

EMC TEST REPORT

FCC 47 CFR Part 15B
Industry Canada RSS-Gen

Electromagnetic compatibility - Unintentional radiators

Report Reference No. : G0M-1202-1765-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 : Orderman GmbH

Address : Bachstrasse 59
5023 Salzburg
AUSTRIA

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 Sol+/Sol+ MSR Handheld terminal

Model No. Sol+ 09021 , Sol+ MSR 09031

Hardware version 1.xx

Firmware / Software version None

FCC-ID: A9CSOL090X

IC: 10102A-SOL0903

Test result Passed

Test Report No.: G0M-1202-1765-EF01-V01

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: 2012-03-01

Date (s) of performance of tests: 2012-03-02 – 2012-03-07

Compiled by: Antje Bartusch

Tested by (+ signature).....: Marcus Klein 

Approved by (+ signature): Jens Zimmermann 

Date of issue: 2012-03-14

Total number of pages.....: 31

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:

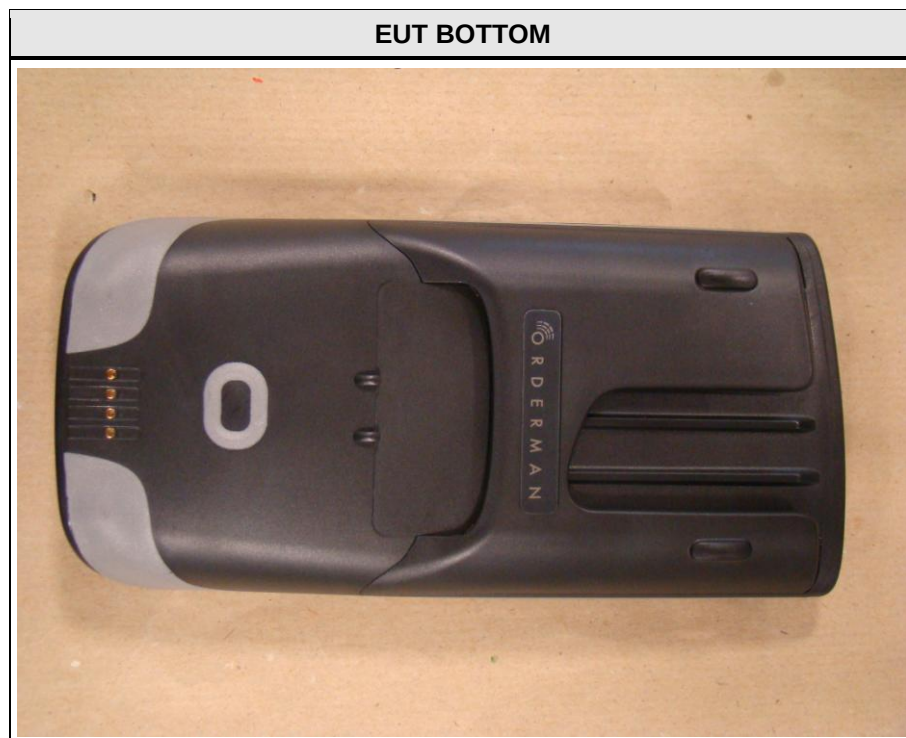
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1 Equipment (Test item) Description

Description	Sol+/Sol+ MSR Handheld terminal
Model	Sol+ 09021 , Sol+ MSR 09031
Serial number	None
Hardware version	1.xx
Software / Firmware version	None
FCC-ID	A9CSOL090X
IC	10102A-SOL0903
Power supply	3.7VDC supplied from accumulator
AC/DC-Adaptor / Charger	Model : FW 7601/05 Manufacturer : FRIWO Input : 100-240VAC / 50-60Hz Output : 5VDC / 1000mA
Manufacturer	Orderman GmbH Bachstrasse 59 5023 Salzburg AUSTRIA
Highest emission frequency	Fmax [MHz] = 550
Device classification	Class B
Equipment type	Tabletop
Number of tested samples	1

1.1 Photos – Equipment external



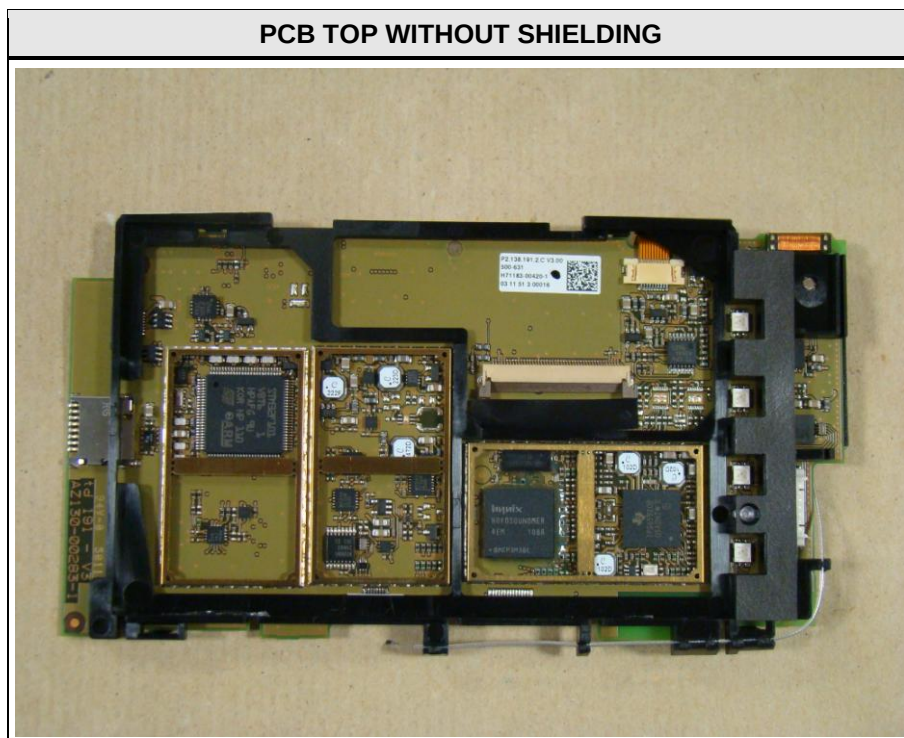
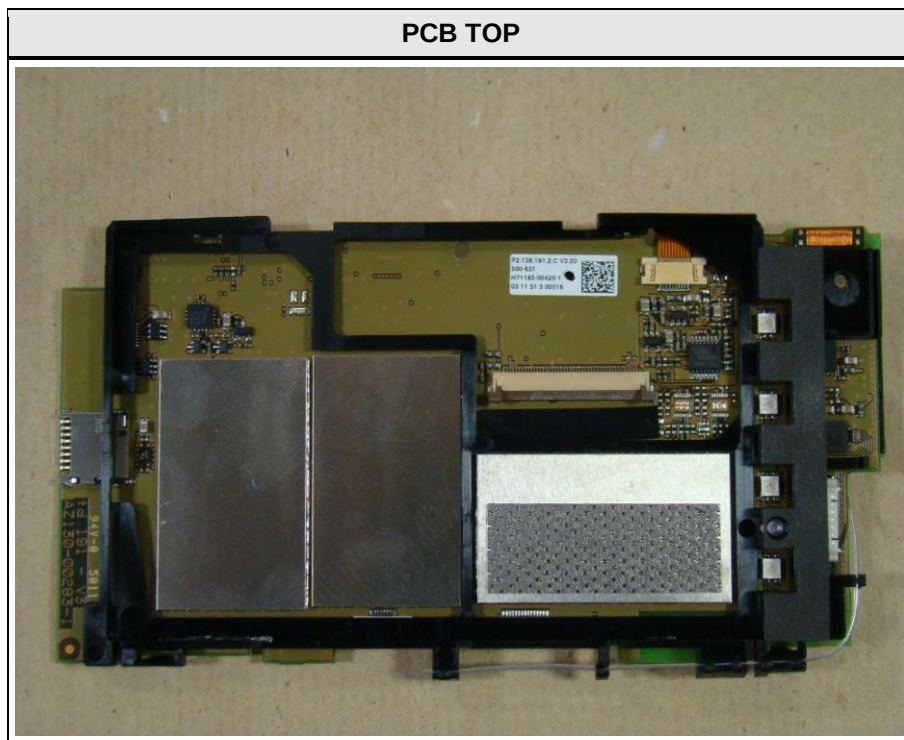
EUT DEDICATED CHARGER FRONT



EUT DEDICATED CHARGER BACK



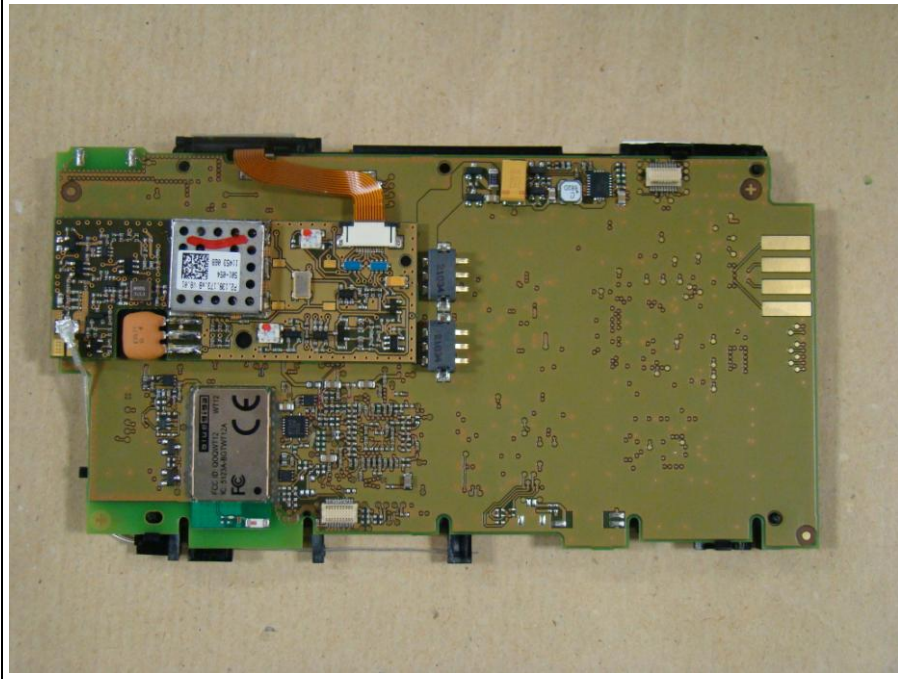
1.2 Photos – Equipment internal



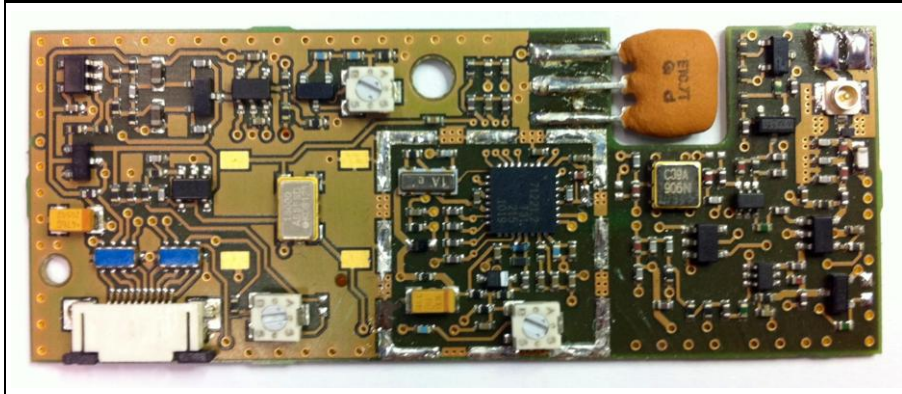
Test Report No.: GOM-1202-1765-EF01-V01

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

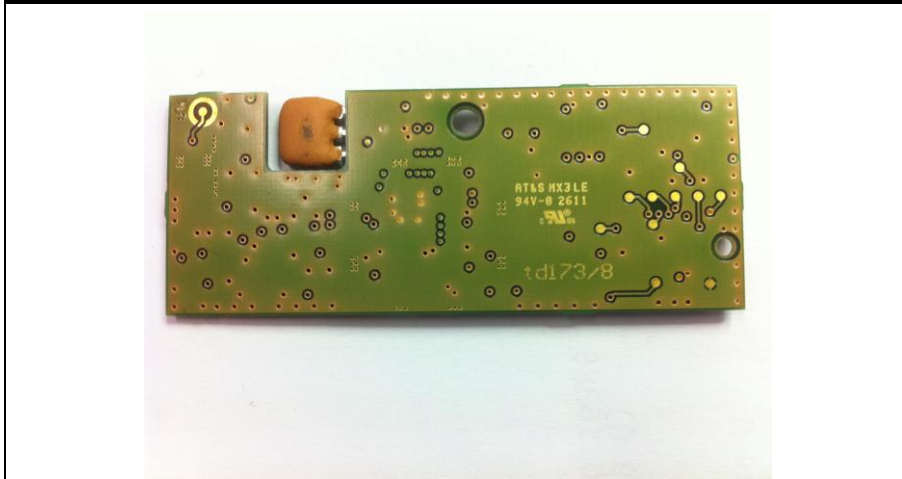
PCB BOTTOM



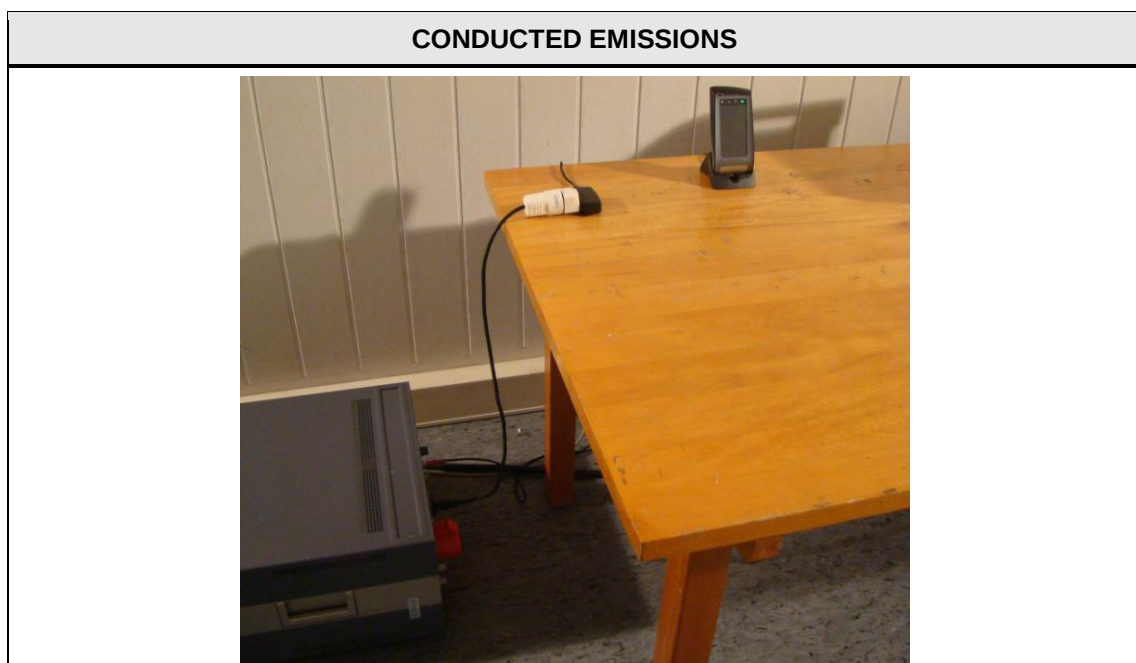
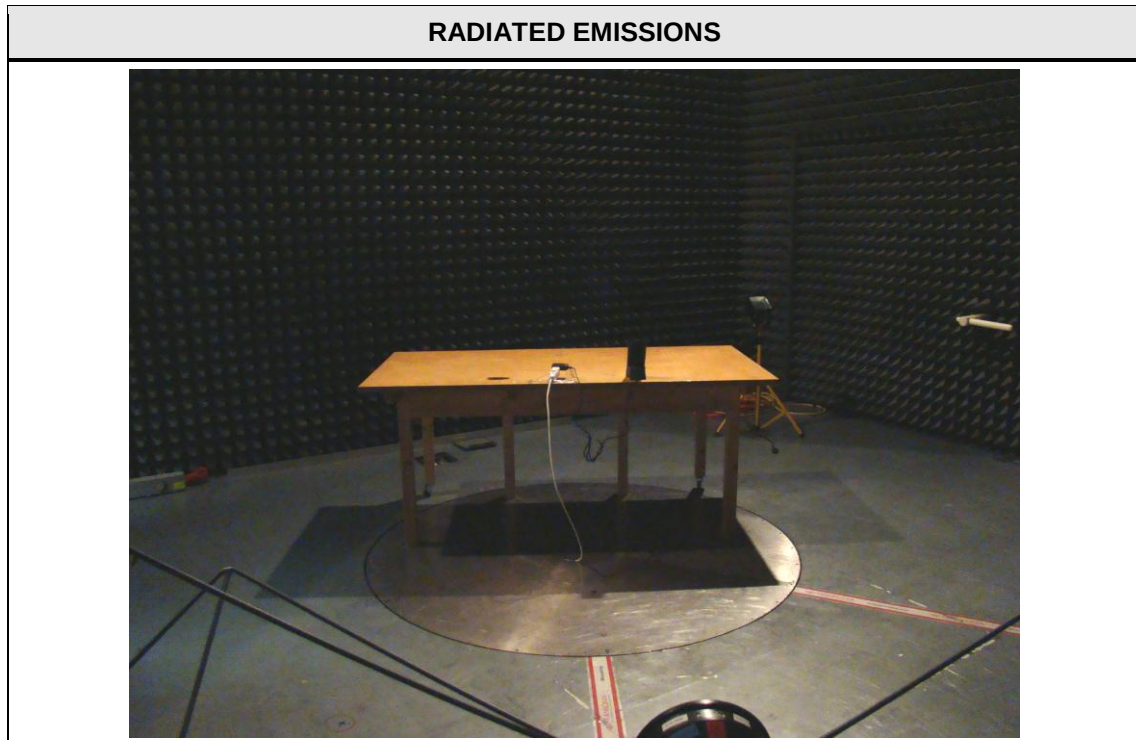
MODULE TOP



MODULE BOTTOM



1.3 Photos – Test setup



1.4 Supporting Equipment Used During Testing

Product Type*	Device	Manufacturer	Model No.	Comments
AE	Power Supply	FRIWO	FW7601/05	
*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 mode
2	BT mode and 902MHz SRD active

1.6 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	ESU8	Inv. No. 0567	Dec 11	Dec 12
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 15.109 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

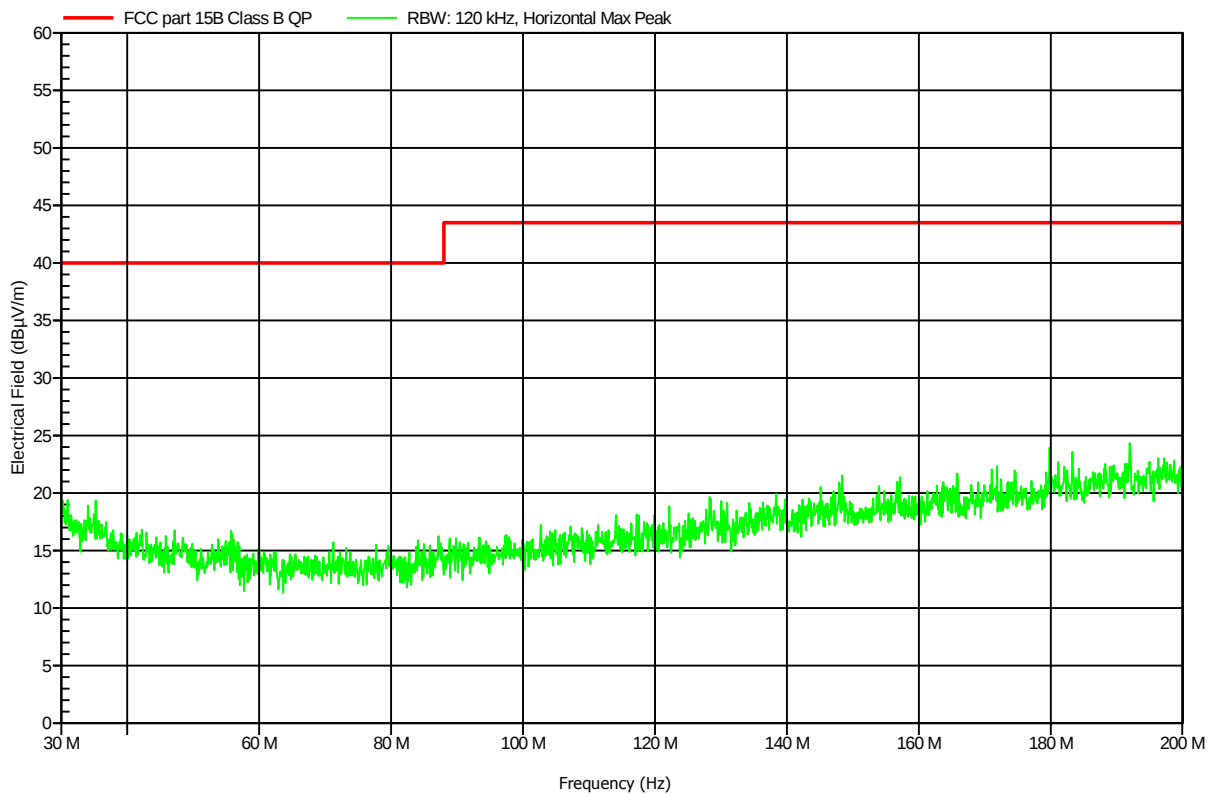
Radiated emissions acc. FCC 47 CFR 15.109 / IC RSS-Gen					Verdict: PASS	
Laboratory Parameters:		Required prior to the test		During the test		
Ambient Temperature		15 to 35°C		23°C		
Relative Humidity		30 to 60%		41%		
Test according referenced standards		Reference Method				
		ANSI C63.4				
Sample 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] = 550				
Fully configured sample scanned over the following frequency range		Frequency range				
		30MHz to 5GHz				
Operating mode		1 & 2				
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:						

Spurious emissions under normal conditions according to FCC Part 15b

Project number: GOM-1202-1765

Manufacturer: Orderman GmbH
 EUT Name: Sol+ MSR
 Model: 09031
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pflug
 Test Conditions: Tnom: 23°C, Unom: 120VAC
 Antenna: Rohde & Schwarz HK 116, Horizontal
 Measurement distance: 3m
 Mode: BT link to Printer
 + 902MHz SRD active
 Test Date: 2012-07-03
 Note:

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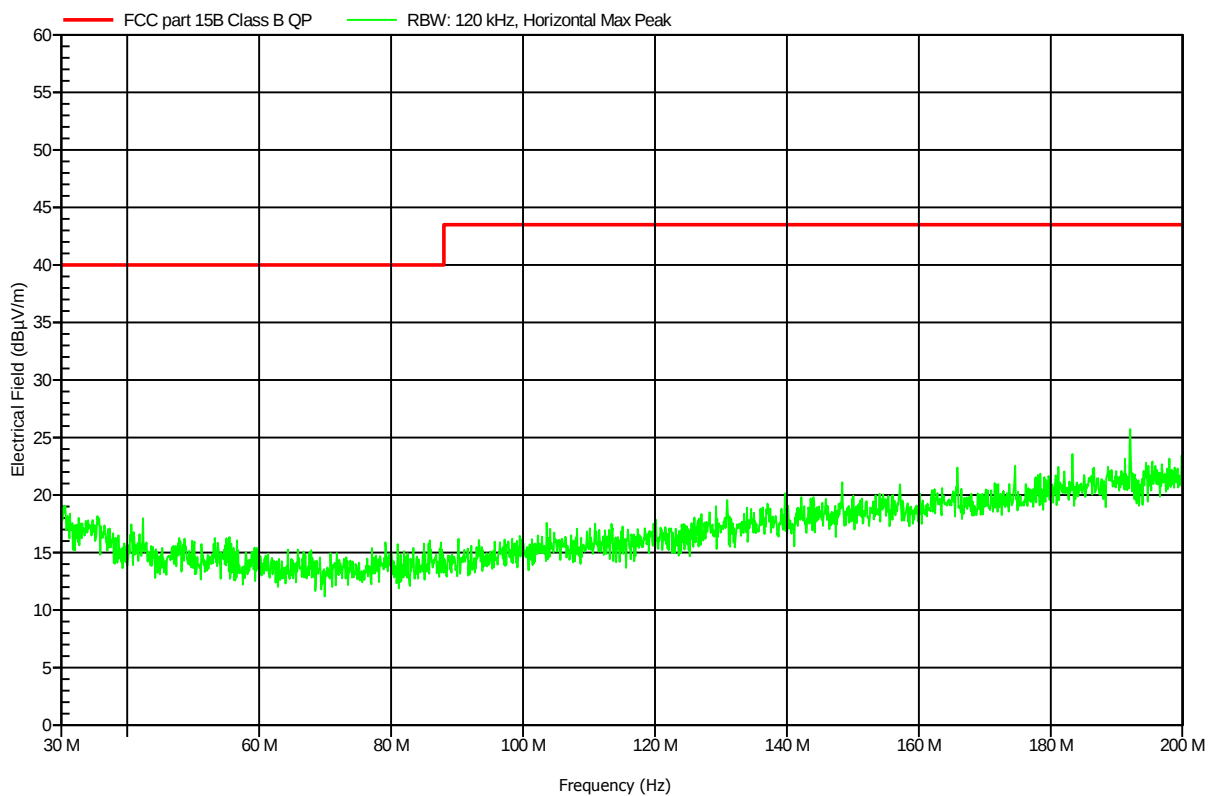


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 Measurement distance: 3m
 Mode: BT link to Printer
 + 902MHz SRD active
 Test Date: 2012-07-03
 Note:

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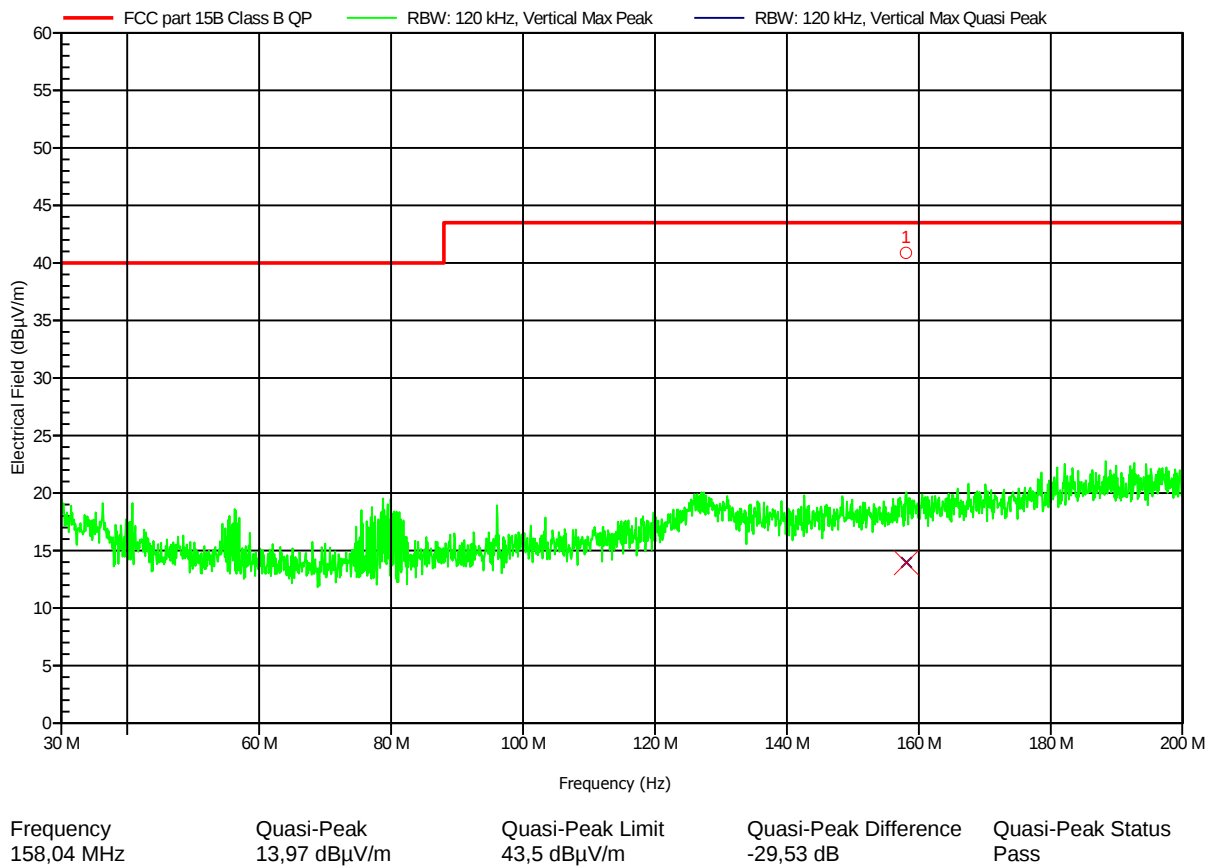


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 Antenna: Rohde & Schwarz HK 116, Vertical
 Measurement distance: 3m
 Mode: BT link to Printer
 + 902MHz SRD active
 Test Date: 2012-07-03
 Note:

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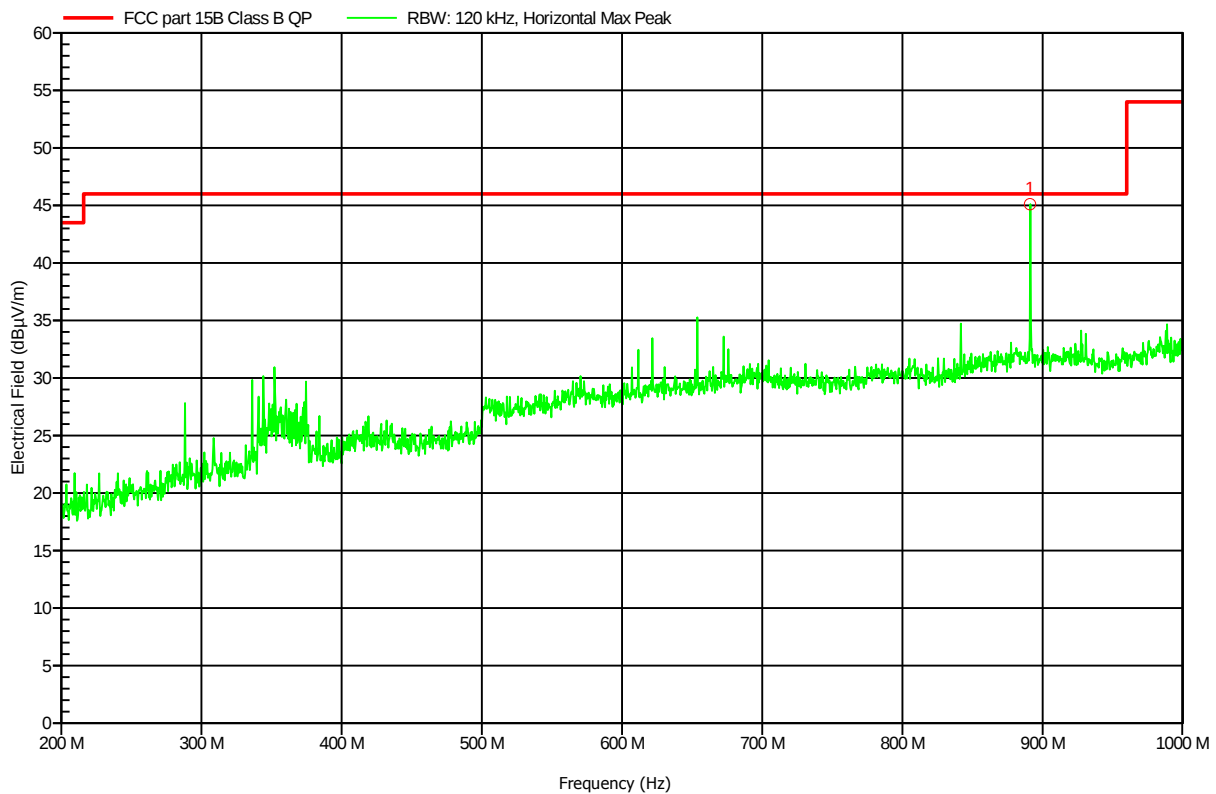


Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1202-1765

Manufacturer: Orderman GmbH
 EUT Name: Sol+ MSR
 Model: 09031
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pflug
 Test Conditions: Tnom: 23°C, Unom: 120VAC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3m
 Mode: BT link to Printer
 + 902MHz SRD active
 Test Date: 2012-07-03
 Note:

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Frequency
 891,02 MHz

Test Report No.: G0M-1202-1765-EF01-V01

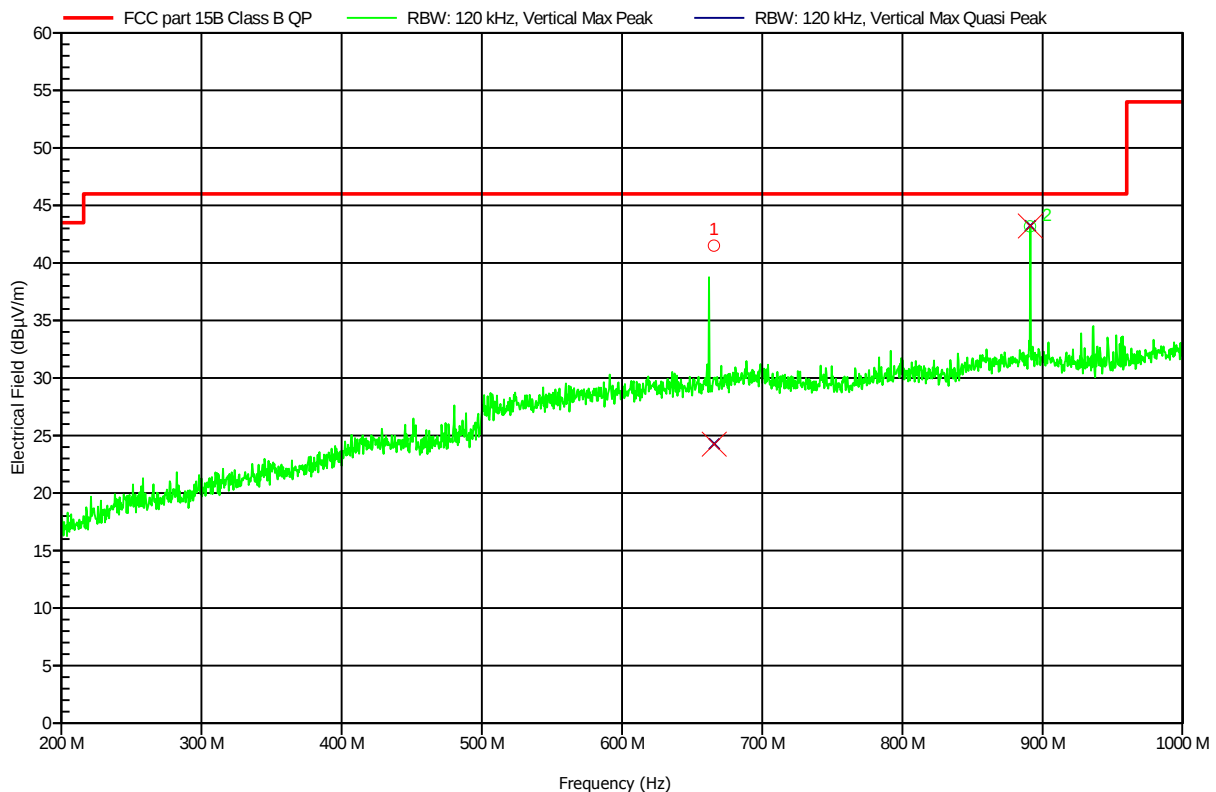
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions under normal conditions according to FCC Part 15b

Project number: GOM-1202-1765

Manufacturer: Orderman GmbH
 EUT Name: Sol+ MSR
 Model: 09031
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pflug
 Test Conditions: Tnom: 23°C, Unom: 120VAC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3m
 Mode: BT link to Printer
 + 902MHz SRD active
 Test Date: 2012-07-03
 Note:

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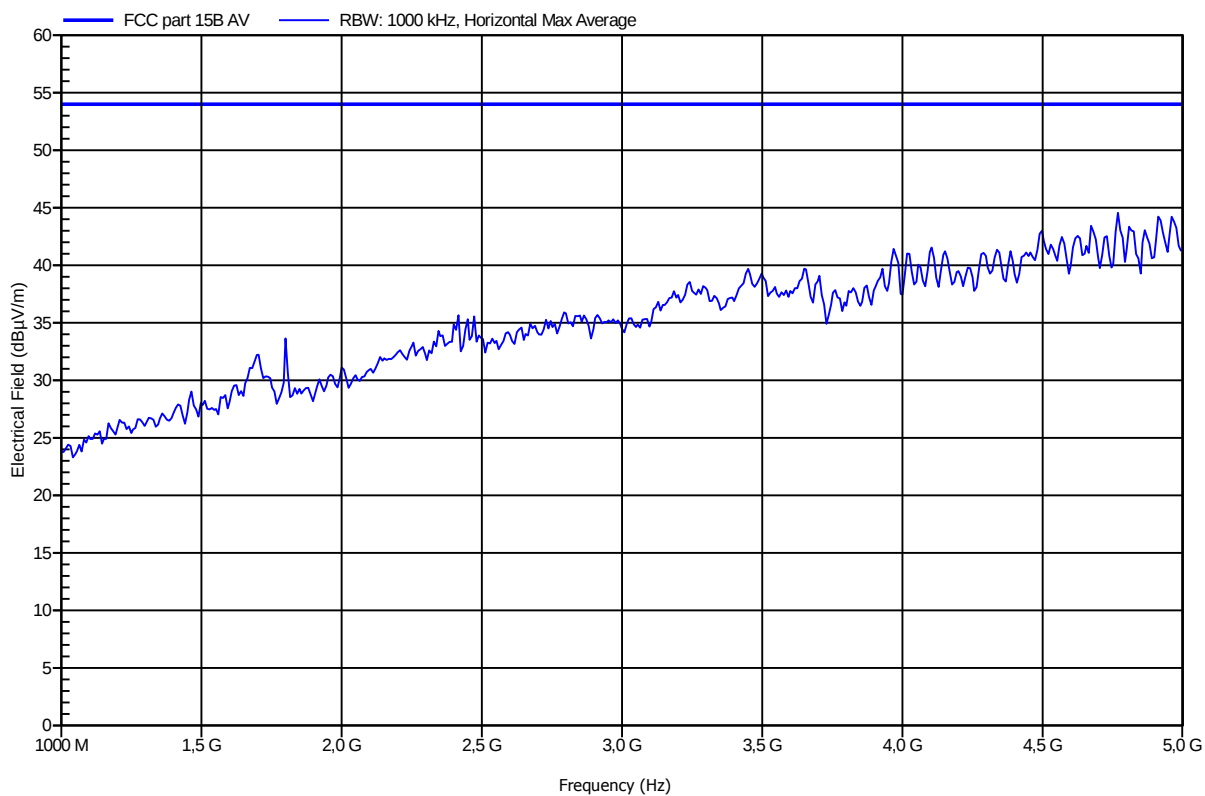
Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
665,6 MHz	24,27 dBµV/m	46 dBµV/m	-21,73 dB	Pass
891,014 MHz	43,24 dBµV/m	46 dBµV/m	-2,76 dB	Pass

Spurious emissions under normal conditions according to FCC Part 15b

Project number: GOM-1202-1765

Manufacturer: Orderman GmbH
 EUT Name: Sol+ MSR
 Model: 09031
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pflug
 Test Conditions: Tnom: 23°C, Unom: 120VAC
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 3m
 Mode: BT link to Printer
 + 902MHz SRD active
 Test Date: 2012-07-03
 Note:

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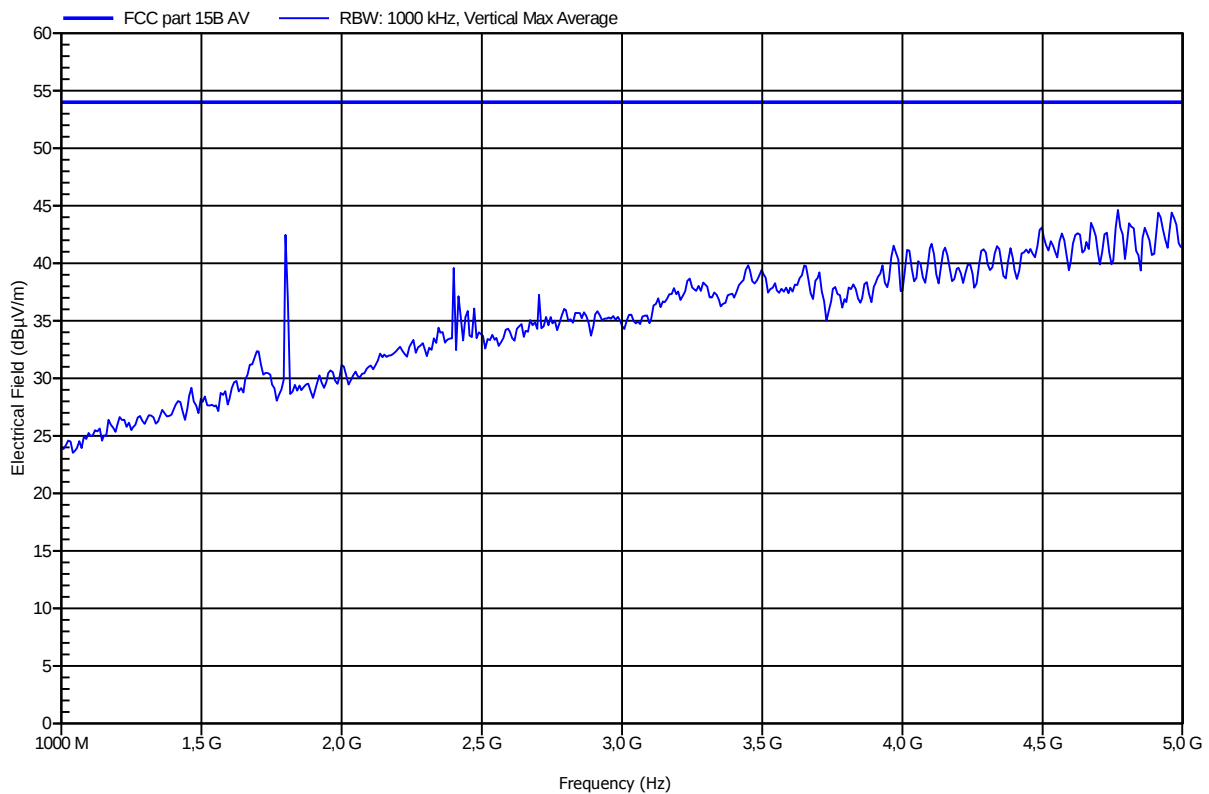


Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1202-1765

Manufacturer: Orderman GmbH
 EUT Name: Sol+ MSR
 Model: 09031
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pflug
 Test Conditions: Tnom: 23°C, Unom: 120VAC
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 3m
 Mode: BT link to Printer
 + 902MHz SRD active
 Test Date: 2012-07-03
 Note:

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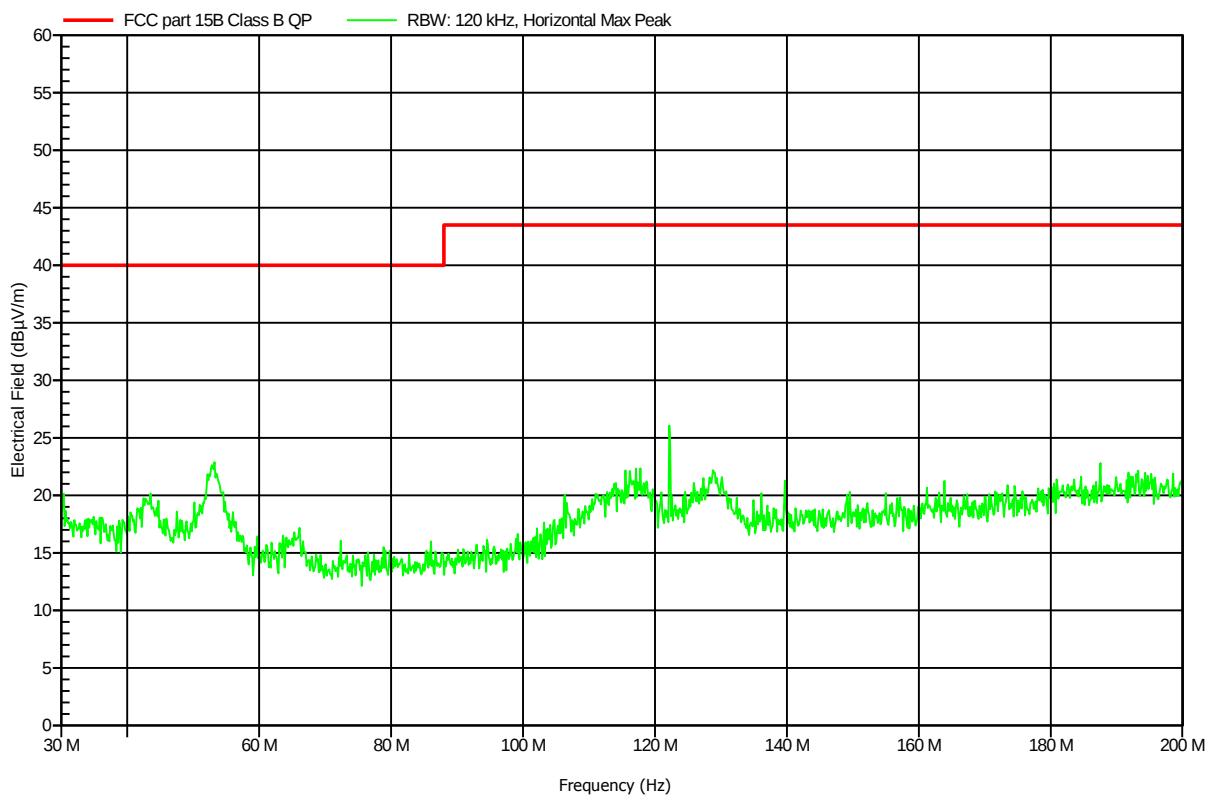


Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1202-1765

Manufacturer:	Orderman GmbH
EUT Name:	Sol+ MSR
Model:	09031
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Klein
Test Conditions:	Tnom: 23°C, Unom: 120VAC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3m, converted to 10m
Mode:	charging
Test Date:	2012-03-02
Note:	

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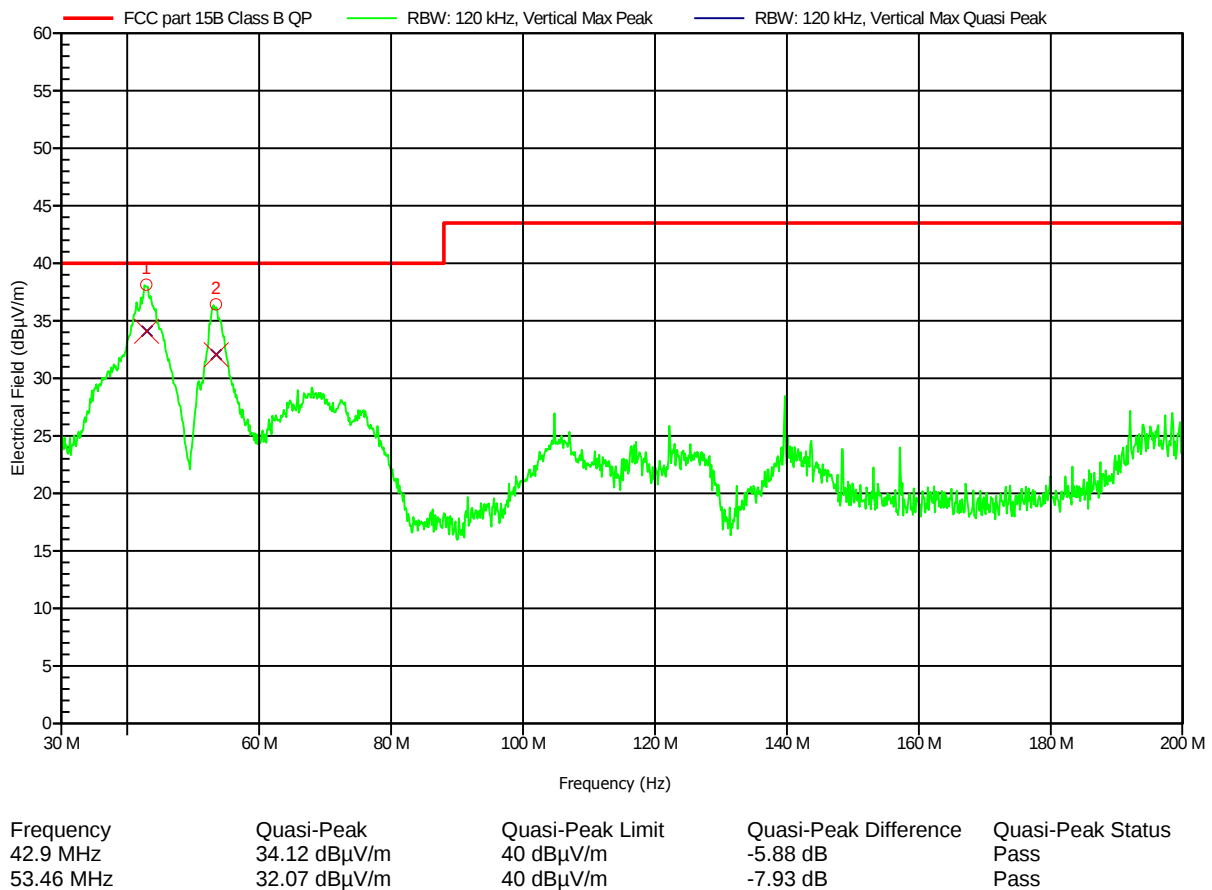


Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1202-1765

Manufacturer: Orderman GmbH
 EUT Name: Sol+ MSR
 Model: 09031
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Klein
 Test Conditions: Tnom: 23°C, Unom: 120VAC
 Antenna: Rohde & Schwarz HK 116, Vertical
 Measurement distance: 3m, converted to 10m
 Mode: charging
 Test Date: 2012-03-02
 Note:

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Test Report No.: G0M-1202-1765-EF01-V01

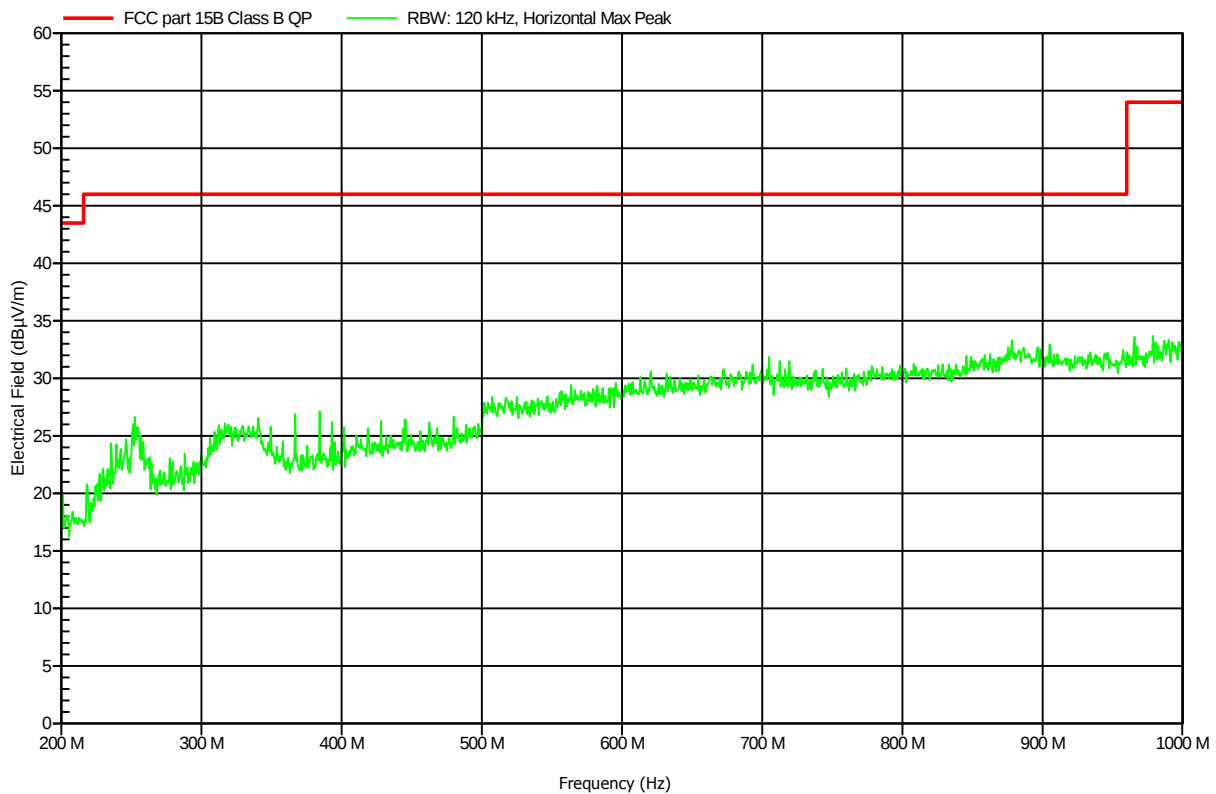
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1202-1765

Manufacturer:	Orderman GmbH
EUT Name:	Sol+ MSR
Model:	09031
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Klein
Test Conditions:	Tnom: 23°C, Unom: 120VAC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3m, converted to 10m
Mode:	charging
Test Date:	2012-03-02
Note:	

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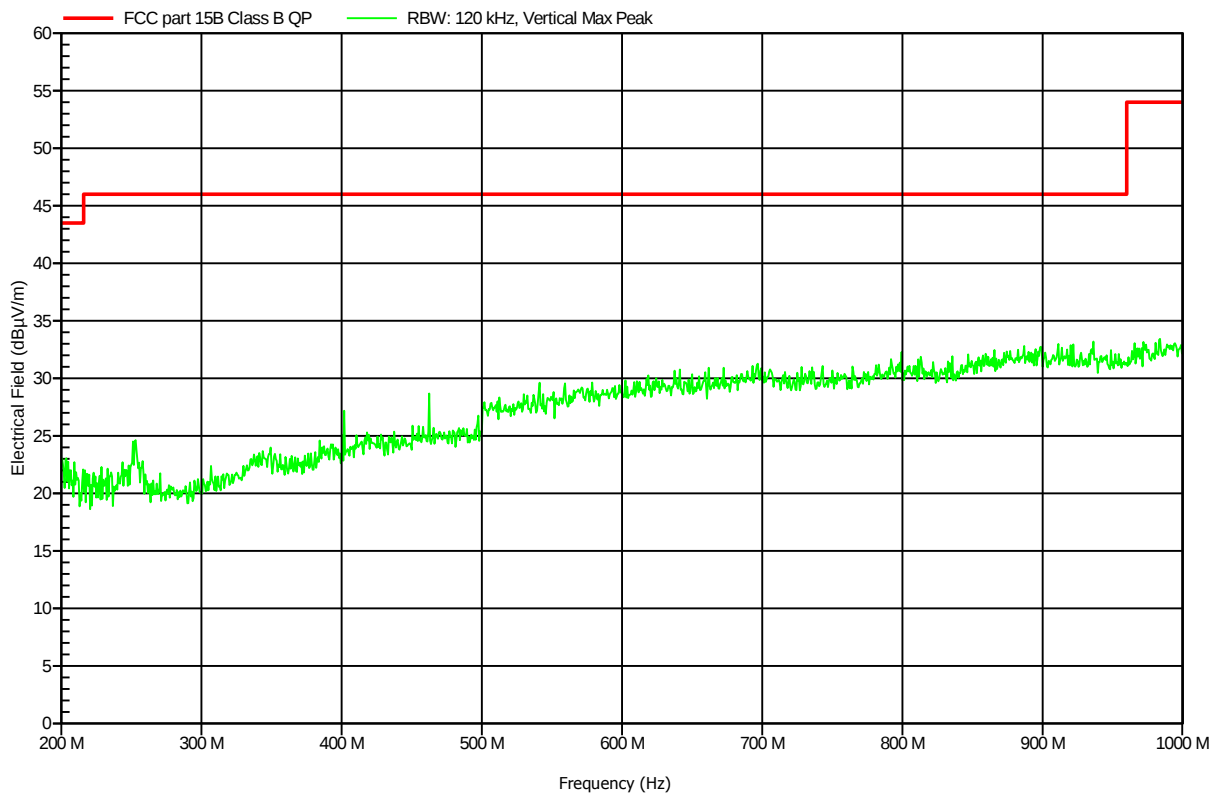


Spurious emissions under normal conditions according to FCC Part 15b

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Manufacturer:	Orderman GmbH
EUT Name:	Sol+ MSR
Model:	09031
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Klein
Test Conditions:	Tnom: 23°C, Unom: 120VAC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3m, converted to 10m
Mode:	charging
Test Date:	2012-03-02
Note:	

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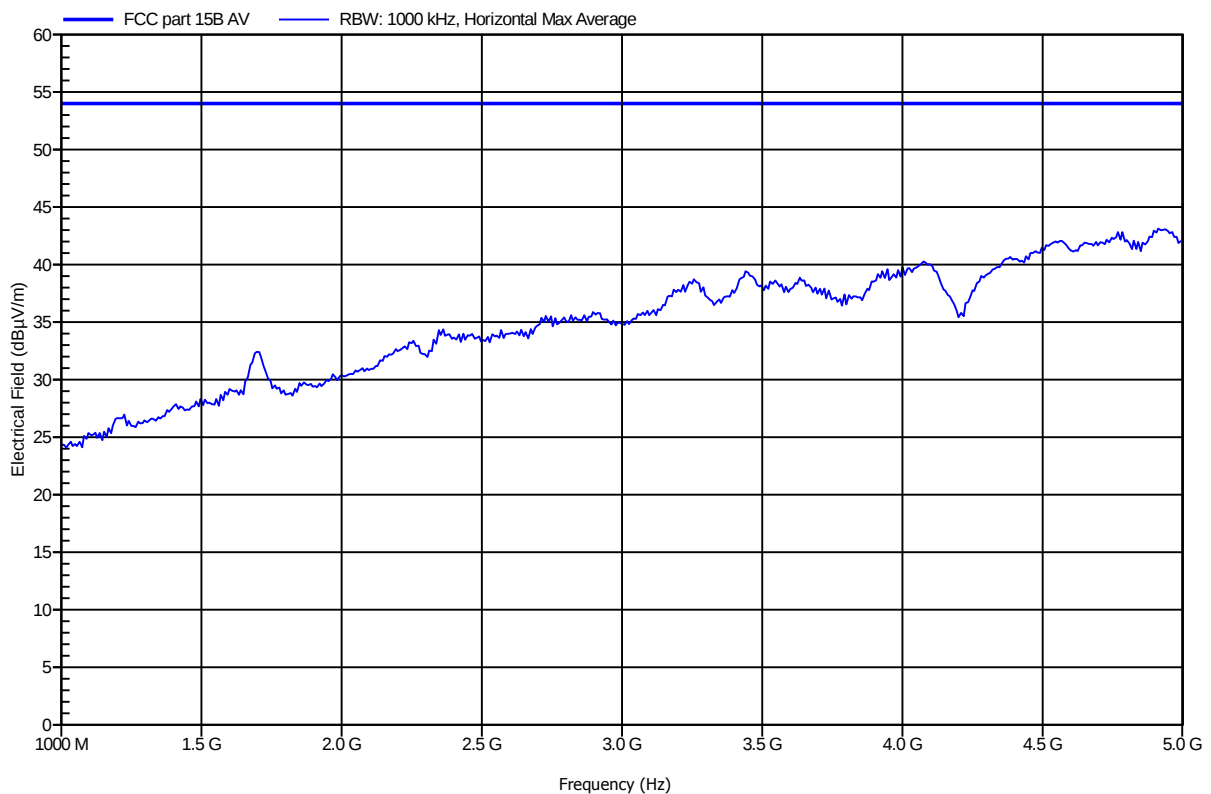


Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1202-1765

Manufacturer:	Orderman GmbH
EUT Name:	Sol+ MSR
Model:	09031
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Klein
Test Conditions:	Tnom: 23°C, Unom: 120VAC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3m
Mode:	charging
Test Date:	2012-03-02
Note:	

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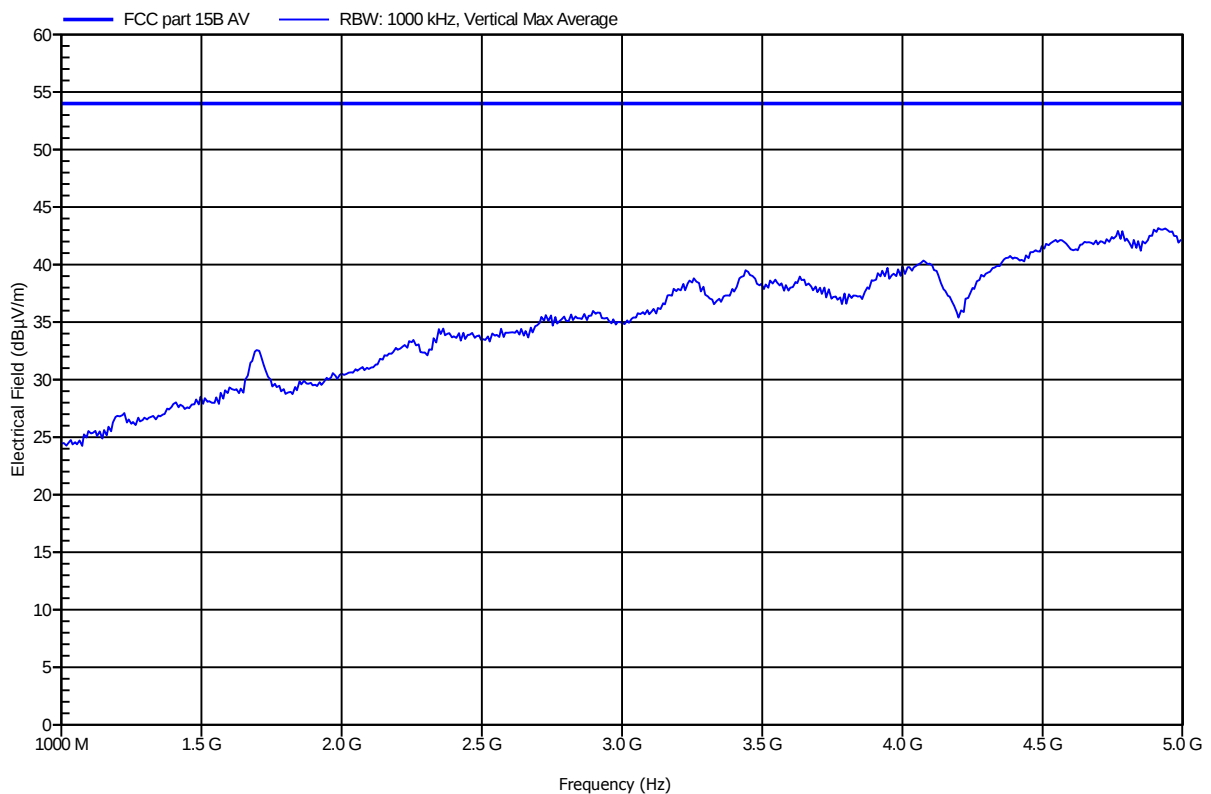


Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1202-1765

Manufacturer:	Orderman GmbH
EUT Name:	Sol+ MSR
Model:	09031
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Klein
Test Conditions:	Tnom: 23°C, Unom: 120VAC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3m
Mode:	charging
Test Date:	2012-03-02
Note:	

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3.2 Test Conditions and Results – AC power line conducted emissions

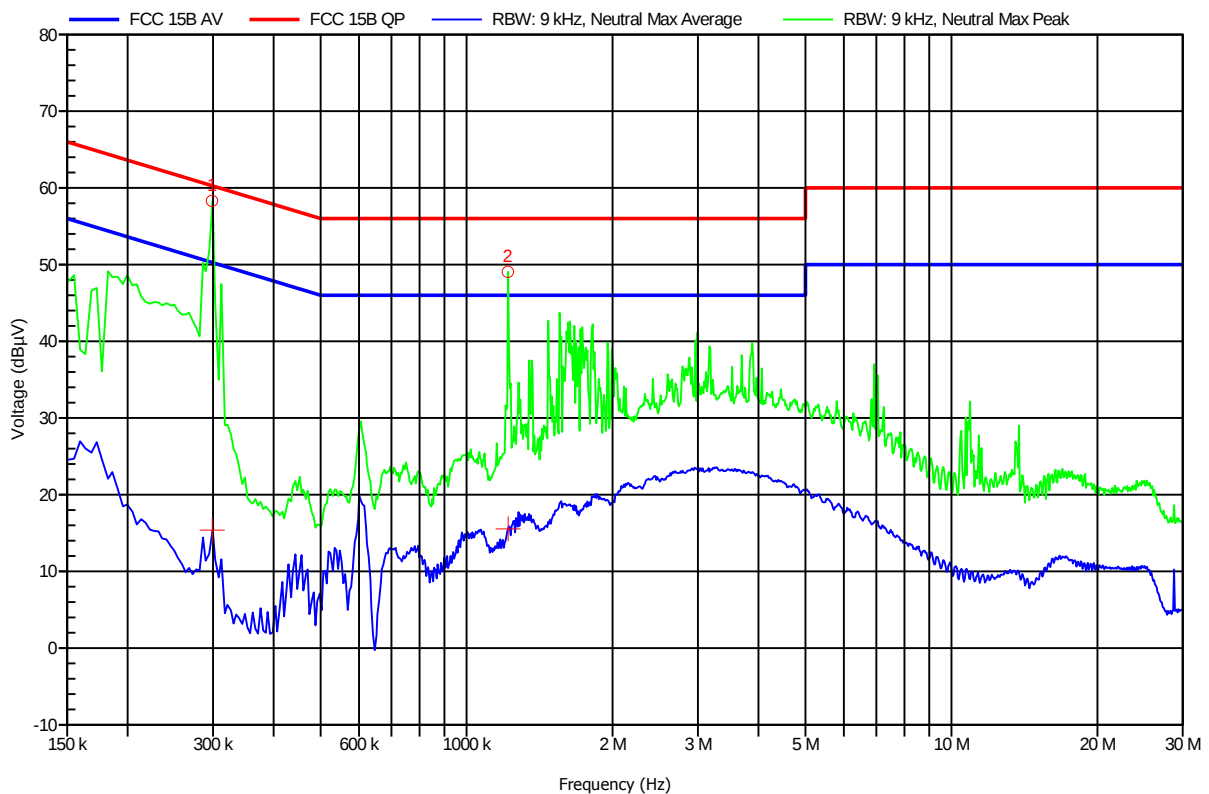
Conducted emissions acc. FCC 47 CFR 15.107 / IC RSS-Gen			Verdict: PASS	
Laboratory Parameters:		Required prior to the test	During the test	
Ambient Temperature		15 to 35°C	23°C	
Relative Humidity		30 to 60%	41%	
Test according referenced standards		Reference Method		
		ANSI C63.4		
Fully configured 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		
Operating mode		2		
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: GOM-1202-1765

Manufacturer: Orderman GmbH
 EUT Name: Sol+ MSR
 Model: 09031
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Klein
 Test Conditions: Tnom: 23°C, Unom: 120VAC
 LISN: ESH2-Z5 N
 Mode: charging
 Test Date: 2012-03-02
 Note:

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Frequency
 298.5 kHz
 1.216 MHz

Frequency	Average	Average Limit	Average Difference	Average Status
298.5 kHz	15.42 dBμV	50.28 dBμV	-34.86 dB	Pass
1.216 MHz	15.58 dBμV	46 dBμV	-30.42 dB	Pass

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

Project number: G0M-1202-1765

Manufacturer:	Orderman GmbH
EUT Name:	Sol+ MSR
Model:	09031
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Klein
Test Conditions:	Tnom: 23°C, Unom: 120VAC
LISN:	ESH2-Z5 L
Mode:	charging
Test Date:	2012-03-02
Note:	

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