

EMC TEST REPORT

FCC 47 CFR Part 15B
Industry Canada RSS-Gen

Electromagnetic compatibility - Unintentional radiators

Report Reference No. : G0M-1307-2974-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 : TomTom International BV

Address : Rembrandtplein 35
1017 CT Amsterdam
Netherlands

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 : Telematic Device with GPRS+WCDMA/BT/GPS

Model No. : L0530

Additional Models : None

Hardware version : drs2_3_pcb 22/2013

Firmware / Software version : 11_10_2880

FCC-ID: S4LLINK530

IC: 5767A-LINK530

Test result : Passed

Test Report No.: G0M-1307-2974-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: 2013-07-08

Date (s) of performance of tests: 2013-07-24

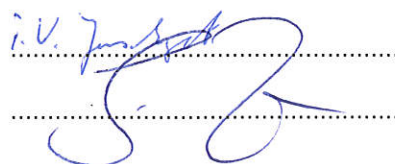
Compiled by: Antje Bartusch

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

Approved by (+ signature): Jens Zimmermann

Date of issue: 2013-08-26

Total number of pages: 27


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	Telematic Device with GPRS+WCDMA/BT/GPS	
Model	L0530	
Additional Models	None	
Serial number	None	
Hardware version	drs2_3_pcb 22/2013	
Software / Firmware version	11_10_2880	
Contains FCC-ID	S4LLINK530	
Contains IC	5767A-LINK530	
Power supply	12 VDC / 24 VDC	
AC/DC-Adaptor	None	
Radio module	Type	Wireless radio Module
	Model	EHS6
	Manufacturer	Cinterion
	HW Version	B2 (rev.3)
	SW Version	Rev. 02.000 SVN08
	FCC-ID	QIPEHS6
	IC	7830A-EHS6
Manufacturer	Quanta Computer Inc. No.211, Wen Hwa 2nd Road., Kuei Shan Hsiang 33377 Tao Yuan Shien Taiwan (ROC)	
Highest emission frequency	2440 MHz	
Device classification	Class B	
Equipment type	Tabletop	
Number of tested samples	1	

1.1 Photos – Equipment external

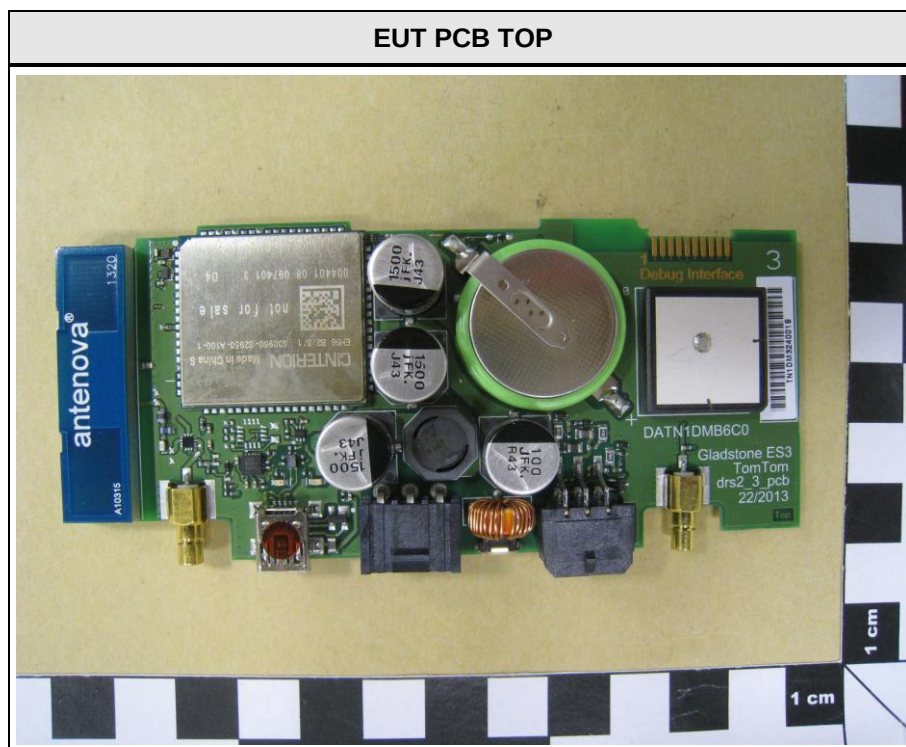
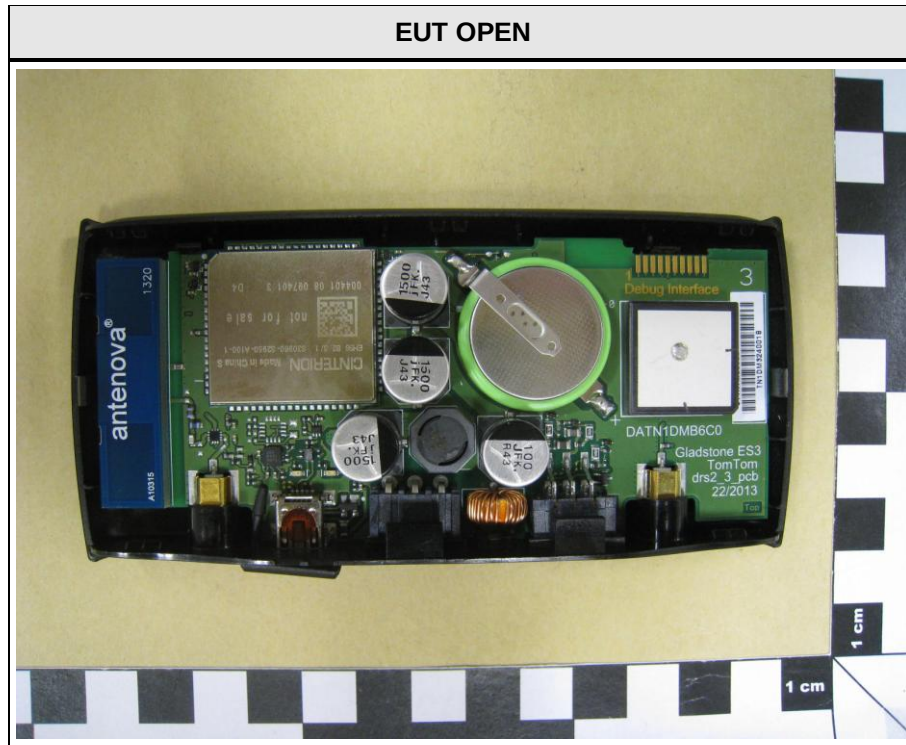


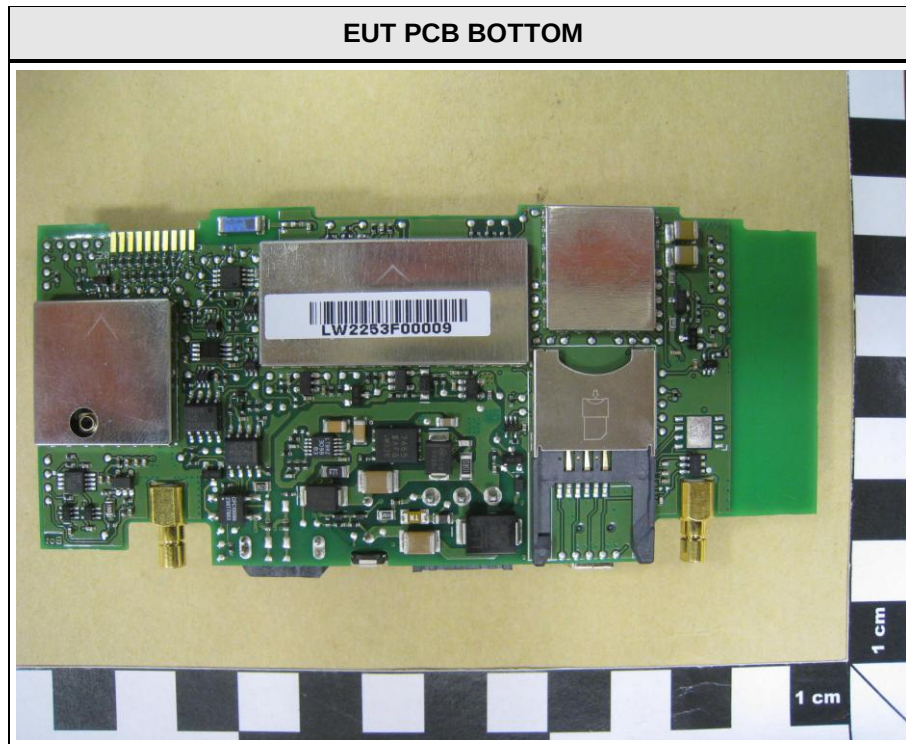
Test Report No.: GOM-1307-2974-EF01-V01

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

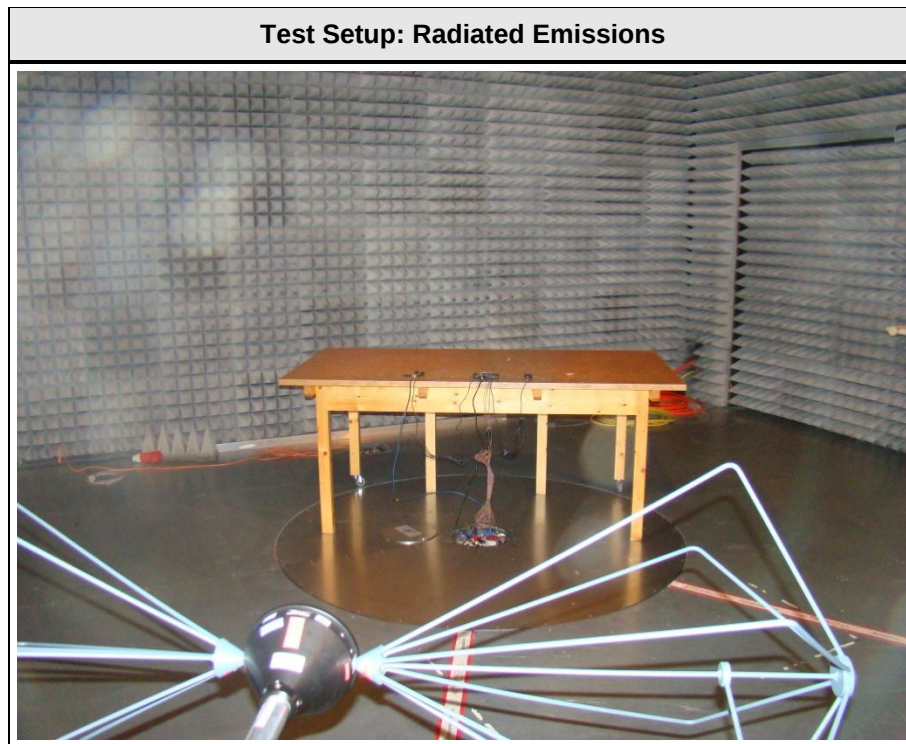


1.2 Photos – Equipment internal





1.4 Photos – Test setup



1.5 Supporting Equipment Used During Testing

Product Type*	Device	Manufacturer	Model No.	Comments
None				
*Note: Use the following abbreviations: AE : Auxiliary/Associated Equipment, or SIM : Simulator (Not Subjected to Test) CABL : Connecting cables				

1.6 Operating Modes

Mode #	Description
1	GSM850 GPRS (2 up, 2 down), GPS receiving, BT searching

1.7 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	ESCS 30	EF00297	2012-09	2013-09

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	EF00297	2012-09	2013-09

1.8 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:

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

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	N/A	
Remarks:				

3 Test Conditions and Results

3.1 Test Conditions and Results – Radiated emissions

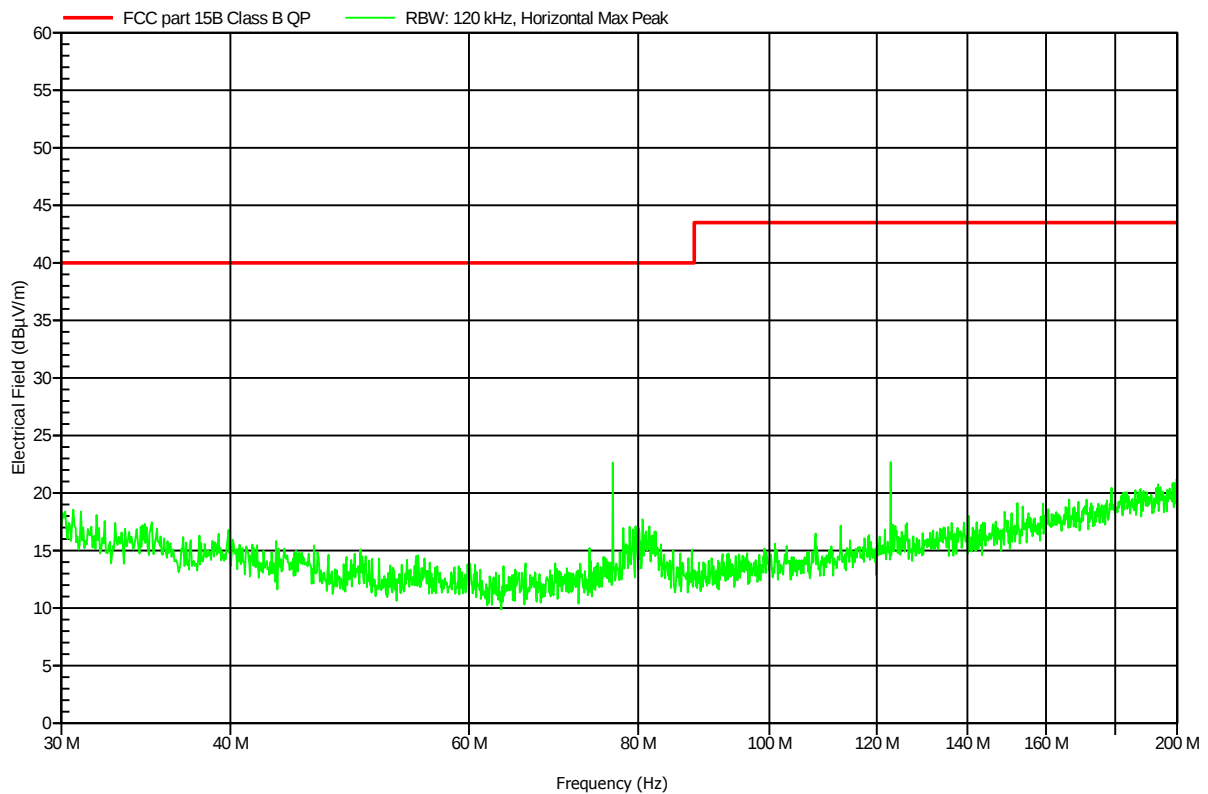
Radiated emissions acc. FCC 47 CFR 15.109 / IC RSS-Gen					Verdict: PASS		
Laboratory Parameters:		Required prior to the test			During the test		
Ambient Temperature		15 to 35 °C			23°C		
Relative Humidity		30 to 60 %			42%		
Test according referenced standards		Reference Method					
		ANSI C63.4					
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					
		2440 MHz					
Fully configured sample scanned over the following frequency range		Frequency range					
		30 MHz to 5 GHz					
Operating mode		1					
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 Part15B

Project number: G0M-1307-2974

Manufacturer:	TomTom International BV
EUT Name:	Telematic Device with GPRS+WCDMA/BT/GPS
Model:	L0530
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Klein
Test Conditions:	Tnom: 23°C, Unom: 12 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3m
Mode:	GSM850 GPRS (2 up, 2 down), GPS receiving, BT searching
Test Date:	2013-07-16
Note:	

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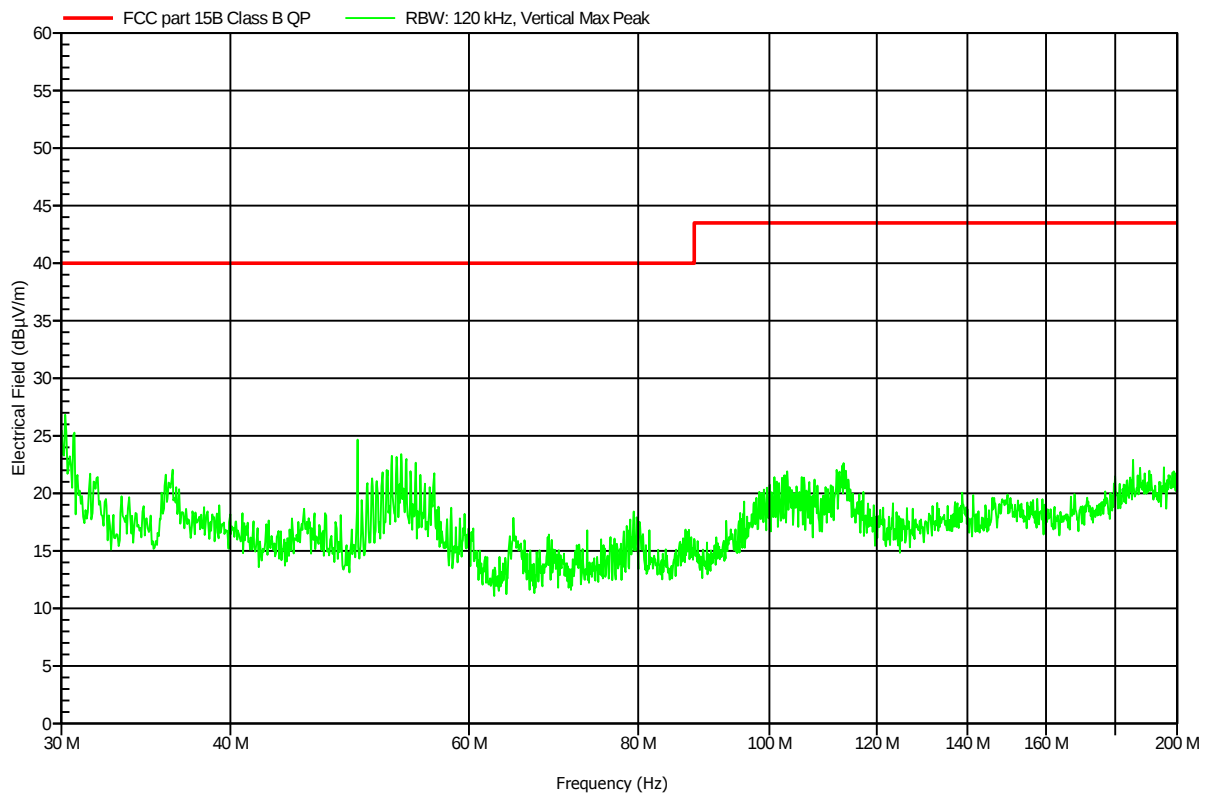


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 Mode: GSM850 GPRS (2 up, 2 down), GPS receiving, BT searching
 Test Date: 2013-07-16
 Note:

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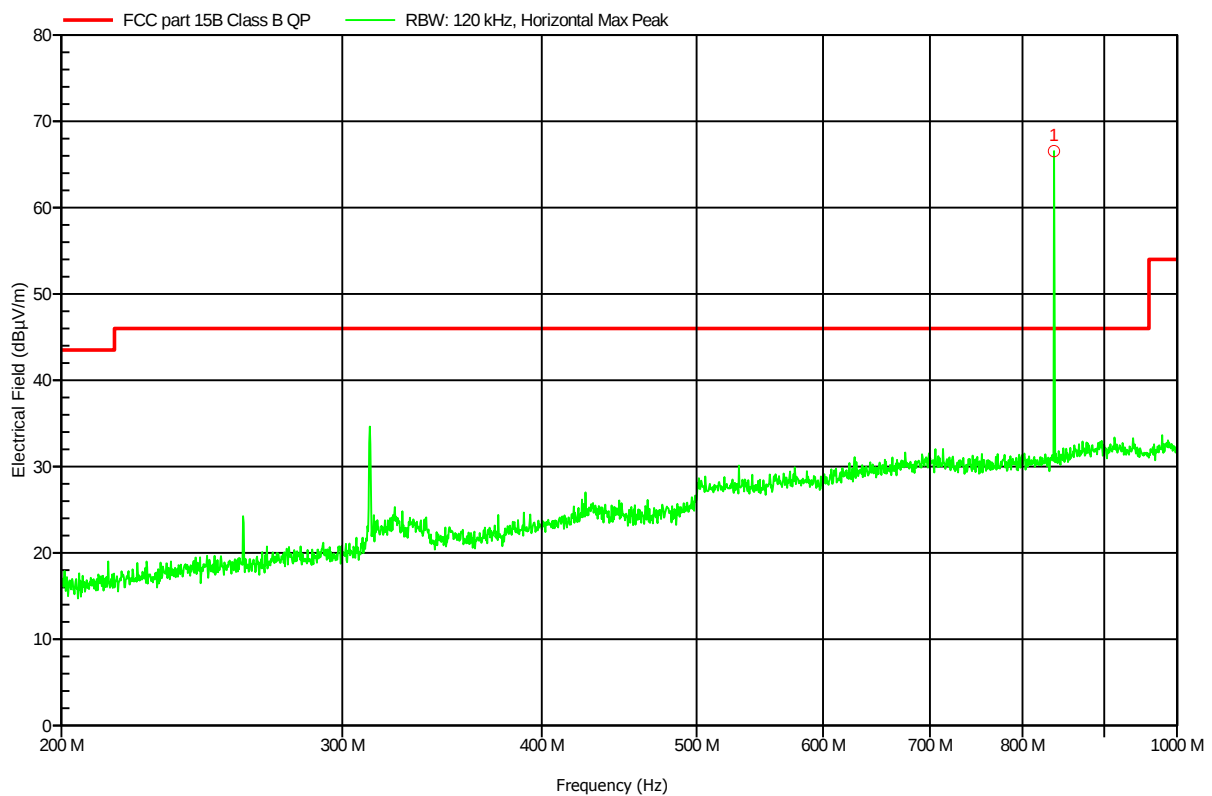


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Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3m
Mode:	GSM850 GPRS (2 up, 2 down), GPS receiving, BT searching
Test Date:	2013-07-16
Note:	Peak 1: GSM850 Carrier

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Nr
1

Frequency
837.08 MHz

Test Report No.: G0M-1307-2974-EF01-V01

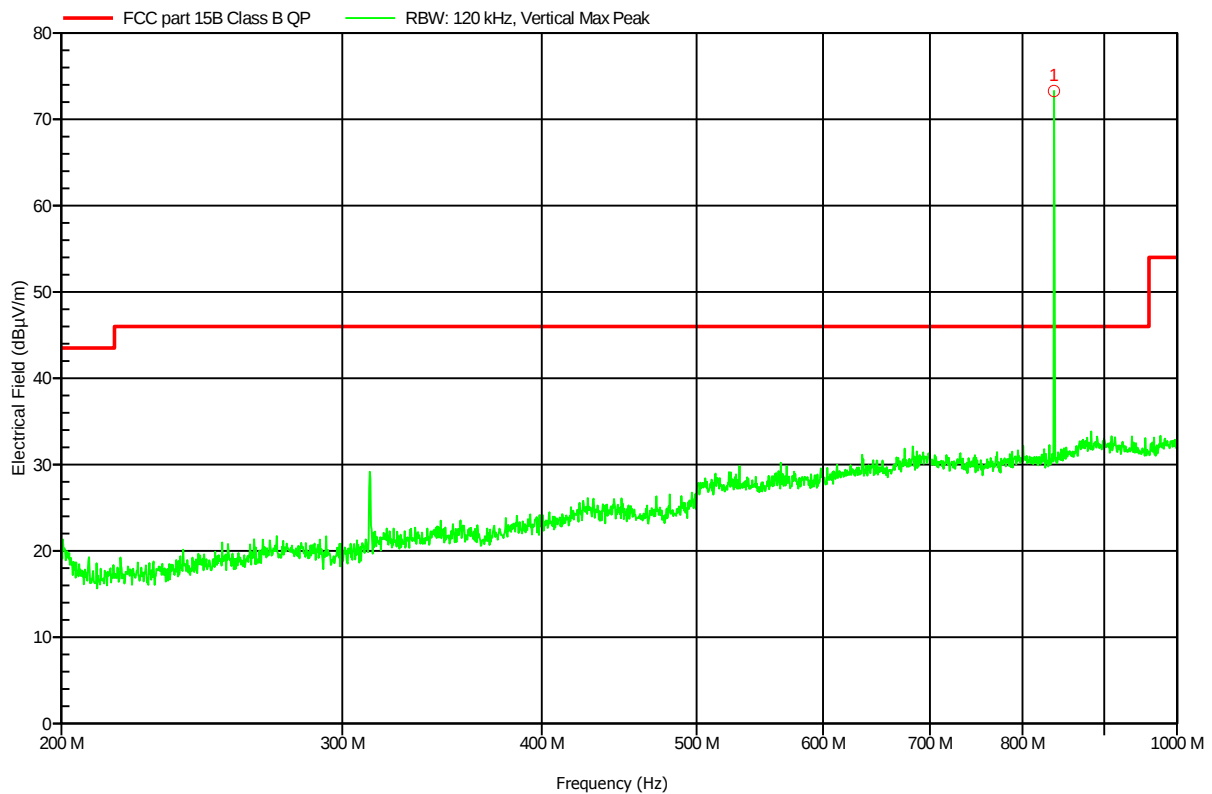
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

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Nr
1

Frequency
837.08 MHz

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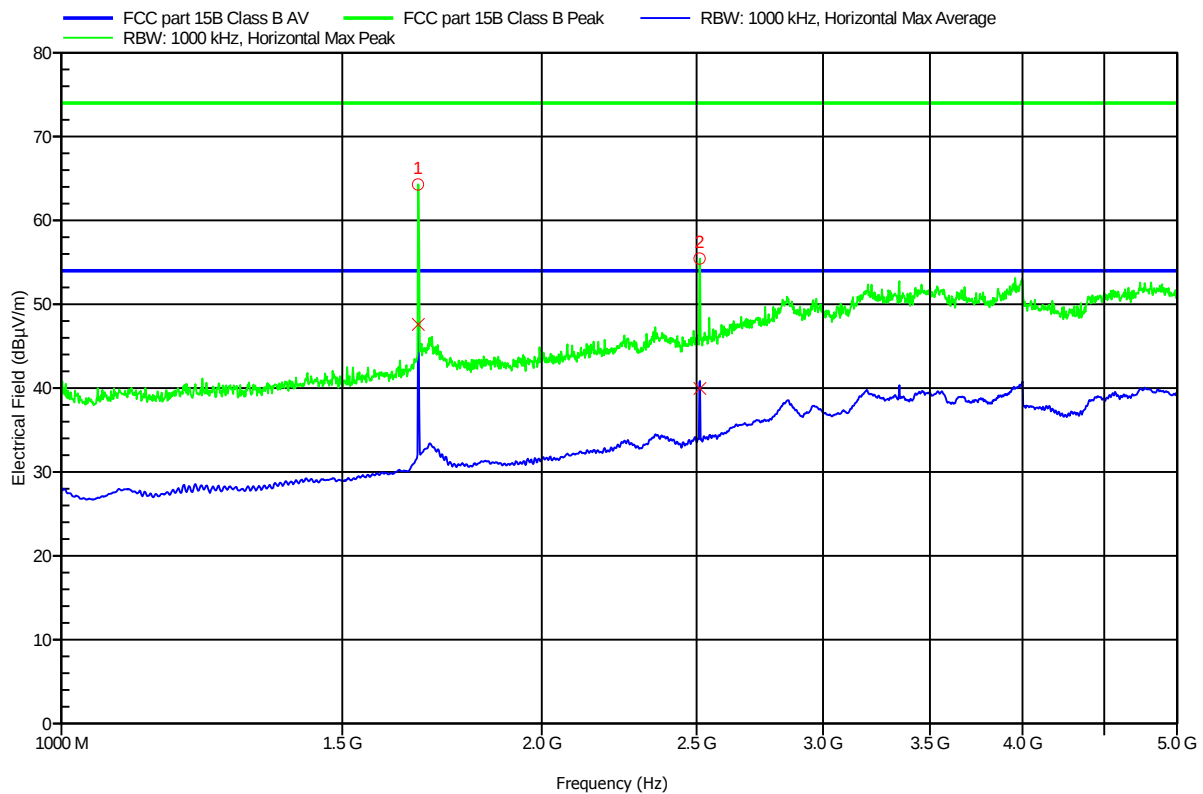
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 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 3m
 Mode: GSM850 GPRS (2 up, 2 down), GPS receiving, BT searching
 Test Date: 2013-07-24
 Note:

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Nr	Frequency	Peak
1	1.673 GHz	64.3 dBµV/m
2	2.511 GHz	55.45 dBµV/m

Nr	Frequency	Average	Average Limit	Average Difference	Average Status
1	1.673 GHz	47.64 dBµV/m	54 dBµV/m	-6.36 dB	Pass
2	2.511 GHz	39.99 dBµV/m	54 dBµV/m	-14.01 dB	Pass

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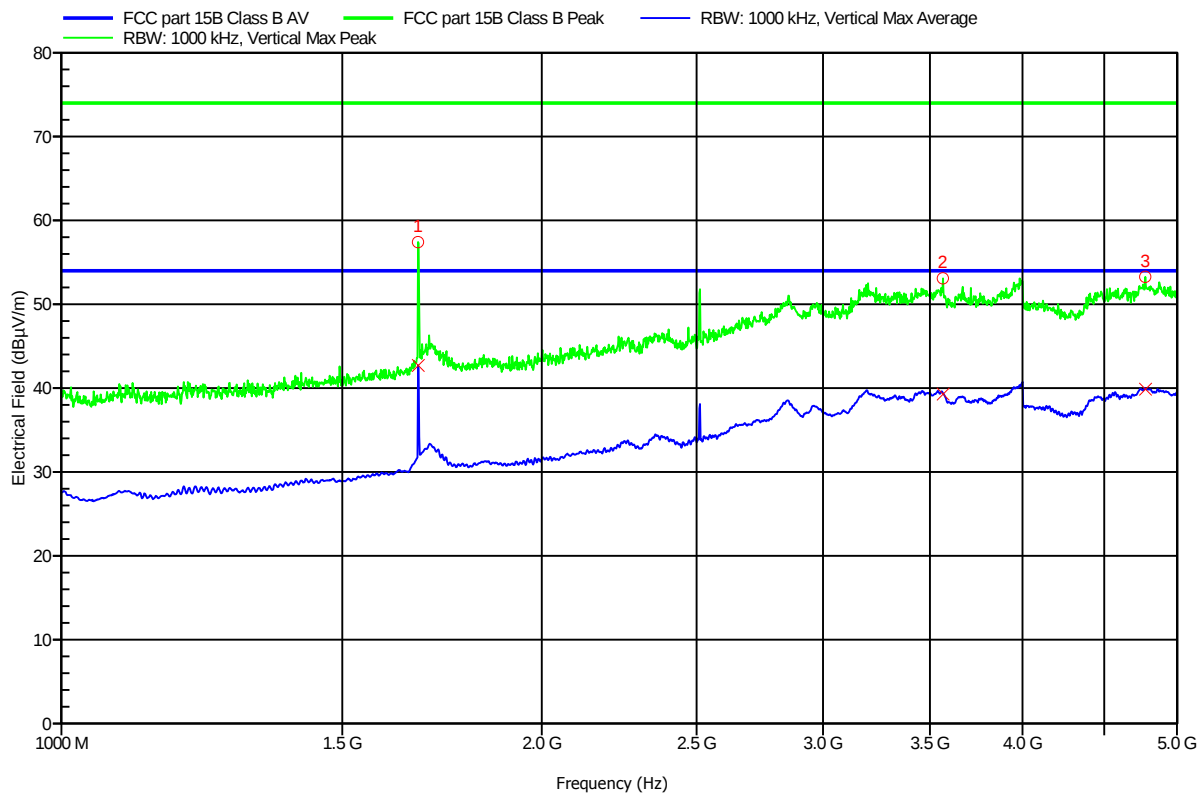
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 Note:

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Nr	Frequency	Peak
1	1.673 GHz	57.41 dBµV/m
2	3.566 GHz	53.09 dBµV/m
3	4.774 GHz	53.28 dBµV/m

Nr	Frequency	Average	Average Limit	Average Difference	Average Status
1	1.673 GHz	42.73 dBµV/m	54 dBµV/m	-11.27 dB	Pass
2	3.566 GHz	39.31 dBµV/m	54 dBµV/m	-14.69 dB	Pass
3	4.774 GHz	39.91 dBµV/m	54 dBµV/m	-14.09 dB	Pass

Test Report No.: GOM-1307-2974-EF01-V01

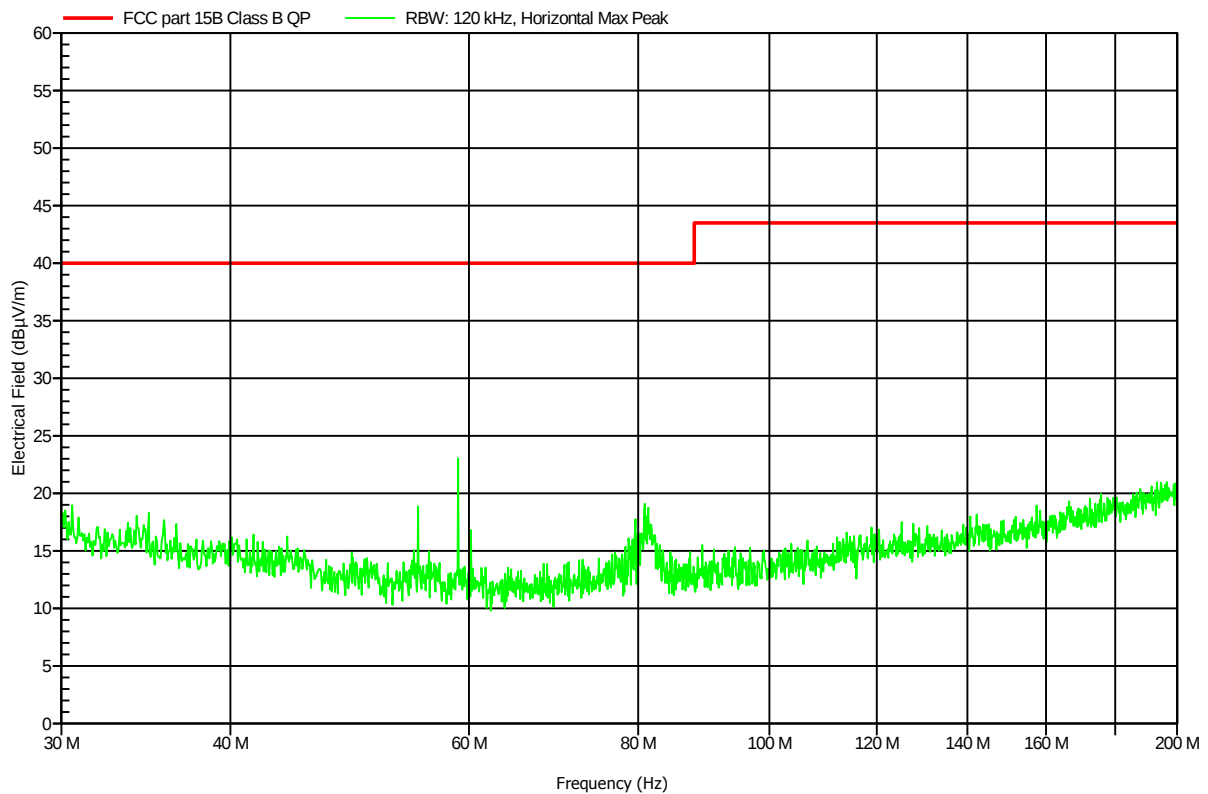
Eurofins Product Service GmbH
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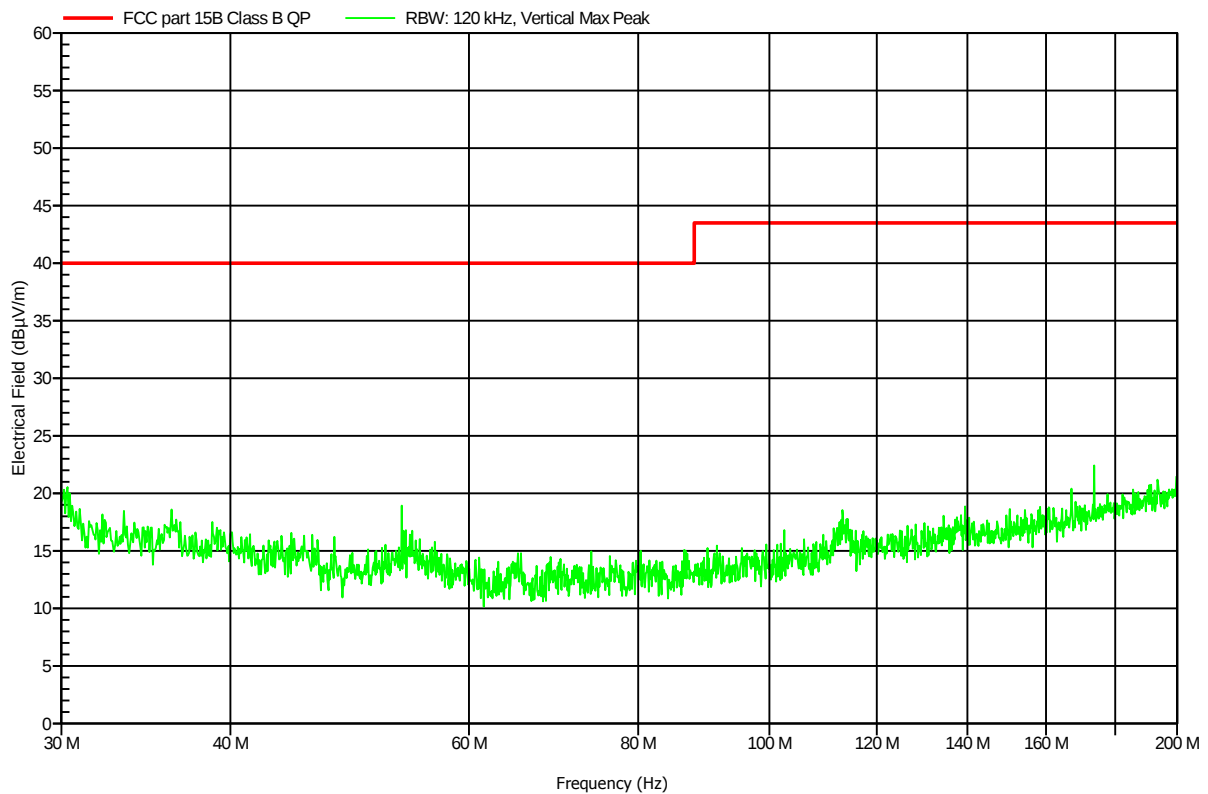
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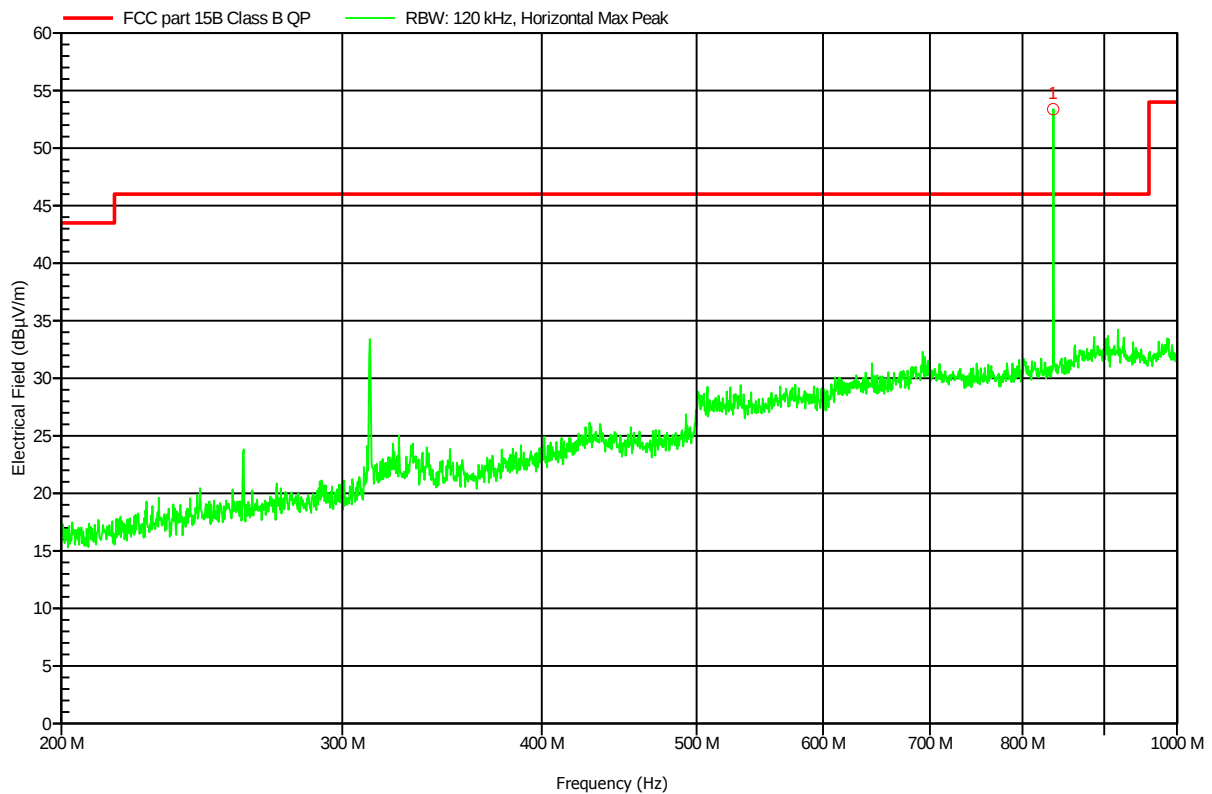


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 Note:

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Nr	Frequency
1	836.12 MHz GSM 850 Carrier

Test Report No.: G0M-1307-2974-EF01-V01

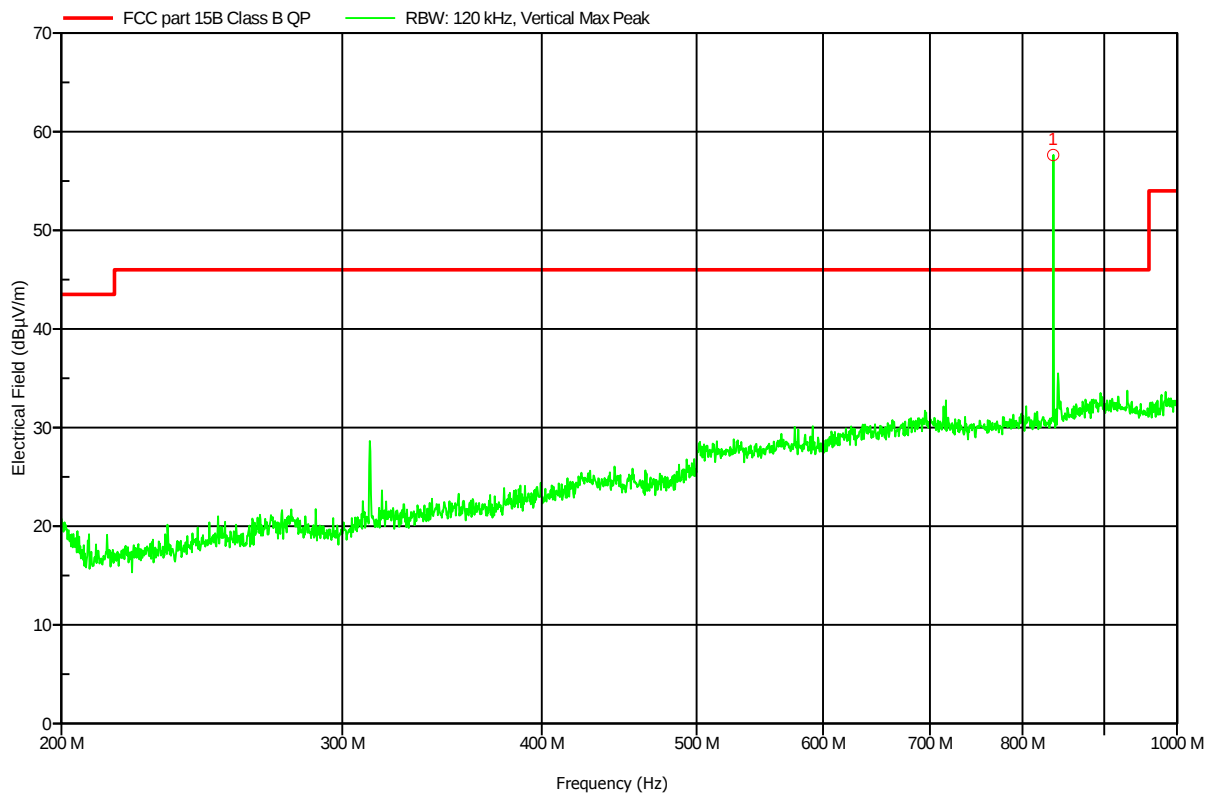
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 Note:

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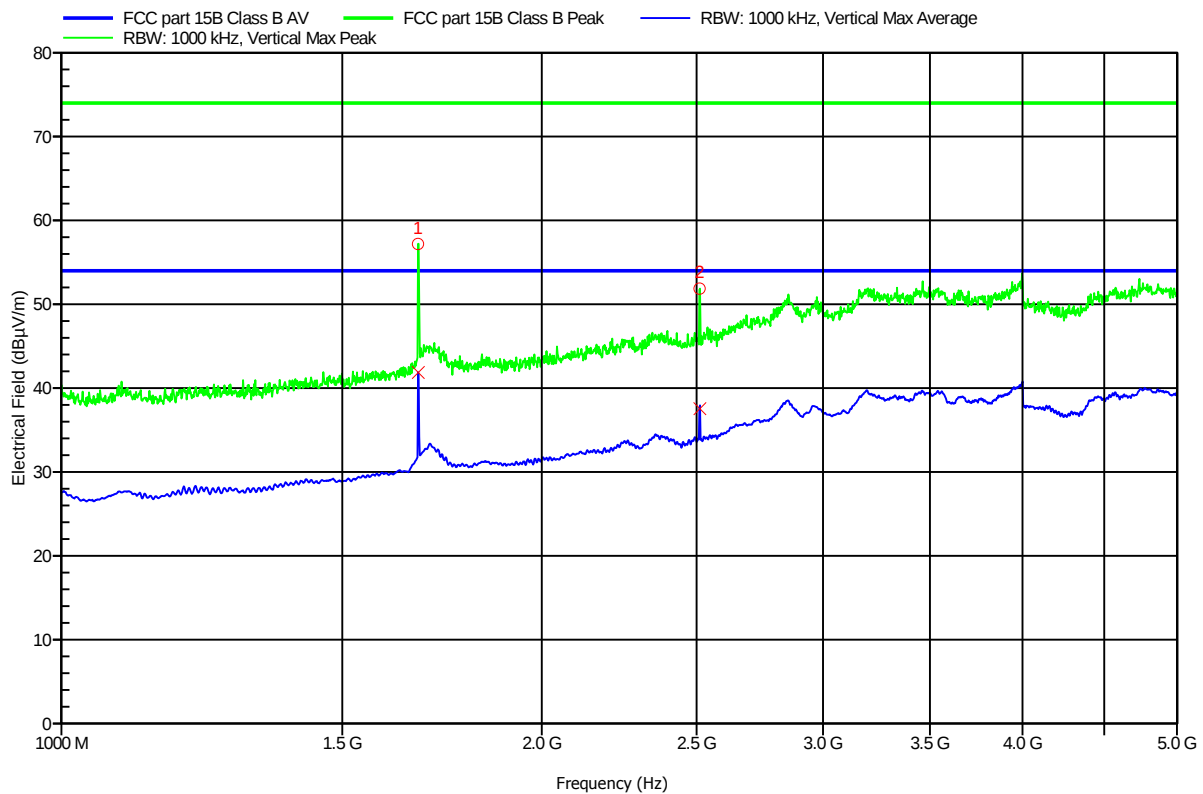
Nr	Frequency
1	836.14 MHz GSM 850 Carrier

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Nr	Frequency	Peak
1	1.673 GHz	57.2 dBµV/m
2	2.511 GHz	51.87 dBµV/m

Nr	Frequency	Average	Average Limit	Average Difference	Average Status
1	1.673 GHz	41.9 dBµV/m	54 dBµV/m	-12.1 dB	Pass
2	2.511 GHz	37.58 dBµV/m	54 dBµV/m	-16.42 dB	Pass

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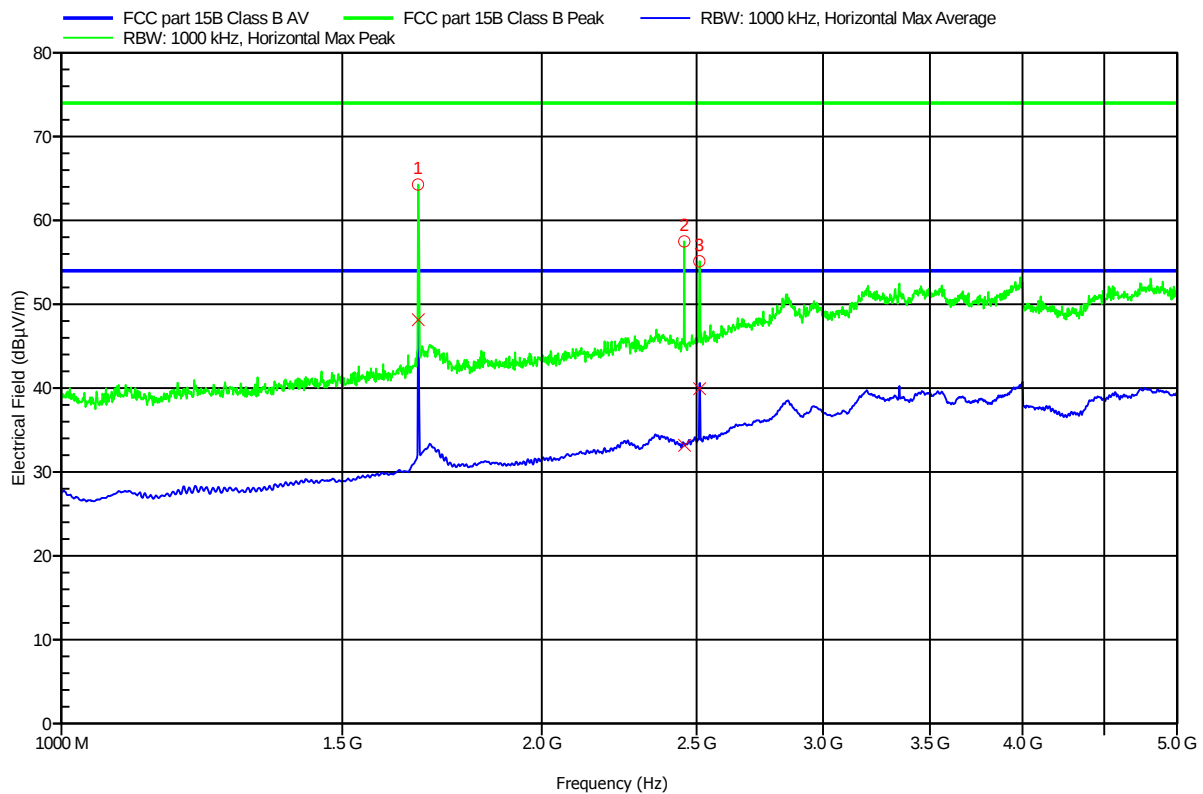
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 Note:

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Nr	Frequency	Peak
1	1.673 GHz	64.28 dBμV/m
2	2.456 GHz	57.5 dBμV/m
3	2.51 GHz	55.13 dBμV/m

Nr	Frequency	Average	Average Limit	Average Difference	Average Status
1	1.673 GHz	48.19 dBμV/m	54 dBμV/m	-5.81 dB	Pass
2	2.456 GHz	33.21 dBμV/m	54 dBμV/m	-20.79 dB	Pass
3	2.51 GHz	39.96 dBμV/m	54 dBμV/m	-14.04 dB	Pass

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