

FCC TEST REPORT

FCC 47 CFR Part 15C
Industry Canada RSS-210

Frequency hopping systems operating within the 2400 – 2483.5 MHz band

Report Reference No. : G0M-1307-2974-TFC247B-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 15C
RSS-210, Issue 8, 2010-12
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

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-TFC247B-V01

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

Possible test case verdicts:

- neither assessed nor tested: N/N
- required by standard but not appl. to test object.....: N/A
- required by standard but not tested.....: N/T
- not required by standard for the test object: N/R
- 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: 2013-08-09 – 2013-08-13

Compiled by.....: Antje Bartusch

Tested by (+ signature).....: Wilfried Treffke 

(Testing Manager)

Approved by (+ signature): Jens Zimmermann 

(Test Lab Manager)

Date of issue: 2013-08-28

Total number of pages: 86

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
01	2013-08-28	Initial Release	

REPORT INDEX

1	EQUIPMENT (TEST ITEM) DESCRIPTION:	5
1.1	Photos – Equipment External	6
1.2	Photos – Equipment internal	8
1.3	Photos – Test setup	10
1.4	Supporting Equipment Used During Testing	11
1.5	Test Modes	12
1.6	Test Equipment Used During Testing	13
1.7	Sample emission level calculation	14
2	RESULT SUMMARY	15
3	TEST CONDITIONS AND RESULTS	16
3.1	Test Conditions and Results – Occupied Bandwidth	16
3.2	Test Conditions and Results – 20 dB Bandwidth	20
3.3	Test Conditions and Results – Number of hopping frequencies	24
3.4	Test Conditions and Results – Frequency hopping channel separation	28
3.5	Test Conditions and Results – Time of occupancy (Dwell Time)	30
3.6	Test Conditions and Results – Maximum peak conducted power	32
3.7	Test Conditions and Results – Band edge compliance	34
3.8	Test Conditions and Results – Conducted spurious emissions	39
3.9	Test Conditions and Results – Transmitter radiated emissions	43
3.10	Test Conditions and Results – Receiver radiated emissions	45
ANNEX A	Transmitter radiated spurious emissions	47
ANNEX B	Receiver radiated spurious emissions	79

1 Equipment (Test item) Description:

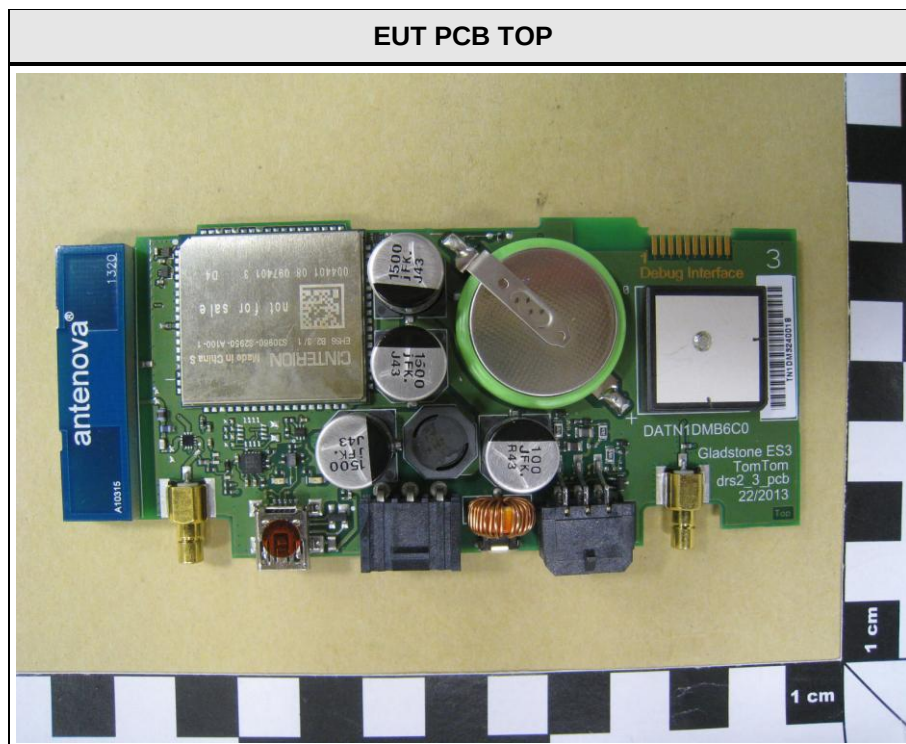
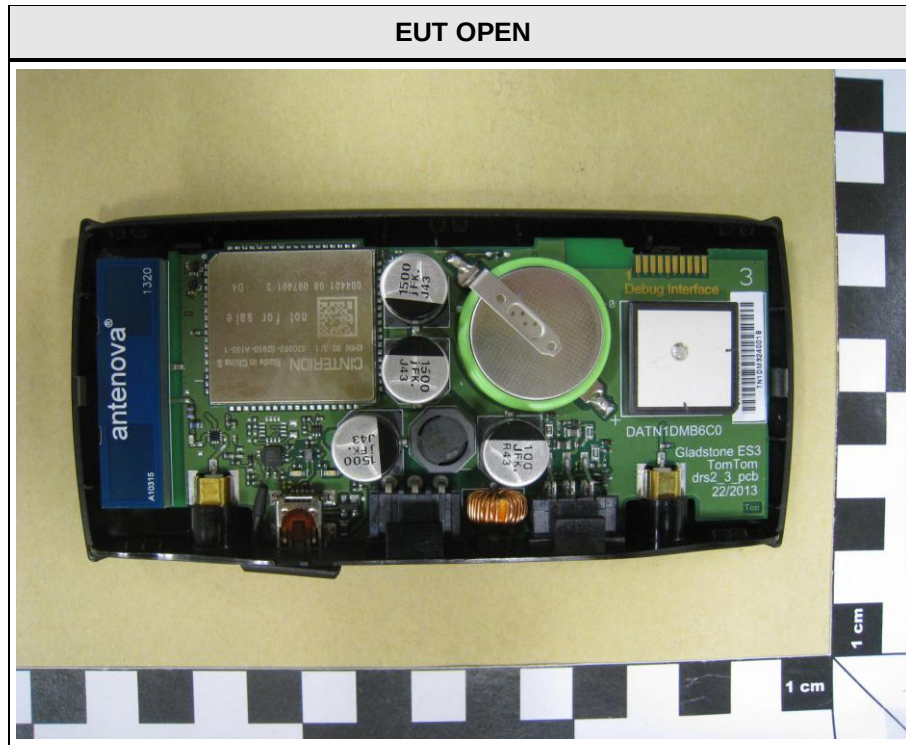
Description	Telematic Device with GPRS+WCDMA/BT/GPS	
Model	L0530	
Serial number	None	
Hardware version	drs2_3_pcb 22/2013	
Software / Firmware version	11_10_2880	
FCC-ID	S4LLINK530	
IC	5767A-LINK530	
Equipment type	Radio module	
Radio type	Transceiver	
Radio technology	Bluetooth	
Operating frequency range	2402 - 2480 MHz	
Assigned frequency band	2400 - 2483.5 MHz	
Main test frequencies	F _{LOW}	2402 MHz
	F _{MID}	2441 MHz
	F _{HIGH}	2480 MHz
Spreading	FHSS	
Modulations	GFSK	
Number of channels	79 hopping channels at all	
Channel spacing	1 MHz	
Number of antennas	1	
Antenna	Type	integrated
	Model	ALA621C4
	Manufacturer	Amotech
	Gain	0 dBi (from datasheet)
Manufacturer	Quanta Computer Inc. No.211, Wen Hwa 2nd Road., Kuei Shan Hsiang 33377 Tao Yuan Shien Taiwan (ROC)	
Power supply	V _{NOM}	12.0 VDC (car power)
	V _{MIN}	10.2 VDC
	V _{MIN}	13.8 VDC
AC/DC-Adaptor	Model	none
	Vendor	none
	Input	none
	Output	none

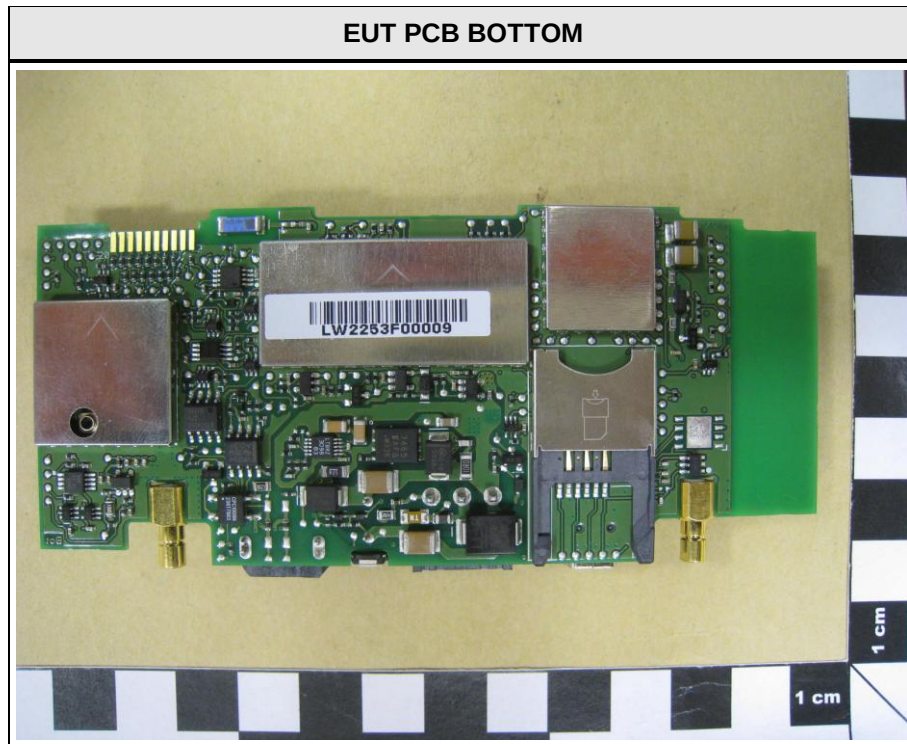
1.1 Photos – Equipment External



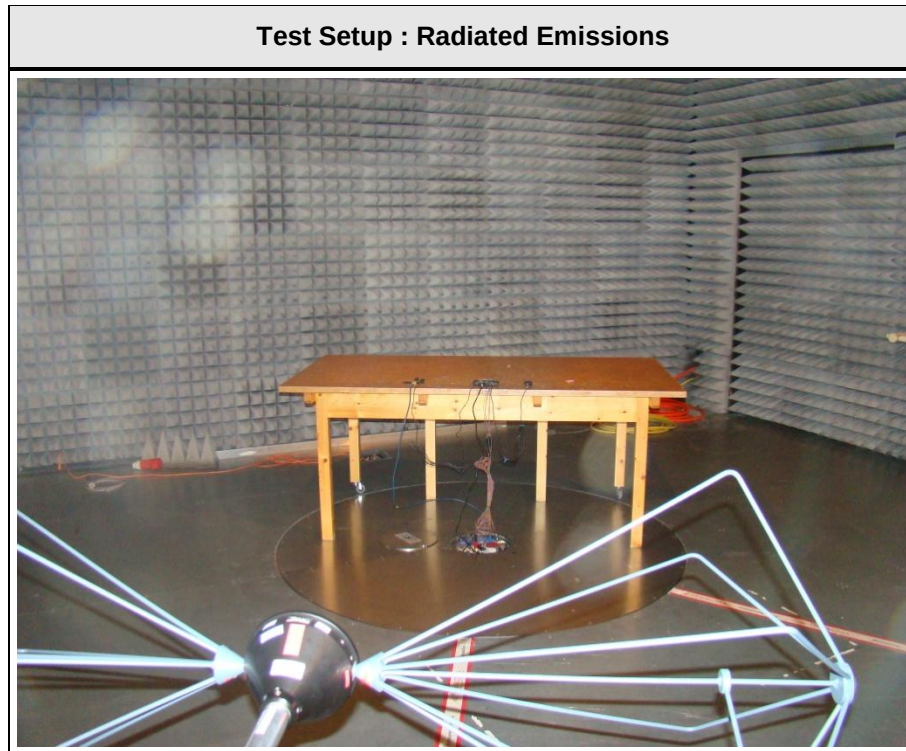


1.2 Photos – Equipment internal





1.3 Photos – Test setup



1.4 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				

1.5 Test Modes

Mode #	Description	
DH5-Sngl	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping stopped (single hopping channel) Modulation = GFSK Packet type = DH5 Data rate = 1 Mbps Duty cycle = 77 % Power level = Maximum
DH5-Hop	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping Modulation = GFSK Packet type = DH5 Data rate = 1 Mbps Duty cycle = 77 % Power level = Maximum
Receive	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone receive Spreading = Hopping

1.6 Test Equipment Used During Testing

20dB Bandwidth					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01

Number of hopping frequencies					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01

Time of occupancy					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01

Maximum peak conducted power					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01

Band edge compliance					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01

Conducted spurious emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01

Radiated spurious emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Semi-anechoic chamber	Frankonia	AC 5	EF00395	calibration	calibration
Spectrum Analyzer	R&S	FSIQ26	EF00242	2013-06	2014-06
Biconical Antenna	R&S	HK 116	EF00012	2013-02	2016-02
LPD Antenna	R&S	HL 223	EF00187	2011-02	2014-02
LPD Antenna	R&S	HL 025	EF00327	2013-02	2016-02

Test Report No.: G0M-1307-2974-TFC247B-V01

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

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:

Reading	+	AF	=	Net Reading	:	Net reading - FCC limit	=	Margin
21.5 dB μ V	+	26 dB	=	47.5 dB μ V/m	:	47.5 dB μ V/m - 57.0 dB μ V/m	=	-9.5 dB

2 Result Summary

FCC 47 CFR Part 15C, IC RSS-210				
Product Specific Standard Section	Requirement – Test	Reference Method	Result	Remarks
RSS-Gen 4.6.1	Occupied Bandwidth	RSS-Gen 4.6.1	N/R	Informational only
FCC § 15.247(a)(1) IC RSS-210 § A8.1	20 dB Bandwidth	Public notice DA 00-705	PASS	
FCC § 15.247(a)(1)(iii) IC RSS-210 § A8.1	Number of hopping frequencies	Public notice DA 00-705	PASS	
FCC § 15.247(a)(1) IC RSS-210 § A8.1	Frequency hopping channel separation	Public notice DA 00-705	PASS	
FCC § 15.247(a)(1)(iii) IC RSS-210 § A8.1	Time of occupancy (Dwell time)	Public notice DA 00-705	PASS	
FCC § 15.247(b)(1) IC RSS-210 § A8.4	Maximum peak conducted power	Public notice DA 00-705	PASS	
47 CFR 15.207 RSS-Gen 7.2.4	AC power line conducted emissions	ANSI C63.4	N/A	
FCC § 15.247(d) IC RSS-210 § A8.5	Band edge compliance	Public notice DA 00-705	PASS	
FCC § 15.247(d) IC RSS-210 § A8.5	Conducted spurious emissions	Public notice DA 00-705	PASS	
FCC § 15.247(d) FCC § 15.209 IC RSS-210 A8.5 IC RSS-Gen 4.9 IC RSS-Gen 7.2.5	Transmitter radiated spurious emissions	Public notice DA 00-705 / ANSI C 63.4	PASS	
IC RSS-Gen 4.10 IC RSS-Gen 6.1	Receiver radiated spurious emissions	ANSI C 63.4	PASS	
Remarks:				

3 Test Conditions and Results

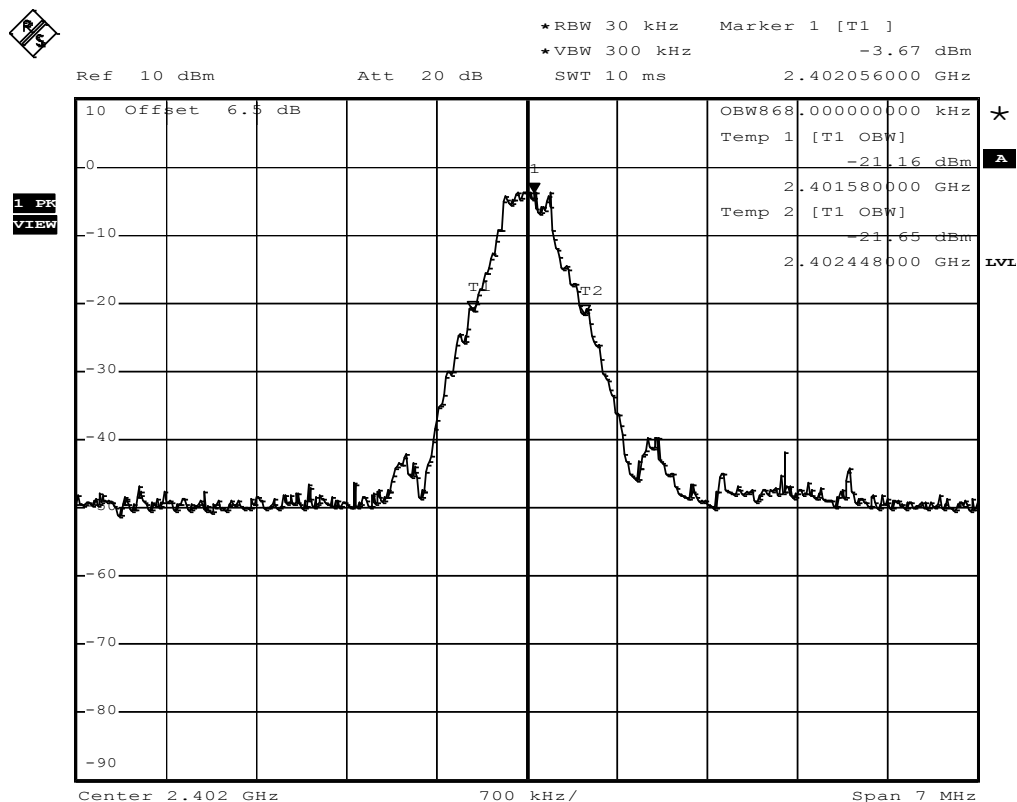
3.1 Test Conditions and Results – Occupied Bandwidth

Occupied Bandwidth acc. IC RSS-Gen				Verdict: PASS
Test according to measurement reference		Reference Method		
		RSS-Gen 4.6.1		
Test frequency range		Tested frequencies		
		F _{LOW} / F _{MID} / F _{HIGH}		
Limits				
None (Informational only)				
Test setup				
Spectrum Analyzer EUT				
Test procedure				
1. EUT set to test mode (Communication tester is used if needed) 2. Span set to at least twice the emission spectrum 3. Resolution bandwidth set to 1 % of span 4. Occupied Bandwidth (99 %) measurement with spectrum analyzer built in measurement function				
Test results				
Channel	Frequency [MHz]	Mode	Occupied Bandwidth [kHz]	
F _{LOW}	2402	DH5-Sngl	868.0	
F _{MID}	2441	DH5-Sngl	854.0	
F _{HIGH}	2480	DH5-Sngl	854.0	
Comments:				

Occupied Bandwidth – DH5-Sngl F_{Low}

RSS Gen Occupied Bandwidth

EUT	Telematic Device with GPRS+WCDMA/BT/GPS
Model	LINK530
Approval Holder	TomTom International B/V / G0M-1307-2974
Temperature / Voltage	Tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 0 / 2402 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	GFSK



Comment: Occupied bandwidth: 868 KHz
Date: 13.AUG.2013 13:13:32

Test Report No.: G0M-1307-2974-TFC247B-V01

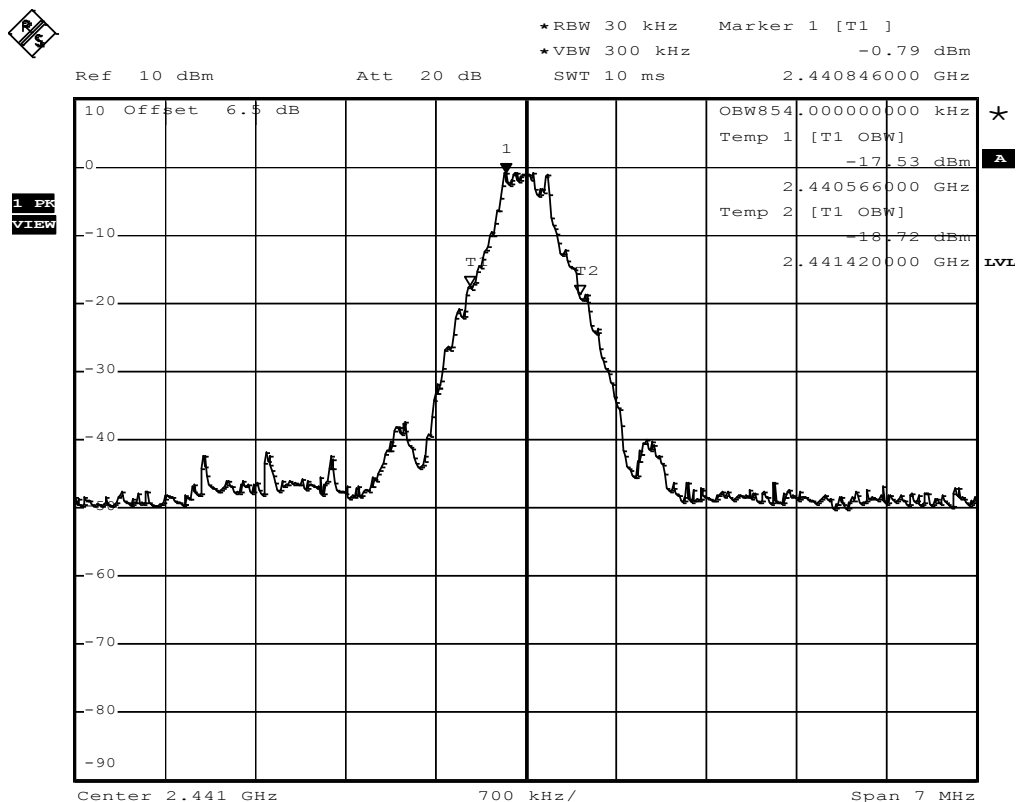
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Occupied Bandwidth – DH5-Sngl F_{MID}

RSS Gen

Occupied Bandwidth

EUT Telematic Device with GPRS+WCDMA/BT/GPS
Model LINK530
Approval Holder TomTom International B/V / G0M-1307-2974
Temperature / Voltage Tnom / Vnom
Test Site / Operator Eurofins Product Service GmbH / Mr. Treffke
Test Specification 4.4.1 Occupied Bandwidth
Comment 1 Channel.:39 / 2441 MHz
Comment 2 A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3 GFSK



Comment: Occupied bandwidth: 854 KHz
Date: 13.AUG.2013 13:16:12

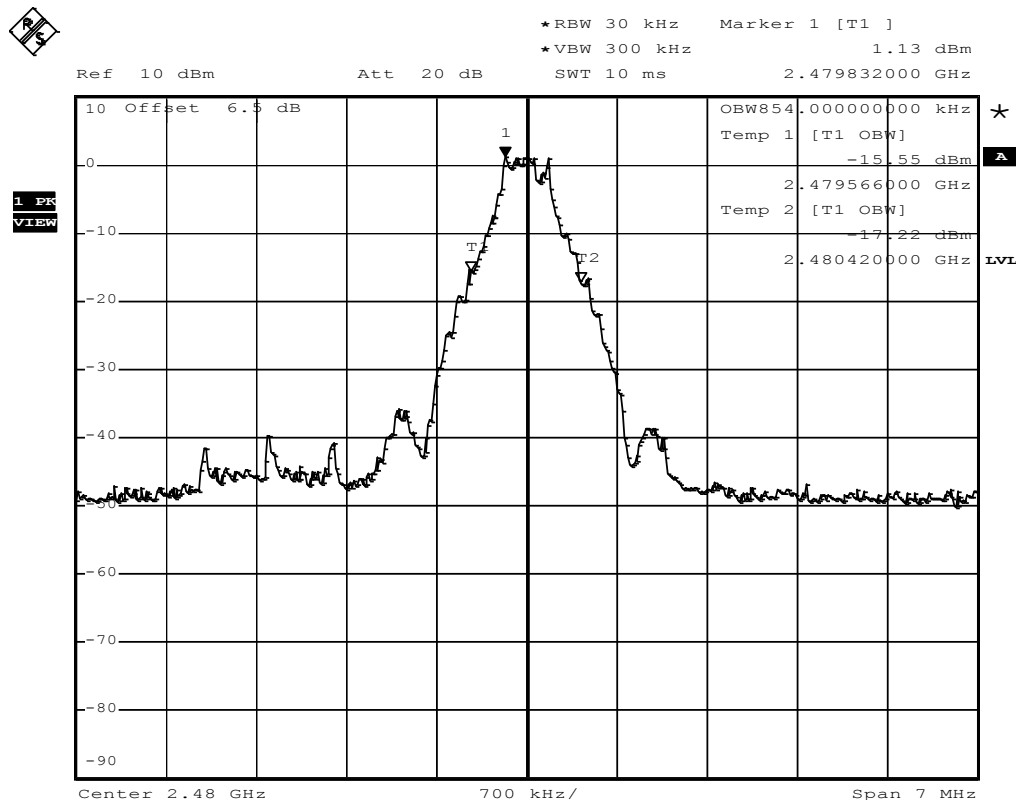
Test Report No.: G0M-1307-2974-TFC247B-V01

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

Occupied Bandwidth – DH5-Sngl F_{HIGH}

RSS Gen Occupied Bandwidth

EUT	Telematic Device with GPRS+WCDMA/BT/GPS
Model	LINK530
Approval Holder	TomTom International B/V / G0M-1307-2974
Temperature / Voltage	Tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.:78 / 2480 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	GFSK



Comment: Occupied bandwidth: 854 KHz
Date: 13.AUG.2013 13:17:58

Test Report No.: G0M-1307-2974-TFC247B-V01

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

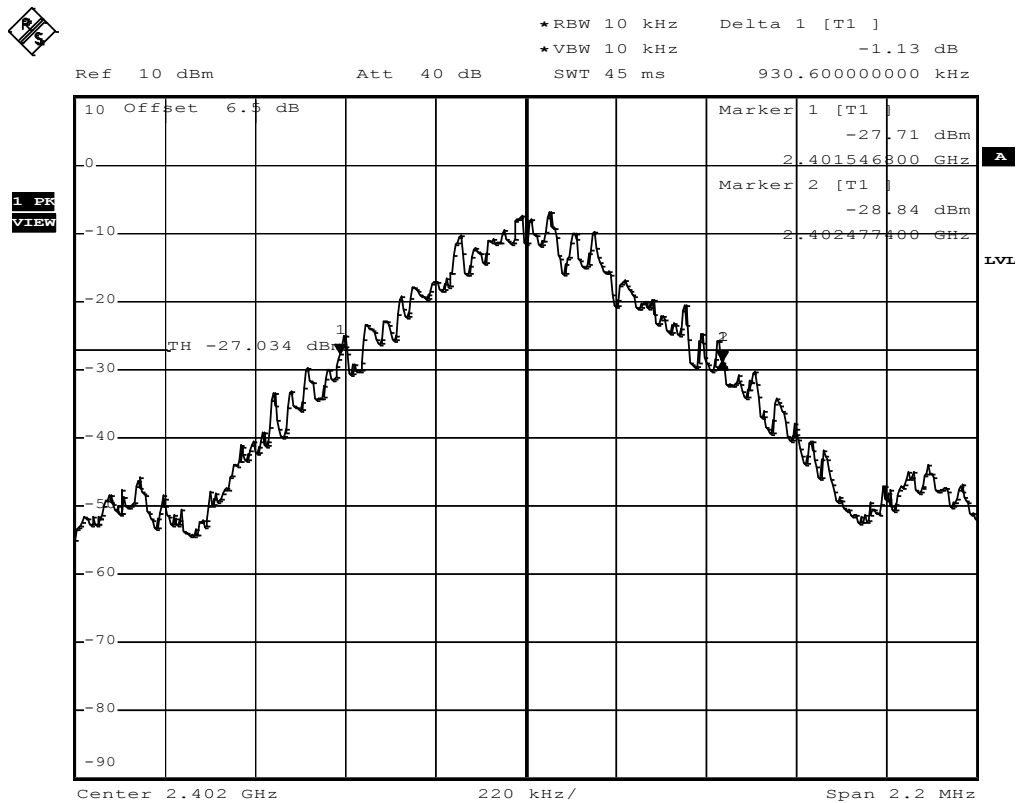
3.2 Test Conditions and Results – 20 dB Bandwidth

20 dB Bandwidth acc. FCC 15.247 / IC RSS-210				Verdict: PASS	
EUT requirement rule parts and clause		Reference			
		FCC 15.247(a)(1) / IC RSS-210 A8.1			
Test according to measurement reference		Reference Method			
		FCC Public Notice DA 00-705			
Test frequency range		Tested frequencies			
		F _{LOW} / F _{MID} / F _{HIGH}			
Limits					
Limit			Condition		
1.5 · Carrier spacing			Output power ≤ 125 mW / 21 dBm		
1.0 · Carrier spacing			125 mW / 21 dBm < Output power ≤ 1 W / 30 dBm		
Test setup					
Spectrum Analyzer EUT					
Test procedure					
1. EUT set to test mode (Communication tester is used if needed) 2. Span set to at least twice the emission spectrum 3. Detector set to peak and max hold 4. Envelope peak value of emission spectrum is selected 5. Marker on envelope of spectrum is set to level of -20 dB to the left of the peak 6. Marker on envelope of spectrum is set to level of -20 dB to the right of the peak 7. 20dB Bandwidth is determined by marker frequency separation					
Test results					
Channel	Frequency [MHz]	Mode	20 dB Bandwidth [MHz]	Limit [MHz]	Result
F _{LOW}	2402	DH5-Sngl	930.6	1.5	PASS
F _{MID}	2441	DH5-Sngl	926.2	1.5	PASS
F _{HIGH}	2480	DH5-Sngl	930.6	1.5	PASS
Comments:					

20 dB Bandwidth – DH5-Sngl F_{LOW}

FCC part 15.247
20 dB bandwidth

EUT	Telematic Device with GPRS+WCDMA/BT/GPS
Model	LINK530
Approval Holder	TomTom International B/V / G0M-1307-2974
Temperature / Voltage	Tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(a)
Comment 1	20 dB bandwidth
Comment 2	Channel.: 0 / 2402 MHz / GFSK
Comment 3	pass



Comment: 20 dB bandwidth: 930.6 KHz
Date: 13.AUG.2013 11:41:16

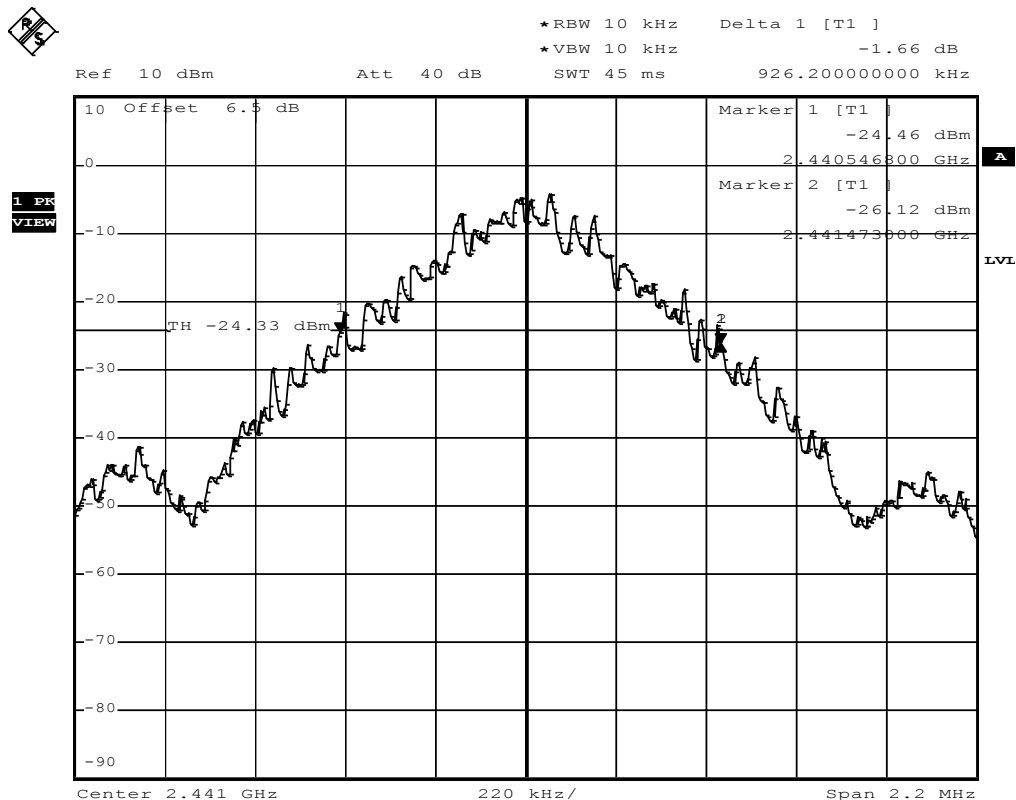
Test Report No.: G0M-1307-2974-TFC247B-V01

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

20 dB Bandwidth – DH5-Sngl F_{MID}

FCC part 15.247
20 dB bandwidth

EUT	Telematic Device with GPRS+WCDMA/BT/GPS
Model	LINK530
Approval Holder	TomTom International B/V / GOM-1307-2974
Temperature / Voltage	Tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(a)
Comment 1	20 dB bandwidth
Comment 2	Channel.: 39 / 2441 MHz / GFSK
Comment 3	pass



Comment: 20 dB bandwidth: 926.2 KHz
Date: 13.AUG.2013 11:42:27

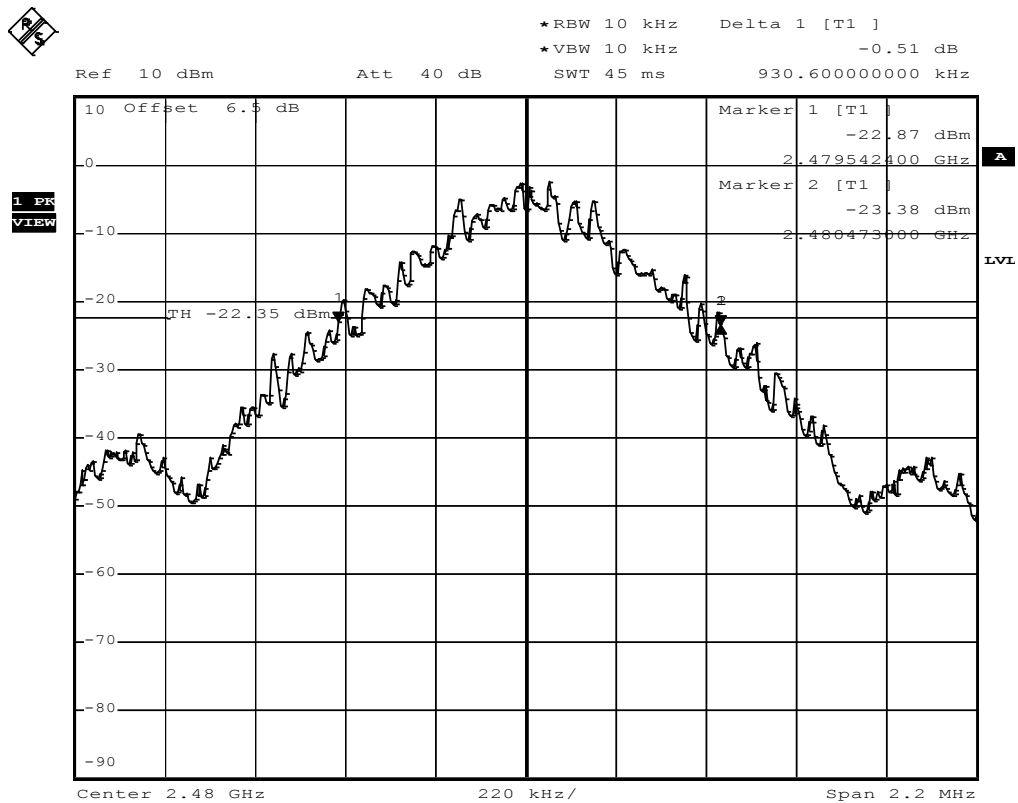
Test Report No.: GOM-1307-2974-TFC247B-V01

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

20 dB Bandwidth – DH5-Sngl F_{HIGH}

FCC part 15.247
20 dB bandwidth

EUT	Telematic Device with GPRS+WCDMA/BT/GPS
Model	LINK530
Approval Holder	TomTom International B/V / G0M-1307-2974
Temperature / Voltage	Tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(a)
Comment 1	20 dB bandwidth
Comment 2	Channel.: 78 / 2480 MHz / GFSK
Comment 3	pass



Comment: 20 dB bandwidth: 930.6 KHz
Date: 13.AUG.2013 11:45:00

Test Report No.: G0M-1307-2974-TFC247B-V01

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

3.3 Test Conditions and Results – Number of hopping frequencies

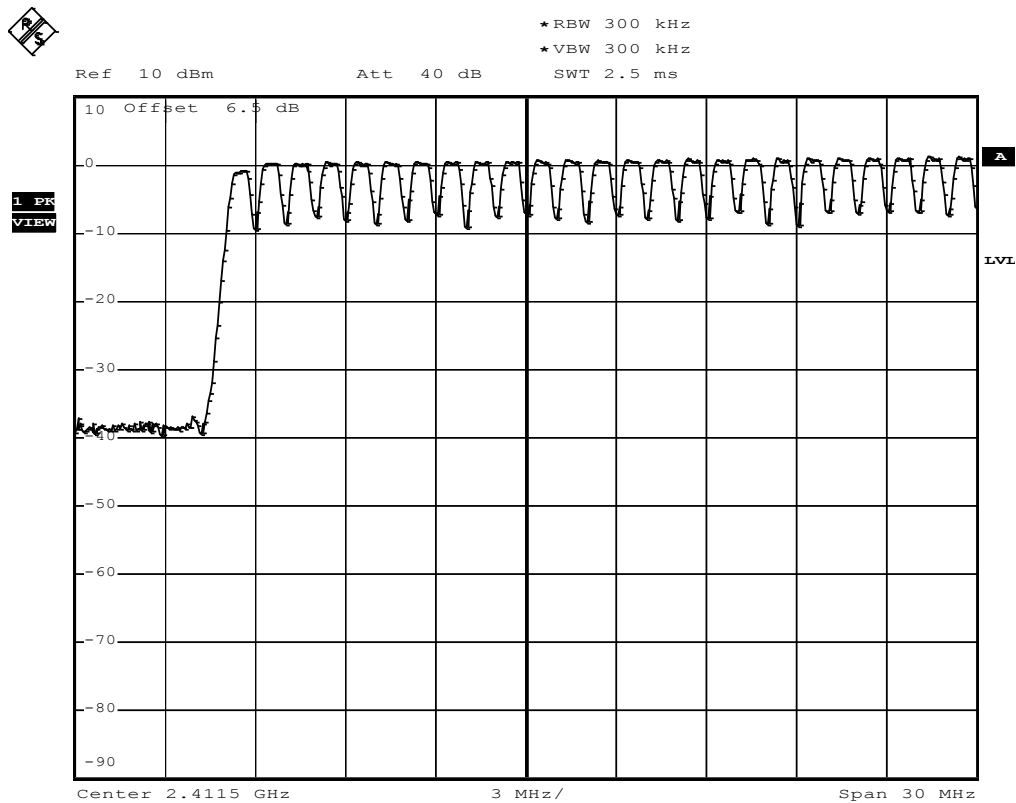
Number of hopping frequencies acc. FCC 15.247 / IC RSS-210		Verdict: PASS
EUT requirement rule parts and clause	Reference	
	FCC 15.247(a)(1)(iii) / IC RSS-210 A8.1	
Test according to measurement reference	Reference Method	
	FCC Public Notice DA 00-705	
Test frequency range	Tested frequencies	
	F _{LOW} - F _{HIGH}	
EUT test mode	DH5-Hop	
Limits		
Limit	Condition	
Number of hopping channels ≥ 15	Output power ≤ 125 mW / 21 dBm	
Number of hopping channels ≥ 75	125 mW / 21 dBm < Output power ≤ 1 W / 30 dBm	
Test setup		
Spectrum Analyzer EUT		
Test procedure		
1. EUT set to test mode (Communication tester is used if needed) 2. Span set to measurement frequency range 3. Detector set to peak and max hold 4. Resolution bandwidth is set small enough to resolve hopping channel emission spectra 5. The number of peaks is counted to determine number of hopping frequencies		
Test results		
Number of hopping frequencies	Limit	Result
79	≥ 15	PASS
Comments:		

Number of hopping frequencies - Range A

FCC part 15.247

Number of hopping frequencies

EUT	Telematic Device with GPRS+WCDMA/BT/GPS
Model	LINK530
Approval Holder	TomTom International B/V / G0M-1307-2974
Temperature / Voltage	Tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(a)
Comment 1	Number of hopping frequencies
Comment 2	Channel.: 0-24
Comment 3	pass



Comment: Number of hopping frequencies
Date: 13.AUG.2013 13:01:09

Test Report No.: G0M-1307-2974-TFC247B-V01

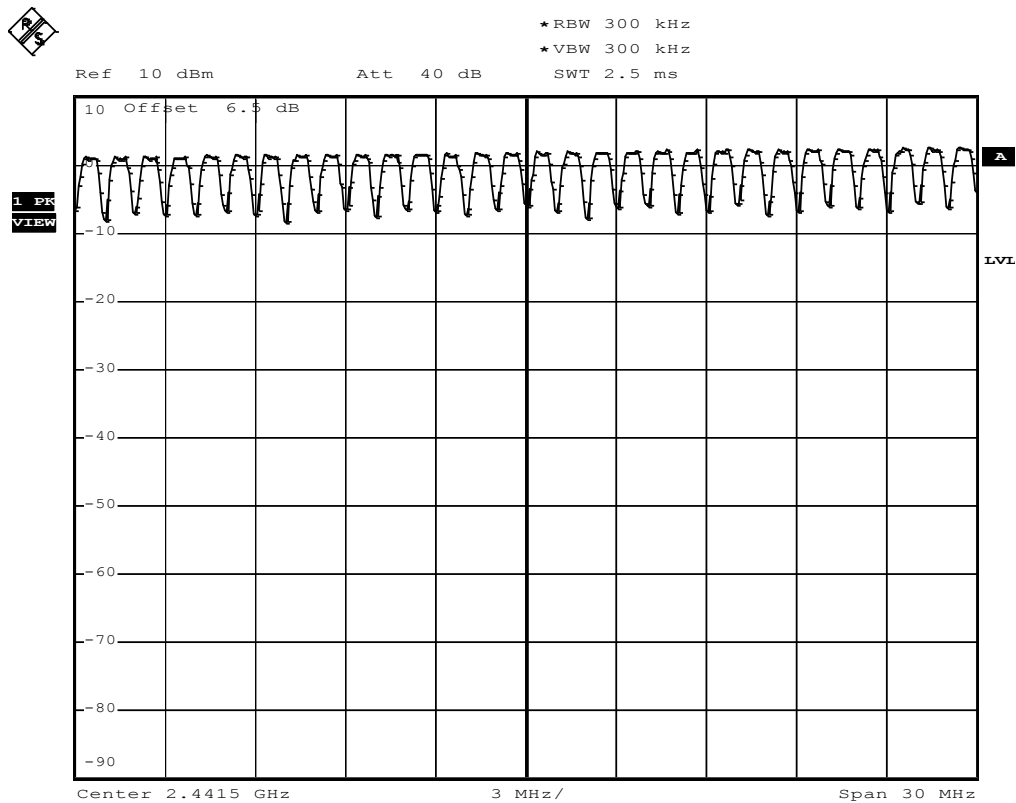
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Number of hopping frequencies - Range B

FCC part 15.247

Number of hopping frequencies

EUT	Telematic Device with GPRS+WCDMA/BT/GPS
Model	LINK530
Approval Holder	TomTom International B/V / G0M-1307-2974
Temperature / Voltage	Tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(a)
Comment 1	Number of hopping frequencies
Comment 2	Channel.: 25-54
Comment 3	pass



Comment: Number of hopping frequencies
Date: 13.AUG.2013 13:02:55

Test Report No.: G0M-1307-2974-TFC247B-V01

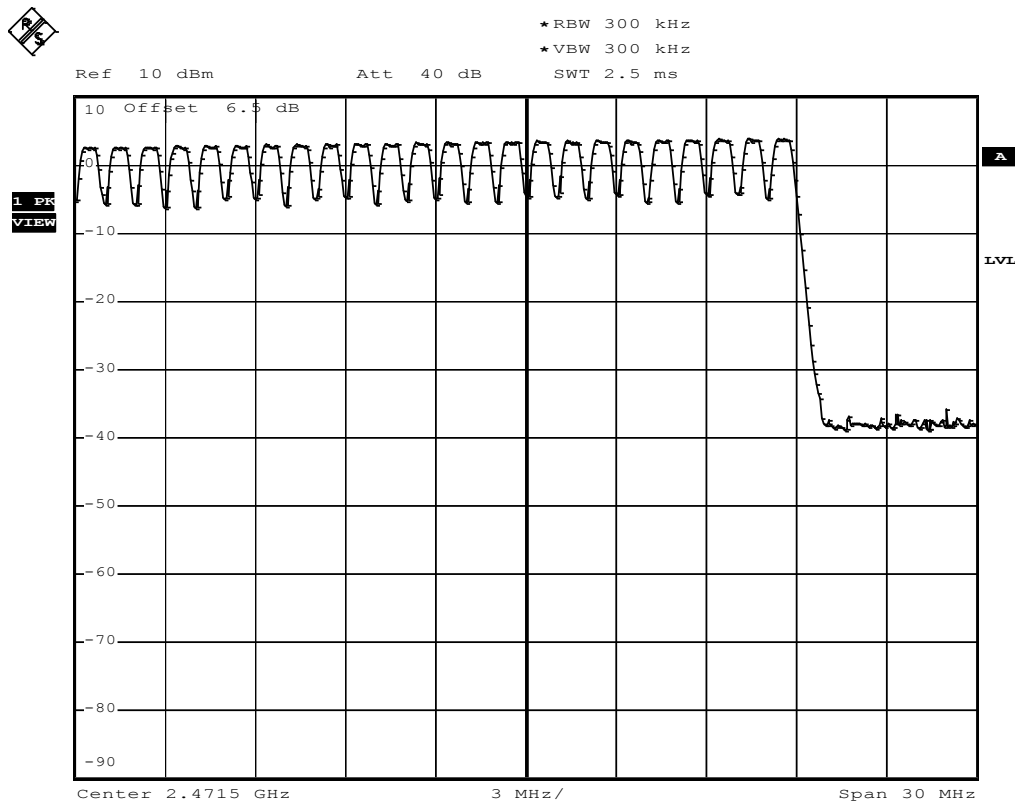
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Number of hopping frequencies - Range C

FCC part 15.247

Number of hopping frequencies

EUT	Telematic Device with GPRS+WCDMA/BT/GPS
Model	LINK530
Approval Holder	TomTom International B/V / G0M-1307-2974
Temperature / Voltage	Tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(a)
Comment 1	Number of hopping frequencies
Comment 2	Channel.: 55-78
Comment 3	pass



Comment: Number of hopping frequencies
Date: 13.AUG.2013 13:07:59

Test Report No.: G0M-1307-2974-TFC247B-V01

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

3.4 Test Conditions and Results – Frequency hopping channel separation

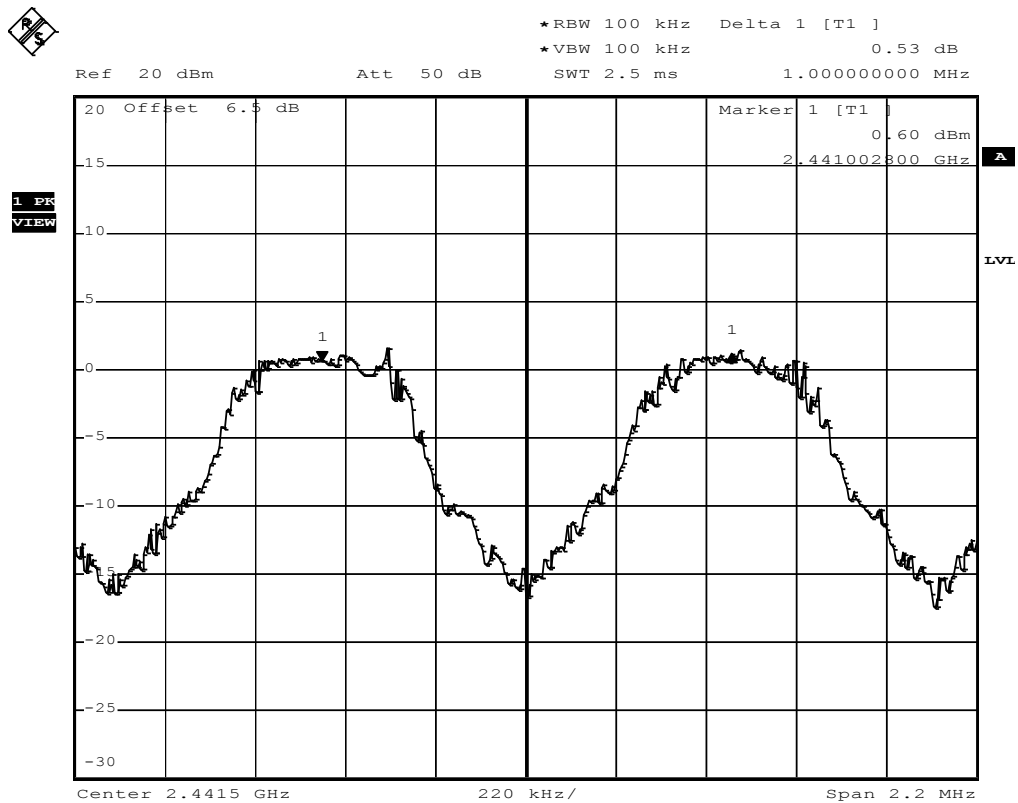
Frequency hopping channel separation acc. FCC 15.247 / IC RSS-210		Verdict: PASS
EUT requirement rule parts and clause	Reference	
	FCC 15.247(a)(1) / IC RSS-210 A8.1	
Test according to measurement reference	Reference Method	
	FCC Public Notice DA 00-705	
Test frequency range	Tested frequencies	
	2441 & 2442 MHz	
EUT test mode	DH5-Hop	
Limits		
Limit	Condition	
≥ 25 kHz or ⅔ of 20 dB bandwidth	Output power ≤ 125 mW / 21 dBm	
≥ 25 kHz or 20 dB bandwidth	125 mW / 21 dBm < Output power ≤ 1 W / 30 dBm	
Test setup		
Spectrum Analyzer EUT		
Test procedure		
1. EUT set to test mode (Communication tester is used if needed) 2. Span set to measurement frequency range 3. Detector set to peak and max hold 4. Resolution bandwidth is set small enough to resolve hopping channel emission spectra 5. The two adjacent channel peaks are marked 6. Channel separation is determined from frequency separation of markers		
Test results		
Channel separation [kHz]	Limit [kHz]	Result
1000	≥ ⅔ · 930.6 = 620.4	PASS
Comments:		

Frequency hopping channel separation

FCC part 15.247

Carrier frequency separation

EUT	Telematic Device with GPRS+WCDMA/BT/GPS
Model	LINK530
Approval Holder	TomTom International B/V / G0M-1307-2974
Temperature / Voltage	Tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(a)(1)
Comment 1	Carrier frequency separation
Comment 2	Channel.: 39/40 / 2441/2442 MHz
Comment 3	Hopping mode



Comment: Limit: > two-thirds of the 20 dB bandwidth ; Result: Pass
Date: 13.AUG.2013 12:58:08

3.5 Test Conditions and Results – Time of occupancy (Dwell Time)

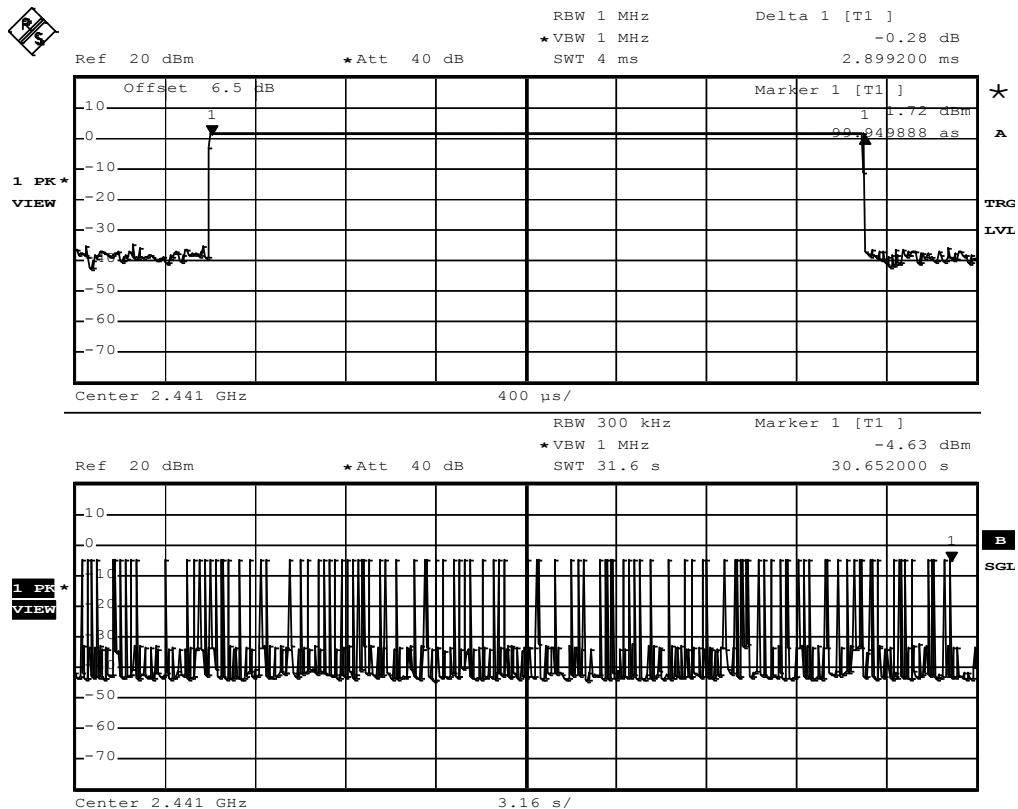
Time of occupancy (Dwell time) acc. FCC 15.247 / IC RSS-210				Verdict: PASS	
EUT requirement rule parts and clause	Reference				
	FCC 15.247(a)(1)(iii) / IC RSS-210 A8.1				
Test according to measurement reference	Reference Method				
	FCC Public Notice DA 00-705				
Test frequency range	Tested frequencies				
	2441 MHz				
EUT test mode	DH5-Hop				
Limits					
Limit					
Time of occupancy ≤ 0.4 s within 0.4 s · Number of hopping channels					
Test setup					
Spectrum Analyzer EUT					
Test procedure					
1. EUT set to test mode (Communication tester is used if needed) 2. Center frequency set to test channel center frequency 3. Span set to zero span and detector to peak and max hold 4. Resolution bandwidth is set to 100kHz and sweep time to observation period 5. Time of occupancy determined from number of peaks multiplied by single hop dwell time					
Test results					
Observation period [s]	No. of hops	Dwell time/hop [s]	Time of occupancy [s]	Limit [s]	Result
31.6	96	0.002899	0.278	≤ 0.4	PASS
Comments:					

Time of occupancy

FCC part 15.247

Time of occupancy (dwell time)

EUT Telematic Device with GPRS+WCDMA/BT/GPS
Model LINK530
Approval Holder TomTom International B/V / G0M-1307-2974
Temperature / Voltage Tnom / Vnom
Test Site / Operator Eurofins Product Service GmbH / Mr. Treffke
Test Specification FCC part 15 section 247(a)
Comment 1 Time of occupancy
Comment 2 Channel.: 39 / 2441 MHz (Hopping mode)
Comment 3 96 events * 2.899 ms result: 278.3 ms



Comment: Burst length=2.8992 ms
Date: 13.AUG.2013 13:26:42

3.6 Test Conditions and Results – Maximum peak conducted power

Maximum peak conducted power acc. FCC 15.247 / IC RSS-210		Verdict: PASS
EUT requirement rule parts and clause	Reference	
	FCC 15.247(b)(1) / IC RSS-210 A8.4	
Test according to measurement reference	Reference Method	
	FCC Public Notice DA 00-705	
Test frequency range	Tested frequencies	
	F _{LOW} / F _{MID} / F _{HIGH}	
Measurement mode	Peak	
Maximum antenna gain	0 dBi ⇒ Limit correction = 0 dB	
Limits		
Limit	Condition	
1 W (30 dBm)	Number of hopping channels ≥ 75	
0.125 W (21 dBm)	75 > Number of hopping channels ≥ 15	
The conducted output power limit specified above is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in the table, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.		
Test setup		
Spectrum Analyzer EUT		
Test procedure		
1. EUT set to test mode (Communication tester is used if needed) 2. Center frequency set to test channel center frequency 3. Span set to twice the 20 dB bandwidth and detector to peak and max hold 4. Resolution bandwidth is set to 3 MHz 5. Peak conducted power is determined from peak of spectrum envelope		

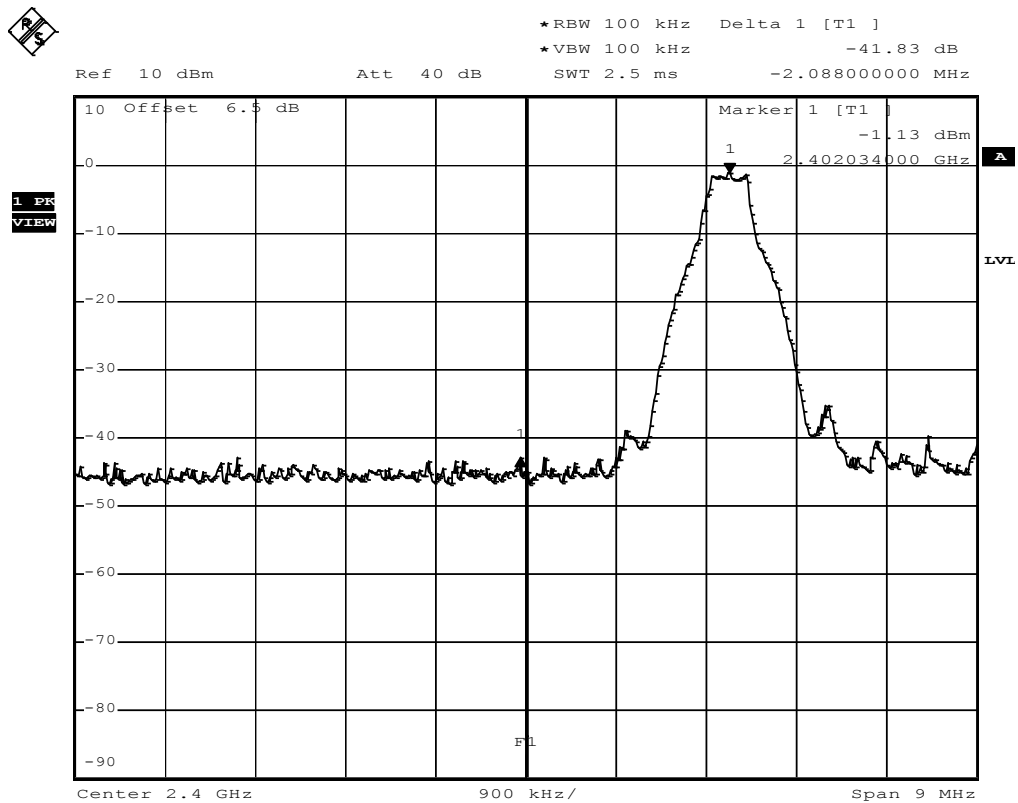
Test results								
Channel	Frequency [MHz]	Voltage	Mode	Peak power [dbm]	Peak power [W]	Limit [dBm]	Margin [dB]	Result
F _{LOW}	2402	12.0 VDC	DH5-Sngl	0.22	0.001	30	-29.78	PASS
F _{LOW}	2402	10.2 VDC	DH5-Sngl	0.27	0.001	30	-29.73	PASS
F _{LOW}	2402	13.8 VDC	DH5-Sngl	0.22	0.001	30	-29.78	PASS
F _{MID}	2441	12.0 VDC	DH5-Sngl	2.65	0.002	30	-27.35	PASS
F _{MID}	2441	10.2 VDC	DH5-Sngl	2.66	0.002	30	-27.34	PASS
F _{MID}	2441	13.8 VDC	DH5-Sngl	2.62	0.002	30	-27.38	PASS
F _{HIGH}	2480	12.0 VDC	DH5-Sngl	4.49	0.003	30	-25.51	PASS
F _{HIGH}	2480	10.2 VDC	DH5-Sngl	4.49	0.003	30	-25.51	PASS
F _{HIGH}	2480	13.8 VDC	DH5-Sngl	4.52	0.003	30	-25.48	PASS
Comments:								

3.7 Test Conditions and Results – Band edge compliance

Band-edge compliance acc. FCC 15.247 / IC RSS-210					Verdict: PASS	
EUT requirement rule parts and clause		Reference				
		FCC 15.247(d) / IC RSS-210 A8.5				
Test according to measurement reference		Reference Method				
		FCC Public Notice DA 00-705				
Test frequency range		Tested frequencies				
		F _{LOW} / F _{HIGH}				
Measurement mode		Peak				
Limits						
Limit			Condition			
≤ -20 dB/100 kHz			Peak power measurement detector = Peak			
≤ -30 dB/100 kHz			Peak power measurement detector = RMS			
Test setup						
Spectrum Analyzer EUT						
Test procedure						
1. EUT set to test mode (Communication tester is used if needed) 2. Span set around lower band edge and detector is set to peak and max hold 3. Resolution bandwidth is set to 100 kHz 4. Markers are set to peak emission levels within frequency band and outside frequency band 5. Band edge attenuation is determined from level difference						
Test results						
Channel	Frequency [MHz]	Mode	Level [dBc]	Limit [dBc]	Margin [dB]	Result
F _{LOW}	2402	DH5-Sngl	-41.83	-20	-21.83	PASS
F _{HIGH}	2480	DH5-Sngl	-42.18	-20	-22.18	PASS
F _{LOW}	2402	DH5-Hop	-46.99	-20	-26.99	PASS
F _{HIGH}	2480	DH5-Hop	-46.84	-20	-26.84	PASS
Comments:						

Band-edge compliance – DH5-Sngl F_{Low}
FCC part 15.247
Band-edge compliance of RF conducted emissions

EUT	Telematic Device with GPRS+WCDMA/BT/GPS
Model	LINK530
Approval Holder	TomTom International B/V / G0M-1307-2974
Temperature / Voltage	Tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 0 / 2402 MHz / GFSK
Comment 3	Single frequency mode



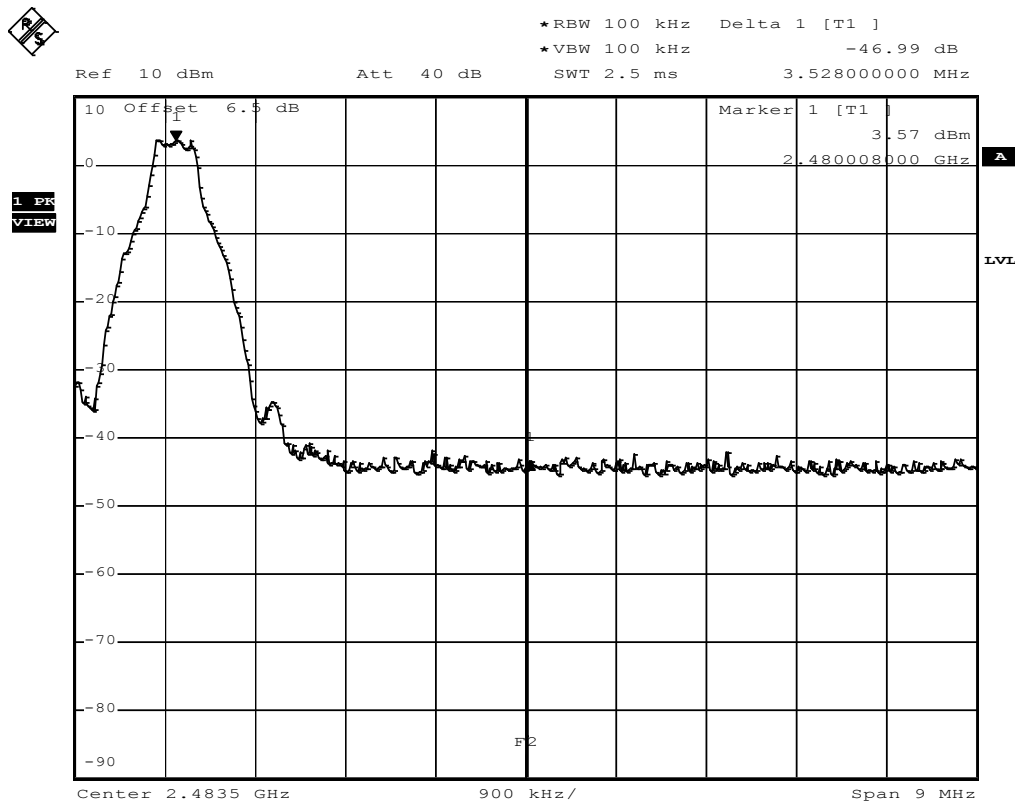
Comment: Limit: Marker Delta value >20 dB; Result: PASS
Date: 13.AUG.2013 11:47:08

Band-edge compliance – DH5-Sngl F_{HIGH}

FCC part 15.247

Band-edge compliance of RF conducted emissions

EUT	Telematic Device with GPRS+WCDMA/BT/GPS
Model	LINK530
Approval Holder	TomTom International B/V / G0M-1307-2974
Temperature / Voltage	Tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 78 / 2480 MHz / GFSK
Comment 3	Single frequency mode



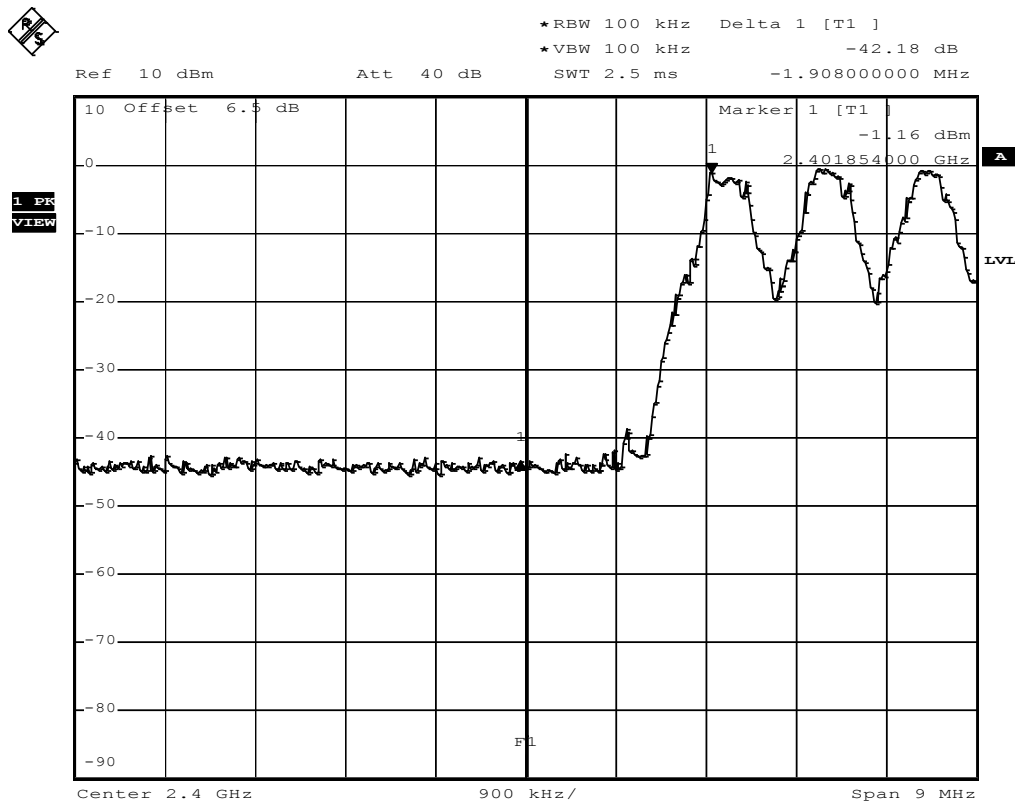
Comment: Limit: Marker Delta value >20 dB; Result: PASS
Date: 13.AUG.2013 11:49:16

Band-edge compliance – DH5-Hop F_{LOW}

FCC part 15.247

Band-edge compliance of RF conducted emissions

EUT	Telematic Device with GPRS+WCDMA/BT/GPS
Model	LINK530
Approval Holder	TomTom International B/V / G0M-1307-2974
Temperature / Voltage	Tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 0 / 2402 MHz
Comment 3	Hopping mode



Comment: Limit: Marker Delta value >20 dB; Result: PASS

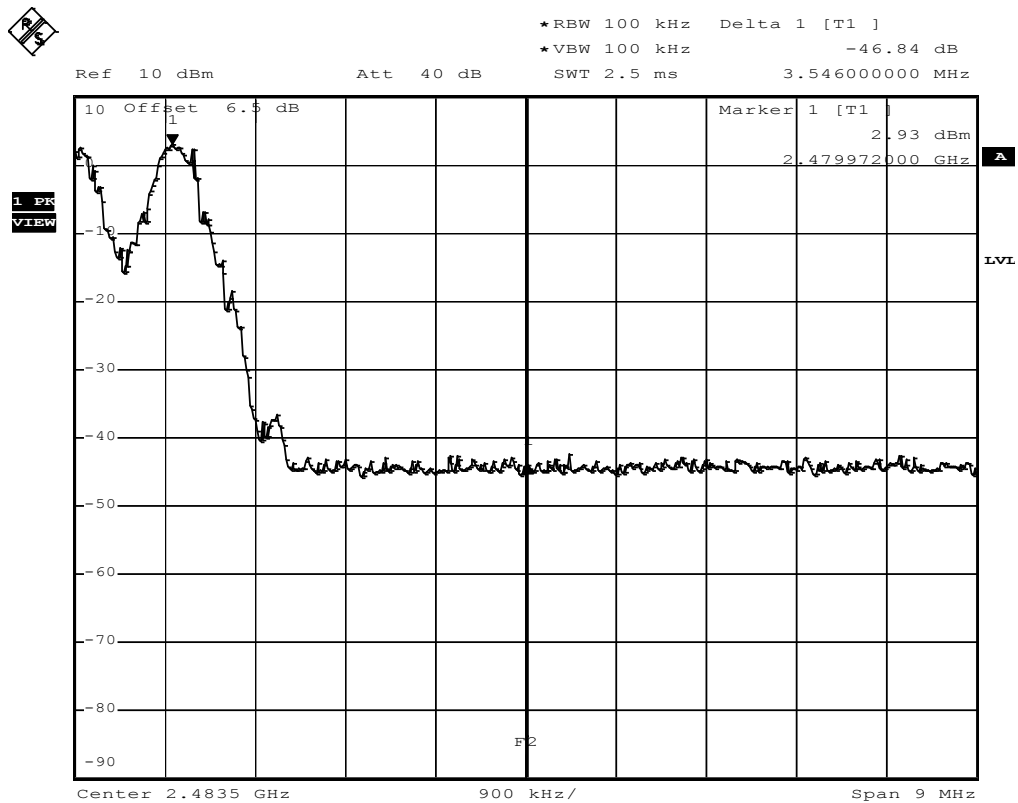
Date: 13.AUG.2013 11:51:55

Band-edge compliance – DH5-Hop F_{HIGH}

FCC part 15.247

Band-edge compliance of RF conducted emissions

EUT	Telematic Device with GPRS+WCDMA/BT/GPS
Model	LINK530
Approval Holder	TomTom International B/V / G0M-1307-2974
Temperature / Voltage	Tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 78 / 2480 MHz
Comment 3	Hopping mode



Comment: Limit: Marker Delta value >20 dB; Result: PASS
Date: 13.AUG.2013 11:53:25

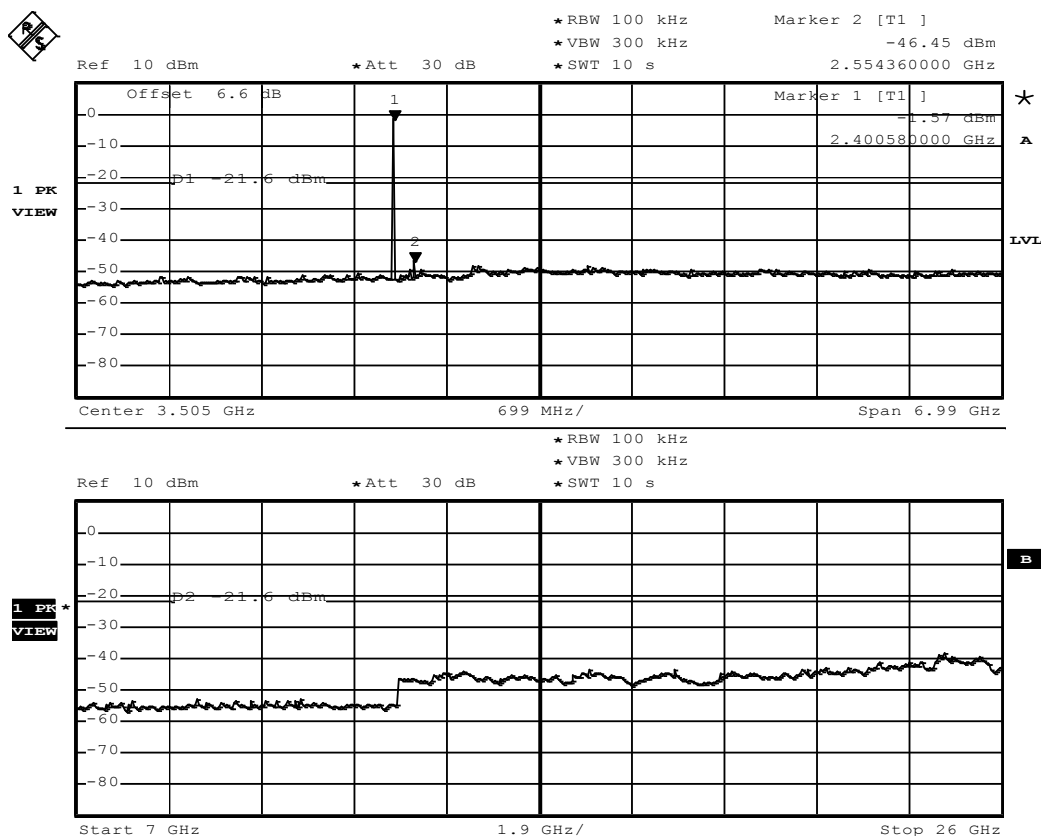
3.8 Test Conditions and Results – Conducted spurious emissions

Conducted spurious emissions acc. FCC 15.247 / IC RSS-210							Verdict: PASS	
EUT requirement rule parts and clause			Reference					
			FCC 15.247(d) / IC RSS-210 A8.5					
Test according to measurement reference			Reference Method					
			FCC Public Notice DA 00-705					
Test frequency range			Tested frequencies					
			10 MHz – 10 th Harmonic					
Measurement mode			Peak					
Limits								
Limit				Condition				
≤ -20 dB/100 kHz				Peak power measurement detector = Peak				
≤ -30 dB/100 kHz				Peak power measurement detector = RMS				
Test setup								
Spectrum Analyzer EUT								
Test procedure								
1. EUT set to test mode (Communication tester is used if needed) 2. Span it set according to measurement range 3. Resolution bandwidth is set to 100 kHz and detector to peak and max hold 4. Markers are set to peak emission levels within frequency band 5. Emission level is determined by second marker on emission peak 6. Attenuation is determined from level difference								
Test results								
Channel	Frequency [MHz]	Mode	Emission [MHz]	Emission Level [dbm]	Peak power [dBm]	Limit [dBm]	Margin [dB]	Result
F _{LOW}	2402	DH5-Sngl	2554.3	-46.45	-1.57	-21.6	-24.85	PASS
F _{MID}	2441	DH5-Sngl	2596.3	-46.16	1.14	-18.9	-27.26	PASS
F _{HIGH}	2480	DH5-Sngl	2638.2	-47.63	2.89	-16.3	-31.33	PASS
Comments:								

Conducted spurious emissions – DH5-Sngl F_{Low}

FCC part 15.247 (d)
Spurious Emissions

EUT Telematic Device with GPRS+WCDMA/BT/GPS
Model LINK530
Approval Holder TomTom International B/V / G0M-1307-2974
Temperature / Voltage Tnom / Vnom
Test Site / Operator Eurofins Product Service GmbH / Mr. Treffke
Test Specification FCC part 15.247 (d)
Comment 1 Spurious Emissions conducted
Comment 2 Channel : 2402 MHz
Comment 3 GFSK

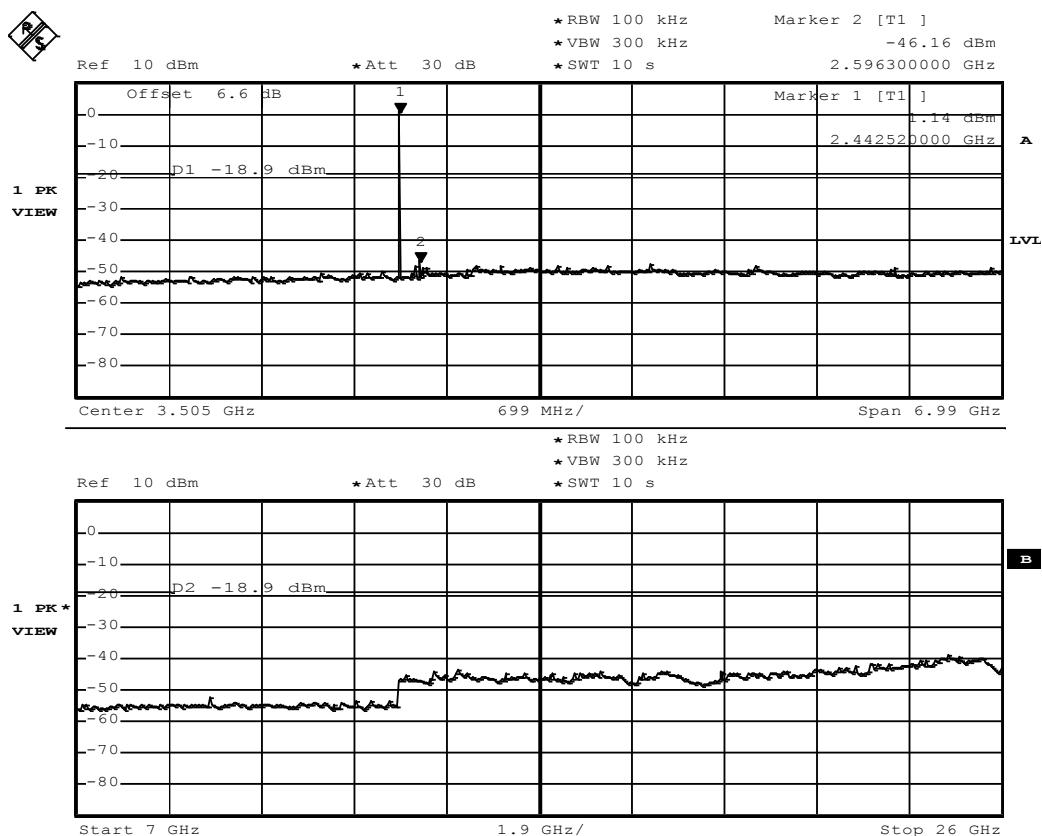


Date: 13.AUG.2013 13:34:11

Conducted spurious emissions – DH5-Sngl F_{MID}

FCC part 15.247 (d)
Spurious Emissions

EUT Telematic Device with GPRS+WCDMA/BT/GPS
Model LINK530
Approval Holder TomTom International B/V / GOM-1307-2974
Temperature / Voltage Tnom / Vnom
Test Site / Operator Eurofins Product Service GmbH / Mr. Treffke
Test Specification FCC part 15.247 (d)
Comment 1 Spurious Emissions conducted
Comment 2 Channel : 2441 MHz
Comment 3 GFSK

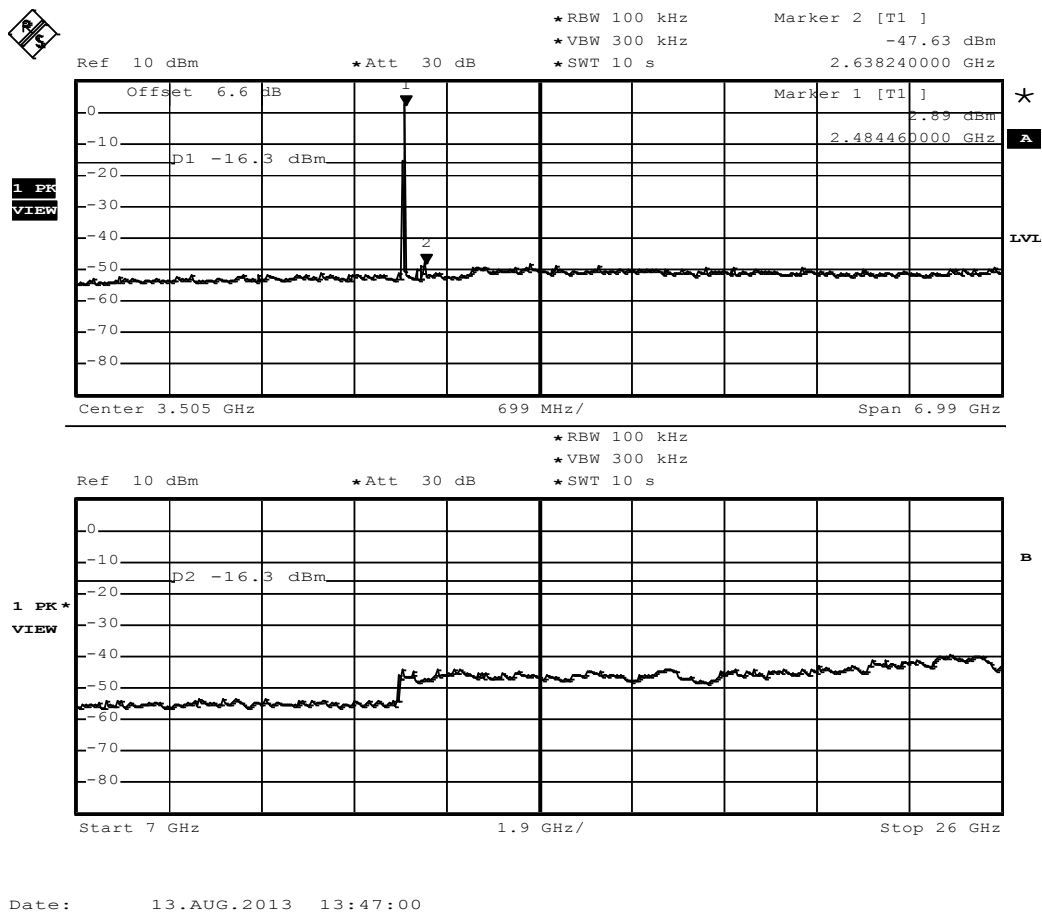


Date: 13.AUG.2013 13:39:14

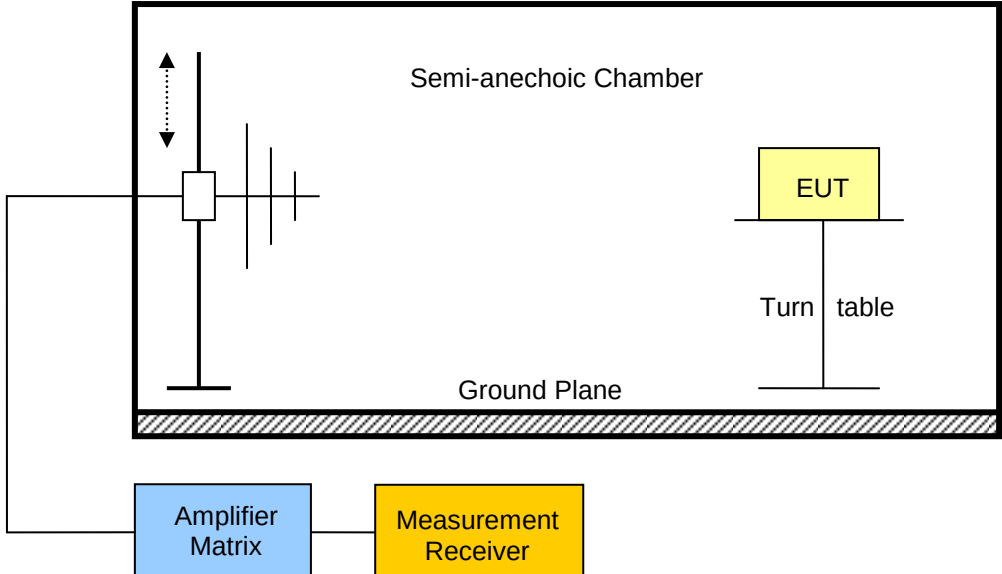
Conducted spurious emissions – DH5-Sngl F_{HIGH}

FCC part 15.247 (d)
Spurious Emissions

EUT Telematic Device with GPRS+WCDMA/BT/GPS
Model LINK530
Approval Holder TomTom International B/V / G0M-1307-2974
Temperature / Voltage Tnom / Vnom
Test Site / Operator Eurofins Product Service GmbH / Mr. Treffke
Test Specification FCC part 15.247 (d)
Comment 1 Spurious Emissions conducted
Comment 2 Channel : 2480 MHz
Comment 3 GFSK



3.9 Test Conditions and Results – Transmitter radiated emissions

Transmitter radiated emissions acc. FCC 47 CFR 15.247 / IC RSS-210				Verdict: PASS
Test according referenced standards	Reference Method			
	FCC 15.247(d) / IC RSS-210 A8.5			
Test according to measurement reference	Reference Method			
	FCC Public Notice DA 00-705 / ANSI C63.4			
Test frequency range	Tested frequencies			
	30 MHz – 10 th Harmonic			
Limits				
Frequency range [MHz]	Detector	Limit [µV/m]	Limit [dBµV/m]	Limit Distance [m]
30 – 88	Quasi-Peak	100	40	3
88 – 216	Quasi-Peak	150	43.5	3
216 – 960	Quasi-Peak	200	46	3
960 – 1000	Quasi-Peak	500	54	3
> 1000	Average	500	54	3
Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)). When average radiated emission measurements are specified, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.				
Test setup				
				

Test procedure

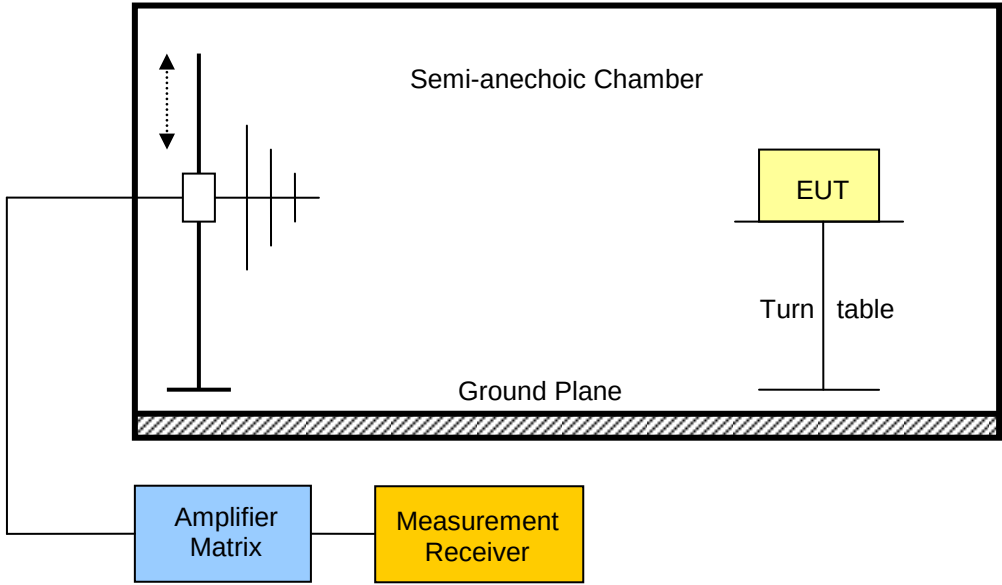
1. EUT set to test mode (Communication tester is used if needed)
2. Span it set according to measurement range
3. Resolution bandwidth below 1 GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1 MHz with peak/average detector is used above 1 GHz
4. Markers are set to peak emission levels within restricted bands

Test results – Internal Antenna

Channel	Frequency [MHz]	Mode	Emission [MHz]	Level [dBμV/m]	Det.	Pol.	Limit [dBμV/m]	Limit dist. [m]*	Margin [dB]
F _{LOW}	2402	DH5-Sngl	2388	39.07	pk	hor	74.00	3	-34.93
F _{LOW}	2402	DH5-Sngl	2388	23.84	RMS	hor	54.00	3	-30.16
F _{LOW}	2402	DH5-Sngl	2390	44.69	pk	ver	74.00	3	-29.31
F _{LOW}	2402	DH5-Sngl	2390	23.65	RMS	ver	54.00	3	-30.35
F _{HIGH}	2480	DH5-Sngl	2483.5	55.60	pk	hor	74.00	3	-18.40
F _{HIGH}	2480	DH5-Sngl	2483.5	38.49	RMS	hor	54.00	3	-15.51
F _{HIGH}	2480	DH5-Sngl	2483.5	60.06	pk	ver	74.00	3	-13.94
F _{HIGH}	2480	DH5-Sngl	2483.5	38.79	RMS	ver	54.00	3	-15.21
F _{HIGH}	2480	DH5-Sngl	4952	44.88	pk	ver	74.00	3	-29.12
F _{HIGH}	2480	DH5-Sngl	4960	43.69	pk	hor	74.00	3	-30.31

Comments: * Physical distance between EUT and measurement antenna.

3.10 Test Conditions and Results – Receiver radiated emissions

Receiver radiated emissions acc. IC RSS-210				Verdict: PASS
Test according referenced standards	Reference Method			
	IC RSS-210 A8.5			
Test according to measurement reference	Reference Method			
	ANSI C63.4			
Test frequency range	Tested frequencies			
	30 MHz – 3 th Harmonic			
EUT test mode	Receive			
Limits				
Frequency range [MHz]	Detector	Limit [μV/m]	Limit [dBμV/m]	Limit Distance [m]
30 – 88	Quasi-Peak	100	40	3
88 – 216	Quasi-Peak	150	43.5	3
216 – 960	Quasi-Peak	200	46	3
960 – 1000	Quasi-Peak	500	54	3
> 1000	Average	500	54	3
Test setup				
				

Test procedure							
1. EUT set to receive mode (Communication tester is used if needed) 2. Span it set according to measurement range 3. Resolution bandwidth below 1 GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1 MHz with peak/average detector is used above 1 GHz 4. Markers are set to peak emission levels							
Test results							
Channel	Frequency [MHz]	Emission [MHz]	Emission Level [db μ V/m]	Emission Level [μ V/m]	Det.	Limit [μ V/m]	Margin [μ V/m]
F _{MID}	2441	3976	43.21	144.71	pk	500	-355.29
Comments: * Physical distance between EUT and measurement antenna. ** Emission level corresponds to ambient noise floor							

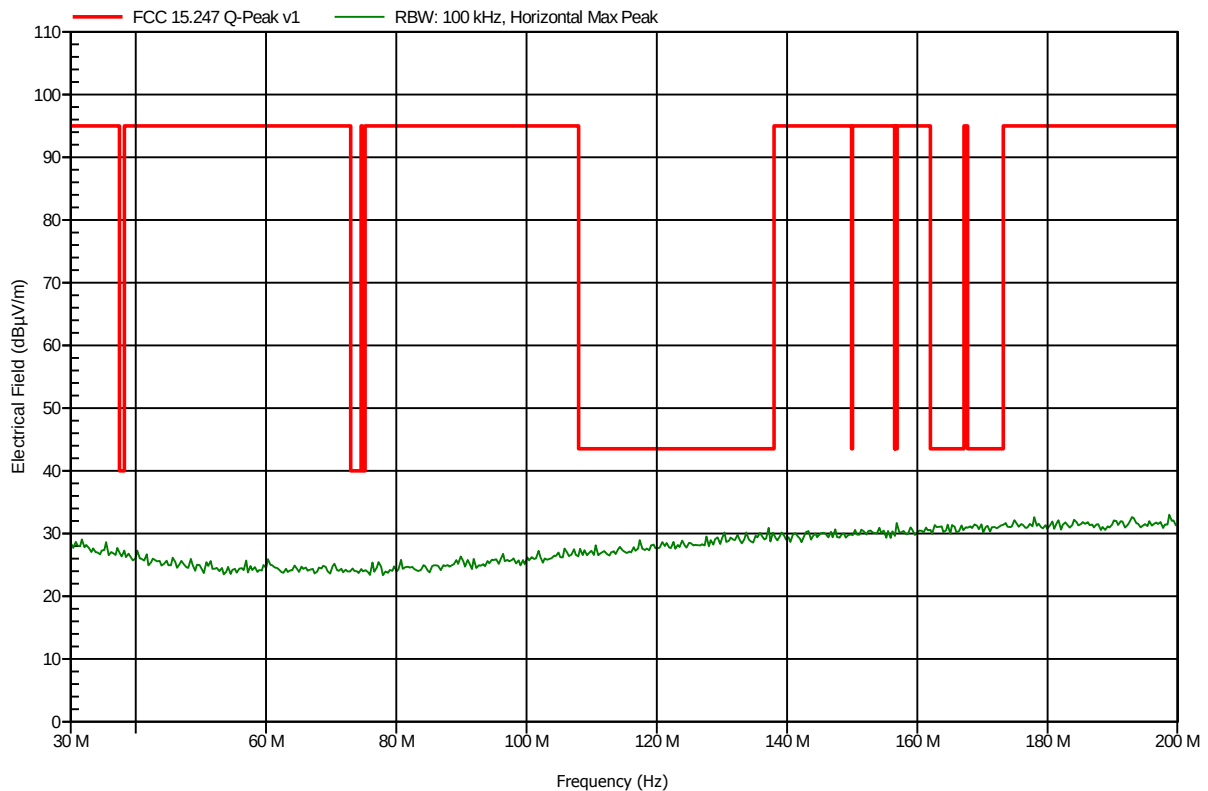
ANNEX A Transmitter radiated spurious emissions

Spurious emissions according to FCC 15.247

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. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 13.2 V DC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; basic, DH5, 2402 MHz
Test Date:	2013-08-09
Note:	worst case

Index 37

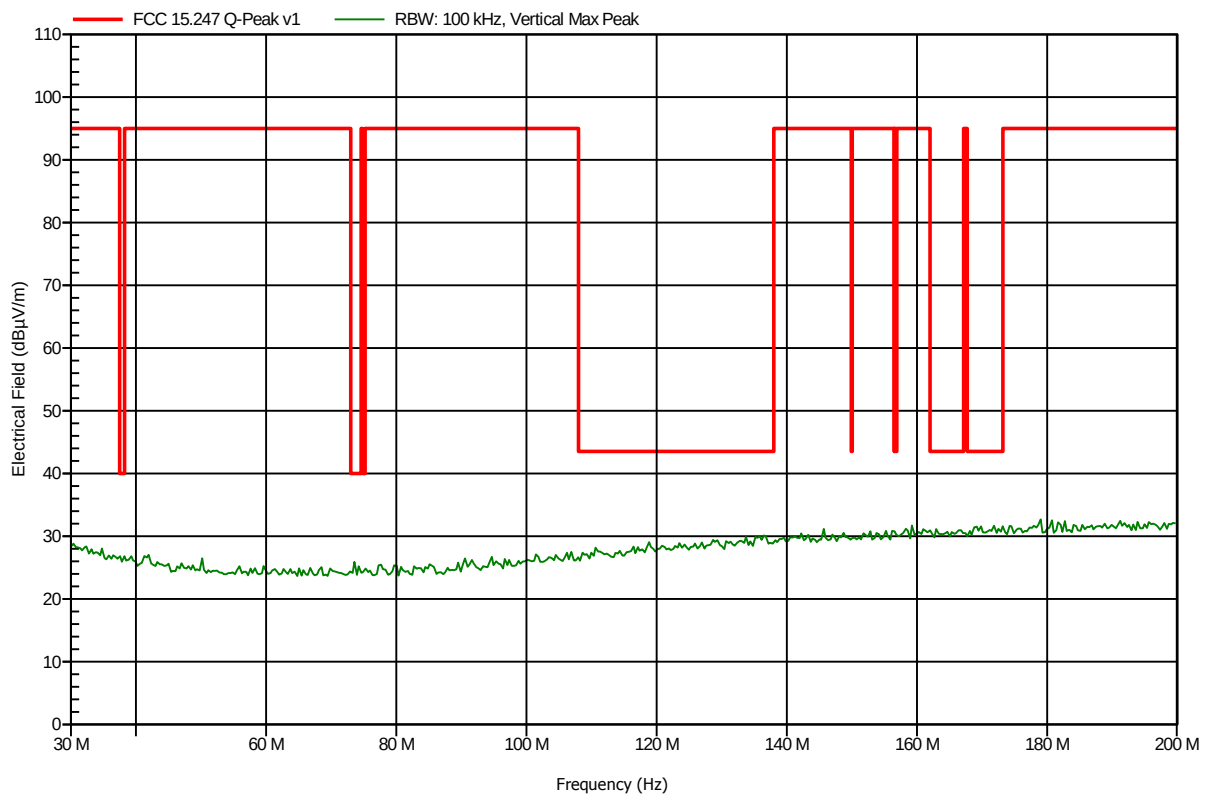


Spurious emissions according to FCC 15.247

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. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 13.2 V DC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; basic, DH5, 2402 MHz
Test Date:	2013-08-09
Note:	worst case

Index 38



Test Report No.: G0M-1307-2974-TFC247B-V01

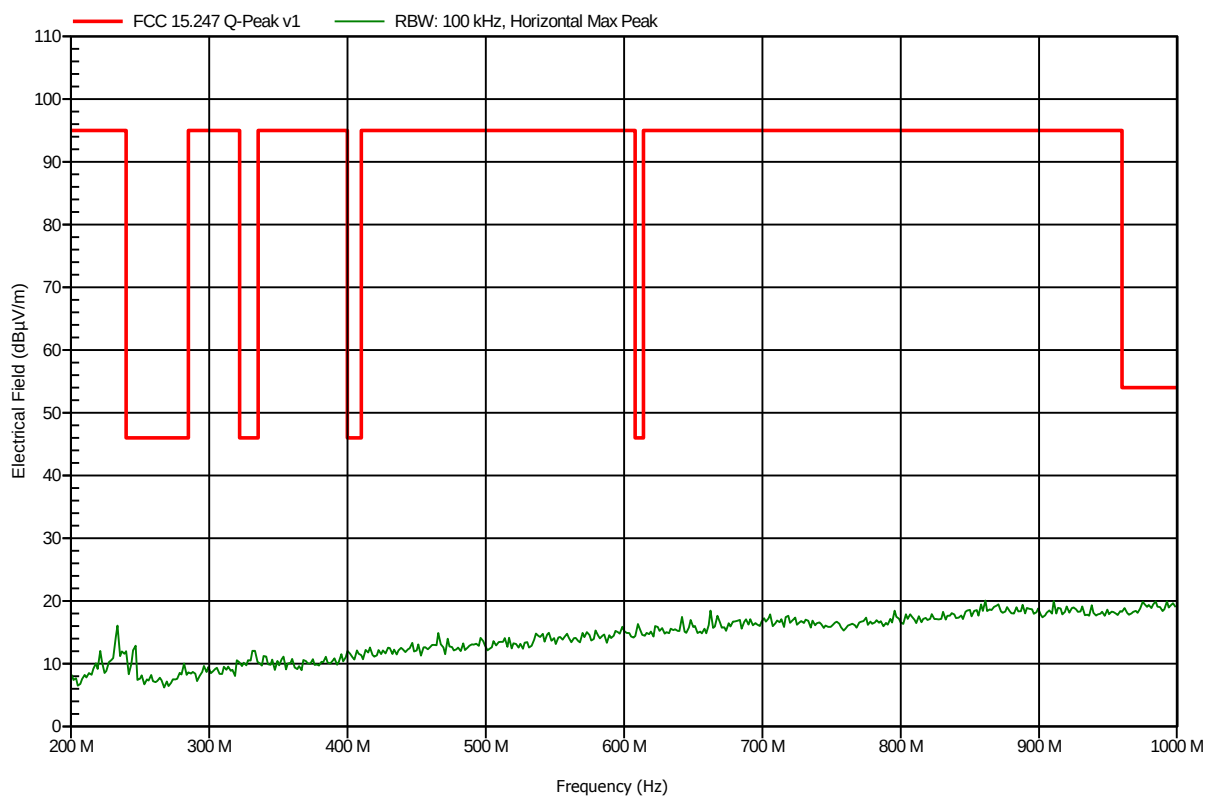
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.247

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. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 13.2 V DC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; basic, DH5, 2402 MHz
Test Date:	2013-08-09
Note:	worst case

Index 35

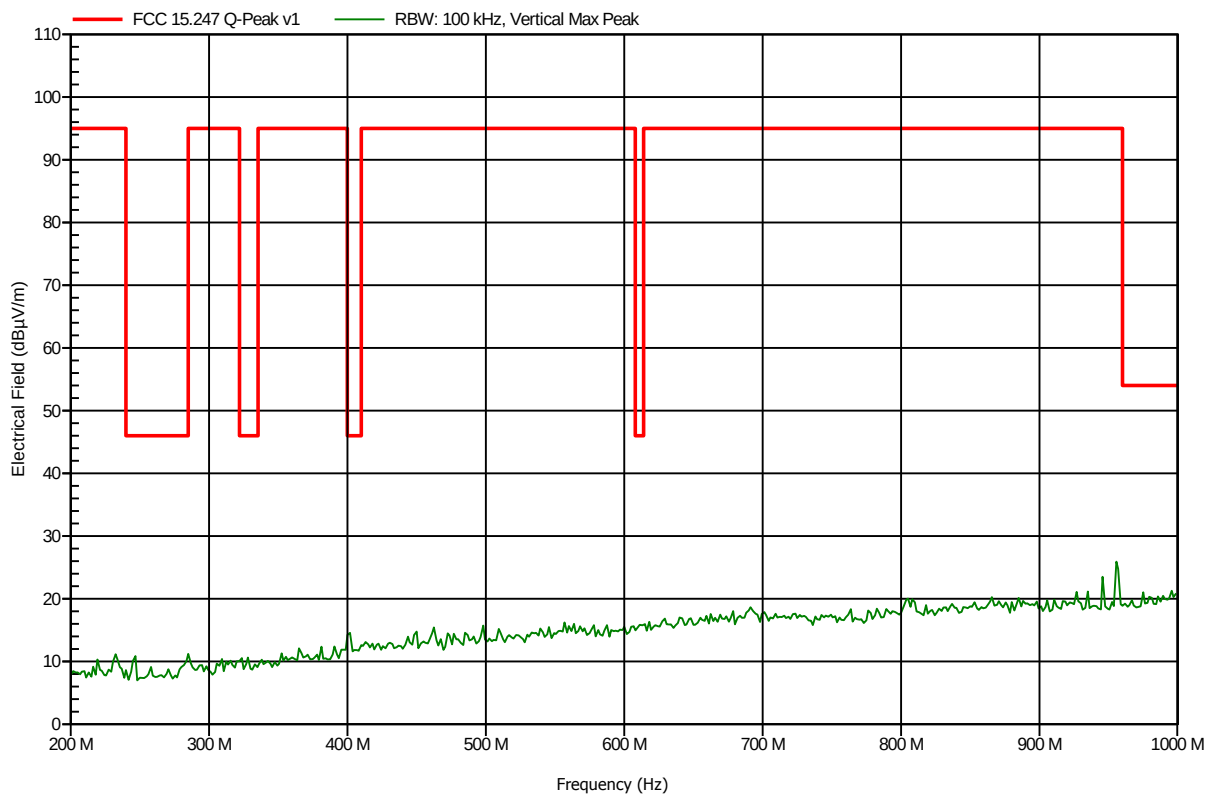


Spurious emissions according to FCC 15.247

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. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 13.2 V DC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; basic, DH5, 2402 MHz
Test Date:	2013-08-09
Note:	worst case

Index 36

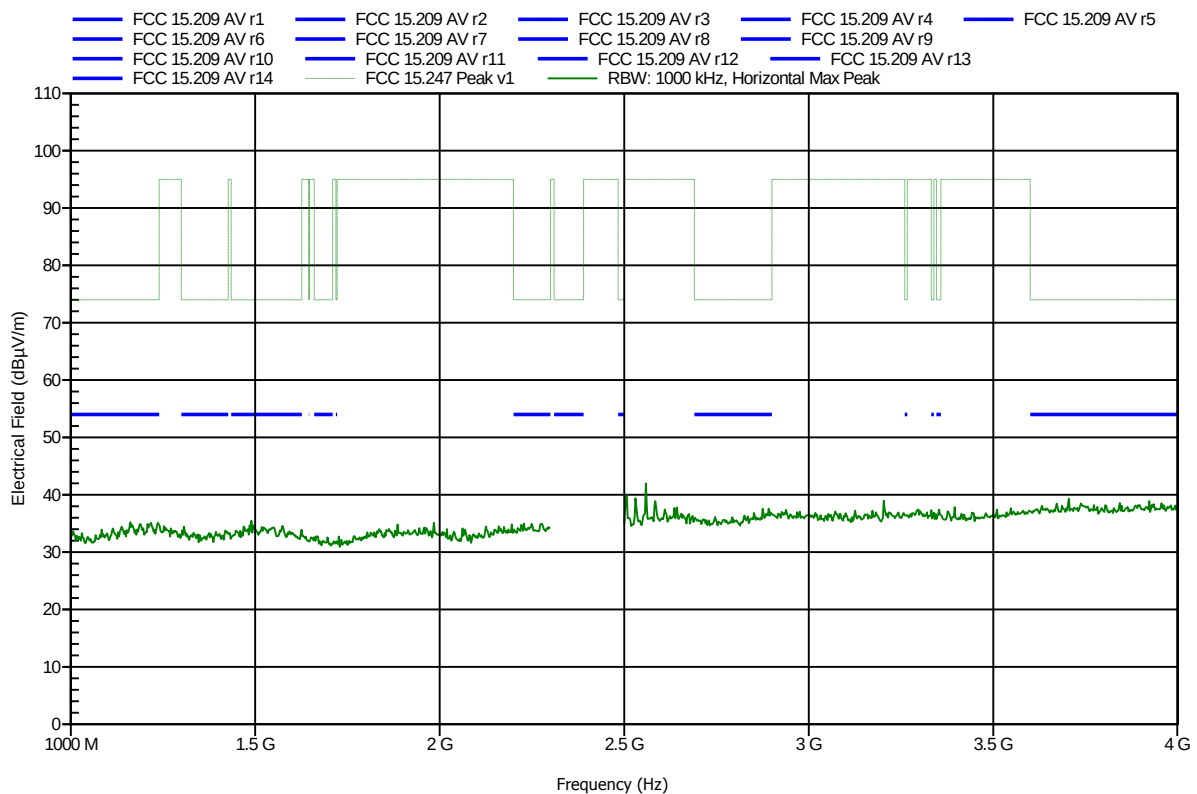


Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; basic, DH5, 2402 MHz
 Test Date: 2013-08-09
 Note:

Index 39

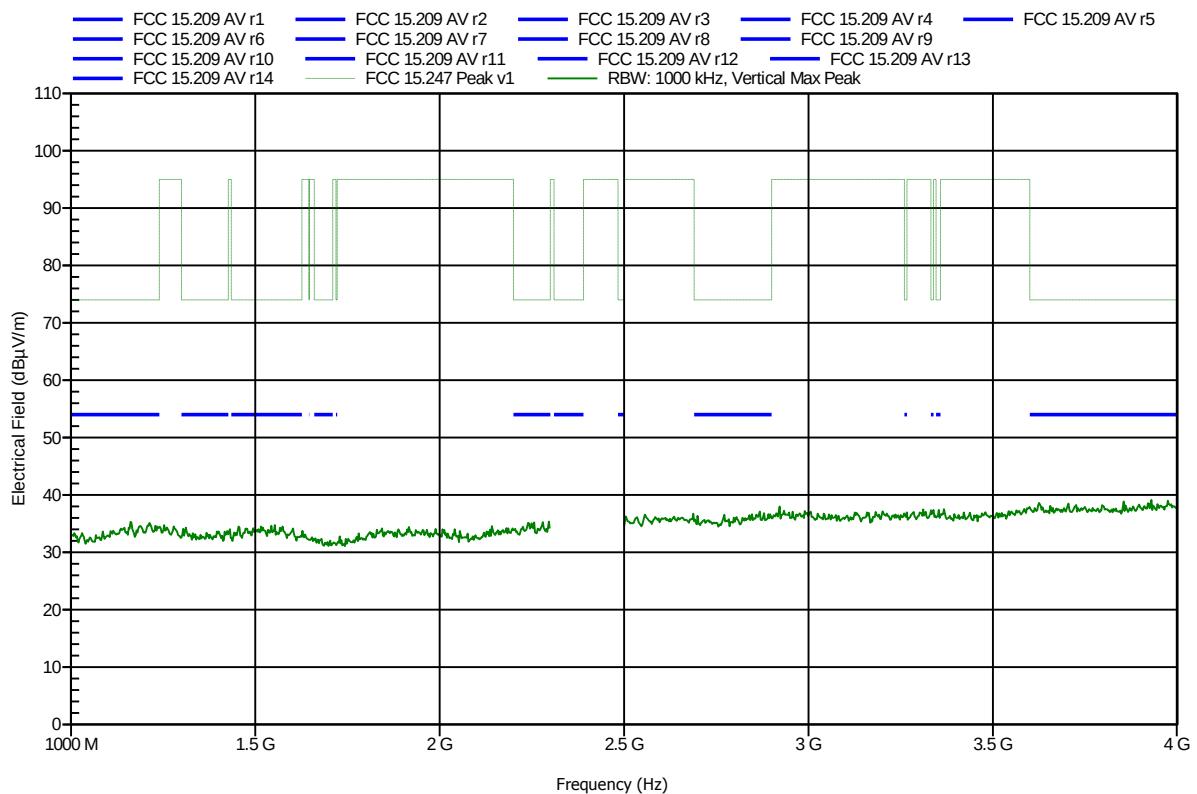


Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; basic, DH5, 2402 MHz
 Test Date: 2013-08-09
 Note:

Index 42

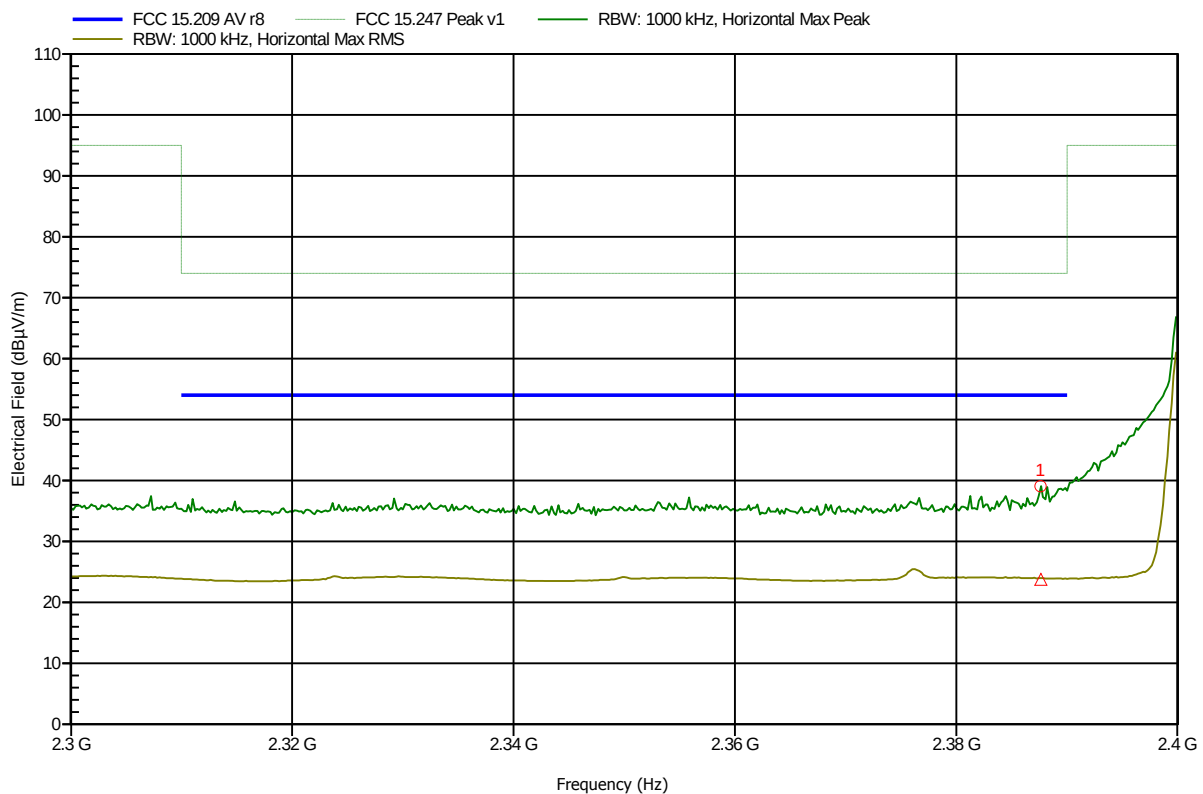


Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; basic, DH5, 2402 MHz
 Test Date: 2013-08-09
 Note: lower bandedge

Index 40



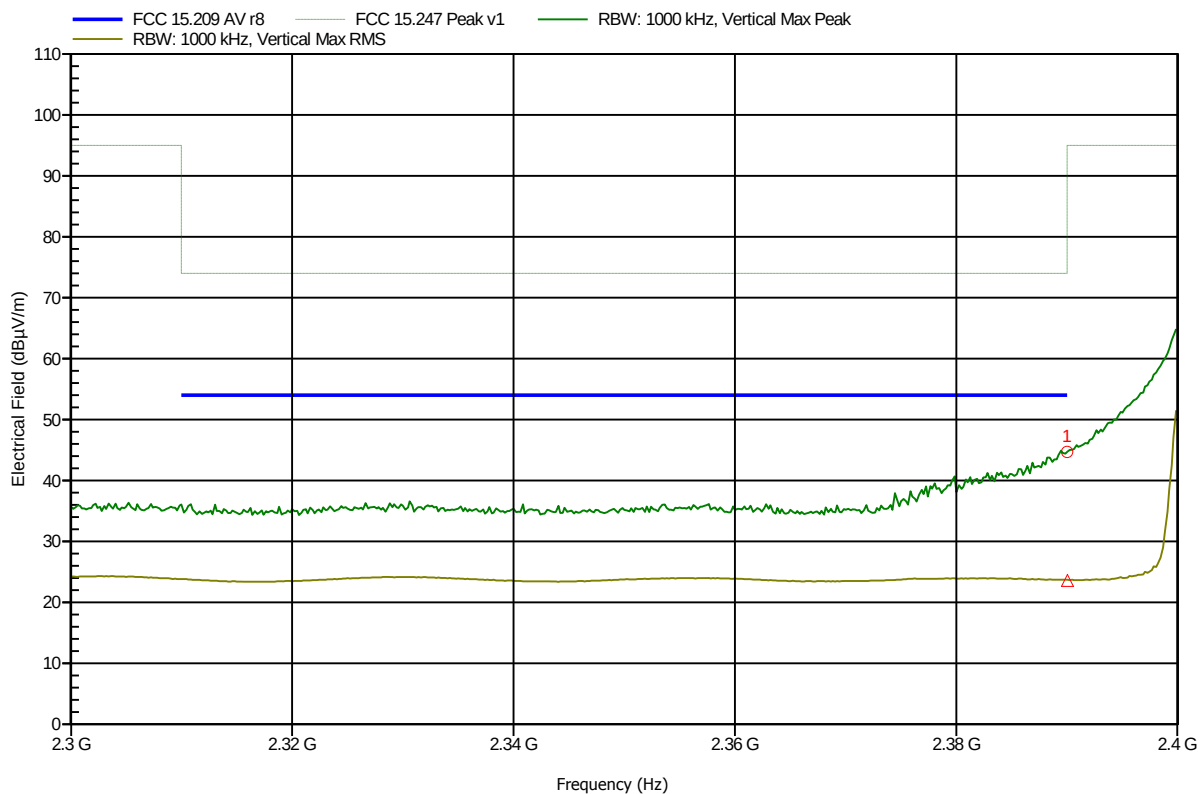
Frequency 2.388 GHz	Peak 39.07 dBμV/m	Peak Limit 74 dBμV/m	Peak Difference -34.93 dB	Peak Status Pass
Frequency 2.388 GHz	RMS 23.84 dBμV/m	RMS Limit 54 dBμV/m	RMS Difference -30.16 dB	RMS Status Pass

Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; basic, DH5, 2402 MHz
 Test Date: 2013-08-09
 Note: lower bandedge

Index 43



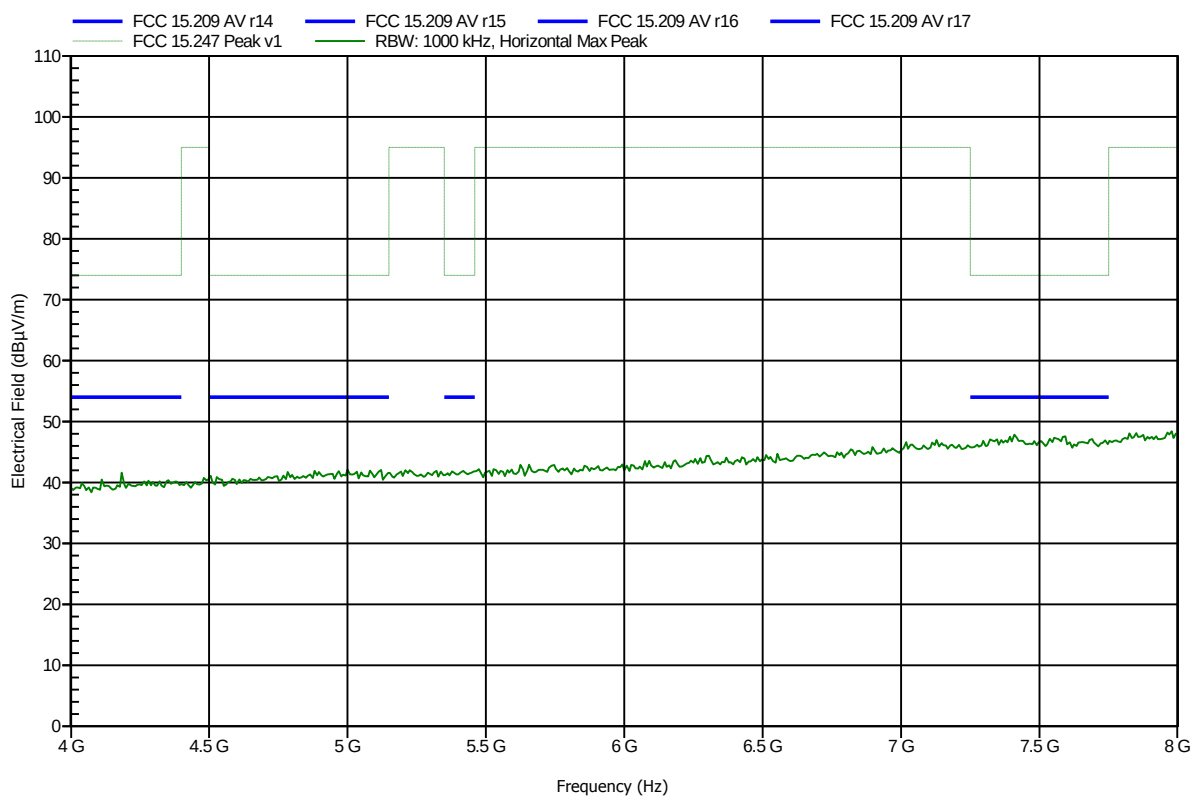
Frequency 2.39 GHz	Peak 44.69 dBµV/m	Peak Limit 74 dBµV/m	Peak Difference -29.31 dB	Peak Status Pass
Frequency 2.39 GHz	RMS 23.65 dBµV/m	RMS Limit 54 dBµV/m	RMS Difference -30.35 dB	RMS Status Pass

Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; basic, DH5, 2402 MHz
 Test Date: 2013-08-09
 Note:

Index 41



Test Report No.: G0M-1307-2974-TFC247B-V01

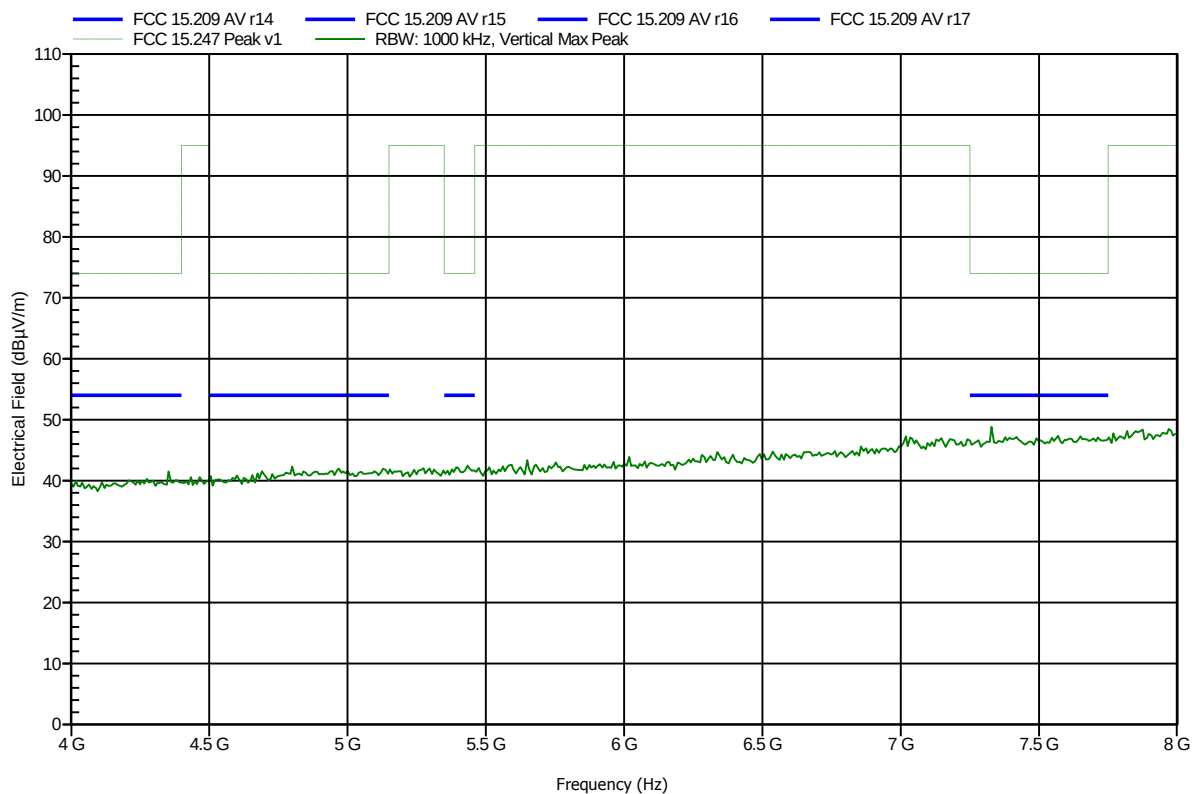
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; basic, DH5, 2402 MHz
 Test Date: 2013-08-09
 Note:

Index 44

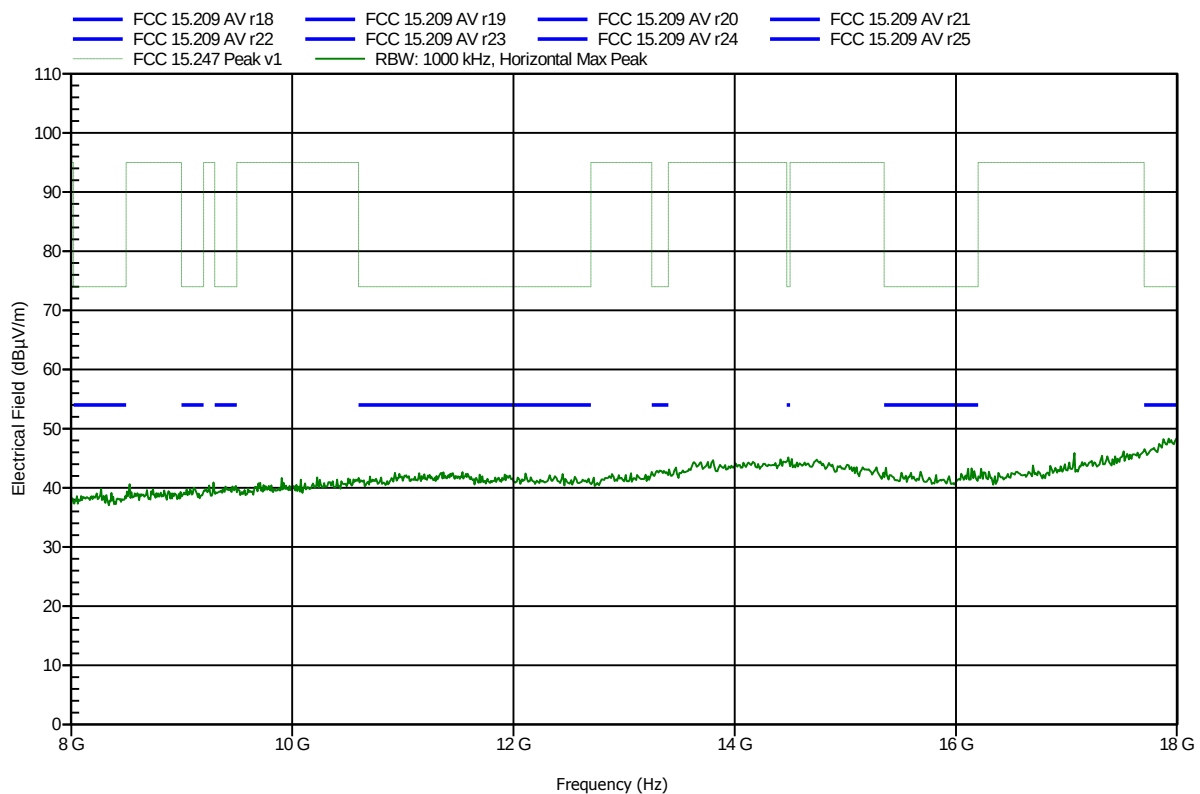


Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 100 cm converted to 3m
 Mode: TX; basic, DH5, 2402 MHz
 Test Date: 2013-08-09
 Note:

Index 56

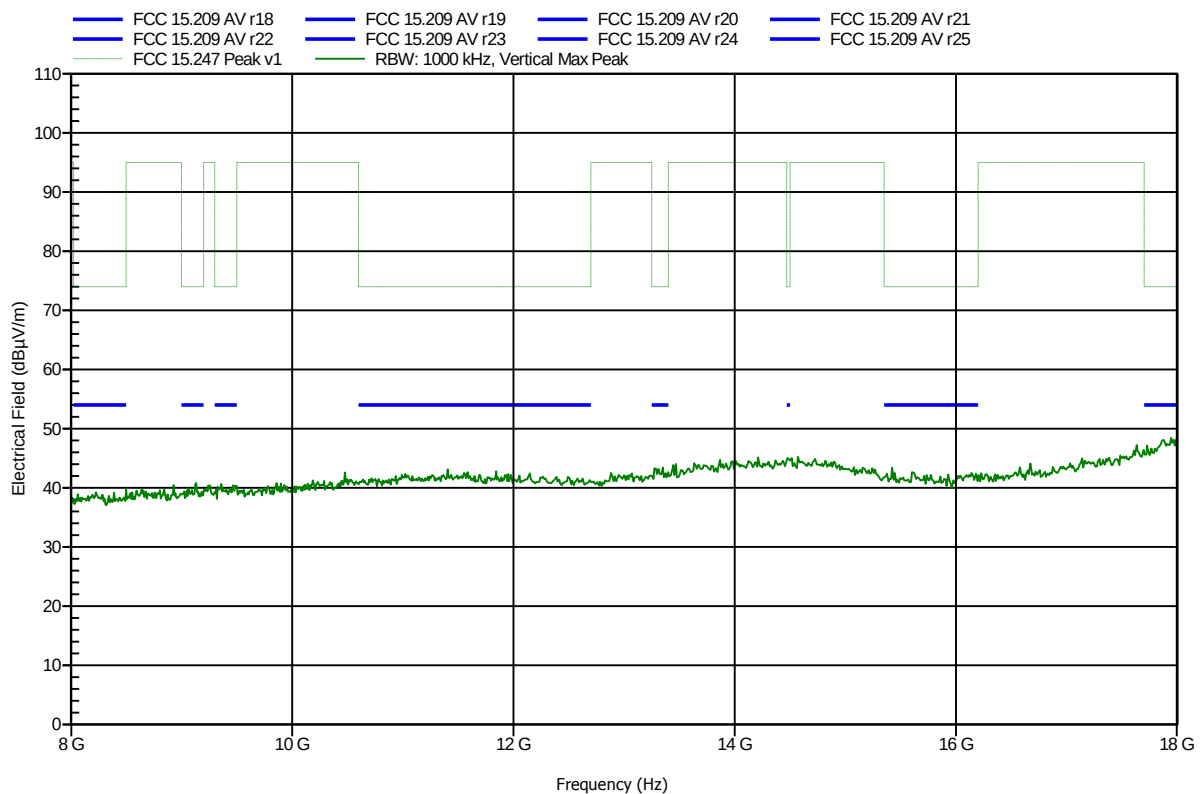


Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 100 cm converted to 3m
 Mode: TX; basic, DH5, 2402 MHz
 Test Date: 2013-08-09
 Note:

Index 59

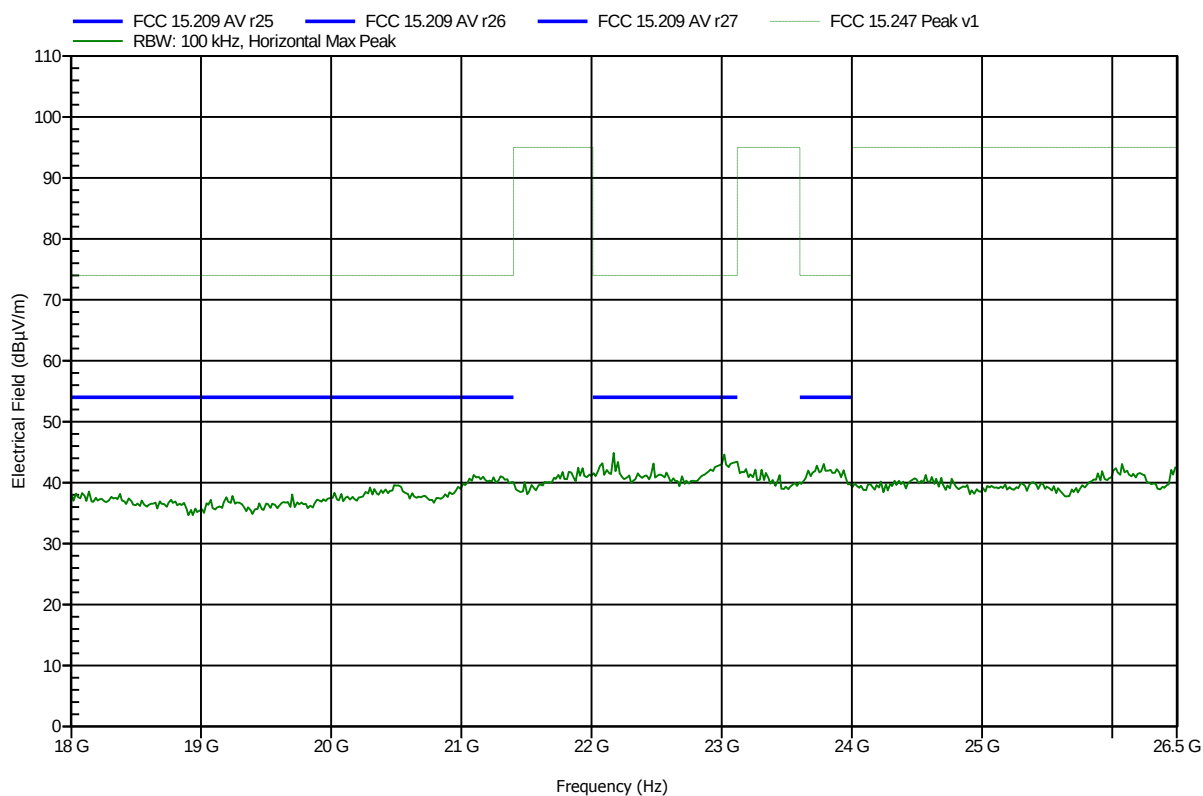


Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 100 cm
 Mode: TX; basic, DH5, 2402 MHz
 Test Date: 2013-08-09
 Note:

Index 58

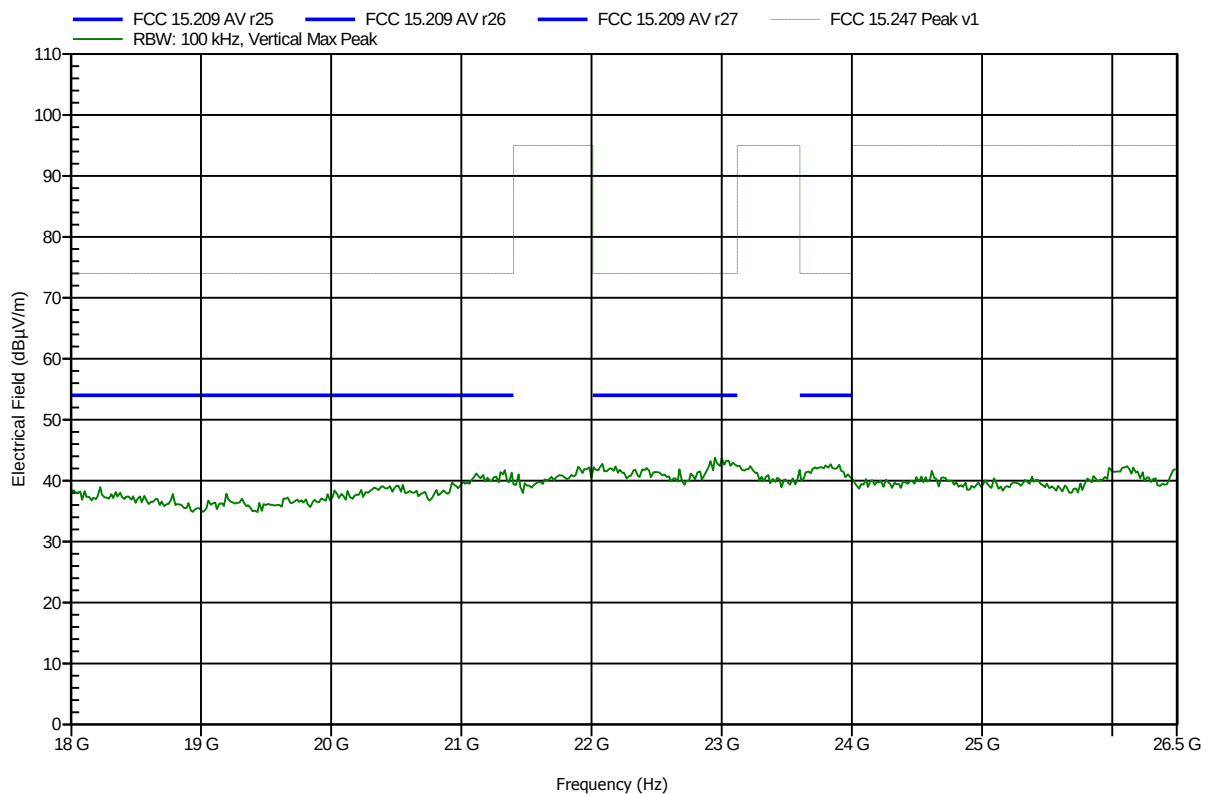


Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 100 cm
 Mode: TX; basic, DH5, 2402 MHz
 Test Date: 2013-08-09
 Note:

Index 60



Test Report No.: G0M-1307-2974-TFC247B-V01

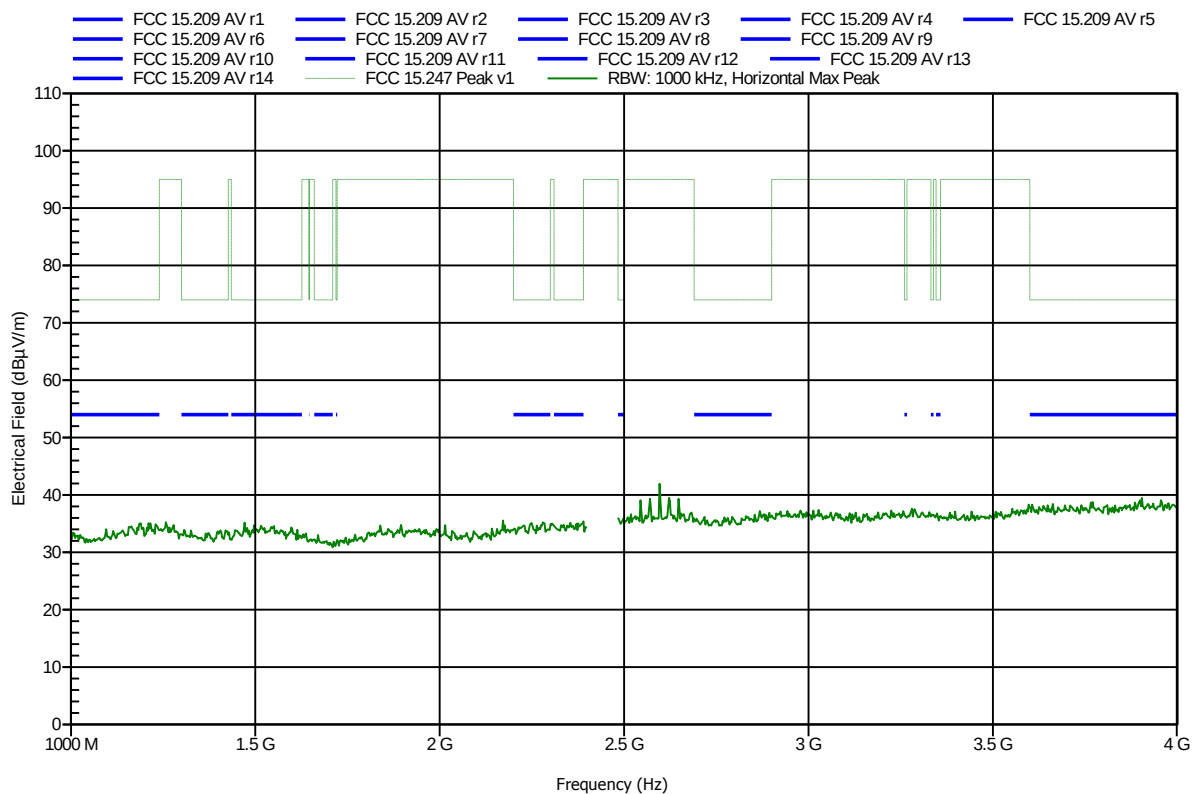
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; basic, DH5, 2441 MHz
 Test Date: 2013-08-09
 Note:

Index 45

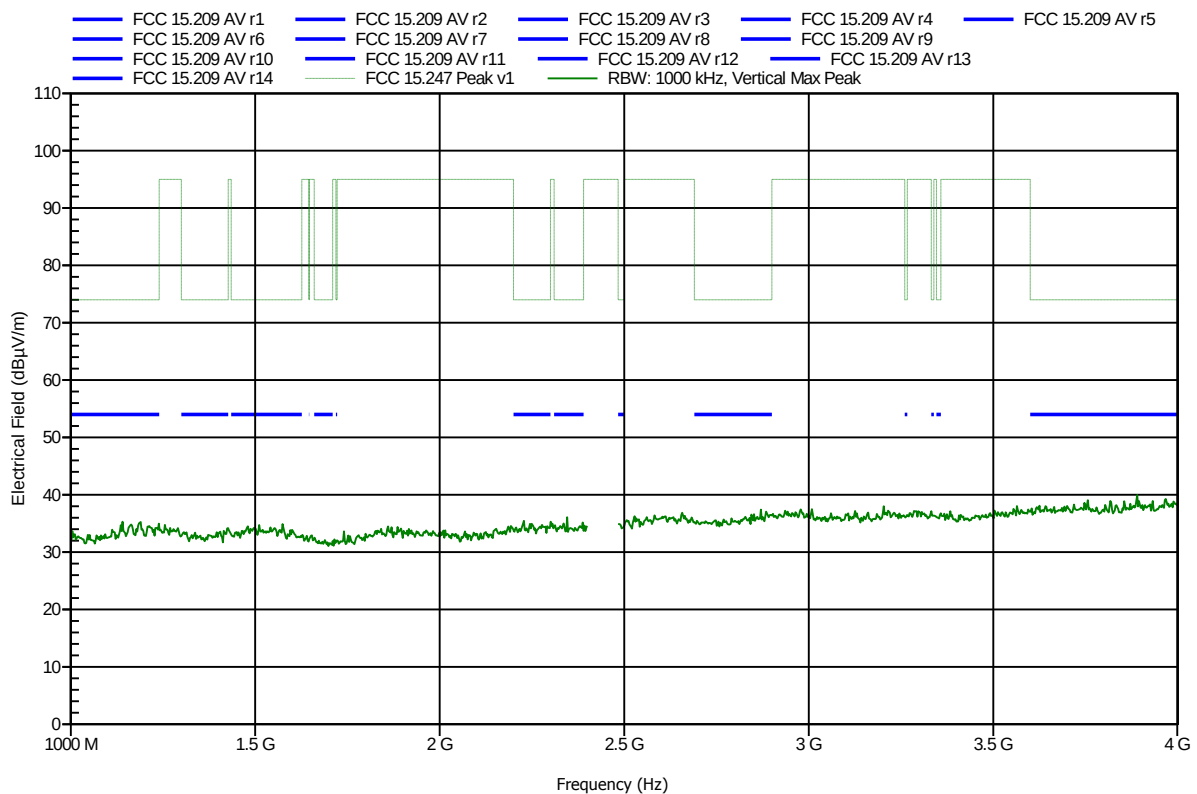


Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; basic, DH5, 2441 MHz
 Test Date: 2013-08-09
 Note:

Index 47

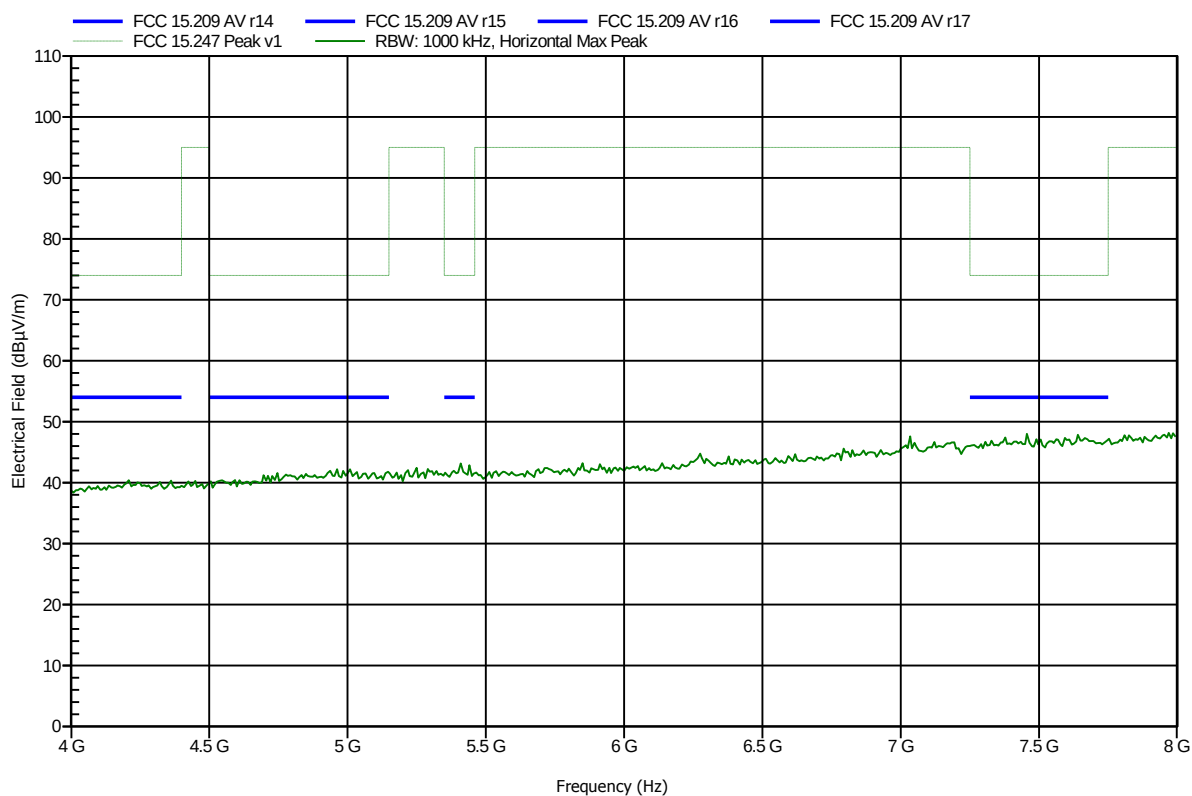


Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; basic, DH5, 2441 MHz
 Test Date: 2013-08-09
 Note:

Index 46

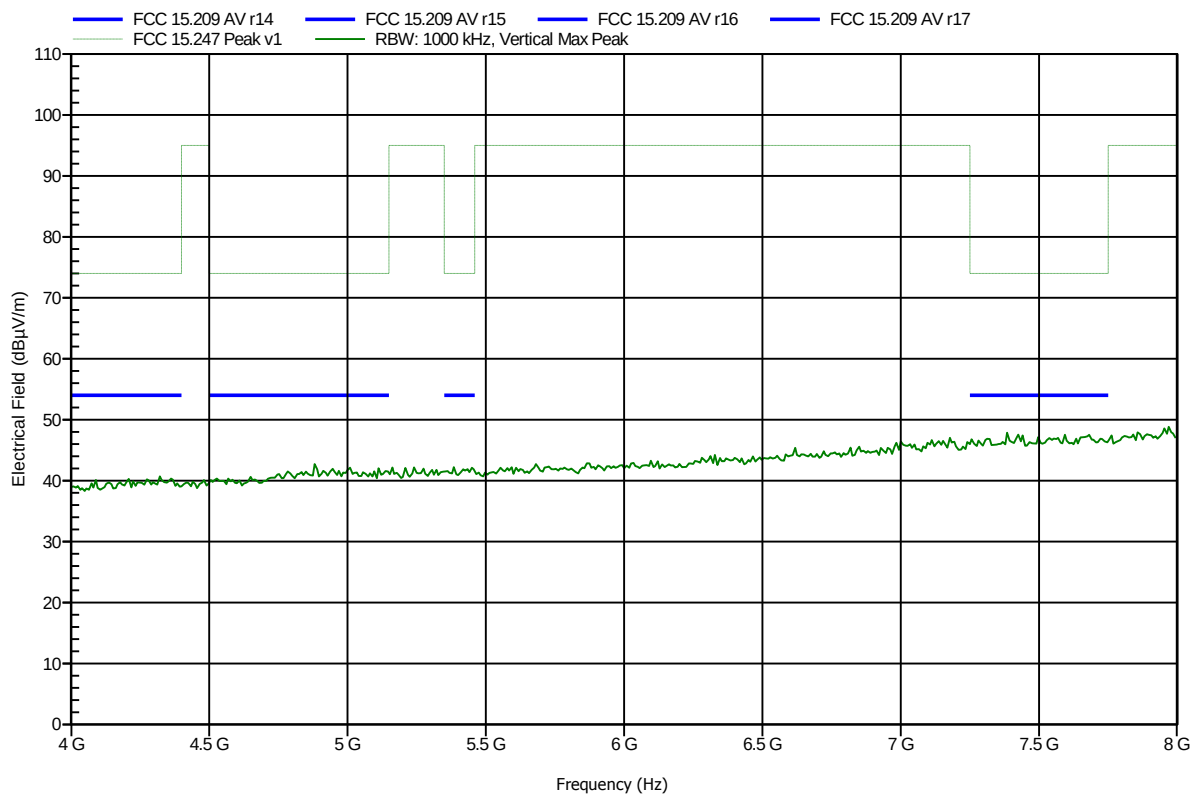


Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; basic, DH5, 2441 MHz
 Test Date: 2013-08-09
 Note:

Index 49

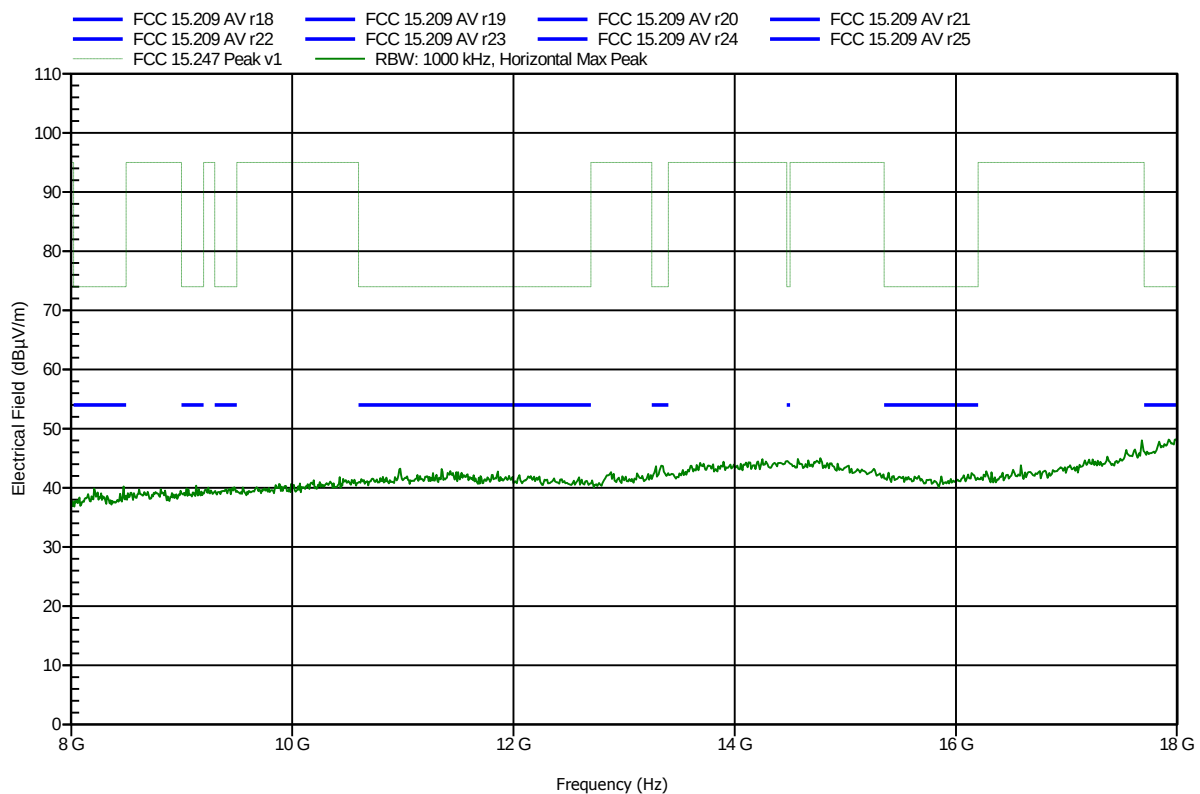


Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 100 cm converted to 3m
 Mode: TX; basic, DH5, 2441 MHz
 Test Date: 2013-08-09
 Note:

Index 61



Test Report No.: G0M-1307-2974-TFC247B-V01

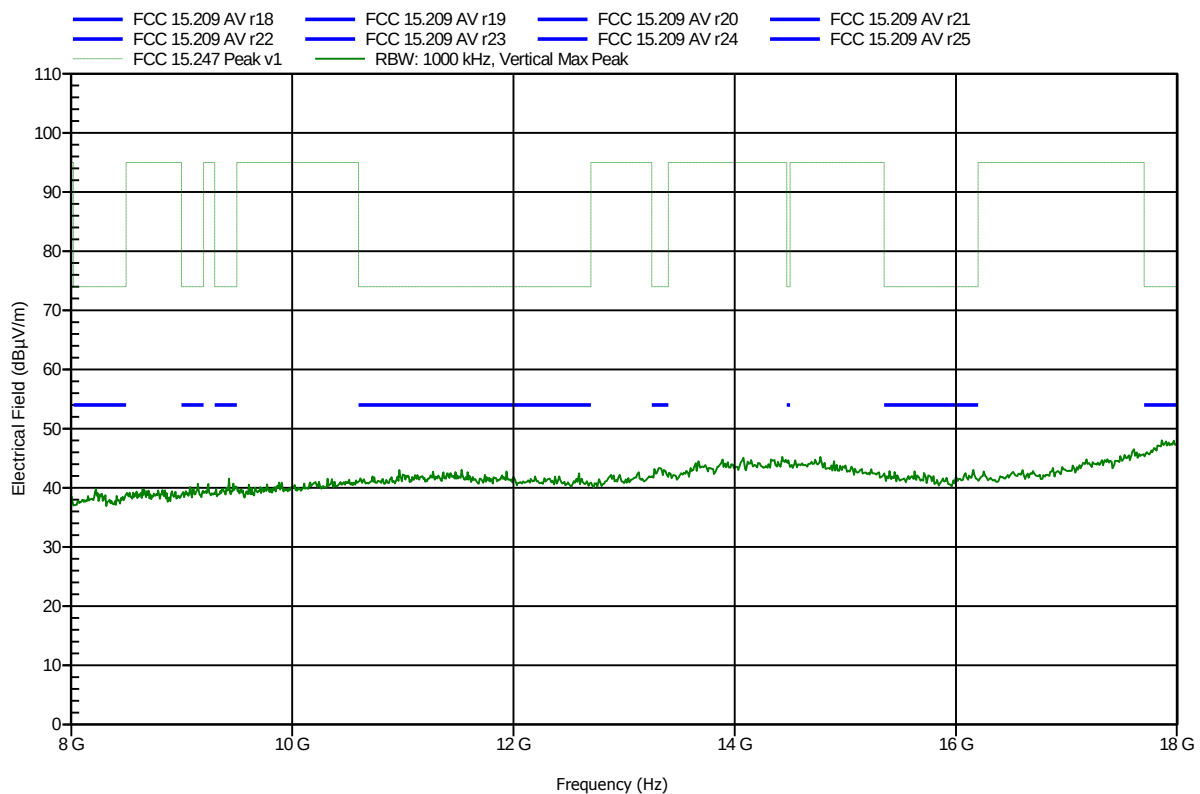
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 100 cm converted to 3m
 Mode: TX; basic, DH5, 2441 MHz
 Test Date: 2013-08-09
 Note:

Index 64

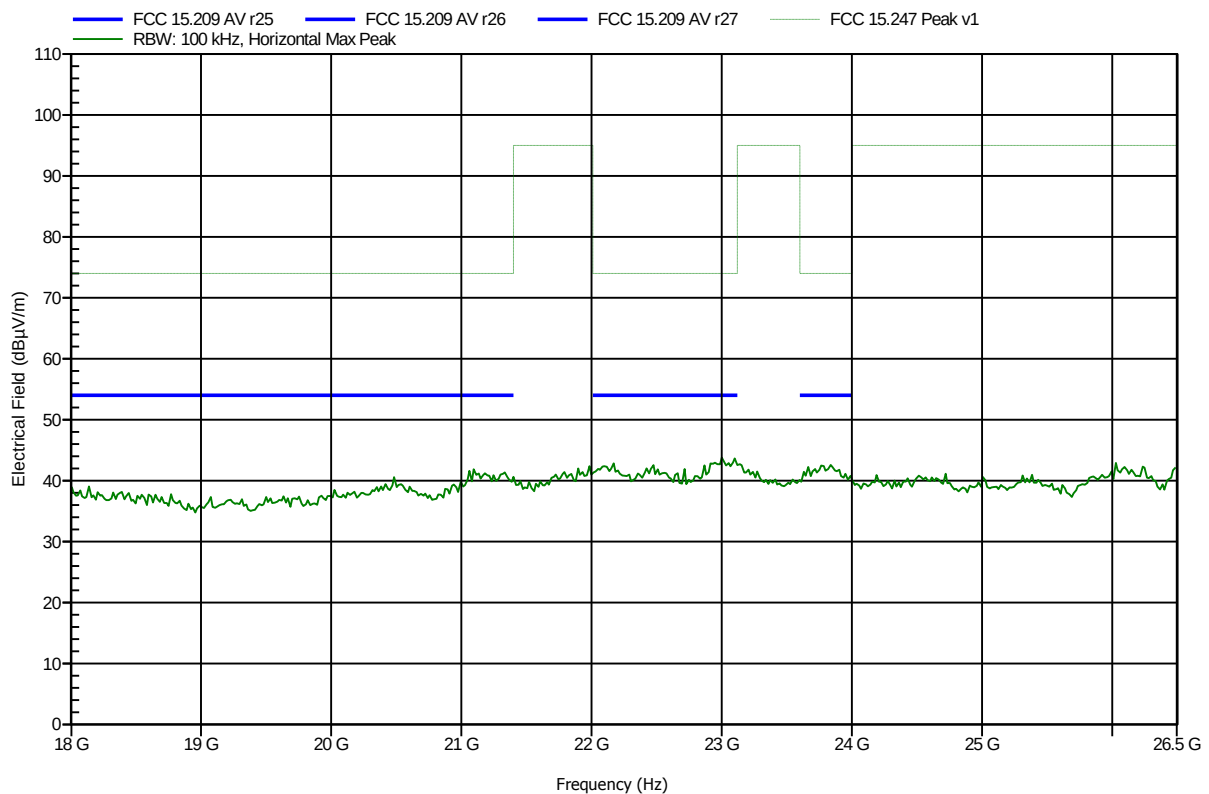


Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 100 cm
 Mode: TX; basic, DH5, 2441 MHz
 Test Date: 2013-08-09
 Note:

Index 62

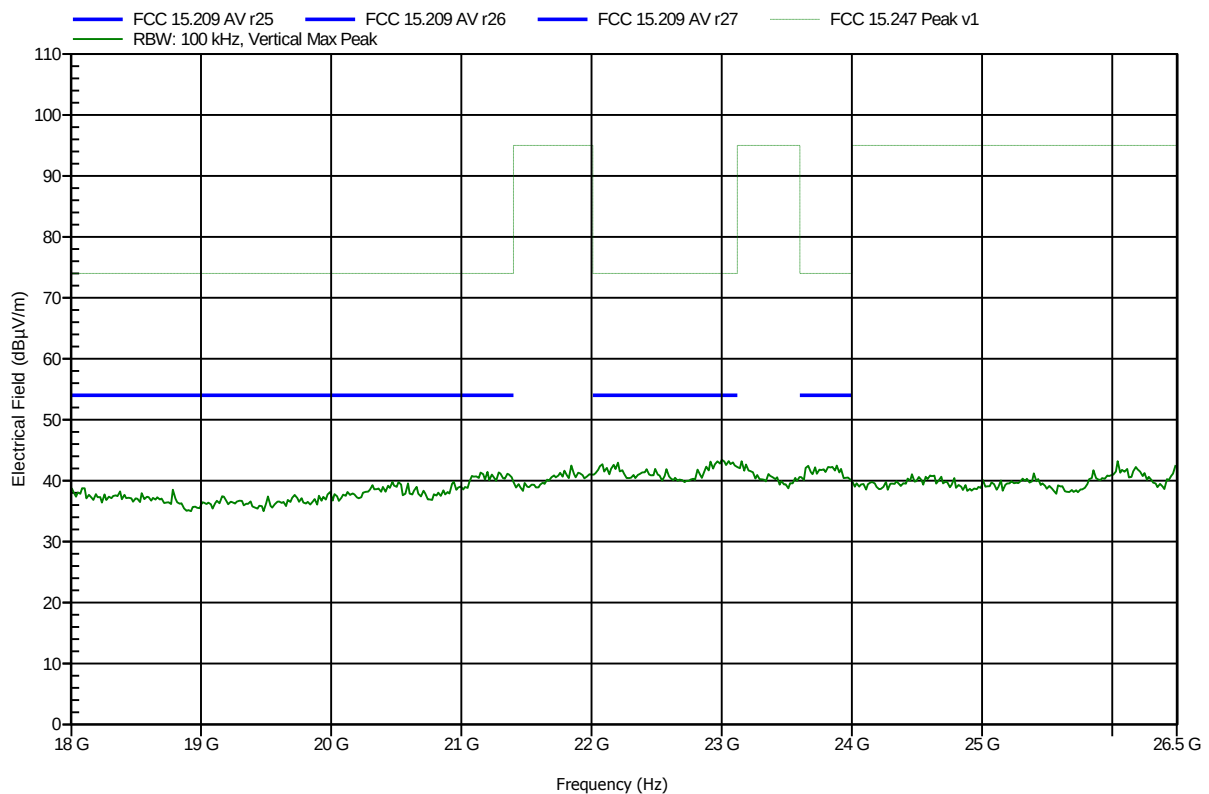


Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 100 cm
 Mode: TX; basic, DH5, 2441 MHz
 Test Date: 2013-08-09
 Note:

Index 65



Test Report No.: G0M-1307-2974-TFC247B-V01

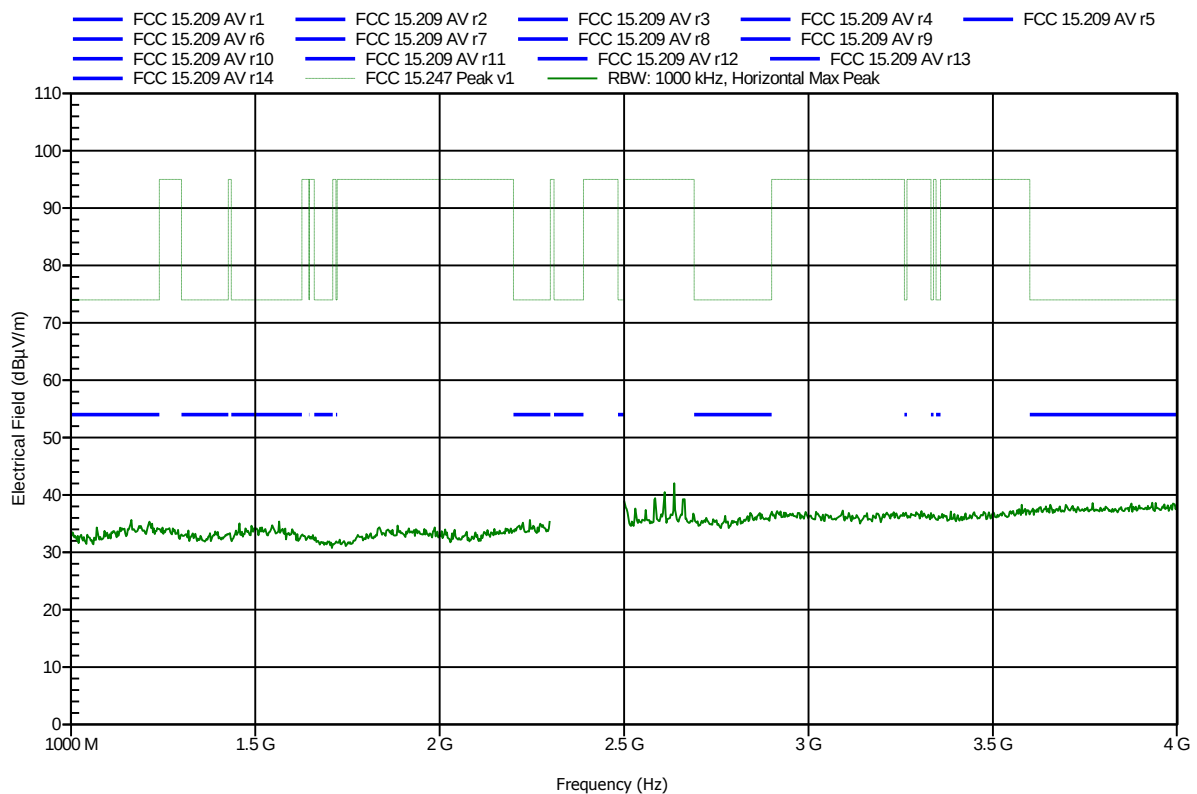
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; basic, DH5, 2480 MHz
 Test Date: 2013-08-09
 Note:

Index 50



Test Report No.: G0M-1307-2974-TFC247B-V01

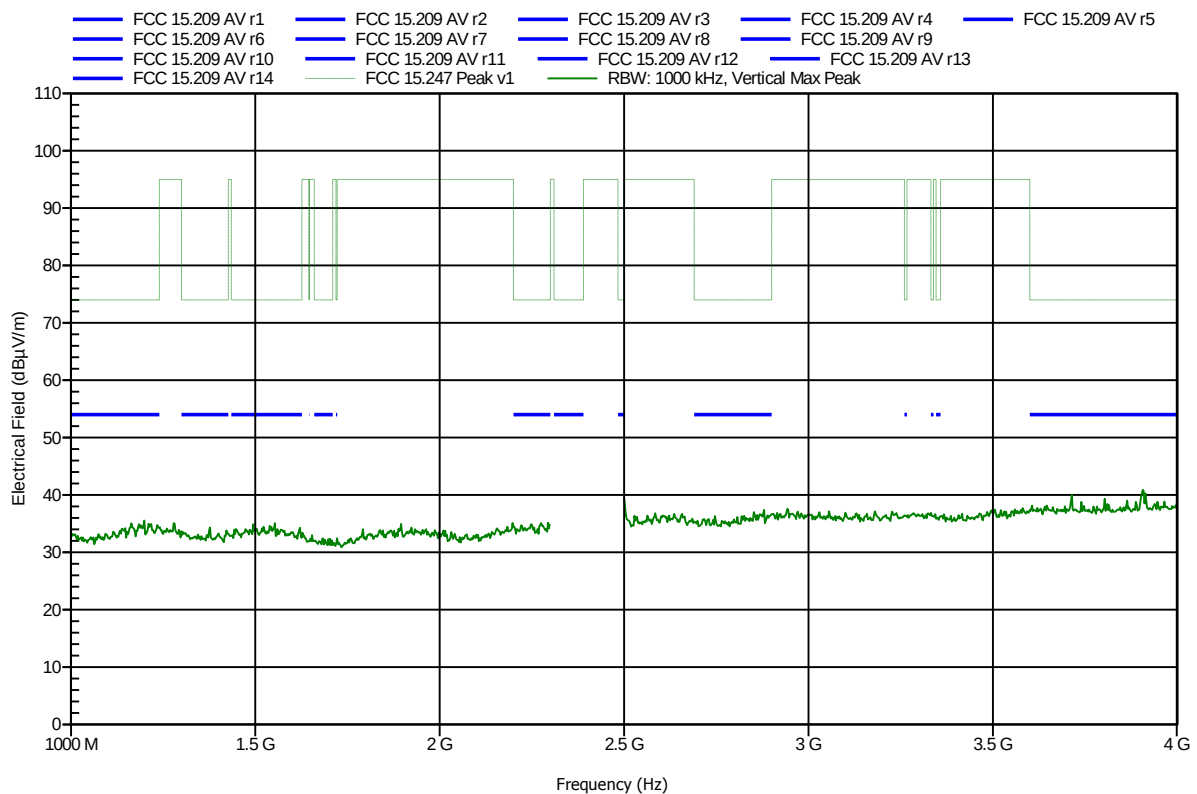
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; basic, DH5, 2480 MHz
 Test Date: 2013-08-09
 Note:

Index 53



Test Report No.: G0M-1307-2974-TFC247B-V01

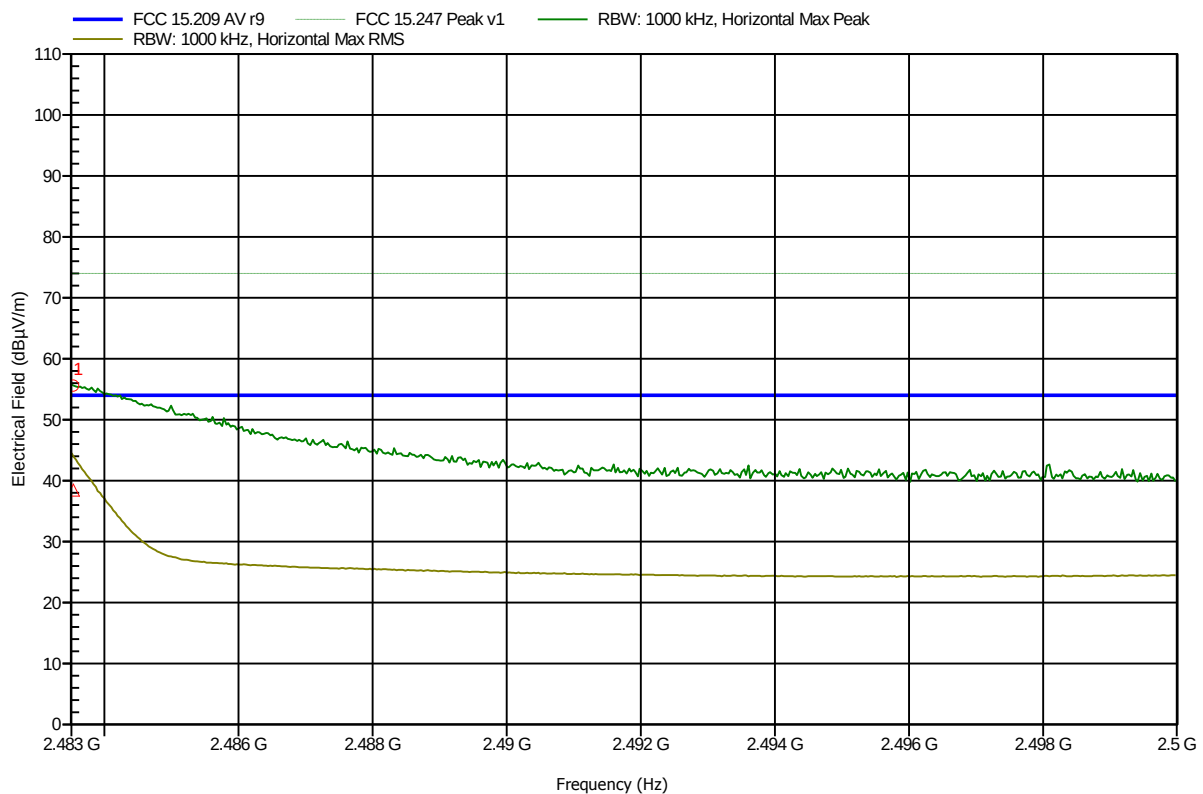
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; basic, DH5, 2480 MHz
 Test Date: 2013-08-09
 Note: upper bandedge

Index 52



Frequency 2.4835 GHz	Peak 55.6 dBµV/m	Peak Limit 74 dBµV/m	Peak Difference -18.4 dB	Peak Status Pass
Frequency 2.4835 GHz	RMS 38.49 dBµV/m	RMS Limit 54 dBµV/m	RMS Difference -15.51 dB	RMS Status Pass

Test Report No.: G0M-1307-2974-TFC247B-V01

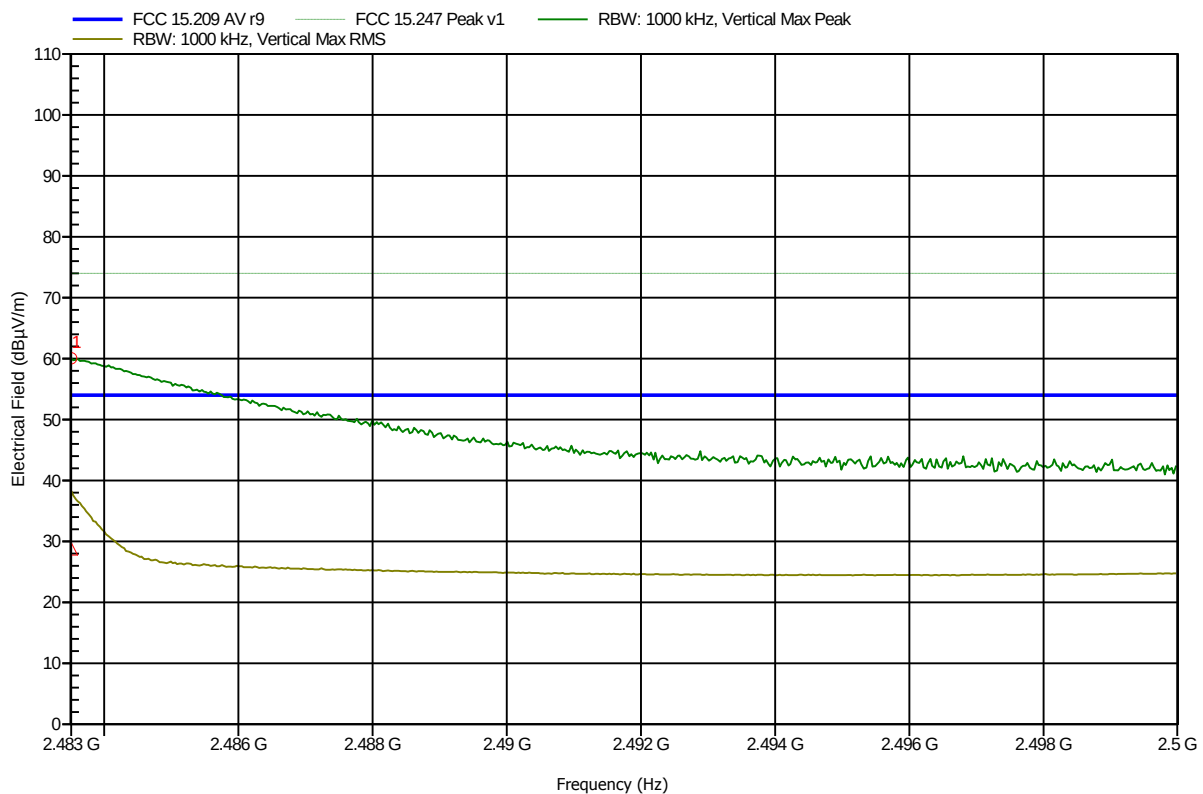
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; basic, DH5, 2480 MHz
 Test Date: 2013-08-09
 Note: upper bandedge

Index 54



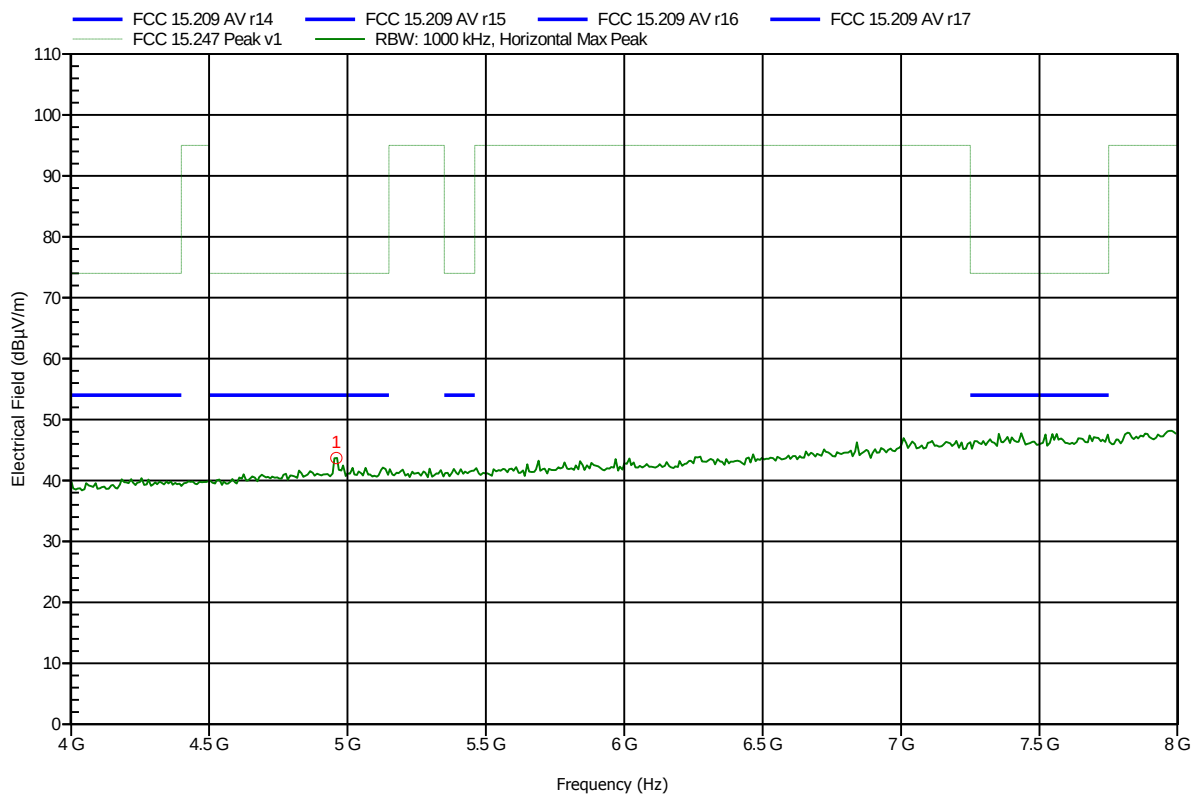
Frequency 2.4835 GHz	Peak 60.06 dBμV/m	Peak Limit 74 dBμV/m	Peak Difference -13.94 dB	Peak Status Pass
Frequency 2.4835 GHz	RMS 38.79 dBμV/m	RMS Limit 54 dBμV/m	RMS Difference -15.21 dB	RMS Status Pass

Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; basic, DH5, 2480 MHz
 Test Date: 2013-08-09
 Note:

Index 51



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.96 GHz	43.69 dBµV/m	74 dBµV/m	-30.31 dB	Pass

Test Report No.: G0M-1307-2974-TFC247B-V01

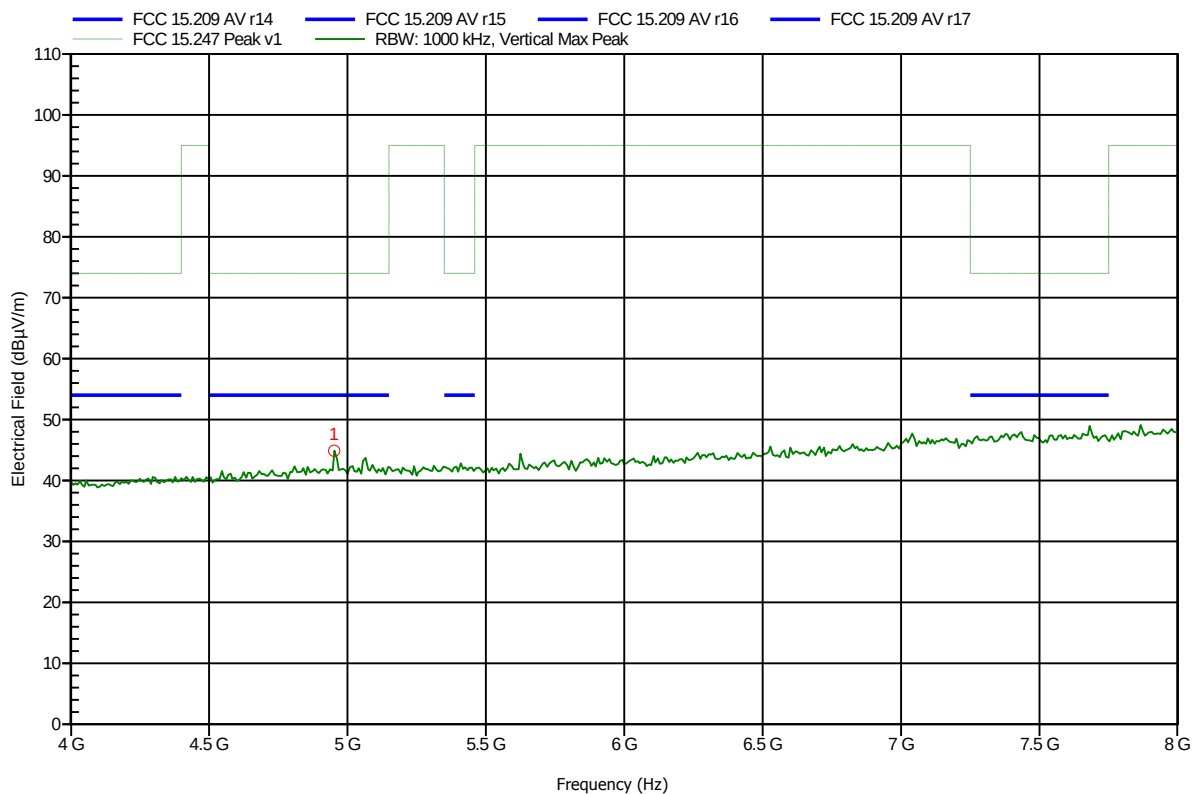
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; basic, DH5, 2480 MHz
 Test Date: 2013-08-09
 Note:

Index 55



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.952 GHz	44.88 dBµV/m	74 dBµV/m	-29.12 dB	Pass

Test Report No.: G0M-1307-2974-TFC247B-V01

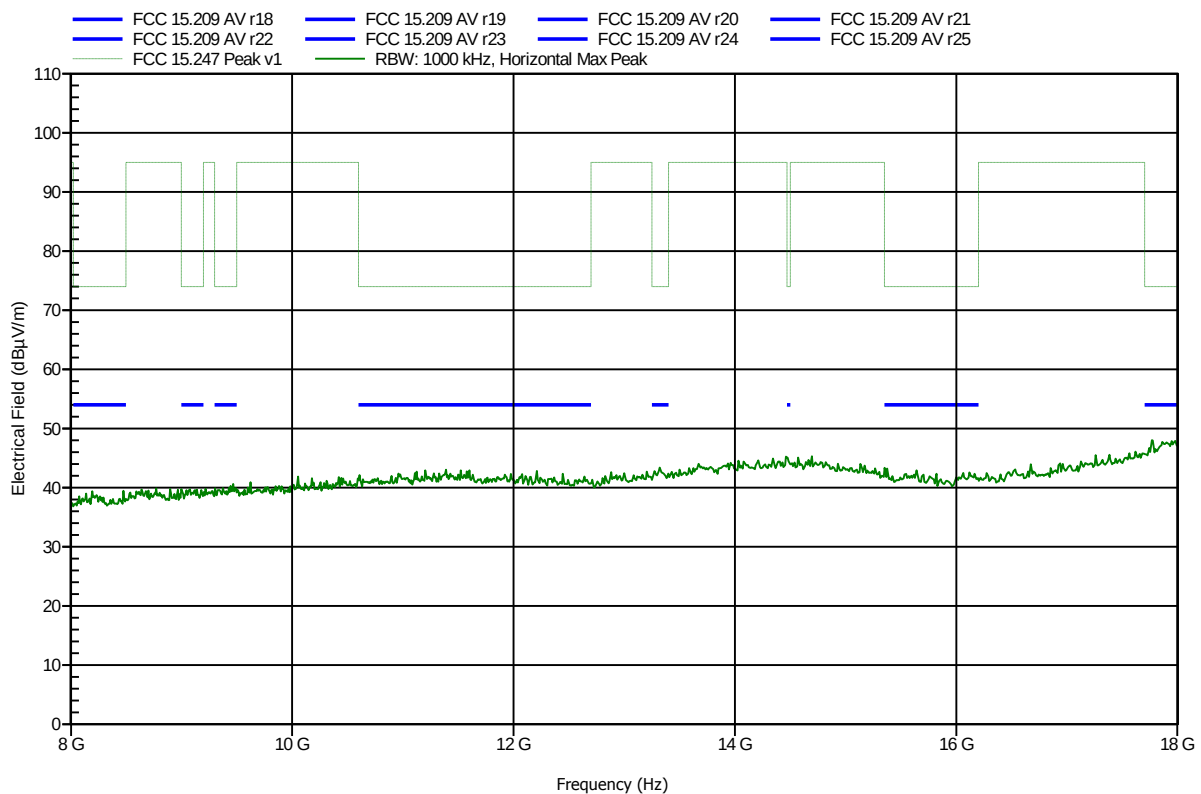
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 100 cm converted to 3m
 Mode: TX; basic, DH5, 2480 MHz
 Test Date: 2013-08-09
 Note:

Index 66



Test Report No.: G0M-1307-2974-TFC247B-V01

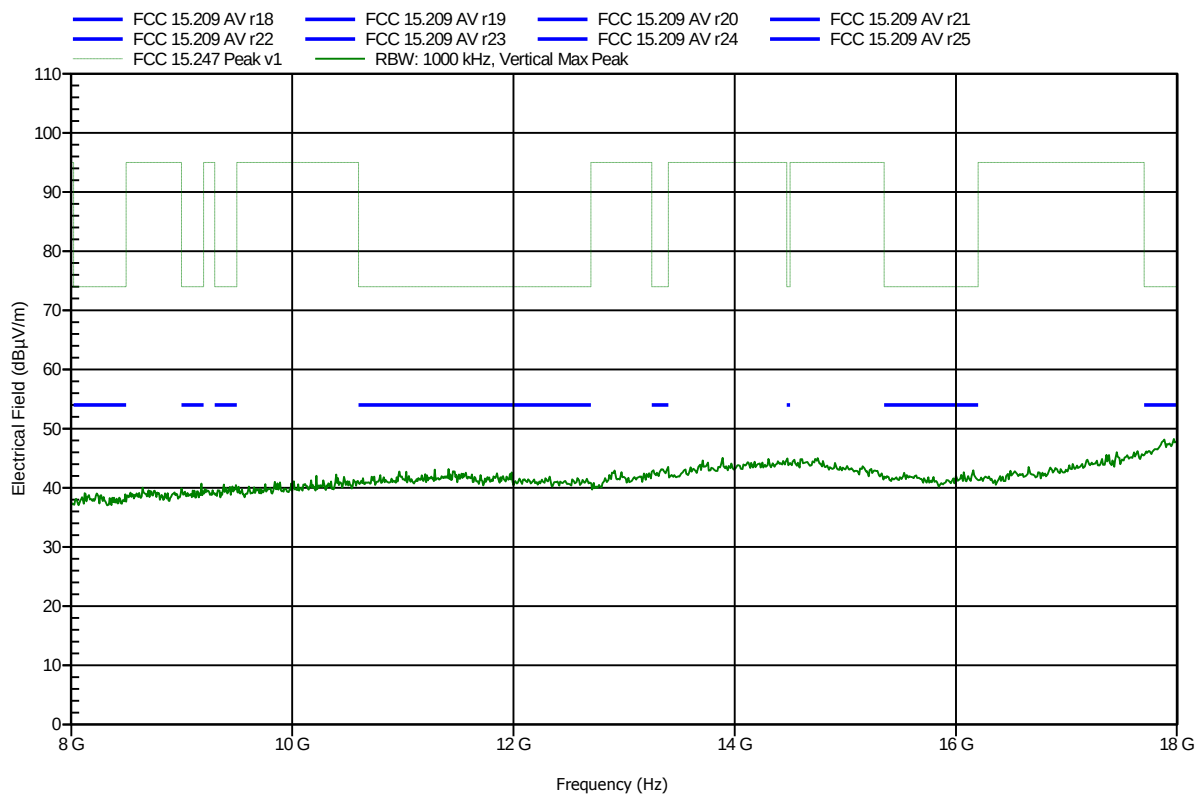
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 100 cm converted to 3m
 Mode: TX; basic, DH5, 2480 MHz
 Test Date: 2013-08-09
 Note:

Index 68



Test Report No.: G0M-1307-2974-TFC247B-V01

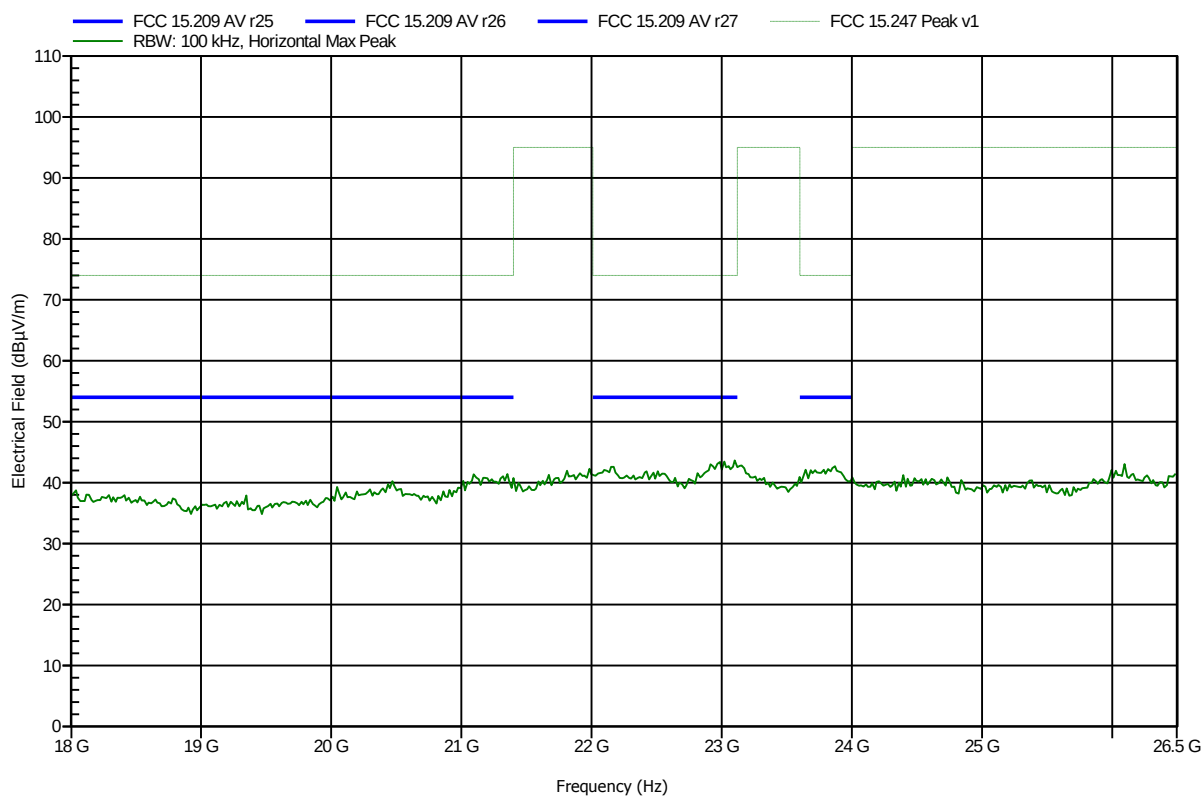
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 100 cm
 Mode: TX; basic, DH5, 2480 MHz
 Test Date: 2013-08-09
 Note:

Index 67



Test Report No.: G0M-1307-2974-TFC247B-V01

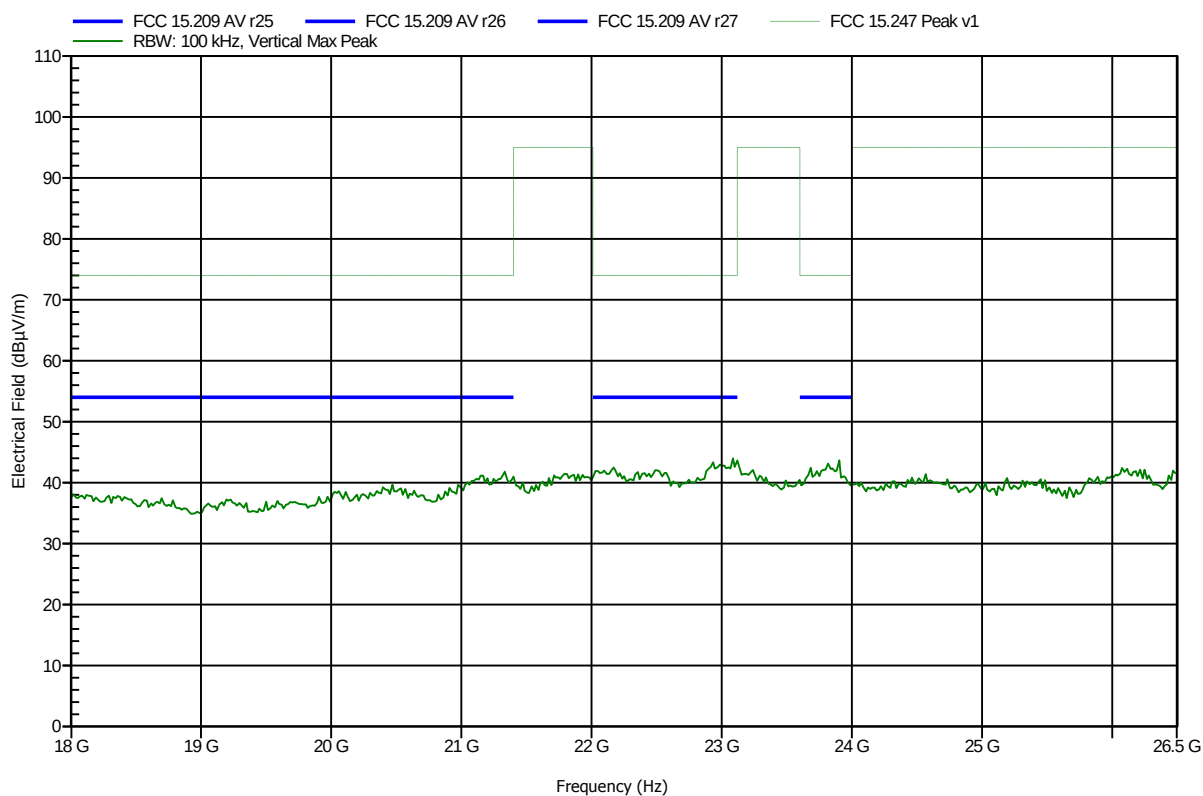
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.247

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 100 cm
 Mode: TX; basic, DH5, 2480 MHz
 Test Date: 2013-08-09
 Note:

Index 69



Test Report No.: G0M-1307-2974-TFC247B-V01

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

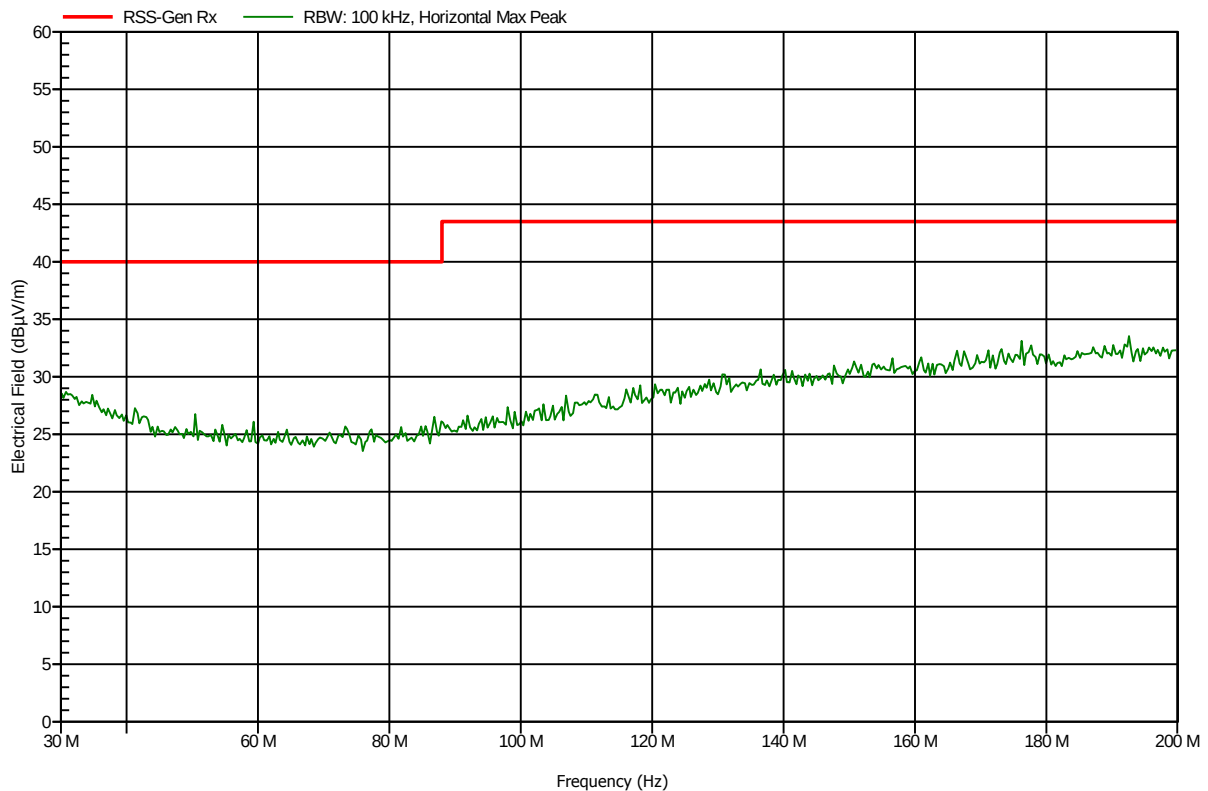
ANNEX B Receiver radiated spurious emissions

Spurious emissions according to RSS-GEN

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. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 13.2 V DC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	RX; scan mode
Test Date:	2013-08-09
Note:	

Index 77

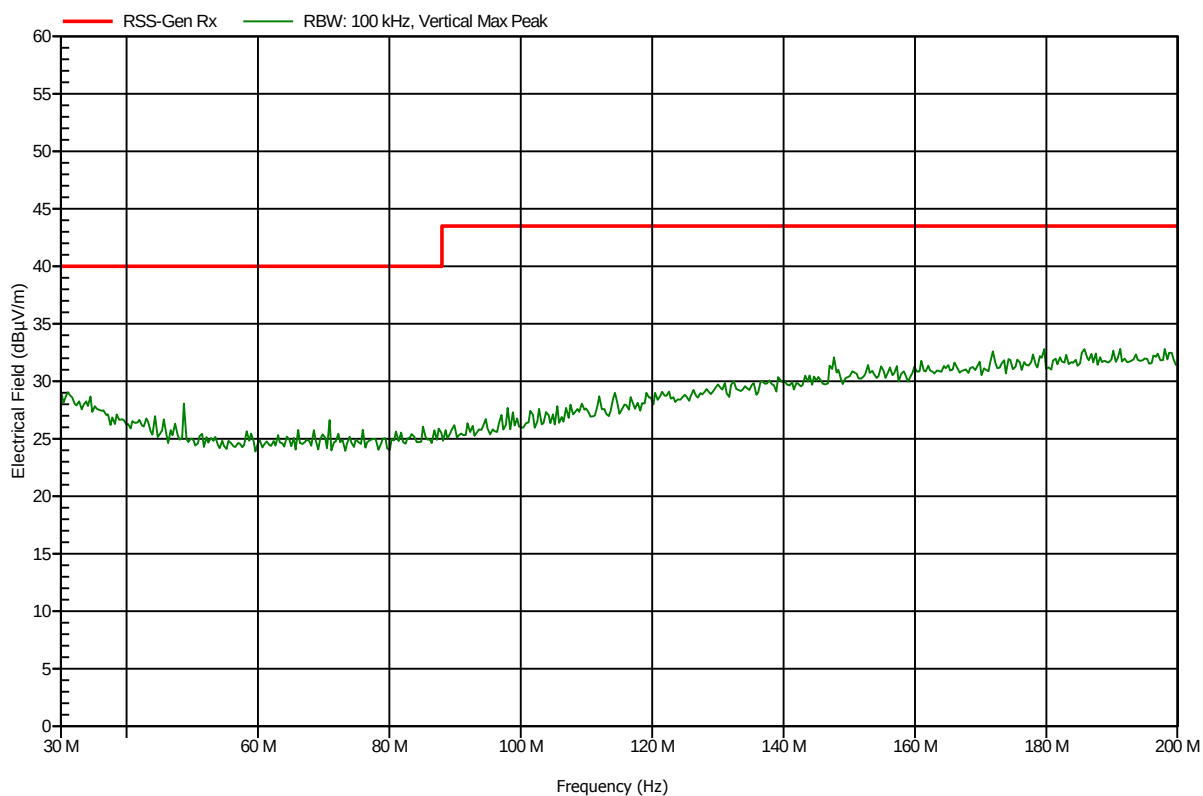


Spurious emissions according to RSS-GEN

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. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 13.2 V DC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	RX; scan mode
Test Date:	2013-08-09
Note:	

Index 78

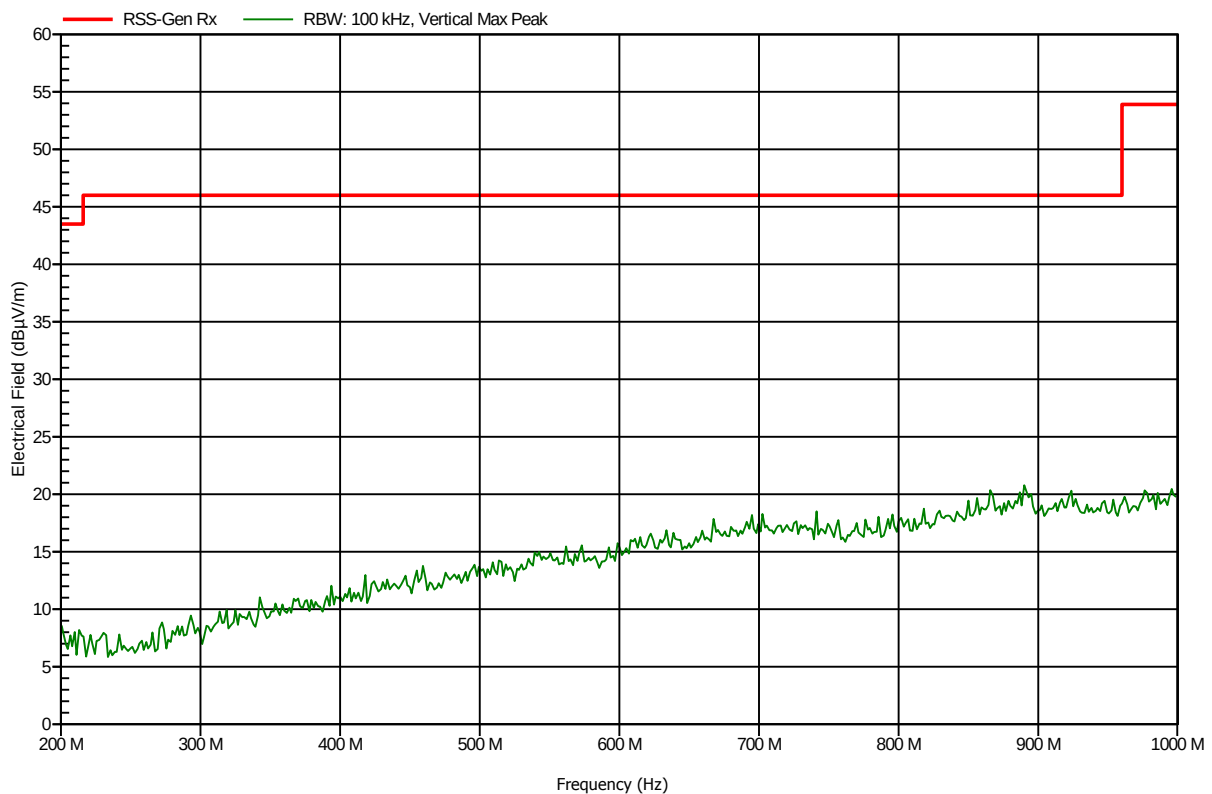


Spurious emissions according to RSS-GEN

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. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 13.2 V DC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	RX; scan mode
Test Date:	2013-08-09
Note:	

Index 75



Test Report No.: G0M-1307-2974-TFC247B-V01

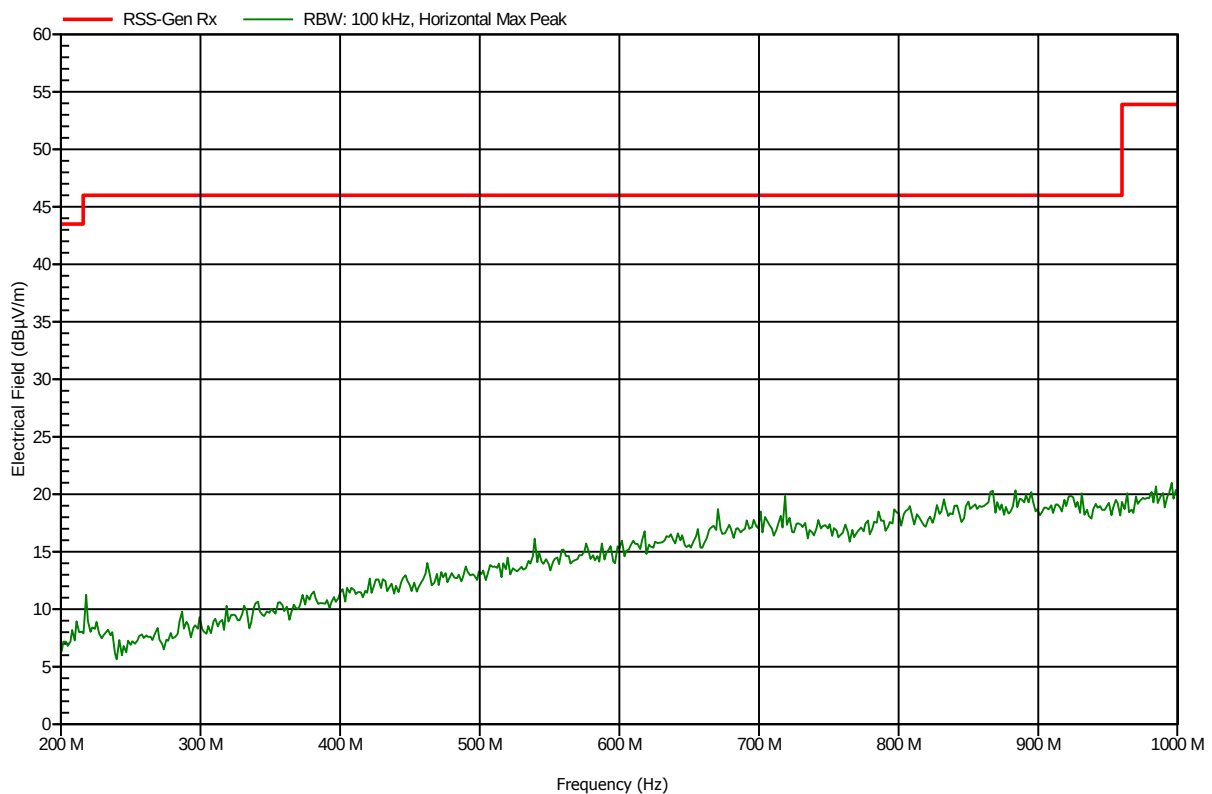
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to RSS-GEN

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. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 13.2 V DC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	RX; scan mode
Test Date:	2013-08-09
Note:	

Index 76

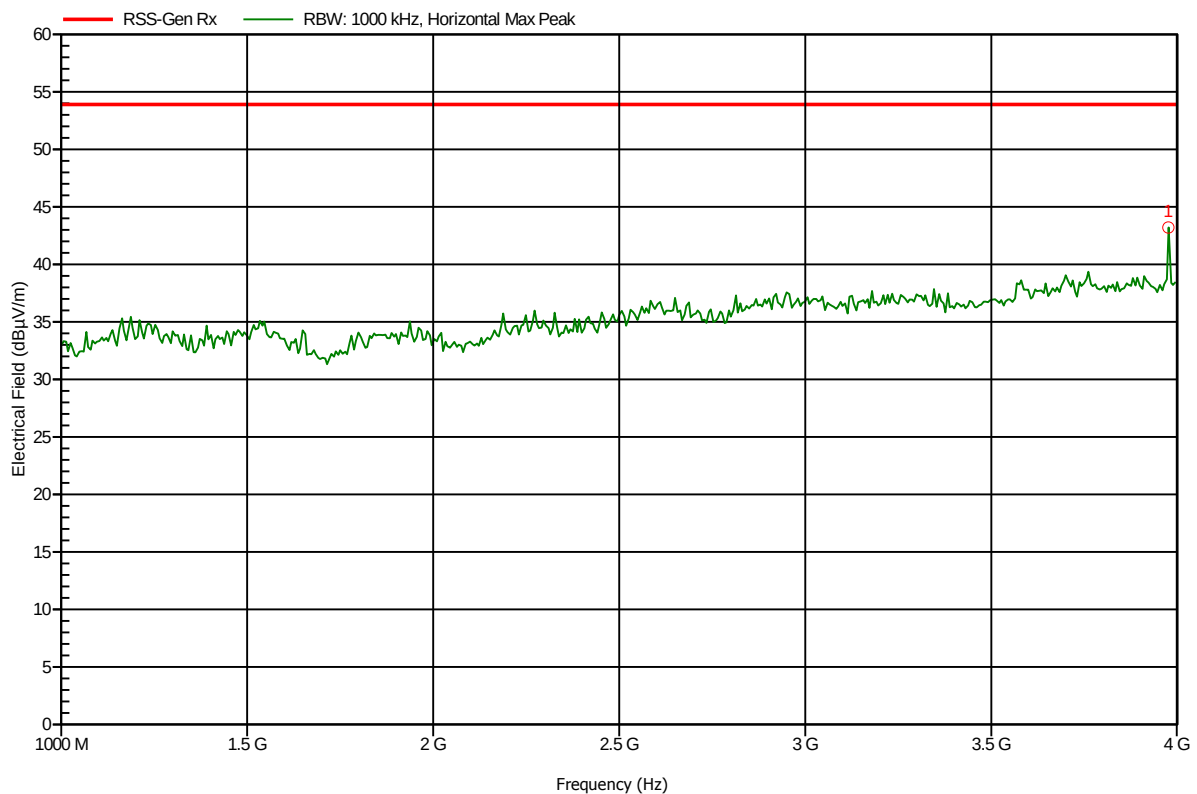


Spurious emissions according to RSS-GEN

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: RX; scan mode
 Test Date: 2013-08-09
 Note:

Index 70



Frequency	Peak	Peak Limit	Peak Difference	Status
3.976 GHz	43.21 dBµV/m	53.9 dBµV/m	-10.69 dB	Pass

Test Report No.: G0M-1307-2974-TFC247B-V01

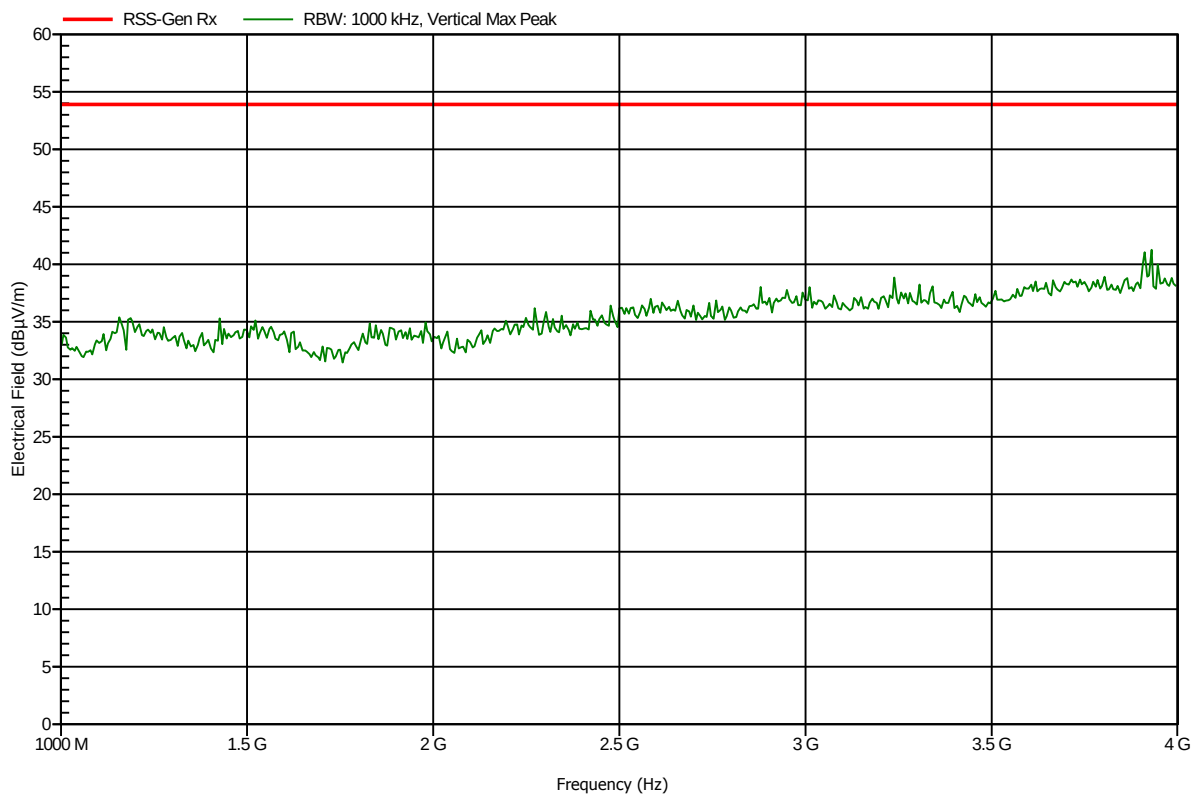
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to RSS-GEN

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. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 13.2 V DC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: RX; scan mode
 Test Date: 2013-08-09
 Note:

Index 72

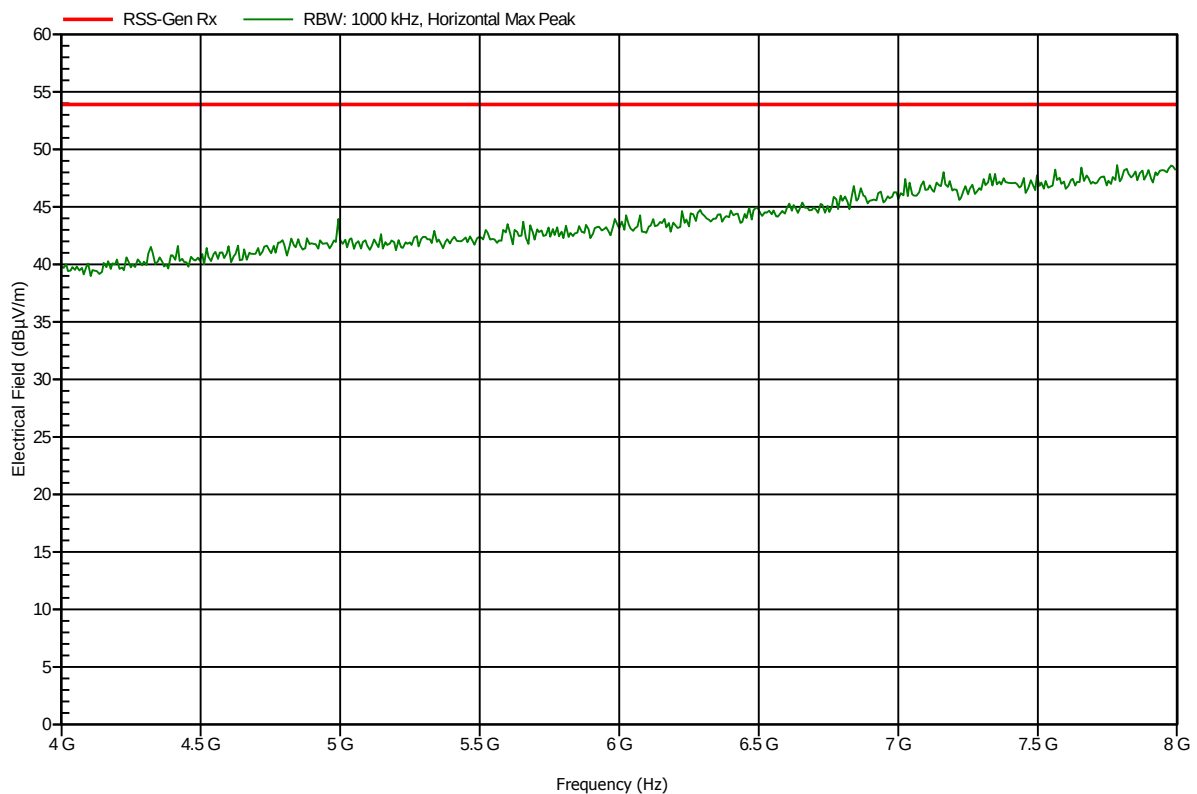


Spurious emissions according to RSS-GEN

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. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 13.2 V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	RX; scan mode
Test Date:	2013-08-09
Note:	

Index 71



Spurious emissions according to RSS-GEN

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. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 13.2 V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	RX; scan mode
Test Date:	2013-08-09
Note:	

Index 73

