

FCC TEST REPORT FCC 47 CFR Part 15C Industry Canada RSS-210 Frequency hopping systems operating within the 2400 – 2483.5MHz band											
Report Reference No. : G0M-1111-1529-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 The 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): <table border="0"> <tr> <td>Product description</td> <td>Telematic Device with GPRS/BT/GPS</td> </tr> <tr> <td>Model No.</td> <td>LINK 5</td> </tr> <tr> <td>Hardware version</td> <td>TomTom drs1_2a_pcb 37/2011</td> </tr> <tr> <td>Firmware / Software version</td> <td>10.02.855</td> </tr> <tr> <td></td> <td>FCC-ID: S4LLINK500</td> </tr> </table>		Product description	Telematic Device with GPRS/BT/GPS	Model No.	LINK 5	Hardware version	TomTom drs1_2a_pcb 37/2011	Firmware / Software version	10.02.855		FCC-ID: S4LLINK500
Product description	Telematic Device with GPRS/BT/GPS										
Model No.	LINK 5										
Hardware version	TomTom drs1_2a_pcb 37/2011										
Firmware / Software version	10.02.855										
	FCC-ID: S4LLINK500										
Test result : Passed											

Possible test case verdicts:

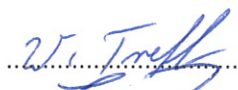
- neither assessed nor tested: N/N
- required by standard but not appl. to test object.....: N/A
- required by standard but not tested.....: N/T
- not required by standard for the test object: N/R
- test object does meet the requirement.....: P (Pass)
- test object does not meet the requirement.....: F (Fail)

Testing:

Date of receipt of test item: 2011-11-14

Date (s) of performance of tests: 2011-11-14 – 2011-11-30

Compiled by: Antje Bartusch

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

Approved by (+ signature): Jens Zimmermann 

Date of issue: 2012-01-24

Total number of pages: 94

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/BT/GPS	
Model	LINK 5	
Serial number	None	
Hardware version	TomTom drs1_2a_pcb 37/2011	
Software / Firmware version	10.02.855	
FCC-ID	S4LLINK500	
IC	N/A	
Equipment type	End product	
Radio type	Transceiver	
Radio technology	Bluetooth	
Operating frequency range	2402 - 2480MHz	
Assigned frequency band	2400 - 2483.5MHz	
Main test frequencies	F _{LOW}	2402MHz
	F _{MID}	2441MHz
	F _{HIGH}	2480MHz
Spreading	FHSS	
Modulations	GFSK, PI/4-DQPSK, 8-PSK	
Number of channels	79 hopping channels at all	
Channel spacing	1MHz	
Number of antennas	2	
Antenna	Type	integrated
	Model	ALA621C4
	Manufacturer	Amotech
	Gain	0dBi (manufacturer declaration)
Manufacturer	Quanta Computer Inc. No.188, Wen Hwa 2nd Road., Kuei Shan Hsiang 00333 Tao Yuan Shien Taiwan (ROC)	
Power supply	V _{NOM}	13.2VDC
	V _{MIN}	9VDC
	V _{Max}	30VDC
AC/DC-Adaptor	none	

1.4 Supporting Equipment Used During Testing:

Product Type*	Device	Manufacturer	Model No.	Comments
AE	Laptop	Samsung	X20	
*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 controlled by external laptop
	Radio conditions:	Mode = standalone transmit Spreading = Hopping stopped (single hopping channel) Modulation = GFSK Packet type = DH5 Data rate = 1Mbps Duty cycle = 47% Power level = Maximum
2-DH5-Sngl	General conditions:	EUT controlled by external laptop
	Radio conditions:	Mode = standalone transmit Spreading = Hopping stopped (single hopping channel) Modulation = $\pi/4$ -DQPSK Packet type = 2-DH5 Data rate = 2Mbps Duty cycle = 47% Power level = Maximum
3-DH5-Sngl	General conditions:	EUT controlled by external laptop
	Radio conditions:	Mode = standalone transmit Spreading = Hopping stopped (single hopping channel) Modulation = 8-DPSK Packet type = 3-DH5 Data rate = 3Mbps Duty cycle = 47% Power level = Maximum
DH5-Hop	General conditions:	EUT controlled by external laptop
	Radio conditions:	Mode = standalone transmit Spreading = Hopping Modulation = GFSK Packet type = DH5 Data rate = 1Mbps Duty cycle = 47% Power level = Maximum

2DH5-Hop	General conditions:	EUT controlled by external laptop
	Radio conditions:	Mode = standalone transmit Spreading = Hopping Modulation = $\pi/4$ -DQPSK Packet type = 2-DH5 Data rate = 2Mbps Duty cycle = 47% Power level = Maximum
3DH5-Hop	General conditions:	EUT controlled by external laptop
	Radio conditions:	Mode = standalone transmit Spreading = Hopping Modulation = 8-DPSK Packet type = 3-DH5 Data rate = 3Mbps Duty cycle = 47% Power level = Maximum

1.6 Test Equipment Used During Testing

20dB Bandwidth					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	ETS 0496	2011-12	2012-12

Number of hopping frequencies					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	ETS 0496	2011-12	2012-12

Time of occupancy					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	ETS 0496	2011-12	2012-12

Maximum peak conducted power					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	ETS 0496	2011-12	2012-12

Band edge compliance					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	ETS 0496	2011-12	2012-12

Conducted spurious emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	ETS 0496	2011-12	2012-12

Radiated spurious emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Semi-anechoic chamber	Frankonia	AC 5	ETS 0583		
Spectrum Analyzer	R&S	FSIQ26	ETS 0413	2011-04	2012-04
Biconical Antenna	R&S	HK 116	ETS 0012	2010-01	2013-01
LPD Antenna	R&S	HL 223	ETS 0295	2011-02	2014-02
LPD Antenna	R&S	HL 025	ETS 0512	2010-02	2013-02

AC powerline conducted emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
AMN	R&S	ESH2-Z5	ETS. 0288	no calibration required	no calibration required
AMN	R&S	ESH3-Z5	ETS 0040	2010-11	2012-11
EMI Test Receiver	R&S	ESCS 30	ETS 0474	2011-06	2012-06

Test Report No.: G0M-1111-1529-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 dBμV. Any external preamplifiers used are taken into account through internal analyzer settings.

A.F.:

This is the antenna factor for the receiving antenna. It is a conversion factor, which converts electric fields strengths to voltages, which can be measured directly on the spectrum analyzer. It is treated as a loss in dB. Cable losses have been included with the A.F. to simplify the calculations. The antenna factor is used in calculations as follows:

$$\text{Reading on Analyzer (dB}\mu\text{V)} + \text{A.F. (dB)} = \text{Net field strength (dB}\mu\text{V/m)}$$

Net:

This is the net field strength measurement (as shown above).

Limit:

This is the FCC Class B radiated emission limit (in units of dBμV/m). The FCC limits are given in units of μV/m. The following formula is used to convert the units of μV/m to dBμV/m:

$$\text{Limit (dB}\mu\text{V/m)} = 20 * \log (\mu\text{V/m})$$

Margin:

This is the margin of compliance below the FCC limit. The units are given in dB. A negative margin indicates the emission was below the limit. A positive margin indicates that the emission exceeds the limit.

Example only:

Reading	+	AF	=	Net Reading	:	Net reading - FCC limit	=	Margin
21.5 dBμV	+	26 dB	=	47.5 dBμV/m	:	47.5 dBμV/m - 57.0 dBμV/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/A	Informational only
FCC § 15.247(a)(1) IC RSS-210 § A8.1	20dB 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	N/A	
Remarks:				

3 Test Conditions and Results

3.1 Test Conditions and Results – 20dB Bandwidth

20dB 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 ≤ 125mW / 21dBm			
1.0 · Carrier spacing		125mW / 21dBm < Output power ≤ 1W / 30dBm			
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 -20dB to the left of the peak 6. Marker on envelope of spectrum is set to level of -20dB to the right of the peak 7. 20dB Bandwidth is determined by marker frequency separation					
Test results					
Channel	Frequency [MHz]	Mode	20dB Bandwidth [MHz]	Limit [MHz]	Result
F _{LOW}	2402	DH5-Sngl	0.931	1.5	PASS
F _{MID}	2441	DH5-Sngl	0.922	1.5	PASS
F _{HIGH}	2480	DH5-Sngl	0.931	1.5	PASS
F _{LOW}	2402	2-DH5-Sngl	1.296	1.5	PASS
F _{MID}	2441	2-DH5-Sngl	1.309	1.5	PASS
F _{HIGH}	2480	2-DH5-Sngl	1.309	1.5	PASS
F _{LOW}	2402	3-DH5-Sngl	1.274	1.5	PASS
F _{MID}	2441	3-DH5-Sngl	1.378	1.5	PASS
F _{HIGH}	2480	3-DH5-Sngl	1.374	1.5	PASS
Comments:					

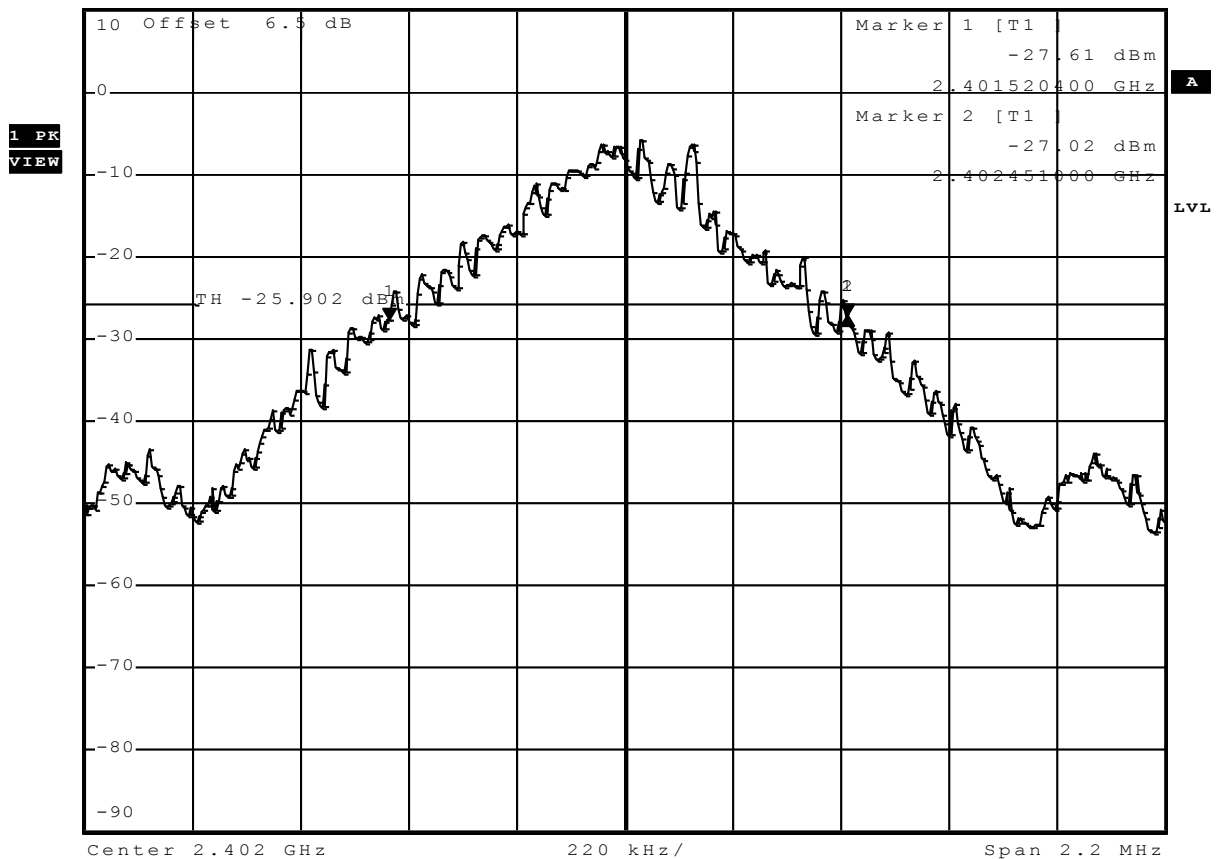
20dB Bandwidth – DH5-Sngl F_{Low}

FCC part 15.247
20 dB bandwidth

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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



★ RBW 10 kHz Delta 1 [T1]
★ VBW 10 kHz 0.59 dB
Ref 10 dBm Att 40 dB SWT 45 ms 930.600000000 kHz



Comment: 20 dB bandwidth: 930.6 KHz
Date: 30.NOV.2011 13:38:34

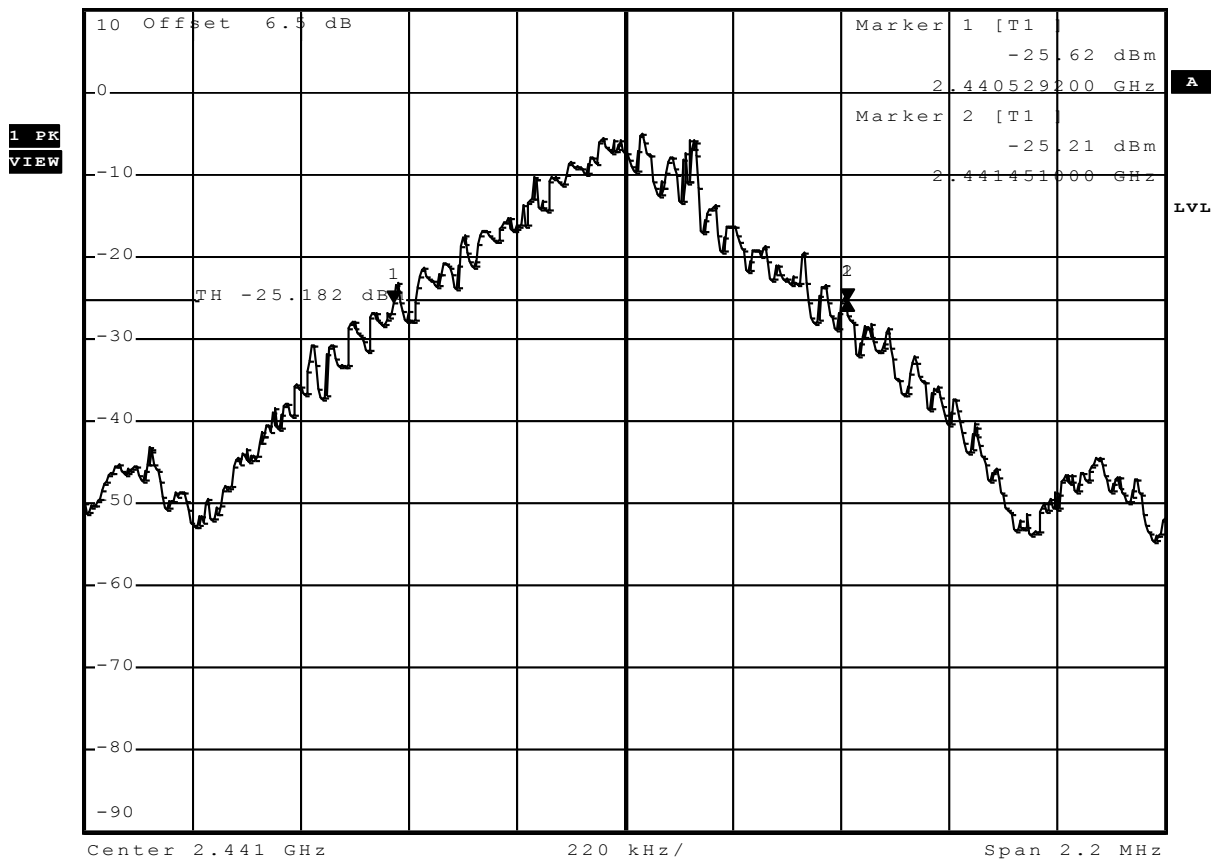
20dB Bandwidth – DH5-Sngl F_{MID}

FCC part 15.247
20 dB bandwidth

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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



*RBW 10 kHz Delta 1 [T1]
*VBW 10 kHz 0.41 dB
Ref 10 dBm Att 40 dB SWT 45 ms 921.800000000 kHz



Comment: 20 dB bandwidth: 921.8 KHz
Date: 30.NOV.2011 13:43:26

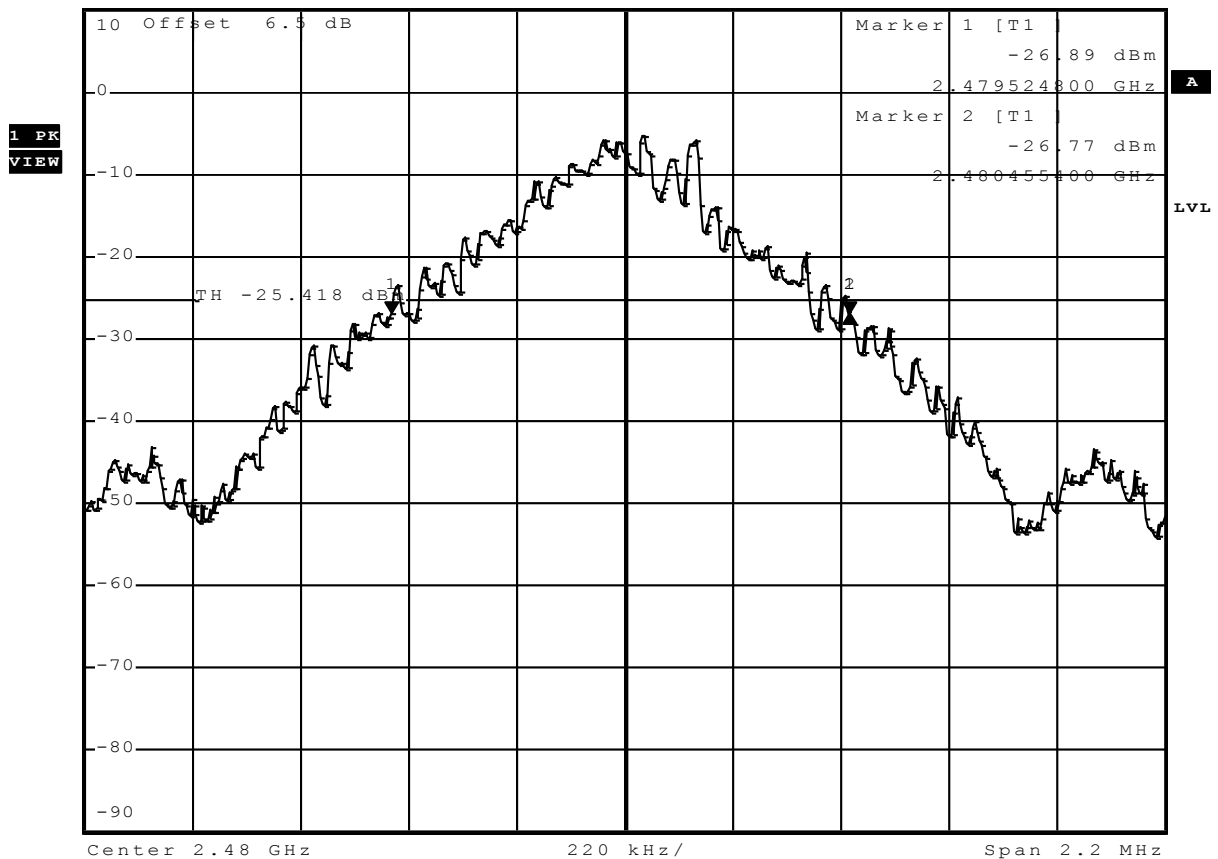
20dB Bandwidth – DH5-Sngl F_{HIGH}

FCC part 15.247
20 dB bandwidth

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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



★ RBW 10 kHz Delta 1 [T1]
★ VBW 10 kHz 0.12 dB
Ref 10 dBm Att 40 dB SWT 45 ms 930.600000000 kHz



Comment: 20 dB bandwidth: 930.6 KHz
Date: 30.NOV.2011 13:45:43

Test Report No.: G0M-1111-1529-TFC247B-V01

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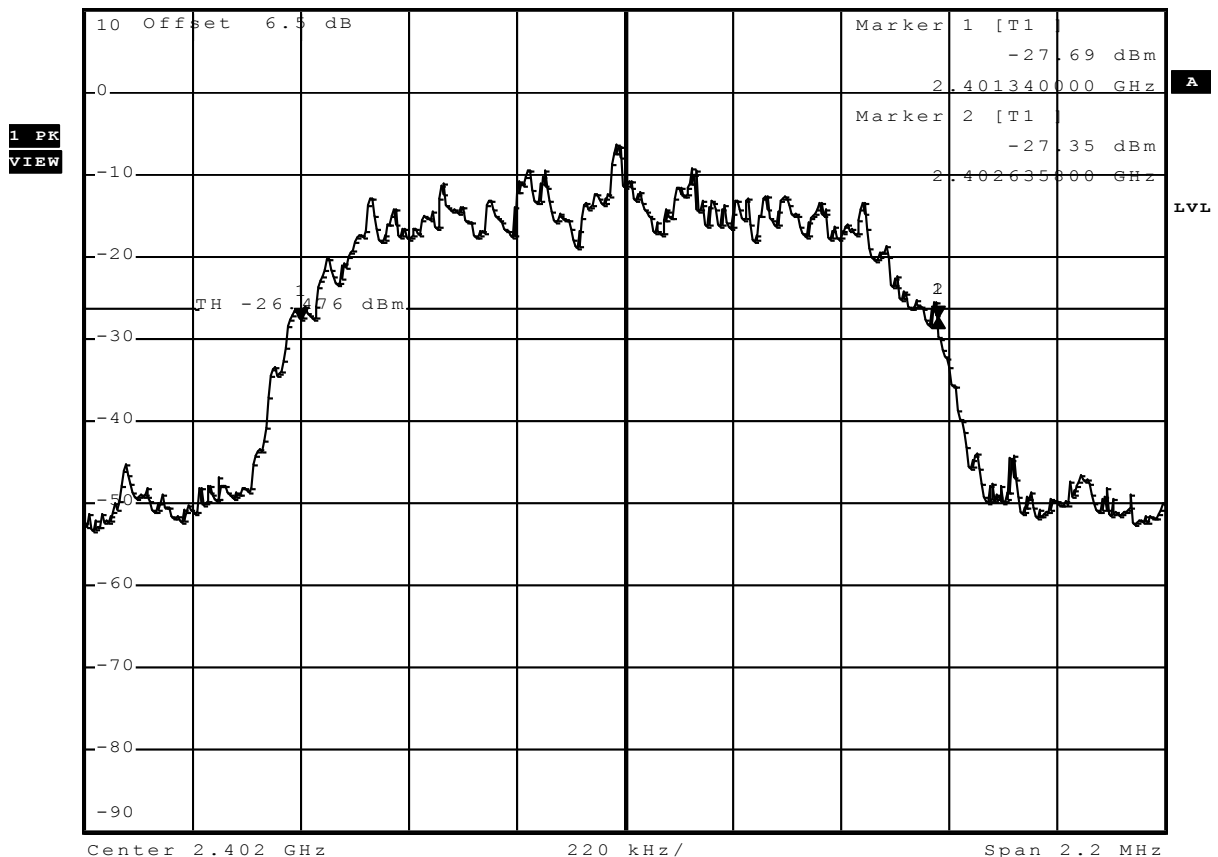
20dB Bandwidth – 2-DH5-Sngl F_{Low}

FCC part 15.247
20 dB bandwidth

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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 / Pi/4-DQPSK
Comment 3	pass



*RBW 10 kHz Delta 1 [T1]
*VBW 10 kHz 0.34 dB
Ref 10 dBm Att 40 dB SWT 45 ms 1.295800000 MHz



Comment: 20 dB bandwidth: 1295.8 KHz
Date: 30.NOV.2011 13:52:12

Test Report No.: G0M-1111-1529-TFC247B-V01

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

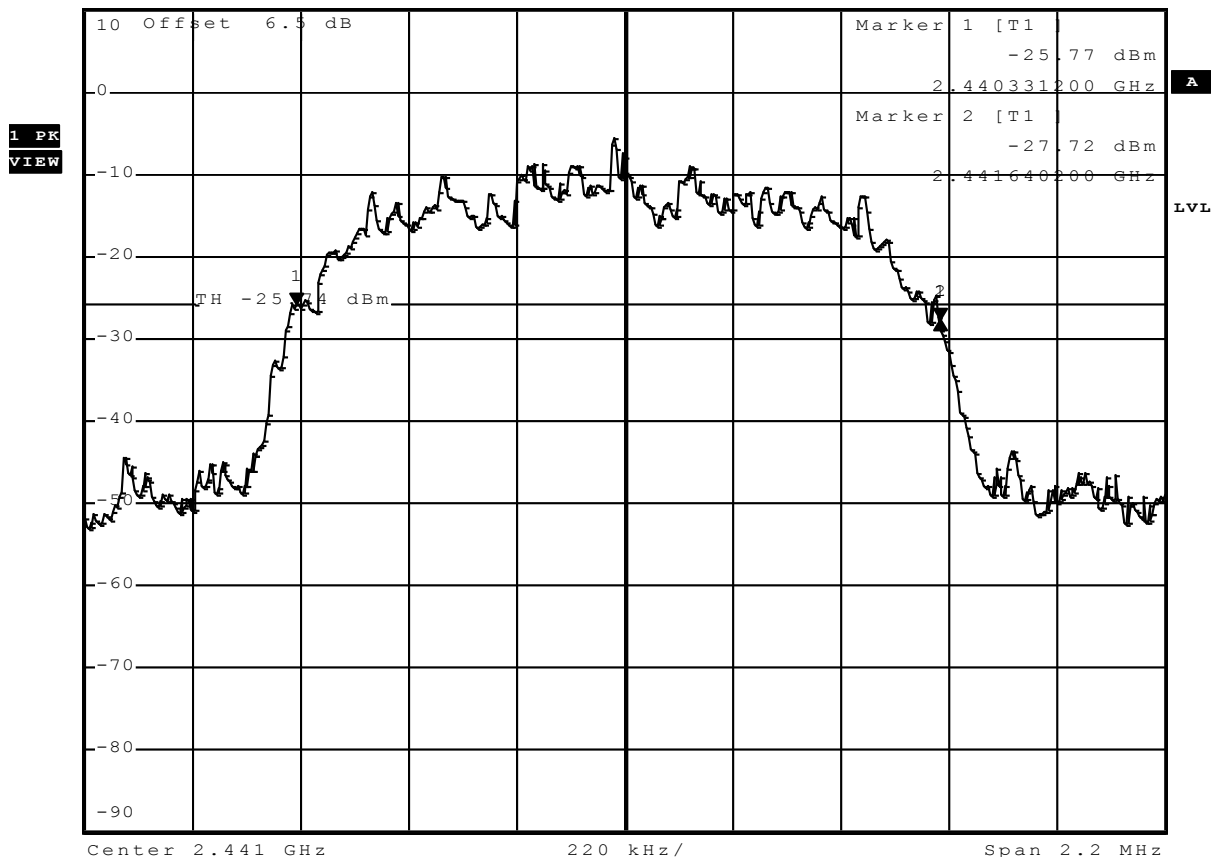
20dB Bandwidth – 2-DH5-Sngl F_{MID}

FCC part 15.247
20 dB bandwidth

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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 / Pi/4-DQPSK
Comment 3	pass



*RBW 10 kHz Delta 1 [T1]
*VBW 10 kHz -1.95 dB
Ref 10 dBm Att 40 dB SWT 45 ms 1.309000000 MHz



Comment: 20 dB bandwidth: 1309 KHz
Date: 30.NOV.2011 13:49:59

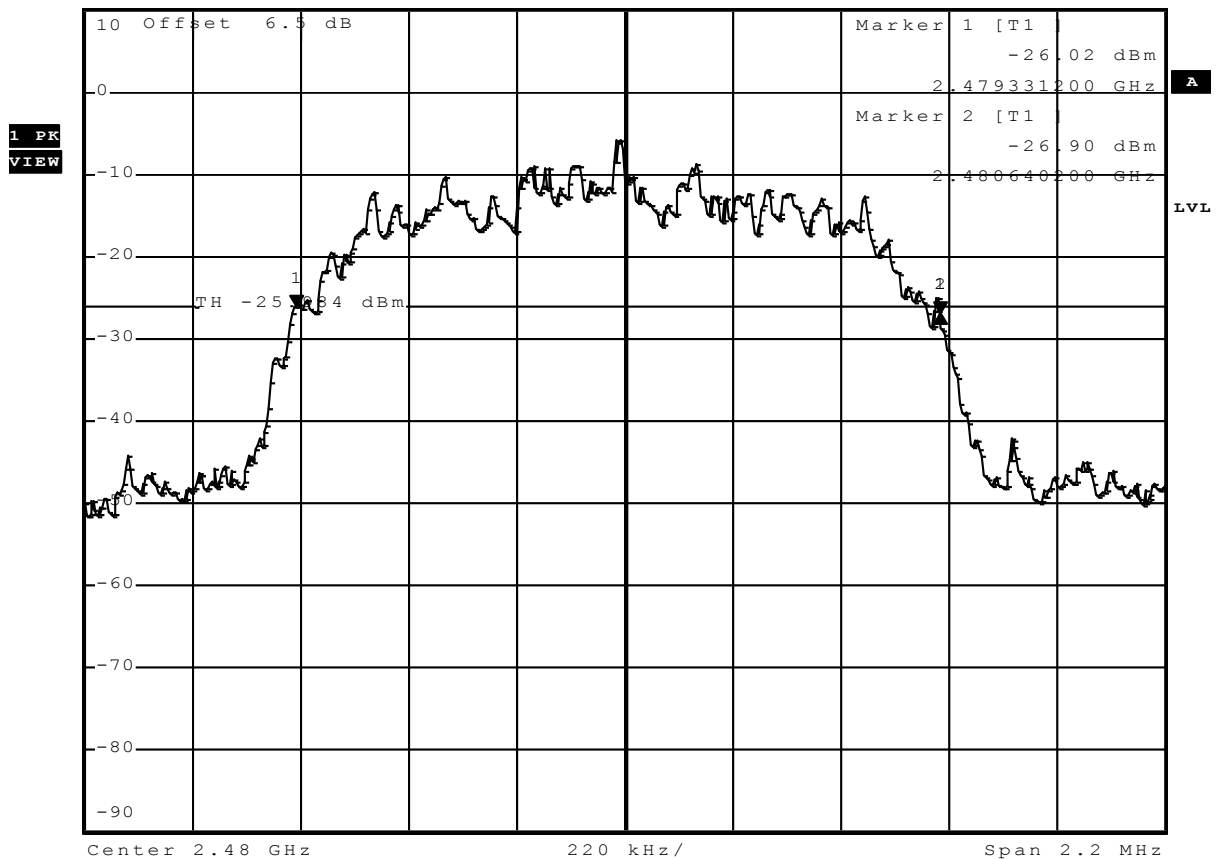
20dB Bandwidth – 2-DH5-Sngl F_{HIGH}

FCC part 15.247
20 dB bandwidth

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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 / Pi/4-DQPSK
Comment 3	pass



★RBW 10 kHz Delta 1 [T1]
★VBW 10 kHz -0.88 dB
Ref 10 dBm Att 40 dB SWT 45 ms 1.309000000 MHz



Comment: 20 dB bandwidth: 1309 KHz
Date: 30.NOV.2011 13:48:04

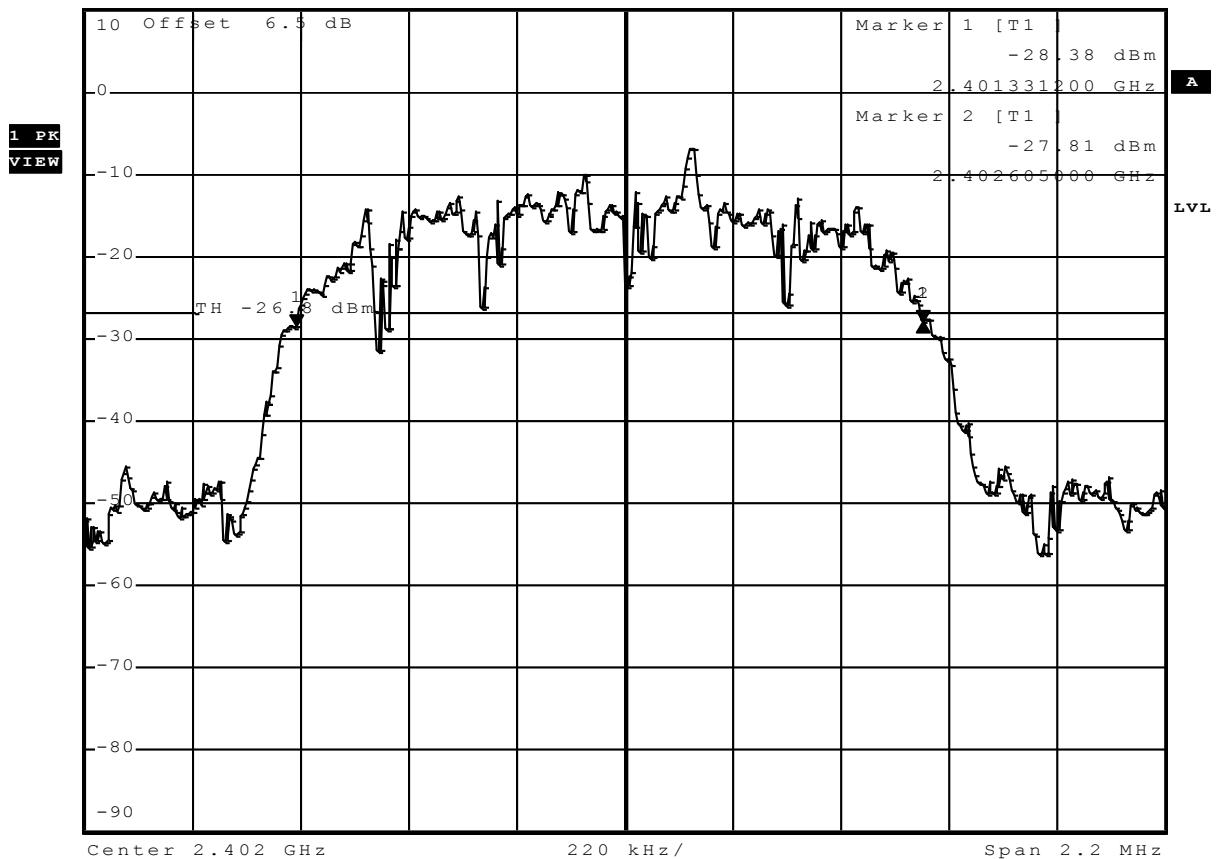
20dB Bandwidth – 3-DH5-Sngl F_{Low}

FCC part 15.247
20 dB bandwidth

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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 / 8DPSK
Comment 3	pass



*RBW 10 kHz Delta 1 [T1]
*VBW 10 kHz 0.57 dB
Ref 10 dBm Att 40 dB SWT 45 ms 1.273800000 MHz



Comment: 20 dB bandwidth: 1273.8 KHz
Date: 30.NOV.2011 13:54:57

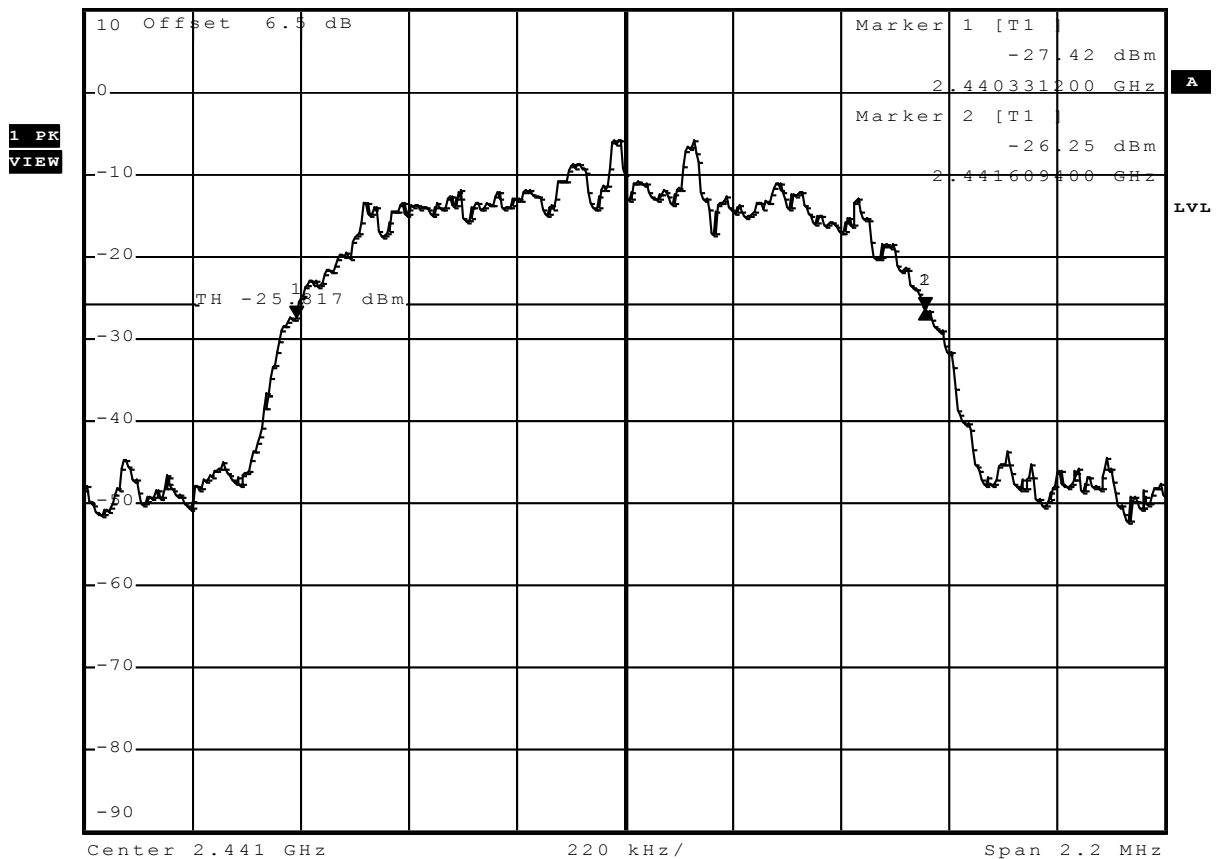
20dB Bandwidth – 3-DH5-Sngl F_{MID}

FCC part 15.247
20 dB bandwidth

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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 / 8DPSK
Comment 3	pass



★RBW 10 kHz Delta 1 [T1]
★VBW 10 kHz 1.17 dB
Ref 10 dBm Att 40 dB SWT 45 ms 1.278200000 MHz



Comment: 20 dB bandwidth: 1278.2 KHz
Date: 30.NOV.2011 14:01:16

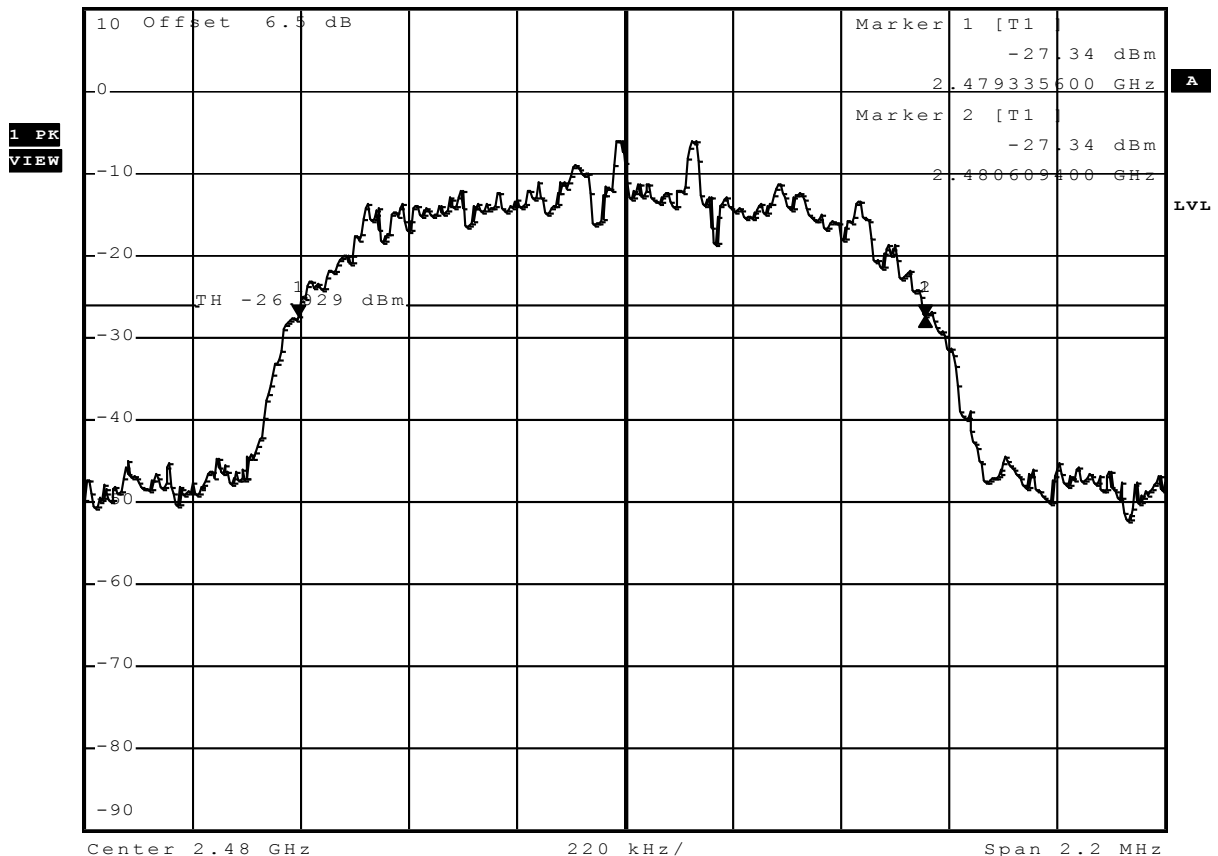
20dB Bandwidth – 3-DH5-Sngl F_{HIGH}

FCC part 15.247
20 dB bandwidth

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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 / 8DPSK
Comment 3	pass



*RBW 10 kHz Delta 1 [T1]
*VBW 10 kHz 0.00 dB
Ref 10 dBm Att 40 dB SWT 45 ms 1.273800000 MHz



Comment: 20 dB bandwidth: 1273.8 KHz
Date: 30.NOV.2011 14:09:24

3.2 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 ≤ 125mW / 21dBm	
Number of hopping channels ≥ 75	125mW / 21dBm < Output power ≤ 1W / 30dBm	
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/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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.: 0-13
Comment 3	pass



* RBW 300 kHz

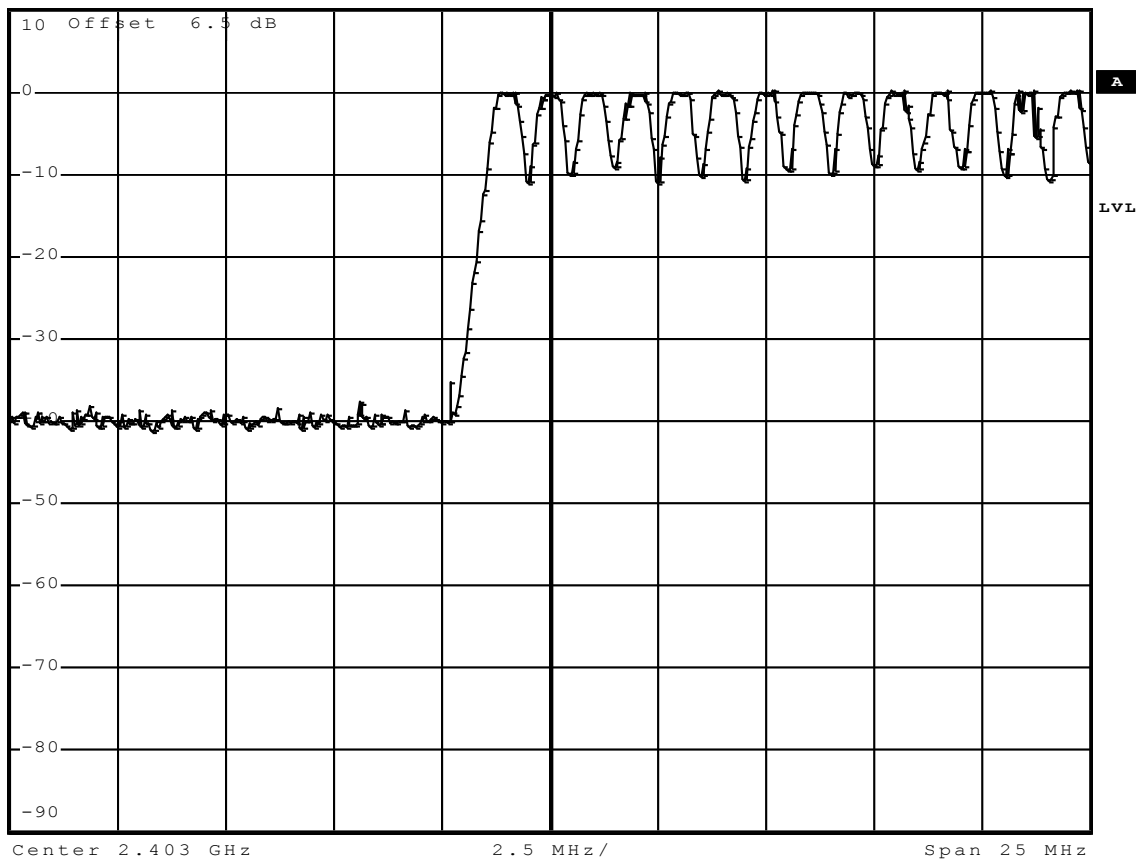
* VBW 300 kHz

Ref 10 dBm

Att 40 dB

SWT 2.5 ms

1 PR
VIEW



Comment: Number of hopping frequencies

Date: 30.NOV.2011 15:13:39

Number of hopping frequencies - Range B

FCC part 15.247

Number of hopping frequencies

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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.: 14-38
Comment 3	pass



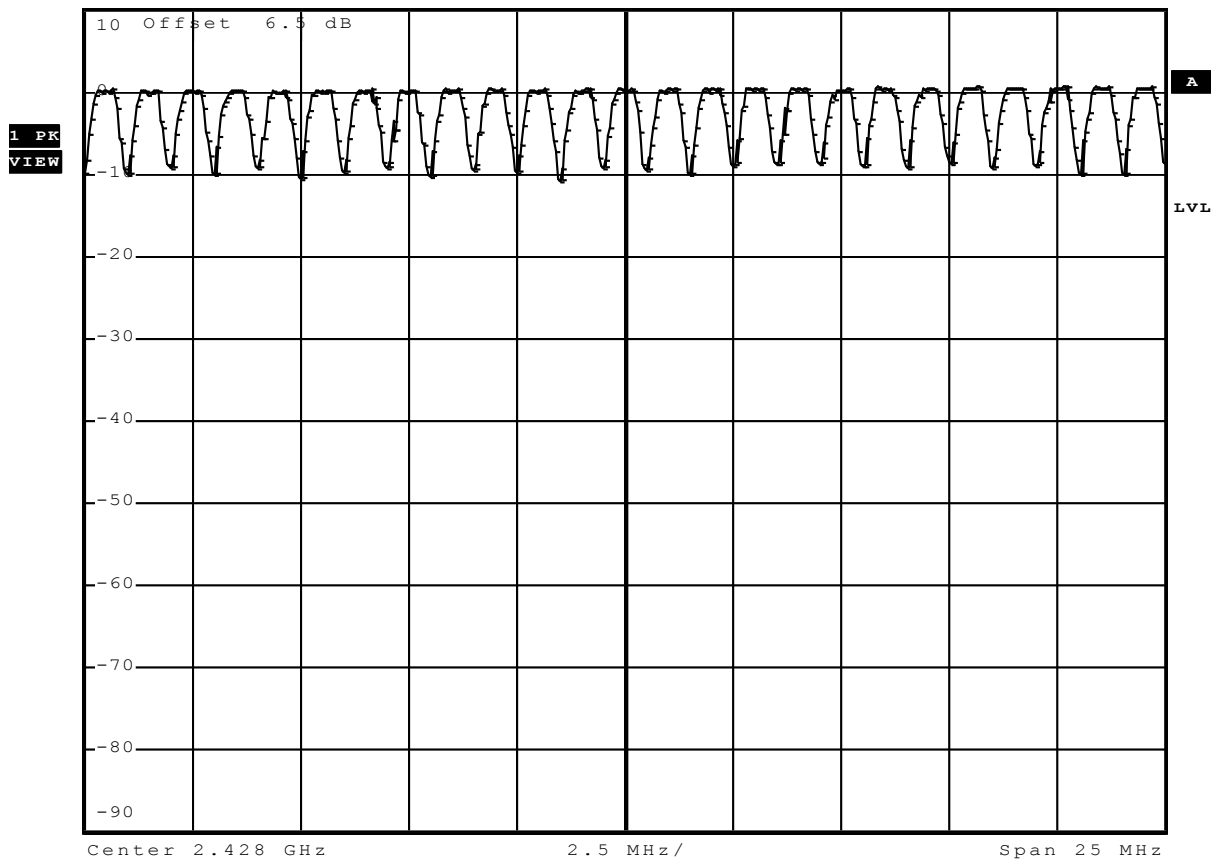
* RBW 300 kHz

* VBW 300 kHz

Ref 10 dBm

Att 40 dB

SWT 2.5 ms



Comment: Number of hopping frequencies

Date: 30.NOV.2011 15:15:14

Number of hopping frequencies - Range C
FCC part 15.247
Number of hopping frequencies

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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.:39-63
Comment 3	pass



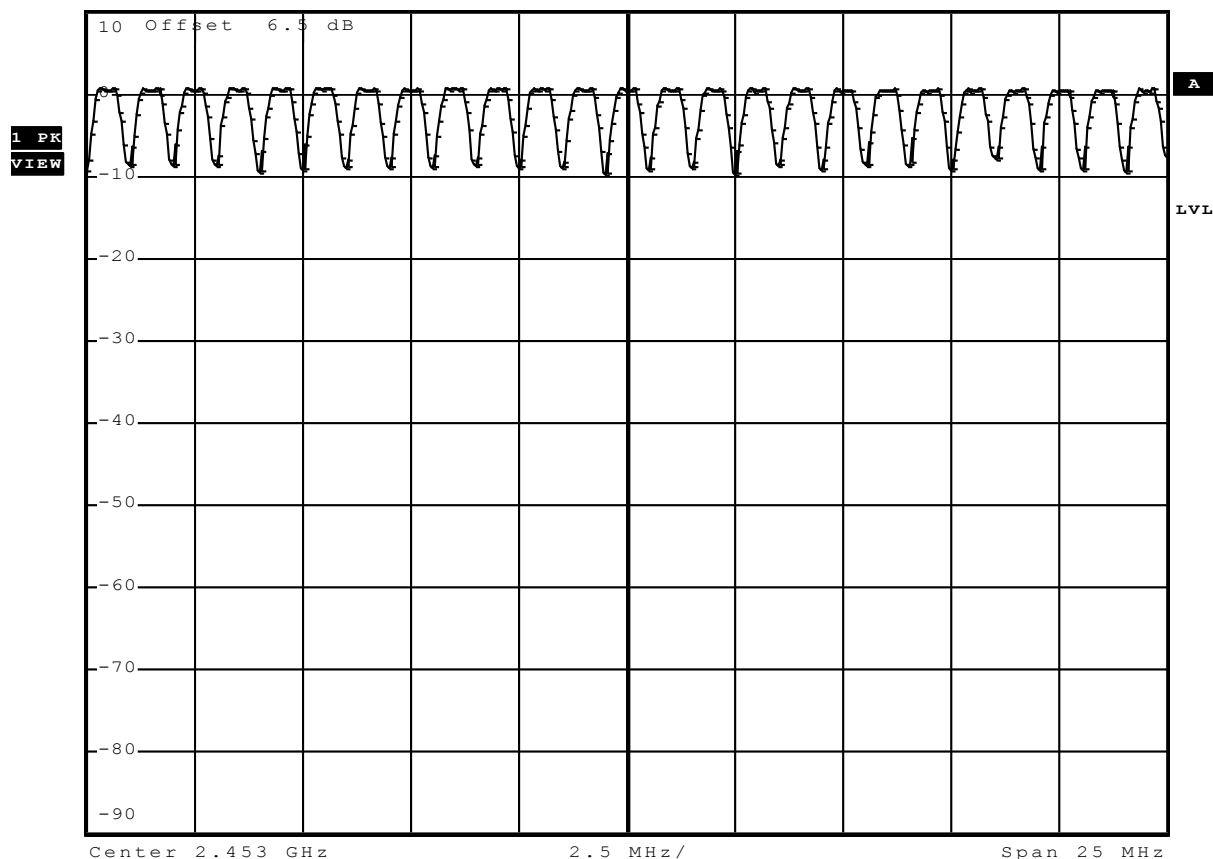
* RBW 300 kHz

* VBW 300 kHz

Ref 10 dBm

Att 40 dB

SWT 2.5 ms



Comment: Number of hopping frequencies

Date: 30.NOV.2011 15:19:08

Number of hopping frequencies - Range D

FCC part 15.247

Number of hopping frequencies

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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.: 64-78
Comment 3	pass



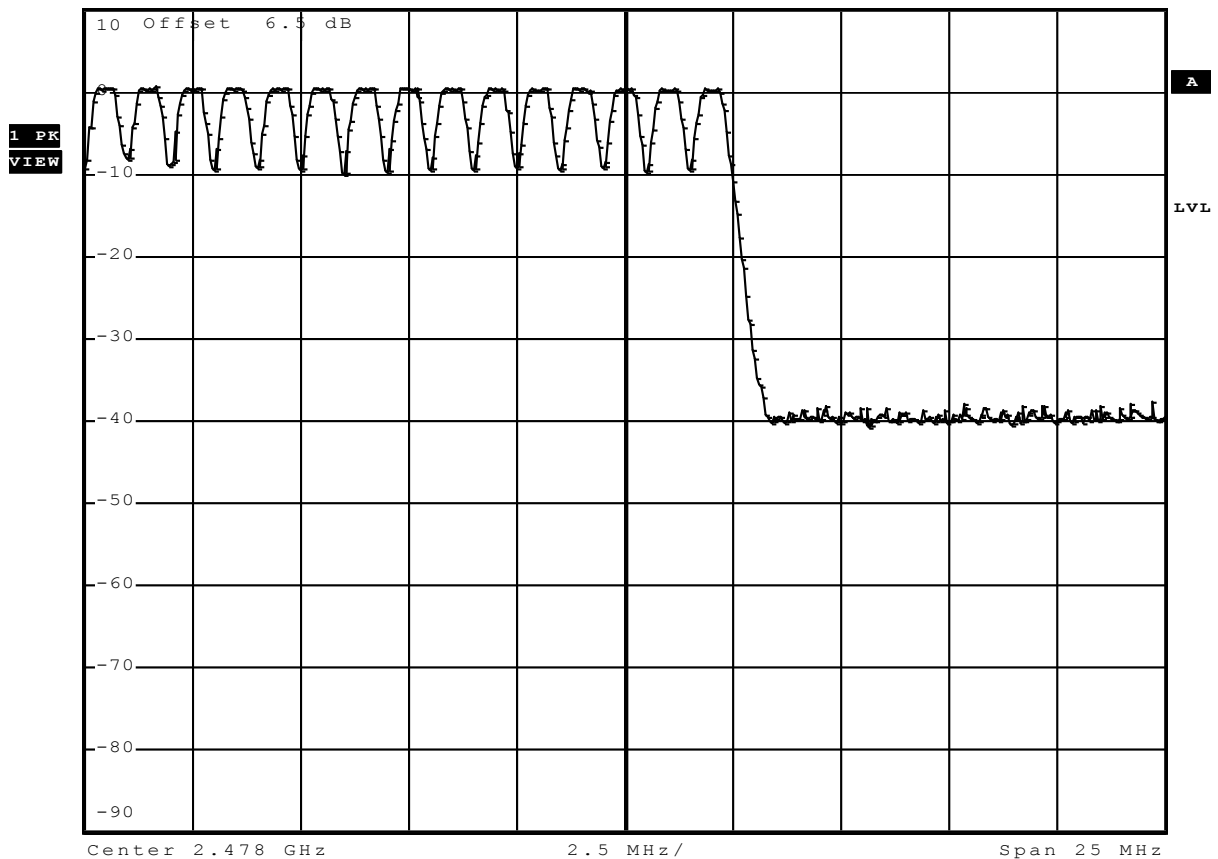
* RBW 300 kHz

* VBW 300 kHz

Ref 10 dBm

Att 40 dB

SWT 2.5 ms



Comment: Number of hopping frequencies

Date: 30.NOV.2011 15:20:59

3.3 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 & 2442MHz	
EUT test mode	DH5-Hop	
Limits		
Limit	Condition	
≥ 25kHz or ⅔ of 20dB bandwidth	Output power ≤ 125mW / 21dBm	
≥ 25kHz or 20dB bandwidth	125mW / 21dBm < Output power ≤ 1W / 30dBm	
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	≥ 314	PASS
Comments:		

Frequency hopping channel separation

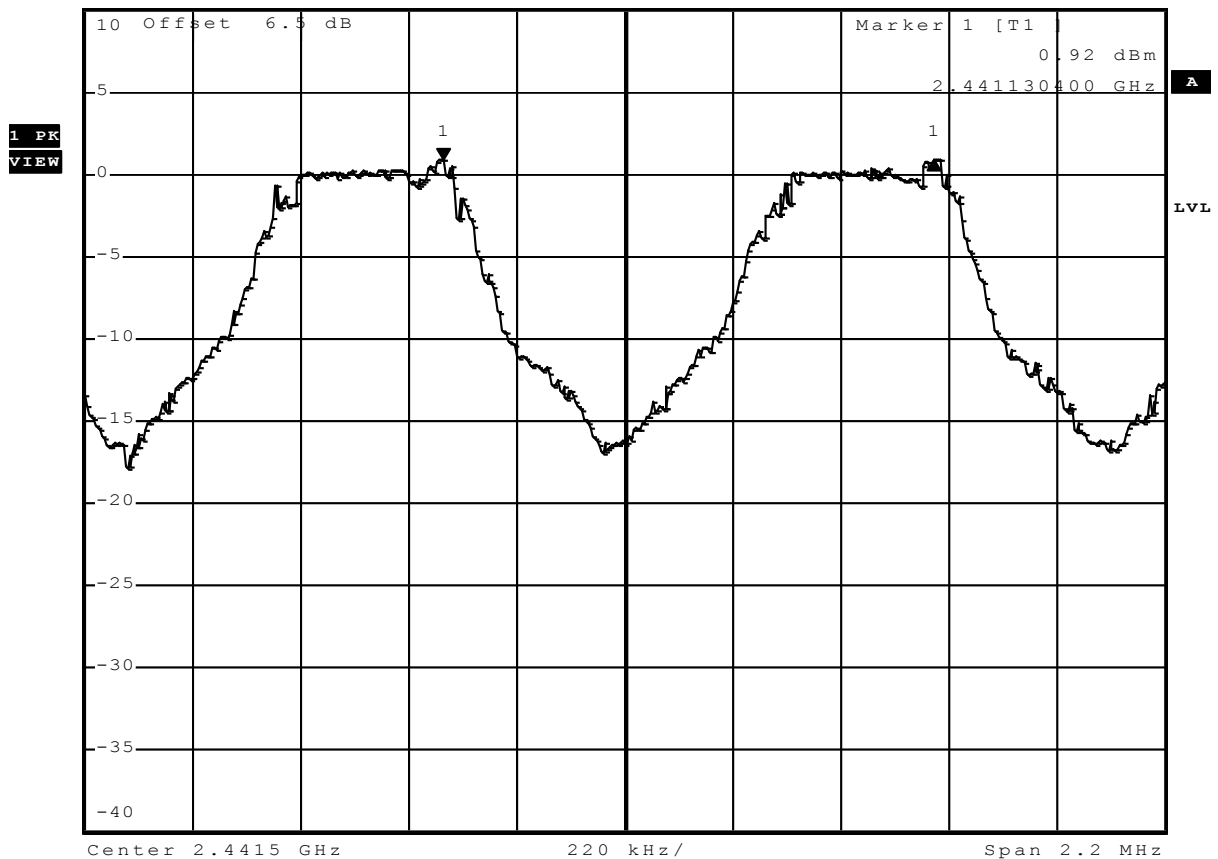
FCC part 15.247

Carrier frequency separation

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -0.08 dB
 Ref 10 dBm Att 40 dB SWT 2.5 ms 1.000000000 MHz



Comment: Limit: > two-thirds of the 20 dB bandwidth ; Result: Pass
 Date: 30.NOV.2011 15:11:28

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

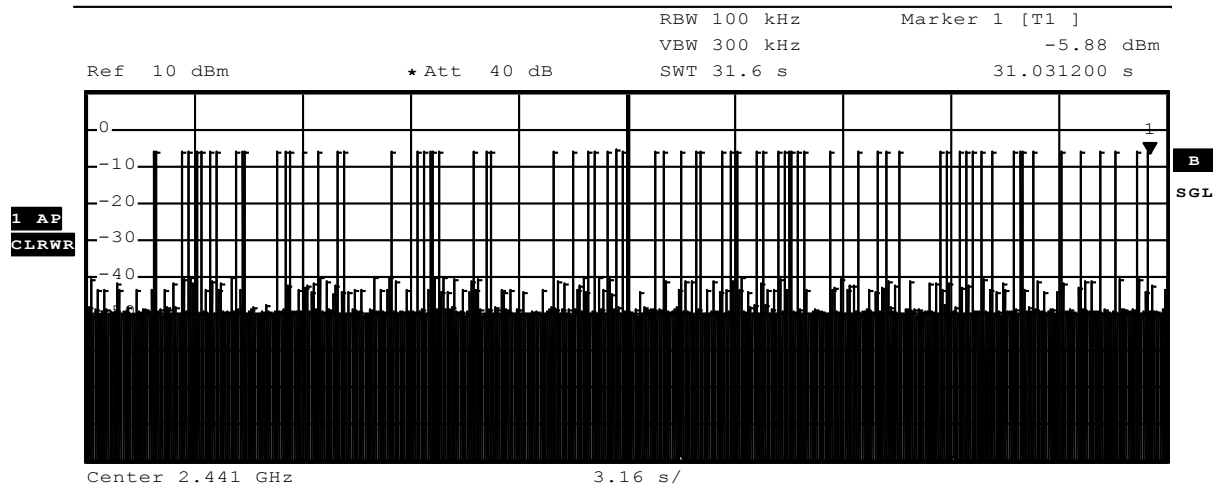
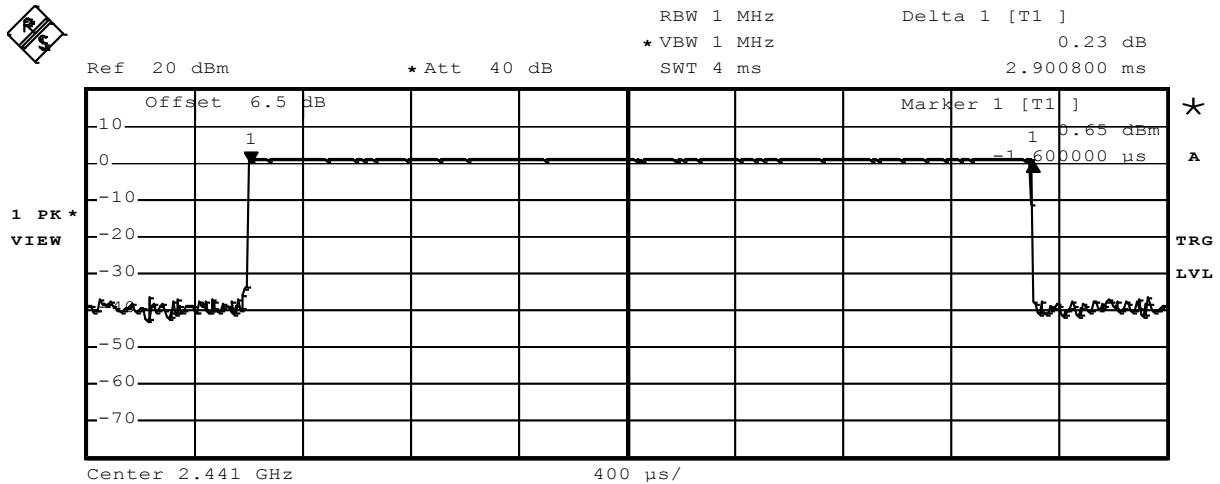
Time of occupancy (Dwell time) acc. FCC 15.247 / IC RSS-210				Verdict: PASS	
EUT requirement rule parts and clause		Reference			
		FCC 15.247(a)(1)(iii) / IC RSS-210 A8.1			
Test according to measurement reference		Reference Method			
		FCC Public Notice DA 00-705			
Test frequency range		Tested frequencies			
		2441MHz			
EUT test mode		DH5-Hop			
Limits					
Limit					
Time of occupancy ≤ 0.4s within 0.4s · 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	67	0.0029	0.1943	≤ 0.4	PASS
Comments:					

Time of occupancy

FCC part 15.247

Time of occupancy (dwell time)

EUT Telematic Device with GPRS/BT/GPS
Model LINK 5
Approval Holder TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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 67 events * 2.9 ms, @31.6s result: 194.3 ms



Comment: Burst length=2.9008 ms
Date: 1.DEC.2011 09:09:32

3.5 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	
	$F_{\text{LOW}} / F_{\text{MID}} / F_{\text{HIGH}}$	
Measurement mode	Peak	
Maximum antenna gain	0dBi $\Rightarrow$ Limit correction = 0dB	
Limits		
Limit	Condition	
1W (30dBm)	Number of hopping channels ≥ 75	
0.125W (21dBm)	$75 > \text{Number of hopping channels} \geq 15$	
The conducted output power limit specified above is based on the use of antennas with directional gains that do not exceed 6dBi. If transmitting antennas of directional gain greater than 6dBi 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 6dBi.		
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 20dB bandwidth and detector to peak and max hold 4. Resolution bandwidth is set to 3MHz 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	13.2VDC	DH5-Sngl	0.2	0.001	30	-29.80	PASS
F _{LOW}	2402	9VDC	DH5-Sngl	0.2	0.001	30	-29.80	PASS
F _{LOW}	2402	30VDC	DH5-Sngl	0.2	0.001	30	-29.80	PASS
F _{MID}	2441	13.2VDC	DH5-Sngl	1.0	0.001	30	-29.00	PASS
F _{MID}	2441	9VDC	DH5-Sngl	1.0	0.001	30	-29.00	PASS
F _{MID}	2441	30VDC	DH5-Sngl	1.0	0.001	30	-29.00	PASS
F _{HIGH}	2480	13.2VDC	DH5-Sngl	0.8	0.001	30	-29.20	PASS
F _{HIGH}	2480	9VDC	DH5-Sngl	0.8	0.001	30	-29.20	PASS
F _{HIGH}	2480	30VDC	DH5-Sngl	0.8	0.001	30	-29.20	PASS
F _{LOW}	2402	13.2VDC	2-DH5-Sngl	2.4	0.002	30	-27.60	PASS
F _{LOW}	2402	9VDC	2-DH5-Sngl	2.4	0.002	30	-27.60	PASS
F _{LOW}	2402	30VDC	2-DH5-Sngl	2.4	0.002	30	-27.60	PASS
F _{MID}	2441	13.2VDC	2-DH5-Sngl	3.1	0.002	30	-26.90	PASS
F _{MID}	2441	9VDC	2-DH5-Sngl	3.1	0.002	30	-26.90	PASS
F _{MID}	2441	30VDC	2-DH5-Sngl	3.1	0.002	30	-26.90	PASS
F _{HIGH}	2480	13.2VDC	2-DH5-Sngl	2.7	0.002	30	-27.30	PASS
F _{HIGH}	2480	9VDC	2-DH5-Sngl	2.7	0.002	30	-27.30	PASS
F _{HIGH}	2480	30VDC	2-DH5-Sngl	2.7	0.002	30	-27.30	PASS
F _{LOW}	2402	13.2VDC	3-DH5-Sngl	2.8	0.002	30	-27.20	PASS
F _{LOW}	2402	9VDC	3-DH5-Sngl	2.8	0.002	30	-27.20	PASS
F _{LOW}	2402	30VDC	3-DH5-Sngl	2.8	0.002	30	-27.20	PASS
F _{MID}	2441	13.2VDC	3-DH5-Sngl	3.5	0.002	30	-26.50	PASS
F _{MID}	2441	9VDC	3-DH5-Sngl	3.5	0.002	30	-26.50	PASS
F _{MID}	2441	30VDC	3-DH5-Sngl	3.5	0.002	30	-26.50	PASS
F _{HIGH}	2480	13.2VDC	3-DH5-Sngl	3.2	0.002	30	-26.80	PASS
F _{HIGH}	2480	9VDC	3-DH5-Sngl	3.2	0.002	30	-26.80	PASS
F _{HIGH}	2480	30VDC	3-DH5-Sngl	3.2	0.002	30	-26.80	PASS
Comments:								

3.6 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 _{MID} / F _{HIGH}				
Measurement mode		Peak				
Limits						
Limit			Condition			
≤ -20dB/100kHz			Peak power measurement detector = Peak			
≤ -30dB/100kHz			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 100kHz 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	-43.48	-20	-23.48	PASS
F _{HIGH}	2480	DH5-Sngl	-43.90	-20	-23.90	PASS
F _{LOW}	2402	DH5-Hop	-42.85	-20	-22.85	PASS
F _{HIGH}	2480	DH5-Hop	-43.95	-20	-23.95	PASS
F _{LOW}	2402	2-DH5-Sngl	-43.43	-20	-23.43	PASS
F _{HIGH}	2480	2-DH5-Sngl	-44.89	-20	-24.89	PASS
F _{LOW}	2402	2-DH5-Hop	-40.38	-20	-20.38	PASS
F _{HIGH}	2480	2-DH5-Hop	-41.12	-20	-21.12	PASS

F_{LOW}	2402	3-DH5-Sngl	-43.87	-20	-23.87	PASS
F_{HIGH}	2480	3-DH5-Sngl	-43.65	-20	-23.65	PASS
F_{LOW}	2402	3-DH5-Hop	-42.42	-20	-22.42	PASS
F_{HIGH}	2480	3-DH5-Hop	-43.78	-20	-23.78	PASS
Comments:						

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

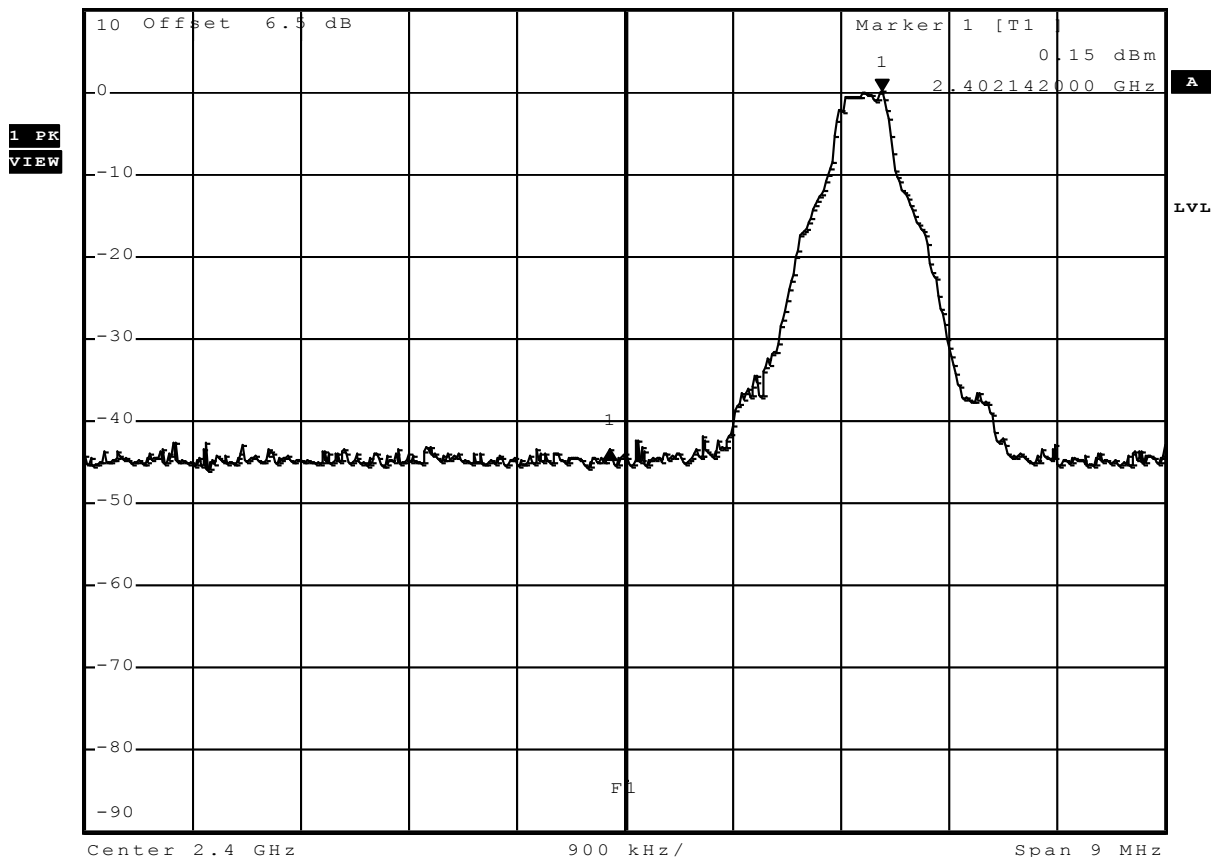
FCC part 15.247

Band-edge compliance of RF conducted emissions

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -43.48 dB
 Ref 10 dBm Att 40 dB SWT 2.5 ms -2.268000000 MHz



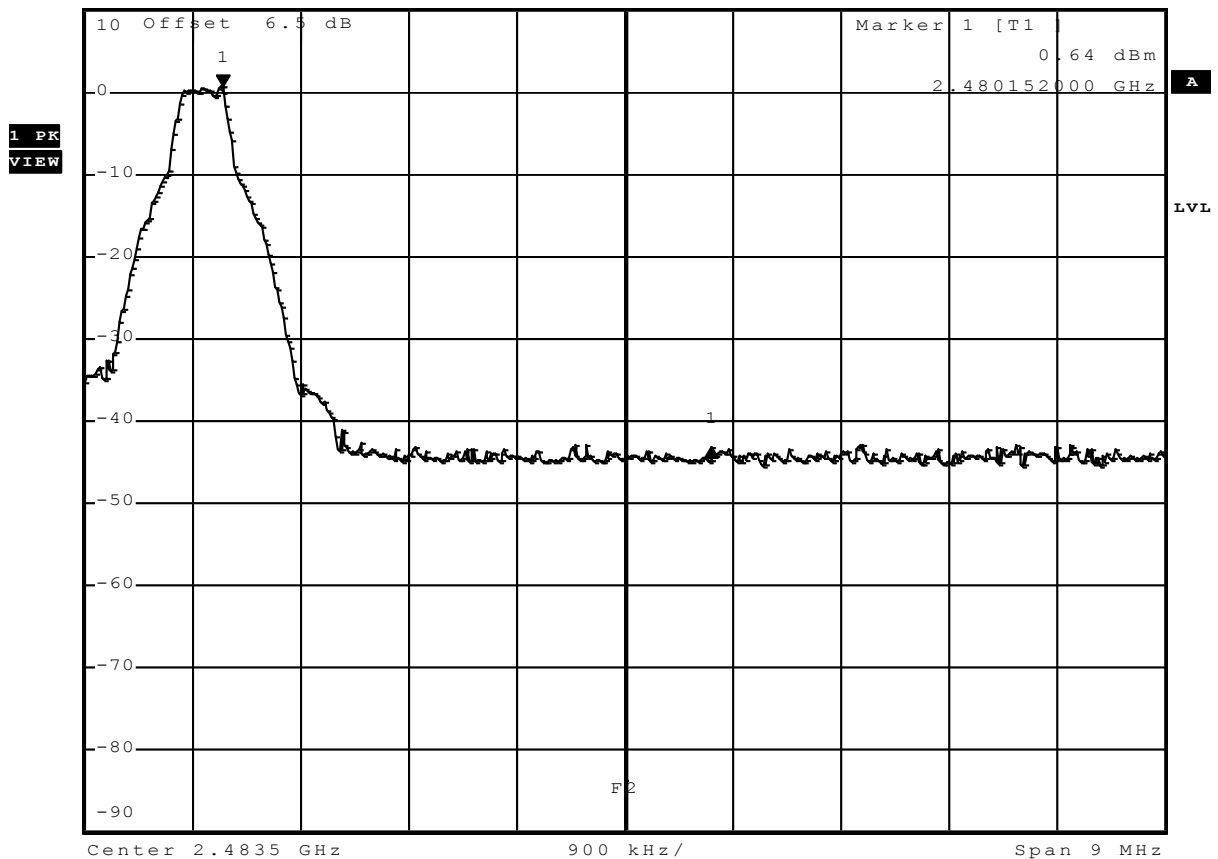
Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 30.NOV.2011 14:18:17

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

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -43.90 dB
 Ref 10 dBm Att 40 dB SWT 2.5 ms 4.068000000 MHz



Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 30.NOV.2011 14:20:27

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

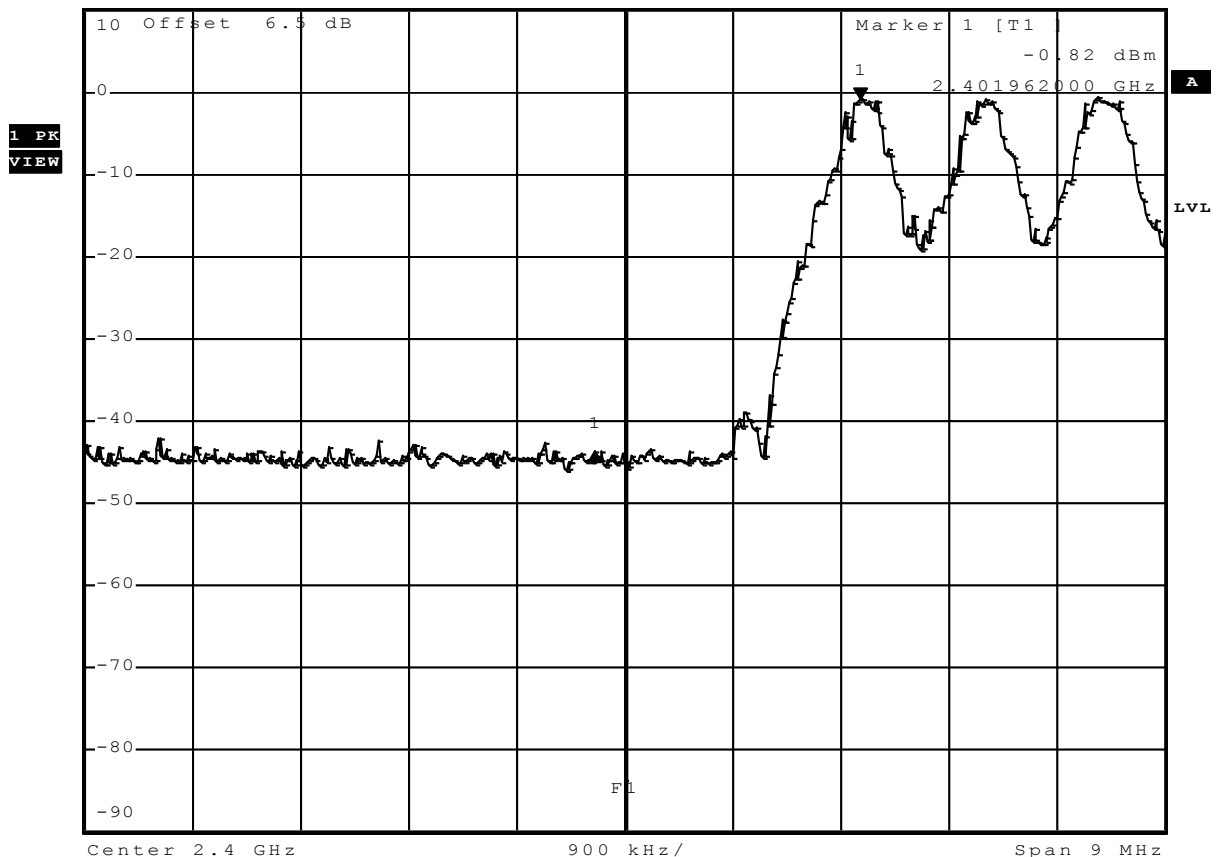
FCC part 15.247

Band-edge compliance of RF conducted emissions

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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	Hopping mode



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -42.85 dB
 Ref 10 dBm Att 40 dB SWT 2.5 ms -2.214000000 MHz



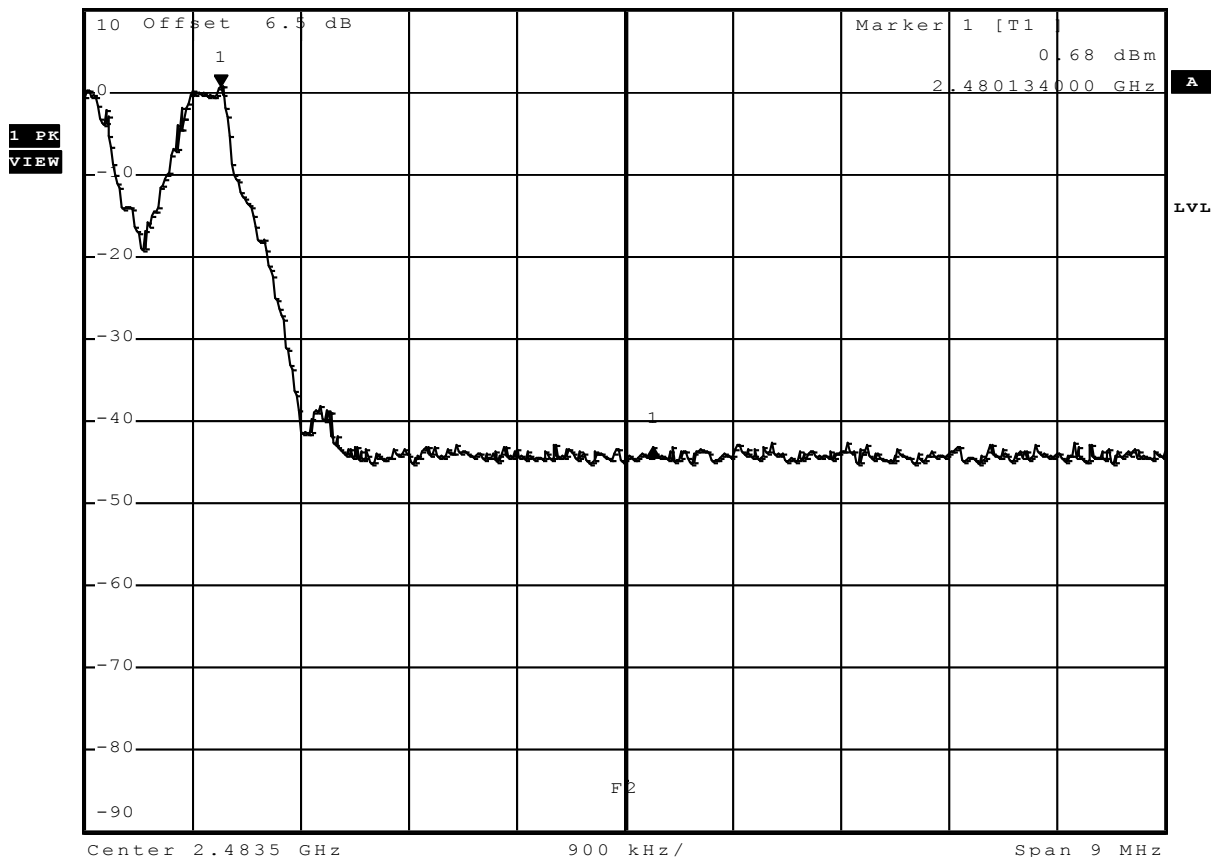
Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 30.NOV.2011 14:38:46

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

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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	Hopping mode



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -43.95 dB
 Ref 10 dBm Att 40 dB SWT 2.5 ms 3.600000000 MHz



Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 30.NOV.2011 14:41:38

Band-edge compliance – 2-DH5-Sngl F_{LOW}

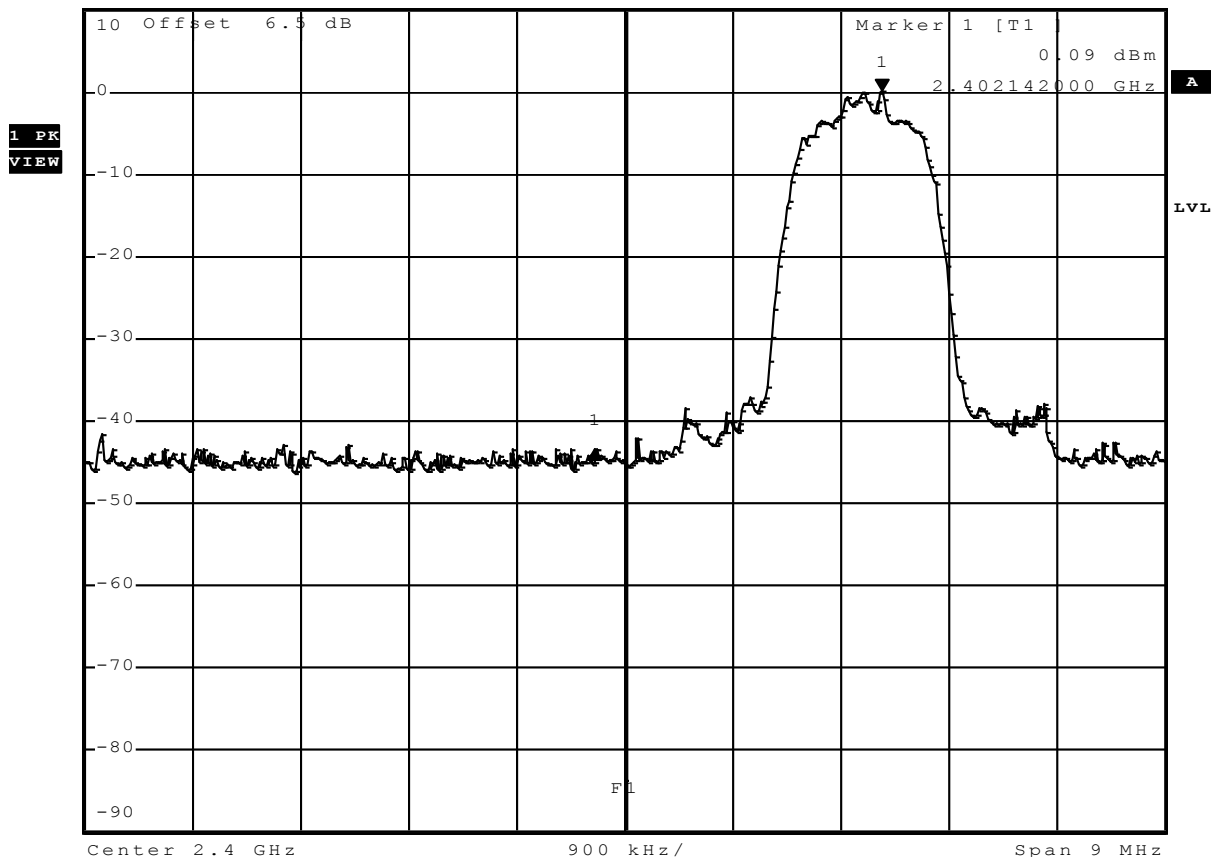
FCC part 15.247

Band-edge compliance of RF conducted emissions

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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 / Pi/4-DQPSK
Comment 3	Single frequency mode



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -43.43 dB
 Ref 10 dBm Att 40 dB SWT 2.5 ms -2.394000000 MHz



Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 30.NOV.2011 14:23:44

Band-edge compliance – 2-DH5-Sngl F_{HIGH}

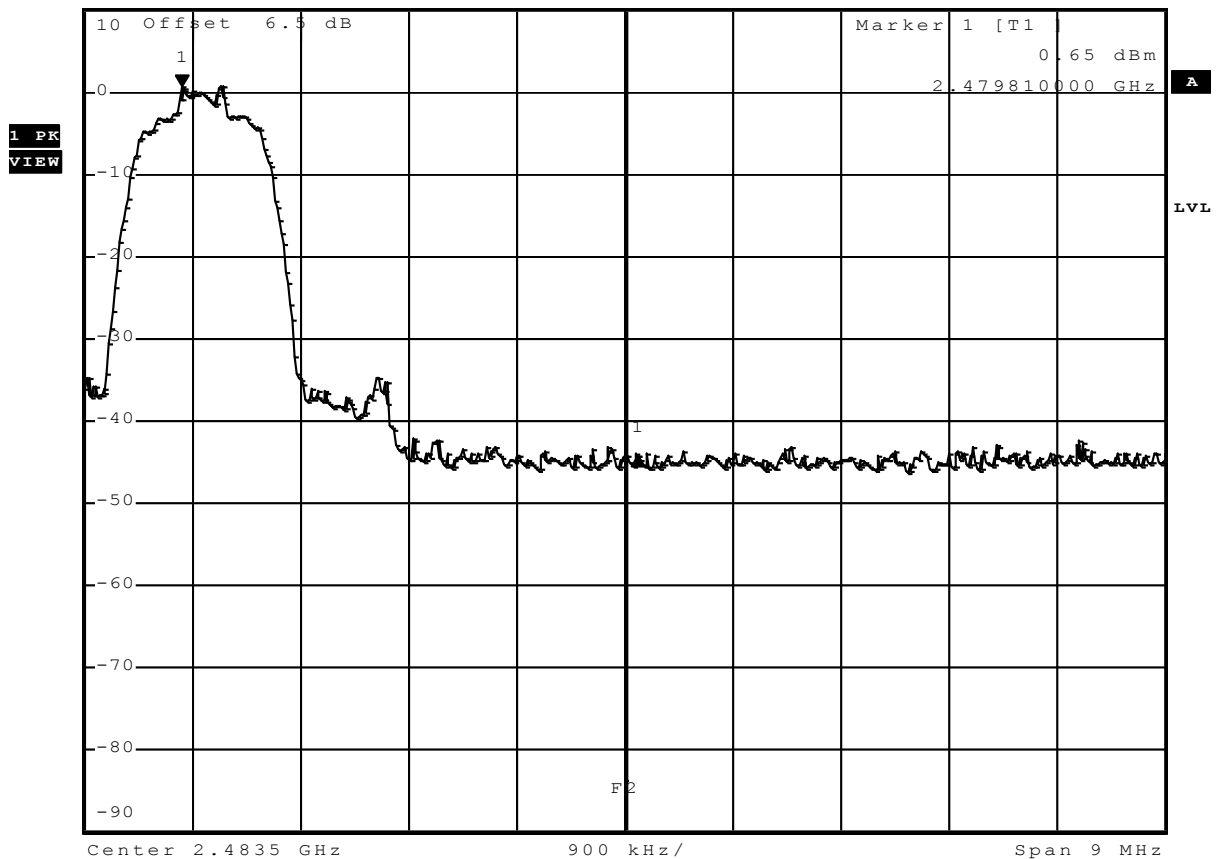
FCC part 15.247

Band-edge compliance of RF conducted emissions

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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 / Pi/4-DQPSK
Comment 3	Single frequency mode



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -44.89 dB
 Ref 10 dBm Att 40 dB SWT 2.5 ms 3.798000000 MHz



Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 30.NOV.2011 14:25:41

Band-edge compliance – 2-DH5-Hop F_{LOW}

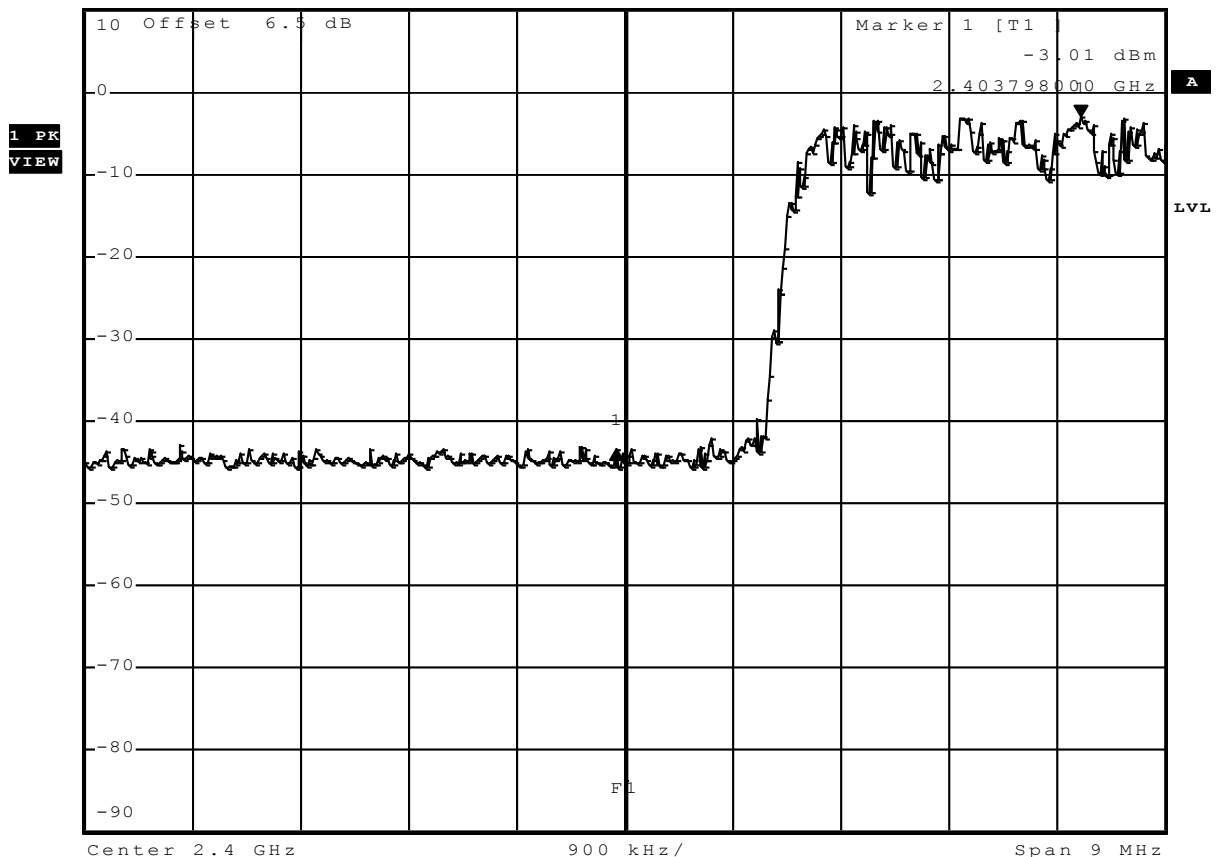
FCC part 15.247

Band-edge compliance of RF conducted emissions

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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 / Pi4-DQPSK
Comment 3	Hopping mode



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -40.38 dB
 Ref 10 dBm Att 40 dB SWT 2.5 ms -3.870000000 MHz



Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 30.NOV.2011 14:44:19

Band-edge compliance – 2-DH5-Hop F_{HIGH}

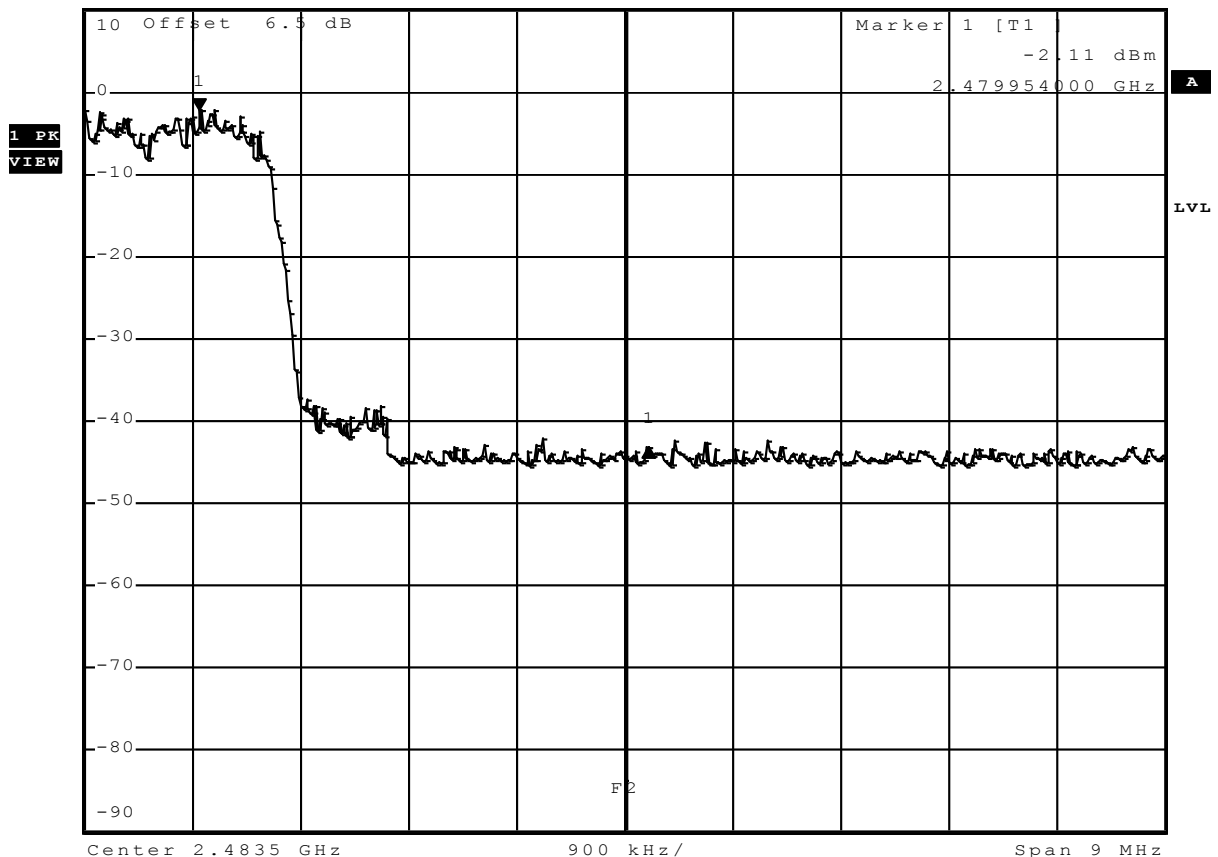
FCC part 15.247

Band-edge compliance of RF conducted emissions

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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 / Pi4-DQPSK
Comment 3	Hopping mode



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -41.12 dB
 Ref 10 dBm Att 40 dB SWT 2.5 ms 3.744000000 MHz



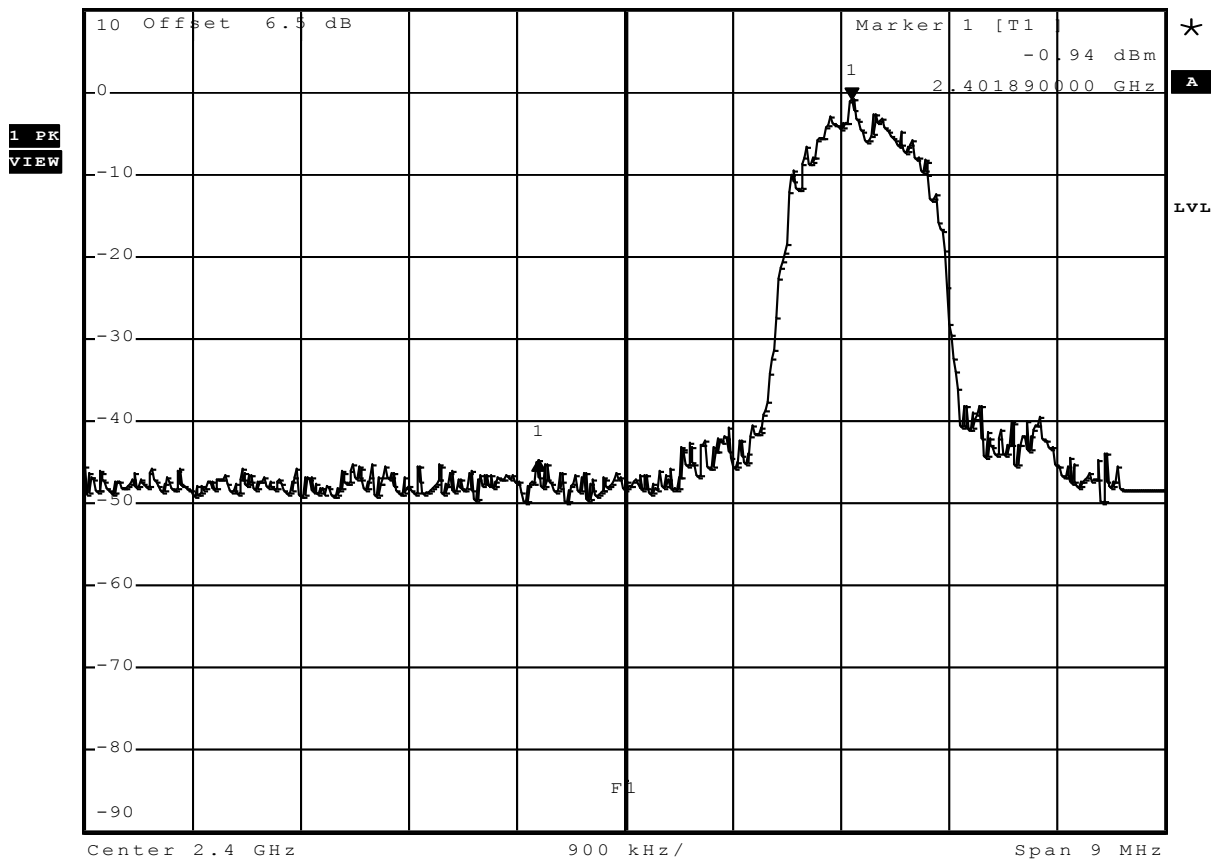
Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 30.NOV.2011 14:46:31

Band-edge compliance – 3-DH5-Sngl F_{LOW}
FCC part 15.247
Band-edge compliance of RF conducted emissions

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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 / 8DPSK
Comment 3	Single frequency mode



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -43.87 dB
 Ref 10 dBm Att 40 dB SWT 2.5 ms -2.610000000 MHz



Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 30.NOV.2011 14:29:15

Band-edge compliance – 3-DH5-Sngl F_{HIGH}

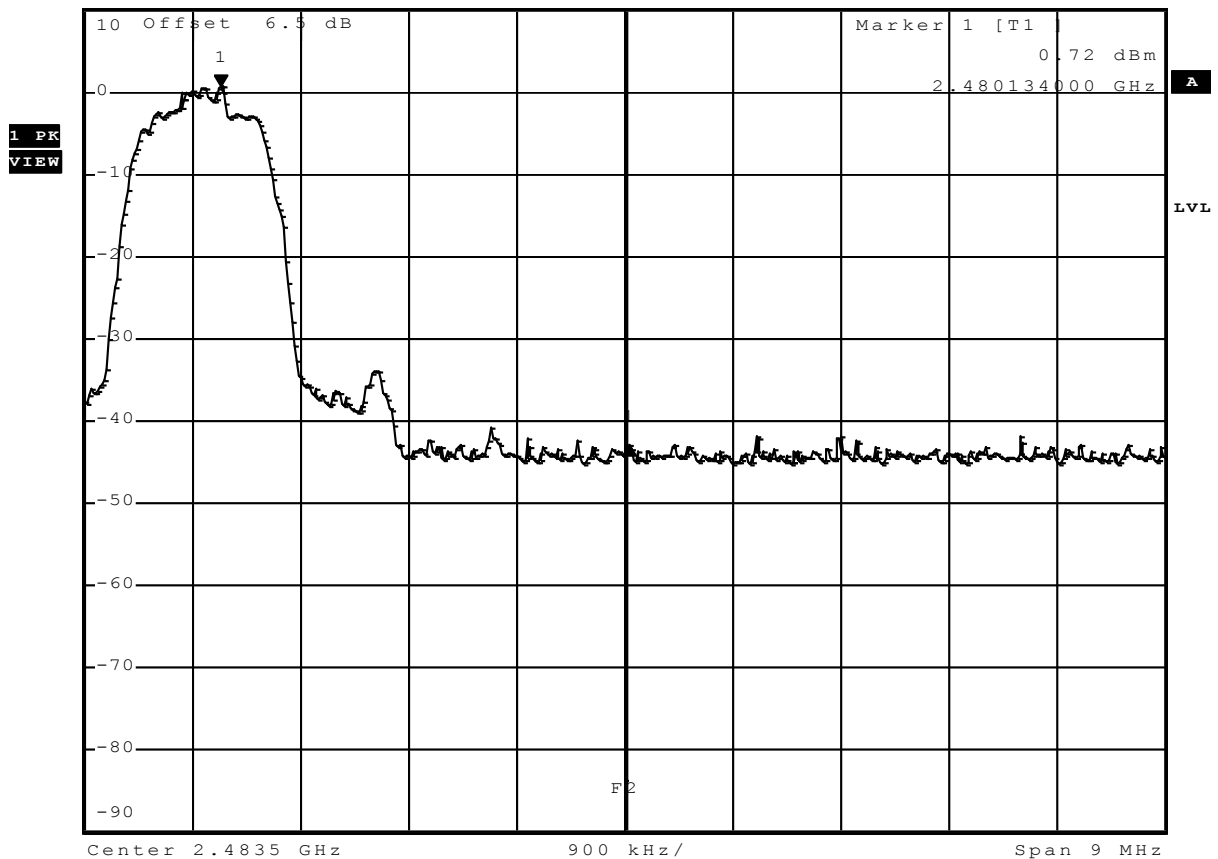
FCC part 15.247

Band-edge compliance of RF conducted emissions

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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 / 8DPSK
Comment 3	Single frequency mode



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -43.65 dB
 Ref 10 dBm Att 40 dB SWT 2.5 ms 3.402000000 MHz



Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 30.NOV.2011 14:31:50

Band-edge compliance – 3-DH5-Hop F_{LOW}

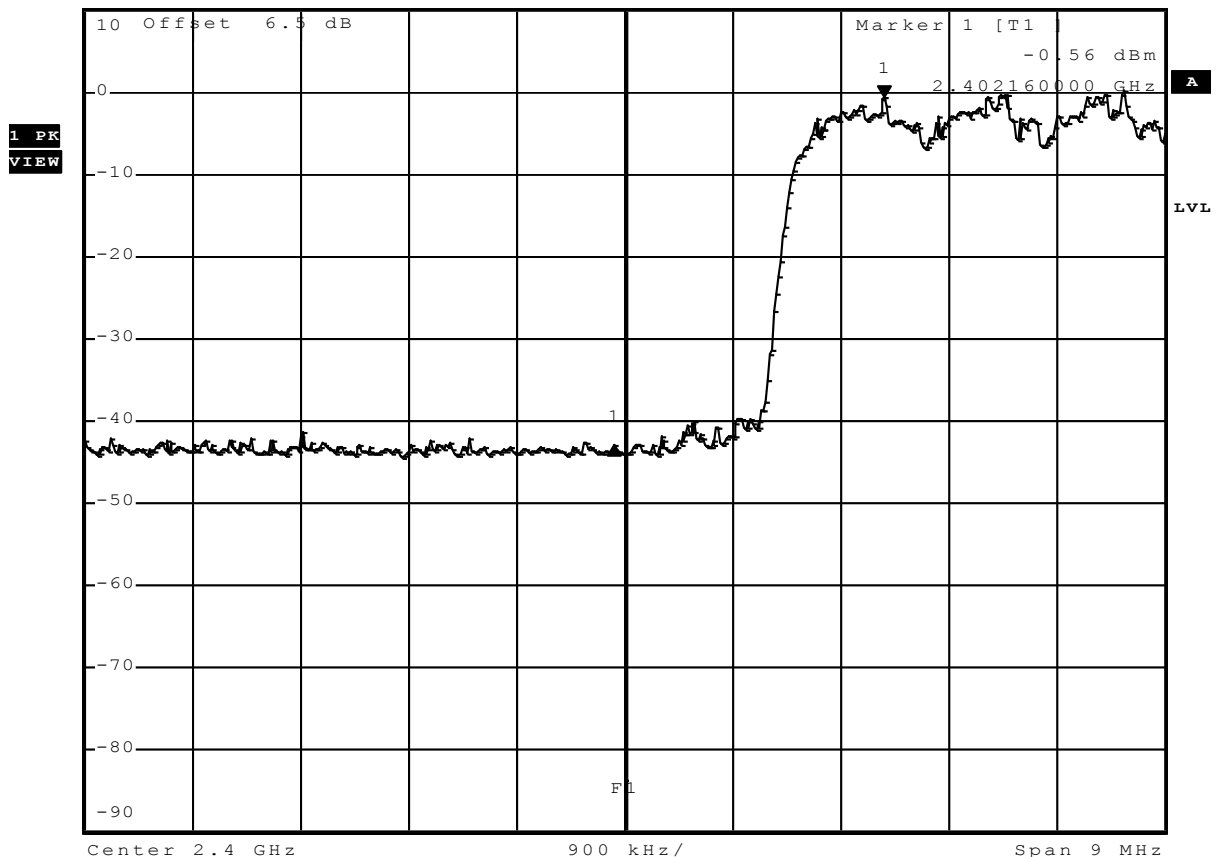
FCC part 15.247

Band-edge compliance of RF conducted emissions

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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 / 8DPSK
Comment 3	Hopping mode



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -42.42 dB
 Ref 10 dBm Att 40 dB SWT 2.5 ms -2.250000000 MHz



Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 30.NOV.2011 15:00:05

Band-edge compliance – 3-DH5-Hop F_{HIGH}

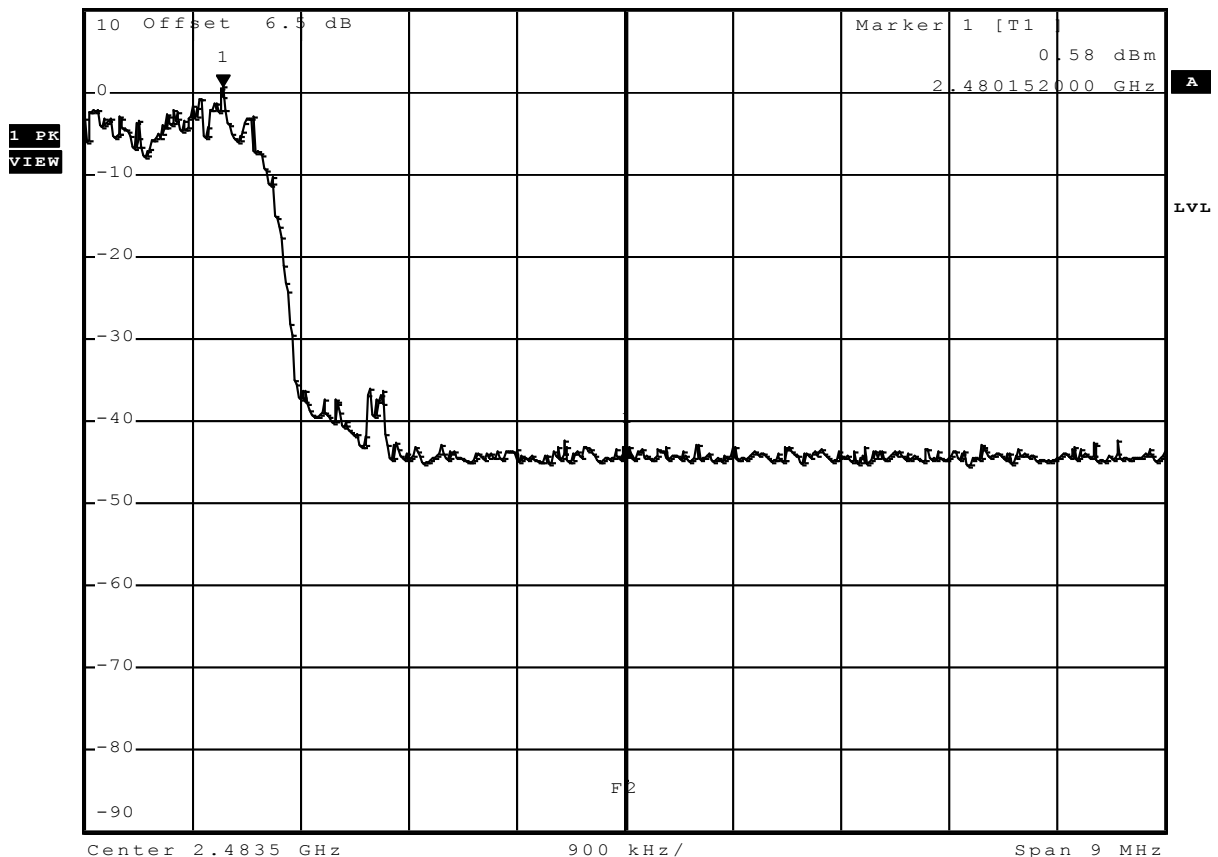
FCC part 15.247

Band-edge compliance of RF conducted emissions

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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 / 8DPSK
Comment 3	Hopping mode



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -43.78 dB
 Ref 10 dBm Att 40 dB SWT 2.5 ms 3.366000000 MHz



Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 30.NOV.2011 15:02:37

3.7 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					
			10MHz – 10 th Harmonic					
Measurement mode			Peak					
Limits								
Limit				Condition				
≤ -20dB/100kHz				Peak power measurement detector = Peak				
≤ -30dB/100kHz				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 100kHz 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	3197.44	-47.50	-0.30	-20.3	-27.20	PASS
F _{HIGH}	2480	DH5-Sngl	4958.92	-46.31	0.09	-19.9	-26.41	PASS
F _{LOW}	2402	2-DH5-Sngl	3197.44	-47.87	-0.79	-20.8	-27.07	PASS
F _{MID}	2441	2-DH5-Sngl	4889.02	-47.41	-0.89	-20.9	-26.51	PASS
F _{HIGH}	2480	2-DH5-Sngl	4958.92	-46.30	-2.20	-22.2	-24.10	PASS
F _{HIGH}	2402	2-DH5-Sngl	3197.44	-47.67	-0.89	-20.8	-26.87	PASS
F _{HIGH}	2441	2-DH5-Sngl	4889.02	-47.01	-0.69	-20.9	-26.11	PASS
F _{HIGH}	2480	2-DH5-Sngl	4958.92	-43.14	-1.60	-21.6	-21.54	PASS
Comments:								

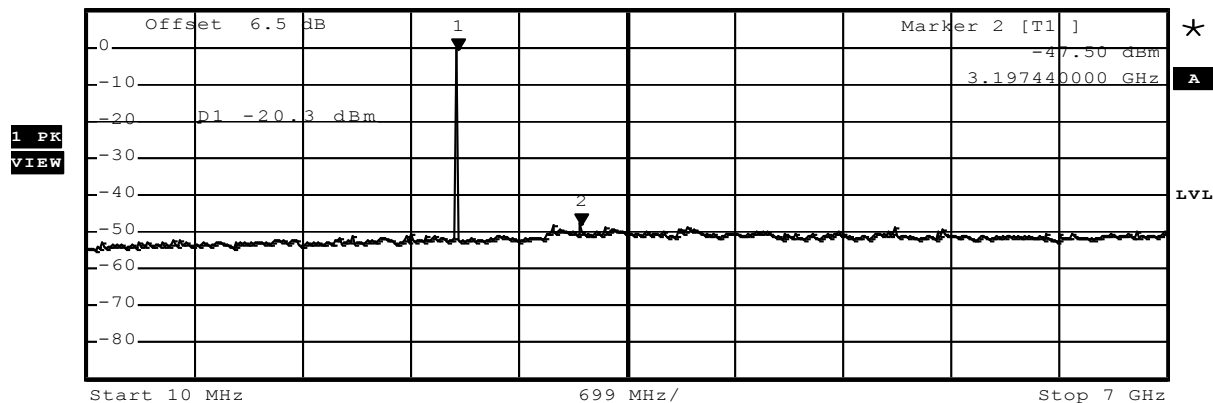
Conducted spurious emissions – DH5-Sngl F_{Low}

FCC part 15.247 (d) Spurious Emissions

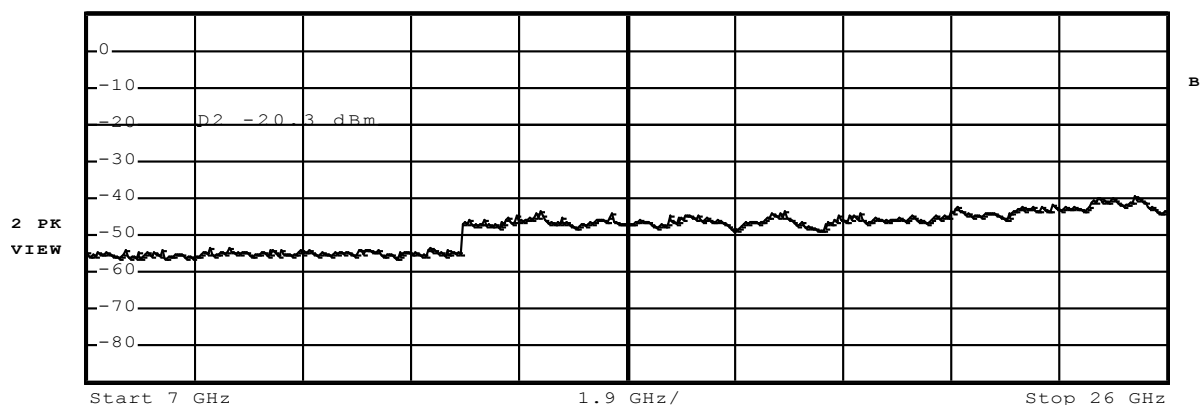
EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2402 MHz
Comment 3	GFSK



Ref 10 dBm * Att 30 dB * RBW 100 kHz Marker 1 [T1] -0.30 dBm
* VBW 300 kHz * SWT 10 s 2.400580000 GHz



Ref 10 dBm * Att 30 dB * RBW 100 kHz * VBW 300 kHz * SWT 10 s



Date: 1.DEC.2011 09:21:59

Test Report No.: G0M-1111-1529-TFC247B-V01

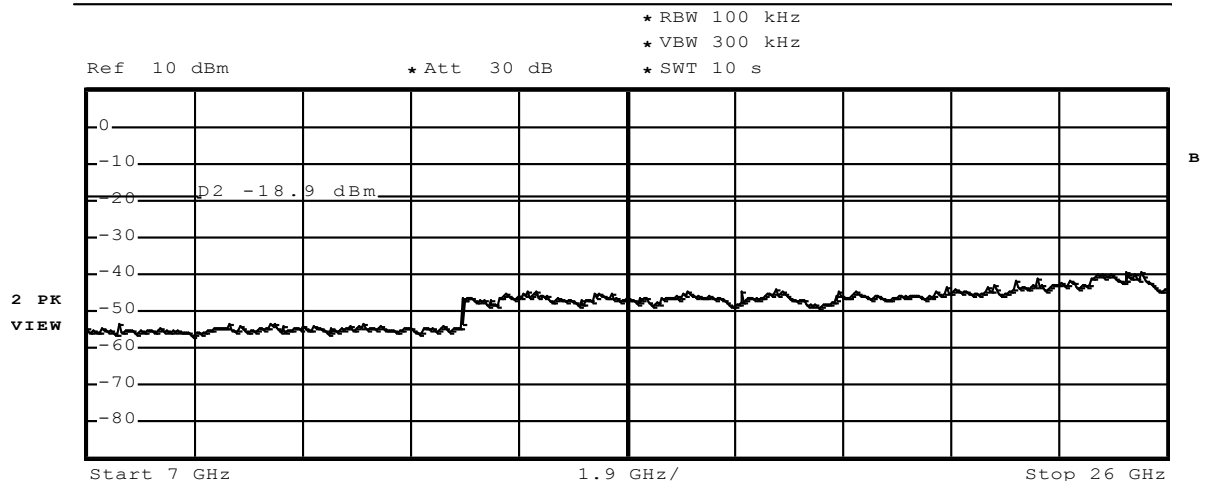
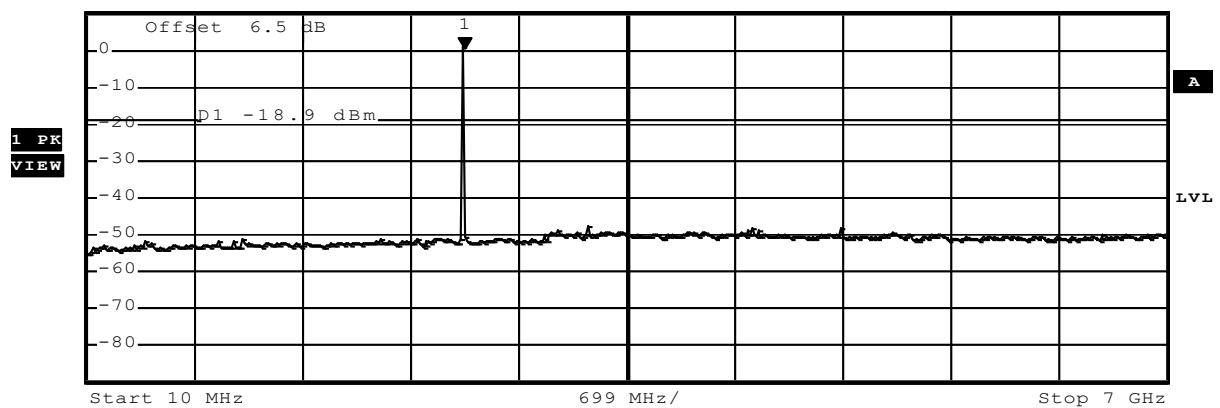
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Conducted spurious emissions – DH5-Sngl F_{MID}
**FCC part 15.247 (d)
Spurious Emissions**

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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



Ref 10 dBm * Att 30 dB * RBW 100 kHz Marker 1 [T1] 1.08 dBm
 * VBW 300 kHz 2.442520000 GHz
 * SWT 10 s



Date: 1.DEC.2011 09:29:16

Conducted spurious emissions – DH5-Sngl F_{HIGH}

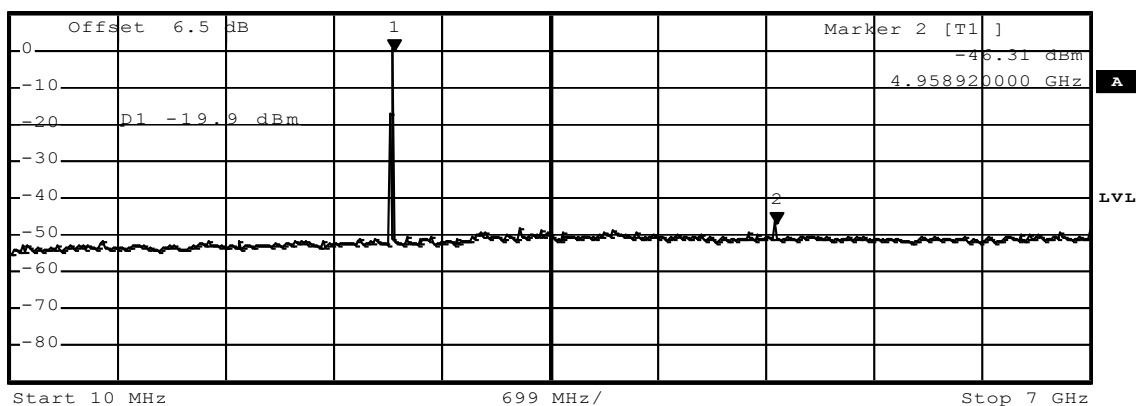
FCC part 15.247 (d) Spurious Emissions

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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



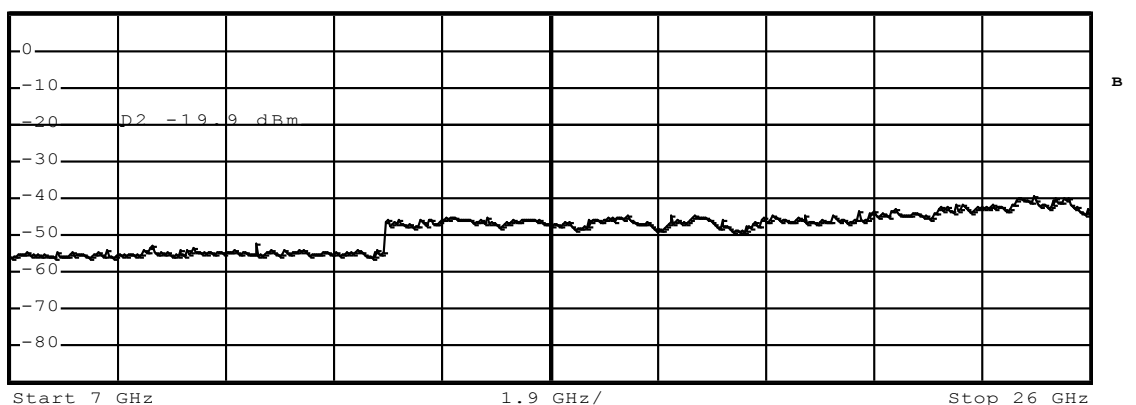
Ref 10 dBm * Att 30 dB * RBW 100 kHz Marker 1 [T1] 0.09 dBm
* VBW 300 kHz 2.484460000 GHz
* SWT 10 s

1 PK
VIEW



Ref 10 dBm * Att 30 dB * RBW 100 kHz
* VBW 300 kHz
* SWT 10 s

2 PK
VIEW



Date: 1.DEC.2011 09:32:13

Conducted spurious emissions – 2-DH5-Sngl F_{LOW}

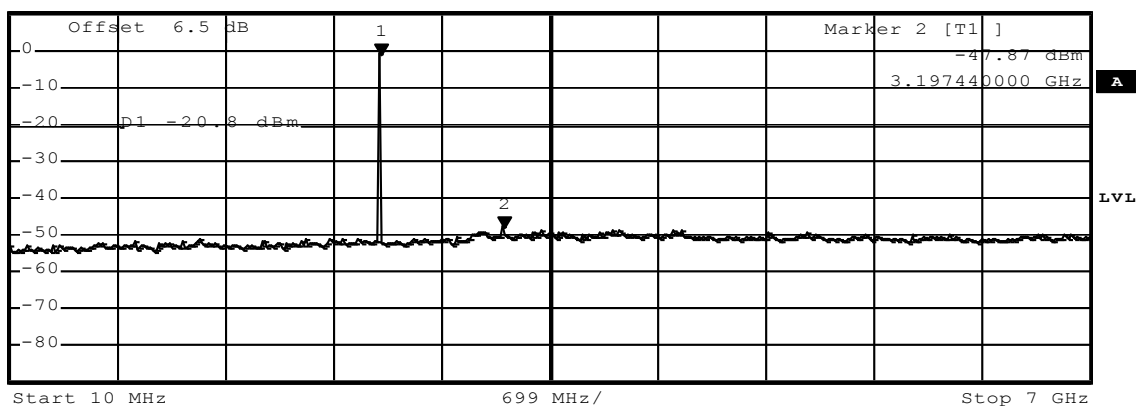
FCC part 15.247 (d) Spurious Emissions

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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	Pi/4-DQPSK

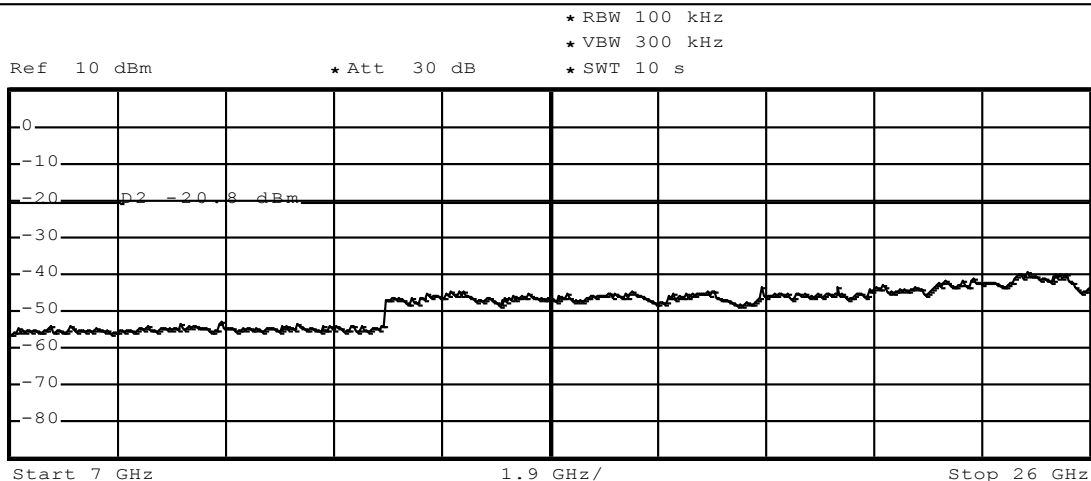


Ref 10 dBm * Att 30 dB * RBW 100 kHz Marker 1 [T1]
* VBW 300 kHz -0.79 dBm
* SWT 10 s 2.400580000 GHz

1 PK
VIEW



2 PK
VIEW



Date: 1.DEC.2011 09:35:42

Test Report No.: G0M-1111-1529-TFC247B-V01

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

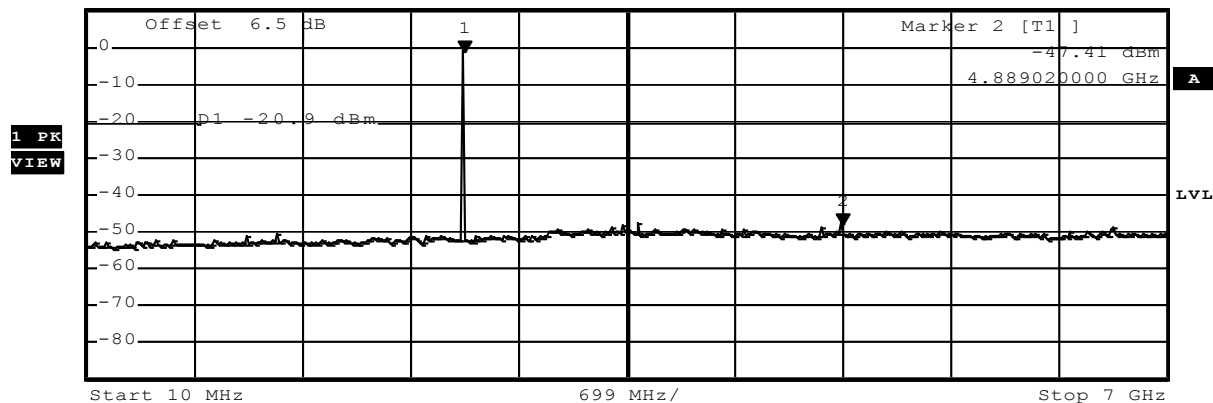
Conducted spurious emissions – 2-DH5-Sngl F_{MID}

FCC part 15.247 (d) Spurious Emissions

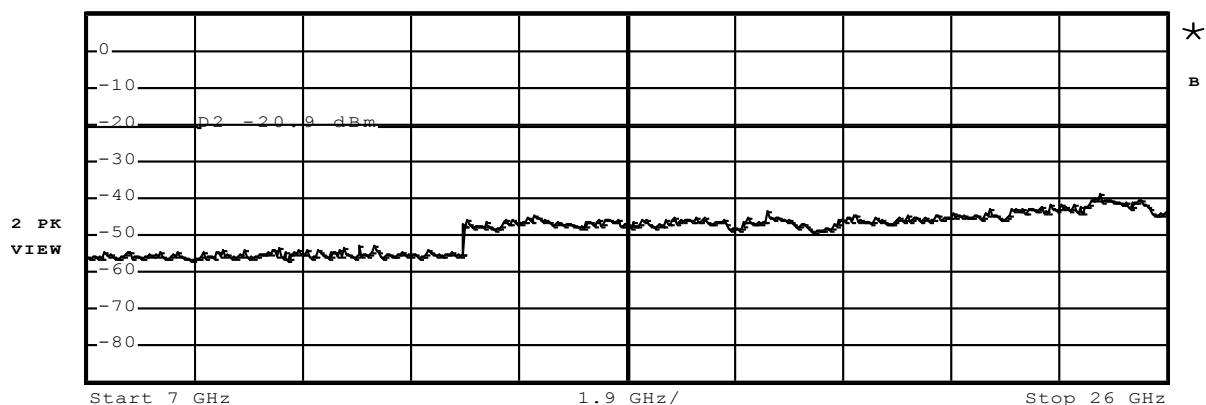
EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2441 MHz
Comment 3	Pi/4-DQPSK



Ref 10 dBm * Att 30 dB * RBW 100 kHz Marker 1 [T1] -0.89 dBm
* VBW 300 kHz * SWT 10 s 2.442520000 GHz



Ref 10 dBm * Att 30 dB * RBW 100 kHz * VBW 300 kHz * SWT 10 s



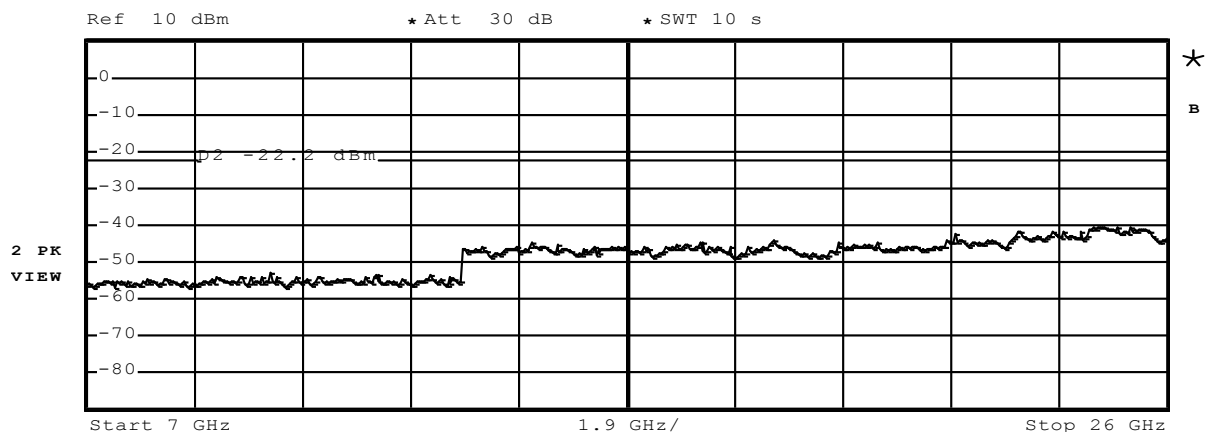
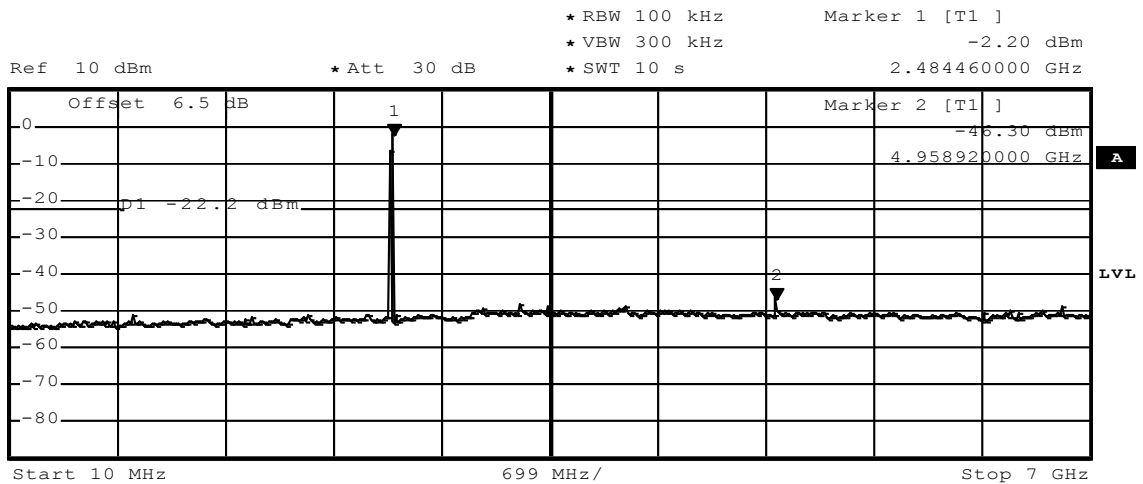
Date: 1.DEC.2011 09:42:28

Test Report No.: G0M-1111-1529-TFC247B-V01

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

Conducted spurious emissions – 2-DH5-Sngl F_{HIGH}
**FCC part 15.247 (d)
Spurious Emissions**

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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	Pi/4-DQPSK



Date: 1.DEC.2011 09:44:20

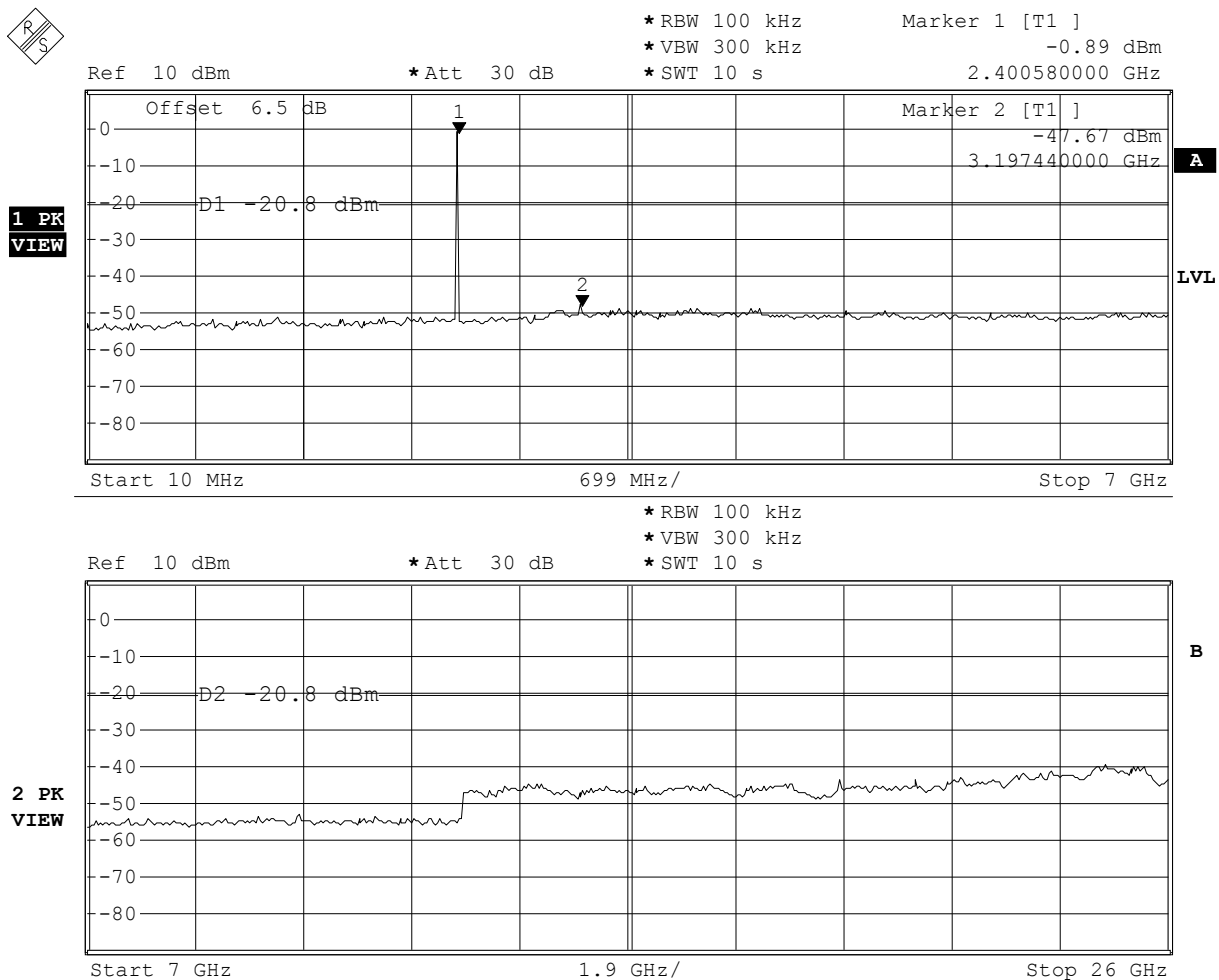
Test Report No.: G0M-1111-1529-TFC247B-V01

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

Conducted spurious emissions – 3-DH5-Sngl F_{Low}

FCC part 15.247 (d)
Spurious Emissions

EUT Model	Telematic Device with GPRS/BT/GPS LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
Temperature / Voltage	t _{nom} / V _{nom}
Test Site / Operator	Euofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2402 MHz
Comment 3	8DPSK



Date: 1.DEC.2011 09:39:42

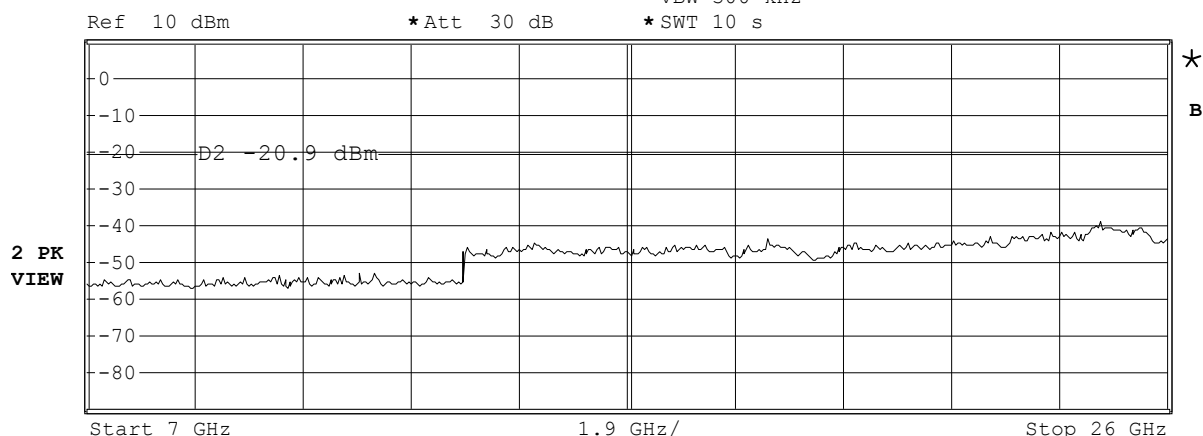
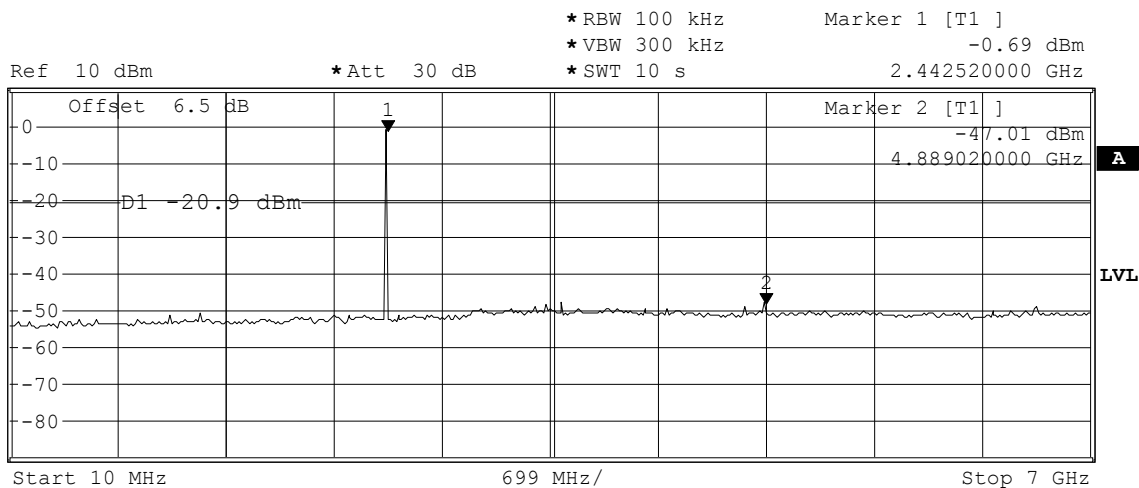
Test Report No.: G0M-1111-1529-TFC247B-V01

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

Conducted spurious emissions – 3-DH5-Sngl F_{MID}

FCC part 15.247 (d) Spurious Emissions

EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
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	8DPSK



Date: 1.DEC.2011 09:52:28

Test Report No.: G0M-1111-1529-TFC247B-V01

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

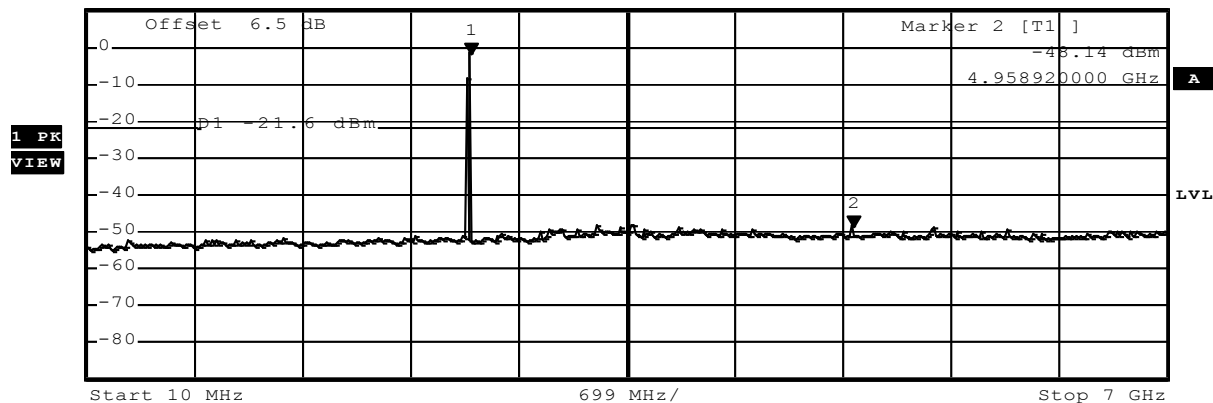
Conducted spurious emissions – 3-DH5-Sngl F_{HIGH}

FCC part 15.247 (d) Spurious Emissions

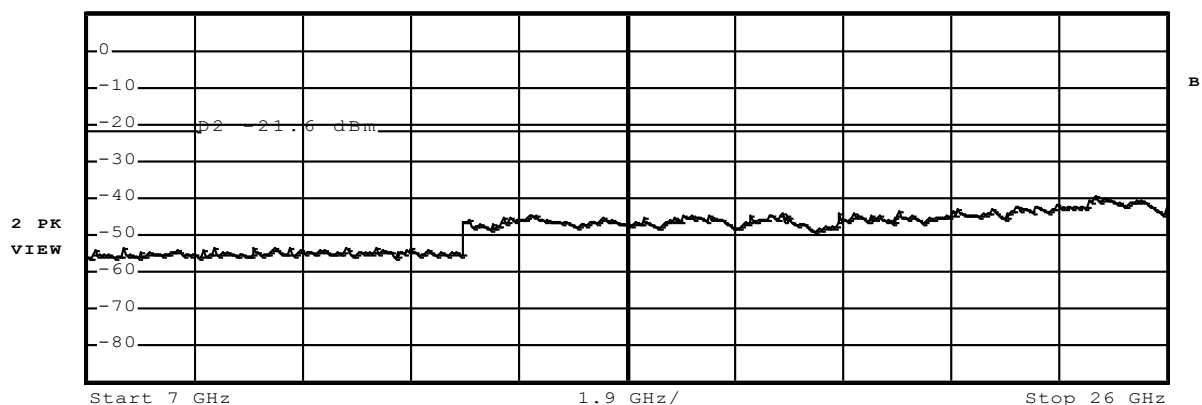
EUT	Telematic Device with GPRS/BT/GPS
Model	LINK 5
Approval Holder	TomTom Development Germany GmbH / Ord.: G0M-1111-1529
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2480 MHz
Comment 3	8DPSK



Ref 10 dBm * Att 30 dB * RBW 100 kHz Marker 1 [T1] -1.60 dBm
* VBW 300 kHz * SWT 10 s 2.484460000 GHz

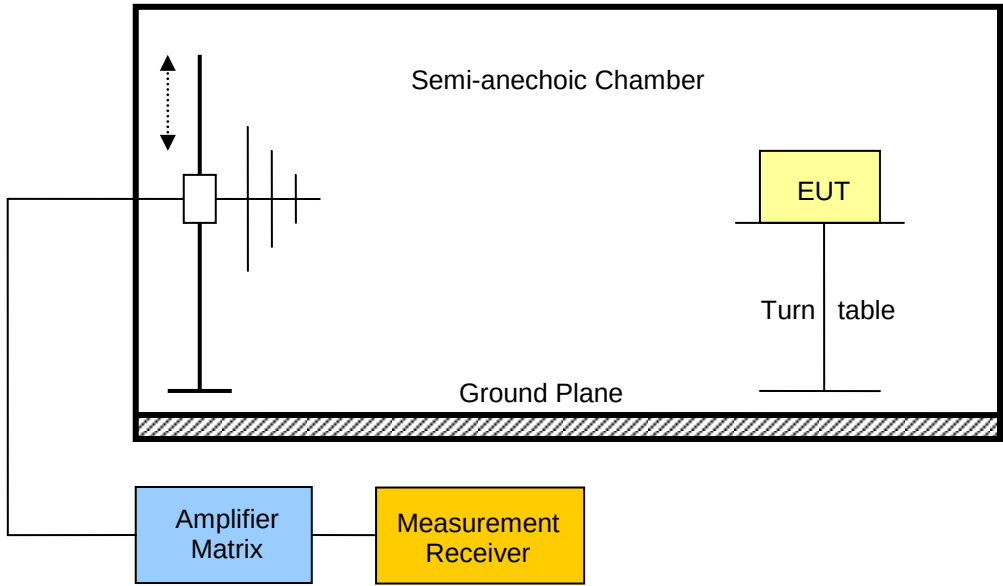


Ref 10 dBm * Att 30 dB * RBW 100 kHz * VBW 300 kHz * SWT 10 s



Date: 1.DEC.2011 09:47:27

3.8 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			
	30MHz – 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 1GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1MHz with peak/average detector is used above 1GHz
4. Markers are set to peak emission levels within restricted bands

Test results – Internal Antenna

Channel	Frequency [MHz]	Mode	Emission [MHz]	Level [db μ V/m]	Det.	Pol.	Limit [db μ V/m]	Limit dist. [m]*	Margin [dB]
F _{HIGH}	2480	DH5-Sngl	241.517	26.18	pk	ver	46	3	-19.82
F _{HIGH}	2480	DH5-Sngl	243.114	30.92	pk	ver	46	3	-15.08
F _{HIGH}	2480	DH5-Sngl	608.782	28.19	pk	hor	46	3	-17.81
F _{High}	2480	DH5-Sngl	2.483	57.98	pk	hor	74	3	-16.02
F _{High}	2480	3-DH5-Sngl	2.483	59.61	pk	hor	74	3	-14.39

Comments: * Physical distance between EUT and measurement antenna.

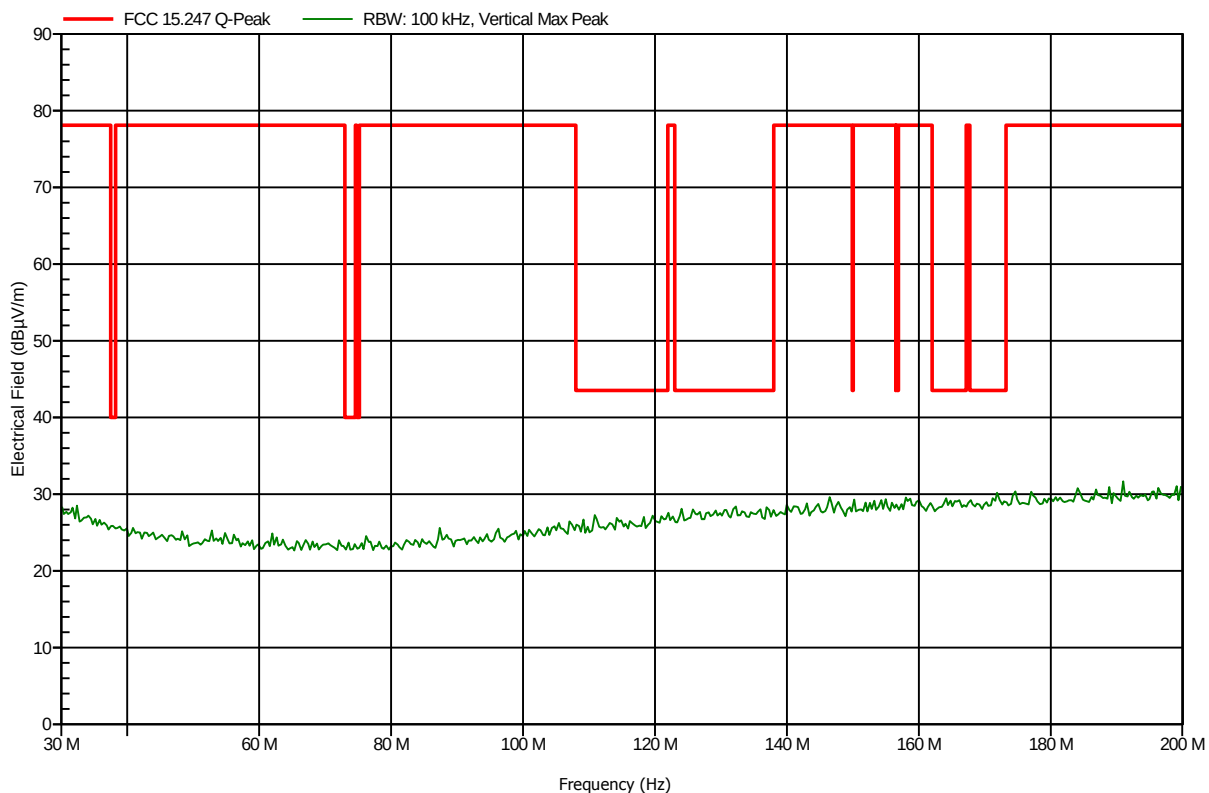
ANNEX A Transmitter radiated spurious emissions

Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer:	TomTom Development Germany GmbH
EUT Name:	Telematic Device with GPRS/BT/GPS
Model:	Link5
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 12 VDC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; basic, DH5, ch78
Test Date:	24.11.2011
Note:	Pass

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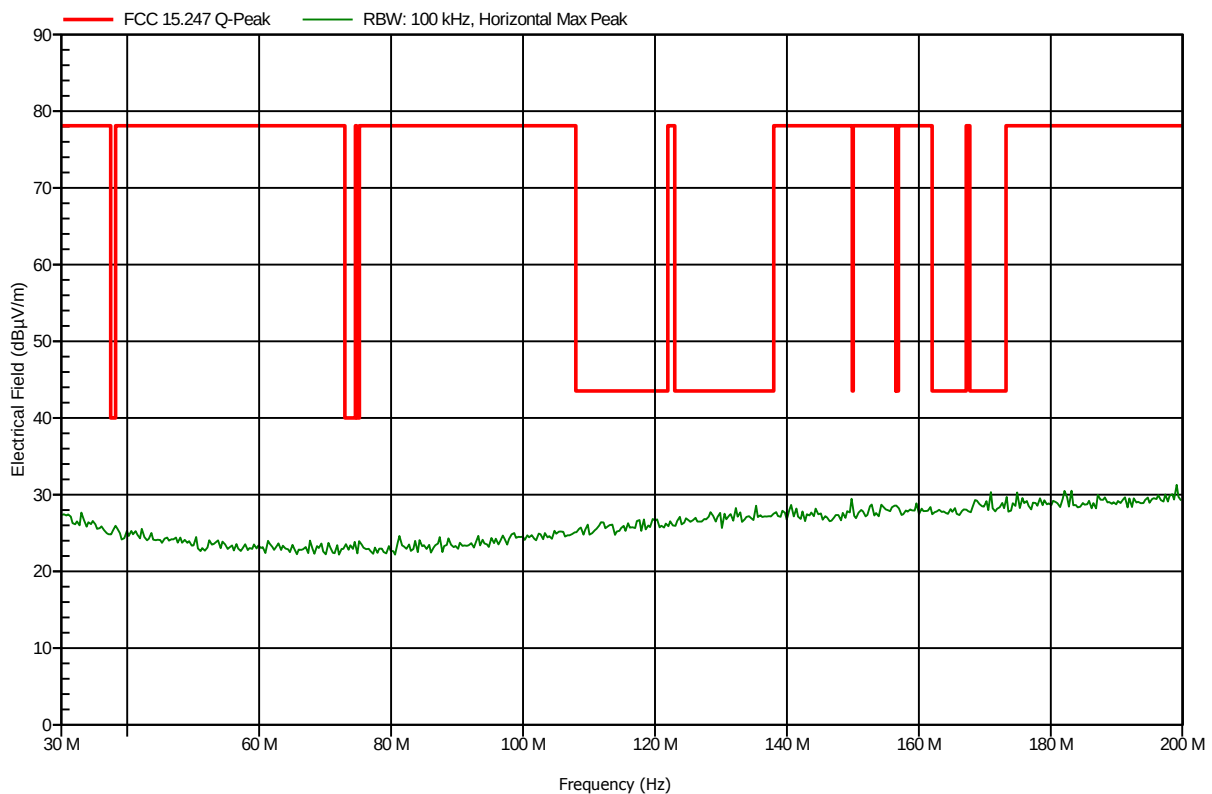


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer:	TomTom Development Germany GmbH
EUT Name:	Telematic Device with GPRS/BT/GPS
Model:	Link5
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 12 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; basic, DH5, ch78
Test Date:	24.11.2011
Note:	Pass

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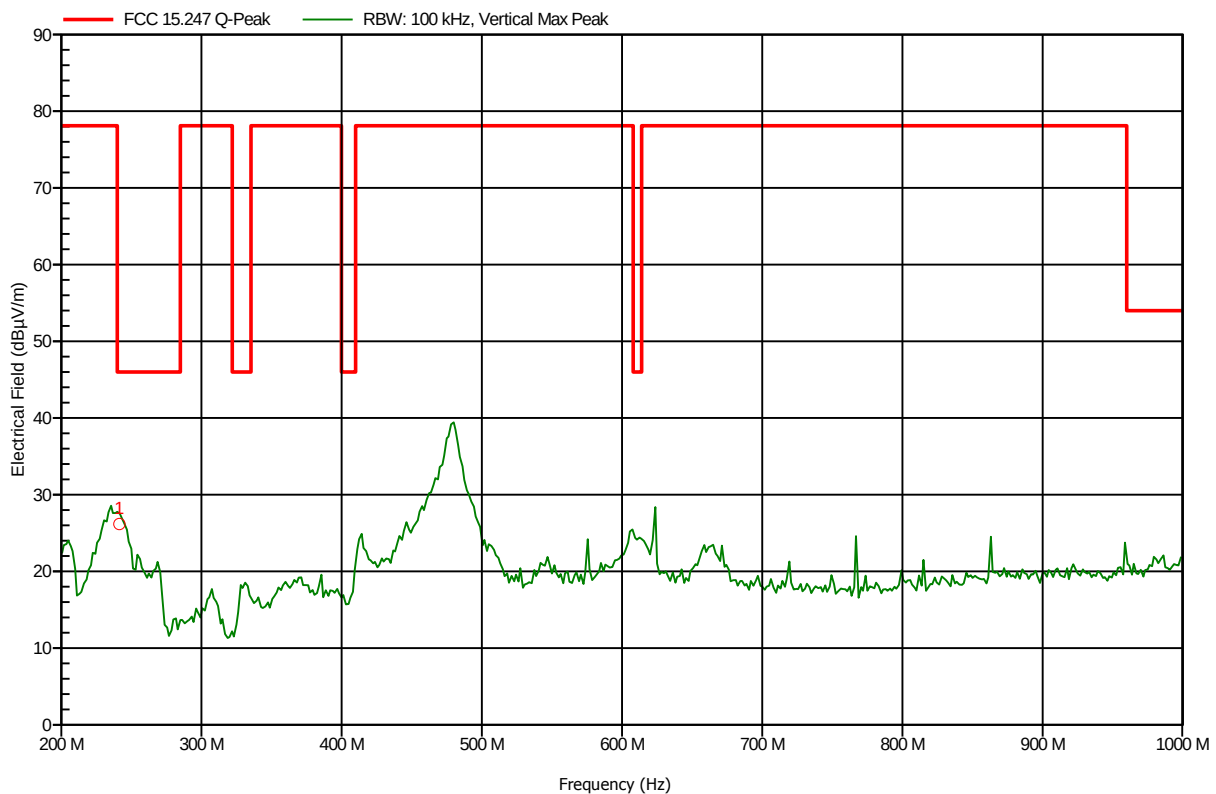


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer: TomTom Development Germany GmbH
 EUT Name: Telematic Device with GPRS/BT/GPS
 Model: Link5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 12 VDC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: TX; basic, DH5, ch78
 Test Date: 24.11.2011
 Note: Pass

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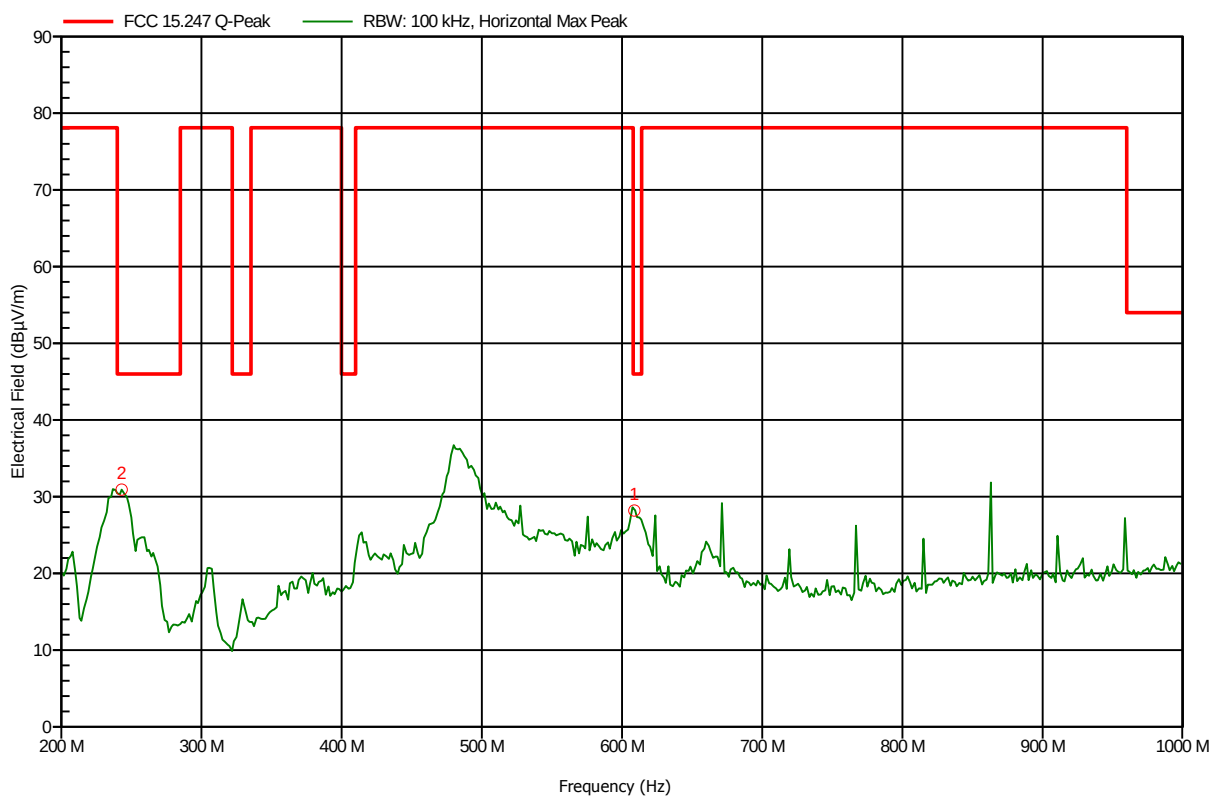
Frequency	Peak	Peak Limit	Peak Difference	Status
241.517 MHz	26.18 dBµV/m	46 dBµV/m	-19.82 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer: TomTom Development Germany GmbH
 EUT Name: Telematic Device with GPRS/BT/GPS
 Model: Link5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 12 VDC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3 m
 Mode: TX; basic, DH5, ch78
 Test Date: 24.11.2011
 Note: Pass

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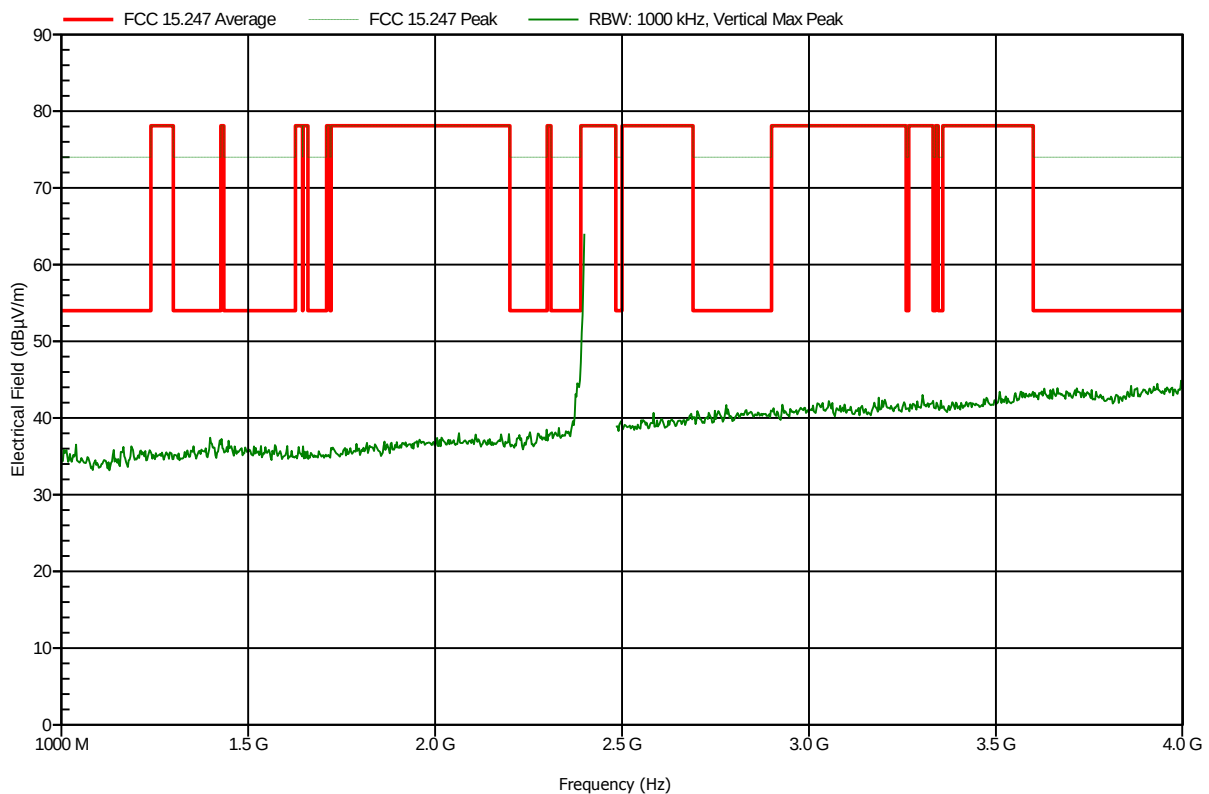
Frequency	Peak	Peak Limit	Peak Difference	Status
243.114 MHz	30.92 dBμV/m	46 dBμV/m	-15.08 dB	Pass
608.782 MHz	28.19 dBμV/m	46 dBμV/m	-17.81 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer:	TomTom Development Germany GmbH
EUT Name:	Telematic Device with GPRS/BT/GPS
Model:	Link5
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 12 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; basic, DH5, ch0
Test Date:	23.11.2011
Note:	Pass

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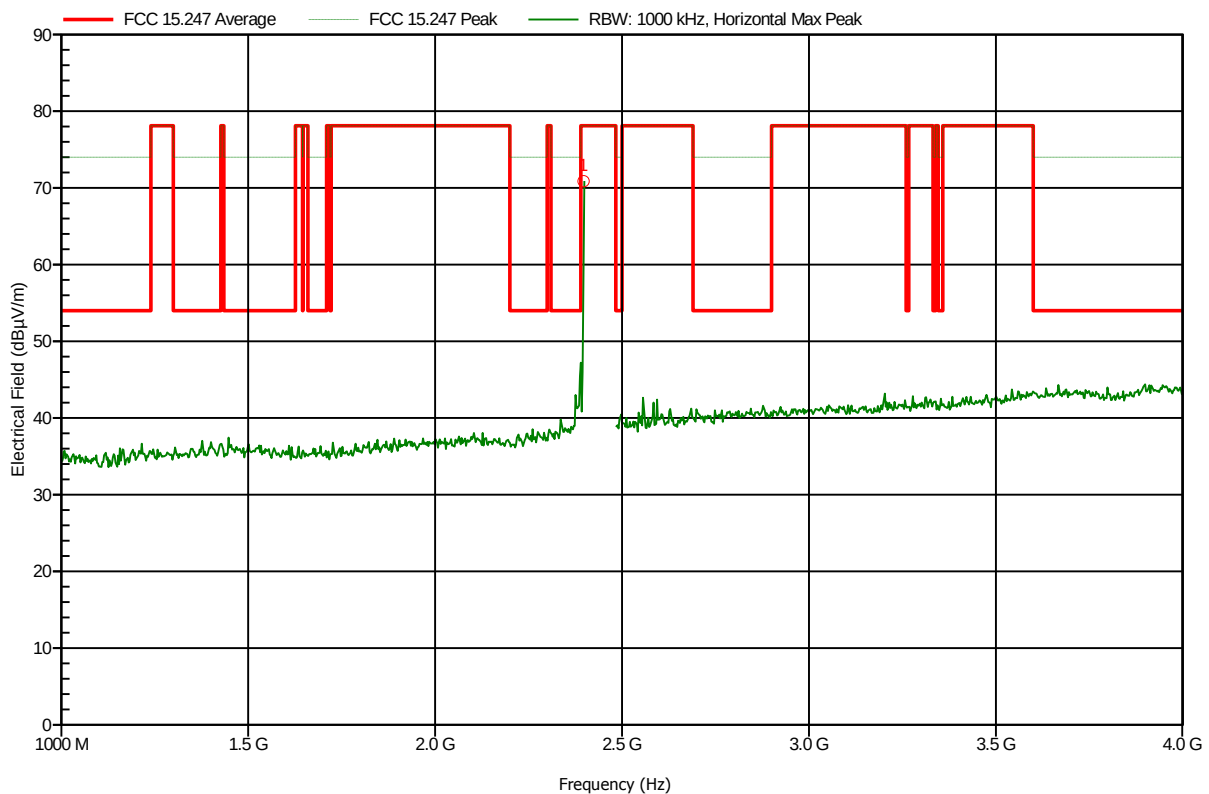


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer: TomTom Development Germany GmbH
 EUT Name: Telematic Device with GPRS/BT/GPS
 Model: Link5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 12 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; basic, DH5, ch0
 Test Date: 23.11.2011
 Note: Pass

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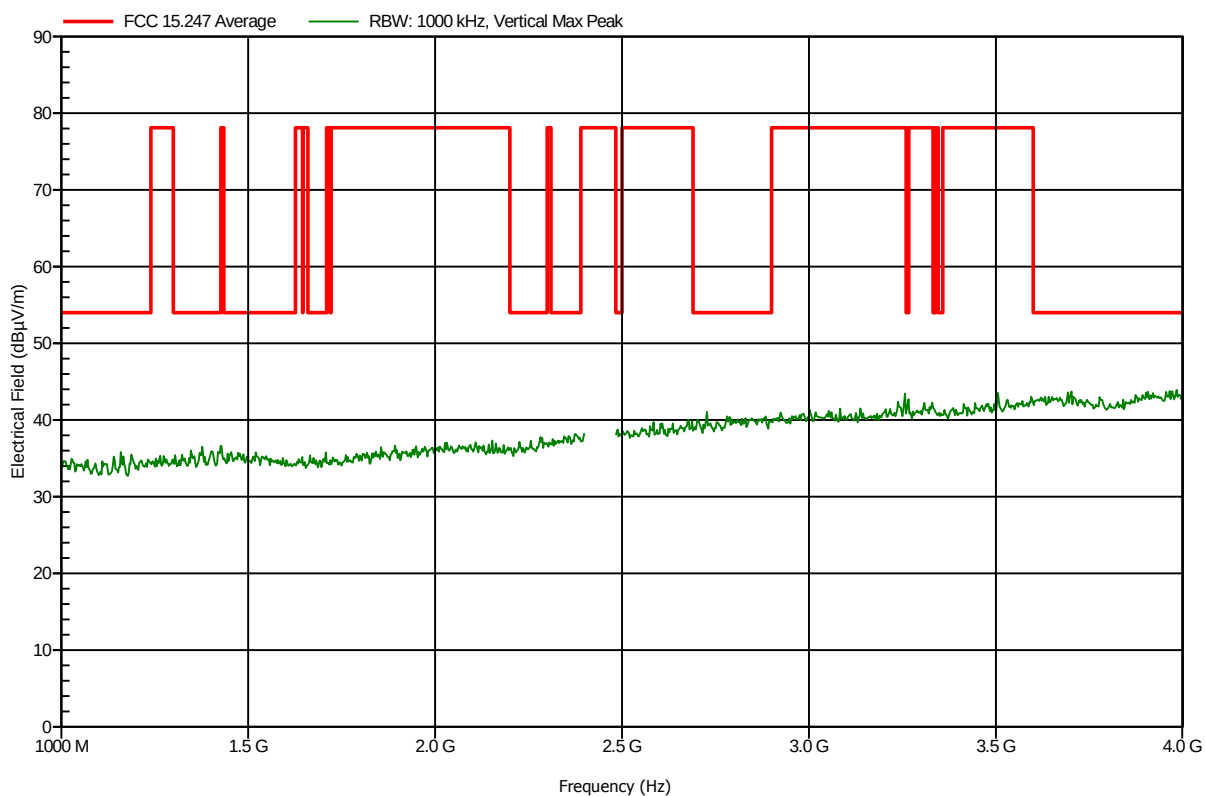
Frequency	Peak	Peak Limit	Peak Difference	Status
2.397 GHz	70.87 dBµV/m	78.1 dBµV/m	-7.23 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer: TomTom Development Germany GmbH
 EUT Name: Telematic Device with GPRS/BT/GPS
 Model: Link5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 12 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; basic, DH5, ch39
 Test Date: 23.11.2011
 Note: Pass

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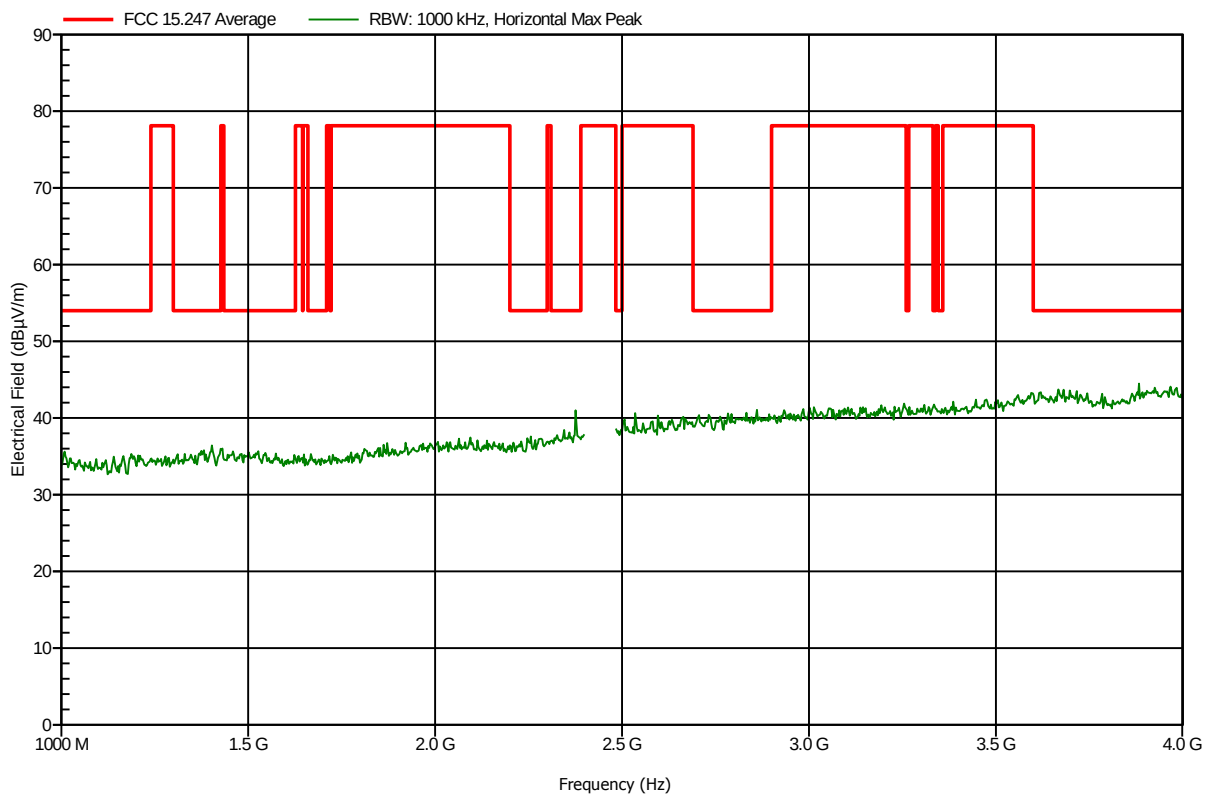


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer:	TomTom Development Germany GmbH
EUT Name:	Telematic Device with GPRS/BT/GPS
Model:	Link5
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 12 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; basic, DH5, ch39
Test Date:	23.11.2011
Note:	Pass

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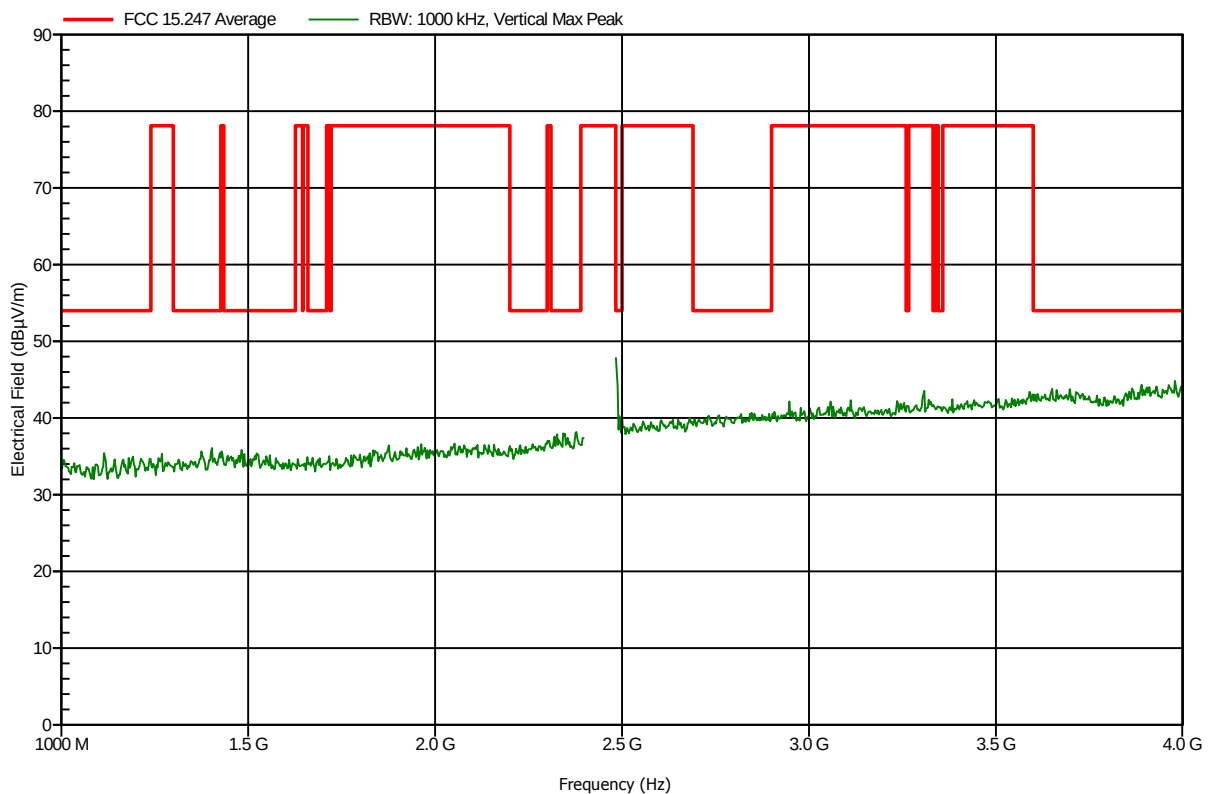


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer: TomTom Development Germany GmbH
 EUT Name: Telematic Device with GPRS/BT/GPS
 Model: Link5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 12 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; basic, DH5, ch78
 Test Date: 23.11.2011
 Note: Pass

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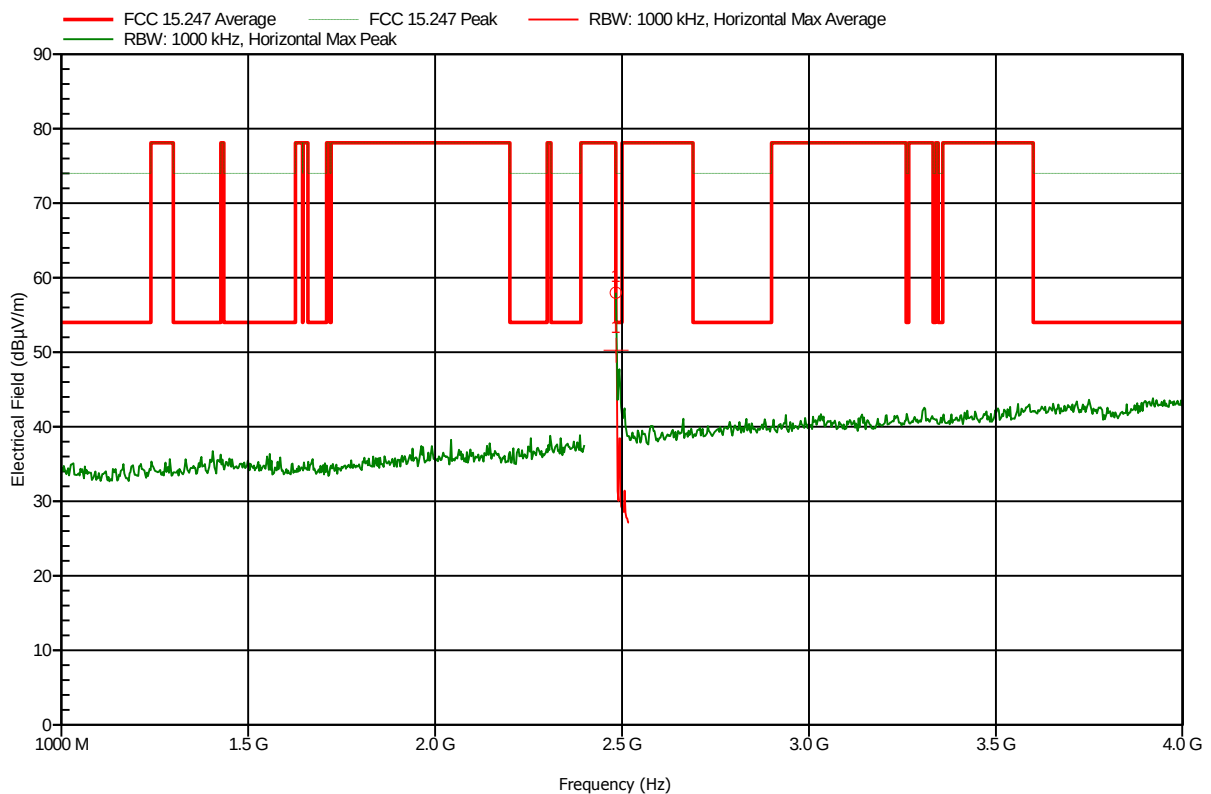


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer: TomTom Development Germany GmbH
 EUT Name: Telematic Device with GPRS/BT/GPS
 Model: Link5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 12 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; basic, DH5, ch78
 Test Date: 24.11.2011
 Note: Pass

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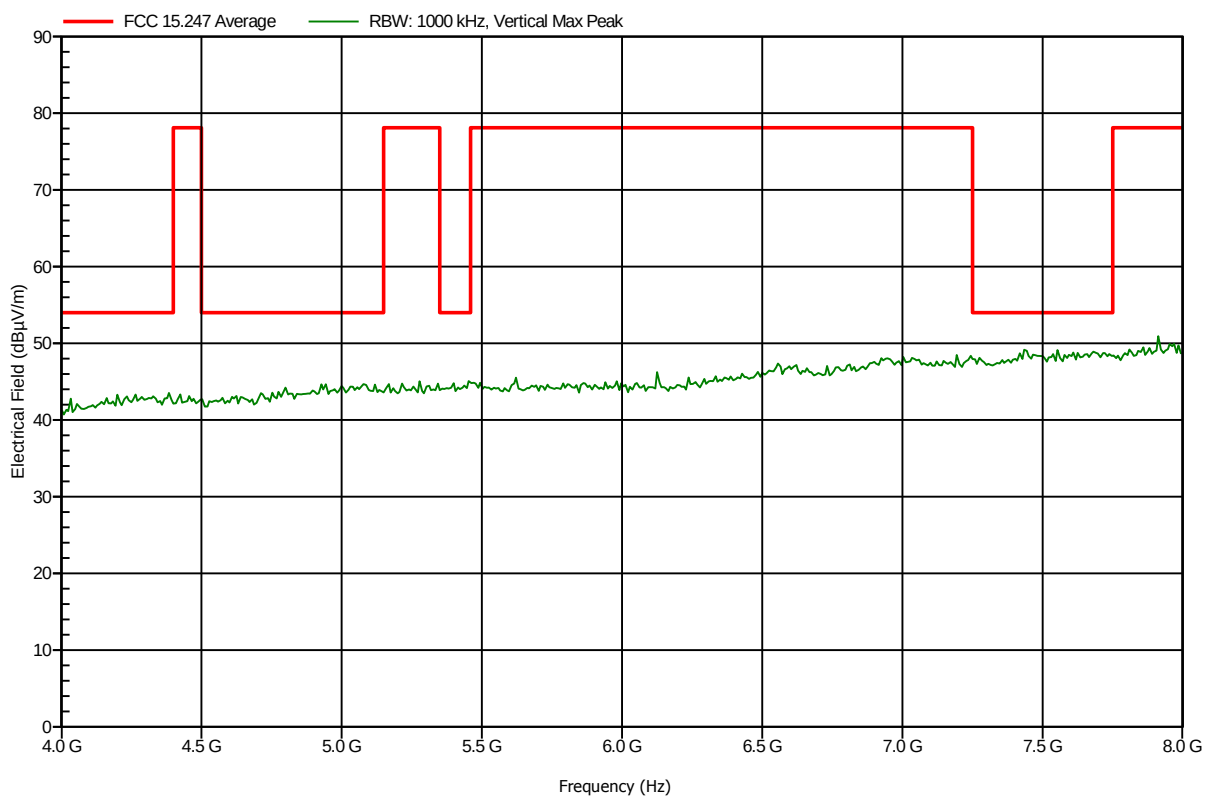
Frequency	Peak	Peak Limit	Peak Difference	Status
2.483 GHz	57.98 dBµV/m	74 dBµV/m	-16.02 dB	Pass
2.484 GHz				Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer: TomTom Development Germany GmbH
 EUT Name: Telematic Device with GPRS/BT/GPS
 Model: Link5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 12 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; basic, DH5, ch0
 Test Date: 23.11.2011
 Note: Pass

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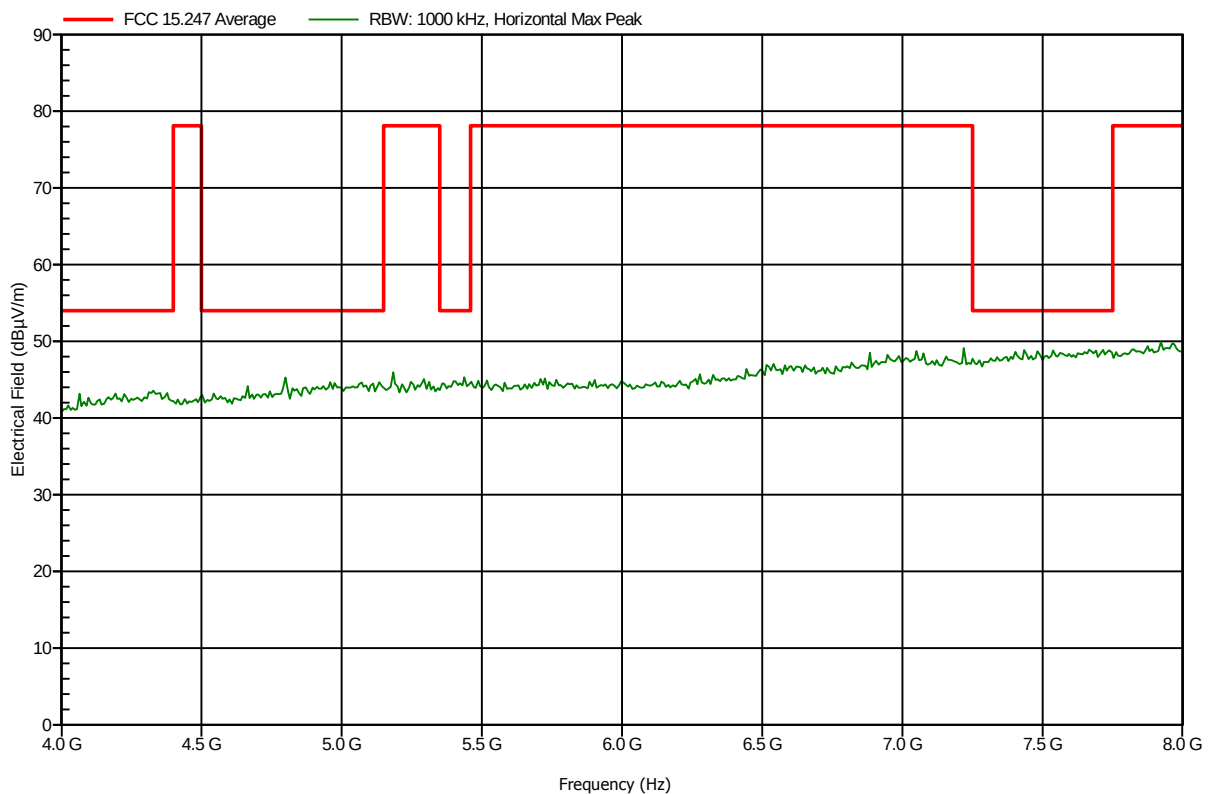


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer:	TomTom Development Germany GmbH
EUT Name:	Telematic Device with GPRS/BT/GPS
Model:	Link5
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 12 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; basic, DH5, ch0
Test Date:	23.11.2011
Note:	Pass

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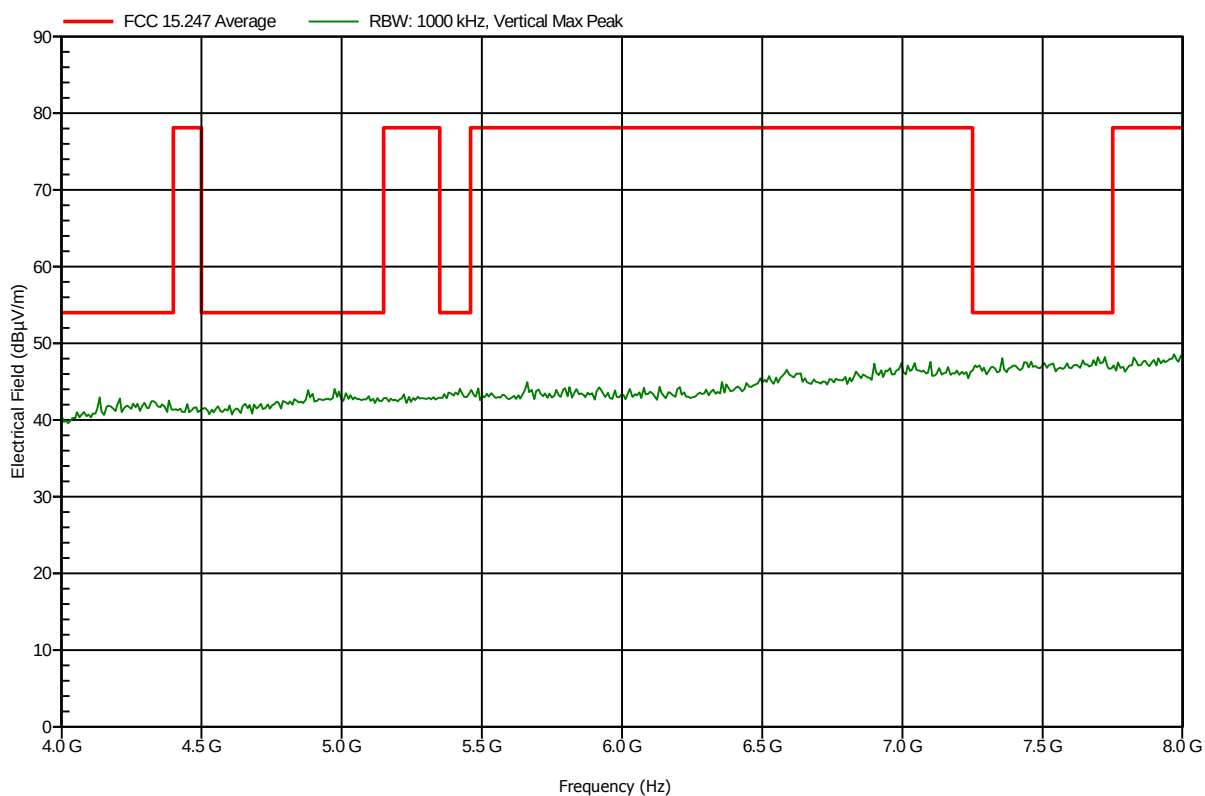


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer: TomTom Development Germany GmbH
 EUT Name: Telematic Device with GPRS/BT/GPS
 Model: Link5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 12 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; basic, DH5, ch39
 Test Date: 23.11.2011
 Note: Pass

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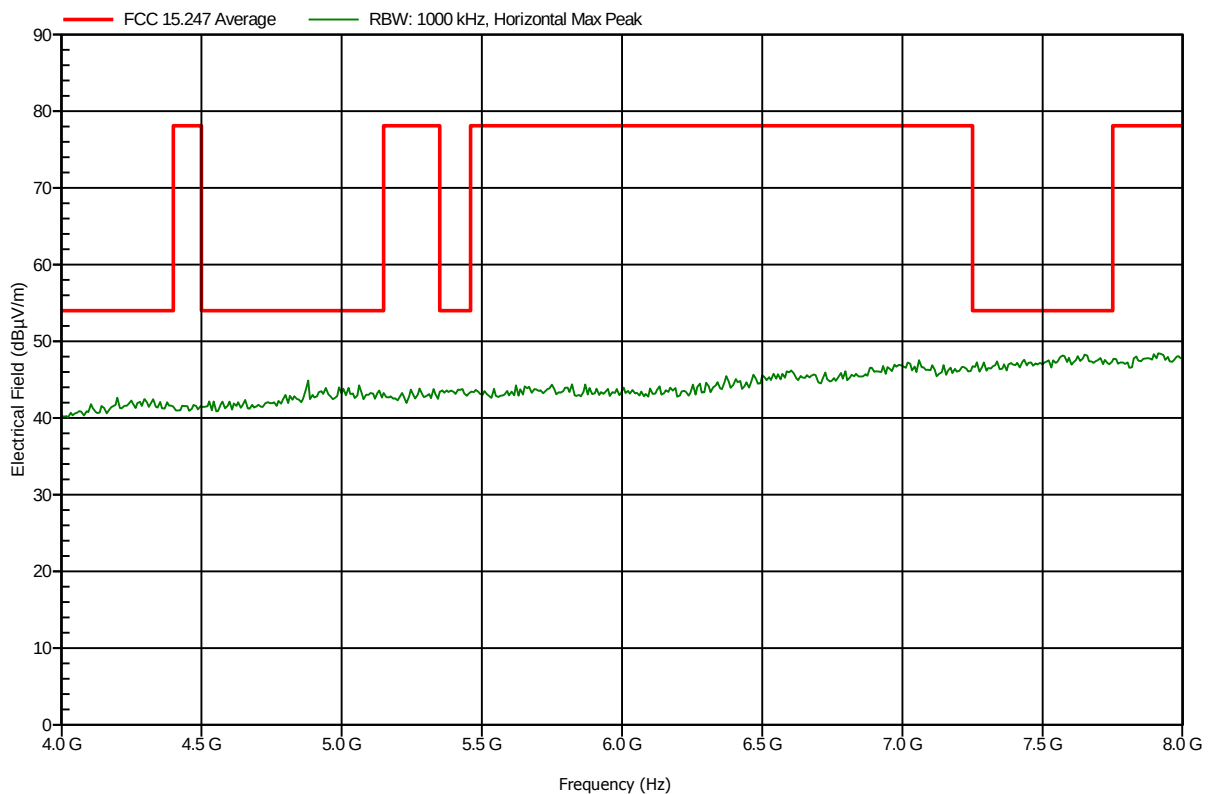


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer: TomTom Development Germany GmbH
 EUT Name: Telematic Device with GPRS/BT/GPS
 Model: Link5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 12 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; basic, DH5, ch39
 Test Date: 23.11.2011
 Note: Pass

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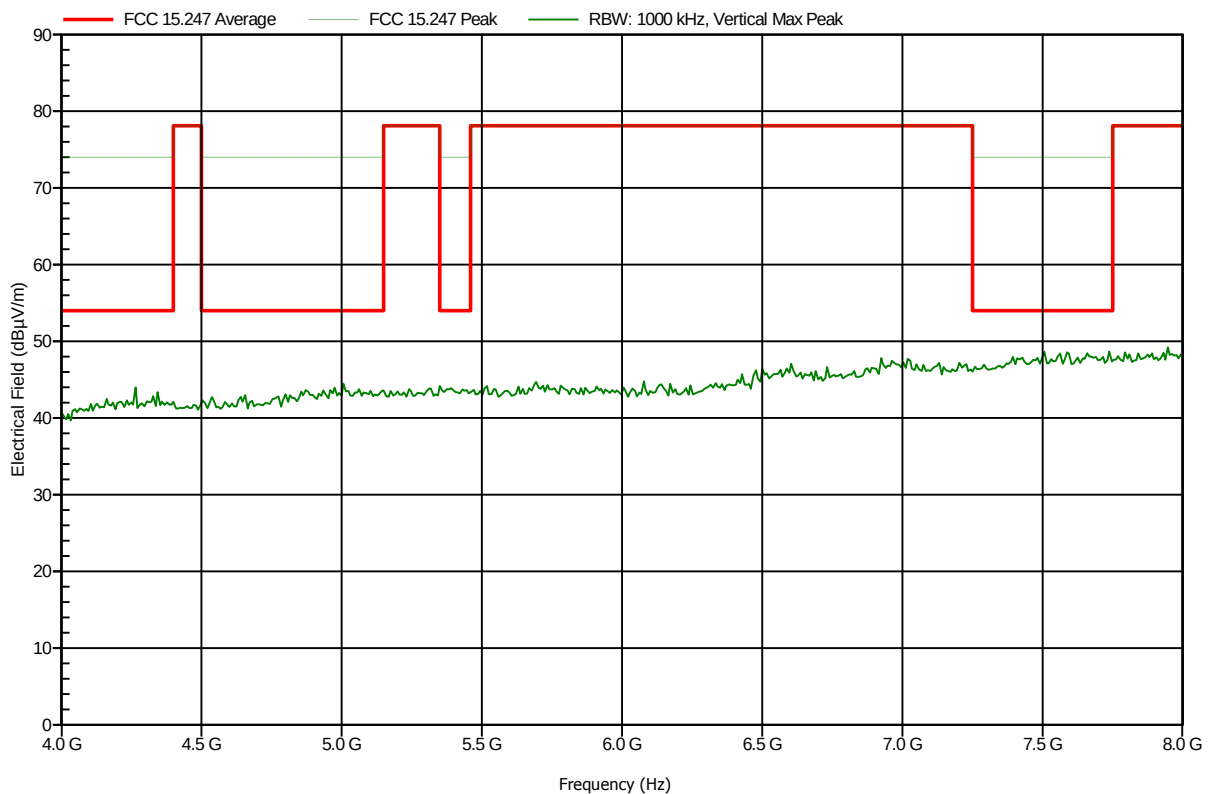


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer: TomTom Development Germany GmbH
 EUT Name: Telematic Device with GPRS/BT/GPS
 Model: Link5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 12 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; basic, DH5, ch78
 Test Date: 24.11.2011
 Note: Pass

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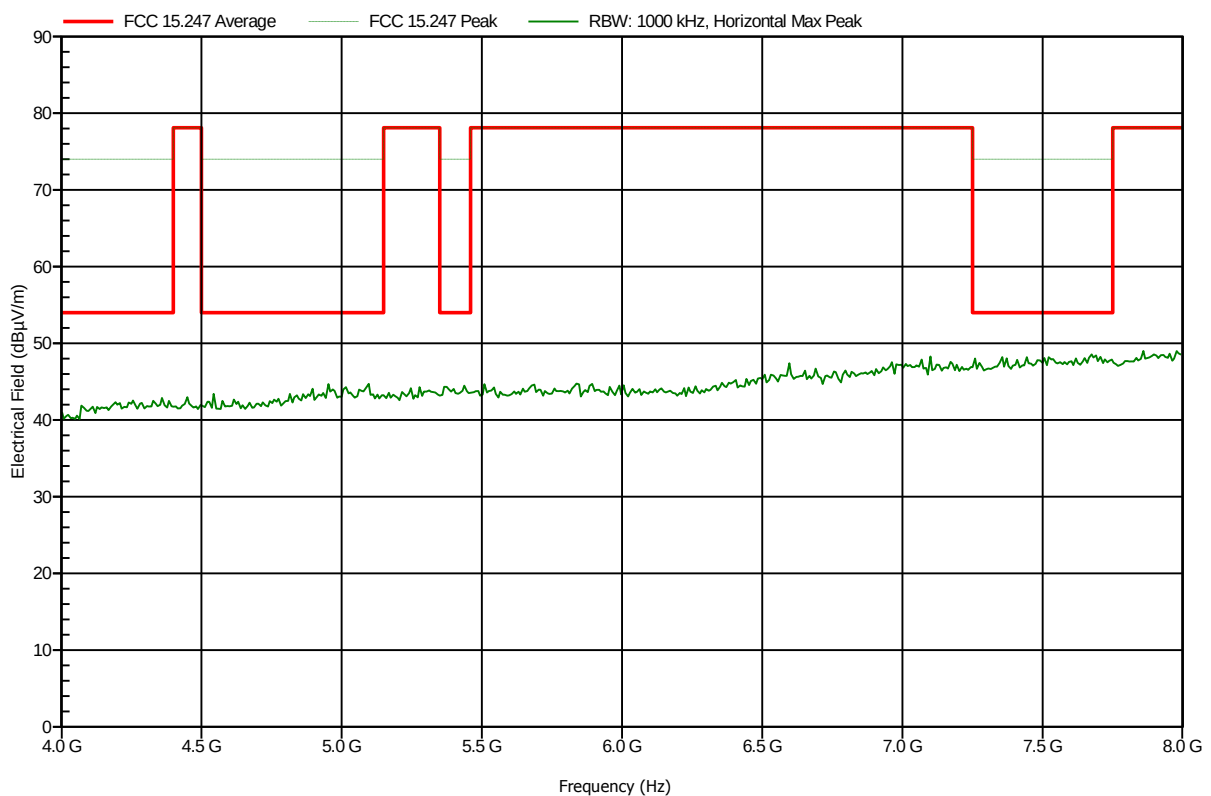


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer: TomTom Development Germany GmbH
 EUT Name: Telematic Device with GPRS/BT/GPS
 Model: Link5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 12 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; basic, DH5, ch78
 Test Date: 24.11.2011
 Note: Pass

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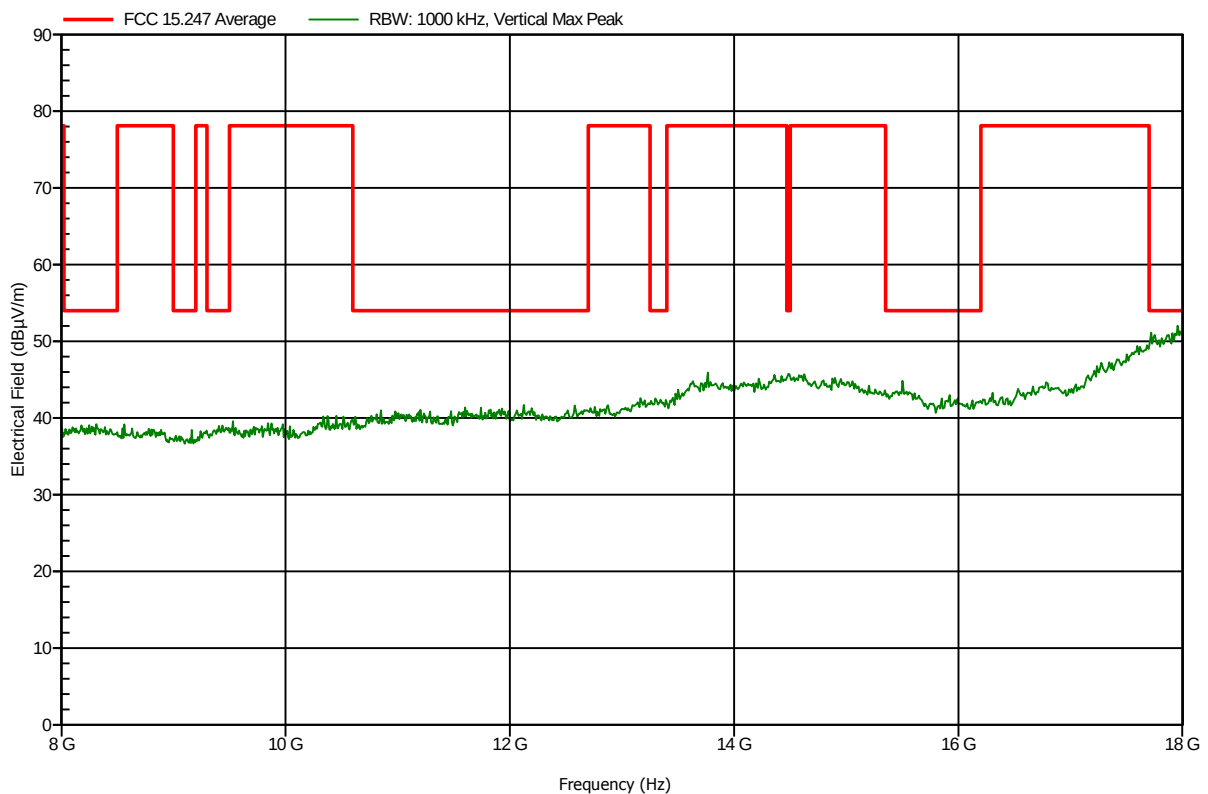


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer:	TomTom Development Germany GmbH
EUT Name:	Telematic Device with GPRS/BT/GPS
Model:	Link5
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 12 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	100 cm
Mode:	TX; basic, DH5, ch0
Test Date:	23.11.2011
Note:	Pass

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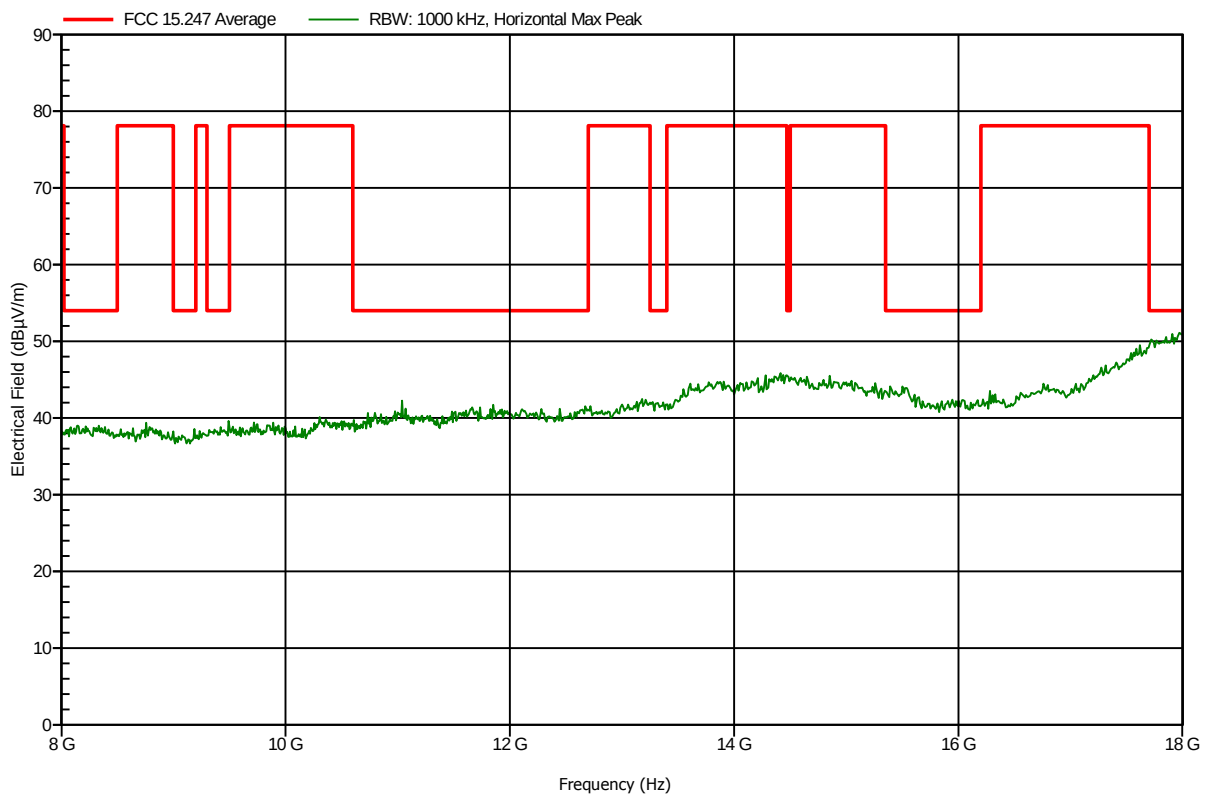


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer: TomTom Development Germany GmbH
 EUT Name: Telematic Device with GPRS/BT/GPS
 Model: Link5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 12 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 100 cm
 Mode: TX; basic, DH5, ch0
 Test Date: 23.11.2011
 Note: Pass

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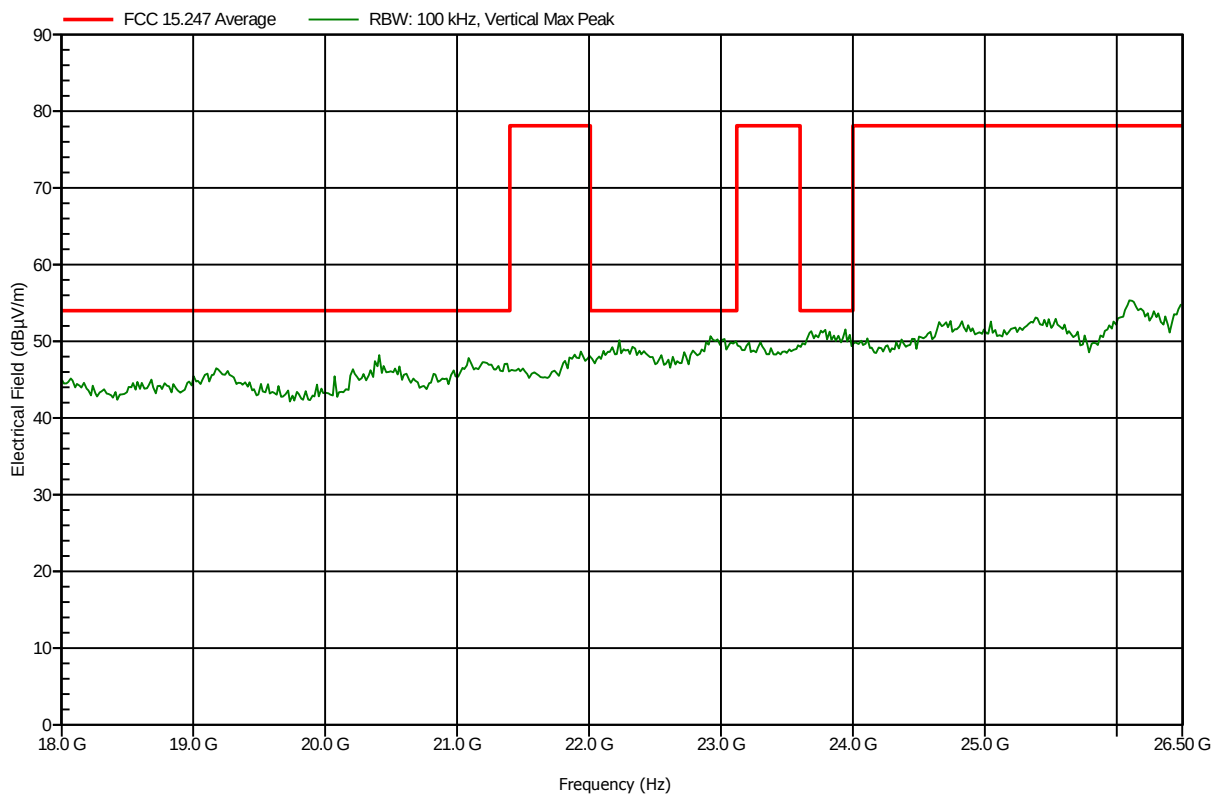


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer:	TomTom Development Germany GmbH
EUT Name:	Telematic Device with GPRS/BT/GPS
Model:	Link5
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 12 VDC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	100 cm
Mode:	TX; basic, DH5, ch0
Test Date:	23.11.2011
Note:	Pass

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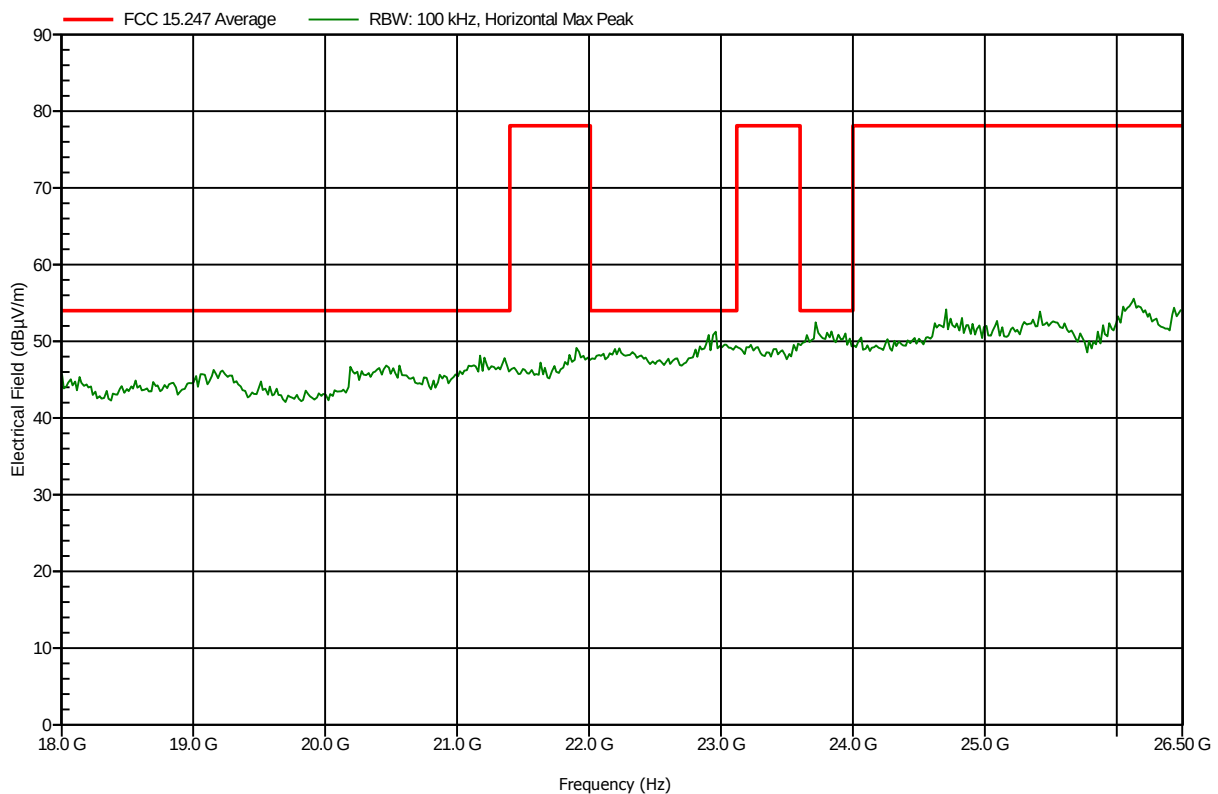


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer:	TomTom Development Germany GmbH
EUT Name:	Telematic Device with GPRS/BT/GPS
Model:	Link5
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 12 VDC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	100 cm
Mode:	TX; basic, DH5, ch0
Test Date:	23.11.2011
Note:	Pass

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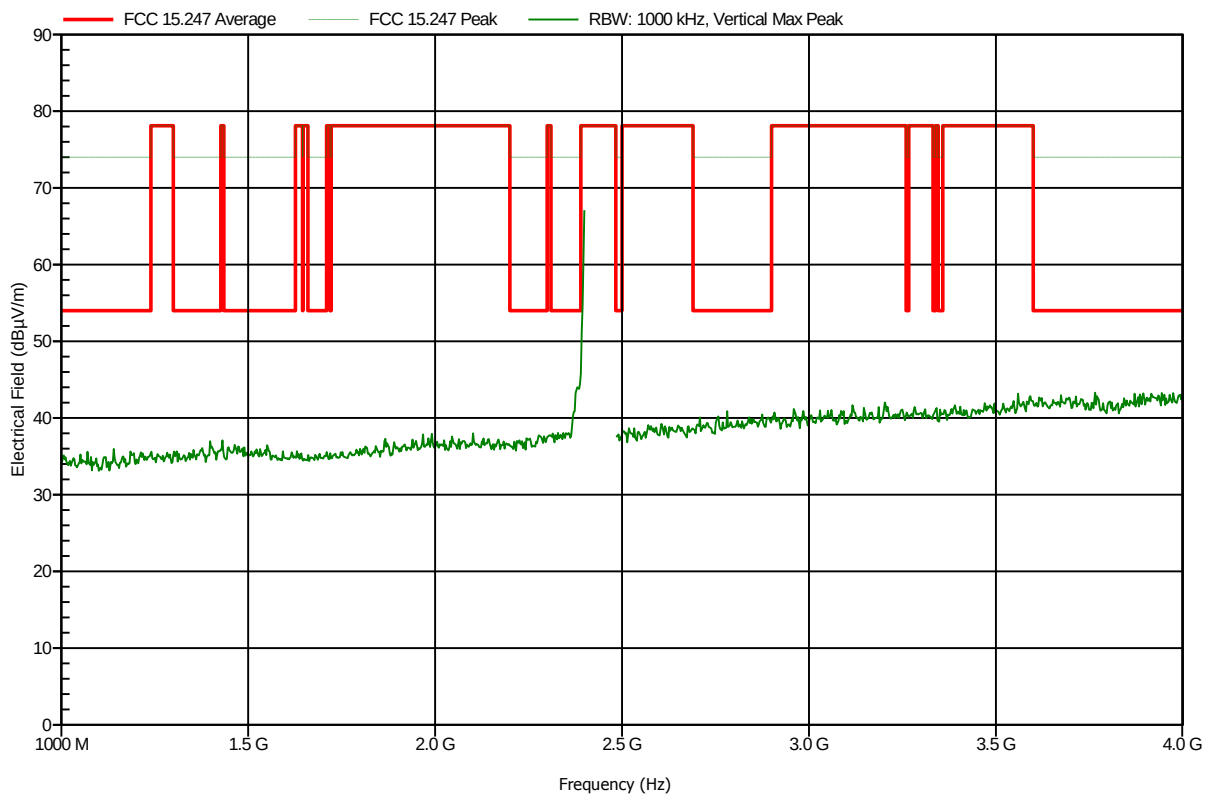


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer:	TomTom Development Germany GmbH
EUT Name:	Telematic Device with GPRS/BT/GPS
Model:	Link5
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 12 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; EDR, 3DH5, ch0
Test Date:	24.11.2011
Note:	Pass

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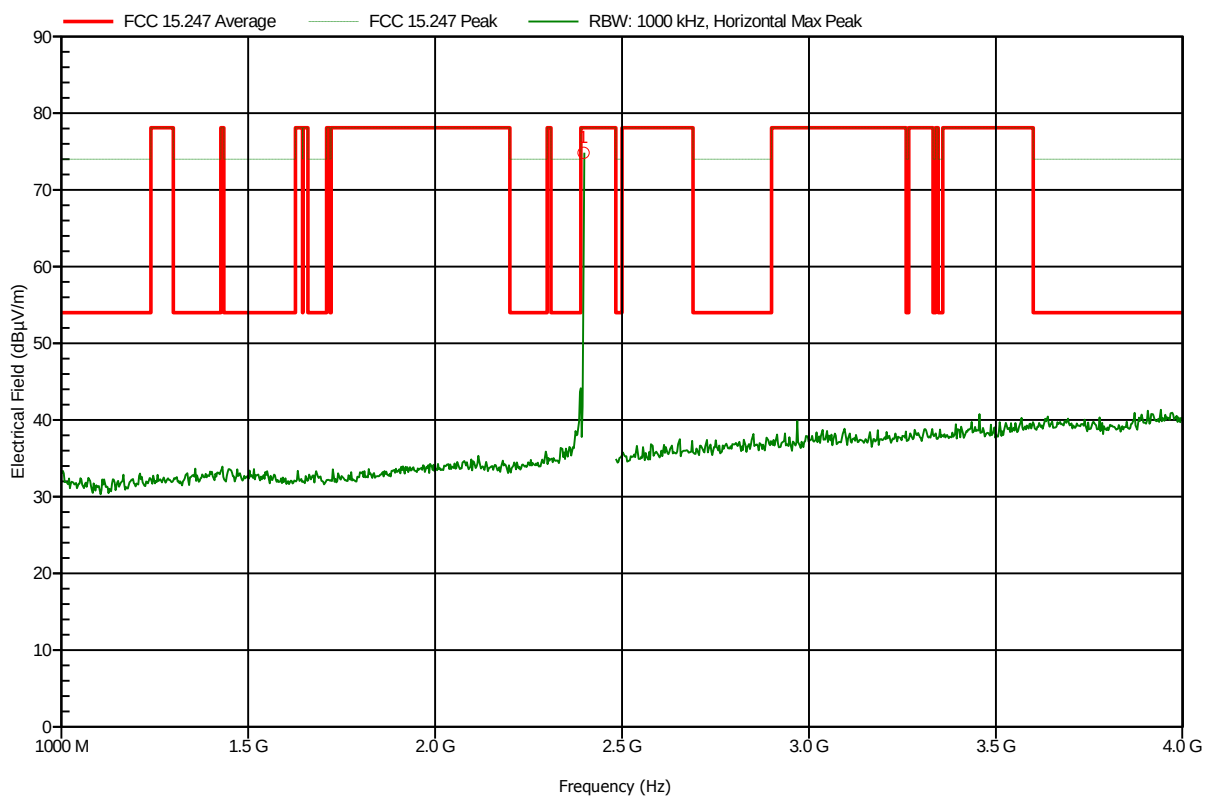


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer: TomTom Development Germany GmbH
 EUT Name: Telematic Device with GPRS/BT/GPS
 Model: Link5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 12 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; EDR, 3DH5, ch0
 Test Date: 24.11.2011
 Note: Pass

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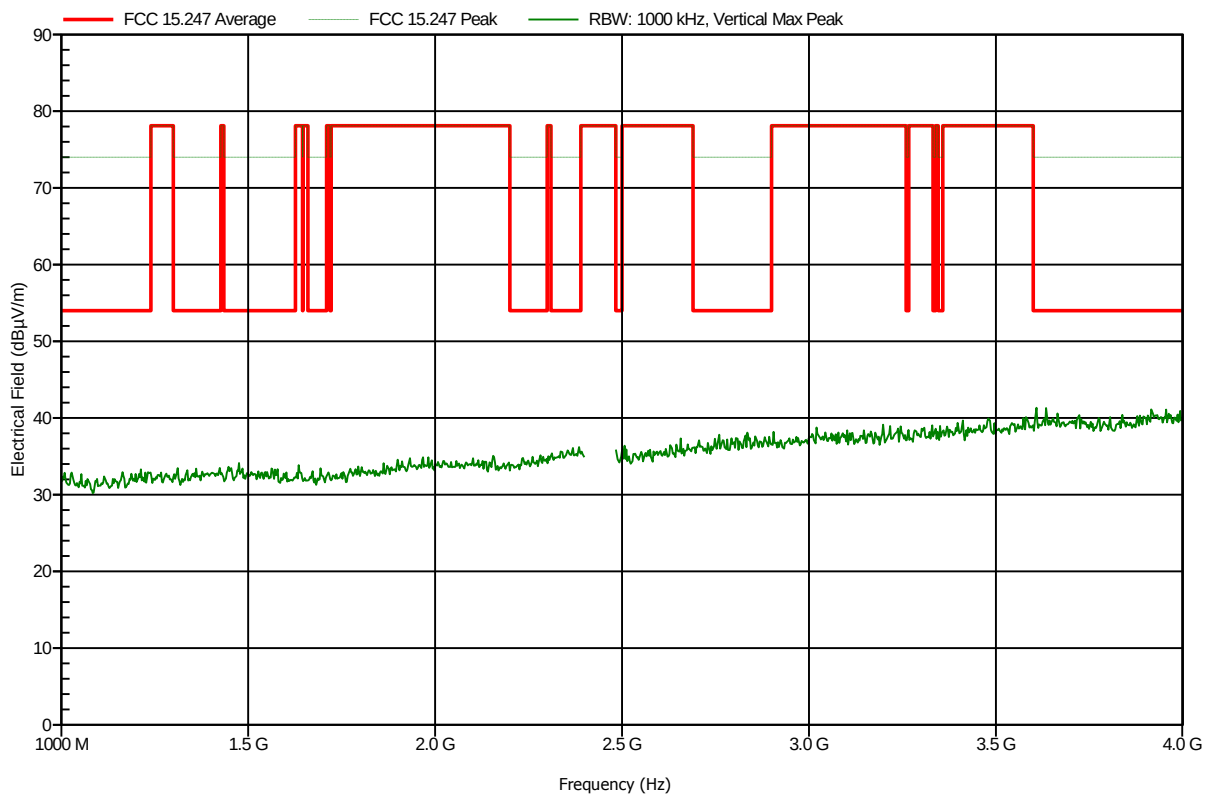
Frequency	Peak	Peak Limit	Peak Difference	Status
2.397 GHz	74.83 dBµV/m	78.1 dBµV/m	-3.27 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer: TomTom Development Germany GmbH
 EUT Name: Telematic Device with GPRS/BT/GPS
 Model: Link5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 12 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; EDR, 3DH5, ch39
 Test Date: 24.11.2011
 Note: Pass

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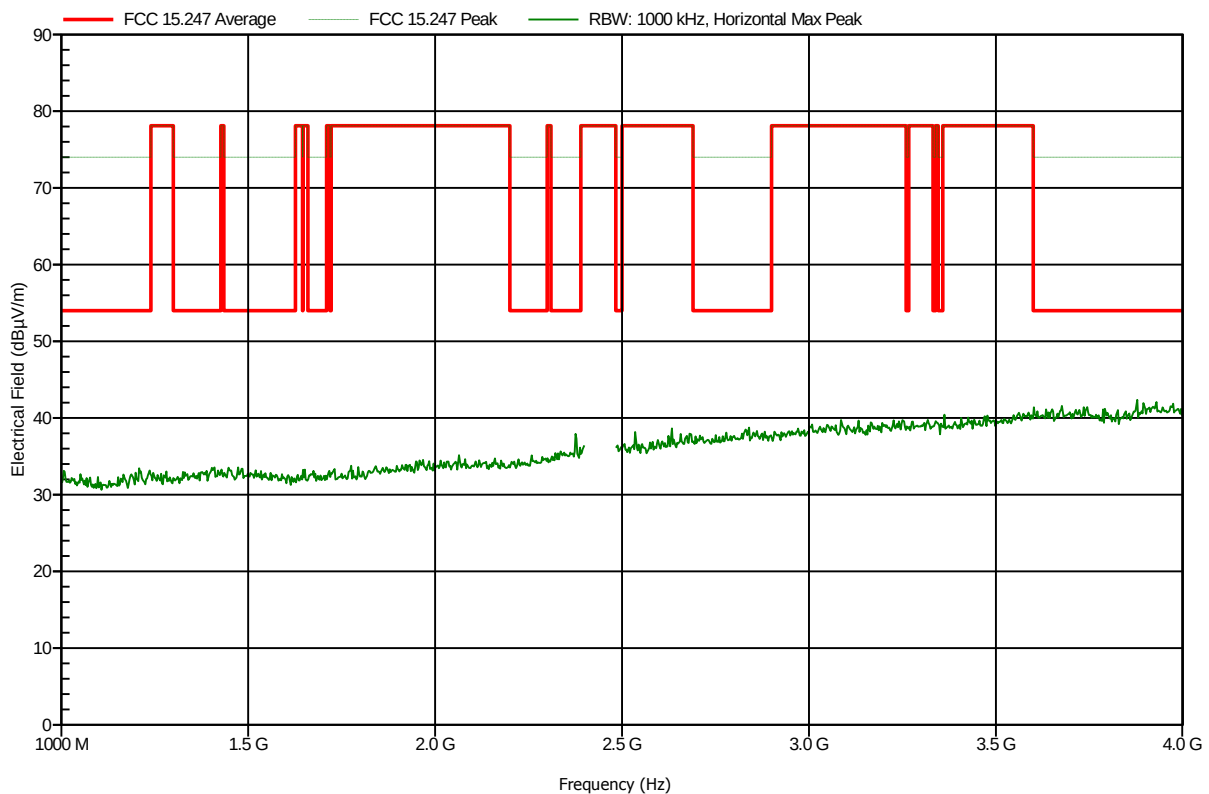


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer:	TomTom Development Germany GmbH
EUT Name:	Telematic Device with GPRS/BT/GPS
Model:	Link5
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 12 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; EDR, 3DH5, ch39
Test Date:	24.11.2011
Note:	Pass

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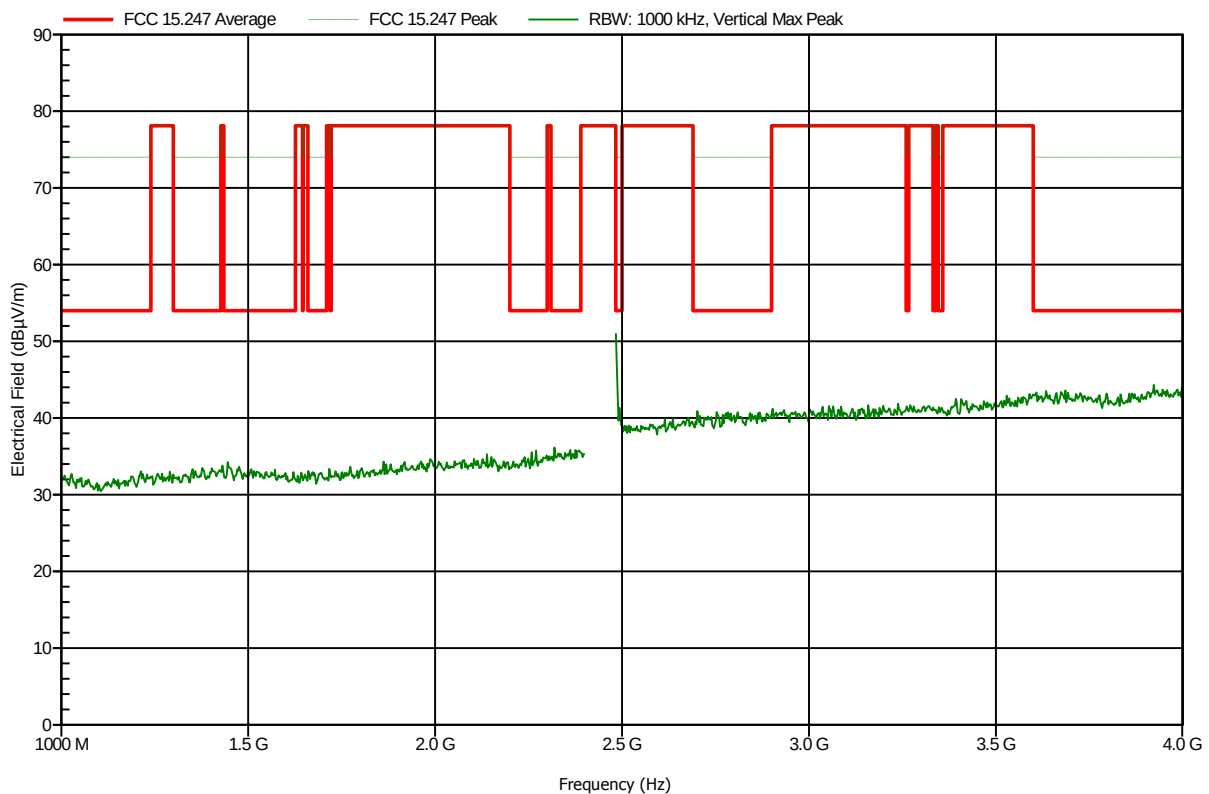


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer:	TomTom Development Germany GmbH
EUT Name:	Telematic Device with GPRS/BT/GPS
Model:	Link5
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 24°C, Vnom: 12 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; EDR, 3DH5, ch78
Test Date:	24.11.2011
Note:	Pass

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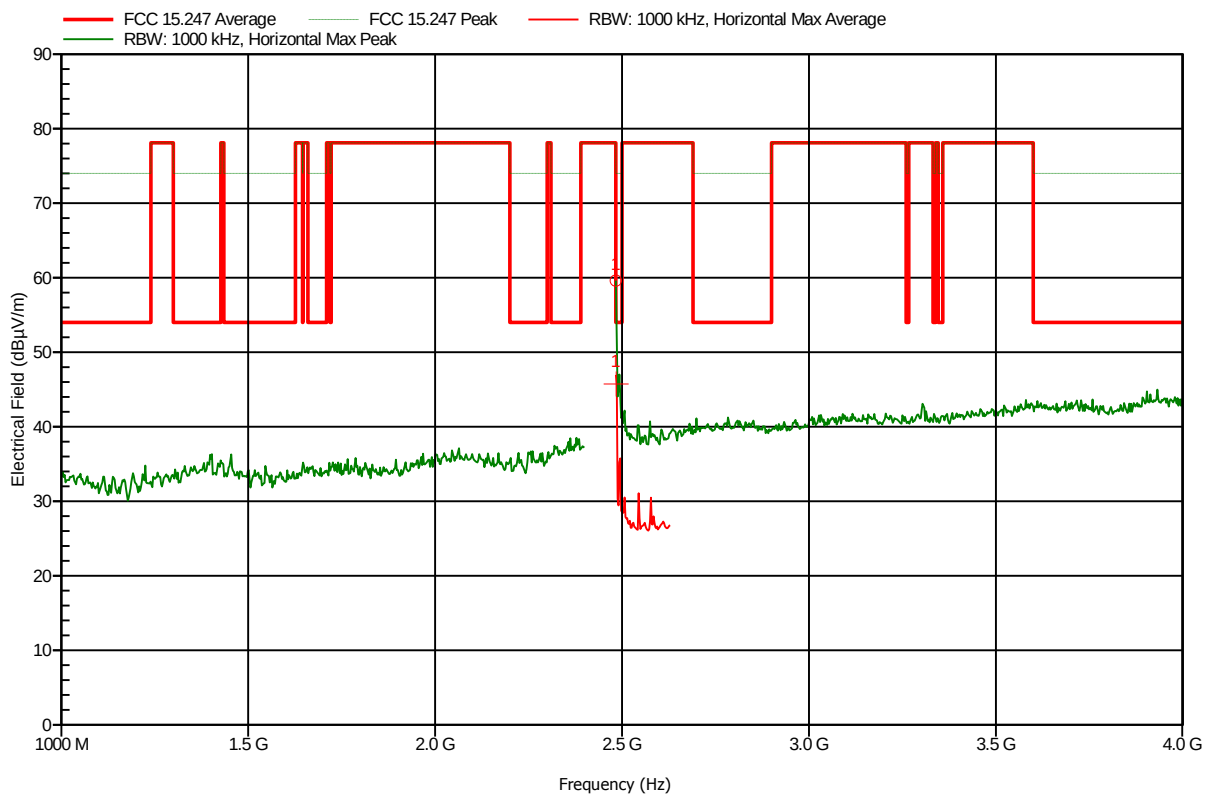


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer: TomTom Development Germany GmbH
 EUT Name: Telematic Device with GPRS/BT/GPS
 Model: Link5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 12 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; EDR, 3DH5, ch78
 Test Date: 24.11.2011
 Note: Pass

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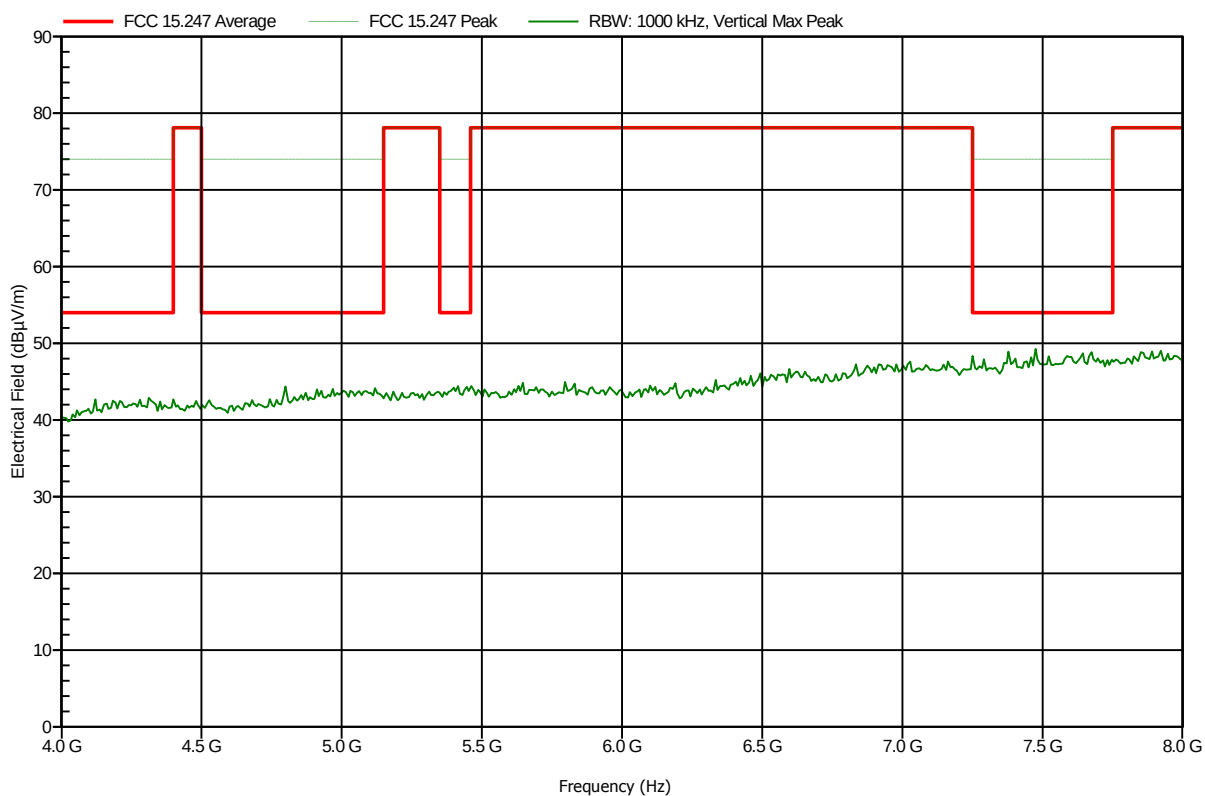
Frequency	Peak	Peak Limit	Peak Difference	Status
2.483 GHz	59.61 dBµV/m	74 dBµV/m	-14.39 dB	Pass
2.484 GHz				Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer: TomTom Development Germany GmbH
 EUT Name: Telematic Device with GPRS/BT/GPS
 Model: Link5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 12 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; EDR, 3DH5, ch0
 Test Date: 24.11.2011
 Note: Pass

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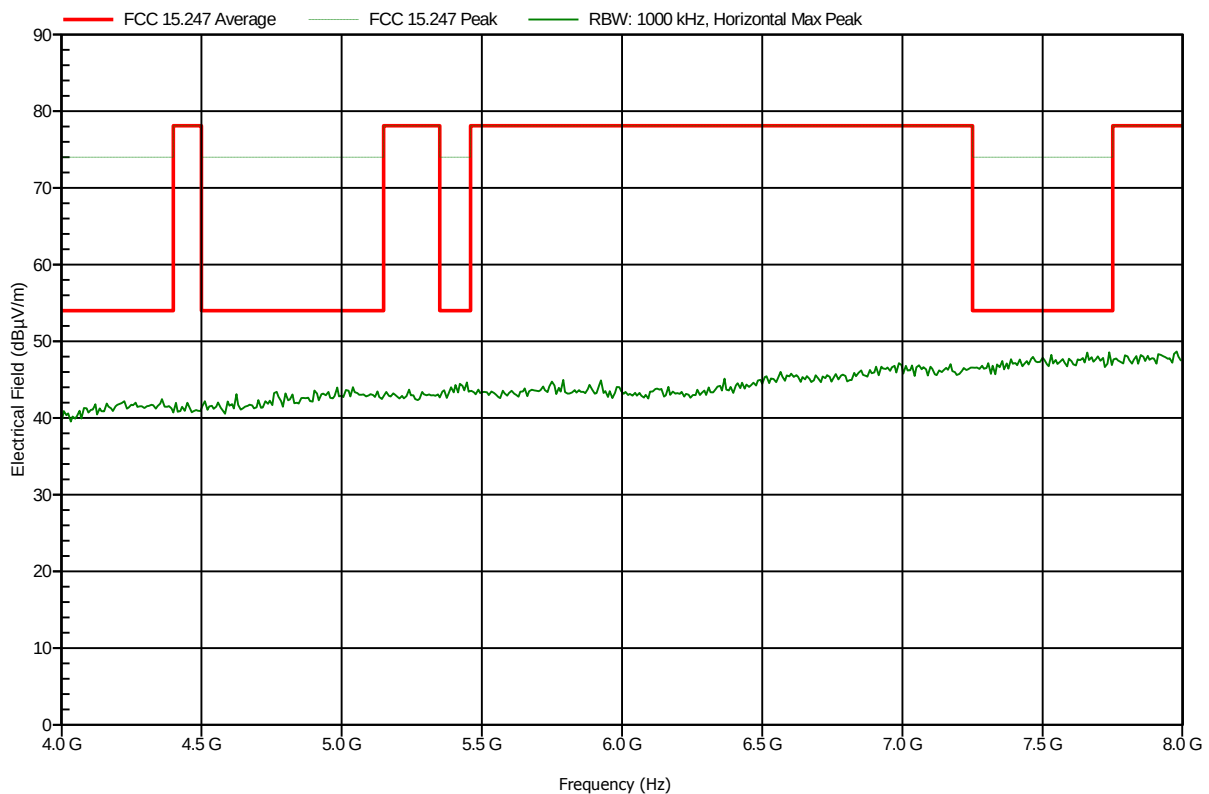


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer: TomTom Development Germany GmbH
 EUT Name: Telematic Device with GPRS/BT/GPS
 Model: Link5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 12 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; EDR, 3DH5, ch0
 Test Date: 24.11.2011
 Note: Pass

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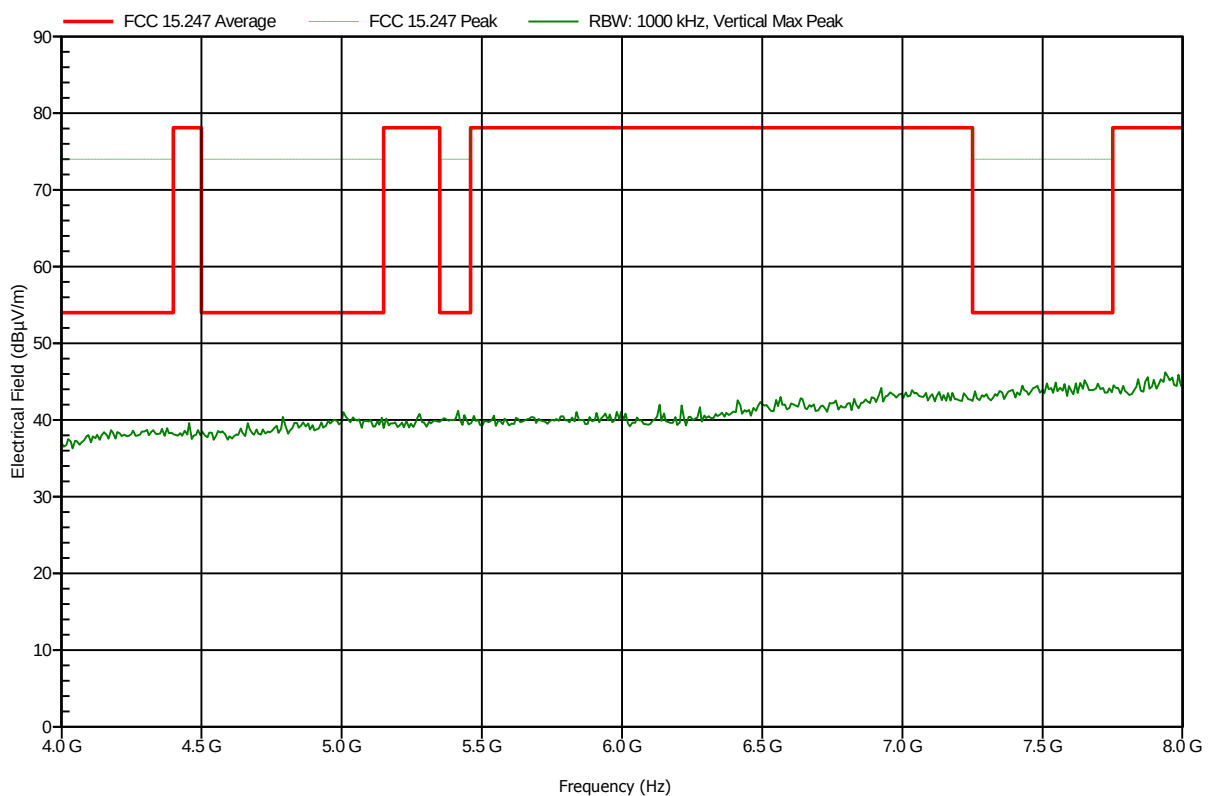


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer: TomTom Development Germany GmbH
 EUT Name: Telematic Device with GPRS/BT/GPS
 Model: Link5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 12 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; EDR, 3DH5, ch39
 Test Date: 24.11.2011
 Note: Pass

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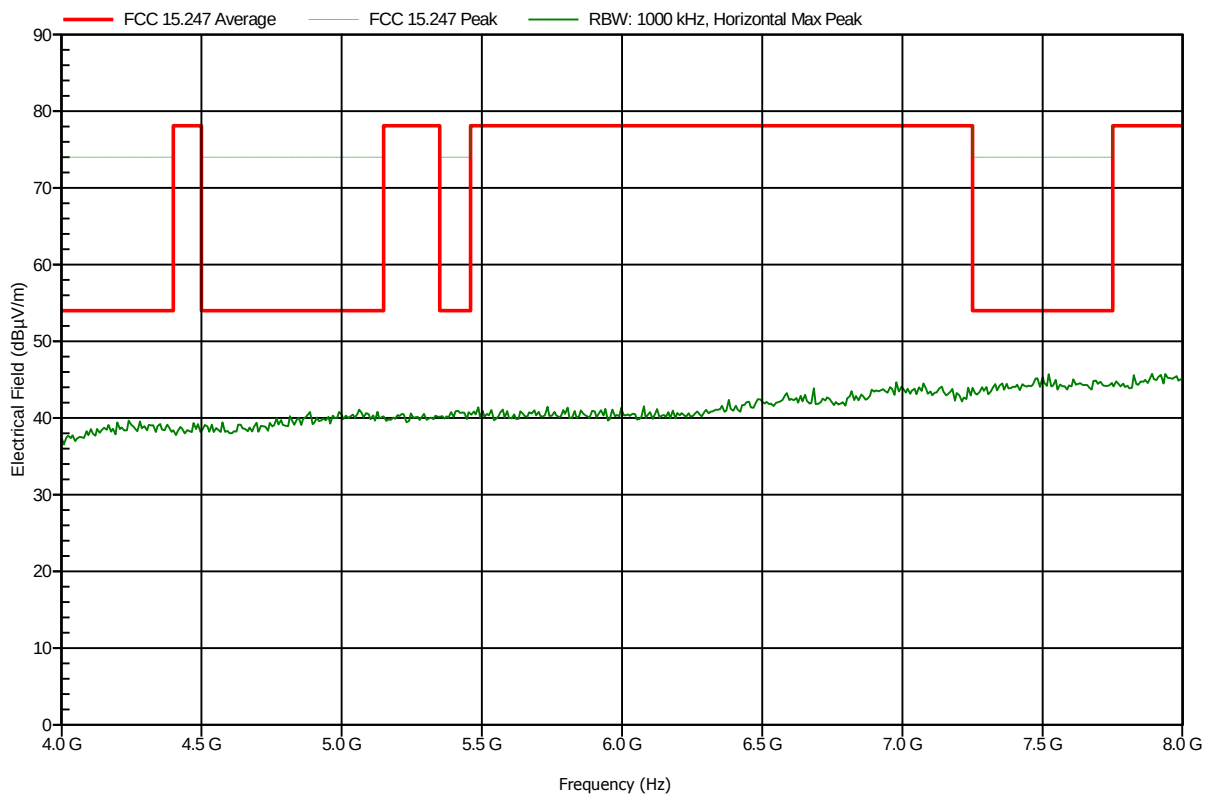


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer: TomTom Development Germany GmbH
 EUT Name: Telematic Device with GPRS/BT/GPS
 Model: Link5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 12 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; EDR, 3DH5, ch39
 Test Date: 24.11.2011
 Note: Pass

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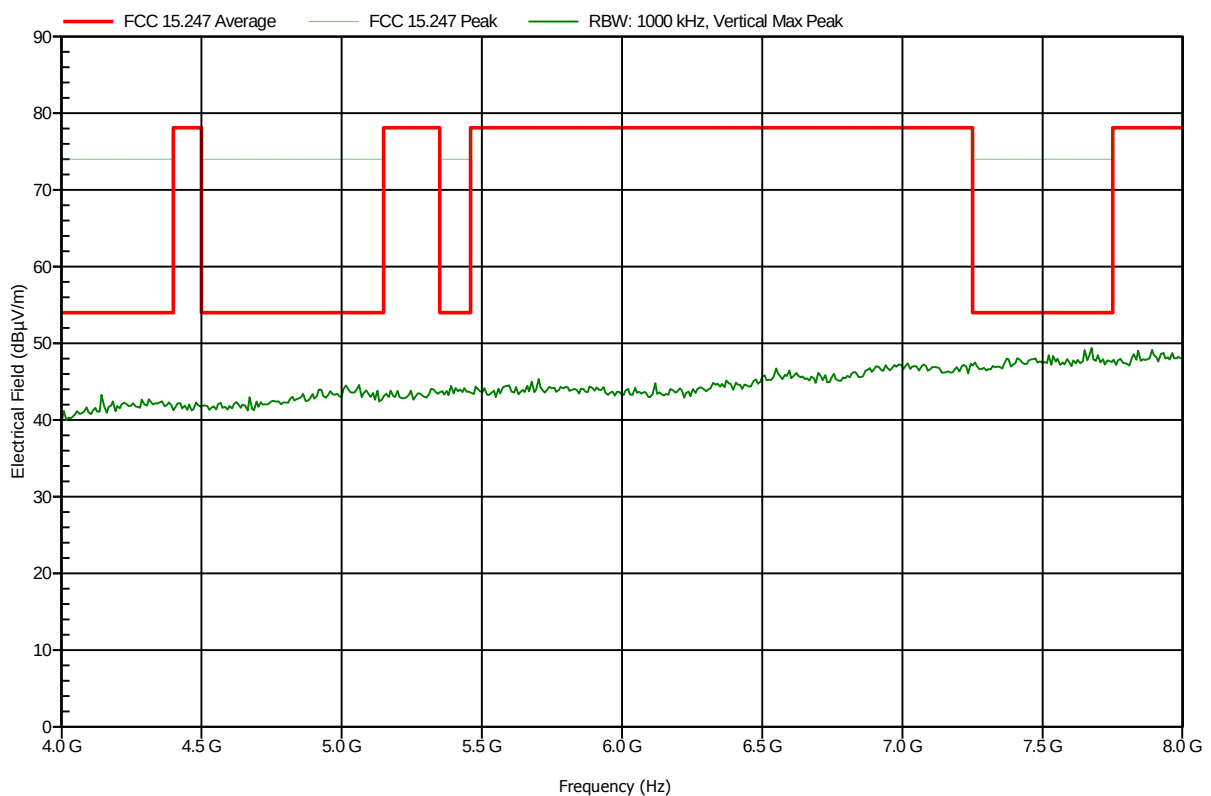


Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer: TomTom Development Germany GmbH
 EUT Name: Telematic Device with GPRS/BT/GPS
 Model: Link5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 12 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; EDR, 3DH5, ch78
 Test Date: 24.11.2011
 Note: Pass

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Spurious emissions according to FCC 15.247

Project number: G0M-1111-1529

Manufacturer: TomTom Development Germany GmbH
 EUT Name: Telematic Device with GPRS/BT/GPS
 Model: Link5
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 24°C, Vnom: 12 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; EDR, 3DH5, ch78
 Test Date: 24.11.2011
 Note: Pass

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