RADIO REPORT

FCC 47 CFR Part 15C
ISED Canada RSS-247

Frequency hopping systems operating within the 2400 – 2483.5 MHz band

Report Reference No	G0M-1802-7246-TFC247BT-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	A2LA Accredited Testing Laboratory, Certificate No.: 1983.01 FCC Test Firm Designation Number: DE0008 IC Testing Laboratory site: 3470A-2
Applicant	TomTom Telematics B.V.
Address	De Ruijterkade 154 1011 AC Amsterdam NETHERLANDS
Test Specification	According to FCC/ISED rules
Standard	47 CFR Part 15C RSS-247, Issue 2, 2017-02
Non-Standard Test Method	None
Test Scope	Full compliance test
Equipment under Test (EUT):	
Product Description	Telematics Device with Bluetooth
Model(s)	L0101
Additional Model(s)	None
Brand Name(s)	LINK 100, LINK 105
Hardware Version(s)	rbn_0_11_brd
Software Version(s)	2.1.1362
FCC-ID	2AGPAL0101
IC	20911-L0101
Test Result	**PASSED**

Possible test case verdicts:		
required by standard but not tested	N/T	
not required by standard	N/R	
not applicable to EUT	N/A	
test object does meet the requirement	P(PASS)	
test object does not meet the requirement	F(FAIL)	
Testing:		
Test Lab Temperature	20 - 23 °C	
Test Lab Humidity	32 – 38 %	
Date of receipt of test item	2018-03-10	
Report:		
Compiled by	Wilfried Treffke	
Tested by (+ signature) (Responsible for Test)	Wilfried Treffke	W. Treffke .....
Approved by (+ signature) (Head of Lab)	Christian Weber	C. Weber .....
Date of Issue	2018-03-23	
Total number of pages	128	
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 History			
Version	Issue Date	Remarks	Revised By
01	2017-03-23	Initial Release	

ABBREVIATIONS AND ACRONYMS

Acronyms	
Acronym	Description
BR	Bluetooth Basic Rate mode
EDR	Bluetooth Enhanced Data Rate mode
EUT	Equipment Under Test
FCC	Federal Communications Commission
ISED	Innovation, Science and Economic Development Canada
RBW	Resolution bandwidth
RMS	Root mean square
VBW	Video bandwidth
V_{NOM}	Nominal supply voltage

REPORT INDEX

1 Equipment (Test Item) Under Test

Description	Telematics Device with Bluetooth	
Model	L0101	
Additional Model(s)	None	
Brand Name(s)	LINK 100, LINK 105	
Serial Number(s)	None	
Hardware Version(s)	rbn_0_11_brd	
Software Version(s)	2.1.1362	
PMN	LINK 100, LINK 105	
HVIN	L0101	
FVIN	None	
HMN	None	
FCC-ID	2AGPAL0101	
IC	20911-L0101	
Equipment type	End Product	
Radio type	Transceiver	
Assigned frequency bands	2400 - 2483.5 MHz	
Radio technology	Bluetooth	
Modulation	GFSK, PI/4-DQPSK, 8-DPSK	
Number of antenna ports	1	
Antenna	Type	Integrated
	Model	ALA321C3
	Manufacturer	Amotech Co., LTD.
	Gain	0 dBi (customer declaration)
Supply Voltage	V_{NOM}	24.0 VDC
Operating Temperature	T_{NOM}	25 °C
AC/DC-Adaptor	Model	None
	Vendor	None
	Input	None
	Output	None
Manufacturer	TomTom Telematics B.V. De Ruijterkade 154 1011 AC Amsterdam NETHERLANDS	

1.1 Photos – Equipment External

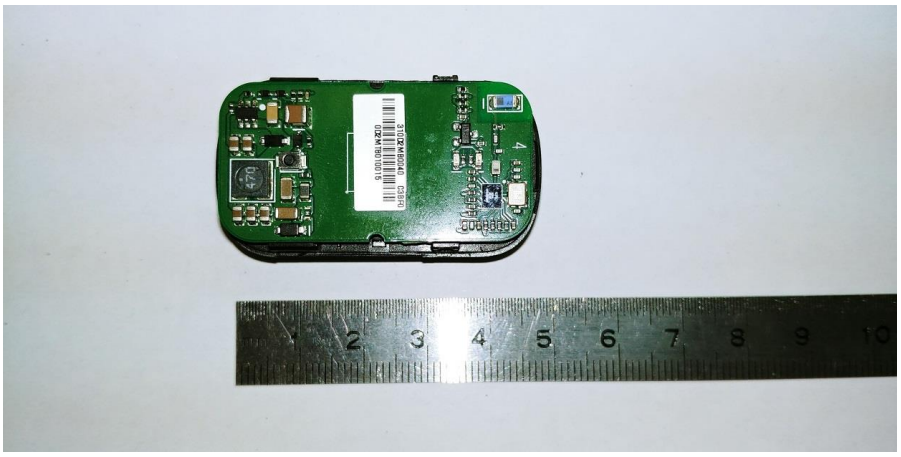
EUT Overview

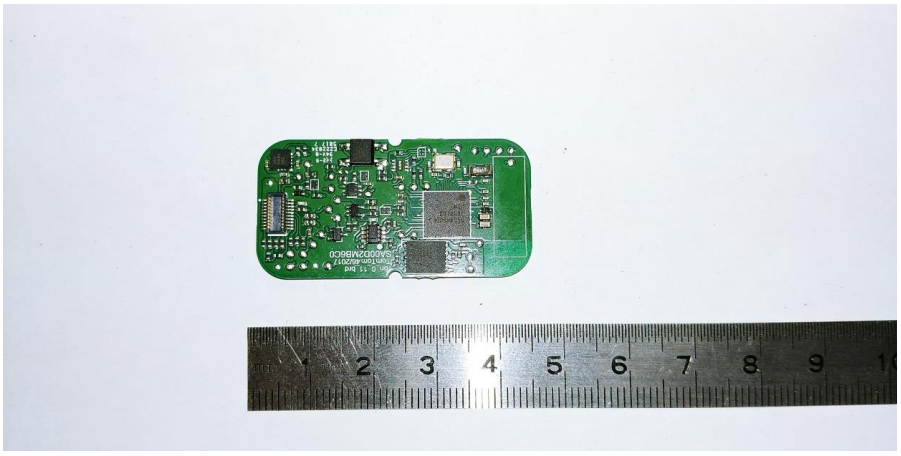

EUT Top


EUT Bottom

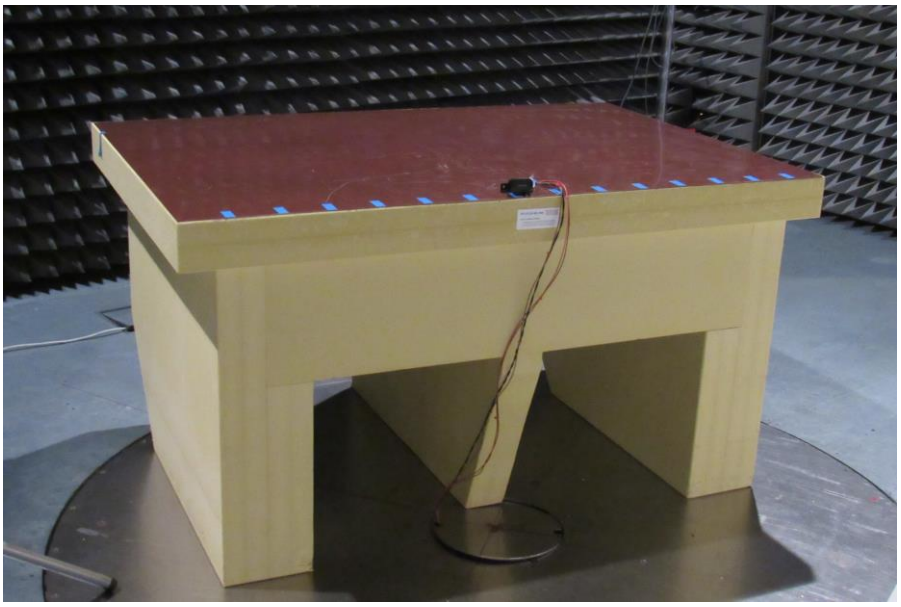

1.2 Photos – Equipment Internal

EUT Open


PCB Top


PCB Bottom


1.3 Photos – Test Setup

7151 001


1.4 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
SIM	Communication Tester	R&S	CBT	Radiated test
SIM	Communication Tester	R&S	CMW270	Conducted test
Description:				
AE	Auxillary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
Comment:				

1.5 Test Modes

Mode	Description
DH5 Single	Mode = Transmit Modulation = GFSK Spreading = None Packet type = DH5 Duty cycle = 78%
2-DH5 Single	Mode = Transmit Modulation = PI/4-DQPSK Spreading = None Packet type = 2-DH5 Duty cycle = 78%
3-DH5 Single	Mode = Transmit Modulation = 8-DPSK Spreading = None Packet type = 3-DH5 Duty cycle = 78%
DH5 Hopping	Mode = Transmit Modulation = GFSK Spreading = FHSS Packet type = DH5 Duty cycle = 78%
2-DH5 Hopping	Mode = Transmit Modulation = PI/4-DQPSK Spreading = FHSS Packet type = 2-DH5 Duty cycle = 78%
3-DH5 Hopping	Mode = Transmit Modulation = 8-DPSK Spreading = FHSS Packet type = 3-DH5 Duty cycle = 78%
Receive	Mode = Receive
Comment:	

1.6 Test Frequencies

Designator	Mode	Channel	Frequency [MHz]
F1	Tx / Rx	0	2402
F2	Tx / Rx	39	2441
F3	Tx / Rx	40	2442
F4	Tx / Rx	78	2480

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:

Reading on Analyzer (dBµV) + A.F. (dB) = Net field strength (dBµV/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:

Limit (dBµV/m) = 20*log (µV/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, ISED RSS-247				
Product Standard Reference	**Requirement**	**Reference Method**	**Result**	**Remarks**
RSS-Gen 6.6	Occupied Bandwidth	ANSI C63.10	N/R	Informational only
FCC § 15.247(a)(1) ISED RSS-247 § 5.1	20 dB Bandwidth	ANSI C63.10	PASS	
FCC § 15.247(a)(1)(iii) ISED RSS-247 § 5.1	Number of hopping frequencies	ANSI C63.10	PASS	
FCC § 15.247(a)(1) ISED RSS-247 § 5.1	Frequency hopping channel separation	ANSI C63.10	PASS	
FCC § 15.247(a)(1)(iii) ISED RSS-247 § 5.1	Time of occupancy (Dwell time)	ANSI C63.10	PASS	
FCC § 15.247(b)(1) ISED RSS-247 § 5.4	Maximum peak conducted power	ANSI C63.10	PASS	
FCC § 15.207 ISED RSS-247 § 3.1	AC power line conducted emissions	ANSI C63.10	N/R	*
FCC § 15.247(d) ISED RSS-247 § 5.5	Band edge compliance	ANSI C63.10	PASS	
FCC § 15.247(d) ISED RSS-247 § 5.5	Conducted spurious emissions	ANSI C63.10	PASS	
FCC § 15.247(d) FCC § 15.209 ISED RSS-GEN § 8.9	Transmitter radiated spurious emissions	ANSI C63.10	PASS	
ISED RSS-247 § 3.1	Receiver radiated spurious emissions	ANSI C63.10	PASS	
Comment: * No powered (directly or indirectly) via AC-Mains				

Possible Test Case Verdicts	
PASS	Test object does meet the requirements
FAIL	Test object does not meet the requirements
N/T	Required by standard but not tested
N/R	Not required by standard for the test object

3 Test Conditions and Results

3.1 Test Conditions and Results - Occupied bandwidth

3.1.1 Information

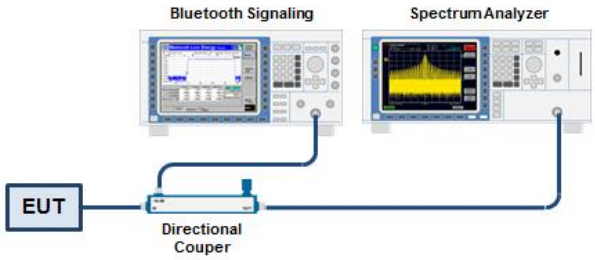
Test Information	
Reference	ISED RSS-Gen 6.6
Measurement Method	ANSI C63.10 6.9.3
Operator	Wilfried Treffke
Date	2018-03-13

3.1.2 Limits

Limits
None (Informational only)

3.1.3 Setup

Test Setup



3.1.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01003	2017-07	2018-07

3.1.5 Procedure

Test Procedure

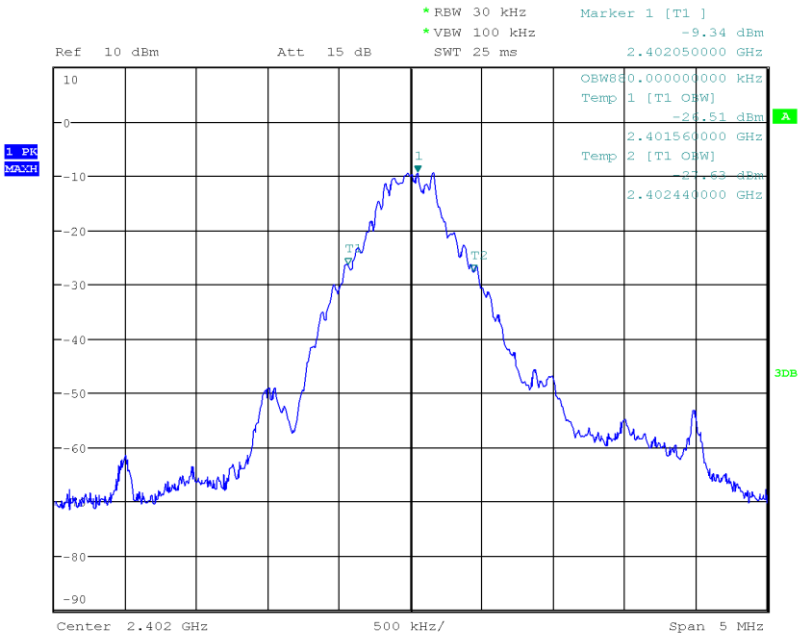
1. EUT transmitter is activated in test mode under normal conditions
2. The spectrum analyzer is set to peak detection and maximum hold with a span twice the emission spectrum
3. The resolution bandwidth is set to 1 % of the bandwidth
4. The occupied bandwidth is measured with the build-in analyzer function

3.1.6 Results

Test Results		
Mode	Frequency [MHz]	Bandwidth [MHz]
DH5	2402	0.880
DH5	2441	0.880
DH5	2480	0.885
2-DH5	2402	1.170
2-DH5	2441	1.170
2-DH5	2480	1.170
3-DH5	2402	1.175
3-DH5	2441	1.175
3-DH5	2480	1.175

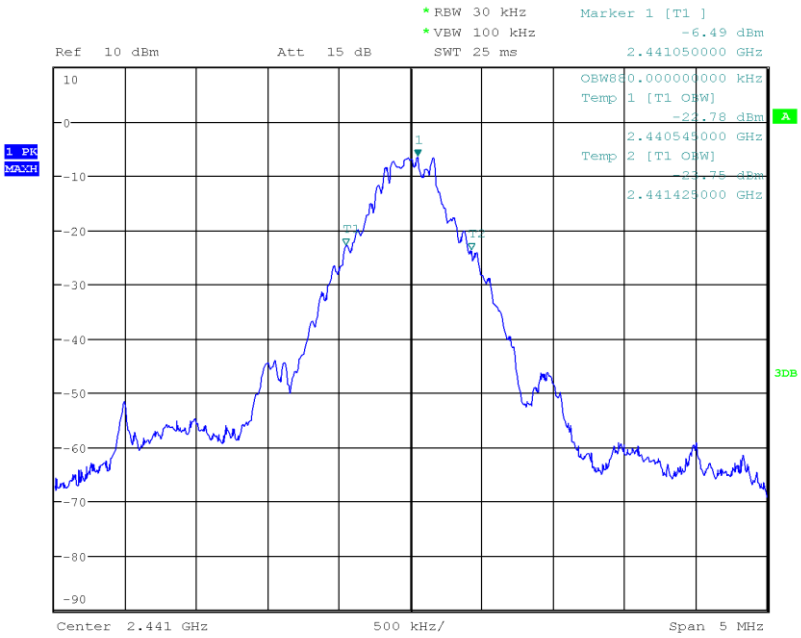
Occupied Bandwidth

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 6.9.3
Operational Mode:	DH5, Channel: 0, 2402 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Occupied Bandwidth [MHz]:	0.880



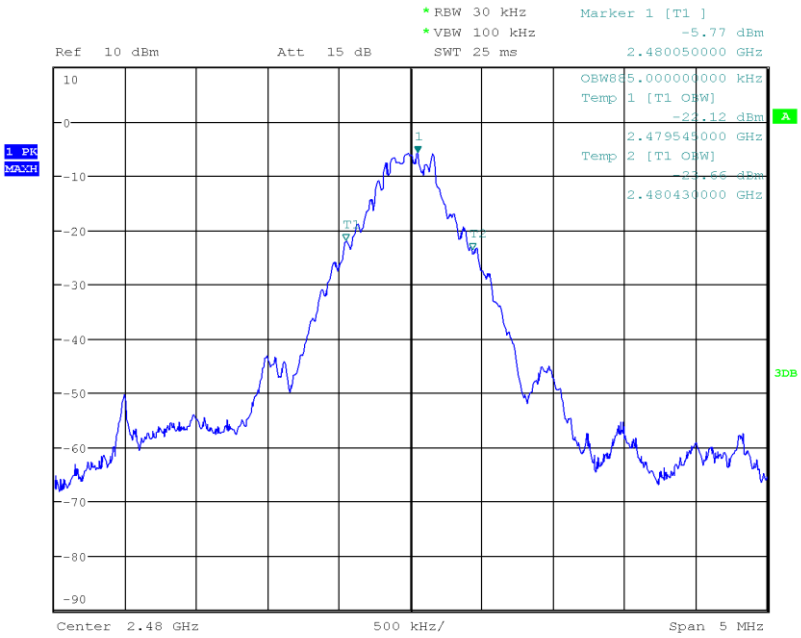
Occupied Bandwidth

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 6.9.3
Operational Mode:	DH5, Channel: 39, 2441 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Occupied Bandwidth [MHz]:	0.880



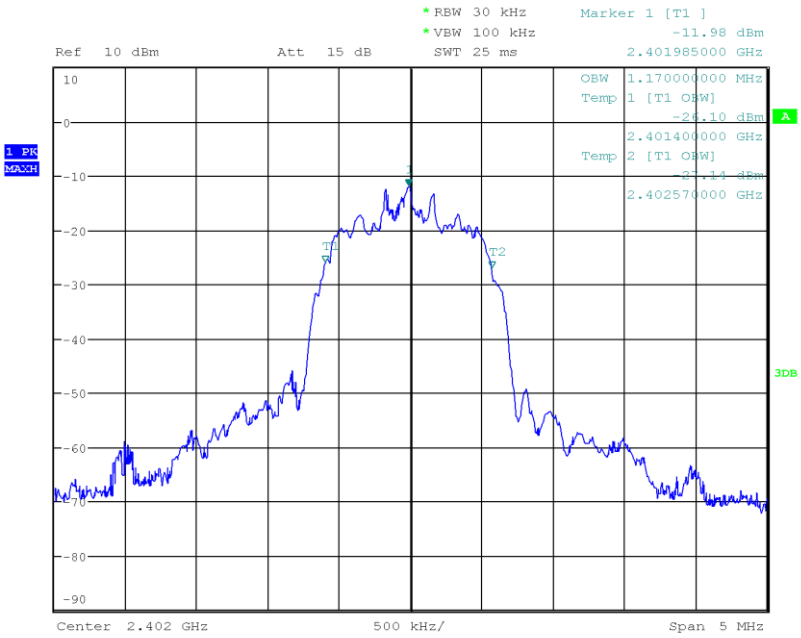
Occupied Bandwidth

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 6.9.3
Operational Mode:	DH5, Channel: 78, 2480 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Occupied Bandwidth [MHz]:	0.885



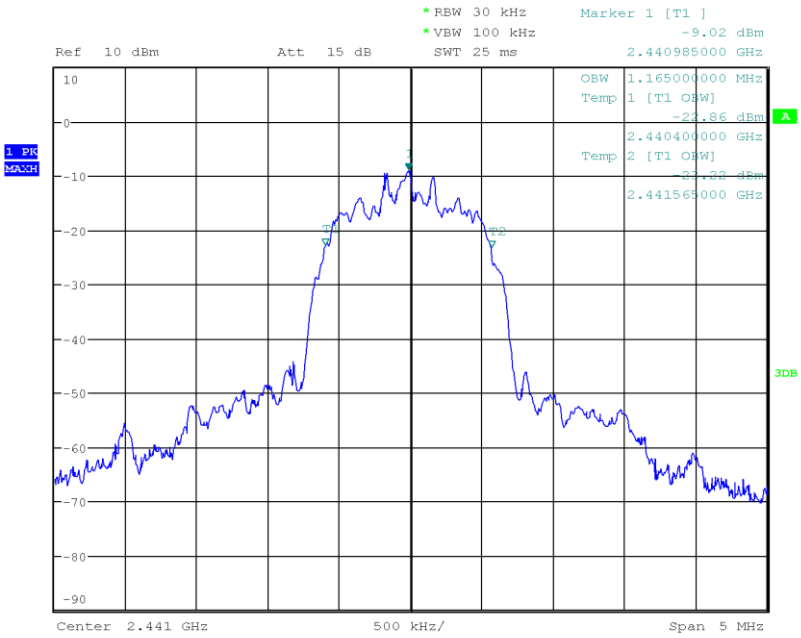
Occupied Bandwidth

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 6.9.3
Operational Mode:	2-DH5, Channel: 0, 2402 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Occupied Bandwidth [MHz]:	1.170



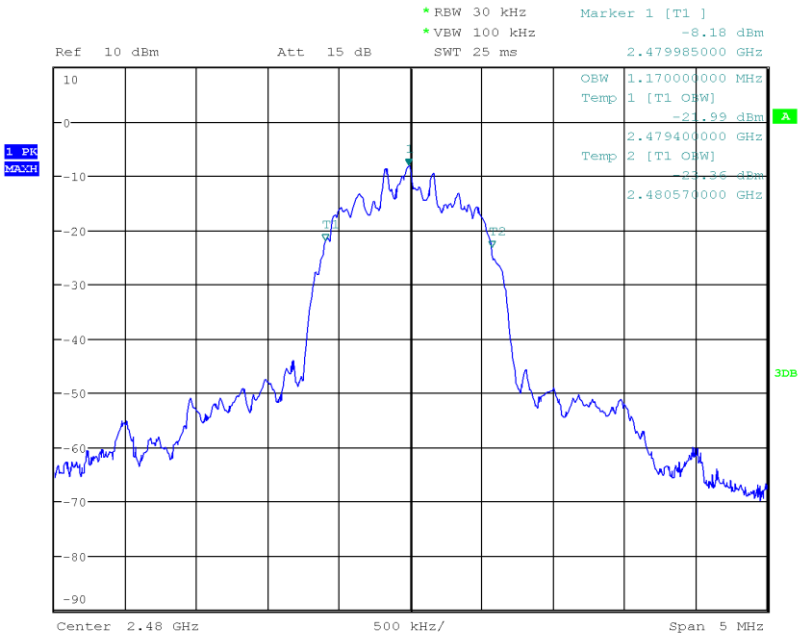
Occupied Bandwidth

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 6.9.3
Operational Mode:	2-DH5, Channel: 39, 2441 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Occupied Bandwidth [MHz]:	1.170



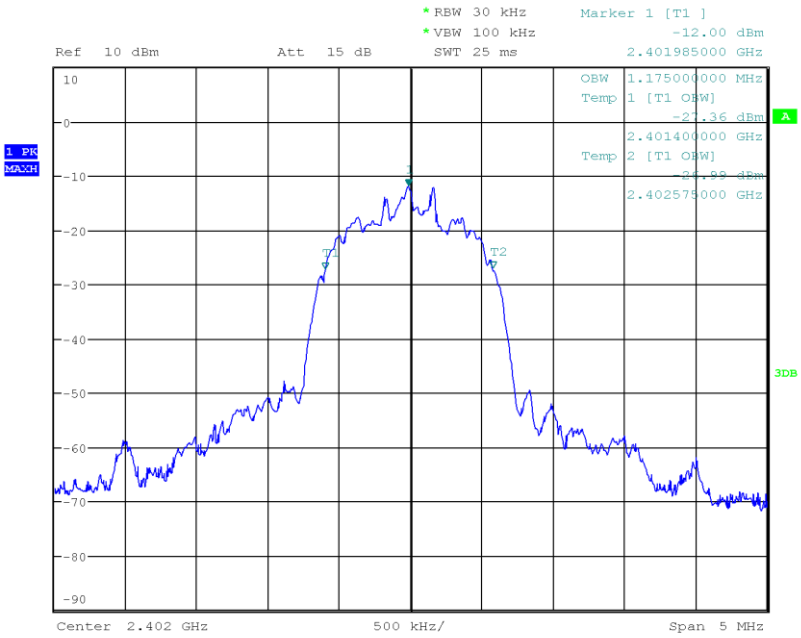
Occupied Bandwidth

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 6.9.3
Operational Mode:	2-DH5, Channel: 78, 2480 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Occupied Bandwidth [MHz]:	1.170



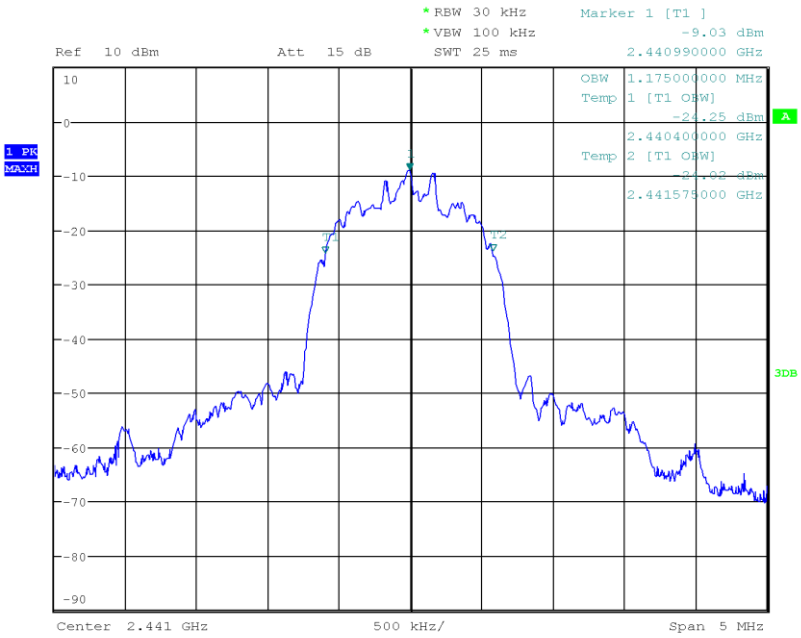
Occupied Bandwidth

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 6.9.3
Operational Mode:	3-DH5, Channel: 0, 2402 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Occupied Bandwidth [MHz]:	1.175



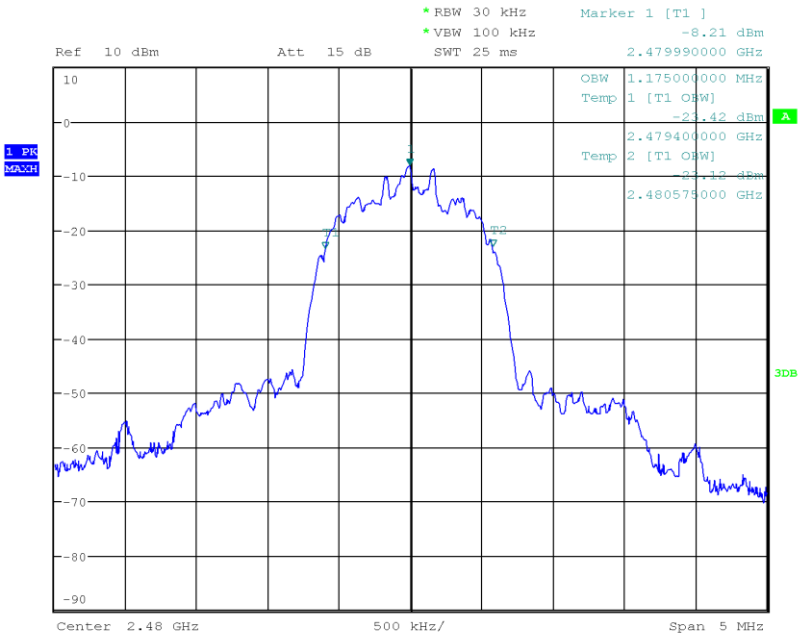
Occupied Bandwidth

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 6.9.3
Operational Mode:	3-DH5, Channel: 39, 2441 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Occupied Bandwidth [MHz]:	1.175



Occupied Bandwidth

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 6.9.3
Operational Mode:	3-DH5, Channel: 78, 2480 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Occupied Bandwidth [MHz]:	1.175



3.2 Test Conditions and Results - 20 dB bandwidth

3.2.1 Information

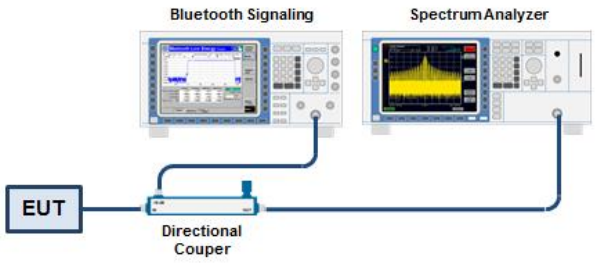
Test Information	
Reference	FCC 15.247(a)(1) / ISED RSS-247 5.1
Measurement Method	ANSI C63.10 6.9.2
Operator	Wilfried Treffke
Date	2018-03-13

3.2.2 Limits

Limits	
Condition	Limit
None (Informational only)	

3.2.3 Setup

Test Setup



3.2.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01003	2017-07	2018-07

3.2.5 Procedure

Test Procedure

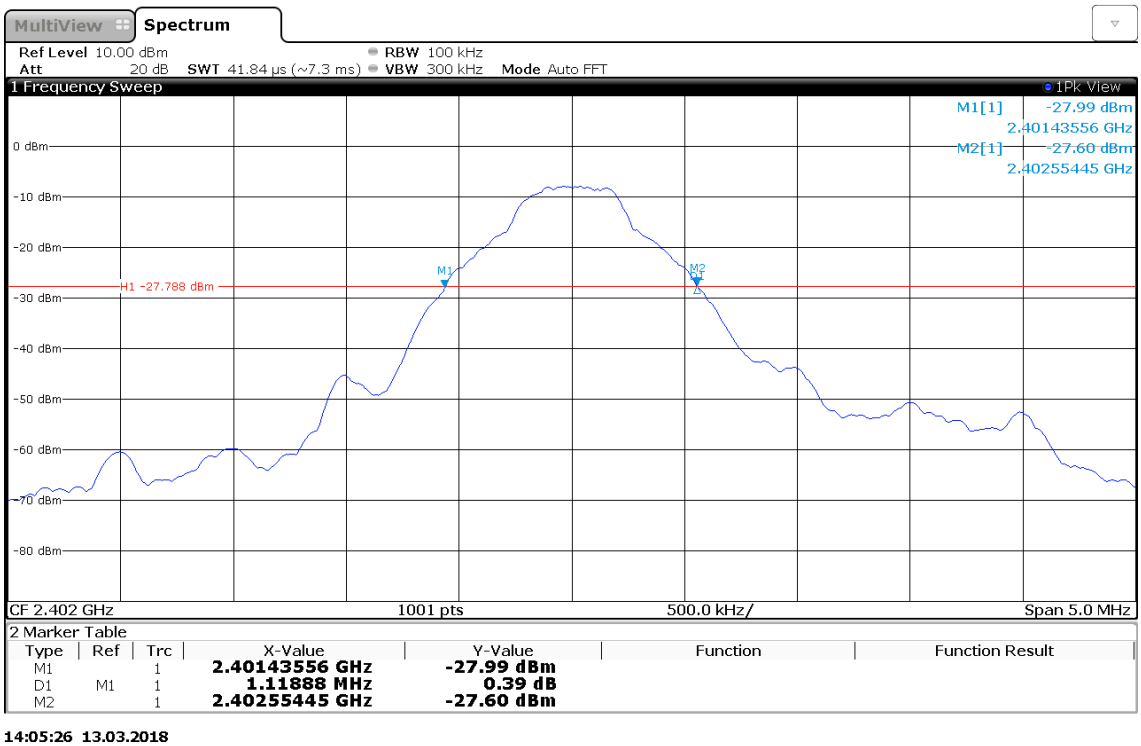
1. EUT set to test mode (Communication tester is used if needed)
2. Span set to at least twice the emission spectrum
3. Detector set to peak and max hold
4. Envelope peak value of emission spectrum is selected
5. Marker on envelope of spectrum is set to level of -20 dB to the left of the peak
6. Marker 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

3.2.6 Results

Test Results		
Mode	Frequency [MHz]	Bandwidth [MHz]
DH5	2402	1119
DH5	2441	1114
DH5	2480	1114
2-DH5	2402	1389
2-DH5	2441	1389
2-DH5	2480	1389
3-DH5	2402	1384
3-DH5	2441	1389
3-DH5	2480	1389

20 dB Bandwidth

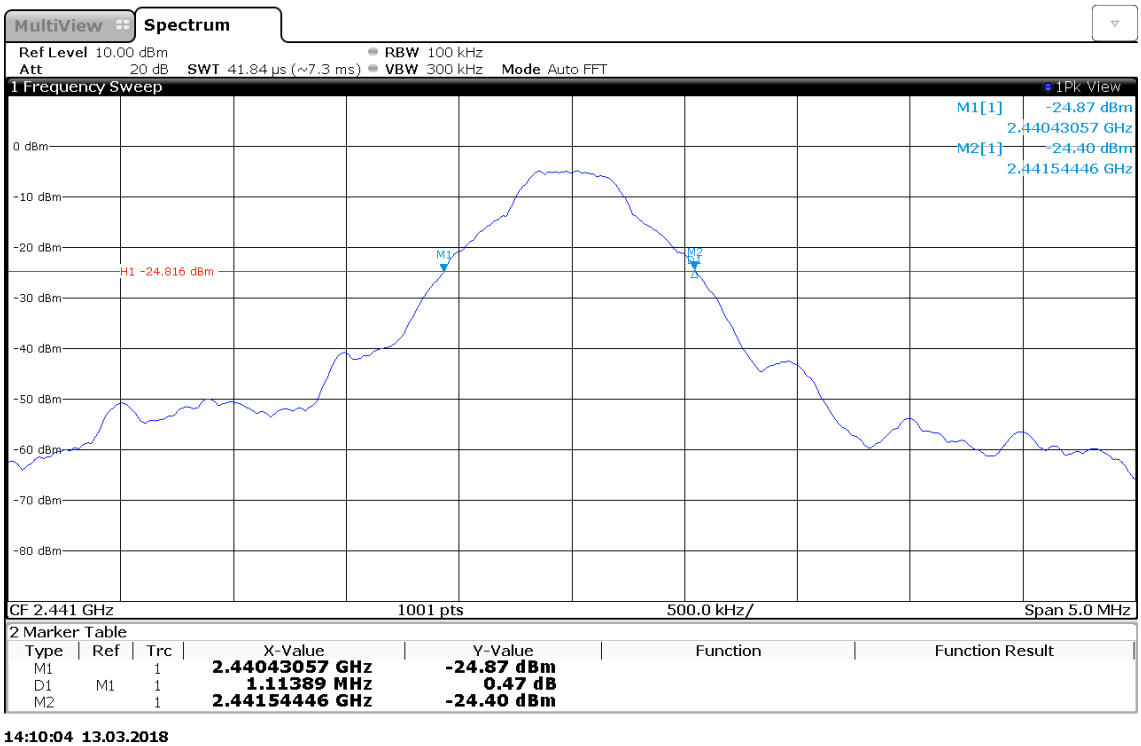
Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 6.9.2
Operational Mode:	DH5, Channel: 0, 2402 MHz
Operating Conditions:	Tnom/Vnom
Operator:	W. Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Lower Frequency [MHz]:	2401.436
Upper Frequency [MHz]:	2402.554
20 dB Bandwidth [kHz]:	1119



14:05:26 13.03.2018

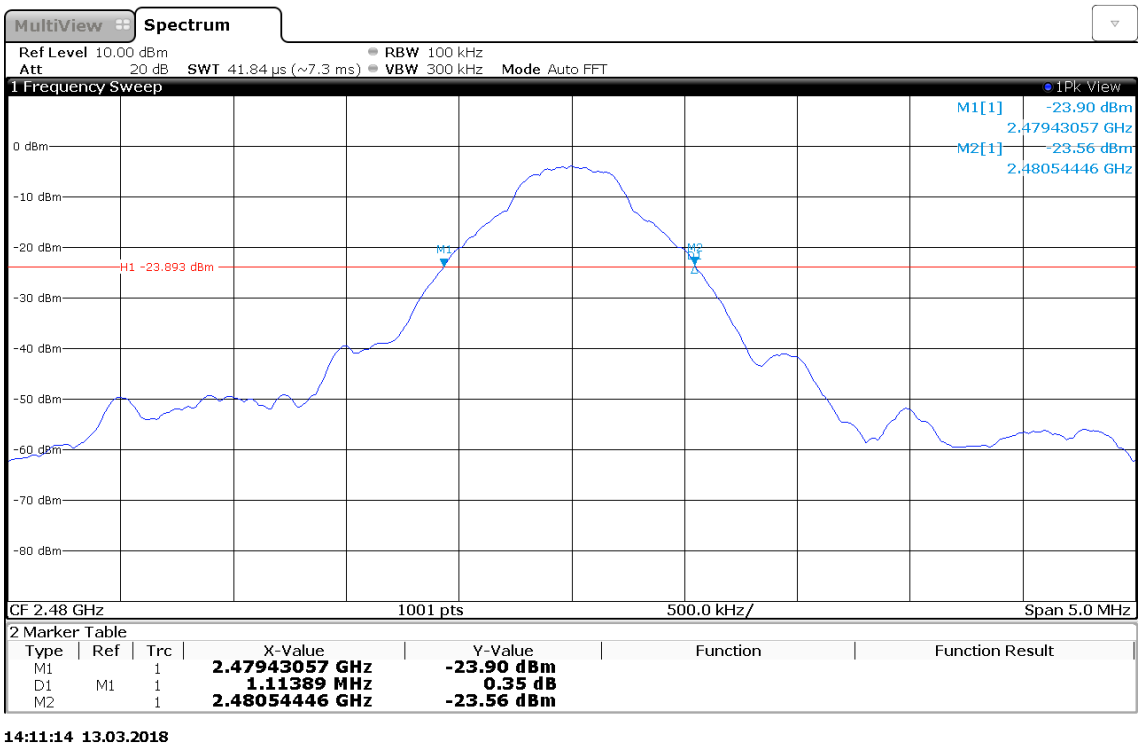
20 dB Bandwidth

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 6.9.2
Operational Mode:	DH5, Channel: 39, 2441 MHz
Operating Conditions:	Tnom/Vnom
Operator:	W. Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Lower Frequency [MHz]:	2440.431
Upper Frequency [MHz]:	2441.544
20 dB Bandwidth [kHz]:	1114



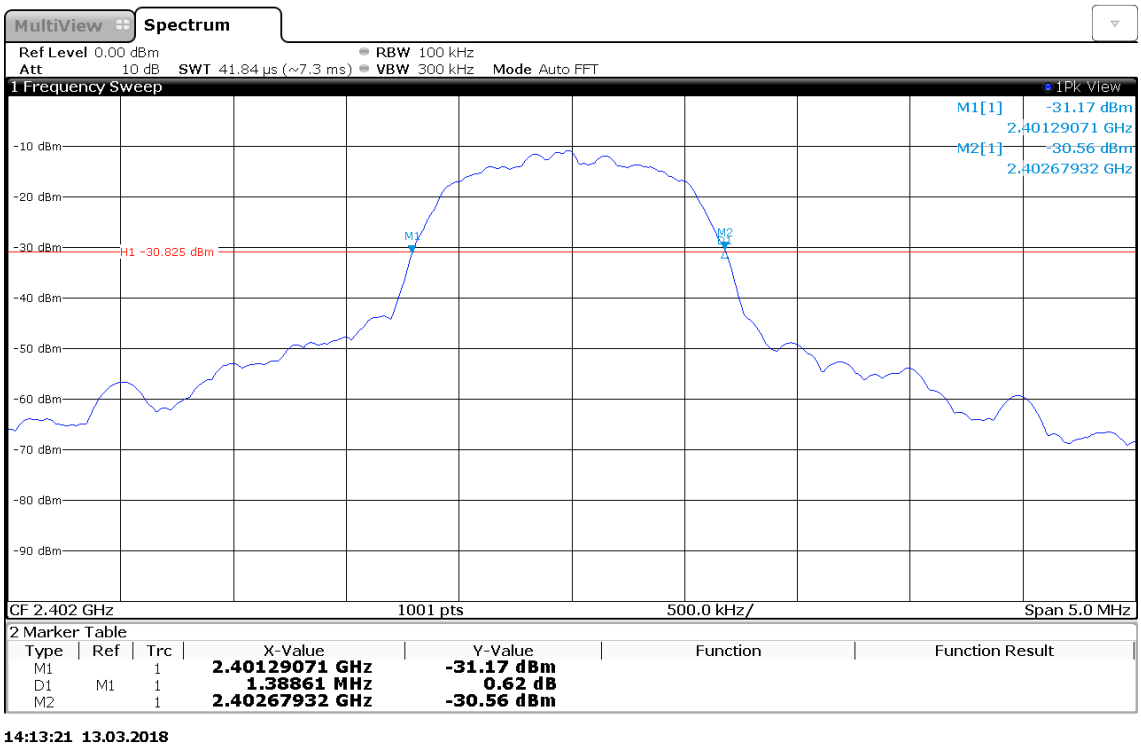
20 dB Bandwidth

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 6.9.2
Operational Mode:	DH5, Channel: 78, 2480 MHz
Operating Conditions:	Tnom/Vnom
Operator:	W. Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Lower Frequency [MHz]:	2479.431
Upper Frequency [MHz]:	2480.544
20 dB Bandwidth [kHz]:	1114



20 dB Bandwidth

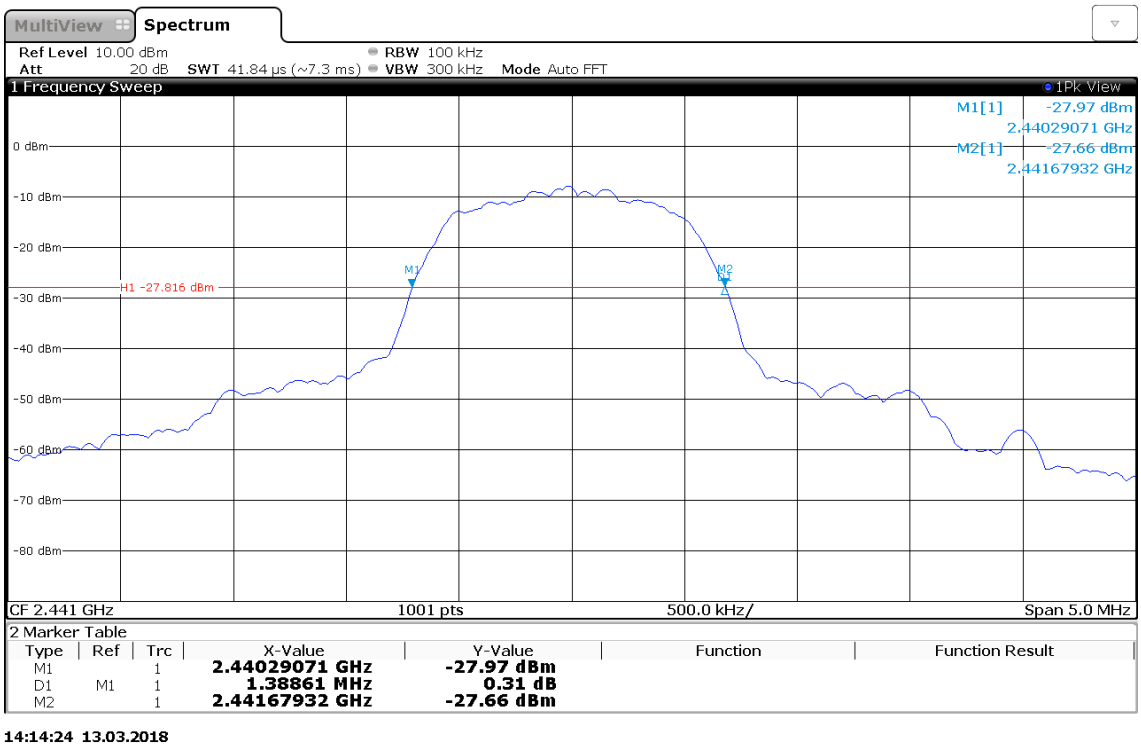
Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 6.9.2
Operational Mode:	2-DH5, Channel: 0, 2402 MHz
Operating Conditions:	Tnom/Vnom
Operator:	W. Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Lower Frequency [MHz]:	2401.291
Upper Frequency [MHz]:	2402.679
20 dB Bandwidth [kHz]:	1389



14:13:21 13.03.2018

20 dB Bandwidth

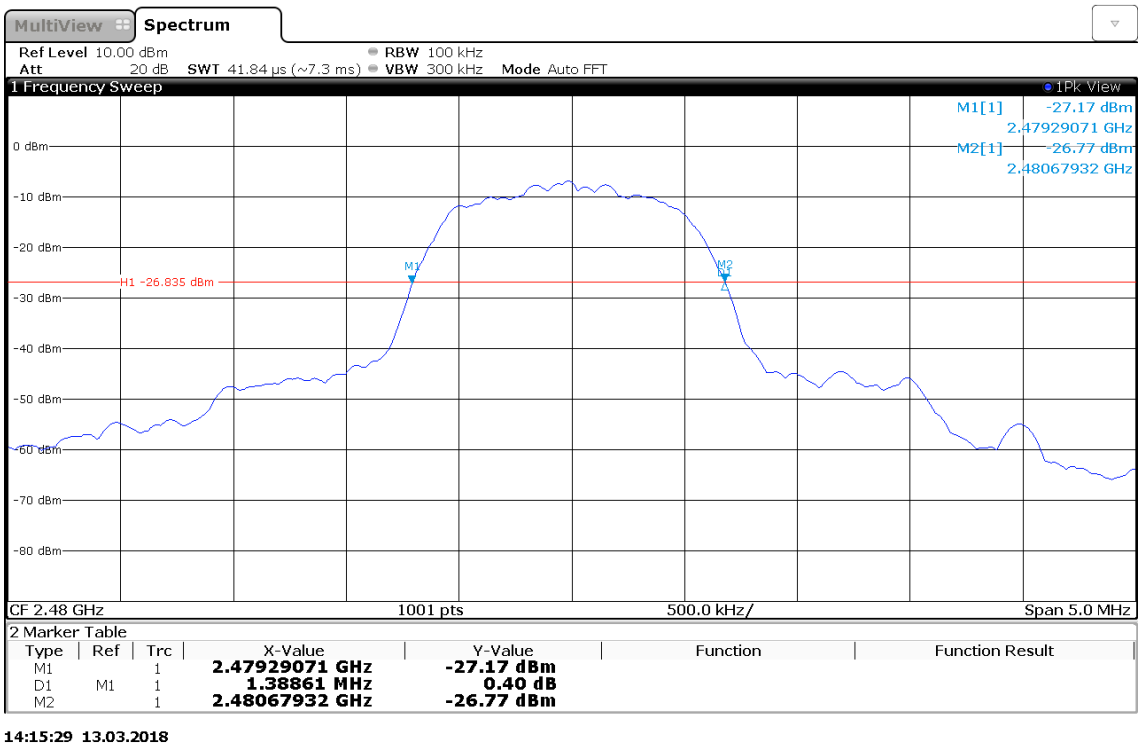
Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 6.9.2
Operational Mode:	2-DH5, Channel: 39, 2441 MHz
Operating Conditions:	Tnom/Vnom
Operator:	W. Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Lower Frequency [MHz]:	2440.291
Upper Frequency [MHz]:	2441.679
20 dB Bandwidth [kHz]:	1389



14:14:24 13.03.2018

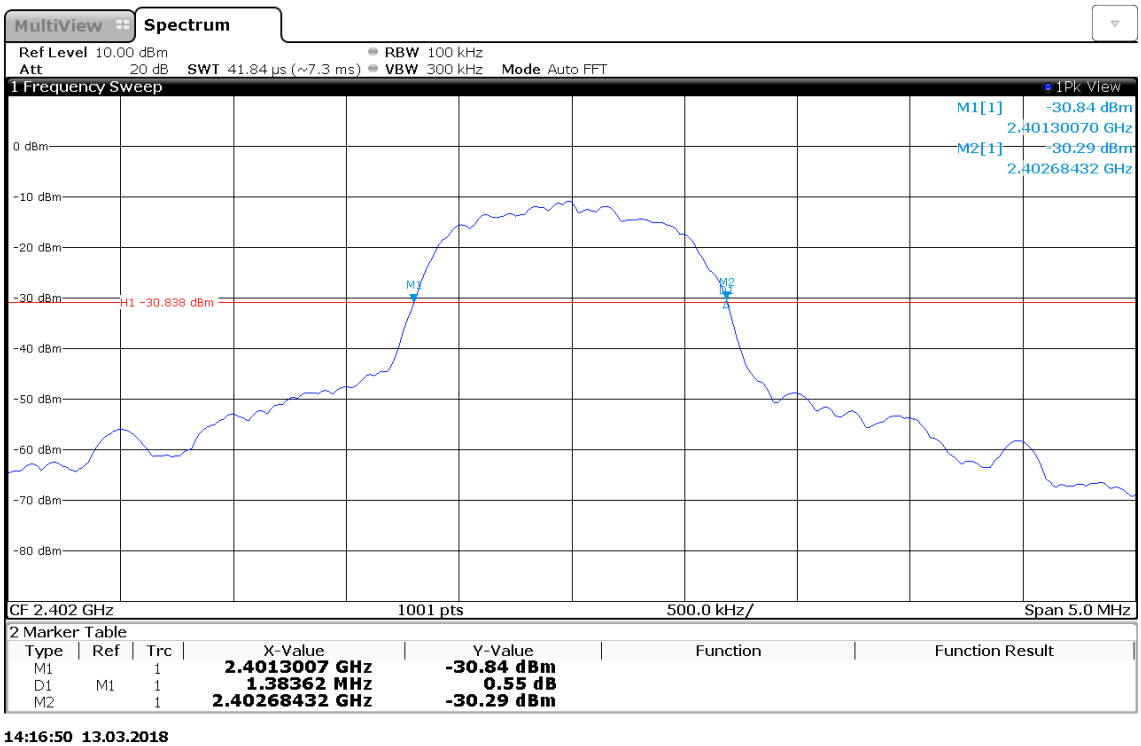
20 dB Bandwidth

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 6.9.2
Operational Mode:	2-DH5, Channel: 78, 2480 MHz
Operating Conditions:	Tnom/Vnom
Operator:	W. Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Lower Frequency [MHz]:	2479.291
Upper Frequency [MHz]:	2480.679
20 dB Bandwidth [kHz]:	1389



20 dB Bandwidth

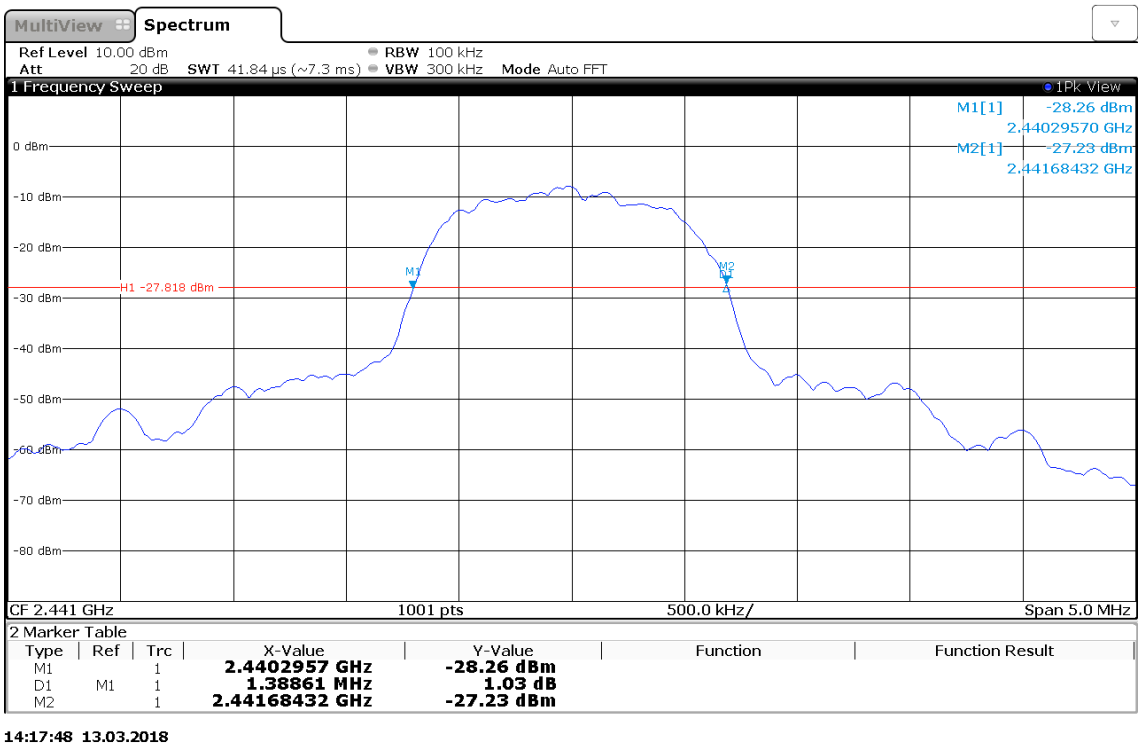
Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 6.9.2
Operational Mode:	3-DH5, Channel: 0, 2402 MHz
Operating Conditions:	Tnom/Vnom
Operator:	W. Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Lower Frequency [MHz]:	2401.301
Upper Frequency [MHz]:	2402.684
20 dB Bandwidth [kHz]:	1384



14:16:50 13.03.2018

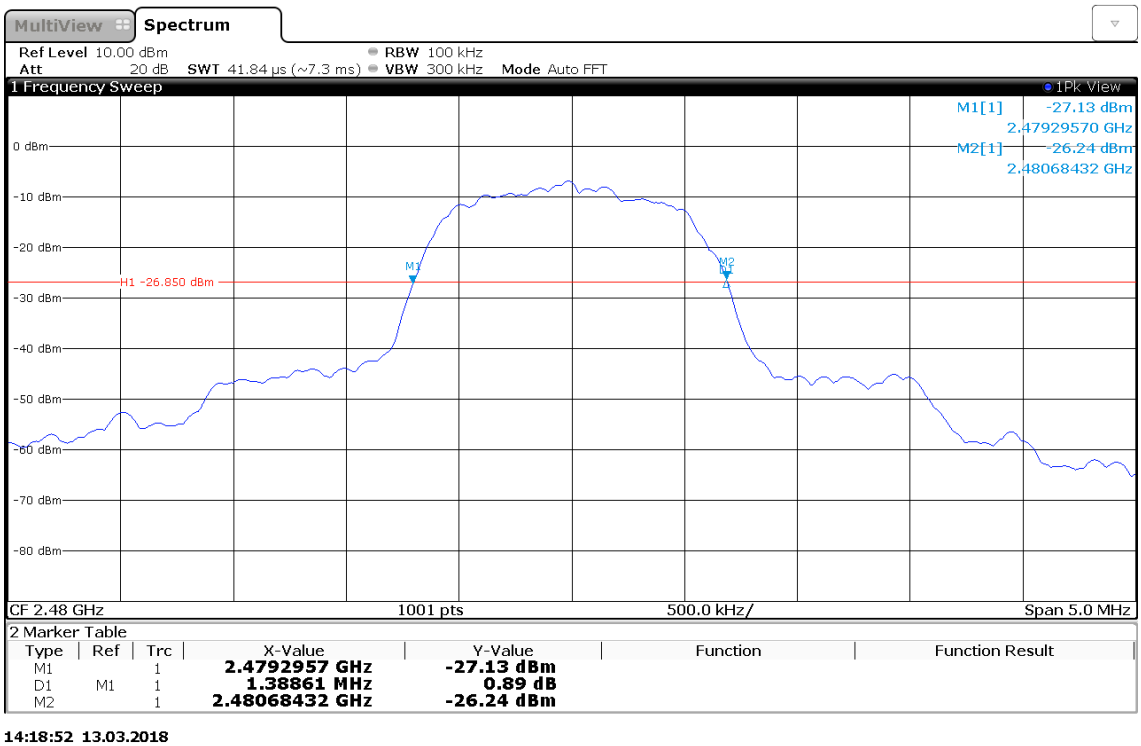
20 dB Bandwidth

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 6.9.2
Operational Mode:	3-DH5, Channel: 39, 2441 MHz
Operating Conditions:	Tnom/Vnom
Operator:	W. Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Lower Frequency [MHz]:	2440.296
Upper Frequency [MHz]:	2441.684
20 dB Bandwidth [kHz]:	1389



20 dB Bandwidth

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 6.9.2
Operational Mode:	3-DH5, Channel: 78, 2480 MHz
Operating Conditions:	Tnom/Vnom
Operator:	W. Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Lower Frequency [MHz]:	2479.296
Upper Frequency [MHz]:	2480.684
20 dB Bandwidth [kHz]:	1389



3.3 Test Conditions and Results - Number of hopping frequencies

3.3.1 Information

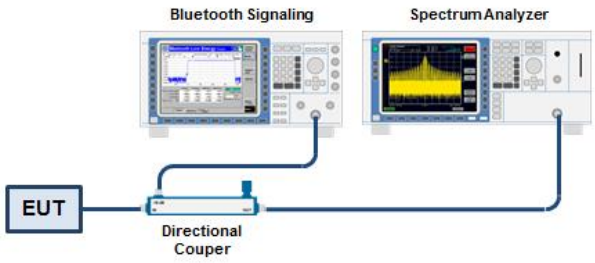
Test Information	
Reference	FCC 15.247(a)(1)(iii) / ISED RSS-247 5.1
Measurement Method	ANSI C63.10 7.8.3
Operator	Wilfried Treffke
Date	2018-03-13

3.3.2 Limits

Limits	
Condition	Number of hopping channels
≥ 15	

3.3.3 Setup

Test Setup



3.3.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01003	2017-07	2018-07

3.3.5 Procedure

Test Procedure

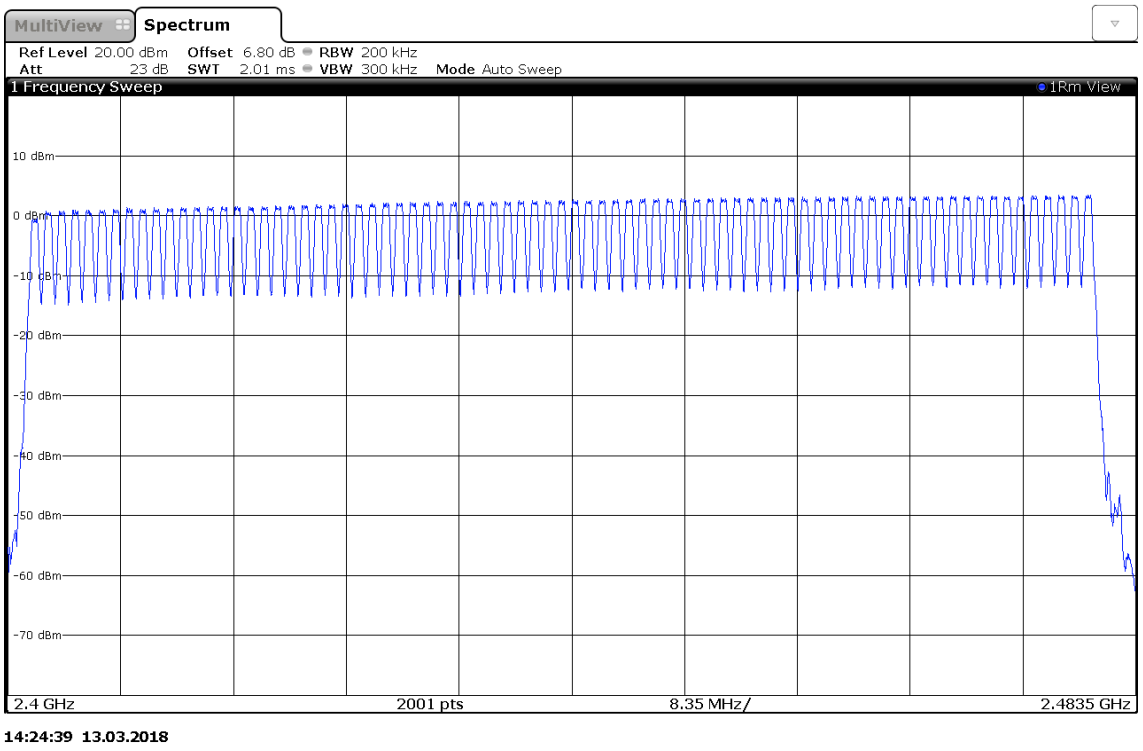
1. EUT set to test mode (Communication tester is used if needed)
2. Span set to measurement frequency range
3. Detector set to peak and max hold
4. Resolution bandwidth is set small enough to resolve hopping channel emission spectra
5. The number of peaks is counted to determine number of hopping frequencies

3.3.6 Results

Test Results		
Number of hopping frequencies	Limit	Margin
79	15	64.00

Number of hopping frequencies

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.27 (a)(1)(iii)
Reference Method:	ANSI C63.10:2013 7.8.3
Operational Mode:	Bluetooth, DH5, Hopping Mode
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Number of Hopping Channels:	79



3.4 Test Conditions and Results - Frequency hopping channel separation

3.4.1 Information

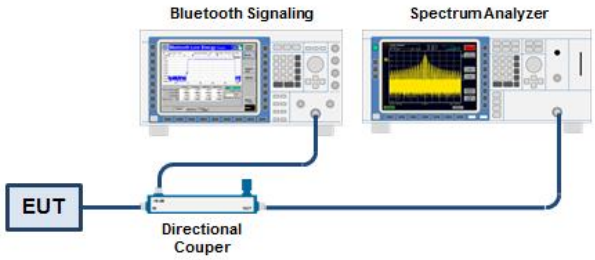
Test Information	
Reference	FCC 15.247(a)(1) / ISED RSS-247 5.1
Measurement Method	ANSI C63.10 7.8.4
Operator	Wilfried Treffke
Date	2018-03-13

3.4.2 Limits

Limit
≥ 25 kHz or ⅔ of 20 dB bandwidth

3.4.3 Setup

Test Setup



3.4.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01003	2017-07	2018-07

3.4.5 Procedure

Test Procedure

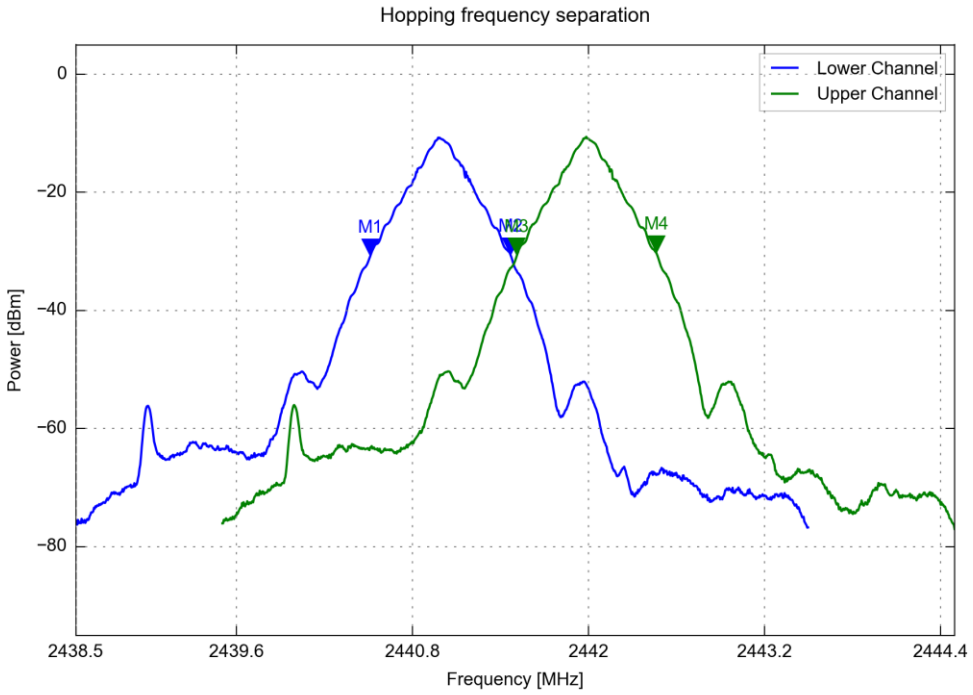
1. EUT set to test mode (Communication tester is used if needed)
2. Span set to measurement frequency range
3. Detector set to peak and max hold
4. Resolution bandwidth is set small enough to resolve hopping channel emission spectra
5. The two adjacent channel peaks are marked
6. Channel separation is determined from frequency separation of markers

3.4.6 Results

Test Results		
Channel separation [kHz]	Limit [kHz]	Margin [kHz]
998	≥ ⅔ · 1114 = 742.67	-255.33

Hopping frequency separation

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247(a)(1)
Reference Method:	ANSI C63.10:2013 7.8.2
Operational Mode:	Bluetooth, DH5, Channels: 2441 + 2442 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Lower Frequency (M1) [MHz]:	2440.510
Upper Frequency (M2) [MHz]:	2441.470
Lower Frequency (M3) [MHz]:	2441.510
Upper Frequency (M4) [MHz]:	2442.465
Lower center Frequency [MHz]:	2440.990
Upper center Frequency [MHz]:	2441.988
Hopping Frequency Separation [MHz]:	0.998



3.5 Test Conditions and Results - Time of occupancy (Dwell time)

3.5.1 Information

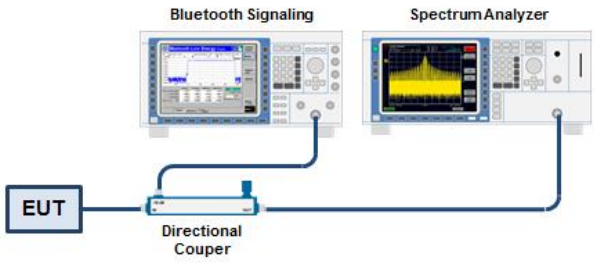
Test Information	
Reference	FCC 15.247(a)(1)(iii) / ISED RSS-247 5.1
Measurement Method	ANSI C63.10 7.8.2
Operator	Wilfried Treffke
Date	2018-03-13

3.5.2 Limits

Limits	
Condition	Number of hopping channels
≤ 0.4 s within 0.4 s · Number of hopping channels	

3.5.3 Setup

Test Setup



3.5.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01003	2017-07	2018-07

3.5.5 Procedure

Test Procedure

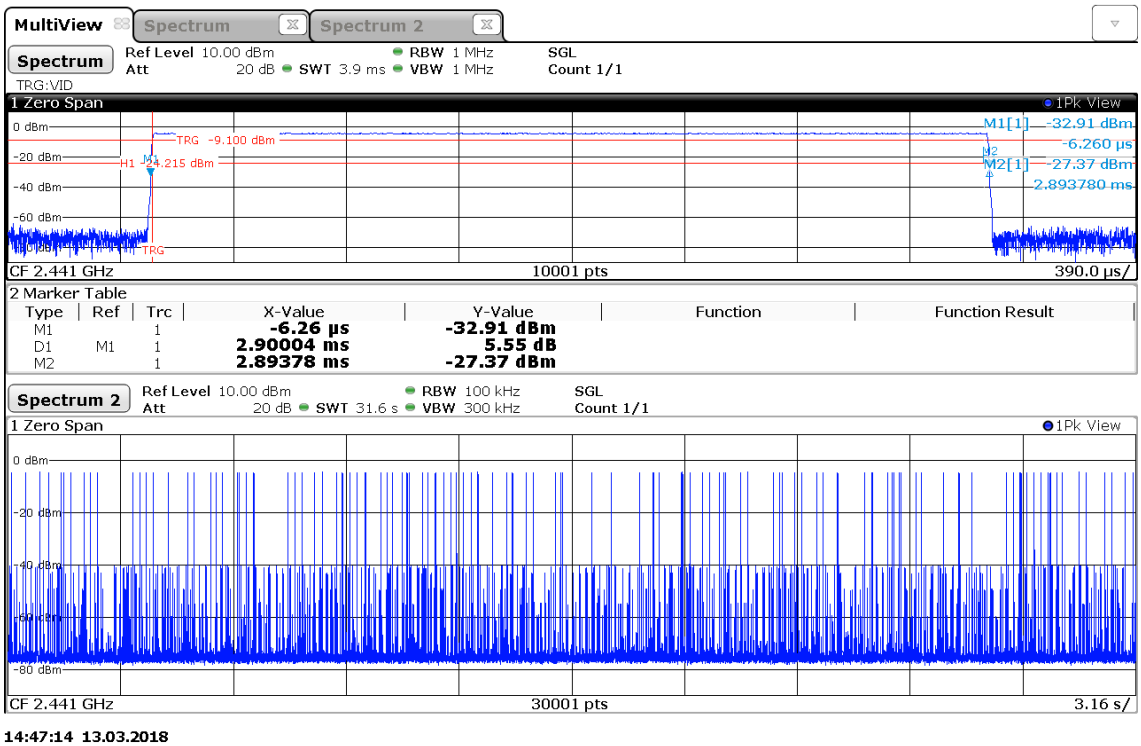
1. EUT set to test hopping mode (Communication tester is used if needed)
2. Analyzer span is set to zero span
3. Detector set to peak and max hold
4. RBW is set to 100 kHz and VBW to 300 kHz
5. The sweep time is set to capture one single dwell time
6. Trigger is set to video trigger
7. A marker is set to the start and end positions of the burst
8. The dwell time is determined from the marker difference
9. Another sweep is initiated without trigger and sweep time set to the observation time
10. The number of hops is counted
11. The total time of occupancy is calculated from the dwell time per hop multiplied by the number of hops

3.5.6 Results

Test Results					
Observation Period [s]	Number of Hops	Dwell time per Hop [s]	Time of occupancy [s]	Limit [s]	Margin [s]
31.6	114	0.002900	0.331	0.4	-0.069

Time of occupancy

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Method:	ANSI C63.10:2013 7.8.4
Operational Mode:	DH5, Hopping mode
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Dwell Time per Hop [ms]:	2.900
Number of Hops:	114
Time of occupancy [s]:	0.331



3.6 Test Conditions and Results - Maximum peak conducted output power

3.6.1 Information

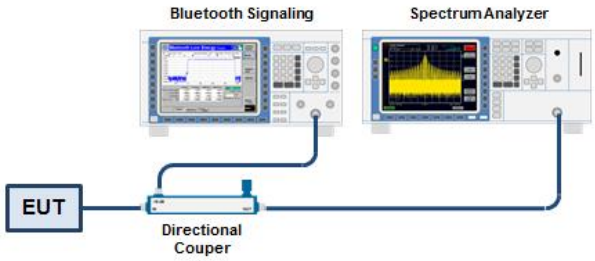
Test Information	
Reference	FCC 15.247(b)(1) / ISED RSS-247 5.4
Measurement Method	ANSI C63.10 7.8.5
Operator	Wilfried Treffke
Date	2018-03-13

3.6.2 Limits

Limits	
Condition	Power
Number of hopping channels ≥ 75	1 W (30 dBm)
75 > Number of hopping channels ≥ 15	0.125 W (21 dBm)
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.	

3.6.3 Setup

Test Setup



3.6.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01003	2017-07	2018-07

3.6.5 Procedure

Test Procedure

1. EUT set to test hopping mode (Communication tester is used if needed)
2. Analyzer resolution bandwidth is set ≥ DTS bandwidth
3. Detector set to peak and max hold
4. Sweep time is set to auto
5. After the trace has stabilized a marker is set to peak of envelope

3.6.6 Results

Test Results - DH5				
Channel [MHz]	Power [dBm]	Power [W]	Limit [W]	Verdict
2402	-0.256	0.0009	1.0	PASS
2441	2.699	0.0019	1.0	PASS
2480	3.541	0.0023	1.0	PASS

Test Results - 2-DH5				
Channel [MHz]	Power [dBm]	Power [W]	Limit [W]	Verdict
2402	-1.594	0.0007	1.0	PASS
2441	1.345	0.0014	1.0	PASS
2480	2.184	0.0017	1.0	PASS

Test Results - 3-DH5				
Channel [MHz]	Power [dBm]	Power [W]	Limit [W]	Verdict
2402	-1.001	0.0008	1.0	PASS
2441	1.936	0.0016	1.0	PASS
2480	2.769	0.0019	1.0	PASS

3.7 Test Conditions and Results - Band-edge compliance

3.7.1 Information

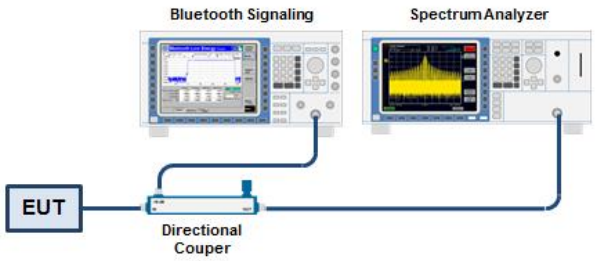
Test Information	
Reference	FCC 15.247(d) / ISED RSS-247 5.5
Measurement Method	ANSI C63.10 6.10
Operator	Wilfried Treffke
Date	2018-03-13

3.7.2 Limits

Limits	
Power Measurement	Out-of-band attenuation [dB]
Peak	20
RMS	30

3.7.3 Setup

Test Setup



3.7.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01003	2017-07	2018-07

3.7.5 Procedure

Test Procedure

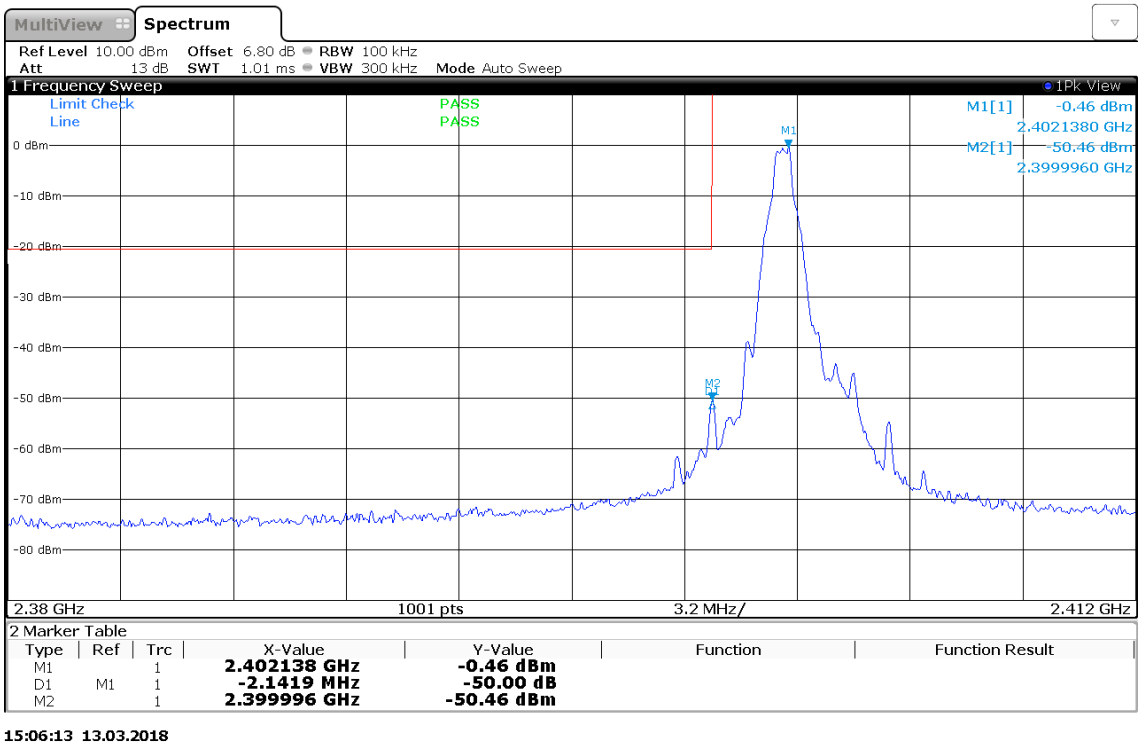
1. EUT set to test mode (Communication tester is used if needed)
2. Span set around lower band edge and detector is set to peak and max hold
3. Resolution bandwidth is set to 100 kHz
4. Markers are set to peak emission levels within frequency band and outside frequency band
5. Band edge attenuation is determined from level difference

3.7.6 Results

Test Results				
Mode	Channel [MHz]	Out-of-band Attenuation [dB]	Limit [dB]	Verdict
DH5 single	2402	-50.00	-20	PASS
DH5 single	2480	-65.40	-20	PASS
DH5 hopping	2402	-61.92	-20	PASS
DH5 hopping	2480	-59.67	-20	PASS
2-DH5 single	2402	-42.95	-20	PASS
2-DH5 single	2480	-62.98	-20	PASS
2-DH5 hopping	2402	-46.36	-20	PASS
2-DH5 hopping	2480	-59.47	-20	PASS
3-DH5 single	2402	-42.60	-20	PASS
3-DH5 single	2480	-62.83	-20	PASS
3-DH5 hopping	2402	-52.69	-20	PASS
3-DH5 hopping	2480	-59.99	-20	PASS

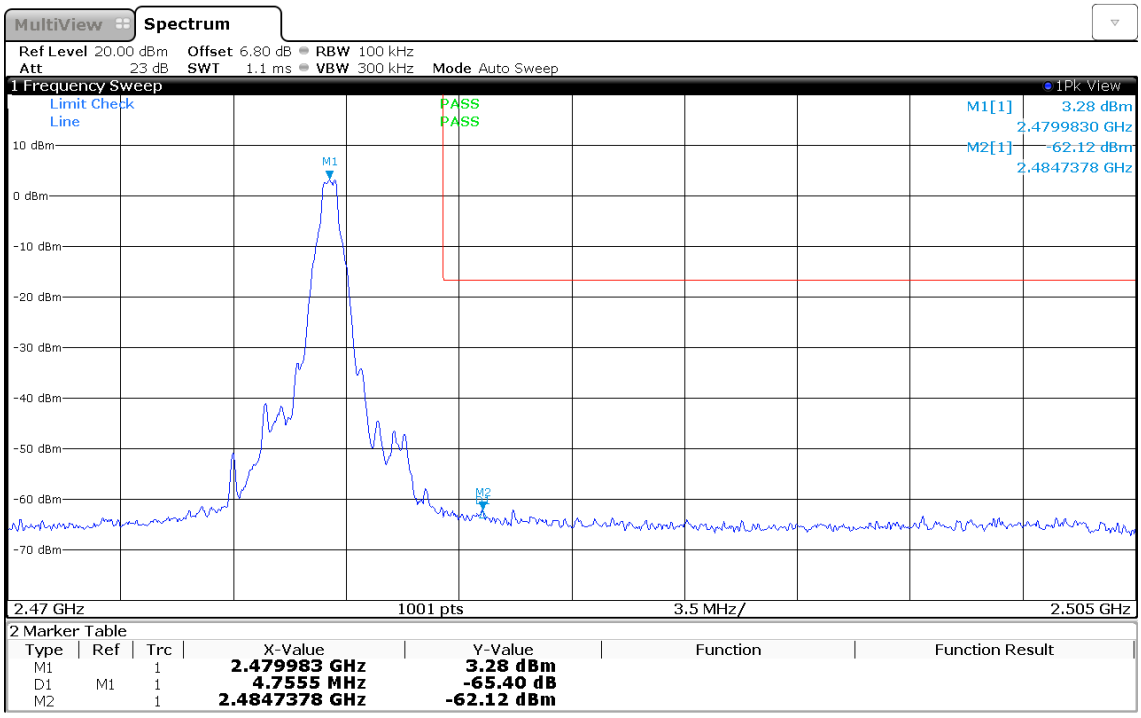
Band-edge Compliance

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.6, 6.10.4
Operational Mode:	DH5, Channel: 0, 2402 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Band-edge	Lower
In-band Frequency [MHz]:	2402.138
Max. in-band Level [dBm/100 kHz]:	-0.464
Out-of-band Frequency [MHz]:	2399.996
Max. out-of-band Level [dBm/100 kHz]:	-50.463
Attenuation [dB]:	-50.0



Band-edge Compliance

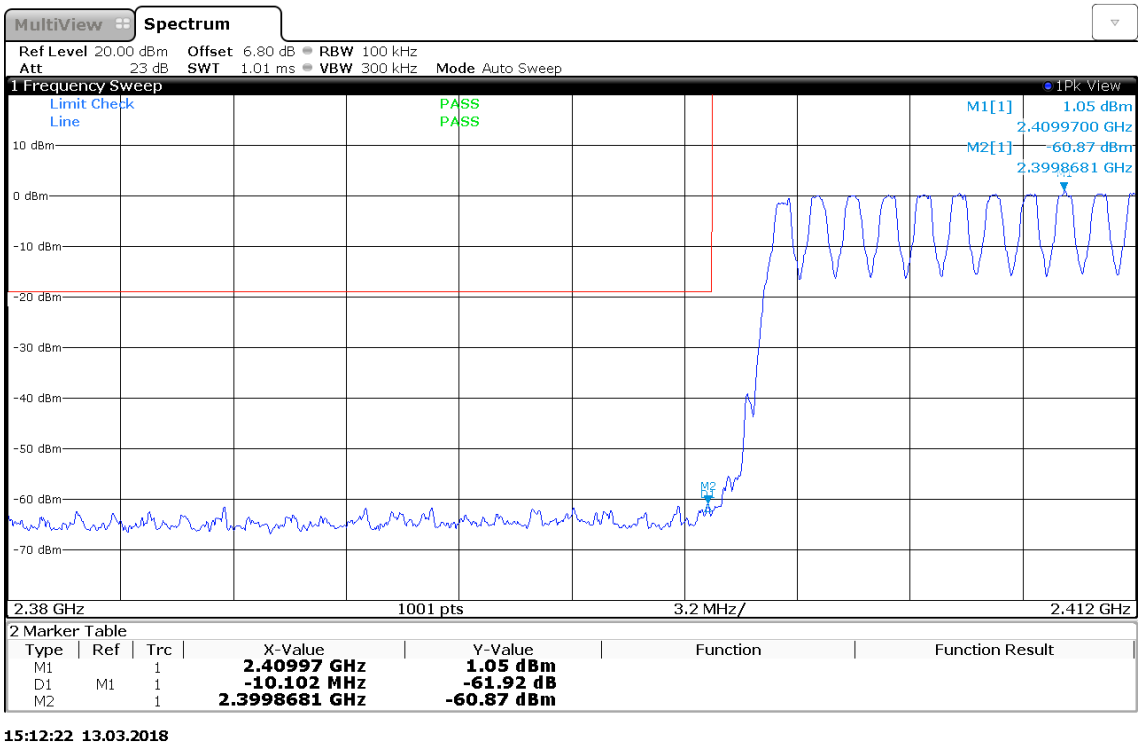
Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.6, 6.10.4
Operational Mode:	DH5, Channel: 78, 2480 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Band-edge	Upper
In-band Frequency [MHz]:	2479.983
Max. in-band Level [dBm/100 kHz]:	3.284
Out-of-band Frequency [MHz]:	2484.738
Max. out-of-band Level [dBm/100 kHz]:	-62.117
Attenuation [dB]:	-65.4



15:08:09 13.03.2018

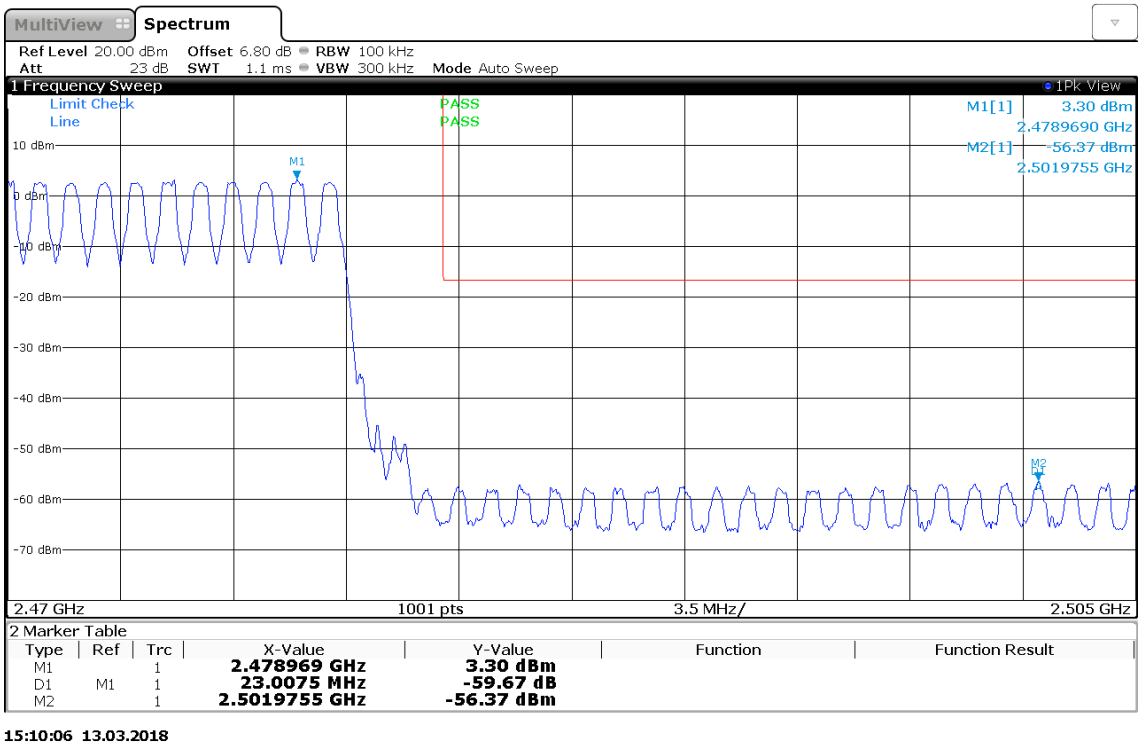
Band-edge Compliance

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.6, 6.10.4
Operational Mode:	DH5, Hopping
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Band-edge	Lower
In-band Frequency [MHz]:	2409.97
Max. in-band Level [dBm/100 kHz]:	1.051
Out-of-band Frequency [MHz]:	2399.868
Max. out-of-band Level [dBm/100 kHz]:	-60.87
Attenuation [dB]:	-61.92



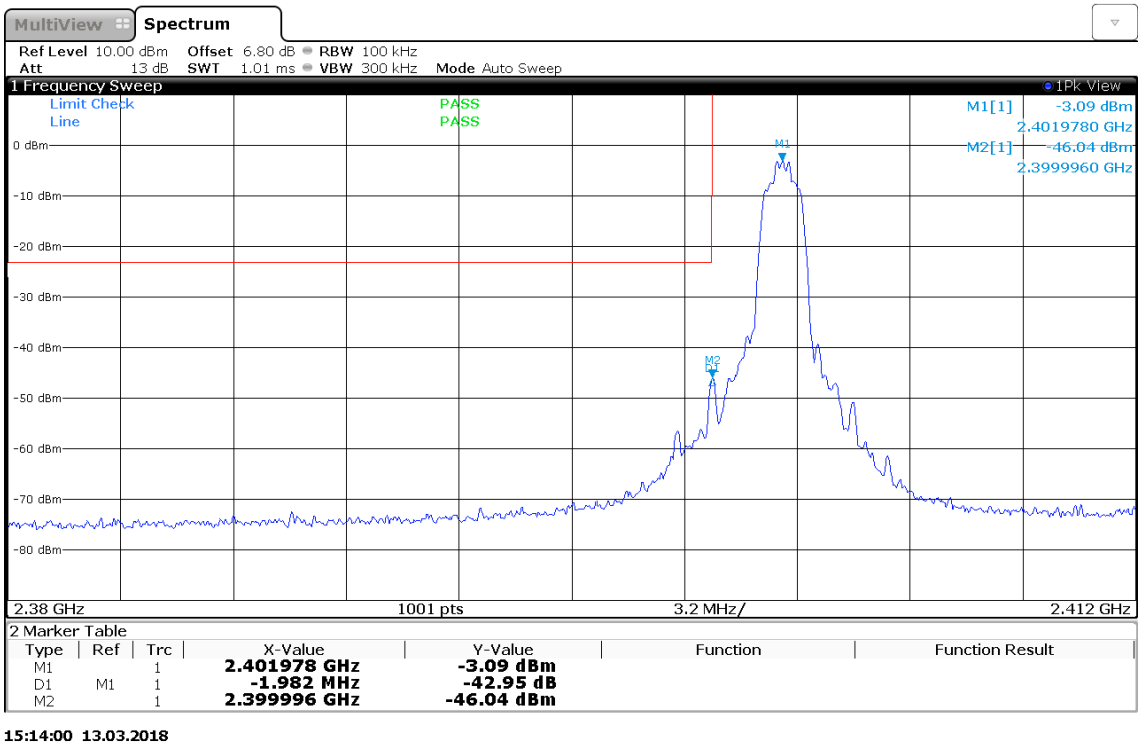
Band-edge Compliance

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.6, 6.10.4
Operational Mode:	DH5, Hopping
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Band-edge	Upper
In-band Frequency [MHz]:	2478.969
Max. in-band Level [dBm/100 kHz]:	3.297
Out-of-band Frequency [MHz]:	2501.976
Max. out-of-band Level [dBm/100 kHz]:	-56.369
Attenuation [dB]:	-59.67



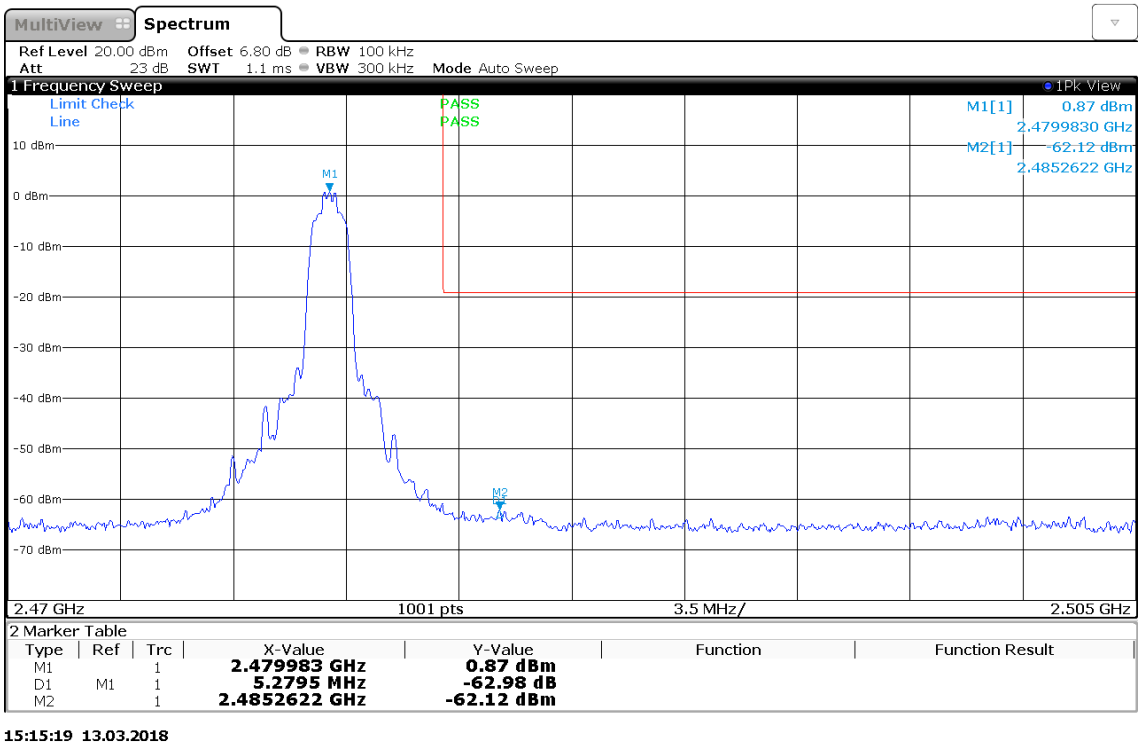
Band-edge Compliance

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.6, 6.10.4
Operational Mode:	2-DH5, Channel: 0, 2402 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Band-edge	Lower
In-band Frequency [MHz]:	2401.978
Max. in-band Level [dBm/100 kHz]:	-3.09
Out-of-band Frequency [MHz]:	2399.996
Max. out-of-band Level [dBm/100 kHz]:	-46.039
Attenuation [dB]:	-42.95



Band-edge Compliance

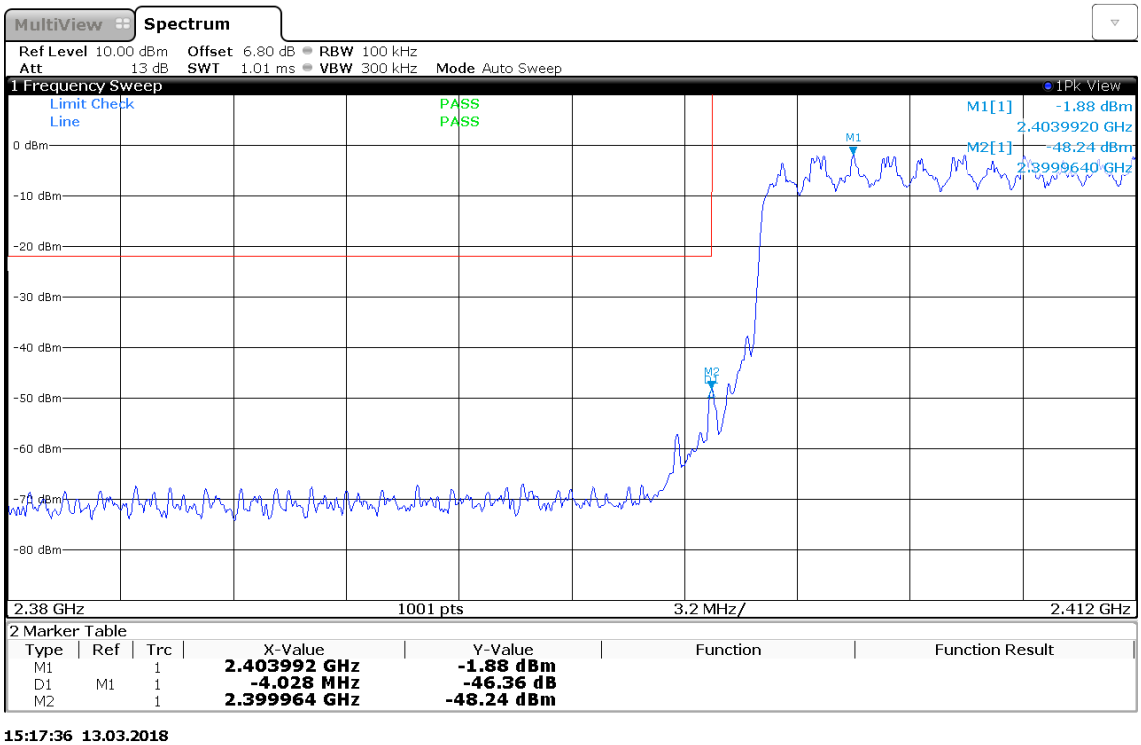
Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.6, 6.10.4
Operational Mode:	2-DH5, Channel: 78, 2480 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Band-edge	Upper
In-band Frequency [MHz]:	2479.983
Max. in-band Level [dBm/100 kHz]:	0.867
Out-of-band Frequency [MHz]:	2485.262
Max. out-of-band Level [dBm/100 kHz]:	-62.115
Attenuation [dB]:	-62.98



15:15:19 13.03.2018

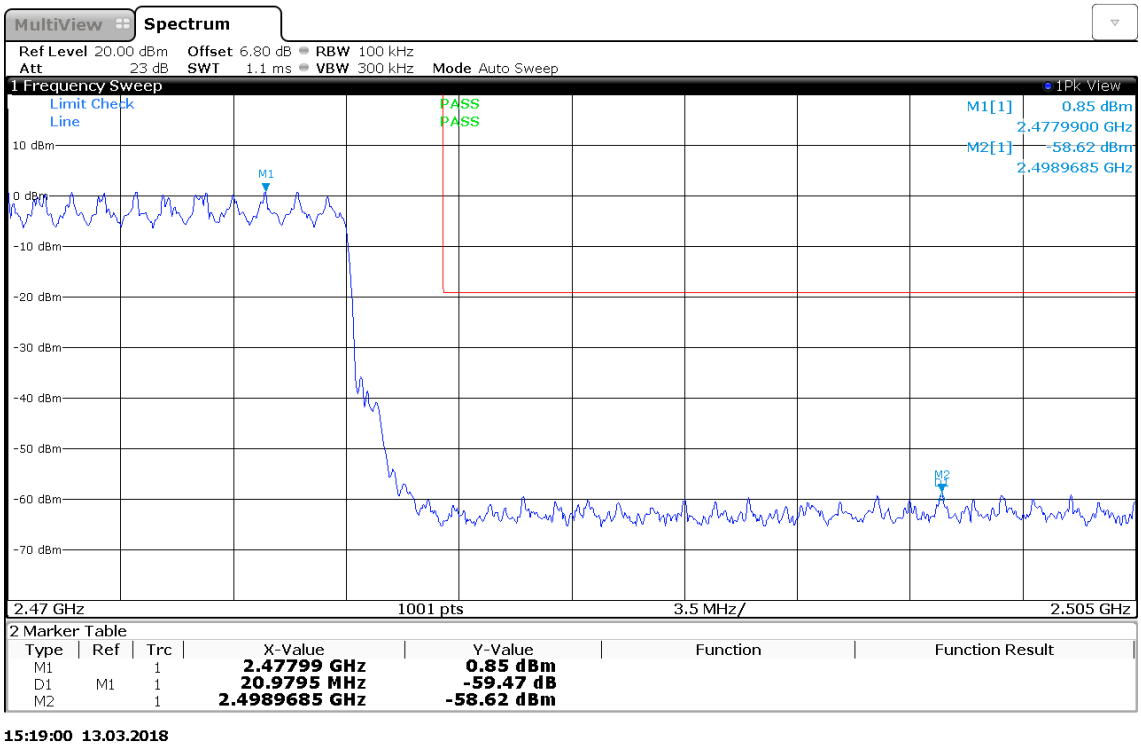
Band-edge Compliance

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.6, 6.10.4
Operational Mode:	2-DH5, Hopping
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Band-edge	Lower
In-band Frequency [MHz]:	2403.992
Max. in-band Level [dBm/100 kHz]:	-1.877
Out-of-band Frequency [MHz]:	2399.964
Max. out-of-band Level [dBm/100 kHz]:	-48.237
Attenuation [dB]:	-46.36



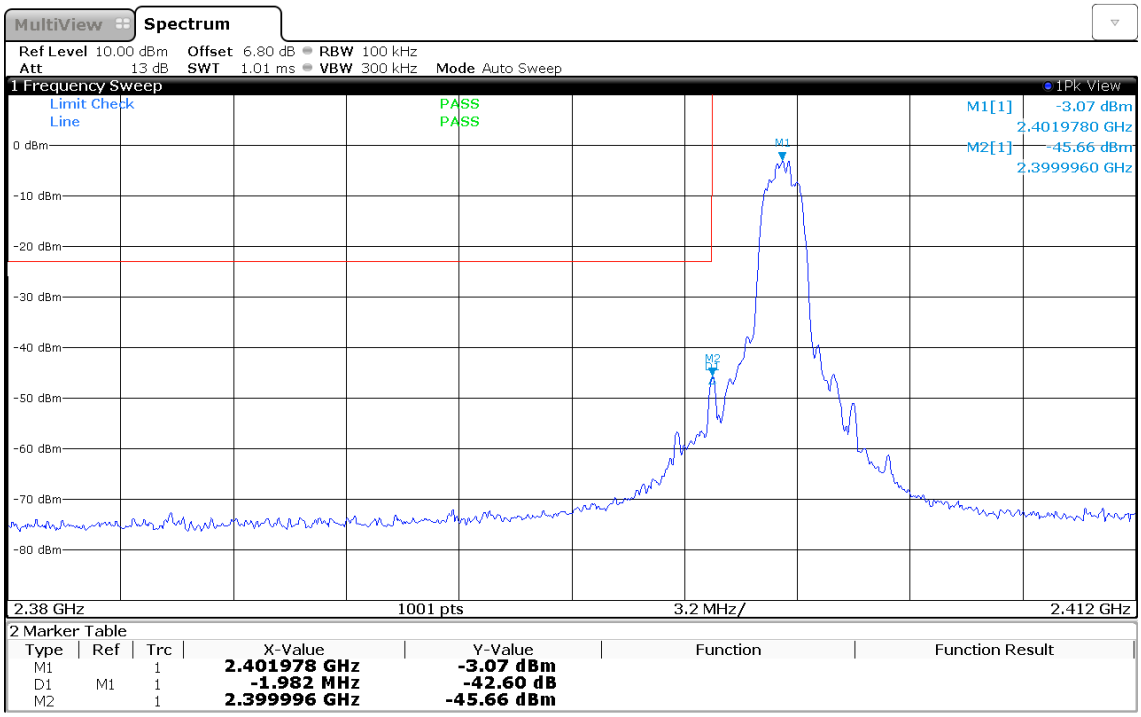
Band-edge Compliance

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.6, 6.10.4
Operational Mode:	2-DH5, Hopping
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Band-edge	Upper
In-band Frequency [MHz]:	2477.99
Max. in-band Level [dBm/100 kHz]:	0.845
Out-of-band Frequency [MHz]:	2498.969
Max. out-of-band Level [dBm/100 kHz]:	-58.624
Attenuation [dB]:	-59.47



Band-edge Compliance

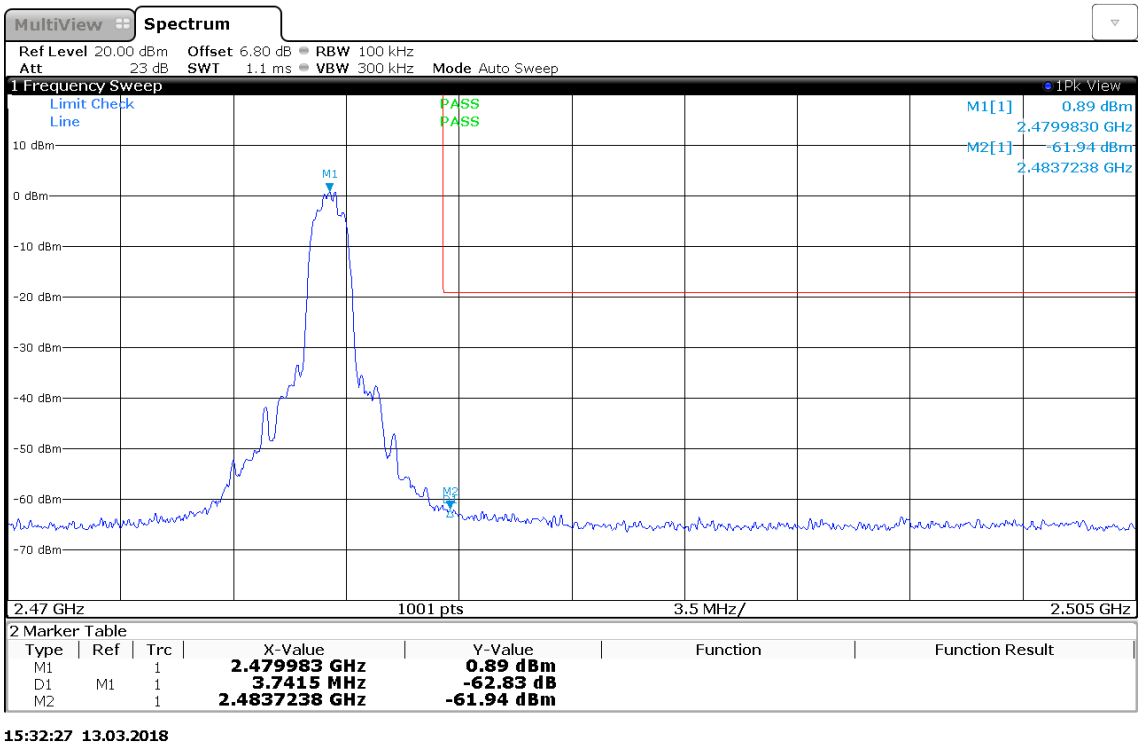
Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.6, 6.10.4
Operational Mode:	3-DH5, Channel: 0, 2402 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Band-edge	Lower
In-band Frequency [MHz]:	2401.978
Max. in-band Level [dBm/100 kHz]:	-3.066
Out-of-band Frequency [MHz]:	2399.996
Max. out-of-band Level [dBm/100 kHz]:	-45.663
Attenuation [dB]:	-42.6



15:30:42 13.03.2018

Band-edge Compliance

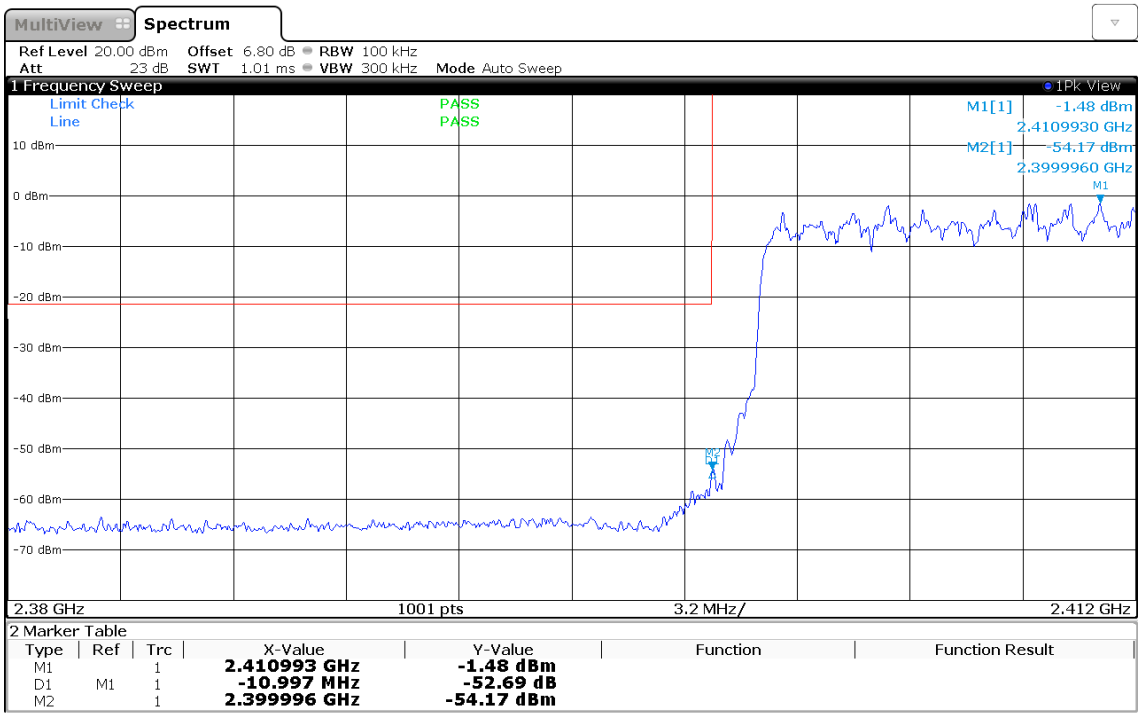
Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.6, 6.10.4
Operational Mode:	3-DH5, Channel: 78, 2480 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Band-edge	Upper
In-band Frequency [MHz]:	2479.983
Max. in-band Level [dBm/100 kHz]:	0.887
Out-of-band Frequency [MHz]:	2483.724
Max. out-of-band Level [dBm/100 kHz]:	-61.943
Attenuation [dB]:	-62.83



15:32:27 13.03.2018

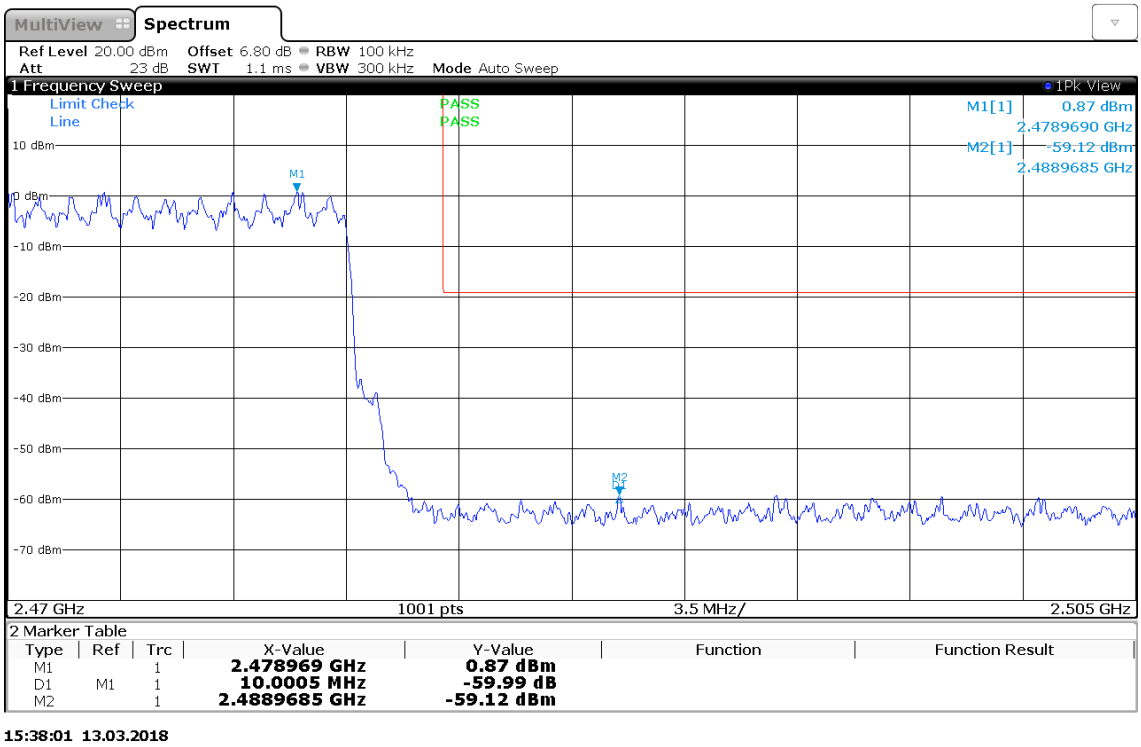
Band-edge Compliance

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.6, 6.10.4
Operational Mode:	3-DH5, Hopping
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Band-edge	Lower
In-band Frequency [MHz]:	2410.993
Max. in-band Level [dBm/100 kHz]:	-1.479
Out-of-band Frequency [MHz]:	2399.996
Max. out-of-band Level [dBm/100 kHz]:	-54.172
Attenuation [dB]:	-52.69



Band-edge Compliance

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.6, 6.10.4
Operational Mode:	3-DH5, Hopping
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Band-edge	Upper
In-band Frequency [MHz]:	2478.969
Max. in-band Level [dBm/100 kHz]:	0.869
Out-of-band Frequency [MHz]:	2488.969
Max. out-of-band Level [dBm/100 kHz]:	-59.121
Attenuation [dB]:	-59.99



15:38:01 13.03.2018

3.8 Test Conditions and Results - Conducted spurious emissions

3.8.1 Information

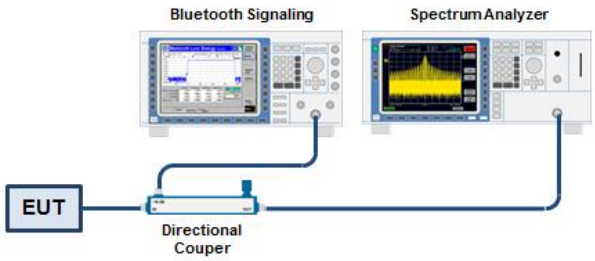
Test Information	
Reference	FCC 15.247(d) / ISED RSS-247 5.5
Measurement Method	ANSI C63.10 6.10
Operator	Wilfried Treffke
Date	2018-03-13

3.8.2 Limits

Limits	
Power Measurement	Out-of-band attenuation [dB]
Peak	20
RMS	30

3.8.3 Setup

Test Setup



3.8.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01003	2017-07	2018-07

3.8.5 Procedure

Test Procedure

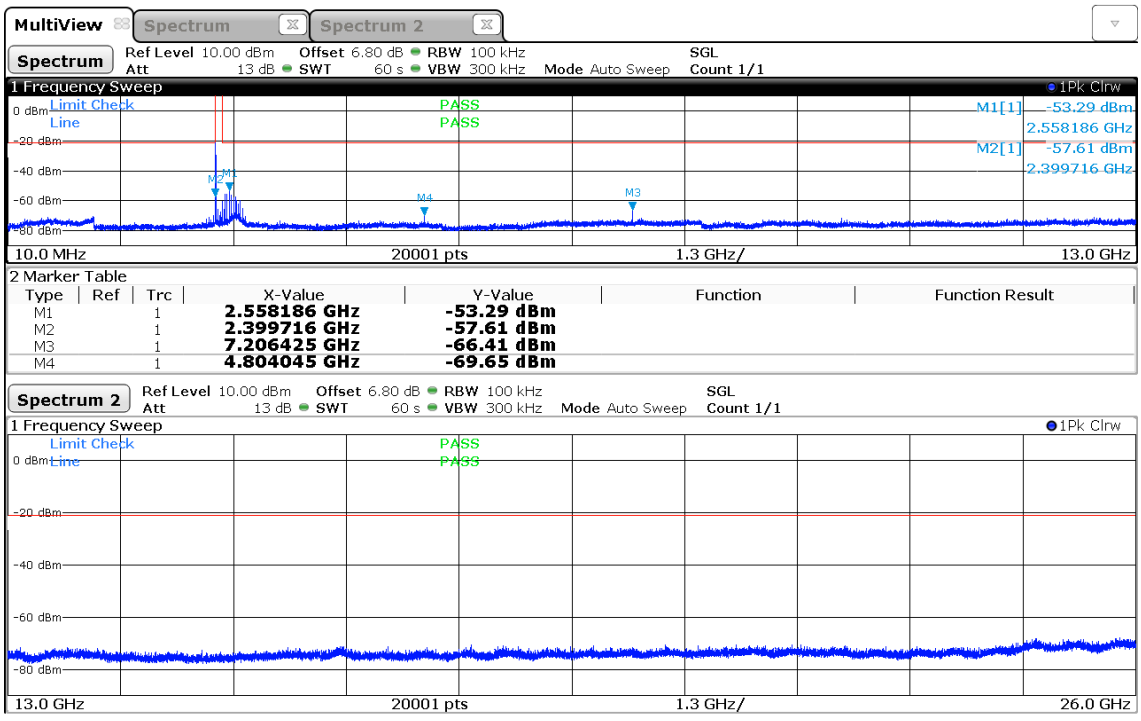
1. EUT set to test mode (Communication tester is used if needed)
2. Span set around lower band edge and detector is set to peak and max hold
3. Resolution bandwidth is set to 100 kHz
4. Markers are set to peak emission levels within frequency band and outside frequency band
5. Band edge attenuation is determined from level difference

3.8.6 Results

Test Results		
Mode	Channel [MHz]	Verdict
DH5	2402	PASS
DH5	2441	PASS
DH5	2480	PASS
2-DH5	2402	PASS
2-DH5	2441	PASS
2-DH5	2480	PASS
3-DH5	2402	PASS
3-DH5	2441	PASS
3-DH5	2480	PASS

Conducted Spurious Emissions

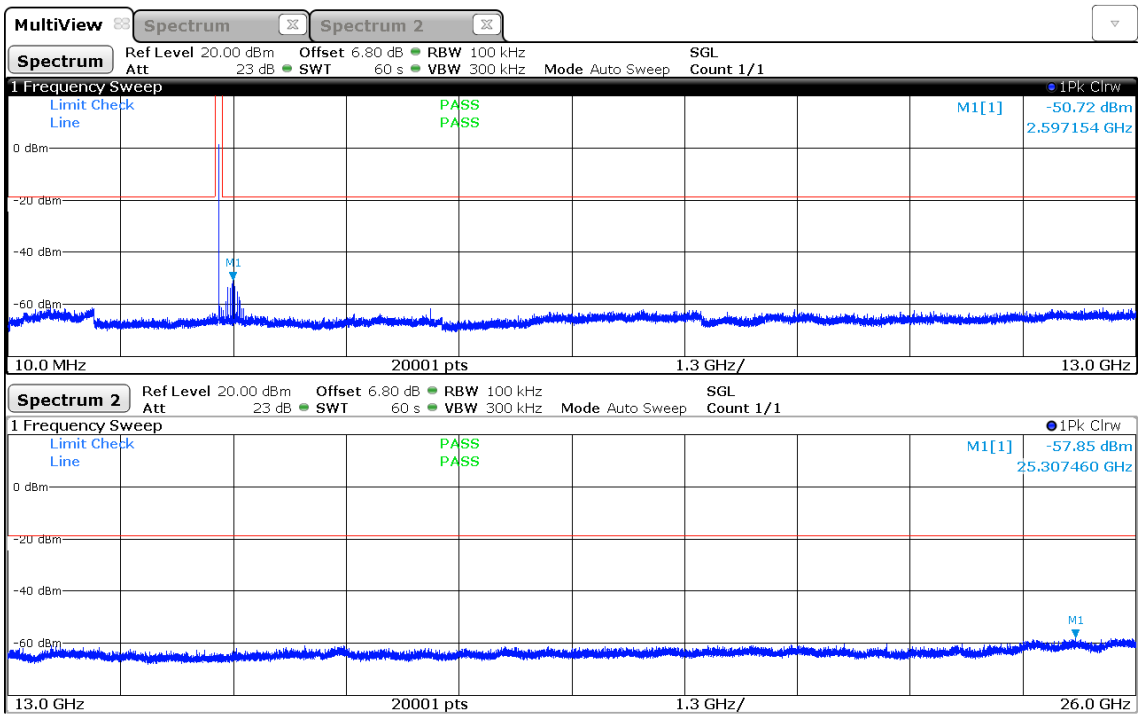
Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.8
Operational Mode:	DH5, Channel: 0, 2402 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Max. in-band Frequency [MHz]:	2402.0
Max. in-band Level [dBm/100 kHz]:	-1.1
Out-of-band Limit [dBm/100 kHz]:	-21.1



15:24:21 13.03.2018

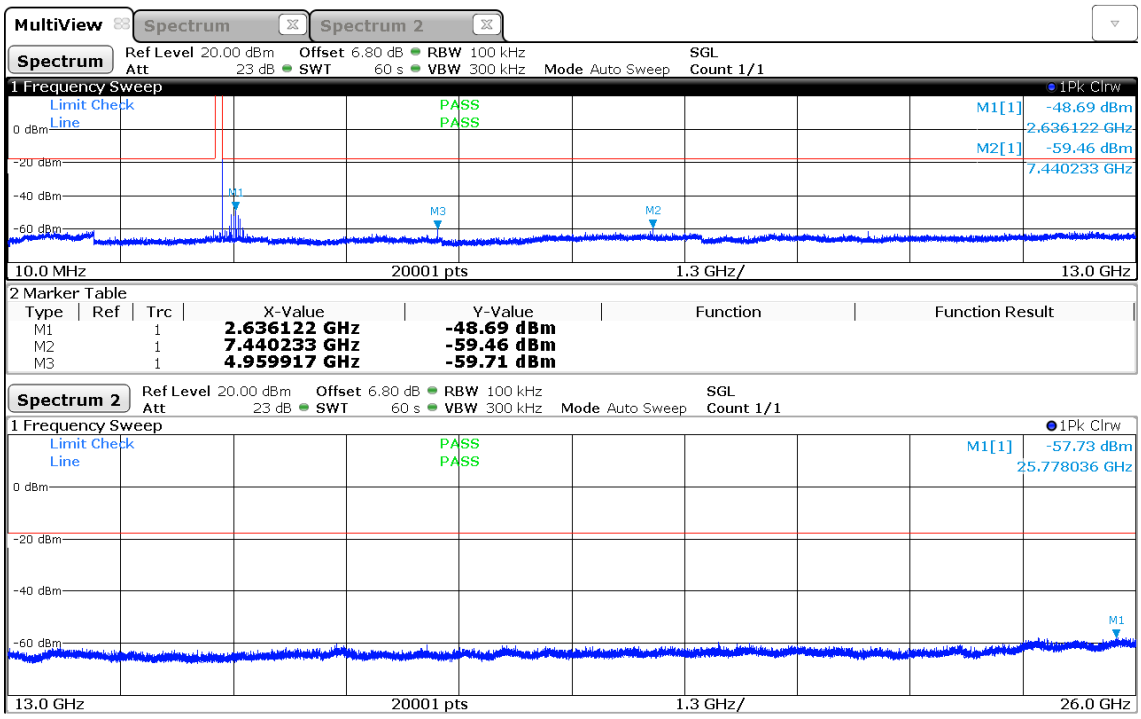
Conducted Spurious Emissions

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.8
Operational Mode:	DH5, Channel: 39, 2441 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Max. in-band Frequency [MHz]:	2441.0
Max. in-band Level [dBm/100 kHz]:	1.3
Out-of-band Limit [dBm/100 kHz]:	-18.7



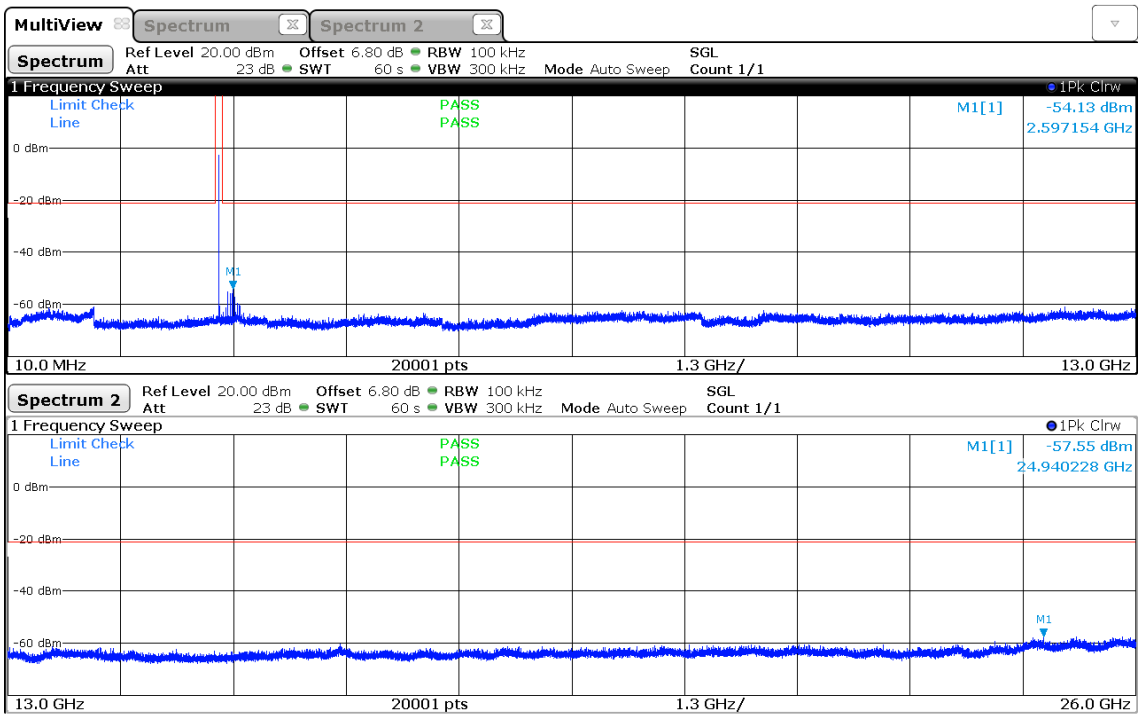
Conducted Spurious Emissions

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.8
Operational Mode:	DH5, Channel: 78, 2480 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Max. in-band Frequency [MHz]:	2479.9
Max. in-band Level [dBm/100 kHz]:	2.4
Out-of-band Limit [dBm/100 kHz]:	-17.6



Conducted Spurious Emissions

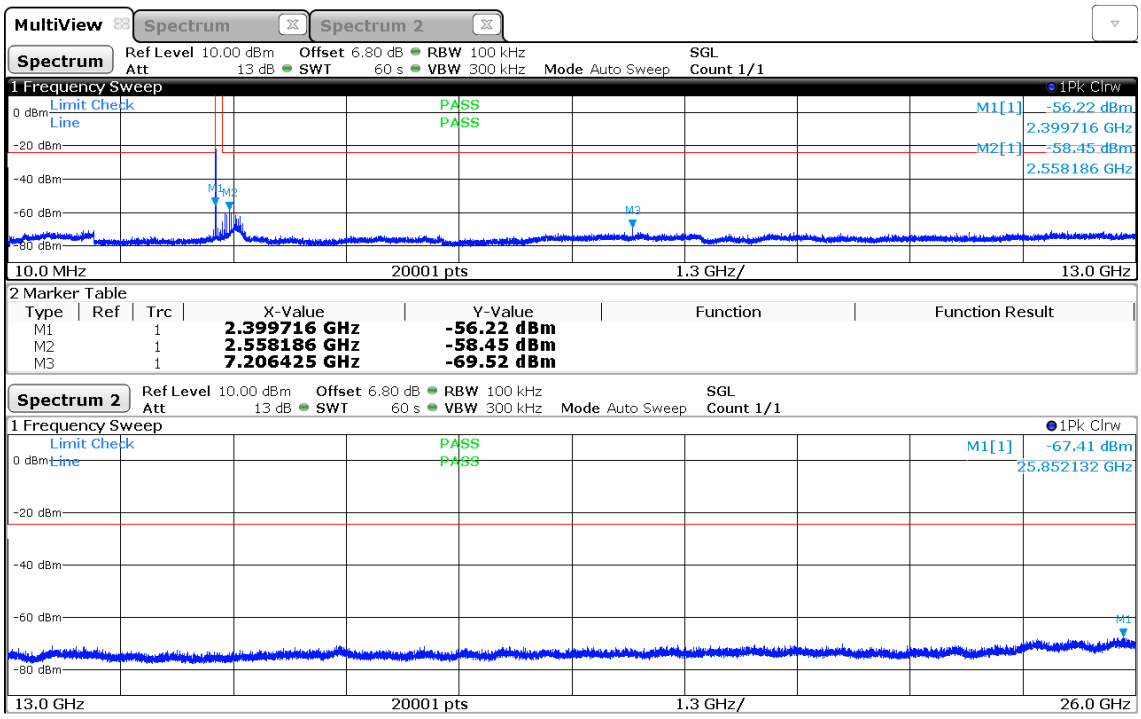
Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.8
Operational Mode:	2-DH5, Channel: 39, 2441 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Max. in-band Frequency [MHz]:	2441.0
Max. in-band Level [dBm/100 kHz]:	-1.2
Out-of-band Limit [dBm/100 kHz]:	-21.2



16:50:31 13.03.2018

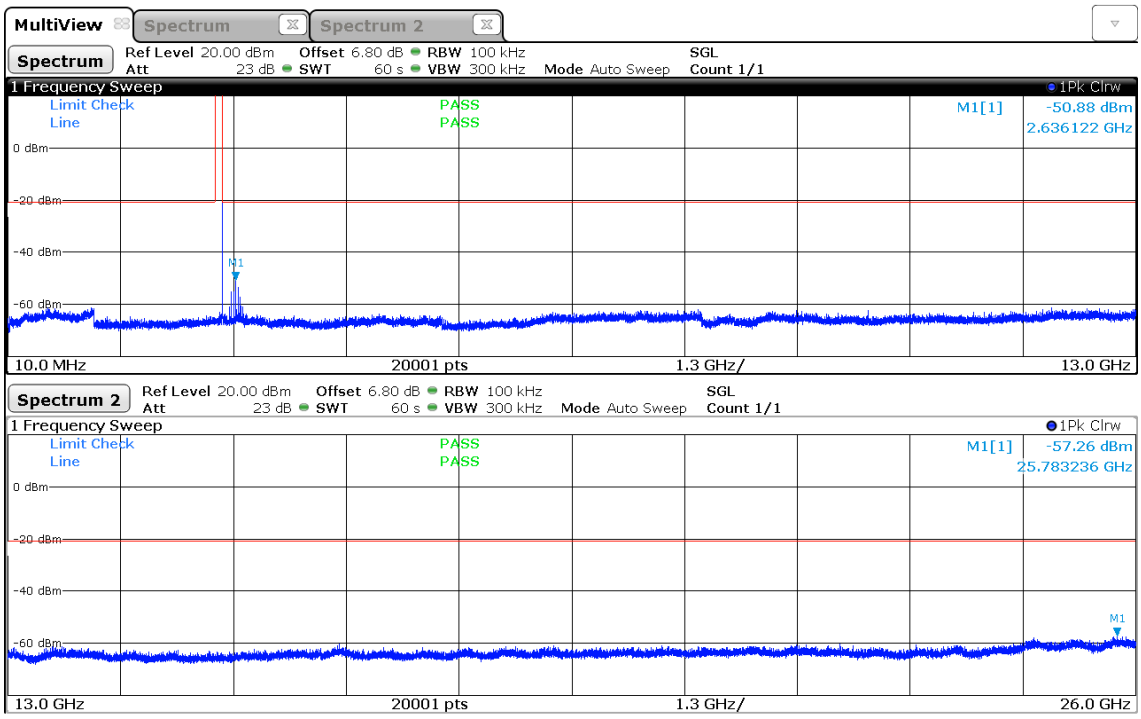
Conducted Spurious Emissions

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.8
Operational Mode:	2-DH5, Channel: 0, 2402 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Max. in-band Frequency [MHz]:	2402.0
Max. in-band Level [dBm/100 kHz]:	-4.2
Out-of-band Limit [dBm/100 kHz]:	-24.2



Conducted Spurious Emissions

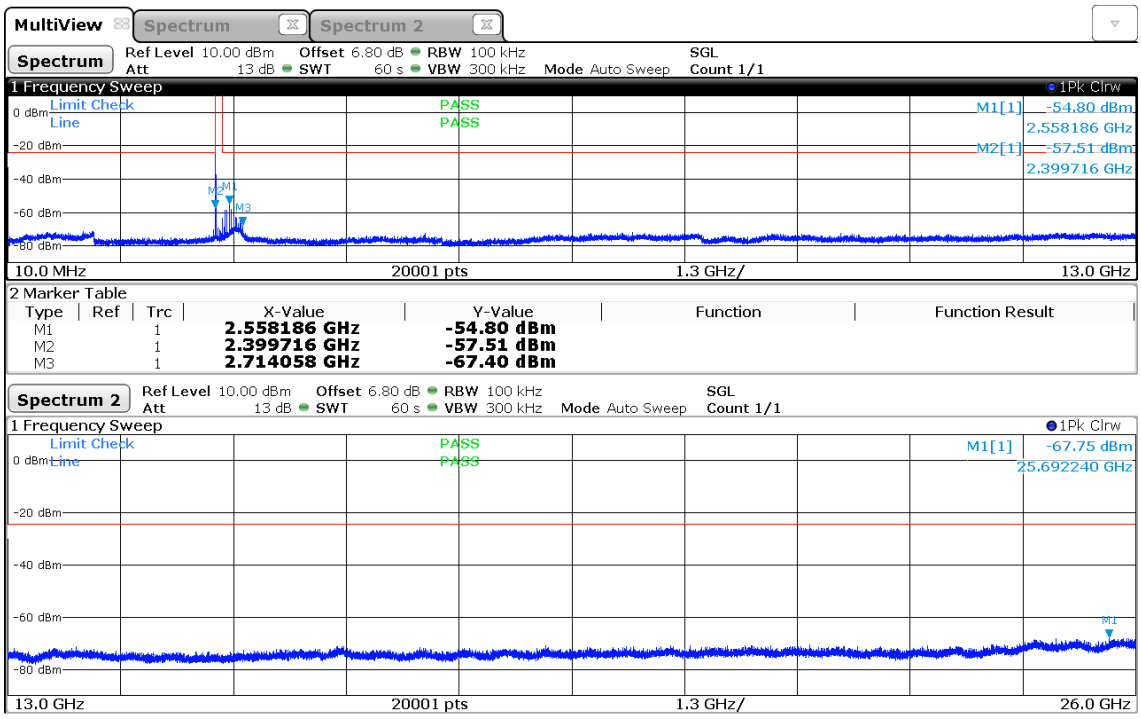
Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.8
Operational Mode:	2-DH5, Channel: 78, 2480 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Max. in-band Frequency [MHz]:	2479.9
Max. in-band Level [dBm/100 kHz]:	-0.8
Out-of-band Limit [dBm/100 kHz]:	-20.8



16:54:21 13.03.2018

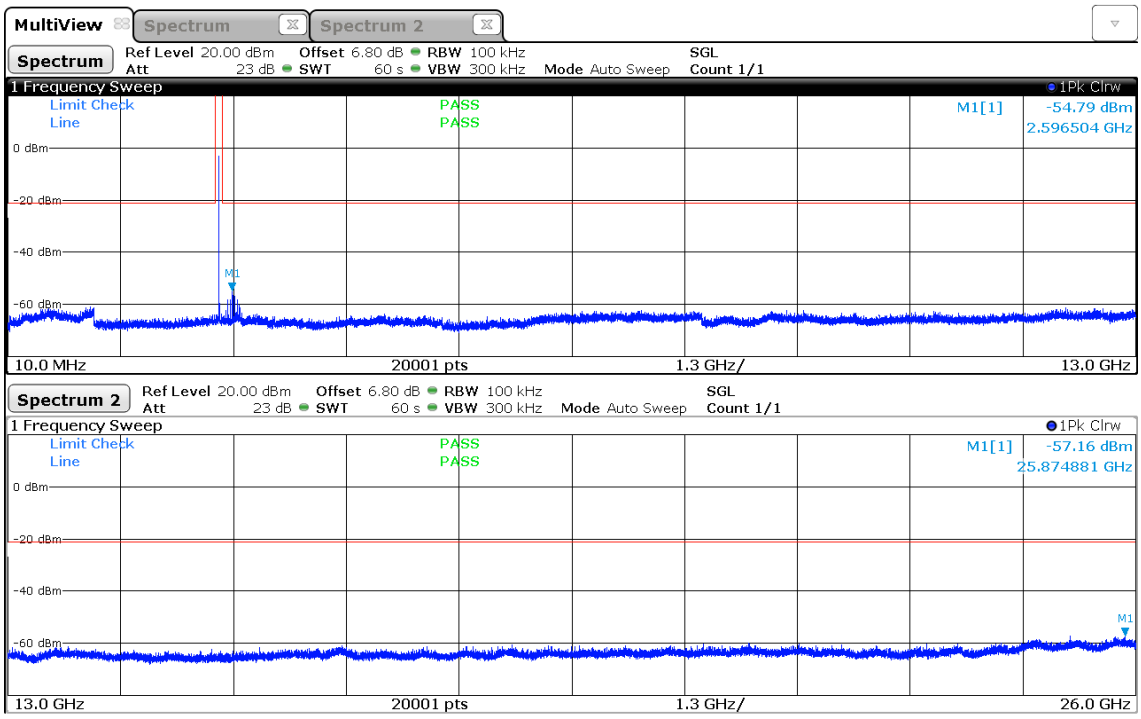
Conducted Spurious Emissions

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.8
Operational Mode:	3-DH5, Channel: 0, 2402 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Max. in-band Frequency [MHz]:	2402.0
Max. in-band Level [dBm/100 kHz]:	-4.2
Out-of-band Limit [dBm/100 kHz]:	-24.2



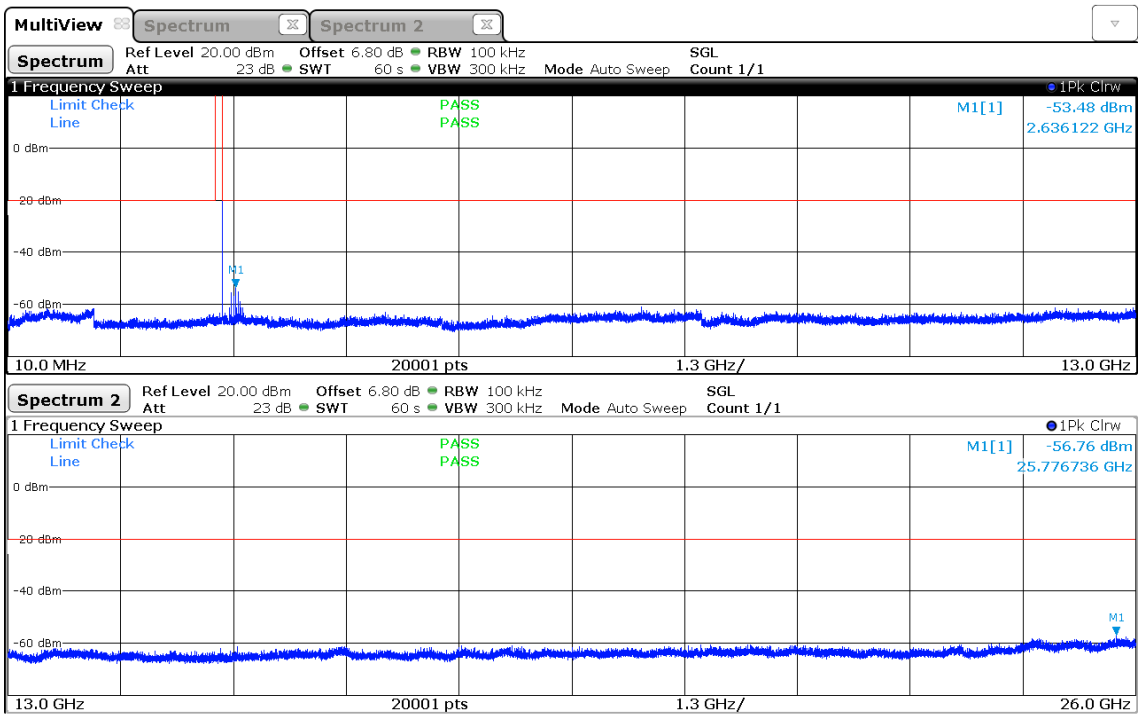
Conducted Spurious Emissions

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.8
Operational Mode:	3-DH5, Channel: 39, 2441 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Max. in-band Frequency [MHz]:	2441.0
Max. in-band Level [dBm/100 kHz]:	-1.2
Out-of-band Limit [dBm/100 kHz]:	-21.2



Conducted Spurious Emissions

Project Number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
Model Description:	Telematic Device with Bluetooth
Model:	L0101
Test Sample ID:	17711
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 7.8.8
Operational Mode:	3-DH5, Channel: 78, 2480 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Wilfried Treffke
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-03-13
Max. in-band Frequency [MHz]:	2480.0
Max. in-band Level [dBm/100 kHz]:	-0.2
Out-of-band Limit [dBm/100 kHz]:	-20.2



3.9 Test Conditions and Results - Transmitter radiated emissions

3.9.1 Information

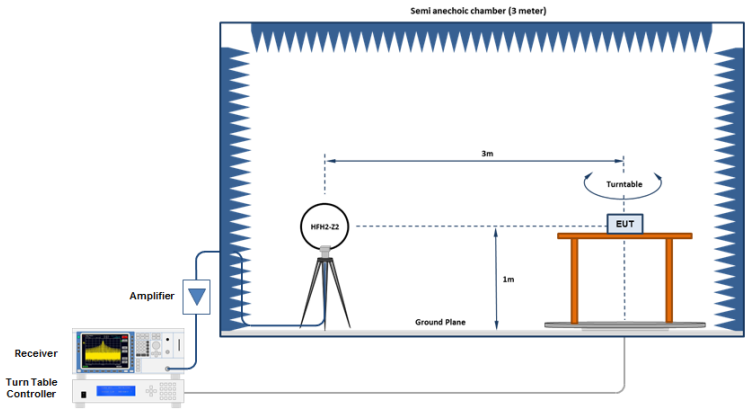
Test Information	
Reference	FCC 15.247(d) / ISED RSS-GEN 8.9
Measurement Method	ANSI C63.10 6.4, 6.5, 6.6
Operator	Sebastian Suckow
Date	2018-03-13

3.9.2 Limits

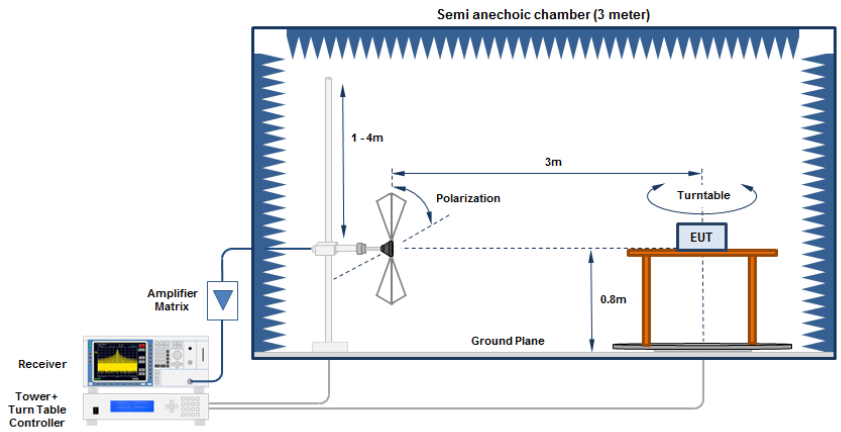
Limits			
Frequency [MHz]	Detector	Field strength [dBµV/m]	Measurement distance [m]
0.009 - 0.09	Average	2400/F[kHz]	300
0.09 - 0.110	Quasi-Peak	2400/F[kHz]	300
0.110 - 0.490	Average	2400/F[kHz]	300
0.490 - 1.705	Quasi-Peak	24000/F[kHz]	30
1.705 - 30.0	Quasi-Peak	30	30
30 - 88	Quasi-Peak	100	3
88 - 216	Quasi-Peak	150	3
216 - 960	Quasi-Peak	200	3
960 - 1000	Quasi-Peak	500	3
>1000	Average	500	3

3.9.3 Setup

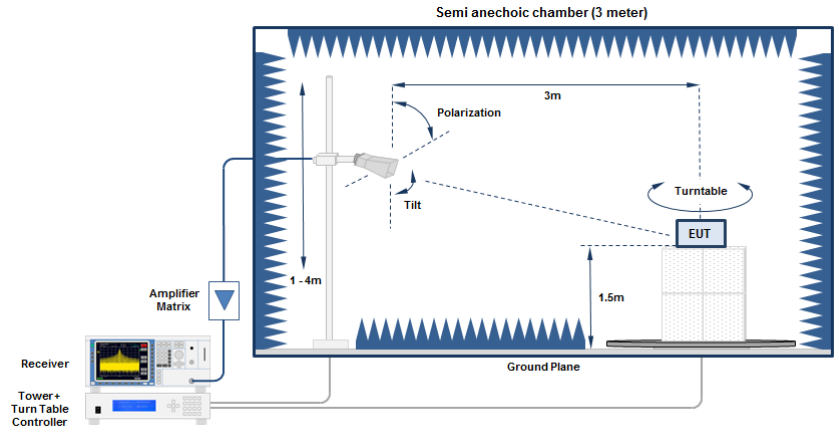
Test Setup < 30 MHz



Test Setup 30 - 1000 MHz



Test Setup > 1 GHz



3.9.4 Equipment

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2017-02	2020-02
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2017-08	2018-08
Antenna	R&S	HK 116	EF00030	2016-04	2019-04
Antenna	R&S	HL 223	EF00212	2016-04	2019-04

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2017-02	2020-02
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2017-08	2018-08
Antenna	R&S	BBHA 9120D	EF00018	2016-09	2019-09
Antenna	Amplifier Research	AT4560	EF01152	2017-10	2018-10

3.9.5 Procedure

Test Procedure < 30 MHz
1. EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground
2. EUT set to test mode
3. The EUT is rotated through 360°
4. The emissions are measured with peak detector and max hold
5. All significant emissions are measured again using the corresponding final detector

Test Procedure 30 - 1000 MHz
1. EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground
2. EUT set to test mode
3. The receiver is set to peak detection with max hold
4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m
5. All significant emissions are measured again using the corresponding final detector

Test Procedure > 1 GHz
1. EUT is placed on a non conducting support at the center of a turn table 1.5 m above the ground
2. EUT set to test mode
3. The receiver is set to peak detection with max hold
4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m
5. All significant emissions are measured again using the corresponding final detector

3.9.6 Results

Test Results - DH5						
Channel [MHz]	Emission [MHz]	Level [dBµV/m]	Det.	Pol.	Limit [dBµV/m]	Margin [dB]
2402	4800	44.96	pk	ver	74.00	-29.04
2441	4880	46.72	pk	ver	74.00	-27.28
2480	4960	44.33	pk	hor	74.00	-29.67
2480	4960	47.93	pk	ver	74.00	-26.07

3.10 Test Conditions and Results - Receiver radiated emissions

3.10.1 Information

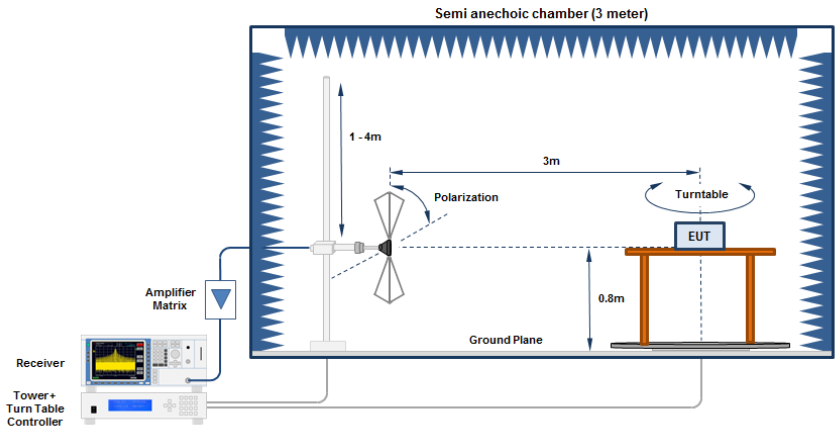
Test Information	
Reference	ISED RSS-247 3.1
Measurement Method	ANSI C63.10 6.5, 6.6
Operator	Sebastian Suckow
Date	2018-03-13

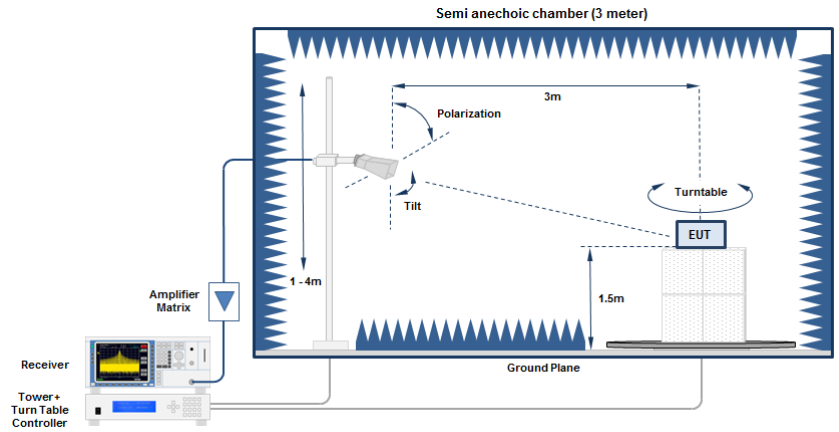
3.10.2 Limits

Limits			
Frequency [MHz]	Detector	Field strength [dBµV/m]	Measurement distance [m]
30 - 88	Quasi-Peak	100	3
88 - 216	Quasi-Peak	150	3
216 - 960	Quasi-Peak	200	3
960 - 1000	Quasi-Peak	500	3
>1000	Average	500	3

3.10.3 Setup

Test Setup 30 - 1000 MHz



Test Setup > 1 GHz


3.10.4 Equipment

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2017-02	2020-02
Measurement Receiver	R&S	ESU 26	EF00887	2017-07	2018-07
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2017-08	2018-08
Antenna	R&S	HK 116	EF00030	2016-04	2019-04
Antenna	R&S	HL 223	EF00212	2016-04	2019-04

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2017-02	2020-02
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2017-08	2018-08
Antenna	R&S	BBHA 9120D	EF00018	2016-09	2019-09
Antenna	Amplifier Research	AT4560	EF01152	2017-10	2018-10

3.10.5 Procedure

Test Procedure 30 - 1000 MHz
1. EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground 2. EUT set to test mode 3. The receiver is set to peak detection with max hold 4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m 5. All significant emissions are measured again using the corresponding final detector

Test Procedure > 1 GHz
1. EUT is placed on a non conducting support at the center of a turn table 1.5 m above the ground 2. EUT set to test mode 3. The receiver is set to peak detection with max hold 4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m 5. All significant emissions are measured again using the corresponding final detector

3.10.6 Results

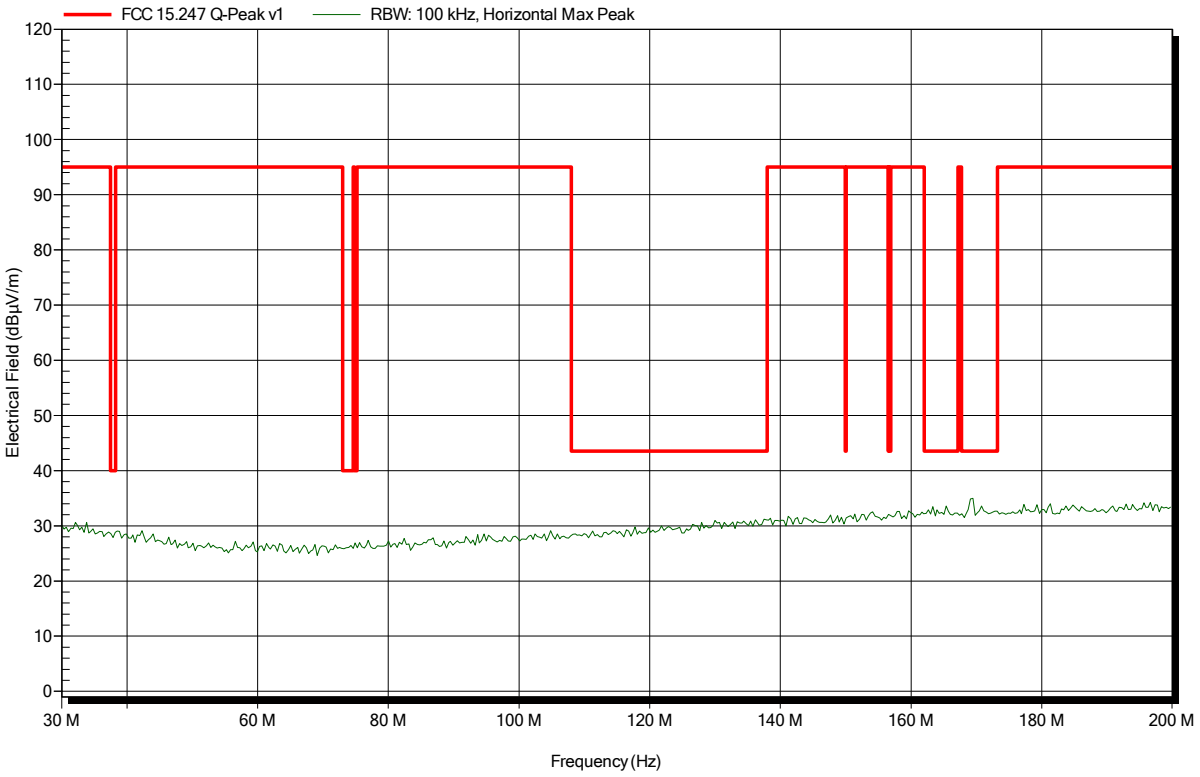
Test Results						
Channel [MHz]	Emission [MHz]	Level [dBµV/m]	Det.	Pol.	Limit [dBµV/m]	Margin [dB]
2441	7480	49.87	pk	hor	53.98	-04.11
2441	7960	50.70	pk	ver	53.98	-03.28

ANNEX A Transmitter spurious emissions

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	HK116, Horizontal
Measurement distance:	3 m
Mode:	TX; BT DH5 2402 MHz
Test Date:	2018-03-13
Note:	

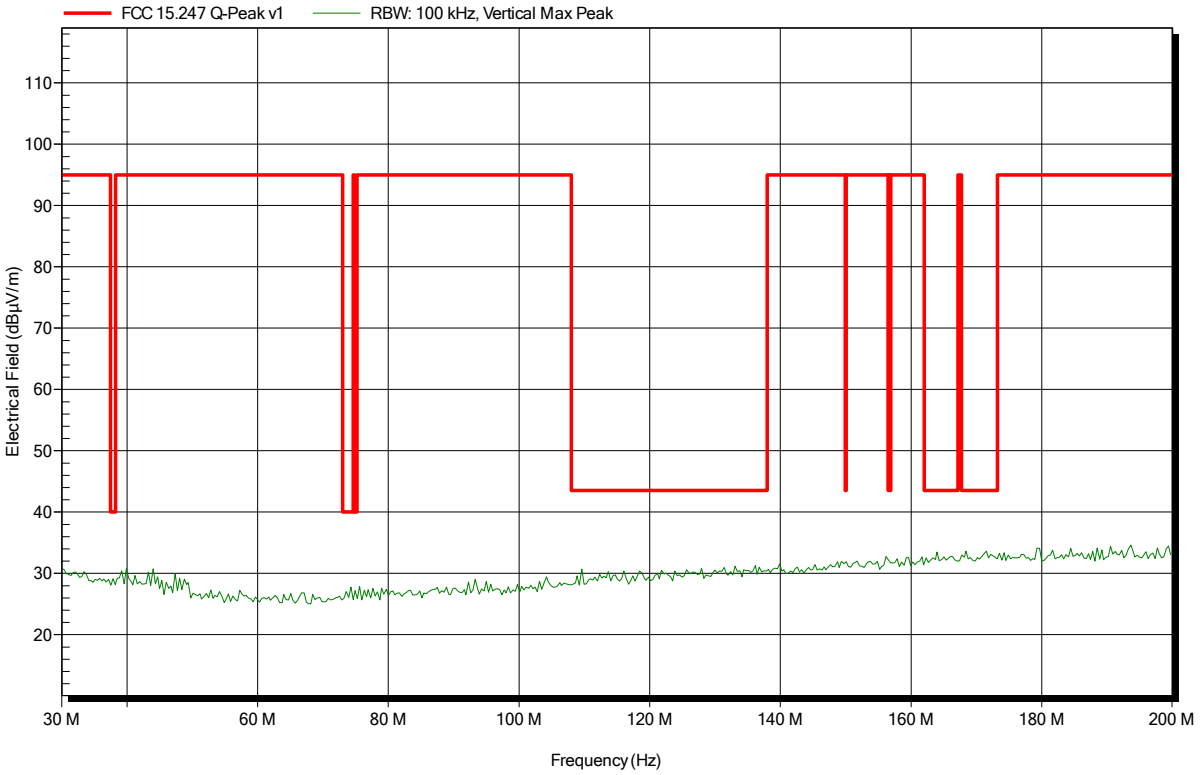
Index 40



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	HK116, Vertical
Measurement distance:	3 m
Mode:	TX; BT DH5 2402 MHz
Test Date:	2018-03-13
Note:	

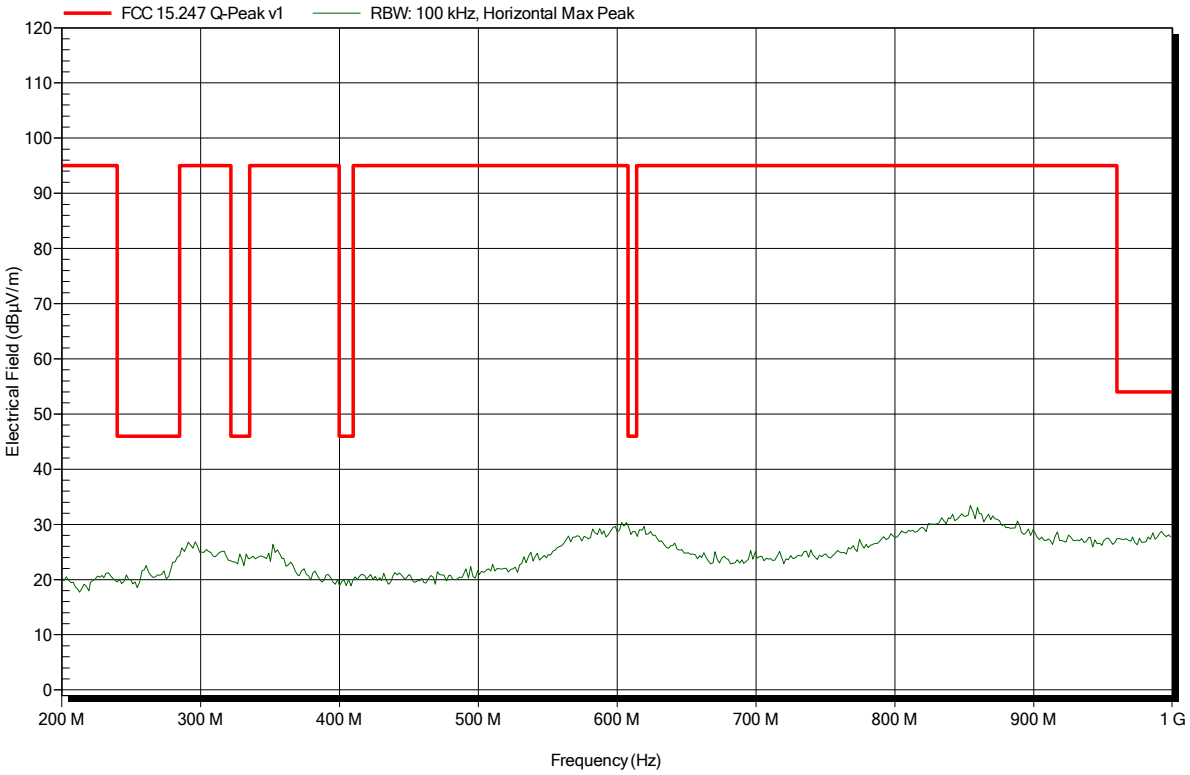
Index 35



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; BT DH5 2402 MHz
Test Date:	2018-03-13
Note:	

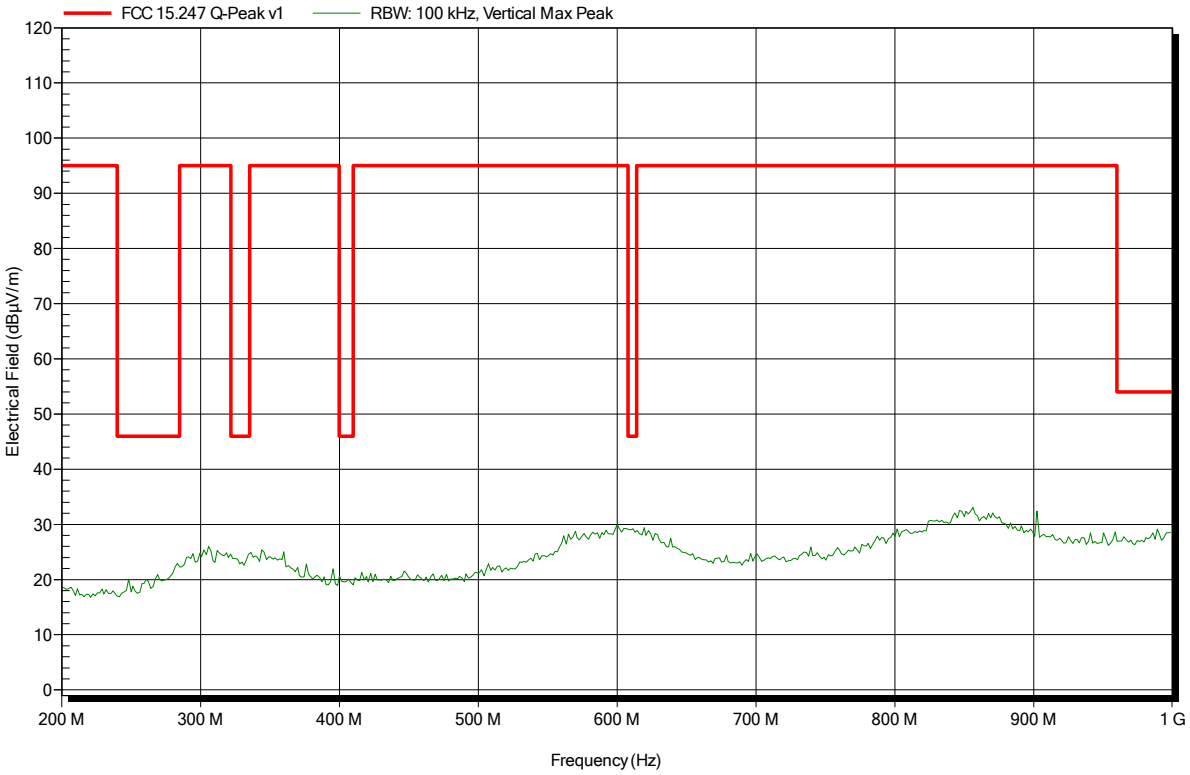
Index 34



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; BT DH5 2402 MHz
Test Date:	2018-03-13
Note:	

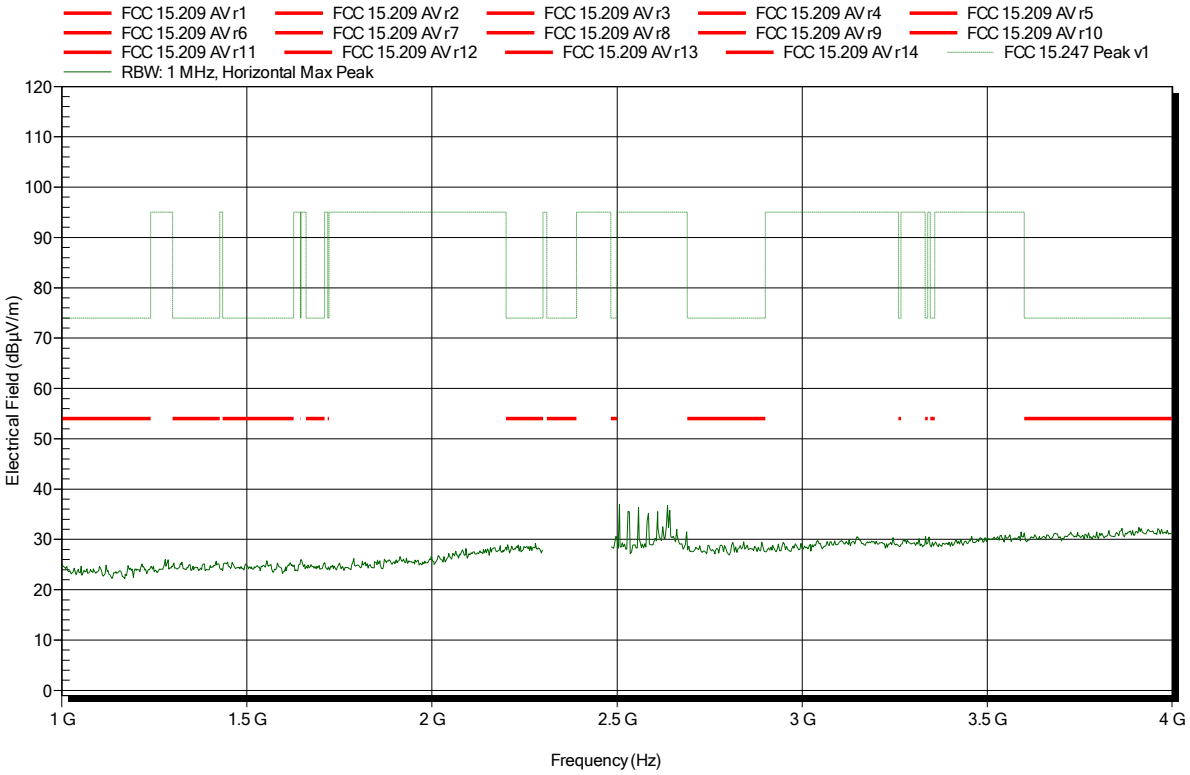
Index 29



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m
Mode:	TX; BT DH5 2402 MHz
Test Date:	2018-03-13
Note:	

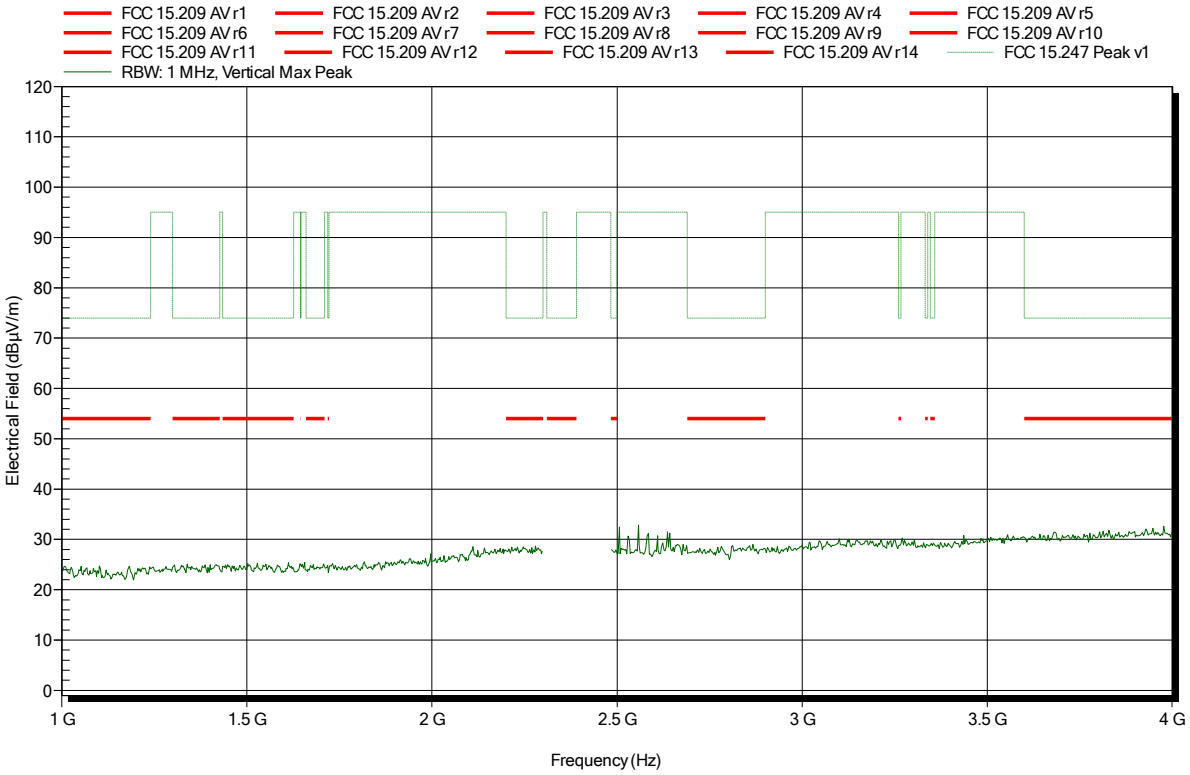
Index 2



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m
Mode:	TX; BT DH5 2402 MHz
Test Date:	2018-03-13
Note:	

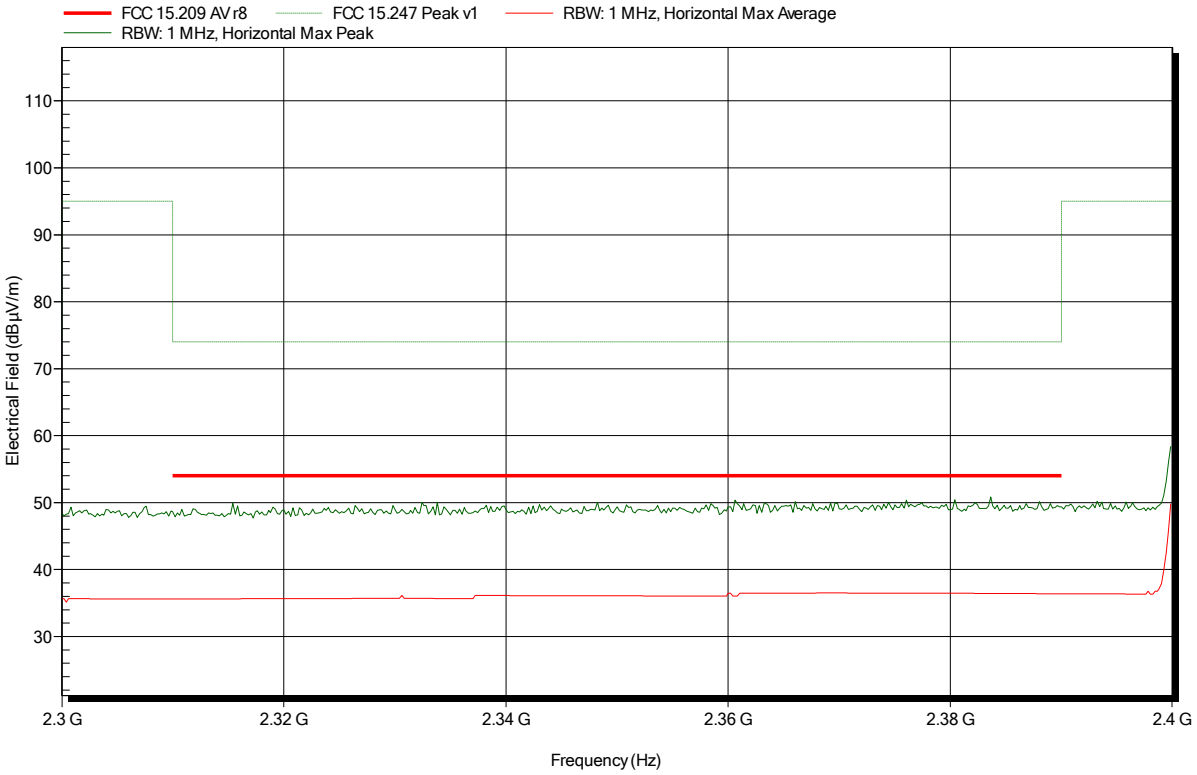
Index 21



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m
Mode:	TX; BT DH5 2402 MHz
Test Date:	2018-03-13
Note:	lower bandedge

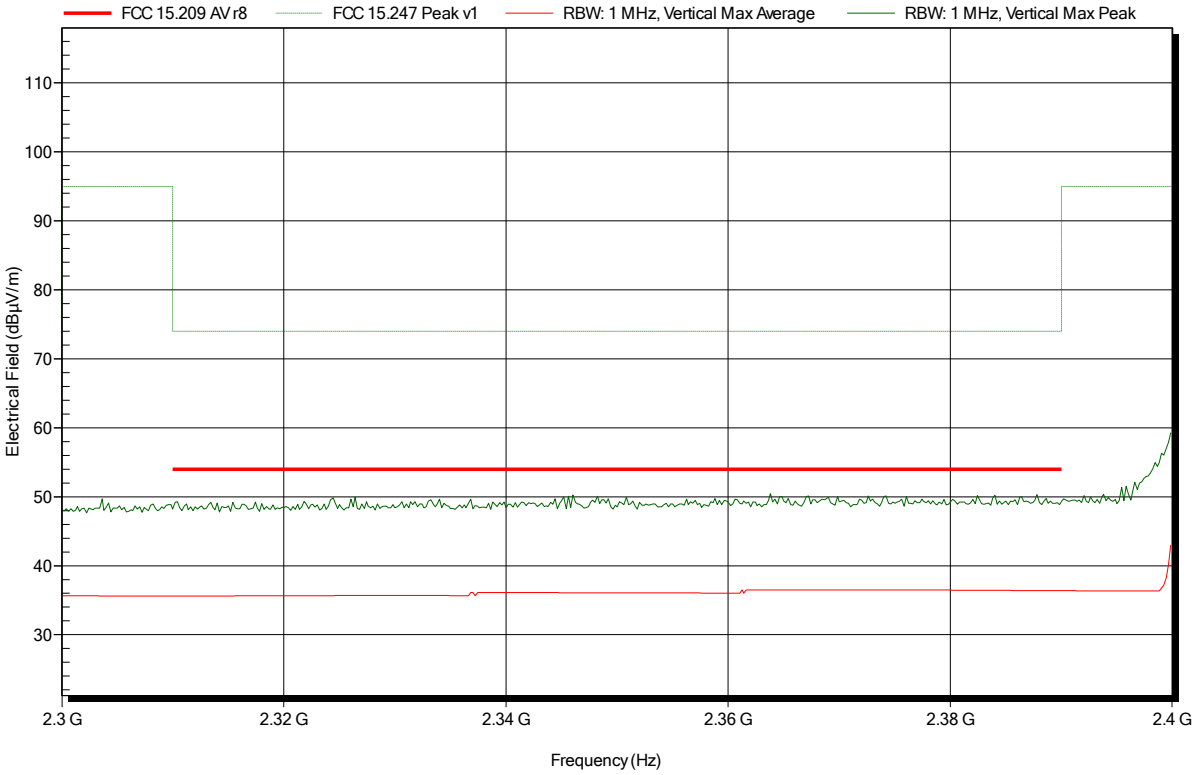
Index 1



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m
Mode:	TX; BT DH5 2402 MHz
Test Date:	2018-03-13
Note:	lower bandedge

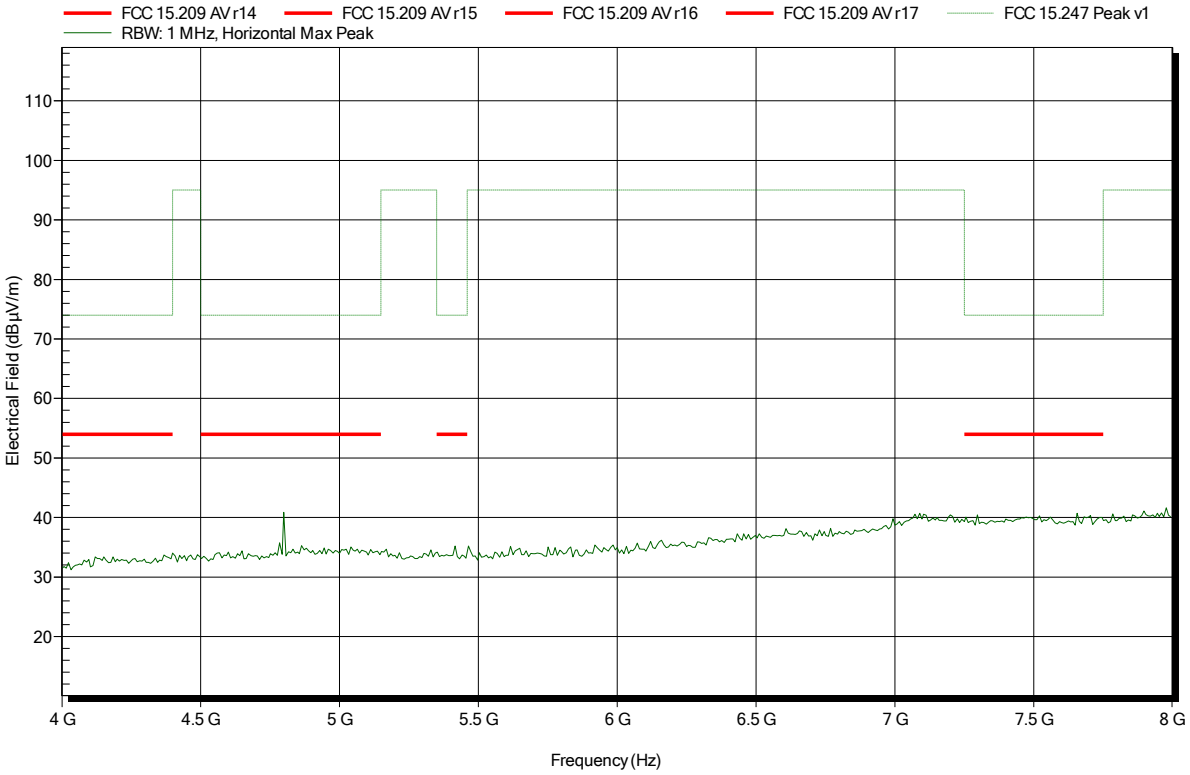
Index 22



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BT DH5 2402 MHz
Test Date:	2018-03-13
Note:	

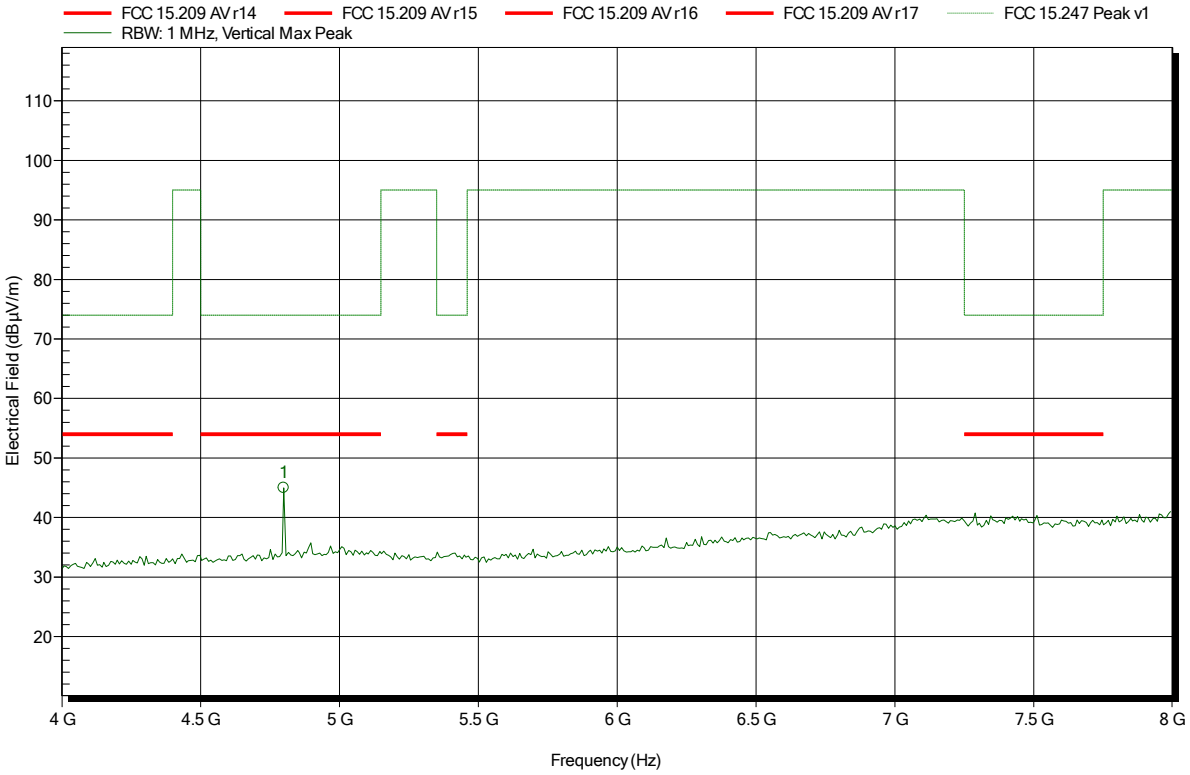
Index 3



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BT DH5 2402 MHz
Test Date:	2018-03-13
Note:	

Index 20

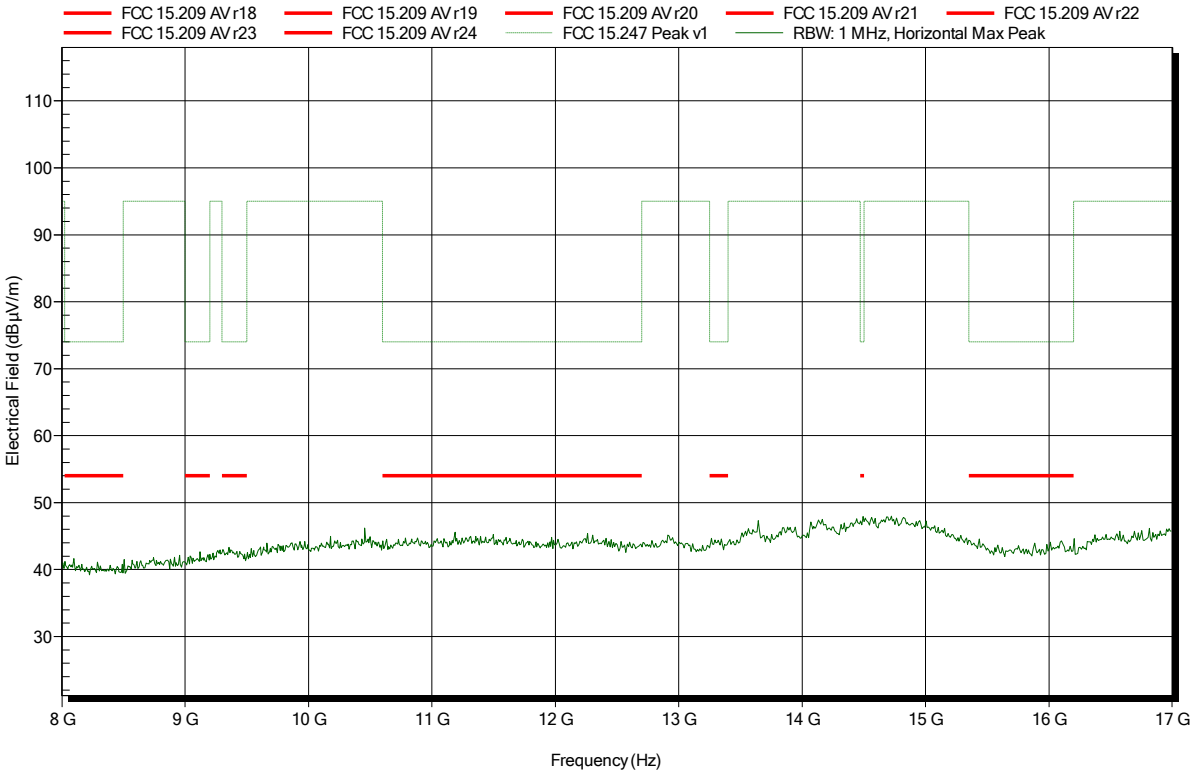


Frequency	Peak	Peak Limit	Peak Difference	Status
4.8 GHz	44.96 dBµV/m	74 dBµV/m	-29.04 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BT DH5 2402 MHz
Test Date:	2018-03-13
Note:	

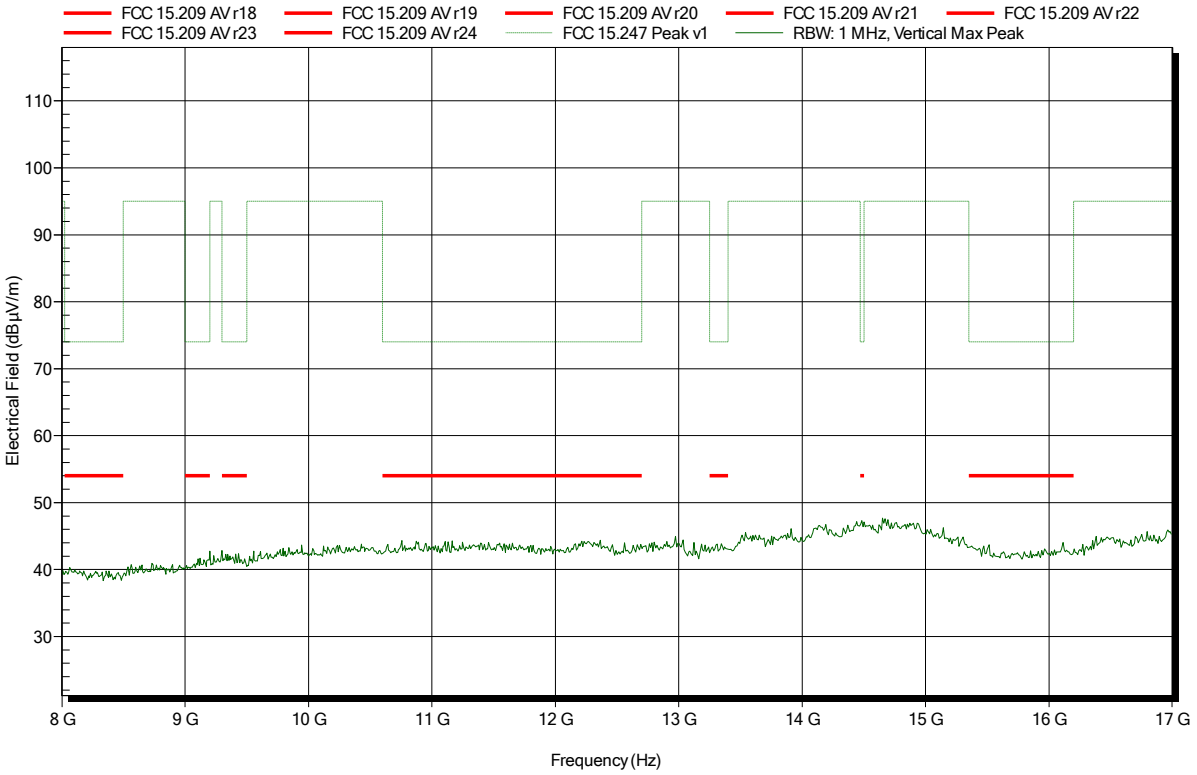
Index 4



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BT DH5 2402 MHz
Test Date:	2018-03-13
Note:	

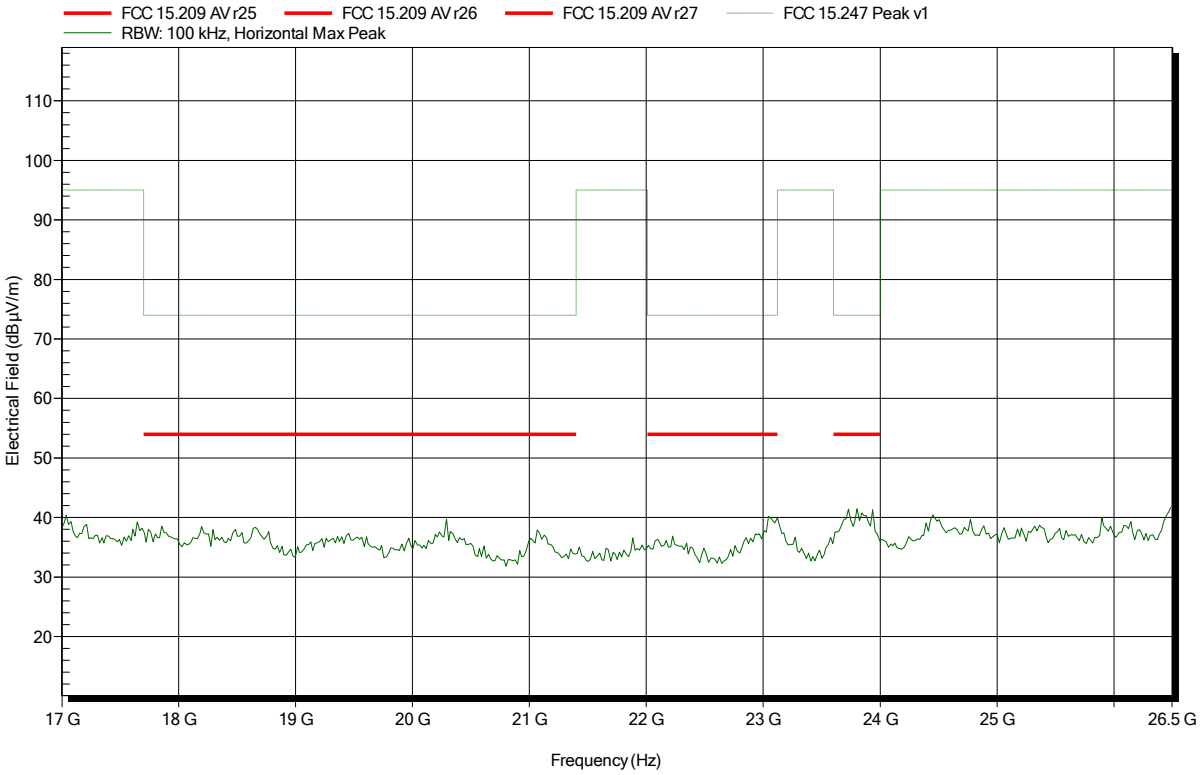
Index 19



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	ATH18G40, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BT DH5 2402 MHz
Test Date:	2018-03-13
Note:	

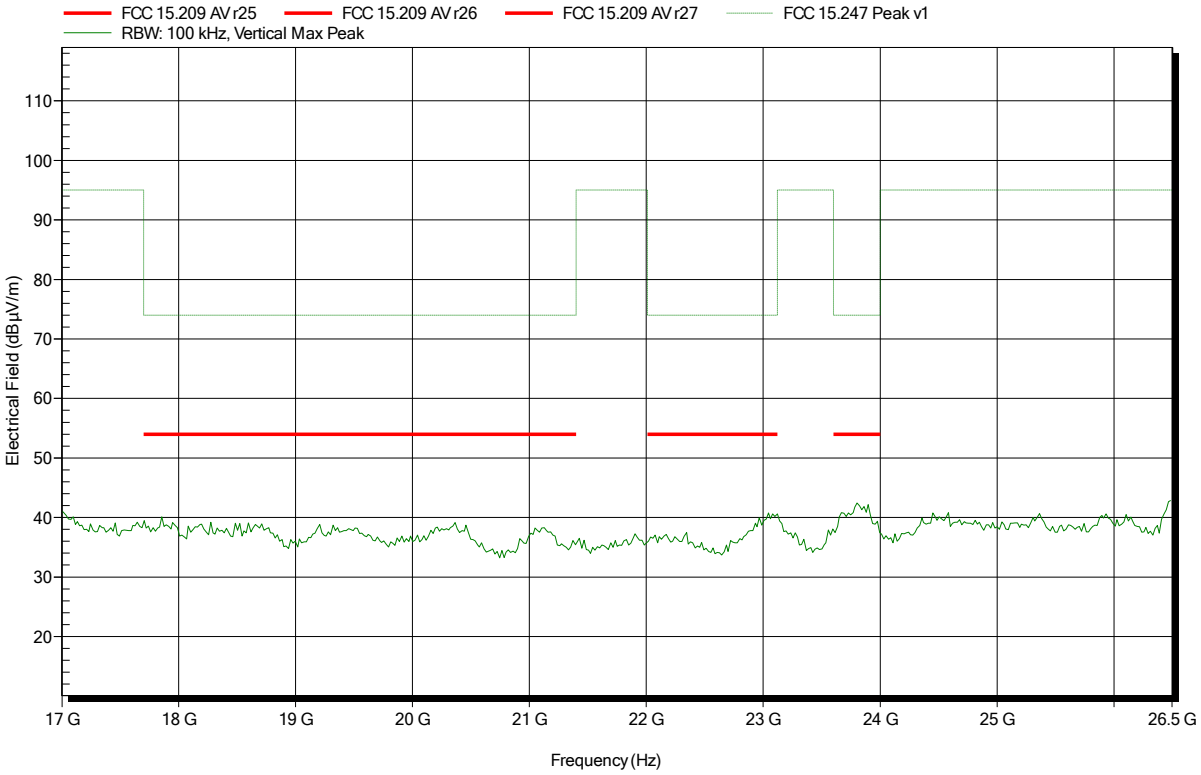
Index 23



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	ATH18G40, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BT DH5 2402 MHz
Test Date:	2018-03-13
Note:	

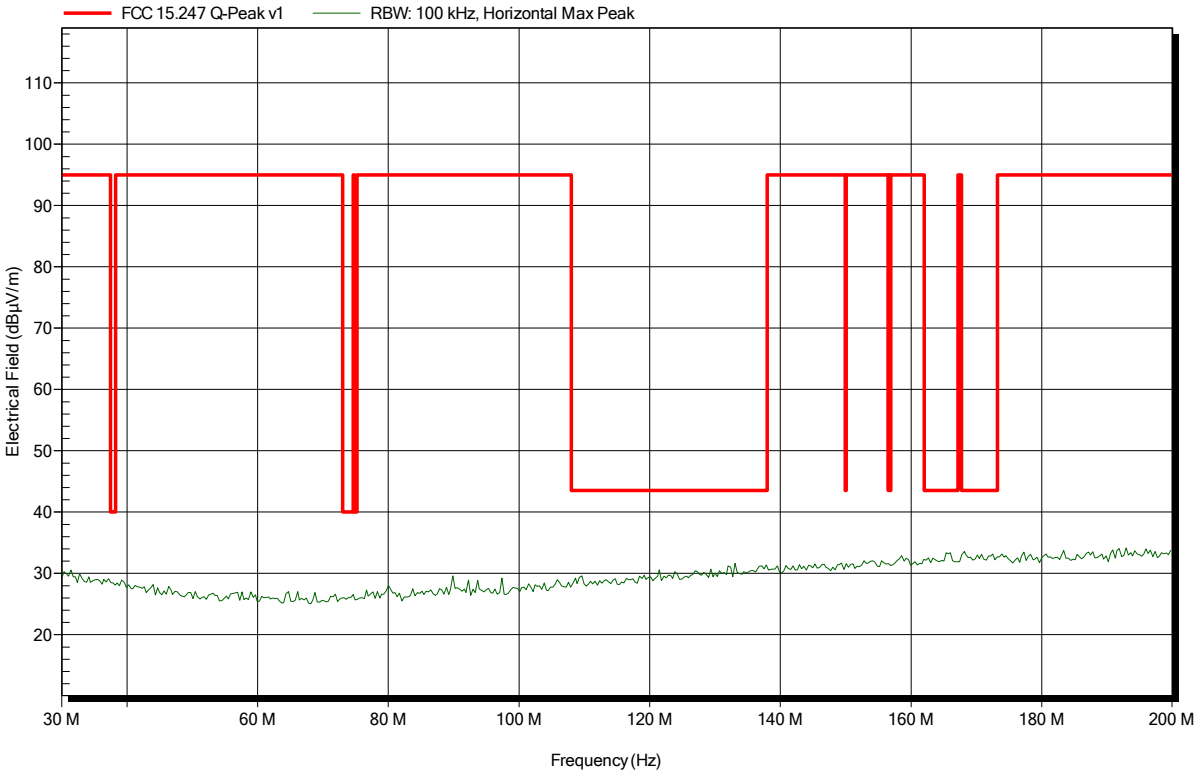
Index 28



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	HK116, Horizontal
Measurement distance:	3 m
Mode:	TX; BT DH5 2441 MHz
Test Date:	2018-03-13
Note:	

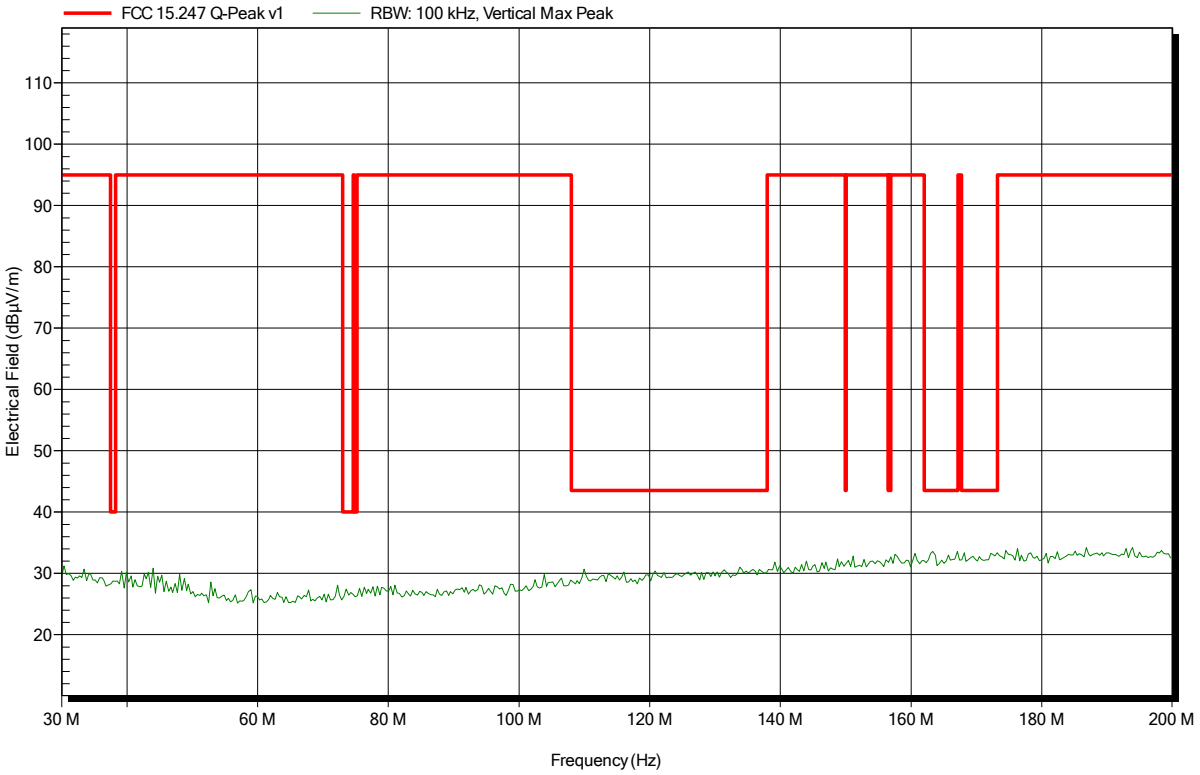
Index 39



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	HK116, Vertical
Measurement distance:	3 m
Mode:	TX; BT DH5 2441 MHz
Test Date:	2018-03-13
Note:	

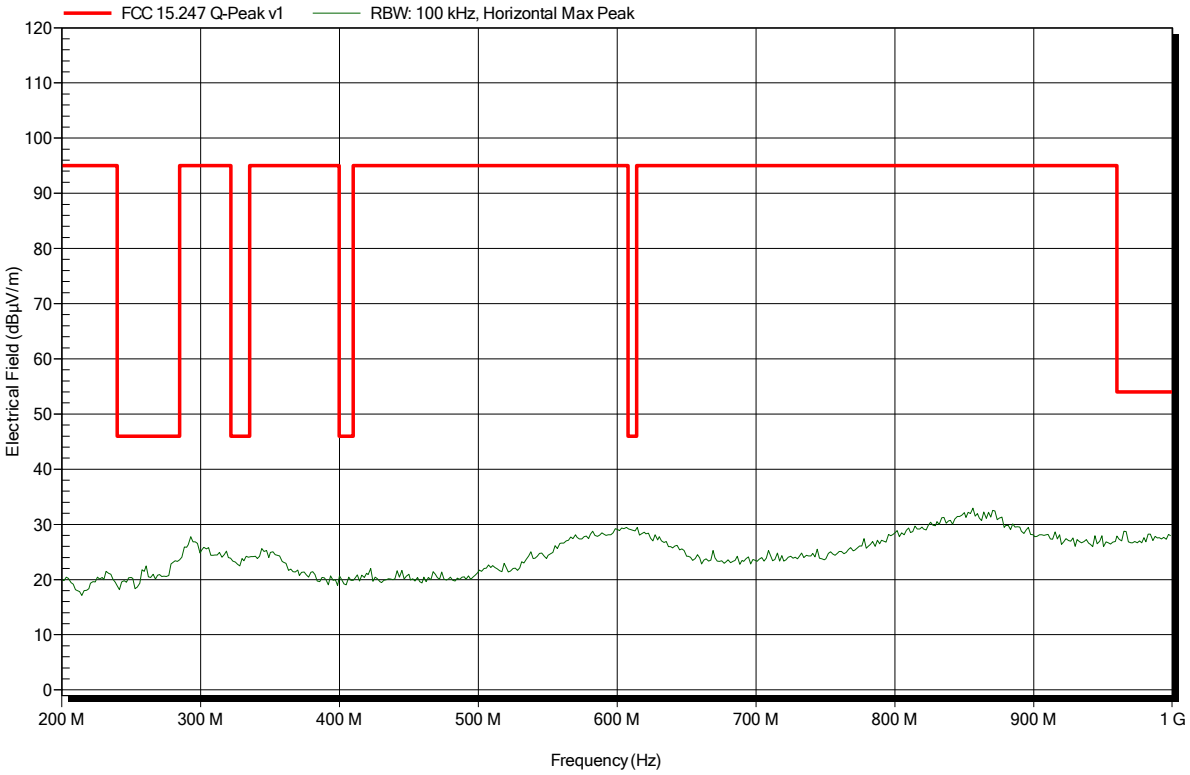
Index 36



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; BT DH5 2441 MHz
Test Date:	2018-03-13
Note:	

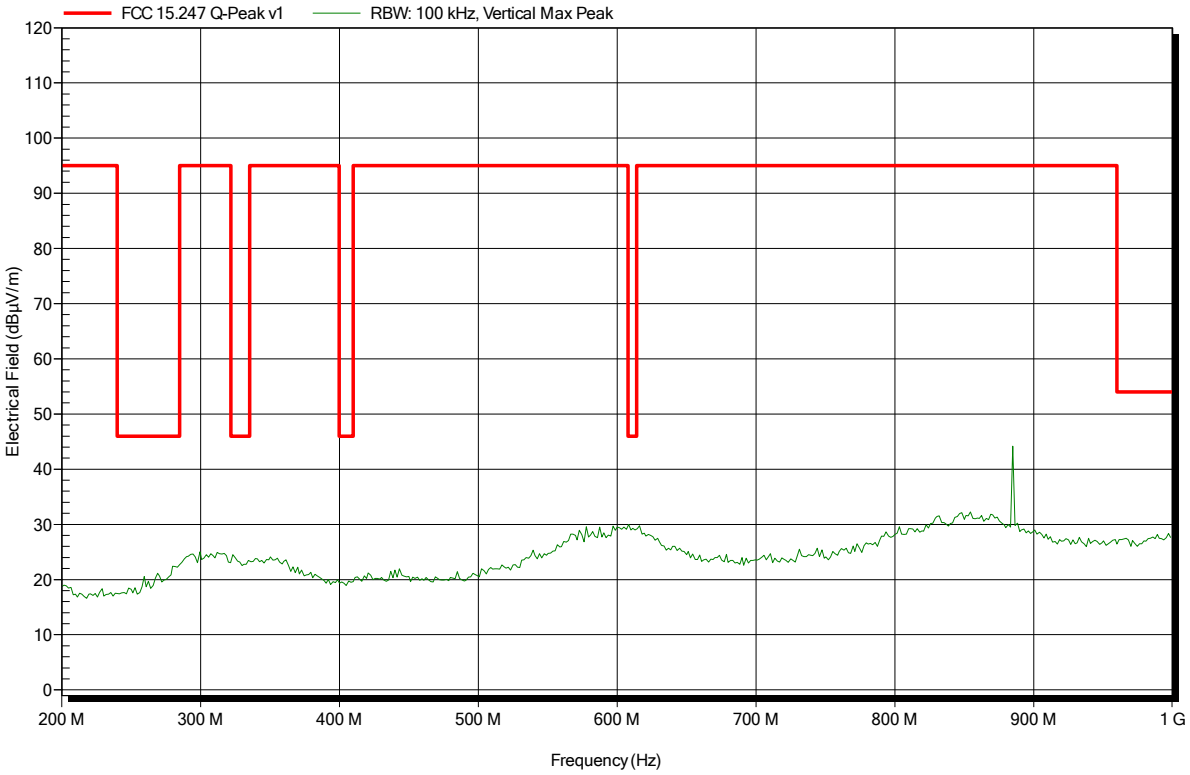
Index 33



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; BT DH5 2441 MHz
Test Date:	2018-03-13
Note:	

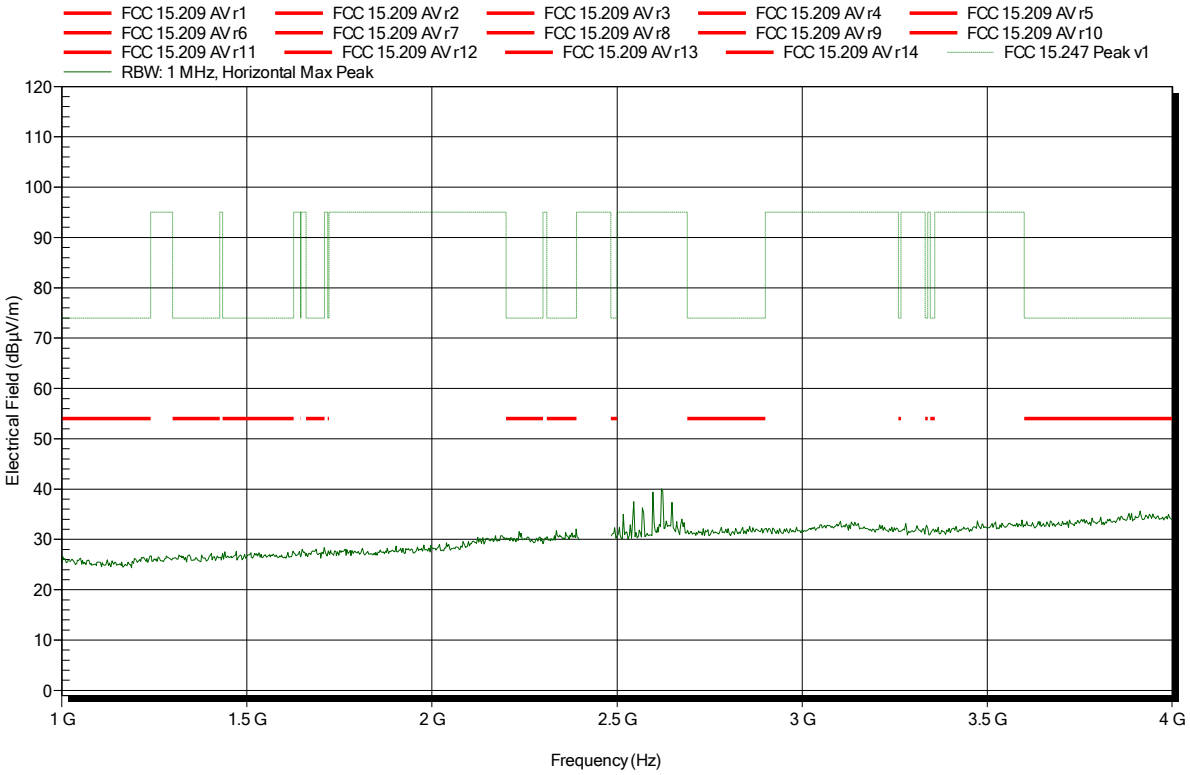
Index 30



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m
Mode:	TX; BT DH5 2441 MHz
Test Date:	2018-03-13
Note:	

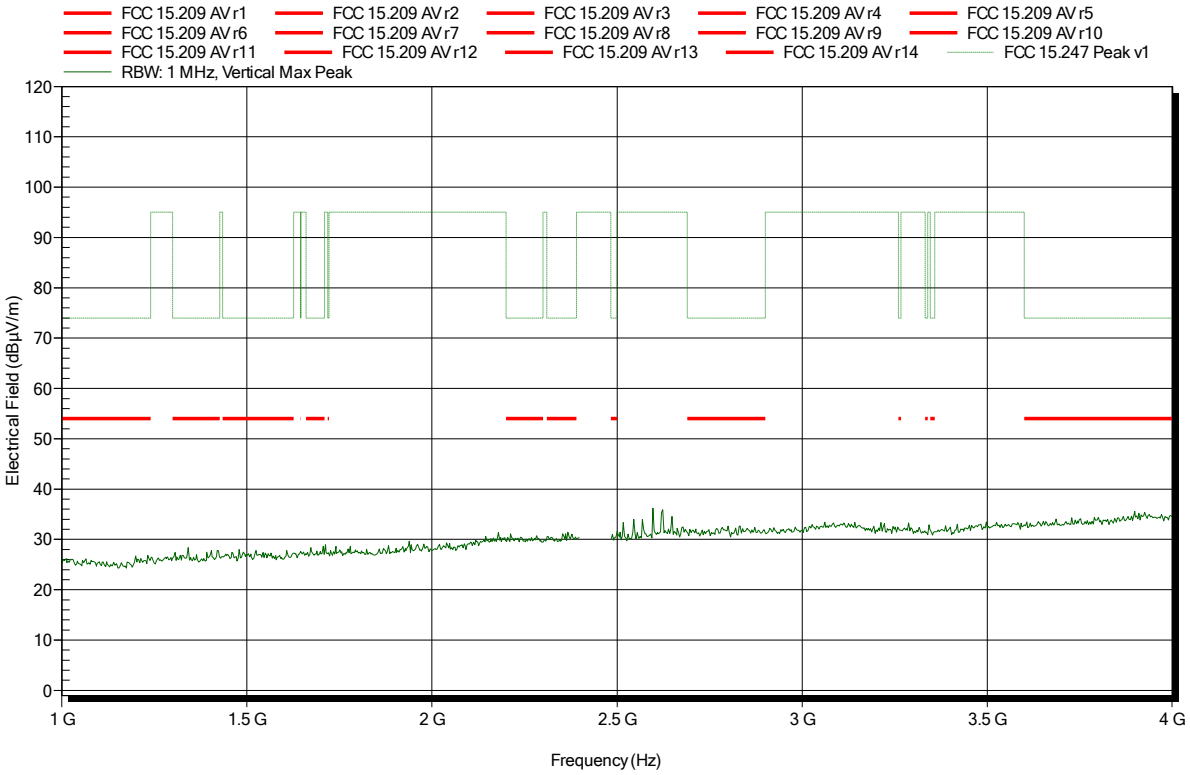
Index 7



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m
Mode:	TX; BT DH5 2441 MHz
Test Date:	2018-03-13
Note:	

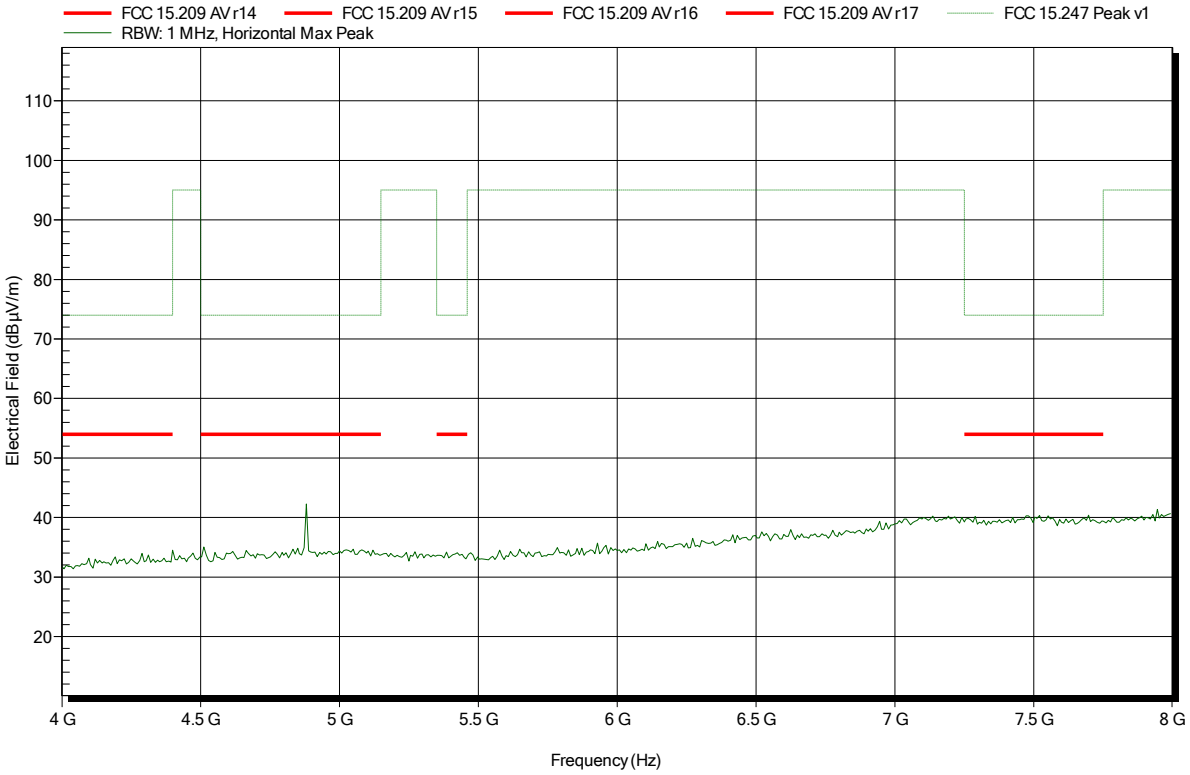
Index 16



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BT DH5 2441 MHz
Test Date:	2018-03-13
Note:	

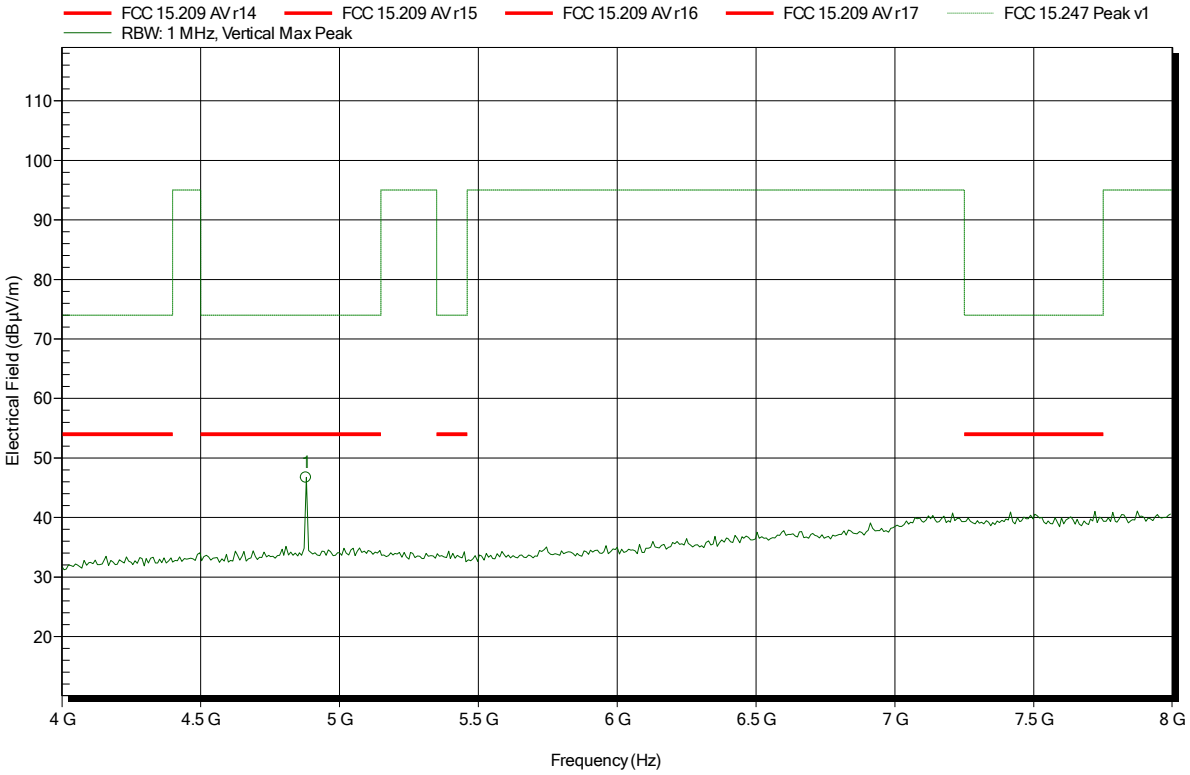
Index 6



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BT DH5 2441 MHz
Test Date:	2018-03-13
Note:	

Index 17

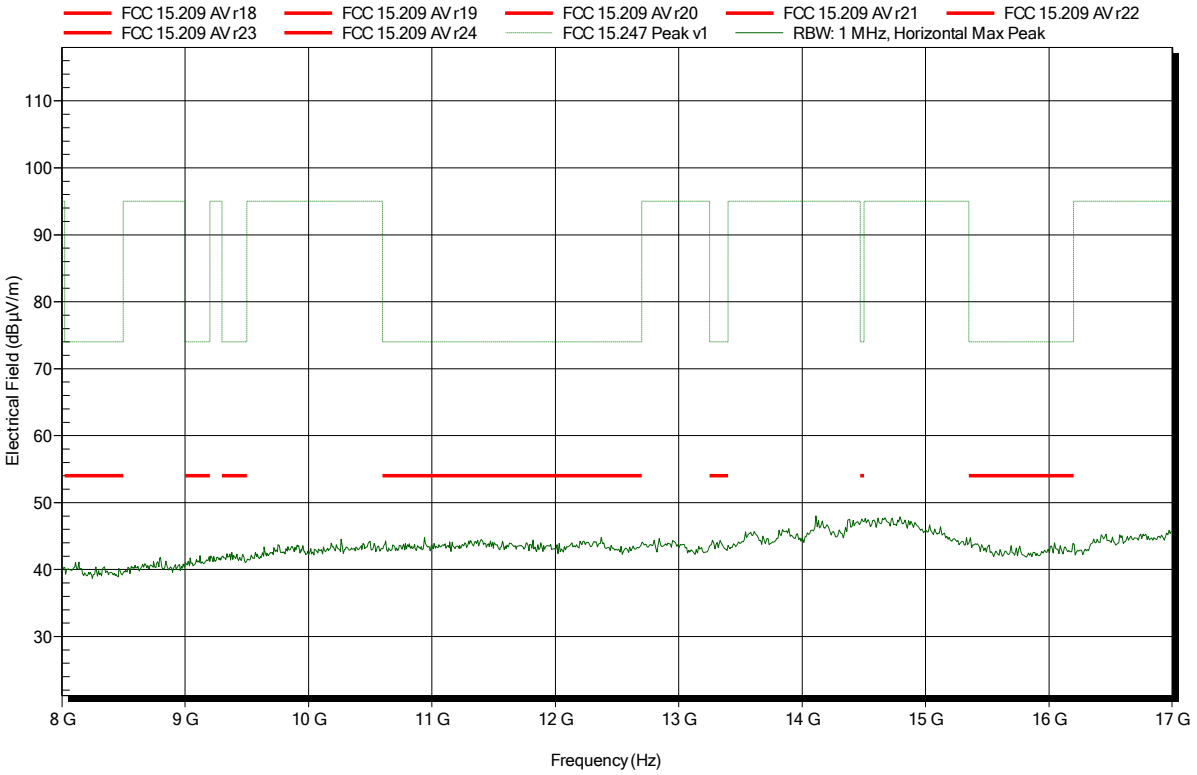


Frequency	Peak	Peak Limit	Peak Difference	Status
4.88 GHz	46.72 dBµV/m	74 dBµV/m	-27.28 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BT DH5 2441 MHz
Test Date:	2018-03-13
Note:	

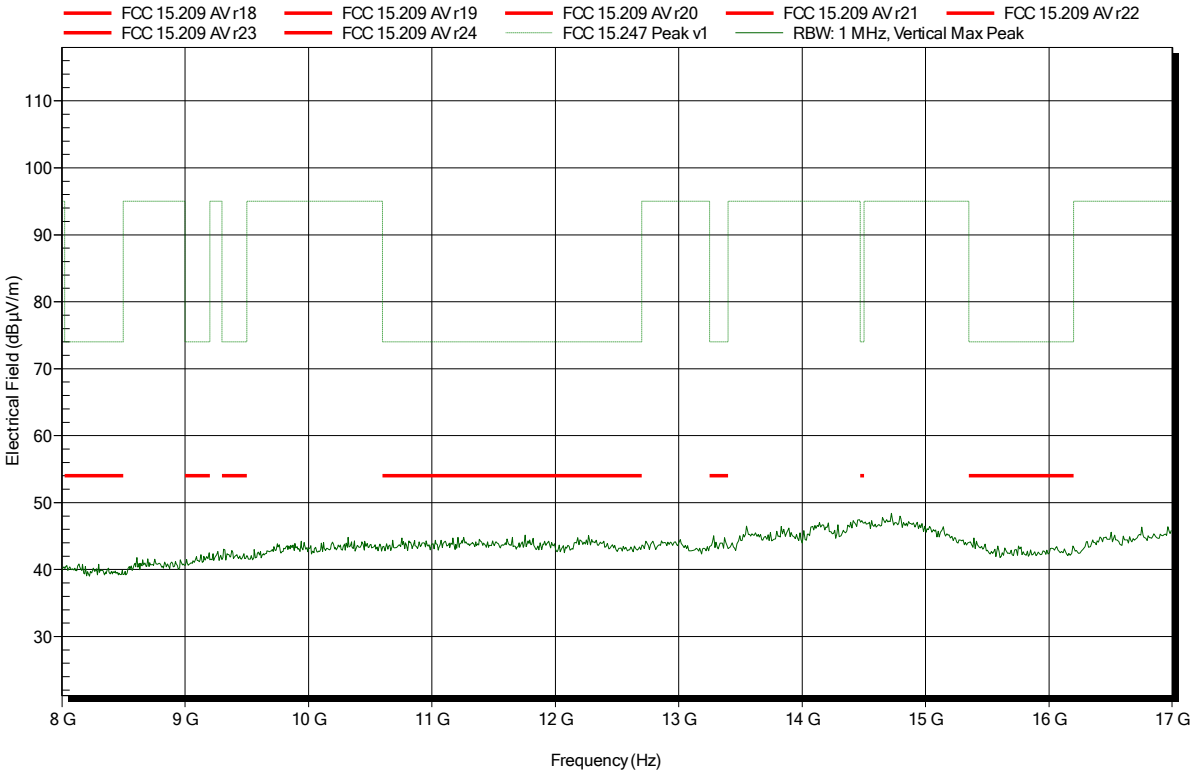
Index 5



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BT DH5 2441 MHz
Test Date:	2018-03-13
Note:	

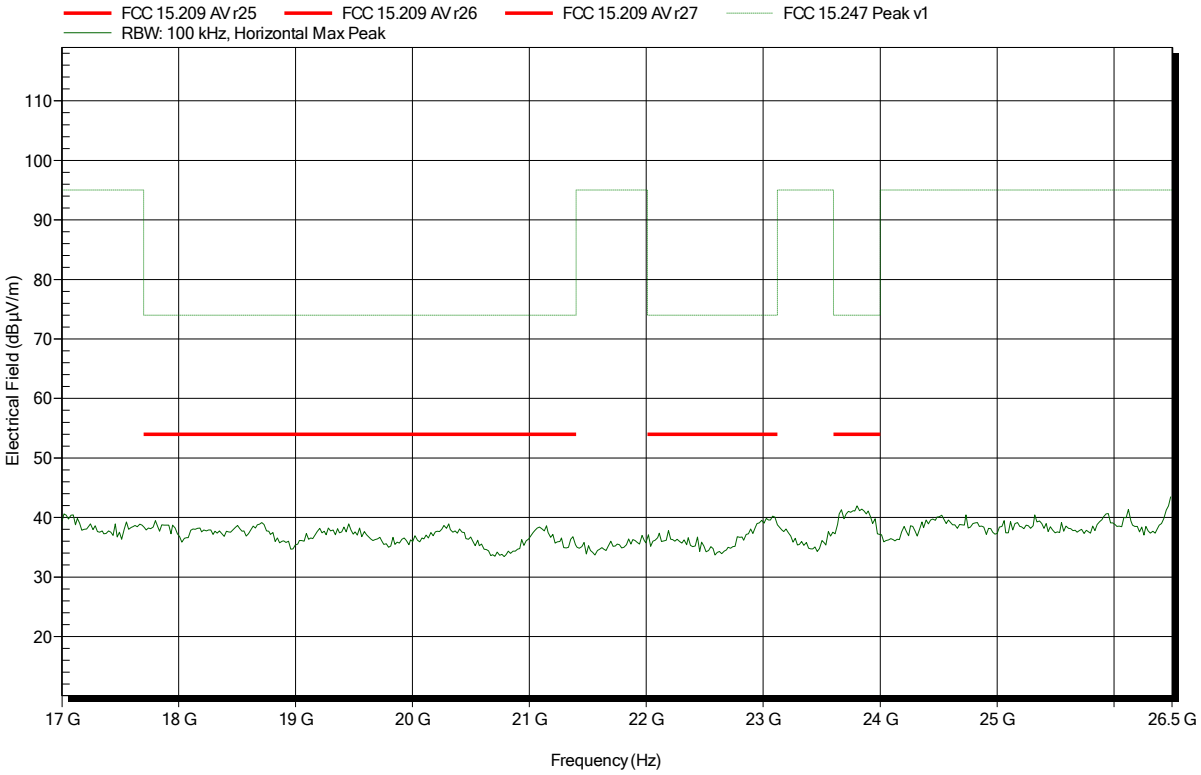
Index 18



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	ATH18G40, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BT DH5 2441 MHz
Test Date:	2018-03-13
Note:	

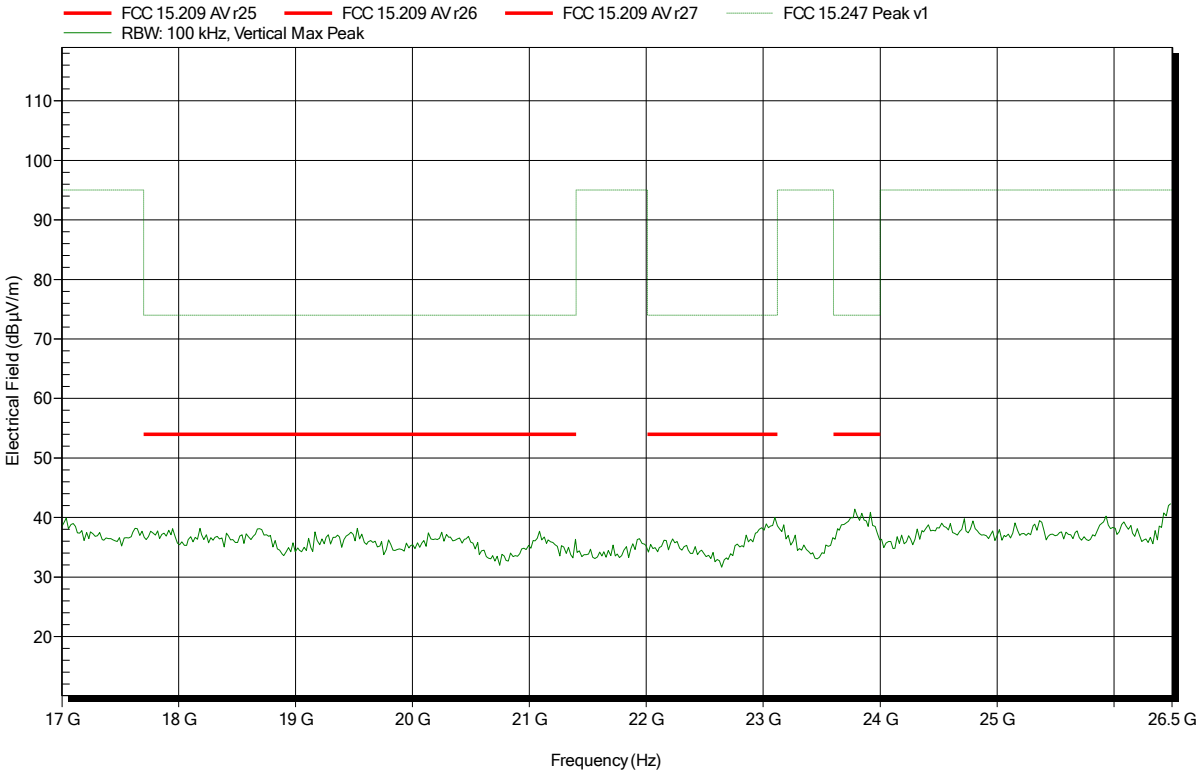
Index 24



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	ATH18G40, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BT DH5 2441 MHz
Test Date:	2018-03-13
Note:	

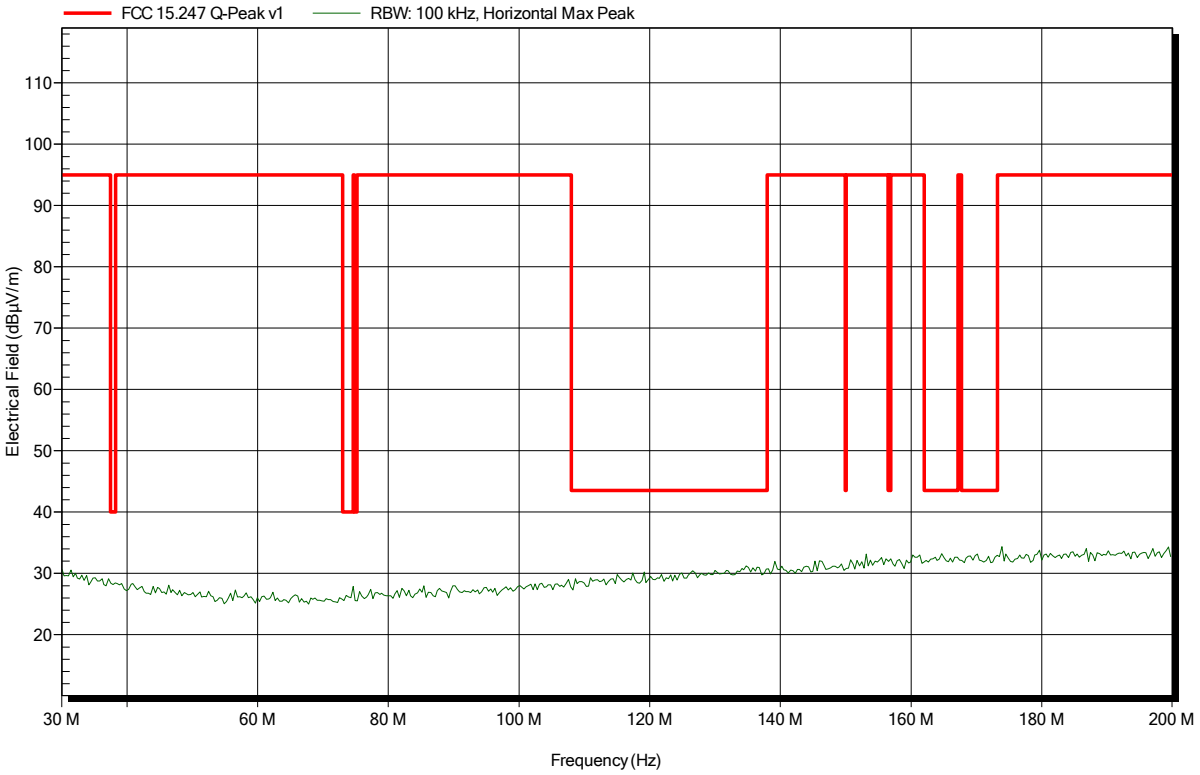
Index 27



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	HK116, Horizontal
Measurement distance:	3 m
Mode:	TX; BT DH5 2480 MHz
Test Date:	2018-03-13
Note:	

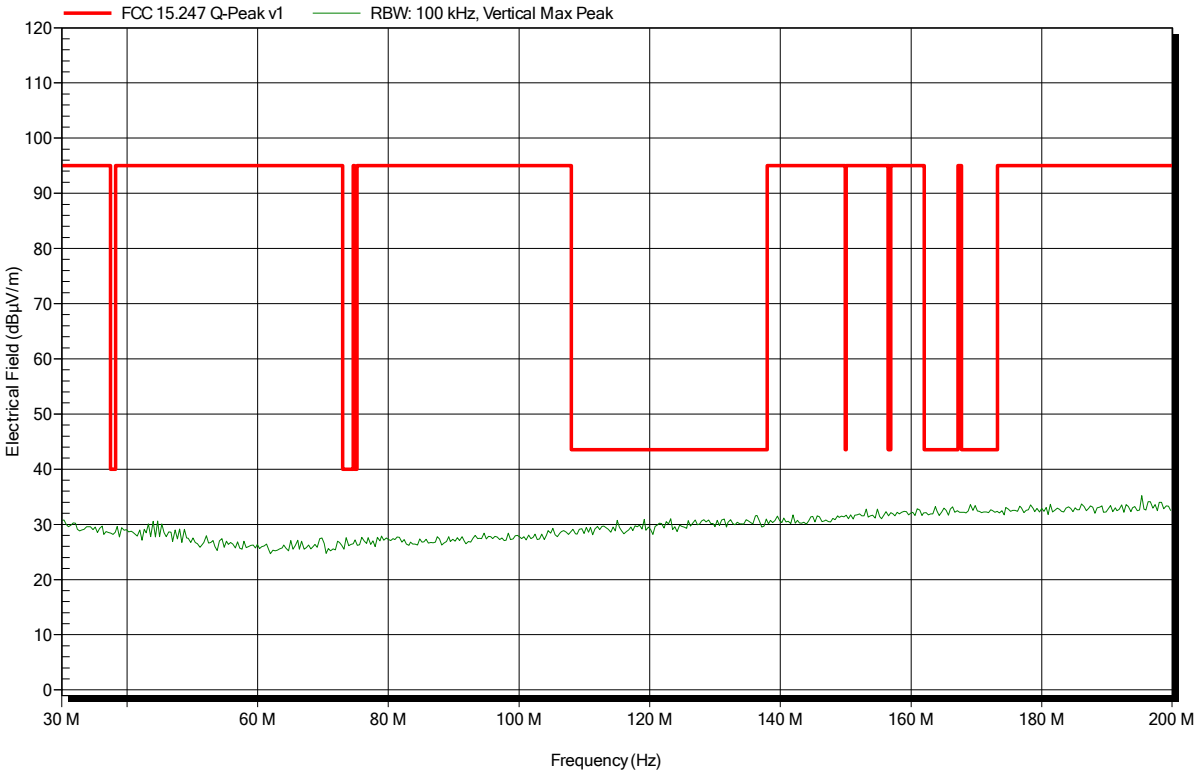
Index 38



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	HK116, Vertical
Measurement distance:	3 m
Mode:	TX; BT DH5 2480 MHz
Test Date:	2018-03-13
Note:	

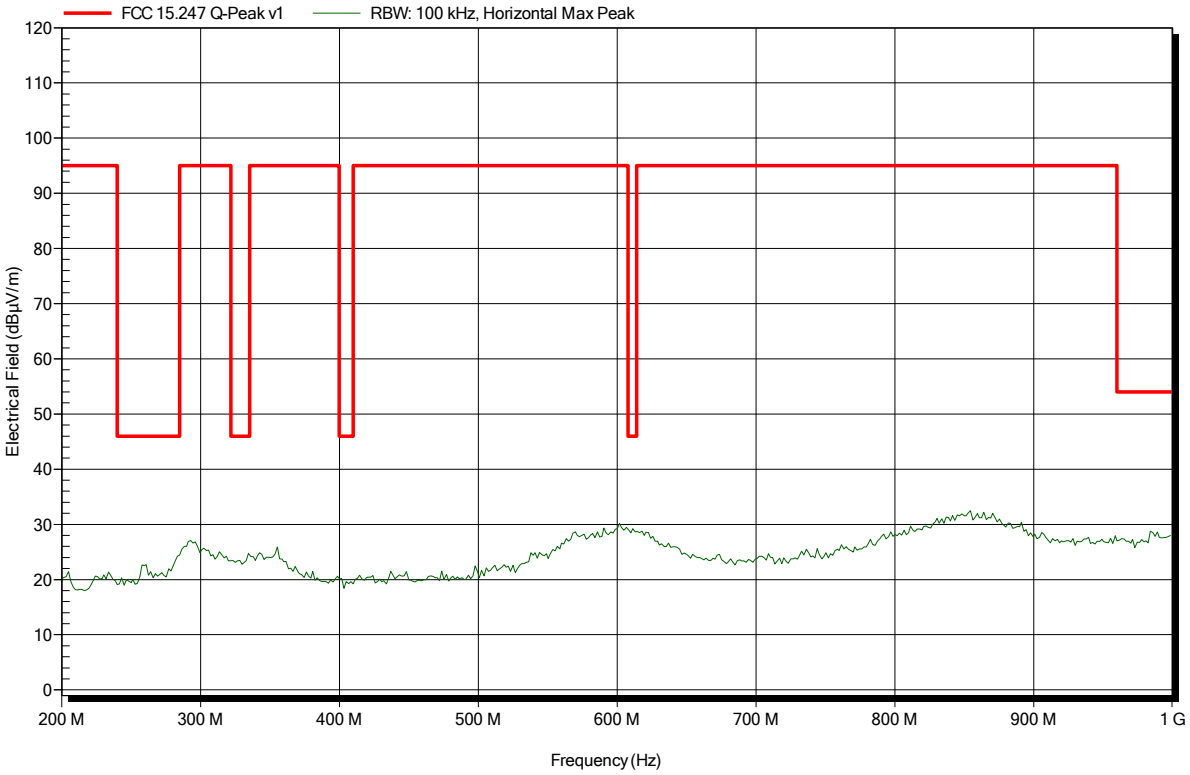
Index 37



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; BT DH5 2480 MHz
Test Date:	2018-03-13
Note:	

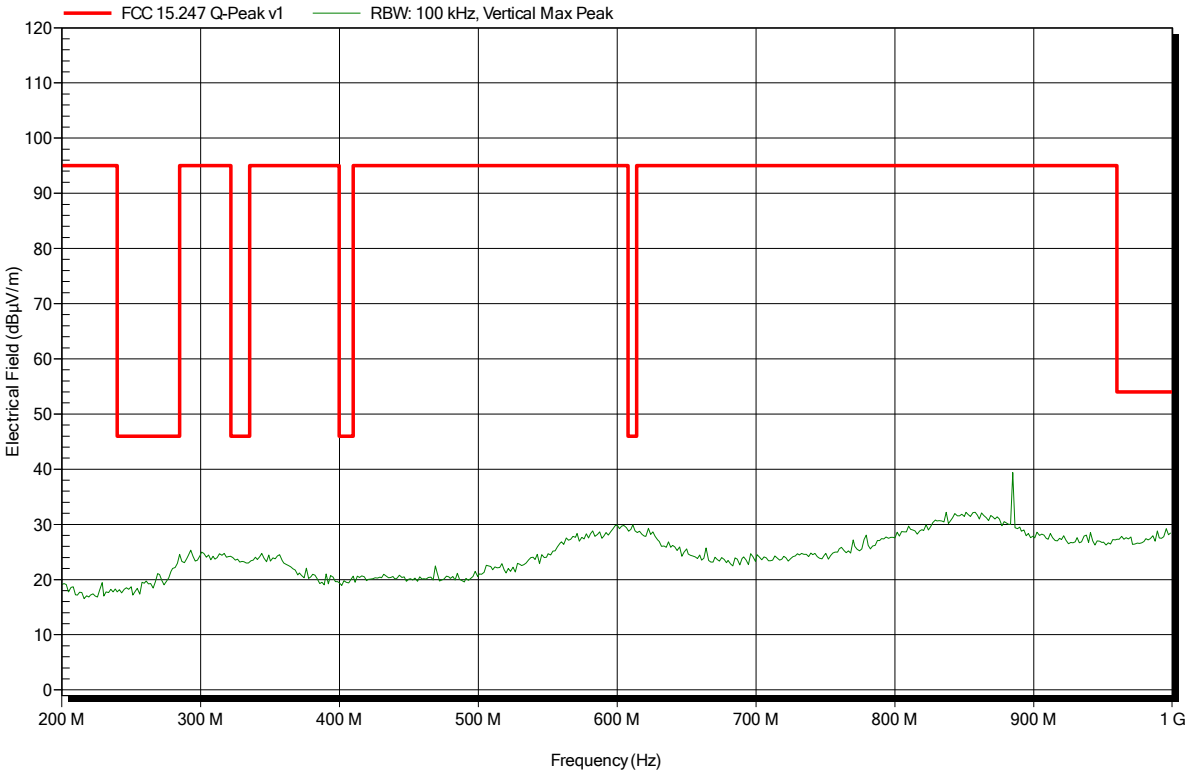
Index 32



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; BT DH5 2480 MHz
Test Date:	2018-03-13
Note:	

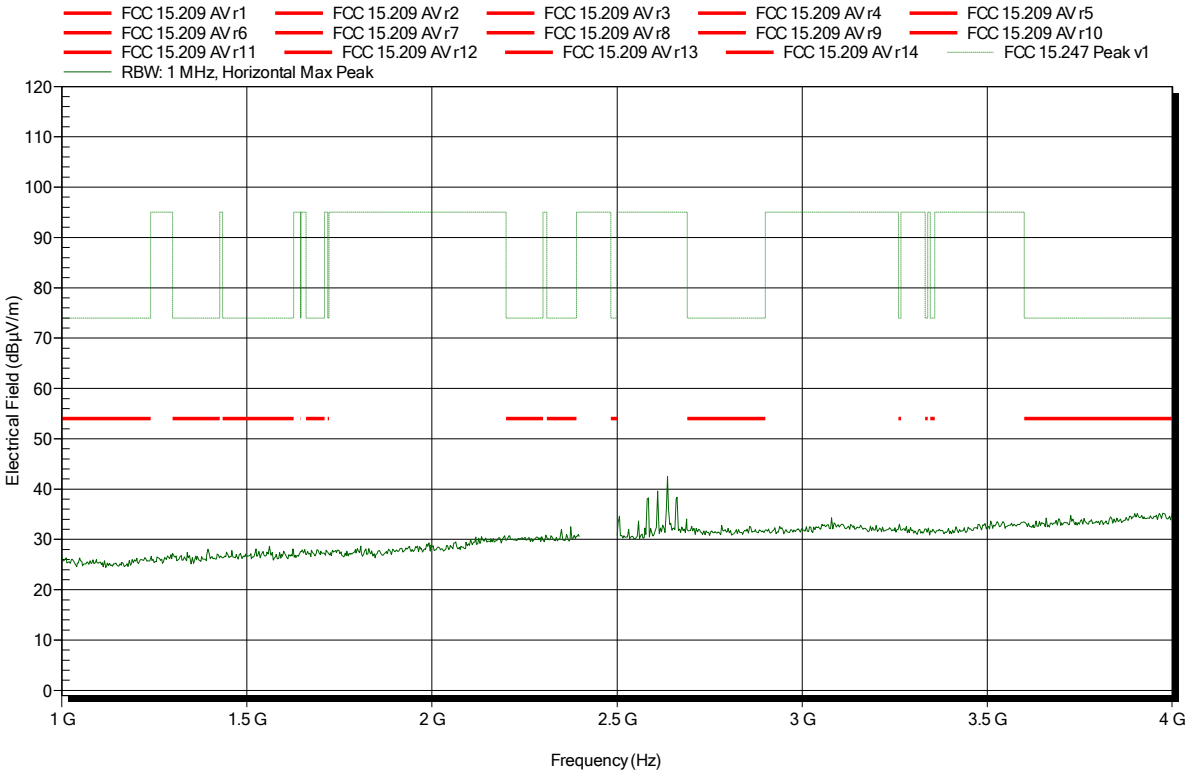
Index 31



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m
Mode:	TX; BT DH5 2480 MHz
Test Date:	2018-03-13
Note:	

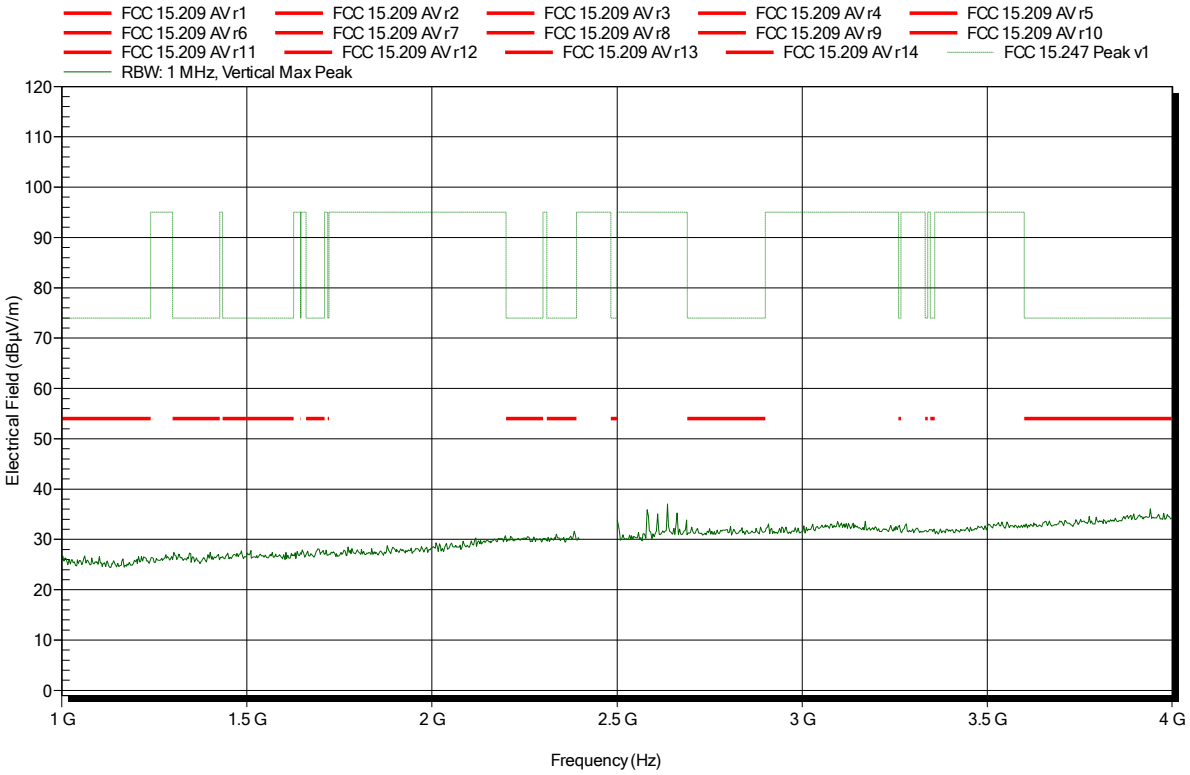
Index 8



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m
Mode:	TX; BT DH5 2480 MHz
Test Date:	2018-03-13
Note:	

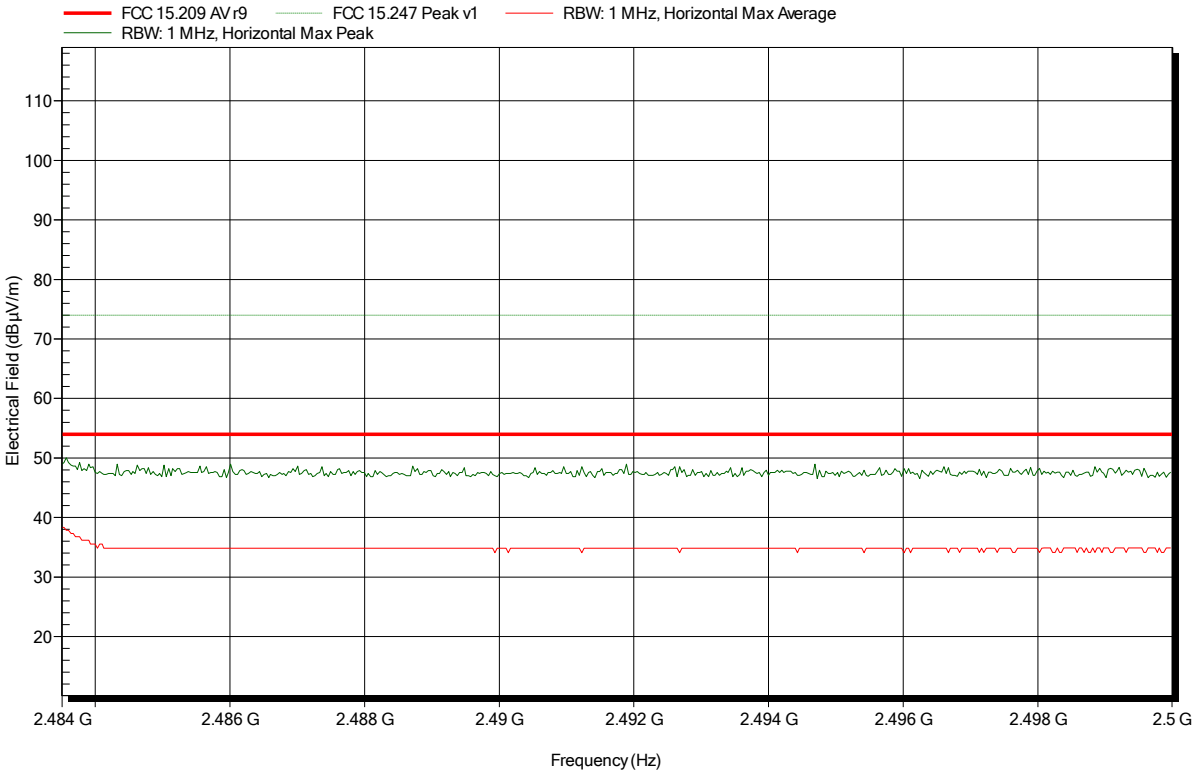
Index 14



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; BT DH5 2480 MHz
Test Date:	2018-03-13
Note:	upper bandedge

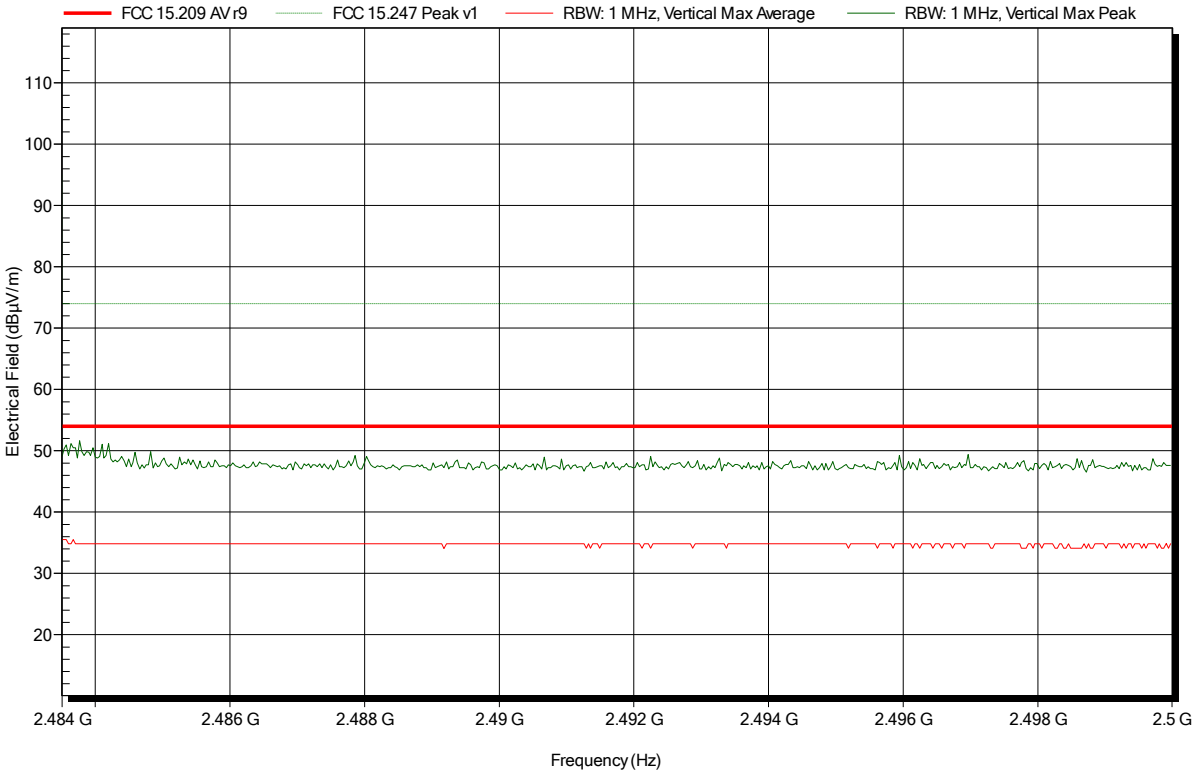
Index 9



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; BT DH5 2480 MHz
Test Date:	2018-03-13
Note:	Upper bandedge

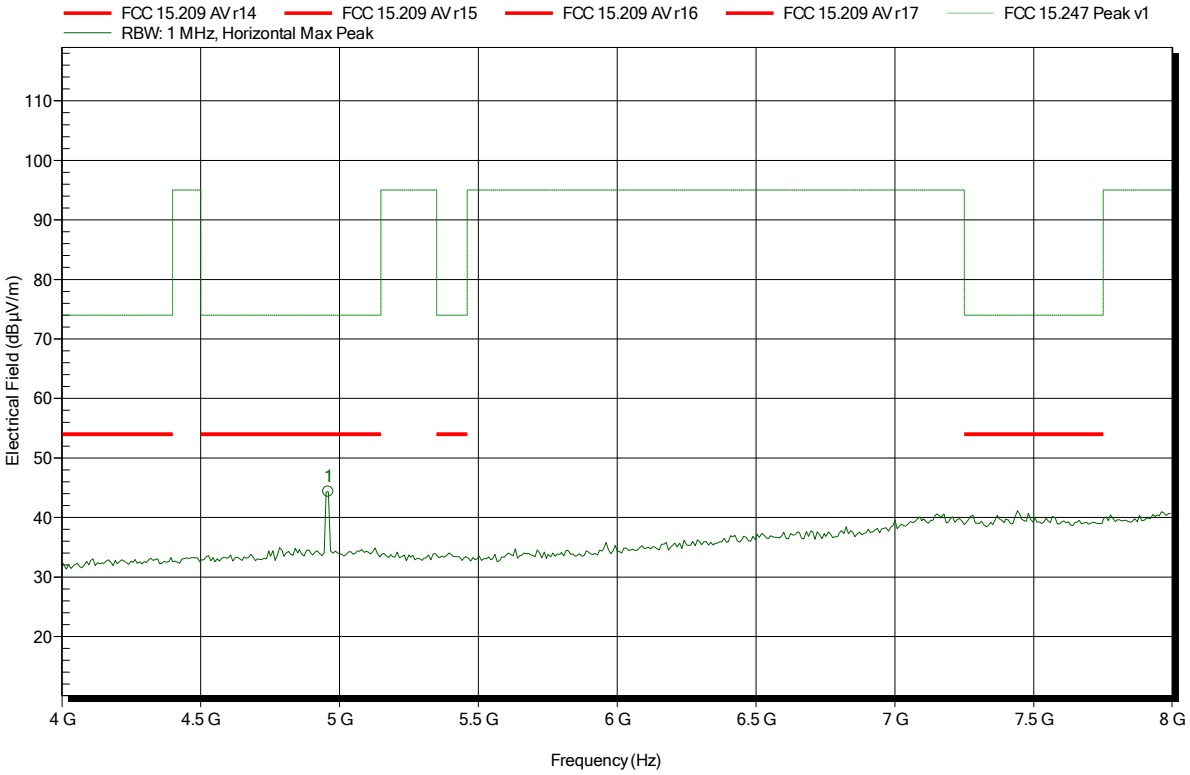
Index 15



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BT DH5 2480 MHz
Test Date:	2018-03-13
Note:	

Index 10

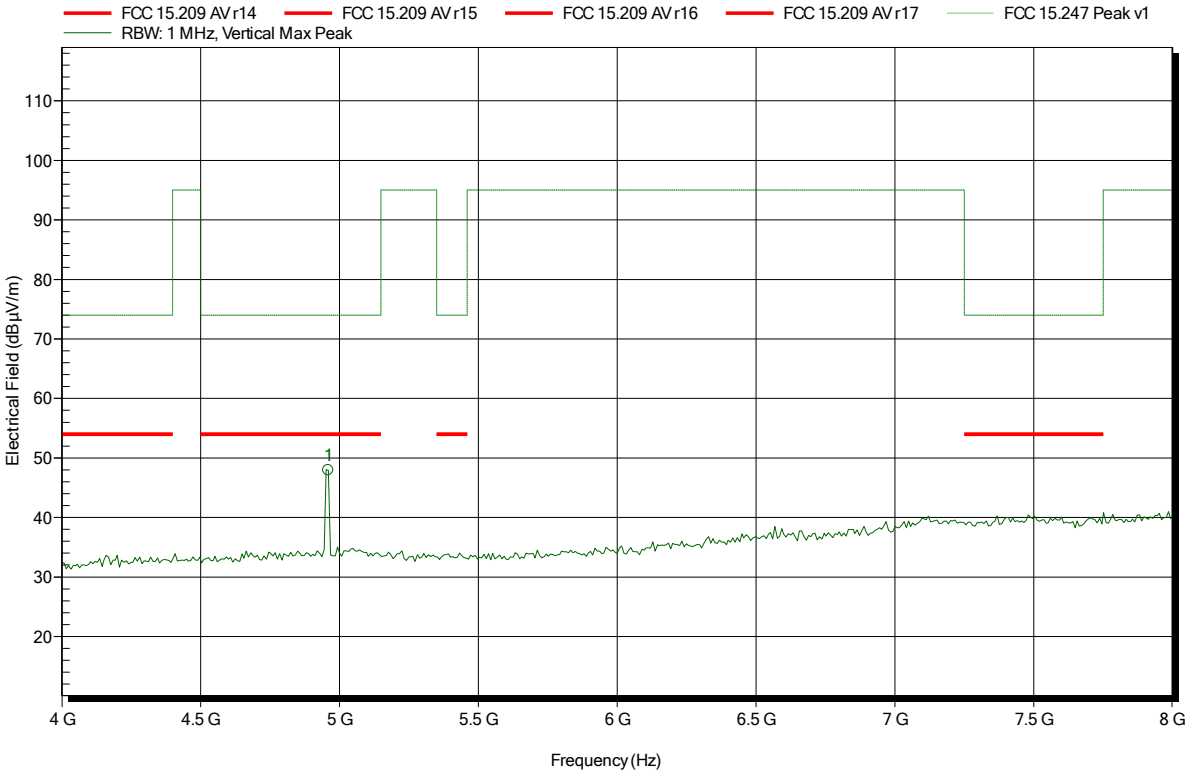


Frequency	Peak	Peak Limit	Peak Difference	Status
4.96 GHz	44.33 dBµV/m	74 dBµV/m	-29.67 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BT DH5 2480 MHz
Test Date:	2018-03-13
Note:	

Index 13

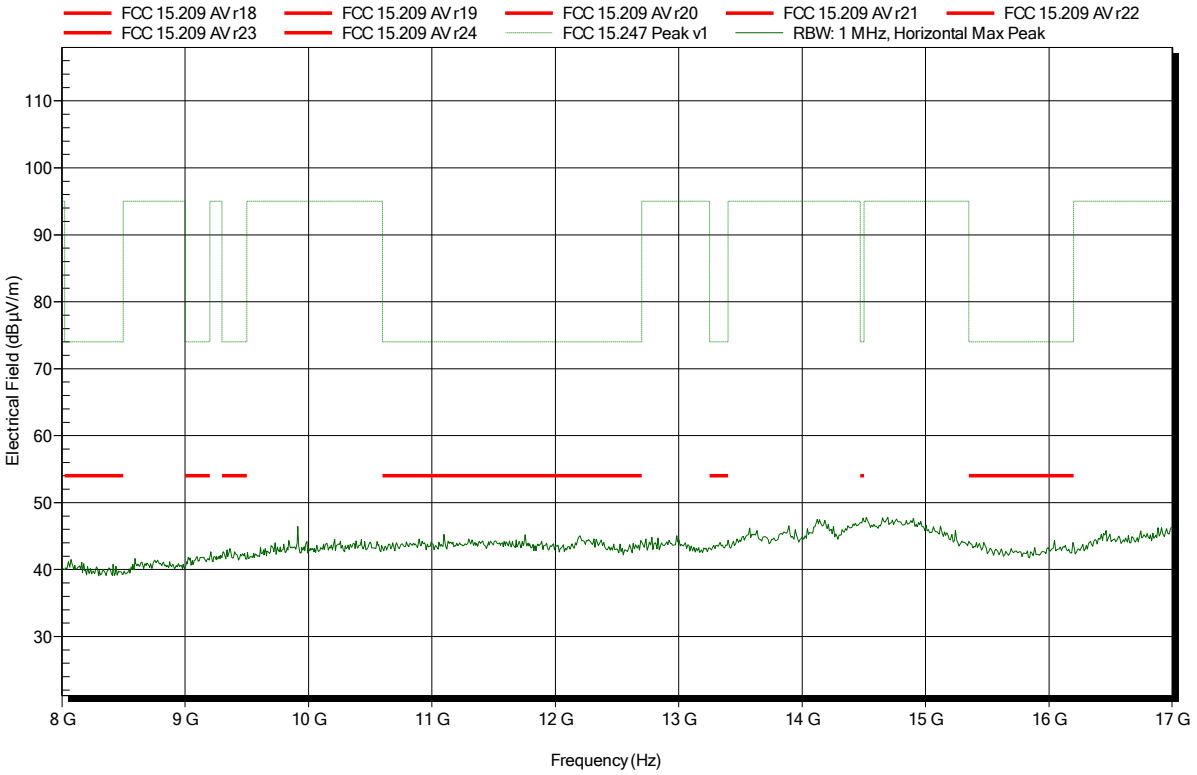


Frequency	Peak	Peak Limit	Peak Difference	Status
4.96 GHz	47.93 dBµV/m	74 dBµV/m	-26.07 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BT DH5 2480 MHz
Test Date:	2018-03-13
Note:	

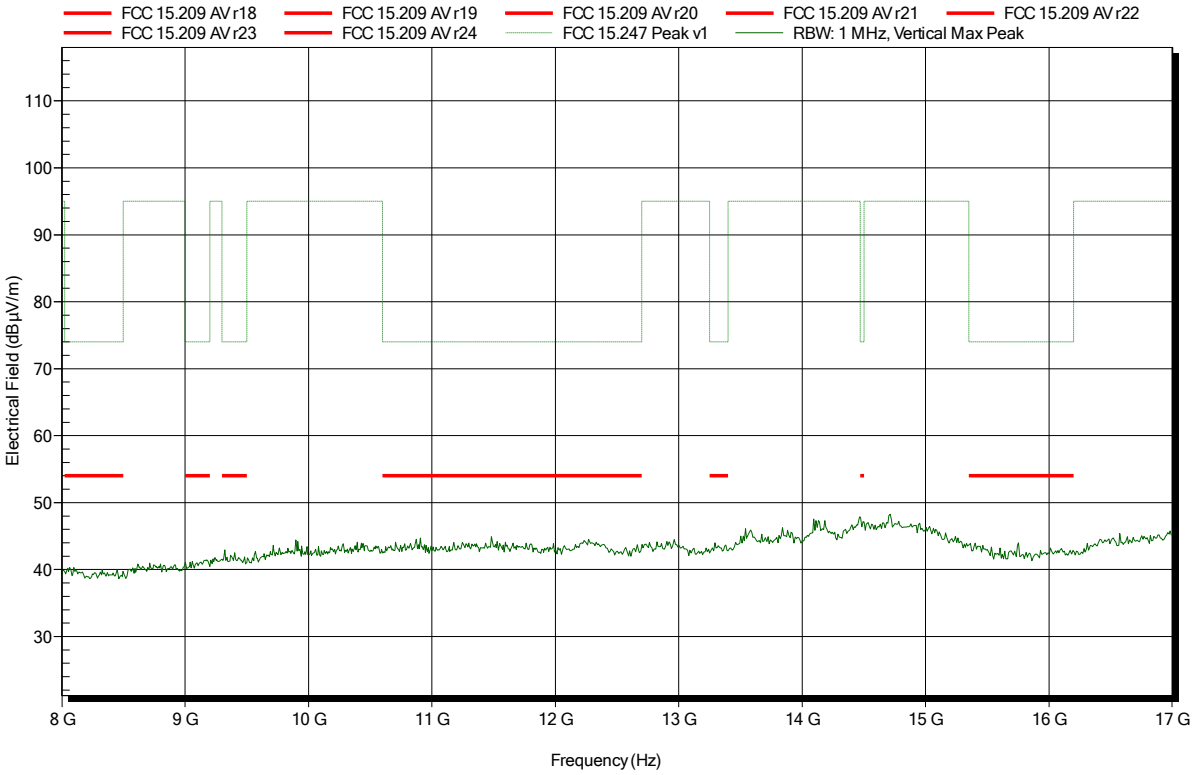
Index 11



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BT DH5 2480 MHz
Test Date:	2018-03-13
Note:	

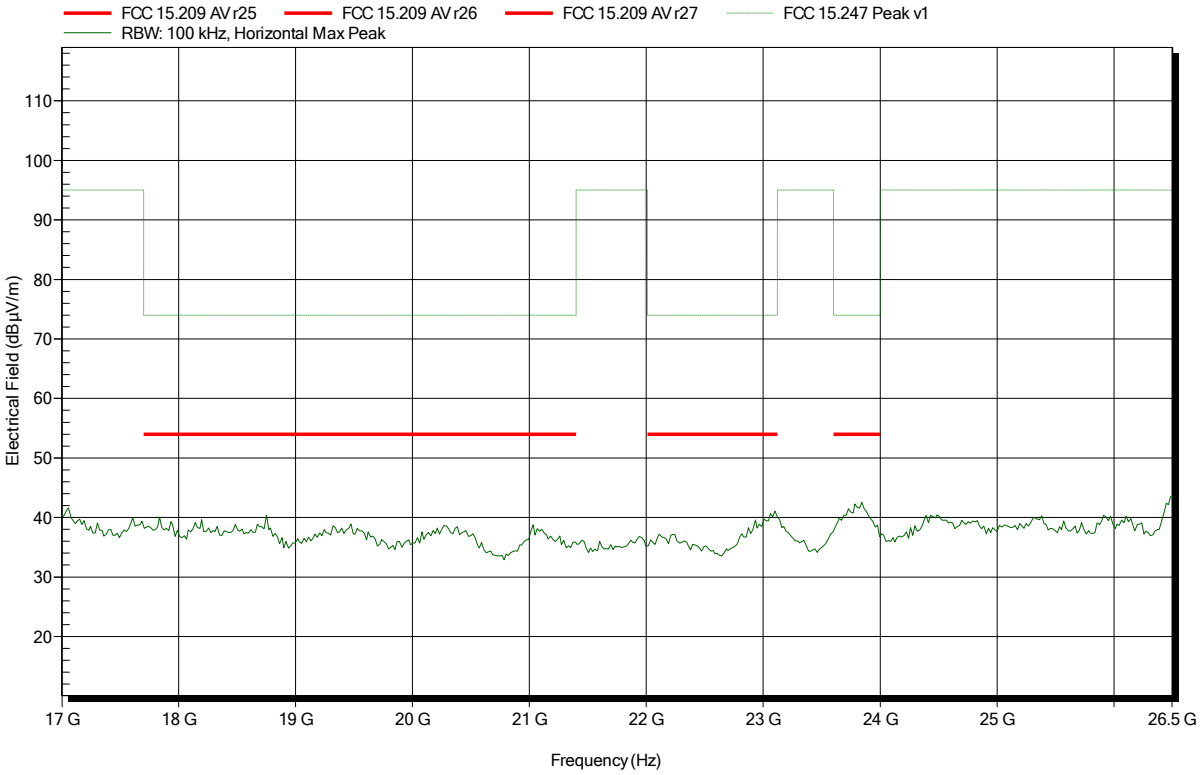
Index 12



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	ATH18G40, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; BT DH5 2480 MHz
Test Date:	2018-03-13
Note:	

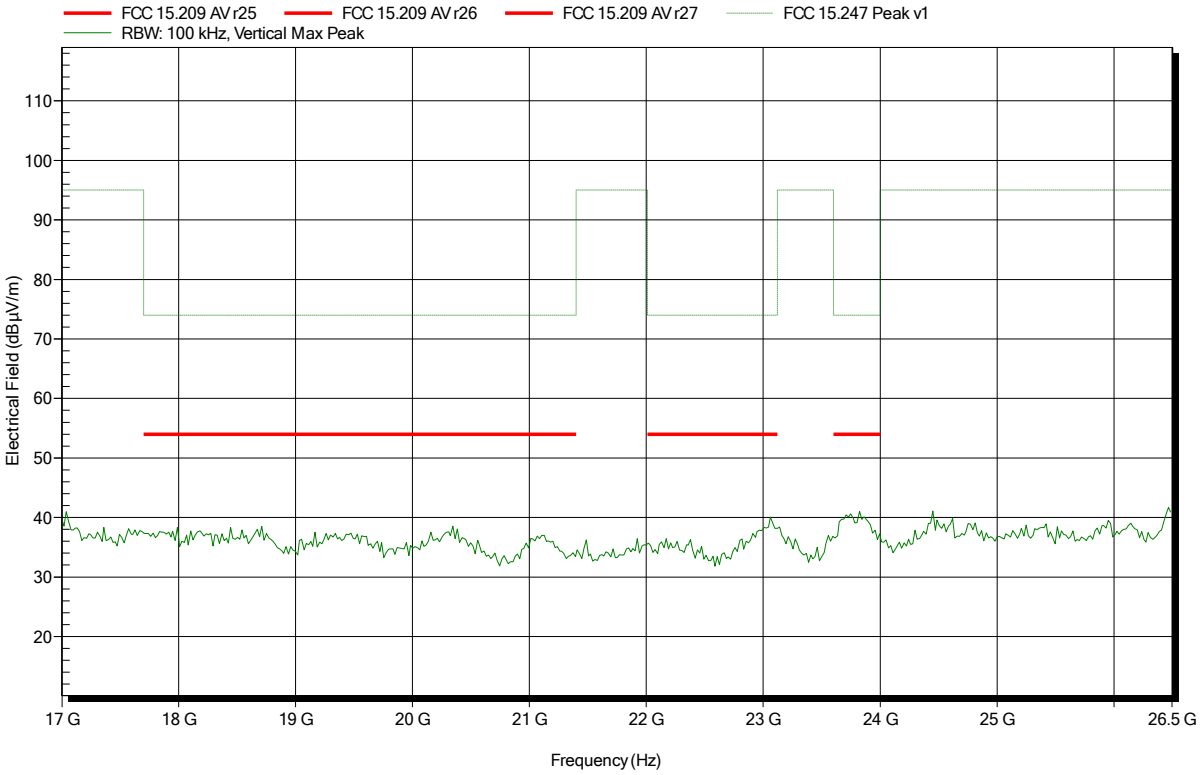
Index 25



Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	ATH18G40, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; BT DH5 2480 MHz
Test Date:	2018-03-13
Note:	

Index 26

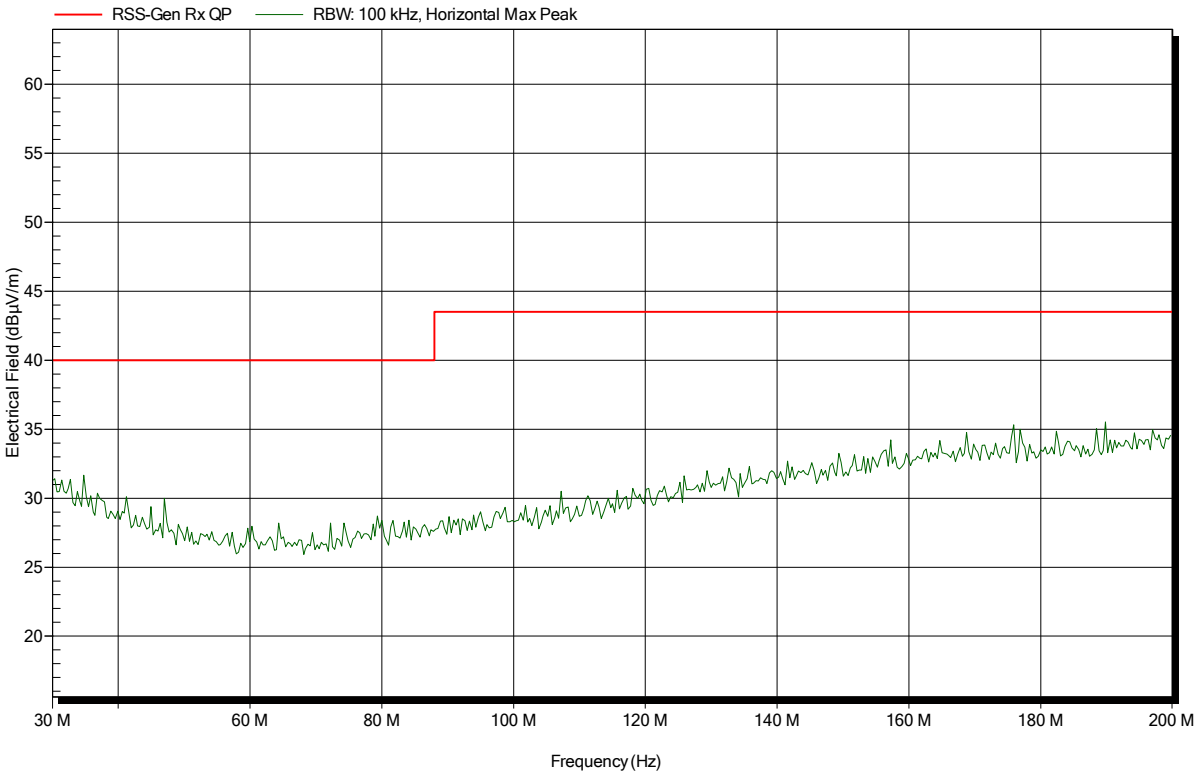


ANNEX B Receiver spurious emissions

Spurious emissions according to RSS-Gen

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	HK116, Horizontal
Measurement distance:	3 m
Mode:	RX; BT Scan Mode
Test Date:	2018-03-13
Note:	

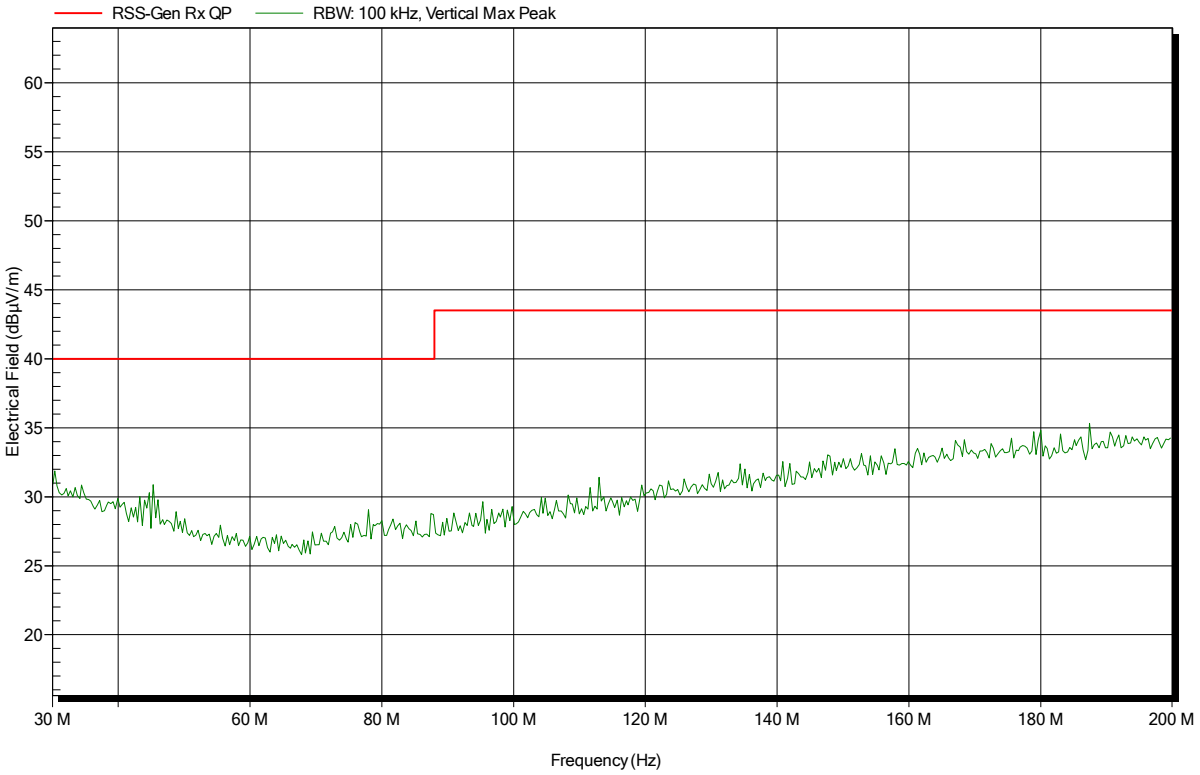
Index 41



Spurious emissions according to RSS-Gen

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	HK116, Vertical
Measurement distance:	3 m
Mode:	RX; BT Scan Mode
Test Date:	2018-03-13
Note:	

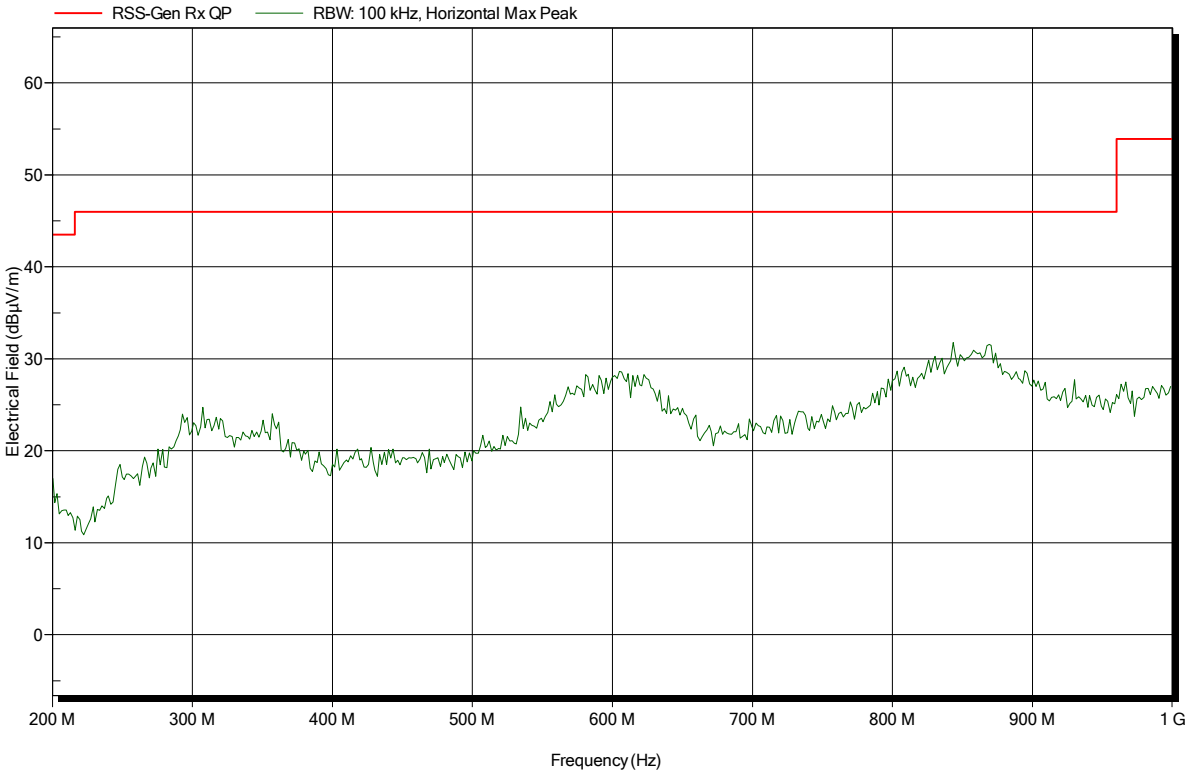
Index 42



Spurious emissions according to RSS-Gen

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	RX; BT Scan Mode
Test Date:	2018-03-13
Note:	

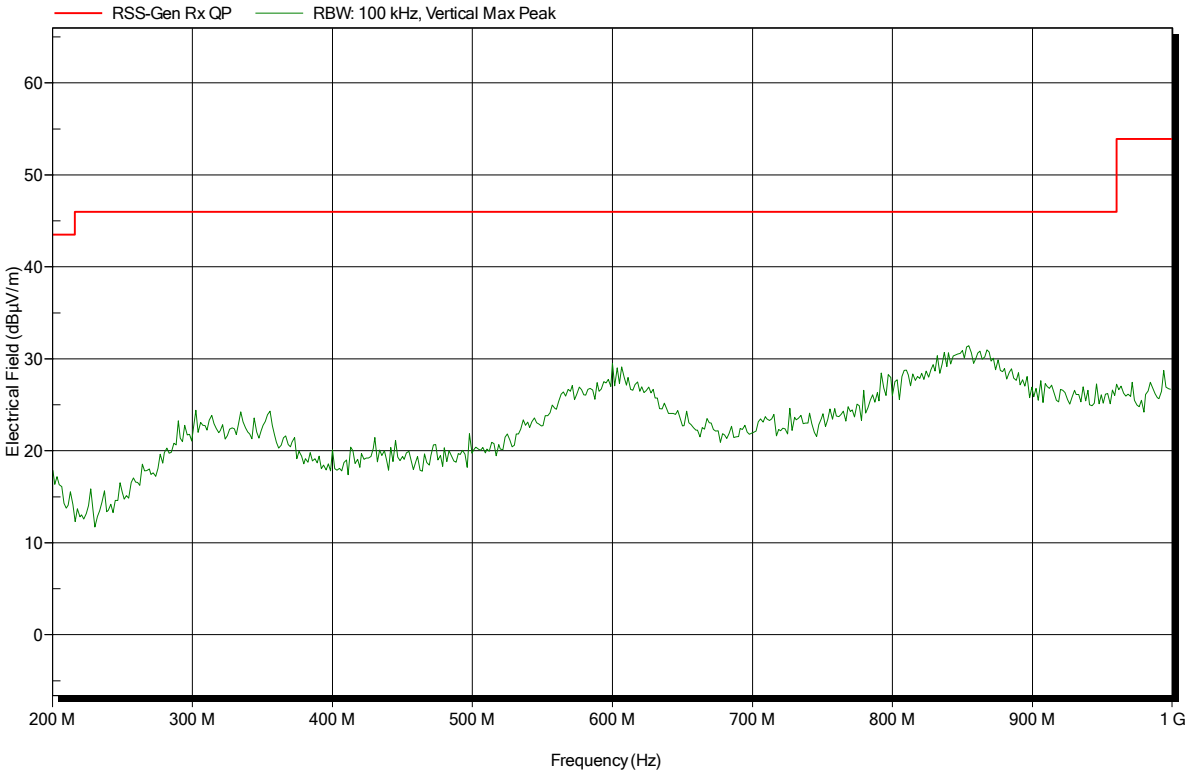
Index 46



Spurious emissions according to RSS-Gen

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	RX; BT Scan Mode
Test Date:	2018-03-13
Note:	

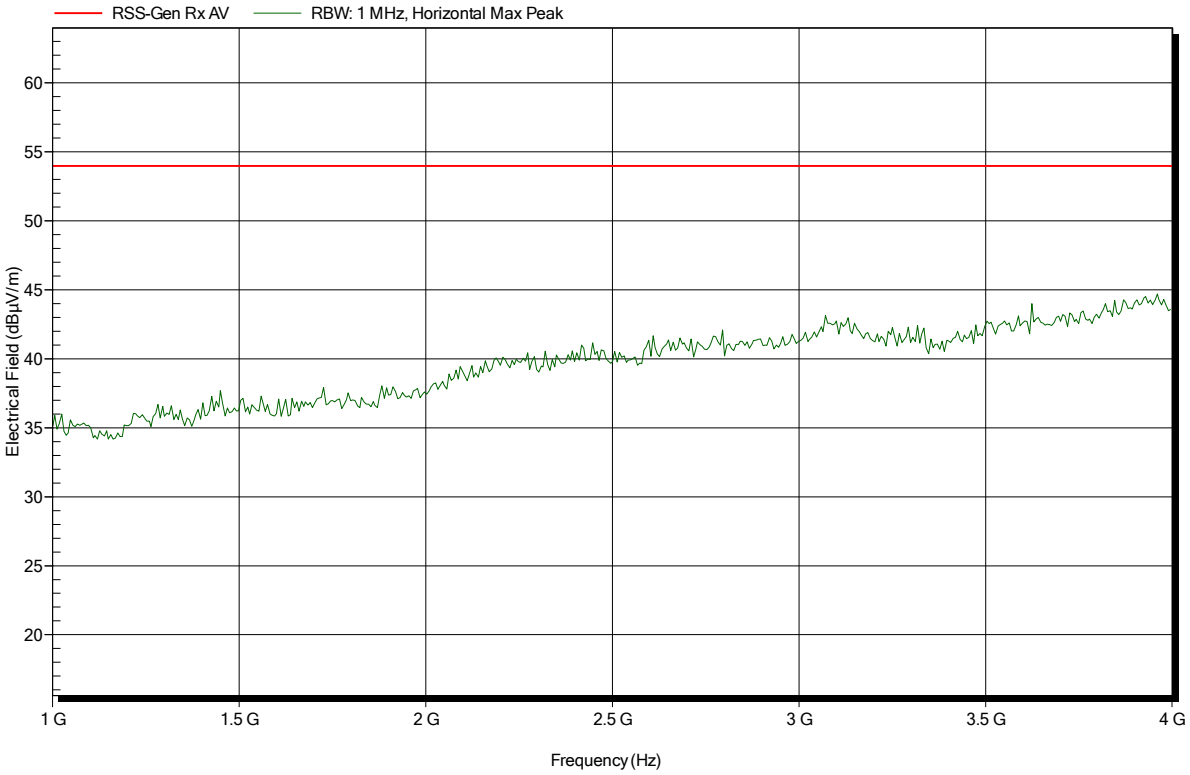
Index 44



Spurious emissions according to RSS-Gen

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	RX; BT Scan Mode
Test Date:	2018-03-13
Note:	

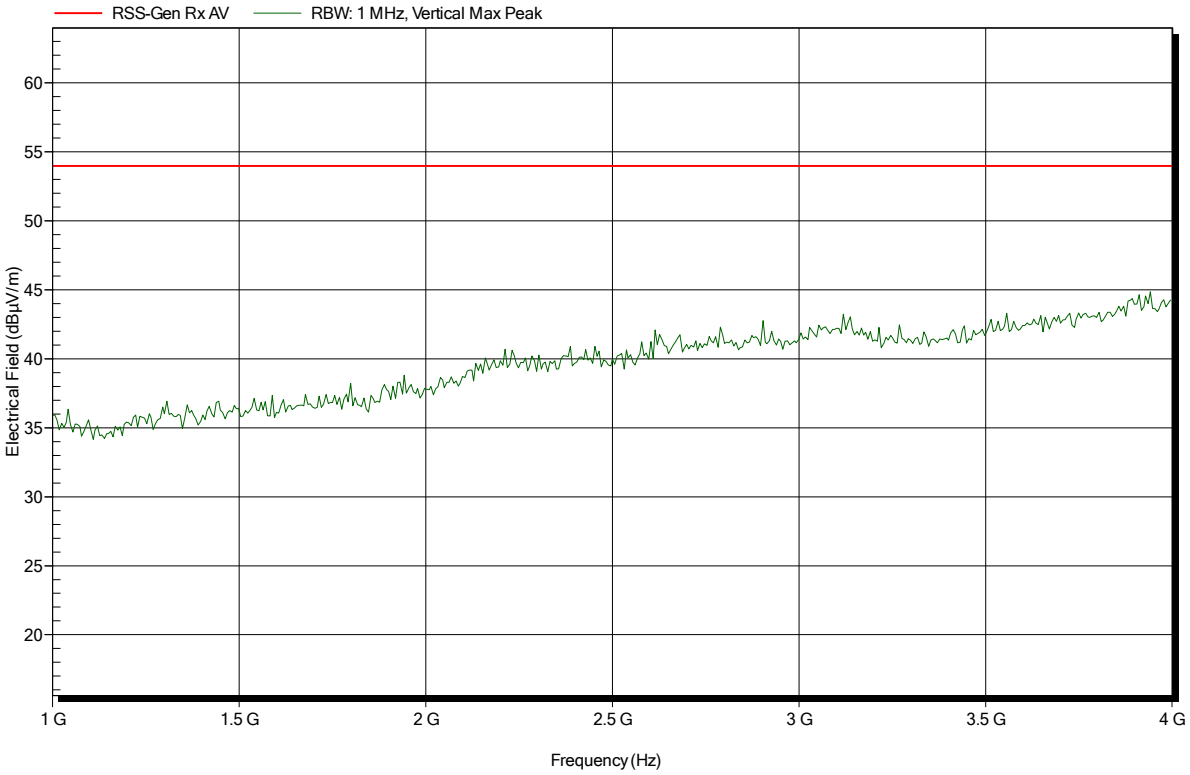
Index 50



Spurious emissions according to RSS-Gen

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	RX; BT Scan Mode
Test Date:	2018-03-13
Note:	

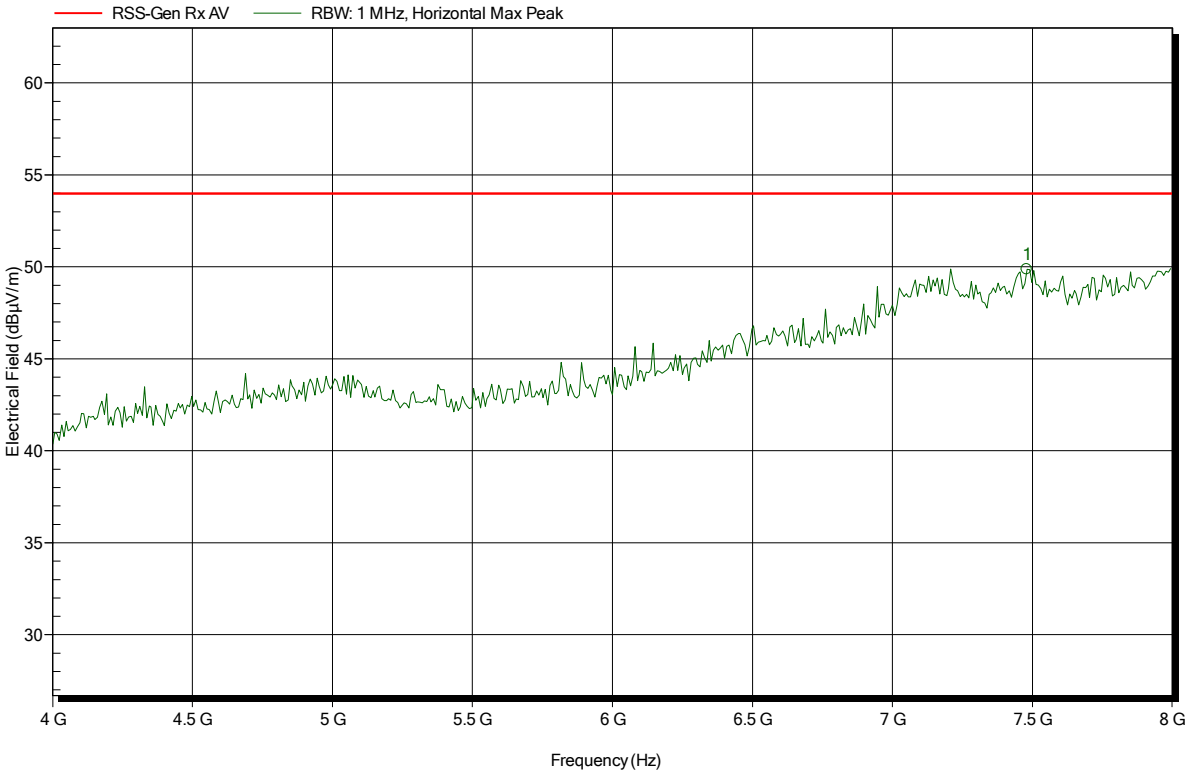
Index 47



Spurious emissions according to RSS-Gen

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	RX; BT Scan Mode
Test Date:	2018-03-13
Note:	

Index 49

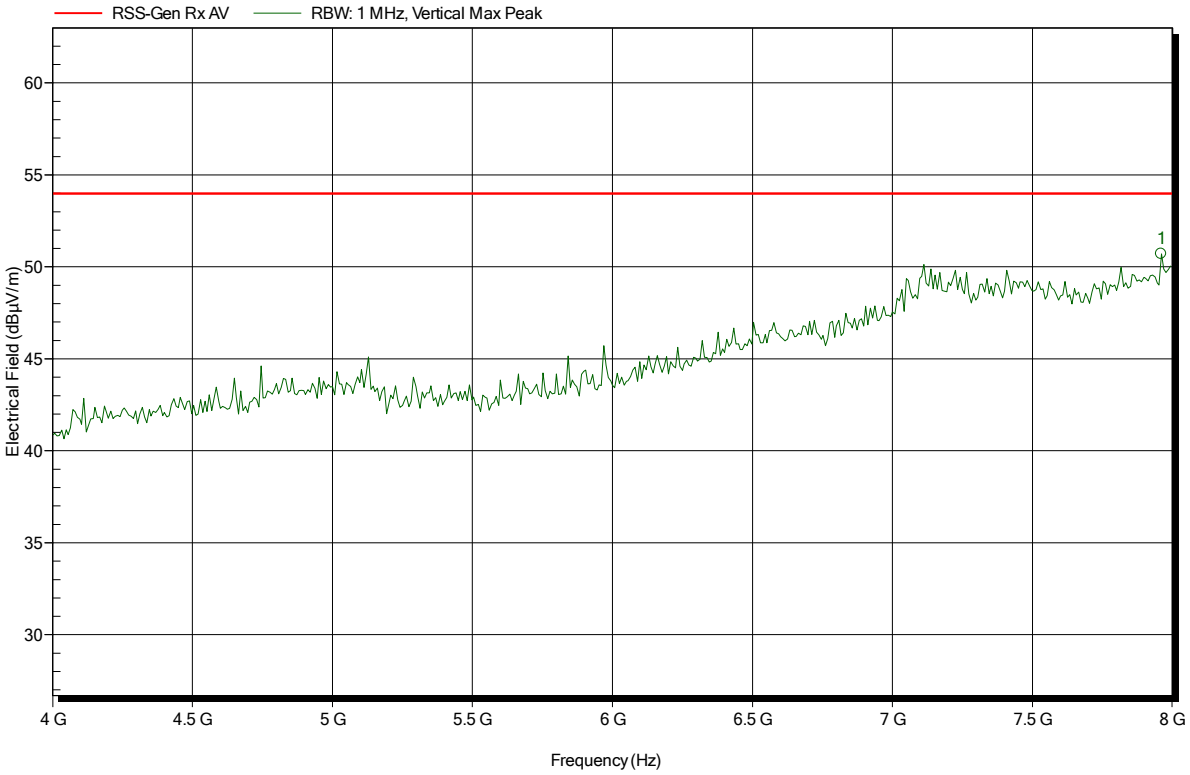


Frequency	Peak	Peak Limit	Peak Difference	Peak Status
7.48 GHz	49.87 dBµV/m	53.98 dBµV/m	-4.11 dB	Pass

Spurious emissions according to RSS-Gen

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	RX; BT Scan Mode
Test Date:	2018-03-13
Note:	

Index 48

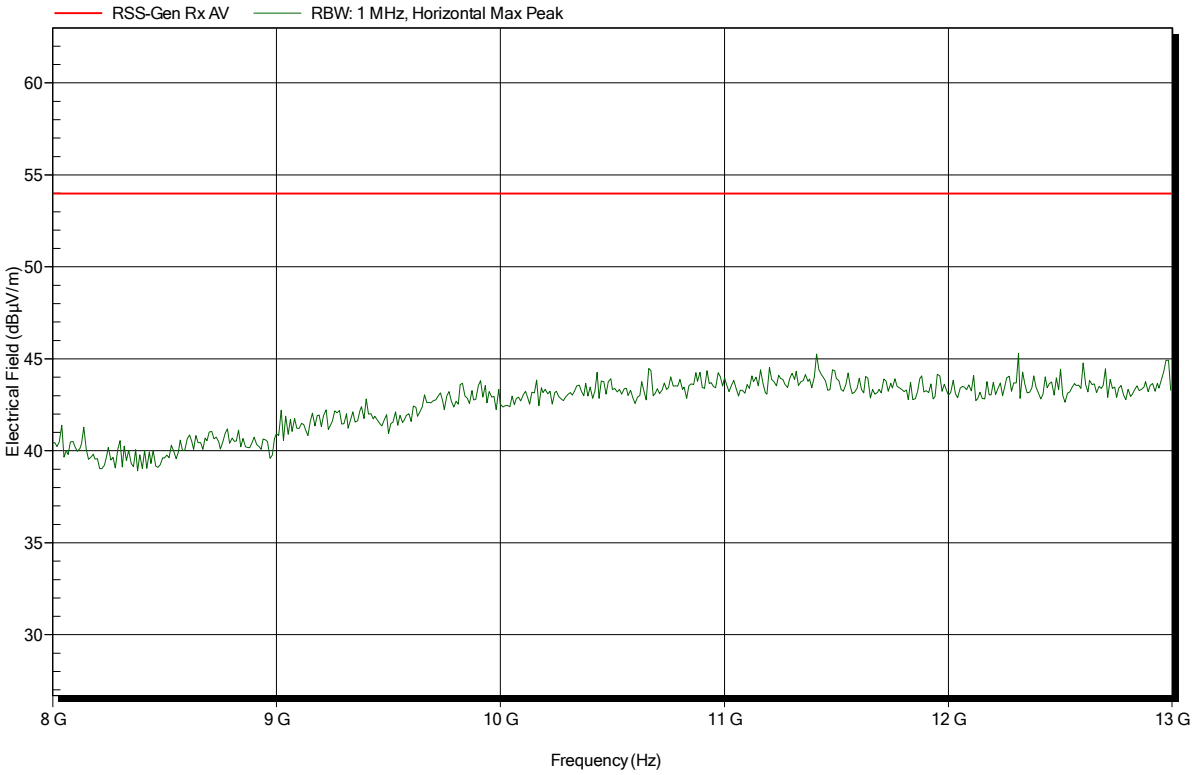


Frequency	Peak	Peak Limit	Peak Difference	Peak Status
7.96 GHz	50.7 dBµV/m	53.98 dBµV/m	-3.28 dB	Pass

Spurious emissions according to RSS-Gen

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	RX; BT Scan Mode
Test Date:	2018-03-13
Note:	

Index 51



Spurious emissions according to RSS-Gen

Project number:	G0M-1802-7246
Applicant:	TomTom Telematics B.V.
EUT Name:	Telematic Device with Bluetooth
Model:	L0101
Test Site:	Eurofins Product Service GmbH
Operator:	Sebastian Suckow
Test Conditions:	Tnom: 23°C, Vnom: 24 VDC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	RX; BT Scan Mode
Test Date:	2018-03-13
Note:	

Index 52