FCC TEST REPORT

FCC 47 CFR Part 15C
Industry Canada RSS-210

Intentional radiator operating within the 5735 - 5865 MHz band

Report Reference No. ..... :	G0M-1309-3212-TFC249D-V01
Testing Laboratory ..... :	Eurofins Product Service GmbH
Address ..... :	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation ..... :	A2LA Accredited Testing Laboratory, Certificate No.: 1983.01 FCC Filed Test Laboratory, Reg.-No.: 96970 IC OATS Filing assigned code: 3470A
Applicant's name ..... :	inmotiotec GmbH
Address ..... :	Oberregauer Straße 48 4844 Regau AUSTRIA
Test specification:	
Standard..... :	47 CFR Part 15C RSS-210, Issue 8, 2010-12 RSS-Gen, Issue 3, 2010-12 ANSI C63.4:2009
Equipment under test (EUT):	
Product description	Transponder
Model No.	LPM Tp. Ser.1
Hardware version	H2.3
Firmware / Software version	fcc0
FCC-ID:	2AATD-TPV23
Test result	**Passed**

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

Testing:

Date of receipt of test item ..... :	2013-08-05	
Date (s) of performance of tests ..... :	2013-08-26 – 2013-08-27	
Compiled by ..... :	Antje Bartusch	
Tested by (+ signature)..... : (Testing Manager)	Wilfried Treffke	W. Treffke .....
Approved by (+ signature) ..... : (Test Lab Manager)	Christian Weber	C. Weber .....
Date of issue ..... :	2013-09-19	
Total number of pages ..... :	34	

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:

The transmission mode of the EUT combines two different transmissions; a chirp spread spectrum mode that shifts an unmodulated carrier over the frequency range of 5735 – 5865 MHz and an single channel FSK modulated telemetry transmission mode on the frequency of 5862 MHz. Each transmission cycle starts with the chirp transmission mode and is ended with the telemetry data transmission mode.

Version History

Version	Issue Date	Remarks	Revised by
01	2013-09-119	Initial Release	

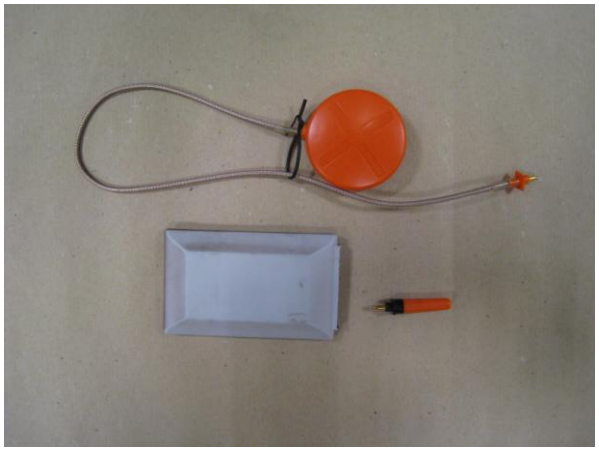
REPORT INDEX

1 Equipment (Test item) Description

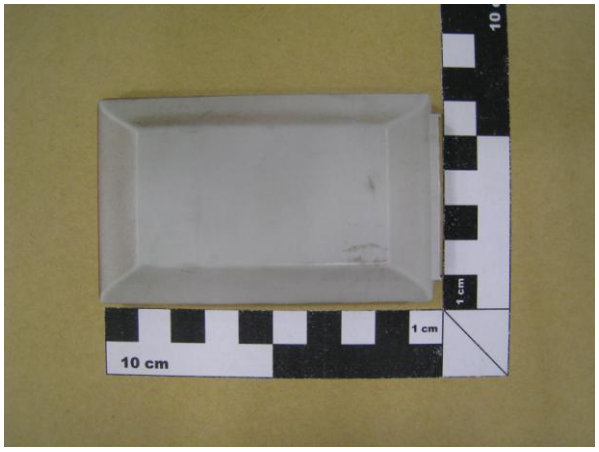
Description	Transponder	
Model	LPM Tp. Ser.1	
Serial number	None	
Hardware version	H2.3	
Software / Firmware version	fcc0	
FCC-ID	2AATD-TPV23	
Equipment type	End product	
Radio type	Transceiver	
Radio technology	custom	
Operating frequency range	5735 - 5865 MHz	
Assigned frequency band	5725 - 5875 MHz	
Frequency range CSS	F_{MID}	5735 - 5865 MHz
Frequency range FSK	F_{MID}	5862 MHz
Spreading	CSS & None (FSK)	
Modulations	None (CSS) & FSK for telemetry mode	
Channel spacing	None	
Number of antennas	2	
Antenna 1	Type	external dedicated
	Model	Sperrtopf Antenne
	Manufacturer	Abatec
	Gain	3 dBi
Antenna 2	Type	external dedicated
	Model	F-Antenne
	Manufacturer	Abatec
	Gain	3 dBi
Manufacturer	Abatec Group AG Oberregauerstraße 48 4844 Regau Austria	
Power supply	V_{NOM}	3.7 VDC (Lithium-Battery) 120VAC (Charging station)
	V_{MIN}	--
	V_{MIN}	--
AC/DC-Adaptor	Model	N/A
	Vendor	N/A
	Input	N/A
	Output	N/A

1.1 Photos – Equipment External

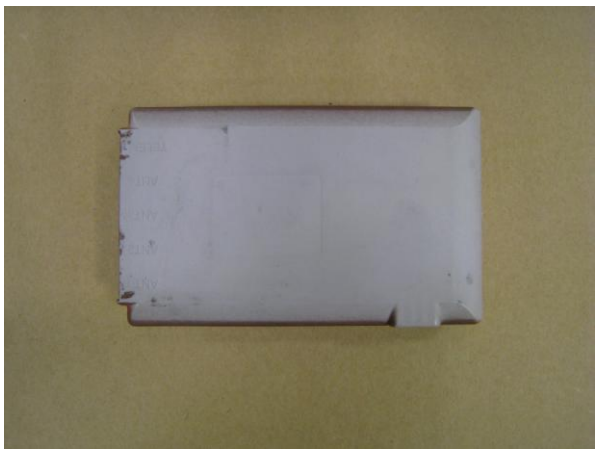
EUT OVERVIEW WITH ANTENNAS



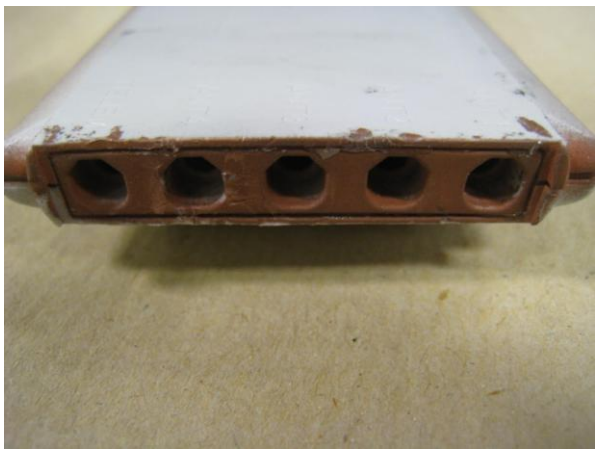
EUT TOP



EUT BOTTOM

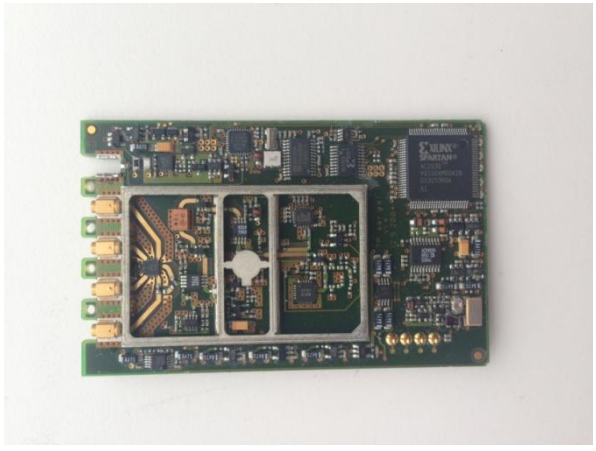
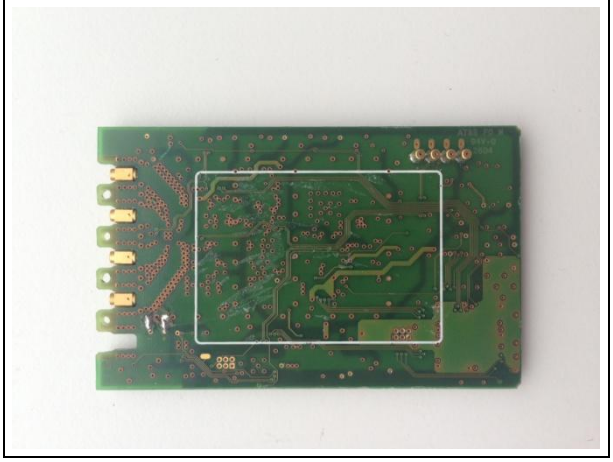


EUT LEFT SIDE



EUT RIGHT SIDE

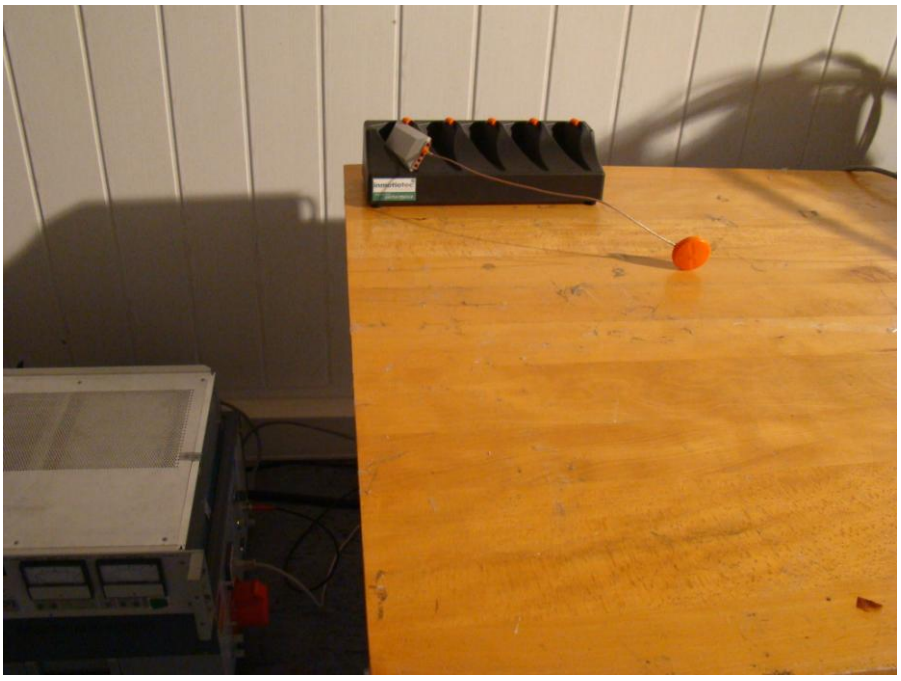
1.2 Photos – Equipment internal

PCB TOP	PCB BOTTOM
	
PCB TOP WITHOUT SHIELDING	**PCB BOTTOM WITHOUT BATTERY**
	

1.3 Photos – Test setup

TESTSETUP RADIATED MEASUREMENTS

TESTSETUP CONDUCTED MEASUREMNETS



1.4 Supporting Equipment Used During Testing

Product Type*	Device	Manufacturer	Model No.	Comments
None				

***Note:** Use the following abbreviations:

AE : Auxiliary/Associated Equipment, or

SIM : Simulator (Not Subjected to Test)

CABL : Connecting cables

1.5 Test Modes

Mode #	Description	
Single	General conditions:	EUT powered by fully charged battery
	Radio conditions:	Mode = standalone transmit Modulation = FMCW / FSK Power level = Maximum

1.6 Test Equipment Used During Testing

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

AC powerline conducted emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
AMN	R&S	ESH2-Z5	EF00182	2012-10	2014-10
AMN	R&S	ESH3-Z5	EF00036	2012-11	2014-11
EMI Test Receiver	R&S	ESCS 30	EF00297	2012-09	2013-09

1.7 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

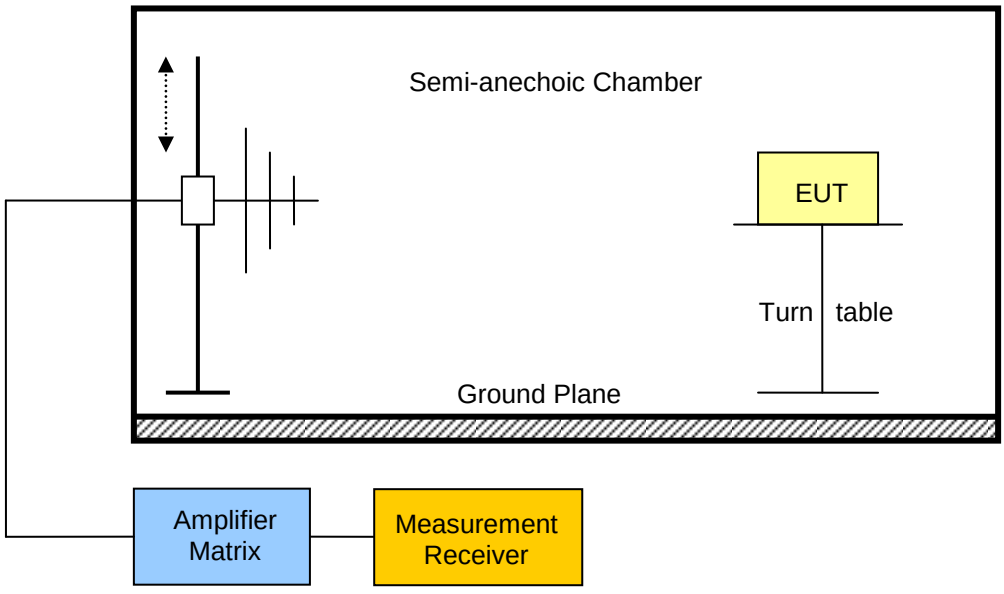
2 Result Summary

FCC 47 CFR Part 15C, IC RSS-210				
Product Specific Standard Section	**Requirement – Test**	**Reference Method**	**Result**	**Remarks**
RSS-Gen 4.6.1	Occupied Bandwidth	RSS-Gen 4.6.1	N/N	
FCC 15.249(a),(c),(e) IC RSS-210 A2.9(a)	Fundamental field strength emissions	ANSI C63.4	PASS	
FCC 15.249(a),(c),(d),(e) IC RSS-210 A2.9(a),(b)	Emission radiated outside the specified frequency band	ANSI C63.4	PASS	
IC RSS-210 Section 2.3 IC RSS-Gen 4.10 6.1	Receiver radiated spurious emissions	ANSI C63.4	N/N	
FCC § 15.207 IC RSS-Gen 7.2.4	AC power line conducted emissions	ANSI C63.4	PASS	
Remarks:				

3 Test Conditions and Results

3.1 Test Conditions and Results – Fundamental field strength emissions

Field strength emissions acc. FCC 47 CFR 15.249 / IC RSS-210				**Verdict: PASS**
Test according referenced standards		Reference Method		
		FCC 15.249(a),(c),(e) / IC RSS-210 A2.9(a)		
Test according to measurement reference		Reference Method		
		ANSI C63.4		
Test frequency range		Tested frequencies		
		F_{MID}		
EUT test mode		Single		
Limits				
Frequency range [MHz]	Detector	Limit [mV/m]	Limit [dBµV/m]	Limit Distance [m]
902 – 928	Quasi-Peak	50	94	3
2400 – 2483.5	Average	50	94	3
5725 - 5875	Average	50	94	3
FCC 15.249(e) : for frequencies above 1000 MHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. Below 1GHz a CISPR quasi-peak detector is used.				
Test setup				



Test procedure
1. EUT set to test mode 2. Span it set according to measurement range 3. Resolution bandwidth below 1 GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1 MHz with peak/average detector is used above 1 GHz 4. Markers are set to maximum emission levels

Test results – Antenna 1

Channel	Frequency [MHz]	Emission [MHz]	Level [dbµV/m]	Detector	Pol.	Limit [dbµV/m]	Limit distance [m]*	Margin [dB]
F_{MID}	5735 - 5865	5768	112.49	pk	ver	114.00	3	-01.51
F_{MID}	5735 - 5865	5768	66.98	avg	ver	94.00	3	-27.02
F_{MID}	5735 – 5865	5802	100.75	pk	hor	114.00	3	-13.25
F_{MID}	5735 – 5865	5802	61.47	avg	hor	94.00	3	-32.53
F_{MID}	5735 - 5865	5862	100.80	pk	hor	114.00	3	-13.20
F_{MID}	5735 – 5865	5862	79.94	avg	hor	94.00	3	-14.06
F_{MID}	5735 – 5865	5862	109.95	pk	ver	114.00	3	-04.05
F_{MID}	5735 – 5865	5862	89.24	avg	ver	94.00	3	-04.76

Test results – Antenna 2

Channel	Frequency [MHz]	Emission [MHz]	Level [dbµV/m]	Detector	Pol.	Limit [dbµV/m]	Limit distance [m]*	Margin [dB]
F_{MID}	5735 - 5865	5770	107.66	pk	ver	114.00	3	-06.34
F_{MID}	5735 - 5865	5770	64.46	avg	ver	94.00	3	-29.54
F_{MID}	5735 – 5865	5778	99.58	pk	hor	114.00	3	-14.42
F_{MID}	5735 – 5865	5778	61.42	avg	hor	94.00	3	-32.58
F_{MID}	5735 - 5865	5862	99.01	pk	hor	114.00	3	-14.99
F_{MID}	5735 – 5865	5862	78.66	avg	hor	94.00	3	-15.34
F_{MID}	5735 – 5865	5862	106.27	pk	ver	114.00	3	-07.73
F_{MID}	5735 – 5865	5862	85.26	avg	ver	94.00	3	-08.74

Comments: * Physical distance between EUT and measurement antenna.

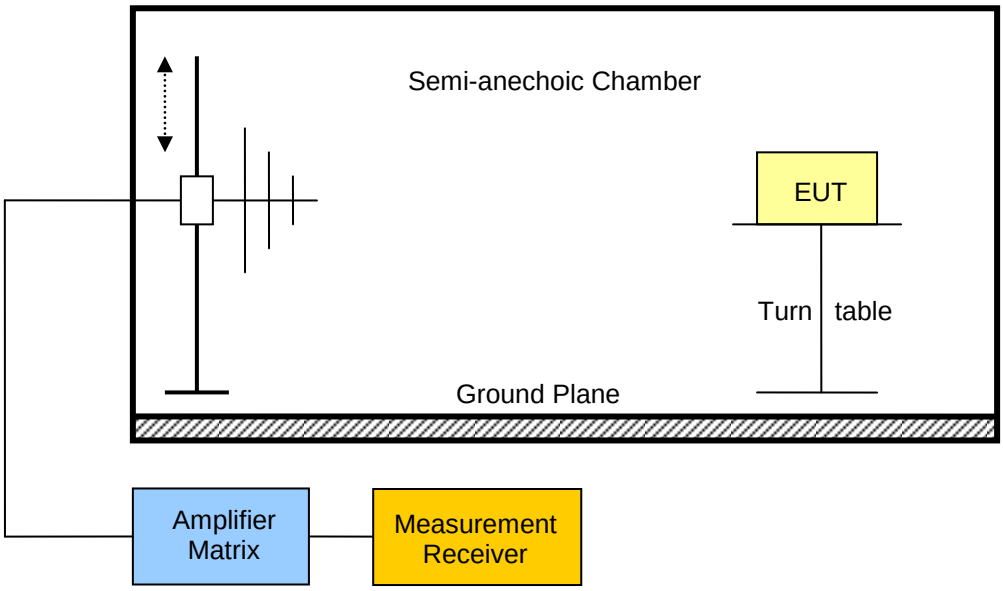
3.2 Test Conditions and Results – Emissions radiated outside the specified frequency band

Radiated out-of-band band emissions acc. FCC 47 CFR 15.249 / IC RSS-210				**Verdict: PASS**
Test according referenced standards		Reference Method		
		FCC 15.249(a),(c),(d),(e) / IC RSS-210 A2.9(a),(b)		
Test according to measurement reference		Reference Method		
		ANSI C63.4		
Test frequency range		Tested frequencies		
		30 MHz – 10th harmonic		
EUT test mode		Single		
Limits - Harmonics				
Frequency range [MHz]	Detector	Limit [µV/m]	Limit [dBµV/m]	Limit Distance [m]
902 – 928	Quasi-Peak	500	54	3
2400 – 2483.5	Average	500	54	3
5725 - 5875	Average	500	54	3
Limits - General				
Frequency range [MHz]	Detector	Limit [µV/m]	Limit [dBµV/m]	Limit Distance [m]
30 – 88	Quasi-Peak	100	40	3
88 – 216	Quasi-Peak	150	43.5	3
216 – 960	Quasi-Peak	200	46	3
960 – 1000	Quasi-Peak	500	54	3
> 1000	Average	500	54	3

FCC 15.249(e) : for frequencies above 1000 MHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

Except the higher order harmonics, emission radiated outside the specified frequency band shall be attenuated by at least 50 dB below the level of the fundamental or to the general field strength limits listed in 15.209 / RSS-Gen, whichever is less stringent.

Test setup



Test procedure

5. EUT set to test mode
6. Span it set according to measurement range
7. Resolution bandwidth below 1 GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1 MHz with peak/average detector is used above 1 GHz
8. Markers are set to maximum emission levels

Test results

Channel	Frequency [MHz]	Emission [MHz]	Level [dbµV/m]	Detector	Pol.	Limit [dbµV/m]	Limit distance [m]*	Margin [dB]
F_{MID}	5735 - 5865	5725	58.64	pk	hor	74.00	3	-15.36
F_{MID}	5735 - 5865	5725	31.05	avg	hor	54.00	3	-22.95
F_{MID}	5735 - 5865	5725	70.06	pk	ver	74.00	3	-03.94
F_{MID}	5735 - 5865	5725	31.60	avg	ver	54.00	3	-22.40
F_{MID}	5735 – 5865	5875	65.96	pk	hor	74.00	3	-08.04
F_{MID}	5735 – 5865	5875	31.79	avg	hor	54.00	3	-22.21
F_{MID}	5735 - 5865	5875	73.27	pk	ver	74.00	3	-00.73
F_{MID}	5735 – 5865	5875	32.67	avg	ver	54.00	3	-21.33
F_{MID}	5735 – 5865	11545	64.83	pk	ver	74.00	3	-09.17
F_{MID}	5735 – 5865	11545	30.70	avg	ver	54.00	3	-23.30
F_{MID}	5735 – 5865	11634	60.31	pk	hor	74.00	3	-13.69
F_{MID}	5735 – 5865	11634	30.45	avg	hor	54.00	3	-23.55
F_{MID}	5735 – 5865	17213	59.17	pk	hor	74.00	3	-14.83
F_{MID}	5735 – 5865	17213	32.82	avg	hor	54.00	3	-21.18
F_{MID}	5735 - 5865	17225	55.51	pk	ver	74.00	3	-18.49
F_{MID}	5735 - 5865	17225	32.47	avg	ver	54.00	3	-21.53

Comments: * Physical distance between EUT and measurement antenna.

3.3 Test Conditions and Results – AC power line conducted emissions

Power line conducted emissions acc. FCC 47 CFR 15.207 / IC RSS-Gen				**Verdict: PASS**
Test according referenced standards	Reference Method			
	ANSI C63.4			
Fully configured sample scanned over the following frequency range	Frequency range			
	0.15 MHz to 30 MHz			
Points of Application	Application Interface			
AC Mains	LISN			
EUT test mode	AC-Powerline			
Limits and results				
Frequency [MHz]	Quasi-Peak [dBµV]	Result	Average [dBµV]	Result
0.15 to 5	66 to 56*	PASS	56 to 46*	PASS
0.5 to 5	56	PASS	46	PASS
5 to 30	60	PASS	50	PASS
Comments: * Limit decreases linearly with the logarithm of the frequency.				

Conducted Emissions

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

Project number: G0M-1309-3212 Ref

Manufacturer:	inmotiotec GmbH
EUT Name:	Transponder
Model:	LPM Tp. Ser.1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Conditions:	Tnom: 23°C, Unom: 3.7 V DC
LISN:	ESH2-Z5 N
Mode:	charging
Test Date:	2013-08-26
Note:	

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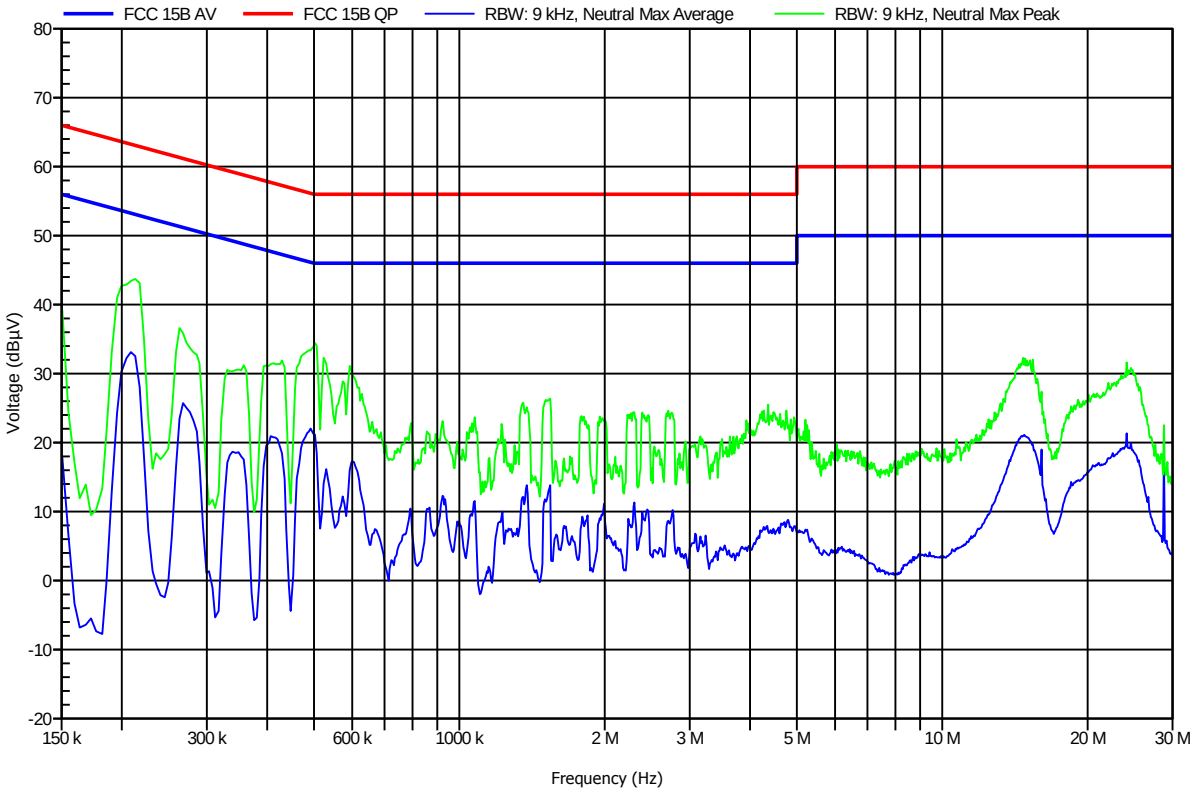

Conducted Emissions

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

Project number: G0M-1309-3212 Ref

Manufacturer:	inmotiotec GmbH
EUT Name:	Transponder
Model:	LPM Tp. Ser.1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Handrik
Test Conditions:	Tnom: 23°C, Unom: 3.7 V DC
LISN:	ESH2-Z5 L
Mode:	charging
Test Date:	2013-08-26
Note:	

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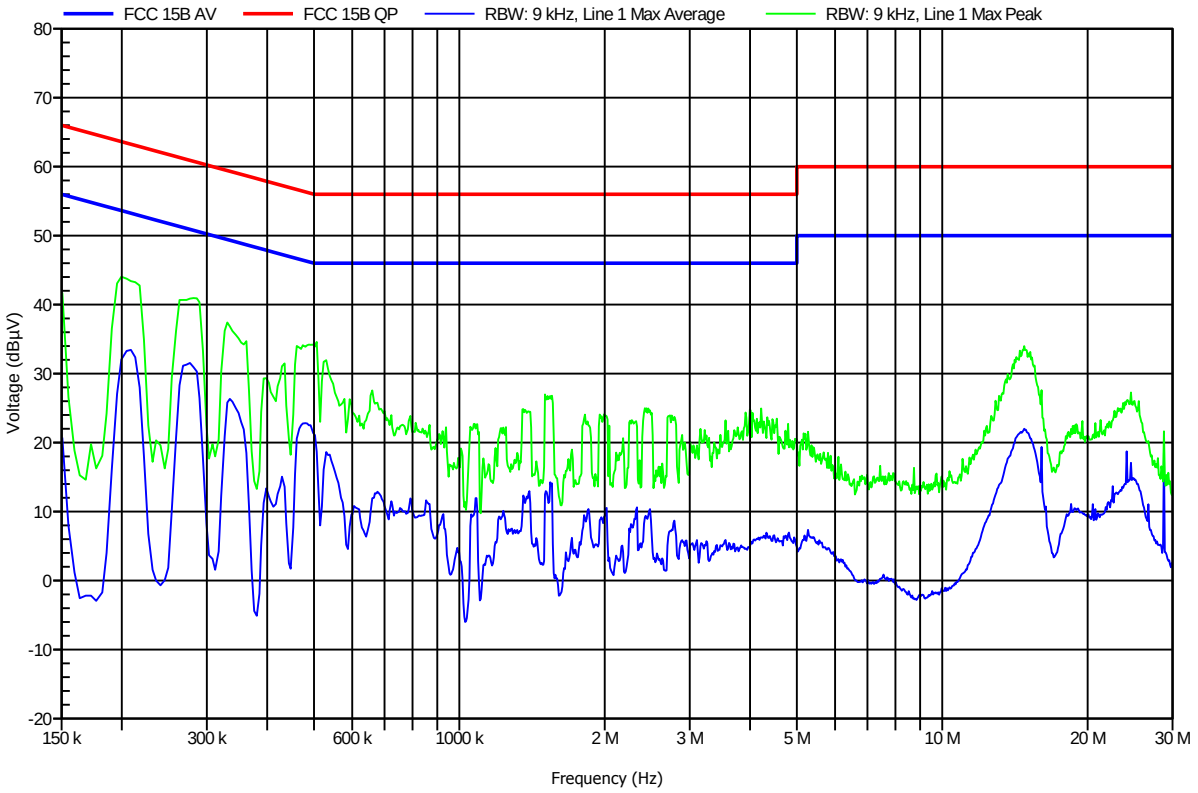

ANNEX A Fundamental field strength emissions

Field Strength of Emissions according to FCC 15.249

Project number: G0M-1309-3212

Manufacturer:	inmotiotec GmbH
EUT Name:	Transponder
Model:	LPM Tp. Ser.1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; Chirp FSK-Telemetrie, ant: Sperrtopfantenne
Test Date:	2013-08-26
Note:	

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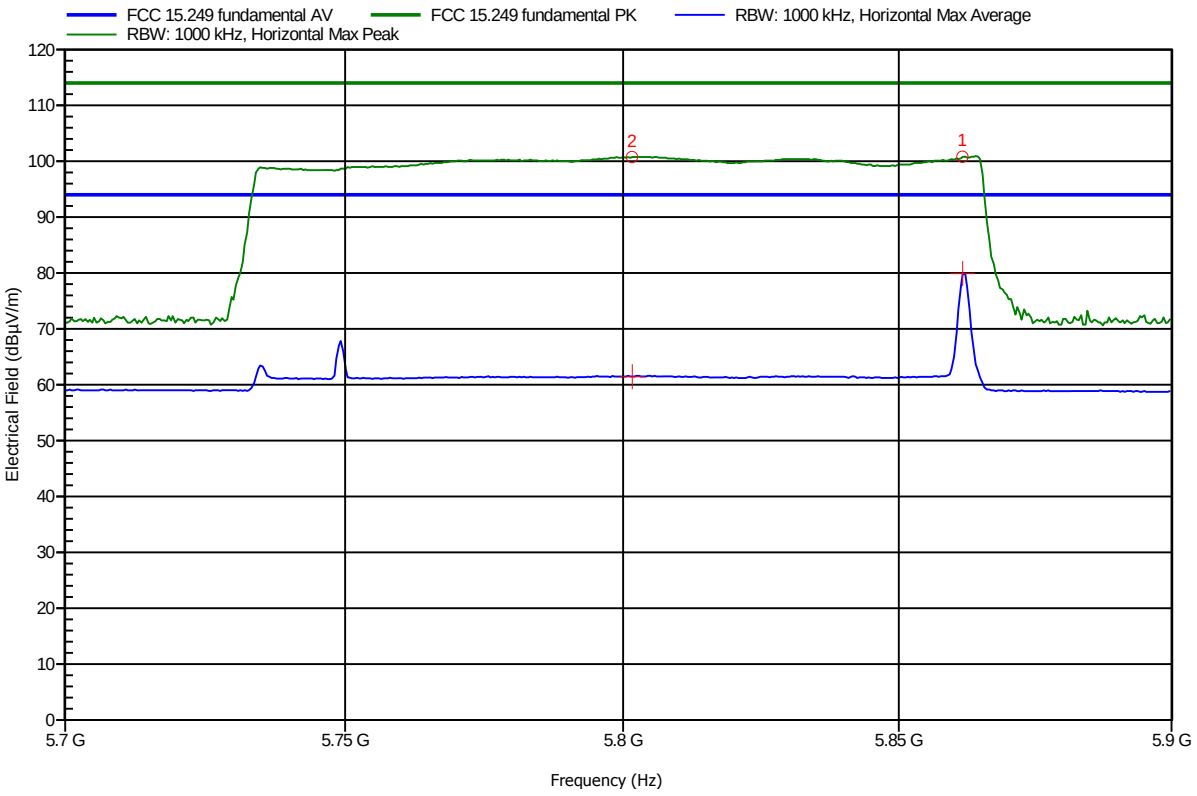

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
5.802 GHz	100.75 dBµV/m	114 dBµV/m	-13.25 dB	Pass
5.862 GHz	100.8 dBµV/m	114 dBµV/m	-13.2 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
5.802 GHz	61.47 dBµV/m	94 dBµV/m	-32.53 dB	Pass
5.862 GHz	79.94 dBµV/m	94 dBµV/m	-14.06 dB	Pass

Field Strength of Emissions according to FCC 15.249

Project number: G0M-1309-3212

Manufacturer:	inmotiotec GmbH
EUT Name:	Transponder
Model:	LPM Tp. Ser.1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; Chirp FSK-Telemetrie, ant: Sperrtopfantenne
Test Date:	2013-08-26
Note:	

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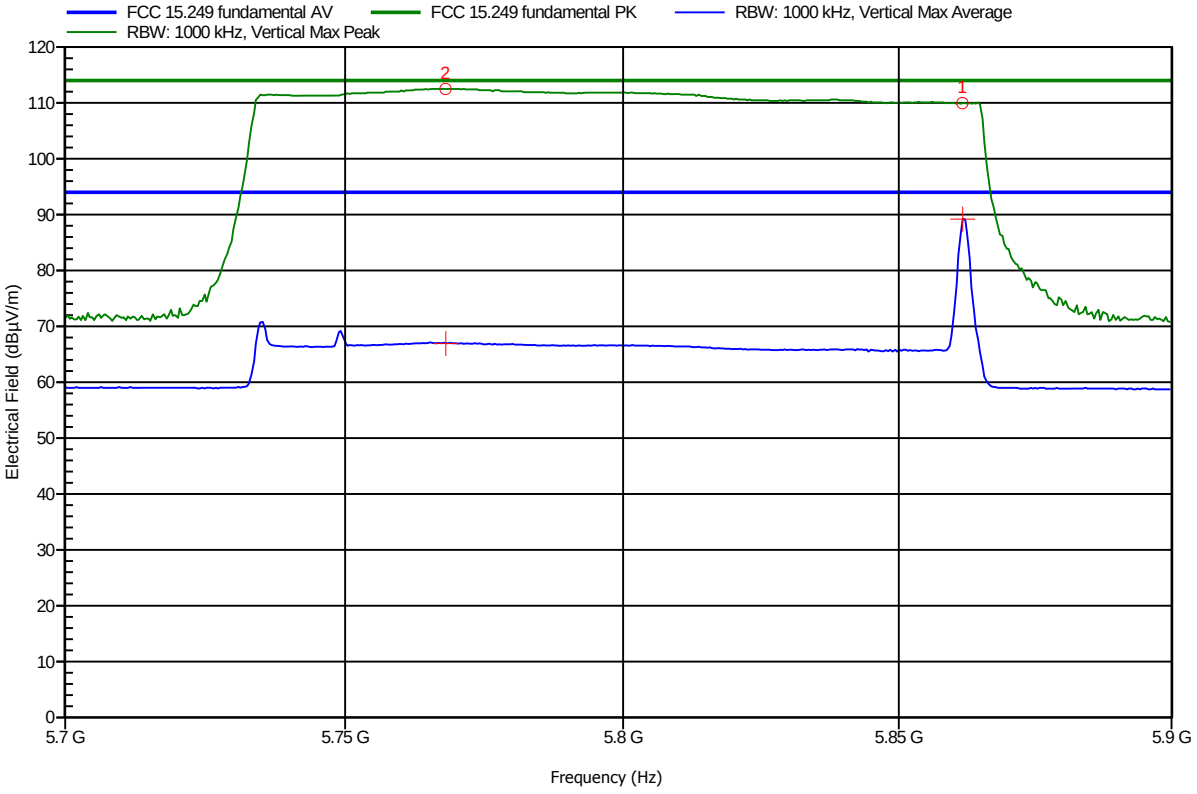

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
5.768 GHz	112.49 dBµV/m	114 dBµV/m	-1.51 dB	Pass
5.862 GHz	109.95 dBµV/m	114 dBµV/m	-4.05 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
5.768 GHz	66.98 dBµV/m	94 dBµV/m	-27.02 dB	Pass
5.862 GHz	89.24 dBµV/m	94 dBµV/m	-4.76 dB	Pass

Field Strength of Emissions according to FCC 15.249

Project number: G0M-1309-3212

Manufacturer:	inmotiotec GmbH
EUT Name:	Transponder
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Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; Chirp FSK-Telemetrie, ant: F-antenna
Test Date:	2013-08-27
Note:	

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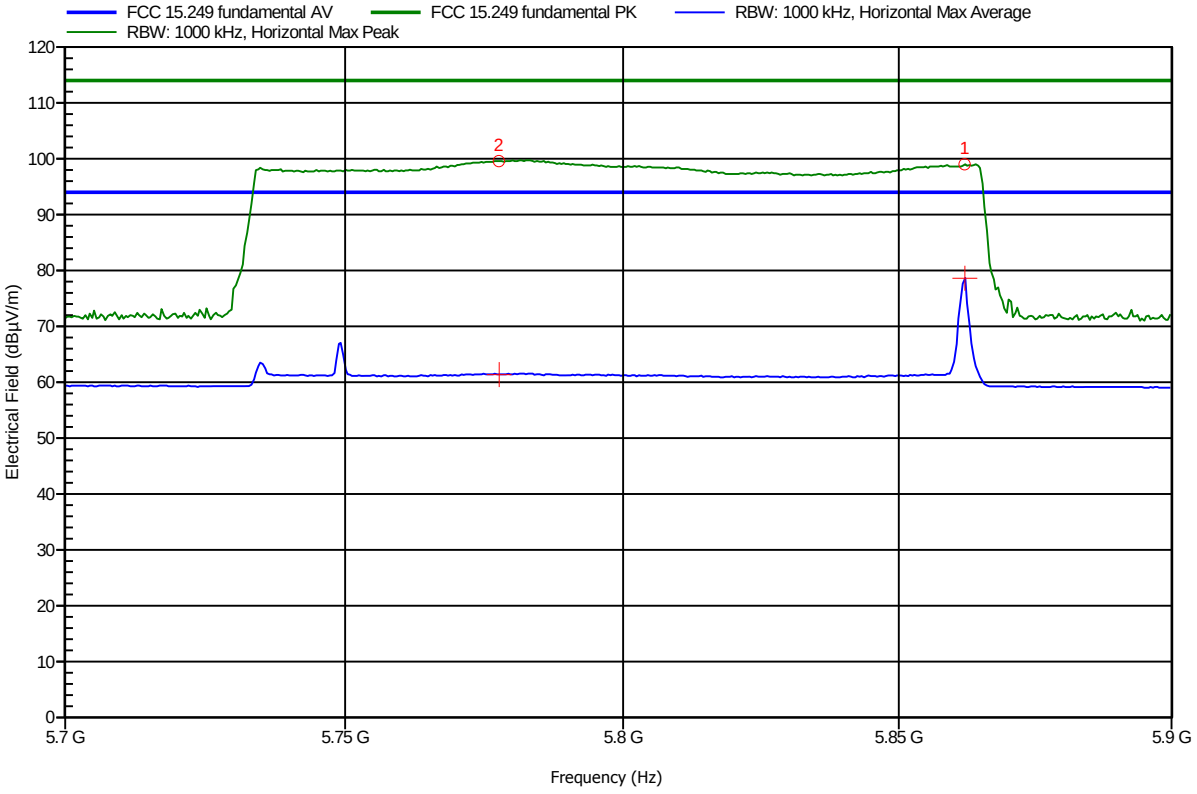

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
5.778 GHz	99.58 dBµV/m	114 dBµV/m	-14.42 dB	Pass
5.862 GHz	99.01 dBµV/m	114 dBµV/m	-14.99 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
5.778 GHz	61.42 dBµV/m	94 dBµV/m	-32.58 dB	Pass
5.862 GHz	78.66 dBµV/m	94 dBµV/m	-15.34 dB	Pass

Field Strength of Emissions according to FCC 15.249

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EUT Name:	Transponder
Model:	LPM Tp. Ser.1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; Chirp FSK-Telemetrie, ant: F-antenna
Test Date:	2013-08-27
Note:	

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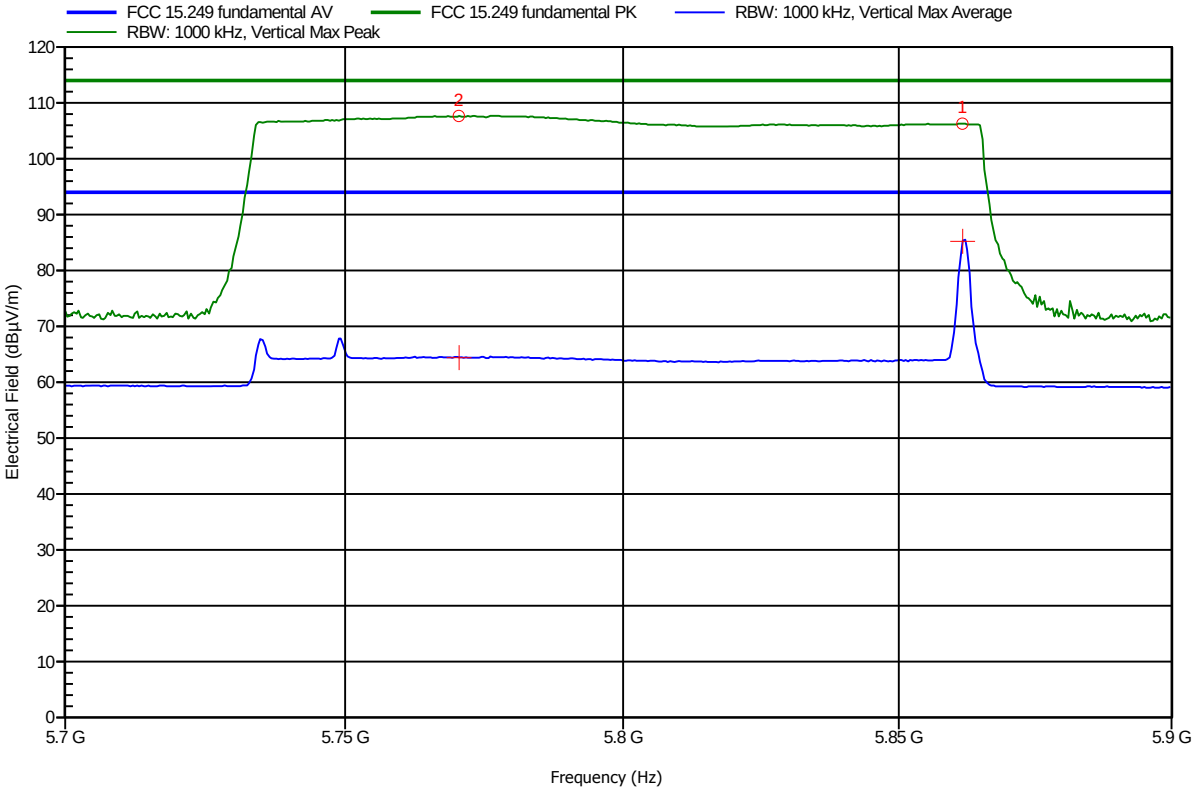

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
5.77 GHz	107.66 dBµV/m	114 dBµV/m	-6.34 dB	Pass
5.862 GHz	106.27 dBµV/m	114 dBµV/m	-7.73 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
5.77 GHz	64.46 dBµV/m	94 dBµV/m	-29.54 dB	Pass
5.862 GHz	85.26 dBµV/m	94 dBµV/m	-8.74 dB	Pass

ANNEX B Transmitter radiated spurious emissions

Spurious emissions according to FCC 15.249

Project number: G0M-1309-3212

Manufacturer:	inmotiotec GmbH
EUT Name:	Transponder
Model:	LPM Tp. Ser.1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; Chirp FSK-Telemetrie, ant: Sperrtopfantenne
Test Date:	2013-08-26
Note:	

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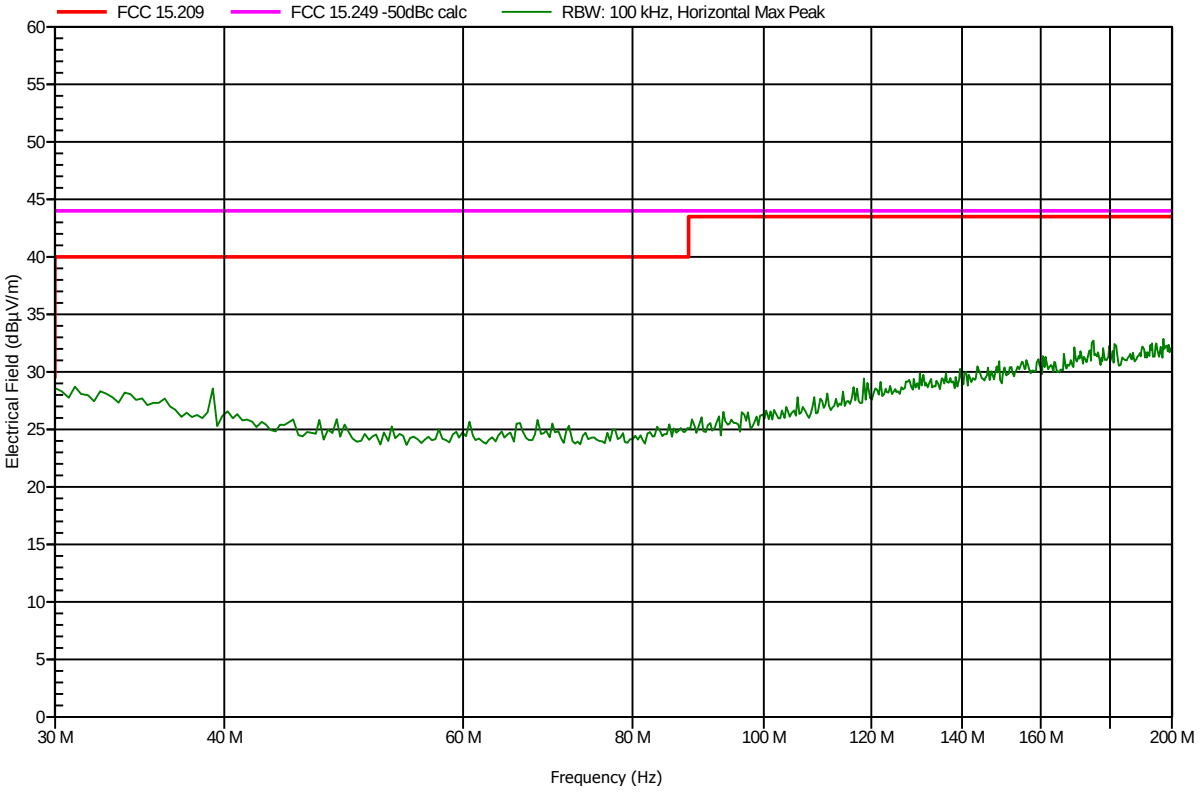

Spurious emissions according to FCC 15.249

Project number: G0M-1309-3212

Manufacturer:	inmotiotec GmbH
EUT Name:	Transponder
Model:	LPM Tp. Ser.1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; Chirp FSK-Telemetrie, ant: Sperrtopfantenne
Test Date:	2013-08-26
Note:	

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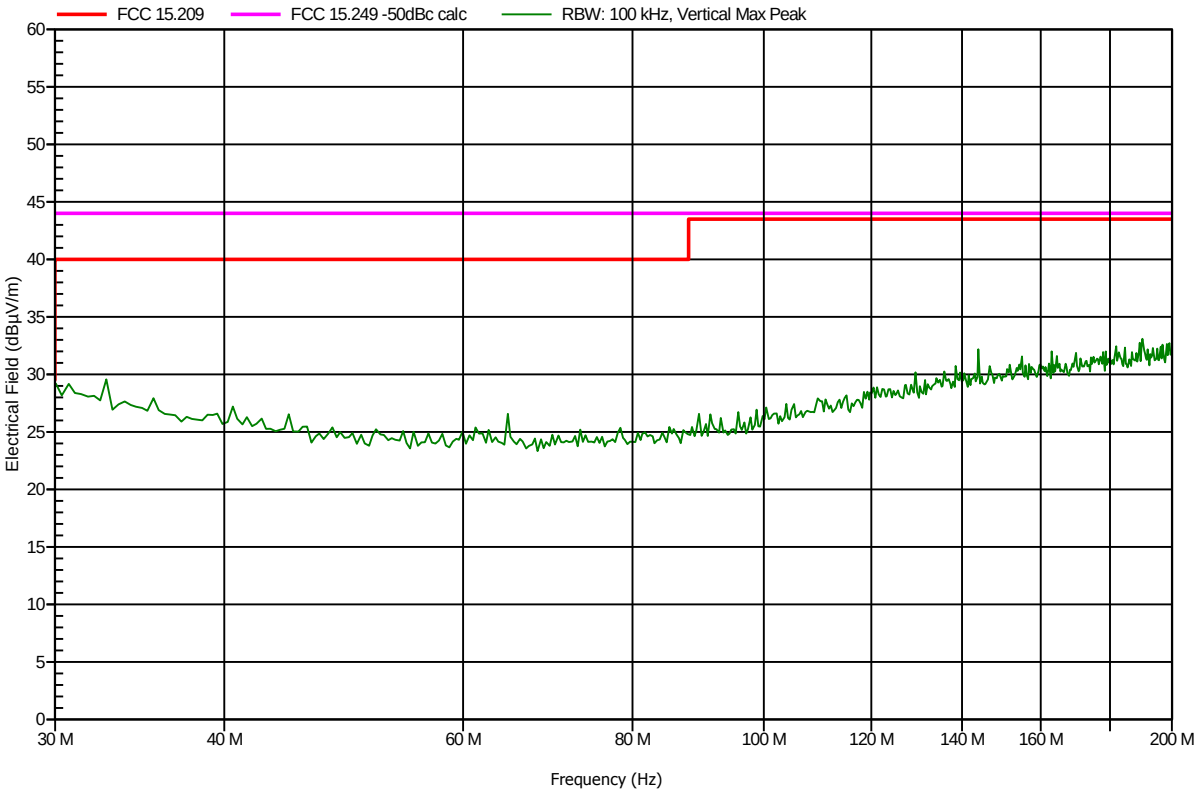

Spurious emissions according to FCC 15.249

Project number: G0M-1309-3212

Manufacturer:	inmotiotec GmbH
EUT Name:	Transponder
Model:	LPM Tp. Ser.1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; Chirp FSK-Telemetrie, ant: Sperrtopfantenne
Test Date:	2013-08-26
Note:	

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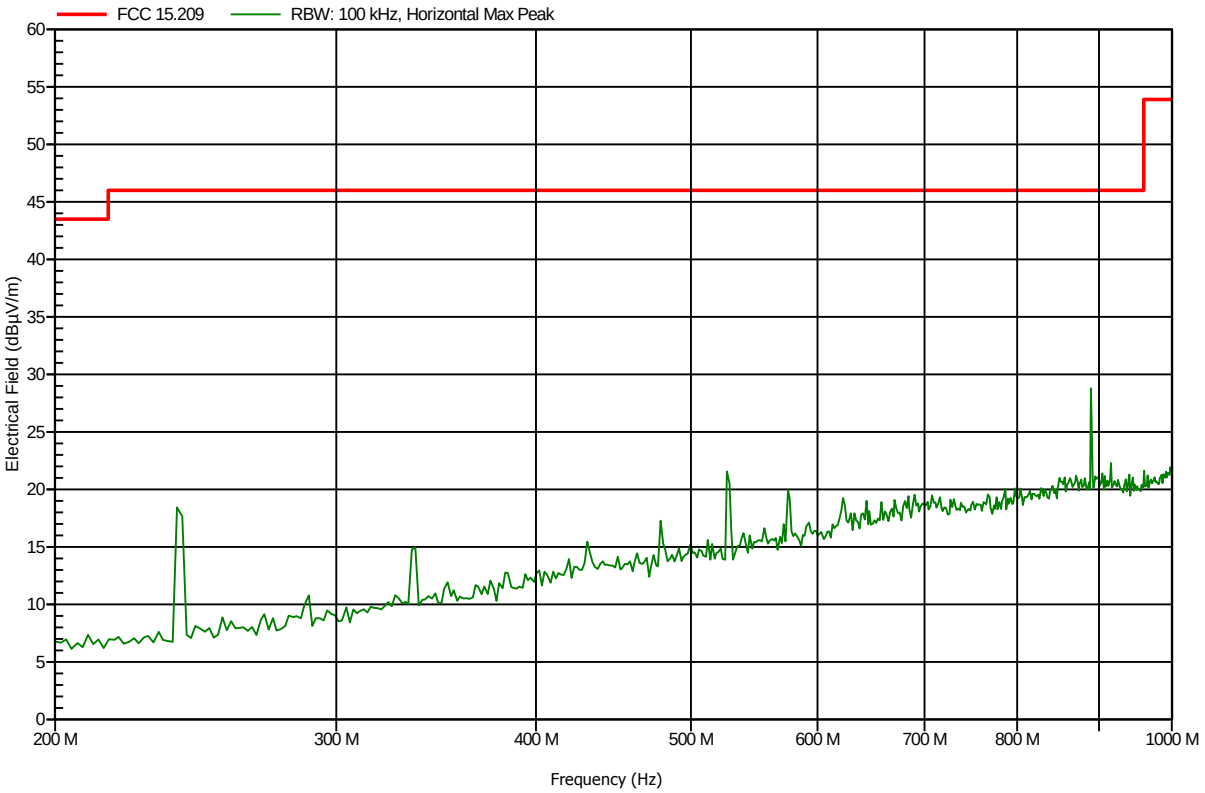

Spurious emissions according to FCC 15.249

Project number: G0M-1309-3212

Manufacturer:	inmotiotec GmbH
EUT Name:	Transponder
Model:	LPM Tp. Ser.1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; Chirp FSK-Telemetrie, ant: Sperrtopfantenne
Test Date:	2013-08-26
Note:	

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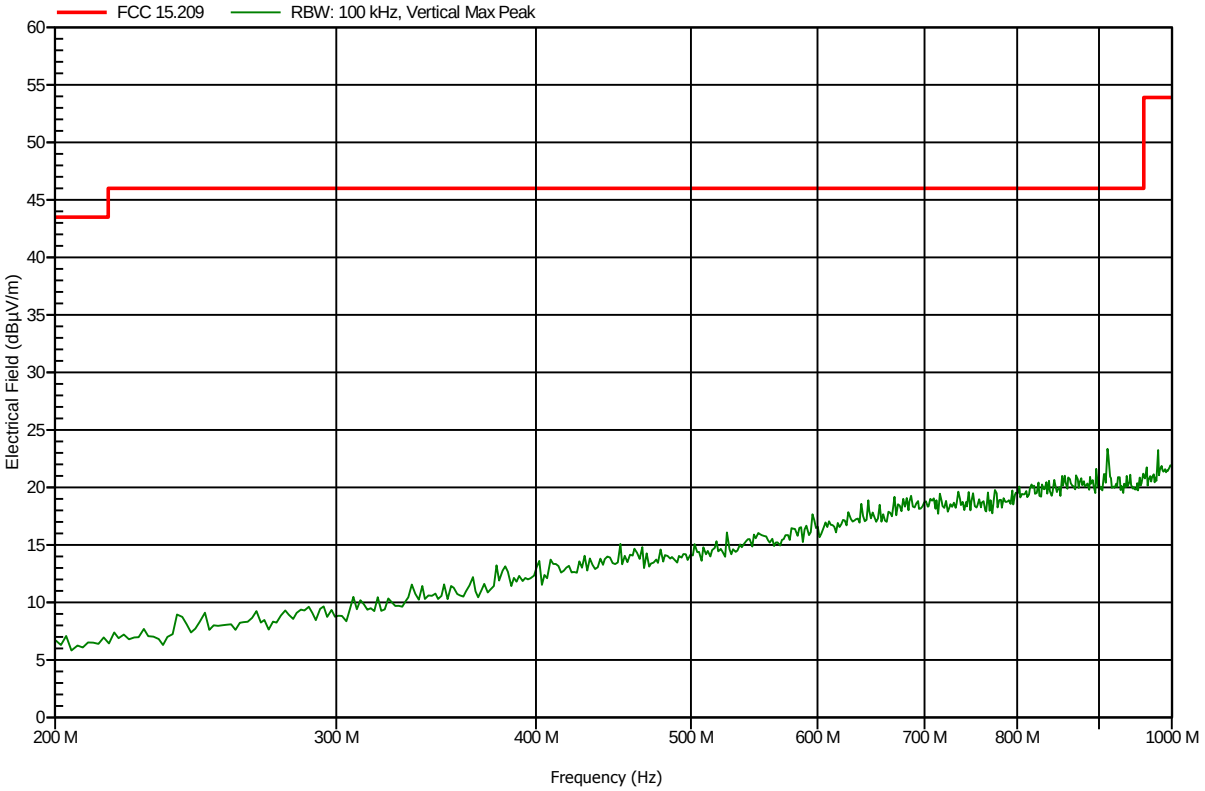

Spurious emissions according to FCC 15.249

Project number: G0M-1309-3212

Manufacturer:	inmotiotec GmbH
EUT Name:	Transponder
Model:	LPM Tp. Ser.1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; Chirp FSK-Telemetrie, ant: Sperrtopfantenne
Test Date:	2013-08-26
Note:	

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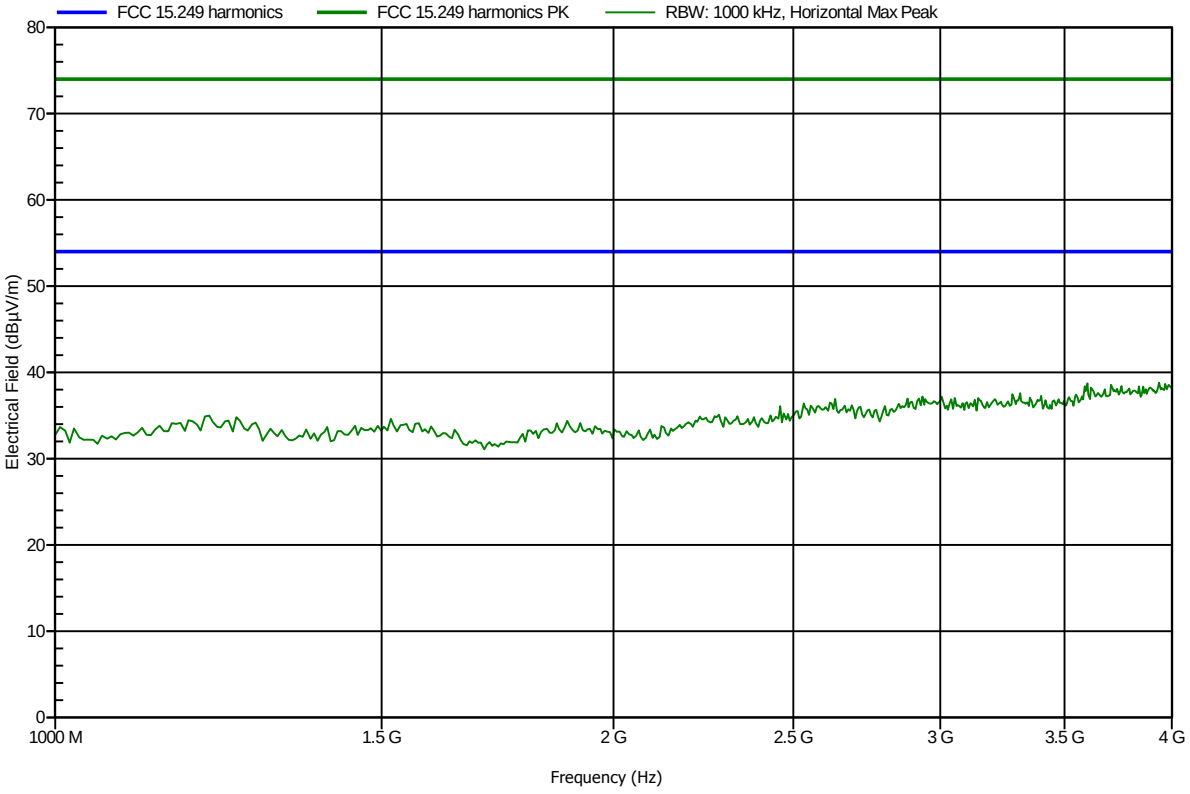

Spurious emissions according to FCC 15.249

Project number: G0M-1309-3212

Manufacturer:	inmotiotec GmbH
EUT Name:	Transponder
Model:	LPM Tp. Ser.1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; Chirp FSK-Telemetrie, ant: Sperrtopfantenne
Test Date:	2013-08-26
Note:	

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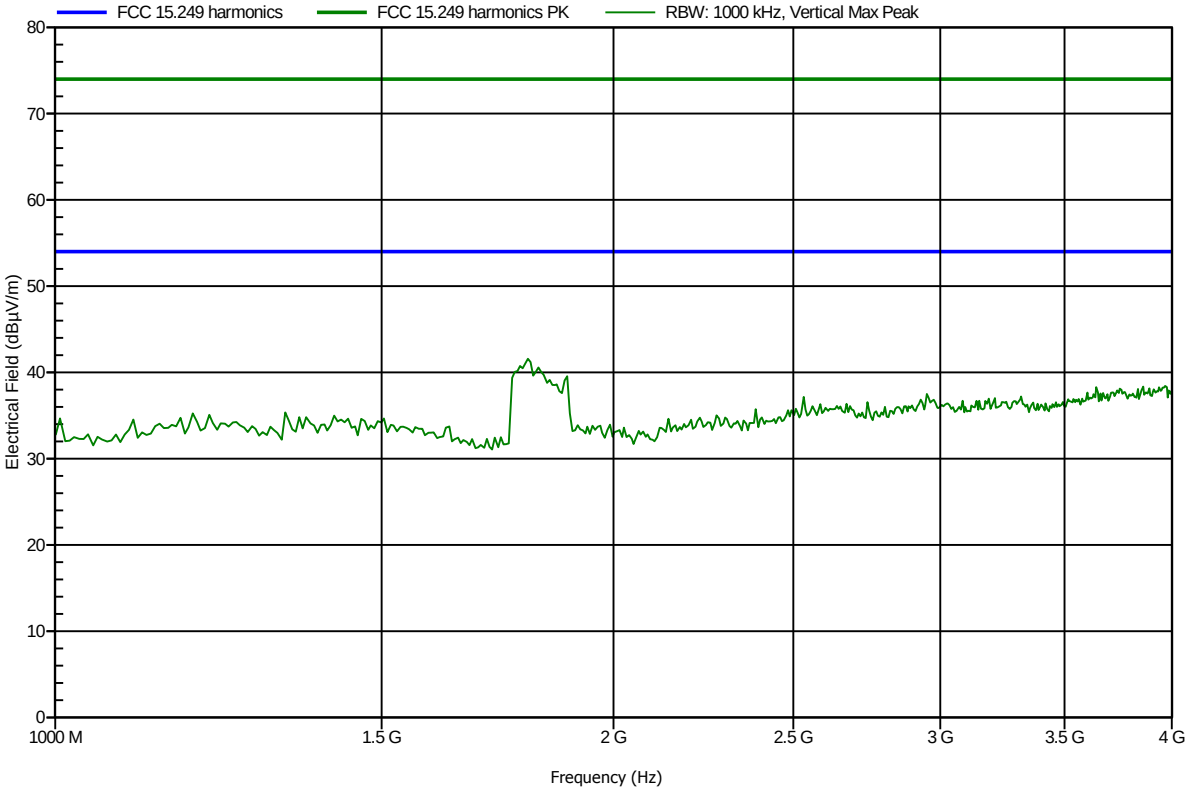

Spurious emissions according to FCC 15.249

Project number: G0M-1309-3212

Manufacturer:	inmotiotec GmbH
EUT Name:	Transponder
Model:	LPM Tp. Ser.1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; Chirp FSK-Telemetrie, ant: Sperrtopfantenne
Test Date:	2013-08-26
Note:	

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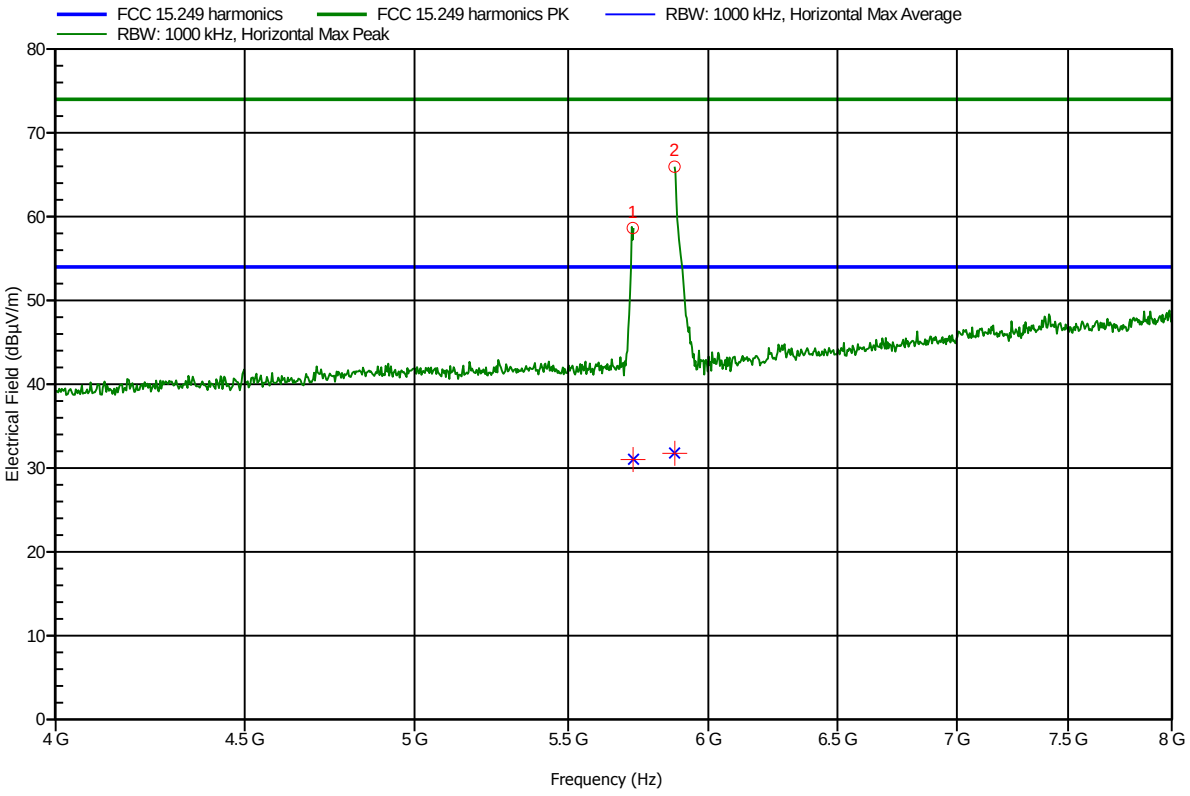

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
5.725 GHz	58.64 dBµV/m	74 dBµV/m	-15.36 dB	Pass
5.875 GHz	65.96 dBµV/m	74 dBµV/m	-8.04 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
5.725 GHz	31.05 dBµV/m	54 dBµV/m	-22.95 dB	Pass
5.875 GHz	31.79 dBµV/m	54 dBµV/m	-22.21 dB	Pass

Spurious emissions according to FCC 15.249

Project number: G0M-1309-3212

Manufacturer:	inmotiotec GmbH
EUT Name:	Transponder
Model:	LPM Tp. Ser.1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; Chirp FSK-Telemetrie, ant: Sperrtopfantenne
Test Date:	2013-08-26
Note:	

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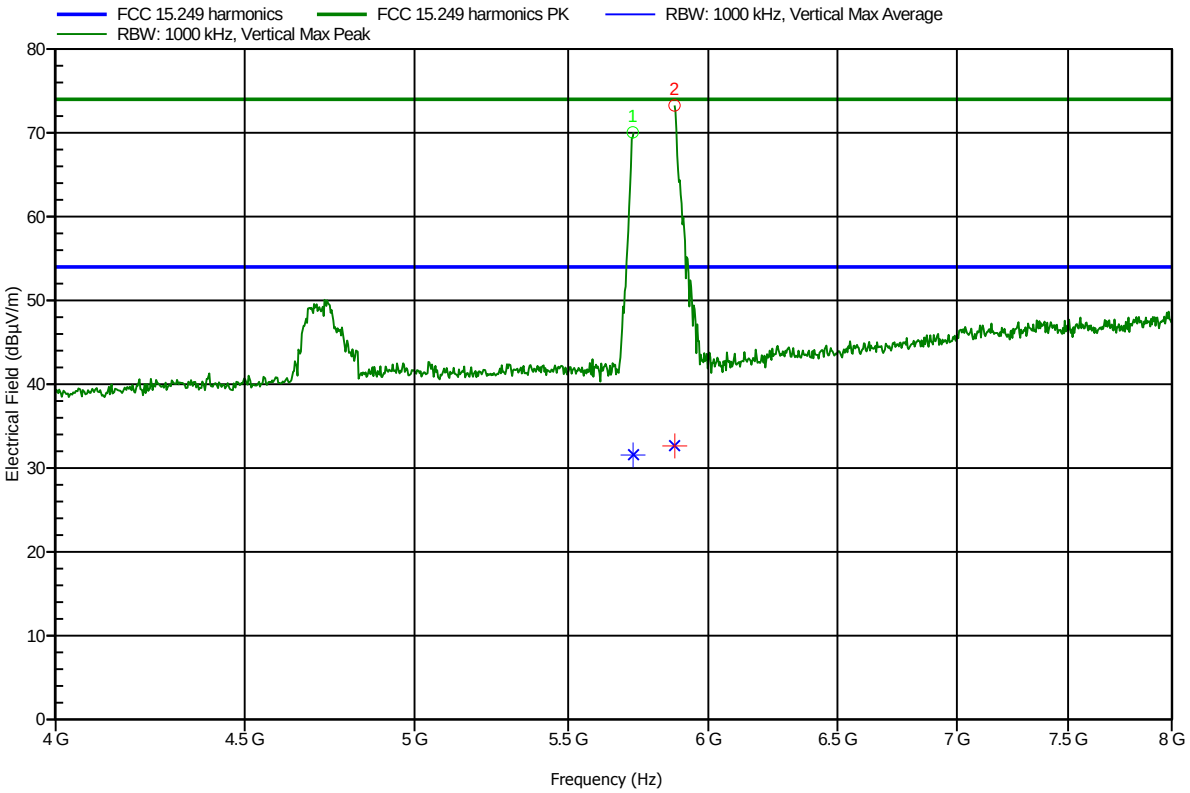

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
5.725 GHz	70.06 dBµV/m	74 dBµV/m	-3.94 dB	Pass
5.875 GHz	73.27 dBµV/m	74 dBµV/m	-0.73 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
5.725 GHz	31.6 dBµV/m	54 dBµV/m	-22.4 dB	Pass
5.875 GHz	32.67 dBµV/m	54 dBµV/m	-21.33 dB	Pass

Spurious emissions according to FCC 15.249

Project number: G0M-1309-3212

Manufacturer:	inmotiotec GmbH
EUT Name:	Transponder
Model:	LPM Tp. Ser.1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	100 cm converted to 3m
Mode:	TX; Chirp FSK-Telemetrie, ant: Sperrtopfantenne
Test Date:	2013-08-27
Note:	

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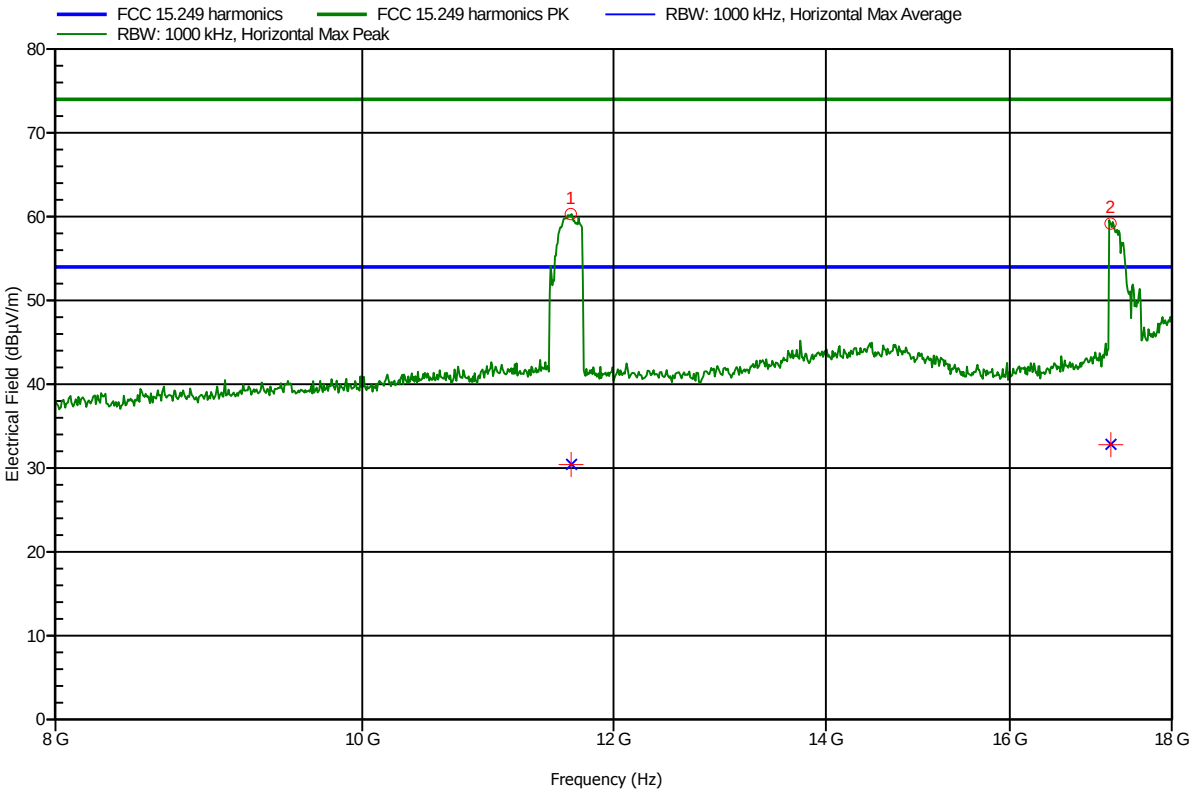

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
11.634 GHz	60.31 dBµV/m	74 dBµV/m	-13.69 dB	Pass
17.213 GHz	59.17 dBµV/m	74 dBµV/m	-14.83 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
11.634 GHz	30.45 dBµV/m	54 dBµV/m	-23.55 dB	Pass
17.213 GHz	32.82 dBµV/m	54 dBµV/m	-21.18 dB	Pass

Spurious emissions according to FCC 15.249

Project number: G0M-1309-3212

Manufacturer:	inmotiotec GmbH
EUT Name:	Transponder
Model:	LPM Tp. Ser.1
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	100 cm converted to 3m
Mode:	TX; Chirp FSK-Telemetrie, ant: Sperrtopfantenne
Test Date:	2013-08-27
Note:	

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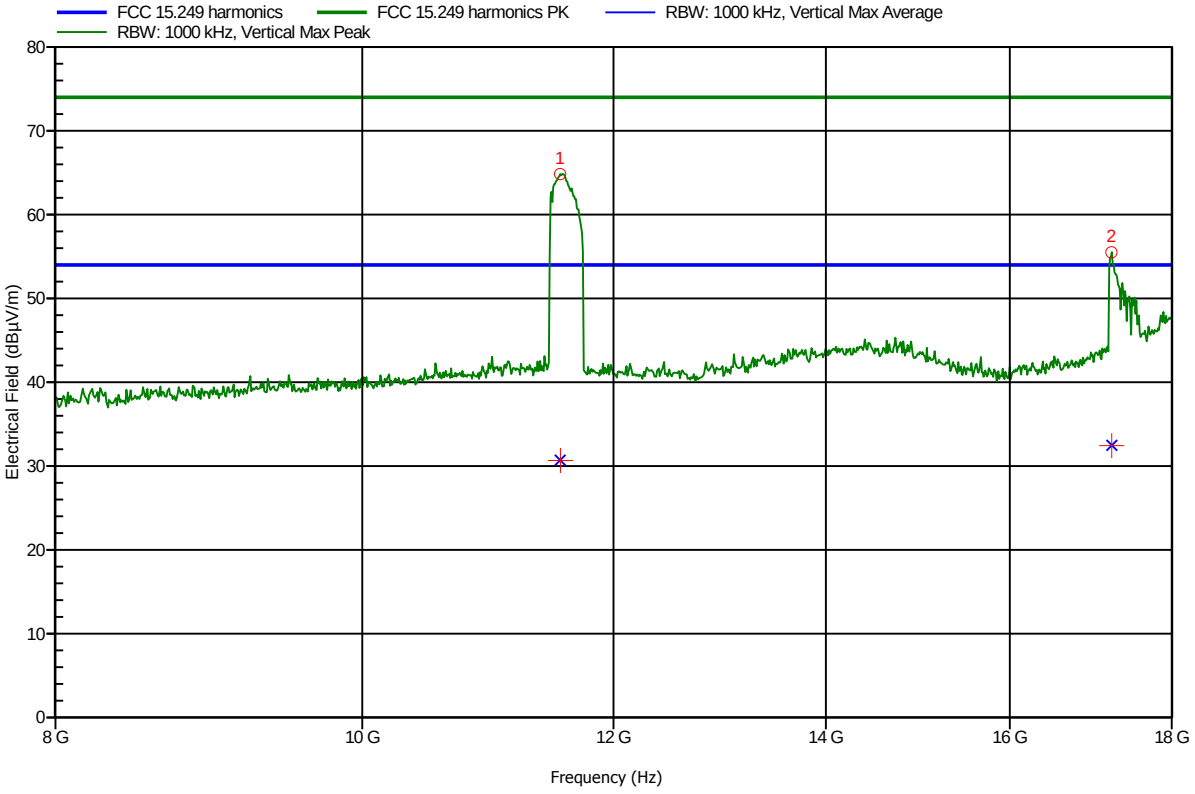

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
11.545 GHz	64.83 dBµV/m	74 dBµV/m	-9.17 dB	Pass
17.225 GHz	55.51 dBµV/m	74 dBµV/m	-18.49 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
11.545 GHz	30.7 dBµV/m	54 dBµV/m	-23.3 dB	Pass
17.225 GHz	32.47 dBµV/m	54 dBµV/m	-21.53 dB	Pass