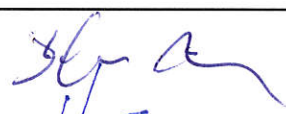


EMC TEST REPORT FCC 47 CFR Part 15B, ISED ICES-003 Issue 6	
Report Reference No	G0M-1901-8021-EF0115B-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	    DAKKS - Registration number : D-PL-12092-01-03 (ISED) ISED Testing Laboratory site: 3470A-2 DAKKS - Registration number : D-PL-12092-01-04 (FCC) FCC Filed Test Laboratory, Reg.-No.: 96970
Applicant	IAV automotive Engineering Inc.
Address	15620 technology Drive 48168 Northville United States
Test Specification	
Standard	47 CFR Part 15 Subpart B ISED ICES-003 Issue 6 ANSI C63.4:2014
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	Telemetry Equipment
Model(s)	TDBOX2
Additional Model(s)	None
Brand Name(s)	None
Hardware Version(s)	IAV-G-00057-01-AA-V02-R01_CI01 and IAV-G-00057-01-AA-V02-R02_CI03
Software Version(s)	Frontend 0109 / Telemetrie 0211
FCC-ID	2AS2J-G00057-01
IC	24891-G0005701
Test Result	PASSED

Possible test case verdicts:		
required by standard but not tested	N/T	
not required by standard	N/R	
required by standard but not appl. to test object	N/A	
test object does meet the requirement	P(PASS)	
test object does not meet the requirement	F(FAIL)	
Testing:		
Date of receipt of test item	2019-02-26	
Report:		
Compiled by	Stefan Dose	
Tested by (+ signature) (Responsible for Test)	Stefan Dose	 
	Matthias Handrik	
Approved by (+ signature) (Head of Lab)	Christian Weber	
Date of Issue	2019-08-26	
Total number of pages	67	
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:		

ABBREVIATIONS AND ACRONYMS

Acronyms	
Acronym	Description
EUT	Equipment Under Test
FCC	Federal Communications Commission
ISED	Innovation, Science and Economic Development Canada
T _{NOM}	Nominal operating temperature
V _{NOM}	Nominal supply voltage

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2019-08-26	Initial Release	

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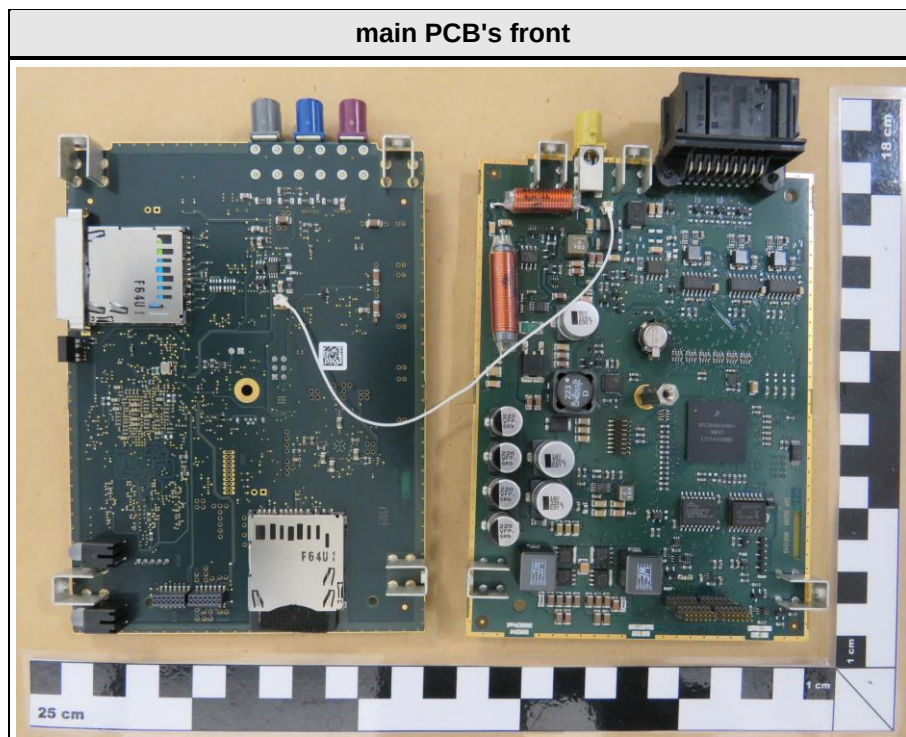
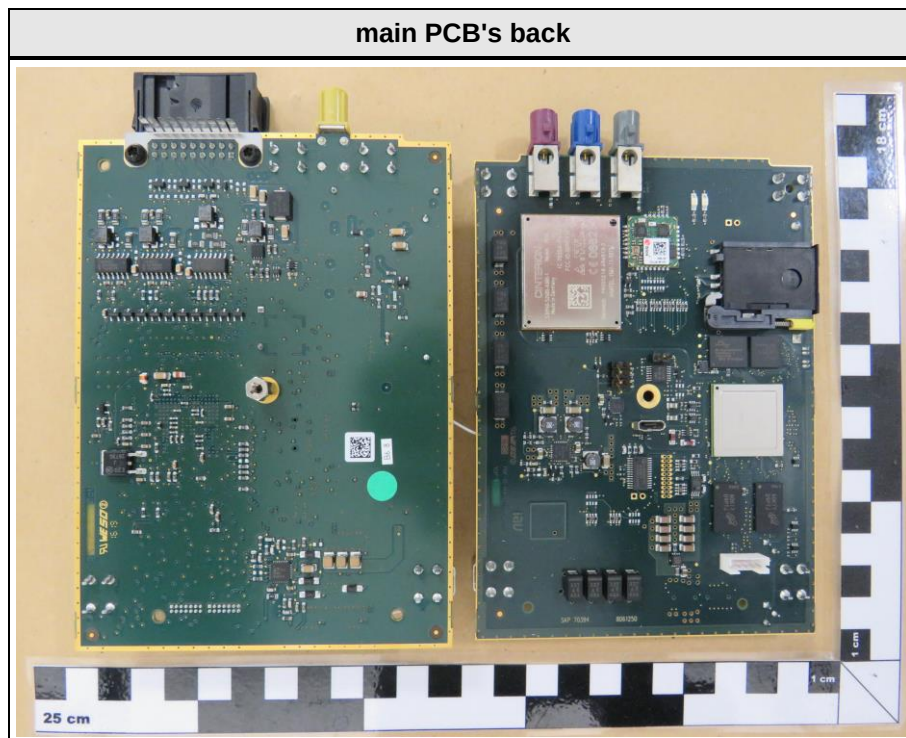
1 Equipment (Test Item) Under Test

Description	Telemetry Equipment	
Model	TDBOX2	
Additional Model(s)	None	
Brand Name(s)	None	
Serial Number(s)	AAB-W0212.06.1700400003	
Hardware Version(s)	IAV-G-00057-01-AA-V02-R01_CI01 and IAV-G-00057-01-AA-V02-R02_CI03	
Software Version(s)	Frontend 0109 / Telemetrie 0211	
FCC-ID	2AS2J-G00057-01	
IC	24891-G0005701	
Class	Class B	
Equipment type	Table top	
Highest internal frequency [MHz]	5825	
Radio Module 1	Type	mobile communication
	Model	PXS-8
	Manufacturer	Gemalto cinterion
	FCC-ID	QIPPS8
	IC	7830A-PXS8
Radio Module 2	Type	WLAN communication
	Model	ELLA-W161-A
	Manufacturer	uBlox
	FCC-ID	PV7-WIBEAR11N-DF1
	IC	7738A-WB11NDF1
Supply Voltage	V _{NOM}	13.8 VDC
AC/DC-Adaptor	none	
Manufacturer	IAV automotive Engineering Inc. 15620 technology Drive 48168 Northville United States	

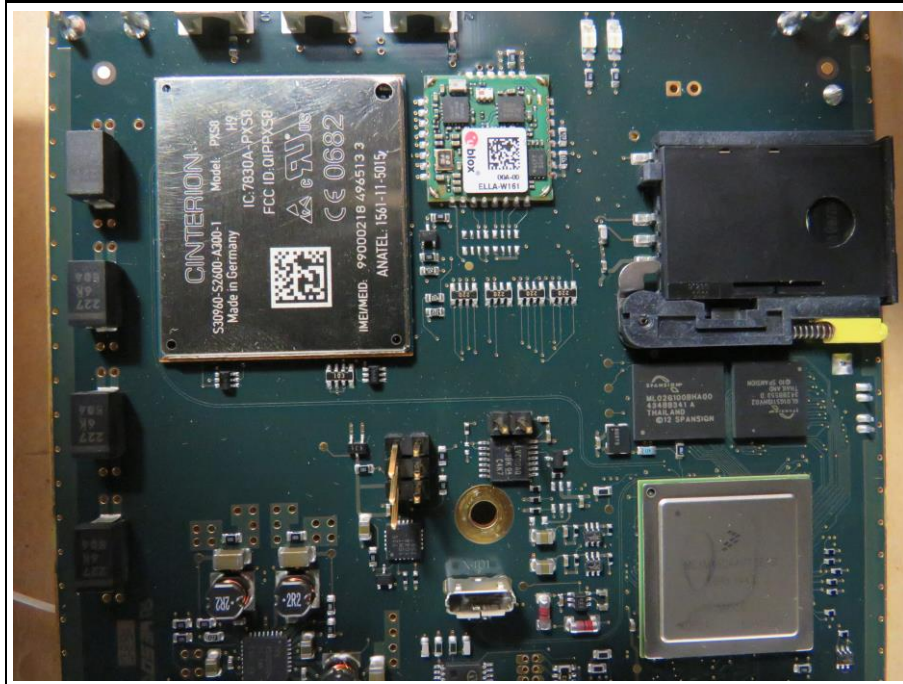
1.1 Equipment Ports

Name	Type	Attributes	Comment
Power	DC	Count: 1 Direction: In Service only: No	usually powered via vehicle battery
KL15 (CAN Bus)	IO	Count: 7 Direction: IO Service only: No	-
cellular	IO	Count: 1 Direction: IO Service only: No	-
WLAN	IO	Count: 1 Direction: IO Service only: No	-
GPS	IO	Count: 1 Direction: In Service only: No	-
Description:			
AC	AC mains power input/output port		
DC	DC power input/output port		
IO	Input/Output port		
TP	Telecommunication port		
NE	Non-electrical port		

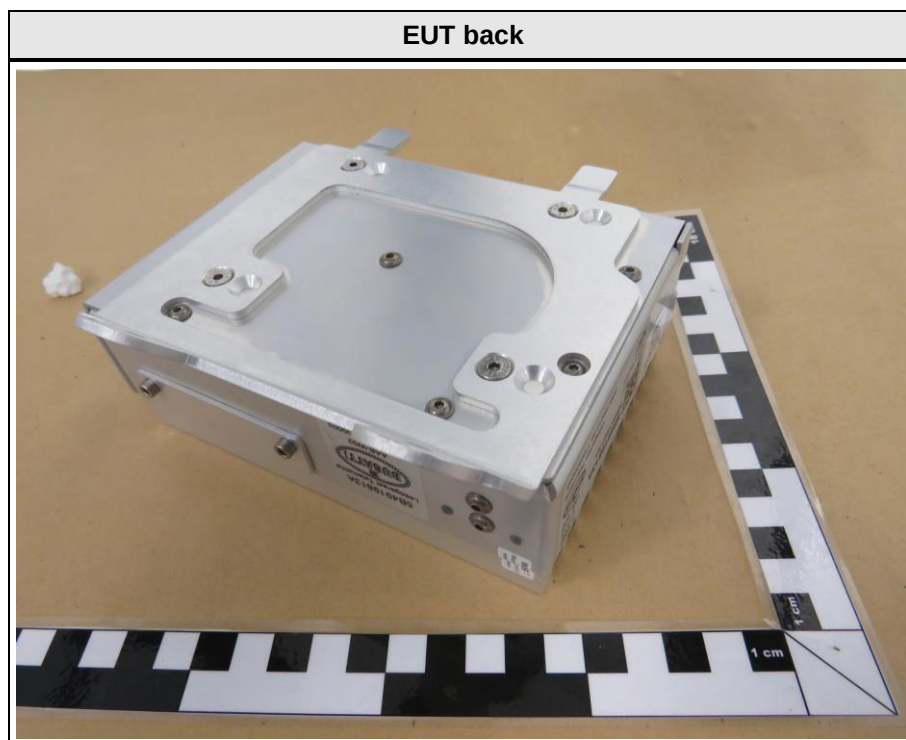
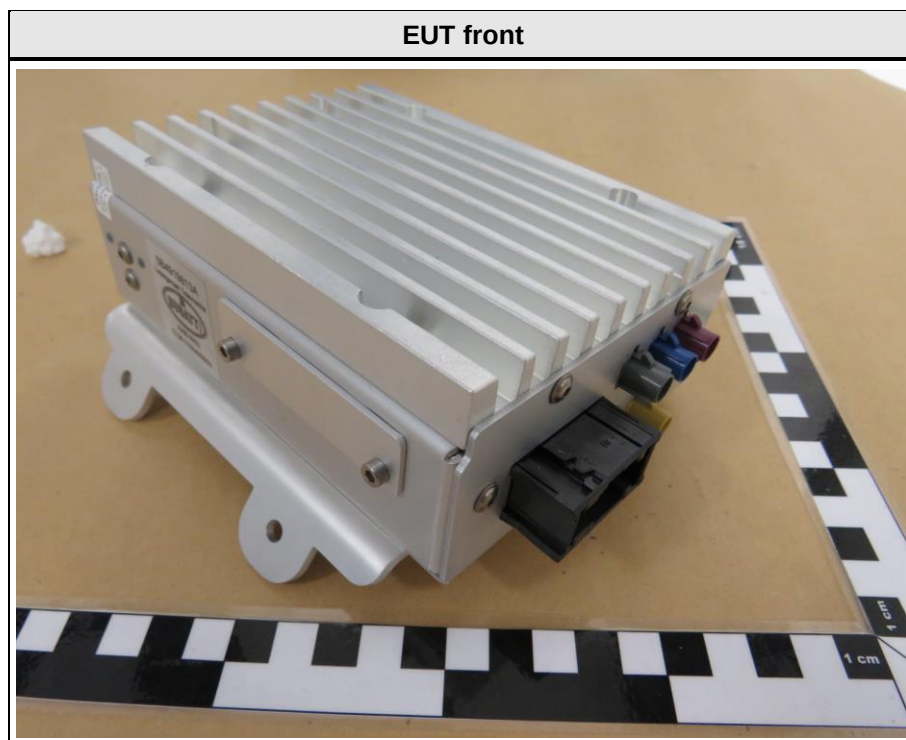
1.2 Equipment Photos - Internal



PCB chip detail



1.3 Equipment Photos - External



1.4 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
SIM	Universal Radio Comm. Tester	R&S	CMU200	-
AE	Laptop	HP	Elitebook 850	-
AE	WLAN-USB-Stick	tp-link	AC600	-
AE	USB to CAN/LN Interface	PEAK	PCan USB Pro	-
AE	Optical Coupler for CAN Data Transmission	PEAK	PCan-LWL	-
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
Comment:				

1.5 Operational Modes

Mode #	Description
1	WLAN 5 GHz + GNSS + UMTS FDD V (850 MHz)
2	WLAN 5 GHz + GNSS + UMTS FDD II (1900 MHz)
3	WLAN 5 GHz + GNSS + GSM 850
4	WLAN 5 GHz + GNSS + GSM 1900
5	WLAN 2.4 GHz + GNSS + UMTS FDD V (850 MHz)
6	WLAN 2.4 GHz + GNSS + UMTS FDD II (1900 MHz)
7	WLAN 2.4 GHz + GNSS + GSM 850
8	WLAN 2.4 GHz + GNSS + GSM 1900
Comment:	

1.6 EUT Configuration

Configuration #	Description
1	EUT is powered up via laboratory power supply and connected to laptop via • WLAN (5 or 2.4GHz) and WLAN-USB-stick • CAN-bus and CAN-to-USB adaptor EUT is connected to Universal Radio Communication Tester via cellular link and receives GPS signal. Monitoring software on laptop is showing status of • CAN-Bus-data – write and receive • WLAN data (e.g. cellular link, SMS, GPS satellite count, ...)
Comment:	

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 analyser in dBµV. Any external preamplifiers used are taken into account through internal analyser 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 analyser. It is treated as a loss in dB. Cable losses have been included with the A.F. to simplify the calculations. The antenna factor is used in calculations as follows:

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

Net:

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

Limit:

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

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

Margin:

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

Example only:

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

2 Result Summary

FCC 47 CFR Part 15B, ISED ICES-003 Issue 6				
Reference	Requirement	Reference Method	Result	Remarks
Emission				
FCC 15.109 ICES-003, 8, 6.1	Radiated emissions	ANSI C63.4:2014	PASS	-
FCC 15.107 ICES-003, 8, 6.2	AC power line conducted emissions	ANSI C63.4:2014	N/R	-
Comment:				

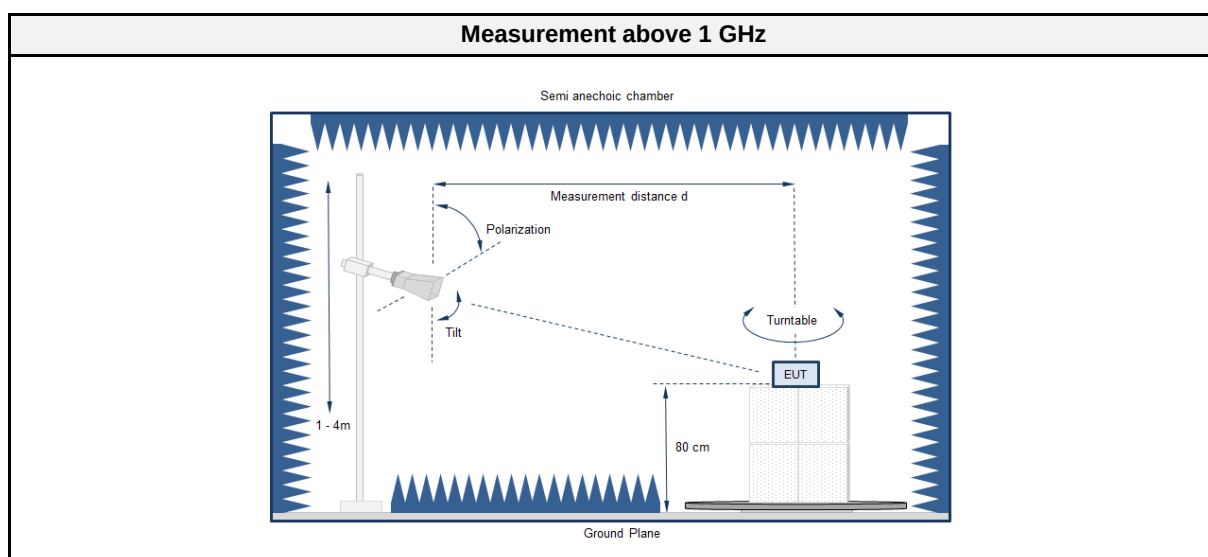
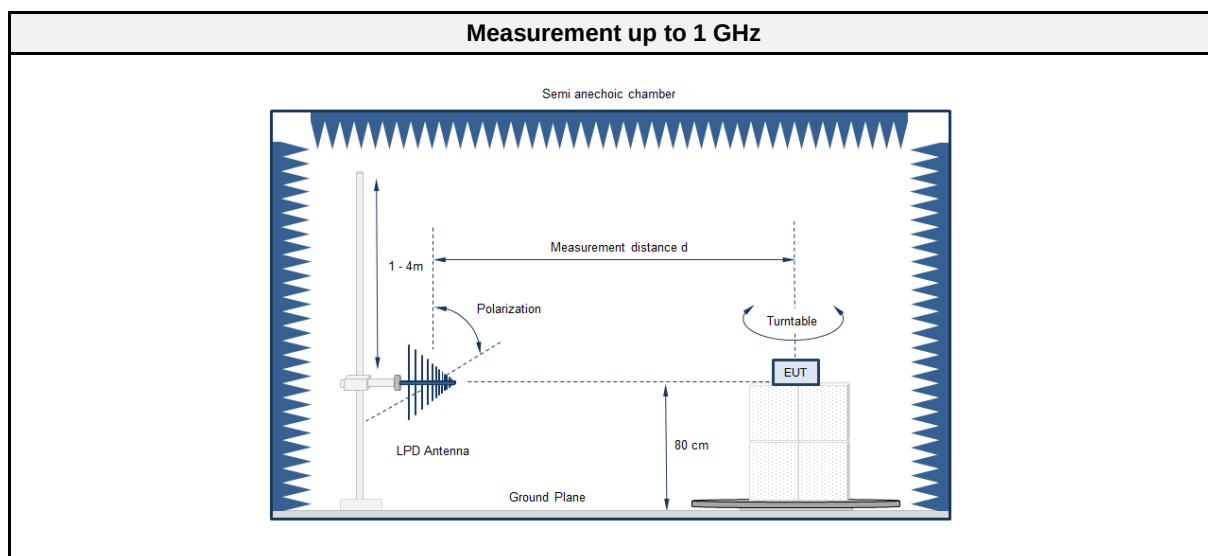
Possible Test Case Verdicts	
PASS	Test object does meet the requirements
FAIL	Test object does not meet the requirements
N/T	Required by standard but not tested
N/R	Not required by standard for the test object

2.1 Test Conditions and Results - Radiated emissions acc. to ANSI C63.4

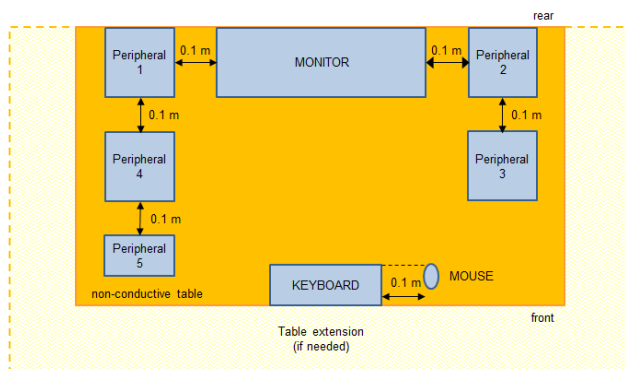
2.1.1 Information

Test Information	
Reference	FCC 15.109, ICES-003, 8, 6.1
Reference method	ANSI C63.4:2014 Section 8
Equipment class	Class B
Equipment type	Table top
Highest internal frequency [MHz]	5825
Measurement range	30 MHz to 29125 MHz
Temperature [°C]	20 – 24
Humidity [%]	27 – 30
Operator	Stefan Dose supervised by Matthias Handrik
Date	2019-02-26, 2019-02-27 and 2019-02-28

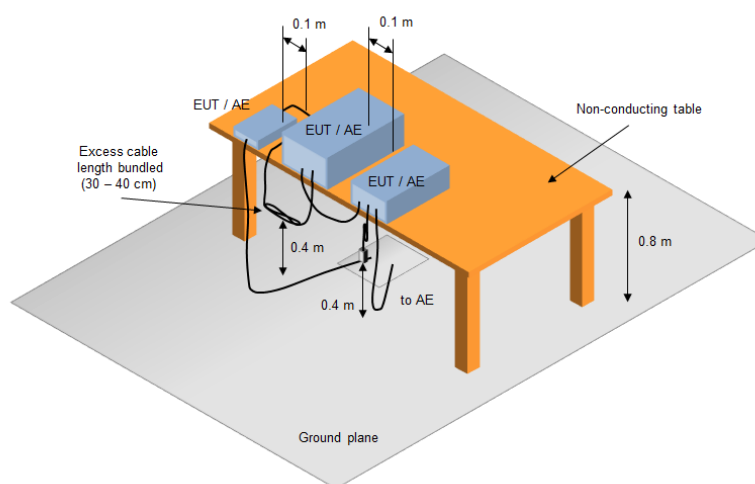
2.1.2 Setup



Equipment placement - Table top



Test Setup



2.1.3 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	Radimation	2016.1.10

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic chamber	Frankonia	AC1	EF00062	2018-07	2021-07
EMI Test Receiver	Keysight	N9038A-526/WXP	EF01070	2018-08	2019-08
Biconical Antenna	R&S	HK 116	EF00030	2016-04	2019-04
LPD Antenna	R&S	HL 223	EF00186	2018-03	2020-03
Horn antenna	Schwarzbeck	BBHA 9120D (1-18GHz)	EF00018	2016-09	2019-09
Spectrum analyser	R&S	FSW43	EF00896	2018-07	2019-07
40GHz High Gain Antenna	Amplifier Research	AT4560	EF00302	2018-04	2019-04

2.1.4 Procedure

Exploratory measurement	
1.	The EUT was placed on a non-conductive table at a height of 0.8m.
2.	The EUT and support equipment, if needed, were set up to simulate typical usage.
3.	Cables, of type and length specified by the manufacturer, were connected to at least one port of each type and were terminated by a device or simulating load of actual usage.
4.	The antenna was placed at a distance of 3 or 10 m.
5.	The received signal was monitored at the measurement receiver.
6.	This procedure has to be performed in both antenna polarizations, horizontal and vertical.
7.	The arrangement of the equipment with the maximum emission level is shown on the setup picture at item 1.3

Final measurement	
1.	The EUT was placed on a 0.8 m non-conductive table at a 3 m distance from the receive antenna. The antenna output was connected to the measurement receiver.
2.	A biconical antenna was used for the frequency range 30 – 200 MHz, a logarithmic periodical antenna was used for the frequency range from 200 – 1000 MHz. Above one 1 GHz a Double Ridged Broadband Horn antenna was used. The antenna was placed on an adjustable height antenna mast.
3.	The EUT and cable arrangement were based on the exploratory measurement results.
4.	Emissions were maximized at each frequency by rotating the EUT and adjusting the receive antenna height and polarization. The maximum values were recorded.
5.	The test data of the worst-case conditions were recorded and shown on the next pages.

2.1.5 Limits

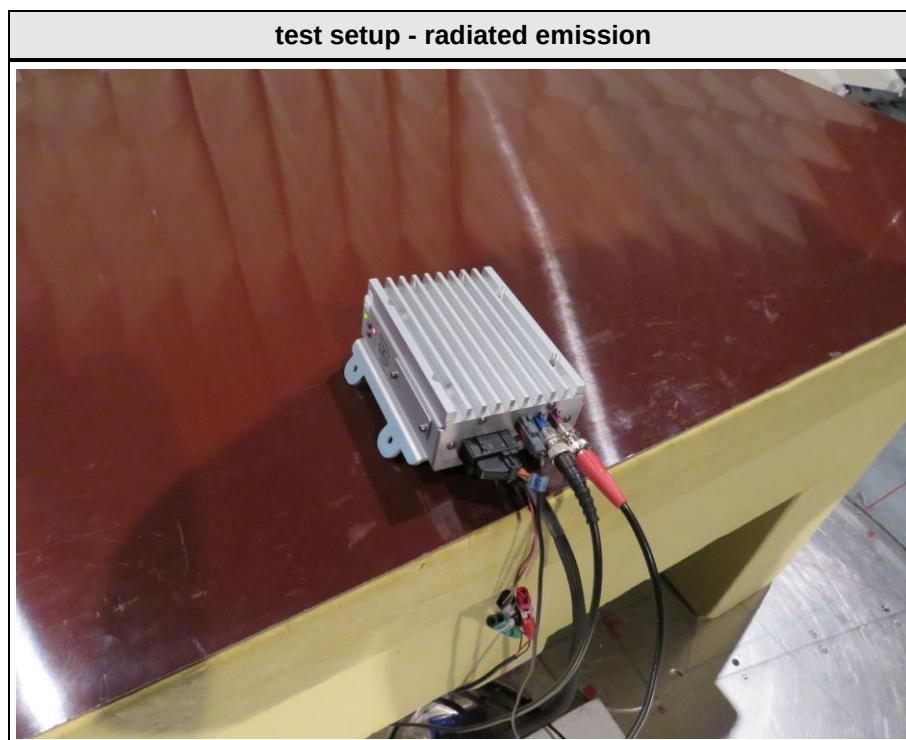
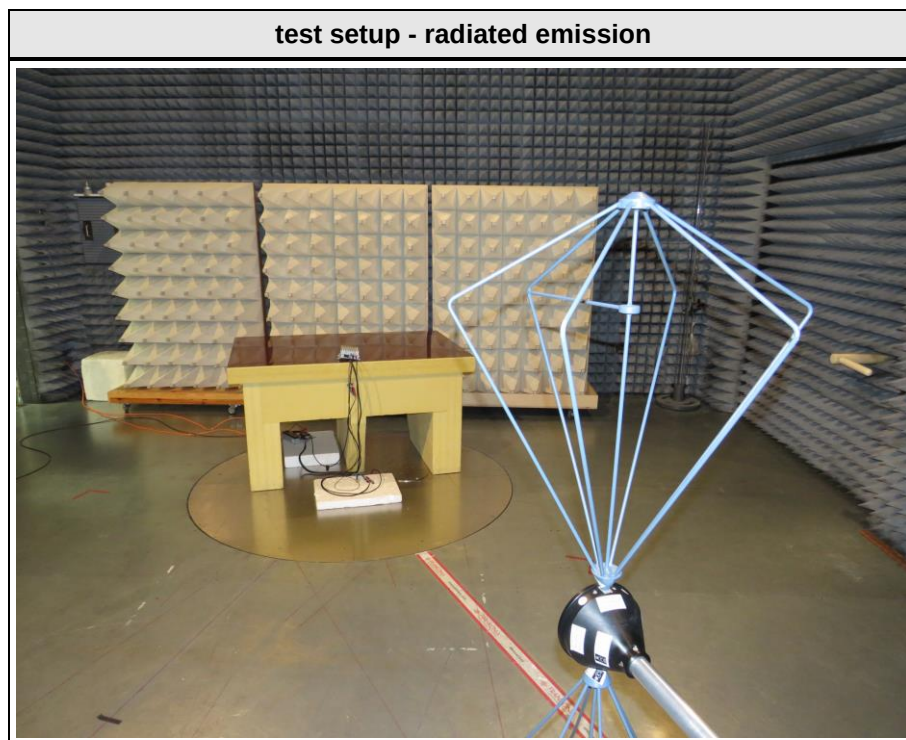
Class B @ 3 m		
Frequency [MHz]	Detector	Limit [dB μ V/m]
30 - 88	Quasi-peak	40
88 - 216	Quasi-peak	43.5
216 - 960	Quasi-peak	46
960 - 1000	Quasi-peak	54
> 1000	Peak	74
	Average	54

Class A @ 10 m		
Frequency [MHz]	Detector	Limit [dB μ V/m]
30 - 88	Quasi-peak	39
88 - 216	Quasi-peak	43.5
216 - 960	Quasi-peak	46.5
960 - 1000	Quasi-peak	49.5
> 1000	Peak	69.5
	Average	49.5

2.1.6 Results

Test Results			
Operational mode	EUT Configuration	Verdict	Remark
1 to 8	1	PASS	note 1
Comments:			
• note 1 → after short check with spectrum analyser no significant radiation frequencies above 17GHz			

2.1.7 Setup Photos



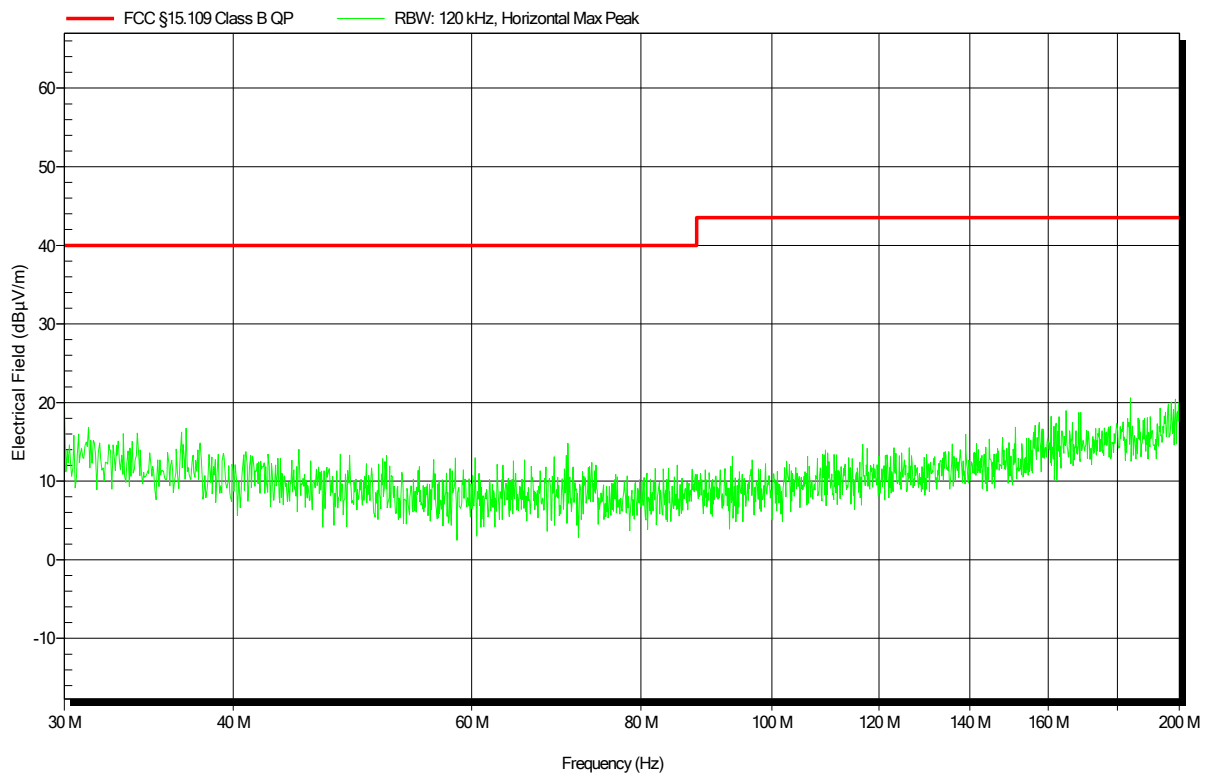
2.1.8 Records

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 23°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3m
Mode:	1
Test Date:	2019-02-28

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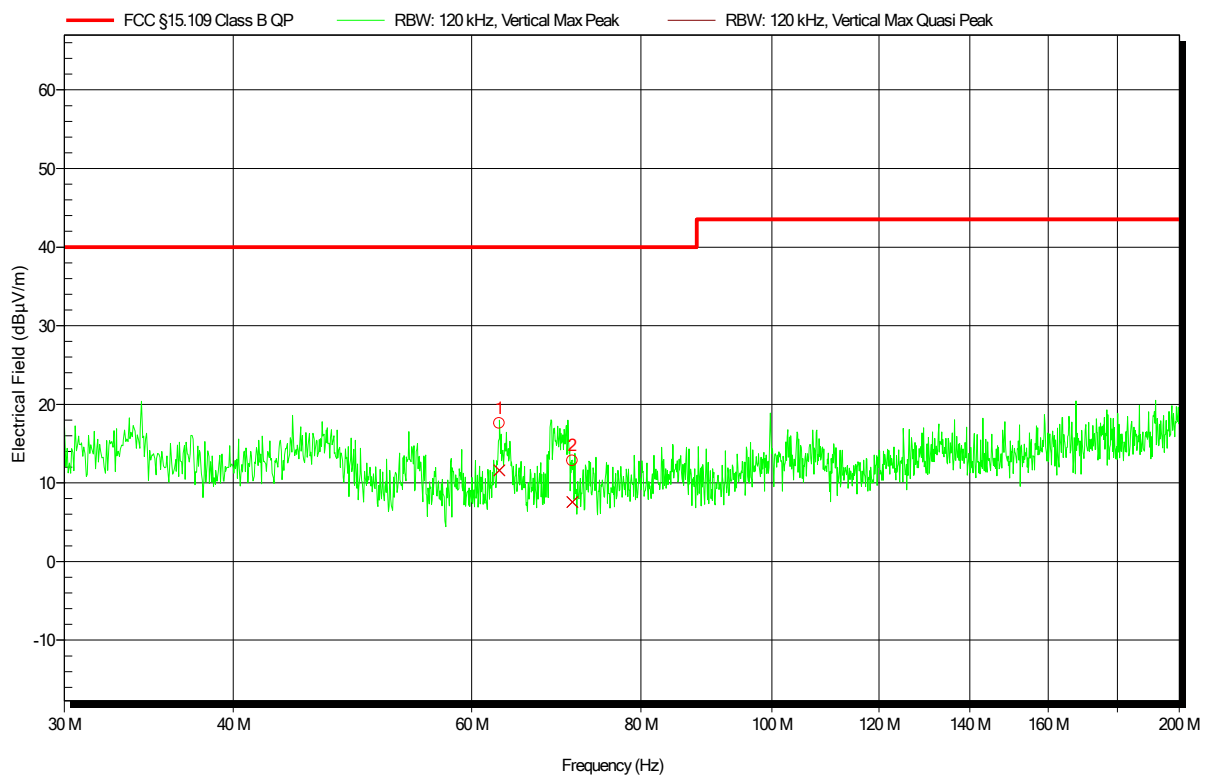


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
EUT Name: Telemetry Equipment
Model: TDBOX2
Test Site: Eurofins Product Service GmbH
Operator: Mr. Dose
Test Conditions: Tnom: 23°C, Unom: 13.8 VDC
Antenna: Rohde & Schwarz HK 116, Vertical
Measurement distance: 3m
Mode: 1
Test Date: 2019-02-28

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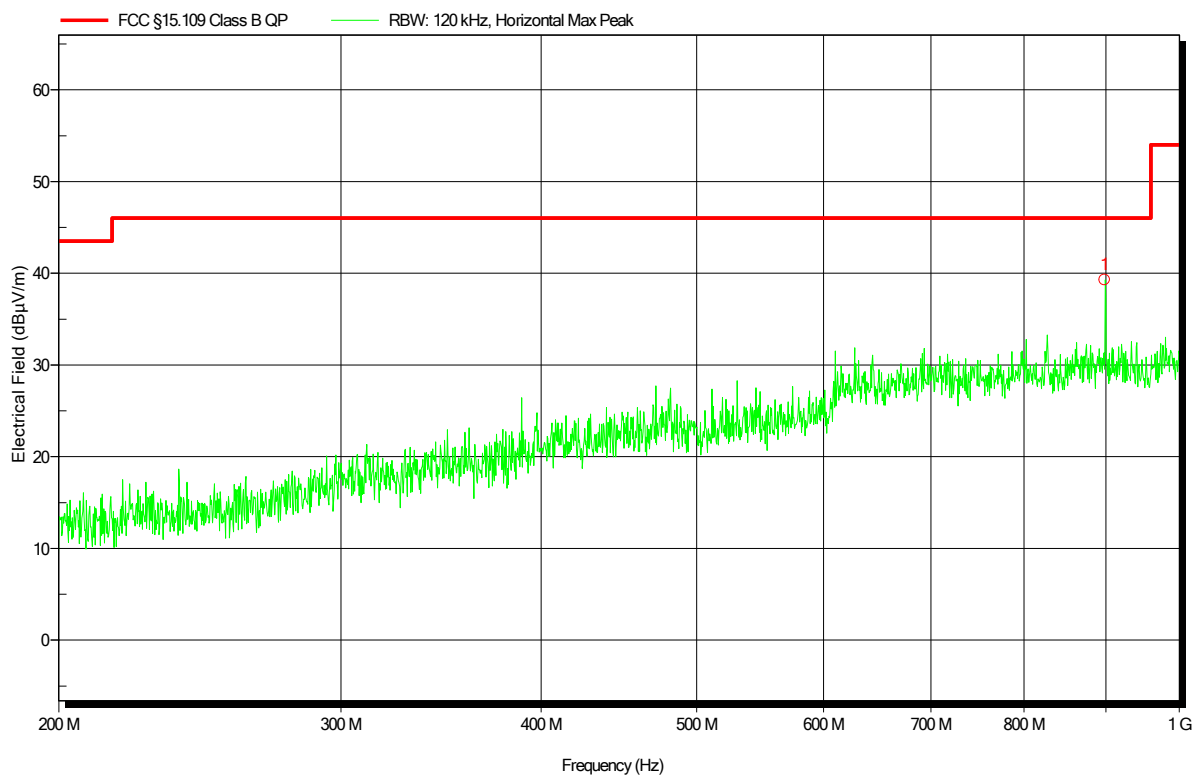
Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	62.907 MHz	11.59 dBµV/m	40 dBµV/m	-28.41 dB	Pass	0 Degree	1 m
2	71.2 MHz	7.57 dBµV/m	40 dBµV/m	-32.43 dB	Pass	0 Degree	1 m

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
 EUT Name: Telemetry Equipment
 Model: TDBOX2
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Dose
 Test Conditions: Tnom: 23°C, Unom: 13.8 VDC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3m
 Mode: 1
 Test Date: 2019-02-28

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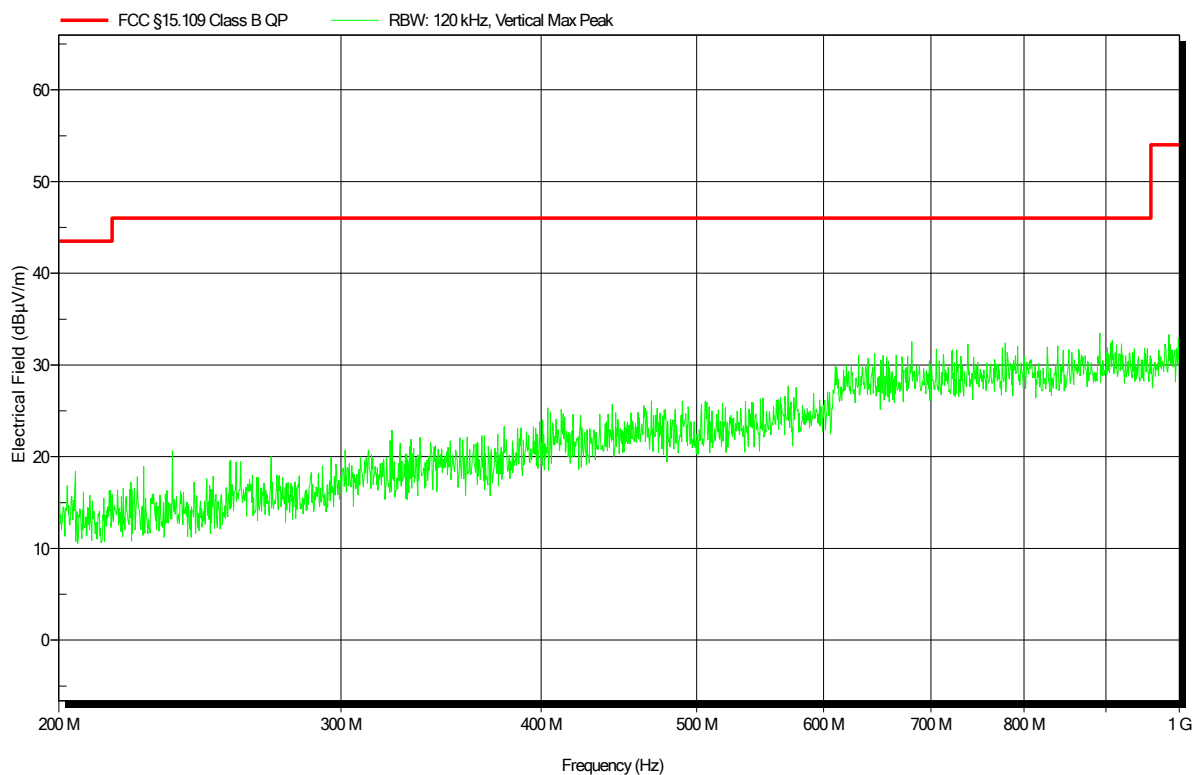
Peak Number 1
 Frequency 898.228 MHz
 GSM Carrier

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 23°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3m
Mode:	1
Test Date:	2019-02-28

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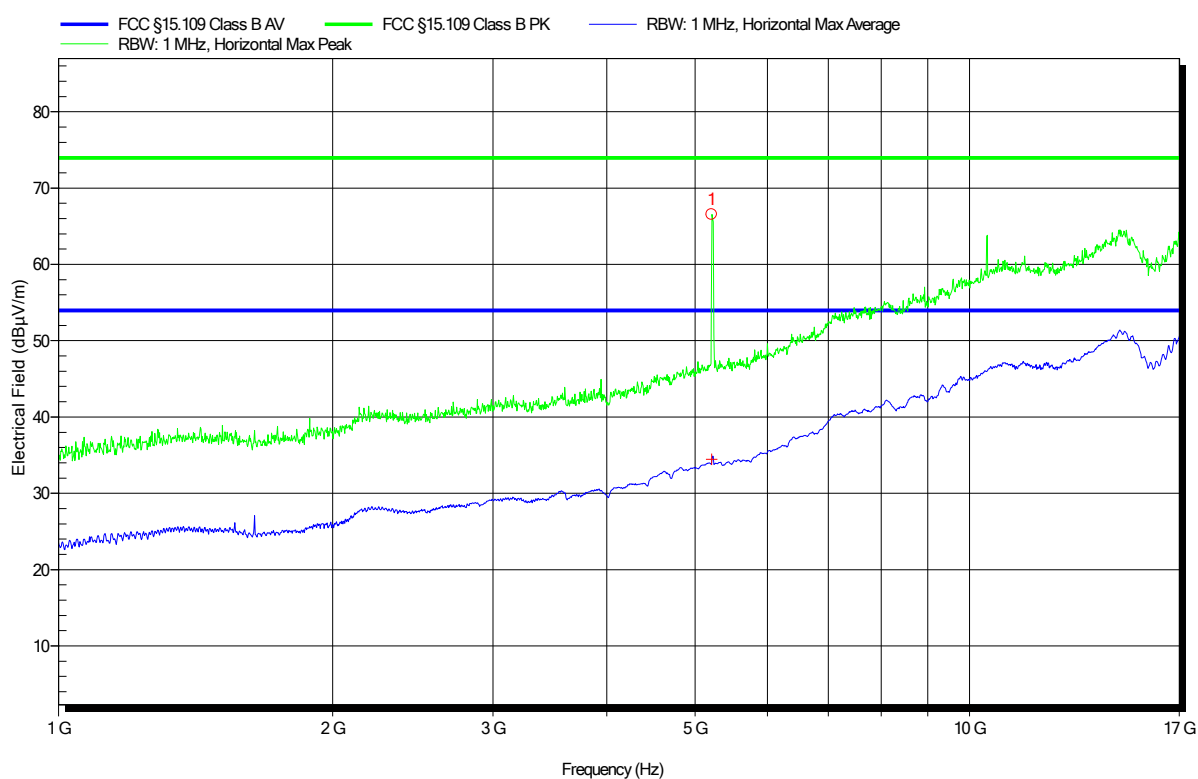


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
 EUT Name: Telemetry Equipment
 Model: TDBOX2
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Dose
 Test Conditions: Tnom: 22°C, Unom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3m
 Mode: 1
 Test Date: 2019-02-27

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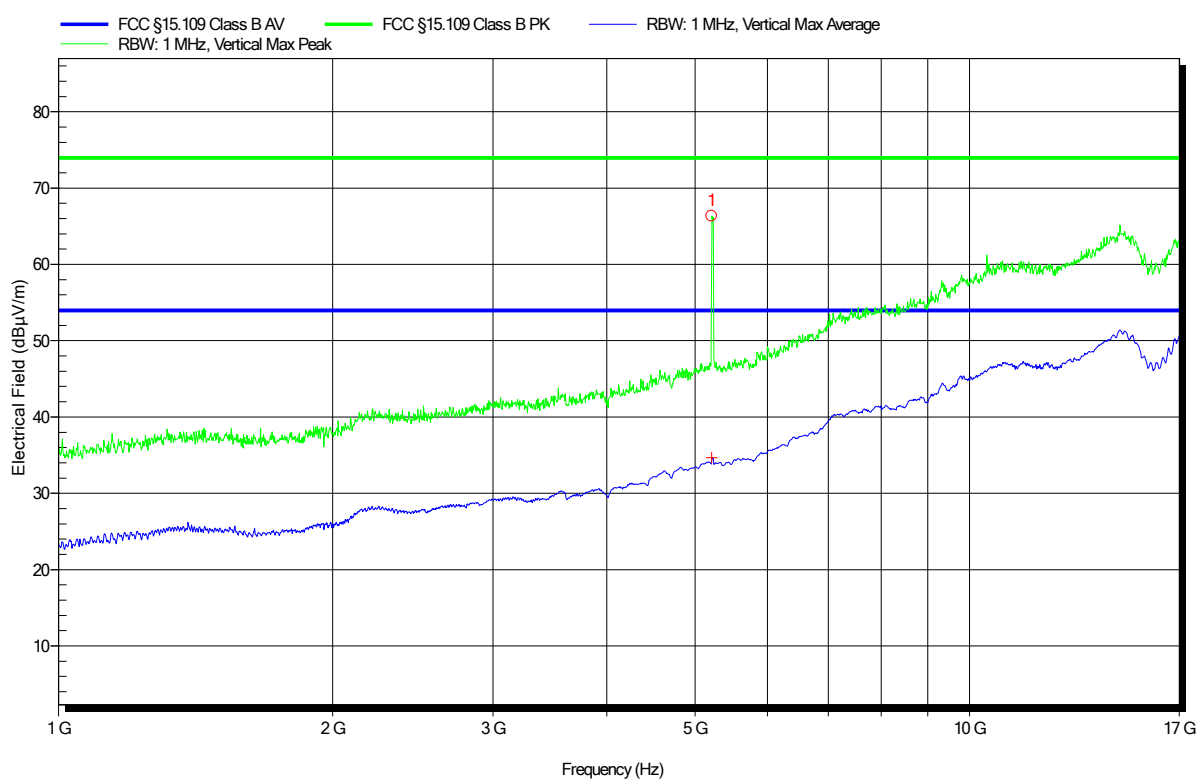
Peak Number	Frequency	WLAN Carrier
1	5.214 GHz	

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
 EUT Name: Telemetry Equipment
 Model: TDBOX2
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Dose
 Test Conditions: Tnom: 22°C, Unom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3m
 Mode: 1
 Test Date: 2019-02-27

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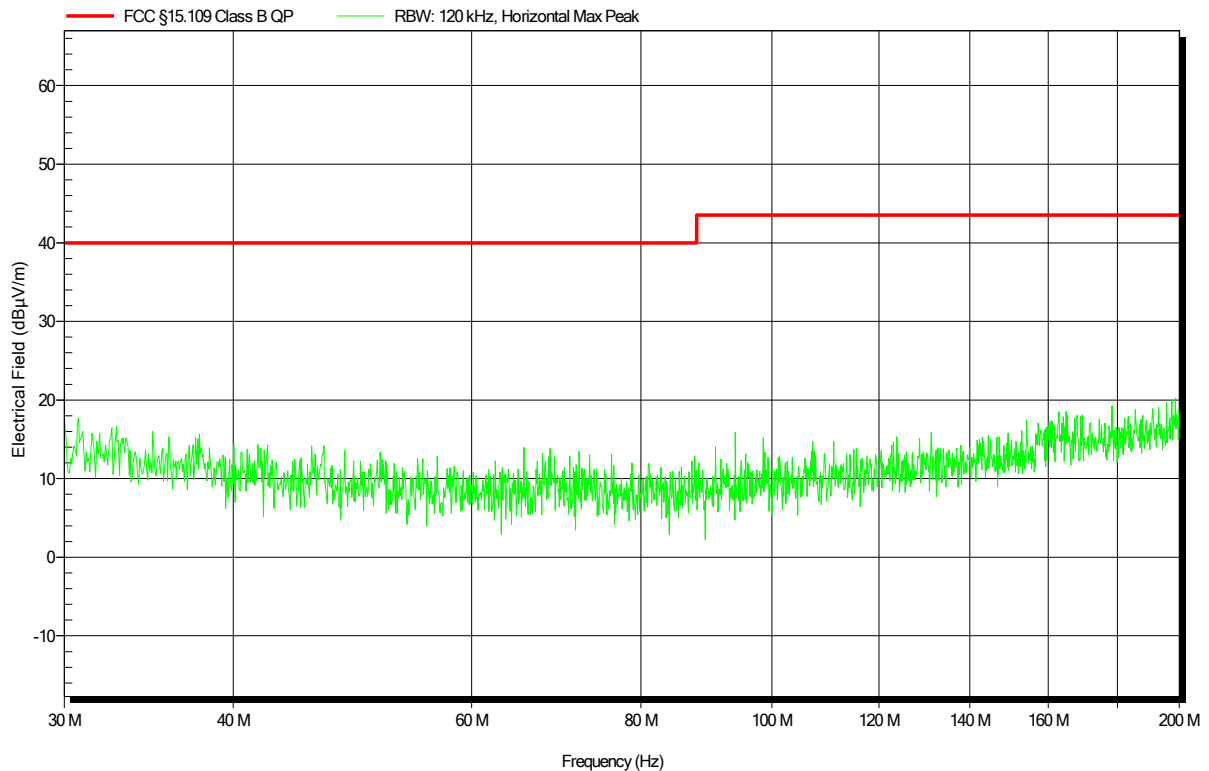
Peak Number	Frequency	WLAN Carrier
1	5.214 GHz	

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 23°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3m
Mode:	2
Test Date:	2019-02-26

Index 2

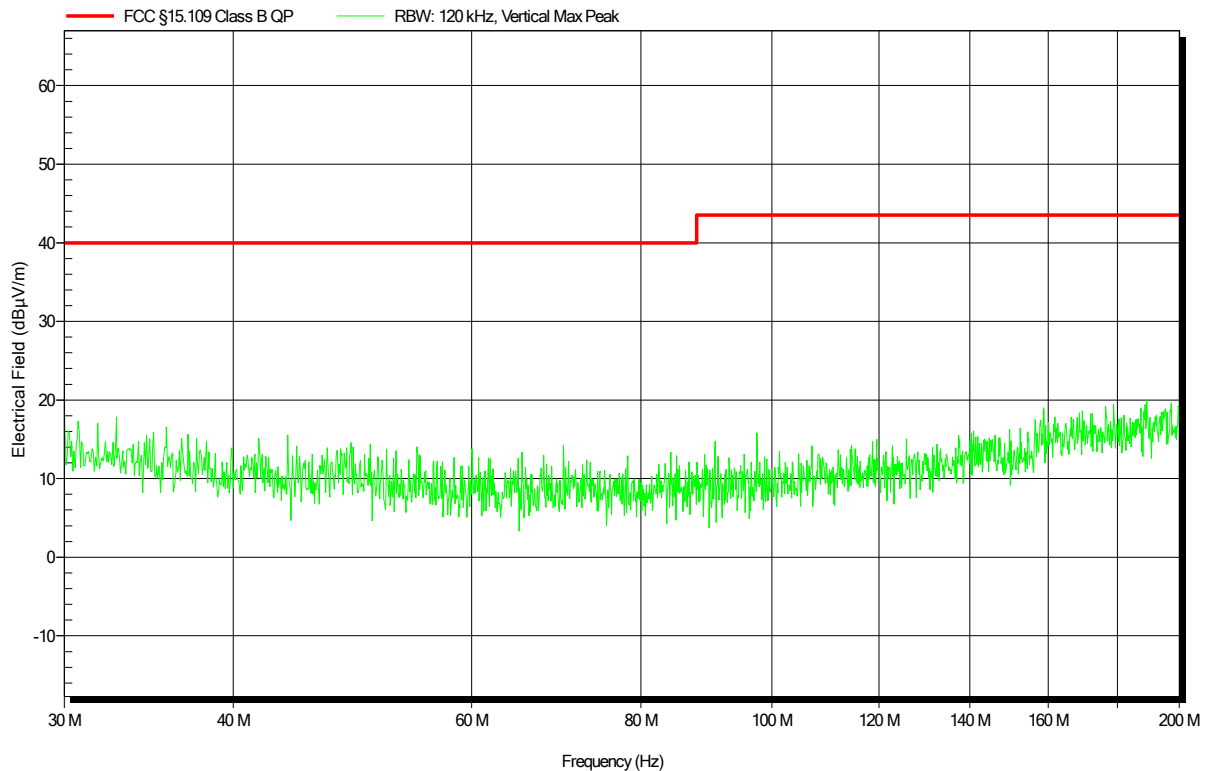


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 23°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3m
Mode:	2
Test Date:	2019-02-26

Index 1

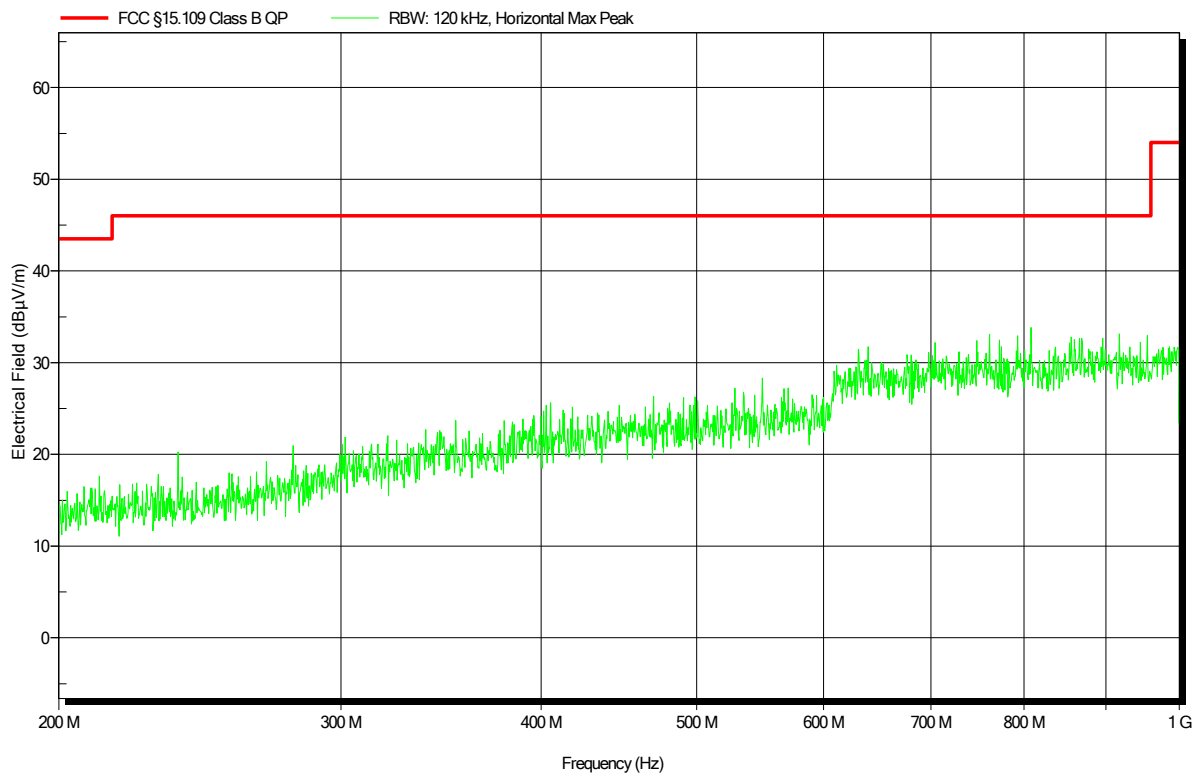


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 21°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3m
Mode:	2
Test Date:	2019-02-27

Index 3

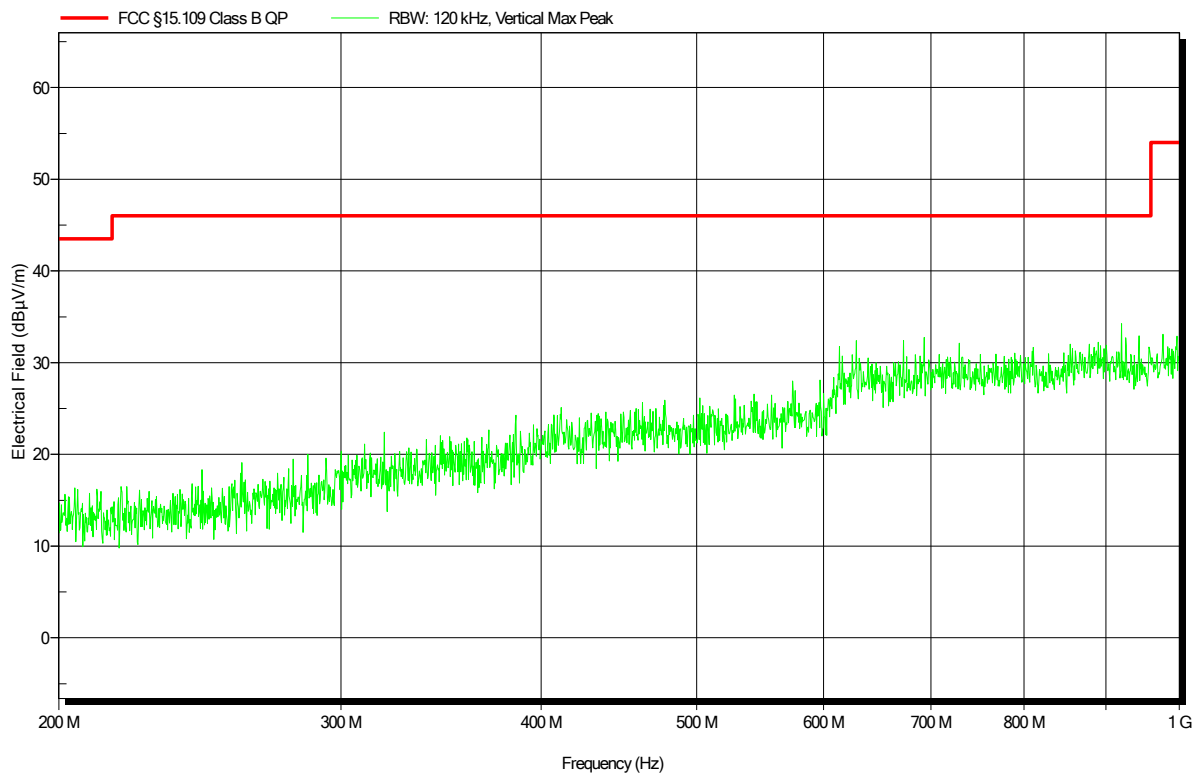


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 21°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3m
Mode:	2
Test Date:	2019-02-27

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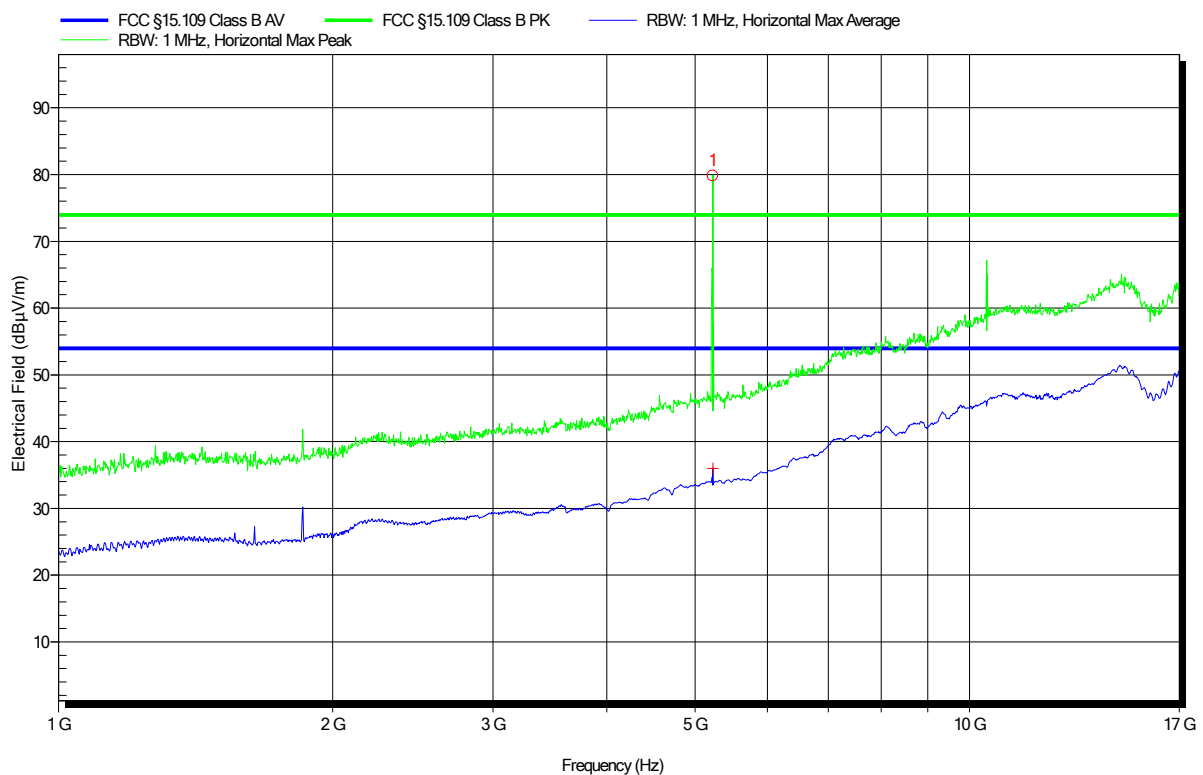


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
 EUT Name: Telemetry Equipment
 Model: TDBOX2
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Dose
 Test Conditions: Tnom: 21°C, Unom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3m
 Mode: 2
 Test Date: 2019-02-27

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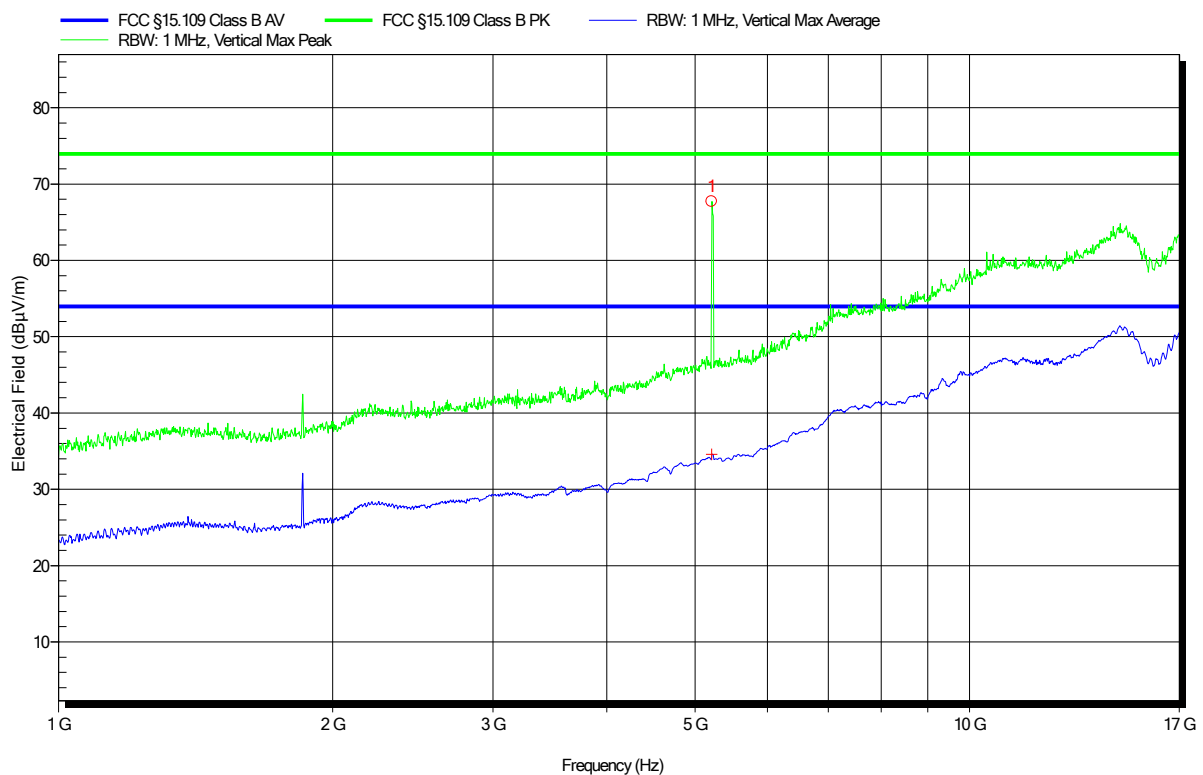
Peak Number 1
 Frequency 5.227 GHz
 WLAN Carrier

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
 EUT Name: Telemetry Equipment
 Model: TDBOX2
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Dose
 Test Conditions: Tnom: 21°C, Unom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3m
 Mode: 2
 Test Date: 2019-02-27

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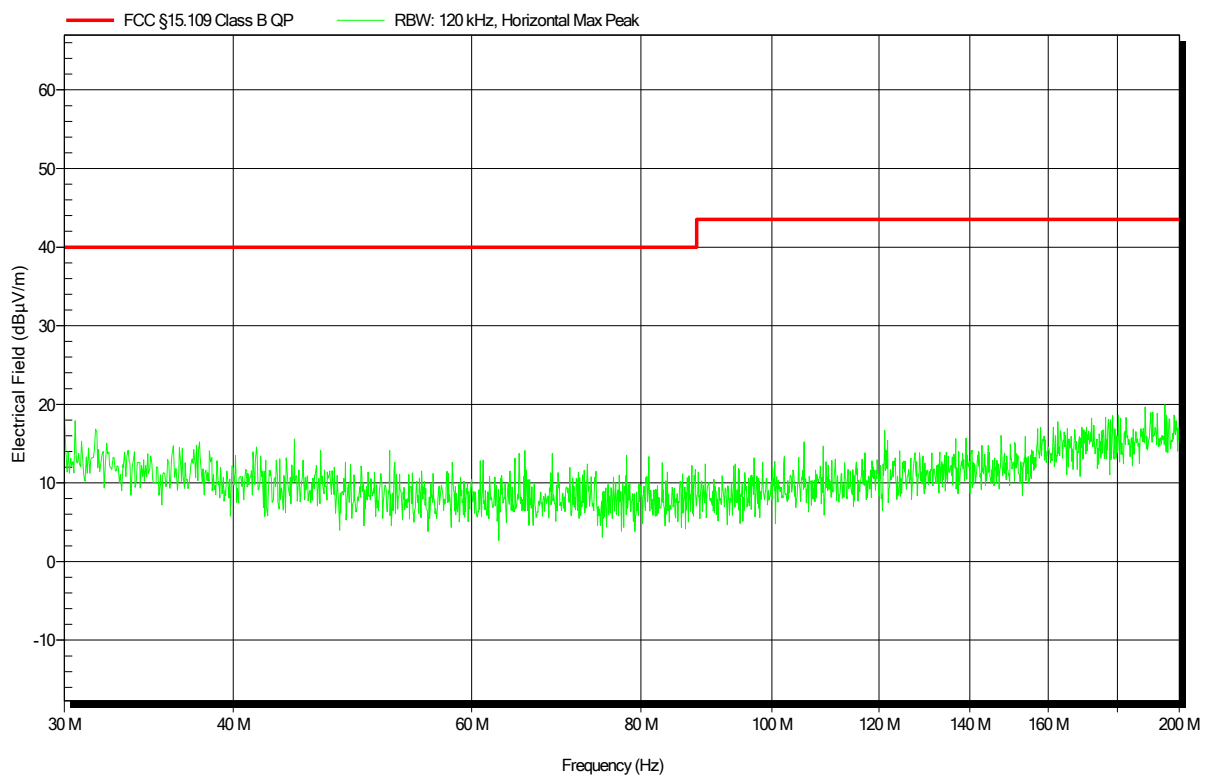
Peak Number	Frequency	WLAN Carrier
1	5.214 GHz	

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 23°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3m
Mode:	3
Test Date:	2019-02-28

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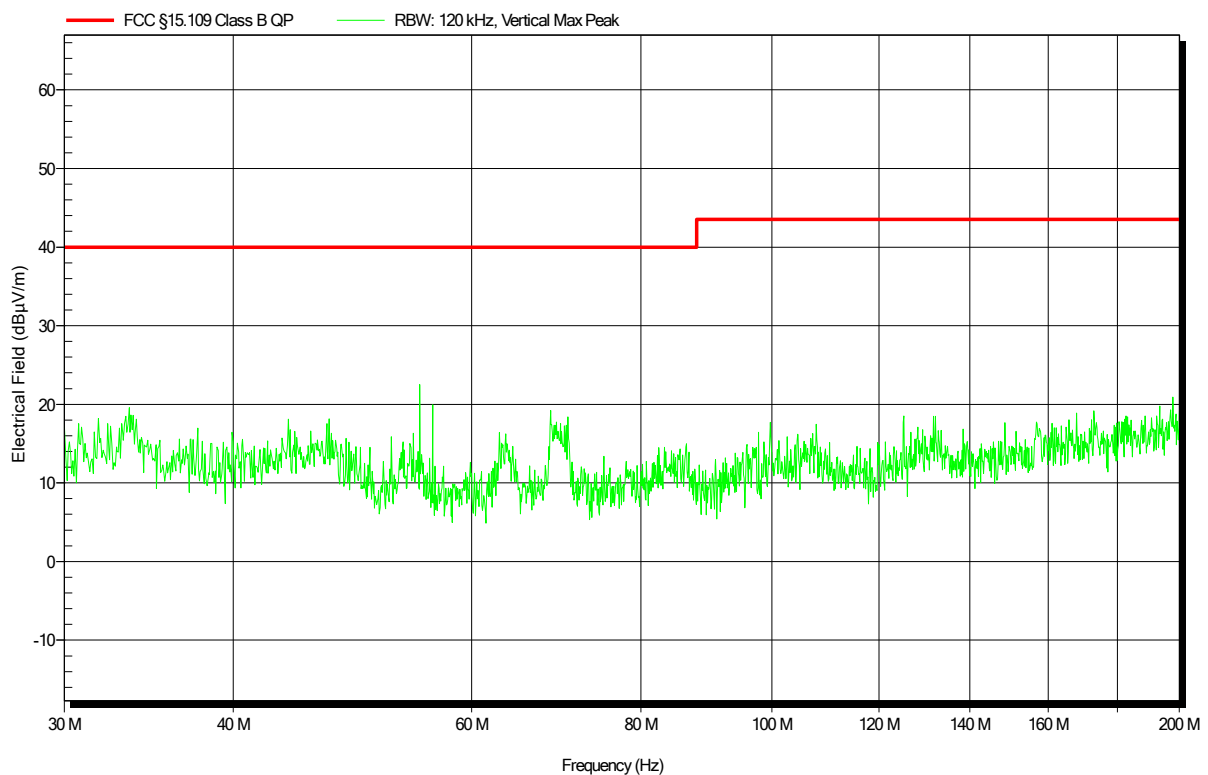


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 23°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3m
Mode:	3
Test Date:	2019-02-28

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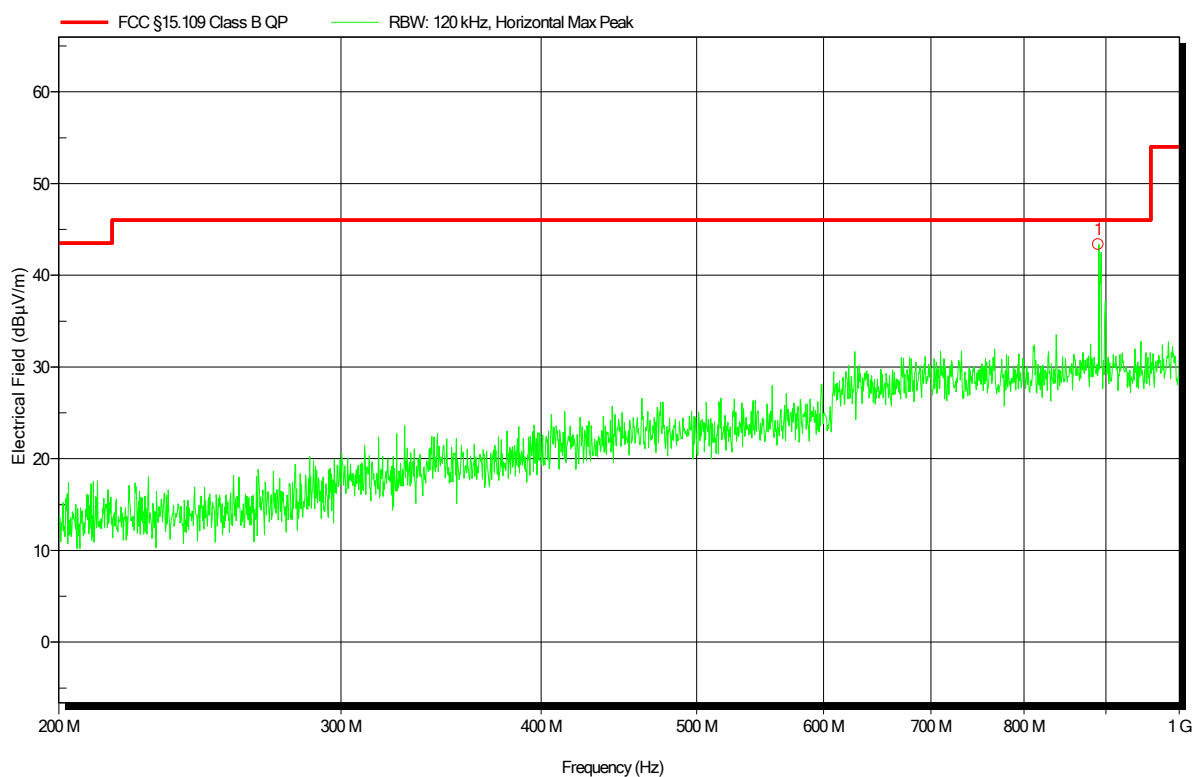


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
 EUT Name: Telemetry Equipment
 Model: TDBOX2
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Dose
 Test Conditions: Tnom: 23°C, Unom: 13.8 VDC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3m
 Mode: 3
 Test Date: 2019-02-28

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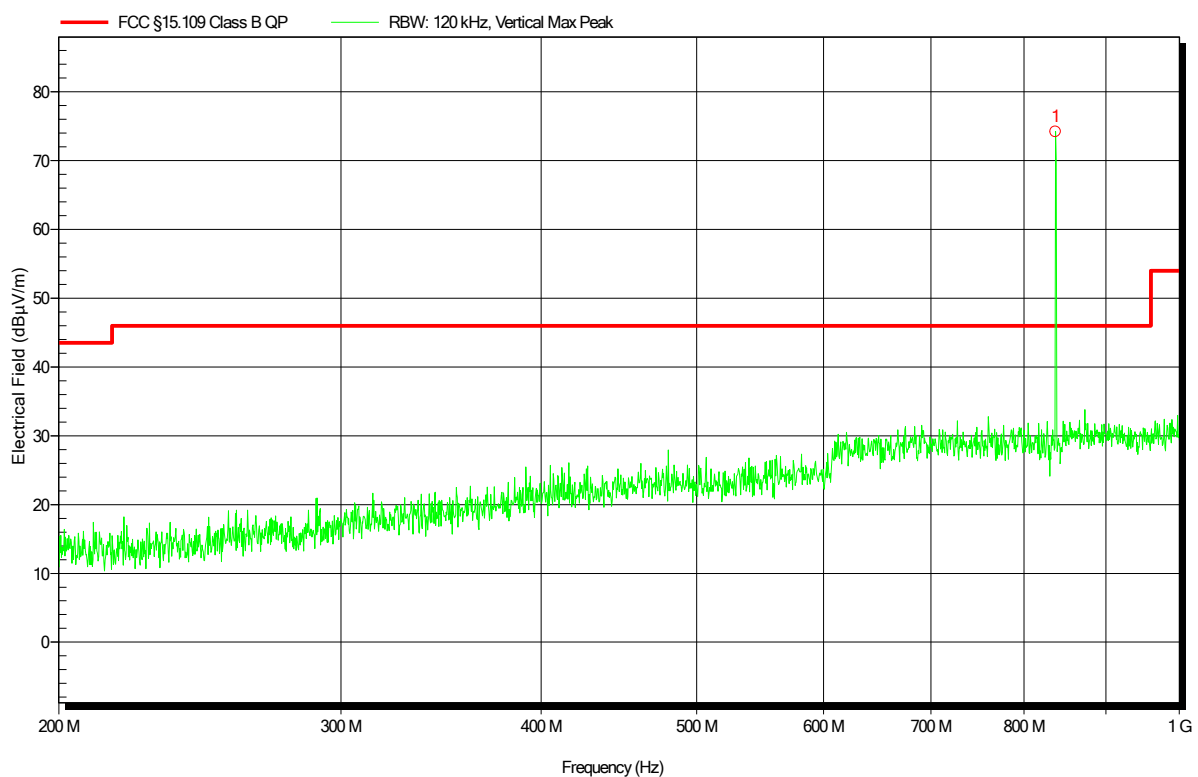
Peak Number 1
 Frequency 890.243 MHz
 GSM Carrier

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
 EUT Name: Telemetry Equipment
 Model: TDBOX2
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Dose
 Test Conditions: Tnom: 23°C, Unom: 13.8 VDC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3m
 Mode: 3
 Test Date: 2019-02-28

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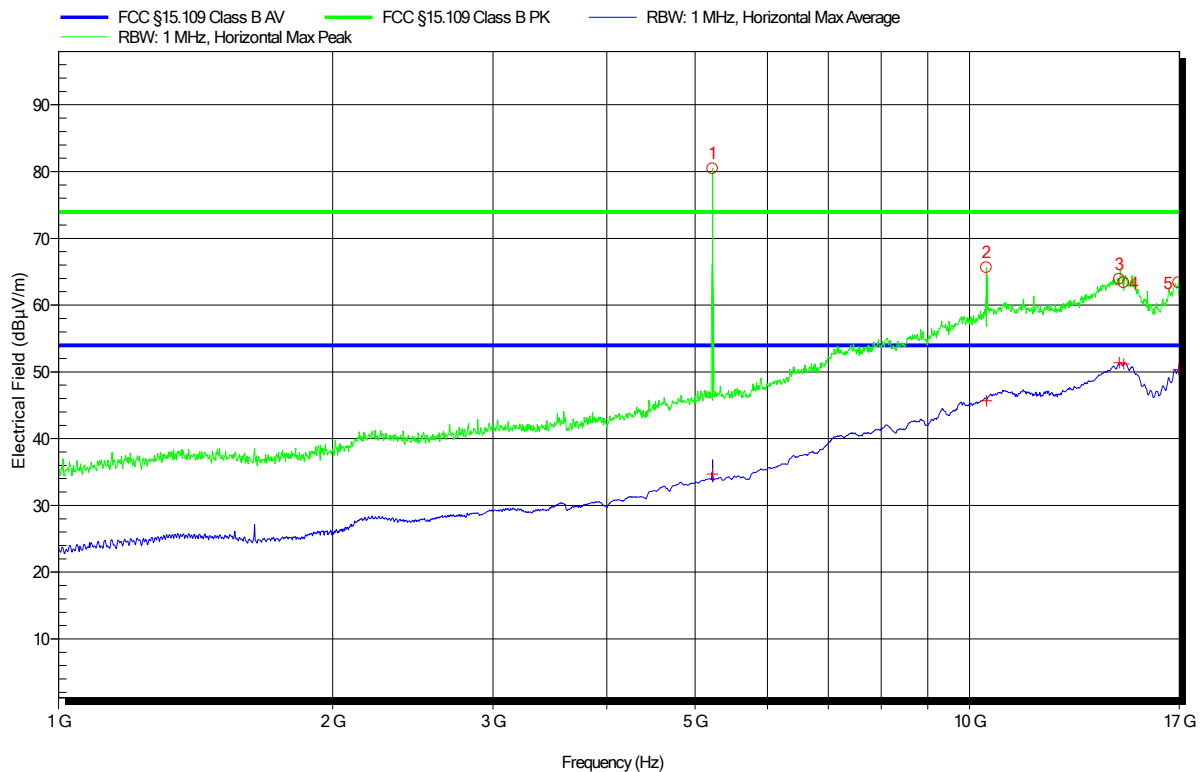
Peak Number 1
 Frequency 836.986 MHz
 Modulation GSM Carrier

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
 EUT Name: Telemetry Equipment
 Model: TDBOX2
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Dose
 Test Conditions: Tnom: 23°C, Unom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3m
 Mode: 3
 Test Date: 2019-02-27

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Peak Number	Frequency	Peak	Angle	Height
1	5.226 GHz	80.41 dBµV/m	WLAN Carrier	
2	10.437 GHz	65.6 dBµV/m	0 Degree	1 m
3	14.607 GHz	63.9 dBµV/m	0 Degree	1 m
4	14.765 GHz	63.38 dBµV/m	0 Degree	1 m
5	16.967 GHz	63.38 dBµV/m	0 Degree	1 m

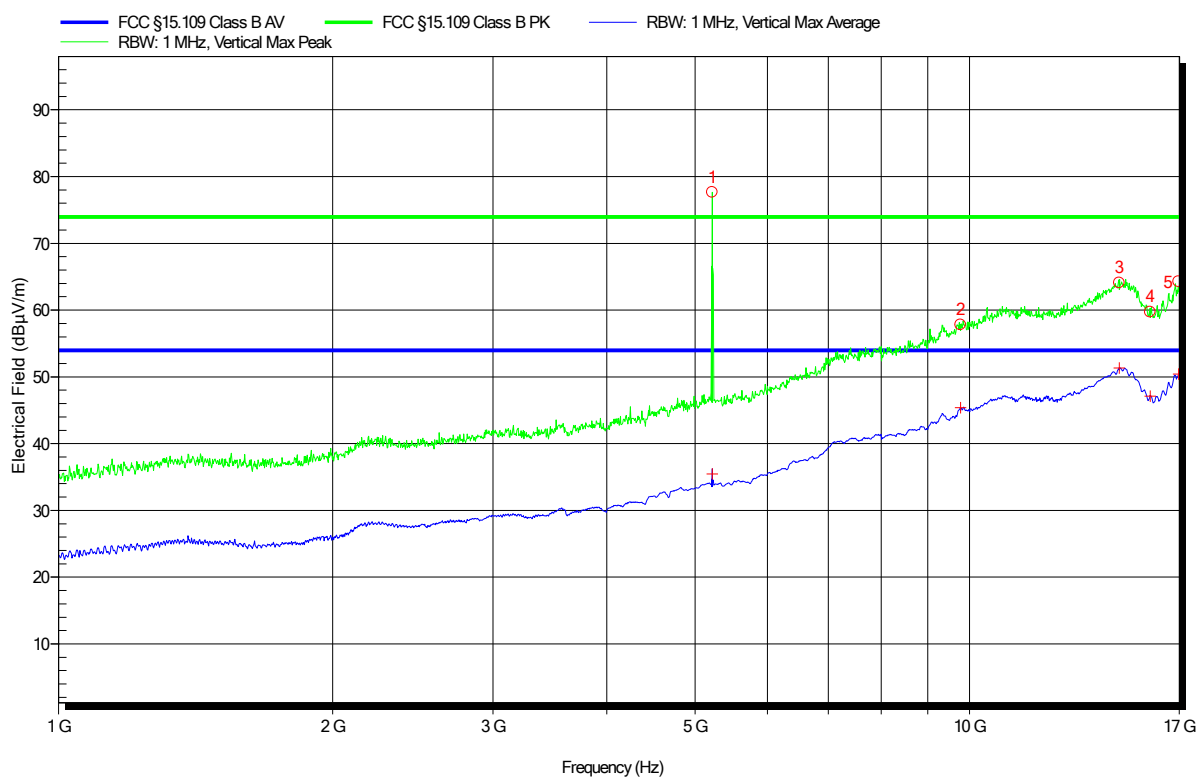
Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	Angle	Height
1	5.226 GHz	34.67 dBµV/m	53.98 dBµV/m	-19.31 dB	Pass	0 Degree	1 m
2	10.437 GHz	45.67 dBµV/m	53.98 dBµV/m	-8.31 dB	Pass	0 Degree	1 m
3	14.607 GHz	51.36 dBµV/m	53.98 dBµV/m	-2.62 dB	Pass	0 Degree	1 m
4	14.765 GHz	51.18 dBµV/m	53.98 dBµV/m	-2.8 dB	Pass	0 Degree	1 m
5	16.967 GHz	50.38 dBµV/m	53.98 dBµV/m	-3.6 dB	Pass	0 Degree	1 m

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
 EUT Name: Telemetry Equipment
 Model: TDBOX2
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Dose
 Test Conditions: Tnom: 23°C, Unom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3m
 Mode: 3
 Test Date: 2019-02-27

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Peak Number	Frequency	Peak	Angle	Height
1	5.219 GHz	77.66 dBµV/m	WLAN Carrier	
2	9.778 GHz	57.81 dBµV/m	0 Degree	1 m
3	14.611 GHz	64.08 dBµV/m	0 Degree	1 m
4	15.795 GHz	59.72 dBµV/m	0 Degree	1 m
5	16.971 GHz	64.27 dBµV/m	0 Degree	1 m

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	Angle	Height
1	5.219 GHz	35.47 dBµV/m	53.98 dBµV/m	-18.5 dB	Pass	0 Degree	1 m
2	9.778 GHz	45.38 dBµV/m	53.98 dBµV/m	-8.6 dB	Pass	0 Degree	1 m
3	14.611 GHz	51.31 dBµV/m	53.98 dBµV/m	-2.66 dB	Pass	0 Degree	1 m
4	15.795 GHz	47.1 dBµV/m	53.98 dBµV/m	-6.88 dB	Pass	0 Degree	1 m
5	16.971 GHz	50.44 dBµV/m	53.98 dBµV/m	-3.54 dB	Pass	0 Degree	1 m

Test Report No.: G0M-1901-8021-EF0115B-V01

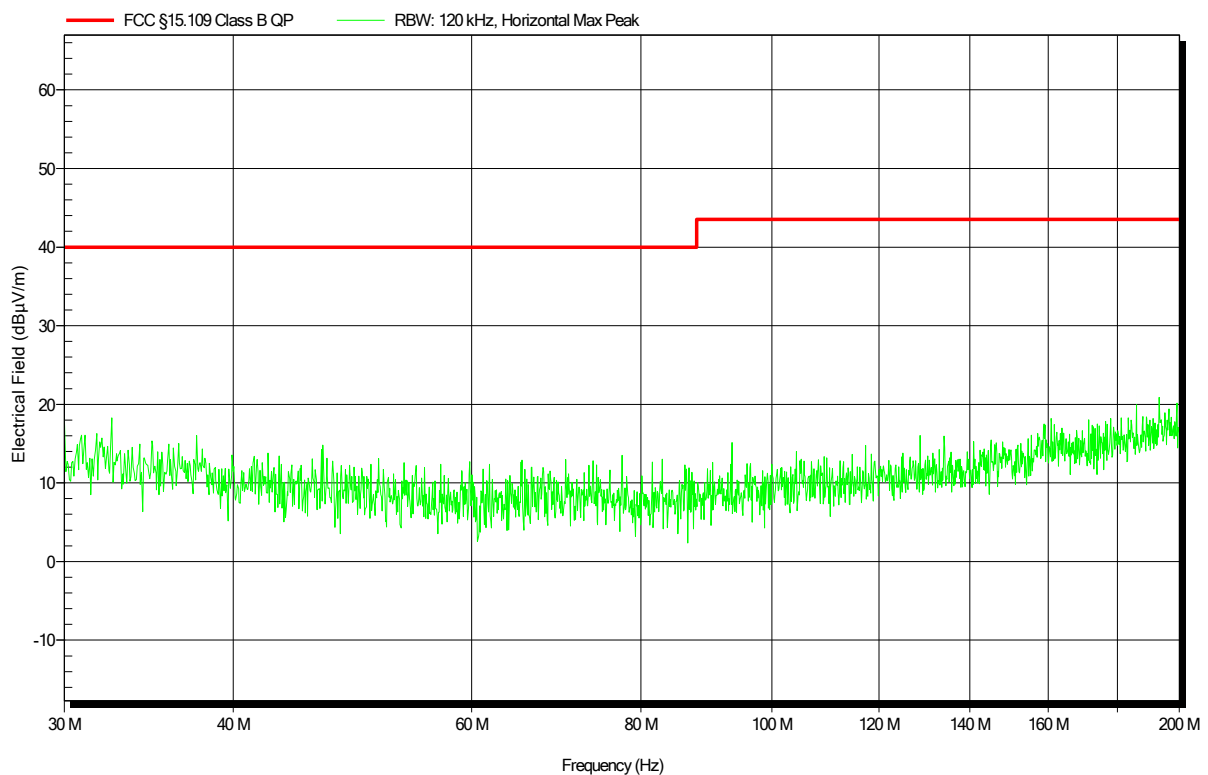
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 23°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3m
Mode:	4
Test Date:	2019-02-28

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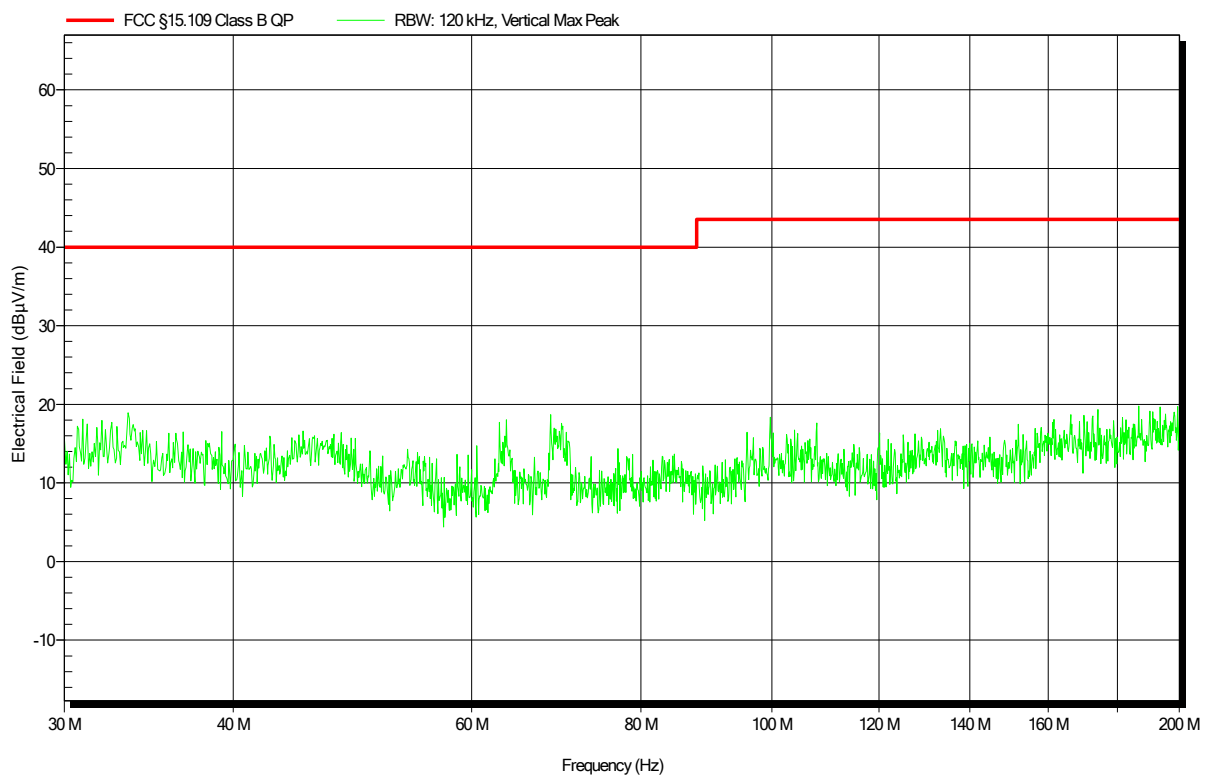


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 23°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3m
Mode:	4
Test Date:	2019-02-28

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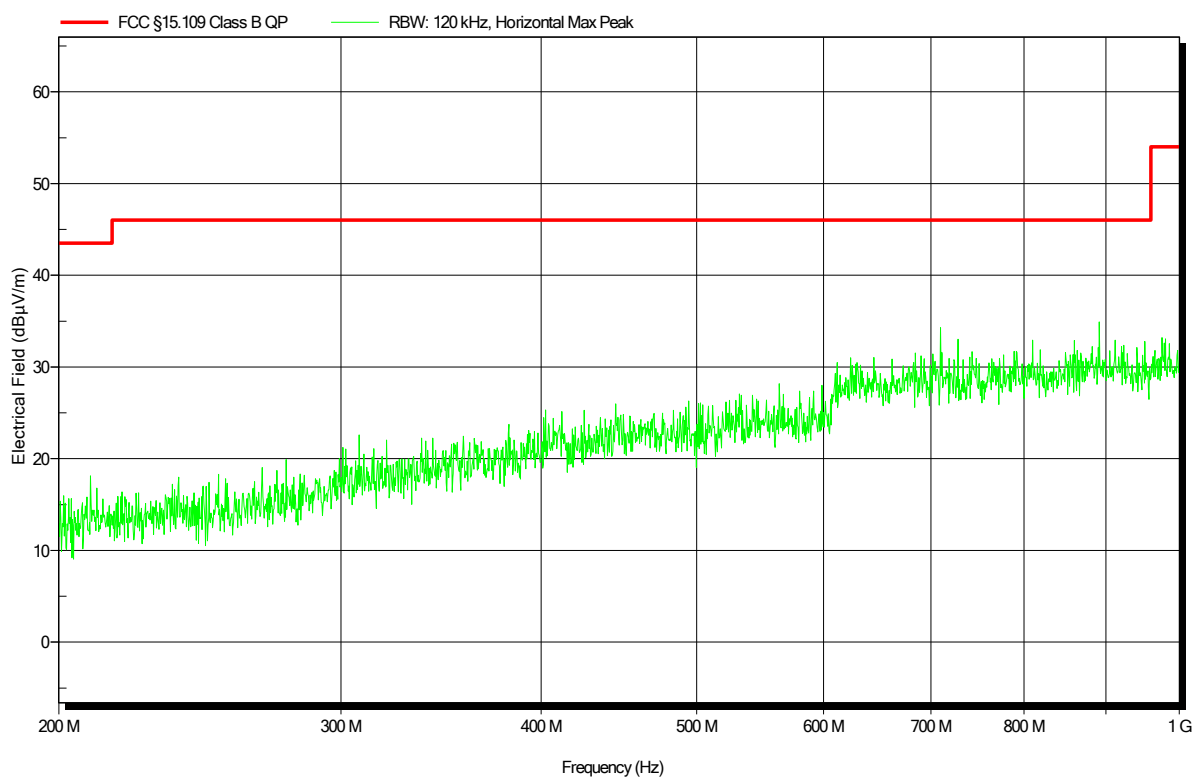


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 23°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3m
Mode:	4
Test Date:	2019-02-28

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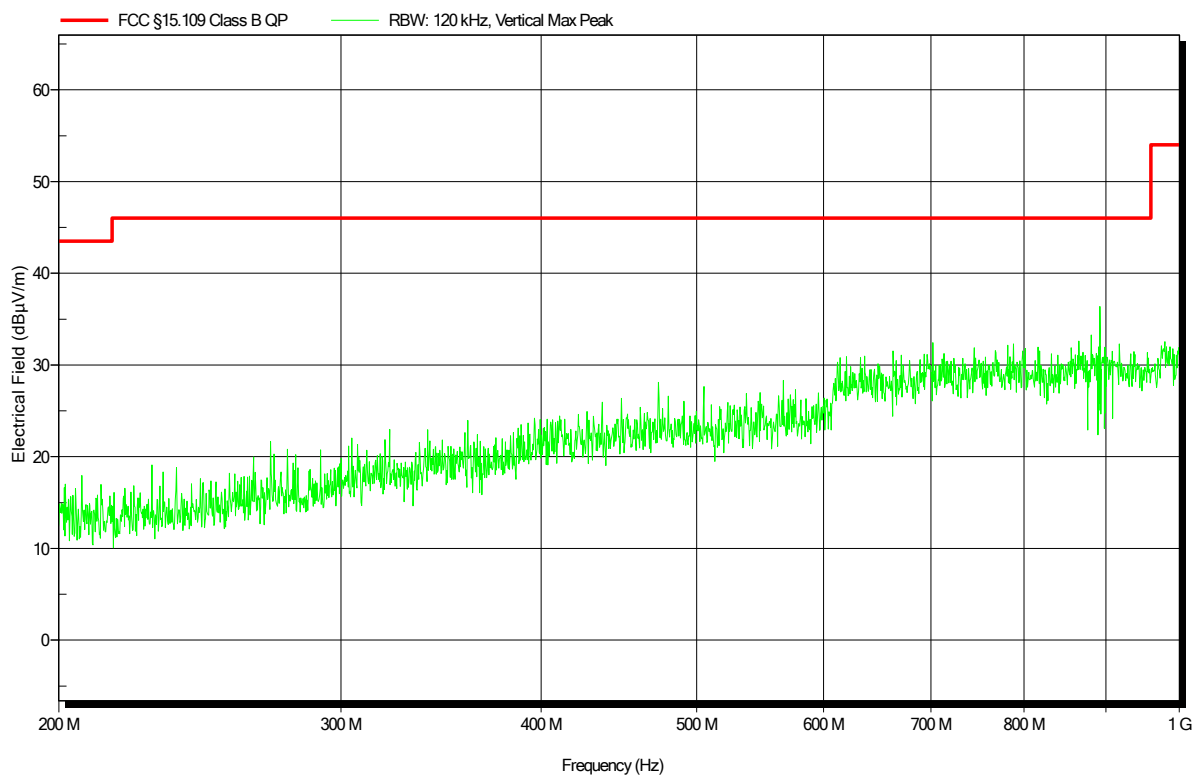


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 23°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3m
Mode:	4
Test Date:	2019-02-28

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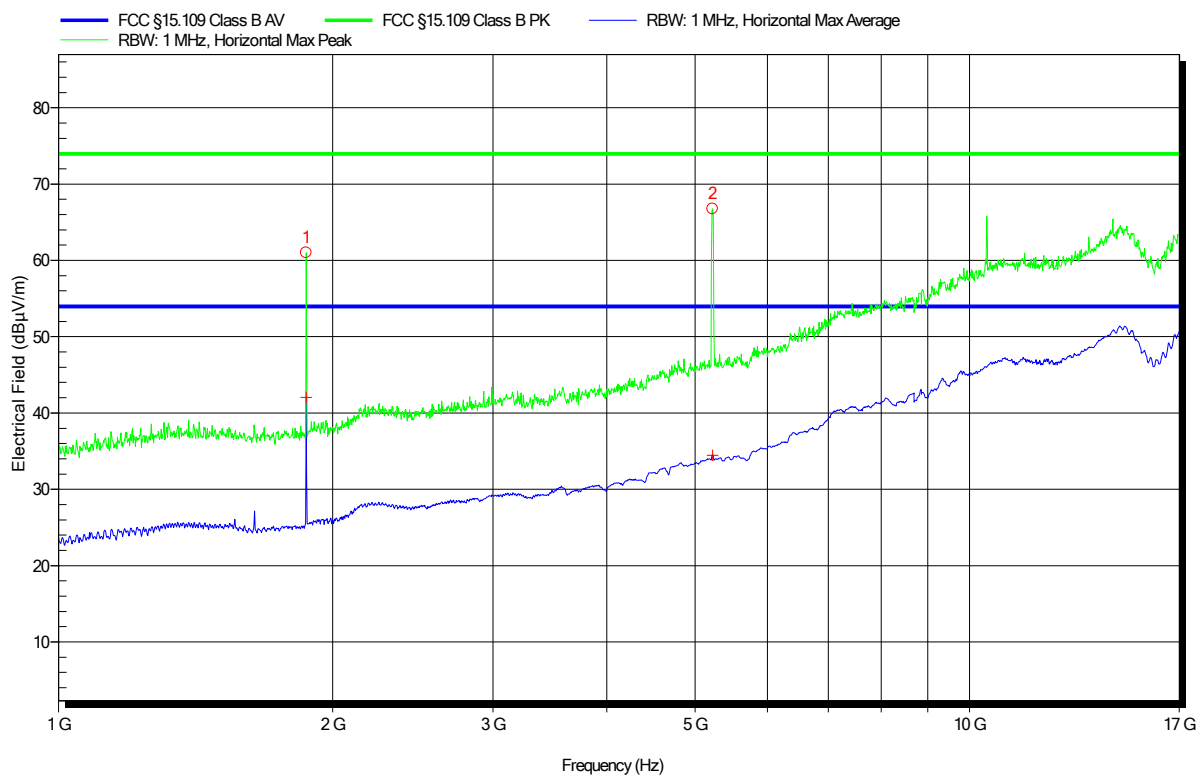


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
 EUT Name: Telemetry Equipment
 Model: TDBOX2
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Dose
 Test Conditions: Tnom: 23°C, Unom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3m
 Mode: 4
 Test Date: 2019-02-27

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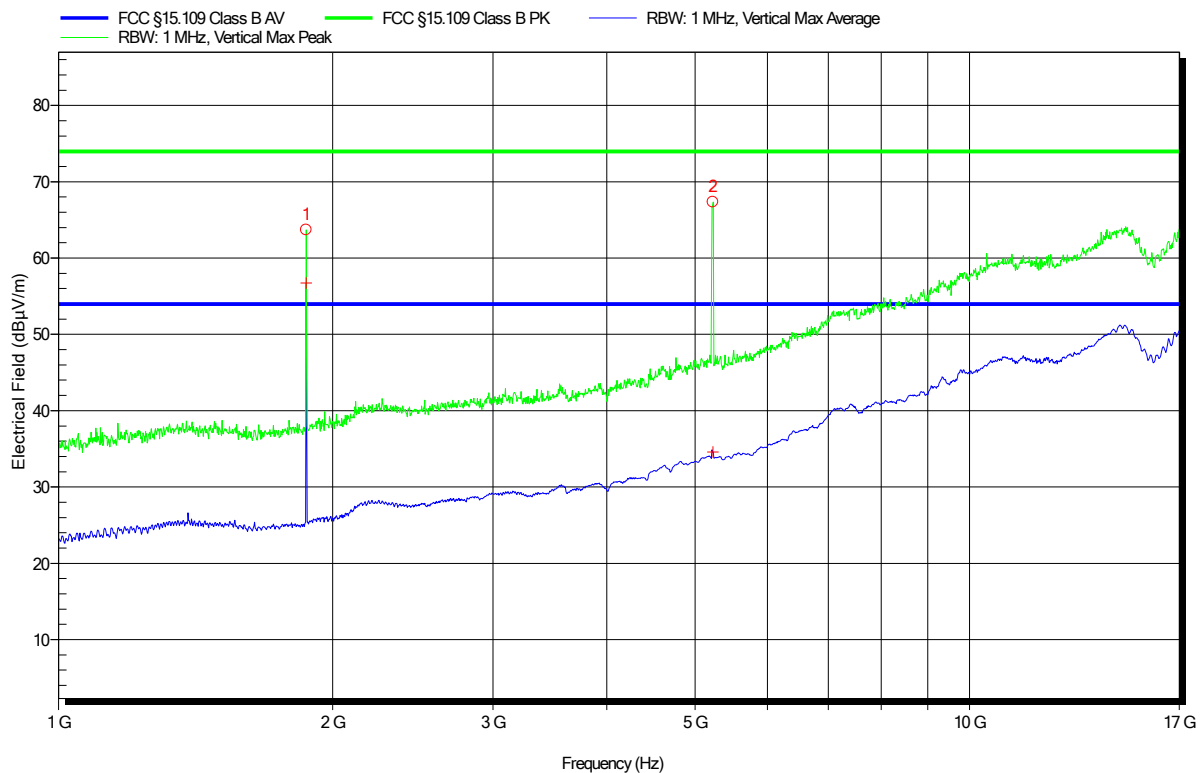
Peak Number	Frequency	
1	1.87 GHz	GSM Carrier
2	5.223 GHz	WLAN Carrier

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
EUT Name: Telemetry Equipment
Model: TDBOX2
Test Site: Eurofins Product Service GmbH
Operator: Mr. Dose
Test Conditions: Tnom: 23°C, Unom: 13.8 VDC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 3m
Mode: 4
Test Date: 2019-02-27

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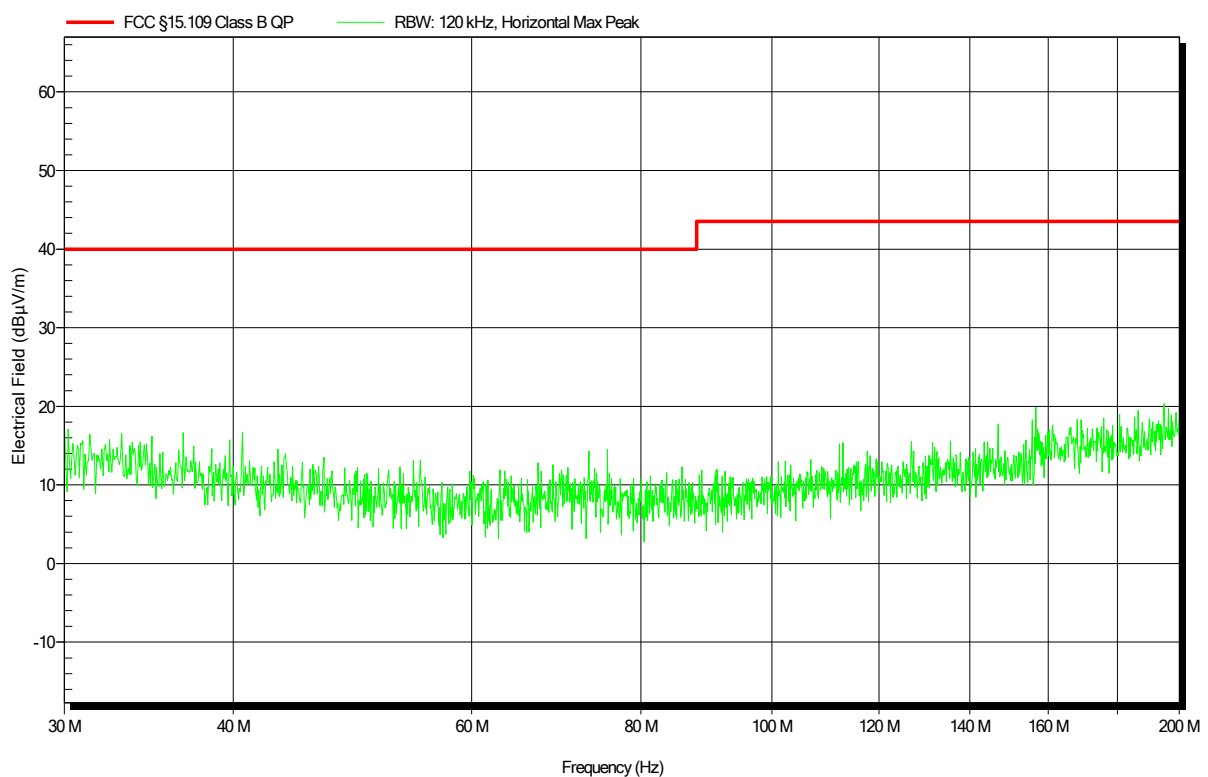


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 23°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3m
Mode:	5
Test Date:	2019-02-28

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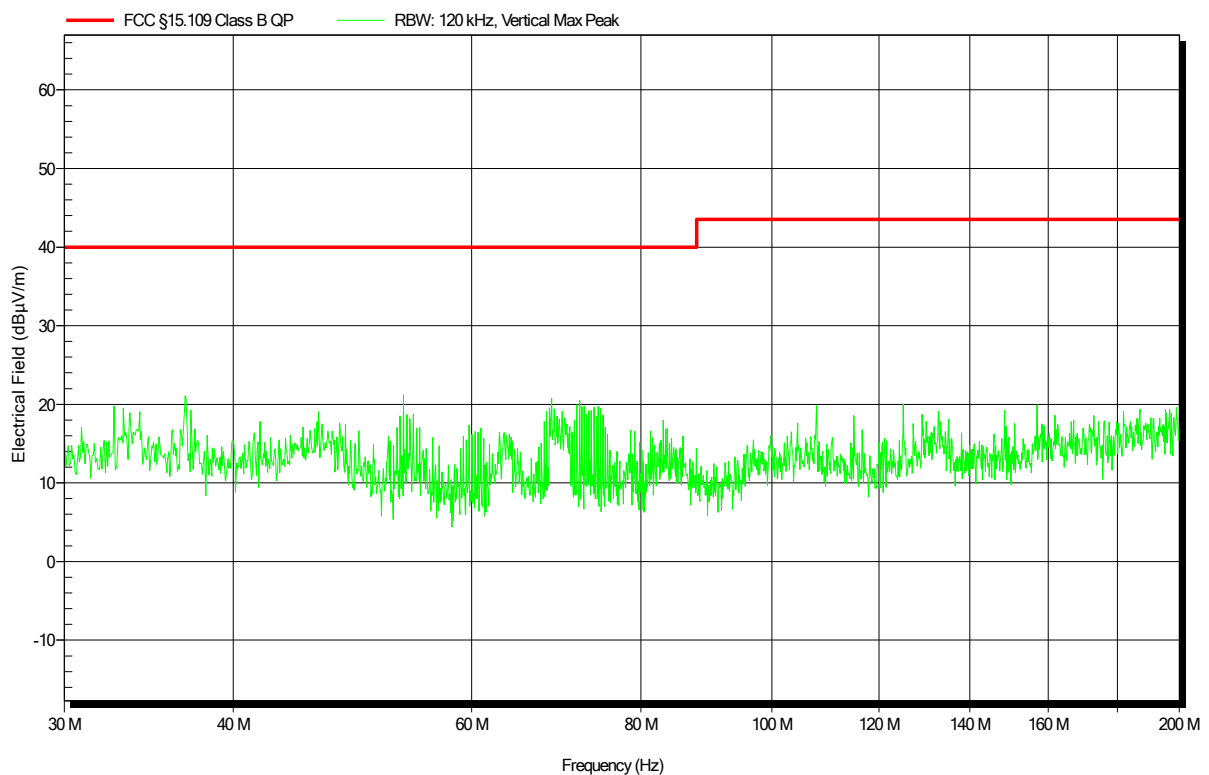


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 23°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3m
Mode:	5
Test Date:	2019-02-28

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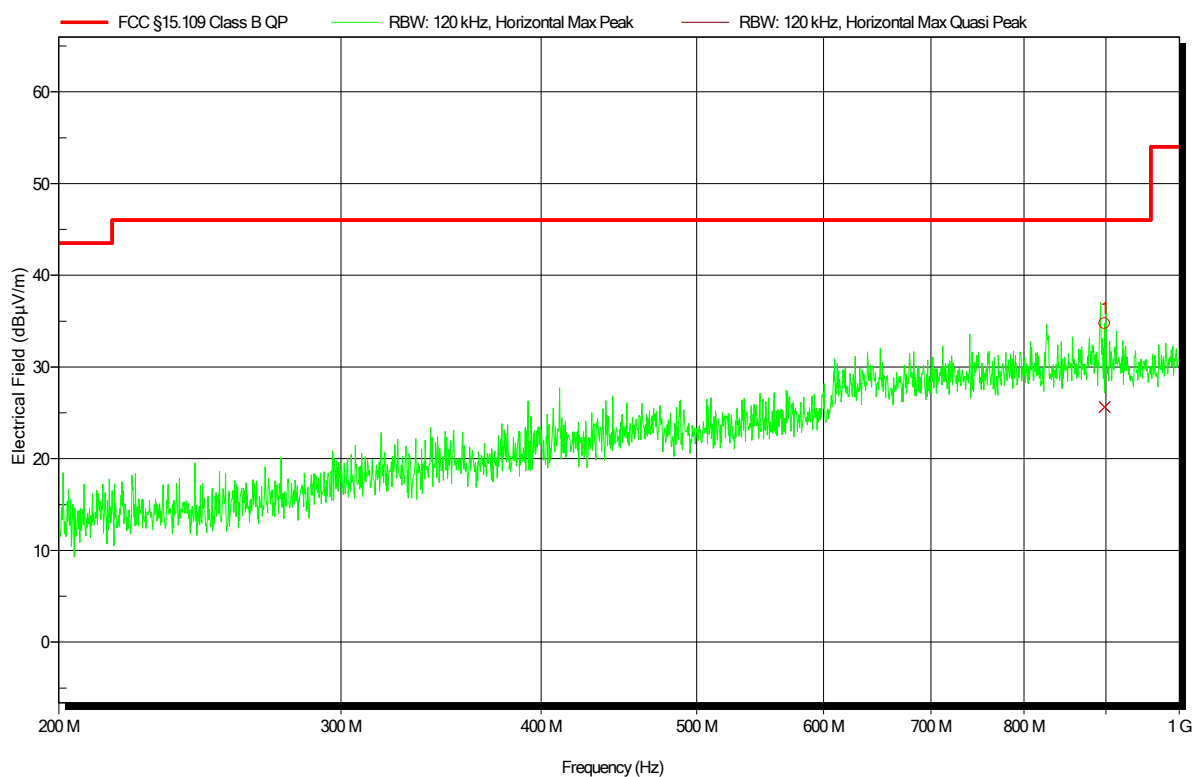


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
 EUT Name: Telemetry Equipment
 Model: TDBOX2
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Dose
 Test Conditions: Tnom: 23°C, Unom: 13.8 VDC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3m
 Mode: 5
 Test Date: 2019-02-28

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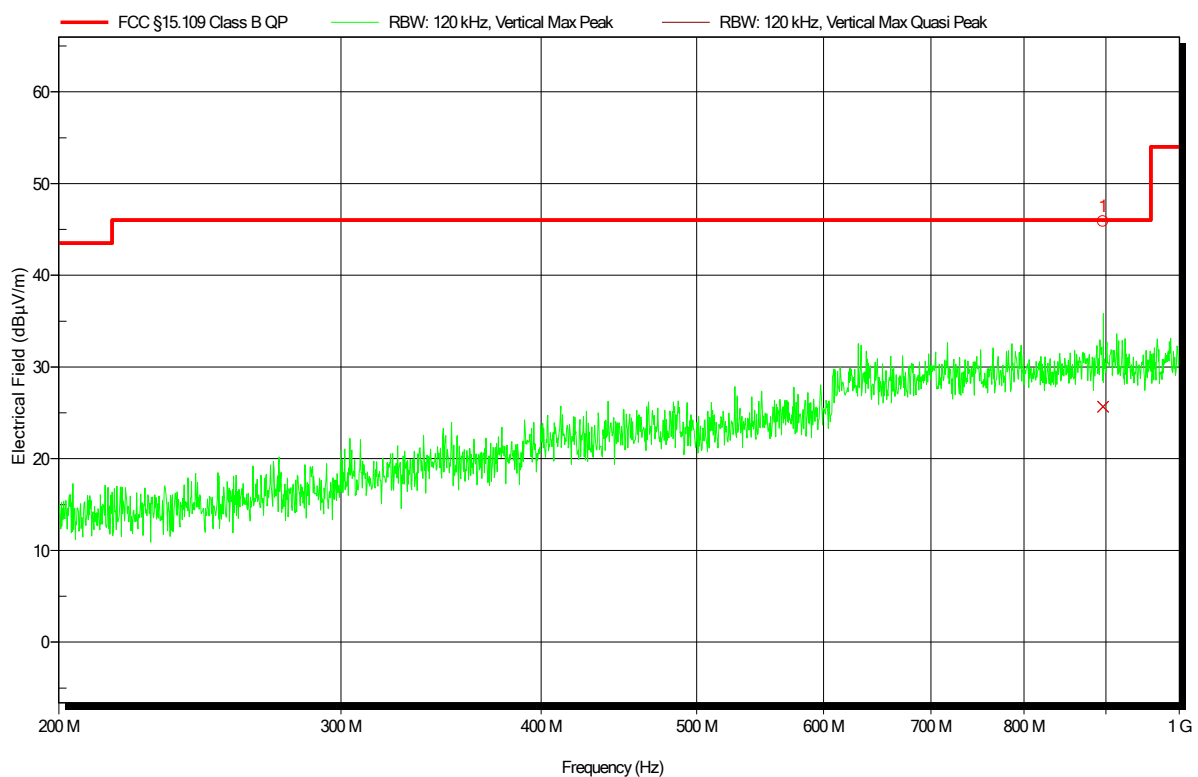
Peak Number	Frequency	UMTS Carrier
1	898.199 MHz	

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
 EUT Name: Telemetry Equipment
 Model: TDBOX2
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Dose
 Test Conditions: Tnom: 23°C, Unom: 13.8 VDC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3m
 Mode: 5
 Test Date: 2019-02-28

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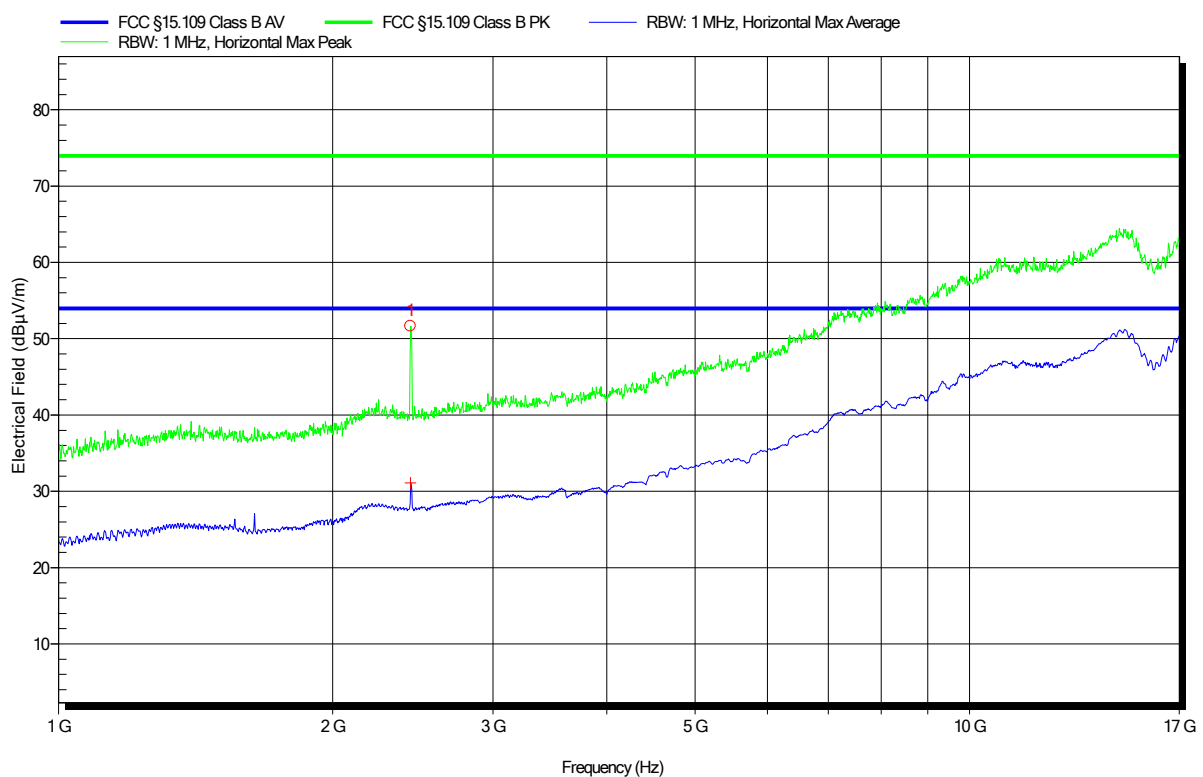
Peak Number	Frequency	UMTS Carrier
1	896.367 MHz	

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
EUT Name: Telemetry Equipment
Model: TDBOX2
Test Site: Eurofins Product Service GmbH
Operator: Mr. Dose
Test Conditions: Tnom: 22°C, Unom: 13.8 VDC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 3m
Mode: 5
Test Date: 2019-02-28

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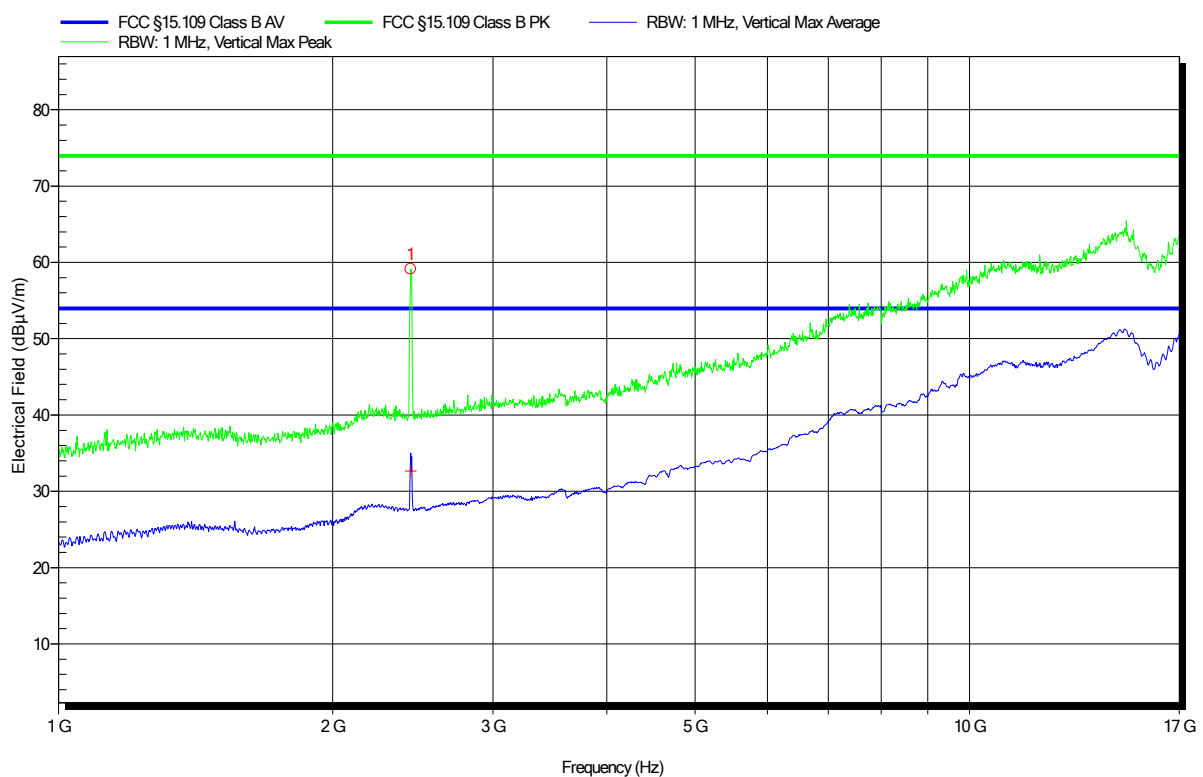
Peak Number 1
Frequency 2.435 GHz
WLAN Carrier

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
EUT Name: Telemetry Equipment
Model: TDBOX2
Test Site: Eurofins Product Service GmbH
Operator: Mr. Dose
Test Conditions: Tnom: 24°C, Unom: 13.8 VDC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 3m
Mode: 5
Test Date: 2019-02-28

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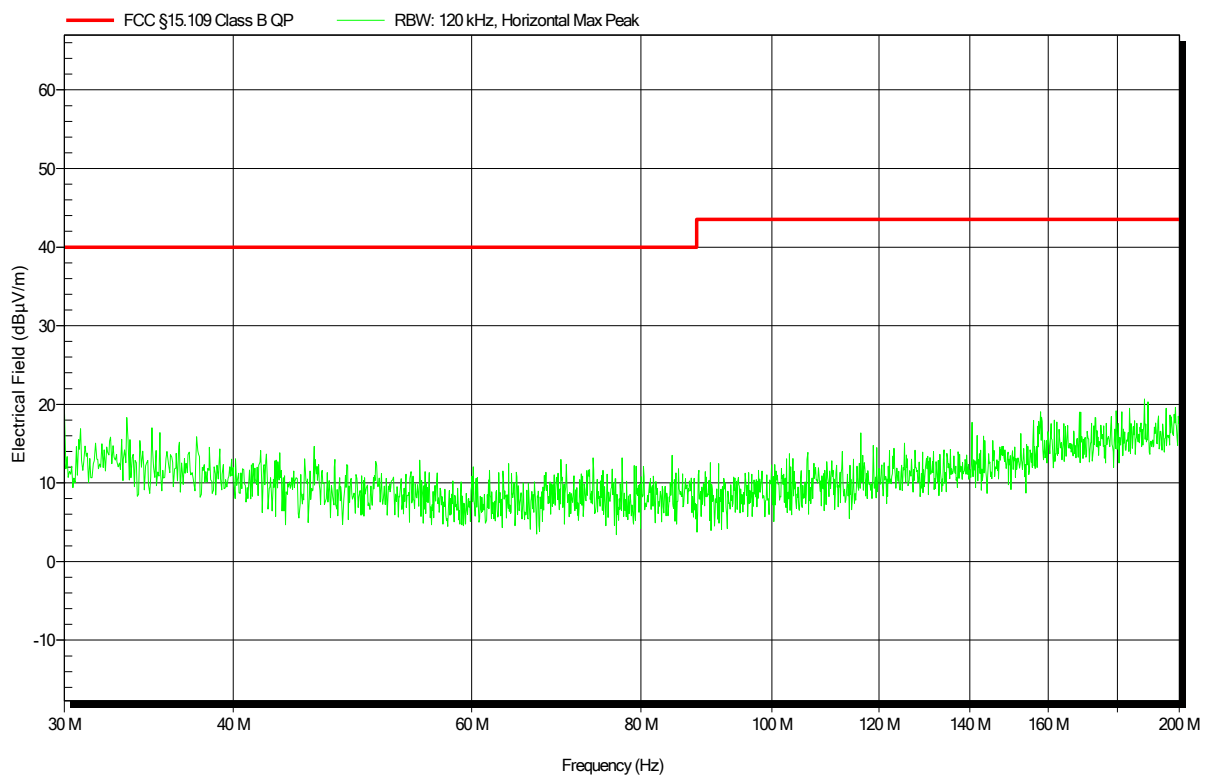
Peak Number 1
Frequency 2.437 GHz
WLAN Carrier

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 23°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3m
Mode:	6
Test Date:	2019-02-28

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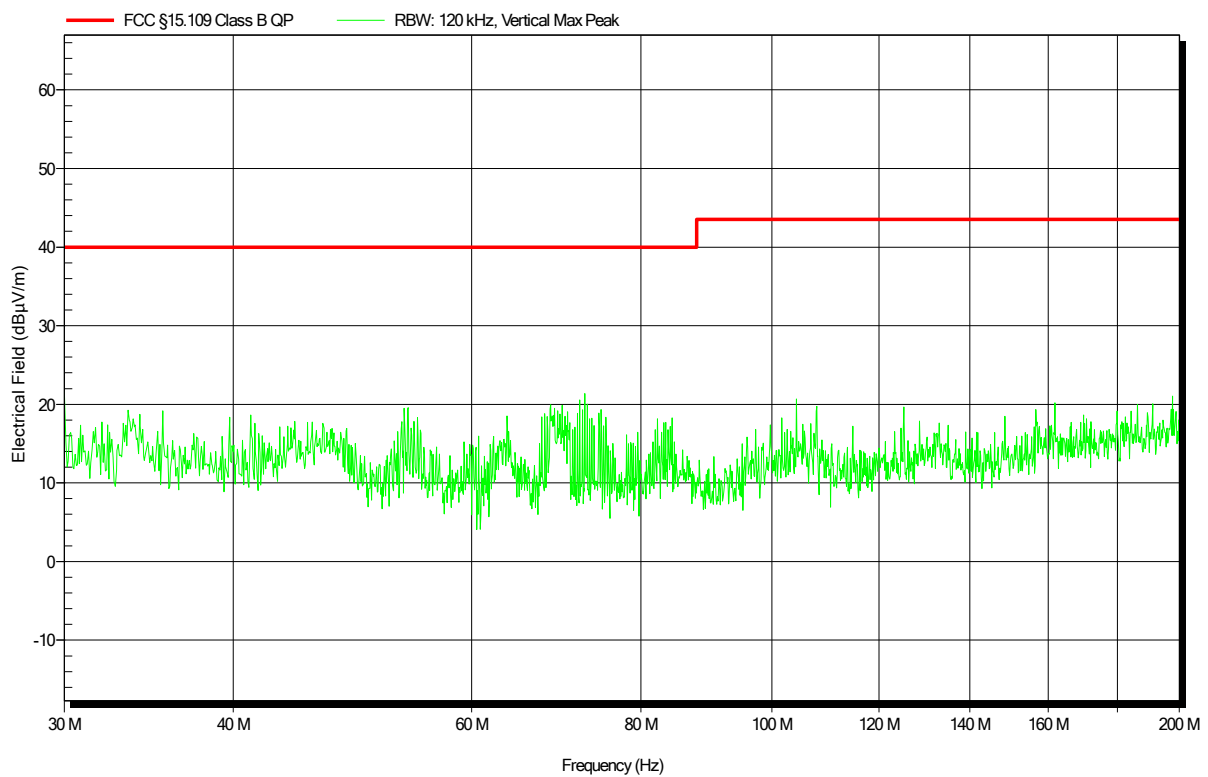


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 23°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3m
Mode:	6
Test Date:	2019-02-28

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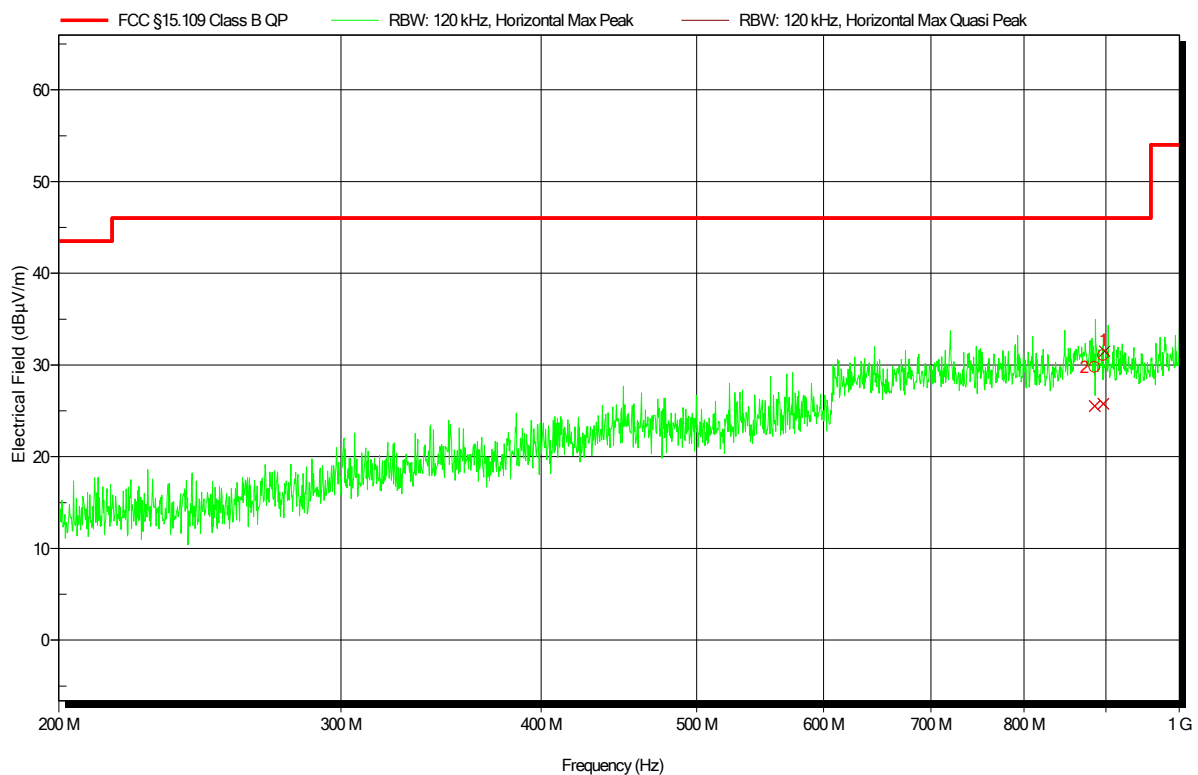


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 23°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3m
Mode:	6
Test Date:	2019-02-28

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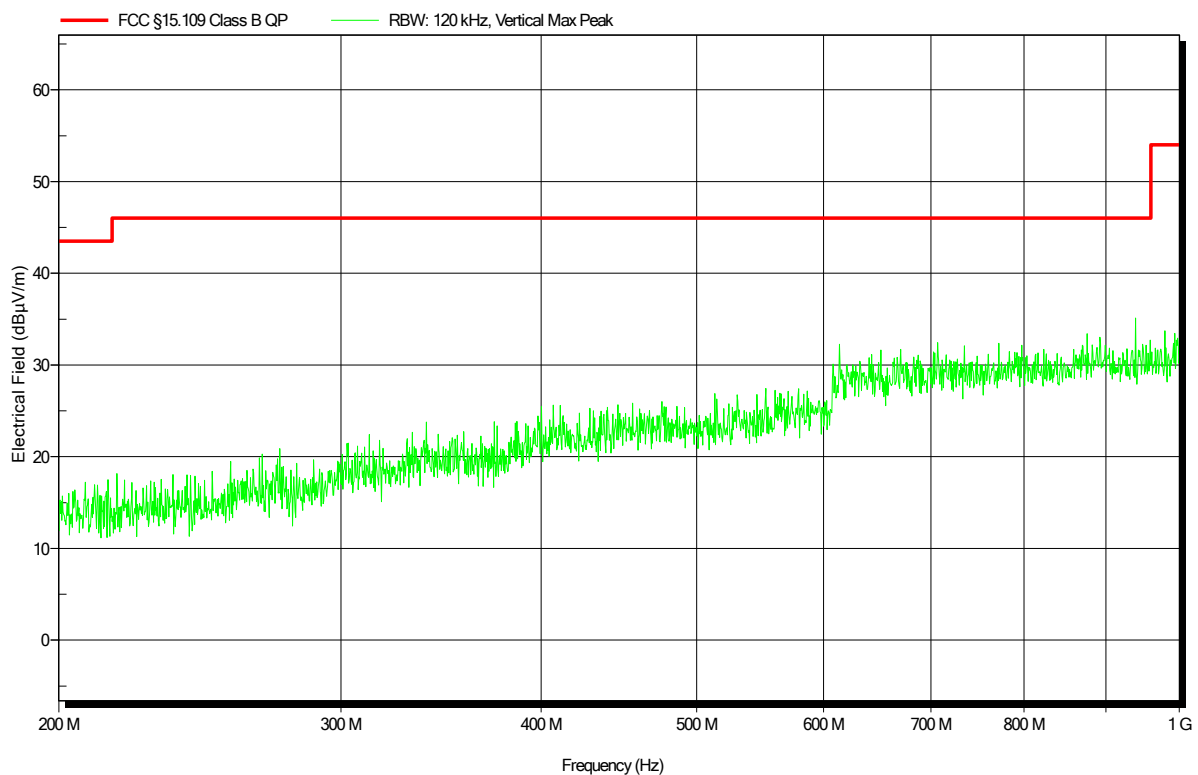


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
 EUT Name: Telemetry Equipment
 Model: TDBOX2
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Dose
 Test Conditions: Tnom: 23°C, Unom: 13.8 VDC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3m
 Mode: 6
 Test Date: 2019-02-28

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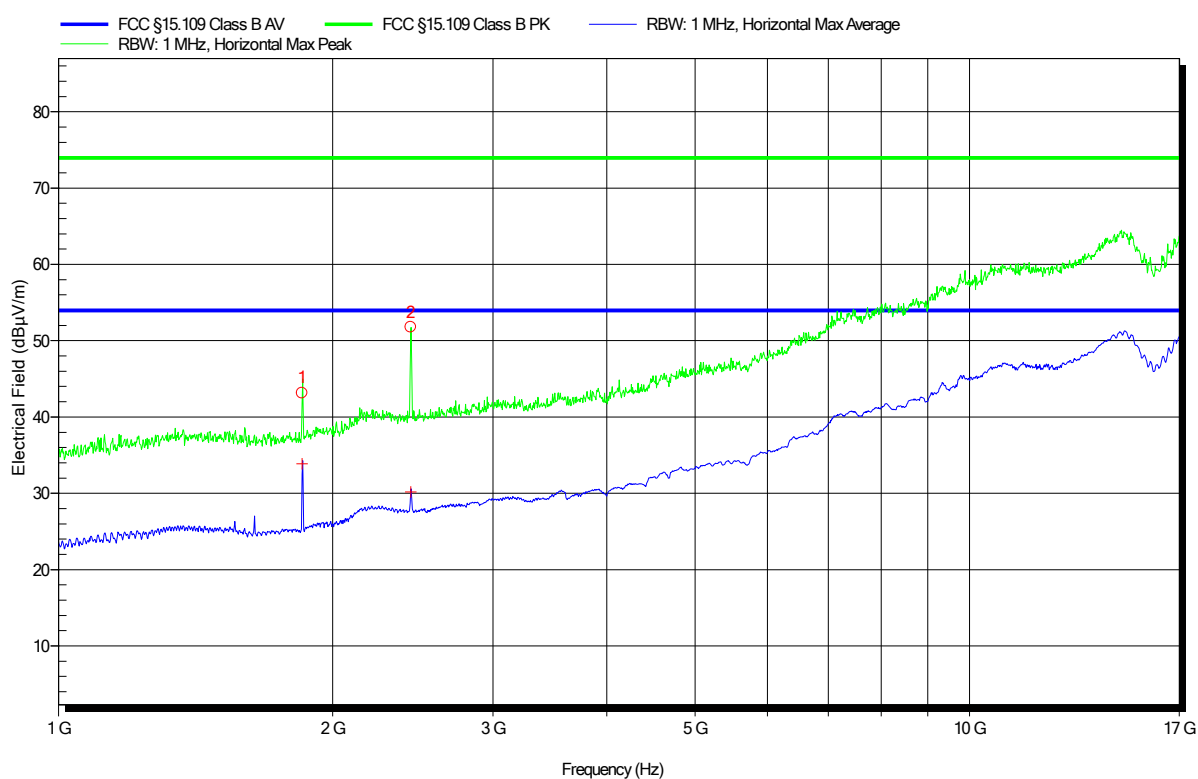


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
 EUT Name: Telemetry Equipment
 Model: TDBOX2
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Dose
 Test Conditions: Tnom: 23°C, Unom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3m
 Mode: 6
 Test Date: 2019-02-28

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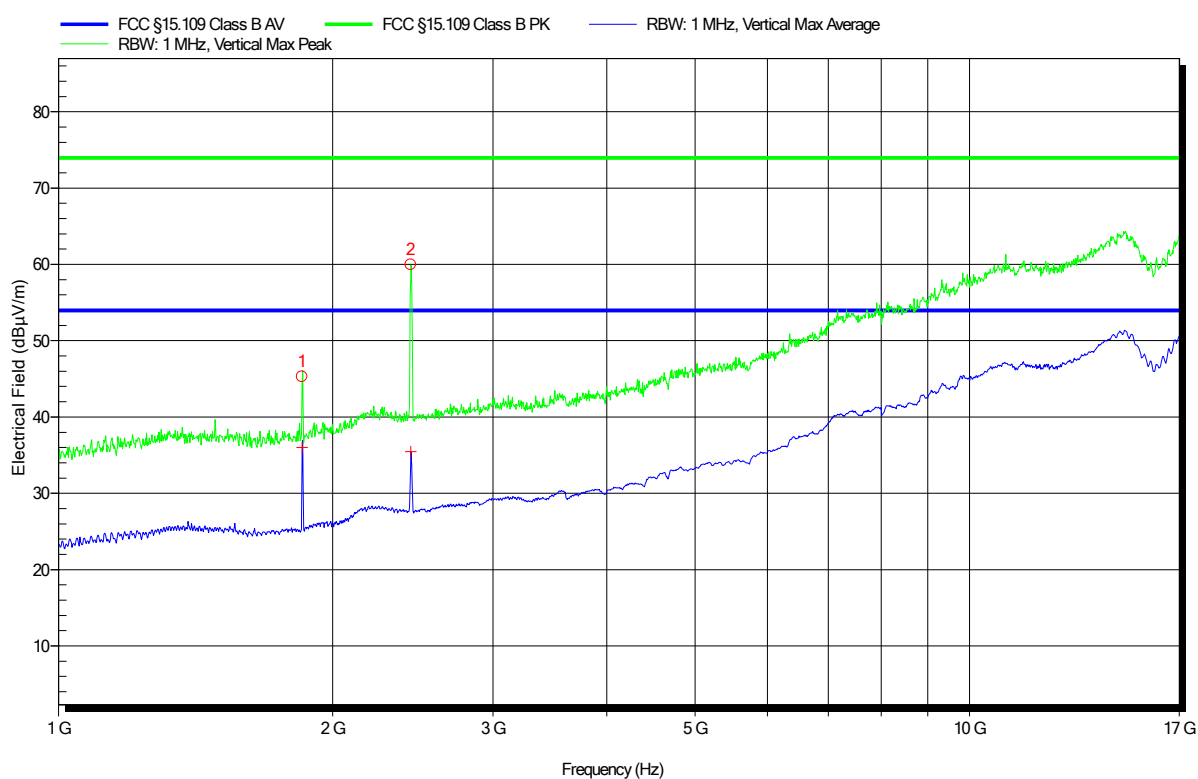
Peak Number	Frequency	
1	1.852 GHz	UMTS Carrier
2	2.436 GHz	WLAN Carrier

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
 EUT Name: Telemetry Equipment
 Model: TDBOX2
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Dose
 Test Conditions: Tnom: 23°C, Unom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3m
 Mode: 6
 Test Date: 2019-02-28

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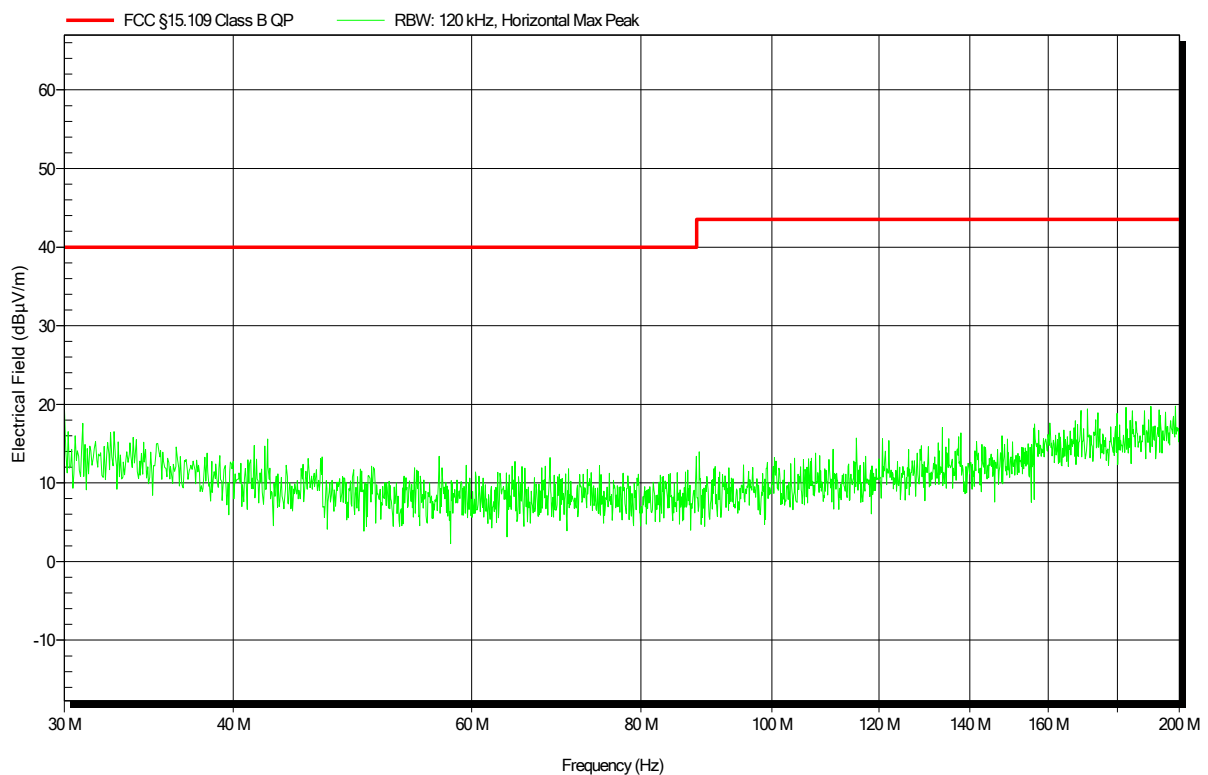
Peak Number	Frequency	
1	1.852 GHz	UMTS Carrier
2	2.436 GHz	WLAN Carrier

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 23°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3m
Mode:	7
Test Date:	2019-02-28

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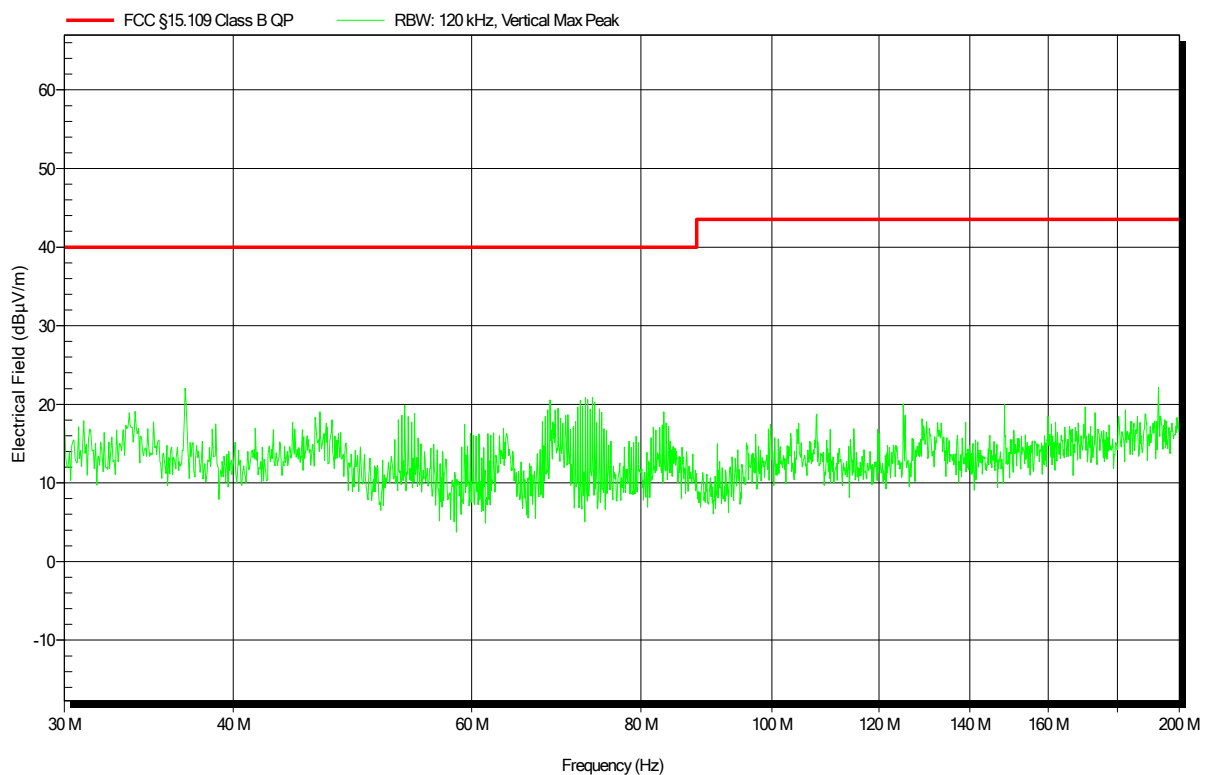


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 23°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3m
Mode:	7
Test Date:	2019-02-28

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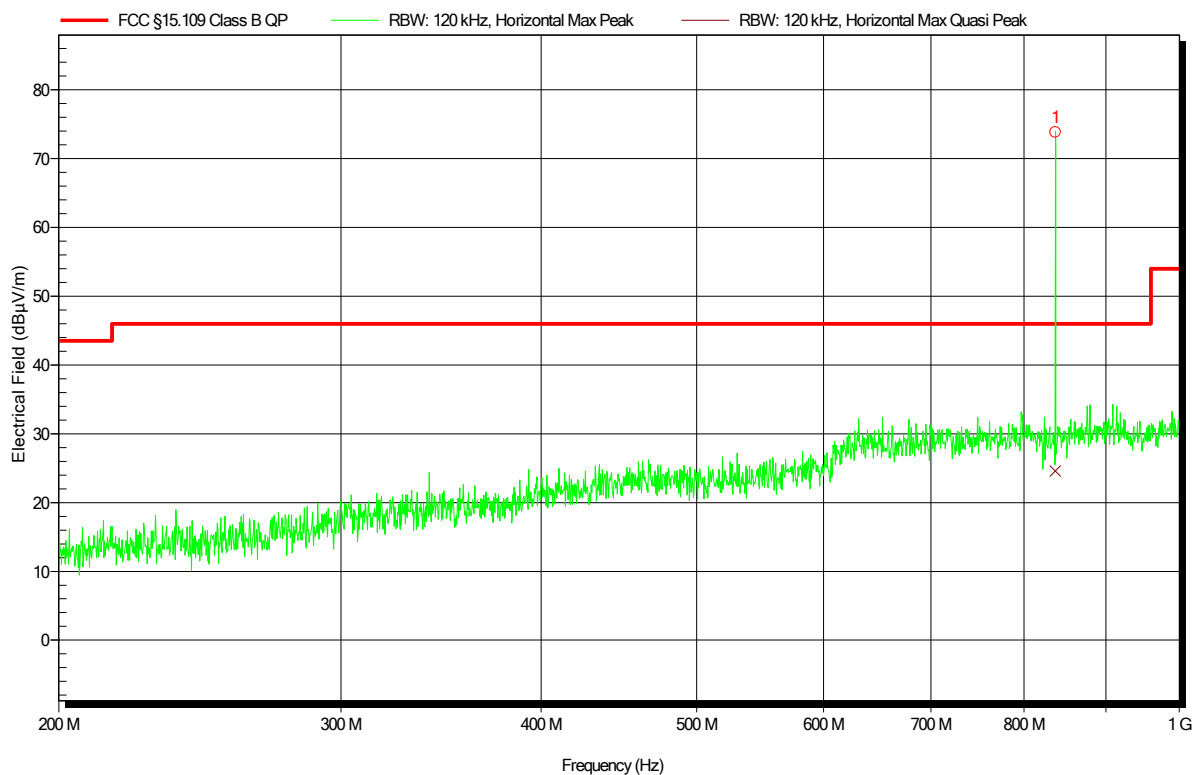


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
 EUT Name: Telemetry Equipment
 Model: TDBOX2
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Dose
 Test Conditions: Tnom: 23°C, Unom: 13.8 VDC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3m
 Mode: 7
 Test Date: 2019-02-28

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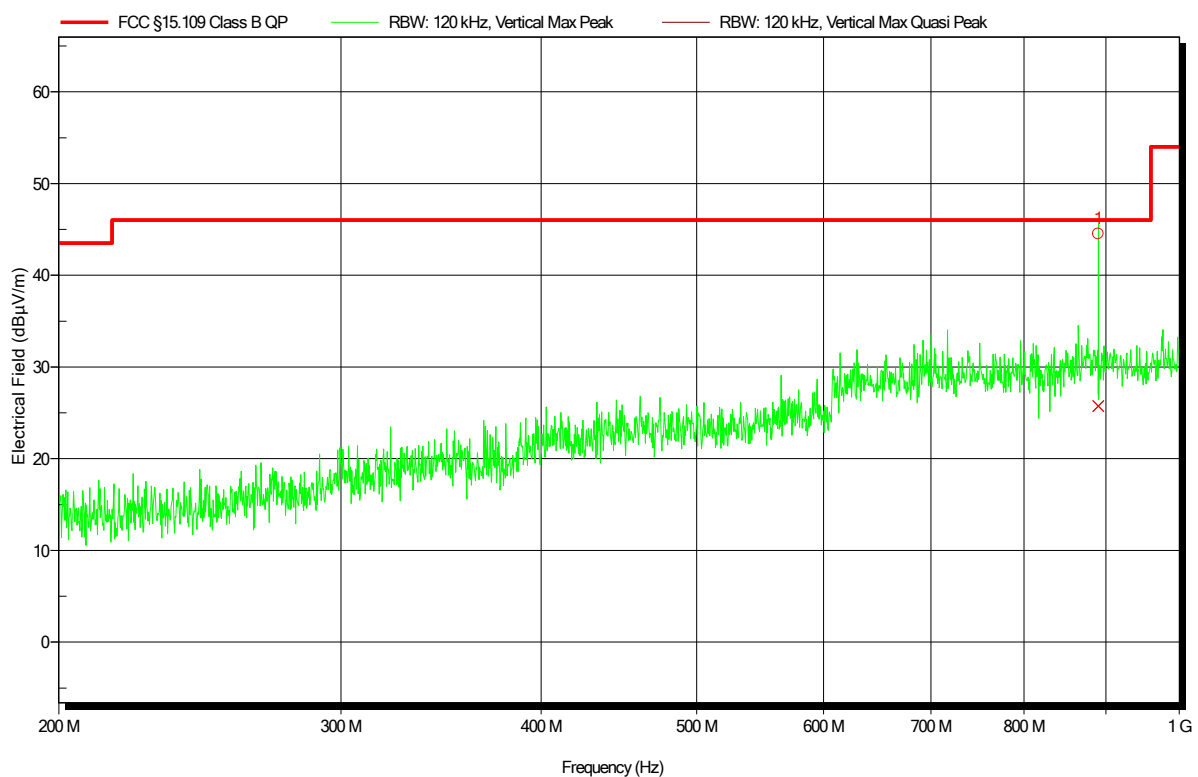
Peak Number 1
 Frequency 837.027 MHz
 GSM Carrier

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
 EUT Name: Telemetry Equipment
 Model: TDBOX2
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Dose
 Test Conditions: Tnom: 23°C, Unom: 13.8 VDC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3m
 Mode: 7
 Test Date: 2019-02-28

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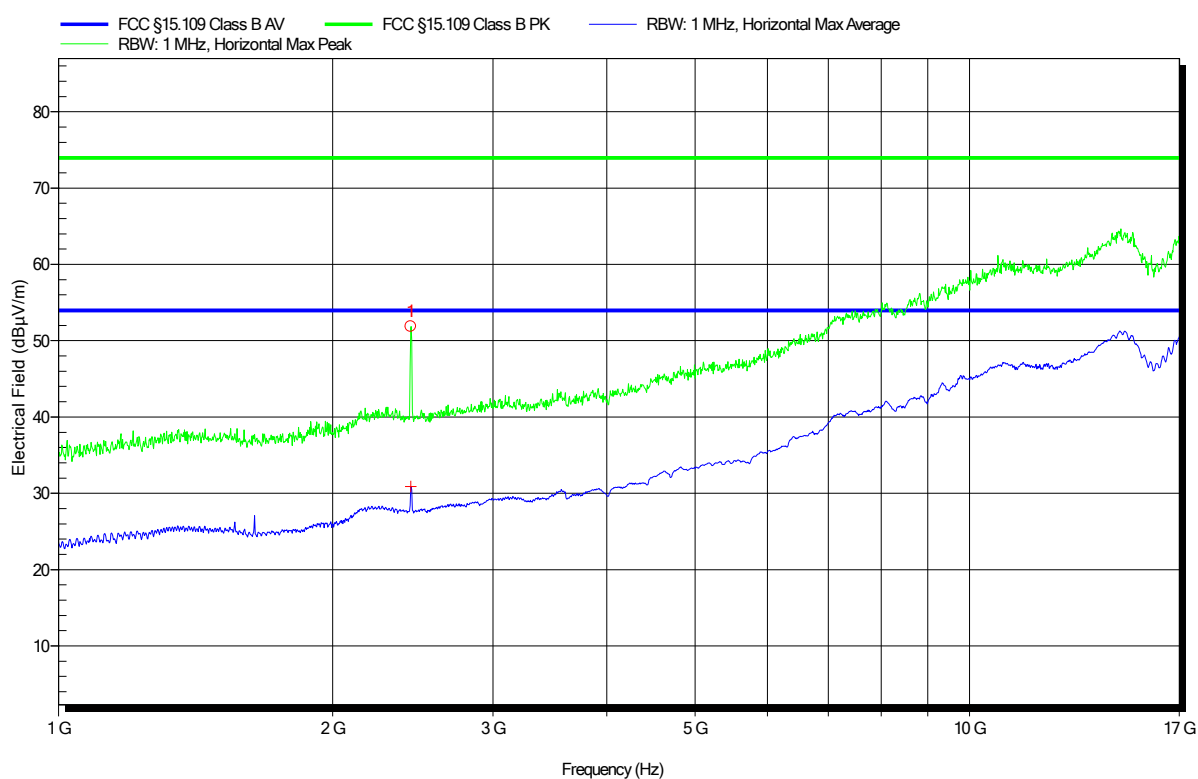
Peak Number	Frequency	GSM Carrier
1	890.224 MHz	

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
 EUT Name: Telemetry Equipment
 Model: TDBOX2
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Dose
 Test Conditions: Tnom: 22°C, Unom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3m
 Mode: 7
 Test Date: 2019-02-28

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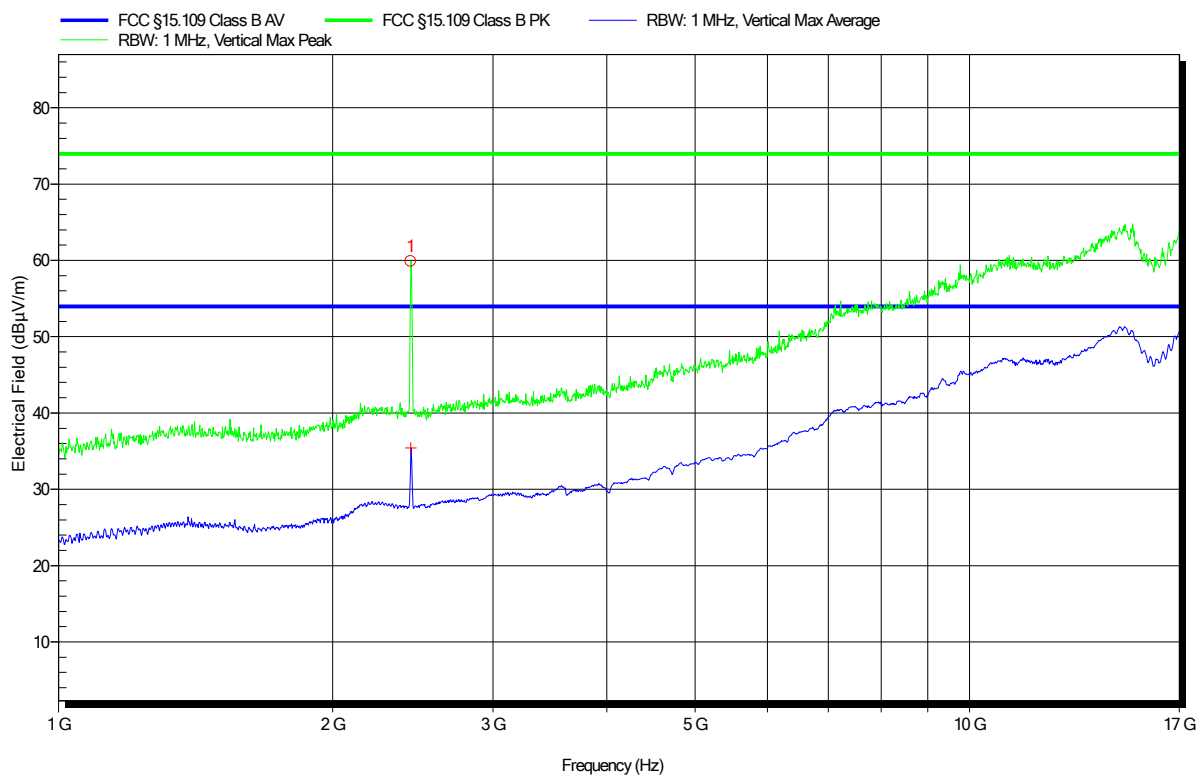
Peak Number	Frequency	
1	2.437 GHz	WLAN Carrier

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
EUT Name: Telemetry Equipment
Model: TDBOX2
Test Site: Eurofins Product Service GmbH
Operator: Mr. Dose
Test Conditions: Tnom: 21°C, Unom: 13.8 VDC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 3m
Mode: 7
Test Date: 2019-02-28

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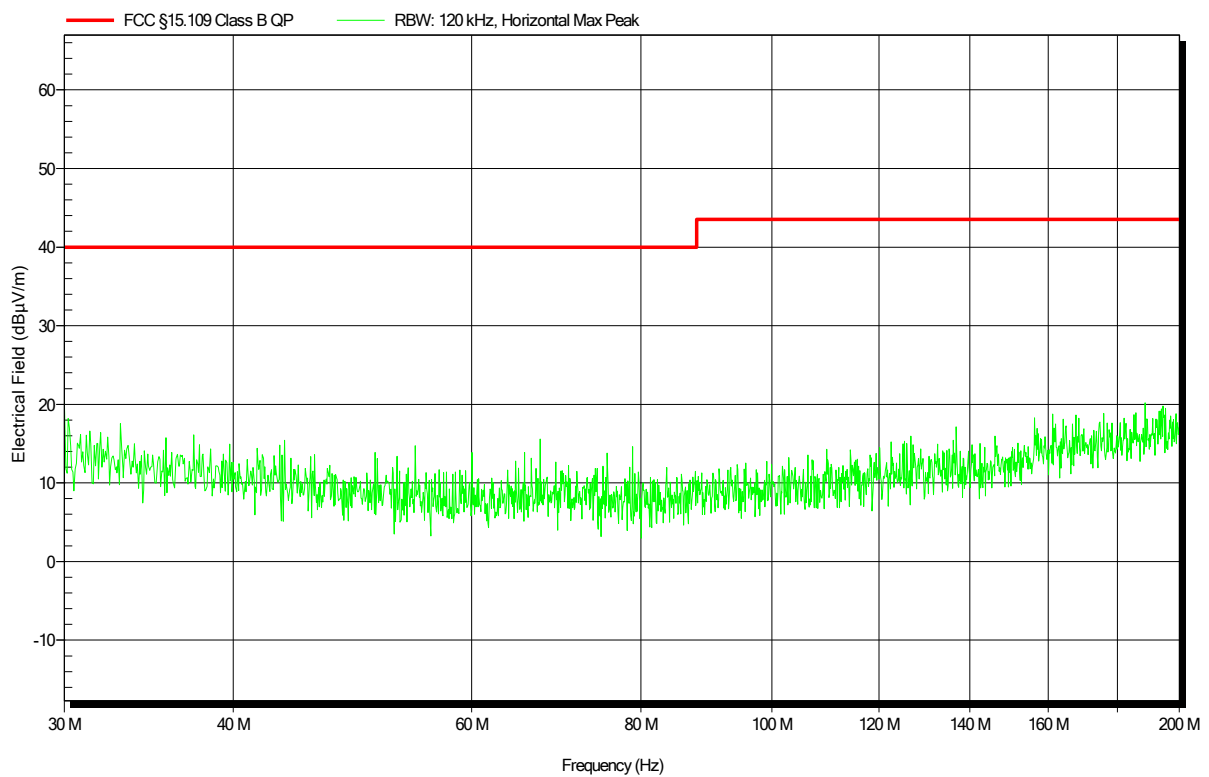
Peak Number	Frequency	WLAN Carrier
1	2.436 GHz	

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 23°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3m
Mode:	8
Test Date:	2019-02-28

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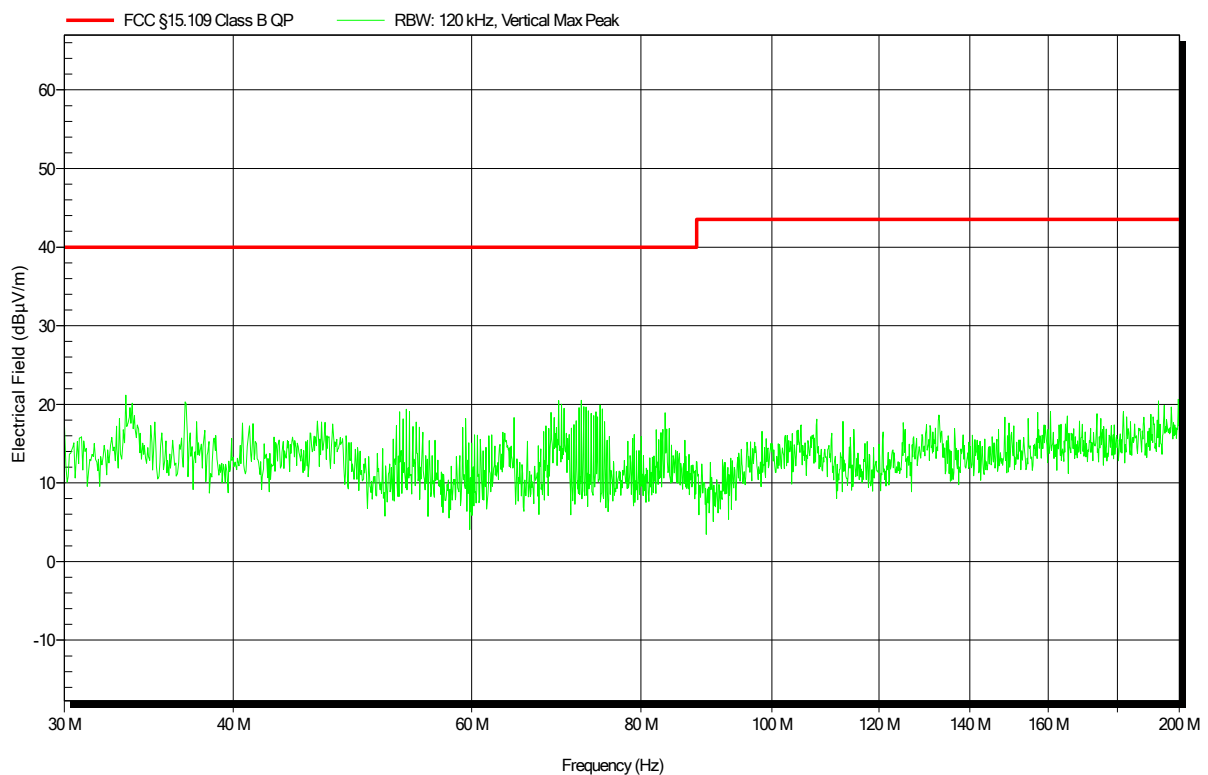


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 23°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3m
Mode:	8
Test Date:	2019-02-28

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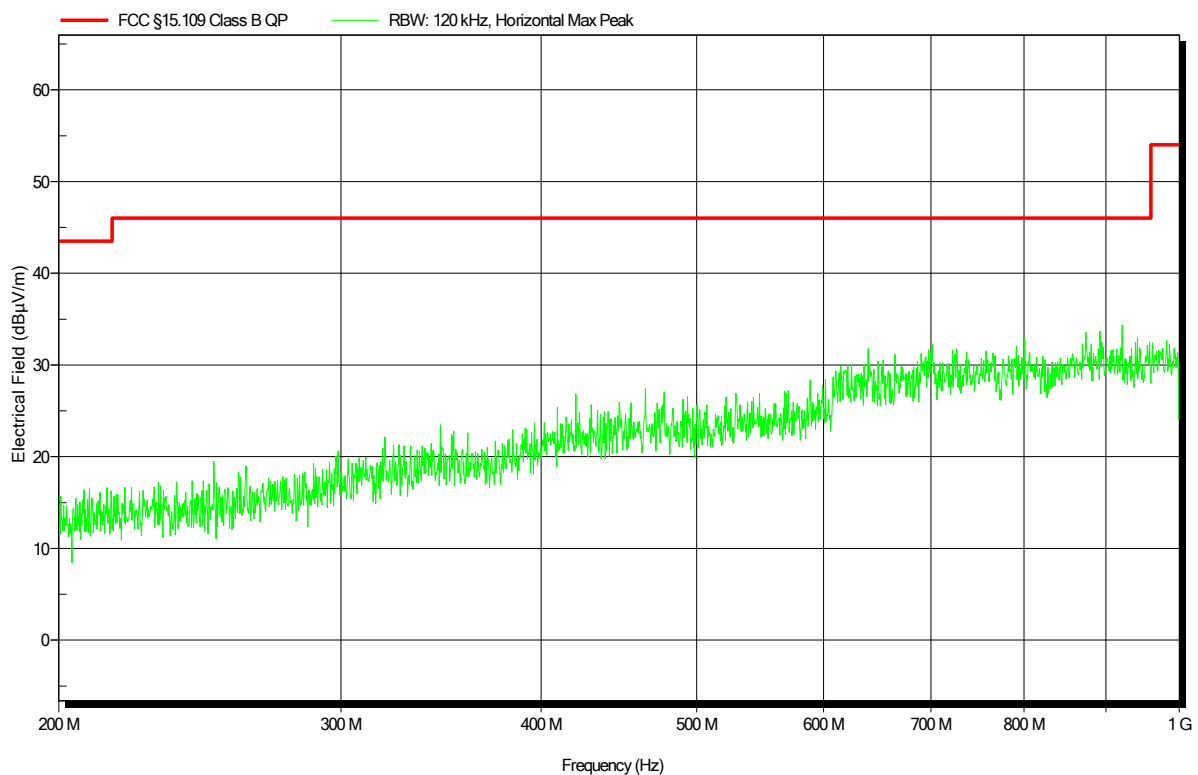


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant:	IAV GmbH
EUT Name:	Telemetry Equipment
Model:	TDBOX2
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Dose
Test Conditions:	Tnom: 23°C, Unom: 13.8 VDC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3m
Mode:	8
Test Date:	2019-02-28

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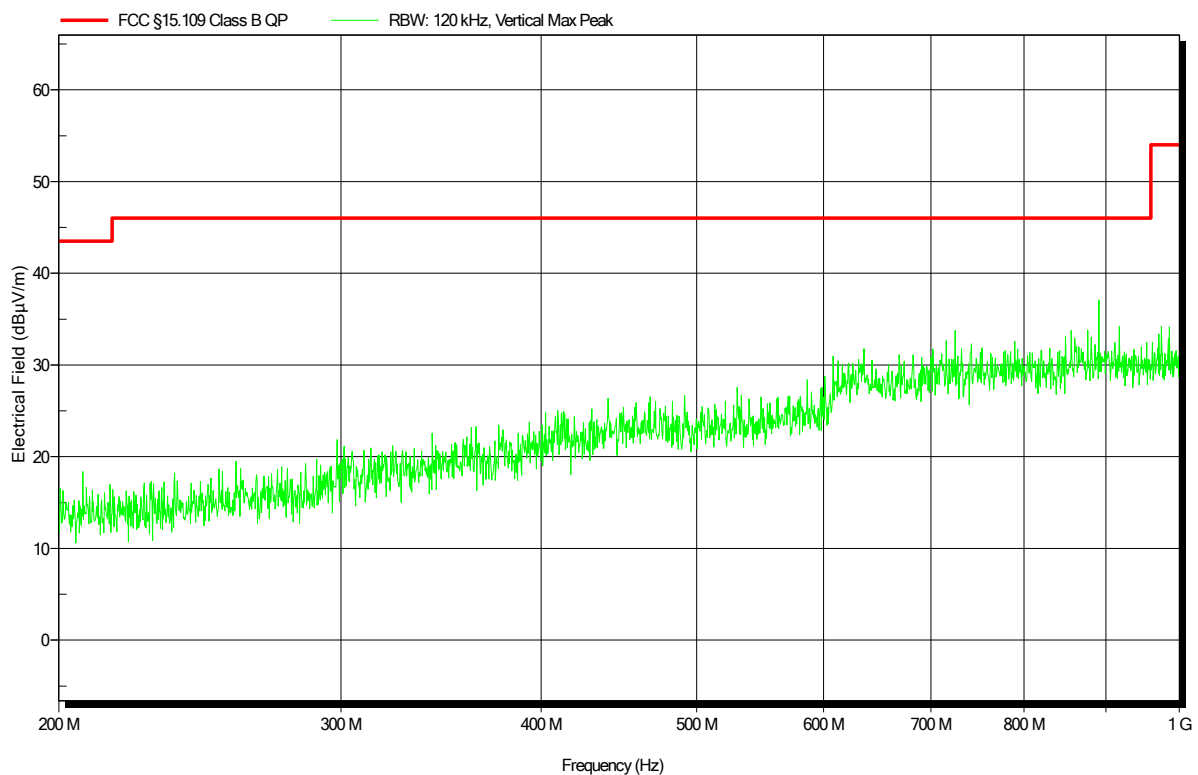


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
 EUT Name: Telemetry Equipment
 Model: TDBOX2
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Dose
 Test Conditions: Tnom: 23°C, Unom: 13.8 VDC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3m
 Mode: 8
 Test Date: 2019-02-28

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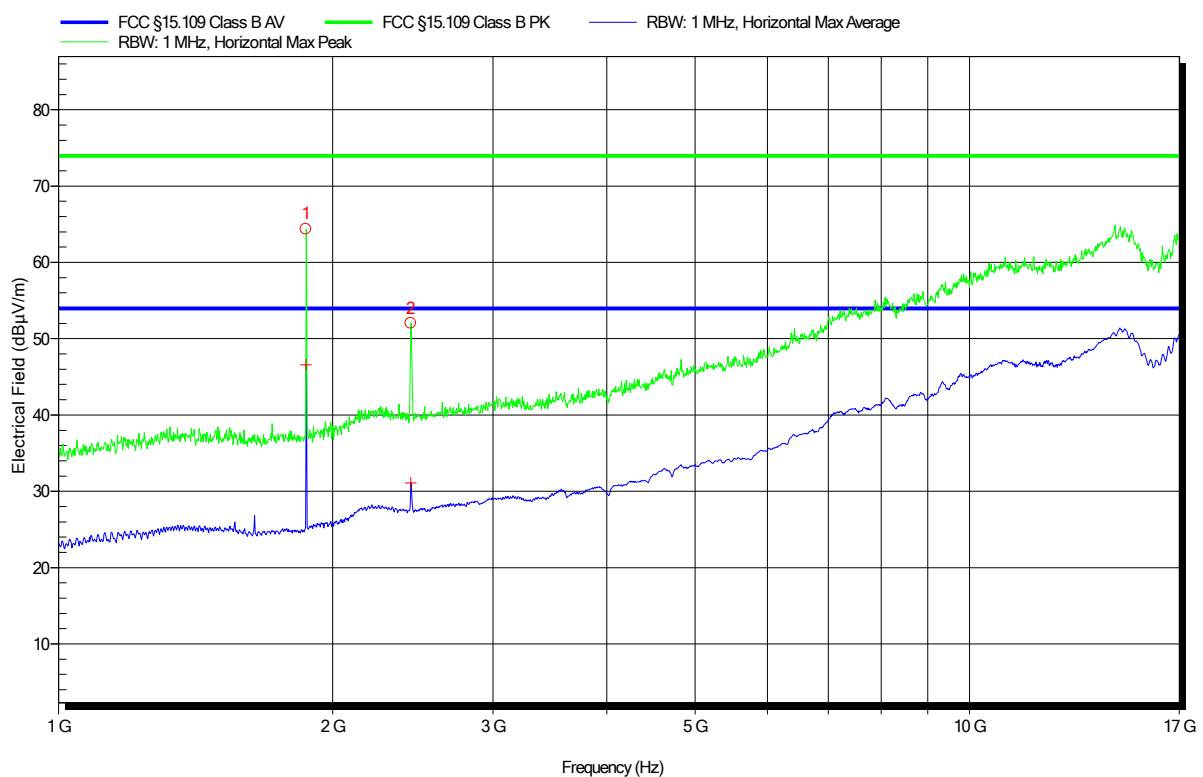


Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
EUT Name: Telemetry Equipment
Model: TDBOX2
Test Site: Eurofins Product Service GmbH
Operator: Mr. Dose
Test Conditions: Tnom: 20°C, Unom: 13.8 VDC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 3m
Mode: 8
Test Date: 2019-02-28

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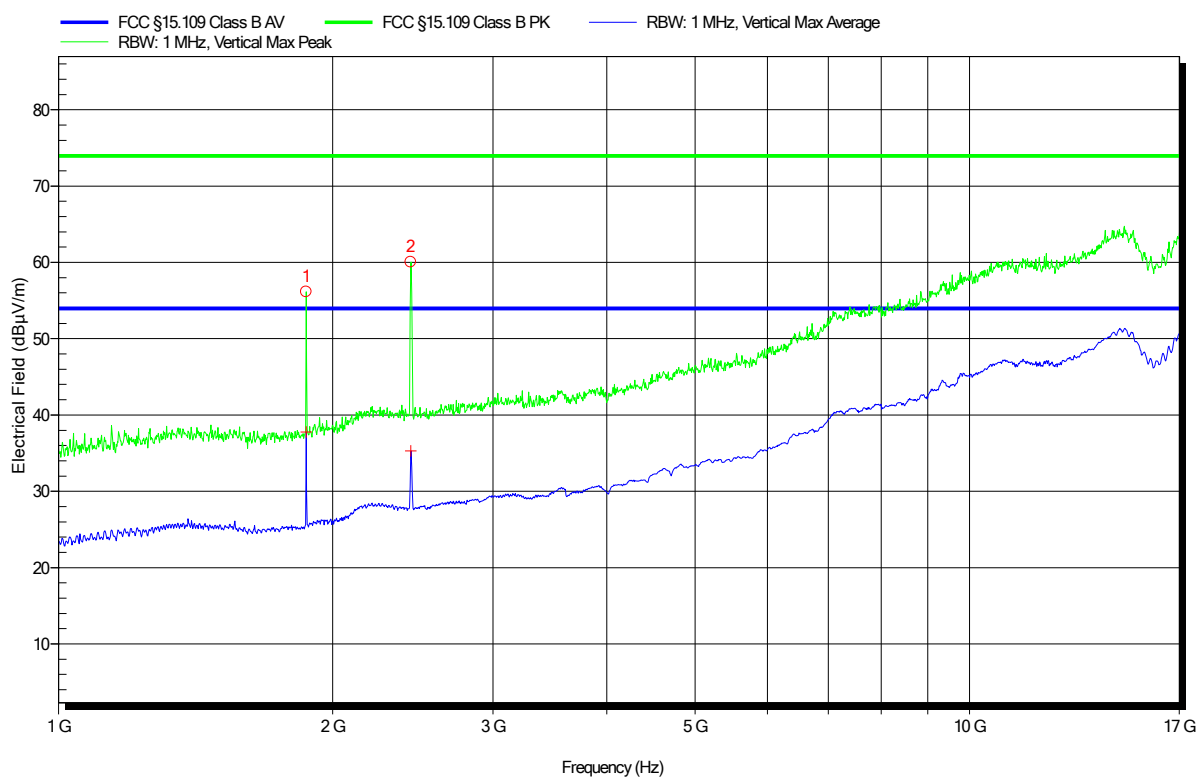
Peak Number	Frequency	
1	1.87 GHz	GSM Carrier
2	2.436 GHz	WLAN Carrier

Radiated emissions under normal conditions according to FCC part 15B

Project number: G0M-1901-8021

Applicant: IAV GmbH
 EUT Name: Telemetry Equipment
 Model: TDBOX2
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Dose
 Test Conditions: Tnom: 21°C, Unom: 13.8 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3m
 Mode: 8
 Test Date: 2019-02-28

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Peak Number	Frequency	
1	1.87 GHz	GSM Carrier
2	2.437 GHz	WLAN Carrier