

RADIO REPORT FCC 47 CFR Part 15C ISED Canada RSS-247 Digital transmission systems operating within the 2400 – 2483.5 MHz band	
Report Reference No	G0M-1807-7557-TFC247DT-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	digades GmbH
Address	Äußere Weberstraße 20 02763 Zittau GERMANY
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	VW RemoteStart
Model(s)	Remote Start Key Fob - VWRSTT
Additional Model(s)	None
Brand Name(s)	None
Hardware Version(s)	HW 005
Software Version(s)	SW 0702
FCC-ID	QNFVWRSTT
IC	6869A-VWRSTT
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	2018-08-23	
Report:		
Compiled by	Sebastian Suckow	
Tested by (+ signature) (Responsible for Test)	Sebastian Suckow	
Approved by (+ signature) (Deputy Head of Lab)	Toralf Jahn	
Date of Issue	2018-09-21	
Total number of pages	73	
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	2018-09-21	Initial Release	

ABBREVIATIONS AND ACRONYMS

Acronyms	
Acronym	Description
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

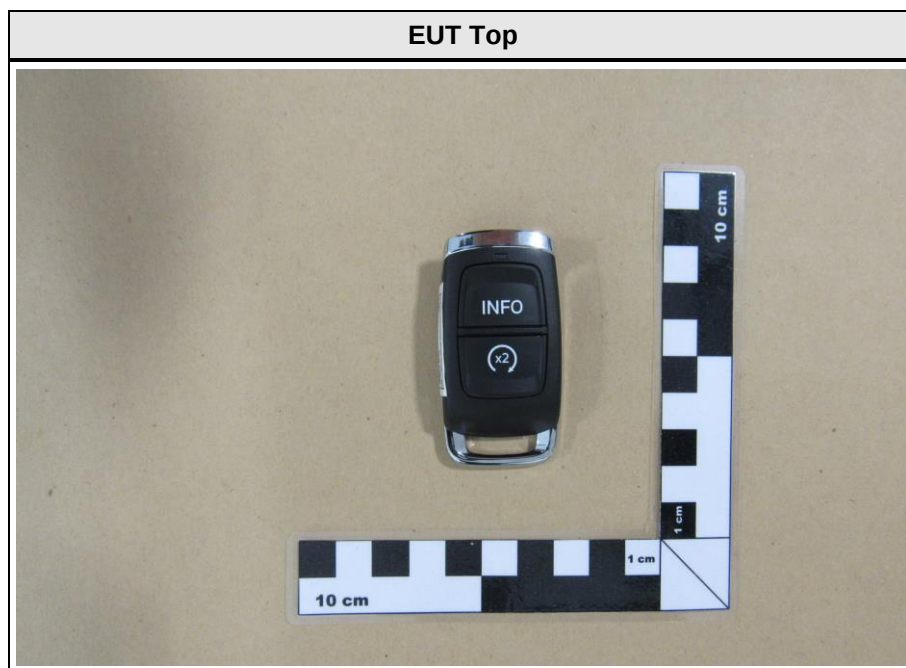
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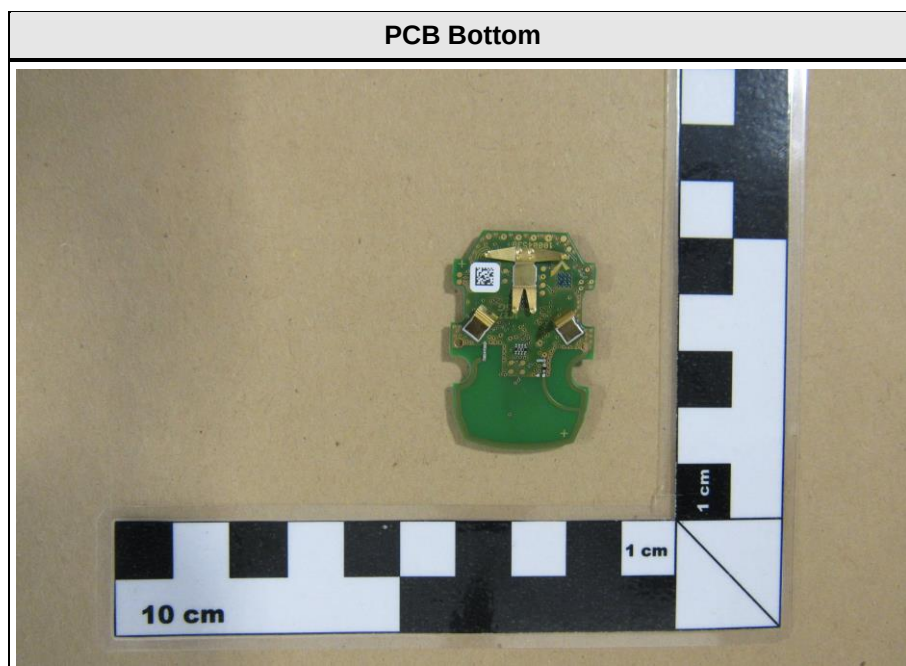
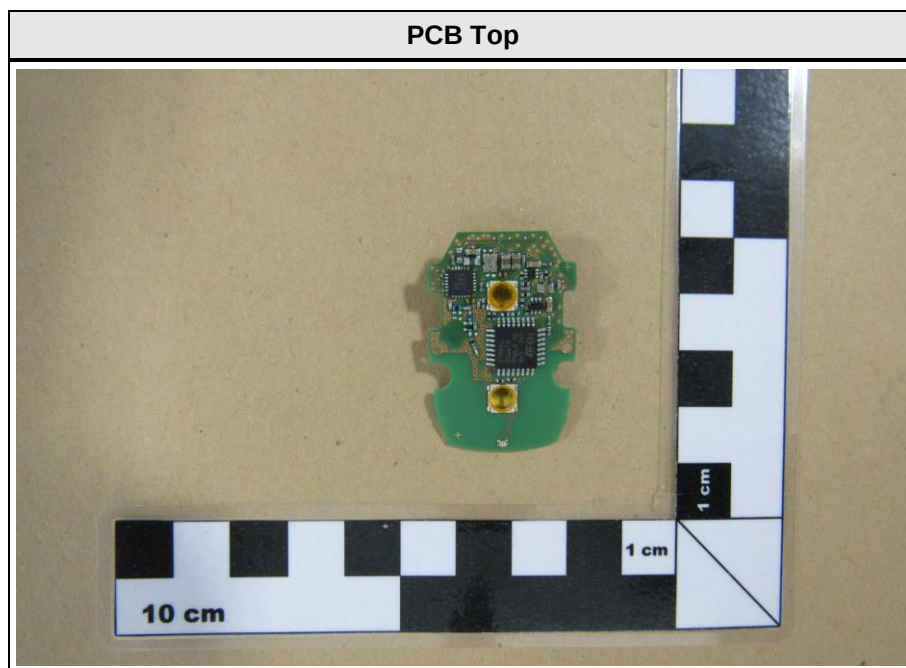
1 Equipment (Test Item) Under Test

Description	VW RemoteStart	
Model	Remote Start Key Fob - VWRSTT	
Additional Model(s)	None	
Brand Name(s)	None	
Serial Number(s)	None	
Hardware Version(s)	HW 005	
Software Version(s)	SW 0702	
PMN	Remote Start Key Fob	
HVIN	VWRSTT	
FVIN	-/-	
HMN	-/-	
FCC-ID	QNFVWRSTT	
IC	6869A-VWRSTT	
Equipment type	End Product	
Radio type	Transceiver	
Assigned frequency bands	902.4 - 927.6 MHz	
Radio technology	Digital Modulation	
Modulation	LoRa	
Number of antenna ports	1	
Antenna	Type	Internal
	Model	PCB
	Manufacturer	Digades GmbH
	Gain	-13 dBi
Supply Voltage	V _{NOM}	3.0 VDC
Operating Temperature	T _{NOM}	25 °C
Manufacturer	digades GmbH Äußere Weberstraße 20 02763 Zittau GERMANY	

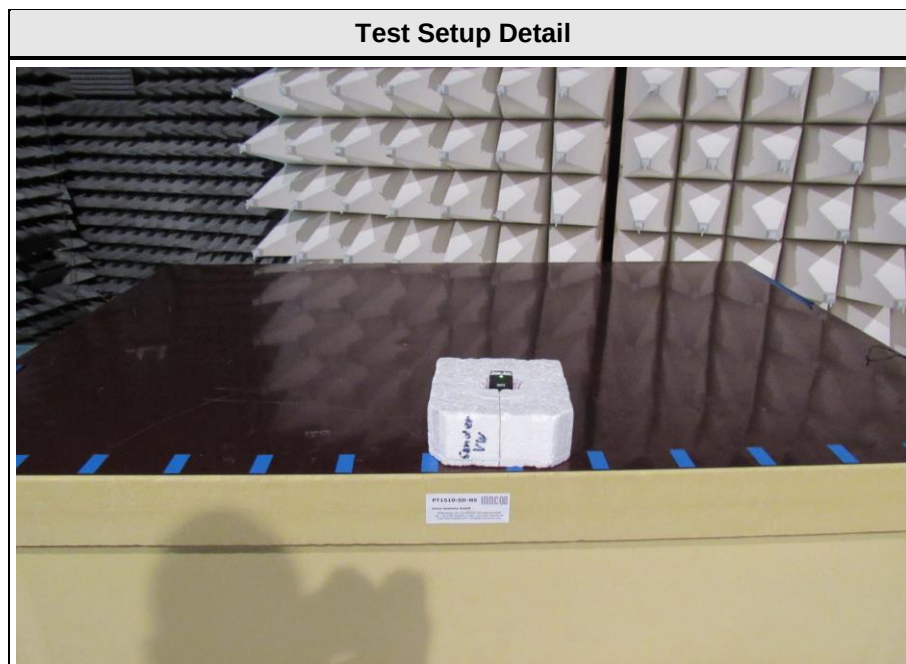
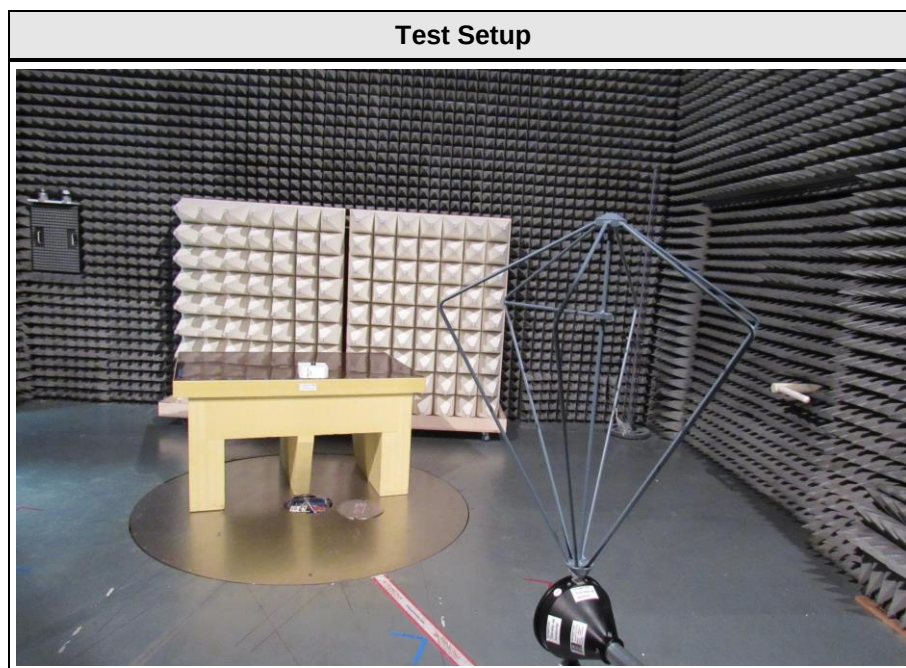
1.1 Photos – Equipment External



1.2 Photos – Equipment Internal



1.3 Photos – Test Setup



1.4 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
None				
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
Comment:				

1.5 Test mode duty cycle

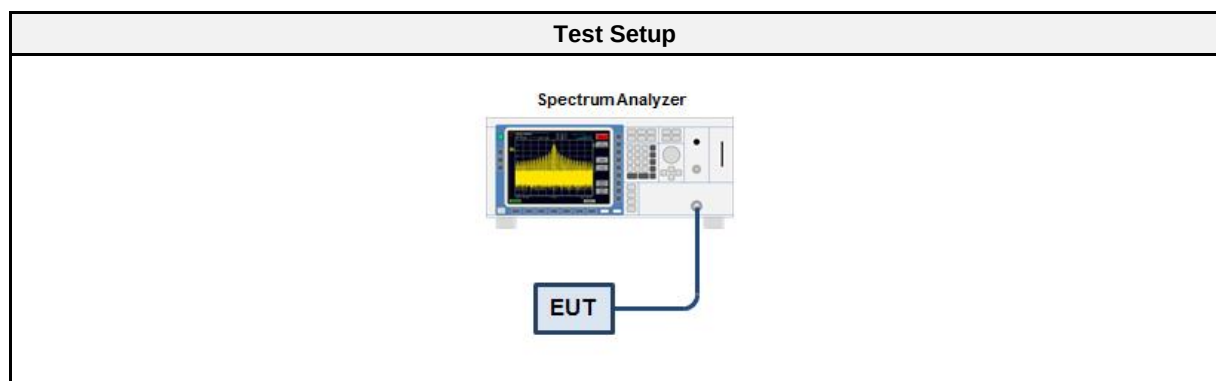
1.5.1 Information

Test Information	
Measurement Method	ANSI C63.10 11.6

1.5.2 Requirements

Requirements	
Duty cycle	Duty cycle correction
≥ 98 %	No correction required
< 98 %	Correction required ($10 \times \log_{10}(1/DC)$)

1.5.3 Setup



1.5.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01003	2018-07	2019-07

1.5.5 Procedure

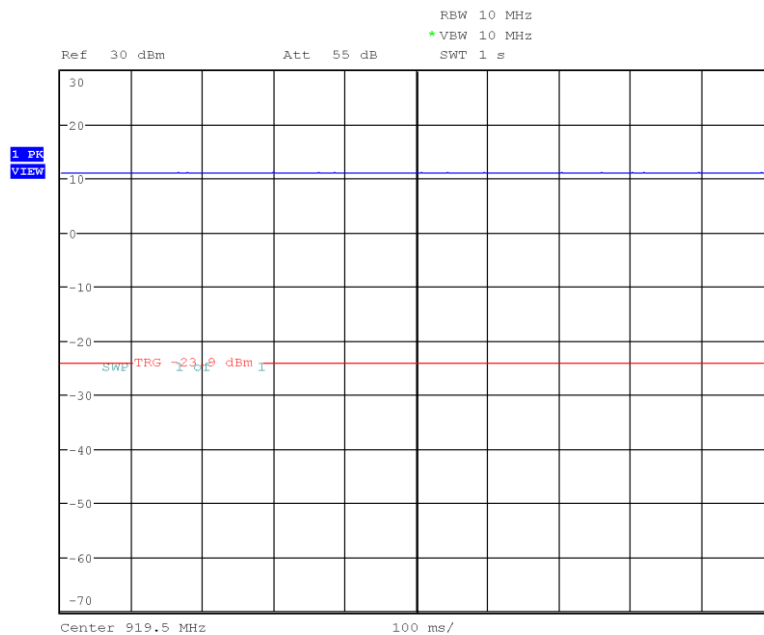
Test Procedure
1. EUT set to test mode 2. Span is set to zero span 3. Detector set to peak 4. Sweep time is set long enough to capture at least 5 bursts 5. Envelope peak value of emission spectrum is selected 6. The maximum burst duration T_{ON} is measured using two markers set to the start and the end of the longest burst 7. The minimum idle duration T_{OFF} is measured using two markers set to the start and the end of the shortest idle period 8. The duty cycle is calculated by $DC = T_{ON} / (T_{ON} + T_{OFF})$ 9. The duty cycle correction is calculated by $DC = 10 \times \log_{10}(T_{ON} / (T_{ON} + T_{OFF}))$

1.5.6 Results

Duty Cycle Results		
Mode	Duty Cycle	Correction Factor [dB]
LoRa	100 %	0

Duty Cycle

Project Number: G0M-1807-7557
 Applicant: digades GmbH
 Model Description: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Sample ID: 19981
 Reference Standards: ANSI C63.10:2013
 Reference Method: ANSI C63.10:2013, Section 7.5
 Operating Frequency: 919.5 MHz
 Operating Conditions: Tnom/Vnom
 Operator: S. Suckow
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-08-23
 Duty Cycle Period: 100
 Maximum Duty Cycle: 1.00
 Maximum Duty Cycle [%]: 100
 Duty Cycle Correction [dB]: 0.00



Date: 23.AUG.2018 08:19:59

1.6 Test Modes

Mode	Description
Transmit	Mode = Transmit Modulation = LoRa Duty cycle = 100 %
Receive	Mode = Receive Modulation = LoRa
Comment:	

1.7 Test Frequencies

Designator	Mode	Channel	Frequency [MHz]
F1	Tx	1	910.5
F2	Tx	2	919.5
F3	Rx	3	915.0

1.8 Sample emission level calculation

The following is a description of terms and a sample calculation, as appears in the radiated emissions data table. The numbers used in the calculation are for example only. There is no direct correlation to the specific data taken for the product described in this document:

Reading:

This is the reading obtained on the spectrum analyzer in dBμV. Any external preamplifiers used are taken into account through internal analyzer settings.

A.F.:

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

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

Net:

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

Limit:

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

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

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 = 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
ISED RSS-Gen, Issue 5 (section 6.6)	Occupied Bandwidth	ANSI C63.10-2013	N/R	Informational only
FCC § 15.247(a)(2) ISED RSS-247, Issue 2 (section 5.2)	6 dB Bandwidth	ANSI C63.10-2013	PASS	
FCC § 15.247(b)(1) ISED RSS-247, Issue 2 (section 5.4)	Maximum peak conducted power	ANSI C63.10-2013	PASS	
FCC § 15.247(e) ISED RSS-247, Issue 2 (section 5.2)	Power spectral density	ANSI C63.10-2013	PASS	
FCC § 15.207 ISED RSS-247, Issue 2 (section 3.1)	AC power line conducted emissions	ANSI C63.10-2013	N/R	
FCC § 15.247(d) ISED RSS-247, Issue 2 (section 5.5)	Band edge compliance	ANSI C63.10-2013	PASS	
FCC § 15.247(d) ISED RSS-247, Issue 2 (section 5.5)	Conducted spurious emissions	ANSI C63.10-2013	PASS	
FCC § 15.247(d) FCC § 15.209 ISED RSS-Gen, Issue 5 (section 6.13)	Transmitter radiated spurious emissions	ANSI C63.10-2013	PASS	
ISED RSS-247, Issue 2 (section 3.1)	Receiver radiated spurious emissions	ANSI C63.10-2013	PASS	
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

3 Test Conditions and Results

3.1 Test Conditions and Results - Occupied bandwidth

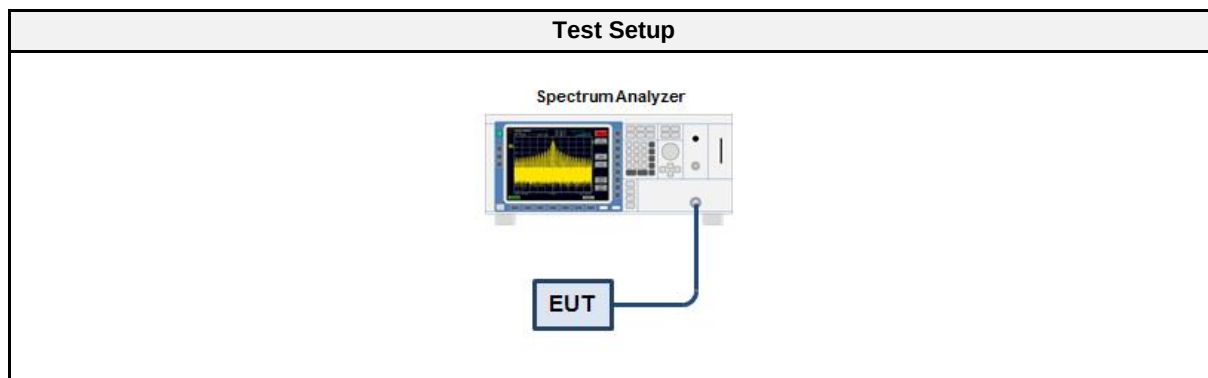
3.1.1 Information

Test Information	
Reference	ISED RSS-Gen, Issue 5 (section 6.6)
Measurement Method	ANSI C63.10 6.9.3
Operator	Sebastian Suckow
Date	2018-08-23

3.1.2 Limits

Limits
None (Informational only)

3.1.3 Setup



3.1.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01003	2018-07	2019-07

3.1.5 Procedure

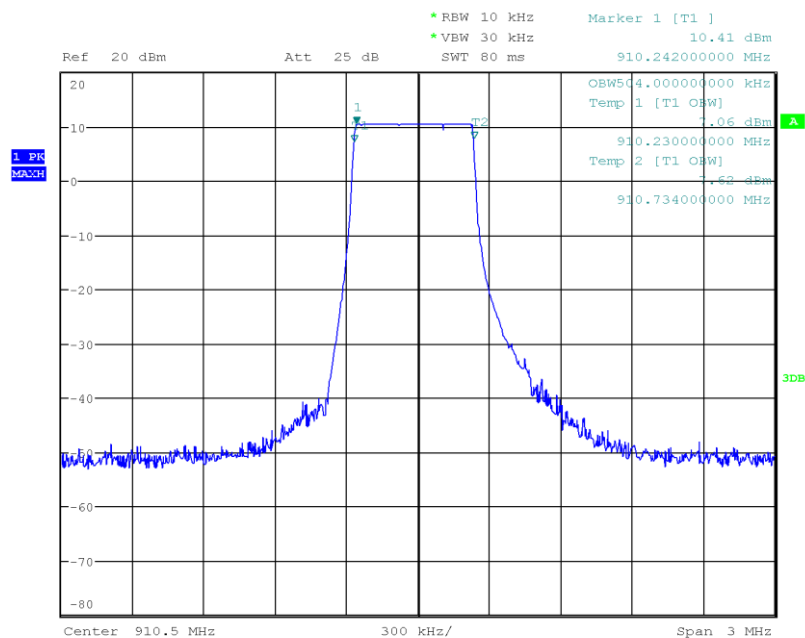
Test Procedure
1. EUT transmitter is activated in test mode under normal conditions 2. The spectrum analyzer is set to peak detection and maximum hold with a span twice the emission spectrum 3. The resolution bandwidth is set to the range of 1 % to 5 % of the occupied bandwidth 4. The occupied bandwidth is measured with the build-in analyzer function

3.1.6 Results

Test Results		
Mode	Frequency [MHz]	Bandwidth [MHz]
Transmit	910.5	0.504
Transmit	919.5	0.504

Occupied Bandwidth

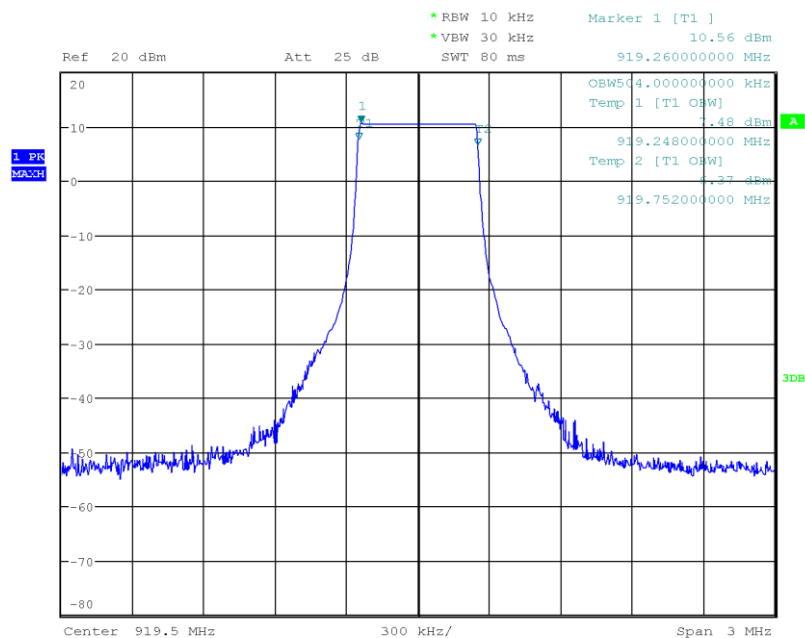
Project Number: G0M-1807-7557
 Applicant: digades GmbH
 Model Description: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Sample ID: 19981
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: LoRa, Channel: 910.5 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Sebastian Suckow
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-08-23
 Occupied Bandwidth [MHz]: 0.504



Date: 23.AUG.2018 14:52:50

Occupied Bandwidth

Project Number: G0M-1807-7557
 Applicant: digades GmbH
 Model Description: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Sample ID: 19981
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: LoRa, Channel: 919.5 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Sebastian Suckow
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-08-23
 Occupied Bandwidth [MHz]: 0.504



Date: 23.AUG.2018 08:23:08

3.2 Test Conditions and Results - 6 dB bandwidth

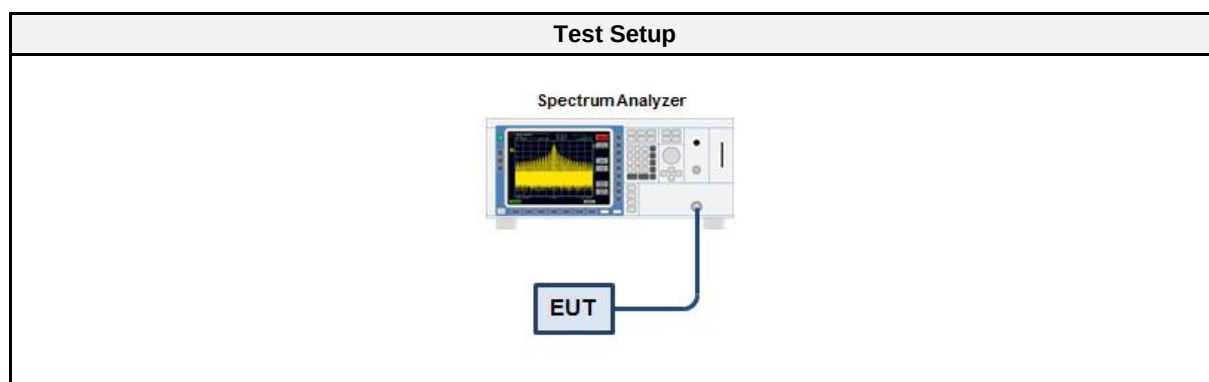
3.2.1 Information

Test Information	
Reference	FCC § 15.247(a)(2); ISED RSS-247, Issue 2 (section 5.2)
Measurement Method	ANSI C63.10 11.8
Operator	Sebastian Suckow
Date	2018-08-23

3.2.2 Limits

Limits
≥ 500kHz

3.2.3 Setup



3.2.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01003	2018-07	2019-07

3.2.5 Procedure

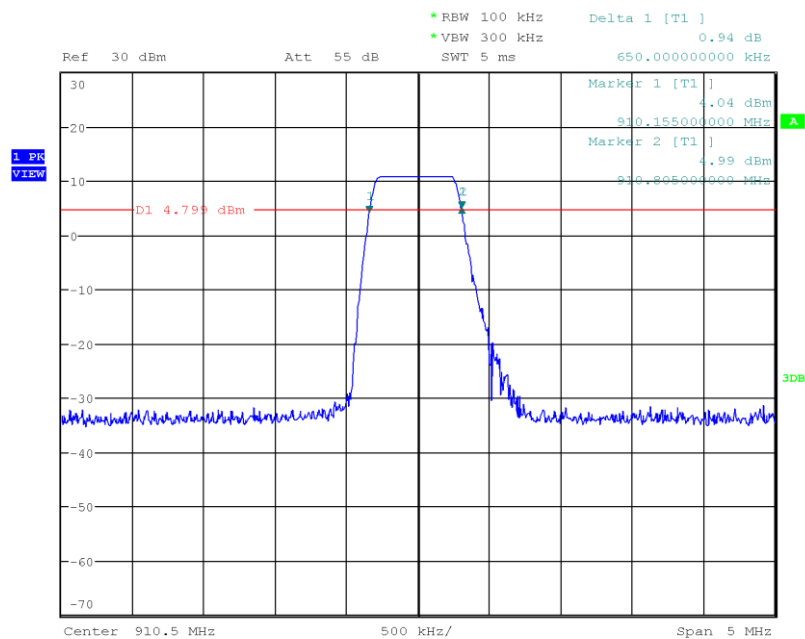
Test Procedure
1. EUT set to test mode 2. Span set to at least twice the emission spectrum 3. Detector set to peak and max hold and RBW is set to 100 kHz 4. Envelope peak value of emission spectrum is selected 5. Marker on envelope of spectrum is set to level of -6 dB to the left of the peak 6. Marker on envelope of spectrum is set to level of -6 dB to the right of the peak 7. 6 dB Bandwidth is determined by marker frequency separation

3.2.6 Results

Test Results				
Mode	Frequency [MHz]	Bandwidth [kHz]	Limit [kHz]	Verdict
Transmit	910.5	650	500	PASS
Transmit	919.5	650	500	PASS

DTS (6 dB) Bandwidth

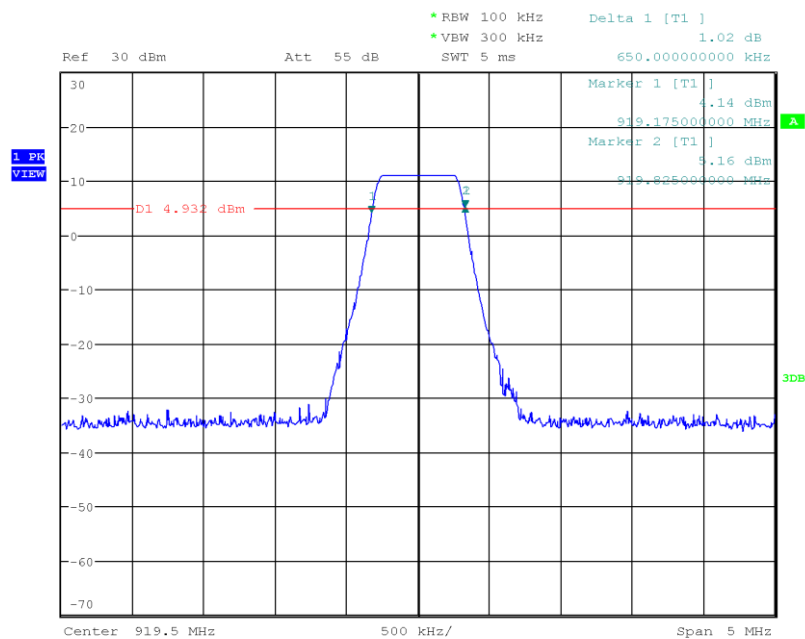
Project Number: G0M-1807-7557
 Applicant: digades GmbH
 Model Description: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Sample ID: 19981
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1
 Operational Mode: LoRa, Channel: 910.5 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Sebastian Suckow
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-08-23
 Lower Frequency [MHz]: 910.155
 Upper Frequency [MHz]: 910.805
 6 dB Bandwidth [kHz]: 650



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DTS (6 dB) Bandwidth

Project Number: G0M-1807-7557
 Applicant: digades GmbH
 Model Description: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Sample ID: 19981
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.8.1 Option 1
 Operational Mode: LoRa, Channel: 919.5 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Sebastian Suckow
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-08-23
 Lower Frequency [MHz]: 919.175
 Upper Frequency [MHz]: 919.825
 6 dB Bandwidth [kHz]: 650



Date: 23.AUG.2018 08:25:23

3.3 Test Conditions and Results - Maximum peak conducted output power

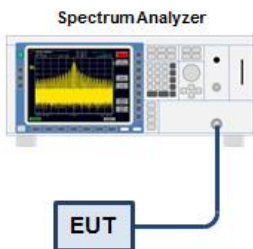
3.3.1 Information

Test Information	
Reference	FCC § 15.247(b)(1); ISED RSS-247, Issue 2 (section 5.4)
Measurement Method	ANSI C63.10 11.9.1
Operator	Sebastian Suckow
Date	2018-08-23

3.3.2 Limits

Limits
1 W (30 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.

3.3.3 Setup

Test Setup
 The diagram illustrates the test setup. A Spectrum Analyzer is connected via a cable to a box labeled 'EUT' (Equipment Under Test). The Spectrum Analyzer's screen shows a frequency spectrum with a prominent peak.

3.3.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01003	2018-07	2019-07

3.3.5 Procedure

Test Procedure
1. EUT set to test hopping mode (Communication tester is used if needed) 2. Analyzer resolution bandwidth is set $\geq$ 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

3.3.6 Results

Test Results				
Channel [MHz]	Power [dBm]	Power [W]	Limit [W]	Verdict
910.5	11.951	0.0157	1.0	PASS
919.5	12.008	0.0159	1.0	PASS

Test Report No.: G0M-1807-7557-TFC247DT-V01

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

3.4 Test Conditions and Results - Power spectral density

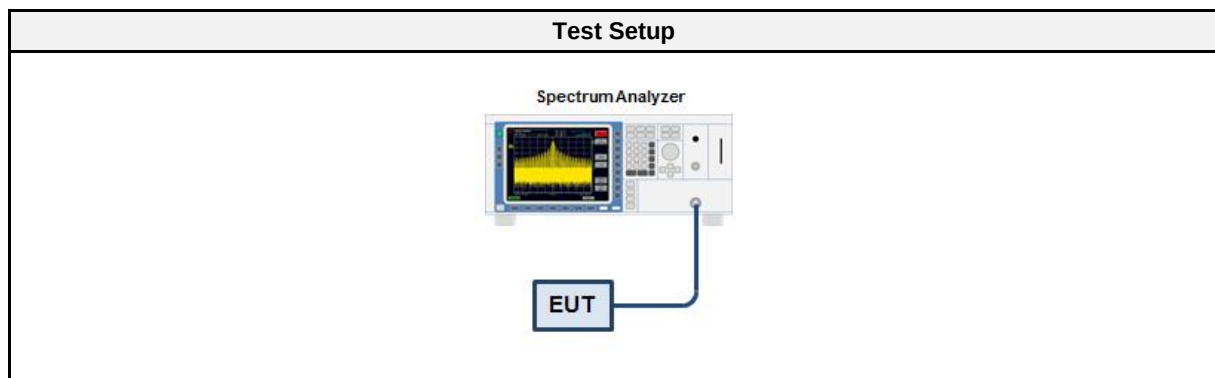
3.4.1 Information

Test Information	
Reference	FCC § 15.247(e); ISSED RSS-247, Issue 2 (section 5.2)
Measurement Method	ANSI C63.10 11.10.2, 14.3.2
Operator	Sebastian Suckow
Date	2018-08-23

3.4.2 Limits

Limits
8 dBm / 3 kHz

3.4.3 Setup



3.4.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01003	2018-07	2019-07

3.4.5 Procedure

Test Procedure
1. EUT set to test mode 2. The analyzer is set to DTS channel center frequency with a span of 1.5 times the DTS bandwidth 3. The RBW is set to 100 kHz with VBW $\geq$ RBW and the detector is set to peak with max hold 4. After the trace has stabilized a marker is set to the envelope maximum 5. If the power spectral density is above the limit the RBW is reduced (not lower than 3 kHz) and the measurement is repeated 6. If the EUT has more than one transmit chain the procedure is repeated for each transmit chain

3.4.6 Results

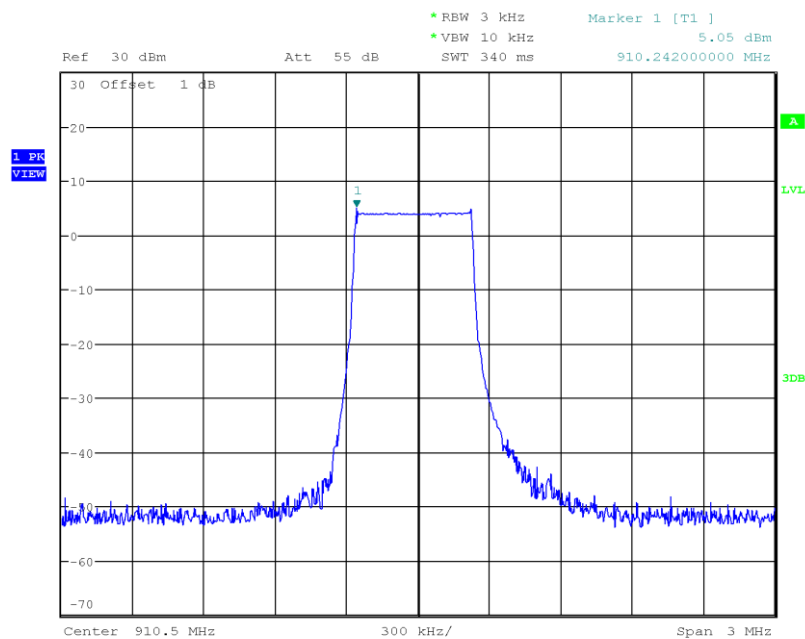
Test Results			
Channel [MHz]	PSD [dBm/RBW]	Limit [dBm/3kHz]	Verdict
910.5	5.054	8.0	PASS
919.5	5.164	8.0	PASS
RBW = 3 kHz			

Test Report No.: G0M-1807-7557-TFC247DT-V01

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

Peak Power Spectral Density

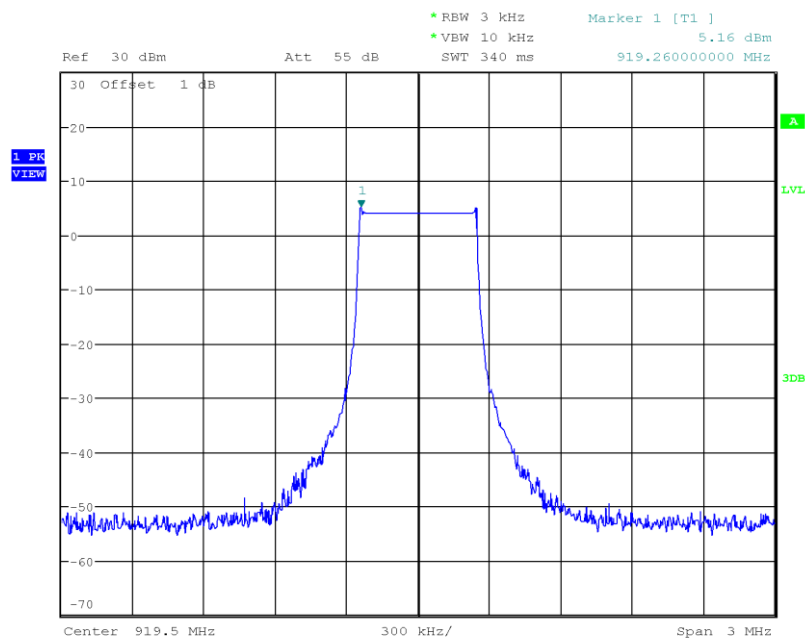
Project Number: G0M-1807-7557
 Applicant: digades GmbH
 Model Description: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Sample ID: 19981
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.10.2
 Operational Mode: LoRa, Channel: 910.5 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Sebastian Suckow
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-08-23
 Peak Frequency [MHz]: 910.242
 Spectral Density [dBm/RBW]: 5.054
 Resolution Bandwidth [kHz]: 3 kHz



Date: 23.AUG.2018 14:55:11

Peak Power Spectral Density

Project Number:	G0M-1807-7557
Applicant:	digades GmbH
Model Description:	VW RemoteStart
Model:	Remote Start Key Fob - VWRSTT
Test Sample ID:	19981
Reference Standards:	FCC 15.247, RSS-247
Reference Method:	ANSI C63.10:2013, Section 11.10.2
Operational Mode:	LoRa, Channel: 919.5 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Sebastian Suckow
Test Site:	Eurofins Product Service GmbH
Test Date:	2018-08-23
Peak Frequency [MHz]:	919.260
Spectral Density [dBm/RBW]:	5.164
Resolution Bandwidth [kHz]:	3 kHz



Date: 23.AUG.2018 08:29:58

3.5 Test Conditions and Results - Band-edge compliance

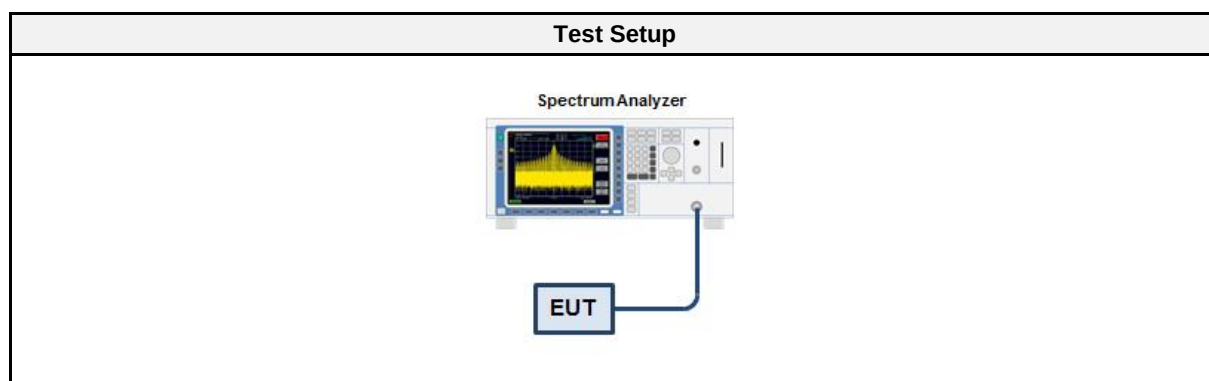
3.5.1 Information

Test Information	
Reference	FCC § 15.247(d); ISED RSS-247, Issue 2 (section 5.5)
Measurement Method	ANSI C63.10 11.13
Operator	Sebastian Suckow
Date	2018-08-23

3.5.2 Limits

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

3.5.3 Setup



3.5.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01003	2018-07	2019-07

3.5.5 Procedure

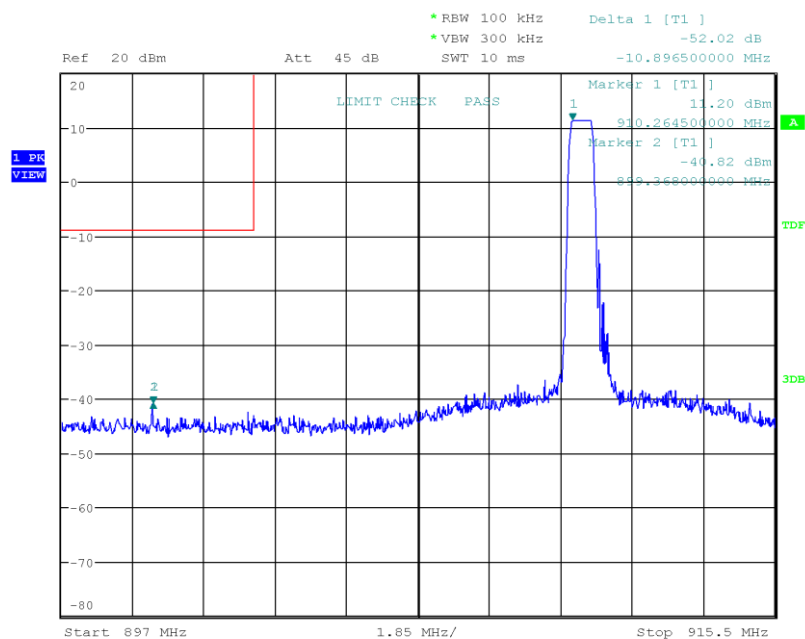
Test Procedure
1. EUT set to test mode (Communication tester is used if needed) 2. Span set around lower band edge and detector is set to peak and max hold 3. Resolution bandwidth is set to 100 kHz 4. Markers are set to peak emission levels within frequency band and outside frequency band 5. Band edge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

3.5.6 Results

Test Results				
Mode	Channel [MHz]	Out-of-band Attenuation [dB]	Limit [dB]	Verdict
Transmit	910.5	-52.02	-20	PASS
Transmit	919.5	-54.88	-20	PASS

Band-edge Compliance

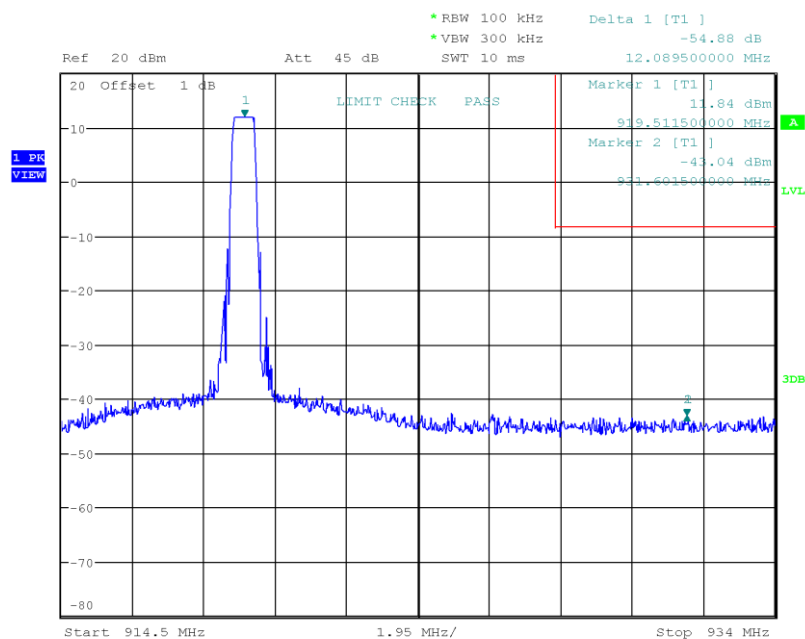
Project Number: G0M-1807-7557
 Applicant: digades GmbH
 Model Description: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Sample ID: 19981
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.10
 Operational Mode: single frequency, Channel: 910.5 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Sebastian Suckow
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-08-23
 Band-edge: Lower
 In-band Frequency [MHz]: 910.264
 Max. in-band Level [dBm/100 kHz]: 11.203
 Out-of-band Frequency [MHz]: 899.368
 Max. out-of-band Level [dBm/100 kHz]: -40.816
 Attenuation [dB]: -52.02



Date: 23.AUG.2018 14:47:33

Band-edge Compliance

Project Number: G0M-1807-7557
 Applicant: digades GmbH
 Model Description: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Sample ID: 19981
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.10
 Operational Mode: single frequency, Channel: 919.5 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Sebastian Suckow
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-08-23
 Band-edge: Upper
 In-band Frequency [MHz]: 919.511
 Max. in-band Level [dBm/100 kHz]: 11.842
 Out-of-band Frequency [MHz]: 931.601
 Max. out-of-band Level [dBm/100 kHz]: -43.041
 Attenuation [dB]: -54.88



Date: 23.AUG.2018 09:07:47

3.6 Test Conditions and Results - Conducted spurious emissions

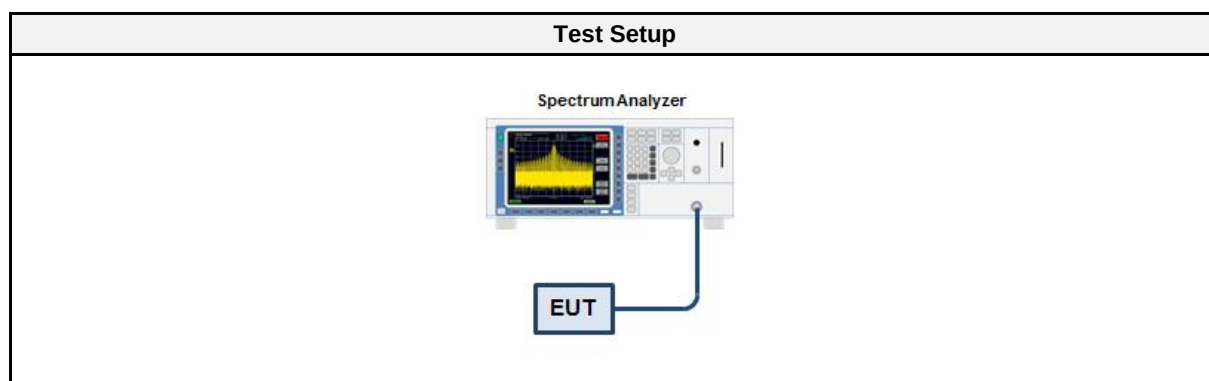
3.6.1 Information

Test Information	
Reference	FCC § 15.247(d); ISED RSS-247, Issue 2 (section 5.5)
Measurement Method	ANSI C63.10 11.11
Operator	Sebastian Suckow
Date	2018-08-23

3.6.2 Limits

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

3.6.3 Setup



3.6.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01003	2018-07	2019-07

3.6.5 Procedure

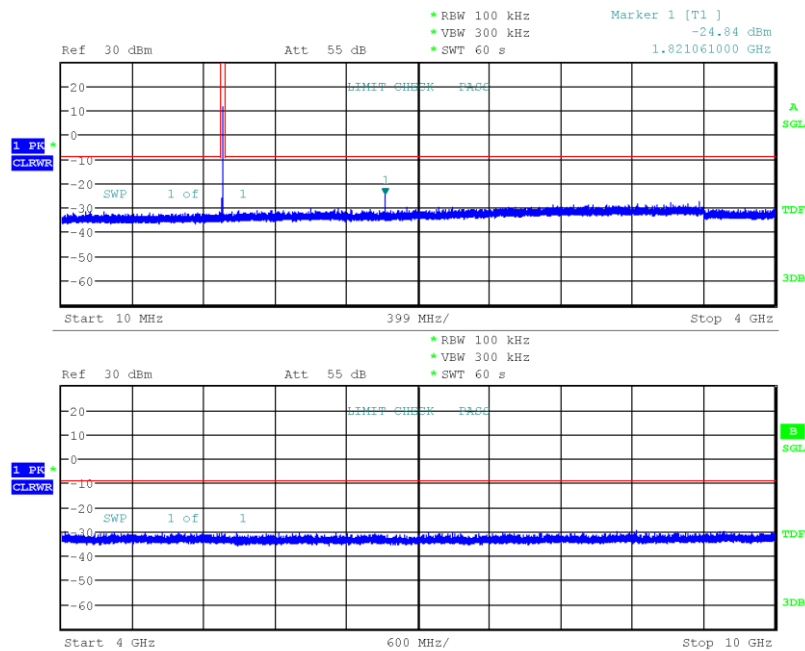
Test Procedure
1. EUT set to test mode (Communication tester is used if needed) 2. Span set around lower band edge and detector is set to peak and max hold 3. Resolution bandwidth is set to 100 kHz 4. Markers are set to peak emission levels within frequency band and outside frequency band 5. Band edge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

3.6.6 Results

Test Results		
Mode	Channel [MHz]	Verdict
Transmit	910.5	PASS
Transmit	919.5	PASS

Conducted Spurious Emissions

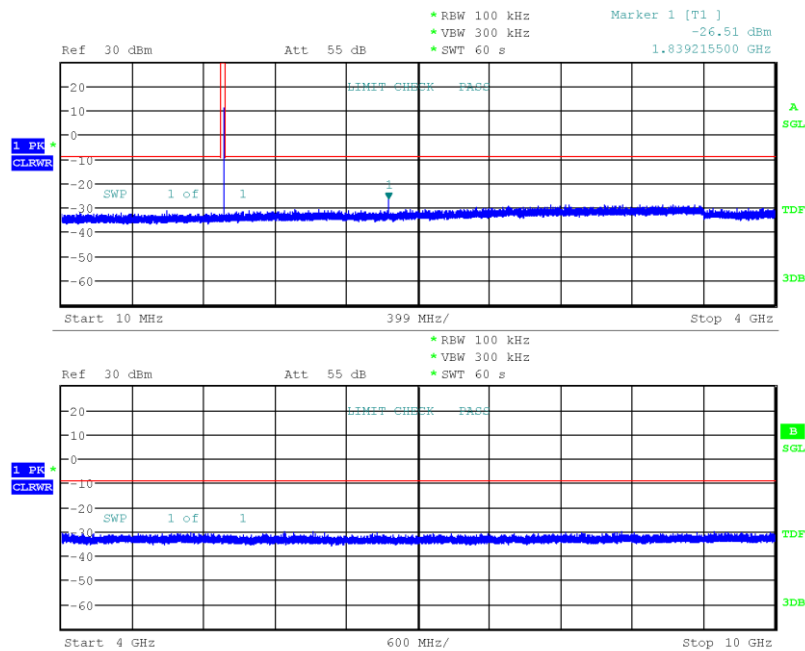
Project Number: G0M-1807-7557
 Applicant: digades GmbH
 Model Description: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Sample ID: 19981
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: LoRa, Channel: 910.5 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Sebastian Suckow
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-08-23
 Max. in-band Frequency [MHz]: 910.3
 Max. in-band Level [dBm/100 kHz]: 11.2
 Out-of-band Limit [dBm/100 kHz]: -8.8



Date: 23.AUG.2018 14:51:35

Conducted Spurious Emissions

Project Number: G0M-1807-7557
 Applicant: digades GmbH
 Model Description: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Sample ID: 19981
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 11.11
 Operational Mode: LoRa, Channel: 919.5 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Sebastian Suckow
 Test Site: Eurofins Product Service GmbH
 Test Date: 2018-08-23
 Max. in-band Frequency [MHz]: 919.4
 Max. in-band Level [dBm/100 kHz]: 11.1
 Out-of-band Limit [dBm/100 kHz]: -8.9



Date: 23.AUG.2018 09:51:49

3.7 Test Conditions and Results - Transmitter radiated emissions

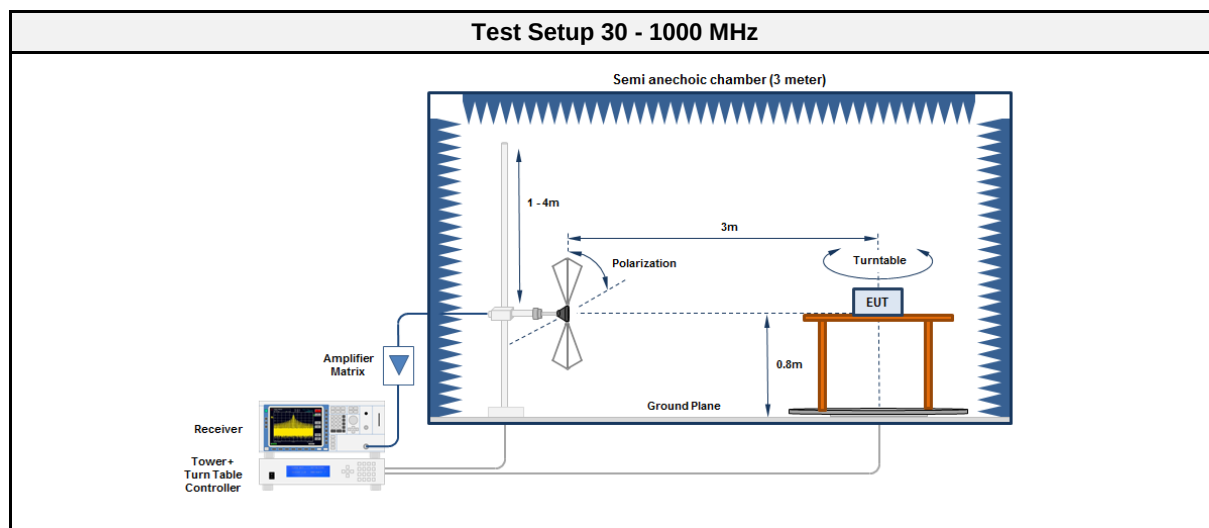
3.7.1 Information

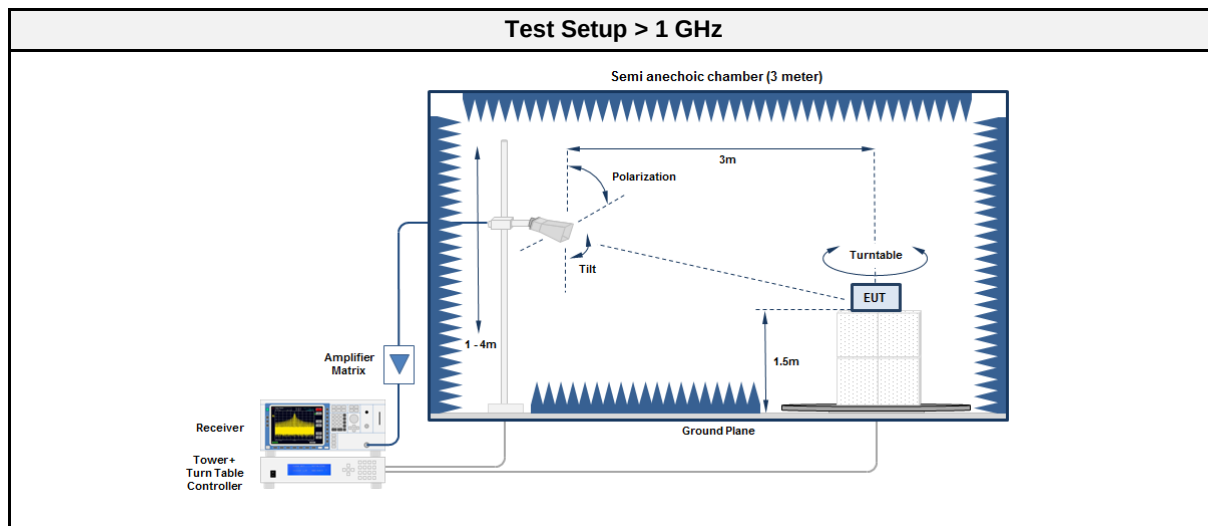
Test Information	
Reference	FCC § 15.247(d); FCC § 15.209; ISSED RSS-Gen, Issue 5 (section 6.13)
Measurement Method	ANSI C63.10 6.4, 6.5, 6.6, 11.12
Operator	Sebastian Suckow
Date	2018-08-23 – 2018-08-24

3.7.2 Limits

Limits			
Frequency [MHz]	Detector	Field strength [$\mu\text{V/m}$]	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

3.7.3 Setup





3.7.4 Equipment

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	-	-
EMI Test Receiver	R&S	ESR7	EF00943	2018-07	2019-07
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	-	-
EMI Test Receiver	R&S	ESR7	EF00943	2018-07	2019-07
Antenna	R&S	BBHA 9120D	EF00018	2016-09	2019-09

3.7.5 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	

3.7.6 Results

Test Results						
Channel [MHz]	Emission [MHz]	Level [dBμV/m]	Det.	Pol.	Limit [dBμV/m]	Margin [dB]
910.5	1818	62.96	pk	hor	95.00	-32.04
910.5	1821	68.26	pk	ver	95.00	-26.74
910.5	2732	47.87	pk	ver	74.00	-26.13
910.5	3640	47.66	pk	ver	74.00	-26.34
910.5	5463	53.55	pk	hor	95.00	-41.45
910.5	6374	50.74	pk	hor	95.00	-44.26
910.5	7285	50.17	pk	hor	74.00	-23.83
910.5	4551	43.99	pk	ver	74.00	-30.01
910.5	5463	51.36	pk	ver	95.00	-43.64
910.5	6374	50.01	pk	ver	95.00	-44.99
910.5	7281	48.61	pk	ver	74.00	-25.39
910.5	8194	50.91	pk	hor	74.00	-23.09
919.5	1836	62.18	pk	hor	95.00	-32.82
919.5	1836	67.08	pk	ver	95.00	-27.92
919.5	2756	47.58	pk	ver	74.00	-26.42
919.5	3676	46.95	pk	ver	74.00	-27.05
919.5	4595	45.7	pk	hor	74.00	-28.3
919.5	6434	52.09	pk	hor	95.00	-42.91
919.5	7355	49.61	RMS	hor	54.00	-4.39
919.5	7353	49.55	pk	ver	74.00	-24.45
919.5	8275	50.32	RMS	hor	54.00	-3.68

3.8 Test Conditions and Results - Receiver radiated emissions

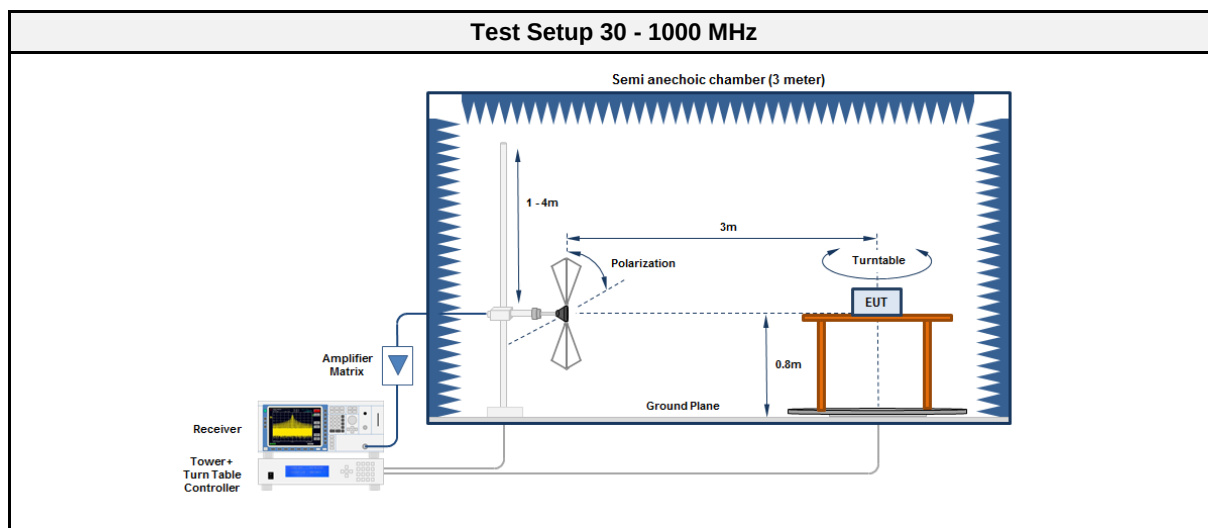
3.8.1 Information

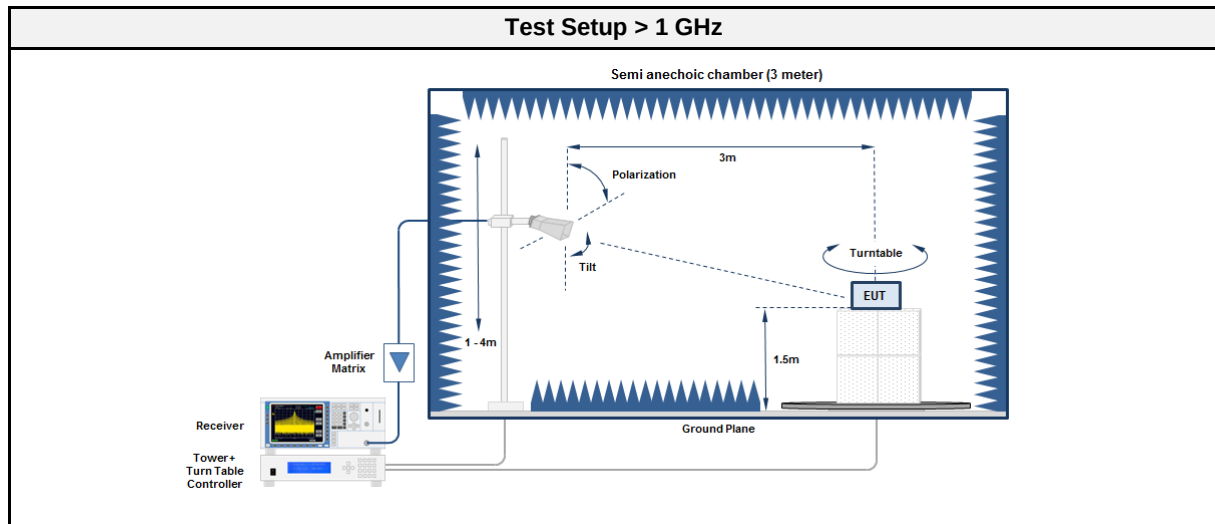
Test Information	
Reference	ISED RSS-247, Issue 2 (section 3.1)
Measurement Method	ANSI C63.10 6.5, 6.6, 11.12
Operator	Sebastian Suckow
Date	2018-08-23 – 2018-08-24

3.8.2 Limits

Limits			
Frequency [MHz]	Detector	Field strength [dB μ V/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

3.8.3 Setup





3.8.4 Equipment

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	-	-
EMI Test Receiver	R&S	ESR7	EF00943	2018-07	2019-07
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	-	-
EMI Test Receiver	R&S	ESR7	EF00943	2018-07	2019-07
Antenna	R&S	BBHA 9120D	EF00018	2016-09	2019-09

3.8.5 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	

3.8.6 Results

Test Results						
Channel [MHz]	Emission [MHz]	Level [dBμV/m]	Det.	Pol.	Limit [dBμV/m]	Margin [dB]
915.0	7980	48.86	pk	hor	53.98	-05.12

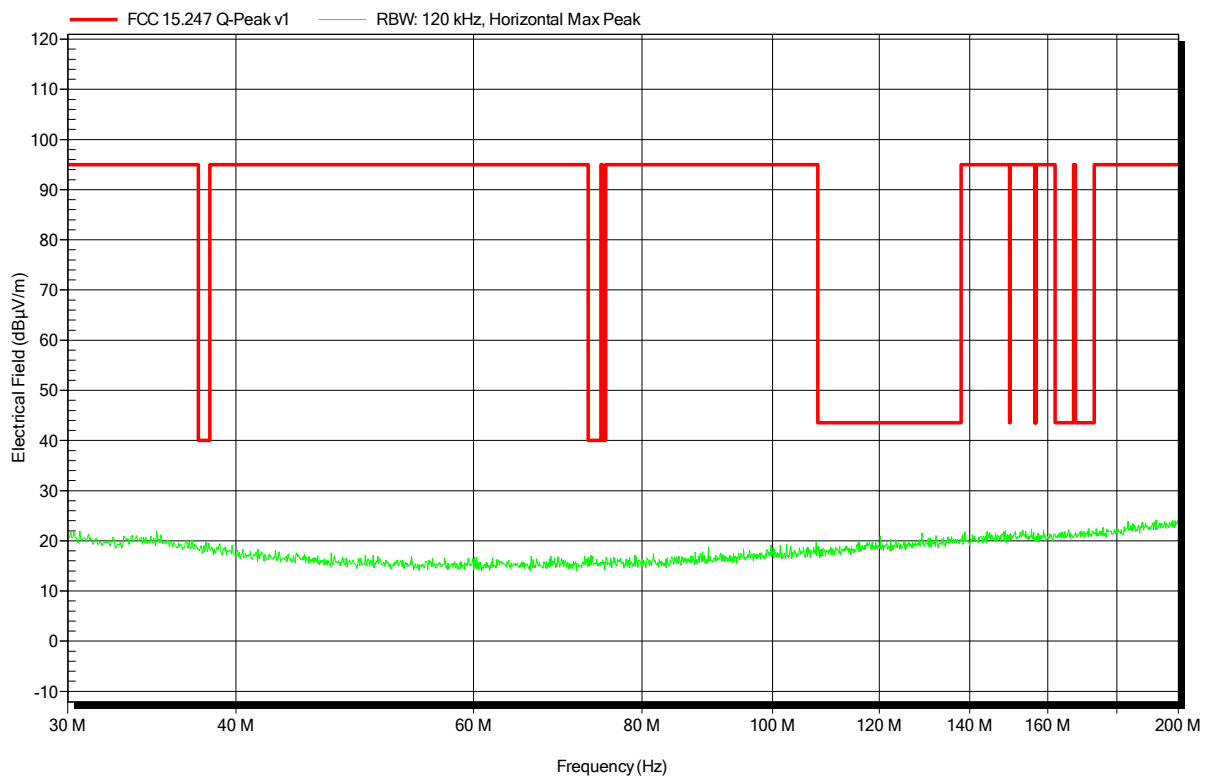
ANNEX A Transmitter spurious emissions

Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
EUT Name: VW RemoteStart
Model: Remote Start Key Fob - VWRSTT
Test Site: Eurofins Product Service GmbH
Operator: Mr. Suckow
Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
Antenna: Rohde & Schwarz HK 116, Horizontal
Measurement distance: 3 m
Mode: TX; SRD 910.5 MHz LoRa
Test Date: 2018-08-24
Note:

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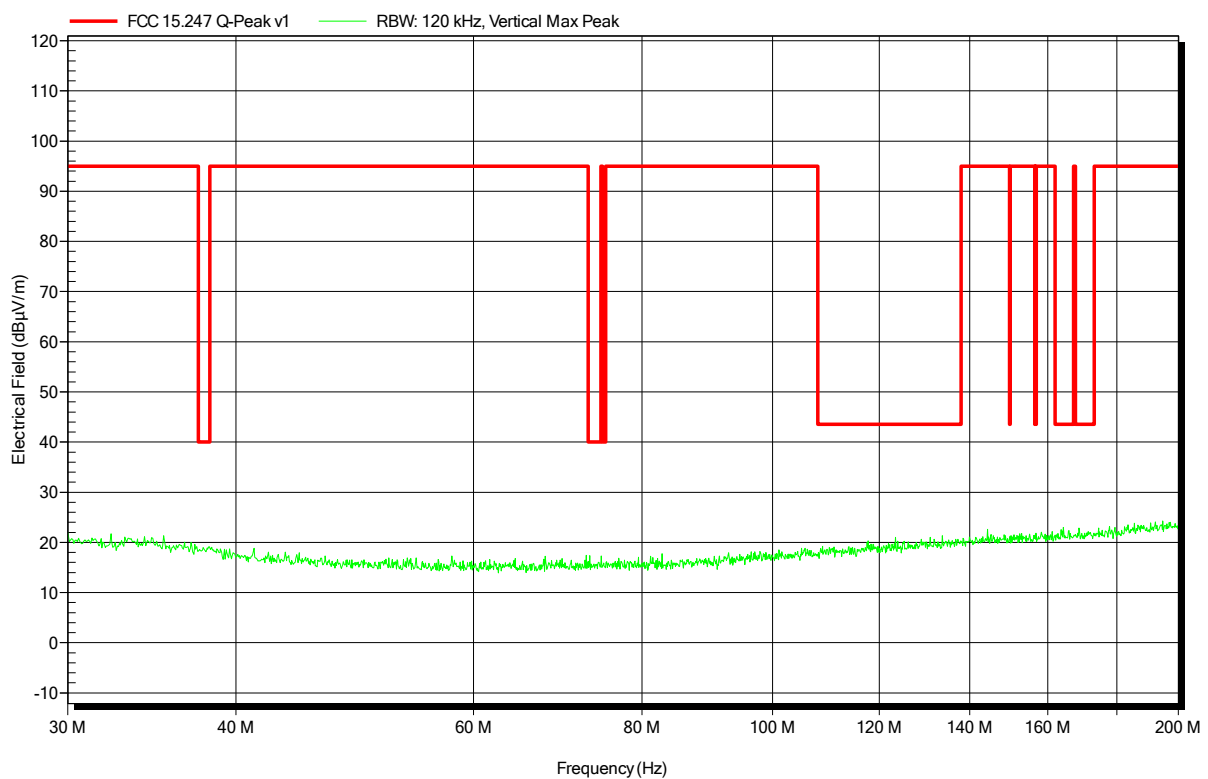


Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
EUT Name: VW RemoteStart
Model: Remote Start Key Fob - VWRSTT
Test Site: Eurofins Product Service GmbH
Operator: Mr. Suckow
Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
Antenna: Rohde & Schwarz HK 116, Vertical
Measurement distance: 3 m
Mode: TX; SRD 910.5 MHz LoRa
Test Date: 2018-08-24
Note:

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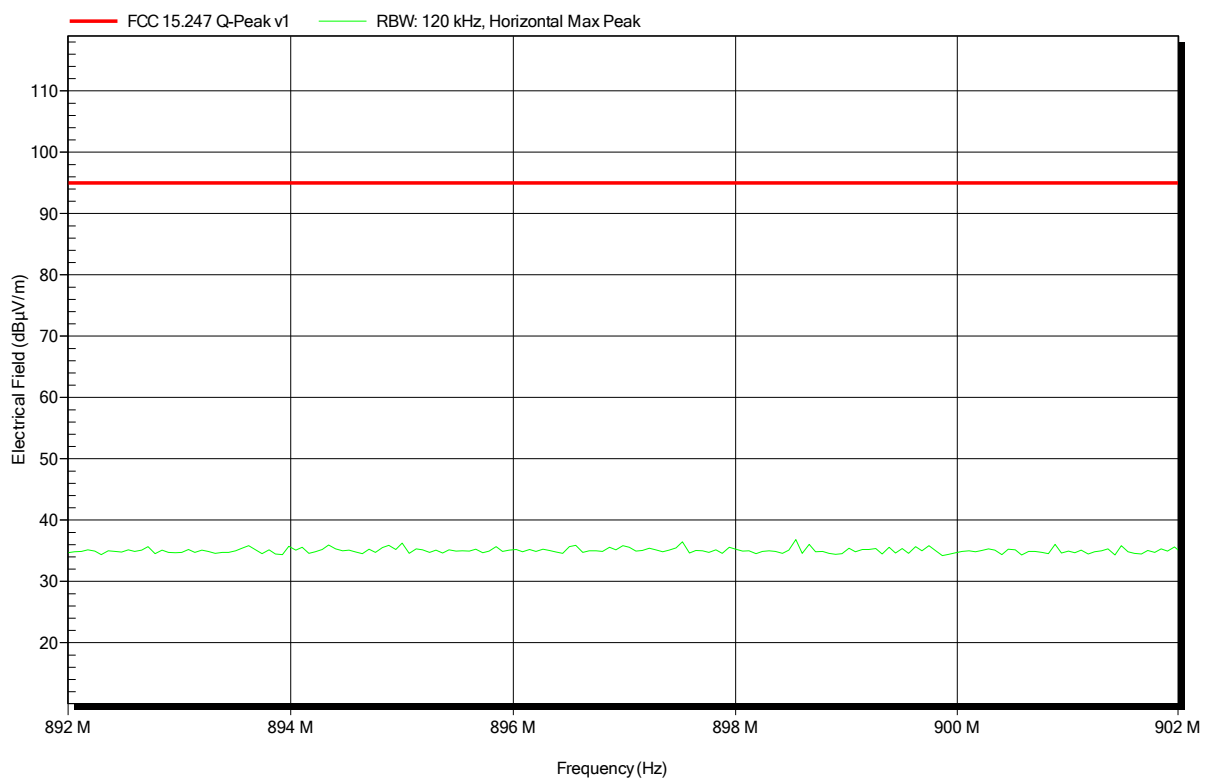


Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
 EUT Name: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Suckow
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3 m
 Mode: TX; SRD 910.5 MHz LoRa
 Test Date: 2018-08-24
 Note:

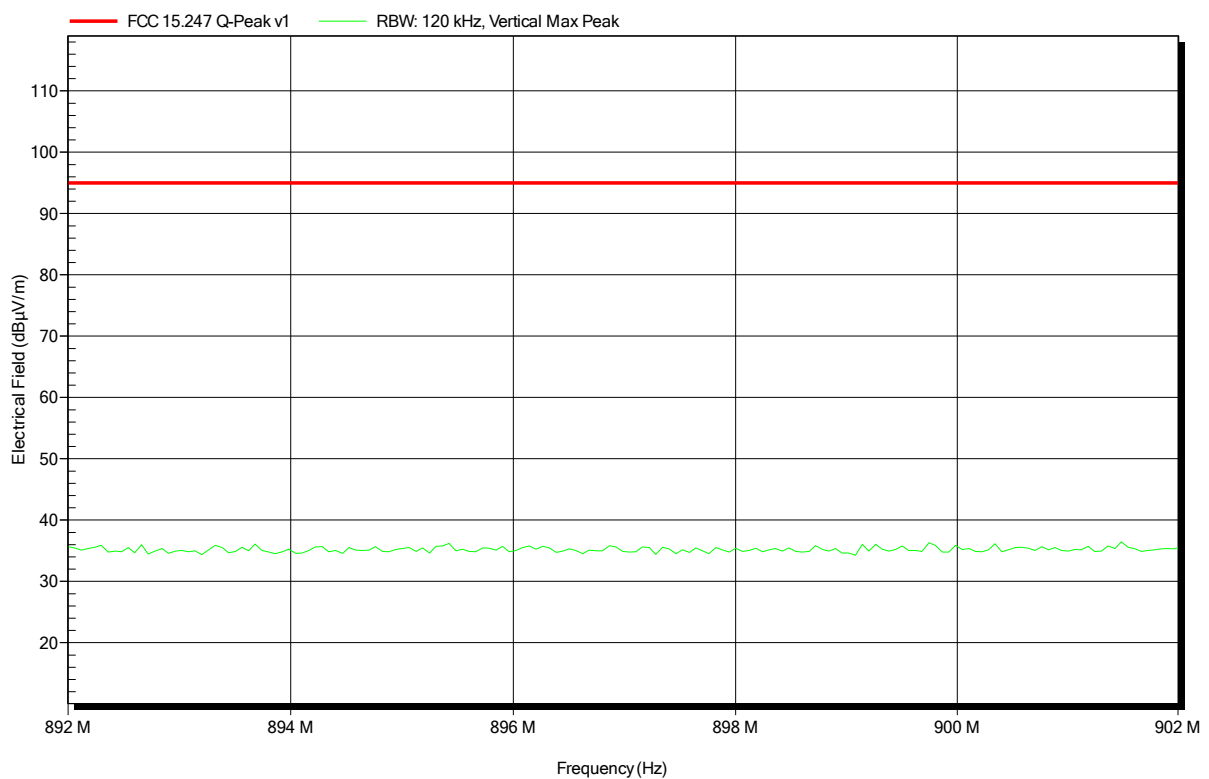
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Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557
 Applicant: digades GmbH
 EUT Name: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Suckow
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: TX; SRD 910.5 MHz LoRa
 Test Date: 2018-08-24
 Note:

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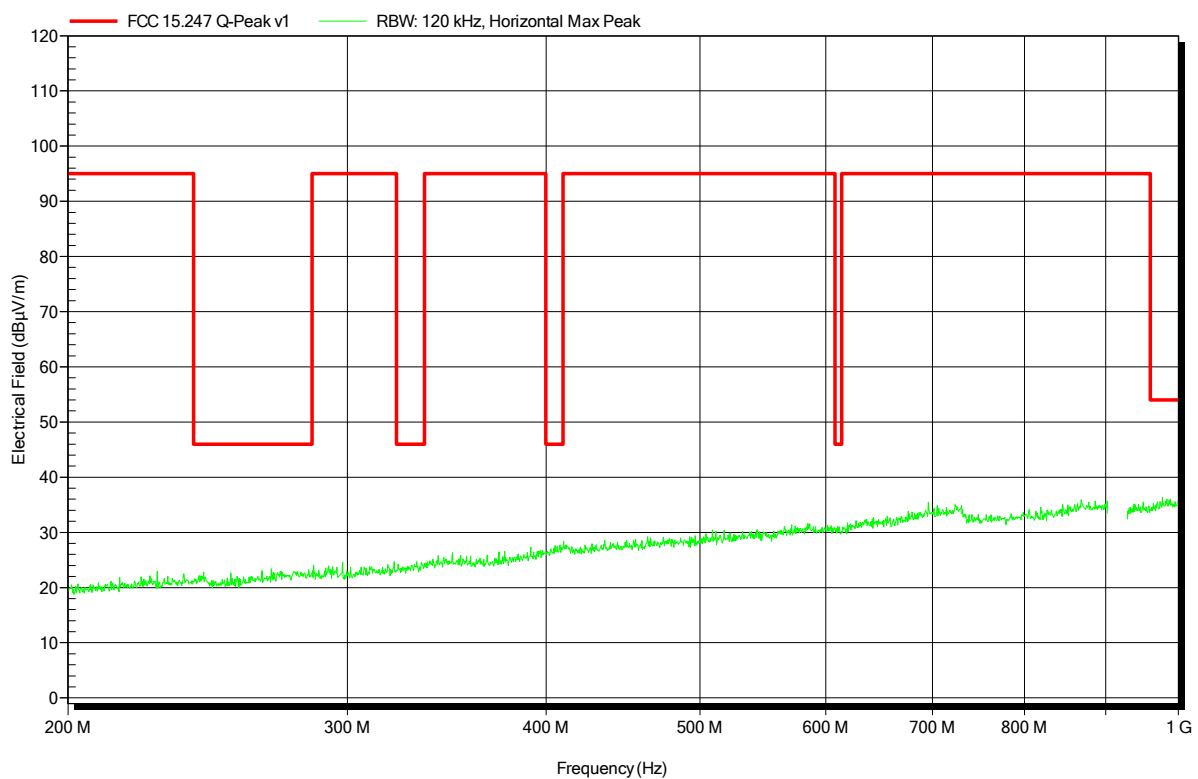


Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
EUT Name: VW RemoteStart
Model: Remote Start Key Fob - VWRSTT
Test Site: Eurofins Product Service GmbH
Operator: Mr. Suckow
Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
Antenna: Rohde & Schwarz HL 223, Horizontal
Measurement distance: 3 m
Mode: TX; SRD 910.5 MHz LoRa
Test Date: 2018-08-24
Note:

Index 15

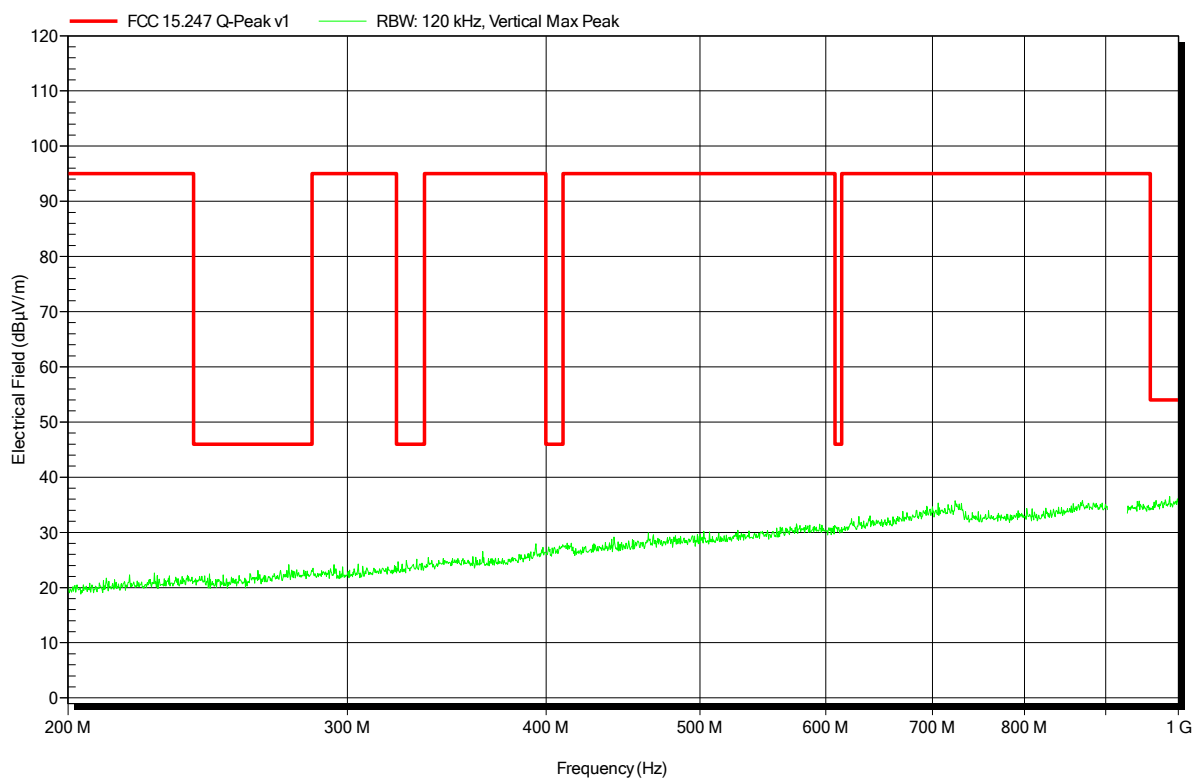


Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
EUT Name: VW RemoteStart
Model: Remote Start Key Fob - VWRSTT
Test Site: Eurofins Product Service GmbH
Operator: Mr. Suckow
Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
Antenna: Rohde & Schwarz HL 223, Vertical
Measurement distance: 3 m
Mode: TX; SRD 910.5 MHz LoRa
Test Date: 2018-08-24
Note:

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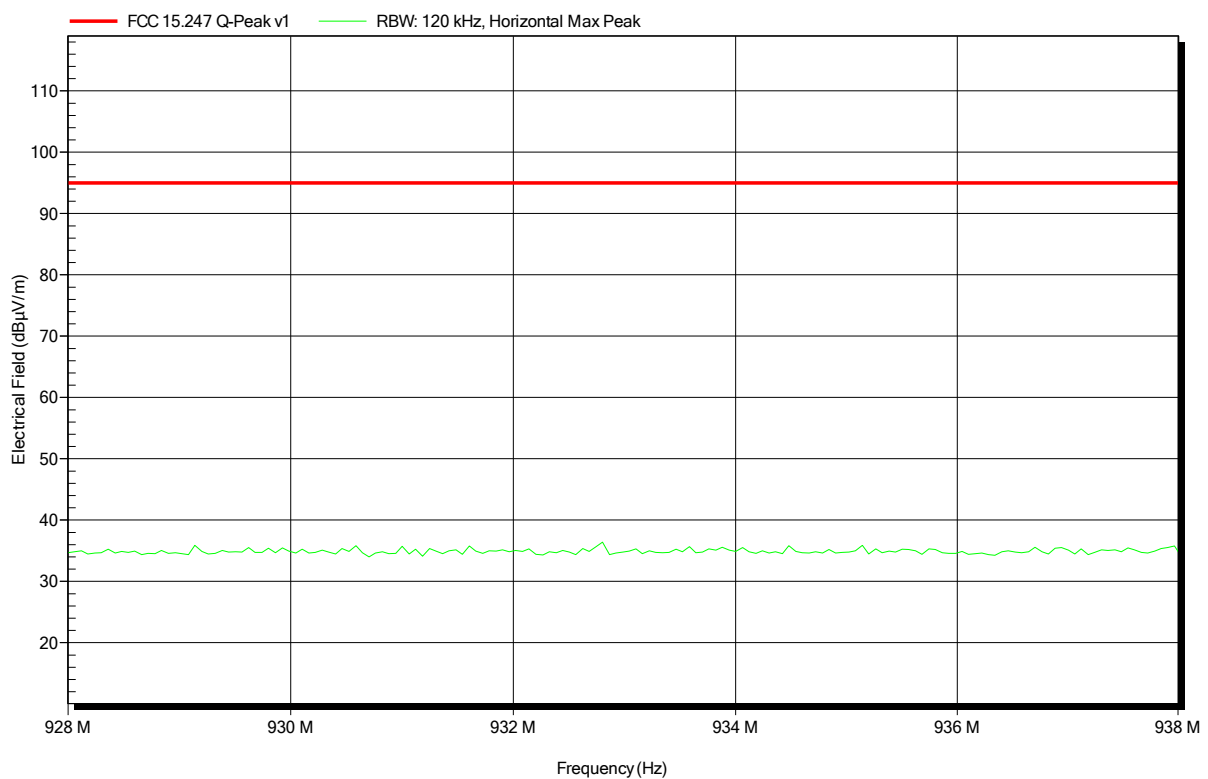


Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
EUT Name: VW RemoteStart
Model: Remote Start Key Fob - VWRSTT
Test Site: Eurofins Product Service GmbH
Operator: Mr. Suckow
Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
Antenna: Rohde & Schwarz HL 223, Horizontal
Measurement distance: 3 m
Mode: TX; SRD 910.5 MHz LoRa
Test Date: 2018-08-24
Note:

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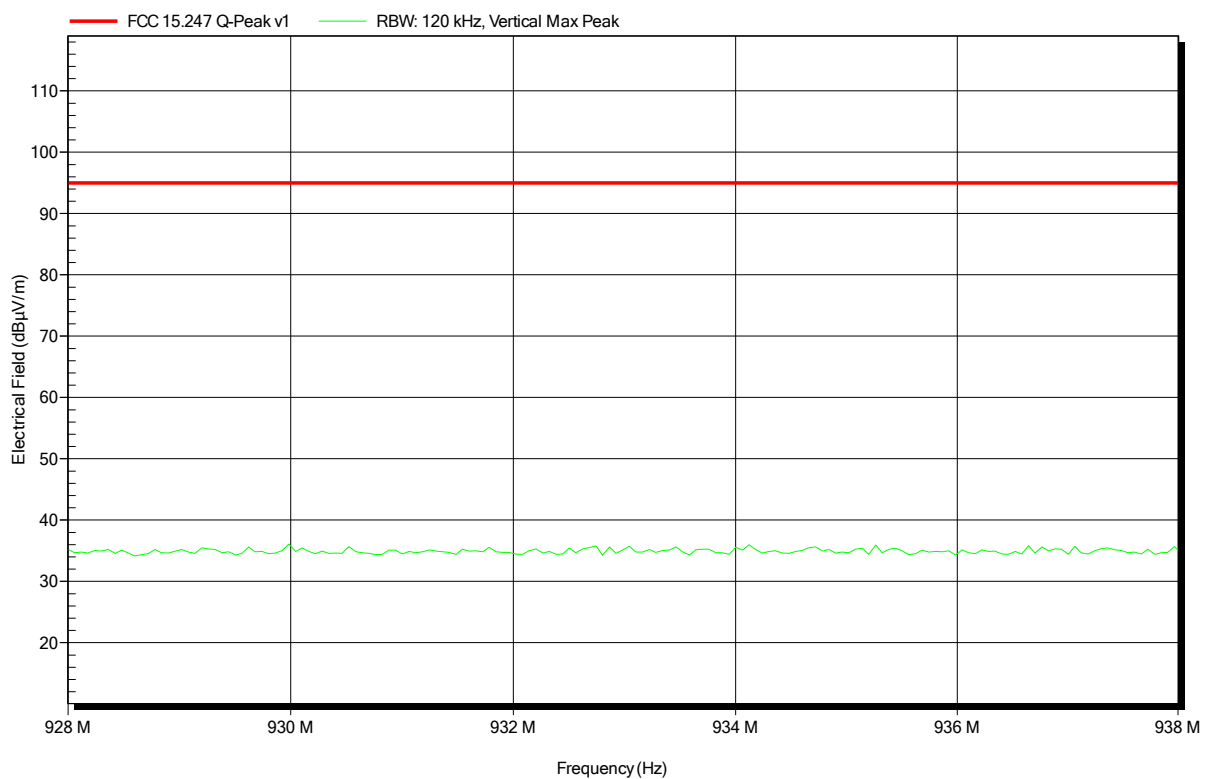


Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
 EUT Name: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Suckow
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: TX; SRD 910.5 MHz LoRa
 Test Date: 2018-08-24
 Note:

Index 11

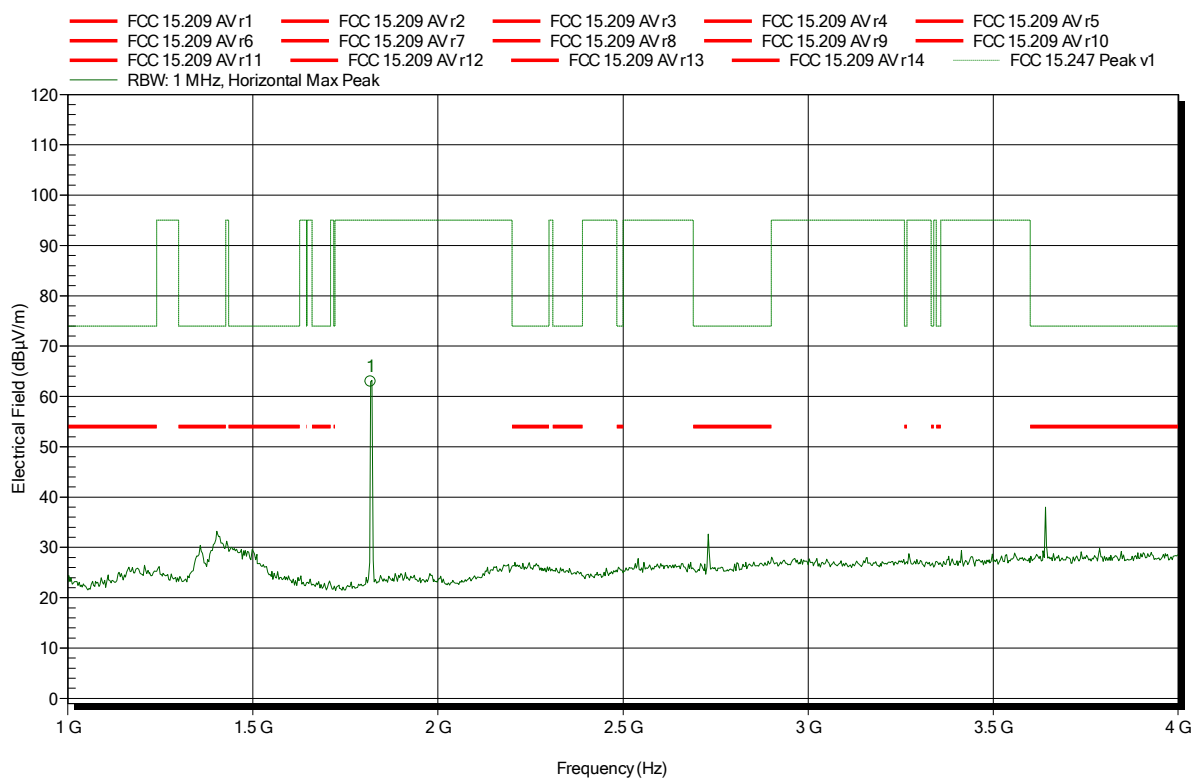


Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
 EUT Name: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Site: Eurofins Product Service GmbH
 Operator: Sebastian Suckow
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; SRD 910.5 MHz LoRa
 Test Date: 2018-08-23
 Note:

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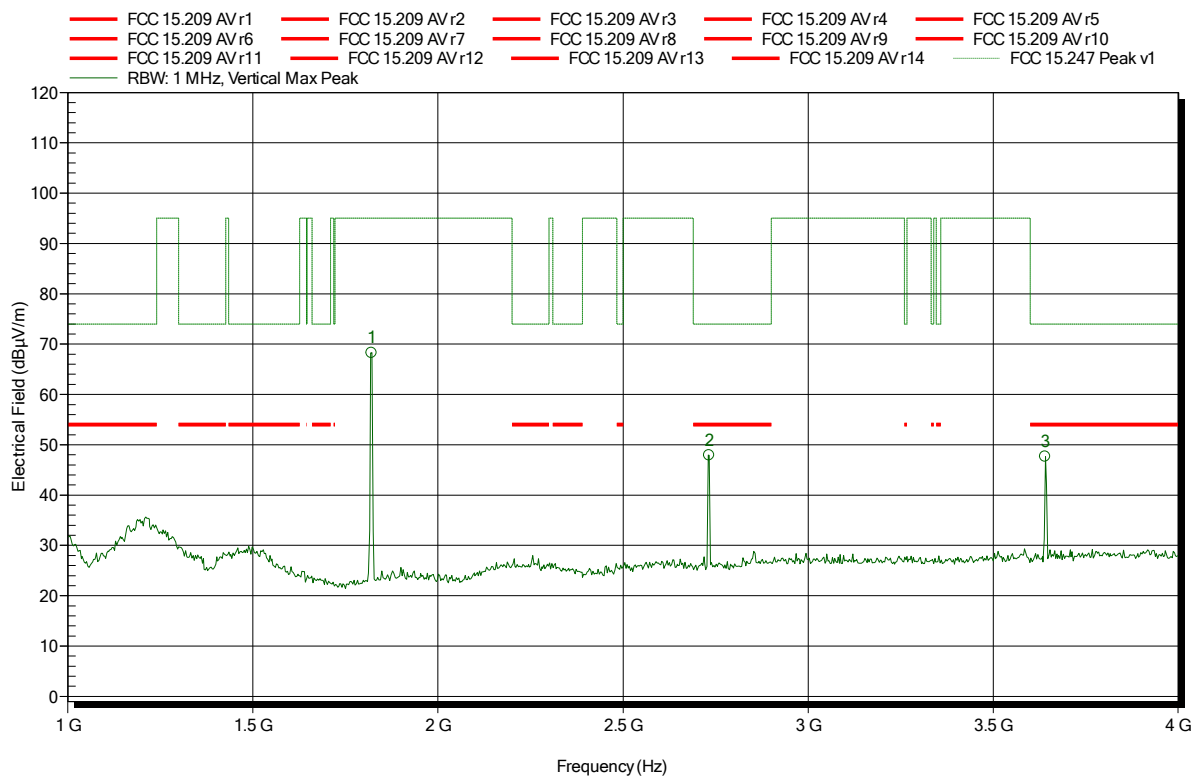
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.818 GHz	62.96 dBµV/m	95 dBµV/m	-32.04 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
 EUT Name: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Site: Eurofins Product Service GmbH
 Operator: Sebastian Suckow
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; SRD 910.5 MHz LoRa
 Test Date: 2018-08-23
 Note:

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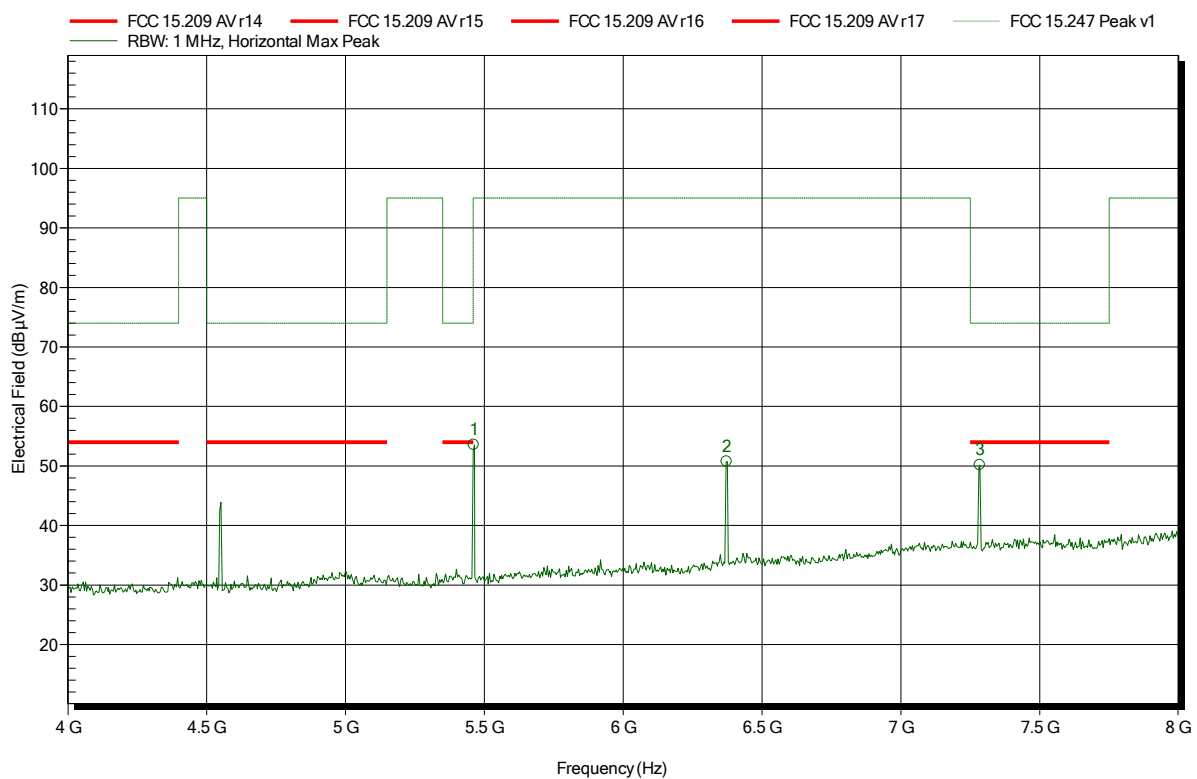
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.821 GHz	68.26 dBµV/m	95 dBµV/m	-26.74 dB	Pass
2.732 GHz	47.87 dBµV/m	74 dBµV/m	-26.13 dB	Pass
3.64 GHz	47.66 dBµV/m	74 dBµV/m	-26.34 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
EUT Name: VW RemoteStart
Model: Remote Start Key Fob - VWRSTT
Test Site: Eurofins Product Service GmbH
Operator: Sebastian Suckow
Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; SRD 910.5 MHz LoRa
Test Date: 2018-08-23
Note:

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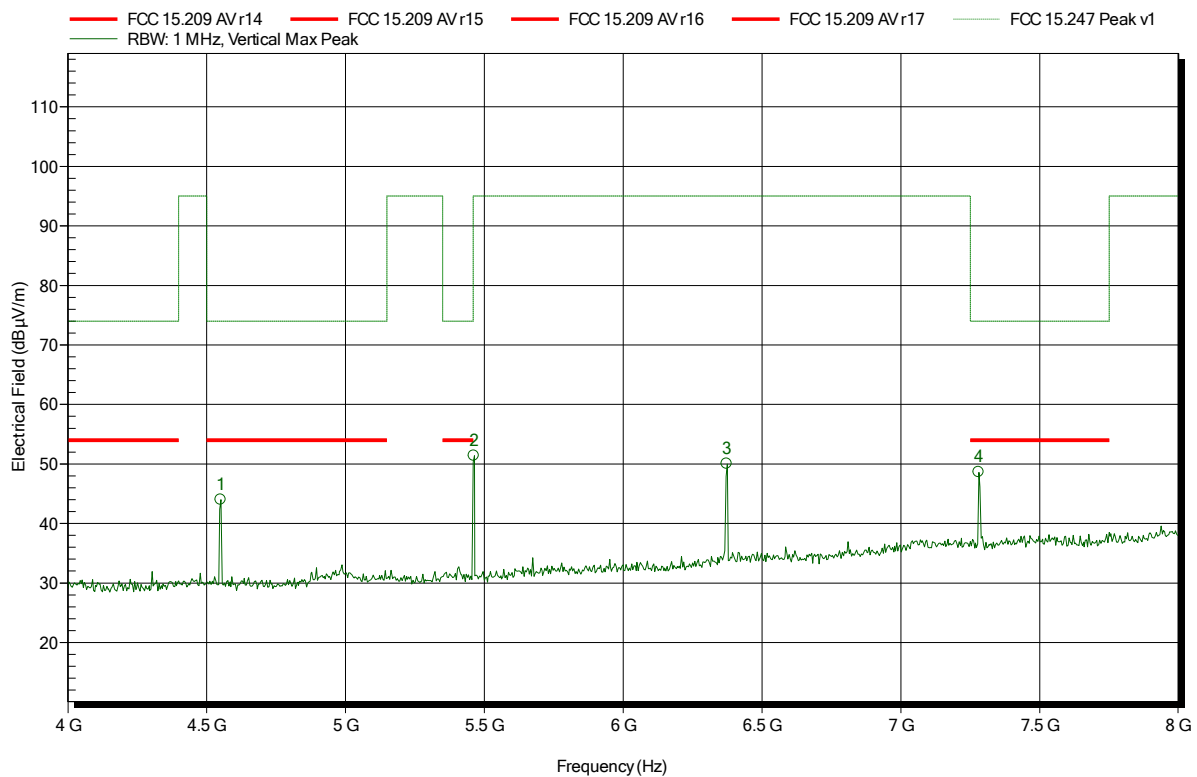
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
5.463 GHz	53.55 dBµV/m	95 dBµV/m	-41.45 dB	Pass
6.374 GHz	50.74 dBµV/m	95 dBµV/m	-44.26 dB	Pass
7.285 GHz	50.17 dBµV/m	74 dBµV/m	-23.83 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
EUT Name: VW RemoteStart
Model: Remote Start Key Fob - VWRSTT
Test Site: Eurofins Product Service GmbH
Operator: Sebastian Suckow
Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; SRD 910.5 MHz LoRa
Test Date: 2018-08-23
Note:

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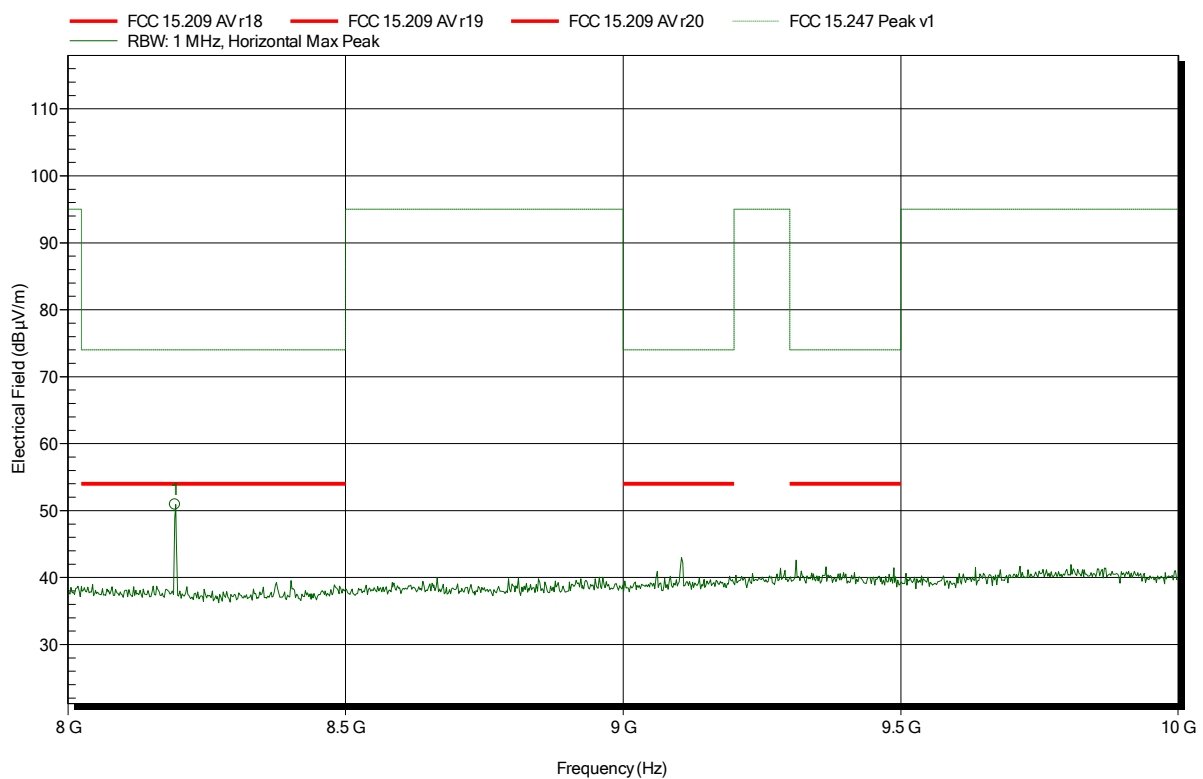
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.551 GHz	43.99 dBµV/m	74 dBµV/m	-30.01 dB	Pass
5.463 GHz	51.36 dBµV/m	95 dBµV/m	-43.64 dB	Pass
6.374 GHz	50.01 dBµV/m	95 dBµV/m	-44.99 dB	Pass
7.281 GHz	48.61 dBµV/m	74 dBµV/m	-25.39 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
EUT Name: VW RemoteStart
Model: Remote Start Key Fob - VWRSTT
Test Site: Eurofins Product Service GmbH
Operator: Sebastian Suckow
Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; SRD 910.5 MHz LoRa
Test Date: 2018-08-23
Note:

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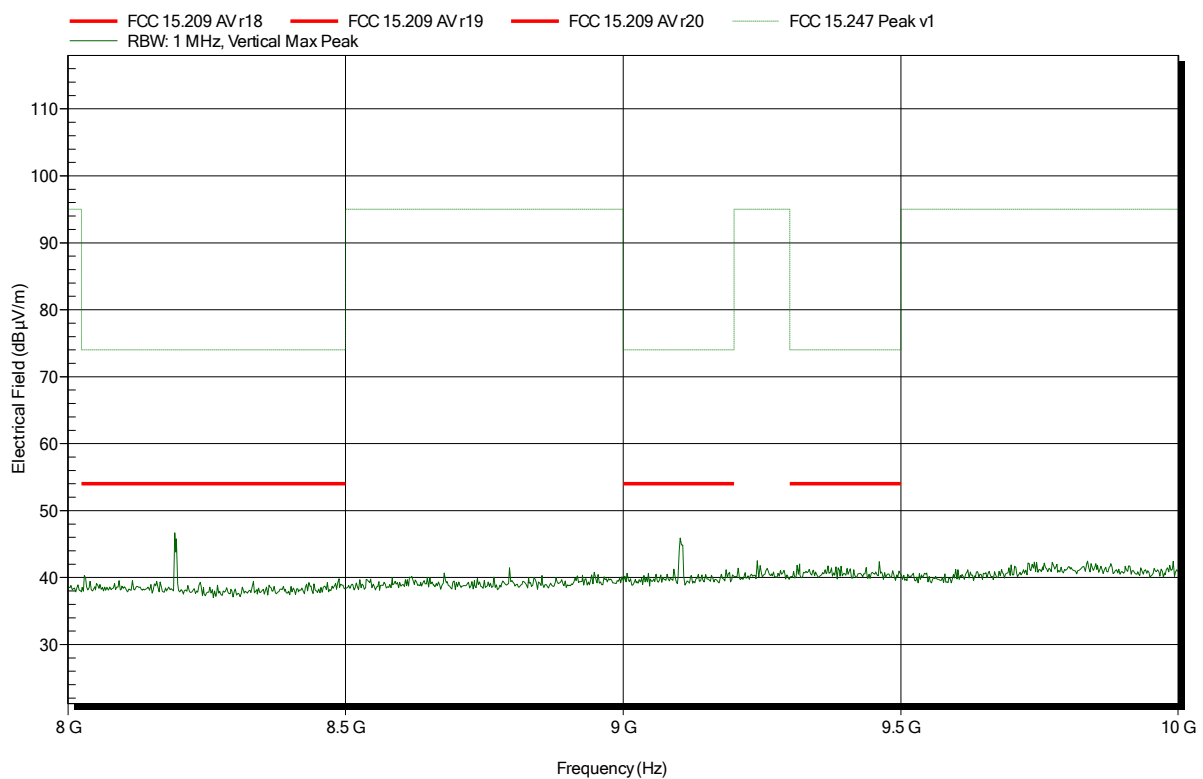
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
8.194 GHz	50.91 dBµV/m	74 dBµV/m	-23.09 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
EUT Name: VW RemoteStart
Model: Remote Start Key Fob - VWRSTT
Test Site: Eurofins Product Service GmbH
Operator: Sebastian Suckow
Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; SRD 910.5 MHz LoRa
Test Date: 2018-08-23
Note:

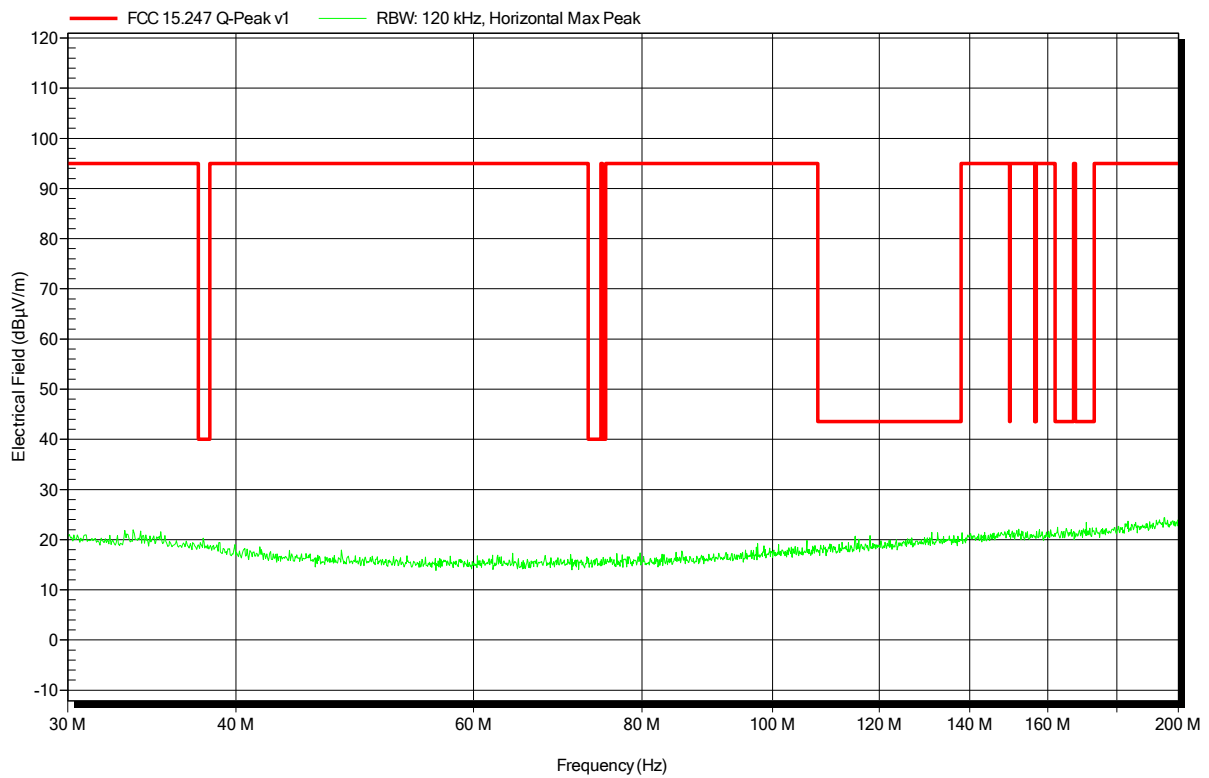
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Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557
 Applicant: digades GmbH
 EUT Name: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Suckow
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
 Antenna: Rohde & Schwarz HK 116, Horizontal
 Measurement distance: 3 m
 Mode: TX; SRD 919.5 MHz LoRa
 Test Date: 2018-08-24
 Note:

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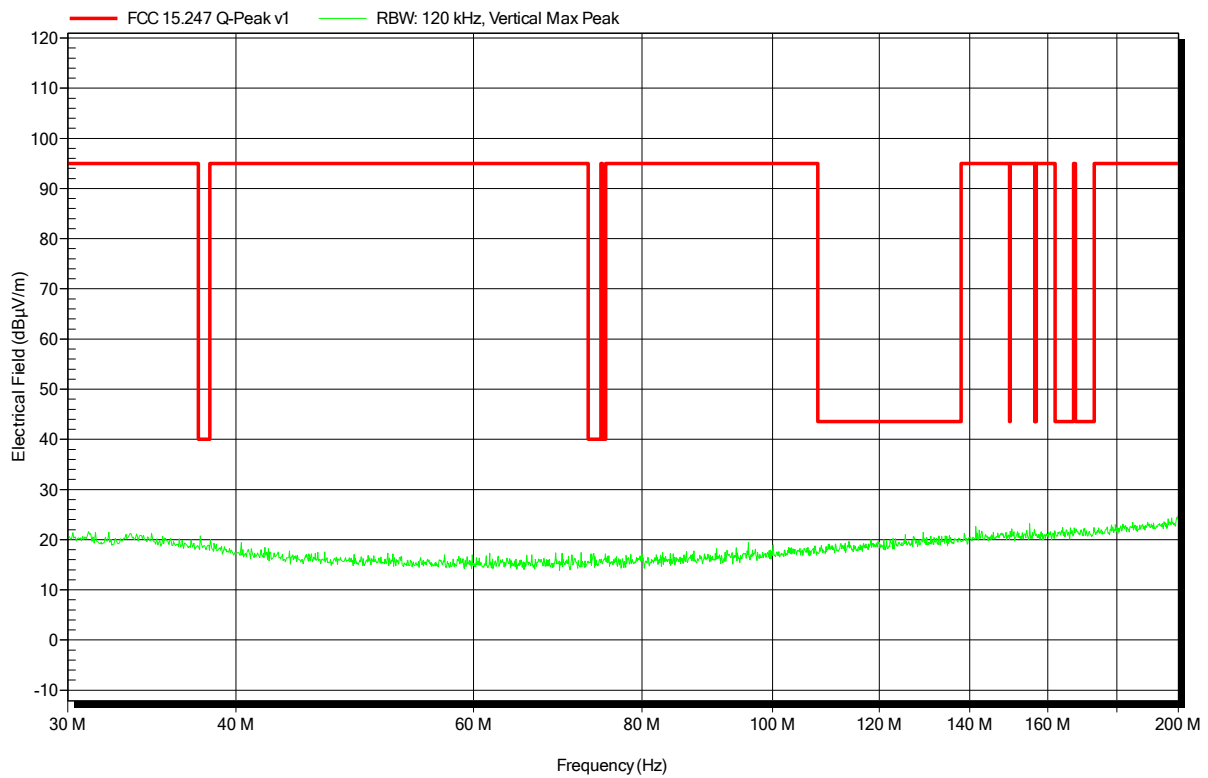


Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
EUT Name: VW RemoteStart
Model: Remote Start Key Fob - VWRSTT
Test Site: Eurofins Product Service GmbH
Operator: Mr. Suckow
Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
Antenna: Rohde & Schwarz HK 116, Vertical
Measurement distance: 3 m
Mode: TX; SRD 919.5 MHz LoRa
Test Date: 2018-08-24
Note:

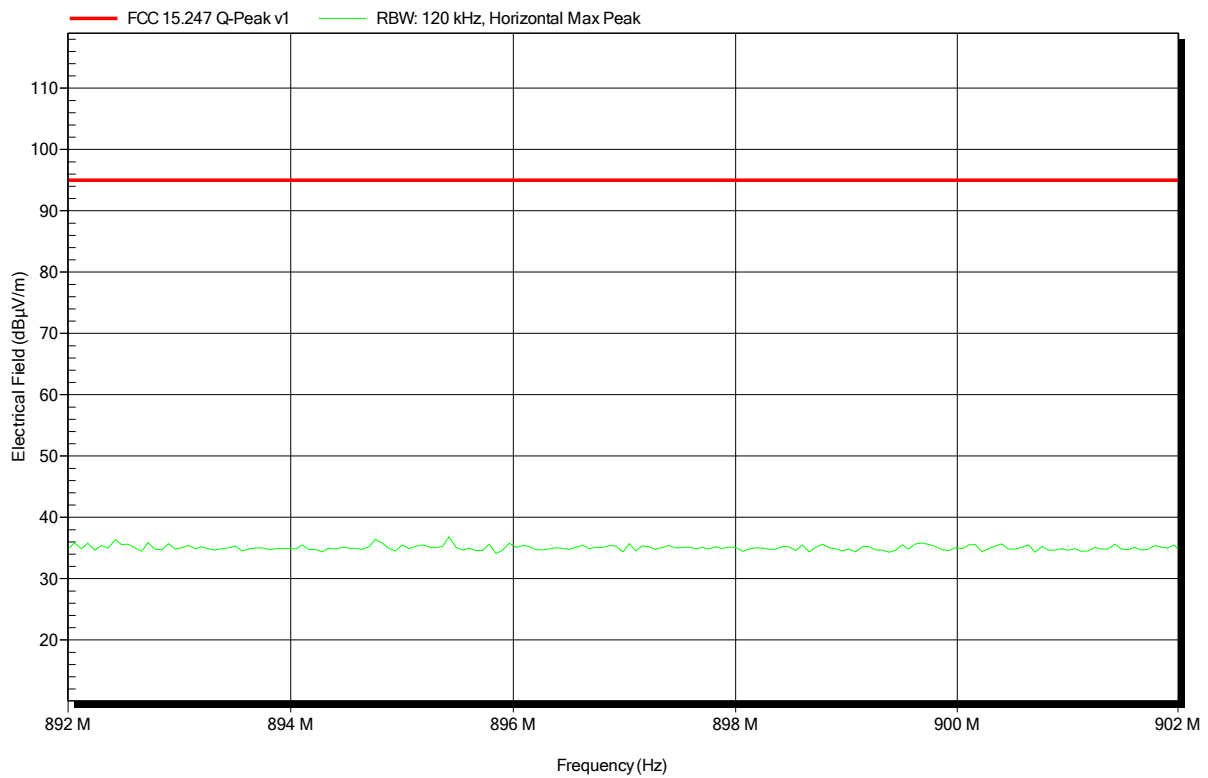
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Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557
 Applicant: digades GmbH
 EUT Name: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Suckow
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3 m
 Mode: TX; SRD 919.5 MHz LoRa
 Test Date: 2018-08-24
 Note:

Index 1

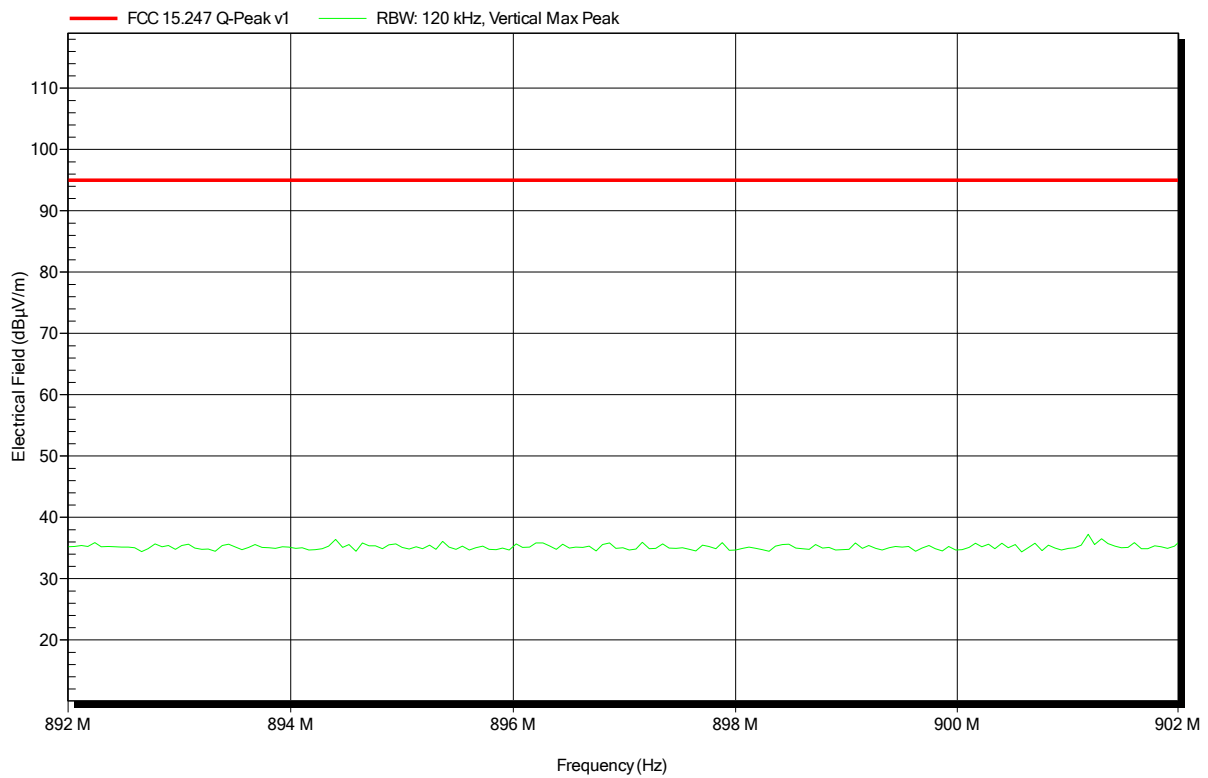


Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
 EUT Name: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Suckow
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: TX; SRD 919.5 MHz LoRa
 Test Date: 2018-08-24
 Note:

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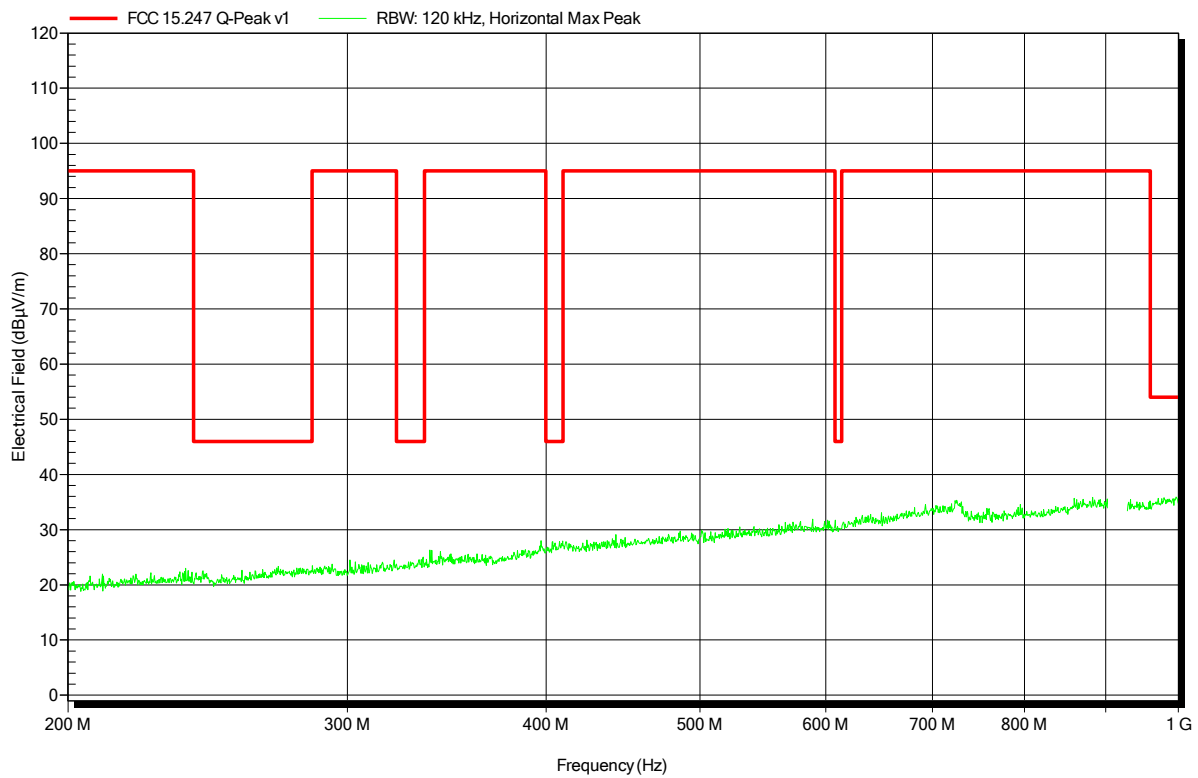


Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
EUT Name: VW RemoteStart
Model: Remote Start Key Fob - VWRSTT
Test Site: Eurofins Product Service GmbH
Operator: Mr. Suckow
Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
Antenna: Rohde & Schwarz HL 223, Horizontal
Measurement distance: 3 m
Mode: TX; SRD 919.5 MHz LoRa
Test Date: 2018-08-24
Note:

Index 2

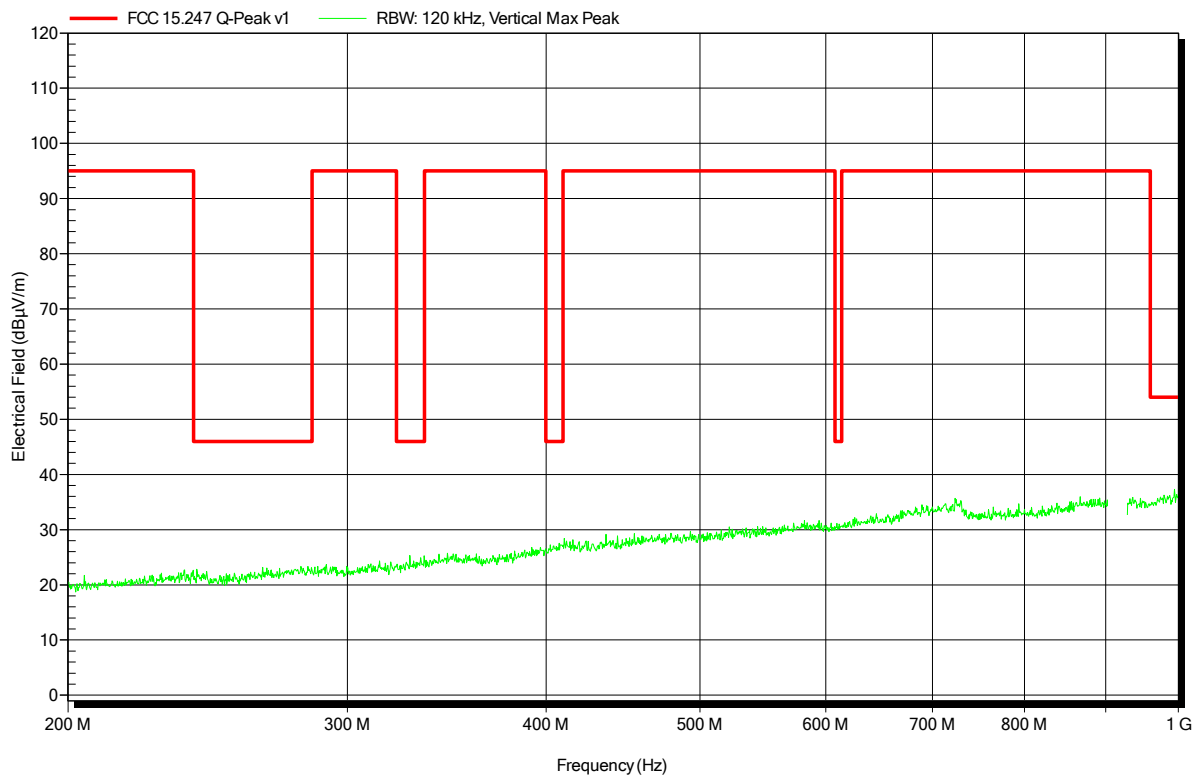


Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
EUT Name: VW RemoteStart
Model: Remote Start Key Fob - VWRSTT
Test Site: Eurofins Product Service GmbH
Operator: Mr. Suckow
Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
Antenna: Rohde & Schwarz HL 223, Vertical
Measurement distance: 3 m
Mode: TX; SRD 919.5 MHz LoRa
Test Date: 2018-08-24
Note:

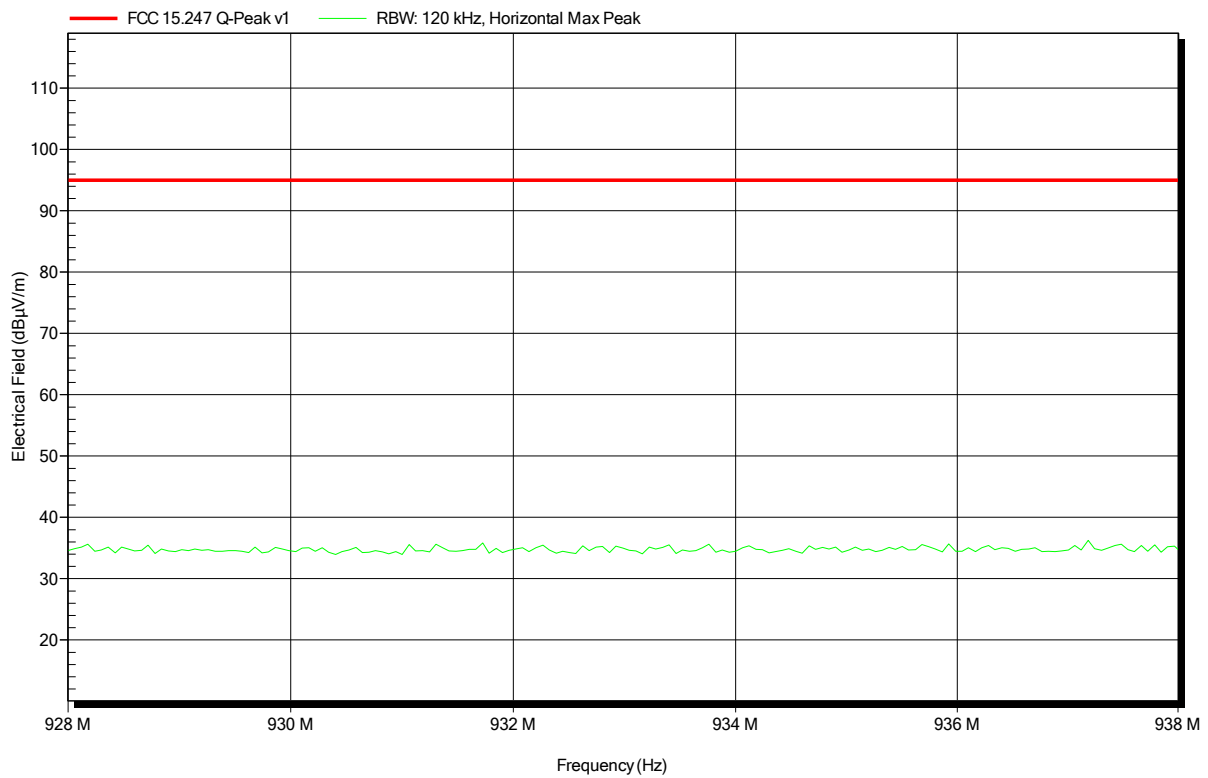
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Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557
 Applicant: digades GmbH
 EUT Name: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Suckow
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3 m
 Mode: TX; SRD 919.5 MHz LoRa
 Test Date: 2018-08-24
 Note:

Index 3

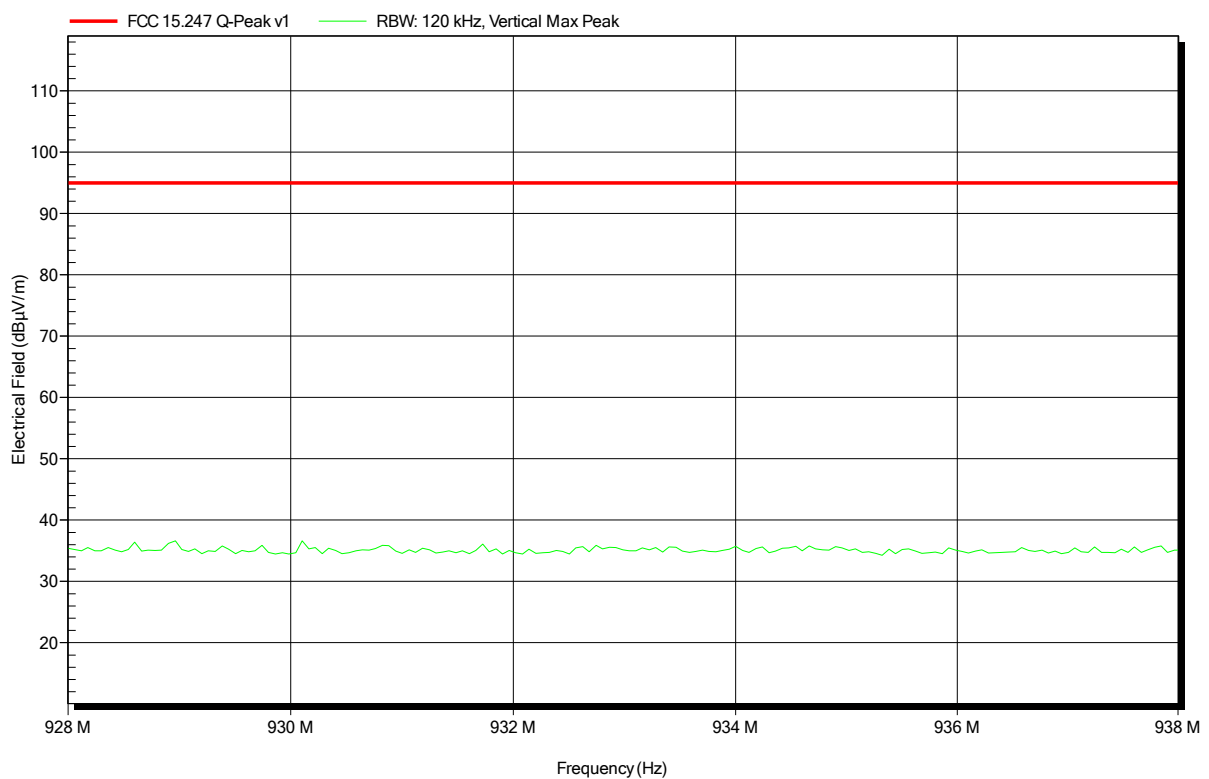


Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
 EUT Name: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Suckow
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: TX; SRD 919.5 MHz LoRa
 Test Date: 2018-08-24
 Note:

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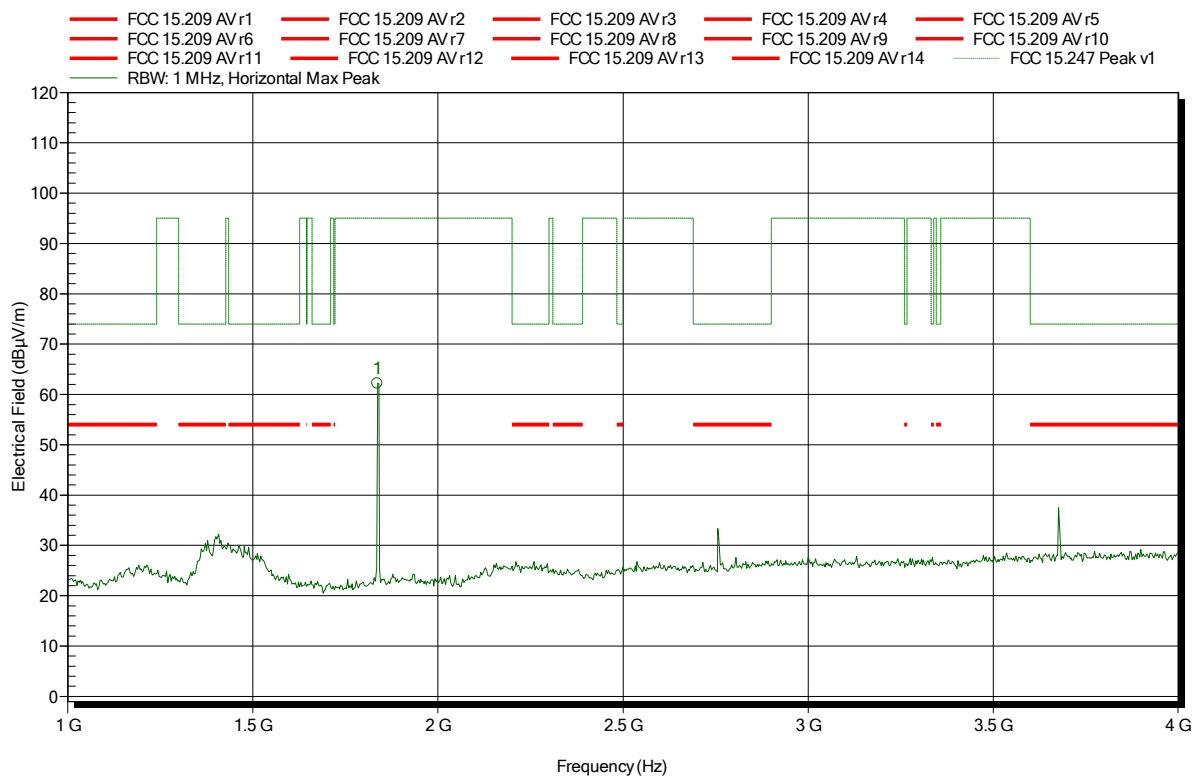


Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
EUT Name: VW RemoteStart
Model: Remote Start Key Fob - VWRSTT
Test Site: Eurofins Product Service GmbH
Operator: Sebastian Suckow
Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; SRD 919.5 MHz LoRa
Test Date: 2018-08-23
Note:

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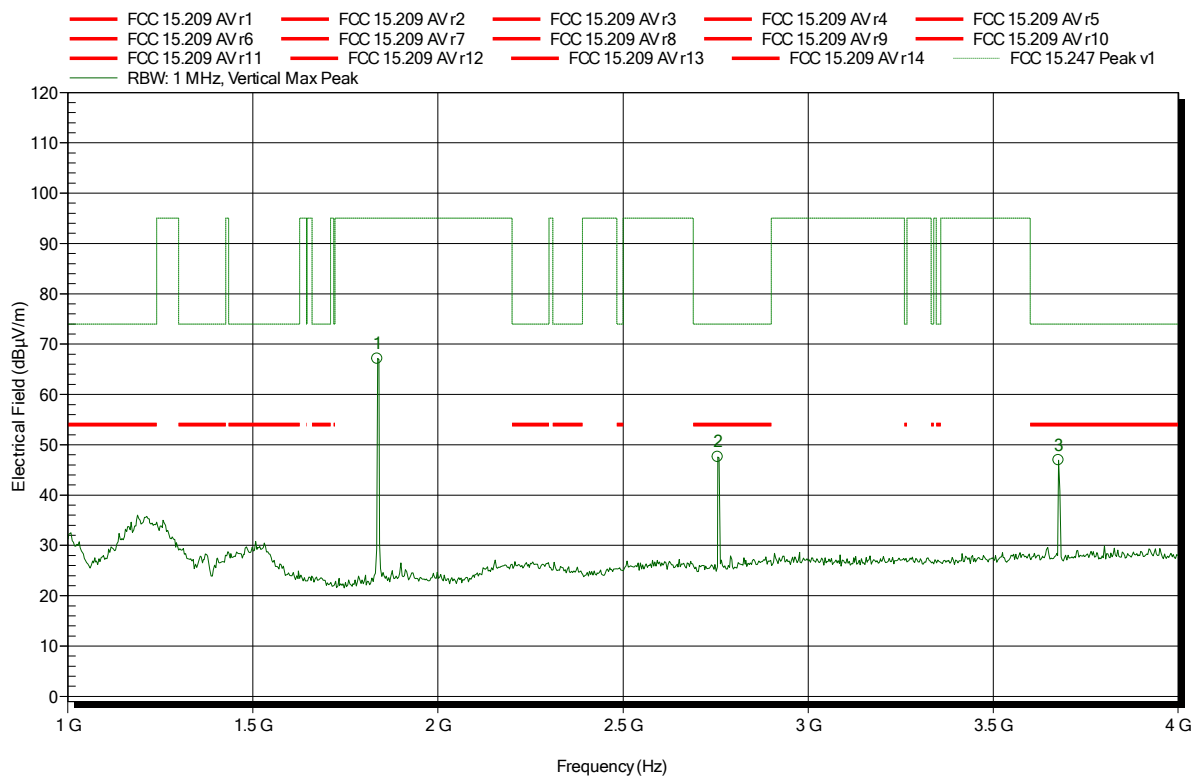
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.836 GHz	62.18 dBµV/m	95 dBµV/m	-32.82 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
EUT Name: VW RemoteStart
Model: Remote Start Key Fob - VWRSTT
Test Site: Eurofins Product Service GmbH
Operator: Sebastian Suckow
Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; SRD 919.5 MHz LoRa
Test Date: 2018-08-23
Note:

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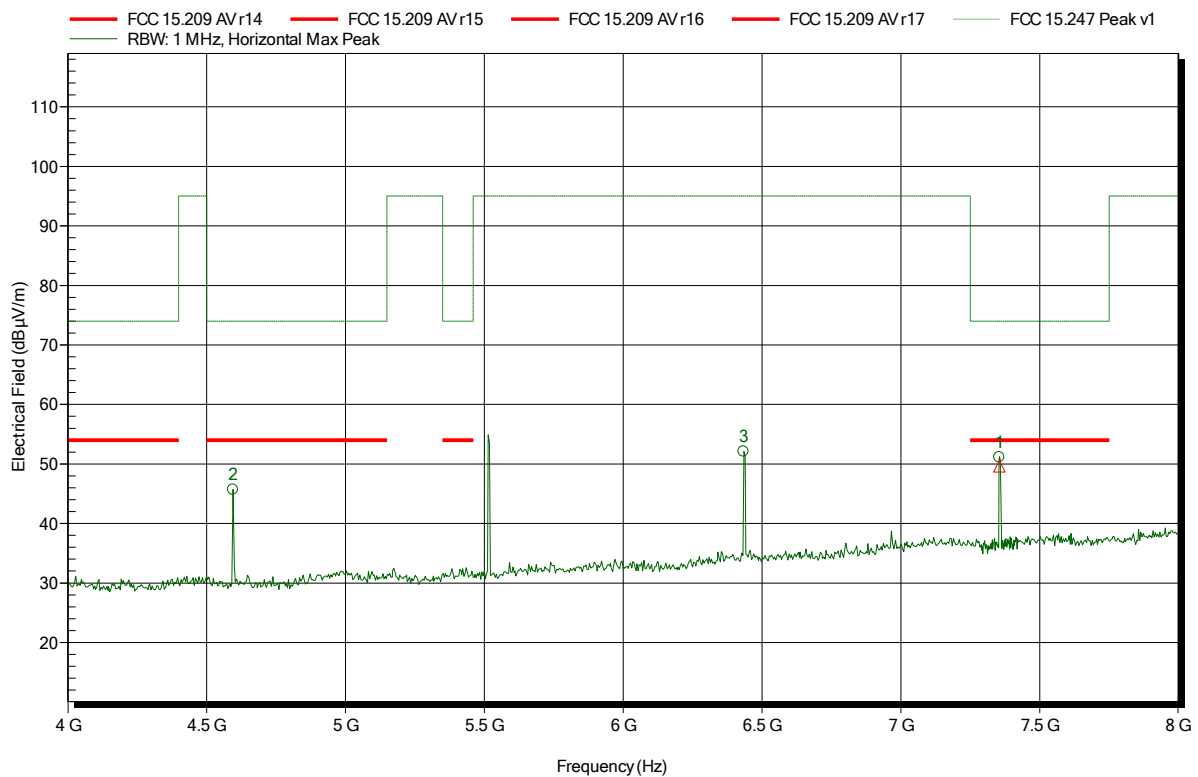
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.836 GHz	67.08 dBµV/m	95 dBµV/m	-27.92 dB	Pass
2.756 GHz	47.58 dBµV/m	74 dBµV/m	-26.42 dB	Pass
3.676 GHz	46.95 dBµV/m	74 dBµV/m	-27.05 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
EUT Name: VW RemoteStart
Model: Remote Start Key Fob - VWRSTT
Test Site: Eurofins Product Service GmbH
Operator: Sebastian Suckow
Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; SRD 919.5 MHz LoRa
Test Date: 2018-08-23
Note:

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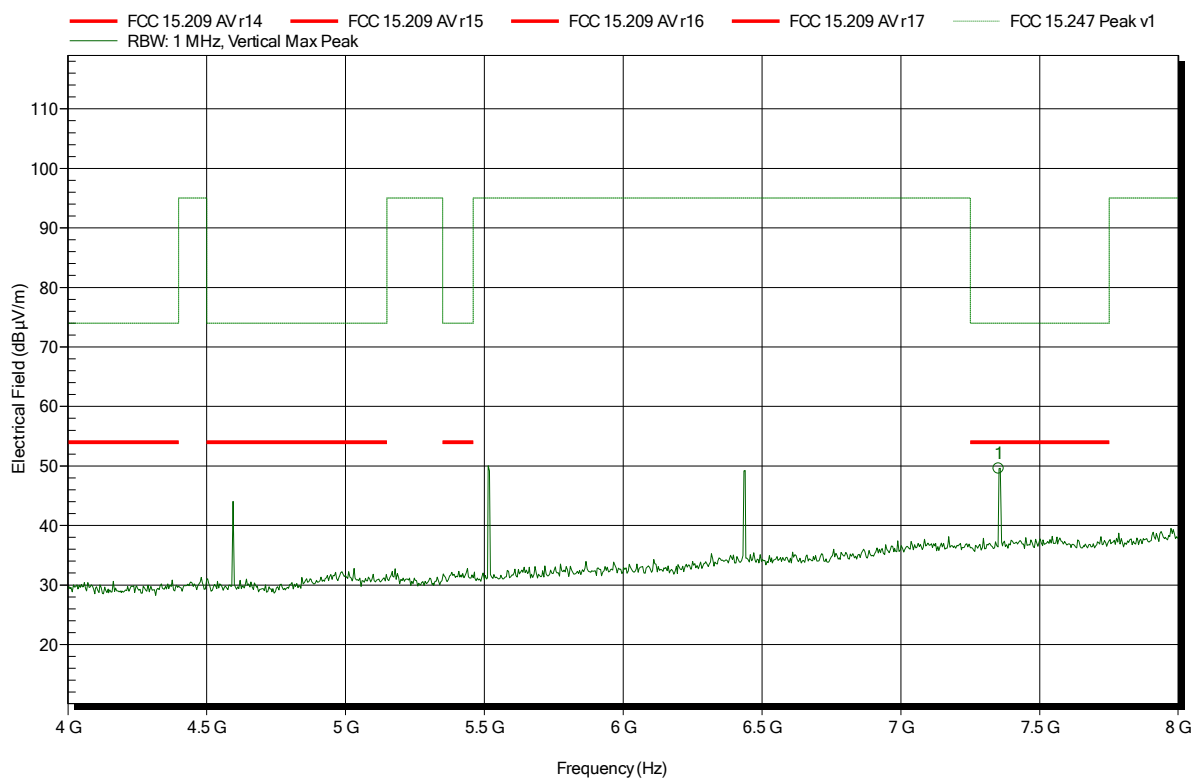
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.595 GHz	45.7 dBµV/m	74 dBµV/m	-28.3 dB	Pass
6.434 GHz	52.09 dBµV/m	95 dBµV/m	-42.91 dB	Pass
7.355 GHz	51.09 dBµV/m	74 dBµV/m	-22.91 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
EUT Name: VW RemoteStart
Model: Remote Start Key Fob - VWRSTT
Test Site: Eurofins Product Service GmbH
Operator: Sebastian Suckow
Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; SRD 919.5 MHz LoRa
Test Date: 2018-08-23
Note:

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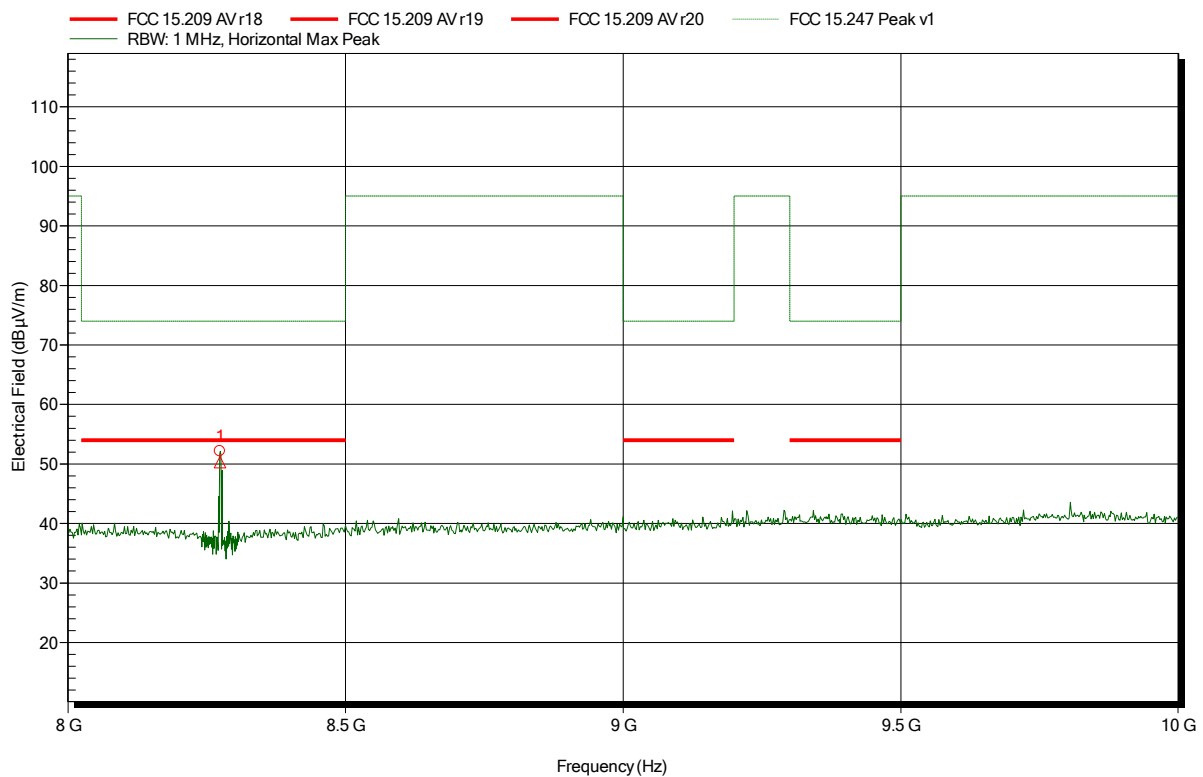
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
7.353 GHz	49.55 dBµV/m	74 dBµV/m	-24.45 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
 EUT Name: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Site: Eurofins Product Service GmbH
 Operator: Sebastian Suckow
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; SRD 919.5 MHz LoRa
 Test Date: 2018-08-23
 Note:

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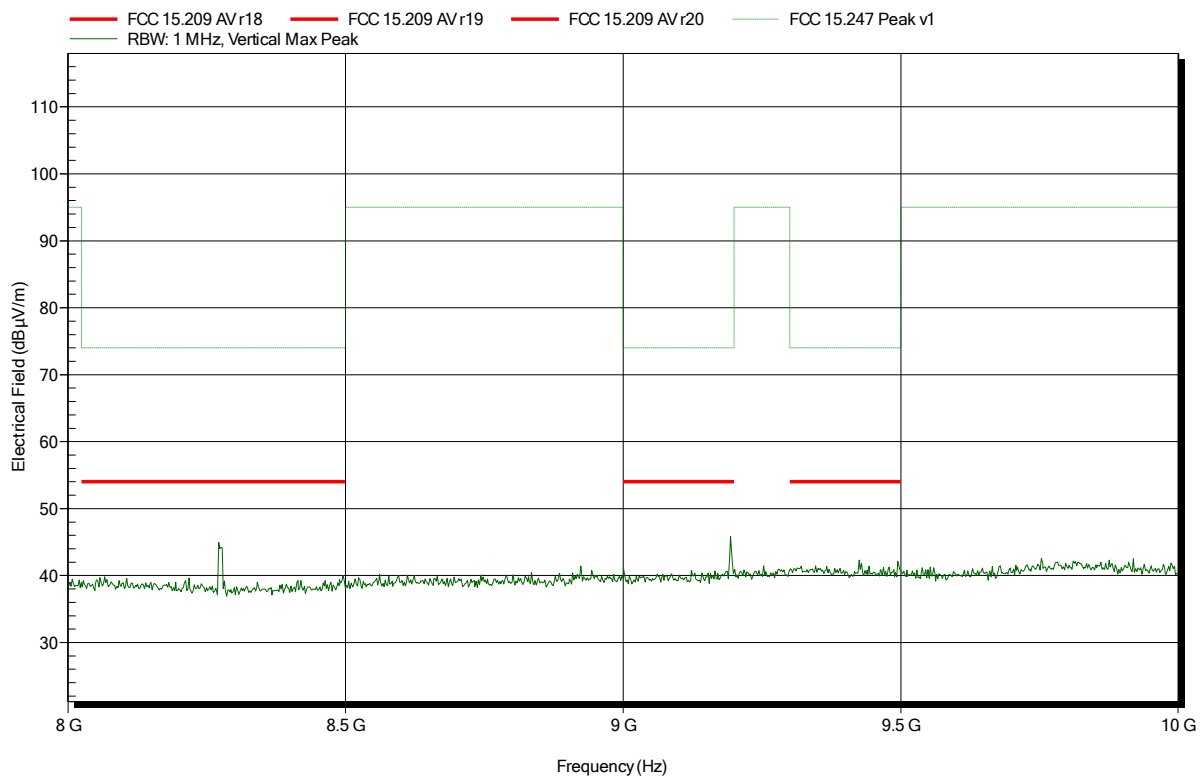
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
8.275 GHz	52.12 dBµV/m	74 dBµV/m	-21.88 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
 EUT Name: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Site: Eurofins Product Service GmbH
 Operator: Sebastian Suckow
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; SRD 919.5 MHz LoRa
 Test Date: 2018-08-23
 Note:

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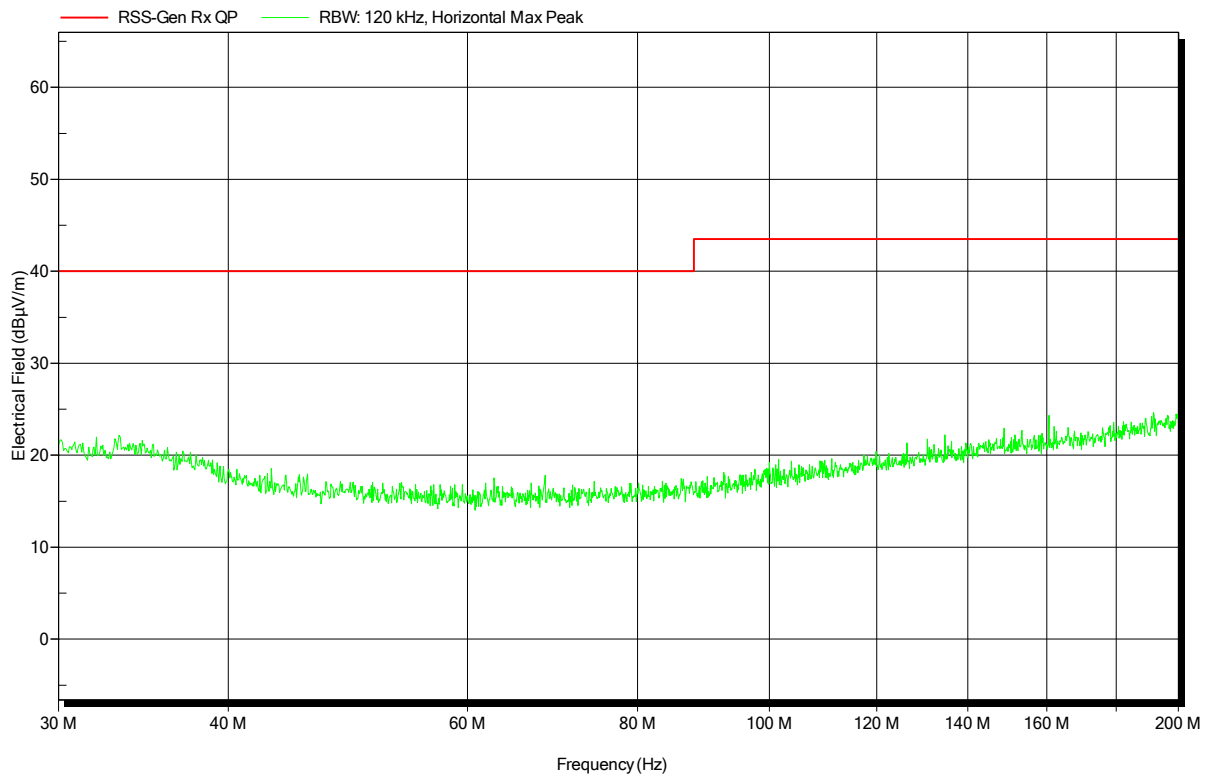
ANNEX B Receiver spurious emissions

Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
EUT Name: VW RemoteStart
Model: Remote Start Key Fob - VWRSTT
Test Site: Eurofins Product Service GmbH
Operator: Mr. Suckow
Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
Antenna: Rohde & Schwarz HK 116, Horizontal
Measurement distance: 3 m
Mode: RX; SRD 915 MHz LoRa
Test Date: 2018-08-24
Note:

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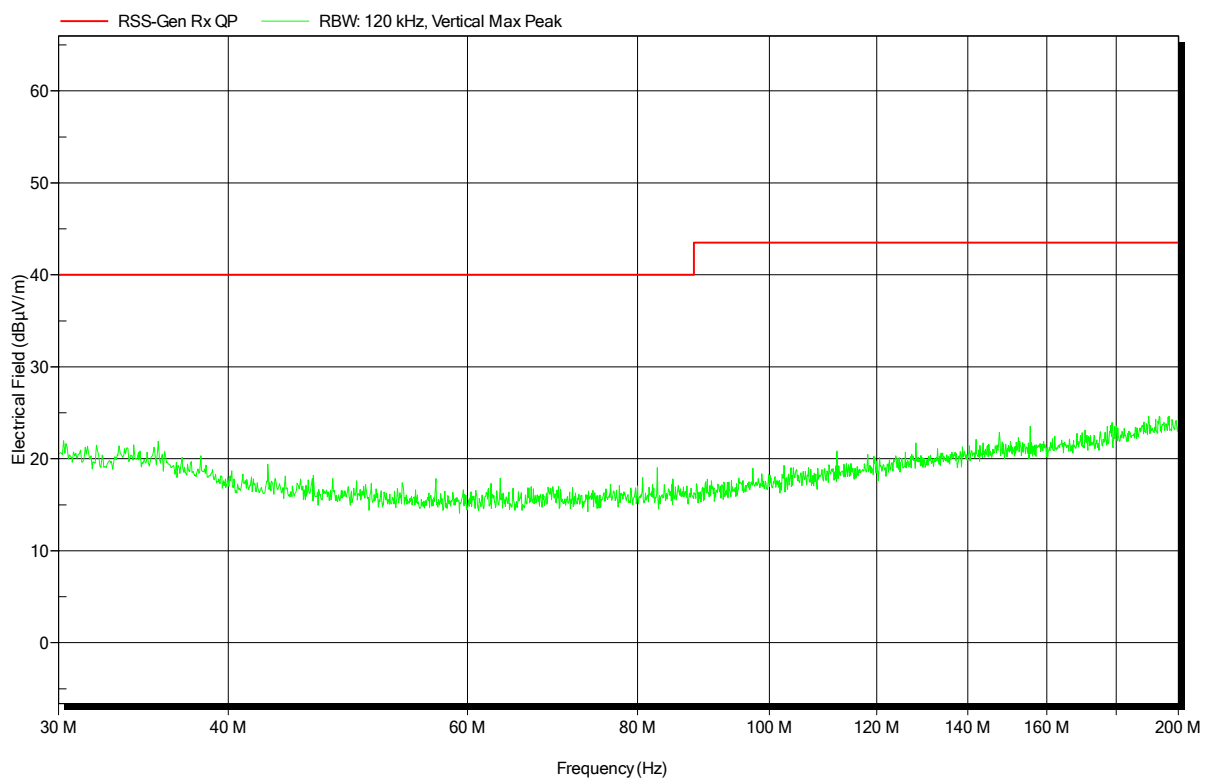


Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
 EUT Name: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Suckow
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
 Antenna: Rohde & Schwarz HK 116, Vertical
 Measurement distance: 3 m
 Mode: RX; SRD 915 MHz LoRa
 Test Date: 2018-08-24
 Note:

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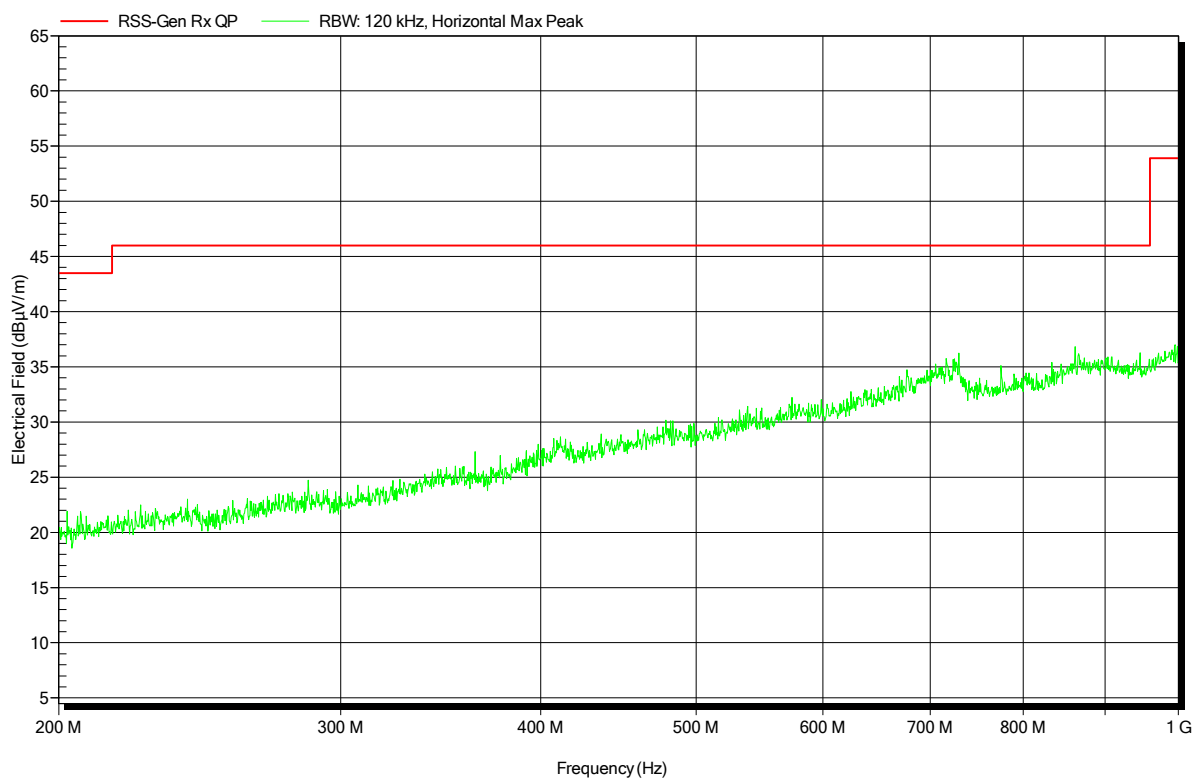


Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
 EUT Name: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Suckow
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3 m
 Mode: RX; SRD 915 MHz LoRa
 Test Date: 2018-08-24
 Note:

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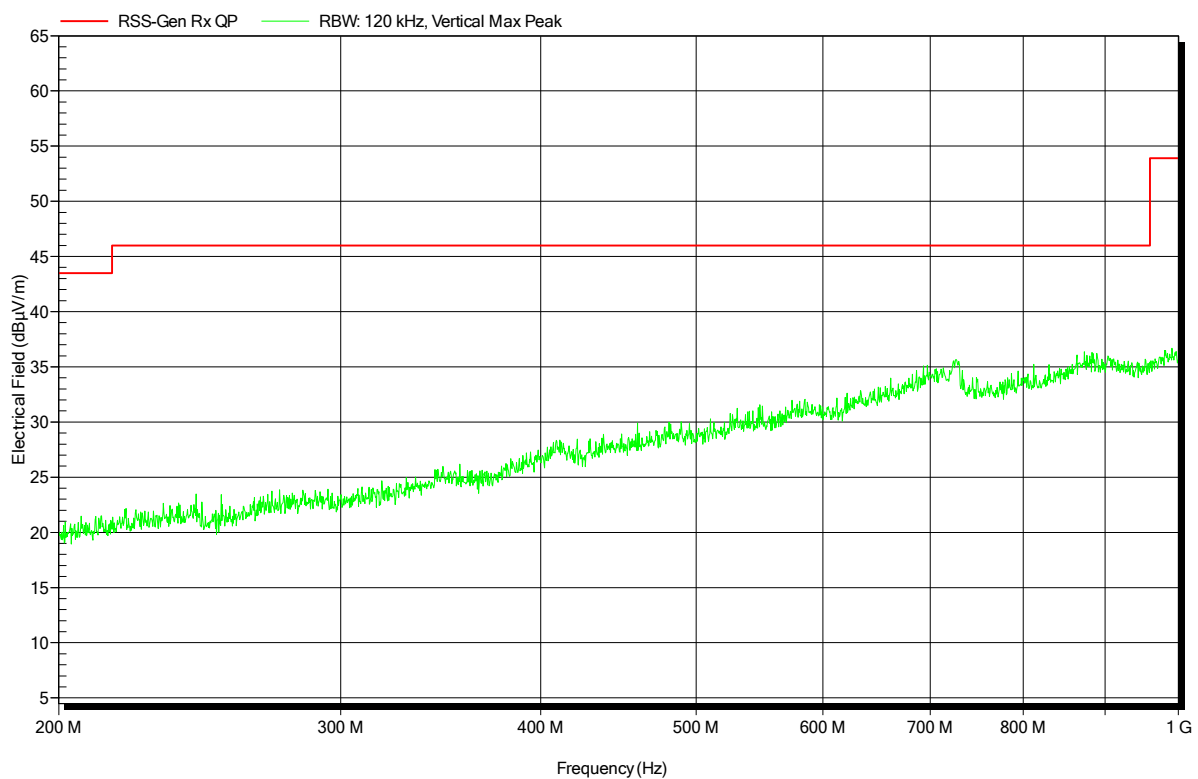


Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
EUT Name: VW RemoteStart
Model: Remote Start Key Fob - VWRSTT
Test Site: Eurofins Product Service GmbH
Operator: Mr. Suckow
Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
Antenna: Rohde & Schwarz HL 223, Vertical
Measurement distance: 3 m
Mode: RX; SRD 915 MHz LoRa
Test Date: 2018-08-24
Note:

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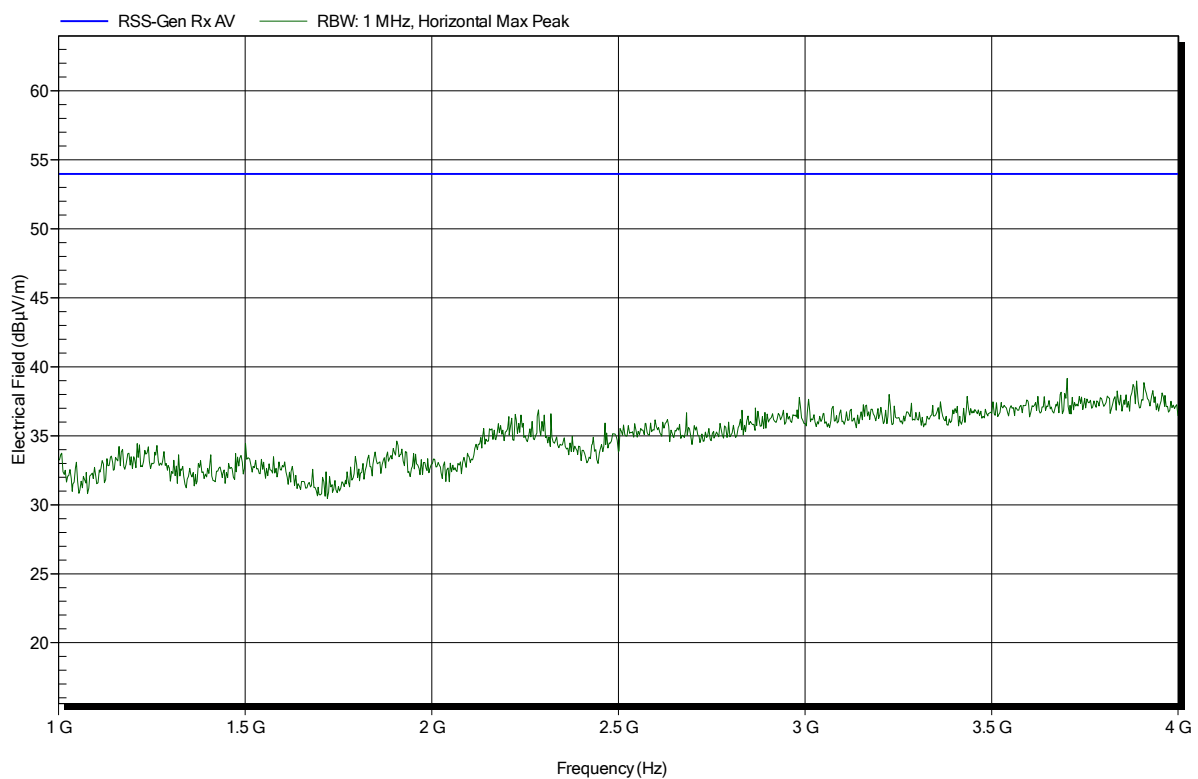


Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
 EUT Name: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Site: Eurofins Product Service GmbH
 Operator: Sebastian Suckow
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: RX; SRD 915 MHz LoRa
 Test Date: 2018-08-23
 Note:

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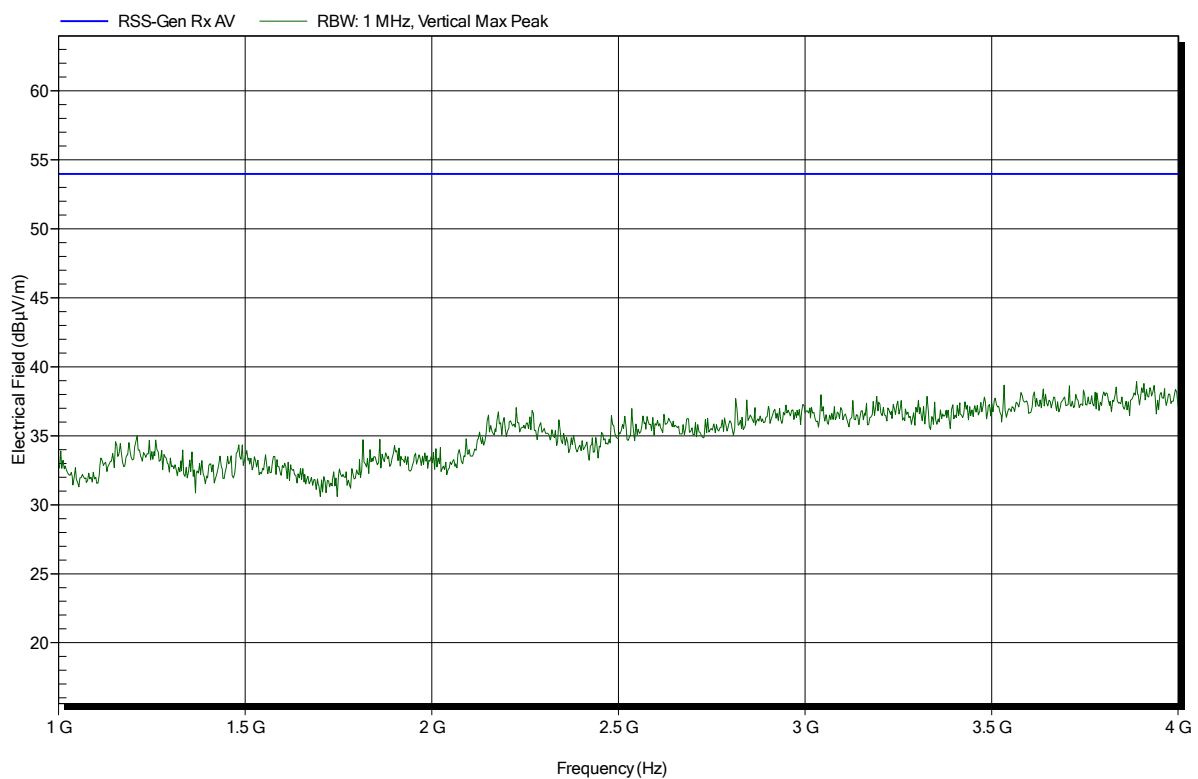


Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
 EUT Name: VW RemoteStart
 Model: Remote Start Key Fob - VWRSTT
 Test Site: Eurofins Product Service GmbH
 Operator: Sebastian Suckow
 Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: RX; SRD 915 MHz LoRa
 Test Date: 2018-08-23
 Note:

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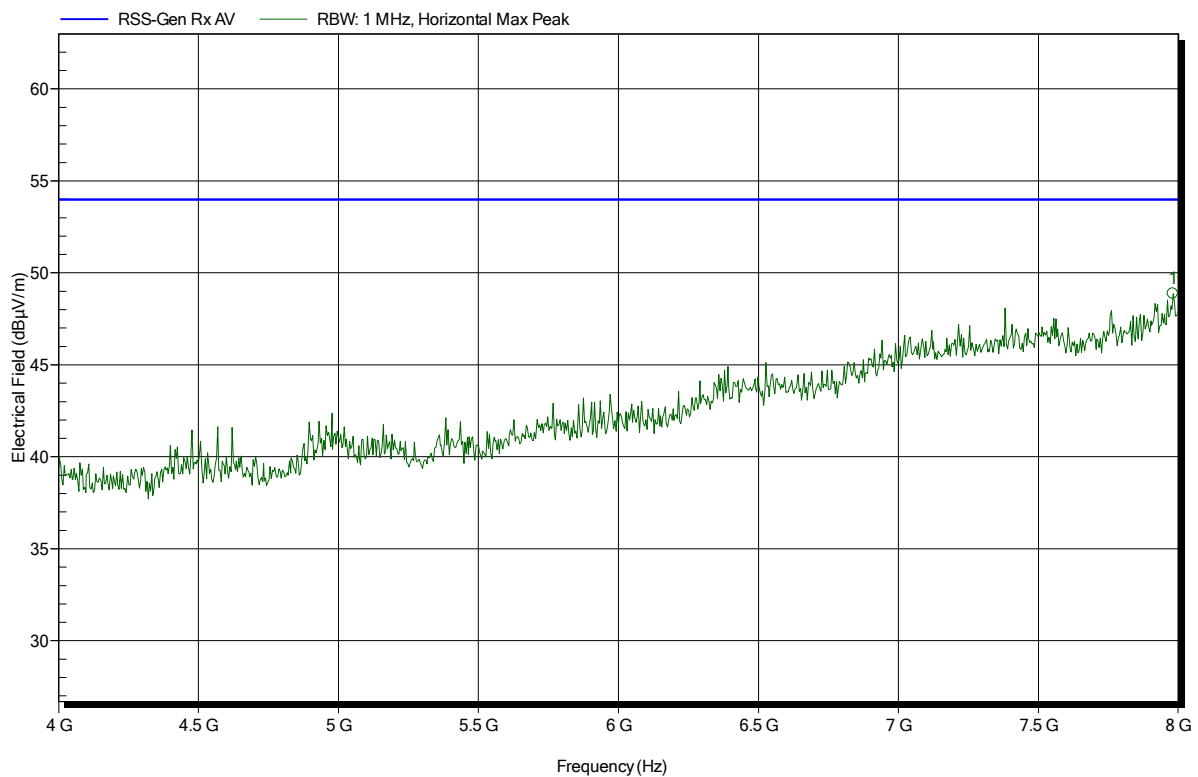


Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
EUT Name: VW RemoteStart
Model: Remote Start Key Fob - VWRSTT
Test Site: Eurofins Product Service GmbH
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Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 3 m
Mode: RX; SRD 915 MHz LoRa
Test Date: 2018-08-23
Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
7.98 GHz	48.86 dBµV/m	53.98 dBµV/m	-5.12 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1807-7557

Applicant: digades GmbH
EUT Name: VW RemoteStart
Model: Remote Start Key Fob - VWRSTT
Test Site: Eurofins Product Service GmbH
Operator: Sebastian Suckow
Test Conditions: Tnom: 25°C, Vnom: 3.0 VDC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 3 m
Mode: RX; SRD 915 MHz LoRa
Test Date: 2018-08-23
Note:

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