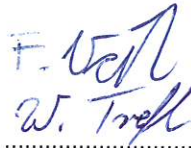


RADIO REPORT FCC 47 CFR Part 15C Digital transmission systems operating within the 902 – 928 MHz band	
Report Reference No	G0M-2002-8859-TFC247DT-ADDANT-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	    DAkKS - Registration number : 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	Kamstrup A/S
Address	Industrivej 28 8660 Skanderborg DENMARK
Test Specification	47 CFR Part 15C
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	Ultrasonic water meter
Model(s)	KWM2220
Additional Model(s)	
Brand Name(s)	Kamstrup
Hardware Version(s)	Unit: 6201-210-04, rev. 00; RF PCB BOM: 55501823, rev. C1; Flow PCB BOM: 55501813, rev. B3
Software Version(s)	RF: 50981336, rev. N1; Meter: 50981595, rev. 00
FCC-ID	OUY-KWMX220
IC	n/a
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 - 27 °C	
Test Lab Humidity	32 – 50 %	
Date of receipt of test item	2020-05-28	
Report:		
Compiled by	Florian Voigt	
Tested by (+ signature) (Responsible for Test)	Florian Voigt supervised by Wilfried Treffke	
Approved by (+ signature) (Head of Lab)	Christian Weber	
Date of Issue	2020-07-09	
Total number of pages	52	
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:		

ADDITIONAL VARIANTS

Additional Variants (not tested and not evaluated variants)		
Not-tested Variant	Description	
1	Product Type Description	Ultrasonic water meter
	Model name	KWM2220
	Brand name	Kamstrup
	Hardware Version	Unit: 6201-210-01, rev. 00 RF PCB BOM: 55501823, rev. C1 Flow PCB BOM: 55501813, rev. B3
	Software Version	RF: 50981336, rev. N1 Meter: 50981595, rev. 00
2	Product Type Description	Ultrasonic water meter
	Model name	KWM2220
	Brand name	Kamstrup
	Hardware Version	Unit: 6201-210-02, rev. 00 RF PCB BOM: 55501823, rev. C1 Flow PCB BOM: 55501813, rev. B3
	Software Version	RF: 50981336, rev. N1 Meter: 50981595, rev. 00
3	Product Type Description	Ultrasonic water meter
	Model name	KWM2220
	Brand name	Kamstrup
	Hardware Version	Unit: 6201-210-03, rev. 00 RF PCB BOM: 55501823, rev. C1 Flow PCB BOM: 55501813, rev. B3
	Software Version	RF: 50981336, rev. N1 Meter: 50981595, rev. 00
4	Product Type Description	Ultrasonic water meter
	Model name	KWM3220
	Brand name	Kamstrup
	Hardware Version	Unit: 6202-205-01, rev. 00 RF PCB BOM: 55501823, rev.C1 Flow PCB BOM: 55501523, rev B1
	Software Version	RF: 50981336, rev. N1 Meter: 50981595, rev. 00
5	Product Type Description	Ultrasonic water meter
	Model name	KWM3220
	Brand name	Kamstrup
	Hardware Version	Unit: 6202-103-02, rev. 00 RF PCB BOM: 55501823, rev.C1 Flow PCB BOM: 55501523, rev B1
	Software Version	RF: 50981336, rev. N1 Meter: 50981595, rev. 00
6	Product Type Description	Ultrasonic water meter
	Model name	KWM3220
	Brand name	Kamstrup
	Hardware Version	Unit: 6202-103-03, rev. 00 RF PCB BOM: 55501823, rev.C1 Flow PCB BOM: 55501523, rev B1
	Software Version	RF: 50981336, rev. N1 Meter: 50981595, rev. 00

Test Report No.: G0M-2002-8859-TFC247DT-ADDANT-V01

7	Product Type Description	Ultrasonic water meter
	Model name	KWM3220
	Brand name	Kamstrup
	Hardware Version	Unit: 6202-103-04, rev. 00 RF PCB BOM: 55501823, rev.C1 Flow PCB BOM: 55501523, rev B1
	Software Version	RF: 50981336, rev. N1 Meter: 50981595, rev. 00
8	Product Type Description	Ultrasonic water meter
	Model name	KWM3220
	Brand name	Kamstrup
	Hardware Version	Unit: 6202-103-06, rev. 00 RF PCB BOM: 55501823, rev.C1 Flow PCB BOM: 55501523, rev B1
	Software Version	RF: 50981336, rev. N1 Meter: 50981595, rev. 00
9	Product Type Description	Ultrasonic water meter
	Model name	KWM3220
	Brand name	Kamstrup
	Hardware Version	Unit: 6202-103-07, rev. 00 RF PCB BOM: 55501823, rev.C1 Flow PCB BOM: 55501523, rev B1
	Software Version	RF: 50981336, rev. N1 Meter: 50981595, rev. 00
10	Product Type Description	Ultrasonic water meter
	Model name	KWM3220
	Brand name	Kamstrup
	Hardware Version	Unit: 6202-103-05, rev. RF PCB BOM: 55501823, rev.C1 Flow PCB BOM: 55501523, rev B1
	Software Version	RF: 50981336, rev. N1 Meter: 50981595, rev. 00
11	Product Type Description	Ultrasonic water meter
	Model name	KWM3220
	Brand name	Kamstrup
	Hardware Version	Unit: 6202-103-08, rev. RF PCB BOM: 55501823, rev.C1 Flow PCB BOM: 55501523, rev B1
	Software Version	RF: 50981336, rev. N1 Meter: 50981595, rev. 00
12	Product Type Description	Ultrasonic water meter
	Model name	KWM3220
	Brand name	Kamstrup
	Hardware Version	Unit: 6201-204-01, rev. 00 RF PCB BOM: 55501823, rev.C1 Flow PCB BOM: 55501523, rev B1
	Software Version	RF: 50981336, rev. N1 Meter: 50981595, rev. 00
Comment: Those named additional variants above have not been tested. Those additional variants of the series have been declared by the manufacturer. The test report explicitly states that those variants were neither tested nor assessed nor evaluated.		

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2020-07-09	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

REPORT INDEX

1	Equipment (Test Item) Under Test.....	8
1.1	Photos – Equipment External	9
1.2	Photos – Equipment Internal	11
1.3	Photos – Test Setup.....	13
1.4	Support Equipment.....	15
1.5	Test Modes	16
1.6	Test Frequencies.....	17
1.7	Sample emission level calculation.....	18
2	Result Summary.....	19
3	Test Conditions and Results.....	20
3.1	Test Conditions and Results - Transmitter radiated emissions	20
ANNEX A	Transmitter spurious emissions	23

1 Equipment (Test Item) Under Test

Description	Ultrasonic water meter	
Model	KWM2220	
Additional Model(s)	None	
Brand Name(s)	Kamstrup	
Serial Number(s)	KAM21142842/20	
Hardware Version(s)	Unit: 6201-210-04, rev. 00; RF PCB BOM: 55501823, rev. C1; Flow PCB BOM: 55501813, rev. B3	
Software Version(s)	RF: 50981336, rev. N1; Meter: 50981595, rev. 00	
PMN	n/a	
HVIN	n/a	
FVIN	n/a	
HMN	n/a	
FCC-ID	OUY-KWMX220	
IC	n/a	
Equipment type	End Product	
Radio type	Transceiver	
Assigned frequency bands	902.0 - 928.0 MHz	
Radio technology	Digital Modulation	
Modulation	2-FSK	
Number of antenna ports	1	
Antenna	Type	external
	Model	30261216 B1
	Manufacturer	Kamstrup
	Gain	-2.1 dBi
Supply Voltage	V _{NOM}	3.66 VDC (lithium battery)
Operating Temperature	T _{NOM}	25 °C
AC/DC-Adaptor	Model	none
	Vendor	none
	Input	none
	Output	none
Manufacturer	Kamstrup A/S Industrivej 28 8660 Skanderborg DENMARK	

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
AE	Optical readout head	Kamstrup	14071	Programming interface
CBL	Auxillary cable			To connect EUT and power supply.
AE	Laboratory power supply	Statron	2224.7	The EUT battery does not last to perform the tests. Therefore an external power supply was necessary.
SFT	Device Control Tool	Kamstrup	ver. 0.05	Tool for controlling RF modules and meters
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
SFT	Software			
Comment:				

1.5 Test Modes

Mode	Description
Transmit	Mode = Transmit Modulation = 2-FSK Duty cycle = 100 %
Comment:	

1.6 Test Frequencies

Designator	Mode	Channel	Frequency [MHz]
F1	Tx	1	912.5
F2	Tx	2	915.0
F3	Tx	3	918.5

1.7 Sample emission level calculation

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

Reading:

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

A.F.:

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

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

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 15C				
Product Standard Reference	Requirement	Reference Method	Result	Remarks
FCC § 15.247(a)(2)	6 dB Bandwidth	ANSI C63.10-2013	N/T	
FCC § 15.247(b)(1)	Maximum peak conducted power	ANSI C63.10-2013	N/T	
FCC § 15.247(e)	Power spectral density	ANSI C63.10-2013	N/T	
FCC § 15.207	AC power line conducted emissions	ANSI C63.10-2013	N/R	No direct or indirect connection to AC mains
FCC § 15.247(d)	Band edge compliance	ANSI C63.10-2013	N/T	
FCC § 15.247(d)	Conducted spurious emissions	ANSI C63.10-2013	N/T	
FCC § 15.247(d) FCC § 15.209	Transmitter 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 - Transmitter radiated emissions

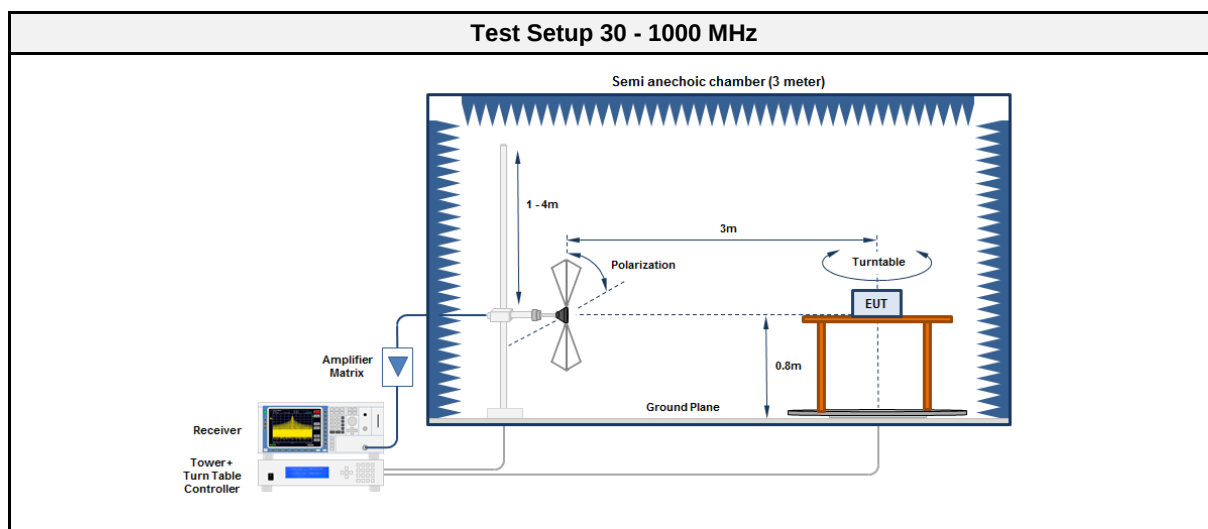
3.1.1 Information

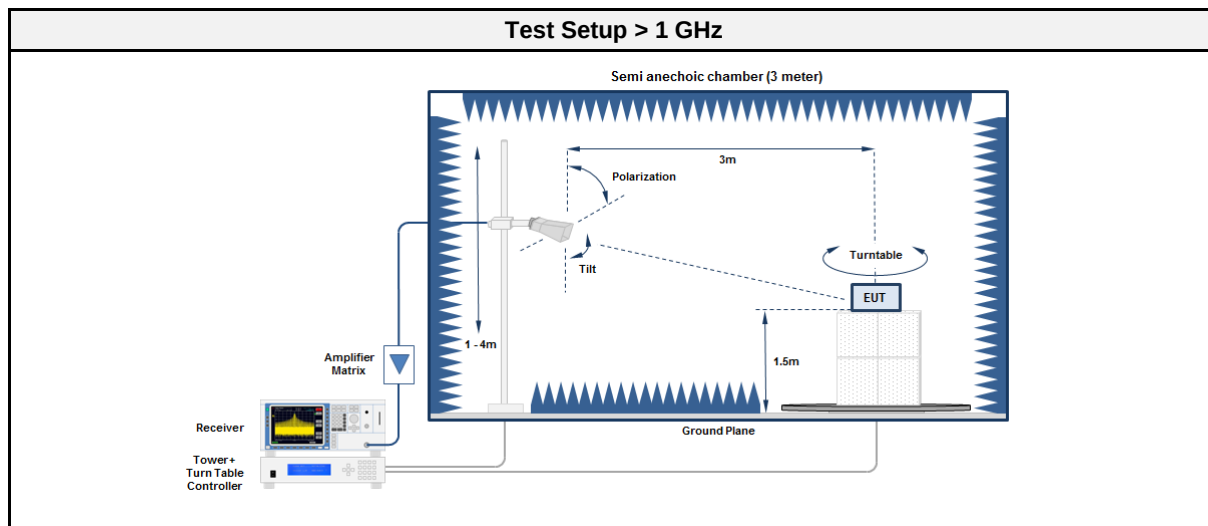
Test Information	
Reference	FCC § 15.247(d); FCC § 15.209
Measurement Method	ANSI C63.10 6.4, 6.5, 6.6, 11.12
Operator	Florian Voigt
Date	2020-07-08

3.1.2 Limits

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

3.1.3 Setup





3.1.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2015.2.4

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Antenna	R&S	HK 116	EF00030	2019-04	2022-04
Antenna	R&S	HL 223	EF00187	2019-05	2022-05
Spectrum analyzer	R&S	FSIQ26	EF00242	2019-07	2020-07

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Spectrum analyzer	R&S	FSIQ26	EF00242	2019-07	2020-07
Antenna	Schwarzbeck	BBHA 9120D	EF00018	2019-10	2022-10

3.1.5 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

3.1.6 Results

Test Results						
Channel [MHz]	Emission [MHz]	Level [dBμV/m]	Det.	Pol.	Limit [dBμV/m]	Margin [dB]
912.5	1030	43.52	pk	ver	74.00	-30.48
912.5	1048	37.75	pk	hor	74.00	-36.25
915.0	401.603	33.76	pk	ver	46.00	-12.24
915.0	1036	43.92	pk	ver	74.00	-30.08
915.0	1054	38.77	pk	hor	74.00	-35.23
915.0	2740	35.30	pk	hor	74.00	-38.70
915.0	2740	37.27	pk	ver	74.00	-36.73
918.5	400.772	28.50	pk	hor	46.00	-17.50
918.5	400.772	31.93	pk	ver	46.00	-14.07
918.5	1036	44.97	pk	ver	74.00	-29.03
918.5	1048	38.77	pk	hor	74.00	-35.23
918.5	2752	35.74	pk	hor	74.00	-38.26
918.5	2752	37.48	pk	ver	74.00	-36.52

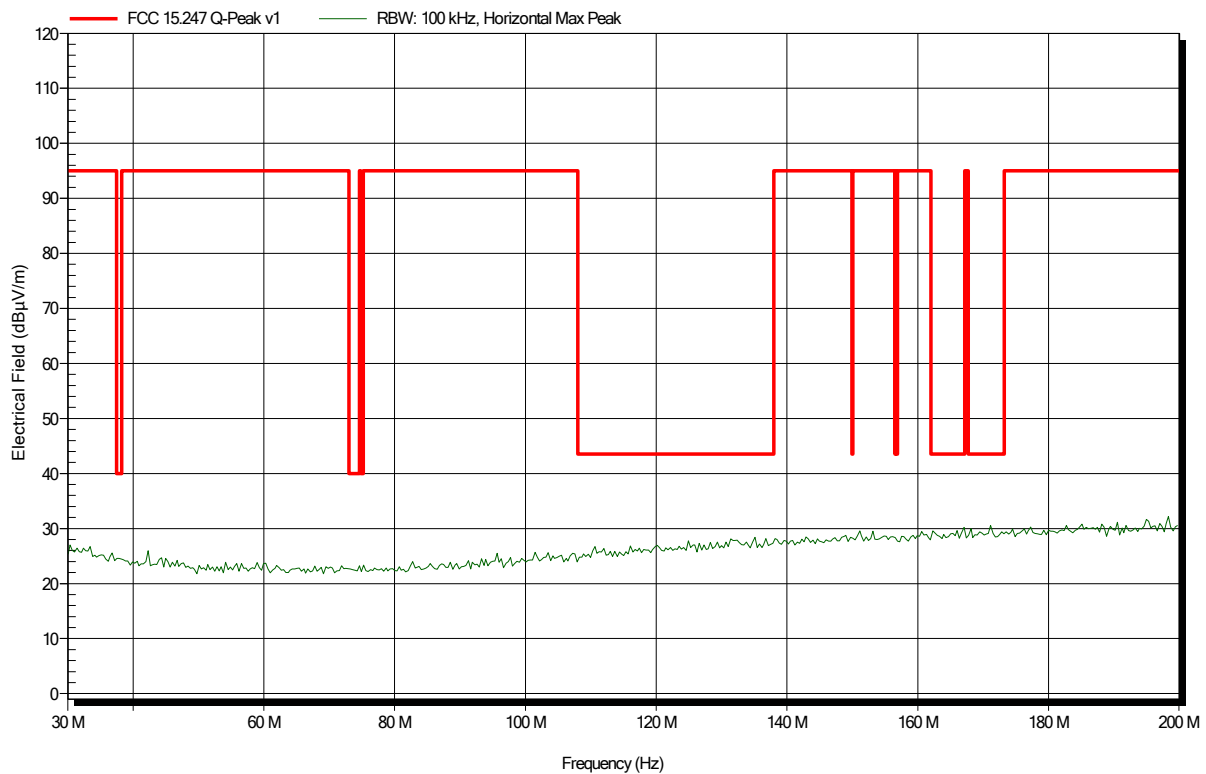
ANNEX A Transmitter spurious emissions

Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
EUT Name: Ultrasonic water meter
Model: KWM2220
Test Site: Eurofins Product Service GmbH
Operator: Florian Voigt (supervised)
Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
Antenna: HK116, Horizontal
Measurement distance: 3 m
Mode: TX; Stub antenna 30261216 B1, Channel Low
Test Date: 2020-07-08
Note:

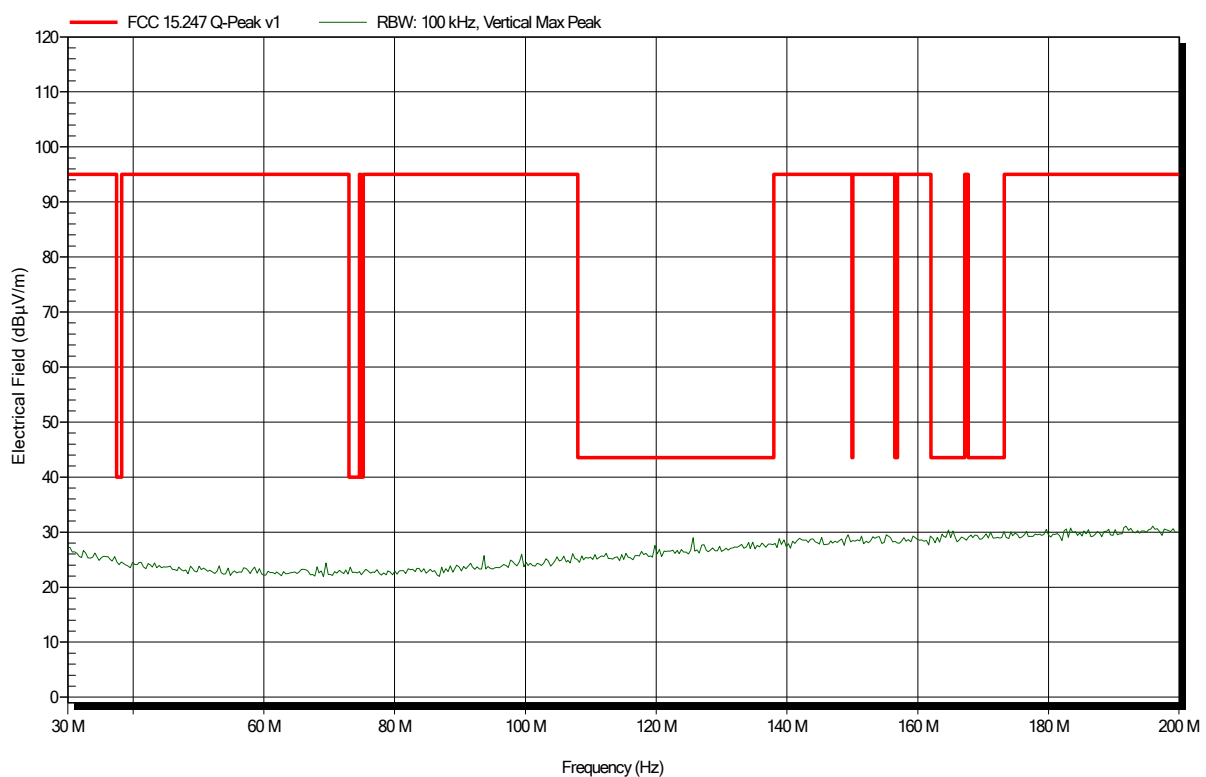
Index 29



Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859
 Applicant: Kamstrup A/S
 EUT Name: Ultrasonic water meter
 Model: KWM2220
 Test Site: Eurofins Product Service GmbH
 Operator: Florian Voigt (supervised)
 Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
 Antenna: HK116, Vertical
 Measurement distance: 3 m
 Mode: TX; Stub antenna 30261216 B1, Channel Low
 Test Date: 2020-07-08
 Note:

Index 28

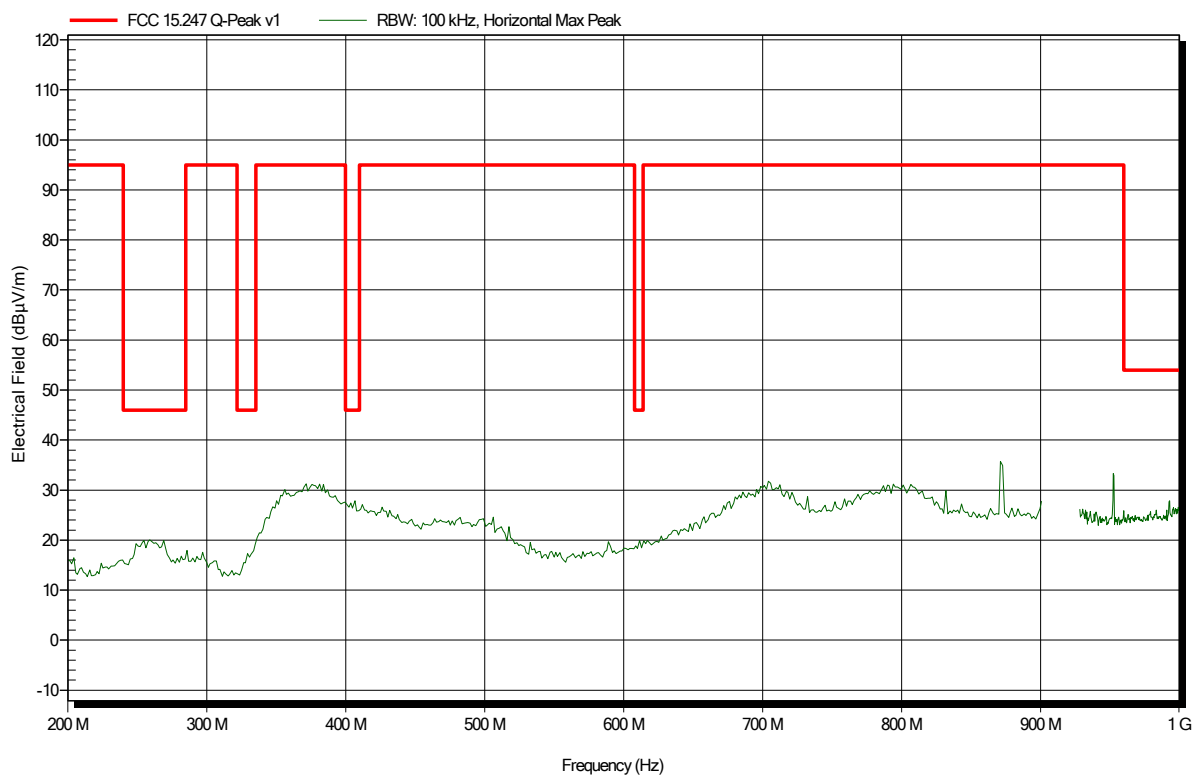


Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
EUT Name: Ultrasonic water meter
Model: KWM2220
Test Site: Eurofins Product Service GmbH
Operator: Florian Voigt (supervised)
Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
Antenna: Rohde & Schwarz HL 223, Horizontal
Measurement distance: 3 m
Mode: TX; Stub antenna 30261216 B1, Channel Low
Test Date: 2020-07-08
Note:

Index 26

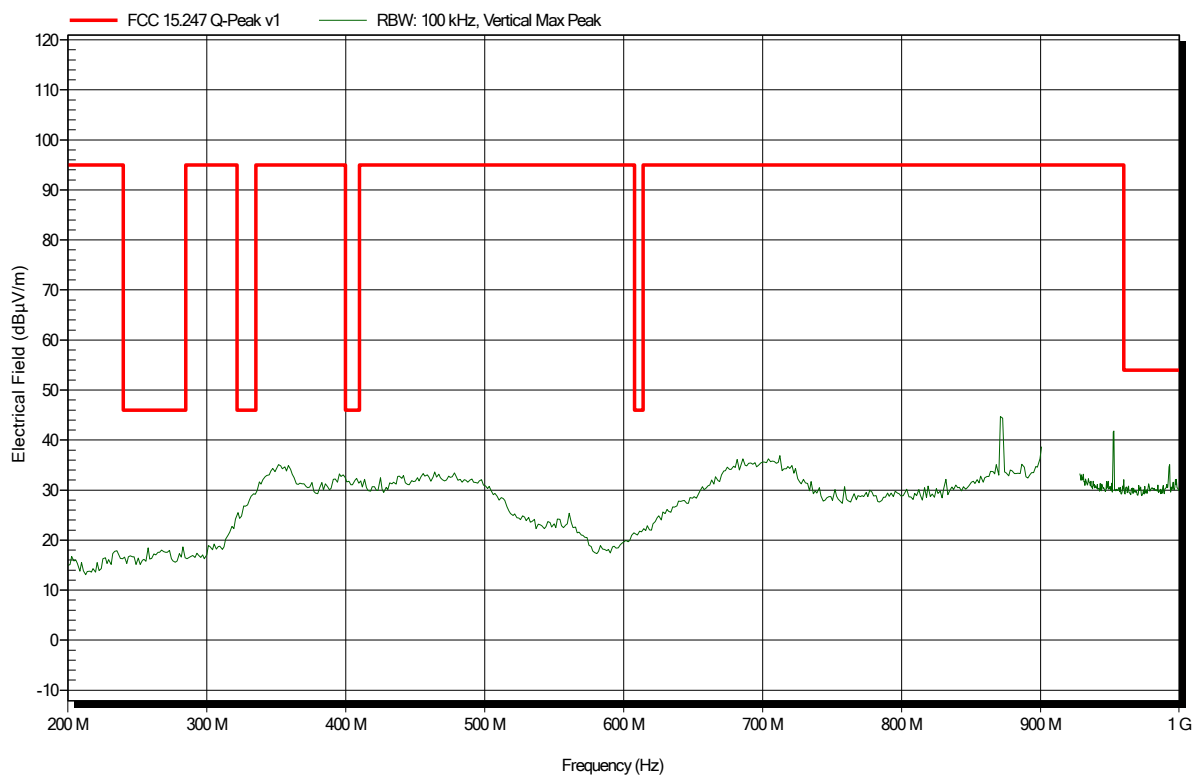


Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
EUT Name: Ultrasonic water meter
Model: KWM2220
Test Site: Eurofins Product Service GmbH
Operator: Florian Voigt (supervised)
Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
Antenna: Rohde & Schwarz HL 223, Vertical
Measurement distance: 3 m
Mode: TX; Stub antenna 30261216 B1, Channel Low
Test Date: 2020-07-08
Note:

Index 27

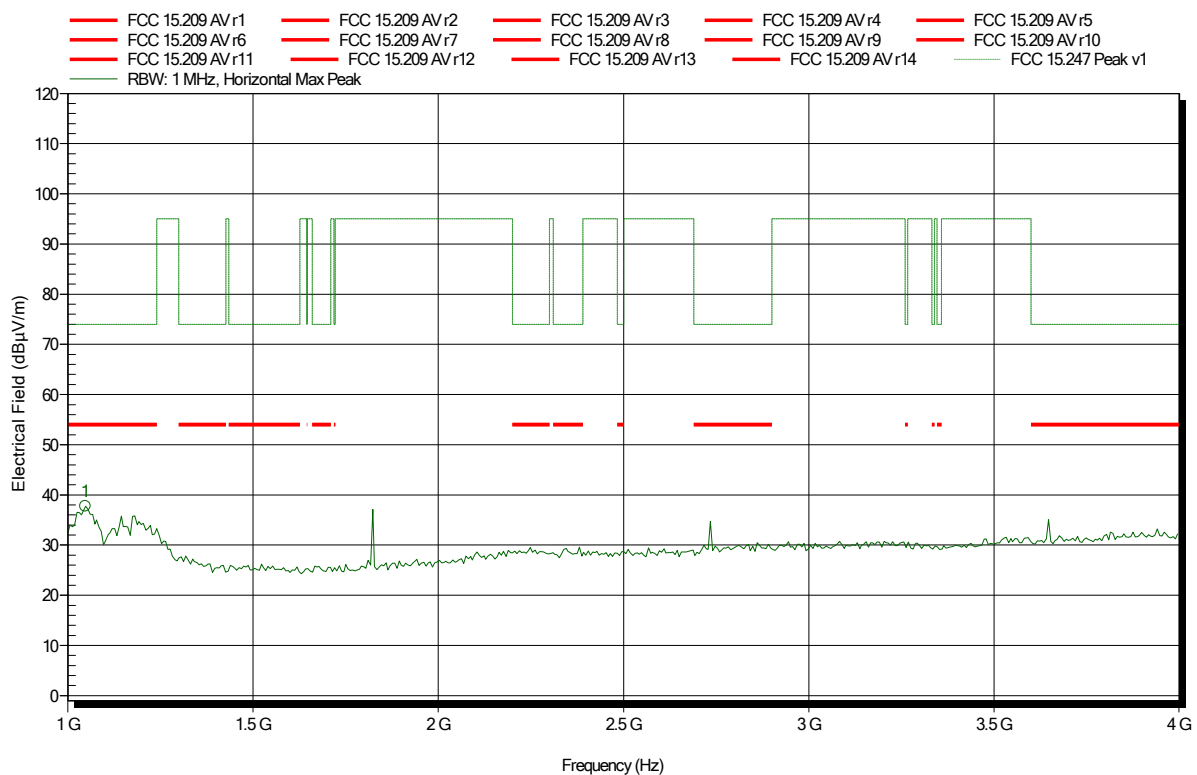


Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
EUT Name: Ultrasonic water meter
Model: KWM2220
Test Site: Eurofins Product Service GmbH
Operator: Florian Voigt (supervised)
Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; Stub antenna 30261216 B1, Channel Low
Test Date: 2020-07-08
Note:

Index 4



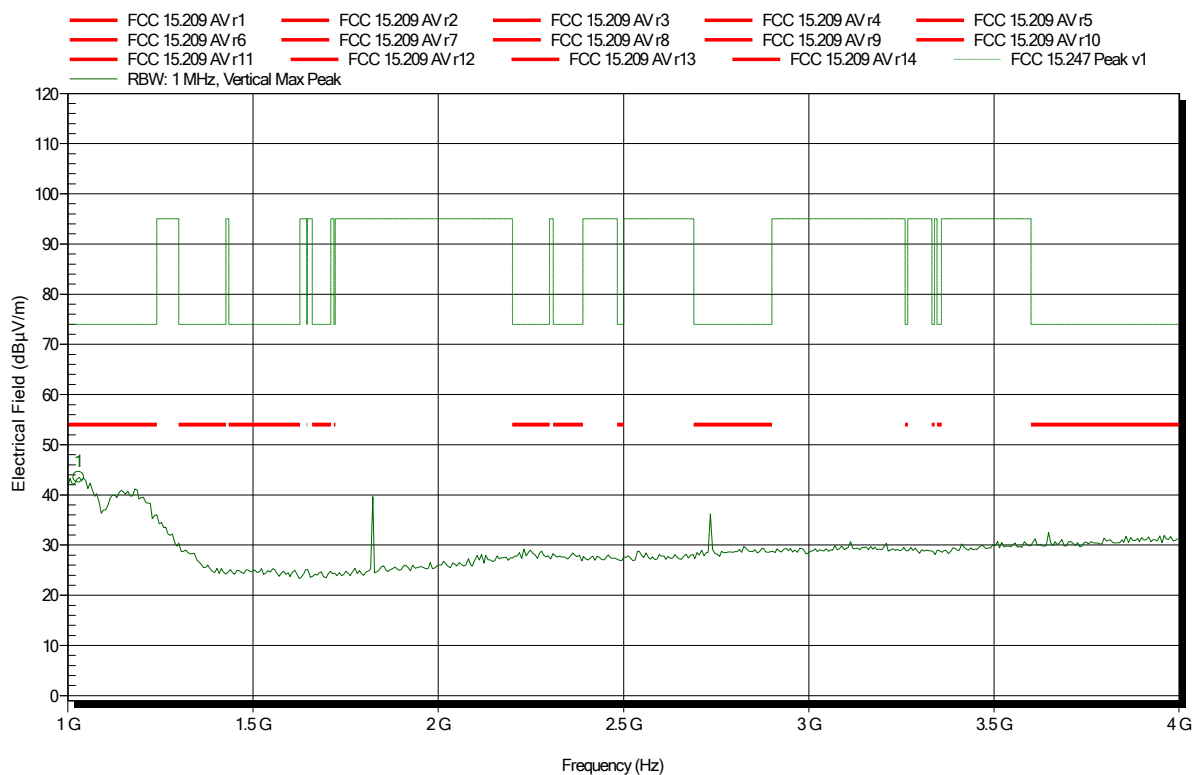
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.048 GHz	37.75 dBµV/m	74 dBµV/m	-36.25 dB	Pass

Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
EUT Name: Ultrasonic water meter
Model: KWM2220
Test Site: Eurofins Product Service GmbH
Operator: Florian Voigt (supervised)
Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; Stub antenna 30261216 B1, Channel Low
Test Date: 2020-07-08
Note:

Index 1



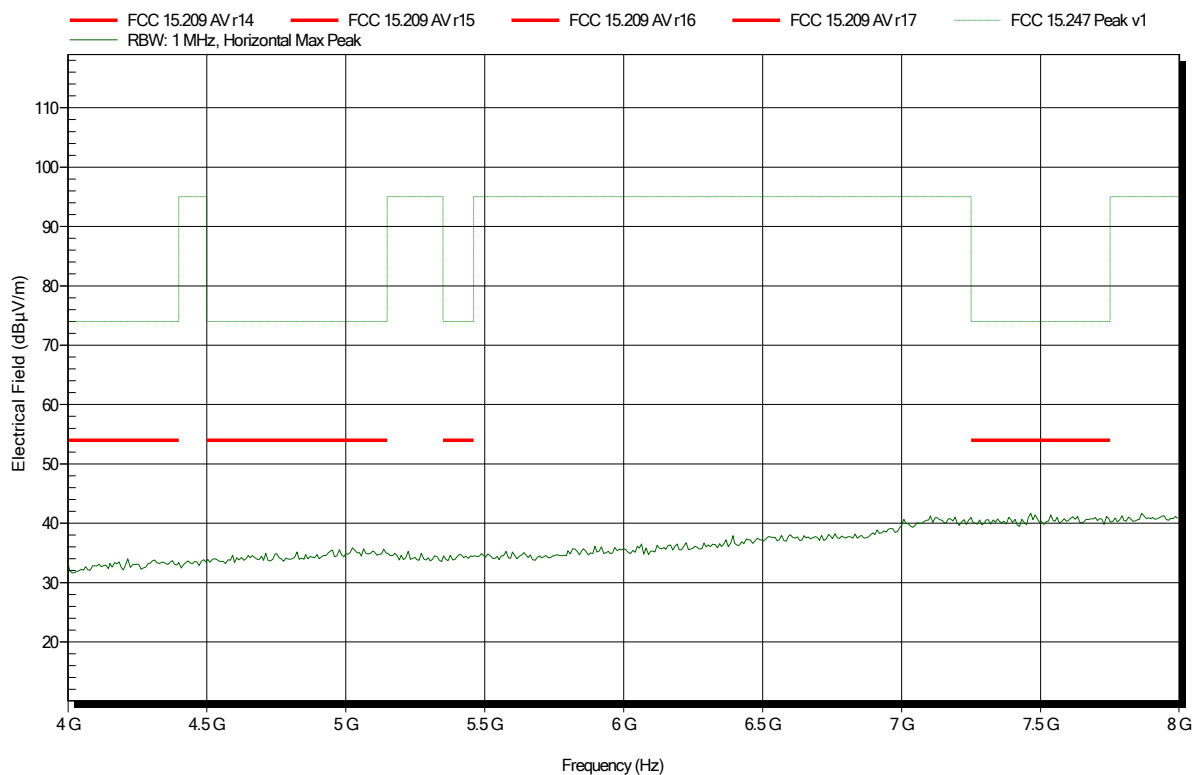
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.03 GHz	43.52 dBµV/m	74 dBµV/m	-30.48 dB	Pass

Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
 EUT Name: Ultrasonic water meter
 Model: KWM2220
 Test Site: Eurofins Product Service GmbH
 Operator: Florian Voigt (supervised)
 Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; Stub antenna 30261216 B1, Channel Low
 Test Date: 2020-07-08
 Note:

Index 5

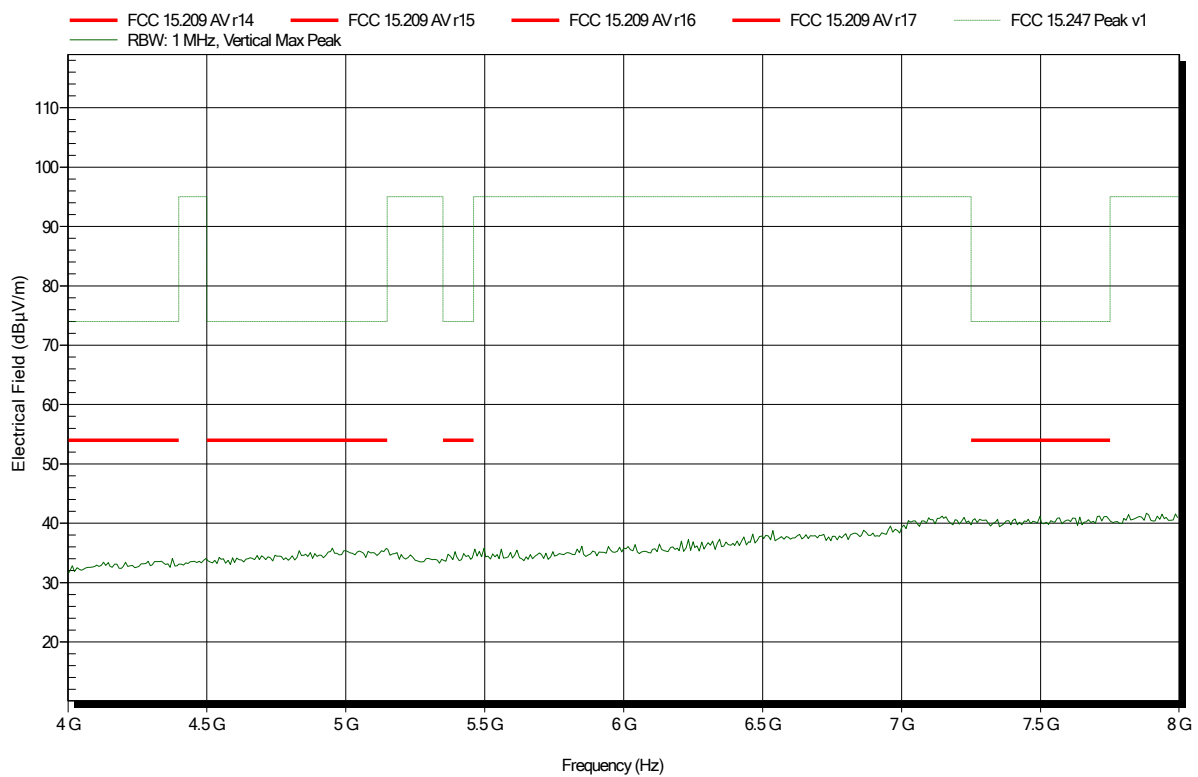


Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
EUT Name: Ultrasonic water meter
Model: KWM2220
Test Site: Eurofins Product Service GmbH
Operator: Florian Voigt (supervised)
Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; Stub antenna 30261216 B1, Channel Low
Test Date: 2020-07-08
Note:

Index 2

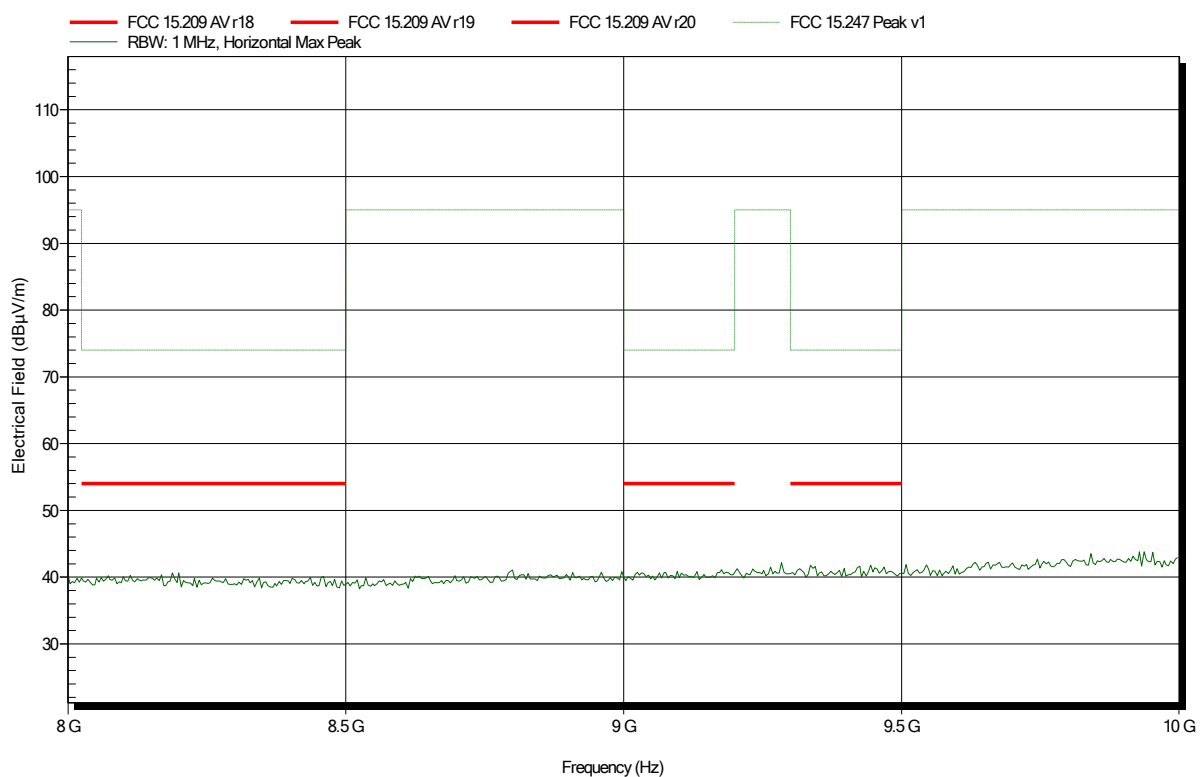


Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
EUT Name: Ultrasonic water meter
Model: KWM2220
Test Site: Eurofins Product Service GmbH
Operator: Florian Voigt (supervised)
Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; Stub antenna 30261216 B1, Channel Low
Test Date: 2020-07-08
Note:

Index 6

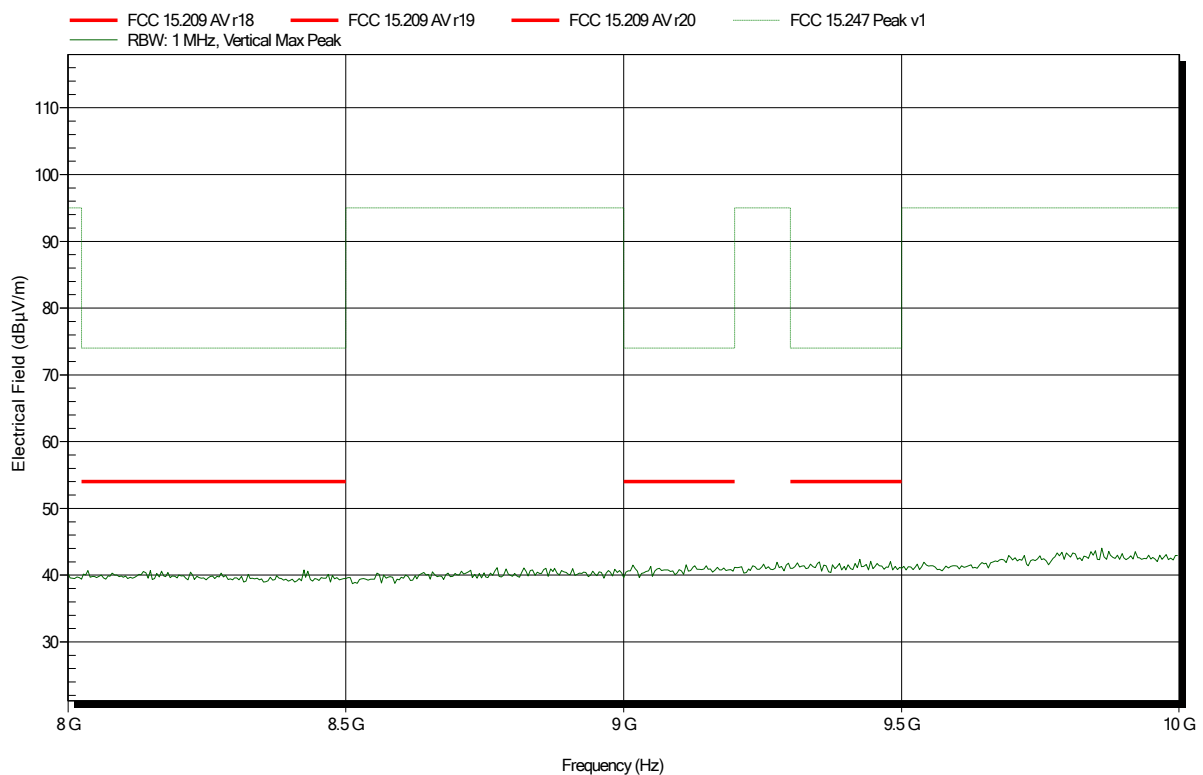


Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
 EUT Name: Ultrasonic water meter
 Model: KWM2220
 Test Site: Eurofins Product Service GmbH
 Operator: Florian Voigt (supervised)
 Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; Stub antenna 30261216 B1, Channel Low
 Test Date: 2020-07-08
 Note:

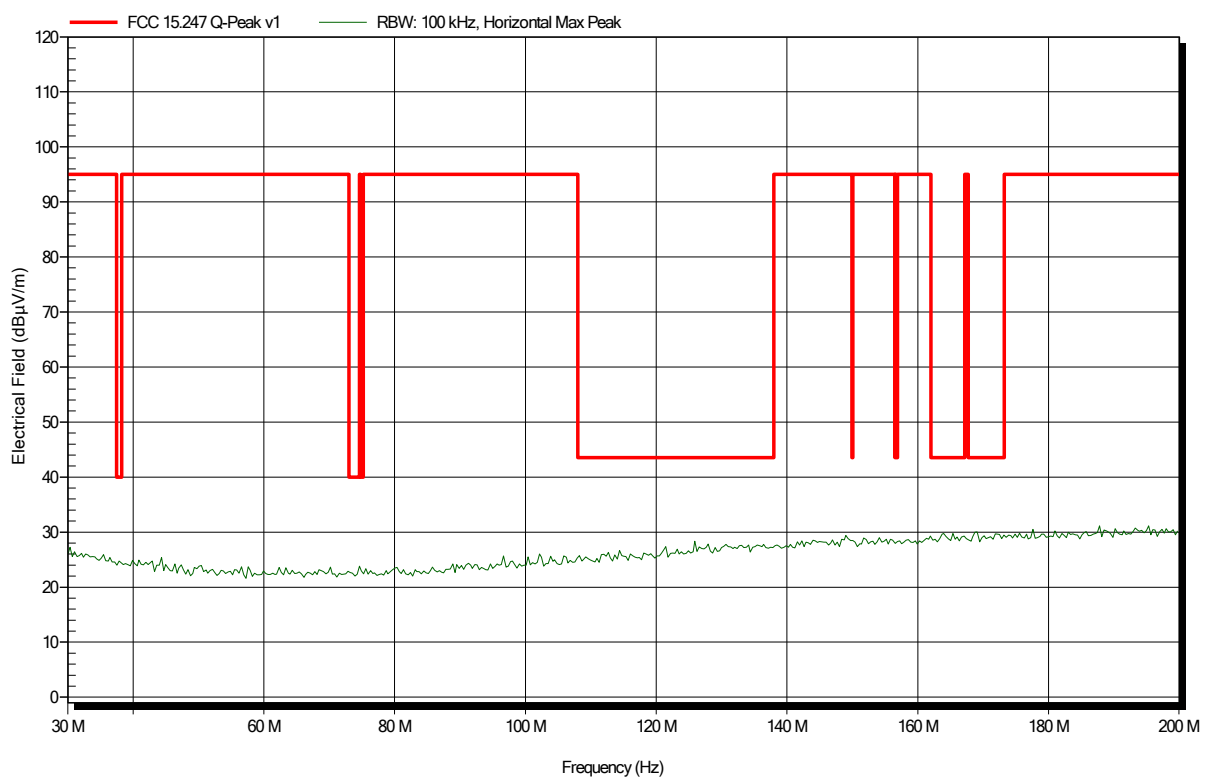
Index 3



Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859
 Applicant: Kamstrup A/S
 EUT Name: Ultrasonic water meter
 Model: KWM2220
 Test Site: Eurofins Product Service GmbH
 Operator: Florian Voigt (supervised)
 Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
 Antenna: HK116, Horizontal
 Measurement distance: 3 m
 Mode: TX; Stub antenna 30261216 B1, Channel Mid
 Test Date: 2020-07-08
 Note:

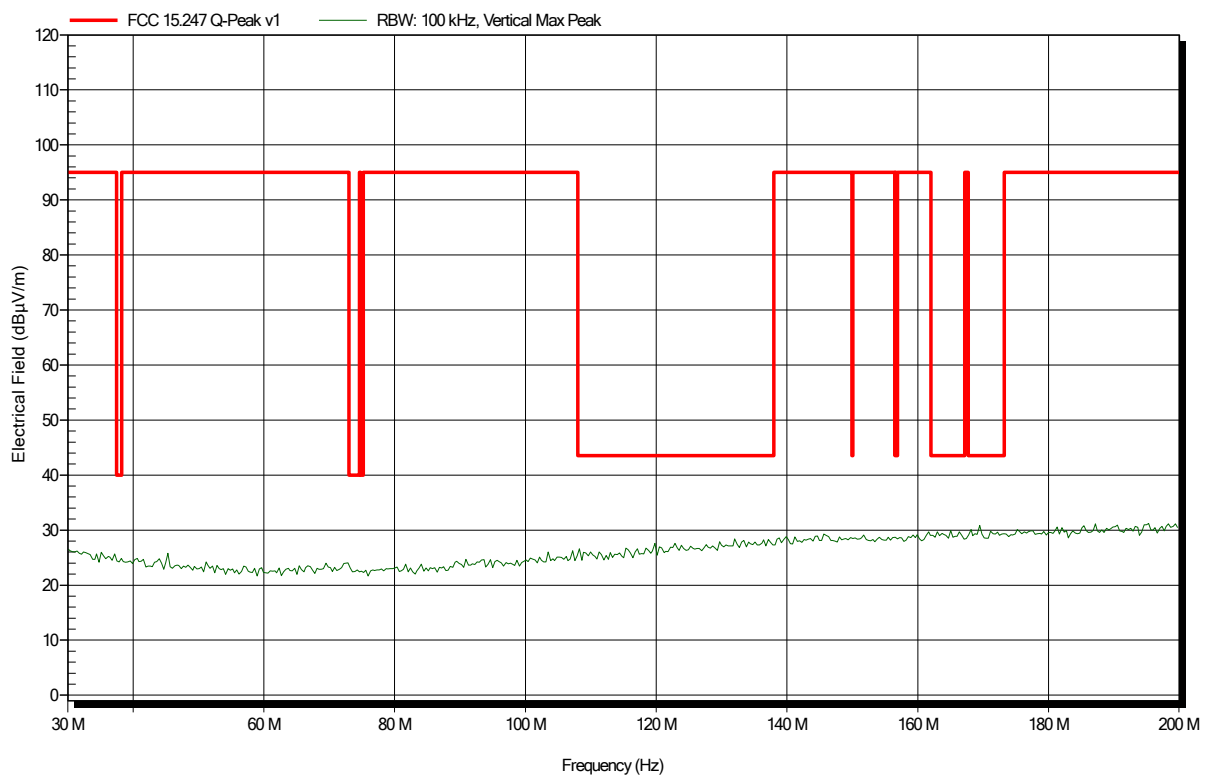
Index 30



Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859
 Applicant: Kamstrup A/S
 EUT Name: Ultrasonic water meter
 Model: KWM2220
 Test Site: Eurofins Product Service GmbH
 Operator: Florian Voigt (supervised)
 Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
 Antenna: HK116, Vertical
 Measurement distance: 3 m
 Mode: TX; Stub antenna 30261216 B1, Channel Mid
 Test Date: 2020-07-08
 Note:

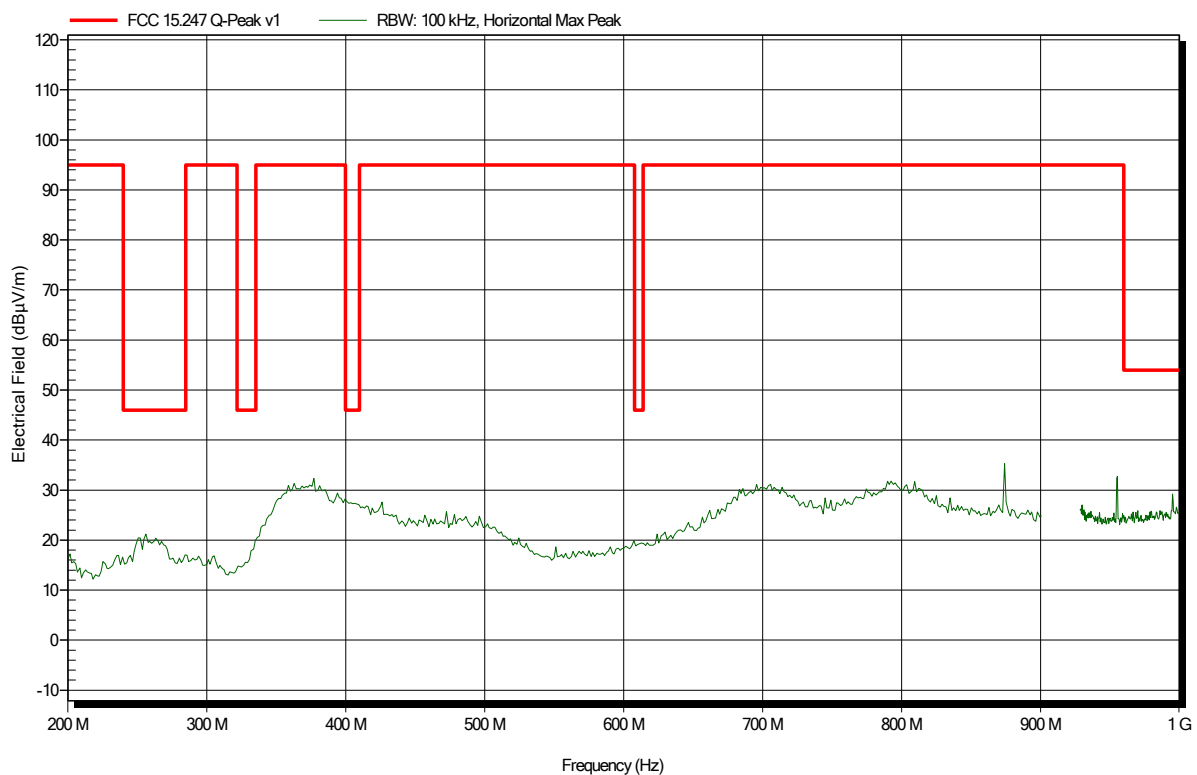
Index 31



Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859
 Applicant: Kamstrup A/S
 EUT Name: Ultrasonic water meter
 Model: KWM2220
 Test Site: Eurofins Product Service GmbH
 Operator: Florian Voigt (supervised)
 Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3 m
 Mode: TX; Stub antenna 30261216 B1, Channel Mid
 Test Date: 2020-07-08
 Note:

Index 25

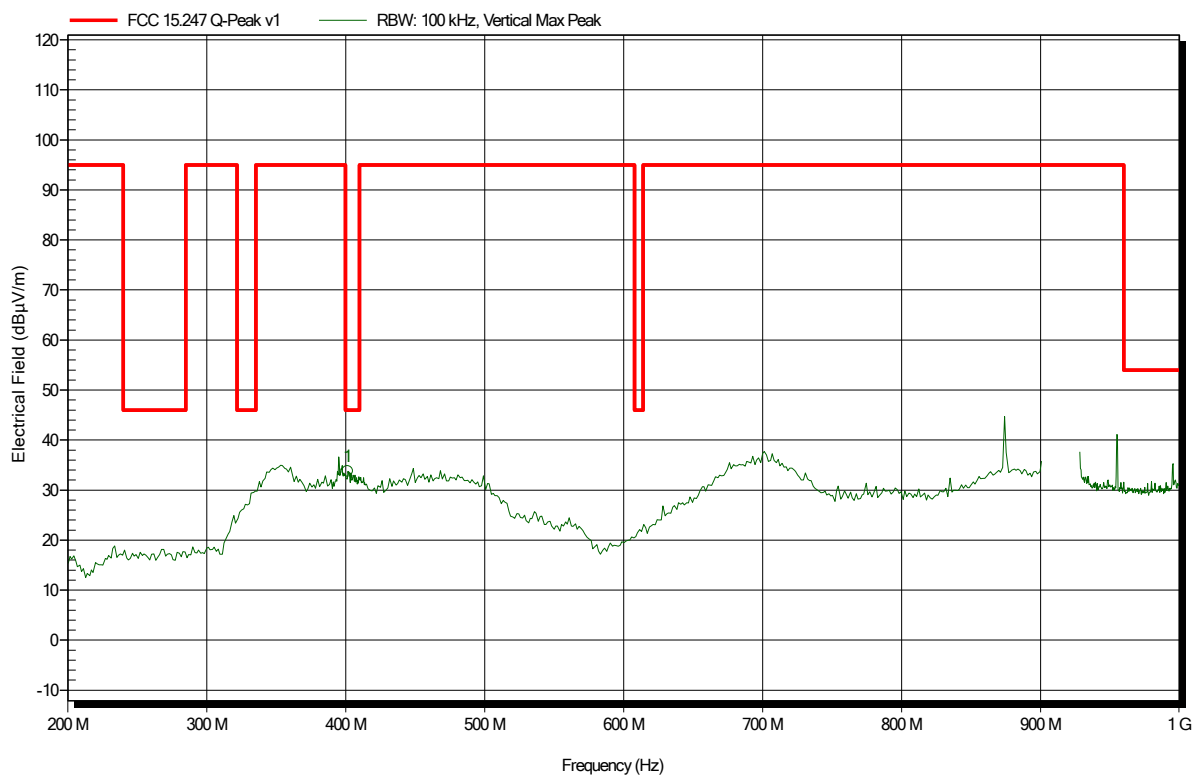


Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
 EUT Name: Ultrasonic water meter
 Model: KWM2220
 Test Site: Eurofins Product Service GmbH
 Operator: Florian Voigt (supervised)
 Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: TX; Stub antenna 30261216 B1, Channel Mid
 Test Date: 2020-07-08
 Note:

Index 24



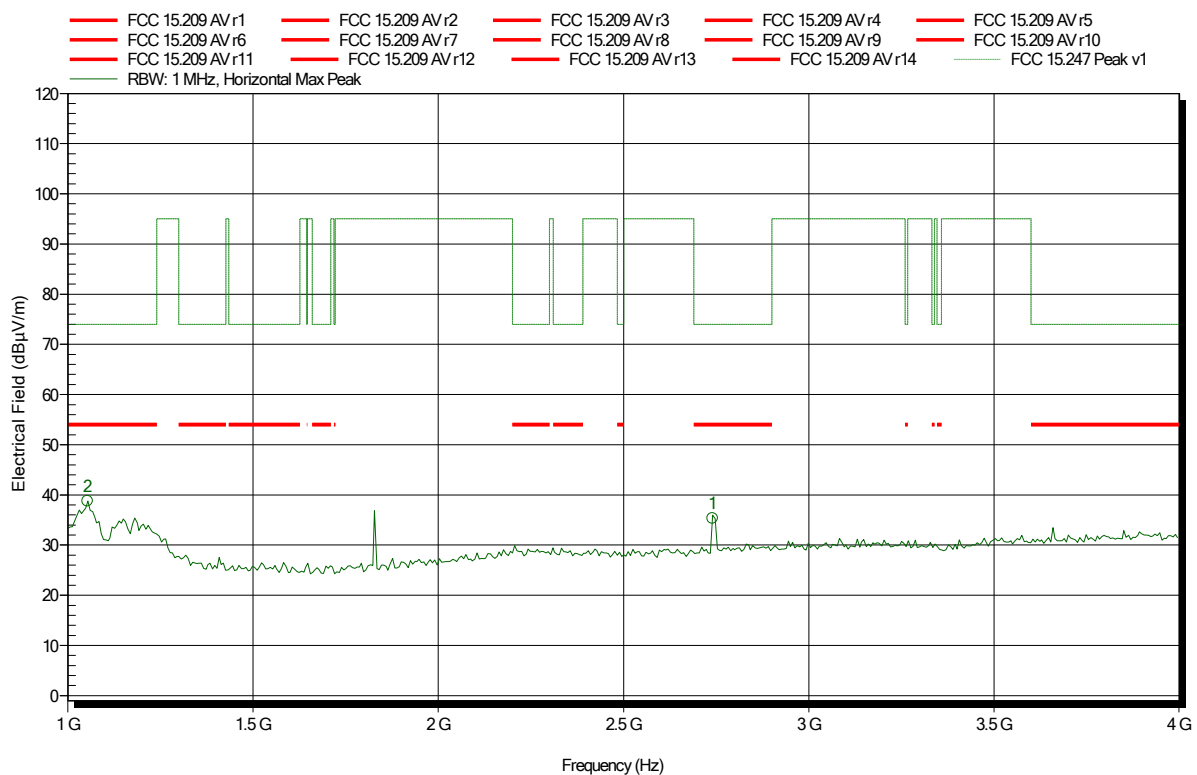
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
401.603 MHz	33.76 dBµV/m	46 dBµV/m	-12.24 dB	Pass

Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
 EUT Name: Ultrasonic water meter
 Model: KWM2220
 Test Site: Eurofins Product Service GmbH
 Operator: Florian Voigt (supervised)
 Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; Stub antenna 30261216 B1, Channel Mid
 Test Date: 2020-07-08
 Note:

Index 7



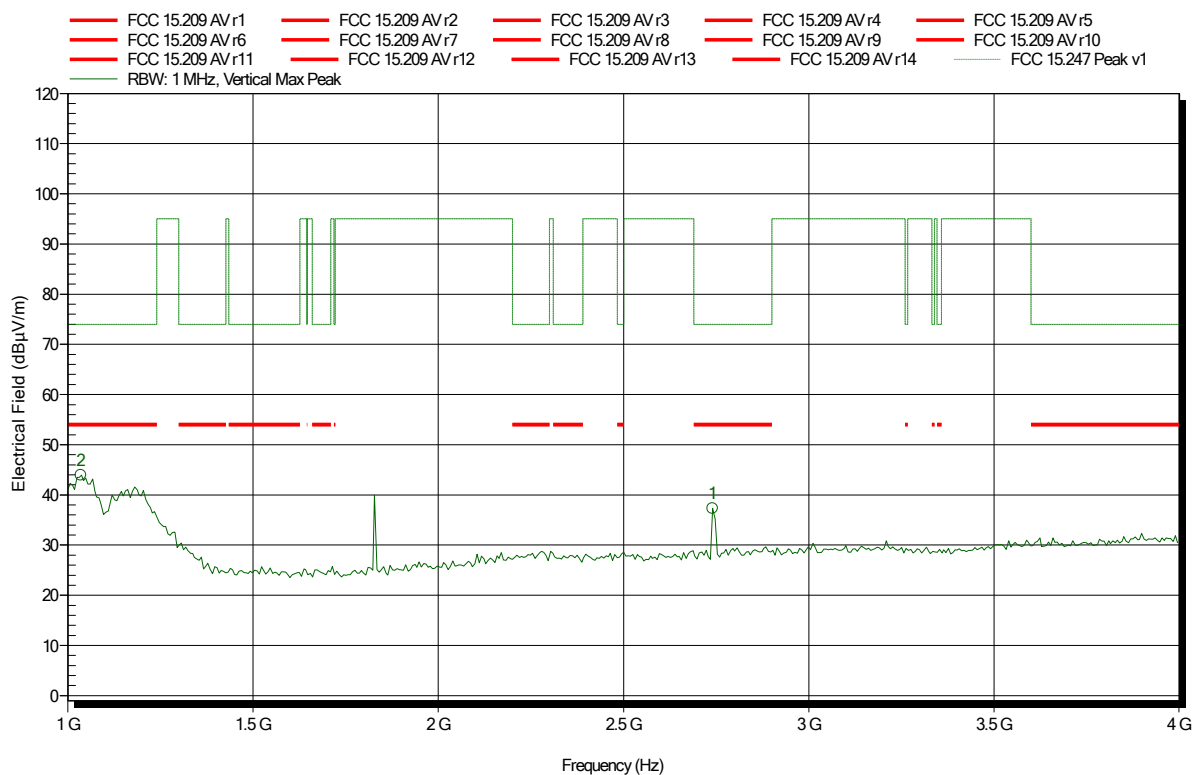
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.054 GHz	38.77 dBµV/m	74 dBµV/m	-35.23 dB	Pass
2.74 GHz	35.3 dBµV/m	74 dBµV/m	-38.7 dB	Pass

Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
 EUT Name: Ultrasonic water meter
 Model: KWM2220
 Test Site: Eurofins Product Service GmbH
 Operator: Florian Voigt (supervised)
 Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; Stub antenna 30261216 B1, Channel Mid
 Test Date: 2020-07-08
 Note:

Index 10



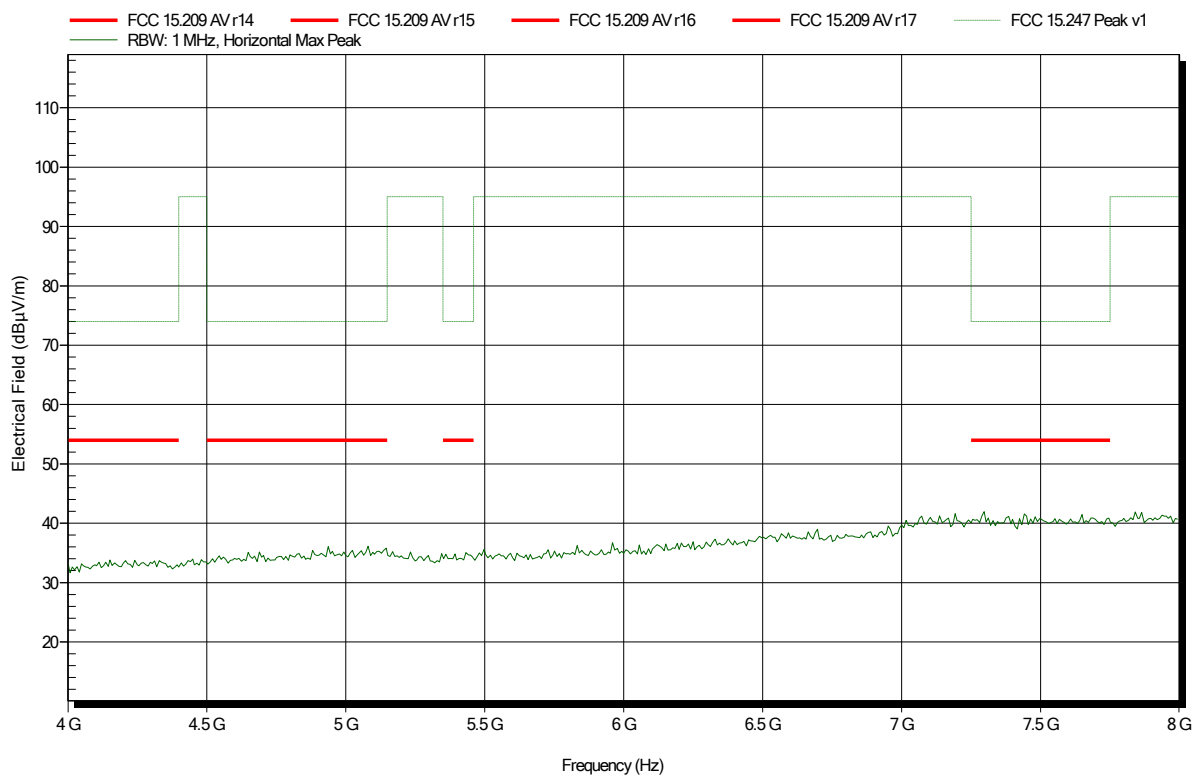
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.036 GHz	43.92 dBµV/m	74 dBµV/m	-30.08 dB	Pass
2.74 GHz	37.27 dBµV/m	74 dBµV/m	-36.73 dB	Pass

Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
 EUT Name: Ultrasonic water meter
 Model: KWM2220
 Test Site: Eurofins Product Service GmbH
 Operator: Florian Voigt (supervised)
 Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; Stub antenna 30261216 B1, Channel Mid
 Test Date: 2020-07-08
 Note:

Index 8

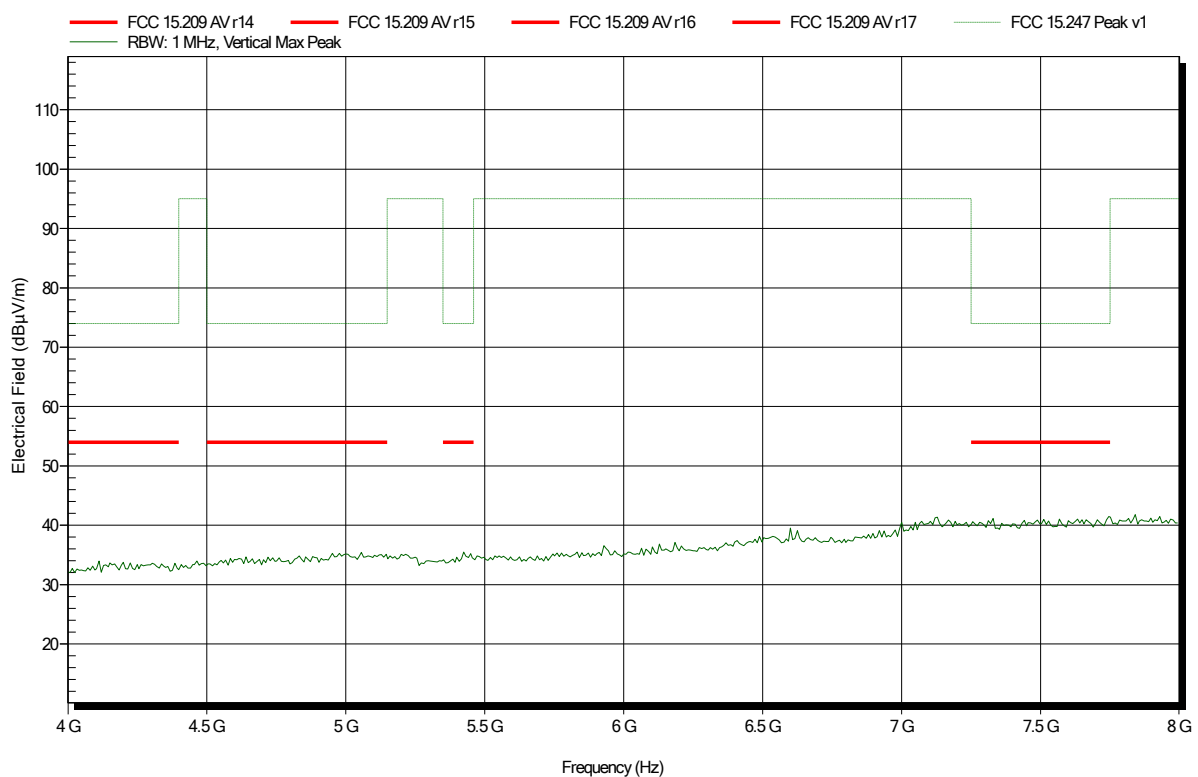


Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
 EUT Name: Ultrasonic water meter
 Model: KWM2220
 Test Site: Eurofins Product Service GmbH
 Operator: Florian Voigt (supervised)
 Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; Stub antenna 30261216 B1, Channel Mid
 Test Date: 2020-07-08
 Note:

Index 11

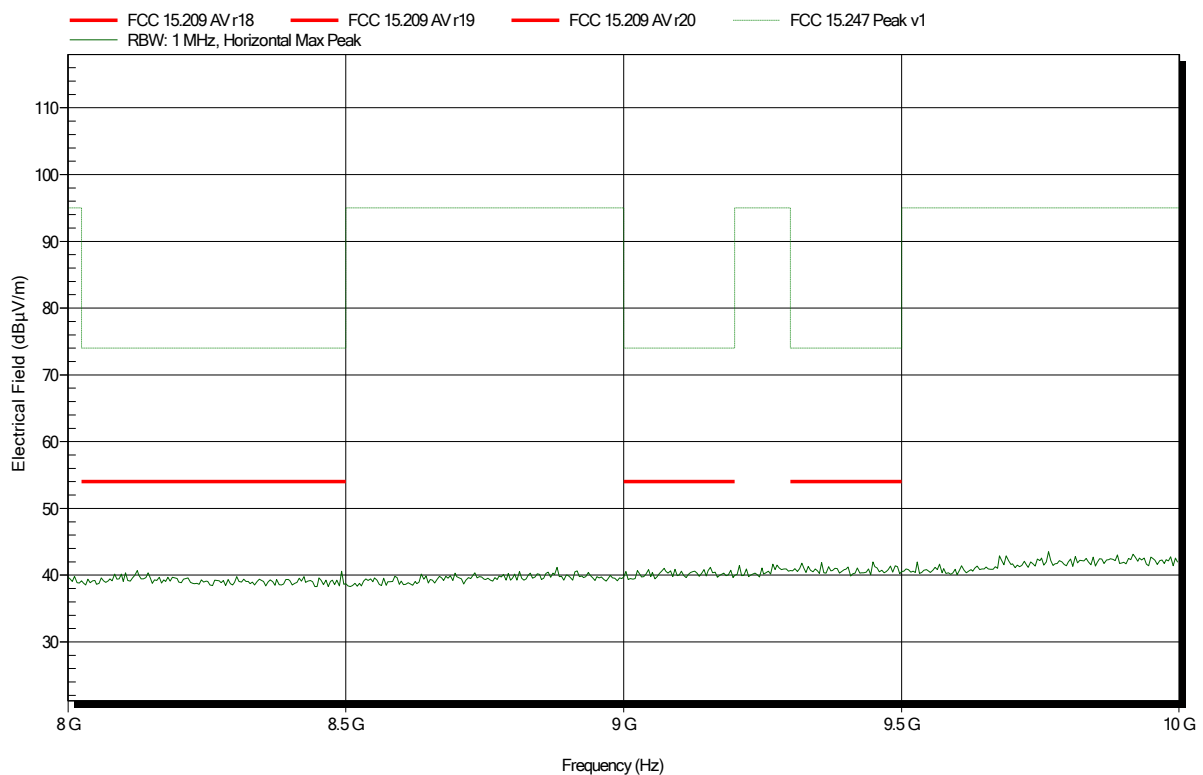


Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
EUT Name: Ultrasonic water meter
Model: KWM2220
Test Site: Eurofins Product Service GmbH
Operator: Florian Voigt (supervised)
Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; Stub antenna 30261216 B1, Channel Mid
Test Date: 2020-07-08
Note:

Index 9

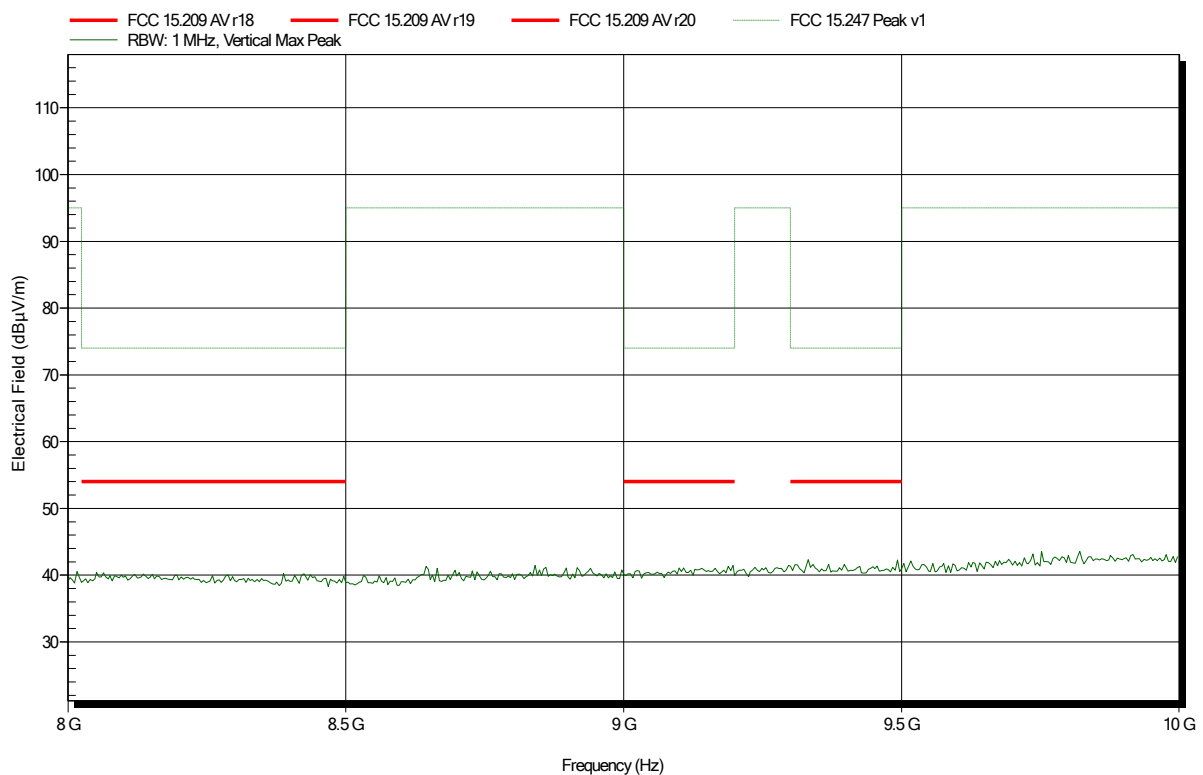


Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
EUT Name: Ultrasonic water meter
Model: KWM2220
Test Site: Eurofins Product Service GmbH
Operator: Florian Voigt (supervised)
Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; Stub antenna 30261216 B1, Channel Mid
Test Date: 2020-07-08
Note:

Index 12

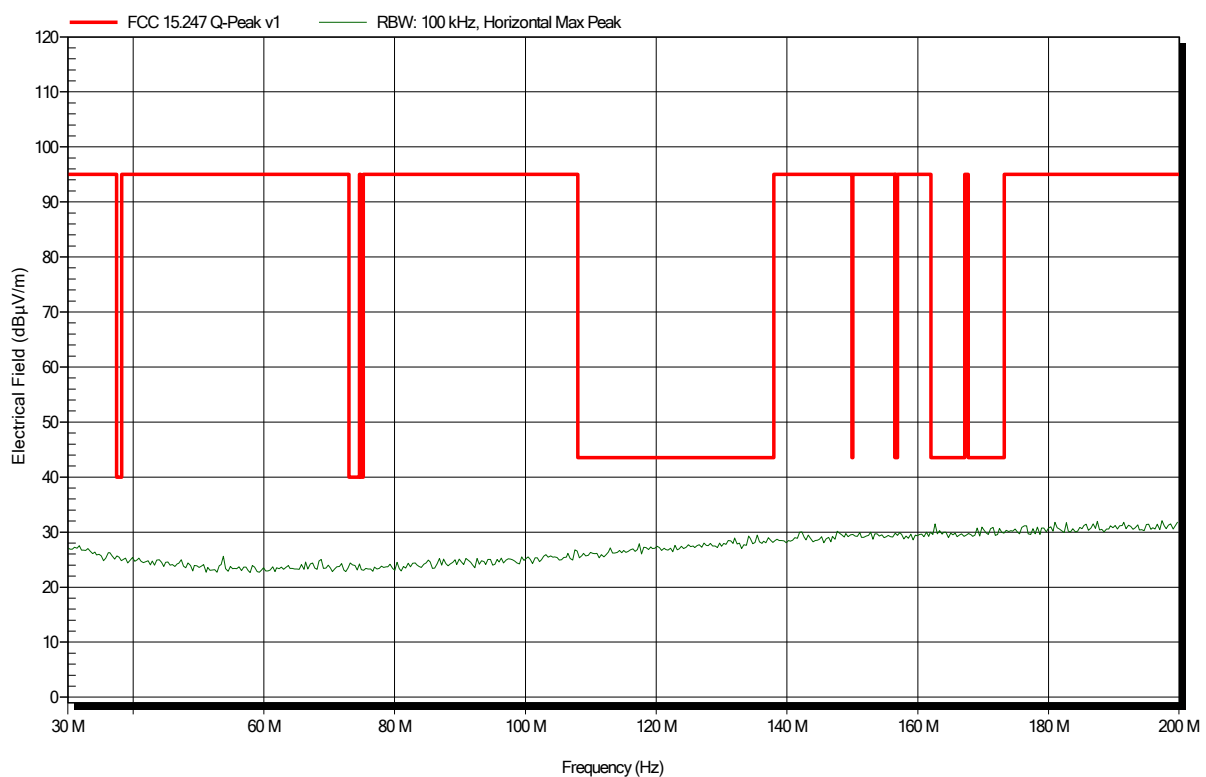


Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
EUT Name: Ultrasonic water meter
Model: KWM2220
Test Site: Eurofins Product Service GmbH
Operator: Florian Voigt (supervised)
Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
Antenna: HK116, Horizontal
Measurement distance: 3 m
Mode: TX; Stub antenna 30261216 B1, Channel High
Test Date: 2020-07-08
Note:

Index 33

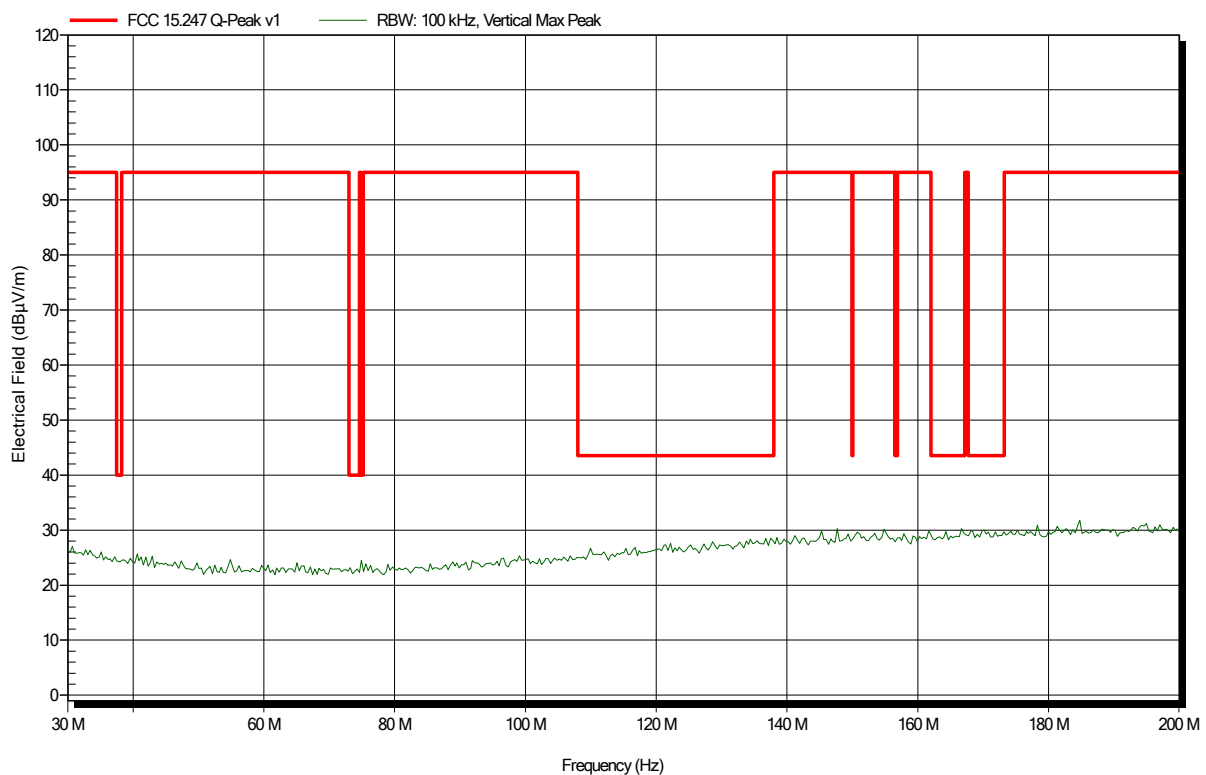


Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
EUT Name: Ultrasonic water meter
Model: KWM2220
Test Site: Eurofins Product Service GmbH
Operator: Florian Voigt (supervised)
Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
Antenna: HK116, Vertical
Measurement distance: 3 m
Mode: TX; Stub antenna 30261216 B1, Channel High
Test Date: 2020-07-08
Note:

Index 32

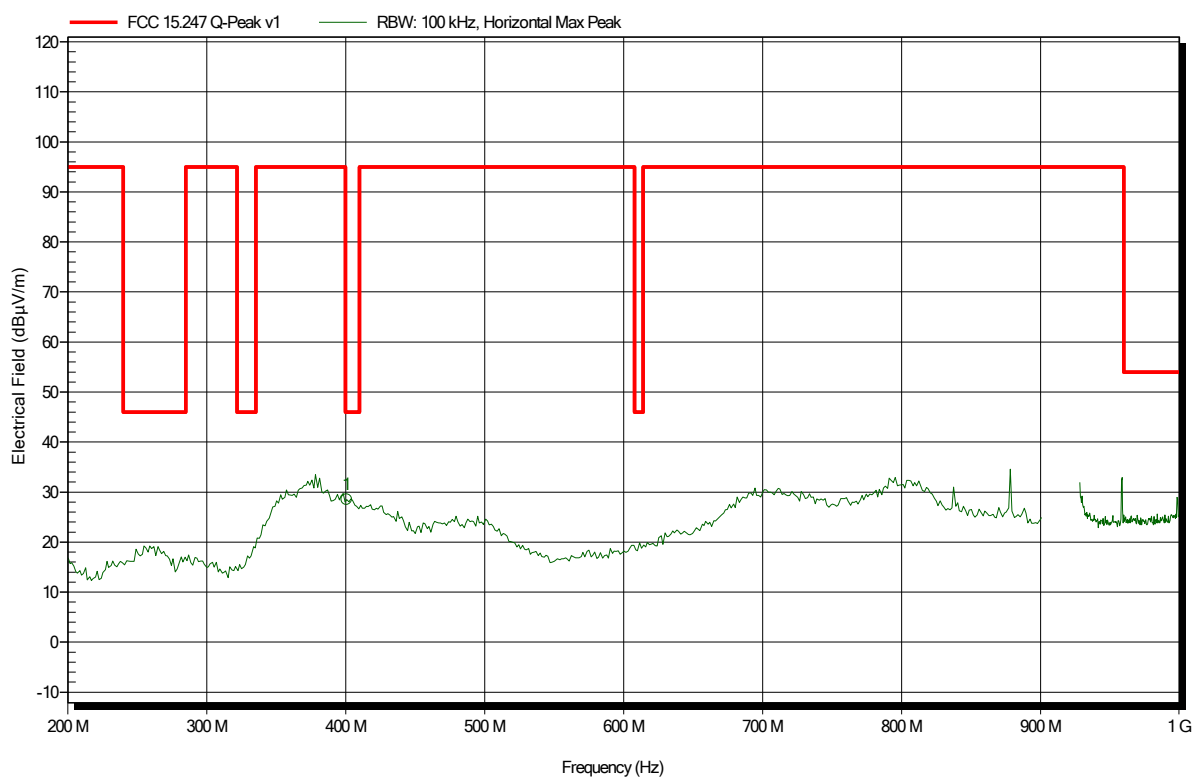


Spurious emissions according to FCC 47 CFR § 15.247

Project number: GOM-2002-8859

Applicant:	Kamstrup A/S
EUT Name:	Ultrasonic water meter
Model:	KWM2220
Test Site:	Eurofins Product Service GmbH
Operator:	Florian Voigt (supervised)
Test Conditions:	Tnom: 23.9°C, Vnom: 3.66 VDC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; Stub antenna 30261216 B1, Channel High
Test Date:	2020-07-08
Note:	

Index 22



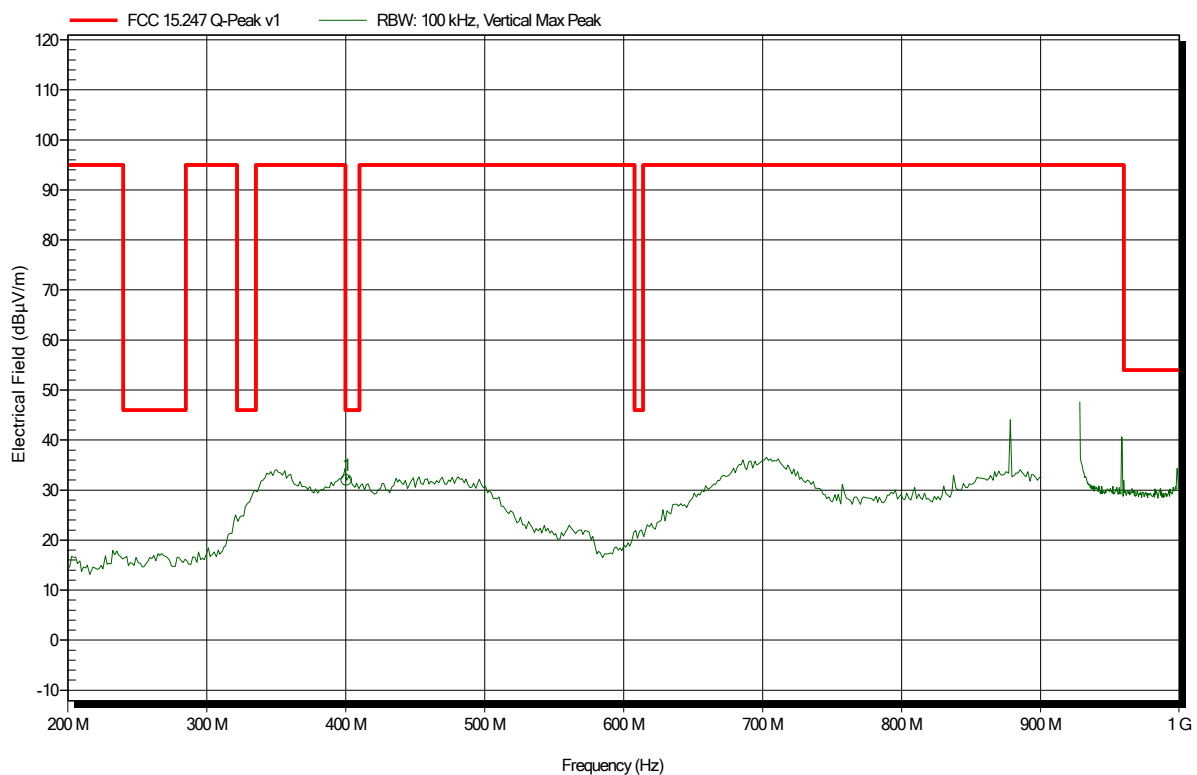
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
400.772 MHz	28.5 dBuV/m	46 dBuV/m	-17.5 dB	Pass

Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
 EUT Name: Ultrasonic water meter
 Model: KWM2220
 Test Site: Eurofins Product Service GmbH
 Operator: Florian Voigt (supervised)
 Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: TX; Stub antenna 30261216 B1, Channel High
 Test Date: 2020-07-08
 Note:

Index 23



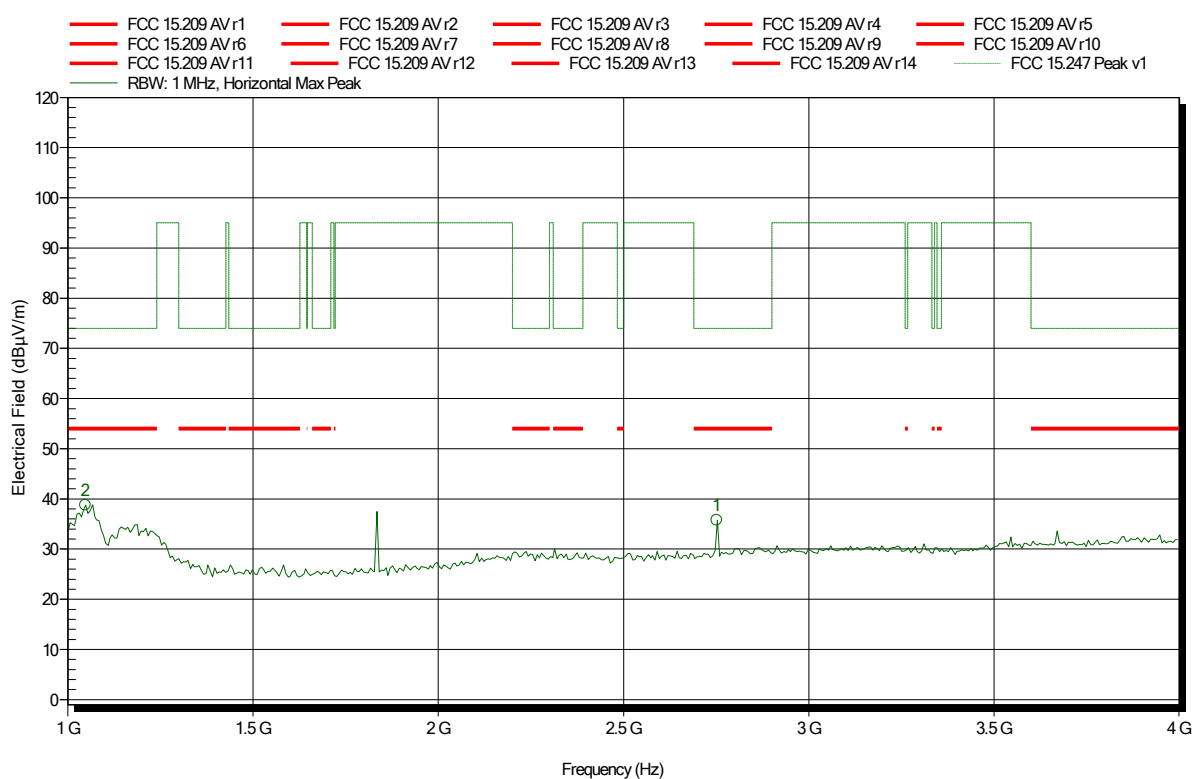
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
400.772 MHz	31.93 dBµV/m	46 dBµV/m	-14.07 dB	Pass

Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
 EUT Name: Ultrasonic water meter
 Model: KWM2220
 Test Site: Eurofins Product Service GmbH
 Operator: Florian Voigt (supervised)
 Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; Stub antenna 30261216 B1, Channel High
 Test Date: 2020-07-08
 Note:

Index 17



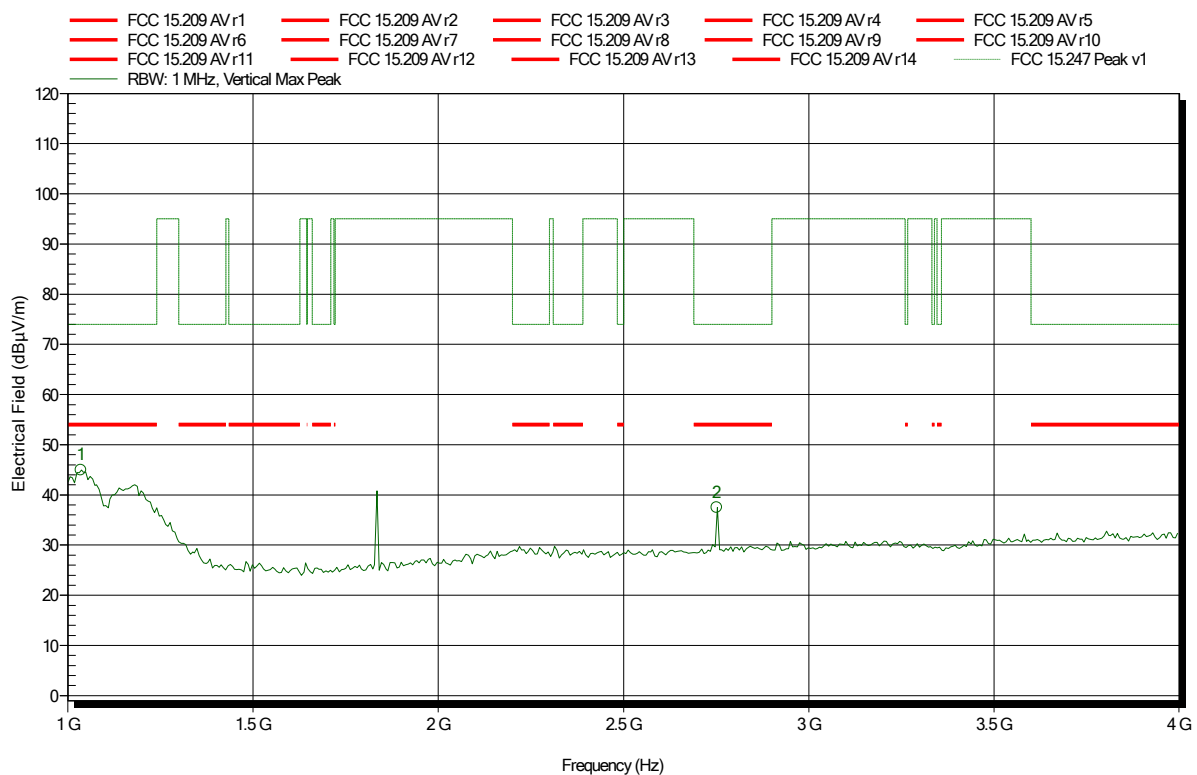
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.048 GHz	38.77 dBµV/m	74 dBµV/m	-35.23 dB	Pass
2.752 GHz	35.74 dBµV/m	74 dBµV/m	-38.26 dB	Pass

Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
 EUT Name: Ultrasonic water meter
 Model: KWM2220
 Test Site: Eurofins Product Service GmbH
 Operator: Florian Voigt (supervised)
 Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; Stub antenna 30261216 B1, Channel High
 Test Date: 2020-07-08
 Note:

Index 13



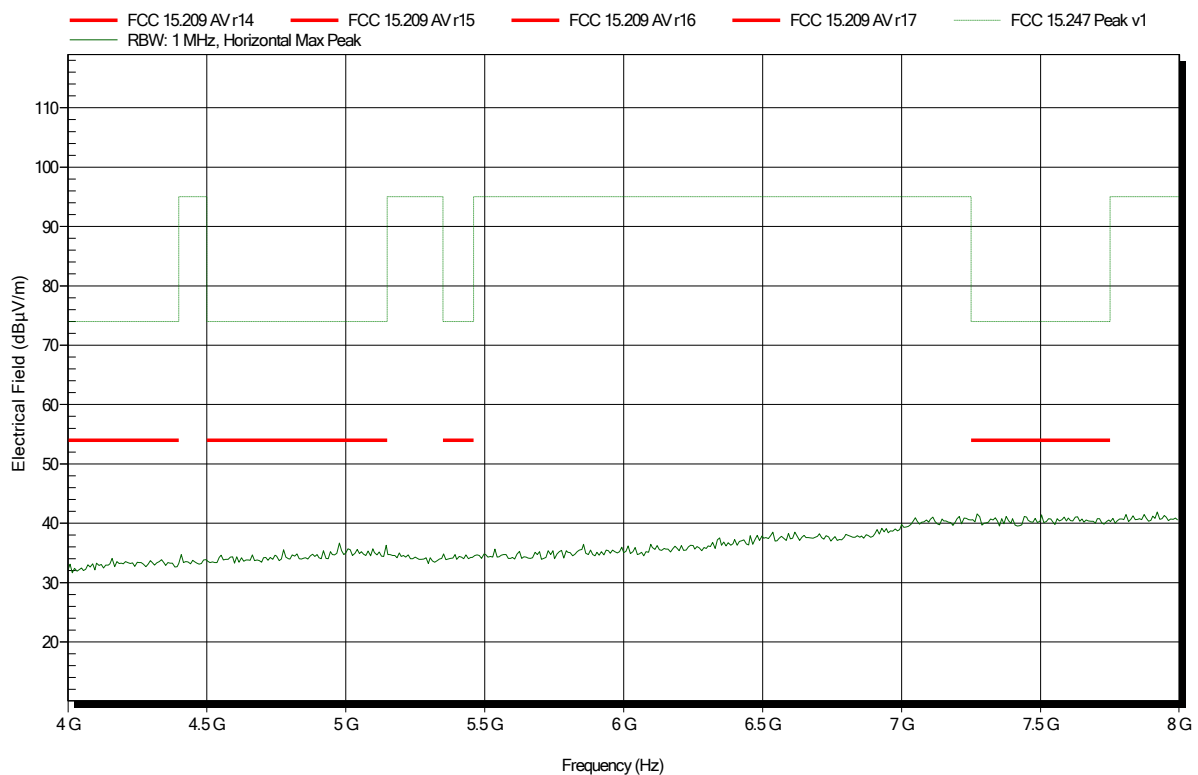
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.036 GHz	44.97 dBµV/m	74 dBµV/m	-29.03 dB	Pass
2.752 GHz	37.48 dBµV/m	74 dBµV/m	-36.52 dB	Pass

Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
EUT Name: Ultrasonic water meter
Model: KWM2220
Test Site: Eurofins Product Service GmbH
Operator: Florian Voigt (supervised)
Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; Stub antenna 30261216 B1, Channel High
Test Date: 2020-07-08
Note:

Index 18

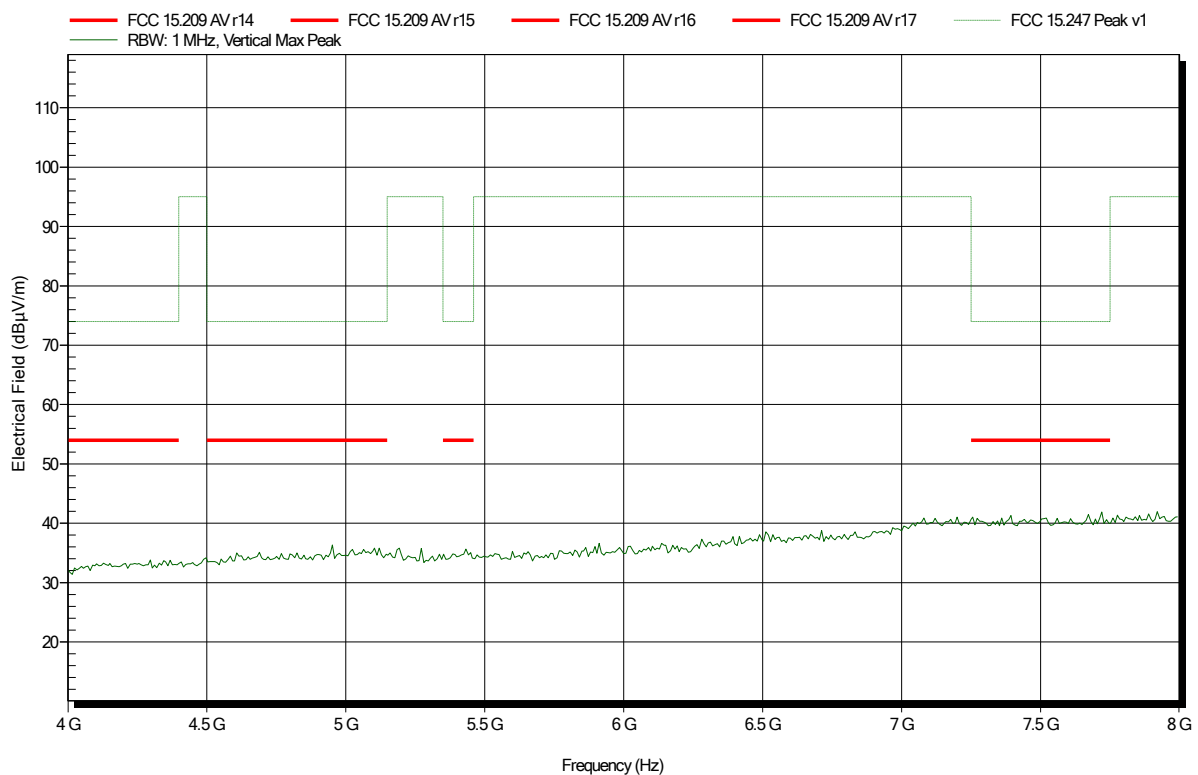


Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
EUT Name: Ultrasonic water meter
Model: KWM2220
Test Site: Eurofins Product Service GmbH
Operator: Florian Voigt (supervised)
Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; Stub antenna 30261216 B1, Channel High
Test Date: 2020-07-08
Note:

Index 15

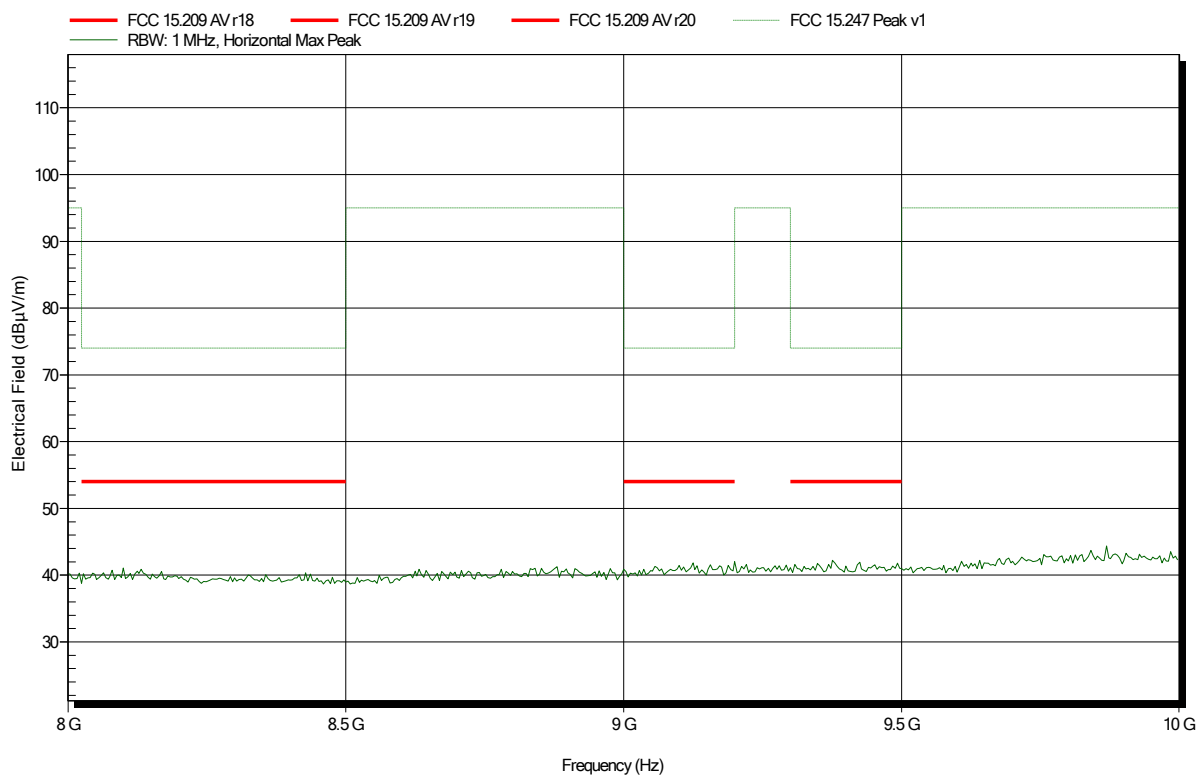


Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
 EUT Name: Ultrasonic water meter
 Model: KWM2220
 Test Site: Eurofins Product Service GmbH
 Operator: Florian Voigt (supervised)
 Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; Stub antenna 30261216 B1, Channel High
 Test Date: 2020-07-08
 Note:

Index 19



Spurious emissions according to FCC 47 CFR § 15.247

Project number: G0M-2002-8859

Applicant: Kamstrup A/S
 EUT Name: Ultrasonic water meter
 Model: KWM2220
 Test Site: Eurofins Product Service GmbH
 Operator: Florian Voigt (supervised)
 Test Conditions: Tnom: 23.9°C, Vnom: 3.66 VDC
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; Stub antenna 30261216 B1, Channel High
 Test Date: 2020-07-08
 Note:

Index 16

