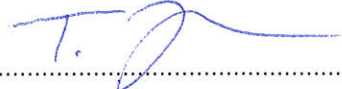


<b>FCC TEST REPORT</b> <b>FCC 47 CFR Part 15C</b> <b>Industry Canada RSS-210</b> <b>Digital transmission systems operating within the 902 – 928 MHz band</b>	
<b>Report Reference No.</b> .....:	G0M-1505-4751-TFC247DT-V01
<b>Testing Laboratory</b> .....	Eurofins Product Service GmbH
<b>Address</b> .....:	Storkower Str. 38c 15526 Reichenwalde Germany
<b>Accreditation</b> .....	  A2LA Accredited Testing Laboratory, Certificate No.: 1983.01 FCC Filed Test Laboratory, Reg.-No.: 96970 IC OATS Filing assigned code: 3470A
<b>Applicant's name</b> .....	Kamstrup A/S
<b>Address</b> .....:	Industrivej 28 8660 Skanderborg DENMARK
<b>Test specification:</b>	
<b>Standard</b> .....	47 CFR Part 15C KDB Publication No. 558074 D01 v03r02 RSS-210, Issue 8, 2010-12 RSS-Gen, Issue 4, 2014-11 ANSI C63.4:2009
<b>Test scope</b> .....:	complete Radio compliance test
<b>Equipment under test (EUT):</b>	
Product description	Kamstrup water meter flowIQ2102 for Chile
Model No.	flowIQ2102
Additional Model(s)	flowIQ3100
Brand Name(s)	None
Hardware version flowIQ2102	55501396 A1 + 55501367 A1
Hardware version flowIQ3100	55501396 A1 + 55501368_A2
Firmware / Software version (both models)	50981149 Q1(fw) / 5514 1337 A1 (eeprom)
	FCC-ID: OUY-FLOW2102      IC: none
<b>Test result</b>	<b>Passed</b>

<b>Possible test case verdicts:</b>	
- neither assessed nor tested .....	N/N
- required by standard but not appl. to test object.....	N/A
- required by standard but not tested.....	N/T
- not required by standard for the test object .....	N/R
- test object does meet the requirement.....	P (Pass)
- test object does not meet the requirement.....	F (Fail)
<b>Testing:</b>	
Test Lab Temperature.....	20 – 23 °C
Test Lab Humidity .....	32 – 38 %
Date of receipt of test item .....	2015-06-08
Date (s) of performance of tests .....	2015-06-08
Compiled by .....	Toralf Jahn
Tested by (+ signature)..... (Responsible for Test)	Toralf Jahn
Approved by (+ signature) .....	Christian Weber
(Head of Lab)	
Date of issue .....	2015-06-12
Total number of pages .....	57
<b>General remarks:</b>	
<p><b>The test results presented in this report relate only to the object tested.</b></p> <p><b>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.</b></p>	
<p>This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.</p>	
<b>Additional comments:</b>	




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## Version History

Version	Issue Date	Remarks	Revised by
01	2015-06-12	Initial Release	

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**1 Equipment (Test item) Description:**

<b>Description</b>	Kamstrup water meter flowIQ2102 for Chile	
<b>Model</b>	flowIQ2102	
<b>Additional Model(s)</b>	flowIQ3100	
<b>Hardware version flowIQ2102</b>	55501396 A1 + 55501367 A1	
<b>Hardware version flowIQ3100</b>	55501396 A1 + 55501368_A2	
<b>Firmware / Software version (both models)</b>	50981149 Q1(fw) / 5514 1337 A1 (eeprom)	
<b>Brand Name(s)</b>	None	
<b>Serial number</b>	None	
<b>FCC-ID</b>	OUY-FLOW2102	
<b>IC</b>	none	
<b>Equipment type</b>	End product	
<b>Radio type</b>	Transceiver	
<b>Radio technology</b>	custom	
<b>Operating frequency range</b>	915 MHz	
<b>Assigned frequency band</b>	902 - 928 MHz	
<b>Frequency range</b>	F <sub>MID</sub>	915 MHz
<b>Spreading</b>	None	
<b>Modulations</b>	FSK	
<b>Number of channels</b>	1 Channel	
<b>Channel spacing</b>	None	
<b>Number of antennas</b>	1	
<b>Antenna</b>	Type	integrated PCB antenna
	Model	55501350
	Manufacturer	Kamstrup
	Gain	-1.2 dBi
<b>Manufacturer</b>	Kamstrup A/S Industrivej 28 8660 Skanderborg DENMARK	
<b>Power supply</b>	V <sub>NOM</sub>	3.6 VDC
	V <sub>MIN</sub>	3.2 VDC
	V <sub>MIN</sub>	3.6 VDC
<b>AC/DC-Adaptor</b>	Model	N/A
	Vendor	N/A
	Input	N/A
	Output	N/A

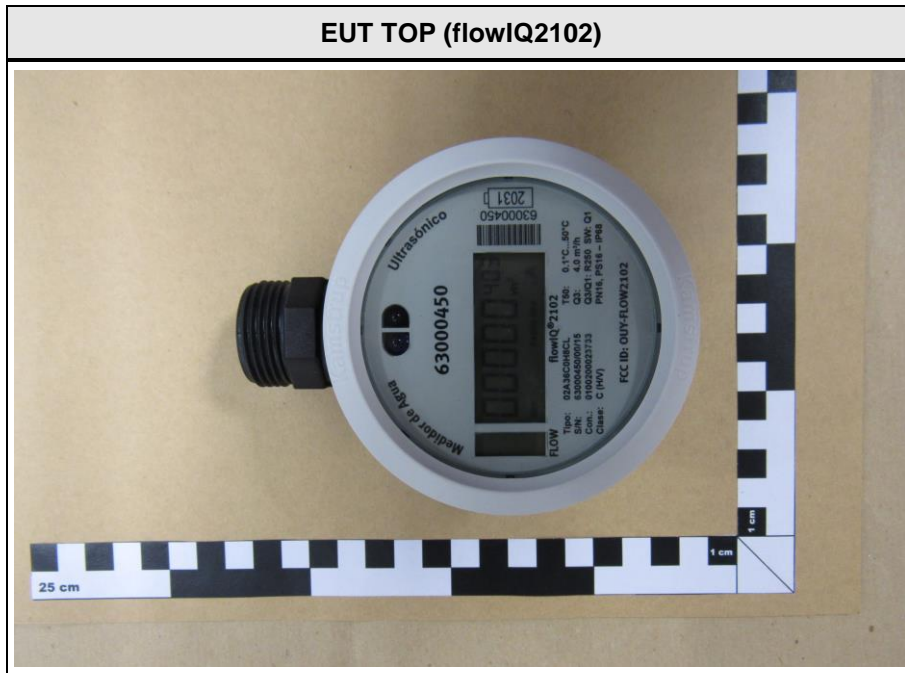
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Test Report No.: G0M-1505-4751-TFC247DT-V01

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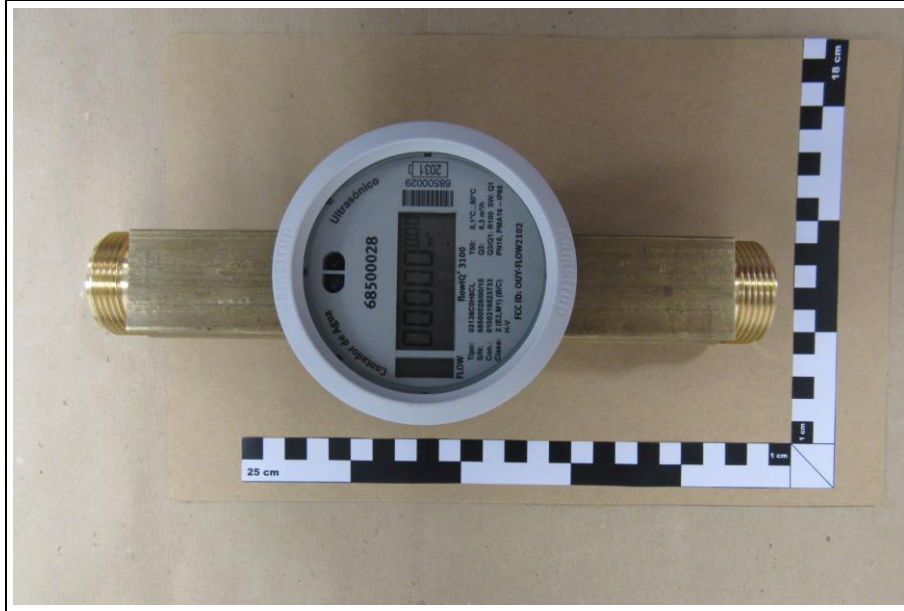
Eurofins Product Service GmbH  
Storkower Str. 38c, D-15526 Reichenwalde, Germany

1.1 Photos – Equipment external





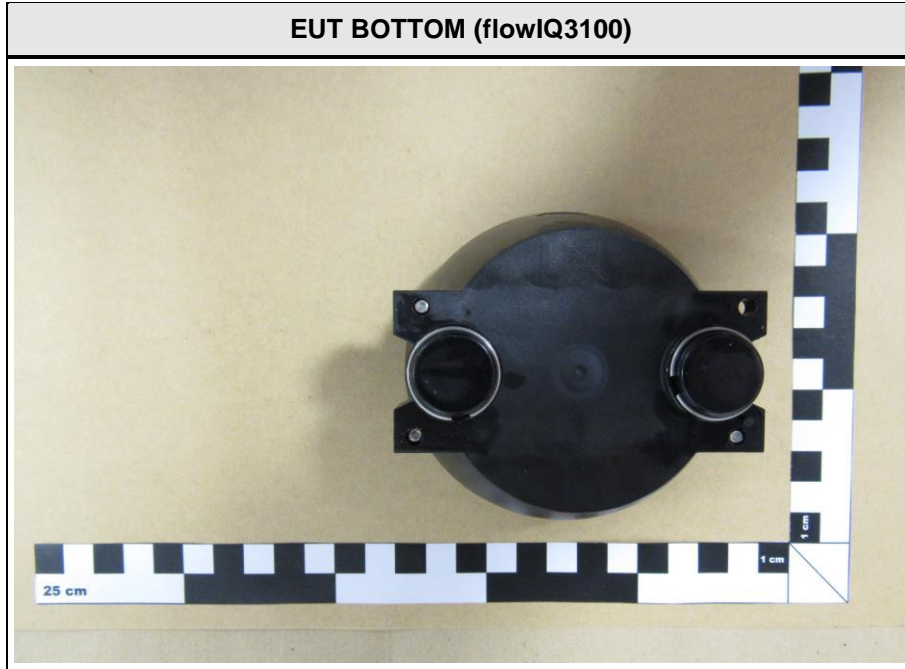
EUT TOP (flowIQ3100)



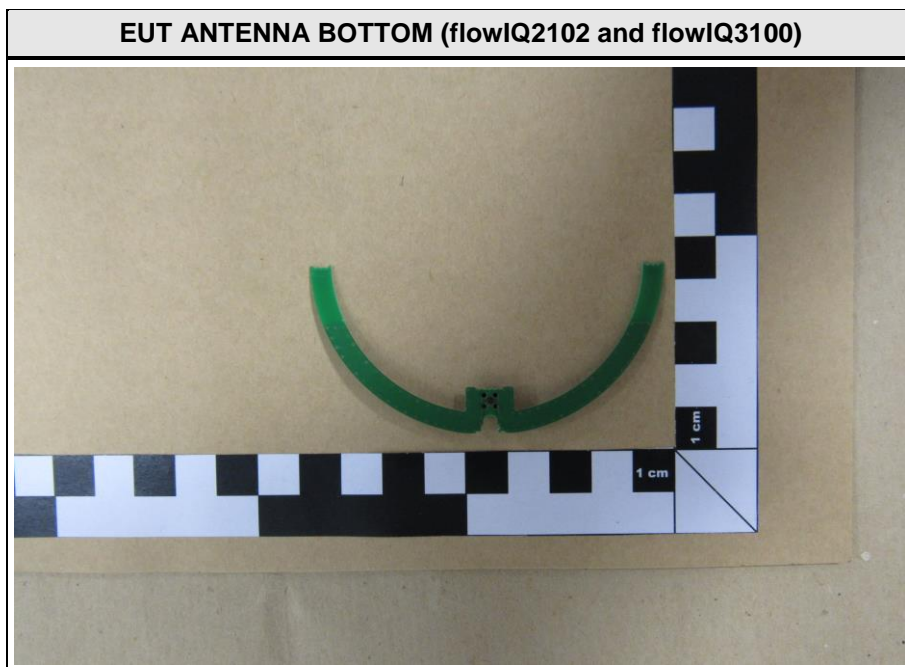
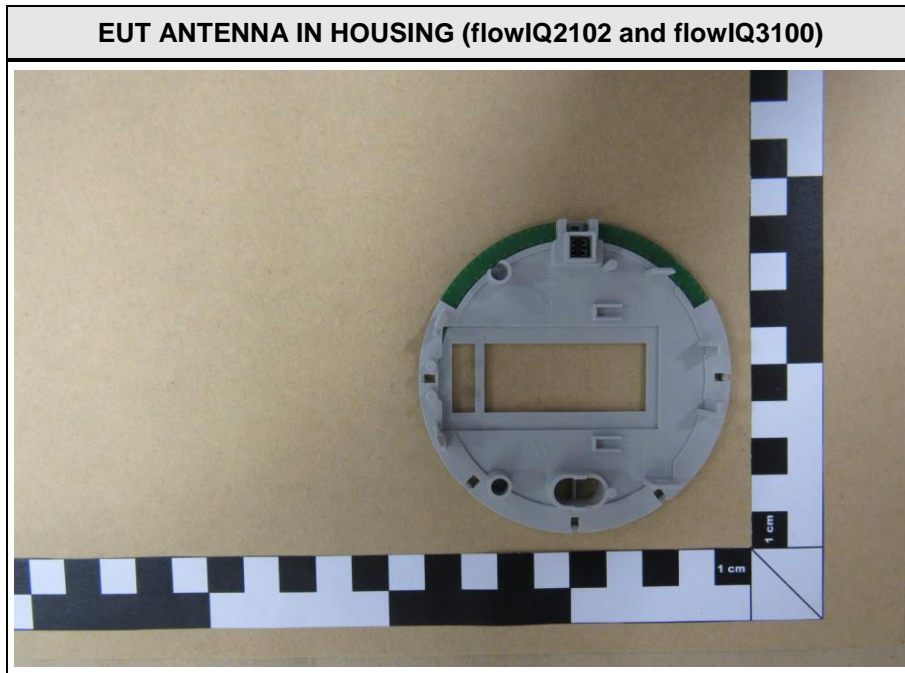
EUT WITH FLOW PART BOTTOM (flowIQ3100)



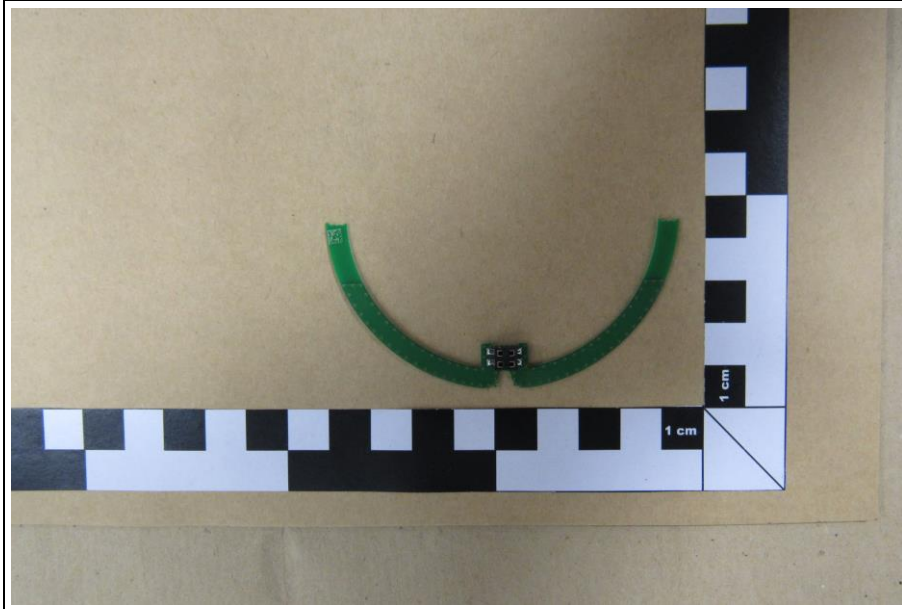




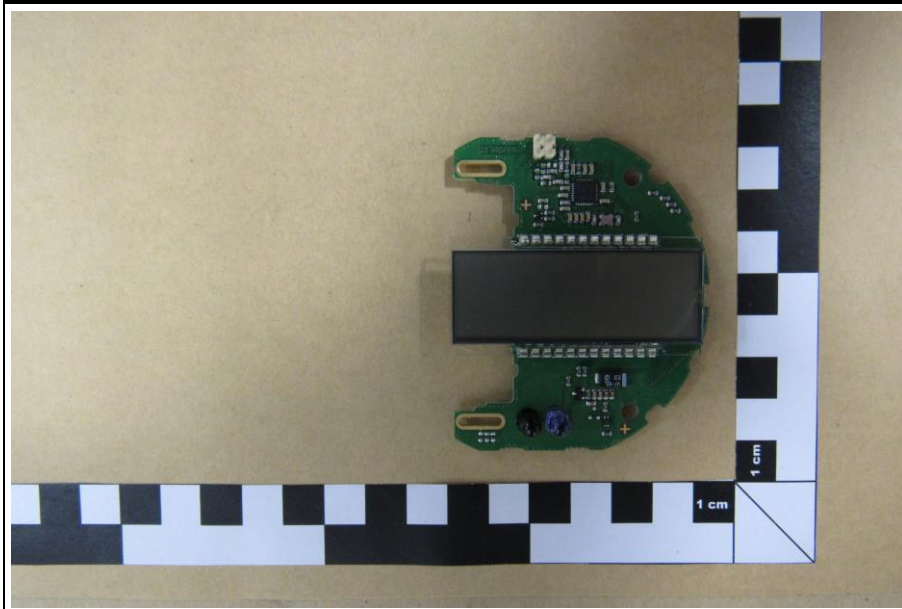
1.2 Photos – Equipment internal



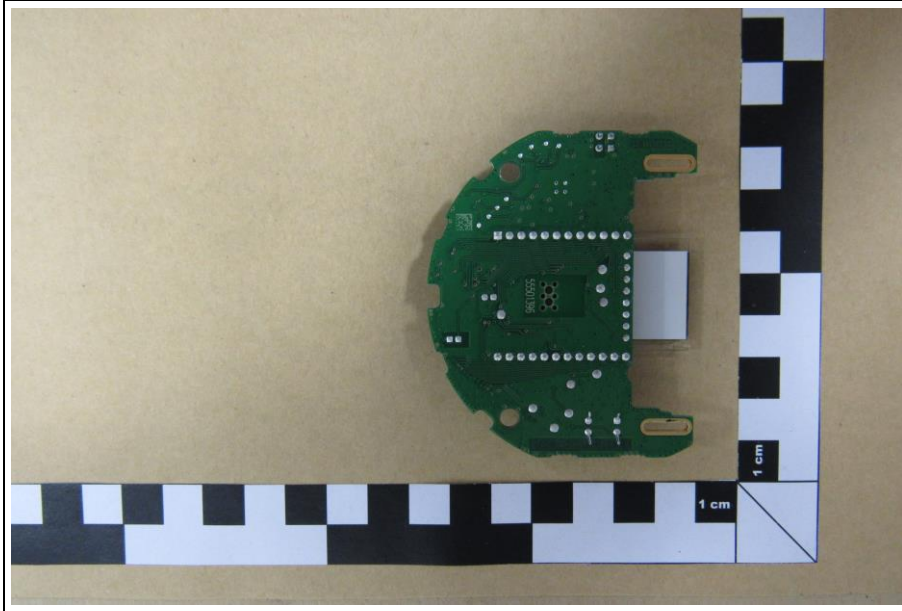
**EUT ANTENNA TOP (flowIQ2102 and flowIQ3100)**



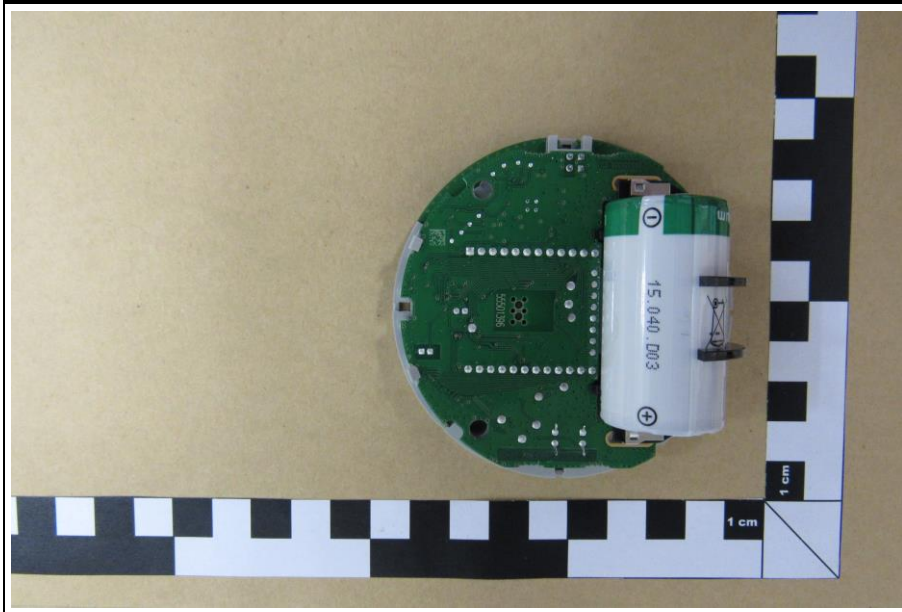
**EUT TOP PCB FRONT (flowIQ2102 and flowIQ3100)**



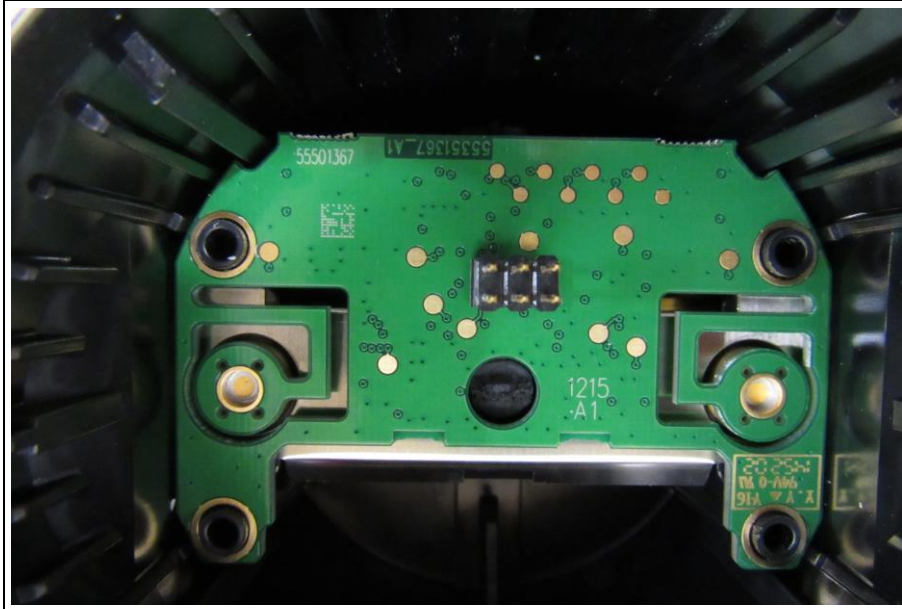
**EUT TOP PCB REAR (flowIQ2102 and flowIQ3100)**



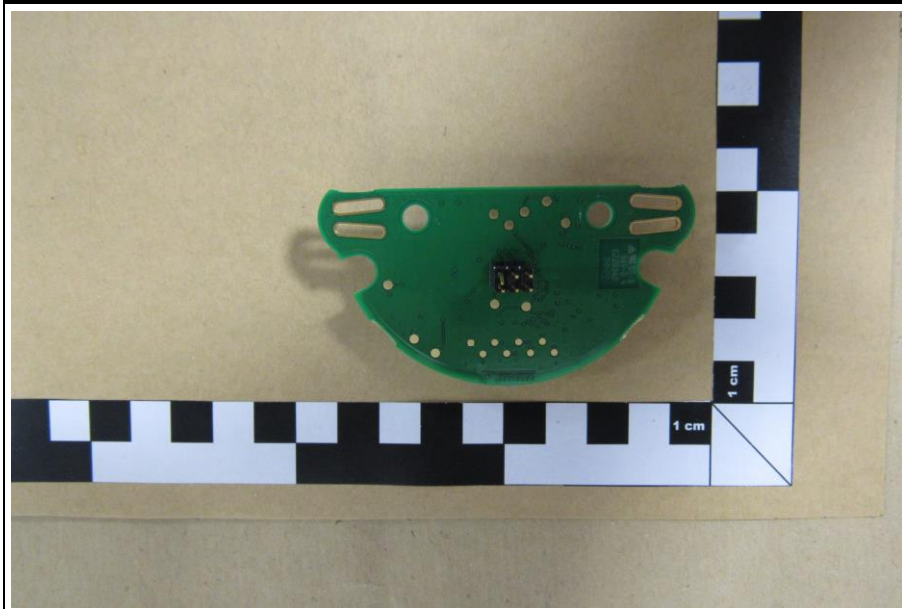
**EUT TOP PCB WITH BATTERY (flowIQ2102 and flowIQ3100)**



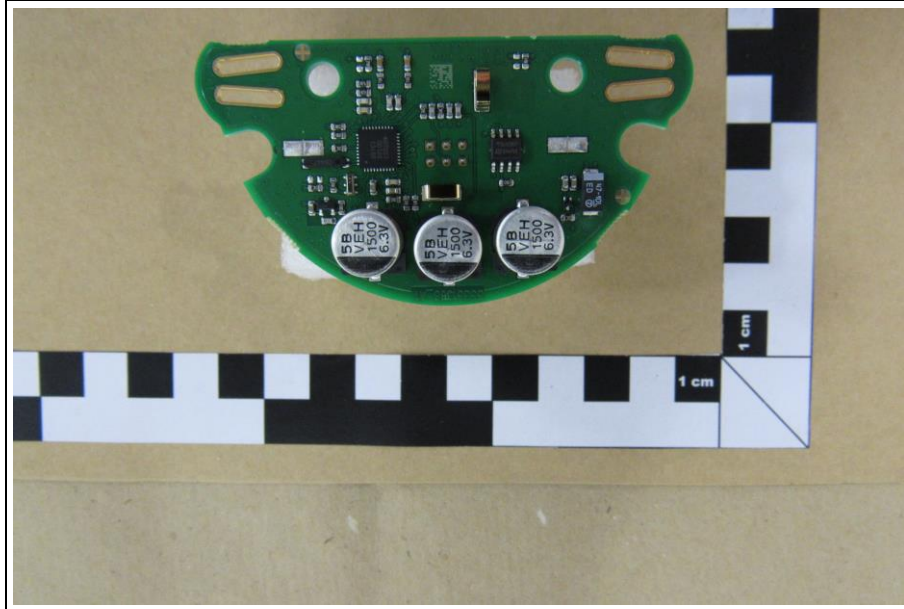
EUT LOWER PCB (flowIQ2102)



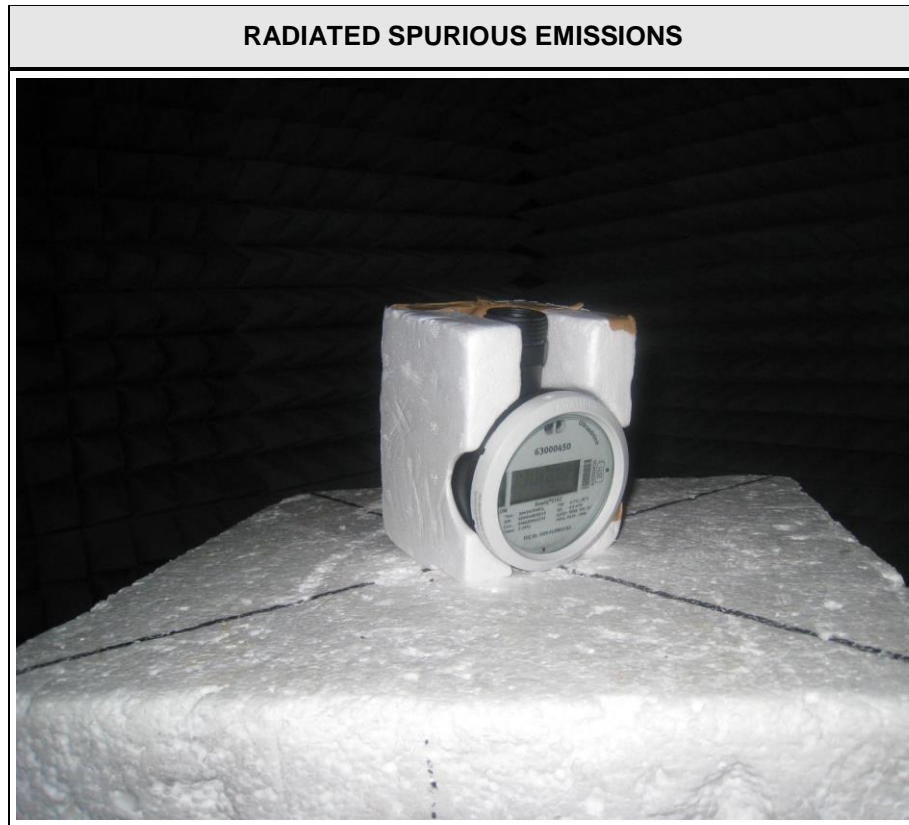
EUT LOWER PCB BOTTOM (flowIQ3100)



EUT LOWER PCB TOP (flowIQ3100)



1.3 Photos – Test setup



#### 1.4 Supporting Equipment Used During Testing

Product Type*	Device	Manufacturer	Model No.	Comments
None				
<p><b>*Note:</b> Use the following abbreviations:</p> <p style="padding-left: 40px;">AE : Auxiliary/Associated Equipment, or</p> <p style="padding-left: 40px;">SIM : Simulator (Not Subjected to Test)</p> <p style="padding-left: 40px;">CABL : Connecting cables</p>				



**1.5 Test Modes**

Mode #	Description	
Single	General conditions:	EUT powered by battery
	Radio conditions:	Mode = standalone transmit Spreading = None Modulation = FSK Duty cycle = 100 % Power level = Maximum (power key 56)

**1.6 Test Equipment Used During Testing**

<b>Measurement Software</b>			
Description	Manufacturer	Name	Version
EMC Test Software	Dare Instruments	Radimation	2014.1.15

<b>Occupied Bandwidth</b>					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	R&S	FSU 26	EF01003	2015-04	2016-04

<b>6dB Bandwidth</b>					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	R&S	FSU 26	EF01003	2015-04	2016-04

<b>Maximum peak conducted power</b>					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	R&S	FSU 26	EF01003	2015-04	2016-04

<b>Power spectral density</b>					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	R&S	FSU 26	EF01003	2015-04	2016-04

<b>Band edge compliance</b>					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	R&S	FSU 26	EF01003	2015-04	2016-04

<b>Conducted spurious emissions</b>					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	R&S	FSU 26	EF01003	2015-04	2016-04

<b>Radiated spurious emissions</b>					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Semi-anechoic chamber	Frankonia	AC 1	EF00062	-	-
Spectrum Analyzer	R&S	FSIQ26	EF00242	2015-04	2016-04
Biconical Antenna	R&S	HK 116	EF00012	2013-02	2016-02
LPD Antenna	R&S	HL 223	EF00187	2014-03	2017-03
LPD Antenna	R&S	HL 025	EF00327	2013-02	2016-02

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

## 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 dB $\mu$ V. 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 dB $\mu$ V/m). The FCC limits are given in units of  $\mu$ V/m. The following formula is used to convert the units of  $\mu$ V/m to dB $\mu$ V/m:

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

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:


$$\begin{array}{rclclcl} \text{Reading} & + & \text{AF} & = & \text{Net Reading} & : & \text{Net reading - FCC limit} & = & \text{Margin} \\ 21.5 \text{ dB}\mu\text{V} & + & 26 \text{ dB} & = & 47.5 \text{ dB}\mu\text{V/m} & : & 47.5 \text{ dB}\mu\text{V/m} - 57.0 \text{ dB}\mu\text{V/m} & = & -9.5 \text{ dB} \end{array}$$

## 2 Result Summary

FCC 47 CFR Part 15C, IC RSS-210				
Product Specific Standard Section	Requirement – Test	Reference Method	Result	Remarks
RSS-Gen 6.6	Occupied Bandwidth	RSS-Gen 6.6	N/R	Informational only
FCC § 15.247(a)(2) IC RSS-210 § A8.2	6 dB Bandwidth	KDB Publication No. 558074	PASS	
FCC § 15.247(b)(3) IC RSS-210 § A8.4	Maximum peak conducted power	KDB Publication No. 558074	PASS	
FCC § 15.247(e) IC RSS-210 § A8.2	Power spectral density	KDB Publication No. 558074	PASS	
47 CFR 15.207 RSS-Gen 7.2.4	AC power line conducted emissions	KDB Publication No. 558074 / ANSI C63.4	PASS	
FCC § 15.247(d) IC RSS-210 § A8.5	Band edge compliance	KDB Publication No. 558074	PASS	
FCC § 15.247(d) IC RSS-210 § A8.5	Conducted spurious emissions	KDB Publication No. 558074	PASS	
FCC § 15.247(d) FCC § 15.209 IC RSS-210 A8.5 IC RSS-Gen 6.13	Transmitter radiated spurious emissions	KDB Publication No. 558074 / ANSI C 63.4	PASS	
IC RSS-Gen 7.1	Receiver radiated spurious emissions	ANSI C 63.4	PASS	
<b>Remarks:</b>				

### 3 Test Conditions and Results

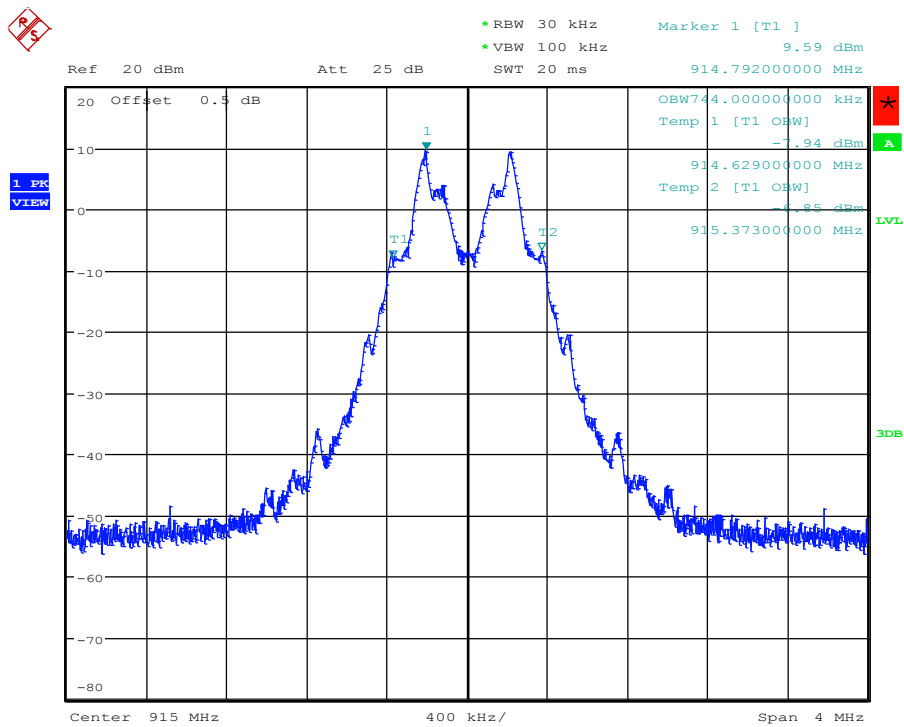
#### 3.1 Test Conditions and Results – Occupied Bandwidth

Occupied Bandwidth acc. IC RSS-Gen		Verdict: PASS
Test according to measurement reference	Reference Method	
	RSS-Gen 6.6	
Test frequency range	Tested frequencies	
	$F_{MID}$	
EUT test mode	Single	
Limits		
None (Informational only)		
Test setup		
		
Test procedure		
<ol style="list-style-type: none"> <li>1. EUT set to test mode (Communication tester is used if needed)</li> <li>2. Span set to at least twice the emission spectrum</li> <li>3. Resolution bandwidth set to 1 % of span</li> <li>4. Occupied Bandwidth (99 %) measurement with spectrum analyzer built in measurement function</li> </ol>		
Test results		
Channel	Frequency [MHz]	Occupied Bandwidth [kHz]
$F_{MID}$	915	744
Comments:		

**Occupied Bandwidth - F<sub>MID</sub>**
**Occupied Bandwidth acc. to RSS-Gen**


Project Number: G0M-1505-4751

Applicant: Kamstrup A/S  
 EUT Name: Kamstrup water meter flowIQ2102 for Chile  
 Model: flowIQ2102  
 Test Site: Eurofins Product Service GmbH  
 Operator: Toralf Jahn  
 Test Conditions: Tnom / Vnom  
 Mode: Tx continuous; modulated  
 Test Date: 2015-06-08  
 Verdict: PASS  
 Note 1: A spectrum analyzer with an integrated 99% power bandwidth function is used  
 Note 2: OBW= 0.744 MHz



Occupied bandwidth: 744 KHz  
 Date: 8.JUN.2015 13:59:09

**3.2 Test Conditions and Results – 6dB Bandwidth**

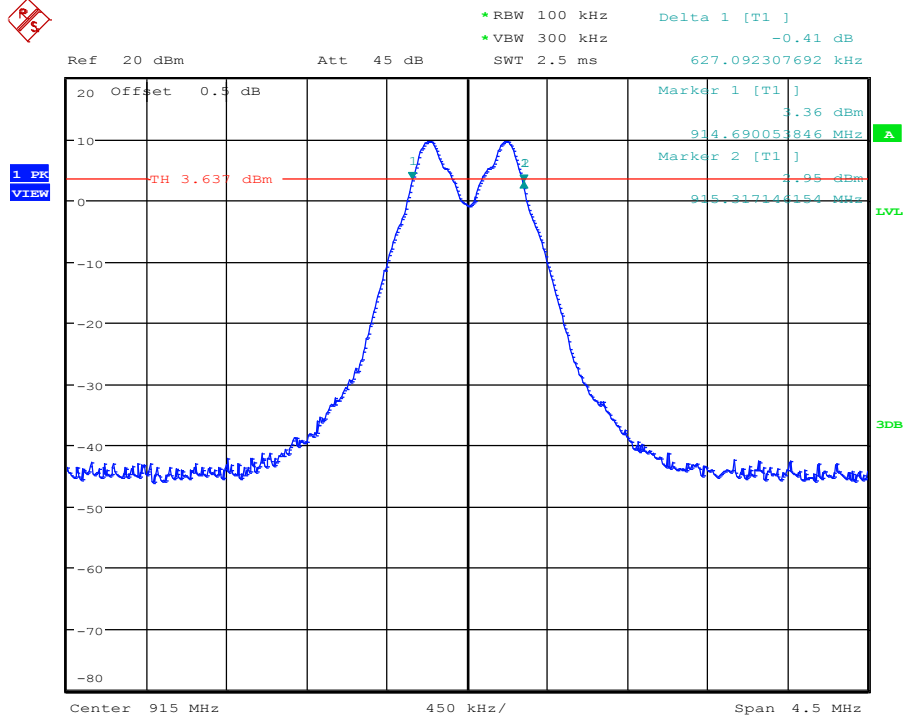
6dB Bandwidth acc. FCC 15.247 / IC RSS-210				Verdict: PASS
EUT requirement rule parts and clause	Reference			
	FCC 15.247(a)(2) / IC RSS-210 A8.2			
Test according to measurement reference	Reference Method			
	FCC KDB Publication No. 558074			
Test frequency range	Tested frequencies			
	F <sub>MID</sub>			
EUT test mode	Single			
<b>Limits</b>				
≥ 500 kHz				
<b>Test setup</b>				
 <pre> graph LR     SA[Spectrum Analyzer] --- EUT[EUT]             </pre>				
<b>Test procedure</b>				
<ol style="list-style-type: none"> <li>1. EUT set to test mode (Communication tester is used if needed)</li> <li>2. Span set to at least twice the emission spectrum</li> <li>3. Detector set to peak and max hold</li> <li>4. Envelope peak value of emission spectrum is selected</li> <li>5. Marker on envelope of spectrum is set to level of -6 dB to the left of the peak</li> <li>6. Marker on envelope of spectrum is set to level of -6 dB to the right of the peak</li> <li>7. 6dB Bandwidth is determined by marker frequency separation</li> </ol>				
<b>Test results</b>				
Channel	Frequency [MHz]	6 dB Bandwidth [kHz]	Limit [kHz]	Result
F <sub>MID</sub>	915	627.1	≥ 500	PASS
Comments:				

6dB Bandwidth - F<sub>MID</sub>

**Minimum 6 dB Bandwidth acc. to FCC 15.247**

Project Number: G0M-1505-4751

Applicant: Kamstrup A/S  
 EUT Name: Kamstrup water meter flowIQ2102 for Chile  
 Model: flowIQ2102  
 Test Site: Eurofins Product Service GmbH  
 Operator: Toralf Jahn  
 Test Conditions: Tnom / Vnom  
 Mode: Tx continuous; modulated  
 Test Date: 2015-06-08  
 Verdict: PASS  
 Note 1: Procedure 8.1 DTS (558074 D01 Meas Guidance)  
 Note 2: Minimum 6 dB Bandwidth conducted




6 dB bandwidth: 627.1 KHz > 500 KHz


Date: 8.JUN.2015 14:06:30



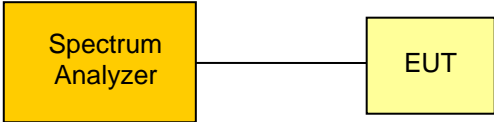
**3.3 Test Conditions and Results – Maximum peak conducted power**

Maximum peak conducted power acc. FCC 15.247 / IC RSS-210					Verdict: PASS		
EUT requirement rule parts and clause	Reference						
	FCC 15.247(b)(3) / IC RSS-210 A8.4						
Test according to measurement reference	Reference Method						
	FCC KDB Publication No. 558074						
Test frequency range	Tested frequencies						
	F <sub>MID</sub>						
EUT test mode	Single						
Measurement mode	Peak						
Maximum antenna gain	5 dBi ⇒ Limit correction = 0 dB						
<b>Limits</b>							
1W (30dBm)							
The conducted output power limit specified above is based on the use of antennas with directional gains that do not exceed 6dBi. If transmitting antennas of directional gain greater than 6dBi 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 6dBi.							
<b>Test setup</b>							
							
<b>Test procedure</b>							
<ol style="list-style-type: none"> <li>1. EUT set to test mode (Communication tester is used if needed)</li> <li>2. Center frequency set to test channel center frequency</li> <li>3. Span is set to be larger than the 6 dB bandwidth and RBW is set to be at least the 6 dB bandwidth</li> <li>4. Peak output power is determined from the maximum of the emission envelope</li> </ol>							
<b>Test results</b>							
Channel	Frequency [MHz]	Voltage	Peak power [dbm]	Peak power [W]	Limit [dBm]	Margin [dB]	Result
F <sub>MID</sub> (flowIQ2102)	915	3.6 VDC	8.3	0.007	30	-21.7	PASS
F <sub>MID</sub> (flowIQ3100)	915	3.6 VDC	9.0	0.008	30	-21.0	PASS
Comments:							

**3.4 Test Conditions and Results – Power spectral density**

Power spectral density acc. FCC 15.247 / IC RSS-210							Verdict: PASS	
EUT requirement rule parts and clause	Reference							
	FCC 15.247(e) / IC RSS-210 A8.2							
Test according to measurement reference	Reference Method							
	FCC KDB Publication No. 558074							
Test frequency range	Tested frequencies							
	F <sub>MID</sub>							
EUT test mode	Single							
Measurement mode	Peak							
<b>Limits</b>								
8 dBm / 3 kHz								
<b>Test setup</b>								
								
<b>Test procedure</b>								
<ol style="list-style-type: none"> <li>1. EUT set to test mode (Communication tester is used if needed)</li> <li>2. Center frequency set to test channel center frequency</li> <li>3. Span is set large enough to capture maximum emissions in passband, RBW is set to 3 kHz</li> <li>4. Peak power density is determined from peak emission of envelope</li> </ol>								
<b>Test results</b>								
Channel	Frequency [MHz]	Voltage	Peak frequency [MHz]	Peak power density [dBm]	Limit [dBm/3kHz]	Margin [dB]	Result	
F <sub>MID</sub>	915	3.6 VDC	915.231	1.5	8.0	-06.50	PASS	
Comments:								

**3.5 Test Conditions and Results – Band edge compliance**

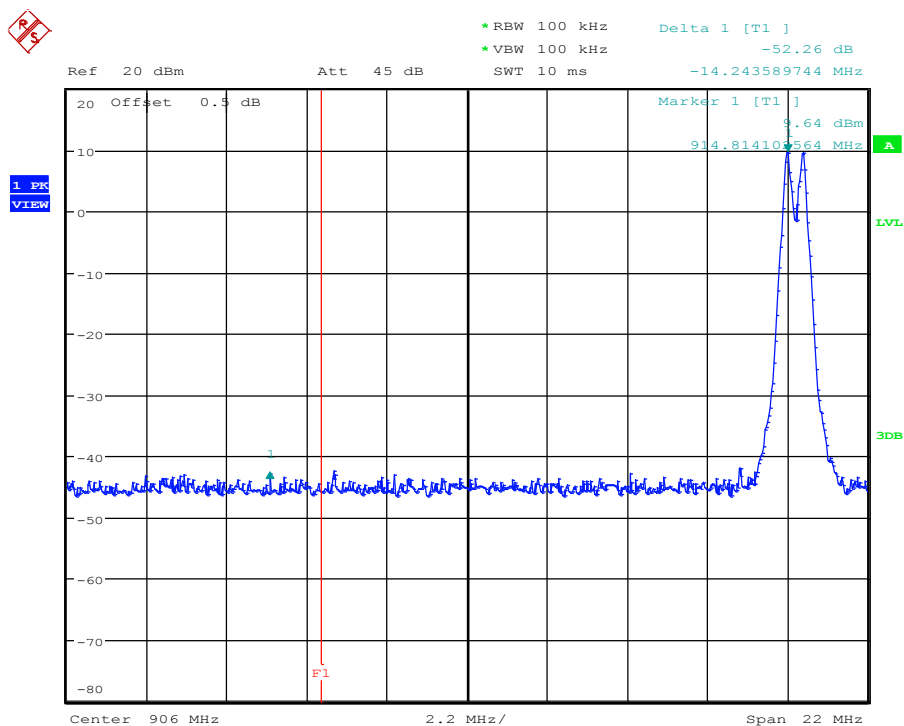
<b>Band-edge compliance acc. FCC 15.247 / IC RSS-210</b>				<b>Verdict: PASS</b>		
EUT requirement rule parts and clause	Reference					
	FCC 15.247(d) / IC RSS-210 A8.5					
Test according to measurement reference	Reference Method					
	FCC KDB Publication No. 558074					
Test frequency range	Tested frequencies					
	F <sub>MID</sub>					
EUT test mode	Single					
<b>Limits</b>						
Limit			Condition			
≤ -20 dB / 100 kHz			Peak power measurement detector = Peak			
≤ -30 dB / 100 kHz			Peak power measurement detector = RMS			
<b>Test setup</b>						
						
<b>Test procedure</b>						
<ol style="list-style-type: none"> <li>1. EUT set to test mode (Communication tester is used if needed)</li> <li>2. Span set around lower band edge and detector is set to peak and max hold</li> <li>3. Resolution bandwidth is set to 100 kHz</li> <li>4. Markers are set to peak emission levels within frequency band and outside frequency band</li> <li>5. Band edge attenuation is determined from level difference</li> </ol>						
<b>Test results</b>						
Channel	Frequency [MHz]	Mode	Level [dBc]	Limit [dBc]	Margin [dB]	Result
F <sub>MID</sub>	915	Single	-52.25	-20	-32.25	PASS
F <sub>MID</sub>	915	Single	-52.39	-20	-32.39	PASS
Comments:						

**Band-edge compliance – F<sub>MID</sub> single – Lower Edge**

**Band-edge compliance acc. to FCC 15.247**

Project Number: G0M-1505-4751

Applicant: Kamstrup A/S  
 EUT Name: Kamstrup water meter flowIQ2102 for Chile  
 Model: flowIQ2102  
 Test Site: Eurofins Product Service GmbH  
 Operator: Toralf Jahn  
 Test Conditions: Tnom / Vnom  
 Mode: Tx continuous; modulated  
 Test Date: 2015-06-08  
 Verdict: PASS  
 Note 1: 20 dB down method (558074 D01 Meas Guidance)  
 Note 2: lower Band-edge, conducted measurement



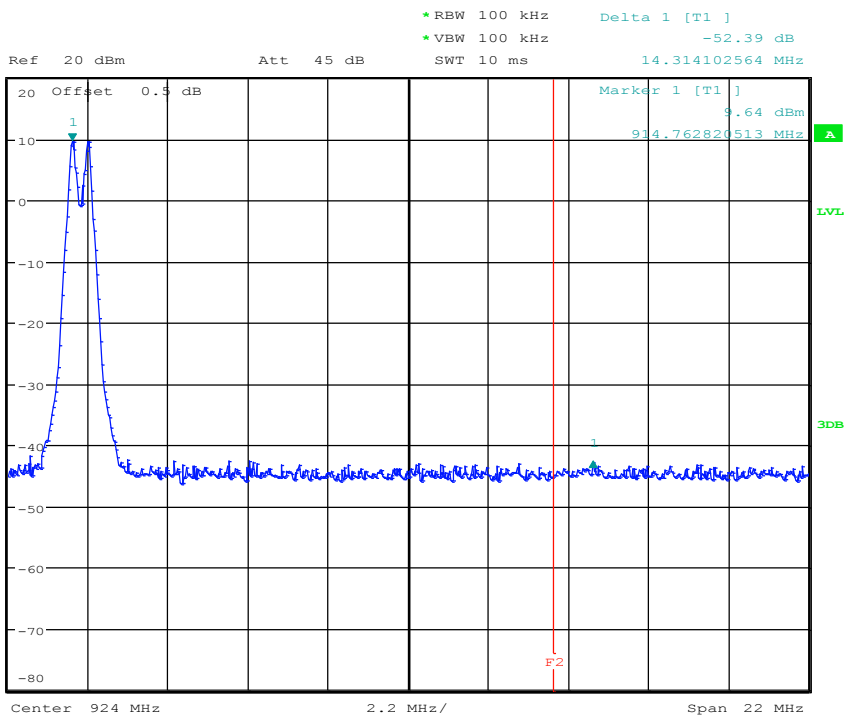
Limit: Marker Delta value >20 dB; Result: PASS  
 Date: 8.JUN.2015 14:20:03

**Band-edge compliance – F<sub>MID</sub> single – Upper Edge**

**Band-edge compliance acc. to FCC 15.247**

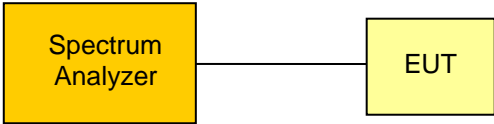
Project Number: G0M-1505-4751

Applicant: Kamstrup A/S  
 EUT Name: Kamstrup water meter flowIQ2102 for Chile  
 Model: flowIQ2102  
 Test Site: Eurofins Product Service GmbH  
 Operator: Toralf Jahn  
 Test Conditions: Tnom / Vnom  
 Mode: Tx continuous; modulated  
 Test Date: 2015-06-08  
 Verdict: PASS  
 Note 1: 20 dB down method (558074 D01 Meas Guidance)  
 Note 2: upper Band-edge, conducted measurement



Limit: Marker Delta value >20 dB; Result: PASS  
 Date: 8.JUN.2015 14:21:31

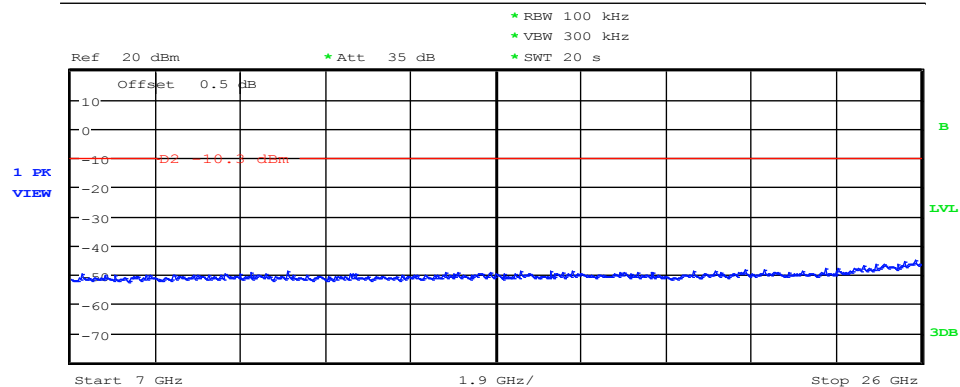
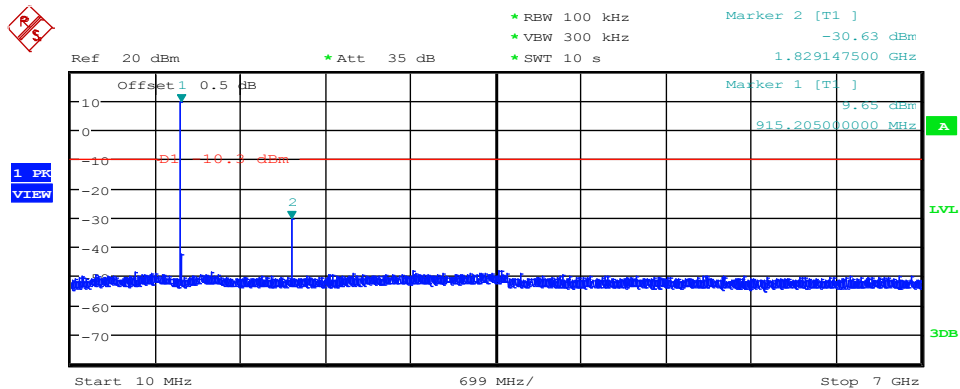
**3.6 Test Conditions and Results – Conducted spurious emissions**

<b>Conducted spurious emissions acc. FCC 15.247 / IC RSS-210</b>						<b>Verdict: PASS</b>	
EUT requirement rule parts and clause	Reference						
	FCC 15.247(d) / IC RSS-210 A8.5						
Test according to measurement reference	Reference Method						
	FCC KDB Publication No. 558074						
Test frequency range	Tested frequencies						
	10 MHz – 10 <sup>th</sup> Harmonic						
EUT test mode	Single						
<b>Limits</b>							
Limit				Condition			
≤ -20 dB / 100 kHz				Peak power measurement detector = Peak			
≤ -30 dB / 100 kHz				Peak power measurement detector = RMS			
<b>Test setup</b>							
							
<b>Test procedure</b>							
<ol style="list-style-type: none"> <li>1. EUT set to test mode (Communication tester is used if needed)</li> <li>2. Span it set according to measurement range</li> <li>3. Resolution bandwidth is set to 100 kHz and detector to peak and max hold</li> <li>4. Markers are set to peak emission levels within frequency band</li> <li>5. Emission level is determined by second marker on emission peak</li> <li>6. Attenuation is determined from level difference</li> </ol>							
<b>Test results</b>							
Channel	Frequency [MHz]	Emission [MHz]	Emission Level [dbm]	Peak power [dBm]	Limit [dBm]	Margin [dB]	Result
F <sub>MID</sub>	902.4	1829	-30.6	9.7	-10.3	-20.3	PASS
Comments:							

**Conducted spurious emissions – F<sub>MID</sub>**
**Spurious Emissions acc. to FCC 15.247**

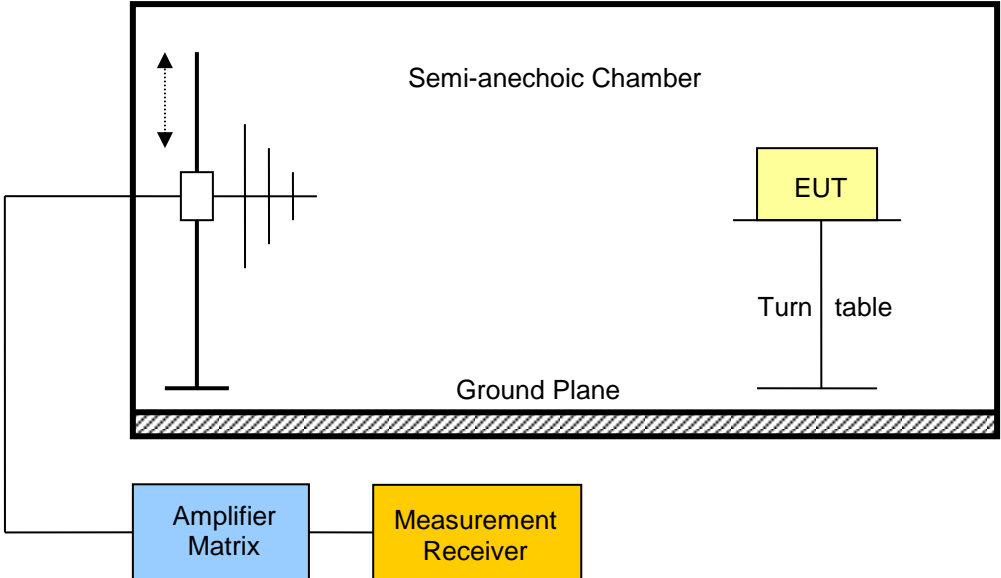
Project Number: G0M-1505-4751

Applicant: Kamstrup A/S  
 EUT Name: Kamstrup water meter flowIQ2102 for Chile  
 Model: flowIQ2102  
 Test Site: Eurofins Product Service GmbH  
 Operator: Toralf Jahn  
 Test Conditions: Tnom / Vnom  
 Mode: Tx continuous; modulated  
 Test Date: 2015-06-08  
 Verdict: PASS  
 Note 1: Spurious in non-restricted frequency bands (558074 D01 Meas Guidance)  
 Note 2: conducted measurement



Date: 8.JUN.2015 14:27:28

## 3.7 Test Conditions and Results – Transmitter radiated emissions

Transmitter radiated emissions acc. FCC 47 CFR 15.247 / IC RSS-210				Verdict: PASS	
Test according referenced standards	Reference Method				
	FCC 15.247(d) / IC RSS-210 A8.5				
Test according to measurement reference	Reference Method				
	FCC KDB Publication No. 558074 / ANSI C63.4				
Test frequency range	Tested frequencies				
	30 MHz – 10 <sup>th</sup> Harmonic				
EUT test mode	Single				
Limits					
Frequency range [MHz]	Detector	Limit [ $\mu$ V/m]	Limit [dB $\mu$ V/m]	Limit Distance [m]	
30 – 88	Quasi-Peak	100	40	3	
88 – 216	Quasi-Peak	150	43.5	3	
216 – 960	Quasi-Peak	200	46	3	
960 – 1000	Quasi-Peak	500	54	3	
> 1000	Average	500	54	3	
Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)). When average radiated emission measurements are specified, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.					
Test setup					
					
Test procedure					

Test Report No.: G0M-1505-4751-TFC247DT-V01

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



1. EUT set to test mode (Communication tester is used if needed)
2. Span it set according to measurement range
3. Resolution bandwidth below 1 GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1 MHz with peak/average detector is used above 1 GHz
4. Markers are set to peak emission levels within restricted bands

**Test results – flowIQ2102**

Channel	Frequency [MHz]	Emission [MHz]	Level [dB $\mu$ V/m]	Detector	Pol.	Limit [dB $\mu$ V/m]	Margin [dB]
F <sub>MID</sub>	915	124.86	34.22	pk	hor	43.52	-09.30
F <sub>MID</sub>	915	893.38	37.38	pk	hor	95.00	-57.62
F <sub>MID</sub>	915	999.712	31.72	pk	hor	54.00	-22.28
F <sub>MID</sub>	915	1828	45.90	pk	ver	95.00	-49.10
F <sub>MID</sub>	915	1828	47.68	pk	hor	95.00	-47.32
F <sub>MID</sub>	915	2740	45.04	pk	ver	74.00	-28.96
F <sub>MID</sub>	915	2740	46.77	pk	hor	74.00	-27.23
F <sub>MID</sub>	915	3658	48.56	pk	ver	74.00	-25.44
F <sub>MID</sub>	915	3658	49.92	pk	hor	74.00	-24.08

**Test results – flowIQ3100**

Channel	Frequency [MHz]	Emission [MHz]	Level [dB $\mu$ V/m]	Detector	Pol.	Limit [dB $\mu$ V/m]	Margin [dB]
F <sub>MID</sub>	915	1828	51.16	pk	hor	95.00	-43.84
F <sub>MID</sub>	915	2744	47.87	pk	hor	74.00	-26.13
F <sub>MID</sub>	915	2744	39.74	avg	hor	54.00	-14.26
F <sub>MID</sub>	915	3659	49.87	pk	ver	74.00	-24.13
F <sub>MID</sub>	915	3659	40.68	avg	ver	54.00	-13.32
F <sub>MID</sub>	915	3661	54.37	pk	hor	74.00	-19.63
F <sub>MID</sub>	915	3661	46.44	avg	hor	54.00	-07.56

Comments: If peak values are well below the average limit no additional average measurements were performed since average values are always at the same or below the peak value.

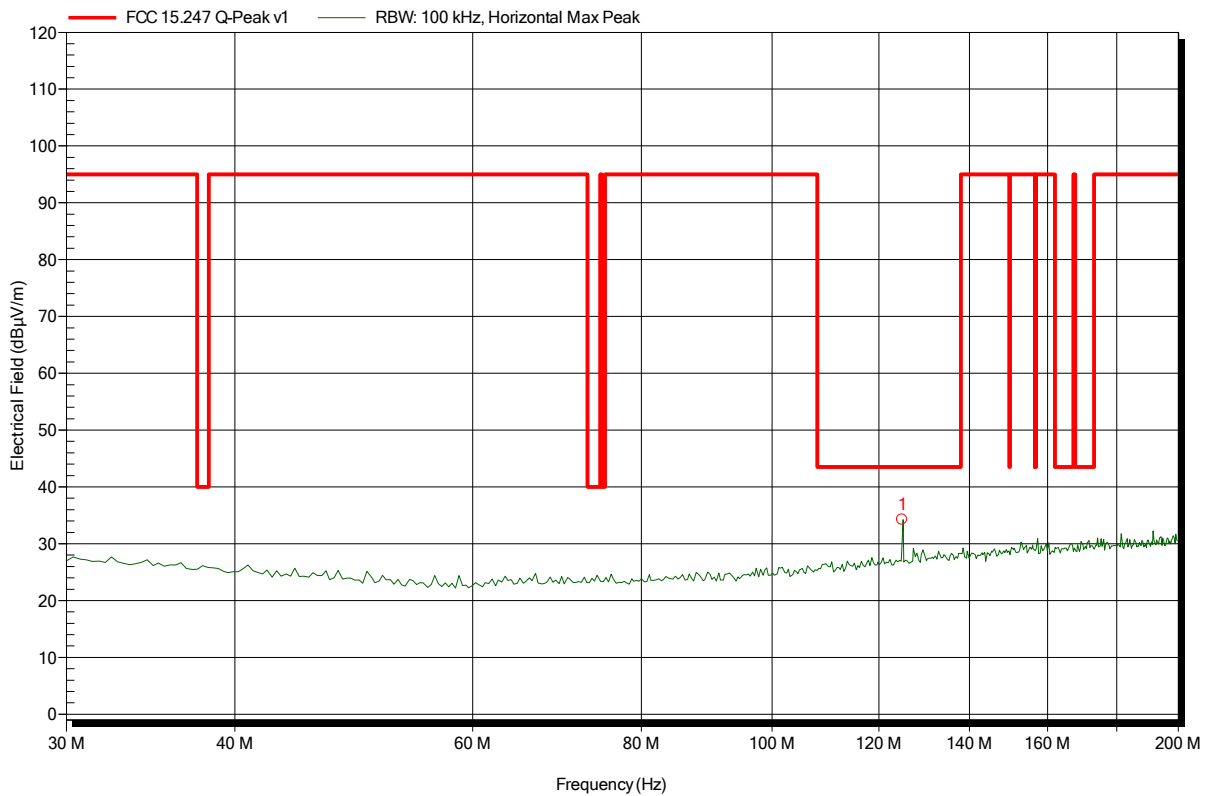
## ANNEX A Transmitter radiated spurious emissions flowIQ2102

### Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1505-4751

Applicant: Kamstrup A/S  
 EUT Name: Kamstrup water meter flowIQ2102 for Chile  
 Model: flowIQ2102  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Jahn  
 Test Conditions: Tnom: 24°C, Vnom: 3.6VDC battery  
 Antenna: Rohde & Schwarz HK 116, Horizontal  
 Measurement distance: 3 m  
 Mode: TX; Tx continuous; modulated; power setting 56  
 Test Date: 2015-06-08  
 Note:

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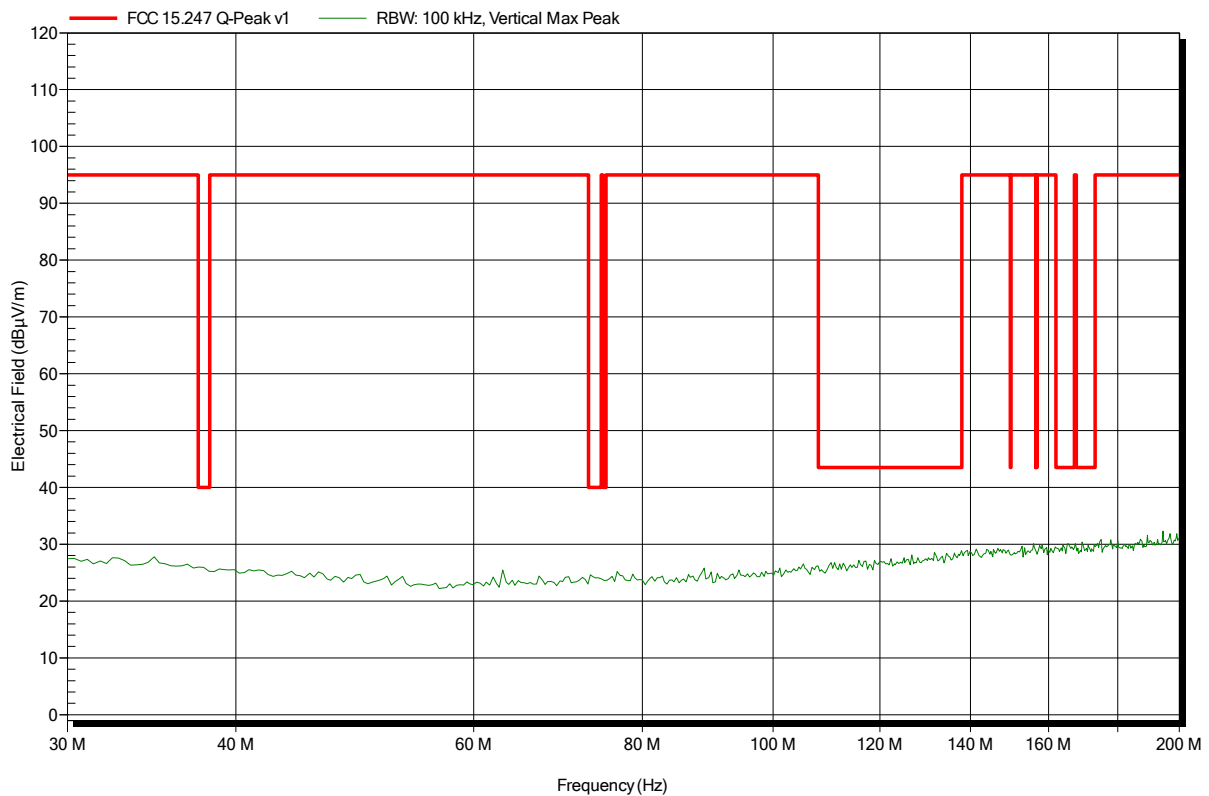
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
124.86 MHz	34.22 dBµV/m	43.52 dBµV/m	-9.3 dB	Pass

**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1505-4751

Applicant:	Kamstrup A/S
EUT Name:	Kamstrup water meter flowIQ2102 for Chile
Model:	flowIQ2102
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Jahn
Test Conditions:	Tnom: 24°C, Vnom: 3.6VDC battery
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; Tx continuous; modulated; power setting 56
Test Date:	2015-06-08
Note:	

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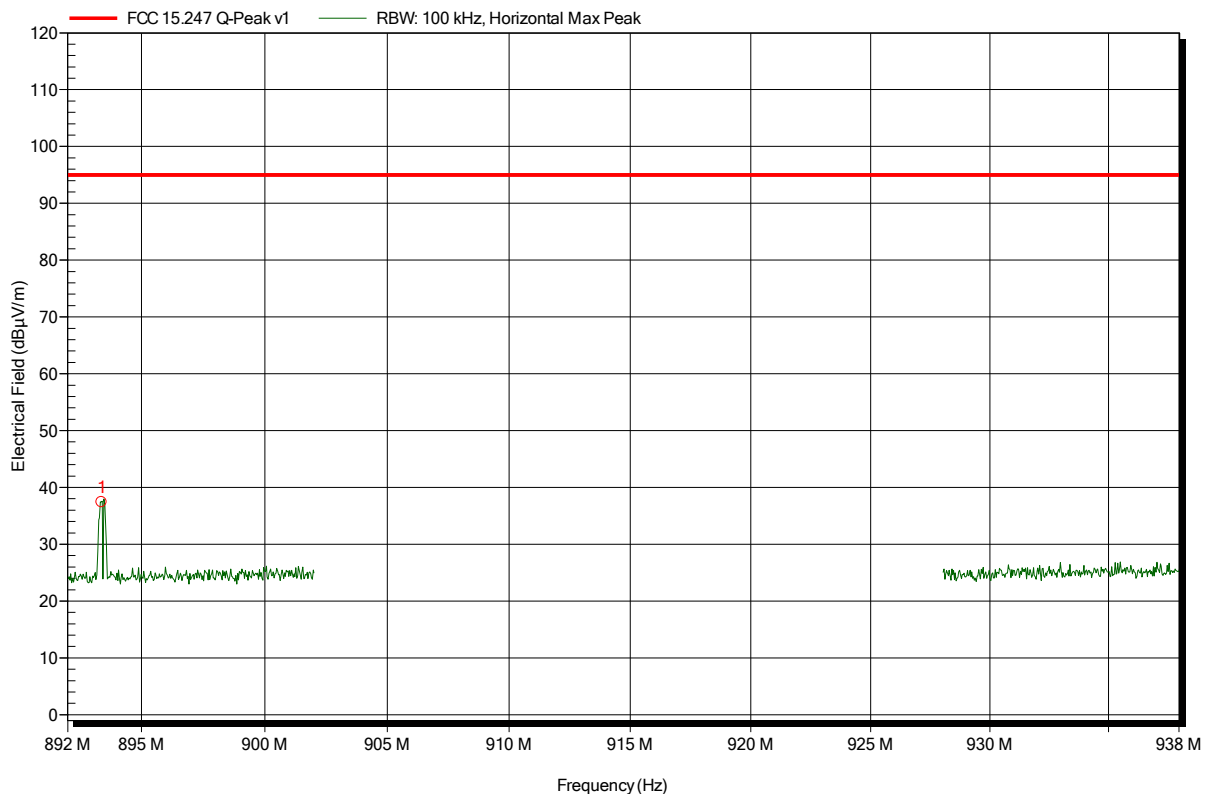


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1505-4751

Applicant: Kamstrup A/S  
 EUT Name: Kamstrup water meter flowIQ2102 for Chile  
 Model: flowIQ2102  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Jahn  
 Test Conditions: Tnom: 24°C, Vnom: 3.6VDC battery  
 Antenna: Rohde & Schwarz HL 223, Horizontal  
 Measurement distance: 3 m  
 Mode: TX; Tx continuous; modulated; power setting 56  
 Test Date: 2015-06-08  
 Note:

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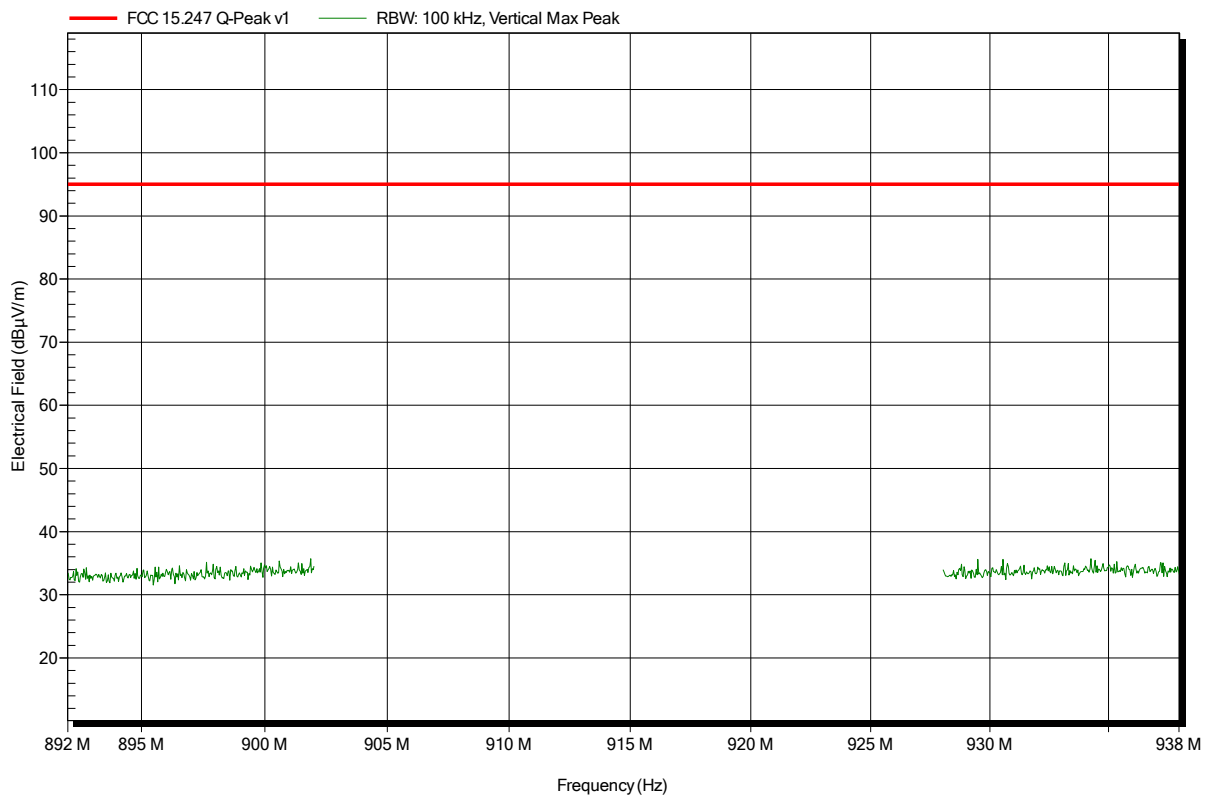
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
893.38 MHz	37.38 dBµV/m	95 dBµV/m	-57.62 dB	Pass

**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1505-4751

Applicant:	Kamstrup A/S
EUT Name:	Kamstrup water meter flowIQ2102 for Chile
Model:	flowIQ2102
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Jahn
Test Conditions:	Tnom: 24°C, Vnom: 3.6VDC battery
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; Tx continuous; modulated; power setting 56
Test Date:	2015-06-08
Note:	

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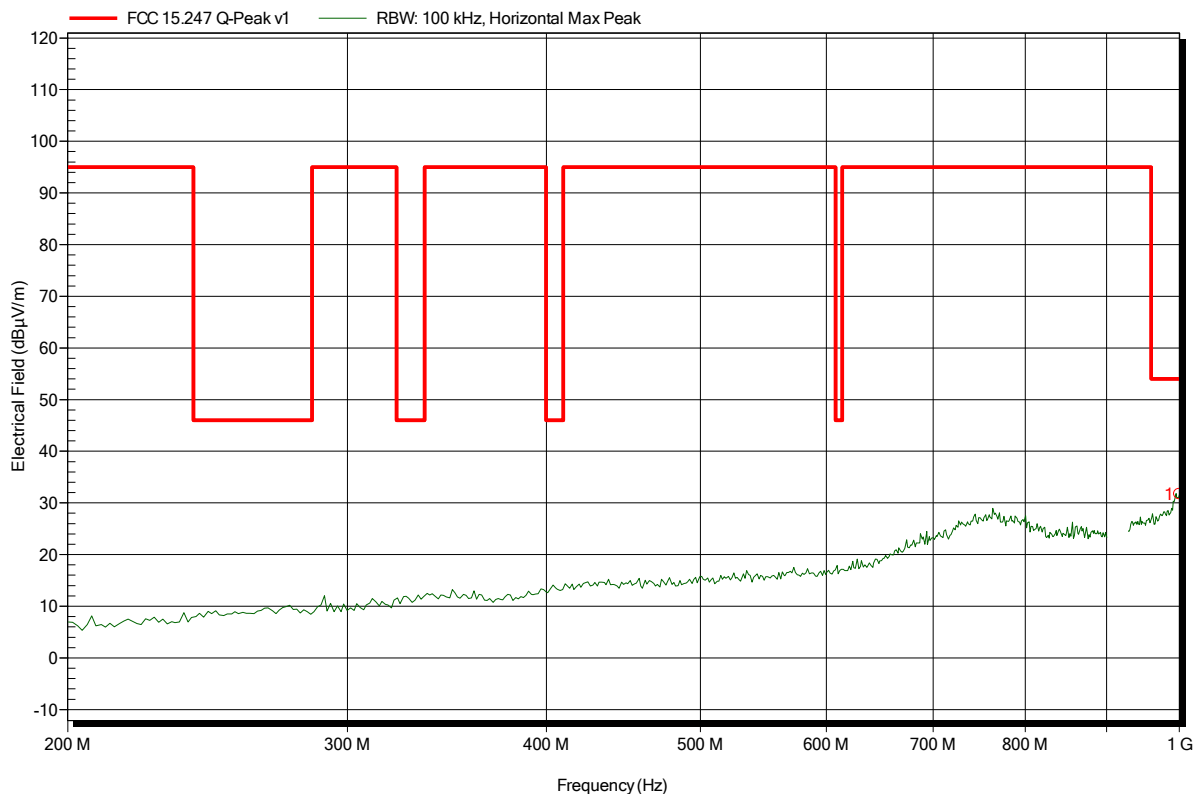


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1505-4751

Applicant: Kamstrup A/S  
 EUT Name: Kamstrup water meter flowIQ2102 for Chile  
 Model: flowIQ2102  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Jahn  
 Test Conditions: Tnom: 24°C, Vnom: 3.6VDC battery  
 Antenna: Rohde & Schwarz HL 223, Horizontal  
 Measurement distance: 3 m  
 Mode: TX; Tx continuous; modulated; power setting 56  
 Test Date: 2015-06-08  
 Note:

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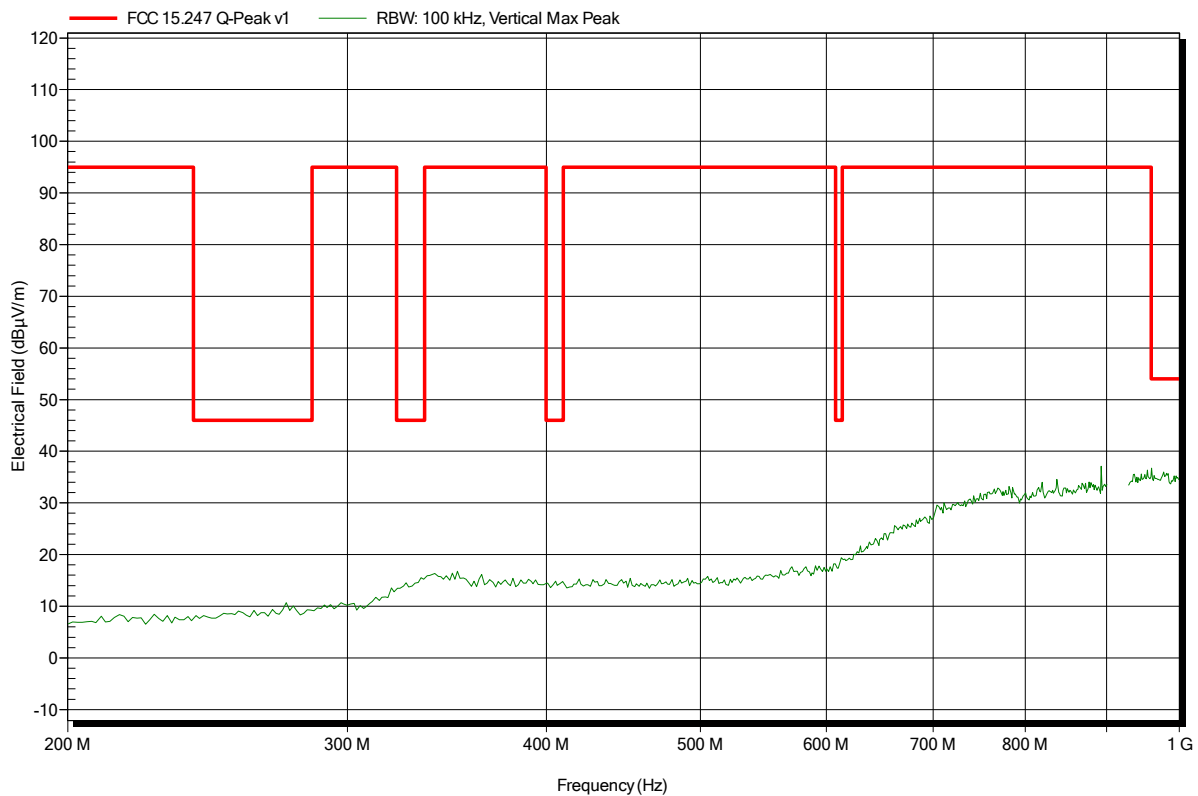
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
999.712 MHz	31.72 dBµV/m	54 dBµV/m	-22.28 dB	Pass

**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1505-4751

Applicant:	Kamstrup A/S
EUT Name:	Kamstrup water meter flowIQ2102 for Chile
Model:	flowIQ2102
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Jahn
Test Conditions:	Tnom: 24°C, Vnom: 3.6VDC battery
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; Tx continuous; modulated; power setting 56
Test Date:	2015-06-08
Note:	

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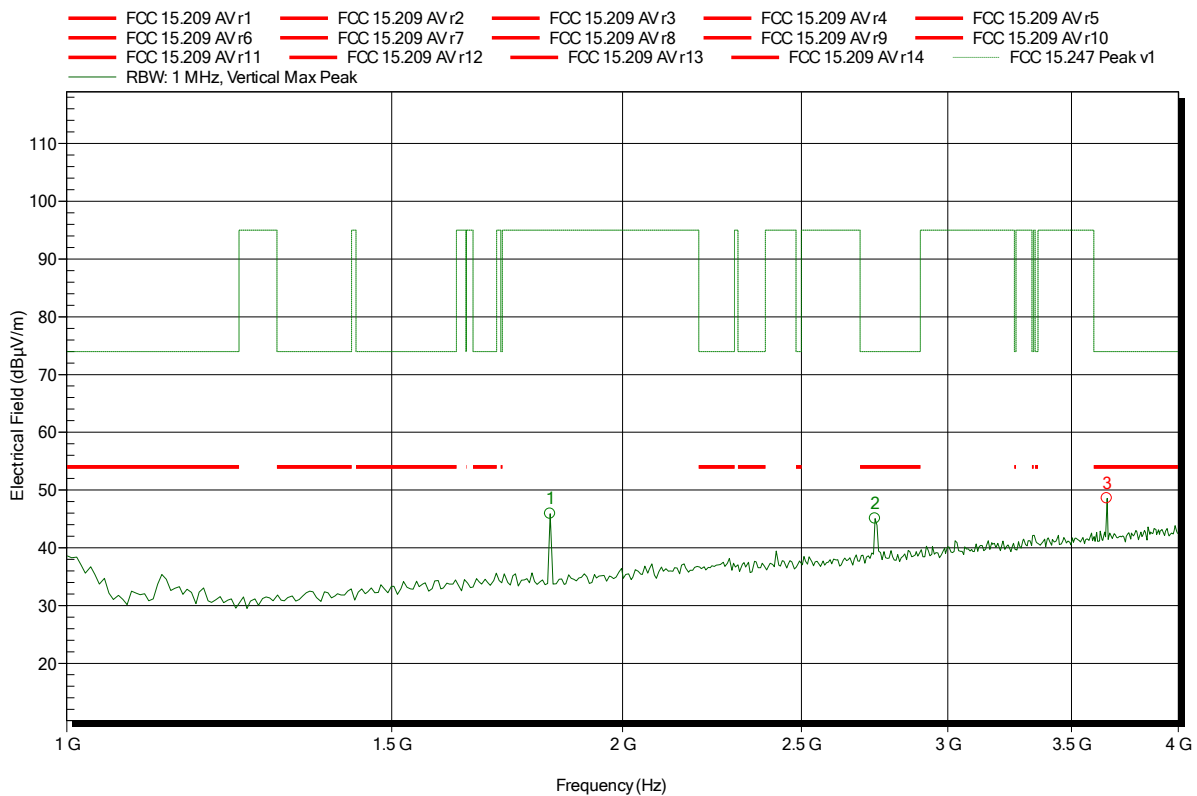


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: GOM-1505-4751

Applicant: Kamstrup A/S  
 EUT Name: Kamstrup water meter flowIQ2102 for Chile  
 Model: flowIQ2102  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Jahn  
 Test Conditions: Tnom: 24°C, Vnom: 3.6VDC battery  
 Antenna: Rohde & Schwarz HL 025, Vertical  
 Measurement distance: 3 m  
 Mode: TX; Tx continuous; modulated; power setting 56  
 Test Date: 2015-06-08  
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.828 GHz	45.9 dBµV/m	95 dBµV/m	-49.1 dB	Pass
2.74 GHz	45.04 dBµV/m	74 dBµV/m	-28.96 dB	Pass
3.658 GHz	48.56 dBµV/m	74 dBµV/m	-25.44 dB	Pass

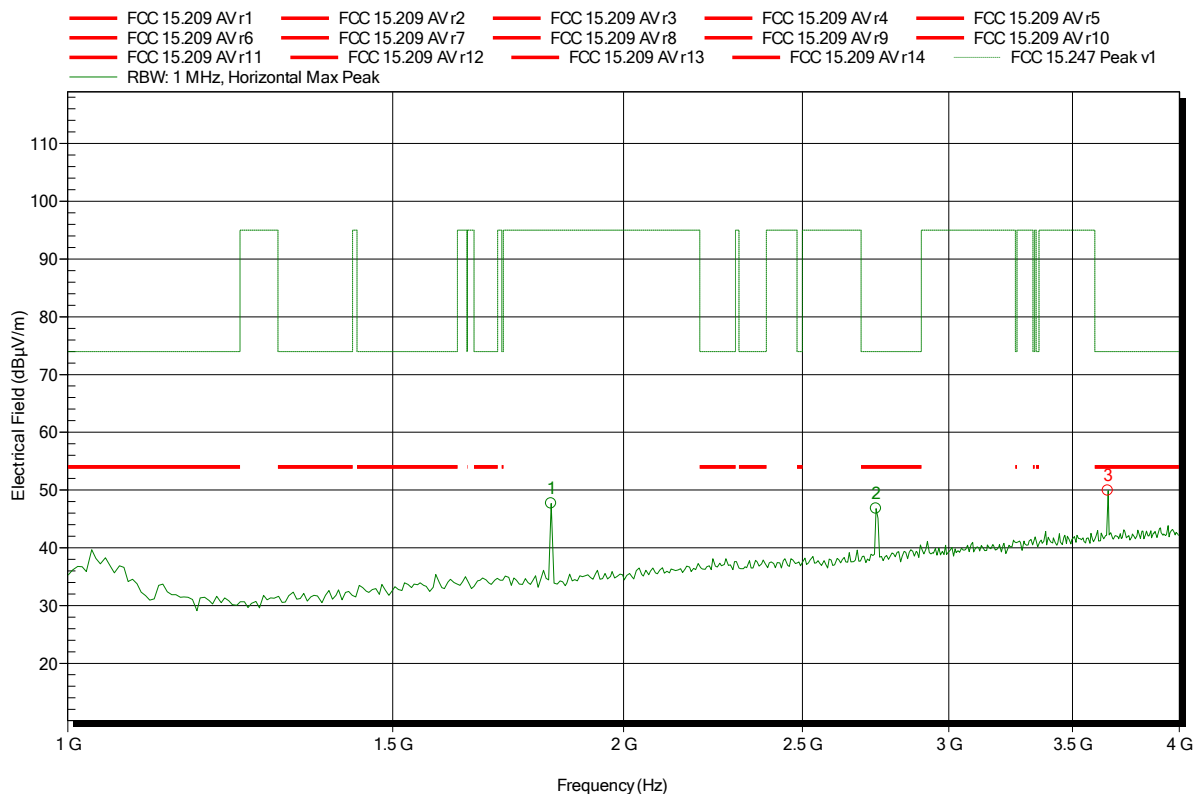


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: GOM-1505-4751

Applicant: Kamstrup A/S  
 EUT Name: Kamstrup water meter flowIQ2102 for Chile  
 Model: flowIQ2102  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Jahn  
 Test Conditions: Tnom: 24°C, Vnom: 3.6VDC battery  
 Antenna: Rohde & Schwarz HL 025, Horizontal  
 Measurement distance: 3 m  
 Mode: TX; Tx continuous; modulated; power setting 56  
 Test Date: 2015-06-08  
 Note:

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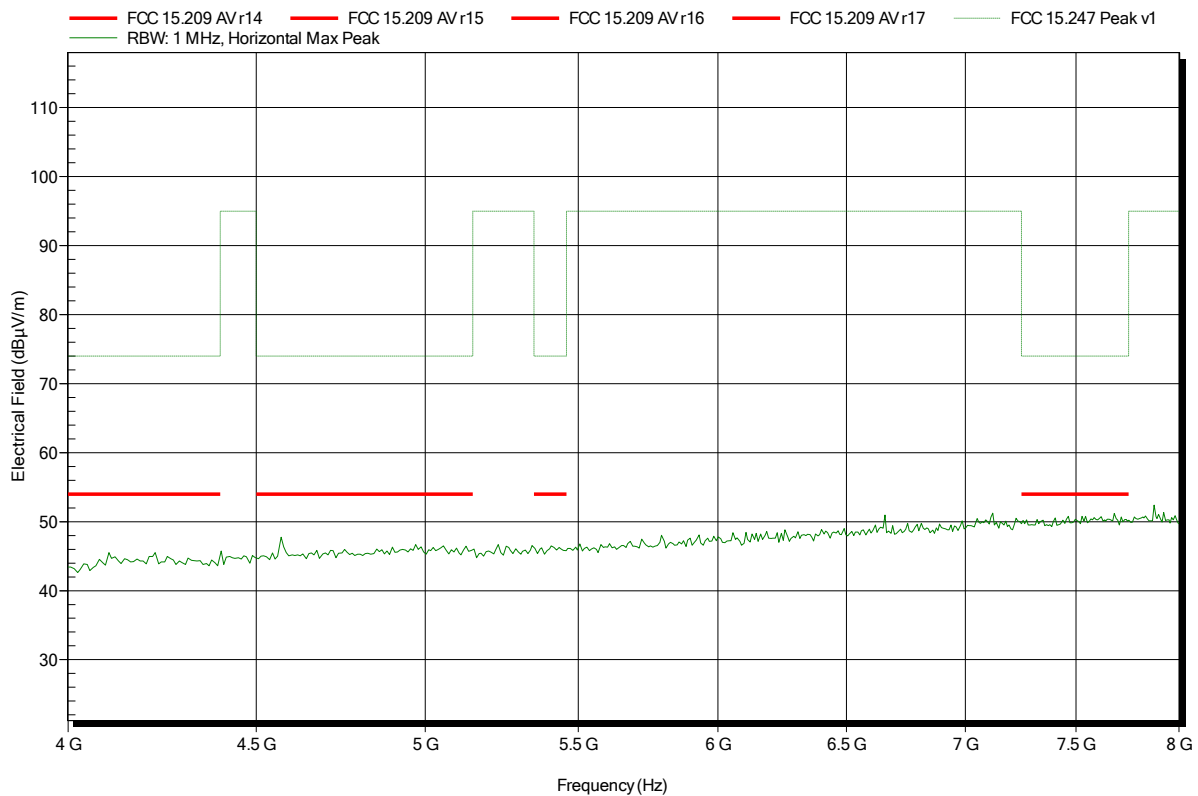
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.828 GHz	47.68 dBµV/m	95 dBµV/m	-47.32 dB	Pass
2.74 GHz	46.77 dBµV/m	74 dBµV/m	-27.23 dB	Pass
3.658 GHz	49.92 dBµV/m	74 dBµV/m	-24.08 dB	Pass

**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1505-4751

Applicant:	Kamstrup A/S
EUT Name:	Kamstrup water meter flowIQ2102 for Chile
Model:	flowIQ2102
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Jahn
Test Conditions:	Tnom: 24°C, Vnom: 3.6VDC battery
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; Tx continuous; modulated; power setting 56
Test Date:	2015-06-08
Note:	

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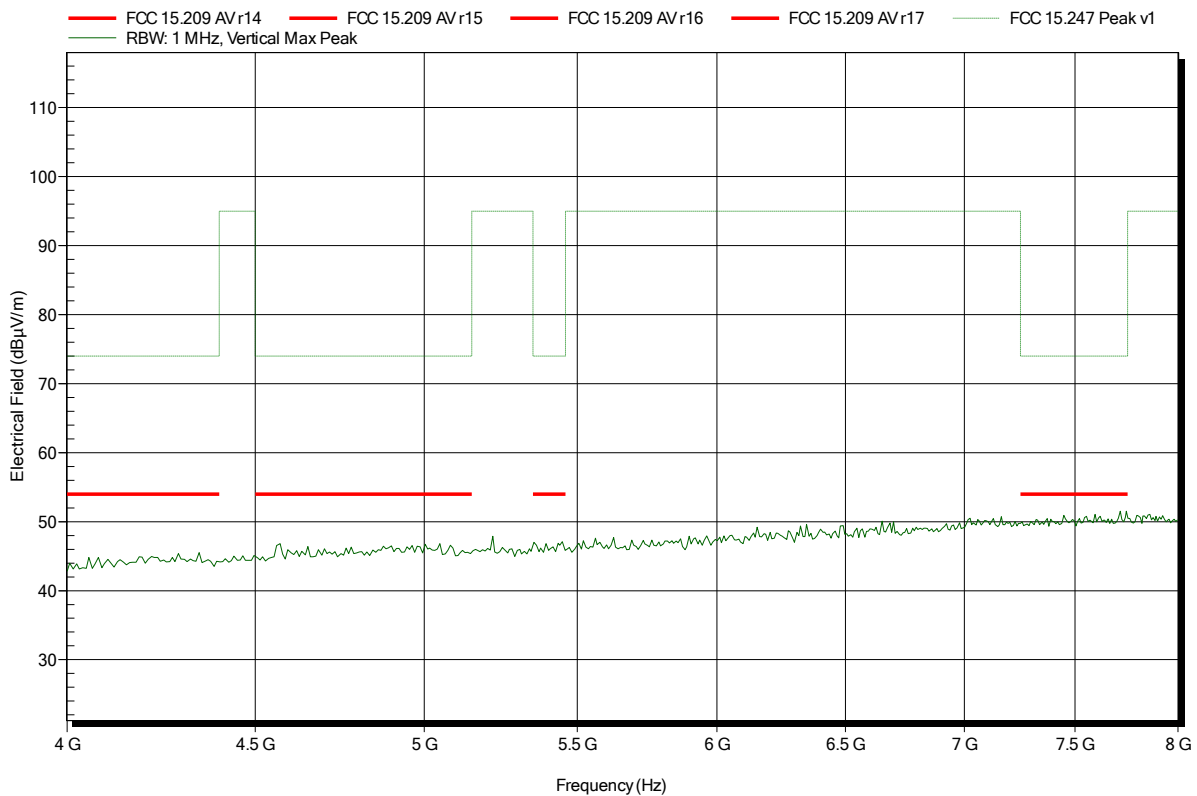


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1505-4751

Applicant:	Kamstrup A/S
EUT Name:	Kamstrup water meter flowIQ2102 for Chile
Model:	flowIQ2102
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Jahn
Test Conditions:	Tnom: 24°C, Vnom: 3.6VDC battery
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; Tx continuous; modulated; power setting 56
Test Date:	2015-06-08
Note:	

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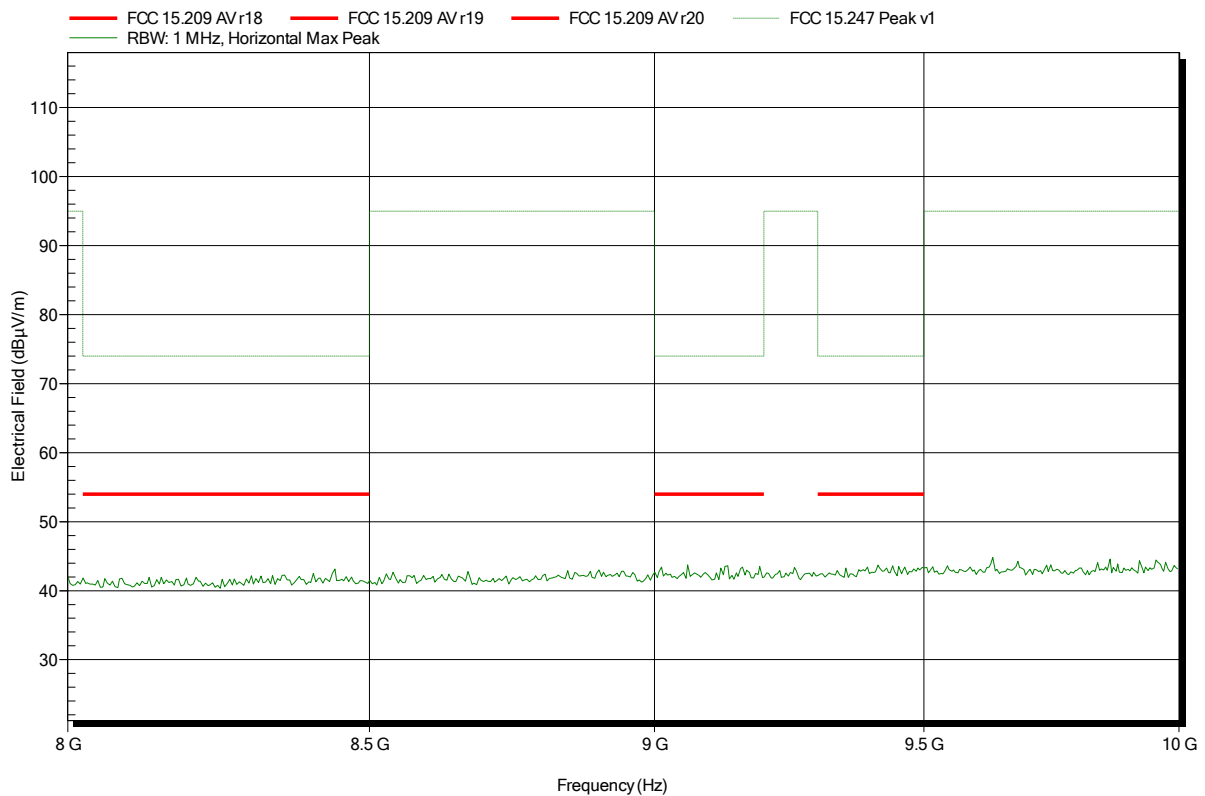


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1505-4751

Applicant:	Kamstrup A/S
EUT Name:	Kamstrup water meter flowIQ2102 for Chile
Model:	flowIQ2102
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Jahn
Test Conditions:	Tnom: 24°C, Vnom: 3.6VDC battery
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; Tx continuous, modulated; power setting 56
Test Date:	2015-06-08
Note:	

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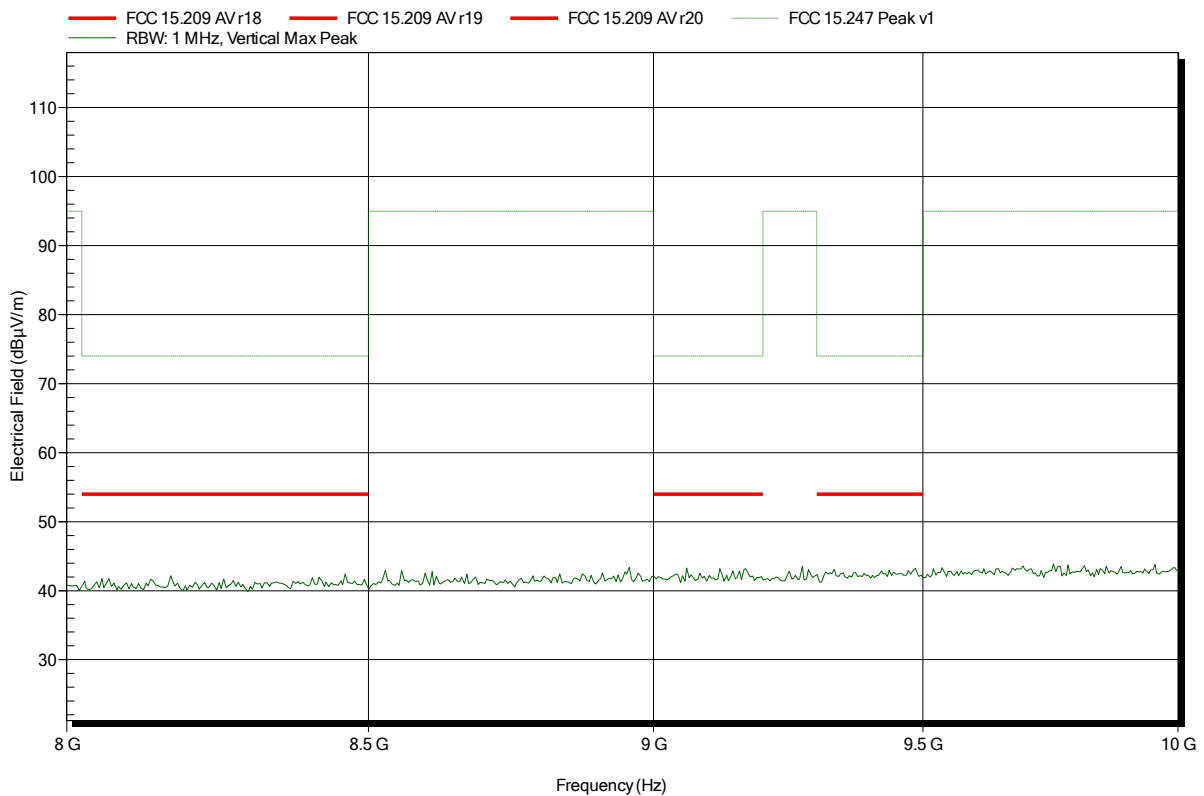


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1505-4751

Applicant:	Kamstrup A/S
EUT Name:	Kamstrup water meter flowIQ2102 for Chile
Model:	flowIQ2102
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Jahn
Test Conditions:	Tnom: 24°C, Vnom: 3.6VDC battery
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; Tx continuous; modulated; power setting 56
Test Date:	2015-06-08
Note:	

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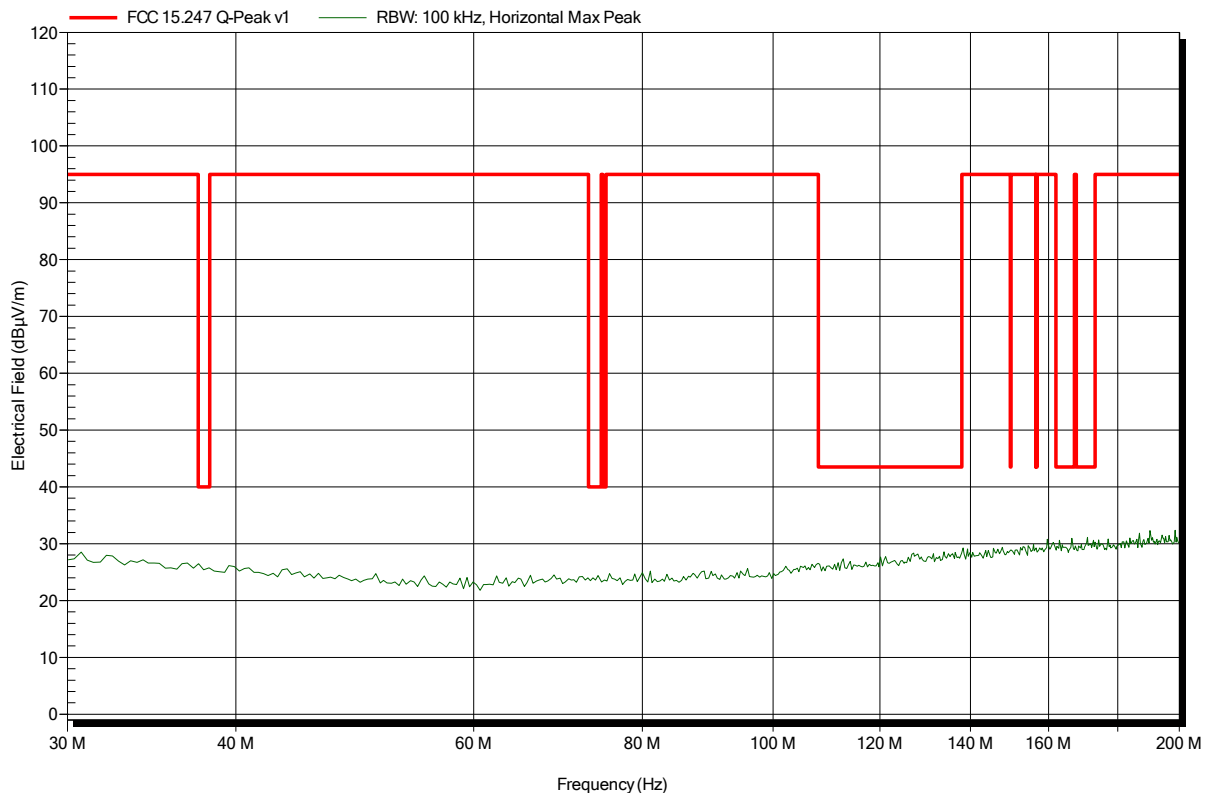
## ANNEX B Transmitter radiated spurious emissions flowIQ3100

### Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1505-4751

Applicant:	Kamstrup A/S
EUT Name:	Kamstrup water meter flowIQ3100 for Chile
Model:	flowIQ3100
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Jahn
Test Conditions:	Tnom: 24°C, Vnom: 3.6VDC battery
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; Tx continuous; modulated; power setting 56
Test Date:	2015-06-08
Note:	

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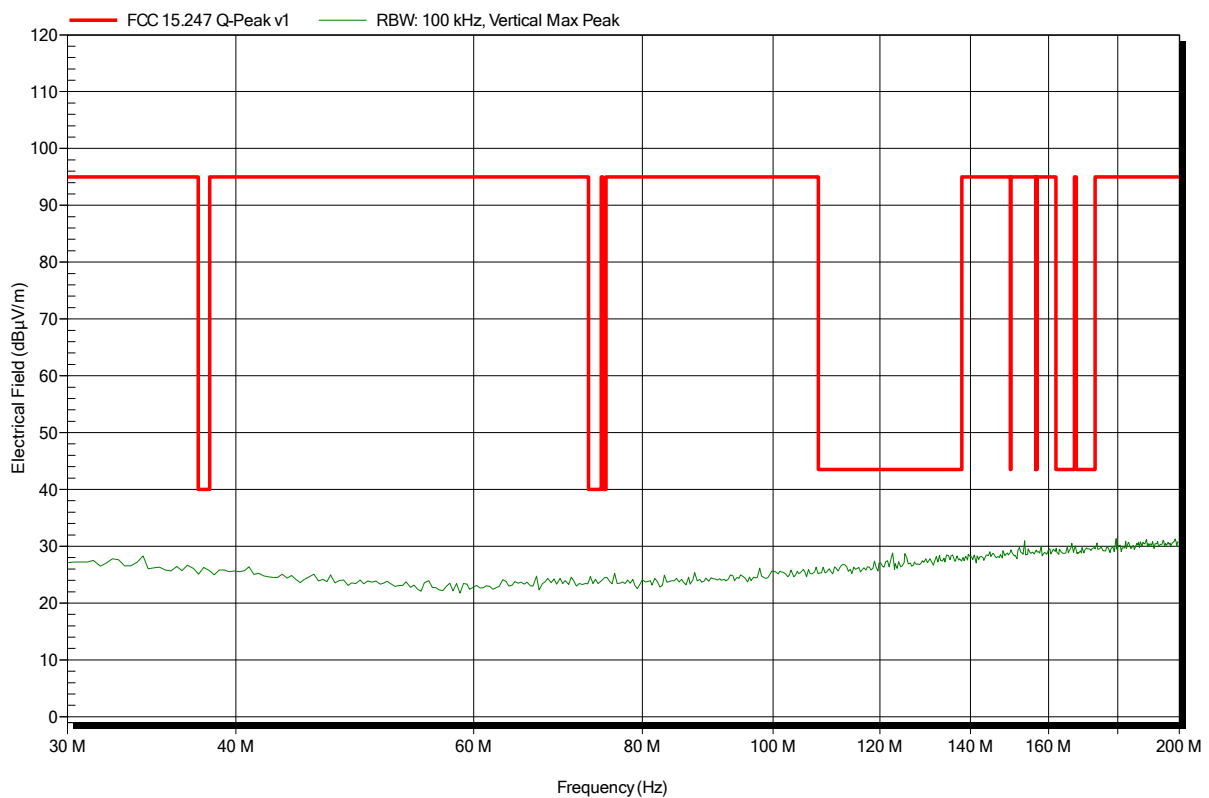


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1505-4751

Applicant:	Kamstrup A/S
EUT Name:	Kamstrup water meter flowIQ3100 for Chile
Model:	flowIQ3100
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Jahn
Test Conditions:	Tnom: 24°C, Vnom: 3.6VDC battery
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; Tx continuous; modulated; power setting 56
Test Date:	2015-06-08
Note:	

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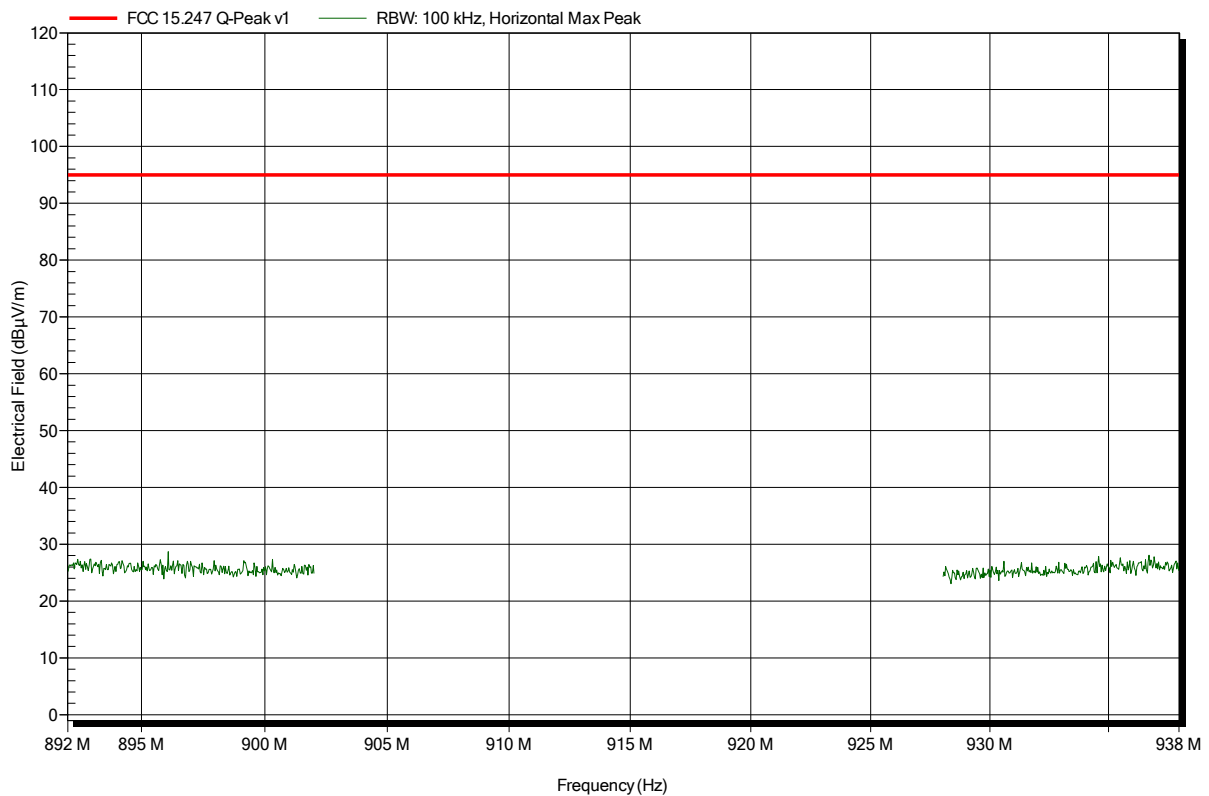


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1505-4751

Applicant:	Kamstrup A/S
EUT Name:	Kamstrup water meter flowIQ3100 for Chile
Model:	flowIQ3100
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Jahn
Test Conditions:	Tnom: 24°C, Vnom: 3.6VDC battery
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; Tx continuous; modulated; power setting 56
Test Date:	2015-06-08
Note:	

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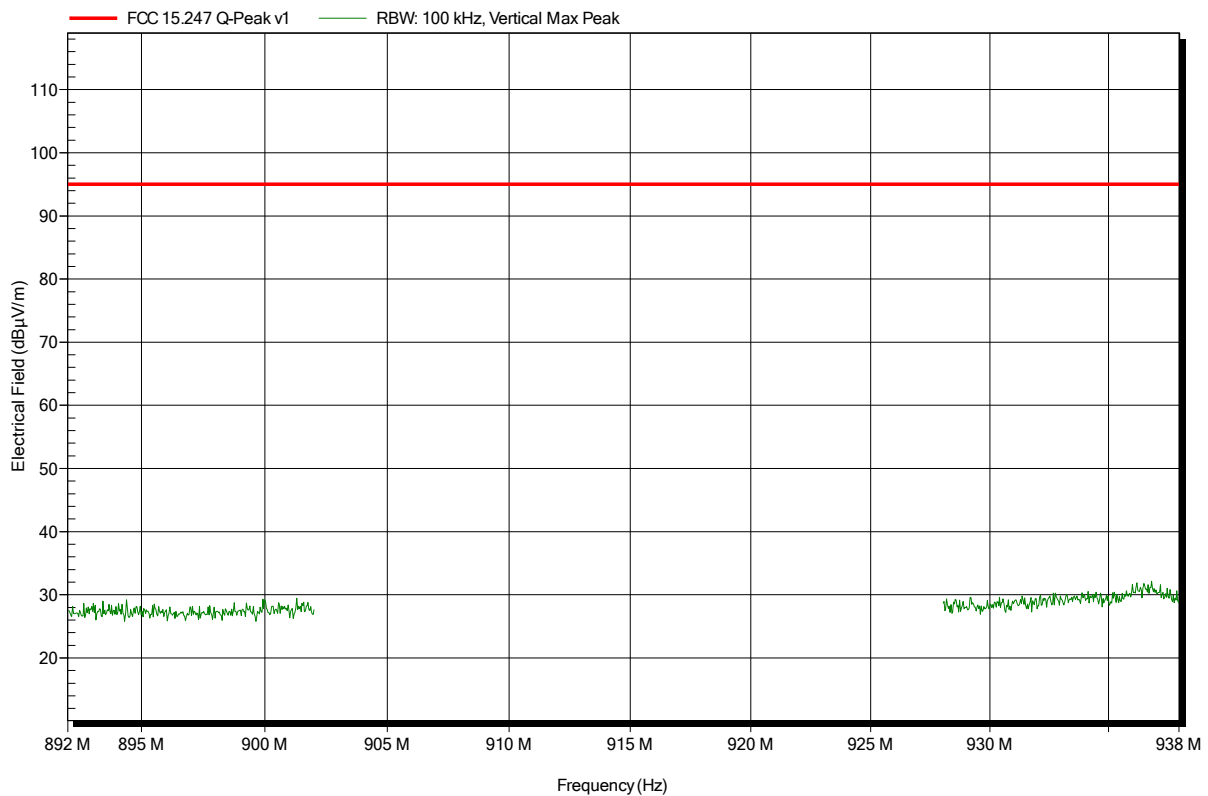


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1505-4751

Applicant:	Kamstrup A/S
EUT Name:	Kamstrup water meter flowIQ3100 for Chile
Model:	flowIQ3100
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Jahn
Test Conditions:	Tnom: 24°C, Vnom: 3.6VDC battery
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; Tx continuous; modulated; power setting 56
Test Date:	2015-06-08
Note:	

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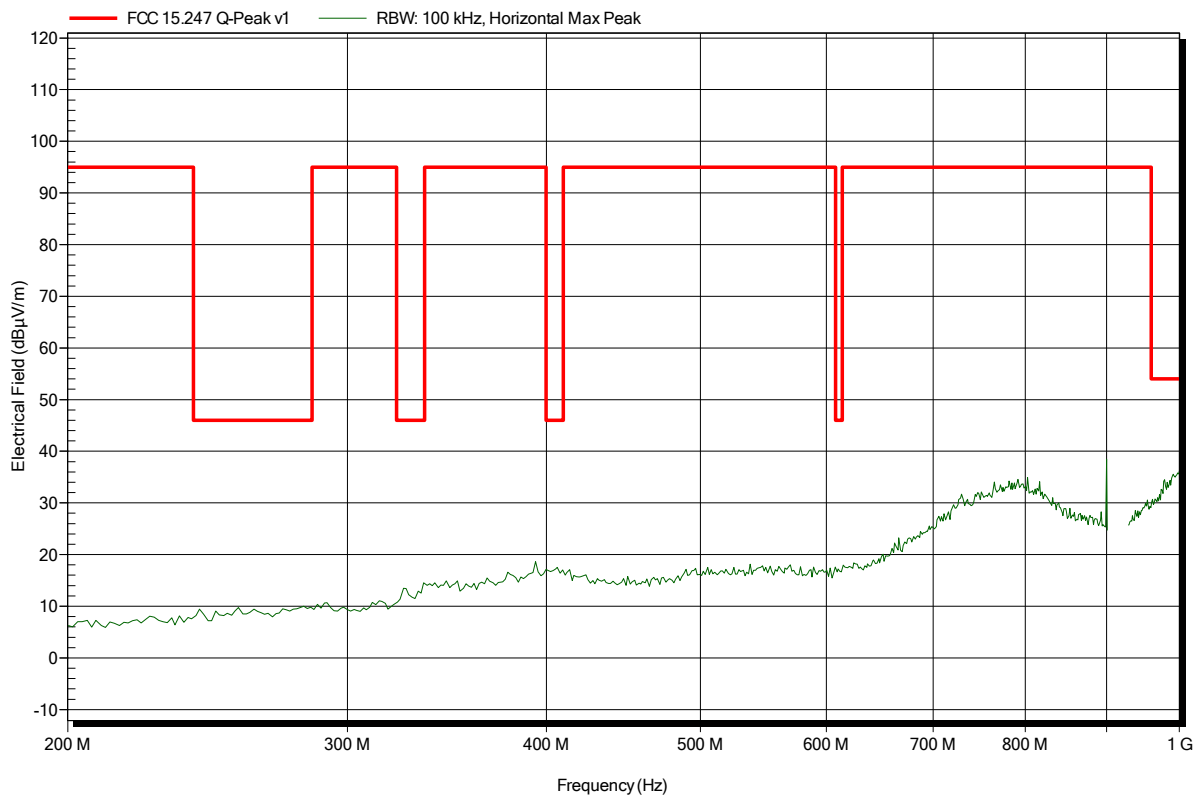


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1505-4751

Applicant:	Kamstrup A/S
EUT Name:	Kamstrup water meter flowIQ3100 for Chile
Model:	flowIQ3100
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Jahn
Test Conditions:	Tnom: 24°C, Vnom: 3.6VDC battery
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; Tx continuous; modulated; power setting 56
Test Date:	2015-06-08
Note:	

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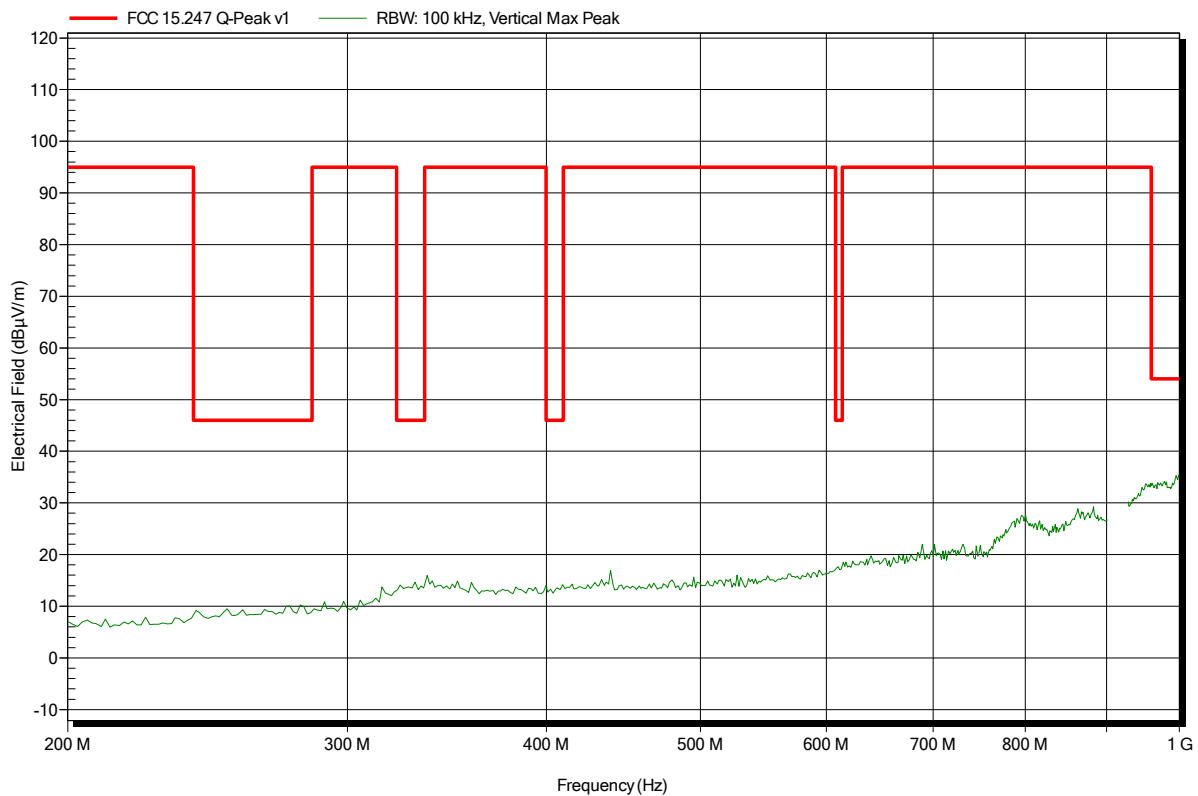


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1505-4751

Applicant:	Kamstrup A/S
EUT Name:	Kamstrup water meter flowIQ3100 for Chile
Model:	flowIQ3100
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Jahn
Test Conditions:	Tnom: 24°C, Vnom: 3.6VDC battery
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; Tx continuous; modulated; power setting 56
Test Date:	2015-06-08
Note:	

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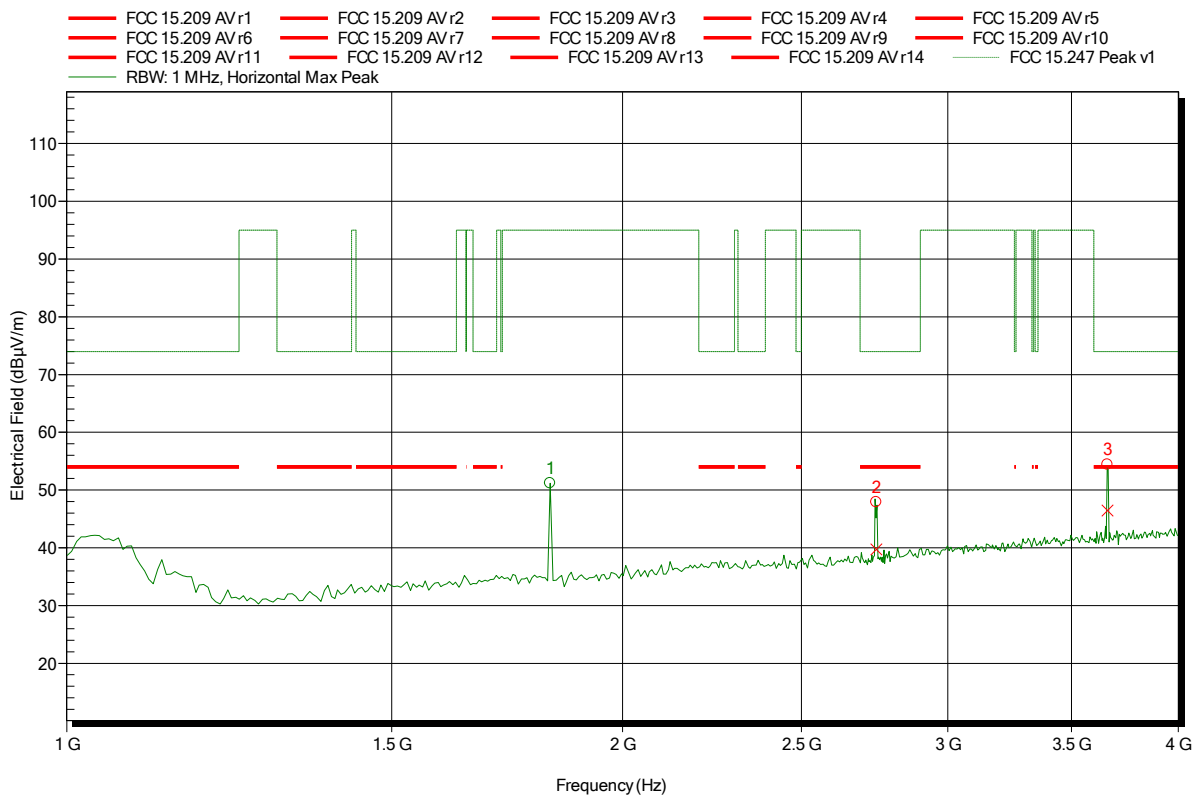


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1505-4751

Applicant: Kamstrup A/S  
 EUT Name: Kamstrup water meter flowIQ3100 for Chile  
 Model: flowIQ3100  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Jahn  
 Test Conditions: Tnom: 24°C, Vnom: 3.6VDC battery  
 Antenna: Rohde & Schwarz HL 025, Horizontal  
 Measurement distance: 3 m  
 Mode: TX; Tx continuous; modulated; power setting 56  
 Test Date: 2015-06-08  
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.828 GHz	51.16 dBµV/m	95 dBµV/m	-43.84 dB	Pass
2.744 GHz	47.87 dBµV/m	74 dBµV/m	-26.13 dB	Pass
3.661 GHz	54.37 dBµV/m	74 dBµV/m	-19.63 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
2.744 GHz	39.74 dBµV/m	54 dBµV/m	-14.26 dB	Pass
3.661 GHz	46.44 dBµV/m	54 dBµV/m	-7.56 dB	Pass

Test Report No.: G0M-1505-4751-TFC247DT-V01

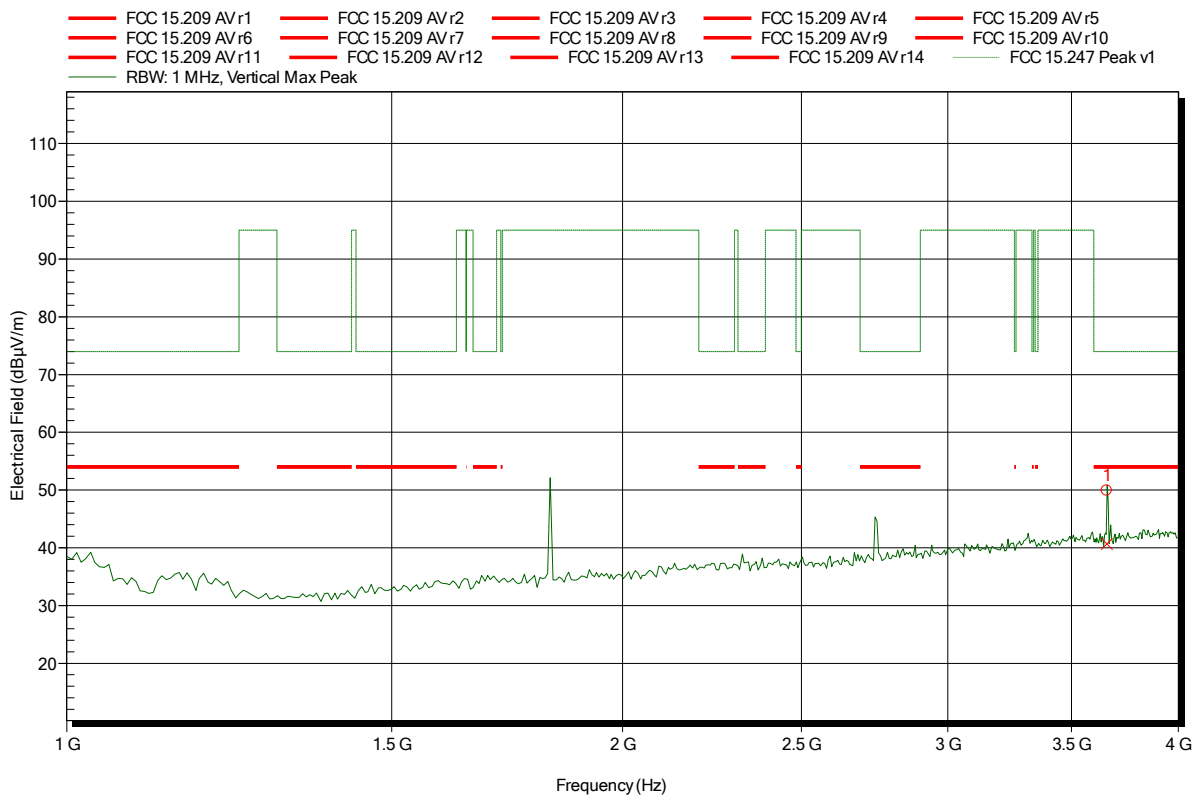
Eurofins Product Service GmbH  
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: GOM-1505-4751

Applicant: Kamstrup A/S  
 EUT Name: Kamstrup water meter flowIQ3100 for Chile  
 Model: flowIQ3100  
 Test Site: Eurofins Product Service GmbH  
 Operator: Mr. Jahn  
 Test Conditions: Tnom: 24°C, Vnom: 3.6VDC battery  
 Antenna: Rohde & Schwarz HL 025, Vertical  
 Measurement distance: 3 m  
 Mode: TX; Tx continuous; modulated; power setting 56  
 Test Date: 2015-06-08  
 Note:

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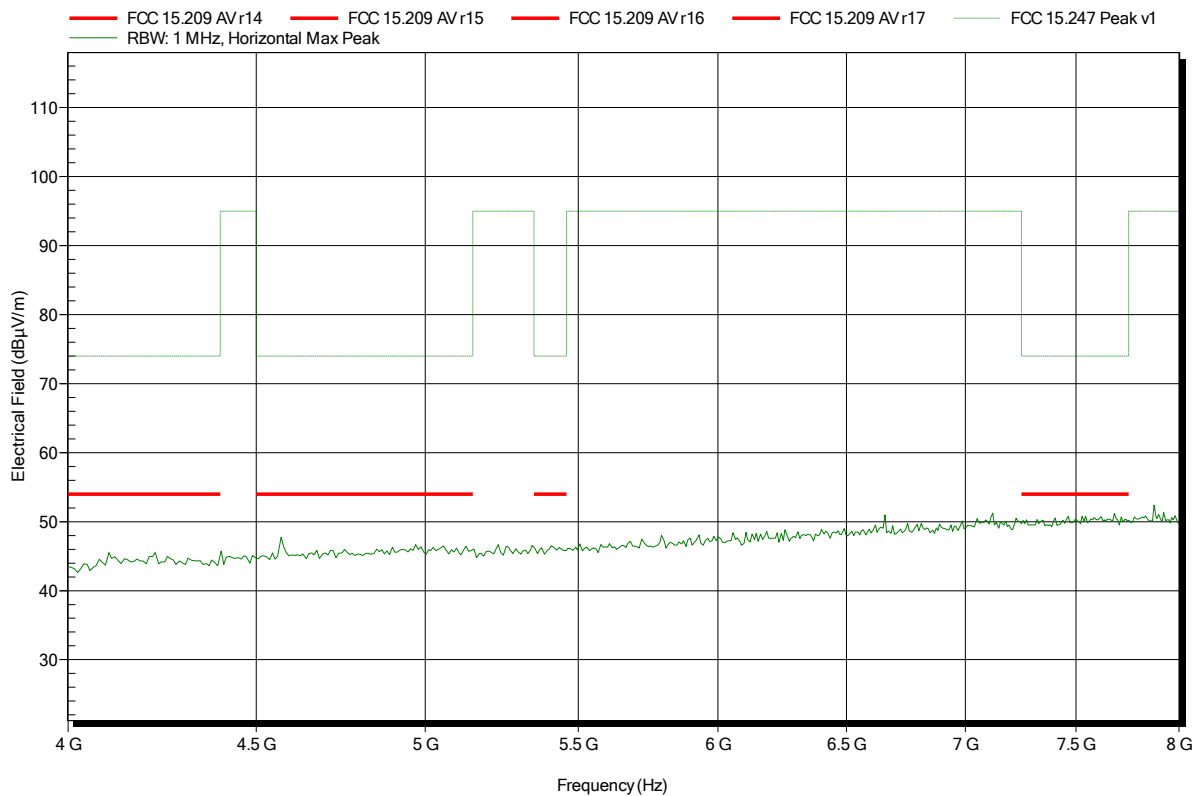
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
3.659 GHz	49.87 dBµV/m	74 dBµV/m	-24.13 dB	Pass
Frequency	Average	Average Limit	Average Difference	Average Status
3.659 GHz	40.68 dBµV/m	54 dBµV/m	-13.32 dB	Pass

**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1505-4751

Applicant:	Kamstrup A/S
EUT Name:	Kamstrup water meter flowIQ3100 for Chile
Model:	flowIQ3100
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Jahn
Test Conditions:	Tnom: 24°C, Vnom: 3.6VDC battery
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; Tx continuous; modulated; power setting 56
Test Date:	2015-06-08
Note:	

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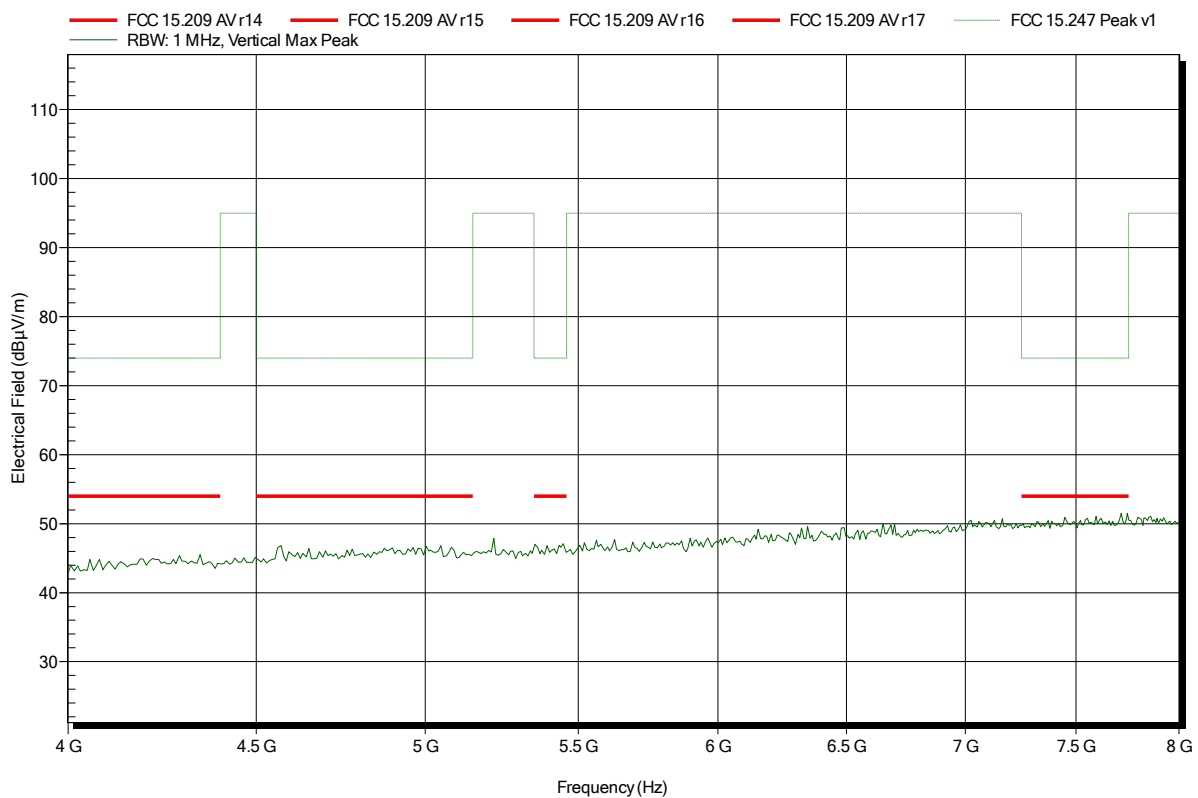


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1505-4751

Applicant:	Kamstrup A/S
EUT Name:	Kamstrup water meter flowIQ3100 for Chile
Model:	flowIQ3100
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Jahn
Test Conditions:	Tnom: 24°C, Vnom: 3.6VDC battery
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; Tx continuous; modulated; power setting 56
Test Date:	2015-06-08
Note:	

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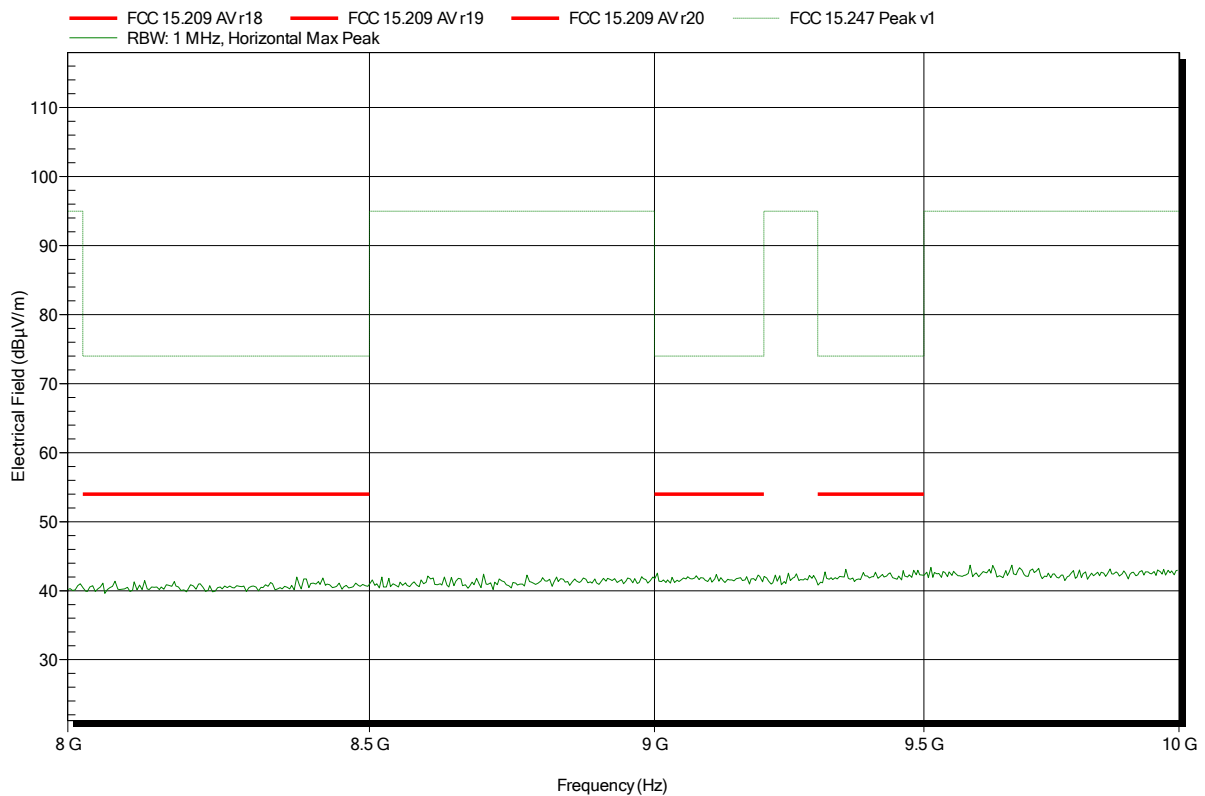


**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1505-4751

Applicant:	Kamstrup A/S
EUT Name:	Kamstrup water meter flowIQ3100 for Chile
Model:	flowIQ3100
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Jahn
Test Conditions:	Tnom: 24°C, Vnom: 3.6VDC battery
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; Tx continuous; modulated; power setting 56
Test Date:	2015-06-08
Note:	

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**Spurious emissions according to FCC part 15 Subpart C § 15.247**

Project number: G0M-1505-4751

Applicant:	Kamstrup A/S
EUT Name:	Kamstrup water meter flowIQ3100 for Chile
Model:	flowIQ3100
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Jahn
Test Conditions:	Tnom: 24°C, Vnom: 3.6VDC battery
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; Tx continuous; modulated; power setting 56
Test Date:	2015-06-08
Note:	

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