

EMC TEST REPORT

FCC 47 CFR Part 15B
Industry Canada ICES-003

Electromagnetic compatibility - Unintentional radiators

Report Reference No. : G0M-1801-7152-EF0115B-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-3

Applicant's name : Kamstrup A/S

Address : Industrivej 28
8660 Skanderborg
DENMARK

Test specification:

Standard..... : 47 CFR Part 15 Subpart B
ICES-003, Issue 6:2016
ANSI C63.4:2014

Equipment under test (EUT):

Product description	Kamstrup READy Collector Top	
Model No.	Kamstrup READy Collector Top	
Additional Models	None	
Hardware version	RFboard: F1. CPUboard: D4 Complete box: A1	
Firmware / Software version	C1	
Contains	FCC-ID: OUY-READYAMI	IC: N/A
Test result	Passed	

Test Report No.: G0M-1801-7152-EF0115B-V01

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

Possible test case verdicts:

- not applicable to test object: N/A
- test object does meet the requirement.....: P (Pass)
- test object does not meet the requirement.....: F (Fail)

Testing:

Date of receipt of test item: 2018-02-20

Date (s) of performance of tests: 2018-02-22

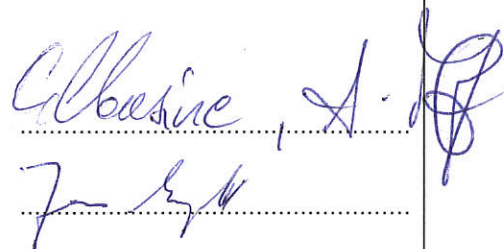
Compiled by: Ruslan Colbasiuc

Tested by (+ signature).....: R. Colbasiuc / A. Pflug

Approved by (+ signature): Jens Marquardt
Deputy Head of Lab

Date of issue: 2018-02-26

Total number of pages: 31


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.

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Additional comments:

Version History

Version	Issue Date	Remarks	Revised by
V01	2018-02-26	Initial Release	

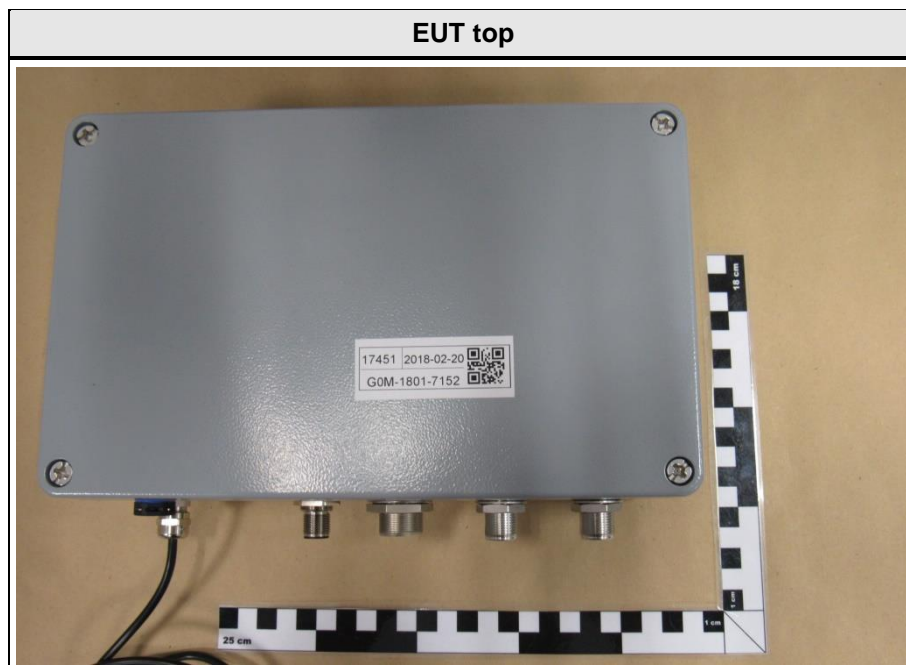
REPORT INDEX

1	EQUIPMENT (TEST ITEM) DESCRIPTION	5
1.1	Photos – Equipment external	6
1.2	Photos – Equipment internal	8
1.3	Photos – Test setup	10
1.4	Supporting Equipment Used During Testing	11
1.5	Input / Output Ports	11
1.6	Operating Modes and Configurations	12
1.7	Test Equipment Used During Testing	13
1.8	Sample emission level calculation	14
2	RESULT SUMMARY	15
3	TEST CONDITIONS AND RESULTS	16
3.1	Test Conditions and Results – Radiated emissions	16
3.2	Test Conditions and Results – AC power line conducted emissions	26

1 Equipment (Test item) Description

Description	Kamstrup READy Collector Top
Model	Kamstrup READy Collector Top
Additional Models	None
Serial number	None
Hardware version	RFboard: F1. CPUboard: D4 Complete box: A1
Software / Firmware version	C1
Contains FCC-ID	OUY-READYAMI
Contains IC	N/A
Power supply	24 VDC
AC/DC-Adaptor	Model : PE-3747-675 Manufacturer : I.T.E. Power Supply Input : 100-240 VAC (60/50 Hz) Output : 5-24 VDC
Manufacturer	Kamstrup A/S Industrivej 28 8660 Skanderborg DENMARK
Highest internal frequency	5320 MHz
Device classification	Class B
Equipment type	Tabletop
Number of tested samples	1
Protective Earth / Ground	Yes
Functional Earth	No

1.1 Photos – Equipment external



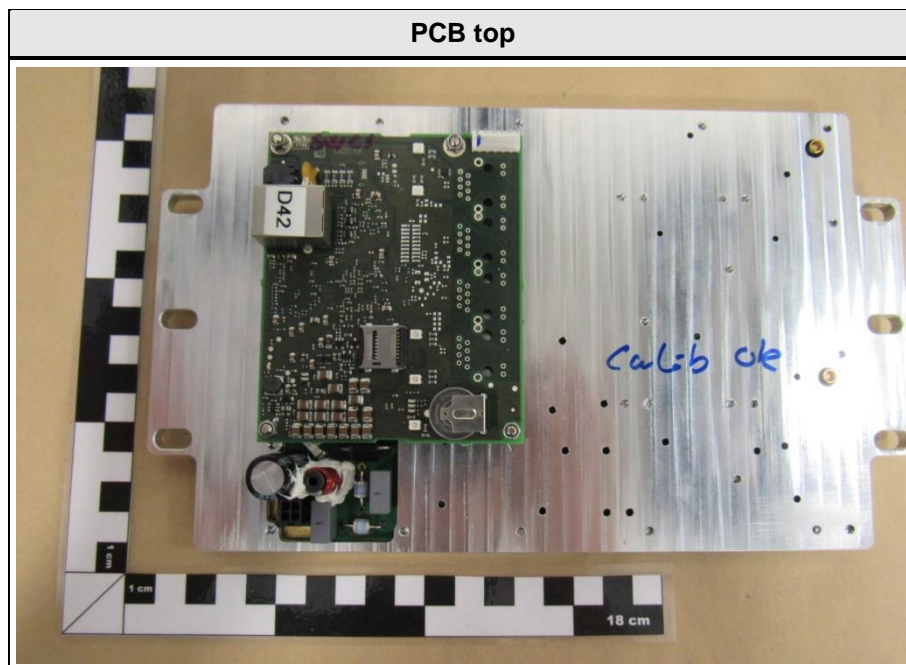
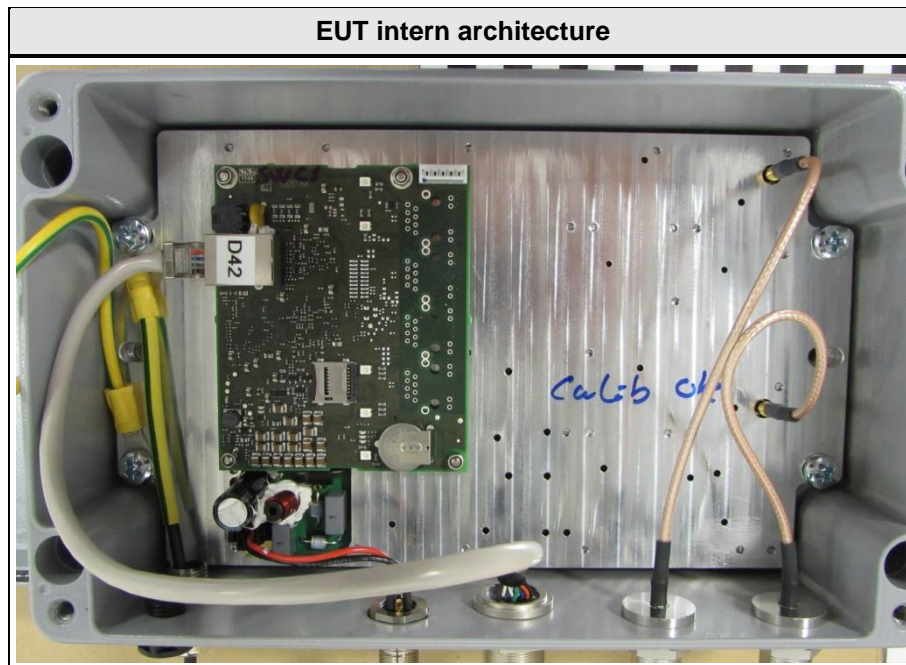
EUT side

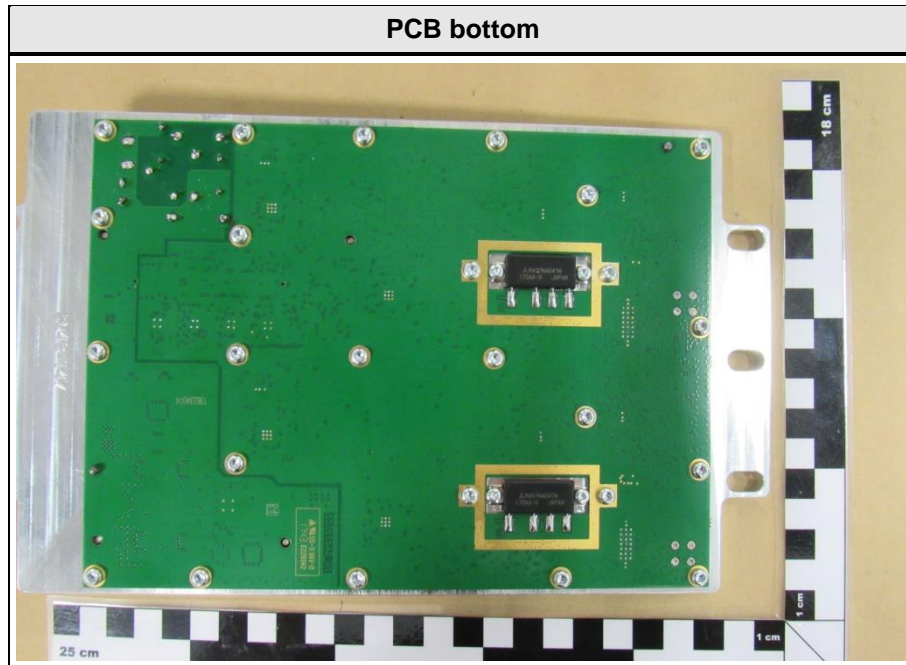


EUT ports

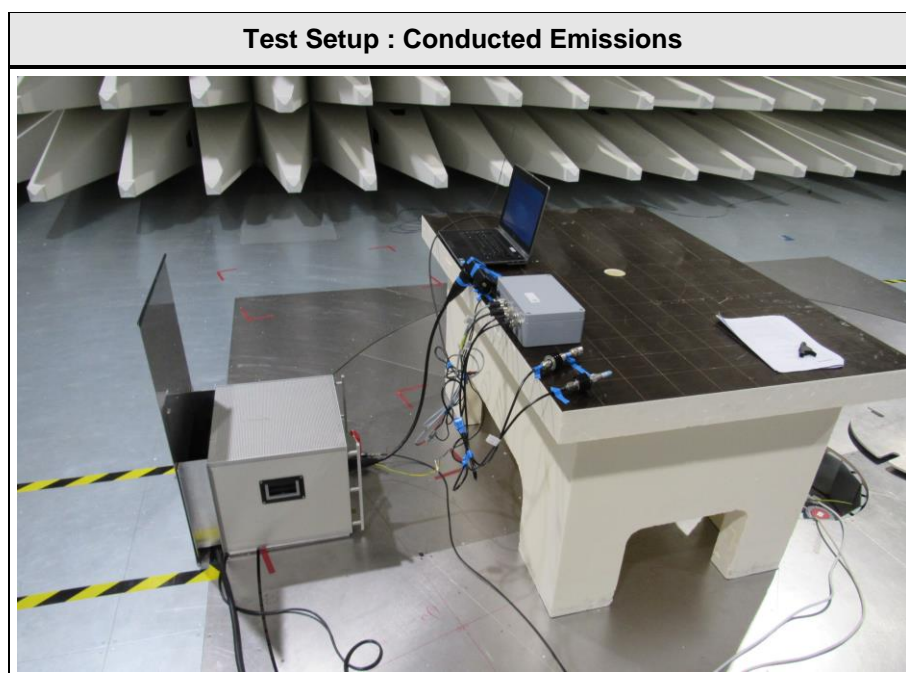
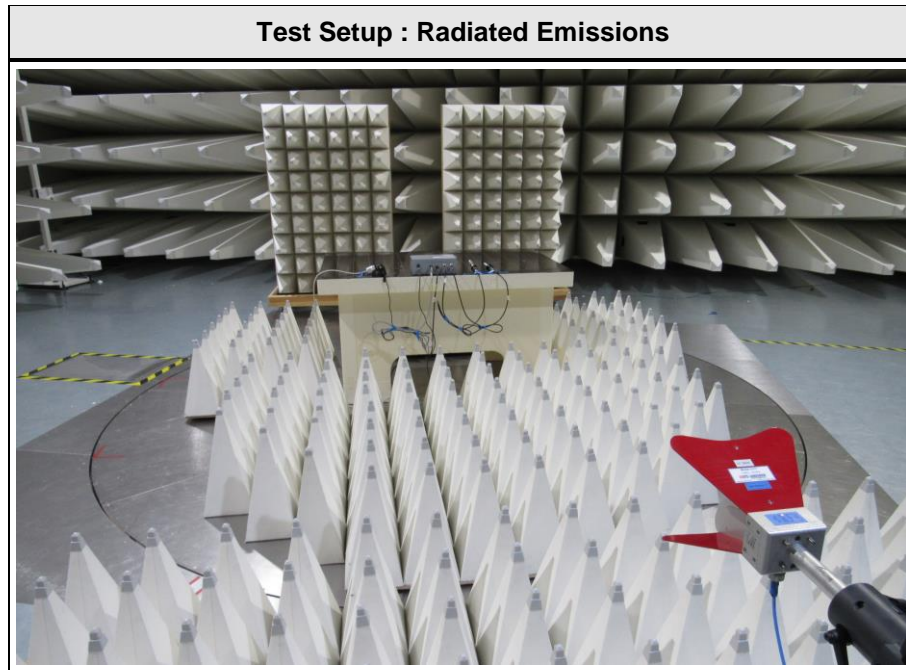


1.2 Photos – Equipment internal





1.3 Photos – Test setup



1.4 Supporting Equipment Used During Testing

Product Type*	Device	Manufacturer	Model No.	Comments (e.g. serial no.)
CABL	LAN cable	Kamstrup	5000 480	
CABL	DC cable	Kamstrup	5000 481	
CABL	Antenna cable	Kamstrup	5000 389	x2
SIM	Laptop	DELL	Latitude E6430	
None				
<p>*Note: Use the following abbreviations:</p> <p>AE : Auxiliary/Associated Equipment, or</p> <p>SIM : Simulator (Not Subjected to Test)</p> <p>CABL : Connecting cables</p>				

1.5 Input / Output Ports

Port #	Name	Type*	Max. Cable Length	Cable Shielded	Comments (e.g. Cat. of Cable)
1	Power Port	DC	85 m	No	
2	Ethernet	I/O	85 m	Yes	
3	Antenna Port 1	I/O	5 m	Yes	
4	Antenna Port 2	I/O	5 m	Yes	
<p>*Note: Use the following abbreviations:</p> <p>AC : AC power port</p> <p>DC : DC power port</p> <p>N/E : Non electrical</p> <p>I/O : Signal input or output port</p> <p>TP : Telecommunication port</p>					

1.6 Operating Modes and Configurations

Mode #	Description
1	./Mod_mid_0. On device is set up a modulated spectrum at max power (37dBm) on the middle frequency (460.65 MHz) on radio 0.
2	./Mod_mid_1. On device is set up a modulated spectrum at max power (37dBm) on the middle frequency (460.65 MHz) on radio 1.

Configuration #	EUT Configuration
1	Device powered up and connected via LAN with the PC. On the PC runs the script ./Mod_mid_0. The device is in Tx mode on output radio 0 and has a LAN communication with the PC.
2	Device powered up and connected via LAN with the PC. On the PC runs the script ./Mod_mid_1. The device is in Tx mode on output radio 1 and has a LAN communication with the PC.

1.7 Test Equipment Used During Testing

Measurement Software			
Description	Manufacturer	Name	Version
EMC Test Software	Dare Instruments	Radimation	2016.1.10

Conducted emissions AC6					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
LISN	Schwarzbeck	NSLK 8128	EF00975	2017-07	2019-07
EMI Test Receiver	Rohde & Schwarz Vertriebs GmbH	ESU26	EF00887	2017-07	2018-07
Pulse Limiter	R&S	ESH3-Z2	EF01063	2017-07	2018-07
Cable	-	RG223/U	-	System Cal.	System Cal.

Radiated emissions AC6					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
TRILOG Broadband Antenna	Schwarzbeck	VULB 9162	EF00978	2016-11	2019-11
Double-Ridged Guide Antenna	ETS-Lindgren	3117	EF00976	2016-03	2019-03
EMI Test Receiver	R&S	ESU26	EF00887	2017-07	2018-07
RF Cable	Huber & Suhner	Sucoflex 106	-	System Cal.	System Cal
RF Cable	Huber & Suhner	Multiflex 141	-	System Cal.	System Cal

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

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

2 Result Summary

FCC 47 CFR Part 15B, Industry Canada ICES-003				
Product Specific Standard	Requirement – Test	Reference Method	Result	Remarks
47 CFR 15.109 ICES-003 Item 6.2	Radiated emissions	ANSI C 63.4	PASS	
47 CFR 15.107 ICES-003 Item 6.1	AC power line conducted emissions	ANSI C63.4	PASS	
Remarks:				

3 Test Conditions and Results

3.1 Test Conditions and Results – Radiated emissions

Radiated emissions acc. FCC 47 CFR 15.109 / ICES-003					Verdict: PASS		
Laboratory Parameters:		Required prior to the test			During the test		
Ambient Temperature		15 to 35 °C			22 °C		
Relative Humidity		30 to 60 %			30 %		
Test according referenced standards		Reference Method					
		ANSI C63.4					
Sample is tested with respect to the requirements of the equipment class		Equipment class					
		Class B					
Test frequency range determined from highest emission frequency		Highest emission frequency					
		Fmax [MHz] = 5320					
Fully configured sample scanned over the following frequency range		Frequency range					
		30 MHz to 27 GHz					
Operating mode		1 / 2					
Configuration		1 / 2					
Limits and results Class B							
Frequency [MHz]	Quasi-Peak [dBµV/m]	Result	Average [dBµV/m]	Result	Peak [dBµV/m]	Result	
30 – 88	40	PASS	-		-	-	
88 – 216	43.5	PASS	-		-	-	
216 – 960	46	PASS	-		-	-	
960 – 1000	54	PASS	-		-	-	
> 1000	-	-	54	PASS	74	PASS	
Comments: no significant emissions in the frequency range from 18 to 27 GHz observed							

Test Procedure:

The test site is in accordance with ANSI C63-4:2014 requirements and is listed by FCC.
The measurement procedure is as follows:

Exploratory measurement:

- The EUT was placed on a non-conductive table at a height of 0.8m.
- The EUT and support equipment, if needed, were set up to simulate typical usage.
- Cables, of type and length specified by the manufacturer, were connected to at least one port of each type and were terminated by a device or simulating load of actual usage.
- The antenna was placed at a distance of 3 or 10 m.
- The received signal was monitored at the measurement receiver.
 - Cables not bundled were manipulated within the range of likely arrangements to produce the highest emission amplitude
 - To maximize the suspected emissions the EUT is rotated 360 degrees. If the signal exceeds the previous amplitude, go back to the corresponding azimuth and manipulate the cables again for maximizing the emissions if possible.
 - Move the antenna from 1 to 4m to maximize the suspected highest amplitude signal.
- This procedure has to be performed in both antenna polarizations, horizontal and vertical.
- The arrangement of the equipment with the maximum emission level is shown on the setup picture at item 1.3.

Final measurement:

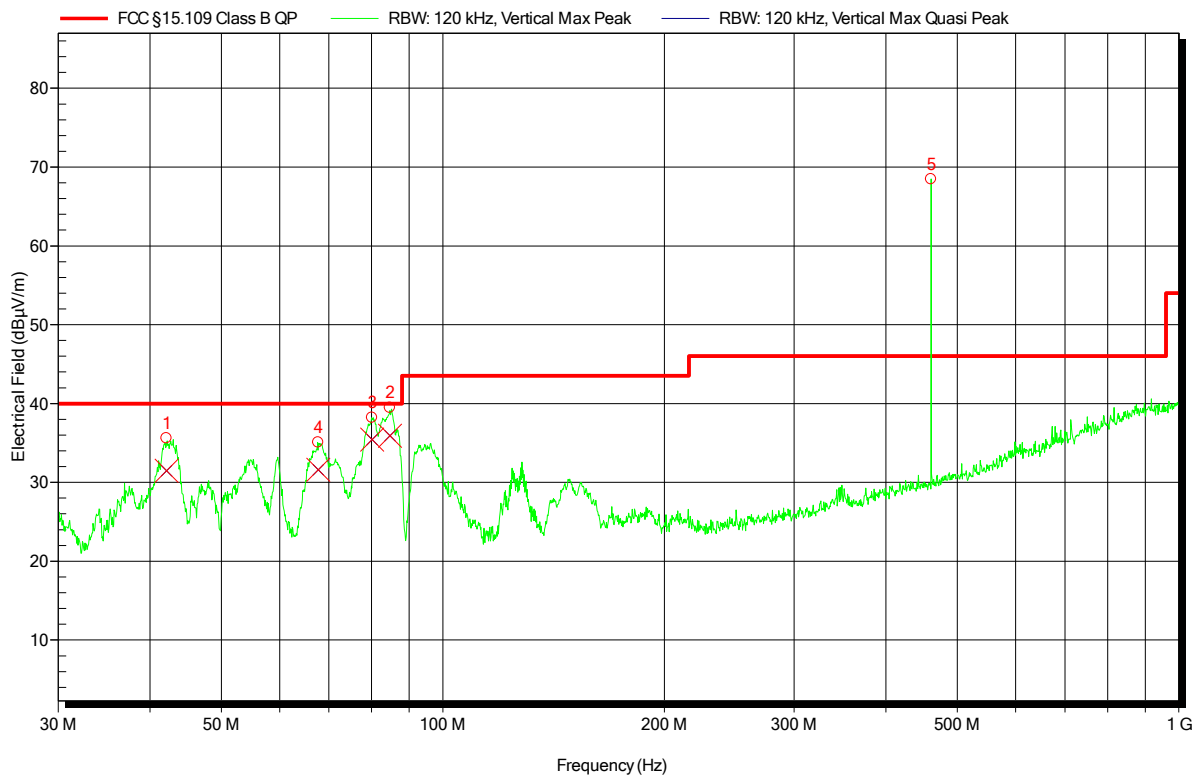
- The EUT was placed on a 0.8 m non-conductive table at a 3 m distance from the receive antenna. The antenna output was connected to the measurement receiver
- A biconical antenna was used for the frequency range 30 – 200 MHz, a logarithmic periodical antenna was used for the frequency range from 200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

Radiated emissions according to FCC 15B

Project number: G0M-1801-7152

Applicant: Kamstrup A/S
 EUT Name: Kamstrup READy Collector Top
 Model: Kamstrup READy Collector Top
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Colbasiuc
 Test Conditions: Tnom: 22°C, Unom: 120 VAC/60 Hz
 Antenna: Schwarzbeck VULB 9162, Vertical
 Measurement distance: 3 m
 Mode: 1
 Test Date: 2018-02-22
 Note:

Index 2



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	42.12 MHz	31.5 dBµV/m	40 dBµV/m	-8.5 dB	Pass	0 Degree	1 m
2	84.78 MHz	35.9 dBµV/m	40 dBµV/m	-4.1 dB	Pass	0 Degree	1 m
3	80.16 MHz	35.4 dBµV/m	40 dBµV/m	-4.6 dB	Pass	0 Degree	1 m
4	67.74 MHz	31.6 dBµV/m	40 dBµV/m	-8.4 dB	Pass	0 Degree	1 m
5	460.66 MHz	Carrier				0 Degree	1 m

Test Report No.: G0M-1801-7152-EF0115B-V01

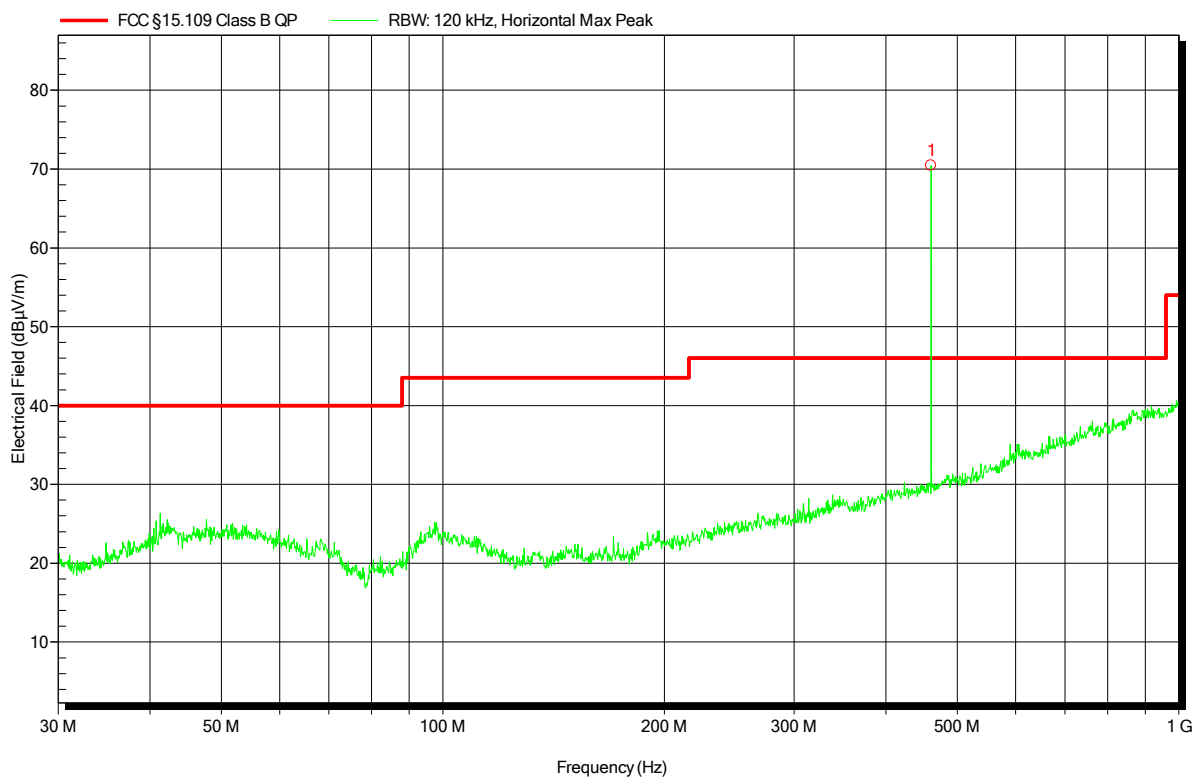
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated emissions according to FCC 15B

Project number: G0M-1801-7152

Applicant: Kamstrup A/S
 EUT Name: Kamstrup READy Collector Top
 Model: Kamstrup READy Collector Top
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Colbasiuc
 Test Conditions: Tnom: 22°C, Unom: 120 VAC/60 Hz
 Antenna: Schwarzbeck VULB 9162, Horizontal
 Measurement distance: 3 m
 Mode: 1
 Test Date: 2018-02-22
 Note:

Index 17



Peak Number	Frequency	Carrier
1	460.66 MHz	

Test Report No.: G0M-1801-7152-EF0115B-V01

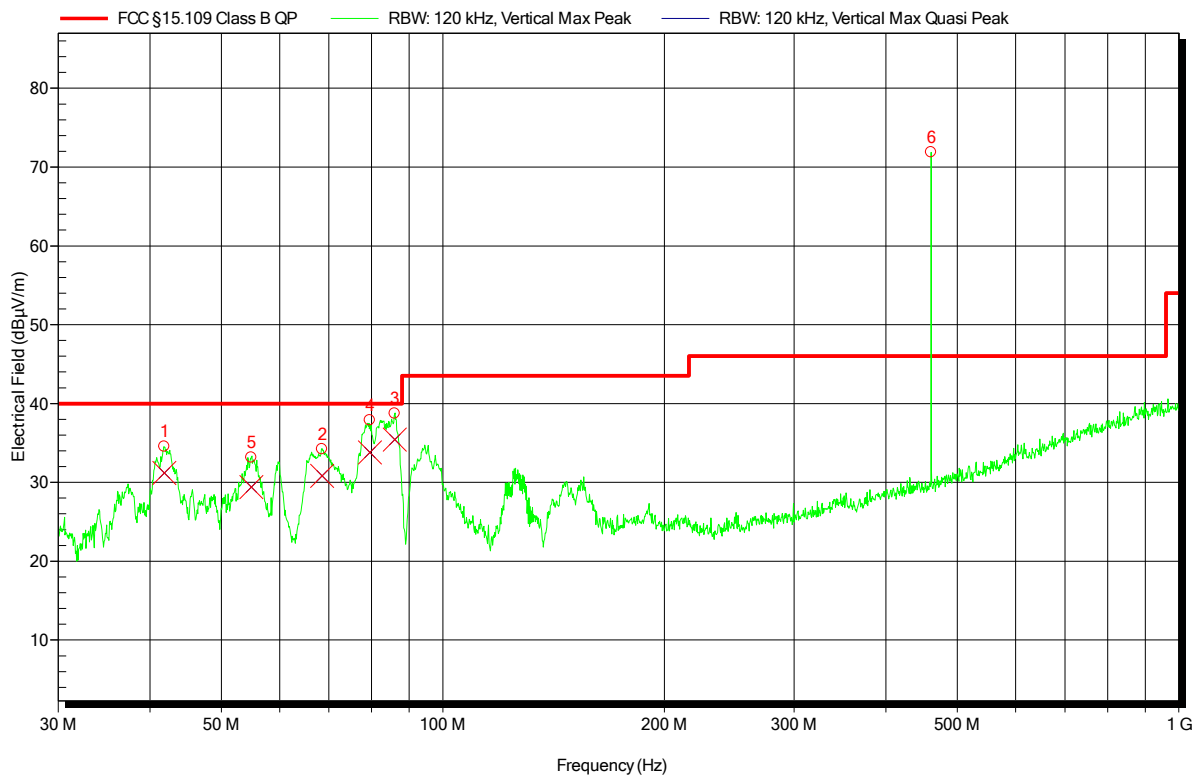
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated emissions according to FCC 15B

Project number: G0M-1801-7152

Applicant: Kamstrup A/S
EUT Name: Kamstrup READy Collector Top
Model: Kamstrup READy Collector Top
Test Site: Eurofins Product Service GmbH
Operator: Mr. Colbasiuc
Test Conditions: Tnom: 22°C, Unom: 120 VAC/60 Hz
Antenna: Schwarzbeck VULB 9162, Vertical
Measurement distance: 3 m
Mode: 2
Test Date: 2018-02-22
Note:

Index 3



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	41.82 MHz	31.2 dBµV/m	40 dBµV/m	-8.8 dB	Pass	0 Degree	1 m
2	68.52 MHz	30.8 dBµV/m	40 dBµV/m	-9.2 dB	Pass	0 Degree	1 m
3	86.04 MHz	35.4 dBµV/m	40 dBµV/m	-4.6 dB	Pass	0 Degree	1 m
4	79.56 MHz	33.8 dBµV/m	40 dBµV/m	-6.2 dB	Pass	0 Degree	1 m
5	54.9 MHz	29.4 dBµV/m	40 dBµV/m	-10.6 dB	Pass	0 Degree	1 m
6	460.66 MHz	Carrier				0 Degree	1 m

Test Report No.: G0M-1801-7152-EF0115B-V01

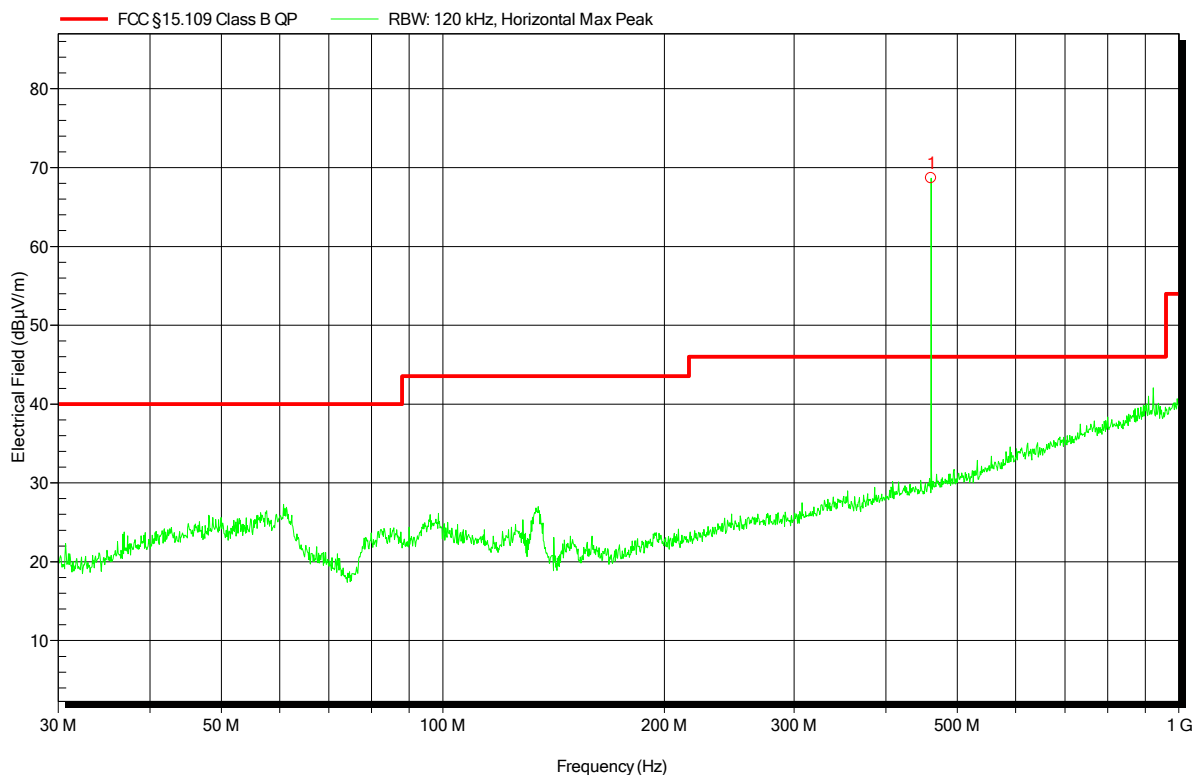
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated emissions according to FCC 15B

Project number: G0M-1801-7152

Applicant: Kamstrup A/S
 EUT Name: Kamstrup READy Collector Top
 Model: Kamstrup READy Collector Top
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Colbasiuc
 Test Conditions: Tnom: 22°C, Unom: 120 VAC/60 Hz
 Antenna: Schwarzbeck VULB 9162, Horizontal
 Measurement distance: 3 m
 Mode: 2
 Test Date: 2018-02-22
 Note:

Index 4



Peak Number	Frequency	Carrier
1	460.66 MHz	

Test Report No.: G0M-1801-7152-EF0115B-V01

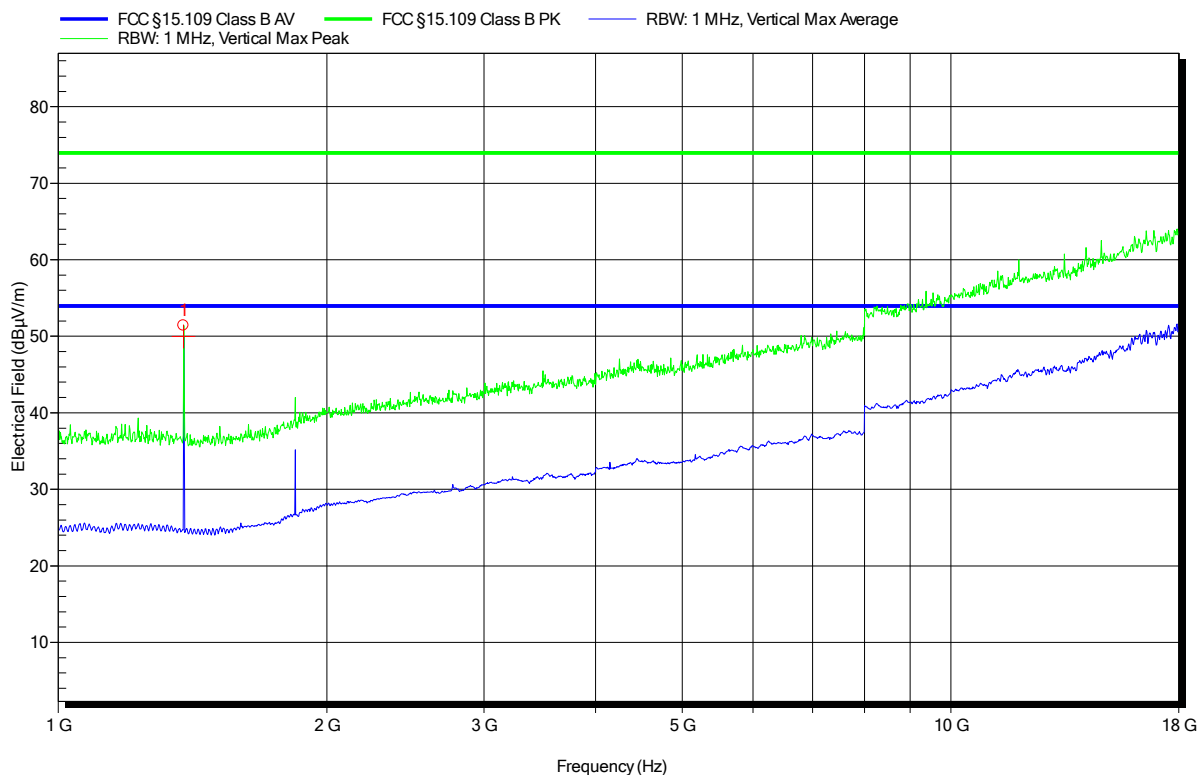
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated emissions according to FCC 15B

Project number: G0M-1801-7152

Applicant: Kamstrup A/S
 EUT Name: Kamstrup READy Collector Top
 Model: Kamstrup READy Collector Top
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Colbasiuc
 Test Conditions: Tnom: 22°C, Unom: 120 VAC/60 Hz
 Antenna: ETS-Lindgren 3117, Vertical
 Measurement distance: 3 m
 Mode: 1
 Test Date: 2018-02-22
 Note:

Index 8



Peak Number	Frequency	
1	1.382 GHz	3rd harmonic from carrier

Test Report No.: G0M-1801-7152-EF0115B-V01

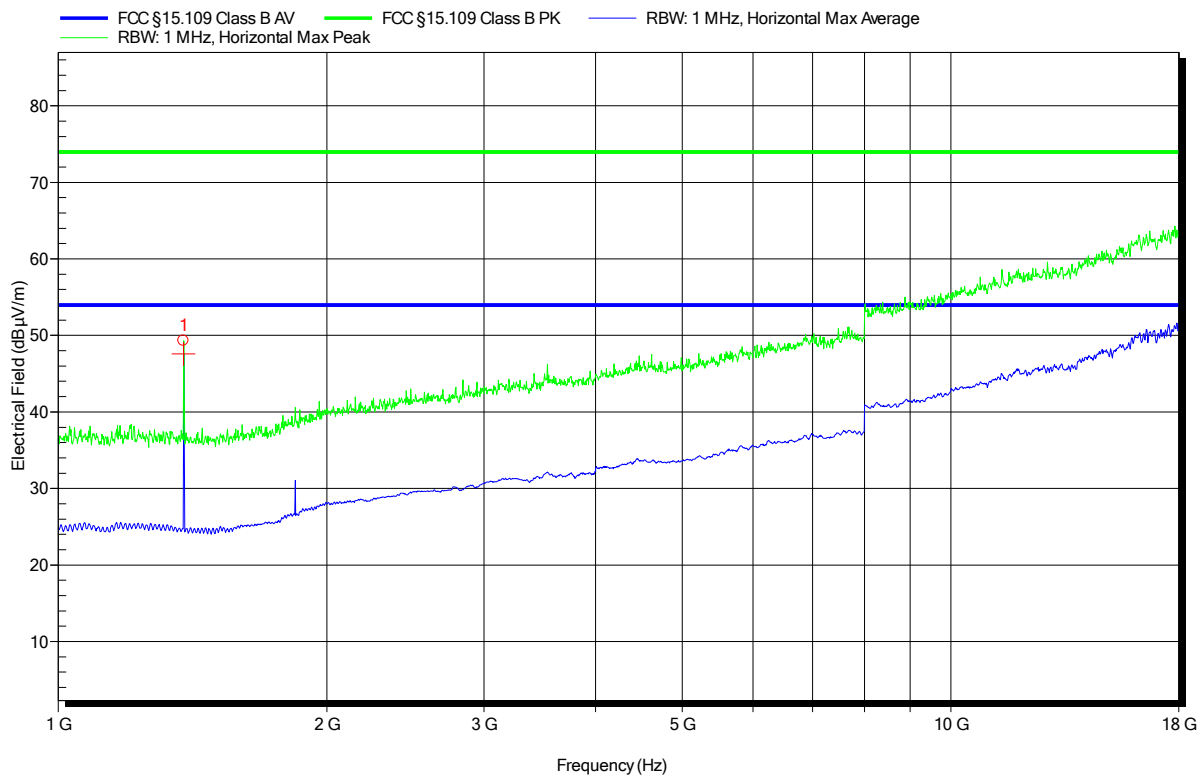
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated emissions according to FCC 15B

Project number: G0M-1801-7152

Applicant: Kamstrup A/S
 EUT Name: Kamstrup READy Collector Top
 Model: Kamstrup READy Collector Top
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Colbasiuc
 Test Conditions: Tnom: 22°C, Unom: 120 VAC/60 Hz
 Antenna: ETS-Lindgren 3117, Horizontal
 Measurement distance: 3 m
 Mode: 1
 Test Date: 2018-02-22
 Note:

Index 9



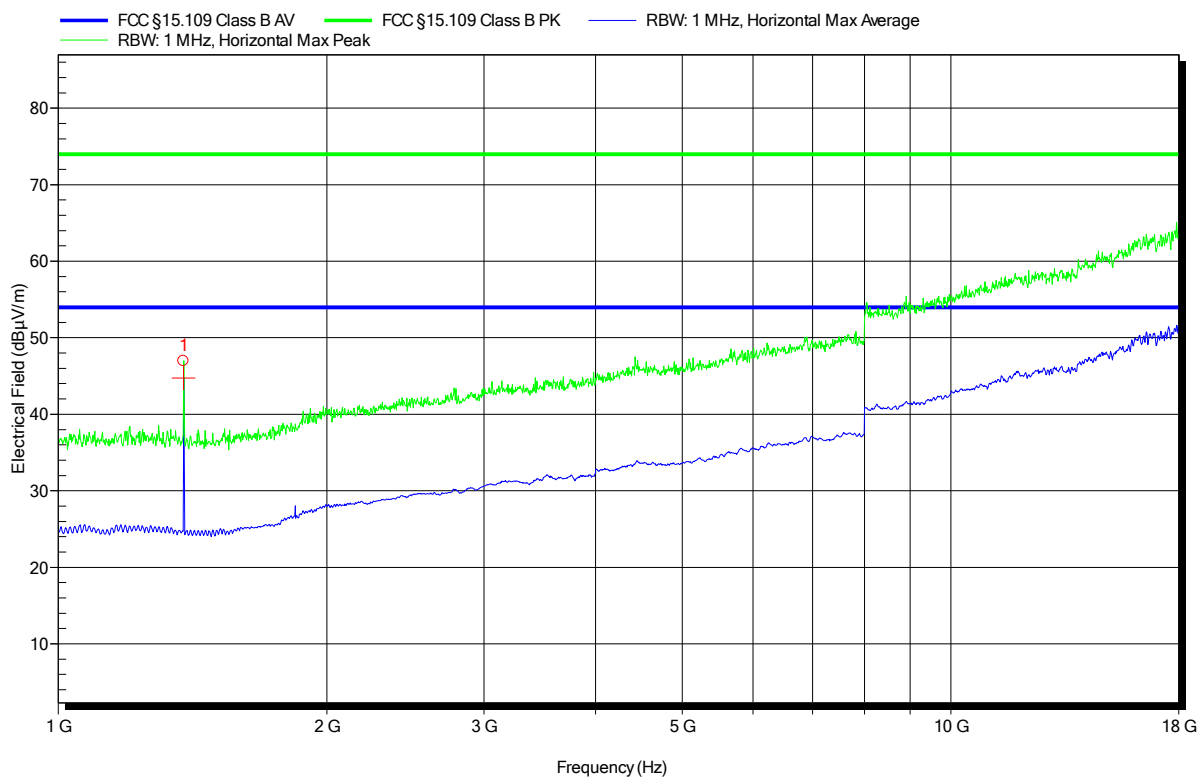
Peak Number	Frequency	Description
1	1.382 GHz	3rd harmonic from carrier

Radiated emissions according to FCC 15B

Project number: G0M-1801-7152

Applicant: Kamstrup A/S
 EUT Name: Kamstrup READy Collector Top
 Model: Kamstrup READy Collector Top
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Colbasiuc
 Test Conditions: Tnom: 22°C, Unom: 120 VAC/60 Hz
 Antenna: ETS-Lindgren 3117, Horizontal
 Measurement distance: 3 m
 Mode: 2
 Test Date: 2018-02-22
 Note:

Index 10



Peak Number	Frequency	Description
1	1.382 GHz	3rd harmonic from carrier

Test Report No.: G0M-1801-7152-EF0115B-V01

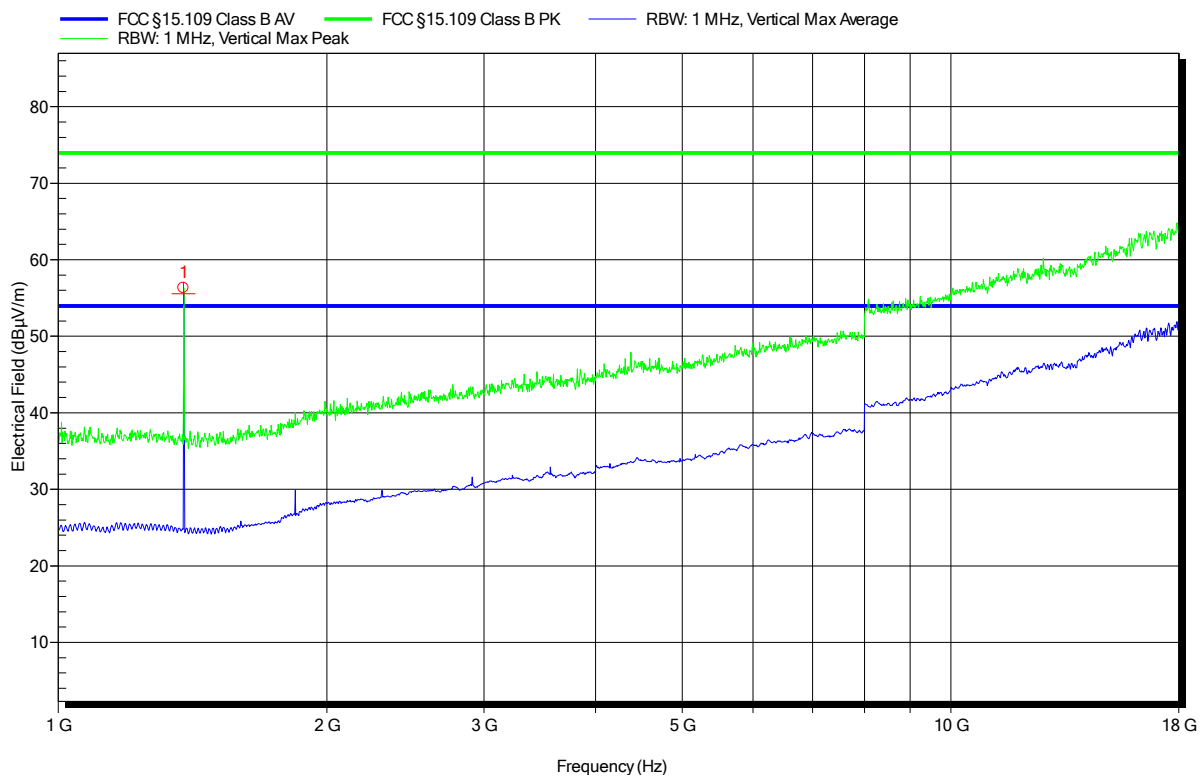
Eurofins Product Service GmbH
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Radiated emissions according to FCC 15B

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 EUT Name: Kamstrup READy Collector Top
 Model: Kamstrup READy Collector Top
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Colbasiuc
 Test Conditions: Tnom: 22°C, Unom: 120 VAC/60 Hz
 Antenna: ETS-Lindgren 3117, Vertical
 Measurement distance: 3 m
 Mode: 2
 Test Date: 2018-02-22
 Note:

Index 16



Peak Number	Frequency	3rd harmonic from carrier
1	1.382 GHz	

Test Report No.: G0M-1801-7152-EF0115B-V01

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

3.2 Test Conditions and Results – AC power line conducted emissions

Conducted emissions acc. FCC 47 CFR 15.107 / ICES-003			Verdict: PASS	
Laboratory Parameters:	Required prior to the test		During the test	
Ambient Temperature	15 to 35 °C		22 °C	
Relative Humidity	30 to 60 %		30 %	
Test according referenced standards	Reference Method			
	ANSI C63.4			
Fully configured sample scanned over the following frequency range	Frequency range			
	0.15 MHz to 30 MHz			
Sample is tested with respect to the requirements of the equipment class	Equipment class			
	Class B			
Points of Application	Application Interface			
AC Mains	LISN			
Operating mode	1 / 2			
Configuration	1 / 2			
Limits and results Class B				
Frequency [MHz]	Quasi-Peak [dBµV]	Result	Average [dBµV]	Result
0.15 to 5	66 to 56*	PASS	56 to 46*	PASS
0.5 to 5	56	PASS	46	PASS
5 to 30	60	PASS	50	PASS
Comments:				
* Limit decreases linearly with the logarithm of the frequency.				

Test Procedure:

The test site is in accordance with ANSI C63-4:2014 requirements and is listed by FCC.
The measurement procedure is as follows:

Exploratory measurement:

- The EUT was placed on a non conductive table 0.8 m above the reference ground plane and 0.4 m away from the vertical conducting plane (ANSI C63.4: 2014 item 7.3.1)
- The power cord that is normally supplied or recommended by the manufacturer was connected to the LISN.
- The distance between the outer edge of the EUT and the LISN shall be set to 0.8 m. A longer power cord shall be bundled to this length (bundling shall not exceed 40 cm in length).
- The LISN measurement port was connected to a measurement receiver
- I/O cables were bundled not longer than 0.4 m
- Measurement was performed in the frequency range 0.15 – 30MHz on each current-carrying conductor
- To maximize the emissions the cable positions were manipulated
- The worst configuration of EUT and cables is shown on a test setup picture at item 1.3

Test Procedure:**Final measurement:**

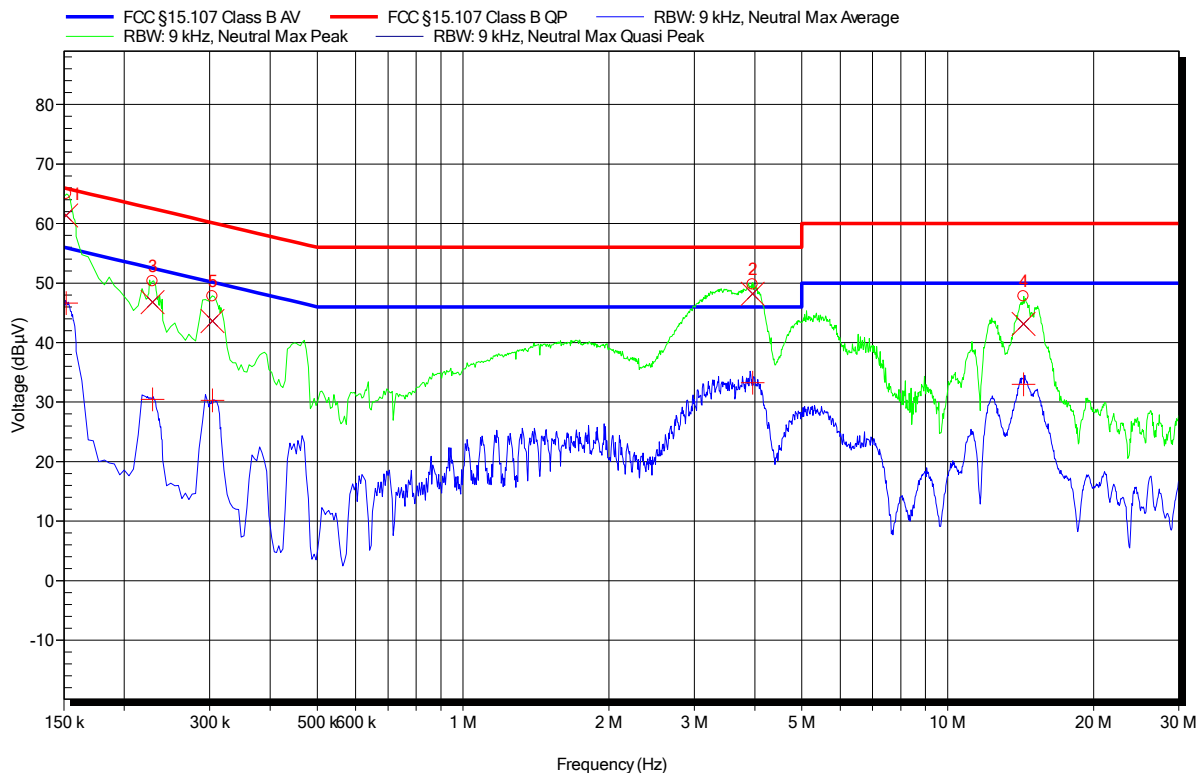
- The EUT was placed on a non conductive table 0.8 m above the reference ground plane and 0.4 m away from the vertical conducting plane (ANSI C63.4: 2014 item 7.3.1)
- The power cord that is normally supplied or recommended by the manufacturer was connected to the LISN.
- The distance between the outer edge of the EUT and the LISN shall be set to 0.8 m. A longer power cord shall be bundled to this length (bundling shall not exceed 40 cm in length).
- The LISN measurement port was connected to a measurement receiver
- The EUT and cable arrangement were based on the exploratory measurement results
- The test data of the worst-case conditions were recorded and shown on the next pages.

Conducted emissions according to FCC 15B

Project number: G0M-1801-7152

Applicant: Kamstrup A/S
EUT Name: Kamstrup READy Collector Top
Model: Kamstrup READy Collector Top
Test Site: Eurofins Product Service GmbH
Operator: Mr. Colbasiuc
Test Conditions: Tnom: 22°C, Unom: 120 VAC/ 60 Hz
LISN: Schwarzbeck NSLK 8128 (N)
Mode: 1
Test Date: 2018-02-23
Note:

Index 18



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
1	151.8 kHz	61.4 dBμV	65.9 dBμV	-4.5 dB	Pass
2	3.962 MHz	48.2 dBμV	56 dBμV	-7.8 dB	Pass
3	228.75 kHz	46.8 dBμV	62.5 dBμV	-15.7 dB	Pass
4	14.343 MHz	43.1 dBμV	60 dBμV	-16.9 dB	Pass
5	303.9 kHz	43.6 dBμV	60.1 dBμV	-16.5 dB	Pass

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status
1	151.8 kHz	46.6 dBμV	55.9 dBμV	-9.3 dB	Pass
2	3.962 MHz	33.2 dBμV	46 dBμV	-12.8 dB	Pass
3	228.75 kHz	30.4 dBμV	52.5 dBμV	-22.0 dB	Pass
4	14.343 MHz	33 dBμV	50 dBμV	-17.0 dB	Pass
5	303.9 kHz	30.3 dBμV	50.1 dBμV	-19.9 dB	Pass

Test Report No.: G0M-1801-7152-EF0115B-V01

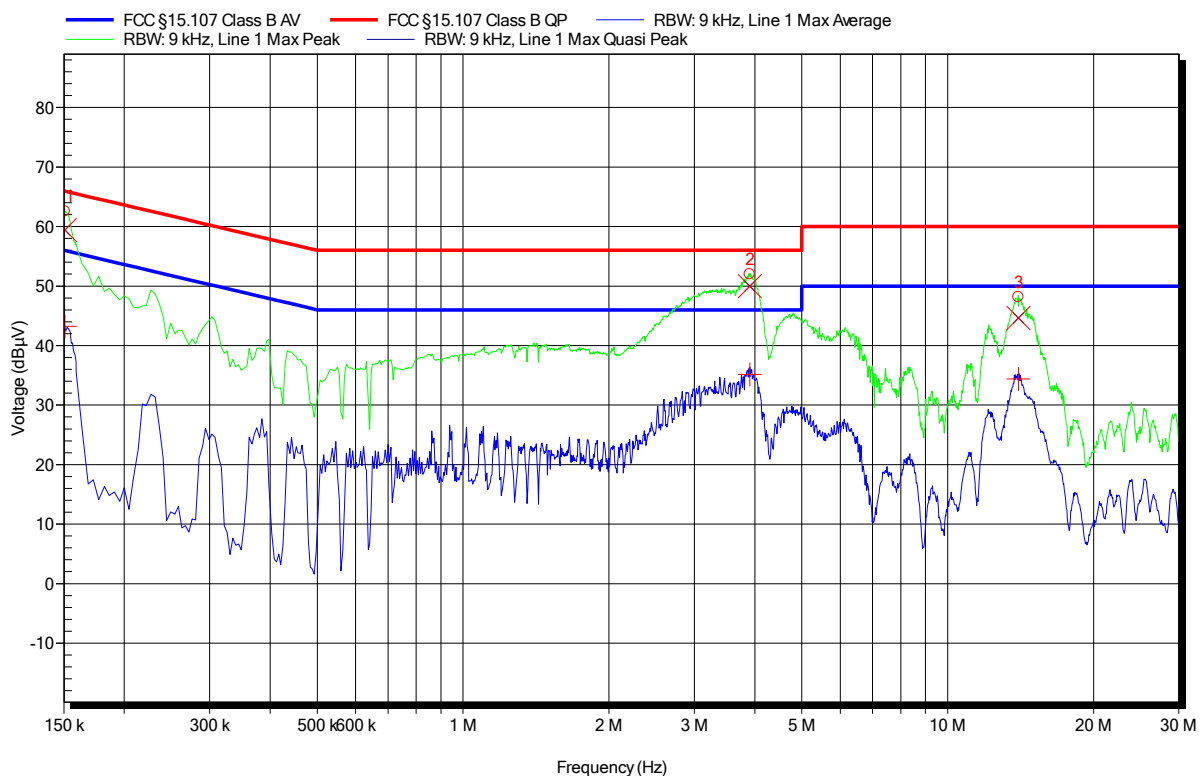
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Conducted emissions according to FCC 15B

Project number: G0M-1801-7152

Applicant: Kamstrup A/S
EUT Name: Kamstrup READy Collector Top
Model: Kamstrup READy Collector Top
Test Site: Eurofins Product Service GmbH
Operator: Mr. Colbasiuc
Test Conditions: Tnom: 22°C, Unom: 120 VAC/ 60 Hz
LISN: Schwarzbeck NSLK 8128 (L)
Mode: 1
Test Date: 2018-02-23
Note:

Index 19



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
1	150.9 kHz	59.4 dBμV	66 dBμV	-6.6 dB	Pass
2	3.908 MHz	50 dBμV	56 dBμV	-6.0 dB	Pass
3	13.988 MHz	44.6 dBμV	60 dBμV	-15.4 dB	Pass

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status
1	150.9 kHz	43.3 dBμV	56 dBμV	-12.7 dB	Pass
2	3.908 MHz	35.1 dBμV	46 dBμV	-10.9 dB	Pass
3	13.988 MHz	34.4 dBμV	50 dBμV	-15.6 dB	Pass

Test Report No.: G0M-1801-7152-EF0115B-V01

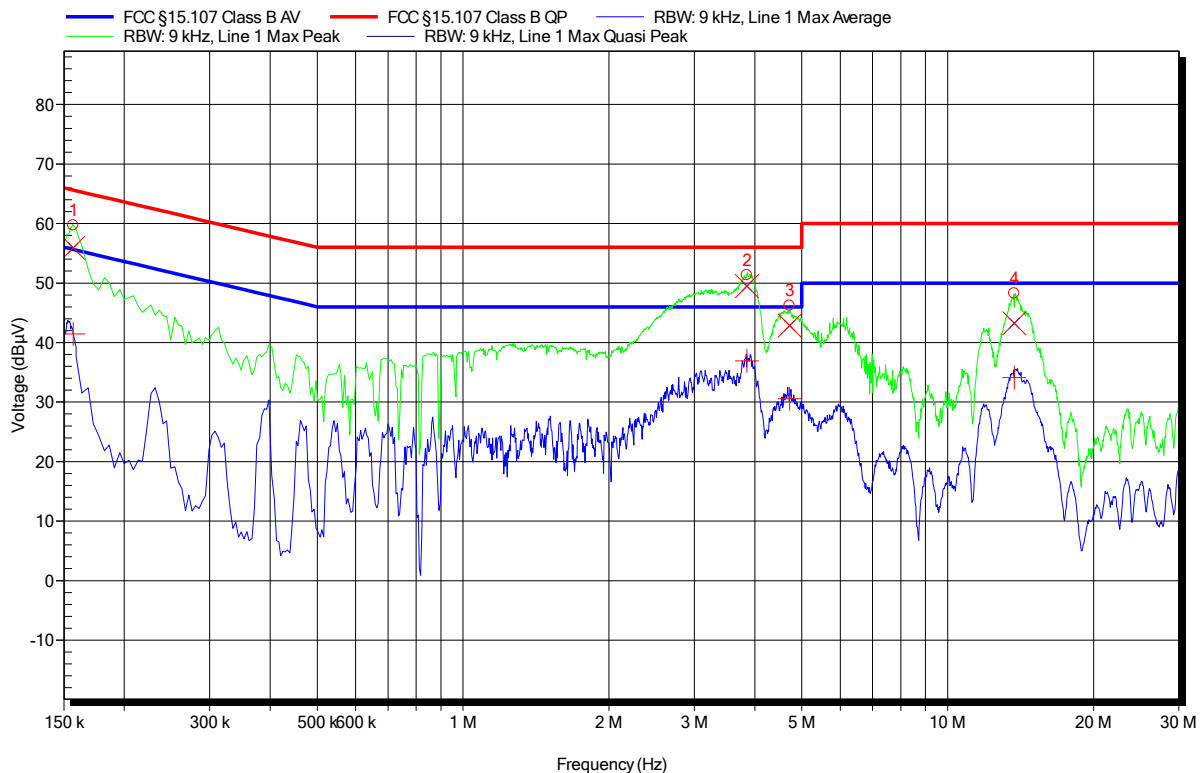
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Conducted emissions according to FCC 15B

Project number: G0M-1801-7152

Applicant: Kamstrup A/S
 EUT Name: Kamstrup READy Collector Top
 Model: Kamstrup READy Collector Top
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Colbasiuc
 Test Conditions: Tnom: 22°C, Unom: 120 VAC/ 60 Hz
 LISN: Schwarzbeck NSLK 8128 (L)
 Mode: 2
 Test Date: 2018-02-23
 Note:

Index 20



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
1	156.75 kHz	55.9 dBμV	65.6 dBμV	-9.7 dB	Pass
2	3.854 MHz	49.5 dBμV	56 dBμV	-6.5 dB	Pass
3	4.718 MHz	42.9 dBμV	56 dBμV	-13.1 dB	Pass
4	13.722 MHz	43.3 dBμV	60 dBμV	-16.7 dB	Pass

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status
1	156.75 kHz	41.5 dBμV	55.6 dBμV	-14.2 dB	Pass
2	3.854 MHz	36.9 dBμV	46 dBμV	-9.1 dB	Pass
3	4.718 MHz	30.5 dBμV	46 dBμV	-15.5 dB	Pass
4	13.722 MHz	34.1 dBμV	50 dBμV	-15.9 dB	Pass

Test Report No.: G0M-1801-7152-EF0115B-V01

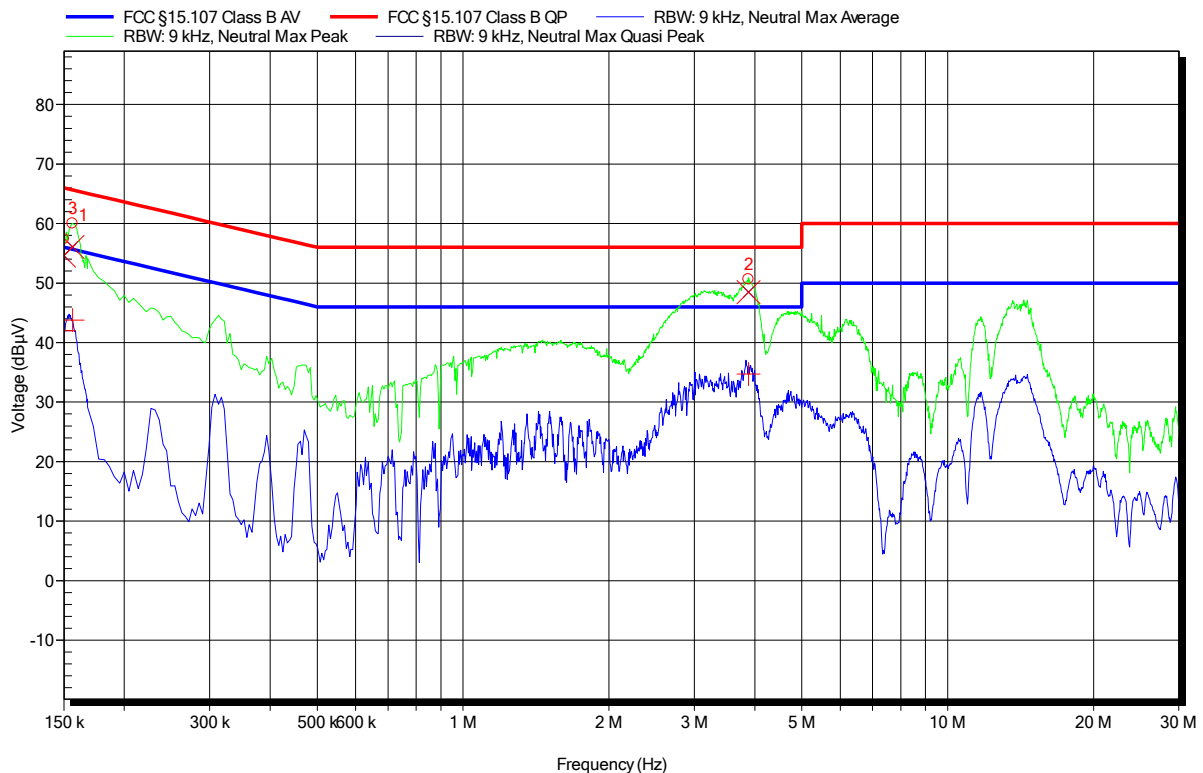
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Conducted emissions according to FCC 15B

Project number: G0M-1801-7152

Applicant: Kamstrup A/S
 EUT Name: Kamstrup READy Collector Top
 Model: Kamstrup READy Collector Top
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Colbasiuc
 Test Conditions: Tnom: 22°C, Unom: 120 VAC/ 60 Hz
 LISN: Schwarzbeck NSLK 8128 (N)
 Mode: 2
 Test Date: 2018-02-23
 Note:

Index 21



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
1	150 kHz	54.6 dBμV	66 dBμV	-11.4 dB	Pass
2	3.881 MHz	48.4 dBμV	56 dBμV	-7.6 dB	Pass
3	156.3 kHz	56.1 dBμV	65.7 dBμV	-9.6 dB	Pass

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status
1	150 kHz	42 dBμV	56 dBμV	-14.0 dB	Pass
2	3.881 MHz	34.7 dBμV	46 dBμV	-11.3 dB	Pass
3	156.3 kHz	43.7 dBμV	55.7 dBμV	-11.9 dB	Pass

Test Report No.: G0M-1801-7152-EF0115B-V01

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