

EMC TEST REPORT FCC 47 CFR Part 15B, ISED ICES-003 Issue 7	
Report Reference No	G0M-2012-9513-EF0115B-V02
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	 A2LA - Registration number: 1983.01 (ISED) ISED wireless device testing laboratory: CN 3470A FCC Filed Test Laboratory, Reg.-No.: 96970
Applicant	Kamstrup A/S
Address	Industrivej 28 8660 Skanderborg DENMARK
Test Specification Standard(s)	47 CFR Part 15 Subpart B ISED ICES-003 Issue 7 ANSI C63.4:2014+A1:2017
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	READy Converter for US/Canada market
Model(s)	READy Converter
Additional Model(s)	None
Brand Name(s)	None
Hardware Version(s)	55501913 B1
Software Version(s)	50981678 B1 / 55142208 A1
FCC-ID	OUY-READYAMR4
IC	22376-READYAMR4
Test Result	PASSED

Possible test case verdicts:		
required by standard but not tested	N/T	
not required by standard	N/R	
required by standard but not appl. to test object	N/A	
test object does meet the requirement	P(PASS)	
test object does not meet the requirement	F(FAIL)	
Testing:		
Date of receipt of test item	2021-01-11	
Report:		
Compiled by	Matthias Handrik	
Tested by (+ signature) (Responsible for Test)	Matthias Handrik	
Approved by (+ signature) (Deputy Head of Lab)	Jens Marquardt	
Date of Issue	2021-05-27	
Total number of pages	47	
General Remarks:		
The test results presented in this report relate only to the object tested. The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.		
Additional Comments:		

ABBREVIATIONS AND ACRONYMS

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

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2021-03-19	Initial Release	-
02	2021-05-27	Replaced document: G0M-2021-9513-EF0115B-V01 Replaced by: G0M-2021-9513-EF0115B-V02 Reason: Corrected FCC ID for Bluetooth radio module.	M.Handrik

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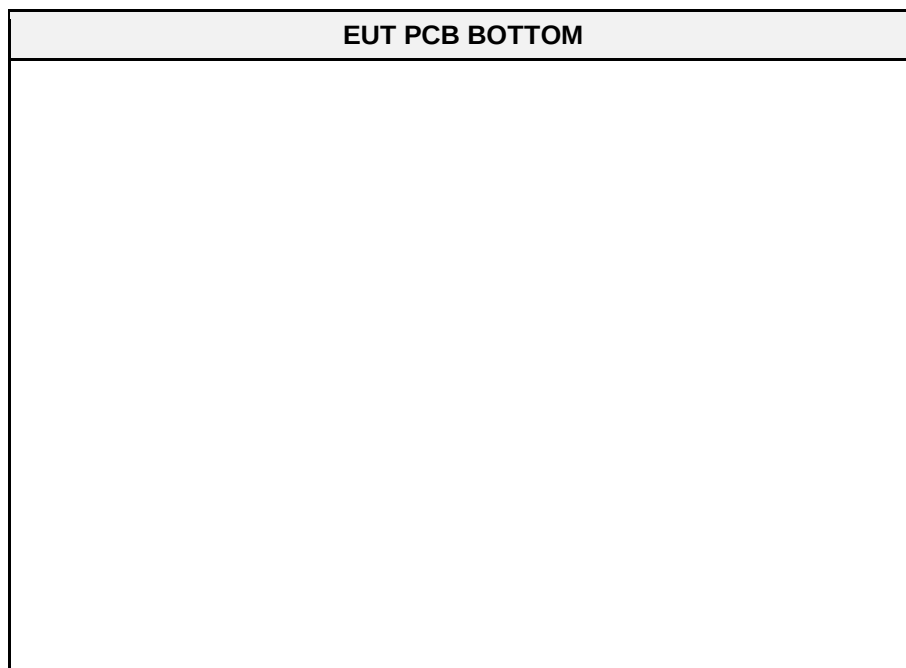
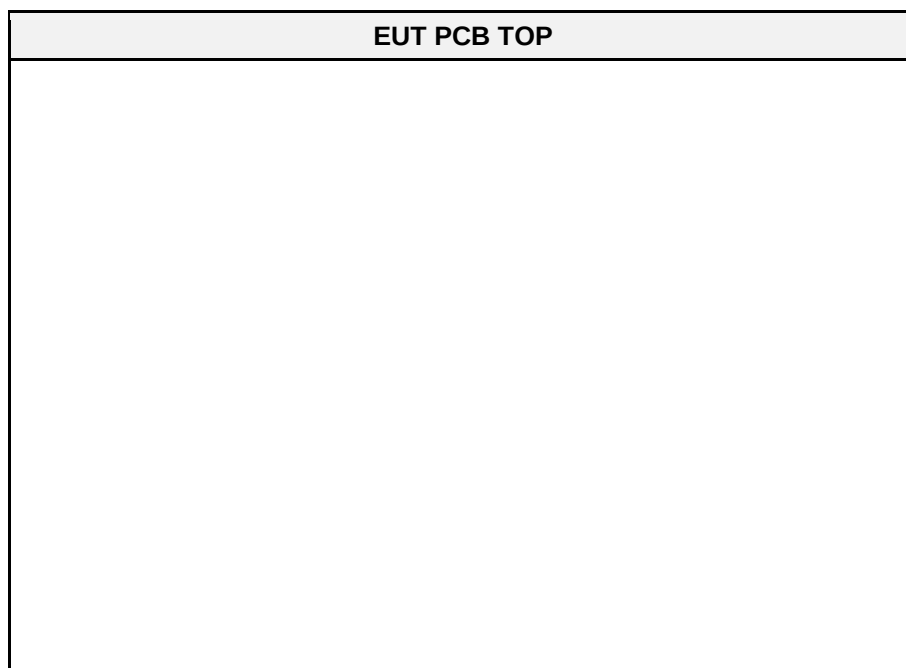
1 Equipment (Test Item) Under Test

Description	READY Converter for US/Canada market	
Model	READY Converter	
Additional Model(s)	None	
Brand Name(s)	None	
Serial Number(s)	12345678	
Hardware Version(s)	55501913 B1	
Software Version(s)	50981678 B1 / 55142208 A1	
EUT Dimensions [cm]	12.0 x 6.5 x 2.4	
FCC-ID	OUI-READYAMR4	
IC	22376-READYAMR4	
Class	Class B	
Equipment type	Table top	
Highest internal frequency [MHz]	3674	
Radio Module I	Type	Bluetooth-module
	Model	PAN10a
	Manufacturer	Panasonic
	FCC-ID	T7VPAN10
	IC	216Q-PAN10
Radio Module II	Type	SRD-module
	Model	Unspecified
	Manufacturer	Unspecified
	FCC-ID	Unspecified
	IC	Unspecified
Supply Voltage	V _{NOM}	3.6 VDC Li-Ion battery
	V _{NOM}	5 VDC via USB AC/DC adaptor
AC/DC-Adaptor	None	
Manufacturer	Kamstrup A/S Industrivej 28 8660 Skanderborg DENMARK	

1.1 Equipment Ports

Name	Type	Attributes	Comment
USB	IO / DC	Count: 1 Direction: IO Max. cable length [m]: 1 Connected to outdoor: No Shielded: Yes Service only: No	USB for power charging
RF connector	IO	Count: 1 Direction: IO Max. cable length [m]: 3 Connected to outdoor: No Shielded: Yes Service only: No	RP SMA
Description:			
AC	AC mains power input/output port		
DC	DC power input/output port		
BAT	DC power input port connected to external battery		
IO	Input/Output port		
TP	Telecommunication port		
NE	Non-electrical port		

1.2 Equipment Photos - Internal



1.3 Equipment Photos - External

EUT + Accessories

EUT TOP

EUT BOTTOM**EUT LEFT**

EUT RIGHT**EUT FRONT**

EUT BACK

AC/DC adaptor label

1.4 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
AE	AC/DC adaptor	ShenZhen Cenwell Technology Co., Ltd	CW0502000RE	-
CBL	USB	Goobay	Kamstrup part number 1652069	Customer support equipment
AE	Antenna	Laird technology/ Nearson	5005001	Customer support equipment
AE	Antenna	Smarteq	6696010	Customer support equipment
AE	Laptop	Lenovo	TinkPad T450	-
AE	Software application	Kamstrup	RDyC DevTool	Customer support equipment
AE	Bluetooth Tester	R&S	CBT	-
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
MON	Monitoring Equipment			
CBL	Connecting Cable			
Comment:				

1.5 Operational Modes

Mode #	Description
1	SDR continuous transmit on 912.5MHz. Bluetooth operates in "RF test mode".
Comment:	

1.6 EUT Configuration

Configuration #	Description
1	RF antenna assembled to EUT. Smarteq antenna was used for the measurement, due to the higher gain and cable length. EUT is set in RF test mode for SRD and Bluetooth, via temporally USB connection to laptop. SRD settings: Channel 1; Tx on Radio 1; PN9 sequence; power 63; Antenna: External. CBT settings: Testmode: Loopback; Hopping; packet type: DH5; pattern: static PRBS9; output power: power up to maximum power.
2	RF antenna assembled to EUT. Lithium battery from EUT is charging by USB-AC/DC adaptor. Smarteq antenna was used for the measurement, due to the higher gain and cable length. EUT is set in RF test mode for SRD and Bluetooth, via temporally USB connection to laptop. SRD settings: Channel 1; Tx on Radio 1; PN9 sequence; power 63; Antenna: External. CBT settings: Testmode: Loopback; Hopping; packet type: DH5; pattern: static PRBS9; output power: power up to maximum power.
Comment:	

1.7 Sample emission level calculation

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

Reading:

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

A.F.:

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

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

Net:

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

Limit:

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

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

Margin:

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

Example only:

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

2 Result Summary

FCC 47 CFR Part 15B, ISED ICES-003 Issue 7				
Reference	Requirement	Reference Method	Result	Remarks
Emission				
FCC 15.109 ICES-003, 3.2.2	Radiated emissions	ANSI C63.4:2014 +A1:2017	PASS	-
FCC 15.107 ICES-003, 3.2.1	AC power line conducted emissions	ANSI C63.4:2014 +A1:2017	PASS	-
Comment:				

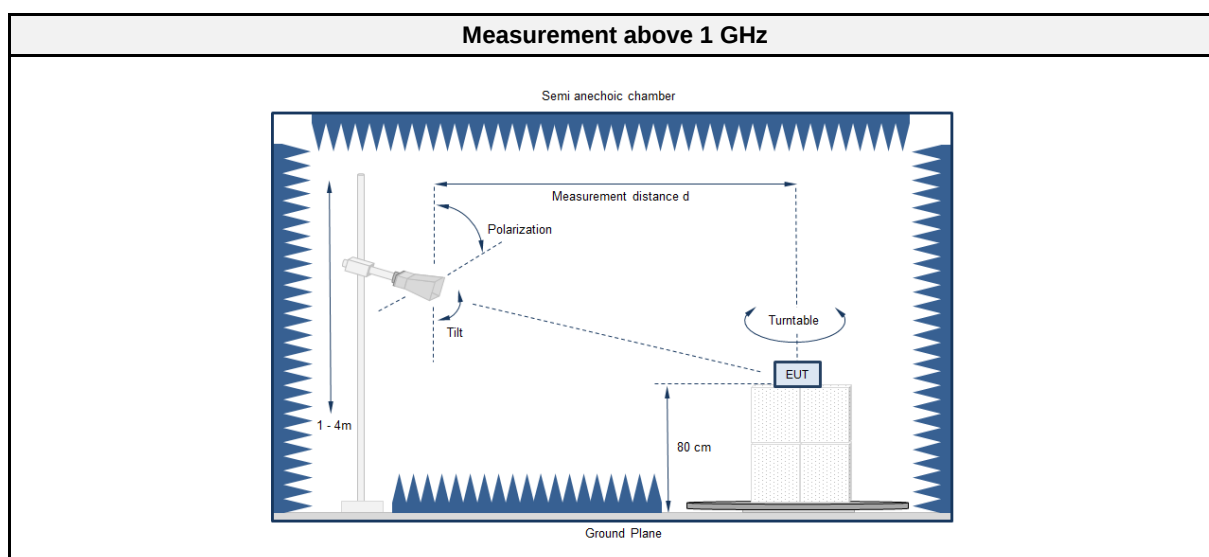
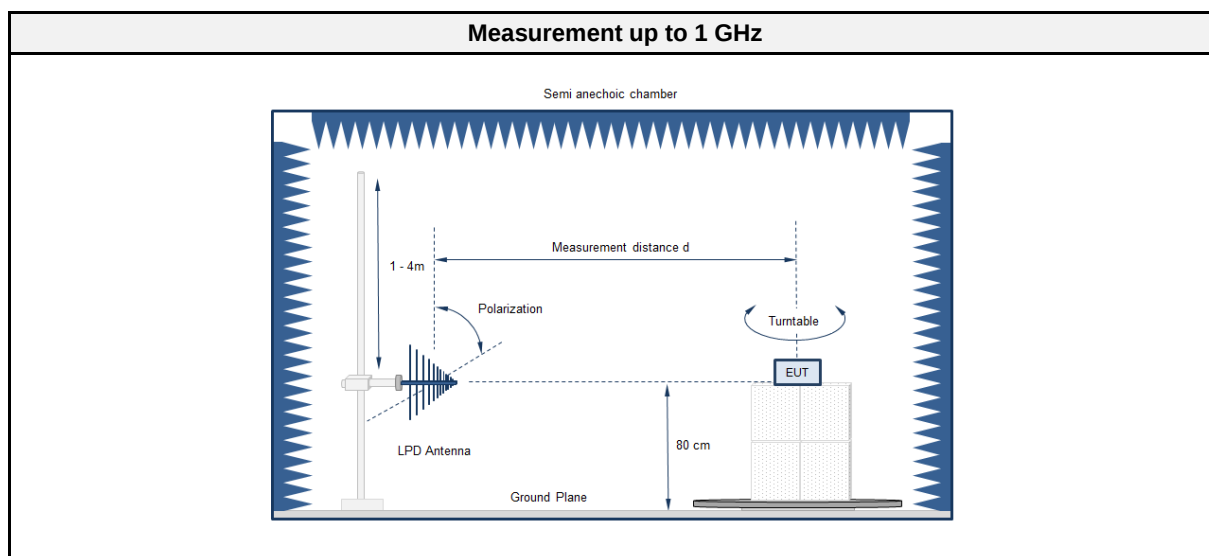
Possible Test Case Verdicts	
PASS	Test object does meet the requirements
FAIL	Test object does not meet the requirements
N/T	Required by standard but not tested
N/R	Not required by standard for the test object

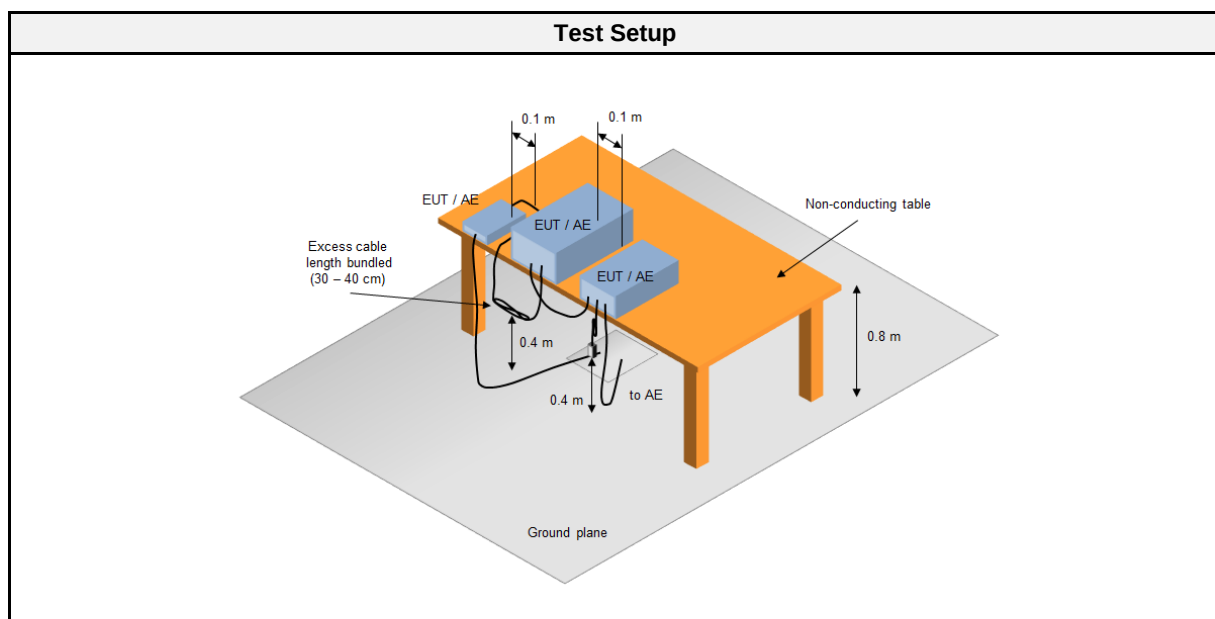
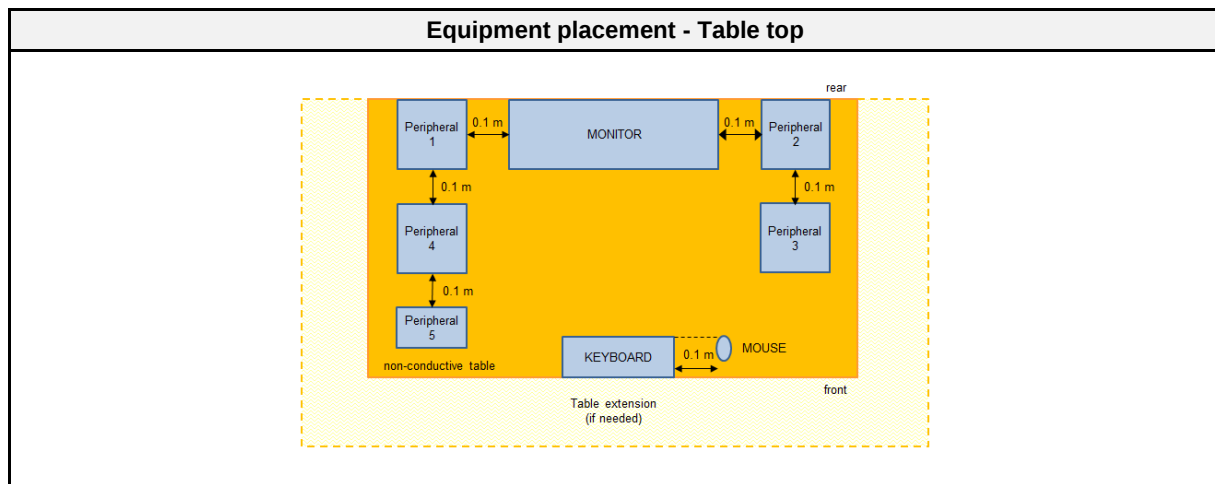
2.1 Test Conditions and Results - Radiated emissions acc. to ANSI C63.4

2.1.1 Information

Test Information	
Reference	FCC 15.109, ICES-003, 3.2.2
Reference method	ANSI C63.4:2014+A1:2017 Section 8
Equipment class	Class B
Equipment type	Table top
Highest internal frequency [MHz]	3674
Measurement range	30 MHz to 20000 MHz
Temperature [°C]	21 ±3
Humidity [%]	25 ±3
Operator	Matthias Handrik
Date	2021-02-16

2.1.2 Setup





2.1.3 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	Radimation	2020.1.8

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic chamber	Frankonia	AC1	EF00062	2018-07	2021-07
EMI Test Receiver	Keysight	N9038A-526/WXP	EF01070	2020-06	2021-06
Biconical Antenna	R&S	HK 116	EF00030	2019-04	2022-04
LPD Antenna	R&S	HL 223	EF00187	2019-05	2022-05
Horn Antenna	Schwarzbeck	BBHA9120D	EF00018	2019-10	2022-10
40GHz High Gain Antenna	Amplifier Research	AT4560	EF00302	2019-05	2021-05
Climatic Sensor	Embedded Data Systems, LLC.	2800100000254 17E	EF01054	2020-03	2021-03

2.1.4 Procedure

Exploratory measurement	
1.	The EUT was placed on a non-conductive table at a height of 0.8m.
2.	The EUT and support equipment, if needed, were set up to simulate typical usage.
3.	Cables, of type and length specified by the manufacturer, were connected to at least one port of each type and were terminated by a device or simulating load of actual usage.
4.	The antenna was placed at a distance of 3 or 10 m.
5.	The received signal was monitored at the measurement receiver.
6.	This procedure has to be performed in both antenna polarizations, horizontal and vertical.
7.	The arrangement of the equipment with the maximum emission level is shown on the setup picture at item 2.1.2

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

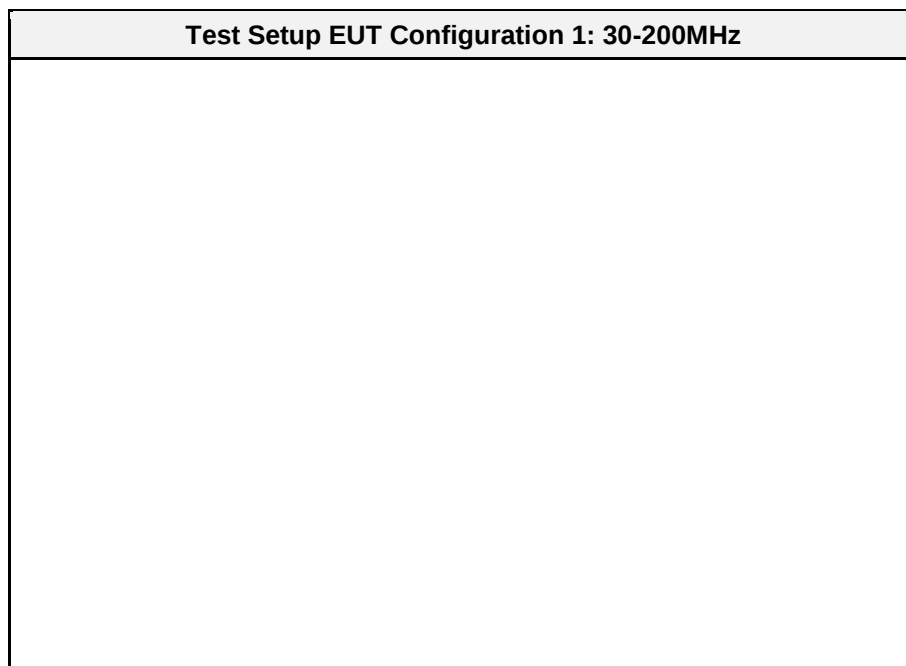
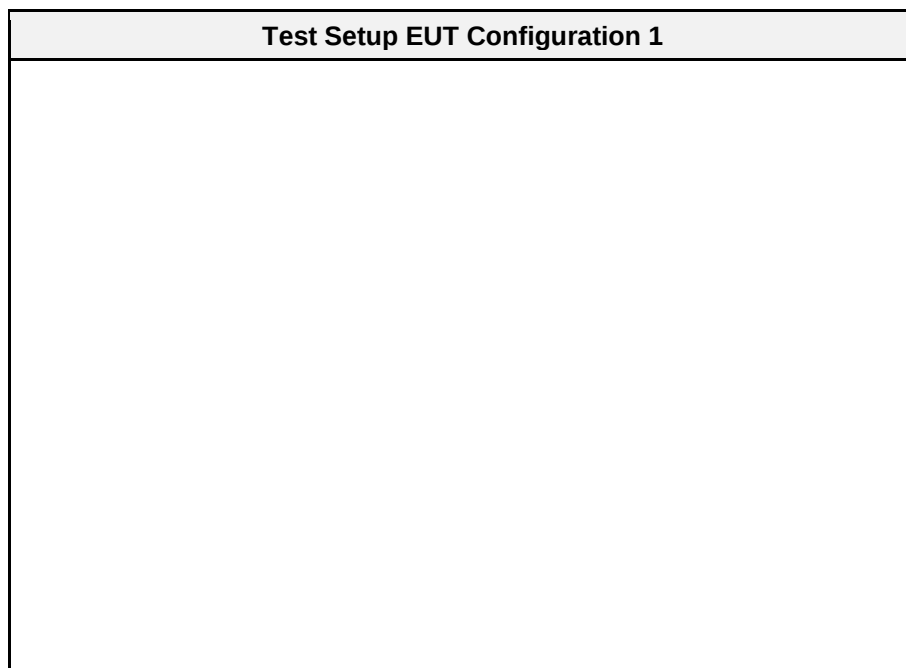
2.1.5 Limits

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

2.1.6 Results

Test Results			
Operational mode	EUT Configuration	Verdict	Remark
1	1	PASS	-
1	2	PASS	-

2.1.7 Setup Photos



Test Setup EUT Configuration 1: 200-1000MHz

Test Setup EUT Configuration 1: 1-17GHz

Test Setup EUT Configuration 1: 17-20GHz

Test Setup EUT Configuration 2

Test Setup EUT Configuration 2: 30-200MHz

Test Setup EUT Configuration 2: 200-1000MHz

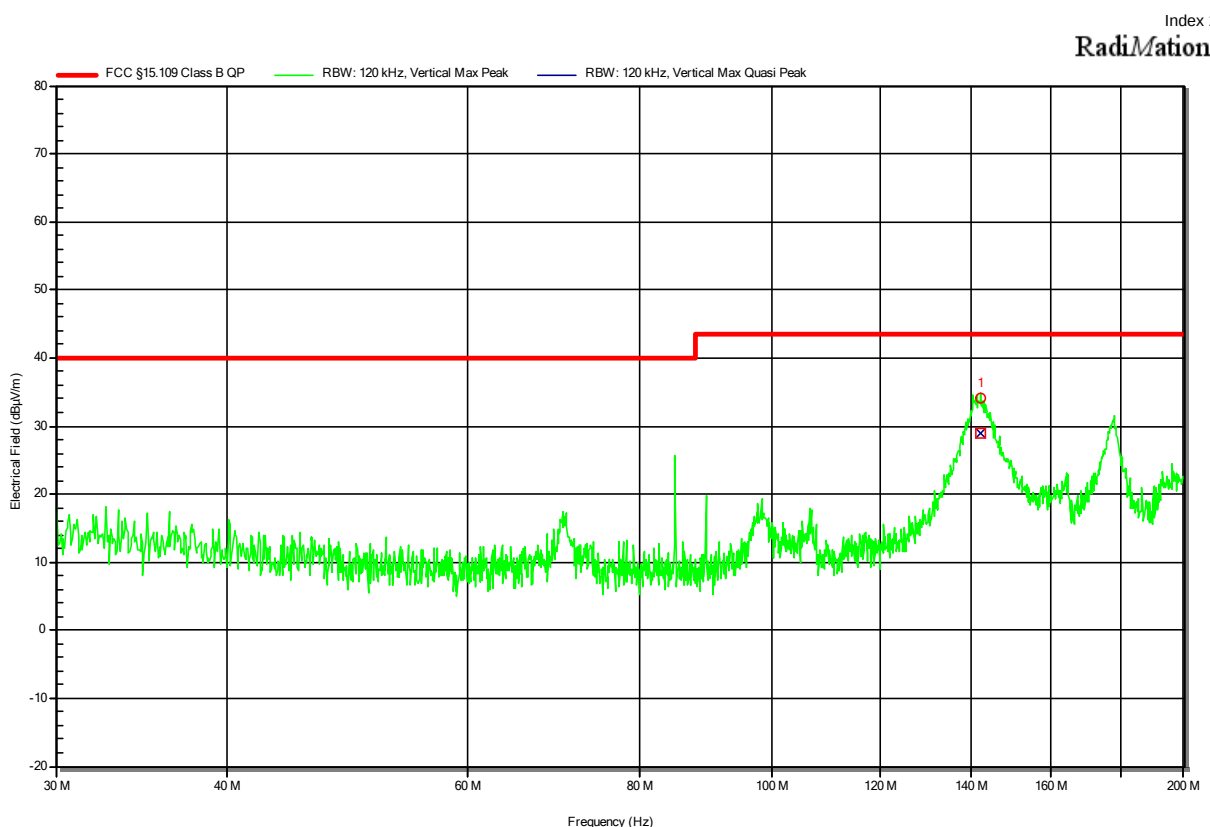
Test Setup EUT Configuration 2: 1-17GHz

Test Setup EUT Configuration 2: 17-20GHz

2.1.8 Records

Radiated emissions according to FCC part 15B

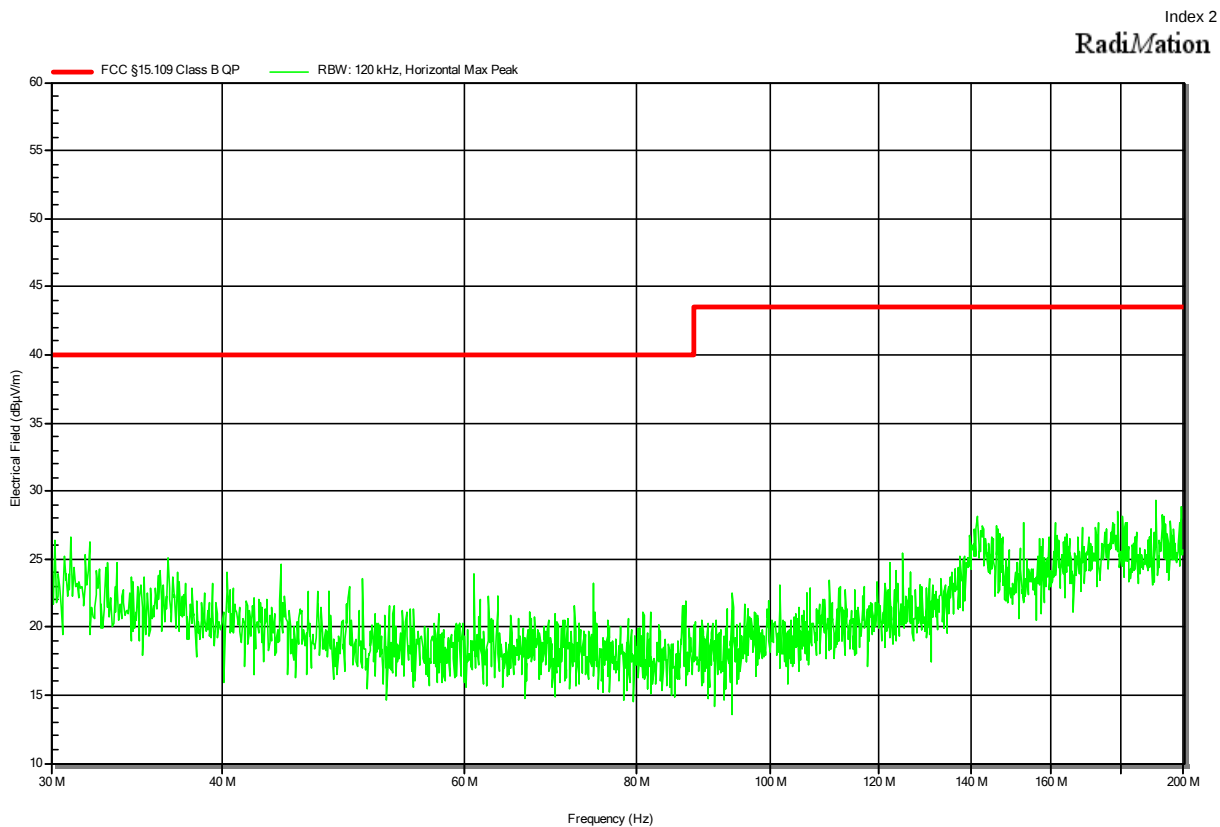
Project Number: G0M-2012-9513
 Applicant: Kamstrup A/S
 Model Description: READy Converter for US/Canada market
 Model: READy Converter
 Test Sample ID: 32714
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Handrik
 Test Date: 2021-02-16
 Operating Conditions: ambient temperature: 21 °Celsius
 power input: 3.6V DC
 Antenna: Rohde & Schwarz HK 116, Vertical
 Measurement Distance: 3m
 Operational Mode & EUT Configuration: Operational mode 1
 EUT configuration 1
 Note 1:



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	142.046 MHz	28.84 dBµV/m	43.52 dBµV/m	-14.68 dB	Pass	-180 degrees	1 m

Radiated emissions according to FCC part 15B

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 Model: READy Converter
 Test Sample ID: 32714
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Handrik
 Test Date: 2021-02-16
 Operating Conditions: ambient temperature: 21 °Celsius
 power input: 3.6V DC
 Antenna: Rohde & Schwarz HK 116, Horizontal
 Measurement Distance: 3m
 Operational Mode & EUT Configuration: Operational mode 1
 EUT configuration 1
 Note 1:

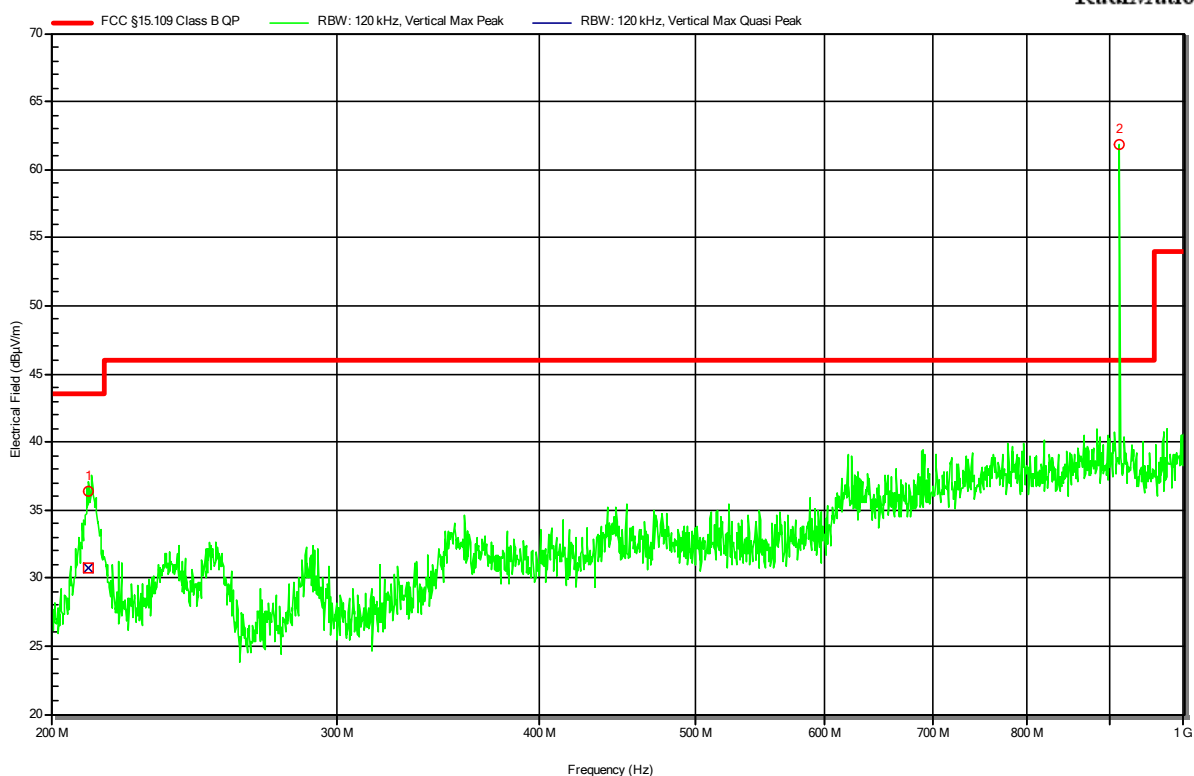


Radiated emissions according to FCC part 15B

Project Number: G0M-2012-9513
Applicant: Kamstrup A/S
Model Description: READy Converter for US/Canada market
Model: READy Converter
Test Sample ID: 32714
Test Site: Eurofins Product Service GmbH
Operator: Mr. Handrik
Test Date: 2021-02-16
Operating Conditions: ambient temperature: 21 °Celsius
power input: 3.6V DC
Antenna: Rohde & Schwarz HL 223, Vertical
Measurement Distance: 3m
Operational Mode & EUT Configuration: Operational mode 1
EUT configuration 1
Note 1:

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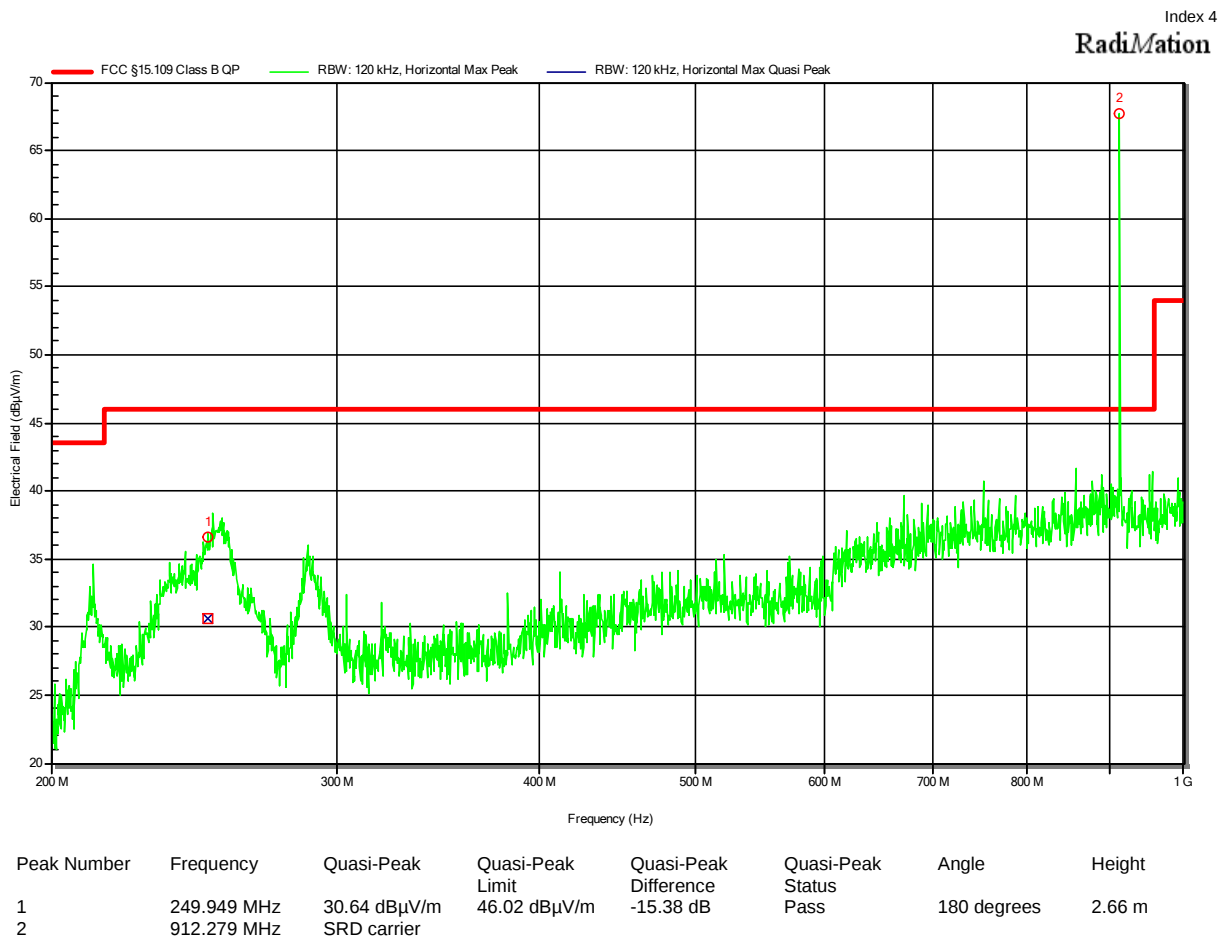
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Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	210.868 MHz	30.78 dBμV/m	43.52 dBμV/m	-12.74 dB	Pass	-15 degrees	1 m
2	912.699 MHz	SRD carrier					

**Radiated emissions
according to FCC part 15B**

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 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Handrik
 Test Date: 2021-02-16
 Operating Conditions: ambient temperature: 21 °Celsius
 power input: 3.6V DC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement Distance: 3m
 Operational Mode & EUT Configuration: Operational mode 1
 EUT configuration 1
 Note 1:

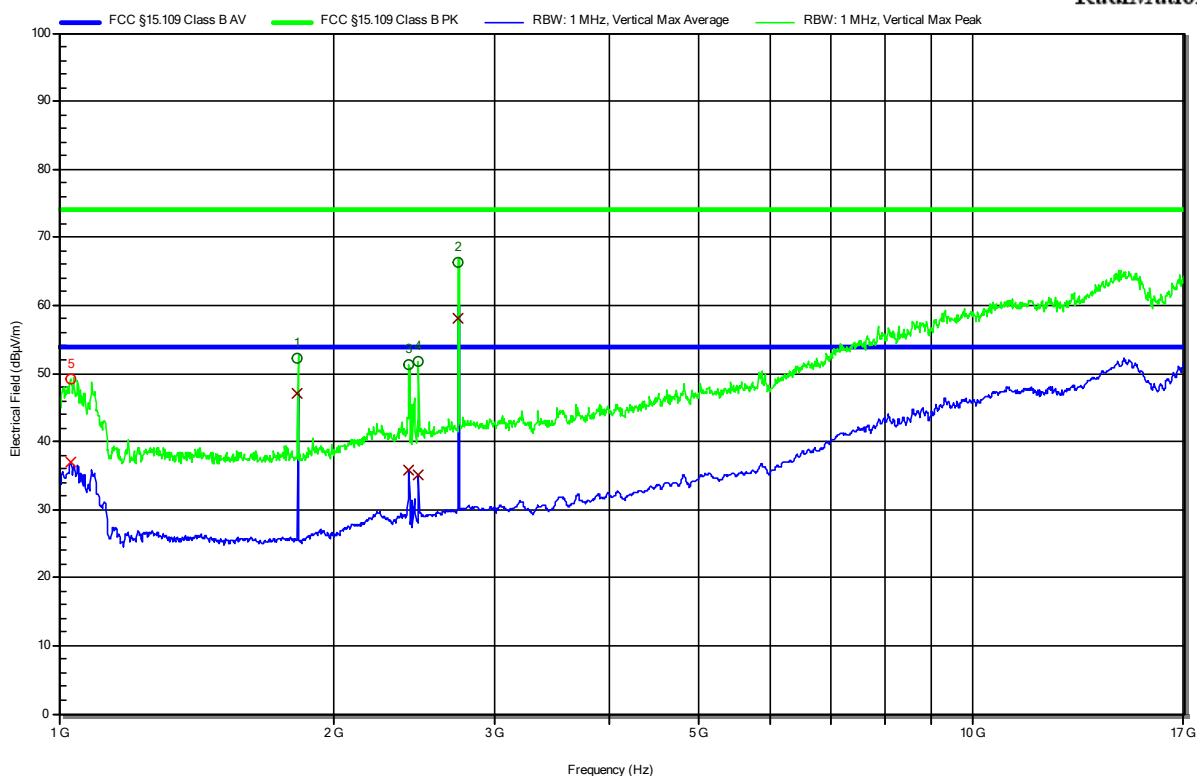


Radiated emissions according to FCC part 15B

Project Number: G0M-2012-9513
Applicant: Kamstrup A/S
Model Description: READy Converter for US/Canada market
Model: READy Converter
Test Sample ID: 32714
Test Site: Eurofins Product Service GmbH
Operator: Mr. Handrik
Test Date: 2021-02-16
Operating Conditions: ambient temperature: 21 °Celsius
power input: 3.6V DC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement Distance: 3m
Operational Mode & EUT Configuration: Operational mode 1
EUT configuration 1
Note 1:

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Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	1.825 GHz	2 nd harmonic of SRD					
2	2.738 GHz	3 rd harmonic of SRD					
3	2.413 GHz	Bluetooth carrier					
4	2.476 GHz						
5	1.029 GHz	49.19 dBμV/m	73.98 dBμV/m	-24.79 dB	Pass	32 degrees	1 m
Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	Angle	Height
1	1.825 GHz	2 nd harmonic of SRD					
2	2.738 GHz	3 rd harmonic of SRD					
3	2.413 GHz	Bluetooth carrier					
4	2.476 GHz						
5	1.029 GHz	36.86 dBμV/m	53.98 dBμV/m	-17.12 dB	Pass	32 degrees	1 m

Test Report No.: G0M-2012-9513-EF0115B-V02

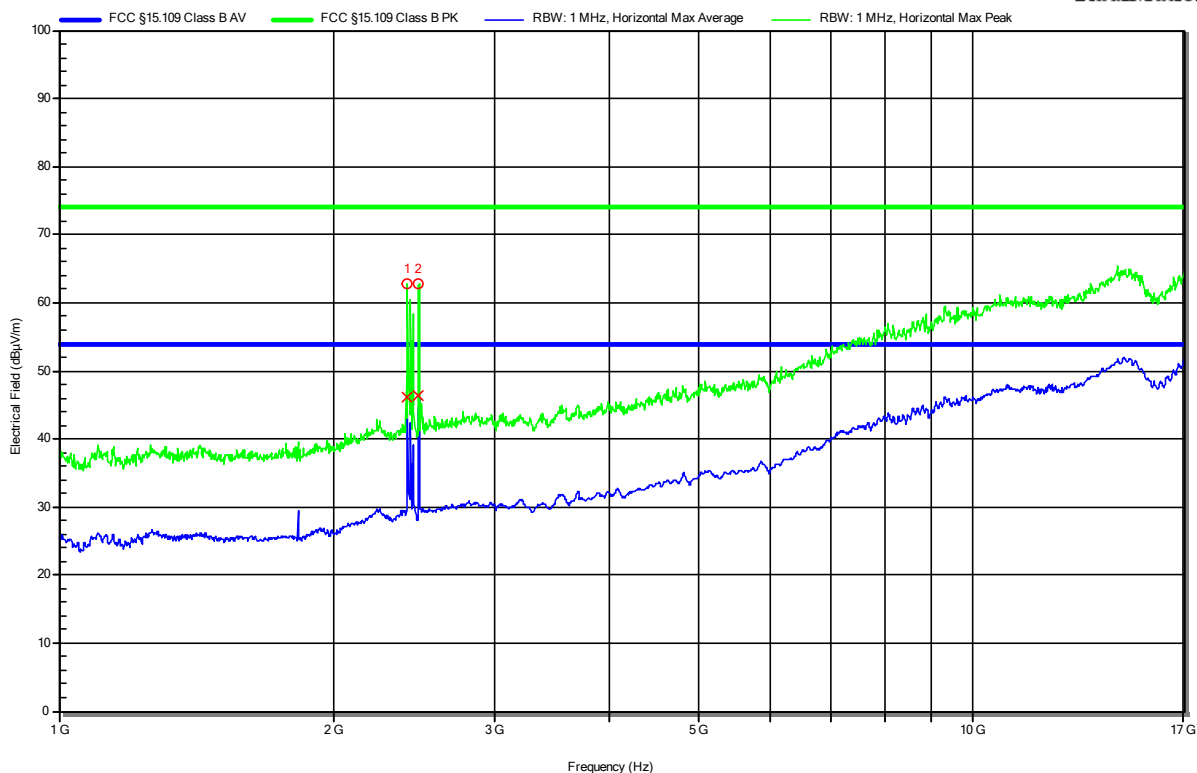
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated emissions according to FCC part 15B

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 Applicant: Kamstrup A/S
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 Model: READy Converter
 Test Sample ID: 32714
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Handrik
 Test Date: 2021-02-16
 Operating Conditions: ambient temperature: 21 °Celsius
 power input: 3.6V DC
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement Distance: 3m
 Operational Mode & EUT Configuration: Operational mode 1
 EUT configuration 1
 Note 1:

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RadiMation



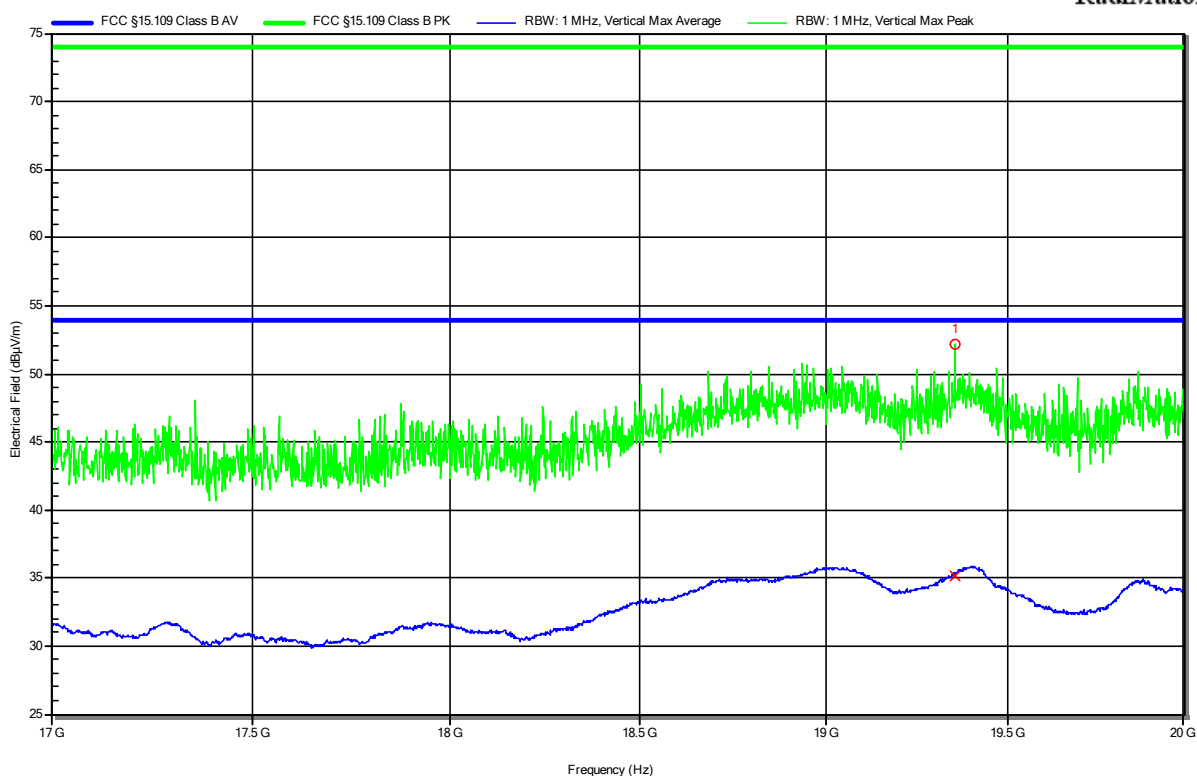
Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	2.404 GHz	Bluetooth carrier					
2	2.476 GHz						

Radiated emissions according to FCC part 15B

Project Number: G0M-2012-9513
Applicant: Kamstrup A/S
Model Description: READy Converter for US/Canada market
Model: READy Converter
Test Sample ID: 32714
Test Site: Eurofins Product Service GmbH
Operator: Mr. Handrik
Test Date: 2021-02-16
Operating Conditions: ambient temperature: 21 °Celsius
power input: 3.6V DC
Antenna: AT4560, Vertical
Measurement Distance: 3m
Operational Mode & EUT Configuration: Operational mode 1
EUT configuration 1
Note 1:

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RadiMation



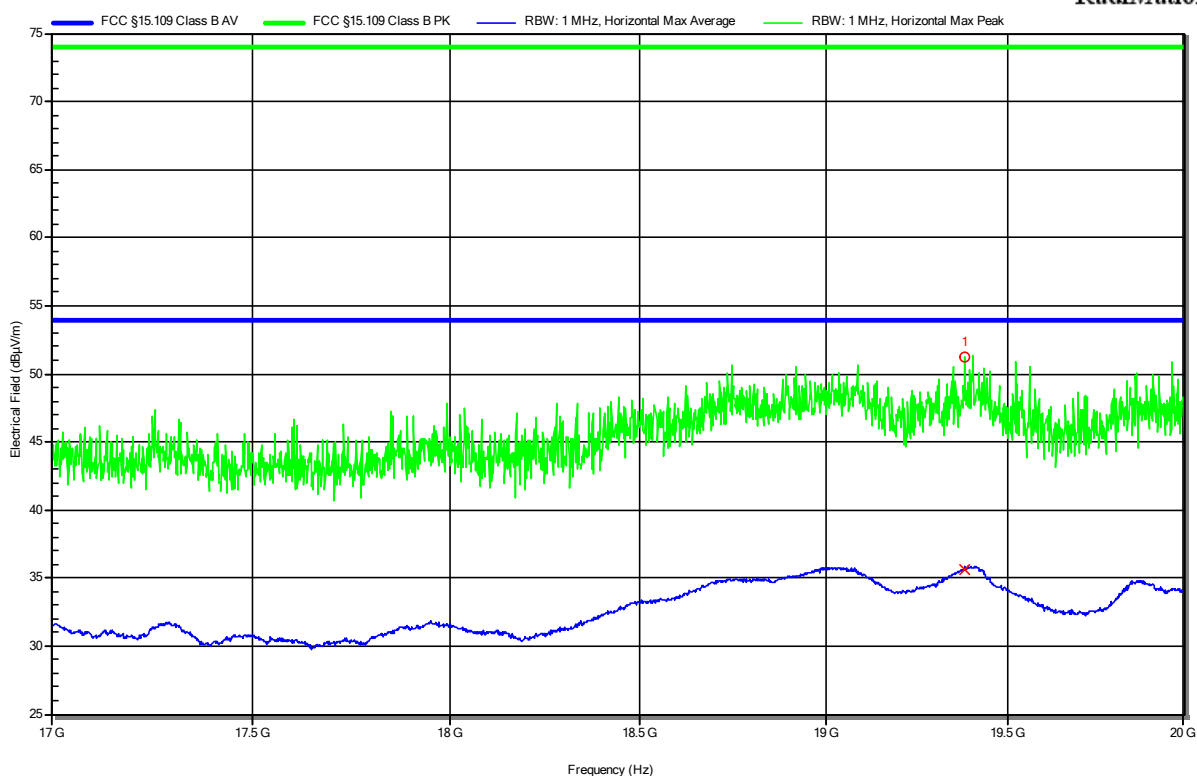
Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	19.355 GHz	52.15 dBµV/m	73.98 dBµV/m	-21.83	Pass	0 degrees	1 m
Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	Angle	Height
1	19.355 GHz	35.2 dBµV/m	53.98 dBµV/m	-18.78 dB	Pass	0 degrees	1 m

Radiated emissions according to FCC part 15B

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power input: 3.6V DC
Antenna: AT4560, Horizontal
Measurement Distance: 3m
Operational Mode & EUT Configuration: Operational mode 1
EUT configuration 1
Note 1:

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RadiMation



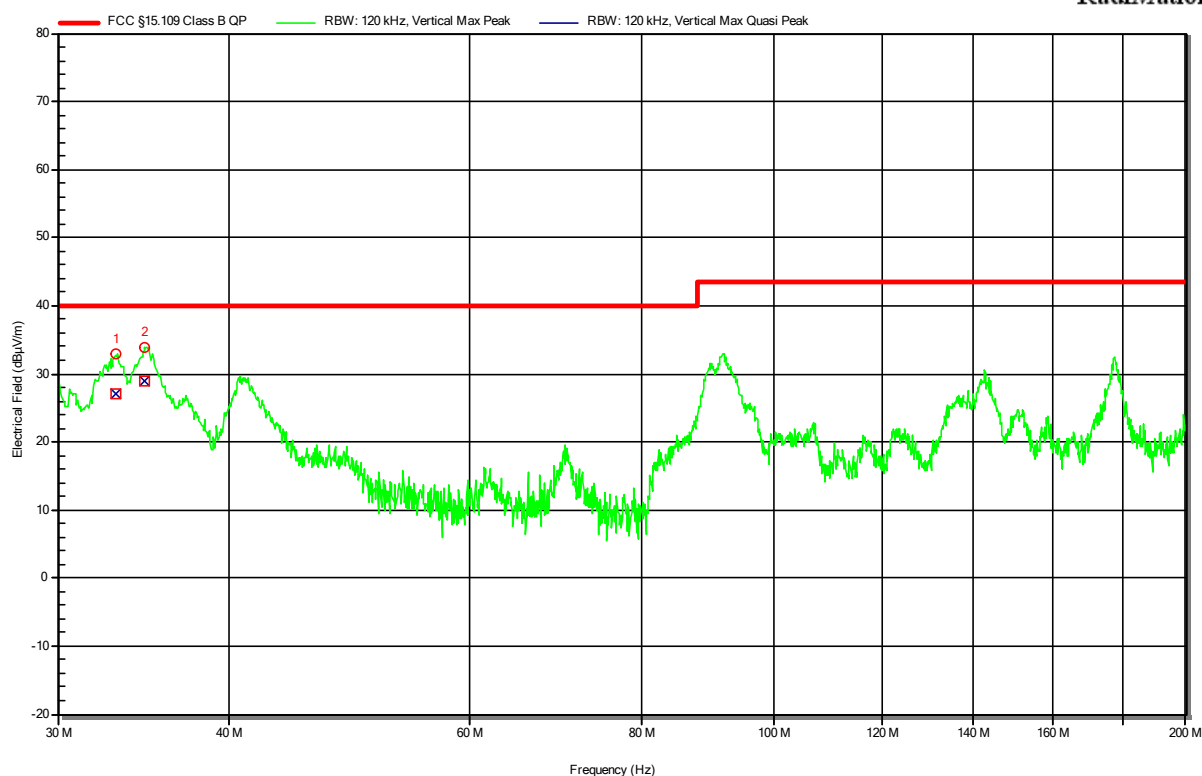
Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	19.381 GHz	51.22 dBµV/m	73.98 dBµV/m	-22.76	Pass	0 degrees	1 m
Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	Angle	Height
1	19.381 GHz	35.62 dBµV/m	53.98 dBµV/m	-18.36 dB	Pass	0 degrees	1 m

Radiated emissions according to FCC part 15B

Project Number: G0M-2012-9513
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 Model Description: READy Converter for US/Canada market
 Model: READy Converter
 Test Sample ID: 32714
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Handrik
 Test Date: 2021-02-16
 Operating Conditions: ambient temperature: 21 °Celsius
 power input: 120V AC / 60Hz
 Antenna: Rohde & Schwarz HK 116, Vertical
 Measurement Distance: 3m
 Operational Mode & EUT Configuration: Operational mode 1
 EUT configuration 2
 Note 1:

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RadiMation



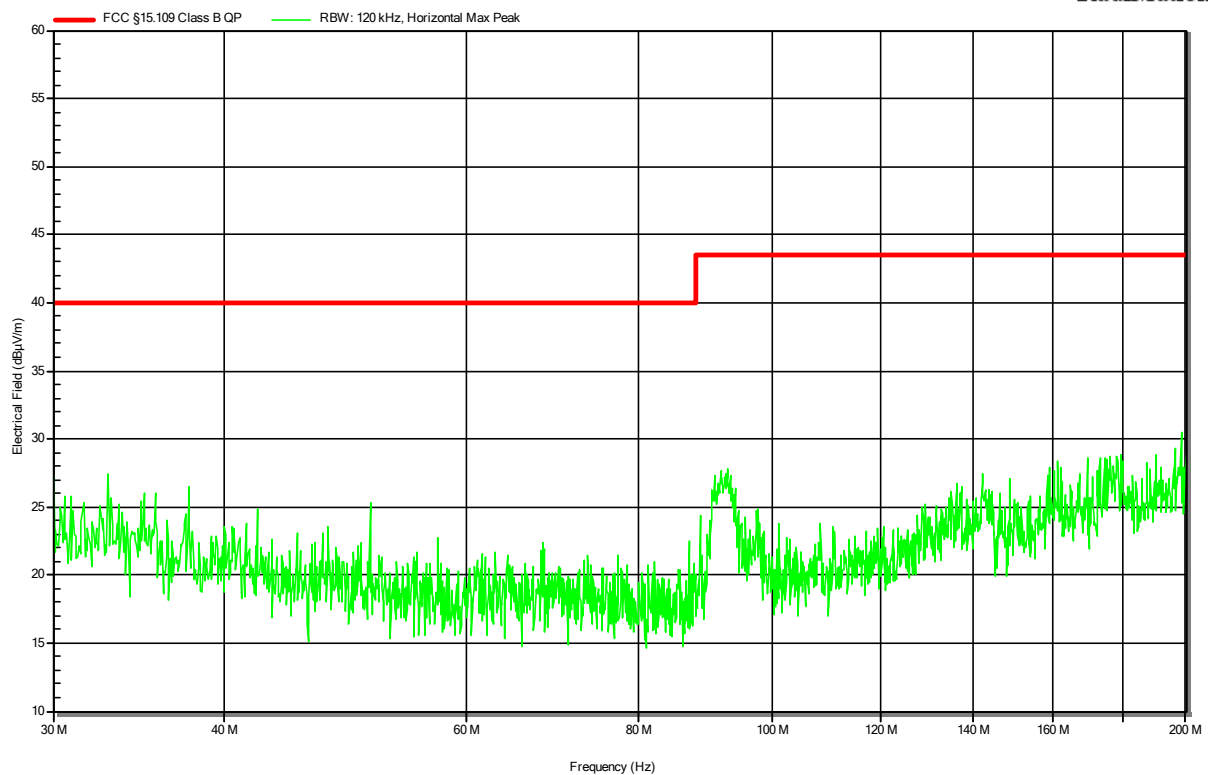
Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	33.063 MHz	27 dBμV/m	40 dBμV/m	-13 dB	Pass	150 degrees	1 m
2	34.744 MHz	29.06 dBμV/m	40 dBμV/m	-10.94 dB	Pass	150 degrees	1 m

Radiated emissions according to FCC part 15B

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 Model Description: READy Converter for US/Canada market
 Model: READy Converter
 Test Sample ID: 32714
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Handrik
 Test Date: 2021-02-16
 Operating Conditions: ambient temperature: 21 °Celsius
 power input: 120V AC / 60Hz
 Antenna: Rohde & Schwarz HK 116, Horizontal
 Measurement Distance: 3m
 Operational Mode & EUT Configuration: Operational mode 1
 EUT configuration 2
 Note 1:

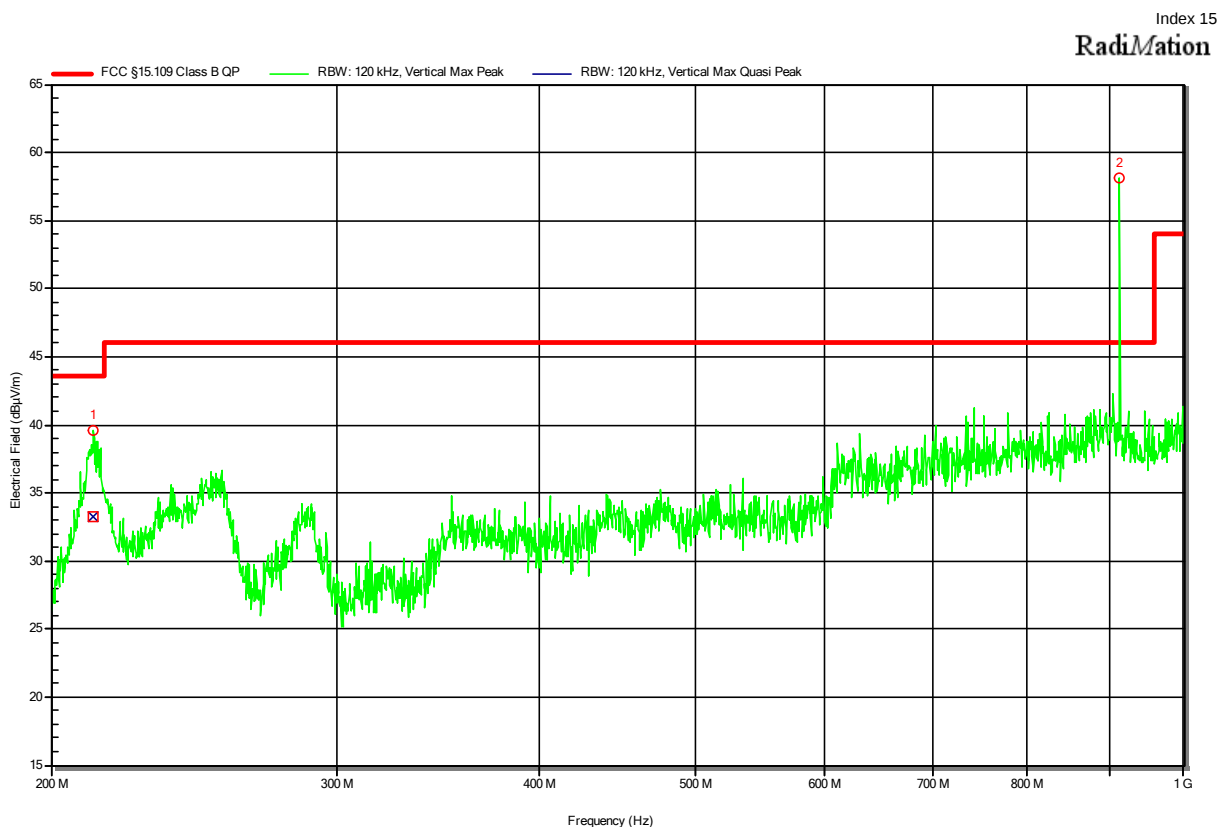
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RadiMation



Radiated emissions according to FCC part 15B

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Model: READy Converter
Test Sample ID: 32714
Test Site: Eurofins Product Service GmbH
Operator: Mr. Handrik
Test Date: 2021-02-16
Operating Conditions: ambient temperature: 21 °Celsius
power input: 120V AC / 60Hz
Antenna: Rohde & Schwarz HL 223, Vertical
Measurement Distance: 3m
Operational Mode & EUT Configuration: Operational mode 1
EUT configuration 2
Note 1:



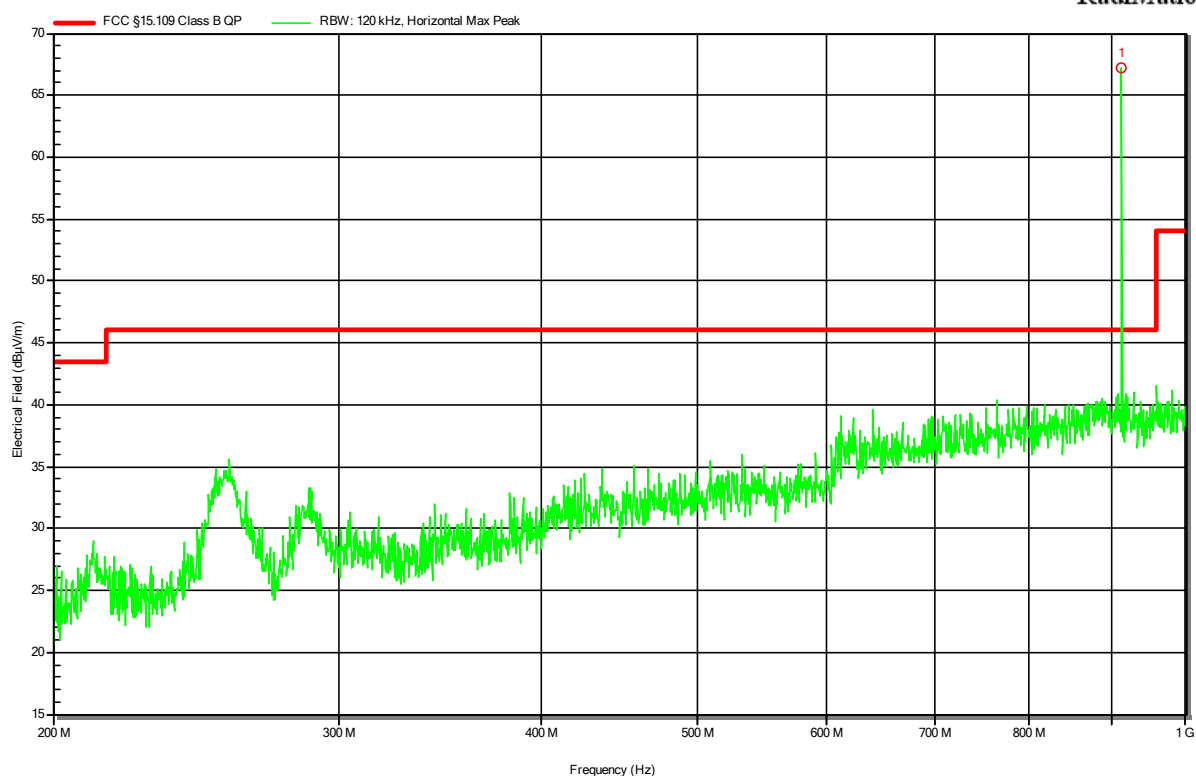
Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	212.381 MHz	33.21 dBµV/m	43.52 dBµV/m	-10.32 dB	Pass	-21 degrees	1 m
2	912.699 MHz	SRD carrier					

Radiated emissions according to FCC part 15B

Project Number: G0M-2012-9513
Applicant: Kamstrup A/S
Model Description: READy Converter for US/Canada market
Model: READy Converter
Test Sample ID: 32714
Test Site: Eurofins Product Service GmbH
Operator: Mr. Handrik
Test Date: 2021-02-16
Operating Conditions: ambient temperature: 21 °Celsius
power input: 120V AC / 60Hz
Antenna: Rohde & Schwarz HL 223, Horizontal
Measurement Distance: 3m
Operational Mode & EUT Configuration: Operational mode 1
EUT configuration 2
Note 1:

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RadiMation



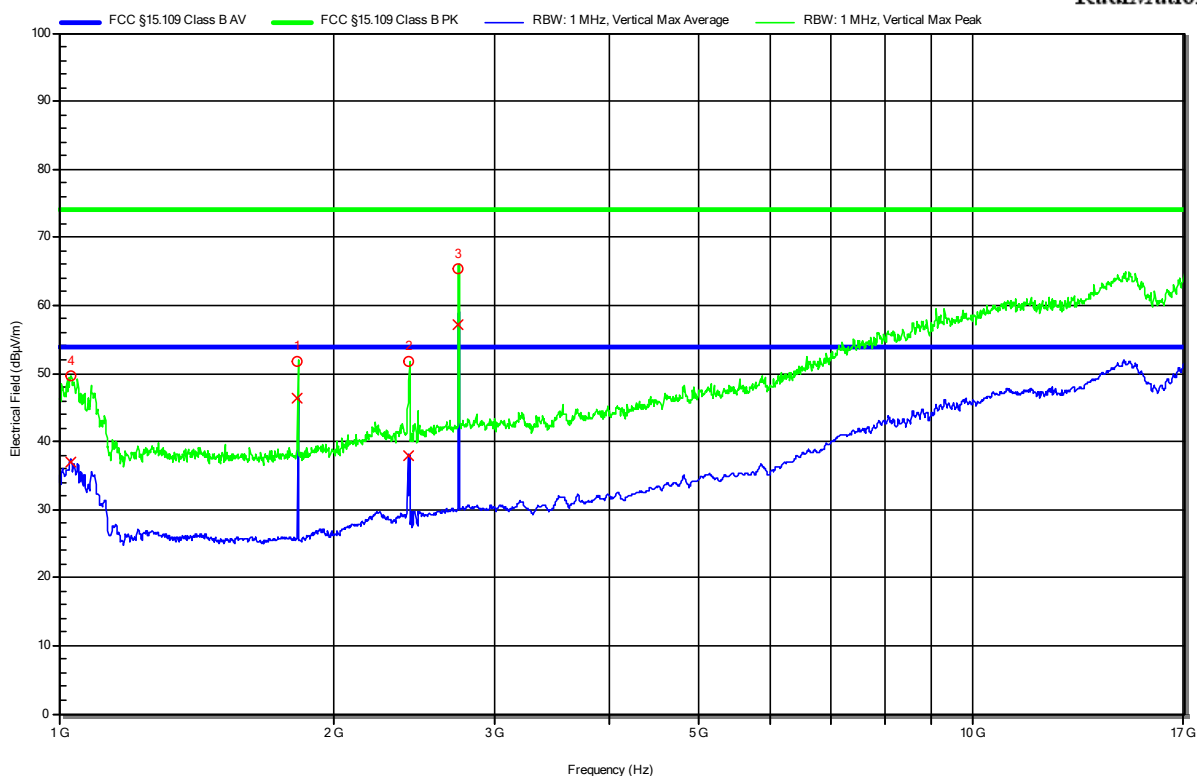
Peak Number	Frequency	Angle	Height
1	912.279 MHz	SRD carrier	

Radiated emissions according to FCC part 15B

Project Number: G0M-2012-9513
Applicant: Kamstrup A/S
Model Description: READy Converter for US/Canada market
Model: READy Converter
Test Sample ID: 32714
Test Site: Eurofins Product Service GmbH
Operator: Mr. Handrik
Test Date: 2021-02-16
Operating Conditions: ambient temperature: 21 °Celsius
power input: 120V AC / 60Hz
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement Distance: 3m
Operational Mode & EUT Configuration: Operational mode 1
EUT configuration 2
Note 1:

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Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	1.825 GHz	2 nd harmonics of SRD					
2	2.417 GHz	Bluetooth carrier					
3	2.738 GHz	3 rd harmonics of SRD					
4	1.031 GHz	49.55 dBμV/m	73.98 dBμV/m	-24.43 dB	Pass	0 degrees	1 m

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	Angle	Height
1	1.825 GHz	2 nd harmonics of SRD					
2	2.417 GHz	Bluetooth carrier					
3	2.738 GHz	3 rd harmonics of SRD					
4	1.031 GHz	37.04 dBμV/m	53.98 dBμV/m	-16.94 dB	Pass	0 degrees	1 m

Test Report No.: G0M-2012-9513-EF0115B-V02

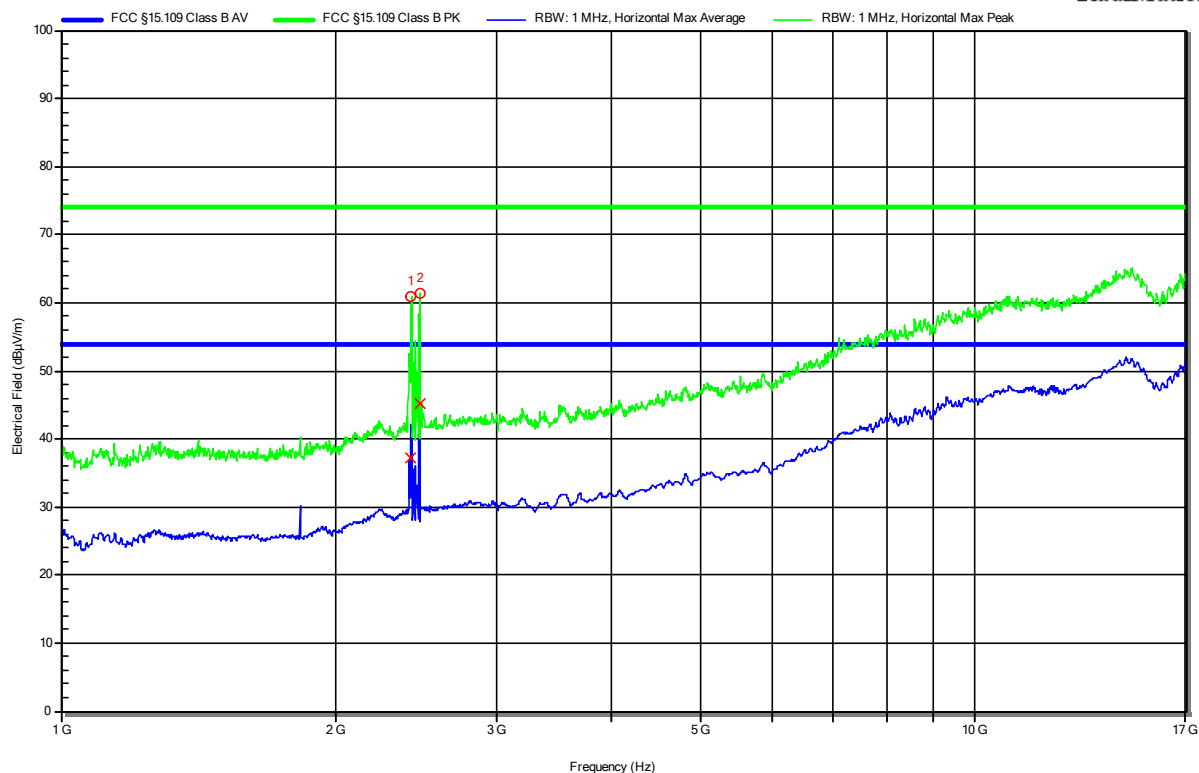
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated emissions according to FCC part 15B

Project Number: G0M-2012-9513
 Applicant: Kamstrup A/S
 Model Description: READy Converter for US/Canada market
 Model: READy Converter
 Test Sample ID: 32714
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Handrik
 Test Date: 2021-02-16
 Operating Conditions: ambient temperature: 21 °Celsius
 power input: 120V AC / 60Hz
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement Distance: 3m
 Operational Mode & EUT Configuration: Operational mode 1
 EUT configuration 2
 Note 1:

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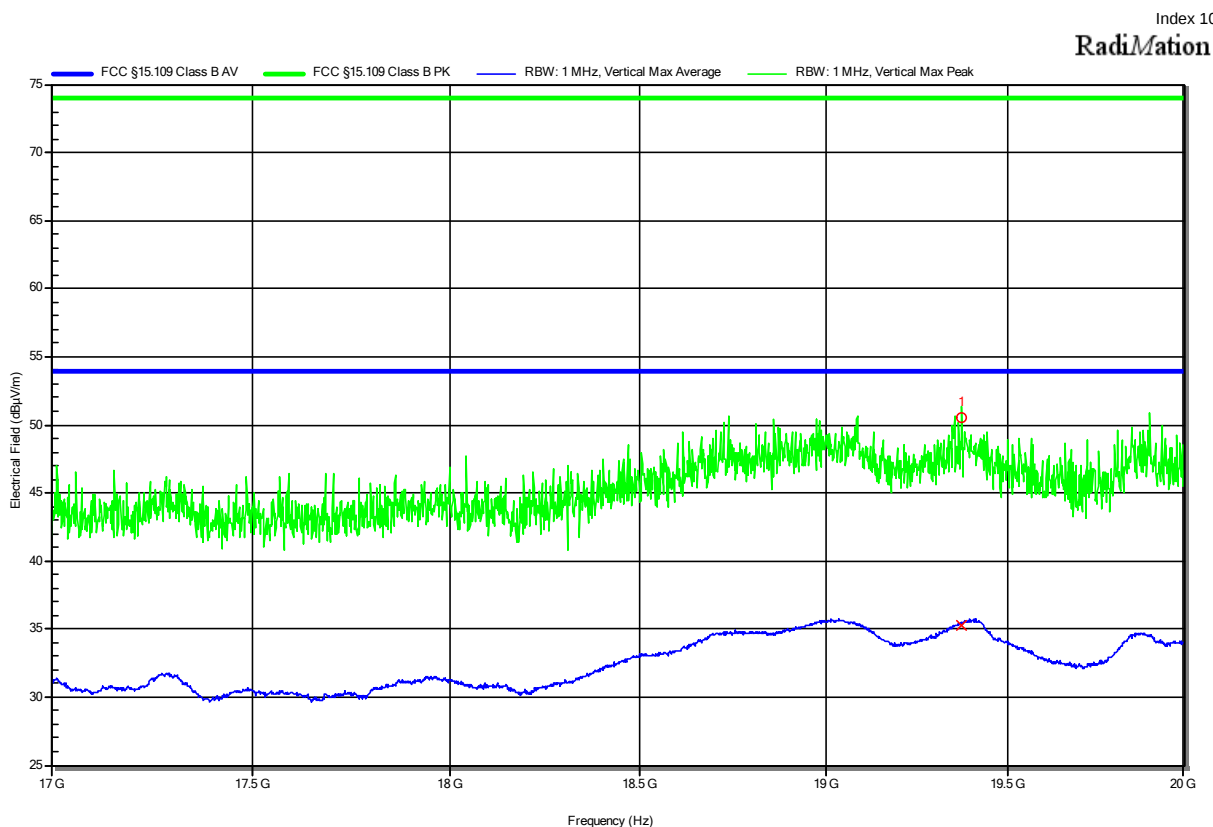
RadiMation



Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	2.416 GHz	Bluetooth carrier					
2	2.472 GHz						

Radiated emissions according to FCC part 15B

Project Number: G0M-2012-9513
Applicant: Kamstrup A/S
Model Description: READy Converter for US/Canada market
Model: READy Converter
Test Sample ID: 32714
Test Site: Eurofins Product Service GmbH
Operator: Mr. Handrik
Test Date: 2021-02-16
Operating Conditions: ambient temperature: 21 °Celsius
power input: 120V AC / 60Hz
Antenna: AT4560, Vertical
Measurement Distance: 3m
Operational Mode & EUT Configuration: Operational mode 1
EUT configuration 2
Note 1:



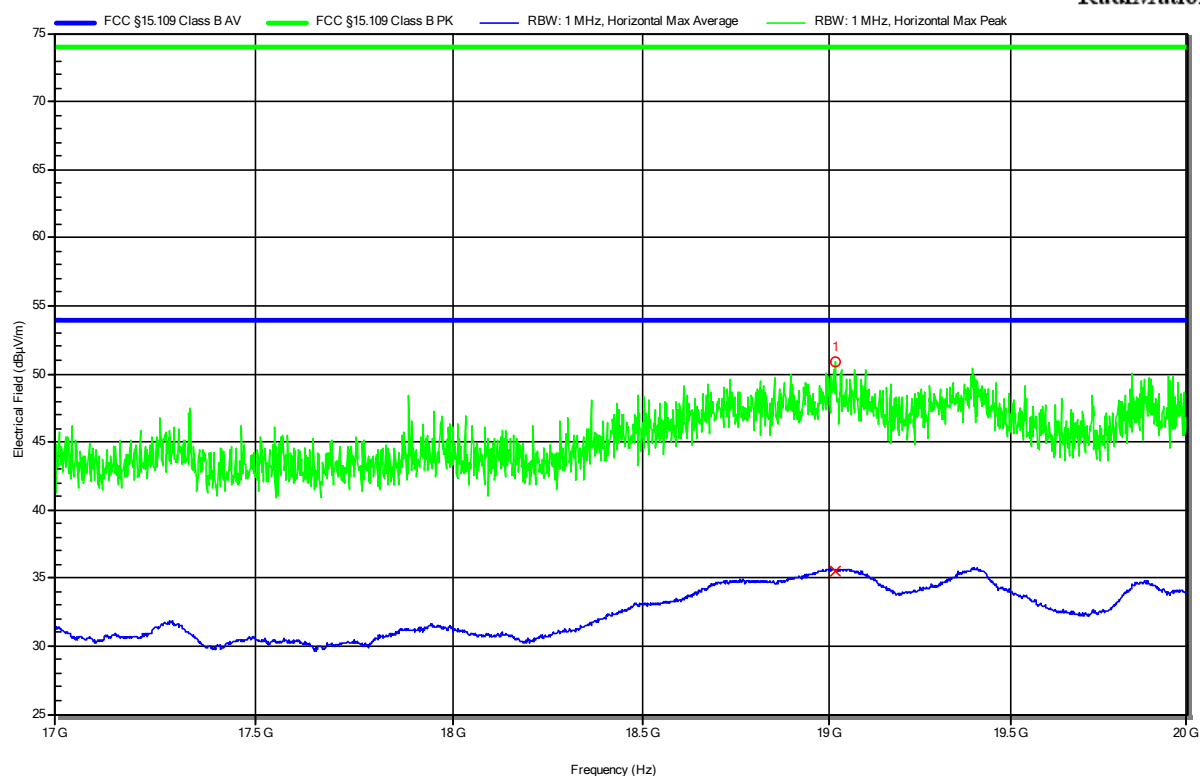
Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	19.373 GHz	50.55 dBμV/m	73.98 dBμV/m	-23.43	Pass	0 degrees	1 m
Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	Angle	Height
1	19.373 GHz	35.29 dBμV/m	53.98 dBμV/m	-18.69 dB	Pass	0 degrees	1 m

Radiated emissions according to FCC part 15B

Project Number: G0M-2012-9513
 Applicant: Kamstrup A/S
 Model Description: READy Converter for US/Canada market
 Model: READy Converter
 Test Sample ID: 32714
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Handrik
 Test Date: 2021-02-16
 Operating Conditions: ambient temperature: 21 °Celsius
 power input: 120V AC / 60Hz
 Antenna: AT4560, Horizontal
 Measurement Distance: 3m
 Operational Mode & EUT Configuration: Operational mode 1
 EUT configuration 2
 Note 1:

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RadiMation



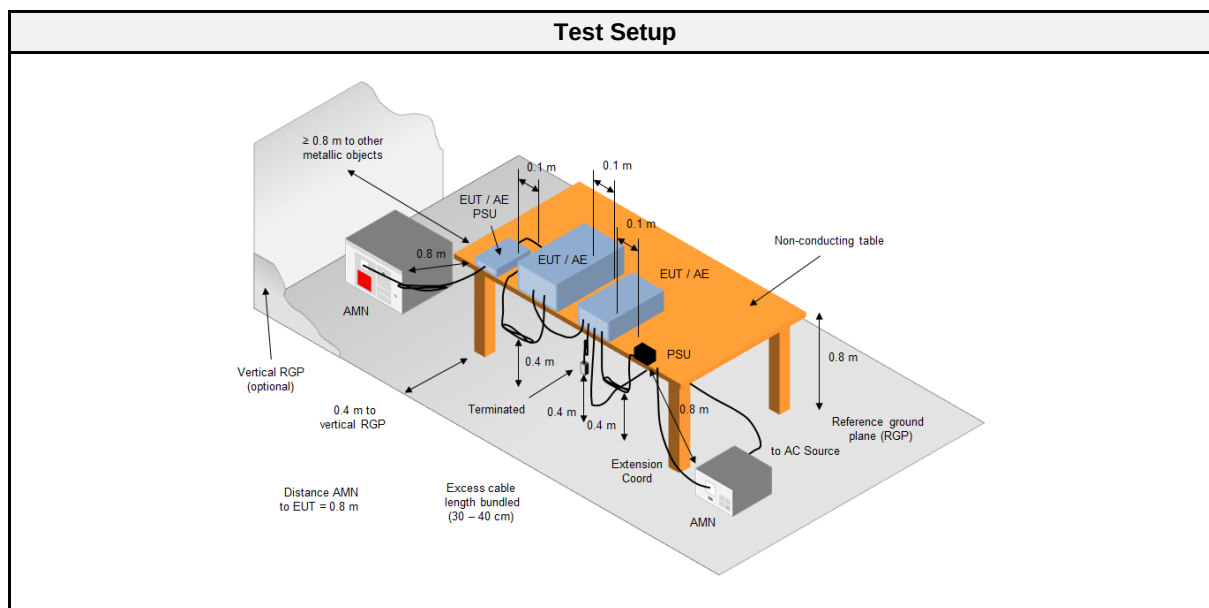
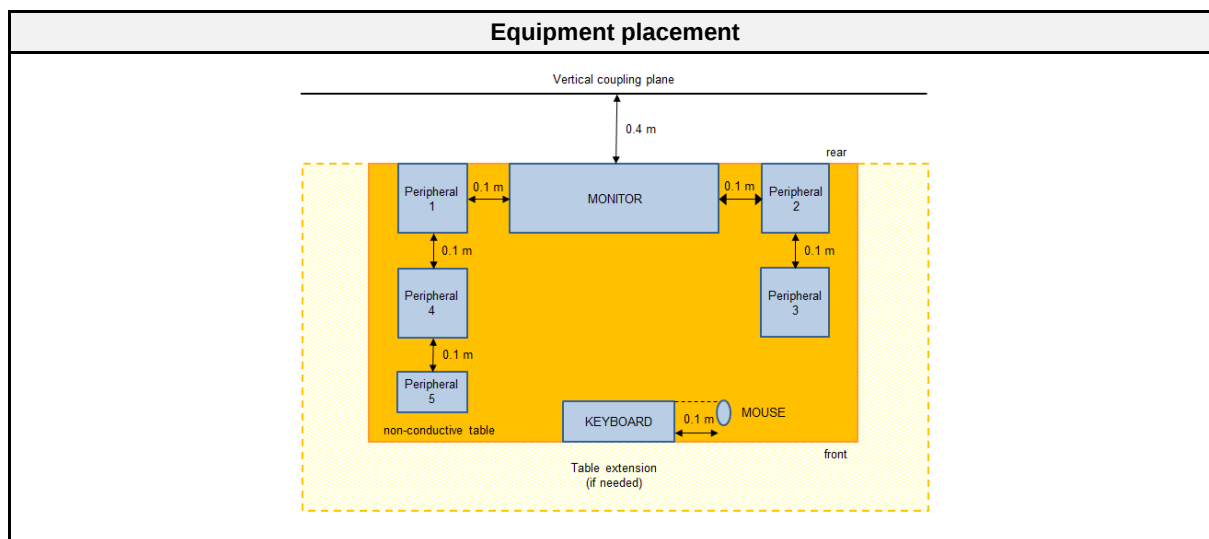
Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	19.017 GHz	50.83 dBμV/m	73.98 dBμV/m	-23.15	Pass	0 degrees	1 m
Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	Angle	Height
1	19.017 GHz	35.51 dBμV/m	53.98 dBμV/m	-18.47 dB	Pass	0 degrees	1 m

2.2 Test Conditions and Results - Conducted emissions acc. to ANSI C63.4

2.2.1 Information

Test Information	
Reference	FCC 15.107, ICES-003, 3.2.1
Reference method	ANSI C63.4:2014+A1:2017 Section 12
Measurement range	150 kHz to 30 MHz
Equipment class	Class B
Equipment type	Table top
Temperature [°C]	21 ±3
Humidity [%]	25 ±3
Operator	Matthias Handrik
Date	2021-02-16

2.2.2 Setup



2.2.3 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	Radimation	2020.1.8

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
AMN	Schwarzbeck	NSLK 8127	EF01592	2020-07	2021-07
Pulse Limiter	R&S	ESH3-Z2	EF01063	2020-07	2021-07
EMI Test Receiver	R&S	ESR 7	EF00943	2020-07	2021-07
Climatic Sensor	Embedded Data Systems, LLC.	2800100000254 17E	EF01054	2020-03	2021-03

2.2.4 Procedure

Exploratory measurement	
1.	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)
2.	The power cord that is normally supplied or recommended by the manufacturer was connected to the LISN.
3.	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).
4.	The LISN measurement port was connected to a measurement receiver
5.	I/O cables were bundled not longer than 0.4 m
6.	Measurement was performed in the frequency range 0.15 – 30MHz on each current-carrying conductor
7.	To maximize the emissions the cable positions were manipulated
8.	The worst configuration of EUT and cables is shown on a test setup picture at item 2.2.2

Final measurement	
1.	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)
2.	The power cord that is normally supplied or recommended by the manufacturer was connected to the LISN.
3.	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).
4.	The LISN measurement port was connected to a measurement receiver
5.	The EUT and cable arrangement were based on the exploratory measurement results
6.	The test data of the worst-case conditions were recorded and shown on the next pages

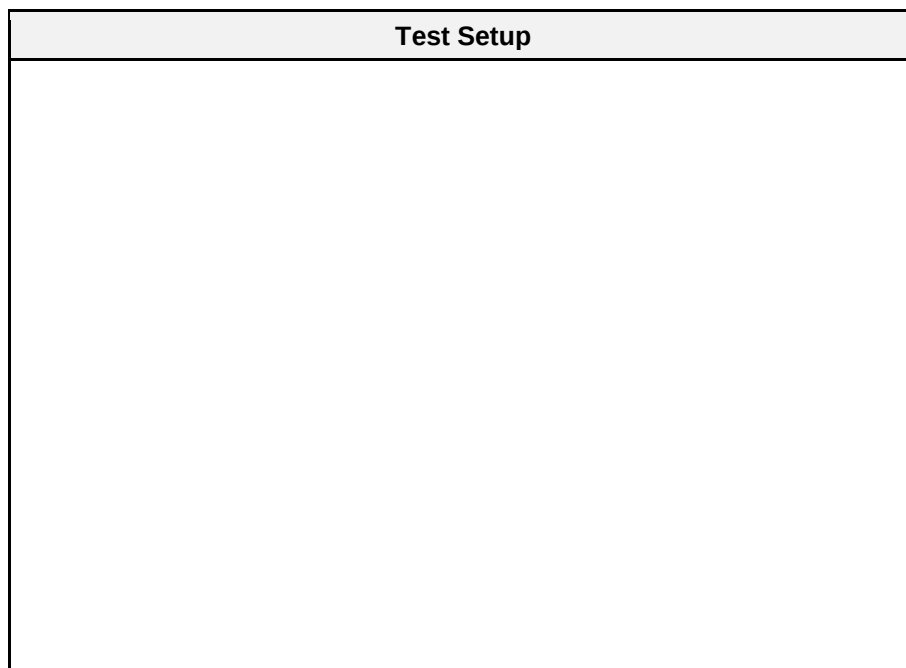
2.2.5 Limits

Class B		
Frequency [MHz]	Quasi-peak Limit [dBμV]	Average Limit [dBμV]
0.15 - 0.5	66 - 56 *	56 - 46 *
0.5 - 5	56	46
5 - 30	60	50
* Decreases with the logarithm of the frequency		

2.2.6 Results

AC power line conducted emissions					
Port	Coupling	Operational mode	EUT Configuration	Verdict	Remark
Power	AMN	1	2	PASS	

2.2.7 Setup Photos



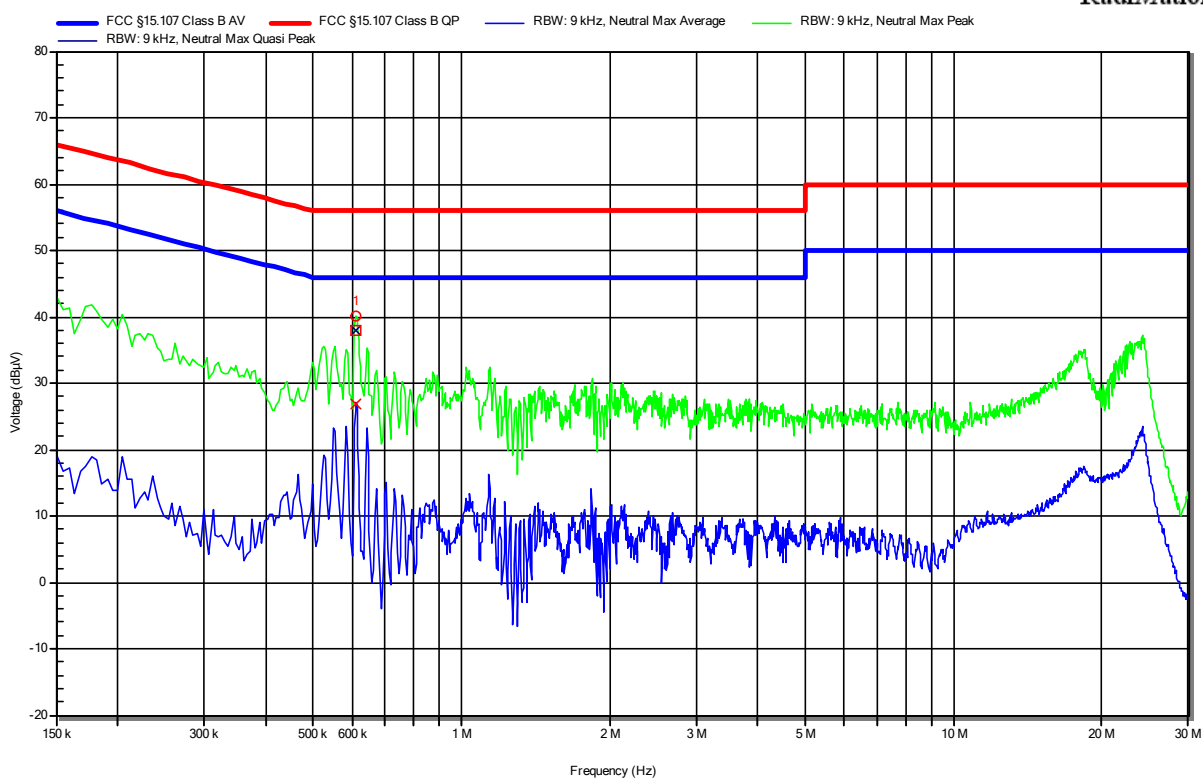
2.2.8 Records

Conducted emissions at the mains power port according to FCC part 15B

Project Number: G0M-2012-9513
 Applicant: Kamstrup A/S
 Model Description: READy Converter for US/Canada market
 Model: READy Converter
 Test Sample ID: 32714
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Handrik
 Test Date: 2021-02-16
 Operating Conditions: ambient temperature: 21 °Celsius
 power input: 120V AC / 60Hz
 LISN: Schwarzbeck NSLK 8127 RC, N
 Operational Mode & EUT Configuration: Operational mode 1
 EUT configuration 2
 Applied to Port: AC Mains
 Note 1:

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RadiMation



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	LISN
1	609.9 kHz	38.04 dBμV	56 dBμV	-17.96 dB	Pass	Neutral
Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	LISN
1	609.9 kHz	26.87 dBμV	46 dBμV	-19.13 dB	Pass	Neutral

Test Report No.: G0M-2012-9513-EF0115B-V02

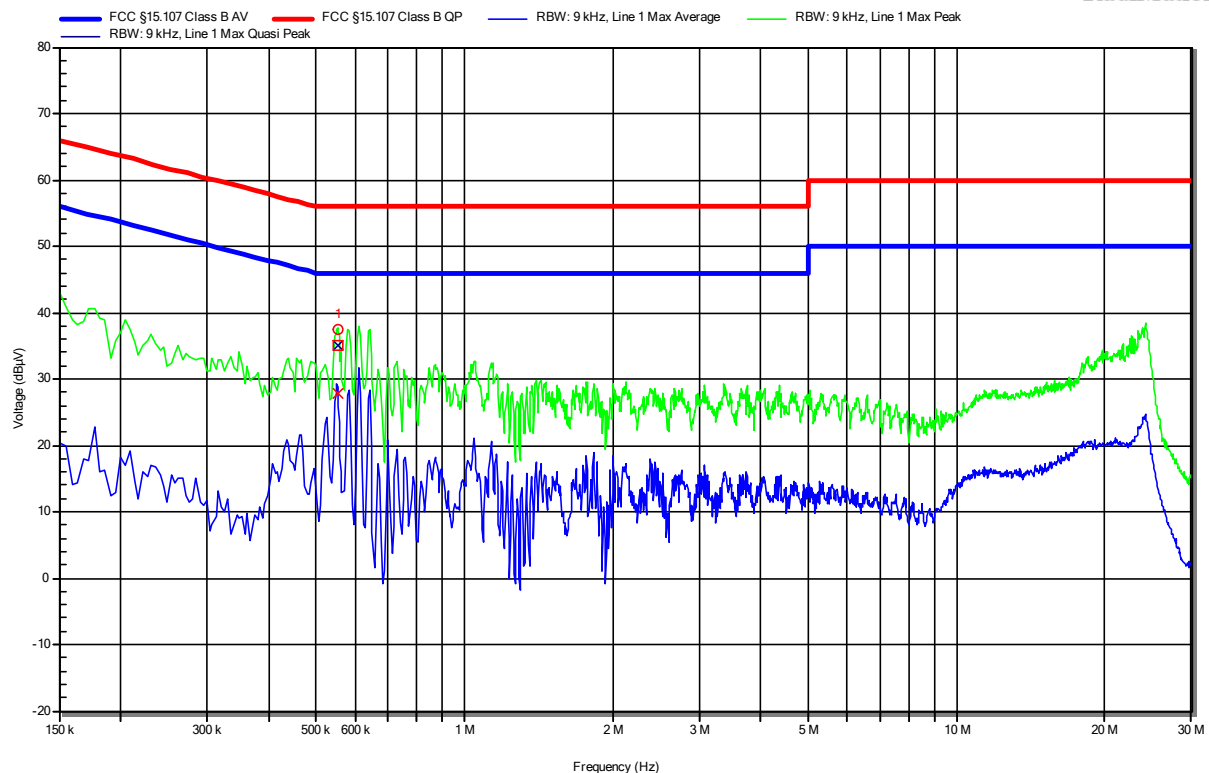
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Conducted emissions at the mains power port according to FCC part 15B

Project Number: G0M-2012-9513
Applicant: Kamstrup A/S
Model Description: READy Converter for US/Canada market
Model: READy Converter
Test Sample ID: 32714
Test Site: Eurofins Product Service GmbH
Operator: Mr. Handrik
Test Date: 2021-02-16
Operating Conditions: ambient temperature: 21 °Celsius
power input: 120V AC / 60Hz
LISN: Schwarzbeck NSLK 8127 RC L
Operational Mode & EUT Configuration: Operational mode 1
EUT configuration 2
Applied to Port: AC Mains
Note 1:

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Radiation



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	LISN
1	552.3 kHz	35.07 dBμV	56 dBμV	-20.93 dB	Pass	Line 1
Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	LISN
1	552.3 kHz	27.88 dBμV	46 dBμV	-18.12 dB	Pass	Line 1