

FCC TEST REPORT FCC 47 CFR Part 15C Industry Canada RSS-247 Digital transmission systems operating within the 902 – 928 MHz band	
Report Reference No.	G0M-1511-5232-TFC247DT-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	  A2LA Accredited Testing Laboratory, Certificate No.: 1983.01 FCC Filed Test Laboratory, Reg.-No.: 96970 IC OATS Filing assigned code: 3470A
Applicant's name	Kamstrup A/S
Address	Industrivej 28 8660 Skanderborg DENMARK
Test specification:	
Standard	47 CFR Part 15C RSS-247, Issue 1, 2015-05 RSS-Gen, Issue 4, 2014-11 ANSI C63.10:2013 ANSI C63.4:2014
Test scope	complete Radio compliance test
Equipment under test (EUT):	
Product description	READy Converter for Australia
Model No.	READy Converter
Additional Model(s)	None
Brand Name(s)	READy Converter
Hardware version	5550 1413 A3
Firmware / Software version	50981118 D1 / 5514 1447 A1
	FCC-ID: OUY-READYAMR2
Test result	Passed

Possible test case verdicts:

- 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)

Testing:

Test Lab Temperature : 20 – 23 °C

Test Lab Humidity : 32 – 38 %

Date of receipt of test item : 2016-01-18

Date (s) of performance of tests : 2016-01-18 – 2016-01-20

Compiled by : Wilfried Treffke

Tested by (+ signature) : Wilfried Treffke *W. Treffke*
(Responsible for Test)

Approved by (+ signature) : Christian Weber *C. Weber*
(Head of Lab)

Date of issue : 2016-02-05

Total number of pages : 60

General remarks:

The test results presented in this report relate only to the object tested.

The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

Additional comments:

Version History

Version	Issue Date	Remarks	Revised by
01	2016-02-05	Initial Release	

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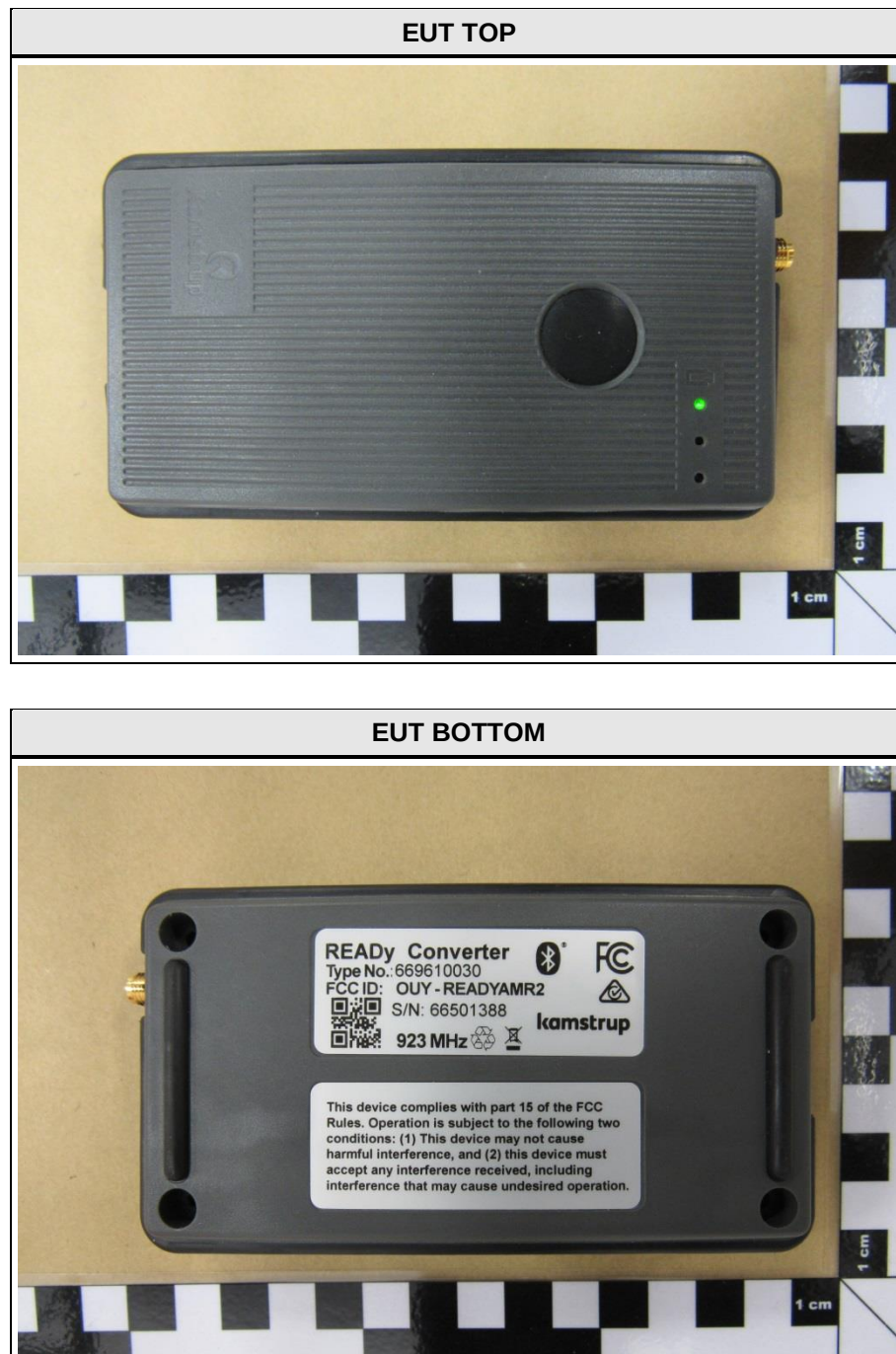
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1 Equipment (Test item) Description

Description	READY Converter for Australia	
Model	READY Converter	
Additional Model(s)	None	
Brand Name(s)	READY Converter	
Serial number	None	
Hardware version	5550 1413 A3	
Software / Firmware version	50981118 D1 / 5514 1447 A1	
FCC-ID	OUY-READYAMR2	
IC	None	
Equipment type	End product	
Radio type	Transceiver	
Radio technology	custom	
Operating frequency range	Rx=923, Tx=925 MHz	
Assigned frequency band	902 - 928 MHz	
Main test frequencies	F _{TX}	925 MHz
	F _{RX}	923 MHz
Spreading	None	
Modulations	2FSK	
Number of channels	1 Channel	
Channel spacing	None	
Number of antennas	1	
Antenna variant 1	Type	external dedicated
	Model	rooftop antenna
	Manufacturer	smarteq
	Gain	5.15 dBi (declared by customer)
Antenna variant 2	Type	external dedicated
	Model	whip antenna RP SMA
	Manufacturer	Laird technology / Nearson
	Gain	2.5 dBi (declared by customer)
Manufacturer	Kamstrup A/S Industrivej 28 8660 Skanderborg DENMARK	
Power supply	V _{NOM}	5.0 VDC
	V _{MIN}	4.75 VDC
	V _{MIN}	5.25 VDC

AC/DC-Adaptor	Model	N/A
	Vendor	N/A
	Input	N/A
	Output	N/A

1.1 Photos – Equipment External



EUT ANTENNA CONNECTOR



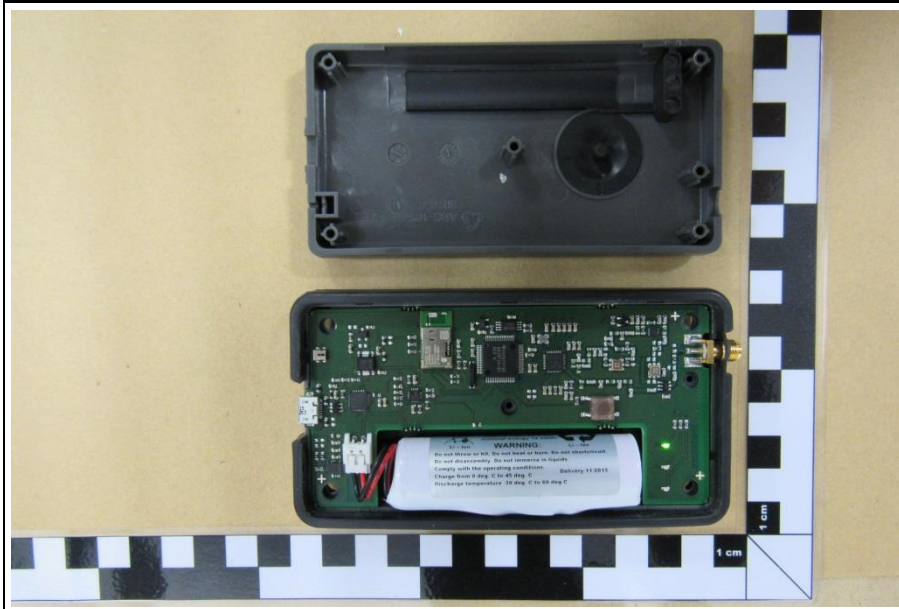
EUT USB CONNECTOR



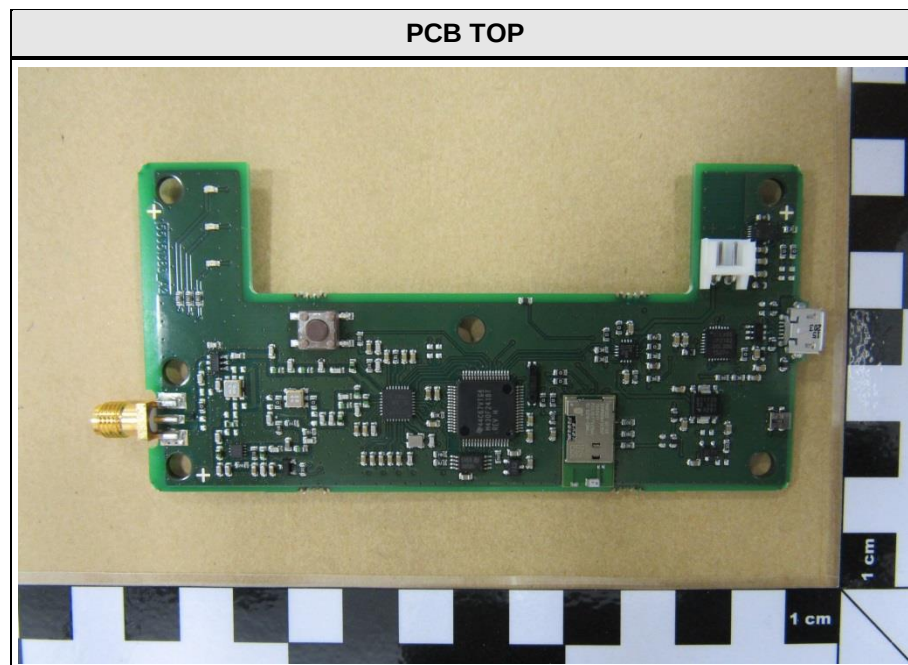
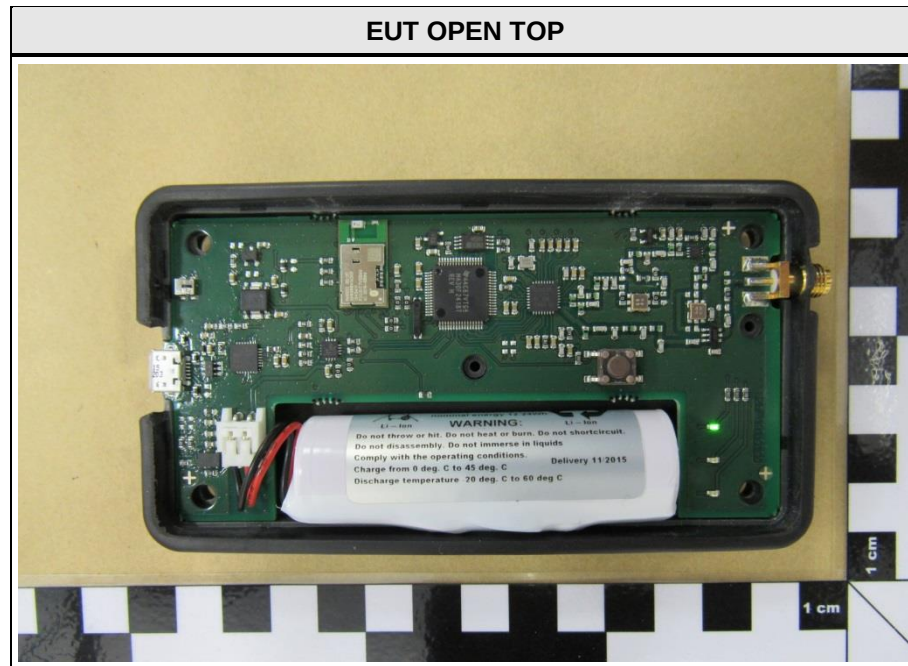
EUT SIDE



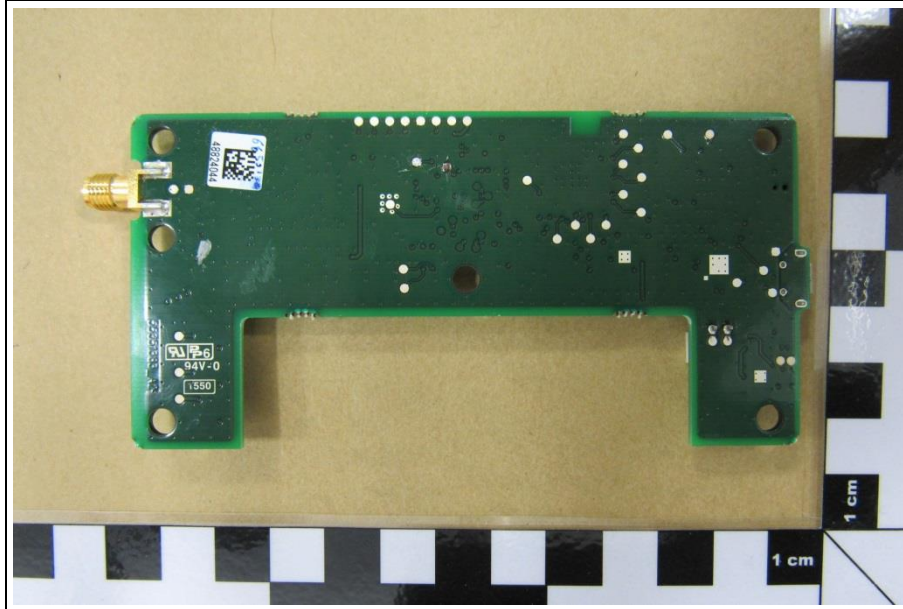
EUT OPEN



1.2 Photos – Equipment internal



PCB BOTTOM



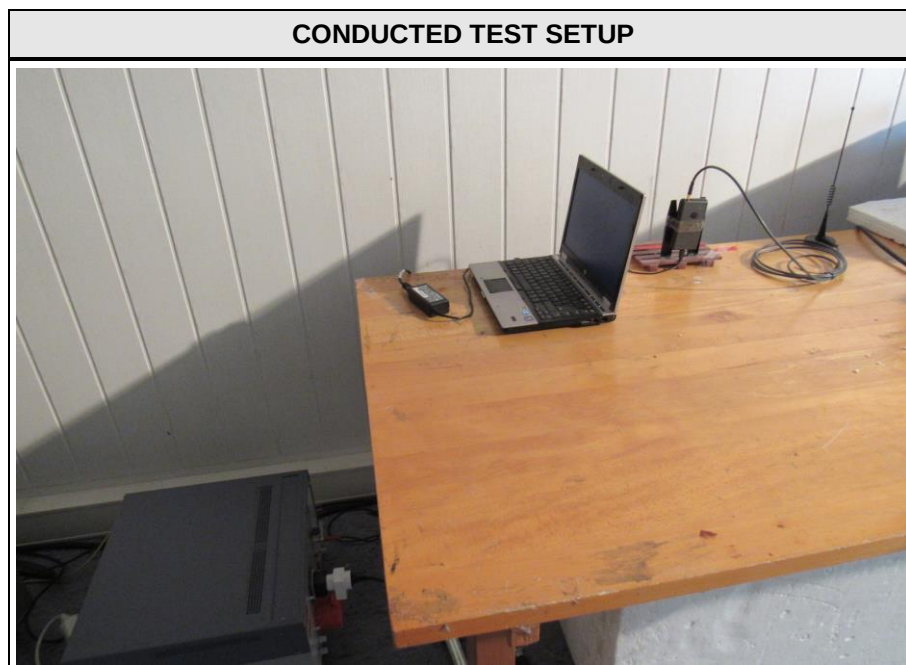
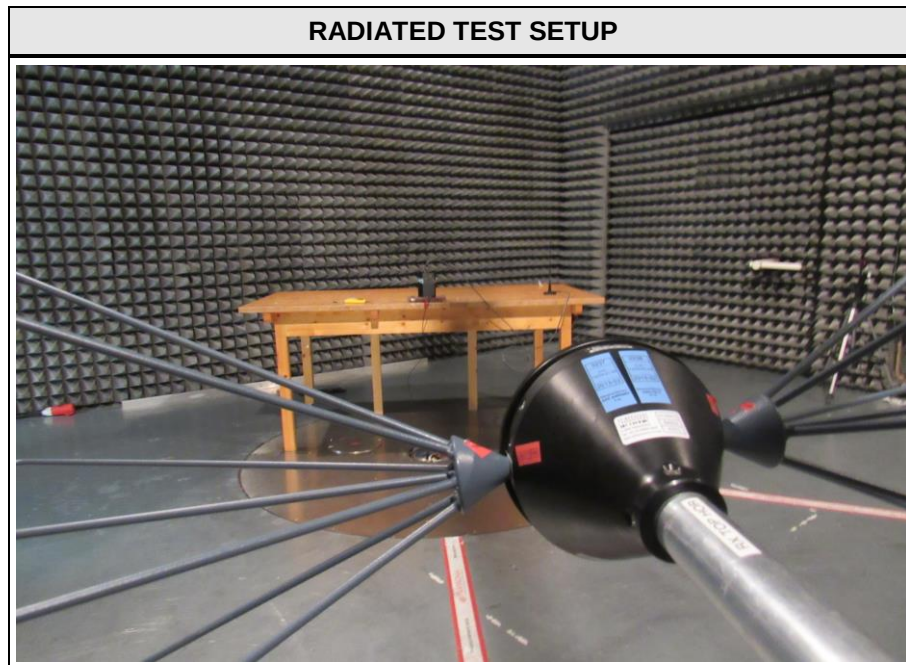
ANTENNA VARIANT 2



ANTENNA VARIANT 1



1.3 Photos – Test setup



1.4 Supporting Equipment Used During Testing

Product Type*	Device	Manufacturer	Model No.	Comments
AE	Notebook	HP	Elitebook 8440p	Serial: CZC0506398
*Note: Use the following abbreviations: AE : Auxiliary/Associated Equipment, or SIM : Simulator (Not Subjected to Test) CABL : Connecting cables				

1.5 Test Modes

Mode #	Description	
Single	General conditions:	EUT powered by laboratory power supply
	Radio conditions:	Mode = standalone transmit Spreading = None Modulation = FSK Duty cycle = 100 % Power level = Maximum (Power Setting 51)
AC-Powerline	General conditions:	EUT powered by laboratory power supply
	Radio conditions:	Mode = standalone transmit Spreading = None Modulation = FSK Duty cycle = 100 % Power level = Maximum

1.6 Test Equipment Used During Testing

Measurement Software			
Description	Manufacturer	Name	Version
EMC Test Software	Dare Instruments	Radimation	2014.1.15

Occupied Bandwidth					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2015-02	2016-02

6dB Bandwidth					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2015-02	2016-02

Maximum peak conducted power					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2015-02	2016-02

Power spectral density					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2015-02	2016-02

Band edge compliance					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2015-02	2016-02

Conducted spurious emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2015-02	2016-02

Radiated spurious emissions					
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	2015-10	2018-10

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Storkower Str. 38c, D-15526 Reichenwalde, Germany

AC powerline conducted emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
AMN	R&S	ESH2-Z5	EF00182	2014-11	2016-11
EMI Test Receiver	R&S	ESCS 30	EF00295	2015-10	2016-10

1.7 Sample emission level calculation

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

Reading:

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

A.F.:

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

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

Net:

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

Limit:

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

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

Margin:

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

Example only:

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

2 Result Summary

FCC 47 CFR Part 15C, IC RSS-247				
Product Specific Standard Section	Requirement – Test	Reference Method	Result	Remarks
RSS-Gen 6.6	Occupied Bandwidth	ANSI C63.10	N/R	Informational only
FCC § 15.247(a)(2) IC RSS-247 § 5.2	6dB Bandwidth	ANSI C63.10	PASS	
FCC § 15.247(b)(3) IC RSS-247 § 5.4	Maximum peak conducted power	ANSI C63.10	PASS	
FCC § 15.247(e) IC RSS-247 § 5.2	Power spectral density	ANSI C63.10	PASS	
47 CFR 15.207 IC RSS-247 § 3.1	AC power line conducted emissions	ANSI C63.4	PASS	
FCC § 15.247(d) IC RSS-247 § 5.5	Band edge compliance	ANSI C63.10	PASS	
FCC § 15.247(d) IC RSS-247 § 5.5	Conducted spurious emissions	ANSI C63.10	PASS	
FCC § 15.247(d) FCC § 15.209 IC RSS-247 § 5.5	Transmitter radiated spurious emissions	ANSI C63.10	PASS	
IC RSS-247 § 3.1	Receiver radiated spurious emissions	ANSI C63.10	N/R	
Remarks:				

3 Test Conditions and Results

3.1 Test Conditions and Results – Occupied Bandwidth

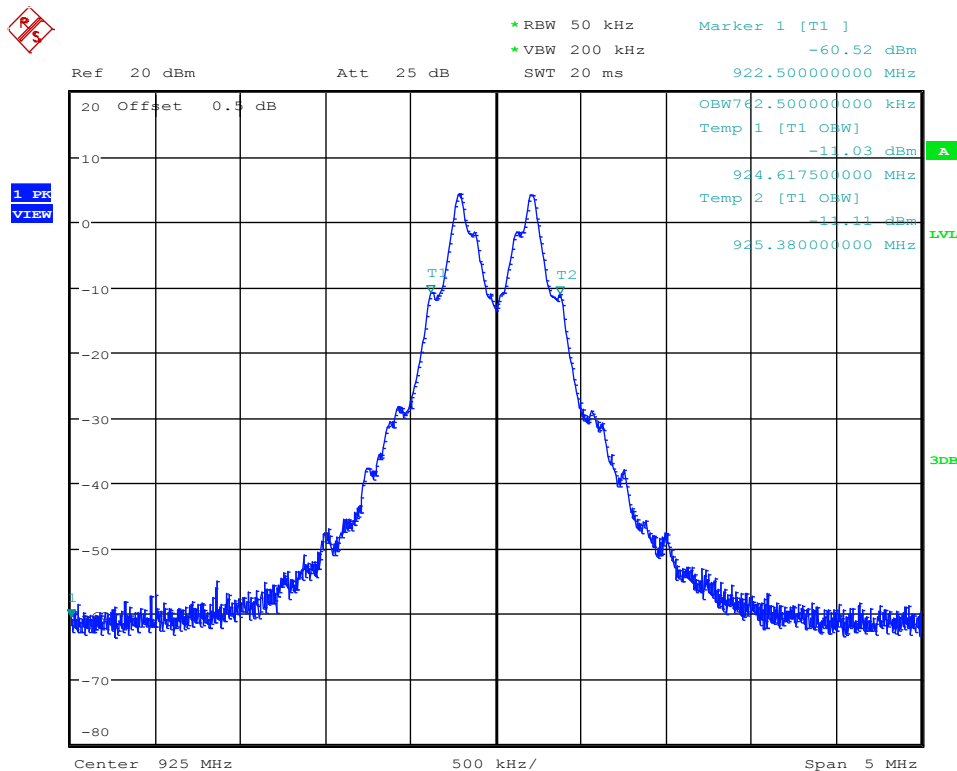
Occupied Bandwidth acc. to IC RSS-Gen			Verdict: PASS
Test according to measurement reference	Reference Method		
	ANSI C63.10		
Test frequency range	Tested frequencies		
	F _{TX}		
EUT test mode	Single		
Limits			
None (Informational only)			
Test setup			
Spectrum Analyzer EUT			
Test procedure			
1. EUT set to test mode (Communication tester is used if needed) 2. Span set to at least twice the emission spectrum 3. Resolution bandwidth set to 1 % of span 4. Occupied Bandwidth (99 %) measurement with spectrum analyzer built in measurement function			
Test results			
Channel	Frequency [MHz]	Occupied Bandwidth [kHz]	
F _{TX}	925.0	762.5	
Comments:			

Occupied Bandwidth – F_{TX}

Occupied Bandwidth acc. to RSS-Gen

Project Number: G0M-1511-5232

Applicant: Kamstrup A/S
EUT Name: READy Converter for Australia
Model: READy Converter
Test Site: Eurofins Product Service GmbH
Operator: Wilfried Treffke
Test Conditions: T_{nom} / V_{nom}
Mode: Tx, 2FSK, 925.0 MHz
Test Date: 2016-01-20
Verdict: PASS
Note 1: A spectrum analyzer with an integrated 99% power bandwidth function is used
Note 2: OBW= 762.5 kHz



Date: 20.JAN.2016 13:21:31

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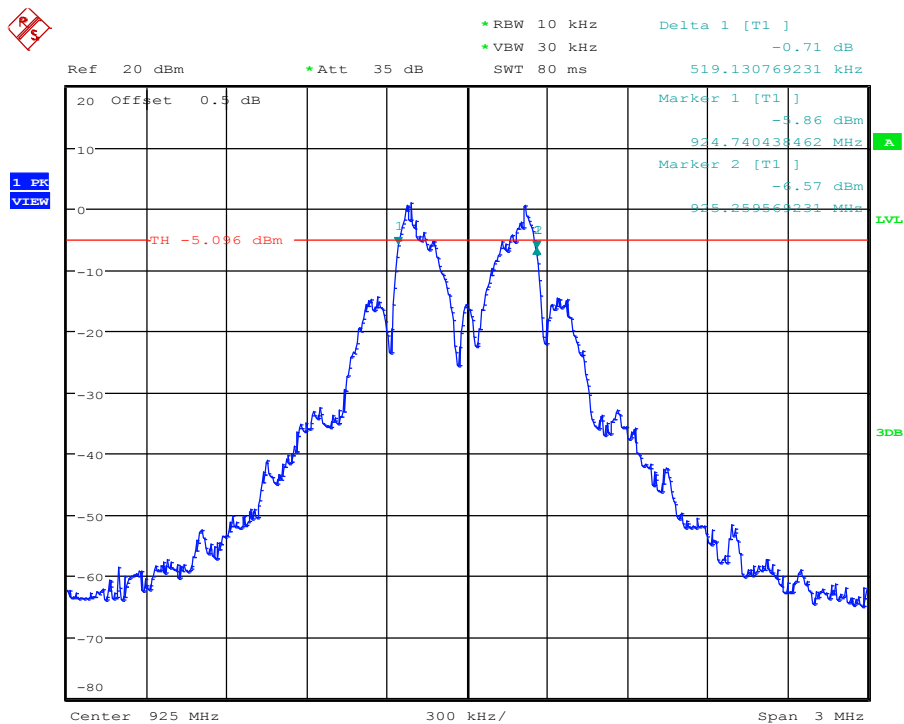
3.2 Test Conditions and Results – 6dB Bandwidth

6dB Bandwidth acc. to FCC 15.247 / IC RSS-247				Verdict: PASS
EUT requirement rule parts and clause	Reference			
	FCC 15.247(a)(2) / IC RSS-247 5.2			
Test according to measurement reference	Reference Method			
	ANSI C63.10			
Test frequency range	Tested frequencies			
	F _{TX}			
EUT test mode	Single			
Limits				
≥ 500 kHz				
Test setup				
Spectrum Analyzer EUT				
Test procedure				
1. EUT set to test mode (Communication tester is used if needed) 2. Span set to at least twice the emission spectrum 3. Detector set to peak and max hold 4. Envelope peak value of emission spectrum is selected 5. Marker on envelope of spectrum is set to level of -6 dB to the left of the peak 6. Marker on envelope of spectrum is set to level of -6 dB to the right of the peak 7. 6dB Bandwidth is determined by marker frequency separation				
Test results				
Channel	Frequency [MHz]	6 dB Bandwidth [kHz]	Limit [kHz]	Result
F _{TX}	925.0	519.1	≥ 500	PASS
Comments:				

6dB Bandwidth – F_{TX}
Minimum 6 dB Bandwidth acc. to FCC 15.247

Project Number: G0M-1511-5232

Applicant: Kamstrup A/S
 EUT Name: READy Converter for Australia
 Model: READy Converter
 Test Site: Eurofins Product Service GmbH
 Operator: Wilfried Treffke
 Test Conditions: Tnom / Vnom
 Mode: Tx, 2FSK, 925.0 MHz
 Test Date: 2016-01-20
 Verdict: PASS
 Note 1: Procedure according to ANSI C63.10
 Note 2: Minimum 6 dB Bandwidth conducted



6 dB bandwidth: 519.1 KHz > 500 KHz; verdict: PASS
 Date: 20.JAN.2016 13:28:48

Test Report No.: G0M-1511-5232-TFC247DT-V01

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 Storkower Str. 38c, D-15526 Reichenwalde, Germany

3.3 Test Conditions and Results – Maximum peak conducted power

Maximum peak conducted power acc. to FCC 15.247 / IC RSS-247						Verdict: PASS	
EUT requirement rule parts and clause			Reference				
			FCC 15.247(b)(3) / IC RSS-247 5.4				
Test according to measurement reference			Reference Method				
			ANSI C63.10				
Test frequency range			Tested frequencies				
			F _{TX}				
EUT test mode			Single				
Measurement mode			Peak				
Maximum antenna gain			5.15 dBi ⇒ Limit correction = 0 dB				
Limits							
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.							
Test setup							
Spectrum Analyzer EUT							
Test procedure							
1. EUT set to test mode (Communication tester is used if needed) 2. Center frequency set to test channel center frequency 3. Span is set to be larger than the 6 dB bandwidth and RBW is set to be at least the 6 dB bandwidth 4. Peak output power is determined from the maximum of the emission envelope							
Test results							
Channel	Frequency [MHz]	Voltage	Peak power [dbm]	Peak power [W]	Limit [dBm]	Margin [dB]	Result
F _{TX}	925.0	5.0	4.31	0.003	30	-25.69	PASS
Comments:							

3.4 Test Conditions and Results – Power spectral density

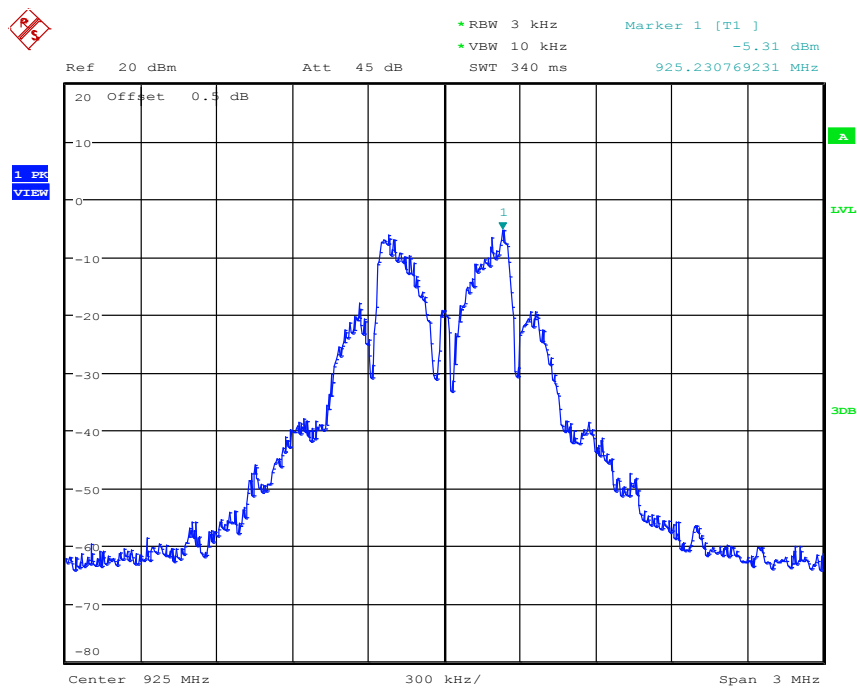
Power spectral density acc. to FCC 15.247 / IC RSS-247						Verdict: PASS	
EUT requirement rule parts and clause			Reference				
			FCC 15.247(e) / IC RSS-247 5.2				
Test according to measurement reference			Reference Method				
			ANSI C63.10				
Test frequency range			Tested frequencies				
			F _{TX}				
EUT test mode			Single				
Measurement mode			Peak				
Limits							
8 dBm / 3 kHz							
Test setup							
Spectrum Analyzer EUT							
Test procedure							
1. EUT set to test mode (Communication tester is used if needed) 2. Center frequency set to test channel center frequency 3. Span is set large enough to capture maximum emissions in passband, RBW is set to 3 kHz 4. Peak power density is determined from peak emission of envelope							
Test results							
Channel	Frequency [MHz]	Voltage	Peak frequency [MHz]	Peak power density [dBm]	Limit [dBm/3kHz]	Margin [dB]	Result
F _{TX}	925.0	5.0	925.231	-5.31	8.0	-13.31	PASS
Comments:							

Power spectral density – F_{TX}

Power spectral density acc. to FCC 15.247

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Applicant: Kamstrup A/S
 EUT Name: READy Converter for Australia
 Model: READy Converter
 Test Site: Eurofins Product Service GmbH
 Operator: Wilfried Treffke
 Test Conditions: Tnom / Vnom
 Mode: Tx, 2FSK, 925.0 MHz
 Test Date: 2016-01-20
 Verdict: PASS
 Note 1: Procedure according to ANSI C63.10
 Note 2: Power spectral density conducted



Maximum Power Spectral Density=-5.31dBm
 f=925.231 MHz RBW= 3kHz , Limit <8dBm/3kHz
 Date: 20.JAN.2016 13:40:52

3.5 Test Conditions and Results – AC power line conducted emissions

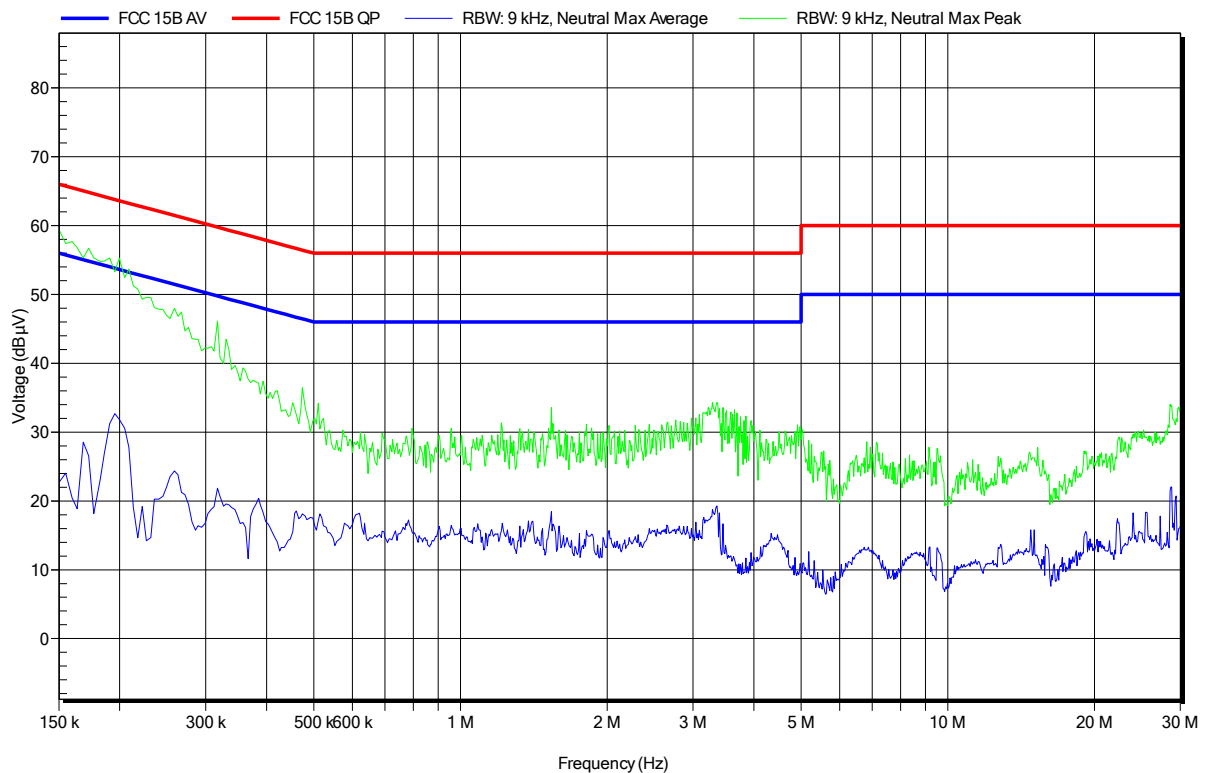
Power line conducted emissions acc. to FCC 47 CFR 15.207 / IC RSS-Gen				Verdict: PASS	
Test according referenced standards		Reference Method			
		ANSI C63.4			
Fully configured sample scanned over the following frequency range		Frequency range			
		0.15 MHz to 30 MHz			
Points of Application		Application Interface			
AC Mains		LISN			
EUT test mode		AC-Powerline			
Limits and results					
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.					

Conducted Emissions 1
EMI voltage test in the ac-mains according to FCC Part 15 B

Project number: G0M-1512-5232

Applicant: Kamstrup A/S
 EUT Name: READy Converter for Australia
 Model: READy Converter
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Marquardt
 Test Conditions: Tnom: 23°C, Unom: 120 VAC
 LISN: ESH2-Z5 N
 Mode: tx (transmission mode) with external antenna
 Test Date: 2016-01-19
 Note:

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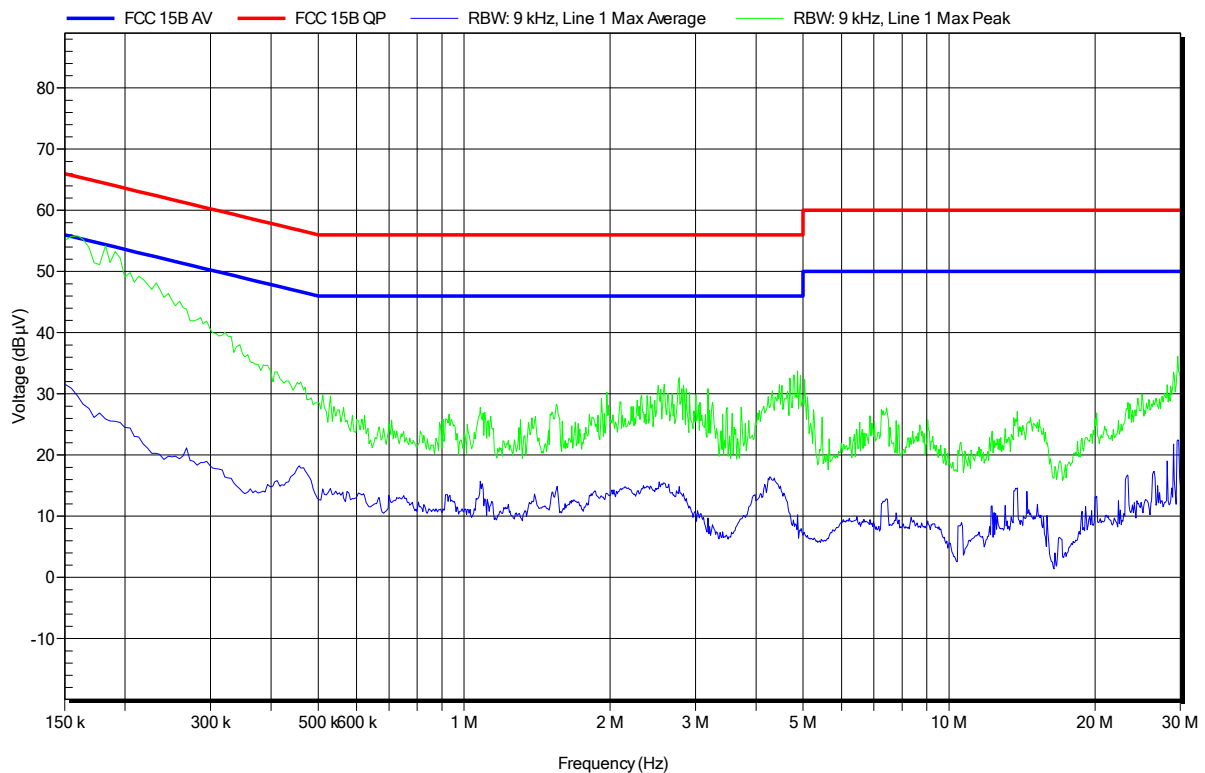


Conducted Emissions 2
EMI voltage test in the ac-mains according to FCC Part 15 B

Project number: G0M-1512-5232

Applicant: Kamstrup A/S
 EUT Name: READy Converter for Australia
 Model: READy Converter
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Marquardt
 Test Conditions: Tnom: 23°C, Unom: 120 VAC
 LISN: ESH2-Z5 L
 Mode: tx (transmission mode) with external antenna
 Test Date: 2016-01-19
 Note:

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3.6 Test Conditions and Results – Band edge compliance

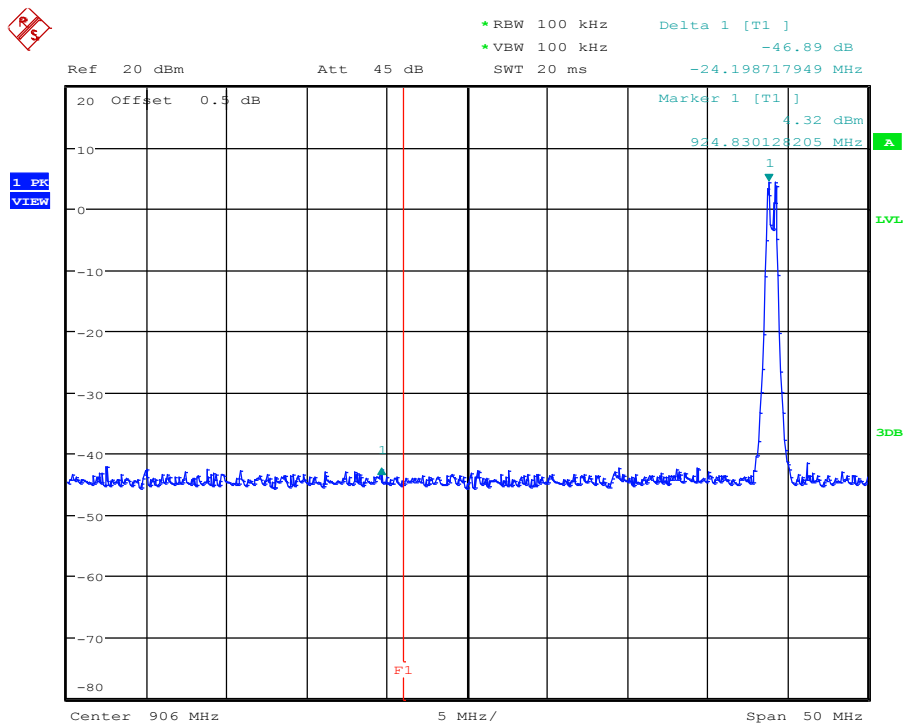
Band-edge compliance acc. to FCC 15.247 / IC RSS-247					Verdict: PASS	
EUT requirement rule parts and clause		Reference				
		FCC 15.247(d) / IC RSS-247 5.5				
Test according to measurement reference		Reference Method				
		ANSI C63.10				
Test frequency range		Tested frequencies				
		F _{TX}				
EUT test mode		Single				
Limits						
Limit			Condition			
≤ -20 dB / 100 kHz			Peak power measurement detector = Peak			
≤ -30 dB / 100 kHz			Peak power measurement detector = RMS			
Test setup						
Spectrum Analyzer EUT						
Test procedure						
1. EUT set to test mode (Communication tester is used if needed) 2. Span set around lower band edge and detector is set to peak and max hold 3. Resolution bandwidth is set to 100 kHz 4. Markers are set to peak emission levels within frequency band and outside frequency band 5. Band edge attenuation is determined from level difference						
Test results						
Channel	Frequency [MHz]	Mode	Level [dBc]	Limit [dBc]	Margin [dB]	Result
F _{TX}	925.0	Lower band-edge	-46.89	-20	-26.89	PASS
F _{TX}	925.0	Upper band-edge	-46.01	-20	-26.01	PASS
Comments:						

Band-edge compliance – F_{TX} single – Lower Edge

Band-edge compliance acc. to FCC 15.247

Project Number: G0M-1511-5232

Applicant: Kamstrup A/S
EUT Name: READY Converter for Australia
Model: READY Converter
Test Site: Eurofins Product Service GmbH
Operator: Wilfried Treffke
Test Conditions: Tnom / Vnom
Mode: Tx; 2FSK; 925 MHz
Test Date: 2016-01-20
Verdict: PASS
Note 1: Reference Method according to ANSI C63.10
Note 2: lower Band-edge, conducted measurement



Limit: Marker Delta value >20 dB; Result: PASS

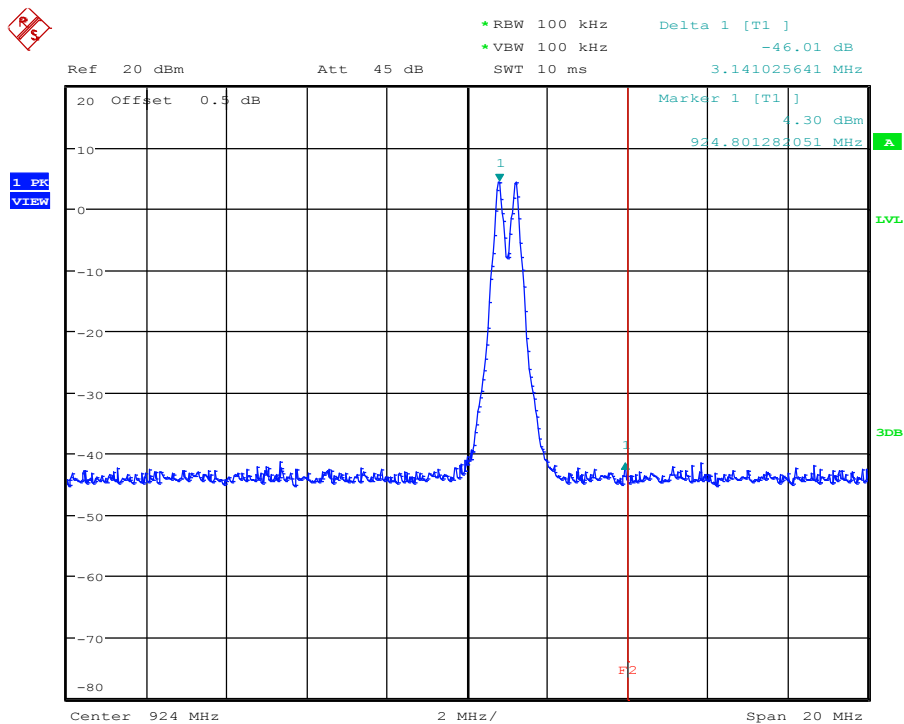
Date: 20.JAN.2016 14:05:01

Band-edge compliance – F_{TX} single – Upper Edge

Band-edge compliance acc. to FCC 15.247

Project Number: G0M-1511-5232

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 EUT Name: READY Converter for Australia
 Model: READY Converter
 Test Site: Eurofins Product Service GmbH
 Operator: Wilfried Treffke
 Test Conditions: T_{nom} / V_{nom}
 Mode: Tx; 2FSK; 925 MHz
 Test Date: 2016-01-20
 Verdict: PASS
 Note 1: Reference Method according to ANSI C63.10
 Note 2: upper Band-edge, conducted measurement



3.7 Test Conditions and Results – Conducted spurious emissions

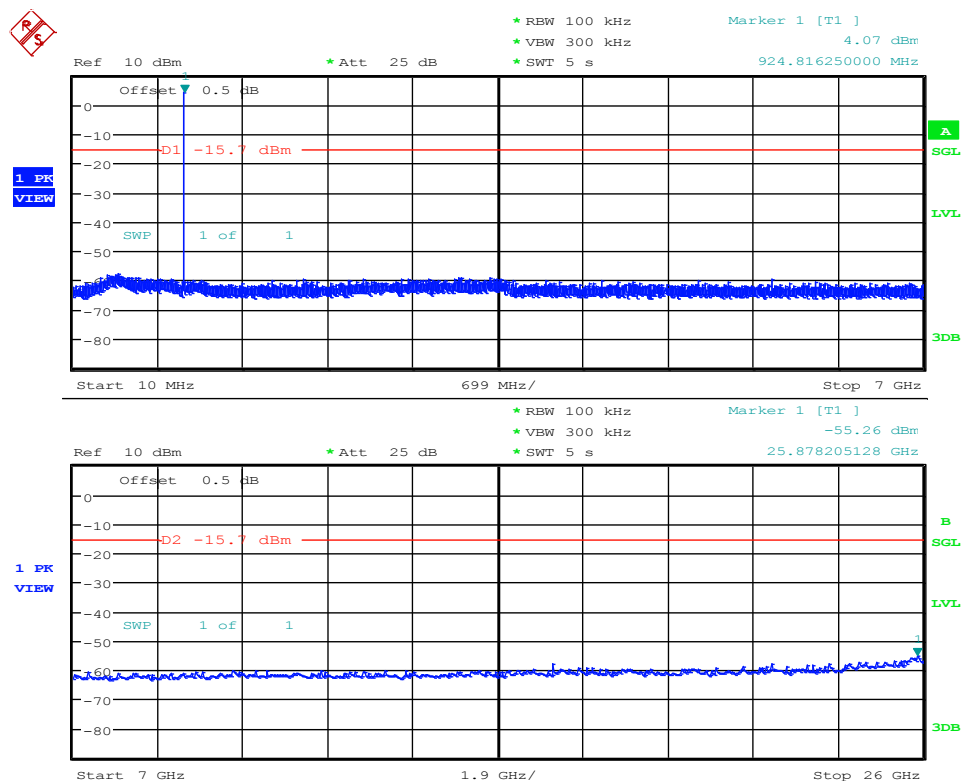
Conducted spurious emissions acc. to FCC 15.247 / IC RSS-247						Verdict: PASS	
EUT requirement rule parts and clause		Reference					
		FCC 15.247(d) / IC RSS-247 5.5					
Test according to measurement reference		Reference Method					
		ANSI C63.10					
Test frequency range		Tested frequencies					
		10 MHz – 10 th Harmonic					
EUT test mode		Single					
Limits							
Limit				Condition			
≤ -20 dB / 100 kHz				Peak power measurement detector = Peak			
≤ -30 dB / 100 kHz				Peak power measurement detector = RMS			
Test setup							
Spectrum Analyzer EUT							
Test procedure							
1. EUT set to test mode (Communication tester is used if needed) 2. Span it set according to measurement range 3. Resolution bandwidth is set to 100 kHz and detector to peak and max hold 4. Markers are set to peak emission levels within frequency band 5. Emission level is determined by second marker on emission peak 6. Attenuation is determined from level difference							
Test results							
Channel	Frequency [MHz]	Emission [MHz]	Emission Level [dbm]	Peak power [dBm]	Limit [dBm]	Margin [dB]	Result
F _{MID}	925.0	2587.8205	-55.26	4.3	-15.7	-39.56	PASS
Comments:							

Conducted spurious emissions – F_{TX}

Spurious Emissions acc. to FCC 15.247

Project Number: G0M-1511-5232

Applicant: Kamstrup A/S
 EUT Name: READy Converter for Australia
 Model: READy Converter
 Test Site: Eurofins Product Service GmbH
 Operator: Wilfried Treffke
 Test Conditions: Tnom / Vnom
 Mode: Tx, 2FSK; 925.0 MHz
 Test Date: 2016-01-20
 Verdict: PASS
 Note 1: Spurious in non-restricted frequency bands (ANSI C63.10)
 Note 2: conducted measurement

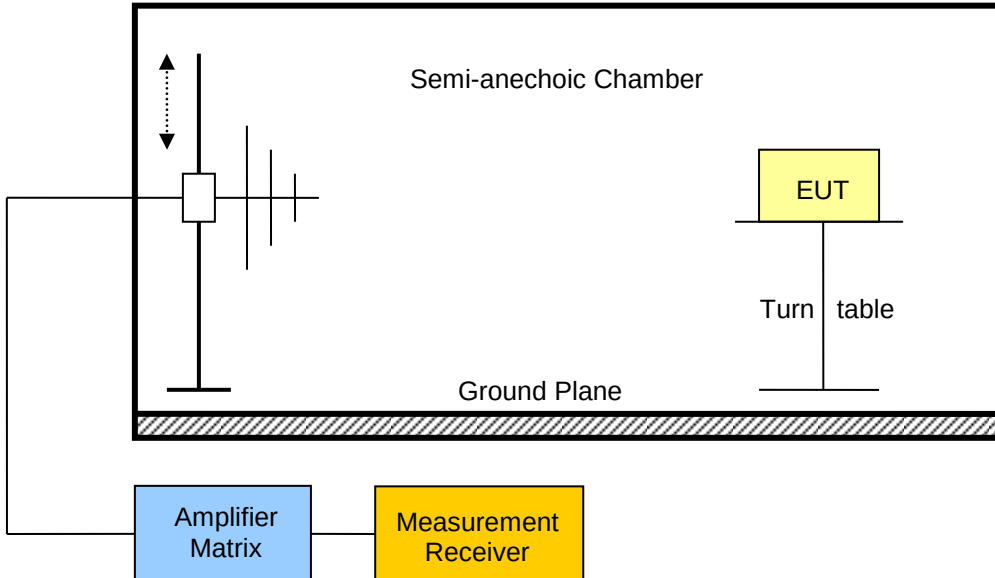


Date: 20.JAN.2016 14:12:28

Test Report No.: G0M-1511-5232-TFC247DT-V01

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

3.8 Test Conditions and Results – Transmitter radiated emissions

Transmitter radiated emissions acc. to FCC 47 CFR 15.247 / IC RSS-247				Verdict: PASS
Test according referenced standards	Reference Method			
	FCC 15.247(d) / IC RSS-247 5.5			
Test according to measurement reference	Reference Method			
	ANSI C63.10			
Test frequency range	Tested frequencies			
	30 MHz – 10 th Harmonic			
EUT test mode	Single			
Limits				
Frequency range [MHz]	Detector	Limit [µV/m]	Limit [dBµV/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 Report No.: G0M-1511-5232-TFC247DT-V01

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

Test procedure								
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 – rooftop antenna								
Channel	Frequency [MHz]	Emission [MHz]	Level [db μ V/m]	Detector	Pol.	Limit [db μ V/m]	Limit distance [m]*	Margin [dB]
F _{TX}	925	246.24	34.40	pk	hor	46.00	3	-11.60
F _{TX}	925	284.072	31.83	pk	ver	46.00	3	-14.17
F _{TX}	925	928.459	40.55	pk	ver	95.00	3	-54.45
F _{TX}	925	1006	48.39	pk	ver	74.00	3	-25.61
F _{TX}	925	3701	46.60	pk	hor	74.00	3	-27.40
Test results – whip antenna								
Channel	Frequency [MHz]	Emission [MHz]	Level [db μ V/m]	Detector	Pol.	Limit [db μ V/m]	Limit distance [m]*	Margin [dB]
F _{TX}	925	401.772	37.83	pk	ver	46.00	3	-08.17
Comments: * Physical distance between EUT and measurement antenna.								

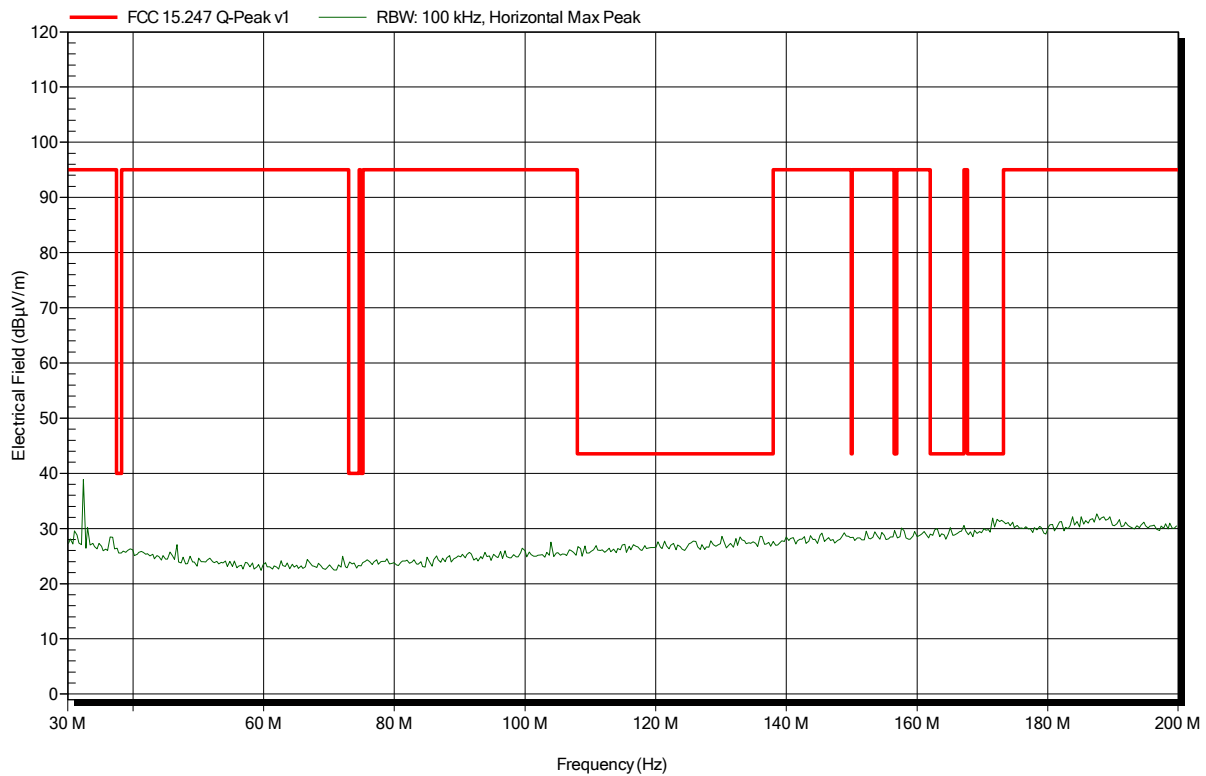
ANNEX A Transmitter radiated spurious emissions

Spurious emissions according to FCC 15.247

Project number: G0M-1511-5232

Applicant:	Kamstrup A/S
EUT Name:	READY Converter for Australia
Model:	READY Converter
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 5 V DC (lithium battery)
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; 925 MHz; 2FSK; rooftop antenna
Test Date:	2016-01-19
Note:	

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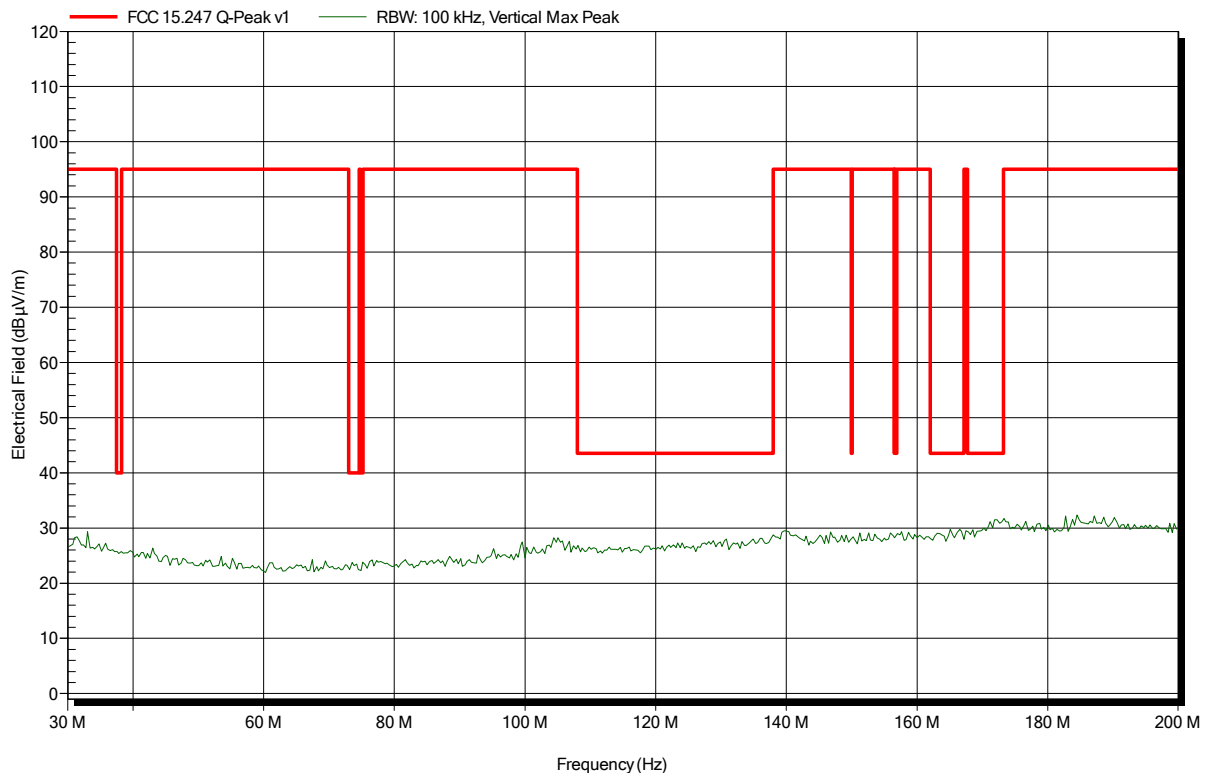


Spurious emissions according to FCC 15.247

Project number: G0M-1511-5232

Applicant:	Kamstrup A/S
EUT Name:	READY Converter for Australia
Model:	READY Converter
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 5 V DC (lithium battery)
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; 925 MHz; 2FSK; rooftop antenna
Test Date:	2016-01-19
Note:	

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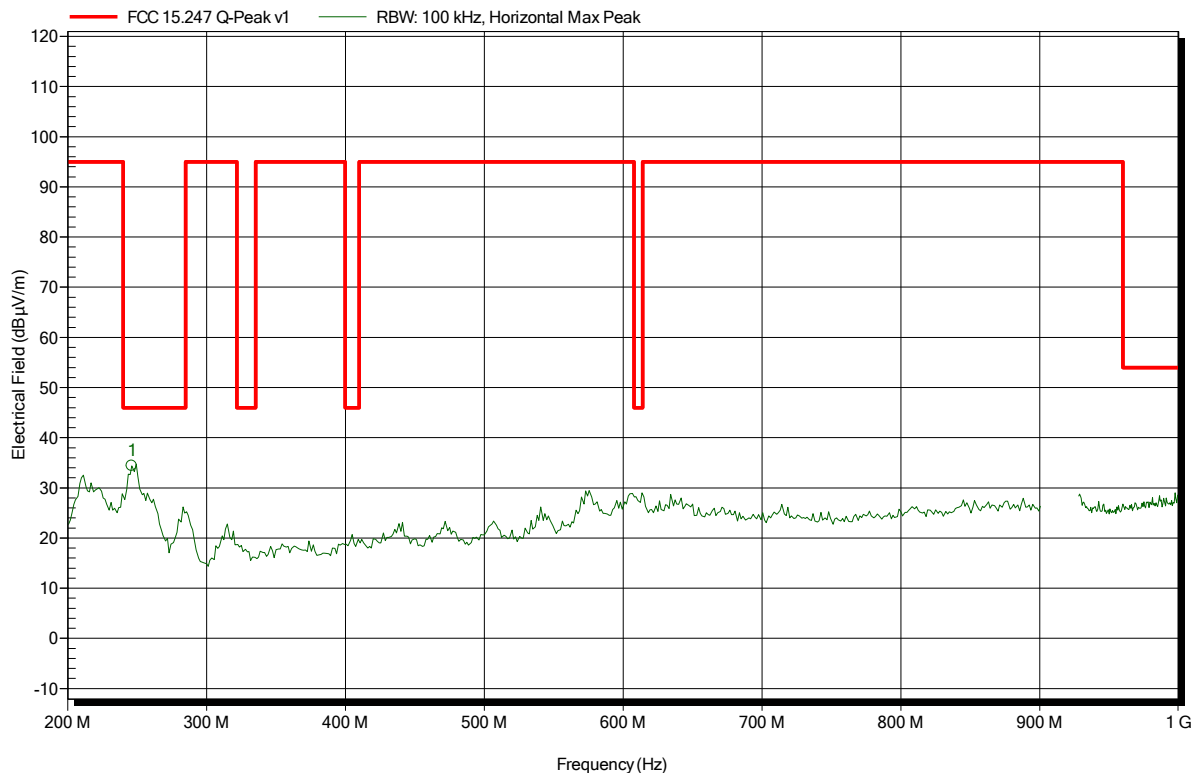


Spurious emissions according to FCC 15.247

Project number: G0M-1511-5232

Applicant: Kamstrup A/S
 EUT Name: READy Converter for Australia
 Model: READy Converter
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 25°C, Vnom: 5 V DC (lithium battery)
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3 m
 Mode: TX; 925 MHz; 2FSK; rooftop antenna
 Test Date: 2016-01-19
 Note:

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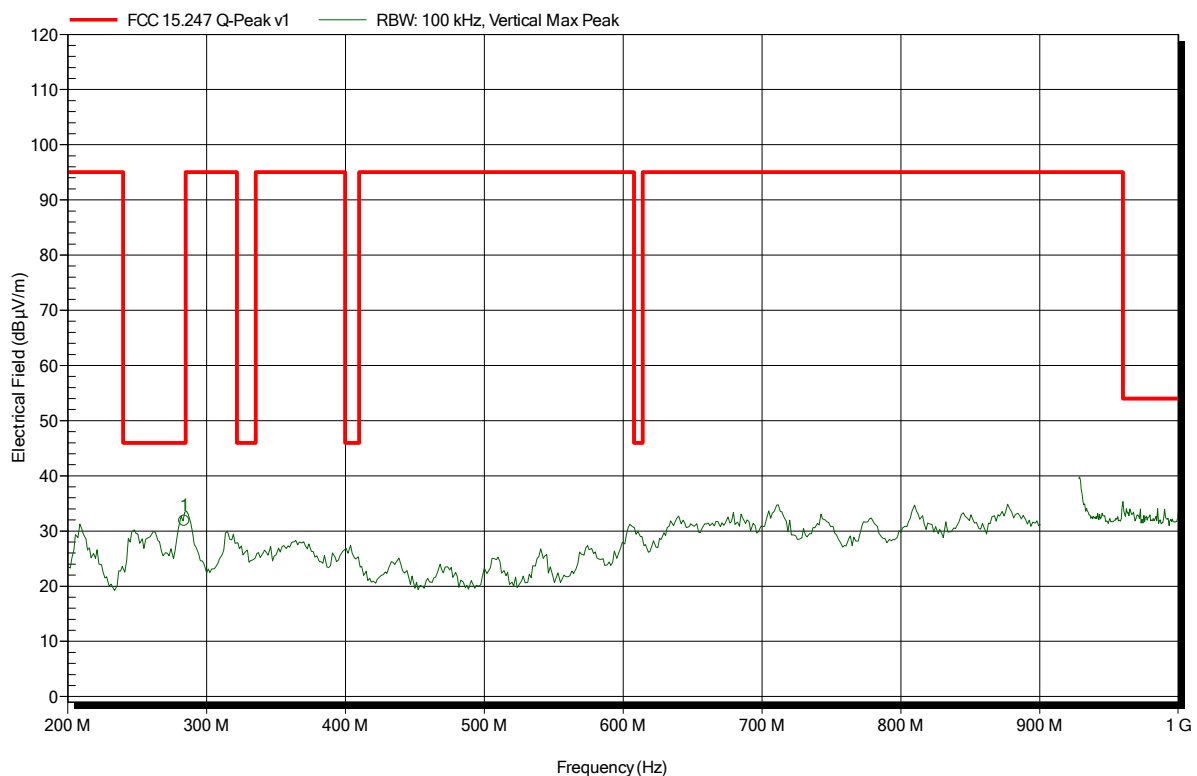
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
246.24 MHz	34.4 dBµV/m	46 dBµV/m	-11.6 dB	Pass

Spurious emissions according to FCC 15.247

Project number: G0M-1511-5232

Applicant: Kamstrup A/S
 EUT Name: READy Converter for Australia
 Model: READy Converter
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 25°C, Vnom: 5 V DC (lithium battery)
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: TX; 925 MHz; 2FSK; rooftop antenna
 Test Date: 2016-01-19
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
284.072 MHz	31.83 dBµV/m	46 dBµV/m	-14.17 dB	Pass

Test Report No.: G0M-1511-5232-TFC247DT-V01

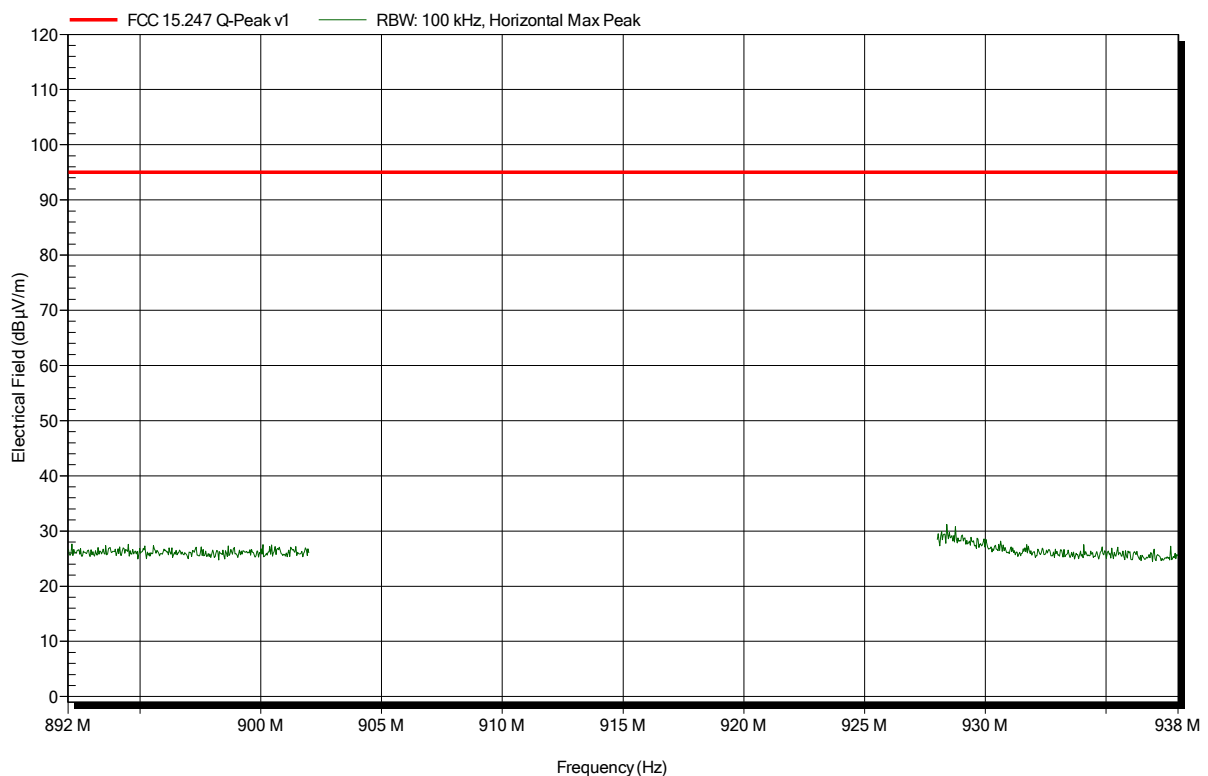
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.247

Project number: G0M-1511-5232

Applicant:	Kamstrup A/S
EUT Name:	READY Converter for Australia
Model:	READY Converter
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 5 V DC (lithium battery)
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; 925 MHz; 2FSK; rooftop antenna
Test Date:	2016-01-19
Note:	band-edge

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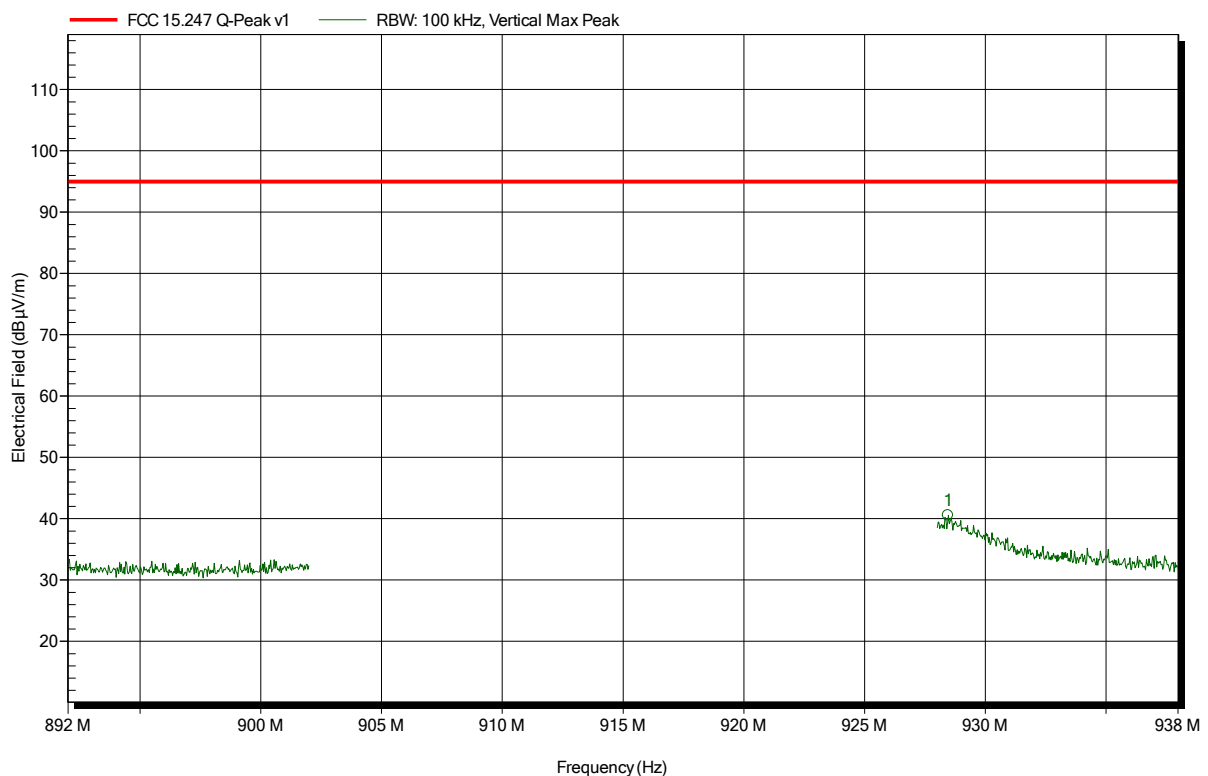


Spurious emissions according to FCC 15.247

Project number: G0M-1511-5232

Applicant: Kamstrup A/S
 EUT Name: READy Converter for Australia
 Model: READy Converter
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 25°C, Vnom: 5 V DC (lithium battery)
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: TX; 925 MHz; 2FSK; rooftop antenna
 Test Date: 2016-01-19
 Note: band-edge

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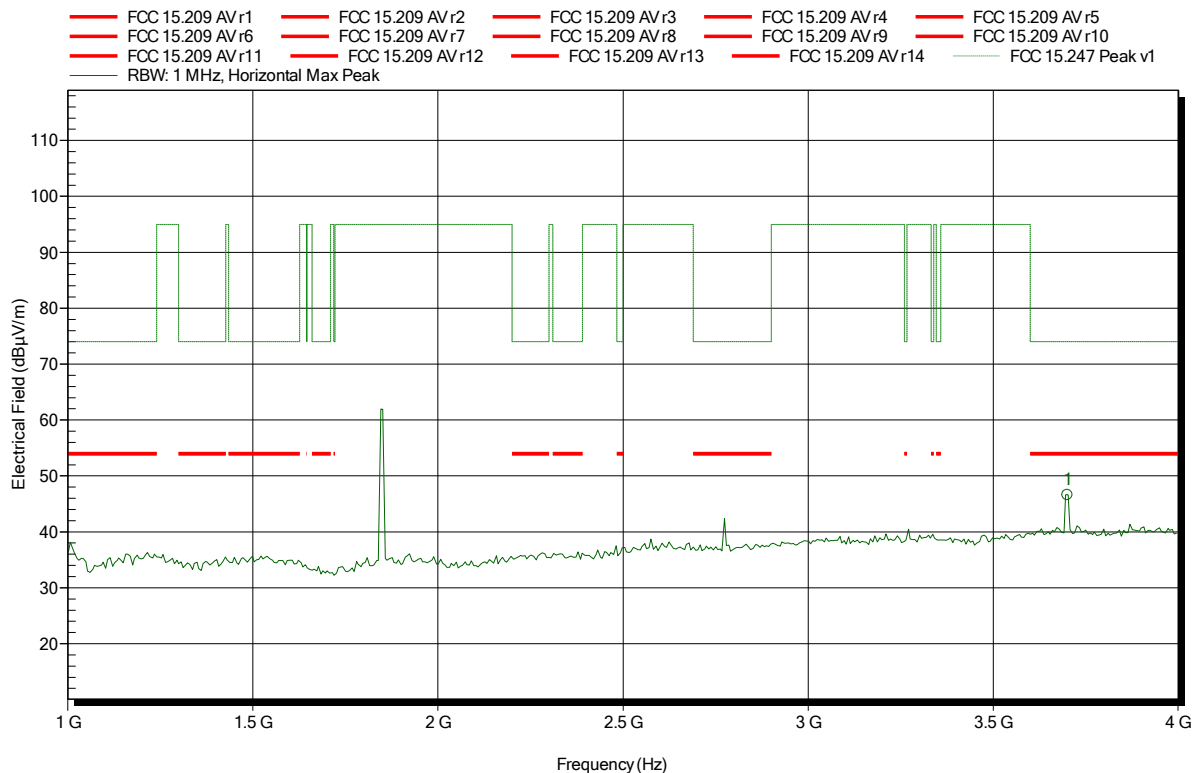
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
928.459 MHz	40.55 dBµV/m	95 dBµV/m	-54.45 dB	Pass

Spurious emissions according to FCC 15.247

Project number: GOM-1511-5232

Applicant: Kamstrup A/S
 EUT Name: READy Converter for Australia
 Model: READy Converter
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 25°C, Vnom: 5 V DC (lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; 925 MHz; 2FSK; rooftop antenna
 Test Date: 2016-01-19
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
3.701 GHz	46.6 dBµV/m	74 dBµV/m	-27.4 dB	Pass

Test Report No.: GOM-1511-5232-TFC247DT-V01

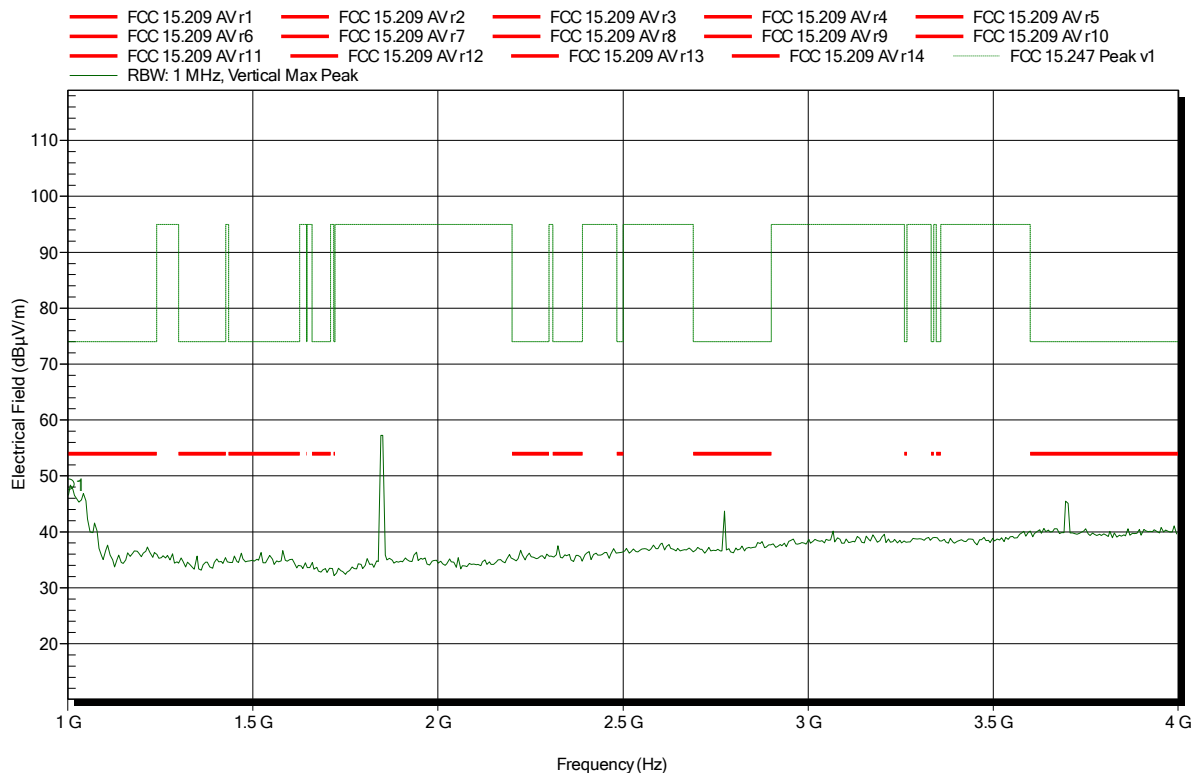
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.247

Project number: GOM-1511-5232

Applicant: Kamstrup A/S
 EUT Name: READy Converter for Australia
 Model: READy Converter
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 25°C, Vnom: 5 V DC (lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; 925 MHz; 2FSK; rooftop antenna
 Test Date: 2016-01-19
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.006 GHz	48.39 dBµV/m	74 dBµV/m	-25.61 dB	Pass

Test Report No.: GOM-1511-5232-TFC247DT-V01

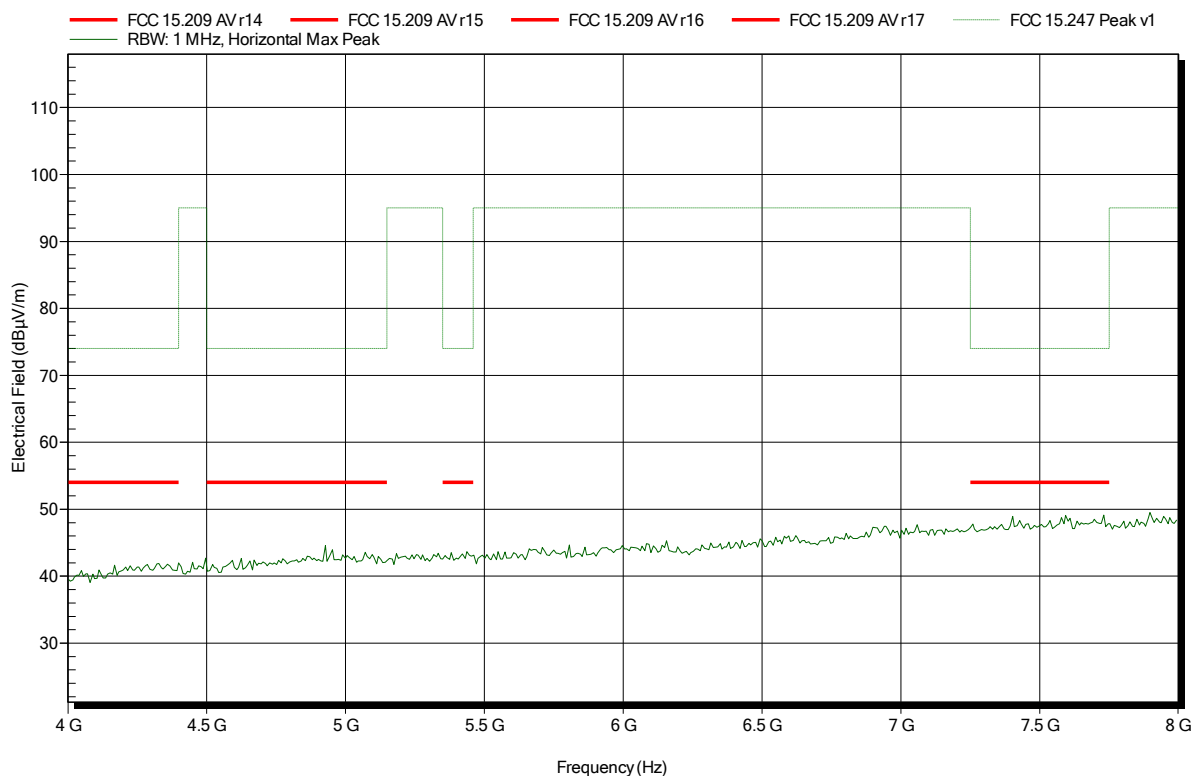
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.247

Project number: G0M-1511-5232

Applicant: Kamstrup A/S
 EUT Name: READY Converter for Australia
 Model: READY Converter
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 25°C, Vnom: 5 V DC (lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; 925 MHz; 2FSK; rooftop antenna
 Test Date: 2016-01-19
 Note:

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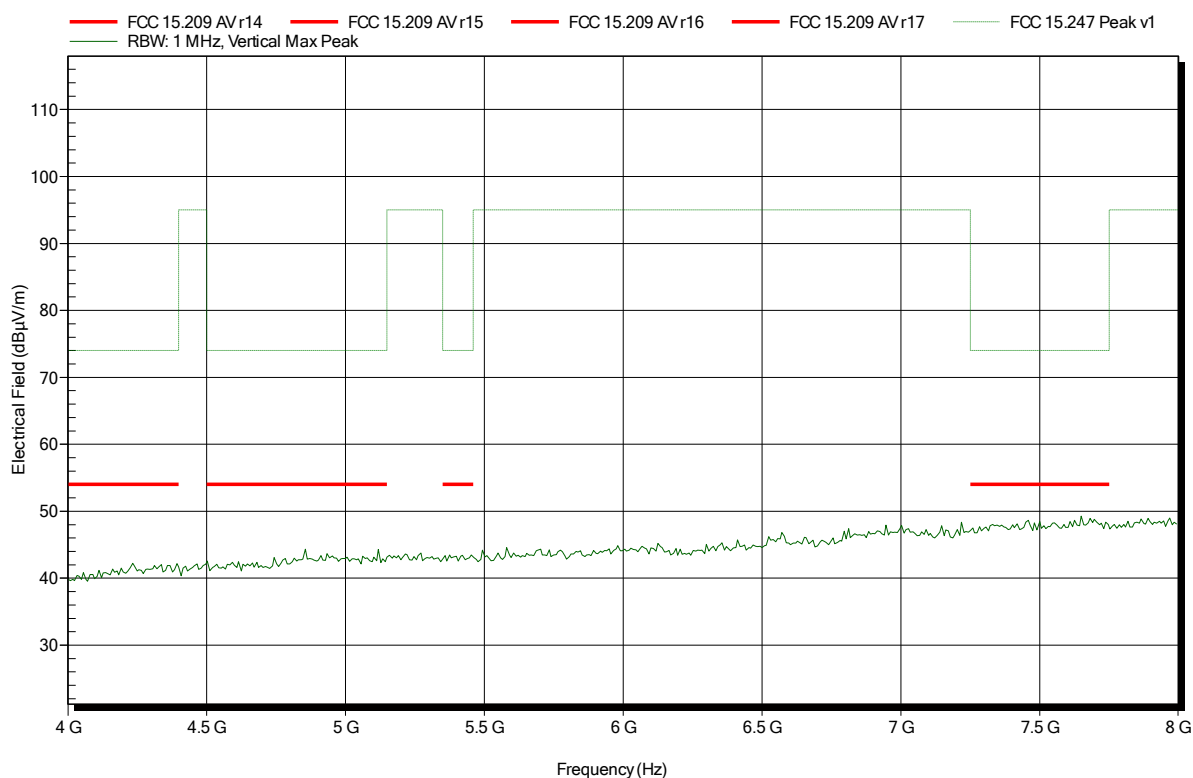


Spurious emissions according to FCC 15.247

Project number: G0M-1511-5232

Applicant: Kamstrup A/S
 EUT Name: READy Converter for Australia
 Model: READy Converter
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 25°C, Vnom: 5 V DC (lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; 925 MHz; 2FSK; rooftop antenna
 Test Date: 2016-01-19
 Note:

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Test Report No.: G0M-1511-5232-TFC247DT-V01

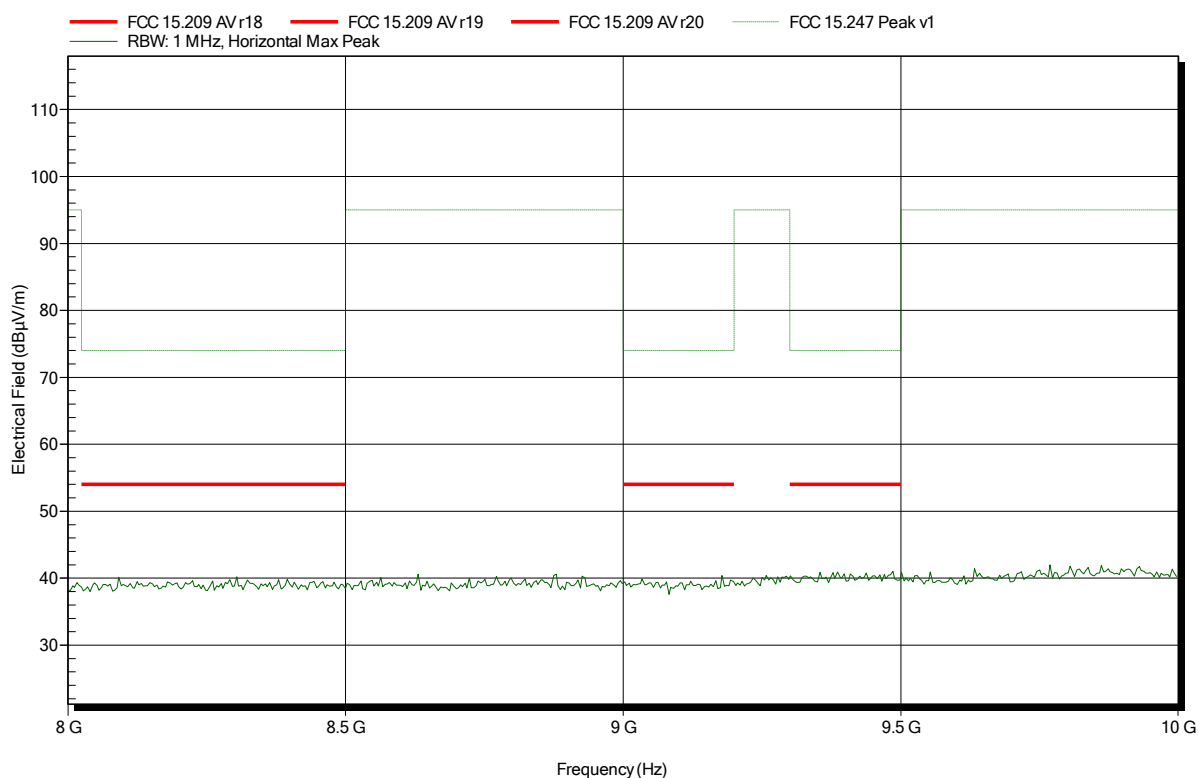
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.247

Project number: G0M-1511-5232

Applicant: Kamstrup A/S
 EUT Name: READy Converter for Australia
 Model: READy Converter
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 25°C, Vnom: 5 V DC (lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; 925 MHz; 2FSK; rooftop antenna
 Test Date: 2016-01-19
 Note:

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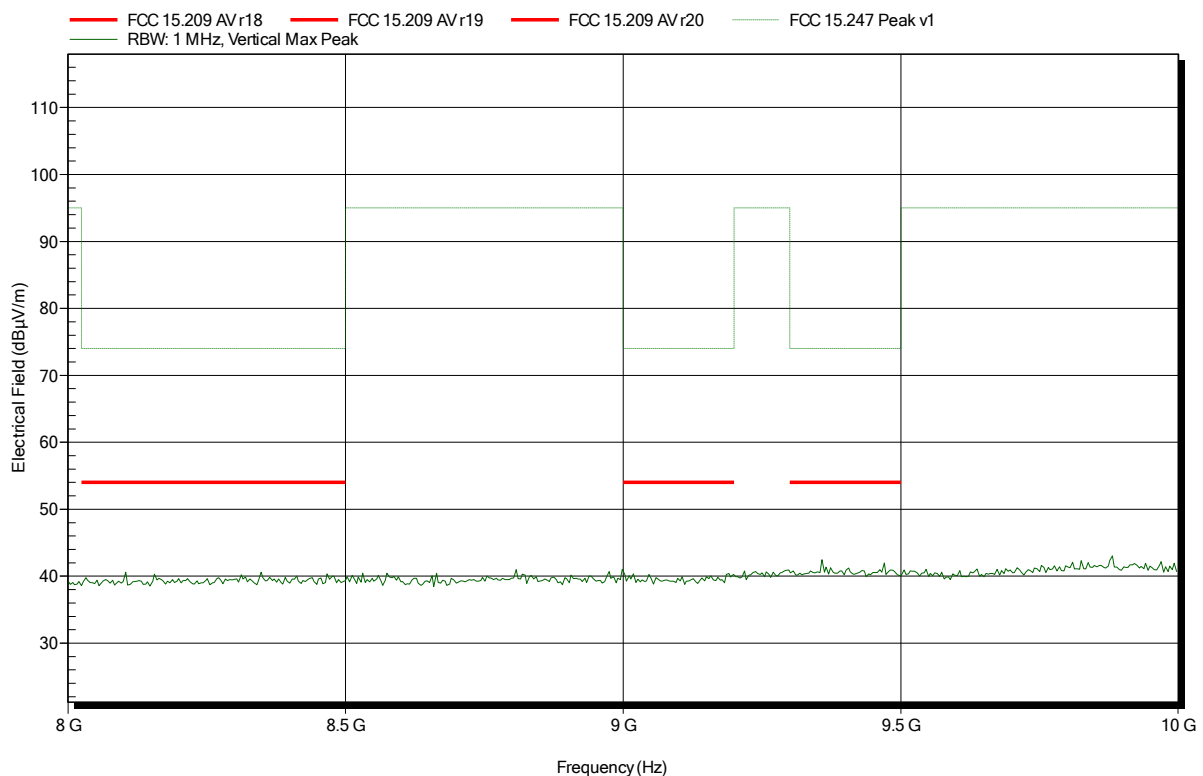


Spurious emissions according to FCC 15.247

Project number: G0M-1511-5232

Applicant:	Kamstrup A/S
EUT Name:	READY Converter for Australia
Model:	READY Converter
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 5 V DC (lithium battery)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; 925 MHz; 2FSK; rooftop antenna
Test Date:	2016-01-19
Note:	

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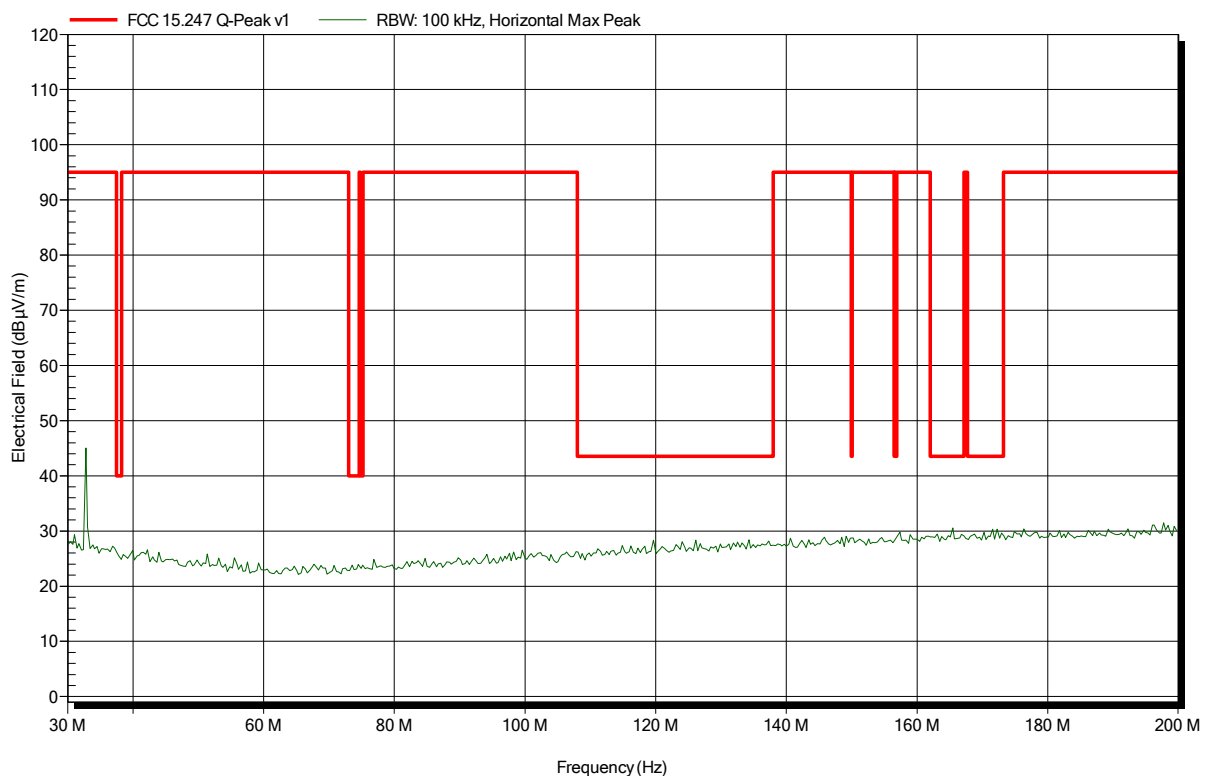


Spurious emissions according to FCC 15.247

Project number: G0M-1511-5232

Applicant:	Kamstrup A/S
EUT Name:	READY Converter for Australia
Model:	READY Converter
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 5 V DC (lithium battery)
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; 925 MHz; 2FSK; whip antenna
Test Date:	2016-01-19
Note:	

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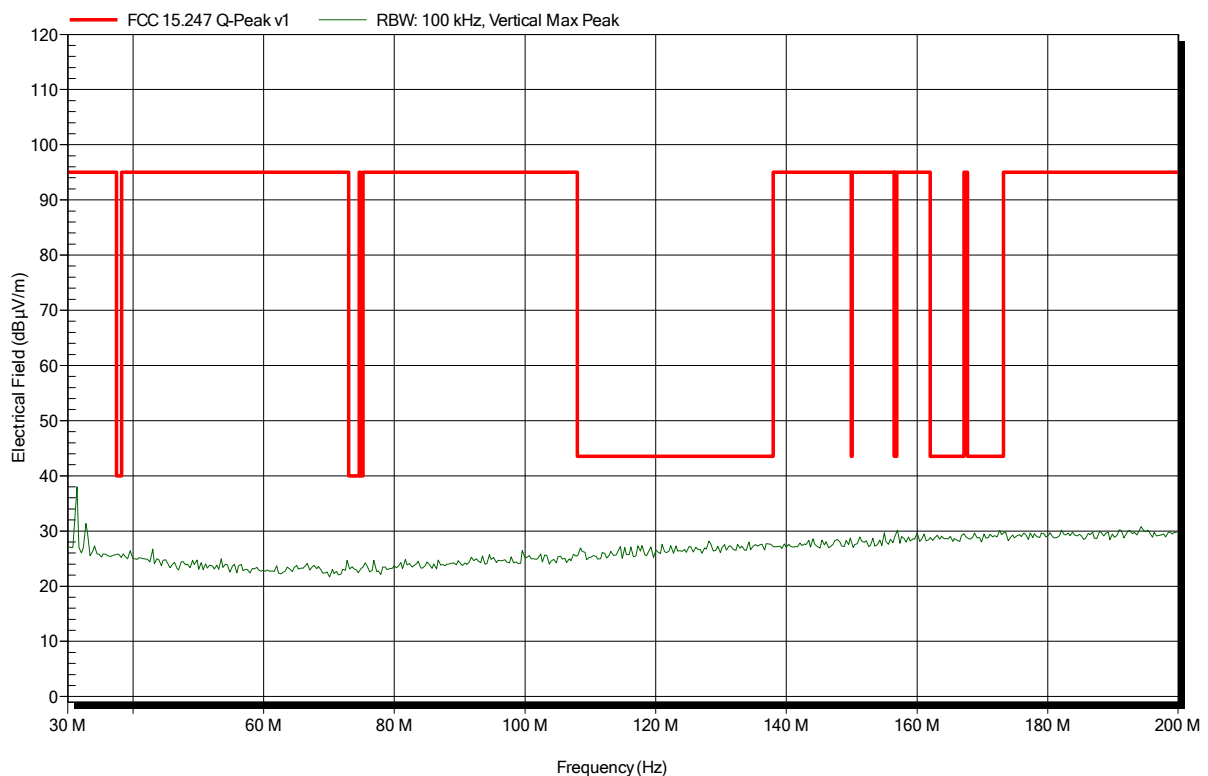


Spurious emissions according to FCC 15.247

Project number: G0M-1511-5232

Applicant: Kamstrup A/S
 EUT Name: READy Converter for Australia
 Model: READy Converter
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 25°C, Vnom: 5 V DC (lithium battery)
 Antenna: Rohde & Schwarz HK 116, Vertical
 Measurement distance: 3 m
 Mode: TX; 925 MHz; 2FSK; whip antenna
 Test Date: 2016-01-19
 Note:

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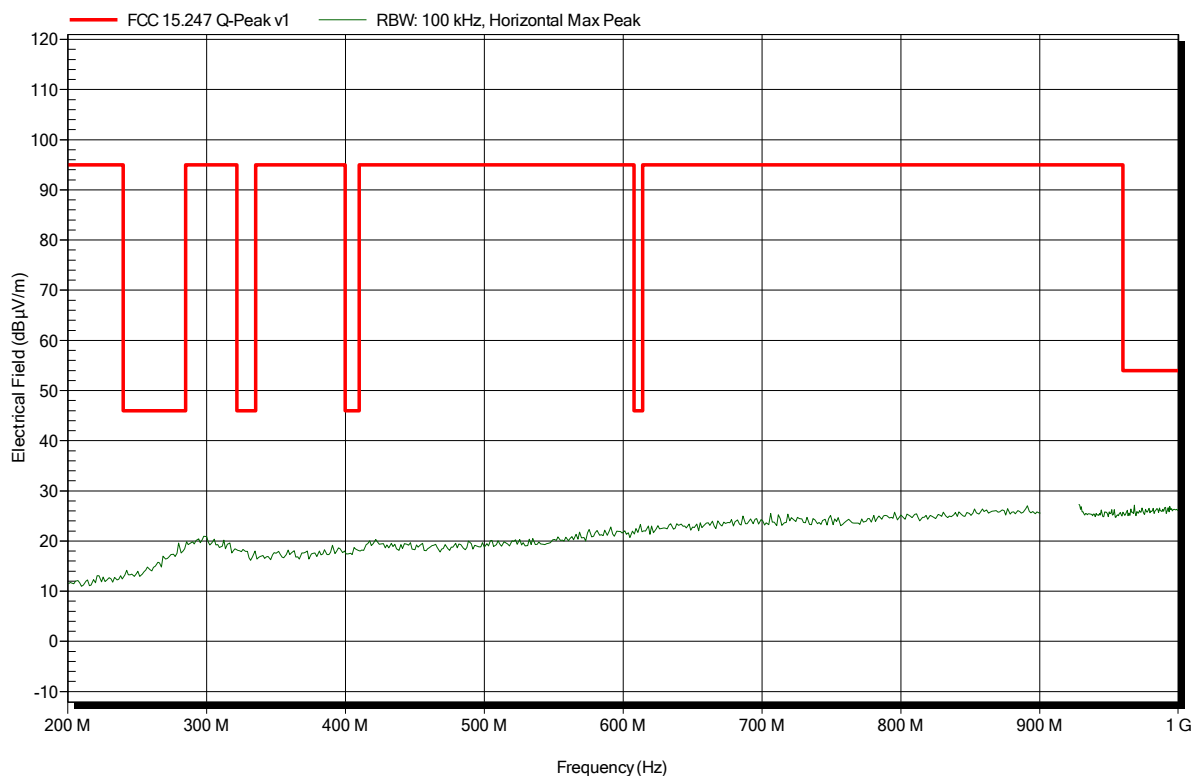


Spurious emissions according to FCC 15.247

Project number: G0M-1511-5232

Applicant: Kamstrup A/S
 EUT Name: READy Converter for Australia
 Model: READy Converter
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 25°C, Vnom: 5 V DC (lithium battery)
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3 m
 Mode: TX; 925 MHz; 2FSK; whip antenna
 Test Date: 2016-01-19
 Note:

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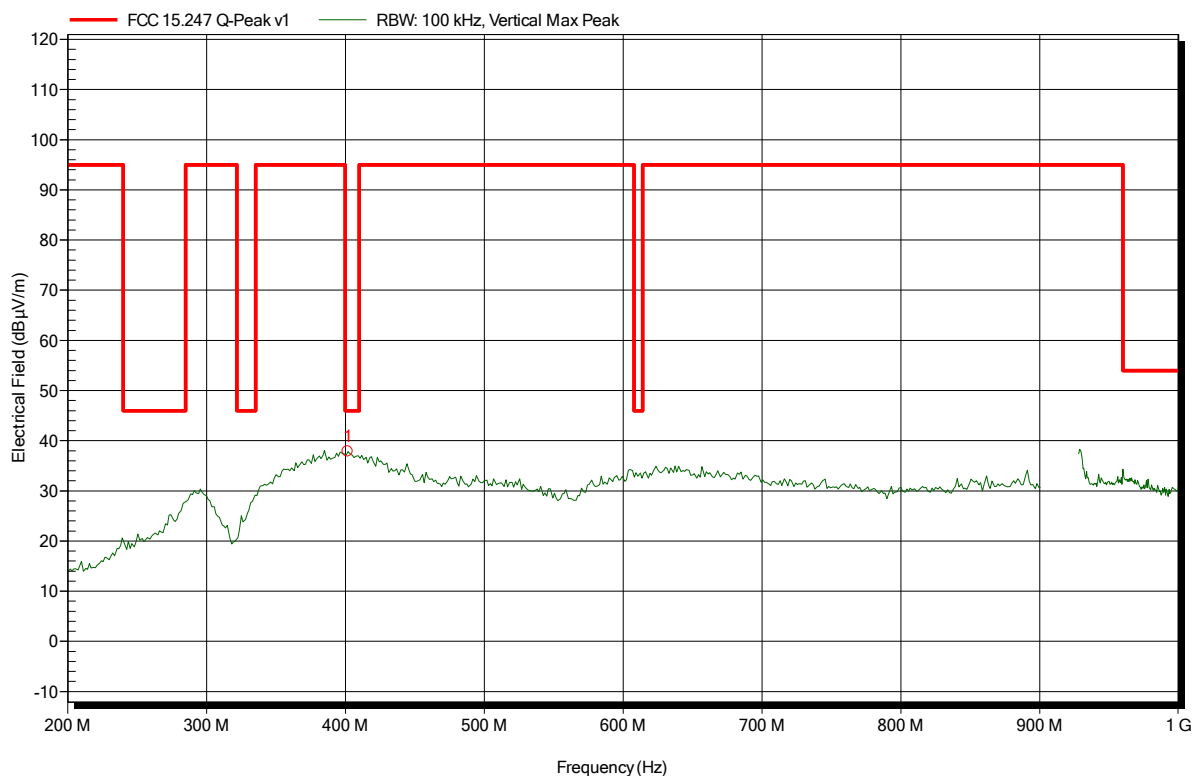


Spurious emissions according to FCC 15.247

Project number: G0M-1511-5232

Applicant:	Kamstrup A/S
EUT Name:	READY Converter for Australia
Model:	READY Converter
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 5 V DC (lithium battery)
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; 925 MHz; 2FSK; whip antenna
Test Date:	2016-01-19
Note:	

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
401.772 MHz	37.83 dBμV/m	46 dBμV/m	-8.17 dB	Pass

Test Report No.: G0M-1511-5232-TFC247DT-V01

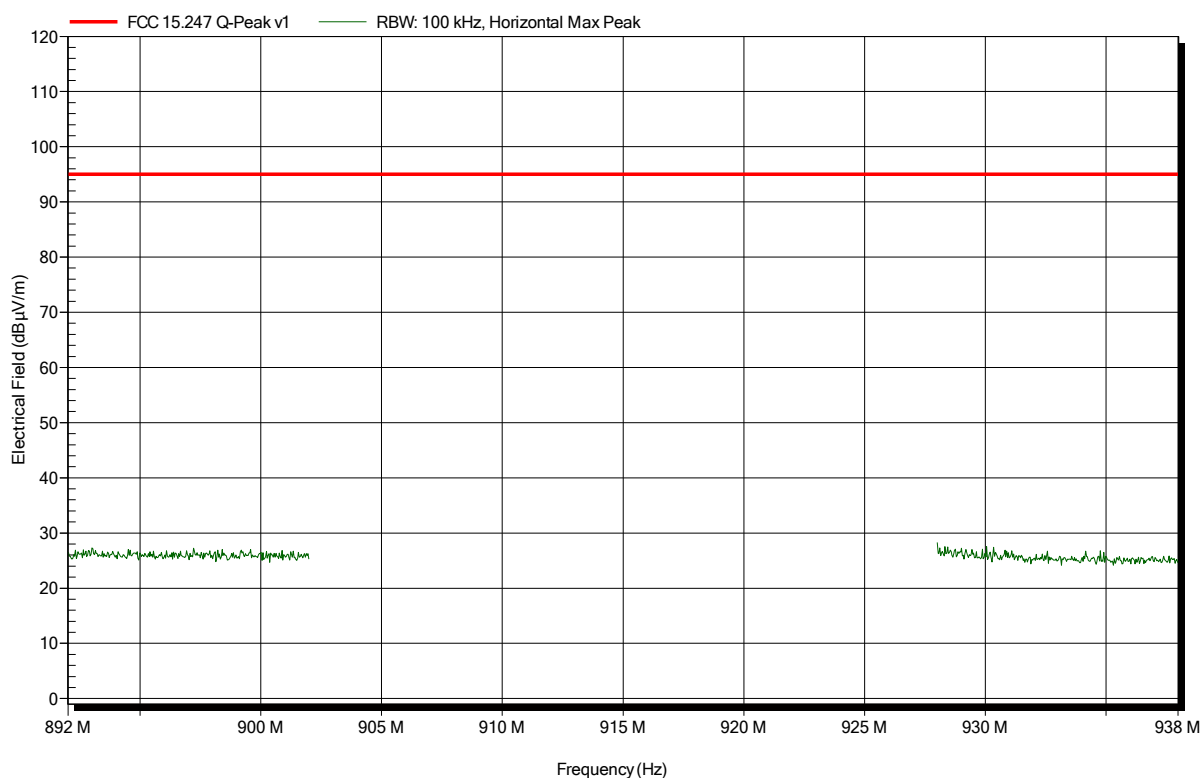
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.247

Project number: G0M-1511-5232

Applicant:	Kamstrup A/S
EUT Name:	READY Converter for Australia
Model:	READY Converter
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 5 V DC (lithium battery)
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; 925 MHz; 2FSK; whip antenna
Test Date:	2016-01-19
Note:	band-edge

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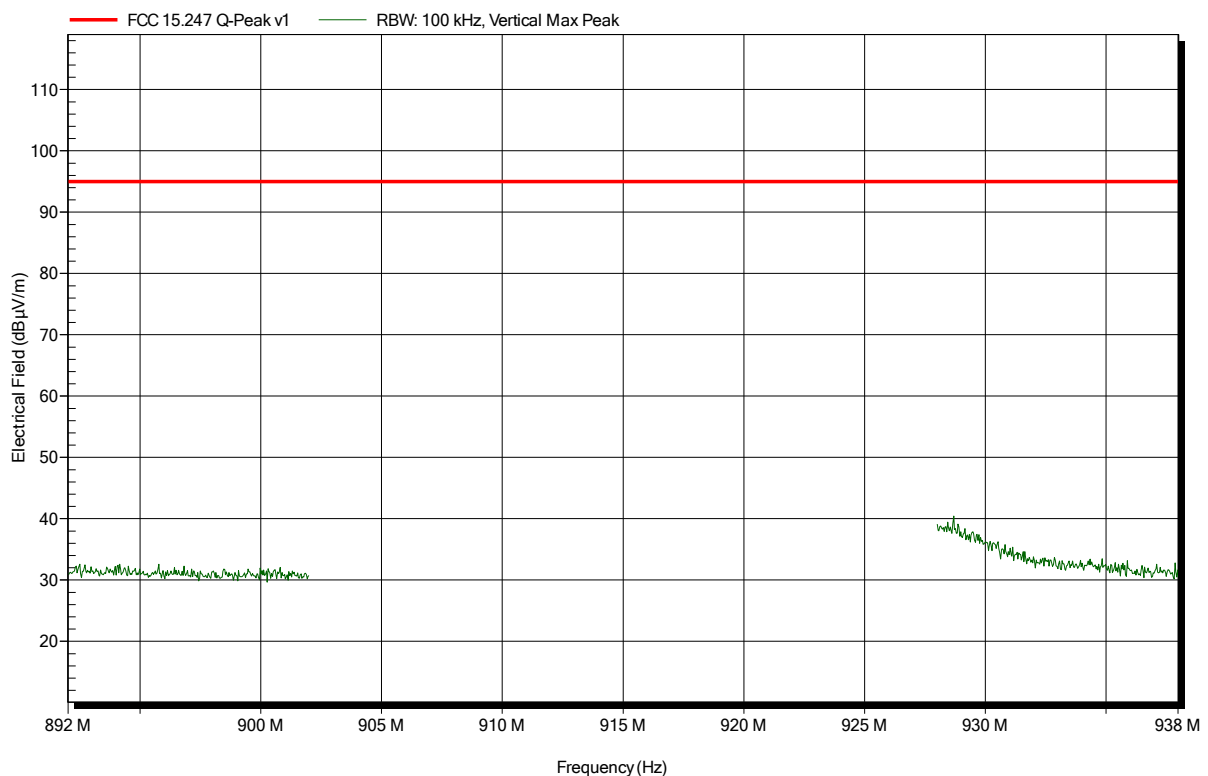


Spurious emissions according to FCC 15.247

Project number: G0M-1511-5232

Applicant:	Kamstrup A/S
EUT Name:	READY Converter for Australia
Model:	READY Converter
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 5 V DC (lithium battery)
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; 925 MHz; 2FSK; whip antenna
Test Date:	2016-01-19
Note:	band-edge

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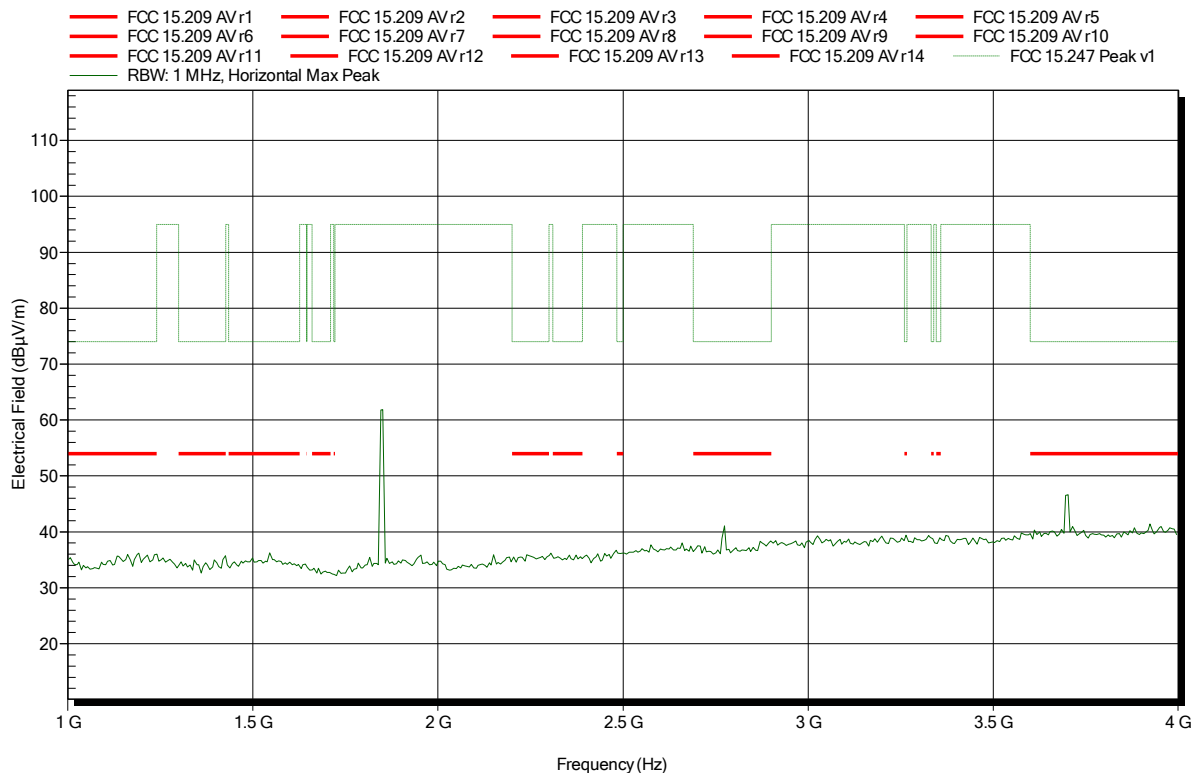


Spurious emissions according to FCC 15.247

Project number: GOM-1511-5232

Applicant: Kamstrup A/S
 EUT Name: READy Converter for Australia
 Model: READy Converter
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 25°C, Vnom: 5 V DC (lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: TX; 925 MHz; 2FSK; whip antenna
 Test Date: 2016-01-19
 Note:

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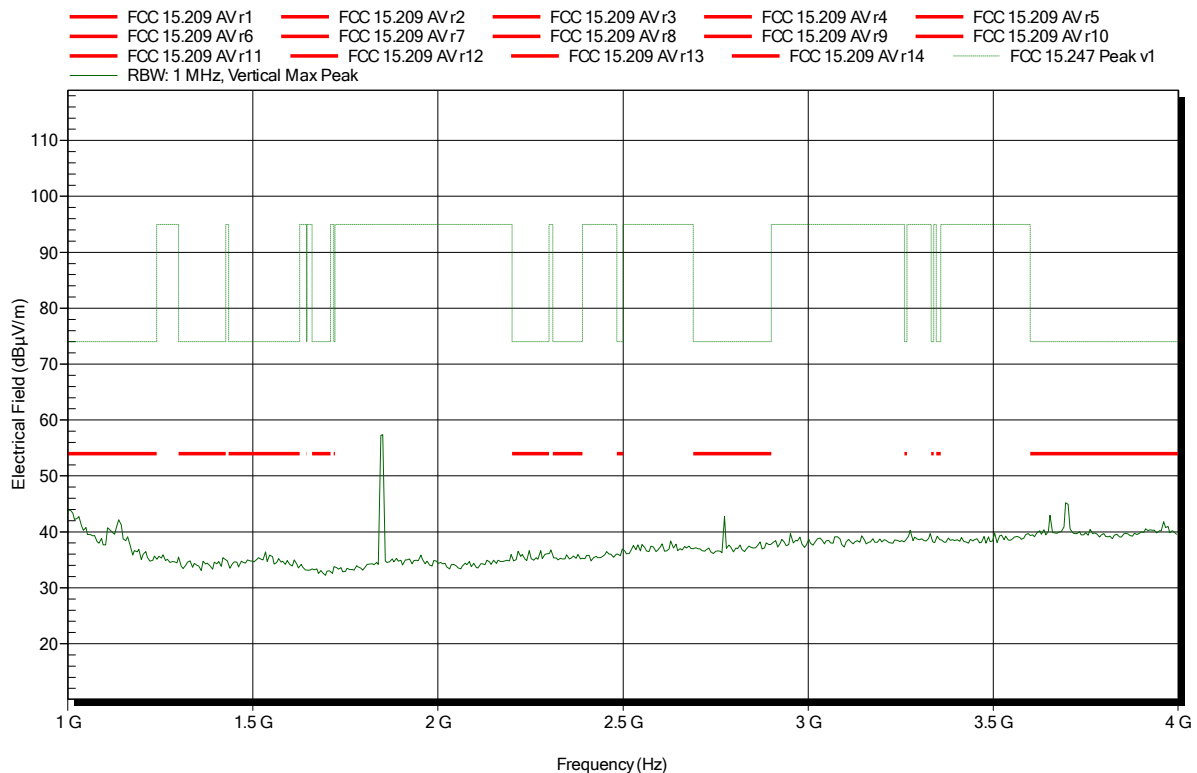


Spurious emissions according to FCC 15.247

Project number: GOM-1511-5232

Applicant: Kamstrup A/S
 EUT Name: READy Converter for Australia
 Model: READy Converter
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 25°C, Vnom: 5 V DC (lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; 925 MHz; 2FSK; whip antenna
 Test Date: 2016-01-19
 Note:

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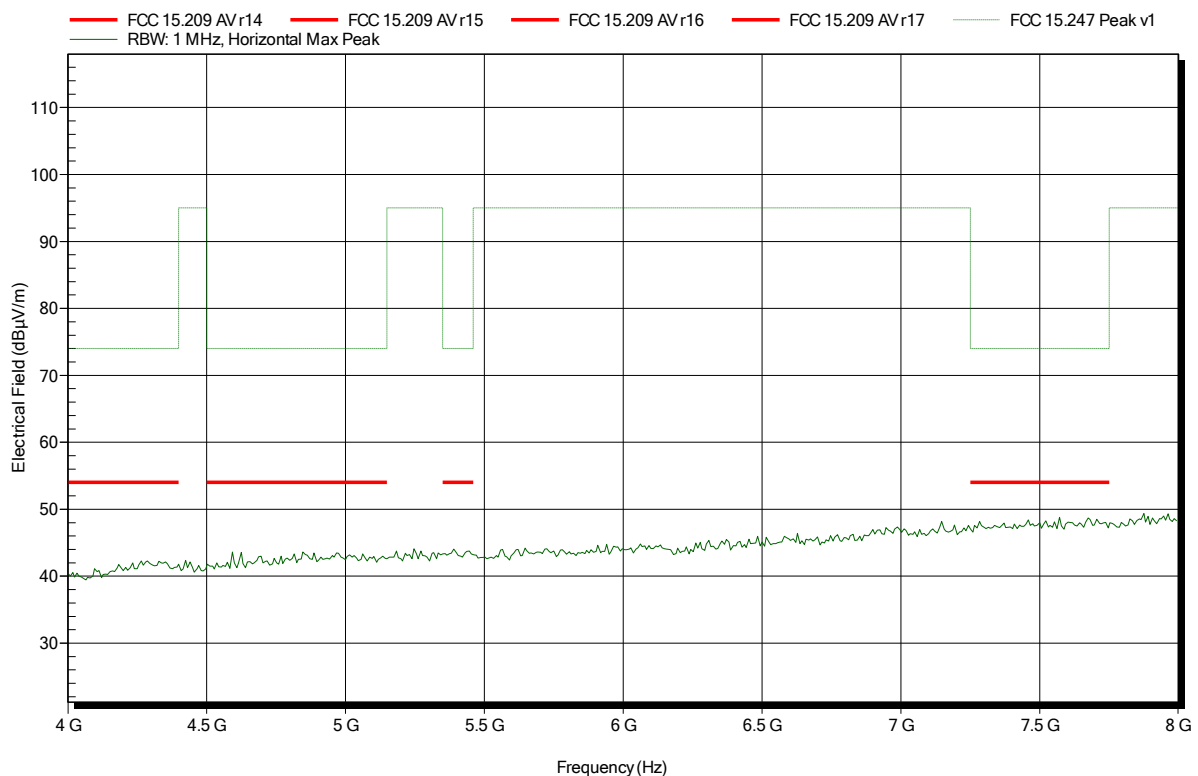


Spurious emissions according to FCC 15.247

Project number: G0M-1511-5232

Applicant:	Kamstrup A/S
EUT Name:	READY Converter for Australia
Model:	READY Converter
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 5 V DC (lithium battery)
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; 925 MHz; 2FSK; whip antenna
Test Date:	2016-01-19
Note:	

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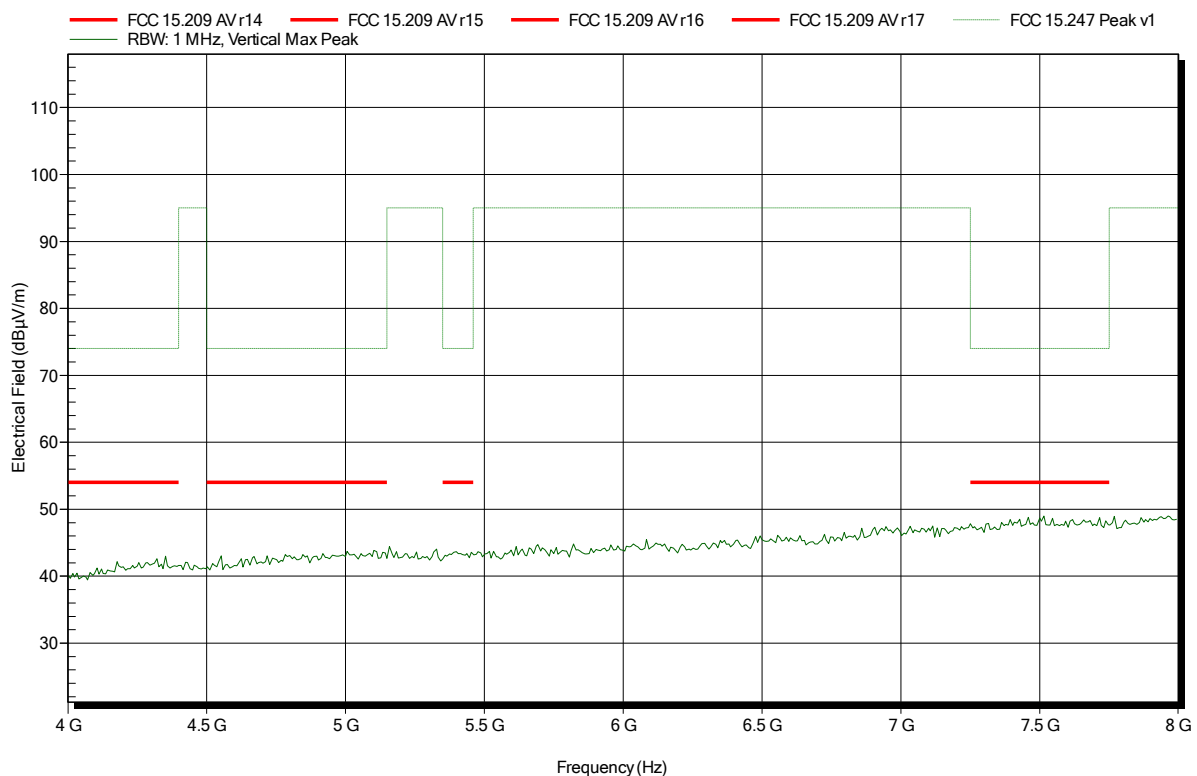


Spurious emissions according to FCC 15.247

Project number: G0M-1511-5232

Applicant: Kamstrup A/S
 EUT Name: READy Converter for Australia
 Model: READy Converter
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 25°C, Vnom: 5 V DC (lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; 925 MHz; 2FSK; whip antenna
 Test Date: 2016-01-19
 Note:

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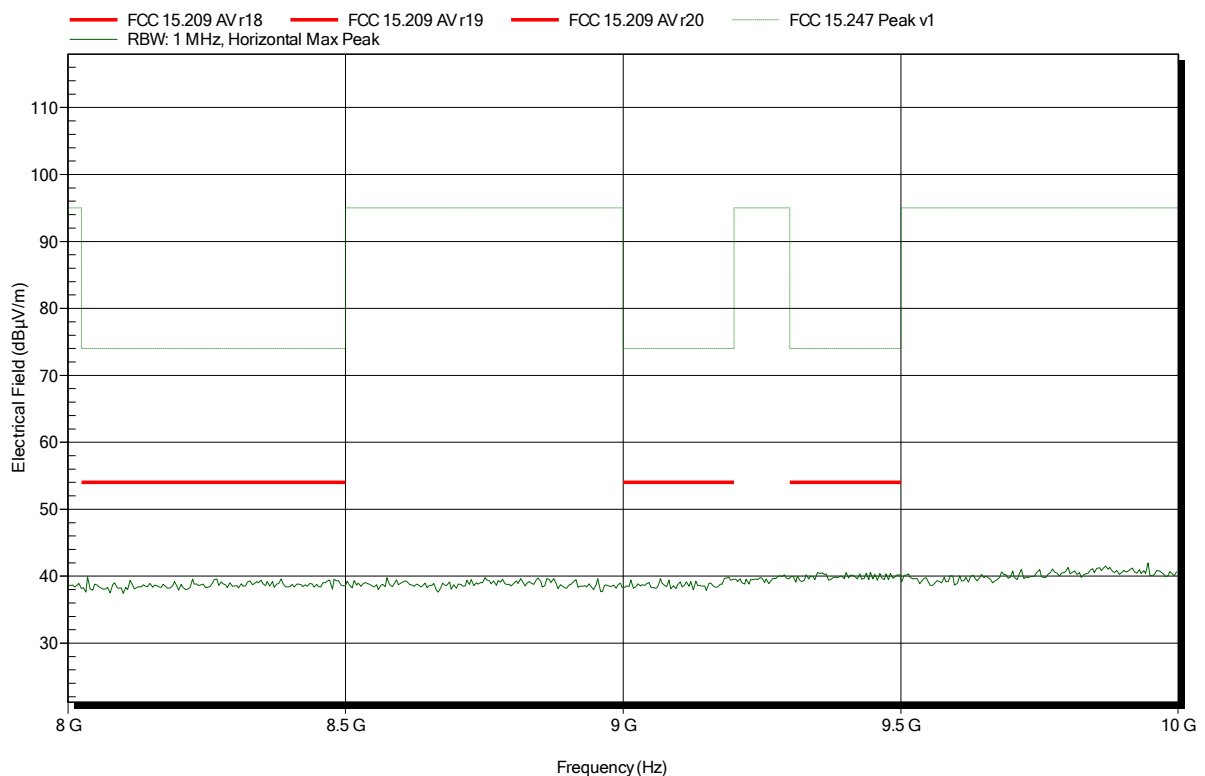


Spurious emissions according to FCC 15.247

Project number: G0M-1511-5232

Applicant: Kamstrup A/S
 EUT Name: READy Converter for Australia
 Model: READy Converter
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Treffke
 Test Conditions: Tnom: 25°C, Vnom: 5 V DC (lithium battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; 925 MHz; 2FSK; whip antenna
 Test Date: 2016-01-19
 Note:

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Test Report No.: G0M-1511-5232-TFC247DT-V01

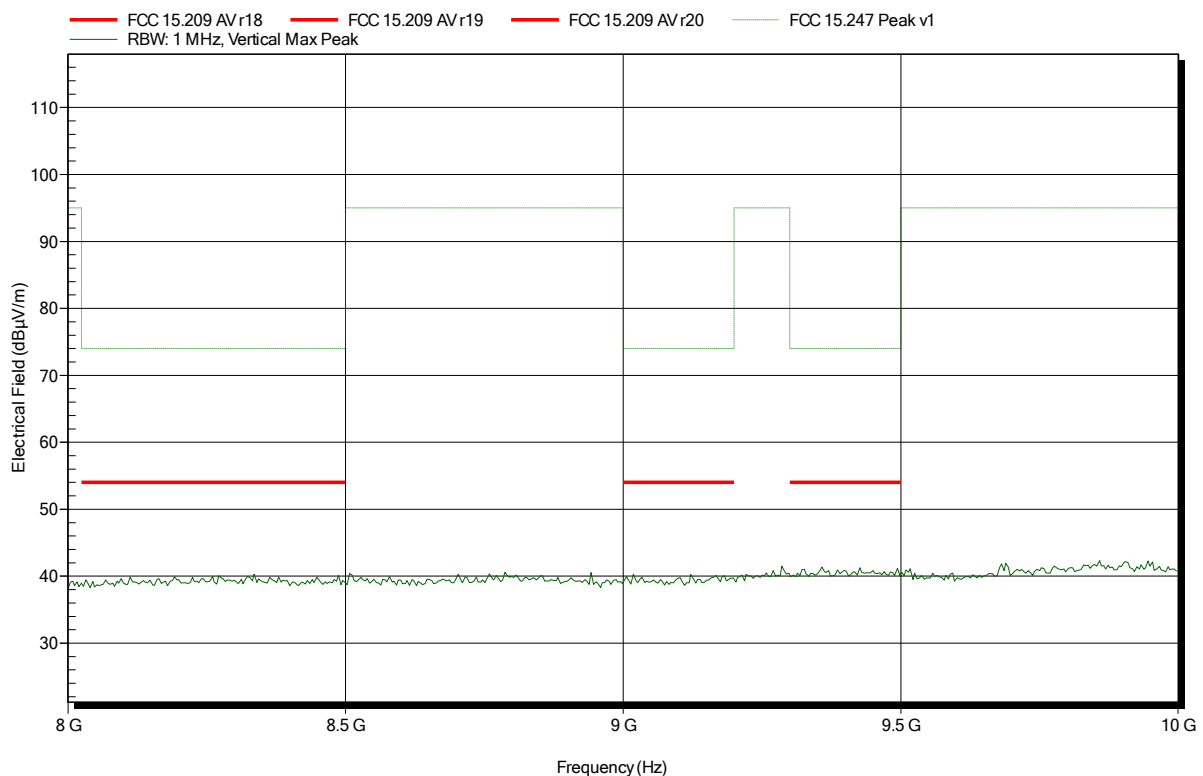
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC 15.247

Project number: G0M-1511-5232

Applicant:	Kamstrup A/S
EUT Name:	READY Converter for Australia
Model:	READY Converter
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 5 V DC (lithium battery)
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; 925 MHz; 2FSK; whip antenna
Test Date:	2016-01-19
Note:	

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Test Report No.: G0M-1511-5232-TFC247DT-V01

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