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DELTA Test Report

TEST REPORT issued by an Accredited Testing Laboratory

1688
ISO/IEC 17025

EMC emission test of In Place Reader IPR

Performed for DeLaval International AB

REC-E703806_2 rev D
Project no.: E703806

13 November 2016

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Title	EMC emission test of In Place Reader IPR
Test object	In Place Reader IPR
Report no.	REC-E703806_2 Rev. C
Project no.	E703806
Test period	May 2015 to 10 October 2016
Client	DeLaval International AB Box 39 14721 Tumba Sweden
Contact person	Tommy Gunnarsson E-mail: Tommy.gunnarsson@delaval.com
Manufacturer	DeLaval International AB
Specifications	FCC:47 CFR Part 15, subpart C IC RSS-GEN, issue 4, IC RSS-210, issue 8
Results	The test object was found to be in compliance with the specifications, as listed in Section 1.
Test personnel	Lars Johnsson
Date	13 November 2016

Project Manager

Lars Johnsson
DELTA

Responsible

Ulf Bjerke. Technical manager
DELTA

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1. Summary of tests

Tests	Test methods	Results
Measurement of radio frequency voltage on mains	ANSI C63.10:2013 FCC CFR 47, Part 15, Subpart C clause 15.207 IC RSS Gen, Issue 4, section 7.2.4	Passed
Measurement of radio frequency electromagnetic field	ANSI C63.10:2013 FCC CFR 47, Part 15, Subpart C clause 15.209 IC RSS Gen, Issue 4, section 7.2.5	Passed
Permitted frequency range of modulation BW	ANSI C63.10:2013 FCC CFR 47, Part 15, Subpart C clause 15.215 IC RSS Gen, Issue 4, section 6.6)	Passed

Conclusion

The test object(s) mentioned in this report meet(s) the requirements of the standard(s) stated below.

- FCC:47 CFR Part 15, subpart C
- IC RSS-GEN, issue 4, IC RSS-210, issue 8

The test results relate only to the object(s) tested.

2. Test object(s) and auxiliary equipment

2.1 Test object(s)

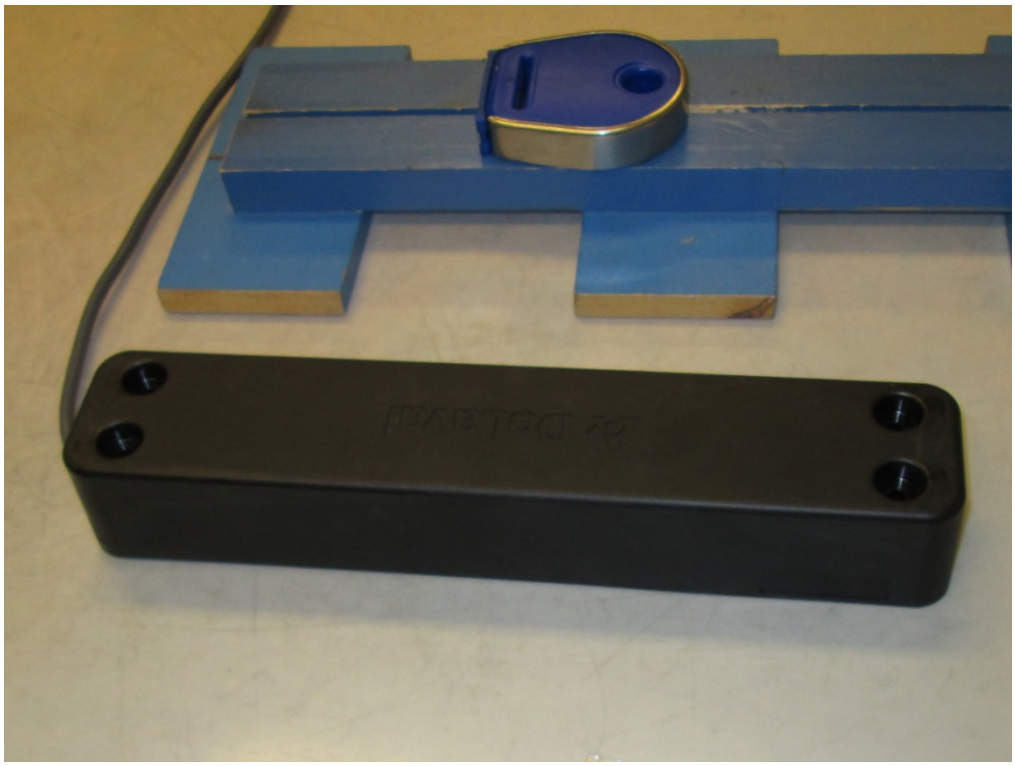


Photo 2.1.1 Test object. Transponder in background.

Test object 2.1.1

Name of test object	DeLaval in place reader IPR
Model / type	5.3
Part no.	874863 81
Serial no.	EMC1
FCC ID	UCS874863
IC ID	6576A-874863
Manufacturer	DeLaval
Supply voltage	12-14VDC
Software version	IPR_1.0.A.032
Hardware version	5.2
Cycle time	-
Highest frequency generated or used	68 MHz
Received	Date: 14 November 2014 Status: Prototype

Test object 2.1.2

Name of test object	DeLaval in place reader IPR
Model / type	5.3
Part no.	874863 81
Serial no.	Prototype
FCC ID	UCS874863
IC ID	6576A-874863
Manufacturer	DeLaval
Supply voltage	12-14VDC
Software version	IPR_1.0.A.032
Hardware version	5.4
Cycle time	-
Highest frequency generated or used	68 MHz
Received	Date: 18 November 2015 Status: Prototype
Comment	Used during measurement of radio frequency voltage on mains, 18 November 2015

Radio parameters

Operating frequency	134.2 kHz
Number of channels	-
Channel spacing:	-
Active frequency hopping	No
Spectrum access technique	-
Duty cycle	60%, (60 ms on 144 ms off)
Number of modulation forms/ data rates	1
Number of power levels	2; default and max
Ambient temperature low	-25° C
Ambient temperature high	+55° C
Power supply	12-14VDC
Antenna type	Integral antenna

Above information regarding the receiver and the transmitter is declared by the manufacturer.

2.2 Auxiliary equipment

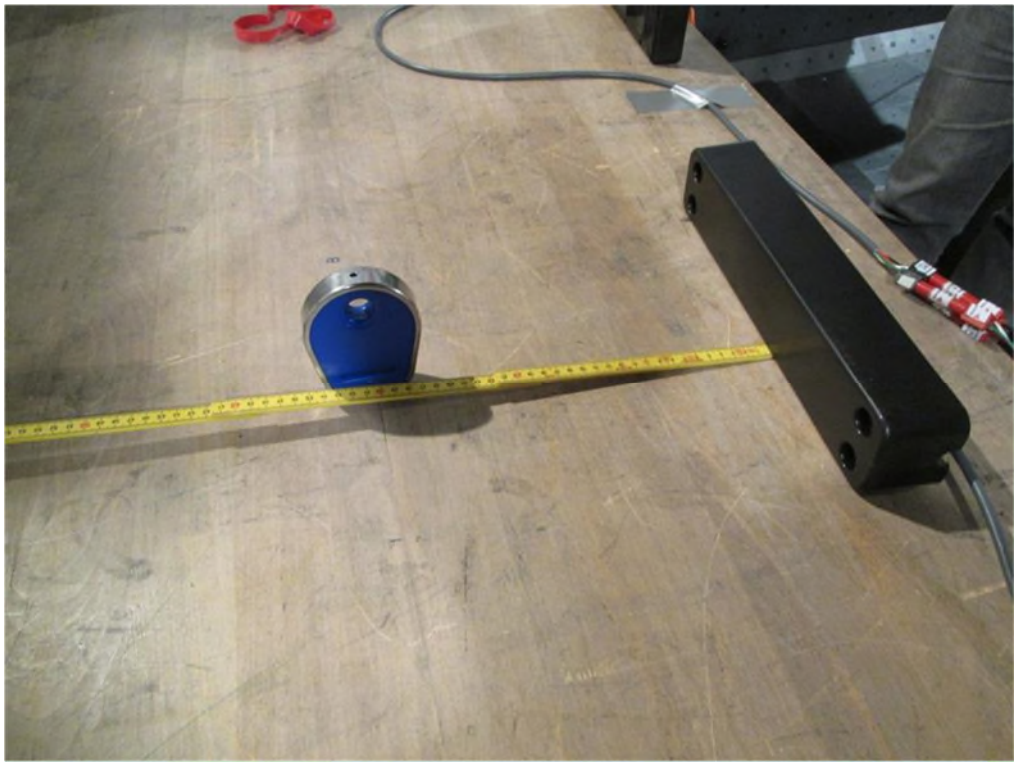


Photo 2.2.1 Auxiliary equipment 2.2.4 DeLaval transponder (left)

Auxiliary equipment 2.2.1

Name of auxiliary equipment	MPC2
Model / type	MPC2
Part no.	928500-83
Serial no.	AJ653091
FCC ID	N/A
Manufacturer	DeLaval
Supply voltage	12VAC
Highest frequency generated or used	12MHz
Comment	Auxiliary equipment supplied by the client, who also has the responsibility for its correct function and set up.

Auxiliary equipment 2.2.2

Name of auxiliary equipment	DeLaval Transponder
Model / type	875574-80
Serial no.	CD 01095
FCC ID	N/A
Manufacturer	DeLaval
Supply voltage	N/A
Comment	Auxiliary equipment supplied by the client, who also has the responsibility for its correct function and set up.

Auxiliary equipment 2.2.3

Name of auxiliary equipment	Transformer 12 VAC
Model / type	PVS 152
Part no.	7215-0007
Serial no.	9932
FCC ID	N/A
Manufacturer	Tufvassons
Supply voltage	230 VAC
Comment	Auxiliary equipment supplied by the client, who also has the responsibility for its correct function and set up.

3. General test conditions

3.1 Test setup during test

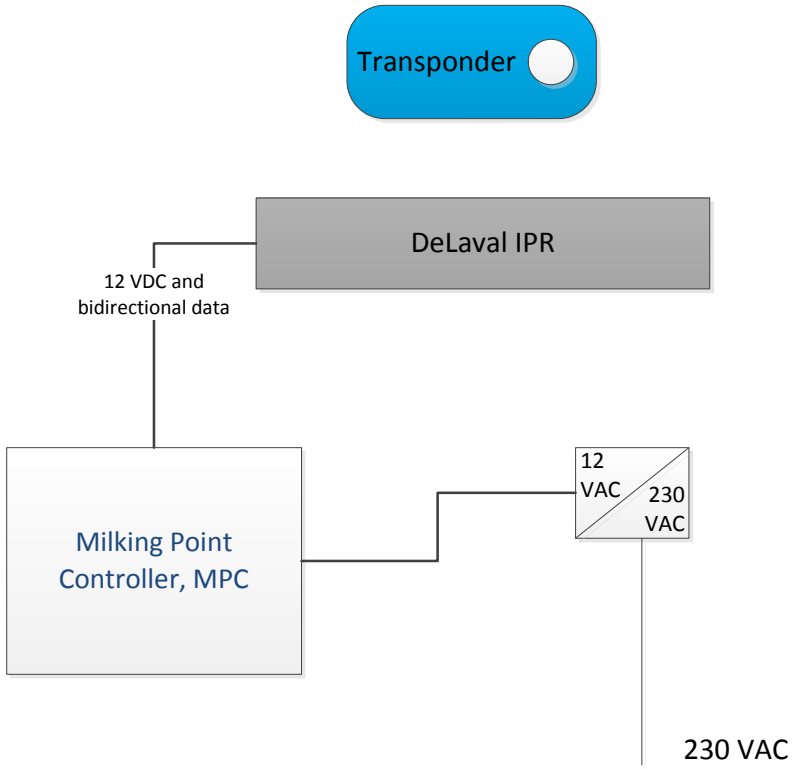


Figure 3.1.1 Block diagram of test object(s) with cables and auxiliary equipment.

3.1.1 Description and intended use of test object

The in place reader (article number 874863 – xx) is a device to activate an ID tag and receive the tag ID from a transponder located on an animal in a DeLaval equipped farm. ID tags are primarily attached to cows, sheep and goats.

The IPR is developed to activate full duplex ISO tags (FDX tags), half duplex ISO tags (HDX tags) and the DeLaval proprietary B-transponder tags (BT tags).

3.1.2 Test modes during emission tests

See document 875574.

3.1.3 Nominal power consumption

Average power consumption= 4W.

3.2 Modifications of the test object

No modification was incorporated.

3.3 Test sequence

The tests described in this test report were performed in the following sequence:

1. Measurement of radio frequency electromagnetic field and occupied bandwidth
2. Measurement of radio frequency voltage on mains.
3. Measurement of radio frequency electromagnetic field. Verification on OATS

3.4 Measurement procedure for Radiated emission tests

The measurement facility is a semi-anechoic chamber, validated according to CISPR 16 and ANSI C63.4. The volumetric Normalized Site Attenuation, NSA, satisfy the ± 4dB criterion, in the frequency range 30 MHz to 1000 MHz, in a cylinder with diameter of 3 m and height of 2 m at 3 m and 10 m measurement distance.

The chamber is validated according to CISPR 16-1-4 VSWR method and complies with the 6 dB requirements in a cylinder with diameter of 2 m and a height of 2 m at 3 m measurement distance.
The details of used test equipment are shown in section 6 List of instruments.

The test object was tested as table top equipment, which means that it was placed on a non-conductive table, 80 cm above the ground reference plane. The antenna distance was 3 m in the frequency range 30 MHz to 26.5 GHz.

The measurement procedure is as following:

- Pre-scan measurements are performed with peak detector in 64 positions when the test object is measured in eight directions and four heights (from 1 m to 4m) both vertical and horizontal polarization.

- For measurement above 1 GHz, RF absorbers are placed on the turntable and on the floor between the measuring horn antenna and turntable.
  Mast tilting is used to keep the main lobe of the antenna pattern on the test object in any elevation above the ground.

After these initial measurements, at critical frequencies where the emission is above or closer than 20 dB from the limit line, the test object is continuously scanned around the positions found during pre-scan measurements for maximum response.
The emission is then measured with quasi-peak detector on frequencies below 1 GHz and with average and peak detector above 1 GHz

The stated levels are a summation of the following factors:

Radiated emission	Measured level (dBµV/m) = Analyzer reading [dBµV] + cable loss [dB] - preamplifier gain [dB] + antenna factor [dBµV/m] + attenuator [dB] (impedance matching).

Conducted emission	Measured level [dBµV] = Analyzer reading [dBµV] + + cable loss[dB] + attenuator (impedance matching) [dB] + Limiter [dB]

4. Test results

4.1 Measurement of spurious emissions. 0.09 – 30 MHz

Test object	DeLaval in place reader IPR	Sheet	RE Loop-1
Type	5.3	Project no.	E703806
Serial no.	EMC1	Date	10 Oct. 2016
Client	DeLaval International AB	Initials	LAJ
Specification	FCC CFR 47, Part 15, Subpart C	Frequency	0.15-30 MHz

Test method Characteristics	ANSI C63.10:2013 Compl. search, ant at 10 m & 30 m, 1 m height, 3 right ang	Temperature Humidity	6 °C 86 % RH
Detector	Peak	Bandwidth	200 Hz/ 9 kHz
Test equipm.	EMC Hall A Västerås Setup VED1	Uncertainty	3.24 dB

Comments

Preview measurement performed in a semi anechoic chamber with peak detector. This was to assess the spurious emission outside the intended transmission band.

Verification of the fundamental frequency and all spurious emissions found at the preview measurement performed at an open area outdoors.

Test result

The measured field strengths were below the limit

Compliant

Yes

Comments

The transmitter duty cycle was 60 ms on/ 42 ms off.

Radiated Emission Test

Test Description:	Radiated emission. Complete measurement 9 kHz - 30 MHz
Date:	2015-04-17
EUT Name:	DeLaval in place reader
Manufacturer:	DeLaval International AB
Serial Number:	
Operating Conditions:	Continous Tx (with normal duty cycle)
Test Site:	DELTA Development Technology AB
Operator Name:	Lars J
Test Specification:	ANSI C63.10:2013
Comment:	Antenna perpendicular to test object (ant height 1 m, distance 10 m) Peak detector.

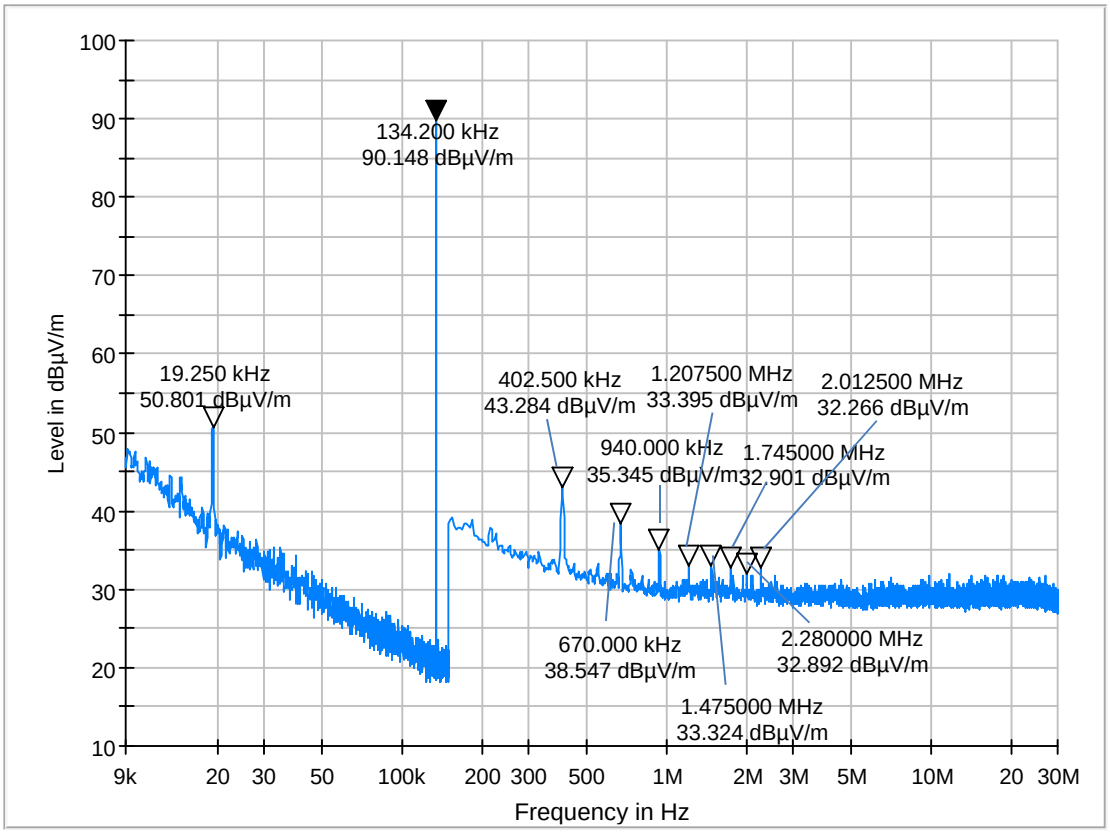


Figure 4.1.1 Preview measurement in semi anechoic chamber.
Note; performed with peak detector.

The frequencies (fundamental and harmonics) identified in the measurement above were measured at an outdoor open area test site.
The table below shows the results from the outdoor measurement.

Final_Result(1)

Frequency (MHz)	Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Measurement distance (m)	Antenna pos	Azimuth (deg)
0.01925	46.64	101.00	54.36	0.200	10	Perpendicular	0
0.13420	79.80	84.14	4.34	0.200	10	Perpendicular	270
0.40250	32.19	74.61	42.42	9.000	10	Perpendicular	90
0.67000	31.22	50.19	18.97	9.000	10	Perpendicular	270
0.94000	28.84	47.26	18.42	9.000	10	Perpendicular	270
1.20750	28.14	45.09	16.95	9.000	10	Perpendicular	180
1.47500	27.18	43.36	16.18	9.000	10	Perpendicular	0
1.74500	23.45	48.60	25.15	9.000	10	Perpendicular	0
2.01250	23.00	48.60	25.60	9.000	10	Perpendicular	180
2.28000	30.74	48.60	17.86	9.000	10	Perpendicular	0

Photo 4.1.1 Test setup regarding measurement of radio frequency electromagnetic field. Preview measurement in shielded room

Photo 4.1.2 Test setup regarding measurement of radio frequency electromagnetic field. Preview measurement in shielded room

Photo 4.1.3 Test setup regarding measurement of radio frequency electromagnetic field. Verification measurement outdoors. 10 m measurement distance.

4.2 Measurement of spurious emissions. 30 - 1000 MHz

Test object	DeLaval in place reader IPR	Sheet	RE Loop-2
Type	5.3	Project no.	E703806
Serial no.	EMC1	Date	27 Nov. 2014
Client	DeLaval International AB	Initials	LAJ
Specification	FCC CFR 47, Part 15, Subpart C	Frequency	30-1000 MHz

Test method Characteristics	ANSI C63.10:2013 Complete search, antenna distance 10 m	Temperature Humidity	23 °C 47 % RH
Detector	Peak and Quasi Peak	Bandwidth	120 kHz
Test equipm.	EMC Hall A Västerås Setup VEC1	Uncertainty	5.1 dB

Test result — The measured field strengths were below the limit

Compliant — Yes

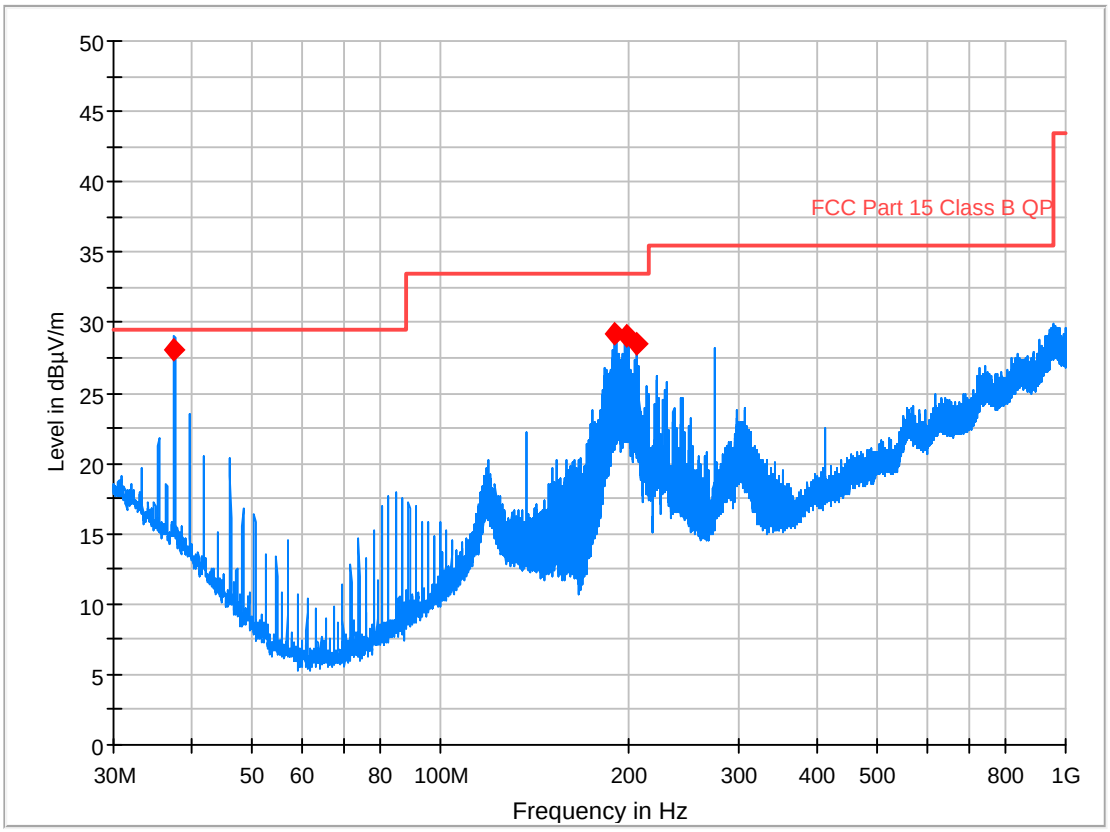
Comments — Final maximal measurements by variation of turntable azimuth, antenna height, and antenna polarisation.

Modification no 1 was implemented (see section 3.3) in order to comply with the receiver spurious radiation limit.

The transmitter duty cycle was 60 ms on/ 42 ms off.

Radiated Emission Test

Test Description:	Radiated emission. Complete measurement 30 - 1000 MHz
Date:	2014-11-27
EUT Name:	IPR
Manufacturer:	DeLaval International AB
Serial Number:	Prototype "EMC1"
Operating Conditions:	Stand by
Test Site:	DELTA Development Technology AB
Operator Name:	Lars J
Test Specification:	FCC CFR 47, Part 15, Subpart C
Comment:	



Preview Result 1-PK+ FCC Part 15 Class B QP Final_Result QPK

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit QPK (dBµV/m)	Margin QPK (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
37.560000	28.09	29.5	1.41	1000.0	120.000	100.0	V	270.0	-11.7
190.020000	29.18	33.0	3.82	1000.0	120.000	301.0	H	118.0	-16.4
198.600000	29.08	33.0	3.92	1000.0	120.000	318.0	H	119.0	-16.1
206.130000	28.43	33.0	4.57	1000.0	120.000	326.0	H	117.0	-15.8

4.3 Measurement of radio frequency voltage on mains

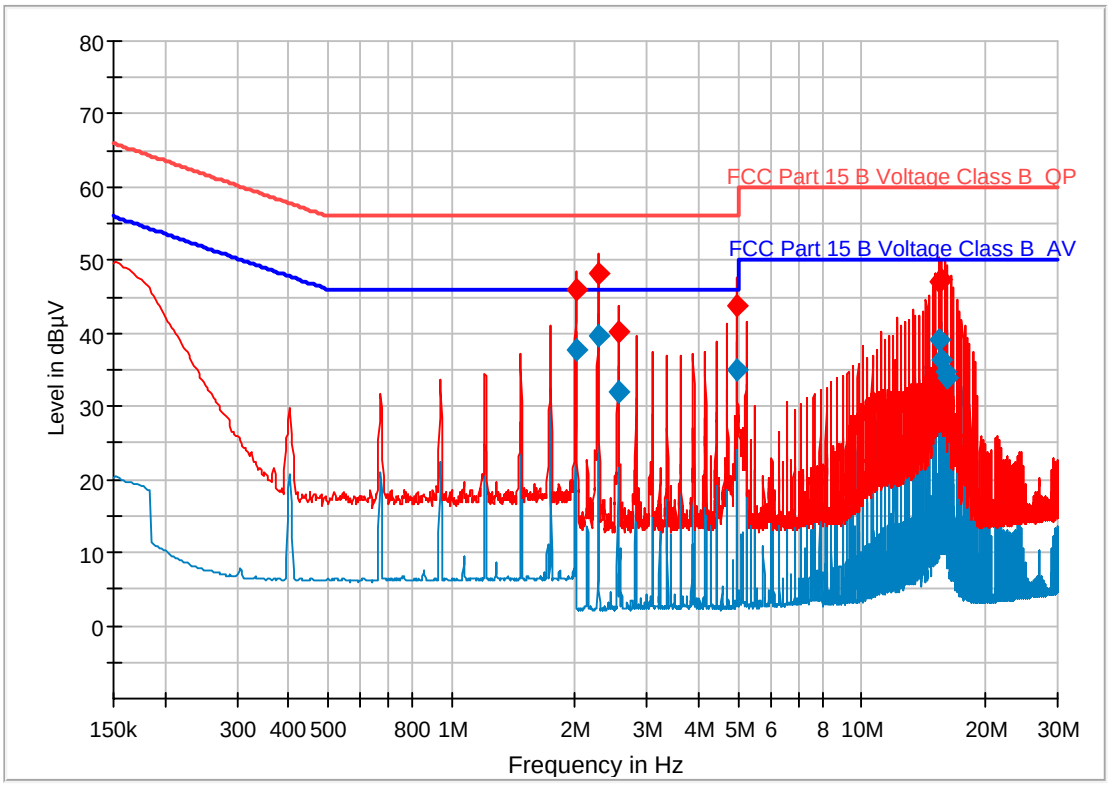
Test object	DeLaval in place reader IPR	Sheet	CE-1
Type	5.3	Project no.	E703806
Serial no.	Prototype	Date	18 Nov. 2015
Client	DeLaval International AB	Initials	LAJ
Specification	FCC CFR 47, Part 15, Subpart C	Frequency	0.15-30 MHz

Test method Characteristics	ANSI C63.10:2013 Artificial mains network: 50 Ω, 50 µH	Temperature Humidity	22 °C 45 % RH
Detector	Quasi Peak and Average	Bandwidth	10 kHz
Test equipm.	EMC Hall A Västerås Setup VEA1	Uncertainty	1.8 dB

Line under test	Maximum of Line and Neutral
Test result	The measured voltages were below the limit
Compliant	Yes
Comments	Mains voltage: 230 VAC The test was performed with various combinations of output power and duty cycle, see “operating conditions” on each plot.

Conducted Emission Test

Test Description:	Conducted emission. Complete measurement 150 kHz - 30 MHz
Date:	2015-11-18
EUT Name:	IPR 5.4
Manufacturer:	DeLaval AB
Serial Number:	Prototype
Operating Conditions:	4 W output power, 5 Hz, Duty cycle 60/144 ms
Test Site:	DELTA Development Technology AB
Operator Name:	Lars J
Test Specification:	FCC Part 15 B Class B
Comment:	



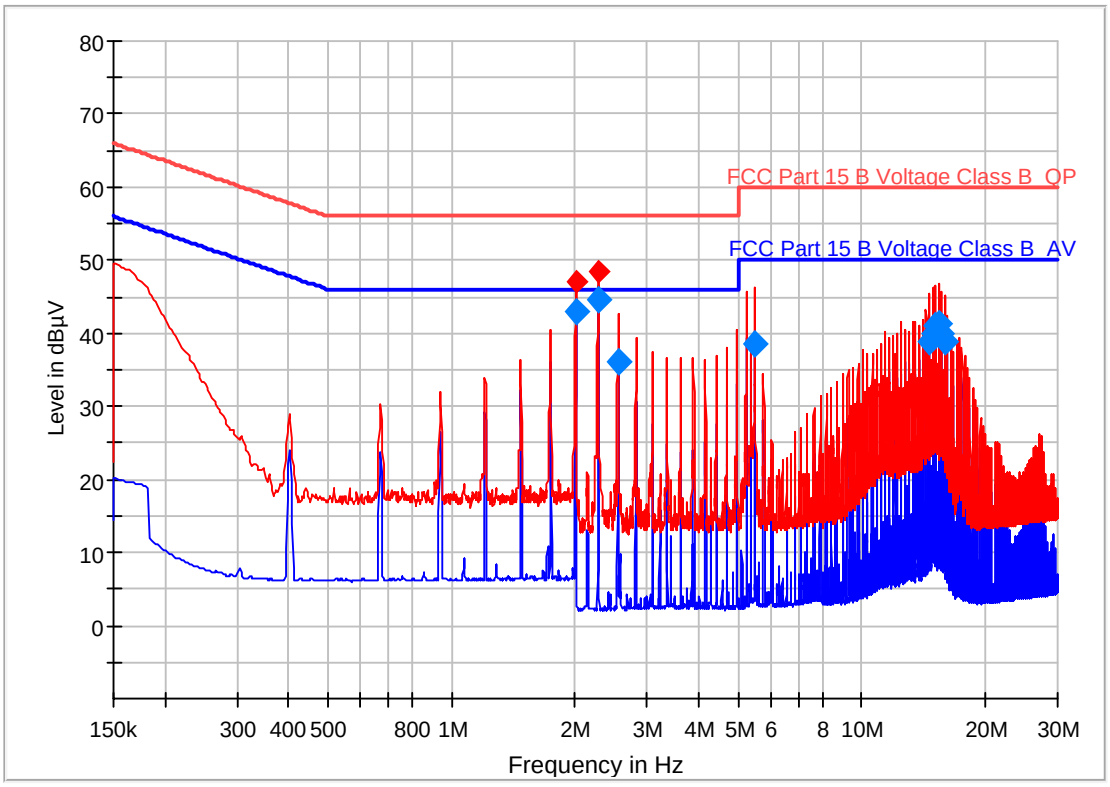
Preview Result 2-AVG
FCC Part 15 B Voltage Class B QP
Final_Result QPK
Preview Result 1-PK+
FCC Part 15 B Voltage Class B AV
Final_Result AVG

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	PE	Corr. (dB)
2.013000	---	37.73	46.00	8.27	2000.0	9.000	N	FL	16.3
2.013000	46.04	---	56.00	9.96	2000.0	9.000	L1	FL	16.3
2.280750	48.26	---	56.00	7.74	2000.0	9.000	N	FL	16.4
2.280750	---	39.53	46.00	6.47	2000.0	9.000	L1	FL	16.4
2.550750	---	32.04	46.00	13.96	2000.0	9.000	N	FL	16.4
2.550750	40.20	---	56.00	15.80	2000.0	9.000	L1	FL	16.4
4.965000	---	34.94	46.00	11.06	2000.0	9.000	N	FL	16.6
4.965000	43.70	---	56.00	12.30	2000.0	9.000	N	FL	16.6
15.432000	47.09	---	60.00	12.91	2000.0	9.000	L1	FL	17.6
15.432000	---	39.20	50.00	10.80	2000.0	9.000	L1	FL	17.6
15.699750	47.25	---	60.00	12.75	2000.0	9.000	L1	FL	17.6
15.699750	---	36.32	50.00	13.68	2000.0	9.000	N	FL	17.3
15.965250	---	34.71	50.00	15.29	2000.0	9.000	L1	FL	17.6
16.237500	---	33.82	50.00	16.18	2000.0	9.000	N	FL	17.4

Conducted Emission Test

Test Description:	Conducted emission. Complete measurement 150 kHz - 30 MHz
Date:	2015-11-18
EUT Name:	IPR 5.4
Manufacturer:	DeLaval AB
Serial Number:	Prototype
Operating Conditions:	4 W output power, 10 Hz, Duty cycle 60/42 ms
Test Site:	DELTA Development Technology AB
Operator Name:	Lars J
Test Specification:	FCC Part 15 B Class B
Comment:	



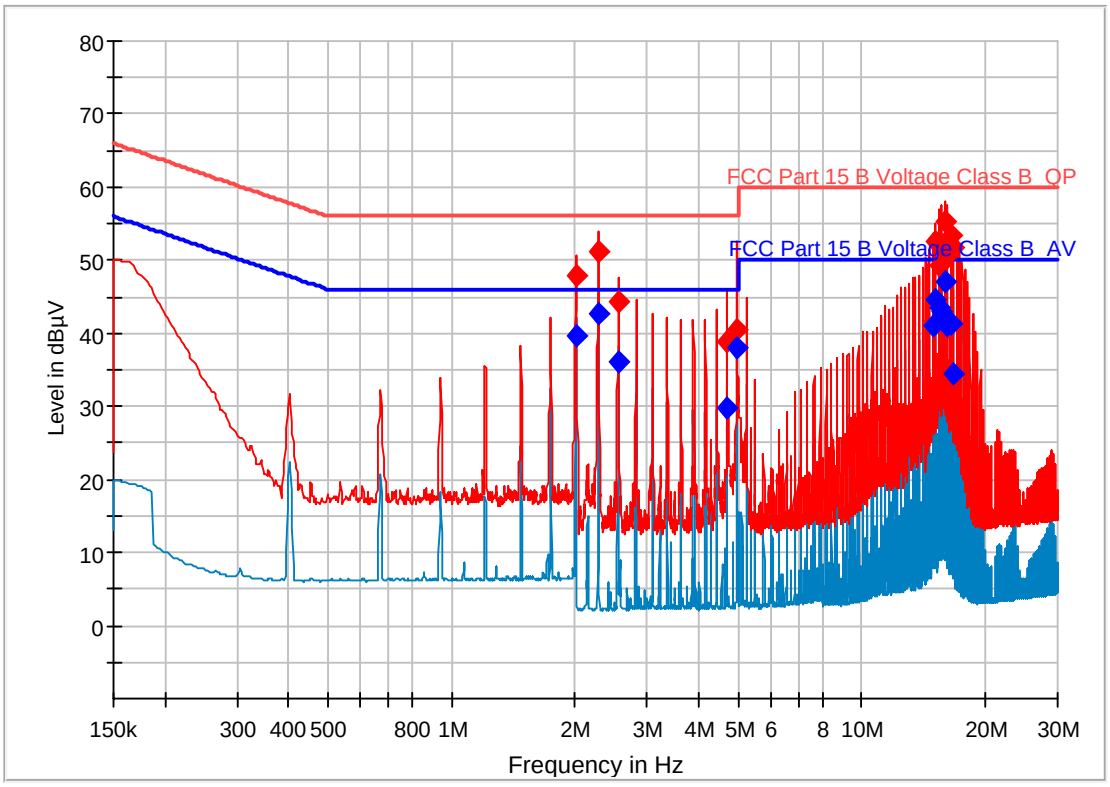
Preview Result 2-AVG
FCC Part 15 B Voltage Class B QP
Final_Result QPK
Preview Result 1-PK+
FCC Part 15 B Voltage Class B AV
Final_Result AVG

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	PE	Corr. (dB)
2.013000	---	42.90	46.00	3.10	2000.0	9.000	L1	FL	16.3
2.013000	47.19	---	56.00	8.81	2000.0	9.000	L1	FL	16.3
2.280750	---	44.74	46.00	1.26	2000.0	9.000	N	FL	16.4
2.283000	48.57	---	56.00	7.43	2000.0	9.000	L1	FL	16.4
2.550750	---	36.01	46.00	9.99	2000.0	9.000	N	FL	16.4
5.502750	---	38.64	50.00	11.36	2000.0	9.000	L1	FL	16.7
14.626500	---	38.88	50.00	11.12	2000.0	9.000	L1	FL	17.6
14.896500	---	39.92	50.00	10.08	2000.0	9.000	L1	FL	17.6
15.164250	---	41.09	50.00	8.91	2000.0	9.000	L1	FL	17.6
15.432000	---	41.35	50.00	8.65	2000.0	9.000	L1	FL	17.6
15.699750	---	39.90	50.00	10.10	2000.0	9.000	L1	FL	17.6
15.969750	---	38.77	50.00	11.23	2000.0	9.000	L1	FL	17.6

Conducted Emission Test

Test Description:	Conducted emission. Complete measurement 150 kHz - 30 MHz
Date:	2015-11-18
EUT Name:	IPR 5.4 with 10 A trafo
Manufacturer:	DeLaval AB
Serial Number:	Prototype
Operating Conditions:	8 W output power, 5 Hz, Duty cycle 60/144 ms
Test Site:	DELTA Development Technology AB
Operator Name:	Lars J
Test Specification:	FCC Part 15 B Class B
Comment:	



Preview Result 2-AVG
FCC Part 15 B Voltage Class B QP
Final_Result QPK
Preview Result 1-PK+
FCC Part 15 B Voltage Class B AV
Final_Result AVG

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	PE	Corr. (dB)
2.013000	47.86	---	56.00	8.14	2000.0	9.000	N	FL	16.3
2.013000	---	39.74	46.00	6.26	2000.0	9.000	N	FL	16.3
2.280750	---	42.66	46.00	3.34	2000.0	9.000	L1	FL	16.4
2.280750	51.22	---	56.00	4.78	2000.0	9.000	L1	FL	16.4
2.550750	44.26	---	56.00	11.74	2000.0	9.000	N	FL	16.4
2.550750	---	36.08	46.00	9.92	2000.0	9.000	L1	FL	16.4
4.697250	38.71	---	56.00	17.29	2000.0	9.000	L1	FL	16.6
4.697250	---	29.88	46.00	16.12	2000.0	9.000	N	FL	16.6
4.965000	---	37.91	46.00	8.09	2000.0	9.000	L1	FL	16.6
4.969500	40.56	---	56.00	15.44	2000.0	9.000	L1	FL	16.6

14.896500	---	40.92	50.00	9.08	2000.0	9.000	N	FL	17.3
15.164250	52.66	---	60.00	7.34	2000.0	9.000	L1	FL	17.6
15.164250	---	44.52	50.00	5.48	2000.0	9.000	L1	FL	17.6
15.432000	---	43.47	50.00	6.53	2000.0	9.000	N	FL	17.3
15.436500	49.35	---	60.00	10.65	2000.0	9.000	L1	FL	17.6
15.699750	51.66	---	60.00	8.34	2000.0	9.000	N	FL	17.3
15.704250	---	43.04	50.00	6.96	2000.0	9.000	L1	FL	17.6
15.969750	55.33	---	60.00	4.67	2000.0	9.000	L1	FL	17.6
15.969750	---	47.16	50.00	2.84	2000.0	9.000	L1	FL	17.6
16.237500	50.59	---	60.00	9.41	2000.0	9.000	N	FL	17.4
16.242000	---	40.97	50.00	9.03	2000.0	9.000	L1	FL	17.7
16.505250	53.39	---	60.00	6.61	2000.0	9.000	L1	FL	17.7
16.509750	---	41.28	50.00	8.72	2000.0	9.000	L1	FL	17.7
16.770750	---	34.44	50.00	15.56	2000.0	9.000	N	FL	17.4
16.775250	51.85	---	60.00	8.15	2000.0	9.000	L1	FL	17.7

Photo 4.3.1 Test setup regarding measurement of radio frequency voltage on mains.

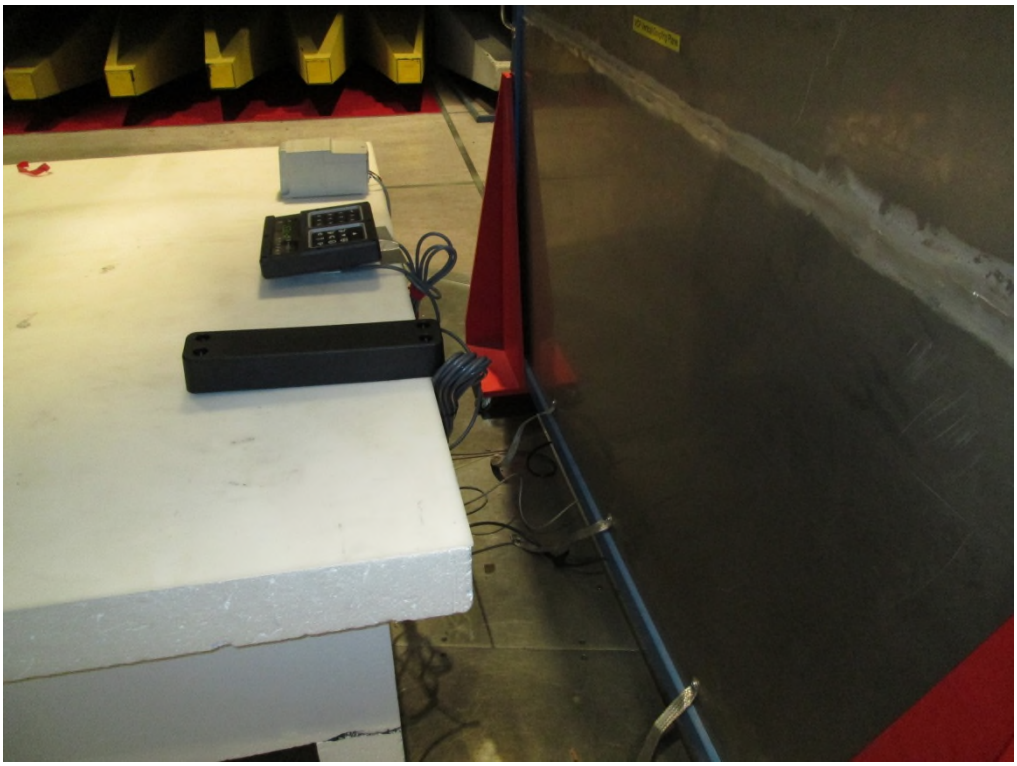


Photo 4.3.2 Test setup regarding measurement of radio frequency voltage on mains.

4.4 Measurement of occupied bandwidth

Test object	DeLaval in place reader IPR	Sheet	CE-2
Type	5.3	Project no.	E703806
Serial no.	Prototype	Date	17 Apr. 2015
Client	DeLaval International AB	Initials	LAJ
Specification	FCC CFR 47, Part 15, Subpart C		

Test method Characteristics	ANSI C63.10:2013 99% and 20 dB Bandwidth	Temperature Humidity	23 °C 30 % RH
Test equipm.	EMC Hall A Västerås Setup VED1		
SA Settings	RBW: 1 kHz and 10kHz		

Frequency [kHz]	Occupied bandwidth	Passed	Remarks
134.200	700 Hz	Yes	99% BW
134.200	400 Hz	Yes	20 dB BW

Compliant Yes

Comment Radiated measurement in shielded chamber

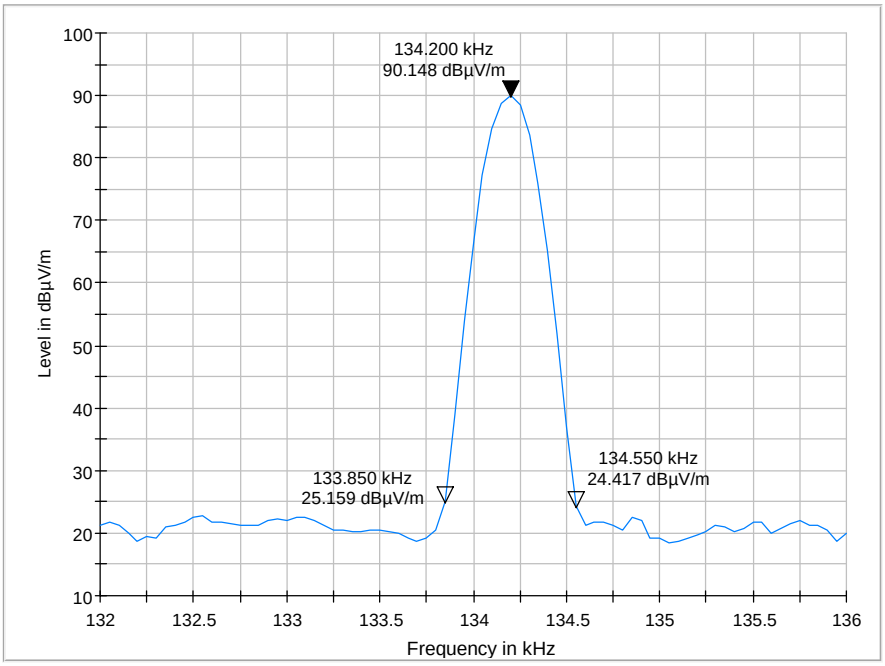


Figure 4.4.1 99% Bandwidth of the modulated carrier

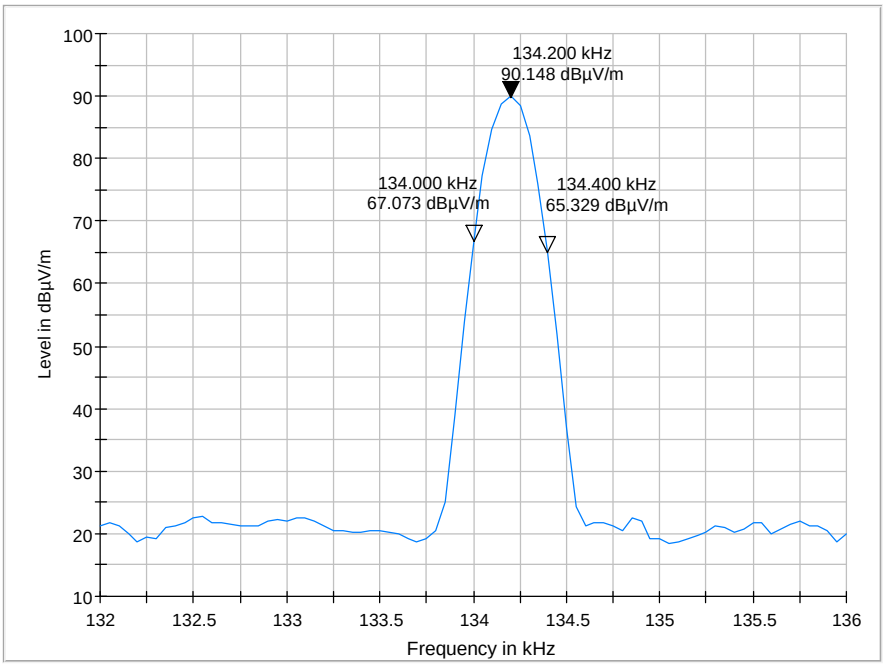


Figure 4.4.2 20 dB Bandwidth of the modulated carrier

Photo 4.4.1 Test setup regarding measurement of occupied bandwidth.

5. National registrations and accreditations

5.1 SWEDAC Accreditation

Organization: Swedish Board for Accreditation and Conformity Assessment - SWEDAC, see www.swedac.se and www.ilac.org

Registration Number: 1688

SWEDAC is part of ILAC (International Laboratory Accreditation Cooperation) including its MRA (Mutual Recognition Arrangement).

5.2 FCC Registrations

Organization: Federal Communications Commission, USA

Registration Number: 516880

Facilities: EMC chamber A 3 and 10 m

5.3 IC Registrations

Organization: Industry Canada, Certification and Engineering Bureau

Registration Number: 9347A

Facilities: EMC chamber A (9347A-1)

6. List of instruments

Setup VEC1							
Measurement of radio frequency electromagnetic field							
Used	***ID no.***	***Description***	***Manufacturer***	***Type no.***	***Cal Date***	***Due Date***	***Setup uncertainty***
☒	36070	Software	Rohde & Schwarz	EMC32 ver. 9.15.01	-		5.1 dB 30-1000 MHz (10 m) 6.2 dB 30-1000 MHz (3 m) 4.5 dB 1-26.5 GHz (3 m)
☒	36020	Measuring receiver	Rohde & Schwarz	ESU26	30/07/2015	20/07/2016	
☒	IE-B928	Antenna Bilog	Chase	CBL6111A	04/08/2015	04/08/2017	
☒	IE-B758	Preamplifier	HP	8447F	07/08/2015	07/08/2016	
☒	36094	Attenuator 4 dB	Pasternack	PE7074-4	02/03/2015	02/03/2016	
☒	36071	Controller	Maturo	NCD	-	-	
☒	36072	Tilt antenna mast	Maturo	TAM 4.0-E	-	-	
☒		Turntable	Heinrich Deisel	DT 440	-	-	

Västerås Setup VEA1							
Measurement of radio frequency voltage on mains							
Used	***ID no.***	***Description***	***Manufacturer***	***Type no.***	***Cal Date***	***Due Date***	***Setup uncertainty***
☒	36070	Software	Rohde & Schwarz	EMC32 ver. 9.15.01	-		1.8 dB
☒	36020	Measuring receiver	Rohde & Schwarz	ESU26	30/07/2015	20/07/2016	
☒	IE-B919	LISN 2 x 10 A 250 V	Rohde & Schwarz	ESH3-Z5	28/07/2015	28/07/2016	
☒	36079	Attenuator 6 dB 10 W	BIRD	10-A-MFB-06	13/07/2015	13/07/2016	
☒	36062	Impulse Voltage Limiter	Rohde & Schwarz	ESH3-Z2	15/06/2015	15/06/2016	
☐	36058	3-Ph. AC Power Source	Pacific Power Source	360AMXT-UPC32	21/05/2014	21/05/2016	

7. Revision

Rev. index	Description	Date/ Init
-	New document	22 Dec. 2015/ LAJ
A	Plot on page 14 corrected.	21 Jan. 2016/ LAJ
B	Chapter 4.4 inserted	11 May 2016/ LAJ
C	Chapter 4.4 supplemented with 20 dB BW measurement. Chapter 4.1; spurious measurement in SAC showing radiated emission outside transmission band removed.	07 Jul. 2016/ LAJ
D	Chapter 4.1, spurious measurement graph updated. Result table from open area measurement added.	13 Nov. 2016/ LAJ