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July 14, 2009

Prüfbericht / Test Report

Nr. / No. 69583-00406 (Edition 3)

Applicant: BALTECH AG
Type of equipment: Inductive RFID Reader
Type designation: RFID Reader 0535A08E
Order No.: ---
Test standards: FCC Code of Federal Regulations,
CFR 47, Part 15,
Sections 15.205, 15.207, 15.215 and 15.225

Industry Canada Radio Standards Specifications
RSS-Gen Issue 2, Section 7.2.2 and
RSS-210 Issue 7, Sections 2.2, 2.6, A2.6 (Category I Equipment)

Note:

The test data of this report is related only to the individual item which has been tested. This report shall not be reproduced except in full extent without the written approval of the testing laboratory.

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1 Description of the Equipment Under Test (EUT)

General data of EUT			
Type designation ¹ :	RFID Reader 0535A08E		
Parts ² :	<i>Identifier</i>	<i>Revision</i>	<i>Description</i>
	535PBA07	0535A08E-001	Digital board
	538PBA06	0538A06B-001	RF board
	538PBA06	0538A07-001	RF board
	539PBA02	0539A02A-001	Switch
Serial number(s):	0001		
Manufacturer:	BALTECH AG		
Type of equipment:	Inductive RFID Reader		
Version:	As received		
FCC ID:	---		
Additional parts/accessories:			

¹ Type designation of the system if EUT consists of more than one part.

² Type designations of the parts of the system, if applicable.



Technical data of EUT	
Application frequency range:	13.110 - 14.010 MHz
Frequency range:	13.56 MHz
Operating frequency:	13.56 MHz
Type of modulation:	ASK
Pulse train:	---
Pulse width:	---
Number of RF-channels:	1
Channel spacing:	---
Designation of emissions ³ :	5K00A1D
Type of antenna:	Integrated
Size/length of antenna:	
Connection of antenna:	<input type="checkbox"/> detachable <input checked="" type="checkbox"/> not detachable
Type of power supply:	DC supply over USB interface
Specifications for power supply:	nominal voltage: 5.00 V minimum voltage: 4.25 V maximum voltage: 5.75 V

³ Also known as "Class of Emission".



2 Administrative Data

Application details

Applicant (full address):	BALTECH AG Lilienthalstraße 27 D-85399 Hallbergmoos
Contact person:	Cemil Yatkin
Order number:	---
Receipt of EUT:	May 11, 2009
Date(s) of test:	May 2009
Note(s):	

Report details

Report number:	69583-00406
Edition:	3
Issue date:	July 14, 2009



3 Identification of the Test Laboratory

Details of the Test Laboratory

Company name:	TÜV SÜD SENTON GmbH
Address:	Aeussere Fruehlingstrasse 45 D-94315 Straubing Germany
Laboratory accreditation:	DAR-Registration No. DAT-P-171/94-02
FCC test site registration number	90926
Industry Canada test site registration:	3050A-1
Contact person:	Mr. Johann Roidt
	Phone: +49 9421 5522-0 Fax: +49 9421 5522-99

4 Summary

Summary of test results

The tested sample complies with the requirements set forth in the
Code of Federal Regulations CFR 47, Part 15, Sections 15.205, 15.207, 15.215 and 15.225
of the Federal Communication Commission (FCC) and the
**Radio Standards Specifications
RSS-Gen Issue 2, Section 7.2.2 and
RSS-210 Issue 7, Sections 2.2, 2.6, A2.6 (Category I Equipment)**
of Industry Canada (IC).

Personnel involved in this report

Laboratory Manager:



Mr. Johann Roidt

Responsible for testing:



Mr. Martin Steindl

Responsible for test report:

Mr. Martin Steindl

5 Operation Mode and Configuration of EUT

Operation Modes

Full tests were performed for two operation modes:

- Reading tag ADC
- Reading tag Stratus

Full tests were performed for both RF boards

Configuration of EUT

The EUT was configured as USB interface device of a laptop PC

List of ports and cables

<i>Port</i>	<i>Description</i>	<i>Classification⁴</i>	<i>Cable type</i>	<i>Cable length</i>
1	AC supply of AC/DC convertor of laptop PC	ac power	Unshielded	1 m
2	DC supply of laptop PC	dc power	Shielded	2 m
3	USB interface cable	signal/control port	Shielded	2 m

List of devices connected to EUT

<i>Item</i>	<i>Description</i>	<i>Type Designation</i>	<i>Serial no. or ID</i>	<i>Manufacturer</i>
1	Digital board	0535PBA07	0535PBA08E-001	Baltech
2	RF board	0538PBA06	0538PBA06B-001	Baltech
3	RF board	0538PBA06	0538PBA07-001	Baltech
4	Switch	0539PBA02	0539PBA02A-001	Baltech

⁴ Ports shall be classified as ac power, dc power or signal/control port



List of support devices

<i>Item</i>	<i>Description</i>	<i>Type Designation</i>	<i>Serial no. or ID</i>	<i>Manufacturer</i>
1	Laptop PC	DELL dimension		DELL
2	AC/DC adapter of laptop PC			DELL
3	Tag card	ADC		
4	Tag card	Stratus		



6 Measurement Procedures

6.1 Bandwidth Measurements

Measurement Procedure:	
Rules and specifications:	CFR 47 Part 2, section 2.202(a) CFR 47 Part 15, section 15.215(c) IC RSS-Gen Issue 2, sections 4.6.1 and 4.6.2 IC RSS-210 Issue 7, section A1.1.3 ANSI C63.4, annex H.6
Guide:	ANSI C63.4 / IC RSS-Gen Issue 2, sections 4.6.1 and 4.6.2
Measurement setup:	<input type="checkbox"/> Conducted: See below <input checked="" type="checkbox"/> Radiated: Radiated Emission Measurement 9 kHz to 30 MHz (6.3)
<p>If antenna is detachable bandwidth measurements shall be performed at the antenna connector (conducted measurement) when the transmitter is adjusted in accordance with the tune-up procedure, if applicable. The RF output terminals are connected to a spectrum analyzer. If required, a resistive matching network equal to the impedance specified or employed for the antenna is used as well as dc block and appropriate attenuators (50 Ohms). The electrical characteristics of the radio frequency load attached to the output terminals shall be stated, if applicable.</p> <p>If radiated measurements are performed the same test setups and instruments are used as with radiated emission measurements for the appropriate frequency range.</p> <p>The analyzer settings are specified by the test description of the appropriate test record(s).</p>	

6.2 Conducted AC Powerline Emission

Measurement Procedure:

Rules and specifications: CFR 47 Part 15, section 15.207
 IC RSS-Gen Issue 2, section 7.2.2

Guide: ANSI C63.4 / CISPR 22

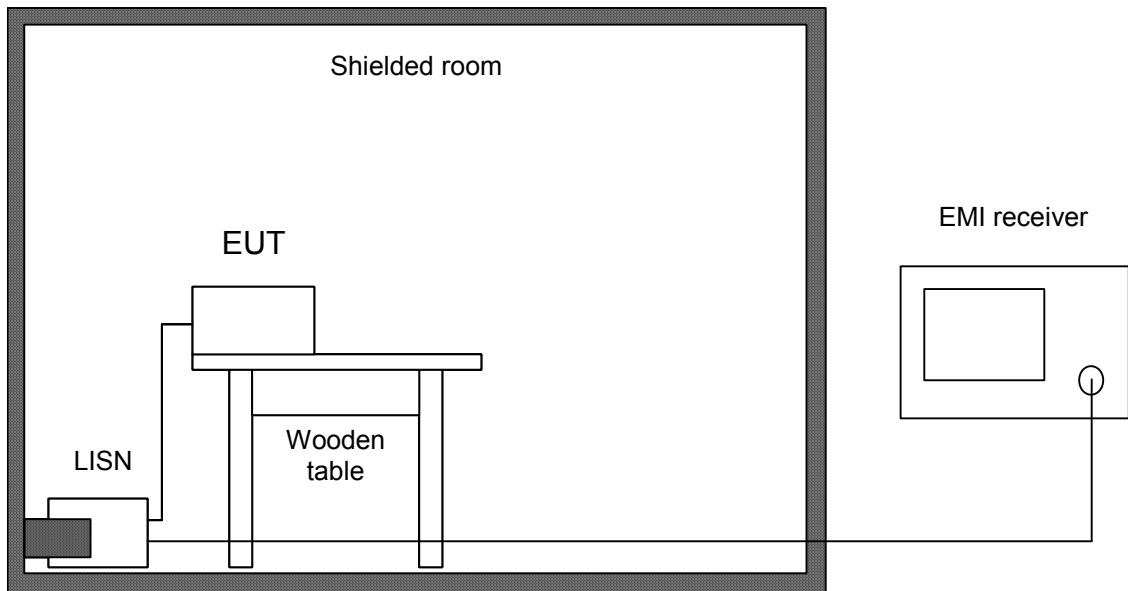
Conducted emission tests in the frequency range 150 kHz to 30 MHz are performed using Line Impedance Stabilization Networks (LISNs). To simplify testing with quasi-peak and average detector the following procedure is used:

First the whole spectrum of emission caused by the equipment under test (EUT) is recorded with detector set to peak using CISPR bandwidth of 10 kHz. After that all emission levels having less margin than 10 dB to or exceeding the average limit are retested with detector set to quasi-peak.

If average limit is kept with quasi-peak levels no additional scan with average detector is necessary. In cases of emission levels between quasi-peak and average limit an additional scan with detector set to average is performed.

According to ANSI C63.4, section 13.1.3.1, testing of intentional radiators with detachable antenna shall be performed using a suitable dummy load connected to the antenna output terminals. Otherwise, the tests shall be made with the antenna connected and, if adjustable, fully extended.

Testing with dummy load may be necessary to distinguish (unintentional) conducted emissions on the supply lines from (intentional) emissions radiated by the antenna and coupling directly to supply lines and/or LISN. Usage of dummy load has to be stated in the appropriate test record(s) and notes should be added to clarify the test setup.



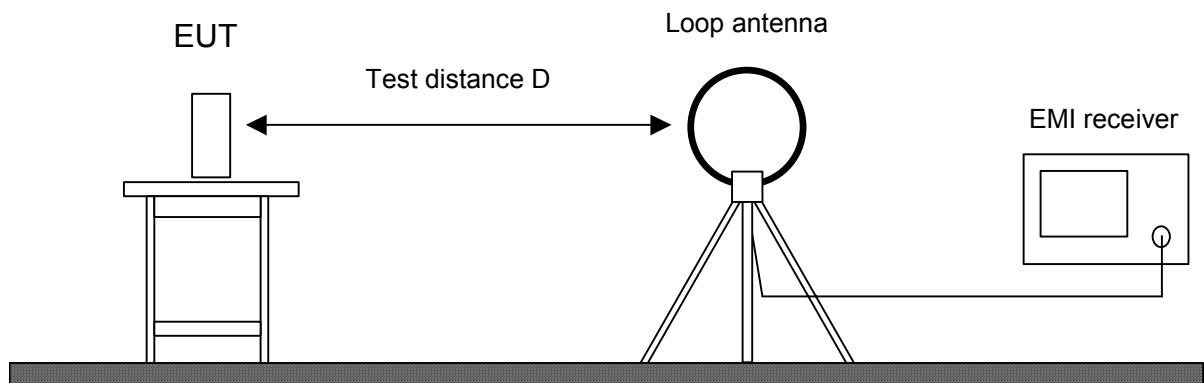


Test instruments used:

Used	Type	Model	Serial No. or ID	Manufacturer
<input checked="" type="checkbox"/>	EMI receiver	ESHS 10	860043/016	Rohde & Schwarz
<input checked="" type="checkbox"/>	LISN	ESH3-Z5	862770/021	Rohde & Schwarz
<input type="checkbox"/>	LISN	ESH3-Z5	830952/025	Rohde & Schwarz
<input type="checkbox"/>	Artificial mains network	ESH 2-Z5	842966/004	Rohde & Schwarz
<input type="checkbox"/>	Shielded room	No. 1	1451	Albatross Projects
<input checked="" type="checkbox"/>	Shielded room	No. 4	3FD-100 544	Euroshield

6.3 Radiated Emission Measurement 9 kHz to 30 MHz

Measurement Procedure:	
Rules and specifications:	CFR 47 Part 15, sections 15.205, 15.215(b) and 15.225(a)-(d) IC RSS-210 Issue 7, sections 2.2, 2.6 and A2.6
Guide:	ANSI C63.4
<p>Radiated emission in the frequency range 9 kHz to 30 MHz is measured using an active loop antenna. First the whole spectrum of emission caused by the equipment is recorded at a distance of 3 meters in a fully or semi anechoic room with the detector of the spectrum analyzer or EMI receiver set to peak. This configuration is also used for recording the spectrum of intentional radiators.</p> <p>Hand-held or body-worn devices are rotated through three orthogonal axes to determine which attitude and configuration produces the highest emission relative to the limit and therefore shall be used for final testing. EUT is rotated all around to find the maximum levels of emissions. Equipment and cables are placed and moved within the range of position likely to find their maximum emissions.</p> <p>If worst case emission of the EUT cannot be recorded with EUT in standard position and loop antenna in vertical polarization the EUT (or the radiating part of the EUT) is rotated by 90 degrees instead of changing the loop antenna to horizontal polarization. This procedure is selected to minimize the influence of the environment (e.g. effects caused by the floor especially with longer distances).</p> <p>Final measurement is performed at a test distance D of 30 meters using an open field test site. In case the regulation requires testing at other distances, the result is extrapolated by either making measurements at an additional distance D of 10 meters to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). In cases of very low emissions measurements are performed at shorter distances and results are extrapolated to the required distance. The provisions of CFR 47 Part 15 sections 15.31(d) and (f)(2) apply. According to CFR 47 Part 15 section 15.209(d) final measurement is performed with detector function set to quasi-peak except for the frequency bands 9 to 90 kHz and 110 to 490 kHz where, for non-pulsed operation, average detector is employed.</p> <p>If the radiated emission limits are expressed in terms of the average value of the emission there also is a peak limit corresponding to 20 dB above the maximum permitted average limit. Additionally, if pulsed operation is employed, the average field strength is determined by averaging over one complete pulse train, including blanking intervals, as specified in CFR 47 Part 15 section 15.35I. If the pulse train exceeds 0.1 second that 0.1 second interval during which the value of the emission is at its maximum is selected for calculation. The pulse train correction is added to the peak value of the emission to get the average value.</p>	



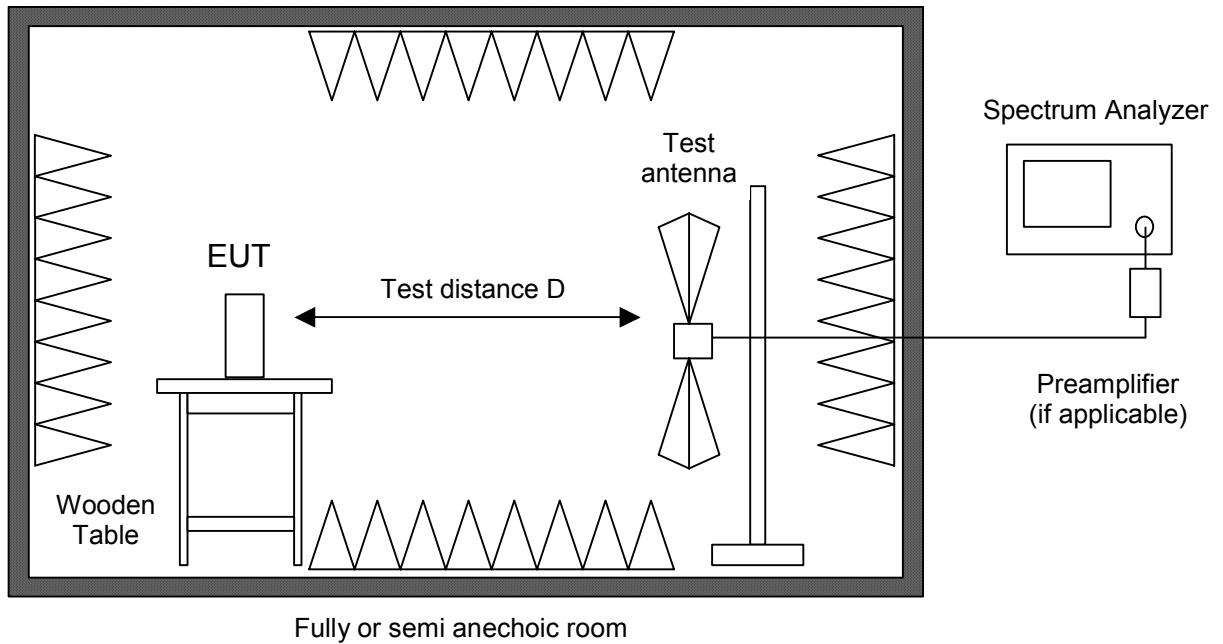


Test instruments used:

Used	Type	Model	Serial No. or ID	Manufacturer
<input checked="" type="checkbox"/>	Spectrum Analyzer	FSP 30	100063	Rohde & Schwarz
<input type="checkbox"/>	EMI test receiver	ESMI	839379/013 839587/006	Rohde & Schwarz
<input checked="" type="checkbox"/>	Test receiver	ESHS 10	860043/016	Rohde & Schwarz
<input type="checkbox"/>	Preamplifier	CPA9231A	3393	Schaffner
<input checked="" type="checkbox"/>	Loop antenna	HFH2-Z2	882964/1	Rohde & Schwarz
<input checked="" type="checkbox"/>	Fully anechoic room	No. 2	1452	Albatross Projects
<input type="checkbox"/>	Semi-anechoic room	No. 3	1453	Siemens
<input checked="" type="checkbox"/>	Open field test site	EG 1	1450	Senton

6.4 Radiated Emission in Fully or Semi Anechoic Room

Measurement Procedure:	
Rules and specifications:	CFR 47 Part 15, sections 15.205(b) and 15.225(d) IC RSS-210 Issue 7, sections 2.2(b)(c), 2.6 and A2.6
Guide:	ANSI C63.4
<p>Radiated emission in fully or semi anechoic room is measured in the frequency range from 30 MHz to the maximum frequency as specified in CFR 47 Part 15 section 15.33.</p> <p>Measurements are made in both the horizontal and vertical planes of polarization in a fully anechoic room using a spectrum analyzer with the detector function set to peak and resolution as well as video bandwidth set to 100 kHz (below 1 GHz) or 1 MHz (above 1 GHz).</p> <p>Testing up to 1 GHz is performed with a linear polarized logarithmic periodic antenna combined with a 4:1 broadband dipole ("Trilog broadband antenna"). For testing above 1 GHz horn antennas are used.</p> <p>All tests below 8.2 GHz are performed at a test distance D of 3 meters. For higher frequencies the test distance may be reduced (e.g. to 1 meter) due to the sensitivity of the measuring instrument(s) and the test results are calculated according to CFR 47 Part 15 section 15.31(f)(1) using an extrapolation factor of 20 dB/decade. If required, preamplifiers are used for the whole frequency range. Special care is taken to avoid overload, using appropriate attenuators and filters, if necessary.</p> <p>If the radiated emission limits are expressed in terms of the average value of the emission there also is a peak limit corresponding to 20 dB above the maximum permitted average limit. Additionally, if pulsed operation is employed, the average field strength is determined by averaging over one complete pulse train, including blanking intervals, as specified in CFR 47 Part 15 section 15.35l. If the pulse train exceeds 0.1 second that 0.1 second interval during which the value of the emission is at its maximum is selected for calculation. The pulse train correction is added to the peak value of the emission to get the average value.</p> <p>Hand-held or body-worn devices are rotated through three orthogonal axes to determine which attitude and configuration produces the highest emission relative to the limit and therefore shall be used for final testing.</p> <p>During testing the EUT is rotated all around to find the maximum levels of emissions. Equipment and cables are placed and moved within the range of position likely to find their maximum emissions.</p> <p>For final testing below 1 GHz an open field test-site is used and the plots recorded in the fully or semi anechoic room are indicated as prescans.</p>	



Test instruments used:

Used	Type	Model	Serial No. or ID	Manufacturer
<input checked="" type="checkbox"/>	Spectrum Analyzer	FSP 30	100063	Rohde & Schwarz
<input type="checkbox"/>	EMI test receiver	ESPI7	101018	Rohde & Schwarz
<input type="checkbox"/>	EMI test receiver	ESMI	839379/013 839587/006	Rohde & Schwarz
<input checked="" type="checkbox"/>	Preamplifier	CPA9231A	3393	Schaffner
<input type="checkbox"/>	Preamplifier	R14601		Advantest
<input type="checkbox"/>	Preamplifier 1-8 GHz	AFS3-00100800-32-LN	847743	Miteq
<input type="checkbox"/>	Preamplifier 0.5-8 GHz	AMF-4D-005080-25-13P	860149	Miteq
<input type="checkbox"/>	Preamplifier 8-18 GHz	ACO/180-3530	32641	CTT
<input type="checkbox"/>	External Mixer	WM782A	845881/005	Tektronix
<input type="checkbox"/>	Harmonic Mixer	FS-Z30	843389/007	Rohde & Schwarz
	Accessories			
<input checked="" type="checkbox"/>	Trilog broadband antenna	VULB 9163	9163-188	Schwarzbeck
<input type="checkbox"/>	Horn antenna	3115	9508-4553	EMCO
<input type="checkbox"/>	Horn antenna	3160-03	9112-1003	EMCO
<input type="checkbox"/>	Horn antenna	3160-04	9112-1001	EMCO
<input type="checkbox"/>	Horn antenna	3160-05	9112-1001	EMCO
<input type="checkbox"/>	Horn antenna	3160-06	9112-1001	EMCO
<input type="checkbox"/>	Horn antenna	3160-07	9112-1008	EMCO
<input type="checkbox"/>	Horn antenna	3160-08	9112-1002	EMCO
<input type="checkbox"/>	Horn antenna	3160-09	9403-1025	EMCO
<input type="checkbox"/>	Horn antenna	3160-10	399185	EMCO
<input checked="" type="checkbox"/>	Fully anechoic room	No. 2	1452	Albatross Projects
<input type="checkbox"/>	Semi-anechoic room	No. 3	1453	Siemens

6.5 Radiated Emission at Open Field Test Site

Measurement Procedure:

Rules and specifications: CFR 47 Part 15, sections 15.205(b) and 15.225(d)
 IC RSS-210 Issue 7, sections 2.2(b)(c), 2.6 and A2.6

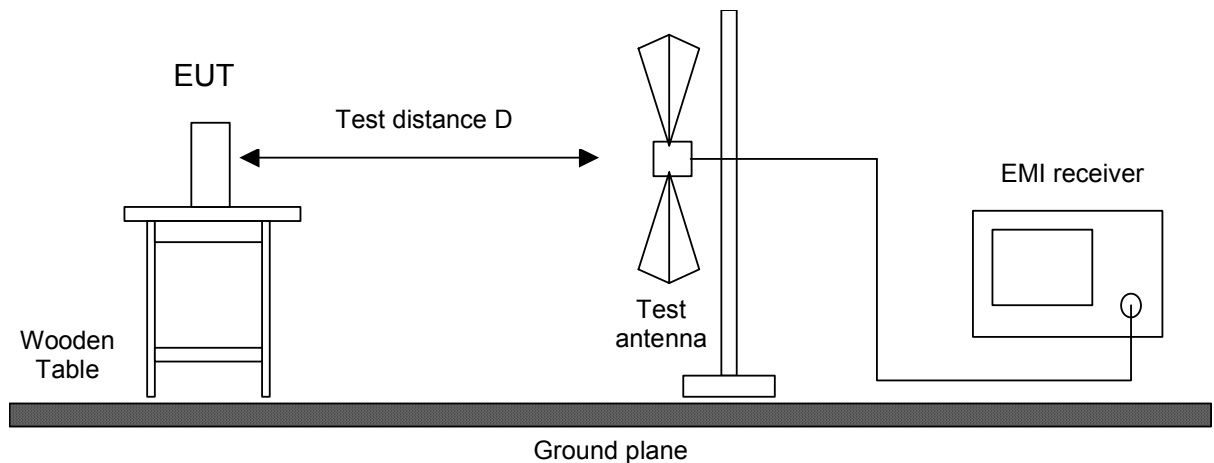
Guide: ANSI C63.4

Radiated emission at open field test site is measured in the frequency range 30 MHz to 1 GHz using a biconical antenna up to 300 MHz and a logarithmic periodic antenna above. The measurement bandwidth of the test receiver is set to 120 kHz with quasi-peak detector selected.

If the radiated emission limits are expressed in terms of the average value of the emission there also is a peak limit corresponding to 20 dB above the maximum permitted average limit. Additionally, if pulsed operation is employed, the average field strength is determined by averaging over one complete pulse train, including blanking intervals, as specified in CFR 47 Part 15 section 15.35I. If the pulse train exceeds 0.1 second that 0.1 second interval during which the value of the emission is at its maximum is selected for calculation. The pulse train correction is added to the peak value of the emission to get the average value.

Hand-held or body-worn devices are tested in the position producing the highest emission relative to the limit as verified by prescans in the fully anechoic room. EUT is rotated all around and receiving antenna is raised and lowered within 1 meter to 4 meters to find the maximum levels of emission. Equipment and cables are placed and moved within the range of position likely to find their maximum emissions.

For measuring emissions of intentional radiators and receivers a test distance D of 3 meters is selected. Testing of unintentional radiators is performed at a distance of 10 meters. If limits specified for 3 meters shall be used for measurements performed at 10 meters distance the limits are calculated according to CFR 47 Part 15 section 15.31(d) and (f)(1) using an inverse linear-distance extrapolation factor of 20 dB/decade.





Test instruments used:

Used	Type		Model	Serial No. or ID	Manufacturer
<input checked="" type="checkbox"/>	EMI receiver	EG 1	ESVP	881120/024	Rohde & Schwarz
<input type="checkbox"/>	EMI receiver		ESVP	891846/003	Rohde & Schwarz
<input checked="" type="checkbox"/>	Biconical antenna	EG 1	HK 116	842204/001	Rohde & Schwarz
<input checked="" type="checkbox"/>	Log. per. antenna	EG 1	HL 223	841516/023	Rohde & Schwarz
<input checked="" type="checkbox"/>	Open field test site		EG 1	1450	Senton

6.6 Carrier Frequency Stability

Measurement Procedure:

Rules and specifications:	CFR 47 Part 15, section 15.225(e) IC RSS-Gen Issue 2, section 4.7 and IC RSS-210 Issue 7, section A2.6
Guide:	ANSI C63.4

The frequency tolerance of the carrier signal is measured over a temperature variation of -20 °C to +50 °C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 °C.

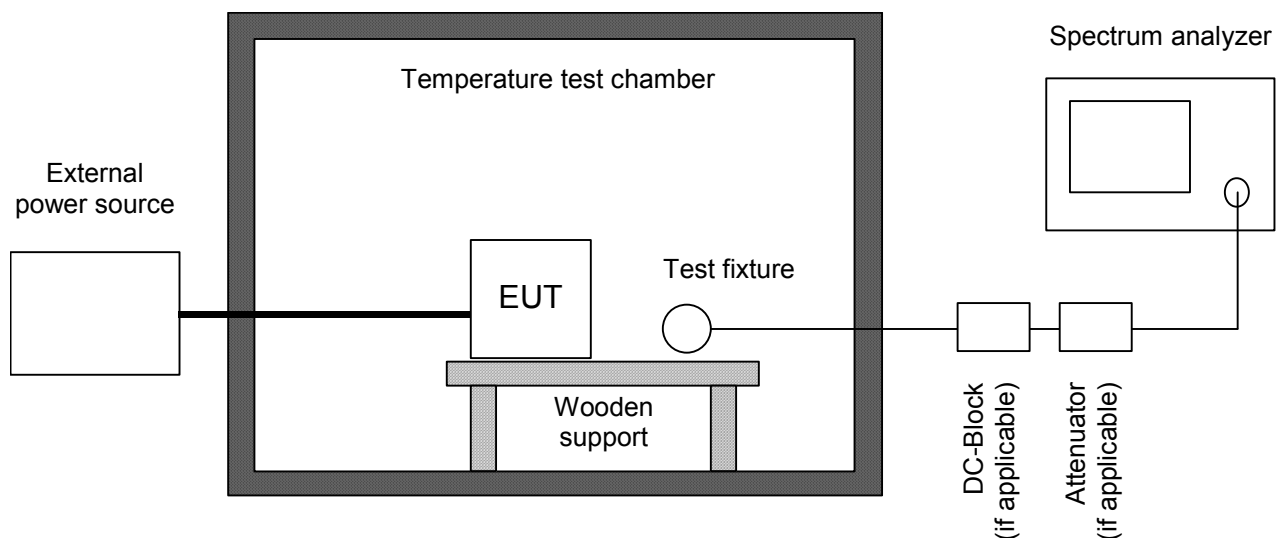
If the EUT provides an antenna connector the spectrum analyzer is connected to this port. If required, a resistive matching network equal to the impedance specified or employed for the antenna is used as well as dc block and appropriate attenuators (50 Ohms). In cases where the EUT does not provide an antenna connector a test fixture is used.

For battery operated equipment, the test is performed using a new battery. Alternatively, an external supply voltage can be used and is at least set to:

- the maximum battery voltage as delivered by a new battery or 115% of the battery nominal voltage
- the battery nominal voltage
- 85% of the battery nominal voltage
- the battery operating end point voltage which shall be specified by the equipment manufacturer

The EUT is operating providing an unmodulated carrier. The peak detector of the spectrum analyzer is selected and resolution as well as video bandwidth are set to values appropriate to the shape of the spectrum of the EUT. The frequency counter mode of the spectrum analyzer is used to maximize the accuracy of the measured frequency tolerance.

If an unmodulated carrier is not available a significant and stable point on the spectrum is selected and the span is reduced to a value that delivers an accuracy which shall be better than 1% of the maximum frequency tolerance allowed for the carrier signal. This method may be performed as long as the margin to the frequency tolerance allowed is larger than the uncertainty of the measured frequency tolerance.





Test instruments used:

Used	Type	Model	Serial No. or ID	Manufacturer
<input checked="" type="checkbox"/>	Spectrum Analyzer	FSP 30	100063	Rohde & Schwarz
<input type="checkbox"/>	EMI test receiver	ESPI7	836914/0002	Rohde & Schwarz
<input type="checkbox"/>	EMI test receiver	ESMI	839379/013 839587/006	Rohde & Schwarz
<input type="checkbox"/>	DC-block	7006	A2798	Weinschel
<input type="checkbox"/>	Attenuator	4776-10	9412	Narda
<input type="checkbox"/>	Attenuator	4776-20	9503	Narda
<input checked="" type="checkbox"/>	Test probe	TP01	001	Senton
<input type="checkbox"/>	Multimeter	21 III	76530546	Fluke
<input type="checkbox"/>	Multimeter	21 III	76381229	Fluke
<input type="checkbox"/>	Multimeter	Fluke 77 III	92370108	Fluke
<input type="checkbox"/>	Multimeter	Fluke 77 IV	93090238	Fluke
<input type="checkbox"/>	Multimeter	Fluke 177	96720024	Fluke
<input type="checkbox"/>	Multimeter	Fluke 177	96720025	Fluke
<input checked="" type="checkbox"/>	DC power supply	NGSM 32/10	203	Rohde & Schwarz
<input type="checkbox"/>	Isolating transformer	RT 5A	10387	Grundig
<input type="checkbox"/>	Isolating transformer	RT 5A	10416	Grundig
<input checked="" type="checkbox"/>	Temperature test chamber	HT4010	07065550	Heraeus

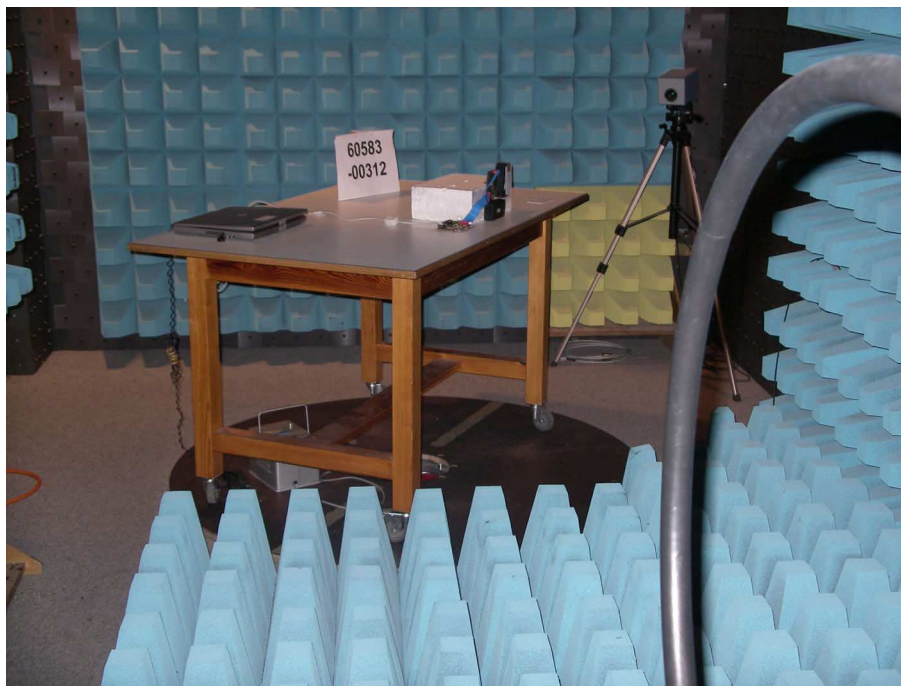


7 Photographs Taken During Testing

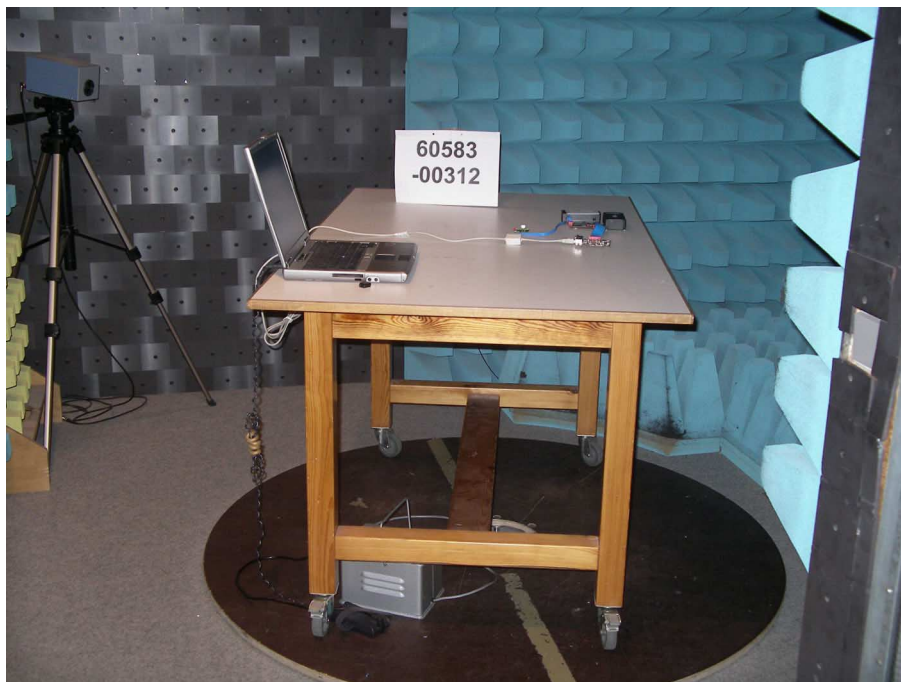
Test setup for conducted AC powerline emission measurement



Test setup for radiated emission measurement 9 kHz – 30 MHz



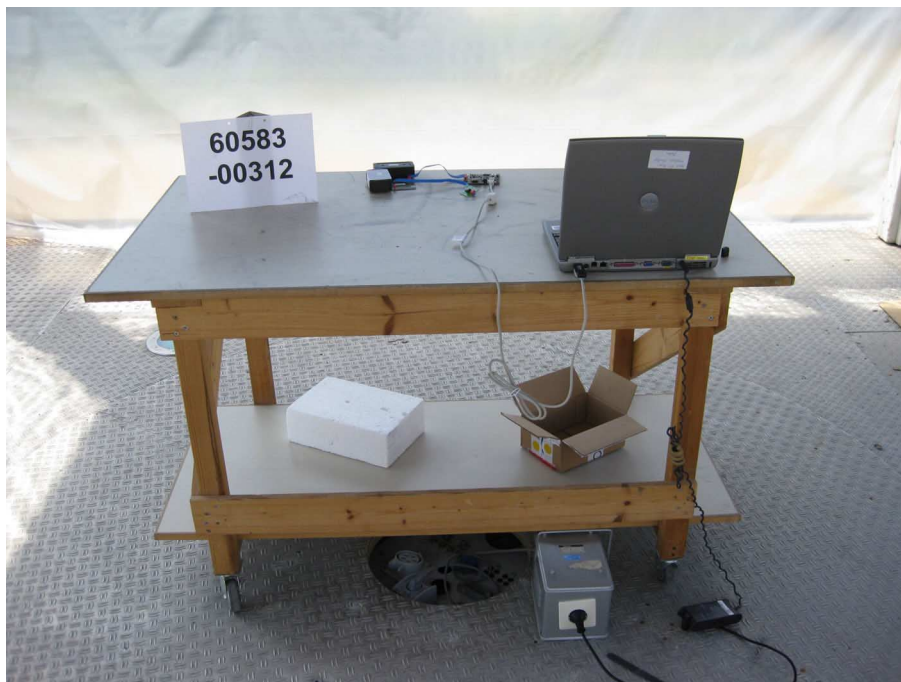
Test setup for radiated emission measurement (fully anechoic room)



Test setup for radiated emission measurement (open field test site)



**Test setup for radiated emission measurement
(open field test site) - continued -**





8 Test Results

FCC CFR 47 Parts 2 and 15			
Section(s)	Test	Page	Result
2.1046(a)	Conducted output power	---	Not applicable
2.202(a)	Occupied bandwidth	29	Recorded
15.215I	Bandwidth of the emission	35	Test passed
2.201, 2.202	Class of emission	40	Calculated
15.35I	Pulse train measurement for pulsed operation	---	Not applicable
15.205(a) 15.205(d)(7)	Restricted bands of operation	--- ⁵	Test passed
15.207	Conducted AC powerline emission 150 kHz to 30 MHz	41	Test passed
15.225(a)-(d)	Spectrum Mask	46	Test passed
15.205(b) 15.215(b) 15.225(a)(d)	Radiated emission 9 kHz to 30 MHz	51	Test passed
15.205(b) 15.225(d)	Radiated emission 30 MHz to 1 GHz	56	Test passed
15.225(e)	Carrier frequency stability	65	Test passed

⁵ See "Spectrum Mask" for the 13.36 to 13.41 MHz band. For all other restricted bands see "Radiated Emission".



IC RSS-Gen Issue 2			
<i>Section(s)</i>	<i>Test</i>	<i>Page</i>	<i>Result</i>
4.8	Transmitter output power (conducted)	---	Not applicable
4.6.1	Occupied Bandwidth	29	Recorded
3.2(h), 8	Designation of emissions	40	Calculated
4.5	Pulsed operation	---	Not applicable
7.2.2	Transmitter AC power lines conducted emissions 150 kHz to 30 MHz	41	Test passed
5.5	Exposure of Humans to RF Fields	68	Exempted from SAR and RF evaluation

IC RSS-210 Issue 7			
<i>Section(s)</i>	<i>Test</i>	<i>Page</i>	<i>Result</i>
2.2(a)	Restricted bands and unwanted emission frequencies	--- ⁶	Test passed
A2.6	Spectrum Mask	46	Test passed
2.2(b)(c), 2.6 A2.6	Unwanted emissions 9 kHz to 30 MHz	51	Test passed
2.2(b)(c), 2.6 A2.6	Unwanted emissions 30 MHz to 1 GHz	56	Test passed
A2.6	Carrier frequency stability	65	Test passed

⁶ See "Spectrum Mask" and "Unwanted emissions".

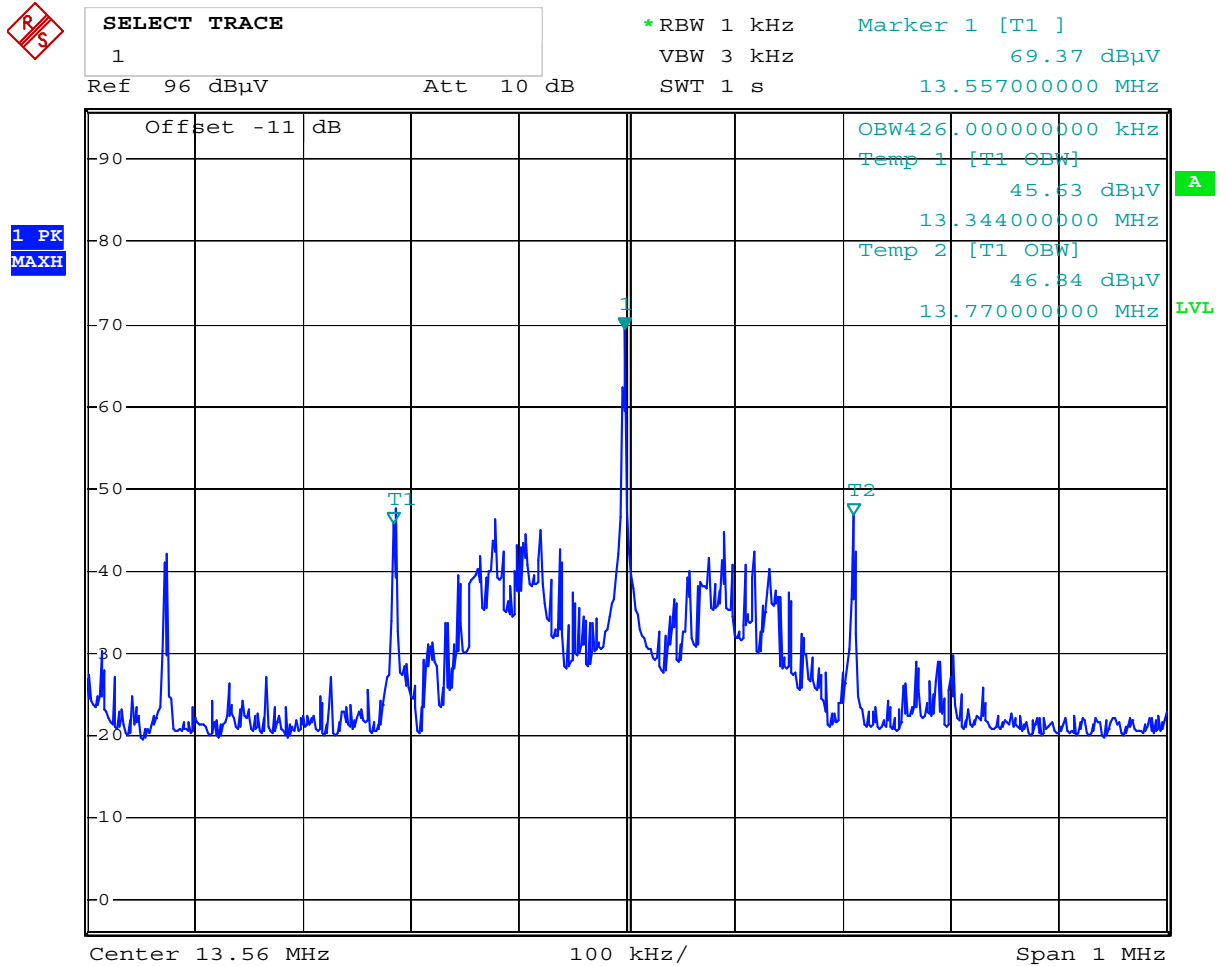


8.1 Occupied Bandwidth

Rules and specifications:	CFR 47 Part 2, section 2.202(a) ANSI C63.4, annex H.6	
Guide:	ANSI C63.4	
Description:	The occupied bandwidth according to CFR 47 Part 2, section 2.202(a), is measured as the 99% emission bandwidth, i.e. below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5% of the total mean power radiated by a given emission.	
	The occupied bandwidth according to ANSI C63.4, annex H.6; is measured as the frequency range defined by the points that are 26 dB down relative to the maximum level of the modulated carrier.	
	The resolution bandwidth of the spectrum analyser shall be set to a value greater than 5.0% of the allowed bandwidth. If no bandwidth specifications are given, the following guidelines are used:	
	Fundamental frequency	Minimum resolution bandwidth
	9 kHz to 30 MHz	1 kHz
	30 MHz to 1000 MHz	10 kHz
	1000 MHz to 40 GHz	100 kHz
	The video bandwidth shall be at least three times greater than the resolution bandwidth.	
Measurement procedure:	Bandwidth Measurements (6.1)	

Comment:	With revision 0538A06B-001
Date of test:	May 15, 2009
Test site:	Fully anechoic room, cabin no. 2

Occupied Bandwidth (99 %) with transponder ADC:



Date: 15.MAY.2009 13:15:47

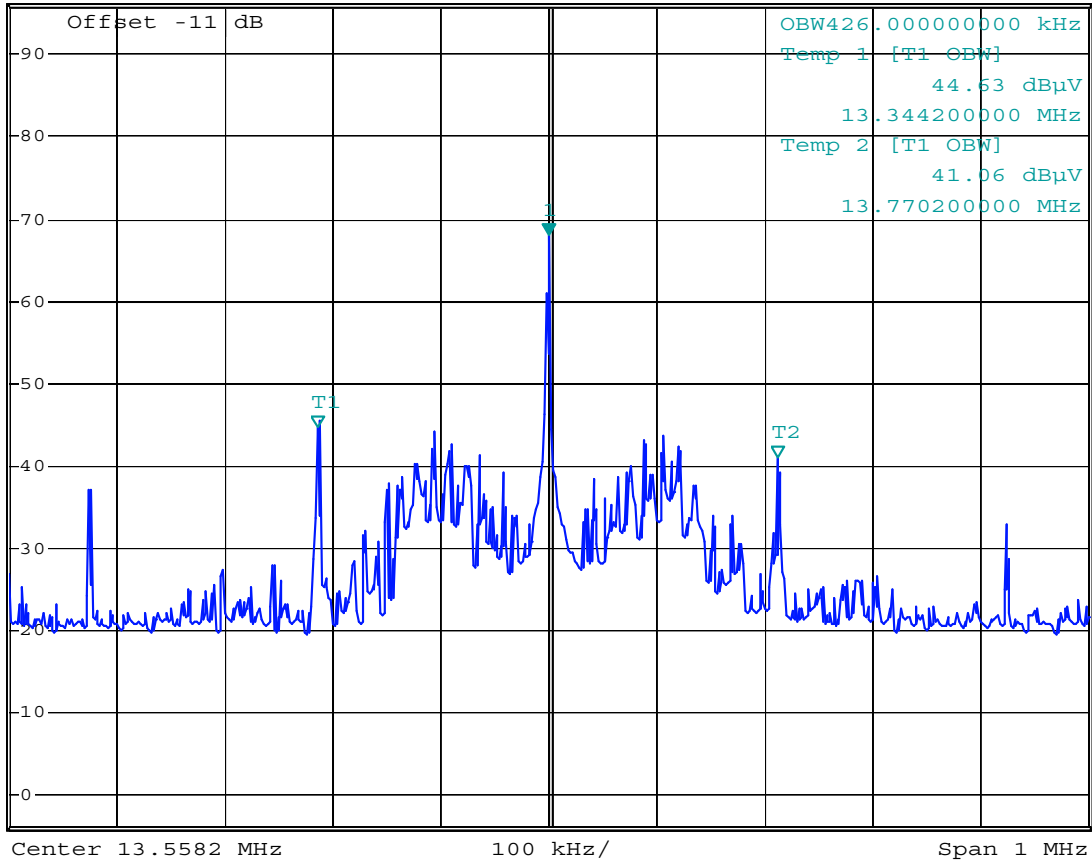
Occupied Bandwidth (99 %): **426 kHz**

Occupied Bandwidth (99 %) with transponder Stratus:



*RBW 1 kHz Marker 1 [T1]
 VBW 3 kHz 68.15 dBµV
 Ref 96 dBµV Att 10 dB SWT 1 s 13.558200000 MHz

1 PK
 VIEW



Date: 15.MAY.2009 13:23:31

Occupied Bandwidth (99 %): **426 kHz**

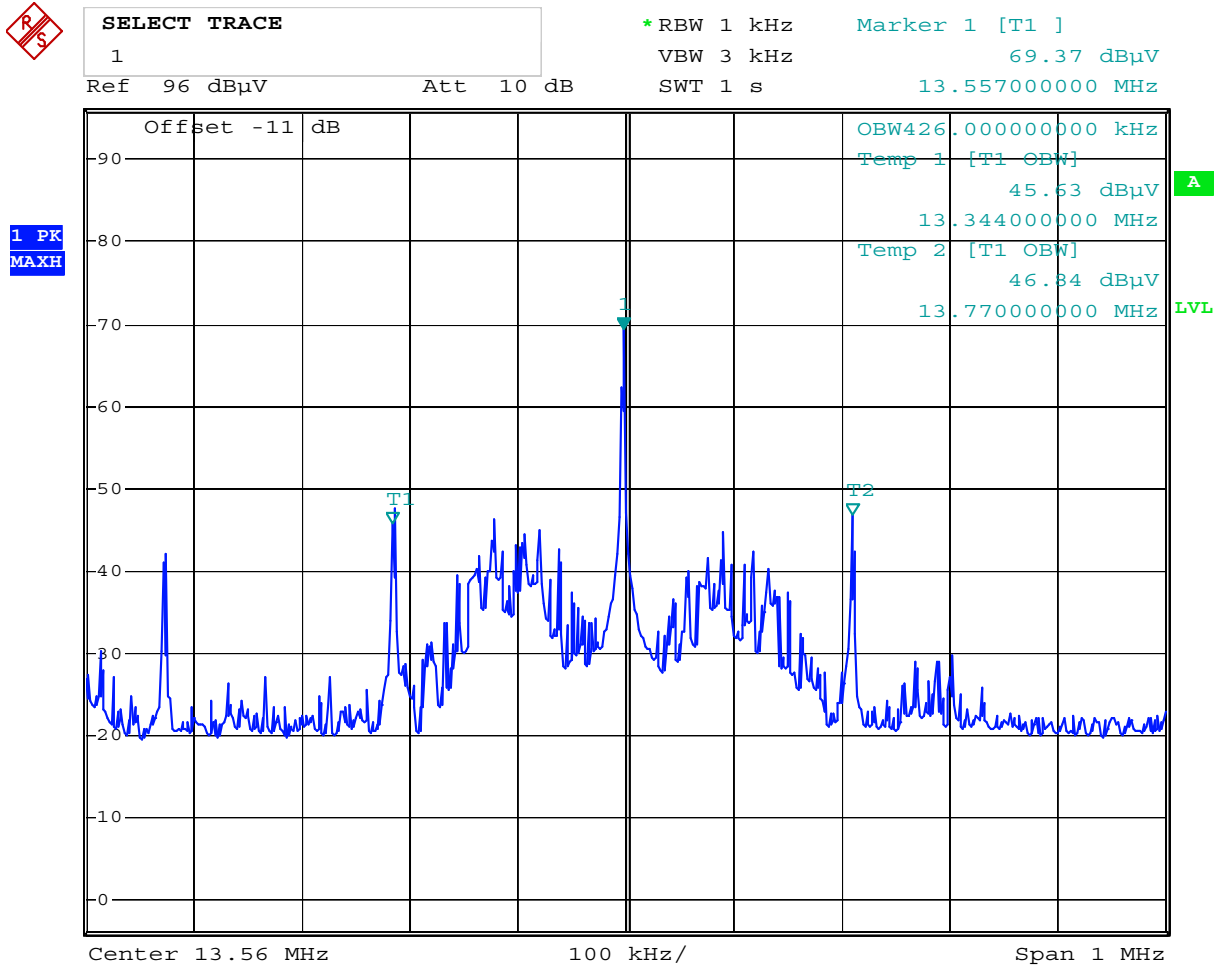


Occupied Bandwidth (continued)

Rules and specifications:	IC RSS-Gen Issue 2, section 4.6.1
Guide:	IC RSS-Gen Issue 2, section 4.6.1
Description:	<p>If not specified in the applicable RSS the occupied bandwidth is measured as the 99% emission bandwidth.</p> <p>The span of the analyser shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth.</p> <p>The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is also recorded. The span between the two recorded frequencies is the occupied bandwidth.</p>
Measurement procedure:	Bandwidth Measurements (6.1)

Comment:	With revision 0538A06B-001
Date of test:	May 15, 2009
Test site:	Fully anechoic room, cabin no. 2

Occupied Bandwidth (99 %) with transponder ADC:



Date: 15.MAY.2009 13:15:47

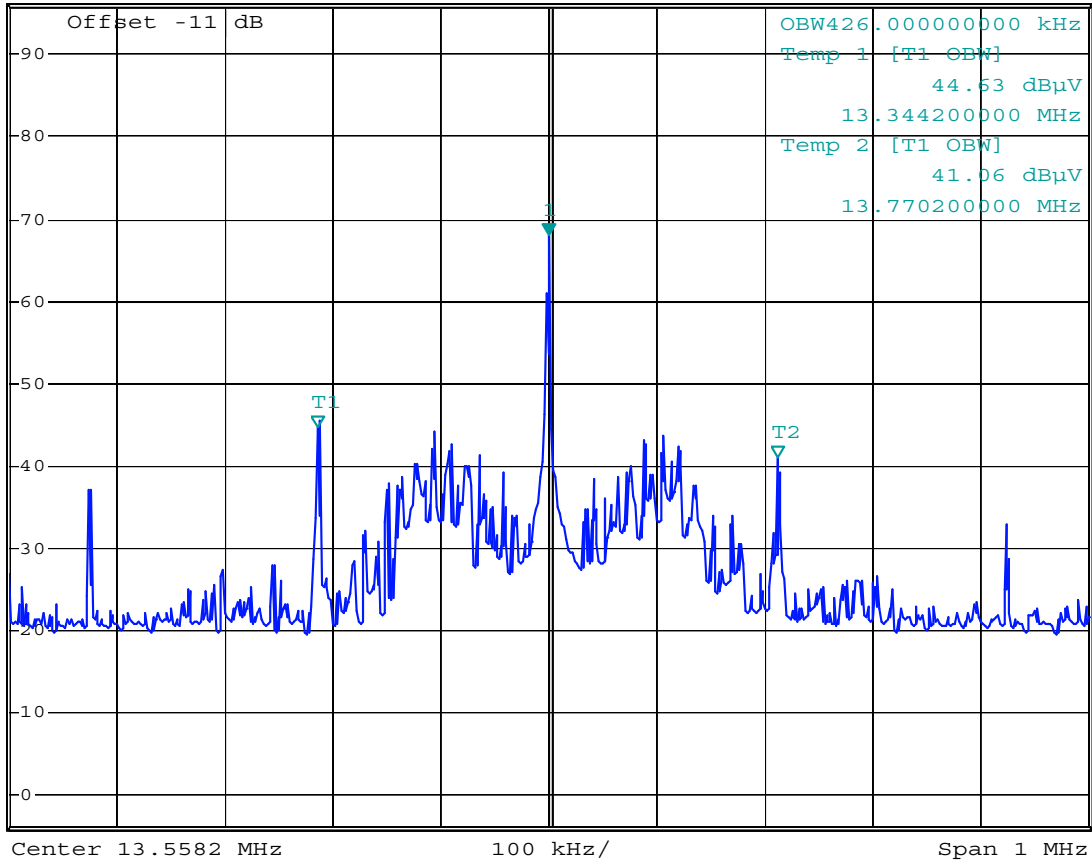
Occupied Bandwidth (99 %): **426 kHz**

Occupied Bandwidth (99 %) with transponder Stratus:



*RBW 1 kHz Marker 1 [T1]
 VBW 3 kHz 68.15 dBµV
 Ref 96 dBµV Att 10 dB SWT 1 s 13.558200000 MHz

1 PK
 VIEW



Date: 15.MAY.2009 13:23:31

Occupied Bandwidth (99 %): **426 kHz**



8.2 Bandwidth of the Emission

Rules and specifications:	CFR 47 Part 15, section 15.215©	
Guide:	ANSI C63.4	
Description:	<p>The 20 dB bandwidth of the emission is measured as the frequency range defined by the points that are 20 dB down relative to the maximum level of the modulated carrier.</p> <p>For intentional radiators operating under the alternative provisions to the general emission limits the requirement to contain the 20 dB bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.</p> <p>The resolution bandwidth of the spectrum analyser shall be set to a value greater than 5.0% of the allowed bandwidth. If no bandwidth specifications are given, the following guidelines are used:</p>	
	Fundamental frequency	Minimum resolution bandwidth
	9 kHz to 30 MHz	1 kHz
	30 MHz to 1000 MHz	10 kHz
	1000 MHz to 40 GHz	100 kHz
	The video bandwidth shall be at least three times greater than the resolution bandwidth.	
Measurement procedure:	Bandwidth Measurements (6.1)	
Test Result:	Test passed	

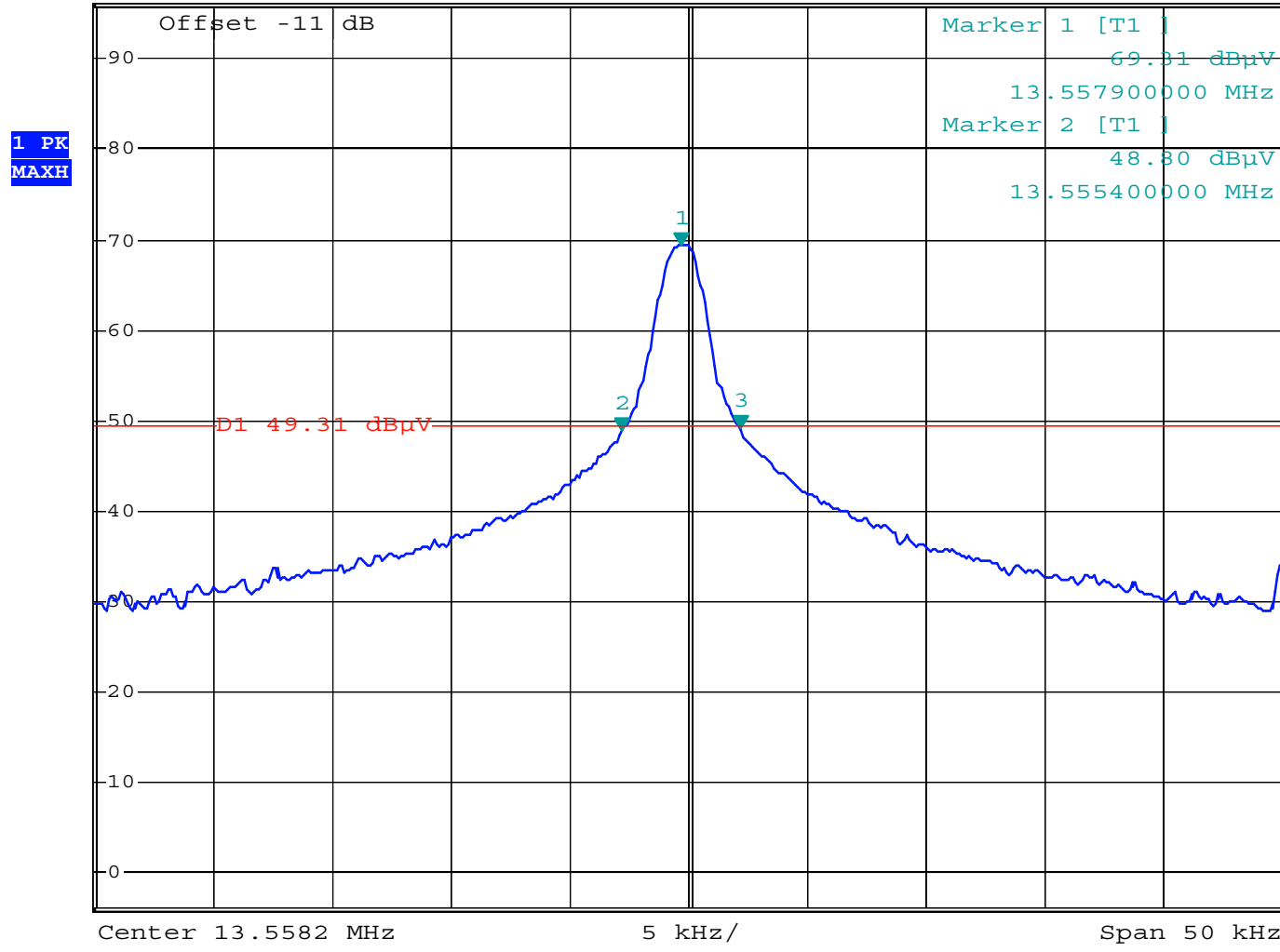


Comment:	With revision 0538A06B-001 and tag ADC
Date of test:	May 15, 2009
Test site:	Fully anechoic room, cabin no. 2



MARKER 3
 13.5604 MHz
 Ref 96 dBµV Att 10 dB

*RBW 1 kHz Marker 3 [T1]
 VBW 3 kHz 49.05 dBµV
 SWT 50 ms 13.560400000 MHz



Date: 15.MAY.2009 13:17:34



Permitted frequency band:	13.110 - 14.010 MHz	
20 dB bandwidth:	5.0 kHz	
Carrier frequency stability:	<input checked="" type="checkbox"/> specified	<input type="checkbox"/> not specified
Maximum frequency tolerances:	+100 kHz -281 kHz	
Bandwidth of the emission:	5.38 kHz	within permitted frequency band⁷: <input checked="" type="checkbox"/> yes <input type="checkbox"/> no

⁷ If a frequency stability is not specified, it is recommended that the fundamental emission is kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.



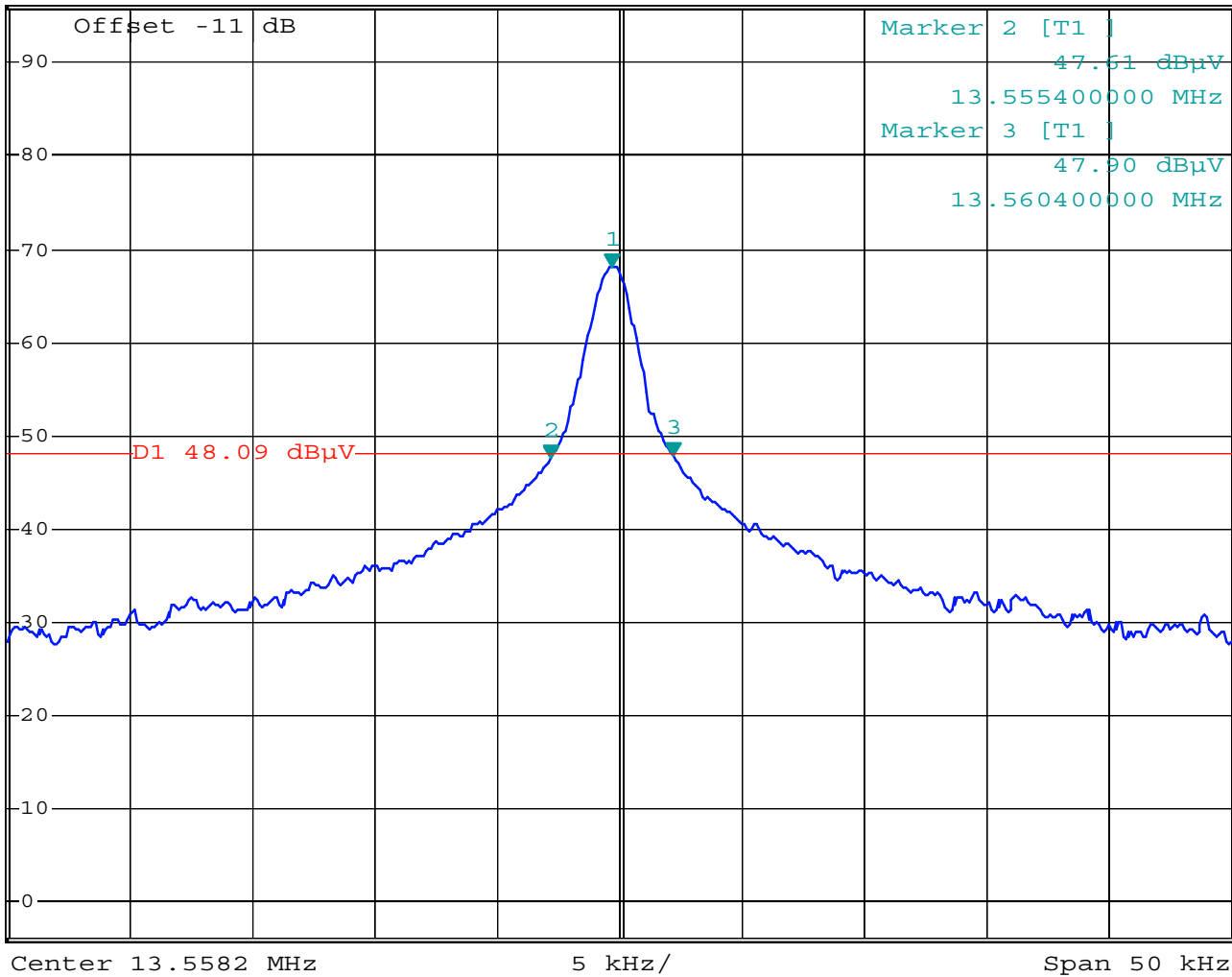
Comment:	With revision 0538A06B-001 and tag Stratus
Date of test:	May 15, 2009
Test site:	Fully anechoic room, cabin no. 2



MARKER 1
 13.5579 MHz
 Ref 96 dBµV Att 10 dB

*RBW 1 kHz Marker 1 [T1]
 VBW 3 kHz 68.09 dBµV
 SWT 50 ms 13.557900000 MHz

1 PK
 VIEW



Date: 15.MAY.2009 13:20:41



Permitted frequency band:	13.110 - 14.010 MHz	
20 dB bandwidth:	5.0 kHz	
Carrier frequency stability:	<input checked="" type="checkbox"/> specified	<input type="checkbox"/> not specified
Maximum frequency tolerances:	+100 kHz -281 kHz	
Bandwidth of the emission:	5.38 kHz	within permitted frequency band⁸: <input checked="" type="checkbox"/> yes <input type="checkbox"/> no

⁸ If a frequency stability is not specified, it is recommended that the fundamental emission is kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.



8.3 Designation of Emissions

Rules and specifications:	CFR 47 Part 2, sections 2.201 and 2.202 IC RSS-Gen Issue 2, sections 3.2(h) and 8
Guide:	ANSI C63.4 / TRC-43

Type of modulation:	Amplitude Modulation
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B_n = Necessary Bandwidth	$B_n = 2BK$
B = Modulation rate	B = 2.5 kHz
K = Overall numerical factor	K = 1
Calculation:	$B_n = 2 \cdot (2.5 \text{ kHz}) \cdot 1 = 5.0 \text{ kHz}$

Designation of Emissions:	5K00A1D
---------------------------	----------------



8.4 Conducted Powerline Emission Measurement 150 kHz to 30 MHz

Rules and specifications:	CFR 47 Part 15, section 15.207 IC RSS-Gen Issue 2, section 7.2.2		
Guide:	ANSI C63.4 / CISPR 22		
Limit:	Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
		Quasi-peak	Average
	0.15 - 0.5	66 to 56	56 to 46
	0.5 - 5	56	46
	5 - 30	60	50
Measurement procedure:	Conducted AC Powerline Emission (6.2)		

Test Result:	Test passed
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Comment:	Reading tag ADC
Date of test:	May 15, 2009
Test site:	Shielded room, cabin no. 4

Test Result:	Test passed
--------------	-------------

Tested on:	L1
------------	----

Frequency (MHz)	Detector	Reading Value (dBµV)	Correction Factor (dB)	Final Value (dBµV)	Limit (dBµV)	Margin (dB)
0.205	Average	40.3	0.0	40.3	53.4	13.1
0.210	Quasi-Peak	48.2	0.0	48.2	63.2	15.0
0.310	Quasi-Peak	38.6	0.0	38.6	60.0	21.4
0.310	Average	35.5	0.0	35.5	50.0	14.5
0.415	Quasi-Peak	34.0	0.0	34.0	57.5	23.5
0.415	Average	33.1	0.0	33.1	47.5	14.4
0.530	Average	25.6	0.0	25.6	46.0	20.4
0.620	Quasi-Peak	37.2	0.0	37.2	56.0	18.8
0.635	Average	31.7	0.0	31.7	46.0	14.3
0.725	Average	30.3	0.0	30.3	46.0	15.7
0.935	Average	25.4	0.0	25.4	46.0	20.6
1.345	Average	24.9	0.0	24.9	46.0	21.1
4.350	Average	24.0	0.0	24.0	46.0	22.0
8.905	Average	32.5	0.0	32.5	50.0	17.5
10.460	Quasi-Peak	35.8	0.0	35.8	60.0	24.2
11.805	Average	28.1	0.0	28.1	50.0	21.9
13.560	Quasi-Peak	50.1	0.0	50.1	60.0	9.9
13.560	Average	49.9	0.0	49.9	50.0	0.1
17.400	Average	28.2	0.0	28.2	50.0	21.8
18.640	Quasi-Peak	34.7	0.0	34.7	60.0	25.3
20.195	Average	29.7	0.0	29.7	50.0	20.3



Tested on: N

Frequency (MHz)	Detector	Reading Value (dBµV)	Correction Factor (dB)	Final Value (dBµV)	Limit (dBµV)	Margin (dB)
0.210	Quasi-Peak	47.4	0.0	47.4	63.2	15.8
0.210	Average	42.0	0.0	42.0	53.2	11.2
0.310	Quasi-Peak	40.4	0.0	40.4	60.0	19.6
0.310	Average	38.0	0.0	38.0	50.0	12.0
0.415	Quasi-Peak	38.2	0.0	38.2	57.5	19.3
0.415	Average	35.2	0.0	35.2	47.5	12.3
0.520	Quasi-Peak	41.3	0.0	41.3	56.0	14.7
0.520	Average	36.8	0.0	36.8	46.0	9.2
0.635	Quasi-Peak	35.9	0.0	35.9	56.0	20.1
0.635	Average	32.8	0.0	32.8	46.0	13.2
0.725	Quasi-Peak	42.5	0.0	42.5	56.0	13.5
0.740	Average	37.0	0.0	37.0	46.0	9.0
0.845	Average	34.4	0.0	34.4	46.0	11.6
0.930	Quasi-Peak	38.0	0.0	38.0	56.0	18.0
1.035	Quasi-Peak	40.9	0.0	40.9	56.0	15.1
1.050	Average	33.4	0.0	33.4	46.0	12.6
1.345	Quasi-Peak	39.7	0.0	39.7	56.0	16.3
1.480	Average	25.0	0.0	25.0	46.0	21.0
1.760	Quasi-Peak	38.2	0.0	38.2	56.0	17.8
1.760	Average	34.1	0.0	34.1	46.0	11.9
1.910	Average	28.9	0.0	28.9	46.0	17.1
2.070	Quasi-Peak	37.6	0.0	37.6	56.0	18.4
2.380	Quasi-Peak	35.5	0.0	35.5	56.0	20.5
2.385	Average	28.5	0.0	28.5	46.0	17.5
3.215	Average	26.5	0.0	26.5	46.0	19.5
4.250	Average	28.5	0.0	28.5	46.0	17.5
4.350	Quasi-Peak	36.7	0.0	36.7	56.0	19.3
4.870	Quasi-Peak	37.2	0.0	37.2	56.0	18.8
5.180	Average	29.7	0.0	29.7	50.0	20.3
6.425	Average	28.9	0.0	28.9	50.0	21.1
7.250	Average	27.4	0.0	27.4	50.0	22.6
7.560	Quasi-Peak	37.9	0.0	37.9	60.0	22.1
13.560	Quasi-Peak	50.7	0.0	50.7	60.0	9.3
13.560	Average	49.8	0.0	49.8	50.0	0.2
17.195	Average	25.2	0.0	25.2	50.0	24.8

Sample calculation of final values:

$$\text{Final Value (dB}\mu\text{V)} = \text{Reading Value (dB}\mu\text{V)} + \text{Correction Factor (dB)}$$



Comment:	Reading tag Stratus
Date of test:	May 15, 2009
Test site:	Shielded room, cabin no. 4

Test Result:	Test passed
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Tested on:	L1
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Frequency (MHz)	Detector	Reading Value (dBµV)	Correction Factor (dB)	Final Value (dBµV)	Limit (dBµV)	Margin (dB)
0.205	Average	39.6	0.0	39.6	53.4	13.8
0.210	Quasi-Peak	47.2	0.0	47.2	63.2	16.0
0.310	Average	35.0	0.0	35.0	50.0	15.0
0.415	Average	32.5	0.0	32.5	47.5	15.0
0.530	Average	27.0	0.0	27.0	46.0	19.0
0.620	Quasi-Peak	38.4	0.0	38.4	56.0	17.6
0.620	Average	31.9	0.0	31.9	46.0	14.1
0.725	Average	30.2	0.0	30.2	46.0	15.8
0.830	Quasi-Peak	34.9	0.0	34.9	56.0	21.1
0.945	Average	26.9	0.0	26.9	46.0	19.1
1.245	Average	27.7	0.0	27.7	46.0	18.3
1.555	Average	27.4	0.0	27.4	46.0	18.6
3.935	Average	21.2	0.0	21.2	46.0	24.8
4.765	Average	26.8	0.0	26.8	46.0	19.2
6.420	Average	23.7	0.0	23.7	50.0	26.3
7.250	Average	27.5	0.0	27.5	50.0	22.5
9.430	Average	28.5	0.0	28.5	50.0	21.5
10.155	Quasi-Peak	36.0	0.0	36.0	60.0	24.0
12.225	Average	33.1	0.0	33.1	50.0	16.9
13.560	Quasi-Peak	50.9	0.0	50.9	60.0	9.1
13.560	Average	49.9	0.0	49.9	50.0	0.1
16.160	Average	29.1	0.0	29.1	50.0	20.9
21.030	Average	27.1	0.0	27.1	50.0	22.9



Tested on: N

Frequency (MHz)	Detector	Reading Value (dBµV)	Correction Factor (dB)	Final Value (dBµV)	Limit (dBµV)	Margin (dB)
0.205	Average	43.0	0.0	43.0	53.4	10.4
0.210	Quasi-Peak	47.0	0.0	47.0	63.2	16.2
0.310	Quasi-Peak	40.3	0.0	40.3	60.0	19.7
0.310	Average	38.5	0.0	38.5	50.0	11.5
0.415	Quasi-Peak	38.1	0.0	38.1	57.5	19.4
0.415	Average	36.1	0.0	36.1	47.5	11.4
0.520	Quasi-Peak	41.2	0.0	41.2	56.0	14.8
0.520	Average	38.2	0.0	38.2	46.0	7.8
0.535	Quasi-Peak	37.0	0.0	37.0	56.0	19.0
0.535	Average	34.2	0.0	34.2	46.0	11.8
0.725	Quasi-Peak	42.4	0.0	42.4	56.0	13.6
0.725	Average	36.0	0.0	36.0	46.0	10.0
0.845	Average	32.8	0.0	32.8	46.0	13.2
0.935	Quasi-Peak	37.7	0.0	37.7	56.0	18.3
1.035	Quasi-Peak	39.3	0.0	39.3	56.0	16.7
1.050	Average	32.4	0.0	32.4	46.0	13.6
1.345	Quasi-Peak	38.8	0.0	38.8	56.0	17.2
1.345	Average	34.0	0.0	34.0	46.0	12.0
1.655	Quasi-Peak	37.2	0.0	37.2	56.0	18.8
1.760	Average	33.1	0.0	33.1	46.0	12.9
2.070	Average	37.7	0.0	37.7	46.0	8.3
2.075	Quasi-Peak	36.2	0.0	36.2	56.0	19.8
2.380	Average	31.8	0.0	31.8	46.0	14.2
2.485	Quasi-Peak	35.0	0.0	35.0	56.0	21.0
3.315	Average	29.1	0.0	29.1	46.0	16.9
4.145	Average	31.0	0.0	31.0	46.0	15.0
4.350	Quasi-Peak	38.0	0.0	38.0	56.0	18.0
4.560	Quasi-Peak	37.7	0.0	37.7	56.0	18.3
5.490	Average	28.4	0.0	28.4	50.0	21.6
5.595	Average	30.8	0.0	30.8	50.0	19.2
7.560	Quasi-Peak	37.0	0.0	37.0	60.0	23.0
7.560	Average	29.3	0.0	29.3	50.0	20.7
8.600	Average	26.4	0.0	26.4	50.0	23.6
13.560	Quasi-Peak	50.9	0.0	50.9	60.0	9.1
13.560	Average	49.8	0.0	49.8	50.0	0.2
16.370	Average	26.9	0.0	26.9	50.0	23.1
20.510	Average	26.4	0.0	26.4	50.0	23.6

Sample calculation of final values:

$$\text{Final Value (dB}\mu\text{V)} = \text{Reading Value (dB}\mu\text{V)} + \text{Correction Factor (dB)}$$

8.5 Spectrum Mask

Rules and specifications:	CFR 47 Part 15, section 15.225(a)-(d) IC RSS-210 Issue 7, section A2.6			
Guide:	ANSI C63.4			
Description:	Compliance with the spectrum mask is tested using a spectrum analyser with resolution bandwidth set to a 1 kHz for the band 13.553 to 13.567 MHz and to 10 kHz outside this band. The video bandwidth shall be at least three times greater than the resolution bandwidth.			
Limit:	Frequency of Emission (MHz)	Field Strength ($\mu\text{V}/\text{m}$)	Field Strength ($\text{dB}\mu\text{V}/\text{m}$)	Measurement Distance d (meters)
	1.705 - 13.110	30	29.5	30
	13.110 - 13.410	106	40.5	30
	13.410 - 13.553	334	50.5	30
	13.553 - 13.567	15848	84.0	30
	13.567 - 13.710	334	50.5	30
	13.710 - 14.010	106	40.5	30
	14.010 - 30.000	30	29.5	30
Measurement procedure:	Radiated Emission Measurement 9 kHz to 30 MHz (6.3)			

Comment:	With revision 0538A06B-001
Date of test:	May 15, 2009
Test site:	Fully anechoic room, cabin no. 2
Test distance:	3 meters
Extrapolation Factor:	40 dB/decade

Test Result:	Test passed
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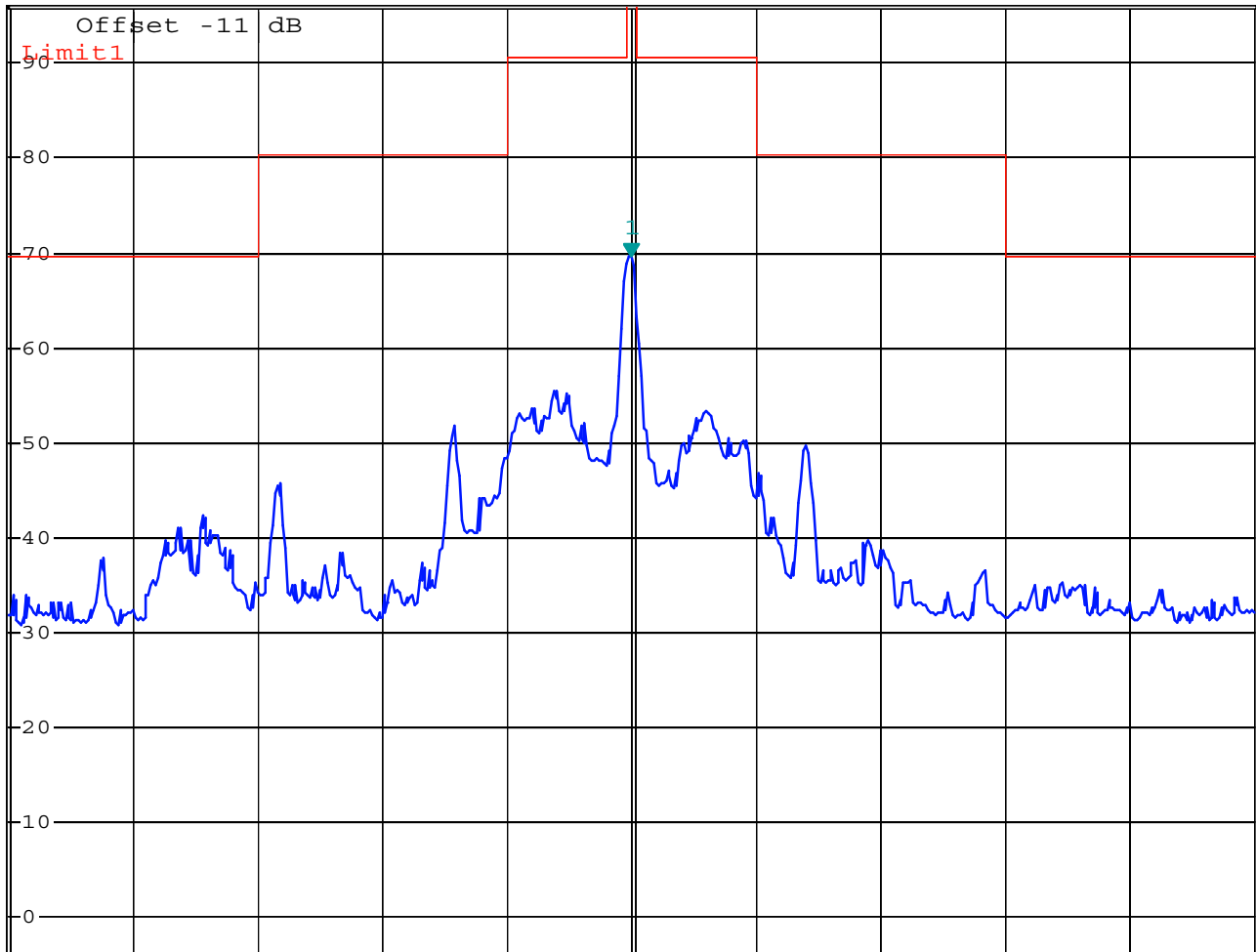
With Transponder ADC



MARKER 1
 13.56 MHz
 Ref 96 dBµV Att 10 dB

*RBW 10 kHz Marker 1 [T1]
 VBW 30 kHz 69.66 dBµV
 SWT 15 ms 13.56000000 MHz

1 PK
 MAXH

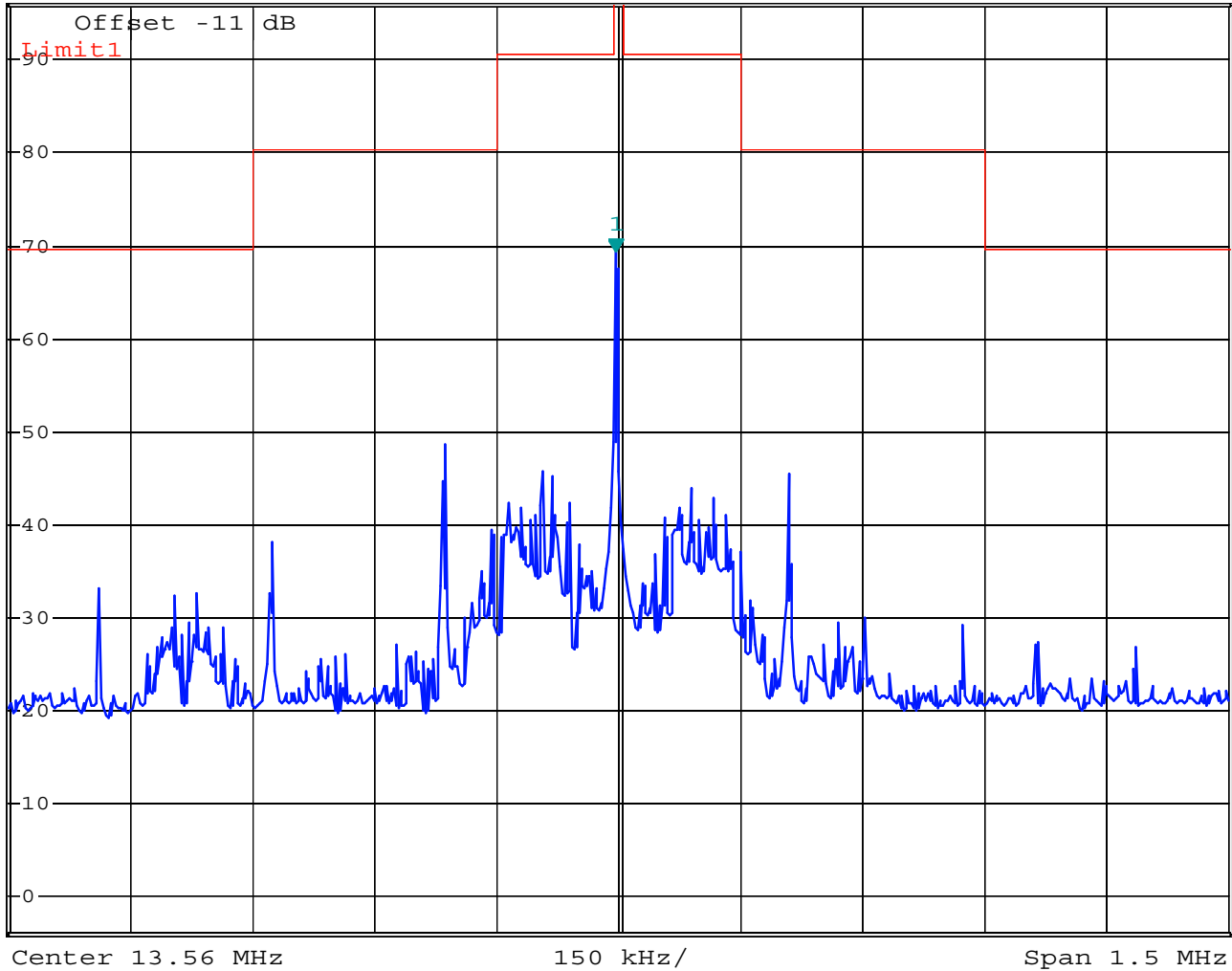


Date: 15.MAY.2009 13:06:58



MARKER 1
13.557 MHz
Ref 96 dBµV Att 10 dB *RBW 1 kHz Marker 1 [T1]
VBW 3 kHz 69.42 dBµV
SWT 1.5 s 13.55700000 MHz

1 PK
MAXH



Date: 15.MAY.2009 13:10:47

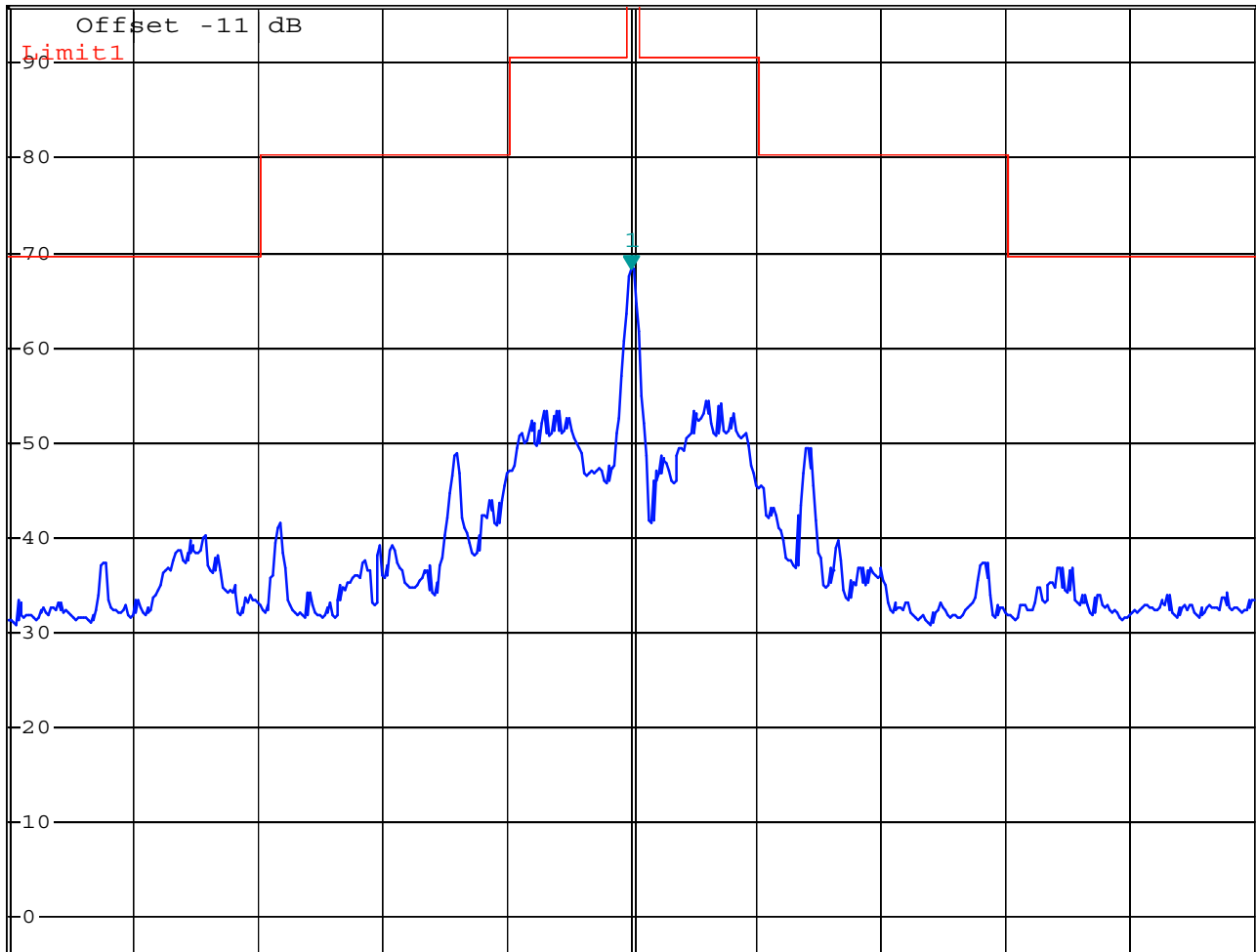
With Transponder Stratus



RESOLUTION BANDWIDTH
 10 kHz
 Ref 96 dBµV Att 10 dB

*RBW 10 kHz Marker 1 [T1]
 VBW 30 kHz 68.43 dBµV
 SWT 15 ms 13.558200000 MHz

1 PK
 MAXH



Date: 15.MAY.2009 13:28:33

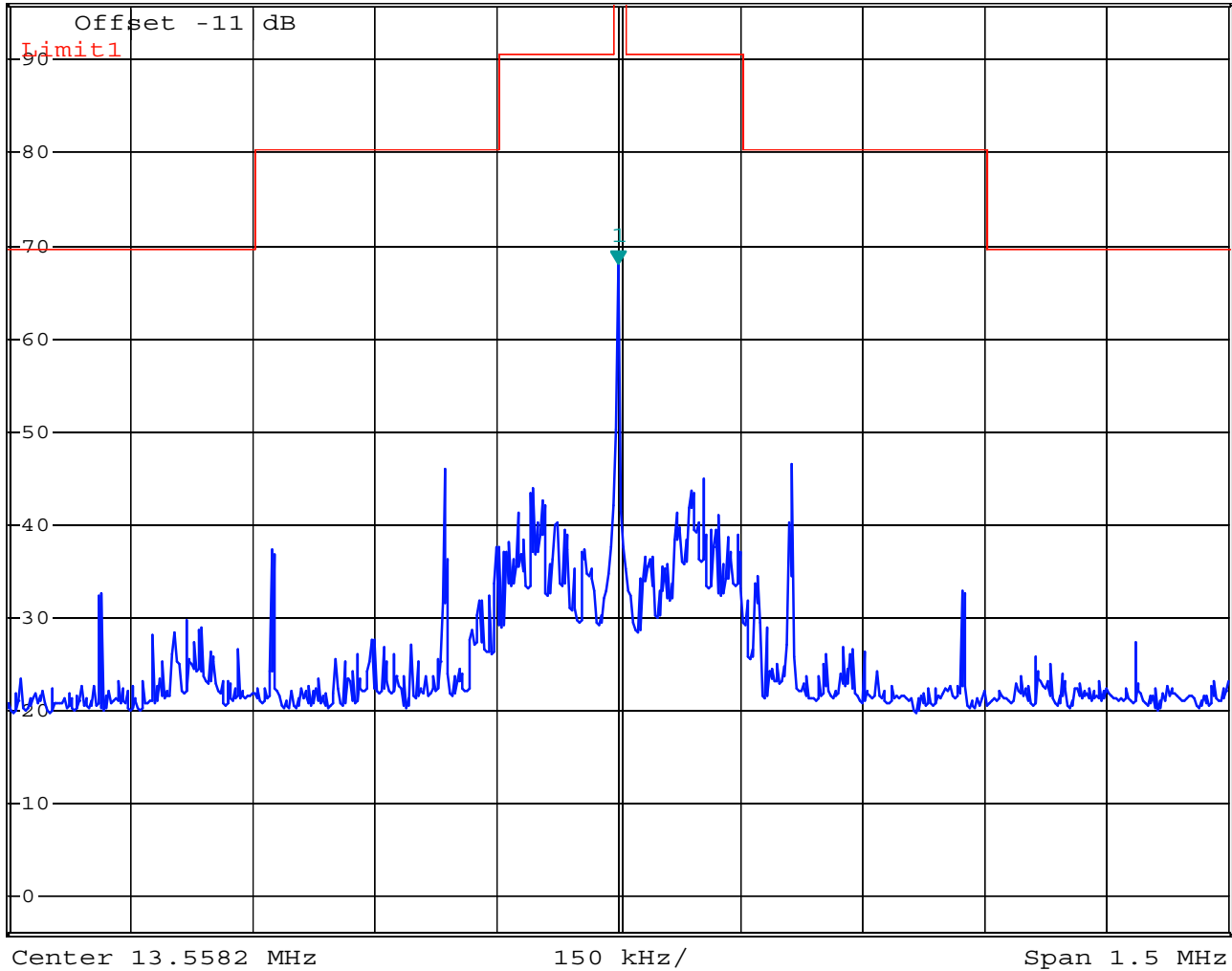


MARKER 1
13.5582 MHz
Ref 96 dBµV Att 10 dB

*RBW 1 kHz
VBW 3 kHz
SWT 1.5 s

Marker 1 [T1]
68.15 dBµV
13.55820000 MHz

1 PK
MAXH



Date: 15.MAY.2009 13:27:18



8.6 Radiated Emission Measurement 9 kHz to 30 MHz

Rules and specifications:	CFR 47 Part 15, sections 15.205 and 15.225(a)-(d) IC RSS-210 Issue 7, sections 2.2(b)(c), 2.6 and A2.6			
Guide:	ANSI C63.4			
Limit:	Frequency of Emission (MHz)	Field Strength ($\mu\text{V}/\text{m}$)	Field Strength ($\text{dB}\mu\text{V}/\text{m}$)	Measurement Distance d (meters)
	0.009 - 0.490	2400/F(kHz)	67.6 - 20 · log(F(kHz))	300
	0.490 - 1.705	24000/F(kHz)	87.6 - 20 · log(F(kHz))	30
	1.705 - 13.110	30	29.5	30
	13.110 - 13.410	106	40.5	30
	13.410 - 13.553	334	50.5	30
	13.553 - 13.567	15848	84.0	30
	13.567 - 13.710	334	50.5	30
	13.710 - 14.010	106	40.5	30
	14.010 - 30.000	30	29.5	30
	Additionally, the level of any unwanted emissions shall not exceed the level of the fundamental emission.			
Measurement procedure:	Radiated Emission Measurement 9 kHz to 30 MHz (6.3)			

Test Result:	Test passed
--------------	-------------



Comment:	With revision 0538A06B-001 and tag ADC
Date of test:	May 25, 2009
Test site:	Open field test site

Test Result:	Test passed
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Extrapolation factor: -40 dB/decade										
Frequency (MHz)	Detector	Distance		Reading Value (dBµV)	Correction Factor (dB/m)	Extrapolation Factor (dB)	Pulse Train Correction (dB)	Final Value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
		d1 (m)	d (m)							
13.56000	Quasi-Peak	10	30	34.1	20.0	-19.1		35.0	84.0	49.0

Sample calculation of final values:

$$\text{Extrapolation Factor (dB)} = (\text{Log}(d) - \text{Log}(d_1)) \cdot \text{Extrapolation Factor (dB/decade)}$$

$$\text{Final Value (dBµV/m)} = \text{Reading Value } d_1 \text{ (dBµV)} + \text{Correction Factor (dB/m)} + \text{Extrapolation Factor (dB)} + \text{Pulse Train Correction (dB)}$$

Note: Extrapolation factor (dB) and final value (dBµV/m) are relating to distance d.



Comment:	With revision 0538A06B-001 and tag Stratus
Date of test:	May 25, 2009
Test site:	Open field test site

Test Result:	Test passed
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Extrapolation factor: -40 dB/decade										
Frequency (MHz)	Detector	Distance		Reading Value (dBµV)	Correction Factor (dB/m)	Extrapolation Factor (dB)	Pulse Train Correction (dB)	Final Value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
		d1 (m)	d (m)							
13.56000	Quasi-Peak	10	30	35.1	20.0	-19.1		36.0	84.0	48.0

Sample calculation of final values:

$$\text{Extrapolation Factor (dB)} = (\text{Log}(d) - \text{Log}(d_1)) \cdot \text{Extrapolation Factor (dB/decade)}$$

$$\text{Final Value (dBµV/m)} = \text{Reading Value } d_1 \text{ (dBµV)} + \text{Correction Factor (dB/m)} + \text{Extrapolation Factor (dB)} + \text{Pulse Train Correction (dB)}$$

Note: Extrapolation factor (dB) and final value (dBµV/m) are relating to distance d.



Comment:	With revision 0538A07-001 and tag ADC
Date of test:	June 18, 2009
Test site:	Open field test site

Test Result:	Test passed
--------------	-------------

Extrapolation factor: -40 dB/decade										
Frequency (MHz)	Detector	Distance		Reading Value (dBµV)	Correction Factor (dB/m)	Extrapolation Factor (dB)	Pulse Train Correction (dB)	Final Value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
		d1 (m)	d (m)							
13.56000	Quasi-Peak	10	30	33.9	20.0	-19.1		34.8	84.0	49.2

Sample calculation of final values:

$$\text{Extrapolation Factor (dB)} = (\text{Log}(d) - \text{Log}(d_1)) \cdot \text{Extrapolation Factor (dB/decade)}$$

$$\text{Final Value (dBµV/m)} = \text{Reading Value } d_1 \text{ (dBµV)} + \text{Correction Factor (dB/m)} + \text{Extrapolation Factor (dB)} + \text{Pulse Train Correction (dB)}$$

Note: Extrapolation factor (dB) and final value (dBµV/m) are relating to distance d.



Comment:	With revision 0538A07-001 and tag Stratus
Date of test:	June 18, 2009
Test site:	Open field test site

Test Result:	Test passed
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Extrapolation factor: -40 dB/decade										
Frequency (MHz)	Detector	Distance		Reading Value (dBµV)	Correction Factor (dB/m)	Extrapolation Factor (dB)	Pulse Train Correction (dB)	Final Value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
		d1 (m)	d (m)							
13.56000	Quasi-Peak	10	30	32.9	20.0	-19.1		33.8	84.0	50.2

Sample calculation of final values:

$$\begin{aligned} \text{Extrapolation Factor (dB)} &= (\text{Log}(d) - \text{Log}(d_1)) \cdot \text{Extrapolation Factor (dB/decade)} \\ \text{Final Value (dBµV/m)} &= \text{Reading Value } d_1 \text{ (dBµV)} + \text{Correction Factor (dB/m)} \\ &\quad + \text{Extrapolation Factor (dB)} + \text{Pulse Train Correction (dB)} \end{aligned}$$

Note: Extrapolation factor (dB) and final value (dBµV/m) are relating to distance d.



8.7 Radiated Emission Measurement 30 MHz to 1 GHz

Rules and specifications:	CFR 47 Part 15, sections 15.205(b) and 15.225(d) IC RSS-210 Issue 7, sections 2.2(b)(c), 2.6 and A2.6		
Guide:	ANSI C63.4		
Limit:	Frequency of Emission (MHz)	Field Strength ($\mu\text{V}/\text{m}$)	Field Strength ($\text{dB}\mu\text{V}/\text{m}$)
	30 - 88	100	40.0
	88 - 216	150	43.5
	216 - 960	200	46.0
	Above 960	500	54.0
	Additionally, the level of any unwanted emissions shall not exceed the level of the fundamental emission.		
Measurement procedures:	Radiated Emission in Fully or Semi Anechoic Room (6.4) Radiated Emission at Open Field Test Site (6.5)		

Test Result:	Test passed
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Comment:	With revision 0538A06B-001 and tag ADC
Date of test:	May 20, 2009
Test site:	Frequencies ≤ 1 GHz: Open field test site Frequencies > 1 GHz: Fully anechoic room, cabin no. 2
Test distance:	3 meters

Test Result:	Test passed
--------------	-------------

Frequency (MHz)	Antenna Polarization	Detector	Receiver Reading (dBµV)	Correction Factor (dB/m)	Pulse Train Correction (dB)	Final Value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
40.676	horizontal	Quasi-Peak	22.3	11.7		34.0	40.0	6.0
84.011	horizontal	Quasi-Peak	13.6	9.8		23.4	40.0	16.6
96.200	horizontal	Quasi-Peak	31.6	10.5		42.1	43.5	1.4
120.011	vertical	Quasi-Peak	19.0	12.4		31.4	43.5	12.1
120.020	horizontal	Quasi-Peak	19.2	12.4		31.6	43.5	11.9
132.020	horizontal	Quasi-Peak	18.4	13.1		31.5	43.5	12.0
144.026	horizontal	Quasi-Peak	18.0	13.6		31.6	43.5	11.9
156.022	horizontal	Quasi-Peak	9.1	14.0		23.1	43.5	20.4
168.029	horizontal	Quasi-Peak	16.3	14.5		30.8	43.5	12.7
180.034	vertical	Quasi-Peak	10.8	15.3		26.1	43.5	17.4
192.040	horizontal	Quasi-Peak	24.7	16.1		40.8	43.5	2.7
240.040	horizontal	Quasi-Peak	11.4	17.5		28.9	46.0	17.1
276.040	vertical	Quasi-Peak	0.5	19.4		19.9	46.0	26.1
276.050	horizontal	Quasi-Peak	9.6	19.4		29.0	46.0	17.0
288.050	horizontal	Quasi-Peak	16.9	20.6		37.5	46.0	8.5
323.860	horizontal	Quasi-Peak	9.9	16.3		26.2	46.0	19.8
336.060	horizontal	Quasi-Peak	15.5	16.8		32.3	46.0	13.7
384.066	horizontal	Quasi-Peak	21.3	18.1		39.4	46.0	6.6
480.080	horizontal	Quasi-Peak	21.7	20.5		42.2	46.0	3.8

Sample calculation of final values:

$$\text{Final Value (dB}\mu\text{V/m)} = \text{Reading Value (dB}\mu\text{V)} + \text{Correction Factor (dB/m)} + \text{Pulse Train Correction (dB)}$$



Comment:	With revision 0538A06B-001 and Stratus
Date of test:	May 20, 2009
Test site:	Frequencies ≤ 1 GHz: Open field test site Frequencies > 1 GHz: Fully anechoic room, cabin no. 2
Test distance:	3 meters

Test Result:	Test passed
--------------	-------------

Frequency (MHz)	Antenna Polarization	Detector	Receiver Reading (dBµV)	Correction Factor (dB/m)	Pulse Train Correction (dB)	Final Value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
40.670	horizontal	Quasi-Peak	16.9	11.7		28.6	40.0	11.4
96.020	horizontal	Quasi-Peak	32.3	10.5		42.8	43.5	0.7
96.100	vertical	Quasi-Peak	16.3	10.5		26.8	43.5	16.7
119.955	horizontal	Quasi-Peak	15.7	12.4		28.1	43.5	15.4
132.020	horizontal	Quasi-Peak	14.0	13.1		27.1	43.5	16.4
144.026	vertical	Quasi-Peak	15.3	13.6		28.9	43.5	14.6
156.022	horizontal	Quasi-Peak	6.9	14.0		20.9	43.5	22.6
168.029	vertical	Quasi-Peak	9.6	14.5		24.1	43.5	19.4
168.032	horizontal	Quasi-Peak	15.1	14.5		29.6	43.5	13.9
169.987	vertical	Quasi-Peak	8.1	14.6		22.7	43.5	20.8
176.254	vertical	Quasi-Peak	8.2	15.0		23.2	43.5	20.3
179.983	horizontal	Quasi-Peak	11.6	15.3		26.9	43.5	16.6
199.900	vertical	Quasi-Peak	6.3	16.5		22.8	43.5	20.7
276.040	vertical	Quasi-Peak	0.0	19.4		19.4	46.0	26.6
276.050	horizontal	Quasi-Peak	5.7	19.4		25.1	46.0	20.9
323.896	horizontal	Quasi-Peak	6.1	16.3		22.4	46.0	23.6
324.000	horizontal	Quasi-Peak	5.1	16.3		21.4	46.0	24.6
360.035	horizontal	Quasi-Peak	9.8	17.4		27.2	46.0	18.8
371.990	horizontal	Quasi-Peak	7.1	17.6		24.7	46.0	21.3
384.067	horizontal	Quasi-Peak	20.2	18.1		38.3	46.0	7.7
420.070	horizontal	Quasi-Peak	7.9	19.3		27.2	46.0	18.8
420.293	horizontal	Quasi-Peak	8.1	19.3		27.4	46.0	18.6
480.000	horizontal	Quasi-Peak	15.6	20.5		36.1	46.0	9.9

Sample calculation of final values:

$$\text{Final Value (dB}\mu\text{V/m)} = \text{Reading Value (dB}\mu\text{V)} + \text{Correction Factor (dB/m)} + \text{Pulse Train Correction (dB)}$$



Comment:	With revision 0538A07-001 and tag ADC
Date of test:	June 19, 2009
Test site:	Frequencies \leq 1 GHz: Open field test site Frequencies $>$ 1 GHz: Fully anechoic room, cabin no. 2
Test distance:	3 meters

Test Result:	Test passed
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Frequency (MHz)	Antenna Polarization	Detector	Receiver Reading (dBµV)	Correction Factor (dB/m)	Pulse Train Correction (dB)	Final Value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
30.100	horizontal	Quasi-Peak	4.6	14.0		18.6	40.0	21.4
31.588	vertical	Quasi-Peak	9.6	13.6		23.2	40.0	16.8
32.700	vertical	Quasi-Peak	9.0	13.3		22.3	40.0	17.7
35.900	vertical	Quasi-Peak	8.0	12.6		20.6	40.0	19.4
36.070	horizontal	Quasi-Peak	0.4	12.6		13.0	40.0	27.0
38.600	vertical	Quasi-Peak	8.3	12.1		20.4	40.0	19.6
40.670	horizontal	Quasi-Peak	21.6	11.7		33.3	40.0	6.7
41.126	vertical	Quasi-Peak	7.3	11.6		18.9	40.0	21.1
59.247	horizontal	Quasi-Peak	7.0	9.7		16.7	40.0	23.3
59.988	vertical	Quasi-Peak	9.2	9.7		18.9	40.0	21.1
67.785	horizontal	Quasi-Peak	18.1	9.6		27.7	40.0	12.3
72.000	vertical	Quasi-Peak	9.6	9.6		19.2	40.0	20.8
72.006	horizontal	Quasi-Peak	8.8	9.6		18.4	40.0	21.6
83.990	vertical	Quasi-Peak	0.7	9.8		10.5	40.0	29.5
84.000	horizontal	Quasi-Peak	15.3	9.8		25.1	40.0	14.9
96.000	horizontal	Quasi-Peak	32.6	10.5		43.1	43.5	0.4
96.016	vertical	Quasi-Peak	28.4	10.5		38.9	43.5	4.6
108.450	vertical	Quasi-Peak	11.7	11.5		23.2	43.5	20.3
108.480	horizontal	Quasi-Peak	10.4	11.5		21.9	43.5	21.6
120.009	vertical	Quasi-Peak	16.4	12.4		28.8	43.5	14.7
120.015	horizontal	Quasi-Peak	18.9	12.4		31.3	43.5	12.2
132.024	vertical	Quasi-Peak	11.3	13.1		24.4	43.5	19.1
133.000	horizontal	Quasi-Peak	13.9	13.2		27.1	43.5	16.4
144.020	vertical	Quasi-Peak	12.0	13.6		25.6	43.5	17.9
144.026	horizontal	Quasi-Peak	18.8	13.6		32.4	43.5	11.1
159.868	horizontal	Quasi-Peak	4.3	14.1		18.4	43.5	25.1
168.022	vertical	Quasi-Peak	13.8	14.5		28.3	43.5	15.2
168.030	horizontal	Quasi-Peak	23.9	14.5		38.4	43.5	5.1
180.078	horizontal	Quasi-Peak	11.8	15.3		27.1	43.5	16.4
192.030	horizontal	Quasi-Peak	27.3	16.1		43.4	43.5	0.1
228.016	horizontal	Quasi-Peak	5.0	17.1		22.1	46.0	23.9
240.035	horizontal	Quasi-Peak	10.9	17.5		28.4	46.0	17.6
264.045	horizontal	Quasi-Peak	8.4	18.5		26.9	46.0	19.1
276.018	horizontal	Quasi-Peak	12.0	19.4		31.4	46.0	14.6
276.040	vertical	Quasi-Peak	4.0	19.4		23.4	46.0	22.6
288.046	horizontal	Quasi-Peak	16.5	20.6		37.1	46.0	8.9
288.050	vertical	Quasi-Peak	8.4	20.6		29.0	46.0	17.0
324.010	horizontal	Quasi-Peak	9.6	16.3		25.9	46.0	20.1
324.037	vertical	Quasi-Peak	2.8	16.3		19.1	46.0	26.9
336.058	horizontal	Quasi-Peak	17.1	16.8		33.9	46.0	12.1
371.975	horizontal	Quasi-Peak	11.0	17.6		28.6	46.0	17.4
384.066	horizontal	Quasi-Peak	22.8	18.1		40.9	46.0	5.1
408.055	horizontal	Quasi-Peak	3.5	19.0		22.5	46.0	23.5
408.074	vertical	Quasi-Peak	2.4	19.0		21.4	46.0	24.6
479.200	horizontal	Quasi-Peak	4.8	20.5		25.3	46.0	20.7
479.418	vertical	Quasi-Peak	3.5	20.5		24.0	46.0	22.0
576.060	horizontal	Quasi-Peak	9.4	22.3		31.7	46.0	14.3
729.835	horizontal	Quasi-Peak	13.2	25.2		38.4	46.0	7.6

Sample calculation of final values:

$$\text{Final Value (dB}\mu\text{V/m)} = \text{Reading Value (dB}\mu\text{V)} + \text{Correction Factor (dB/m)} \\ + \text{Pulse Train Correction (dB)}$$



Comment:	With revision 0538A07-001 and Stratus
Date of test:	June 19, 2009
Test site:	Frequencies \leq 1 GHz: Open field test site Frequencies $>$ 1 GHz: Fully anechoic room, cabin no. 2
Test distance:	3 meters

Test Result:	Test passed
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Frequency (MHz)	Antenna Polarization	Detector	Receiver Reading (dBµV)	Correction Factor (dB/m)	Pulse Train Correction (dB)	Final Value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
32.700	vertical	Quasi-Peak	8.2	13.3		21.5	40.0	18.5
35.940	vertical	Quasi-Peak	9.1	12.6		21.7	40.0	18.3
41.860	vertical	Quasi-Peak	7.4	11.5		18.9	40.0	21.1
47.970	vertical	Quasi-Peak	8.2	10.6		18.8	40.0	21.2
72.014	vertical	Quasi-Peak	9.2	9.6		18.8	40.0	21.2
72.020	horizontal	Quasi-Peak	5.8	9.6		15.4	40.0	24.6
78.060	horizontal	Quasi-Peak	1.7	9.6		11.3	40.0	28.7
84.000	vertical	Quasi-Peak	8.5	9.8		18.3	40.0	21.7
84.015	horizontal	Quasi-Peak	13.4	9.8		23.2	40.0	16.8
96.016	vertical	Quasi-Peak	30.2	10.5		40.7	43.5	2.8
96.017	horizontal	Quasi-Peak	32.8	10.5		43.3	43.5	0.2
108.469	horizontal	Quasi-Peak	11.7	11.5		23.2	43.5	20.3
120.006	vertical	Quasi-Peak	16.4	12.4		28.8	43.5	14.7
120.020	horizontal	Quasi-Peak	16.7	12.4		29.1	43.5	14.4
131.926	vertical	Quasi-Peak	9.3	13.1		22.4	43.5	21.1
132.018	horizontal	Quasi-Peak	15.8	13.1		28.9	43.5	14.6
144.018	horizontal	Quasi-Peak	17.4	13.6		31.0	43.5	12.5
144.029	vertical	Quasi-Peak	13.7	13.6		27.3	43.5	16.2
155.997	horizontal	Quasi-Peak	7.5	14.0		21.5	43.5	22.0
156.360	vertical	Quasi-Peak	1.1	14.0		15.1	43.5	28.4
168.025	vertical	Quasi-Peak	14.0	14.5		28.5	43.5	15.0
168.027	horizontal	Quasi-Peak	22.6	14.5		37.1	43.5	6.4
179.900	horizontal	Quasi-Peak	10.0	15.3		25.3	43.5	18.2
179.912	vertical	Quasi-Peak	6.0	15.3		21.3	43.5	22.2
192.032	horizontal	Quasi-Peak	27.1	16.1		43.2	43.5	0.3
240.020	horizontal	Quasi-Peak	10.6	17.5		28.1	46.0	17.9
264.040	horizontal	Quasi-Peak	7.3	18.5		25.8	46.0	20.2
276.056	vertical	Quasi-Peak	3.3	19.4		22.7	46.0	23.3
288.043	horizontal	Quasi-Peak	15.1	20.6		35.7	46.0	10.3
311.208	horizontal	Quasi-Peak	2.2	15.9		18.1	46.0	27.9
311.825	vertical	Quasi-Peak	7.3	15.9		23.2	46.0	22.8
324.015	horizontal	Quasi-Peak	5.6	16.3		21.9	46.0	24.1
336.053	vertical	Quasi-Peak	8.0	16.8		24.8	46.0	21.2
372.060	horizontal	Quasi-Peak	7.8	17.6		25.4	46.0	20.6
384.063	horizontal	Quasi-Peak	20.8	18.1		38.9	46.0	7.1
420.060	horizontal	Quasi-Peak	9.8	19.3		29.1	46.0	16.9
437.455	horizontal	Quasi-Peak	1.5	19.7		21.2	46.0	24.8
456.600	vertical	Quasi-Peak	9.4	20.1		29.5	46.0	16.5
480.003	vertical	Quasi-Peak	18.5	20.5		39.0	46.0	7.0
576.107	horizontal	Quasi-Peak	13.2	22.3		35.5	46.0	10.5
672.112	vertical	Quasi-Peak	6.6	24.6		31.2	46.0	14.8
672.115	horizontal	Quasi-Peak	5.6	24.6		30.2	46.0	15.8
728.400	horizontal	Quasi-Peak	10.0	25.2		35.2	46.0	10.8
732.600	vertical	Quasi-Peak	19.1	25.2		44.3	46.0	1.7

Sample calculation of final values:

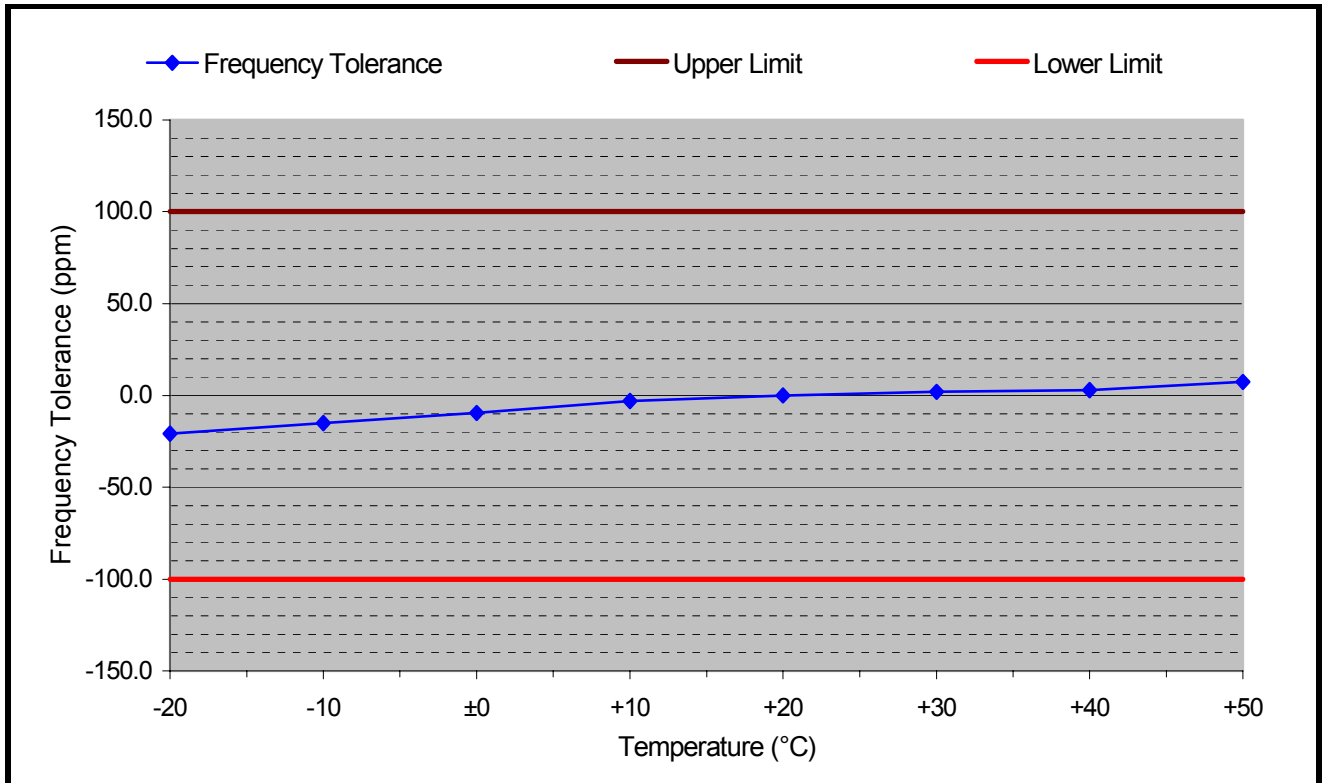
$$\text{Final Value (dB}\mu\text{V/m)} = \text{Reading Value (dB}\mu\text{V)} + \text{Correction Factor (dB/m)} \\ + \text{Pulse Train Correction (dB)}$$

8.8 Carrier Frequency Stability

Rules and specifications:	CFR 47 Part 15, section 15.225(e) IC RSS-Gen Issue 2, section 4.7 and IC RSS-210 Issue 7, section A2.6
Guide:	ANSI C63.4
Limit:	The frequency tolerance of the carrier signal shall be maintained within ± 0.01 % (± 100 ppm) of the carrier frequency under nominal conditions.
Temperature range:	-20°C to +50°C (at normal supply voltage)
Voltage range:	85% to 115% of the rated supply voltage (at a temperature of +20°C)
Measurement procedure:	Carrier Frequency Stability (6.6)

Comment:	
Date of test:	May 20, 2009

8.8.1 Carrier Frequency Stability vs. Temperature

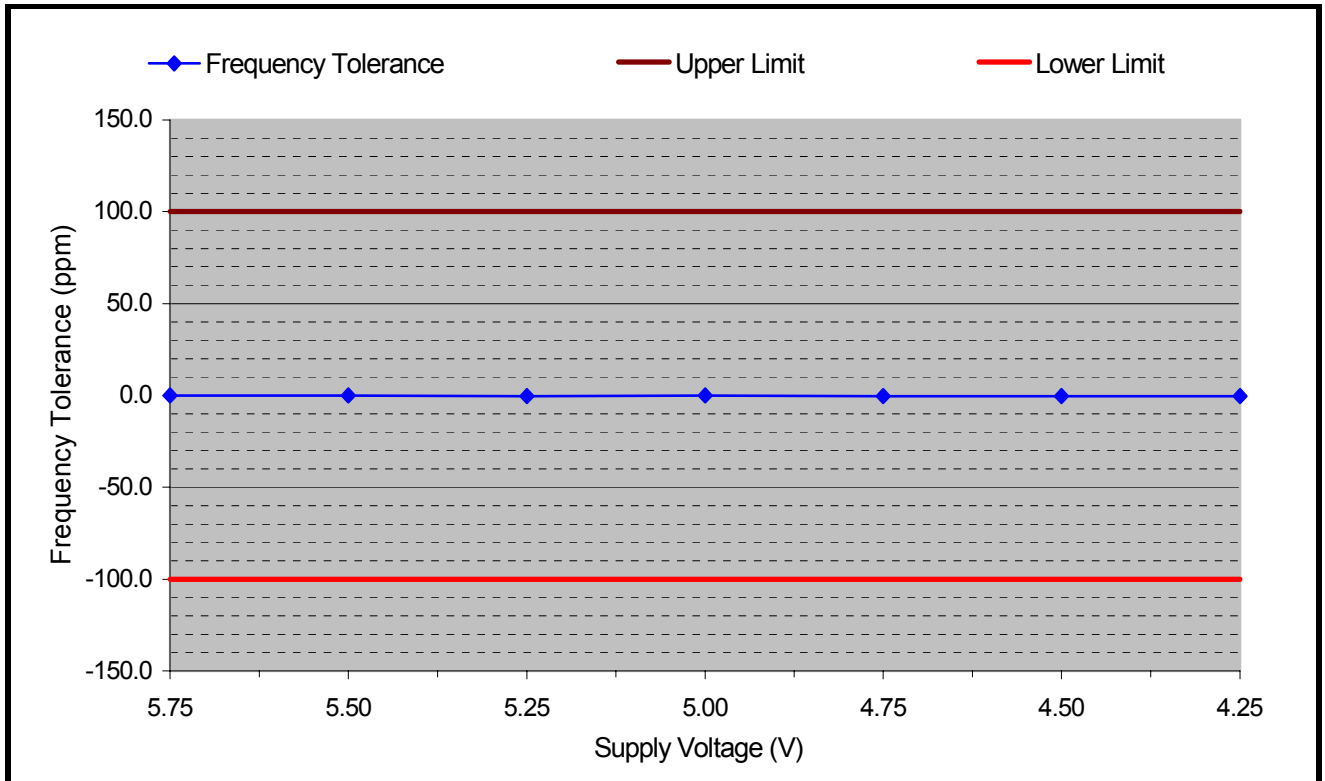


Supply voltage: 5 V Nominal frequency: 13.557864 MHz

Temperature (°C)	Frequency (MHz)	Frequency Tolerance (Hz)	Frequency Tolerance (ppm)	Upper Limit (ppm)	Lower Limit (ppm)	Margin (ppm)
-20	13.557583	-281	-20.8	+100.0	-100.0	79.2
-10	13.557660	-204	-15.0	+100.0	-100.0	85.0
±0	13.557734	-130	-9.6	+100.0	-100.0	90.4
+10	13.557822	-42	-3.1	+100.0	-100.0	96.9
+20	13.557864	0	0.0	+100.0	-100.0	100.0
+30	13.557892	28	2.1	+100.0	-100.0	97.9
+40	13.557902	38	2.8	+100.0	-100.0	97.2
+50	13.557964	100	7.4	+100.0	-100.0	92.6

Test Result: Test passed

8.8.2 Carrier Frequency Stability vs. Supply Voltage



Temperature: +20 °C Battery End Point: Not applicable
 Nominal frequency: 13.557864 MHz

Supply Voltage (V)	Frequency (MHz)	Frequency Tolerance (Hz)	Frequency Tolerance (ppm)	Upper Limit (ppm)	Lower Limit (ppm)	Margin (ppm)
5.75	13.557864	0	0.0	+100.0	-100.0	100.0
5.50	13.557864	0	0.0	+100.0	-100.0	100.0
5.25	13.557860	-4	-0.3	+100.0	-100.0	99.7
5.00	13.557864	0	0.0	+100.0	-100.0	100.0
4.75	13.557860	-4	-0.3	+100.0	-100.0	99.7
4.50	13.557860	-4	-0.3	+100.0	-100.0	99.7
4.25	13.557860	-4	-0.3	+100.0	-100.0	99.7

Test Result: Test passed



8.9 Exposure of Humans to RF Fields

Rules and specifications:	IC RSS-Gen Issue 2, section 5.5
Guide:	IC RSS-102 Issue 2, section 2.5

Exposure of Humans to RF Fields	Applicable	Declared by applicant	Measured	Exemption
The antenna is				
<input type="checkbox"/> detachable				
<p>The conducted output power (CP in watts) is measured at the antenna connector:</p> $CP = \dots\dots\dots \text{ W}$ <p>The effective isotropic radiated power (EIRP in watts) is calculated using</p> <p><input type="checkbox"/> the numerical antenna gain: $G = \dots\dots\dots$</p> $EIRP = G \cdot CP \Rightarrow EIRP = \dots\dots\dots \text{ W}$ <p><input type="checkbox"/> the field strength⁹ in V/m: $FS = \dots\dots\dots \text{ V/m}$</p> $EIRP = \frac{(FS \cdot D)^2}{30} \Rightarrow EIRP = \dots\dots\dots \text{ W}$ <p>with:</p> <p>Distance between the antennas in m: $D = \dots\dots\dots \text{ m}$</p>			<input type="checkbox"/>	
<input checked="" type="checkbox"/> not detachable				
<p>A field strength measurement is used to determine the effective isotropic radiated power (EIRP in watts) given by⁹:</p> $EIRP = \frac{(FS \cdot D)^2}{30} \Rightarrow EIRP = 1.08 \cdot 10^{-6} \text{ W}$ <p>with:</p> <p>Field strength in V/m: $FS = 569 \cdot 10^{-6} \text{ V/m}$</p> <p>Distance between the two antennas in m: $D = 10 \text{ m}$</p>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Selection of output power				
<p>The output power TP is the higher of the conducted or effective isotropic radiated power (e.i.r.p.):</p> $TP = 1.08 \cdot 10^{-6} \text{ W}$				

⁹ The conversion formula is valid only for properly matched antennas. In other cases the transmitter output power may have to be measured by a terminated measurement when applying the exemption clauses. If an open area test site is used for field strength measurement, the effect due to the metal ground reflecting plane should be subtracted from the maximum field strength value in order to reference it to free space, before calculating TP.

9 Referenced Regulations

All tests were performed with reference to the following regulations and standards:

<input checked="" type="checkbox"/>	CFR 47 Part 2	Code of Federal Regulations Part 2 (Frequency allocation and radio treaty matters; General rules and regulations) of the Federal Communication Commission (FCC)	October 1, 2008
<input checked="" type="checkbox"/>	CFR 47 Part 15	Code of Federal Regulations Part 15 (Radio Frequency Devices) of the Federal Communication Commission (FCC)	October 1, 2008
<input checked="" type="checkbox"/>	ANSI C63.4	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	December 11, 2003 (published on January 30, 2004)
<input checked="" type="checkbox"/>	RSS-Gen	Radio Standards Specification RSS-Gen Issue 2 containing General Requirements and Information for the Certification of Radiocommunication Equipmment, published by Industry Canada	June 2007
<input checked="" type="checkbox"/>	RSS-210	Radio Standards Specification RSS-210 Issue 7 for Low Power Licence-Exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment, published by Industry Canada	June 2007
<input type="checkbox"/>	RSS-310	Radio Standards Specification RSS-310 Issue 1 for Low Power Licence-Ecempt Radiocommunicaton Devices (All Frequency Bands): Category II Equipment, published by Industry Canada	September 2005
<input checked="" type="checkbox"/>	RSS-102	Radio Standards Specification RSS-102 Issue 2: Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)	November 2005
<input checked="" type="checkbox"/>	ICES-003	Interference-Causing Equipment Standard ICES-003 Issue 4 for Digital Apparatus, published by Industry Canada	February 7, 2004
<input checked="" type="checkbox"/>	CISPR 22	Third Edition of the International Special Committee on Radio Interference (CISPR), Pub. 22, "Information Technology Equipment – Radio Disturbance Characteristics – Limits and Methods of Measurement"	1997
<input type="checkbox"/>	CAN/CSA-CEI/IEC CISPR 22	Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment	2002



TRC-43

Notes Regarding Designation of Emission (Including Necessary Bandwidth and Classification), Class of Station and Nature of Service, published by Industry Canada

October 9, 1982



10 Revision History

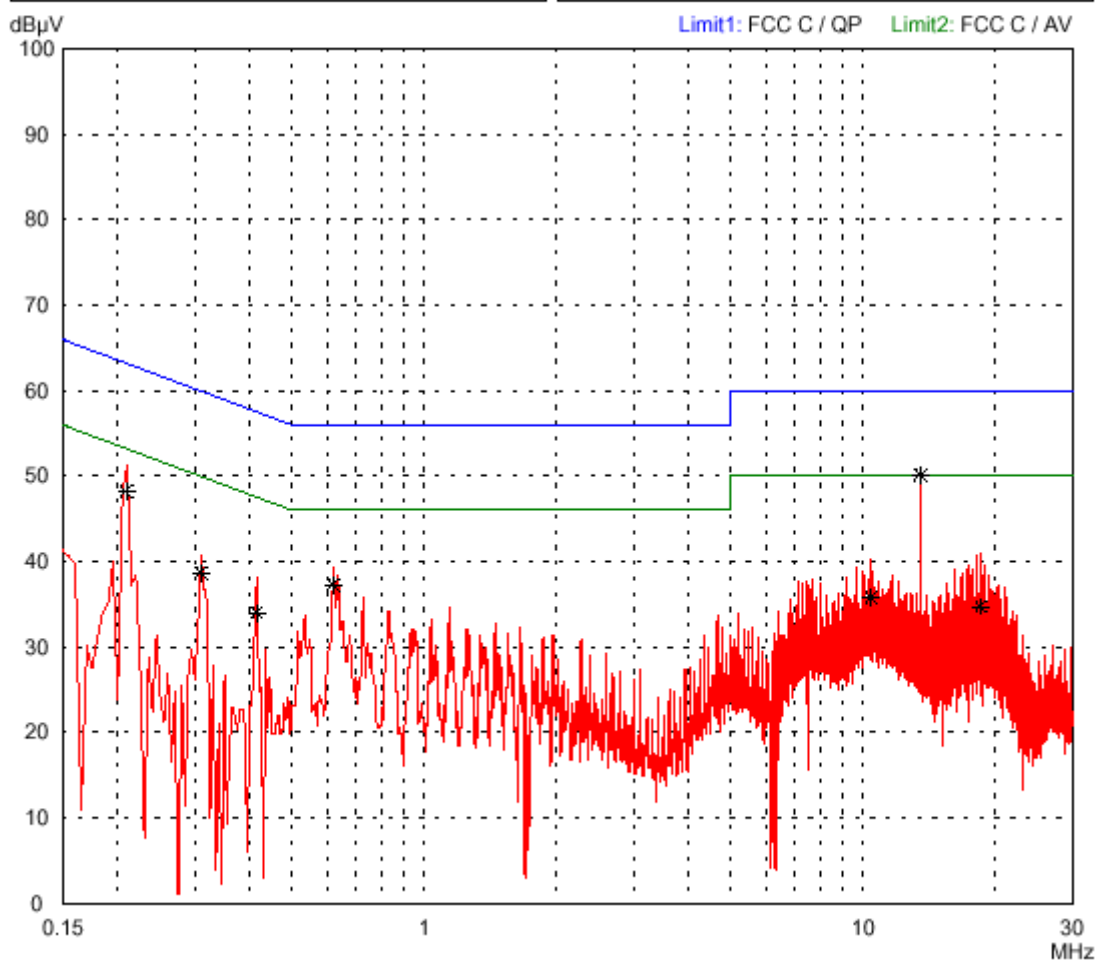
Revision History			
<i>Edition</i>	<i>Date</i>	<i>Issued by</i>	<i>Modifications</i>
1	23.06.09	Martin Steindl (cj)	First Edition
2	30.06.09	Christa Jäger	Edition 2 Update "Referenced Regulations"
3	14.07.09	Christa Jäger	Edition 3 Page 54/55 Magnetic Field Test Test date corrected



11 Charts taken during testing

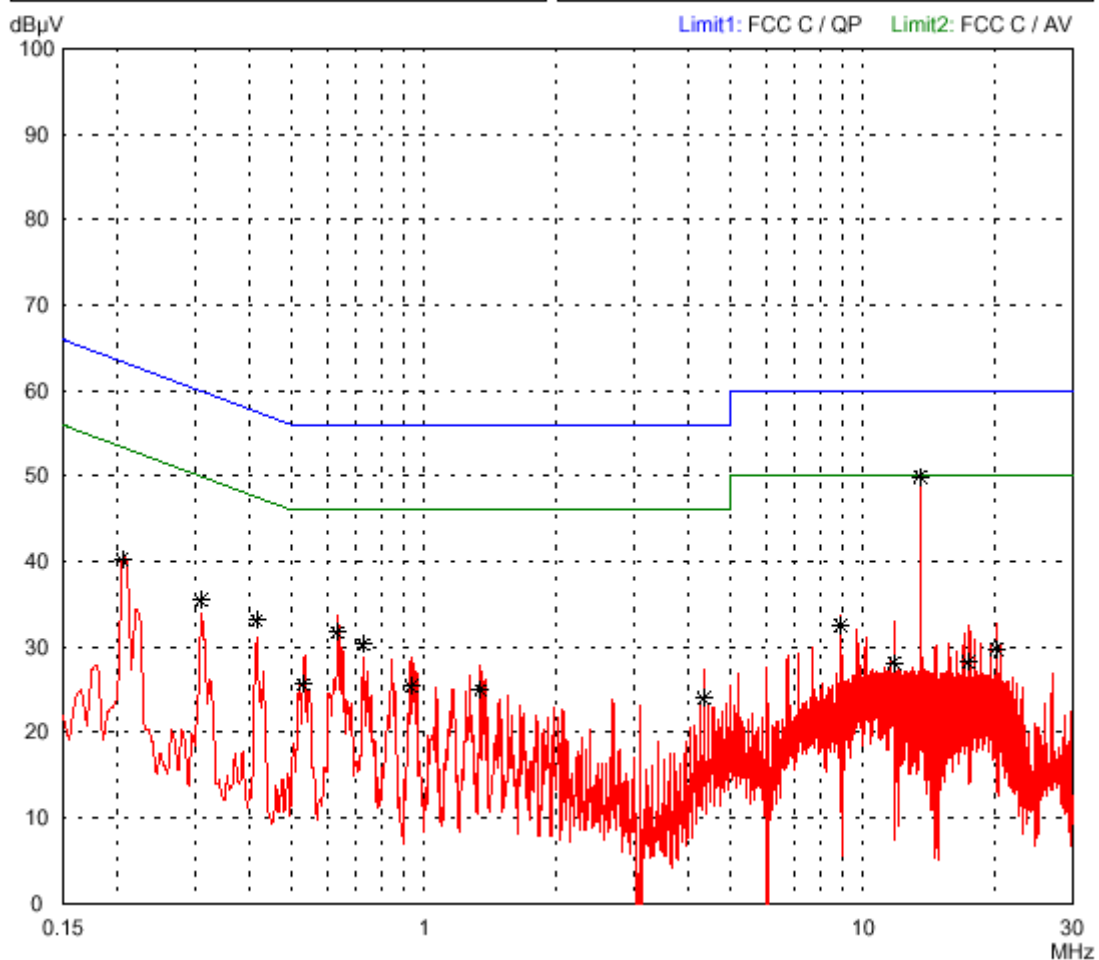
Conducted Emission Test 150 kHz - 30 MHz according to FCC Part 15 Subpart C

<p>Model: RFID Reader 0535A08E</p> <p>Serial no.: ---</p> <p>Applicant: BALTECH AG</p> <p>Test site: Shielded room, cabin no. 4</p> <p>Tested on: Linecord AC/DC adapter of PC Phase L1</p> <p>Date of test: 05/15/2009 Operator: M. Steindl</p> <p>Test performed: automatically File name:</p>	<p>Mode:</p> <ul style="list-style-type: none"> - AC 110 V power supply - With DELL laptop PC - reading card ADC continuously
<p>Detector: Peak / Final Results: QP</p>	<p>Final results: 20 dB Margin 25 Subranges</p>



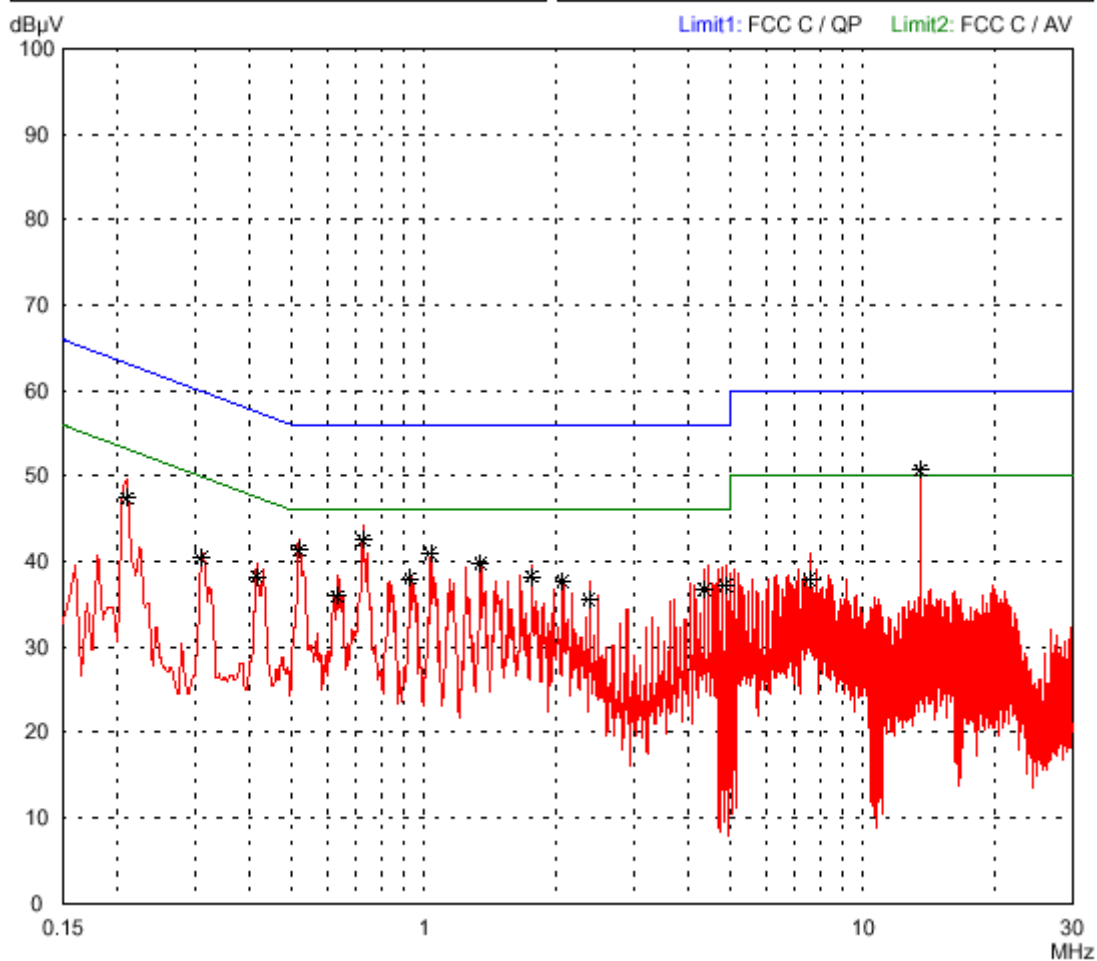
Conducted Emission Test 150 kHz - 30 MHz according to FCC Part 15 Subpart C

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Serial no.: ---											
Applicant: BALTECH AG											
Test site: Shielded room, cabin no. 4											
Tested on: Linecord AC/DC adapter of PC Phase L1											
Date of test: 05/15/2009	Operator: M. Steindl										
Test performed: automatically	File name:										
Mode: - AC 110 V power supply - With DELL laptop PC - reading card ADC continuously											
Detector: Average / Final Results: AV	Final results: 20 dB Margin 25 Subranges										



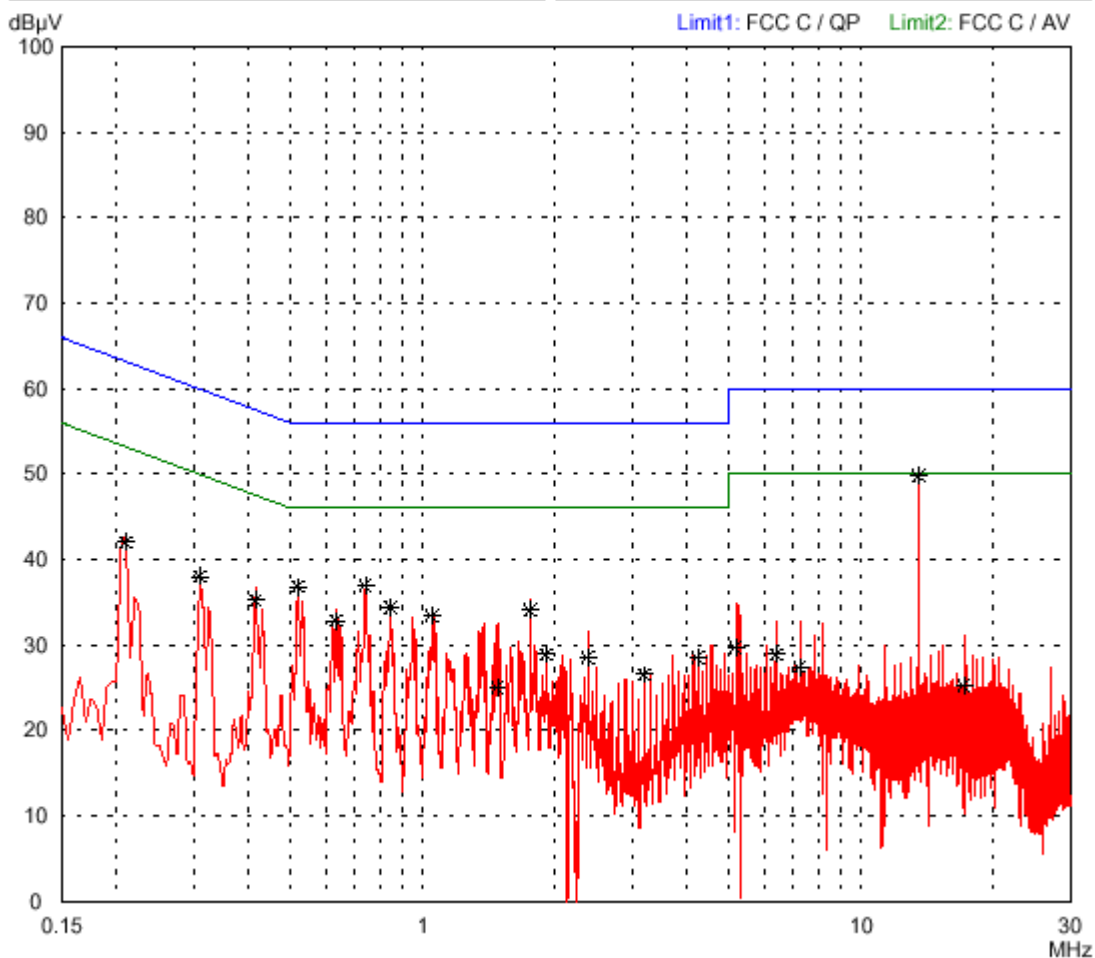
Conducted Emission Test 150 kHz - 30 MHz according to FCC Part 15 Subpart C

<p>Model: RFID Reader 0535A08E</p> <p>Serial no.: ---</p> <p>Applicant: BALTECH AG</p> <p>Test site: Shielded room, cabin no. 4</p> <p>Tested on: Linecord AC/DC adapter of PC Phase N</p> <p>Date of test: 05/15/2009 Operator: M. Steindl</p> <p>Test performed: automatically File name:</p>	<p>Mode:</p> <ul style="list-style-type: none"> - AC 110 V power supply - With DELL laptop PC - reading card ADC continuously
<p>Detector: Peak / Final Results: QP</p>	<p>Final results: 20 dB Margin 25 Subranges</p>



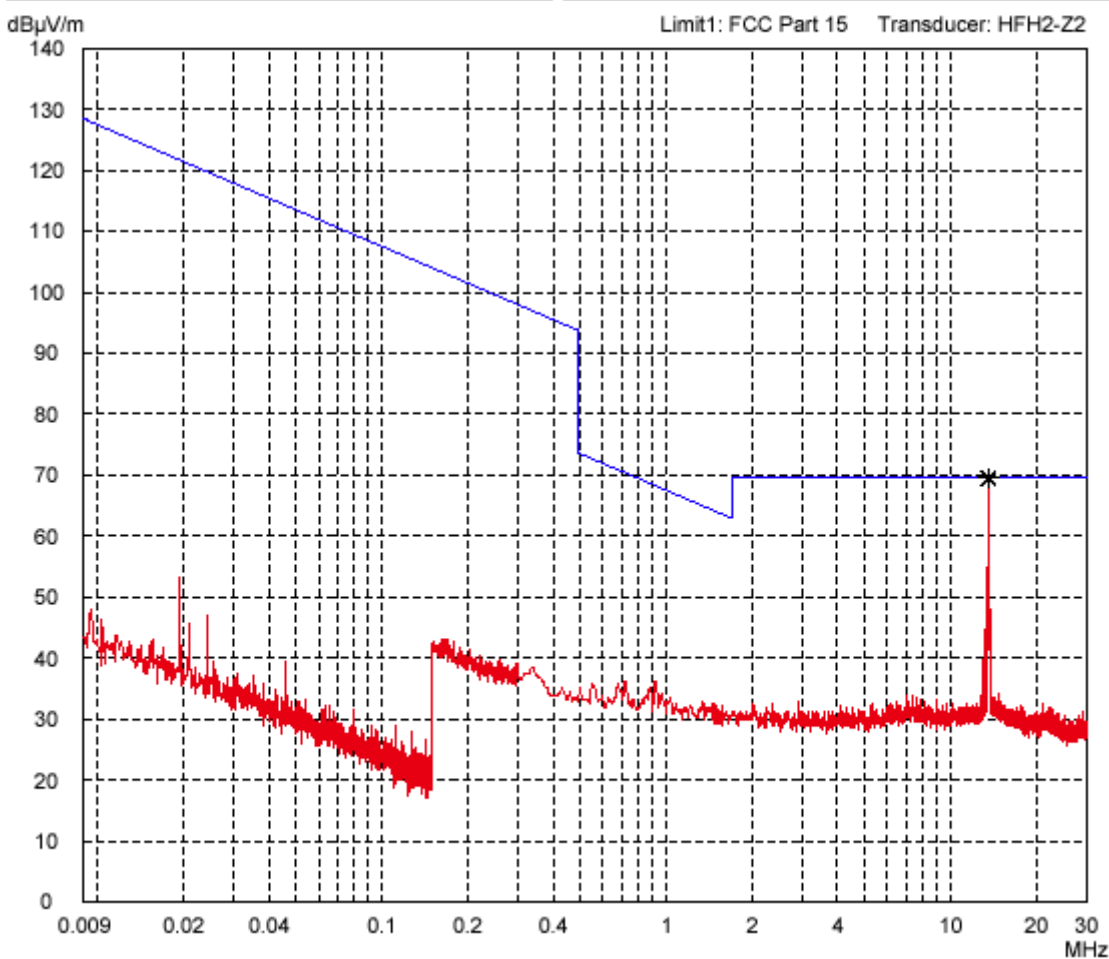
Conducted Emission Test 150 kHz - 30 MHz according to FCC Part 15 Subpart C

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">Model: RFID Reader 0535A08E</td></tr> <tr><td style="padding: 2px;">Serial no.: ---</td></tr> <tr><td style="padding: 2px;">Applicant: BALTECH AG</td></tr> <tr><td style="padding: 2px;">Test site: Shielded room, cabin no. 4</td></tr> <tr><td style="padding: 2px;">Tested on: Linecord AC/DC adapter of PC Phase N</td></tr> <tr><td style="padding: 2px;">Date of test: 05/15/2009</td></tr> <tr><td style="padding: 2px;">Operator: M. Steindl</td></tr> <tr><td style="padding: 2px;">Test performed: automatically</td></tr> <tr><td style="padding: 2px;">File name:</td></tr> </table>	Model: RFID Reader 0535A08E	Serial no.: ---	Applicant: BALTECH AG	Test site: Shielded room, cabin no. 4	Tested on: Linecord AC/DC adapter of PC Phase N	Date of test: 05/15/2009	Operator: M. Steindl	Test performed: automatically	File name:	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">Mode: - AC 110 V power supply - With DELL laptop PC - reading card ADC continuously</td></tr> </table>	Mode: - AC 110 V power supply - With DELL laptop PC - reading card ADC continuously
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Serial no.: ---											
Applicant: BALTECH AG											
Test site: Shielded room, cabin no. 4											
Tested on: Linecord AC/DC adapter of PC Phase N											
Date of test: 05/15/2009											
Operator: M. Steindl											
Test performed: automatically											
File name:											
Mode: - AC 110 V power supply - With DELL laptop PC - reading card ADC continuously											
Detector: Average / Final Results: AV	Final results: 20 dB Margin 25 Subranges										

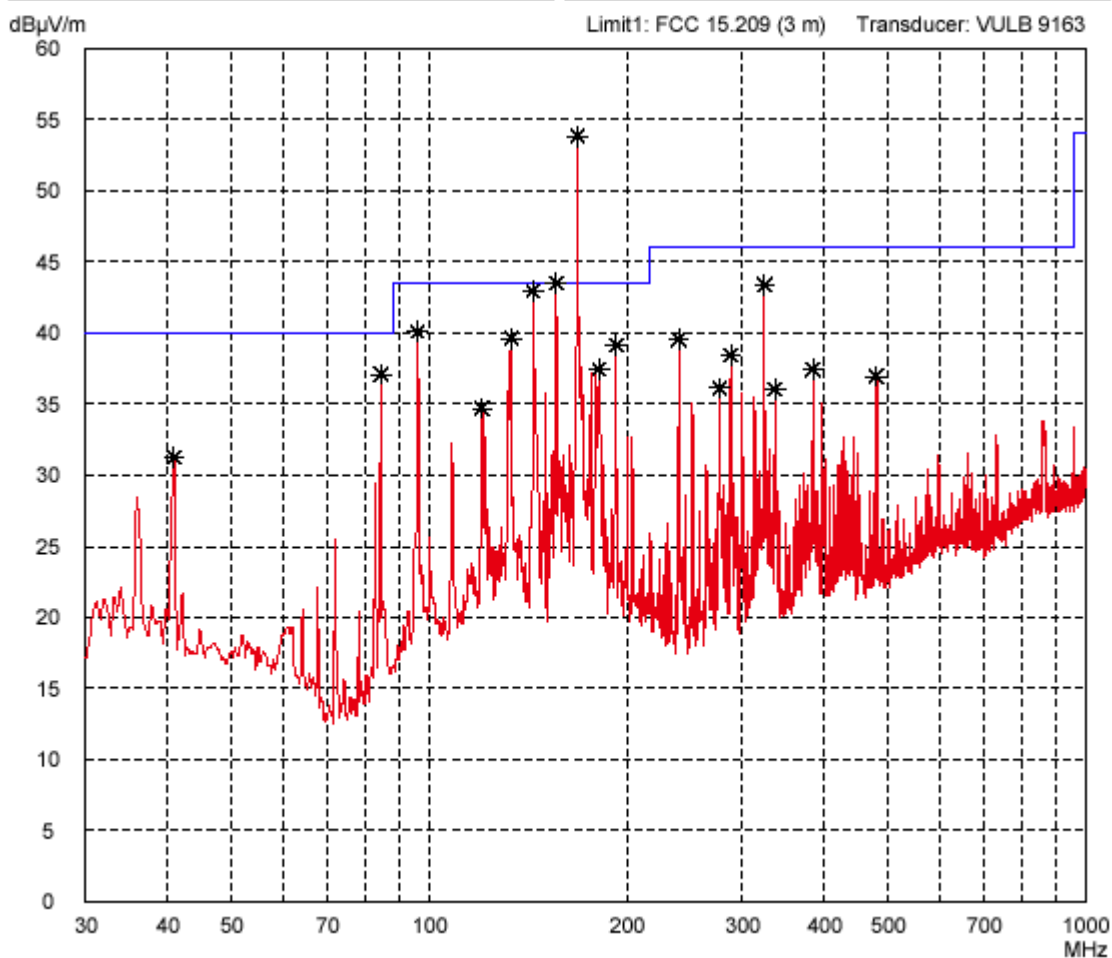


**Radiated Emission Test 9 kHz - 30 MHz
 acc. to FCC Part 15 Subpart C (FAR)**

Model: RFID Reader 0535A08E		Comment: - AC 110 V power supply - With DELL laptop PC - reading card ADC continuously
Serial no.: ---		
Applicant: BALTECH AG		
Test site: Fully anechoic room, cabin no. 2		
Tested on: Test distance 3 metres		
Date of test: 05/15/2009	Operator: M. Steindl	List of values: 10 dB Margin 50 Subranges
Test performed: by hand	File name: default.emi	
Detector: Peak		

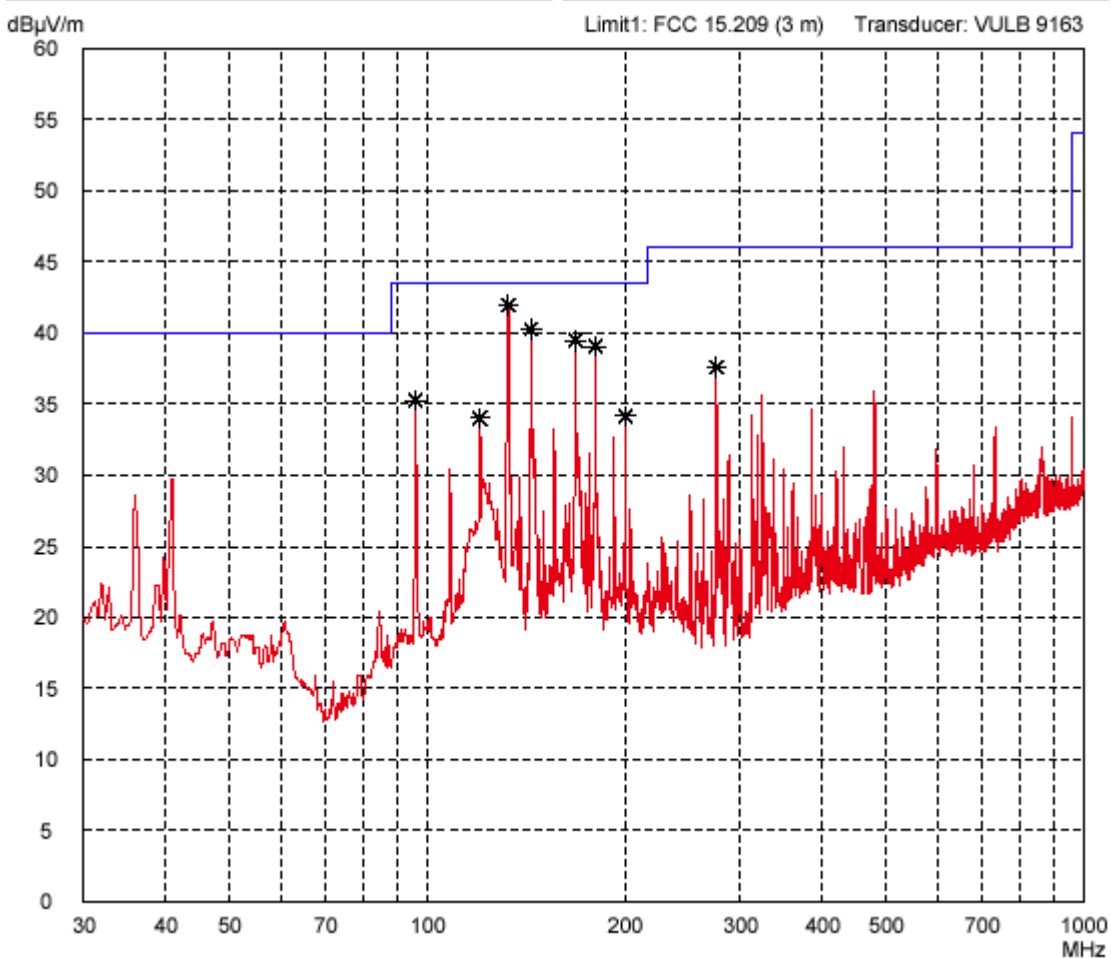


Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 Subpart C (FAR)	
Model: RFID Reader 0535A08E	Comment: - AC 110 V power supply - With DELL laptop PC - reading card ADC continuously
Serial no.: ---	
Applicant: BALTECH AG	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 05/15/2009	
Test performed: automatically	File name: default.emi
Detector: Peak	List of values: 10 dB Margin 50 Subranges



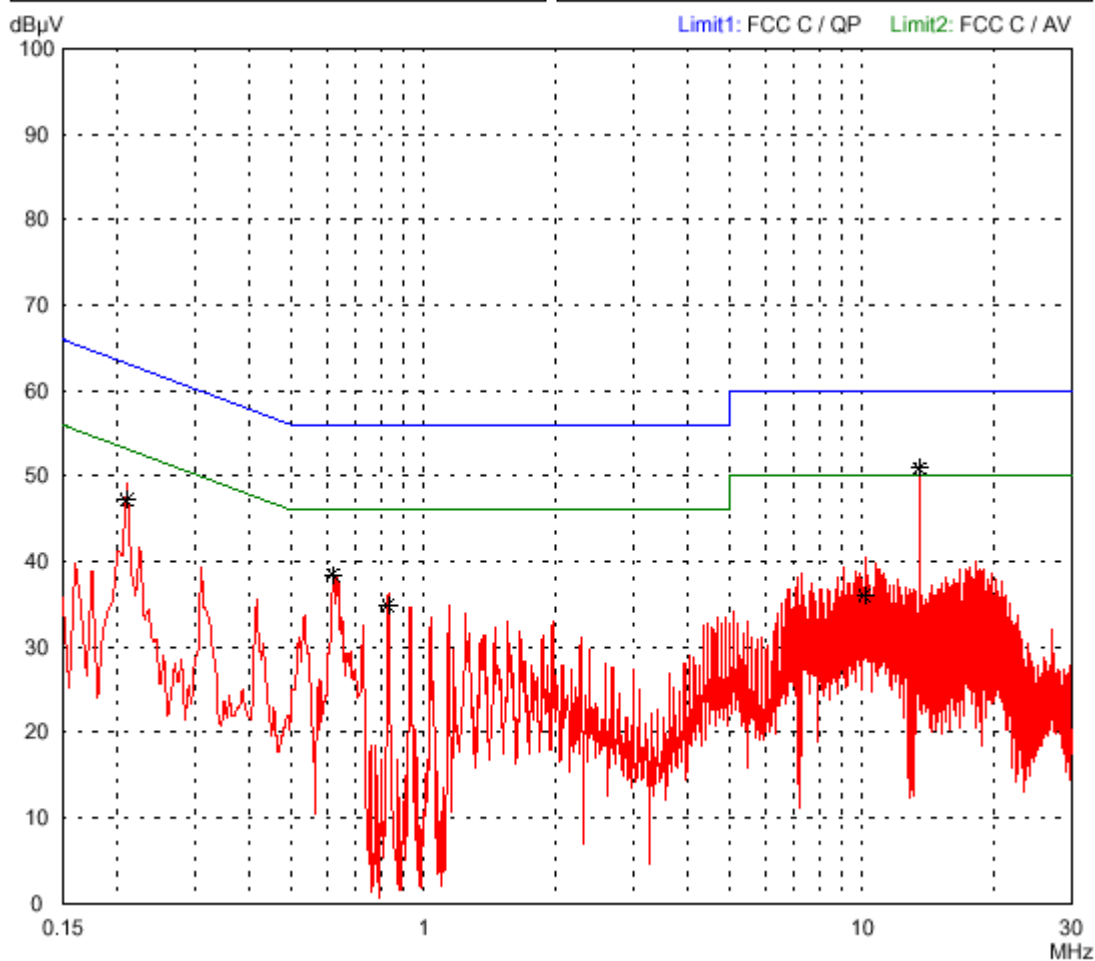
Radiated Emission Test 30 MHz - 1 GHz
 acc. to FCC Part 15 Subpart C (FAR)

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">Model: RFID Reader 0535A08E</td></tr> <tr><td style="padding: 2px;">Serial no.: ---</td></tr> <tr><td style="padding: 2px;">Applicant: BALTECH AG</td></tr> <tr><td style="padding: 2px;">Test site: Fully anechoic room, cabin no. 2</td></tr> <tr><td style="padding: 2px;">Tested on: Test distance 3 metres Vertical Polarization</td></tr> <tr><td style="padding: 2px;">Date of test: 05/15/2009</td></tr> <tr><td style="padding: 2px;">Operator: M. Steindl</td></tr> <tr><td style="padding: 2px;">Test performed: automatically</td></tr> <tr><td style="padding: 2px;">File name: default.emi</td></tr> </table>	Model: RFID Reader 0535A08E	Serial no.: ---	Applicant: BALTECH AG	Test site: Fully anechoic room, cabin no. 2	Tested on: Test distance 3 metres Vertical Polarization	Date of test: 05/15/2009	Operator: M. Steindl	Test performed: automatically	File name: default.emi	<p>Comment:</p> <ul style="list-style-type: none"> - AC 110 V power supply - With DELL laptop PC - reading card ADC continuously
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Serial no.: ---										
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Test site: Fully anechoic room, cabin no. 2										
Tested on: Test distance 3 metres Vertical Polarization										
Date of test: 05/15/2009										
Operator: M. Steindl										
Test performed: automatically										
File name: default.emi										
Detector: Peak	List of values: 10 dB Margin 50 Subranges									



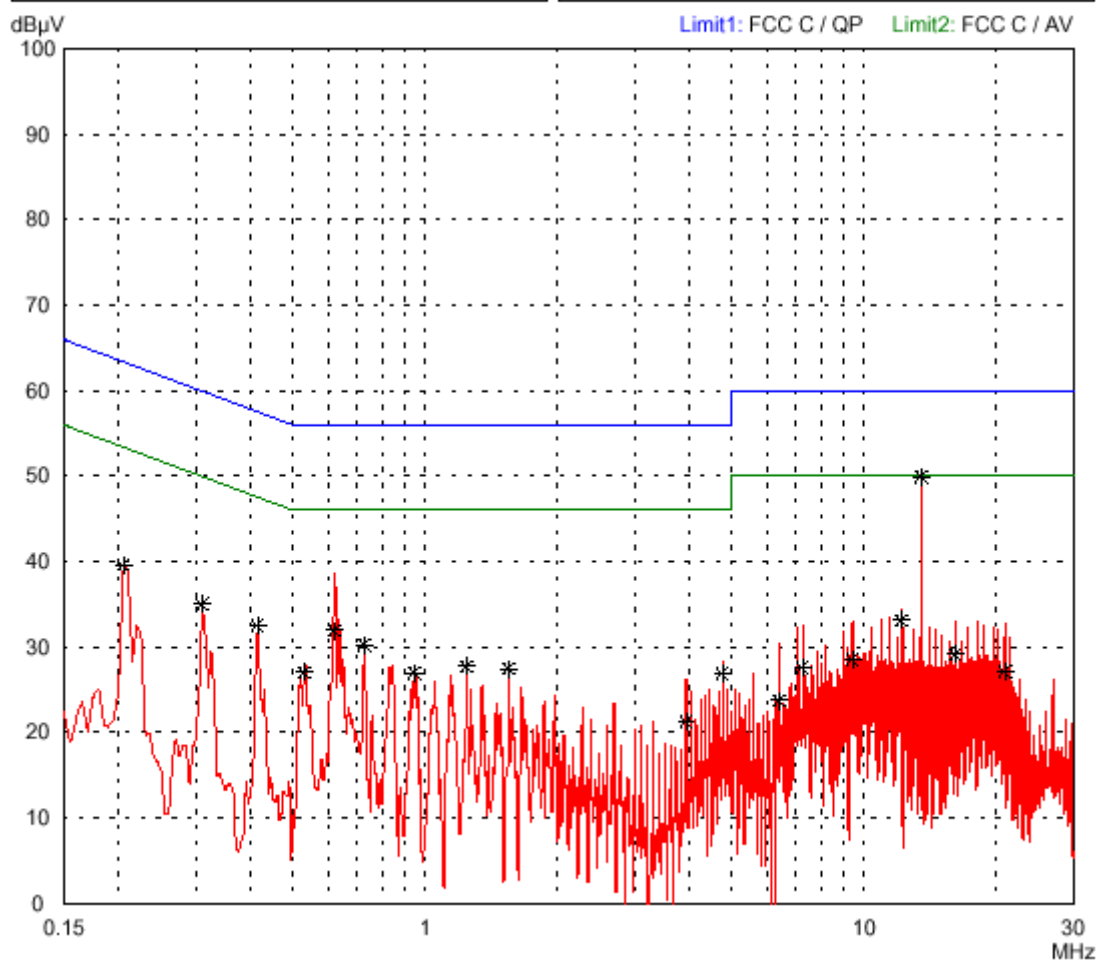
Conducted Emission Test 150 kHz - 30 MHz according to FCC Part 15 Subpart C

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">Model: RFID Reader 0535A08E</td></tr> <tr><td style="padding: 2px;">Serial no.: ---</td></tr> <tr><td style="padding: 2px;">Applicant: BALTECH AG</td></tr> <tr><td style="padding: 2px;">Test site: Shielded room, cabin no. 4</td></tr> <tr><td style="padding: 2px;">Tested on: Linecord AC/DC adapter of PC Phase L1</td></tr> <tr><td style="padding: 2px;">Date of test: 05/15/2009</td></tr> <tr><td style="padding: 2px;">Operator: M. Steindl</td></tr> <tr><td style="padding: 2px;">Test performed: automatically</td></tr> <tr><td style="padding: 2px;">File name:</td></tr> </table>	Model: RFID Reader 0535A08E	Serial no.: ---	Applicant: BALTECH AG	Test site: Shielded room, cabin no. 4	Tested on: Linecord AC/DC adapter of PC Phase L1	Date of test: 05/15/2009	Operator: M. Steindl	Test performed: automatically	File name:	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">Mode: - AC 110 V power supply - With DELL laptop PC - reading card Stratus continuously</td></tr> </table>	Mode: - AC 110 V power supply - With DELL laptop PC - reading card Stratus continuously
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Serial no.: ---											
Applicant: BALTECH AG											
Test site: Shielded room, cabin no. 4											
Tested on: Linecord AC/DC adapter of PC Phase L1											
Date of test: 05/15/2009											
Operator: M. Steindl											
Test performed: automatically											
File name:											
Mode: - AC 110 V power supply - With DELL laptop PC - reading card Stratus continuously											
Detector: Peak / Final Results: QP	Final results: 20 dB Margin 25 Subranges										



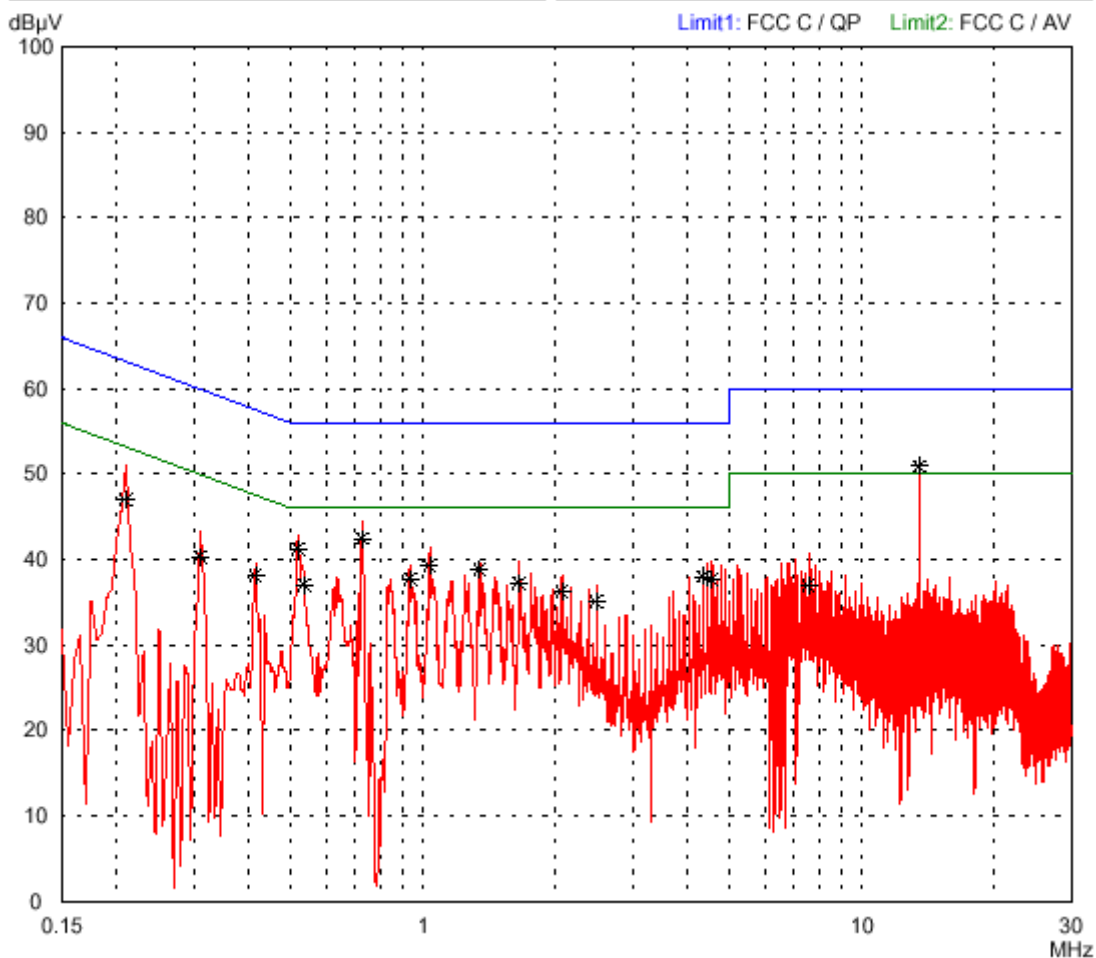
Conducted Emission Test 150 kHz - 30 MHz according to FCC Part 15 Subpart C

<p>Model: RFID Reader 0535A08E</p> <p>Serial no.: ---</p> <p>Applicant: BALTECH AG</p> <p>Test site: Shielded room, cabin no. 4</p> <p>Tested on: Linecord AC/DC adapter of PC Phase L1</p> <p>Date of test: 05/15/2009 Operator: M. Steindl</p> <p>Test performed: automatically File name:</p>	<p>Mode:</p> <ul style="list-style-type: none"> - AC 110 V power supply - With DELL laptop PC - reading card Stratus continuously
<p>Detector: Average / Final Results: AV</p>	<p>Final results: 20 dB Margin 25 Subranges</p>



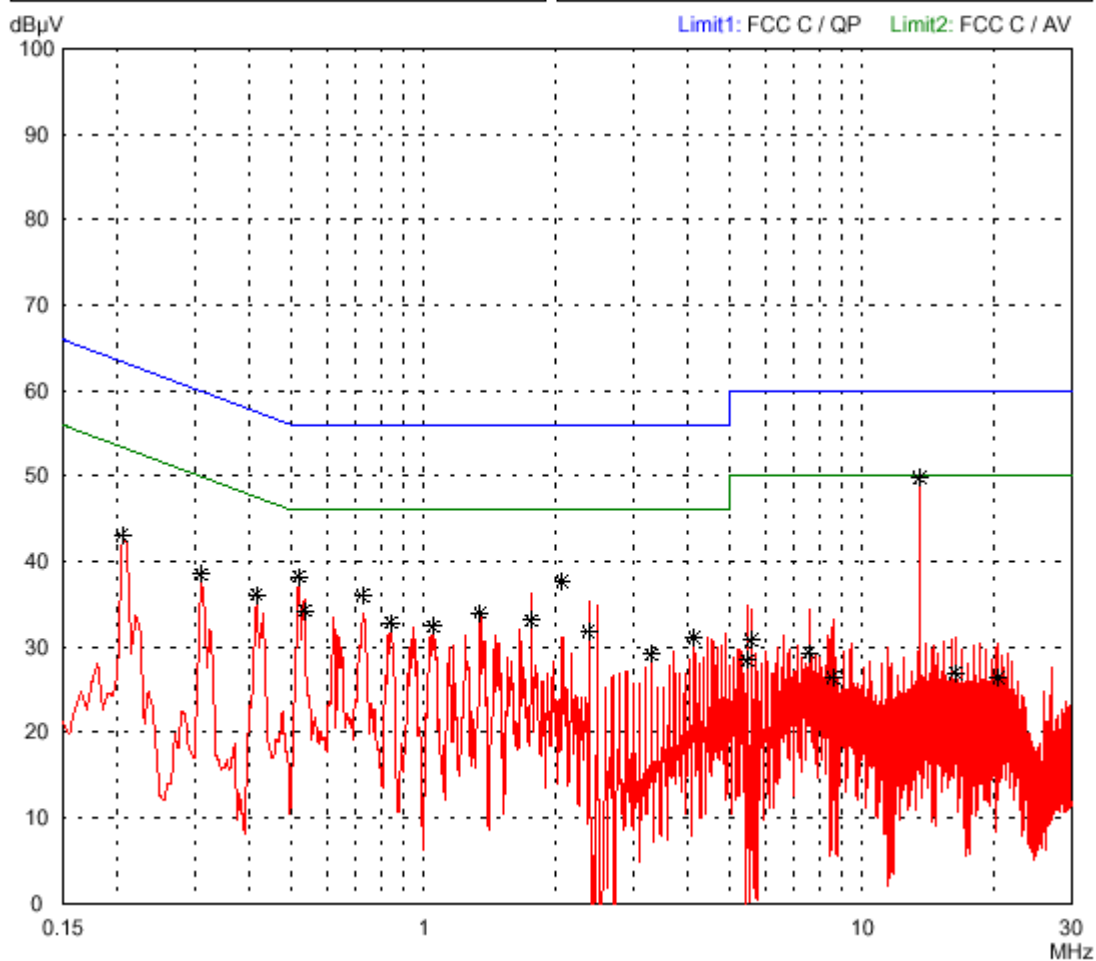
Conducted Emission Test 150 kHz - 30 MHz according to FCC Part 15 Subpart C

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">Model: RFID Reader 0535A08E</td></tr> <tr><td style="padding: 2px;">Serial no.: ---</td></tr> <tr><td style="padding: 2px;">Applicant: BALTECH AG</td></tr> <tr><td style="padding: 2px;">Test site: Shielded room, cabin no. 4</td></tr> <tr><td style="padding: 2px;">Tested on: Linecord AC/DC adapter of PC Phase N</td></tr> <tr><td style="padding: 2px;">Date of test: 05/15/2009</td></tr> <tr><td style="padding: 2px;">Operator: M. Steindl</td></tr> <tr><td style="padding: 2px;">Test performed: automatically</td></tr> <tr><td style="padding: 2px;">File name:</td></tr> </table>	Model: RFID Reader 0535A08E	Serial no.: ---	Applicant: BALTECH AG	Test site: Shielded room, cabin no. 4	Tested on: Linecord AC/DC adapter of PC Phase N	Date of test: 05/15/2009	Operator: M. Steindl	Test performed: automatically	File name:	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">Mode: - AC 110 V power supply - With DELL laptop PC - reading card Stratus continuously</td></tr> </table>	Mode: - AC 110 V power supply - With DELL laptop PC - reading card Stratus continuously
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Serial no.: ---											
Applicant: BALTECH AG											
Test site: Shielded room, cabin no. 4											
Tested on: Linecord AC/DC adapter of PC Phase N											
Date of test: 05/15/2009											
Operator: M. Steindl											
Test performed: automatically											
File name:											
Mode: - AC 110 V power supply - With DELL laptop PC - reading card Stratus continuously											
Detector: Peak / Final Results: QP	Final results: 20 dB Margin 25 Subranges										



Conducted Emission Test 150 kHz - 30 MHz according to FCC Part 15 Subpart C

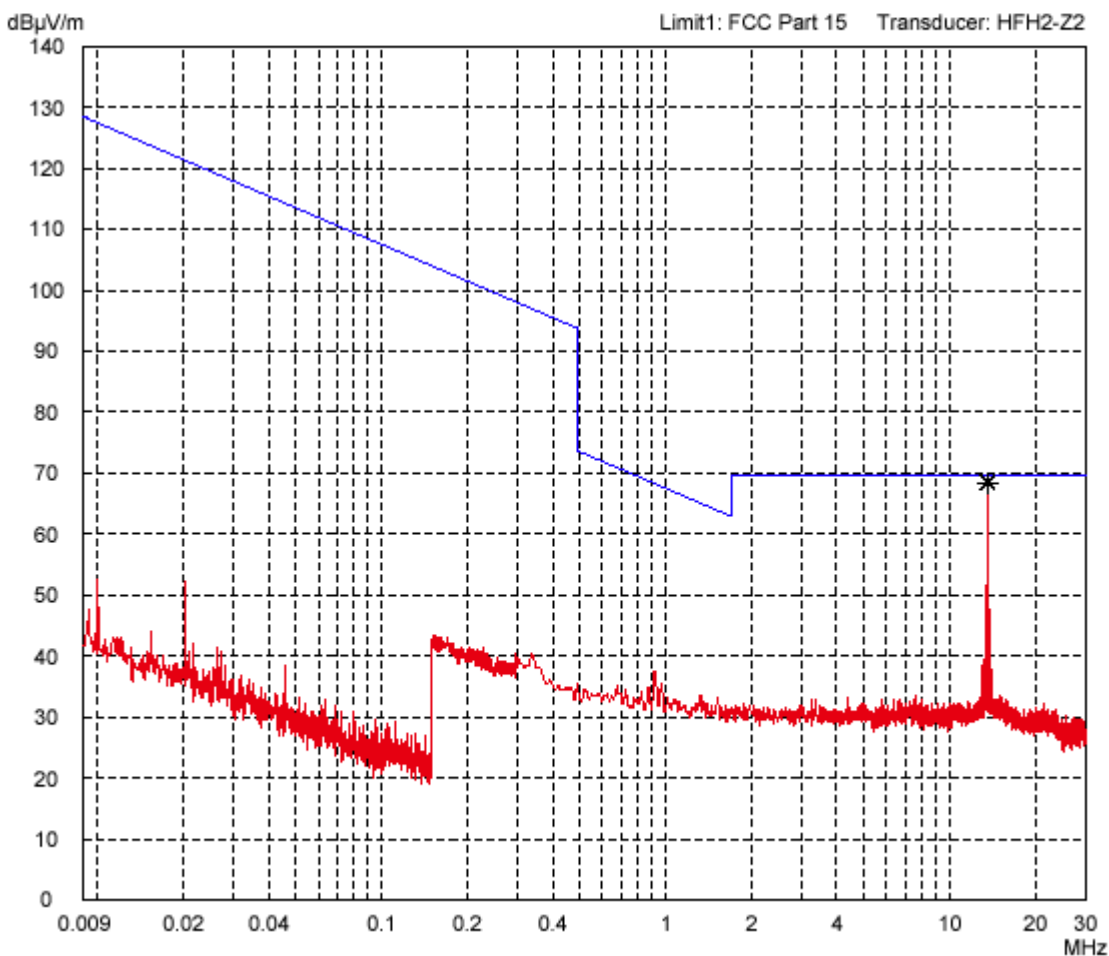
<p>Model: RFID Reader 0535A08E</p> <p>Serial no.: ---</p> <p>Applicant: BALTECH AG</p> <p>Test site: Shielded room, cabin no. 4</p> <p>Tested on: Linecord AC/DC adapter of PC Phase N</p> <p>Date of test: 05/15/2009 Operator: M. Steindl</p> <p>Test performed: automatically File name:</p>	<p>Mode: - AC 110 V power supply - With DELL laptop PC - reading card Stratus continuously</p>
<p>Detector: Average / Final Results: AV</p>	<p>Final results: 20 dB Margin 25 Subranges</p>



**Radiated Emission Test 9 kHz - 30 MHz
 acc. to FCC Part 15 Subpart C (FAR)**

Model: RFID Reader 0535A08E		Comment: - AC 110 V power supply - With DELL laptop PC - reading card Stratus continuously
Serial no.: ---		
Applicant: BALTECH AG		
Test site: Fully anechoic room, cabin no. 2		
Tested on: Test distance 3 metres		
Date of test: 05/15/2009	Operator: M. Steindl	
Test performed: by hand	File name: default.emi	

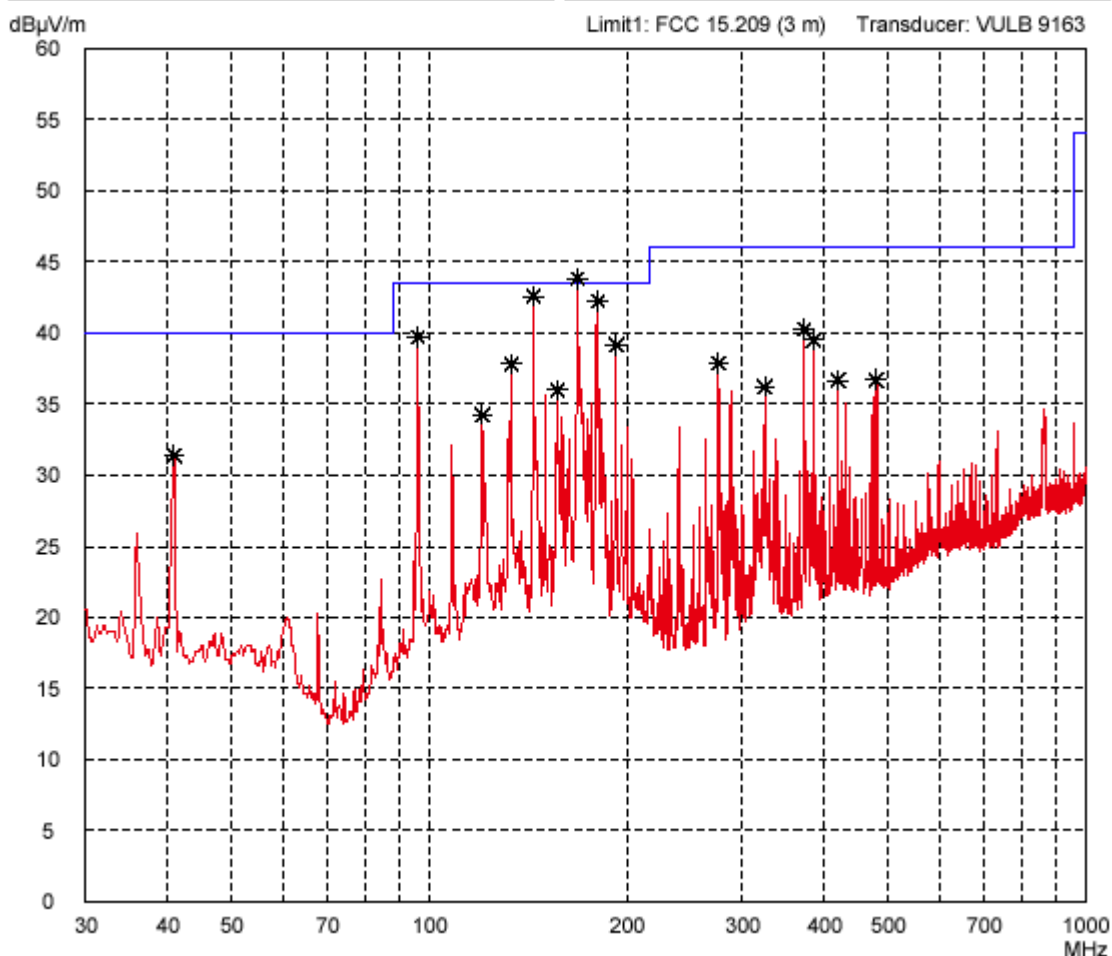
Detector: Peak	List of values: 10 dB Margin 50 Subranges
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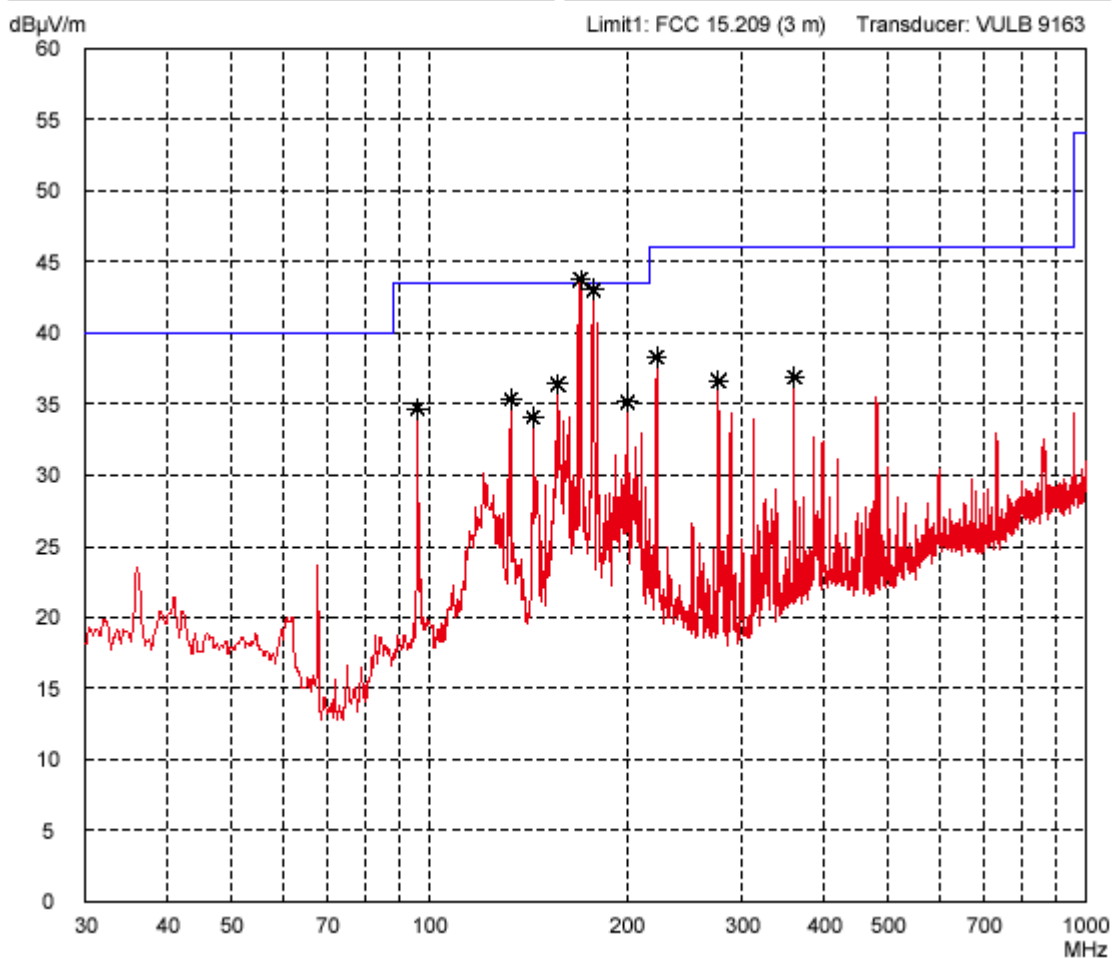
**Radiated Emission Test 30 MHz - 1 GHz
 acc. to FCC Part 15 Subpart C (FAR)**

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">Model: RFID Reader 0535A08E</td> </tr> <tr> <td colspan="2">Serial no.: ---</td> </tr> <tr> <td colspan="2">Applicant: BALTECH AG</td> </tr> <tr> <td colspan="2">Test site: Fully anechoic room, cabin no. 2</td> </tr> <tr> <td colspan="2">Tested on: Test distance 3 metres Horizontal Polarization</td> </tr> <tr> <td>Date of test: 05/15/2009</td> <td>Operator: M. Steindl</td> </tr> <tr> <td>Test performed: automatically</td> <td>File name: default.emi</td> </tr> </table>	Model: RFID Reader 0535A08E		Serial no.: ---		Applicant: BALTECH AG		Test site: Fully anechoic room, cabin no. 2		Tested on: Test distance 3 metres Horizontal Polarization		Date of test: 05/15/2009	Operator: M. Steindl	Test performed: automatically	File name: default.emi	<p>Comment:</p> <ul style="list-style-type: none"> - AC 110 V power supply - With DELL laptop PC - reading card Stratus continuously
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Serial no.: ---															
Applicant: BALTECH AG															
Test site: Fully anechoic room, cabin no. 2															
Tested on: Test distance 3 metres Horizontal Polarization															
Date of test: 05/15/2009	Operator: M. Steindl														
Test performed: automatically	File name: default.emi														

Detector: Peak	List of values: 10 dB Margin 50 Subranges
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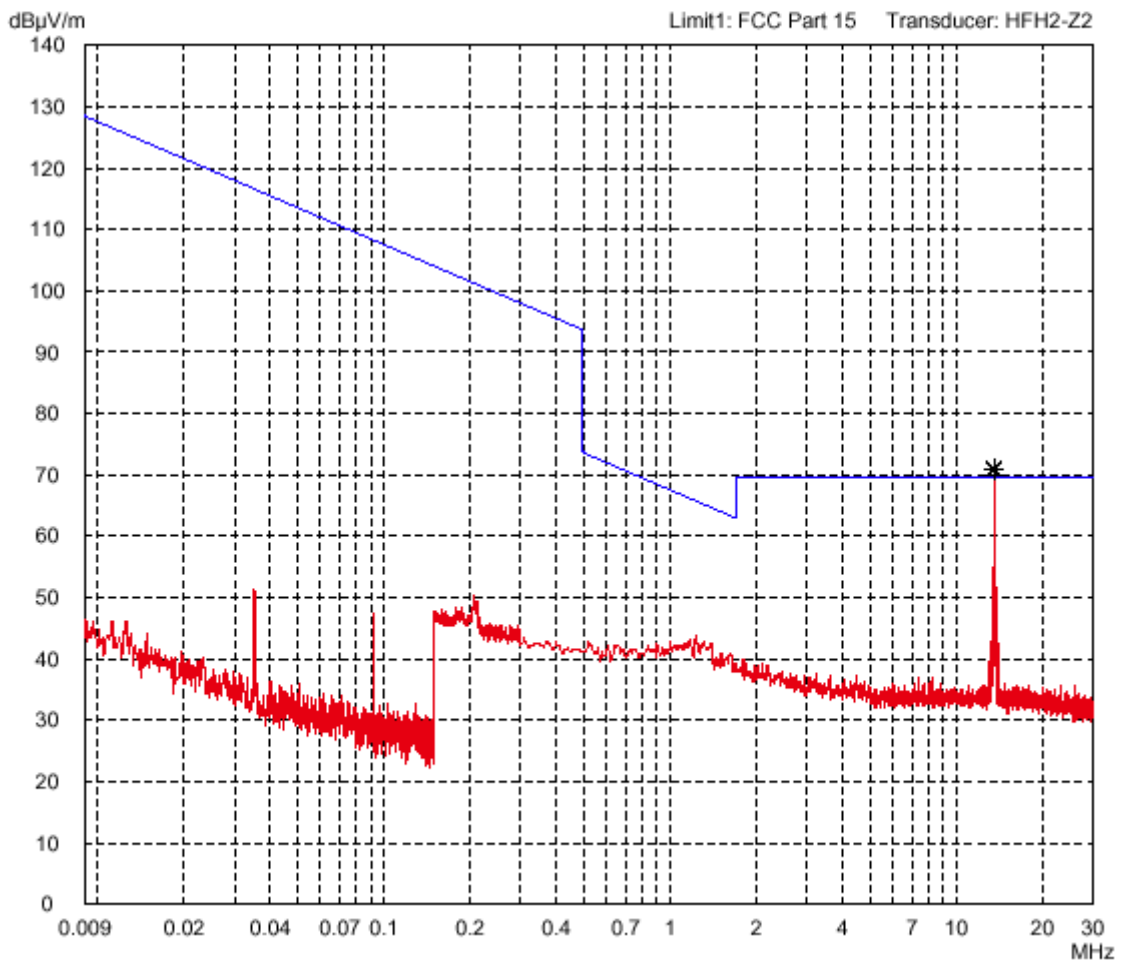


Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 Subpart C (FAR)	
Model: RFID Reader 0535A08E	Comment: - AC 110 V power supply - With DELL laptop PC - reading card Stratus continuously
Serial no.: ---	
Applicant: BALTECH AG	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 05/15/2009	
Test performed: automatically	File name: default.emi
Detector: Peak	List of values: 10 dB Margin 50 Subranges



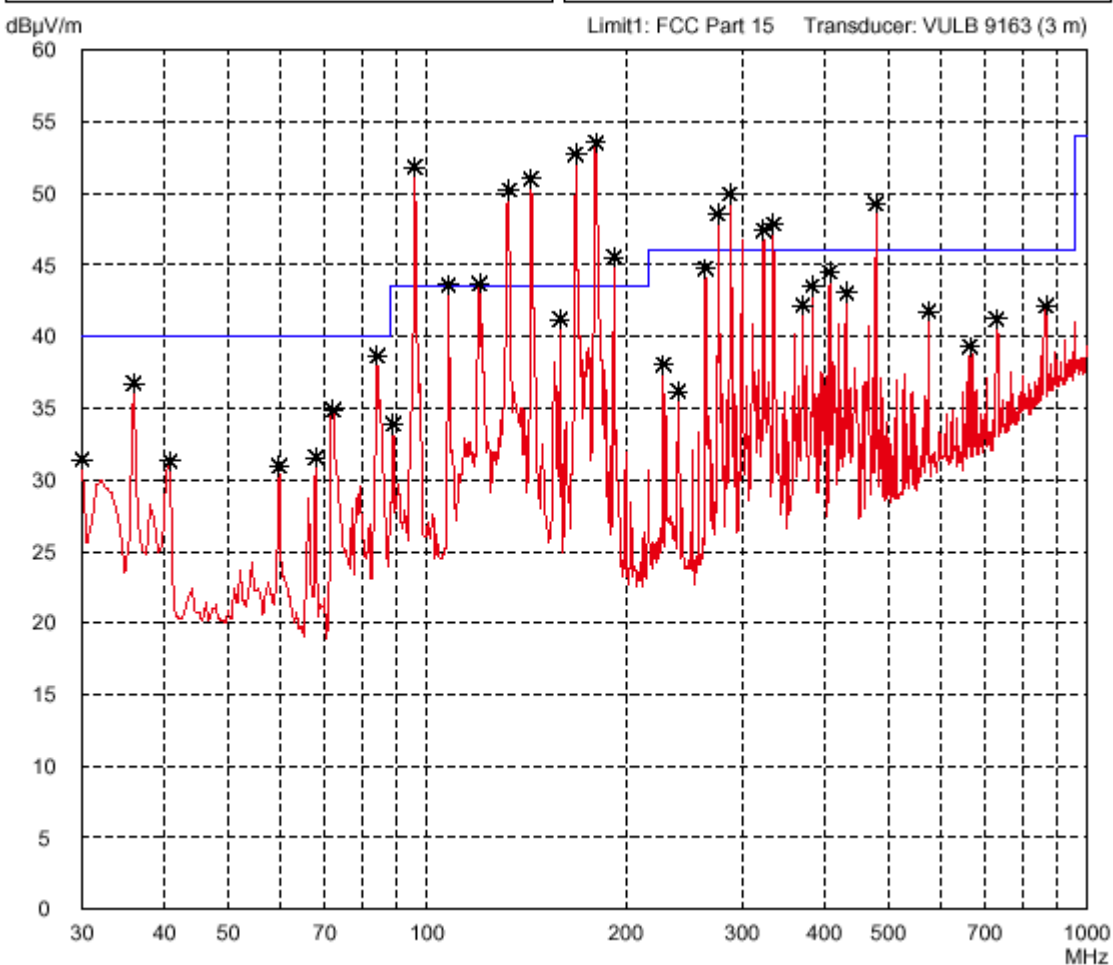
Magnetic Field Test 9 kHz - 30 MHz
 acc. to FCC Subpart C

Model: Leser Antenne 0537A07		Comment: - With DELL laptop PC - Reading tag ADC continuously
Serial no.: ---		
Applicant: Baltech AG		
Test site: Semi anechoic room, cabin no. 3		
Tested on: Test distance 3 metres		
Date of test: 06/18/2009	Operator: M. Steindl	
Test performed: by hand	File name: default.emi	
Detector: Peak		List of values: 10 dB Margin 50 Subranges



Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Subpart C

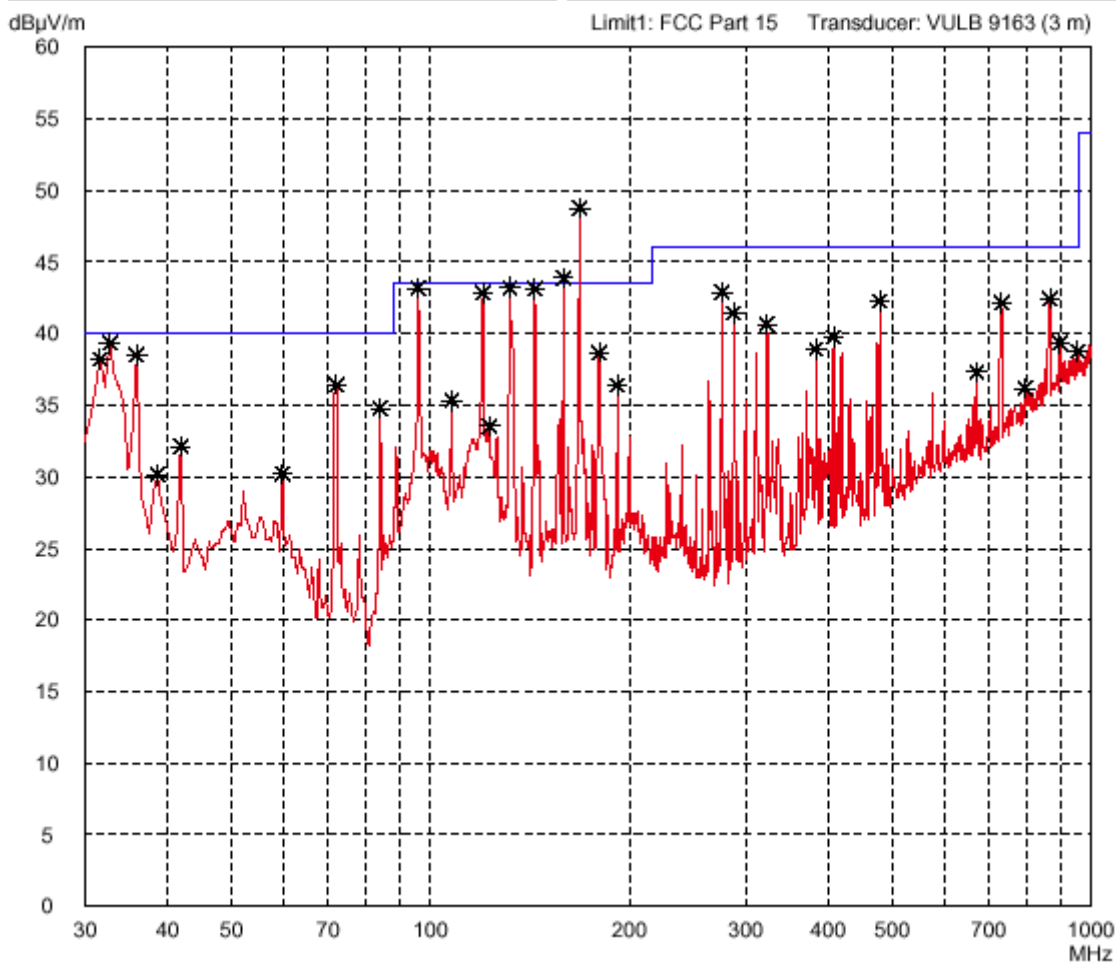
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">Model: Leser Antenne 0537A07</td></tr> <tr><td style="padding: 2px;">Serial no.: ---</td></tr> <tr><td style="padding: 2px;">Applicant: Baltech AG</td></tr> <tr><td style="padding: 2px;">Test site: Semi anechoic room, cabin no. 3</td></tr> <tr><td style="padding: 2px;">Tested on: Test distance 3 metres Horizontal Polarization</td></tr> <tr><td style="padding: 2px;">Date of test: 06/18/2009</td></tr> <tr><td style="padding: 2px;">Operator: M. Steindl</td></tr> <tr><td style="padding: 2px;">Test performed: automatically</td></tr> <tr><td style="padding: 2px;">File name: default.emi</td></tr> </table>	Model: Leser Antenne 0537A07	Serial no.: ---	Applicant: Baltech AG	Test site: Semi anechoic room, cabin no. 3	Tested on: Test distance 3 metres Horizontal Polarization	Date of test: 06/18/2009	Operator: M. Steindl	Test performed: automatically	File name: default.emi	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">Comment: - With DELL laptop PC - Reading tag ADC continuously</td></tr> </table>	Comment: - With DELL laptop PC - Reading tag ADC continuously
Model: Leser Antenne 0537A07											
Serial no.: ---											
Applicant: Baltech AG											
Test site: Semi anechoic room, cabin no. 3											
Tested on: Test distance 3 metres Horizontal Polarization											
Date of test: 06/18/2009											
Operator: M. Steindl											
Test performed: automatically											
File name: default.emi											
Comment: - With DELL laptop PC - Reading tag ADC continuously											
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">Detector: Peak</td></tr> </table>	Detector: Peak	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">List of values: Selected by hand</td></tr> </table>	List of values: Selected by hand								
Detector: Peak											
List of values: Selected by hand											



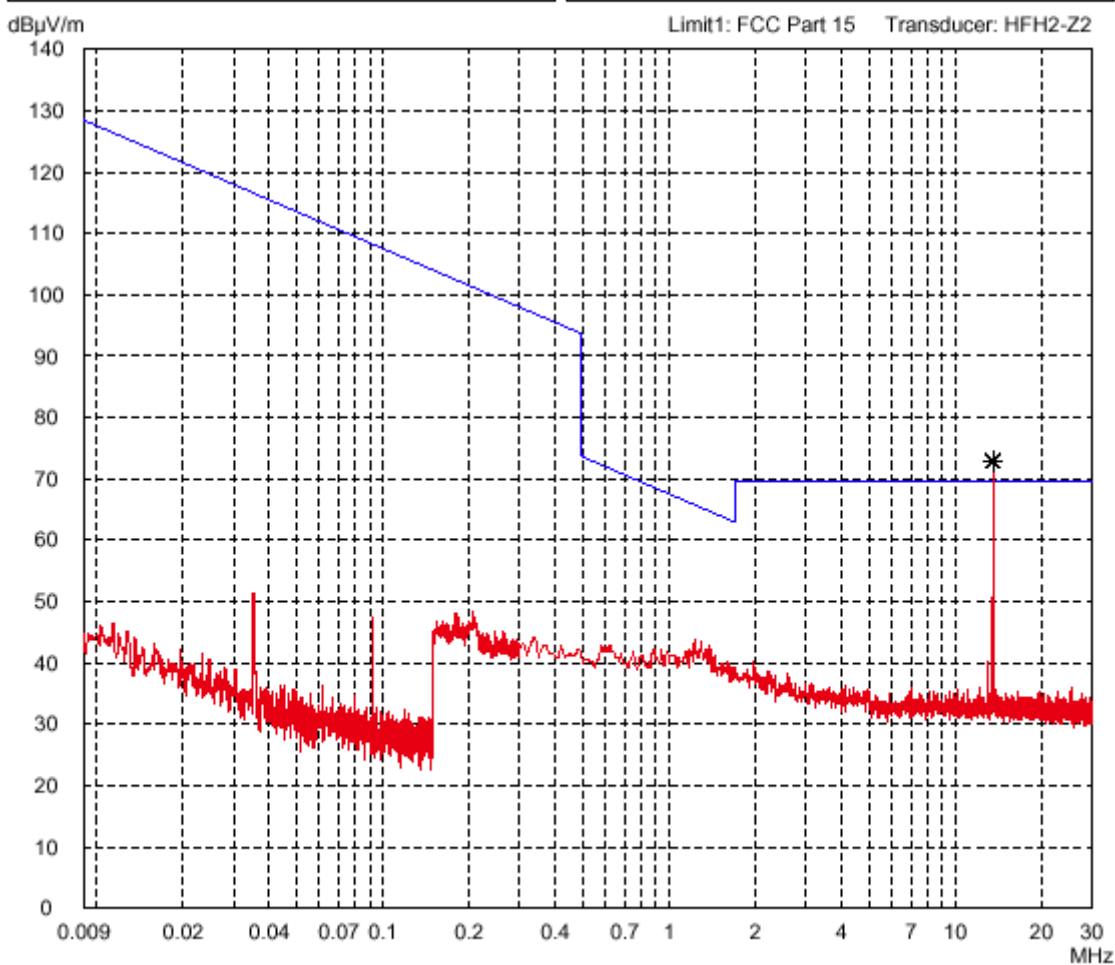
Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Subpart C

<p>Model: Leser Antenne 0537A07</p> <p>Serial no.: ---</p> <p>Applicant: Baltech AG</p> <p>Test site: Semi anechoic room, cabin no. 3</p> <p>Tested on: Test distance 3 metres Vertical Polarization</p> <p>Date of test: 06/18/2009 Operator: M. Steindl</p> <p>Test performed: automatically File name: default.emi</p>	<p>Comment: - With DELL laptop PC - Reading tag ADC continuously</p>
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Detector: Peak	List of values: 10 dB Margin 50 Subranges
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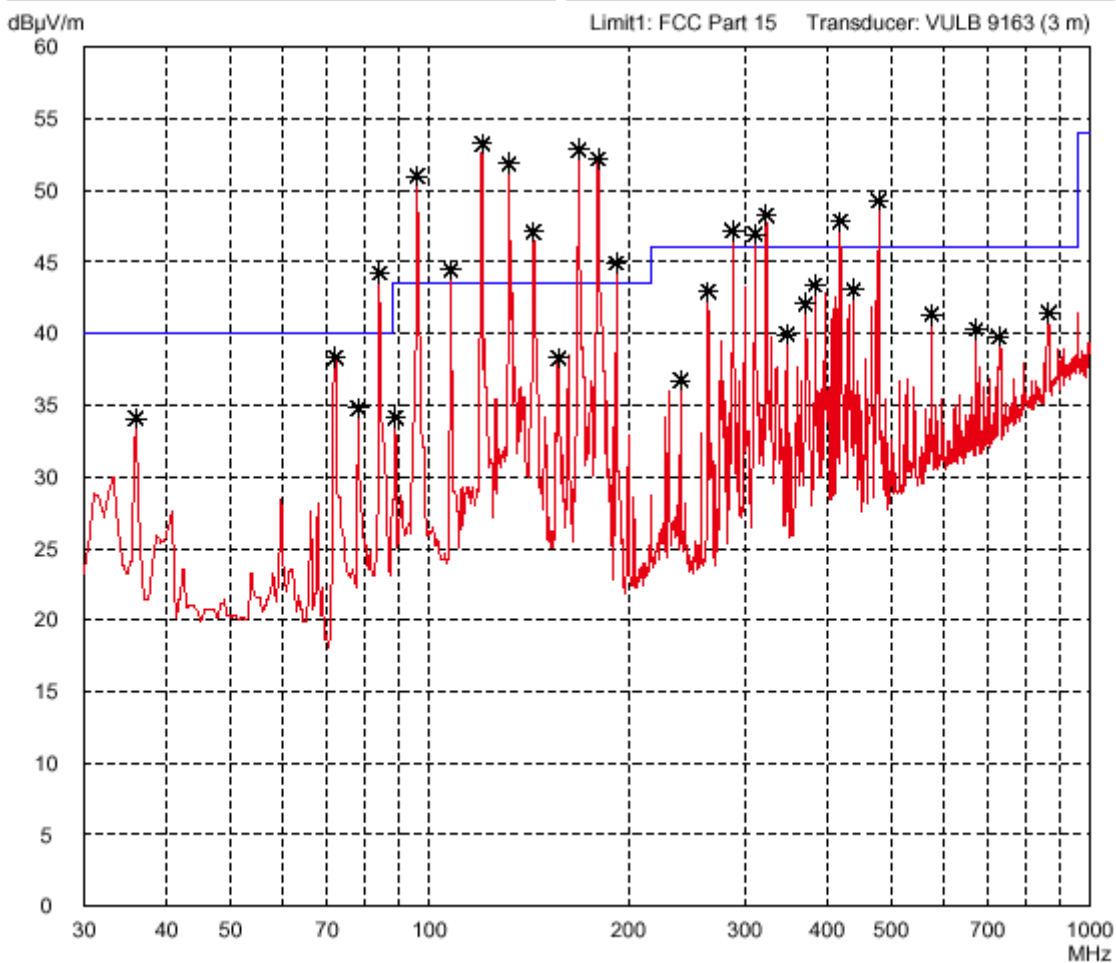


Magnetic Field Test 9 kHz - 30 MHz acc. to FCC Subpart C	
Model: Leser Antenne 0537A07	Comment: - With DELL laptop PC - Reading tag Stratus continuously
Serial no.: ---	
Applicant: Baltech AG	
Test site: Semi anechoic room, cabin no. 3	
Tested on: Test distance 3 metres	
Date of test: 06/18/2009	Operator: M. Steindl
Test performed: by hand	File name: default.emi
Detector: Peak	List of values: 10 dB Margin 50 Subranges



**Radiated Emission Test 30 MHz - 1 GHz
 acc. to FCC Subpart C**

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Comment: - With DELL laptop PC - Reading tag Stratus continuously											
Detector: Peak	List of values: Selected by hand										



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Detector: Peak	List of values: 10 dB Margin 50 Subranges										

