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September 21,  
2010

## Prüfbericht / Test Report

Nr. / No. 14912-02340-3 (Edition 2)

Applicant: Siemens AG  
Type of equipment: Antennas for UHF RFID Reader  
Type designation: RF630R with RF640A and RF642A  
Order No.:  
Test standards: FCC Code of Federal Regulations,  
CFR 47, Part 15,  
Sections 15.205, 15.215 and 15.247  
  
Industry Canada Radio Standards Specifications  
RSS-210 Issue 7, Sections 2.2, 2.6 and A8 (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 <sup>1</sup> :	RF630R with RF640A and RF642A
Parts <sup>2</sup> :	Reader: RF630R Antenna 1: RF640A (antenna gain: 4.3 dBi) Antenna 2: RF642A (antenna gain: 7.0 dBi)
Serial number(s):	Test sample
Manufacturer:	Siemens AG
Type of equipment:	Antennas for UHF RFID Reader
Version:	As received
FCC ID:	
Additional parts/accessories:	

Technical data of EUT	
Application frequency range:	902 - 928 MHz
Frequency range:	902.25 - 927.75 MHz
Operating frequency:	915.25 MHz
Type of modulation:	DSB-ASK and SSB-ASK
Pulse train:	---
Pulse width:	---
Number of RF-channels:	50
Channel spacing:	500 kHz
Designation of emissions <sup>3</sup> :	56K9A1D
Type of antenna:	External antenna
Size/length of antenna:	185 x 185 mm
Connection of antenna:	<input checked="" type="checkbox"/> detachable <input type="checkbox"/> not detachable
Type of power supply:	DC supply
Specifications for power supply:	nominal voltage: 24 V

<sup>1</sup> Type designation of the system if EUT consists of more than one part.

<sup>2</sup> Type designations of the parts of the system, if applicable.

<sup>3</sup> Also known as "Class of Emission".

## 2 Administrative Data

### Application details

Applicant (full address):	Siemens AG Siemensstraße 2 - 4 D-90766 Fürth
Contact person:	Dr. Thomas Erik Schilhabel
Contract identification:	
Receipt of EUT:	August 24, 2010
Date(s) of test:	August 24, 2010
Note(s):	This test report is intended for a permissive change. For further details please refer to the original test report.

### Report details

Report number:	14912-02340-3
Edition:	3
Issue date:	September 21, 2010

### 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-PL-171/94-03
FCC test site registration number	90926
Industry Canada test site registration:	3050A
Contact person:	Mr. Johann Roidt
	Phone: (+49) (0)9421 5522-0 Fax: (+49) (0)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, 15.215 and 15.247(d)**

of the Federal Communication Commission (FCC) and the

**Radio Standards Specifications**

**RSS-210 Issue 7, Sections 2.2, 2.6 and A8.5 (Category I Equipment)**

of Industry Canada (IC).

### Personnel involved in this report

Laboratory Manager:



Mr. Johann Roidt

Responsible for testing:



Mr. Thomas Eberl

Responsible for test report:

Mr. Thomas Eberl

## 5 Operation Mode and Configuration of EUT

### Operation Mode(s)

Transmitting continuously with 915.25 MHz

### Configuration(s) of EUT

The EUT was configured as antenna of a RF630R tag reader system.

### List of ports and cables

<i>Port</i>	<i>Description</i>	<i>Classification<sup>4</sup></i>	<i>Cable type</i>	<i>Cable length</i>
1	AC supply of AC/DC converter	ac power	Unshielded	2 m
2	DC supply	dc power	Unshielded	1 m
3	RS422 interface	signal/control port	Shielded	2 m
4	Antenna 6GT2815-0BH30	signal/control port	Shielded	3 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>
---				

### List of support devices

<i>Item</i>	<i>Description</i>	<i>Type Designation</i>	<i>Serial no. or ID</i>	<i>Manufacturer</i>
1	UHF RFID Reader	RF630R	SJNA/WD000158	Siemens
2	AC/DC adapter 24 V	6GT2898-0AA20-USA	--	Siemens

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

TÜV SÜD SENTON GmbH  
Äußere Frühlingstraße 45  
D-94315 Straubing  
Germany

Phone: +49 9421 5522-0  
Fax: +49 9421 5522-99  
eMail: [senton@tuev-sued.de](mailto:senton@tuev-sued.de)  
Web: [www.tuev-sued.de/senton](http://www.tuev-sued.de/senton)



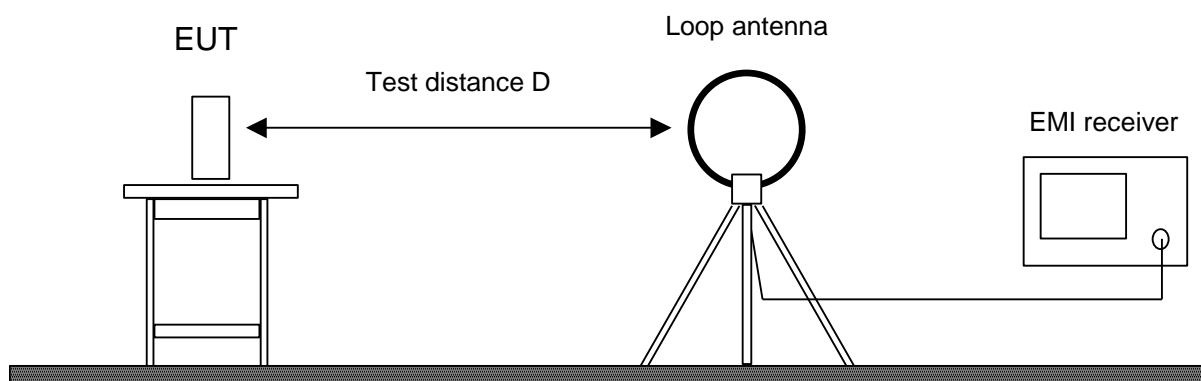
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## 6 Measurement Procedures



## 6.1 Radiated Emission Measurement 9 kHz to 30 MHz

Measurement Procedure:	
Rules and specifications:	CFR 47 Part 15, sections 15.205(b) and 15.247 IC RSS-210 Issue 7, sections 2.2(b)(c), 2.6 and A8.5
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 15.35(c). 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>	

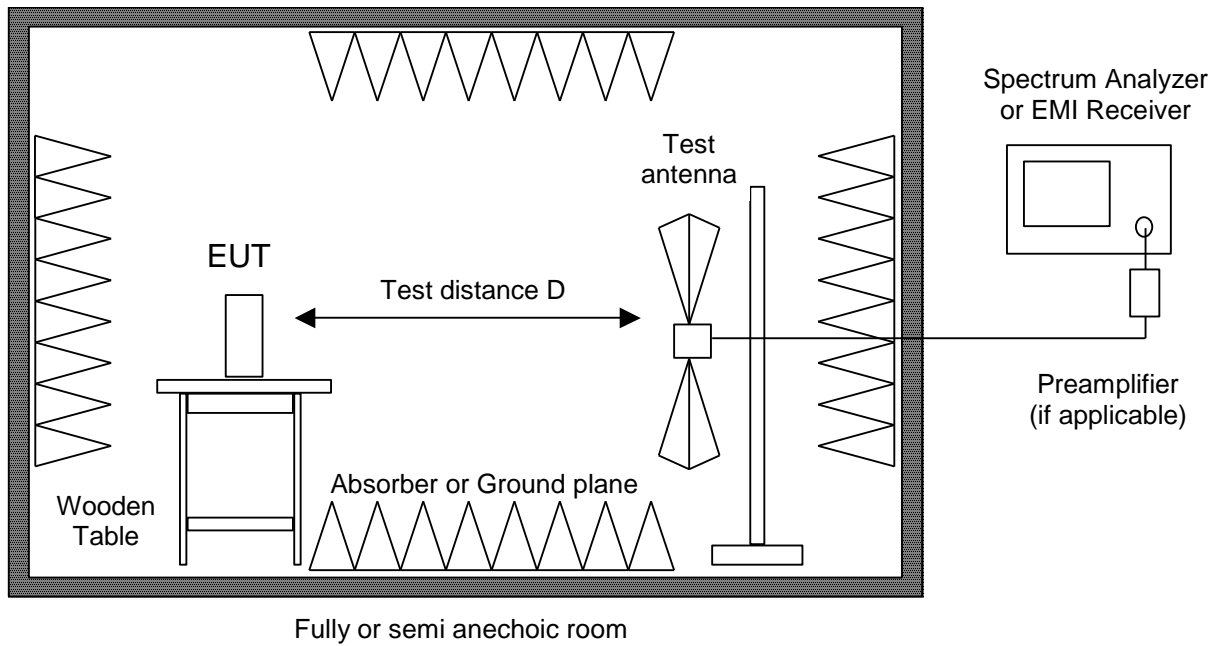


Test instruments used:

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

## 6.2 Radiated Emission in Fully or Semi Anechoic Room

Measurement Procedure:	
Rules and specifications:	CFR 47 Part 15, sections 15.109, 15.215(b) and 15.249 IC RSS-Gen Issue 2, sections 6(a), 7.2.3.2 IC RSS-210 Issue 7, section A2.9
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 or semi 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). Final measurements in the frequency range from 30 MHz to 1 GHz are made in both the horizontal and vertical planes of polarization in a semi anechoic room using a EMI receiver with the detector function set to quasi-peak and the measurement bandwidth of the test receiver is set to 120 kHz.</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 18 GHz are performed at a test distance D of 3 meters. For higher frequencies the test distance is 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 15.35(c). 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"/>	Spectrum analyzer	R 3271	05050023	Advantest
<input type="checkbox"/>	EMI test receiver	ESMI	839379/013 839587/006	Rohde & Schwarz
<input checked="" type="checkbox"/>	EMI test receiver	ESU8	100232	Rohde & Schwarz
<input checked="" type="checkbox"/>	Preamplifier	CPA9231A	3393	Schaffner
<input type="checkbox"/>	Preamplifier	R14601		Advantest
<input checked="" 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 checked="" 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 checked="" type="checkbox"/>	Trilog broadband antenna	VULB 9163	9163-214	Schwarzbeck
<input checked="" type="checkbox"/>	Horn antenna	3115	9508-4553	EMCO
<input type="checkbox"/>	Horn antenna	3160-03	9112-1003	EMCO
<input checked="" type="checkbox"/>	Horn antenna	3160-04	9112-1001	EMCO
<input checked="" type="checkbox"/>	Horn antenna	3160-05	9112-1001	EMCO
<input checked="" type="checkbox"/>	Horn antenna	3160-06	9112-1001	EMCO
<input checked="" 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
<input checked="" type="checkbox"/>	Semi-anechoic room	No. 8	2057	Albatross Projects

TÜV SÜD SENTON GmbH  
Äußere Frühlingstraße 45  
D-94315 Straubing  
Germany

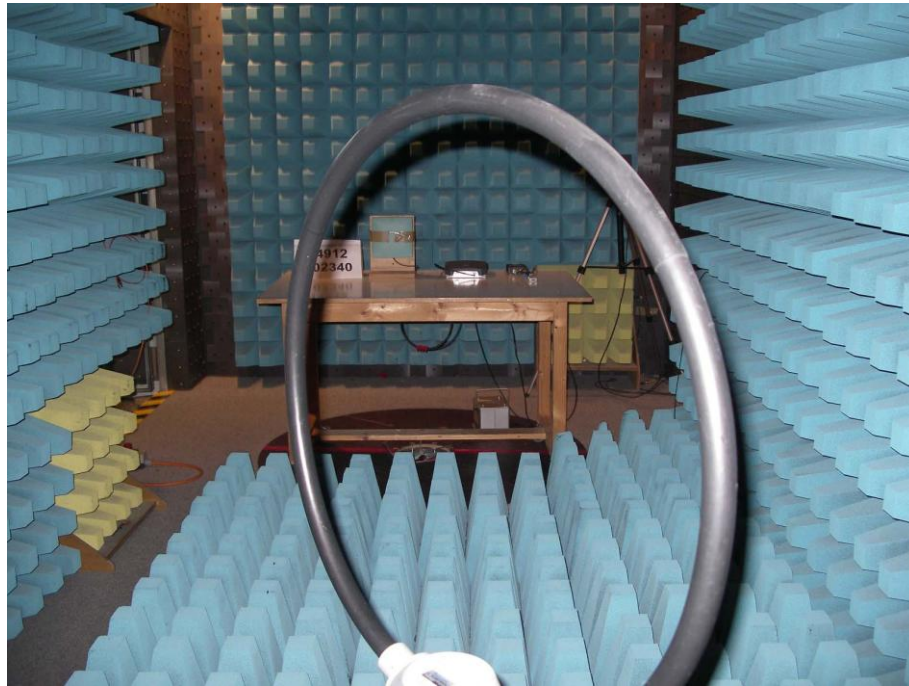
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Fax: +49 9421 5522-99  
eMail: [senton@tuev-sued.de](mailto:senton@tuev-sued.de)  
Web: [www.tuev-sued.de/senton](http://www.tuev-sued.de/senton)



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## **7 Photographs Taken During Testing**

## Test setup for radiated emission measurement 9 kHz – 30 MHz

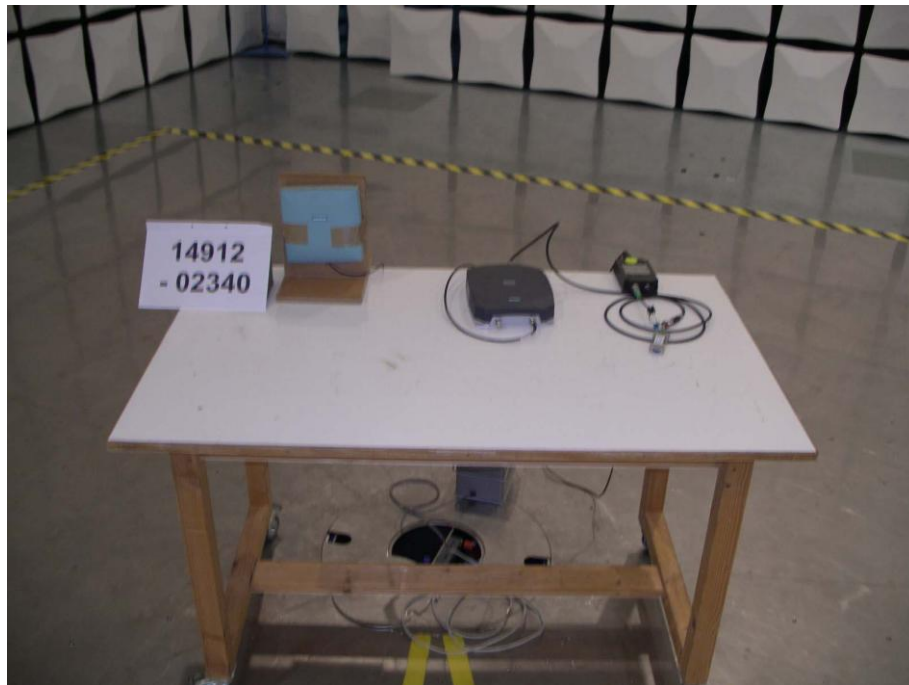


### Test setup for radiated emission measurement (fully anechoic room)

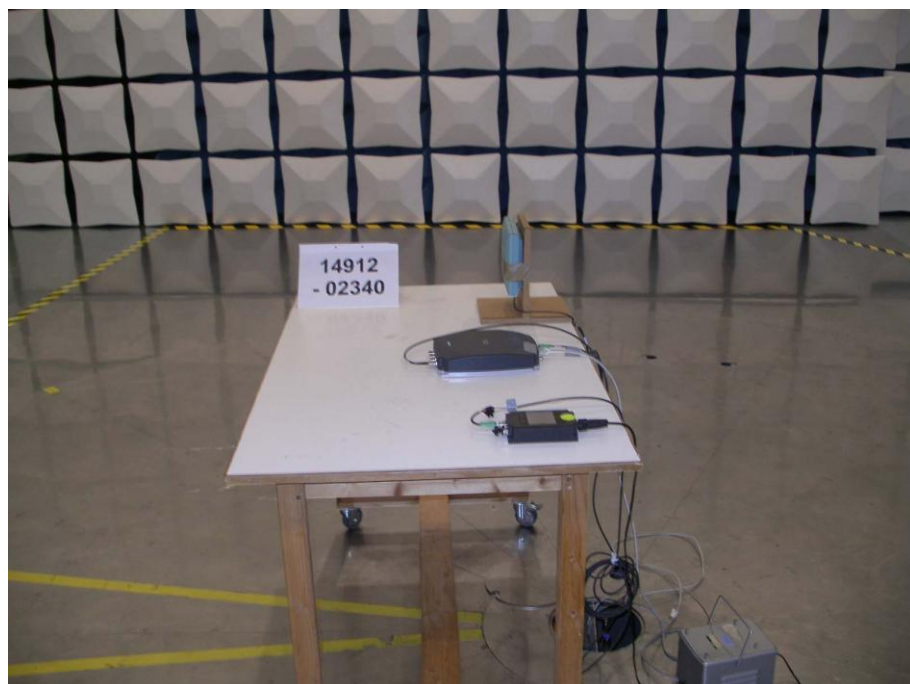
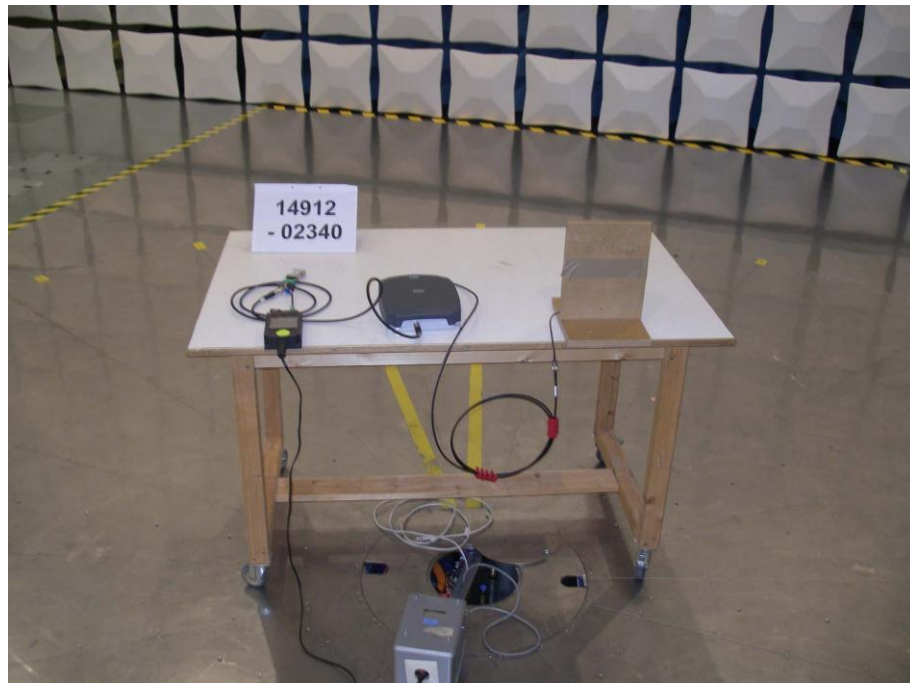




### Test setup for radiated emission measurement (semi anechoic room)



**Test setup for radiated emission measurement  
(semi anechoic room)  
- continued -**



## 8 Test Results

<b>FCC CFR 47 Parts 2 and 15</b>			
<i>Section(s)</i>	<i>Test</i>	<i>Page</i>	<i>Result</i>
2.1046(a)	Conducted output power		Not applicable
2.202(a)	Occupied bandwidth		Not performed
15.204	Antenna requirement		Not performed
15.215(c)	Bandwidth of the emission		Not performed
2.201, 2.202	Class of emission		Calculated
15.35(c)	Pulse train measurement for pulsed operation		Not applicable
15.205(a)	Restricted bands of operation		Not performed
15.247(a)(1)(i)	Channel Bandwidth		Not performed
15.247(a)(1)	Hopping channel separation		Not performed
15.247(a)(1)(i)	Number of hopping frequencies used		Not performed
15.247(a)(1)(i)	Time occupancy on any channel		Not performed
15.247(b)(2)	Maximum peak output power		Not performed
15.207	Conducted AC powerline emission 150 kHz to 30 MHz		Not performed
15.247(d)	Conducted emissions		Not performed
15.205(b) 15.247(d)	Radiated emission 9 kHz to 30 MHz	21	Test passed
15.205(b) 15.215(b) 15.247(d)	Radiated emission 30 MHz to 10 GHz	22	Test passed
15.247(i) 2.1093	RF exposure requirement	25	Test passed

<b>IC RSS-Gen Issue 2</b>			
<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		Not performed
3.2(h), 8	Designation of emissions		Not performed
4.5	Pulsed operation		Not applicable
7.2.2	Transmitter AC power lines conducted emissions 150 kHz to 30 MHz		Not performed
5.5	Exposure of Humans to RF Fields	28	

<b>IC RSS-210 Issue 7</b>			
<i>Section(s)</i>	<i>Test</i>	<i>Page</i>	<i>Result</i>
2.2(a)	Restricted bands and unwanted emission frequencies		Not performed
7.1.4	Antenna requirement		Not performed
A8.1(c)	Channel bandwidth		Not performed
A8.1(b)	Hopping channel separation		Not performed
A8.1(c)	Number of hopping frequencies used		Not performed
A8.1(c)	Time occupancy on any channel		Not performed
A8.4(1)	Maximum output power		Not performed
A8.5	Conducted emissions		Not performed
2.2(b)(c) 2.6 A8.5	Unwanted emissions 9 kHz to 30 MHz	21	Test passed
2.2(b)(c) 2.6 A8.5	Unwanted emissions 30 MHz to 10 GHz	22	Test passed

## 8.1 Radiated Emission Measurement 9 kHz to 30 MHz

Rules and specifications:	CFR 47 Part 15, sections 15.205 and 15.209 IC RSS-210 Issue 7, sections 2.2 and 2.6			
Guide:	ANSI C63.4			
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).			
Limit 15.209:	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 - 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 (6.1)			

Comment:	
Date of test:	August 24, 2010
Test site:	Open field test site

All emissions show more than 20 dB margin to the limit, no values recorded.

Test Result:	Test passed
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## 8.2 Radiated Emission Measurement 30 MHz to 10 GHz

Rules and specifications:	CFR 47 Part 15, sections 15.215(b) and 15.247 IC RSS-210 Issue 7, section A8		
Guide:	ANSI C63.4		
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).		
Limit 15.209:	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 (6.2)		
Test Result:	Test passed		

## Antenna R640A

Comment:	
Date of test:	August 25, 2010
Test site:	Frequencies ≤ 1 GHz: Semi anechoic room, cabin no. 8 Frequencies > 1 GHz: Fully anechoic room, cabin no. 2
Test distance:	Frequencies ≤ 8.2 GHz: 3 meters Frequencies > 8.2 GHz: 1 meters

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)
41.580	vertical	Quasi-Peak	13.1	14.4		27.5	104.8	77.3
52.230	vertical	Quasi-Peak	24.4	14.4		38.8	104.8	66.0
76.680	vertical	Quasi-Peak	28.4	10.2		38.6	104.8	66.2
85.560	vertical	Quasi-Peak	22.2	10.9		33.1	104.8	71.7
154.860	horizontal	Quasi-Peak	23.5	9.8		33.3	104.8	71.5
186.210	horizontal	Quasi-Peak	22.3	11.6		33.9	104.8	70.9
309.690	horizontal	Quasi-Peak	22.3	14.9		37.2	104.8	67.6
361.320	horizontal	Quasi-Peak	22.4	16.3		38.7	104.8	66.1
915.250	horizontal	Quasi-Peak	100.1	24.7		124.8		
1828.000	vertical	Peak	12.2	31.4		43.6	104.8	61.2

### Sample calculation of final values:

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

## Antenna R642A

Comment:			
Date of test:	August 25, 2010		
Test site:	Frequencies ≤ 1 GHz: Semi anechoic room, cabin no. 8 Frequencies > 1 GHz: Fully anechoic room, cabin no. 2		
Test distance:	Frequencies ≤ 8.2 GHz:	3 meters	
	Frequencies > 8.2 GHz:	1 meters	

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)
40.590	vertical	Quasi-Peak	14.5	14.4		28.9	107.8	78.9
53.610	vertical	Quasi-Peak	26.3	14.2		40.5	107.8	67.3
79.290	vertical	Quasi-Peak	29.4	10.3		39.7	107.8	68.1
94.560	vertical	Quasi-Peak	25.1	12.6		37.7	107.8	70.1
154.860	horizontal	Quasi-Peak	30.0	9.8		39.8	107.8	68.0
188.040	horizontal	Quasi-Peak	19.5	11.8		31.3	107.8	76.5
361.320	horizontal	Quasi-Peak	28.6	16.3		44.9	107.8	62.9
722.640	horizontal	Quasi-Peak	15.5	22.1		37.6	107.8	70.2
915.250	vertical	Quasi-Peak	103.1	24.7		127.8		
929.100	vertical	Quasi-Peak	41.7	24.6		66.3	107.8	41.5
1828.000	vertical	Peak	17.5	31.4		48.9	107.8	58.9

### Sample calculation of final values:

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



### 8.3 RF exposure requirement

Rules and specifications:	CFR 47 Part 15, section 15.247(i) CFR 47 Part 1, sections 1.1307(b)(1)				
Guide:	OET Bulletin 65, Edition 97-01				
Limits:	Limits for general population / uncontrolled exposure				
	Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time (minutes)
	0.3 - 1.34	614	1.63	(100)*	30
	1.34 - 30	824 / f	2.19 / f	(180 / f <sup>2</sup> )*	30
	30 - 300	27.5	0.073	0.2	30
	300 - 1500	---	---	f/1500	30
	1500 - 100000	---	---	1.0	30
	f = frequency in MHz * Plane-wave equivalent power density				

Test Result:	Test passed
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## Antenna R640A

Spectral power density		Declared by applicant	Measured
Prediction <sup>5</sup> :	$S = P G / 4 \pi R^2$		
Where:	<p>S = Power density</p> <p>P = Power input of antenna</p> <p>G = Power gain of the antenna relativ to an isotropic radiator</p> <p>R = Distance to the center of radiation of the antenna</p>		
Maximum output power:	P = 794.3 mW	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Antenna gain:	<b>G = 2.137</b>	<input checked="" type="checkbox"/>	
Prediction distance:	R = 20 cm		
Power density at 20 cm:	<b>S = 0.3379 mW/cm<sup>2</sup></b>		
Limit	<b>S<sub>lim</sub> = 0.6098 mW/cm<sup>2</sup></b>		

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

<sup>5</sup> MPE Prediction of MPE according to equation from page 19 of OET Bulletin 65, Ed. 97-01

## Antenna R642A

<b>Spectral power density</b>		Declared by applicant	Measured
Prediction <sup>6</sup> :	$S = P G / 4 \pi R^2$		
Where:	S = Power density P = Power input of antenna G = Power gain of the antenna relativ to an isotropic radiator R = Distance to the center of radiation of the antenna		
Maximum output power:	P = 794.3 mW	☒	☒
Antenna gain:	G = 3.98	☒	
Prediction distance:	R = 30 cm		
Power density at 30 cm:	<b>S = 0.2797 mW/cm<sup>2</sup></b>		
Limit	<b>S<sub>lim</sub> = 0.6098 mW/cm<sup>2</sup></b>		

Test Result:	Test passed
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<sup>6</sup> MPE Prediction of MPE according to equation from page 19 of OET Bulletin 65, Ed. 97-01

## 8.4 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 for antenna R640A	Applicable	Declared by applicant	Measured	Exemption
The antenna is				
<input checked="" type="checkbox"/> detachable				
<p>The conducted output power (CP in watts) is measured at the antenna connector:</p> $CP = 794.3 \text{ mW}$ <p>The effective isotropic radiated power (EIRP in watts) is calculated using</p> <p><input checked="" type="checkbox"/> the numerical antenna gain: <math>G = 2.137</math></p> $EIRP = G \cdot CP \Rightarrow EIRP = 1.697 \text{ W}$ <p><input checked="" type="checkbox"/> the field strength<sup>7</sup> in V/m: <math>FS = 1.738 \text{ V/m}</math></p> $EIRP = \frac{(FS \cdot D)^2}{30} \Rightarrow EIRP = 0.906 \text{ W}$ <p>with:</p> <p>Distance between the antennas in m: <math>D = 3 \text{ m}</math></p>			<input checked="" type="checkbox"/>	
<input type="checkbox"/> not detachable				
<p>A field strength measurement is used to determine the effective isotropic radiated power (EIRP in watts) given by<sup>7</sup>:</p> $EIRP = \frac{(FS \cdot D)^2}{30} \Rightarrow EIRP = \dots\dots\dots \text{ W}$ <p>with:</p> <p>Field strength in V/m: <math>FS = \dots\dots\dots \text{ dB}\mu\text{V/m}</math></p> <p>Distance between the two antennas in m: <math>D = \dots\dots\dots \text{ m}</math></p>			<input type="checkbox"/>	<input 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> $TP = 1.697 \text{ W}$				

<sup>7</sup> 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.



Exposure of Humans to RF Fields for antenna R640A (continued)	Applicable	Declared by applicant	Measured	Exemption
<b>Separation distance between the user and the transmitting device is</b>				
<input type="checkbox"/> less than or equal to 20 cm <input checked="" type="checkbox"/> greater than 20 cm		<input checked="" type="checkbox"/>		
<b>Transmitting device is</b>				
<input type="checkbox"/> in the vicinity of the human head <input type="checkbox"/> body-worn		<input type="checkbox"/>		
<b>SAR evaluation</b>				
SAR evaluation is required if the separation distance between the user and the device is less than or equal to 20 cm.				
<input type="checkbox"/> The device operates from 3 kHz up to 1 GHz inclusively and its source-based time-averaged output power is less than, or equal to 200 mW for General Public Use and 1000 mW for Controlled Use.				<input type="checkbox"/>
<input type="checkbox"/> The device operates above 1 GHz up to 2.2 GHz inclusively and its source-based time-averaged output power is less than, or equal to 100 mW for General Public Use and 500 mW for Controlled Use.				<input type="checkbox"/>
<input type="checkbox"/> The device operates above 2.2 GHz up to 3 GHz inclusively and its source-based time-averaged output power is less than, or equal to 20 mW for General Public Use and 100 mW for Controlled Use.				<input type="checkbox"/>
<input type="checkbox"/> The device operates above 3 GHz up to 6 GHz inclusively and its source-based time-averaged output power) is less than, or equal to 10 mW for General Public Use and 50 mW for Controlled Use.				<input type="checkbox"/>
<input type="checkbox"/> SAR evaluation is documented in test report no. ....				
<b>RF exposure evaluation</b>				
RF exposure evaluation is required if the separation distance between the user and the device is greater than 20 cm.				
<input checked="" type="checkbox"/> The device operates below 1.5 GHz and its e.i.r.p. is equal to or less than 2.5 W.				<input checked="" type="checkbox"/>
<input type="checkbox"/> The device operates at or above 1.5 GHz and the e.i.r.p. of the device is equal to or less than 5 W.				<input type="checkbox"/>
<input type="checkbox"/> RF exposure evaluation is documented in test report no. ....				

Exposure of Humans to RF Fields for antenna R642A	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> <p style="text-align: center;"><b><math>CP = 794.3 \text{ mW}</math></b></p> <p>The effective isotropic radiated power (EIRP in watts) is calculated using</p> <p><input checked="" type="checkbox"/> the numerical antenna gain: <b><math>G = 3.98</math></b></p> <p style="text-align: center;"><b><math>EIRP = G \cdot CP \Rightarrow EIRP = 3.161 \text{ W}</math></b></p> <p><input checked="" type="checkbox"/> the field strength<sup>8</sup> in V/m: <b><math>FS = 2.455 \text{ V/m}</math></b></p> <p style="text-align: center;"><b><math>EIRP = \frac{(FS \cdot D)^2}{30} \Rightarrow EIRP = 1.81 \text{ W}</math></b></p> <p>with:</p> <p>Distance between the antennas in m: <b><math>D = 3 \text{ m}</math></b></p>			<input checked="" type="checkbox"/>	
<input type="checkbox"/> not detachable				
<p>A field strength measurement is used to determine the effective isotropic radiated power (EIRP in watts) given by<sup>7</sup>:</p> <p style="text-align: center;"><b><math>EIRP = \frac{(FS \cdot D)^2}{30} \Rightarrow EIRP = \dots\dots\dots \text{ W}</math></b></p> <p>with:</p> <p>Field strength in V/m: <b><math>FS = \dots\dots\dots \text{ dB}\mu\text{V/m}</math></b></p> <p>Distance between the two antennas in m: <b><math>D = \dots\dots\dots \text{ m}</math></b></p>			<input type="checkbox"/>	<input 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> <p style="text-align: center;"><b><math>TP = 3.161 \text{ W}</math></b></p>				

<sup>8</sup> 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.

Exposure of Humans to RF Fields for antenna R642A (continued)	Applicable	Declared by applicant	Measured	Exemption
<b>Separation distance between the user and the transmitting device is</b>				
<input type="checkbox"/> less than or equal to 20 cm		<input checked="" type="checkbox"/>		
<input checked="" type="checkbox"/> greater than 20 cm				
<b>Transmitting device is</b>				
<input type="checkbox"/> in the vicinity of the human head		<input type="checkbox"/>		
<input type="checkbox"/> body-worn				
<b>SAR evaluation</b>				
SAR evaluation is required if the separation distance between the user and the device is less than or equal to 20 cm.				
<input type="checkbox"/> The device operates from 3 kHz up to 1 GHz inclusively and its source-based time-averaged output power is less than, or equal to 200 mW for General Public Use and 1000 mW for Controlled Use.				<input type="checkbox"/>
<input type="checkbox"/> The device operates above 1 GHz up to 2.2 GHz inclusively and its source-based time-averaged output power is less than, or equal to 100 mW for General Public Use and 500 mW for Controlled Use.				<input type="checkbox"/>
<input type="checkbox"/> The device operates above 2.2 GHz up to 3 GHz inclusively and its source-based time-averaged output power is less than, or equal to 20 mW for General Public Use and 100 mW for Controlled Use.				<input type="checkbox"/>
<input type="checkbox"/> The device operates above 3 GHz up to 6 GHz inclusively and its source-based time-averaged output power) is less than, or equal to 10 mW for General Public Use and 50 mW for Controlled Use.				<input type="checkbox"/>
<input type="checkbox"/> SAR evaluation is documented in test report no. ....				
<b>RF exposure evaluation</b>				
RF exposure evaluation is required if the separation distance between the user and the device is greater than 20 cm.				
<input type="checkbox"/> The device operates below 1.5 GHz and its e.i.r.p. is equal to or less than 2.5 W.				<input type="checkbox"/>
<input type="checkbox"/> The device operates at or above 1.5 GHz and the e.i.r.p. of the device is equal to or less than 5 W.				<input type="checkbox"/>
<input type="checkbox"/> RF exposure evaluation is documented in test report no. ....				

## 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, 2009
<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, 2009
<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 Equipment, 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 2 for Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category II Equipment, published by Industry Canada	June 2007
<input checked="" type="checkbox"/>	RSS-102	Radio Standards Specification RSS-102 Issue 3: Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) , published by Industry Canada	June 2009
<input 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



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<input checked="" type="checkbox"/>	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
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## 10 Revision History

Revision History			
<i>Edition</i>	<i>Date</i>	<i>Issued by</i>	<i>Modifications</i>
1	September 9, 2010	T. Eberl (cj)	First edition
2	September 14, 2010	M. Steindl (cj)	Edition 2 required for FCC-IC-Certification RF Exposure Requirement attached Exposure of Humans to RF Fields attached
3	September 21, 2010	T. Eberl (cj)	Edition 3 RF Exposure recalculation in case of corrected antenna gain done by applicant

TÜV SÜD SENTON GmbH  
Äußere Frühlingstraße 45  
D-94315 Straubing  
Germany

Phone: +49 9421 5522-0  
Fax: +49 9421 5522-99  
eMail: [senton@tuev-sued.de](mailto:senton@tuev-sued.de)  
Web: [www.tuev-sued.de/senton](http://www.tuev-sued.de/senton)

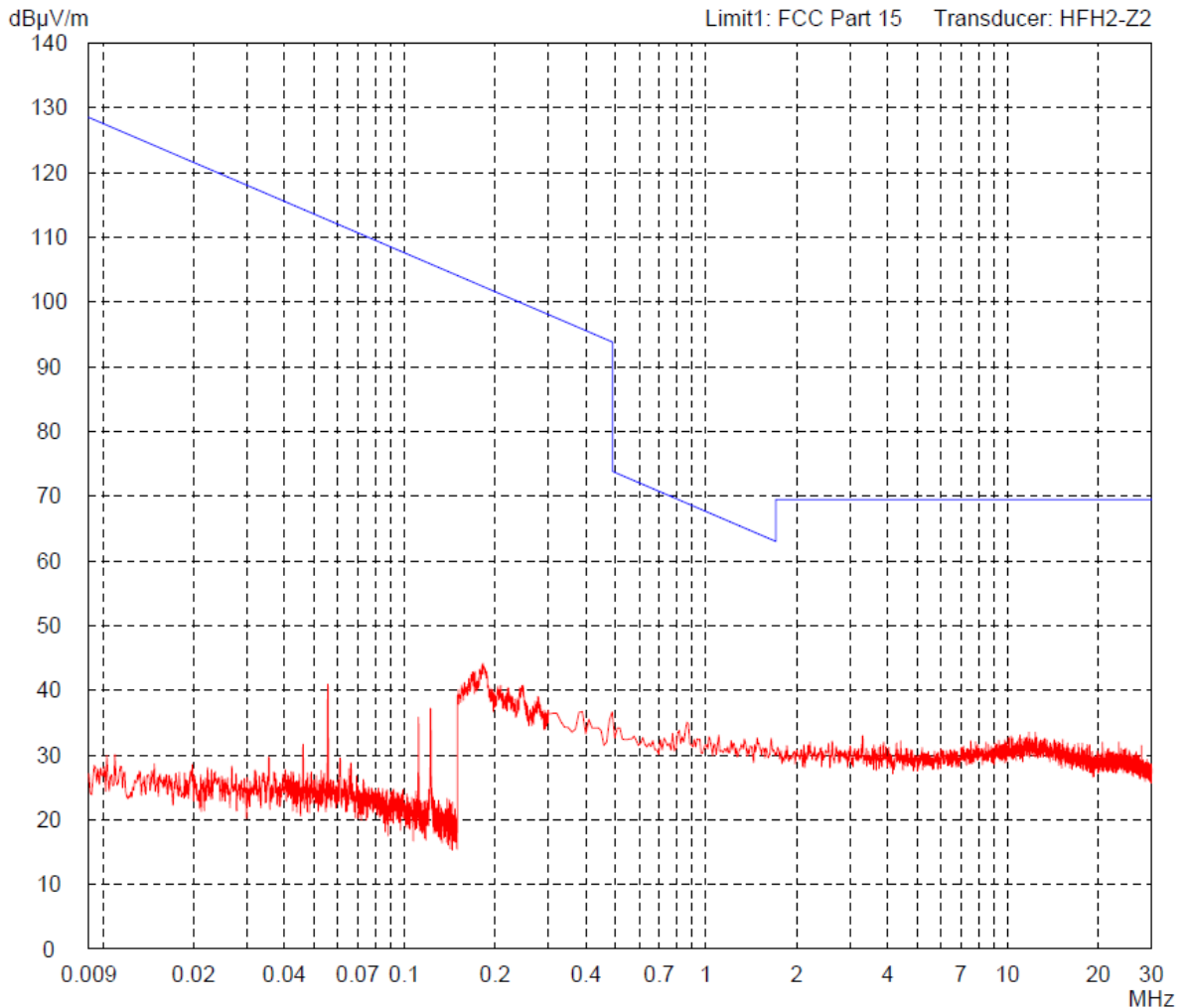


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## 11 Charts taken during testing

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

<b>Model:</b> RF630R with RF640A		<b>Comment:</b> - DC 24 V power supply with AC/DC adaptor - Transmitting continuously on single frequency - Frequency: 915.25 MHz
<b>Serial no.:</b> ---		
<b>Applicant:</b> Siemens AG, Fürth		
<b>Test site:</b> Fully anechoic room, cabin no. 2		
<b>Tested on:</b> Test distance 3 metres		
<b>Date of test:</b> 08/26/2010	<b>Operator:</b> T. Eberl	
<b>Test performed:</b> by hand	<b>File name:</b> default.emi	
<b>Detector:</b> Peak		<b>List of values:</b> 10 dB Margin                      50 Subranges

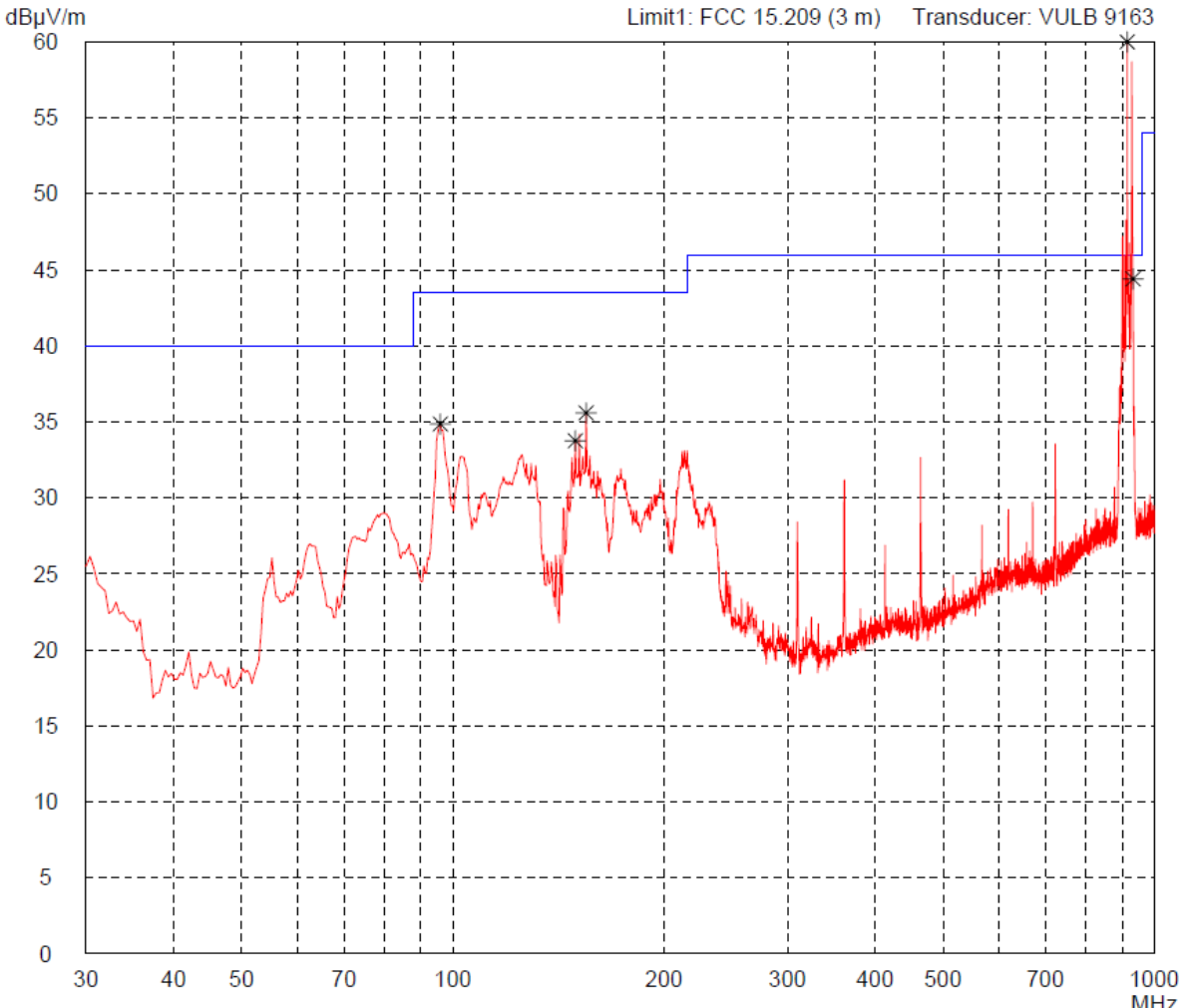


<b>Result:</b> Limit kept	<b>Project file:</b> 14912-02340-3	Page    of    Pages
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## Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 Subpart C (FAR)

<p><b>Model:</b> RF630R with RF640A</p> <p><b>Serial no.:</b> --</p> <p><b>Applicant:</b> Siemens AG, Fürth</p> <p><b>Test site:</b> Fully anechoic room, cabin no. 2</p> <p><b>Tested on:</b> Test distance 3 metres Horizontal Polarization</p> <p><b>Date of test:</b> 08/25/2010      <b>Operator:</b> T. Eberl</p> <p><b>Test performed:</b> automatically      <b>File name:</b> default.emi</p>	<p><b>Comment:</b></p> <ul style="list-style-type: none"> <li>- DC 24 V power supply with AC/DC adaptor</li> <li>- Transmitting continuously on single frequency</li> <li>- Frequency: 915.25 MHz</li> <li>- with notch-filter set to carrier frequency</li> </ul>
--	--

<b>Detector:</b> Peak	<b>List of values:</b> 10 dB Margin                      50 Subranges
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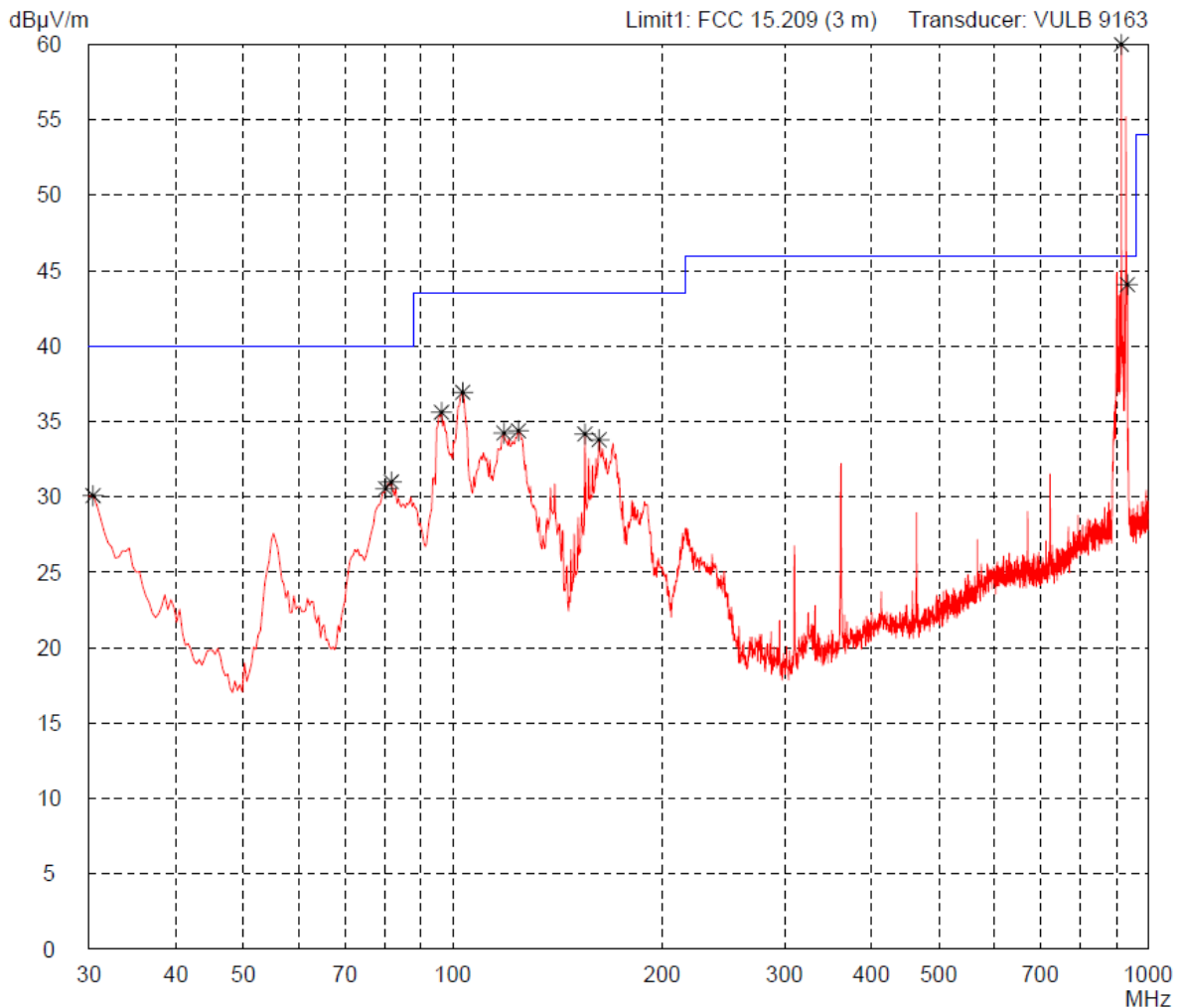


<b>Result:</b> Prescan	<b>Project file:</b> 14912-02340-3                      Page    of    Pages
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## Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 Subpart C (FAR)

<p><b>Model:</b> RF630R with RF640A</p> <p><b>Serial no.:</b> --</p> <p><b>Applicant:</b> Siemens AG, Fürth</p> <p><b>Test site:</b> Fully anechoic room, cabin no. 2</p> <p><b>Tested on:</b> Test distance 3 metres Vertical Polarization</p> <p><b>Date of test:</b> 08/25/2010</p> <p><b>Operator:</b> T. Eberl</p> <p><b>Test performed:</b> automatically</p> <p><b>File name:</b> default.emi</p>	<p><b>Comment:</b></p> <ul style="list-style-type: none"> <li>- DC 24 V power supply with AC/DC adaptor</li> <li>- Transmitting continuously on single frequency</li> <li>- Frequency: 915.25 MHz</li> <li>- with notch-filter set to carrier frequency</li> </ul>
--	--

<p><b>Detector:</b> Peak</p>	<p><b>List of values:</b> 10 dB Margin                      50 Subranges</p>
----------------------------------	--

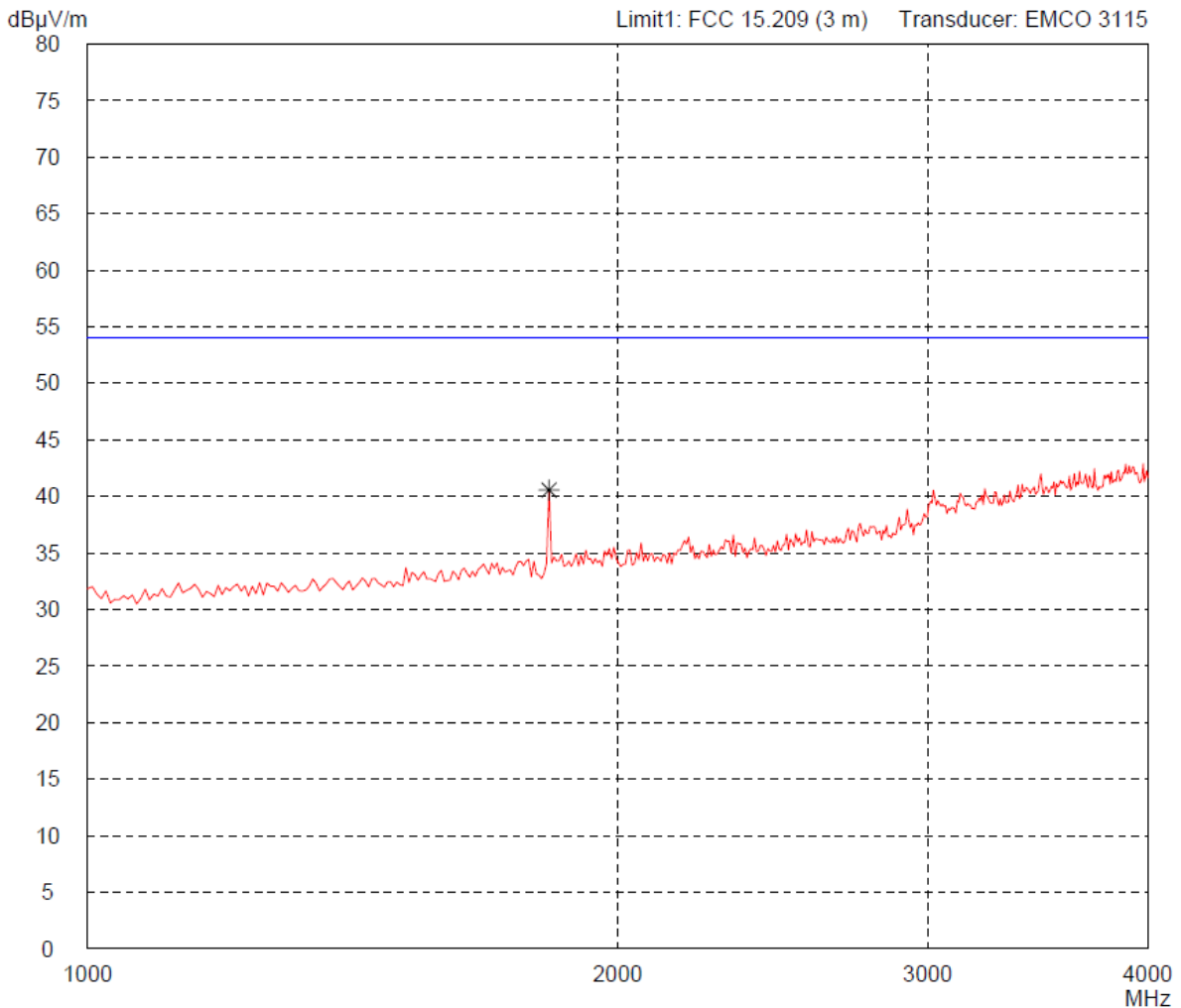


<p><b>Result:</b> Prescan</p>	<p><b>Project file:</b> 14912-02340-3</p> <p style="text-align: right;">Page    of    Pages</p>
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## Radiated Emission Test 1 GHz - 4 GHz acc. to FCC Part 15 Subpart C (FAR)

<p><b>Model:</b> RF630R with RF640A</p> <p><b>Serial no.:</b> --</p> <p><b>Applicant:</b> Siemens AG, Fürth</p> <p><b>Test site:</b> Fully anechoic room, cabin no. 2</p> <p><b>Tested on:</b> Test distance 3 metres Horizontal Polarization</p> <p><b>Date of test:</b> 08/25/2010      <b>Operator:</b> T. Eberl</p> <p><b>Test performed:</b> automatically      <b>File name:</b> default.emi</p>	<p><b>Comment:</b></p> <ul style="list-style-type: none"> <li>- DC 24 V power supply with AC/DC adaptor</li> <li>- Transmitting continuously on single frequency</li> <li>- Frequency: 915.25 MHz</li> </ul>
--	--

<p><b>Detector:</b> Peak</p>	<p><b>List of values:</b> Selected by hand</p>
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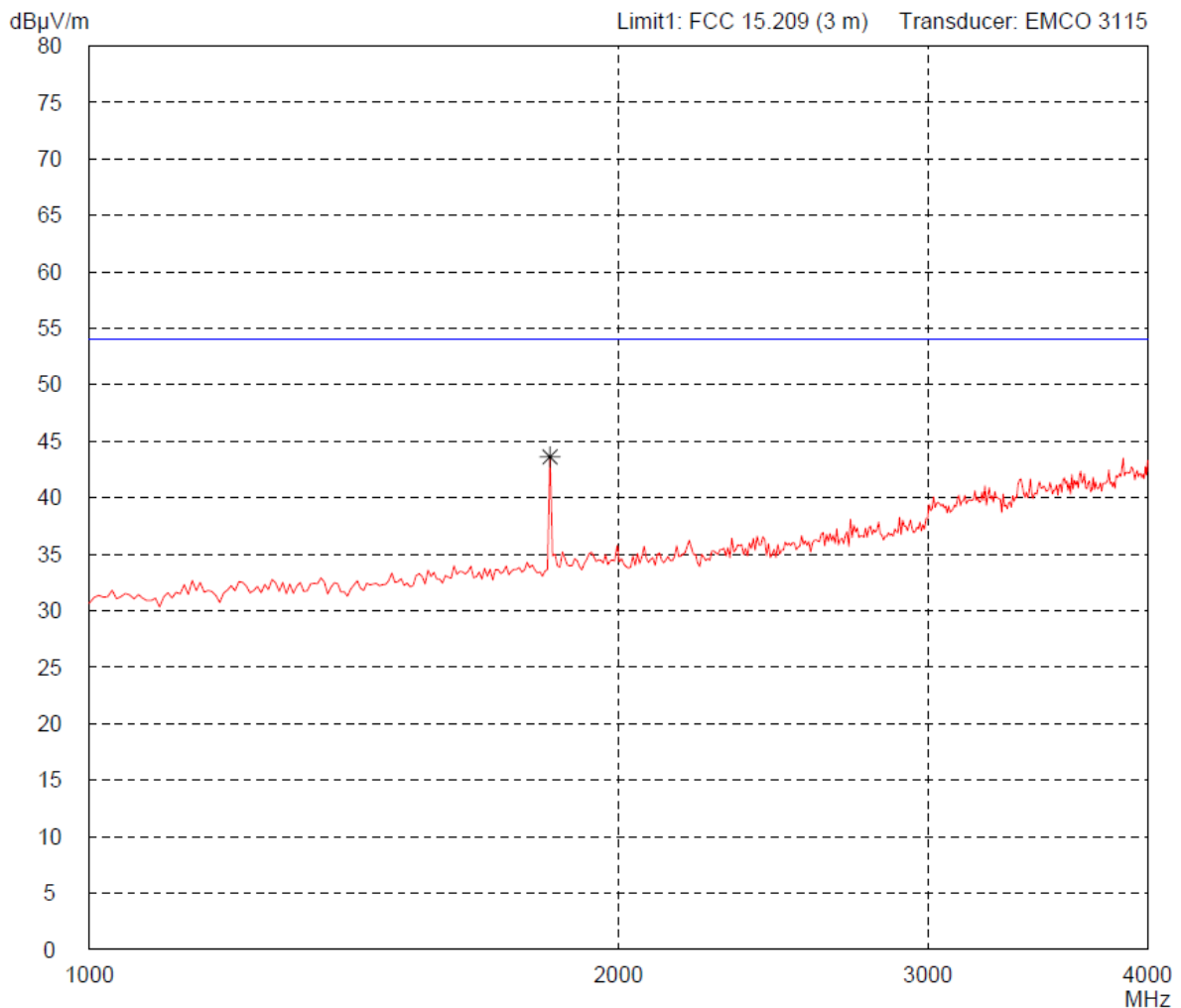


<p><b>Result:</b> Limit kept</p>	<p><b>Project file:</b> 14912-02340-3</p> <p style="text-align: right;">Page    of    Pages</p>
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## Radiated Emission Test 1 GHz - 4 GHz acc. to FCC Part 15 Subpart C (FAR)

<p><b>Model:</b> RF630R with RF640A</p> <p><b>Serial no.:</b> --</p> <p><b>Applicant:</b> Siemens AG, Fürth</p> <p><b>Test site:</b> Fully anechoic room, cabin no. 2</p> <p><b>Tested on:</b> Test distance 3 metres Vertical Polarization</p> <p><b>Date of test:</b> 08/25/2010</p> <p><b>Operator:</b> T. Eberl</p> <p><b>Test performed:</b> automatically</p> <p><b>File name:</b> default.emi</p>	<p><b>Comment:</b></p> <ul style="list-style-type: none"> <li>- DC 24 V power supply with AC/DC adaptor</li> <li>- Transmitting continuously on single frequency</li> <li>- Frequency: 915.25 MHz</li> </ul>
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<p><b>Detector:</b> Peak</p>	<p><b>List of values:</b> Selected by hand</p>
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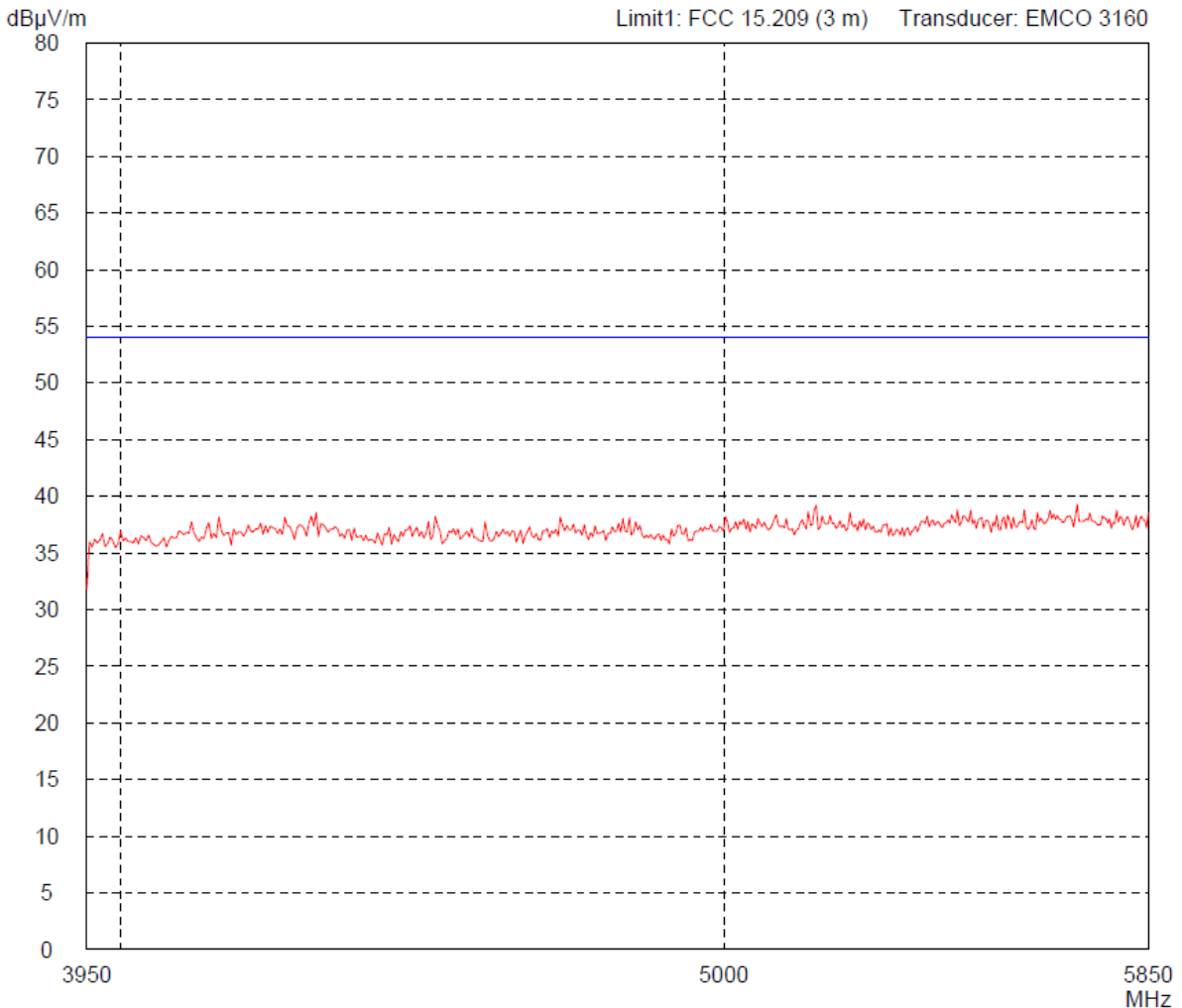
<p><b>Result:</b> Limit kept</p>	<p><b>Project file:</b> 14912-02340-3</p> <p style="text-align: right;">Page    of    Pages</p>
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**Radiated Emission Test 3.95 GHz - 5.85 GHz  
acc. to FCC Part 15 Subpart C (FAR)**

Model: RF630R with RF640A	Comment:  - DC 24 V power supply with AC/DC adaptor  - Transmitting continuously on single frequency - Frequency: 915.25 MHz
Serial no.: --	
Applicant: Siemens AG, Fürth	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Horizontal Polarization	
Date of test: 08/25/2010      Operator: T. Eberl	
Test performed: automatically      File name: default.emi	

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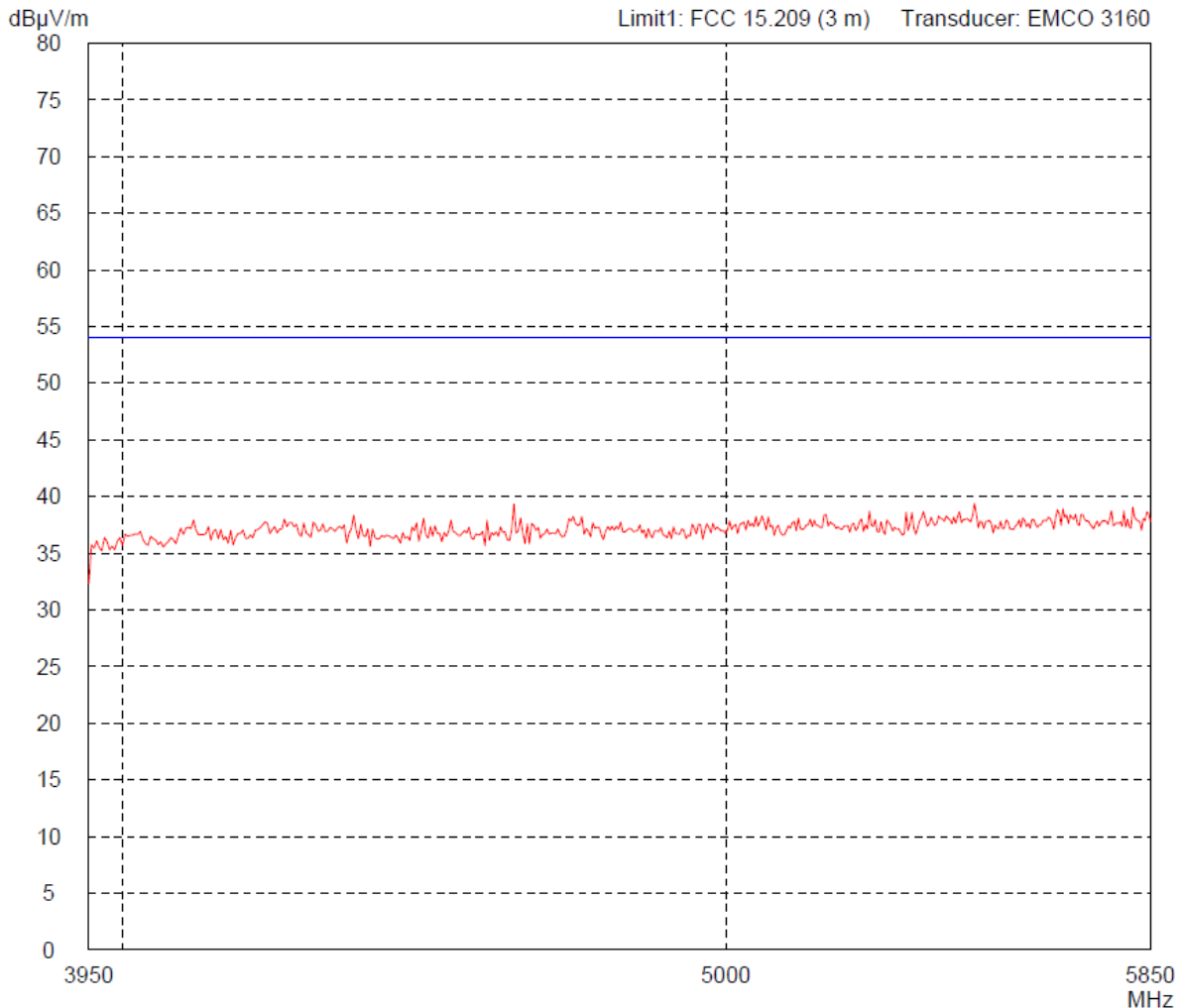


Result: Limit kept	Project file: 14912-02340-3	Page    of    Pages
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**Radiated Emission Test 3.95 GHz - 5.85 GHz  
acc. to FCC Part 15 Subpart C (FAR)**

Model: RF630R with RF640A	Comment:  - DC 24 V power supply with AC/DC adaptor  - Transmitting continuously on single frequency - Frequency: 915.25 MHz	
Serial no.: --		
Applicant: Siemens AG, Fürth		
Test site: Fully anechoic room, cabin no. 2		
Tested on: Test distance 3 metres Vertical Polarization		
Date of test: 08/25/2010		Operator: T. Eberl
Test performed: automatically		File name: default.emi

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

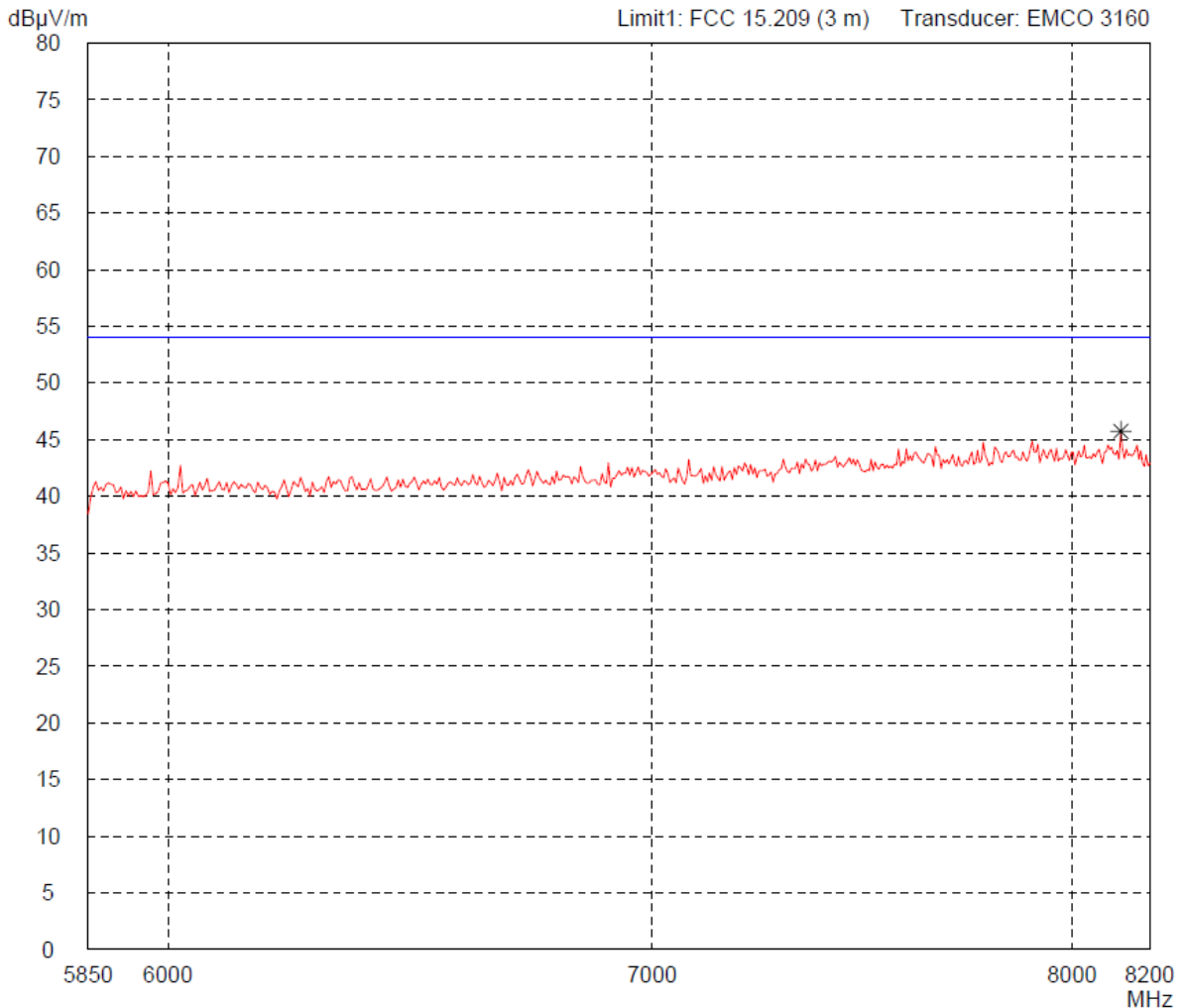


Result: Limit kept	Project file: 14912-02340-3	Page    of    Pages
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**Radiated Emission Test 5.85 GHz - 8.2 GHz  
acc. to FCC Part 15 Subpart C (FAR)**

Model: RF630R with RF640A	Comment:  - DC 24 V power supply with AC/DC adaptor  - Transmitting continuously on single frequency - Frequency: 915.25 MHz	
Serial no.: --		
Applicant: Siemens AG, Fürth		
Test site: Fully anechoic room, cabin no. 2		
Tested on: Test distance 3 metres Horizontal Polarization		
Date of test: 08/25/2010		Operator: T. Eberl
Test performed: automatically		File name: default.emi

Detector: Peak	List of values: Selected by hand
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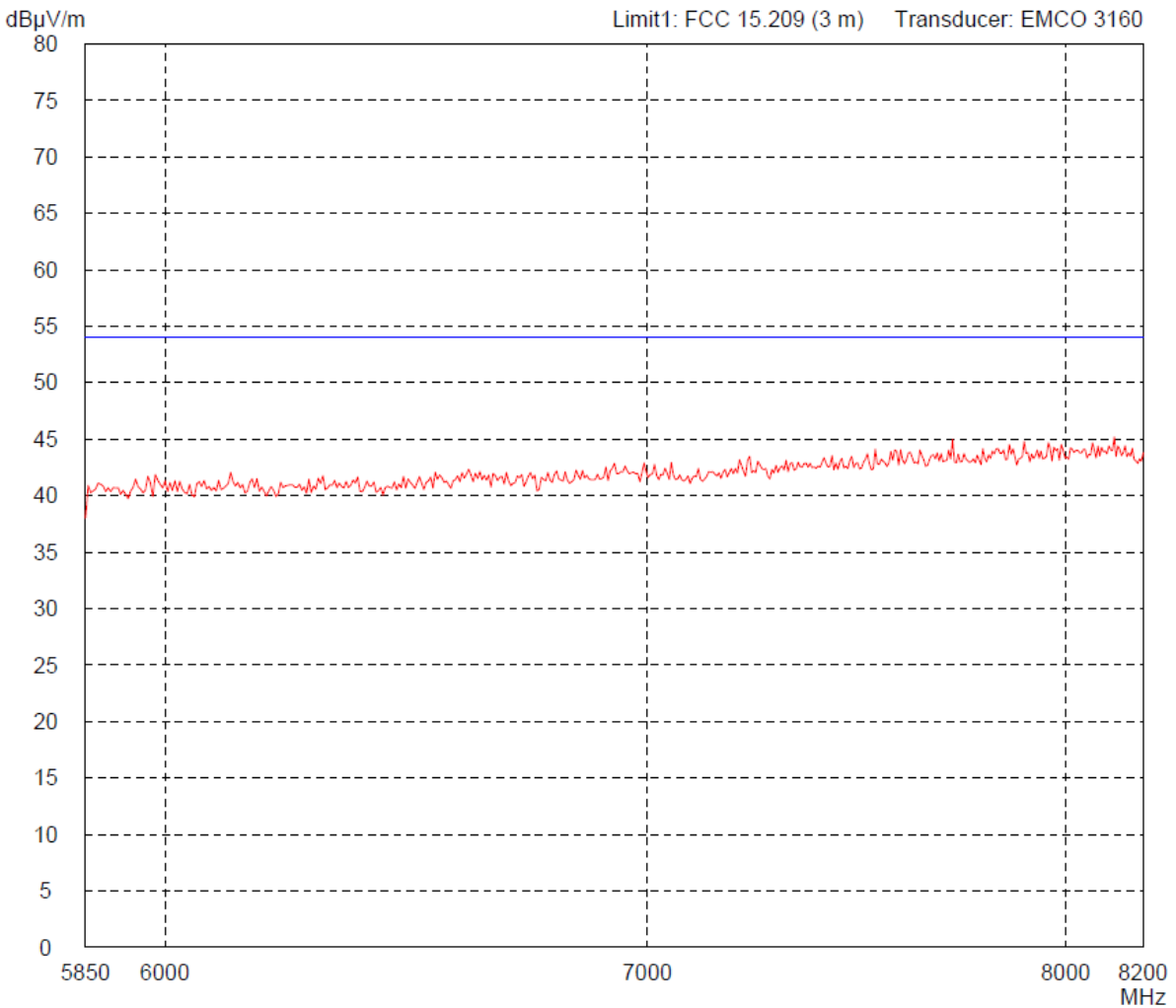


Result: Limit kept	Project file: 14912-02340-3	Page    of    Pages
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**Radiated Emission Test 5.85 GHz - 8.2 GHz  
acc. to FCC Part 15 Subpart C (FAR)**

Model: RF630R with RF640A	Comment:  - DC 24 V power supply with AC/DC adaptor  - Transmitting continuously on single frequency - Frequency: 915.25 MHz
Serial no.: --	
Applicant: Siemens AG, Fürth	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 08/25/2010      Operator: T. Eberl	
Test performed: automatically      File name: default.emi	

Detector: Peak	List of values: Selected by hand
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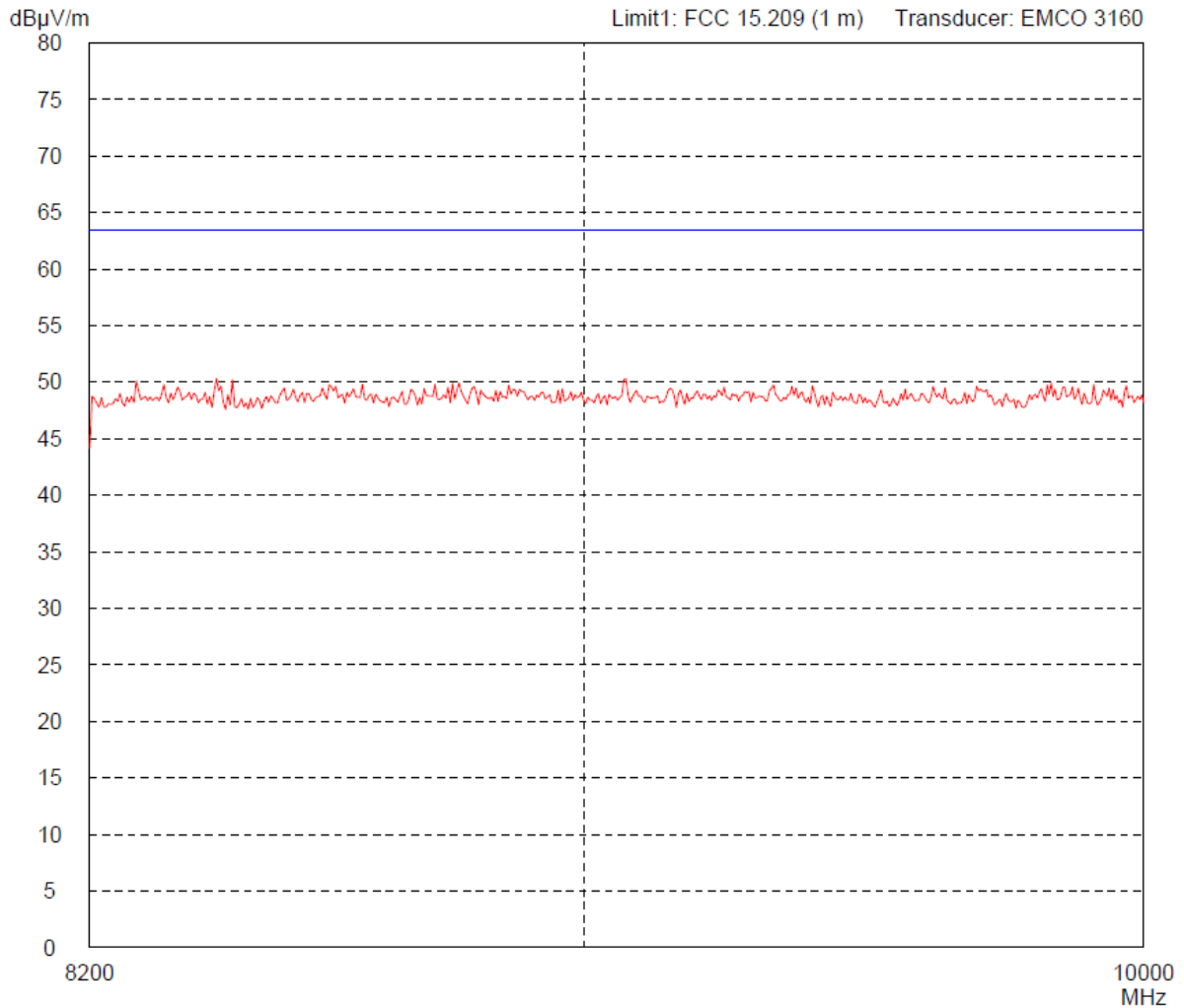


Result: Limit kept	Project file: 14912-02340-3	Page      of      Pages
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## Radiated Emission Test 8.2 GHz - 10 GHz acc. to FCC Part 15 Subpart C (FAR)

<p><b>Model:</b> RF630R with RF640A</p> <p><b>Serial no.:</b> --</p> <p><b>Applicant:</b> Siemens AG, Fürth</p> <p><b>Test site:</b> Fully anechoic room, cabin no. 2</p> <p><b>Tested on:</b> Test distance 1 meter Horizontal Polarization</p> <p><b>Date of test:</b> 08/25/2010      <b>Operator:</b> T. Eberl</p> <p><b>Test performed:</b> automatically      <b>File name:</b> default.emi</p>	<p><b>Comment:</b></p> <ul style="list-style-type: none"> <li>- DC 24 V power supply with AC/DC adaptor</li> <li>- Transmitting continuously on single frequency</li> <li>- Frequency: 915.25 MHz</li> </ul>
---	--

<p><b>Detector:</b> Peak</p>	<p><b>List of values:</b> 10 dB Margin                      50 Subranges</p>
----------------------------------	--

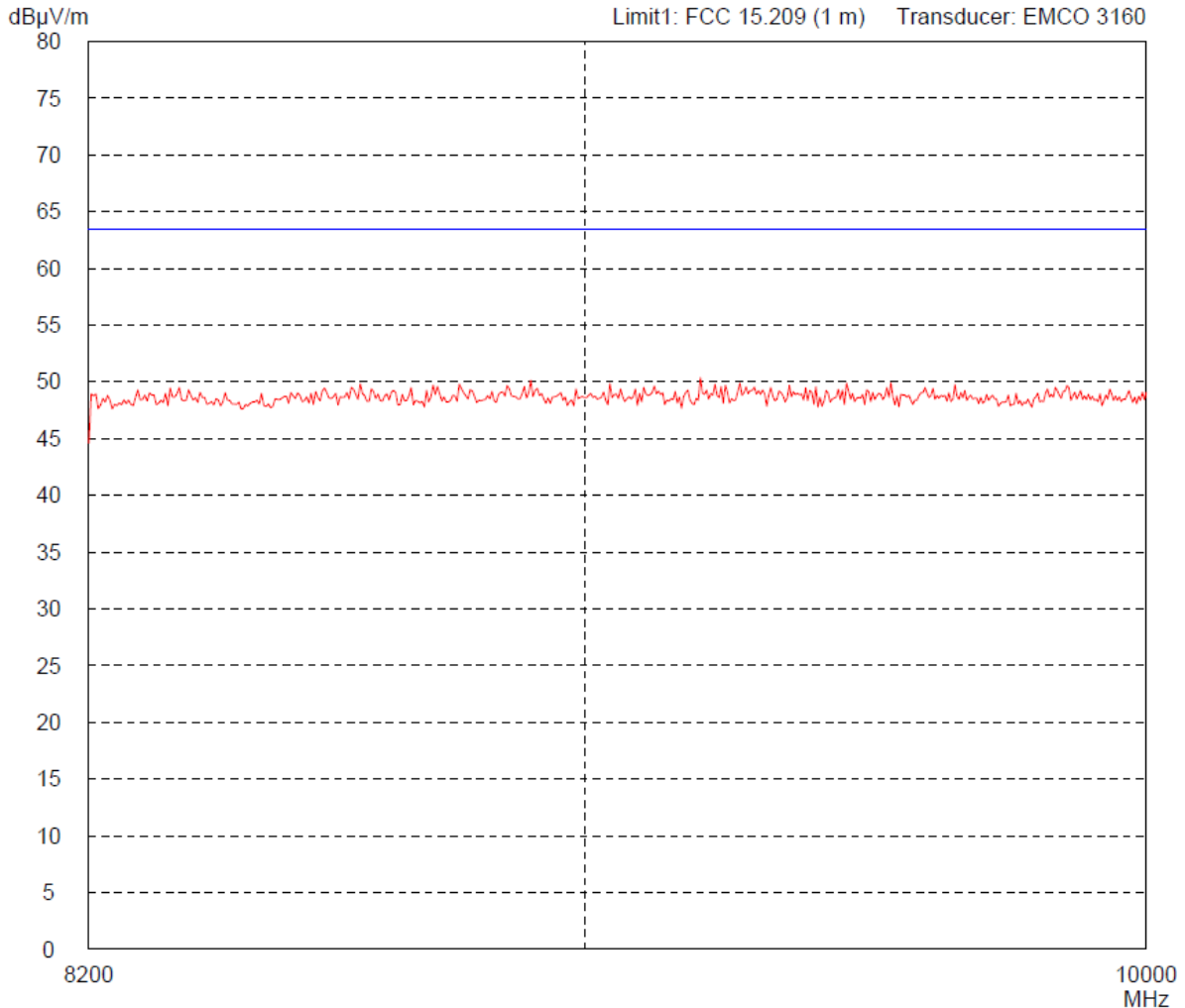


<p><b>Result:</b> Limit kept</p>	<p><b>Project file:</b> 14912-02340-3</p> <p style="text-align: right;">Page    of    Pages</p>
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**Radiated Emission Test 8.2 GHz - 10 GHz  
acc. to FCC Part 15 Subpart C (FAR)**

Model: RF630R with RF640A	Comment:  - DC 24 V power supply with AC/DC adaptor  - Transmitting continuously on single frequency - Frequency: 915.25 MHz
Serial no.: --	
Applicant: Siemens AG, Fürth	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 1 meter Vertical Polarization	
Date of test: 08/25/2010      Operator: T. Eberl	
Test performed: automatically      File name: default.emi	

Detector: Peak	List of values: 10 dB Margin      50 Subranges
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Result: Limit kept	Project file: 14912-02340-3	Page    of    Pages
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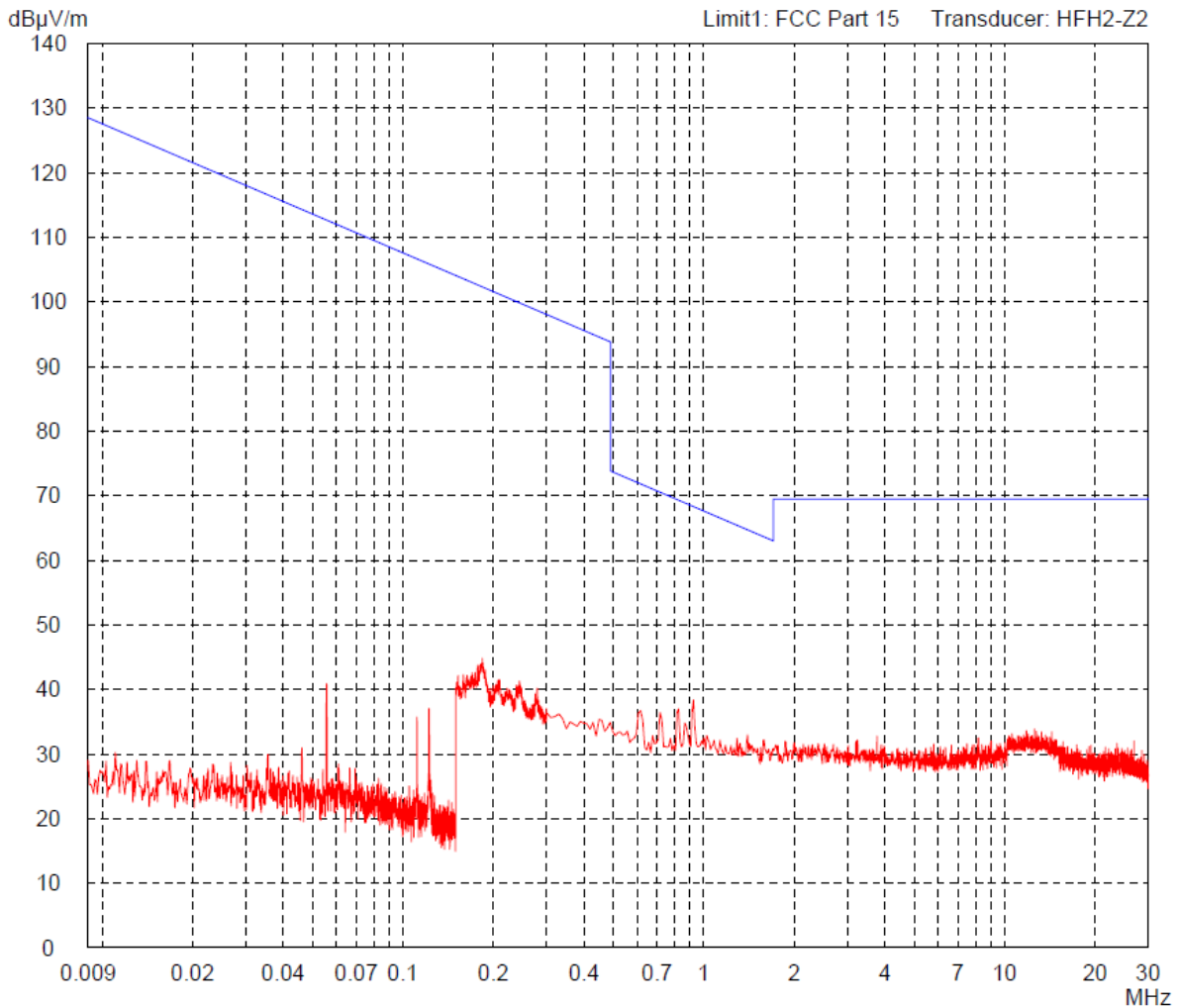
## Radiated Emission Test 9 kHz - 30 MHz acc. to FCC Part 15 Subpart C (FAR)

Model: RF630R with RF642A	
Serial no.: ---	
Applicant: Siemens AG, Fürth	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres	
Date of test: 08/26/2010	Operator: T. Eberl
Test performed: by hand	File name: default.emi

Comment:	
- DC 24 V power supply with AC/DC adaptor	
- Transmitting continuously on single frequency	
- Frequency: 915.25 MHz	

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



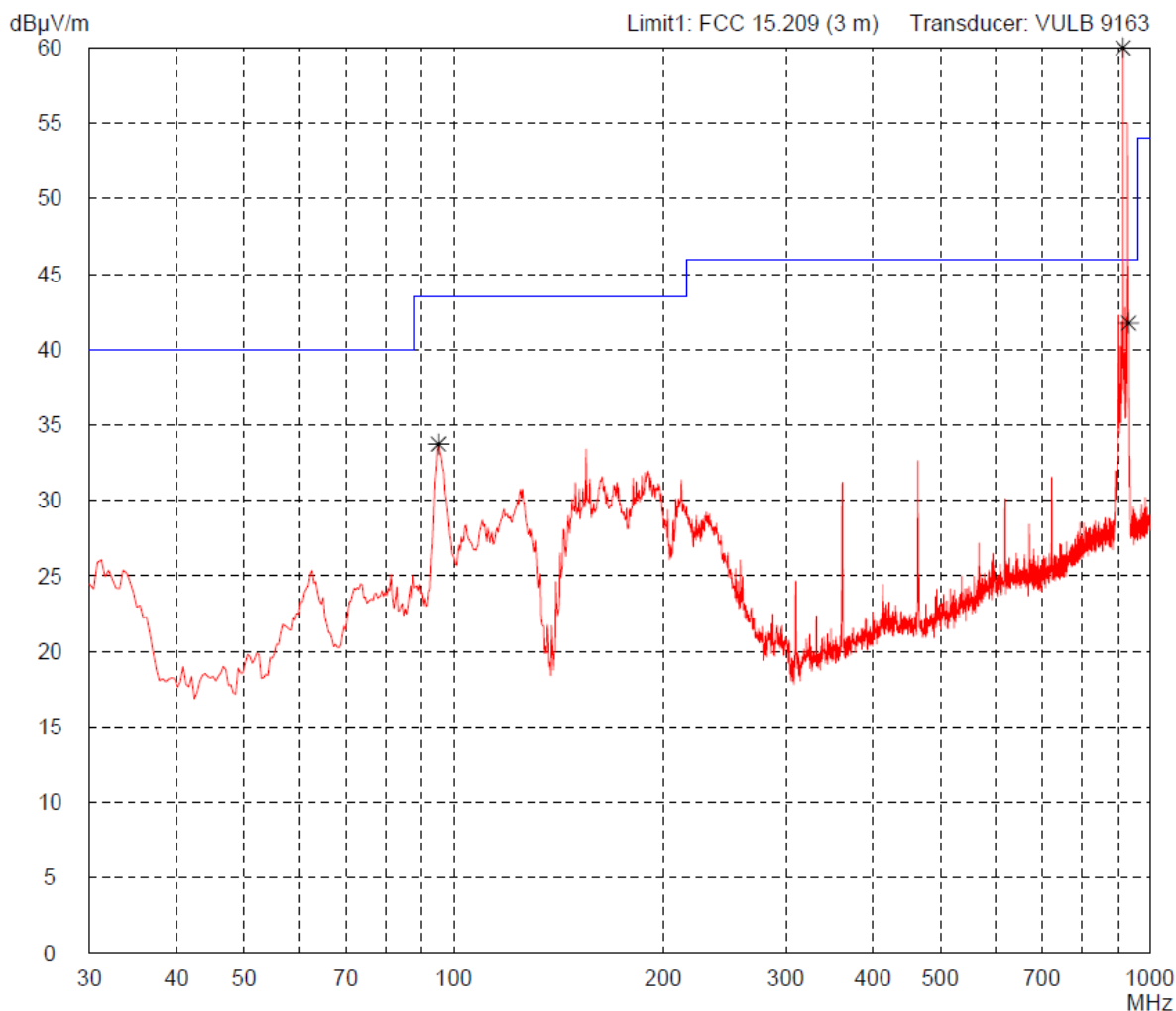
Result: Limit kept
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Project file: 14912-02340-3	Page    of    Pages
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## Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 Subpart C (FAR)

<p><b>Model:</b> RF630R with RF642A</p> <p><b>Serial no.:</b> --</p> <p><b>Applicant:</b> Siemens AG, Fürth</p> <p><b>Test site:</b> Fully anechoic room, cabin no. 2</p> <p><b>Tested on:</b> Test distance 3 metres Horizontal Polarization</p> <p><b>Date of test:</b> 08/25/2010      <b>Operator:</b> T. Eberl</p> <p><b>Test performed:</b> automatically      <b>File name:</b> default.emi</p>	<p><b>Comment:</b></p> <ul style="list-style-type: none"> <li>- DC 24 V power supply with AC/DC adaptor</li> <li>- Transmitting continuously on single frequency</li> <li>- Frequency: 915.25 MHz</li> <li>- with notch-filter set to carrier frequency</li> </ul>
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<b>Detector:</b> Peak	<b>List of values:</b> 10 dB Margin                      50 Subranges
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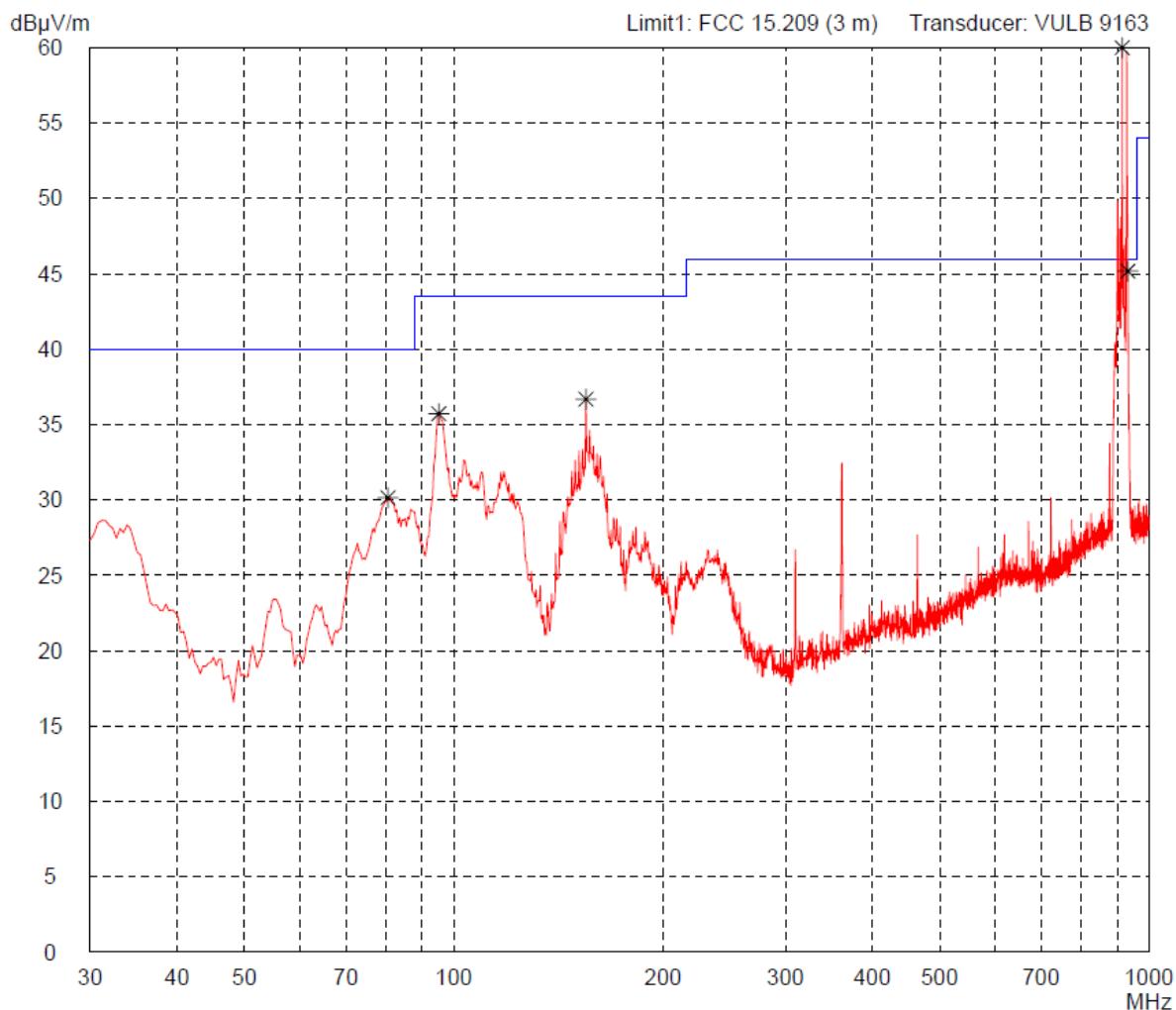
<b>Result:</b> Prescan	<b>Project file:</b> 14912-02340-3                      Page    of    Pages
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## Radiated Emission Test 30 MHz - 1 GHz acc. to FCC Part 15 Subpart C (FAR)

<p><b>Model:</b> RF630R with RF642A</p> <p><b>Serial no.:</b> --</p> <p><b>Applicant:</b> Siemens AG, Fürth</p> <p><b>Test site:</b> Fully anechoic room, cabin no. 2</p> <p><b>Tested on:</b> Test distance 3 metres Vertical Polarization</p> <p><b>Date of test:</b> 08/25/2010</p> <p><b>Operator:</b> T. Eberl</p> <p><b>Test performed:</b> automatically</p> <p><b>File name:</b> default.emi</p>	<p><b>Comment:</b></p> <ul style="list-style-type: none"> <li>- DC 24 V power supply with AC/DC adaptor</li> <li>- Transmitting continuously on single frequency</li> <li>- Frequency: 915.25 MHz</li> <li>- with notch-filter set to carrier frequency</li> </ul>
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<p><b>Detector:</b> Peak</p>	<p><b>List of values:</b> 10 dB Margin                      50 Subranges</p>
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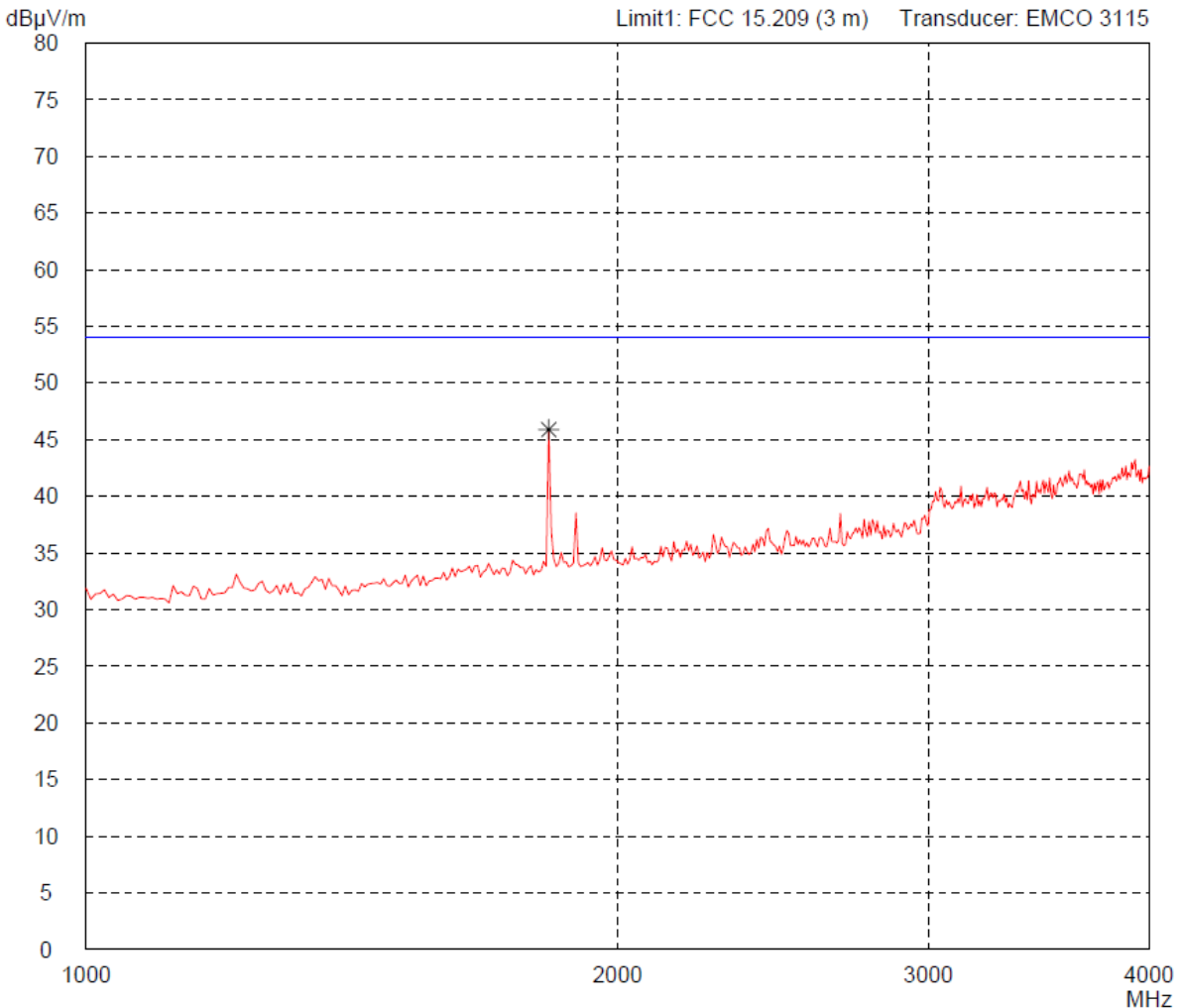


<p><b>Result:</b> Prescan</p>	<p><b>Project file:</b> 14912-02340-3</p> <p style="text-align: right;">Page    of    Pages</p>
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## Radiated Emission Test 1 GHz - 4 GHz acc. to FCC Part 15 Subpart C (FAR)

<p><b>Model:</b> RF630R with RF642A</p> <p><b>Serial no.:</b> --</p> <p><b>Applicant:</b> Siemens AG, Fürth</p> <p><b>Test site:</b> Fully anechoic room, cabin no. 2</p> <p><b>Tested on:</b> Test distance 3 metres Horizontal Polarization</p> <p><b>Date of test:</b> 08/25/2010      <b>Operator:</b> T. Eberl</p> <p><b>Test performed:</b> automatically      <b>File name:</b> default.emi</p>	<p><b>Comment:</b></p> <ul style="list-style-type: none"> <li>- DC 24 V power supply with AC/DC adaptor</li> <li>- Transmitting continuously on single frequency</li> <li>- Frequency: 915.25 MHz</li> <li>- with notch-filter set to carrier frequency</li> </ul>
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<b>Detector:</b> Peak	<b>List of values:</b> 10 dB Margin                      50 Subranges
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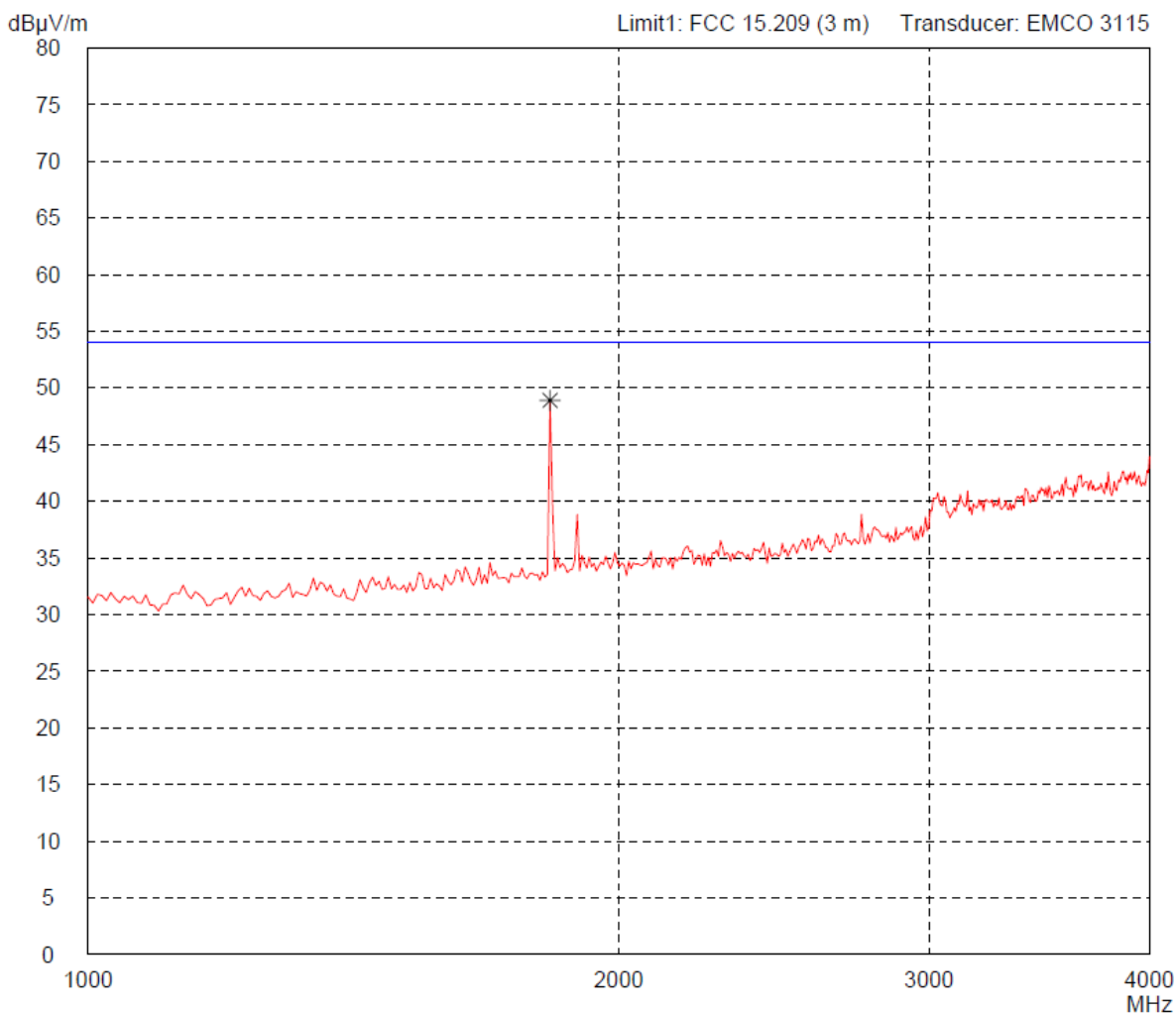


<b>Result:</b> Limit kept	<b>Project file:</b> 14912-02340-3                      Page    of    Pages
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## Radiated Emission Test 1 GHz - 4 GHz acc. to FCC Part 15 Subpart C (FAR)

<p><b>Model:</b> RF630R with RF642A</p> <p><b>Serial no.:</b> --</p> <p><b>Applicant:</b> Siemens AG, Fürth</p> <p><b>Test site:</b> Fully anechoic room, cabin no. 2</p> <p><b>Tested on:</b> Test distance 3 metres Vertical Polarization</p> <p><b>Date of test:</b> 08/25/2010      <b>Operator:</b> T. Eberl</p> <p><b>Test performed:</b> automatically      <b>File name:</b> default.emi</p>	<p><b>Comment:</b></p> <ul style="list-style-type: none"> <li>- DC 24 V power supply with AC/DC adaptor</li> <li>- Transmitting continuously on single frequency</li> <li>- Frequency: 915.25 MHz</li> <li>- with notch-filter set to carrier frequency</li> </ul>
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<p><b>Detector:</b> Peak</p>	<p><b>List of values:</b> 10 dB Margin                      50 Subranges</p>
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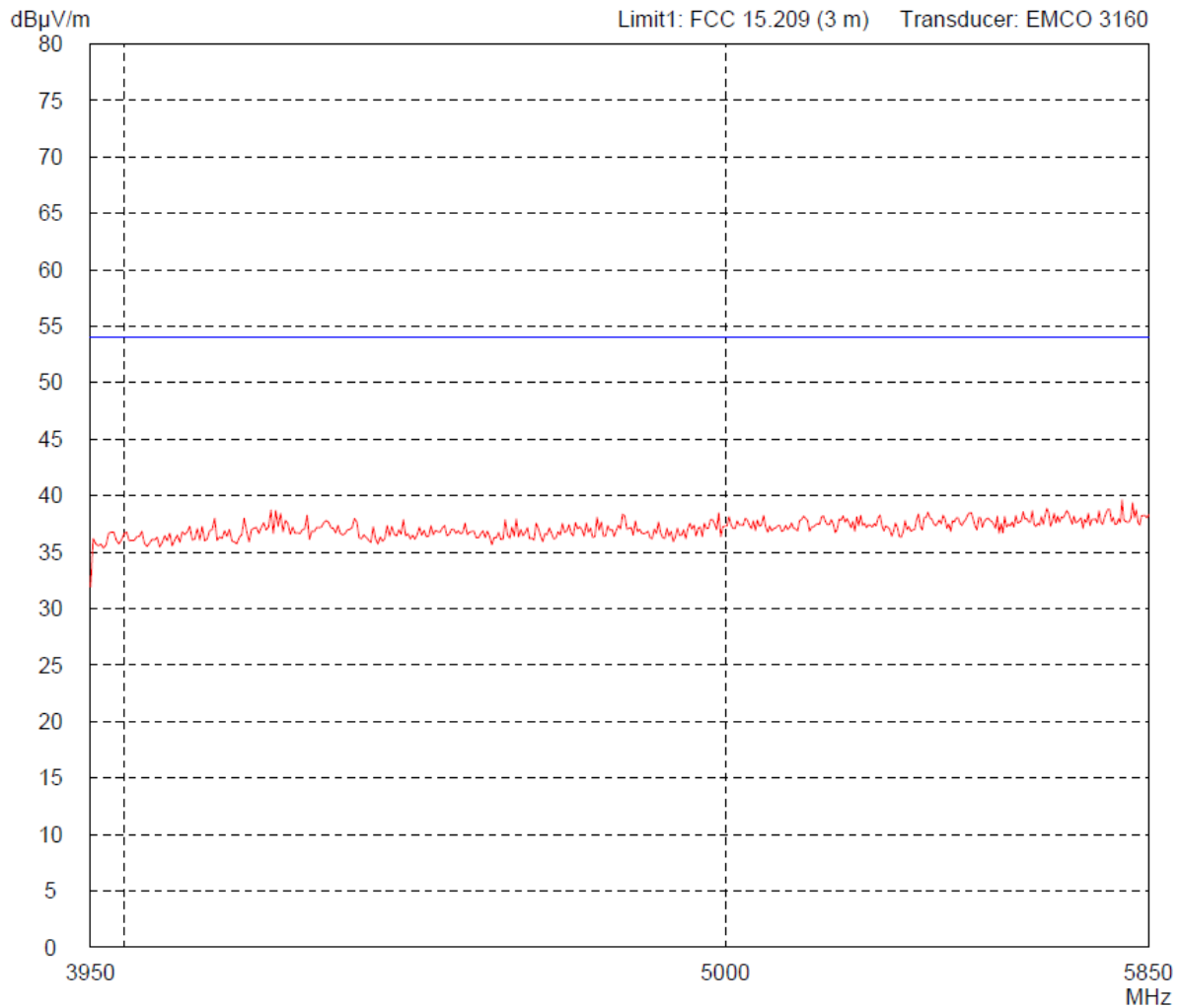


<p><b>Result:</b> Limit kept</p>	<p><b>Project file:</b> 14912-02340-3                      Page    of    Pages</p>
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## Radiated Emission Test 3.95 GHz - 5.85 GHz acc. to FCC Part 15 Subpart C (FAR)

<b>Model:</b> RF630R with RF642A	<b>Comment:</b>  - DC 24 V power supply with AC/DC adaptor  - Transmitting continuously on single frequency - Frequency: 915.25 MHz  - with notch-filter set to carrier frequency
<b>Serial no.:</b> --	
<b>Applicant:</b> Siemens AG, Fürth	
<b>Test site:</b> Fully anechoic room, cabin no. 2	
<b>Tested on:</b> Test distance 3 metres Horizontal Polarization	
<b>Date of test:</b> 08/25/2010 <b>Operator:</b> T. Eberl <b>Test performed:</b> automatically <b>File name:</b> default.emi	

<b>Detector:</b> Peak	<b>List of values:</b> 10 dB Margin                      50 Subranges
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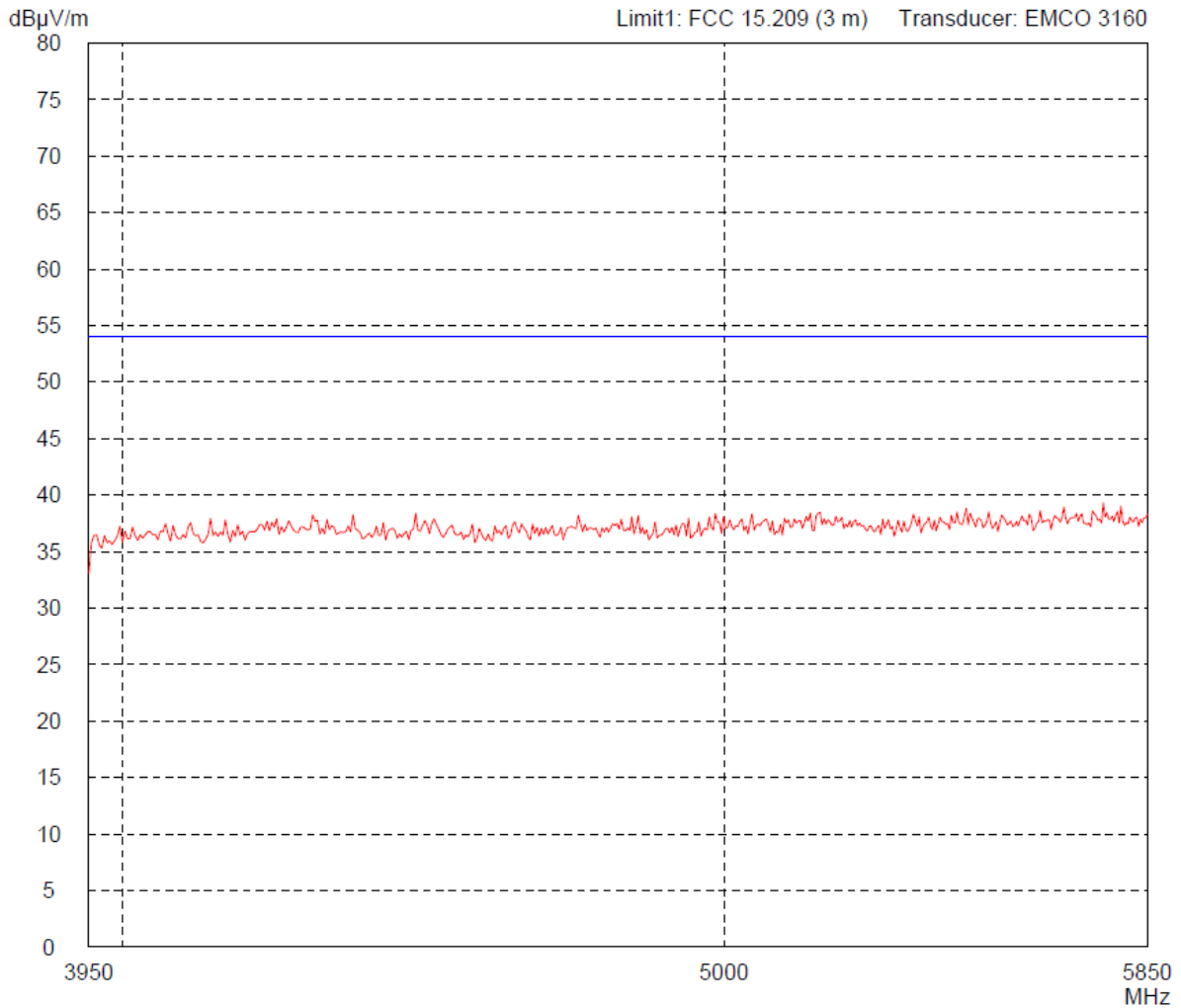


<b>Result:</b> Limit kept	<b>Project file:</b> 14912-02340-3                      Page    of    Pages
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**Radiated Emission Test 3.95 GHz - 5.85 GHz  
acc. to FCC Part 15 Subpart C (FAR)**

Model: RF630R with RF642A	Comment:  - DC 24 V power supply with AC/DC adaptor  - Transmitting continuously on single frequency - Frequency: 915.25 MHz
Serial no.: --	
Applicant: Siemens AG, Fürth	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 3 metres Vertical Polarization	
Date of test: 08/25/2010      Operator: T. Eberl	
Test performed: automatically      File name: default.emi	

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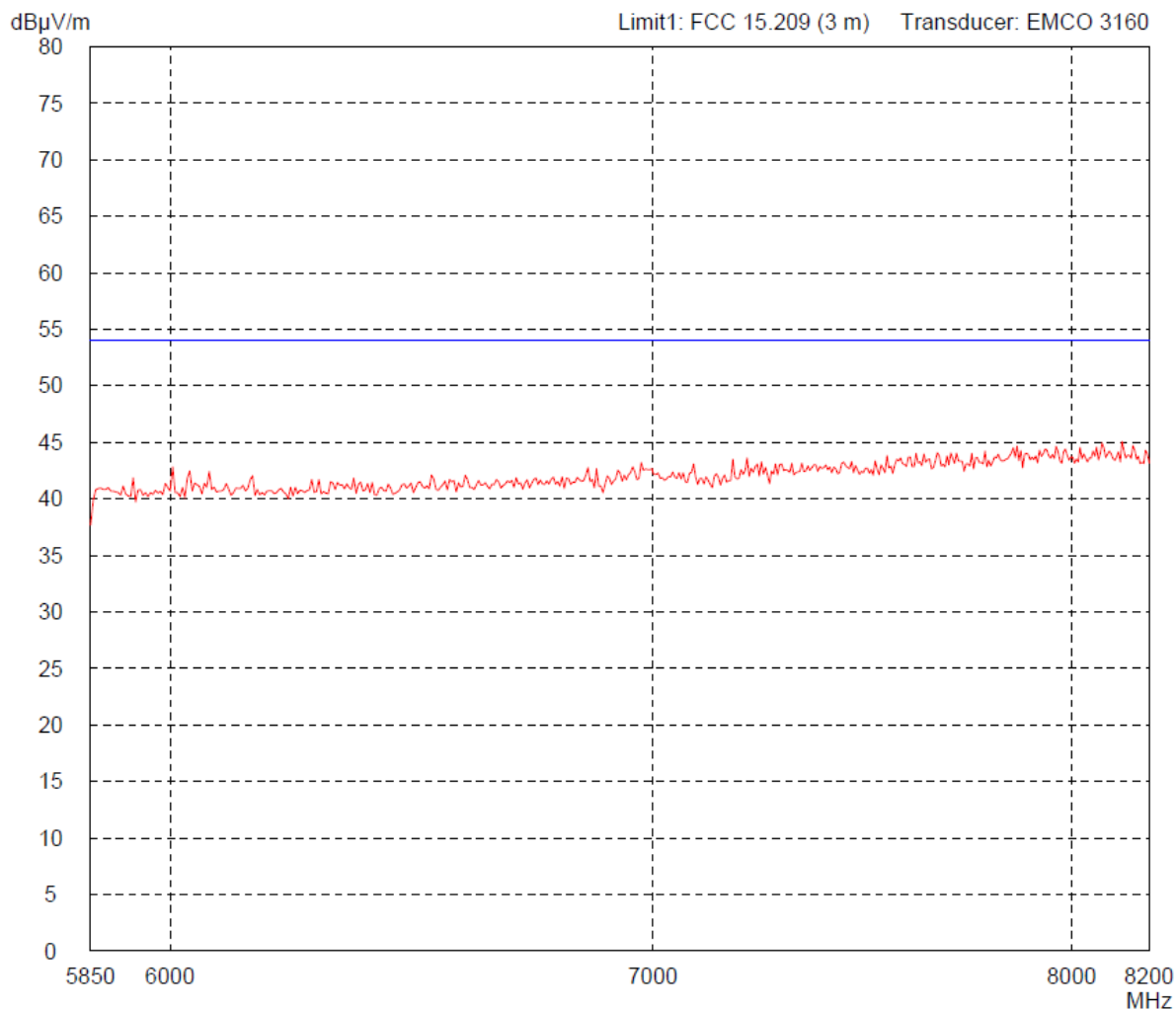


Result: Limit kept	Project file: 14912-02340-3	Page    of    Pages
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## Radiated Emission Test 5.85 GHz - 8.2 GHz acc. to FCC Part 15 Subpart C (FAR)

<p><b>Model:</b> RF630R with RF642A</p> <p><b>Serial no.:</b> --</p> <p><b>Applicant:</b> Siemens AG, Fürth</p> <p><b>Test site:</b> Fully anechoic room, cabin no. 2</p> <p><b>Tested on:</b> Test distance 3 metres Horizontal Polarization</p> <p><b>Date of test:</b> 08/25/2010      <b>Operator:</b> T. Eberl</p> <p><b>Test performed:</b> automatically      <b>File name:</b> default.emi</p>	<p><b>Comment:</b></p> <ul style="list-style-type: none"> <li>- DC 24 V power supply with AC/DC adaptor</li> <li>- Transmitting continuously on single frequency</li> <li>- Frequency: 915.25 MHz</li> </ul>
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<b>Detector:</b> Peak	<b>List of values:</b> Selected by hand
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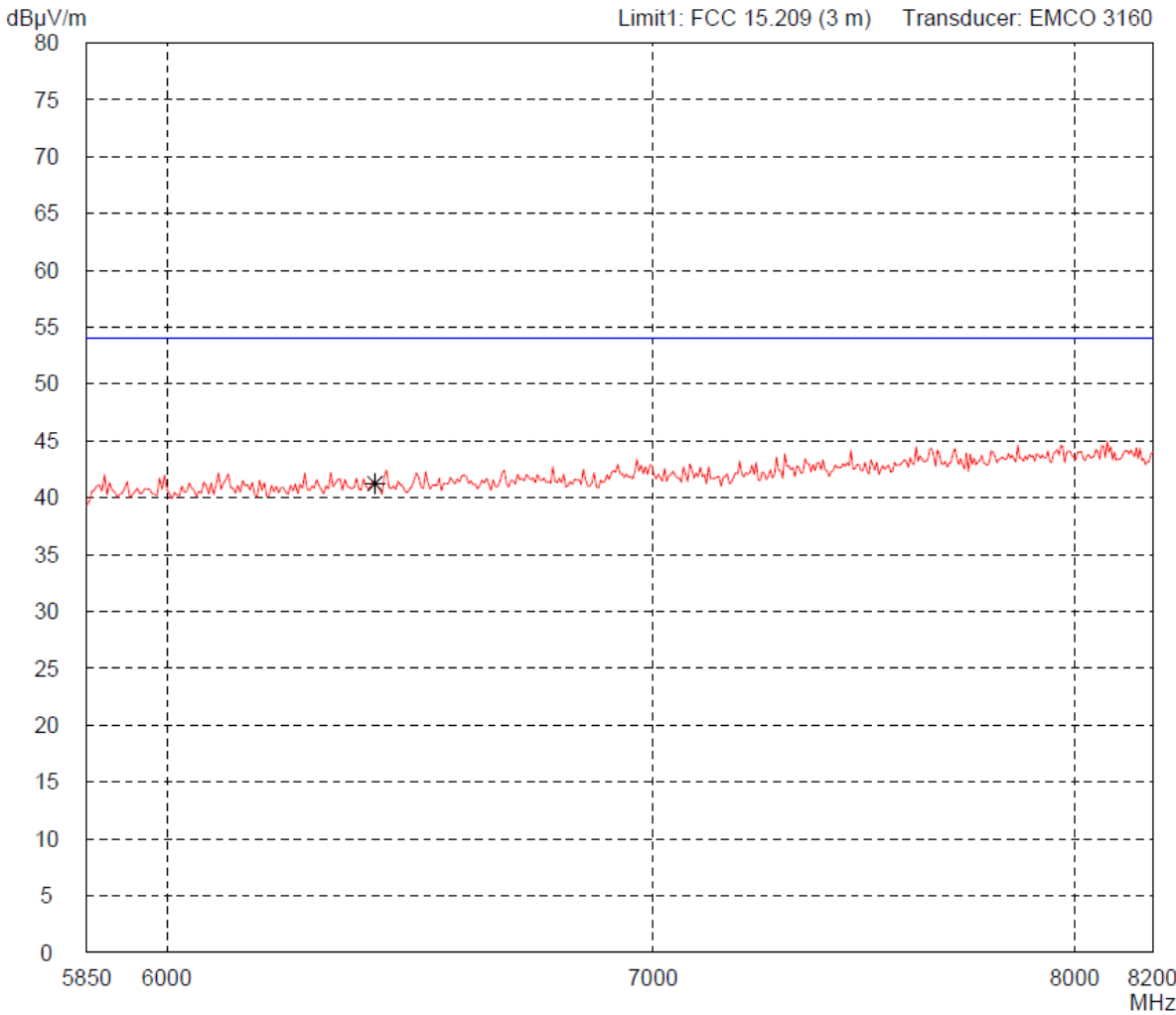


<b>Result:</b> Limit kept	<b>Project file:</b> 14912-02340-3      Page    of    Pages
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## Radiated Emission Test 5.85 GHz - 8.2 GHz acc. to FCC Part 15 Subpart C (FAR)

<b>Model:</b> RF630R with RF642A	<b>Comment:</b>  - DC 24 V power supply with AC/DC adaptor  - Transmitting continuously on single frequency - Frequency: 915.25 MHz
<b>Serial no.:</b> --	
<b>Applicant:</b> Siemens AG, Fürth	
<b>Test site:</b> Fully anechoic room, cabin no. 2	
<b>Tested on:</b> Test distance 3 metres Vertical Polarization	
<b>Date of test:</b> 08/25/2010 <b>Operator:</b> T. Eberl	
<b>Test performed:</b> automatically <b>File name:</b> default.emi	

<b>Detector:</b> Peak	<b>List of values:</b> Selected by hand
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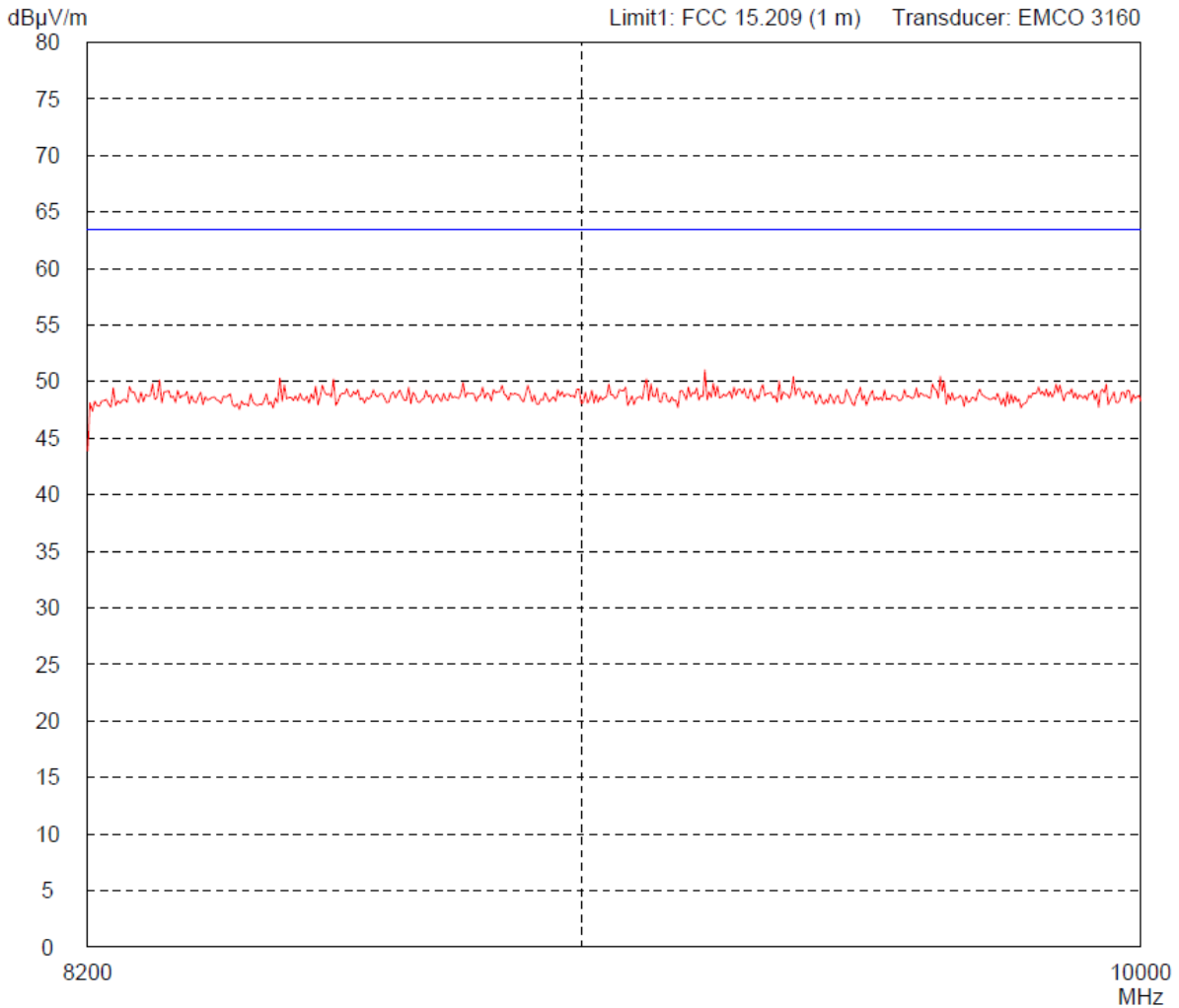


<b>Result:</b> Limit kept	<b>Project file:</b> 14912-02340-3
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**Radiated Emission Test 8.2 GHz - 10 GHz  
acc. to FCC Part 15 Subpart C (FAR)**

Model: RF630R with RF642A	Comment:  - DC 24 V power supply with AC/DC adaptor  - Transmitting continuously on single frequency - Frequency: 915.25 MHz
Serial no.: --	
Applicant: Siemens AG, Fürth	
Test site: Fully anechoic room, cabin no. 2	
Tested on: Test distance 1 meter Horizontal Polarization	
Date of test: 08/25/2010      Operator: T. Eberl	
Test performed: automatically      File name: default.emi	

Detector: Peak	List of values: 10 dB Margin      50 Subranges
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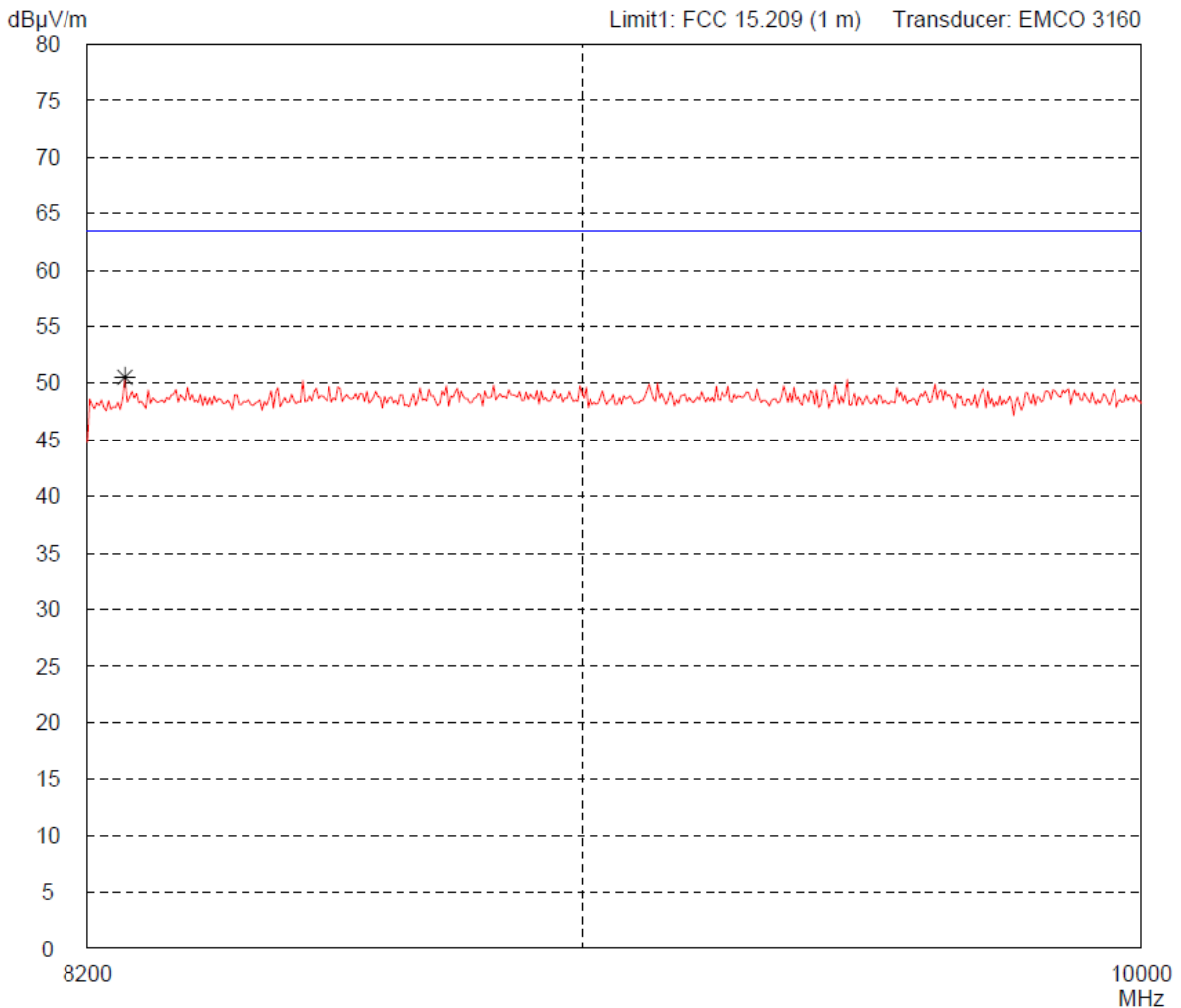
Result: Limit kept	Project file: 14912-02340-3	Page      of      Pages
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## Radiated Emission Test 8.2 GHz - 10 GHz acc. to FCC Part 15 Subpart C (FAR)

<p><b>Model:</b> RF630R with RF642A</p> <p><b>Serial no.:</b> --</p> <p><b>Applicant:</b> Siemens AG, Fürth</p> <p><b>Test site:</b> Fully anechoic room, cabin no. 2</p> <p><b>Tested on:</b> Test distance 1 meter Vertical Polarization</p> <p><b>Date of test:</b> 08/25/2010      <b>Operator:</b> T. Eberl</p> <p><b>Test performed:</b> automatically      <b>File name:</b> default.emi</p>	<p><b>Comment:</b></p> <ul style="list-style-type: none"> <li>- DC 24 V power supply with AC/DC adaptor</li> <li>- Transmitting continuously on single frequency</li> <li>- Frequency: 915.25 MHz</li> </ul>
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<p><b>Detector:</b> Peak</p>	<p><b>List of values:</b> Selected by hand</p>
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<p><b>Result:</b> Limit kept</p>	<p><b>Project file:</b> 14912-02340-3</p> <p style="text-align: right;">Page    of    Pages</p>
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