

FCC ID: NXW-RF290R

EMI - TEST REPORT

- FCC Part 15.225 -

Deutsche
Akkreditierungsstelle
D-PL-12030-01-01

Test Report No. :	T36422-00-02HU	29. November 2012 Date of issue
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Type / Model Name : SIMATIC RF290R**Product Description** : RF-Long-Range Reader with external Antenna**Applicant** : Siemens AGAddress : Gleiwitzer Str. 555D-90475 Nürnberg**Manufacturer** : Siemens AGAddress : Gleiwitzer Str. 555D-90475 Nürnberg**Licence holder** : Siemens AGAddress : Gleiwitzer Str. 555D-90475 Nürnberg

Test Result according to the standards listed in clause 1 test standards:	POSITIVE
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The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test
results without the written permission of the test laboratory.

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1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 15, Subpart A - General (October, 2012)

Part 15, Subpart A, Section 15.31	Measurement standards
Part 15, Subpart A, Section 15.33	Frequency range of radiated measurements
Part 15, Subpart A, Section 15.35	Measurement detector functions and bandwidths
Part 15, Subpart A, Section 15.38	Incorporation by reference

FCC Rules and Regulations Part 15, Subpart C - Intentional Radiators (October, 2012)

Part 15, Subpart C, Section 15.203	Antenna requirement
Part 15, Subpart C, Section 15.204	External radio frequency power amplifiers and antenna modifications
Part 15, Subpart C, Section 15.205	Restricted bands of operation
Part 15, Subpart C, Section 15.207	Conducted limits
Part 15, Subpart C, Section 15.209	Radiated emission limits, general requirements
Part 15, Subpart C, Section 15.215	Additional provisions to the general radiated emission limitations
Part 15, Subpart C, Section 15.225	Operation within the band 13.110 - 14.010 MHz

FCC Rules and Regulations Part 1, Subpart I - Procedures Implementing the National Environmental Policy Act of 1969

Part 1, Subpart I, Section 1.1310	Radiofrequency radiation exposure limits
Part 1, Subpart 2, Section 2.1093	Radiofrequency radiation exposure evaluation: portable device

OET Bulletin 65, 65A, 65B, 65C Edition 97-01, August 1997 – Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.

ANSI C63.4: 2009	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
ANSI C95.1:1992	IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
CISPR 16-4-2: 2003	Uncertainty in EMC measurement

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2 SUMMARY

GENERAL REMARKS:

The EuT is a RF-Long-Range Reader with external antenna which is working at 13.56 MHz.

The receiver is permanently co-located within the transmitter. Therefore the receive mode is to short and was tested together with the transmitter in operating mode.

Following antennas are provided with the RF290R:

- Antenna D5
- Antenna D6
- Antenna D10

For detailed information about the different antennas please refer to the user manual.

FINAL ASSESSMENT:

The equipment under test **fulfills** the EMI requirements cited in clause 1 test standards.

Date of receipt of test sample : acc. to storage records

Testing commenced on : 22. October 2012

Testing concluded on : 13. November 2012

Checked by:

Tested by:

Klaus Gegenfurtner
Dipl. Ing.(FH)
Manager: Radio Group

Markus Huber

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3 EQUIPMENT UNDER TEST

3.1 Photo documentation of the EUT – See attachment A

3.2 Power supply system utilised

Power supply voltage : 24.0 V / DC

3.3 Short description of the equipment under test (EUT)

The EUT is a RF-Long-Range Reader with external antenna. The reader is used for wireless identification of a variety of objects.

Number of tested samples: 1
Serial number: Prototype

EUT operation mode:

The equipment under test was operated during the measurement under the following conditions:

- Cont. tag reading mode at 13.56 MHz, Power setting: 5.0 W

- Standby

EUT configuration:

The following peripheral devices and interface cables were connected during the measurements:

- | | |
|-----------------------------------|---|
| - <u>Laptop and test software</u> | Model : <u>Supplied by manufacturer</u> |
| - <u>Test tag</u> | Model : <u>Supplied by manufacturer</u> |
| - <u>Power supply – DEUTRONIC</u> | Model : <u>ETC45-24, #9443010049, #0844</u> |

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4 TEST ENVIRONMENT

4.1 Address of the test laboratory

mikes-testingpartners gmbh
Ohmstrasse 2-4
94342 STRASSKIRCHEN
GERMANY

4.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature: 15-35 ° C

Humidity: 30-60 %

Atmospheric pressure: 86-106 kPa

4.3 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader may notice that tolerances within the calibration of the equipment and facilities may cause additional uncertainty. The measurement uncertainty is calculated for all measurements listed in this test report acc. to CISPR 16-4-2 „Uncertainties, statistics and limit modelling – Uncertainty in EMC measurement“ and documented in the mikes-testingpartners gmbh quality system acc. to DIN EN ISO/IEC 17025. For all measurements shown in this report, the measurement uncertainty of the test laboratory, mikes-testingpartners gmbh, is below the measurement uncertainty as defined by CISPR. Therefore, no special measures must be taken into consideration with regard to the limits according to CISPR. Furthermore, component diversity and modifications in production processes may result in additional deviation. If necessary, refer to the test lab for the actual measurement uncertainty for specific tests. The manufacturer has the sole responsibility of continued compliance of the EUT.

FCC ID: NXW-RF290R**4.1 Measurement Protocol for FCC, VCCI and AUSTEL****4.1.1 GENERAL INFORMATION****4.1.1.1 Test methodology**

Conducted and radiated disturbance testing is performed according to the procedures set out by the International Special Committee on Radio Interference (CISPR) Publication 22, European Standard EN 55022 as shown under section 1 of this report.

4.1.1.2 Justification

The equipment under test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral using the appropriate impedance characteristic or left unterminated. Where appropriate, cables are manually manipulated with respect to each other thus obtaining maximum disturbances from the unit.

4.1.2 DETAILS OF TEST PROCEDURES**General Standard information**

The test methods used comply with CISPR Publication 22, EN 55022 - "Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement" and with ANSI C63.4 - "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". In compliance with 47 CFR Part 15 Subpart A, Section 15.38 testing for FCC compliance may be achieved by following the procedures set out in ANSI C63.4 and applying the CISPR 22 limits.

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5 TEST CONDITIONS AND RESULTS

5.1 Conducted emissions

For test instruments and accessories used see section 6 Part A 4.

5.1.1 Description of the test location

Test location: Shielded Room S2

5.1.2 Photo documentation of the test set-up



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5.1.3 Applicable standard

According to FCC Part 15, Section 15.107(a):

Except for Class A devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the given limits.

5.1.4 Description of Measurement

The measurements are performed following the procedures set out in ANSI C63.4 described under item 4.4.3. If the minimum limit margin appears to be less than 20 dB with a peak mode measurement, the emissions are remeasured using a tuned receiver with quasi-peak and average detection and recorded on the data sheets.

5.1.5 Test result

Frequency range: 0.15 MHz - 30 MHz

Min. limit margin 4.1 dB at 0.485 MHz

Limit according to FCC Part 15, Section 15.107(a):

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

* Decreases with the logarithm of the frequency

The requirements are **FULFILLED**.

Remarks: For detailed test result please refer to following test protocols

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5.1.6 Test protocol

Test point: L1
 Operation mode: Tag reading mode
 Remarks: Power supply – DEUTRONIC
 ETC45-24, #9443010049, #0844
 Date: 31.10.2012
 Tested by: Huber Markus

Result: passed

Freq kHz	QP- L dB[μV]	D -Limit QP [dB]	Freq kHz	AV-L dB[μV]	D -Limit AV [dB]
160	50,7	14,8	160	43,2	12,3
200	36,8	26,8	240	31,5	20,6
245	37,8	24,1	320	25,7	24,0
290	28,5	32,0	405	29,6	18,2
405	31,9	25,9	485	39,7	6,6
485	41,9	14,4	565	36,6	9,4
565	38,5	17,5	810	22,7	23,3
725	30,1	25,9	970	29,5	16,5
970	31,9	24,1	1210	26,4	19,6
1210	30,5	25,5	1295	29	17,0
1295	31,9	24,1	1615	28,4	17,6
1695	30,6	25,4	2020	28,3	17,7
1940	31	25,0	2425	27,6	18,4
2425	30,7	25,3	3070	25,5	20,5
3395	31,4	24,6	3800	24,7	21,3

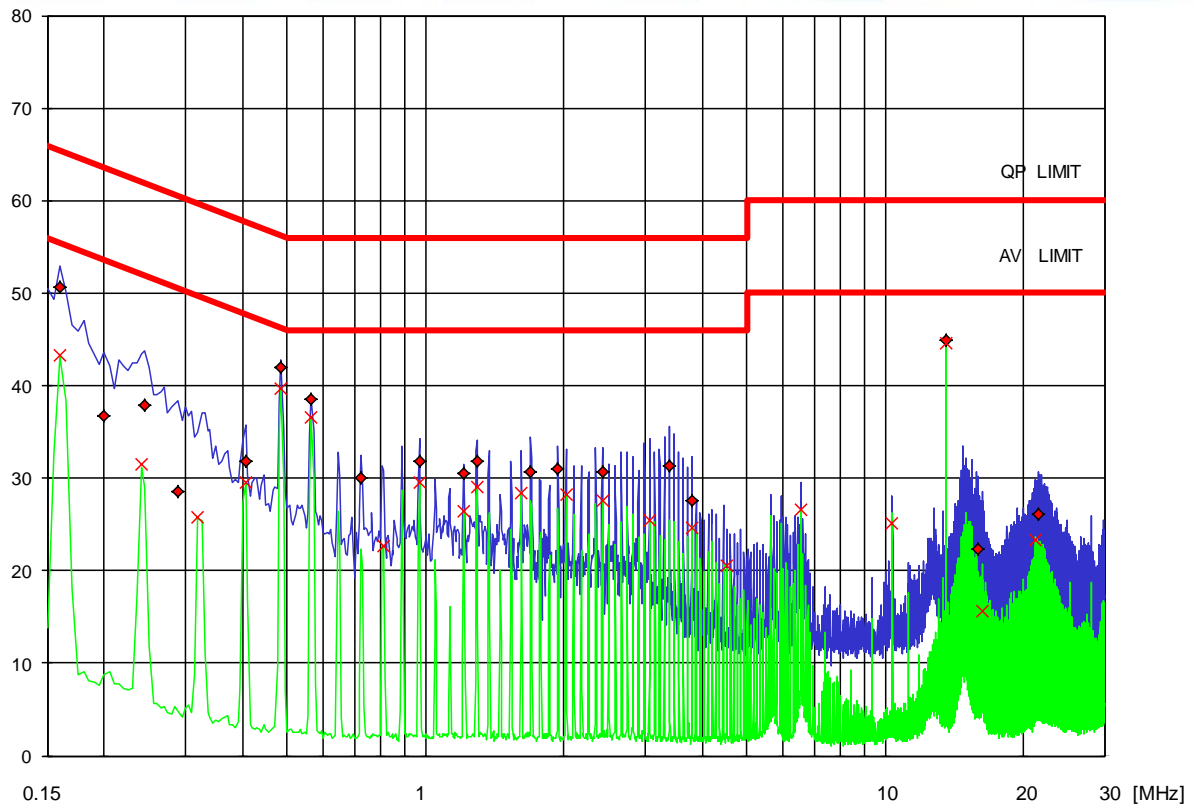
Freq kHz	QP- L dB[μV]	D -Limit QP [dB]	Freq kHz	AV-L dB[μV]	D -Limit AV [dB]
3800	27,6	28,4	4530	20,5	25,5
13560	44,9	15,1	6560	26,6	23,4
15935	22,4	37,6	10375	25,1	24,9
21520	26,1	33,9	13560	44,5	5,5
			16310	15,6	34,4
			21280	23,3	26,7

dB [μV]

Legend

PK: — AV: —

Detector: QP: ♦ AV: ×



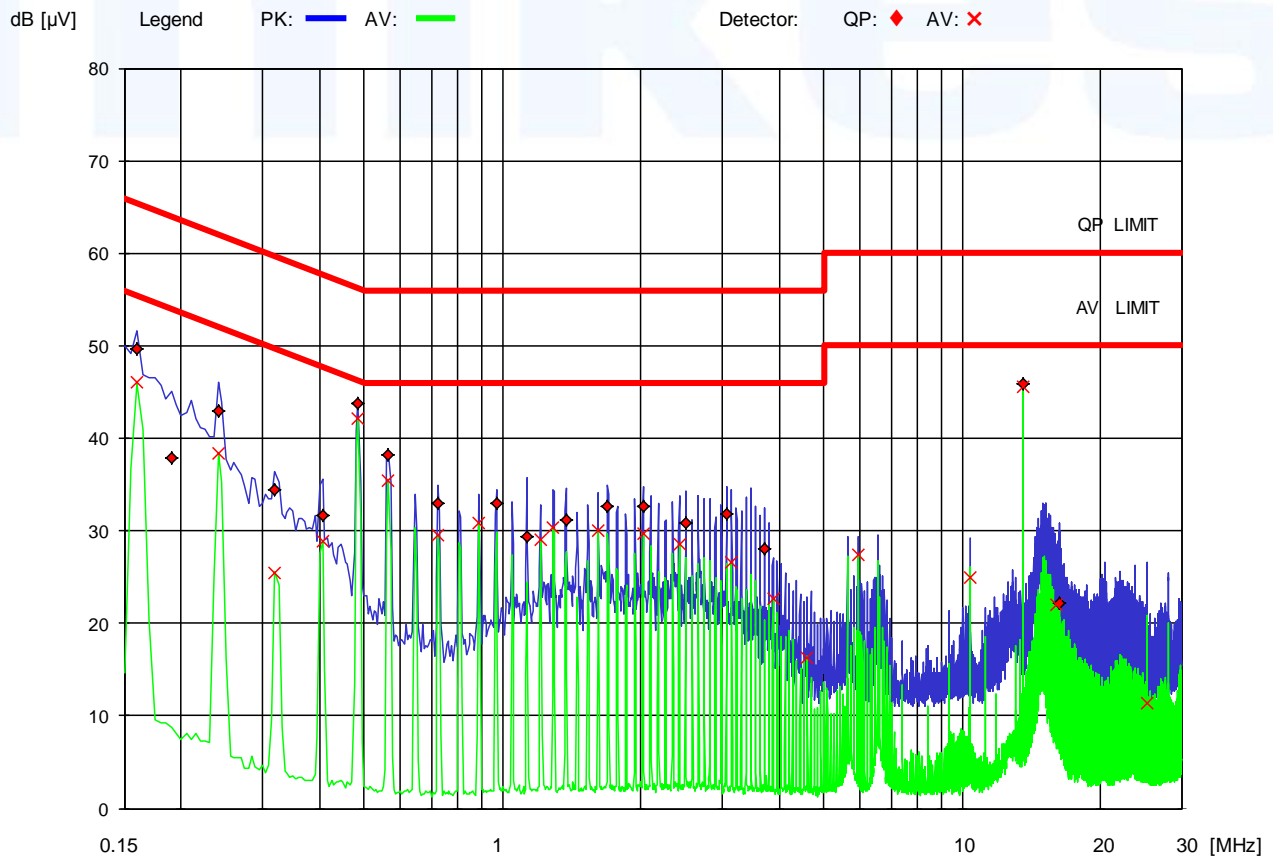
FCC ID: NXW-RF290R

Test point: N
 Operation mode: Tag reading mode
 Remarks: Power supply – DEUTRONIC
 ETC45-24, #9443010049, #0844
 Date: 31.10.2012
 Tested by: Huber Markus

Result: passed

Freq kHz	QP-L dB[μV]	D-Limit QP [dB]	Freq kHz	AV-L dB[μV]	D-Limit AV [dB]
160	49,6	15,9	160	46,1	9,4
190	37,8	26,2	240	38,3	13,8
240	42,9	19,2	320	25,5	24,2
320	34,5	25,2	405	28,8	19,0
405	31,6	26,2	485	42,2	4,1
485	43,8	12,5	565	35,5	10,5
565	38,2	17,8	725	29,6	16,4
725	33	23,0	890	30,8	15,2
970	32,9	23,1	1210	29,1	16,9
1130	29,3	26,7	1290	30,3	15,7
1375	31,2	24,8	1615	30,1	15,9
1695	32,6	23,4	2020	29,7	16,3
2020	32,7	23,3	2425	28,6	17,4
2505	30,8	25,2	3150	26,6	19,4
3070	31,8	24,2	3880	22,6	23,4

Freq kHz	QP-L dB[μV]	D-Limit QP [dB]	Freq kHz	AV-L dB[μV]	D-Limit AV [dB]
3715	28	28,0	4605	16,3	29,7
13560	45,9	14,1	5940	27,4	22,6
16245	22,1	37,9	10395	25	25,0
			13560	45,5	4,5
			16000	22	28,0
			25225	11,4	38,6



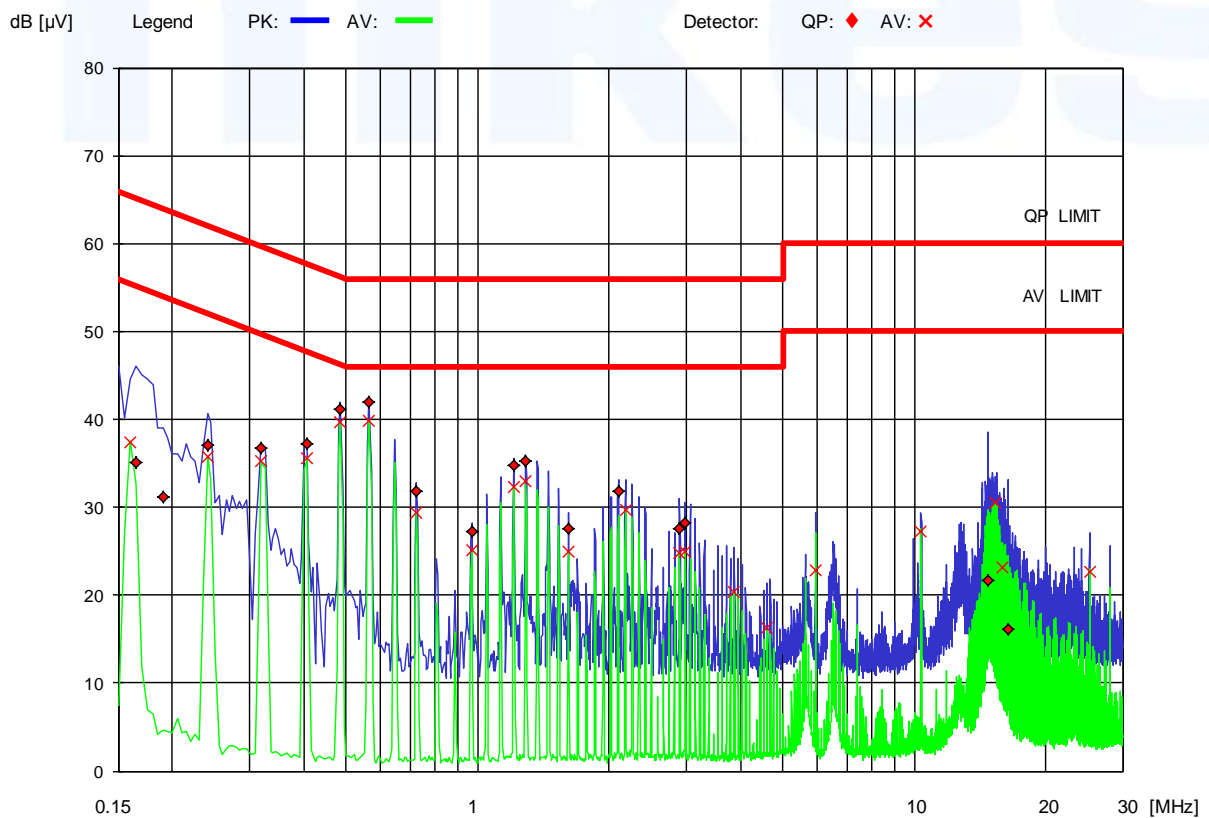
FCC ID: NXW-RF290R

Test point: N
 Operation mode: Standby mode
 Remarks: Power supply – DEUTRONIC
 ETC45-24, #9443010049, #0844
 Date: 31.10.2012
 Tested by: Huber Markus

Result: passed

Freq kHz	QP-L dB[μV]	D-Limit QP [dB]	Freq kHz	AV-L dB[μV]	D-Limit AV [dB]
165	35,1	30,1	160	37,4	18,1
190	31,1	32,9	240	35,7	16,4
240	37,1	25,0	320	35,2	14,5
320	36,7	23,0	405	35,6	12,2
405	37,2	20,6	485	39,6	6,7
485	41,2	15,1	565	39,9	6,1
565	41,9	14,1	725	29,4	16,6
725	31,8	24,2	970	25,1	20,9
970	27,3	28,7	1210	32,3	13,7
1210	34,7	21,3	1290	32,9	13,1
1290	35,3	20,7	1615	24,9	21,1
1615	27,6	28,4	2180	29,7	16,3
2100	31,9	24,1	2905	24,8	21,2
2905	27,6	28,4	2985	25	21,0
2985	28,2	27,8	3875	20,3	25,7

Freq kHz	QP-L dB[μV]	D-Limit QP [dB]	Freq kHz	AV-L dB[μV]	D-Limit AV [dB]
14720	21,7	38,3	4600	16,2	29,8
16425	16,1	43,9	5935	22,8	27,2
			10380	27,2	22,8
			15325	30,5	19,5
			15890	23,1	26,9
			25215	22,6	27,4



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5.2 Field strength of the fundamental wave

For test instruments and accessories used see section 6 Part CPR 1.

5.2.1 Description of the test location

Test location: OATS1

Test distance: 3 metres

5.2.2 Photo documentation of the test set-up



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5.2.3 Applicable standard

According to FCC Part 15, Section 15.225(a):

The field strength of any emission within the band 13.553 – 13.567 MHz shall not exceed 15848 $\mu\text{V/m}$ at 30 m.

5.2.4 Description of Measurement

The transmitted field strength of the EUT has to be measured at an open area test site using a tuned receiver and a shielded loop antenna. The set up of the equipment under test will be in accordance with ANSI C63.4. The measurement has been performed at 3 m. The results have been compared to the limits defined at 30 m distances according to FCC Part 15C, Section 15.31(f)(2) using an inverse linear distance extrapolation factor of 40 dB/decade. The final measurement has been performed with an EMI receiver using quasi peak detector and a resolution bandwidth of 9 kHz.

5.2.5 Test result

- Antenna D5:

a) Result at a measurement distance of 3m

Frequency (MHz)	Level (dB μV)	Ant. factor (dB 1/m)	Field strength dB($\mu\text{V/m}$)
13.56	90.6	20.0	110.6

b) Result extrapolated to a distance of 30 m

Frequency (MHz)	Level (dB μV)	Ant. factor (dB 1/m)	Field strength dB($\mu\text{V/m}$)	Limit dB($\mu\text{V/m}$)	Delta (dB)
13.56	50.6	20.0	70.6	84.0	-13.4

- Antenna D6:

a) Result at a measurement distance of 3m

Frequency (MHz)	Level (dB μV)	Ant. factor (dB 1/m)	Field strength dB($\mu\text{V/m}$)
13.56	98.2	20.0	118.2

b) Result extrapolated to a distance of 30 m

Frequency (MHz)	Level (dB μV)	Ant. factor (dB 1/m)	Field strength dB($\mu\text{V/m}$)	Limit dB($\mu\text{V/m}$)	Delta (dB)
13.56	58.2	20.0	78.2	84.0	-5.8

- Antenna D10:

a) Result at a measurement distance of 3m

Frequency (MHz)	Level (dB μV)	Ant. factor (dB 1/m)	Field strength dB($\mu\text{V/m}$)
13.56	101.2	20.0	121.2

b) Result extrapolated to a distance of 30 m

Frequency (MHz)	Level (dB μV)	Ant. factor (dB 1/m)	Field strength dB($\mu\text{V/m}$)	Limit dB($\mu\text{V/m}$)	Delta (dB)
13.56	61.2	20.0	81.2	84.0	-2.8

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Limit according to FCC Part 15, Section 15.225(a):

Frequency (MHz)	Field strength of fundamental wave		Measurement distance (metres)
	($\mu\text{V}/\text{m}$)	$\text{dB}(\mu\text{V}/\text{m})$	
13.553 - 13.567	15848	84.0	30

The requirements are **FULFILLED**.

Remarks: Test was performed which all antennas which are provide with the RF290R.
Test set-up pictures are for example to see how the test was performed.

mikes

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5.3 Spurious emissions

For test instruments and accessories used see section 6 Part SER 1, SER 2.

5.3.1 Description of the test location

Test location: OATS1

Test distance: 3 metres

5.3.2 Photo documentation of the test set-up



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5.3.3 Applicable standard

According to FCC Part 15C, Section 15.209:

The emissions from an intentional radiator shall not exceed the field strength levels specified in the table below.

5.3.4 Description of Measurement

The spurious emissions of the EUT have to be measured at an open area test site in the frequency range from 9 kHz to 1000 MHz using a tuned EMI receiver. The set up of the equipment under test will be in accordance with ANSI C63.4. The measurement has been performed at 3 m. The results have been compared to the limits defined at 30 m or 300 m distances according to FCC Part 15C, Section 15.31(f)(2) using an inverse linear distance extrapolation factor of 40 dB/decade. The final measurement has been performed with the EMI receiver using Quasi peak detector except for the frequency bands 9 kHz to 90 kHz and 110 to 490 kHz where an average detector will be used, according to Section 15.209(d).

The resolution bandwidth during the measurement is as follows:

9 kHz – 150 kHz:	RBW:	200 Hz
150 kHz – 30 MHz:	RBW:	9 kHz
30 MHz – 1000 MHz:	RBW:	120 kHz

5.3.5 Test result

Results at a measurement distance of 3m

Frequency (MHz)	Level AV (dB μ V)	Level QP (dB μ V)	Ant. factor (dB)	Field strength QP dB(μ V/m)	Field strength AV dB(μ V/m)	Limit dB(μ V/m)	Delta (dB)
0.009-0.090	---						
0.090-0.110		---					
0.110-0.490	---						
0.490 - 1.705		---					
1.705 - 30.0		---					
30 - 88		---					
88 - 216		---					

Limit according to FCC Part 15 Subpart 15.209(a):

Frequency (MHz)	Field strength of spurious emissions		Measurement distance (metres)
	(μ V/m)	dB(μ V/m)	
0.009 - 0.490	2400/F(kHz)	--	300
0.490 - 1.705	24000/F (kHz)	--	30
1.705 - 30.0	30	29.5	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

The requirements are **FULFILLED**.

Remarks: Measurement has been performed up to the 10th harmonic (135.6 MHz).

No undesired emissions occurred in the frequency range from 9 kHz up to 135.6 MHz

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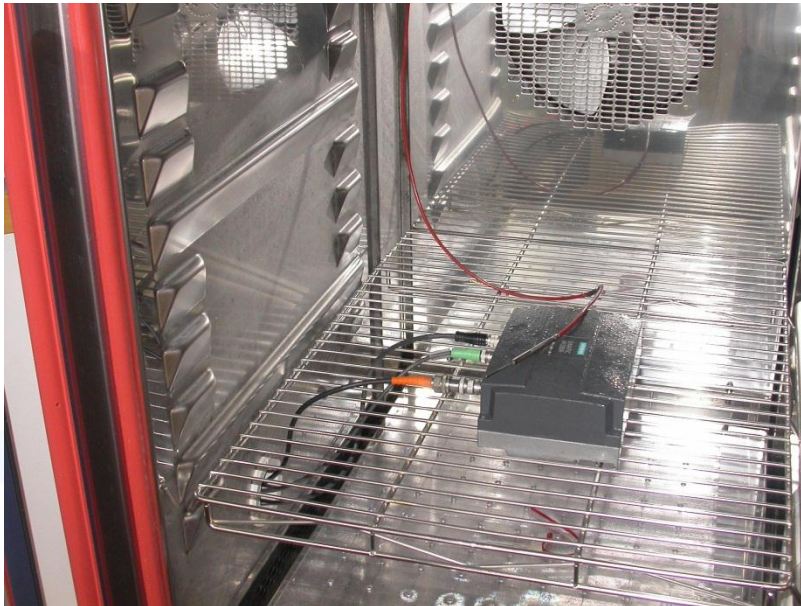
5.4 Frequency tolerance

For test instruments and accessories used see section 6 Part FE.

5.4.1 Description of the test location

Test location: AREA4 (Climatic Chamber)

5.4.2 Photo documentation of the test set-up



5.4.3 Applicable standard

According to FCC Part 15, Section 15.225(e):

The frequency tolerance of the carrier signal shall be maintained within ± 0.01 % of the operating frequency over a temperature range 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. For battery operated equipment, the equipment shall be performed using a new battery.

5.4.4 Description of Measurement

The frequency tolerance has been measured radiated using a spectrum analyser. The center frequency of the spectrum analyser has been set to the fundamental frequency. This is an alternative test method because the EuT can not be operated in un-modulated mode. The limit line was set to 10 dB below the carrier. The frequencies of the upper (f_U) and lower (f_L) points, where the displayed power envelope of the modulation including frequency drift is equal to the appropriate level, have been recorded. The centre frequency is calculated as $f_C = (f_U + f_L)/2$. The measurement has been performed at normal and extreme test conditions from -20 °C to $+50$ °C in steps of 10 degrees (According to FCC Part 2.1055).

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5.4.5 Test result

Test conditions		Test result
		Frequency (MHz)
$T_{min} (-20)^{\circ}\text{C}$	$V_{nom} (24.0 \text{ V})$	13.5601
$T (-10)^{\circ}\text{C}$	$V_{nom} (24.0 \text{ V})$	13.5601
$T (0)^{\circ}\text{C}$	$V_{nom} (24.0 \text{ V})$	13.5601
$T (10)^{\circ}\text{C}$	$V_{nom} (24.0 \text{ V})$	13.5598
$T_{nom} (20)^{\circ}\text{C}$	$V_{min} (20.4 \text{ V})$	13.5601
	$V_{nom} (24.0 \text{ V})$	13.5601
	$V_{max} (27.6 \text{ V})$	13.5601
$T (30)^{\circ}\text{C}$	$V_{nom} (24.0 \text{ V})$	13.5601
$T (40)^{\circ}\text{C}$	$V_{nom} (24.0 \text{ V})$	13.5600
$T_{max} (50)^{\circ}\text{C}$	$V_{nom} (24.0 \text{ V})$	13.5600
Measurement uncertainty		$\pm 10 \text{ Hz}$

Carrier frequency: $f_c = 13.56 \text{ MHz}$

Max. tolerance: $\pm 0.01 \% \text{ of } 13.56 \text{ MHz} = \pm 1.356 \text{ kHz}$

Lowest frequency: $f_l = 13.5598 \text{ MHz}$

Lowest tolerance: $f_l - f_c = -0.20 \text{ kHz} < -1.356 \text{ kHz}$

Limit according to FCC Part 15, Section 15.225(e):

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01 \%$ of the operating frequency.

The requirements are **FULFILLED**.

Remarks:

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5.5 20 dB Bandwidth

For test instruments and accessories used see section 6 Part MB.

5.5.1 Description of the test location

Test location: AREA4

5.5.2 Photo documentation of the test set-up



5.5.3 Applicable standard

According to FCC Part 15C, Section 15.215(c):

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in section 15.217 to 15.257, must be designed to ensure that the 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated 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.

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5.5.4 Description of Measurement

The frequency range has been measured radiated using a test fixture and a spectrum analyser. The limit line is set to 20 dB below the carrier. The frequency of the upper (F_H) and lower (F_L) points, where the displayed power envelope of the modulation including frequency drift is equal to the appropriate level, is recorded as the modulation bandwidth. The measurement has been performed at normal and extreme test conditions in modulated transmitting mode.

Spectrum analyzer settings:

RBW: 1 kHz
 VBW: 3 kHz
 Detector Peak

5.5.5 Test result

Carrier Frequency (MHz)	(F_L) (MHz)	(F_H) (MHz)	Bandwidth (kHz)	Limit (kHz)
13.56	13.5576	13.5625	4.9	14.0

Limit according to FCC Part 15C, Section 15.215(c):

Frequency band (MHz)	Limit 20 dB bandwidth (kHz)
13.553 - 13.567	14.0

The requirements are **FULFILLED**.

Remarks: For detailed test result please refer to following test protocol.

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5.5.6 Test protocol

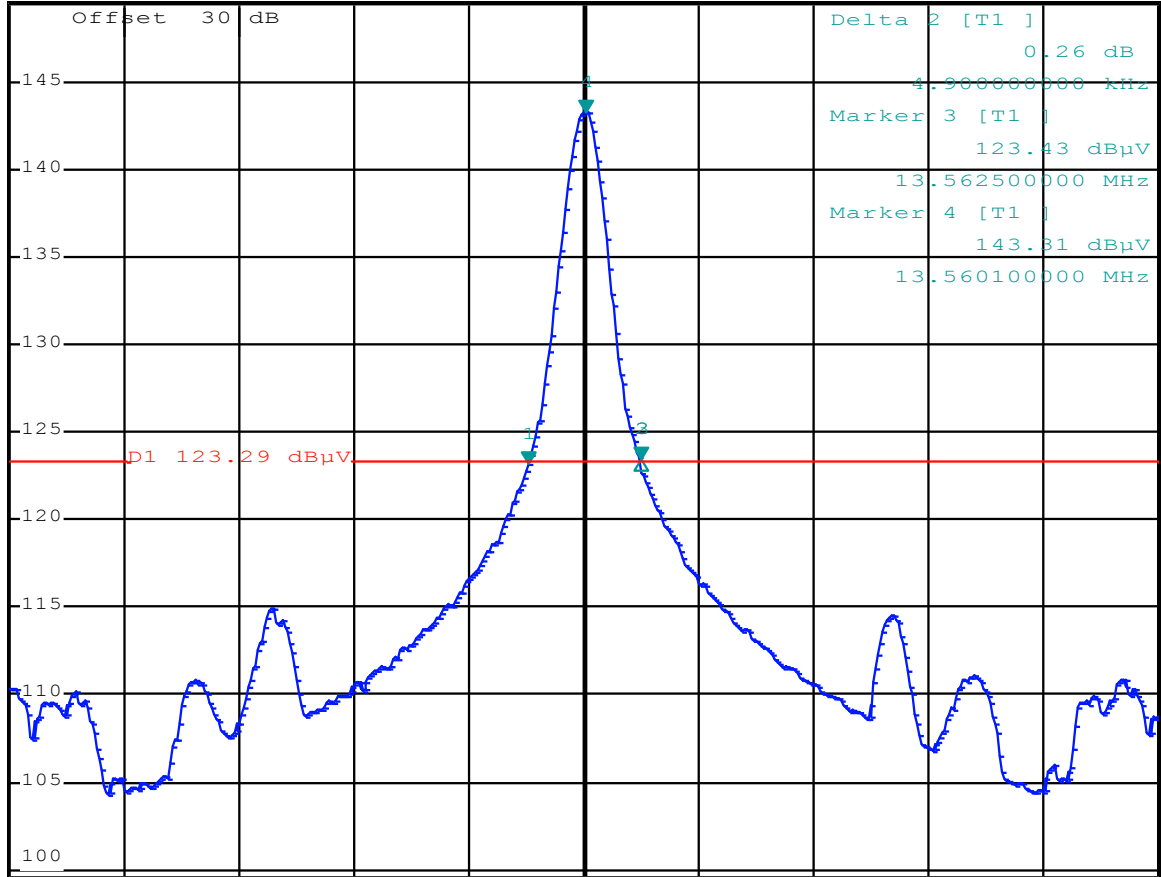


*RBW 1 kHz Marker 1 [T1]
 VBW 3 kHz 123.17 dBμV
 SWT 50 ms 13.557600000 MHz

Ref 149.5 dBμV

Att 45 dB

1 PK
 VIEW



Center 13.56 MHz

5 kHz/

Span 50 kHz

FCC ID: NXW-RF290R

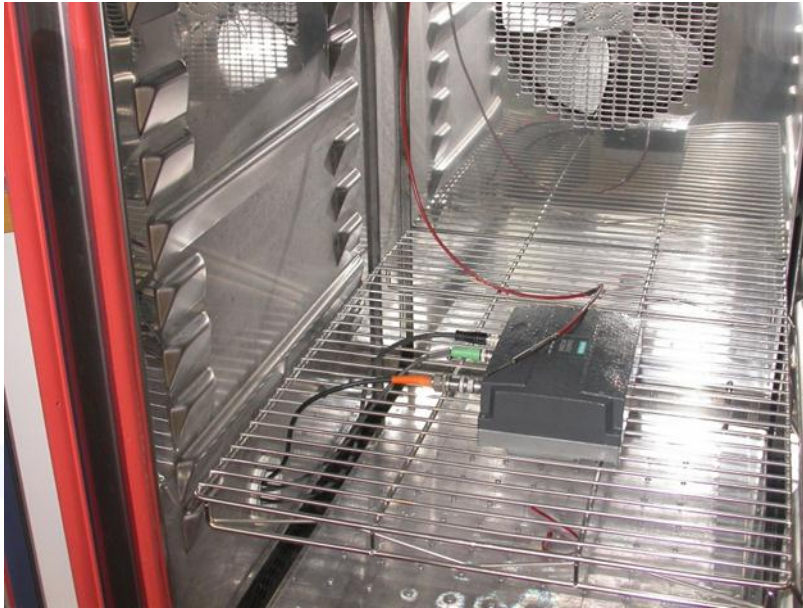
5.6 Transmitter spectrum mask

For test instruments and accessories used see section 6 Part MB.

5.6.1 Description of the test location

Test location: AREA4

5.6.2 Photo documentation of the test set-up



FCC ID: NXW-RF290R

5.6.3 Applicable standard

According to FCC Part 15C, Section 15.225 (a-d):

The field strength of any emission shall not exceed the limits given in FCC Part 15C, Section 15.225 (a-d)

5.6.4 Description of Measurement

The spectrum mask is measured using a spectrum analyser. The profile of the spectrum mask is displayed on analyser and have to be adjusted to the reference level given as maximum output power measured in OATS. The marker is set up manually to the particular maximum level at the effective limit in the frequency range and recorded. The measurement was performed radiated.

5.6.5 Test result

Frequency band (MHz)	Emission level (dB μ V/m)	Limit (dB μ V/m)
13.110 – 13.410	≤ 20	40.5
13.410 - 13.553	46.2	50.5
13.553 - 13.567	81.2	84.0
13.567 – 13.710	45.4	50.5
13.710 – 14.010	≤ 20	40.5
outside of 13.110 – 14.010	≤ 10	29.5

Limits according to FCC Part 15C, Section 15.225(a-d):

The absolute levels of RF power at any frequency shall not exceed the limits defined in the following table:

Frequency band (MHz)	Emission level limit at 30 m (μ V/m)
13.110 – 13.410	106
13.410 - 13.553	334
13.553 - 13.567	15,848
13.567 – 13.710	334
13.710 – 14.010	106
outside of 13.110 – 14.010	30

The requirements are **FULFILLED**.

Remarks:

FCC ID: NXW-RF290R

5.6.6 Test protocol

Spectrum mask of modulated signal

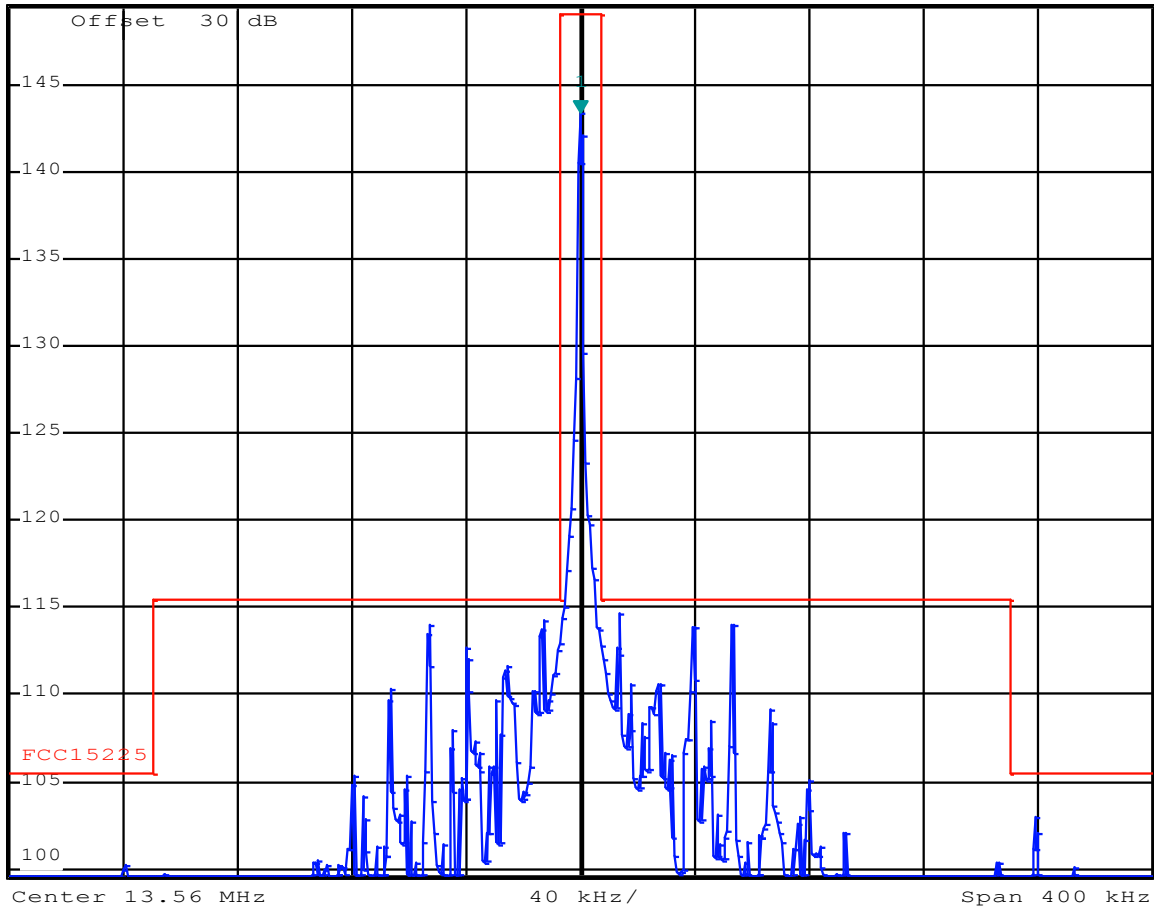


*RBW 1 kHz Marker 1 [T1]
 VBW 3 kHz 143.38 dBμV
 SWT 400 ms 13.560100000 MHz

Ref 149.5 dBμV

Att 45 dB

1 PK
VIEW



The values of the plot are extrapolated to a measurement distance of 3 m (Antenna D10).

FCC ID: NXW-RF290R

5.7 Receiver radiated emissions

5.7.1 Description of the test location

Test location: None

5.7.2 Applicable standard

According to FCC Part 15, Section 15.109(a):

The emission of an unintentional radiator shall not exceed the specified field strength level at 3 m.

Remarks: This test is not applicable. The receive mode is too short to make an assessment.

mikes

FCC ID: NXW-RF290R
6 USED TEST EQUIPMENT AND ACCESSORIES

All test instruments used are calibrated and verified regularly. The calibration history is available on request.

Test ID	Model Type	Equipment No.	Next Calib.	Last Calib.	Next Verif.	Last Verif.
A 4	ESHS 30	02-02/03-05-002	11/07/2013	11/07/2012		
	ESH 2 - Z 5	02-02/20-05-004	12/05/2013	12/05/2012	12/03/2013	12/09/2012
	N-4000-BNC	02-02/50-05-138				
	N-1500-N	02-02/50-05-140				
	ESH 3 - Z 2	02-02/50-05-155			02/04/2013	02/10/2012
	SP 103 /3.5-60	02-02/50-05-182				
CPR 1	FMZB 1516	01-02/24-01-018			16/02/2013	16/02/2012
	S10162-B	02-02/50-05-031				
	KK-EF393-21N-16	02-02/50-05-033				
	NW-2000-NB	02-02/50-05-113				
FE	ESCI	02-02/03-05-004	10/10/2013	10/10/2012		
	HZ-10	02-02/24-05-012				
	MetraHIT World	02-02/32-10-001	09/08/2013	09/08/2012		
	WK-340/40	02-02/45-05-001	31/05/2013	31/05/2012	09/02/2013	09/08/2012
	6543A	02-02/50-05-157				
MB	ESCI	02-02/03-05-004	10/10/2013	10/10/2012		
	HZ-10	02-02/24-05-012				
	MetraHIT World	02-02/32-10-001	09/08/2013	09/08/2012		
	WK-340/40	02-02/45-05-001	31/05/2013	31/05/2012	09/02/2013	09/08/2012
	6543A	02-02/50-05-157				
SER 1	FMZB 1516	01-02/24-01-018			16/02/2013	16/02/2012
	S10162-B	02-02/50-05-031				
	KK-EF393-21N-16	02-02/50-05-033				
	NW-2000-NB	02-02/50-05-113				
SER 2	ESVS 30	02-02/03-05-006	26/06/2013	26/06/2012		
	VULB 9168	02-02/24-05-005	16/03/2013	16/03/2012	08/04/2013	08/10/2012
	S10162-B	02-02/50-05-031				
	NW-2000-NB	02-02/50-05-113				
	KK-EF393/U-16N-21N_20m	02-02/50-12-018				