FCC ID: NDX-RIN1300

EMI -- T E S T R E P O R T

Test Report No. : **T30691-00-05HU**	24. August 2006 Date of issue

Type / Model Name : R-IN1301

Product Description : HF Long Range Reader (RFID)

Applicant : DATAMARS S.A.

Address : Via ai Prati

CH-6930 Bedano-Lugano

Manufacturer : DATAMARS S.A.

Address : Via ai Prati

CH-6930 Bedano-Lugano

Licence holder : DATAMARS S.A.

Address : Via ai Prati

CH-6930 Bedano-Lugano

Test Result according to the standards listed in clause 1 test standards:	**POSITIVE**

Deutscher Akkreditierungs Rat
DAR
DAT-P-207/05-00

Contents

1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 15 Subpart C- Intentional Radiators (October 01, 2005)

Part 15, Subpart C, Section 15.225	Operation within the band 13.110-14.010 MHz
Part 15, Subpart C, Section 15.209(a)	Radiated emissions, general requirements
Part 15, Subpart C, Section 15.207(a)	AC Line conducted emissions

2 SUMMARY

GENERAL REMARKS:

The EuT is working at frequency of 13.56 MHz.

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 : 18. April 2006

Testing concluded on : 09. August 2006

Checked by:

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

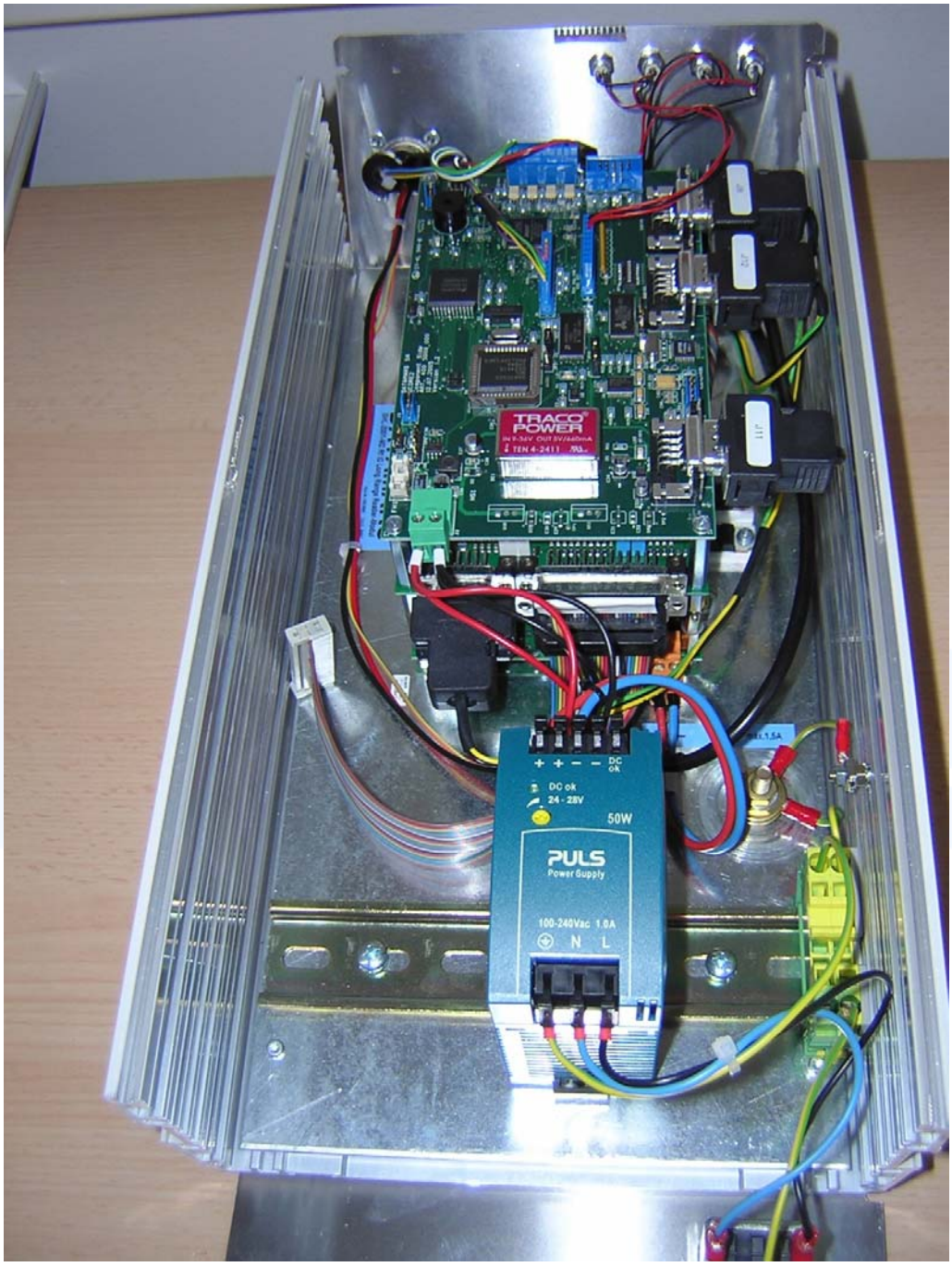
Tested by:

Markus Huber

3 EQUIPMENT UNDER TEST

3.1 Photo documentation of the EuT


DATAMARS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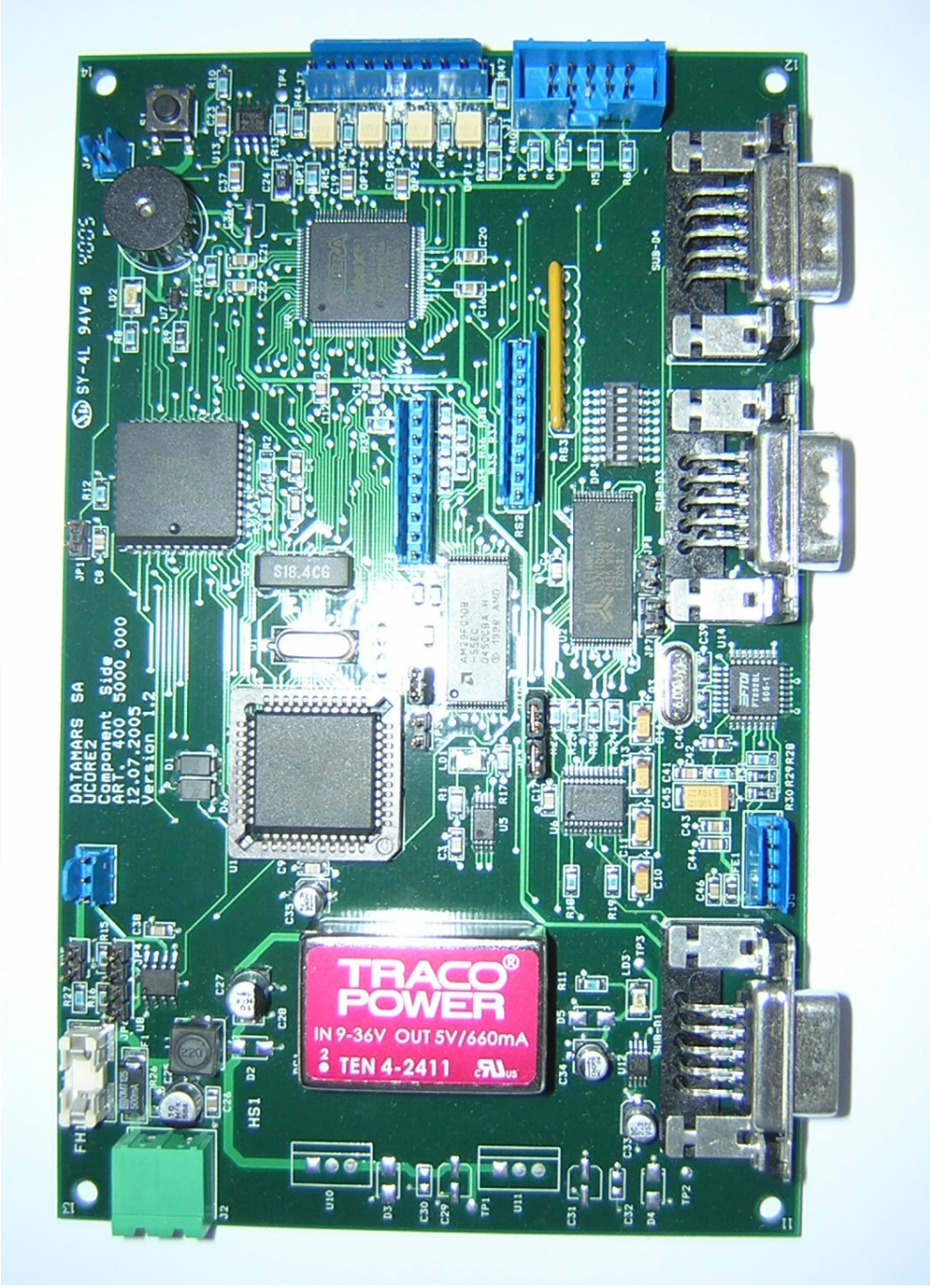
50W
PULS
Power Supply
100-240Vac 1.0A
N L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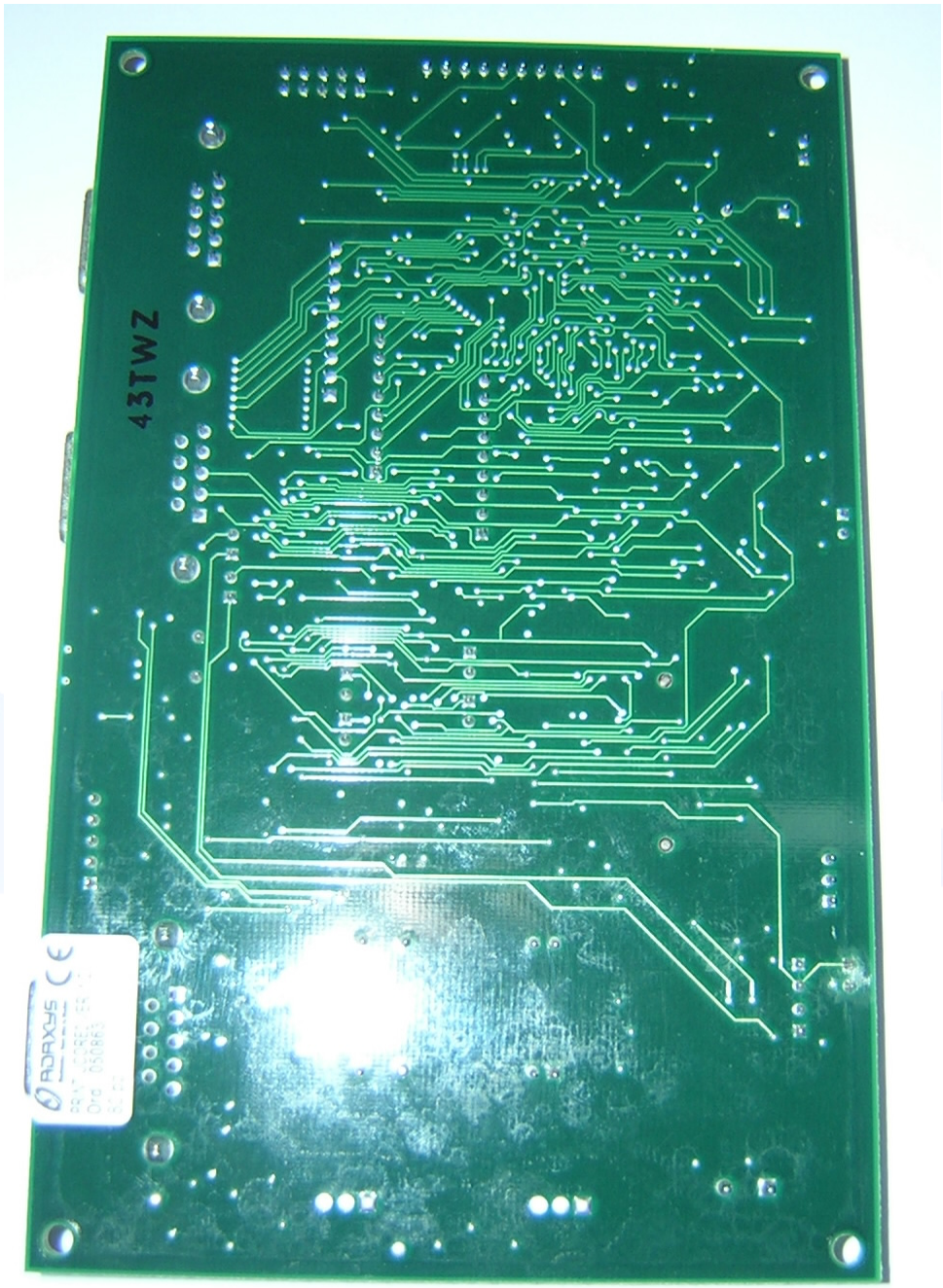
UCORE2
Component Side
ART. 400 5000_000
12.07.2005
Version 1.2
TRACO POWER
IN 9-36V OUT 5V/660mA
TEN 4-2411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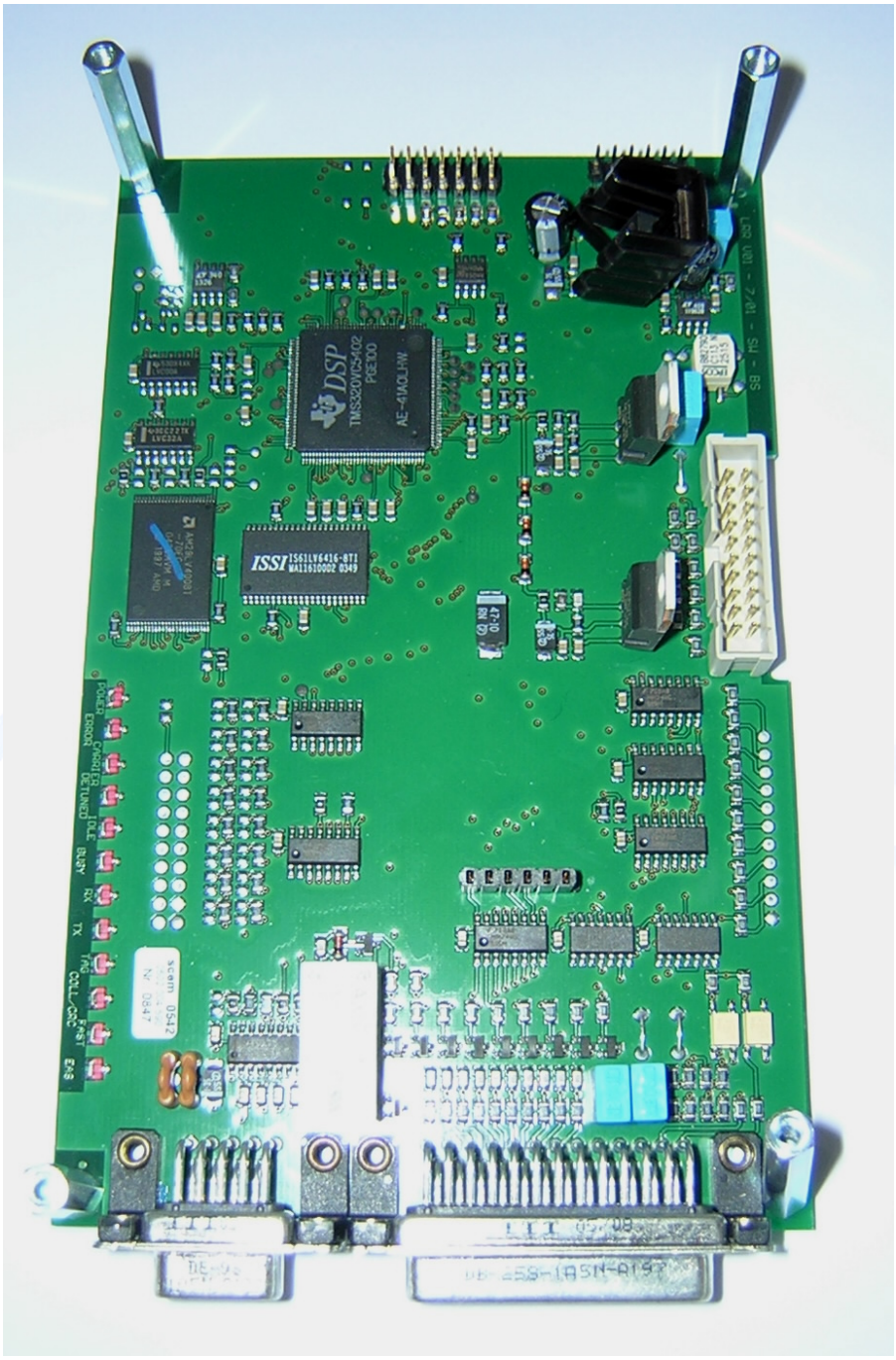
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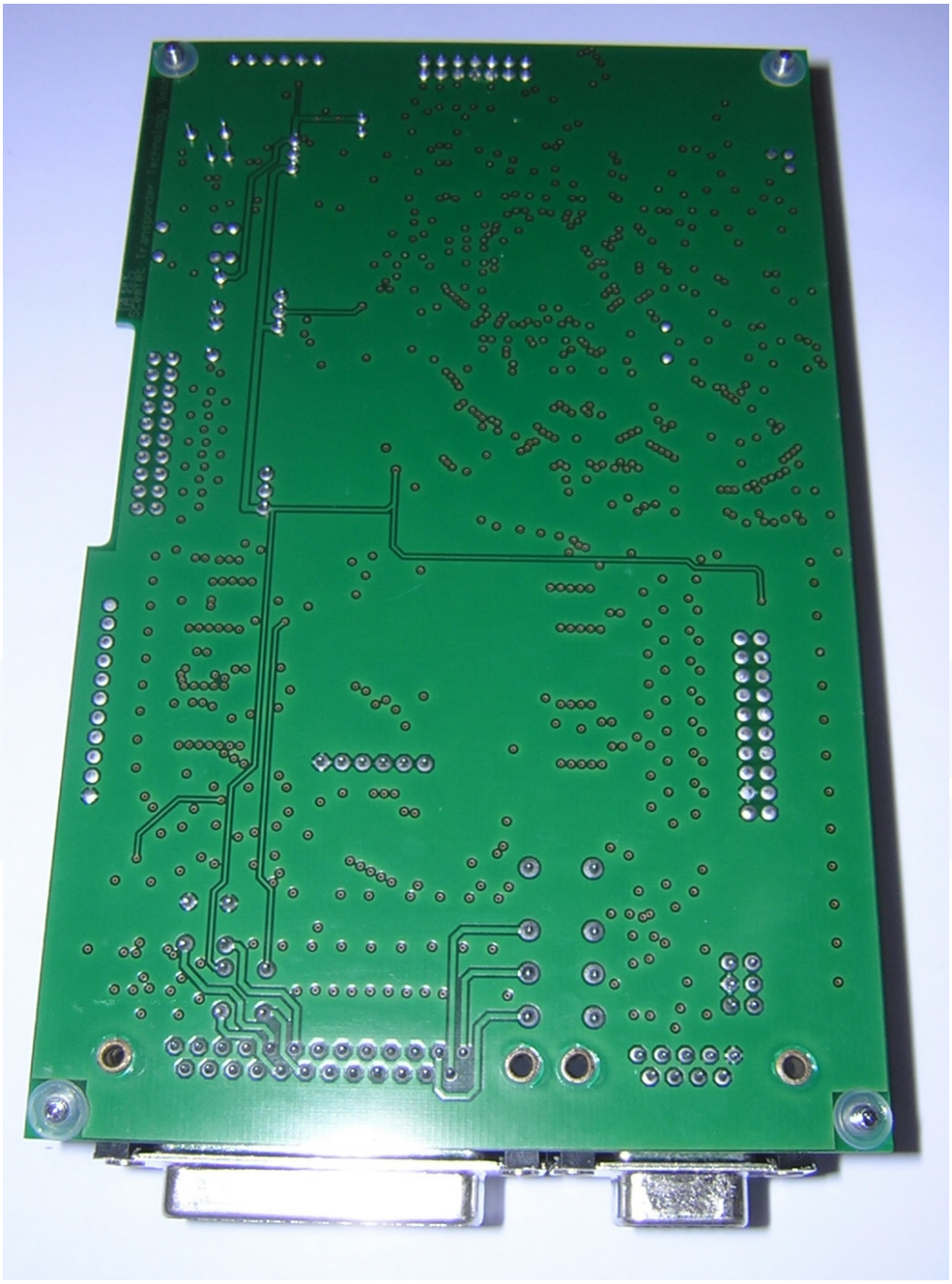
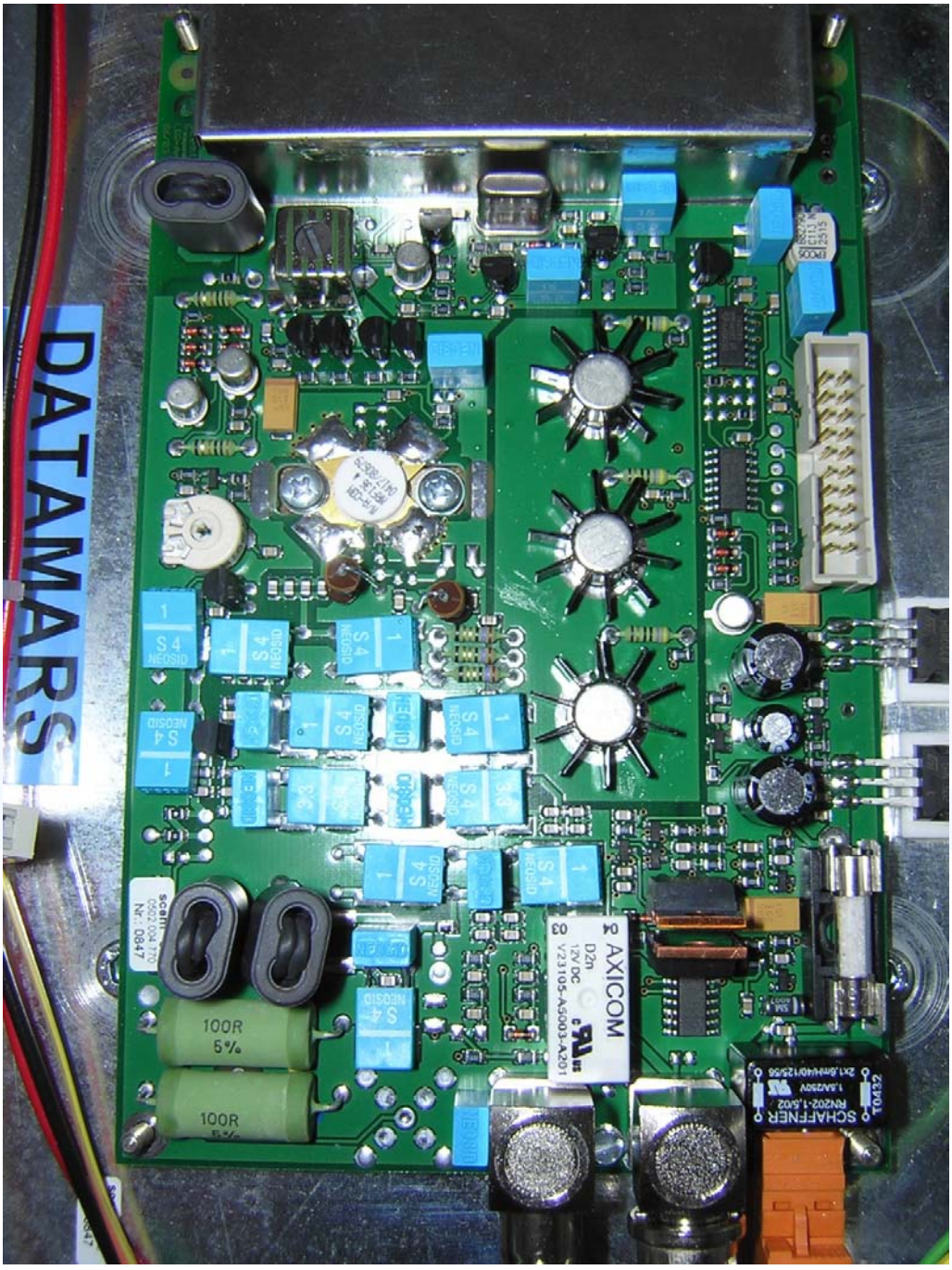
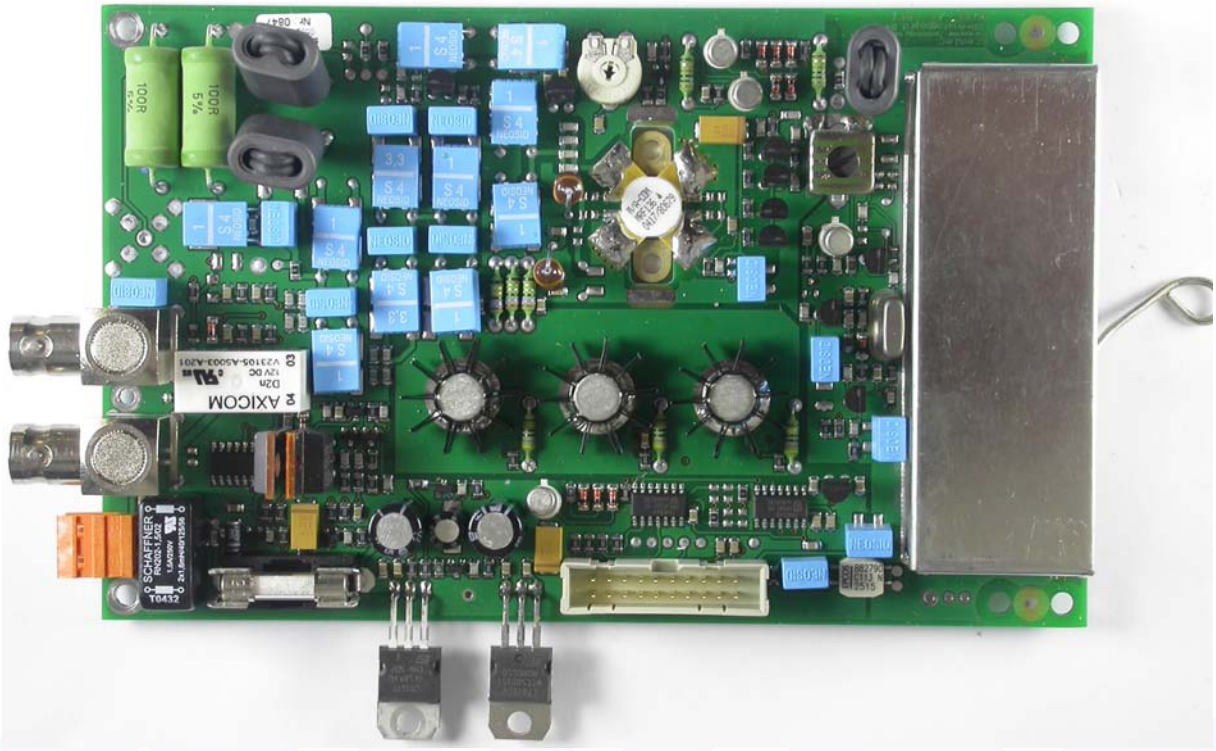



DATAMARS
AXICOM
SCHAFFNER
100R
5%
100R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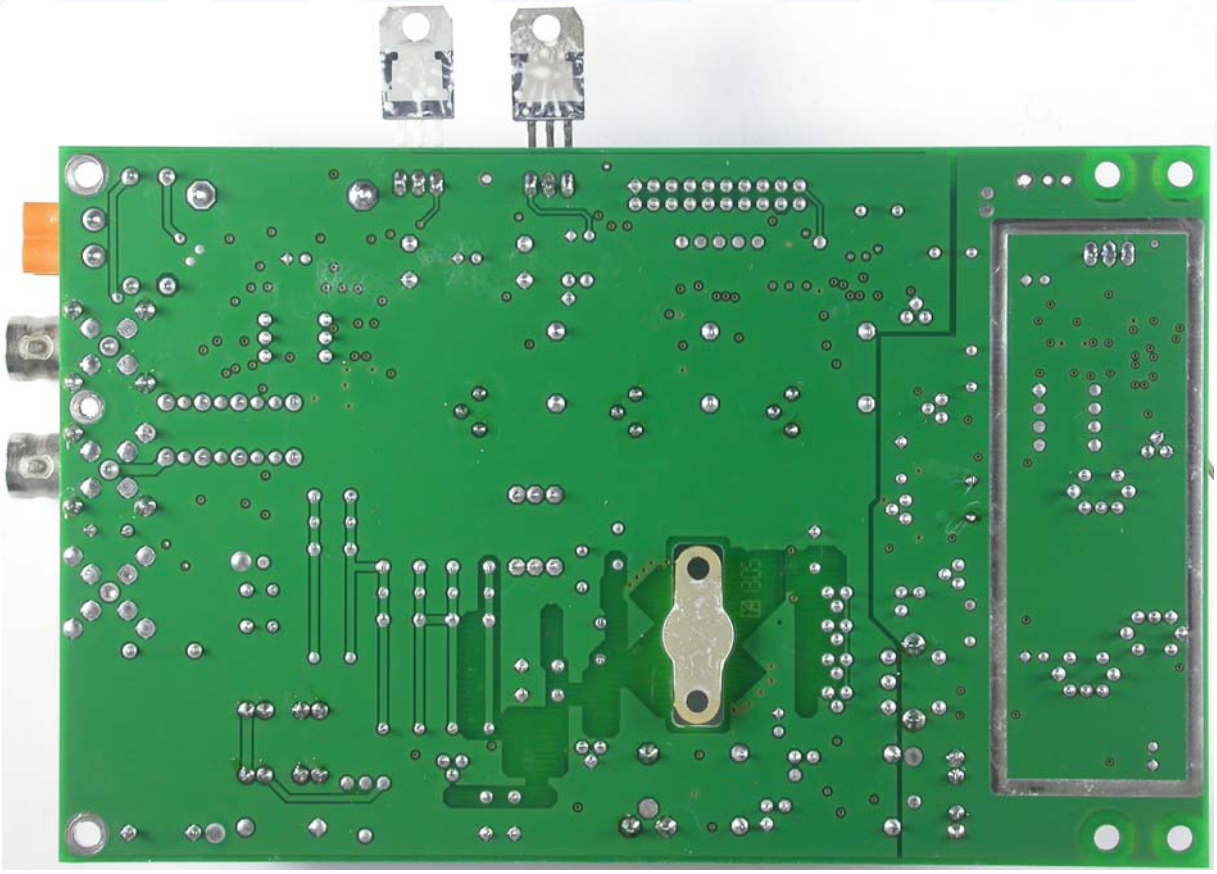

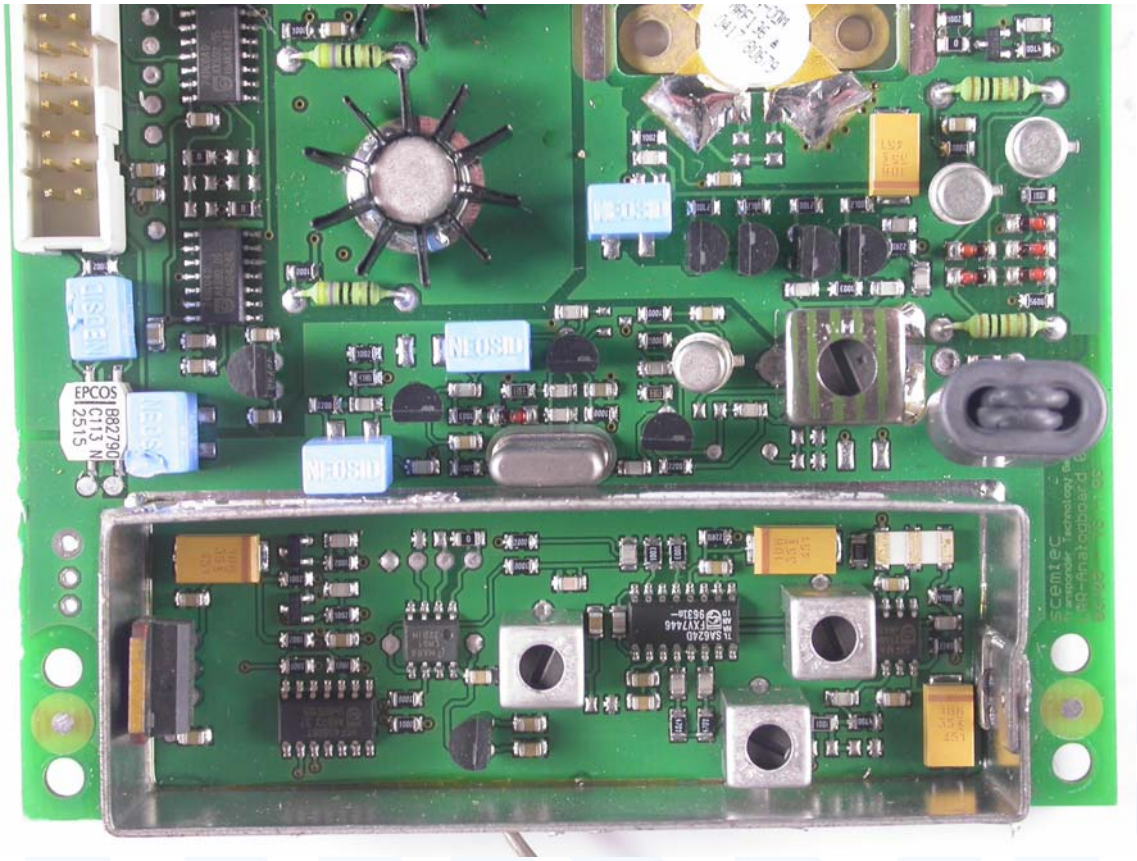
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2515
NEOSID
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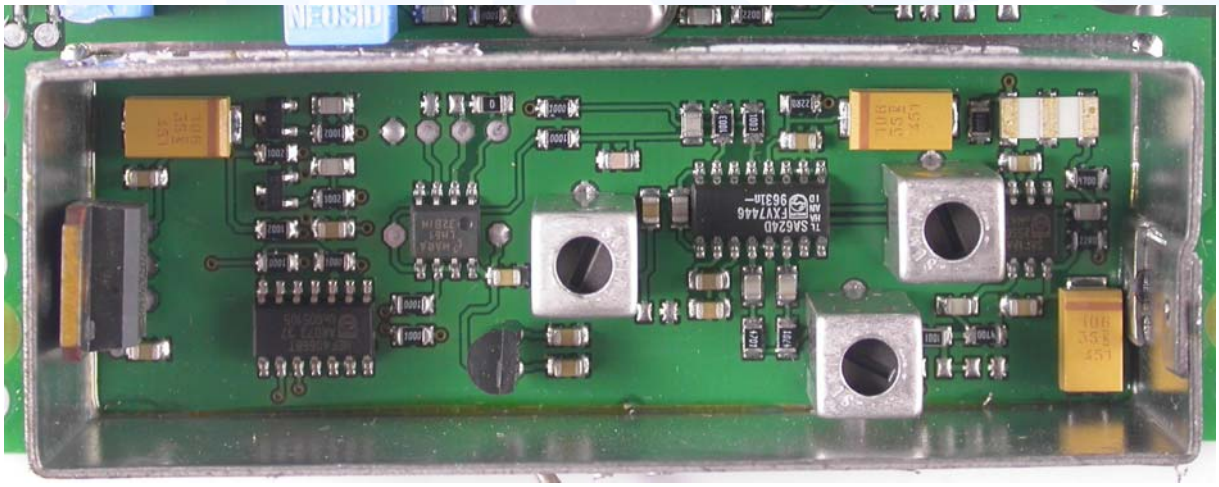
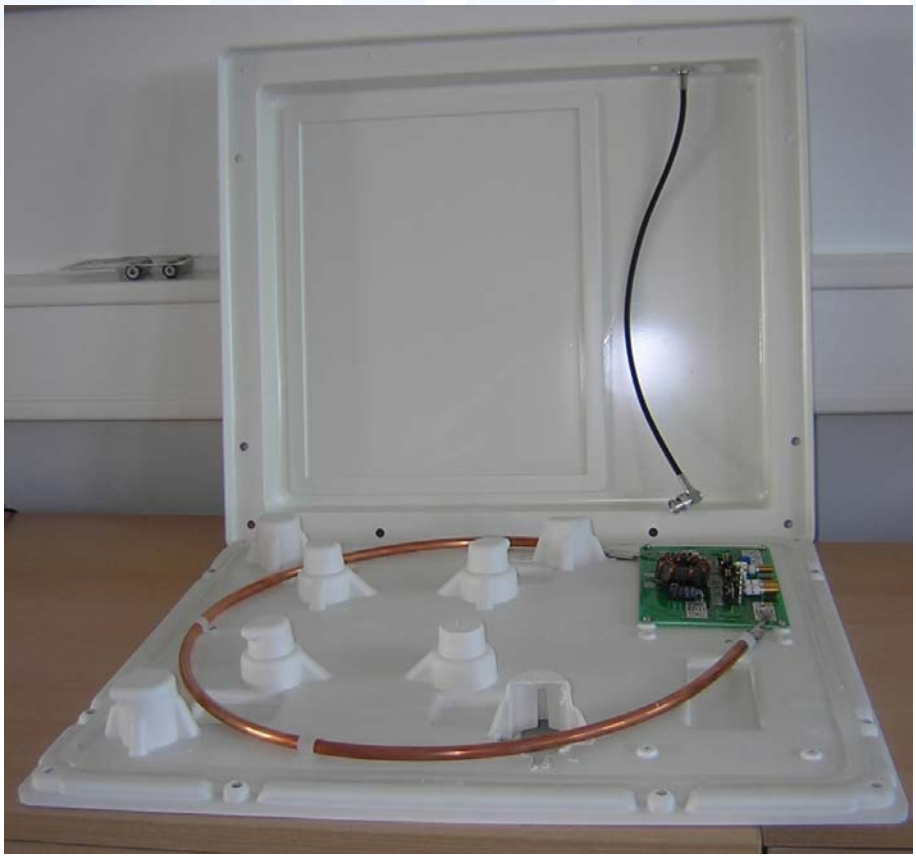
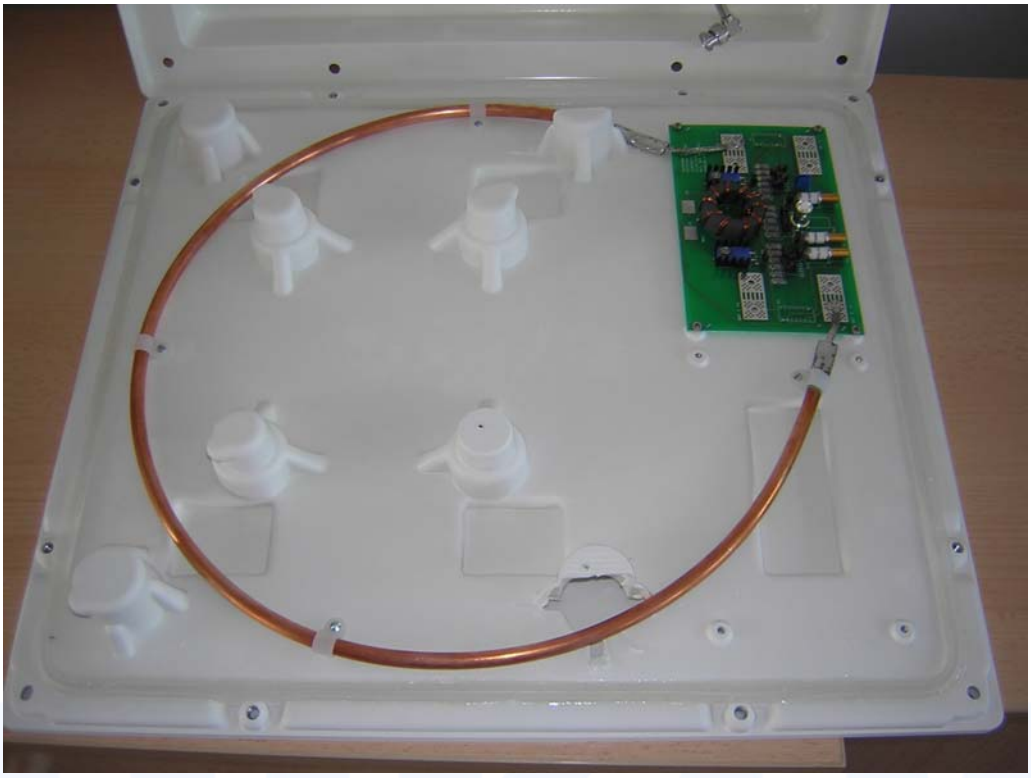
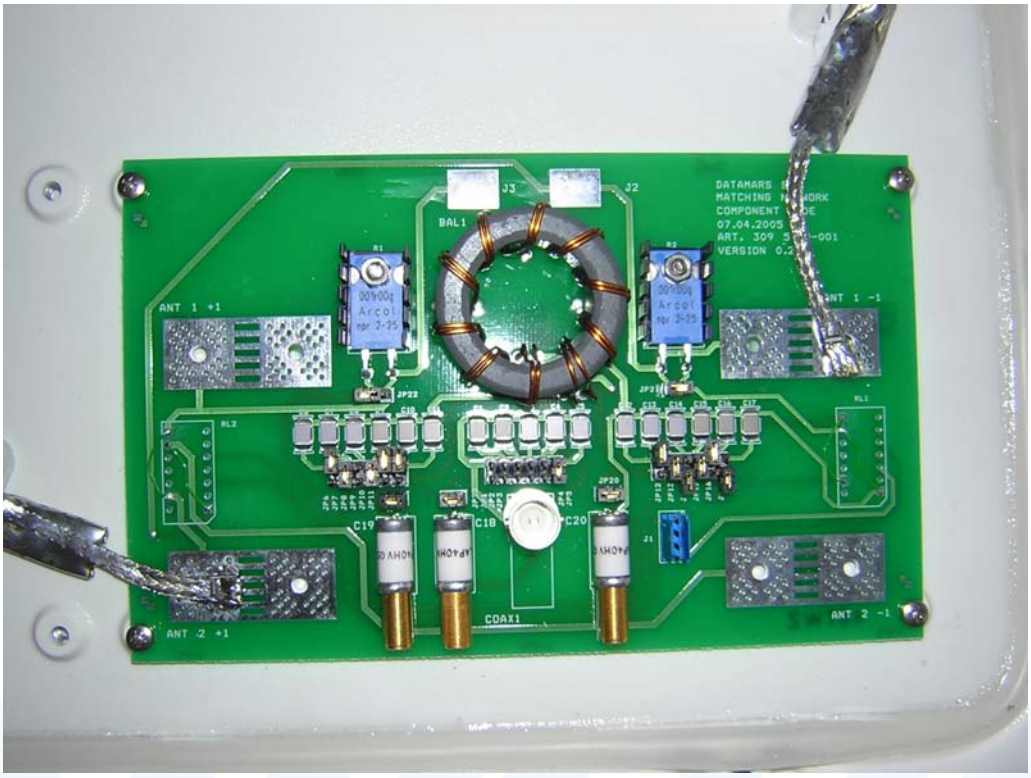
FXY7446


NEOSID
SA6240
FXY7446


DATAMARS



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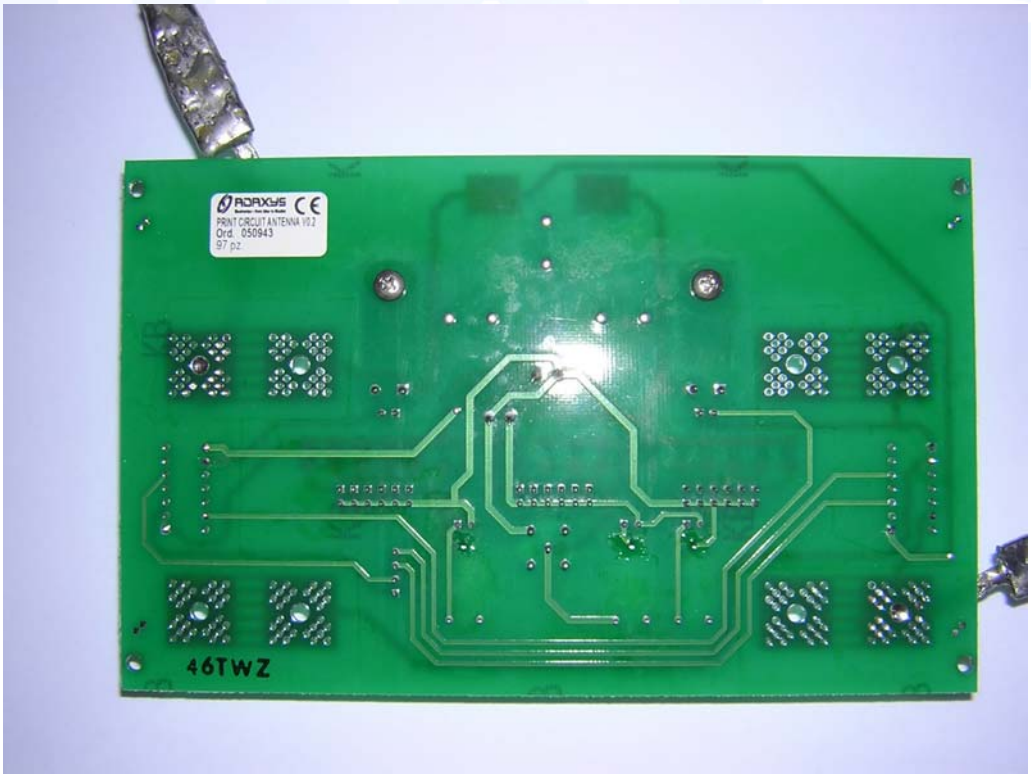
J2
BAL1
ANT 1 +1
ANT 1 -1
ANT 2 -1
ANT 2 +1
C19
C18
C20
COAX1


ADAXYS
PRINT CIRCUIT ANTENNA V0.2
Ord. 050943
97 pz.
46TWZ

3.2 Power supply system utilised

Power supply voltage : 115 V / 60 Hz / 1ϕ

3.3 Short description of the Equipment under Test (EuT)

The EuT R-IN1301 is a RFID reader. In multi read mode the R-IN1301 can read more than 30 LoundryChips (Transponders) per second.

Number of tested samples: 1
Serial number: 01E4002141

EuT operation mode:

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

- Tx mode at 13.56 MHz

- Rx mode at 13.56 MHz

EuT configuration:

(The CDF filled by the applicant can be viewed at the test laboratory.)

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

-	Coax cable	Model :	shielded, 3.6 m
-	AC power line	Model :	unshielded, 1.5 m
-	RS 232	Model :	shielded, 1.5 m
-		Model :	
-		Model :	
-		Model :	

- customer specific cables

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 is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16-4-2 /11.2003 „Uncertainties, statistics and limit modelling – Uncertainty in EMC measurements“ and is documented in the quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

4.4 Measurement Protocol for FCC, VCCI and AUSTEL

4.4.1 GENERAL INFORMATION

4.4.1.1 Test Methodology

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

In compliance with 47 CFR Part 15 Subpart A Section 15.38 testing for FCC compliance may be done following the ANSI C63.4-2003 procedures and using the CISPR 22 Limits.

4.4.1.2 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.

4.4.2 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 C63.4-2003 - "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz."

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

5.1.3 Description of Measurement

The final level, expressed in dBμV, is arrived at by taking the reading directly from the EMI receiver. This level is compared directly to the FCC Limit or to the CISPR limit.

To convert between dBμV and μV, the following conversions apply:

dBμV = 20(log μV)

μV = Inverse log(dBμV/20)

Conducted emissions on the 50 Hz and/or 60 Hz power interface of the EuT are measured in the frequency range of 150 kHz to 30 MHz. The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi-peak detection and a Line Impedance Stabilization Network (LISN) with 50Ω/50 μH (CISPR 16) characteristics. Table top equipment is placed on a non-conducting table 80 centimeters above the floor and is positioned 40 centimeters from the vertical ground plane (wall) of the screen room. 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.

5.1.4 Test result

Frequency range:	0.15 MHz - 30 MHz
Min. limit margin	16.6 dB at 13.560 MHz

The requirements are **FULFILLED.**

Remarks: _____

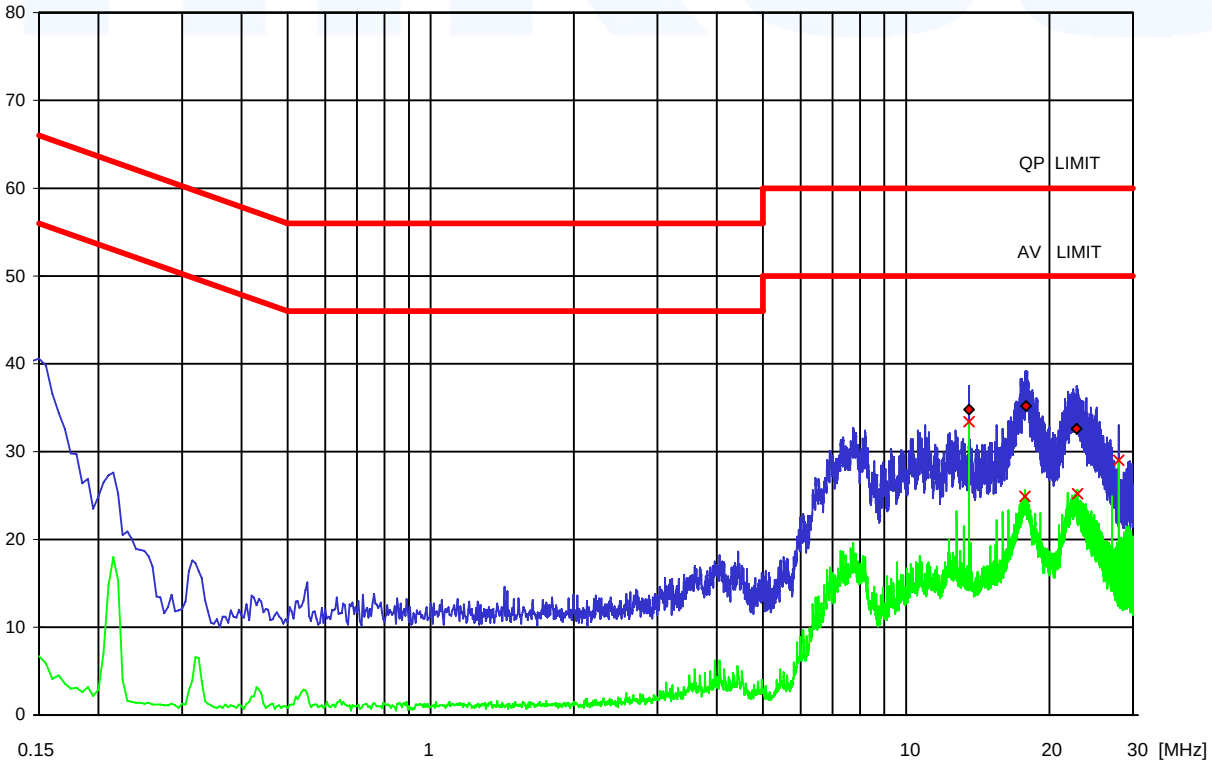
5.1.5 Test protocol

Test point L1 Result: passed
Operation mode: Tx mode at 13.56 MHz
Remarks:
Date: 04. May 2006
Operator: Markus Huber

Freq kHz	QP- L dB[µV]	D -Limit QP [dB]	Freq kHz	AV-L dB[µV]	D -Limit AV [dB]
13560	34,8	25,2	13560	33,4	16,6
17880	35,2	24,8	17785	24,9	25,1
22840	32,6	27,4	22935	25,2	24,8
			28005	29	21,0

Freq kHz	QP- L dB[µV]	D -Limit QP [dB]	Freq kHz	AV-L dB[µV]	D -Limit AV [dB]

dB [µV] Legend PK: AV: Detector: QP: AV:



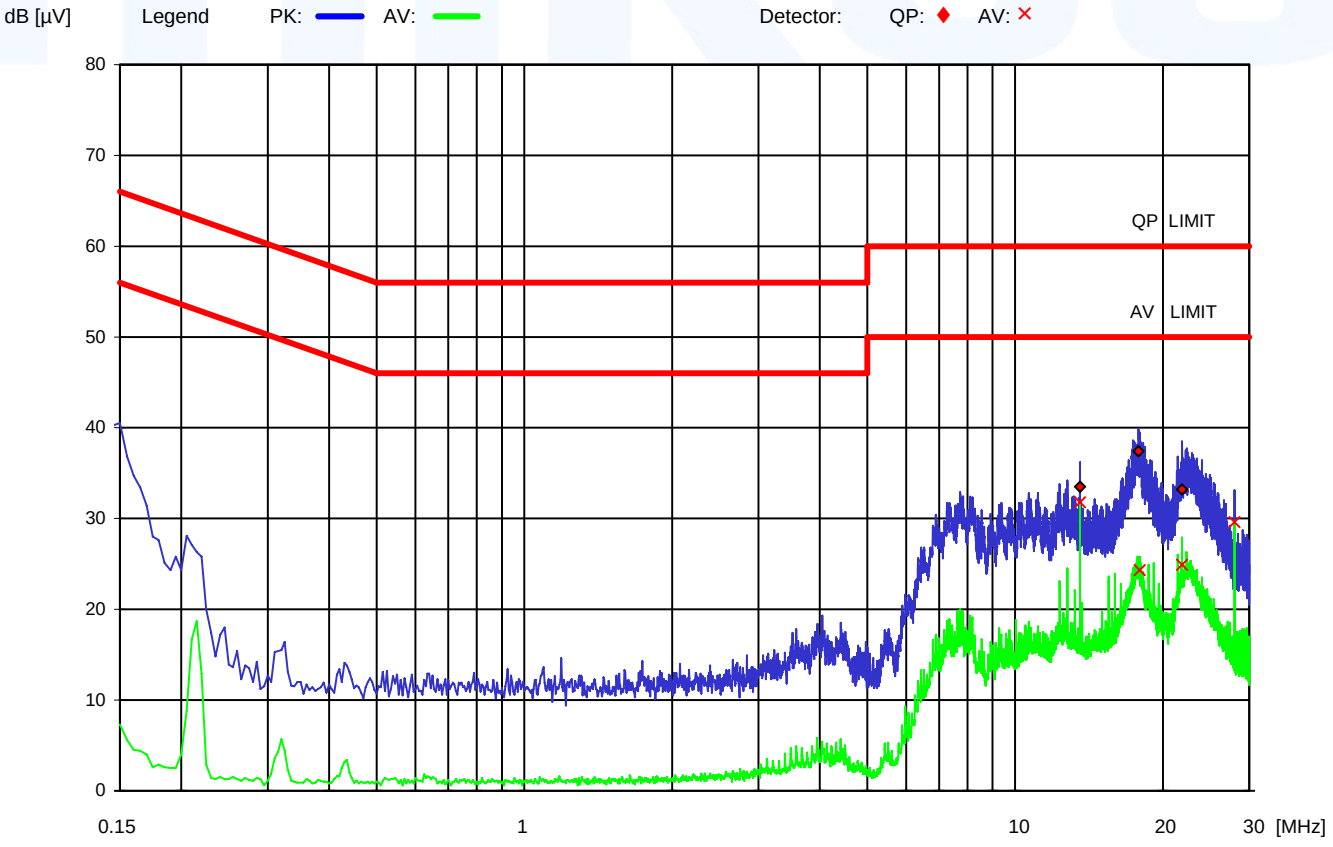
FCC ID: NDX-RIN1300

Test point: N
Operation mode: Tx mode at 13.56 MHz
Remarks:
Date: 04. May 2006
Operator: Markus Huber

Result: passed

Freq kHz	QP- L dB[µV]	D -Limit QP [dB]	Freq kHz	AV-L dB[µV]	D -Limit AV [dB]
13560	33,5	26,5	13560	31,8	18,2
17845	37,4	22,6	17935	24,3	25,7
21900	33,2	26,8	21895	24,9	25,1
			28005	29,6	20,4

Freq kHz	QP- L dB[µV]	D -Limit QP [dB]	Freq kHz	AV-L dB[µV]	D -Limit AV [dB]



FCC ID: NDX-RIN1300

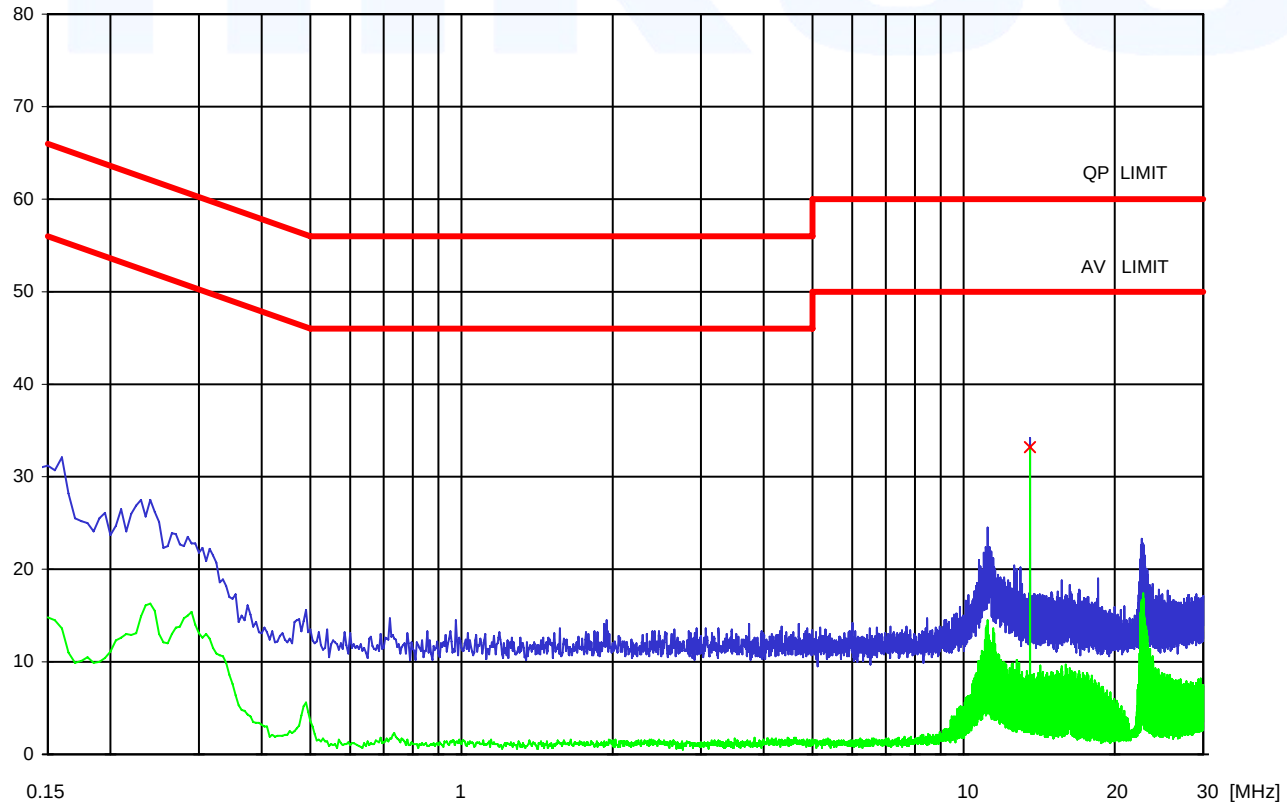
Test point: L1
Operation mode: Rx mode at 13.56 MHz
Remarks:
Date: 04. May 2006
Operator: Markus Huber

Result: passed

Freq kHz	QP- L dB[µV]	D -Limit QP [dB]	Freq kHz	AV-L dB[µV]	D -Limit AV [dB]
no Result			13560	33,2	16,8

Freq kHz	QP- L dB[µV]	D -Limit QP [dB]	Freq kHz	AV-L dB[µV]	D -Limit AV [dB]

dB [µV] Legend PK: AV: Detector: QP: AV:



FCC ID: NDX-RIN1300

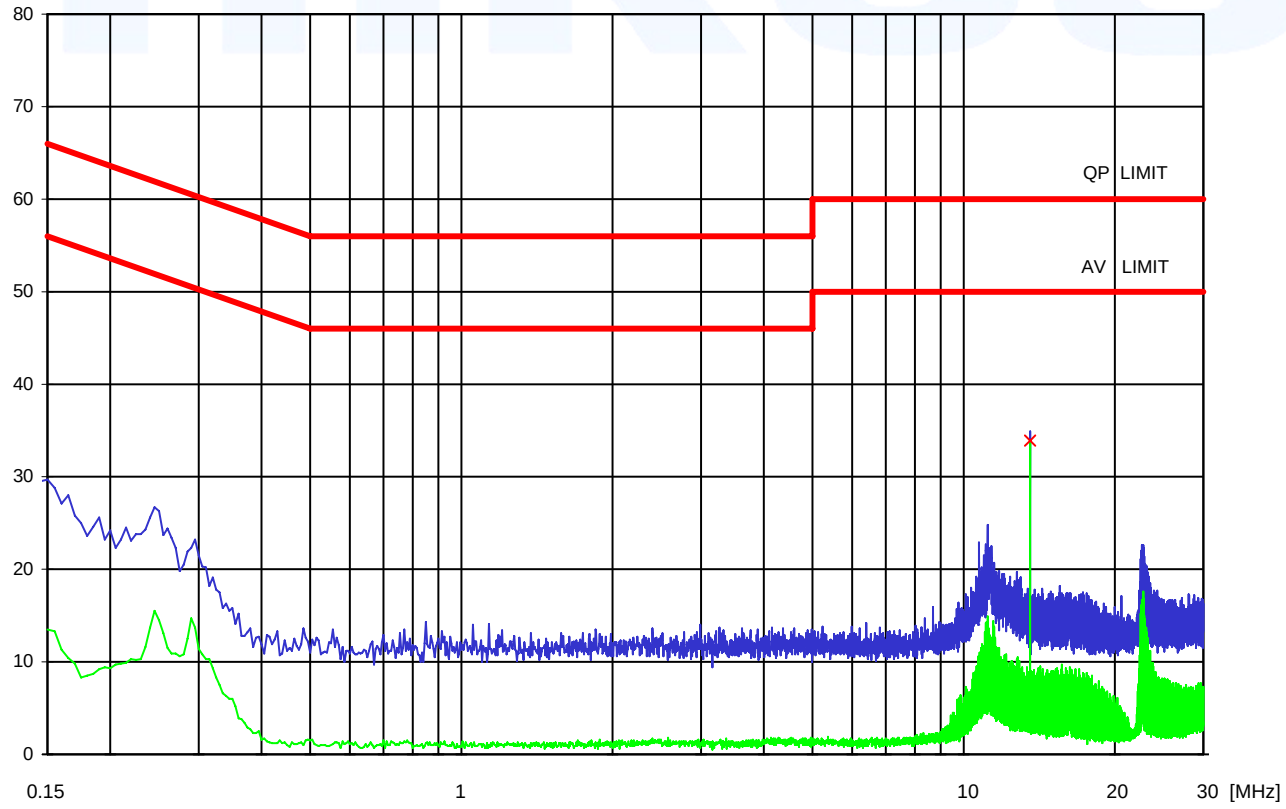
Test point: N
Operation mode: Rx mode at 13.56 MHz
Remarks:
Date: 04. May 2006
Operator: Markus Huber

Result: passed

Freq kHz	QP- L dB[µV]	D -Limit QP [dB]	Freq kHz	AV-L dB[µV]	D -Limit AV [dB]
no Result			13560	33,9	16,1

Freq kHz	QP- L dB[µV]	D -Limit QP [dB]	Freq kHz	AV-L dB[µV]	D -Limit AV [dB]

dB [µV] Legend PK: AV: Detector: QP: AV:



5.2 Field strength of the fundamental wave

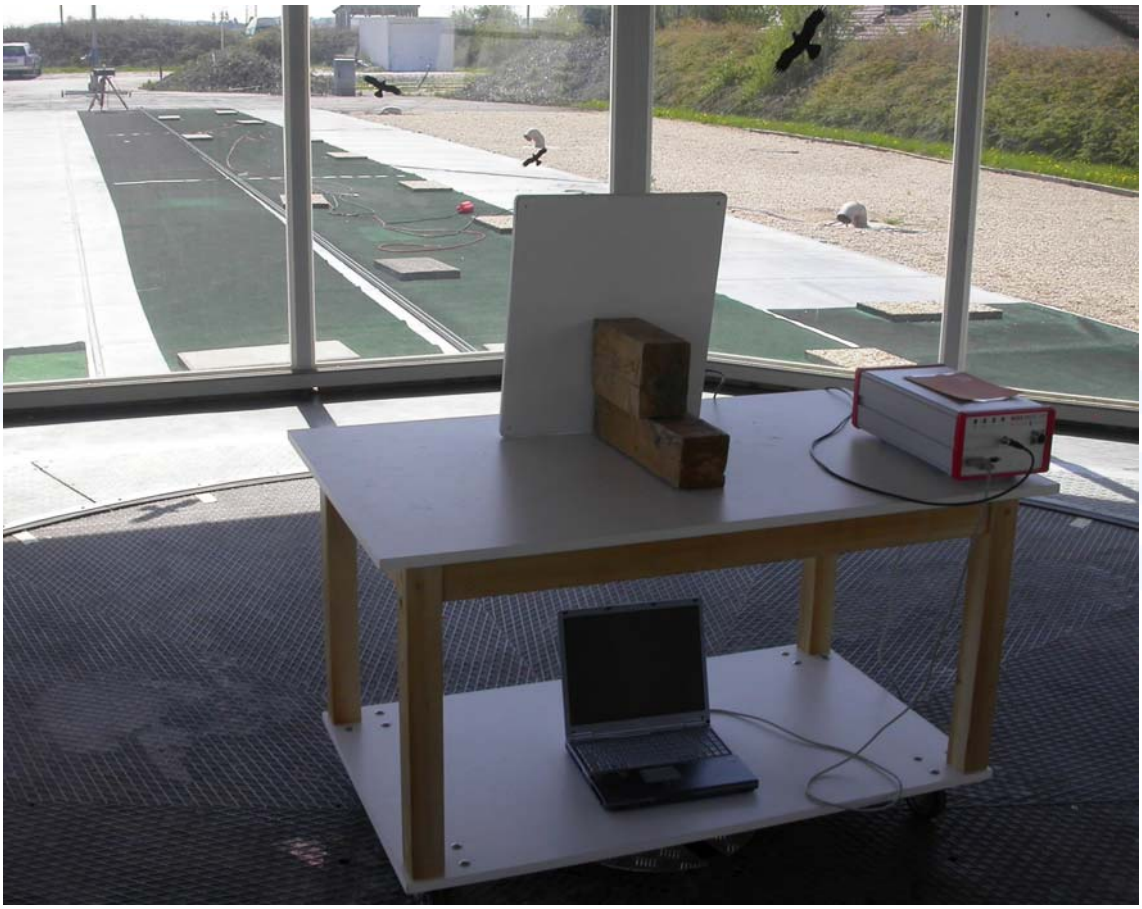
For test instruments and accessories used see section 6 Part **CPR 1**.

5.2.1 Description of the test location

Test location: OATS1

Test distance: 30 metres

5.2.2 Photo documentation of the test set-up



5.2.3 Description of Measurement

The magnetic field strength from the EuT will be measured on an open area test site in the frequency range of 9 kHz to 30 MHz using a tuned receiver and a shielded loop antenna. The set up of the Equipment under test will be in accordance to ANSI C63.4-2003. The antenna was positioned 3, 10 or 30 meters horizontally from the EuT. Measurements have been made in all three orthogonal axes and the shielded loop antenna was rotated to locate the maximum of the emissions. In the case where larger measuring distances are required the results will extrapolated based on the values measured on the closer distances according to Section 15.31 (f) (2) [2]. The final measurement will be performed with an EMI Receiver set to 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) [2].

The final level, expressed in dBµV/m, is arrived at by taking the reading from the EMI receiver (Level dBµV) and adding the antenna correction factor and cable loss factor (Factor dB) to it. This result then has to be compared with the relevant FCC limit.
The resolution bandwidth during the measurement is as follows:
9 kHz – 150 kHz: ResBW: 200 Hz
150 kHz – 30 MHz: ResBW: 9 kHz

Example:

Frequency (MHz)	Level (dBµV)	+	Factor (dB)	=	Level (dBµV/m)	Limit (dBµV/m)	=	Delta (dB)
1.705	5	+	20	=	25	30	=	5

5.2.4 Test result

Frequency [MHz]	L: PK [dBµV]	L: AV [dBµV]	L: QP [dBµV]	Correct. [dB]	L: PK [dBµV/m]	L: AV [dBµV/m]	L: QP [dBµV/m]	Limit [dBµV/m]	Delta [dB]
13.56	53.8	53.0	53.3	20.0	73.8	73.0	73.3	84.0	-10.4

Limit according to FCC Part 15 Subpart 15.225(a)

Frequency (MHz)	Field strength of fundamental wave		Measurement distance (meters)
	(µV/m)	dB (µV/m)	
13.553-13.567	**15848**	**84**	**30**

The requirements are **FULFILLED.**

Remarks: _____

5.3 Spurious emissions (Magnectic field) 9 kHz – 30 MHz

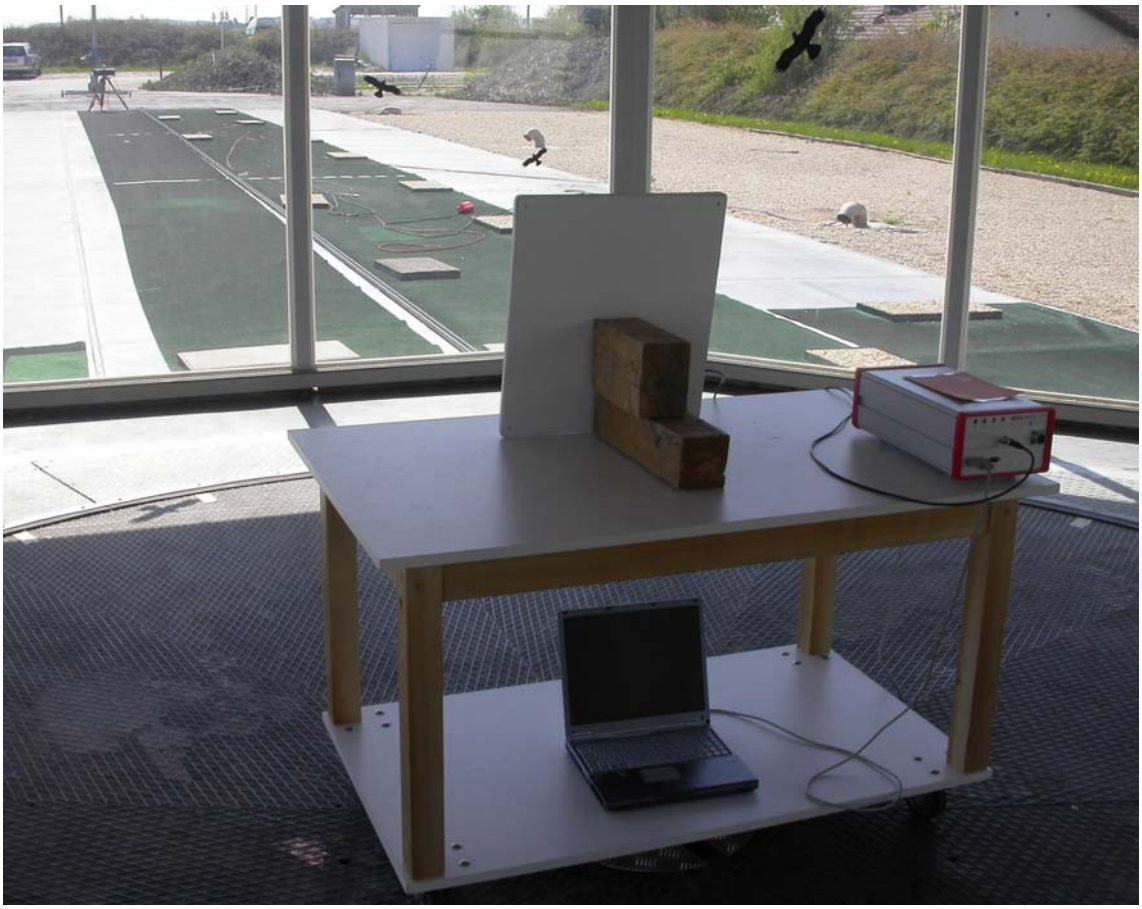
For test instruments and accessories used see section 6 Part **SER 1**.

5.3.1 Description of the test location

Test location: OATS1

Test distance: 30 metres

5.3.2 Photo documentation of the test set-up



5.3.3 Description of Measurement

The spurious emissions from the EuT will be measured on an open area test site in the frequency range of 9 kHz to 30 MHz using a tuned receiver and a shielded loop antenna. The antenna was positioned 3, 10 or 30 meters horizontally from the EuT. Measurements have been made in all three orthogonal axes and the shielded loop antenna was rotated to locate the maximum of the emissions. In the case where larger measuring distances are required the results will extrapolated based on the values measured on the closer distances according to Section 15.31 (f) (2) [2]. The final measurement will be performed with an EMI Receiver set to 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) [2].

The final level, expressed in dBµV/m, is arrived at by taking the reading from the EMI receiver (Level dBµV) and adding the antenna correction factor and cable loss factor (Factor dB) to it. This result then has to be compared with the relevant FCC limit.
The resolution bandwidth during the measurement is as follows:
9 kHz – 150 kHz: ResBW: 200 Hz
150 kHz – 30 MHz: ResBW: 9 kHz

Example:

Frequency (MHz)	Level (dBµV)	+	Factor (dB)	=	Level (dBµV/m)	Limit (dBµV/m)	=	Delta (dB)
1.705	5	+	20	=	25	30	=	5

5.3.4 Test result

Frequency [MHz]	L: PK [dBµV]	L: AV [dBµV]	L: QP [dBµV]	Correct. [dB]	L: PK [dBµV/m]	L: AV [dBµV/m]	L: QP [dBµV/m]	Limit [dBµV/m]	Delta [dB]
27.12	-5.2	-6.8	-6.2	20.0	14.8	13.2	13.8	29.5	-15.7

Limit according to FCC Part 15 Subpart 15.209(a)

Frequency (MHz)	Field strength of spurious emissions		Measurement distance (meters)
	(µV/m)	dB (µV/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

The requirements are **FULFILLED.**

Remarks: _____

5.4 Radiated emissions (electric field) 30 MHz – 1 GHz

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

5.4.1 Description of the test location

Test location: OATS1

Test distance: 3 metres

5.4.2 Photo documentation of the test set-up

5.4.3 Description of Measurement

Spurious emissions from the EuT are measured in the frequency range of 30 MHz to 1000 MHz using a tuned receiver and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasi-peak detection. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimetres above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. The set up of the Equipment under test will be in accordance to ANSI C63.4-2003. The Interface cables that are closer than 40 centimetres to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimetres from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna was positioned 3, 10 or 30 meters horizontally from the EuT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarization`s and the EuT are rotated 360 degrees.

The final level, expressed in dBµV/m, is arrived by taking the reading from the EMI receiver (Level dBµV) and adding the correction factors and cable loss factor (Factor dB) to it. This is done automatically in the EMI receiver, where the correction factors are stored. This result then has the FCC or CISPR limit subtracted from it to provide the Delta which gives the tabular data as shown in the data sheets at page.

The resolution bandwidth during the measurement is as follows:
30 MHz – 1000 MHz: ResBW: 120 kHz

Example:

Frequency (MHz)	Level (dBµV)	+	Factor (dB)	=	Level (dBµV/m)	Limit (dBµV/m)	=	Delta (dB)
719	75	+	32.6	=	107.6	110	=	-2.4

5.4.4 Test result

Frequency [MHz]	L: QP [dBµV]	Correct. [dB]	L: QP [dBµV/m]	Limit [dBµV/m]	Delta [dB]
67.93	20.1	12.6	32.7	40.0	-7.3
135.78	22.8	15.1	37.9	43.5	-5.6
159.90	19.4	16.2	35.6	43.5	-7.9
162.85	22.8	15.8	38.6	43.5	-4.9
312.20	28.7	16.2	44.9	46.0	-1.1
325.60	27.1	16.5	43.6	46.0	-2.4
339.25	26.8	16.9	43.7	46.0	-2.3
352.80	25.1	17.2	42.3	46.0	-3.7
366.24	24.8	17.5	42.3	46.0	-3.7
379.79	24.3	17.9	42.2	46.0	-3.8
393.40	22.9	18.2	41.1	46.0	-4.9
407.00	19.8	18.5	38.3	46.0	-7.7
420.60	24.3	18.8	43.1	46.0	-2.9
434.00	23.0	19.1	42.1	46.0	-3.9
447.84	18.7	19.4	38.2	46.0	-7.8
461.20	17.4	19.7	37.2	46.0	-8.8

Limit according to FCC Part 15 Subpart 15.209(a)

Frequency (MHz)	Field strength of spurious emissions		Measurement distance (meters)
	(µV/m)	dB (µV/m)	
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: _____

5.5 Frequency tolerance of the carrier

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

5.5.1 Description of the test location

Test location: AREA4

5.5.2 Photo documentation of the test set-up

5.5.3 Test result

Test conditions		Test result		
		Frequency (MHz)		
T_{min} (-20)°C	V_{nom} (115)V	13.56128		
T (-10)°C	V_{nom} (115)V	13.56128		
T (0)°C	V_{nom} (115)V	13.56128		
T (10)°C	V_{nom} (115)V	13.56128		
T_{nom} (20)°C	V_{min} (98)V	13.56128		
	V_{nom} (115)V	13.56128		
	V_{max} (132)V	13.56128		
T (30)°C	V_{nom} (115)V	13.56128		
T (40)°C	V_{nom} (115)V	13.56138		
T_{max} (50)°C	V_{nom} (115)V	13.56148		
Maximum tolerance of carrier frequency (kHz)		- 0.0 / + 0.2		
Measurement uncertainty		± 10 Hz		

Limit according to FCC Part 15 Subpart 15.225 (e): ± 0.01 % of carrier frequency at 13.560 MHz = ± 1.356 kHz

The requirements are **FULFILLED.**

Remarks: _____

5.6 Emission Bandwidth

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

5.6.1 Description of the test location

Test location: Shielded Room S4

5.6.2 Photo documentation of the test set-up

5.6.3 Description of Measurement

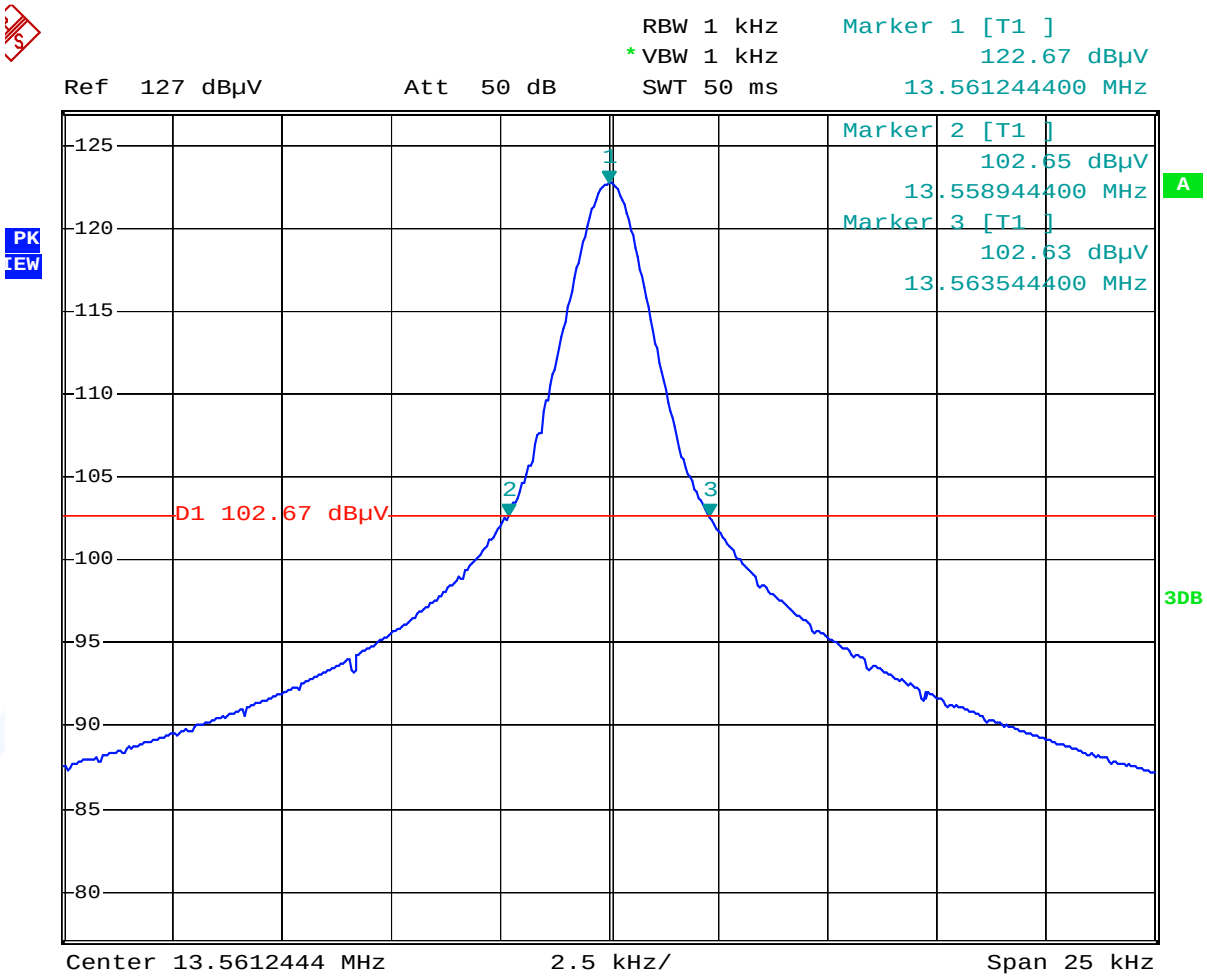
The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio of -20 dB. The reference level is the level of the highest amplitude signal observed from the transmitter at either the fundamental frequency or the first-order modulation products in all typical modes of operation, including the unmodulated carrier, even if atypical.
The resolution bandwidth of measuring instrument was set to a value as shown in the folloing table below according to ANSI C63.4-2003.

Fundamental frequency	Minimum resolution bandwidth
9 kHz to 30 MHz	1kHz
30 to 1000 MHz	10 kHz
1000 MHz to 40 GHz	100 kHz

5.6.4 Test result

Channel Frequency [MHz]	20 dB Bandwidth [kHz]
13.56	4.6

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


RBW 1 kHz
*VBW 1 kHz
SWT 50 ms
Marker 1 [T1]
122.67 dBµV
13.561244400 MHz
Ref 127 dBµV
Att 50 dB
Marker 2 [T1]
102.65 dBµV
13.558944400 MHz
Marker 3 [T1]
102.63 dBµV
13.563544400 MHz
A
PK
EW
D1 102.67 dBµV
3DB
125
120
115
110
105
100
95
90
85
80
Center 13.5612444 MHz
2.5 kHz/
Span 25 kHz

5.7 Transmitter spectrum mask

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

5.7.1 Description of the test location

Test location: AREA4

5.7.2 Test result

The absolute levels of RF power at any frequency shall not exceed the limits defined in FCC Part §15.225 a-d

The requirements are **FULFILLED.**

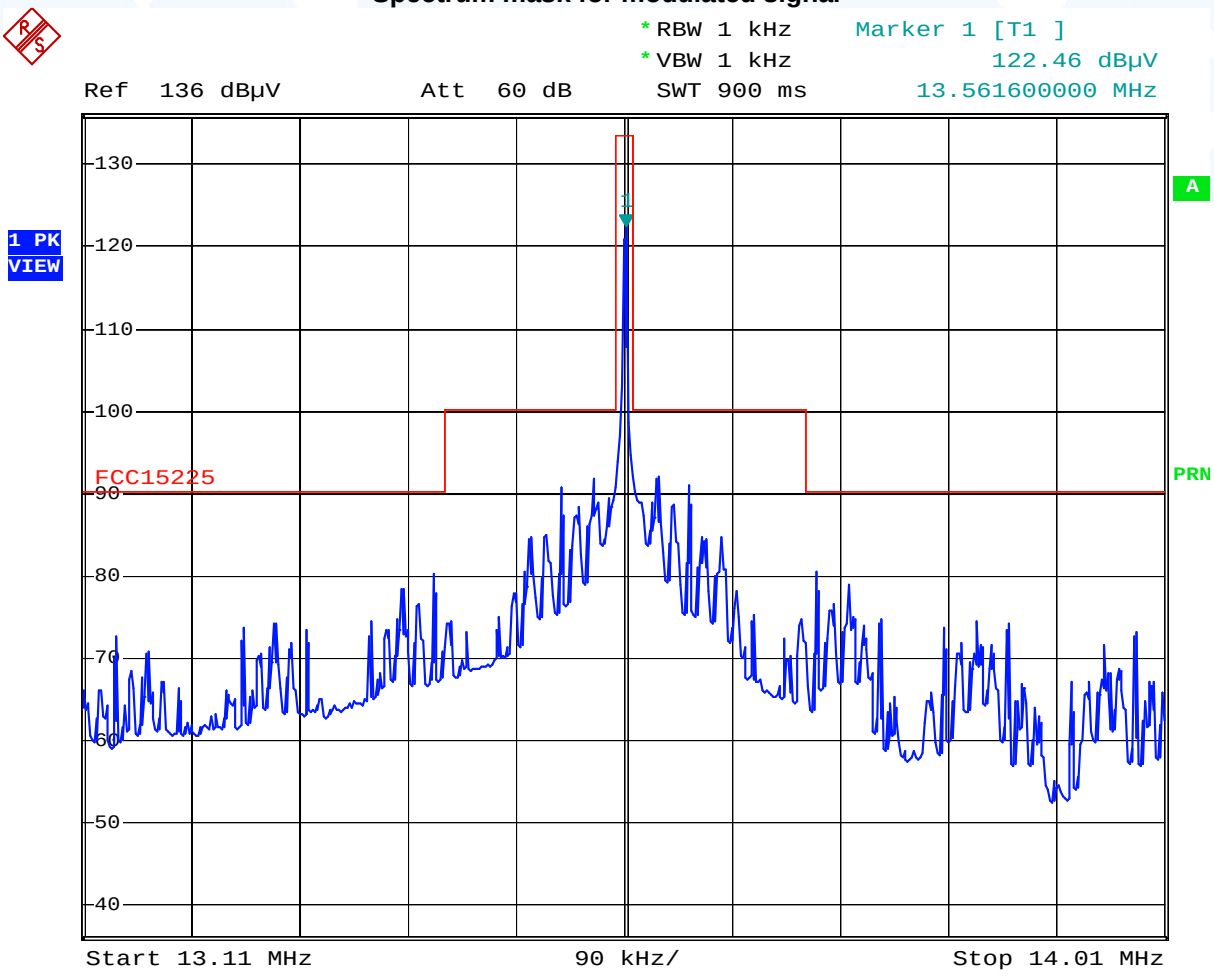
Remarks: _____

_____

_____

5.7.3 Test protocol

Spectrum mask for modulated signal



5.8 Receiver radiated emissions (Magnectic field) 9 kHz – 30 MHz

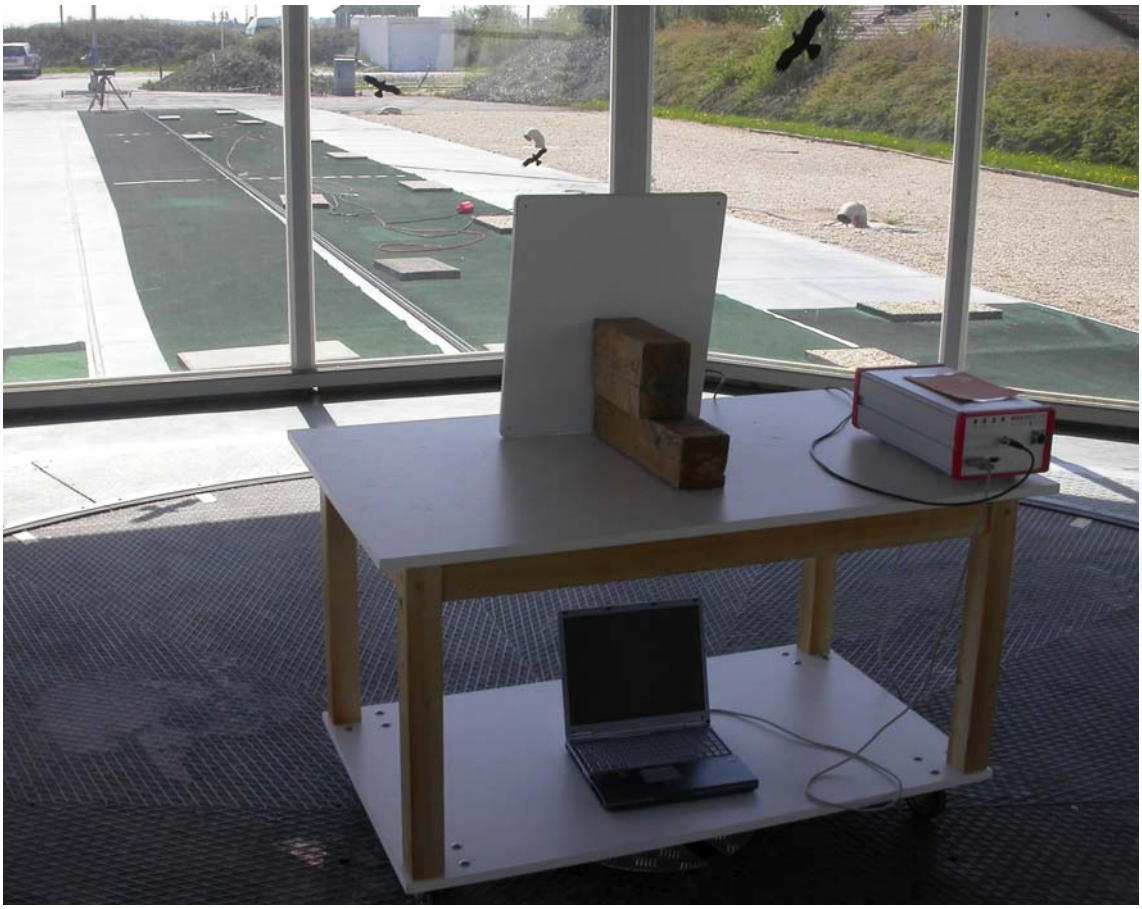
For test instruments and accessories used see section 6 Part **SER 1**.

5.8.1 Description of the test location

Test location: OATS1

Test distance: 30 metres

5.8.2 Photo documentation of the test set-up



5.8.3 Description of Measurement

Spurious emissions from the EuT are measured in the frequency range of 9 kHz to 30 MHz using a tuned receiver and a shielded loop antenna. The antenna was positioned 3, 10 or 30 meters horizontally from the EuT. Measurements have been made in all three orthogonal axes and the shielded loop antenna was rotated to locate the maximum of the emissions.

The final level, expressed in dBµV/m, is arrived at by taking the reading from the EMI receiver (Level dBµV) and adding the antenna correction factor and cable loss factor (Factor dB) to it. This result then has to be compared with the relevant FCC limit.

The resolution bandwidth during the measurement was as follows:
9 kHz – 150 kHz: ResBW: 200 Hz
150 kHz – 30 MHz: ResBW: 9 kHz

Example:

Frequency (MHz)	Level (dBµV)	+	Factor (dB)	=	Level (dBµV/m)	Limit (dBµV/m)	=	Delta (dB)
1.705	5	+	20	=	25	30	=	5

5.8.4 Test result

Frequency [MHz]	L: PK [dBµV]	L: AV [dBµV]	L: QP [dBµV]	Correct. [dB]	L: PK [dBµV/m]	L: AV [dBµV/m]	L: QP [dBµV/m]	Limit [dBµV/m]	Delta [dB]
0.009 - 30		< 0		20		< 20			

Limit according to FCC Part 15 Subpart 15.209(a)

Frequency (MHz)	Field strength of spurious emissions		Measurement distance (meters)
	(µV/m)	dB (µV/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

The requirements are **FULFILLED.**

Remarks: _____

5.9 Receiver radiated emissions (electric field) 30 MHz – 1 GHz

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

5.9.1 Description of the test location

Test location: OATS1

Test distance: 3 metres

5.9.2 Photo documentation of the test set-up

5.9.3 Description of Measurement

Spurious emissions from the EuT are measured in the frequency range of 30 MHz to 10 times the highest used frequency using a tuned receiver and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasi-peak detection. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimetres above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Interface cables that are closer than 40 centimetres to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimetres from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna was positioned 3, 10 or 30 meters horizontally from the EuT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarization`s and the EuT are rotated 360 degrees.

The final level, expressed in dBµV/m, is arrived by taking the reading from the EMI receiver (Level dBµV) and adding the correction factors and cable loss factor (Factor dB) to it. This is done automatically in the EMI receiver, where the correction factors are stored. This result then has the FCC or CISPR limit subtracted from it to provide the Delta which gives the tabular data as shown in the data sheets at page.

Example:

Frequency (MHz)	Level (dBµV)	+	Factor (dB)	=	Level (dBµV/m)	Limit (dBµV/m)	=	Delta (dB)
719	75	+	32.6	=	107.6	110	=	-2.4

5.9.4 Test result

Frequency [MHz]	L: PK [dBµV]	L: AV [dBµV]	L: QP [dBµV]	Correct. [dB]	L: PK [dBµV/m]	L: AV [dBµV/m]	L: QP [dBµV/m]	Limit [dBµV/m]	Delta [dB]
30 - 1000			< 10	20			< 30		

Limit according to FCC Part 15 Subpart 15.209(a)

Frequency (MHz)	Field strength of spurious emissions		Measurement distance (meters)
	(µV/m)	dB (µV/m)	
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
960-1000	500	54	3

The requirements are **FULFILLED.**

Remarks: _____

6 USED TEST EQUIPMENT AND ACCESSORIES

All test instruments used, in addition to the test accessories, are calibrated and verified regularly.

The calibration intervals and the calibration history will be given out on request.

Test Report No: T30691-00-05HU
Beginning of Testing: 18 April 2006
End of Testing: 09 August 2006

Test ID	Model Type	Kind of Equipment	Manufacturer	Equipment No.
A 4	ESHS 30	EMI Test Receiver	Rohde & Schwarz München	02-02/03-05-002
	NNLK 8129	LISN	Schwarzbeck Mess-Elektronik	02-02/20-05-001
	ESH 2 - Z 5	LISN	Rohde & Schwarz München	02-02/20-05-004
	ESH 3 - Z 2	Pulse Limiter	Rohde & Schwarz München	02-02/50-05-001
	N-4000-BNC	RF Cable	mikes-testingpartners gmbh	02-02/50-05-138
	N-1500-N	RF Cable	mikes-testingpartners gmbh	02-02/50-05-140
	SP 103 /3.5-60	Convertor 220V / 110V	mikes-testingpartners gmbh	02-02/50-05-182
CPR 1	FMZB 1516	Magnetic Field Antenna	Schwarzbeck Mess-Elektronik	01-02/24-01-018
	ESCS 30	EMI Test Receiver	Rohde & Schwarz München	02-02/03-05-001
FE	Lifebook E7010	Laptop / Fujitsu-Siemens	Fujitsu Siemens Computers	02-01/01-05-012
	ESCI	EMI Test Receiver	Rohde & Schwarz München	02-02/03-05-004
	THS730A	Handheld Scope	Tektronix GmbH	02-02/13-05-001
	WK-340/40	Climatic Chamber	Weiss Umwelttechnik GmbH	02-02/45-05-001
	Type 5315.5	Transformer	STATRON Gerätetechnik	02-02/50-05-197
MB	Lifebook E7010	Laptop / Fujitsu-Siemens	Fujitsu Siemens Computers	02-01/01-05-012
	ESCI	EMI Test Receiver	Rohde & Schwarz München	02-02/03-05-004
	THS730A	Handheld Scope	Tektronix GmbH	02-02/13-05-001
	Type 5315.5	Transformer	STATRON Gerätetechnik	02-02/50-05-197
SER 1	FMZB 1516	Magnetic Field Antenna	Schwarzbeck Mess-Elektronik	01-02/24-01-018
	ESCS 30	EMI Test Receiver	Rohde & Schwarz München	02-02/03-05-001
SER 2	ESVS 30	EMI Test Receiver	Rohde & Schwarz München	02-02/03-05-006
	VULB 9168	Trilog-Broadband Antenna	Schwarzbeck Mess-Elektronik	02-02/24-05-005
	S10162-B/+11N-50-10-5/+11	RF Cable 33m	Huber + Suhner	02-02/50-05-031
	KK-EF393-21N-16	RF Cable 20m	Huber + Suhner	02-02/50-05-033
	NW-2000-NB	RF Cable	Huber + Suhner	02-02/50-05-113