CETECOM ICT Services GmbH

Radio Satellite Communication
Untertürkheimer Straße 6-10 . D-66117 Saarbrücken Telefon: +49 (0)681 598-9100 Telefax: -9075

Akkreditiertes Prüflaboratorium

DAR-Registriernummer:
TTI-P-G 166/98

Test report no.: 2_2131-D/00
FCC Rule 15.209 / USA
ID 3000-IN

Table of Contents

1 General information

1.1 Notes

The test results of this test report relate exclusively to the test item specified in 1.5. The CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalisations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM ICT Services GmbH.

1.2 Testing laboratory

CETECOM ICT Services GmbH
Untertürkheimer Straße 6 – 10
66117 Saarbrücken
Deutschland
Telefone: + 49 681 598 - 9000
Telefax : + 49 681 598 - 9075
E-mail : Michael.Berg@ict.cetecom.de
Internet : www.cetecom.de

Accredited testing laboratory
DAR-registration number : TTI-P-G-166/98

1.3 Details of applicant

Name : Sennheiser electronic GmbH & Co. KG
Street : Am Labor 1
City : D-30900 Wedemark
Country : Germany
Telephone : +49 (51 30) 600-0
Telefax : +49 (51 30) 600-300
Contact : Mr. Klaus Willemsen
Telephone: +49 (51 30) 600-542

1.4 Application details

Date of receipt of application : 07.12.2000
Date of receipt of test item : 07.12.2000
Date of test : 19./20.12.2000

1.5 Test item

Type of equipment	:	location transmitter
Type designation	:	**ID 3000-IN**
Manufacturer	:	applicant
Street	:	
City	:	
Country	:	
Serial number	:	**see photos**
Additional informations: :		
Frequency	:	**127 kHz / 24K0F1D**
Number of channels	:	**1**
Antenna	:	**indoor loop antenna/ coil antenna**
Power supply	:	6V DC (4* 1,5 V Battery) or external 6-12V DC
Type of equipment	:	**-**
Carrier power	:	

1.6 Test standards: FCC Rule Part 15.209

2 Technical test

2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed.

Technical responsibility for area of testing :

2001-01-18	**RSC8412**	**Hausknecht M**	
Date	**Section**	**Name**	**Signature**

2001-01-18	**RSC8414**	**Ames H.**	
Date	**Section**	**Name**	**Signature**

2.2 Test report

TEST REPORT

FCC Rule Part 15.209

Test report no. : 2_2131-D/00

TEST REPORT REFERENCE

LIST OF MEASUREMENTS

Equipment under test : ID 3000-IN
Ambient temperature : 23 °C
Relative humidity : 30%

FIELD STRENGTH OF FUNDAMENTAL **SUBCLAUSE § 15.209**

Polarisation of the measurements for the larger power level .: vertical
Measurement distance 300 m

TEST CONDITIONS		FIELD STRENGTH (µV/m)		
Frequency (MHz)		0.127		
T_{nom}(23) °C	V_{nom}(6 / 12)V	18.5		
Maximum deviation from output power under extreme test conditions (dBc)		-0,8		
Measurement uncertainty		±3dB		

Limit : 18,9µV/m

Limits **SUBCLAUSE § 15.209**

Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
above 960	500	3

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
17 - 24

Equipment under test : ID 3000-IN
Ambient temperature : 23 °C
Relative humidity : 30%

EMISSIONS RADIATED **SUBCLAUSE §15.209**

Transmitter operating **Modulated/~~Unmodulated*~~**
***(Delete whichever is inappropriate)**

Measurement distance see table

SPURIOUS EMISSIONS LEVEL (µV/m)								
0.127 MHz								
f (MHz)	Detector	Level (µV/m)	f (MHz)	Detector	Level (µV/m)	f (MHz)	Detector	Level (µV/m)
0.38	QP	0,6						
Measurement uncertainty			± 3dB					

Measurement was made with a CISPR QP-adapter and 10 kHz BW.

Limits **SUBCLAUSE § 15.209**

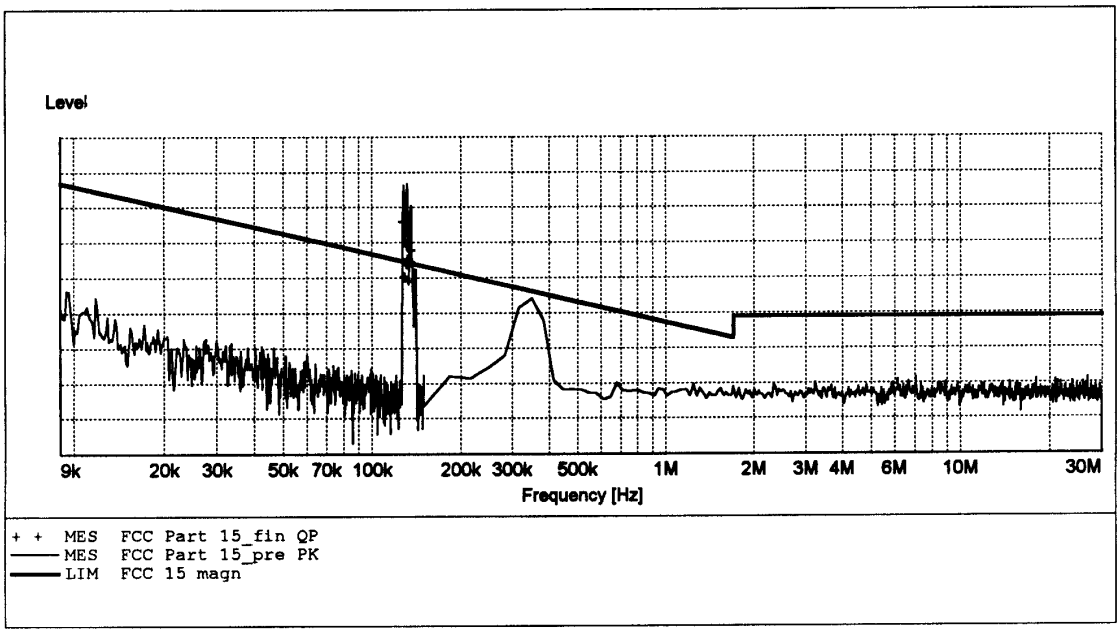
Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
above 960	500	3

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
17 - 24

Equipment under test : ID 3000-IN
Ambient temperature : 23 °C
Relative humidity : 30%

EMISSIONS RADIATED **SUBCLAUSE §15.209**

This scan was made with an automatic test system from R&S and the software ESK1.



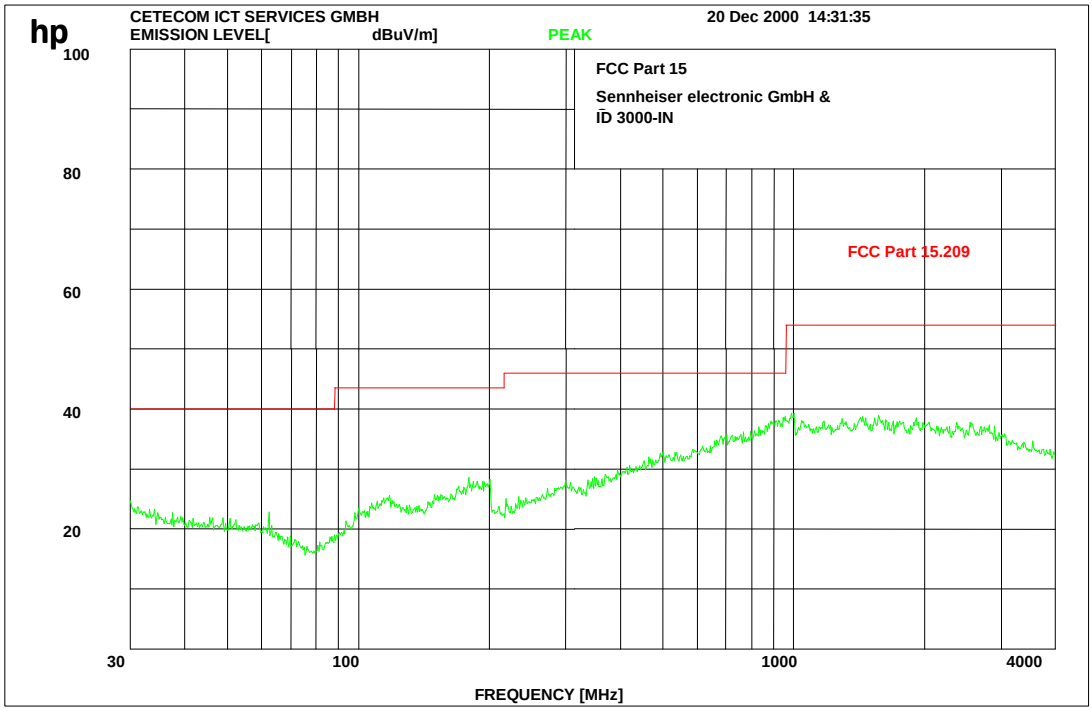
It shows the behavior of the 127 kHz TX radiated up to 30 MHz.
The limit line in the plot is calculated for 300 m, but the test was performed at 30m.
So we have a readout, that is 20 dB to high (real 18.5 µV/m) and the peak at
380 kHz is 30 dB below carrier at 127 kHz (real 0.6 µV/m).

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
17 - 24

Equipment under test : ID 3000-IN
Ambient temperature : 23 °C
Relative humidity : 30%

EMISSIONS RADIATED **SUBCLAUSE §15.209**

no peaks found from 30 to 4000 MHz. (average and peak)
The peak at 62 MHz is our calibration mark for 23 dBµV/m.



Limits **SUBCLAUSE § 15.209**

Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
above 960	500	3

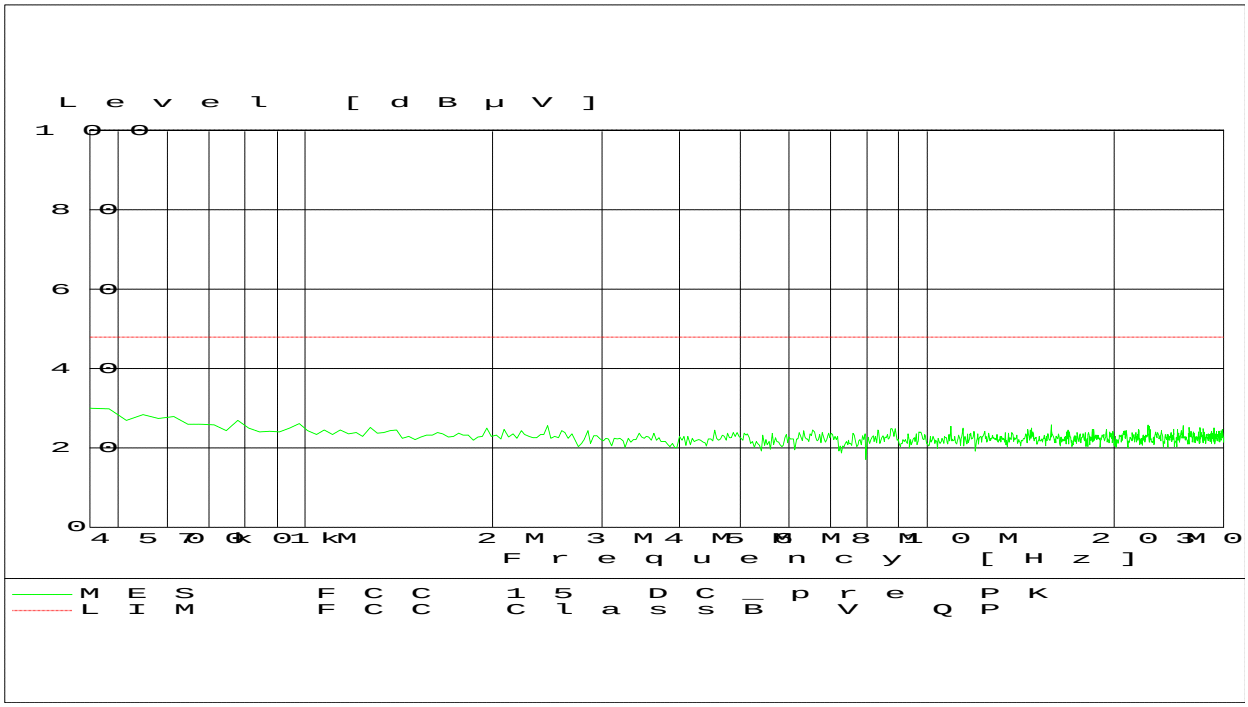
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
17 - 24

Equipment under test : IFG
Ambient temperature : 23 °C
Relative humidity : 51 %

CONDUCTED EMISSIONS **§ 15.207**

no peaks found

"FCC Part 15 DC"



The measurements were performed with a CISPR quasi peak adapter with 10 kHz BW

Technical specification : 15.207
Limit

0.45 to 30 MHz	250 µV / 47.96 dBµV

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
51 - 63

TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

To simplify the identification on each page of the test equipment used, on each page of the test report, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory, below.

No	Instrument/Ancillary	Type	Manufacturer	Serial No.
01	Spectrum Analyzer	8566 A	Hewlett-Packard	1925A00257
02	Analyzer Display	8566 A	Hewlett-Packard	1925A00860
03	Oscilloscope	7633	Tektronix	230054
04	Radio Analyzer	CMTA 54	Rohde & Schwarz	894 043/010
05	System Power Supply	6038 A	Hewlett-Packard	2848A07027
06	Signal Generator	8111 A	Hewlett-Packard	2215G00867
07	Signal Generator	8662 A	Hewlett-Packard	2224A01012
08	Funktionsgenerator	AFGU	Rohde & Schwarz	862 480/032
09	Regeltrenntrafo	MPL	Erfi	91350
10	Netznachbildung	NNLA 8120	Schwarzbeck	8120331
11	Relais-Matrix	PSU	Rohde & Schwarz	893 285/020
12	Power-Meter	436 A	Hewlett-Packard	2101A12378
13	Power-Sensor	8484 A	Hewlett-Packard	2237A10156
14	Power-Sensor	8482 A	Hewlett-Packard	2237A00616
15	Modulationsmeter	9008	Racal-Dana	2647
16	Frequenzzähler	5340 A	Hewlett-Packard	1532A03899
17	Absorber Schirmkabine	---	MWB	87400/002
18	Spectrum Analyzer	85660 B	Hewlett-Packard	2747A05306
19	Analyzer Display	85662 A	Hewlett-Packard	2816A16541
20	Quasi Peak Adapter	85650 A	Hewlett-Packard	2811A01131
21	RF-Preselector	85685 A	Hewlett-Packard	2833A00768
22	Biconical Antenne	3104	Emco	3758
23	Log. Per. Antenne	3146	Emco	2130
24	Double Ridge Horn	3115	Emco	3088
25	EMI-Testreceiver	ESAI	Rohde & Schwarz	863 180/013
26	EMI-Analyzer-Display	ESAI-D	Rohde & Schwarz	862 771/008
27	Biconical Antenne	HK 116	Rohde & Schwarz	888 945/013
28	Log. Per. Antenne	HL 223	Rohde & Schwarz	825 584/002
29	Relais-Switch-Unit	RSU	Rohde & Schwarz	375 339/002
30	Highpass	HM985955	FSY Microwave	001
31	Amplifier	P42-GA29	Tron-Tech	B 23602
32	Absorber Schirmkabine		Frankonia	
33	Steuerrechner	PSM 7	Rohde & Schwarz	834 621/004
34	EMI Test Reciever	ESMI	Rohde & Schwarz	827 063/010
35	EMI Test Receiver	Display	Rohde & Schwarz	829 808/010

TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

To simplify the identification on each page of the test equipment used, on each page of the test report, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory, below.

No	Instrument/Ancillary	Type	Manufacturer	Serial No.
36	Controler	HD 100	Deisel	100/322/93
37	Relais Matrix	PSN	Rohde & Schwarz	829 065/003
38	Control Unit	GB 016 A2	Rohde & Schwarz	344 122/008
39	Relais Switch Unit	RSU	Rohde & Schwarz	316 790/001
40	Power Supply	6032A	Hewlett Packard	2846A04063
41	Spektrum Monitor	EZM	Rohde & Schwarz	883 720/006
42	Meßempfänger	ESH 3	Rohde & Schwarz	890 174/002
43	Meßempfänger	ESVP	Rohde & Schwarz	891 752/005
44	Biconi Ant. 20-300MHz	HK 116	Rohde & Schwarz	833 162/011
45	Logper Ant. 0.3-1 GHz	HL 223	Rohde & Schwarz	832 914/010
46	Amplifier 0.1-4 GHz	AFS4	Miteq Inc.	206461
47	Logper Ant. 1-18 GHz	HL 024 A2	Rohde & Schwarz	342 662/002
48	Polarisationsnetzwerk	HL 024 Z1	Rohde & Schwarz	341 570/002
49	Double Ridge G Horn Antenne 1-26.5 GHz	3115	EMCO	9107-3696
50	Microw. Sys. Amplifier 0.5- 26.5 GHz	8317A	Hewlett Packard	3123A00105
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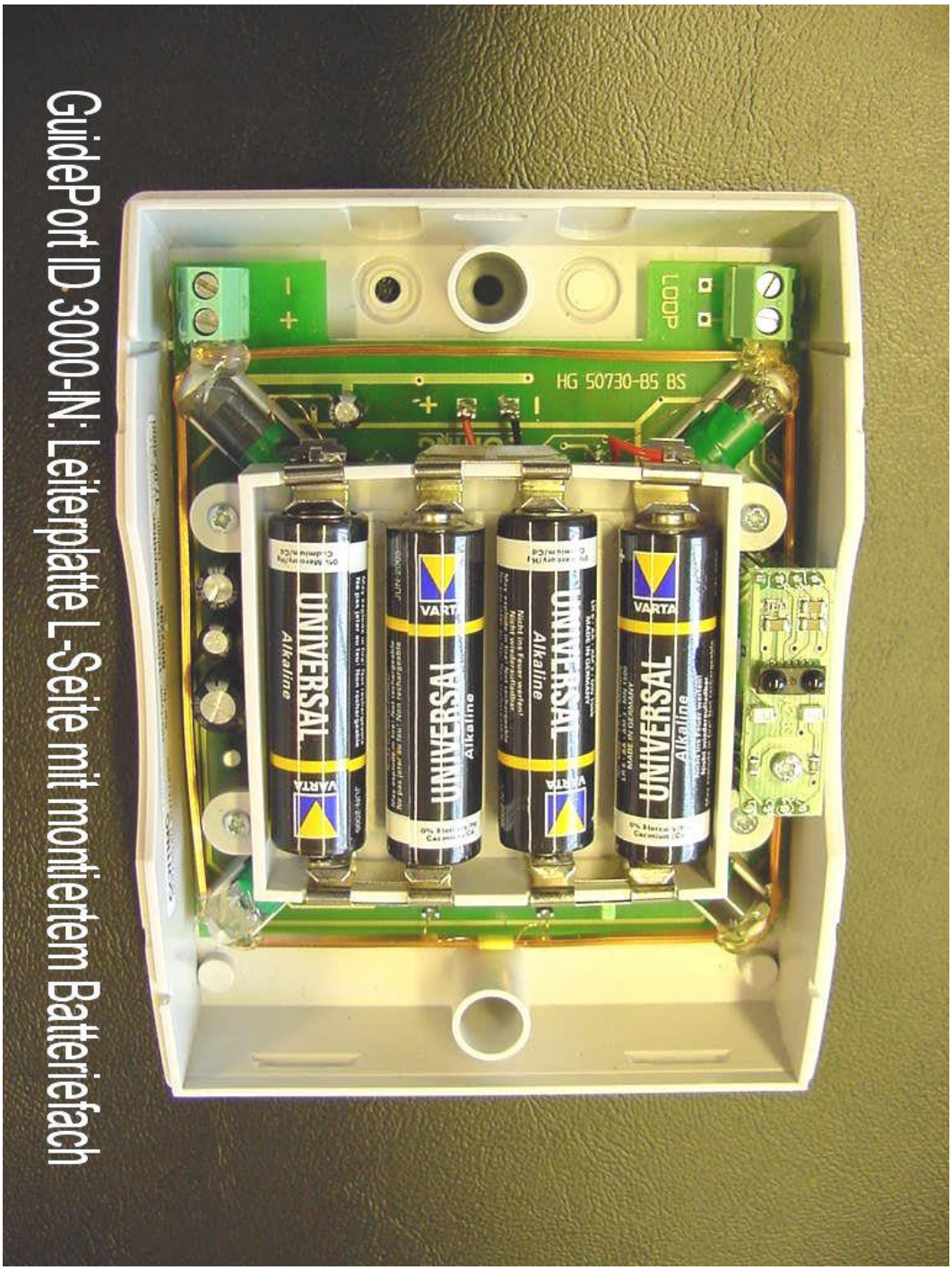
PHOTOGRAPHS OF THE EQUIPMENT

ID 3000-IN
Photograph no.: 1

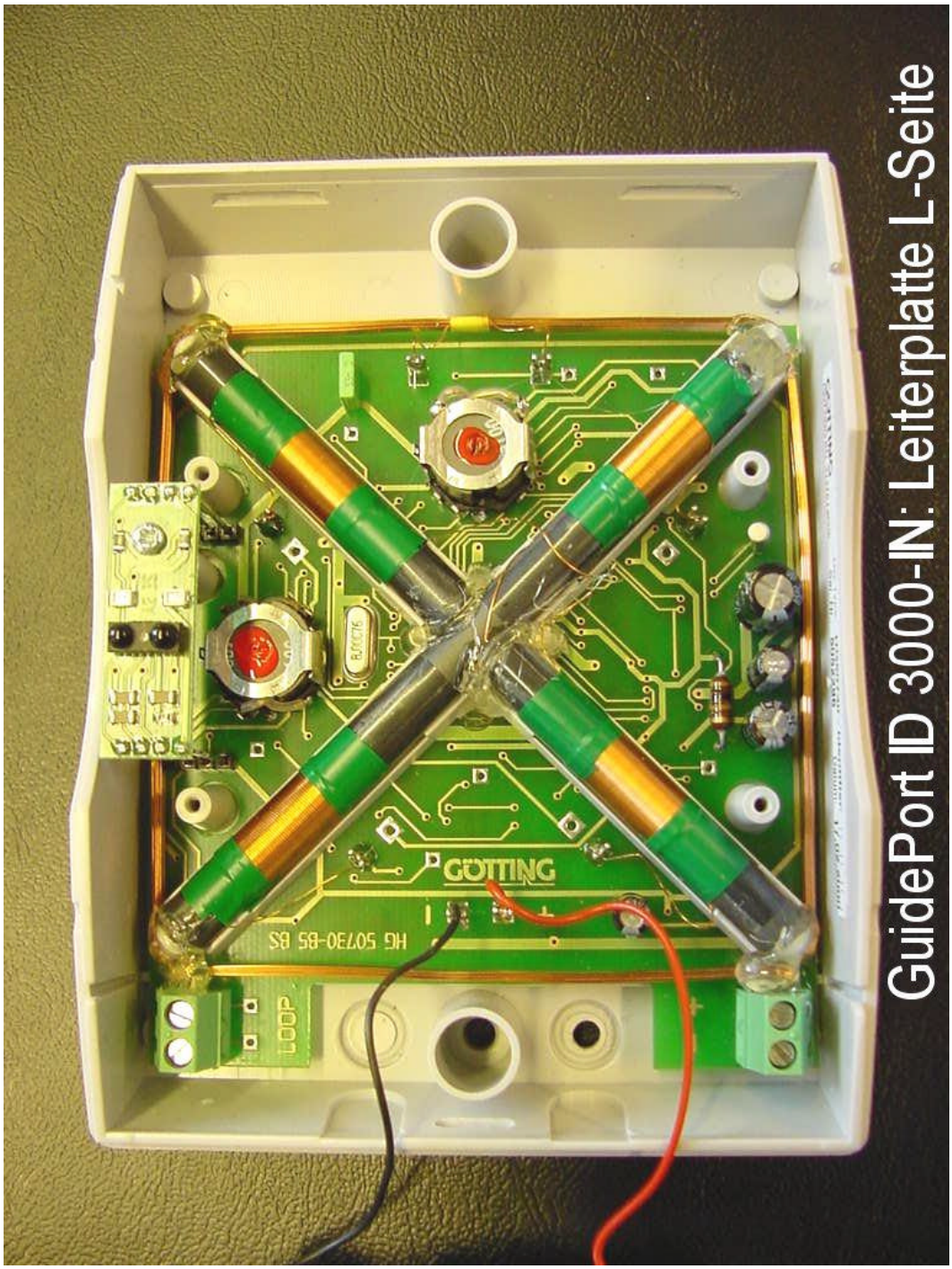
PHOTOGRAPHS OF THE EQUIPMENT

ID 3000-IN
Photograph no.: 2



PHOTOGRAPHS OF THE EQUIPMENT

ID 3000-IN
Photograph no.: 3



PHOTOGRAPHS OF THE EQUIPMENT

ID 3000-IN
Photograph no.: 4