

Recognized by the  
Federal Communications Commission and Industry Canada  
**Anechoic chamber registration No.: 90462 (FCC)**  
**Anechoic chamber registration No.: 3463 (IC)**  
**TCB ID: DE0001**



Accredited by the  
German Accreditation Council  
**DAR-Registration Number**  
**TTI-P-G 081/94-D0**



Independent ETSI  
compliance test house



**Accredited Bluetooth™ Test Facility (BQTF)**

**Test report no.: 2-3759-01-02/04**

**FCC Part 15.249**

**RS130 / RS140**

**FCC-ID: DMORS03CDUS**

**IC : 2099A-RS03CDCN**

CETECOM – ICT Services GmbH  
Untertürkheimerstr. 6-10  
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## 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.

### Test laboratory manager:

2004-10-01          RSC - 8411          Berg M.

Date

Section

Name

Signature



### Technical responsibility for area of testing:

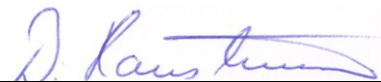
2004-10-01          RSC - 8412          Hausknecht D.

Date

Section

Name

Signature



## 1.2 Testing laboratory

CETECOM ICT Services GmbH

Untertürkheimer Straße 6 - 10

66117 Saarbrücken

Germany

Telephone : + 49 681 598 - 0

Telefax : + 49 681 598 - 9075

E-mail : Michael.Berg@ict.cetecom.de

Internet : www.cetecom-ict.de

### Accredited testing laboratory

Accredited by : Regulierungsbehörde für Telekommunikation und Post (RegTP)

Listed by : Federal Communications Commission (FCC)

Authority	Identification/Registration No.
RegTP	TTI-P-G 081/94-D0
FCC	90462

## 1.3 Details of applicant

Name : Sennheiser electronic GmbH & Co. KG

Street : Am Labor 1

City : D-30900 Wedemark

Country : Germany

Telephone: +49 5130 600-0

Telex : +49 5130 600-300

E-mail : [bartschv@sennheiser.com](mailto:bartschv@sennheiser.com)

### Contact person:

Name : Mr. Volker Bartsch

Telephone : +49 5130 600-465

Telex : +49 5130 600-330

E-mail : bartschv@sennheiser.com

## 1.4 Application details

Date of receipt of application : 2004-09-02

Date of receipt of test item : 2004-09-20

Date of test : 2004-09-21

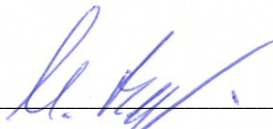
## 1.5 Test item

Type of equipment : **Wireless Headphone**  
Type designation : RS130 / RS140  
Consists of: 1 x Transmitter TR130-8 or TR140-8 (different AF circuit)  
1 x AC/DC Adapter SIL Model No.:VD990020D  
1 x Receiver HDR130-8 or HDR140-8  
Manufacturer : Sennheiser electronic GmbH & Co. KG  
Street : Am Labor 1  
City : D-30900 Wedemark  
Country : Germany  
Serial number : - / -

**Additional information** :  
Frequency : 926.1 – 927.5 MHz  
180KF3E (= 2 x max deviation (75 kHz) + 2 x max AF (15 kHz )  
Channel spacing : 700 kHz  
Number of channels : 3  
Antenna : integral antenna  
ERP : 49.5 dBmV/m in 3m  
Power supply : Tx: 120V/9V AC/DC Adapter; Rx: 2x 1.2V rechargeable battery  
Temperature range : +5°C - +45°C  
Transmitter spurious : 78.5 µV/m in 3m  
Receiver spurious : 42.1 dBµ/m (Noise floor) in 3m  
IC-ID : 2099A-RS03CDCN

**DECLARATION OF COMPLIANCE:** I declare that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned Industry Canada standard(s); and that the equipment identified in this application has been subjected to all the applicable test conditions specified in the Industry Canada standards and all of the requirements of the standard have been met.

Signature: \_\_\_\_\_



Date: 2004-09-20 Michael Berg ; Test management  
NAME AND TITLE (Please print or type):

## 1.6 Test specifications: FCC Part 15 §15.249 CANADA RSS-210

TR130-9 and HDR130-9 represent the worst case configuration and was chosen for test.

RS130 consist of Receiver HDR130-9 and Transmitter TR130-9  
RS140 consist of Receiver HDR140-9 and Transmitter TR140-9

## 2 Technical test

### 2.1 Summary of test results

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 20 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber.

The receiving antennas are conform with specifications ANSI C63.2-1996 clause 15 and ANSI C63.4-2003 clause 4.1.5. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test set-ups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received.

The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63.4-2003 clause 4.2.

Antennas are conform with ANSI C63.2-1996 item 15.

9 kHz - 30 MHz: Quasi Peak measurement, 100 Hz/ 9kHz Bandwidth, passive loop antenna.

30 MHz - 200 MHz: Quasi Peak measurement, 120KHz Bandwidth, biconical antenna

200MHz - 1GHz: Quasi Peak measurement, 120KHz Bandwidth, log periodic antenna

>1GHz: Average, RBW 1MHz, VBW 10 Hz, wave guide horn

All measurement settings are according to FCC 15.35, 15.209.

The product fulfils also the requirements for CANADA RSS-210

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

**FINAL VERDICT : PASS**

**2.2 Test report**

**TEST REPORT**

**Test report no: 2-3759-01-02/04**

## LIST OF MEASUREMENTS.

The list of measured parameters is given below.

Clause	Page number
FIELDSTRENGTH OF FUNDAMENTAL § 15.249	9
SPURIOUS RADIATION § 15.249	10
RECEIVER SPURIOUS RADIATION § 15.109	18
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TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS	24
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Equipment under test : RS130/RS140

Ambient temperature : 23°C

Relative humidity : 38%

**FIELDSTRENGTH OF FUNDAMENTAL**

§ 15.249

TEST CONDITIONS		MAXIMUM OUTPUT POWER (QUASI PEAK)		
		ERP (mV/m)		
Frequency (MHz)		926.0 MHz	926.8 MHz	927.5 MHz
T <sub>nom</sub> ( 23.0 )°C	V <sub>nom</sub> ( 115V )V	48.4	46.8	49,5
Measurement uncertainty		±3dB		

Quasi Peak

Measured at a distance of 3m

Limits

SUBCLAUSE § 15.249 (a)

Fundamental Frequency (MHz)	Field strength of Fundamental (mV/m)	Field strength of Fundamental (µV/m)
902-928	50 (94 dBµV/m)	500 (54 dBµV/m)
2400-2483.5	50 (94 dBµV/m)	500 (54 dBµV/m)
5725-5875	50 (94 dBµV/m)	500 (54 dBµV/m)
24.0-24.25 GHz	250 (108 dBµV/m)	2500 (68 dBµV/m)

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24; 64; 52-63

Equipment under test : RS130/RS140

Ambient temperature : 23°C

Relative humidity : 38%

**SPURIOUS RADIATION**

§ 15.249

Radiated

SPURIOUS EMISSIONS LEVEL ( $\mu\text{V/m}$ )								
926.0 MHz			926.8 MHz			927.5 MHz		
f (MHz)	Detect	Level ( $\mu\text{V/m}$ )	f (MHz)	Detect	Level ( $\mu\text{V/m}$ )	f (MHz)	Detect	Level ( $\mu\text{V/m}$ )
1852.0	AV	73,3	1853.6	AV	68,4	1855.0	AV	66.8
4630.0	AV	45.7	2780.4	AV	81.3	2782.5	AV	60.3
			4634.0	AV	78.5	4637.5	AV	66.8
						6492,5	AV	26.0
<b>Measurement uncertainty</b>			<b><math>\pm 3</math> dB</b>					

f < 1 GHz : RBW/VBW: 100 kHz

f  $\geq$  1GHz : RBW/VBW: 1 MHz

H = Horizontal ; V= Vertical

Measured at a distance of 3m

Limits

SUBCLAUSE § 15.249 (a)

Fundamental Frequency (MHz)	Field strength of Fundamental (mV/m)	Field strength of Fundamental ( $\mu\text{V/m}$ )
902-928	50 (94 dB $\mu\text{V/m}$ )	500 (54 dB $\mu\text{V/m}$ )
2400-2483.5	50 (94 dB $\mu\text{V/m}$ )	500 (54 dB $\mu\text{V/m}$ )
5725-5875	50 (94 dB $\mu\text{V/m}$ )	500 (54 dB $\mu\text{V/m}$ )
24.0-24.25 GHz	250 (108 dB $\mu\text{V/m}$ )	2500 (68 dB $\mu\text{V/m}$ )

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24; 64; 52-63

Equipment under test : RS130/RS140

Ambient temperature : 23°C

Relative humidity : 38%

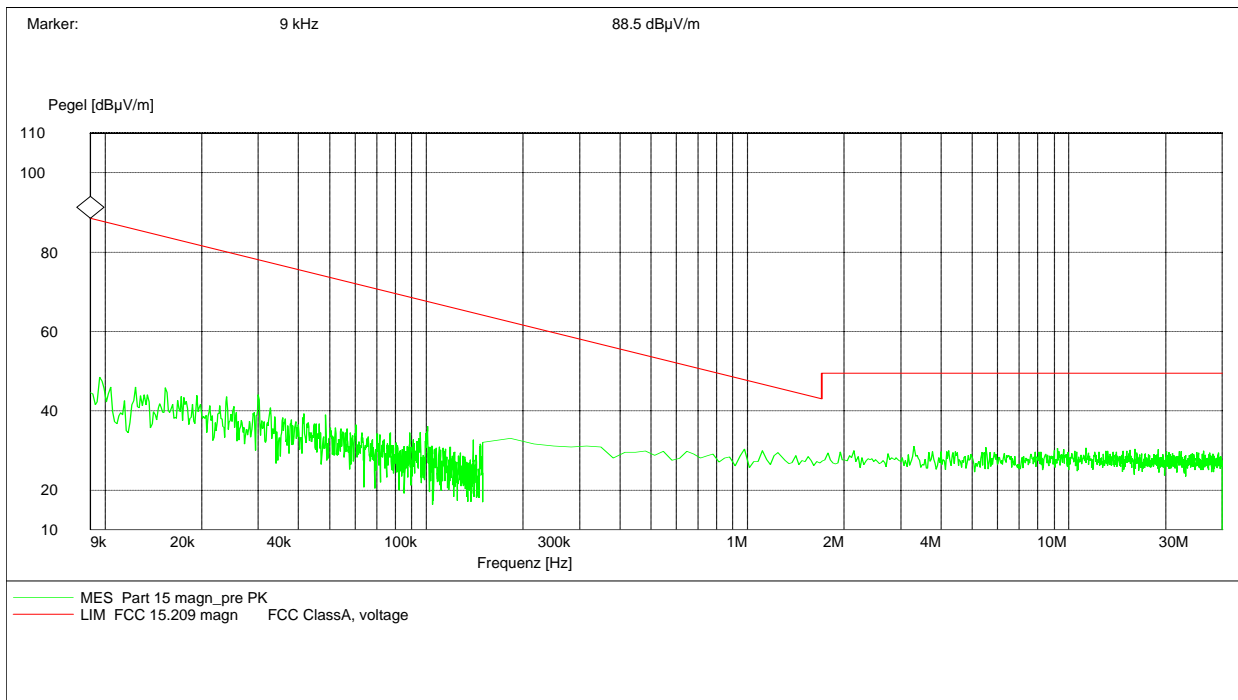
## Plots of the measurements

### SPURIOUS RADIATION 9kHz – 30 MHz

§ 15.109

#### Part 15.209 Magnetics

EUT: TR130-9/TR140-9  
 Manufacturer: Sennheiser electronic GmbH & Co. KG  
 Operating Condition: Tx on ; Receiver in charging mode  
 Test Site: Cetecom, Room 6  
 Operator: Berg M.  
 Test Specification: 15.109/15.209  
 Comment:  
 Start of Test: 21.09.04 / 08:52:15



### Limits

### SUBCLAUSE § 15.109

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 / 29.5 dBµV/m	30

### REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24; 64; 52-63

Equipment under test : RS130/RS140

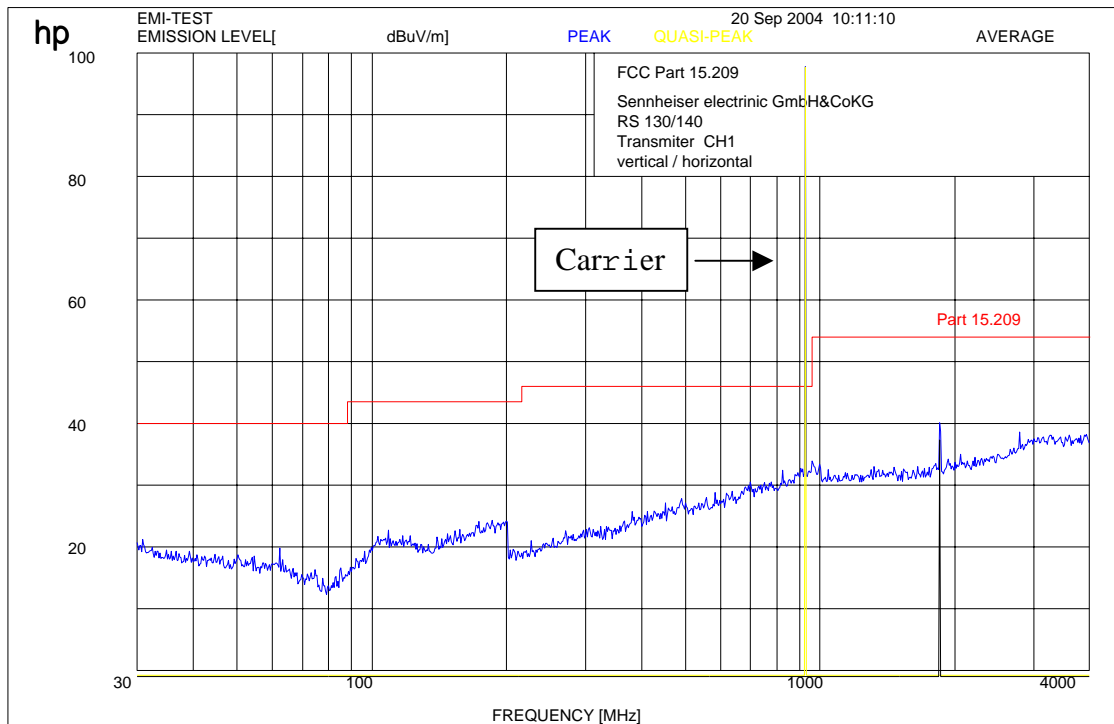
Ambient temperature : 23°C

Relative humidity : 38%

**SPURIOUS RADIATION**  
Radiated

§ 15.249

**926.0 MHz**



$f < 1 \text{ GHz} : \text{RBW/VBW: } 100 \text{ kHz}$

$f \geq 1 \text{ GHz} : \text{RBW/VBW: } 1 \text{ MHz}$

**Limits**

**SUBCLAUSE § 15.249 (a)**

Fundamental Frequency (MHz)	Field strength of Fundamental (mV/m)	Field strength of Fundamental ( $\mu\text{V/m}$ )
902-928	50 (94 dB $\mu\text{V/m}$ )	500 (54 dB $\mu\text{V/m}$ )
2400-2483.5	50 (94 dB $\mu\text{V/m}$ )	500 (54 dB $\mu\text{V/m}$ )
5725-5875	50 (94 dB $\mu\text{V/m}$ )	500 (54 dB $\mu\text{V/m}$ )
24.0-24.25 GHz	250 (108 dB $\mu\text{V/m}$ )	2500 (68 dB $\mu\text{V/m}$ )

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**

(for reference numbers see test equipment listing)

17 – 24; 64; 52-63

Equipment under test : RS130/RS140

Ambient temperature : 23°C

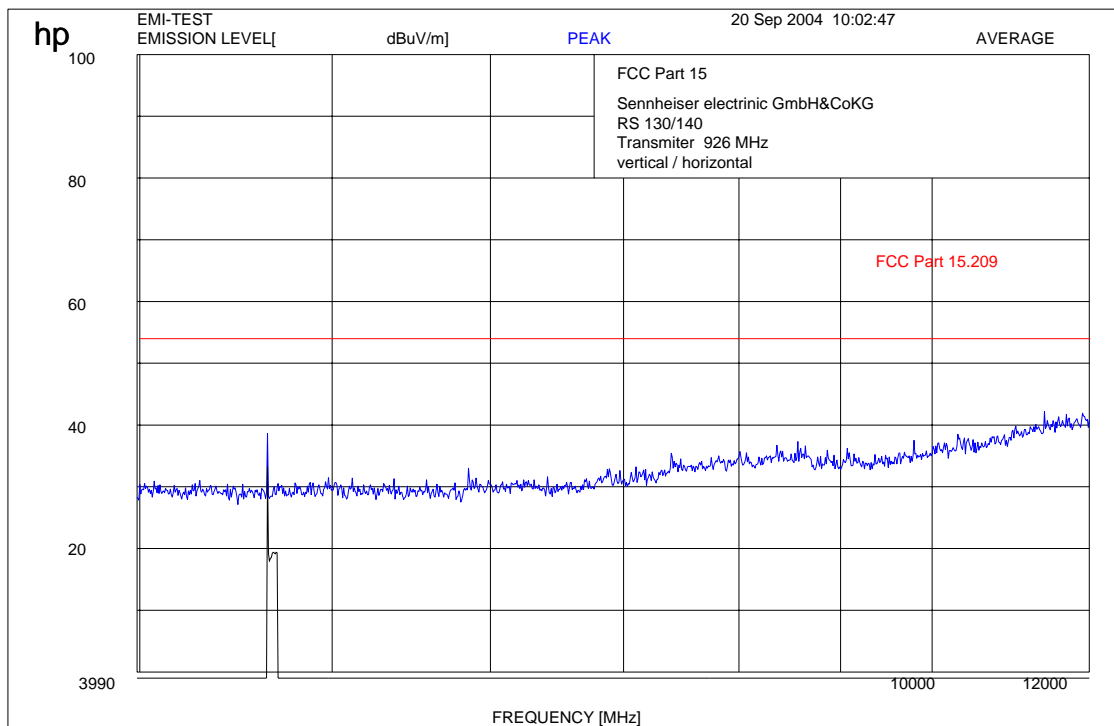
Relative humidity : 38%

**SPURIOUS RADIATION**

§ 15.249

**Radiated**

**926.0 MHz**



$f < 1 \text{ GHz} : \text{RBW/VBW} : 100 \text{ kHz}$

$f \geq 1 \text{ GHz} : \text{RBW/VBW} : 1 \text{ MHz}$

**Limits**

**SUBCLAUSE § 15.249 (a)**

Fundamental Frequency (MHz)	Field strength of Fundamental (mV/m)	Field strength of Fundamental ( $\mu\text{V/m}$ )
902-928	50 (94 dB $\mu\text{V/m}$ )	500 (54 dB $\mu\text{V/m}$ )
2400-2483.5	50 (94 dB $\mu\text{V/m}$ )	500 (54 dB $\mu\text{V/m}$ )
5725-5875	50 (94 dB $\mu\text{V/m}$ )	500 (54 dB $\mu\text{V/m}$ )
24.0-24.25 GHz	250 (108 dB $\mu\text{V/m}$ )	2500 (68 dB $\mu\text{V/m}$ )

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**

(for reference numbers see test equipment listing)

17 – 24; 64; 52-63

Equipment under test : RS130/RS140

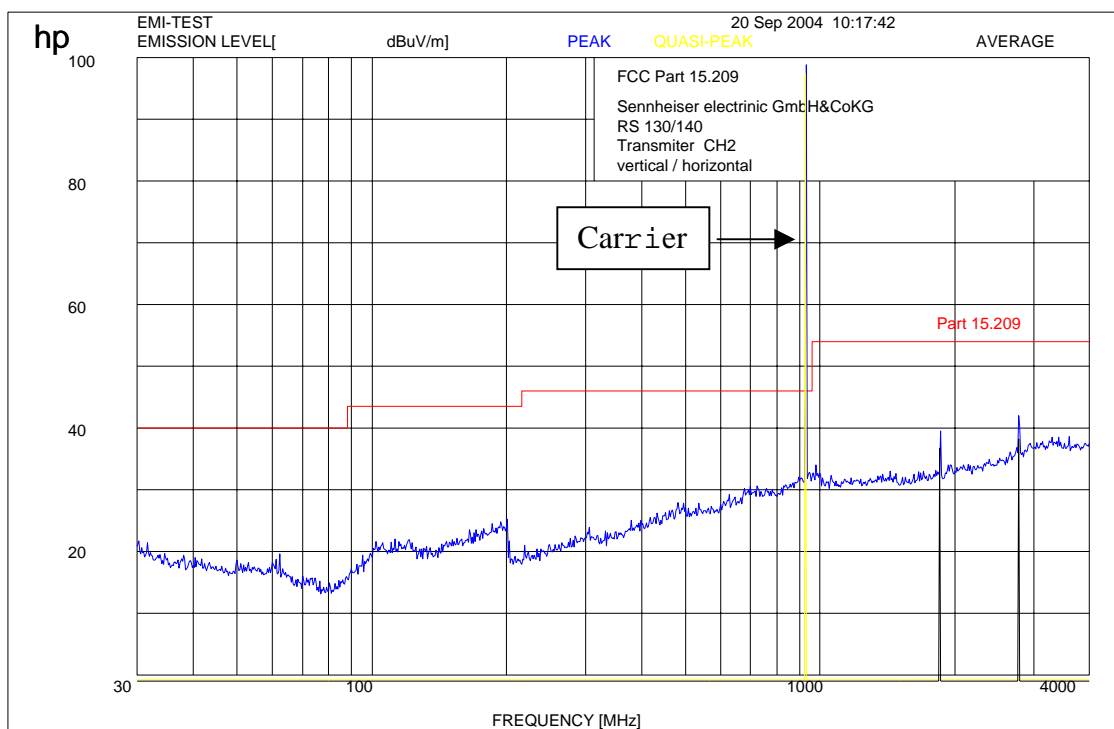
Ambient temperature : 23°C

Relative humidity : 38%

**SPURIOUS RADIATION**  
**Radiated**

§ 15.249

926.8 MHz



$f < 1 \text{ GHz} : \text{RBW/VBW} : 100 \text{ kHz}$

$f \geq 1 \text{ GHz} : \text{RBW/VBW} : 1 \text{ MHz}$

**Limits**

**SUBCLAUSE § 15.249 (a)**

Fundamental Frequency (MHz)	Field strength of Fundamental (mV/m)	Field strength of Fundamental ( $\mu\text{V/m}$ )
902-928	50 (94 dB $\mu\text{V/m}$ )	500 (54 dB $\mu\text{V/m}$ )
2400-2483.5	50 (94 dB $\mu\text{V/m}$ )	500 (54 dB $\mu\text{V/m}$ )
5725-5875	50 (94 dB $\mu\text{V/m}$ )	500 (54 dB $\mu\text{V/m}$ )
24.0-24.25 GHz	250 (108 dB $\mu\text{V/m}$ )	2500 (68 dB $\mu\text{V/m}$ )

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**

(for reference numbers see test equipment listing)

17 – 24; 64; 52-63

Equipment under test : RS130/RS140

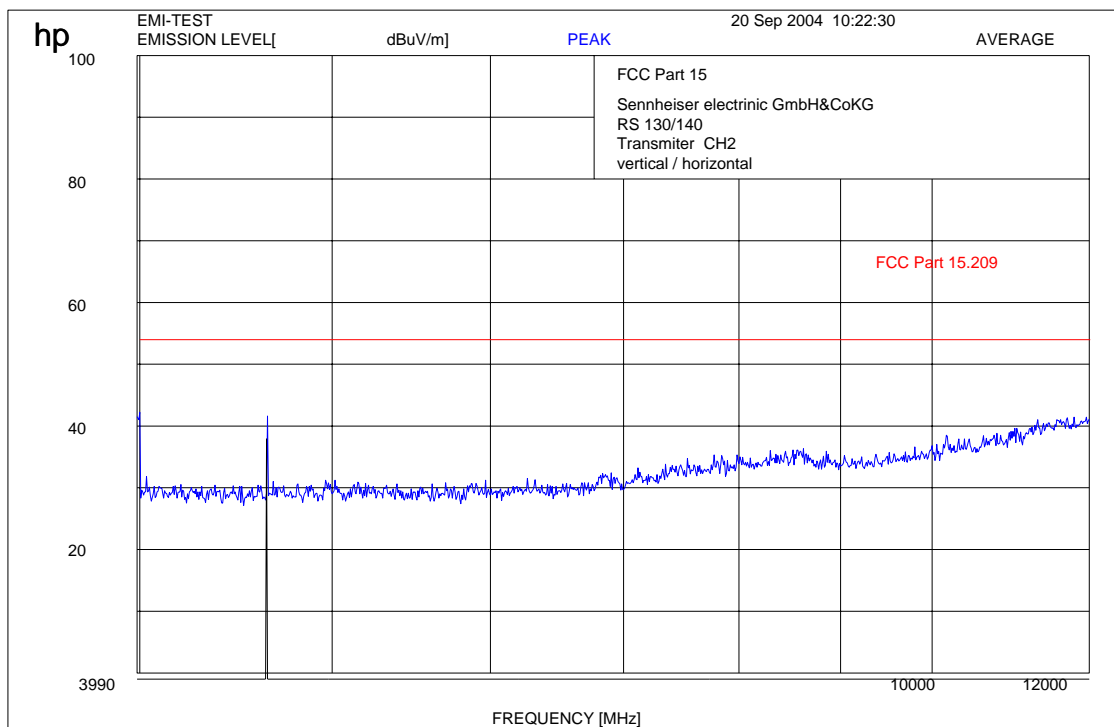
Ambient temperature : 23°C

Relative humidity : 38%

**SPURIOUS RADIATION**  
**Radiated**

§ 15.249

926.8 MHz



$f < 1 \text{ GHz} : \text{RBW/VBW} : 100 \text{ kHz}$

$f \geq 1 \text{ GHz} : \text{RBW/VBW} : 1 \text{ MHz}$

**Limits**

**SUBCLAUSE § 15.249 (a)**

Fundamental Frequency (MHz)	Field strength of Fundamental (mV/m)	Field strength of Fundamental ( $\mu\text{V/m}$ )
902-928	50 (94 dB $\mu\text{V/m}$ )	500 (54 dB $\mu\text{V/m}$ )
2400-2483.5	50 (94 dB $\mu\text{V/m}$ )	500 (54 dB $\mu\text{V/m}$ )
5725-5875	50 (94 dB $\mu\text{V/m}$ )	500 (54 dB $\mu\text{V/m}$ )
24.0-24.25 GHz	250 (108 dB $\mu\text{V/m}$ )	2500 (68 dB $\mu\text{V/m}$ )

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**

(for reference numbers see test equipment listing)

17 – 24; 64; 52-63

Equipment under test : RS130/RS140

Ambient temperature : 23°C

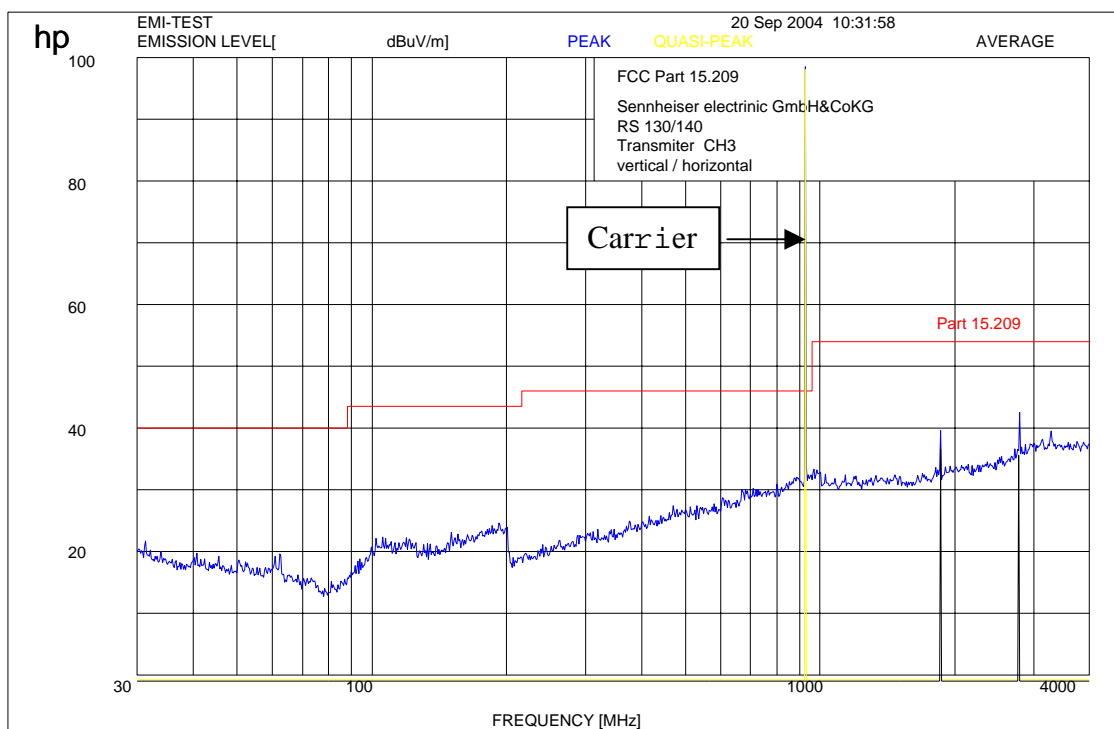
Relative humidity : 38%

**SPURIOUS RADIATION**

§ 15.249

**Radiated**

927.5 MHz



$f < 1 \text{ GHz} : \text{RBW/VBW} : 100 \text{ kHz}$

$f \geq 1 \text{ GHz} : \text{RBW/VBW} : 1 \text{ MHz}$

**Limits**

**SUBCLAUSE § 15.249 (a)**

Fundamental Frequency (MHz)	Field strength of Fundamental (mV/m)	Field strength of Fundamental ( $\mu\text{V/m}$ )
902-928	50 (94 dB $\mu\text{V/m}$ )	500 (54 dB $\mu\text{V/m}$ )
2400-2483.5	50 (94 dB $\mu\text{V/m}$ )	500 (54 dB $\mu\text{V/m}$ )
5725-5875	50 (94 dB $\mu\text{V/m}$ )	500 (54 dB $\mu\text{V/m}$ )
24.0-24.25 GHz	250 (108 dB $\mu\text{V/m}$ )	2500 (68 dB $\mu\text{V/m}$ )

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24; 64; 52-63



Equipment under test : RS130/RS140

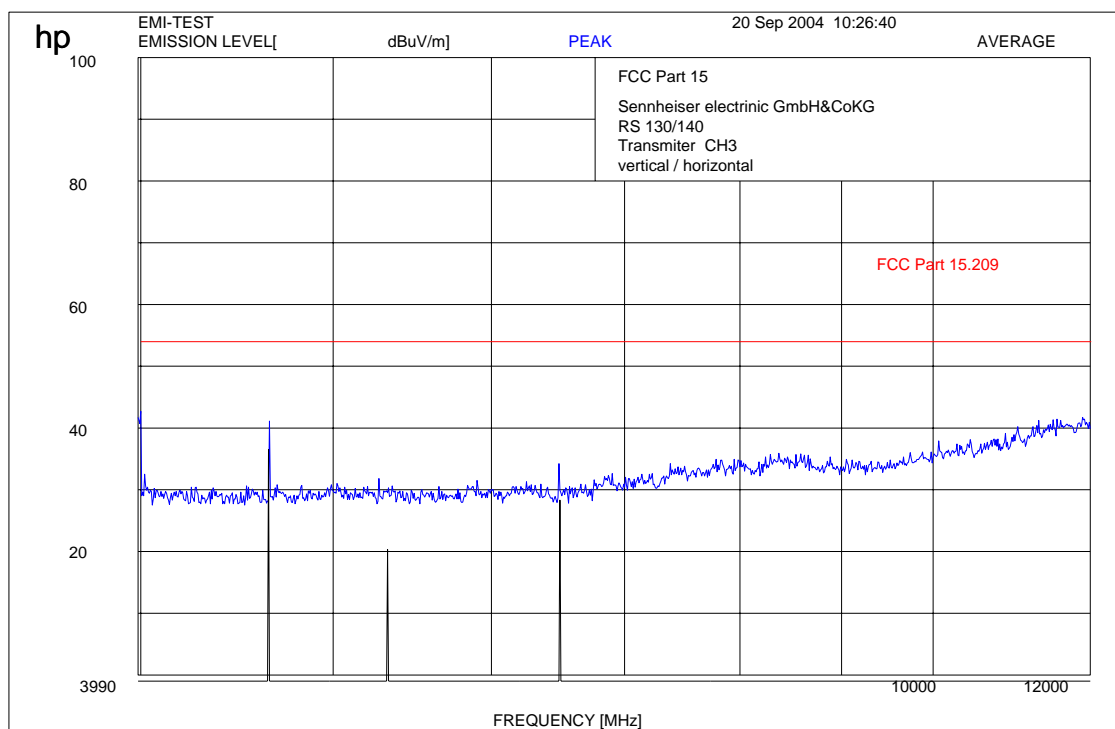
Ambient temperature : 23°C

Relative humidity : 38%

## SPURIOUS RADIATION Radiated

§ 15.249

927.5 MHz



$f < 1 \text{ GHz} : \text{RBW/VBW} : 100 \text{ kHz}$

$f \geq 1 \text{ GHz} : \text{RBW/VBW} : 1 \text{ MHz}$

Limits

SUBCLAUSE § 15.249 (a)

Fundamental Frequency (MHz)	Field strength of Fundamental (mV/m)	Field strength of Fundamental ( $\mu\text{V/m}$ )
902-928	50 (94 dB $\mu\text{V/m}$ )	500 (54 dB $\mu\text{V/m}$ )
2400-2483.5	50 (94 dB $\mu\text{V/m}$ )	500 (54 dB $\mu\text{V/m}$ )
5725-5875	50 (94 dB $\mu\text{V/m}$ )	500 (54 dB $\mu\text{V/m}$ )
24.0-24.25 GHz	250 (108 dB $\mu\text{V/m}$ )	2500 (68 dB $\mu\text{V/m}$ )

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24; 64; 52-63

Equipment under test : RS130/RS140

Ambient temperature : 23°C

Relative humidity : 38%

**RECEIVER SPURIOUS RADIATION**  
Radiated

§ 15.109

SPURIOUS EMISSIONS LEVEL (µV/m)								
926.1 MHz			926.8 MHz			927.5 MHz		
f (MHz)	Detector	Level (µV/m)	f (MHz)	Detector	Level (µV/m)	f (MHz)	Detector	Level (µV/m)
no traceable peak found			no traceable peak found			no traceable peak found		
<b>Measurement uncertainty</b>			<b>±3 dB</b>					

f < 1 GHz : RBW/VBW: 100 kHz                      f ≥ 1GHz : RBW/VBW: 1 MHz  
H = Horizontal ; V= Vertical

Measurement distance see table

**Limits** SUBCLAUSE § 15.109

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

Equipment under test : RS130/RS140

Ambient temperature : 23°C

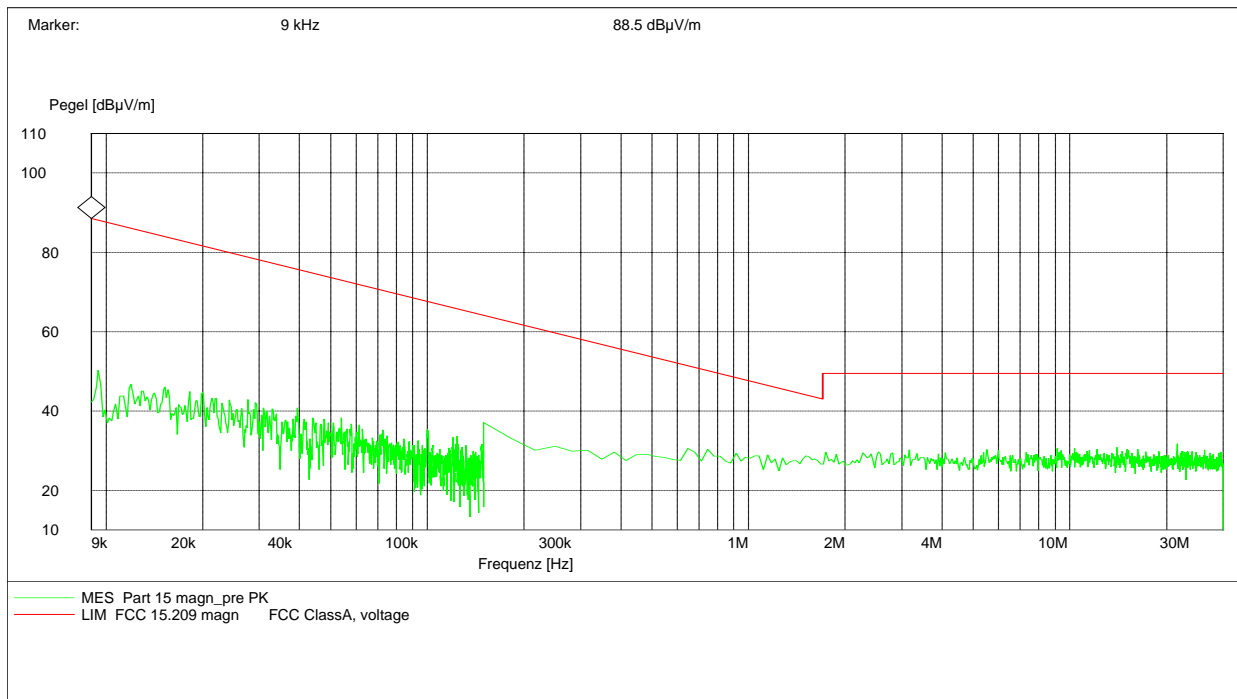
Relative humidity : 38%

SPURIOUS RADIATION 9kHz – 30 MHz

§ 15.109

**Part 15.209 Magnetics**

EUT: HDR130/HDR140  
 Manufacturer: Sennheiser electronic GmbH & Co. KG  
 Operating Condition: Receiver  
 Test Site: Cetecom, Room 6  
 Operator: Berg M.  
 Test Specification: 15.109/15.209  
 Comment:  
 Start of Test: 21.09.04 / 08:43:11



**Limits**

**SUBCLAUSE § 15.109**

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 / 29.5 dBµV/m	30

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**

(for reference numbers see test equipment listing)

17 – 24; 64; 52-63

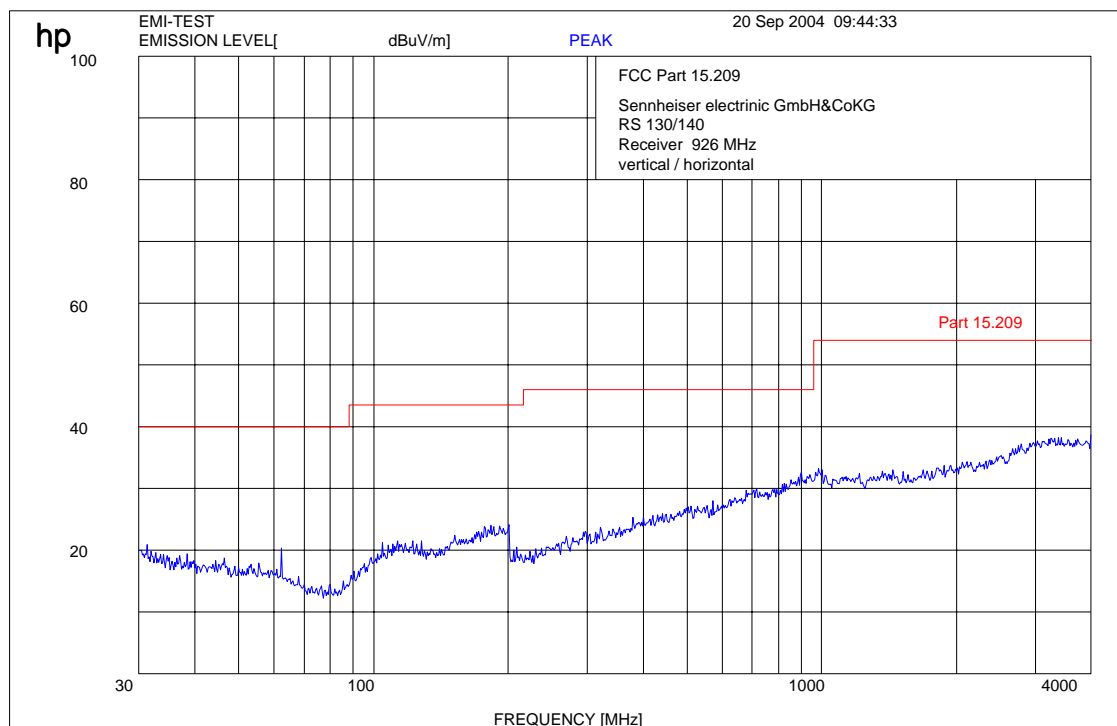
Equipment under test : RS130/RS140

Ambient temperature : 23°C

Relative humidity : 38%

EMISSION LIMITATIONS ( Receiver) SUBCLAUSE § 15.109

Rx mode (Plot valid for all channels)



$f < 1 \text{ GHz} : \text{RBW/VBW: } 100 \text{ kHz}$

$f \geq 1 \text{ GHz} : \text{RBW/VBW: } 1 \text{ MHz}$

## LIMITS

## SUBCLAUSE § 15.247 (c)

In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. 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) (see §15.205(c)).

## REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24; 64; 52-63

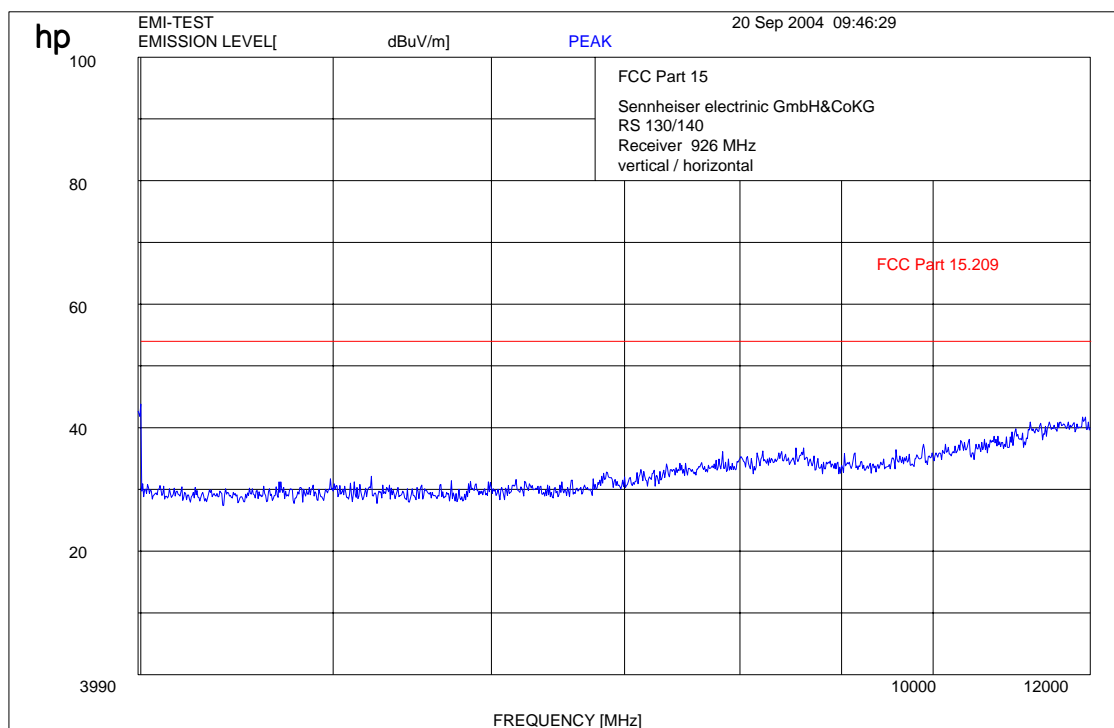
Equipment under test : RS130/RS140

Ambient temperature : 23°C

Relative humidity : 38%

EMISSION LIMITATIONS ( Receiver) SUBCLAUSE § 15.109

Rx mode (Plot valid for all channels)



$f < 1 \text{ GHz} : \text{RBW/VBW: } 100 \text{ kHz}$

$f \geq 1 \text{ GHz} : \text{RBW/VBW: } 1 \text{ MHz}$

Limits

SUBCLAUSE § 15.109

Frequency (MHz)	Field strength ( $\mu\text{V/m}$ )	Measurement distance (m)
30 - 88	100 (40 dB $\mu\text{V/m}$ )	3
88 - 216	150 (43.5 dB $\mu\text{V/m}$ )	3
216 - 960	200 (46 dB $\mu\text{V/m}$ )	3
above 960	500 (54 dB $\mu\text{V/m}$ )	3

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 - 24; 64; 52-63

Equipment under test : RS130/RS140

Ambient temperature : 23°C

Relative humidity : 38%

Conducted emissions

§ 15.107/207

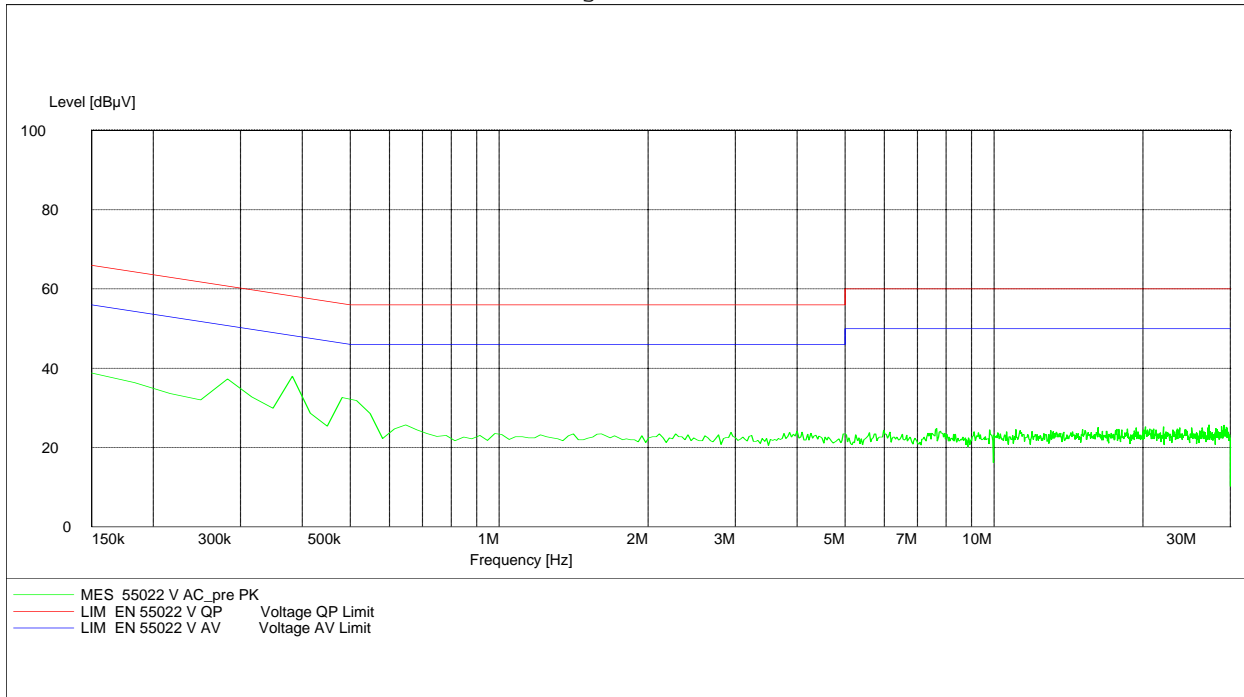
CISPR 22

EN 55022

EUT: RS 130/140  
 Manufacturer: Sennheiser electronics GmbH & Co. KG  
 Operating Condition: Transmitter and Haedset (charging mode)  
 Test Site: CETECOM ICT Services Room 006  
 Operator: Berg  
 Test Specification:  
 Comment: 115V / 60 Hz  
 Start of Test: 20.09.04 / 11:17:09

SCAN TABLE: "EN 55022 V"

Short Description: Voltage Mains 1.60  
 Start Stop Step Detector Meas. IF Transducer  
 Frequency Frequency Width Time Bandw.  
 150.0 kHz 30.0 MHz 7.5 kHz MaxPeak 100.0 ms 10 kHz ESH3-Z5 L1 1458  
 Average



Limit§ 15.207

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	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.

Conducted emissions § 15.107/207

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24; 64; 52-63

**Equipment under test : RS130/RS140**

**Ambient temperature : 23°C**

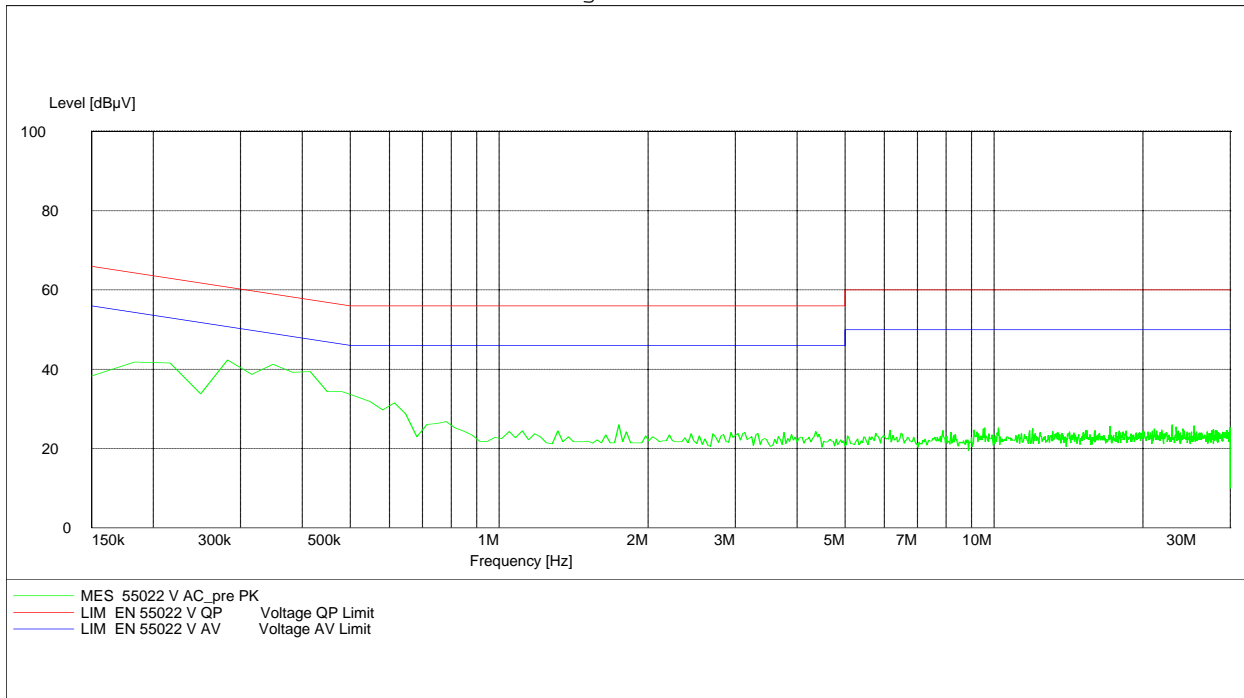
**Relative humidity : 38%**

**CISPR 22  
EN 55022**

EUT: RS 130/140  
 Manufacturer: Sennheiser electronics GmbH & Co. KG  
 Operating Condition: Transmitter and Haedset Transmit mode)  
 Test Site: CETECOM ICT Services Room 006  
 Operator: Berg  
 Test Specification:  
 Comment: 115V / 60 Hz  
 Start of Test: 20.09.04 / 11:26:57

**SCAN TABLE: "EN 55022 V"**

Short Description:			Voltage Mains 1.60			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	7.5 kHz	MaxPeak	100.0 ms	10 kHz	ESH3-Z5 L1 1458
			Average			



**Limit§ 15.207**

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	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.

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**

(for reference numbers see test equipment listing)

17 – 24; 64; 52-63

**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



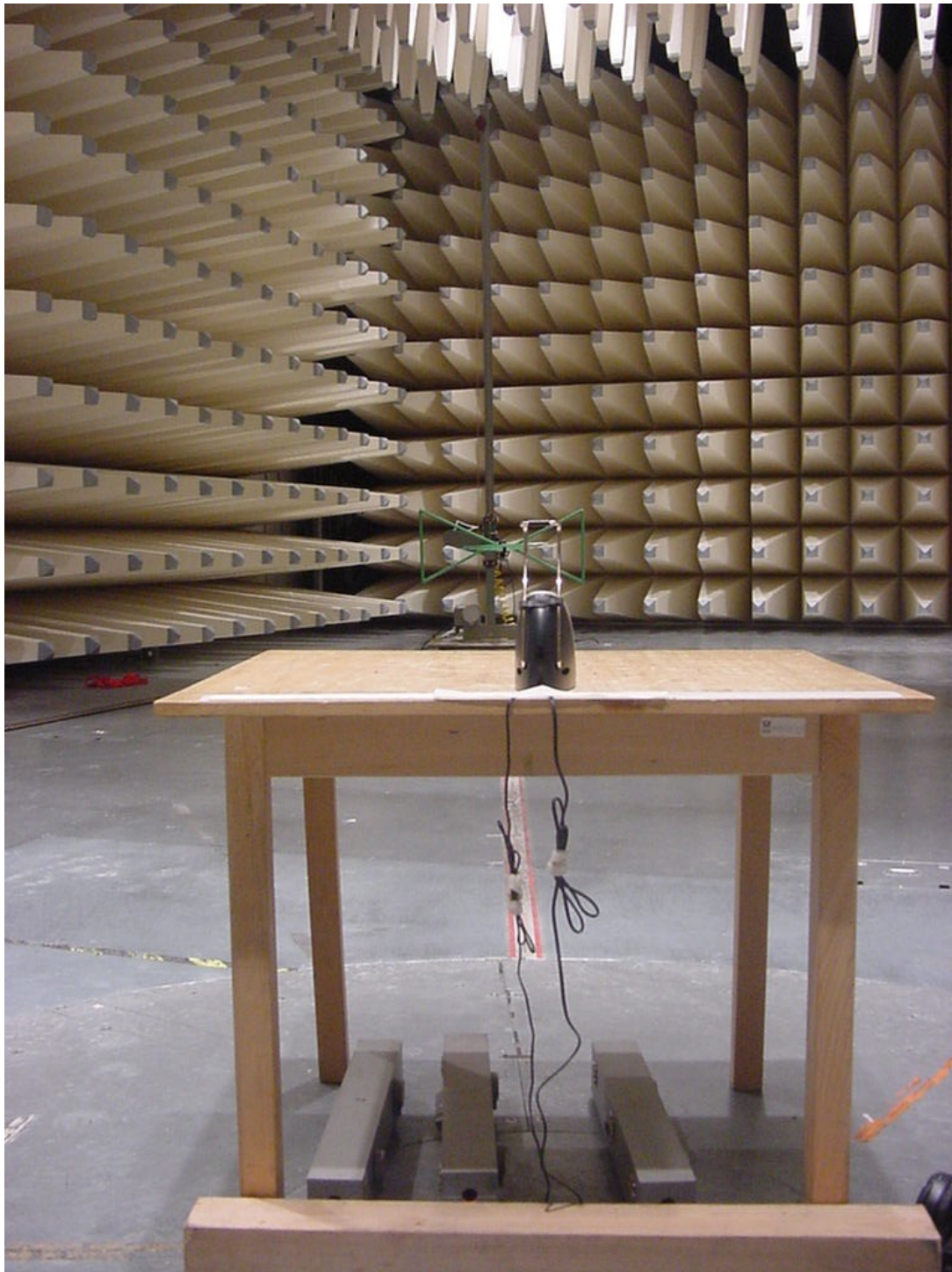
**TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS**

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
51	Spectrum Analyzer	8562A	Hewlett Packard	2809AO2682
52	Steuerrechner	PSM 7	Rohde & Schwarz	883 086/026
53	DC V-Netzwerk	ESH3-Z6	Rohde & Schwarz	861 406/005
54	DC V-Netzwerk	ESH3-Z6	Rohde & Schwarz	893 689/012
55	AC 2 Phasen V-Netzwerk	ESH3-Z5	Rohde & Schwarz	861 189/014
56	AC 2 Phasen V-Netzwerk	ESH3-Z5	Rohde & Schwarz	894 981/019
57	AC-3 Phasen V-Netzwerk	ESH2-Z5	Rohde & Schwarz	882 394/007
58	Stromversorgung	6032A	Rohde & Schwarz	2933A05441
59	HF-Test Empfänger	ESVP.52	Rohde & Schwarz	881 487/021
60	Spectrum Monitor	EZM	Rohde & Schwarz	883 086/026
61	HF-Test Empfänger	ESH3	Rohde & Schwarz	881 515/002
62	Relais Matrix	PSU	Rohde & Schwarz	882 943/029
63	Relais Matrix	PSU	Rohde & Schwarz	828 628/007
64	Spectrum Analyzer	FSIQ 26	Rohde & Schwarz	119.6001.27
65	Spectrum Analyzer	HP 8565E	Hewlett Packard	3473A00773
66				

Test setup

TR140-9



Test setup

TR140-9





Test setup

HDR140-9



Test setup

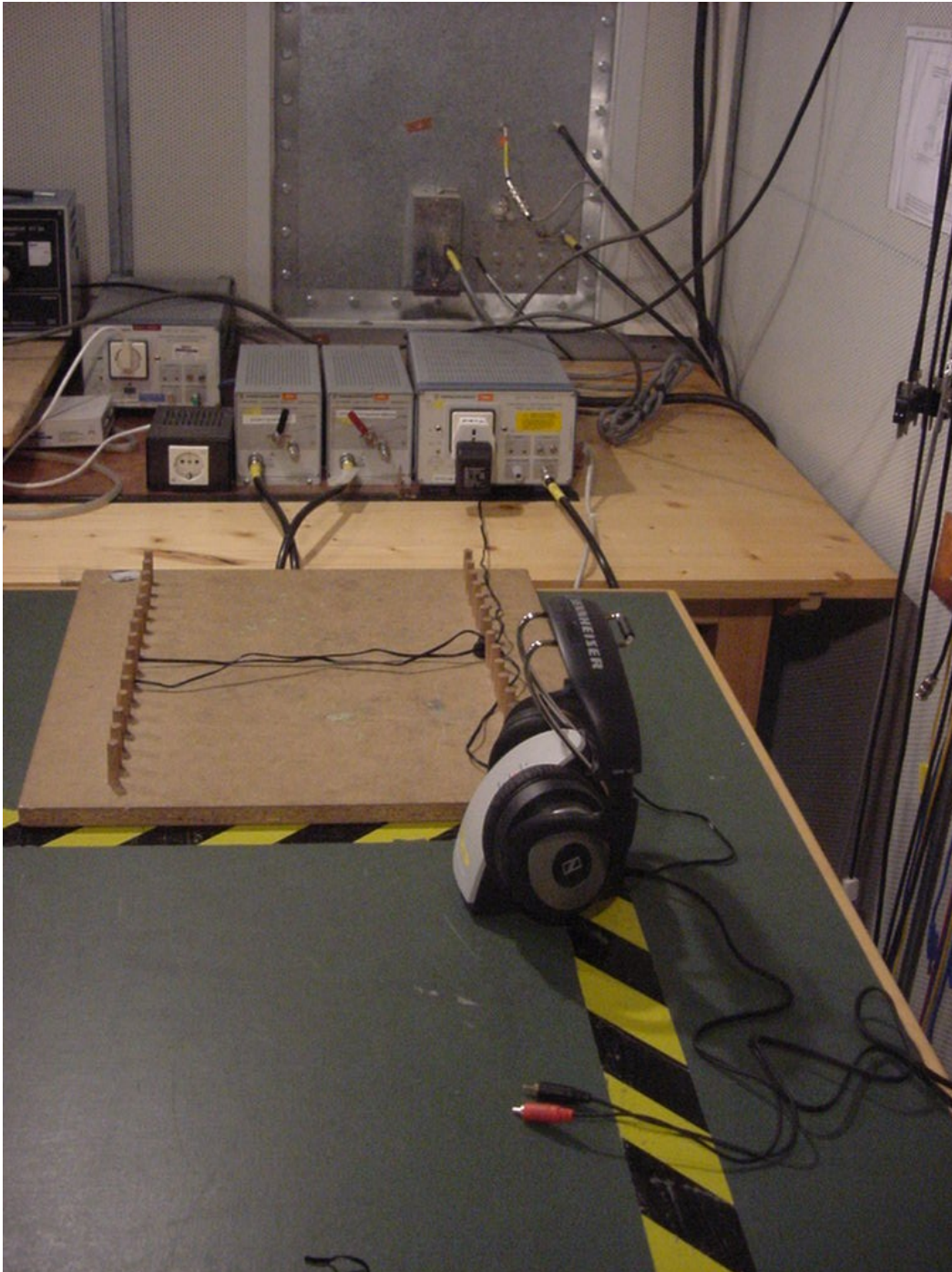
HDR140-9





Test setup

RS140



**Photographs of the equipment**

Photo 1

**RS130**



PHOTOGRAPHS OF THE EQUIPMENT

Photo 2

**RS130**





**PHOTOGRAPHS OF THE EQUIPMENT**

Photo 3

**RS140**



**PHOTOGRAPHS OF THE EQUIPMENT**

Photo 4

**RS140**



**PHOTOGRAPHS OF THE EQUIPMENT**

Photo 5

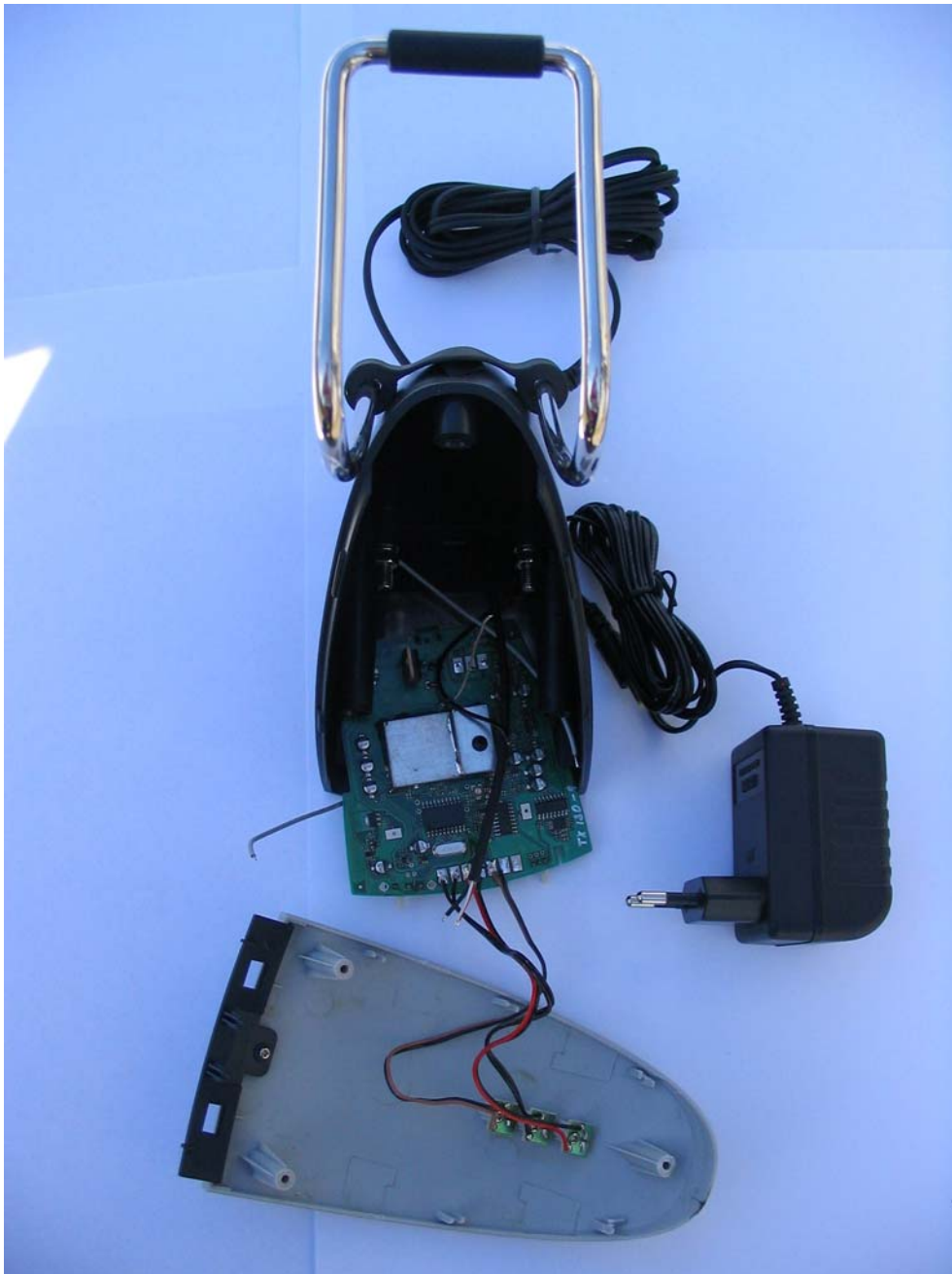
TR130-8



**PHOTOGRAPHS OF THE EQUIPMENT**

Photo 6

**TR130-8**



**PHOTOGRAPHS OF THE EQUIPMENT**

Photo 7

**TR140-8**

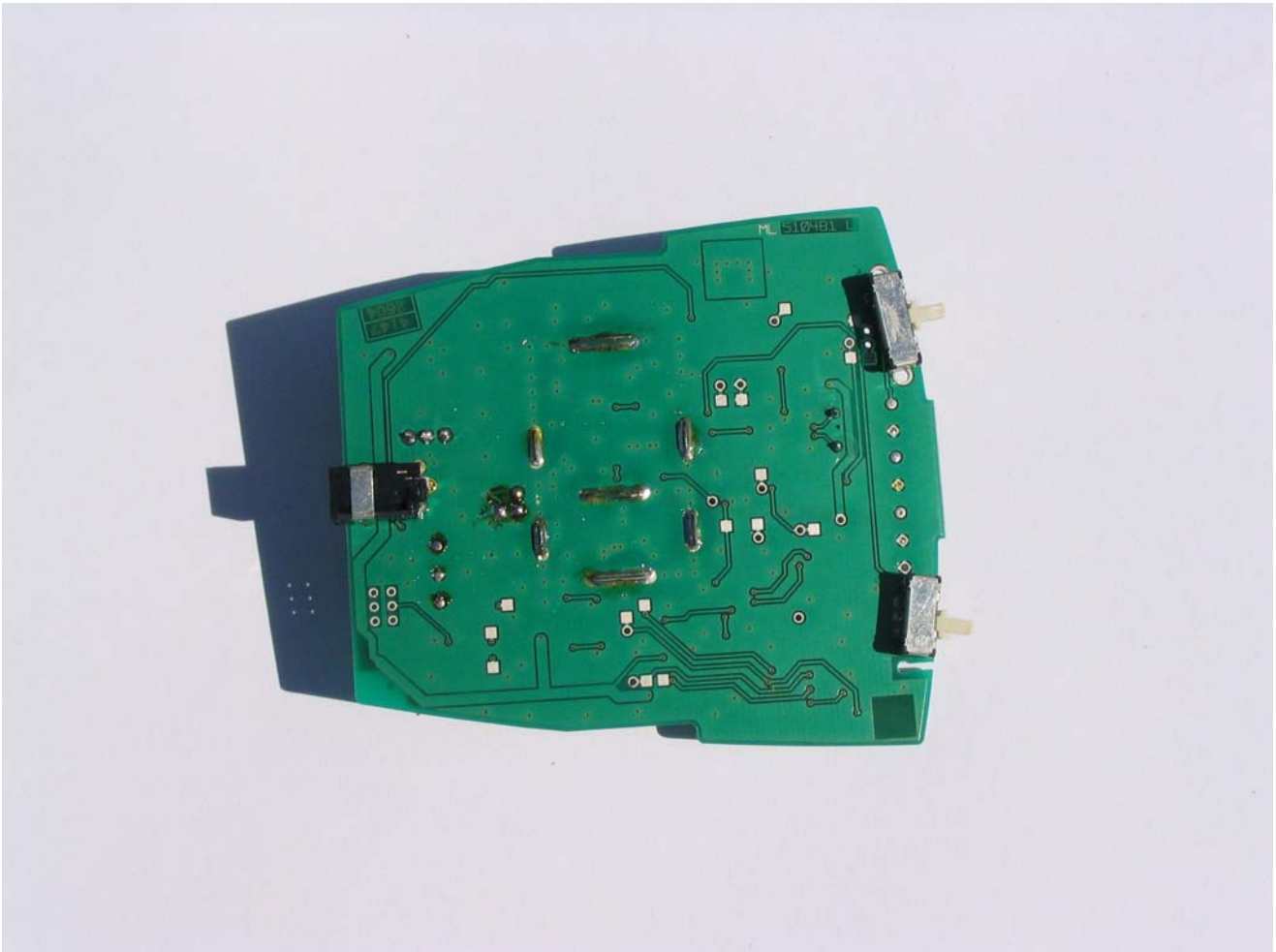




**PHOTOGRAPHS OF THE EQUIPMENT**

Photo 8

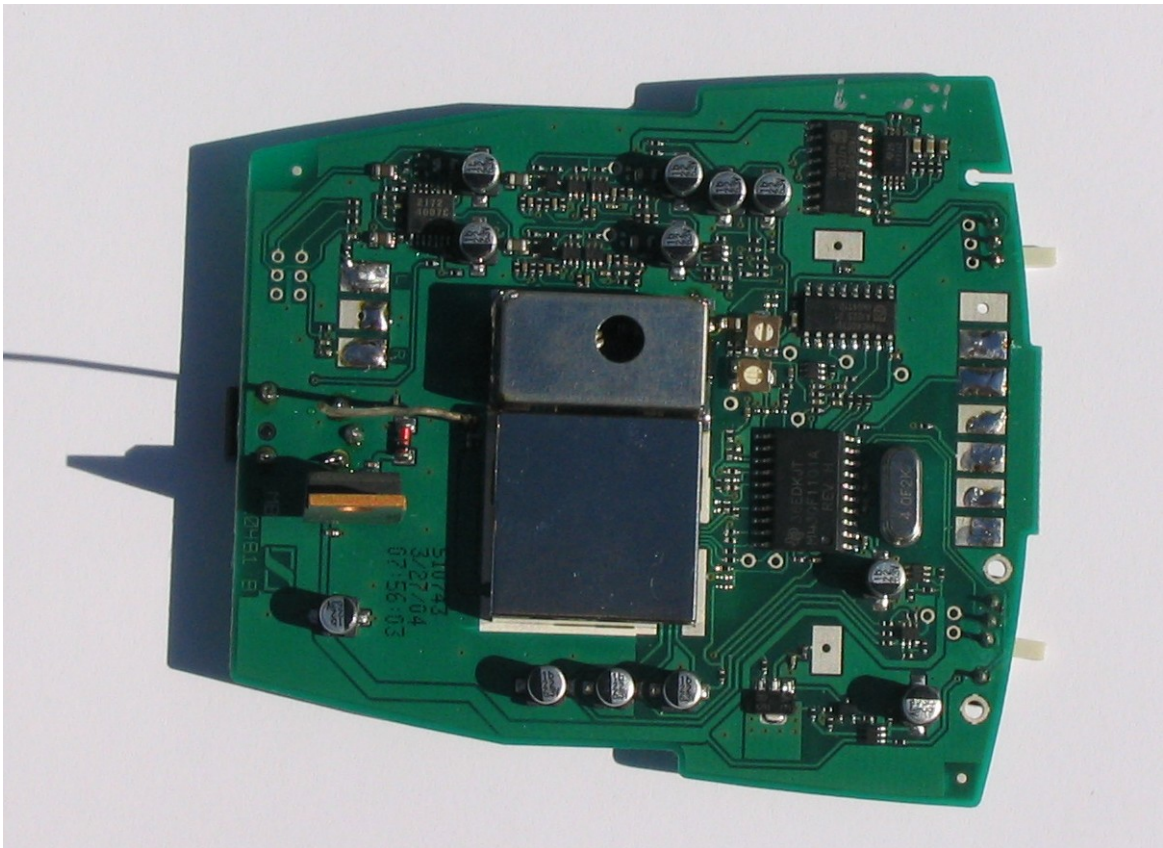
**PCB ( bottom )**



**PHOTOGRAPHS OF THE EQUIPMENT**

Photo 9

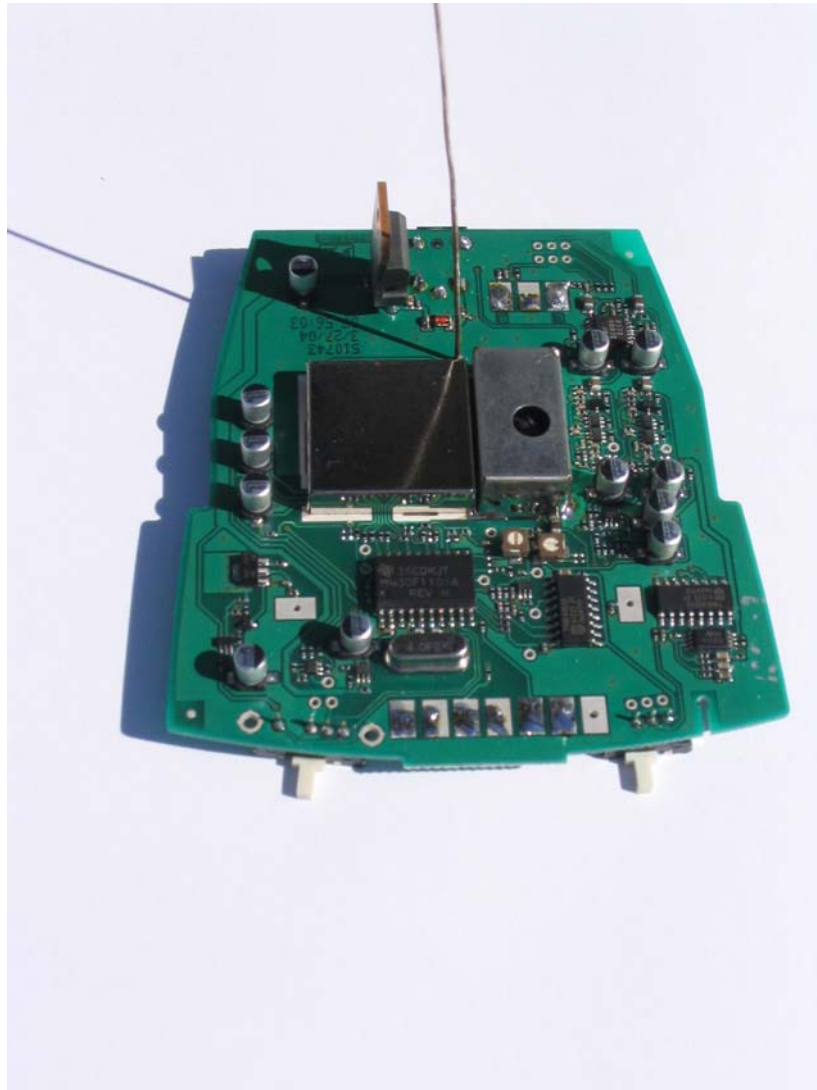
**PCB**



**PHOTOGRAPHS OF THE EQUIPMENT**

Photo 10

**PCB**

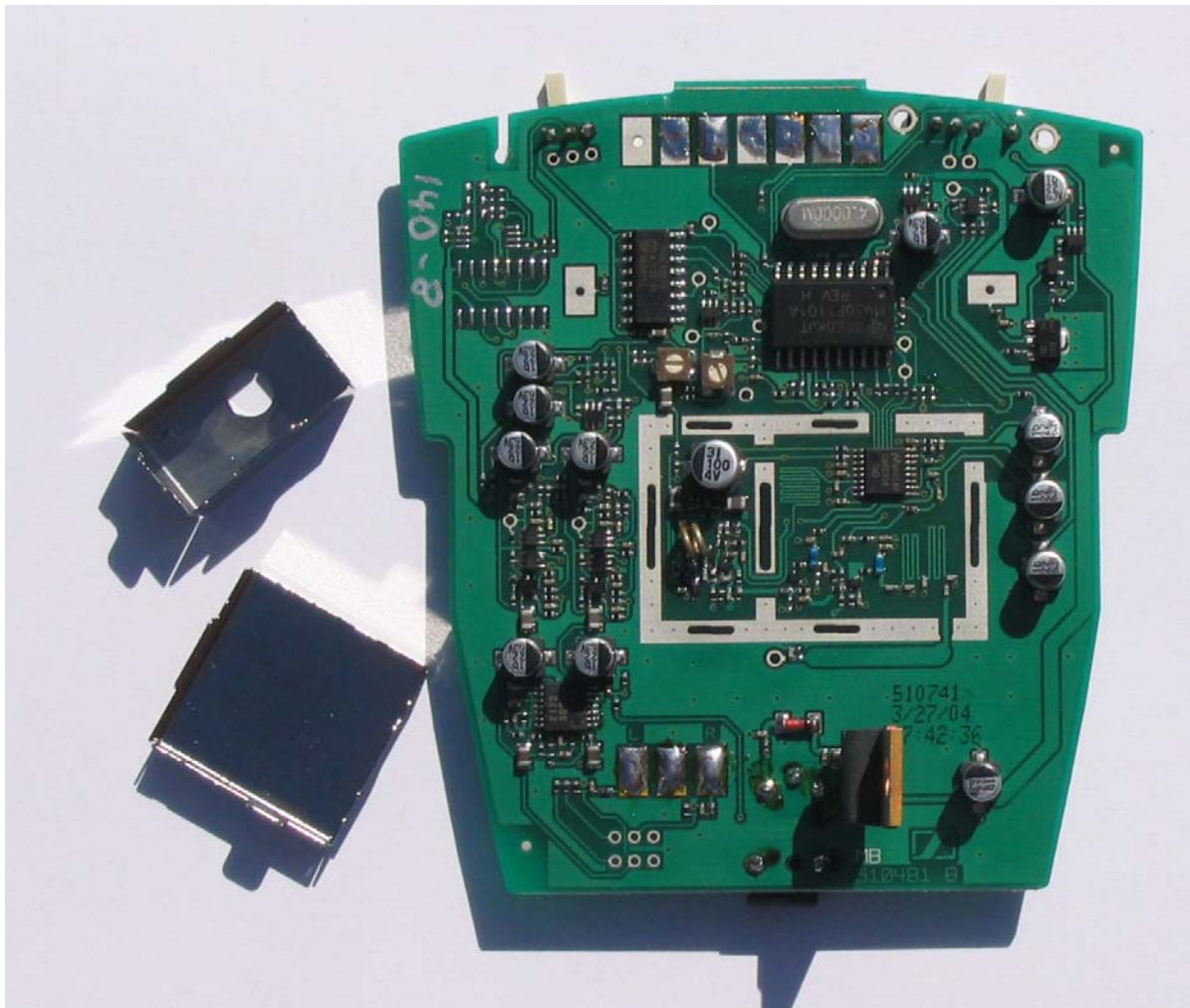




**PHOTOGRAPHS OF THE EQUIPMENT**

Photo 11

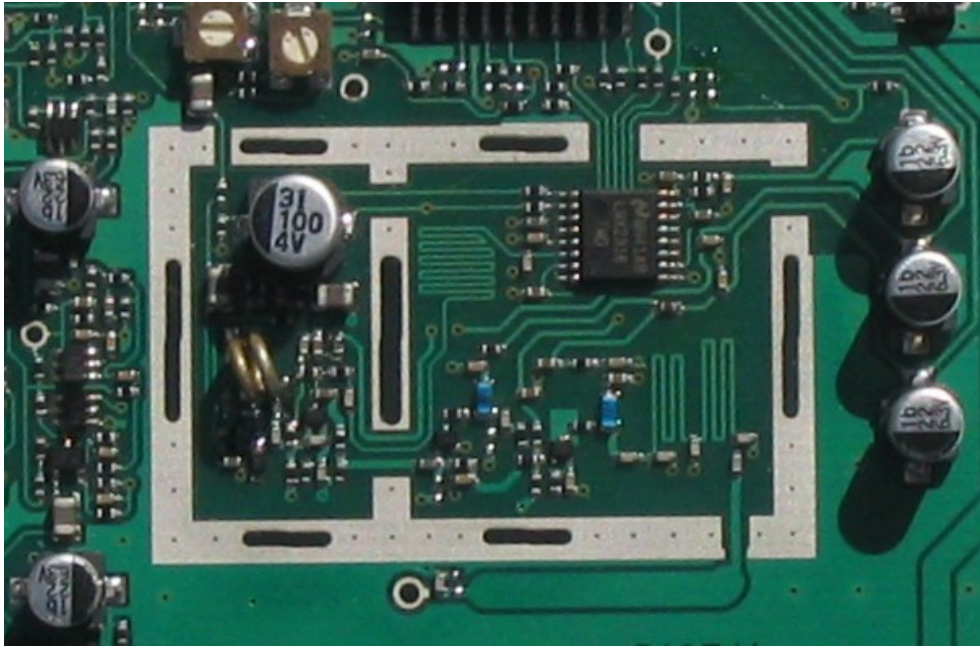
**PCB (open)**



**PHOTOGRAPHS OF THE EQUIPMENT**

Photo 12

**PCB (open)**



**PHOTOGRAPHS OF THE EQUIPMENT**

Photo 13

**HDR130-8**



**PHOTOGRAPHS OF THE EQUIPMENT**

Photo 14

**HDR140-8**





**PHOTOGRAPHS OF THE EQUIPMENT**

Photo 15

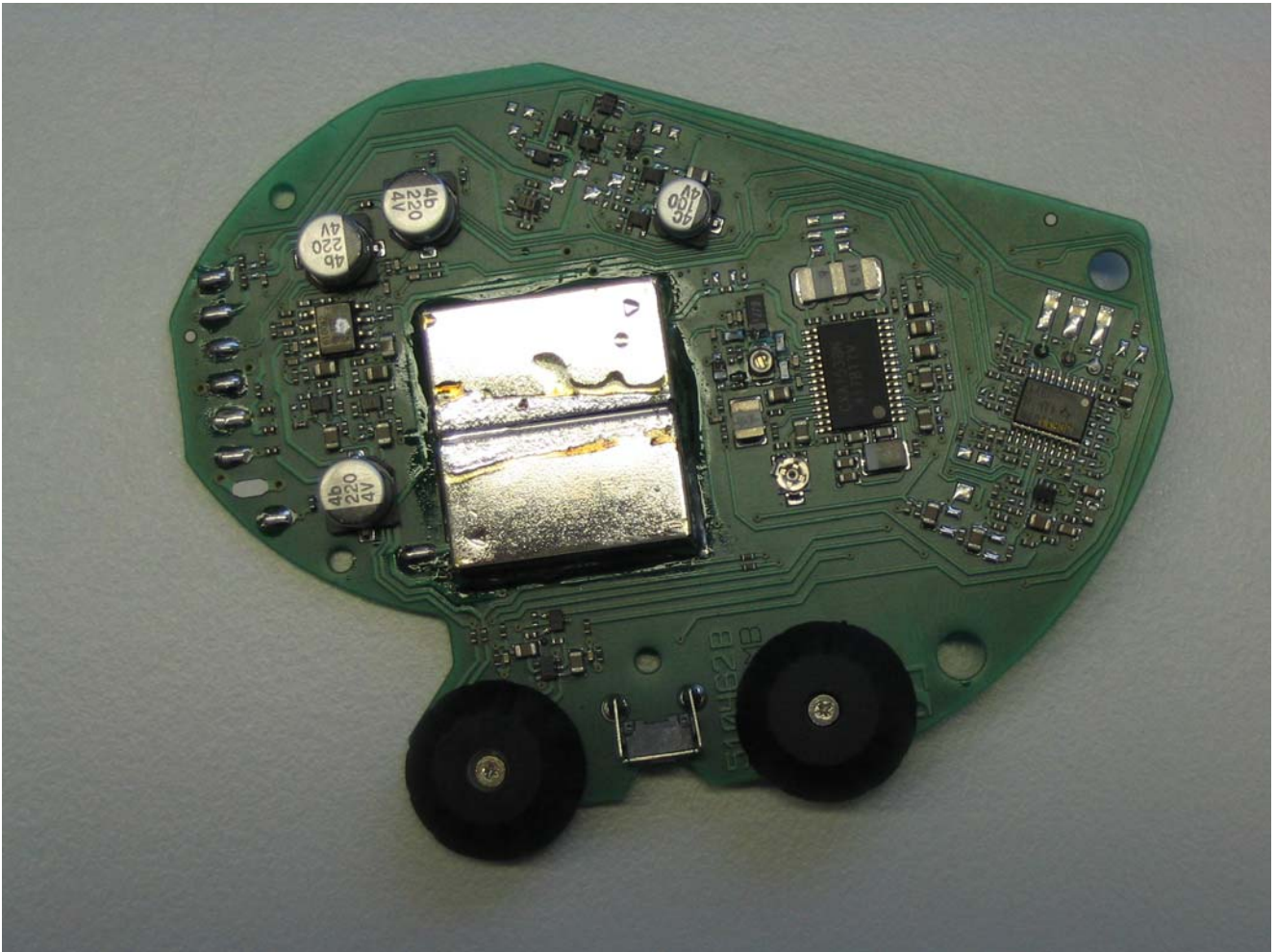
**HDR130/140-8 PCB**



**PHOTOGRAPHS OF THE EQUIPMENT**

Photo 16

**HDR130/140-8 PCB**

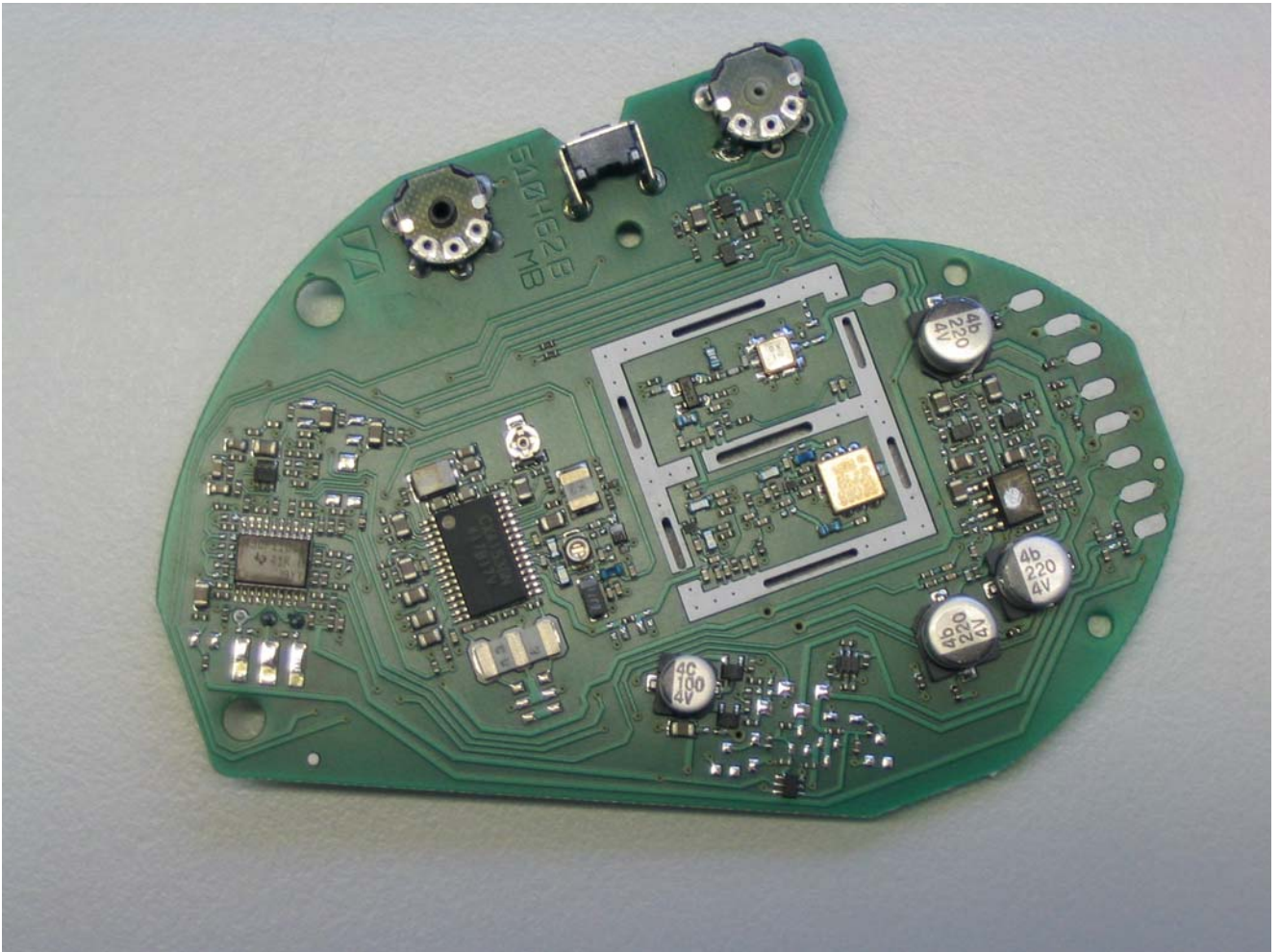




**PHOTOGRAPHS OF THE EQUIPMENT**

Photo 17

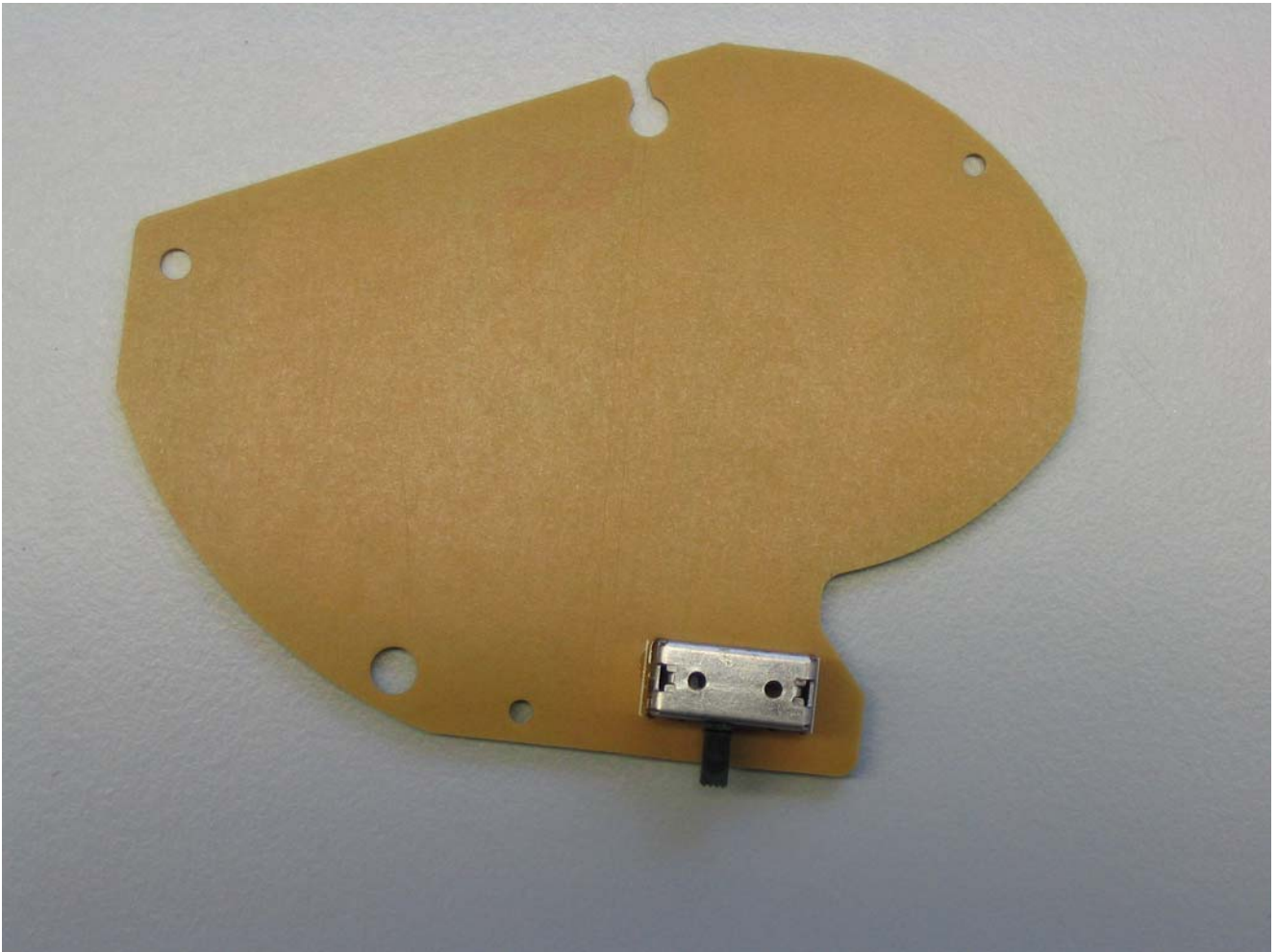
**HDR130/140-8 PCB**



**PHOTOGRAPHS OF THE EQUIPMENT**

Photo 18

**HDR140-8 PCB left side bottom**



**PHOTOGRAPHS OF THE EQUIPMENT**

Photo 19

**HDR140-8 PCB left side top**

