



Accredited testing-laboratory

DAR registration number: DAT-P-176/94-D1

**Federal Motor Transport Authority (KBA)
DAR registration number: KBA-P 00070-97**

Recognized by the Federal Communications Commission

Anechoic chamber registration no.: 90462 (FCC)

Anechoic chamber registration no.: 3462C-1 (IC)

Certification ID: DE 0001

Accreditation ID: DE 0002

Accredited Bluetooth® Test Facility (BQTF)

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Test report no. : 1-1146-01-03/09
Type identification : Stethoset 840 Serie (TR840/ RR840 / RR840-S)
Applicant : Sennheiser electronic GmbH & Co. KG
FCC ID : DMOSET840
IC Certification No : 2099A-840
Test standards : 47 CFR Part 15
RSS - 210 Issue 7

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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 3.1.1. 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:

2009-05-04 **Jakob Reschke**
Date Name

Signature 

Technical responsibility for area of testing:

2009-05-04 **Michael Berg**
Date Name

Signature 

1.2 Testing laboratory

CETECOM ICT Services GmbH

Untertürkheimer Straße 6 - 10

66117 Saarbrücken

Germany

Phone: + 49 681 5 98 - 0

Fax: + 49 681 5 98 - 9075

e-mail: info@ICT.cetecom.de

Internet: http://www.cetecom-ict.de

State of accreditation: The test laboratory (area of testing) is accredited according to
DIN EN ISO/IEC 17025
DAR registration number: DAT-P-176/94-D1

Accredited by: Federal Motor Transport Authority (KBA)
DAR registration number: KBA-P 00070-97

Testing location, if different from CETECOM ICT Services GmbH:

Name :
Street :
Town :
Country :
Phone :
Fax :

1.3 Details of applicant

Name:	Sennheiser electronic GmbH & Co. KG
Street:	Am Labor 1
Town:	30900 Wedemark
Country:	Germany
Telephone:	+49 (0) 5130 6 00 - 0
Fax:	+49 (0) 5130 600 330
Contact:	Volker Bartsch
E-mail:	bartschv@sennheiser.com
Telephone:	+49 (0) 5130 600 465

1.4 Application details

Date of receipt of order:	2009-04-27
Date of receipt of test item:	2009-04-27
Date of start test:	2009-04-27
Date of end test:	2009-05-04
Persons(s) who have been present during the test:	-/-

2 Test standard/s

47 CFR Part 15	2008-07	Title 47 of the Code of Federal Regulations; Chapter I- Federal Communications Commission subchapter A - general, Part 15-Radio frequency devices
RSS - 210 Issue 7	2007-06	Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radio communication Devices (All Frequency Bands): Category I Equipment

1.5 Test Item

Type of equipment	:	Wireless Listening System
Model name	:	Stethoset 840 Serie In this report the following EUTs were measured: SET 840-TV contains: TR840 (Transmitter) RR840 (Receiver) SET 840-S contains: TR840 (Transmitter) RR840S (Receiver)
Manufacturer	:	Sennheiser electronic GmbH & Co. KG
Address	:	Am Labor 1
City	:	Wedemark
Country	:	Germany
Tested to Radio Standards Specification (RSS) No.	:	210 Issue 7
Open Area Test Site Industry Canada Number	:	IC 3462C-1
Frequency Range (or fixed frequency)	:	926 MHz – 928 MHz
Field Strength (3m)	:	93.82 dBµV/m (by 3m)
Occupied Bandwidth (99% BW)	:	130 kHz
Type of Modulation	:	FM
Antenna Information	:	Integrated antenna
Emission Designator (TRC-43)	:	130KF3E
Transmitter Spurious (worst case)	:	251 µV/m in 3m (noise floor)
Receiver Spurious (worst case)	:	251 µV/m in 3m (noise floor)
IC no.	:	2099A-840
FCC ID	:	DMOSET840

ATTESTATION:

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.

Testing Engineer:

2009-05-04 **Jakob Reschke**

Date

Name

Signature



1.6 Test Setup

Hardware	:	Unknown
Software	:	Unknown

1.7 Test Specifications

FCC	:	CFR Part 15.249
IC	:	RSS 210, Issue 7

1.8 Additional Comments

Differences between the two Receivers:

Stethoset Receiver 840	integrated acoustic transducers
Receiver 840 S	no acoustic transducers, therefore a 3,5mm jack is used to connect headphones

The transmitters are identical.

2 Statement of Compliance

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

2.1 Summary of Measurement Results

2.1.1 CFR 47 Part 15 Radio frequency devices

Section in this Report	Test Name / Section FCC Part 15	Test Name / Section RSS 210 Issue 7	Measurement applicable	Verdict
4.1	§ 15.35 (c) Timing of the transmitter (Duty cycle correction factor)	6.5 Pulsed Operation	No	
4.2	§ 15.249 (a) FIELDSTRENGTH OF FUNDAMENTAL	6.2.2 (m2)(1) 902-928, 2400-2483.5 and 5725-5875 MHz	YES	PASS
4.3	§ 15.249 (a) (d) FIELDSTRENGTH OF HARMONICS and SPURIOUS	6.2.2 (m2)(1)(3) 902-928, 2400-2483.5 and 5725-5875 MHz	YES	PASS
4.4	§ 15.109 Receiver spurious emissions (radiated)	7.3 Receiver Spurious Emissions (Radiated)	YES	PASS
4.5	§ 15.107 / 15.207 Conducted Limits	Section 6.6 , 7.4	YES	PASS

3 Measurements and 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 confirmed 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 confirmed with ANSI C63.2-1996 item 15.

150 kHz - 30 MHz: Quasi Peak measurement, 9 kHz Bandwidth, passive loop antenna.

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

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

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

All measurement settings are according to FCC 15.109 and 15.107

4 FCC Part 15 Subpart C

4.1 Timing of the transmitter

Not applicable!

Reference

FCC	:	CFR Part SUBCLAUSE § 15.35 (c)
IC	:	RSS 210, Issue 7 6.5 PULSED OPERATION

Limits: § 15.35 (c)

(c) Unless otherwise specified, e.g. Section 15.255(b), when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.

4.2 Field Strength of the Fundamental

Reference

FCC	:	CFR Part SUBCLAUSE § 15.249 (a)
IC	:	RSS 210, Issue 7, 6.2.2 (m2)(1) 902-928, 2400-2483.5 and 5725-5875 MHz

MAXIMUM OUTPUT POWER (RADIATED)

TEST CONDITIONS		MAXIMUM POWER [dB μ V/m]		
Frequency		925.95 MHz	926.80 MHz	927.50 MHz
T _{nom} = 21 °C	V _{nom} = 110 V	93.40	93.82	93.80
Measurement uncertainty		±3dB		

RBW/VBW: 1 MHz

Limits

SUBCLAUSE § 15.249 (a)

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

4.3 Field Strength of the Harmonics and Spurious

Reference

FCC	:	CFR Part SUBCLAUSE § 15.249 (a)(d)
IC	:	RSS 210, Issue 7, 6.2.2 (m2)(1)(3) 902-928, 2400-2483.5 and 5725-5875 MHz

EMISSION LIMITATIONS					
Frequency (MHz)		Amplitude of emission (dBµV/m) Average/QP	Limit max. allowed emission power	Actual attenuation below frequency of operation (dB)	Results
No critical peaks found			20 dBc or 46 dBµV/m		Complies
			20dBc or 54 dBµV/m		
Measurement uncertainty			± 3dB		

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)

Limits

SUBCLAUSE § 15.249 (d)

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

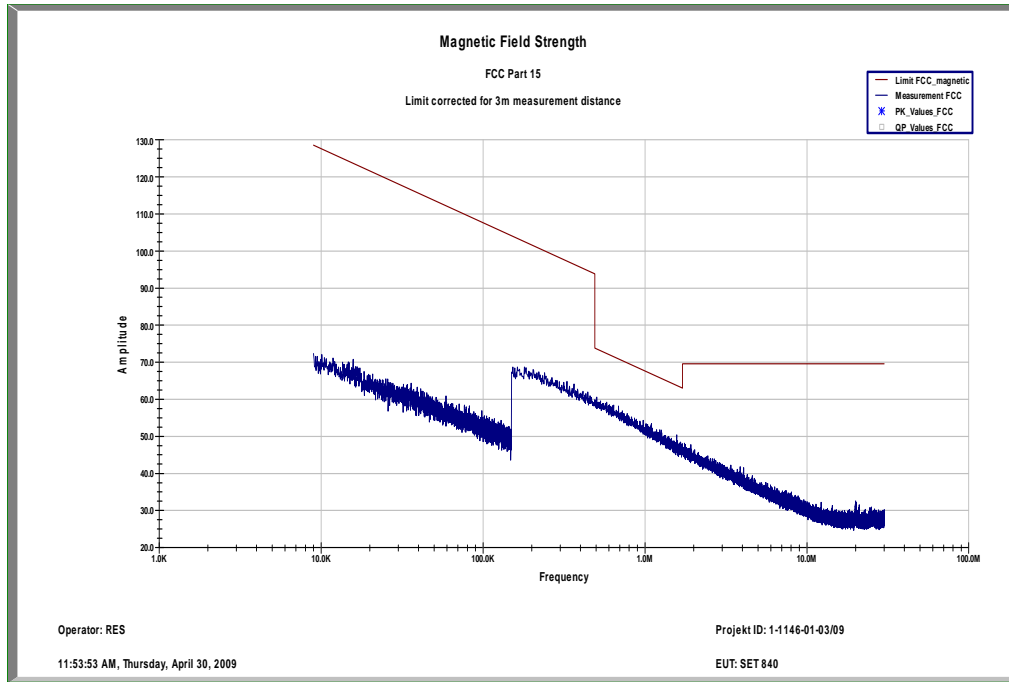
Part 15.109 Magnetics

(To convert the measuring distance from 3m to 30m and 30 to 300m a correction factor from 40 dB/decade was used.)

Measurement distance 3m

This measurement was done in 3 polarisations; the plot shows the worst case.

Plot 1: (valid for all channels)



Limits

SUBCLAUSE § 15.209

Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.0009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
above 960	500	3

Traffic Mode:

Plot 2: 30 MHz – 1 GHz (Lowest Channel)

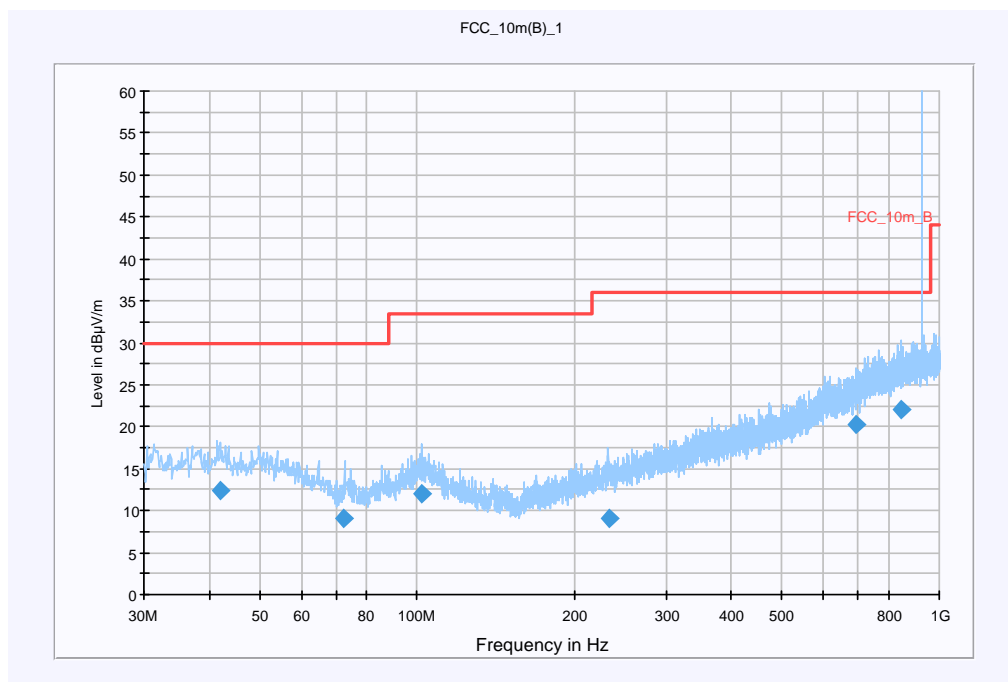
Information:

EUT:	Stethoset Funk SET 840er Serie
Serial Number:	TR840R
Test Description:	FCC Part 15 Class B @ 10 m
Operating Conditions:	TX-Mode Channel 01; 925.95MHz ; Input Signal 1 KHz / 1V
Operator Name:	ZAK + Langer
Comment:	Powered by AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Level Unit:	dB μ V/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	QuasiPeak	120 kHz	15 s	Receiver

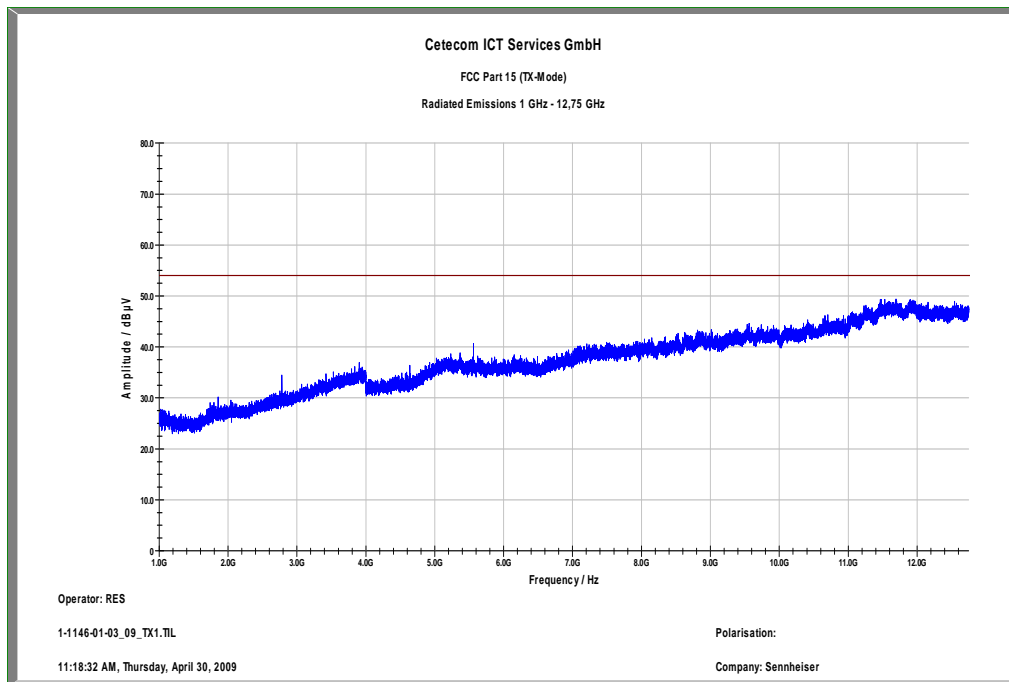


Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
41.997050	12.3	15000.000	120.000	100.0	V	218.0	13.5	17.7	30.0
72.188900	9.1	15000.000	120.000	132.0	V	253.0	9.5	20.9	30.0
101.945200	12.0	15000.000	120.000	107.0	V	266.0	12.1	21.5	33.5
232.771450	9.0	15000.000	120.000	150.0	H	50.0	13.1	27.0	36.0
694.461050	20.2	15000.000	120.000	200.0	H	171.0	22.9	15.8	36.0
842.144450	22.1	15000.000	120.000	200.0	H	312.0	24.9	13.9	36.0

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0109)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

Plot 3: 1 GHz – 12 GHz (Lowest Channel)



Plot 4: 30 MHz – 1 GHz (Middle Channel)

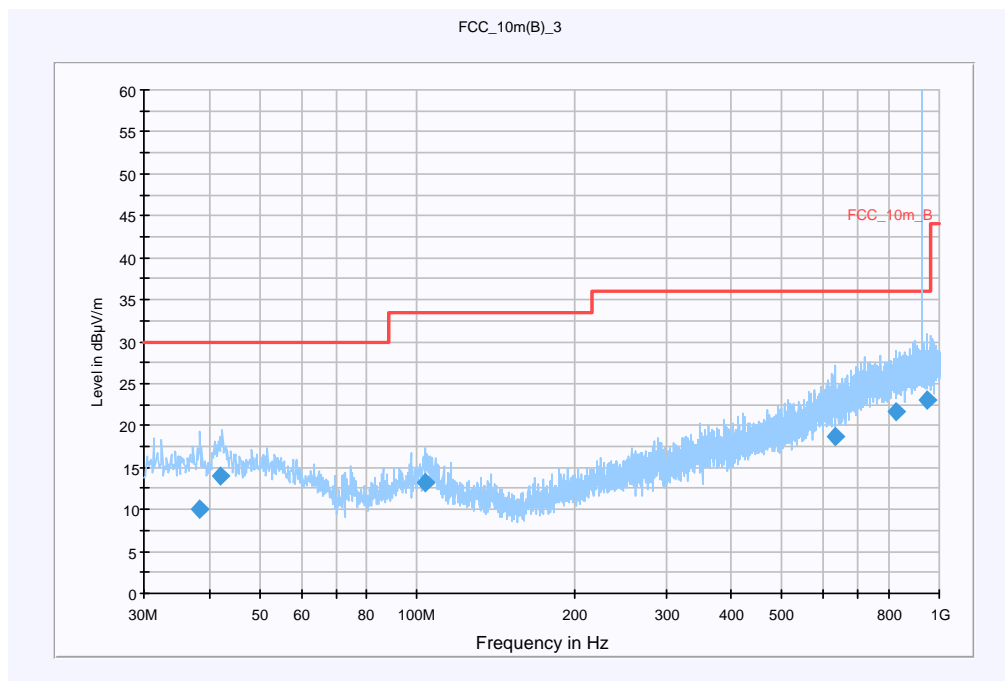
Information

EUT:	Stethoset Funk SET 840er Serie
Serial Number:	TR840R
Test Description:	FCC Part 15 Class B @ 10 m
Operating Conditions:	TX-Mode Channel 02; 926.8MHz; Input Signal 1 KHz / 1V
Operator Name:	ZAK + Langer
Comment:	Powered by AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Level Unit:	dB μ V/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	QuasiPeak	120 kHz	15 s	Receiver

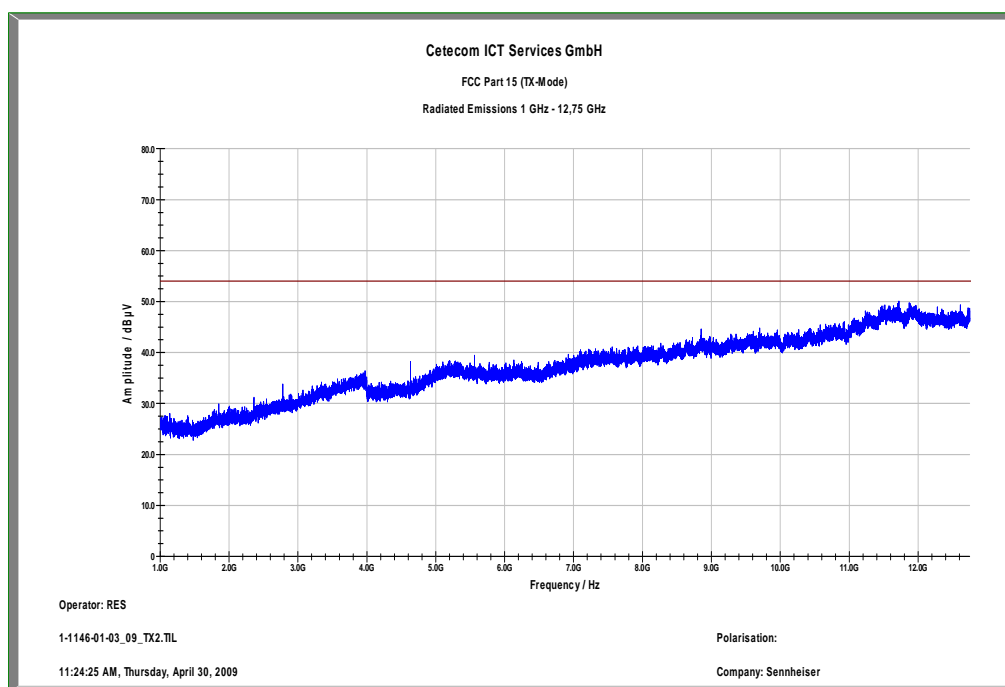


Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
38.281950	10.0	15000.000	120.000	98.0	V	49.0	13.4	20.0	30.0
41.928050	14.0	15000.000	120.000	116.0	V	163.0	13.5	16.0	30.0
103.938150	13.2	15000.000	120.000	125.0	V	233.0	11.9	20.3	33.5
632.739550	18.7	15000.000	120.000	217.0	H	224.0	21.6	17.3	36.0
825.238600	21.7	15000.000	120.000	189.0	V	154.0	24.7	14.3	36.0
946.608450	23.1	15000.000	120.000	167.0	V	47.0	25.8	12.9	36.0

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0109)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

Plot 5: 1 GHz – 12 GHz (Middle Channel)



Plot 6: 30 MHz – 1 GHz (Highest Channel)

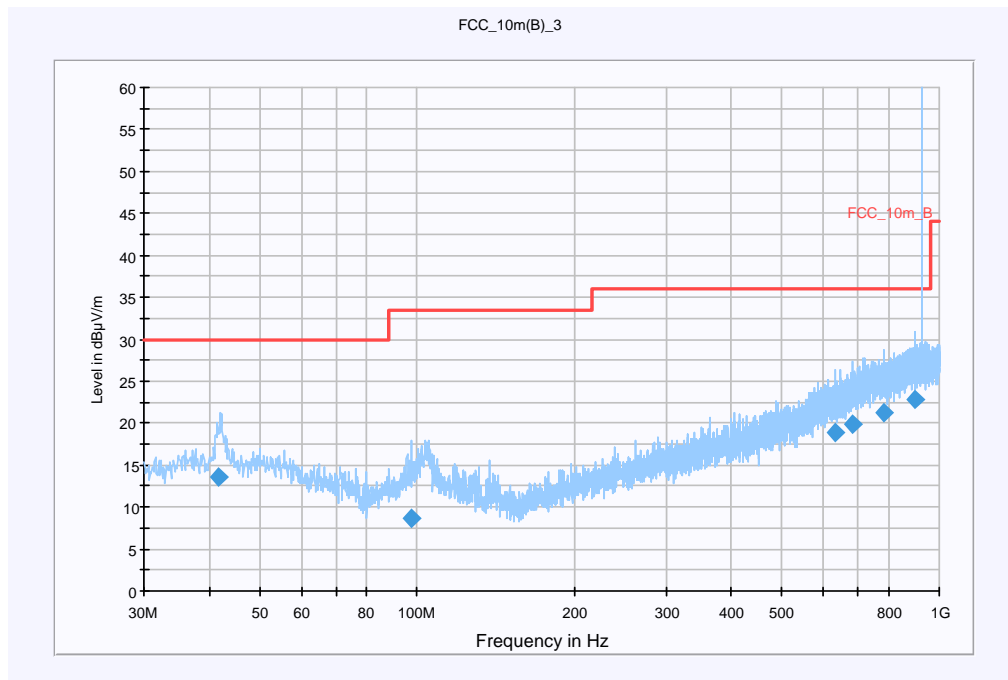
Information

EUT:	Stethoset Funk SET 840er Serie
Serial Number:	TR840R
Test Description:	FCC Part 15 Class B @ 10 m
Operating Conditions:	TX-Mode Channel 03; 927.5MHz; Input Signal 1 KHz / 1V
Operator Name:	ZAK + Langer
Comment:	Powered by AC 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Level Unit:	dB μ V/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	QuasiPeak	120 kHz	15 s	Receiver

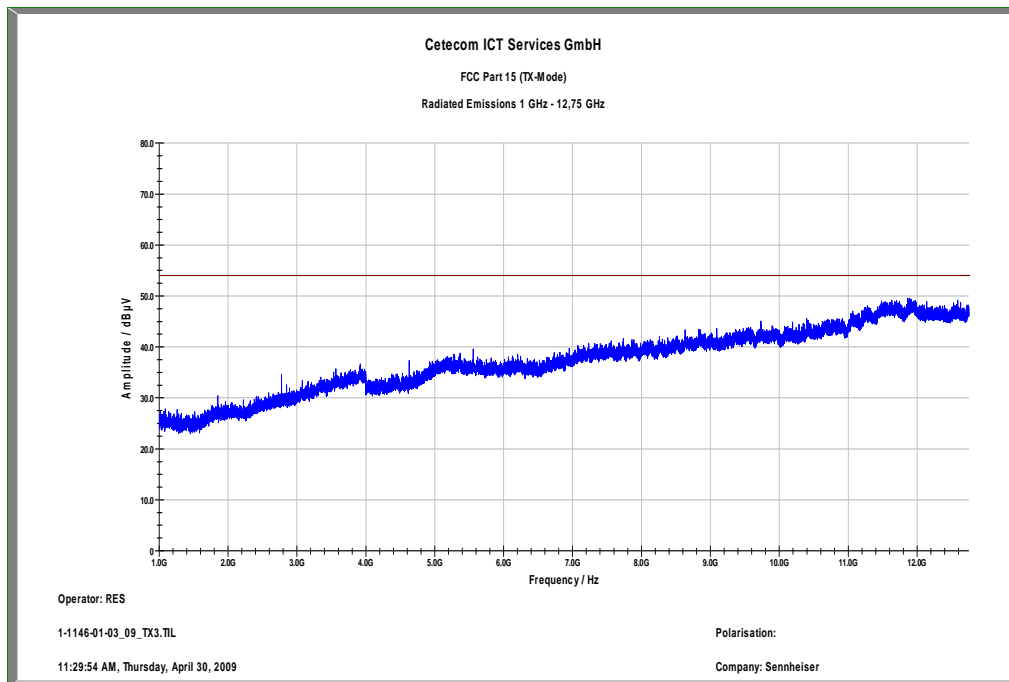


Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
41.767950	13.5	15000.000	120.000	130.0	V	212.0	13.5	16.5	30.0
97.639250	8.6	15000.000	120.000	117.0	V	61.0	12.0	24.9	33.5
633.600950	18.8	15000.000	120.000	220.0	V	72.0	21.6	17.2	36.0
684.279800	19.8	15000.000	120.000	220.0	H	31.0	22.6	16.2	36.0
784.308850	21.3	15000.000	120.000	220.0	H	40.0	24.3	14.7	36.0
895.638850	22.8	15000.000	120.000	192.0	H	224.0	25.6	13.2	36.0

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0109)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

Plot 7: 1 GHz – 12 GHz (Highest Channel)



4.4 Receiver Spurious Emission (radiated)

Reference

FCC	:	CFR Part SUBCLAUSE § 15.109
IC	:	RSS 210, Issue 7, Section 7.3 Receiver Spurious Emissions (Radiated)

Plot 1: 30 MHz – 1 GHz (Receiver from SET 840-TV)

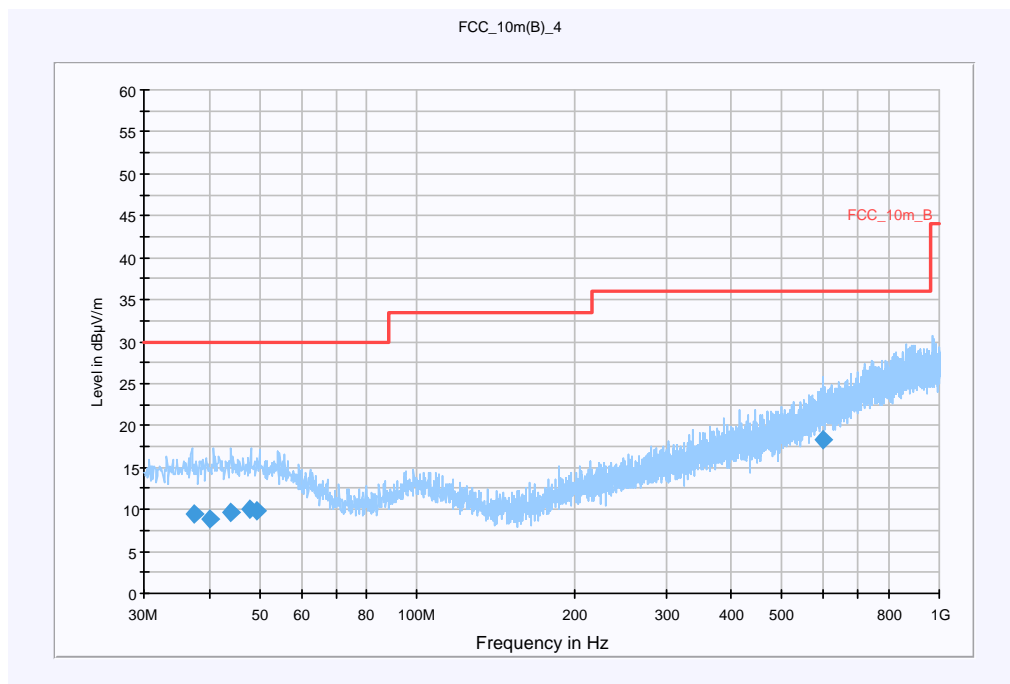
Information

EUT:	RR840 (Set 840 TV)
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	RX-Mode
Operator Name:	Hennemann
Comment:	Powered by Battery

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Level Unit:	dBµV/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	QuasiPeak	120 kHz	15 s	Receiver

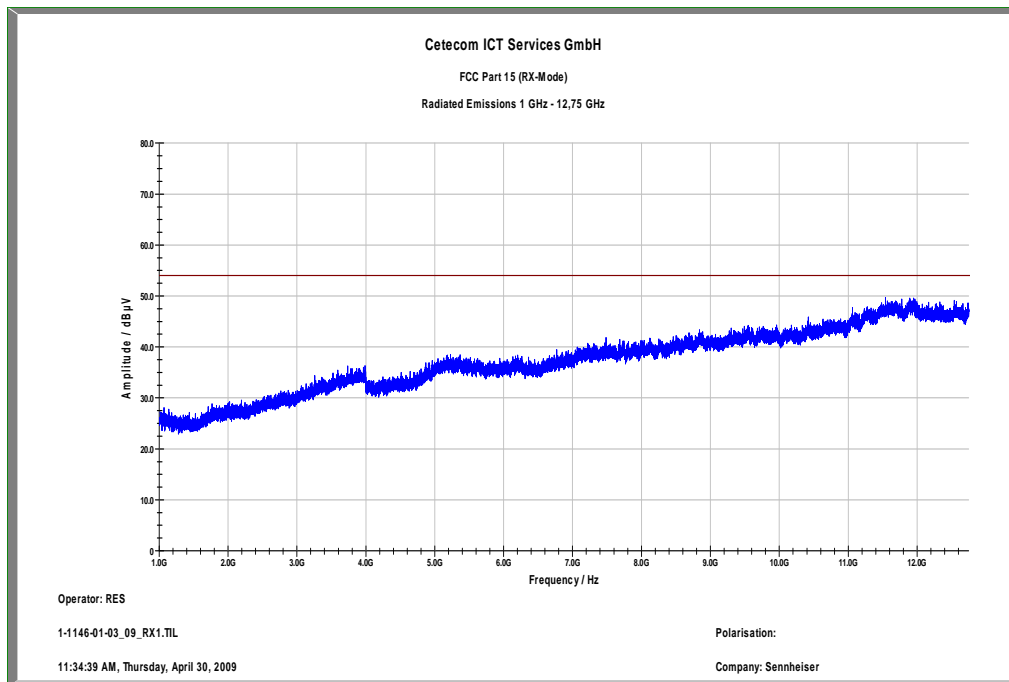


Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
37.577000	9.4	15000.000	120.000	220.0	H	204.0	13.4	20.6	30.0
40.283800	8.9	15000.000	120.000	220.0	H	130.0	13.6	21.1	30.0
43.826350	9.7	15000.000	120.000	220.0	V	293.0	13.5	20.3	30.0
47.998750	10.0	15000.000	120.000	98.0	V	323.0	13.5	20.0	30.0
49.482750	9.8	15000.000	120.000	98.0	V	27.0	13.5	20.2	30.0
600.441350	18.4	15000.000	120.000	182.0	H	149.0	21.4	17.6	36.0

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0109)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

Plot 2: 1 GHz – 12 GHz (Receiver from SET 840-TV)



Plot 3: 30 MHz – 1 GHz (Receiver from SET 840-S)

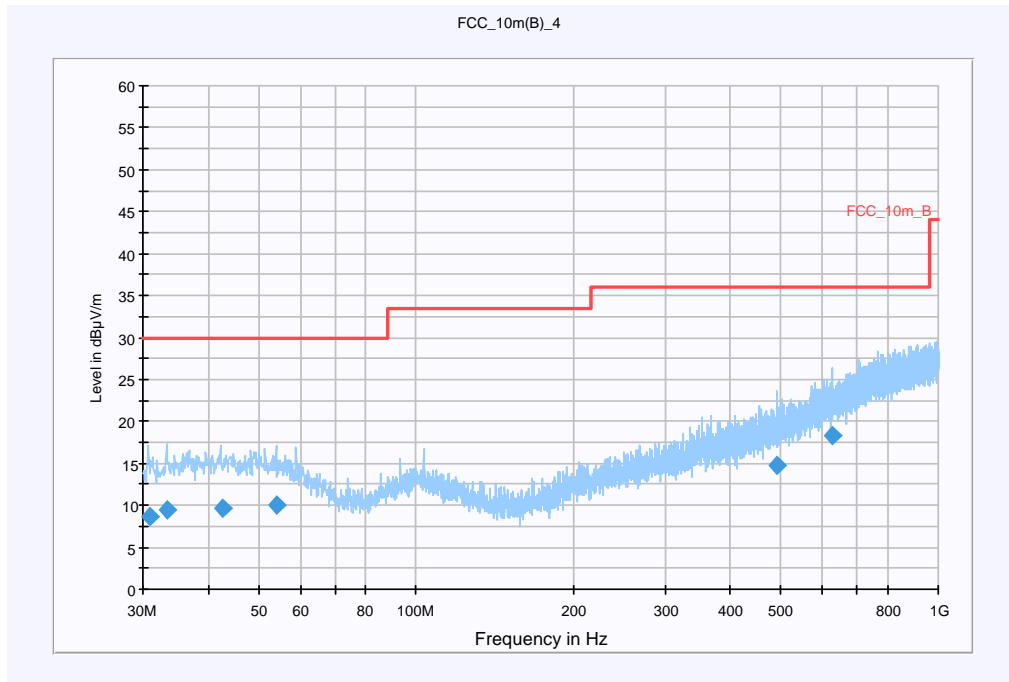
Information

EUT:	RR840S (Set 840S)
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	RX-Mode
Operator Name:	Hennemann
Comment:	Powered by Battery

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Level Unit:	dBµV/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	QuasiPeak	120 kHz	15 s	Receiver

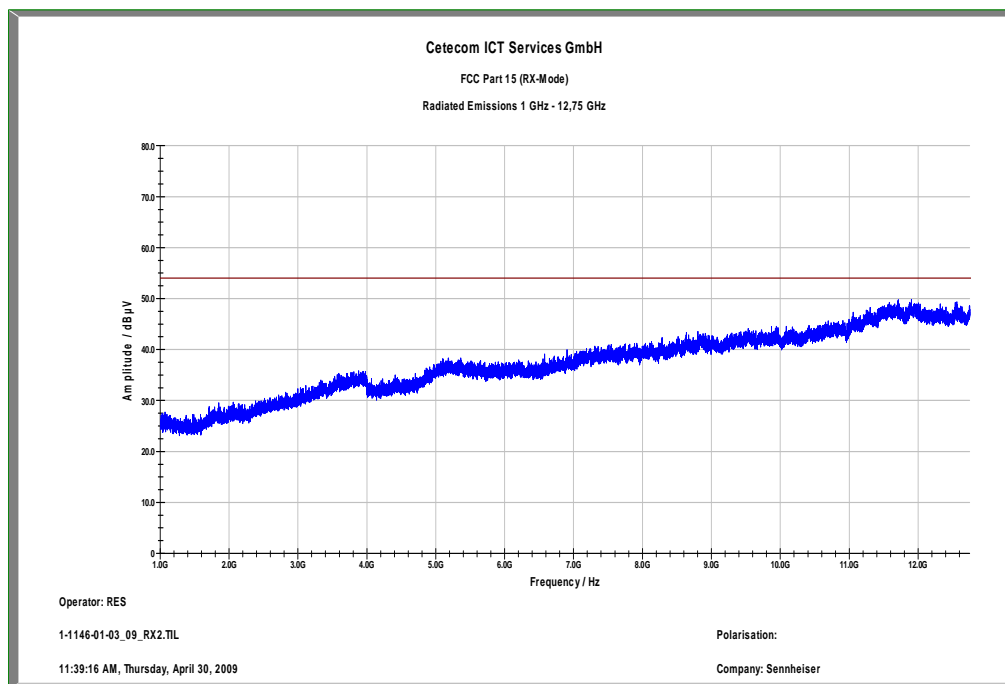


Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
30.906750	8.7	15000.000	120.000	220.0	H	316.0	12.7	21.3	30.0
33.510300	9.4	15000.000	120.000	98.0	V	267.0	13.0	20.6	30.0
42.826300	9.7	15000.000	120.000	191.0	H	49.0	13.5	20.3	30.0
54.030750	10.0	15000.000	120.000	166.0	V	197.0	13.2	20.0	30.0
490.236200	14.7	15000.000	120.000	124.0	H	126.0	18.9	21.3	36.0
625.860450	18.3	15000.000	120.000	195.0	V	97.0	21.5	17.7	36.0

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0109)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

Plot 4: 1 GHz – 12 GHz (Receiver from SET 840-S)



Plot 5: 30 MHz – 1 GHz (Receiver from SET 840-S (with connected headset))

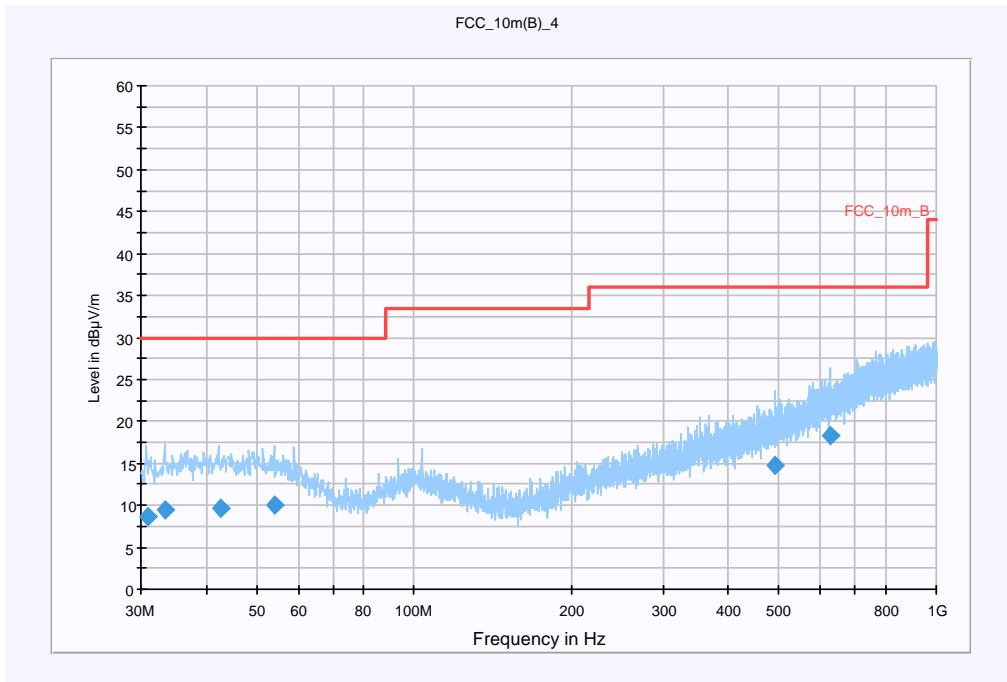
Information

EUT:	RR840S (Set 840S) + Headset
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	RX-Mode
Operator Name:	Hennemann
Comment:	Powered from Battery

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Level Unit:	dBµV/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	QuasiPeak	120 kHz	15 s	Receiver

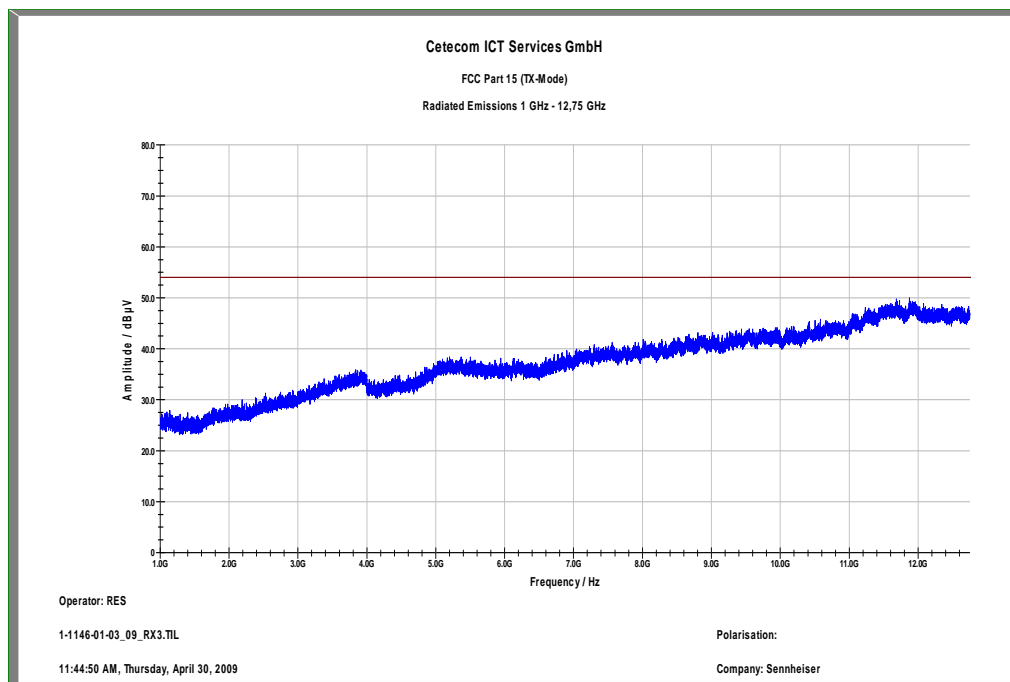


Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
30.906750	8.7	15000.000	120.000	220.0	H	316.0	12.7	21.3	30.0
33.510300	9.4	15000.000	120.000	98.0	V	267.0	13.0	20.6	30.0
42.826300	9.7	15000.000	120.000	191.0	H	49.0	13.5	20.3	30.0
54.030750	10.0	15000.000	120.000	166.0	V	197.0	13.2	20.0	30.0
490.236200	14.7	15000.000	120.000	124.0	H	126.0	18.9	21.3	36.0
625.860450	18.3	15000.000	120.000	195.0	V	97.0	21.5	17.7	36.0

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0109)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

Plot 6: 1 GHz – 12 GHz (Receiver from SET 840-S (with connected headset))



Limits

SUBCLAUSE § 15.109

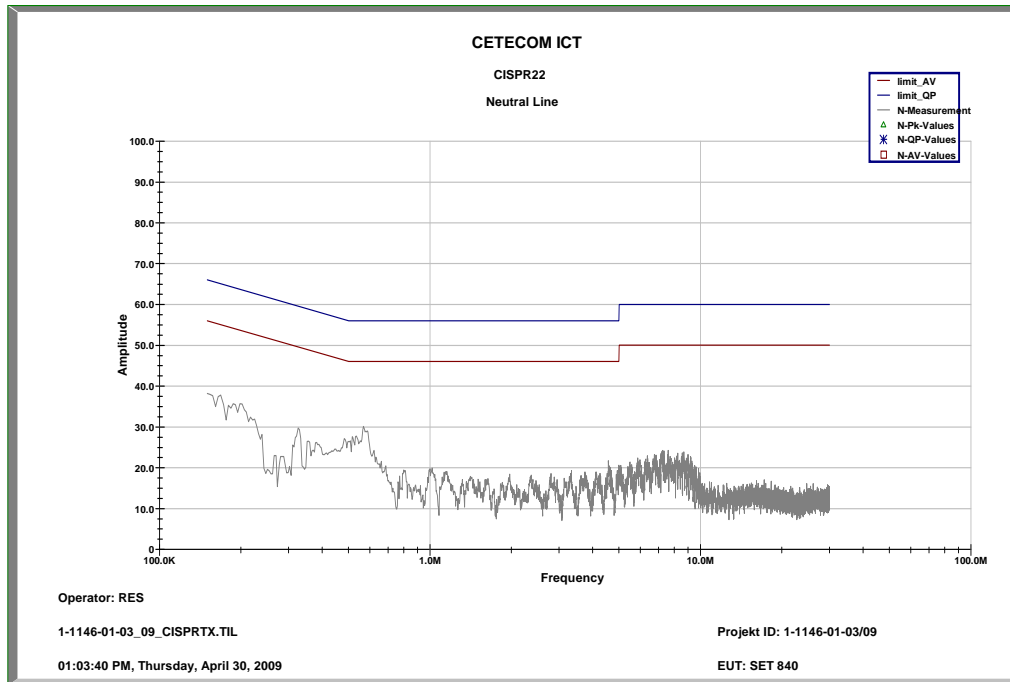
Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
above 960	500	3

4.5 Conducted Limits

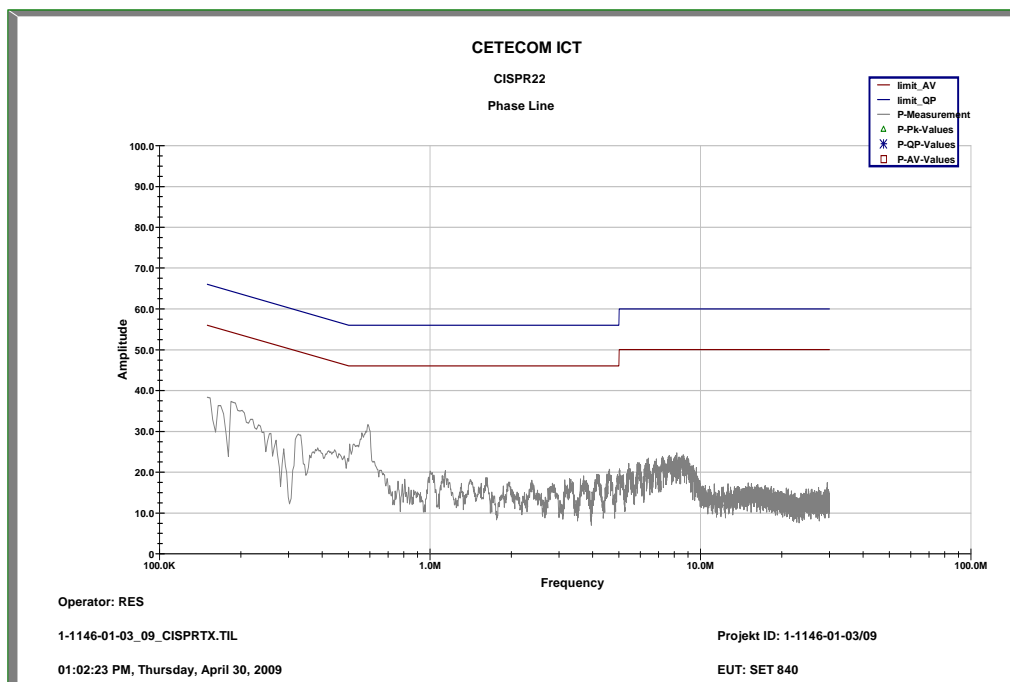
Reference

FCC	:	CFR Part 15.207, 15.107
IC	:	RSS 210, Issue 7, Section 6.6 , 7.4

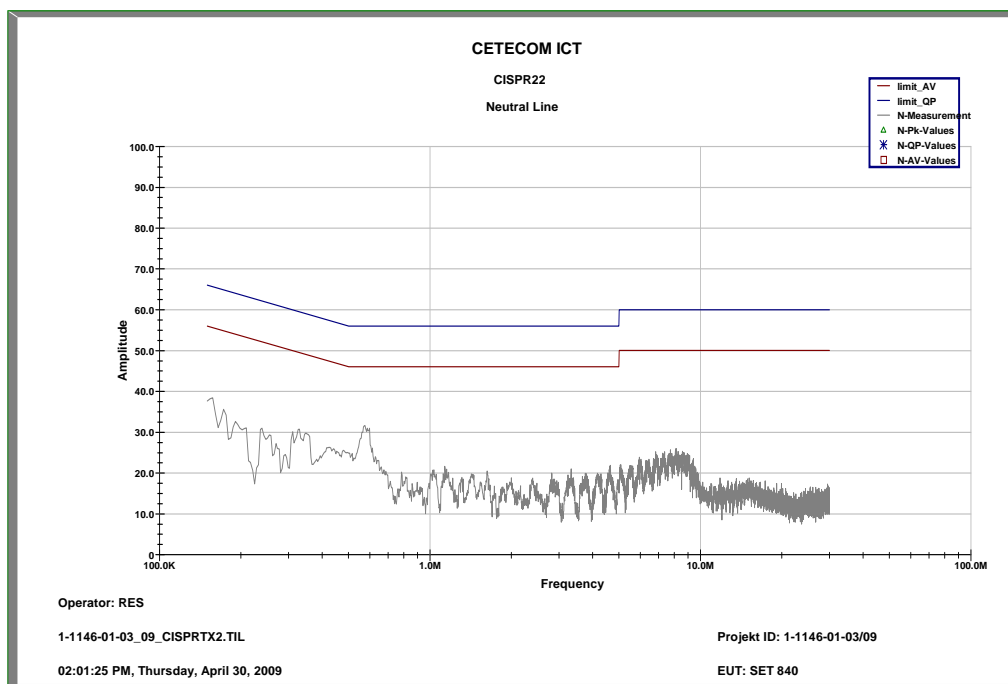
Plot 1: Transmitter only (Neutral Line)



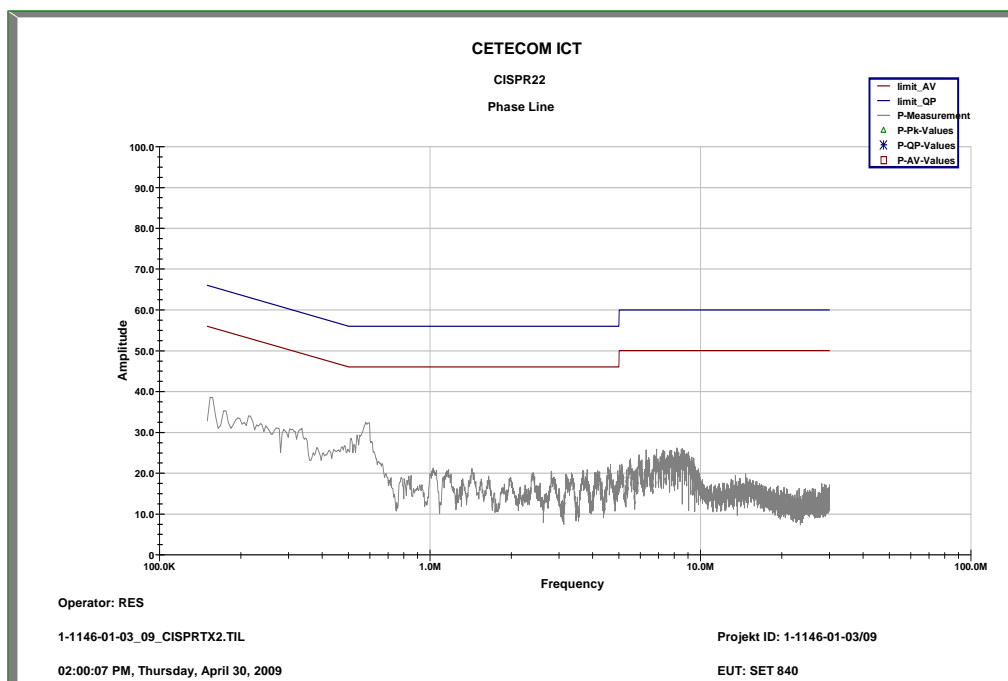
Plot 2: Transmitter only (Phase Line)



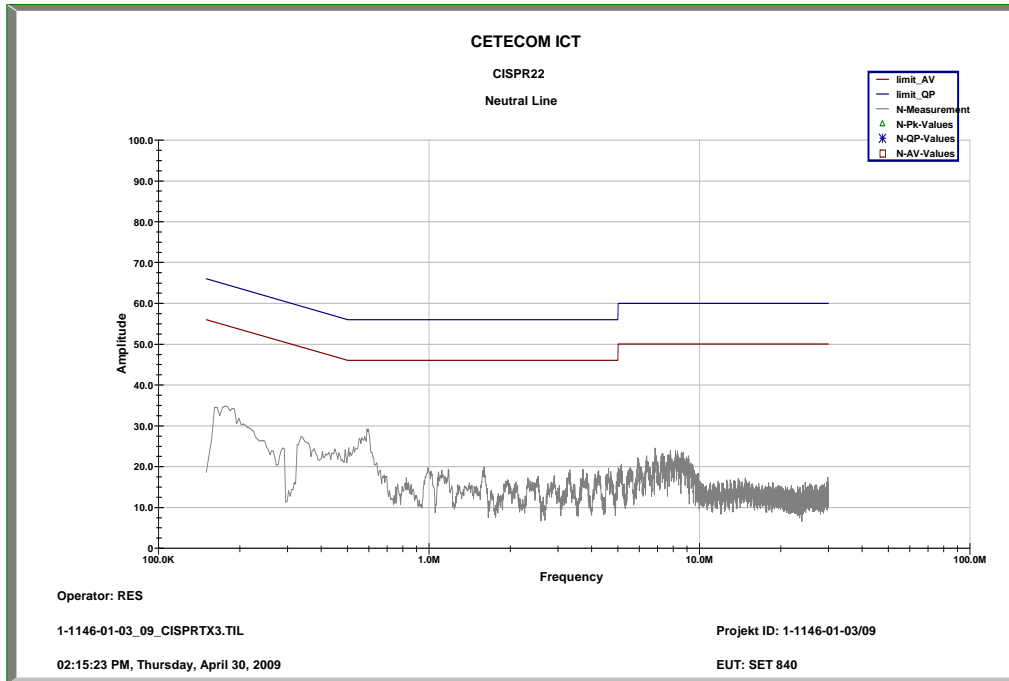
Plot 3: Transmitter + Receiver charging (840-S) (Neutral Line)



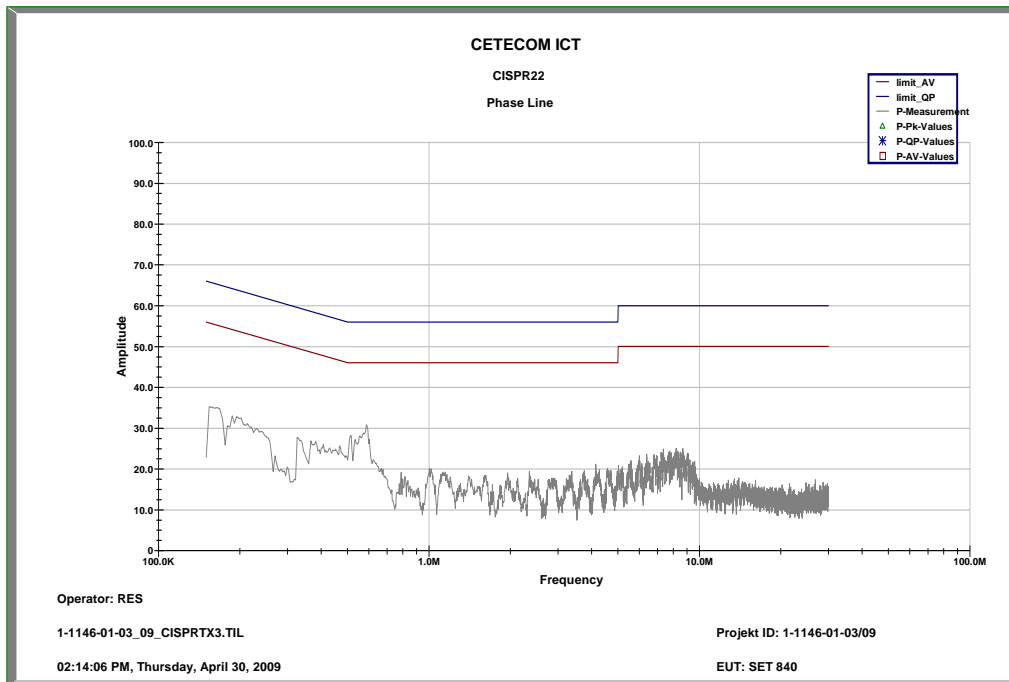
Plot 4: Transmitter + Receiver charging (840-S) (Phase Line)



Plot 5: Transmitter + Receiver charging (840-TV) (Neutral Line)



Plot 6: Transmitter + Receiver charging (840-TV) (Phase Line)



Limits:

Under normal test conditions only	See plots
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3 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.

All reported calibration intervals are calibrations according to the EN/ISO/IEC 17025 standard. These calibrations were performed from an accredited external calibration laboratory.

Additional to these calibrations the laboratory performed comparison measurements with other calibrated systems and performed a weekly chamber inspection.

All used devices are connected with a 10 MHz external reference.

According to the manufacturers' instruction is it possible to establish a calibration interval for the FSP unit of 24 month, if the device has an external 10 MHz reference.

Anechoic chamber C:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Anechoic chamber	MWB	87400/02	300000996	Monthly verification		
2	System-Rack 85900	HP I.V.	*	300000222	n.a.		
3	Measurement System 1						
4	PSA-Spektrumanalysator 3 Hz - 26,5 GHz (E4440A)	Agilent	MY48250080	300003812	05.08.2008	24	05.08.2010
5	EMI Preselector 9kHz - 1 GHz (N9039A)	Agilent	MY48260003	300003825	19.08.2008	24	19.08.2010
6	Microwave Analog Signal Generator (N5183A)	Agilent	MY47420220	300003813	06.08.2008	24	06.08.2010
7	PC	F+W			n.a.		
8	TILE	TILE			n.a.		
9	TRILOG Super Breitband Antenne (VULB9163)	Schwarzbeck	371	300003854	Monthly verification (System cal.)		
10	Double Ridged Antenna 3115	EMCO	3088	300001032	Monthly verification (System cal.)		
11	Active Loop Antenna 6502	EMCO	2210	300001015	Monthly verification (System cal.)		
12	Switch / Control Unit 3488A	HP	2719A15013	300001156	n.a.		
13	Power Supply 6032A	HP	2818A03450	300001040	08.01.2009	36	08.01.2012
14	Busisolator	Kontron		300001056	n.a.		
15	Leitungsteiler 11850C	HP		300000997	Monthly verification (System cal.)		
16	Power attenuator 8325	Byrd	1530	300001595	Monthly verification (System cal.)		
17	Band reject filter WRCG1855/1910	Wainwright	7	300003350	Monthly verification (System cal.)		
18	Band reject filter WRCG2400/2483	Wainwright	11	300003351	Monthly verification (System cal.)		
19	Hochpassfilter WHK1.1/15G-10SS	Wainwright	3	300003255	Monthly verification (System cal.)		
20	Hochpassfilter WHKX2.9/18G-12SS	Wainwright	1	300003492	Monthly verification (System cal.)		
21	Hochpassfilter WHKX7.0/18G-8SS	Wainwright	18	300003789	Monthly verification (System cal.)		
22	Switch / Control Unit 3488A	HP	2605e08770	300001443	n.a.		
23	Trenntrafo RT5A	Grundig	9242	300001263	n.a.		
24	Relais Matrix PSU	R&S	890167/024	300001168	n.a.		
25	Netznachbildung ESH3-Z5	R&S	828576/020	300001210	n.a.		

SRD Laboratory Room 002:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	System Controller PSM 12	R&S	835259/007	300002681-00xx	n.a.		
2	Memory Extension PSM-K10	R&S	To 1	300002681	n.a.		
3	Operating Software PSM-B2	R&S	To 1	300002681	n.a.		
4	19" Monitor		22759020-ED	300002681	n.a.		
5	Mouse		LZE 0095/6639	300002681	n.a.		
6	Keyboard		G00013834L461	300002681	n.a.		
7	Spectrum Analyser FSIQ 26	R&S	835540/018	300002681-0005	10.01.2008	24	10.01.2010
8	Tracking Generator FSIQ-B10	R&S	835107/015	300002681	s.No.7		
10	RF-Generator SMIQ03 (B1 Signal)	R&S	835541/056	300002681-0002	26.08.2008	36	26.08.2011
11	Modulation Coder SMIQ-B20	R&S	To 10	300002681	s.No.10		
12	Data Generator SMIQ-B11	R&S	To 10	300002681	s.No.10		
13	RF Rear Connection SMIQ-B19	R&S	To 10	300002681	s.No.10		
14	Broadband horn antenna (1-18 GHz)	EMCO	9107-3696	300001604	16.04.2008	24	16.04.2010
15	Broadband horn antenna (1-18 GHz)	EMCO	9107-3697	300001605	21.08.2008	24	21.08.2010
16	Std gain horn antenna (18-26.5 GHz)	Narda	Model no. 638	300000486	n.a.		
17	Std gain horn antenna (18-26.5 GHz)	Narda	Model no. 638	300000487	n.a.		
18	Sleeve dipole antenna Model 3126-880	ETS-Lindgren	00040887	3000000	n.a.		
19	Fast CPU SM-B50	R&S	To 10	300002681	s.No.10		
20	FM Modulator SM-B5	R&S	835676/033	300002681	s.No.10		
21	RF-Generator SMIQ03 (B2 Signal)	R&S	835541/055	300002681-0001	25.08.2008	36	25.08.2011
22	Modulation Coder SMIQ-B20	R&S	To 21	300002681	s.No.21		
23	Data Generator SMIQ-B11	R&S	To 21	300002681	s.No.21		
24	RF Rear Connection SMIQ-B19	R&S	To 21	300002681	s.No.21		
25	Fast CPU SM-B50	R&S	To 21	300002681	s.No.21		
26	FM Modulator SM-B5	R&S	836061/022	300002681	s.No.21		
27	RF-Generator SMP03 (B3 Signal)	R&S	835133/011	300002681-0003	26.08.2008	36	26.08.2011
28	Attenuator SMP-B15	R&S	835136/014	300002681	S.No.27		
29	RF Rear Connection SMP-B19	R&S	834745/007	300002681	S.No.27		
30	Power Meter NRVD	R&S	835430/044	300002681-0004	26.08.2008	24	26.08.2010
31	Power Sensor NRVD-Z1	R&S	833894/012	300002681-0013	26.08.2008	24	26.08.2010
32	Power Sensor NRVD-Z1	R&S	833894/011	300002681-0010	26.08.2008	24	26.08.2010
33	Rubidium Standard RUB	R&S		300002681-0009	27.08.2008	24	27.08.2010
34	Switching and Signal Conditioning Unit SSCU	R&S	338864/003	300002681-0006	Verified with path compensation		
35	Laser Printer HP Deskjet 2100	HP	N/A	300002681-0011	n.a.		
36	19" Rack	R&S	11138363000004	300002681	n.a.		
37	RF-cable set	R&S	N/A	300002681	n.a.		
39	IEEE-cables	R&S	N/A	300002681	n.a.		
40	Sampling System FSIQ-B70	R&S	835355/009	300002681	s.No.7		
41	RSP programmable attenuator	R&S	834500/010	300002681-0007	26.08.2008	24	26.08.2010
42	Signalling Unit	R&S	838312/011	300002681	n.a.		
43	NGPE programmable Power Supply for EUT	R&S	192.033.41	300002681			
44	Power Splitter 6005-3	Inmet Corp.	none	300002841	n.a.		
45	SMA Cables SPS-1151-985-SPS	Insulated Wire	different	different	n.a.		
46	CBT32 with EDR Signaling Unit	R&S					

47	Coupling unit	Narda	N/A	--	n.a.		
48	2xSwitch Matrix PSU	R&S	872584/021	300001329	n.a.		
49	RF-cable set	R&S	N/A	different	n.a.		
50	IEEE-cables	R&S	N/A	--	n.a.		

Note: 3000002681-00xx inventoried as a system

Anechoic chamber F:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Control Computer	F+W	FW0502032	300003303	-/-	-/-	-/-
2	Trilog Antenna VULB 9163	Schwarzbeck	295	300003787	01.04.2008	24	01.04.2010
3	Amplifier - 0518C-138	Veritech Micro-wave Inc.	-/-	-/-	-/-	-/-	-/-
4	Switch - 3488A	HP		300000368	-/-	-/-	-/-
5	EMI Test receiver - ESCI	R&S	100083	300003312	31.01.2009	24	31.01.2011
6	Turntable Controller - 1061 3M	EMCO	1218	300000661	-/-	-/-	-/-
7	Tower Controller 1051 Controller	EMCO	1262	300000625	-/-	-/-	-/-
8	Tower - 1051	EMCO	1262	300000625	-/-	-/-	-/-
10	Ultra Notch-Filter Rejected band Ch. 62	WRCD	9	-/-	-/-	-/-	-/-

4 Photographs of the Test Set-up

Photo documentation

Photo 1:



Photo 2:

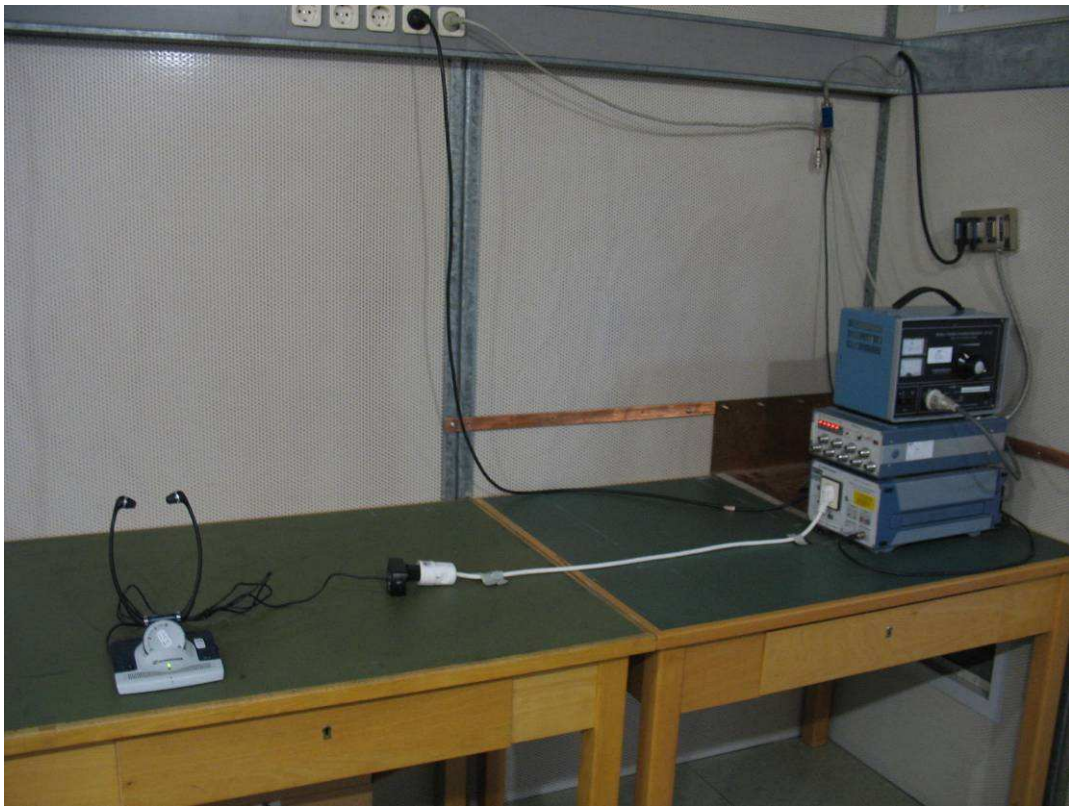


Photo 3:

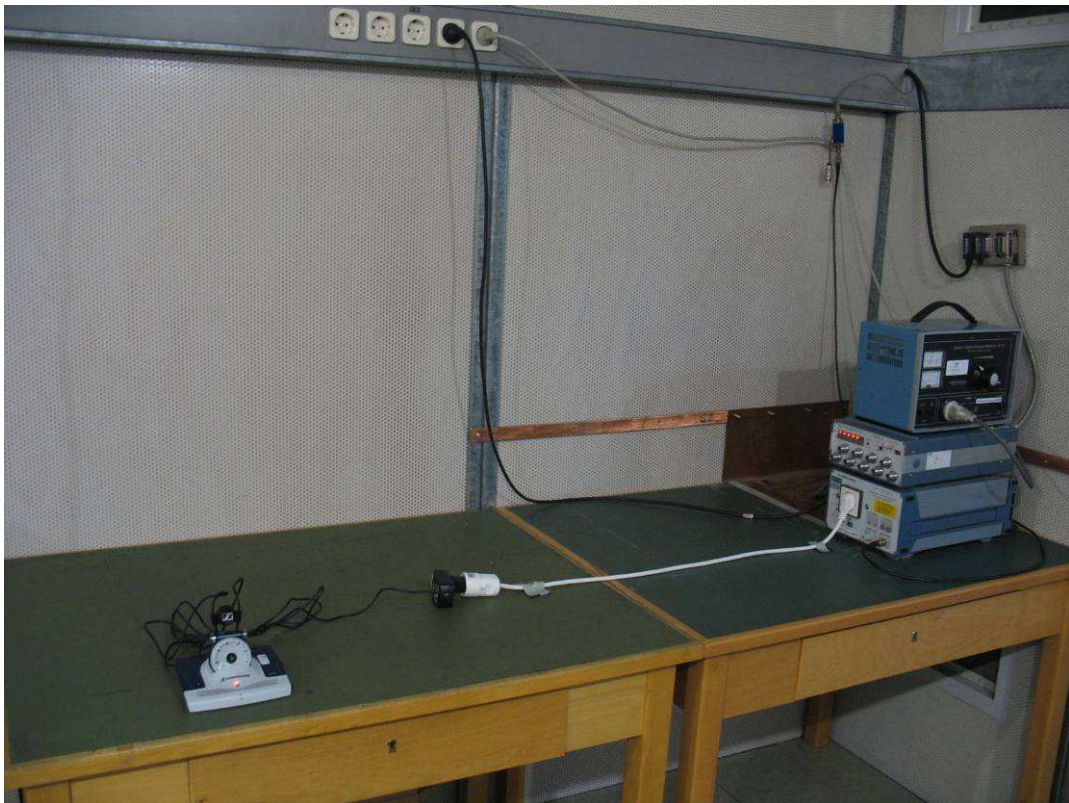


Photo 4:



Photo 5:



Photo 6:



Photo 7:



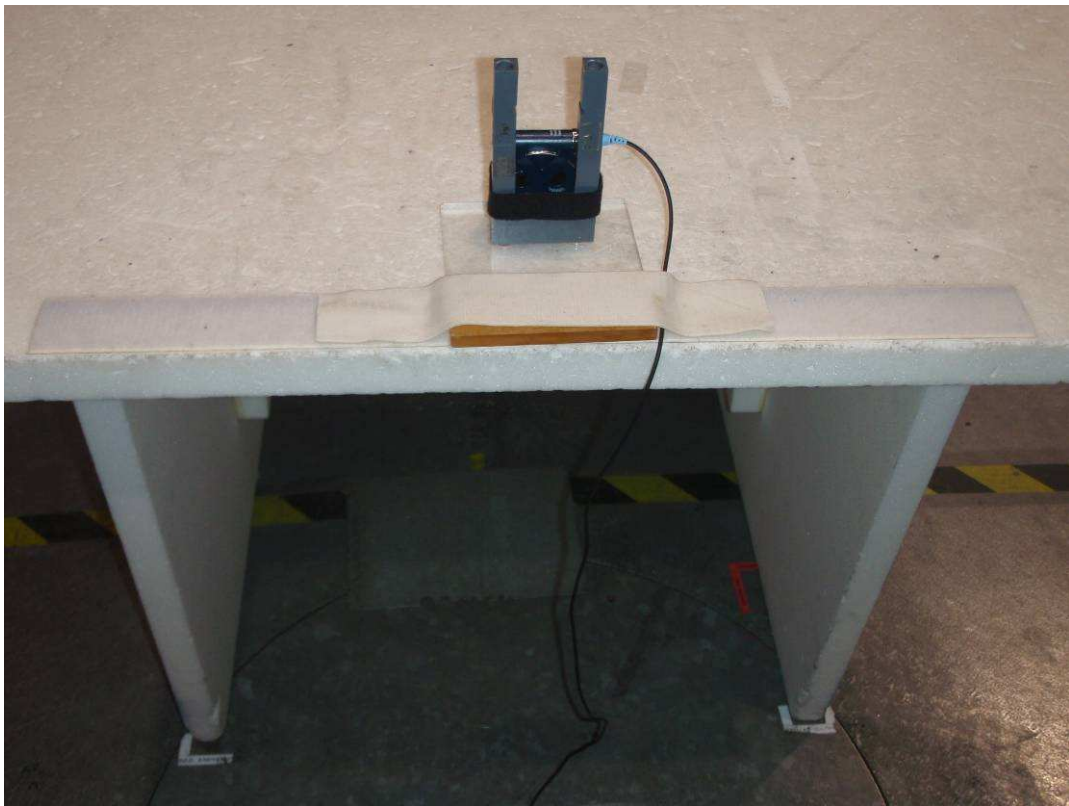
Photo 8:



Photo 9:



Photo 10:



5 Photographs of the EUT

Photo documentation

Photo 11:



Photo 12:



Photo 13:



Photo 14:



Photo 15:



Photo 16:



Photo 17:



Photo 18:

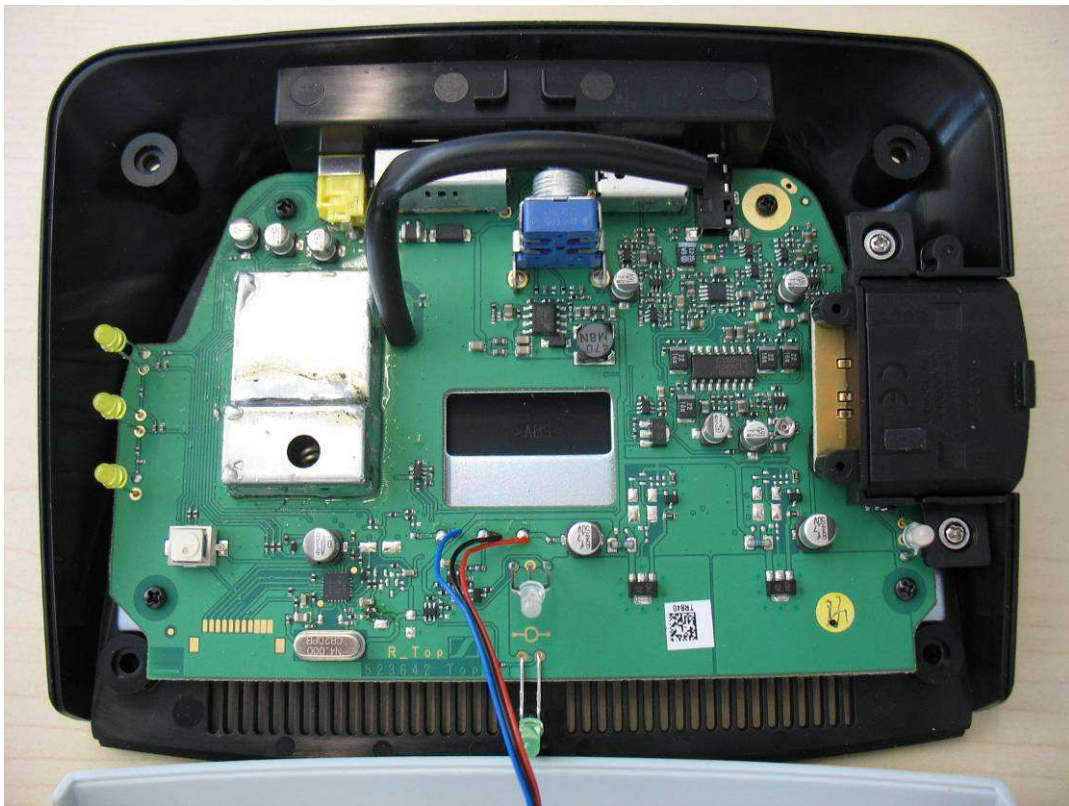


Photo 19:



Photo 20:



Photo 21:



Photo 22:



Photo 23:



Photo 24:

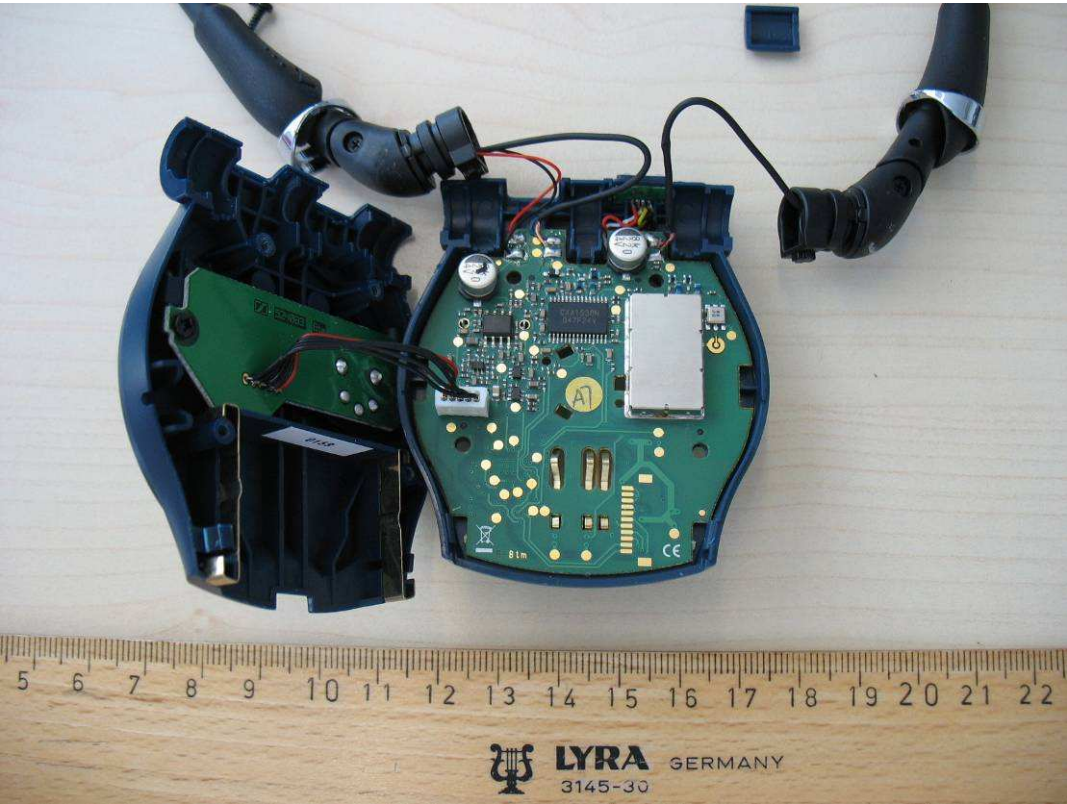


Photo 25:

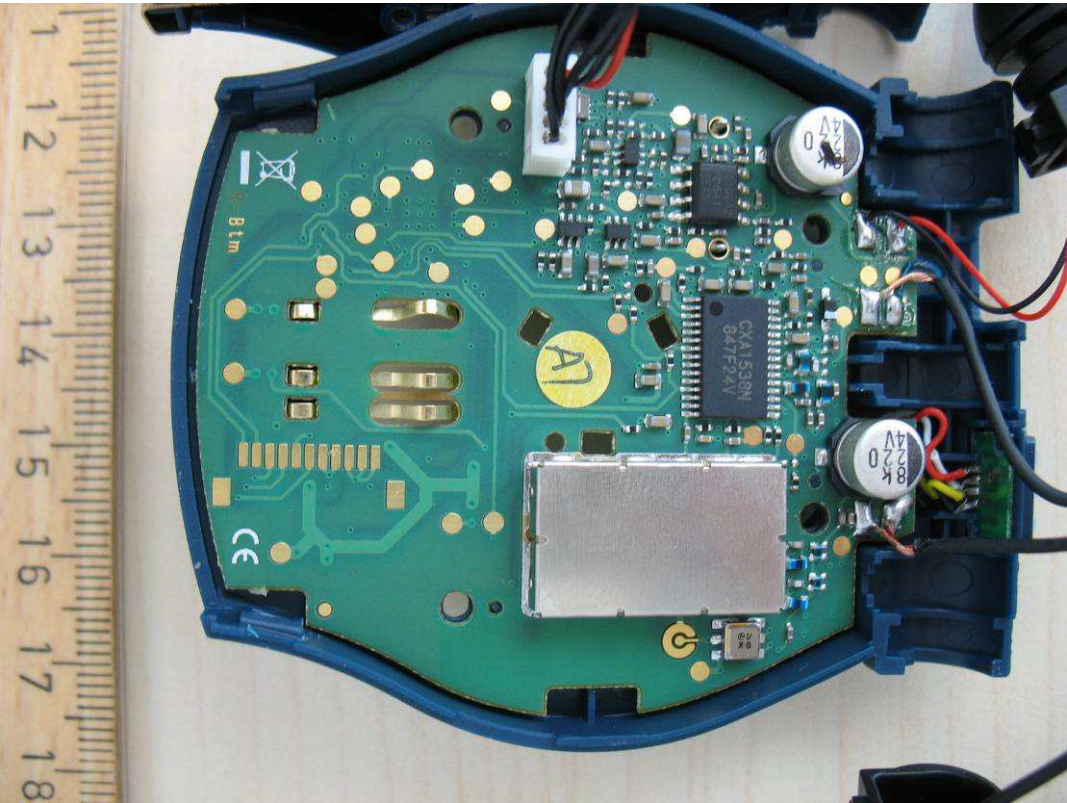


Photo 26:

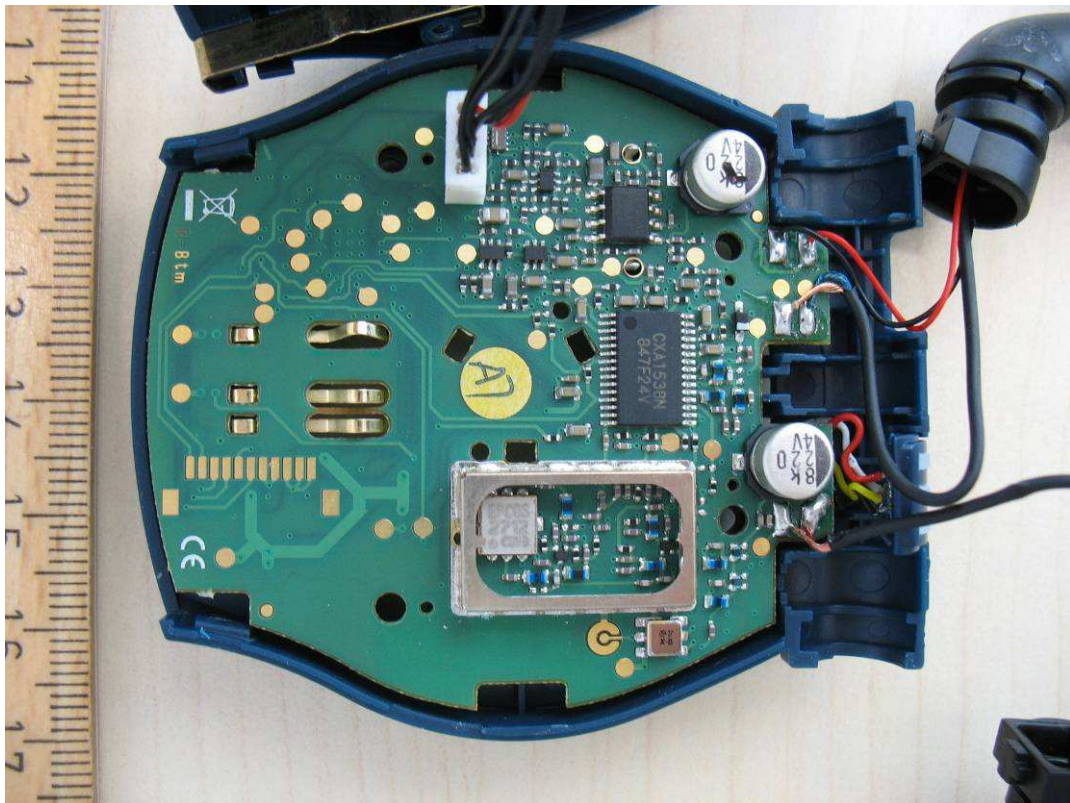


Photo 27:

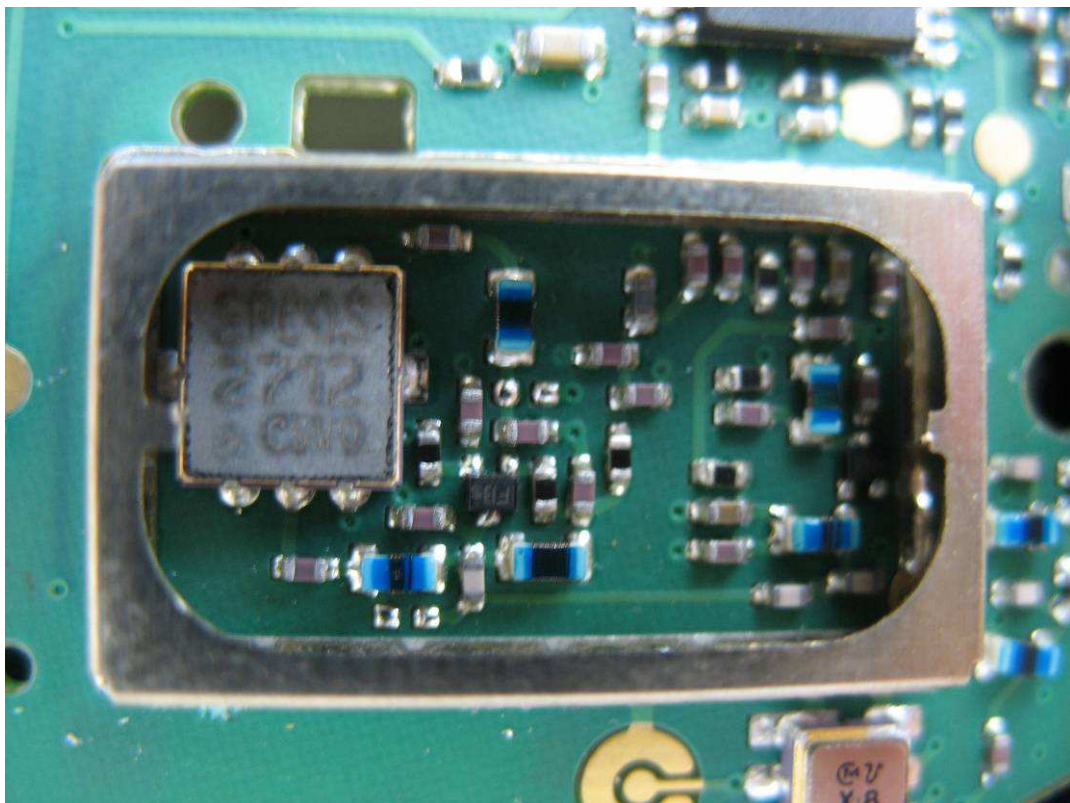


Photo 28:



Photo 29:



Photo 30:



Photo 31:



Photo 32:

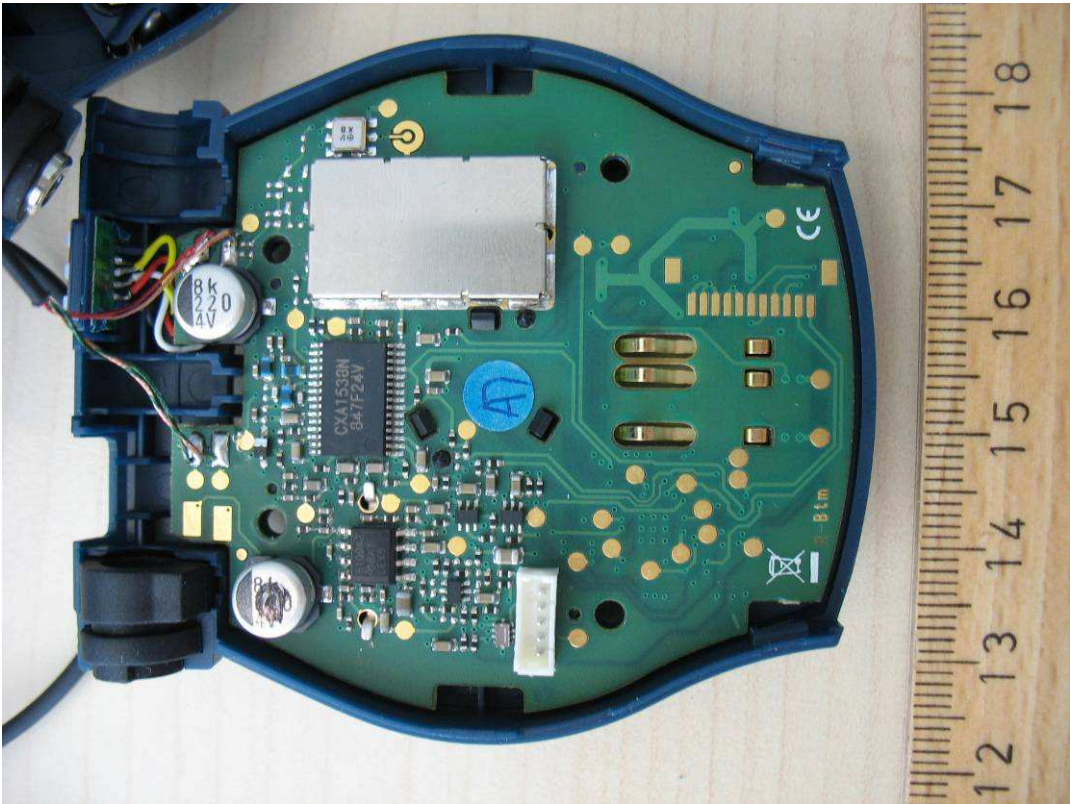


Photo 33:

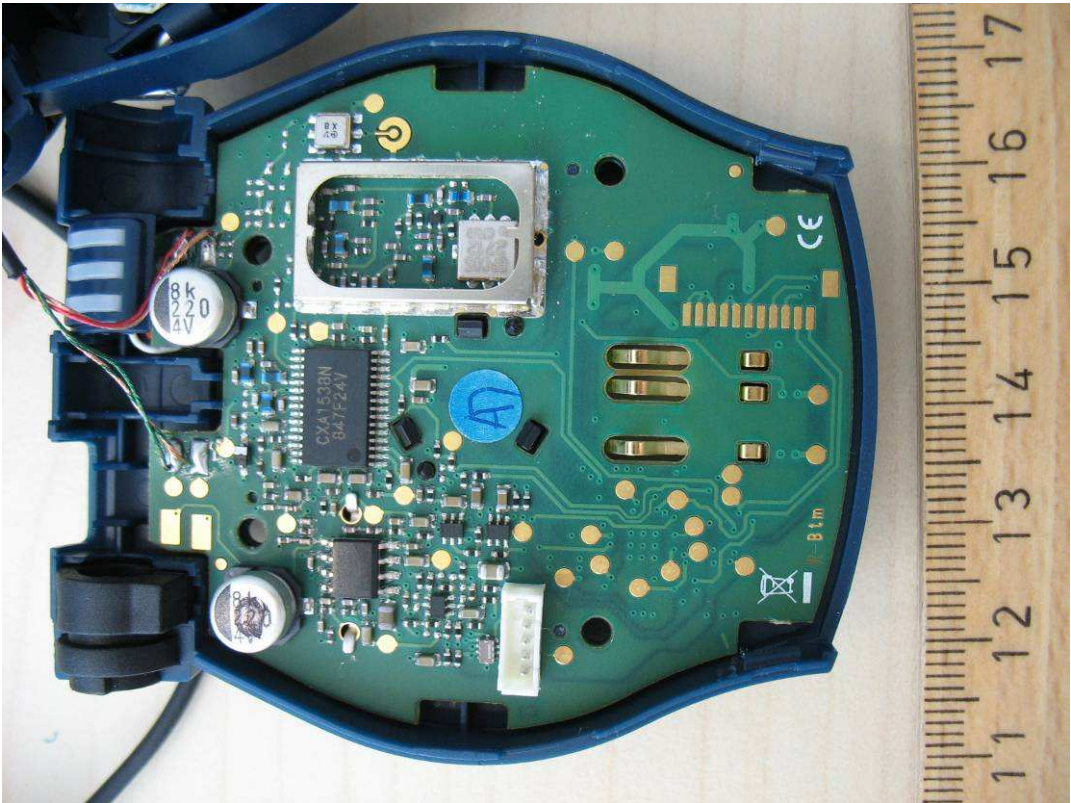


Photo 34:

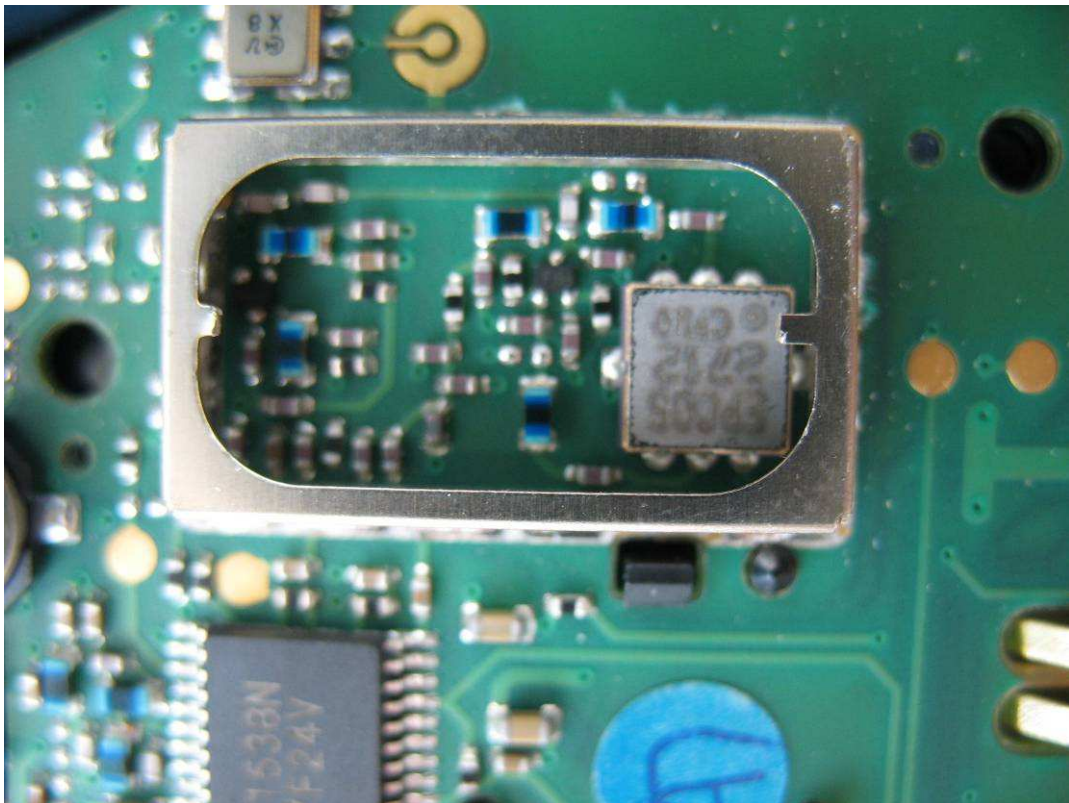


Photo 35:



Photo 36:

