Accredited testing-laboratory

DAR registration number: DGA-PL-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)

Test report no.	**:**	**1-1531-01-10/09**
Type identification	**:**	**TEKConnect, ConnexxLink**
Applicant	**:**	**SIEMENS Audiologische Technik GmbH**
FCC ID	**:**	**SGI-WL201AP**
IC Certification No	**:**	**267AB-WL200AP**
Test standards	**:**	**47 CFR Part 15**
		RSS - 210 Issue 7

Table of contents

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.
This test report is electronically signed and valid without handwriting signature. For verification of the electronical signatures, the public keys can be requested at the testing laboratory.

Test laboratory manager:		cn=Jakob Reschke, o=CETECOM ICT Services GmbH, ou=RES-100323, email=Jakob.Reschke@ict.cetecom.de, c=DE 2010.06.23 09:53:09 +02'00'
2010-06-16	**Jakob Reschke**	
Date	Name	Signature

Technical responsibility for area of testing:		cn=Stefan Boes, o=Cetecom ICT Services GmbH, ou=BOE-100120, email=Stefan.Boes@ict.cetecom.de, c=DE 2010.06.23 09:55:01 +02'00'
2010-06-16	**Stefan Bös**	
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: DGA-PL-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:	**SIEMENS Audiologische Technik GmbH** **Basic Technology (AEBT)**
Street:	**Gebbertstrasse 125**
Town:	**91058 Erlangen**
Country:	**Germany**
Telephone:	
Fax:	**+49 (9131) 308-3207**
Contact:	**Clemens Meythaler**
E-mail:	**clemens.meythaler@siemens.com**
Telephone:	**+49 (9131) 308-3000**

1.4 Application details

Date of receipt of order:	**2010-02-05**
Date of receipt of test item:	**2010-06-09**
Date of start test:	**2010-06-09**
Date of end test	**2010-06-09**
Persons(s) who have been present during the test:	**-/-**

2 Test standard/s

47 CFR Part 15	**2009-10**	**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 Radiocommunication Devices (All Frequency Bands): Category I Equipment**

3 Technical tests

3.1 Details of manufacturer

Name:	**SIEMENS Audiologische Technik GmbH Basic Technology (AEBT)**
Street:	**Gebbertstrasse 125**
Town:	**91058 Erlangen**
Country:	**Germany**

3.1.1 Test Item (Additional EUT information For IC Canada (appendix 2)

Kind of test item	:	**TEKConnect**
Type identification	:	**TEKConnect, ConnexxLink**
S/N serial number	:	**Unknown**
HW hardware status	:	**Unknown**
SW software status	:	**Unknown**
Frequency Band [MHz]	:	**1.705 MHz – 10 MHz**
Frequency Range (or fixed frequency)	:	**3.26 MHz**
Type of Modulation	:	**FM**
Number of channels	:	**1**
Antenna information	:	**Internal antenna**
Power Supply	:	**3.70 V DC by Li-Ion Battery**
Temperature Range	:	**22 °C**

Max. field strength: **41 dBµV/m AV at 10 m distance**

FCC ID: **SGI-WL201AP**
IC: **267AB-WL200AP**

3.2 Additional EUT information For IC Canada (appendix 2)

IC Registration Number	:	**267AB**
Model Name	:	**TEKConnect, ConnexxLink**
Manufacturer (complete Address)	:	**SIEMENS Audiologische Technik GmbH Gebbertstrasse 125 Erlangen Germany**
Tested to Radio Standards Specification (RSS) No.	:	**RSS-210 Issue 7**
Open Area Test Site Industry Canada Number	:	**IC 3462C-1**
Frequency Range (or fixed frequency) [MHz]	:	**3.26 MHz**
Field Strength (at what distance)	:	**51 dBµV/m AV at 10 m distance**
Antenna Type	:	**Internal antenna**
Occupied Bandwidth (99% BW) [kHz]	:	**48.10**
Type of Modulation	:	**FM**
Emission Designator (TRC-43)	:	**48K1F1D**
Transmitter Spurious (worst case) [dBµV/m in 10 m]:		**29 (noise floor)**
Receiver Spurious (worst case) [dBµV/m in 10m]	:	**34 (noise floor)**
Power Supply	:	**3.70 V DC by Li-Ion Battery**
Temperature Range	:	**22 °C**

ATTESTATION: I attest that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned departmental standard(s), and that the radio equipment identified in this application has been subject to all applicable test conditions specified in the departmental standards and all of the requirements of the standards have been met.

Signature:

cn=Jakob Reschke, o=CETECOM ICT Services GmbH,
ou=RES-100323, email=Jakob.Reschke@ict.cetecom.de, c=DE
2010.06.23 09:53:35 +02'00'

Date: 2010-06-23

Test engineer: **Jakob Reschke**

3.2.1 Extreme conditions testing values

Description	Shortcut	Unit	Value
Nominal Temperature	T_{nom}	°C	**22**
Nominal Humidity	H_{nom}	%	**51**
Nominal Power Source	V_{nom}	V	**3.70**

Type of power source: **DC by Li-Ion Battery**

4 Statement of Compliance

4.1 Summary of Measurement Results

☒ **No deviations from the technical specifications were ascertained**

☐ There were deviations from the technical specifications ascertained

4.2 CFR 47 Part 15 Unintentional Radiators

Section in this Report	Test Name / Section FCC Part 15	Test Name / Section RSS 210 Issue 7	Measurement applicable	Verdict
6.1	§ 15.223 (a) Fieldstrength of Fundamental	RSS-210 Issue 7	YES	PASS
6.2	§ 15.223 (a) Emission Bandwidth	RSS-210 Issue 7	YES	PASS
6.3	§ 15.209 Fieldstrength of harmonics and spurious	RSS-210 Issue 7 Section 2.7 Table 4	YES	PASS
6.4	§ 15.209 Receiver spurious emissions (radiated)	RSS-GEN Issue Section 6	YES	PASS

4.2.1 Additional comments

The EUT was tested as shown in the test setup pictures.
To get the EUT into continuous transmission the “Volume up” button was pressed continuously. No additionally antenna or cables were used.

5 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.

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

30 MHz – 1 GHz: Quasi Peak measurement, 120 KHz Bandwidth, trilog antenna

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

All measurement settings are according to FCC 15.109 and 15.107

6 FCC Part 15.223

4.1 Field Strength of the Fundamental

Reference

FCC:	CFR Part SUBCLAUSE § 15.223 (a)
IC:	RSS-210 Issue 7

MAXIMUM FIELD STRENGTH

TEST CONDITIONS		MAXIMUM POWER (dBµV/m at 10 m distance)
Frequency		3.26 MHz
T_{nom} = 22 °C	V_{nom}= 3.00	41.00
Measurement uncertainty		± 3dB

RBW/VBW : 120 kHz

Limits **SUBCLAUSE § 15.223 (a)**

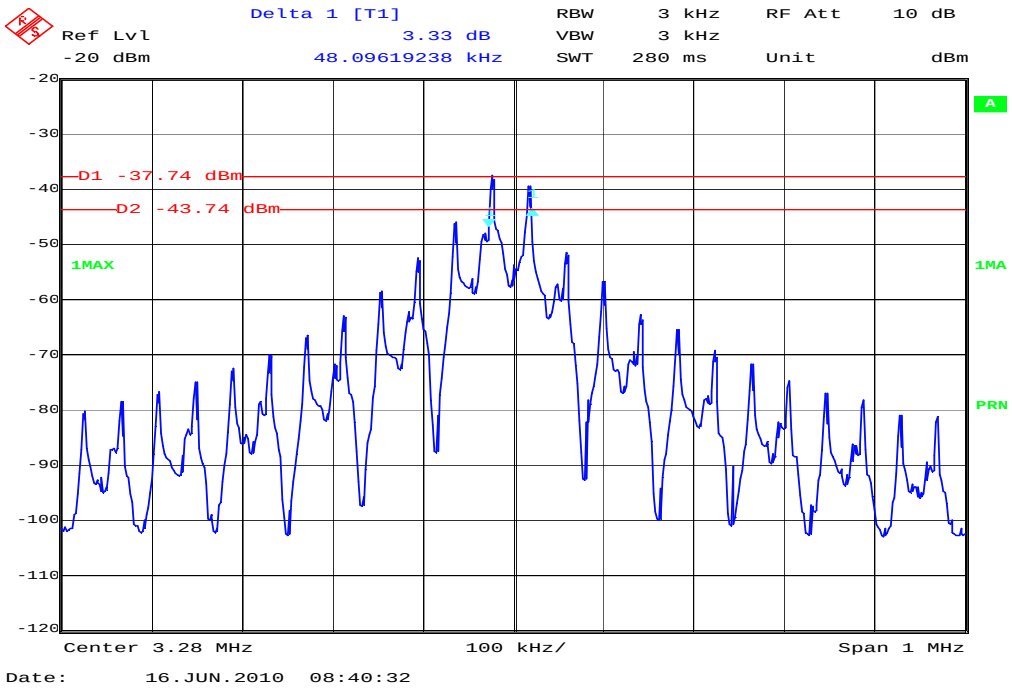
The field strength of any emission within the band 1.705-10.0 MHz shall not exceed 100 microvolts/meter at a distance of 30 meters. However, if the bandwidth of the emission is less than 10% of the center frequency, the field strength shall not exceed 15 microvolts/meter or (the bandwidth of the device in kHz) divided by (the center frequency of the device in MHz) microvolts/meter at a distance of 30 meters, whichever is the higher level

4.2 Emission Bandwidth

Reference

FCC:	CFR Part SUBCLAUSE § 15.223 (a)
IC:	RSS-210 Issue 7

Plot 1:



The emission bandwidth at 6 dBc is 48.10 KHz

Limit: § 15.223 (a)

For the purposes of this Section, bandwidth is determined at the points 6 dB down from the modulated carrier

4.3 Field Strength of the Harmonics and Spurious

Reference

FCC:	CFR Part SUBCLAUSE § 15.223 (b)
IC:	RSS-210 Issue 7 Section 2.7 Table 4

EMISSION LIMITATIONS					
f (MHz)		**amplitude of emission (dBµV/m) PK/AV/QP**	**limit max. allowed**	**actual attenuation below frequency of operation (dB)**	**results**
3.26		41 AV	43.52 (calculated from 30 meter to 10 meter)	2.52	Operating frequency
No critical peaks found			20dBc or 62 dBµV/m and 54 dBµV/m in restricted bands		Complies
					Complies
					Complies
					Complies
					Complies
					Complies
					Complies
					Complies
					Complies
Measurement uncertainty			± 3dB		

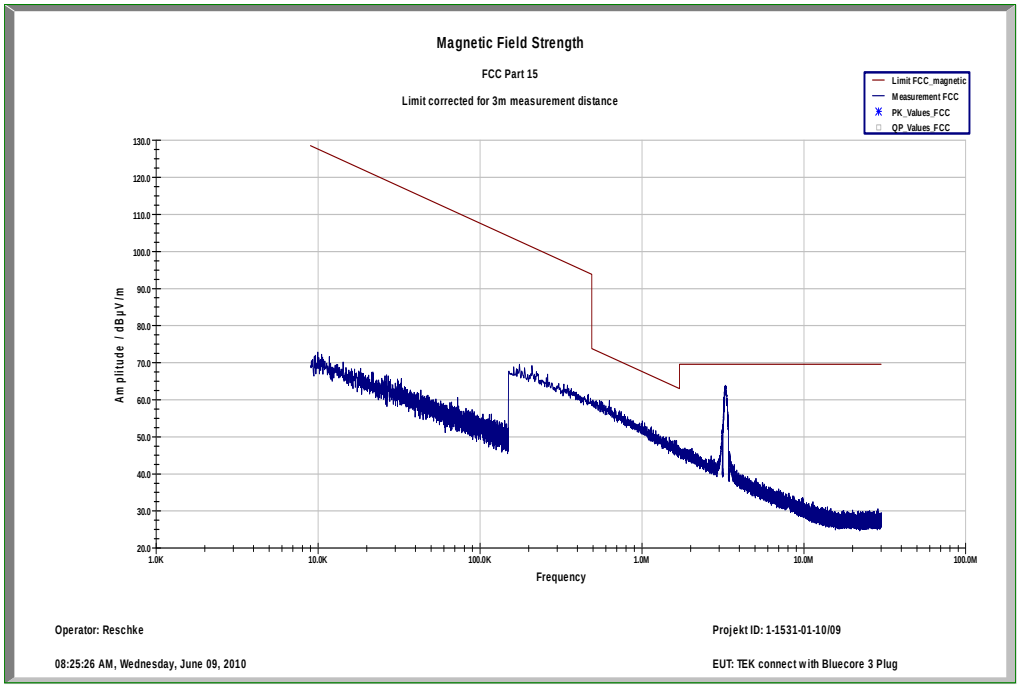
Limits (Average Values) **SUBCLAUSE § 15.231 (b)**

Fundamental Frequency (MHz)	Field strength of Fundamental (µV/m)	Field strength of spurious(µV/m)
40.66 – 40.70	2,250	225
70-130	1,250	125
130-174	1,250 to 3,750	125 to 375
174-260	3,750	375
260-470(315)	3,750 to 12,500(6041.67)	375 to 1,250(604.167)
Above 470	12,500	1,250

*****

The field strength of any emission within the band 1.705-10.0 MHz shall not exceed 100 microvolts/meter at a distance of 30 meters. However, if the bandwidth of the emission is less than 10% of the center frequency, the field strength shall not exceed 15 microvolts/meter or (the bandwidth of the device in kHz) divided by (the center frequency of the device in MHz) microvolts/meter at a distance of 30 meters, whichever is the higher level.

Part 15.109 Magnetics
Measurement distance 3m



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	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
above 960	500	3

Plot 1:
Tx : 30 MHz – 1 GHz

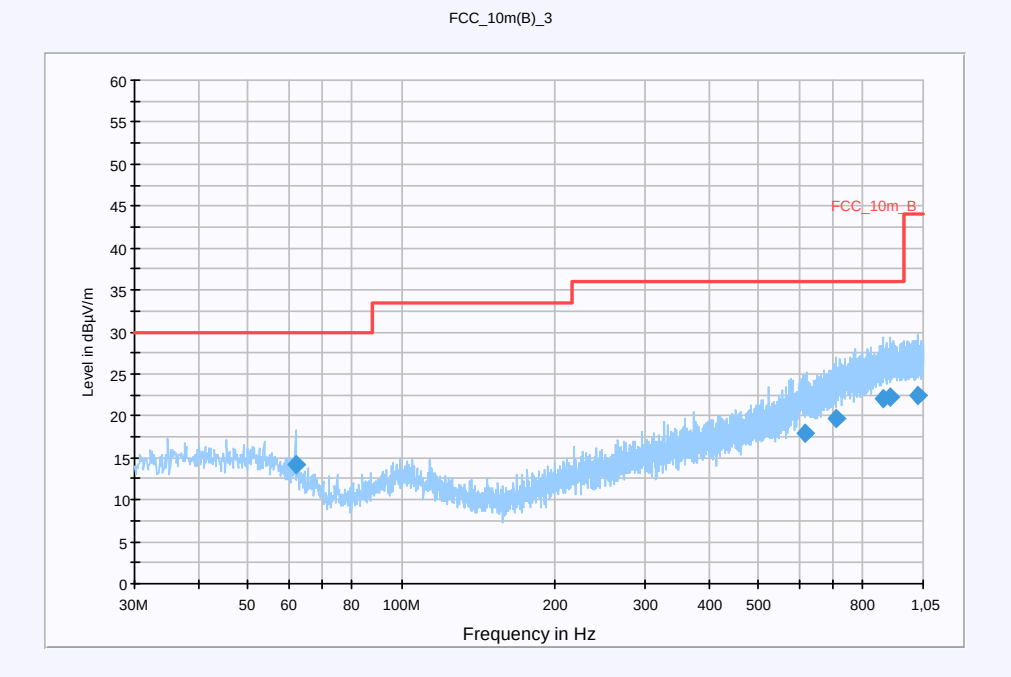
Common Information

EUT:	TEK connect with Bluecore
Serial Number:	none
Test Description:	FCC part 15 C @ 10m
Operating Conditions:	cont. TX
Operator Name:	LNG
Comment:	battery powered

Scan Setup: STAN_Fin [EMI radiated]

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

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz – 1.05 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
61.976250	14.1	15000.000	120.000	220.0	V	289.0	11.1	15.9	30.0	
614.815800	17.9	15000.000	120.000	220.0	H	17.0	20.9	18.1	36.0	
708.295800	19.6	15000.000	120.000	98.0	V	270.0	22.7	16.4	36.0	
877.051800	22.1	15000.000	120.000	115.0	H	172.0	24.9	13.9	36.0	
901.777350	22.2	15000.000	120.000	220.0	H	85.0	25.2	13.8	36.0	
1025.739150	22.4	15000.000	120.000	204.0	V	277.0	26.3	21.6	44.0	

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

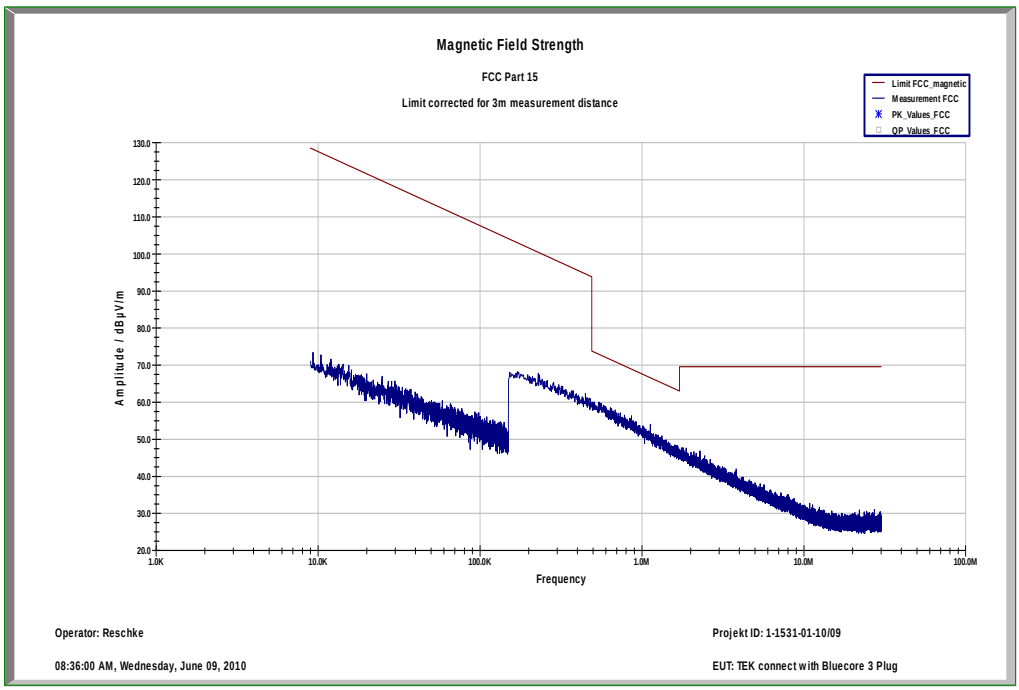
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (1005)
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

6.4 Receiver Spurious Emission (radiated)

Reference

FCC:	CFR Part SUBCLAUSE § 15.109
IC:	RSS-GEN Issue Section 6

Plot 1: 9 kHz – 30 MHz



Plot 2: 30 MHz - 1 GHz

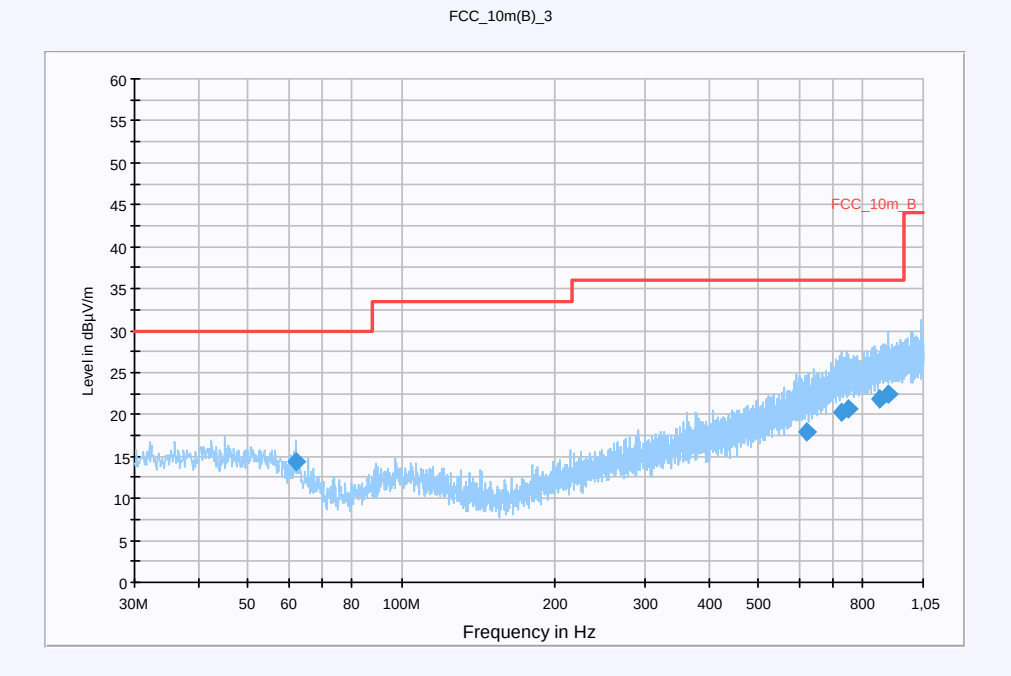
Common Information

EUT:	TEK connect with Bluecore
Serial Number:	none
Test Description:	FCC part 15 C @ 10m
Operating Conditions:	Rx-Mode
Operator Name:	LNG
Comment:	battery powered

Scan Setup: STAN_Fin [EMI radiated]

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

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1,05 GHz	QuasiPeak	120 kHz	15 s	Receiver



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 (1005)
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

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

7 Test equipment and ancillaries used for tests

In order to simplify the identification of the equipment used at each specific test, each item of test equipment and ancillaries are provided with an identifier or number in the equipment list below.

Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, rf-generating and signalling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

No.	Labor / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kal. Art	Last Calibration	Next Calibration
1	n. a.	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2818A03450	300001040	Ve	08.01.2009	08.01.2012
2	n. a.	PowerAttenuator	8325	Byrd	1530	300001595			
3	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vlKI!	05.03.2009	05.03.2011
4	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
5	n. a.	Anechoic chamber		MWB	87400/02	300000996			
6	Spec.A. 2_2e	System rack for EMI measurement solution	85900	HP I.V.	*	300000222	ne		
7	9	Artificial Mains 9 kHz to 30 MHz, 4 x 25 Ampere	ESH3-Z5	R&S	828576/020	300001210	Ve	06.01.2010	06.01.2012
8	n. a.	Relais Matrix	3488A	HP Meßtechnik	2719A15013	300001156	ne		
9	n. a.	Relais Matrix	PSU	R&S	890167/024	300001168	ne		
10	n. a.	Isolating Transformer	RT5A	Grundig	9242	300001263	ne		
11	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
12	n. a.	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
13	n. a.	Band Reject filter	WRCG1855/1910-1835/1925-40/8SS	Wainwright	7	300003350	ev		
14	n. a.	Band Reject filter	WRCG2400/2483-2375/2505-50/10SS	Wainwright	11	300003351	ev		
15	n. a.	TILE-Software Emission	Quantum Change, Modell TILE-ICS/FULL	EMCO	none	300003451	ne		
16	n. a.	Highpass Filter	WHKX2.9/18G-12SS	Wainwright	1	300003492	ev		
17	n. a.	Highpass Filter	WHK1.1/15G-10SS	Wainwright	3	300003255	ev		
18	n. a.	Highpass Filter	WHKX7.0/18G-8SS	Wainwright	18	300003789	ne		
19	n. a.	PSA Spectrum Analyzer 3 Hz -	E4440A	Agilent Technologies	MY48250080	300003812	k	05.08.2008	05.08.2010

		26.5 GHz							
20	n. a.	MXG Microwave Analog Signal Generator	N5183A	Agilent Technologies	MY47420220	300003813	k	06.08.2008	06.08.2010
21	n. a.	RF Filter Section 9kHz - 1GHz	N9039A	Agilent Technologies	MY48260003	300003825	vlKI!	19.08.2008	19.08.2010
22	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854	vlKI!	17.12.2008	17.12.2010
23	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
24	50	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04466	300000580	k	06.01.2009	06.01.2011
25	n. a.	software	SPS_PHE 1.4f	Spitzberger & Spieß	B5981; 5D1081;B5979	300000210	ne		
26	n. a.	EMI Test Receiver	ESCI 1166.5950.03	R&S	100083	300003312	k	08.01.2010	08.01.2012
27	n. a.	Analyzer-Reference-System (Harmonics and Flicker)	ARS 16/1	SPS	A3509 07/0 0205	300003314	k		
28	n. a.	Amplifier	JS42-00502650-28-5A	MITEQ	1084532	300003379	ev		
29	n. a.	Antenna Tower	Model 2175	ETS-LINDGREN	64762	300003745	izw		
30	n. a.	Positioning Controller	Model 2090	ETS-LINDGREN	64672	300003746	izw		
31	n. a.	Turntable Interface-Box	Model 105637	ETS-LINDGREN	44583	300003747	izw		
32	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787	k		
33	n. a.	Spectrum-Analyzer	FSU26	R&S	200809	300003874	k	08.01.2010	08.01.2012
34	n. a.	Signal Analyzer 20Hz-26,5GHz-150 to + 30 DBM	FSiQ26	R&S	835111/0004	300002678	Ve	06.01.2009	06.01.2011

8 Photographs of the Test Set-up

Photo documentation

Photo 1:

Photo 2:

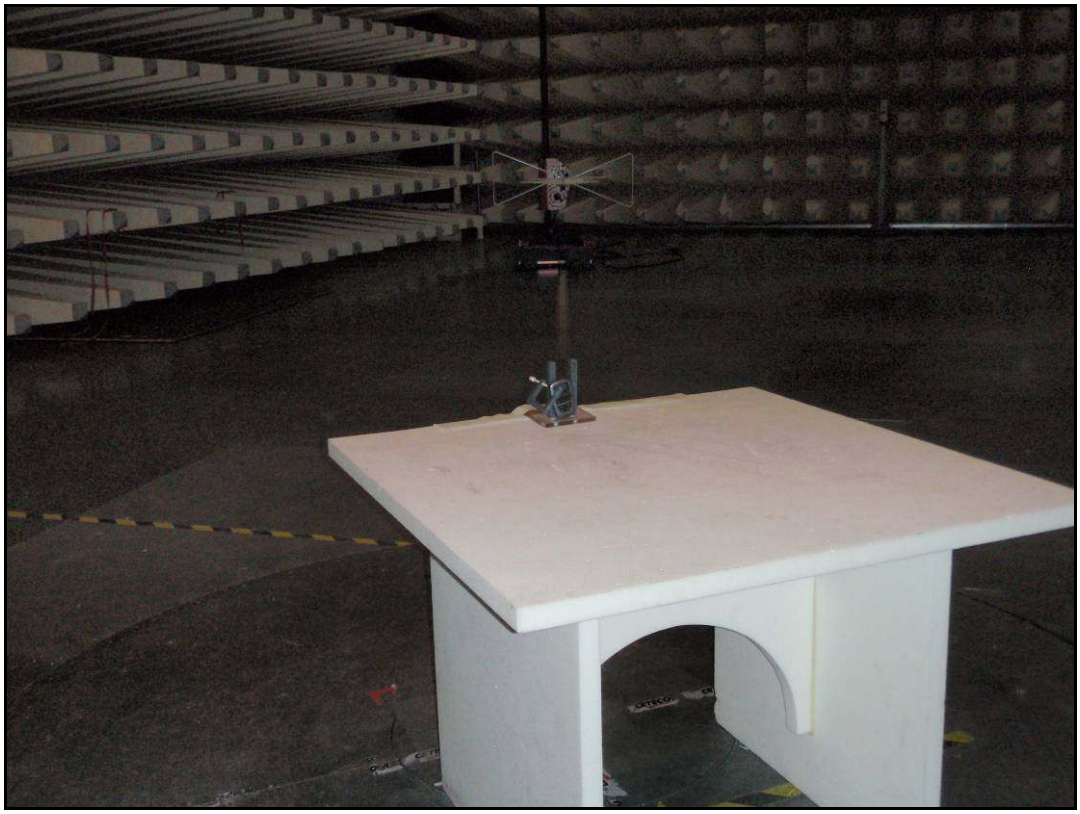


Photo 3:

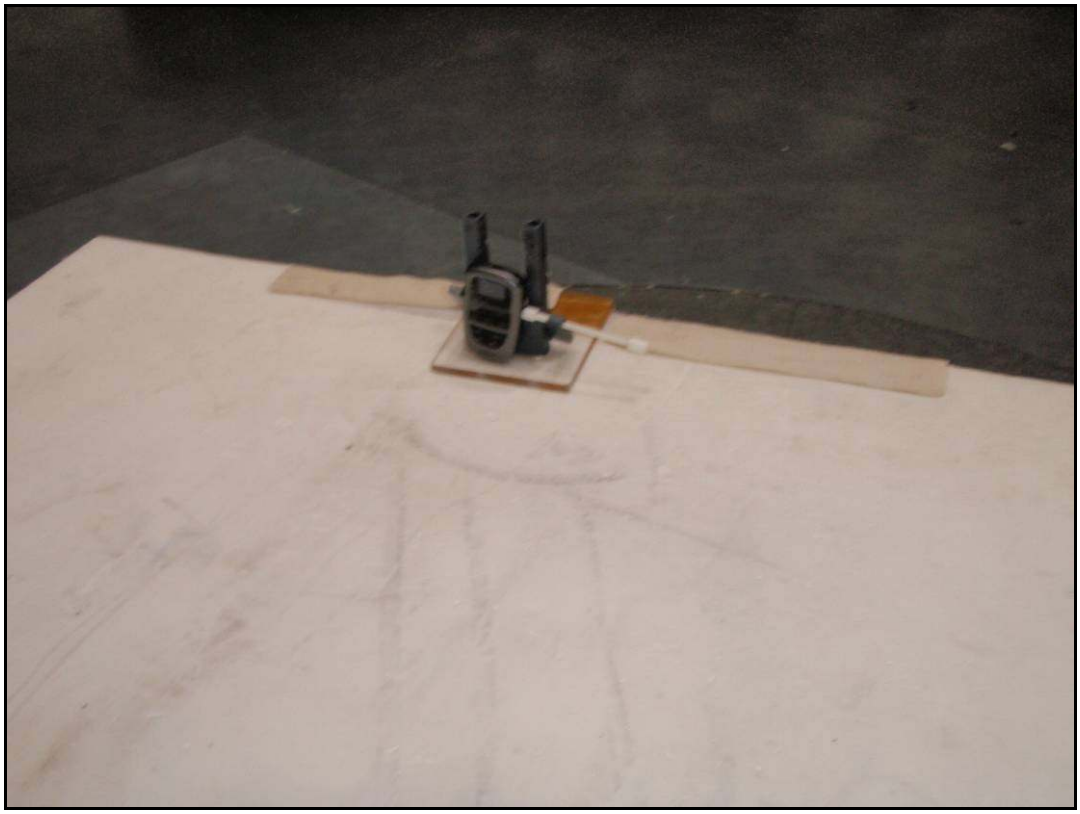
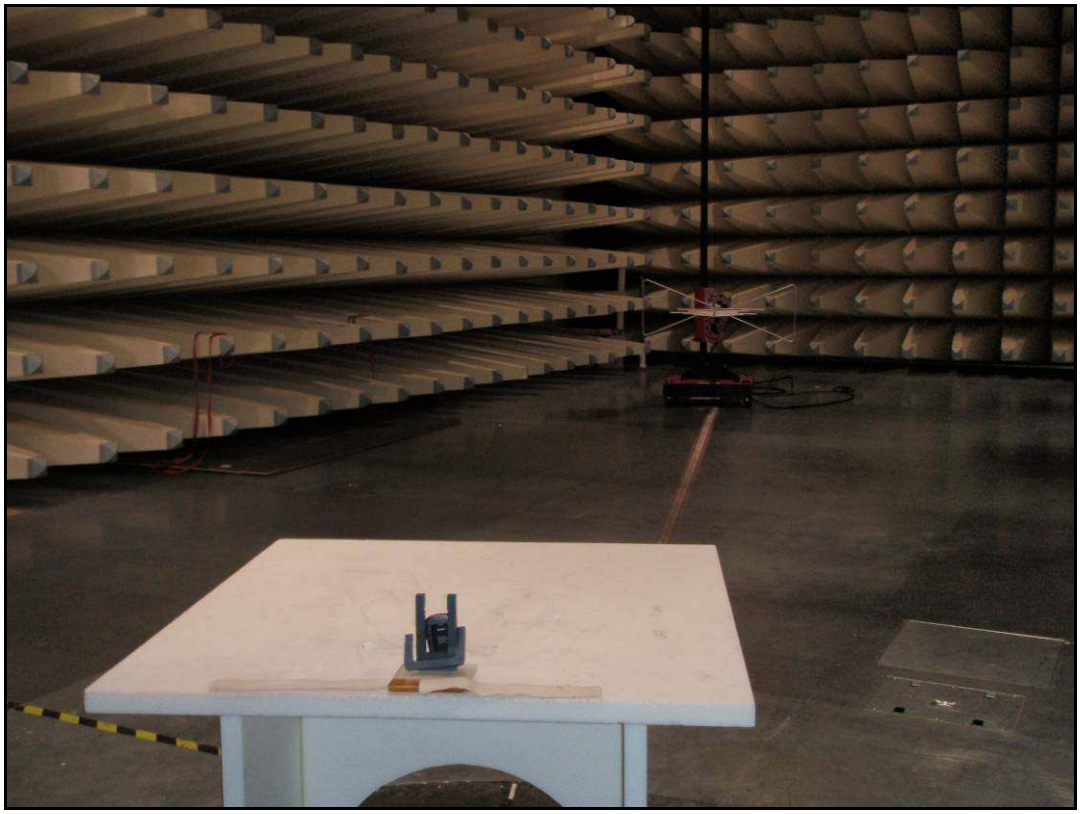


Photo 4:



9 Photographs of the EUT

Photo documentation

Photo 5:

Photo 6:

Photo 7:

Photo 8:

Photo 9:

Photo 10:

Photo 11:

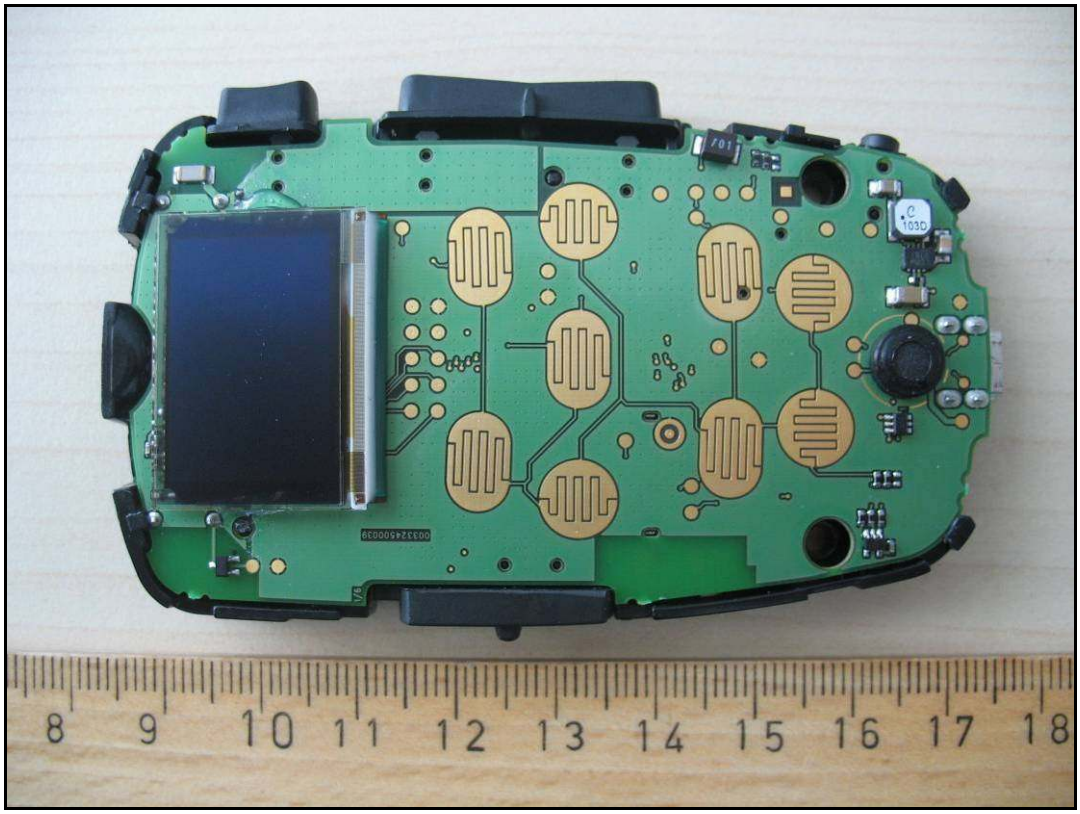


Photo 12:

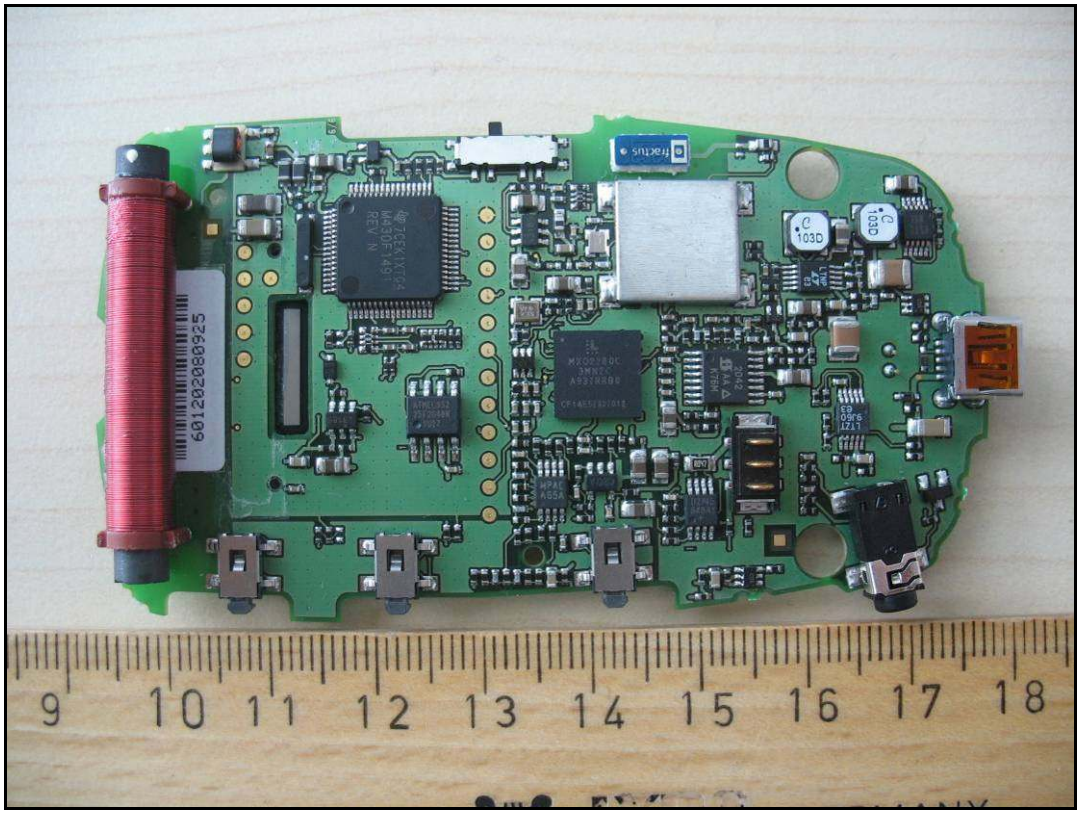


Photo 13:

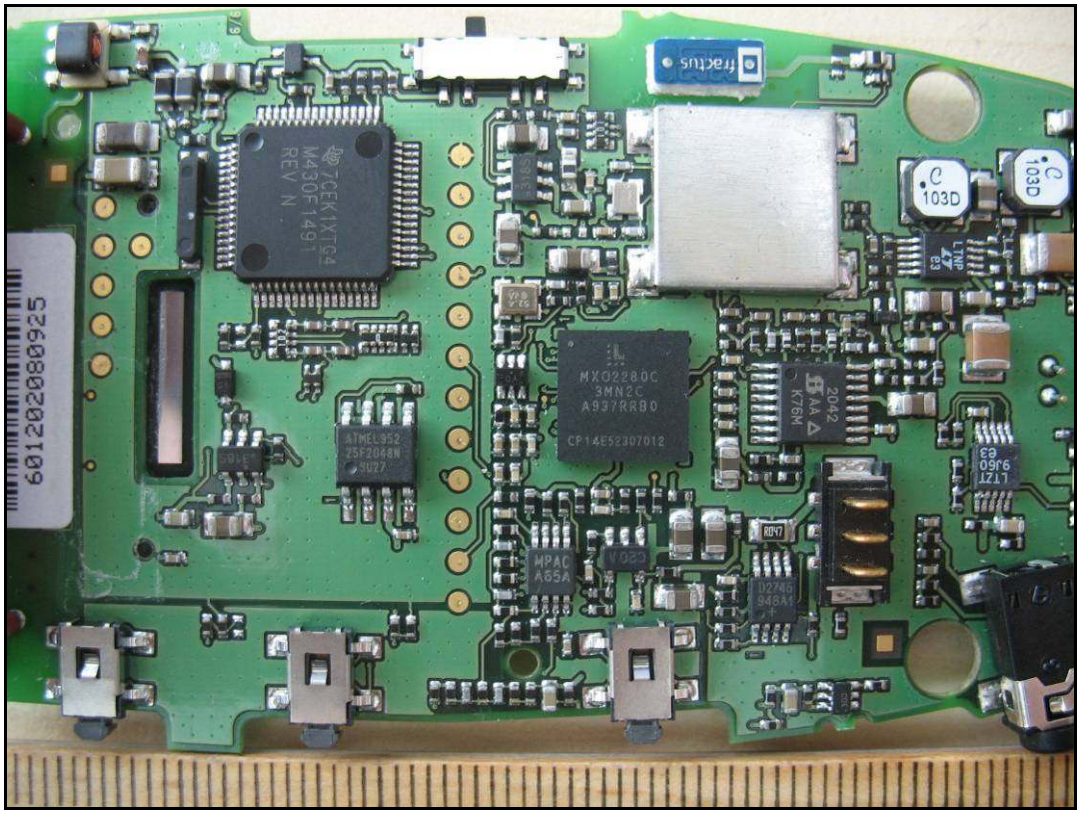


Photo 14:

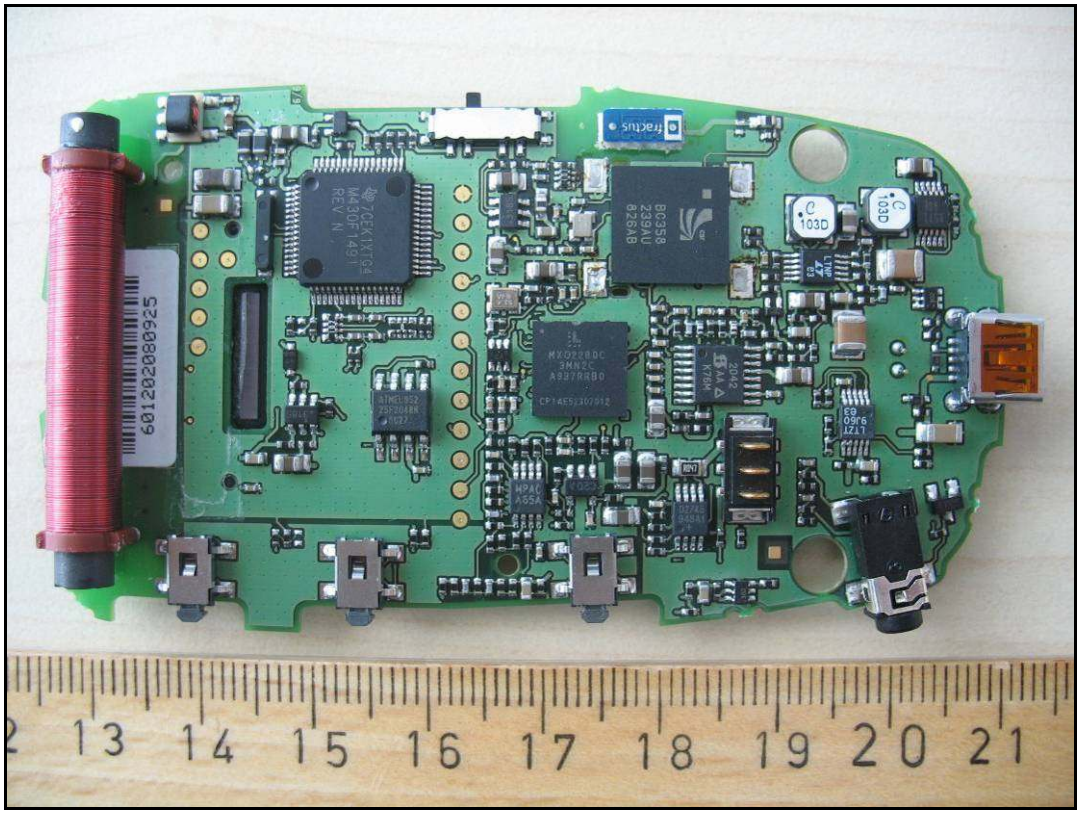


Photo 15: