



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)

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Annex to Test

report no. : 1-1954-23-02/10
Type identification : AAD-3880071-BV
Applicant : Sony Ericsson Mobile Communications AB
FCC ID : PY7A3880071
IC Certification No : 4170B-A3880071
Test standards : 47 CFR Part 15
ICES-003 Issue 4

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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:

2010-04-28

Marco Bertolino

A handwritten signature in blue ink, appearing to read "M. Bertolino", written over a horizontal line.

Date

Name

Signature

Technical responsibility for area of testing:

2010-04-28

Stefan Bös

A handwritten signature in blue ink, appearing to read "Stefan Bös", written over a horizontal line.

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:	Sony Ericsson Mobile Communications AB
Street:	Nya Vattentorget
Town:	22188 Lund
Country:	Sweden
Telephone:	+46-46-19-3000
Fax:	+46 (0) 46 19 32 95
Contact:	Johan Wedin
E-mail:	johan.wedin@sonyericsson.com
Telephone:	+46 (0) 707 19 57 36

1.4 Application details

Date of receipt of order:	2010-04-19
Date of receipt of test item:	2010-04-22
Date of start test:	2010-04-22
Date of end test:	2010-04-27
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
ICES-003 Issue 4	2004-04	Spectrum Management and Telecommunications Policy Interference-Causing Equipment Standard

3 Technical tests

3.1 Details of manufacturer

Name:	Sony Ericsson Mobile Communications AB
Street:	Nya Vattentornet
Town:	22188 Lund
Country:	Sweden

3.2 Test item(s) and test configuration

No.: 1	CB511H8B3E	with	battery CBA-0002021 + charger (GPS on)
No.: 2	CB511H8ARW	with	battery CBA-0002021 + charger (GPS on)
No.: 3	CB511H8B20	with	power supply
No.: 4	CB511H8B49	with	power supply

3.3 Test item

Kind of test item	:	GSM Mobile Phone 850/900/1800/1900 UMTS FDD1/FDD2/FDD5, HSUPA/HSDPA, BT2.0+EDR, A-GPS, FM Rx, WLAN
Type identification	:	AAD-3880071-BV
Serial Number	:	Rad. CB511H8B3E CB511H8ARW Cond. CB511H8B20 CB511H8B49
Frequency	:	1850.2 – 1909.8 MHz and 824.2 – 848.8 MHz
Antenna Type	:	Integrated PCB antenna → for more information, please take a look at the sub-clause 9. (Photos of the EUT)
Power supply (normal)	:	DC by power supply / battery CBA-0002021 + charger

4 **Summary of Measurement Results and list of all performed test cases**

- ☒ **No deviations from the technical specifications were ascertained**
- ☐ There were deviations from the technical specifications ascertained

Section in this Report	Test Name	Verdict
6.1	Conducted limits CFR Part 15.207, 15.107 ICES-003 Issue 4	Passed
6.2	Unwanted emissions CFR Part SUBCLAUSE § 15.109 ICES-003 Issue 4	Passed

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 conforming to 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 conforming to ANSI C63.2-1996 item 15.

9 kHz – 150 kHz ,Quasi Peak measurement, 200 Hz Bandwidth, passive loop antenna.

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

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

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

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

All measurement settings are according to FCC 15.109 and 15.107

6 Annex A: FCC Part 15 Subpart B

6.1 Conducted Limits

Reference

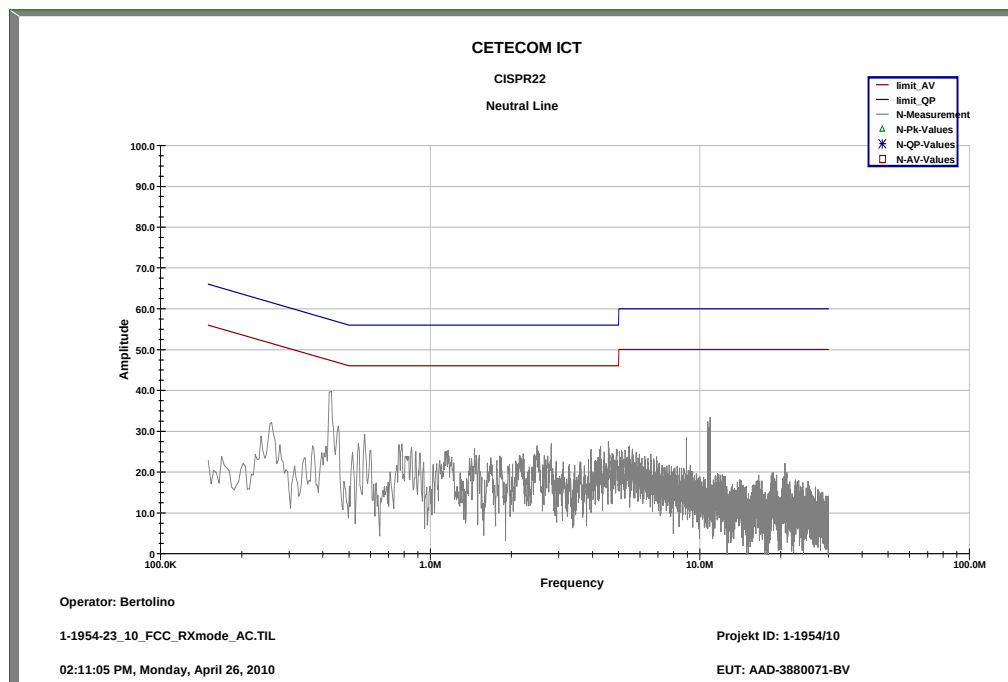
FCC:	CFR Part 15.207, 15.107
IC:	ICES-003 Issue 4

Limits: § 15.107 / 15.207

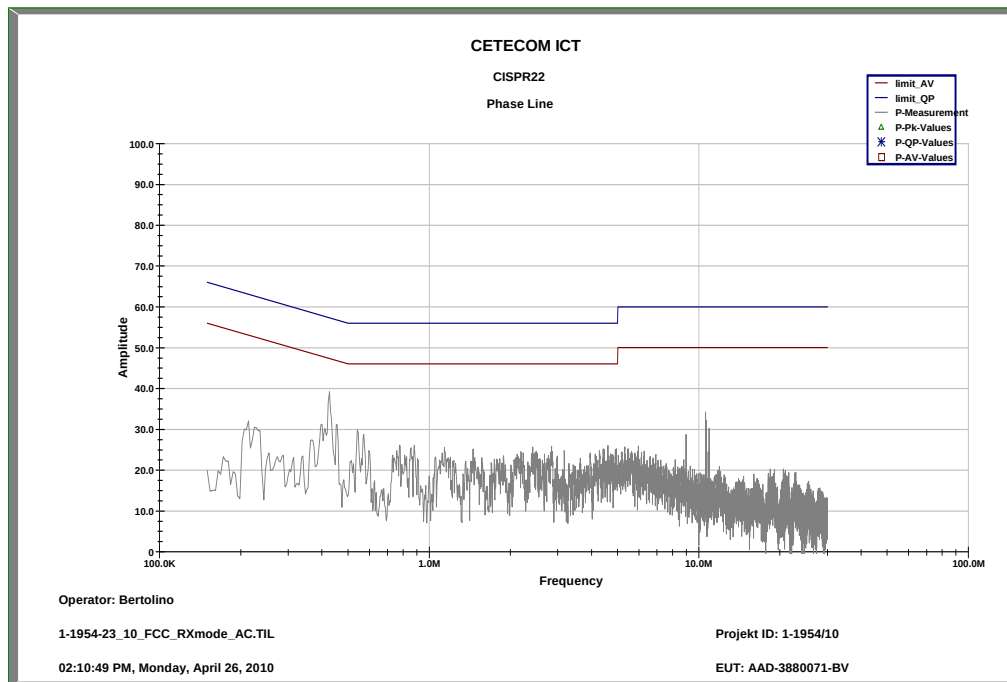
Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	Quasi-peak	Average
0.15 – 0.5	66 to 56 *	56 to 46 *
0.5 – 5	56	46
5 - 30	60	50

* Decreases with the logarithm of the frequency

Plot 1: RX / Idle mode; neutral line



Plot 2: RX / Idle mode; phase line



6.2 Unwanted emissions

Reference

FCC:	CFR Part 15.109, 2.1053
IC:	RSS 132, Issue 2, Section 4.6 and 6.6

Method of measurement

The measurement was performed in worst case. The EUT was not connected to the CMU 200. So the EUT perform a network search. In this case all oscillators are active.

Measurement Results

SPURIOUS EMISSIONS LEVEL (dB μ V/m)								
Idle mode			-/-			-/-		
f (MHz)	Detector	Level (dB μ V/m)	f (MHz)	Detector	Level (dB μ V/m)	f (MHz)	Detector	Level (dB μ V/m)
No critical peaks detected. All detected emissions are below the limit.								
Measurement uncertainty			± 3 dB					

$f < 1$ GHz : RBW/VBW: 100 kHz

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

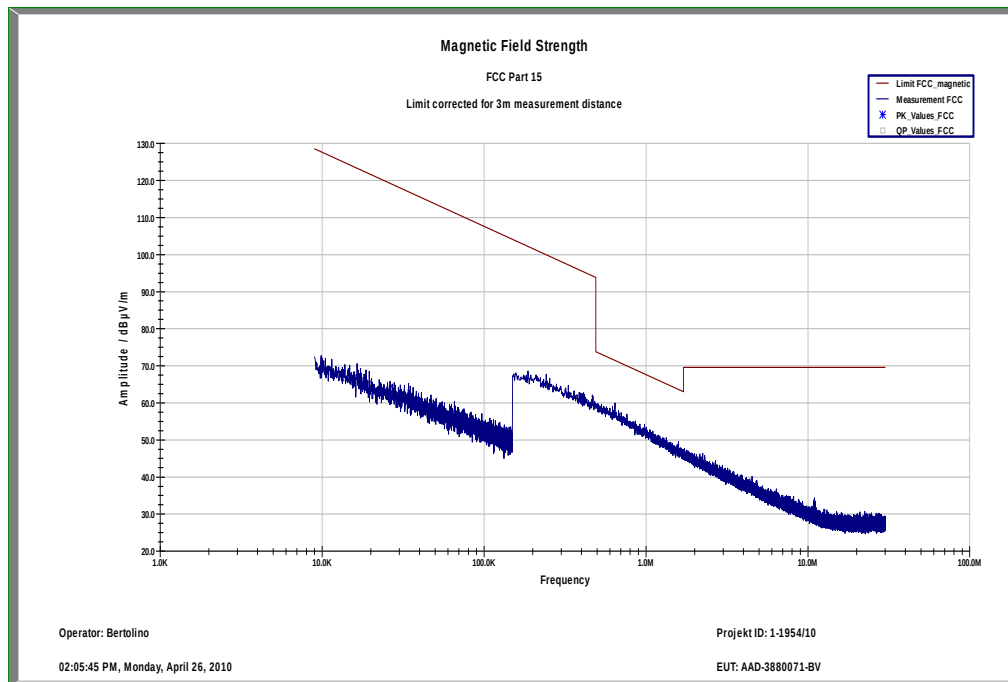
H = Horizontal; V= Vertical

Measurement distance see table

Limits: § 15.109

Frequency (MHz)	Field strength (dB μ V/m)	Measurement distance (m)
30 - 88	30.0	10
88 - 216	33.5	10
216 - 960	36.0	10
above 960	54.0	3

Plot 1: RX mode, 10 kHz – 30 MHz (valid for all channels)



Plot 2: RX mode, 30 MHz – 1 GHz, vertical & horizontal polarization

CETECOM ICT Services GmbH

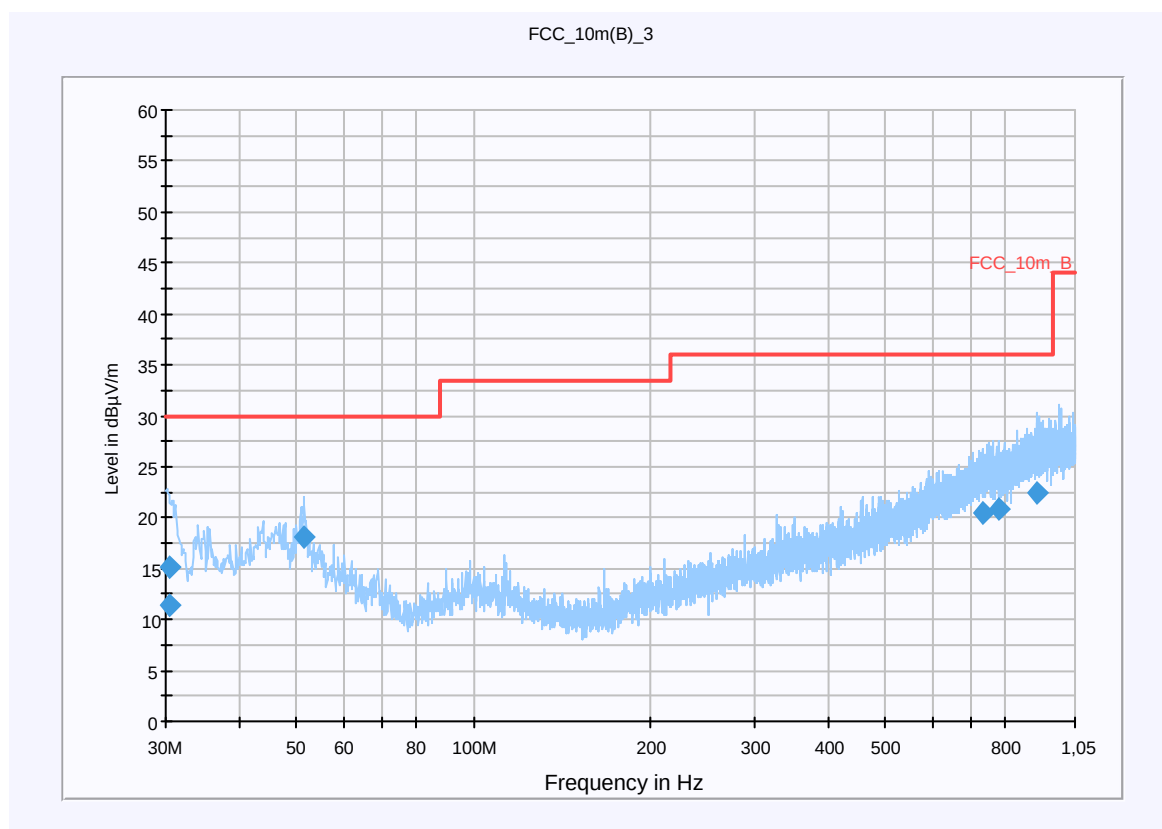
Common Information

EUT: AAD-3880071-BV + Standard USB Charger EP800
 Serial Number: IMEI:00440214-045595-1
 Test Description: FCC part 15 B Class B @ 10m
 Operating Conditions: GSM / UMTS idle / A-GPS active
 Operator Name: Lang
 Comment: AC: 115 V / 60 Hz

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

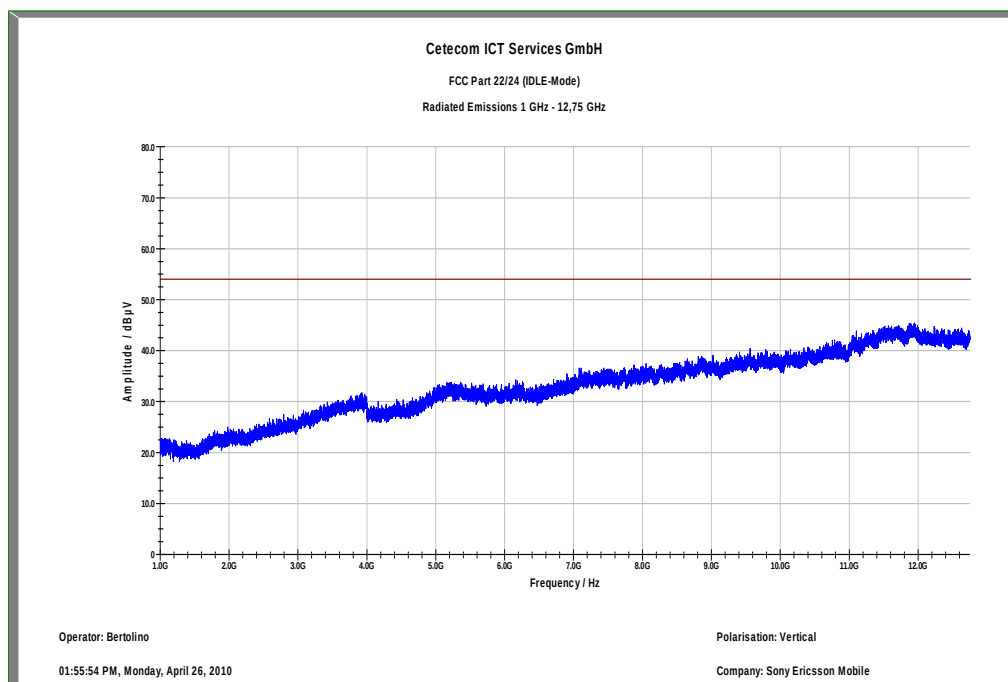
Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
30.454415	15.1	15000.000	120.000	98.0	V	44.0	12.6	14.9	30.0	
30.526500	11.3	15000.000	120.000	98.0	V	211.0	12.6	18.7	30.0	
51.612000	18.2	15000.000	120.000	98.0	V	314.0	13.2	11.8	30.0	
732.225300	20.4	15000.000	120.000	220.0	H	152.0	23.2	15.6	36.0	
779.261850	20.8	15000.000	120.000	220.0	H	325.0	23.7	15.2	36.0	
907.747200	22.4	15000.000	120.000	190.0	H	152.0	25.2	13.6	36.0	

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

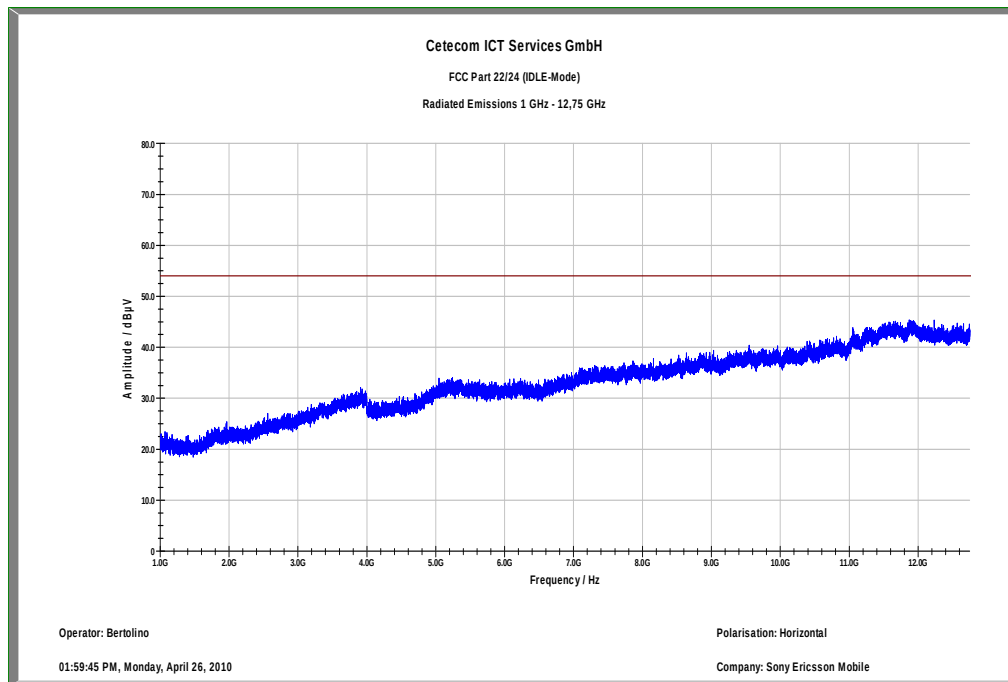
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0909)
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

EMC 32 Version 8.10.00

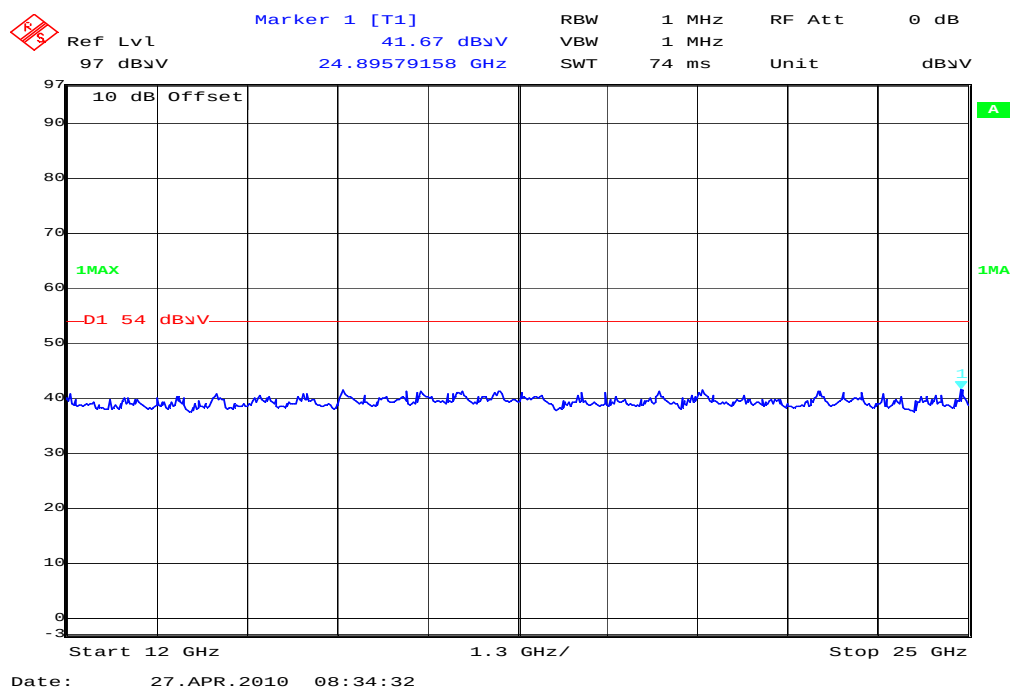
Plot 3: RX mode, 1 GHz – 12.75 GHz, vertical polarization



Plot 4: RX mode, 1 GHz – 12.75 GHz, horizontal polarization



Plot 5: RX mode, 12 GHz – 25 GHz (valid for all channels)



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	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
2	50	Netzgerät	6032A	HP Meßtechnik	2920A04466	300000580	k	06.01.2009	06.01.2011
3	n. a.	software	SPS_PHE 1.4f	Spitzberger & Spieß	B5981; 5D1081;B5979	300000210	k	03.09.2001	03.09.2003
4	n. a.	EMI-Messempfänger	ESCI 1166.5950.03	R&S	100083	300003312	k	08.01.2010	08.01.2012
5	n. a.	Analysator-Referenz-System (Harmonics u. Flicker)	ARS 16/1	SPS	A3509 07/0 0205	300003314	k	06.06.2007	06.06.2009
6	n. a.	Amplifier	JS42-00502650-28-5A	MITEQ	1084532	300003379	ev		
7	n. a.	Antennenmast	Model 2175	ETS-LINDGREN	64762	300003745	izw		
8	n. a.	Steuergerät	Model 2090	ETS-LINDGREN	64672	300003746	izw		
9	n. a.	Interface-Box für Drehtisch	Model 105637	ETS-LINDGREN	44583	300003747	izw		
10	n. a.	Breitbandantenne	VULB9163	Schwarzbeck	295	300003787	k	01.04.2008	01.04.2010
11	n. a.	Spectrum-Analyzer	FSU26	R&S	200809	300003874	k	08.01.2010	08.01.2012
12	n. a.	System Autoranging DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2818A03450	300001040	Ve	08.01.2009	08.01.2012
13	n. a.	PowerAttenuator	8325	Byrd	1530	300001595			
14	n. a.	Double-Ridged Waveguide Horn Antenna 1-26.5GHz	3115	EMCO	8812-3088	300001032	vlKI!	05.03.2009	05.03.2011
15	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
16	n. a.	Anechoic		MWB	87400/02	300000			

		chamber				996			
17	Spec. A. 2_2e	System rack for EMI measurement solution	85900	HP I.V.	*	300000 222	ne		
18	9	Artificial Mains 9 kHz to 30 MHz, 4 x 25 Ampere	ESH3-Z5	R&S	828576/02 0	300001 210	Ve	06.01. 2010	06.01. 2012
19	n. a.	Relais Matrix	3488A	HP Meßtechnik	2719A150 13	300001 156	ne		
20	n. a.	Relais Matrix	PSU	R&S	890167/02 4	300001 168	ne		
21	n. a.	Isolating Transformer	RT5A	Grundig	9242	300001 263	ne		
22	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000 997	ne		
23	n. a.	Switch / Control Unit	3488A	HP	2605e087 70	300001 443	ne		
24	n. a.	Band Reject filter	WRCG1855/191 0-1835/1925- 40/8SS	Wainwright	7	300003 350	ev		
25	n. a.	Band Reject filter	WRCG2400/248 3-2375/2505- 50/10SS	Wainwright	11	300003 351	ev		
26	n. a.	TILE-Software Emission	Quantum Change, Modell TILE-ICS/FULL	EMCO	none	300003 451	ne		
27	n. a.	Highpass Filter	WHKX2.9/18G- 12SS	Wainwright	1	300003 492	ev		
28	n. a.	Highpass Filter	WHK1.1/15G- 10SS	Wainwright	3	300003 255	ev		
29	n. a.	Highpass Filter	WHKX7.0/18G- 8SS	Wainwright	18	300003 789	ne		
30	n. a.	PSA Spectrum Analyzer 3 Hz - 26.5 GHz	E4440A	Agilent Vertr. Bad Hom	MY48250 080	300003 812	k	05.08. 2008	05.08. 2010
31	n. a.	MXG Microwave Analog Signal Generator	N5183A	Agilent Vertr. Bad Hom	MY47420 220	300003 813	k	06.08. 2008	06.08. 2010
32	n. a.	RF Filter Section 9kHz - 1GHz	N9039A	Agilent Vertr. Bad Hom	MY48260 003	300003 825	vlKI!	19.08. 2008	19.08. 2010
33	n. a.	TRILOG Super Breitband Antenne	VULB9163	Schwarzbeck	371	300003 854	vlKI!	17.12. 2008	17.12. 2010