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CETECOM ICT Services
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TEST REPORT

DAkkS Deutsche Akkreditierungsstelle D-PL-12076-01-01

Annex to Test Report No.: 1-2977-30-02/11-A

Testing Laboratory

CETECOM ICT Services GmbH
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Accredited Test Laboratory:
The test laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025
DAkkS registration number: D-PL-12076-01-01

Area of Testing: Radio Satellite Communications

Applicant

Sony Ericsson Mobile Communications AB
Nya Vattentornet
22188 Lund/Sweden
Phone: +46 46 19 30 00
Fax: +46 46 19 32 95
Contact: Johan Wedin
e-mail: johan.wedin@sonyericsson.com
Phone: +46 70 71 95 73 6

Manufacturer

Sony Ericsson Mobile Communications AB
Nya Vattentornet
22188 Lund/Sweden

Test Standard/s

47 CFR Part 15	Title 47 of the Code of Federal Regulations; Chapter I Part 15 – Radio frequency devices
ICES -003 Issue 4	Spectrum Management amd Telecommunications Policy Interference-Causing Equipment Standard

For further applied test standards please refer to section 3 of this test report.

Test item

Kind of test item:	**GSM Mobile Phone (GPRS/EGPRS) 850/ 900/1800/1900; UMTS (HSDPA/HSUPA) FDDI/V/VI; BT2.1 + EDR; A-GPS; WLAN; ANT+; RFID**
Model name:	**AAD-3880112-BV**
FCC ID:	**PY7A3880112**
IC:	**4170B-A3880112**
Frequency:	**824.2 – 848.8 MHz, 826.4 – 846.6 MHz, 1850.2 – 1909.8 MHz**
Power supply:	**3.70 V DC by Li-ion Battery (BA750) and power supply**
Temperature range:	**-30 °C to +60 °C**

Test performed:

2011-05-26 Marco Bertolino

Test Report authorised:

2011-05-26 Stefan Bös

1 Table of contents

2 General Information

2.1 Notes

The test results of this test report relate exclusively to the test item specified in this test report. 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 CETECOM ICT Services GmbH.

2.2 Application details

Date of receipt of order:	2011-04-07
Date of receipt of test item:	2011-04-07
Start of test:	2011-04-08
End of test:	2011-04-11
Person(s) present during the test:	-/-

3 Test standard/s

Test Standard	Version	Test Standard Description
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
ICES-003 Issue 4	2004-04	Spectrum Management and Telecommunications Policy Interference-Causing Equipment Standard

4 Test Environment

Temperature:	T_{nom}	+23 °C during room temperature tests	
	T_{max}	+60 °C during high temperature test	
	T_{min}	-30 °C during low temperature test	
Relative humidity content:		40 %	
Air pressure:		not relevant for this kind of testing	
Power supply:	V_{nom}	3.70 V	DC by Li-ion Battery (BA750) and power supply
	V_{max}	4.40 V	
	V_{min}	3.30 V	

5 Test item

Kind of test item	:	**GSM Mobile Phone (GPRS/EGPRS) 850/ 900/1800/1900; UMTS (HSDPA/HSUPA) FDDI/V/VI; BT2.1 + EDR; A-GPS; WLAN; ANT+; RFID**
Type identification	:	**AAD-3880112-BV**
S/N serial number	:	**Rad. CB5A1CH60C, CB5A1CH60D** **Cond. CB5A1CH5UP, CB5A1CH5LV**
HW hardware status	:	**AP1.1**
SW software status	:	**3.0.1.F.0.25** **ATP R1A034** **Private**
Frequency band [MHz]	:	**824.2 – 848.8 MHz, 1850.2 – 1909.8 MHz**
Type of modulation	:	**GMSK; 8-PSK; QPSK; 16QAM**
Antenna	:	**Integrated antenna**
Power supply	:	**3.70 V DC by Li-ion Battery (BA750) and power supply**
Temperature range	:	**-30℃ to +60 ℃**

It is not possible to turn GPS and HDMI simultaneously on. Due to this the HDMI Interface was selected as the worst case.
The tests were performed with GPS off and HDMI on (with traffic).

6 Test Laboratories sub-contracted

None

7 Summary of Measurement Results

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

TC identifier	Description	verdict	date	Remark
RF-Testing	CFR Part 15.107, 15.109 ICES-003, Issue 4	passed	2011-05-26	-/-

7.1 Receiver

Test Case	temperature conditions	power source voltages	Pass	Fail	NA	NP	Results (max.)
RX-Spurious Emissions Conducted < 30 MHz	Nominal	Nominal	☒	☐	☐	☐	
Spurious Emissions Radiated	Nominal	Nominal	☒	☐	☐	☐	

Note:
NA = Not applicable; NP = Not performed

8 Measurement Results

8.1 RX Spurious Emissions Conducted < 30 MHz

Description:

Measurement of the conducted spurious emissions in transmit mode below 30 MHz. The EUT is set to Idle mode. Both power lines, phase and neutral line, are measured. Found peaks are remeasured with average and quasi peak detection to show compliance to the limits.

Measurement:

Measurement parameter	
Detector:	Peak - Quasi Peak / Average
Sweep time:	Auto
Video bandwidth:	F < 150 kHz: 200 Hz F > 150 kHz: 9 kHz
Resolution bandwidth:	F < 150 kHz: 1 kHz F > 150 kHz: 100 kHz
Span:	9 kHz to 30 MHz
Trace-Mode:	Max Hold

Limits:

FCC		IC
CFR Part 15.107(a)		ICES-003, Issue 4
TX Spurious Emissions Conducted < 30 MHz		
Frequency (MHz)	Quasi-Peak (dBµV/m)	Average (dBµV/m)
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30.0	60	50

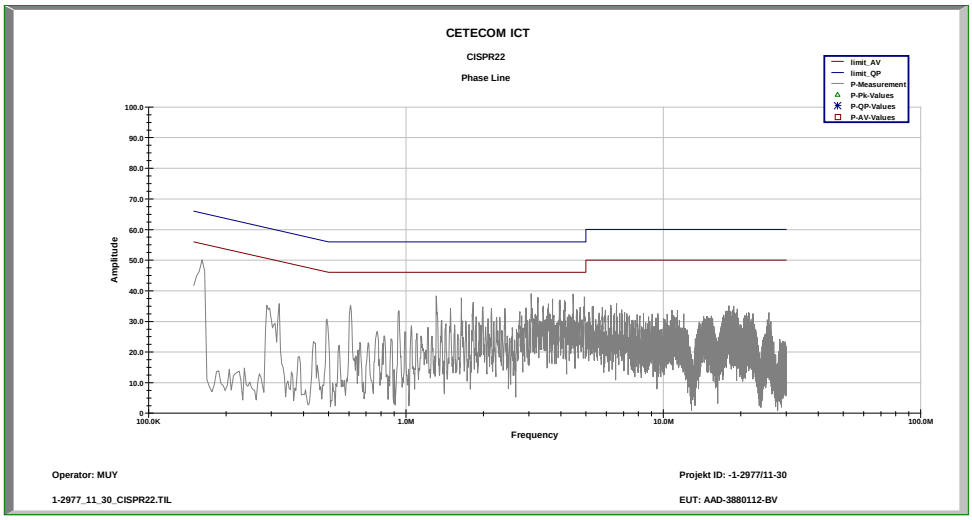
*Decreases with the logarithm of the frequency

Result: **Also see plots**

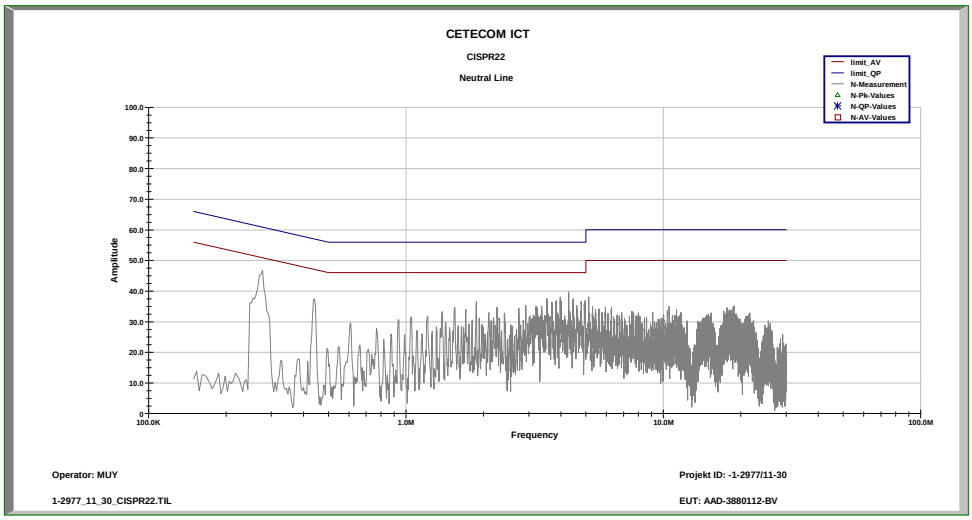
RX Spurious Emissions Conducted < 30 MHz [dBµV/m]		
F [MHz]	Detector	Level [dBµV/m]
No critical peaks found		
Measurement uncertainty	± 3 dB	

Result: **The result of the measurement is passed.**

Plot 1: 9 kHz to 30 MHz / Phase Line



Plot 2: 9 kHz to 30 MHz / Neutral Line



8.2 Spurious Emissions Radiated – Receiver Mode

Description:

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

Measurement:

Measurement parameters	
Detector:	Below 1 GHz Peak / QuasiPeak Above 1 GHz Peak / Average
Sweep time:	2 sec
Video bandwidth:	Below 1 GHz 100 kHz Above 1 GHz 1 MHz
Resolution bandwidth:	1 MHz
Span:	100 MHz Steps
Trace-Mode:	Max Hold

Limits:

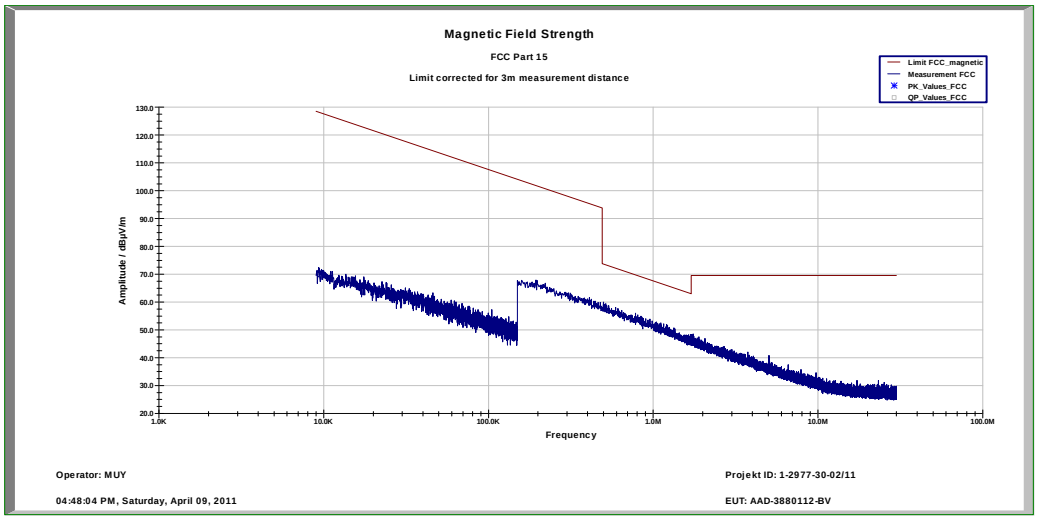
FCC		IC
CFR Part 15.109 CFR Part 2.1053		RSS Gen, Issue 2, Section 4.10 ICES-003 Issue 4
Spurious Emissions Radiated – Receiver Mode		
Frequency (MHz)	**Field Strength (dBµV/m)**	**Measurement distance (m)**
30 – 88	30.0	10
88 - 216	33.5	10
216 – 960	36.0	10
Above 960	54.0	3

Results:

Spurious Emission Level (dBµV/m)		
Frequency (MHz)	**Detector**	**Level (dBµV/m)**
No peaks detected		
Measurement uncertainty	± 3dB	

Result: **The result of the measurement is passed.**

Plot 1: Receiver mode up to 30 MHz



Plot 2: Receiver mode (30 MHz - 1 GHz)

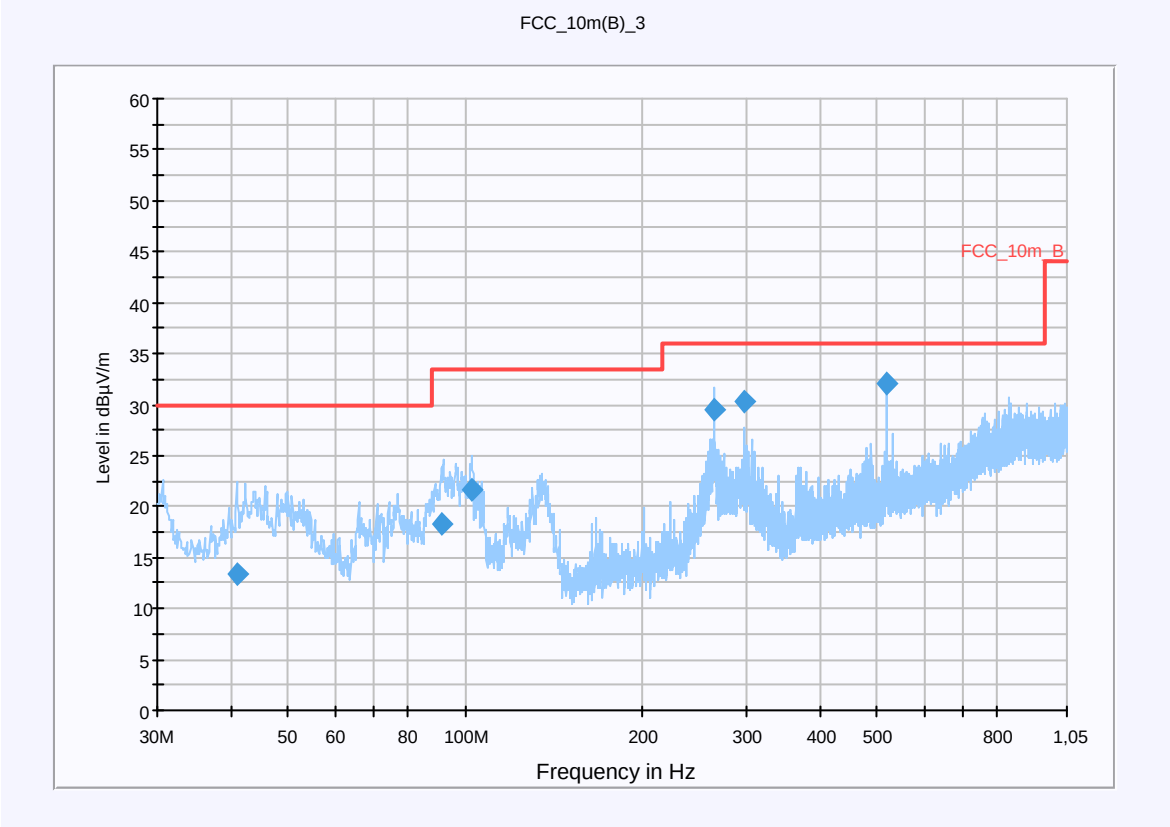
Common Information

EUT:	AAD-3880112-BV
Serial Number:	CB5A1CH60D IMEI: 00440214-249926-2
Test Description:	FCC part 15 class B @ 10 m
Operating Conditions:	GSM idle + HDMI out active + charging
Operator Name:	Hennemann
Comment:	AC: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

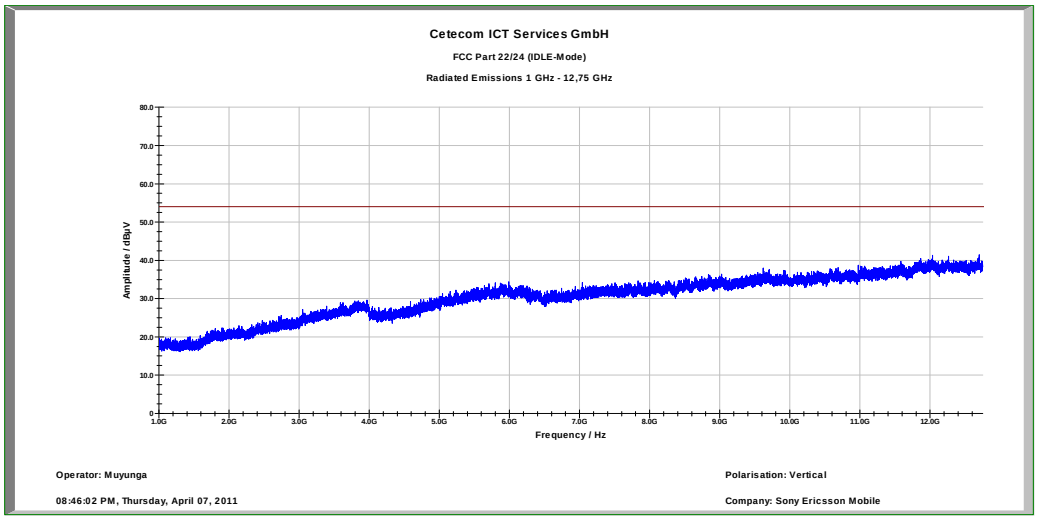
Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 2 GHz	QuasiPeak	120 kHz	15 s	Receiver



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
41.046300	13.4	15000.000	120.000	167.0	V	137.0	13.4	16.6	30.0	
91.130700	18.4	15000.000	120.000	120.0	V	64.0	10.7	15.1	33.5	
102.348450	21.7	15000.000	120.000	98.0	V	100.0	11.7	11.8	33.5	
265.498500	29.5	15000.000	120.000	106.0	V	271.0	13.7	6.5	36.0	
297.025350	30.3	15000.000	120.000	113.0	V	146.0	14.4	5.7	36.0	
519.756750	32.0	15000.000	120.000	120.0	H	-7.0	19.0	4.0	36.0	

Plot 3: Receiver mode (1 GHz – 12.75 GHz)



RBW/VBW: 1MHz

9 Test equipment and ancillaries used for tests

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).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Labor/Item).

No.	Lab / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	19	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	9107-3697	300001605	Ve	19.10.2010	19.10.2012
2	n. a.	Isolating Transformer	913501	Erfi		300001205	ne		
3	4	Radiocom. Analyzer	CMTA 54	R&S	894043/010	300001175	NK!	06.06.2007	
4	9	Signal Generator 0.1-4320 MHz, AM/FM/PHIM/Puls Mod.	SMHU	R&S	894055/005	300001190	Ve	05.01.2010	05.01.2013
5	10	Signal Generator 0.1-2000 MHz	SMH	R&S	864219/033	300001410	Ve	18.08.2010	18.08.2013
6	n. a.	DC Power Supply 0 – 32V	1108-32	Heiden	001802	300001383	Ve	23.06.2010	23.06.2013
7	n. a.	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04590	300001041	Ve	08.01.2009	08.01.2012
8	n. a.	Temperature Test Chamber	VT 4002	Heraeus Voetsch	521/83761	300002326	Ve	28.05.2009	28.05.2011
9	n. a.	Audio Analyzer 2Hz - 300 kHz	UPD	R&S	841074/009	300001236	k	08.01.2010	08.01.2012
10	n. a.	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
11	n. a.	Signal Analyzer 20Hz-26,5GHz-150 to + 30 DBM	FSiQ26	R&S	835111/0004	300002678	Ve	04.11.2010	04.11.2012
12	n. a.	Temperature Test Chamber	T-40/50	CTS GmbH	064023	300003540	vlKl!	04.06.2009	04.06.2011
13	n. a.	Isolating Transformer	RT5A	Grundig	8041	300001626	g		
14	n. a.	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2818A03450	300001040	Ve	08.01.2009	08.01.2012
15	n. a.	Coaxial Attenuator 30dB/500W	8325	Bird	1530	300001595	ev		
16	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vlKl!	05.03.2009	05.09.2011
17	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
18	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996		23.03.2009	
19	Spec.A. 2_2e	System rack for EMI measurement solution	85900	HP I.V.	*	300000222	ne		
20	9	Artificial Mains 9 kHz to 30 MHz	ESH3-Z5	R&S	828576/020	300001210	Ve	06.01.2010	06.01.2012
21	n. a.	Relais Matrix	3488A	HP Meßtechnik	2719A15013	300001156	ne		
22	n. a.	Relais Matrix	PSU	R&S	890167/024	300001168	ne		
23	n. a.	Isolating Transformer	RT5A	Grundig	9242	300001263	ne		
24	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
25	n. a.	Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143	ne		
26	n. a.	Band Reject filter	WRCG1855/1910-	Wainwright	7	300003350	ev		

			1835/1925-40/8SS						
27	n. a.	Band Reject filter	WRCG2400/2483-2375/2505-50/10SS	Wainwright	11	300003351	ev		
28	n. a.	TILE-Software Emission	Quantum Change, Modell TILE-ICS/FULL	EMCO	none	300003451	ne		
29	n. a.	Highpass Filter	WHKX2.9/18G-12SS	Wainwright	1	300003492	ev		
30	n. a.	Highpass Filter	WHK1.1/15G-10SS	Wainwright	3	300003255	ev		
31	n. a.	Highpass Filter	WHKX7.0/18G-8SS	Wainwright	18	300003789	ne		
32	n. a.	PSA Spectrum Analyzer 3 Hz - 26.5 GHz	E4440A	Agilent Technologies	MY48250080	300003812	k	08.09.2010	08.09.2012
33	n. a.	MXG Microwave Analog Signal Generator	N5183A	Agilent Technologies	MY47420220	300003813	k	13.09.2010	13.09.2012
34	n. a.	RF Filter Section 9kHz - 1GHz	N9039A	Agilent Technologies	MY48260003	300003825	vlKl!	08.09.2010	08.09.2012
35	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854	vlKl!	17.12.2008	17.12.2011
36	n. a.	Universal Communication Tester	CMU200	R&S	103992	300003231	vlKl!	30.06.2010	30.06.2012

Agenda: Kind of Calibration

k	calibration / calibrated	EK	limited calibration
ne	not required (k, ev, izw, zw not required)	zw	cyclical maintenance (external cyclical maintenance)
ev	periodic self verification	izw	internal cyclical maintenance
Ve	long-term stability recognized	g	blocked for accredited testing
vlkl!	Attention: extended calibration interval		
NK!	Attention: not calibrated	*)	next calibration ordered / currently in progress