

TEST REPORT

Annex to Test Report No.: 1-2403-02-09/10



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
DAR registration number: DGA-PL-176/94-D1

Area of Testing: Radio Satellite Communications

Applicant

Sagem Wireless

2 rue du Petit Albi
95801 Cergy Pontoise Cedex/France
Phone: +33-(0)1-58-11-91-0
Fax: +86 574 27960000
Contact: Xinni Yang
e-mail: Xinni.yang@sagemwireless.com.cn
Phone: +86 574 27960929

Manufacturer

Sagem Wireless
2 rue du Petit Albi
95801 Cergy Pontoise Cedex
France

Test Standard/s

47 CFR Part 22

Title 47 of the Code of Federal Regulations; Chapter I Federal Communications Commission
subchapter B - common carrier services, Part 22-Public mobile services

47 CFR Part 24

Title 47 of the Code of Federal Regulations; Chapter I Federal Communications Commission
subchapter B - common carrier services, Part 24-Personal communications services

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

Test Item

Kind of test item: GSM Mobile Phone
Model name: COSY Phone 3G
FCC ID: M9HCOSY3G
Frequency [MHz]: 824.2 – 848.8 MHz, 1850.2 – 1909.8 MHz
Power supply: 3.9 V DC by Li-ion Battery
Temperature range: -/- °C to -/- °C



Test performed:

Test Report authorised:

2010-08-23 Daniel Muyunga

2010-08-23 Michael Berg

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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:	2010-07-22
Date of receipt of test item:	2010-08-17
Start of test:	2010-08-17
End of test:	2010-08-18
Person(s) present during the test:	-/-

3 Test standard/s

Test Standard	Version	Test Standard Description
47 CFR Part 22	2006-10	Title 47 of the Code of Federal Regulations; Chapter I Federal Communications Commission subchapter B - common carrier services, Part 22-Public mobile services
47 CFR Part 24	2006-10	Title 47 of the Code of Federal Regulations; Chapter I Federal Communications Commission subchapter B - common carrier services, Part 24-Personal communications services

4 Test Environment

Temperature:	T_{nom}	+20 °C during room temperature tests
	T_{max}	-/- °C during high temperature test
	T_{min}	-/- °C during low temperature test
Relative humidity content:		55 %
Air pressure:		not relevant for this kind of testing
Power supply:	V_{nom}	3.9 V DC by Li-ion Battery
	V_{max}	4.2 V
	V_{min}	3.5 V

5 Test item

Kind of test item	:	GSM Mobile Phone
Type identification	:	COSY Phone 3G
GPS receiver turned	:	On
S/N serial number	:	352331040008560 352331040007844
HW hardware status	:	V0x
SW software status	:	EB, R07
Frequency Band [MHz]	:	824.2 – 848.8 MHz, 1850.2 – 1909.8 MHz
Type of Modulation	:	GMSK; 8-PSK; QPSK; 16QAM
Number of channels	:	300 (PCS1900) and 125 (PCS850)
Antenna	:	Internal antenna
Power Supply	:	3.9 V DC by Li-ion Battery
Temperature Range	:	-/- °C to -/- °C

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	2010-08-23	-/-

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

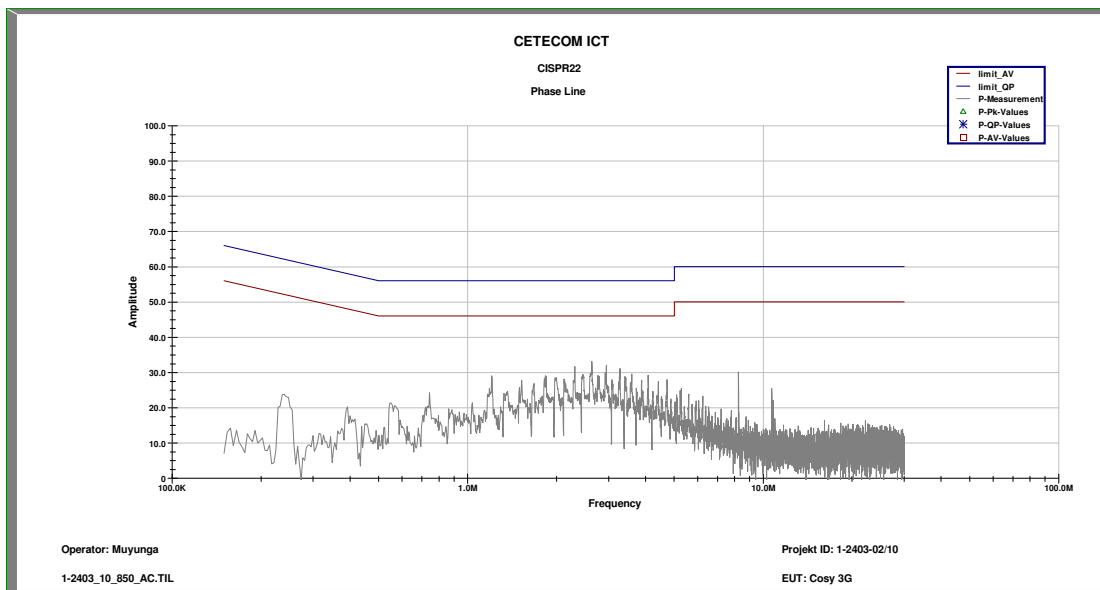
*Decreases with the logarithm of the frequency

Result: Also see plots

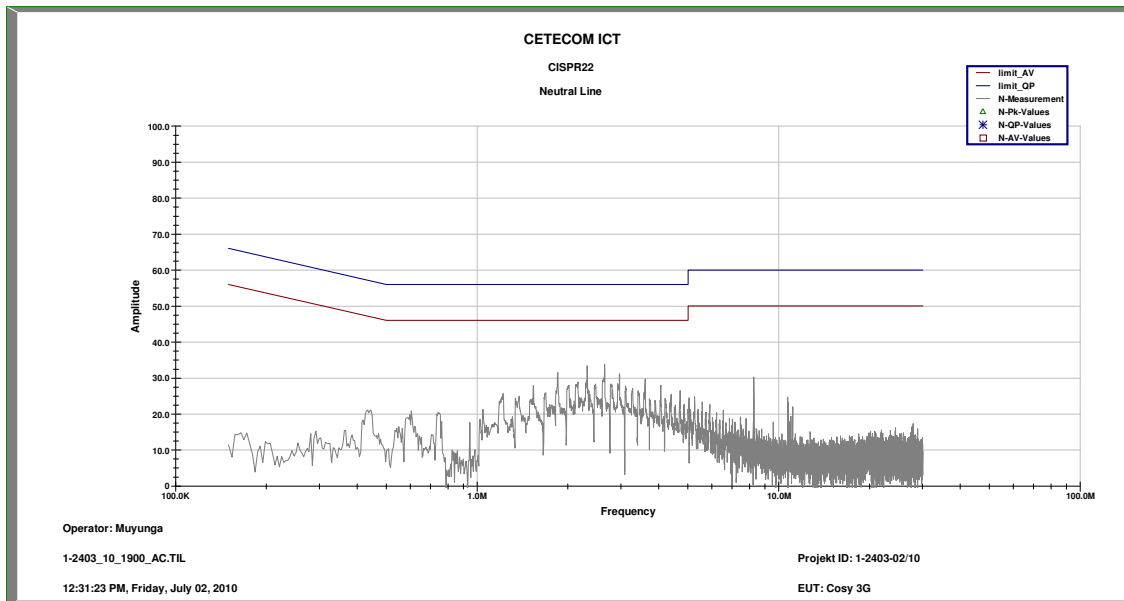
RX Spurious Emissions Conducted < 30 MHz [dBμV/m]		
F [MHz]	Detector	Level [dBμV/m]
No critical peaks found		
Measurement uncertainty	± 3 dB	

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:

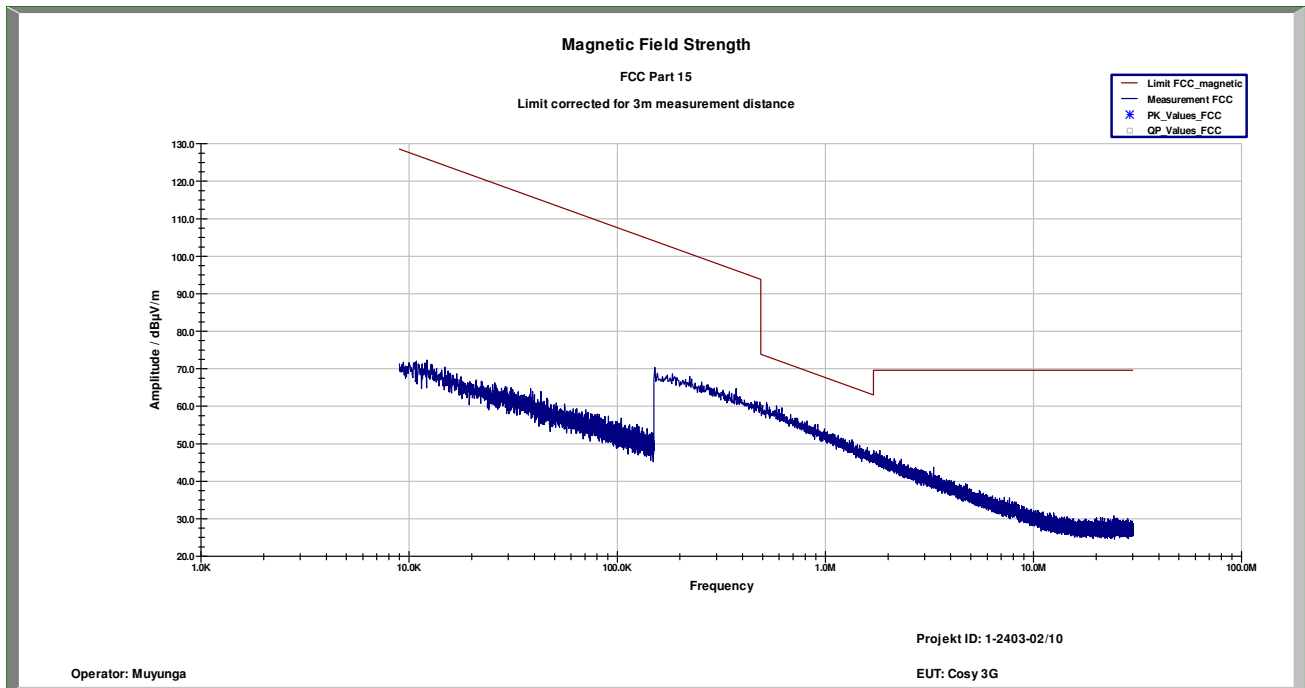
Measurement parameters	
Detector:	Below 1 GHz Peak / QuasiPeak Above 1 GHz Peak / Average
Sweep time:	2 sec
Video bandwidth:	Below 1 GHz 100 kHz Above 1 GHz 1 MHz
Resolution bandwidth:	1 MHz
Span:	100 MHz Steps
Trace-Mode:	Max Hold

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 (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

Result: The result of the measurement is passed.

Plot 1: Receiver mode up to 30 MHz



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

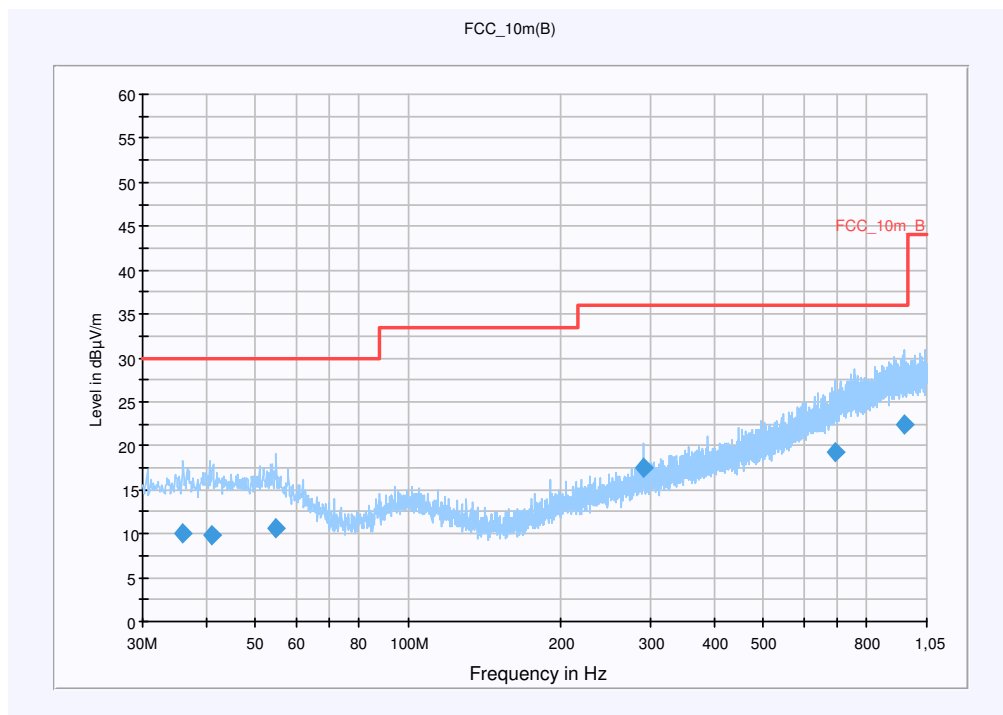
Common Information

EUT: Cosy Phone 3 G
Serial Number: IMEI: 352331040008982
Test Description: FCC Part 15 B @ 10m
Operating Conditions: GSM idle
Operator Name: Langer
Comment: 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

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

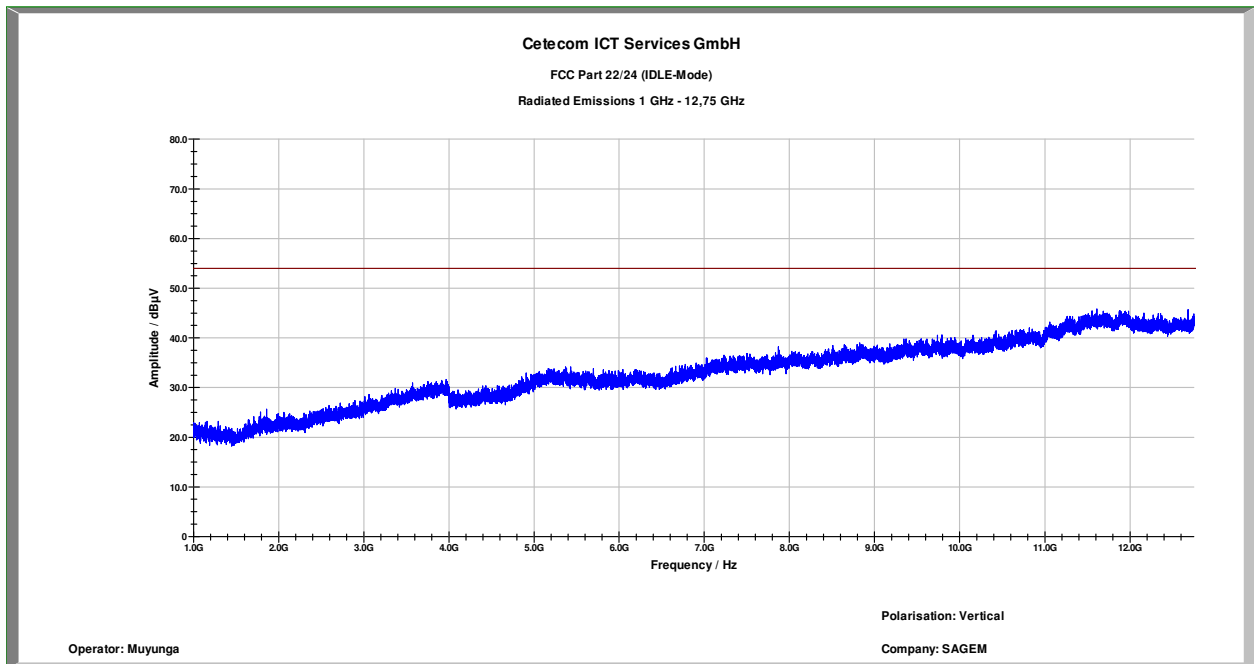
Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1,05 GHz	QuasiPeak	120 kHz	15 s	Receiver



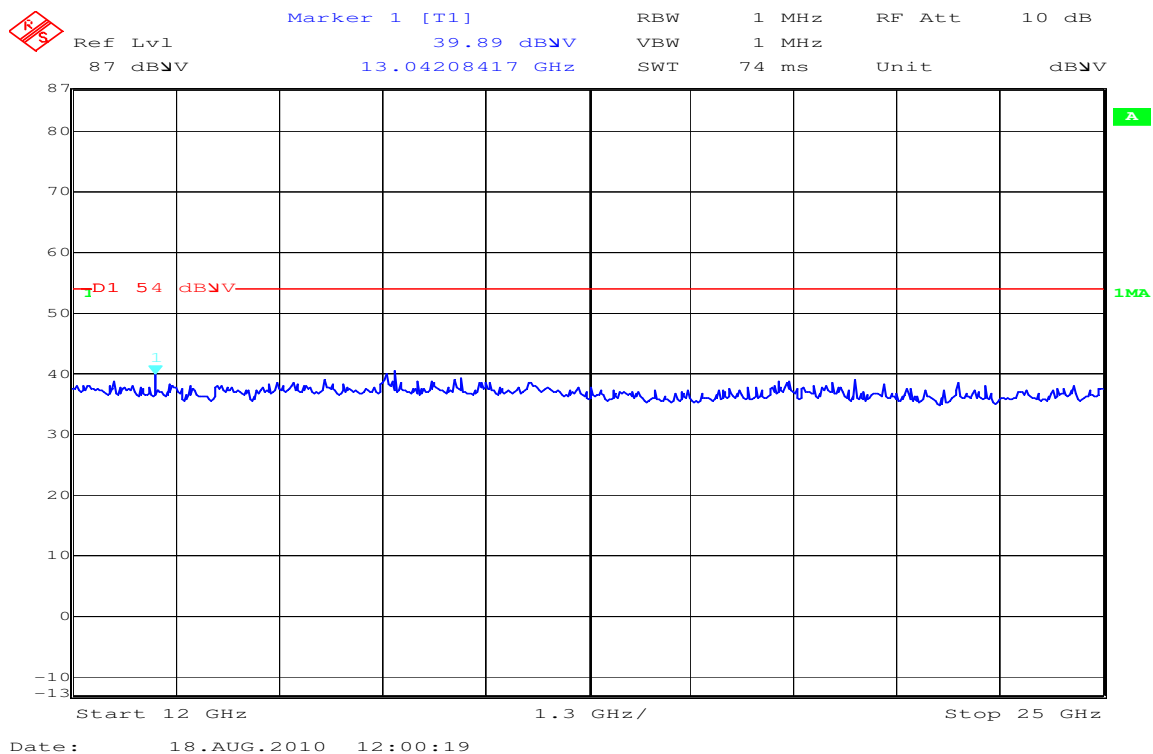
Final Result 1

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)
35.934600	10.1	15000.000	120.000	100.0	V	3.0	13.1	19.9	30.0
40.968000	9.8	15000.000	120.000	200.0	V	42.0	13.4	20.2	30.0
54.870000	10.6	15000.000	120.000	289.0	V	46.0	12.9	19.4	30.0
289.984950	17.6	15000.000	120.000	221.0	V	236.0	14.3	18.4	36.0
692.376000	19.3	15000.000	120.000	400.0	H	272.0	22.3	16.7	36.0
950.740350	22.5	15000.000	120.000	250.0	H	109.0	25.4	13.5	36.0

Plot 3: Receiver mode (1 GHz – 12.75 GHz)
Worst case polarisation: vertical



Plot 4: Receiver mode (12.75 GHz – 25 GHz)



9 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	viKI!	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 - 26.5 GHz	E4440A	Agilent Technologies	MY48250080	300003812	k	05.08.2010	05.08.2012
20	n. a.	MXG Microwave Analog Signal Generator	N5183A	Agilent Technologies	MY47420220	300003813	k	06.08.2010	06.08.2012
21	n. a.	RF Filter Section 9kHz - 1GHz	N9039A	Agilent Technologies	MY48260003	300003825	viKI!	19.08.2010	19.08.2012
22	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854	viKI!	17.12.2008	17.12.2010

Annex A Photographs of the Test Set-up

Photo documentation

Photo 1:



Photo 2:

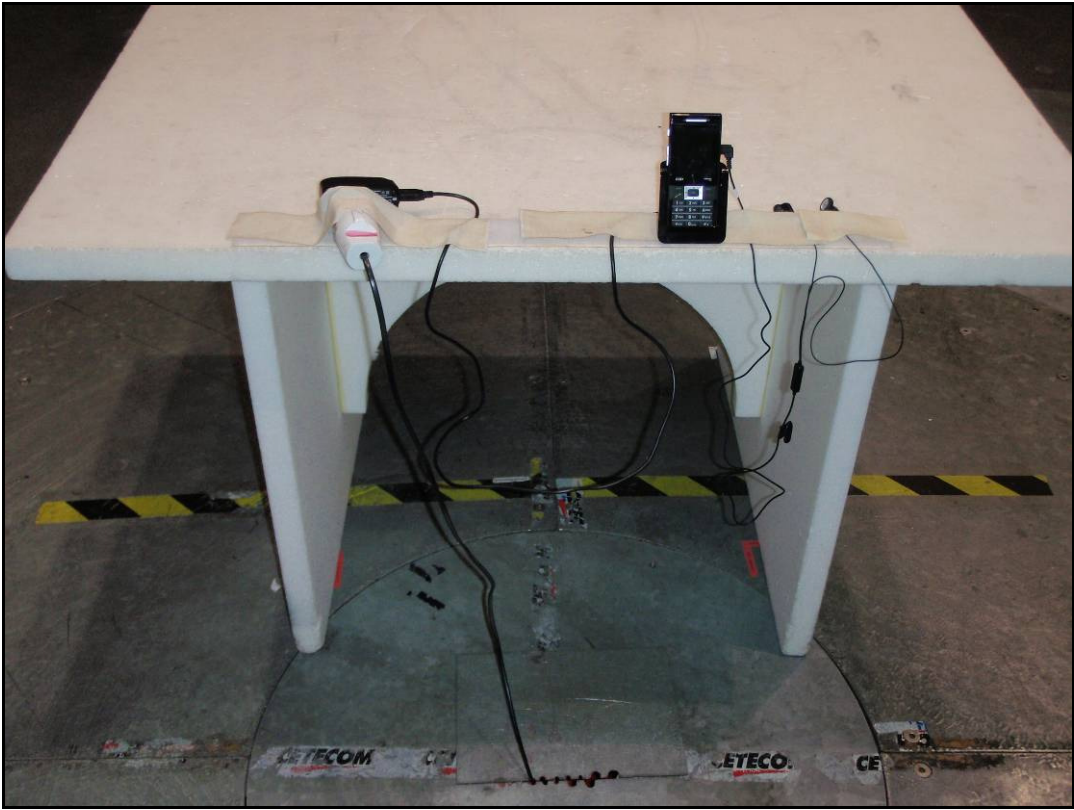


Photo 3:



Annex B External Photographs of the EUT

Photo documentation

Photo 4:



Photo 5:



Photo 6:



Photo 7:



Photo 8:



Annex C Internal Photographs of the EUT

Photo documentation

Photo 9:



Photo 10:



Photo 11:



Photo 12:



Photo 13:

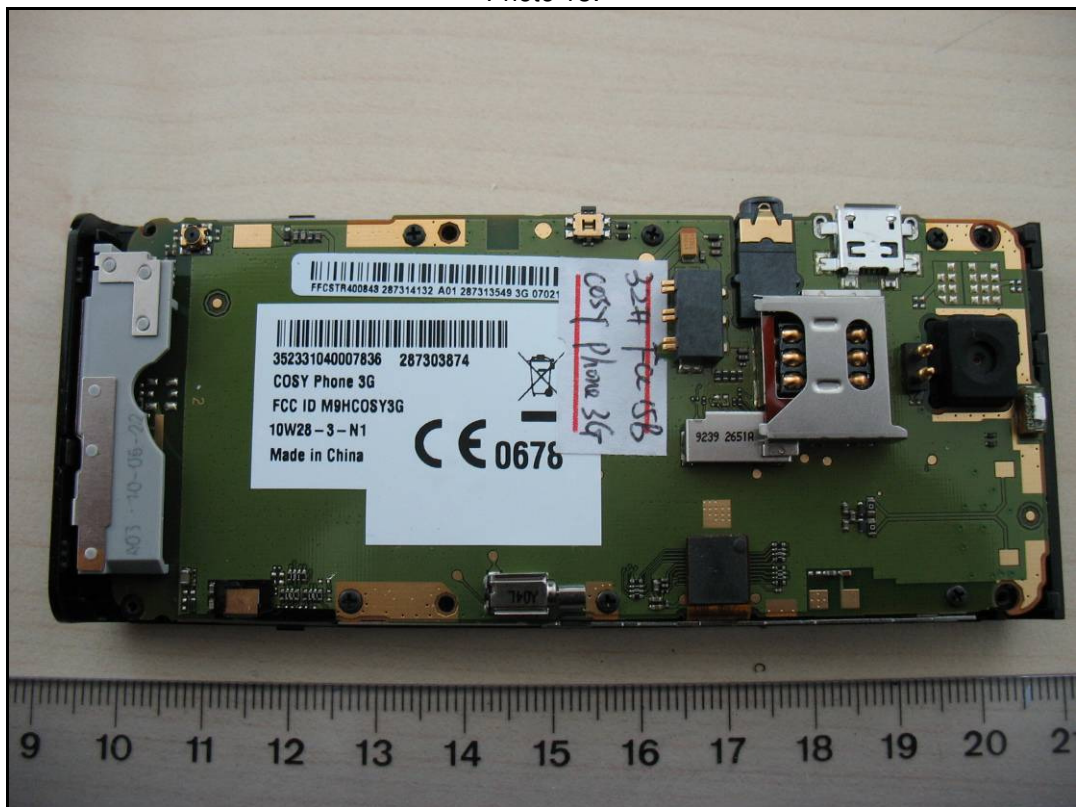


Photo 14:



Photo 15:

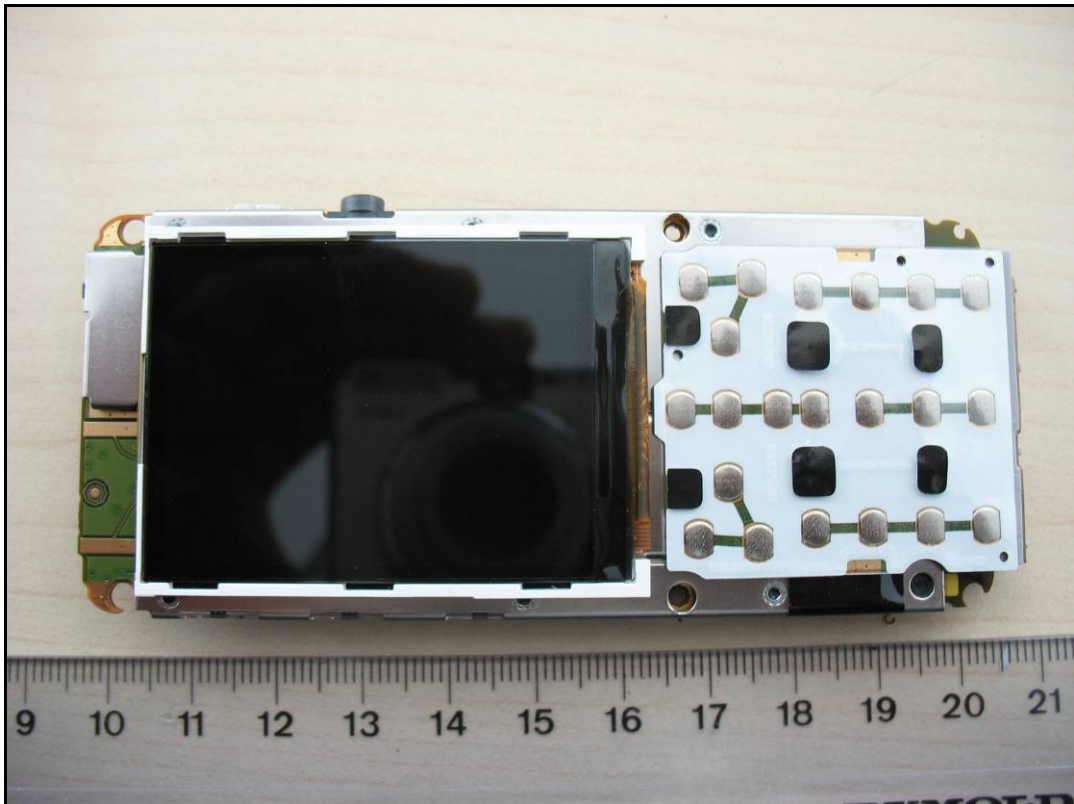


Photo 16:

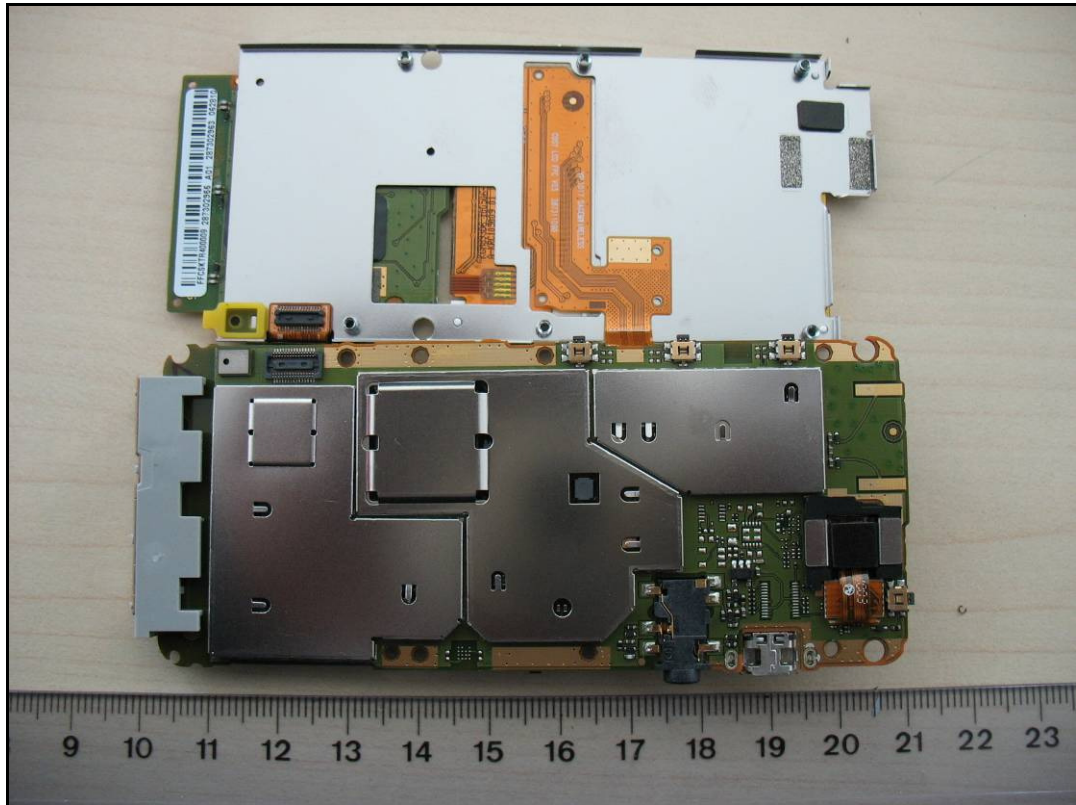


Photo 17:

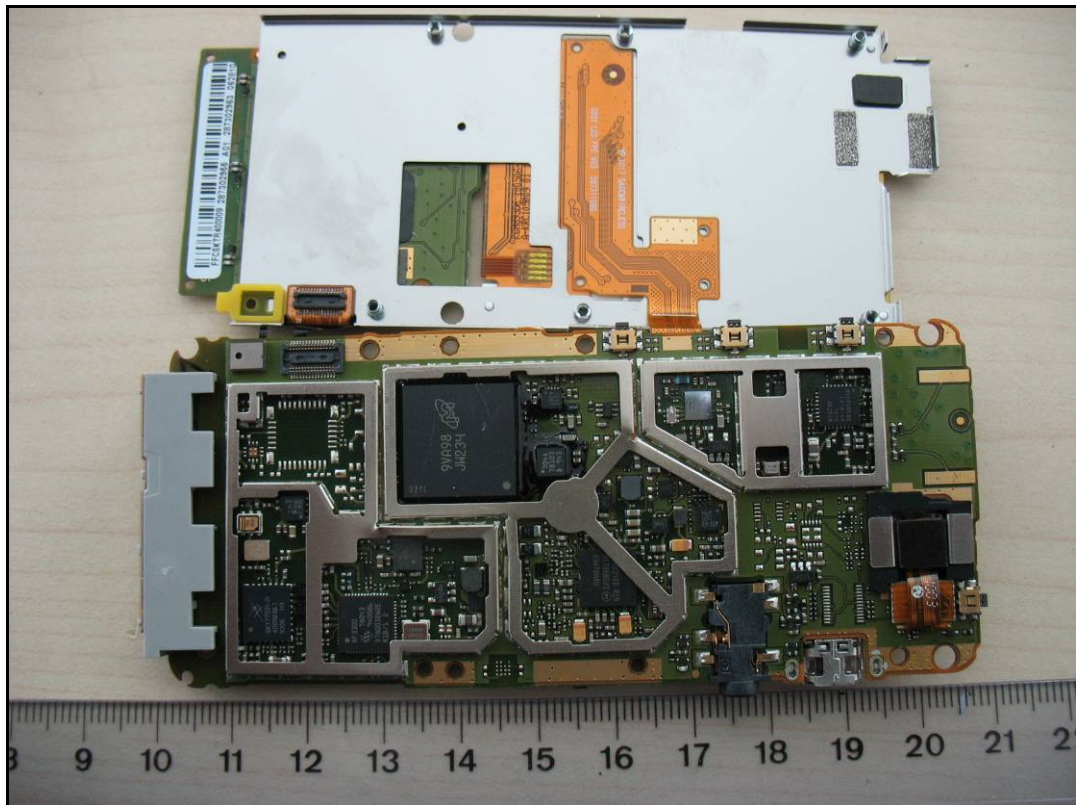


Photo 18:

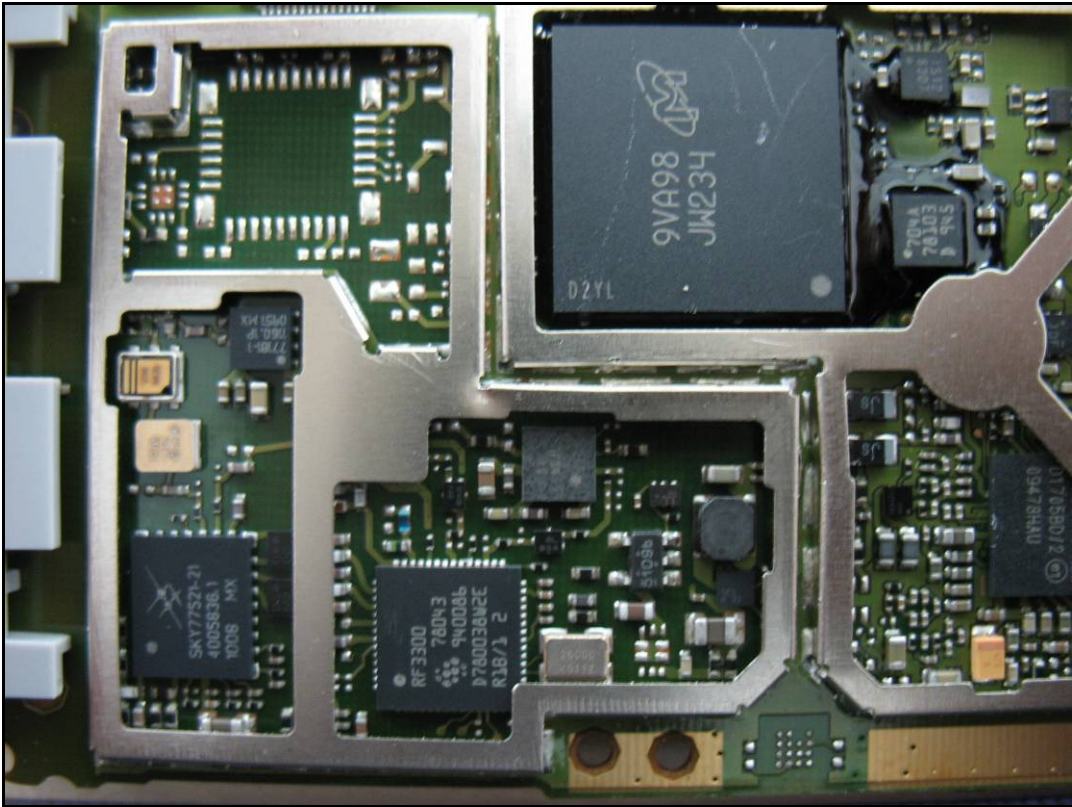
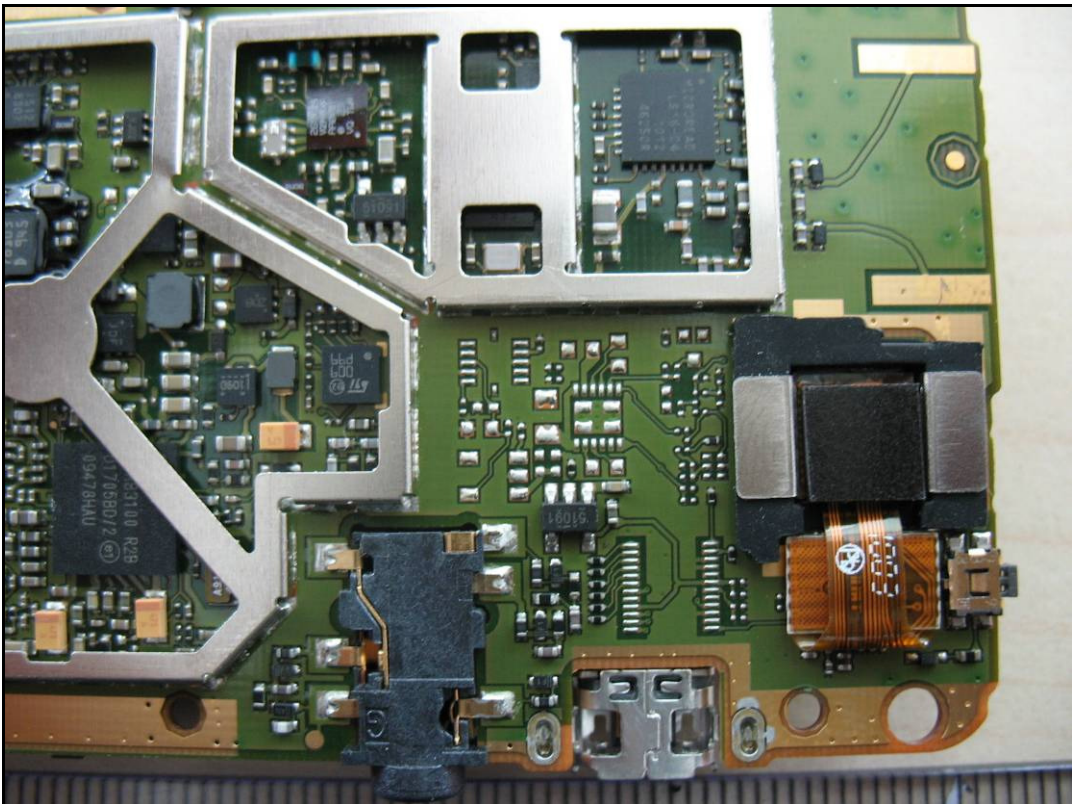


Photo 19:



Annex D Document history

Version	Applied changes	Date of release
1.0	Initial release	2010-08-23

Annex E Further information

Glossary

DUT	-	Device under Test
EMC	-	Electromagnetic Compatibility
EUT	-	Equipment under Test
FCC	-	Federal Communication Commission
FCC ID	-	Company Identifier at FCC
HW	-	Hardware
IC	-	Industry Canada
Inv. No.	-	Inventory number
N/A	-	not applicable
S/N	-	Serial Number
SW	-	Software