



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.: 3463A-1 (IC)

Certification ID: DE 0001

Accreditation ID: DE 0002

Accredited Bluetooth[®] Test Facility (BQTF)

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Test report no. : 2-4832-02-03/07
Type identification : V400 (Portable Part)
Applicant : Siemens Home and Office Communication
FCC ID : TVU-V400
IC Certification No : 267U-V400
Test standards : 47 CFR Part 15
RSS – 210 Issue 7

Table of contents

1	General information	3
1.1	Notes	3
1.2	Testing laboratory	4
1.3	Details of applicant	4
1.4	Application details	4
2	Test standard/s:	5
3	Technical tests	6
3.1	Details of manufacturer	6
3.1.1	Test item	6
3.1.2	Additional EUT information For IC Canada (appendix 2)	7
3.1.3	EUT operating modes	8
3.1.4	Extreme conditions testing values	8
4	Summary of Measurement Results and list of all performed test cases	9
5	RF measurement testing	10
5.1	Description of test set-up	10
5.1.1	Radiated measurements	10
5.1.2	Conducted measurements	10
5.2	Referenced Documents	11
5.3	Additional comments	11
5.4	Antenna gain	11
5.5	Max. peak output power (radiated)	12
5.6	Spurious Emissions - radiated (Transmitter)	13
5.7	Spurious Emissions - radiated (Receiver)	19
5.8	Spurious Emissions - radiated <30 MHz	22
5.9	Conducted Emissions <30 MHz	23
6	Test equipment and ancillaries used for tests	24
7	Photographs of the Test Set-up	Fehler! Textmarke nicht definiert.
8	Photographs of the EUT	Fehler! Textmarke nicht definiert.

1 General information

1.1 Notes

The test results of this test report relate exclusively to the test item specified in 1.5. 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:

2008-01-04

Reschke Jakob



Date

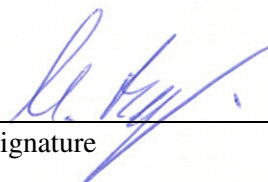
Name

Signature

Technical responsibility for area of testing:

2008-01-04

Berg Michael



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:	Siemens Home and Office Communication
Street:	Frankenstr. 2
Town:	D-46395 Bocholt
Country:	Germany
Telephone:	+49 (0) 2871 91-0
Fax:	+49 (0) 2871 91-24 95
Contact:	Uwe Alt
E-mail:	uwe.alt@siemens.com
Telephone:	+49 (0) 2871 91-28 57

1.4 Application details

Date of receipt of order:	2007-12-06
Date of receipt of test item:	2008-01-03
Date of start test:	2008-01-03
Date of end test:	2008-01-04
Persons(s) who have been present during the test:	--

2 Test standard/s:

47 CFR Part 15	20.09.2007	Title 47 of the Code of Federal Regulations; Chapter I- Federal Communications Commission subchapter D – Unlicensed Personal Communications Service 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 Home and Office Communication
Street:	Frankenstr. 2
Town:	D-46395 Bocholt
Country:	Germany

3.1.1 Test item

Kind of test item :	DECT Phone
Type identification :	V400
S/N serial number :	-/-
HW hardware status :	A5B00901008370
SW software status :	V 27
Frequency Band [MHz] :	1920 – 1930 MHz
Type of Modulation :	GFSK
Number of channels :	12
Antenna :	Integrated antenna
Power Supply :	3 V DC by Battery
Temperature Range :	23 °C

Max. power radiated: 19.79 dBm

3.1.2 Additional EUT information For IC Canada (appendix 2)

IC Registration Number:	267U
Model Name:	V400 (Portable Part)
Manufacturer (complete Address):	Siemens Home and Office Communication Frankenstr. 2 D-46395 Bocholt Germany
Tested to Radio Standards Specification (RSS) No.:	RSS-210 Issue 7
Open Area Test Site Industry Canada Number:	IC 3463A-1
Frequency Range (or fixed frequency) [MHz]:	1920 – 1930 MHz
RF: Power [W] (max):	Rad. EIRP: 95.28 mW
Antenna Type:	Integrated antenna
Occupied Bandwidth (99% BW) [kHz]:	Not measured
Type of Modulation:	GFSK
Emission Designator (TRC-43):	-/-
Transmitter Spurious (worst case) [μ V/m in 3m]:	Peak found. 43.5 dB μ V/m
Receiver Spurious (worst case) [μ V/m in 3m]:	No critical peaks detected.

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:



Test engineer: Jakob Reschke Date: 2008-01-04

3.1.3 EUT operating modes

EUT operating mode no. *)	Description of operating modes	Additional information
Op. 0	Normal mode	Normal temperature and power source conditions
Op. 1		low temperature, low power source conditions
Op. 2		low temperature, high power source conditions
Op. 3		high temperature, low power source conditions
Op. 4		high temperature, high power source conditions

*) EUT operating mode no. is used to simplify the test plan

3.1.4 Extreme conditions testing values

Description	Shortcut	Unit	Value
Nominal Temperature	T _{nom}	°C	23
Nominal Humidity	H _{nom}	%	45
Nominal Power Source	V _{nom}	V	3

Type of power source: **3 V DC by Battery**

Deviations from these values are reported in chapter 2

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

TC identifier	Description	verdict	date	Remark
RF-Testing	FCC Part 15 §15 - CANADA RSS-210	PASS	2008-01-04	PASS

Test Case	Pass	Fail	Not applicable	Not performed
Max. peak output power (radiated)	Yes			
Spurious Emission - conducted (Transmitter)	Yes			
Spurious Emission -radiated (Transmitter)	Yes			
Spurious Emissions-radiated (Receiver)	Yes			
Spurious Emissions-radiated <30 MHz	Yes			
Conducted Emissions <30 MHz	Yes			

5 RF measurement testing

5.1 Description of test set-up

5.1.1 Radiated measurements

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 - 150 MHz: 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, bi-conical antenna

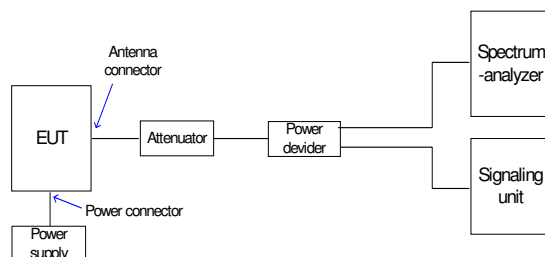
200MHz - 1GHz: Quasi Peak measurement, 120 kHz Bandwidth, log periodic antenna

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

All measurement settings are according to FCC 15.209 and 15.207

5.1.2 Conducted measurements

The EUT's RF signal is coupled out by the antenna connector which is supplied by the manufacturer. The signal is connected to the spectrum analyzer. The specific losses for signal path are first checked within a calibration. The measurement readings on the spectrum analyzer are corrected by the specific test set-up loss. The attenuator, power divider, signalling unit and the spectrum analyzer are impedance matched on 50 Ohm.



5.2 Referenced Documents

2-4189/05

5.3 Additional comments

None

5.4 Antenna gain

The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module.

Not measured

	low channel	mid channel	high channel
Conducted power [dBm]	--	--	--
Radiated power [dBm]	--	--	--
Gain [dBi]	--	--	--

5.5 Max. peak output power (radiated)

Results:

Test conditions		Max. peak output power EIRP [dBm]		
Frequency [MHz]		1921.536 MHz	1924.992 MHz	1928.448 MHz
T _{nom}	V _{nom}	18.65	19.79	18.99
Measurement uncertainty		±3dB		

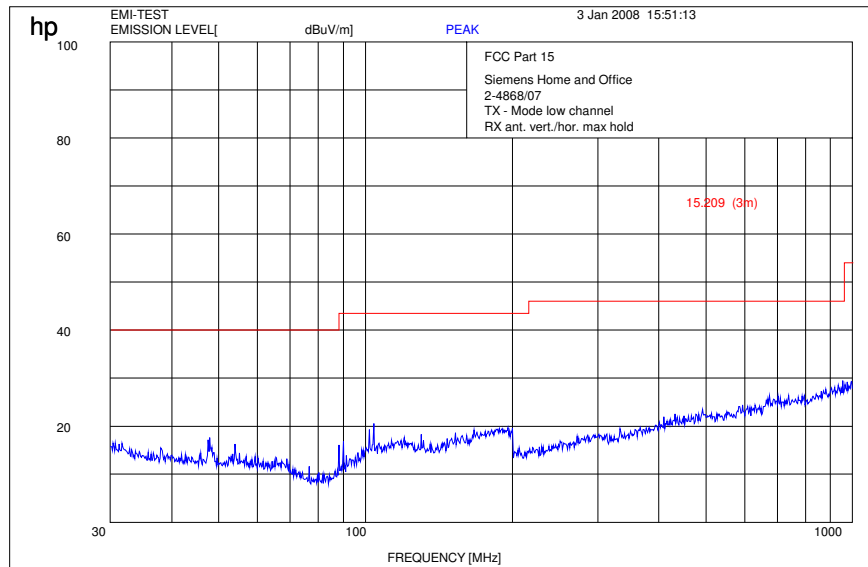
RBW / VBW: 10 MHz

Limits:

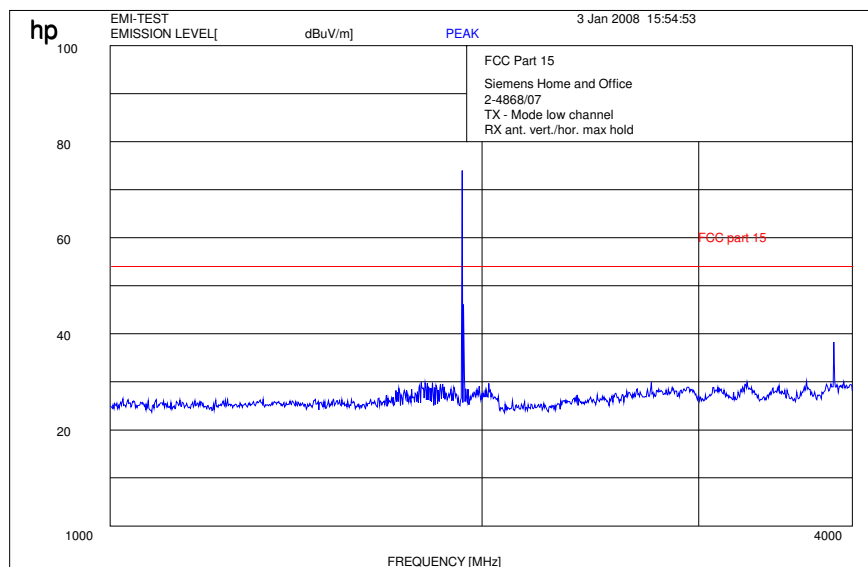
Under normal test conditions only, for frequency range 1920-1930 MHz	Max. 112 mW
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5.6 Spurious Emissions - radiated (Transmitter)

Plot 1: 0.03 - 1 GHz (lowest channel)

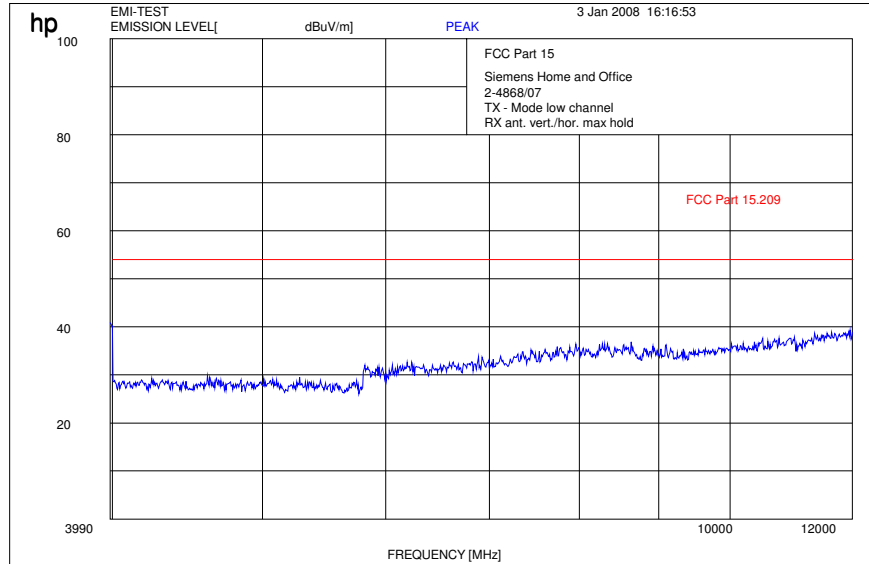


Plot 2: 1 - 4 GHz (lowest channel)

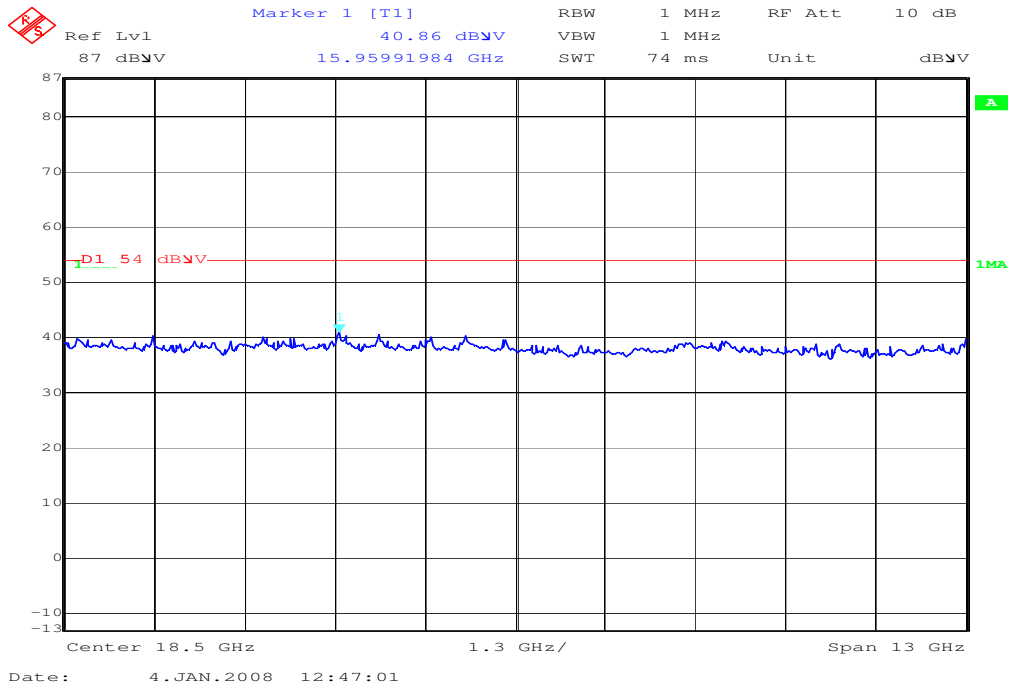


Carrier notched with rejection filter.

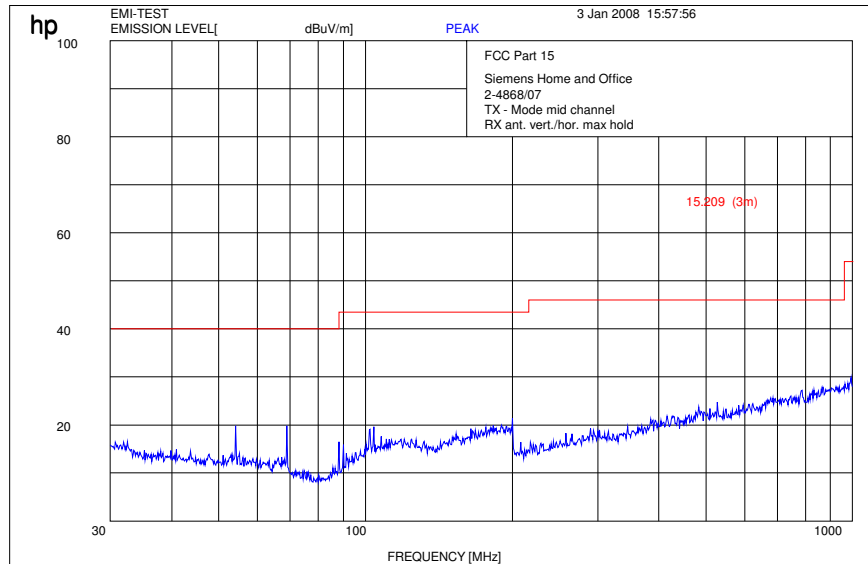
Plot 3: 4 - 12 GHz (lowest channel)



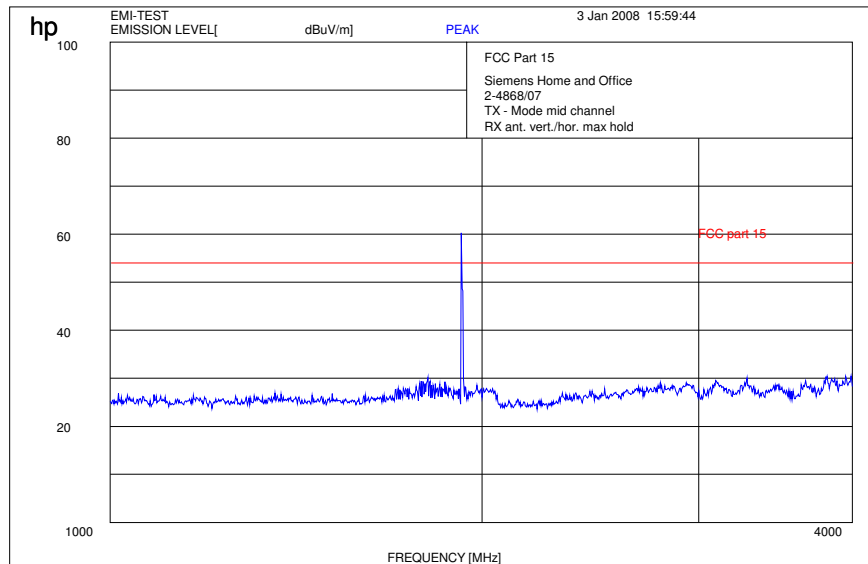
Plot 4: 12 - 25 GHz (valid for all channels)



Plot 5: 0.03 - 1 GHz (middle channel)

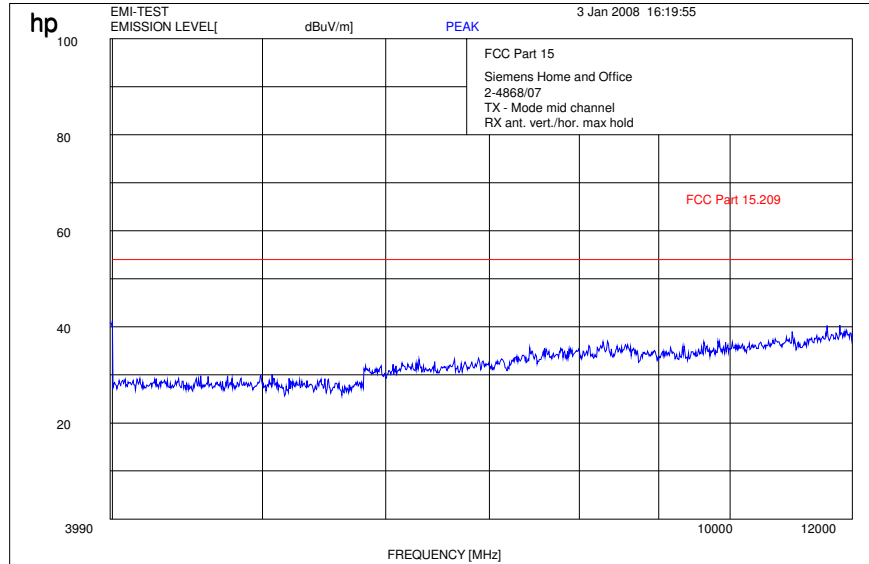


Plot 6: 1 - 4 GHz (middle channel)

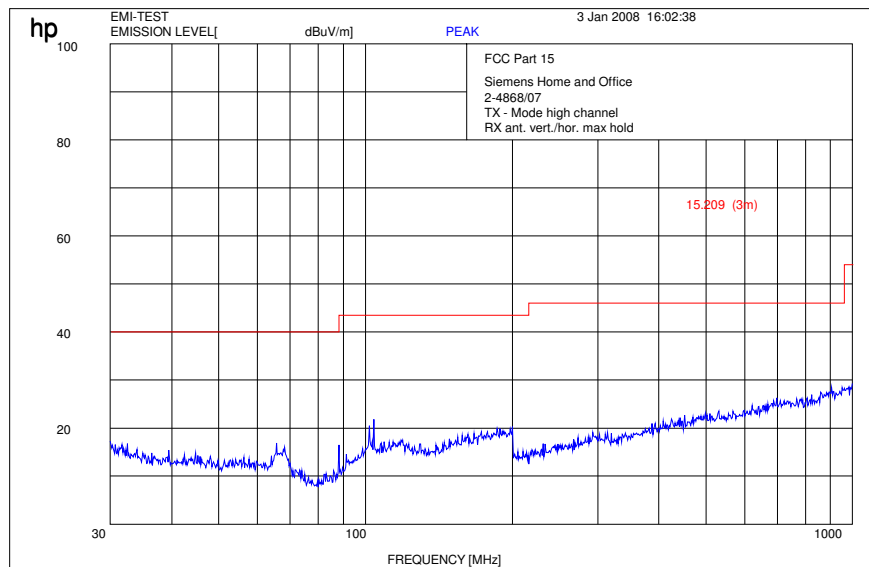


Carrier notched with rejection filter.

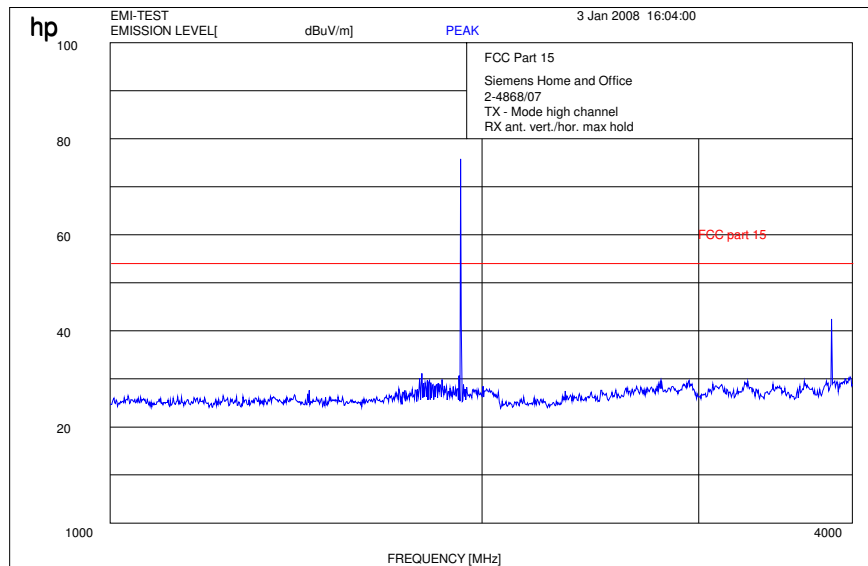
Plot 7: 4 - 12 GHz (middle channel)



Plot 8: 0.03 - 1 GHz (highest channel)

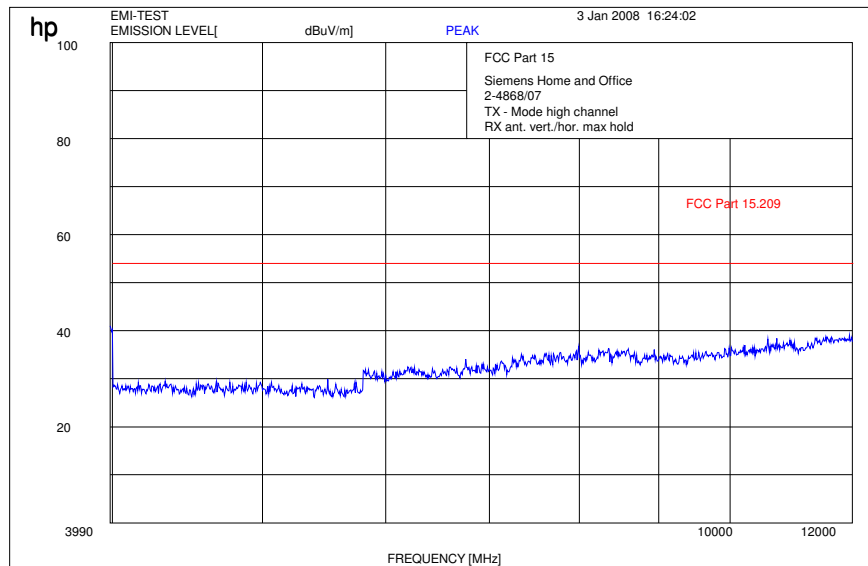


Plot 9: 1 - 4 GHz (highest channel)



Carrier notched with rejection filter.

Plot 10: 4 - 12 GHz (highest channel)



Results:

SPURIOUS EMISSIONS LEVEL §15.209								
1921.536 MHz			1924.992 MHz			1928.448 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
3900	Peak	38.5	No critical peaks found.			3870	Peak	43.5
Measurement uncertainty			±3 dB					

f < 1 GHz : RBW/VBW: 100 kHz

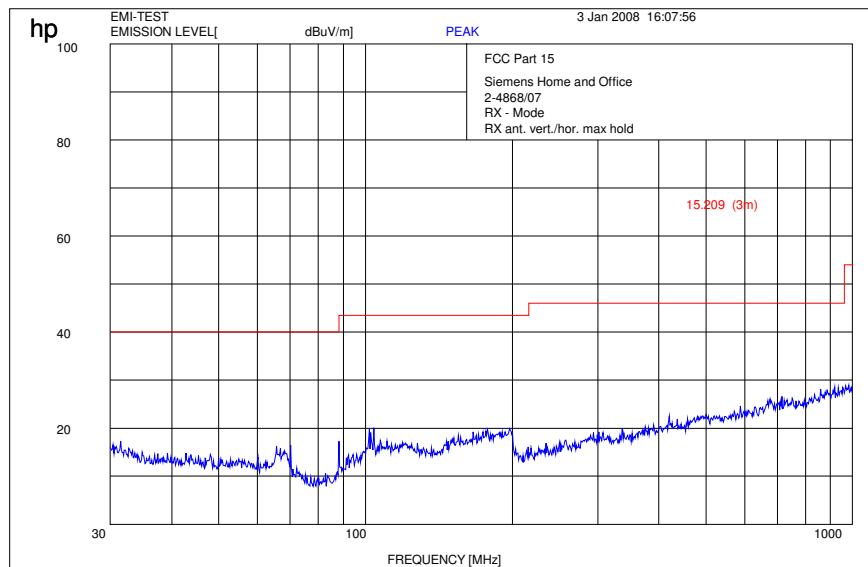
f ≥ 1GHz : RBW/VBW: 1 MHz

Limits: § 15.209

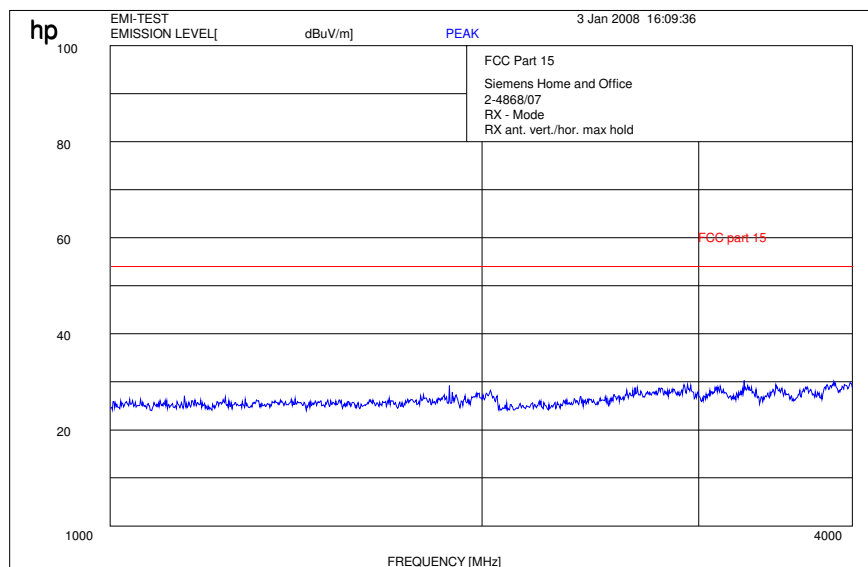
Frequency [MHz]	Field strength [µV/m]	Measurement distance (m)
30 - 88	100 (40 dBµV/m)	3
88 - 216	150 (43.5 dBµV/m)	3
216 - 960	200 (46 dBµV/m)	3
above 960	500 (54 dBµV/m)	3

5.7 Spurious Emissions - radiated (Receiver)

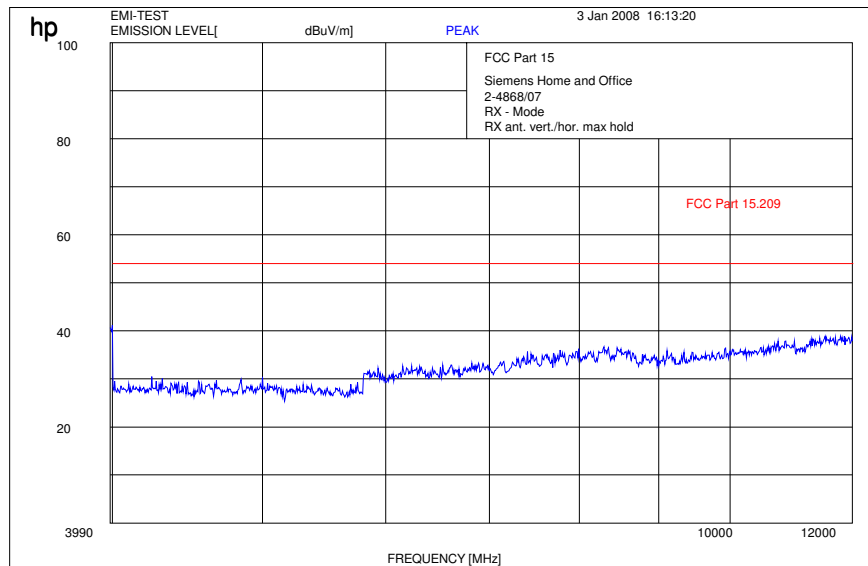
Plot 1: 0.03 - 1 GHz



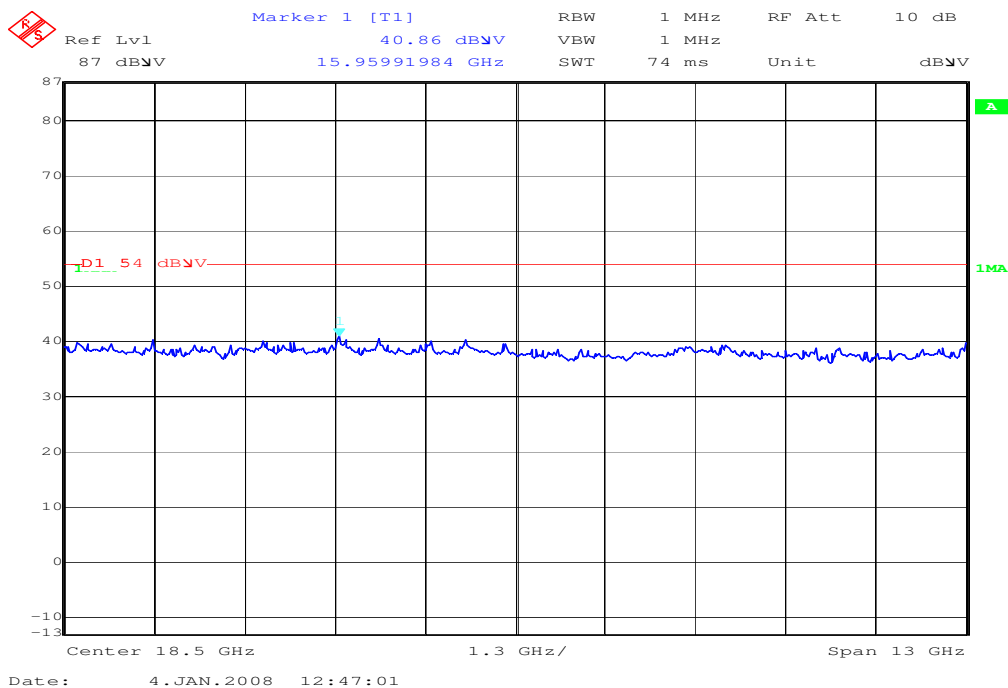
Plot 2: 1 - 4 GHz



Plot 3: 4 - 12 GHz



Plot 4: 12 - 25 GHz



Results:

Spurious Emissions level [dB μ V/m]		
f[MHz]	Detector	Level [dB μ V/m]
No critical peaks found.		
Measurement uncertainty		±3 dB

f < 1 GHz : RBW/VBW: 100 kHz

f ≥ 1GHz : RBW/VBW: 1 MHz

See above plots

Measurement distance see table

Limits: § 15.109 / 209

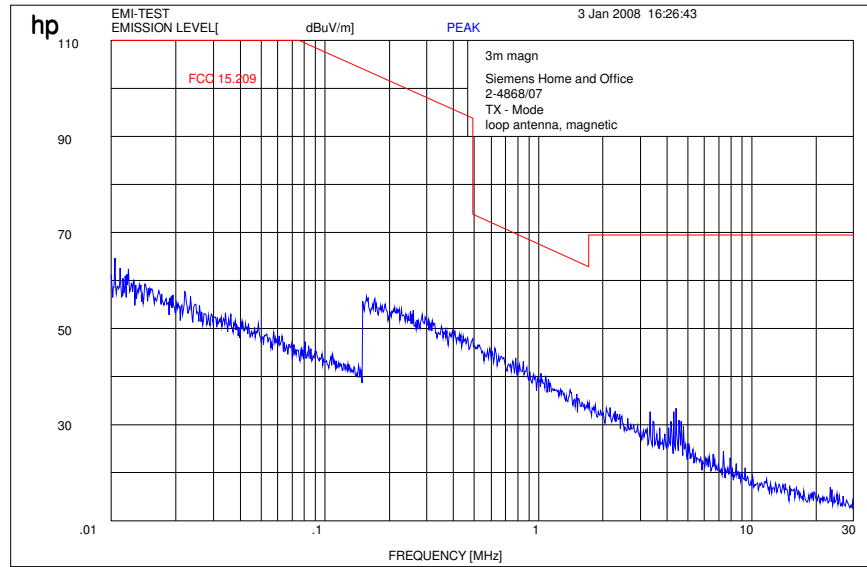
Frequency (MHz)	Field strength (μ V/m)	Measurement distance (m)
30 - 88	100 (40 dB μ V/m)	3
88 - 216	150 (43.5 dB μ V/m)	3
216 - 960	200 (46 dB μ V/m)	3
above 960	500 (54 dB μ V/m)	3

5.8 Spurious Emissions - radiated <30 MHz

Measured at 3 m distance.

Values recalculated with 40 dB/decade according to FCC rules.

Plot 1:

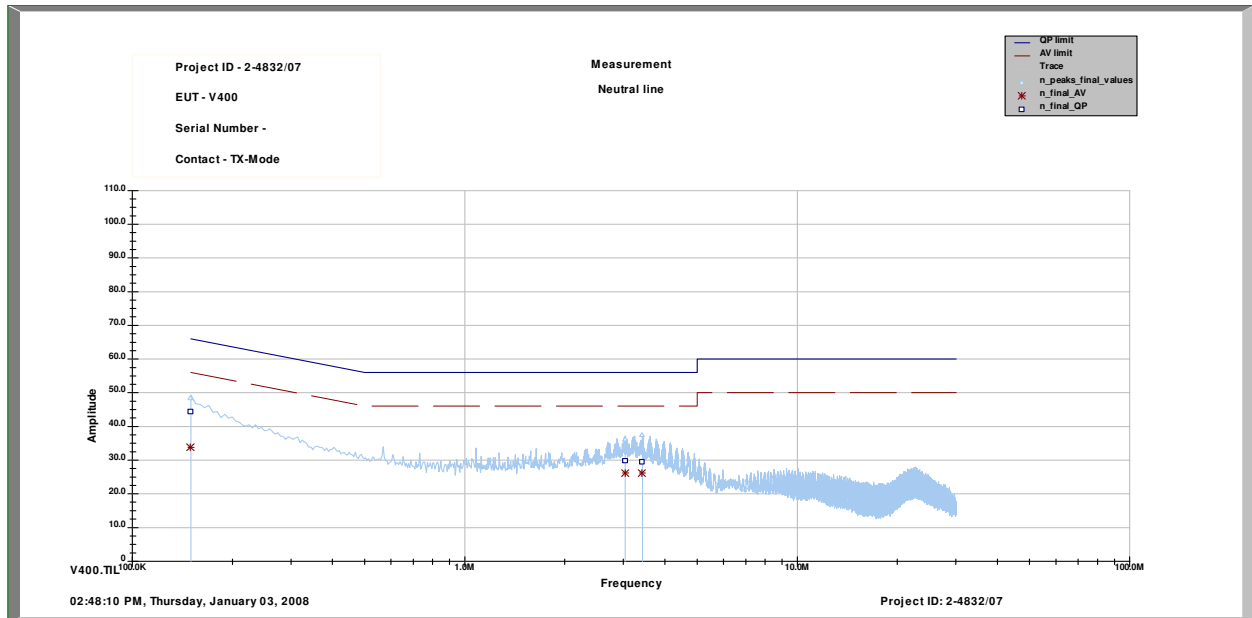


Limits:

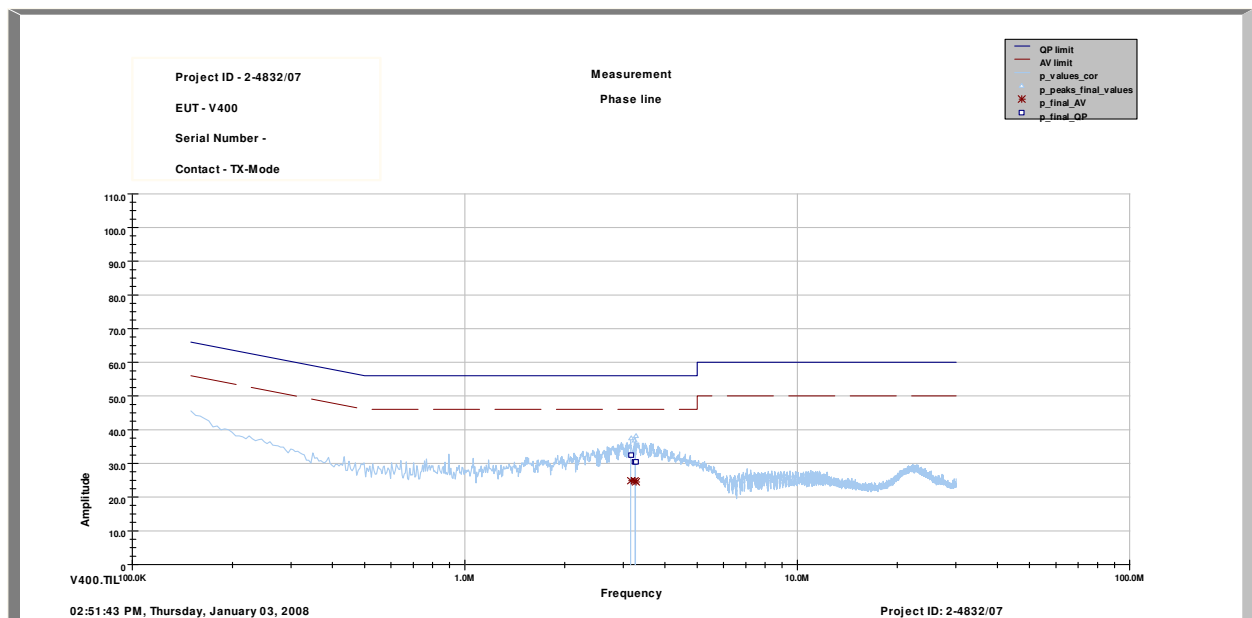
Frequency (MHz)	Field strength ($\mu\text{V/m}$)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30 / 29.5 dB $\mu\text{V/m}$	30
30 - 88	100 / 40 dB $\mu\text{V/m}$	3
88 - 216	150 / 43.5 dB $\mu\text{V/m}$	3
216 - 960	200 / 46 dB $\mu\text{V/m}$	3
above 960	54 dB $\mu\text{V/m}$	3

5.9 Conducted Emissions <30 MHz

Plot 1: Neutral line



Plot 2: Phase line



We measured in TX and RX mode, L1 and N floating and grounded, max value was hold.

Limits:

Under normal test conditions only	See plots
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6 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.

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	Spektrum Analyzer 8566B	HP	2747A05306	300001000	05.10.2006	24	05.10.2008
5	Spektrum Analyzer Display 85662A	HP	2816A16541	300002297	05.10.2006	24	05.10.2008
6	Quasi-Peak-Adapter 85650A	HP	2811A01131	300000999	05.10.2006	24	05.10.2008
7	RF-Preselector 85685A	HP	2837A00779	300000218	08.11.2006	24	08.11.2008
8	PC Vectra VL	HP		300001688	n.a.		
9	Software EMI	HP		300000983	n.a.		
10	Measurement System 2						
11	FSP 30	R&S	100623	ICT 300003464	05.10.2007	24	15.10.2009
12	PC	F+W			n.a.		
13	TILE	TILE			n.a.		
14	Biconical antenna	EMCO	S/N: 860 942/003		Monthly verification (System cal.)		
15	Log. Period. Antenna 3146	EMCO	2130	300001603	Monthly verification (System cal.)		
16	Double Ridged Antenna HP 3115P	EMCO	3088	300001032	Monthly verification (System cal.)		
17	Active Loop Antenna 6502	EMCO	2210	300001015	Monthly verification (System cal.)		
18	Power Supply 6032A	HP	2818A03450	300001040	12.05.2007	36	12.05.2010
19	Busisolator	Kontron		300001056	n.a.		
20	Leitungsteiler 11850C	HP		300000997	Monthly verification (System cal.)		
21	Power attenuator 8325	Byrd	1530	300001595	Monthly verification (System cal.)		
22	Band reject filter WRCG1855/1910	Wainwright	7	300003350	Monthly verification (System cal.)		
23	Band reject filter WRCG2400/2483	Wainwright	11	300003351	Monthly verification (System cal.)		

System Rack Room 005 :

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	FSP 30	R&S		300003575	02.04.2007	24	02.04.2009
2	CBT	R&S	100313	300003516	24.10.2006	24	24.10.2008
3	Switch Matrix	HP		300000929	n.a.		
4	Power Supply	HP	3041A00544	300002270	13.05.2007	36	13.05.2010
5	Signal Generator	R&S	836206/0092	300002680	30.05.2007	36	30.05.2010

Anechoic chamber F:

No.	Instrument/Ancillary	Manufacturer	Type	Serial-No.	Internal identification
Radiated emission in chamber F					
F-1	Control Computer	F+W		FW0502032	300003303
F-2	Bilog antenna	Chase	CBL 6112A	2110	300000573
F-3a	Amplifier	Veritech Microwave Inc.	0518C-138	- / -	- / -
F-4b	Switch	HP	3488A	- / -	300000368
F-5	EMI Test receiver	R&S	ESCI	100083	300003312
F-6	Turntable Controller	EMCO	1061 3M	1218	300000661
F-7	Tower Controller	EMCO	1051 Controller	1262	300000625
F-8	Tower	EMCO	1051 Tower	1262	300000625
F-9	Ultra Notch-Filter Rejected band Ch. 62	WRCD		9	
Radiated immunity in chamber F					
F-10	Control Computer	F+W		FW0502032	300003303
F-11	Signal Generator	R&S	SML 03	102519	300003407
F-12	RF-Amplifier	ar	50W1000	12932	300001438
F-13	Directional Coupler	ar	DC 3010	12708	300001428
F-14	Logper Antenna	R&S	HL023A1	323704/016	300001476
F-15	RF-Amplifier	ar	60S1G3	313649	300003410
F-16	Directional Coupler	ar	DC7144A	312786	300003411
F-17	Horn Antenna	ar	AT 4002	19739	300000633
F-18	Power Meter	R&S	NRV	860327/024	F033
F-19	Power sensor	R&S	URV5-Z2	839080/005	300002844.02
F-20	Power sensor	R&S	URV5-Z2	830755/057	F032
Harmonics and flicker in front of chamber F					
F-21	Flicker and Harmonics Test System	Spitzenberger & Spies	PHE4500/B I PHE4500/B II	B5983 B5984	300000210
F-22	Control Unit	Spitzenberger & Spies	STE	B5980	300000210
F-23	Power Amplifier	Spitzenberger & Spies	EP 4500/B	B5976	300000210
F-24	Conect Panel	Spitzenberger & Spies	Conect panel	B5982	300000210
F-25	Power Supply	Spitzenberger & Spies	NT-EP 4500	B3977	300000210
F-26	Additional transformer	Spitzenberger & Spies	UT-EP 4500	B5978	300000210
F-27	Analyzer Reference System	Spitzenberger & Spies	ARS 16/1	A3509 07/0 0205	300003314
F-26	Power Supply	Hewlett Packard	6032 A	2920 A 04466	300000580

7 Photographs of the Test Set-up

Photo 1:

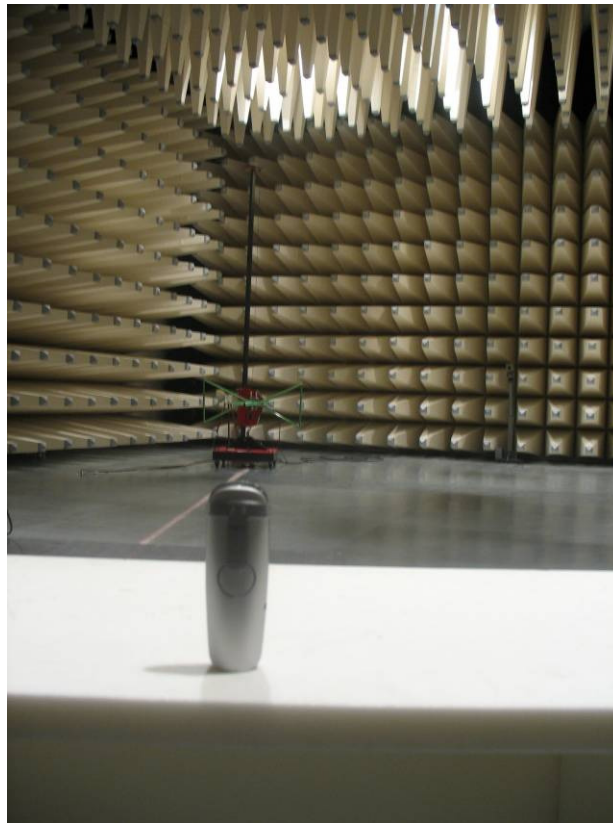


Photo 2:



Photo 3:



8 Photographs of the EUT

Photo 1:



Photo 2:



Photo 3:



Photo 4:



Photo 5:



Photo 6:



Photo 7:



Photo 8:



Photo 9:

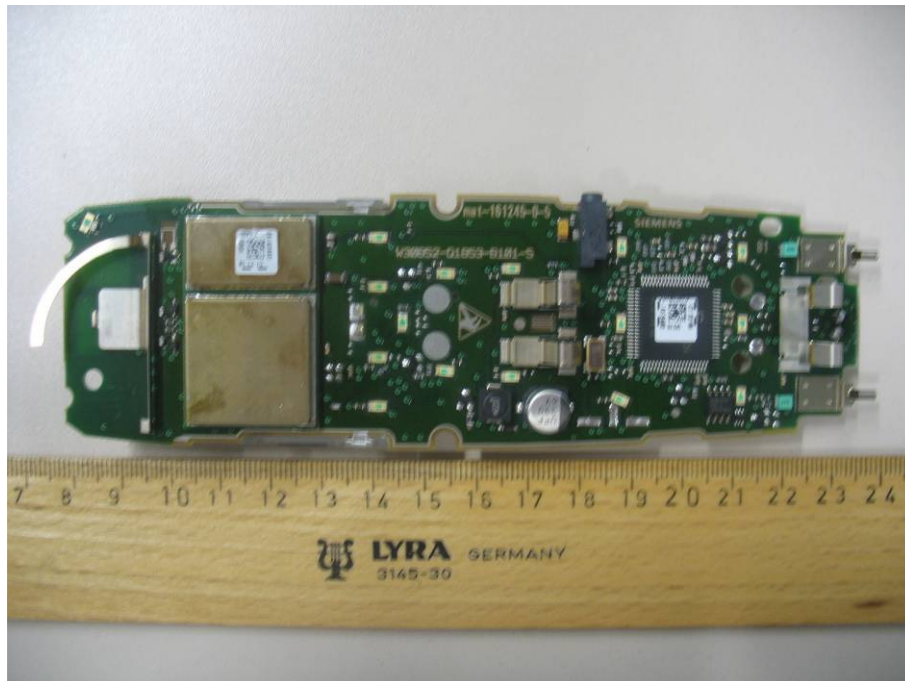


Photo 10:

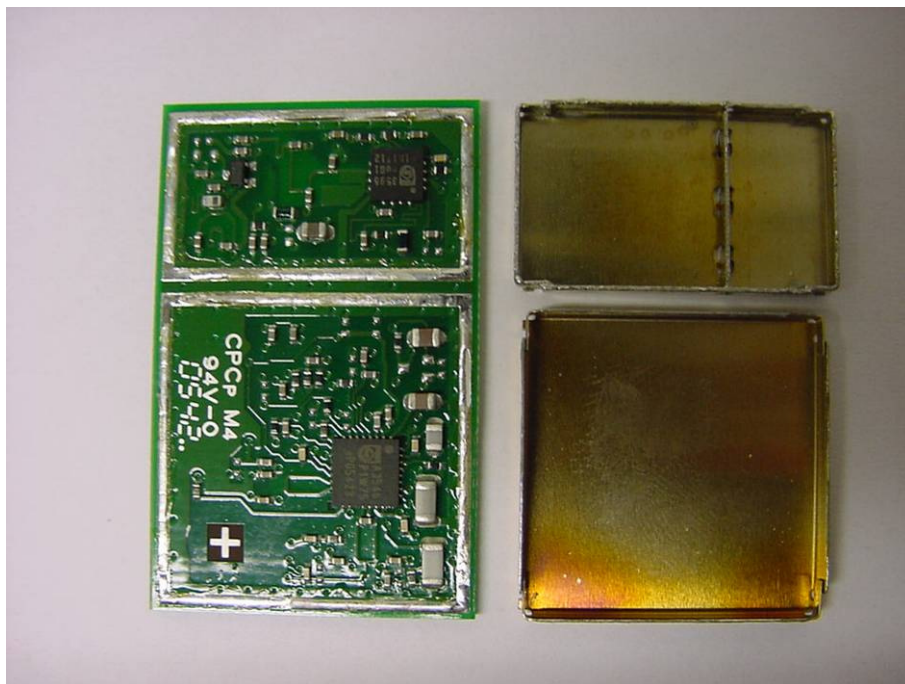


Photo 11:

