



Laboratoria De Nayer v.z.w.
Department of Electronics
Section E.M.C.

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041-T - ISO17025

TEST REPORT

LDN number : 815/835
serial number: E0612004
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date of edition: 20/02/2007

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Customer's references	
Customer :	Agfa Gevaert NV
Address :	Septestraat 27 2640 Mortsel
Contact person :	Mr. Jan Vercammen

EUT's identification
Description and identification of the sample or equipment under test (marks, type number):
Drystar AXYS : table top model (medical printer) SN : 17 , type : 5367/100 FCC ID : HPL5367

Applied Tests or Technical Standards	
Emission:	
Test or Technical Standard	Title
FCC CFR47 part 15	Code of Federal Regulations , part 15 , Subpart B , unintentional Radiators

MRA : between E.C. and USA : CAB (EMC) [designation number BE0002]date of validation 15.01.2002 (refer to p33)

Equipment Classifications

Class A digital device : A digital device that is marketed for use in a commercial , industrial or business environment , exclusive of a device which is marketed for use by the general public or is intended to be used in the home.

Class B digital device : A digital device that is marketed for use in a residential environment , notwithstanding use in commercial , industrial or business environments. Examples of such a devices include , but are not limited to , personal computer , calculators and similar electronic devices that are marketed for use by the general public.

Field Strength Calculation.

The field strength is calculated in the receiver , for conducted emission TDF1 is selected , for spurious radiated emission the champbel and HF906 is selected and for radiated field strength of the fundamental TDF3 is selected. TDF1 is the Transducer Factor for the LISN (combination of the attenuation of the LISN and cable in the range 150kHz-30MHz)

Champbel is the Transducer factor for the bilog antenna (combination of the AF of the Chase antenna , pre-amplifier and cables in the range 30MHz-1GHz) .

HF906 is the Transducer factor for the horn antenna (combination of the AF of the R&S antenna , pre-amplifier and cables in the range 1GHz-5GHz) .

TDF3 is the Transducer factor for the loop antenna (combination of the AF of the loop antenna and cables in the range 150kHz-30MHz) .

Deviations from the test methods :
none

History of the tests	
identification number of the receipt:	EMC06041
Date of receipt of the sample or equipment under test:	20/11/2006
Date(s) of test:	21 and 22/11/2006

List of measurement equipment used during the tests

Item	model	serial number	
Rohde & Schwarz EMI receiver	ESCS30	SN:826547/027	*
Chase Bilog antenna	CBL6112A	SN:2182	
Chase bicon antenna	CBL6111B	1948	*
Antenne mast + controller	RSM 010 / RSC 02	/	*
Anechoic room	EAC52282	/	*
Rohde & Schwarz signal generator	SMX	SN: 825026/026	
WaveTek signal generator	182A	M6660836	
Amplifier Research amplifier 25-1000 MHz	25W1000M7	SN:12126	
Amplifier Research amplifier 10 kHz – 220 MHz	50A220	SN: 12143	
EM clamp	EM101	SN: 35400	
ESD generator EM-TEST	ESD30	SN:0295-31	
ESD gun	P 18	SN:0295-31	
Compact generator	UCS 500	SN: 0596-42	
Magnetic field source	MFS 100/P	SN: A1888 04/0 0297	
Magnetic loop antenna		SN: A18811/00297	
Magnetic field probe	/	SN: A1888 11/S 0297	
AC power generator(Spitzenberger +Spies)	EMV E2000/Pas	SN: A2780 00/0 0501	*
Vierdraht-T-Netznachbildung	EZ-10	SN: 843074/018	
100 Ohm resistor	CR 100A	/	
R&S ISN 4wire network	ENY41	837032/012	
R&S ISN 2wire network	ENY22	837497/017	
R&S clamp	MDS21	84003/017	
R&S T-network 2wire network	ESH3-Z4	SN: 844390/004	
R&S T-network 4wire network	EZ-10	SN: 843074/018	
CDN 801-M2/3 : LÜTHI	CDN M2/3	930	
CDN 801-M5 : LÜTHI	CDN M5	932	
LISN single phase : EMCO	3816/2	9805-1086	*
parallel probe	LDN	LDNLP2	
preamp : 9kHz-1GHz Chase	CPA9231	SN :3078	*
HP Power supply	HP6247B		
HP spectrum – EMI Analyzer	HP8546A	SN: 3549A00300	*
R&S horn antenna 1-18GHz	HF906	SN: 100008	*
R&S horn antenna 1-18GHz	HF906	SN: 100007	
R&S power meter	NRVD	SN : 857.8008.02	
R&S power sensor	URV5-Z4	SN : 095 161955	
Marconi signal generator	2024	SN : 112246/063	
R&S loop antenna 9k-30MHz	HFH2 Z2	SN : 878604/007	
R&S bilog antenna 30-3000MHz	HL562	SN : 361324/017	
R&S bilog antenna 30-3000MHz	HL562	SN : 361324/018	
HP dynamic signal analyzer	HP3562A	SN : 3005A05241	
Fluke Scopemeter	192B	SN : DM8380360	
Fluke current probe	i200s	SN : 1040036ZBS	
Fluke DVM	73III	SN: 74140243	
preamp : 9kHz-1GHz	W1G2M-220-P	A00501	*
Miteq low noise preamp	AFS4-00100800-25-10P-4	1581127	*

1. Description of the EUT.

1.1. General.

The EUT is composed out one unit

1.2 Technical specifications of the EUT's.

rated power supply	110V/230Vac (50/60Hz)
maximum internal clock freq.	1GHz
Cabling:	1 power cable (L , N , PE) l=2m LAN cable CAT5 : l=25m
Test equipment (AE) (no part EUT)	Laptop : Dell Latitude D600 software + version : Freya
Modifications	none



De Vos Jan
Test Engineer



Prof. dr. ir. Dirk Van Troyen
Technical Director

Photographs of the EUT's.
Photo 1 :Complete Model .



Photo 2 : rear



photo3 : RF ID tag reader



photo4 : AE



2. Test conditions and climatic conditions.

2.1 Test conditions.

The equipment under test(EUT's) has been tested as a table top equipment.
For the radiated emission test the distance between antenna and EUT was 3 meter.
All tests have been performed in an anechoic chamber.

2.2. Climatic conditions.

test date : 21 and 22/11/2006

The climatic conditions during these tests were: ambient temperature : 21.6/21.8°C
relative humidity: 44/40%
atmospheric pressure:1010/1017 mBar

3. The manufacturers'/applicants' role during the tests.

The applicant prepared the EUT and witnessed the test.

4. Tests.

4.1. Emission tests.

The test has been performed according to the standard: CFR 47 part15 Subpart B .

4.1.1. Conducted emission .

The test has been performed according to the standard: CFR 47 part15 Subpart B section 15.107.

4.1.2 conducted emission on EUT(mains).(22/11/06)

The equipment was placed at ± 80 cm above the floor as table top equipment .

The test has been performed in a shielded room.

The conducted emission level was measured with a LISN according to CISPR16 (0.15 MHz – 30 MHz).

Test voltage : 115VAC /60Hz

The upper limit line is the quasi-peak limit line for class B equipments.

The lower limit line is the average limit line for class B equipments.

Measurement results for EUT

Conducted emission L1-PE

table1 : EUT

Freq (MHz)	QP (dB μ V)	AV (dB μ V)
0.205	46.1	40.9
0.405	37.5	32.4
24.05	40.7	33.1

fig1 : plot results L1- PE, peak detector , normal mode.

Conducted emission L2-PE

table2 : EUT

Freq (MHz)	QP (dB μ V)	AV (dB μ V)
0.205	47.0	41.7
0.27	37.7	34.0
5.07	42.5	34.2

fig2 : plot results L2- PE, peak detector , normal mode.

conclusion :The EUT satisfies the class B limits for conducted emission according to part15 .

4.1.3 radiated emission (30-1000MHz) (22.11.2006).

The equipment was placed as a table top in a semi anechoic room (10x6x6) with metal groundplane on the floor. The chamber complies with the ANSI C63.4/5 and CISPR 16.

The radiated emission level was measured with a bilog antenna (30-1000MHz) .

Test voltage : 115VAC /50Hz

Specification reference :C.F.R.47 part 15.109

The limit line 1 is the quasi-peak limit line(red) for class B equipments.

Measurement results Radiated emission : Horizontal polarization operation mode

table3

Freq (MHz)	QP (dB μ V/m)	height(m)	side
200.0	41.3	1	1
280.0	35.8	1	1
200.0	35.3	1	2
240.0	36.8	1	2
961.0	35.5	1	2
200.0	33.1	2	3
320.0	28.8	1	3
200.0	34.1	1	4
961.0	38.1	1	4

The final measurements with the quasi-peak detector remain everywhere below the limits for the class B limits.

fig3=hor/1 ; fig5=hor/2 ; fig7= hor/3; fig9= hor/4

The limit line 1 is the average limit line(green) for class A equipments.

table4: 1.0-5.0GHz (21/11/2006) (BW=1MHz)

Freq (GHz)	AV (dB μ V/m)	height(m)	side
1.29	27.7	1	1
1.29	25.8	1	2
1.29	27.1	1	3
1.36	24.4	1	3
1.20	26.5	1	4
1.28	25.5	1	4

The final measurements with the average detector remain everywhere below the limits for the class B limits.

fig11,12=hor/1 ; fig15,16=hor/2

Vertical polarization operation mode

table5

Freq (MHz)	QP (dB μ V/m)	height(m)	side
240.0	36.2	1	1
960.87	37.3	1	1
200.0	37.9	1	2
960.63	35.9	1	2
280.0	32.5	1	3
320.0	36.3	1	3
200.0	41.4	1	4
320.0	36.2	1	4

The final measurements with the quasi-peak detector remain everywhere below the limits for the class B limits.

fig4=ver/1 ; fig6=ver/2 ; fig8= ver/3 ; fig10= ver/4

The limit line 1 is the average limit line(green) for class A equipments.

table 6: 1.0-5.0GHz (21/11/2006) (BW=1MHz)

Freq (GHz)	AV (dB μ V/m)	height(m)	side
1.28	27.9	1	1
1.92	26.1	1	1
1.28	29.5	1	2
1.37	27.3	1	2
1.28	28.5	1	3
1.28	27.1	1	4
1.36	25.7	1	4

The final measurements with the average detector remain everywhere below the limits for the class B limits.

fig13,14=ver/1 ; fig17,18=ver/2

conclusion: The EUT satisfies the class B limits for radiated emission according to part15 .

4.1.4 Tables limit lines

table 7: conducted emission limit (class B device)

Freq (Hz)	QP (dB μ V)	AV (dB μ V)
150k ...500k	66 to 56	56 to 46
500k ... 5M	56	46
5M-30M	60	50

table 8 : radiated emission limit @ 3m distance (class B device)

Frequency (MHz)	QP (dB μ V/m)	AV (dB μ V/m)
30-88	40	--
88-216	43.5	--
216-960	46.0	--
960-1000	54.0	--
1000-5000	--	54.0

5. Summary of the test results.

5.1 Test results of the emission tests.

Conducted and Radiated emission measurement according to FCC part15 Subpart B.		
Test	The EUT complies class B limits	remark
conducted emissions (0.15 MHz – 30 MHz)	yes	
spurious emissions (30 MHz – 1000 MHz)	yes	
spurious emissions (1.0-5.0GHz) part15.209	yes	

6. Plotted graphs of the emission measurements.

6.1 fig1 Conducted emission L1-PE (115V/60Hz)

Drystar AXYS
115V L1 FCC no print

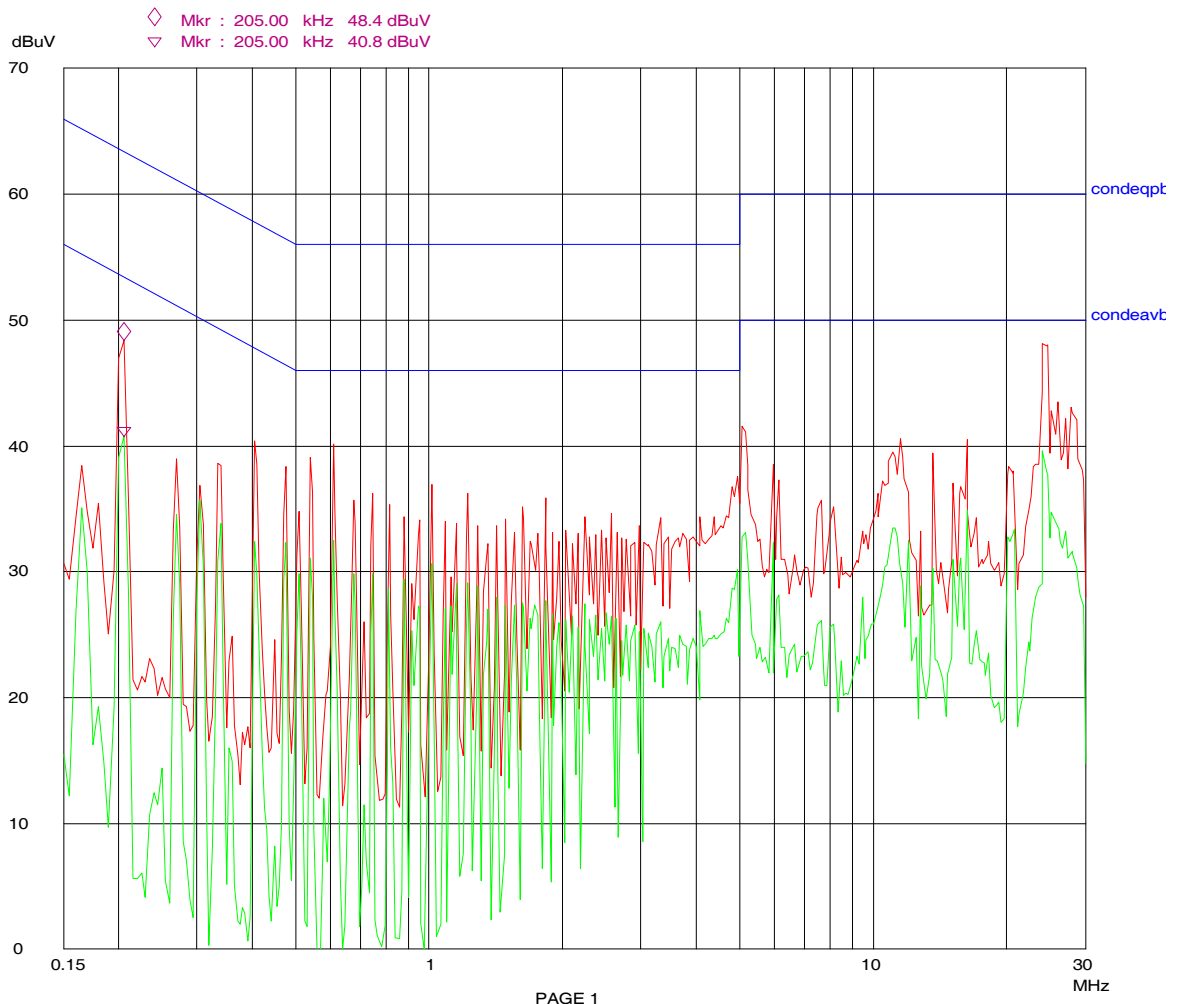
22. Nov 06 16:22

EUT: Gevaert

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	5k	9k	PK+AV	20ms	AUTO	LD OFF

Transducer No.	Start	Stop	Name
1	9k	30M	lisnemco



Drystar AXYS
115V L2 FCC no print

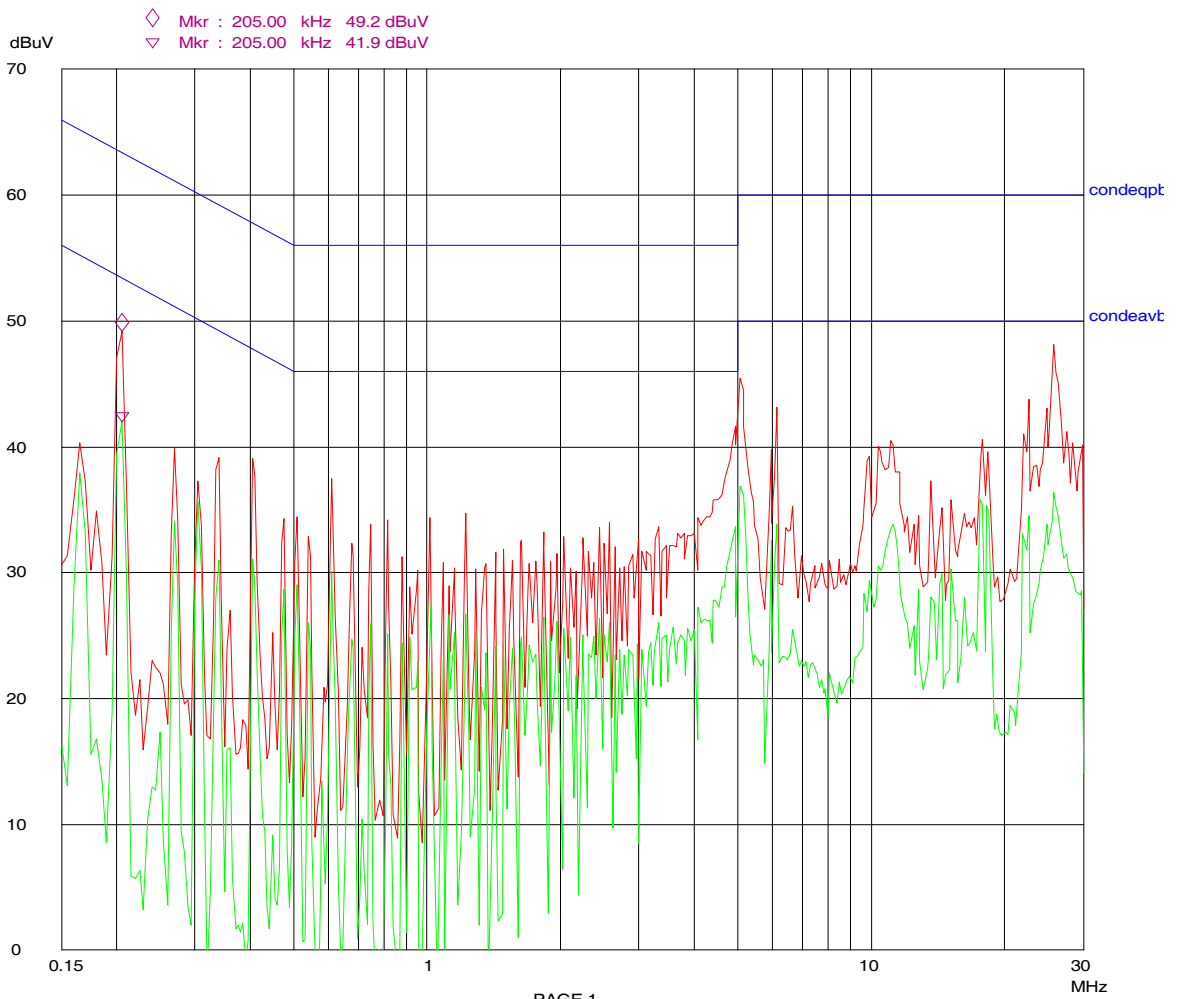
22. Nov 06 16:37

EUT: Gevaert

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	5k	9k	PK+AV	20ms	AUTO	LD OFF

Transducer No.	Start	Stop	Name
1	9k	30M	lisnemco



Drystar AXYS h FCC no printing

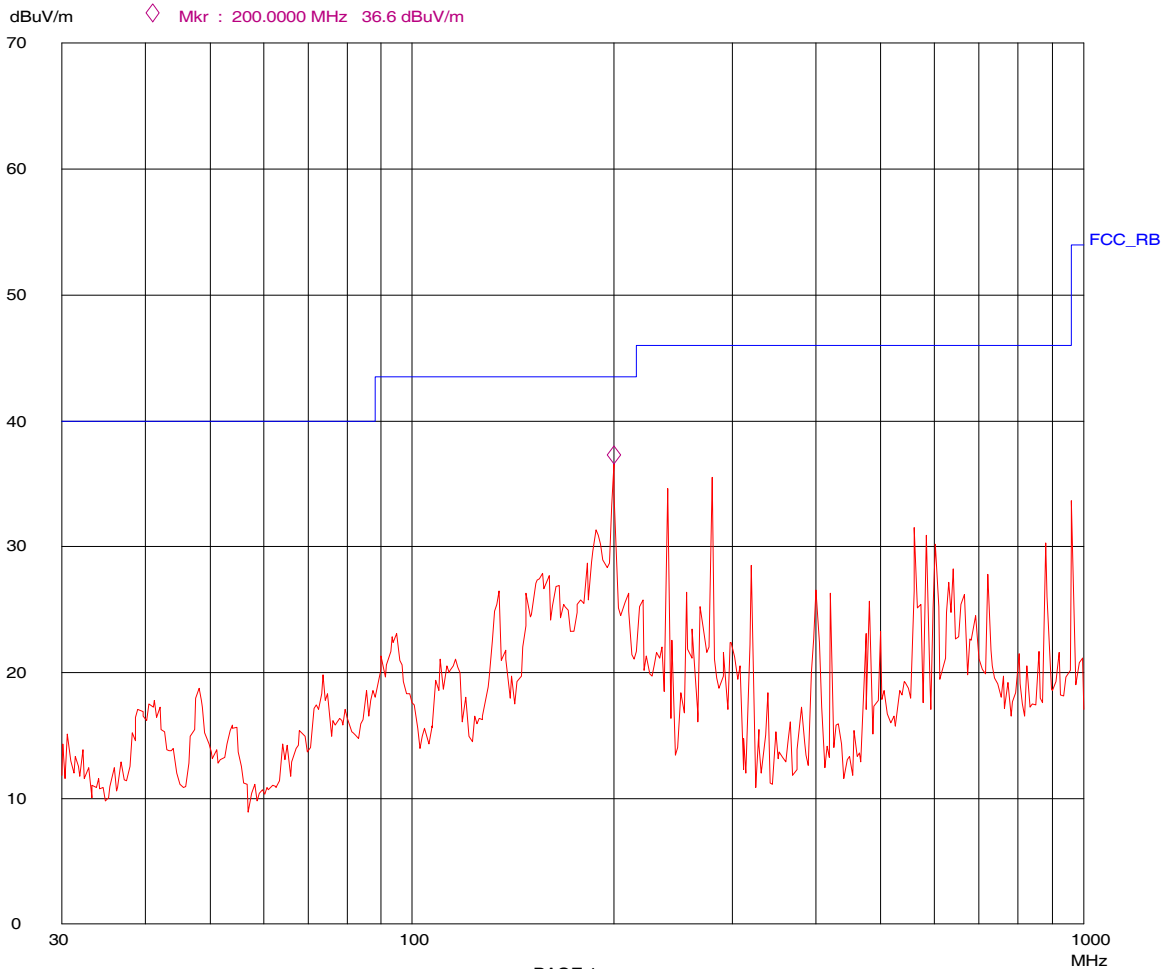
22. Nov 06 13:41

EUT: Gevaert

Scan Settings (2 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
30M	300M	62.5k	120k	PK	1ms	AUTO	LD ON
300M	1000M	62.5k	120k	PK	1ms	AUTO	LD ON

Transducer No.	Start	Stop	Name
21	30M	1000M	champbel



Drystar AXYS 1v FCC no printing

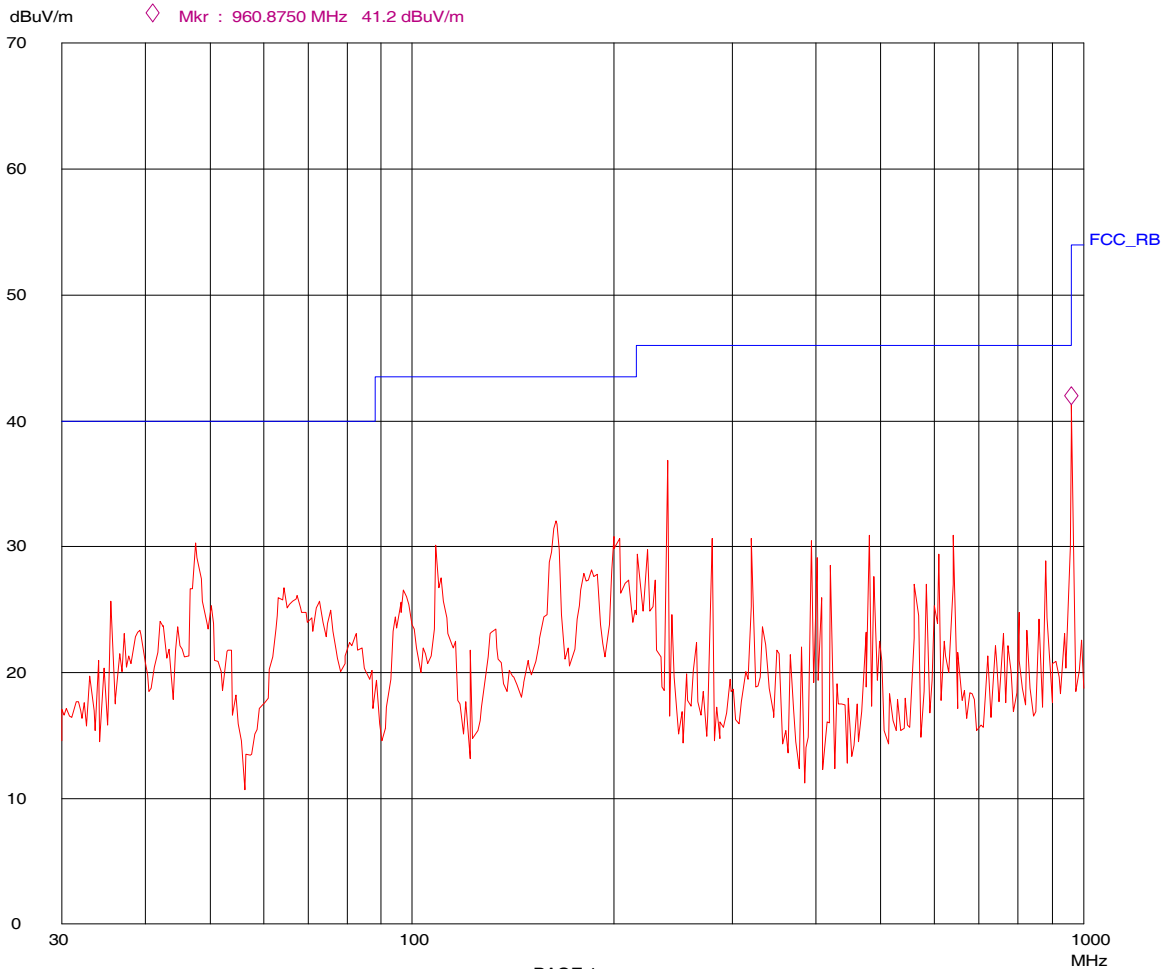
22. Nov 06 13:57

EUT: Gevaert

Scan Settings (2 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
30M	300M	62.5k	120k	PK	1ms	AUTO	LD ON
300M	1000M	62.5k	120k	PK	1ms	AUTO	LD ON

Transducer No.	Start	Stop	Name
21	30M	1000M	champbel



Drystar AXYS 2h FCC no printing

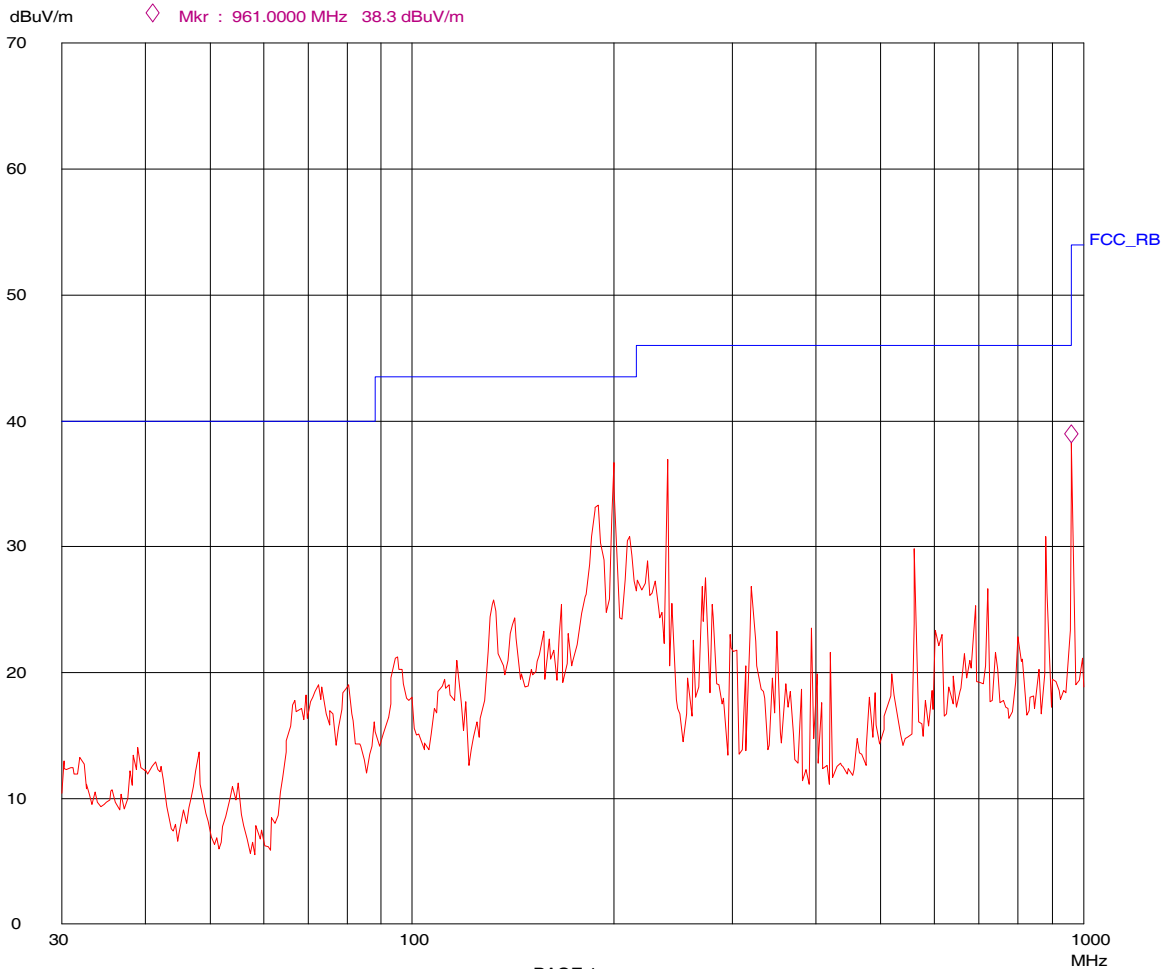
22. Nov 06 14:10

EUT: Gevaert

Scan Settings (2 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
30M	300M	62.5k	120k	PK	1ms	AUTO	LD ON
300M	1000M	62.5k	120k	PK	1ms	AUTO	LD ON

Transducer No.	Start	Stop	Name
21	30M	1000M	champbel



Drystar AXYS
2v FCC no printing

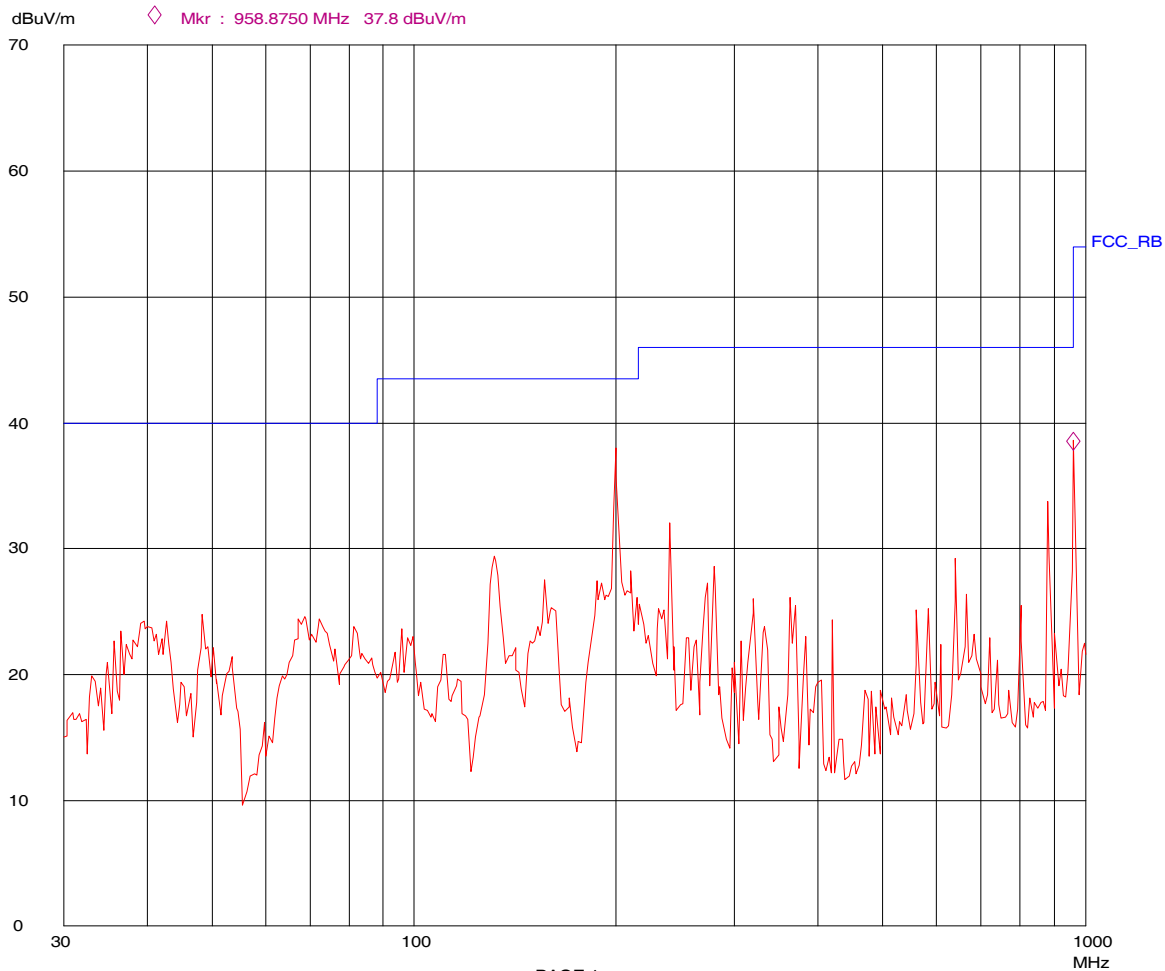
22. Nov 06 14:04

EUT: Gevaert

Scan Settings (2 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
30M	300M	62.5k	120k	PK	1ms	AUTO	LD ON
300M	1000M	62.5k	120k	PK	1ms	AUTO	LD ON

Transducer No.	Start	Stop	Name
21	30M	1000M	champbel



Drystar AXYS
3h FCC no printing

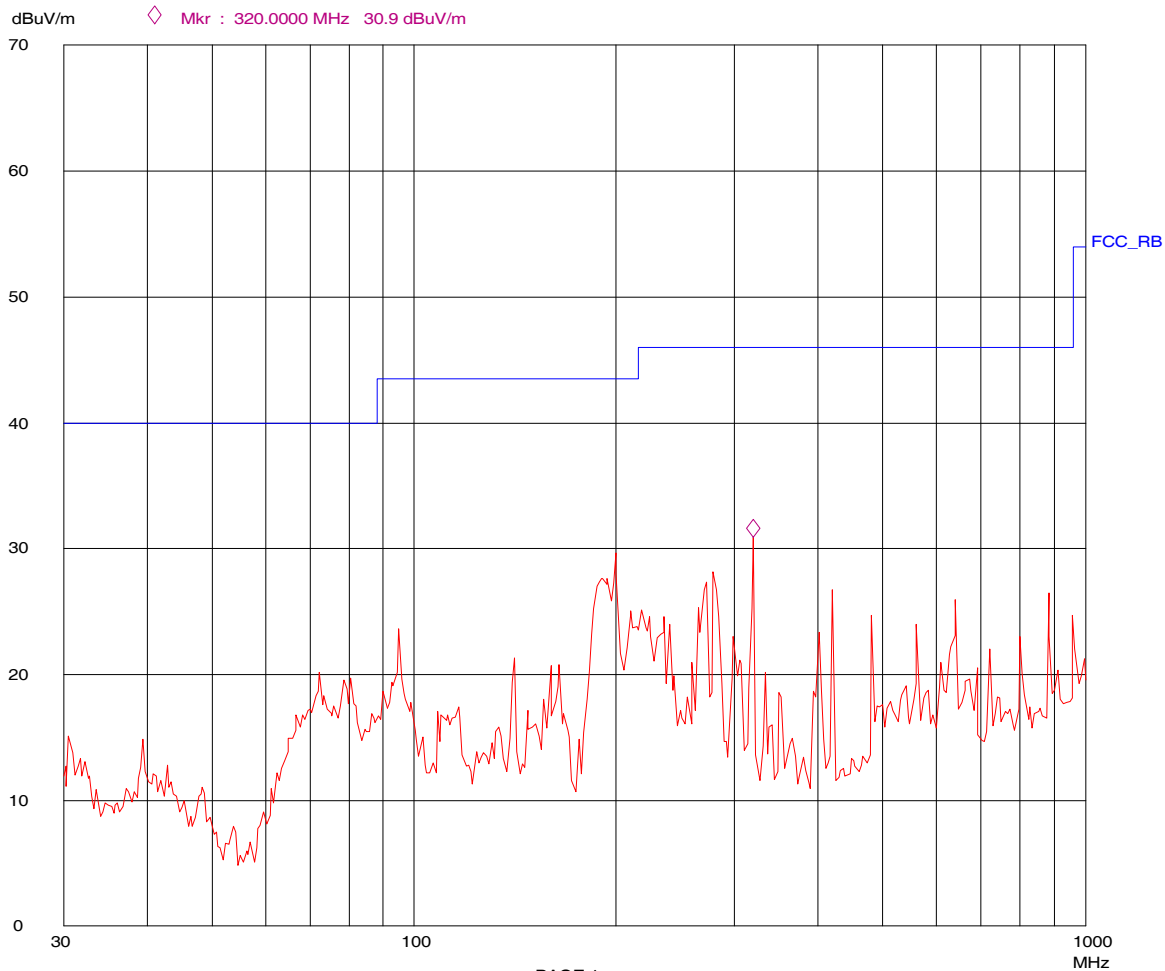
22. Nov 06 14:17

EUT: Gevaert

Scan Settings (2 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
30M	300M	62.5k	120k	PK	1ms	AUTO	LD ON
300M	1000M	62.5k	120k	PK	1ms	AUTO	LD ON

Transducer No.	Start	Stop	Name
21	30M	1000M	champbel



Drystar AXYS 3v FCC no printing

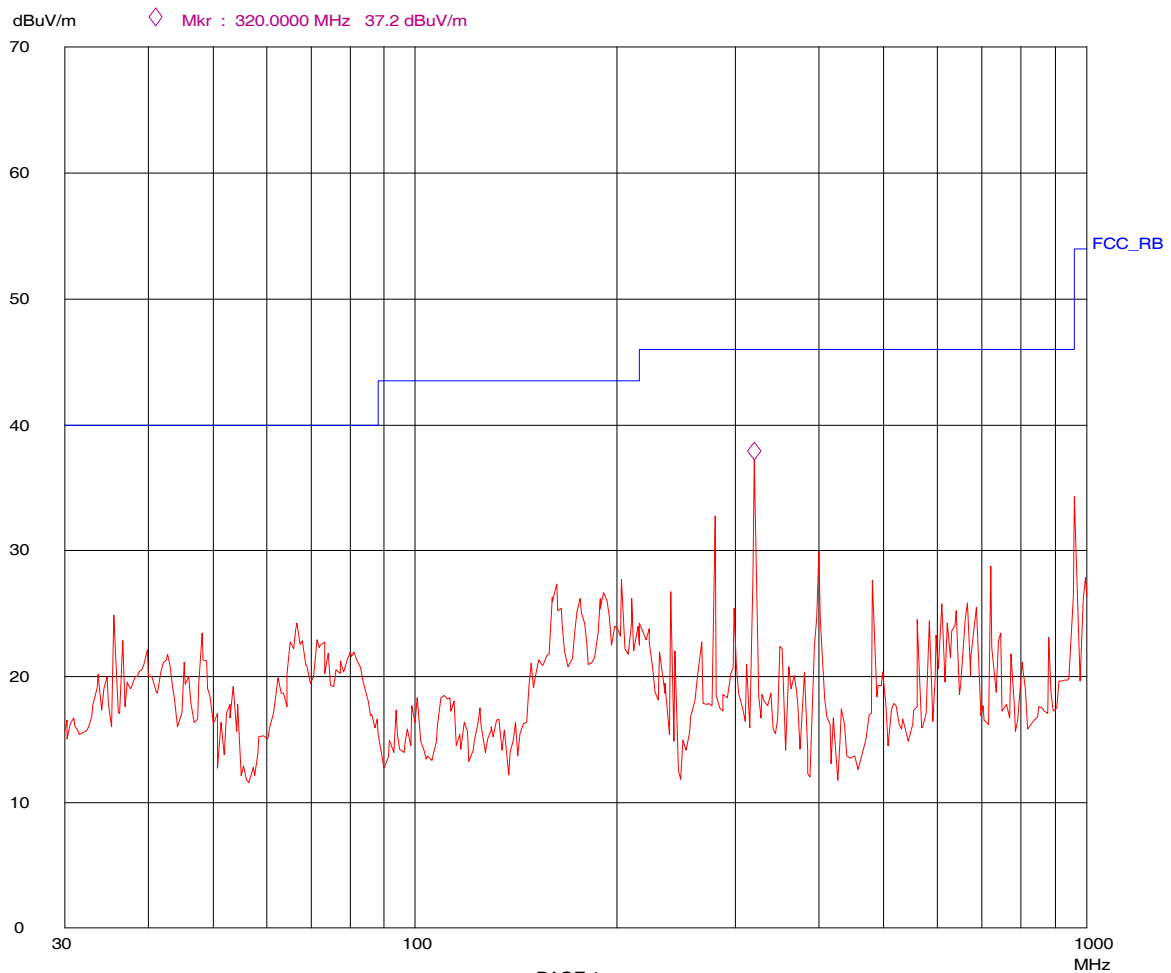
22. Nov 06 14:27

EUT: Gevaert

Scan Settings (2 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
30M	300M	62.5k	120k	PK	1ms	AUTO	LD ON
300M	1000M	62.5k	120k	PK	1ms	AUTO	LD ON

Transducer No.	Start	Stop	Name
21	30M	1000M	champbel



Drystar AXYS
4h FCC no printing

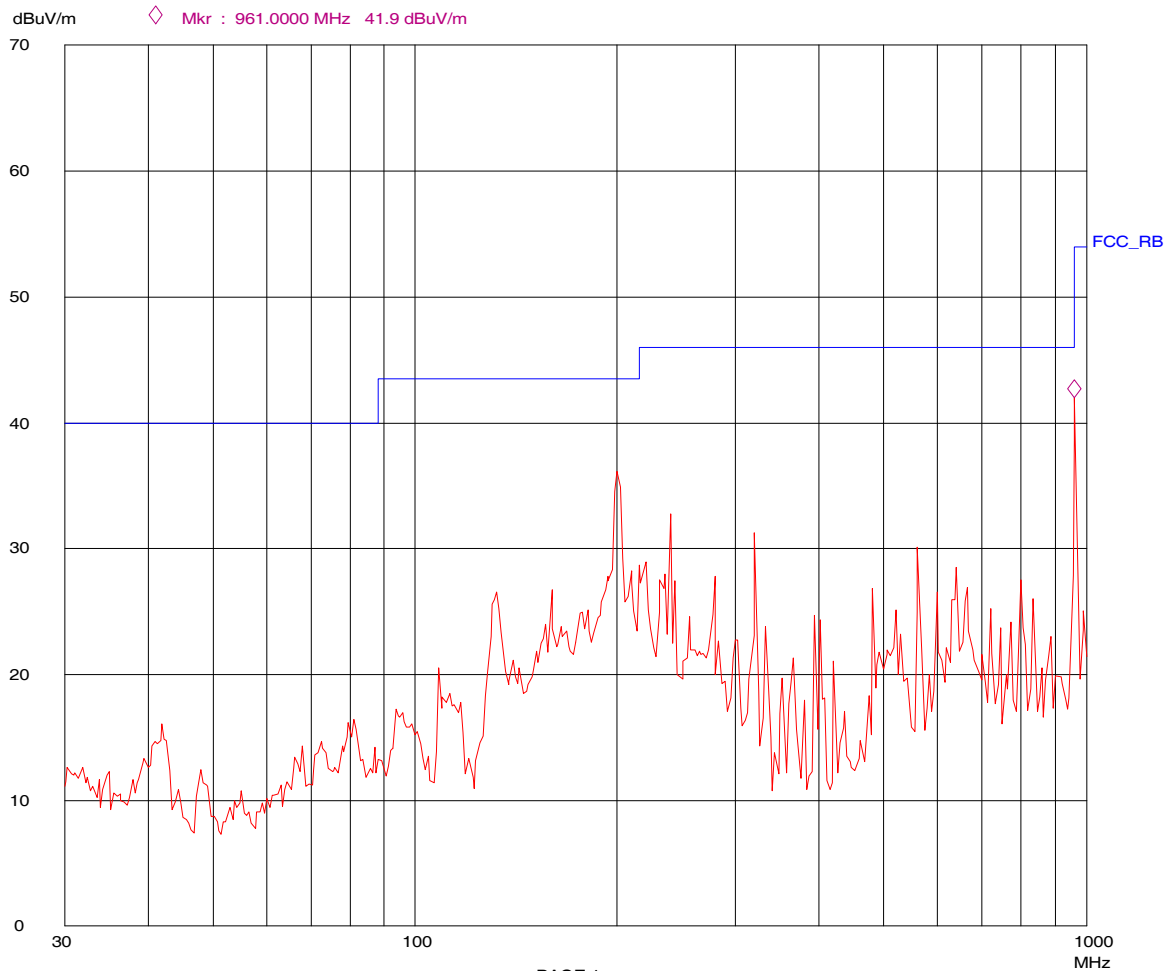
22. Nov 06 14:45

EUT: Gevaert

Scan Settings (2 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
30M	300M	62.5k	120k	PK	1ms	AUTO	LD ON
300M	1000M	62.5k	120k	PK	1ms	AUTO	LD ON

Transducer No.	Start	Stop	Name
21	30M	1000M	champbel



PAGE 1

Drystar AXYS
4v FCC no printing

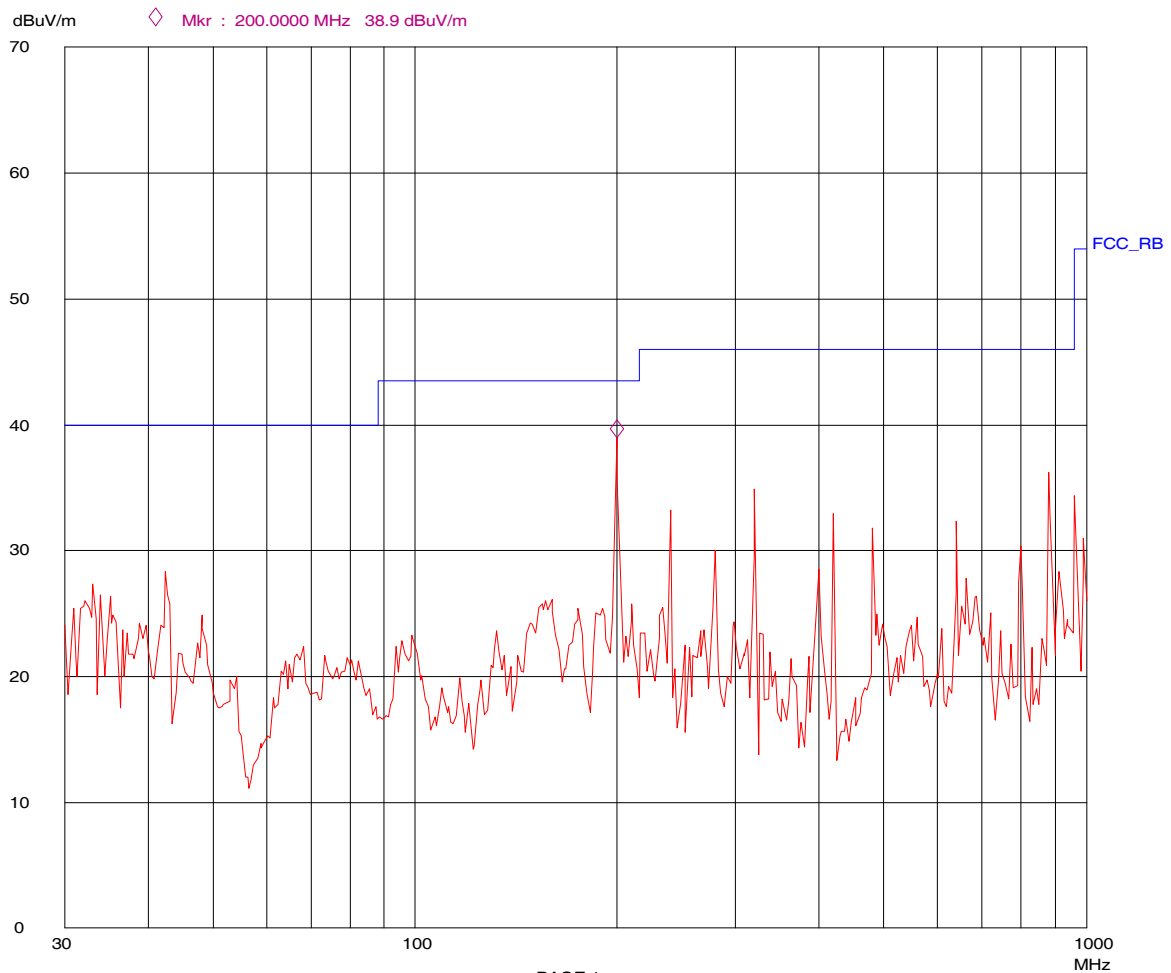
22. Nov 06 14:38

EUT: Gevaert

Scan Settings (2 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
30M	300M	62.5k	120k	PK	1ms	AUTO	LD ON
300M	1000M	62.5k	120k	PK	1ms	AUTO	LD ON

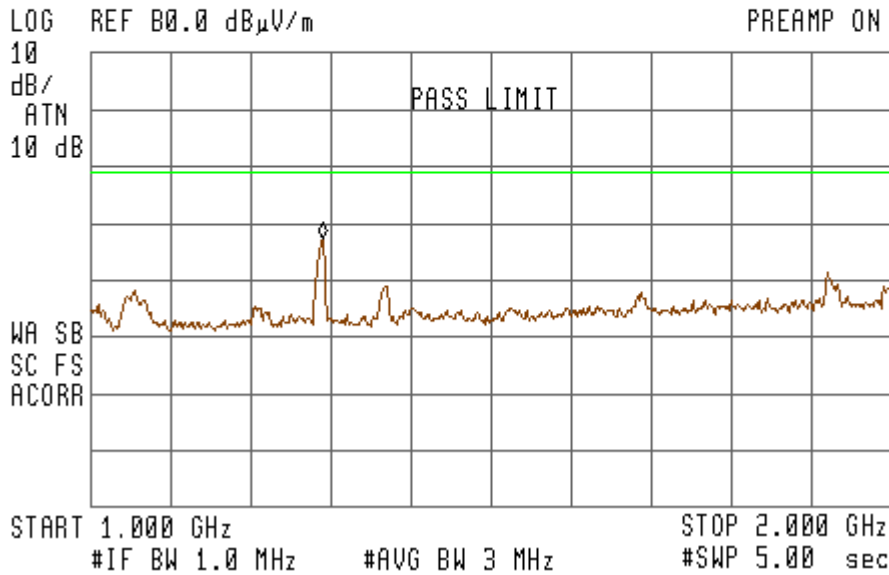
Transducer No.	Start	Stop	Name
21	30M	1000M	champbel



6.11fig11 Radiated emission (1-2GHz) hor. pol side1



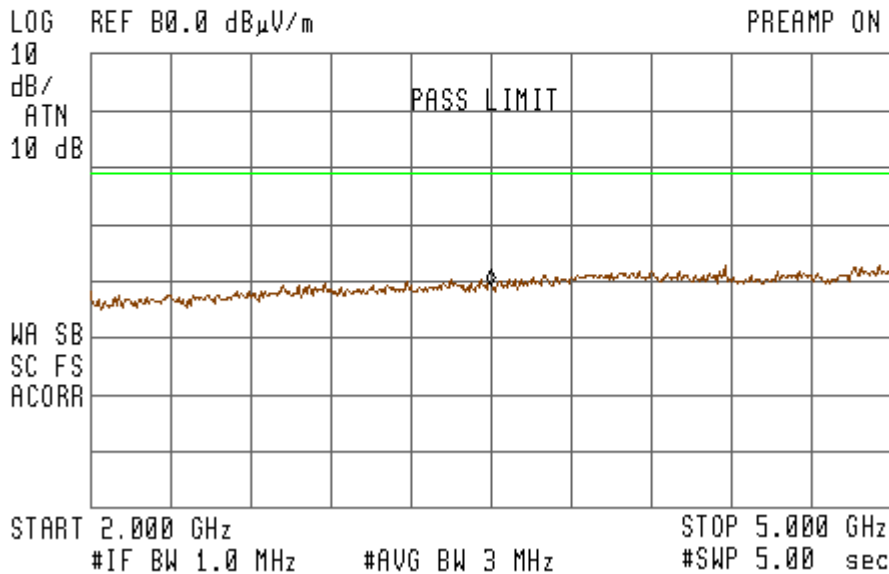
ACTV DET: PEAK
 MEAS DET: PEAK QP AVG
 MKR 1.290 GHz
 47.12 dB μ V/m



6.12fig12 Radiated emission (2-5GHz) hor. pol side1



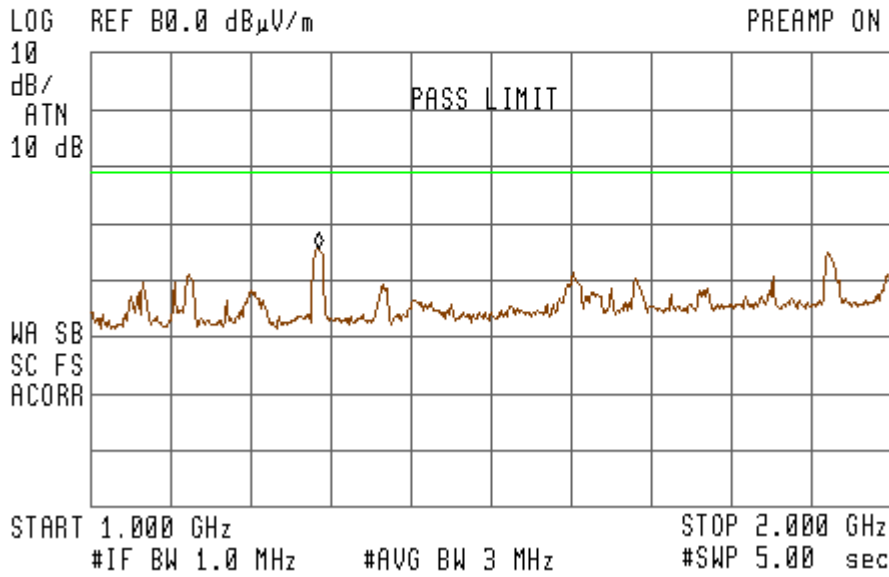
ACTV DET: PEAK
 MEAS DET: PEAK QP AVG
 MKR 3.499 GHz
 39.08 dB μ V/m



6.13fig13 Radiated emission (1-2GHz) ver. pol sidel



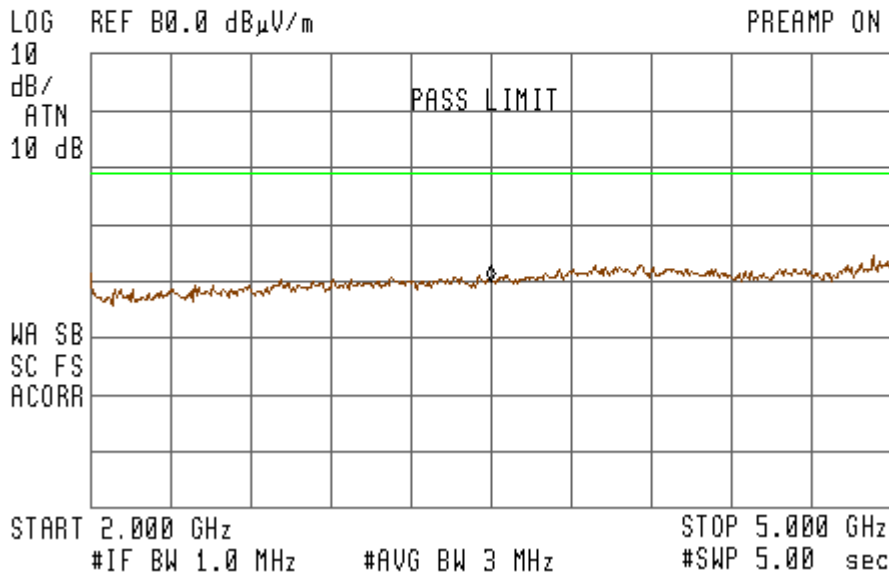
ACTV DET: PEAK
 MEAS DET: PEAK QP AVG
 MKR 1.285 GHz
 45.49 dB μ V/m



6.14fig14 Radiated emission (2-5GHz) ver. pol sidel



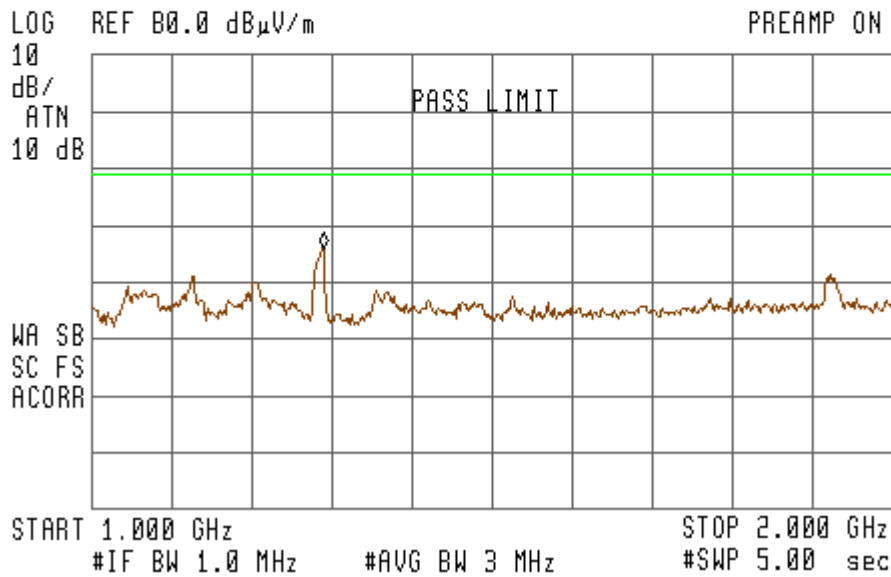
ACTV DET: PEAK
 MEAS DET: PEAK QP AVG
 MKR 3.499 GHz
 39.98 dB μ V/m



6.15 fig15 Radiated emission (1-2GHz) hor. pol side2



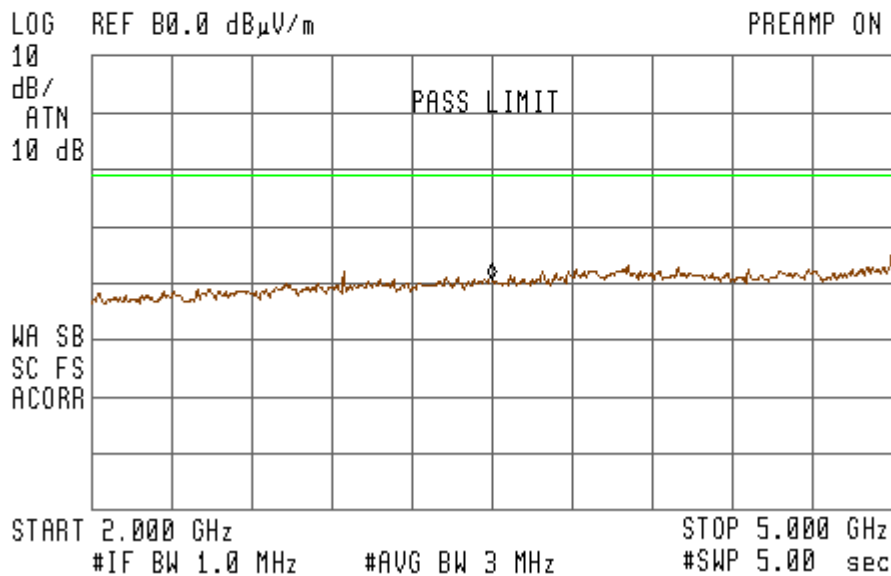
ACTV DET: PEAK
 MEAS DET: PEAK QP AVG
 MKR 1.290 GHz
 45.83 dB μ V/m



6.16 fig16 Radiated emission (2-5GHz) hor. pol side2



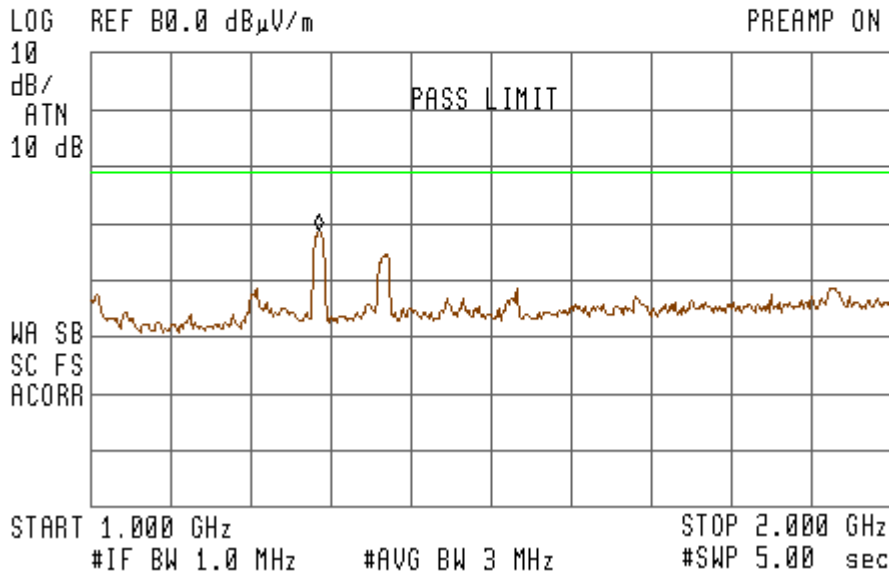
ACTV DET: PEAK
 MEAS DET: PEAK QP AVG
 MKR 3.499 GHz
 40.40 dB μ V/m



6.17 fig17 Radiated emission (1-2GHz) ver. pol side2



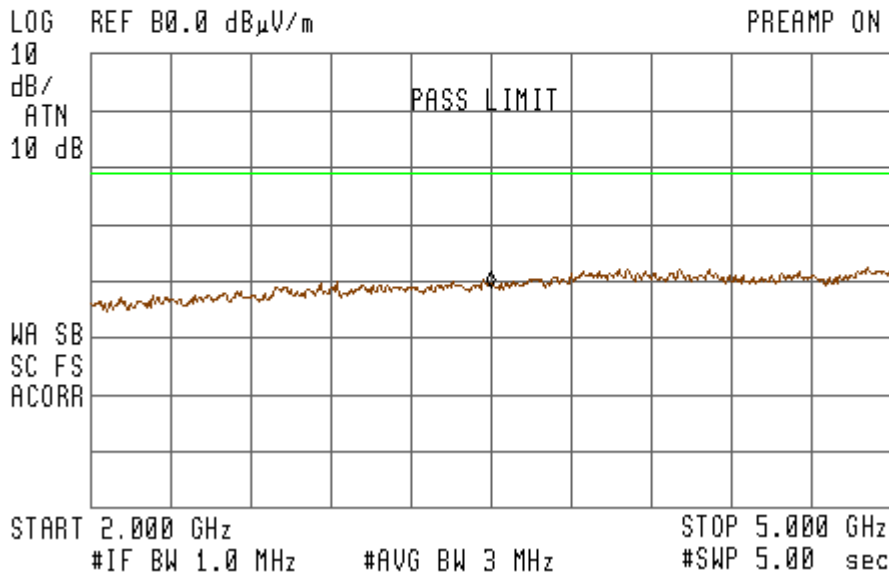
ACTV DET: PEAK
 MEAS DET: PEAK QP AVG
 MKR 1.285 GHz
 48.55 dB μ V/m



6.18 fig18 Radiated emission (1-2GHz) ver. pol side2



ACTV DET: PEAK
 MEAS DET: PEAK QP AVG
 MKR 3.499 GHz
 38.90 dB μ V/m



7. Photo test setup

Photo 5: radiated emission set-up (30-1000MHz)

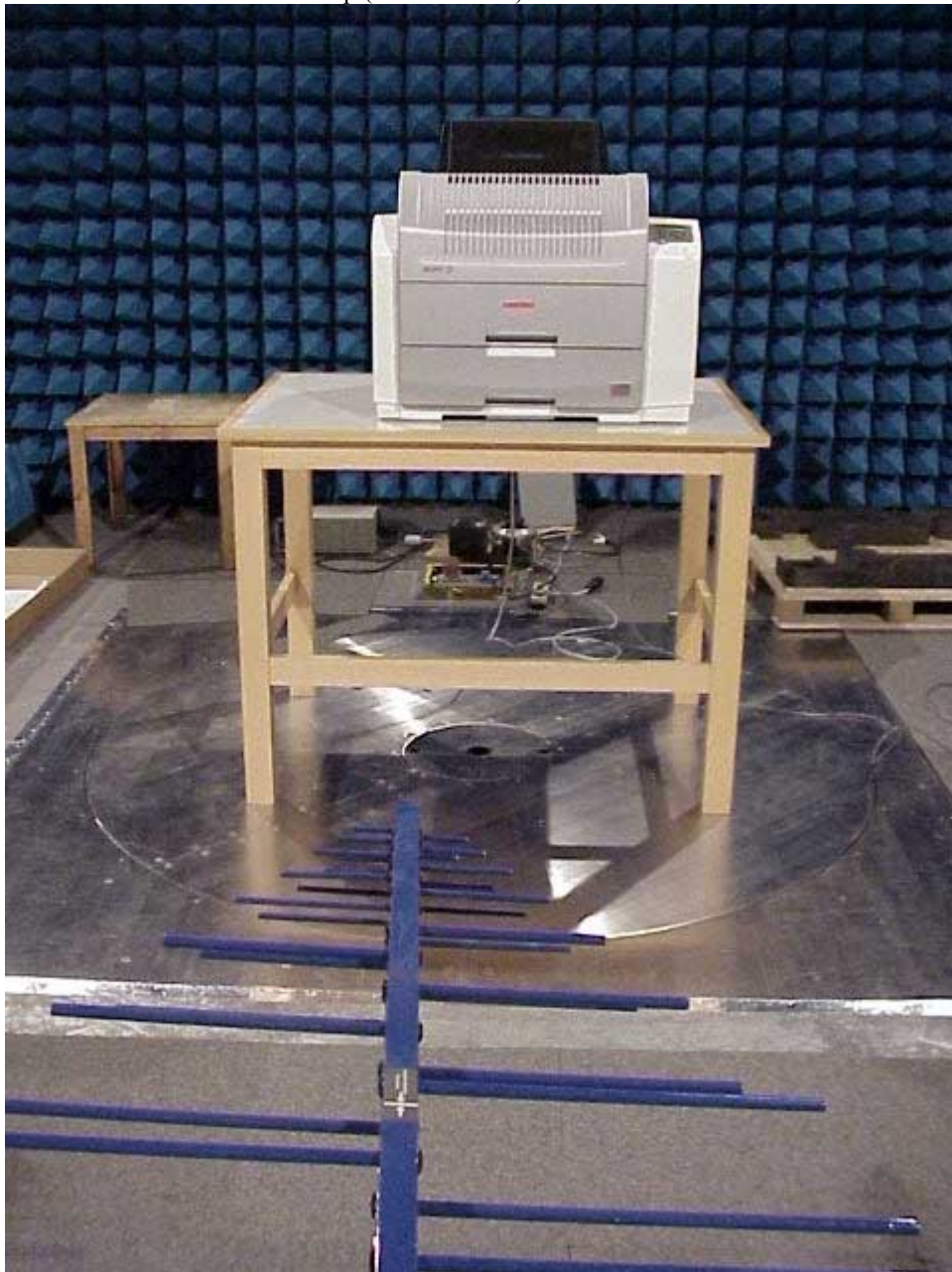


photo 6: radiated emission set-up (1-5GHz)

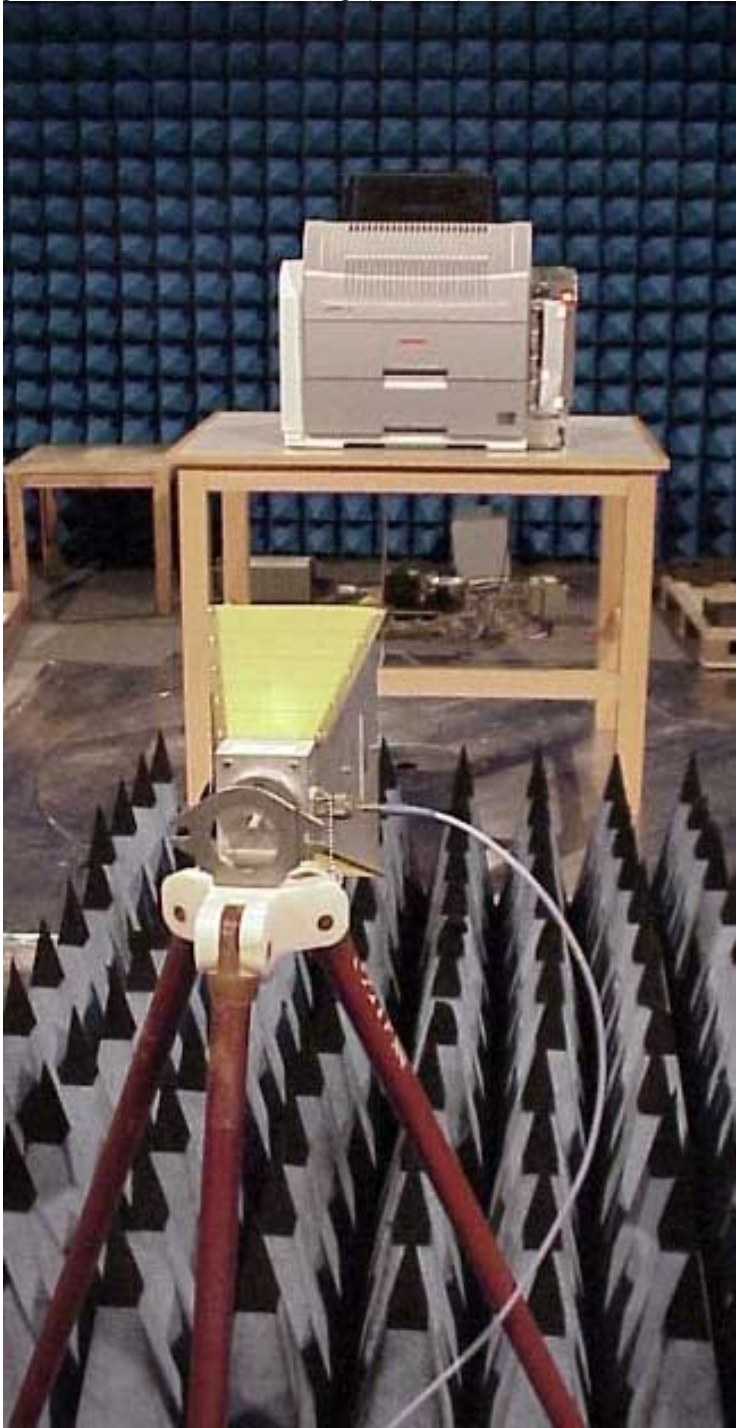


Photo 7: conducted emission mains (0.15-30MHz)



8. Modification

no modification

9. Uncertainty.

measurement	uncertainty	remark
CE with LISN	$\pm 2.42\text{dB}$	
RE 30-2000MHz	$\pm 3.9\text{dB}$	



Organisme belge d'Accréditation
Belgische Accreditatieinstelling
Belgische Akkreditierungsstelle
Belgian Accreditation Body

Signatory to EA, ILAC and IAF
Multilateral Agreements

Accreditation Certificate No. 041-TEST

In compliance with the provisions of the Royal Decree of 31 January 2006 setting up BELAC, the Accreditation Board hereby declares, that the test laboratory

LABORATORIA DE NAYER VZW
Jan De Nayerlaan, 3
2860 SINT-KATELIJNE-WAVER - Belgium

has the competence to perform the tests as described in the annex which is an integral part of the present certificate, in accordance with the requirements of the standard NBN EN ISO/IEC 17025:2000. The present accreditation is the subject of regular surveillance in order to confirm the compliance with the accreditation conditions.

The Chair of the Accreditation Board BELAC,

Nicole MEURÉE-VANLAETHEM

Issue date : **2006-09-05**

Validity date : **2009-01-07**

Original version of this certificate is in Dutch.



FEDERAL COMMUNICATIONS COMMISSION

**Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046**

November 29, 2004

Laboratoria DE NAYER
Jan De Nayerlaan 3
B-2860 Sint-Katelijne-Waver
Belgium

Attention: Dirk Van Troyen

Re: Accreditation of Laboratoria DE NAYER

Dear Sir or Madam:

We have been notified by the European Commission that Laboratoria DE NAYER has been accredited as a Conformity Assessment Body (CAB).

At this time your organization is hereby designated to perform compliance testing on equipment subject to Declaration Of Conformity (DOC) and Certification under Parts 15 and 18 of the Commission's Rules.

This designation will expire upon expiration of the accreditation or notification of withdrawal of designation.

Sincerely,



Thomas W. Phillips
Electronics Engineer