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

Jan De Nayerlaan 3
B-2860 Sint-Katelijne-Waver

041-T - ISO17025

TEST REPORT

LDN number : 815/835
serial number: E0612003
edition number: 01
date of edition: 08/02/2007

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 C , Intentional Radiators** part 15.225 Operation within the band 13.110-14.010MHz

MRA : **between E.C. and USA : CAB (EMC) [designation number BE0002] date of validation 15.01.2002 (refer to p 30)**

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 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) .
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:	22/11 and 12/12/2006

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	
Antenne mast + controller	RSM 010 / RSC 02	/	*
Anechoic room	EAC52282	/	*
Chase bicon antenna	CBL6111B	1948	*
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	*
Vierddraht-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	
Miteq low noise preamp	AFS4-00100800-25-10P-4	1581127	
parallel probe	LDN	LDNLP2	
preamp : 9kHz-1GHz Chase	CPA9231	SN :3078	
HP Power supply	HP6247B		
HP spectrum 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 Scope meter	192B	SN : DM8380360	
Fluke current probe	i200s	SN : 1040036ZBS	
Fluke DVM	73III	SN: 74140243	
preamp : 9kHz-1GHz	W1G2M-220-P	A00501	*

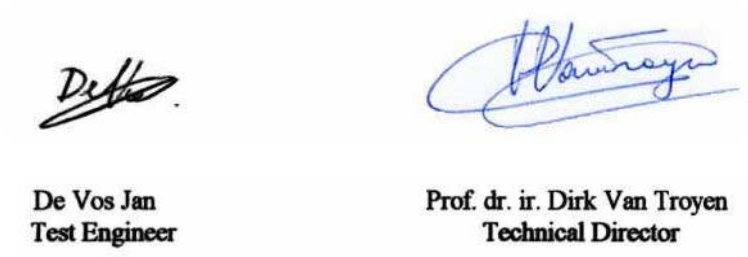
1. Description of the EUT.

l.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

1.3. Photographs of the EUT's.

photo 1 :Complete Model .

photo 2 : rear view

photo 3 : RFID tag

photo 4 : 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.

date : 22/11 and 12/12/2006
The climatic conditions during these tests were: ambient temperature : 21.8/22.3°C
relative humidity: 40/42%
atmospheric pressure: 1017/1023mBar

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 .

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/ANSI C36.4 (0.15 MHz - 30 MHz).
Test voltage : 115V /60Hz
Specification reference :C.F.R.47 part 15.207

The upper limit line is the quasi-peak limit line for class A equipments.
The lower limit line is the average limit line for class A equipments.

Measurement results for EUT

Conducted emission L1-PE

table1 : EUT

Freq (MHz)	QP (dBµV)	AV (dBµV)
0.205	44.2	39.8
0.405	41.6	32.8
23.53	46.0	41.1

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

Conducted emission L2-PE

table2 : EUT

Freq (MHz)	QP (dBµV)	AV (dBµV)
0.205	45.9	41.5
0.27	41.1	37.8
5.07	41.8	31.9

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

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

4.1.3. Radiated emission (30-1000MHz)

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) and horn antenna (1-5GHz)
Test voltage : 115V /50Hz
Specification reference :C.F.R.47 part 15.209

The limit line 1 is the quasi-peak limit line(green) for class A equipments.

Measurement results Radiated emission :
Horizontal polarization operation mode
table3 : 30-1000MHz (12/12/2006)

Freq (MHz)	QP (dBµV/m)	height(m)	side
80.0	49.7	2	1
60.3	43.8	2	1
60.25	40.9	2	2
79.93	48.4	2	2
79.93	40.9	2.25	3
996.81	32.4	1	3
60.4	35.2	2	4
79.8	43.8	2	4
79.1	37.4	2	5
120.75	34.7	2	5

The final measurements with the quasi-peak detector remain everywhere below the limits for the class A limits.
fig3=hor/1 ; fig5=hor/2 ; fig7= hor/3 ; fig9=hor/4

Vertical polarization operation mode
table4 (12/12/2006)

Freq (MHz)	QP (dBµV/m)	height(m)	side
38.75	32.0	1	1
95.56	38.5	1	1
80.87	45.3	1	2
972.5	25.6	1	2
39.12	36.0	1	3
79.87	45.5	1.25	3
89.75	37.5	1	5
210.81	40.7	1	5
32.37	35.4	1	7
209.43	35.0	1	7
961.8	39.2	1	7
40.50	40.9	1	8
178.87	37.5	1	8

The final measurements with the quasi-peak detector remain everywhere below the limits for the class A limits.
fig4=ver/1 ; fig6=ver/2 ; fig8= ver/3 ; fig10= ver/4

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

4.1.4. Fundamental Radiated emission.(22/11/2006)

Measurements were performed to the limits specified in FCC part 15.225 for fundamental frequencies , in the range 13.553 and 13.567MHz , any emission in this frequency band must not exceed 15.848µV/m @30m distances (84dBµV/m @30m).

The test was done at 1m distance , the limit was calculated using the square of an inverse linear distance extrapolation factor of 40dB/dec. (40 log 30/1). section 15.31(f)(2)

table5

Freq (MHz)	QP (dBµV/m)	limit (dBµV/m) @1m
13.56	50.2	143.0

fig11: RFID tag : peak value (add 10dB correction factor)

conclusion: The EUT satisfies limit for radiated emission according to part15.225.

4.1.5. Limit lines

table 6 : conducted emission limit (class A device)

frequency (MHz)	QP (dBµV)	AV (dBµV)
0.15-0.5	79	66
0.5-30	73	60

table 7 : radiated emission limit @ 3m distance (class A)

Frequency (MHz)	QP (dBµV/m)	AV (dBµV/m)
30-88	49	--
88-216	53.5	--
216-960	56.5	--
960-1000	59.5	--
1000-5000	--	59.5

5.Summary of the test results.

5.1 Test results of the emission tests.

Test	The EUT complies limits	remark
conducted emissions (0.15 MHz – 30 MHz) part 15.207	yes	
spurious emissions (30 MHz – 1000 MHz) part15.209	yes	
radiated field strength of fundamental emissions part15.225	yes	

6. Plotted graphs of the emission measurements.

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

Drystar AXYS
115V L1 FCC print

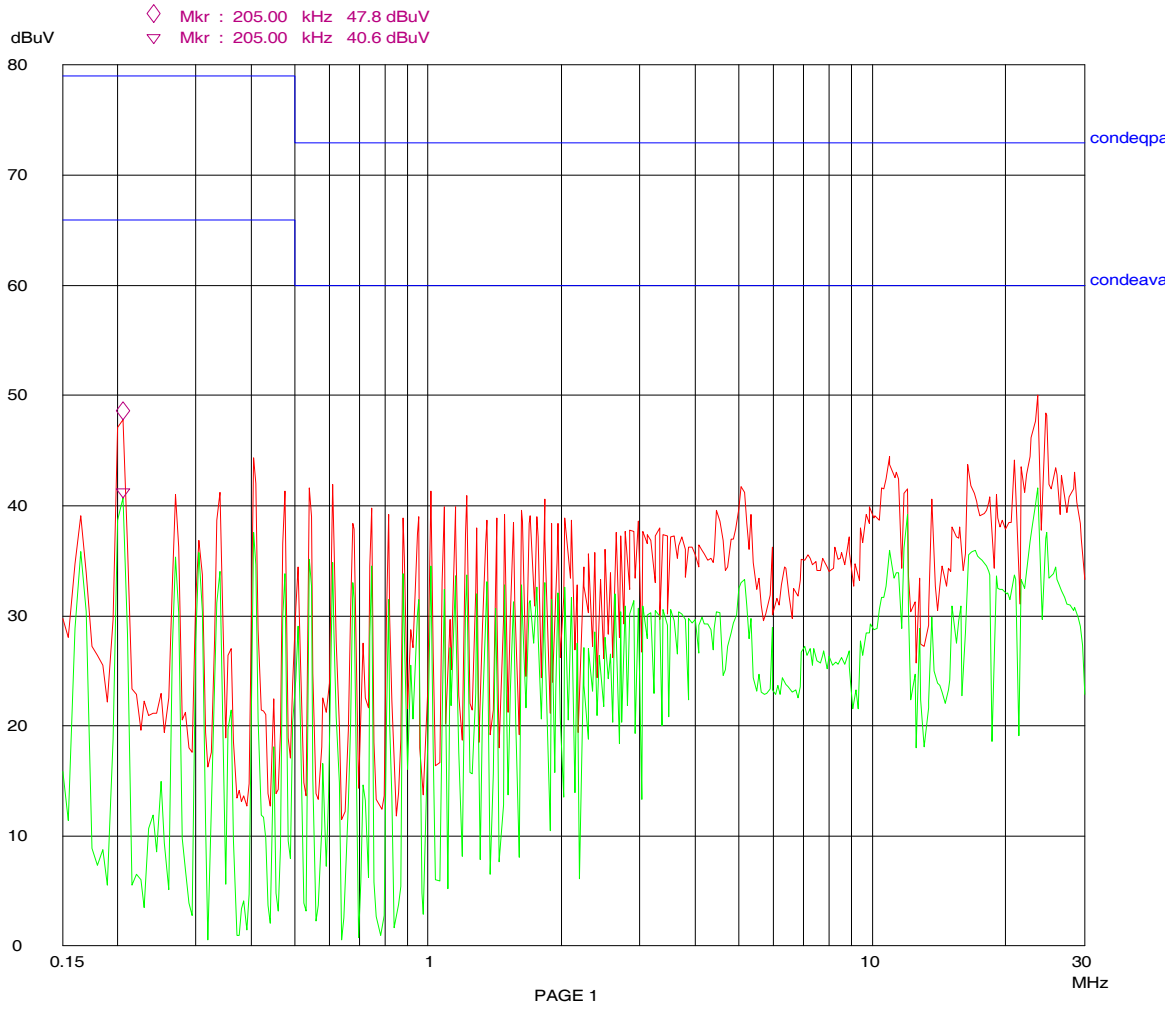
22. Nov 06 16:08

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



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6.2 fig2 Conducted emission L2-PE (115V/60Hz)

Drystar AXYS
230V L2 FCC print

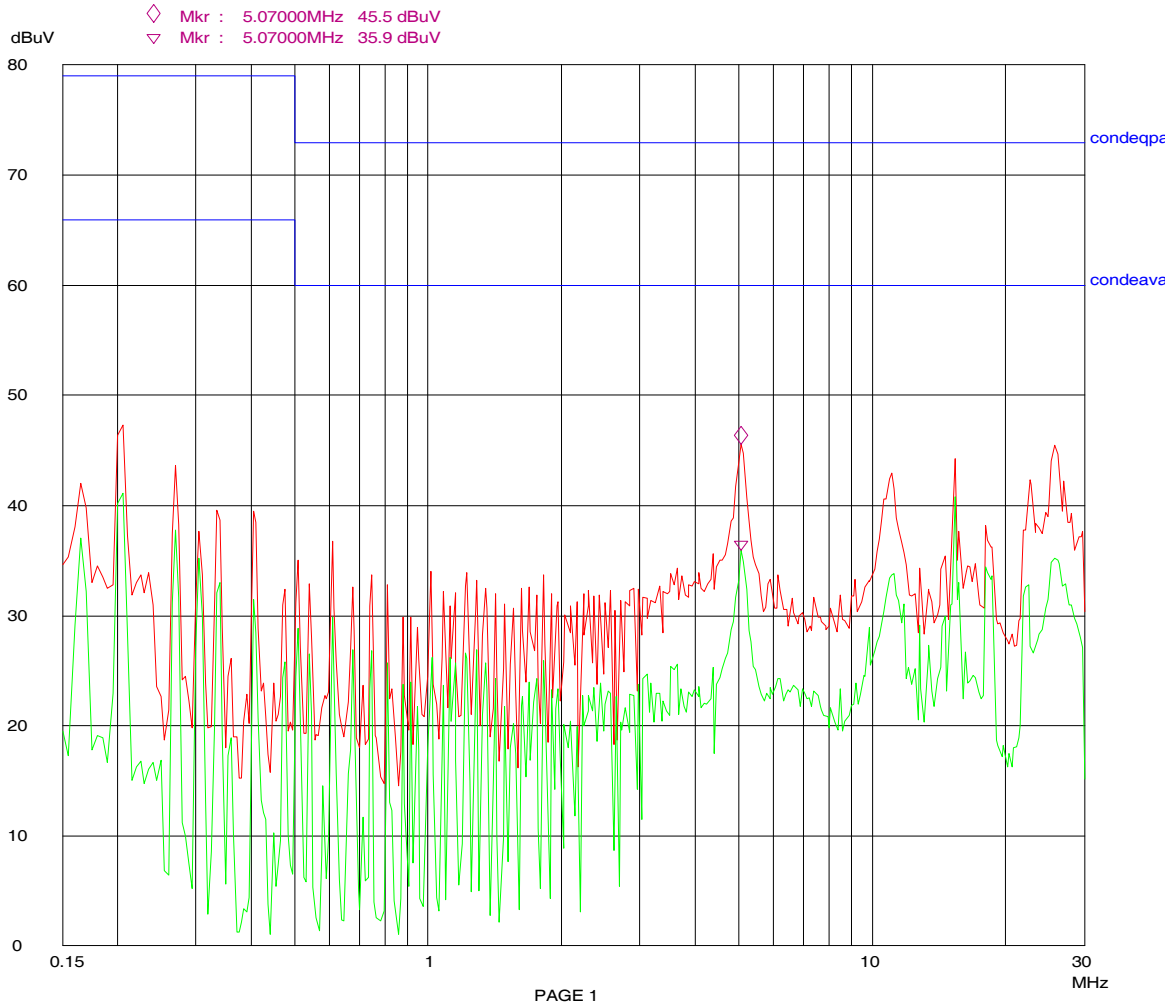
22. Nov 06 15:33

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



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6.3 fig3 Radiated emission (30…1000MHz) hor. pol , side1 (RE : 115Vac/50Hz)

Drystar AXYS
1h FCC

12. Dec 06 14:52

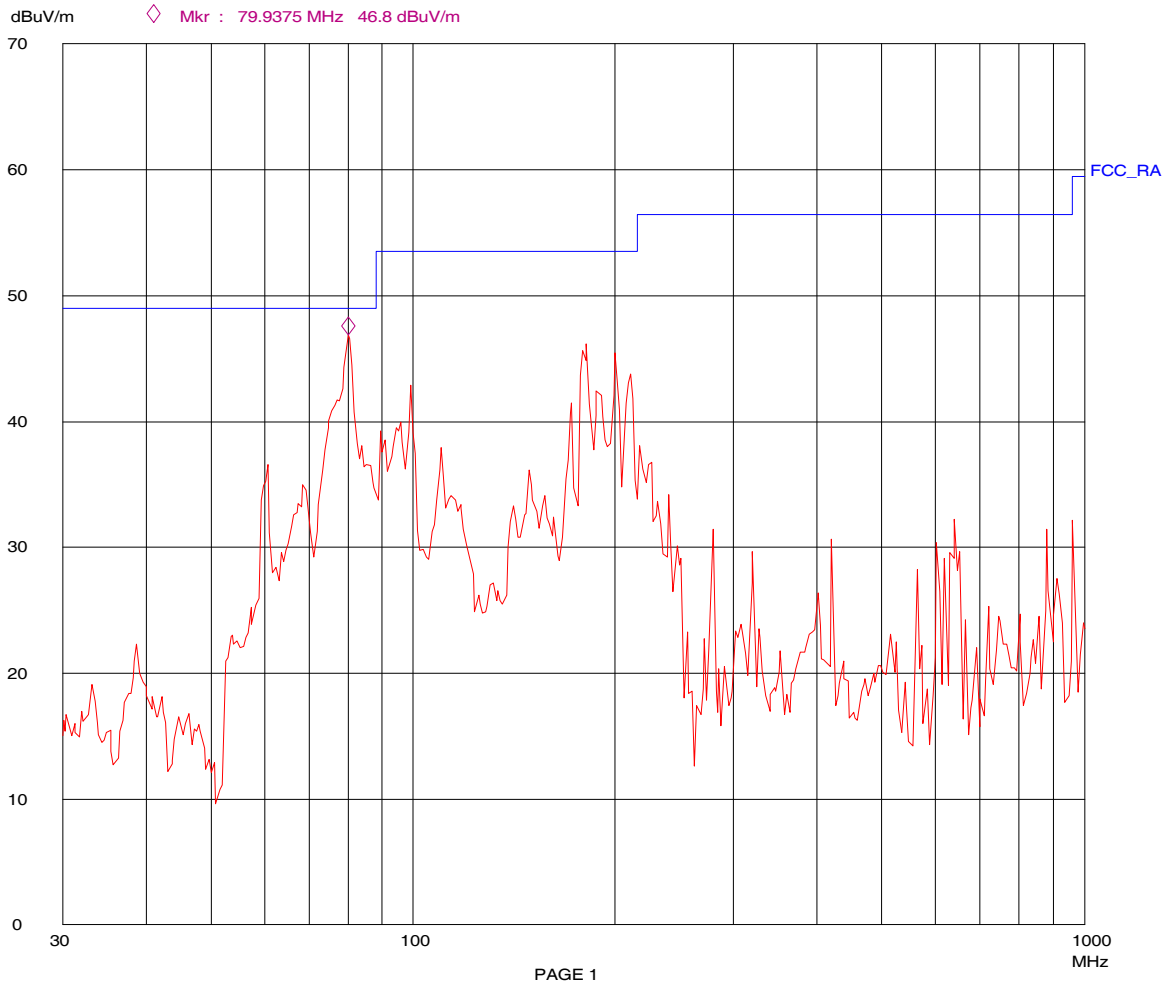
EUT: Gevaert

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 LN	ON

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



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6.4 fig4 Radiated emission (30…1000MHz) ver. pol , side1

Drystar AXYS
1h FCC

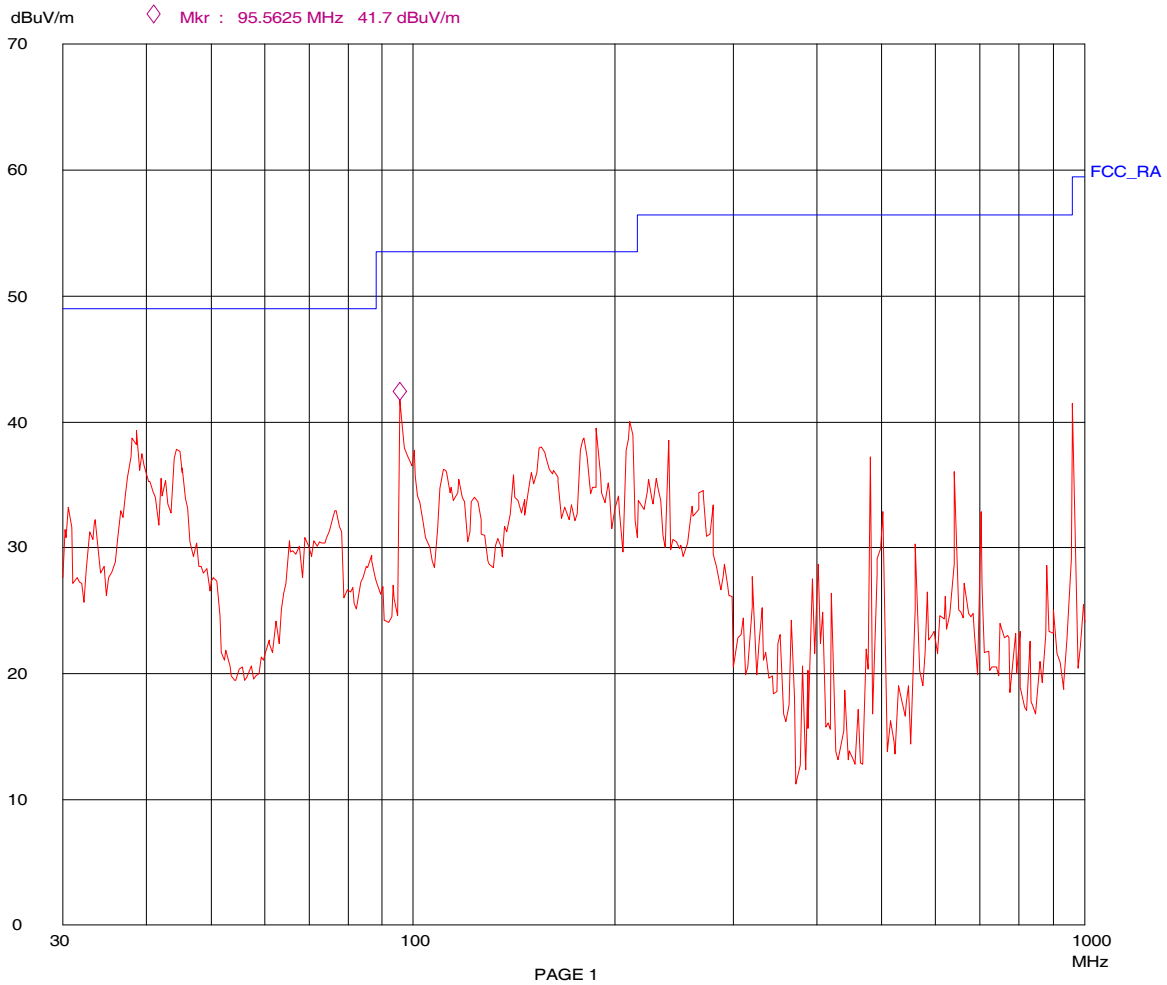
12. Dec 06 14:44

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 LN	ON	

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



6.5 fig5 Radiated emission (30…1000MHz) hor. pol , side2

Drystar AXYS
3h FCC

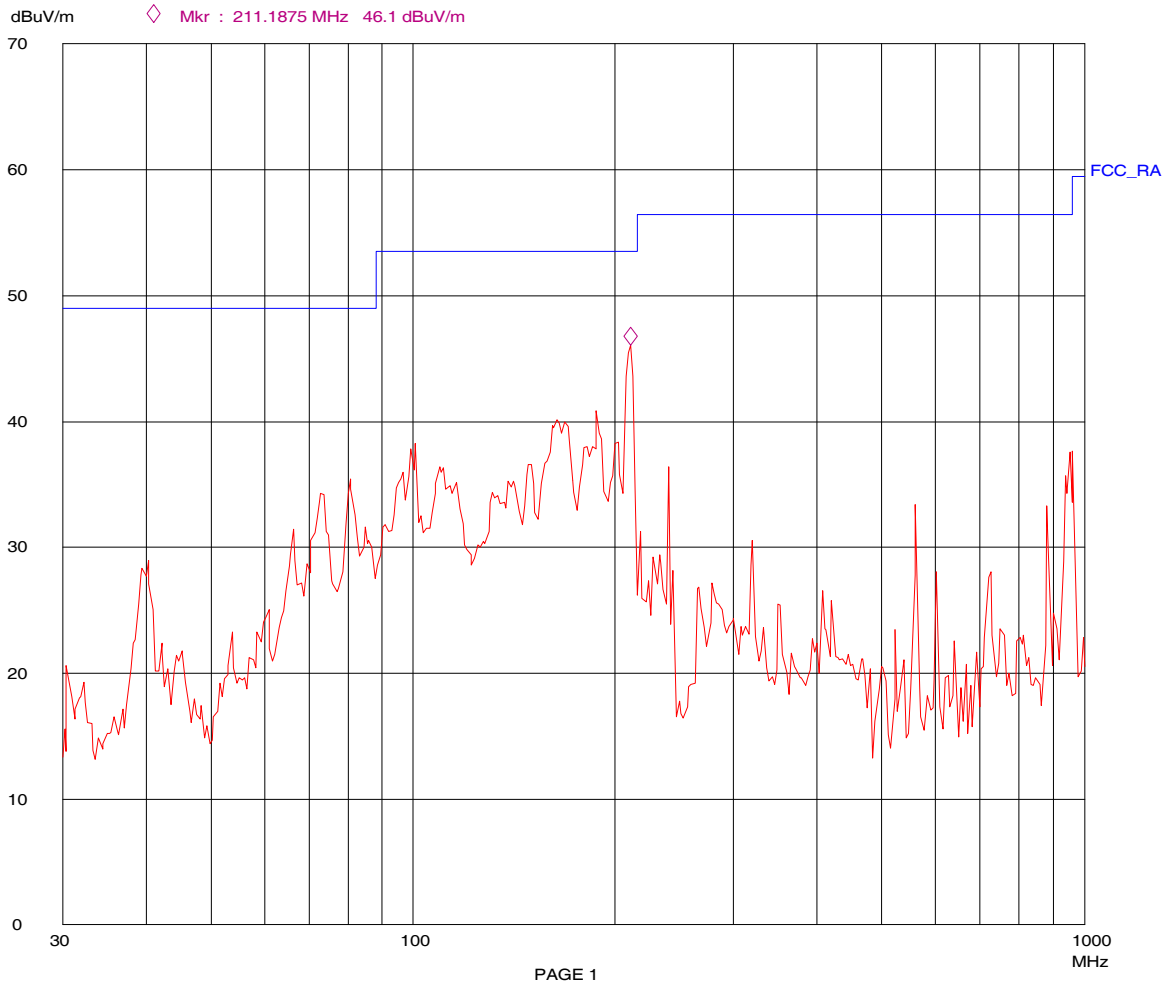
12. Dec 06 14:28

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 LN		ON

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



PAGE 1

6.6 fig6 Radiated emission (30…1000MHz) ver. pol side2

Drystar AXYS
3v FCC

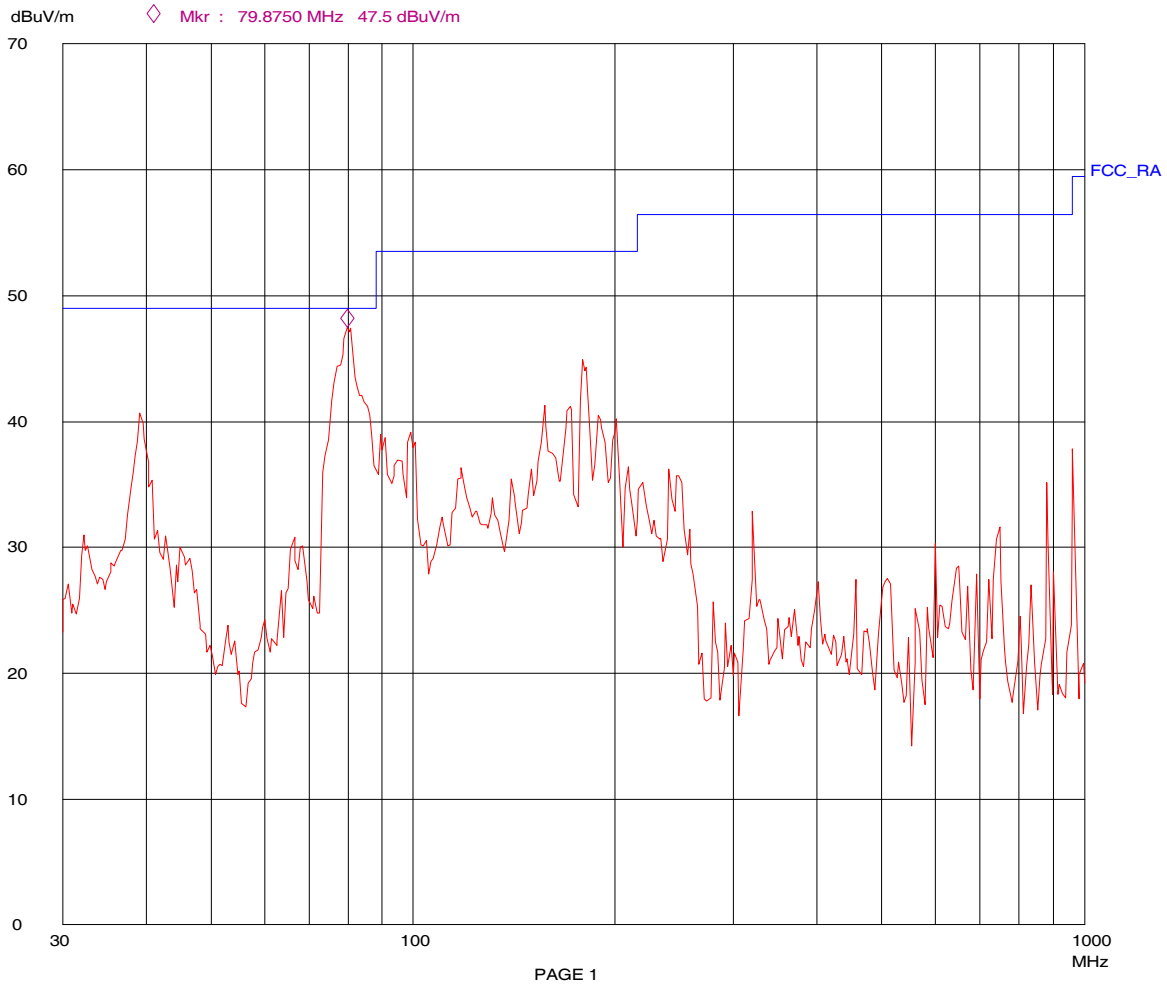
12. Dec 06 14:20

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 LN	ON

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



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6.7 fig7 Radiated emission (30…1000MHz) hor. pol side3

Drystar AXYS
5h FCC

12. Dec 06 14:03

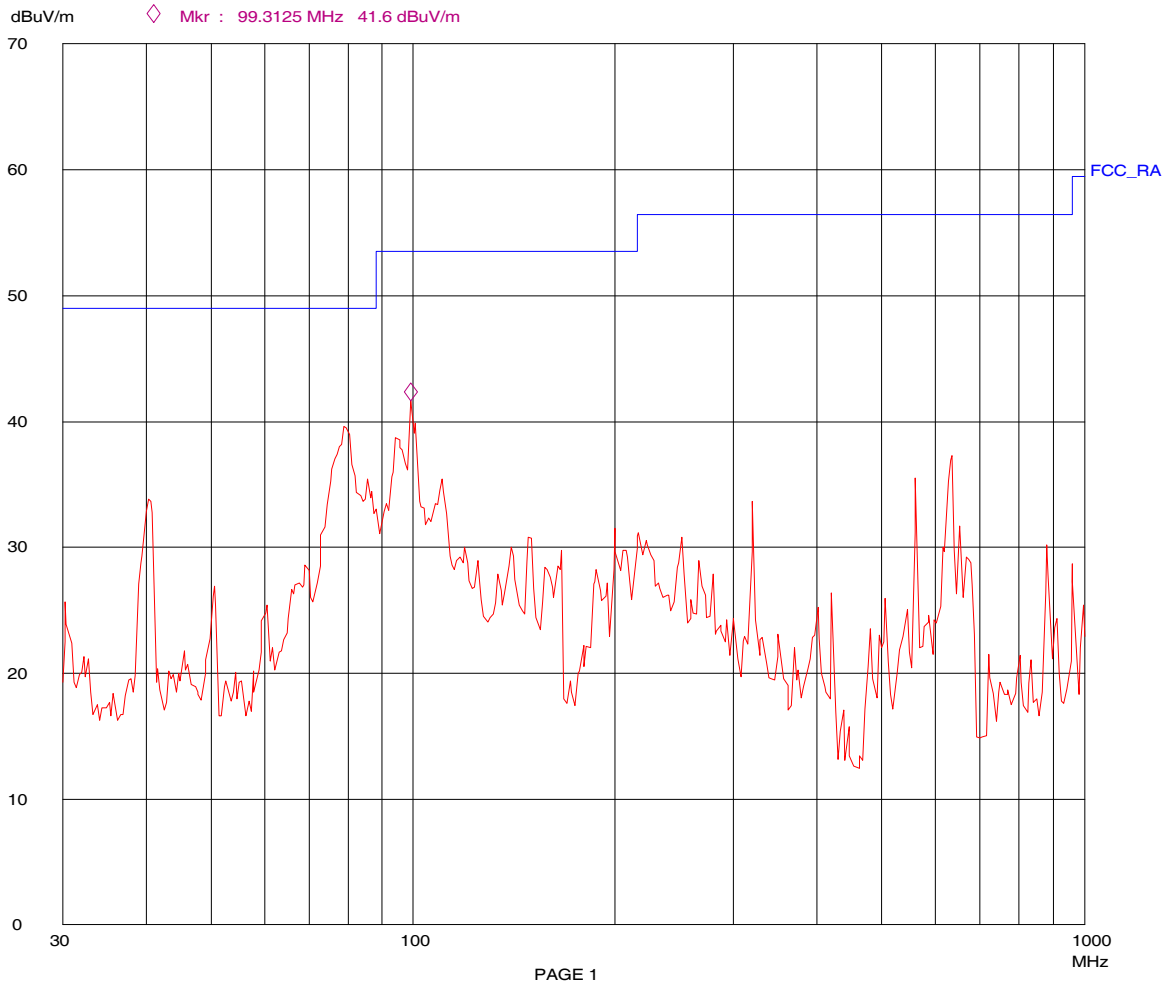
EUT: Gevaert

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 LN	ON

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



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6.8 fig8 Radiated emission (30…1000MHz) ver. pol side3

Drystar AXYS
5v FCC

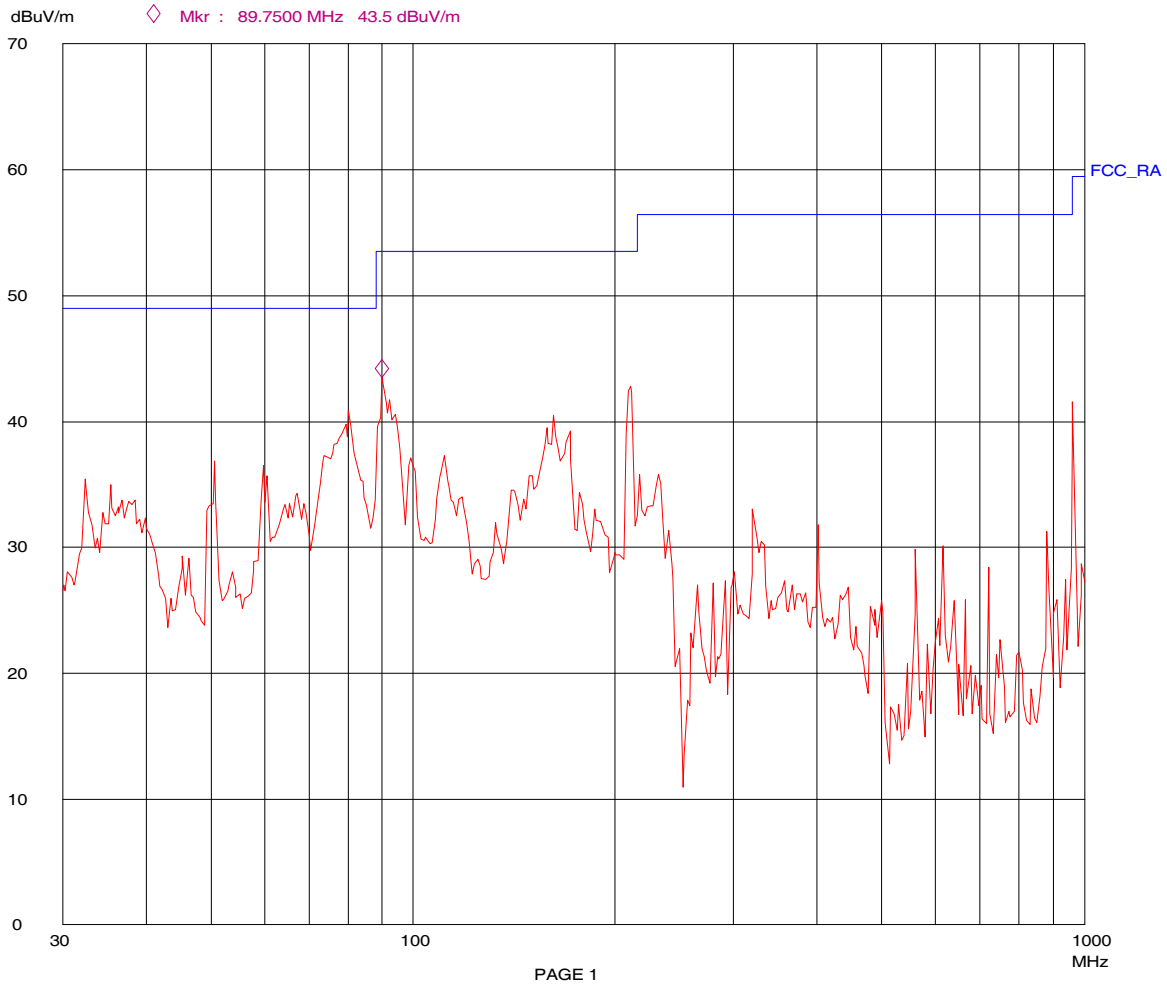
12. Dec 06 14:12

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 LN		ON

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



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6.9fig9Radiated emission (30…1000MHz) ho pol side4

Drystar AXYS
7h FCC

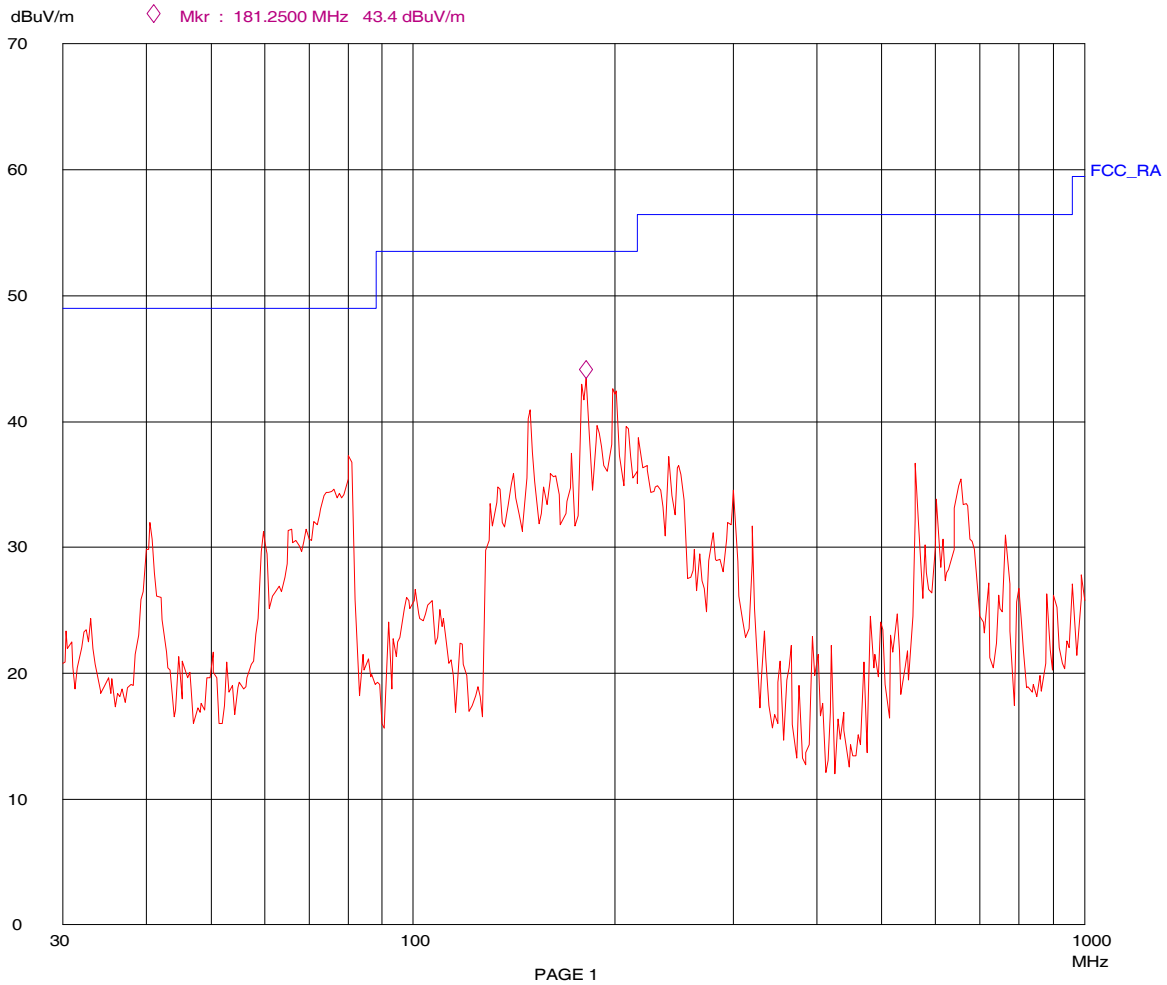
12. Dec 06 12:02

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 LN		ON

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



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6.10ig10adiated emission (30…1000MHz) ver. pol side4

Drystar AXYS
7v FCC

12. Dec 06 12:08

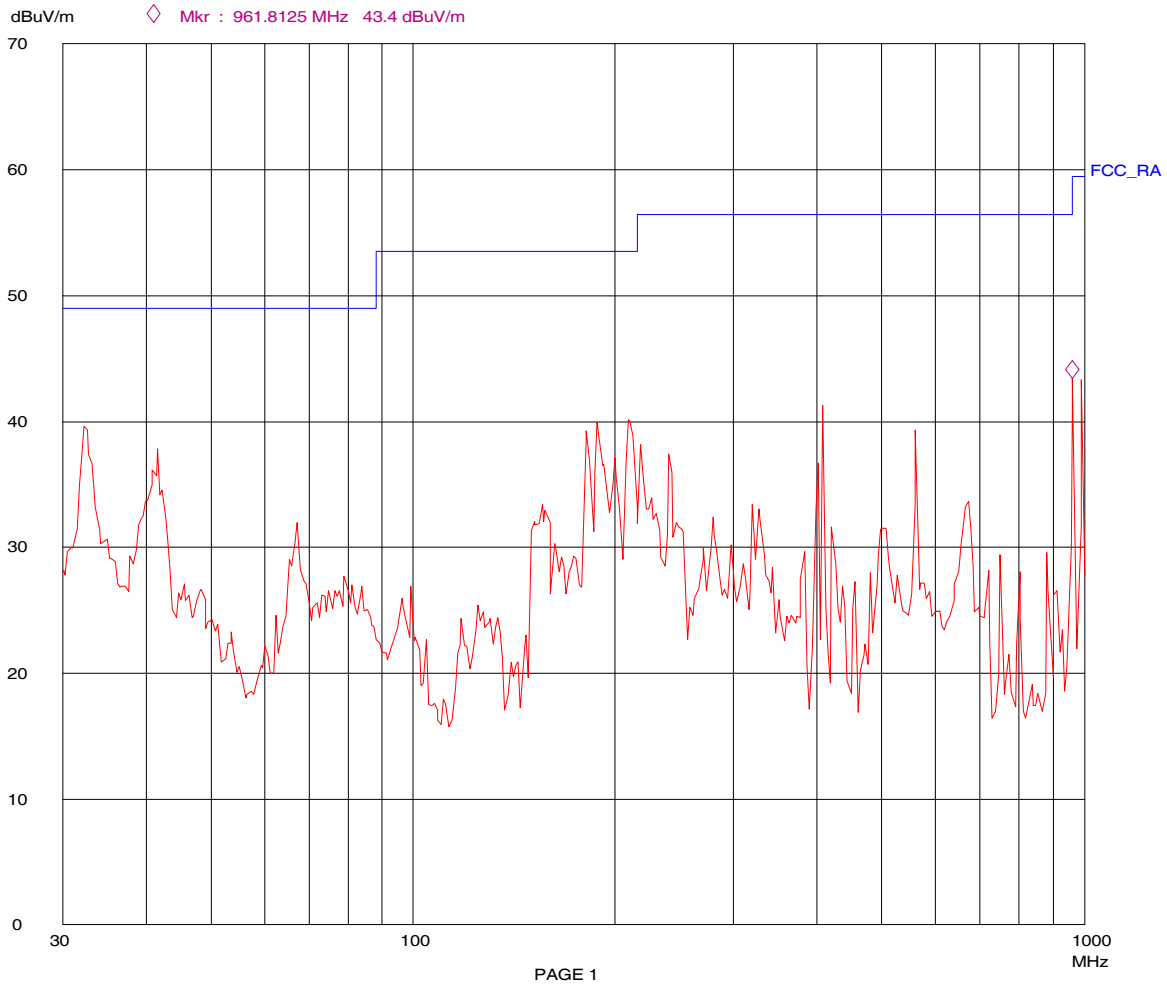
EUT: Gevaert

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 LN	ON

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



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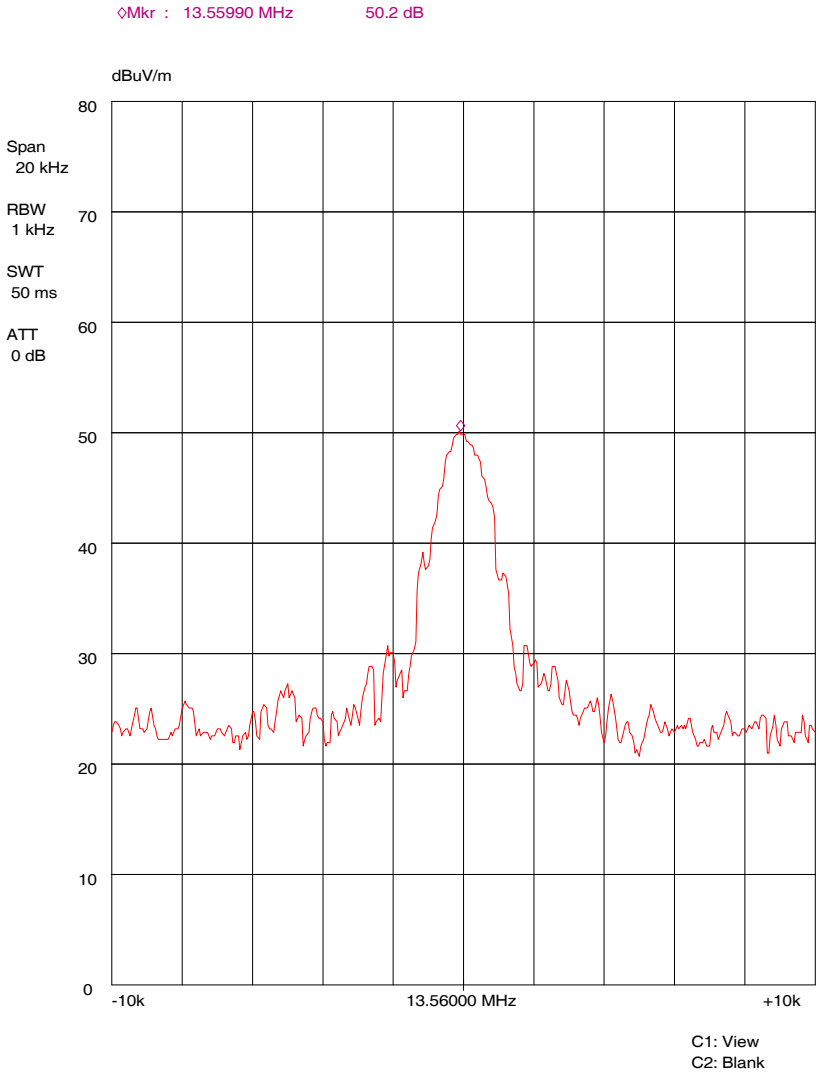
6.11 fig11 : Intentional radiator @13.56MHz

Drystar AXYS
ISM 0

22. Nov 06 12:13

EUT: Gevaert



7. Photo test setup

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

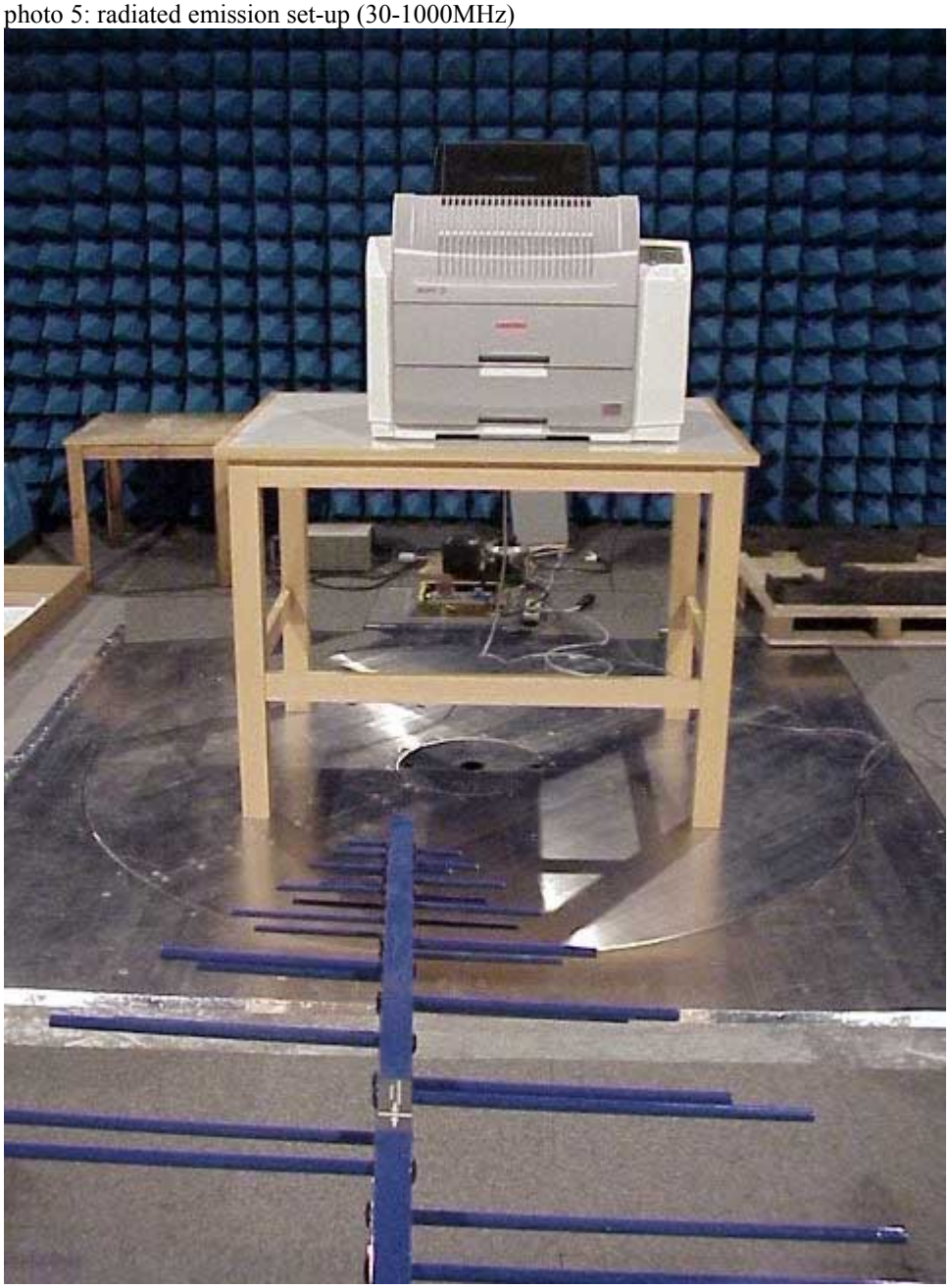


photo 6: conducted emission mains (0.15-30MHz)

photo 7 : radiated emission set-up (band 13.56MHz)

distance 1m en EUT is closed.

7. Modification

none

8. Uncertainty.

measurement	uncertainty	remark
CE with LISN	±2.42dB	
RE 30-1000MHz	±3.9dB	
RE magn. field	±3.9dB	

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,

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

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

Nicole MEURÉE-VANLAETHEM

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