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REPORT ON ELECTROMAGNETIC COMPATIBILITY TESTS

Performed at:
TWENTY PENCE TEST SITE

Twenty Pence Road,
Cottenham,
Cambridge
U.K.
CB4 8PS

on

Bewator Group Ltd

HD500-2, PM500 and SP500

dated

18 November 2003

Equipment Under Test (EUT):	**HD500-2, PM500 and SP500**
Test Commissioned by:	**Bewator Group Ltd** **Mercers Row** **Cambridge** **CB5 8EX**
Representative:	**Philip Buckle**
Test Started:	**16 December 2002**
Test Completed:	**3 January 2003**
Test Engineer:	**Dave Smith**
Date of Report:	**18 November 2003**
Report:	

Written by:	**Claire Arber**	**Checked by:**	**Dave Smith**
Signature:	C. Arber	**Signature:**	D. A. Smith
Date:	**18 Novmber 2003**	**Date:**	**18 November 2003**

Test Standards Applied

CFR 47 : 2002	***Code of Federal Regulations: Pt 15 Subpart C - Radio Frequency Devices - Intentional Radiators***	**PASS**

Emissions Test Results Summary

CFR 47 : 2002 **PASS**

Test	Port	Method	Limit	PASS/FAIL	*Notes*
Conducted Emissions	ac power	ANSI C63.4:1992	CISPR22(B)	PASS	
Radiated Emissions		ANSI C63.4:1992	FCC(C)	PASS	

Contents

1 EUT Details

1.1 General

The EUT was a magnetic tag detector. The EUT transmits an unmodulated 132kHz signal. When a tag is located near the EUT it detects the 132kHz signal and transmits a code to the EUT on a 66kHz carrier.

Details of the EUT and associated peripherals used during the tests are listed below. Figure 1 shows the interconnections between the EUT and peripherals.

Item	Manufacturer	Model	Description	Serial No:	Notes
1	Bewator	HD500-2	EUT 1		
2	Bewator	SP500	EUT 2		
3	Bewator	PM500	EUT 3		
	Peripheral equipment				
4	Bewator		Tag		
5	BARTEC	A7-2-176-1902	AC/DC external PSU		
6	Bewator	4101	Control box		

1.2 Modifications to EUT and Peripherals

Details of any modifications that were required to achieve compliance are listed below. The modification numbers are referred to in the results sections as appropriate.

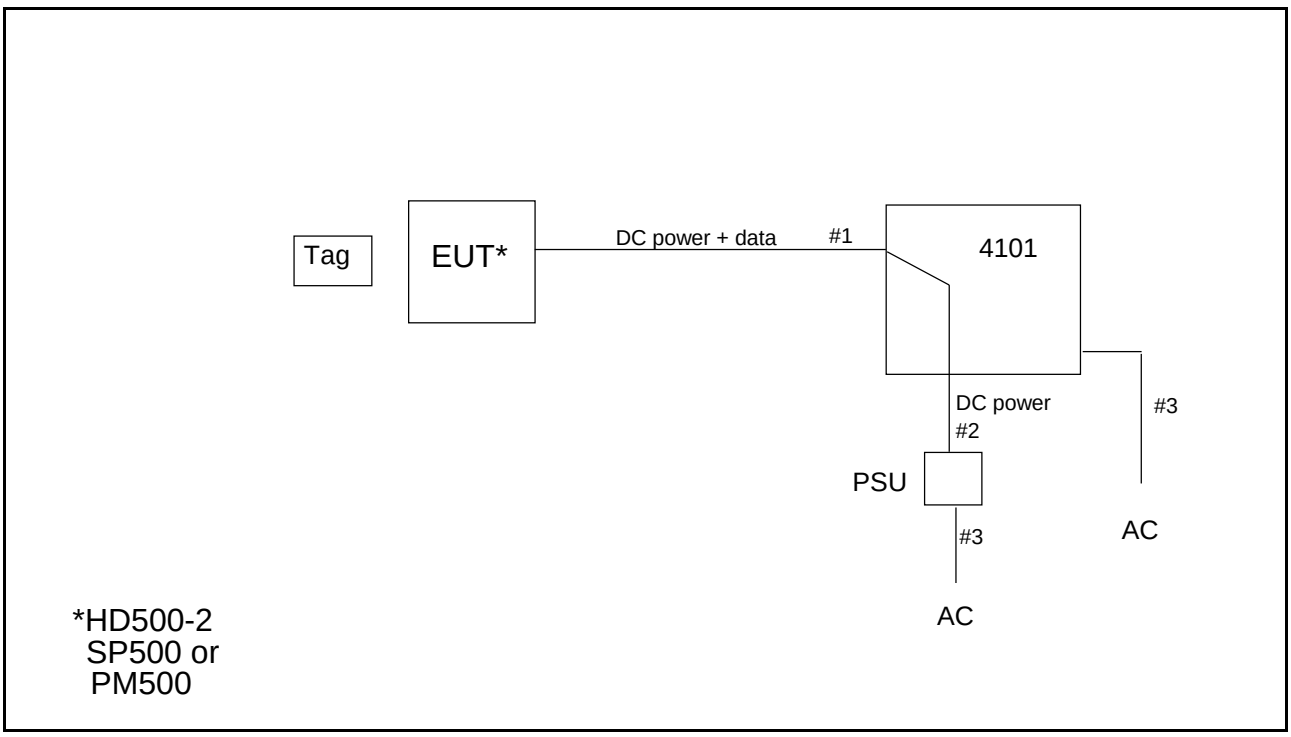
Mod No:	Details	Implemented for
0	Original unit.	

1.3 EUT Operating Modes

The EUT was tested in the following operating mode or modes. Generally, operating modes are chosen that will exercise the functions of the EUT as fully as possible and in a manner likely to produce maximum emission levels or susceptibility. Individual test result sheets reference the operating mode of the EUT.

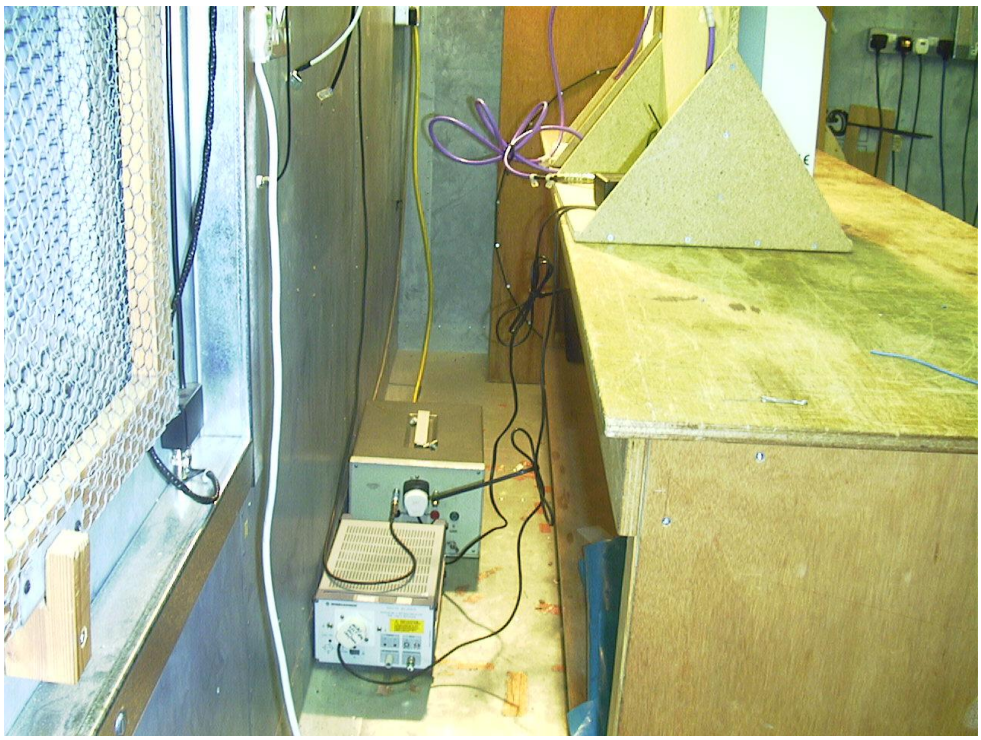
Operating Mode	Details
1	**Tag near EUT and continuously detected by EUT.**

Figure 1 General Arrangement of EUT and Peripherals



#1 DC power and signal cable - foil screen - screen only connected at controller end.
#2 Unscreened DC power cable (integral to PSU).
#3 Unscreened AC power cable.

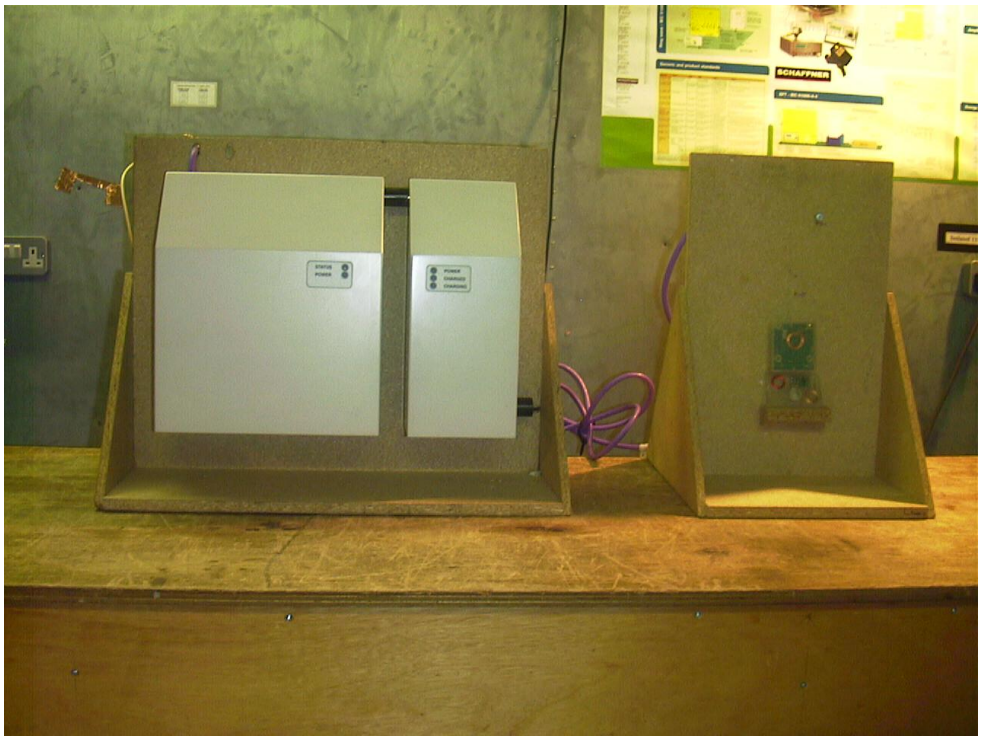
Photograph 1 HD500-2 - Conducted Emissions - Front



Photograph 2 HD500-2 - Conducted Emissions - Back

Photograph 3 SP500 - Conducted Emissions - Front

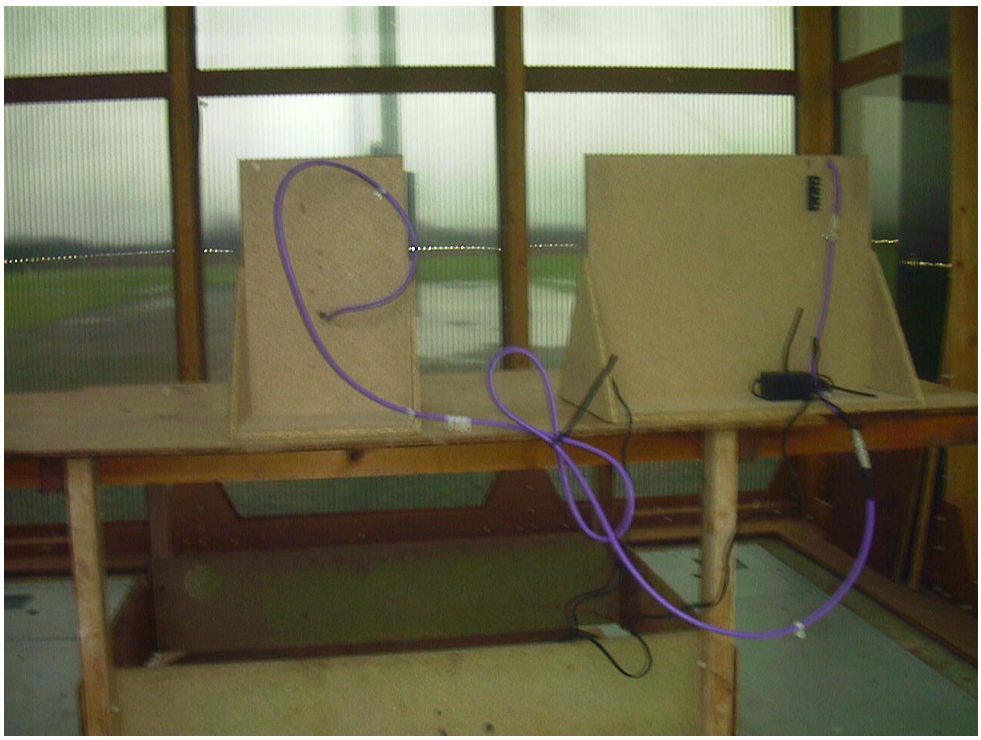
Photograph 4 SP500 - Conducted Emissions - Back



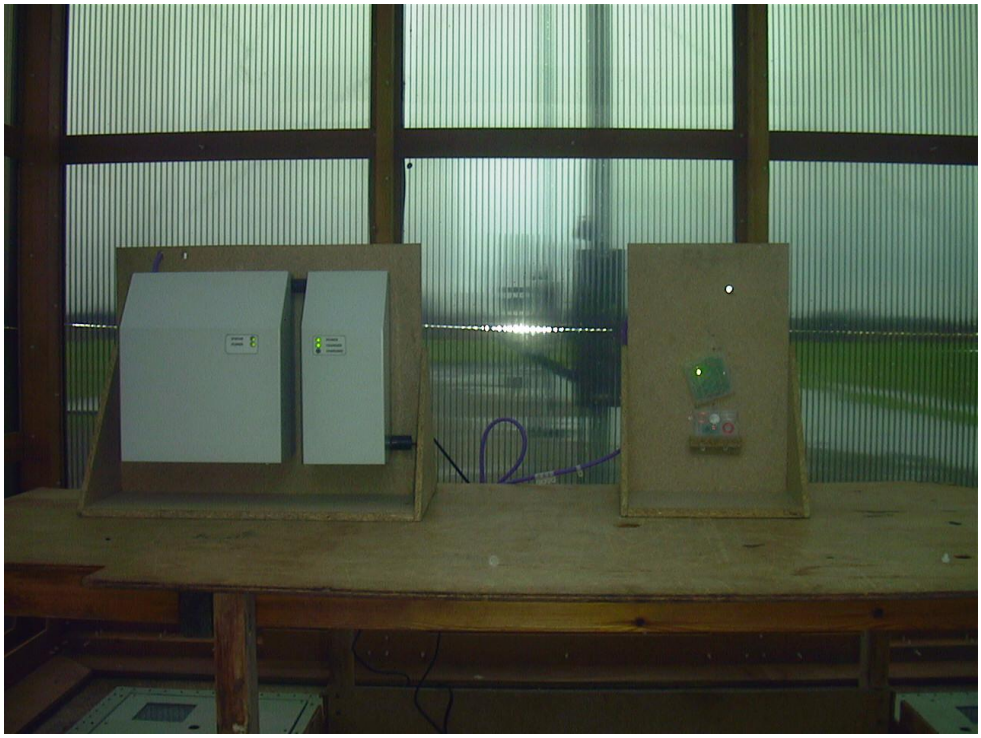
Photograph 5 PM500 - Conducted Emissions - Front

Photograph 6 PM500 - Conducted Emissions - Back

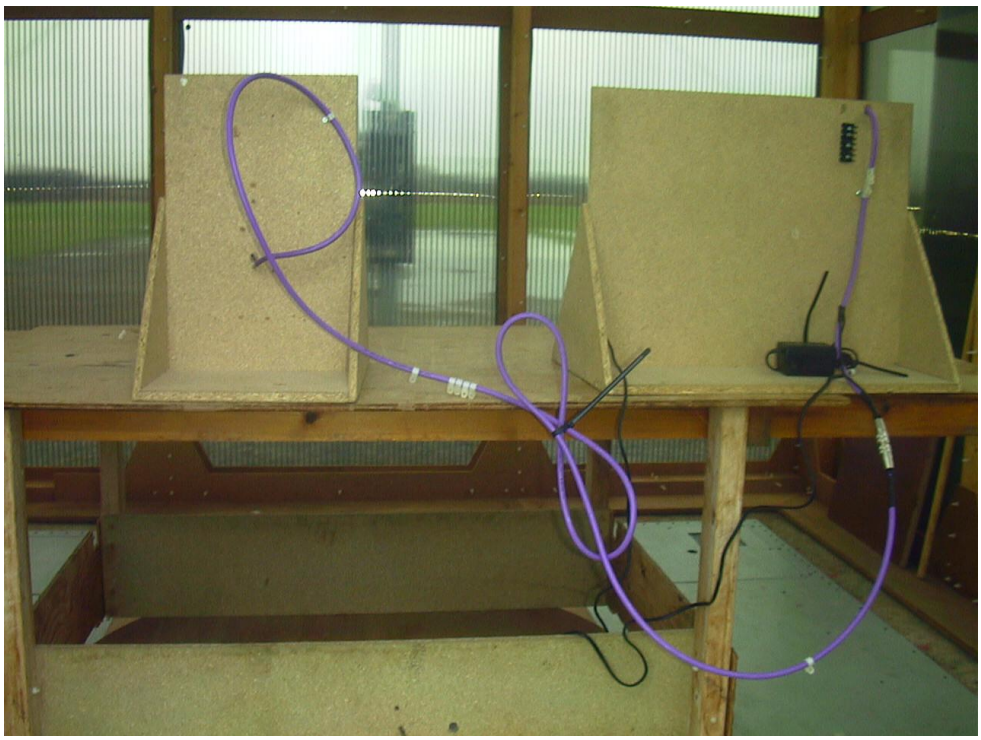
Photograph 7 HD500-2 - Radiated Emissions - Front



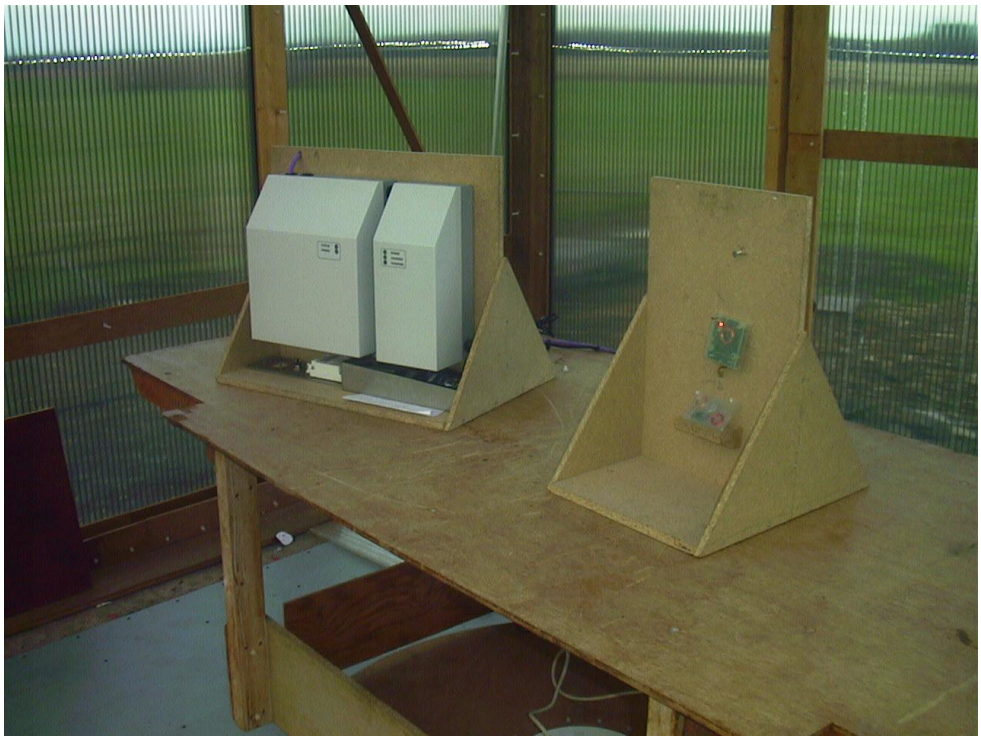
Photograph 8 HD500-2 - Radiated Emissions - Back



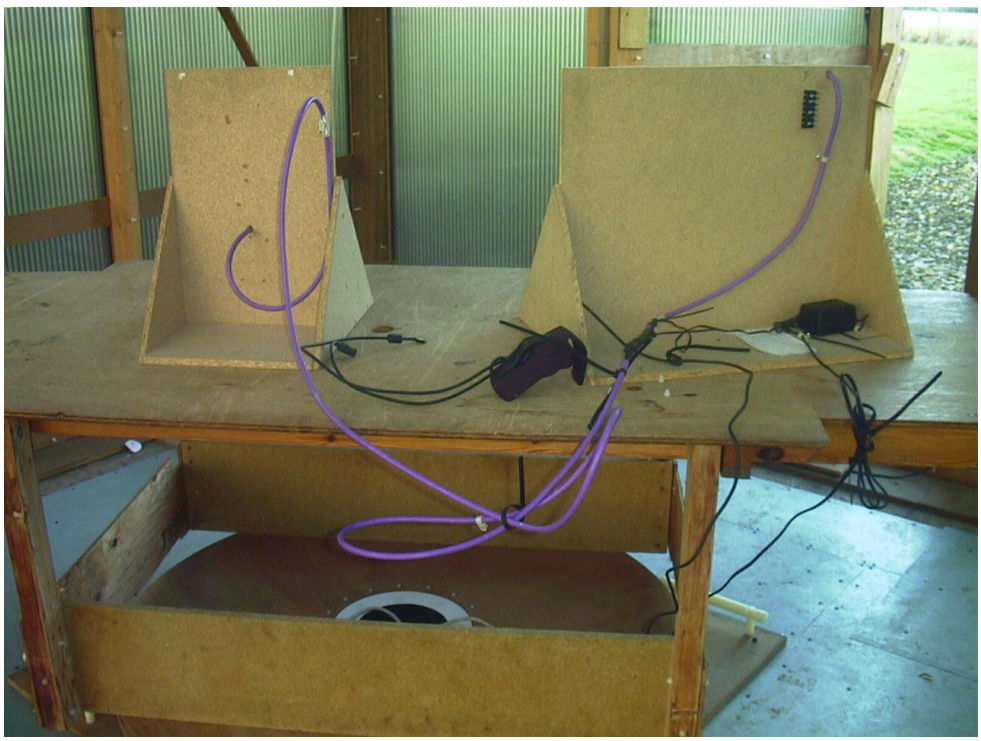
Photograph 9 SP500 - Radiated Emissions - Front



Photograph 10 SP500 - Radiated Emissions - Back



Photograph 11 PM500 - Radiated Emissions - Front



Photograph 12 PM500 - Radiated Emissions - Back

2 Test Equipment

The test equipment used during the tests was one or more of the items listed below. Individual test result sheets indicate which items were used.

Ref No:	Manufacturer	Model	Description	Serial Number	Cal Date
R1	Chase	LHR7000	RF Receiver (10kHz-30MHz)	1056	15/01/02
R4	Rohde and Schwarz	ESVS10	RF Receiver (20MHz-1GHz)	843744/00	16/01/02
R5 R5B	Hewlett Packard Hewlett Packard	HP 8595E HP87405A	Spectrum Analyser Pre-amp	3412A00701 3207A00322	27/11/02
L1	EMCO	3825/2	LISN	1358	06/10/02
L2	Rohde and Schwarz	ESH3-Z5	LISN	843862/009	06/10/02
A4	Chase	CBL6112	Bilog Antenna (30MHz-2GHz)	2027	23/07/02
A5	Chase	CBL111A	Bilog Antenna (30MHz-1GHz)	1760	23/07/02
A9	EMCO	6502	Act Loop Antenna (9kHz-30MHz)	2139	25/03/02

3 Test Methods

3.1 Conducted Emissions - ac power

This section describes the general method of performing this test. The specific method used and any deviations from this general method are listed in the appropriate results section.

Bench top EUTs and peripheral equipment are normally placed on a 0.8m high non-conducting bench, positioned 0.4m from one of the metallic walls of a screened room. Floor standing EUTs are normally placed 0.1m above the metallic floor of the screened room. Mains leads are bundled so as not to exceed 1m.

The EUT is powered using a 50ohm/50uH Line Impedance Stabilisation Network (LISN). Peripherals are powered using a second a 50ohm/50uH LISN. These LISNs are bonded to the screened room floor.

With the correct supply voltage applied to the EUT scans are performed on both the live and neutral line outputs of the LISN using quasi-peak detection over the specified frequency range. The results of these scans are shown in the plots section at the end of the report.

Significant emissions identified by the scans are measured and the results tabulated. The table of results is shown in the conducted emissions results section.

3.2 Radiated Emissions <30MHz

This section describes the general method of performing this test. The specific method used and any deviations from this general method are listed in the appropriate results section.

Initial scans are performed in a semi-anechoic screened room at a distance of 3m. Scans are performed over the frequency range specified in the test standard using an appropriate loop antenna. During these scans the EUT and peripherals are rotated through 360°. Bench top EUTs are placed on a non-conducting bench at a height of 0.8m above the ground plane. Floor standing EUTs are placed 0.1m above the ground plane. The results of the scans are shown in the plots included at the end of the report.Significant emissions identified by the scans are measured on an open area test site at the appropriate test distance using a CISPR16 quasi-peak receiver. The open area test site does not have a ground plane. Maximised readings are obtained by rotating the EUT through 360°. The receiving antenna remains at a fixed height of 1m. Measurements are made with the receiving antenna both coaxial and perpendicular to the EUT.

3.3 Radiated Emissions >30MHz

This section describes the general method of performing this test. The specific method used and any deviations from this general method are listed in the appropriate results section.

Initial scans are performed in a semi-anechoic screened room at a distance of 3m. Scans are performed over the frequency range specified in the test standard with the antenna both horizontally and vertically polarised. During these scans the EUT and peripherals are rotated through 360°. Bench top EUTs are placed on a non-conducting bench at a height of 0.8m above the ground plane. Floor standing EUTs are placed 0.1m above the ground plane. The results of the scans are shown in the plots included at the end of the report.

Significant emissions identified by the scans are measured on an open area test site at the appropriate test distance using a CISPR16 quasi-peak receiver. Maximised readings are obtained by rotating the EUT through 360° and adjusting the height of the antenna from 1m to 4m. Measurements are made with the antenna both horizontally and vertically polarised and the results tabulated.

4 Test Results

The following sections contain tabulated test results. Plots of various scans are included at the back of this section.

4.1 AC Power Conducted Emission Results

Test Equipment:	Factor Set 1:	EMLISN	10DB_PAD	RG214	10 m cable

Conducted Emissions

Company:	Bewator Group Ltd	*Product:*	HD500-2, PM500 and SP500
Date:	17 December 2002	*Test Eng:*	Richard Martin
Ports:	ac power		
Test:	ANSI C63.4:1992 using limits of		FCC(C)
Ports:			
Test:			

Test	Op Mode	Mod State	Line (L/N)	Fact Set	Freq. MHz	Det qp/ av	Rec. Level dBuV	Corr'n Factor dB	Total Level dBuV	Limit CISPR22(B) dBuV	Margin CISPR22(B) dB	Limit	Margin	Notes
Results					Minimum Margin PASS/FAIL					> 10dB	dB			

Notes	Comments and Observations
	Results of scans shown in plot 1 to plot 6. All conducted emissions using the quasipeak detector were more than 10dB below the average detector limit.

4.2 Radiated Emissions Results - HD500-2 <30MHz FCC

Test Equipment:	Factor Set 1:	LOOP_HI		RG214	25 m cable
	Factor Set 2:	LOOP_HI	DBV/MTOA/M	RG214	25 m cable
	Factor Set : 3	HFBILOG		RG214	25 m cable

Radiated Emissions

Company:	Bewator Group Ltd	*Product:*	HD500-2
Date:	18 December 2002	*Test Eng:*	Dave Smith
Ports:			
Test:	ANSI C63.4:1992 using limits of		FCC(C)
Ports:			
Test:			

Test	Op Mode	Mod State	Dist m	Fact Set	Freq. MHz	Ant Pol	Rec. Level dBuV	Corr'n Factor dB/m	Total Level dBuV/m	Limit FCC_C dBuV/m	Margin FCC_C dB	Limit	Margin	Notes
	1	0	10	1	0.132	B	34.2	10.7	44.9	84.3	39.4			#1
	1	0	10	1	0.132	A	30.0	10.7	40.7	84.3	43.6			#1
	1	0	10	1	18.479	B	14.6	11.1	25.7	39.1	13.4			#2
	1	0	10	1	18.479	A	7.9	11.1	19.0	39.1	20.1			#2
	1	0	10	1	24.022	B	18.3	11.0	29.3	39.1	9.8			#2
	1	0	10	1	24.022	A	13.4	11.0	24.4	39.1	14.7			#2
	1	0	10	1	25.868	B	11.3	10.8	22.1	39.1	17.0			#2
	1	0	10	1	25.868	A	6.5	10.8	17.3	39.1	21.8			#2
Results							Minimum Margin			9.8 dB				
							PASS/FAIL			PASS				

Notes	Comments and Observations
	Results of screened room scans shown in plot 7 & plot 8.
#1	Limit adjusted for test distance of 10m using 40dB/decade as per section 15.31(f).
#2	Limit adjusted for test distance of 10m using 20dB/decade. Section 15.31(f) allows 40dB/decade but a more conservative figure was used.
	Polarisation A: plane of loop 90° to EUT; Polarisation B: plane of loop facing EUT.
	A quasi-peak detector was used for all measurements. The standard allows an average detector @132kHz. However this should be measured over a 100msec period and as the EUT with a tag present has a 50% duty cycle over a 500msec period and the 132kHz signal is unmodulated, a quasi-peak, average or peak detector over a 100msec period should give the same reading.

4.3 Radiated Emissions Results - SP500 <30MHz FCC

Test Equipment:	Factor Set 1:	LOOP_HI		RG214	25 m cable
	Factor Set 2:	LOOP_HI	DBV/MTOA/M	RG214	25 m cable
	Factor Set : 3	HFBILOG		RG214	25 m cable

Radiated Emissions

Company:	Bewator Group Ltd	*Product:*	SP500
Date:	18 December 2002	*Test Eng:*	Dave Smith
Ports:			
Test:	ANSI C63.4:1992 using limits of		FCC(C)
Ports:			
Test:			

Test	Op Mode	Mod State	Dist m	Fact Set	Freq. MHz	Ant Pol	Rec. Level dBuV	Corr'n Factor dB/m	Total Level dBuV/m	Limit FCC_C dBuV/m	Margin FCC_C dB	Limit	Margin	Notes
	1	0	10	1	0.132	A	30.0	10.7	40.7	84.3	43.6			#1
	1	0	10	1	0.132	B	34.2	10.7	44.9	84.3	39.4			#1
	1	0	10	1	18.485	A	9.0	11.1	20.1	39.1	19.0			#2
	1	0	10	1	18.485	B	10.2	11.1	21.3	39.1	17.8			#2
	1	0	10	1	24.022	A	4.5	11.0	15.5	39.1	23.6			#2
	1	0	10	1	24.022	B	2.2	11.0	13.2	39.1	25.9			#2
	1	0	10	1	25.868	A	16.9	10.8	27.7	39.1	11.4			#2
	1	0	10	1	25.868	B	14.3	10.8	25.1	39.1	14.0			#2
Results							Minimum Margin			11.4 dB				
							PASS/FAIL			PASS				

Notes	Comments and Observations
	Results of screened room scans shown in plot 11 & plot 12.
#1	Limit adjusted for test distance of 10m using 40dB/decade as per section 15.31(f).
#2	Limit adjusted for test distance of 10m using 20dB/decade. Section 15.31(f) allows 40dB/decade but a more conservative figure was used.
	Polarisation A: plane of loop 90° to EUT; Polarisation B: plane of loop facing EUT.
	A quasi-peak detector was used for all measurements. The standard allows an average detector @132kHz. However this should be measured over a 100msec period and as the EUT with a tag present has a 50% duty cycle over a 500msec period and the 132kHz signal is unmodulated, a quasi-peak, average or peak detector over a 100msec period should give the same reading.

4.4 Radiated Emissions Results - PM500 <30MHz FCC

Test Equipment:	Factor Set 1:	LOOP_HI		RG214	25 m cable
	Factor Set 2:	LOOP_HI	DBV/MTOA/M	RG214	25 m cable
	Factor Set : 3	HFBILOG		RG214	25 m cable

Radiated Emissions

Company:	Bewator Group Ltd	*Product:*	PM500
Date:	18 December 2002	*Test Eng:*	Dave Smith
Ports:			
Test:	ANSI C63.4:1992 using limits of		FCC(C)
Ports:			
Test:			

Test	Op Mode	Mod State	Dist m	Fact Set	Freq. MHz	Ant Pol	Rec. Level dBuV	Corr'n Factor dB/m	Total Level dBuV/m	Limit FCC_C dBuV/m	Margin FCC_C dB	Limit	Margin	Notes
	1	0	10	1	0.132	B	28.1	10.7	38.8	84.3	45.5			#1
	1	0	10	1	0.132	A	32.0	10.7	42.7	84.3	41.6			#1
	1	0	10	1	18.479	B	10.3	11.1	21.4	39.1	17.7			#2
	1	0	10	1	18.479	A	10.1	11.1	21.2	39.1	17.9			#2
	1	0	10	1	24.022	B	7.2	11.0	18.2	39.1	20.9			#2
	1	0	10	1	24.022	A	2.2	11.0	13.2	39.1	25.9			#2
	1	0	10	1	25.870	B	18.5	10.8	29.3	39.1	9.8			#2
	1	0	10	1	25.870	A	14.5	10.8	25.3	39.1	13.8			#2
Results							Minimum Margin			9.8 dB				
							PASS/FAIL			PASS				

Notes	Comments and Observations
	Results of screened room scans shown in plot 15 & plot 16.
#1	Limit adjusted for test distance of 10m using 40dB/decade as per section 15.31(f).
#2	Limit adjusted for test distance of 10m using 20dB/decade. Section 15.31(f) allows 40dB/decade but a more conservative figure was used.
	Polarisation A: plane of loop 90° to EUT; Polarisation B: plane of loop facing EUT.
	A quasi-peak detector was used for all measurements. The standard allows an average detector @132kHz. However this should be measured over a 100msec period and as the EUT with a tag present has a 50% duty cycle over a 500msec period and the 132kHz signal is unmodulated, a quasi-peak, average or peak detector over a 100msec period should give the same reading.

4.5 Radiated Emissions Results - HD500-2 - >30MHz FCC

Test Equipment:	Factor Set 1:	LOOP_HI		RG214	25 m cable
	Factor Set 2:	LOOP_HI	DBV/MTOA/M	RG214	25 m cable
	Factor Set : 3	HFBILOG		RG214	25 m cable

Radiated Emissions

Company:	Bewator Group Ltd	*Product:*	HD500-2
Date:	17 December 2002	*Test Eng:*	Derek Barlow
Ports:			
Test:	ANSI C63.4:1992 using limits of		FCC(C)
Ports:			
Test:			

Test	Op Mode	Mod State	Dist m	Fact Set	Freq. MHz	Ant Pol	Rec. Level dBuV	Corr'n Factor dB/m	Total Level dBuV/m	Limit FCC_C dBuV/m	Margin FCC_C dB	Limit	Margin	Notes
	1	0	10	3	31.550	V	-4.0	18.7	14.7	29.5	14.8			
	1	0	10	3	40.750	V	-3.0	13.5	10.5	29.5	19.0			
	1	0	10	3	55.500	V	0.5	7.8	8.3	29.5	21.2			
	1	0	10	3	62.840	V	-2.0	7.7	5.7	29.5	23.9			
	1	0	10	3	70.230	V	0.3	7.7	8.0	29.5	21.5			
	1	0	10	3	77.750	V	-3.0	8.4	5.4	29.5	24.2			
	1	0	10	3	251.340	V	6.2	15.5	21.7	35.5	13.8			
	1	0	10	3	369.620	H	10.4	18.9	29.3	35.5	6.3			
Results							Minimum Margin			6.3 dB				
							PASS/FAIL			PASS				

Notes	Comments and Observations
	Results of screened room scans shown in plot 9 & plot 10.

4.6 Radiated Emissions Results - SP500 - >30MHz FCC

Test Equipment:	Factor Set 1:	LOOP_HI		RG214	25 m cable
	Factor Set 2:	LOOP_HI	DBV/MTOA/M	RG214	25 m cable
	Factor Set : 3	HFBILOG		RG214	25 m cable

Radiated Emissions

Company:	Bewator Group Ltd	*Product:*	SP500
Date:	17 December 2002	*Test Eng:*	Derek Barlow
Ports:			
Test:	ANSI C63.4:1992 using limits of		FCC(C)
Ports:			
Test:			

Test	Op Mode	Mod State	Dist m	Fact Set	Freq. MHz	Ant Pol	Rec. Level dBuV	Corr'n Factor dB/m	Total Level dBuV/m	Limit FCC_C dBuV/m	Margin FCC_C dB	Limit	Margin	Notes
	1	0	10	3	31.550	V	1.0	18.7	19.7	29.5	9.8			
	1	0	10	3	40.750	V	-1.5	13.5	12.0	29.5	17.5			
	1	0	10	3	55.500	V	1.4	7.8	9.2	29.5	20.3			
	1	0	10	3	62.840	V	0.1	7.7	7.8	29.5	21.8			
	1	0	10	3	70.230	V	-1.2	7.7	6.5	29.5	23.0			
	1	0	10	3	77.750	V	-3.0	8.4	5.4	29.5	24.2			
	1	0	10	3	251.400	V	8.8	15.6	24.4	35.5	11.2			
	1	0	10	3	369.620	V	13.0	18.9	31.9	35.5	3.7			
Results							Minimum Margin			3.7	dB			
							PASS/FAIL			PASS				

Notes	Comments and Observations
	Results of screened room scans shown in plot 13 & plot 14.

4.7 Radiated Emissions Results - PM500 - >30MHz FCC

Test Equipment:	Factor Set 1:	LOOP_HI		RG214	25 m cable
	Factor Set 2:	LOOP_HI	DBV/MTOA/M	RG214	25 m cable
	Factor Set : 3	HFBILOG		RG214	25 m cable

Radiated Emissions

Company:	Bewator Group Ltd	*Product:*	PM500
Date:	17 December 2002	*Test Eng:*	Derek Barlow
Ports:			
Test:	ANSI C63.4:1992 using limits of		FCC(C)
Ports:			
Test:			

Test	Op Mode	Mod State	Dist m	Fact Set	Freq. MHz	Ant Pol	Rec. Level dBuV	Corr'n Factor dB/m	Total Level dBuV/m	Limit FCC_C dBuV/m	Margin FCC_C dB	Limit	Margin	Notes
	1	0	10	3	31.550	V	2.0	18.7	20.7	29.5	8.8			
	1	0	10	3	40.750	V	-1.2	13.5	12.3	29.5	17.2			
	1	0	10	3	55.500	V	0.5	7.8	8.3	29.5	21.2			
	1	0	10	3	62.840	V	-1.0	7.7	6.7	29.5	22.9			
	1	0	10	3	70.230	V	1.2	7.7	8.9	29.5	20.6			
	1	0	10	3	77.750	V	-3.0	8.4	5.4	29.5	24.2			
	1	0	10	3	251.400	V	6.2	15.6	21.8	35.5	13.8			
	1	0	10	3	369.620	H	5.0	18.9	23.9	35.5	11.7			
Results								Minimum Margin		8.8	dB			
								PASS/FAIL		PASS				

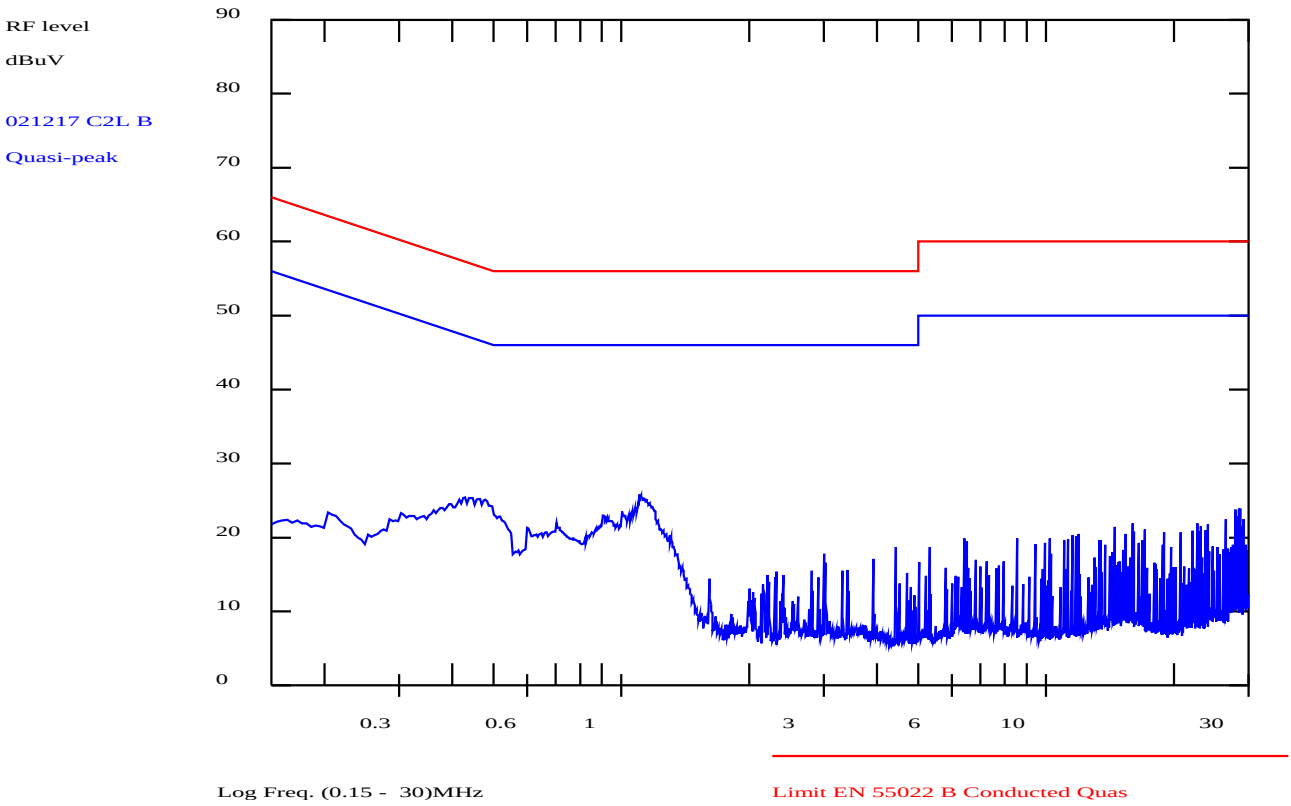
Notes	Comments and Observations
	Results of screened room scans shown in plot 17 & plot 18.

Chase EMS 6.21

Notes

Analyse 021217 C2L Bewator HD 500-2 -115V

Test: EN55022(B),EN55011(B),EN55014&13 Main Cond(QP Det)



PLOT 1 Conducted Emissions - HD500-2 115V Live

Company:	Bewator Ltd.	Product:	HD 500-2
Date:	17 Dec 02	Test Engineer:	Richard Martin
Test:	FCC	Limit:	FCC (C) QP + AV

Notes:

115V

Line:	Live	Attenuator:	10dB PAD	Operating Mode:	1
Detector:	QuasiPeak			Mod. State:	0
LISN:	EMCO	Filename:	C2C175CF.plt		

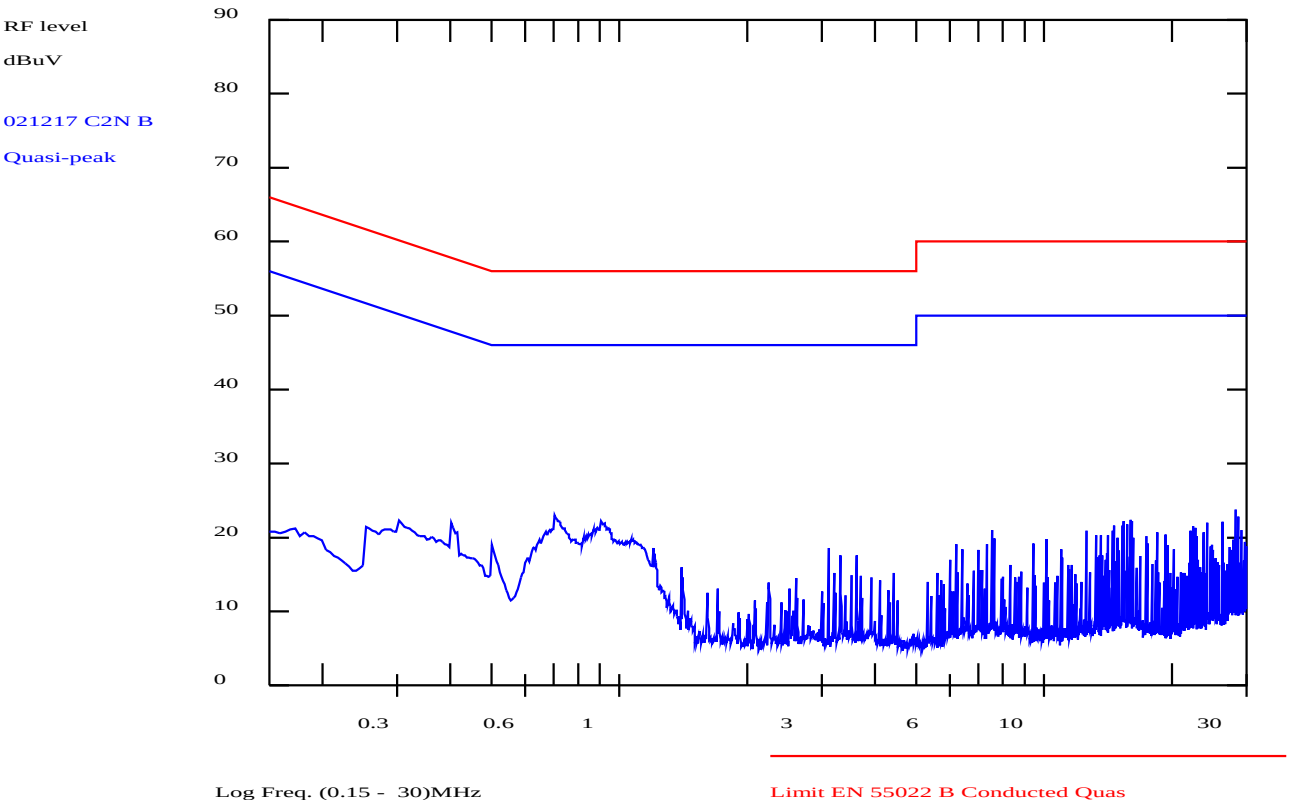
Frequency List (MHz)

Chase EMS 6.21

Notes

Analyse 021217 C2N Bewator HD 500-2 - 115V

Test: EN55022(B),EN55011(B),EN55014&13 Main Cond(QP Det)



PLOT 2 Conducted Emissions - HD500-2 115V Neutral

Company:	Bewator Ltd.	Product:	HD 500-2
Date:	17 Dec 02	Test Engineer:	Richard Martin
Test:	FCC	Limit:	FCC (C) QP + AV

Notes:

115V

Line:	Neutral	Attenuator:	10dB PAD	Operating Mode:	1
Detector:	QuasiPeak			Mod. State:	0
LISN:	EMCO	Filename:	C2C175EA.plt		

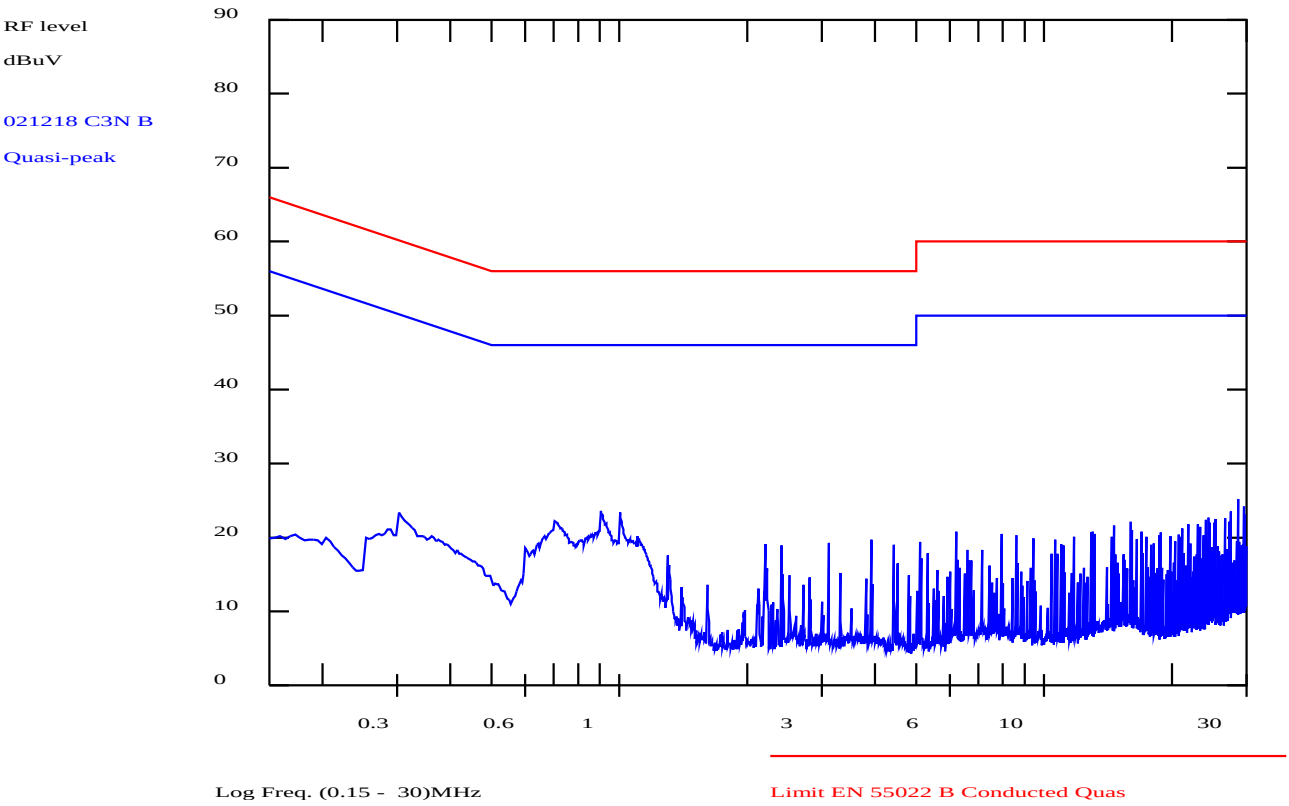
Frequency List (MHz)

Chase EMS 6.21

Notes

Analyse 021218 C3N Bewator HD 500-2 SP500 - 115V

Test: EN55022(B),EN55011(B),EN55014&13 Main Cond(QP Det)



PLOT 3 Conducted Emissions - SP500 115V Neutral

Company:	Bewator Ltd.	Product:	SP500
Date:	17 Dec 02	Test Engineer:	Richard Martin
Test:	FCC	Limit:	FCC (C) QP + AV

Notes:

115V

Line:	Neutral	Attenuator:	10dB PAD	Operating Mode:	1
Detector:	QuasiPeak			Mod. State:	0
LISN:	EMCO	Filename:	C2C17610.plt		

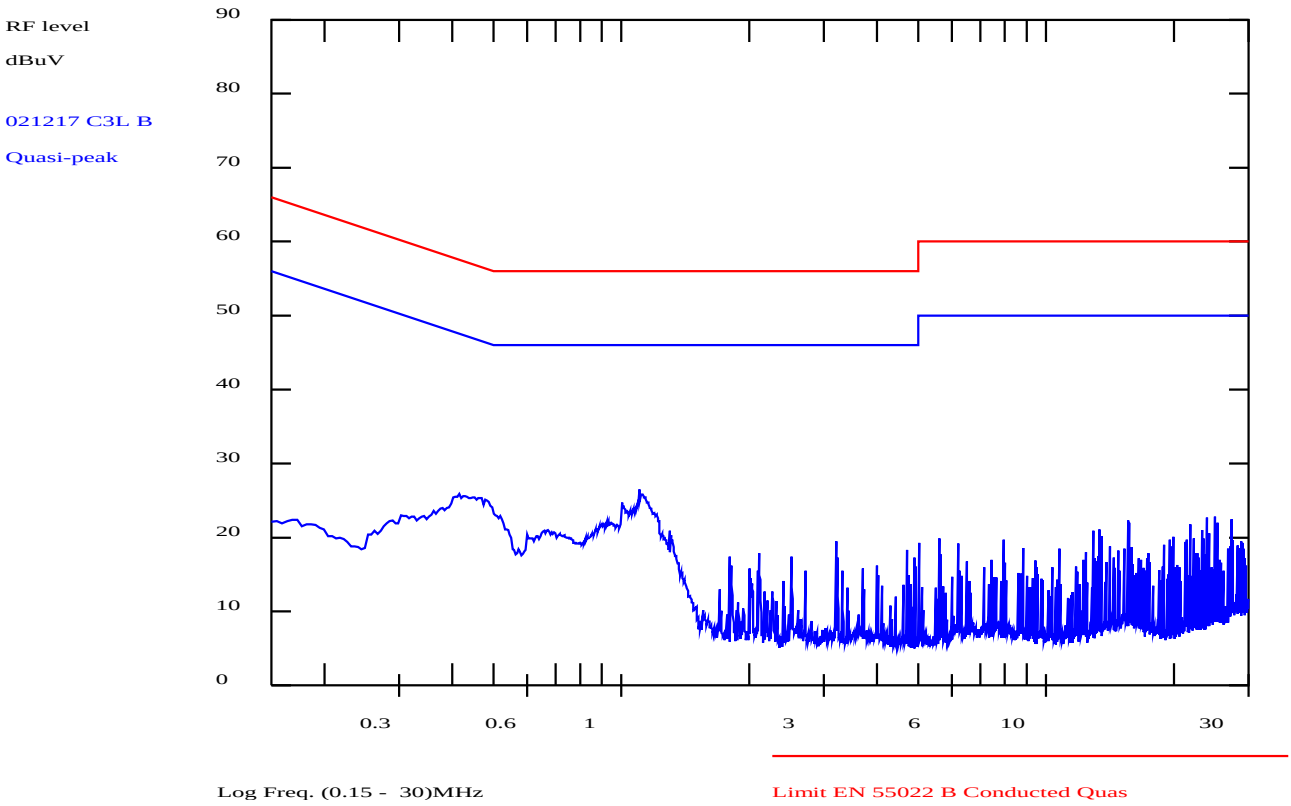
Frequency List (MHz)

Chase EMS 6.21

Notes

Analyse 021217 C3L Bewator HD500-2 SP500 - 115V

Test: EN55022(A),EN55011(A),EN55014&13 Main Cond(QP Det)



PLOT 4 Conducted Emissions - SP500 115V Live

Company:	Bewator Ltd.	Product:	SP500
Date:	17 Dec 02	Test Engineer:	Richard Martin
Test:	FCC	Limit:	FCC (C) QP + AV

Notes:

115V

Line:	Live	Attenuator:	10dB PAD	Operating Mode:	1
Detector:	QuasiPeak			Mod. State:	0
LISN:	EMCO	Filename:	C2C1762B.plt		

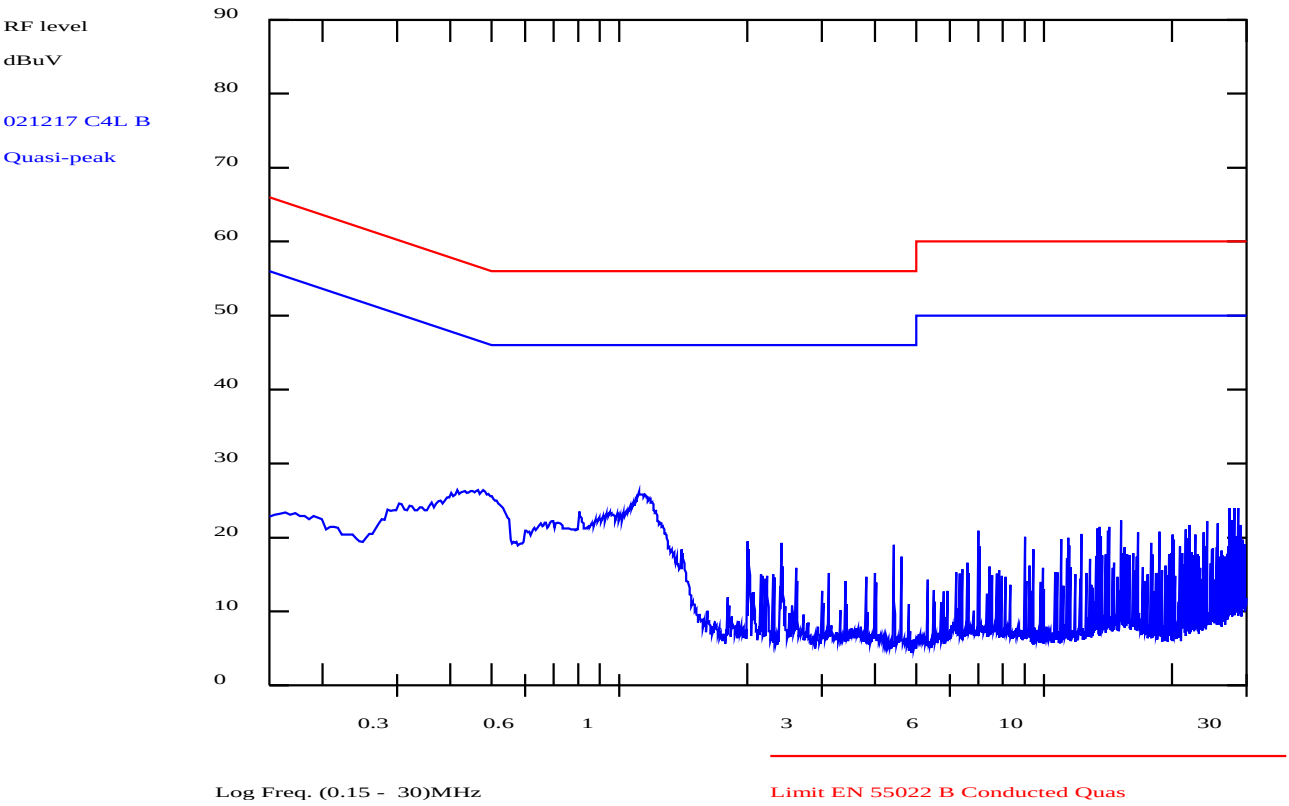
Frequency List (MHz)

Chase EMS 6.21

Notes

Analyse 021217 C4L Bewator HD500-2 PM500 - 115V

Test: EN55022(A),EN55011(A),EN55014&13 Main Cond(QP Det)



PLOT 5 Conducted Emissions - PM500 115V Live

Company:	Bewator Ltd.	Product:	PM500
Date:	17 Dec 02	Test Engineer:	Richard Martin
Test:	FCC	Limit:	FCC (C) QP + AV

Notes:

115V

Line:	Live	Attenuator:	10dB PAD	Operating Mode:	1
Detector:	QuasiPeak			Mod. State:	0
LISN:	EMCO	Filename:	C2C1767F.plt		

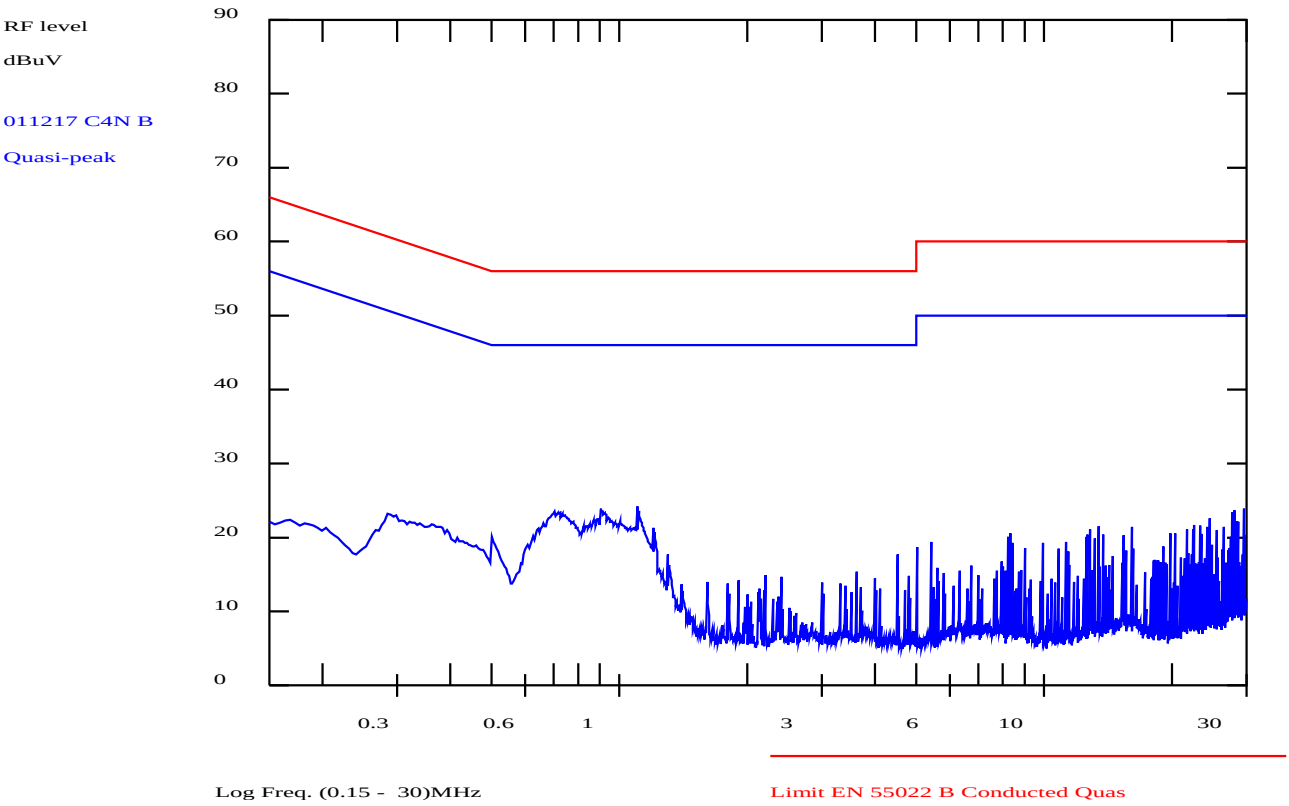
Frequency List (MHz)

Chase EMS 6.21

Notes

Analyse 011217 C4N Bewator HD500-2 PM500 - 115V

Test: EN55022(A),EN55011(A),EN55014&13 Main Cond(QP Det)



PLOT 6 Conducted Emissions - PM500 115V Neutral

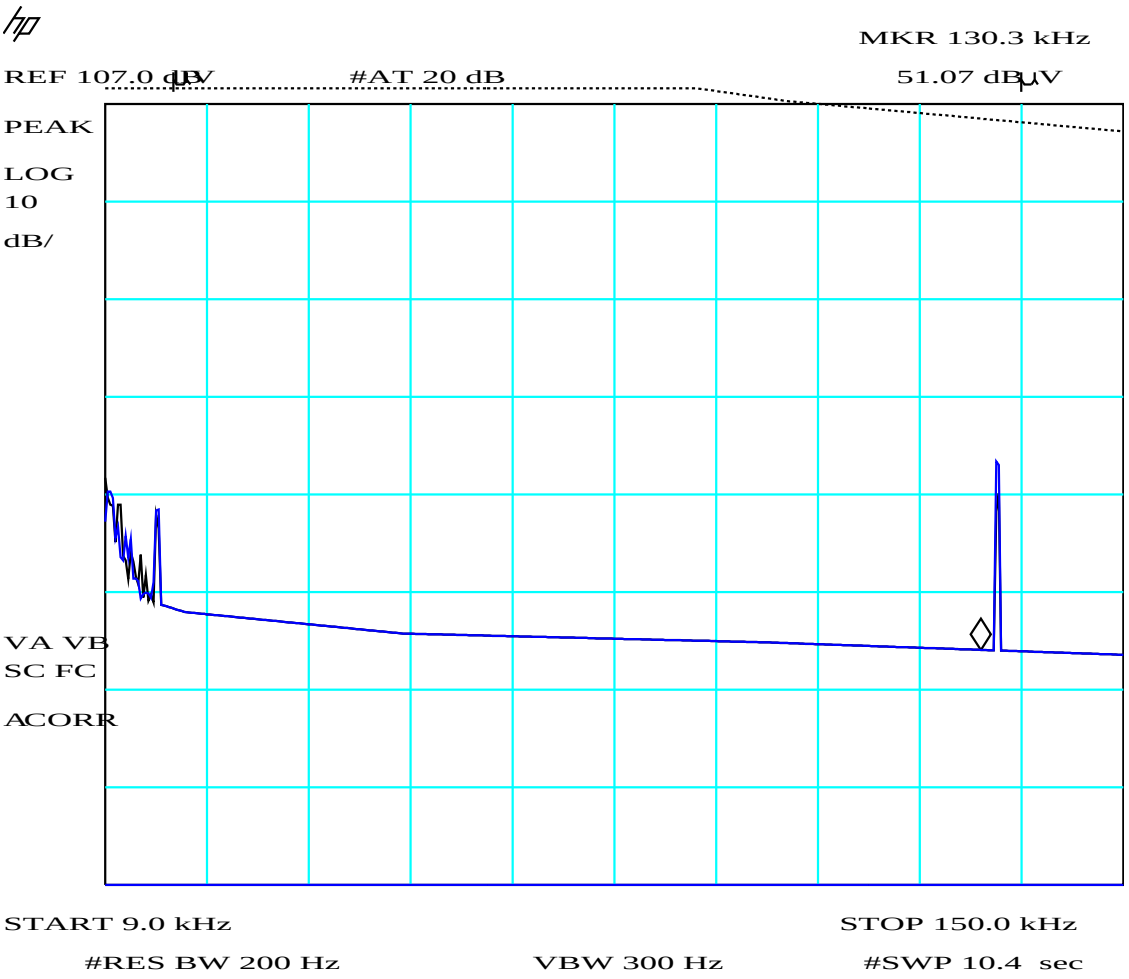
Company:	Bewator Ltd.	Product:	PM500
Date:	17 Dec 02	Test Engineer:	Richard Martin
Test:	FCC	Limit:	FCC (C) QP + AV

Notes:

115V

Line:	Neutral	Attenuator:	10dB PAD	Operating Mode:	1
Detector:	QuasiPeak			Mod. State:	0
LISN:	EMCO	Filename:	C2C17697.plt		

Frequency List (MHz)



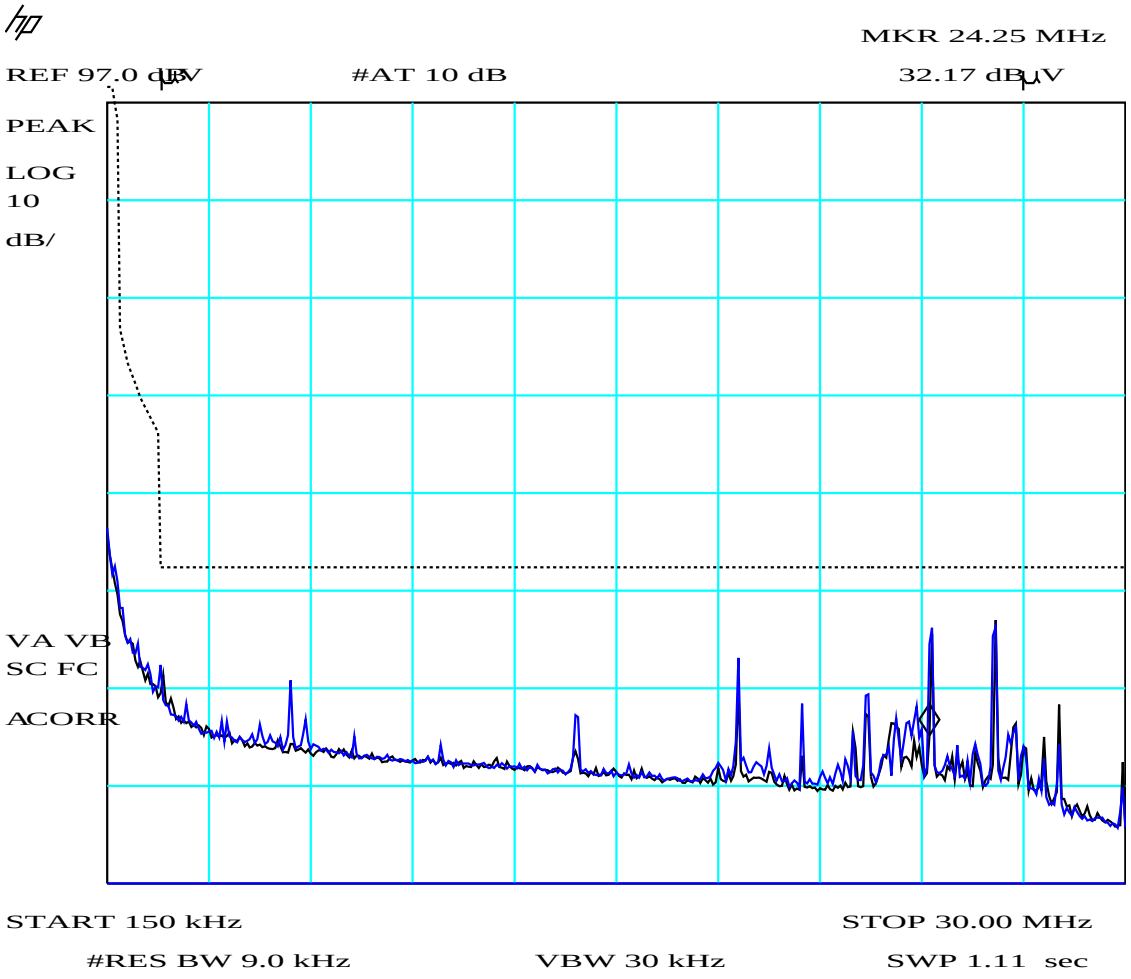
PLOT 7 Radiated Emissions - HD500-2 - 9kHz to 150kHz (FCC Limit)

Company:	Bewator Ltd	Product:	HD500-2
Date:	16 Dec 02	Test Engineer:	Dave Smith
Test:	FCC pt 15	Limit:	FCC C

Notes:
Limit adjusted to 3m distance using factor of 40dB/decade below 1.705MHz and 20dB/decade above 1.705MHz.

Polarisation:	Both	Orientation:	4 sides	Operating Mode:	1
Distance:	3m	Antenna:	Loop	Mod. State:	0
Height:	1m	Filename:	H2C165C5.plt		

Frequency List (MHz)



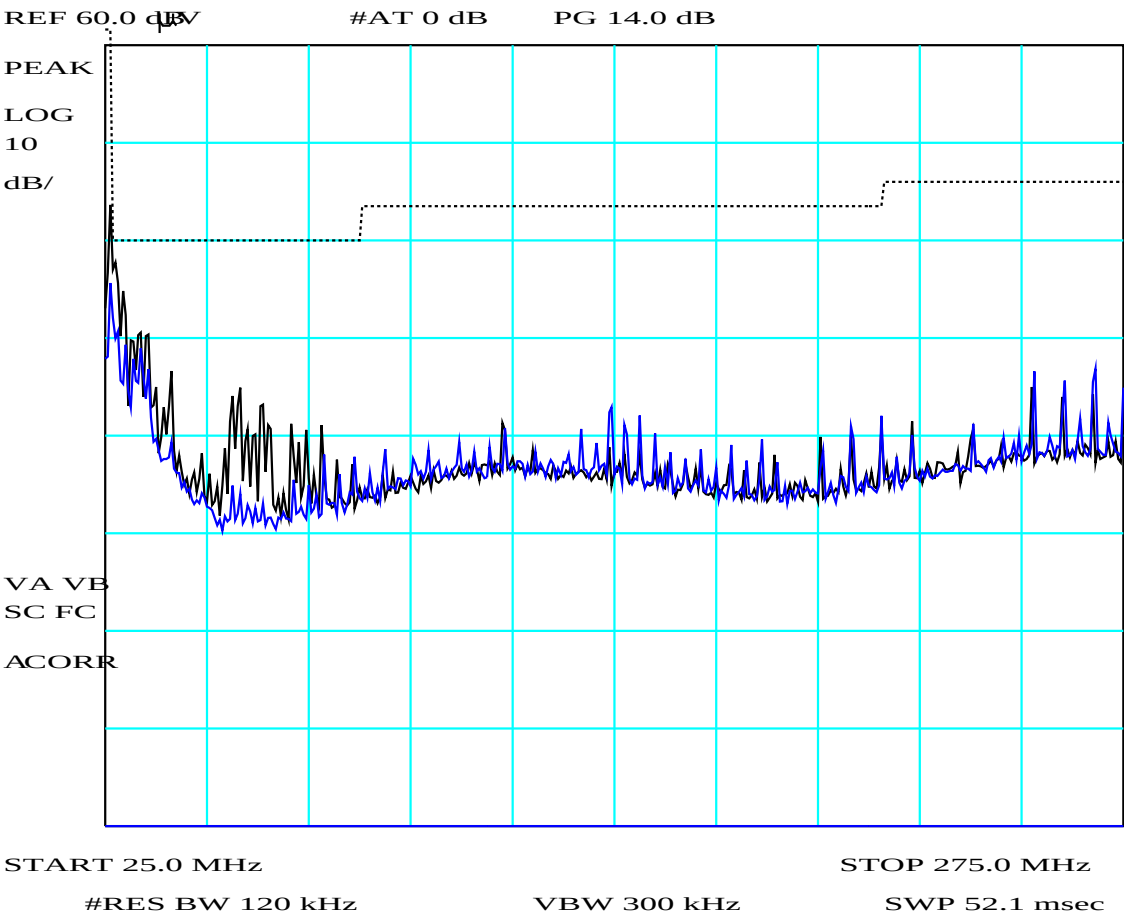
PLOT 8 Radiated Emissions - HD500-2 - 150kHz to 30MHz (FCC Limit)

Company:	Bewator Ltd	Product:	HD500-2
Date:	16 Dec 02	Test Engineer:	Dave Smith
Test:	FCC pt 15	Limit:	FCC C

Notes:
Limit adjusted to 3m distance using factor of 40dB/decade below 1.705MHz and 20dB/decade above 1.705MHz.

Polarisation:	Both	Orientation:	4 sides	Operating Mode:	1
Distance:	3m	Antenna:	Loop	Mod. State:	0
Height:	1m	Filename:	H2C165D9.plt		

Frequency List (MHz)



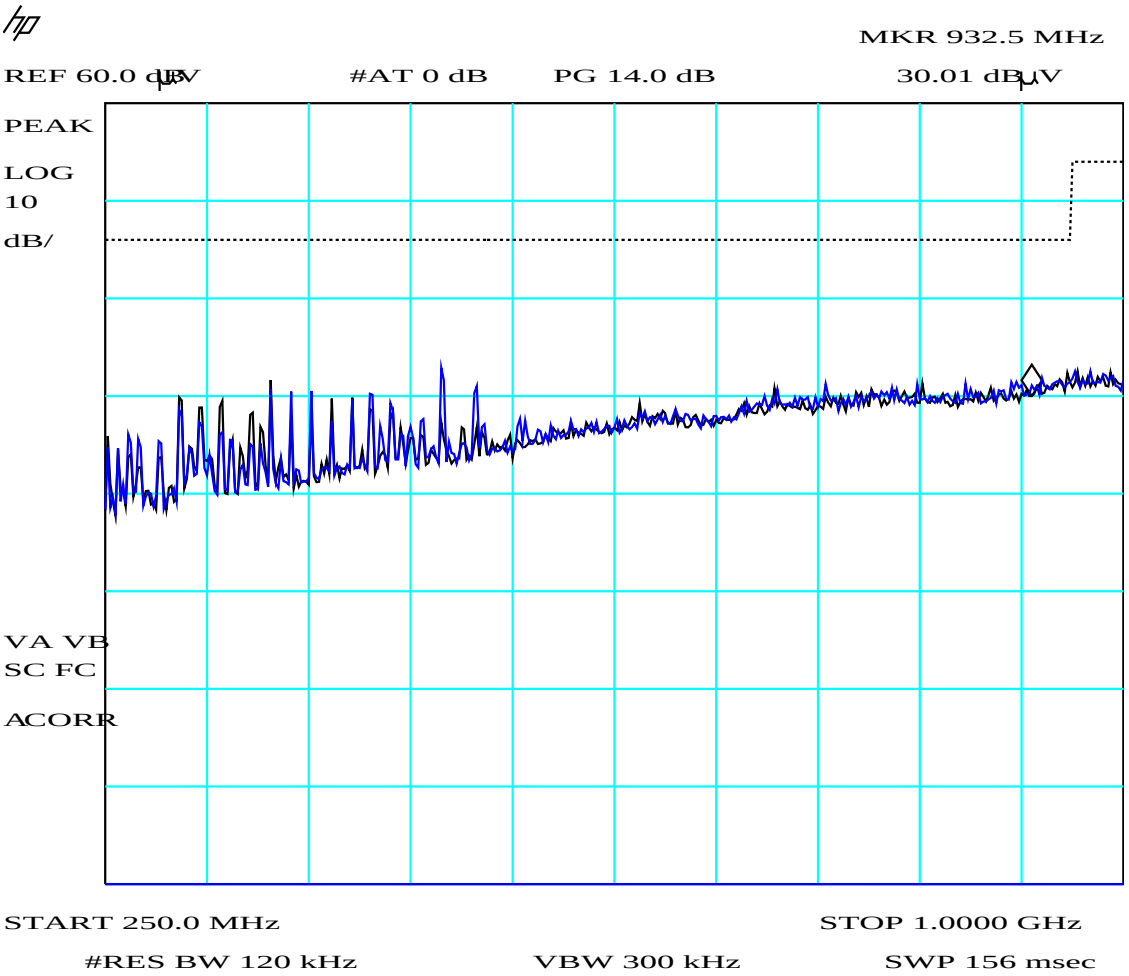
PLOT 9 Radiated Emissions - HD500-2 - 25MHz to 275MHz (FCC Limit)

Company:	Bewator Ltd	Product:	HD500-2
Date:	16 Dec 02	Test Engineer:	Dave Smith
Test:	FCC pt 15	Limit:	FCC C

Notes:

Polarisation:	V + H	Orientation:	0 - 360°	Operating Mode:	1
Distance:	3m	Antenna:	Bilog	Mod. State:	0
Height:	1m	Filename:	H2C164A0.plt		

Frequency List (MHz)



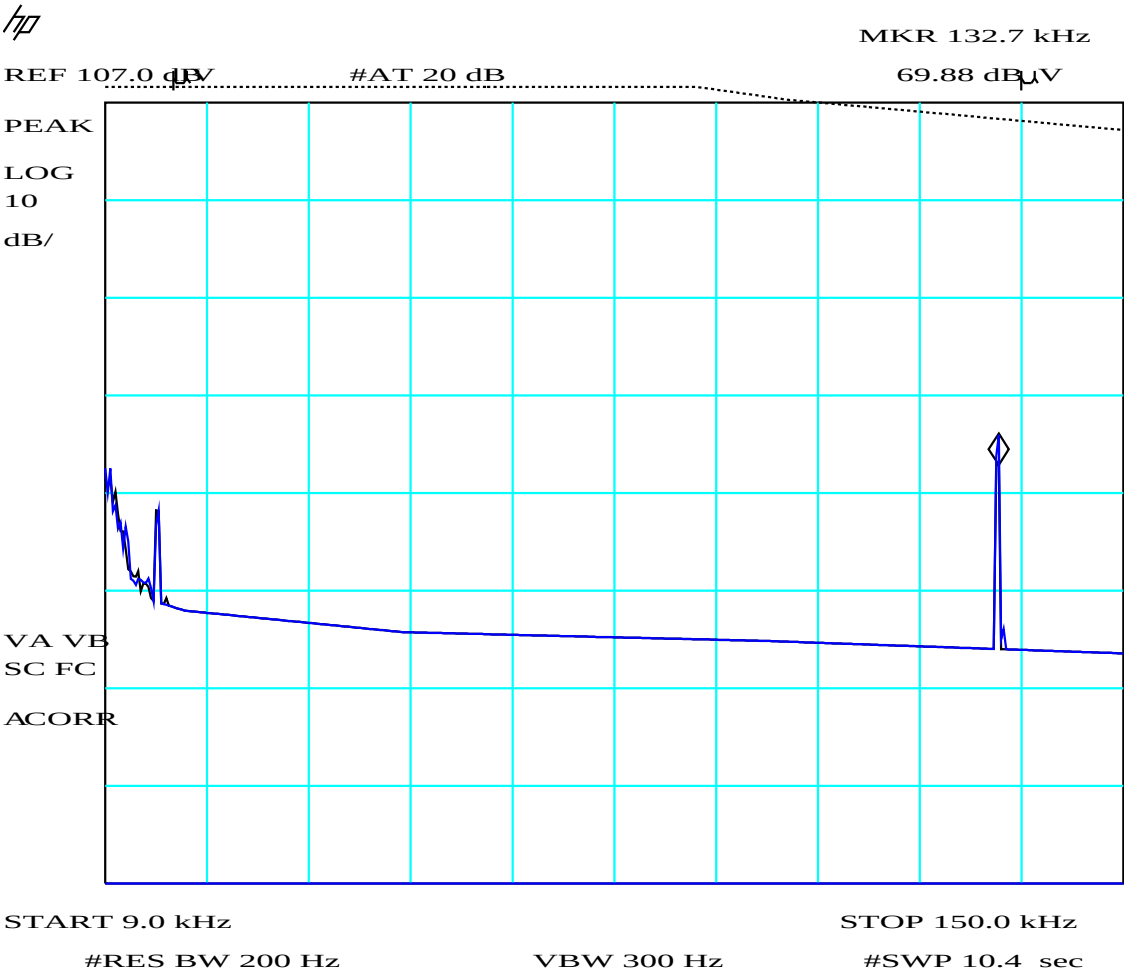
PLOT 10 Radiated Emissions - HD500-2 - 250MHz to 1GHz (FCC Limit)

Company:	Bewator Ltd	Product:	HD500-2
Date:	16 Dec 02	Test Engineer:	Dave Smith
Test:	FCC pt 15	Limit:	FCC C

Notes:

Polarisation:	V + H	Orientation:	0 - 360°	Operating Mode:	1
Distance:	3m	Antenna:	Bilog	Mod. State:	0
Height:	1m	Filename:	H2C164B1.plt		

Frequency List (MHz)



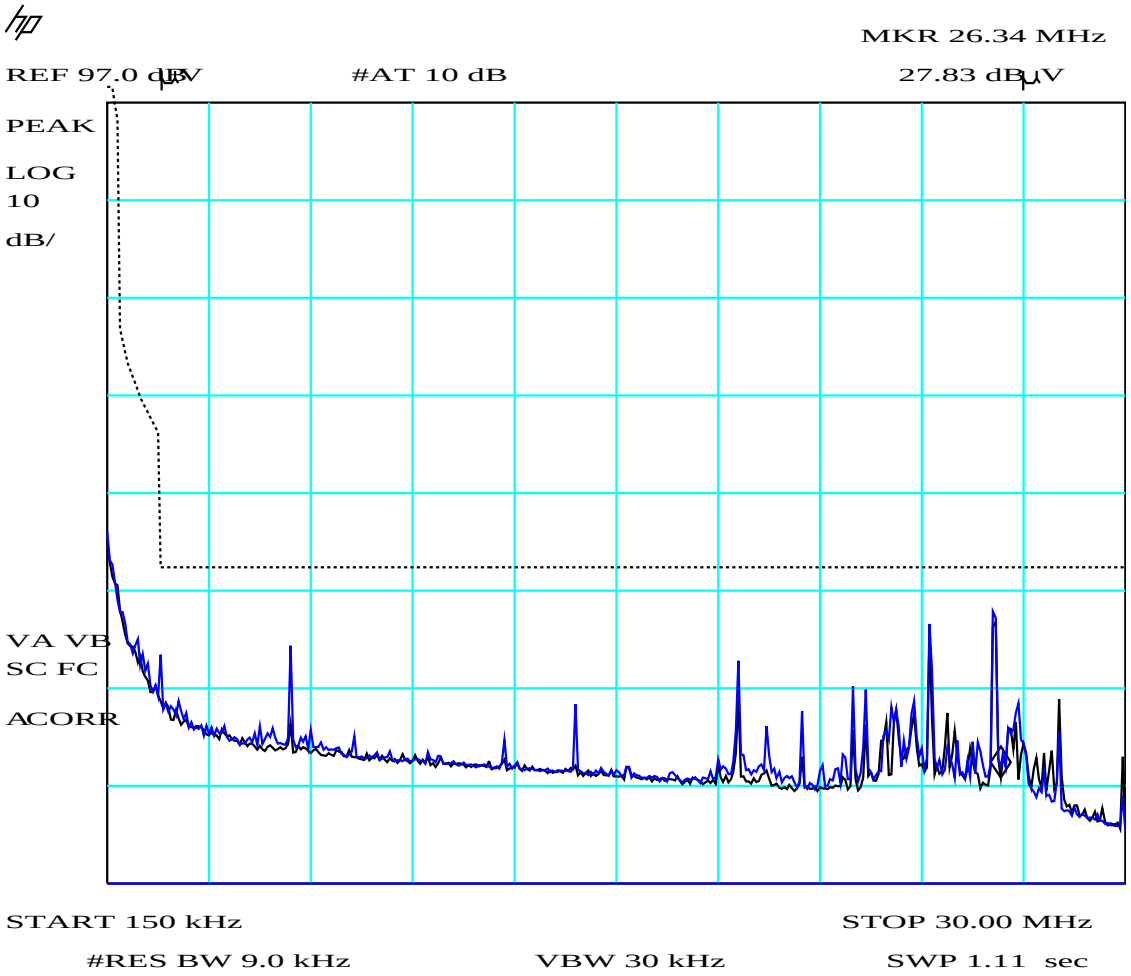
PLOT 11 Radiated Emissions - SP500 - 9kHz to 150kHz (FCC Limit)

Company:	Bewator Ltd	Product:	SP500
Date:	16 Dec 02	Test Engineer:	Dave Smith
Test:	FCC pt 15	Limit:	FCC C

Notes:
Limit adjusted to 3m distance using factor of 40dB/decade below 1.705MHz and 20dB/decade above 1.705MHz.

Polarisation:	Both	Orientation:	4 sides	Operating Mode:	1
Distance:	3m	Antenna:	Loop	Mod. State:	0
Height:	1m	Filename:	H2C165EE.plt		

Frequency List (MHz)



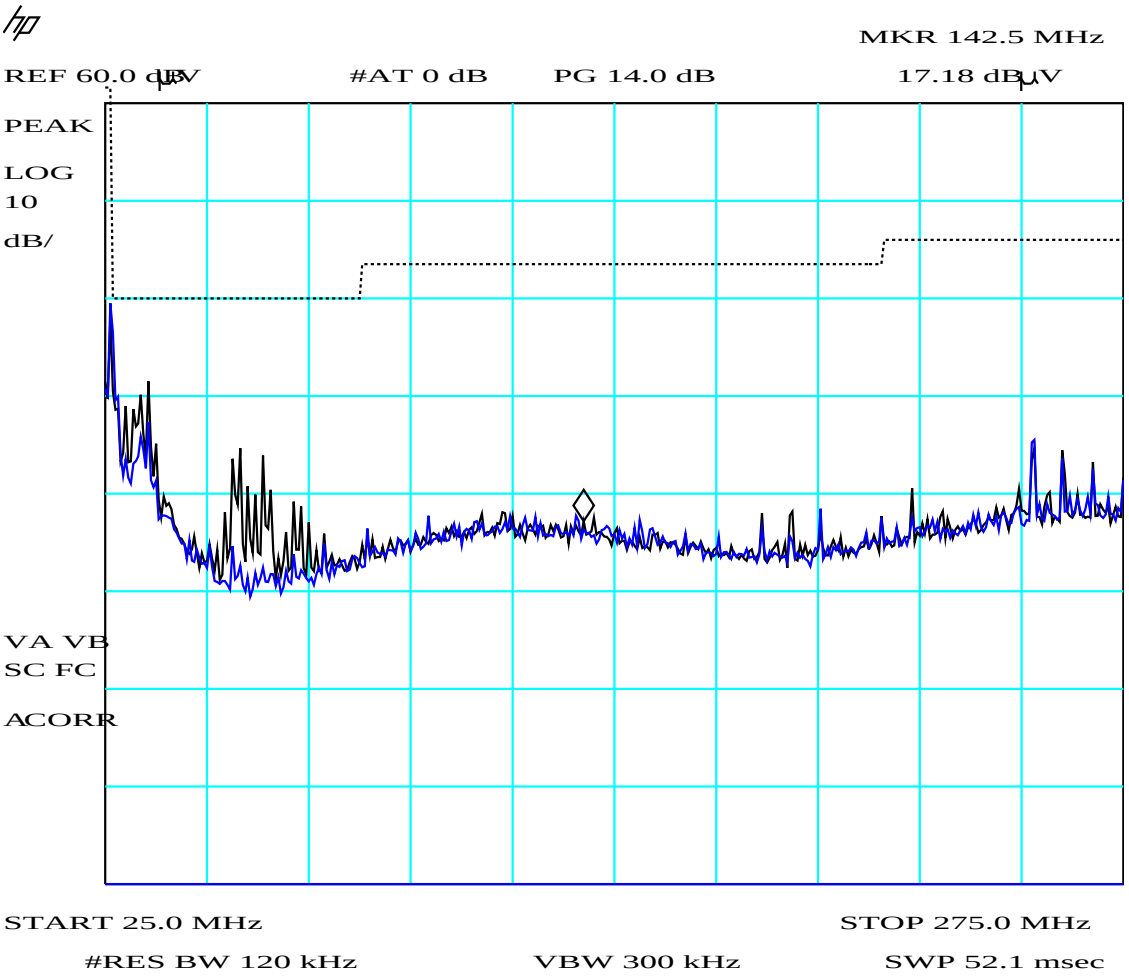
PLOT 12 Radiated Emissions - SP500 - 150kHz to 30MHz (FCC limit)

Company:	Bewator Ltd	Product:	SP500
Date:	16 Dec 02	Test Engineer:	Dave Smith
Test:	FCC pt 15	Limit:	FCC C

Notes:
Limit adjusted to 3m distance using factor of 40dB/decade below 1.705MHz and 20dB/decade above 1.705MHz.

Polarisation:	Both	Orientation:	4 sides	Operating Mode:	1
Distance:	3m	Antenna:	Loop	Mod. State:	0
Height:	1m	Filename:	H2C165F6.plt		

Frequency List (MHz)



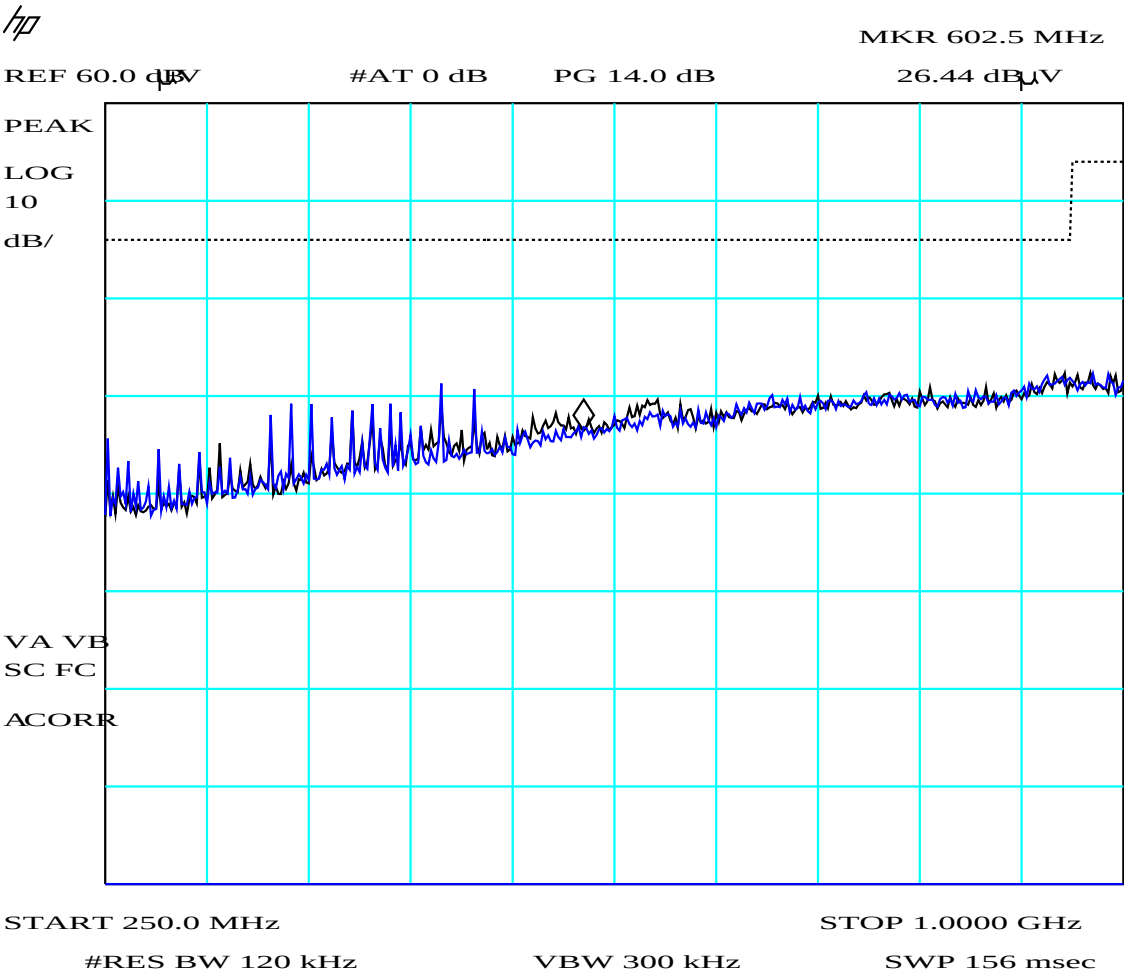
PLOT 13 Radiated Emissions - SP500 - 25MHz to 275MHz (FCC Limit)

Company:	Bewator Ltd	Product:	SP500
Date:	16 Dec 02	Test Engineer:	Dave Smith
Test:	FCC pt 15	Limit:	FCC C

Notes:

Polarisation:	V + H	Orientation:	0 - 360°	Operating Mode:	1
Distance:	3m	Antenna:	Bilog	Mod. State:	0
Height:	1m	Filename:	H2C164EA.plt		

Frequency List (MHz)



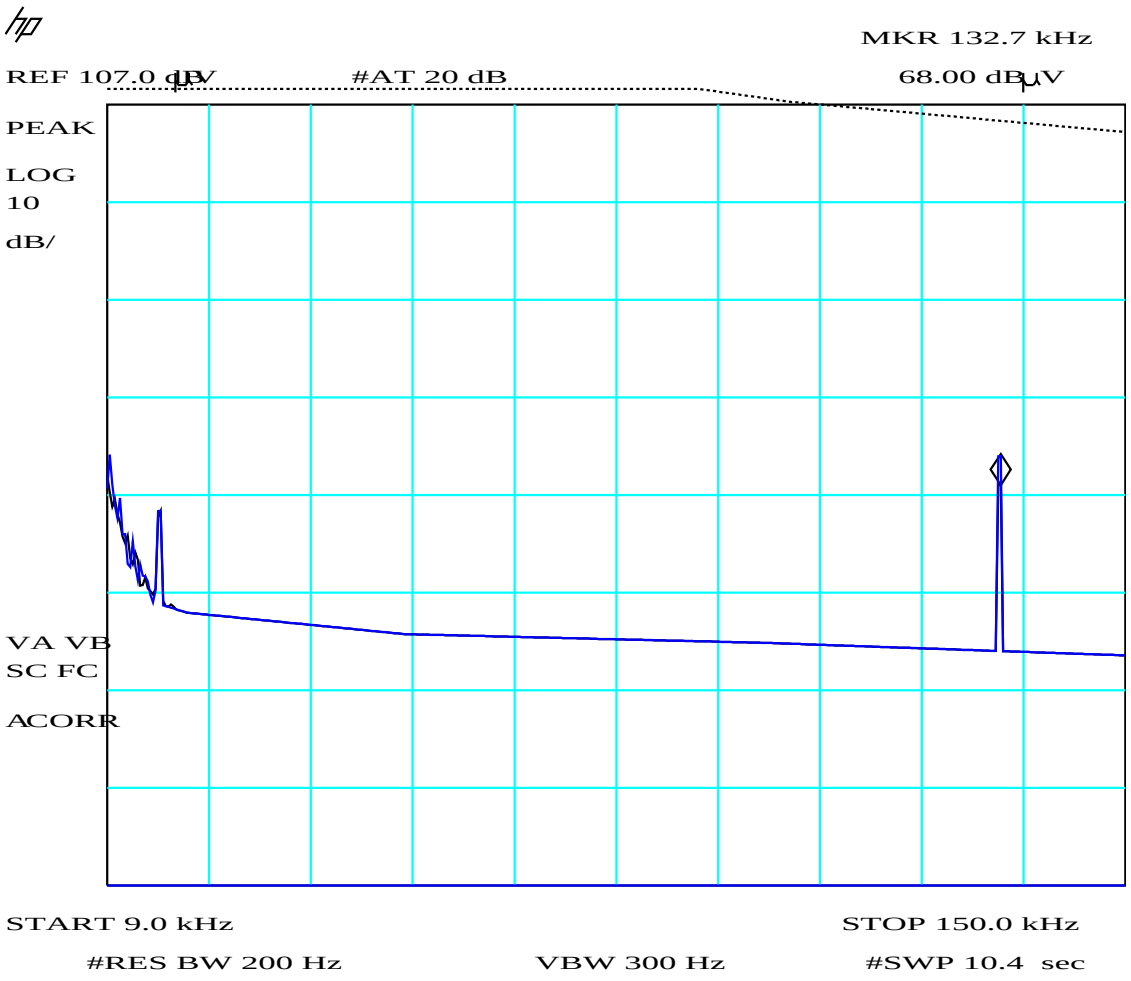
PLOT 14 Radiated Emissions - SP500 - 250MHz to 1GHz (FCC Limit)

Company:	Bewator Ltd	Product:	SP500
Date:	16 Dec 02	Test Engineer:	Dave Smith
Test:	FCC pt 15	Limit:	FCC C

Notes:

Polarisation:	V + H	Orientation:	0 - 360°	Operating Mode:	1
Distance:	3m	Antenna:	Bilog	Mod. State:	0
Height:	1m	Filename:	H2C164F1.plt		

Frequency List (MHz)



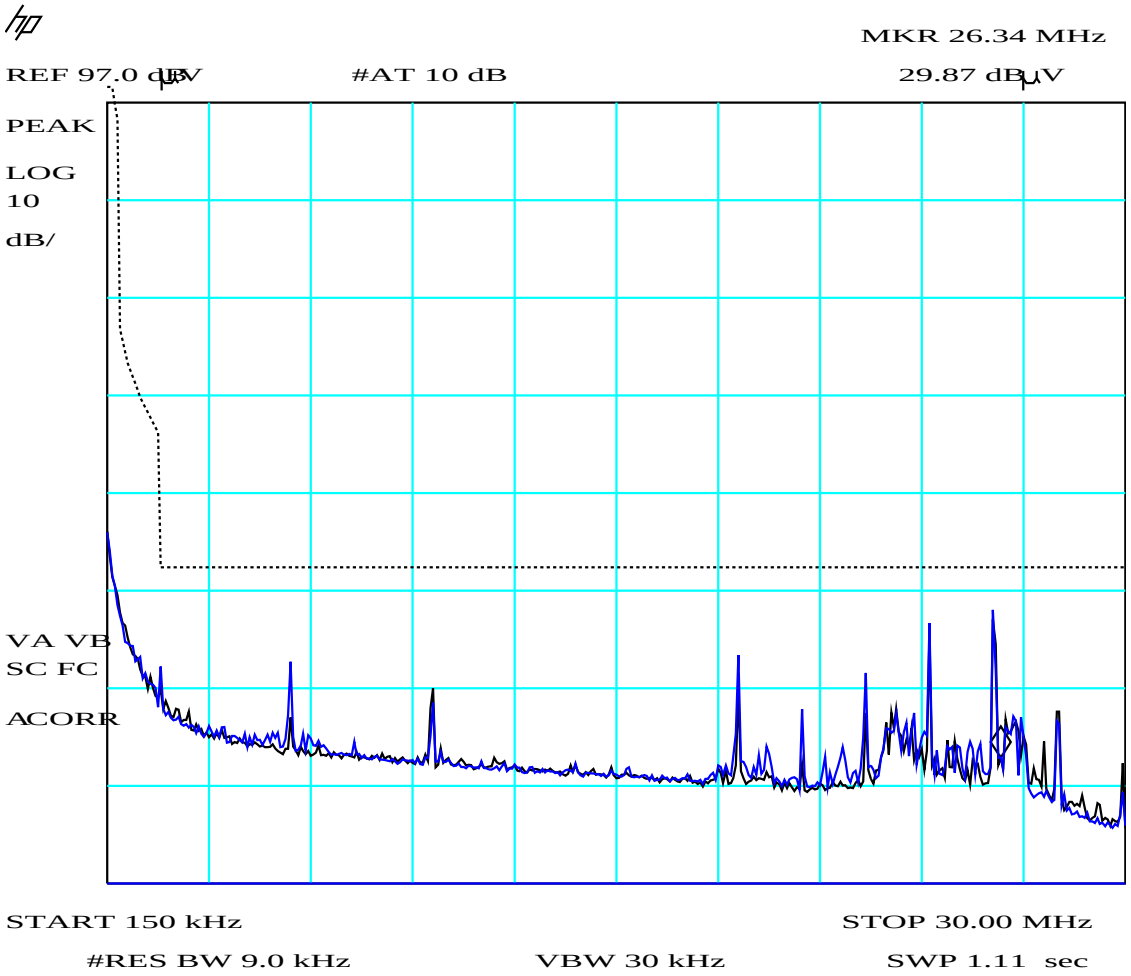
PLOT 15 Radiated Emissions - PM500 - 9kHz to 150kHz (FCC Limit)

Company:	Bewator Ltd	Product:	PM500
Date:	16 Dec 02	Test Engineer:	Dave Smith
Test:	FCC pt 15	Limit:	FCC C

Notes:
Limit adjusted to 3m distance using factor of 40dB/decade below 1.705MHz and 20dB/decade above 1.705MHz.

Polarisation:	Both	Orientation:	4 sides	Operating Mode:	1
Distance:	3m	Antenna:	Loop	Mod. State:	0
Height:	1m	Filename:	H2C16683.plt		

Frequency List (MHz)



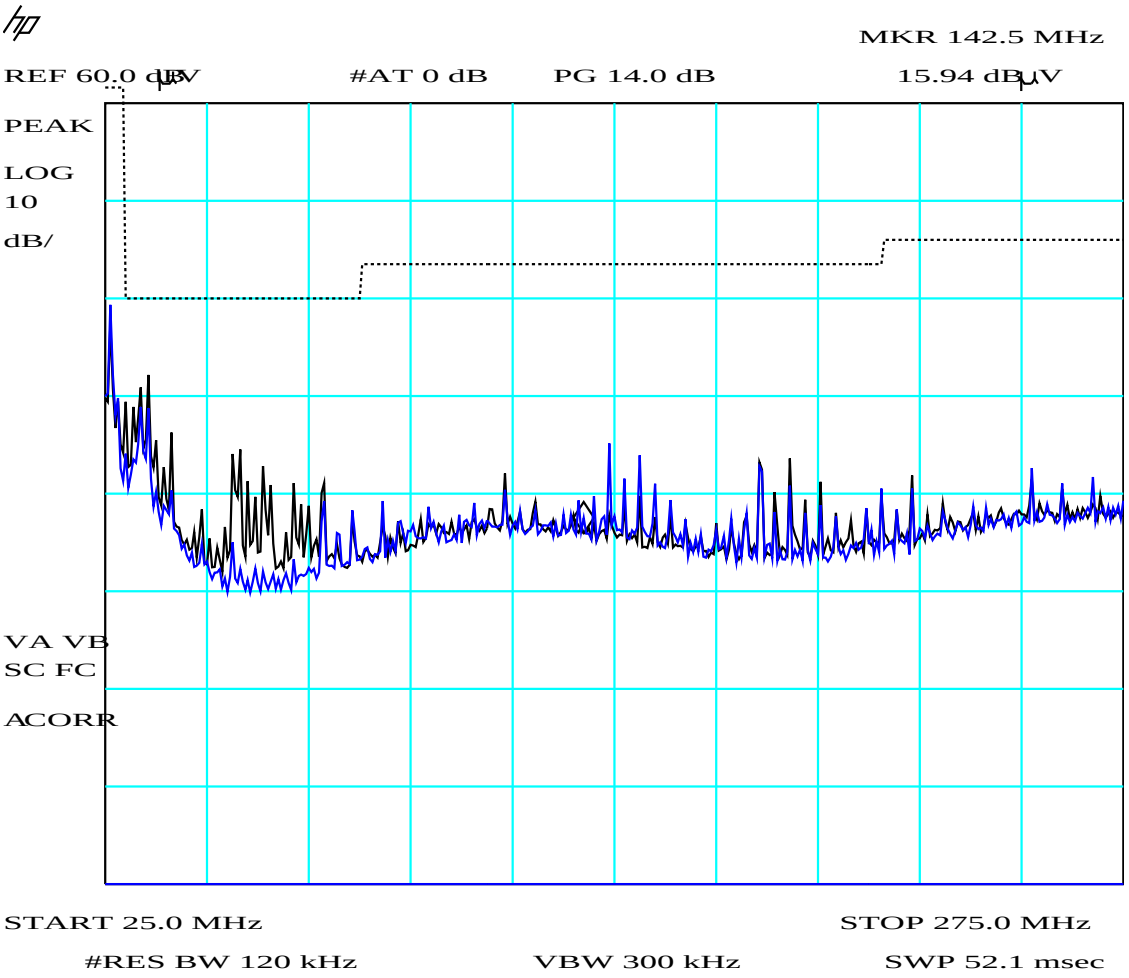
PLOT 16 Radiated Emissions - PM500 - 150kHz to 30MHz (FCC Limit)

Company:	Bewator Ltd	Product:	PM500
Date:	16 Dec 02	Test Engineer:	Dave Smith
Test:	FCC pt 15	Limit:	FCC C

Notes:
Limit adjusted to 3m distance using factor of 40dB/decade below 1.705MHz and 20dB/decade above 1.705MHz.

Polarisation:	Both	Orientation:	4 sides	Operating Mode:	1
Distance:	3m	Antenna:	Loop	Mod. State:	0
Height:	1m	Filename:	H2C1668C.plt		

Frequency List (MHz)



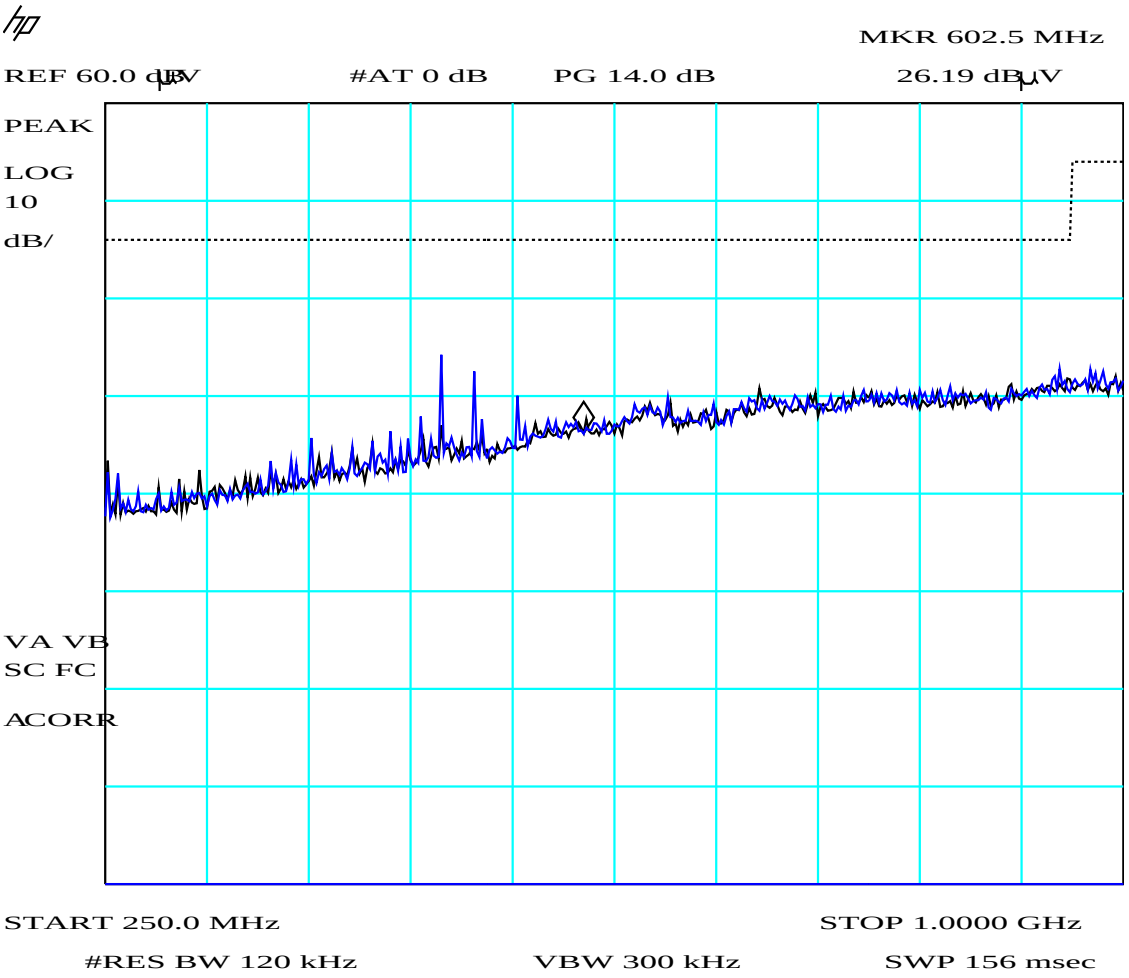
PLOT 17 Radiated Emissions - PM500 - 25MHz to 275MHz (FCC Limit)

Company:	Bewator Ltd	Product:	PM500
Date:	16 Dec 02	Test Engineer:	Dave Smith
Test:	FCC pt 15	Limit:	FCC C

Notes:

Polarisation:	V + H	Orientation:	0 - 360°	Operating Mode:	1
Distance:	3m	Antenna:	Bilog	Mod. State:	0
Height:	1m	Filename:	H2C16500.plt		

Frequency List (MHz)



PLOT 18 Radiated Emissions - PM500 - 250MHz to 1GHz (FCC Limit)

Company:	Bewator Ltd	Product:	PM500
Date:	16 Dec 02	Test Engineer:	Dave Smith
Test:	FCC pt 15	Limit:	FCC C

Notes:

Polarisation:	V + H	Orientation:	0 - 360°	Operating Mode:	1
Distance:	3m	Antenna:	Bilog	Mod. State:	0
Height:	1m	Filename:	H2C16505.plt		

Frequency List (MHz)
