TEST REPORT

ACCREDITED

Certification # 1367-01

Laboratory ID
PRODUCT SAFETY ENGINEERING, INC.
12955 Bellamy Brothers Boulevard
Dade City, Florida 33525 USA
PH (352) 588-2209 FX (352) 588-2544

Submitter ID
Checkpoint Systems Inc.
101 Wolf Drive

Thorofare, NJ 08086

Report Issue Date: 13 Jul 04
Sample S/N: NA
Sample Receipt Date: 23 MAR 04

Test Report Number: 04F265B
Model Designation: Liberty DX, GXD
Product Description: Electronic Surveillance Detection System

Sample Test Date: see data sheets

Marketing Approval _____

Description of non-standard test method or test practice: ***None***

Estimated Measurement Uncertainty: ***Not Applicable***

Special limitations of use: ***None***

Traceability: ***reference standards of measurement have been calibrated by a competent body using standards traceable to the NIST.***

According to testing performed at Product Safety Engineering, Inc., the above-mentioned unit is in compliance with the electromagnetic compatibility requirements defined in regulations indicated on page (3) of the test report. The test results contained herein relate only to the model(s) identified above. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics.

As the responsible EMC Project Engineer, I hereby declare that the equipment tested as specified above conforms to the requirements indicated on page (3) of the test report.

Signature _____ Name David Foerstner

Title Engineering Group Leader Date 13 July 04

Reviewed by:
Approved Signatory _____ Date 13 Jul 04

DIRECTORY - EMISSIONS

Product Safety Engineering, Inc 12955 Bellamy Brothers Blvd. Dade City, FL 33525
Tel (352) 588-2209 Fax (352) 588-2544

EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to following regulations:

□ - EN 50081-1 : 1992

□ - EN 50081-2 : 1995

□ - EN 55011 : 1998 / A1:1999 — □ - Group 1 — □ - Group 2

□ - Class A — □ - Class B

□ - EN 55013 : 1990 / A12:1994 / A13:1996 / A14:1999

□ - EN 55014 -1: 2001

□ - Household appliances and similar

□ - Portable tools

□ - Semiconductor devices

□ - EN 55022 : 1998 — □ - Class A — □ - Class B

□ -AS/NZS 3548:1995 — □ - Class A — □ - Class B

■ - ICES-003 — ■ - Class A — □ - Class B

□ - CNS 13438 — □ - Class A — □ - Class B

□ - VCCI : 1999 — □ - Class A — □ - Class B

■ - FCC Part 15 — ■ - Class A — □ - Class B

■ - Certification (as intentional radiator)
■ - Verification (as unintentional radiator)
□ - Declaration of Conformity

■ - RSS-210

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Environmental conditions during testing:

	LAB	OATS
Temperature: *	_____	: _____
Relative Humidity: **	_____	: _____

* The ambient temperature during the testing was within the range of (50° - 104° F) unless indicted above.
** The humidity levels during the testing was within the range of (10% - 90%) relative humidity unless indicated above.

Power supply system : 115 Volts 60 Hz SINGLE phase

Sign Explanations:

□ - not applicable
■ - applicable

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Emissions Test Conditions: CONDUCTED EMISSIONS (Interference Voltage)

The *CONDUCTED EMISSIONS (INTERFERENCE VOLTAGE)* measurements were performed at the following test location:

□ - **Test not applicable**

□ - Darby Test Site (Open Area Test Site)
■ - Darby Laboratory

Test equipment used :

	Model Number	Manufacturer	Description	Serial Number
■ -	8028-50	Solar	50 Ω LISN	829012, 829022
■ -	3825/2	Solar	50 Ω LISN	924840
■ -	EMC-30	Electro-Metrics	EMI Receiver	191
□ -	8566B	Hewlett-Packard	Spectrum Analyzer	2421A00526
□ -	85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
□ -	85662A	Hewlett Packard	Analyzer Display	2403A07352
□ -	8028-50	Solar	50 Ω LISN	903725, 903726
□ -	FCC-TLISN-T4	Fisher Custom Com.	Telecom ISN	20072

Emissions Test Conditions: RADIATED EMISSIONS (Magnetic Field)

The *RADIATED EMISSIONS (MAGNETIC FIELD)* measurements were performed at the following test location:

■ - Darby Test Site (Open Area Test Site)
□ -
□ -

at a test distance of :

□ - 3 meters
■ - 30 meters

□ - **Test not applicable**

Test equipment used :

	Model Number	Manufacturer	Description	Serial Number
□ -	96005	Eaton	Log Periodic Antenna	1099
□ -	BIA-25	Electro-Metrics	Biconical Antenna	4283
■ -	8566B	Hewlett-Packard	Spectrum Analyzer	2421A00526
■ -	85662A	Hewlett-Packard	Analyzer Display	2403A07352
■ -	85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
□ -	ALR-30M	Electro-Metrics	Loop Antenna	824
□ -	8447D	Hewlett Packard	Preamplifier	2944A06832
□ -	EMC-30	Electro-Metrics	EMI Receiver	191
■ -	ALA-130/A	Antenna Research	Loop Antenna	106

Emissions Test Conditions: RADIATED EMISSIONS (Electric Field)

The *RADIATED EMISSIONS (ELECTRIC FIELD)* measurements, in the frequency range of 30 MHz-1000 MHz, were tested in a horizontal and vertical polarization at the following test location :

□ - Test not applicable

■ - Darby Site (Open Area Test Site)
□ - Darby Lab
□ -

at a test distance of :

□ - 3 meters
■ - 10 meters
□ - 30 meters

Test equipment used :

	Model Number	Manufacturer	Description	Serial Number
■ -	LPA30	eElectro-Metrics	Log Periodic Antenna	2280
■ -	BIA-30	Electro-Metrics	Biconical Antenna	3852
■ -	8566B	Hewlett-Packard	Spectrum Analyzer	2421A00526
■ -	85662A	Hewlett-Packard	Analyzer Display	2403A07352
■ -	85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
■ -	8447D	Hewlett-Packard	Preamplifier (26dB)	2944A06832
□ -	EMC-30	Electro-Metrics	EMI Receiver	191
□ -	8568B	Hewlett Packard	Spectrum Analyzer	2407A03213
□ -	85650A	Hewlett Packard	Quasi-Peak Adapter	2043A00358
□ -	85662A	Hewlett Packard	Analyzer Display	2340A05806
□ -	96005	Eaton	Log Periodic	1099
□ -	BIA 25	Electro-Metrics	Biconical Antenna	4283

Emissions Test Conditions): INTERFERENCE POWER

The *INTERFERENCE POWER* measurements were performed by using the absorbing clamp on the mains and interface cables in the frequency range 30 MHz - 300 MHz at the following test location :

■ - Test not applicable

□ - Darby Lab
□ -

Test equipment used :

	Model Number	Manufacturer	Description	Serial Number
□ -	MDS-21	Rhode&Schwarz	Absorbing Clamp	8608447020
□ -	8566B	Hewlett-Packard	Spectrum Analyzer	2421A00526
□ -	85662A	Hewlett-Packard	Analyzer Display	2403A07352
□ -	85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
□ -	8447D	Hewlett-Packard	Amplifier (26 dB)	2944A06832
□ -	EMC-30	Electro-Metrics	EMI Receiver	191

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The *EQUIVALENT RADIATED EMISSIONS* measurements in the frequency range GHz - GHz were performed in a horizontal and vertical polarization at the following test location :

□ - Darby Test Site (Open Area Test Site)
□ -
□ -
□ -

at a test distance of:

□ - 1 meters
□ - 3 meters
□ - 10 meters

■ - **Test not applicable**

Test equipment used :

	Model Number	Manufacturer	Description	Serial Number
□ -	8566B	Hewlett-Packard	Spectrum Analyzer	2421A00526
□ -	85662A	Hewlett-Packard	Analyzer Display	2403A07352
□ -	85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
□ -	8449B	Hewlett-Packard	Preamplifier	3008A00320
□ -	3115	Electro-Mechanics	Double Ridge Guide Horn	3810

The *ANTENNA TERMINAL DISTURBANCE VOLTAGE* in the frequency range 30 MHz - 1,000 MHz were performed.

□ - Darby Test Site (Open Area Test Site)
□ - Laboratory
□ -
□ -

■ - **Test not applicable**

	Model Number	Manufacturer	Description	Serial Number
□ -	2F9-3C4-3C5	Wavecom	UHF PAL TV Modulator	185879
□ -	2F1-3C4-3C5	Wavecom	VHF PAL TV Modulator	157728
□ -	A-8000	IFR	Spectrum Analyzer	1306
□ -	8648B	Hewlett-Packard	Signal Generator	3623A01433
□ -	8648B	Hewlett-Packard	Signal Generator	3623A01477
□ -	LMV-182A	Leader	RMS Milli-Voltmeter	8010091
□ -	3202	Krhon-Hite	Active filter	5899
□-	FMT115	Leaming	FM Modulator	NONE
□ -	371	UDT	Optical power meter	06657
□ -	TSG95	Tektronix	PAL video / Audio generator	B028883
□-				

Equipment Under Test (EUT) Test Operation Mode - Emission tests :

The device under test was operated under the following conditions during emissions testing:

□ - Standby

□ - Test program (H - Pattern)

□ - Test program (color bar)

□ - Test program (customer specific)

□ - Practice operation

■ - Normal Operating Mode

□ -

Configuration of the device under test:

■ - See System Under Test Information in Appendix B

Rationale for EUT setup / configuration:

ANSI C63.4-2001

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Emission Test Results:

Conducted emissions 150 kHz - 30 MHz

The requirements are ■ - **MET** □ - **NOT MET**

Minimum limit margin **11.0** dB at **7.98** MHz
Remarks: Power supply WW425 - Line side

Radiated emissions (magnetic field) 10 kHz - 30 MHz

The requirements are ■ - **MET** □ - **NOT MET**

Minimum limit margin **0.5** dB at **8.7** MHz
Remarks: Model DX

Radiated emissions (electric field) 30 MHz - 1000 MHz

The requirements are ■ - **MET** □ - **NOT MET**

Minimum limit margin **0.1** dB at **760.0** MHz
Remarks: Model GXD

Interference Power at the mains and interface cables 30 MHz - 300 MHz

The requirements are □ - **MET** □ - **NOT MET**

Minimum limit margin dB at MHz
Remarks:

Radiated emissions GHz - GHz

The requirements are □ - **MET** □ - **NOT MET**

Minimum limit margin dB at GHz
Remarks:

Antenna Terminal Disturbance Voltage 30 MHz - 1,000 MHz

The requirements are □ - **MET** □ - **NOT MET**

Minimum limit margin dB at MHz
Remarks:

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GENERAL REMARKS: Per client instructions and agreement with FCC, for measurement of the fundamental and harmonic emissions in the band 1.705 MHz to 10 MHz, a 20 dB reduction from the true peak is to be compared to the limits of 100 uV/meter (40 dBuV/meter) at 30 meters. The EUT is to be modulated as normally installed. True peak is the point at which the analyzer bandwidth is adjusted for minimum pulse desensitization. A copy of the correspondence between Checkpoint and the FCC is attached in Appendix A for reference. Measurement of the fundamental (7.4 - 8.9) MHz was performed by setting the spectrum analyzer to "max-hold", peak detector, a 300 kHz bandwidth, and a span from 7 - 9.2 MHz. A resolution bandwidth of 300 kHz was used because increasing the bandwidth above 300 kHz did not increase the detected peak of the fundamental.

AVERAGE CALCULATION: The control signals are timed for (32) six microsecond bursts at a (100 Hz rate. During the antenna's cycle, the system performs two "blasts" which are called a "bin". A bin consists of two noise cycles and two blast cycles. A "blast" is a transmit cycle followed by a receive cycle. During the noise cycle, the system does not transmit but only receives ambient noise. This allows the system to establish the baseline noise level of the environment for later comparison. The system then transmits or "pulses" the field and then receives or "listens" for an echo of a target signal.

The overall duty cycle for the transmitter operation is (1.92%).
(16 bins * 2 blasts per bin * 6 usec) = 192 usec
192 / frame rate (100) Hz (10 milliseconds) = 0.0192
Average correction = (20 * Log $_{10}$ (Duty Cycle) = -34.33 dB

** Maximum allowed adjustment for duty cycle = 20 dB so that is what we applied to the peak readings to adjust for average detection.

SUMMARY:

The requirements according to the technical regulations are

■ - met

□ - **not** met.

The device under test does

■ - fulfill the general approval requirements mentioned on page 3.

□ - **not** fulfill the general approval requirements mentioned on page 3.

Testing Start Date **03/24/2004**

Testing End Date: **03/25/2004**

- PRODUCT SAFETY ENGINEERING INC -

Test-setup photo(s):
Conducted emission 450/150 kHz - 30 MHz

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Test-setup photo(s):
Radiated emission 30 MHz - 1000 MHz

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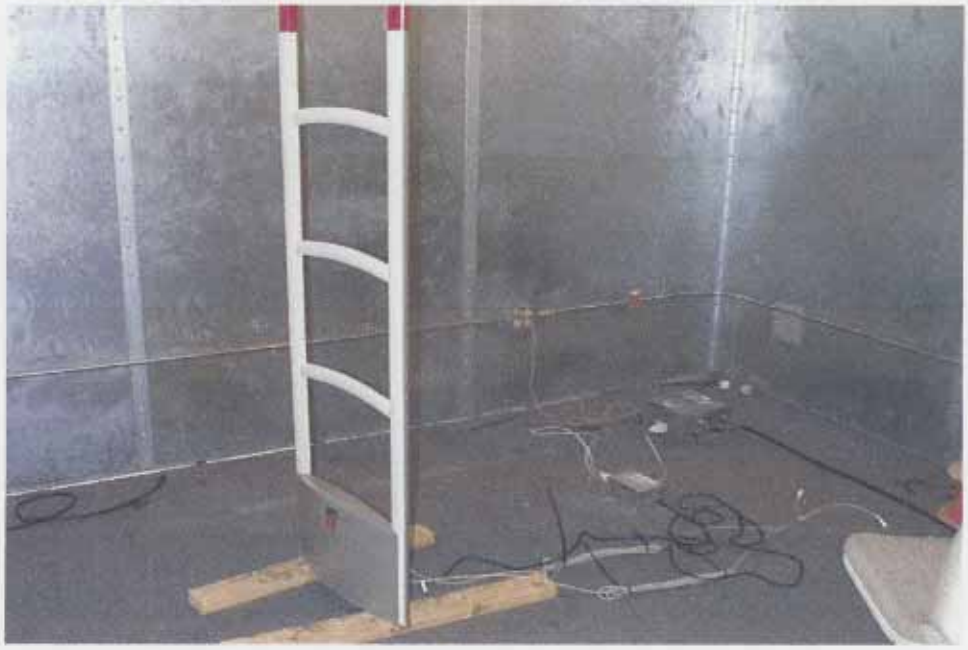
Test-setup photo(s):
Conducted emission 450/150 kHz - 30 MHz



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Test-setup photo(s):
Radiated emission 30 MHz - 1000 MHz

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APPENDIX

A

Test Equipment Calibration Information

&

Test Data Sheets

TEST EQUIPMENT CALIBRATION INFORMATION

Manufacturer	Model	Description	Serial Number	Cal Due
Hewlett Packard	8566B	Spectrum Analyzer	2421A00526	08/14/04
Hewlett Packard	85662A	Display	2403A07352	08/14/04
Hewlett Packard	85650A	Quasi-Peak Adapter	2043A00209	08/14/04
Hewlett Packard	8447D	Preamp 0.1 - 1,000 MHz	2944A06832	12/10/04
Hewlett Packard	8568B	Spectrum Analyzer	2407A03213	08/14/04
Hewlett Packard	85662A	Display	2340A05806	08/14/04
Hewlett Packard	85650A	Quasi-Peak Adapter	2043A00358	08/14/04
Hewlett Packard	8447D	Preamp 0.1 - 1,000 MHz	2944A06901	08/14/04
Hewlett Packard	8447D	Preamp 0.1 - 1,000 MHz	1937A03247	07/17/04
Hewlett Packard	8449B	Preamp 1 - 26.5 GHz	3008A00320	12/02/04
Hewlett Packard	8648B	Signal Generator	3443U00312	05/04/05
Hewlett Packard	8672A	Signal Generator	2211A02426	10/17/04
Eaton	96005	Log Periodic Antenna	1099	02/05/05
Electro-Metrics	LPA 30	Log Periodic Antenna	2280	01/12/05
Electro-Metrics	BIA 30	Biconical Antenna	3852	01/13/05
Electro-Metrics	BIA 25	Biconical Antenna	4283	02/04/05
Electro-Mechanics	3115	Double Ridge Guide Ant.	3810	11/25/05
Electro-Metrics	ALR30M	Magnetic Loop Antenna	824	01/12/05
Solar	8012	LISN	924840	12/24/04
Solar	8028	LISN	829012/809022	12/12/04
Solar	8028	LISN	903725/903726	12/01/04
Schwartzbeck	MDS-21	Absorbing Clamp	02581	09/18/04
Leader	LFG1310	Function Generator	8060233	05/04/05
IFR Systems	A-8000	Spectrum Analyzer	1306	12/08/04
Electro-Metrics	EMC-30	EMI Receiver	191	05/04/05
Antenna Research	ALA-130/A	Loop Antenna	106	03/14/05
Radio Shack	63-867	Temp/Hygrometer	N/A	05/04/05
Radio Shack	63-867A	Temp/Hygrometer	N/A	05/04/05

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Radiated Emissions Measurements
Intentional Radiator
Fundamental
Per 15.223

Model DX (Operating at (1.73 - 2.05) MHz

Freq. (MHz)	Amplitude (dBuV) Peak	Antenna Correction Factor	Cable Loss	Amplitude (dBuV/m) Peak	Average Correction Factor (dB)	Field Strength (dBuV/m)	FCC Limit dBuV/m	Delta Limit (dB)
1.7	55.9	-9.0	0.5	47.4	-20	27.4	40.0	12.6
1.8	58.1	-9.3	0.5	49.3	-20	29.3	40.0	10.7
1.9	57.2	-9.7	0.5	48.0	-20	28.0	40.0	12.0

Model DX (Operating at (7.4 - 8.9) MHz

Freq. (MHz)	Amplitude (dBuV) Peak	Antenna Correction Factor	Cable Loss	Amplitude (dBuV/m) Peak	Average Correction Factor (dB)	Field Strength (dBuV/m)	FCC Limit dBuV/m	Delta Limit (dB)
7.5	59.9	-6.8	0.5	53.6	-20	33.6	40.0	6.4
8.2	62.6	-6.0	0.5	57.1	-20	37.1	40.0	2.9
8.7	64.6	-5.6	0.5	59.5	-20	39.5	40.0	0.5

Model GXD (Operating at (1.73 - 2.05) MHz

Freq. (MHz)	Amplitude (dBuV) Peak	Antenna Correction Factor	Cable Loss	Amplitude (dBuV/m) Peak	Average Correction Factor (dB)	Field Strength (dBuV/m)	FCC Limit dBuV/m	Delta Limit (dB)
1.9	60.8	--9.7	0.5	51.6	-20	31.6	40.0	8.4
1.8	58.5	-9.3	0.5	49.7	-20	29.7	40.0	10.3

Model GXD (Operating at (7.4 - 8.9) MHz

Freq. (MHz)	Amplitude (dBuV) Peak	Antenna Correction Factor	Cable Loss	Amplitude (dBuV/m) Peak	Average Correction Factor (dB)	Field Strength (dBuV/m)	FCC Limit dBuV/m	Delta Limit (dB)
7.5	63.5	-6.8	0.5	57.2	-20	37.2	40.0	2.8
8.2	64.5	-6.0	0.5	59.0	-20	39.0	40.0	1.0
8.7	64.6	-5.6	0.5	59.5	-20	39.5	40.0	0.5

The DX and GXD models operate at dual frequencies simulataneously.

Measurements were all performed at a distance of (30) meters. Average correction factor reflects adjustment in amplitude based on calculated effect of duty cycle. (See duty cycle calculation)

Measurements were also performed up to the tenth harmonic and no emissions were observed.

Operation in Restricted Bands per 15.205:

The Direct Digital Synthesizer (DDS) generates a sequence of (16) discrete frequencies. The transmitter is not capable of hopping into, or operating in, the restricted bands and therefore, complies with the restriction. The tuning table included in the theory of operation defines each possible operating frequency.

The restricted frequency bands (per FCC Part 15.205) in the operating frequency band of the EUT are as follows:

2.1735 - 2.1905 MHz
8.291 - 8.294 MHz
8.362 - 8.366 MHz
8.37625 - 8.38675 MHz
8.41425 - 8.41475 MHz

Radiated Emissions Measurements
(30 - 1,000) MHz
Unintentional Radiator
Per 15.109

PRODUCT EMISSIONS

PRODUCT SAFETY ENGINEERING
PRODUCT SAFETY ENGINEERING Data File: LIBERTY DX FCC-A 3-26-2004

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	COMMENTS
1	42.080	39.0	31.6	-7.4	PK	V	100	1	-16.7	
2	48.060	39.0	31.3	-7.7	PK	V	100	90	-16.7	
3	67.070	39.0	25.9	-13.2	QP	V	100	270	-18.7	
4	80.024	39.0	25.5	-13.5	PK	V	100	1	-20.9	
5	199.998	43.5	34.0	-9.5	PK	V	100	90	-8.7	Mkr @ 200.1 MHz
6	240.019	46.4	33.7	-12.7	QP	H	200	270	-13.2	
7	280.021	46.4	34.3	-12.1	PK	H	200	90	-11.6	
8	319.994	46.4	39.3	-7.1	PK	H	200	90	-10.5	
9	360.006	46.4	37.4	-9.0	PK	H	200	270	-10.4	
10	400.001	46.4	34.6	-11.8	PK	H	200	270	-9.9	
11	439.983	46.4	42.0	-4.4	QP	H	200	270	-8.9	
12	460.021	46.4	36.4	-10.0	PK	H	200	1	-8.6	
13	559.985	46.4	38.9	-7.5	QP	H	200	270	-7.4	
14	600.024	46.4	40.2	-6.2	QP	H	200	270	-6.9	
15	640.037	46.4	38.3	-8.1	QP	H	200	270	-5.9	
16	659.981	46.4	43.8	-2.6	PK	H	200	90	-5.2	
17	680.007	46.4	45.8	-0.7	QP	H	200	270	-4.3	
18	700.011	46.4	39.1	-7.3	PK	H	200	1	-3.4	
19	720.019	46.4	42.9	-3.5	PK	H	200	1	-3.4	
20	760.014	46.4	41.7	-4.7	PK	H	200	270	-3.4	
21	840.009	46.4	42.8	-3.6	PK	H	200	270	-2.5	
22	919.997	46.4	39.2	-7.2	QP	H	200	270	-0.3	
23	959.991	46.4	43.8	-2.6	PK	H	200	90	0.8	
24	999.999	49.5	40.1	-9.4	QP	H	200	270	1.5	Mkr @ 1000 MHz

PRODUCT EMISSIONS

PRODUCT SAFETY ENGINEERING
PRODUCT SAFETY ENGINEERING Data File: LIBERTY GXD FCC-A 3-29-2004

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV/m	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	COMMENTS
1	36.601	39.0	16.1	-22.9	PK	H	200	315	-16.6	
2	142.125	43.5	19.5	-24.1	PK	H	200	315	-14.	
3	239.997	46.4	32.5	-13.9	PK	V	100	45	-14.	
4	279.986	46.4	38.7	-7.7	PK	V	100	225	-12.2	
5	320.001	46.4	45.1	-1.3	QP	V	100	315	-10.9	
6	439.980	46.4	37.5	-8.9	PK	V	100	135	-10.1	
7	480.005	46.4	35.5	-10.9	PK	V	100	225	-9.	
8	520.017	46.4	35.7	-10.7	PK	V	100	225	-8.2	
9	559.987	46.4	43.2	-3.2	QP	V	100	315	-7.8	
10	600.011	46.4	36.1	-10.3	PK	V	100	225	-7.5	
11	639.995	46.4	43.7	-2.7	QP	V	100	225	-5.9	
12	660.008	46.4	41.9	-4.5	PK	V	100	135	-5.	
13	680.009	46.4	40.8	-5.6	QP	V	100	225	-4.2	
14	700.026	46.4	40.6	-5.8	PK	V	100	225	-3.4	
15	760.010	46.4	46.3	-0.1	QP	V	100	315	-3.9	
16	800.009	46.4	34.2	-12.2	PK	V	100	270	-4.8	
17	839.995	46.4	40.9	-5.5	QP	V	100	225	-2.7	
18	920.004	46.4	39.6	-6.8	PK	V	100	225	-0.9	
19	959.987	46.4	42.8	-3.6	PK	V	100	225	-0.2	
20	999.978	49.5	44.6	-4.9	PK	V	100	225	0.3	Mkr @ 1000 MHz

Conducted Emissions Measurements
(0.150 - 30) MHz
Intentional Radiator
Per 15.207

A14

Product Safety Engineering

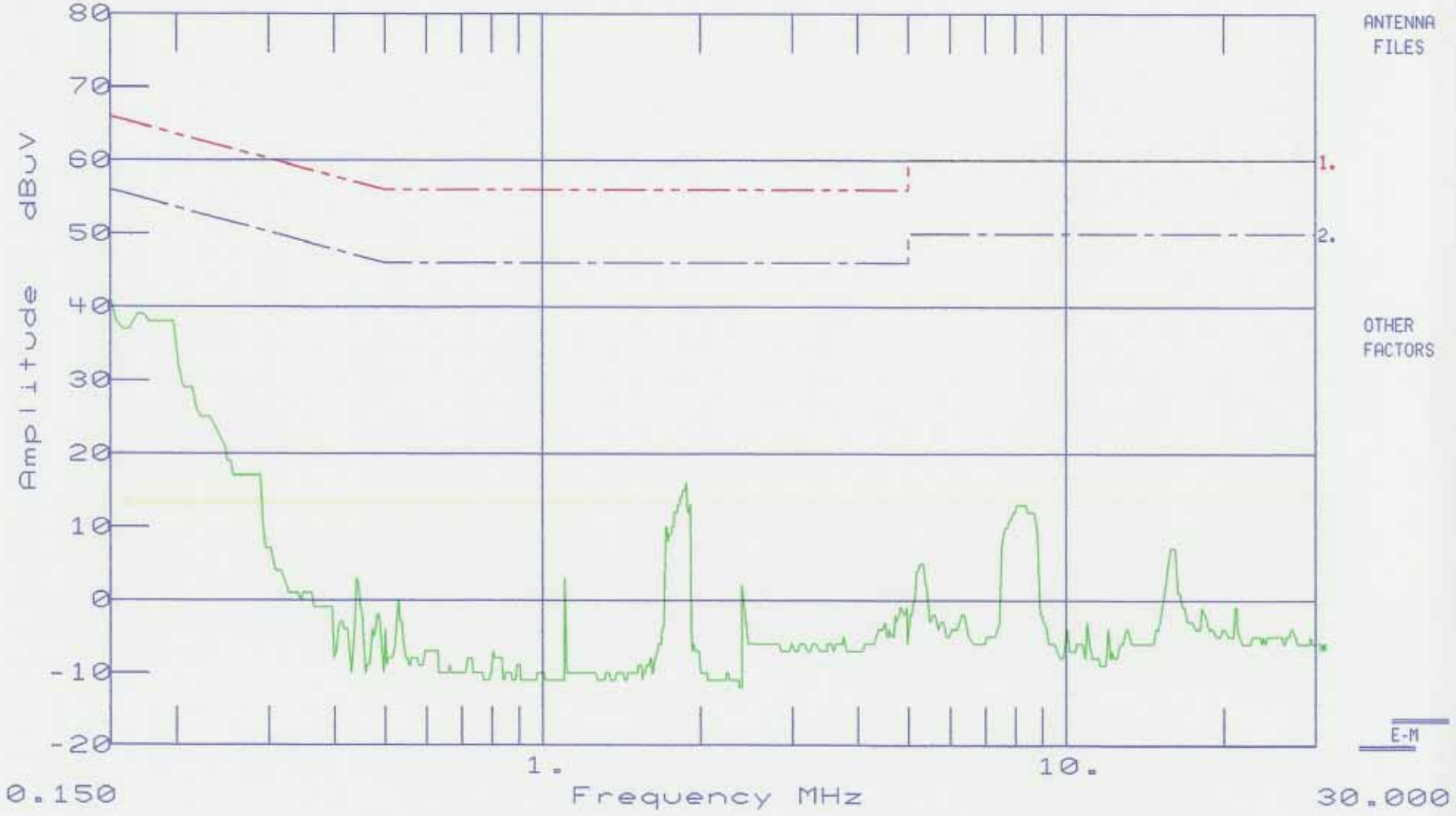
CHECKPOINT

Date :	03/30/04	Time :	08:06:28.78
Technician :	JACK GARNER	Test Equip. :	EMC-30
Test Method :	EN55022 CLASS B	Test Number :	1
Equipment :	LIBERTY DX/GLOBTEK	Sensor Loc. :	LINE
Mode of Op. :	NORMAL	Sensor Pol. :	
Serial No. :	41267300P0091103017	Ext. Atten. :	0 dB

Comment : 120 VAC / 60 HZ WITH IMX04 FILTERED LINE CORD

EMC-30 SETTINGS
Detector QuasiPeak
Bandwidth CISPR
Dump/Dwell N/A
RF Atten. 10 dB
IF Atten. 10 dB

SPECS
1) CISPR 22 Quasi Peak
2) CISPR 22 AVG
3)
4)



TEST TITLE:CHECKPOINT		PAGE 1
DATA FILE :265_L_A.D30		Freq.(MHz)
Amplitude Units : dBuV	Threshold -18 dB	0.1500

Freq(MHz)	Amp	C22BQP.S30 vs Spec(dB)	C22BAVG.S30 vs Spec(dB)
0.1500	41.0		-15.000 *
0.1542	38.0		-17.771 *
0.1689	39.0		-16.014 *
0.1730	39.0		-15.815 *
0.1770	38.0		-16.625 *
0.1812	38.0		-16.430 *
0.1854	38.0		-16.240 *
0.1892	38.0		-16.072 *
0.1933	38.0		-15.894 *
0.1975	38.0		-15.715 *

All

Product Safety Engineering

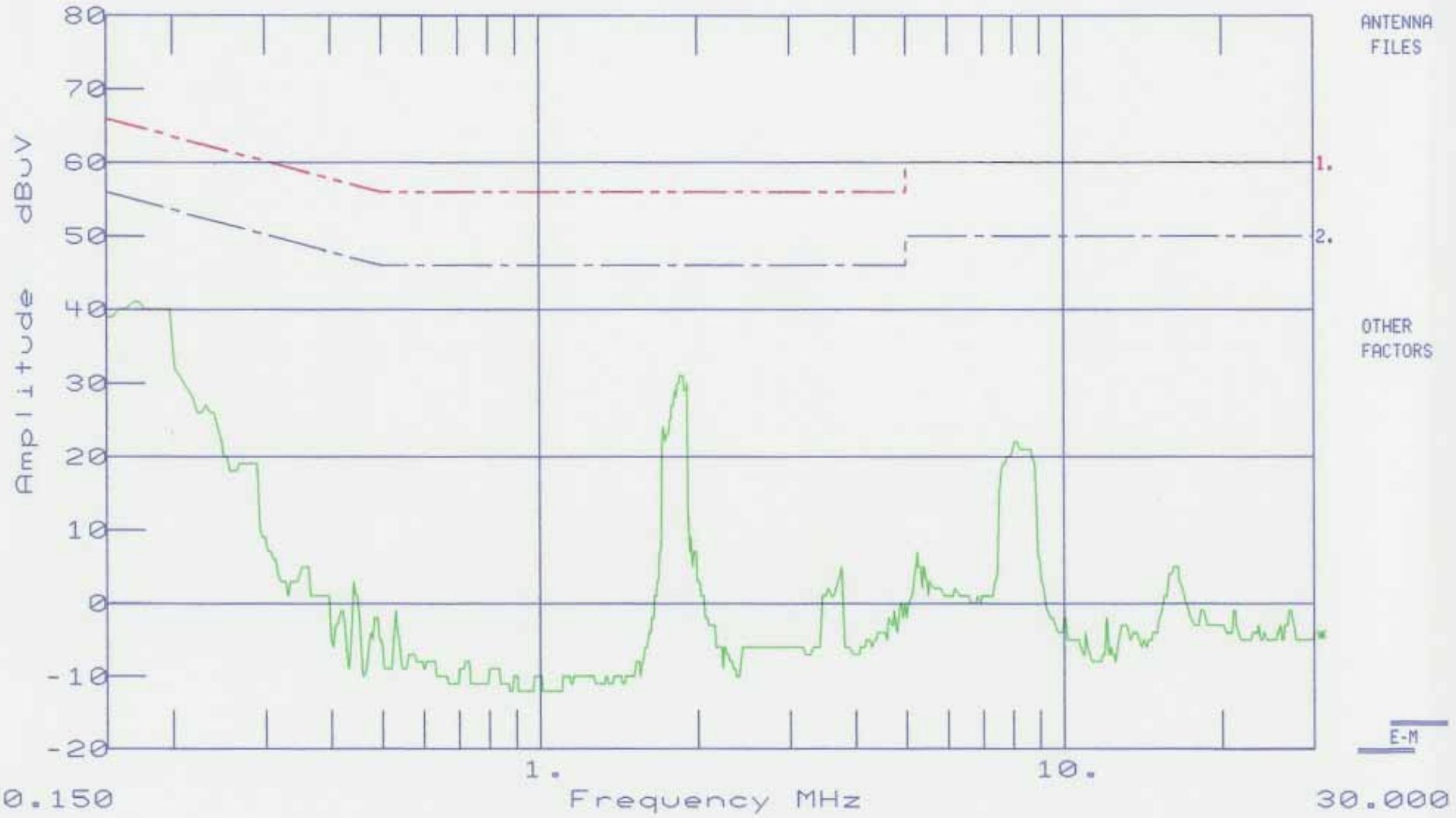
CHECKPOINT

Date :	03/30/04	Time :	10:49:20.35
Technician :	JACK GARNER	Test Equip. :	EMC-30
Test Method :	EN55022 CLASS B	Test Number :	1
Equipment :	LIBERTY DX/GLOBTEK	Sensor Loc. :	NEUTRAL
Mode of Op. :	NORMAL	Sensor Pol. :	
Serial No. :	41267300P0091103017	Ext. Atten. :	0 dB

Comment : 120 VAC / 60 HZ WITH IMX04 FILTERED LINE CORD

EMC-30 SETTINGS
Detector QuasiPeak
Bandwidth CISPR
Dump/Dwell N/A
RF Atten. 10 dB
IF Atten. 10 dB

SPECS
1) CISPR 22 Quasi Peak
2) CISPR 22 AVG
3)
4)



TEST TITLE:CHECKPOINT		PAGE 1
DATA FILE :265_N_A.D30		Freq.(MHz)
Amplitude Units : dBuV	Threshold -18 dB	0.1500

Freq(MHz)	Amp	C22BQP.S30 vs Spec(dB)	C22BAVG.S30 vs Spec(dB)
0.1500	39.0		-17.000 *
0.1542	39.0		-16.771 *
0.1583	40.0		-15.553 *
0.1625	40.0		-15.335 *
0.1689	41.0		-14.014 *
0.1730	41.0		-13.815 *
0.1770	40.0		-14.625 *
0.1812	40.0		-14.430 *
0.1854	40.0		-14.240 *
0.1892	40.0		-14.072 *
0.1933	40.0		-13.894 *
0.1975	40.0		-13.715 *
1.8053	28.0		-18.000 *
1.8121	29.0		-17.000 *
1.8188	28.0		-18.000 *
1.8256	29.0		-17.000 *
1.8323	30.0		-16.000 *
1.8391	30.0		-16.000 *
1.8458	30.0		-16.000 *
1.8525	31.0		-15.000 *
1.8593	31.0		-15.000 *
1.8660	31.0		-15.000 *
1.8728	31.0		-15.000 *
1.8795	31.0		-15.000 *
1.8863	29.0		-17.000 *
1.8930	29.0		-17.000 *
1.8998	29.0		-17.000 *
1.9065	29.0		-17.000 *
1.9134	30.0		-16.000 *

Product Safety Engineering

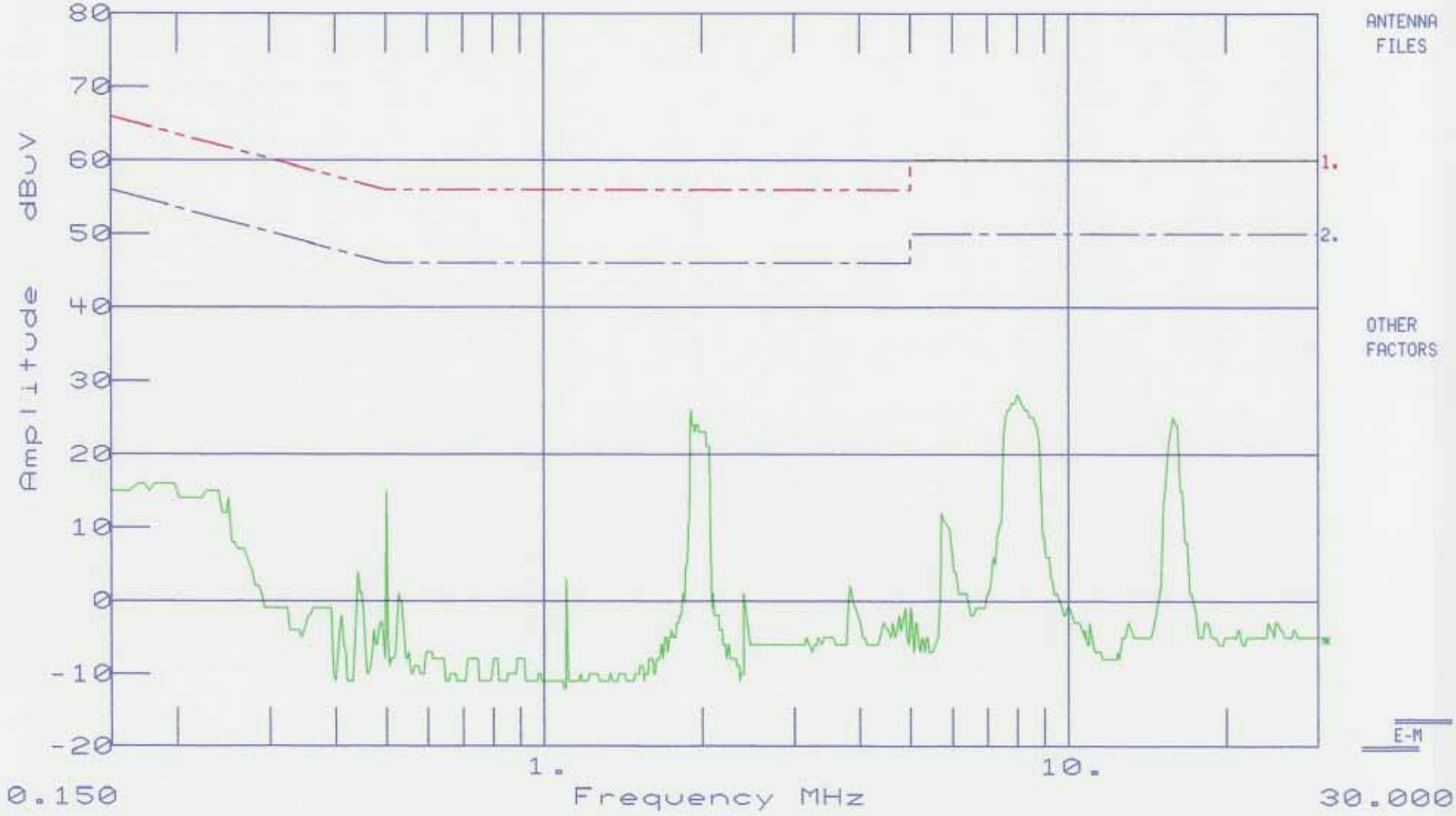
CHECKPOINT

Date :	03/26/04	Time :	08:41:26.76
Technician :	JACK GARNER	Test Equip. :	EMC-30
Test Method :	EN55022 CLASS B	Test Number :	1
Equipment :	LIBERTY GXD /WW224	Sensor Loc. :	LINE
Mode of Op. :	NORMAL	Sensor Pol. :	
Serial No. :	1326750OU0072503012	Ext. Atten. :	0 dB

Comment : 120 VAC / 60 HZ WITH IMX04 FILTERED LINE CORD

EMC-30 SETTINGS
Detector QuasiPeak
Bandwidth CISPR
Dump/DwellN/A
RF Atten. 10 dB
IF Atten. 10 dB

SPECS
1) CISPR 22 Quasi Peak
2) CISPR 22 AVG
3)
4)



TEST TITLE:CHECKPOINT		PAGE 1
DATA FILE :265_L_B.D30		Freq.(MHz)
Amplitude Units : dBuV	Threshold -25 dB	0.1500

Freq(MHz)	Amp	C22BQP.S30 vs Spec(dB)	C22BAVG.S30 vs Spec(dB)
1.8998	22.0		-24.000 *
1.9065	26.0		-20.000 *
1.9134	25.0		-21.000 *
1.9167	24.0		-22.000 *
1.9269	24.0		-22.000 *
1.9302	24.0		-22.000 *
1.9403	23.0		-23.000 *
1.9471	24.0		-22.000 *
1.9538	24.0		-22.000 *
1.9606	24.0		-22.000 *
1.9673	24.0		-22.000 *
1.9741	23.0		-23.000 *
1.9808	23.0		-23.000 *
1.9875	23.0		-23.000 *
1.9943	23.0		-23.000 *
2.0010	23.0		-23.000 *
2.0078	23.0		-23.000 *
2.0145	23.0		-23.000 *
2.0212	23.0		-23.000 *
2.0280	23.0		-23.000 *
2.0347	23.0		-23.000 *
2.0415	21.0		-25.000 *
2.0482	21.0		-25.000 *
2.0550	21.0		-25.000 *
2.0617	21.0		-25.000 *
2.0684	21.0		-25.000 *
7.5803	25.0		-25.000 *
7.6476	26.0		-24.000 *
7.7149	26.0		-24.000 *
7.7822	27.0		-23.000 *
7.8495	27.0		-23.000 *
7.9169	27.0		-23.000 *
7.9842	28.0		-22.000 *
8.0447	28.0		-22.000 *
8.1188	27.0		-23.000 *
8.1526	27.0		-23.000 *
8.2535	26.0		-24.000 *
8.3208	26.0		-24.000 *
8.3679	26.0		-24.000 *
8.4553	25.0		-25.000 *
8.5226	25.0		-25.000 *
8.5765	25.0		-25.000 *
15.8360	25.0		-25.000 *

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Product Safety Engineering

CHECKPOINT

Date :	03/26/04	Time :	09:02:33.68
Technician :	JACK GARNER	Test Equip. :	EMC-30
Test Method :	EN55022 CLASS B	Test Number :	1
Equipment :	LIBERTY GXD /WW224	Sensor Loc. :	NEUTRAL
Mode of Op. :	NORMAL	Sensor Pol. :	
Serial No. :	1326750OU0072503012	Ext. Atten. :	0 dB

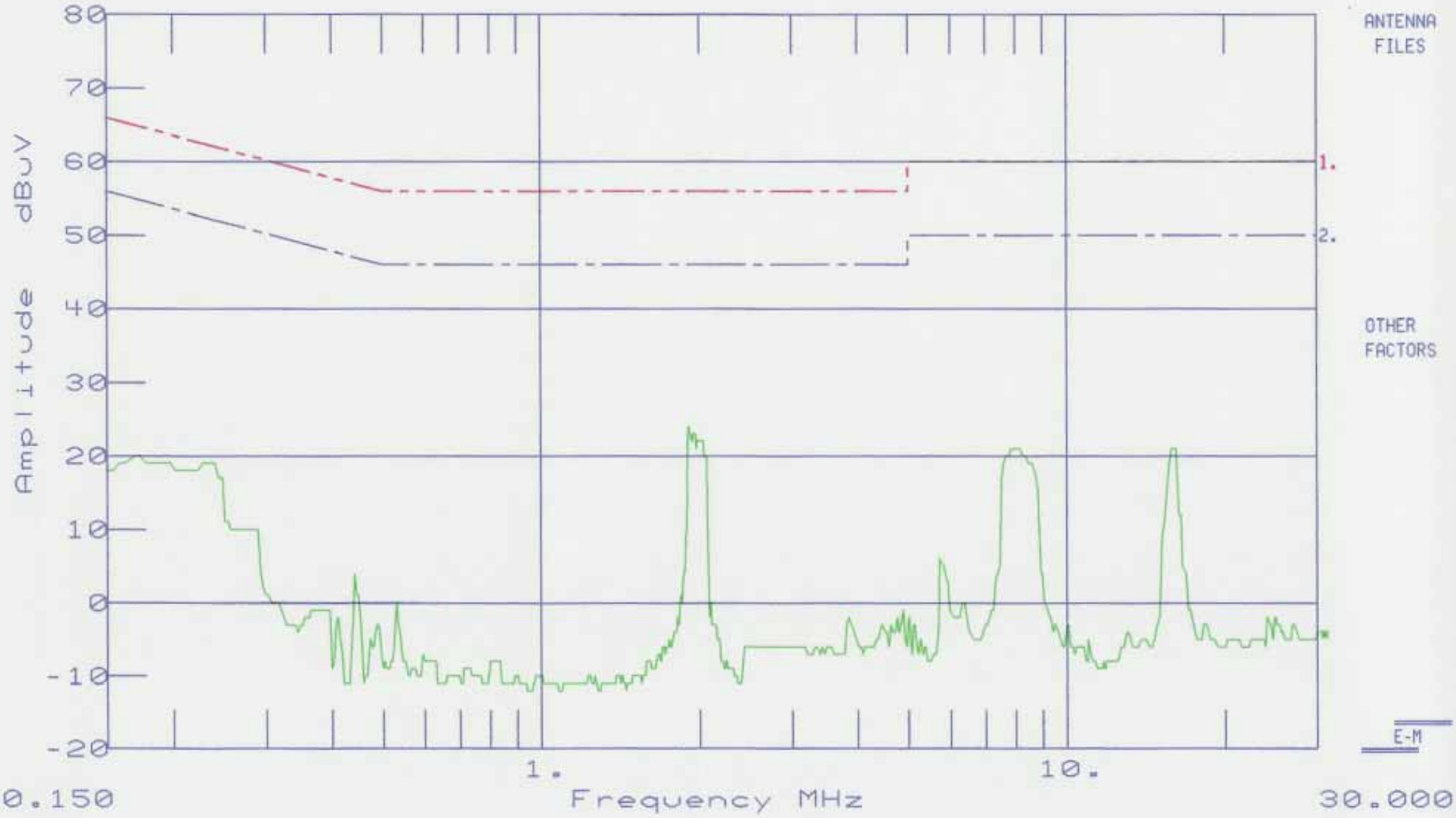
Comment : 120 VAC / 60 HZ WITH IMX04 FILTERED LINE CORD

EMC-30 SETTINGS

Detector	QuasiPeak
Bandwidth	CISPR
Dump/Dwell	N/A
RF Atten.	10 dB
IF Atten.	10 dB

SPECS

1) CISPR 22 Quasi Peak
2) CISPR 22 AVG
3)
4)



TEST TITLE:CHECKPOINT			PAGE 1
DATA FILE :266_N_B.D30			Freq.(MHz)
Amplitude Units : dBuV		Threshold -23 dB	0.1500

Freq(MHz)	Amp	C22BQP.S30 vs Spec(dB)	C22BAVG.S30 vs Spec(dB)
0.1500	34.0		-22.000 *
0.1542	33.0		-22.771 *
0.1689	33.0		-22.014 *
0.1730	33.0		-21.815 *
0.1770	32.0		-22.625 *
0.1812	32.0		-22.430 *
0.1854	32.0		-22.240 *
0.1892	32.0		-22.072 *
0.1933	32.0		-21.894 *
0.1975	32.0		-21.715 *

A18

Product Safety Engineering

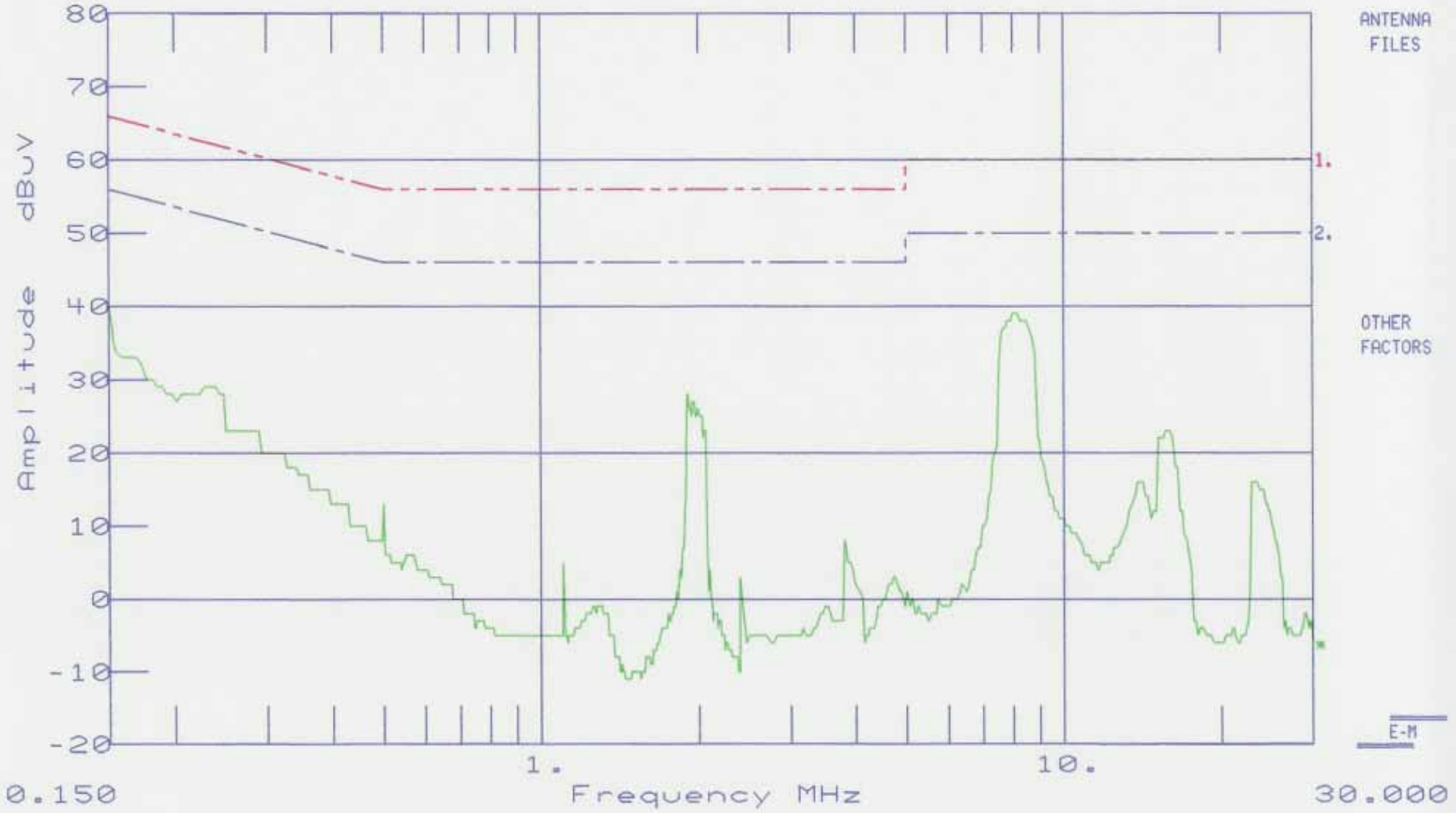
CHECKPOINT

Date :	03/24/04	Time :	15:15:07.58
Technician :	JACK GARNER	Test Equip. :	EMC-30
Test Method :	EN55022 CLASS B	Test Number :	1
Equipment :	LIBERTY GXD /WW425	Sensor Loc. :	LINE
Mode of Op. :	NORMAL	Sensor Pol. :	
Serial No. :	1326750OU0072503012	Ext. Atten. :	0 dB

Comment : 120 VAC / 60 HZ WITH IMX04 FILTER CORD

EMC-30 SETTINGS
Detector QuasiPeak
Bandwidth CISPR
Dump/DwellN/A
RF Atten. 10 dB
IF Atten. 10 dB

SPECS
1) CISPR 22 Quasi Peak
2) CISPR 22 AVG
3)
4)



TEST TITLE:CHECKPOINT			PAGE 1
DATA FILE :265_L_C.D30			Freq.(MHz)
Amplitude Units : dBuV		Threshold -20 dB	0.1500

Freq(MHz)	Amp	C22BQP.S30 vs Spec(dB)	C22BAVG.S30 vs Spec(dB)
0.1500	40.0		-16.000 *
1.9065	28.0		-18.000 *
1.9134	28.0		-18.000 *
1.9201	26.0		-20.000 *
1.9269	26.0		-20.000 *
1.9336	26.0		-20.000 *
1.9471	27.0		-19.000 *
1.9538	27.0		-19.000 *
1.9606	27.0		-19.000 *
1.9673	27.0		-19.000 *
1.9943	26.0		-20.000 *
2.0010	26.0		-20.000 *
7.5130	32.0		-18.000 *
7.5803	36.0		-14.000 *
7.6476	37.0		-13.000 *
7.7149	37.0		-13.000 *
7.7822	38.0		-12.000 *
7.8495	38.0		-12.000 *
7.9169	38.0		-12.000 *
7.9842	39.0		-11.000 *
8.0515	39.0		-11.000 *
8.1188	39.0		-11.000 *
8.1526	39.0		-11.000 *
8.2535	38.0		-12.000 *
8.3208	38.0		-12.000 *
8.3881	38.0		-12.000 *
8.4553	38.0		-12.000 *
8.4755	38.0		-12.000 *
8.5832	37.0		-13.000 *
8.6572	36.0		-14.000 *
8.6908	36.0		-14.000 *
8.7918	34.0		-16.000 *
8.7985	34.0		-16.000 *

A2φ

Product Safety Engineering

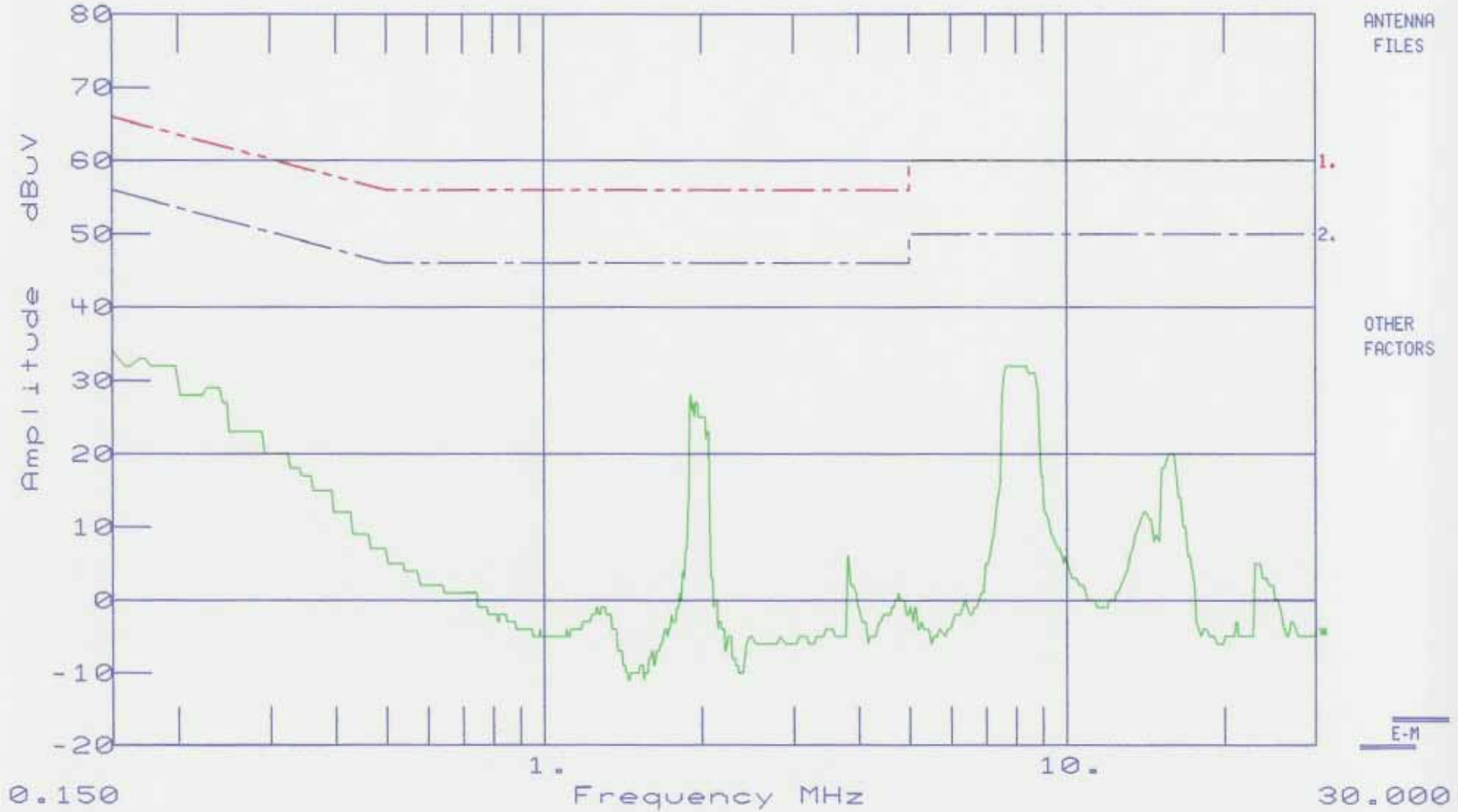
CHECKPOINT

Date :	03/24/04	Time :	14:53:42.33
Technician :	JACK GARNER	Test Equip. :	EMC-30
Test Method :	EN55022 CLASS B	Test Number :	1
Equipment :	LIBERTY GXD /WW425	Sensor Loc. :	NEUTRAL
Mode of Op. :	NORMAL	Sensor Pol. :	
Serial No. :	1326750OU0072503012	Ext. Atten. :	0 dB

Comment : 120 VAC / 60 HZ WITH IMX04 FILTER CORD

EMC-30 SETTINGS
Detector QuasiPeak
Bandwidth CISPR
Dump/Dwell N/A
RF Atten. 10 dB
IF Atten. 10 dB

SPECS
1) CISPR 22 Quasi Peak
2) CISPR 22 AVG
3)
4)



TEST TITLE:CHECKPOINT		PAGE 1
DATA FILE :265_N_C.D30		Freq.(MHz)
Amplitude Units : dBuV	Threshold -20 dB	0.1500

Freq(MHz)	Amp	C22BQP.S30 vs Spec(dB)	C22BAVG.S30 vs Spec(dB)
1.9065	28.0		-18.000 *
1.9099	28.0		-18.000 *
1.9201	26.0		-20.000 *
1.9269	27.0		-19.000 *
1.9336	26.0		-20.000 *
1.9471	27.0		-19.000 *
1.9538	27.0		-19.000 *
1.9606	27.0		-19.000 *
1.9673	27.0		-19.000 *
7.5803	31.0		-19.000 *
7.6476	32.0		-18.000 *
7.7149	32.0		-18.000 *
7.7822	32.0		-18.000 *
7.8294	32.0		-18.000 *
7.9169	32.0		-18.000 *
7.9842	32.0		-18.000 *
8.0515	32.0		-18.000 *
8.1188	32.0		-18.000 *
8.1862	32.0		-18.000 *
8.2535	32.0		-18.000 *
8.3208	32.0		-18.000 *
8.3679	32.0		-18.000 *
8.4553	31.0		-19.000 *
8.5226	31.0		-19.000 *
8.5832	31.0		-19.000 *
8.6572	31.0		-19.000 *
8.6908	31.0		-19.000 *

Bandwidth Plot

A Plot of the operating bandwidth was taken by placing the measuring antenna close to the EUT, setting a spectrum analyzer to (5) dB/div, RBW= 300 kHz, VBW= 1 MHz, span = (7 - 9.24) MHz and (1.18 - 2.5) MHz, peak detection and max hold. The plots are shown of the following pages.

The plots confirm the transmitter bandwidth exceeds (10%) [820 kHz] of the center frequency of (8.2) MHz and [189 kHz] of the center frequency of (1.89) MHz, therefore the limit is (100) uV/meter at (30) meters.

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PRODUCT SAFETY ENGINEERING


PRODUCT SAFETY ENGINEERING
Hp REF 120.5 dBµV ATTEN 30 dB
5 dB/
POS PK
PRODUCT SAFETY ENGINEERING
OPEN AREA TEST SITE
DL
114.1
dBµV
START 1.18 MHz
STOP 2.50 MHz
RES BW 300 kHz
VBW 1 MHz
SWP 20.0 sec

Antenna Current

Antenna	Control Position	Frequency Range (MHz)	TX1 Current mA	TX2 Current mA
DX	12 O'clock	1.73 - 2.05		2900
DX	5 O'clock	7.4 - 8.9	355	
GXD	12 O'clock	1.73 - 2.05		2775
GXD	5 O'clock	7.4 - 8.9	360	

APPENDIX

B

System Under Test Description

Product Safety Engineering, Inc 12955 Bellamy Brothers Blvd. Dade City, FL 33525
Tel (352) 588-2209 Fax (352) 588-2544

Description of System under Test

The Liberty consists of a Checkpoint model 4022 printed wiring board and (2) antenna configuration; DX and GXD. The system receives power from an external DC power supply. The EUT was tested using (3) different power supplies; Globtek model GT-255024D-R, Deltron models WW 424 and WW 224. The filtered AC power cord, Eupen Kabelwerk model IMX 04, was used during ther testing. The 24V DC power in of the EUT uses a (3) pin plug (only 2 cabled) which is (1) meter long, shielded and the shield is terminated at power supply end only.

The following unterminated cables were attached:

All the PDA units:

J9 Synch port 4 pin plug to unterminated.

J10 Synch port 4 pin plug to unterminated.

J13 COMM OUT 6 pin plug to unterminated.

J14 COMM IN 6 pin plug to unterminated.

All cables shielded but shields were not connected

CHECKPOINT SYSTEMS, INC.

FACSIMILE TRANSMISSION COVER

To: F.C.C. Lab

Date: 7/26/96

Attention: Mr. Ed Gibbons

Fax No.: (301) 344-2050

No. of Pages: 2 (Incl. Cover)

From: Mr. Gregory E. Slect
CHECKPOINT SYSTEMS, INC.
101 WOLF DRIVE, P.O. BOX 188
THOROFARE, N.J. 08086

Telephone: (609) 384-2339 Direct
Toll Free: (800) 257-5540 Ext. 2339
Fax No.: (609) 384-2366

Dear Mr. Gibbons:

Following up on our recent phone conversations, please confirm and if necessary correct our understanding of the points discussed below. Based on the details of our fax dated 7/3/96:

✓ • Our pulsed emissions will be treated as frequency hoping, where the bandwidth will be considered the spectrum contained between the lowest and highest carrier frequency we pulse.

✓ • A simple ratio of the maximum single restricted band infringed upon divided by the bandwidth of our fundamental emission must be less the 1% to satisfy section 15.205 of the rules.

→ • For fundamental and harmonic emissions ~~[illegible]~~ *in the band 1.705-10 MHz*, a 30 dB reduction from the true peak is to be compared to the limits of 100uV/meter ~~[illegible]~~ at 30 meters. The unit is modulated as normally installed. True peak refers to the point at which the analyzer bandwidth is adjusted for minimum pulse desensitization.

→ • For ~~[illegible]~~ *emissions outside the 1.705-10 MHz band* CISPR quasi-peak measurements will be made with the unit modulating as normally installed. Based on the bandwidth plot, care must be given to measure multiples of the worst case emission points. Limits are as specified in section 15.209.

✓ • Conducted emissions remain as specified in part 15 of the rules.

Ed Gibbons
8/2/96

APPENDIX

C

Measurement Protocol

Product Safety Engineering, Inc 12955 Bellamy Brothers Blvd. Dade City, FL 33525
Tel (352) 588-2209 Fax (352) 588-2544

The test methodology followed during the collection of the data included within this technical report was ANSI C63.4:1992.

The EUT was powered with (120) VAC / (60) Hz during the collection of data included within.

The data is compared to the FCC Part 15 Class A limits.

The "EMI" instrumentation is capable of calculating the final emission level based on the following formula:

Level at the receiver (dBμV) + Antenna Correction Factor (dB/M) + Cable Loss (dB) - Preamp Gain (dB) = Actual Level in dBμV/M.

The sample calculation below is based on the actual test data collected:

Observed Level		**46.3**	dBμV	
ACF	+	**22.8**	dB/M	
Cable Loss	+	**3.2**	dB	
Preamp Gain	-	**26.0**	dB	
Actual Level		**46.3**	dBμV/M	@ **760** MHz

Please have a company official review this report and sign.

_____