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EN 60974-10 Test Report

on

Plasma Cutting System
Model Number: MAXPRO200

Customer Name:	Hypertherm, Inc.
Customer P.O:	182062
Date of Report Revision:	September 6, 2012
Test Report No:	R-5606N, Rev. B
Test Start Date:	June 11, 2012
Test Finish Date:	June 22, 2012
Test Technician:	M. Seamans
Laboratory Supervisor:	T. Hannemann
Approved By:	S. Wentworth
Report Revision Prepared By:	J. Ramsey, T. Hannemann

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Certification and Signatures

We certify that this report is a true report of the results obtained from the tests of the equipment stated, and relates only to the equipment tested. We further certify that the measurements shown in this report were made in accordance with the procedures indicated and vouch for the qualifications of all Retlif Testing Laboratories personnel taking them.

Todd Hannemann
Laboratory Supervisor
iNARTE Certified Technician ATL-0255-T

Scott Wentworth
Branch Manager
NVLAP Approved Signatory

Non-Warranty Provision
The testing services have been performed, findings obtained and reports prepared in accordance with generally accepted laboratory principles and practices. This warranty is in lieu of all others, either expressed or implied.

Non-Endorsement
This test report contains only findings and results arrived at after employing the specific test procedures and standards listed herein. It is not intended to constitute a recommendation, endorsement or certification of the product or material tested. This report must not be used by the client to claim product endorsement by NVLAP, NIST or any other agency of the U.S. Government.

Revision History

Revisions to this document are listed below; the latest revised document supersedes all previous issues of this document.

Revision	Date	Pages Affected
-	June 26, 2012	Original Release
A	August 8, 2012	Global Changes: • All page numbering--incorrect in original • Document revised from R-5606N to R-5606N, Rev. A • Revised Harmonics Mode of Operation per customer request Cover Page: • Changed report written by C. Reitz & T. Hannemann to report revised by J. Ramsey & T. Hannemann 20: • Clarified General Test Setup 54: • Modified Paragraph 6.3.3 per Appendix B of EN 60974-10 55: • Revised Paragraph 6.3.4-Typographical error 56: • Revised Paragraph 6.3.8 to remove conditional connection requirement and show compliance with Appendix B statement 60-65: • Removed conditional connection note from data. 66: • Modified Paragraph 6.4.4 by removing Phase 1
B	September 4, 2012	Global Changes: • Document revised from R-5606N, Rev. A to R-5606N, Rev. B 68: • Revised calculated Rsce value based on final measurement from 200 to 150 72-74: • Revised test data

Test Program Summary

Report Number:	R-5606N, Rev. B
Customer:	Hypertherm, Inc.
Address:	Etna Road
	Hanover, NH 03755
Test Sample:	Plasma Cutting System
Model Number:	MAXPRO200
Serial Number:	Alpha 6
Manufacturer:	Hypertherm, Inc.

Test Specification:
EN 60974-10: 2007- Arc welding equipment - Part 10: Electromagnetic compatibility (EMC) requirements

Mode of Operation:
During the performance of all Emissions and Immunity testing, the Plasma Cutting System was operated as follows:

Emissions:
- Idle: Powered On; No Load
- Minimum: Powered On; Output set to 50 Amps
- Maximum: Powered On; Output set to 98 Amps

Immunity
(ESD, Radiated Immunity, Electrical Fast Transient, Surge, Conducted Immunity & Voltage Dips & Interrupts):
- Idle: Powered On; No Load
- 100% Duty Cycle: Powered On; Output current set to 98 Amperes

Harmonics:
- Rated Duty Cycle: Powered On; Output set to 33 kW (148 Amperes, 223V) at rated duty cycle (100%)

Flicker:
- 100% Duty Cycle: Powered On; Output current set to 98 Amperes

Susceptibility Criteria:
The following were considered indications of EUT susceptibility:

Idle Mode:

- Change in operating state (Failure to remain powered on with no load/output current)

100% Duty Cycle:

- Change in operating state beyond which is allowed in Performance Criteria A, B & C as specified in Paragraph 5.6 herein.
- Loss of output which cannot be reinitiated by the operator by normal means

Test Methods:
The test methods performed on the EUT and the corresponding test results are shown in Table 1.

Table 1 - Test Methods and Results

Paragraph	Test Method	Test Results
6.1	CISPR 11, Conducted Emissions, Class A	Complied
6.2	CISPR 11, Radiated Emissions, Class A	Complied
6.3	IEC 61000-3-11, Voltage Fluctuation and Flicker	Complied
6.4	IEC 61000-3-12, Harmonics	Complied
6.5	IEC 61000-4-2, Electrostatic Discharge	Complied
6.6	IEC 61000-4-3, Radiated Immunity	Complied
6.7	IEC 61000-4-4, Electrical Fast Transient/Burst, Power Leads	Complied
6.8	IEC 61000-4-4, Electrical Fast Transient/Burst, I/O Leads	Complied
6.9	IEC 61000-4-5, Surge Immunity	Complied
6.10	IEC 61000-4-6, Conducted Immunity, Power Leads	Complied
6.11	IEC 61000-4-6, Conducted Immunity, I/O Leads	Complied
6.12	IEC 61000-4-11, Voltage Dips, Interrupts and Variations	Complied

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All test methods listed above are included in Retlif Testing Laboratories Scope of Accreditation and were performed in accordance with the Retlif Testing Laboratory Quality System which is compliant with the requirements of ISO/IEC 17025 General Requirements for the Competence of Calibration and Testing Laboratories.

1.0 Scope

The purpose of this testing program was to determine the compliance of a Plasma Cutting System (EUT), Model Number: MAXPRO200, as described in Paragraph 5.0 of this report, to the essential requirements of European Community Council Directive 2004/108/EC, the EMC Directive.

2.0 Applicable Documents

The following documents form a part of this test report to the extent specified herein:

RCM-001; Rev H	-	Retlif Testing Laboratories, Calibration Manual
RQM-001; Rev O	-	Retlif Testing Laboratories, Quality Assurance Manual
ANSI/NCSL Z540.1; 94 (R2002)	-	Calibration Laboratories and Measuring and Test Equipment - General Requirements
MIL-PRF-15733H	-	Filters, Radio Frequency Interference, General Specifications for
CISPR 11:2003	-	Industrial, scientific and medical (ISM) radio-frequency equipment - Electromagnetic disturbance characteristics - Limits and methods of measurement
IEC 61000-3-11: 2000	-	Electromagnetic compatibility (EMC) – Part 3-11: Limits – Limitation of voltage changes, voltage fluctuations and flicker in low-voltage supply systems - Equipment with rated current < 75A and not subject to conditional connection
IEC 61000-3-12: 2004	-	Electromagnetic compatibility (EMC) – Part 3-12: Limits – Limits for harmonic currents produced by equipment connected to low-voltage systems with inputs > 16 A and < 75 A per phase
IEC 61000-4-2 Edition 2.0: 2008-12	-	Electromagnetic compatibility (EMC)- Part 4-2: Testing and measurement techniques- Electrostatic discharge immunity test
IEC 61000-4-3 Edition 3.2:2010-04		Electromagnetic compatibility (EMC)- Part 4-3: Testing and measurement techniques- Radiated, radio-frequency, electromagnetic field immunity test
IEC 61000-4-4 Edition 2.1: 2011-03	-	Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test
IEC 61000-4-5 Edition 2.0: 2005-11	-	Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test
IEC 61000-4-6 Edition 3.0: 2008-10	-	Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio frequency fields.
IEC 61000-4-11 Edition 2.0: 2004-03	-	Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity test
EN 60974-10: 2007	-	Arc welding equipment - Part 10: Electromagnetic compatibility (EMC) requirements

3.0 Acronyms and Definitions

The following acronyms may be used within this test report:

BCI:	Bulk Cable Injection
CISPR:	International Special Committee on Radio Interference
CE:	Conducted Emissions
CS:	Conducted Susceptibility
dB:	Decibel
dBµA:	Decibels Relative to One Microampere
dBµV:	Decibels Relative to One Microvolt
dBµV/m:	Decibels Relative to One Microvolt per Meter
EMC:	Electromagnetic Compatibility
EMI:	Electromagnetic Interference
EN:	European Norm
EUT:	Equipment Under Test
GHz:	Gigahertz
GPIB:	General Purpose Interface Bus
Hz:	Hertz
IEC:	International Electrotechnical Commission
ISM:	Industrial, Scientific and Medical
kHz:	Kilohertz
LISN:	Line Impedance Stabilization Network
mA:	Milliampere
mS:	Millisecond
mΩ:	Milliohm
MHz:	Megahertz
OATS:	Open Area Test Site
RE:	Radiated Emissions
RF:	Radio Frequency
RS:	Radiated Susceptibility
RMS:	Root Mean Square
µA:	Microampere
µF:	Microfarad
µH:	Microhenry
µV:	Microvolt
µV/m:	Microvolts per Meter
V/m:	Volts per Meter
Ω:	Ohm

4.0 General Requirements

4.1 Test Environment

All testing was performed at the Retlif Testing Laboratories Goffstown, New Hampshire facility. Each test method was performed in the environment specified within the test standard. Where the test environment deviated from that specified, it is noted in the applicable test method.

4.1.1 Shielded Enclosures

All testing which required the use of a shielded enclosure was performed in a solid steel, double wall, modular type. The attenuation characteristics of the enclosure were in accordance with IEEE-Std-299. All input power lines to the enclosure were filtered utilizing filters manufactured in accordance with MIL-PRF-15733H and tested in accordance with MIL-STD-220B. The walls of the enclosure were treated with a combination of carbon impregnated foam and ferrite tile. For IEC 61000-4-3, the floor between the EUT and test antenna was treated with ferrite tile. The enclosure met the field uniformity requirements contained therein.

4.1.2 Conducted Emissions

All conducted emissions testing described herein was performed on a conducting ground plane. The conducting ground plane for measuring AC power line conducted emissions consisted of a floor-earth grounded conducting surface. The conducting surface was a minimum of 2.0 meters x 2.0 meters in size and extended at least 0.5 meters beyond the vertical projection (footprint) of the EUT. The ground plane was covered by insulating material 10 millimeters thick.

4.1.3 Radiated Emissions

4.1.3.1 Preliminary

Preliminary radiated emissions measurements were performed in a shielded enclosure.

4.1.3.2 Formal

Formal radiated emissions testing were performed on an open area test site (OATS). The test site measurements were in accordance with CISPR 16. The conducting ground plane was constructed of one quarter inch ground cloth. The equipment under test was placed in an RF transparent enclosure on top of a flush mounted, metallic turntable. The test site met the test site attenuation requirements specified in CISPR 16 throughout the range of measurement frequencies.

4.2 Test Instrumentation

A listing of all test instrumentation utilized is contained within each applicable test method. These listings indicate the model, manufacturer, frequency range, last calibration date and calibration due date of all instrumentation utilized. All instrumentation utilized was calibrated prior to use in accordance with the procedures set forth in Retlif Testing Laboratories standard manuals RCM-001 and RQM-001 which are in accordance with the requirements of ANSI/NCSL Z-540.1.

4.2.1 Measurement Uncertainty

In accordance with ISO/IEC 17025, Retlif Testing Laboratories has produced an estimate of the uncertainty of its measurements using accepted methods of analysis, through the production and application of suitable uncertainty of measurement procedures. For emissions testing, measurement uncertainty has been calculated in order to provide a confidence level of 95% (K=2.0). For immunity/susceptibility testing, measurement uncertainty has been calculated to provide a minimum confidence level of 90% (K=1.64). The results of these calculations are shown in the table below:

Table 2 - Measurement Uncertainty

Test Method	Confidence Level	Probability Distribution	K	Expanded Uncertainty
Conducted Emissions	95 %	Normal	2.00	3.72 dB
Radiated Emissions	95 %	Normal	2.00	6.10 dB
Harmonics	95 %	Normal	2.00	3.19 %
Flicker	95 %	Normal	2.00	5.10 %
Conducted Immunity	95 %	Normal	2.00	2.21 dB

For Electrical Fast Transient/Burst (EFT/B) and Surge immunity testing, the test methods specify the limits to the values of the major sources of uncertainty of measurement. The test equipment utilized to perform these tests has been determined to meet the requirements of the relevant standards and the results have been reported in accordance with the relevant standards. Therefore, the requirements for measurement uncertainty are deemed to have been satisfied.

4.3 Detector Function

For the conducted emissions testing described herein Peak, Quasi-Peak and Average detector functions in accordance with CISPR 16 were utilized.

For the radiated emissions testing described herein a Quasi-Peak detector function in accordance with CISPR 16 was utilized.

5.0 Description of Equipment Under Test

5.1 EUT Description

The Plasma Cutting System, Model Number: MAXPRO200, is a highly portable air plasma cutting system The power supply provides 200 Amperes maximum output and includes all control circuitry, electrical and gas inputs and outputs, pilot circuitry and a torch. The EUT also includes provisions for a primary input power cable and a work cable and clamp. The system is designed to for professional hand cutting, gouging and mechanical cutting.

5.1.1 Designations

Table 3 details the equipment nomenclature, Manufacturer, Part Number, Model Number and Serial Number, where applicable, of all EUT system components, if applicable.

Table 3 - EUT Designations

Description	Manufacturer	Model Number	Serial Number
Plasma Cutting System	Hypertherm	MAXPRO200	Alpha 6

5.1.2 Physical Characteristics

Table 4 details the physical characteristics of all EUT components, if applicable.

Table 4 - Physical Characteristics

Description	Depth (cm)	Width (cm)	Height (cm)	Weight (kg)
Plasma Cutting System	104.0	69.0	101.0	283.0

5.2 Electrical Characteristics

5.2.1 Power Input

Table 5 details the electrical power requirements of all EUT components:

Table 5 - Power Input

Description	Input Voltage	Frequency	Current	Phases
Plasma Cutting System	400 VAC	60 Hz	25 Amperes	Three

5.3 EUT Configuration

For all test methods, the EUT was configured as shown in the General Test Setup drawing, Figure 1.

5.3.1 Power Leads and Interconnecting Cables

All power and interconnecting cables, including cable length, routing and type were as specified in Table 6:

Table 6 - EUT Interconnecting Cable Configurations

System Component	EUT Port	Cable Length (Meters)	Signal Description	Cable Description	Routed To
Power Supply	Input	2.0	AC Power Input	Unshielded / Four Conductor	AC Mains
Power Supply	Output	30.0	DC	Unshielded / Work Lead	Load
Power Supply	Output	30.0	DC	Unshielded / Test Lead	Load
Power Supply	Output	30.0	DC	Unshielded / Torch Lead	Load
Power Supply	I/O	30.0	Discretes	Unshielded / Remote Cable	I/O

5.4 Modifications

No modifications were made to the EUT during the course of this testing program in order to demonstrate compliance with the specified requirements.

5.5 Mode of Operation

The Plasma Cutting System was tested in the following modes of operation for Emissions and Immunity testing:

Emissions:

- Idle: Powered On; No Load
- Minimum: Powered On; Output set to 50 Amps
- Maximum: Powered On; Output set to 98 Amps

Immunity

(ESD, Radiated Immunity, Electrical Fast Transient, Surge, Conducted Immunity & Voltage Dips & Interrupts):

- Idle: Powered On; No Load
- 100% Duty Cycle: Powered On; Output current set to 98 Amperes

Harmonics:

- Rated Duty Cycle: Powered On; Output set to 33 kW (148 Amperes, 223V) at rated duty cycle (100%)

Flicker:

- 100% Duty Cycle: Powered On; Output current set to 98 Amperes

5.5.1 Support Equipment

All equipment that was utilized to achieve the EUT operating state specified in Paragraph 5.5 is listed in Table 7:

Table 7 - Support Equipment

Description	Manufacturer
Load Bank	Hypertherm
Work Lead	Hypertherm
Test Lead	Hypertherm
Torch and Torch Lead	Hypertherm

5.6 Susceptibility Criteria

Idle Mode:

- Change in operating state (Failure to remain powered on with no load/output current)

100% Duty Cycle:

- Change in operating state beyond which is allowed in Performance Criteria A, B & C as specified below.
- Loss of output which cannot be reinitiated by the operator by normal means

The following performance criteria (as applicable), as outlined in EN 60974-10, were used to determine compliance with the requirements:

IEC 61000-4-2	- Performance Criteria B
IEC 61000-4-3	- Performance Criteria A
IEC 61000-4-4	- Performance Criteria B
IEC 61000-4-5	- Performance Criteria B
IEC 61000-4-6	- Performance Criteria A
IEC 61000-4-11	- Performance Criteria B and C

Performance Criteria A: The arc welding equipment shall continue to operate as intended. A variation in welding current, wire feed speed, and travel speed of ±10% of setting is permitted, unless the manufacturer states otherwise. All controls shall continue to function and, in particular, it shall be possible to terminate the welding current using the normal switch provided, for example, the switch on a metal inert/active gas welding torch or foot control. No loss of stored data is permitted. After the test the output shall return to the original setting. Under no circumstances shall the no-load voltage exceed those values given in EN 60974-1.

Performance Criteria B: A variation in welding current, wire feed speed, and travel speed of +50/-100% is permitted (in practice this may result in the arc extinguishing, in which case the arc may be reinitiated by the operator using the normal means). It shall be possible to terminate the welding current using the normal switch provided, for example, the switch on a metal inert/active gas welding torch or a foot control. No loss of stored data is permitted. After the test the output shall return to the original setting. Under no circumstances shall the no-load voltage exceed those values given in EN 60974-1.

Performance Criteria C: Temporary Loss of function is permitted, requiring the arc welding equipment to be reset manually.

Susceptibility Criteria (con't)

NOTE: This may require the equipment to be switched off and on.

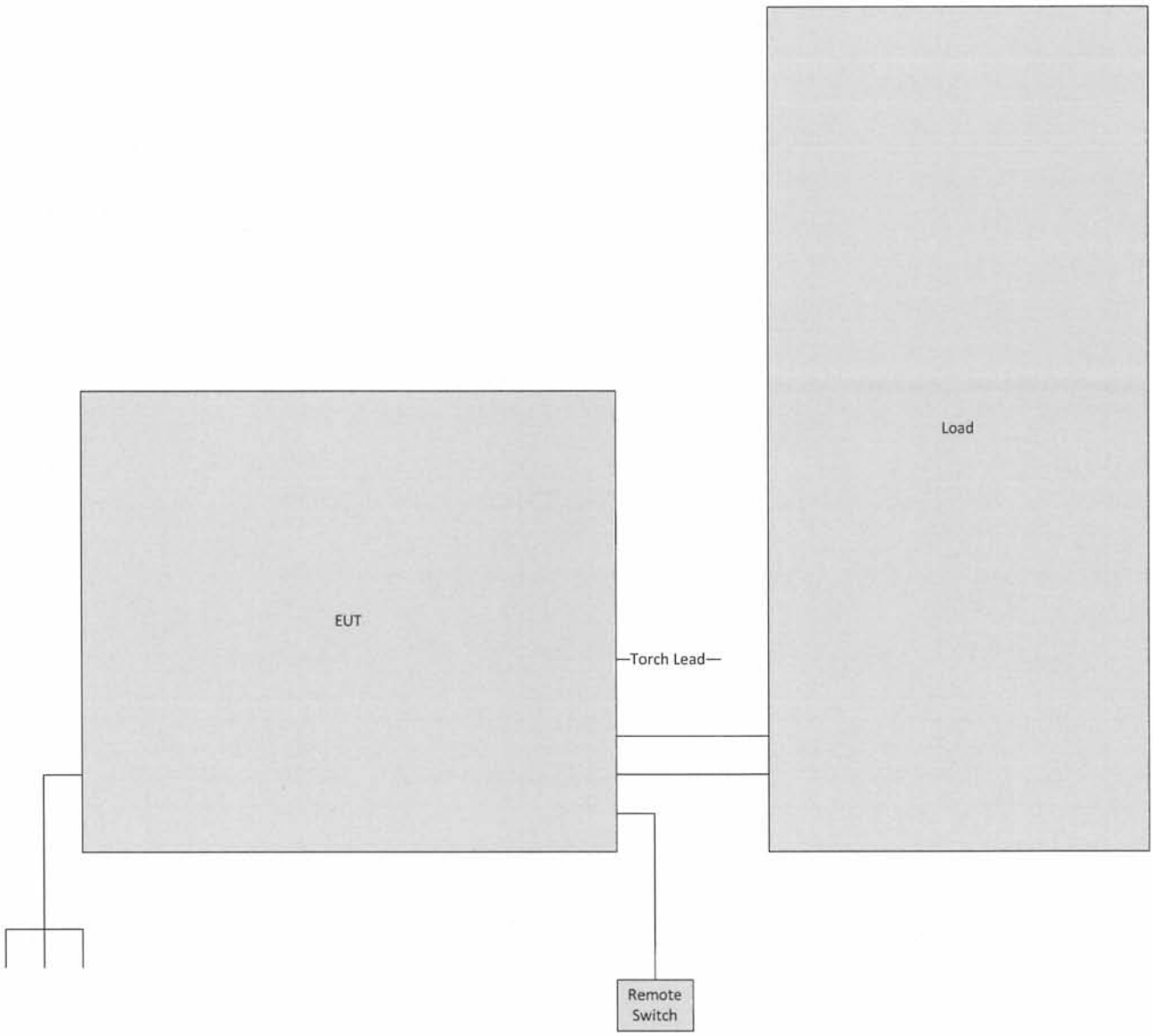
No loss of stored data is permitted unless it can be restored by the operation of the controls. Under no circumstances shall the no-load voltage exceed those values given in EN 60974-1.

The EUT performance was verified by visually monitoring the front display for current level and current clamp meter for current reading.

5.6.1 Monitoring Equipment

No monitoring equipment was utilized to monitor the EUT for indications of degradation or malfunction (susceptibility).

Figure 1 - General Test Setup



6.0 Test Methods Performed and Test Results

The following test methods were performed on the EUT. All testing documented herein was performed in the sequence shown in Table 8:

Table 8 - Test Sequence and Results

Testing Dates	Para.	Test Method	Results
June 13, 2012	6.1	CISPR 11, Conducted Emissions, Class A	Complied
June 13, 2012	6.7	IEC 61000-4-4, Electrical Fast Transient/Burst, Power Leads	Complied
June 13-14, 2012	6.9	IEC 61000-4-5, Surge Immunity	Complied
June 19, 2012	6.6	IEC 61000-4-3, Radiated Immunity	Complied
June 19, 2012	6.12	IEC 61000-4-11, Voltage Dips, Interrupts and Variations	Complied
June 19, 2012	6.8	IEC 61000-4-4, Electrical Fast Transient/Burst, I/O Leads	Complied
June 20, 2012	6.2	CISPR 11, Radiated Emissions, Class A	Complied
June 21, 2012	6.10	IEC 61000-4-6, Conducted Immunity, Power Leads	Complied
June 21, 2012	6.11	IEC 61000-4-6, Conducted Immunity, I/O Leads	Complied
June 21, 2012	6.4	IEC 61000-3-12, Harmonics	Complied
June 21, 2012	6.3	IEC 61000-3-11, Voltage Fluctuation and Flicker	Complied
June 22, 2012	6.5	IEC 61000-4-2, Electrostatic Discharge	Complied

6.1 CISPR 11, Conducted Emissions, 150 kHz to 30 MHz

6.1.1 Normative Reference
CISPR 11 Edition 4: 2003

6.1.2 Purpose
The purpose of this test was to determine the magnitude of the radio frequency emissions emanating from the EUT via conduction on the AC power leads in the frequency range of 0.15 to 30 MHz.

6.1.3 Test Limits
The limits shown in Table 9 and Table 10 were used to determine compliance of the EUT to the requirements of CISPR 11:

Table 9 - Conducted Emissions, Test Limits, Load Conditions

Frequency Range	Group 2, Class A Limits (dBµV)	
	Quasi-Peak	Average
0.15 MHz to 0.50 MHz	100.0	90.0
0.50 MHz to 5.0 MHz	86.0	76.0
5.0 MHz to 30.0 MHz	90.0 to 70.0*	80.0 to 60.0*

* Limit decreases linearly with the log of the frequency.

NOTE: In accordance with Clause 6.3.2.2 of EN 60974-10: 2007, the applicable loaded limit was selected based on the rated maximum supply current.

Table 10- Conducted Emissions, Test Limits, Idle State

Frequency Range	Group 1, Class A Limits (dBµV)	
	Quasi-Peak	Average
0.15 MHz to 0.50 MHz	79.0	66.0
5.0 MHz to 30.0 MHz	73.0	60.0

6.1.4 Leads Tested
The following AC power input leads of the EUT were tested separately to demonstrate compliance:

- 400 VAC, 60 Hz, Phase 1
- 400 VAC, 60 Hz, Phase 2
- 400 VAC, 60 Hz, Phase 3

6.1.5 Test Setup

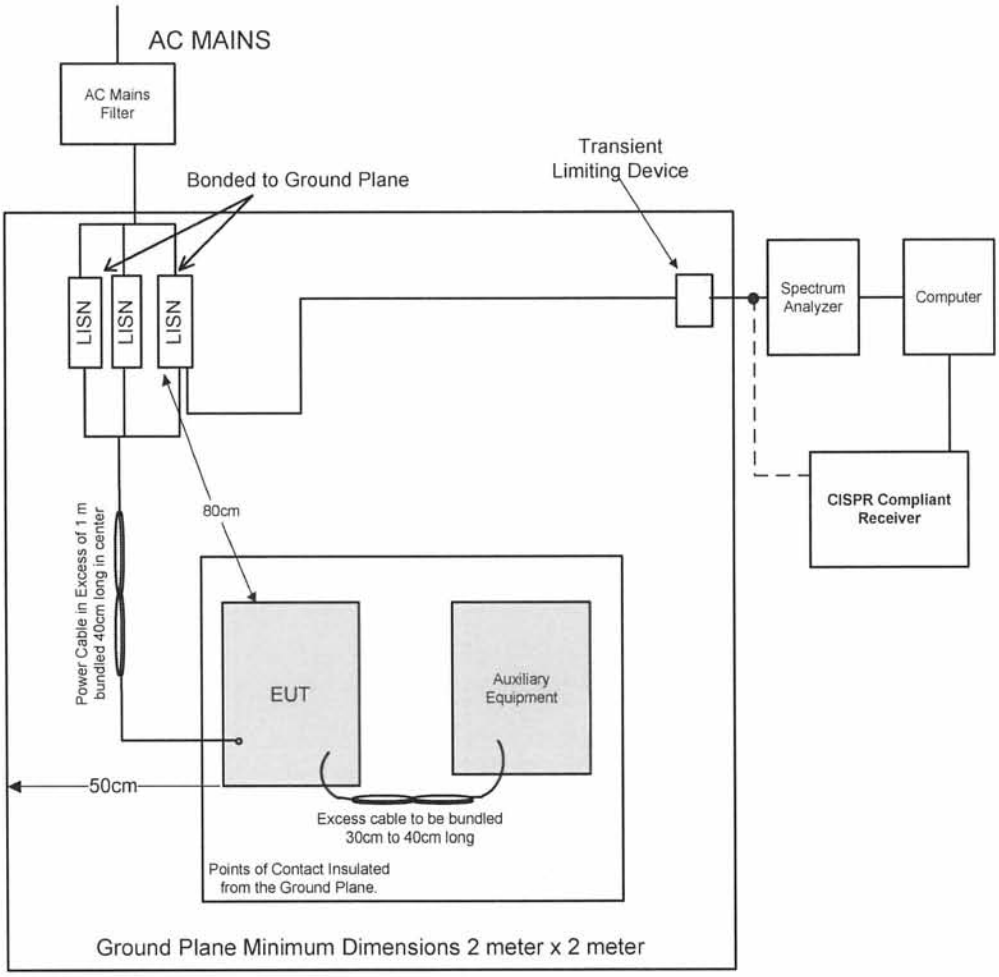
The EUT and associated cabling, configured as detailed in paragraph 5.0 herein, was placed on the ground plane, the points of contact being insulated from the ground plane but otherwise consistent with normal use. The metal ground plane extended at least 0.5 m beyond the boundary of the equipment under test, and had a minimum size of 2.0 m x 2.0 m. All EUT components were located at least 0.8 m from all other metal surfaces. The ground plane was connected to the reference earth terminal of the LISN (V-network) with a conductor as short as possible. The LISN was located so that its closest surface was no less than 0.8 m from the nearest boundary of the equipment under test.

Each current carrying conductor of the EUT's power cord was then connected to a 50 ohm/50 µH LISN. The LISNs were mounted to the ground plane in a position that produced a minimum distance of 0.8 m between the EUT and the LISNs. Power cord length in excess of 1.0 m was folded to and forth to form a bundle in the approximate center of the cable not exceeding 40 cm until the overall cable length was equal to 1.0 m. Earth connections, where required for safety purposes, were connected to the reference "earth" point of the LISN. Where not otherwise provided or specified by the manufacturer, they were 1 m long and run parallel to the mains connection at a distance of not more than 0.1 m.

The power and signal cables were oriented in relation to the ground plane in a manner equivalent to actual use and precautions taken with the layout of the cables to ensure that spurious effects did not occur. Excess length of interconnecting cables was bundled at the approximate center of the cable with bundles 30 to 40 cm in length.

The RF port of the LISN was connected to the test receiver by means of 50 Ohm coaxial cable through a transient limiting device. The RF ports of LISNs installed in power leads not under test were terminated in 50 Ohms.

Figure 2 - Conducted Emissions, Test Setup



6.1.6 Test Equipment

The details of the test equipment utilized during the performance of this test method are shown below:

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
5038	FLUKE	10DB ATTENUATOR	10KHZ - 1GHZ	Y9304	10/21/2011	10/21/2012
514	SOLAR ELECTRONICS	LINE IMPEDANCE STABILIZATION NETWORK	50 Hz - 400 Hz	8602-50-TS-50-N	8/10/2011	8/10/2012
515	SOLAR ELECTRONICS	LINE IMPEDANCE STABILIZATION NETWORK	50 Hz - 400 Hz	8602-50-TS-50-N	8/10/2011	8/10/2012
516	SOLAR ELECTRONICS	LINE IMPEDANCE STABILIZATION NETWORK	50 Hz - 400 Hz	8602-50-TS-50-N	8/10/2011	8/10/2012
R444	AGILENT / HP	SPECTRUM ANALYZER	100 Hz - 26.5 GHz	E7405A;A	6/4/2010	7/4/2012

6.1.7 Test Procedure

With the test instrumentation and the EUT configured as stated above, the following steps were performed:

1. The EUT was operated as detailed in the first operating mode as specified in paragraph 5.5 herein.
2. The measurement system was configured to measure the emissions on the first lead under test in the frequency range of 150 kHz to 30 MHz, utilizing a peak detector function.
3. The peak data obtained in step 2 was then compared to the specified Quasi-Peak and average limits.
4. If the peak data obtained in step 2 was found to be in compliance with the average limit, then this lead of the test sample was found to comply and the next lead under test was configured for testing beginning at step 2.
5. If the peak data obtained in step 2 was found to be in compliance with the Quasi-Peak limit but not the average limit, the emissions exceeding the average limit were measured utilizing a CISPR compliant receiver with an average detector.
6. If the average data obtained in step 5 complied with the average limit then this lead of the test sample was found to comply and the next lead under test was configured for testing beginning at step 2.
7. If the peak data obtained in step 2 did not comply with the both specified Quasi-Peak and average limits the emissions exceeding the specified limits were measured utilizing a CISPR compliant receiver with both Quasi-Peak and average detectors.
8. The obtained Quasi-Peak data was then compared to the specified Quasi-Peak limit, and the average data was compared to the average limit. If the obtained data was found to be in compliance with specified limits, then this lead of the test sample was found to comply.
9. Steps 1 through 8 were repeated for each remaining lead of the EUT.
10. Steps 1 through 9 were repeated for each additional mode of operation outlined in paragraph 5.5.

6.1.8 Sample Calculations

Shown below is a sample showing calculations used, either manually or under software control, to derive the final corrected reading.

$$R_C = M_R + C_{IL} + A_{IL}$$

Where:
R_C = Corrected Reading in dBµV
M_R = Meter Reading in dBµV
C_{IL} = Insertion Loss of Cable in dB
A_{IL} = Insertion Loss of Attenuator in dB

Example:
M_R = 43.5 dBµV
C_{IL} = 0.15 dB
A_{IL} = 10.2 dB

R_C = 43.5 + 0.15 + 10.2
= 53.85 dBµV

6.1.9 Test Results

The EUT complied with the requirements specified for this method. No emissions were observed which exceeded the specified limits of CISPR 11.

See the following photographs and test data for a full presentation of the test setup and results obtained.

Test Photographs
Conducted Emissions

Test Photographs
Conducted Emissions

EUT Configuration

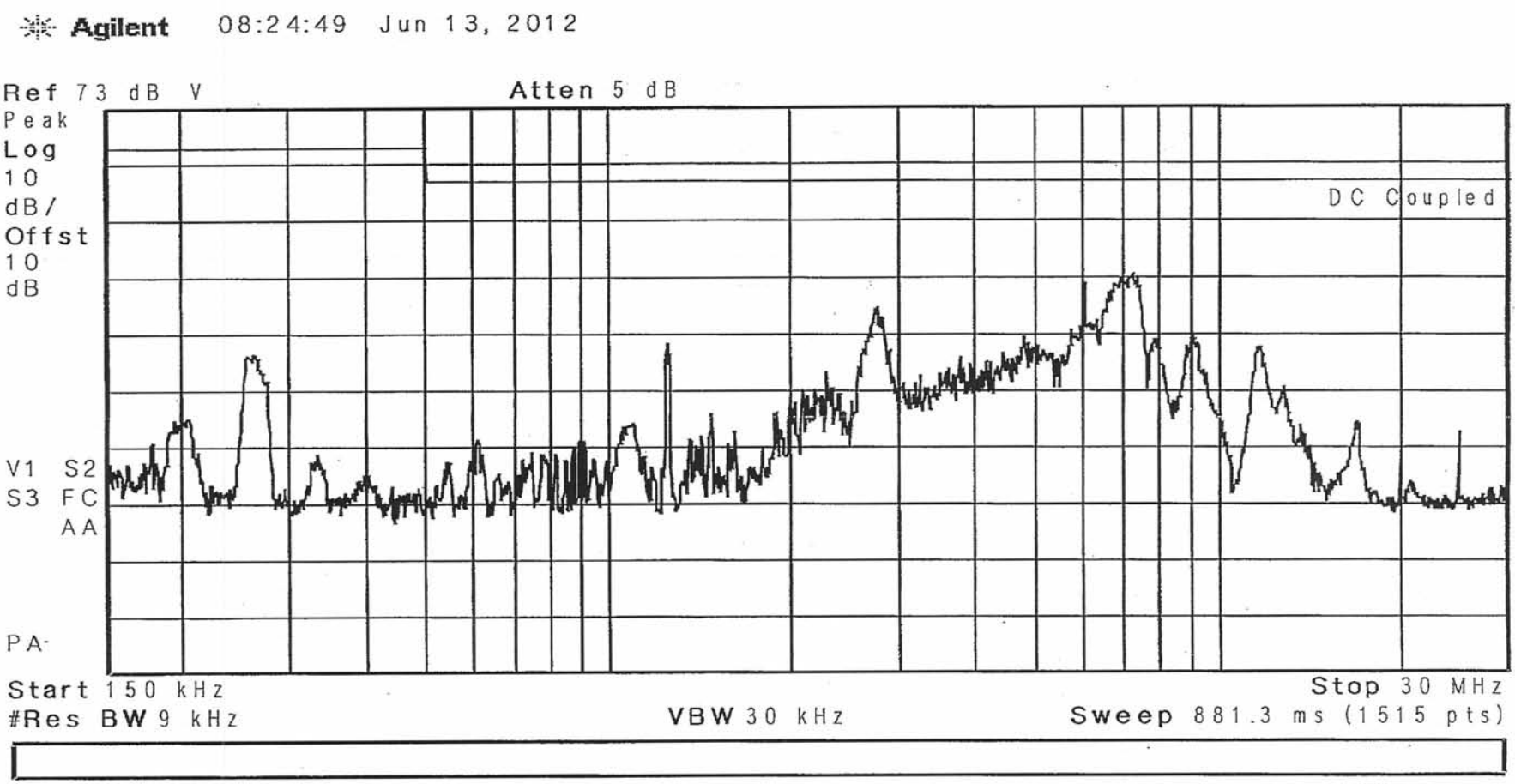
Test Setup

Conducted Emissions
Test Data

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

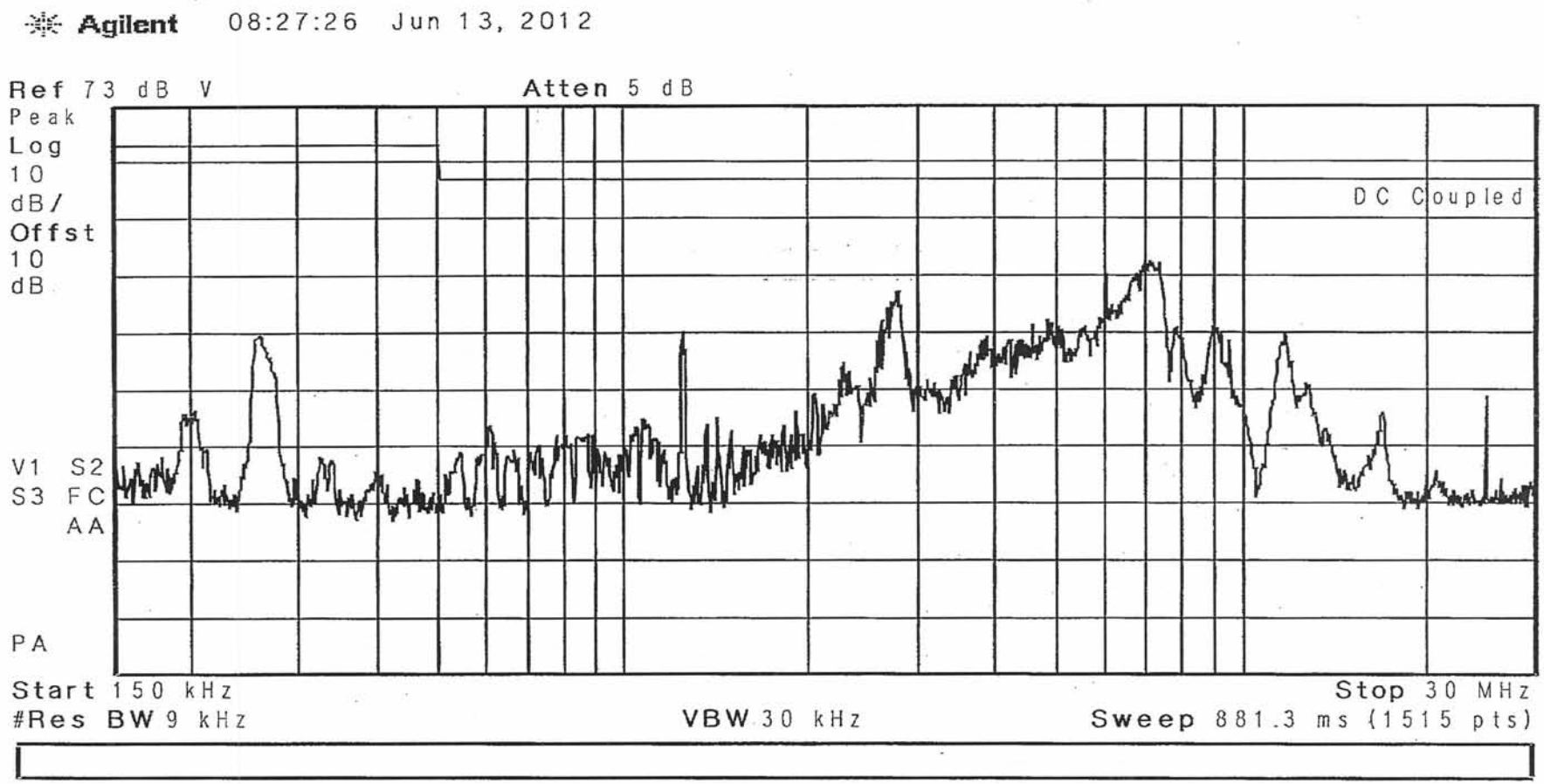
Test Method:	CISPR 11, Mains Terminal Disturbance 150 kHz to 30 MHz				
Customer:	Hypertherm, Inc.	**Test Sample:**	MAXPRO 200 Plasma Cutting System	**Job No:**	R-5606N
Model No:	MAXPRO 200	**Serial No:**	Alpha 6	**Technician:**	M. Seamans
Test Specification:	EN60974-10:2007	Paragraph 6.3.2		**Date:**	June 13, 2012
Operating Mode:	Idle				
Notes:	Lead Tested: 400 VAC 60 Hz Phase 1 Peak Readings to Average Limits.				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

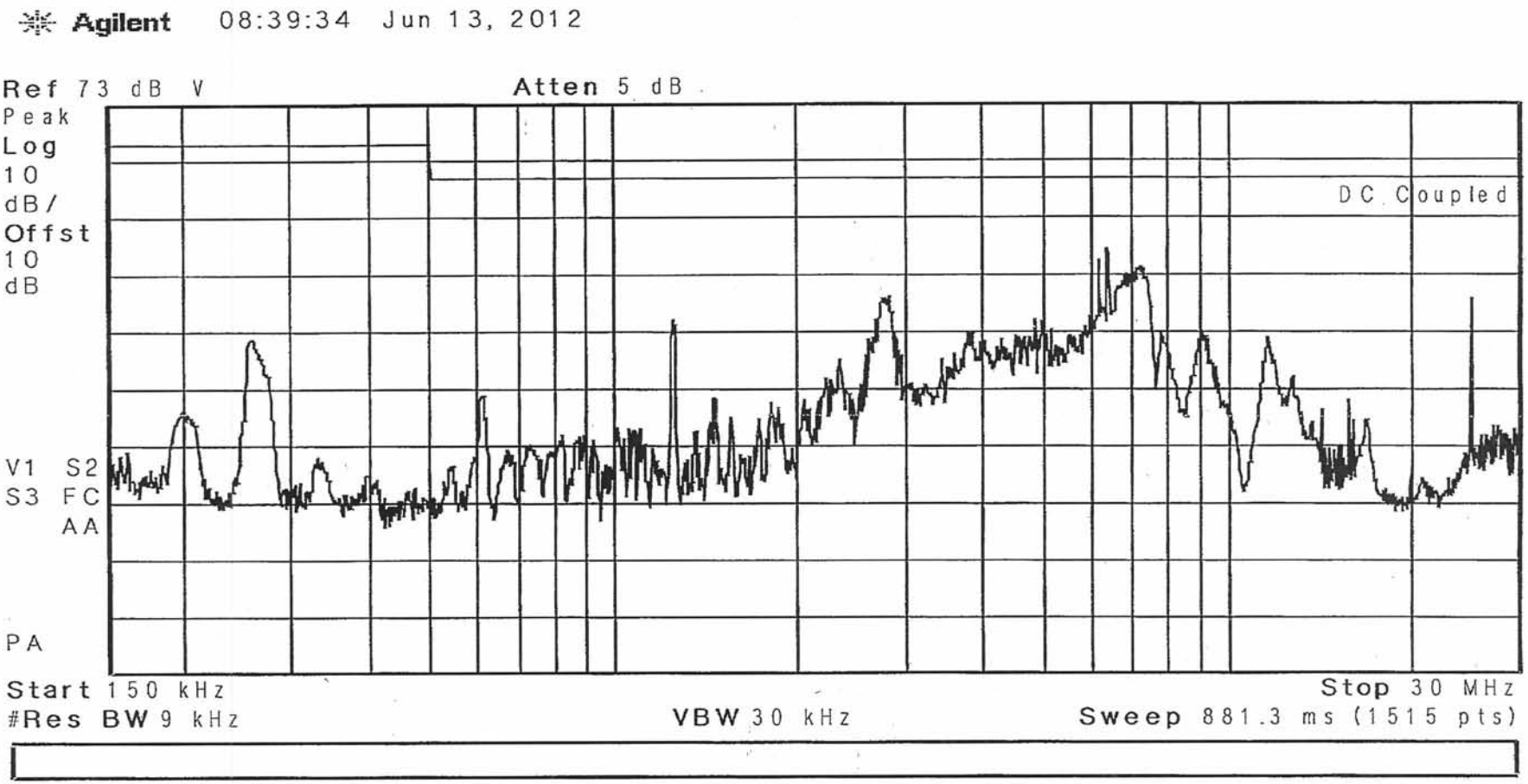
Test Method:	**CISPR 11, Mains Terminal Disturbance 150 kHz to 30 MHz**				
Customer:	Hypertherm, Inc.	**Test Sample:**	MAXPRO 200 Plasma Cutting System	**Job No:**	R-5606N
Model No:	MAXPRO 200	**Serial No:**	Alpha 6	**Technician:**	M. Seamans
Test Specification:	EN60974-10:2007	Paragraph 6.3.2		**Date:**	June 13, 2012
Operating Mode:	Idle				
Notes:	Lead Tested: 400 VAC 60 Hz Phase 2 Peak Readings to Average Limits.				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	CISPR 11, Mains Terminal Disturbance 150 kHz to 30 MHz				
Customer:	Hypertherm, Inc.	Test Sample:	MAXPRO 200 Plasma Cutting System	Job No:	R-5606N
Model No:	MAXPRO 200	Serial No:	Alpha 6	Technician:	M. Seamans
Test Specification:	EN60974-10:2007	Paragraph 6.3.2		Date:	June 13, 2012
Operating Mode:	Idle				
Notes:	Lead Tested: 400 VAC 60 Hz Phase 3 Peak Readings to Average Limits.				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	CISPR 11, Mains Terminal Disturbance 150 kHz to 30 MHz		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No:	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10:2007 Paragraph: 6.3.2		
Operating Mode:	Minimum rated welding current		
Technician:	M. Seamans	**Date:**	June 13, 2012
Notes:	Lead Tested: 400 VAC 60 Hz Phase 1		

Test Frequency	Lead Tested	Quasi-Peak Reading	Quasi-Peak Limit	Quasi-Peak Margin	Average Readings	Average Limits	Average Margin			
MHz		dBuV	dBuV	dB	dBuV	dBuV	dB			
0.150	-	-	100.0	-	-	90.0	-			
|	-	-	|	-	-	|	-			
0.253	L1	72.95	|	-27.05	65.61	|	-24.4			
|	-	-	|	-	-	|	-			
0.500	-	-	100.0	-	-	90.0	-			
0.500	-	-	86.0	-	-	76.0	-			
|	-	-	|	-	-	|	-			
2.307	L1	67.33	|	-18.67	58.09	|	-17.9			
3.308	L1	67.28	|	-18.72	59.77	|	-16.2			
|	-	-	|	-	-	|	-			
5.000	-	-	90.0	-	-	80.0	-			
5.000	-	-	90.0	-	-	80.0	-			
|	-	-	|	-	-	|	-			
5.751	L1	65.43	88.54	-23.11	58.71	78.50	-19.8			
7.321	L1	66.33	85.85	-19.52	60.16	75.90	-15.7			
9.000	L1	65.44	83.44	-18.00	59.55	73.40	-13.9			
9.453	L1	76.67	82.89	-6.22	62.80	72.90	-10.1			
14.336	L1	54.76	78.27	-23.51	49.74	68.27	-18.5			
16.899	L1	56.02	76.54	-20.52	51.39	66.54	-15.2			
|	-	-	|	-	-	|	-			
30.000	-	-	70.0	-	-	60.0	-			

EUT emissions observed throughout the given frequency spectrum were recorded and evaluated. Emission levels closest to the limit are listed on this data sheet.

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	CISPR 11, Mains Terminal Disturbance 150 kHz to 30 MHz		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No:	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10:2007 Paragraph: 6.3.2		
Operating Mode:	Minimum rated welding current		
Technician:	M. Seamans	**Date:**	June 13, 2012
Notes:	Lead Tested: 400 VAC 60 Hz Phase 3		

Test Frequency	Lead Tested	Quasi-Peak Reading	Quasi-Peak Limit	Quasi-Peak Margin	Average Readings	Average Limits	Average Margin			
MHz		dBuV	dBuV	dB	dBuV	dBuV	dB			
0.150	-	-	100.0	-	-	90.0	-			
|	-	-	|	-	-	|	-			
0.259	L3	74.93	|	-25.07	68.91	|	-21.1			
|	-	-	|	-	-	|	-			
0.500	-	-	100.0	-	-	90.0	-			
0.500	-	-	86.0	-	-	76.0	-			
|	-	-	|	-	-	|	-			
2.189	L3	68.01	|	-17.99	59.58	|	-16.42			
3.273	L3	70.13	|	-15.87	63.30	|	-12.7			
|	-	-	|	-	-	|	-			
5.000	-	-	90.0	-	-	80.0	-			
5.000	-	-	90.0	-	-	80.0	-			
|	-	-	|	-	-	|	-			
7.770	L3	75.40	85.11	-9.71	60.44	75.1	-14.67			
9.060	L3	66.11	83.44	-17.33	60.25	73.4	-13.19			
9.450	L3	77.13	82.89	-5.76	59.24	72.9	-13.65			
16.780	L3	55.99	76.54	-20.55	51.34	66.5	-15.20			
|	-	-	|	-	-	|	-			
30.000	-	-	70.0	-	-	60.0	-			

EUT emissions observed throughout the given frequency spectrum were recorded and evaluated. Emission levels closest to the limit are listed on this data sheet.

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	CISPR 11, Mains Terminal Disturbance 150 kHz to 30 MHz		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No:	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10:2007 Paragraph: 6.3.2		
Operating Mode:	Minimum rated welding current		
Technician:	M. Seamans	**Date:**	June 13, 2012
Notes:	Lead Tested: 400 VAC 60 Hz Phase 2		

Test Frequency	Lead Tested	Quasi-Peak Reading	Quasi-Peak Limit	Quasi-Peak Margin	Average Readings	Average Limits	Average Margin			
MHz		dBuV	dBuV	dB	dBuV	dBuV	dB			
0.150	-	-	100.0	-	-	90.0	-			
|	-	-	|	-	-	|	-			
0.258	L2	75.36	|	-24.64	68.11	|	-21.9			
|	-	-	|	-	-	|	-			
0.500	-	-	100.0	-	-	90.0	-			
0.500	-	-	86.0	-	-	76.0	-			
|	-	-	|	-	-	|	-			
2.196	L2	68.96	|	-17.04	59.42	|	-16.58			
3.273	L2	69.77	|	-16.23	62.65	|	-13.4			
|	-	-	|	-	-	|	-			
5.000	-	-	90.0	-	-	80.0	-			
5.000	-	-	90.0	-	-	80.0	-			
|	-	-	|	-	-	|	-			
7.270	L2	68.76	85.85	-17.09	62.62	75.85	-13.23			
9.032	L2	66.42	83.44	-17.02	60.80	73.44	-12.64			
16.727	L2	56.98	76.54	-19.56	52.51	66.57	-14.06			
|	-	-	|	-	-	|	-			
30.000	-	-	70.0	-	-	60.0	-			

EUT emissions observed throughout the given frequency spectrum were recorded and evaluated. Emission levels closest to the limit are listed on this data sheet.

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	CISPR 11, Mains Terminal Disturbance 150 kHz to 30 MHz		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No:	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10:2007 Paragraph: 6.3.2		
Operating Mode:	Maximum rated welding current (limited to 25A on AC input)		
Technician:	M. Seamans	**Date:**	June 13, 2012
Notes:	Lead Tested: 400 VAC 60 Hz Phase 1		

Test Frequency	Lead Tested	Quasi-Peak Reading	Quasi-Peak Limit	Quasi-Peak Margin	Average Readings	Average Limits	Average Margin			
MHz		dBuV	dBuV	dB	dBuV	dBuV	dB			
0.150	-	-	100.0	-	-	90.0	-			
|	-	-	|	-	-	|	-			
0.265	L1	76.20	|	-23.80	74.16	|	-15.8			
|	-	-	|	-	-	|	-			
0.500	-	-	100.0	-	-	90.0	-			
0.500	-	-	86.0	-	-	76.0	-			
|	-	-	|	-	-	|	-			
2.196	L1	64.59	|	-21.41	53.60	|	-22.4			
3.230	L1	68.78	|	-17.22	61.14	|	-12.7			
3.880	L1	78.82	|	-7.18	63.33	|	-12.7			
|	-	-	|	-	-	|	-			
5.000	-	-	90.0	-	-	80.0	-			
5.000	-	-	90.0	-	-	80.0	-			
|	-	-	|	-	-	|	-			
7.260	L1	72.52	85.85	-13.33	65.77	75.85	-10.1			
7.750	L1	78.40	85.11	-6.71	63.71	75.11	-11.4			
9.440	L1	71.53	82.89	-11.36	55.17	72.89	-17.7			
|	-	-	|	-	-	|	-			
|	-	-	|	-	-	|	-			
|	-	-	|	-	-	|	-			
30.000	-	-	70.0	-	-	60.0	-			

EUT emissions observed throughout the given frequency spectrum were recorded and evaluated. Emission levels closest to the limit are listed on this data sheet.

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	CISPR 11, Mains Terminal Disturbance 150 kHz to 30 MHz		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No:	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10:2007 Paragraph: 6.3.2		
Operating Mode:	Maximum rated welding current (limited to 25A on AC input)		
Technician:	M. Seamans	**Date:**	June 13, 2012
Notes:	Lead Tested: 400 VAC 60 Hz Phase 3		

Test Frequency	Lead Tested	Quasi-Peak Reading	Quasi-Peak Limit	Quasi-Peak Margin	Average Readings	Average Limits	Average Margin			
MHz		dBuV	dBuV	dB	dBuV	dBuV	dB			
0.150	-	-	100.0	-	-	90.0	-			
|	-	-	|	-	-	|	-			
0.265	L3	77.80	|	-22.20	75.77	|	-14.2			
|	-	-	|	-	-	|	-			
0.500	-	-	100.0	-	-	90.0	-			
0.500	-	-	86.0	-	-	76.0	-			
|	-	-	|	-	-	|	-			
2.128	L3	66.45	|	-19.55	57.70	|	-18.30			
3.251	L3	70.08	|	-15.92	63.92	|	-12.1			
|	-	-	|	-	-	|	-			
5.000	-	-	90.0	-	-	80.0	-			
5.000	-	-	90.0	-	-	80.0	-			
|	-	-	|	-	-	|	-			
7.245	L3	73.69	85.85	-12.16	67.40	75.85	-8.4			
7.770	L3	78.09	85.11	-7.02	64.53	75.11	-10.6			
9.032	L3	66.98	83.44	-16.46	60.97	73.44	-12.5			
9.450	L3	76.44	82.89	-6.45	60.94	72.89	-12.0			
16.722	L3	43.97	76.54	-32.57	38.33	66.56	-28.2			
|	-	-	|	-	-	|	-			
30.000	-	-	70.0	-	-	60.0	-			

EUT emissions observed throughout the given frequency spectrum were recorded and evaluated. Emission levels closest to the limit are listed on this data sheet.

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	CISPR 11, Mains Terminal Disturbance 150 kHz to 30 MHz		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No:	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10:2007 Paragraph: 6.3.2		
Operating Mode:	Maximum rated welding current (limited to 25A on AC input)		
Technician:	M. Seamans	**Date:**	June 13, 2012
Notes:	Lead Tested: 400 VAC 60 Hz Phase 2		

Test Frequency	Lead Tested	Quasi-Peak Reading	Quasi-Peak Limit	Quasi-Peak Margin	Average Readings	Average Limits	Average Margin			
MHz		dBuV	dBuV	dB	dBuV	dBuV	dB			
0.150	-	-	100.0	-	-	90.0	-			
|	-	-	|	-	-	|	-			
0.265	L2	77.99	|	-22.01	76.03	|	-14.0			
|	-	-	|	-	-	|	-			
0.500	-	-	100.0	-	-	90.0	-			
0.500	-	-	86.0	-	-	76.0	-			
|	-	-	|	-	-	|	-			
2.158	L2	67.32	|	-18.68	58.02	|	-17.98			
3.254	L2	71.52	|	-14.48	63.95	|	-12.1			
|	-	-	|	-	-	|	-			
5.000	-	-	90.0	-	-	80.0	-			
5.000	-	-	90.0	-	-	80.0	-			
|	-	-	|	-	-	|	-			
7.250	L2	73.21	85.85	-12.64	67.35	75.85	-8.5			
7.750	L2	78.56	85.11	-6.55	64.59	75.11	-10.5			
9.037	L2	68.72	83.44	-14.72	62.73	73.44	-10.7			
9.440	L2	72.43	82.89	-10.46	56.97	72.89	-15.9			
|	-	-	|	-	-	|	-			
30.000	-	-	70.0	-	-	60.0	-			

EUT emissions observed throughout the given frequency spectrum were recorded and evaluated. Emission levels closest to the limit are listed on this data sheet.

6.2 CISPR 11, Radiated Emissions, 30 MHz to 1 GHz

6.2.1 Normative Reference
CISPR 11 Edition 4: 2003

6.2.2 Purpose
The purpose of this test was to determine the magnitude of the radio frequency emissions emanating from the EUT via radiation from the enclosure and connected cabling in the frequency range of 30 MHz to 1 GHz.

6.2.3 Test Limits
The limits shown in Table 11 and Table 12 were used to determine compliance of the EUT to the radiated emissions requirements of CISPR 11:

Table 11 - Radiated Emissions, Test Limits, Load Conditions

Frequency Range	Group 2, Class A, Quasi-Peak Limit at 10 Meters (dBµV/m)
30.0 MHz to 230.0 MHz	80.0 to 60.0*
230.0 MHz to 1000.0 MHz	60.0

* Decreasing linearly with logarithm frequency

Table 12- Radiated Emissions, Test Limits, Idle State

Frequency Range	Group 1, Class A, Quasi-Peak Limit at 10 Meters (dBµV/m)
30.0 MHz to 230.0 MHz	40.0
230.0 MHz to 1000.0 MHz	47.0

6.2.4 Test Setup

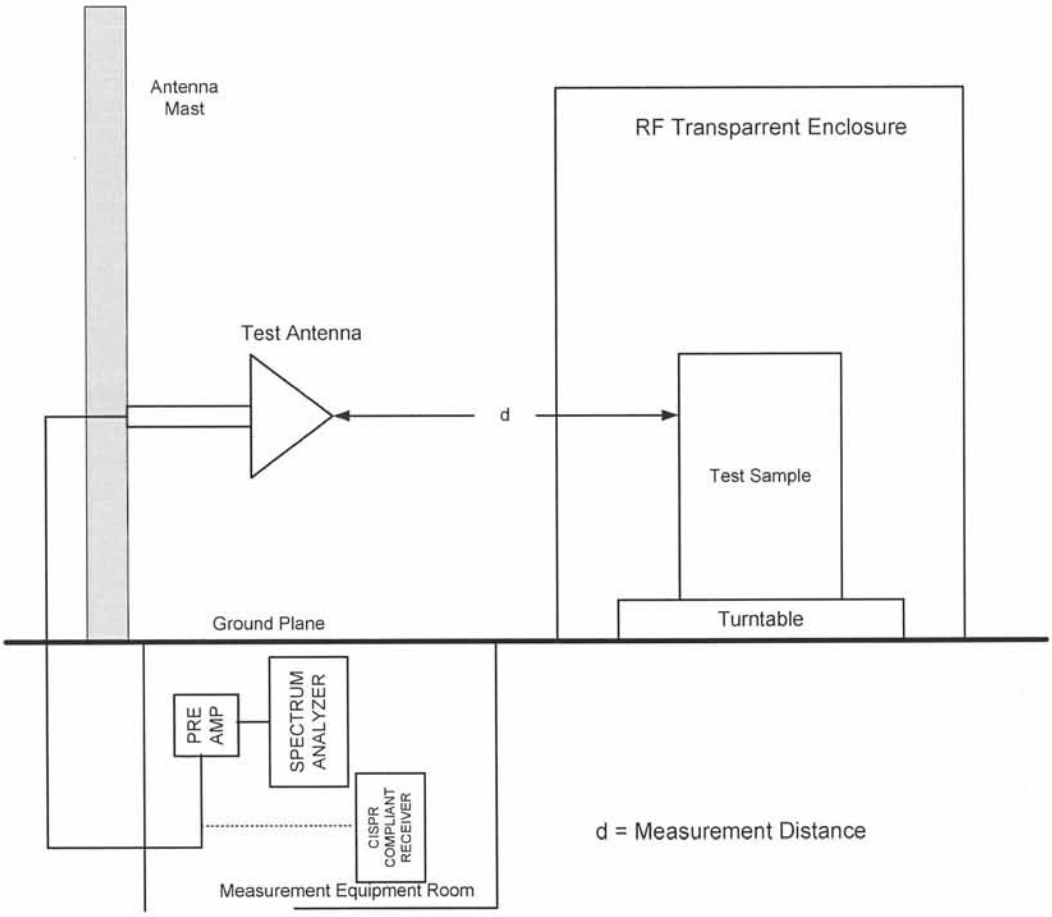
The EUT and associated cabling, configured as detailed in paragraph 5.0 herein, was placed on the flush mounted turntable, the points of contact being insulated from the turntable but otherwise constituent with normal use. The turntable positions were relative to the EUT as follows:

When facing the EUT the front is at 0°, the rear is at 180° and the left side is at 270°. The test stand was situated such that the nearest part of the boundary of the EUT was located 10.0 m from the measuring antenna.

The AC power cables were routed to the AC mains outlet located on top of the turntable. Excess power cable length was left on the surface of the turntable. Earth connections, where required for safety purposes, were connected to a ground reference point on the turntable. Where not otherwise provided or specified by the manufacturer, they were 1.0 m long and run parallel to the mains connection at a distance of not more than 0.1 m.

The power and signal cables were oriented in relation to the ground plane in a manner equivalent to actual use. Excess length of interconnecting cables was bundled at the approximate center of the cable with bundles 30 to 40 cm in length. Care was taken during testing to relocate all system components and cabling in an effort to maximize the emissions from the EUT.

Figure 3 - Radiated Emissions, Test Setup



6.2.5 Test Equipment

The details of the test equipment utilized during the performance of this test method are shown below:

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
4029	RETLIF	OPEN AREA TEST SITE	3 / 10 Meters	RNH	8/21/2009	8/21/2012
5053	EMCO	BICONILOG ANTENNA	26 MHz - 3 GHz	3142C	11/14/2011	11/14/2012
5070	ROHDE & SCHWARZ	EMI TEST RECEIVER	20 Hz - 40 GHz	ESIB40	10/26/2011	10/26/2012
5152	GENERAL TECHNICS	Control Computer		INDUSTRIAL PC	No Calibration Required	

6.2.6 Test Procedure

With the test instrumentation and the EUT configured as stated above, the following steps were performed:

1. The EUT was operated as detailed in the first operating mode specified in paragraph 5.5 herein.
2. The spectrum analyzer was configured to display the frequency range of test.
3. With the test antenna both horizontally and vertically polarized, the EUT cabling was relocated in order to maximize the radiated emissions.
4. The EUT configuration which produced maximum radiated emissions with respect to the limit was maintained for the duration of testing.
5. The frequency of test was scanned to determine the frequency of all emissions from the EUT.
6. At each frequency upon which an emission was determined to be from the EUT the following steps were performed in order to further maximize the observed emissions:
   a. The test antenna height was varied from 1.0 m to 4.0 m.
   b. The test antenna polarization was varied from vertical to horizontal.
   c. The EUT was rotated 360° about its vertical axis.
7. The RF cable from the test antenna was connected to the CISPR compliant receiver.
8. For all emissions found to be within 20 dB of the specified limit, the following was recorded:
   a. Frequency of emission.
   b. Quasi-Peak detector receiver meter reading.
   c. Correction factor consisting of antenna factor and cable loss.
   d. Test antenna height and polarization.
   e. Turntable position.
9. Steps 1 through 8 were repeated for each additional mode of operation outlined in paragraph 5.5.

6.2.7 Sample Calculations

Shown below is a sample showing calculations used, either manually or under software control, to derive the final corrected reading.

$R_C = M_R + C_{IL} + A_F$

Where:
R_C = Corrected Reading in dBµV/M
M_R = Meter Reading in dBµV
C_{IL} = Insertion Loss of Cable in dB
A_F = Antenna Factor in dB

Example:
M_R = 25.3 dBµV
C_{IL} = 3.6 dB
A_F = 12.4dB

R_C = 25.3 + 3.6 + 12.4
= 41.3 dBµV/M

6.2.8 Test Results

The EUT complied with the requirements specified for this method. No emissions were observed which exceeded the specified Class A limits of CISPR 11.

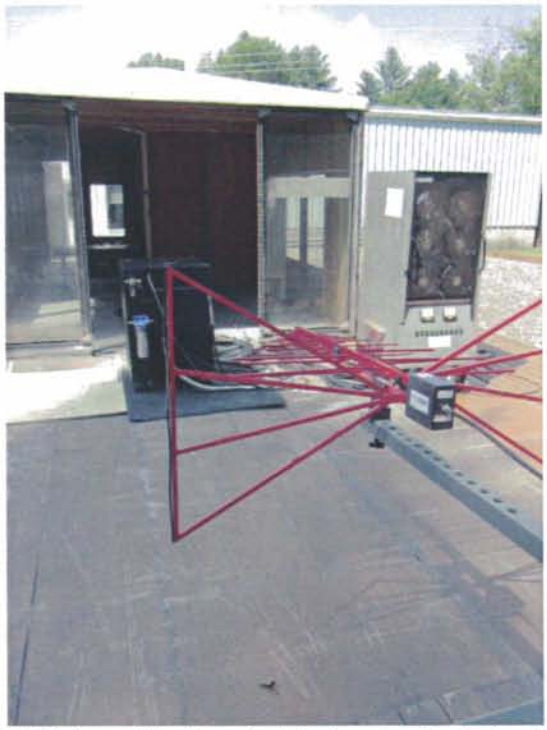
See the following photographs and test data for a full presentation of the test setup and results obtained.

Test Photographs
Radiated Emissions

Test Photographs
Radiated Emissions

EUT Configuration

Test Photographs
Radiated Emissions



Test Setup, Horizontal Antenna Polarization

Test Setup, Vertical Antenna Polarization

Radiated Emissions
Test Data

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	CISPR 11, Radiated Emissions 30 MHz to 1 GHz		
Customer	Hypertherm, Inc.	**Job No.**	R-5606N
Test Sample	MAXPRO 200 Plasma Cutting System		
Model No.	MAXPRO 200	**Serial No.**	Alpha 6
Test Specification:	EN60974-10:2007 Paragraph 6.3		
Operating Mode:	Idle		
Technician:	M. Seamans	**Date:**	June 20, 2012
Notes:	Test Distance: 3 Meters Detector: Quasi-Peak		

Test Frequency	Antenna Position	Turntable Position	Uncorrected Reading	Correction Factor	Corrected Reading	Distance Factor	Corrected Reading			Limit at 10 Meters
MHz	(H/V) - Height	Degrees	dBuV	dB	dBuV/m	dB	dBuV/m			dBuV/m
30.00	-	-	-	-	-	-	-			40.0
|	-	-	-	-	-	-	-			|
32.14	V-1m	270.0	5.75	17.75	23.50	-10.46	13.04			|
32.69	V-1m	180.0	6.24	17.46	23.70	-10.46	13.24			|
33.15	V-1m	0.0	6.38	17.22	23.60	-10.46	13.14			|
33.20	V-1m	90.0	6.81	17.19	24.00	-10.46	13.54			|
34.10	V-1m	180.0	6.39	16.71	23.10	-10.46	12.64			|
35.06	V-1m	270.0	6.59	16.21	22.80	-10.46	12.34			|
35.41	V-1m	0.0	7.08	16.02	23.10	-10.46	12.64			|
39.81	V-1m	180.0	10.20	13.70	23.90	-10.46	13.44			|
44.57	V-1m	270.0	9.84	12.06	21.90	-10.46	11.44			|
44.57	V-1m	180.0	7.64	12.06	19.70	-10.46	9.24			|
44.88	V-1m	90.0	8.55	11.95	20.50	-10.46	10.04			|
52.98	V-1m	270.0	11.99	9.71	21.70	-10.46	11.24			|
53.30	V-1m	90.0	10.45	9.65	20.10	-10.46	9.64			|
60.27	V-1m	270.0	12.12	8.48	20.60	-10.46	10.14			|
66.61	V-1m	270.0	11.10	7.90	19.00	-10.46	8.54			|
72.29	V-1m	270.0	21.84	7.66	29.50	-10.46	19.04			|
118.10	V-1m	270.0	11.07	9.43	20.50	-10.46	10.04			|
131.30	H-2m	180.0	11.62	8.98	20.60	-10.46	10.14			|
139.55	H-2m	180.0	16.43	9.67	26.10	-10.46	15.64			|
144.23	V-1m	180.0	16.38	10.12	26.50	-10.46	16.04			|
|	-	-	-	-	-	-	-			|
230.00	-	-	-	-	-	-	-			40.0
230.00	-	-	-	-	-	-	-			47.0
|	-	-	-	-	-	-	-			|
367.95	H-2m	180.0	13.00	19.10	32.10	-10.46	21.64			|
369.05	V-1m	90.0	14.68	19.12	33.80	-10.46	23.34			|
370.16	V-1m	90.0	14.95	19.15	34.10	-10.46	23.64			|
371.64	V-2.5m	180.0	18.82	19.18	38.00	-10.46	27.54			|
372.02	H-1.5m	0.0	16.51	19.19	35.70	-10.46	25.24			|

EUT emissions observed throughout the given frequency spectrum were recorded and evaluated. Emission levels closest to the limit are listed on this data sheet.

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	CISPR 11, Radiated Emissions 30 MHz to 1 GHz		
Customer	Hypertherm, Inc.	**Job No.**	R-5606N
Test Sample	MAXPRO 200 Plasma Cutting System		
Model No.	MAXPRO 200	**Serial No.**	Alpha 6
Test Specification:	EN60974-10:2007 Paragraph 6.3		
Operating Mode:	Idle		
Technician:	M. Seamans	**Date:**	June 20, 2012
Notes:	Test Distance: 3 Meters Detector: Quasi-Peak		

Test Frequency	Antenna Position	Turntable Position	Meter Reading	Correction Factor	Corrected Reading	Distance Factor	Corrected Reading			Limit at 10 Meters
MHz	(H/V) - Height	Degrees	dBuV	dB	dBuV/m	dB	dBuV/m			dBuV/m
372.76	V-1m	0.0	23.80	19.20	43.00	-10.46	32.54			|
375.00	V-1m	0.0	25.15	19.25	44.40	-10.46	33.94			|
375.00	H-3m	90.0	13.05	19.25	32.30	-10.46	21.84			|
|	-	-	-	-	-	-	-			|
1000.00	-	-	-	-	-	-	-			47.0

EUT emissions observed throughout the given frequency spectrum were recorded and evaluated. Emission levels closest to the limit are listed on this data sheet.

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	CISPR 11, Radiated Emissions 30 MHz to 1 GHz		
Customer	Hypertherm, Inc.	**Job No.**	R-5606N
Test Sample	MAXPRO 200 Plasma Cutting System		
Model No.	MAXPRO 200	**Serial No.**	Alpha 6
Test Specification:	EN60974-10:2007 Paragraph 6.3		
Operating Mode:	Minimum rated welding current		
Technician:	M. Seamans	**Date:**	June 20, 2012
Notes:	Test Distance: 3 Meters Detector: Quasi-Peak		

Test Frequency	Antenna Position	Turntable Position	Uncorrected Reading	Correction Factor	Corrected Reading	Distance Factor	Corrected Reading			Limit at 10 Meters
MHz	(H/V) - Height	Degrees	dBuV	dB	dBuV/m	dB	dBuV/m			dBuV/m
30.00	-	-	-	-	-	-	-			80.0
|	-	-	-	-	-	-	-			|
30.09	V-1m	0.0	19.67	18.83	38.50	-10.46	28.04			|
30.09	H-3m	270.0	20.77	18.83	39.60	-10.46	29.14			|
30.12	V-1m	0.0	18.98	18.82	37.80	-10.46	27.34			|
30.15	V-1m	270.0	24.60	18.80	43.40	-10.46	32.94			|
30.30	H-3m	0.0	8.08	18.72	26.80	-10.46	16.34			Decreasing
30.45	H-3m	180.0	10.56	18.64	29.20	-10.46	18.74			linearly
30.73	V-1m	180.0	16.90	18.50	35.40	-10.46	24.94			with
31.40	H-3m	270.0	18.16	18.14	36.30	-10.46	25.84			logarithm
31.44	H-3m	0.0	10.88	18.12	29.00	-10.46	18.54			of
31.57	V-1m	0.0	20.25	18.05	38.30	-10.46	27.84			frequency
31.57	V-1m	270.0	18.65	18.05	36.70	-10.46	26.24			|
31.60	V-1m	0.0	20.96	18.04	39.00	-10.46	28.54			|
33.29	H-1m	180.0	10.06	17.14	27.20	-10.46	16.74			|
33.39	H-3m	270.0	11.81	17.09	28.90	-10.46	18.44			|
33.42	V-1m	0.0	27.33	17.07	44.40	-10.46	33.94			|
33.45	V-1m	180.0	30.24	17.06	47.30	-10.46	36.84			|
33.55	V-1m	0.0	26.40	17.00	43.40	-10.46	32.94			|
33.55	V-1m	270.0	21.70	17.00	38.70	-10.46	28.24			|
33.62	H-3m	0.0	10.13	16.97	27.10	-10.46	16.64			|
33.79	H-3m	0.0	13.52	16.88	30.40	-10.46	19.94			|
34.78	V-1m	270.0	6.64	16.36	23.00	-10.46	12.54			|
40.90	H-1m	180.0	15.70	13.30	29.00	-10.46	18.54			|
41.03	V-1m	0.0	17.55	13.25	30.80	-10.46	20.34			|
41.14	V-1m	180.0	29.09	13.21	42.30	-10.46	31.84			|
42.10	H-3m	0.0	17.91	12.89	30.80	-10.46	20.34			|
42.10	H-3m	270.0	20.61	12.89	33.50	-10.46	23.04			|
43.51	V-1m	0.0	19.39	12.41	31.80	-10.46	21.34			|
43.77	H-3m	0.0	16.17	12.33	28.50	-10.46	18.04			|
45.51	V-1m	270.0	19.96	11.74	31.70	-10.46	21.24			|
	EUT emissions observed throughout the given frequency spectrum were recorded and evaluated. Emission levels closest to the limit are listed on this data sheet.									

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	CISPR 11, Radiated Emissions 30 MHz to 1 GHz		
Customer	Hypertherm, Inc.	**Job No.**	R-5606N
Test Sample	MAXPRO 200 Plasma Cutting System		
Model No.	MAXPRO 200	**Serial No.**	Alpha 6
Test Specification:	EN60974-10:2007 Paragraph 6.3		
Operating Mode:	Minimum rated welding current		
Technician:	M. Seamans	**Date:**	June 20, 2012
Notes:	Test Distance: 3 Meters Detector: Quasi-Peak		

Test Frequency	Antenna Position	Turntable Position	Meter Reading	Correction Factor	Corrected Reading	Distance Factor	Corrected Reading			Limit at 10 Meters
MHz	(H/V) - Height	Degrees	dBuV	dB	dBuV/m	dB	dBuV/m			dBuV/m
46.94	H-3m	180.0	15.05	11.25	26.30	-10.46	15.84			|
47.13	V-1m	180.0	18.31	11.19	29.50	-10.46	19.04			|
49.75	V-1m	270.0	16.79	10.31	27.10	-10.46	16.64			|
53.73	V-1m	180.0	14.42	9.58	24.00	-10.46	13.54			|
60.88	V-1m	0.0	16.78	8.42	25.20	-10.46	14.74			|
80.45	V-1m	0.0	19.87	7.93	27.80	-10.46	17.34			|
91.25	V-1m	0.0	23.65	9.05	32.70	-10.46	22.24			|
|	-	-	-	-	-	-	-			|
230.00	-	-	-	-	-	-	-			60.0
230.00	-	-	-	-	-	-	-			60.0
|	-	-	-	-	-	-	-			|
368.68	H-1m	180.0	13.69	19.11	32.80	-10.46	22.34			|
368.68	V-1.5m	0.0	17.59	19.11	36.70	-10.46	26.24			|
372.01	H-1m	0.0	10.21	19.19	29.40	-10.46	18.94			|
372.02	V-2m	180.0	18.81	19.19	38.00	-10.46	27.54			|
372.76	V-1m	0.0	23.60	19.20	42.80	-10.46	32.34			|
373.51	H-1.5m	0.0	14.98	19.22	34.20	-10.46	23.74			|
375.00	V-1m	0.0	25.15	19.25	44.40	-10.46	33.94			|
|	-	-	-	-	-	-	-			|
1000.00	-	-	-	-	-	-	-			60.0

EUT emissions observed throughout the given frequency spectrum were recorded and evaluated. Emission levels closest to the limit are listed on this data sheet.

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	CISPR 11, Radiated Emissions 30 MHz to 1 GHz		
Customer	Hypertherm, Inc.	**Job No.**	R-5606N
Test Sample	MAXPRO 200 Plasma Cutting System		
Model No.	MAXPRO 200	**Serial No.**	Alpha 6
Test Specification:	EN60974-10:2007 Paragraph 6.3		
Operating Mode:	Maximum rated welding current (limited to 25A on AC input)		
Technician:	M. Seamans	**Date:**	June 20, 2012
Notes:	Test Distance: 3 Meters Detector: Quasi-Peak		

Test Frequency	Antenna Position	Turntable Position	Uncorrected Reading	Correction Factor	Corrected Reading	Distance Factor	Corrected Reading			Limit at 10 Meters
MHz	(H/V) - Height	Degrees	dBuV	dB	dBuV/m	dB	dBuV/m			dBuV/m
30.00	-	-	-	-	-	-	-			80.0
|	-	-	-	-	-	-	-			|
30.03	V-1m	270.0	19.64	18.86	38.50	-10.46	28.04			|
30.06	H-3m	270.0	15.15	18.85	34.00	-10.46	23.54			|
30.15	V-1m	0.0	12.70	18.80	31.50	-10.46	21.04			|
31.06	V-1m	180.0	10.48	18.32	28.80	-10.46	18.34			|
31.50	V-1m	0.0	10.31	18.09	28.40	-10.46	17.94			Decreasing
32.17	V-1m	0.0	9.67	17.73	27.40	-10.46	16.94			linearly
32.79	V-1m	270.0	10.49	17.41	27.90	-10.46	17.44			with
33.22	V-1m	180.0	16.92	17.18	34.10	-10.46	23.64			logarithm
33.45	V-1m	0.0	11.64	17.06	28.70	-10.46	18.24			of
33.55	V-1m	270.0	14.90	17.00	31.90	-10.46	21.44			frequency
33.62	V-1m	0.0	13.03	16.97	30.00	-10.46	19.54			|
34.64	V-1m	270.0	7.17	16.43	23.60	-10.46	13.14			|
35.55	V-1m	270.0	7.15	15.95	23.10	-10.46	12.64			|
40.25	V-1m	0.0	15.48	13.52	29.00	-10.46	18.54			|
40.81	V-1m	180.0	25.48	13.32	38.80	-10.46	28.34			|
40.98	V-1m	0.0	18.63	13.27	31.90	-10.46	21.44			|
41.06	H-3m	180.0	15.46	13.24	28.70	-10.46	18.24			|
42.06	H-3m	0.0	14.50	12.90	27.40	-10.46	16.94			|
42.18	H-3m	270.0	17.44	12.86	30.30	-10.46	19.84			|
43.60	H-3m	270.0	12.32	12.38	24.70	-10.46	14.24			|
43.68	H-3m	0.0	11.45	12.35	23.80	-10.46	13.34			|
47.18	H-3m	180.0	16.13	11.17	27.30	-10.46	16.84			|
47.37	V-1m	180.0	21.39	11.11	32.50	-10.46	22.04			|
48.57	V-1m	270.0	22.20	10.70	32.90	-10.46	22.44			|
49.85	H-3m	0.0	12.93	10.27	23.20	-10.46	12.74			|
51.47	V-1m	270.0	20.33	9.97	30.30	-10.46	19.84			|
54.10	V-1m	0.0	14.89	9.51	24.40	-10.46	13.94			|
58.08	V-1m	0.0	21.97	8.83	30.80	-10.46	20.34			|
59.14	V-1m	270.0	22.05	8.65	30.70	-10.46	20.24			|

EUT emissions observed throughout the given frequency spectrum were recorded and evaluated. Emission levels closest to the limit are listed on this data sheet.

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	CISPR 11, Radiated Emissions 30 MHz to 1 GHz		
Customer	Hypertherm, Inc.	**Job No.**	R-5606N
Test Sample	MAXPRO 200 Plasma Cutting System		
Model No.	MAXPRO 200	**Serial No.**	Alpha 6
Test Specification:	EN60974-10:2007 Paragraph 6.3		
Operating Mode:	Maximum rated welding current (limited to 25A on AC input)		
Technician:	M. Seamans	**Date:**	June 20, 2012
Notes:	Test Distance: 3 Meters Detector: Quasi-Peak		

Test Frequency	Antenna Position	Turntable Position	Meter Reading	Correction Factor	Corrected Reading	Distance Factor	Corrected Reading			Limit at 10 Meters
MHz	(H/V) - Height	Degrees	dBuV	dB	dBuV/m	dB	dBuV/m			dBuV/m
59.67	H-3m	270.0	22.44	8.56	31.00	-10.46	20.54			|
59.97	V-1m	0.0	22.89	8.51	31.40	-10.46	20.94			|
59.97	V-1m	180.0	19.49	8.51	28.00	-10.46	17.54			|
61.00	V-1m	0.0	23.09	8.41	31.50	-10.46	21.04			|
63.23	H-3m	270.0	18.29	8.21	26.50	-10.46	16.04			|
71.50	H-3m	270.0	19.17	7.63	26.80	-10.46	16.34			|
81.43	V-1m	0.0	21.17	8.03	29.20	-10.46	18.74			|
91.44	V-1m	0.0	21.44	9.06	30.50	-10.46	20.04			|
130.38	H-1m	0.0	13.50	8.90	22.40	-10.46	11.94			|
139.55	H-3m	180.0	6.91	9.67	16.58	-10.46	6.12			|
|	-	-	-	-	-	-	-			|
230.00	-	-	-	-	-	-	-			60.0
230.00	-	-	-	-	-	-	-			60.0
|	-	-	-	-	-	-	-			|
368.32	H-3m	180.0	12.89	19.11	32.00	-10.46	21.54			|
368.68	V-1.5m	0.0	17.49	19.11	36.60	-10.46	26.14			|
370.16	V-1m	180.0	14.65	19.15	33.80	-10.46	23.34			|
372.39	V-1m	0.0	23.51	19.19	42.70	-10.46	32.24			|
372.76	H-1.5m	0.0	14.70	19.20	33.90	-10.46	23.44			|
373.13	H-3m	0.0	13.99	19.21	33.20	-10.46	22.74			|
375.00	V-1m	0.0	24.75	19.25	44.00	-10.46	33.54			|
|	-	-	-	-	-	-	-			|
1000.00	-	-	-	-	-	-	-			60.0

EUT emissions observed throughout the given frequency spectrum were recorded and evaluated. Emission levels closest to the limit are listed on this data sheet.

6.3 IEC 61000-3-11, Voltage Fluctuation and Flicker

6.3.1 Normative Reference
IEC 61000-3-11: 2000

6.3.2 Purpose
The purpose of this test method was to determine the voltage changes produced by the equipment under test.

6.3.3 Test Limits
The limits shown below were used to determine compliance of the EUT to the requirements of IEC 61000-3-11 (as modified by Appendix B of EN 60974-10).

- The value of P_{st} shall not be greater than 1.0;
- The value of d(t) during a voltage change shall not exceed 3.3% for more than 500 ms;
- The maximum relative voltage change d_{max} shall not exceed 7%;

$P_{st\ and}$ P_{lt} requirements were not applied to voltage changes caused by manual switching.

The limits were not applied to voltage changes associated with emergency switching or emergency interruptions.

6.3.4 Power Ports Tested

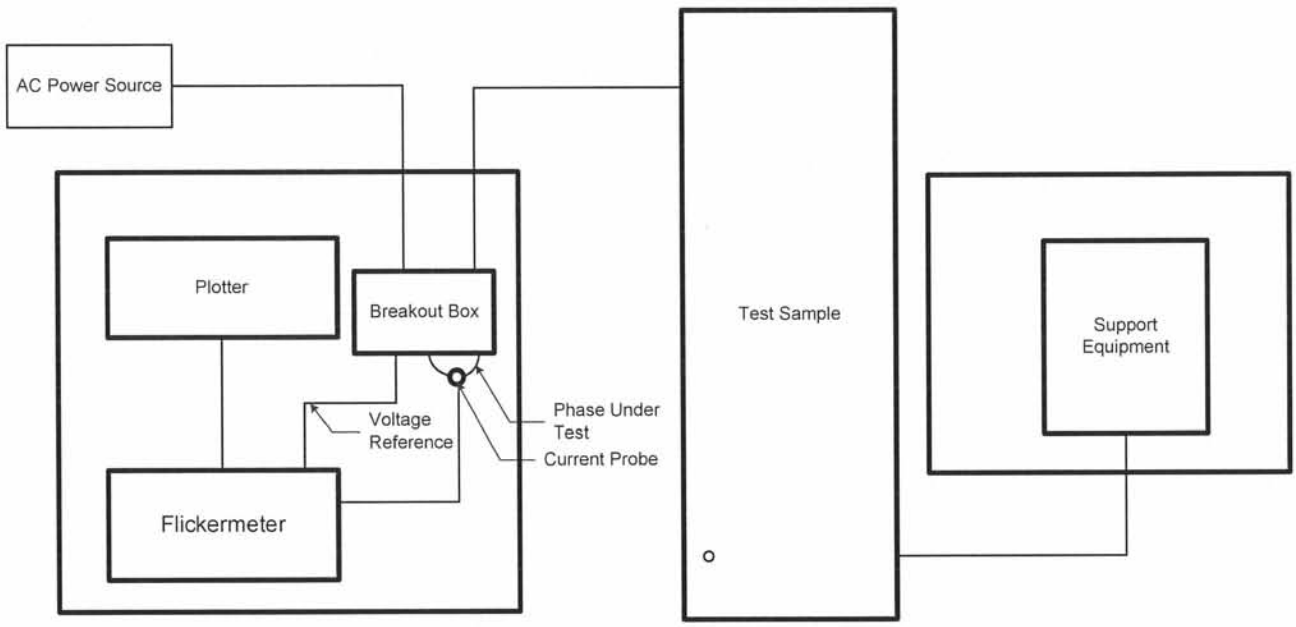
The following AC power port of the EUT was tested in order to demonstrate compliance:

- 400 VAC, 60 Hz

6.3.5 Test Setup

The EUT and associated cabling, configured as detailed in paragraph 5.0 herein, was placed in its normal orientation. The AC power leads of the EUT were routed through the breakout box. The voltage reference of the power frequency analyzer was connected between neutral and the phase under test. The current probe of the power frequency analyzer was installed on the phase under test.

Figure 4 - Voltage Fluctuation and Flicker, Test Setup



6.3.6 Test Equipment

The details of the test equipment utilized during the performance of this test method are shown below:

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
5047	AEMC	CURRENT CLAMP	30 Hz - 5 KHz	SR 601	5/1/2012	5/31/2013
529	COMBINOVA ANALYZER	POWER MEAS. SYS.		300	1/19/2012	1/31/2013

6.3.7 Test Procedure

With the test instrumentation and EUT configured as stated above, the following steps were performed on each AC Input of the EUT:

1. The flickermeter was configured to acquire magnitudes of the voltage changes produced by the EUT on the first phase under test.
2. The mode of operation of the EUT was configured as specified in Paragraph 5.5 and such that one complete cycle of operation was performed during the observation period.
3. The flickermeter was configured to measure short term flicker for an observation period of 10 minutes.
4. The flickermeter was configured to measure long term flicker for an observation period of two (2) hours.
5. At the end of the observation period the values of P_{st}, P_{lt}, d(t), d_c and d_{max} were recorded.
6. Steps 1 through 5 were repeated for each remaining phase under test.

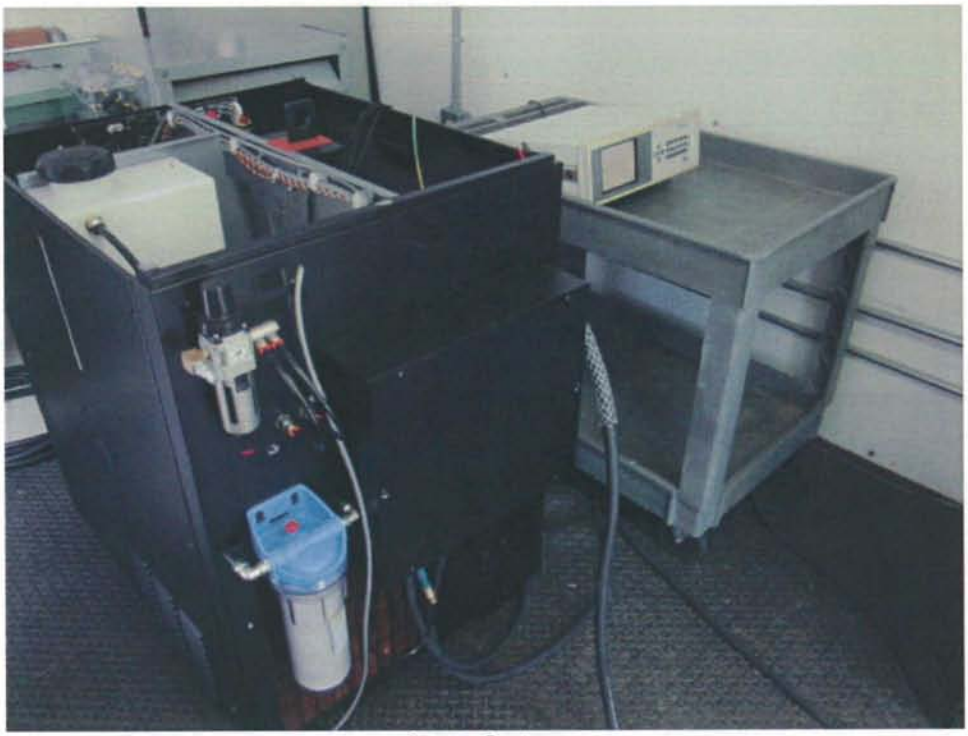
6.3.8 Test Results

The EUT complied with the requirements specified for this method. No voltage fluctuation or flicker values were observed in excess of the limit specified in IEC 61000-3-11.

See the following photograph(s) and test data for a full presentation of the test setup and results obtained.

Test Photographs
Voltage Fluctuation and Flicker

Test Photographs
Voltage Fluctuation and Flicker



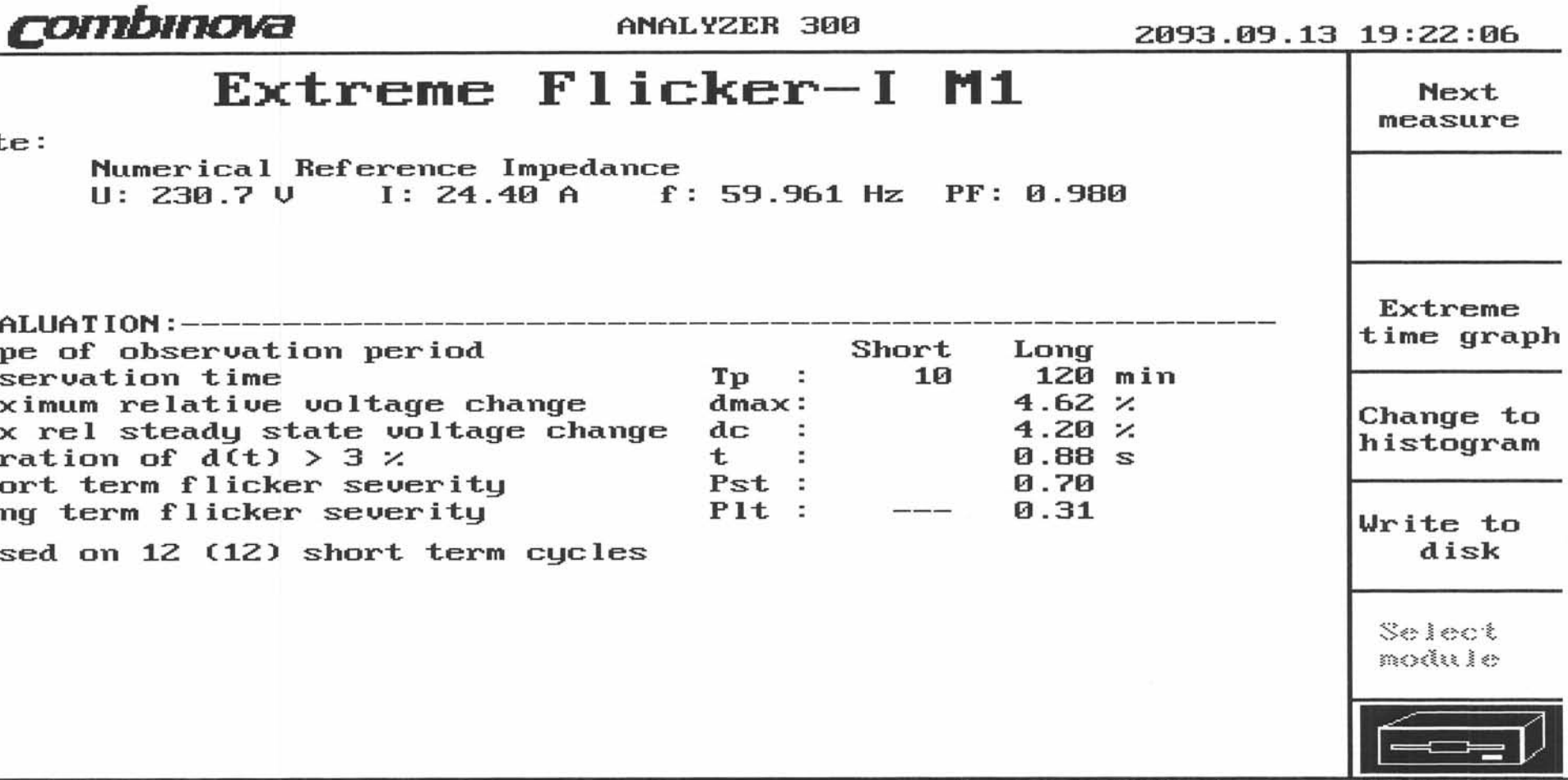
Test Setup

Voltage Fluctuation and Flicker
Test Data

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

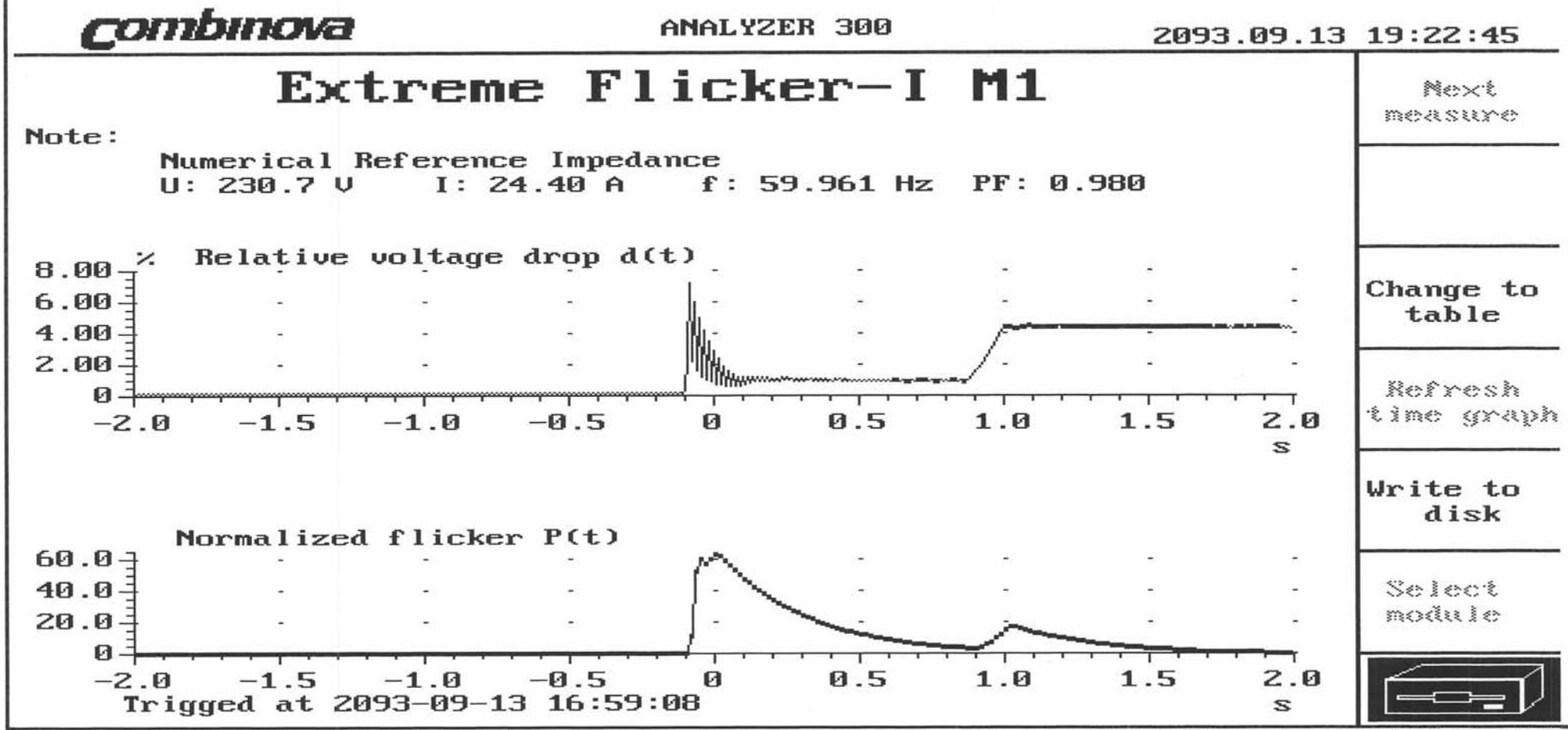
Test Method:	IEC 61000-3-3, Voltage Fluctuations and Flicker				
Customer:	Hypertherm, Inc.	Test Sample:	MAXPRO 200 Plasma Cutting System	Job No:	R-5606N
Model No:	MAXPRO 200	Serial No:	Alpha 6	Technician:	M. Seamans
Test Specification:	EN60974-10:2007			Date:	June 21, 2012
Operating Mode:	Maximum rated welding current (limited to 25A on AC input)				
Notes:	Lead Tested: Main Power 400 VAC 60 Hz Phase 1				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	IEC 61000-3-3, Voltage Fluctuations and Flicker				
Customer:	Hypertherm, Inc.	**Test Sample:**	MAXPRO 200 Plasma Cutting System	**Job No:**	R-5606N
Model No:	MAXPRO 200	**Serial No:**	Alpha 6	**Technician:**	M. Seamans
Test Specification:	EN60974-10:2007			**Date:**	June 21, 2012
Operating Mode:	Maximum rated welding current (limited to 25A on AC input)				
Notes:	Lead Tested: Main Power 400 VAC 60 Hz Phase 1				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	IEC 61000-3-3, Voltage Fluctuations and Flicker				
Customer:	Hypertherm, Inc.	Test Sample:	MAXPRO 200 Plasma Cutting System	Job No:	R-5606N
Model No:	MAXPRO 200	Serial No:	Alpha 6	Technician:	M. Seamans
Test Specification:	EN60974-10:2007			Date:	June 21, 2012
Operating Mode:	Maximum rated welding current (limited to 25A on AC input)				
Notes:	Lead Tested: Main Power 400 VAC 60 Hz Phase 2				

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Extreme Flicker-I M1

Note:

Numerical Reference Impedance
U: 230.5 V I: 22.96 A f: 60.012 Hz PF: 0.979

EVALUATION:----------

Type of observation period		Short	Long	
Observation time	Tp :	10	120	min
Maximum relative voltage change	dmax:		4.63	%
Max rel steady state voltage change	dc :		4.01	%
Duration of d(t) > 3 %	t :		2.88	s
Short term flicker severity	Pst :		0.69	
Long term flicker severity	Plt :	---	0.31	

Based on 12 (12) short term cycles

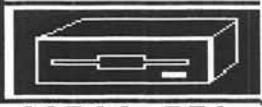
Next measure

Extreme time graph

Change to histogram

Write to disk

Select module

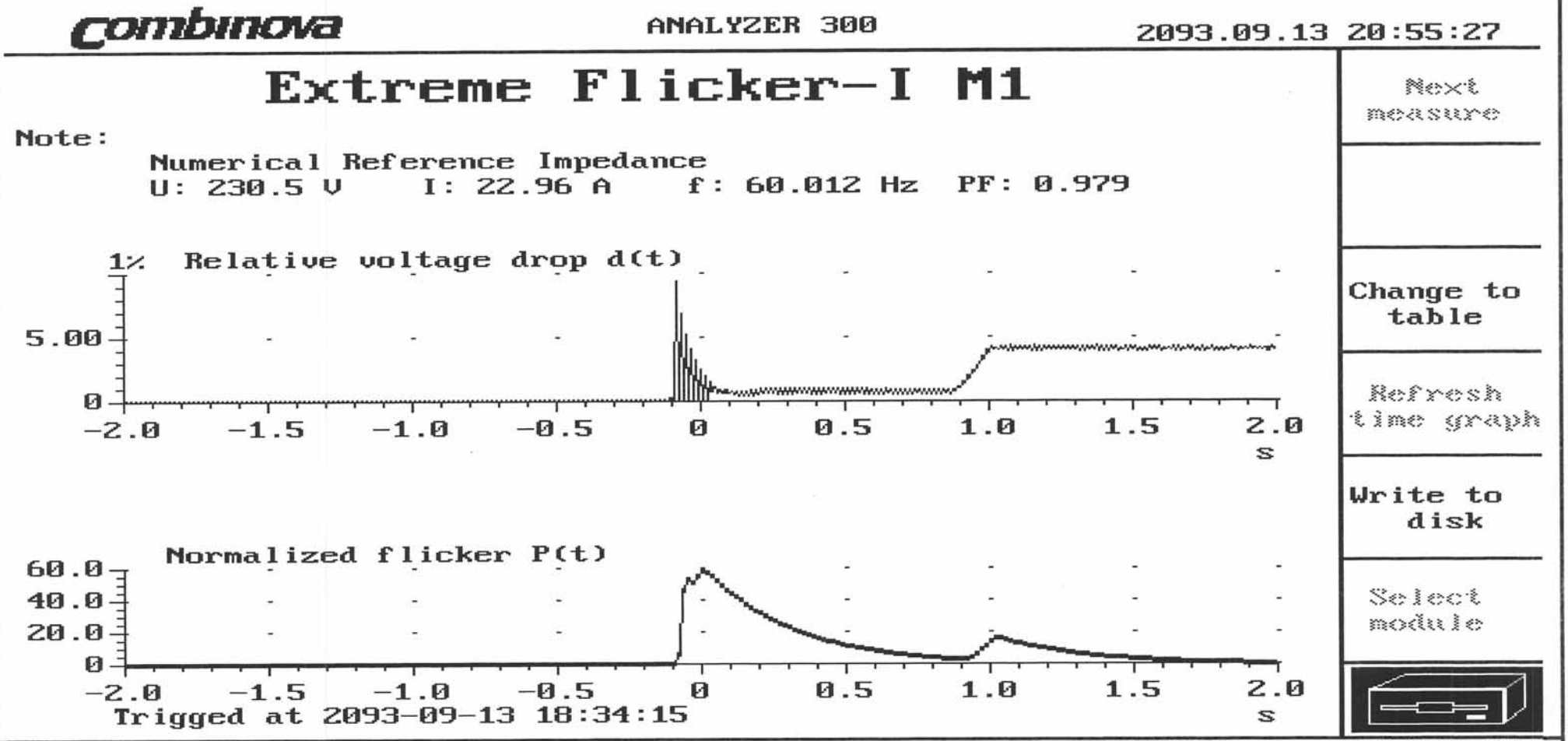


Appl: DEFAULT (1311_00)

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	IEC 61000-3-3, Voltage Fluctuations and Flicker				
Customer:	Hypertherm, Inc.	**Test Sample:**	MAXPRO 200 Plasma Cutting System	**Job No:**	R-5606N
Model No:	MAXPRO 200	**Serial No:**	Alpha 6	**Technician:**	M. Seamans
Test Specification:	EN60974-10:2007			**Date:**	June 21, 2012
Operating Mode:	Maximum rated welding current (limited to 25A on AC input)				
Notes:	Lead Tested: Main Power 400 VAC 60 Hz Phase 2				



RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	IEC 61000-3-3, Voltage Fluctuations and Flicker				
Customer:	Hypertherm, Inc.	Test Sample:	MAXPRO 200 Plasma Cutting System	Job No:	R-5606N
Model No:	MAXPRO 200	Serial No:	Alpha 6	Technician:	M. Seamans
Test Specification:	EN60974-10:2007			Date:	June 22, 2012
Operating Mode:	Maximum rated welding current (limited to 25A on AC input)				
Notes:	Lead Tested: Main Power 400 VAC 60 Hz Phase 3				

combinova ANALYZER 300 2093.09.13 16:53:40

Extreme Flicker-I M1

Next measure

Note:

Numerical Reference Impedance
U: 231.1 V I: 23.70 A f: 60.017 Hz PF: 0.984

Extreme time graph

EVALUATION:----------

Type of observation period		Short	Long	
Observation time	Tp :	10	120	min
Maximum relative voltage change	dmax:		4.20	%
Max rel steady state voltage change	dc :		4.11	%
Duration of d(t) > 3 %	t :		0.48	s
Short term flicker severity	Pst :		0.63	
Long term flicker severity	Plt :	---	0.28	

Based on 12 (12) short term cycles

Change to histogram

Write to disk

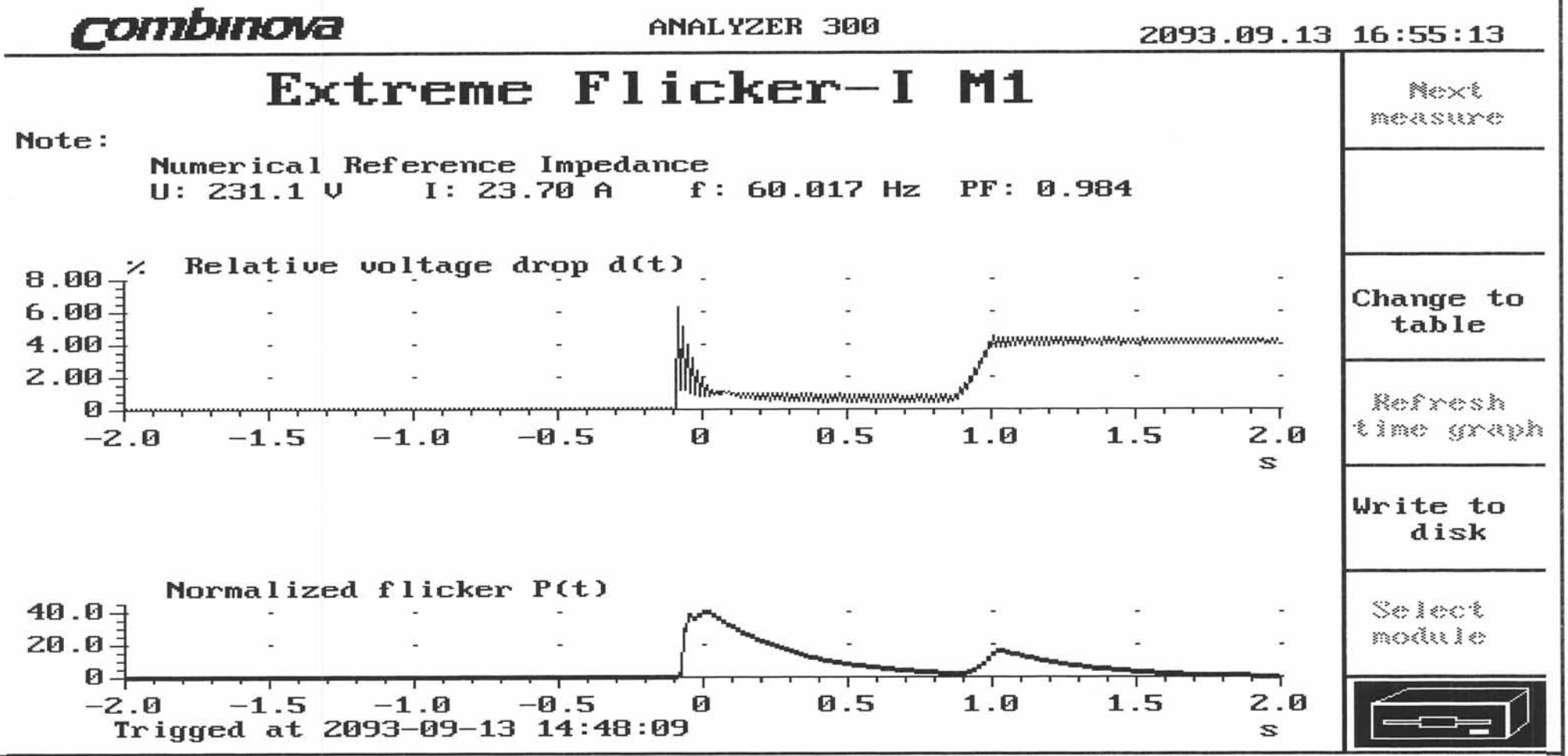
Select module

Appl: DEFAULT (1311_00)

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	IEC 61000-3-3, Voltage Fluctuations and Flicker				
Customer:	Hypertherm, Inc.	**Test Sample:**	MAXPRO 200 Plasma Cutting System	**Job No:**	R-5606N
Model No:	MAXPRO 200	**Serial No:**	Alpha 6	**Technician:**	M. Seamans
Test Specification:	EN60974-10:2007			**Date:**	June 22, 2012
Operating Mode:	Maximum rated welding current (limited to 25A on AC input)				
Notes:	Lead Tested: Main Power 400 VAC 60 Hz Phase 3				



6.4 IEC 61000-3-12, Power Frequency Harmonics, 100 Hz to 2 kHz

6.4.1 Normative Reference
IEC 61000-3-12: 2004

6.4.2 Purpose
The purpose of this test method was to determine the magnitude of harmonic components of the AC input current of the EUT over the frequency range of 100 Hz to 2 kHz, the 40th harmonic.

6.4.3 Test Limits
The limits shown in Table 13 were used to determine compliance of the EUT to the requirements for balanced three-phase equipment as specified by IEC 61000-3-12.

Table 13 - Power Frequency Harmonics, Test Limits

Minimal R_{SCE}	Admissible Individual Harmonic Current I_n/I_1[a] %				Admissible Harmonic Current Distortion Factors %	
	I_5	I_7	I_{11}	I_{13}	THD	PWHD
33	10.7	7.2	3.1	2	13	22
66	14	9	5	3	16	25
120	19	12	7	4	22	28
250	31	20	12	7	37	38
≥350	40	25	15	10	48	46
The relative values of even harmonics up to order 12 shall not exceed $16/_n$%. Even harmonics above order 12 are taken into account in THD and PWHD in the same way as off order harmonics. Note: Linear interpolation between successive R_{SCE} values is permitted. See also Annex B of EN 61000-3-12.						
[a] I_n = Reference Fundamental Current; I_n = Harmonic Current Component						

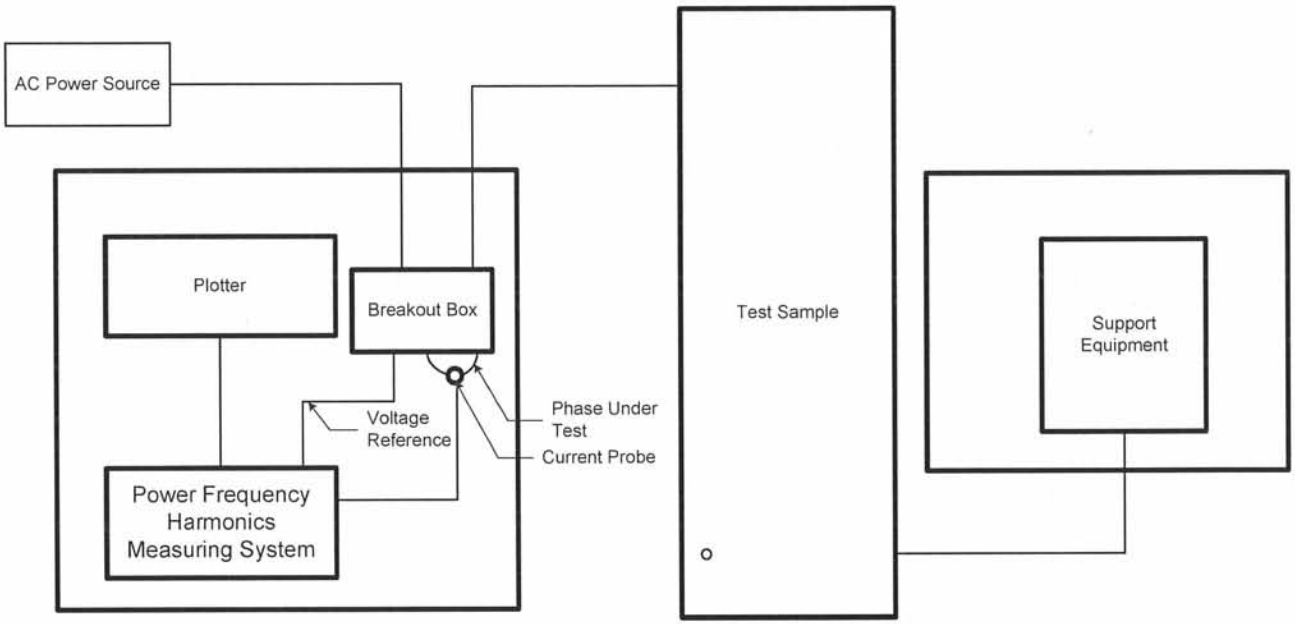
6.4.4 Power Port Tested
The following AC power port of the EUT was tested in order to demonstrate compliance:

- 400 VAC, 60 Hz

6.4.5 Test Setup

The EUT and associated cabling, configured as detailed in paragraph 5.0 herein, was placed in its normal orientation. The AC power leads of the EUT were routed through the breakout box. The voltage reference of the power frequency analyzer was connected between neutral and the phase under test. The current probe of the power frequency analyzer was installed on the phase under test.

Figure 5 - Power Frequency Harmonics, Test Setup



6.4.6 Test Equipment

The details of the test equipment utilized during the performance of this test method are shown below:

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
5047	AEMC	CURRENT CLAMP	30 Hz - 5 KHz	SR 601	5/1/2012	5/31/2013
529	COMBINOVA ANALYZER	POWER MEAS. SYS.		300	1/19/2012	1/31/2013

6.4.7 Test Procedure

With the test instrumentation and EUT configured as stated above, the following steps were performed on each AC Input of the EUT:

1. The power frequency analyzer was configured to acquire magnitudes of the harmonic components of the AC input current from 100 Hz to 2 kHz, on the first phase under test.
2. The EUT was powered on and operating as specified in Paragraph 5.5.
3. The value of AC input power and the magnitude of harmonic emissions were recorded.
4. Steps 1 through 3 were repeated for each remaining phase under test.

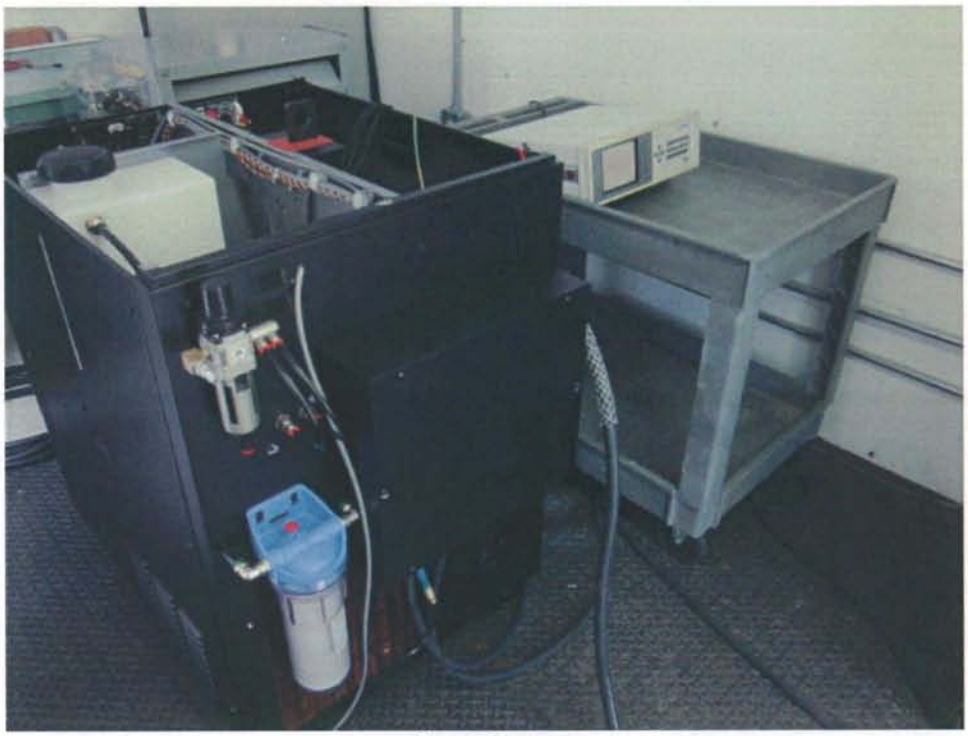
6.4.8 Test Results

The EUT was found to comply with the requirements for this method. No harmonic emissions were observed which exceeded the limits for balanced three-phase equipment. The calculated R_{SCE} value based on final measurements was 150. The values for S_{SC} and S_{equ} will be calculated by Hypertherm and included in their product installation documentation.

See the following photographs and test data for a full presentation of the test setup and results obtained.

Test Photographs
Power Frequency Harmonics

Test Photographs
Power Frequency Harmonics



Test Setup

Power Frequency Harmonics
Test Data

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	IEC 61000-3-12, Harmonics		
Customer	Hypertherm, Inc.	**Job No.**	R-5606N
Test Sample	MAXPRO 200 Plasma Cutting System		
Model No.	MAXPRO200	**Serial No.**	Alpha 6
Test Specification:	EN 60974-10:2007 Table B.8; Table 4		
Operating Mode:	100% Duty Cycle		
Technician:	M. Seamans	**Date:**	June 21, 2012
Notes:	Phase 1		

n	In	In^2	In/I1	(In/I1)^2	n*(In/I1)^2	Harmonic		Limit		
1	53.30000	2840.89				**Current (%)**		RCSE of 150		
2	0.76	0.5776	0.014258912	0.000203317		1.425891182		8.00		
3	0.74	0.5476	0.013883677	0.000192756		1.38836773		-----		
4	0.2	0.04	0.003752345	1.40801E-05		0.375234522		4.00		
5	0.14	0.0196	0.002626642	6.89925E-06		0.262664165		21.50		
6	0.05	0.0025	0.000938086	8.80006E-07		0.09380863		2.67		
7	0.2	0.04	0.003752345	1.40801E-05		0.375234522		14.00		
8	0.03	0.0009	0.000562852	3.16802E-07		0.056285178		2.00		
9	0.06	0.0036	0.001125704	1.26721E-06		0.112570356		-----		
10	0.04	0.0016	0.000750469	5.63204E-07		0.075046904		1.60		
11	3.94	15.5236	0.073921201	0.005464344		7.392120075		8.00		
12	0.1	0.01	0.001876173	3.52002E-06		0.187617261		1.33		
13	2.46	6.0516	0.046153846	0.002130178		4.615384615		4.95		
14	0.06	0.0036	0.001125704	1.26721E-06	1.77409E-05					
15	0.02	0.0004	0.000375235	1.40801E-07	2.11201E-06					
16	0.02	0.0004	0.000375235	1.40801E-07	2.25282E-06			Limit (RCSE 150)		
17	0.2	0.04	0.003752345	1.40801E-05	0.000239362	**THD**	9.98	25.50		
18	0.02	0.0004	0.000375235	1.40801E-07	2.53442E-06	**PWHD**	22.69	31.25		
19	0.12	0.0144	0.002251407	5.06883E-06	9.63078E-05	**Rsce,i3**				
20	0.03	0.0009	0.000562852	3.16802E-07	6.33604E-06	**Rsce,i5**	-85.97			
21	0.05	0.0025	0.000938086	8.80006E-07	1.84801E-05	**Rsce,i7**	-77.08			
22	0.04	0.0016	0.000750469	5.63204E-07	1.23905E-05	**Rsce,i9**				
23	1.52	2.3104	0.028517824	0.000813266	0.018705124	**Rsce,i11**	134.80			
24	0.09	0.0081	0.001688555	2.85122E-06	6.84293E-05	**Rsce,i13**	136.62			
25	1.28	1.6384	0.024015009	0.000576721	0.014418017	**Rsec,THD**	8.90			
26	0.04	0.0016	0.000750469	5.63204E-07	1.46433E-05	**Rsce,PWHD**	35.91			
27	0.05	0.0025	0.000938086	8.80006E-07	2.37602E-05	**Volts (RMS)**	396.78	Phase to Phase		
28	0.01	0.0001	0.000187617	3.52002E-08	9.85607E-07	**Amps (Fund.)**	53.30			
29	0.31	0.0961	0.005816135	3.38274E-05	0.000980995	**THC**	5.32			
30	0.02	0.0004	0.000375235	1.40801E-07	4.22403E-06	**Amps (RMS)**	53.56			
31	0.26	0.0676	0.004878049	2.37954E-05	0.000737656					
32	0.02	0.0004	0.000375235	1.40801E-07	4.50563E-06					
33	0.07	0.0049	0.001313321	1.72481E-06	5.69188E-05					
34	0.04	0.0016	0.000750469	5.63204E-07	1.91489E-05					
35	0.9	0.81	0.016885553	0.000285122	0.009979267	**Rsce**	136.62			
36	0.06	0.0036	0.001125704	1.26721E-06	4.56195E-05					
37	0.68	0.4624	0.012757974	0.000162766	0.006022338					
38	0.03	0.0009	0.000562852	3.16802E-07	1.20385E-05					
39	0.02	0.0004	0.000375235	1.40801E-07	5.49124E-06					
40	0.01	0.0001	0.000187617	3.52002E-08	1.40801E-06		Phase A			

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	IEC 61000-3-12, Harmonics		
Customer	Hypertherm, Inc.	**Job No.**	R-5606N
Test Sample	MAXPRO 200 Plasma Cutting System		
Model No.	MAXPRO200	**Serial No.**	Alpha 6
Test Specification:	EN 60974-10:2007 Table B.8; Table 4		
Operating Mode:	100% Duty Cycle		
Technician:	M. Seamans	**Date:**	June 21, 2012
Notes:	Phase 2		

n	In	In^2	In/I1	(In/I1)^2	n*(In/I1)^2	Harmonic		Limit		
1	51.91000	2694.6481				Current (%)		RCSE of 150		
2	0.89	0.7921	0.01714506	0.00029395		1.71450588		8		
3	0.67	0.4489	0.01290695	0.00016659		1.29069543		-----		
4	0.25	0.0625	0.00481603	2.3194E-05		0.48160277		4		
5	0.44	0.1936	0.00847621	7.1846E-05		0.84762088		21.5		
6	0.03	0.0009	0.00057792	3.34E-07		0.05779233		2.66666667		
7	0.25	0.0625	0.00481603	2.3194E-05		0.48160277		14		
8	0.03	0.0009	0.00057792	3.34E-07		0.05779233		2		
9	0.07	0.0049	0.00134849	1.8184E-06		0.13484878		-----		
10	0.03	0.0009	0.00057792	3.34E-07		0.05779233		1.6		
11	3.82	14.5924	0.0735889	0.00541533		7.35889039		8		
12	0.01	0.0001	0.00019264	3.7111E-08		0.01926411		1.33333333		
13	2.34	5.4756	0.04507802	0.00203203		4.50780196		4.95		
14	0.01	0.0001	0.00019264	3.7111E-08	5.1955E-07					
15	0.04	0.0016	0.00077056	5.9377E-07	8.9065E-06					
16	0.01	0.0001	0.00019264	3.7111E-08	5.9377E-07			**Limit (RCSE 150)**		
17	0.22	0.0484	0.0042381	1.7962E-05	0.00030535	**THD**	9.67919499	25.5		
18	0.02	0.0004	0.00038528	1.4844E-07	2.672E-06	**PWHD**	18.5990577	31.25		
19	0.09	0.0081	0.00173377	3.006E-06	5.7113E-05	**Rsce,i3**				
20	0.01	0.0001	0.00019264	3.7111E-08	7.4221E-07	**Rsce,i5**	-79.4708791			
21	0.01	0.0001	0.00019264	3.7111E-08	7.7932E-07	**Rsce,i7**	-75.3066204			
22	0.02	0.0004	0.00038528	1.4844E-07	3.2657E-06	**Rsce,i9**				
23	1.3	1.69	0.02504334	0.00062717	0.01442489	**Rsce,i11**	133.97226			
24	0.01	0.0001	0.00019264	3.7111E-08	8.9065E-07	**Rsce,i13**	132.312079			
25	1.08	1.1664	0.02080524	0.00043286	0.01082145	**Rsec,THD**	6.17449994			
26	0.01	0.0001	0.00019264	3.7111E-08	9.6488E-07	**Rsce,PWHD**	-18.6792309			
27	0.05	0.0025	0.00096321	9.2776E-07	2.505E-05	**Volts (RMS)**	396.033417	Phase to Phase		
28	0.01	0.0001	0.00019264	3.7111E-08	1.0391E-06	**Amps (Fund.**	51.91			
29	0.24	0.0576	0.00462339	2.1376E-05	0.0006199	**THC**	5.02447012			
30	0.02	0.0004	0.00038528	1.4844E-07	4.4533E-06	**Amps (RMS)**	52.1525973			
31	0.22	0.0484	0.0042381	1.7962E-05	0.00055681					
32	0	0	0	0	0					
33	0.02	0.0004	0.00038528	1.4844E-07	4.8986E-06					
34	0.02	0.0004	0.00038528	1.4844E-07	5.047E-06					
35	0.61	0.3721	0.01175111	0.00013809	0.0048331	**Rsce**	**133.97**			
36	0.01	0.0001	0.00019264	3.7111E-08	1.336E-06					
37	0.46	0.2116	0.00886149	7.8526E-05	0.00290546					
38	0	0	0	0	0					
39	0.02	0.0004	0.00038528	1.4844E-07	5.7893E-06					
40	0.01	0.0001	0.00019264	3.7111E-08	1.4844E-06		Phase B			

RETLIF TESTING LABORATORIES

EMISSIONS DATA SHEET

Test Method:	IEC 61000-3-12, Harmonics		
Customer	Hypertherm, Inc.	**Job No.**	R-5606N
Test Sample	MAXPRO 200 Plasma Cutting System		
Model No.	MAXPRO200	**Serial No.**	Alpha 6
Test Specification:	EN 60974-10:2007 Table B.8; Table 4		
Operating Mode:	100% Duty Cycle		
Technician:	M. Seamans	**Date:**	June 21, 2012
Notes:	Phase 3		

n	In	In^2	In/I1	(In/I1)^2	n*(In/I1)^2	Harmonic		Limit		
1	52.62	2768.8644				Current (%)		RCSE of 150		
2	0.54	0.2916	0.01026226	0.00010531		1.02622577		8		
3	0.46	0.2116	0.00874192	7.6421E-05		0.87419232		-----		
4	0.19	0.0361	0.00361079	1.3038E-05		0.36107944		4		
5	0.35	0.1225	0.00665146	4.4242E-05		0.66514633		21.5		
6	0.06	0.0036	0.00114025	1.3002E-06		0.11402509		2.66666667		
7	0.23	0.0529	0.00437096	1.9105E-05		0.43709616		14		
8	0.01	0.0001	0.00019004	3.6116E-08		0.01900418		2		
9	0.1	0.01	0.00190042	3.6116E-06		0.19004181		-----		
10	0.03	0.0009	0.00057013	3.2504E-07		0.05701254		1.6		
11	3.58	12.8164	0.06803497	0.00462876		6.80349677		8		
12	0.04	0.0016	0.00076017	5.7785E-07		0.07601672		1.33333333		
13	2.25	5.0625	0.04275941	0.00182837		4.27594071		4.95		
14	0.06	0.0036	0.00114025	1.3002E-06	1.8202E-05					
15	0.05	0.0025	0.00095021	9.029E-07	1.3543E-05					
16	0.01	0.0001	0.00019004	3.6116E-08	5.7785E-07			Limit (RCSE 150)		
17	0.19	0.0361	0.00361079	1.3038E-05	0.00022164	THD	8.70505587	25.5		
18	0.01	0.0001	0.00019004	3.6116E-08	6.5009E-07	PWHD	14.6494256	31.25		
19	0.12	0.0144	0.0022805	5.2007E-06	9.8813E-05	Rsce,i3				
20	0.01	0.0001	0.00019004	3.6116E-08	7.2232E-07	Rsce,i5	-81.4983741			
21	0.04	0.0016	0.00076017	5.7785E-07	1.2135E-05	Rsce,i7	-76.0483973			
22	0.02	0.0004	0.00038008	1.4446E-07	3.1782E-06	Rsce,i9				
23	1.07	1.1449	0.02033447	0.00041349	0.00951029	Rsce,i11	120.087419			
24	0.01	0.0001	0.00019004	3.6116E-08	8.6678E-07	Rsce,i13	123.037628			
25	0.93	0.8649	0.01767389	0.00031237	0.00780916	Rsec,THD	-2.6813103			
26	0.03	0.0009	0.00057013	3.2504E-07	8.4511E-06	Rsce,PWHD	-71.3409921			
27	0.04	0.0016	0.00076017	5.7785E-07	1.5602E-05	Volts (RMS)	395.981456	Phase to Phase		
28	0	0	0	0	0	Amps (Fund.	52.62			
29	0.19	0.0361	0.00361079	1.3038E-05	0.0003781	THC	4.5806004			
30	0.01	0.0001	0.00019004	3.6116E-08	1.0835E-06	Amps (RMS)	52.8189956			
31	0.17	0.0289	0.00323071	1.0437E-05	0.00032356					
32	0	0	0	0	0					
33	0.03	0.0009	0.00057013	3.2504E-07	1.0726E-05					
34	0.01	0.0001	0.00019004	3.6116E-08	1.2279E-06					
35	0.38	0.1444	0.00722159	5.2151E-05	0.0018253	Rsce	**123.04**			
36	0.01	0.0001	0.00019004	3.6116E-08	1.3002E-06					
37	0.3	0.09	0.00570125	3.2504E-05	0.00120266					
38	0.01	0.0001	0.00019004	3.6116E-08	1.3724E-06					
39	0.01	0.0001	0.00019004	3.6116E-08	1.4085E-06					
40	0	0	0	0	0		Phase C			

6.5 IEC 61000-4-2, Electrostatic Discharge

6.5.1 Normative Reference
IEC 61000-4-2 Edition 2.0: 2008-12

6.5.2 Purpose
The purpose of this test method was to determine the ability of the EUT to withstand electrostatic discharges applied directly to the EUT and those applied to objects adjacent to the EUT.

6.5.3 Test Parameters
The critical parameters of the electrostatic discharge generator and the applied voltage waveform are shown below:

Air:

Discharge Voltage:	8.0 kV
Discharge Polarity:	Positive/Negative
Discharge Rate:	1 PPS
Rise Time:	0.7 to 1 nanosecond
Pulse Duration:	20 nanoseconds
Storage Capacitor:	150 picofarads
Discharge Resistor:	330 Ohms

Contact:

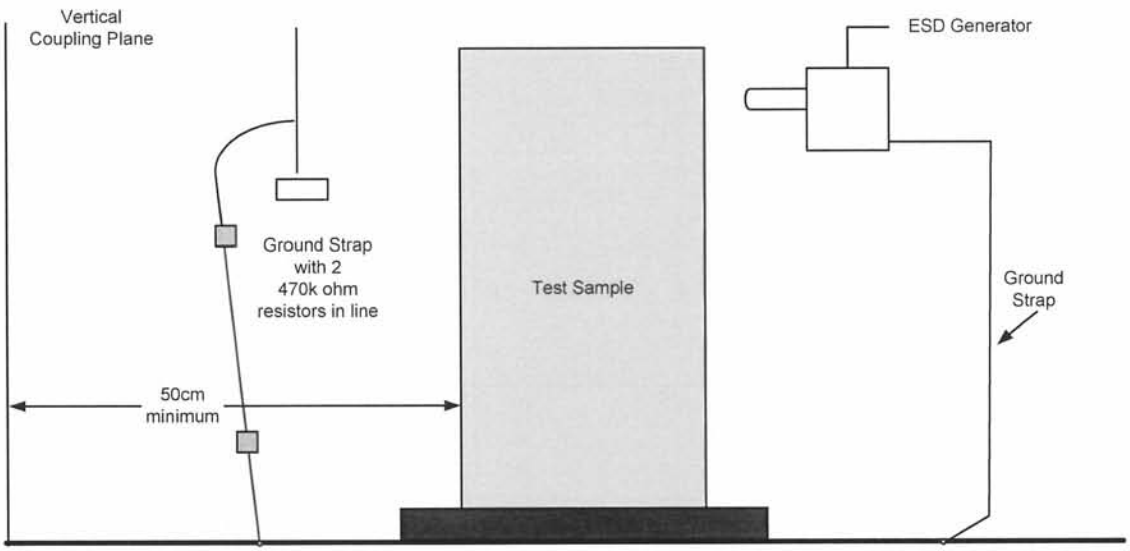
Discharge Voltage:	4.0 kV
Discharge Polarity:	Positive/Negative
Discharge Rate:	1 PPS
Rise Time:	0.7 to 1 nanosecond
Pulse Duration:	20 nanoseconds
Storage Capacitor:	150 picofarads
Discharge Resistor:	330 Ohms

6.5.4 Test Setup

The EUT and associated cabling, configured as detailed in paragraph 5.0 herein, were placed on 0.1 m thick insulating supports above the ground reference plane. The minimum size of the ground reference plane was 1.0 m^2 and projected beyond the EUT by at least 0.5 m on each side. The ground reference plane was connected to the protective grounding system. A distance of 1.0 meter minimum was maintained between the equipment under test and the walls of the laboratory and any other metallic structure. The EUT was connected to the grounding system in accordance with its installation specifications. The position of the power and signal cables was representative of installation practice.

The discharge return cable of the ESD generator was connected to the ground reference plane. The total length of the cable was 2.0 m. The vertical coupling plane was connected to the ground reference plane via a cable with a 470 kOhm resistor located at each end. The vertical coupling plane was positioned parallel to at a distance of 0.1 m from the EUT.

Figure 6 - Electrostatic Discharge, Test Setup



NOTE: Test sample is placed 10cm above the horizontal ground plane

6.5.5 Test Point Determination

The ESD generator was set to the continuous discharge mode. With the EUT configured as stated above, all surfaces of the equipment were probed at a discharge rate of approximately 10 PPS in order to determine areas on the equipment which were susceptible. After this probing and/or an engineering evaluation, the test points specified on the following data sheets were selected.

6.5.6 Test Equipment

The details of the test equipment utilized during the performance of this test method are shown below:

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
461	SCHAFFNER	ESD SIMULATOR	150PF/330OHM	NSG 435	10/17/2011	10/17/2012

6.5.7 Test Procedure

With the EUT and test instrumentation configured as stated above, the following steps were performed:

1. The ESD generator was configured to apply 4.0 kV contact discharges.
2. Ten (10) positive discharges were then applied to each test point indicated in the contact discharge test points indicated on the following data sheet at a repetition rate of 1.0 PPS.
3. The ESD generator was configured to apply negative discharges and step 2 was repeated.
4. Steps 1 through 3 were repeated for each remaining contact discharge level specified.
5. The ESD generator was then configured to apply 8.0 kV air discharges.
6. Ten (10) positive discharges were then applied to each test point indicated in the air discharge test points specified on the following data sheet at a repetition rate of 1.0 PPS.
7. The ESD generator was configured to apply negative discharges and step 5 was repeated.
8. Steps 5 through 7 were repeated for each remaining air discharge level specified.
9. Steps 2 through 8 were repeated for each mode of operation outlined in Paragraph 5.5.

6.5.8 Test Results

The EUT complied with the requirements specified for this method. The test sample did not exhibit any malfunction or degradation of performance beyond that specified in Paragraph 5.6 herein when subjected to the electrostatic discharges specified above.

See the following photographs and test data for a full presentation of the test setup and results obtained.

Test Photographs
Electrostatic Discharge

Test Photographs
Electrostatic Discharge

Test Setup

Vertical Coupling Plane

Electrostatic Discharge
Test Data

RETLIF TESTING LABORATORIES

SUSCEPTIBILITY DATA SHEET

Test Method:	IEC 61000-4-2, ELECTROSTATIC DISCHARGE		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No.	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10, Electromagnetic compatibility (EMC) - Product standard for arc welding equipment Table 3		
Operating Mode:	No Load		
Climatic Conditions:	Temperature: 36.5°C Humidity: 26 % Barometric Pressure: 1016 mbars		
Technician:	M. Seamans	**Date:**	June 22, 2012
Notes:			

Repetition Rate	Threshold	Test Level	Number of Pulses & Pulse Polarity	Positions Tested	
PPS	K Volts				
Direct application of contact discharges.					
1.0	-----	4.0	10 Positive & 10 Negative	Front Panel	
I	I	I	I	Front Panel Screws	
I	I	I	I	Top Panel	
I	I	I	I	Top Panel Screws	
I	I	I	I	Left Side Panel	
I	I	I	I	Left Side Panel Screws	
I	I	I	I	Right Side Panel	
I	I	I	I	Right Side Panel Screws	
I	I	I	I	Back Panel	
I	I	I	I	Back Panel Screws	
I	I	I	I	Air Fitting	
1.0	-----	4.0	10 Positive & 10 Negative	Filter Fittings	
1.0	-----	4.0	10 Positive & 10 Negative	Indirect Application of Contact Discharges	
I	I	I	I	Vertical Coupling Plane:	
I	I	I	I	-Front Side of EUT	
I	I	I	I	-Left Side of EUT	
I	I	I	I	-Right Side of EUT	
1.0	-----	4.0	10 Positive & 10 Negative	-Back Side of EUT	

The test sample did not exhibit any malfunction, degradation of performance or deviation from specified indication beyond the tolerances specified by Criteria B of EN60974-10 or approved test plan in accordance with the above stated test method as defined by the manufacturer. If no threshold is listed, then the highest level EUT was subjected to, was the highest test level.

RETLIF TESTING LABORATORIES

SUSCEPTIBILITY DATA SHEET

Test Method:	IEC 61000-4-2, ELECTROSTATIC DISCHARGE		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No.	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10, Electromagnetic compatibility (EMC) - Product standard for arc welding equipment Table 3		
Operating Mode:	No Load Temperature: 36.5°C Humidity: 26 % Barometric Pressure: 1016 mbars		
Technician:	M. Seamans	**Date:**	June 22, 2012
Notes:			

Repetition Rate	Threshold	Test Level	Number of Pulses & Pulse Polarity	Positions Tested	
PPS	K Volts				
Direct application of air discharges.					
1.0	-----	8.0	10 Positive & 10 Negative	Main Switch	
I	I	I	I	Control Knobs	
I	I	I	I	Coolant Cap	
1.0	-----	8.0	10 Positive & 10 Negative	Air Adjustment Knob	

The test sample did not exhibit any malfunction, degradation of performance or deviation from specified indication beyond the tolerances specified by Criteria B of EN60974 10 or approved test plan in accordance with the above stated test method as defined by the manufacturer. If no threshold is listed, then the highest level EUT was subjected to, was the highest test level.

RETLIF TESTING LABORATORIES

SUSCEPTIBILITY DATA SHEET

Test Method:	IEC 61000-4-2, ELECTROSTATIC DISCHARGE		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No.	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10, Electromagnetic compatibility (EMC) - Product standard for arc welding equipment Table 3		
Operating Mode:	100% Duty Cycle		
Climatic Conditions:	Temperature: 36.5°C Humidity: 26 % Barometric Pressure: 1016 mbars		
Technician:	M. Seamans	**Date:**	June 22, 2012
Notes:			

Repetition Rate	Threshold	Test Level	Number of Pulses & Pulse Polarity	Positions Tested	
PPS	K Volts				
Direct application of contact discharges.					
1.0	-----	4.0	10 Positive & 10 Negative	Front Panel	
I	I	I	I	Front Panel Screws	
I	I	I	I	Top Panel	
I	I	I	I	Top Panel Screws	
I	I	I	I	Left Side Panel	
I	I	I	I	Left Side Panel Screws	
I	I	I	I	Right Side Panel	
I	I	I	I	Right Side Panel Screws	
I	I	I	I	Back Panel	
I	I	I	I	Back Panel Screws	
I	I	I	I	Air Fitting	
1.0	-----	4.0	10 Positive & 10 Negative	Filter Fittings	
1.0	-----	4.0	10 Positive & 10 Negative	Indirect Application of Contact Discharges	
I	I	I	I	Vertical Coupling Plane:	
I	I	I	I	-Front Side of EUT	
I	I	I	I	-Left Side of EUT	
I	I	I	I	-Right Side of EUT	
1.0	-----	4.0	10 Positive & 10 Negative	-Back Side of EUT	

The test sample did not exhibit any malfunction, degradation of performance or deviation from specified indication beyond the tolerances specified by Criteria B of EN60974-10 or approved test plan in accordance with the above stated test method as defined by the manufacturer. If no threshold is listed, then the highest level EUT was subjected to, was the highest test level.

RETLIF TESTING LABORATORIES

SUSCEPTIBILITY DATA SHEET

Test Method:	IEC 61000-4-2, ELECTROSTATIC DISCHARGE		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No.	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10, Electromagnetic compatibility (EMC) - Product standard for arc welding equipment Table 3		
Operating Mode:	100% Duty Cycle Temperature: 36.5°C Humidity: 26 % Barometric Pressure: 1016 mbars		
Technician:	M. Seamans	**Date:**	June 22, 2012
Notes:			

Repetition Rate	Threshold	Test Level	Number of Pulses & Pulse Polarity	Positions Tested	
PPS	K Volts				
Direct application of air discharges.					
1.0	-----	8.0	10 Positive & 10 Negative	Main Switch	
I	I	I	I	Control Knobs	
I	I	I	I	Coolant Cap	
1.0	-----	8.0	10 Positive & 10 Negative	Air Adjustment Knob	

The test sample did not exhibit any malfunction, degradation of performance or deviation from specified indication beyond the tolerances specified by Criteria B of EN60974 10 or approved test plan in accordance with the above stated test method as defined by the manufacturer. If no threshold is listed, then the highest level EUT was subjected to, was the highest test level.

6.6 IEC 61000-4-3, Radiated Immunity, 80 MHz to 1 GHz

6.6.1 Normative Reference
IEC 61000-4-3 Edition 3.2: 2010-04

6.6.2 Purpose
The purpose of this test method was to determine if the EUT was so constructed as to have an adequate level of intrinsic immunity to radiated electromagnetic fields in the frequency range of 80 to 1000 MHz, enabling the EUT to operate as intended.

6.6.3 Test Parameters
The critical parameters of the applied electromagnetic field are as shown in Table 14 below:

Table 14 - Radiated Immunity, Test Parameters

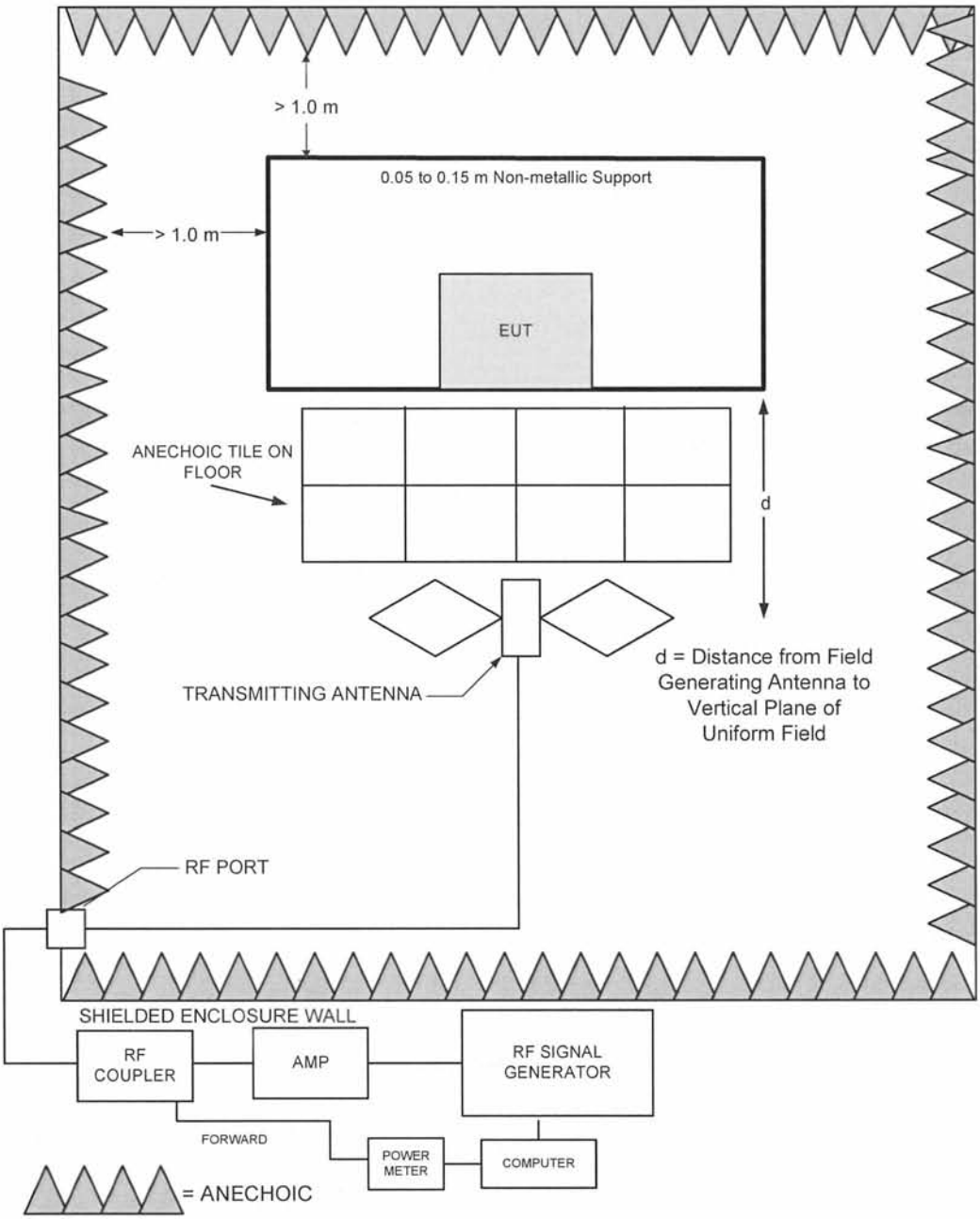
Frequency Range	80 to 1000 MHz
Field Strength	10 V/m
Modulation	1 kHz, 80%, AM
Dwell Time	1 second
Polarization of Applied Field	Horizontal and Vertical

6.6.4 Test Setup
The EUT and associated cabling, configured as detailed in paragraph 5.0 herein, was placed on 0.05 to 0.15 m high non-metallic test stand within the semi-anechoic test chamber. The test enclosure ceiling, walls and portions of the floor were treated with a mixture of ferrite tile and carbon impregnated foam absorber. The EUT was positioned such that the front edge of the stand was at, and parallel to, the vertical plane which defined the uniform field area. Excess length of cables interconnecting units of the EUT, were bundled low inductively in the approximate center of the cable to form a bundle 30 to 40 cm in length. Unterminated cables and those exiting the test area were routed horizontally along the front edge of the uniform field area on the non-metallic supports.

The field generating antenna was positioned in the same location as during calibration. An RF signal generator was connected to the input of the RF power amplifier. The output of the RF power amplifier was connected to an RF coupler which in turn was connected to the test antenna. A power meter was connected to the forward power port of the RF coupler.

The RF signal generator and power meter were connected to a control computer via a GPIB port. The control computer was running software which adjusted the forward power at each frequency step necessary to obtain the specified field strength. The necessary forward power was calculated based upon that recorded during field uniformity calibration, which was performed prior to testing as specified in paragraph 6.2.2 of IEC 61000-4-3.

Figure 7 - Radiated Immunity, Test Setup



6.6.5 Test Equipment

The details of the test equipment utilized during the performance of this test method are shown below:

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
4025	UNIVERSAL SHIELDING	SHIELDED ENCLOSURE - TEST CHAMBER	100dB, 14kHz - 10GHz	24X16X12	2/17/2012	2/28/2013
4025FU	RETLIF	FIELD UNIFORMITY	80 - 2700 MHz	ANECHOIC ROOM	4/2/2012	4/2/2013
4202	EMCO	BICONILOG	26 MHz - 2.7 GHz	3142	Inspect Before Use	
4994	AMPLIFIER RESEARCH	RF POWER AMPLIFIER	80-1000MHz, 250W	250W1000	3/19/2012	3/31/2013
5058	BOONTON	POWER METER	10 KHZ - 100 GHZ	4232A	9/6/2011	9/6/2012
5059A	BOONTON	POWER SENSOR	10 KHZ - 8 GHZ	51011-EMC	9/6/2011	9/6/2012
5151	DELL	Control Computer		Optiplex 755	No Calibration Required	
5176	WERLATONE COUPLER	DUAL DIRECTIONAL	80MHZ-1GHZ	C5982-10	2/23/2012	2/28/2013
530A	MARCONI	SIGNAL GENERATOR	10 kHz - 1.2 GHz	2023	10/20/2011	10/20/2012

6.6.6 Test Procedure

With the EUT configured as described above, the following steps were performed:

1. The field generating antenna was horizontally polarized with the front of the EUT facing the antenna.
2. The software on the control computer was initiated, which performed the following steps:
   a. The software calculated the forward power required at each frequency step to attain the specified field level.
   b. The output frequency of the signal generator was adjusted to the start frequency of the test.
   c. The output level of the generator was increased until the required power was measured at the forward port of the RF coupler.
   d. The specified modulation was enabled.
   e. This condition was held for the dwell time specified in the test parameters.
   f. The frequency was incremented by 1%.
   g. Steps c through f were repeated until the EUT was subjected to the specified field strength over the entire frequency range of test.
3. At each frequency step, the EUT was monitored for degradation or malfunction.
4. The field generating antenna was vertically polarized and steps 2 and 3 were repeated.
5. Steps 2 through 4 were repeated with each of the rear, left and right sides of the test sample facing the field generating antenna.
6. Steps 2 through 5 were repeated for each mode of operation outlined in Paragraph 5.5.

6.6.7 Sample Calculations

Shown below is a sample showing calculations used to determine the forward power necessary to obtain the required test field strength in V/M.

$P_T = P_C - R$

Where:
P_T = Test Forward Power in dBm
P_C = Calibration Forward Power at E_C in dBm
$R = 20 \text{ LOG } (E_C / E_T)$
E_C = Calibration Field Strength in V/M
E_T = Required Test Field Strength in V/M

Example:
E_C = 18.0 V/M
E_T = 10.0 V/M
P_C = 31.5 dBm

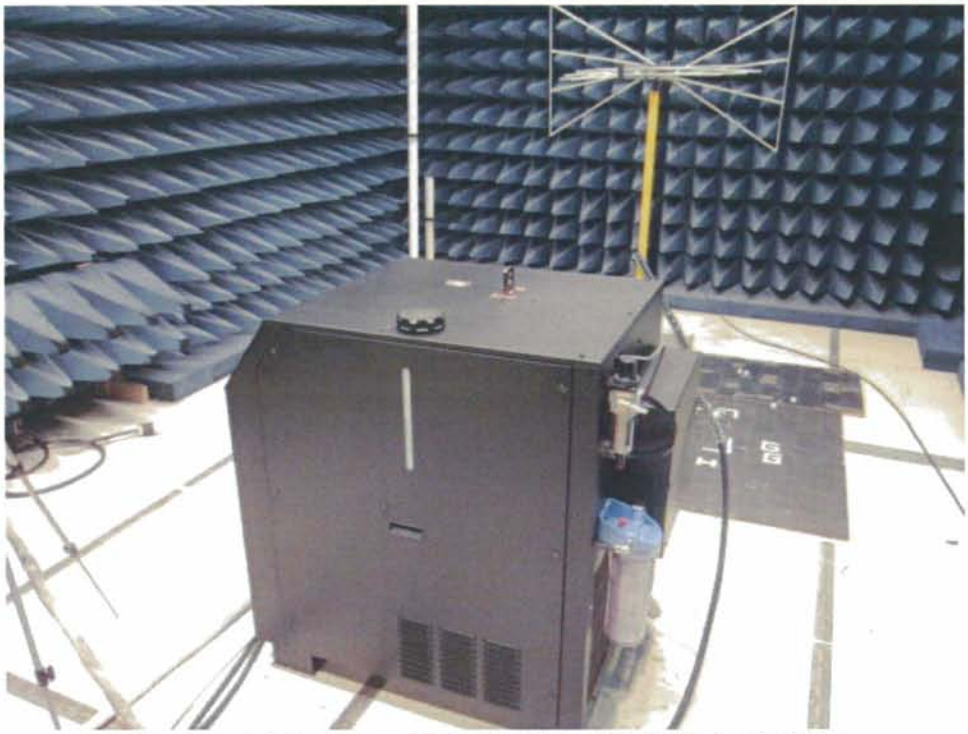
P_T = 31.5 – (20 LOG (18.0 / 10.0)
= 31.5 – 20 LOG (1.8)
= 31.5 – 20 LOG (.255)
= 31.5 – 5.1
= 26.4 dBm

6.6.8 Test Results

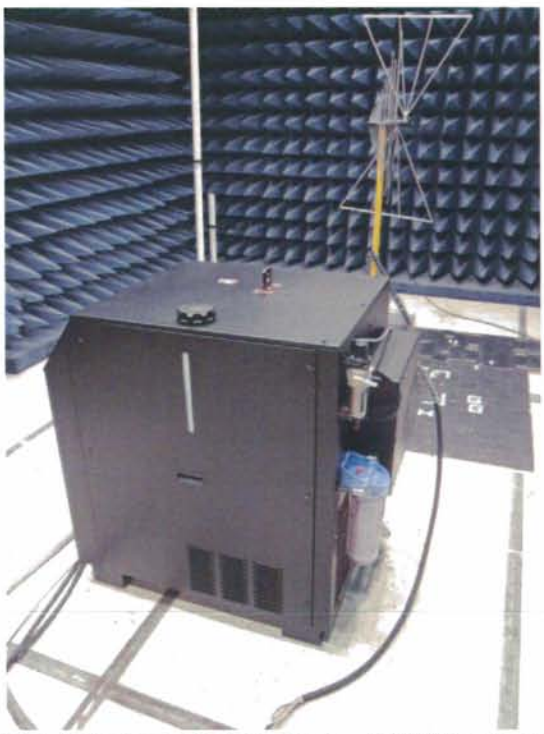
The EUT complied with the requirements specified for this method. The test sample did not exhibit any malfunction or degradation of performance beyond that specified in Paragraph 5.6 herein when subjected to the radiated electromagnetic field specified above.

See the following photographs and test data for a full presentation of the test setup and results obtained.

Test Photographs
Radiated Immunity



Horizontal Antenna Polarization, 80 MHz to 1 GHz



Vertical Antenna Polarization, 80 MHz to 1 GHz

Radiated Immunity
Test Data

RETLIF TESTING LABORATORIES

SUSCEPTIBILITY DATA SHEET

Test Method:	IEC 61000-4-3, Radiated Immunity 80 MHz to 1 GHz		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No.	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10, Electromagnetic compatibility (EMC) - Product standard for arc welding equipment Table 3		
Operating Mode:	No Load		
Climatic Conditions:	Temperature: 23.5°C Humidity: 44 % Barometric Pressure: 1010 mbars		
Technician:	M. Seamans	**Date:**	June 19, 2012
Notes:			

Test Frequency	Threshold	Test Level	Modulation	Antenna Polarity	
MHz	V/m				
80	-----	10	80% AM 1 kHz	Vertical & Horizontal	
1000	-----	10	80% AM 1 kHz	Vertical & Horizontal	

The test sample did not exhibit any malfunction, degradation of performance or deviation from specified indication beyond the tolerances specified by Criteria A of EN60974-10 or approved test plan in accordance with the above stated test method as defined by the manufacturer. If no threshold is listed, then the highest level EUT was subjected to, was the highest test level.

RETLIF TESTING LABORATORIES

SUSCEPTIBILITY DATA SHEET

Test Method:	IEC 61000-4-3, Radiated Immunity 80 MHz to 1 GH		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No.	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10, Electromagnetic compatibility (EMC) - Product standard for arc welding equipment Table 3		
Operating Mode:	100% Duty Cycle		
Climatic Conditions:	Temperature: 23.5°C Humidity: 44 % Barometric Pressure: 1010 mbars		
Technician:	M. Seamans	**Date:**	June 19, 2012
Notes:			

Test Frequency	Threshold	Test Level	Modulation	Antenna Polarity	
MHz	V/m				
80	-----	10	80% AM 1 kHz	Vertical & Horizontal	
1000	-----	10	80% AM 1 kHz	Vertical & Horizontal	

The test sample did not exhibit any malfunction, degradation of performance or deviation from specified indication beyond the tolerances specified by Criteria A of EN60974 10 or approved test plan in accordance with the above stated test method as defined by the manufacturer. If no threshold is listed, then the highest level EUT was subjected to, was the highest test level.

6.7 IEC 61000-4-4, Electrical Fast Transient / Burst, Power Ports

6.7.1 Normative Reference
IEC 61000-4-4 Edition 2.1: 2011-03

6.7.2 Purpose
The purpose of this test method was to determine if the EUT was so constructed as to have an adequate level of intrinsic immunity to electrical fast transient bursts applied to input power leads, enabling the EUT to operate as intended.

6.7.3 Test Parameters
The critical parameters of the electrical fast transient/burst generator and the applied waveform are shown below:

Transient Voltage:	0.5 kV, 1.0 kV, 2.0 kV
Transient Polarity:	Positive and Negative
Repetition Rate:	5 kHz
Rise Time of Pulse:	5 ns ± 30%
Pulse Duration:	50 ns ± 30%
Burst Period:	300 ms ± 20%
Burst Duration:	15 ms ± 20%

6.7.4 Power Ports Tested
The following power ports of the EUT were tested, in the coupling mode shown, in order to demonstrate compliance:

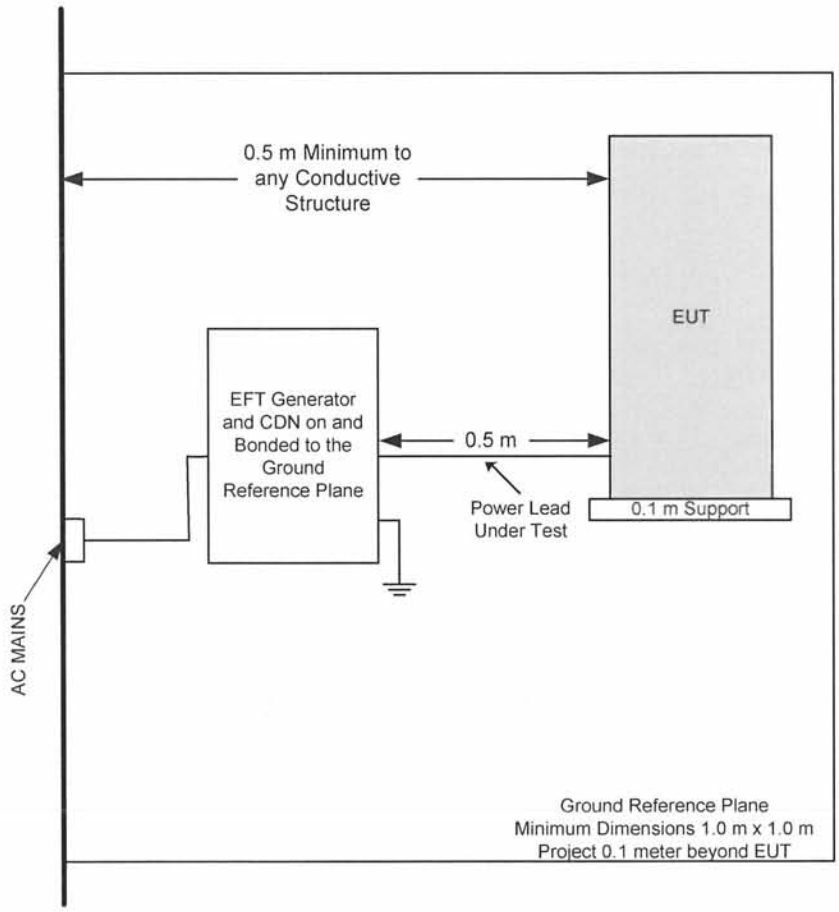
- 400 VAC, 60 Hz
  - Coupling Modes:
    - Phase 1 to Earth Reference
    - Phase 2 to Earth Reference
    - Phase 3 to Earth Reference
    - Ground to Earth Reference

6.7.5 Test Setup

The EUT and associated cabling, configured as detailed in paragraph 5.0 herein, were placed on 0.1 m thick insulating supports above the ground reference plane. The minimum size of the ground reference plane was 1.0 m^2 and projected beyond the EUT by at least 0.1 m on each side. The ground reference plane was connected to the protective grounding system. A distance of 0.5 m minimum was maintained between the equipment under test and the walls of the laboratory and any other metallic structure. The EUT was connected to the grounding system in accordance with its installation specifications. All cables to the EUT were placed on the 0.1 m insulating support above the ground reference plane. The cables not under test were routed as far as possible from the port under test, in order to minimize the coupling between cables.

The test generator including the coupling/decoupling network was placed directly on, and bonded to, the ground reference plane. The length of power leads connecting the EUT to the coupling/decoupling network was 0.5 m.

Figure 8 - Electrical Fast Transient Burst, Power Ports Test Setup



6.7.6 Test Equipment

The details of the test equipment utilized during the performance of this test method are shown below:

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
5104	EMC-PARTNER	SURGE GENERATOR	4KV EFT-SURGE-DIPS	TRANSIENT 2000	10/20/2011	10/20/2012
5105	EMC-PARTNER NET	COUPLING/DECOUPLING	480V 3phase 32amp	CDN2000A-06-32	Inspect Before Use	

6.7.7 Test Procedure

With the EUT and test instrumentation configured as stated above, the following steps were performed:

1. The transient generator was configured to apply 0.5 kV transients.
2. Positive transients were applied to the input power leads in the coupling modes specified above, for a period of 1 minute for each mode.
3. The EUT was continuously monitored for malfunction or degradation as specified in Paragraph 5.6 herein.
4. The transient generator was configured to apply negative transients and steps 2 and 3 were repeated.
5. Steps 2 through 4 were repeated for each remaining test level specified.
6. Steps 2 through 5 were repeated for each mode of operation outlined in Paragraph 5.5.

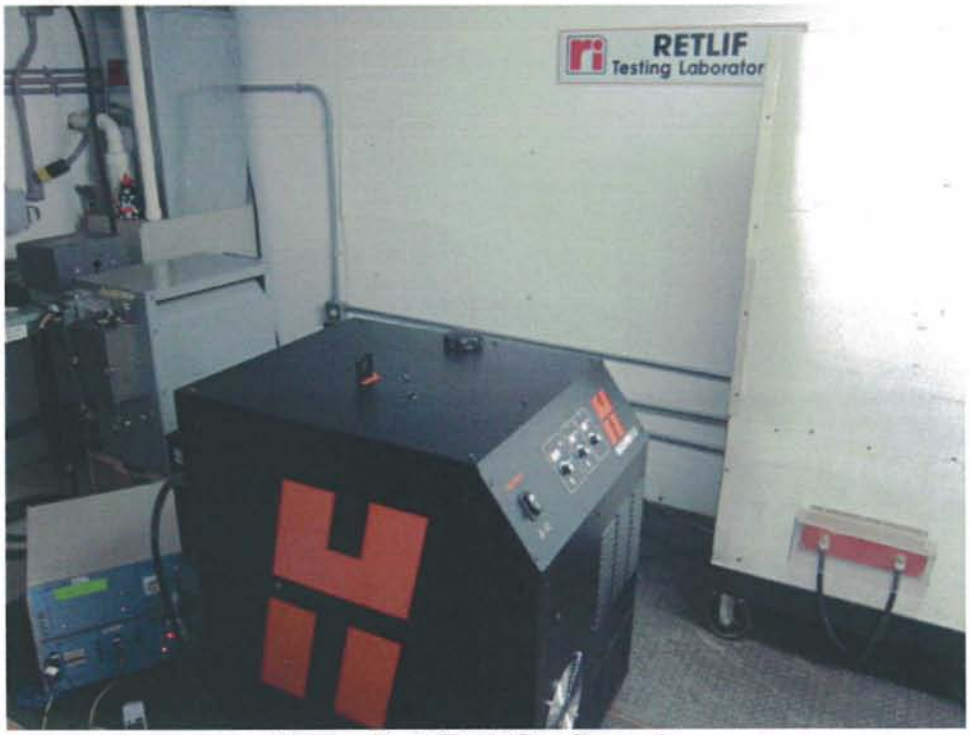
6.7.8 Test Results

The EUT complied with the requirements specified for this method. The test sample did not exhibit any malfunction or degradation of performance beyond that specified in Paragraph 5.6 herein when subjected to the electrical fast transients/bursts specified above.

See the following photographs and test data for a full presentation of the test setup and results obtained.

Test Photographs
Electrical Fast Transients/Bursts

Test Photographs
Electrical Fast Transients/Bursts



Power Port Test Configuration

Electrical Fast Transients/Bursts
Test Data

RETLIF TESTING LABORATORIES

SUSCEPTIBILITY DATA SHEET

Test Method:	IEC 61000-4-4, Electrical Fast Transient Burst		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No.	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10, Electromagnetic compatibility (EMC) - Product standard for arc welding equipment Table 4		
Operating Mode:	No Load		
Climatic Conditions:	Temperature: 20.5°C Humidity: 65 % Barometric Pressure: 1011 mbars		
Technician:	M. Seamans	**Date:**	June 13, 2012
Notes:			

Test Frequency	Burst Period	Burst Duration	Threshold	Test Level	Pulse Polarity	Lead Tested	Test Duration	Injection Method	
kHz	mS		K Volts			400 VAC 60 Hz 3 Phase	Minutes		
5.0	300	15	---	0.5, 1.0 & 2.0	+ & -	L1 to PE	1	CDN	
I	I	I	I	I	I	L2 to PE	I	CDN	
I	I	I	I	I	I	L3 to PE	I	CDN	
I	I	I	I	I	I	Ground to PE	I	CDN	
5.0	300	15	---	0.5, 1.0 & 2.0	+ & -	All to PE	1	CDN	

The test sample did not exhibit any malfunction, degradation of performance or deviation from specified indication beyond the tolerances specified by Criteria B of EN60974 10 or approved test plan in accordance with the above stated test method as defined by the manufacturer. If no threshold is listed, then the highest level EUT was subjected to, was the highest test level.

RETLIF TESTING LABORATORIES

SUSCEPTIBILITY DATA SHEET

Test Method:	IEC 61000-4-4, Electrical Fast Transient Burst		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No.	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10, Electromagnetic compatibility (EMC) - Product standard for arc welding equipment Table 4		
Operating Mode:	100 % Duty Cycle		
Climatic Conditions:	Temperature: 20.5°C Humidity: 65 % Barometric Pressure: 1011 mbars		
Technician:	M. Seamans	**Date:**	June 13, 2012
Notes:			

Test Frequency	Burst Period	Burst Duration	Threshold	Test Level	Pulse Polarity	Lead Tested	Test Duration	Injection Method	
kHz	mS		K Volts			400 VAC 60 Hz 3 Phase	Minutes		
5.0	300	15	---	0.5, 1.0 & 2.0	+ & -	L1 to PE	1	CDN	
I	I	I	I	I	I	L2 to PE	I	CDN	
I	I	I	I	I	I	L3 to PE	I	CDN	
I	I	I	I	I	I	Ground to PE	I	CDN	
5.0	300	15	---	0.5, 1.0 & 2.0	+ & -	All to PE	1	CDN	

The test sample did not exhibit any malfunction, degradation of performance or deviation from specified indication beyond the tolerances specified by Criteria B of EN60974 10 or approved test plan in accordance with the above stated test method as defined by the manufacturer. If no threshold is listed, then the highest level EUT was subjected to, was the highest test level.

6.8 IEC 61000-4-4, Electrical Fast Transient / Burst, I/O Cables

6.8.1 Normative Reference
IEC 61000-4-4 Edition 2.1: 2011-03

6.8.2 Purpose
The purpose of this test method was to determine if the EUT was so constructed as to have an adequate level of intrinsic immunity to electrical fast transient bursts applied to I/O cables, enabling the EUT to operate as intended.

6.8.3 Test Parameters
The critical parameters of the electrical fast transient/burst generator and the applied waveform are shown below:

Transient Voltage:	0.5 kV, 1.0 kV, 2.0 kV
Transient Polarity:	Positive and Negative
Repetition Rate:	5 kHz
Rise Time of Pulse:	5 ns ± 30%
Pulse Duration:	50 ns ± 30%
Burst Period:	300 ms ± 20%
Burst Duration:	15 ms ± 20%

6.8.4 I/O Port Tested
The following I/O port of the EUT was tested in order to demonstrate compliance:

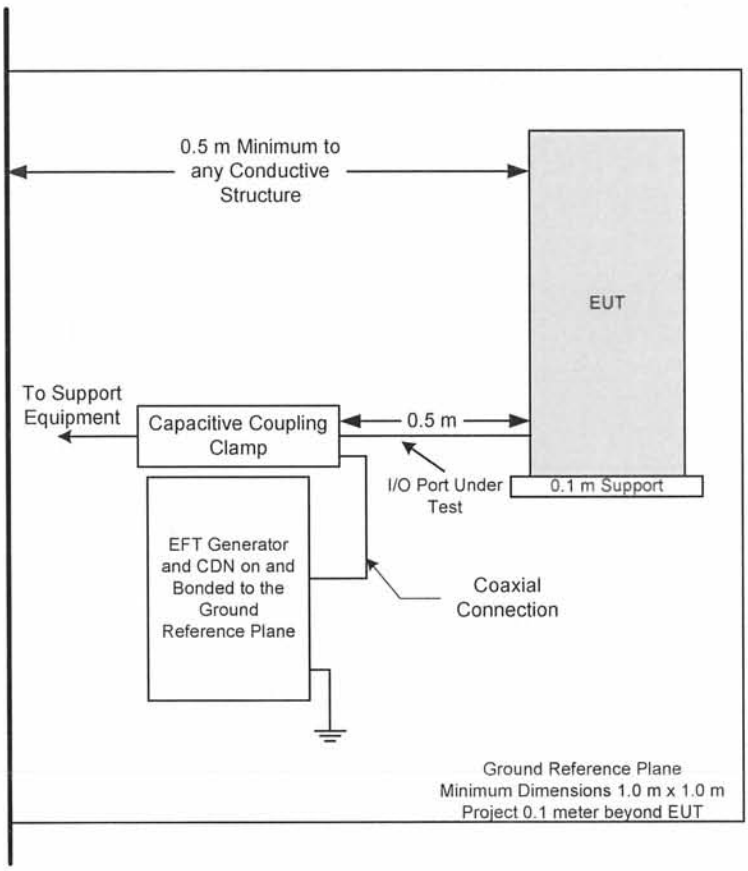
- Remote Cable

6.8.5 Test Setup

The EUT and associated cabling, configured as detailed in paragraph 5.0 herein, were placed on 0.1 m thick insulating supports above the ground reference plane. The minimum size of the ground reference plane was 1.0 m^2 and projected beyond the EUT by at least 0.1 m on each side. The ground reference plane was connected to the protective grounding system. A distance of 0.5 m minimum was maintained between the equipment under test and the walls of the laboratory and any other metallic structure. The EUT was connected to the grounding system in accordance with its installation specifications. All cables to the EUT were placed on the 0.1 m insulating support above the ground reference plane. The cables not under test were routed as far as possible from the port under test, in order to minimize the coupling between cables.

The test generator including the capacitive coupling clamp was placed directly on, and bonded to, the ground reference plane. The I/O port under test was installed in the capacitive coupling clamp. The length of I/O port between the capacitive coupling clamp and EUT was 0.5 m. The output of the test generator was connected to the end of the capacitive coupling clamp nearest the EUT.

Figure 9 - Electrical Fast Transient Burst, I/O Cables Setup



6.8.6 Test Equipment

The details of the test equipment utilized during the performance of this test method are shown below:

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
467B	SCHAFFNER	CAPAC. COUPLING CLAMP		CDN 125	Inspect Before Use	
5104	EMC-PARTNER	SURGE GENERATOR	4KV EFT-SURGE-DIPS	TRANSIENT 2000	10/20/2011	10/20/2012

6.8.7 Test Procedure

With the EUT and test instrumentation configured as stated above, the following steps were performed:

1. The transient generator was configured to apply 0.5 kV transients.
2. Positive transients were applied to the first I/O cable specified for a period of 1 minute.
3. The EUT was continuously monitored for malfunction or degradation as specified in Paragraph 5.6 herein.
4. The transient generator was configured to apply negative transients and steps 2 and 3 were repeated.
5. Steps 2 through 4 were repeated for each remaining test level specified.
6. Steps 2 through 5 were repeated for each I/O cable tested.
7. Steps 2 through 6 were repeated for each mode of operation outlined in Paragraph 5.5.

6.8.8 Test Results

Observation:

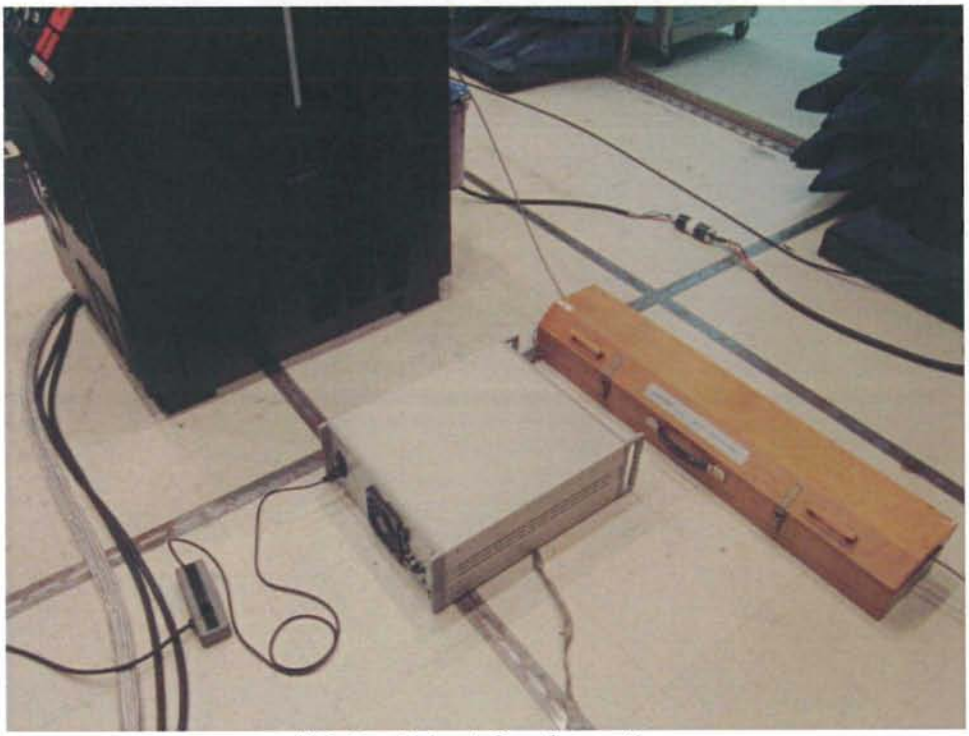
During the application of -2.0 kV electrical fast transients / bursts applied to the Remote Cable, the EUT output shut off and required manual intervention for reset.

The EUT complied with the requirements specified for this method. The test sample did not exhibit any malfunction or degradation of performance beyond that specified in Paragraph 5.6 herein when subjected to the electrical fast transients/bursts specified above.

See the following photographs and test data for a full presentation of the test setup and results obtained.

Test Photographs
Electrical Fast Transients/Bursts

Test Photographs
Electrical Fast Transients/Bursts



I/O Port Test Configuration

Electrical Fast Transients/Bursts
Test Data

RETLIF TESTING LABORATORIES

SUSCEPTIBILITY DATA SHEET

Test Method:	IEC 61000-4-4, Electrical Fast Transient Burst		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No.	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10, Electromagnetic compatibility (EMC) - Product standard for arc welding equipment Table 5		
Operating Mode:	No Load		
Climatic Conditions:	Temperature: 20.5°C Humidity: 65 % Barometric Pressure: 1011 mbars		
Technician:	M. Seamans	**Date:**	June 19, 2012
Notes:	Injection Method: Capacitive Clamp		

Test Frequency	Burst Period	Burst Duration	Threshold	Test Level	Pulse Polarity	I/O Lead Tested	Test Duration	
kHz	mS		K Volts				Minutes	
5.0	300	15	---	0.25, 0.5, 1 & 2	+ & -	Remote Cable	1.0	

The test sample did not exhibit any malfunction, degradation of performance or deviation from specified indication beyond the tolerances specified by Criteria B of EN60974 10 or approved test plan in accordance with the above stated test method as defined by the manufacturer. If no threshold is listed, then the highest level EUT was subjected to, was the highest test level.

RETLIF TESTING LABORATORIES

SUSCEPTIBILITY DATA SHEET

Test Method:	IEC 61000-4-4, Electrical Fast Transient Burst		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No.	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10, Electromagnetic compatibility (EMC) - Product standard for arc welding equipment Table 5		
Operating Mode:	100 % Duty Cycle		
Climatic Conditions:	Temperature: 20.5°C Humidity: 65 % Barometric Pressure: 1011 mbars		
Technician:	M. Seamans	**Date:**	June 19, 2012
Notes:	Injection Method: Capacitive Clamp		

Test Frequency	Burst Period	Burst Duration	Threshold	Test Level	Pulse Polarity	I/O Lead Tested	Test Duration	
kHz	mS		K Volts				Minutes	
5.0	300	15	---	0.25, 0.5, 1 & 2	+ & -	Remote Cable	1.0	

The test sample did not exhibit any malfunction, degradation of performance or deviation from specified indication beyond the tolerances specified by Criteria B of EN60974-10 or approved test plan in accordance with the above stated test method as defined by the manufacturer. If no threshold is listed, then the highest level EUT was subjected to, was the highest test level.

6.9 IEC 61000-4-5, Surge, Power Leads

6.9.1 Normative Reference
IEC 61000-4-5 Edition 2.0: 2005-11

6.9.2 Purpose
The purpose of this test method was to determine if the EUT was so constructed as to have an adequate level of intrinsic immunity to common and differential mode surges applied to input power leads, enabling the EUT to operate as intended.

6.9.3 Test Parameters
The critical parameters of the applied surge waveform are shown below:

Voltage:	0.5 kV, 1.0 kV Differential Mode 0.5 kV, 1.0 kV, 2.0 kV Common Mode
Polarity:	Positive and Negative
Phase Angle:	90°, 180°, 270°

	Open Circuit	Short Circuit
Rise Time:	1.2 µsec	8.0 µsec
Duration:	50.0 µsec	20.0 µsec
Rep Rate:	1 ppm	

6.9.4 Power Ports Tested
The following power ports of the EUT were tested, in the coupling mode shown, in order to demonstrate compliance:

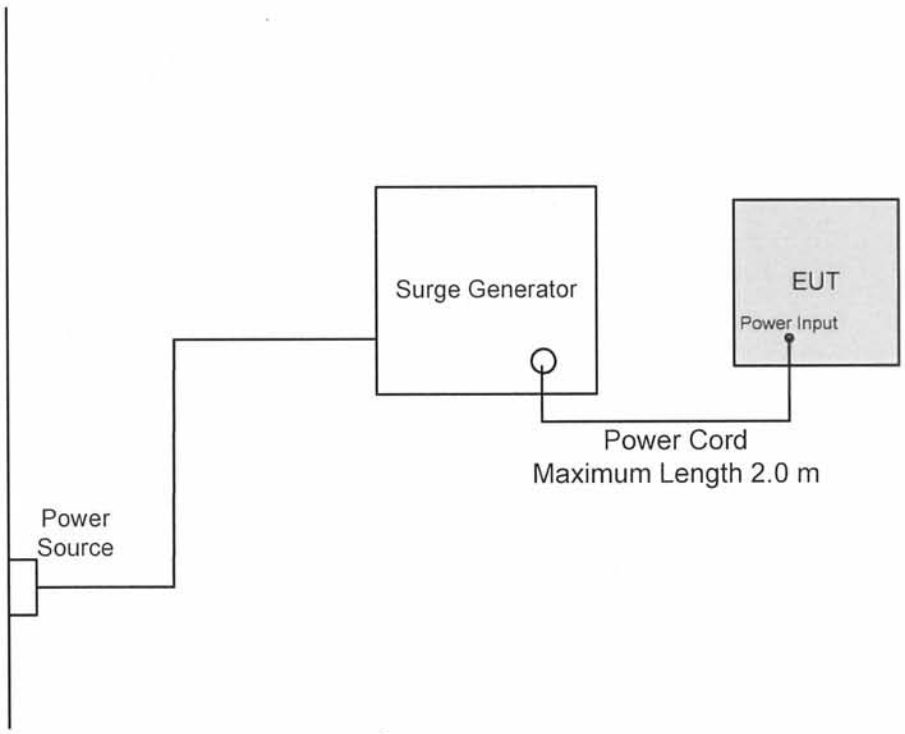
- 400 VAC, 60 Hz
  - Coupling Modes:
    - Common Mode: Phase 1 to Ground
    - Common Mode: Phase 2 to Ground
    - Common Mode: Phase 3 to Ground
    - Differential Mode: Phase 1 to Phase 2
    - Differential Mode: Phase 1 to Phase 3
    - Differential Mode: Phase 2 to Phase 3

6.9.5 Test Setup

The EUT and associated cabling was configured as detailed in paragraph 5.0 herein. The EUT was connected to the grounding system in accordance with its installation specifications.

The input power leads of the EUT were connected to the capacitive coupling/decoupling network contained within the test generator. The length of power leads connecting the EUT to the capacitive coupling/decoupling network did not exceed 2.0 m.

Figure 10 - Surge, Power Leads, Test Setup



6.9.6 Test Equipment

The details of the test equipment utilized during the performance of this test method are shown below:

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
5104	EMC-PARTNER	SURGE GENERATOR	4KV EFT-SURGE-DIPS	TRANSIENT 2000	10/20/2011	10/20/2012
5105	EMC-PARTNER NET	COUPLING/DECOUPLING	480V 3phase 32amp	CDN2000A-06-32	Inspect Before Use	

6.9.7 Test Procedure

With the EUT and test instrumentation configured as stated above, the following steps were performed:

1. The transient generator was configured to apply 0.5 kV transients.
2. Five positive 0.5 kV transients were applied to the power leads in the coupling modes specified, at a repetition rate not exceeding 1 ppm, at each specified phase angle.
3. The EUT was continuously monitored for malfunction or degradation as specified in Paragraph 5.6 herein.
4. The transient generator was configured to apply negative transients and steps 2 and 3 were repeated.
5. Steps 2 through 4 were repeated for each remaining test level specified.
6. Steps 2 through 5 were repeated for each mode of operation outlined in Paragraph 5.5.

6.9.8 Test Results

The EUT complied with the requirements specified for this method. The test sample did not exhibit any malfunction or degradation of performance beyond that specified in Paragraph 5.6 herein when subjected to the surges specified above.

See the following photographs and test data for a full presentation of the test setup and results obtained.

Test Photographs
Surge

Test Photographs
Surge

Test Setup

Surge
Test Data

RETLIF TESTING LABORATORIES

SUSCEPTIBILITY DATA SHEET

Test Method:	IEC 61000-4-5, Surge		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No.	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10, Electromagnetic compatibility (EMC) - Product standard for arc welding equipment		
Operating Mode:	No Load		
Climatic Conditions:	Temperature: 23.5°C Humidity: 63 % Barometric Pressure: 1018 mbars		
Technician:	M. Seamans	**Date:**	June 14, 2012
Notes:			

# of Pulses/ PPM	Threshold	Test Level	Pulse Polarity	Lead Tested	Phase Angle	Injection Method	
	K Volts			400 VAC 60 Hz 3 Phase			
5/1	-----	0.5, 1.0 & 2.0	+ / -	L1 to Ground	90; 180; 270	CDN	
I	I	I	I	L2 to Ground	I	CDN	
5/1	-----	0.5, 1.0 & 2.0	+ / -	L3 to Ground	90; 180; 270	CDN	
5/1	-----	0.5 & 1.0	+ / -	L1 to L2	90; 180; 270	CDN	
I	I	I	I	L1 to L3	I	CDN	
5/1	-----	0.5 & 1.0	+ / -	L2 to L3	90; 180; 270	CDN	

The test sample did not exhibit any malfunction, degradation of performance or deviation from specified indication beyond the tolerances specified by Criteria of EN60974-10 or approved test plan in accordance with the above stated test method as defined by the manufacturer. If no threshold is listed, then the highest level EUT was subjected to, was the highest test level.

RETLIF TESTING LABORATORIES

SUSCEPTIBILITY DATA SHEET

Test Method:	IEC 61000-4-5, Surge		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No.	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10, Electromagnetic compatibility (EMC) - Product standard for arc welding equipment		
Operating Mode:	100 % Duty Cycle		
Climatic Conditions:	Temperature: 23.5°C Humidity: 63 % Barometric Pressure: 1018 mbars		
Technician:	M. Seamans	**Date:**	June 14, 2012
Notes:			

# of Pulses/ PPM	Threshold	Test Level	Pulse Polarity	Lead Tested	Phase Angle	Injection Method	
	K Volts			400 VAC 60 Hz 3 Phase			
5/1	-----	0.5, 1.0 & 2.0	+ / -	L1 to Ground	90; 180; 270	CDN	
I	I	I	I	L2 to Ground	I	CDN	
5/1	-----	0.5, 1.0 & 2.0	+ / -	L3 to Ground	90; 180; 270	CDN	
5/1	-----	0.5 & 1.0	+ / -	L1 to L2	90; 180; 270	CDN	
I	I	I	I	L1 to L3	I	CDN	
5/1	-----	0.5 & 1.0	+ / -	L2 to L3	90; 180; 270	CDN	

The test sample did not exhibit any malfunction, degradation of performance or deviation from specified indication beyond the tolerances specified by Criteria of EN60974-10 or approved test plan in accordance with the above stated test method as defined by the manufacturer. If no threshold is listed, then the highest level EUT was subjected to, was the highest test level.

6.10 IEC 61000-4-6, Conducted Immunity, Power Ports, 0.15 to 80 MHz

6.10.1 Normative Reference
IEC 61000-4-6 Edition 3.0: 2008-10

6.10.2 Purpose
The purpose of this test method was to determine if the EUT was so constructed as to have an adequate level of intrinsic immunity to radio frequency electromagnetic energy injected into input power leads in the frequency range of 0.15 to 80 MHz, enabling the EUT to operate as intended.

6.10.3 Test Parameters
The critical parameters of the applied electromagnetic energy for testing the power ports were as shown below:

Frequency Range:	0.15 to 80 MHz
Applied Signal Level:	10 Vrms
Modulation:	1 kHz, 80%, AM
Injection Method:	Coupling Decoupling Network (CDN)
Step Size:	1%
Dwell Time:	1.0 second

6.10.4 Power Port Tested
The following power port of the EUT was tested in order to demonstrate compliance:

- 400 VAC, 60 Hz

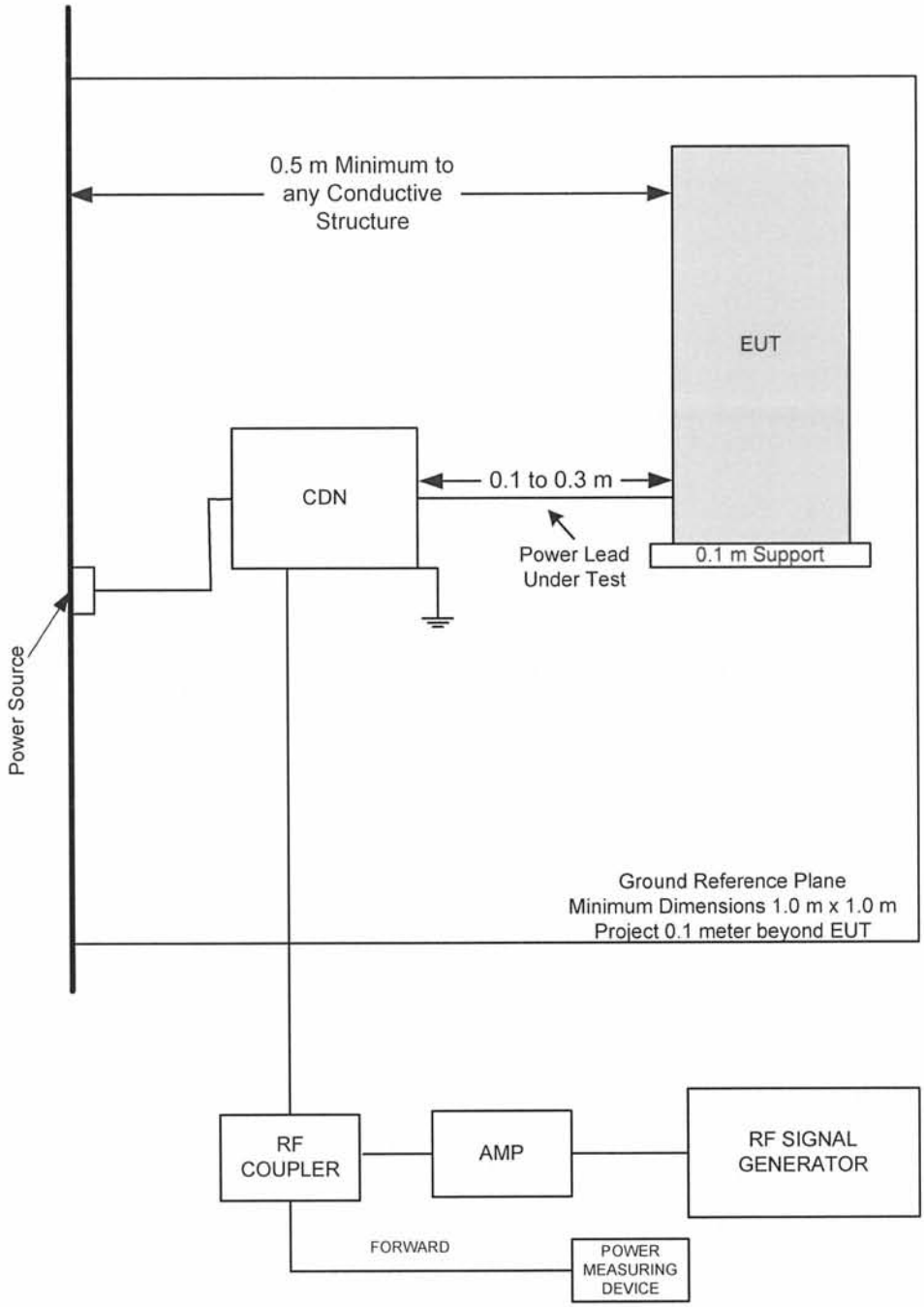
6.10.5 Test Setup

The EUT and associated cabling, configured as detailed in paragraph 5.0 herein, were placed on 0.1 m thick insulating supports above the ground reference plane. The minimum size of the ground reference plane was 1.0 m^2 and projected beyond the EUT by at least 0.1 m on each side. The ground reference plane was connected to the protective grounding system. A distance of 0.5 m meter minimum was maintained between the equipment under test and the walls of the laboratory and any other metallic structure. The EUT was connected to the grounding system in accordance with its installation specifications. All cables to the EUT were supported at least 30 mm above the ground reference plane. The cables not under test were routed as far as possible from the cable under test, in order to minimize the coupling between cables.

A coupling/decoupling network was installed in series with the power input leads of the port under test. The coupling/decoupling network was bonded to the ground reference plane at a distance of 0.1 to 0.3 meters from the EUT.

An RF signal generator was connected to the input of the RF power amplifier. The output of the RF power amplifier was connected to an RF coupler which in turn was connected to the CDN. A power meter was connected to the forward power port of the RF coupler.

Figure 11 - Conducted Immunity, Power Ports Test Setup



6.10.6 Test Equipment

The details of the test equipment utilized during the performance of this test method are shown below:

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
4895	AGILENT / HP	SPECTRUM ANALYZER	9kHz - 22GHz	8593EM	10/20/2011	10/20/2012
4975	ENI	RF POWER AMPLIFIER	100 kHz - 150 MHz	325LA-HP	10/24/2011	10/24/2012
5046	MARCONI	SIGNAL GENERATOR	10 kHz - 1.2 GHz	2023A	4/30/2012	4/30/2013
5112	JFW INDUSTRIES	6.0DB ATTENUATOR	DC - 4 GHz	50FHC-006-50N	1/19/2012	1/31/2013
532	WERLATONE COUPLER	HIGH POWER DIR	.01 - 1000 MHz	C2630	10/26/2011	10/26/2012
602	FCC NET	COUPLING/DECOUPLING	150 kHz - 230 MHz	FCC-801-M4-25	2/16/2012	2/28/2013

6.10.7 Test Procedure

With the EUT configured as described above, the following steps were performed:

1. The output frequency of the signal generator was adjusted to the start frequency of the test.
2. The output level of the generator was increased until the required power was measured at the forward port of the RF coupler.
3. The specified modulation was enabled.
4. This condition was held for the dwell time specified in the test parameters.
5. The frequency was incremented by 1%.
6. Steps 2 through 5 were repeated until the EUT was subjected to the specified test level over the entire frequency range of test.
7. At each frequency step, the EUT was monitored for degradation or malfunction.
8. Steps 1 through 7 were repeated with each remaining power port tested.
9. Steps 2 through 8 were repeated for each mode of operation outlined in Paragraph 5.5.

6.10.8 Test Results

The EUT complied with the requirements specified for this method. The test sample did not exhibit any malfunction or degradation of performance beyond that specified in Paragraph 5.6 herein when subjected to the conducted disturbances specified above.

See the following photographs and test data for a full presentation of the test setup and results obtained.

Test Photographs
Conducted Immunity

Test Photographs
Conducted Immunity

Power Port Test Configuration

Conducted Immunity
Test Data

RETLIF TESTING LABORATORIES

SUSCEPTIBILITY DATA SHEET

Test Method:	IEC 61000-4-6, Conducted Immunity 150 kHz to 80 MHz		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No:	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10, Electromagnetic compatibility (EMC) - Product standard for arc welding equipment Table 4		
Operating Mode:	No load		
Climatic Conditions:	Temperature: 27.5°C Humidity: 61 % Barometric Pressure: 1013 mbars		
Technician:	M. Seamans	**Date:**	June 21, 2012
Notes:			

Test Frequency	Threshold	Limit	Modulation	Lead Tested	Injection Method	
MHz	Vrms			400 VAC 60 Hz 3 Phase		
0.15	---	10	80% AM 1 kHz	---	CDN	
80	---	10	80% AM 1 kHz	---	CDN	

The test sample did not exhibit any malfunction, degradation of performance or deviation from specified indication beyond the tolerances specified by Criteria of EN60974-10 or approved test plan in accordance with the above stated test method as defined by the manufacturer. If no threshold is listed, then the highest level EUT was subjected to, was the highest test level.

RETLIF TESTING LABORATORIES

SUSCEPTIBILITY DATA SHEET

Test Method:	IEC 61000-4-6, Conducted Immunity 150 kHz to 80 MHz		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No:	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10, Electromagnetic compatibility (EMC) - Product standard for arc welding equipment Table 4		
Operating Mode:	100% Duty Cycle		
Climatic Conditions:	Temperature: 27.5°C Humidity: 61 % Barometric Pressure: 1013 mbars		
Technician:	M. Seamans	**Date:**	June 21, 2012
Notes:			

Test Frequency	Threshold	Limit	Modulation	Lead Tested	Injection Method	
MHz	Vrms			400 VAC 60 Hz 3 Phase		
0.15	---	10	80% AM 1 kHz	---	CDN	
80	---	10	80% AM 1 kHz	---	CDN	

The test sample did not exhibit any malfunction, degradation of performance or deviation from specified indication beyond the tolerances specified by Criteria of EN60974-10 or approved test plan in accordance with the above stated test method as defined by the manufacturer. If no threshold is listed, then the highest level EUT was subjected to, was the highest test level.

6.11 IEC 61000-4-6, Conducted Immunity, I/O Ports, 0.15 to 80 MHz

6.11.1 Normative Reference
IEC 61000-4-6 Edition 3.0: 2008-10

6.11.2 Purpose
The purpose of this test method was to determine if the EUT was so constructed as to have an adequate level of intrinsic immunity to radio frequency electromagnetic energy injected into I/O ports in the frequency range of 0.15 to 80 MHz, enabling the EUT to operate as intended.

6.11.3 Test Parameters
The critical parameters of the applied electromagnetic energy for testing the I/O ports were as shown below:

Frequency Range:	0.15 to 80 MHz
Applied Signal Level:	10 Vrms
Modulation:	1 kHz, 80%, AM
Injection Method:	Bulk Cable Injection (BCI)
Step Size:	1%
Dwell Time:	1.0 second

6.11.4 I/O Port Tested
The following I/O port of the EUT was tested utilizing coupling mode shown, in order to demonstrate compliance:

- Remote Cable

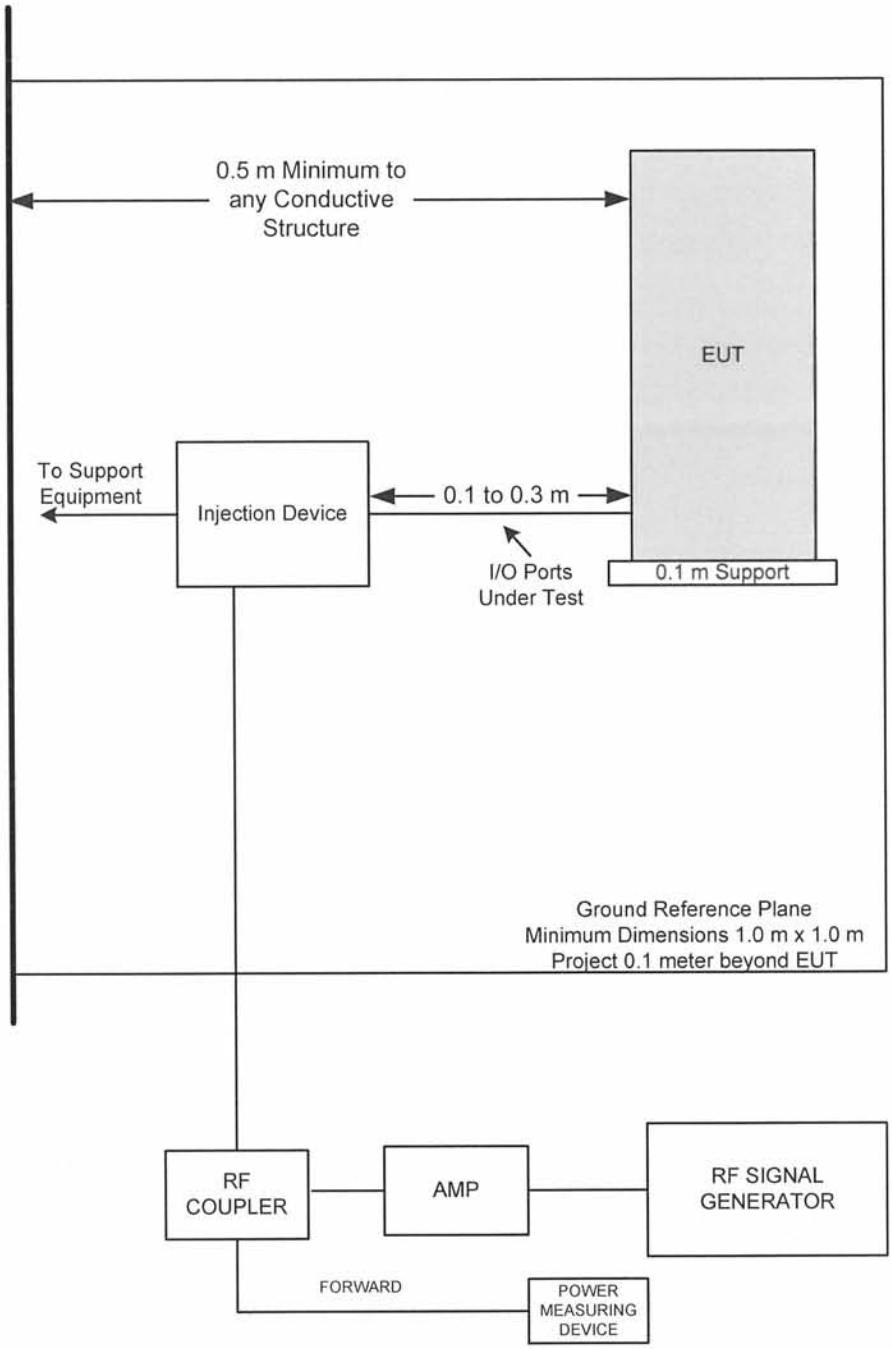
6.11.5 Test Setup

The EUT and associated cabling, configured as detailed in paragraph 5.0 herein, were placed on 0.1 m thick insulating supports above the ground reference plane. The minimum size of the ground reference plane was 1.0 m^2 and projected beyond the EUT by at least 0.1 m on each side. The ground reference plane was connected to the protective grounding system. A distance of 0.5 m meter minimum was maintained between the equipment under test and the walls of the laboratory and any other metallic structure. The EUT was connected to the grounding system in accordance with its installation specifications. All cables to the EUT were supported at least 30 mm above the ground reference plane. The cables not under test were routed as far as possible from the port under test, in order to minimize the coupling between cables.

An injection device was installed on the I/O port under test, at a distance of 0.1 to 0.3 meters from the EUT.

An RF signal generator was connected to the input of the RF power amplifier. The output of the RF power amplifier was connected to an RF coupler which in turn was connected to the injection device. A power meter was connected to the forward power port of the RF coupler.

Figure 12 - Conducted Immunity, I/O Ports Test Setup



6.11.6 Test Equipment

The details of the test equipment utilized during the performance of this test method are shown below:

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
4895	AGILENT / HP	SPECTRUM ANALYZER	9kHz - 22GHz	8593EM	10/20/2011	10/20/2012
4975	ENI	RF POWER AMPLIFIER	100 kHz - 150 MHz	325LA-HP	10/24/2011	10/24/2012
5046	MARCONI	SIGNAL GENERATOR	10 kHz - 1.2 GHz	2023A	4/30/2012	4/30/2013
531	FISCHER CUSTOM COMM	PROBE	10 kHz - 100 MHz	F-120-3A-1	5/1/2012	5/31/2013
532	WERLATONE COUPLER	HIGH POWER DIR	.01 - 1000 MHz	C2630	10/26/2011	10/26/2012
602	FCC NET	COUPLING/DECOUPLING	150 kHz - 230 MHz	FCC-801-M4-25	2/16/2012	2/28/2013

6.11.7 Test Procedure

With the EUT configured as described above, the following steps were performed:

1. The output frequency of the signal generator was adjusted to the start frequency of the test.
2. The output level of the generator was increased until the required power was measured at the forward port of the RF coupler.
3. The specified modulation was enabled.
4. This condition was held for the dwell time specified in the test parameters.
5. The frequency was incremented by 1%.
6. Steps 2 through 5 were repeated until the EUT was subjected to the specified test level over the entire frequency range of test.
7. At each frequency step, the EUT was monitored for degradation or malfunction. Steps 2 through 7 were repeated for each mode of operation outlined in Paragraph 5.5.

6.11.8 Test Results

The EUT complied with the requirements specified for this method. The test sample did not exhibit any malfunction or degradation of performance beyond that specified in Paragraph 5.6 herein when subjected to the conducted disturbances specified above.

See the following photographs and test data for a full presentation of the test setup and results obtained.

Test Photographs
Conducted Immunity

Test Photographs
Conducted Immunity

I/O Port Test Configuration, Bulk Current Injection

Conducted Immunity
Test Data

RETLIF TESTING LABORATORIES

SUSCEPTIBILITY DATA SHEET

Test Method:	IEC 61000-4-6, Conducted Immunity 150 kHz to 80 MHz		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No:	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10, Electromagnetic compatibility (EMC) - Product standard for arc welding equipment Table 5		
Operating Mode:	No load		
Climatic Conditions:	Temperature: 27.5°C Humidity: 61 % Barometric Pressure: 1013 mbars		
Technician:	M. Seamans	**Date:**	June 21, 2012
Notes:			

Test Frequency	Threshold	Limit	Modulation	Lead Tested	Injection Method	
MHz	Vrms			Unshielded I/Os		
0.15	---	10	80% AM 1 kHz		BCI	
I	I	I	I	Remote Cable	I	
80	---	10	80% AM 1 kHz		BCI	

The test sample did not exhibit any malfunction, degradation of performance or deviation from specified indication beyond the tolerances specified by Criteria of EN60974-10 or approved test plan in accordance with the above stated test method as defined by the manufacturer. If no threshold is listed, then the highest level EUT was subjected to, was the highest test level.

RETLIF TESTING LABORATORIES

SUSCEPTIBILITY DATA SHEET

Test Method:	IEC 61000-4-6, Conducted Immunity 150 kHz to 80 MHz		
Customer:	Hypertherm, Inc.	**Job No:**	R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System		
Model No:	MAXPRO 200	**Serial No:**	Alpha 6
Test Specification:	EN60974-10, Electromagnetic compatibility (EMC) - Product standard for arc welding equipment Table 5		
Operating Mode:	100% Duty Cycle		
Climatic Conditions:	Temperature: 27.5°C Humidity: 61 % Barometric Pressure: 1013 mbars		
Technician:	M. Seamans	**Date:**	June 21, 2012
Notes:			

Test Frequency	Threshold	Limit	Modulation	Lead Tested	Injection Method	
MHz	Vrms			Unshielded I/Os		
0.15	---	10	80% AM 1 kHz		BCI	
"	"	"	"	Remote Cable	"	
80	---	10	80% AM 1 kHz		BCI	

The test sample did not exhibit any malfunction, degradation of performance or deviation from specified indication beyond the tolerances specified by Criteria of EN60974-10 or approved test plan in accordance with the above stated test method as defined by the manufacturer. If no threshold is listed, then the highest level EUT was subjected to, was the highest test level.

6.12 IEC 61000-4-11, Voltage Dips and Interrupts

6.12.1 Normative Reference
IEC 61000-4-11 Edition 2.0: 2004-03

6.12.2 Purpose
The purpose of this test method was to determine the effects that voltage dips and interrupts of the AC input voltage had on the EUT's operation.

6.12.3 Test Parameters
The parameters of the voltage dips and interrupts are shown in Table 15:

Table 15 - Voltage Dips and Interrupts, Test Parameters

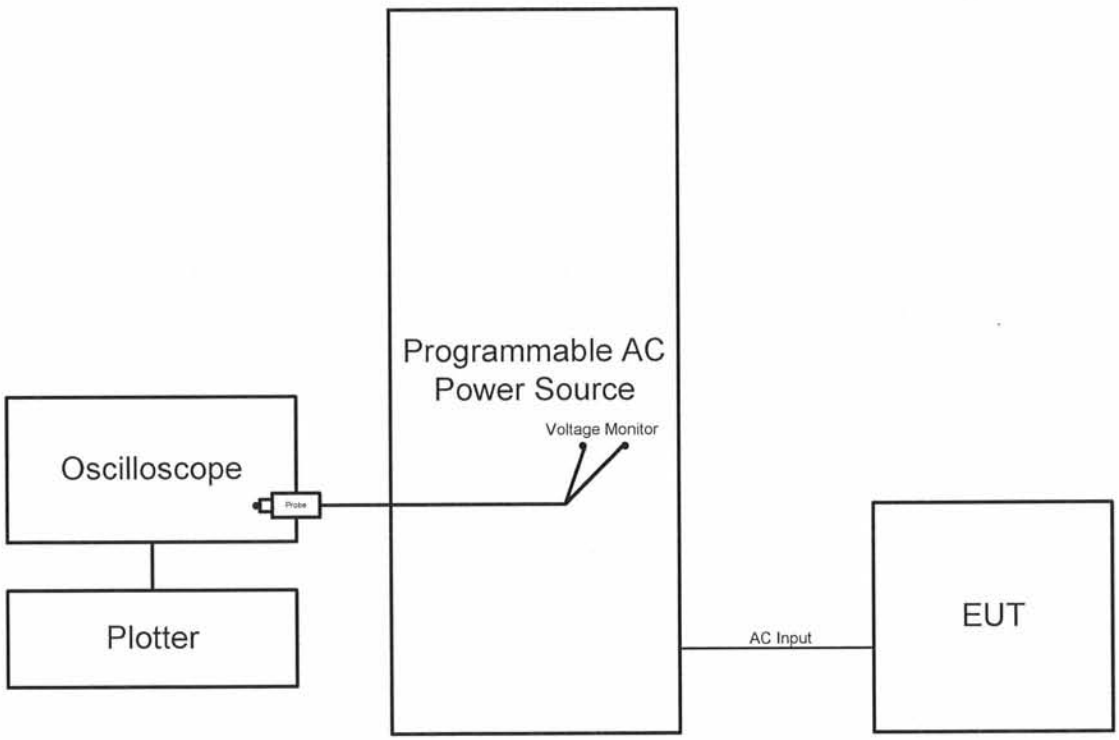
Test No.	Freq	Duration		Voltage Variation			Rep Rate	Rep	Criteria
		Cycles	mSec	Rated Voltage	% of Rated	Test Voltage			
1	60	0.5	10	400	100	0	10 sec	3	B
2	60	5	100	400	100	0	10 sec	3	C

6.12.4 Power Port Tested
The following power port of the EUT was tested in order to demonstrate compliance:

- 400 VAC, 60 Hz

6.12.5 Test Setup
The EUT and associated cabling was configured as detailed in paragraph 5.0 herein. The EUT was connected to the grounding system in accordance with its installation specifications. The input power to the EUT was provided by a programmable AC power source. An oscilloscope was connected across the AC output of the programmable AC power source.

Figure 13 - Voltage Dips and Interrupts, Test Setup



6.12.6 Test Equipment

The details of the test equipment utilized during the performance of this test method are shown below:

EN	Manufacturer	Description	Range	Model No.	Cal Date	Due Date
4274	ATC	MULTI-RANGER TIMER/COUNTER	0.01 Sec - 999 Min.	365A	Inspect Before Use	
4932	CRYDOM	RELAY	40A, 480VAC	D4840	No Calibration Required	
4932A	CRYDOM	RELAY	40A, 480VAC	D4840	No Calibration Required	
4932B	CRYDOM	RELAY	40A, 480VAC	D4840	No Calibration Required	
5110	BK PRECISION	DC POWER SUPPLY	30V / 3A	1630	Calibrate Before Use	

6.12.7 Test Procedure

With the EUT and test instrumentation configured as stated above, the following steps were performed:

1. The programmable AC power source was configured to provide voltage deviation number 1 specified in the table above.
2. The parameters of voltage deviation number 1 were verified on the oscilloscope.
3. The power input leads of the EUT were connected to the programmable AC power source and the EUT was placed in the operating mode detailed in Paragraph 5.5 herein.
4. Voltage deviation number 1 was applied. The number of repetitions and the repetition rate was as specified in the table above.
5. The EUT was monitored for any degradation as specified in Paragraph 5.6 herein.
6. Steps 1 through 5 were repeated for each remaining voltage deviation.
7. Steps 2 through 6 were repeated for each mode of operation outlined in Paragraph 5.5.

6.12.8 Sample Calculations

Shown below is a sample showing calculations used to determine the time duration, in milliseconds, of AC Power Line Dips and Interrupts.

$T_I = C_{II} \times (1000/F)$
Where:
T_I = Interrupt Duration in Milliseconds
C_{II} = Number of Cycles
F = AC Line Frequency

Example:
½ Cycle Dropout at 50 Hz
$C_{II} = 0.5$
F = 50
$T_I = 0.5 \times (1000/50)$
$= 0.5 \times 20$
= 10 milliseconds

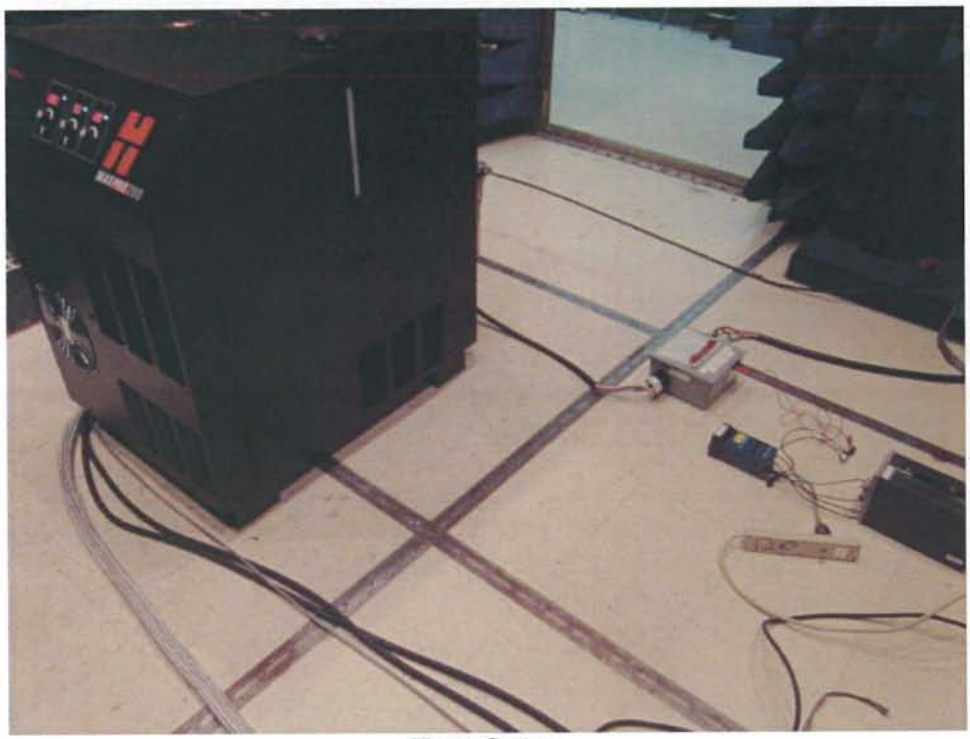
6.12.9 Test Results

The EUT complied with the requirements specified for this method. The test sample did not exhibit any malfunction or degradation of performance beyond that specified in Paragraph 5.6 herein when subjected to the voltage dips and interrupts specified above.

See the following photographs and test data for a full presentation of the test setup and results obtained.

Test Photographs
Voltage Dips and Interrupts

Test Photographs
Voltage Dips and Interrupts



Test Setup

Voltage Dips and Interrupts
Test Data

RETLIF TESTING LABORATORIES

SUSCEPTIBILITY DATA SHEET

Test Method:	EN 61000-4-11, Voltage Dips & Interruptions
Customer:	Hypertherm, Inc. — Job No: R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System
Model No:	MAXPRO 200 — Serial No: Alpha 6
Test Specification:	EN60974-10, Electromagnetic compatibility (EMC) - Product standard for arc welding equipment Table 4
Operating Mode:	100% Duty Cycle
Climatic Conditions:	Temperature: 23°C Humidity: 44 % Barometric Pressure: 1010 mbars
Technician:	M. Seamans — Date: June 19, 2012
Notes:	Lead Tested: 400 VAC 60 Hz 3 Phase

Voltage Deviation		Duration	Times Applied	Repetition Interval	Specified Criteria	
Percent		mS		Seconds		
100		10	3	10	B	
100		100	3	10	C	

The test sample did not exhibit any malfunction, degradation of performance or deviation from specified indication beyond the tolerances specified by Criteria B & C of EN60974-10 or approved test plan in accordance with the above stated test method as defined by the manufacturer. If no threshold is listed, then the highest level EUT was subjected to, was the highest test level.

RETLIF TESTING LABORATORIES

SUSCEPTIBILITY DATA SHEET

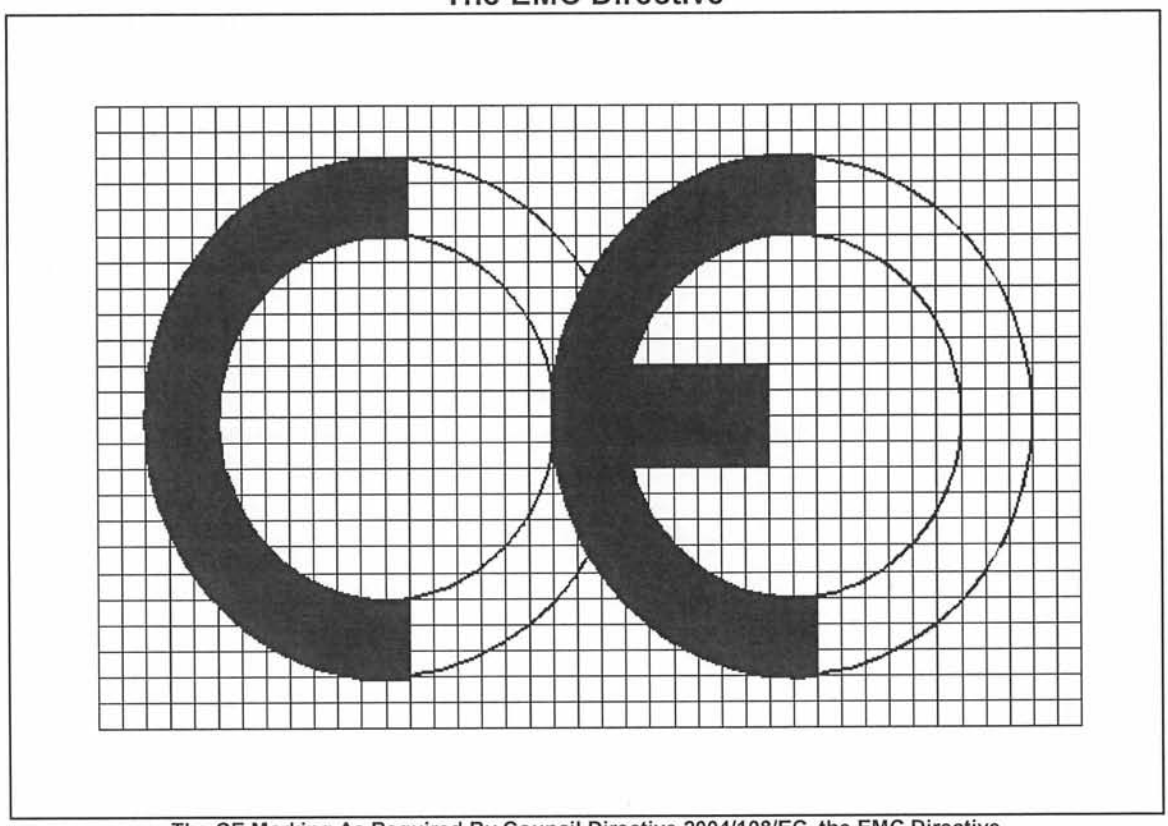
Test Method:	EN 61000-4-11, Voltage Dips & Interruptions
Customer:	Hypertherm, Inc. — Job No: R-5606N
Test Sample:	MAXPRO 200 Plasma Cutting System
Model No:	MAXPRO 200 — Serial No: Alpha 6
Test Specification:	EN60974-10, Electromagnetic compatibility (EMC) - Product standard for arc welding equipment Table 4
Operating Mode:	No Load
Climatic Conditions:	Temperature: 23°C Humidity: 44 % Barometric Pressure: 1010 mbars
Technician:	M. Seamans — Date: June 19, 2012
Notes:	Lead Tested: 400 VAC 60 Hz 3 Phase

Voltage Deviation		Duration	Times Applied	Repetition Interval	Specified Criteria	
Percent		mS		Seconds		
100		10	3	10	B	
100		100	3	10	C	

The test sample did not exhibit any malfunction, degradation of performance or deviation from specified indication beyond the tolerances specified by Criteria B & C of EN60974-10 or approved test plan in accordance with the above stated test method as defined by the manufacturer. If no threshold is listed, then the highest level EUT was subjected to, was the highest test level.

Appendix A: Labeling Information

CE Marking As Required By The EMC Directive



The CE Marking As Required By Council Directive 2004/108/EC, the EMC Directive, in Accordance with the CE Marking Directive (93/68/EEC)

General Marking Requirements

The EMC Directive does not require that a date be placed with the mark. The CE Marking can be placed in any one of the following locations:

a) on the device
b) on the packaging
c) in the instruction manual
d) on the warranty/guarantee certificate

The CE marking shall have a height of not less than 5 mm and shall maintain the proportions shown above.

NOTES:

1) By placing the CE marking on a product, the manufacturer is stating that the device complies with ALL applicable EC directives. The test report in which this information is contained shows compliance of the device to the requirements of the EMC directive only, other directives may or may not be applicable at this time.
2) The information shown above is valid as of the issue date of the test report in which it is contained.

Appendix B: Declaration of Conformity

Contents of the Declaration of Conformity As Required By The EMC Directive

The EC Declaration of Conformity must contain the following information:

- A reference to Directive 2004/108/EC;
- Identification of the apparatus to which it refers, as set out in Article 9(1), each apparatus shall be identified in terms of type, batch, serial number or any other information allowing for the identification of the apparatus;
- The name and address of the manufacturer and, where applicable, the name and address of his authorized representative in the Community;
- A dated reference to the specifications under which conformity is declared to ensure the conformity of the apparatus with the provisions of this Directive;
- The date of that declaration;
- The identity and signature of the person empowered to bind the manufacturer or his authorized representative.

Notes:
The manufacturer or his authorized representative in the Community shall hold the technical documentation and the EC Declaration of Conformity at the disposal of the authorities for a period of at least ten years after the date on which such apparatus was last manufactured. If neither the manufacturer nor his authorized representative is established within the Community, the obligation to hold the EC Declaration of Conformity and the technical documentation at the disposal of the competent authorities rests with the person who places the apparatus on the Community market.

"Hold at the disposal" covers the obligation of "Making documentation available to the competent authority".

The concept of holding at the disposal of means:

- There shall be one person in the Community responsible for making available the EC Declaration of Conformity and the technical documentation;
- This person must present the EC Declaration of Conformity and the technical documentation upon request by the competent authorities, within a reasonable time. He has to take positive actions to make it actually available to those authorities (send a copy of the file, email, etc.);

Notes (con't.):

- Failure to present the information within a reasonable period in response to a request by the authorities constitutes an infringement of one of the administrative requirements of the EMC Directive.

- This person does not need to be in material possession of the documents. The documents can be kept on the manufacturer's premises, even if the manufacturer is outside the Community. However the authorities, who have limited geographical jurisdiction, cannot be expected to go beyond their frontiers to examine the technical documentation at the manufacturer's premises. The manufacturer or his authorized representative in the Community is obligated to hold the required documents in such a way that they can be presented to the authorities upon first request and within a reasonable time. The onus rests with the manufacturer or his authorities' representative in the Community to ensure that the documentation is provided.

- Where neither are present in the Community, the responsibility for the provision of this information rests with the person first placing the products onto the Community market.

- The manufacturer has to provide the documentation and cannot use the argument that it contains confidential information (e.g. commercial confidentiality).

- The information to be made available on request needs not to be an original document but can be a copy. In addition, the technical documentation can be kept in any format (for example as a hard copy of CD-ROM or any other electronic storage method), which allows it to be made available within a reasonable period of time.

Appendix C: Sample Declaration of Conformity

Sample Declaration of Conformity

Company Logo

We, the undersigned,

Manufacturer: _____
Address, City: _____
Country: _____
Phone Number: _____
Fax Number/E-mail: _____
Authorized Representative in Europe: _____
Address, City: _____
Country: _____

certify and declare under our sole responsibility that the following apparatus:

Description: _____
Manufacturer: _____
Brand: _____
Identification: _____
Restrictive Use: _____

conforms with the essential requirements of the EMC Directive 200/108/EC, based on the following specifications applied:

EU Harmonized Standards: _____
(Note: This should match the Certification issued with this report.)

The technical documentation is kept at the following address:

Company: _____
Address, City: _____
Country: _____
Phone Number: _____
Fax Number/E-mail: _____

Name and Position of Person Binding the Manufacturer of his Authorized Representative:

{Full Name} _____ {Signature} _____
{Title/Position} _____ {Date} _____