



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Project No: 10170
Test Report Release Date: 3/28/2019

TEST SPECIFICATIONS:

MILITARY STANDARD

MIL-STD-461G (11 December 2015)

REQUIREMENTS FOR THE CONTROL OF ELECTROMAGNETIC INTERFERENCE

CHARACTERISTICS OF SUBSYSTEMS AND EQUIPMENT

THE FOLLOWING MEETS CS115, CS116 & CS117 TEST PROCEDURE(S) OF THE
ABOVE TEST SPECIFICATION

Formal Name: EMPStorm

Kind of Equipment: Surge Protector

Test Configuration: Tabletop

Model Number(s): N/A

Model(s) Tested: N/A

Serial Number(s): N/A

Date of Tests: March 7, 8, 11, 12 & 13, 2019

Test Conducted for: Disasterpreparer LLC
112 Zanca Turn
Yorktown, VA 23693

NOTICE: "This test report relates only to the items tested and must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government."

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SIGNATURE PAGE

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United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 100276-0

D.L.S. Electronic Systems, Inc.
Wheeling, IL

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:*

Electromagnetic Compatibility & Telecommunications

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communiqué dated January 2009).*

2018-09-19 through 2019-09-30

Effective Dates



For the National Voluntary Laboratory Accreditation Program



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1.0 INTRODUCTION:

On March 7, 8, 11, 12 & 13, 2019, a series of susceptibility tests were made to demonstrate that the EMPStorm, Serial No. N/A, manufactured by Disasterpreparer LLC was tested to the requirements of , using the following test procedure(s): CS115, CS116 & CS117.

2.0 TEST FACILITY:

D.L.S. Electronic Systems, Inc. is a full-service EMC Testing Laboratory accredited to ISO Guide 17025. NVLAP Certificate and Scope can be viewed at <http://www.dlsemc.com/certificate>. Our facilities are registered with the FCC, Industry Canada, and VCCI. All tests were performed by personnel of D.L.S. Electronic Systems, Inc. at the following location:

Main Test Facility:
D.L.S. Electronic Systems, Inc.
1250 Peterson Drive
Wheeling, Illinois 60090

A list of the test equipment used, along with identification and calibration data, is included in the Table of each Appendix of this report. All primary equipment was calibrated against known reference standards with a verified traceable path to NIST.

3.0 SUSCEPTIBILITY TEST SET-UP:

All susceptibility tests were performed at D.L.S. Electronic Systems, Inc. For table top equipment the EUT was placed on a non-conductive table. The following describes the lab that was used for testing:

LAB J: 21' long x 10' wide x 10' high screen shielded enclosure.

All lines leaving the room were filtered.

The tests were run in the following lab:

LAB J: CS115, Bulk Cable Injection, Impulse Excitation
LAB J: CS116, Sinusoidal Transients, 10 kHz to 100 MHz
LAB J: CS117, Lightning Induced Transients, Cable & Power Leads



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4.0 OPERATING CONDITIONS OF TEST SAMPLE:

All test measurements were made at a laboratory temperature of **73°F** at **40%** humidity with the following mode of operation:

The device should be hooked to split-phase 120/240VAC 60 Hz power. While not required, a sample load can also be attached to simulate a home or business load. Each phase can be tested separately or together.

5.0 PERFORMANCE MONITORED:

The EMPStorm performance was monitored as follows:

There are five green LEDs. If after any of the tests, the lights turn off and red lights turn on, the product would be out of spec.

No change in LED status.

6.0 DESCRIPTION OF TEST SAMPLE:

6.1 DESCRIPTION:

Type 2 surge protection device that limits surges that go into a home or business. It attaches to the breaker panel.

6.2 PHYSICAL DIMENSIONS OF EQUIPMENT UNDER TEST:

Length: 10 in x Width: 6 in x Height: 4 in

7.0 ADDITIONAL DESCRIPTION OF EQUIPMENT UNDER TEST:

There were no changes made during testing.



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8.0 PHOTO INFORMATION AND TEST SETUP:

The test setup can be seen in the accompanying photograph.

Item 0 EUT

Item 1 Unshielded Power



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9.0 PHOTO ID TAKEN DURING TESTING:

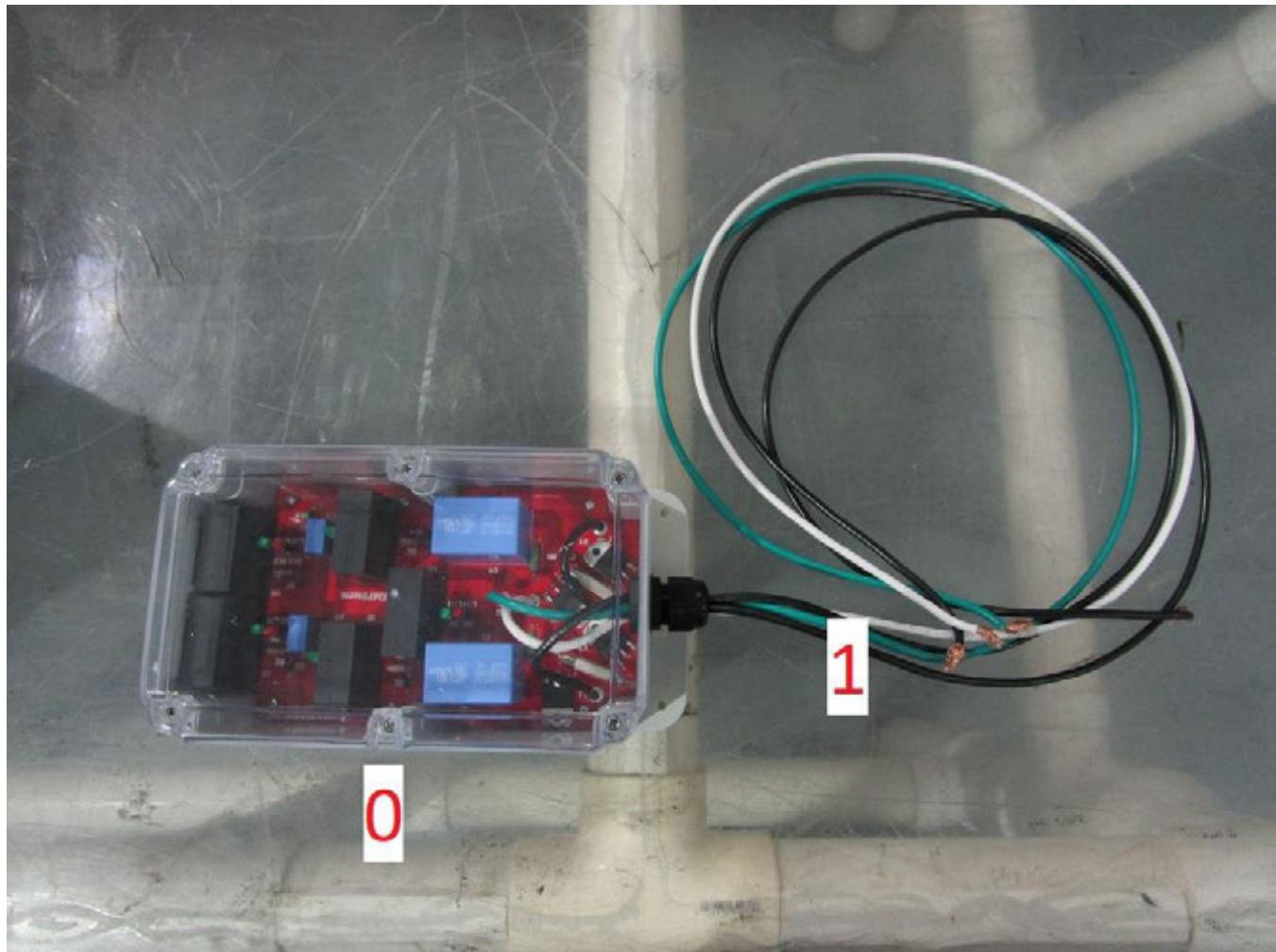


Photo ID



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10.0 REFERENCES:

MIL-STD-461G Requirements for the Control of Electromagnetic Interference Emission and Susceptibility Characteristics of Subsystems and Equipment (11 December 2015)

DoDI6055.11 - Protection of DoD Personnel from Exposure to Radio Frequency Radiation and Military Exempt Lasers

SD-2 - Buying Commercial and Non-developmental Items

11.0 CONCLUSION OF SUSCEPTIBILITY TESTS:

The EMPStorm **meets** CS115, CS116 & CS117 Test Procedure(s) of MIL-STD-461G, Requirements for the Control of Electromagnetic Interference Emission and Susceptibility Characteristics of Subsystems and Equipment. See the Appendix(es) A-C for a detailed explanation of the test results.



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APPENDIX A

TEST METHOD

CS115 CONDUCTED SUSCEPTIBILITY

BULK CABLE INJECTION

IMPULSE EXCITATION



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Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix A
Test: CS115 Bulk Cable Injection

1.0 PURPOSE:

The purpose of this test is to ensure that the EMPStorm does not exhibit any degradation of performance, malfunction, or undesirable effects when subjected to a pre-calibrated signal having rise and fall times, pulse width, and amplitude as specified in Figure CS115-1 at a 30 Hz rate for one minute.

2.0 DESCRIPTION OF TEST APPARATUS:

A tabulation of all equipment used for this test is described in Table 1 shown at the end of this Appendix.

3.0 TEST PROCEDURE:

The test setup complies with the general testing requirements of Test Method CS115, MIL-STD-461G, paragraph 5.13.3.3. The test signal was applied to the injection probe while monitoring the induced current. The pulse signal was applied at the pulse repetition rate having the required rise and fall times, pulse width, and amplitude for the required duration.

4.0 LEVELS SPECIFIED FOR TEST:

The conducted immunity of the EMPStorm should not be lower than the following requirements:

MIL-STD-461G, CS115
Pre-calibrated test signal with a minimum 30 ns pulse width at a 30 Hz rate for one minute at 5A peak amplitude.



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5.0 TEST SUMMARY:

The EMPStorm **meets** the following conditions:

Lab used: J

Pulse width, rise time and pulse repetition used for this test:

Pulse width:	30 ns
Rise and fall times:	<2 ns
Repetition Rate:	30 Hz
Pulse Duration:	1 minute

Levels used during testing:

MIL-STD-461G; CS115

Pre-calibrated test signal with a minimum 30 ns pulse width at a 30 Hz rate for one minute at 5A peak amplitude.

Summary:

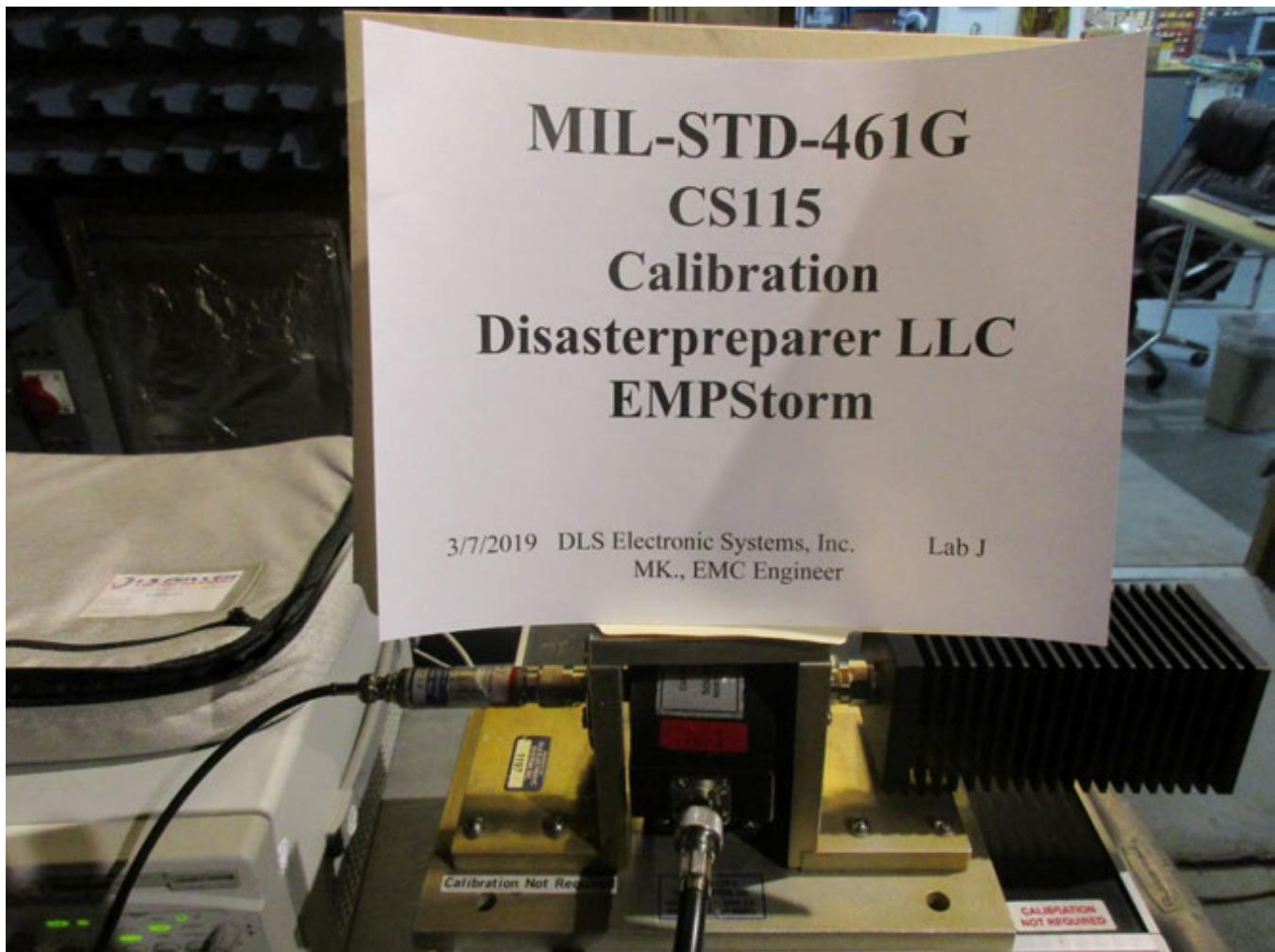
No events were observed.



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6.0 PHOTOS TAKEN DURING TESTING:



CS115 Calibration



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6.0 PHOTOS TAKEN DURING TESTING:



CS115 Test Power Bundle



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TEST INSTRUMENTATION

TABLE 1

Description	Manufacturer	Model Number	Serial Number	Range	Cal On	Cal Due Dates
Attenuator, RF, 39 dB, precision	JFW Industries	50FHEV-039-5N M/B F	01	DC-100 MHz	1/2/2019	1/2/2020
Generator, Pulse	Solar Electronics	9355-1	941050	500 MHz	03/08/2019	N/A
LISN, 24 Amp	Solar Electronics	8028-50-BP-24-BNC	098874	10 kHz-100 MHz	9/13/2018	9/13/2019
LISN, 24 Amp	Solar Electronics	8028-50-BP-24-BNC	098872	10 kHz-100 MHz	11/30/2018	11/30/2019
LISN, 24 Amp	Solar Electronics	8028-50-BP-24-BNC	098875	10 kHz-100 MHz	1/24/2019	1/24/2020
LISN, 24 Amp	Solar Electronics	8028-50-BP-24-BNC	1010156	10 kHz-100 MHz	9/7/2018	9/7/2019
Oscilloscope, Digital	Agilent Technologies	54845A	US40110198	DC-1.5 GHz, 8MS/s	1/11/2019	1/11/2020
Probe, Current, RF	Fischer Custom Communications	F-52	96	10 kHz-500 MHz	5/14/2018	5/14/2019

All primary equipment is calibrated against known reference standards with a verified traceable path to NIST.



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TEST EQUIPMENT

TABLE 2

Description	Manufacturer	Model Number	Serial Number	Range
Fixture, Calibration	Solar Electronics	9125-1	N/A	2 MHz-450 MHz
Load, Resistive, RF, 100W	Bird Electronic	100-ST-MN	1412376	DC-18 GHz
Probe, Current Injection	Solar Electronics	9142-1N	030129	2 MHz-450 MHz

The above test equipment is verified upon use.



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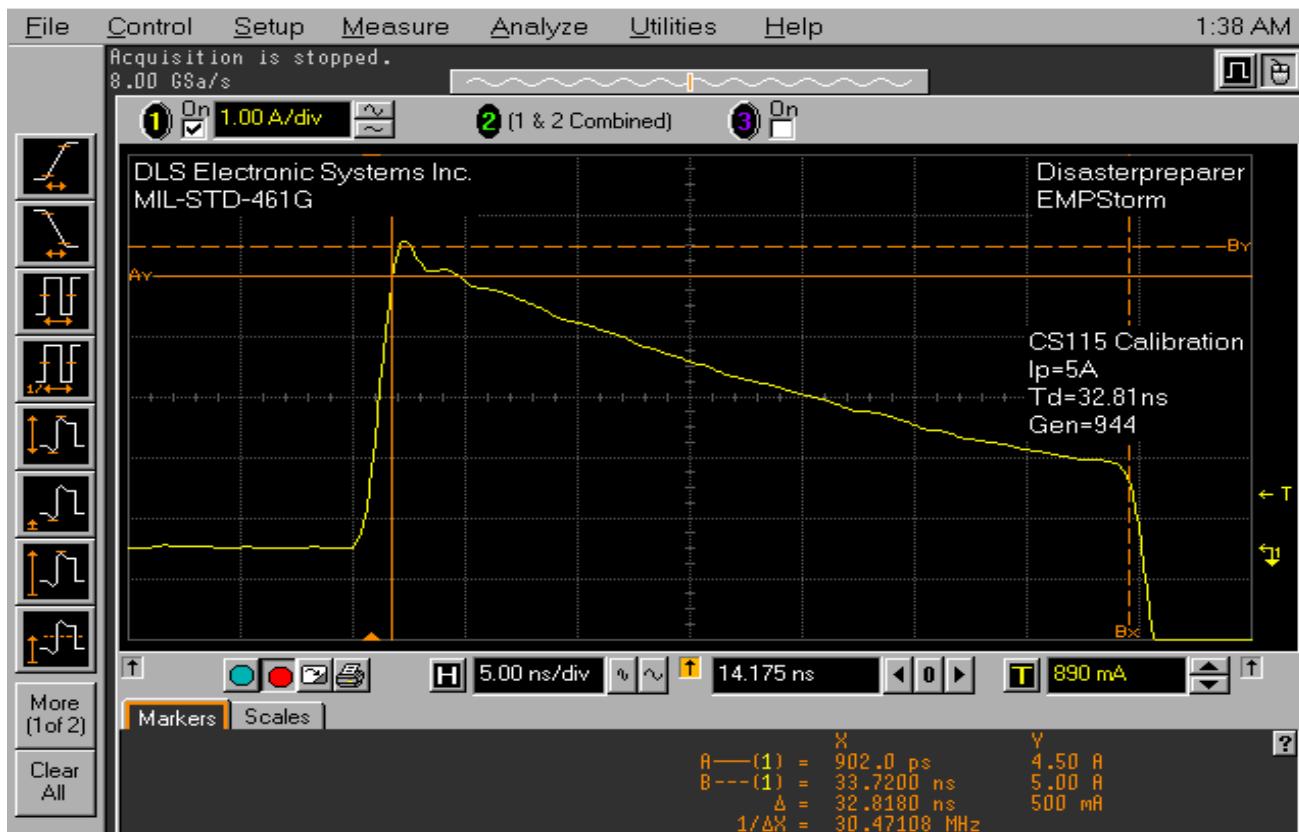
Company: Disasterpreparer LLC
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CS115 BULK CABLE INJECTION – CALIBRATION DATA



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Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 8.00 GSa/s
Averaging off
9-bit BW Filter on Interpolation off

Channel 1 Scale 1.00 A/div Offset 2.500 A Coupling DC Impedance 50 Ohms
Attenuation 1.740 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 5.00 ns/div Position 14.175 ns Reference center

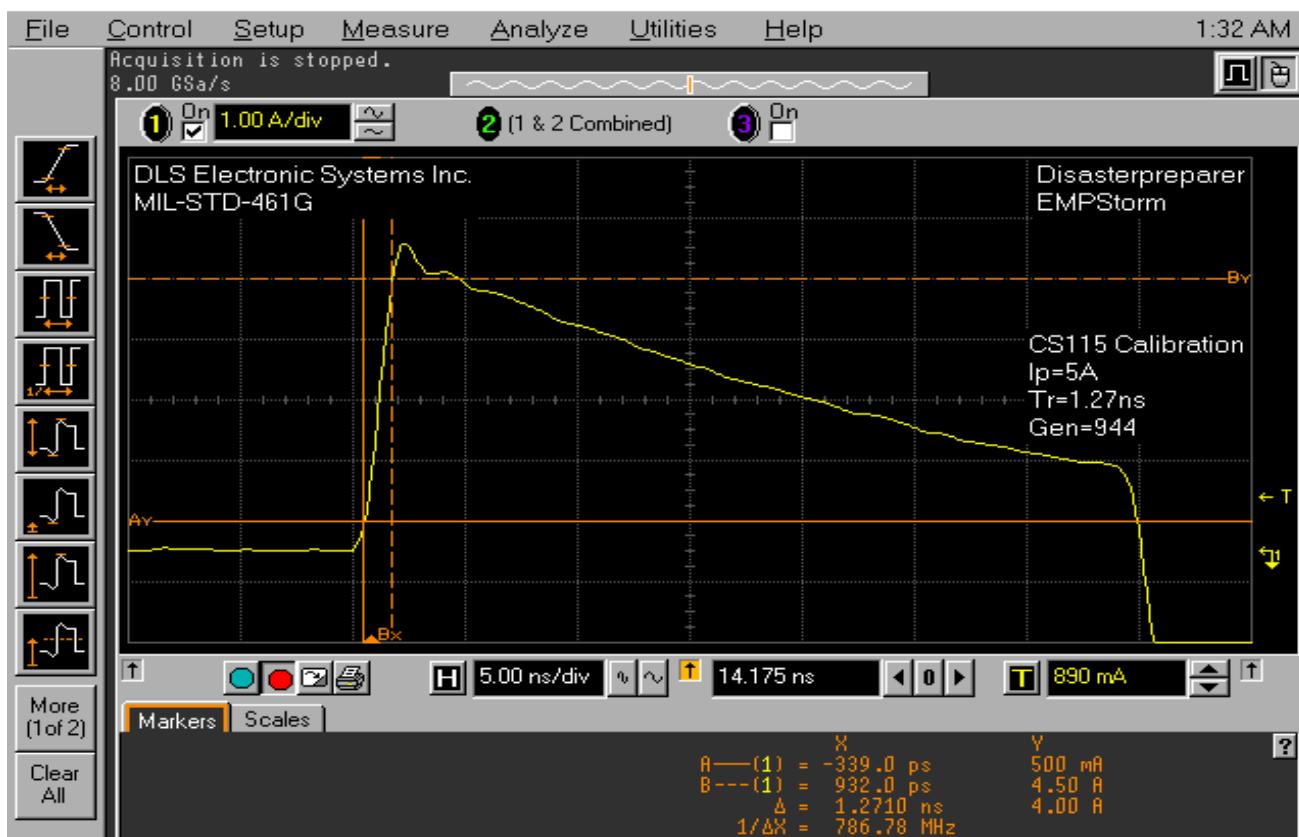
Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level 890 mA Slope rising

Marker	X	Y
A—(1)	902.0 ps	4.50 A
B---(1)	33.7200 ns	5.00 A
Δ	32.8180 ns	500 mA
1/ΔX	30.47108 MHz	



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Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 8.00 GSa/s
Averaging off
9-bit BW Filter on Interpolation off

Channel 1 Scale 1.00 A/div Offset 2.500 A Coupling DC Impedance 50 Ohms
Attenuation 1.740 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 5.00 ns/div Position 14.175 ns Reference center

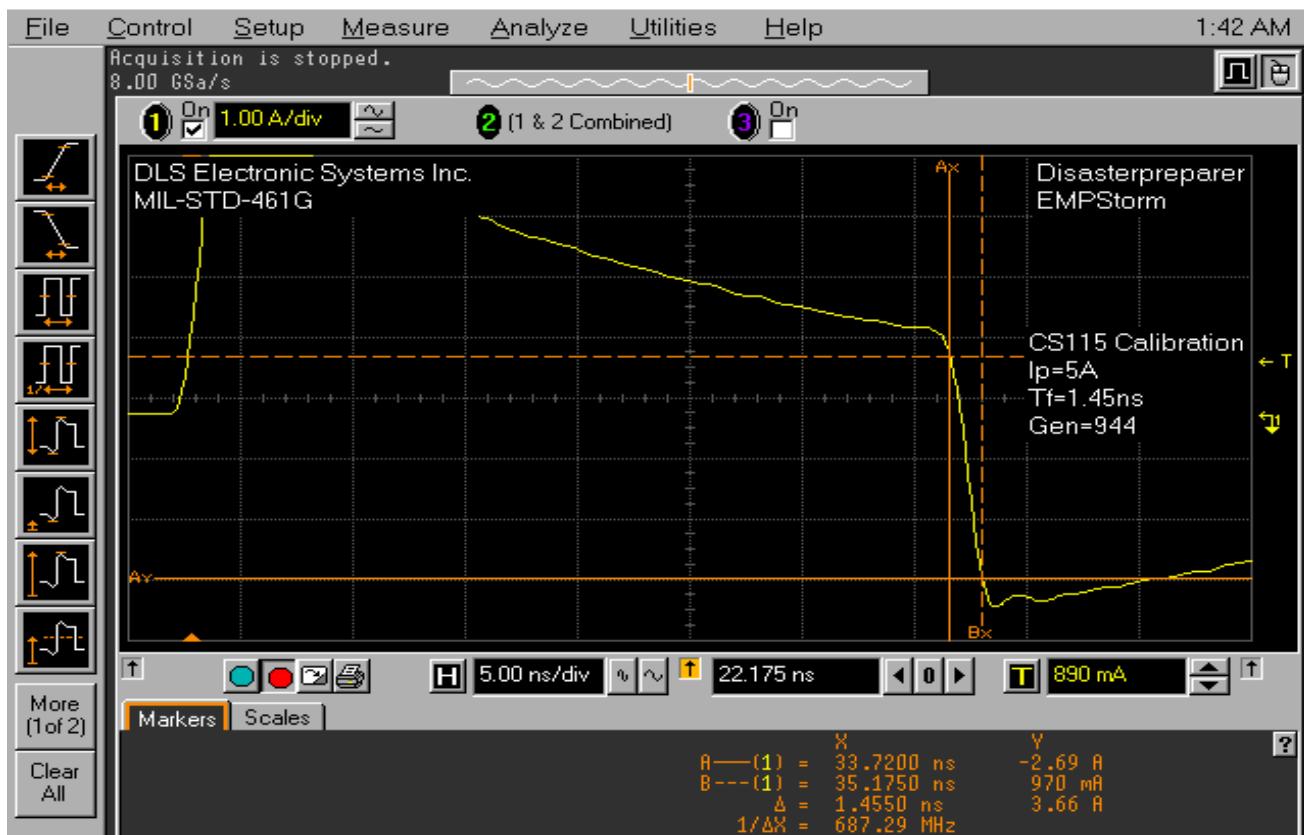
Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level 890 mA Slope rising

Marker X Y
A—(1) = -339.0 ps 500 mA
B---(1) = 932.0 ps 4.50 A
Δ = 1.2710 ns 4.00 A
1/ΔX = 786.78 MHz



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Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 8.00 GSa/s
Averaging off
9-bit BW Filter on Interpolation off

Channel 1 Scale 1.00 A/div Offset 280 mA Coupling DC Impedance 50 Ohms
Attenuation 1.740 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 5.00 ns/div Position 22.175 ns Reference center

Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level 890 mA Slope rising

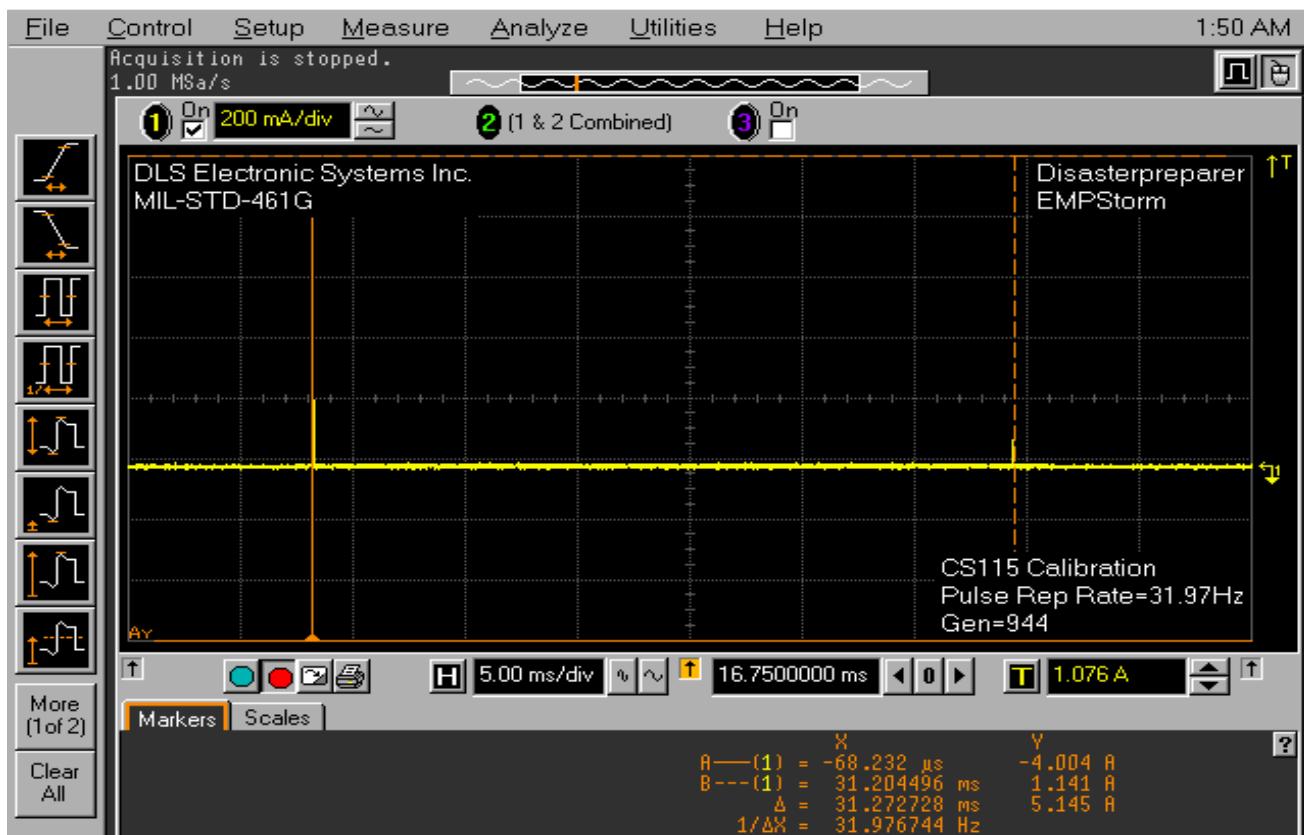
Marker

	X	Y
A—(1)	= 33.7200 ns	-2.69 A
B---(1)	= 35.1750 ns	970 mA
Δ	= 1.4550 ns	3.66 A
1/ΔX	= 687.29 MHz	



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Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 1.00 MSa/s
Averaging off
9-bit BW Filter on Interpolation off

Channel 1 Scale 200 mA/div Offset 224.0 mA Coupling DC Impedance 50 Ohms
Attenuation 1.740 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 5.00 ms/div Position 16.750000 ms Reference center

Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level 1.076 A Slope rising

Marker

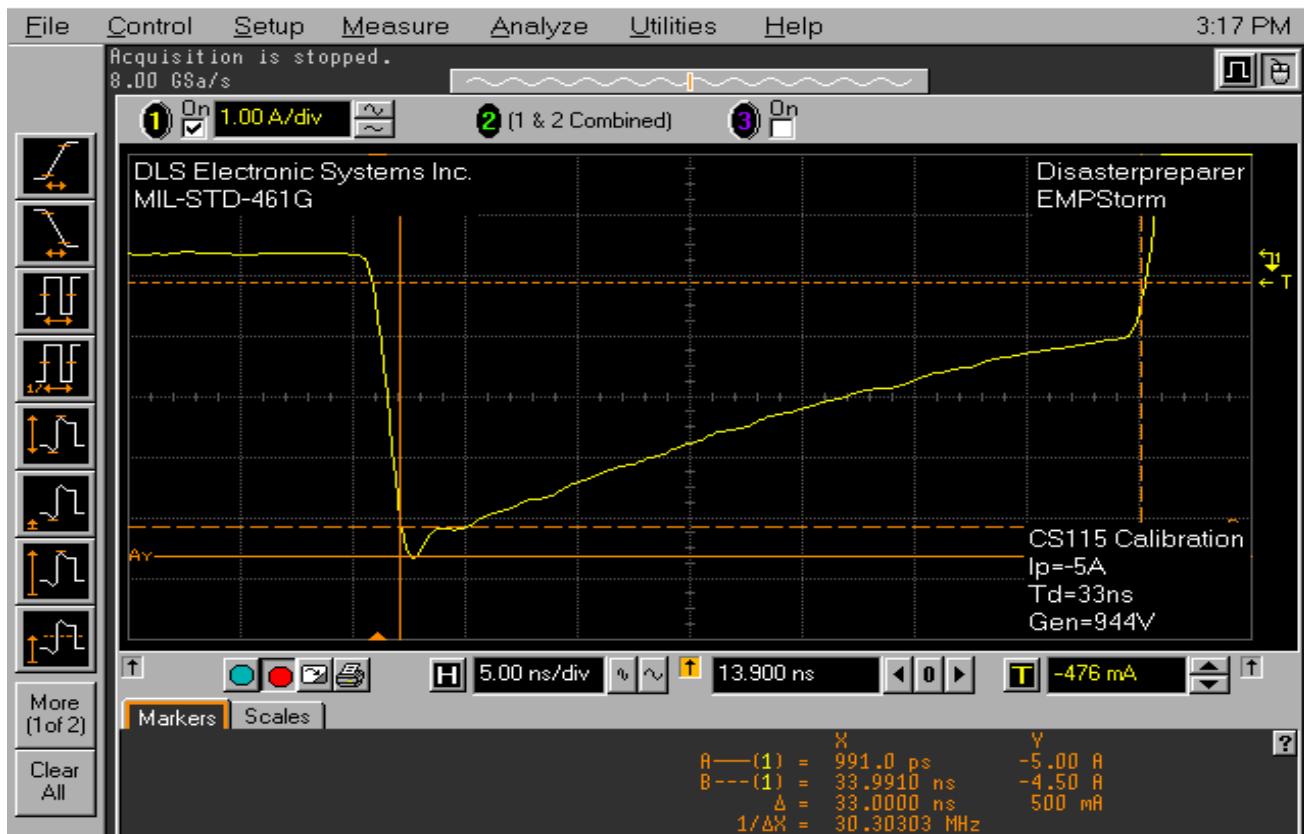
X	Y
A—(1) = -68.232 μs	-4.004 A
B---(1) = 31.204496 ms	1.141 A
Δ = 31.272728 ms	5.145 A
1/ΔX = 31.976744 Hz	



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Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 8.00 GSa/s
Averaging off
9-bit BW Filter on Interpolation off

Channel 1 Scale 1.00 A/div Offset -2.366 A Coupling DC Impedance 50 Ohms
Attenuation 1.740 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 5.00 ns/div Position 13.900 ns Reference center

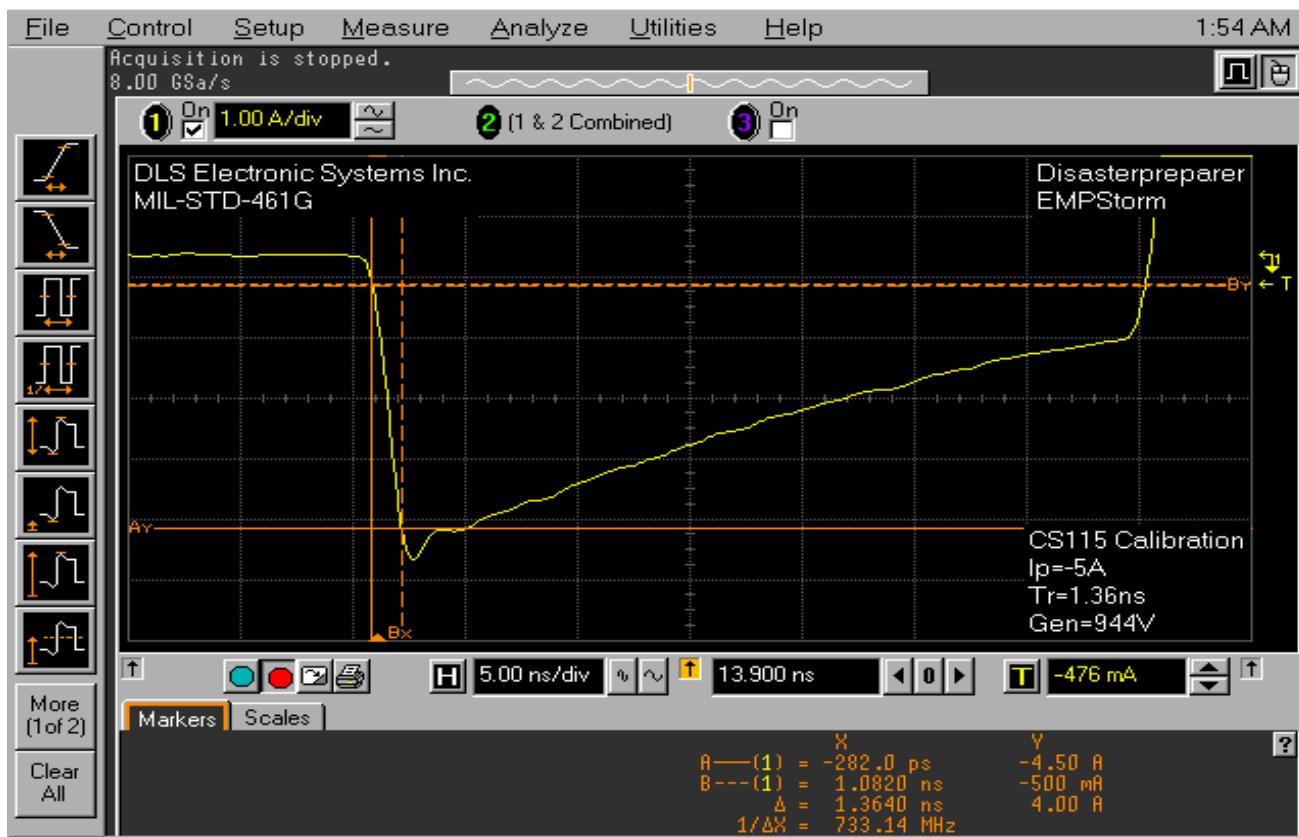
Trigger Mode edge Sweep auto
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level -476 mA Slope falling

Marker X Y
A—(1) = 991.0 ps -5.00 A
B---(1) = 33.9910 ns -4.50 A
Δ = 33.0000 ns 500 mA
1/ΔX = 30.30303 MHz



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Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 8.00 GSa/s
Averaging off
9-bit BW Filter on Interpolation off

Channel 1 Scale 1.00 A/div Offset -2.366 A Coupling DC Impedance 50 Ohms
Attenuation 1.740 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 5.00 ns/div Position 13.900 ns Reference center

Trigger Mode edge Sweep auto
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level -476 mA Slope falling

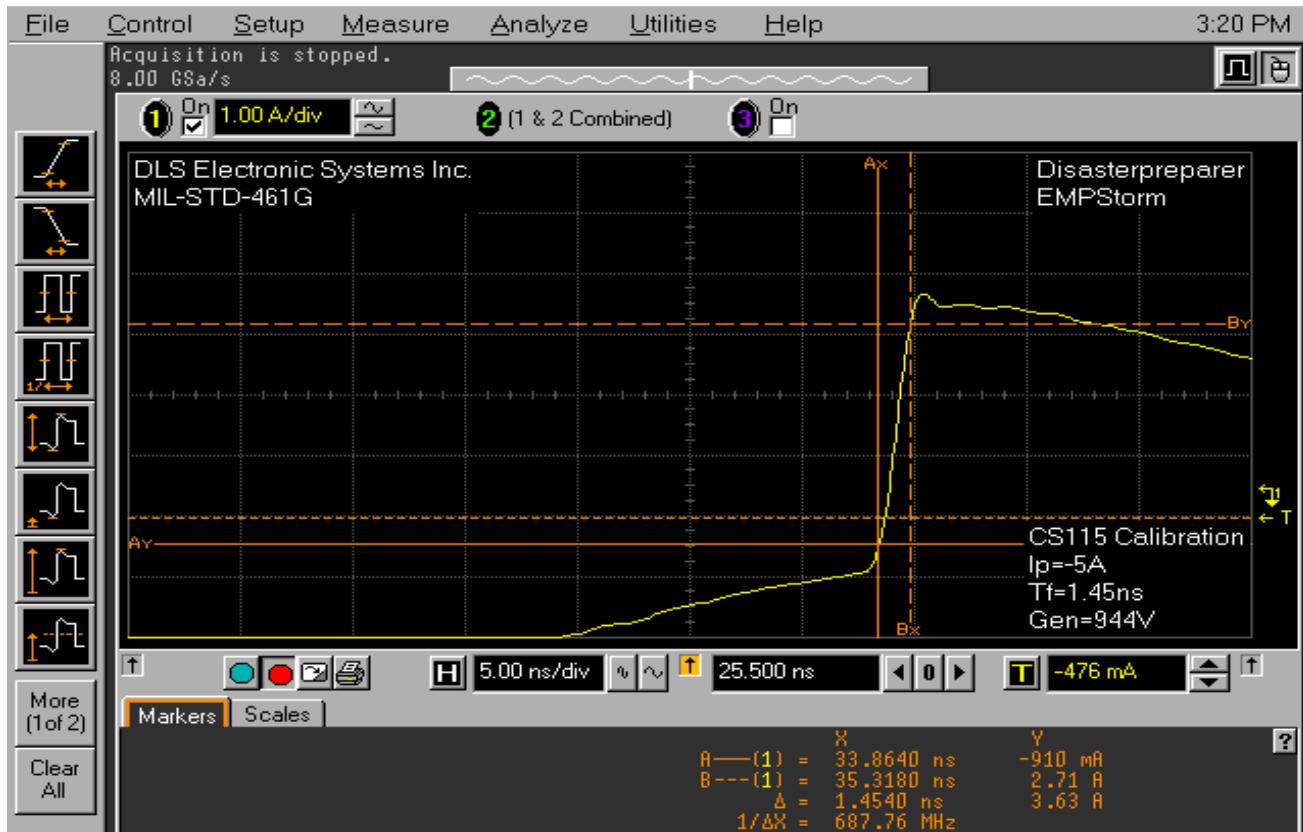
Marker X Y
A—(1) = -282.0 ps -4.50 A
B---(1) = 1.0820 ns -500 mA
Δ = 1.3640 ns 4.00 A
1/ΔX = 733.14 MHz



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Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 8.00 GSa/s
Averaging off
9-bit BW Filter on Interpolation off

Channel 1 Scale 1.00 A/div Offset 1.544 A Coupling DC Impedance 50 Ohms
Attenuation 1.740 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 5.00 ns/div Position 25.500 ns Reference center

Trigger Mode edge Sweep auto
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level -476 mA Slope falling

Marker

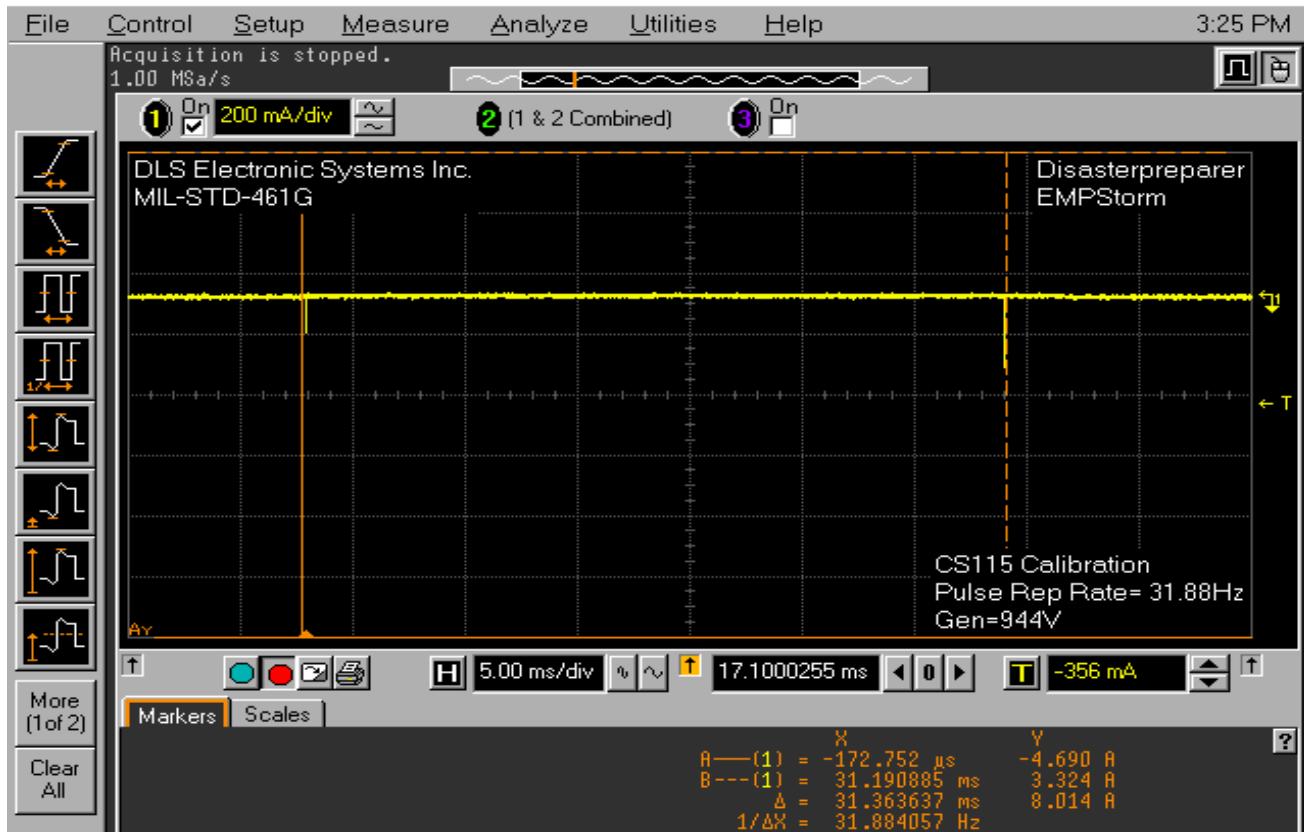
A—(1)	=	33.8640 ns	X	-910 mA
B---(1)	=	35.3180 ns	Y	2.71 A
Δ	=	1.4540 ns		3.63 A
1/ΔX	=	687.76 MHz		



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Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 1.00 MSa/s
Averaging off
9-bit BW Filter on Interpolation off

Channel 1 Scale 200 mA/div Offset -330.0 mA Coupling DC Impedance 50 Ohms
Attenuation 1.740 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 5.00 ms/div Position 17.100026 ms Reference center

Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level -356 mA Slope falling

Marker X Y

A—(1) = -172.752 μs	-4.690 Ω
B---(1) = 31.190885 ms	3.324 Ω
Δ = 31.363637 ms	8.014 Ω
1/ΔX = 31.884057 Hz	



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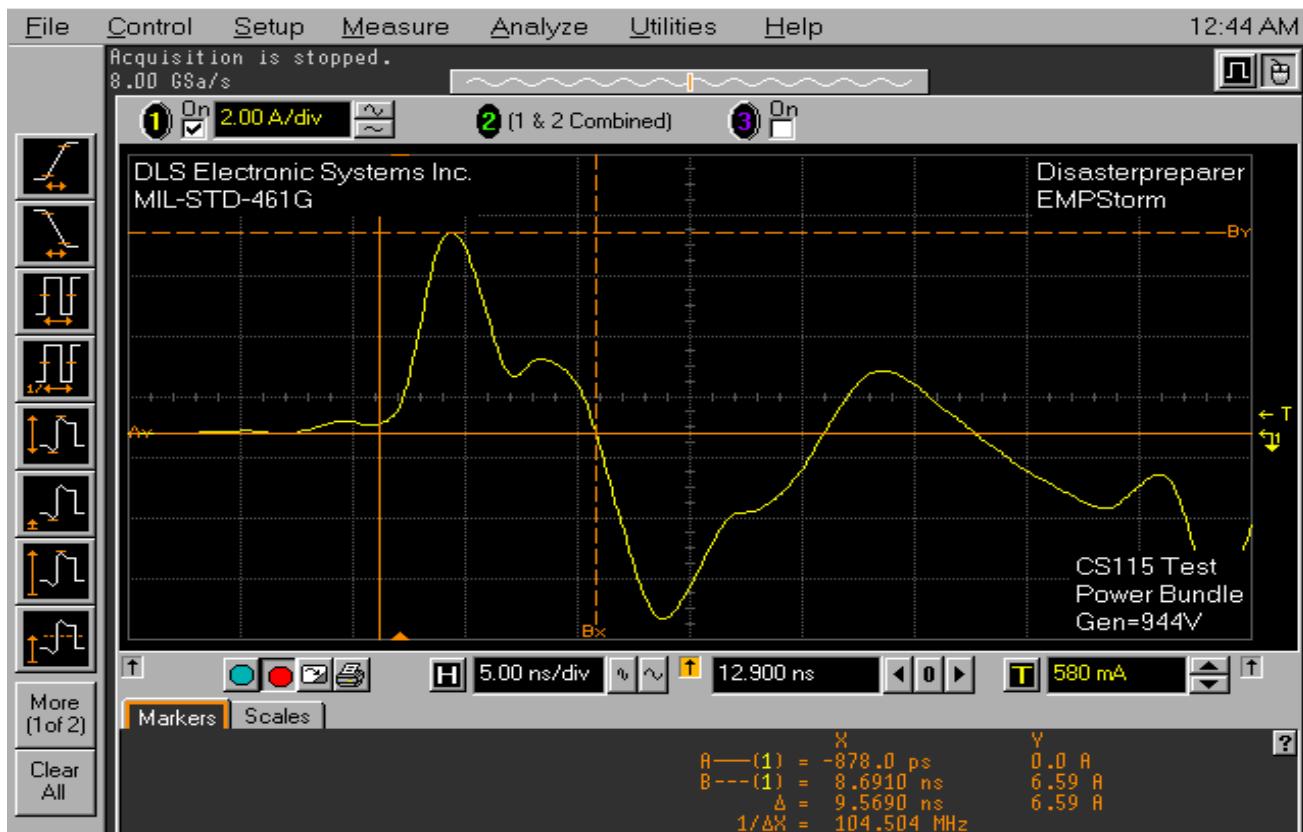
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CS115 BULK CABLE INJECTION – DATA



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Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 8.00 GSa/s
Averaging off
9-bit BW Filter on Interpolation off

Channel 1 Scale 2.00 A/div Offset 1.180 A Coupling DC Impedance 50 Ohms
Attenuation 33.15 dB Atten units decibel Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 5.00 ns/div Position 12.900 ns Reference center

Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level 580 mA Slope rising

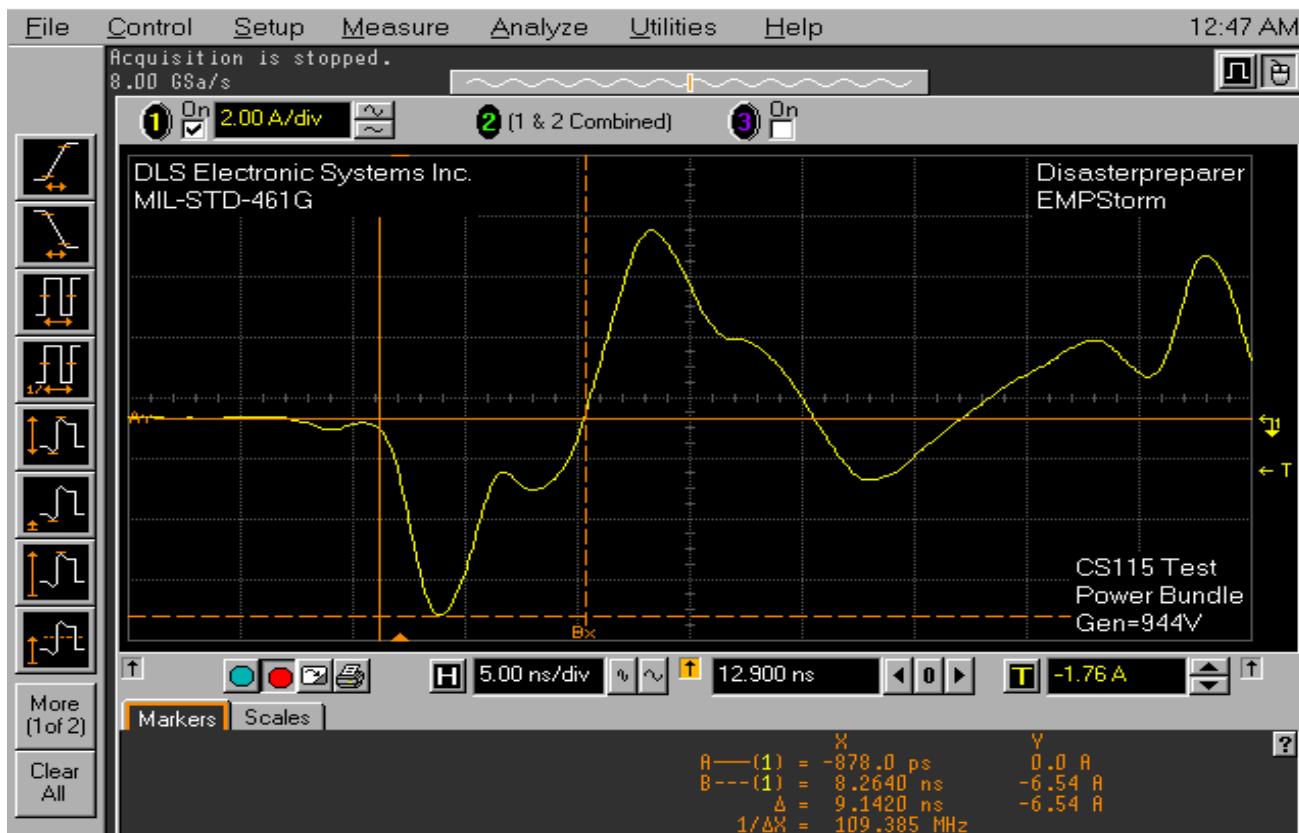
Marker

X	Y
A---(1) = -878.0 ps	0.0 A
B---(1) = 8.6910 ns	6.59 A
Delta = 9.5690 ns	6.59 A
1/Delta X = 104.504 MHz	



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix A
Test: CS115 Bulk Cable Injection



Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 8.00 GSa/s
Averaging off
9-bit BW Filter on Interpolation off

Channel 1 Scale 2.00 A/div Offset 660 mA Coupling DC Impedance 50 Ohms
Attenuation 33.15 dB Atten units decibel Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 5.00 ns/div Position 12.900 ns Reference center

Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level -1.76 A Slope falling

Marker

	X	Y
A—(1)	-878.0 ps	0.0 A
B---(1)	8.2640 ns	-6.54 A
Δ	9.1420 ns	-6.54 A
1/ΔX	109.385 MHz	



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix A
Test: CS115 Bulk Cable Injection

CS115 BULK CABLE INJECTION – EXCEL DATA



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix A
Test: CS115 Bulk Cable Injection

MIL-STD-461G CS115 Calibration, Verification & Test Form					
Company: Disasterpreparer	Date(s)/Engineer(s): 3/8/19/Maciej K.				
EUT: EMPStorm	Cable/Test Point: See Below				
Mode: Powered ON	Result: Pass				
50-Ohm Calibration					
Pulse Polarity	Current(A)	Pulse Width(ns)	Rep Rate(Hz)	Generator (V)	Scope Ratio
Positive	5	32.81ns	31.97	944	1.74
Negative	5	33ns	31.36	944	
Test					
Apply cal gen setting, record Current applied (using Factor found in ver) & threshold if applicable.					
Cable/Test Point	Polarity	Current(A)	Susceptibility Response	Threshold (A)	Scope dB
Power Bundle	Pos	6.59A	None		33.15
	Neg	6.54A	None		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377

APPENDIX B

TEST METHOD

CS116 CONDUCTED SUSCEPTIBILITY DAMPED SINUSOIDAL TRANSIENTS

ACTUAL FREQUENCY RANGE TESTED: 10 kHz – 100 MHz



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients

1.0 PURPOSE:

The purpose of this test is to ensure that the EMPStorm does not exhibit any degradation of performance, malfunction, or undesirable effects when subjected to a signal having the waveform shown in Figure CS116-1 and having a maximum current as specified in Figure CS-116-2.

2.0 DESCRIPTION OF TEST APPARATUS:

A tabulation of all equipment used for this test is described in Table 1 shown at the end of this Appendix.

3.0 TEST PROCEDURE:

The test setup complies with the general testing requirements of Method CS116, MIL-STD-461G, paragraph 5.14.3.3 with the monitor probe being set 5 cm from the EUT and the injection probe placed 5 cm from the monitor probe. The test signal was applied to the injection probe while monitoring the induced current. As stated in paragraph 5.14.3.4 of MIL-STD-461G the test signal was applied to each cable or power lead of the EUT sequentially. The Damped Sinusoid Transient Generator output level was slowly increased to provide the specified current without exceeding the pre-calibrated output level.



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients

4.0 LEVELS SPECIFIED FOR TEST:

The threshold conducted susceptibility of the EMPStorm should not be lower than the requirements of the following table:

MIL-STD-461G

Frequency In MHz	Minimum Line Current (Amps)	CS116
.01 to 1	.1 to 10	All Applications
1 to 30	10	All Applications
30 to 100	10 to 3	All Applications

As a minimum, compliance was demonstrated at the following test frequencies: .01, .1, 1, 10, 30 and 100 MHz. If there are other frequencies critical to equipment installation, compliance was also demonstrated at those frequencies. The test signal repetition rate shall be no greater than one pulse per second and no less than one pulse every two seconds. The pulses shall be applied for a period of five minutes.

5.0 TEST SUMMARY:

The EMPStorm **meets** the following conditions:

Lab used: **J**

Frequency Range: **10 kHz – 100 MHz**

Test Frequencies: **.01, .1, 1, 10, 30 and 100 MHz**

Levels used during testing:

MIL-STD-461G; CS116
10 kHz to 1 MHz; 1 Amp to 10 Amps (All Applications)
1 MHz to 30 MHz; 10 Amps (All Applications)
30 MHz to 100 MHz; 10 Amps to 3 Amps (All Applications)

Summary:

No events were observed.



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients

6.0 PHOTOS TAKEN DURING TESTING:



CS116 10 kHz-10 MHz Calibration



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients

6.0 PHOTOS TAKEN DURING TESTING:



CS116 30 and 100 MHz Calibration



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients

6.0 PHOTOS TAKEN DURING TESTING:



CS116 10 kHz-10 MHz Test Power Bundle



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients

6.0 PHOTOS TAKEN DURING TESTING:



CS116 30 and 100 MHz Test Power Bundle



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients

TEST INSTRUMENTATION

TABLE 1

Description	Manufacturer	Model Number	Serial Number	Range	Cal On	Cal Due Dates
Attenuator, RF, 39 dB, precision	JFW Industries	50FHEV-039-5N M/B F	01	DC-100 MHz	1/2/2019	1/2/2020
Generator, Pulse	Solar Electronics	9354-2	049836	10 kHz-100 MHz	03/08/2019	03/08/2020
LISN, 24 Amp	Solar Electronics	8028-50-BP-24-BNC	1010156	10 kHz-100 MHz	9/7/2018	9/7/2019
LISN, 24 Amp	Solar Electronics	8028-50-BP-24-BNC	098872	10 kHz-100 MHz	11/30/2018	11/30/2019
LISN, 24 Amp	Solar Electronics	8028-50-BP-24-BNC	098874	10 kHz-100 MHz	9/13/2018	9/13/2019
LISN, 24 Amp	Solar Electronics	8028-50-BP-24-BNC	098875	10 kHz-100 MHz	1/24/2019	1/24/2020
Oscilloscope, Digital	Agilent Technologies	54845A	US40110198	DC-1.5 GHz, 8MS/s	1/11/2019	1/11/2020
Probe, Current, RF	Solar Electronics	6741-1	867618	10 kHz-100 MHz	5/24/2018	5/24/2019

All primary equipment is calibrated against known reference standards with a verified traceable path to NIST.



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients

TEST EQUIPMENT

TABLE 2

Description	Manufacturer	Model Number	Serial Number	Range
Fixture, Calibration	Solar Electronics	9125-1	N/A	2 MHz-450 MHz
Fixture, Calibration	Solar Electronics	9357-1	N/A	10 kHz-100 MHz
Load, Resistive, RF, 100W	Bird Electronic	100-ST-MN	1412376	DC-18 GHz
Probe, Current Injection	Solar Electronics	9142-1N	030129	2 MHz-450 MHz
Probe, Current Injection	Solar Electronics	9335-2	0410518	10 kHz-500 MHz

The above test equipment is verified upon use.



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients

CS116 DAMPED SINUSOIDAL TRANSIENTS SUSCEPTIBILITY – EXCEL DATA



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
 Model Tested: N/A
 Report Number: 24377
 Standard: MIL STD 461 Appendix B
 Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients

MIL-STD-461G CS116 Calibration, Verification & Test Form- Army & Navy Limit											
Company: Disasterpreparer		Date(s)/Engineer(s): Maciej K. / 3-8-2019									
EUT: EMPStorm		Cable/Test Point: See Below									
Mode: Powered ON		Result : Pass									
Freq. (MHz)	Limit: I _p (A)	Cable (dB)	Atten (dB)	Trans (dB)	Trans (Ratio)	Factor (Ratio)	I _{peak} k (A)	I _n (A)	N	Q	Gen (V / %)
0.01	0.1	0.22999 573	38.57 5996	38.805 99	87.156	1.743	0.10 0	0.05	4	13.60	36V/100%
0.1	1	0.03700 256	38.69 5004	38.732 01	86.417	1.728	1.00 0	0.5	4	13.60	230V/75%
1	10	0.05500 031	38.73 5001	38.79	86.996	1.740	10.0 00	4.73	4	12.59	2566 V/62%
10	10	0.02699 28	38.79 2999	38.819 99	87.297	1.746	10.0 00	4.43	4	11.58	1862 V/60%
30	10	0.17099 762	38.81 7001	38.988	89.002	1.780	10.0 00	5.39	4	15.25	1307 V/82%
100	3	0.33399 963	38.73 5996	38.826	87.357	1.747	3.00 0	1.48	4	13.34	401V/68%
Power Bundle											
Freq. (MHz)	Probe/Att/ Cble Used	M-Probe (-dBΩ)	M-Atten (dB)	M-Cable (dB)	Trans (dB-Ohms)			I _{p/Vgen}	I _P or Gen	EUT Susceptibility	
0.01	6741/none /CS-M2	3.6000	0	0.2299 96	3.8300			0A/36V	Gen	None	
0.1	6741/719/ CS-M2	2.7900	0	0.0370 03	2.8270			0A/230V	Gen	None	
1	6741/719/ CS-M2	2.2000	38.73 5001	0.055	40.9900			0.07A /2566V	Gen	None	
10	6741/719/ CS-M2	1.9400	38.79 2999	0.0269 93	40.7600			1.52A /1862V	Gen	None	
30	6741/719/ CS-M2	2.7900	38.81 7001	0.1709 98	41.7780			5.48A /1307V	Gen	None	
100	6741/719/ CS-M2	4.3200	38.73 5996	0.334	43.3900			1.48A /401V	Gen	None	



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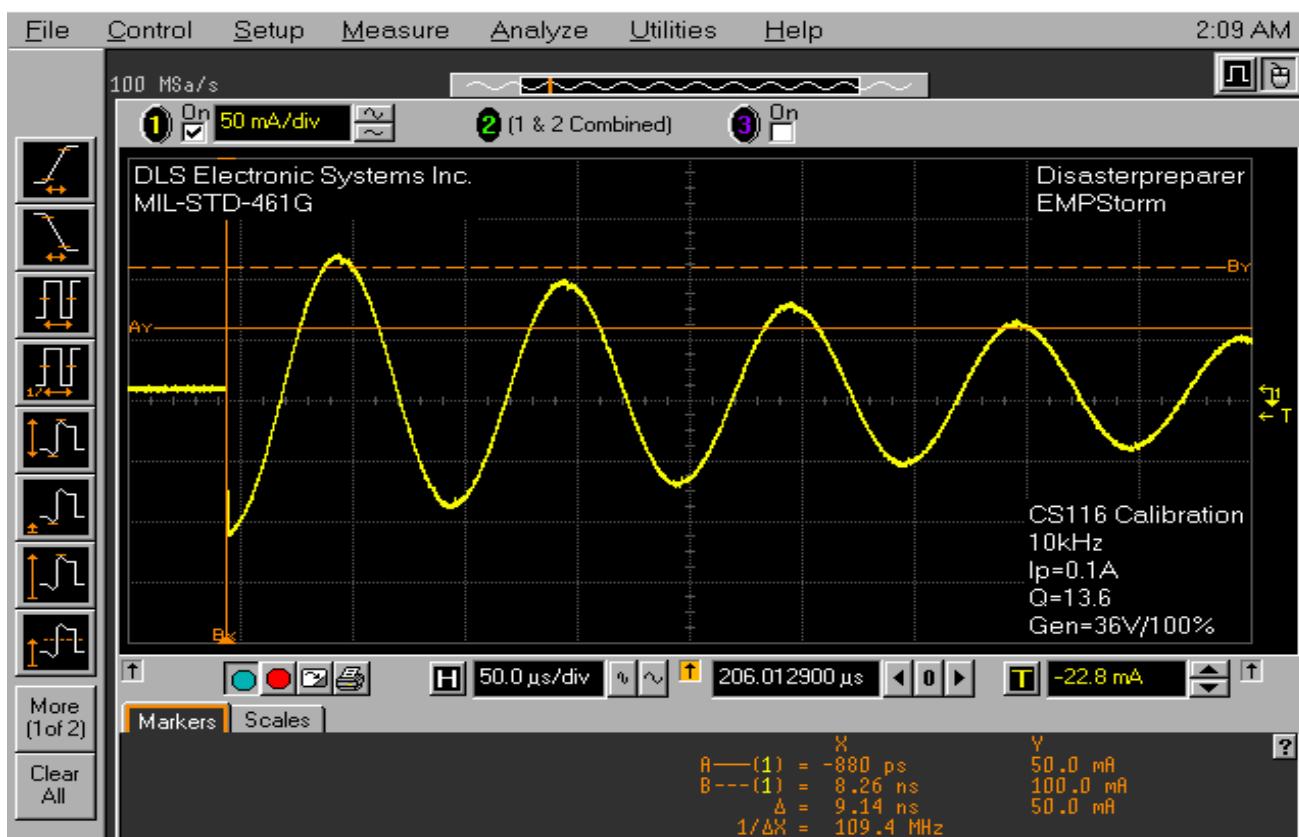
Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients

CS116 DAMPED SINUSOIDAL TRANSIENTS SUSCEPTIBILITY – CALIBRATION DATA



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients



Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 100 MSa/s
Averaging off
9-bit BW Filter on Interpolation off

Channel 1 Scale 50 mA/div Offset -10.0 mA Coupling DC Impedance 50 Ohms
Attenuation 1.740 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 50.0 μs/div Position 206.01290 μs Reference center

Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level -22.8 mA Slope falling

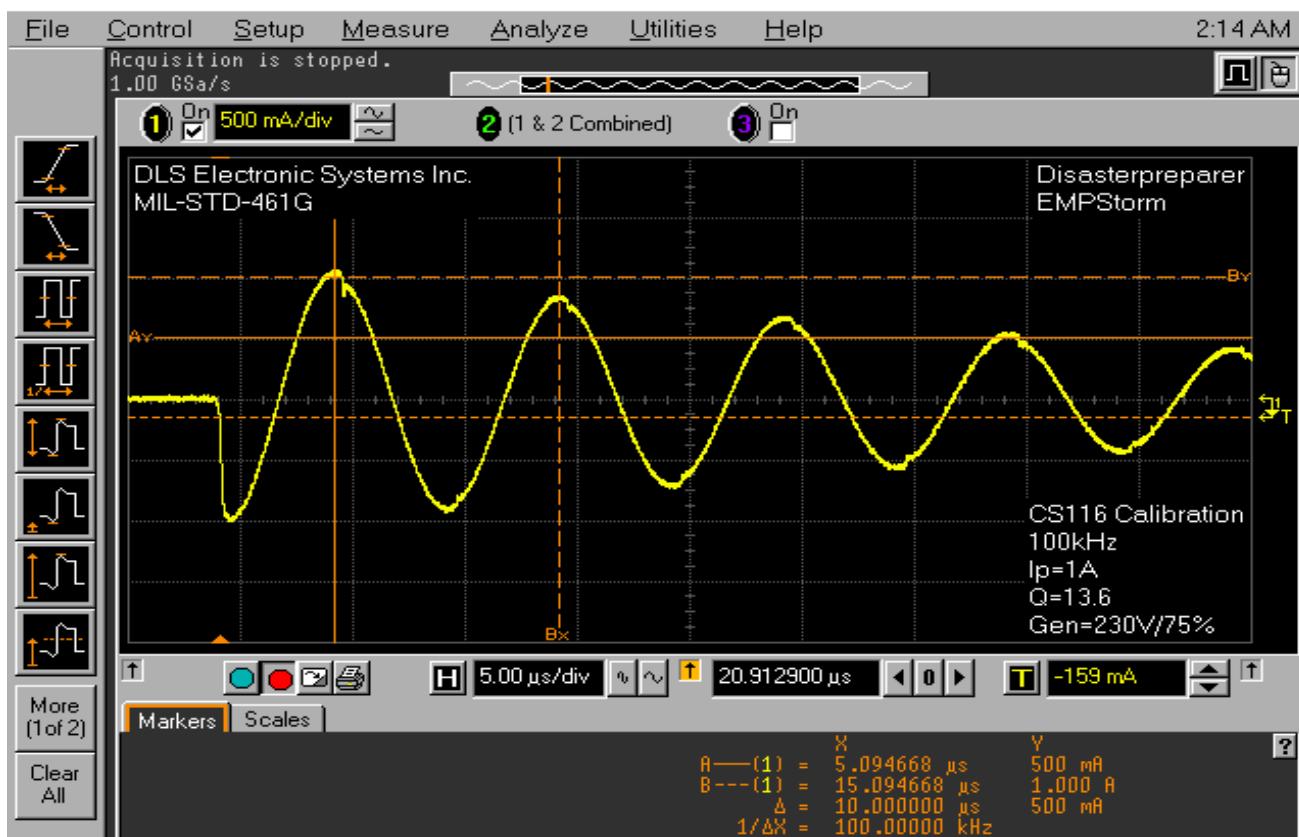
Marker

X	Y
A—(1) = -880 ps	50.0 mA
B---(1) = 8.26 ns	100.0 mA
Δ = 9.14 ns	50.0 mA
1/ΔX = 109.4 MHz	



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients



Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 1.00 GSa/s
Averaging off
9-bit BW Filter on Interpolation off

Channel 1 Scale 500 mA/div Offset -10 mA Coupling DC Impedance 50 Ohms
Attenuation 1.740 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 5.00 μs/div Position 20.912900 μs Reference center

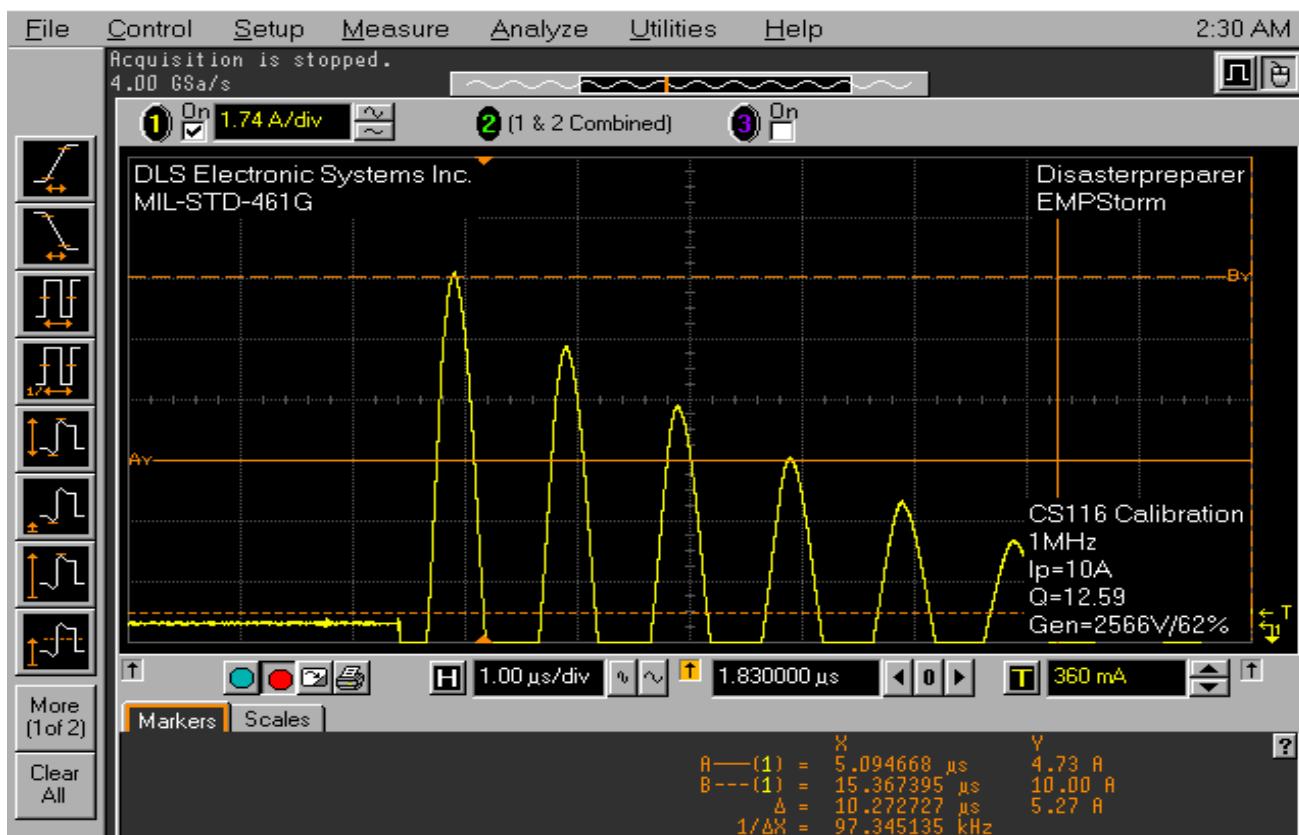
Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level -159 mA Slope falling

Marker X Y
A—(1) = 5.094668 μs 500 mA
B---(1) = 15.094668 μs 1.000 A
Δ = 10.000000 μs 500 mA
1/ΔX = 100.00000 kHz



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients



Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 4.00 GSa/s
Averaging off
9-bit BW Filter on Interpolation off

Channel 1 Scale 1.74 A/div Offset 6.470 A Coupling DC Impedance 50 Ohms
Attenuation 1.740 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 1.00 μs/div Position 1.830000 μs Reference center

Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level 360 mA Slope falling

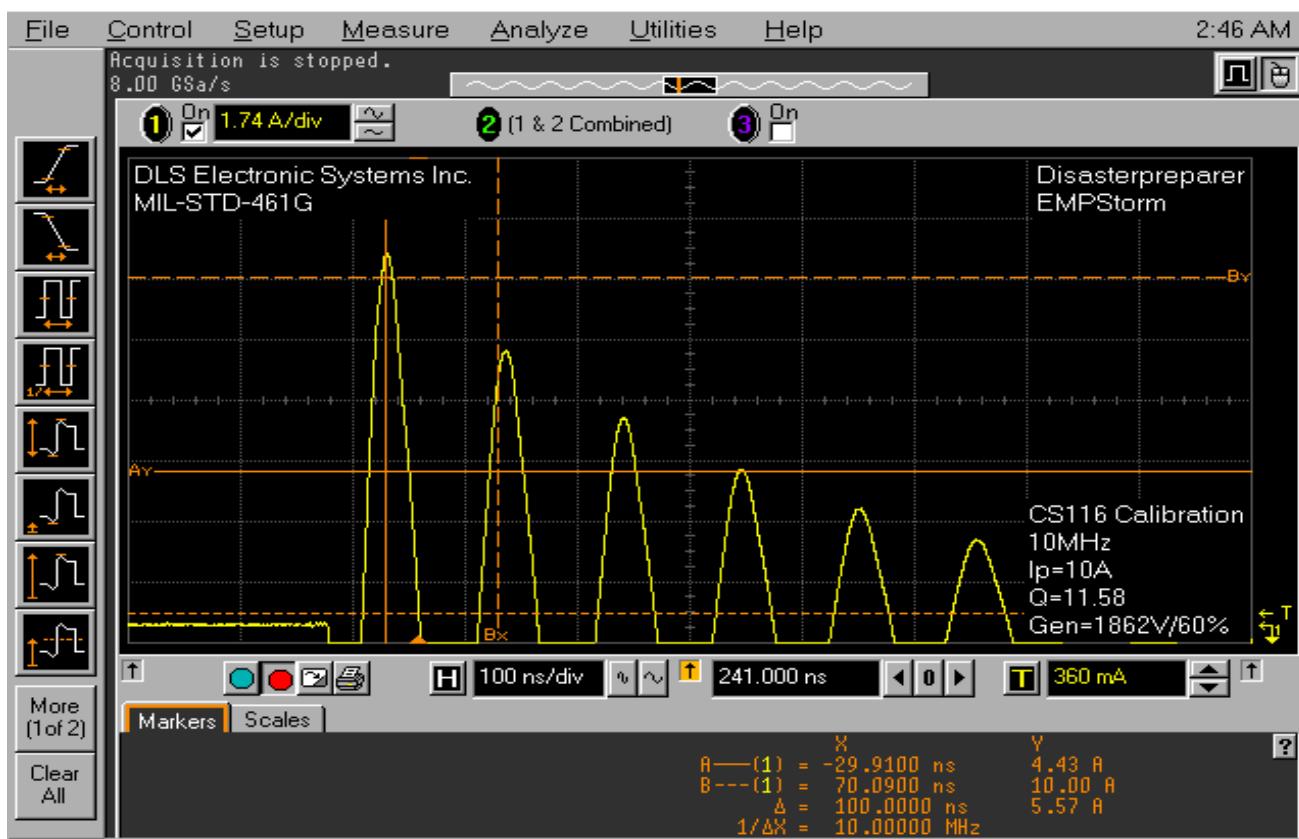
Marker

X	Y
5.094668 μs	4.73 Ω
15.367395 μs	10.00 Ω
Δ = 10.272727 μs	5.27 Ω
1/ΔX = 97.345135 kHz	



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients



Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 8.00 GSa/s
Averaging off
9-bit BW Filter on Interpolation off

Channel 1 Scale 1.74 A/div Offset 6.470 A Coupling DC Impedance 50 Ohms
Attenuation 1.746 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 100 ns/div Position 241.000 ns Reference center

Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level 360 mA Slope falling

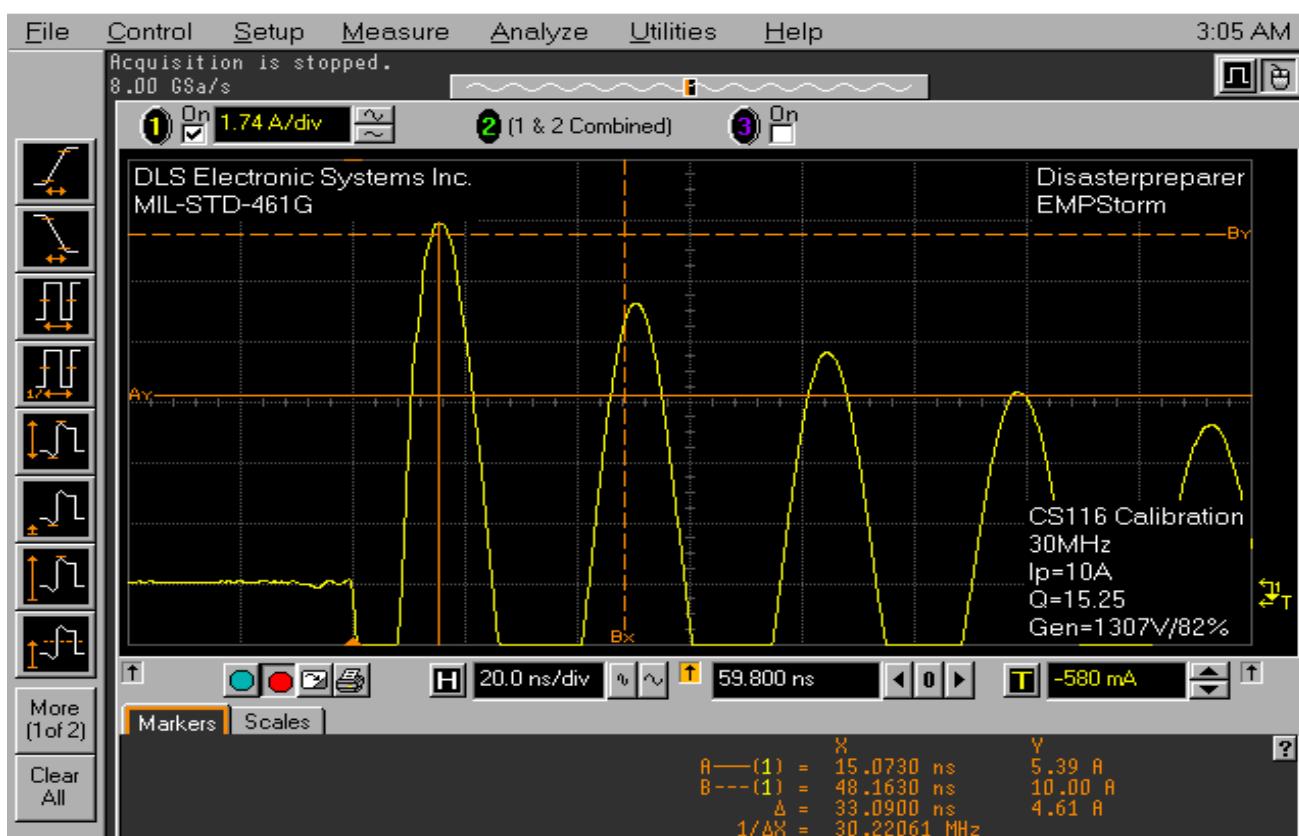
Marker

	X	Y
A—(1) =	-29.9100 ns	4.43 A
B---(1) =	70.0900 ns	10.00 A
Δ =	100.0000 ns	5.57 A
1/ΔX =	10.00000 MHz	



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients



Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts

Sampling rate automatic Sampling rate 8.00 GSa/s

Averaging off

9-bit BW Filter on Interpolation off

Channel 1 Scale 1.74 A/div Offset 5.190 A Coupling DC Impedance 50 Ohms

Attenuation 1.780 : 1 Atten units ratio Skew 0.0 s

Ext adapter None Ext coupler None

Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 20.0 ns/div Position 59.800 ns Reference center

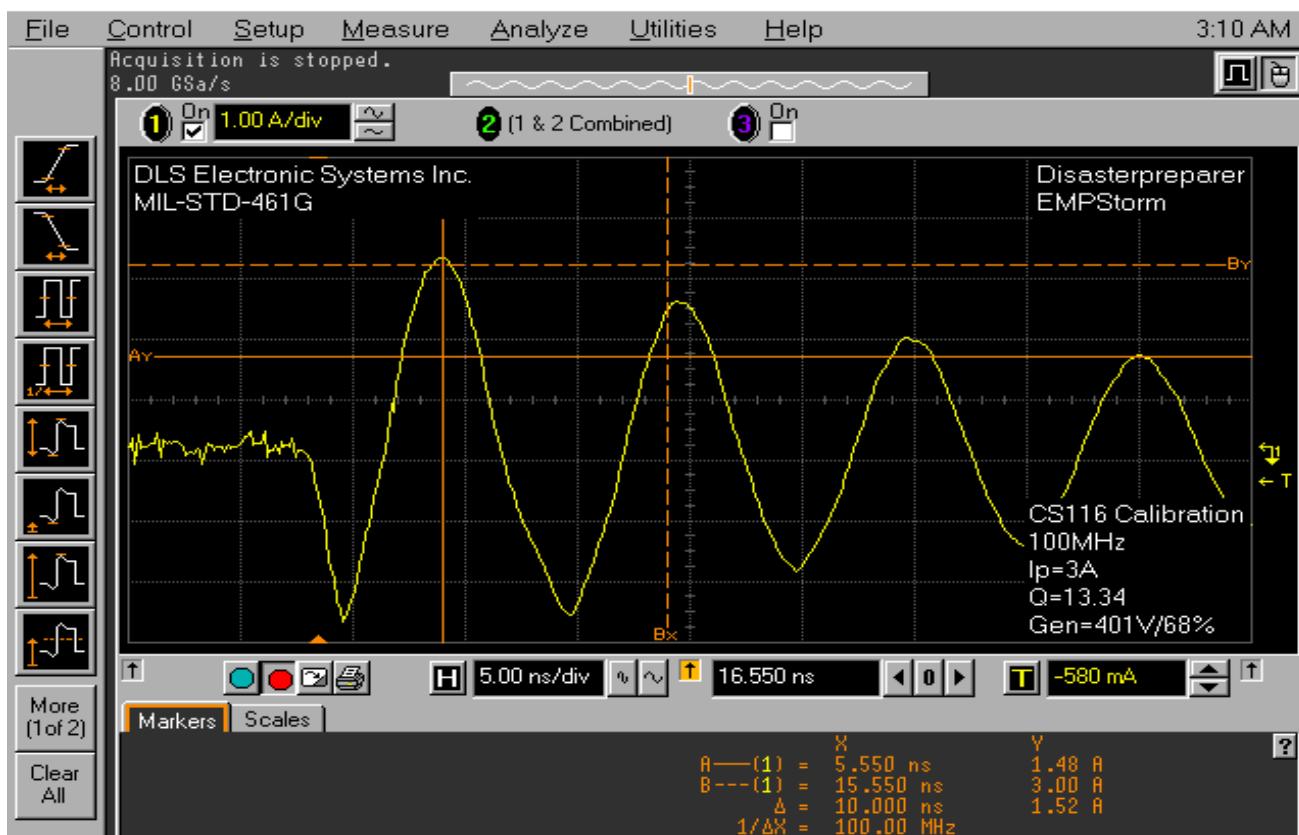
Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level -580 mA Slope falling

Marker	X	Y
A—(1)	15.0730 ns	5.39 A
B---(1)	48.1630 ns	10.00 A
Δ	33.0900 ns	4.61 A
1/ΔX	30.22061 MHz	



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients



Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 8.00 GSa/s
Averaging off
9-bit BW Filter off Interpolation off

Channel 1 Scale 1.00 A/div Offset 770 mA Coupling DC Impedance 50 Ohms
Attenuation 1.747 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 5.00 ns/div Position 16.550 ns Reference center

Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level -580 mA Slope falling

Marker

	X	Y
A—(1)	= 5.550 ns	1.48 A
B---(1)	= 15.550 ns	3.00 A
Δ	= 10.000 ns	1.52 A
1/ΔX	= 100.00 MHz	



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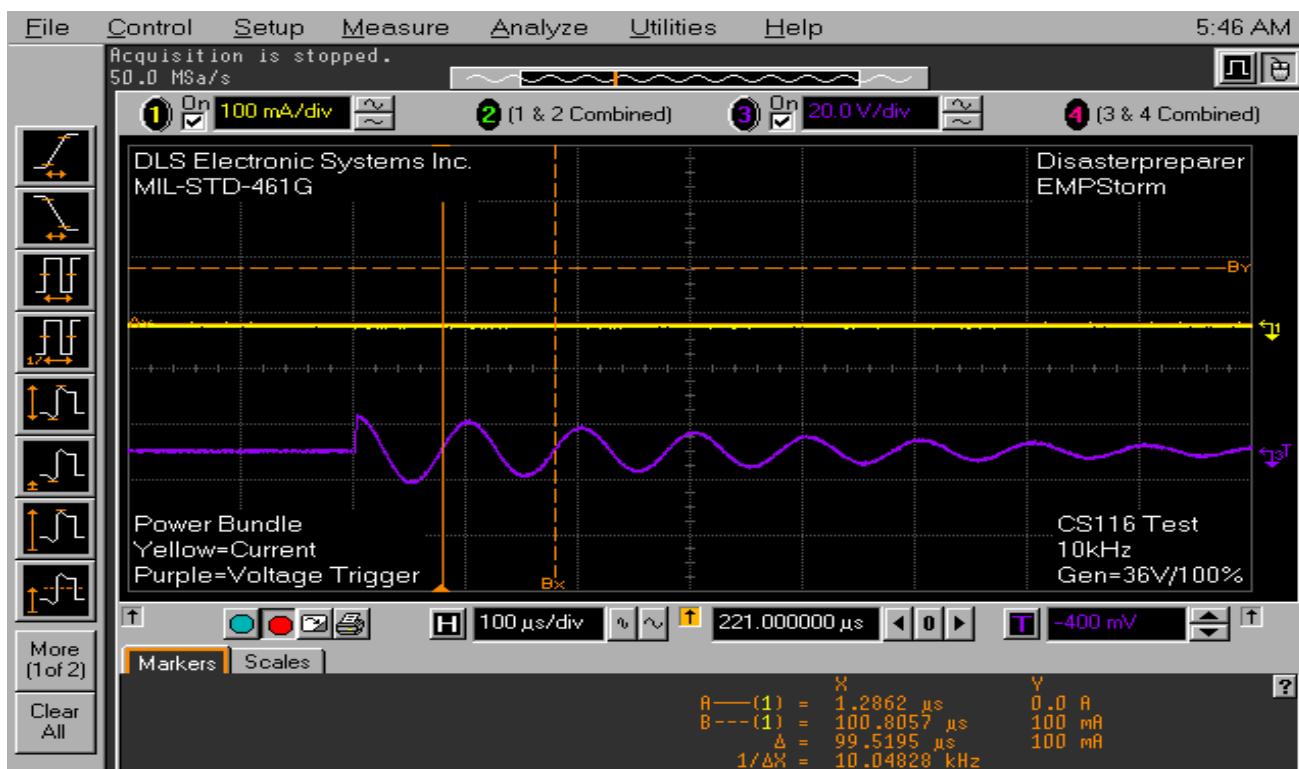
Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients

CS116 DAMPED SINUSOIDAL TRANSIENTS SUSCEPTIBILITY – DATA



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients



Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 50.0 MSa/s
Averaging off
9-bit BW Filter on Interpolation on

Channel 1 Scale 100 mA/div Offset -79.0 mA Coupling DC Impedance 50 Ohms
Attenuation 3.830 dB Atten units decibel Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Channel 3 Scale 20.0 V/div Offset 29.6 V Coupling DC Impedance 1M Ohm
Attenuation 100.0 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 100 μ s/div Position 221.00000 μ s Reference center

Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 3 Trigger level -400 mV Slope rising

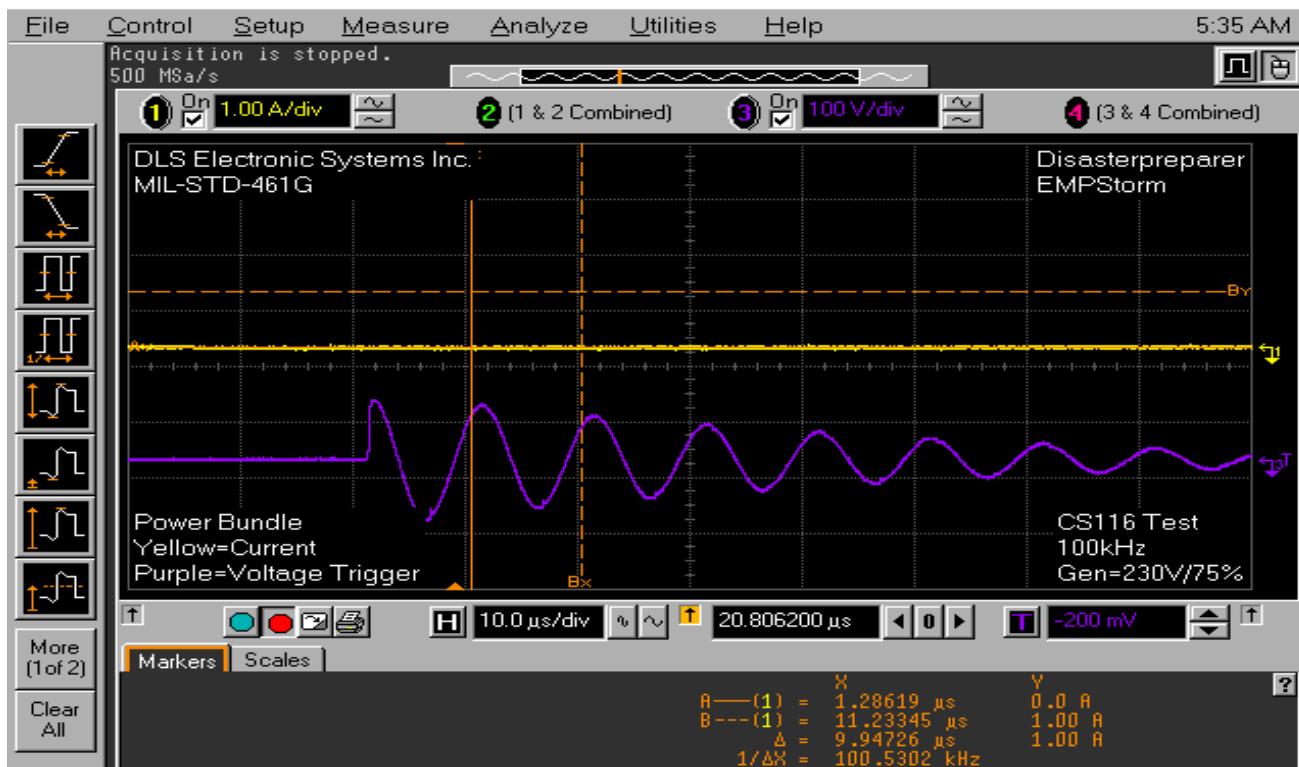
Marker

X	Y
A—(1) = 1.2862 μ s	0.0 A
B---(1) = 100.8057 μ s	100 mA
Δ = 99.5195 μ s	100 mA
1/ Δ X = 10.04828 kHz	



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients



Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 500 MSa/s
Averaging off
9-bit BW Filter on Interpolation on

Channel 1 Scale 1.00 A/div Offset -342 mA Coupling DC Impedance 50 Ohms
Attenuation 2.820 dB Atten units decibel Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Channel 3 Scale 100 V/div Offset 167.2 V Coupling DC Impedance 1M Ohm
Attenuation 100.0 : 1 Atten units ratio Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 10.0 μ s/div Position 20.806200 μ s Reference center

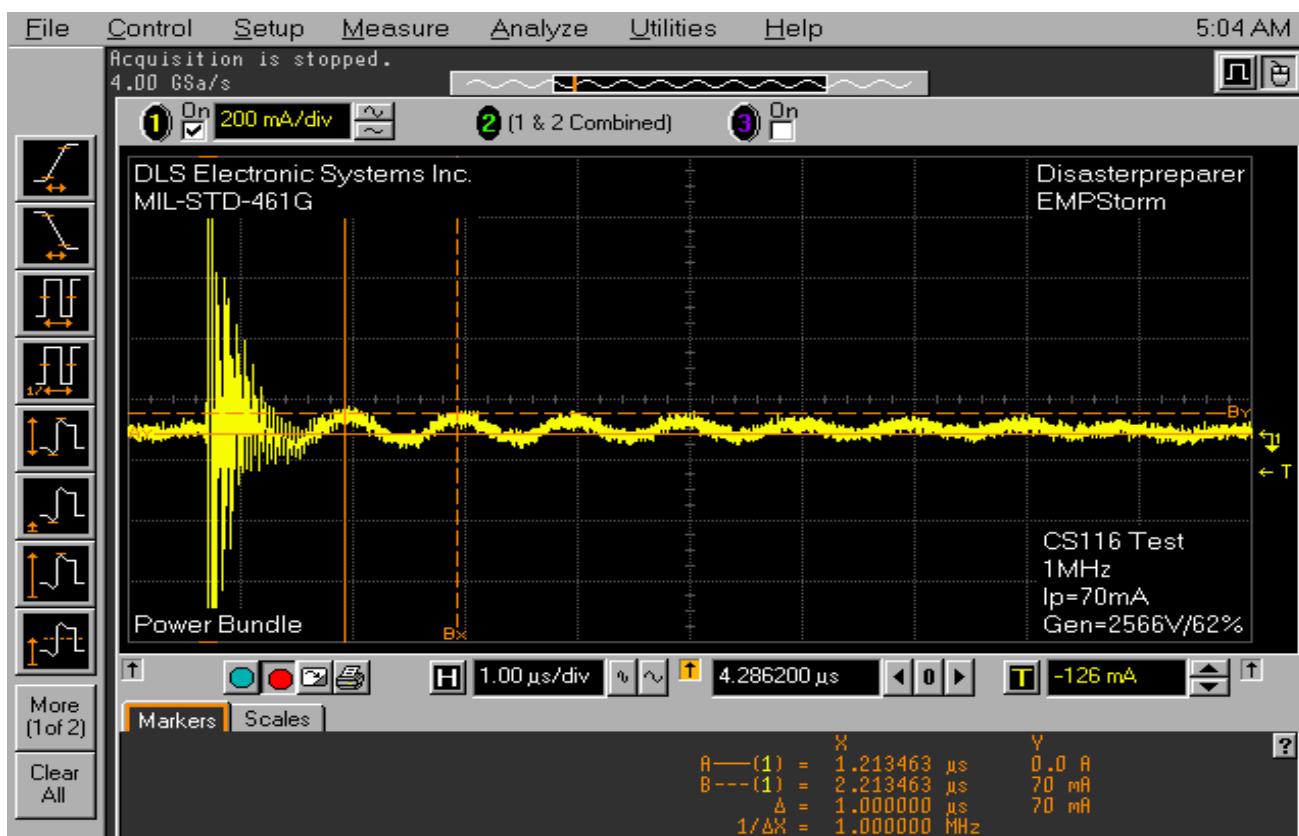
Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 3 Trigger level -200 mV Slope rising

Marker X Y
A—(1) = 1.28619 μ s 0.0 A
B---(1) = 11.23345 μ s 1.00 A
Δ = 9.94726 μ s 1.00 A
1/ΔX = 100.5302 kHz



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients



Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 4.00 GSa/s
Averaging off
9-bit BW Filter on Interpolation on

Channel 1 Scale 200 mA/div Offset 114 mA Coupling DC Impedance 50 Ohms
Attenuation 40.99 dB Atten units decibel Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 1.00 μs/div Position 4.286200 μs Reference center

Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level -126 mA Slope falling

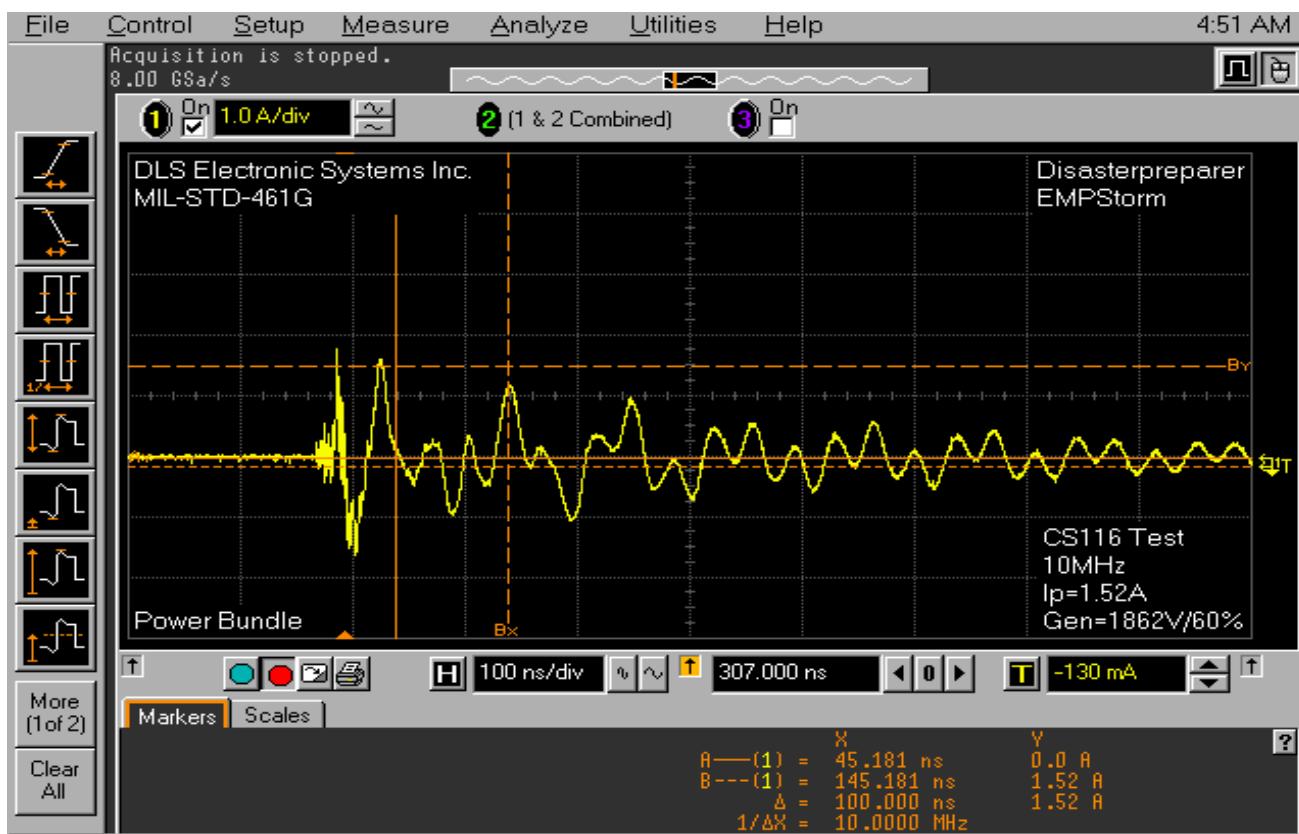
Marker

	X	Y
A—(1) =	1.213463 μs	0.0 mA
B---(1) =	2.213463 μs	70 mA
Δ =	1.000000 μs	70 mA
1/ΔX =	1.000000 MHz	



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients



Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 8.00 GSa/s
Averaging off
9-bit BW Filter off Interpolation off

Channel 1 Scale 1.0 A/div Offset 1.030 A Coupling DC Impedance 50 Ohms
Attenuation 40.76 dB Atten units decibel Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 100 ns/div Position 307.000 ns Reference center

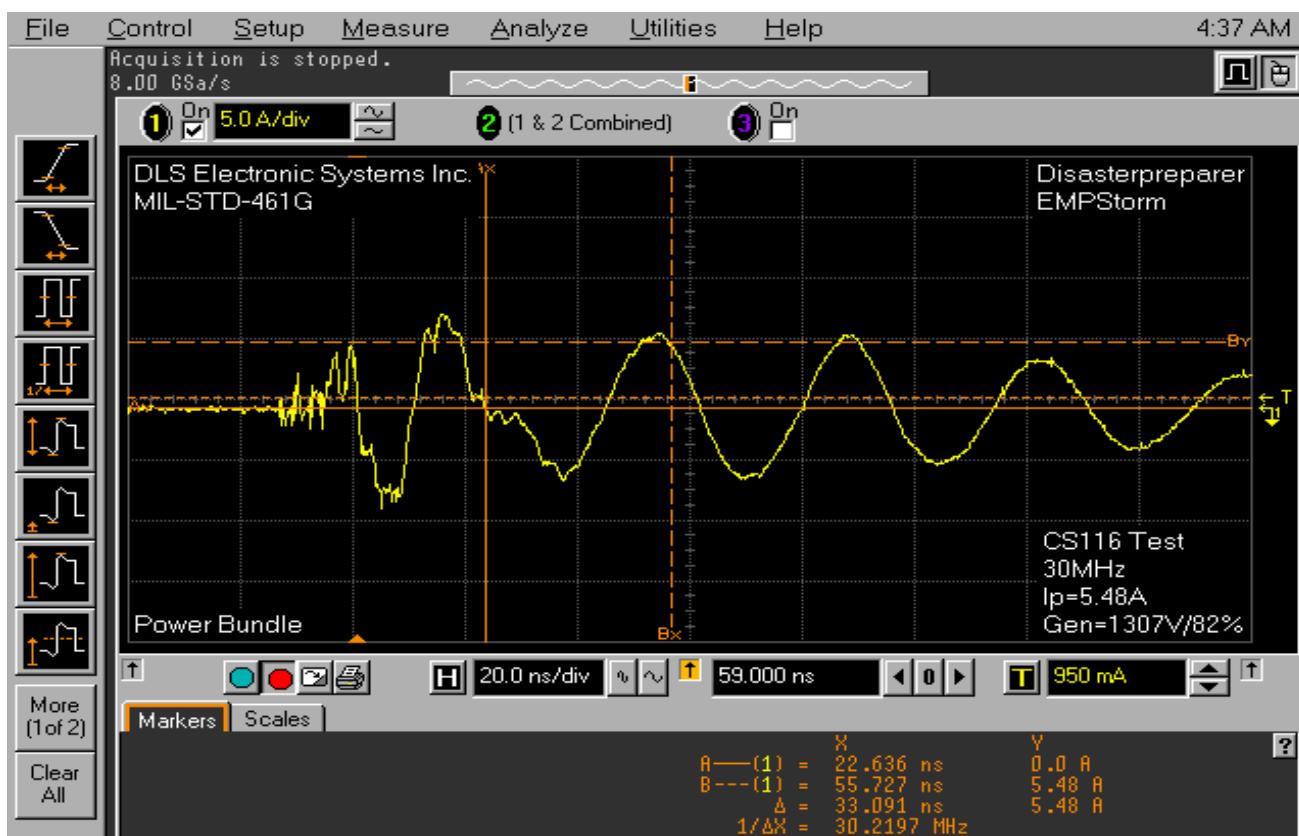
Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level -130 mA Slope falling

Marker X Y
A—(1) = 45.181 ns 0.0 A
B---(1) = 145.181 ns 1.52 A
Δ = 100.000 ns 1.52 A
1/ΔX = 10.0000 MHz



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients



Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 8.00 GSa/s
Averaging off
9-bit BW Filter off Interpolation off

Channel 1 Scale 5.0 A/div Offset 770 mA Coupling DC Impedance 50 Ohms
Attenuation 41.77 dB Atten units decibel Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 20.0 ns/div Position 59.000 ns Reference center

Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level 950 mA Slope falling

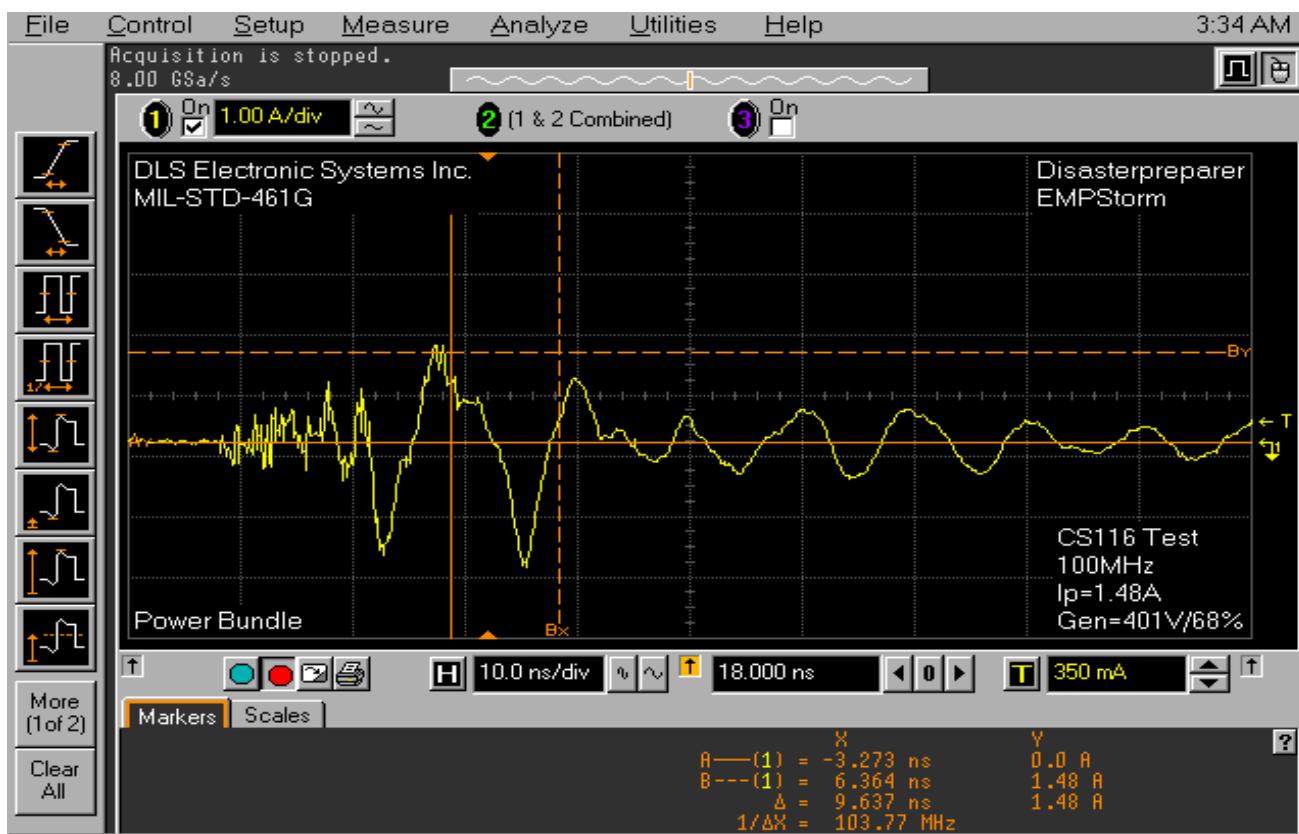
Marker

	X	Y
A—(1)	= 22.636 ns	0.0 A
B---(1)	= 55.727 ns	5.48 A
Δ	= 33.091 ns	5.48 A
1/ΔX	= 30.2197 MHz	



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL STD 461 Appendix B
Test: CS116 Conducted Susceptibility Damped Sinusoidal Transients



Acquisition Sampling mode real time Configuration 8GSa/s
Memory depth manual Memory depth 65536pts
Sampling rate automatic Sampling rate 8.00 GSa/s
Averaging off
9-bit BW Filter off Interpolation off

Channel 1 Scale 1.0 A/div Offset 770 mA Coupling DC Impedance 50 Ohms
Attenuation 43.39 dB Atten units decibel Skew 0.0 s
Ext adapter None Ext coupler None
Ext gain 1.00E+00 Ext offset 0.0E+00

Time base Scale 10.0 ns/div Position 18.000 ns Reference center

Trigger Mode edge Sweep triggered
Hysteresis normal Holdoff time 60 ns Coupling DC
Source channel 1 Trigger level 350 mA Slope falling

Marker

X	Y
R—(1) = -3.273 ns	0.0 A
B---(1) = 6.364 ns	1.48 A
Δ = 9.637 ns	1.48 A
1/ΔX = 103.77 MHz	



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C

APPENDIX C

MIL-STD-461G

CS117

CS117 CONDUCTED SUSCEPTIBILITY

LIGHTNING INDUCED TRANSIENTS

CABLE BUNDLE



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

1.0 PURPOSE OF THE TEST:

These tests verify the capability of the equipment to withstand effects of lightning induced electrical transients. The functional upset and damage tolerance test was performed using the Cable Induction test method.

2.0 WAVEFORMS AND LEVELS:

1, 2,3,4 & 5a	External Levels	3	External Levels
Cable	Cable	Cable Bundle	Cable
Bundle	Bundle	Multiple	Bundle
Multiple	Multiple	Burst Test	Multiple
Stroke Test	Stroke Test	Waveform	Burst Test
Waveform	Level	Set	Level
Set			

X = Test not performed

The equipment under test was tested to the levels and waveforms consistent with its expected use and aircraft installation. The EMPStorm was subjected Level(s) The EUT was subjected to Lightning Induced Transient using Waveforms 1,2,3,4,5a at External Levels (Voc/Isc) per waveform set.



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

3.0 TEST SETUP AND APPARATUS:

A typical test setup for the Cable Induction Test shown in Figure CS117-9 was used during testing.

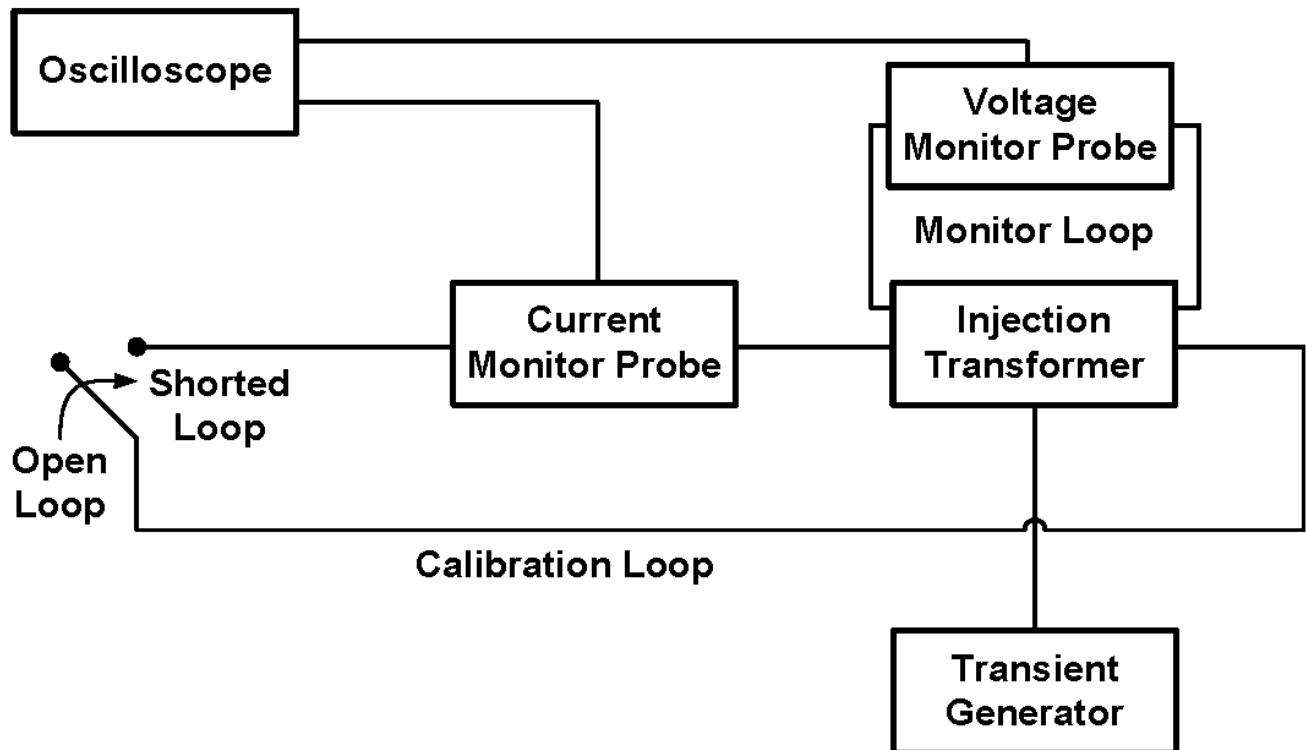


FIGURE CS117-9. Typical test setup for calibration of lightning waveforms.



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

3.0 TEST SETUP AND APPARATUS (CON'T):

The typical Cable Bundle test setup shown in Figure CS117-10 was used during testing.

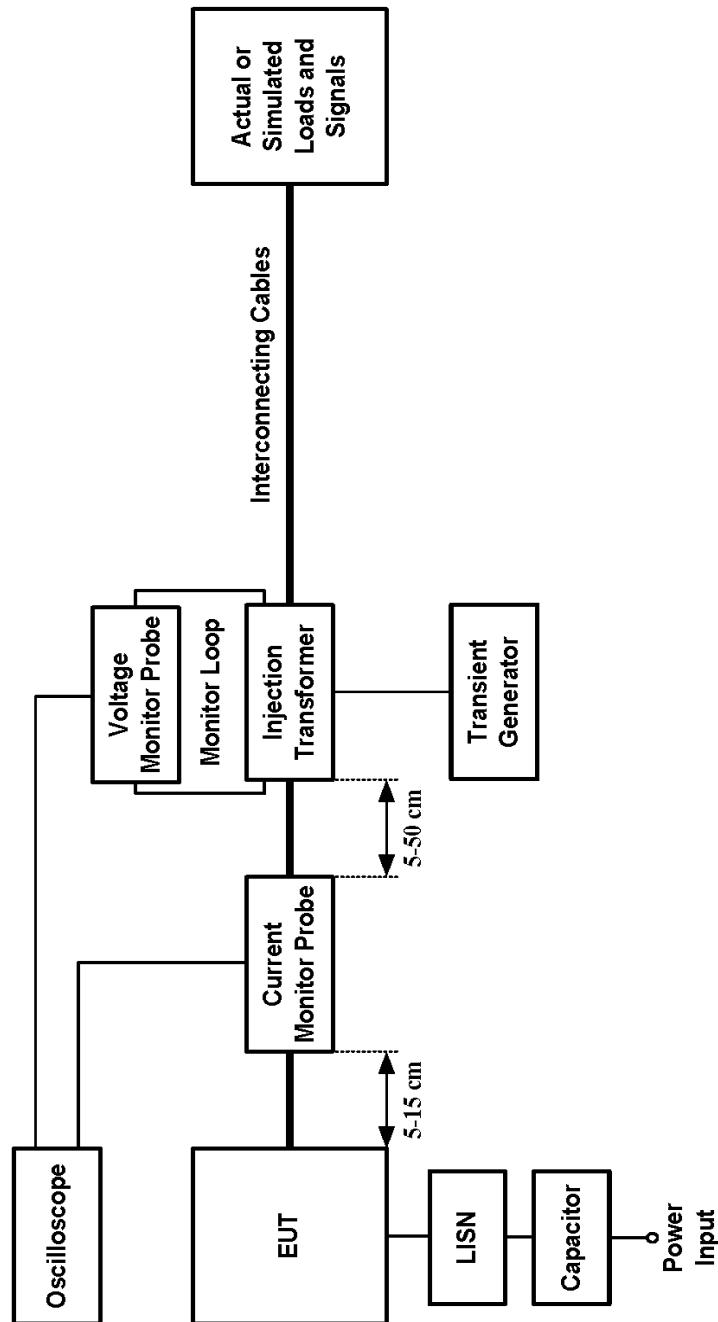


FIGURE CS117-10. Typical setup for bulk cable injection of lightning transients on complete interconnecting cable bundles.



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

3.0 TEST SETUP AND APPARATUS (CON'T):

The typical Cable Bundle test setup shown in Figure CS117-11 was used during testing.

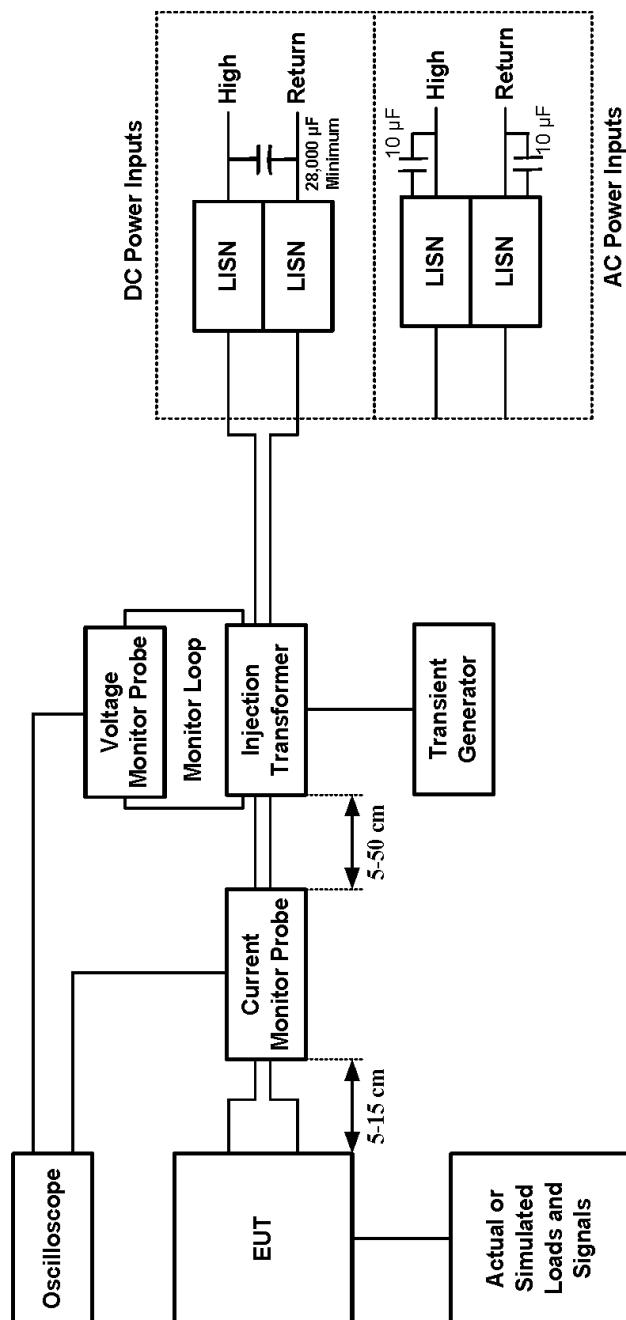


FIGURE CS117-11. Typical setup for bulk cable injection of lightning transients on complete power cables (high sides and returns).



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

3.0 TEST SETUP AND APPARATUS (CON'T):

The typical Cable Bundle test setup shown in Figure CS117-12 was used during testing.

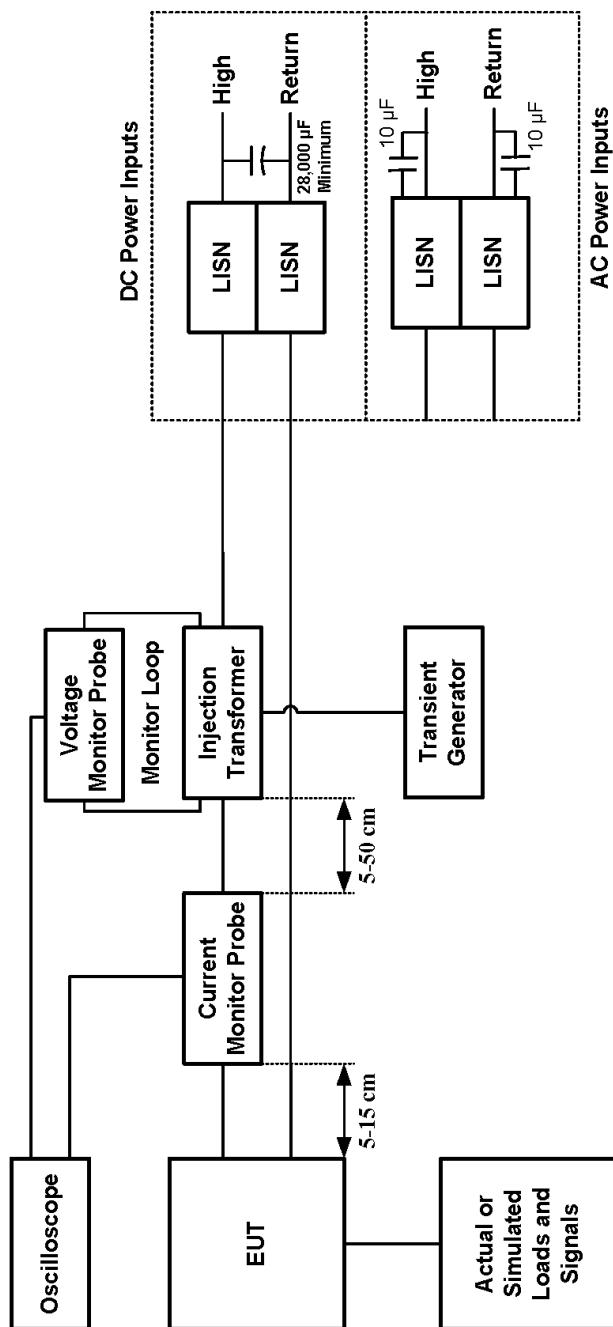


FIGURE CS117-12. Typical setup for bulk cable injection of lightning transients on power cables with power returns and chassis grounds excluded from the cable bundle.



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

3.0 TEST SETUP AND APPARATUS (CON'T):

The transient generator used produced the Current Waveform 1 as shown in Figure CS117-1 of the test specification. Any method of generating the spike may be used if the waveform complies with Figure CS117-1. The generator was connected to the designated cable bundle of the device under test.

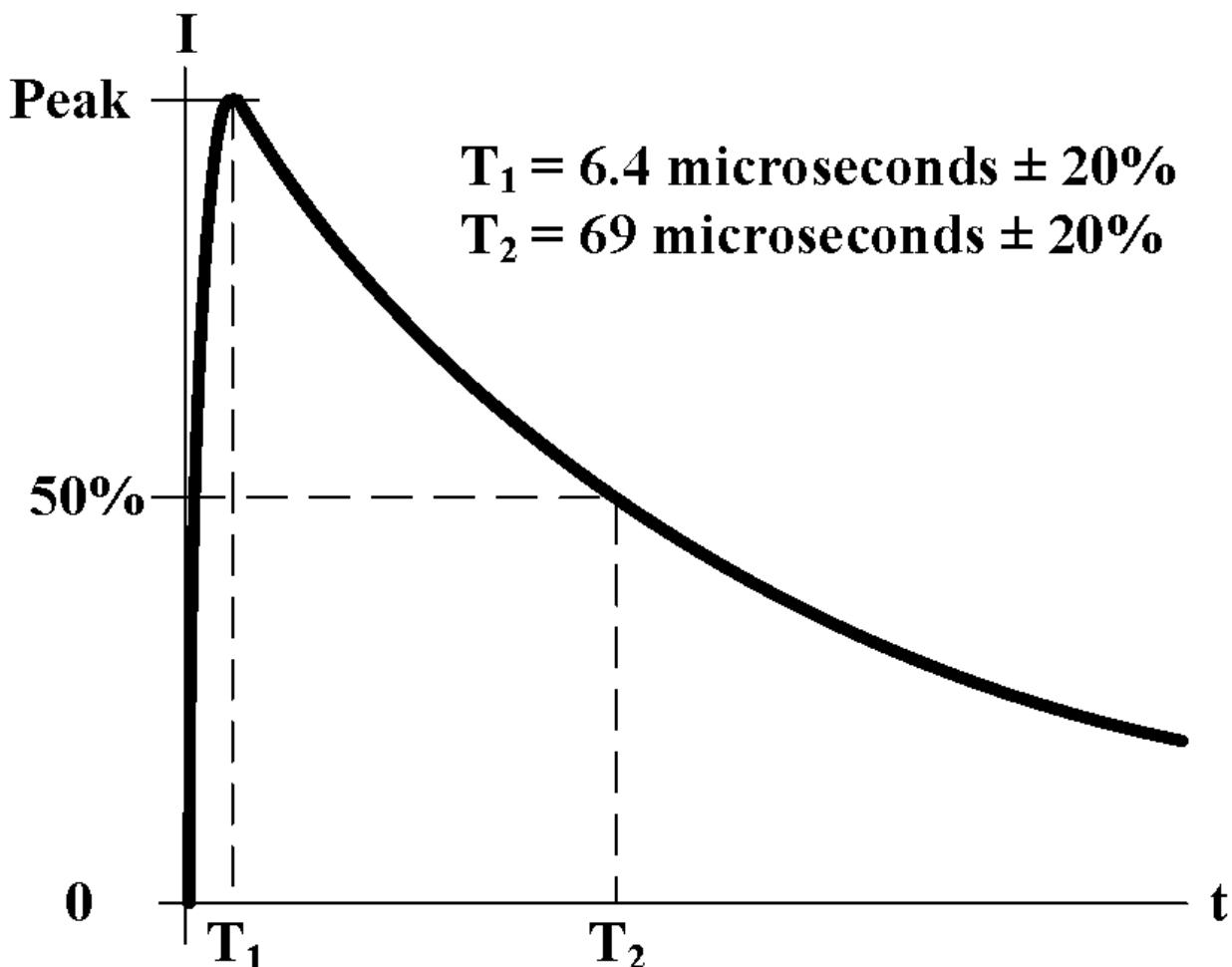


FIGURE CS117-1. Current Waveform 1.



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

3.0 TEST SETUP AND APPARATUS (CON'T):

The transient generator used produced the Voltage Waveform 2 as shown in Figure CS117-2 of the test specification. Any method of generating the spike may be used if the waveform complies with Figure CS117-2. The generator was connected to the designated cable bundle of the device under test.

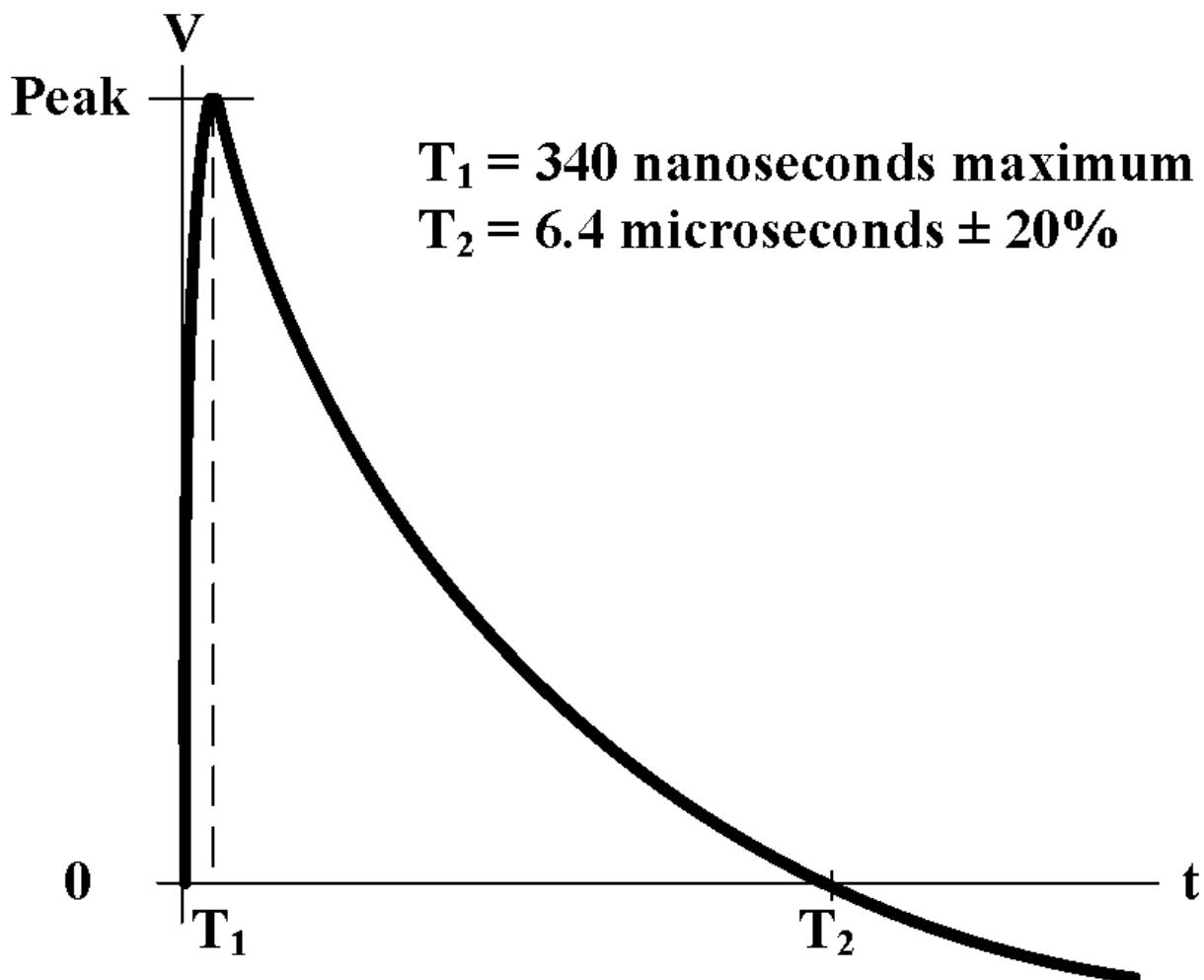


FIGURE CS117-2. Voltage Waveform 2.

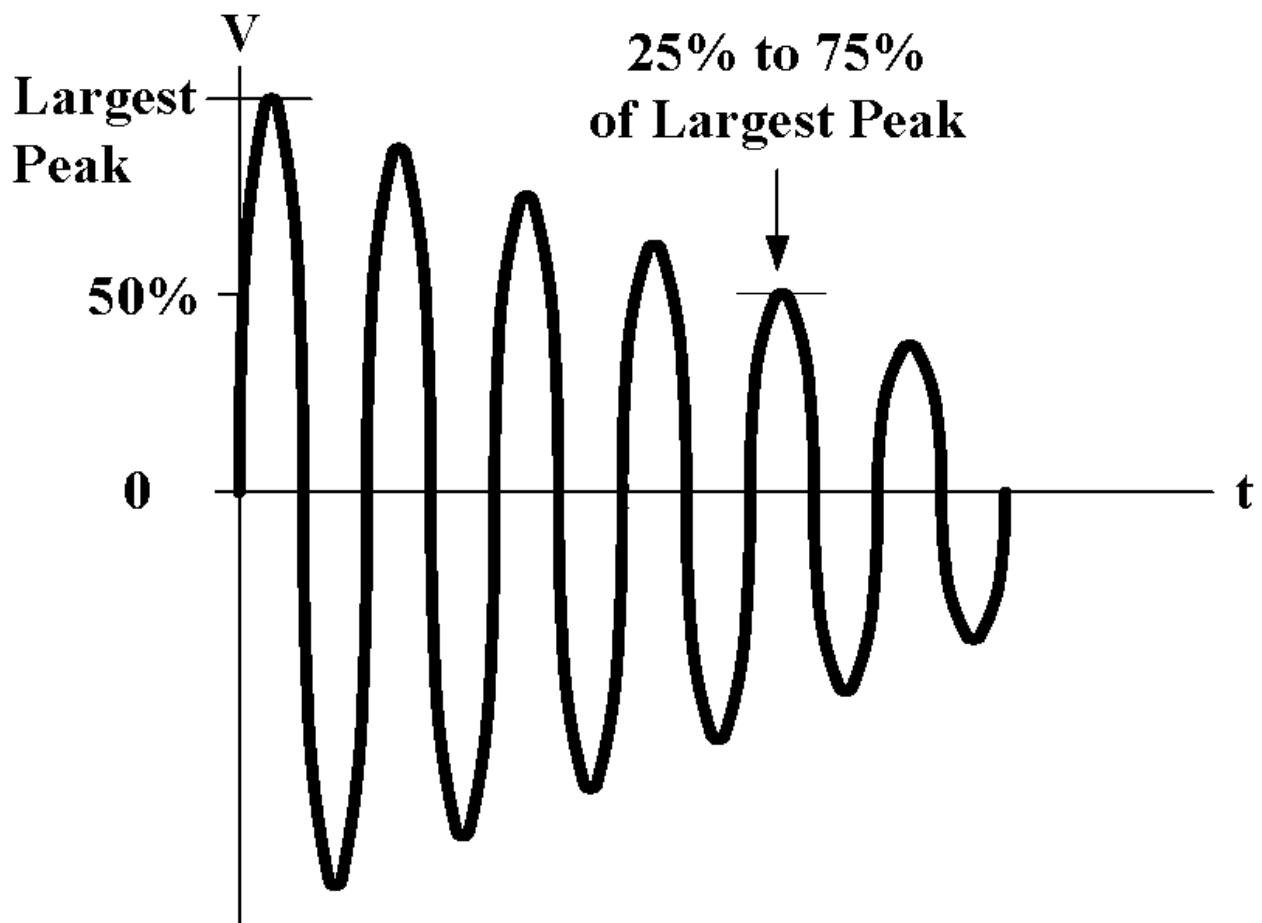


1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

3.0 TEST SETUP AND APPARATUS (CON'T):

The transient generator used produced the Voltage/Current Waveform 3 shown in Figure CS117-3 of the test specification. Any method of generating the spike may be used if the waveform complies with Figure CS117-3. The generator was connected to the designated cable bundle of the device under test.



NOTE:

The waveshape may have either a damped sine or cosine waveshape.

FIGURE CS117-3. Voltage Waveform 3.



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

3.0 TEST SETUP AND APPARATUS (CON'T):

The transient generator used produced the Voltage Waveforms 4 shown in Figure CS117-4 of the test specification. Any method of generating the spike may be used if the waveform complies with Figure CS117-4. The generator was connected to the designated cable bundle of the device under test.

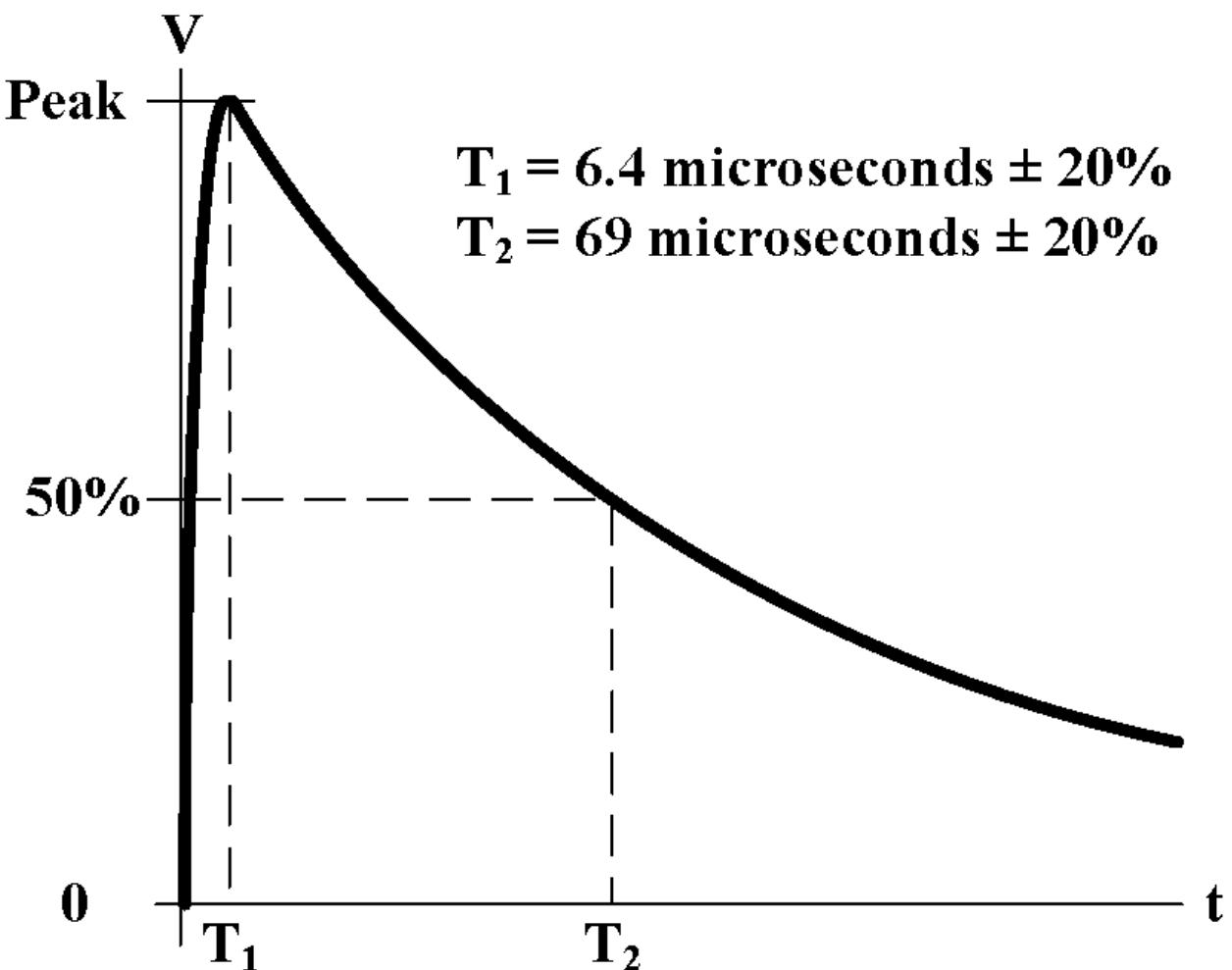


FIGURE CS117-4. Voltage Waveform 4.

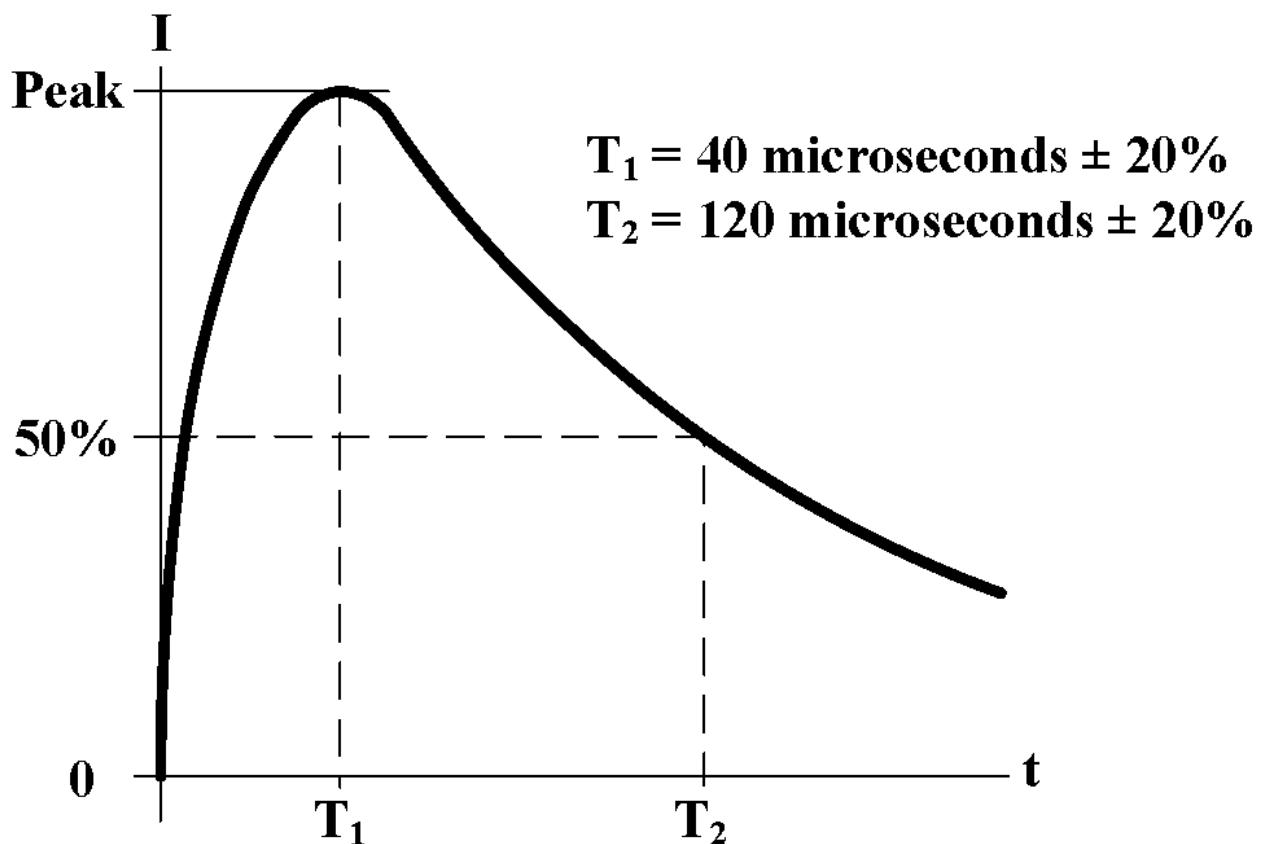


1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

3.0 TEST SETUP AND APPARATUS (CON'T):

The transient generator used produced the Current/Voltage Waveform 5 shown in Figure CS117-5 of the test specification. Any method of generating the spike may be used if the waveform complies with Figure CS117-5. The generator was connected to the designated cable bundle of the device under test.





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

4.0 TEST PROCEDURE:

General Performance:

The transient generator was connected to the primary inputs of the injection transformer (See CS117-10, 11 & 12). For each generator, the voltage waveform with the calibration loop open and the current waveform with the calibration loop shorted was recorded. For the Multiple Stroke tests, the relevant waveshape parameters, applicable pulse patterns and timing identified in CS117-7 was verified. The maximum test level of Table VII was achieved. For the Multiple Burst tests, the relevant waveshape parameters, applicable pulse patterns and timing identified in CS117-8 was verified. The maximum test level of Table VII was achieved.

Test Sequence:

- a). The EUT, support equipment and interconnecting cable bundles were configured as shown in Figure CS117-10 with the injection transformer around the cable bundle under test. The current and voltage monitoring probes were connected to an oscilloscope. While the transients were applied, the generator setting was increased until the test level (V_T or I_T) or the limit (V_L or I_L) was reached.
- b) For the Multiple Stroke test a minimum of ten multiple stroke applications were applied while monitoring the EUT at the generator setting that was established in the Test Sequence, Paragraph (a). For the Multiple Burst test a multiple burst application was applied every three seconds (three seconds between the start of each set of three bursts) continuously for five minutes, while monitoring the EUT at the generator setting that was established in the Test Sequence, Paragraph (a).
- c). The transient generator polarity was reversed repeating the generator performance verification and Paragraphs a through b.
- d). Paragraphs a through c were repeated for each injection test point.
- e). The generator performance verification and Paragraphs a through d were repeated for each waveform applied.



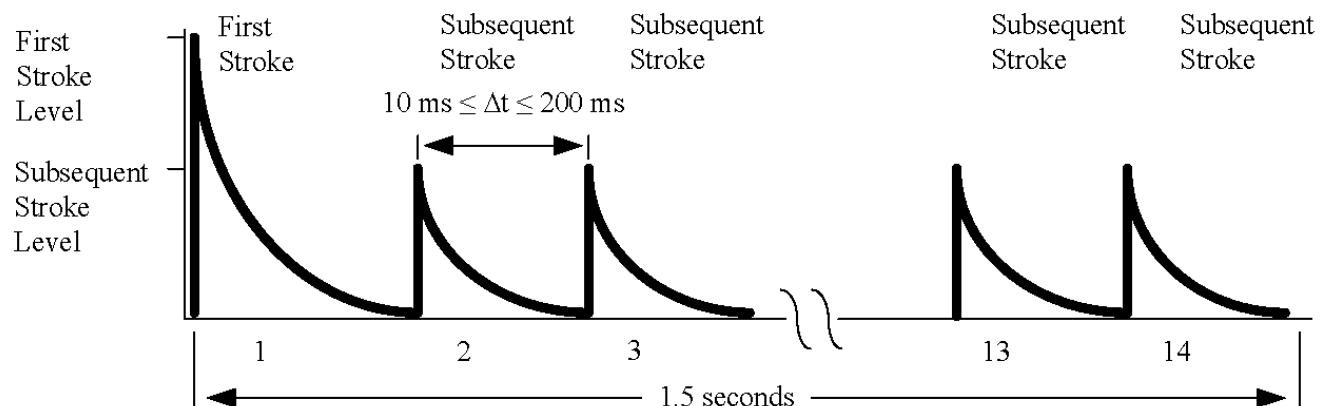
1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

4.0 TEST PROCEDURE (CON'T):

The cable bundle single stroke test may be combined with the multiple stroke test. In this case the test level of the first transient of the multiple stroke test application is replaced with the single stroke test level provided in Table 22-3.

The following Multiple Stroke as shown in Figure CS117-7 was used during testing.



One first transient followed by thirteen subsequent transients distributed over a period of up to 1.5 seconds.

FIGURE CS117-7. Multiple stroke application.



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

4.0 TEST PROCEDURE (CON'T):

The following Multiple Burst as shown in Figure CS117-8 was used during testing.

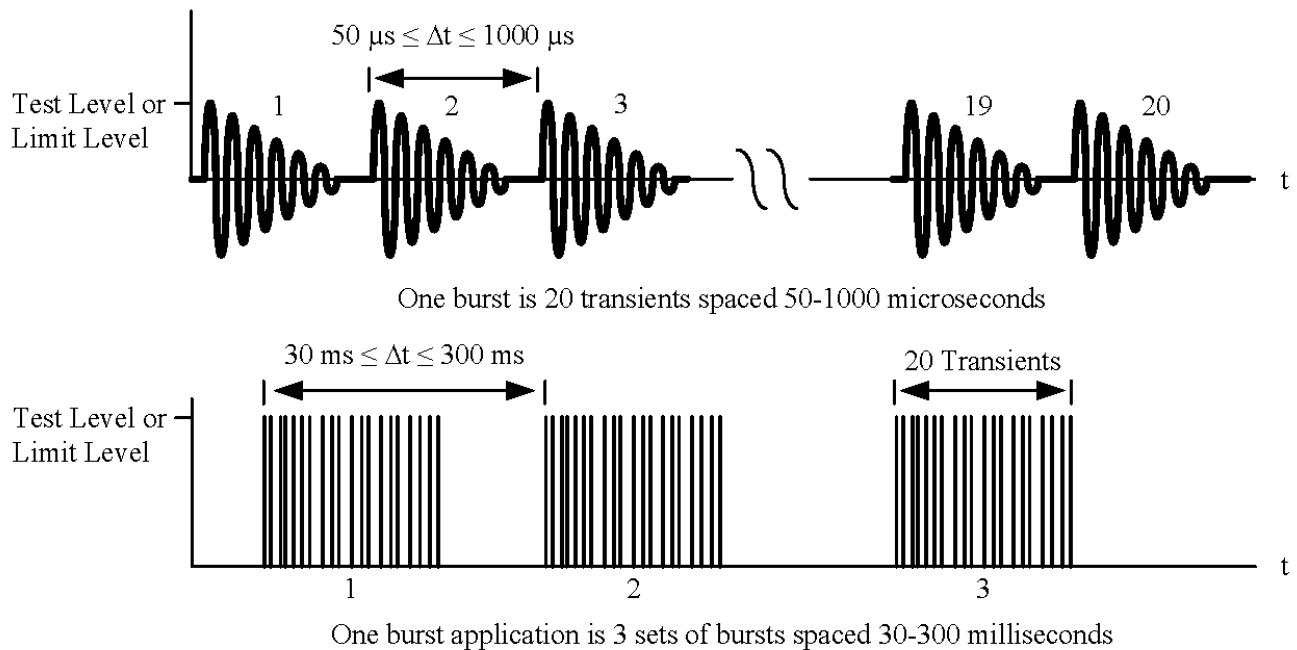


FIGURE CS117-8. Multiple burst application.

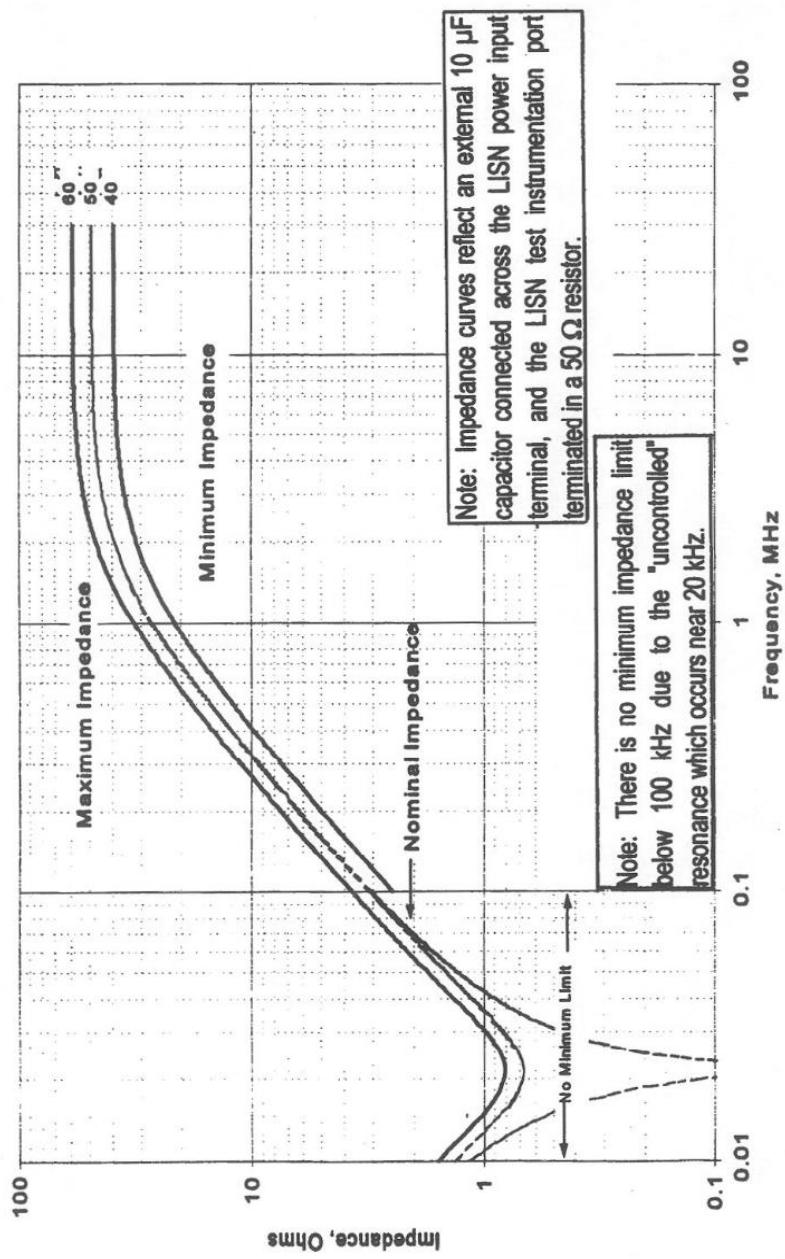


1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

4.0 TEST PROCEDURE (CON'T):

The following LISN Input Impedance Characteristic as shown below was used during testing.



LISN Input Impedance Characteristic



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

5.0 LIMITS & RESULTS:

5.1 LIMITS:

The Waveform used for the Multiple Stroke test is taken from the following Table VII:

<u>Multiple Stroke</u>			
Applicability	Test Description	Internal Equipment Levels**	External Equipment Levels**
All equipment installations	Waveform 2 (WF2)/ Waveform 1 (WF1)	<u>First Stroke</u> $V_L = 300 \text{ V}$ (WF2) $I_T = 600 \text{ A}$ (WF1) $I_T = 60 \text{ A}^*$ <u>Subsequent Strokes</u> $V_L = 150 \text{ V}$ (WF2) $I_T = 150 \text{ A}$ (WF1) $I_T = 30 \text{ A}^*$	<u>First Stroke</u> $V_L = 750 \text{ V}$ (WF2) $I_T = 1500 \text{ A}$ (WF1) $I_T = 150 \text{ A}^*$ <u>Subsequent Strokes</u> $V_L = 375 \text{ V}$ (WF2) $I_T = 375 \text{ A}$ (WF1) $I_T = 75 \text{ A}^*$
All equipment installations	Waveform 3 (WF3) – 1 MHz and 10 MHz	<u>First Stroke</u> $V_T = 600 \text{ V}$ (WF3) $I_L = 120 \text{ A}$ (WF3) $I_L = 24 \text{ A}^*$ <u>Subsequent Strokes</u> $V_T = 300 \text{ V}$ (WF3) $I_L = 60 \text{ A}$ (WF3) $I_L = 12 \text{ A}^*$	<u>First Stroke</u> $V_T = 1500 \text{ V}$ (WF3) $I_L = 300 \text{ A}$ (WF3) $I_L = 60 \text{ A}^*$ <u>Subsequent Strokes</u> $V_T = 750 \text{ V}$ (WF3) $I_L = 150 \text{ A}$ (WF3) $I_L = 30 \text{ A}^*$
Equipment installations routed in areas with composite skin/structure.	Waveform 4 (WF4)/ Waveform 5A (WF5A)	<u>First Stroke</u> $V_L = 300 \text{ V}$ (WF4) $I_T = 1000 \text{ A}$ (WF5A) $I_T = 300 \text{ A}^*$ <u>Subsequent Strokes</u> $V_L = 75 \text{ V}$ (WF4) $I_T = 200 \text{ A}$ (WF5A) $I_T = 150 \text{ A}^*$	<u>First Stroke</u> $V_L = 750 \text{ V}$ (WF4) $I_T = 2000 \text{ A}$ (WF5A) $I_T = 750 \text{ A}^*$ <u>Subsequent Strokes</u> $V_L = 187.5 \text{ V}$ (WF4) $I_T = 400 \text{ A}$ (WF5A) $I_T = 375 \text{ A}^*$

CS117 Test and limit levels for Multiple Stroke lightning



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

5.0 LIMITS & RESULTS (CON'T):

5.1 LIMITS:

The Waveform used for the Multiple Burst test is taken from the following Table VII:

<u>Multiple Burst</u>			
<u>Applicability</u>	<u>Test Description</u>	<u>Internal Equipment Levels**</u>	<u>External Equipment Levels**</u>
All equipment installations	Waveform 3 (WF3) – 1 MHz and 10 MHz	$V_T = 360 \text{ V (WF3)}$ $I_L = 6 \text{ A (WF3)}$	$V_T = 900 \text{ V (WF3)}$ $I_L = 15 \text{ A (WF3)}$
Equipment installations that utilize short, low impedance cable bundle installations.	Waveform 6 (WF6)	$V_L = 600 \text{ V (WF6)}$ $I_T = 30 \text{ A (WF6)}$	$V_L = 1500 \text{ V (WF6)}$ $I_T = 75 \text{ A (WF6)}$

Notes:

*These current levels are intended for individual power leads or low count wire bundles. When multiple leads are tested together, this current shall be increased to the full bundle level or to the number of leads multiplied by the appropriate individual current test or limit level, whichever is less.

**Amplitude Tolerance is +20%,-0% for all waveforms, except the tolerance is relaxed to +50%,-0% for the Subsequent Strokes. V_T represents the test voltage level in volts and I_T represents the test current level in amperes. V_L (volts) and I_L (amperes) represent limits intended to prevent over-stressing the EUT beyond the requirements.

CS117 Test and limit levels for Multiple Burst lightning



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

5.0 LIMITS & RESULTS (CON'T):

5.2 RESULTS:

The EMPStorm **meets** MIL-STD-461G, CS117, Multiple Stroke and Multiple Burst.

Lab used: J

Summary:

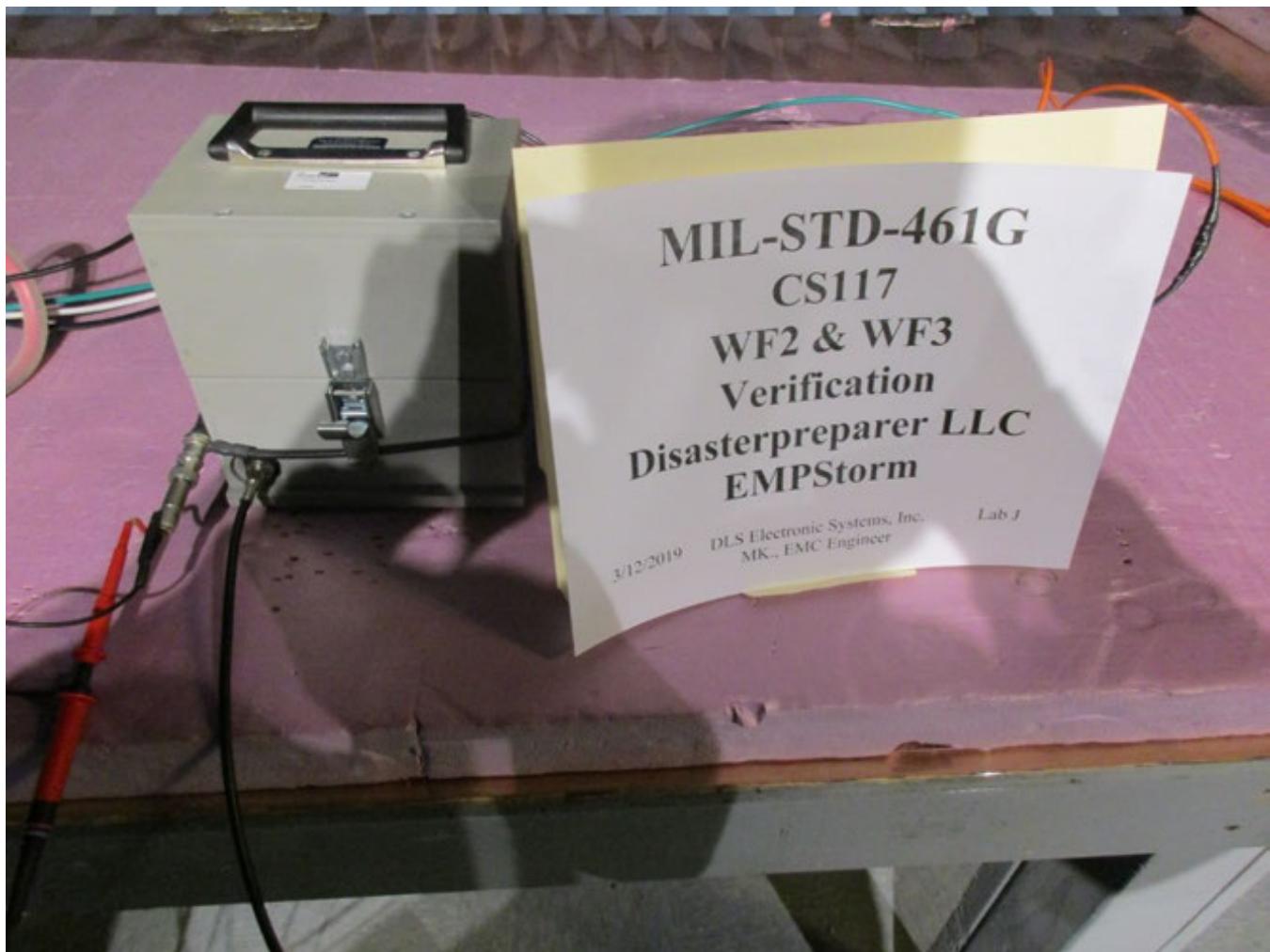
No events were observed.



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

6.0 CABLE BUNDLE PHOTOS TAKEN DURING TESTING



CS117 WF2 and WF3 OC Verification



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

6.0 CABLE BUNDLE PHOTOS TAKEN DURING TESTING



CS117 WF4 OC Verification



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

6.0 CABLE BUNDLE PHOTOS TAKEN DURING TESTING



CS117 WF1 and WF5A Test



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

6.0 CABLE BUNDLE PHOTOS TAKEN DURING TESTING



CS117 WF2 and WF3 Test



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

6.0 CABLE BUNDLE PHOTOS TAKEN DURING TESTING



CS117 WF4 Test



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

TABLE 1 / TEST INSTRUMENTATION

Description	Manufacturer	Model Number	Serial Number	Range	Cal On	Cal Due Dates
LISN, 24 Amp	Solar Electronics	8028-50-BP-24-BNC	098870	10 kHz-100 MHz	9/13/2018	9/13/2019
LISN, 24 Amp	Solar Electronics	8028-50-BP-24-BNC	1010159	10 kHz-100 MHz	9/7/2018	9/7/2019
Oscilloscope, Digitalz	LeCroy	WavePro 7200A	LCRY0705N 13389	2 GHz	6/21/2018	6/21/2019
Probe, Current, Rogowski	PEM	CWT 3R	24723-22547	1 kHz/600A	4/6/2018	4/6/2019

All primary equipment is calibrated against known reference standards with a verified traceable path to NIST.

TABLE 2 / TEST EQUIPMENT

Description	Manufacturer	Model Number	Serial Number	Range
Generator, Impulse	EMC Partner	MIG-OS-MB	457	N/A
Generator, Transient	EMC Partner	MIG0600MS	462 & 463	N/A
Transformer, Coupling	EMC Partner	CN-GI-CI	016	N/A
Transformer, Coupling	EMC Partner	CN-G1-CI-V	012	N/A
Transformer, Coupling	EMC Partner	CN-MIG-BTI	021	N/A

The above test equipment is verified upon use.



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

CS117

CABLE BUNDLE WF2

VERIFICATION DATA SHEETS



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 2:10:54 PM

MS WF2 Open Circuit Verification

1st 750V/1500A

Sub 375V/375A

T1= 340ns Max

T2= 6.4us (+/-20%)

Timing 10-200ms

MS WF2 Open Circuit Verification - Positive Timing 1-10

Page 1 of 2



TELEDYNE LECROY

3/12/2019 2:29:14 PM



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 2:10:54 PM

MS WF2 Open Circuit Verification

1st 750V/1500A

Sub 375V/375A

T1= 340ns Max

T2= 6.4us (+/-20%)

Timing 10-200ms

MS WF2 Open Circuit Verification - Positive Timing 1-10

Page 2 of 2

Channel Status

		C2
Vertical	V / Div	200 V
	Offset	-630.0 V
	Coupling	AC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

	Time / Div	500 ns	Sampling Rate	20 GS/s	Segments	14
Horizontal	Time / Pt	50 ps	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-2.24 μs		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	142 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 2:37:47 PM

MS WF2 Open Circuit Verification

1st 750V/1500A

Sub 375V/375A

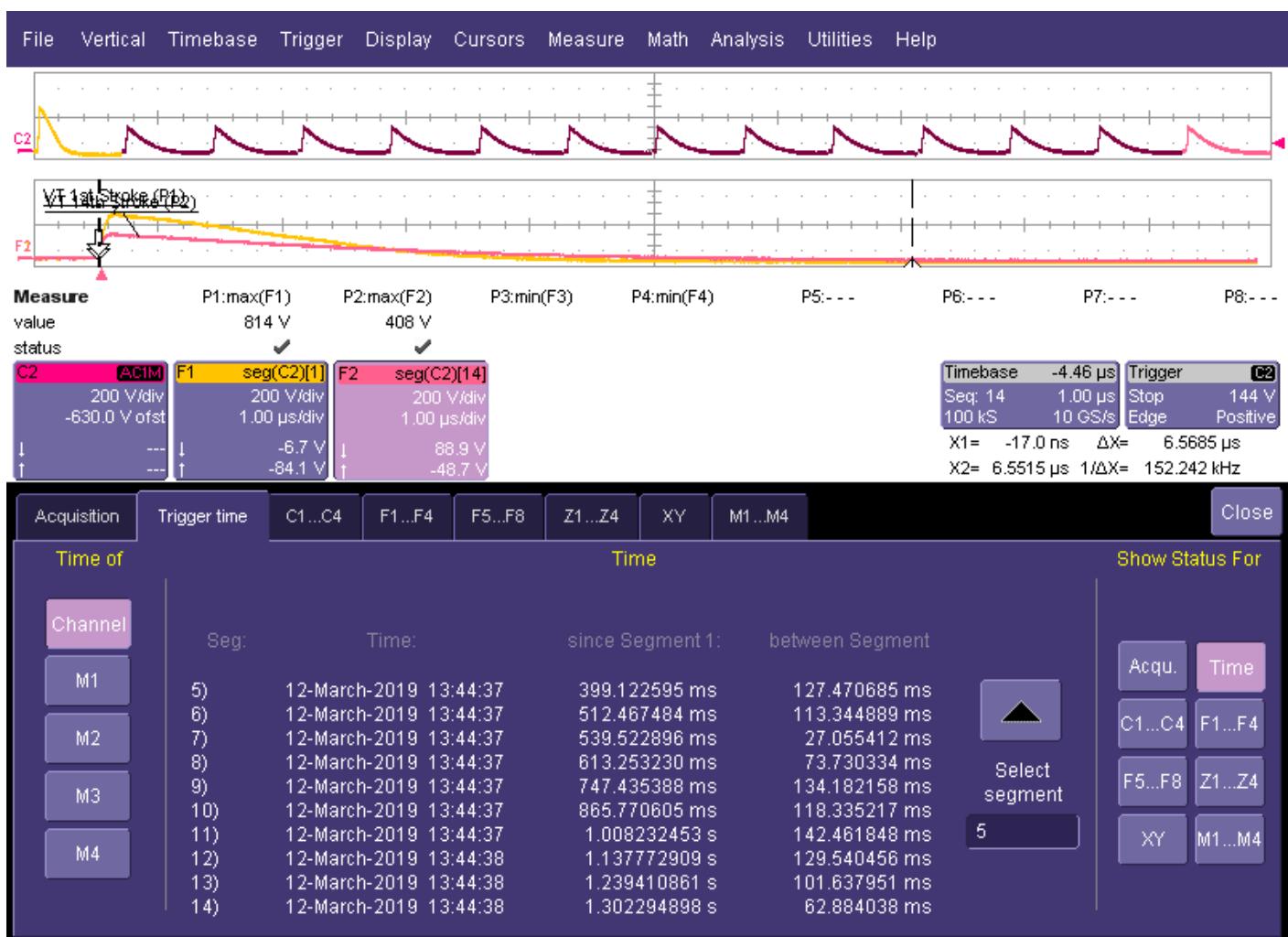
T1= 340ns Max

T2= 6.4us (+/-20%)

Timing 10-200ms

MS WF2 Open Circuit Verification - Positive Timing 5-14

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1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 2:37:47 PM

MS WF2 Open Circuit Verification

1st 750V/1500A

Sub 375V/375A

T1= 340ns Max

T2= 6.4us (+/-20%)

Timing 10-200ms

MS WF2 Open Circuit Verification - Positive Timing 5-14

Page 2 of 2

Channel Status

C2	
Vertical	V / Div
	Offset
	Coupling
	BW-Limit
	Probe
	Sweeps

Acquisition Status

	Time / Div	1.00 μ s	Sampling Rate	10 GS/s	Segments	14
Horizontal	Time / Pt	100 ps	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-4.46 μ s		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	144 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 2:42:27 PM

MS WF2 Open Circuit Verification

1st 750V/1500A

Sub 375V/375A

T1= 340ns Max

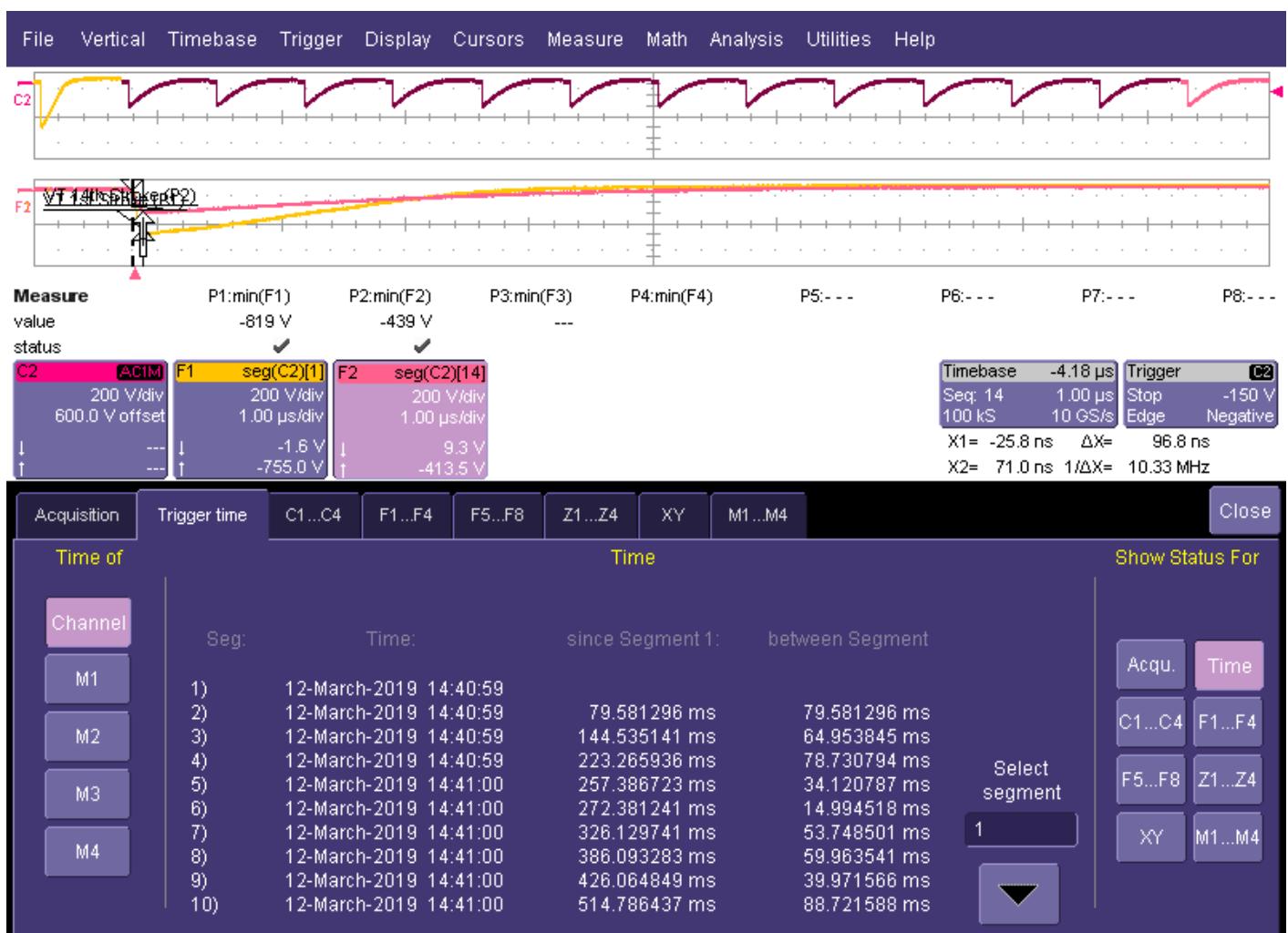
T2= 6.4us (+/-20%)

Timing 10-200ms

MS WF2 Open Circuit Verification - Negative Timing 1-10



Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 2:42:27 PM

MS WF2 Open Circuit Verification

1st 750V/1500A

Sub 375V/375A

T1= 340ns Max

T2= 6.4us (+/-20%)

Timing 10-200ms

MS WF2 Open Circuit Verification - Negative Timing 1-10

Page 2 of 2

Channel Status

	C1	C2
Vertical	V / Div	---
	Offset	600.0 V
	Coupling	AC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

	Time / Div	1.00 μs	Sampling Rate	10 GS/s	Segments	14
Horizontal	Time / Pt	100 ps	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-4.18 μs		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-150 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 2:45:11 PM

MS WF2 Open Circuit Verification

1st 750V/1500A

Sub 375V/375A

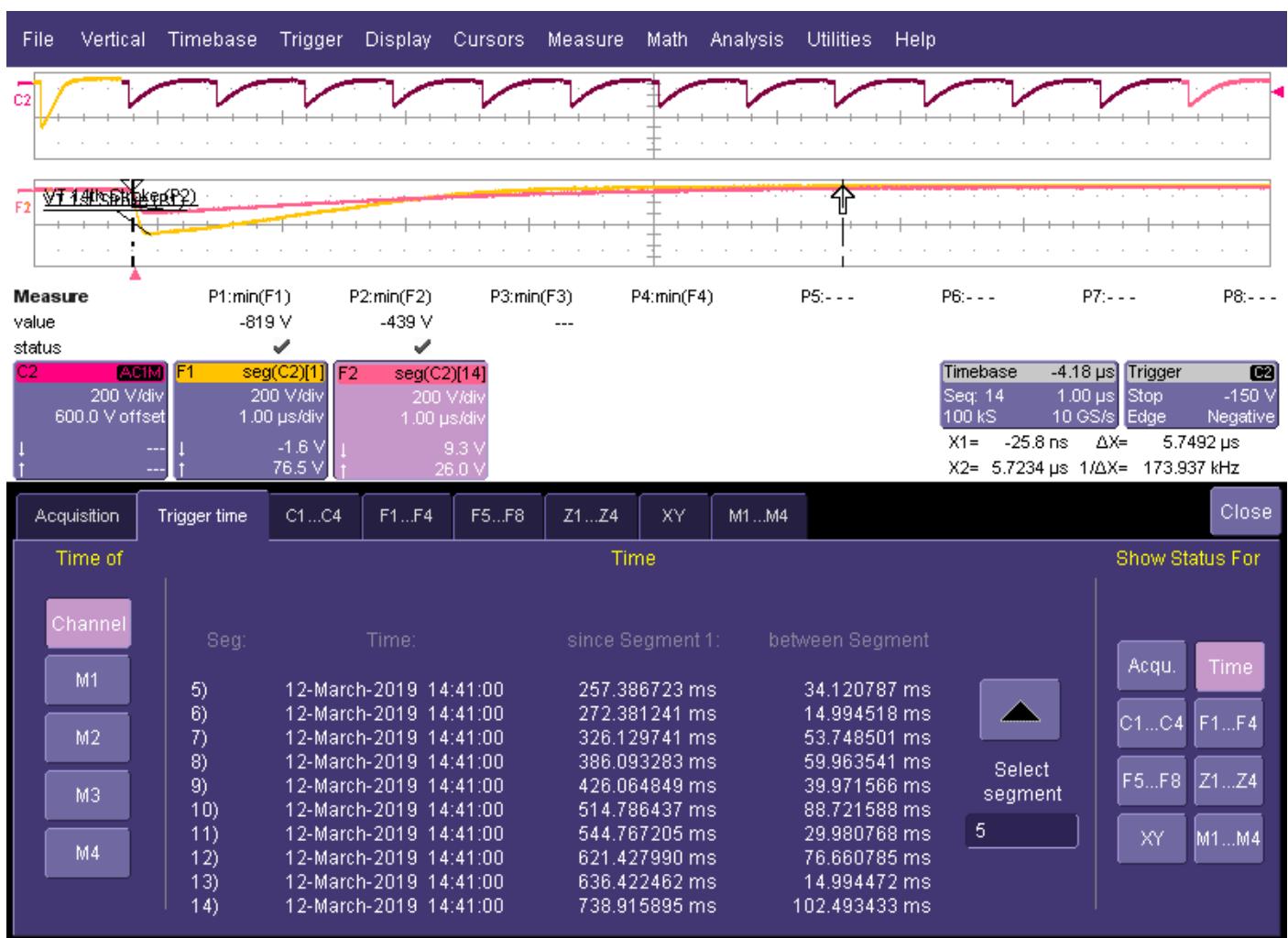
T1= 340ns Max

T2= 6.4us (+/-20%)

Timing 10-200ms

MS WF2 Open Circuit Verification - Negative Timing 5-14

Page 1 of 2



TELEDYNE LECROY

3/12/2019 2:45:39 PM



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 2:45:11 PM

MS WF2 Open Circuit Verification

1st 750V/1500A

Sub 375V/375A

T1= 340ns Max

T2= 6.4us (+/-20%)

Timing 10-200ms

MS WF2 Open Circuit Verification - Negative Timing 5-14

Page 2 of 2

Channel Status

	C1	C2
Vertical	V / Div	---
	Offset	600.0 V
	Coupling	AC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

	Time / Div	1.00 μs	Sampling Rate	10 GS/s	Segments	14
Horizontal	Time / Pt	100 ps	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-4.18 μs		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-150 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

CS117

CABLE BUNDLE WF3, MS

VERIFICATION DATA SHEETS



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 1:27:10 PM

MS WF3 1MHz OC Verification

1st 1500V/300A

Sub 750V/150A

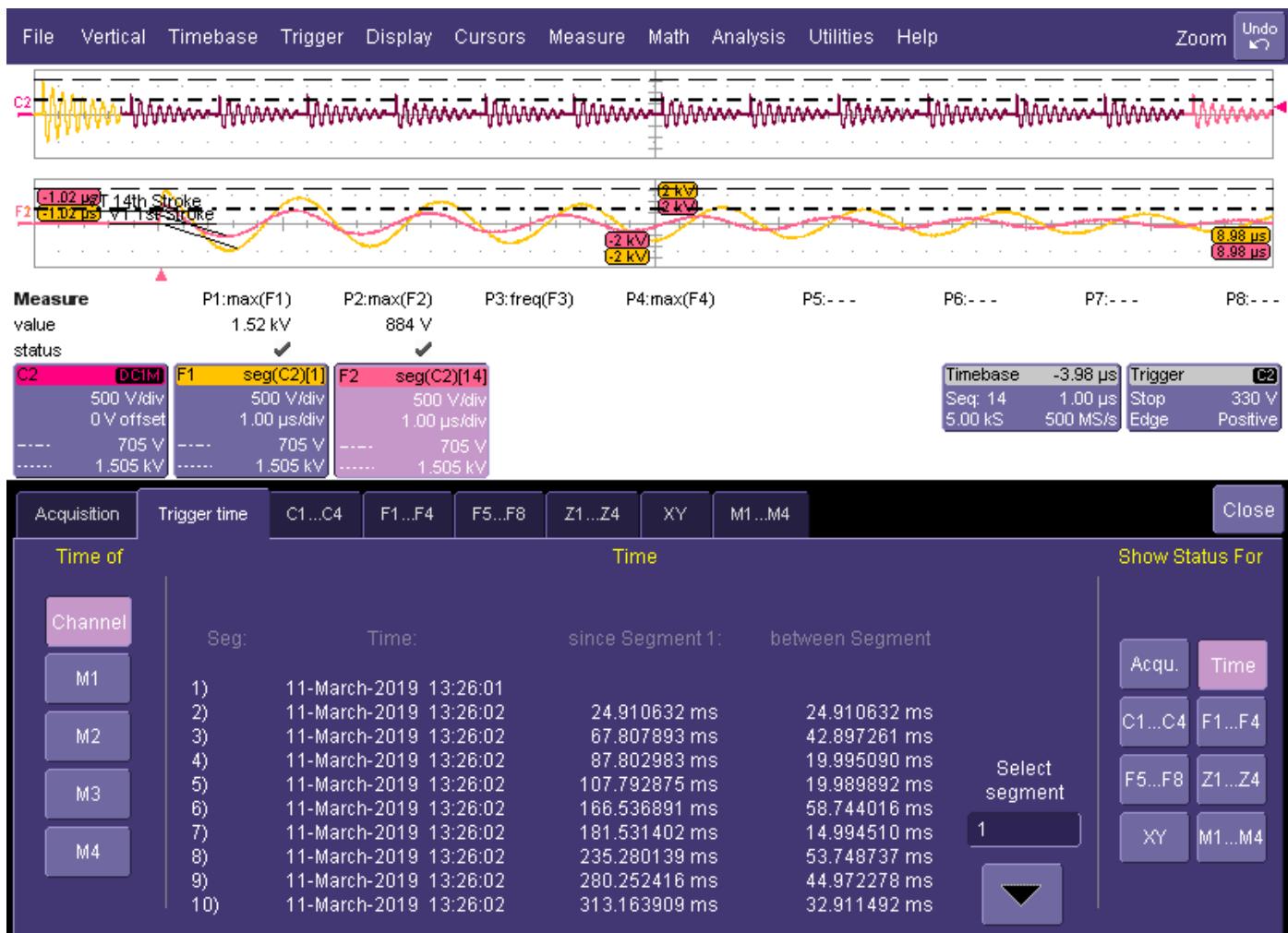
f=1MHz +/-20%

5th-25%-75% of 1st

Timing 10 to 200ms

MS WF3 1MHz OC Verification Pos Timing 1-10

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 1:27:10 PM

MS WF3 1MHz OC Verification

1st 1500V/300A

Sub 750V/150A

f=1MHz +/-20%

5th-25%-75% of 1st

Timing 10 to 200ms

MS WF3 1MHz OC Verification Pos Timing 1-10

Page 2 of 2

Channel Status

C2	
Vertical	V / Div
	Offset
	Coupling
	BW-Limit
	Probe
	Sweeps

Acquisition Status

Horizontal	Time / Div	1.00 μs	Sampling Rate	500 MS/s	Segments	14
	Time / Pt	2.000 ns	Sampling Mode	Sequence		
	Pts / Div	500.0 S	Trigger Delay	-3.98 μs		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	330 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 1:28:17 PM

MS WF3 1MHz OC Verification

1st 1500V/300A

Sub 750V/150A

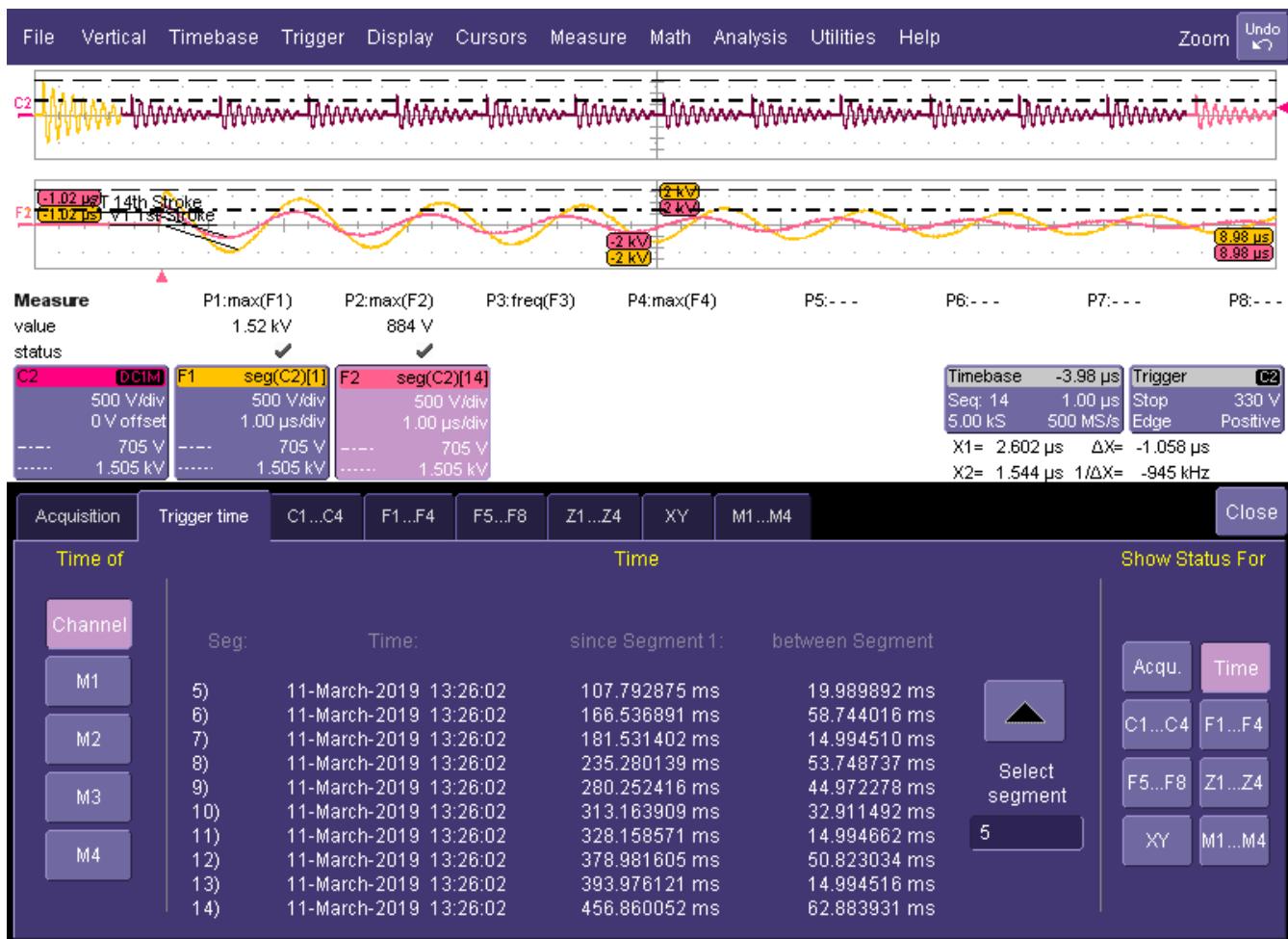
f=1MHz +/-20%

5th-25%-75% of 1st

Timing 10 to 200ms

MS WF3 1MHz OC Verification Pos Timing 5-14

Page 1 of 2



TELEDYNE LECROY

3/11/2019 1:28:35 PM



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 1:28:17 PM

MS WF3 1MHz OC Verification

1st 1500V/300A

Sub 750V/150A

f=1MHz +/-20%

5th-25%-75% of 1st

Timing 10 to 200ms

MS WF3 1MHz OC Verification Pos Timing 5-14

Page 2 of 2

Channel Status

C2	
Vertical	V / Div
	Offset
	Coupling
	BW-Limit
	Probe
	Sweeps

Acquisition Status

Horizontal	Time / Div	1.00 μs	Sampling Rate	500 MS/s	Segments	14
	Time / Pt	2.000 ns	Sampling Mode	Sequence		
	Pts / Div	500.0 S	Trigger Delay	-3.98 μs		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	330 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 1:33:39 PM

MS WF3 1MHz OC Verification

1st 1500V/300A

Sub 750V/150A

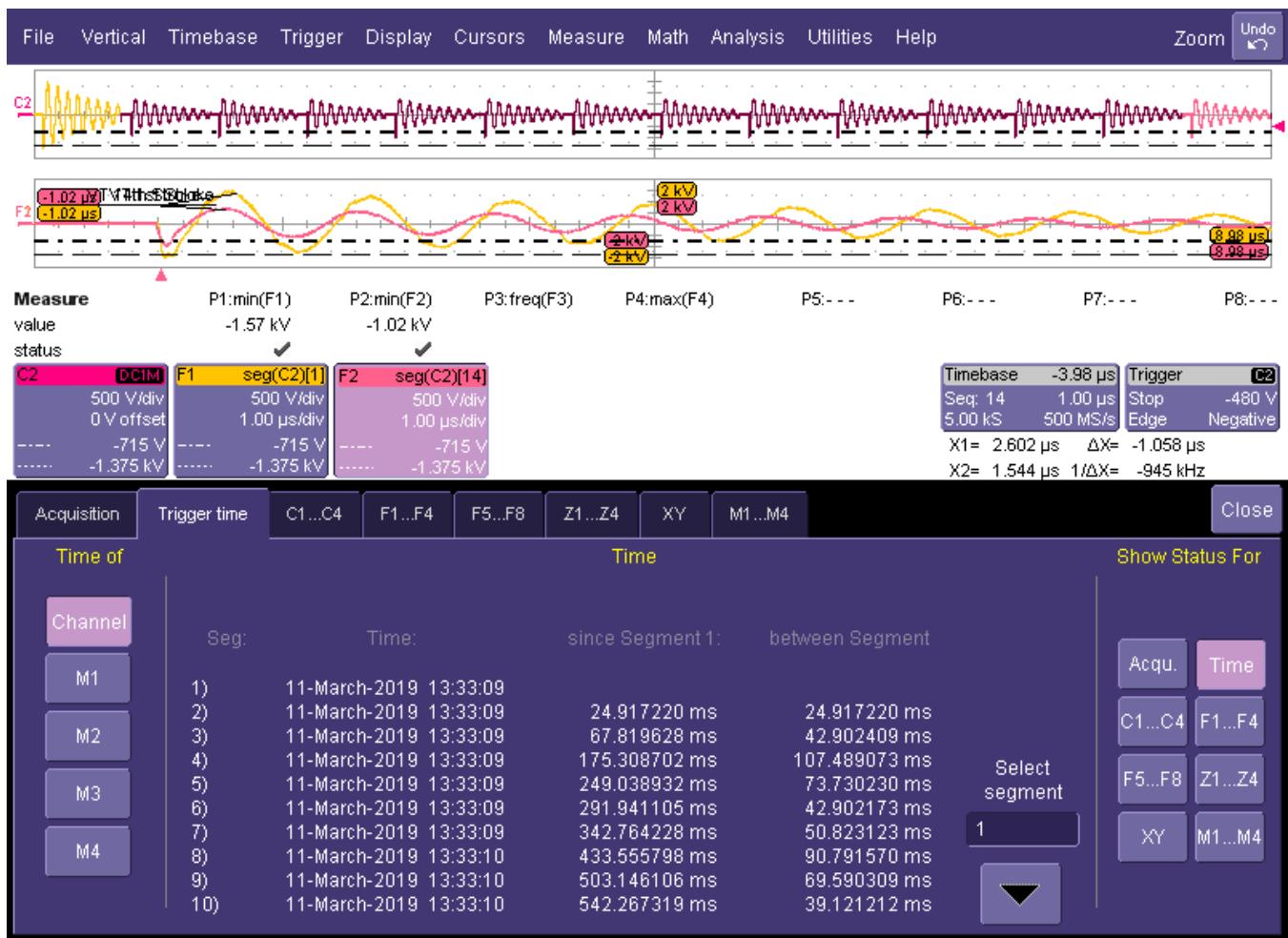
f=1MHz +/-20%

5th-25%-75% of 1st

Timing 10 to 200ms

MS WF3 1MHz OC Verification Neg Timing 1-10

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 1:33:39 PM

MS WF3 1MHz OC Verification

1st 1500V/300A

Sub 750V/150A

f=1MHz +/-20%

5th-25%-75% of 1st

Timing 10 to 200ms

MS WF3 1MHz OC Verification Neg Timing 1-10

Page 2 of 2

Channel Status

C2	
Vertical	V / Div
	Offset
	Coupling
	BW-Limit
	Probe
	Sweeps

Acquisition Status

Horizontal	Time / Div	1.00 μ s	Sampling Rate	500 MS/s	Segments	14
	Time / Pt	2.000 ns	Sampling Mode	Sequence		
	Pts / Div	500.0 S	Trigger Delay	-3.98 μ s		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-480 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 1:34:49 PM

MS WF3 1MHz OC Verification

1st 1500V/300A

Sub 750V/150A

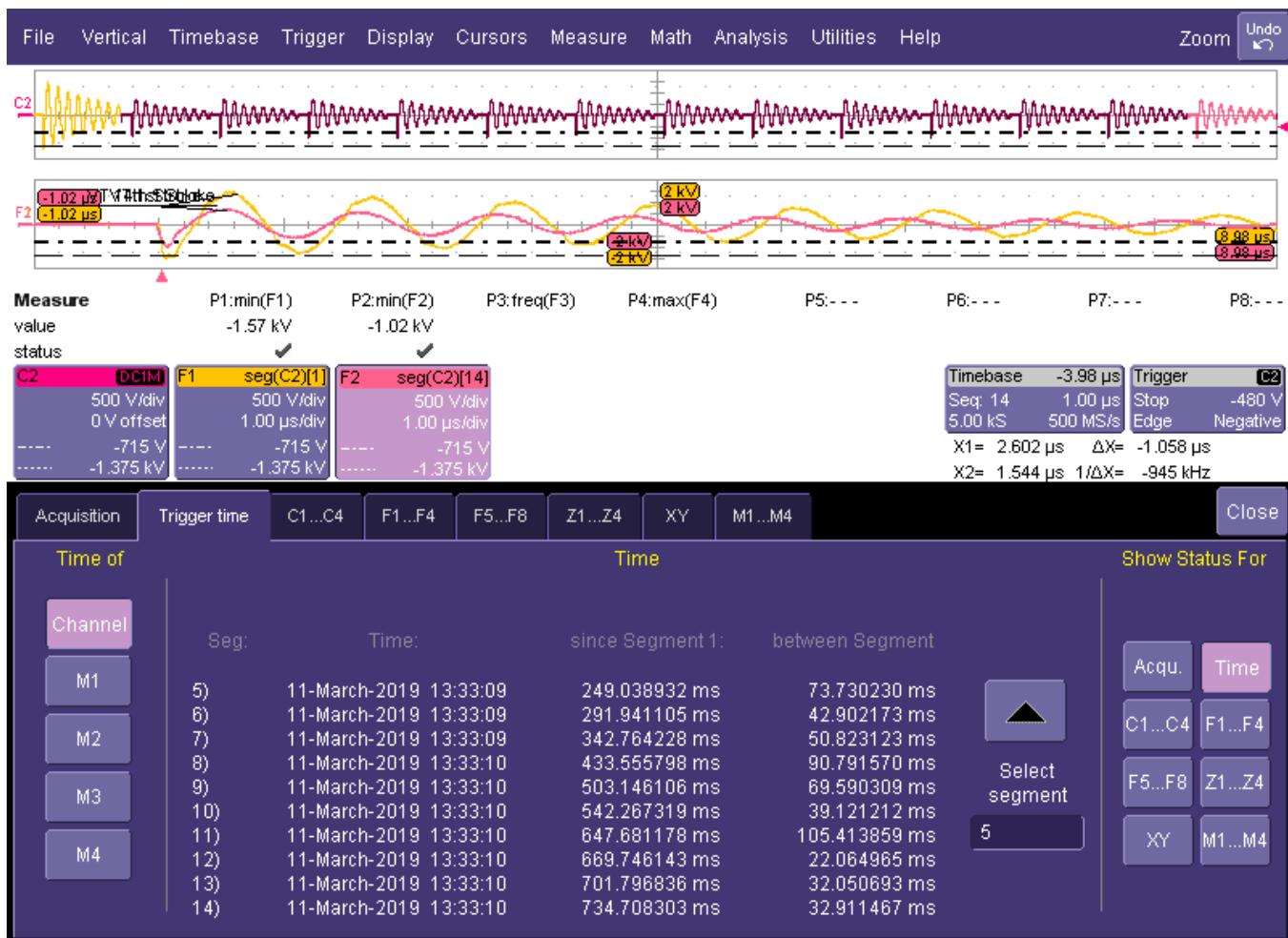
f=1MHz +/-20%

5th-25%-75% of 1st

Timing 10 to 200ms

MS WF3 1MHz OC Verification Neg Timing 5-14

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 1:34:49 PM

MS WF3 1MHz OC Verification

1st 1500V/300A

Sub 750V/150A

f=1MHz +/-20%

5th-25%-75% of 1st

Timing 10 to 200ms

MS WF3 1MHz OC Verification Neg Timing 5-14

Page 2 of 2

Channel Status

C2	
Vertical	V / Div
	Offset
	Coupling
	BW-Limit
	Probe
	Sweeps

Acquisition Status

Horizontal	Time / Div	1.00 μ s	Sampling Rate	500 MS/s	Segments	14
	Time / Pt	2.000 ns	Sampling Mode	Sequence		
	Pts / Div	500.0 S	Trigger Delay	-3.98 μ s		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-480 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 11:27:29 AM

MS WF3 10MHz OC Verification

1st 1500V/300A

Sub 750V/150A

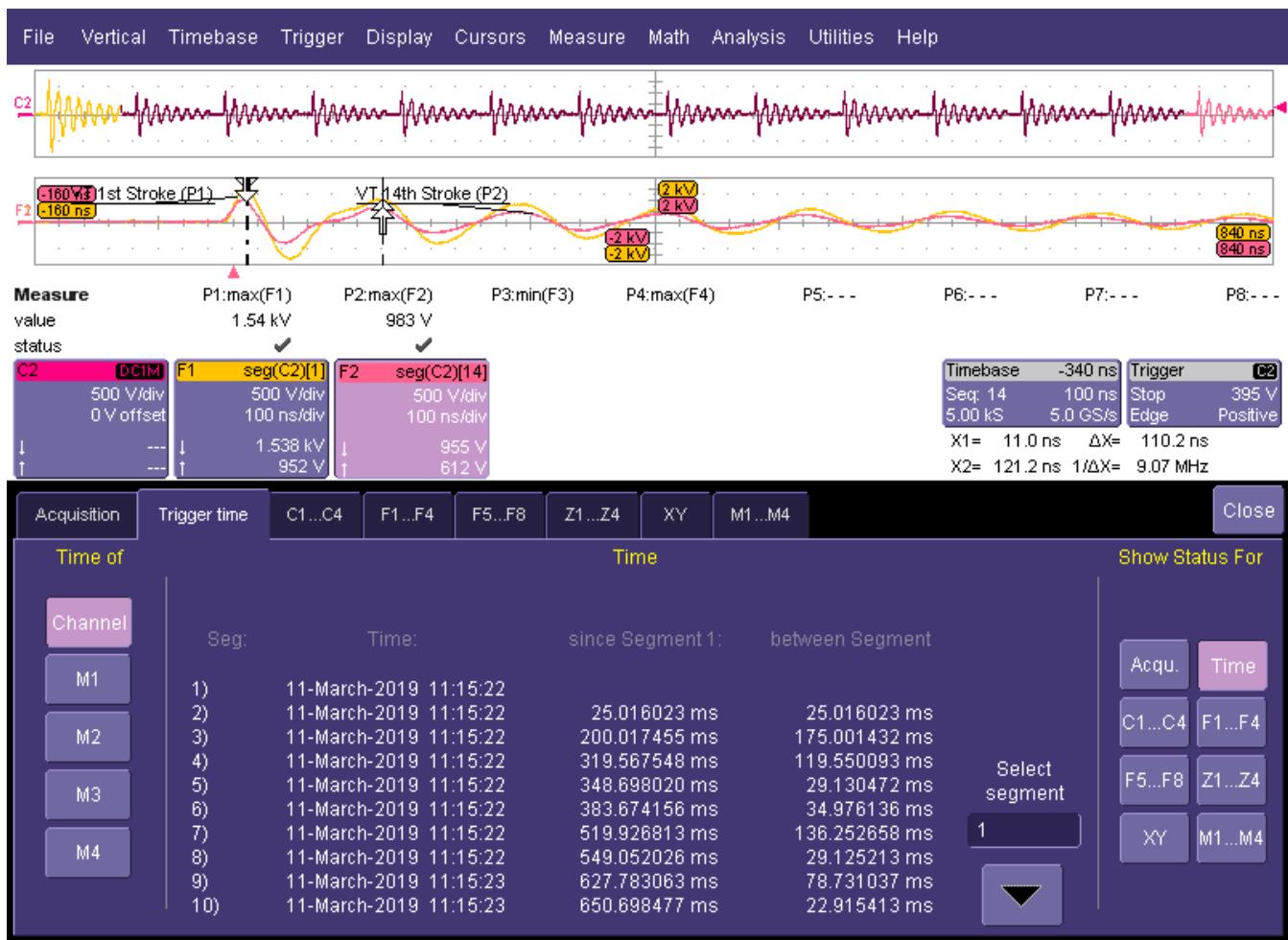
f=10MHz +/-20%

5th-25%-75% of 1st

Timing 10 to 200ms

MS WF3 10MHz OC Verification Pos Timing 1-10

Page 1 of 2



TELEDYNE LECROY

3/11/2019 11:28:01 AM



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 11:27:29 AM

MS WF3 10MHz OC Verification

1st 1500V/300A

Sub 750V/150A

f=10MHz +/-20%

5th-25%-75% of 1st

Timing 10 to 200ms

MS WF3 10MHz OC Verification Pos Timing 1-10

Page 2 of 2

Channel Status

C2	
Vertical	V / Div
	Offset
	Coupling
	BW-Limit
	Probe
	Sweeps

Acquisition Status

Horizontal	Time / Div	100 ns	Sampling Rate	5.0 GS/s	Segments	14
	Time / Pt	200 ps	Sampling Mode	Sequence		
	Pts / Div	500.0 S	Trigger Delay	-340 ns		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	395 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 11:29:09 AM

MS WF3 10MHz OC Verification

1st 1500V/300A

Sub 750V/150A

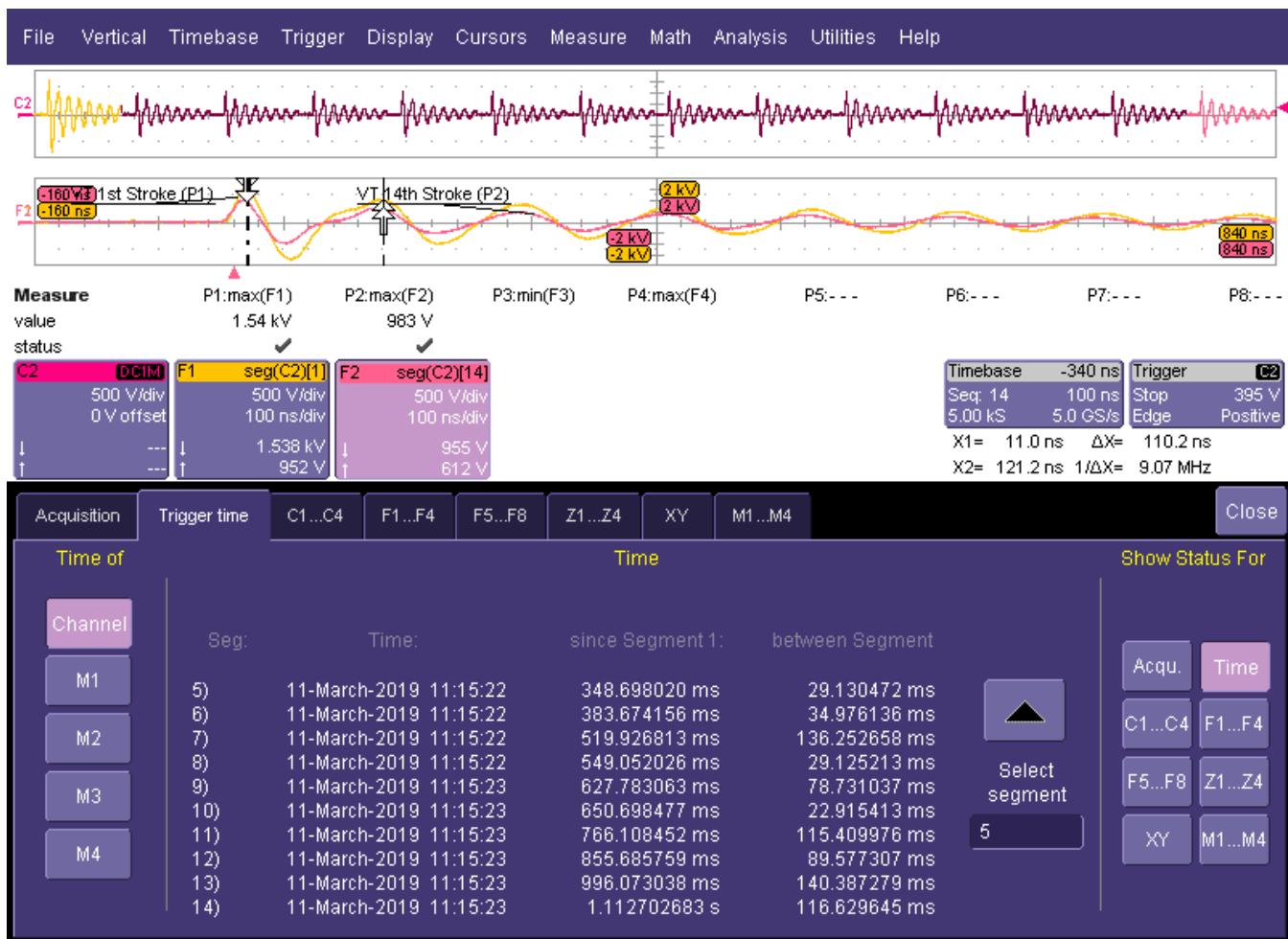
f=10MHz +/-20%

5th-25%-75% of 1st

Timing 10 to 200ms

MS WF3 10MHz OC Verification Pos Timing 5-14

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 11:29:09 AM

MS WF3 10MHz OC Verification

1st 1500V/300A

Sub 750V/150A

f=10MHz +/-20%

5th-25%-75% of 1st

Timing 10 to 200ms

MS WF3 10MHz OC Verification Pos Timing 5-14

Page 2 of 2

Channel Status

C2	
Vertical	V / Div
	Offset
	Coupling
	BW-Limit
	Probe
	Sweeps

Acquisition Status

Horizontal	Time / Div	100 ns	Sampling Rate	5.0 GS/s	Segments	14
	Time / Pt	200 ps	Sampling Mode	Sequence		
	Pts / Div	500.0 S	Trigger Delay	-340 ns		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	395 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 1:09:17 PM

MS WF3 10MHz OC Verification

1st 1500V/300A

Sub 750V/150A

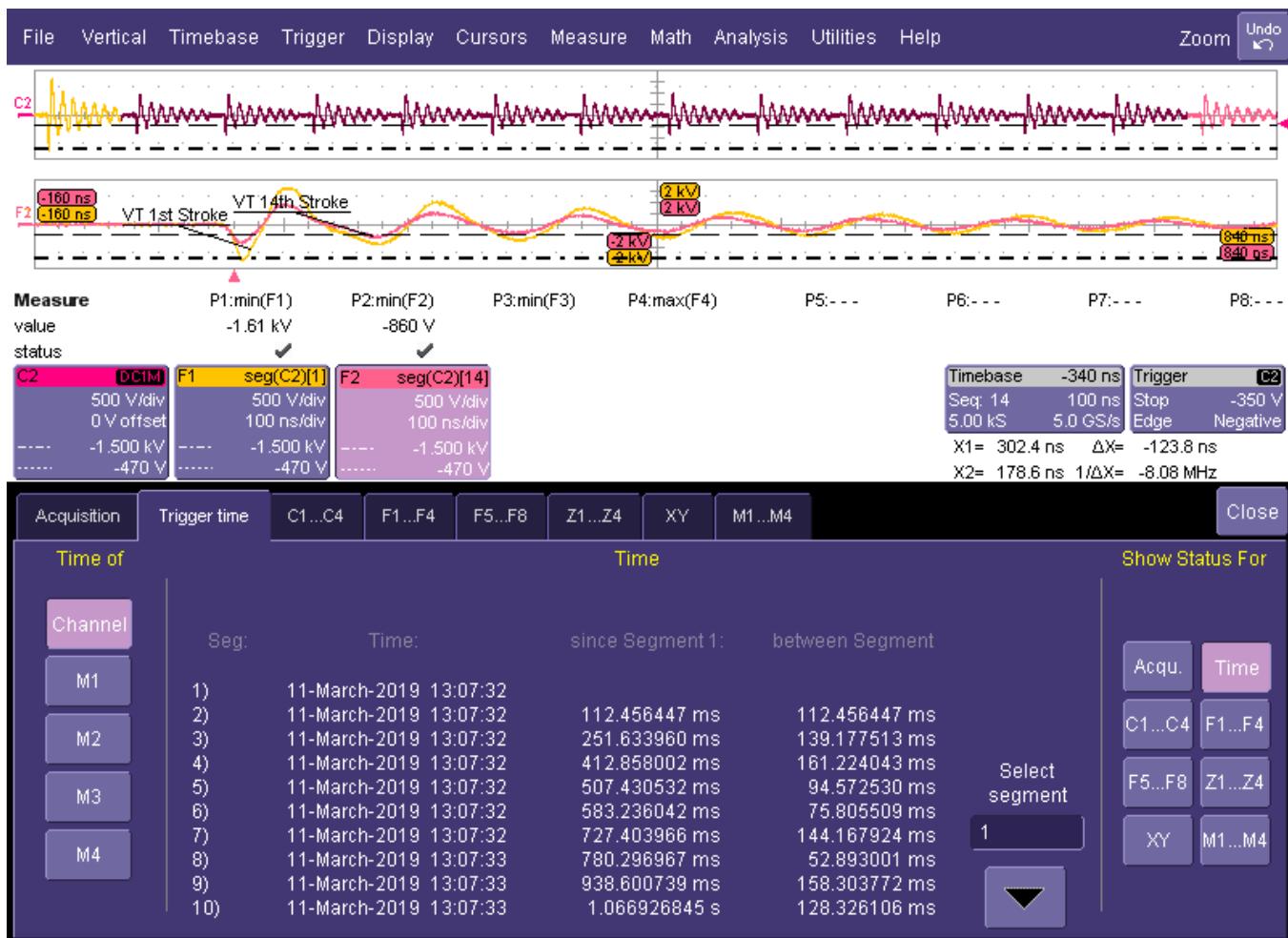
f=10MHz +/-20%

5th-25%-75% of 1st

Timing 10 to 200ms

MS WF3 10MHz OC Verification Neg Timing 1-10

Page 1 of 2



TELEDYNE LECROY

3/11/2019 1:09:44 PM



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 1:09:17 PM

MS WF3 10MHz OC Verification

1st 1500V/300A

Sub 750V/150A

f=10MHz +/-20%

5th-25%-75% of 1st

Timing 10 to 200ms

MS WF3 10MHz OC Verification Neg Timing 1-10

Page 2 of 2

Channel Status

C2	
Vertical	V / Div
	Offset
	Coupling
	BW-Limit
	Probe
	Sweeps

Acquisition Status

Horizontal	Time / Div	100 ns	Sampling Rate	5.0 GS/s	Segments	14
	Time / Pt	200 ps	Sampling Mode	Sequence		
	Pts / Div	500.0 S	Trigger Delay	-340 ns		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-350 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 1:10:25 PM

MS WF3 10MHz OC Verification

1st 1500V/300A

Sub 750V/150A

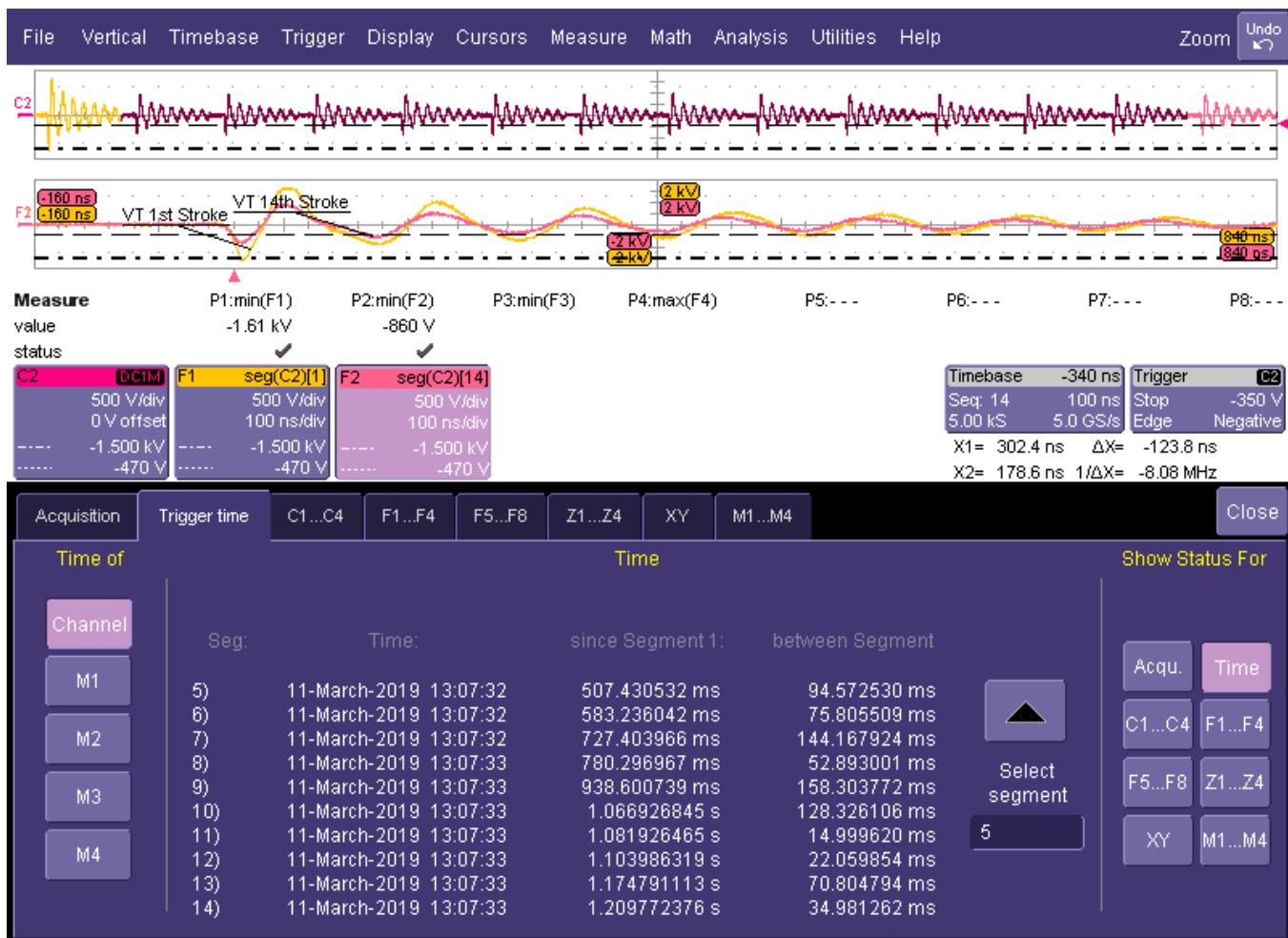
f=10MHz +/-20%

5th-25%-75% of 1st

Timing 10 to 200ms

MS WF3 10MHz OC Verification Neg Timing 5-14

Page 1 of 2



TELEDYNE LECROY

3/11/2019 1:10:57 PM



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 1:10:25 PM

MS WF3 10MHz OC Verification

1st 1500V/300A

Sub 750V/150A

f=10MHz +/-20%

5th-25%-75% of 1st

Timing 10 to 200ms

MS WF3 10MHz OC Verification Neg Timing 5-14

Page 2 of 2

Channel Status

C2	
Vertical	V / Div
	Offset
	Coupling
	BW-Limit
	Probe
	Sweeps

Acquisition Status

Horizontal	Time / Div	100 ns	Sampling Rate	5.0 GS/s	Segments	14
	Time / Pt	200 ps	Sampling Mode	Sequence		
	Pts / Div	500.0 S	Trigger Delay	-340 ns		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-350 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

CS117

CABLE BUNDLE WF3, MB

VERIFICATION DATA SHEETS



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 12:52:07 PM

MB WF3 1MHz OC Verification

900V/15A

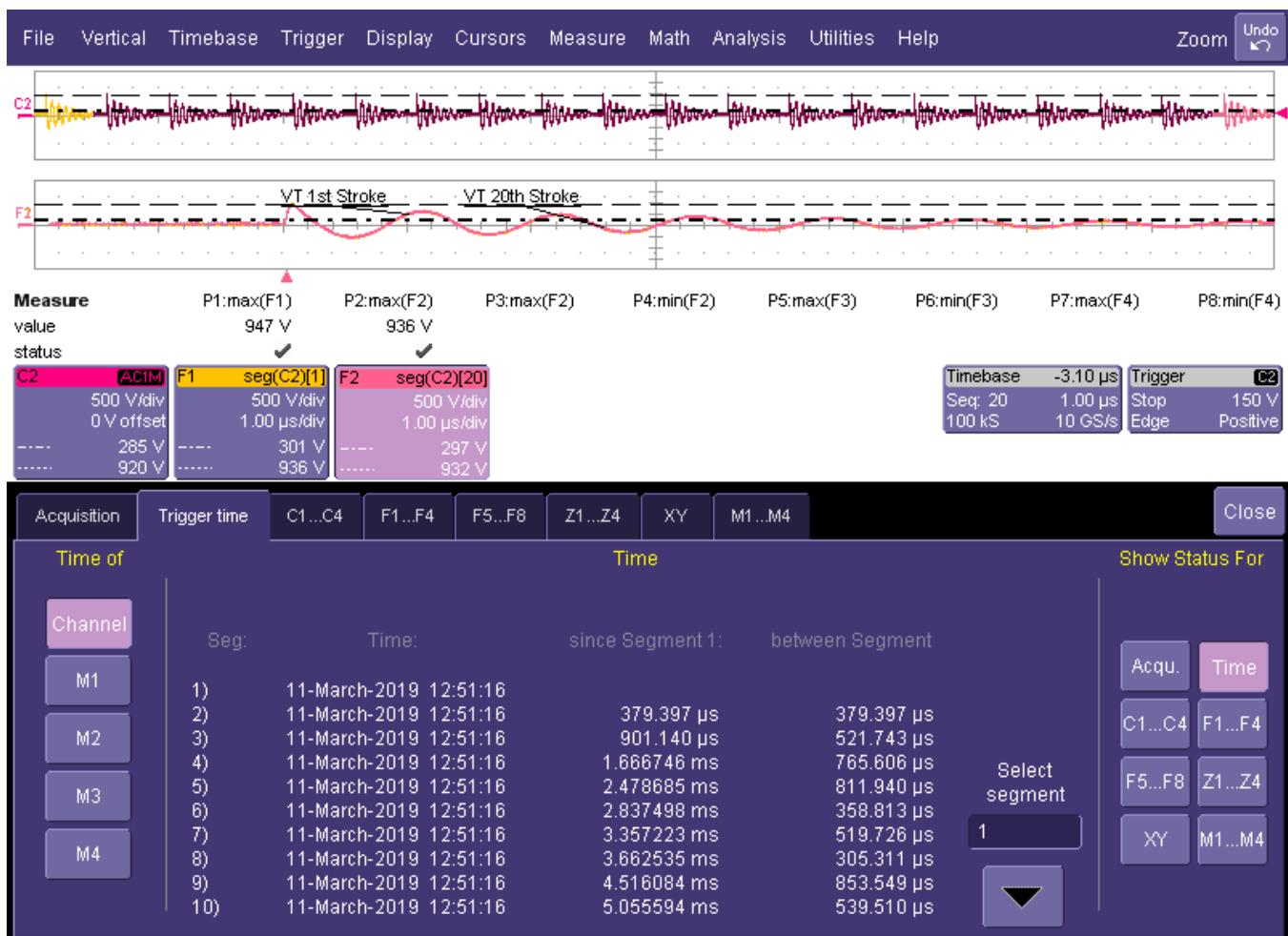
f=1MHz +/-20%

5th-25%-75% of 1st

Timing 50 to 1000us

MB WF3 1MHz OC Verification Pos Timing 1-10

Page 1 of 2



TELEDYNE LECROY

3/11/2019 12:52:46 PM



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 12:52:07 PM

MB WF3 1MHz OC Verification

900V/15A

f=1MHz +/-20%

5th-25%-75% of 1st

Timing 50 to 1000us

MB WF3 1MHz OC Verification Pos Timing 1-10

Page 2 of 2

Channel Status

C2		
Vertical	V / Div	500 V
	Offset	0 V
	Coupling	AC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

	Time / Div	1.00 μs	Sampling Rate	10 GS/s	Segments	20
Horizontal	Time / Pt	100 ps	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-3.10 μs		
	Mode	Stop	Slope	Positive		
Trigger	Type	Edge	Level	150 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 12:53:18 PM

MB WF3 1MHz OC Verification

900V/15A

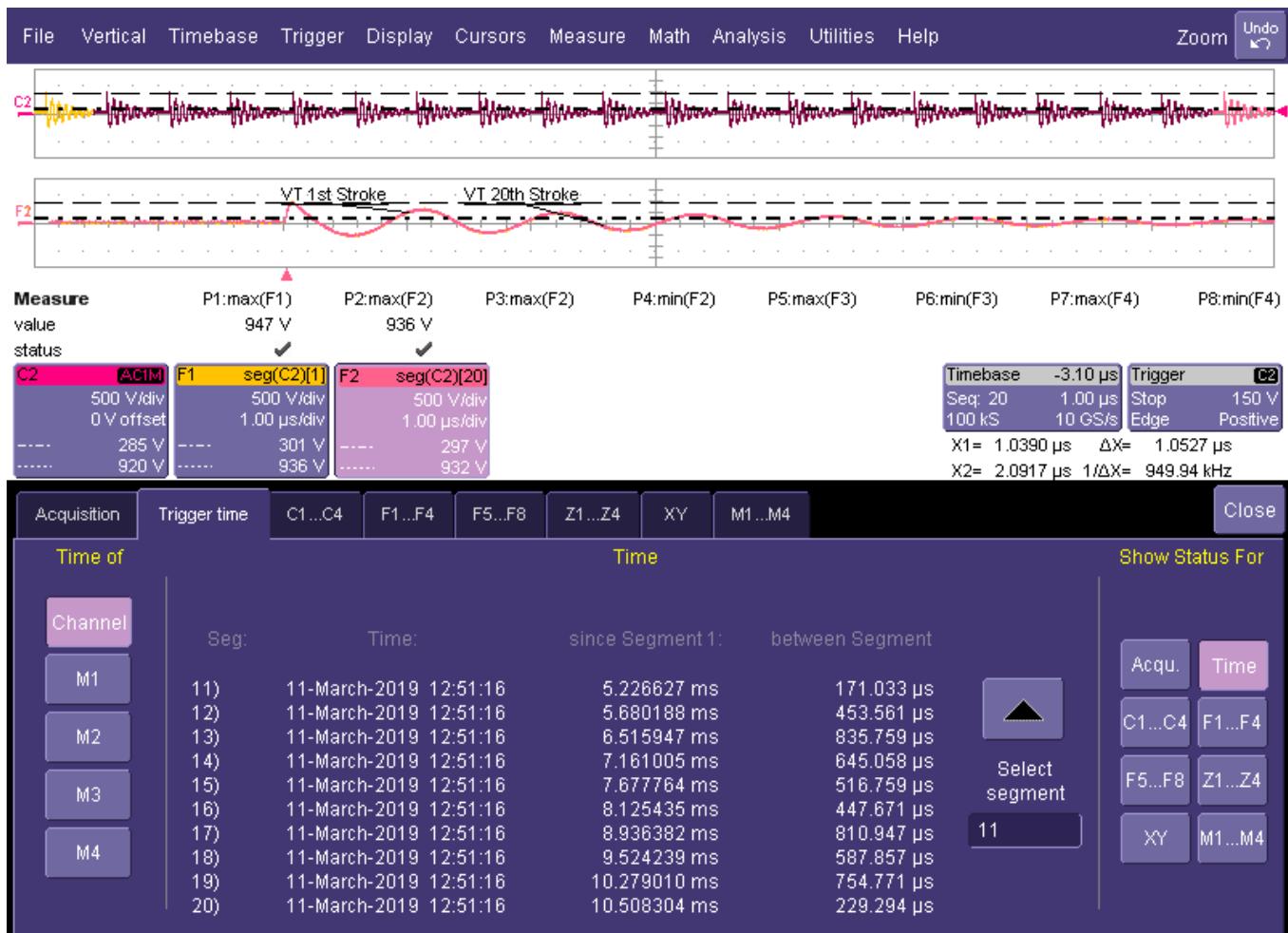
f=1MHz +/-20%

5th-25%-75% of 1st

Timing 50 to 1000us

MB WF3 1MHz OC Verification Pos Timing 11-20

Page 1 of 2



TELEDYNE LECROY

3/11/2019 12:53:52 PM



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 12:53:18 PM

MB WF3 1MHz OC Verification

900V/15A

f=1MHz +/-20%

5th-25%-75% of 1st

Timing 50 to 1000us

MB WF3 1MHz OC Verification Pos Timing 11-20

Page 2 of 2

Channel Status

C2		
Vertical	V / Div	500 V
	Offset	0 V
	Coupling	AC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

	Time / Div	1.00 μs	Sampling Rate	10 GS/s	Segments	20
Horizontal	Time / Pt	100 ps	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-3.10 μs		
	Mode	Stop	Slope	Positive		
Trigger	Type	Edge	Level	150 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 12:55:44 PM

MB WF3 1MHz OC Verification

900V/15A

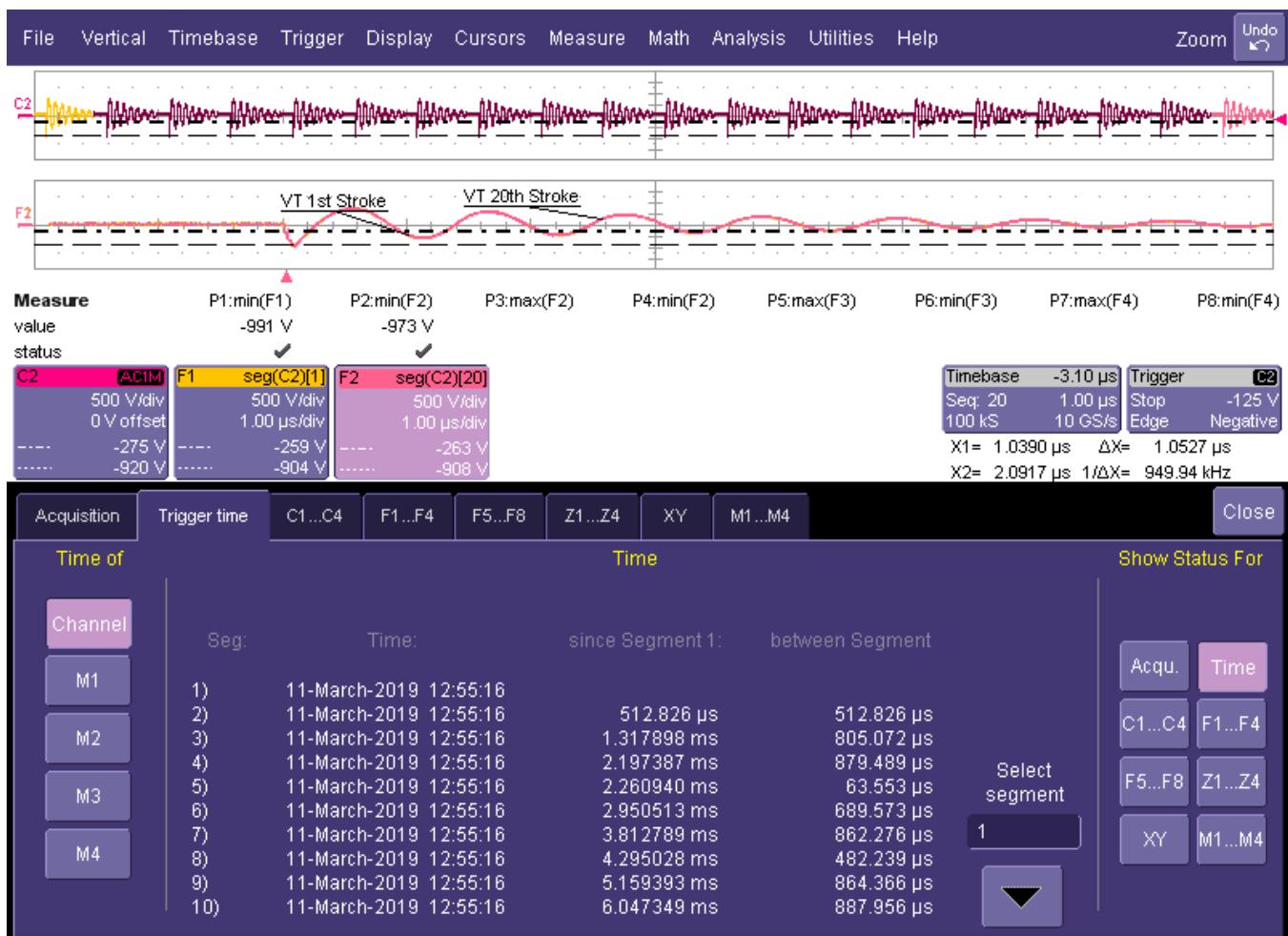
f=1MHz +/-20%

5th-25%-75% of 1st

Timing 50 to 1000us

MB WF3 1MHz OC Verification Neg Timing 1-10

Page 1 of 2



TELEDYNE LECROY

3/11/2019 12:56:18 PM



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 12:55:44 PM

MB WF3 1MHz OC Verification

900V/15A

f=1MHz +/-20%

5th-25%-75% of 1st

Timing 50 to 1000us

MB WF3 1MHz OC Verification Neg Timing 1-10

Page 2 of 2

Channel Status

C2		
Vertical	V / Div	500 V
	Offset	0 V
	Coupling	AC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

Horizontal	Time / Div	1.00 μs	Sampling Rate	10 GS/s	Segments	20
	Time / Pt	100 ps	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-3.10 μs		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-125 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 12:56:57 PM

MB WF3 1MHz OC Verification

900V/15A

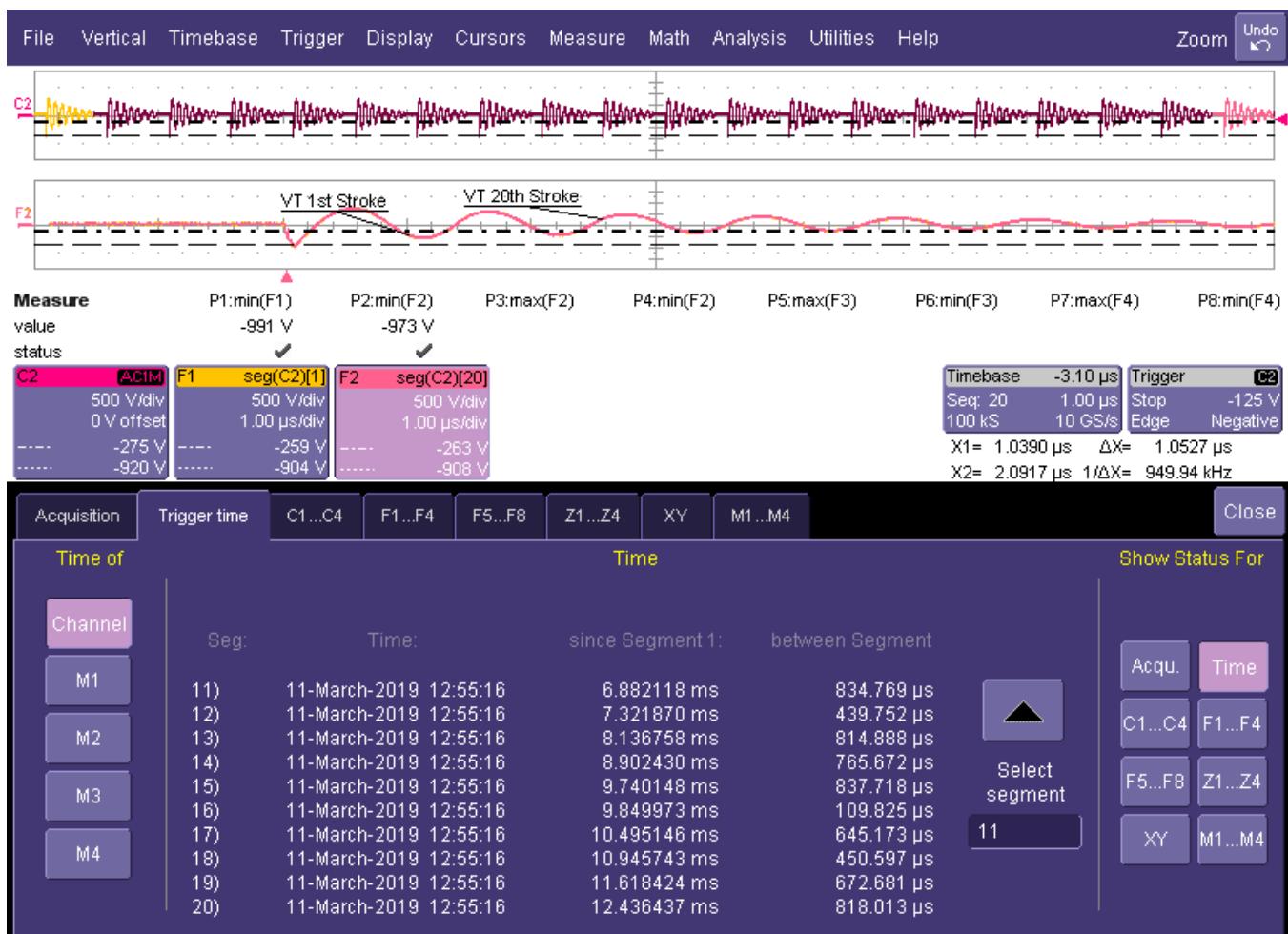
f=1MHz +/-20%

5th-25%-75% of 1st

Timing 50 to 1000us

MB WF3 1MHz OC Verification Neg Timing 11-20

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 12:56:57 PM

MB WF3 1MHz OC Verification

900V/15A

f=1MHz +/-20%

5th-25%-75% of 1st

Timing 50 to 1000us

MB WF3 1MHz OC Verification Neg Timing 11-20

Page 2 of 2

Channel Status

C2		
Vertical	V / Div	500 V
	Offset	0 V
	Coupling	AC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

	Time / Div	1.00 μs	Sampling Rate	10 GS/s	Segments	20
Horizontal	Time / Pt	100 ps	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-3.10 μs		
	Mode	Stop	Slope	Negative		
Trigger	Type	Edge	Level	-125 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 12:32:31 PM

MB WF3 10MHz OC Verification

900V/15A

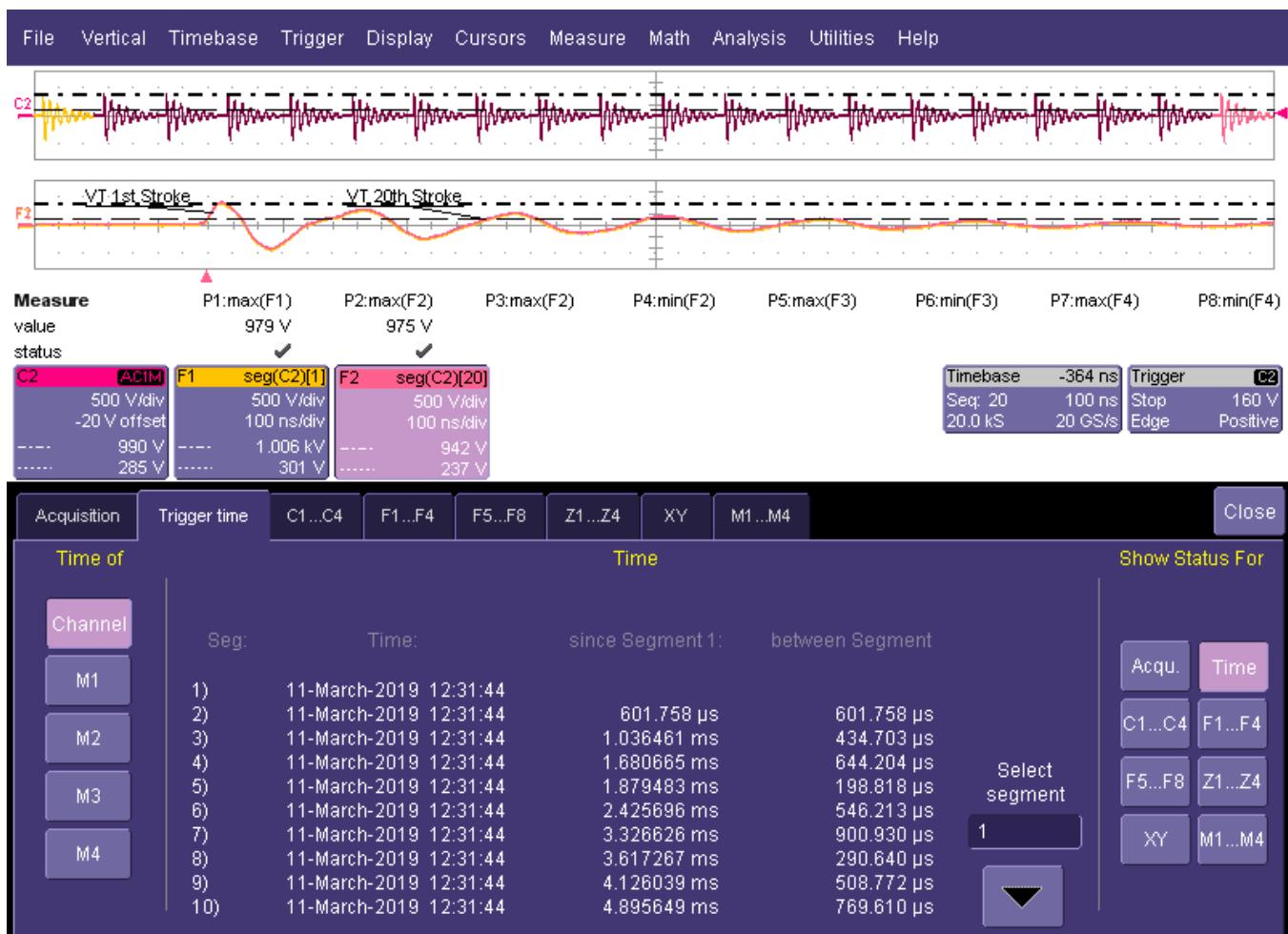
f=10MHz +/-20%

5th-25%-75% of 1st

Timing 50 to 1000us

MB WF3 10MHz OC Verification Pos Timing 1-10

Page 1 of 2



TELEDYNE LECROY

3/11/2019 12:32:54 PM



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 12:32:31 PM

MB WF3 10MHz OC Verification

900V/15A

f=10MHz +/-20%

5th-25%-75% of 1st

Timing 50 to 1000us

MB WF3 10MHz OC Verification Pos Timing 1-10

Page 2 of 2

Channel Status

C2		
Vertical	V / Div	500 V
	Offset	-20 V
	Coupling	AC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

Horizontal	Time / Div	100 ns	Sampling Rate	20 GS/s	Segments	20
	Time / Pt	50 ps	Sampling Mode	Sequence		
Trigger	Pts / Div	2.0000 kS	Trigger Delay	-364 ns		
	Mode	Stop	Slope	Positive		
	Type	Edge	Level	160 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 12:47:29 PM

MB WF3 10MHz OC Verification

900V/15A

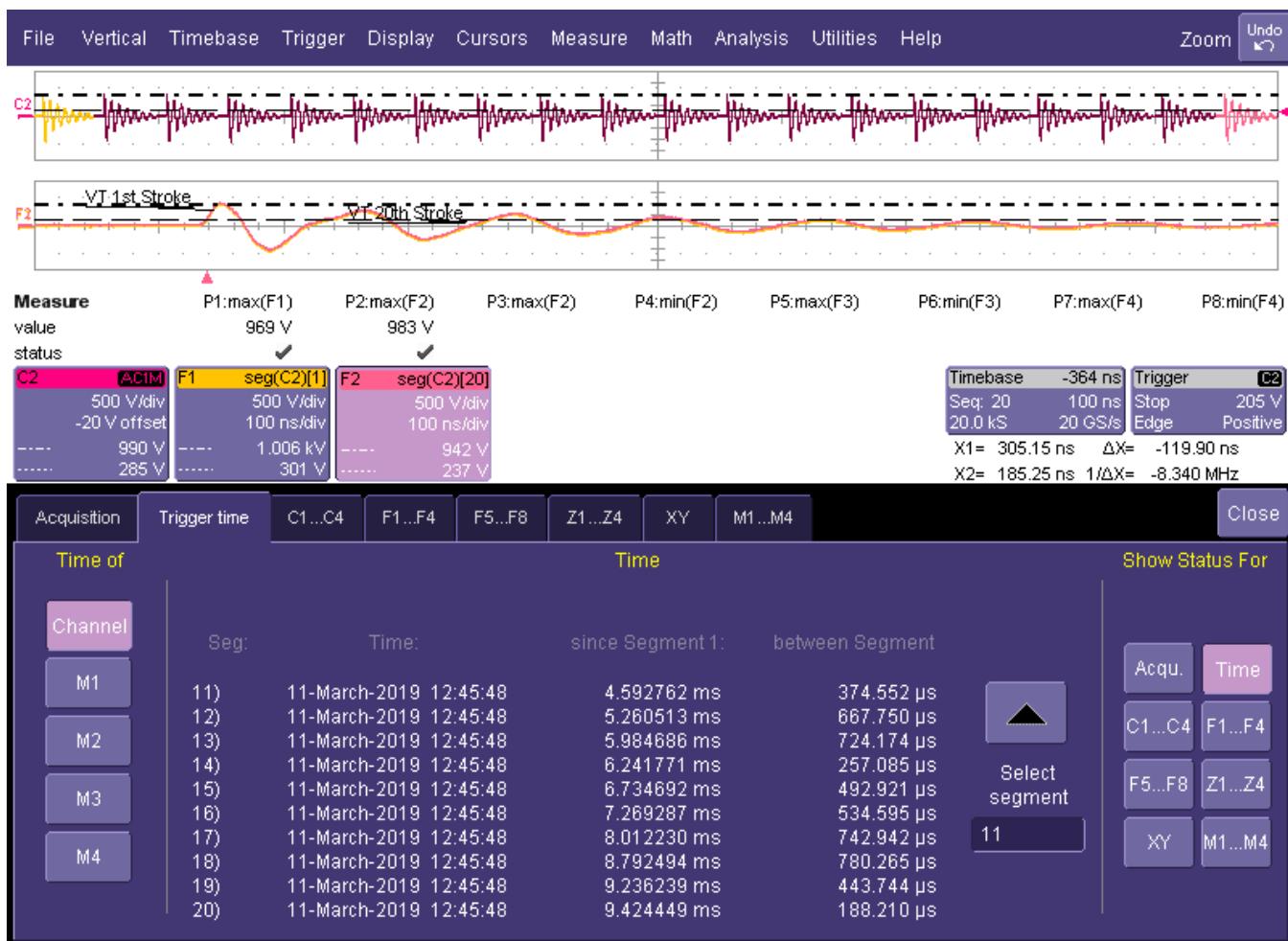
f=10MHz +/-20%

5th-25%-75% of 1st

Timing 50 to 1000us

MB WF3 10MHz OC Verification Pos Timing 11-20

Page 1 of 2



TELEDYNE LECROY

3/11/2019 12:47:48 PM



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 12:47:29 PM

MB WF3 10MHz OC Verification

900V/15A

f=10MHz +/-20%

5th-25%-75% of 1st

Timing 50 to 1000us

MB WF3 10MHz OC Verification Pos Timing 11-20

Page 2 of 2

Channel Status

C2		
Vertical	V / Div	500 V
	Offset	-20 V
	Coupling	AC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

Horizontal	Time / Div	100 ns	Sampling Rate	20 GS/s	Segments	20
Trigger	Time / Pt	50 ps	Sampling Mode	Sequence		
	Pts / Div	2.0000 kS	Trigger Delay	-364 ns		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	205 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 12:37:55 PM

MB WF3 10MHz OC Verification

900V/15A

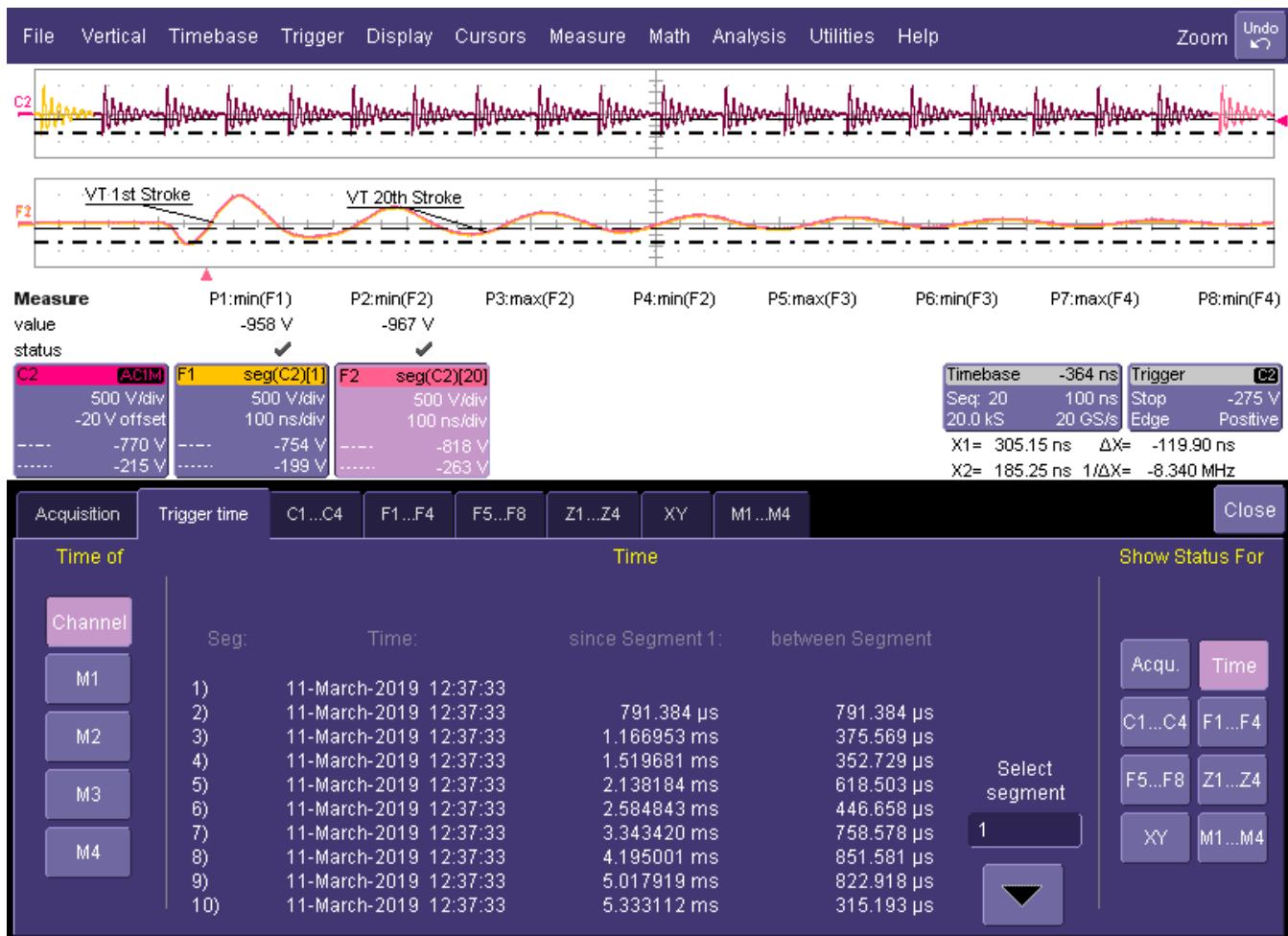
f=10MHz +/-20%

5th-25%-75% of 1st

Timing 50 to 1000us

MB WF3 10MHz OC Verification Neg Timing 1-10

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 12:37:55 PM

MB WF3 10MHz OC Verification

900V/15A

f=10MHz +/-20%

5th-25%-75% of 1st

Timing 50 to 1000us

MB WF3 10MHz OC Verification Neg Timing 1-10

Page 2 of 2

Channel Status

C2		
Vertical	V / Div	500 V
	Offset	-20 V
	Coupling	AC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

Horizontal	Time / Div	100 ns	Sampling Rate	20 GS/s	Segments	20
	Time / Pt	50 ps	Sampling Mode	Sequence		
Trigger	Pts / Div	2.0000 kS	Trigger Delay	-364 ns		
	Mode	Stop	Slope	Positive		
	Type	Edge	Level	-275 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 12:39:47 PM

MB WF3 10MHz OC Verification

900V/15A

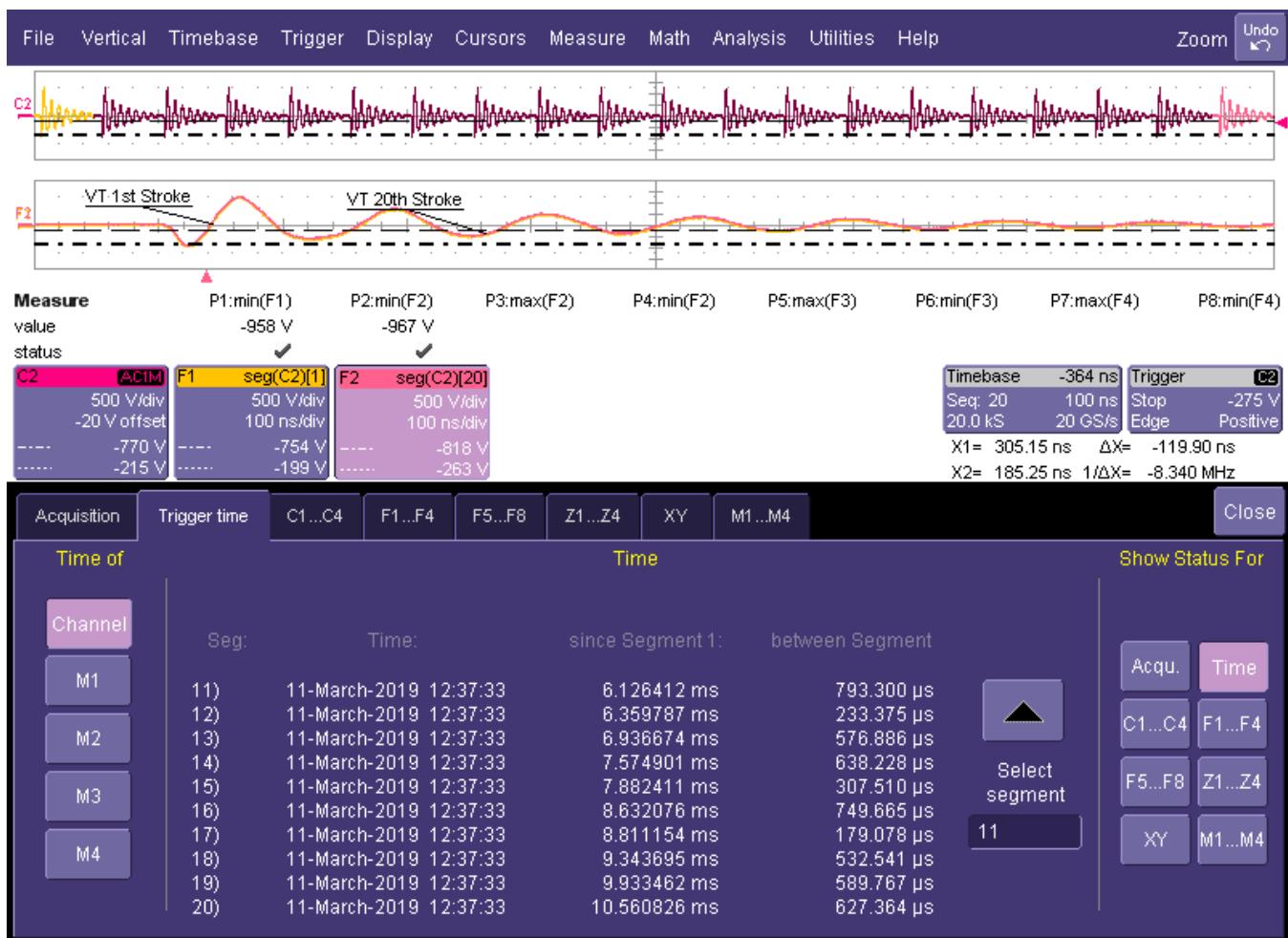
f=10MHz +/-20%

5th-25%-75% of 1st

Timing 50 to 1000us

MB WF3 10MHz OC Verification Neg Timing 11-20

Page 1 of 2



TELEDYNE LECROY

3/11/2019 12:40:20 PM



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 12:39:47 PM

MB WF3 10MHz OC Verification

900V/15A

f=10MHz +/-20%

5th-25%-75% of 1st

Timing 50 to 1000us

MB WF3 10MHz OC Verification Neg Timing 11-20

Page 2 of 2

Channel Status

C2		
Vertical	V / Div	500 V
	Offset	-20 V
	Coupling	AC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

Horizontal	Time / Div	100 ns	Sampling Rate	20 GS/s	Segments	20
Trigger	Time / Pt	50 ps	Sampling Mode	Sequence		
	Pts / Div	2.0000 kS	Trigger Delay	-364 ns		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	-275 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

CS117

CABLE BUNDLE WF4

VERIFICATION DATA SHEETS



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 1:38:32 PM

MS WF4 OC Verification

1st 750V/2000A, sub 187.5V/400A

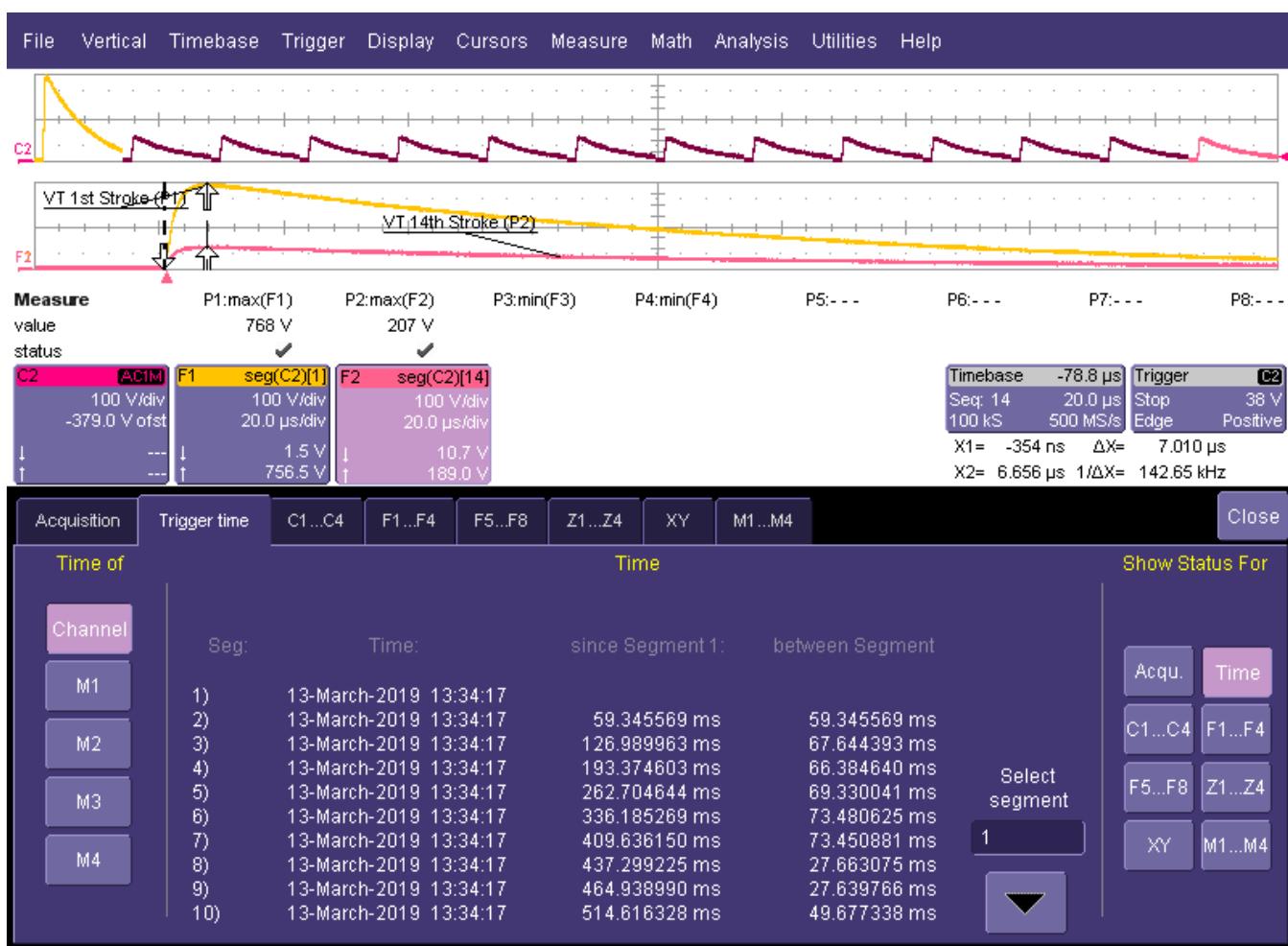
T1=6.4us +/-20%

T2=69us +/-20%

Timing 10-200ms

MS WF4 OC Verification Pos Timing 1-10

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 1:38:32 PM

MS WF4 OC Verification

1st 750V/2000A, sub 187.5V/400A

T1=6.4us +-20%

T2=69us +-20%

Timing 10-200ms

MS WF4 OC Verification Pos Timing 1-10

Page 2 of 2

Channel Status

C2		
Vertical	V / Div	100 V
	Offset	-379.0 V
	Coupling	AC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

	Time / Div	20.0 μs	Sampling Rate	500 MS/s	Segments	14
Horizontal	Time / Pt	2.000 ns	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-78.8 μs		
	Mode	Stop	Slope	Positive		
Trigger	Type	Edge	Level	38 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 1:40:39 PM

MS WF4 OC Verification

1st 750V/2000A, sub 187.5V/400A

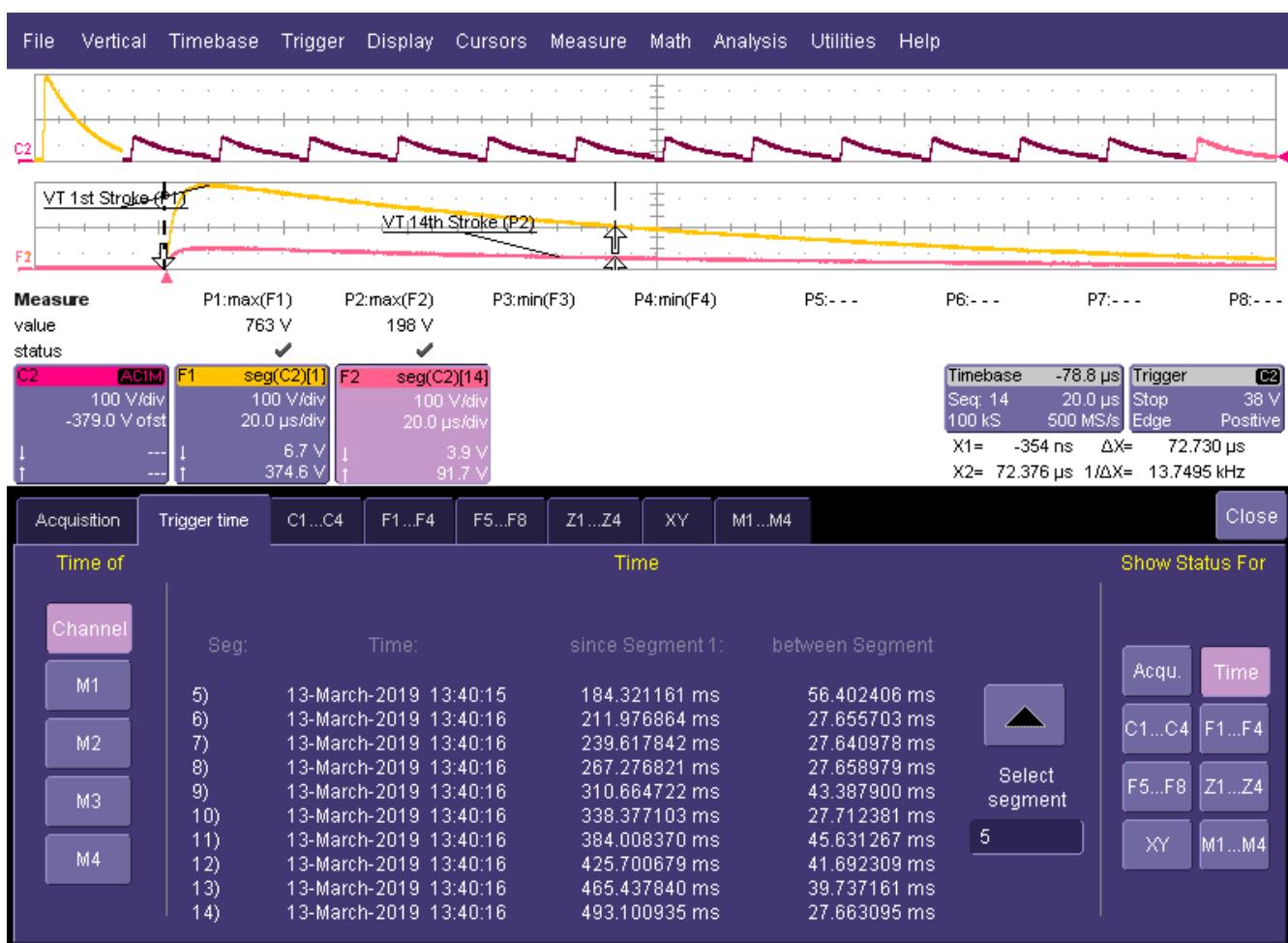
T1=6.4us +-20%

T2=69us +-20%

Timing 10-200ms

MS WF4 OC Verification Pos Timing 5-14

Page 1 of 2



TELEDYNE LECROY

3/13/2019 1:40:49 PM



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 1:40:39 PM

MS WF4 OC Verification

1st 750V/2000A, sub 187.5V/400A

T1=6.4us +-20%

T2=69us +-20%

Timing 10-200ms

MS WF4 OC Verification Pos Timing 5-14

Page 2 of 2

Channel Status

C2		
Vertical	V / Div	100 V
	Offset	-379.0 V
	Coupling	AC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

	Time / Div	20.0 μs	Sampling Rate	500 MS/s	Segments	14
Horizontal	Time / Pt	2.000 ns	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-78.8 μs		
	Mode	Stop	Slope	Positive		
Trigger	Type	Edge	Level	38 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 1:42:39 PM

MS WF4 OC Verification

1st 750V/2000A, sub 187.5V/400A

T1=6.4us +-20%

T2=69us +-20%

Timing 10-200ms

MS WF4 OC Verification Neg Timing 1-10

Page 1 of 2



TELEDYNE LECROY

3/13/2019 1:42:50 PM



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 1:40:39 PM

MS WF4 OC Verification

1st 750V/2000A, sub 187.5V/400A

T1=6.4us +-20%

T2=69us +-20%

Timing 10-200ms

MS WF4 OC Verification Pos Timing 5-14

Page 2 of 2

Channel Status

C2		
Vertical	V / Div	100 V
	Offset	390.0 V
	Coupling	AC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

	Time / Div	20.0 μs	Sampling Rate	500 MS/s	Segments	14
Horizontal	Time / Pt	2.000 ns	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-78.8 μs		
	Mode	Stop	Slope	Negative		
Trigger	Type	Edge	Level	-68 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 1:43:40 PM

MS WF4 OC Verification

1st 750V/2000A, sub 187.5V/400A

T1=6.4us +/-20%

T2=69us +/-20%

Timing 10-200ms

MS WF4 OC Verification Neg Timing 5-14

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 1:43:40 PM

MS WF4 OC Verification

1st 750V/2000A, sub 187.5V/400A

T1=6.4us +-20%

T2=69us +-20%

Timing 10-200ms

MS WF4 OC Verification Neg Timing 5-14

Page 2 of 2

Channel Status

C2		
Vertical	V / Div	100 V
	Offset	390.0 V
	Coupling	AC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

	Time / Div	20.0 μs	Sampling Rate	500 MS/s	Segments	14
Horizontal	Time / Pt	2.000 ns	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-78.8 μs		
	Mode	Stop	Slope	Negative		
Trigger	Type	Edge	Level	-68 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

CS117

CABLE BUNDLE WF1, MS

TEST DATA SHEETS



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 10:01:53 AM

Disasterpreparer

EMPStorm

MS WF1 Cable Bundle Test

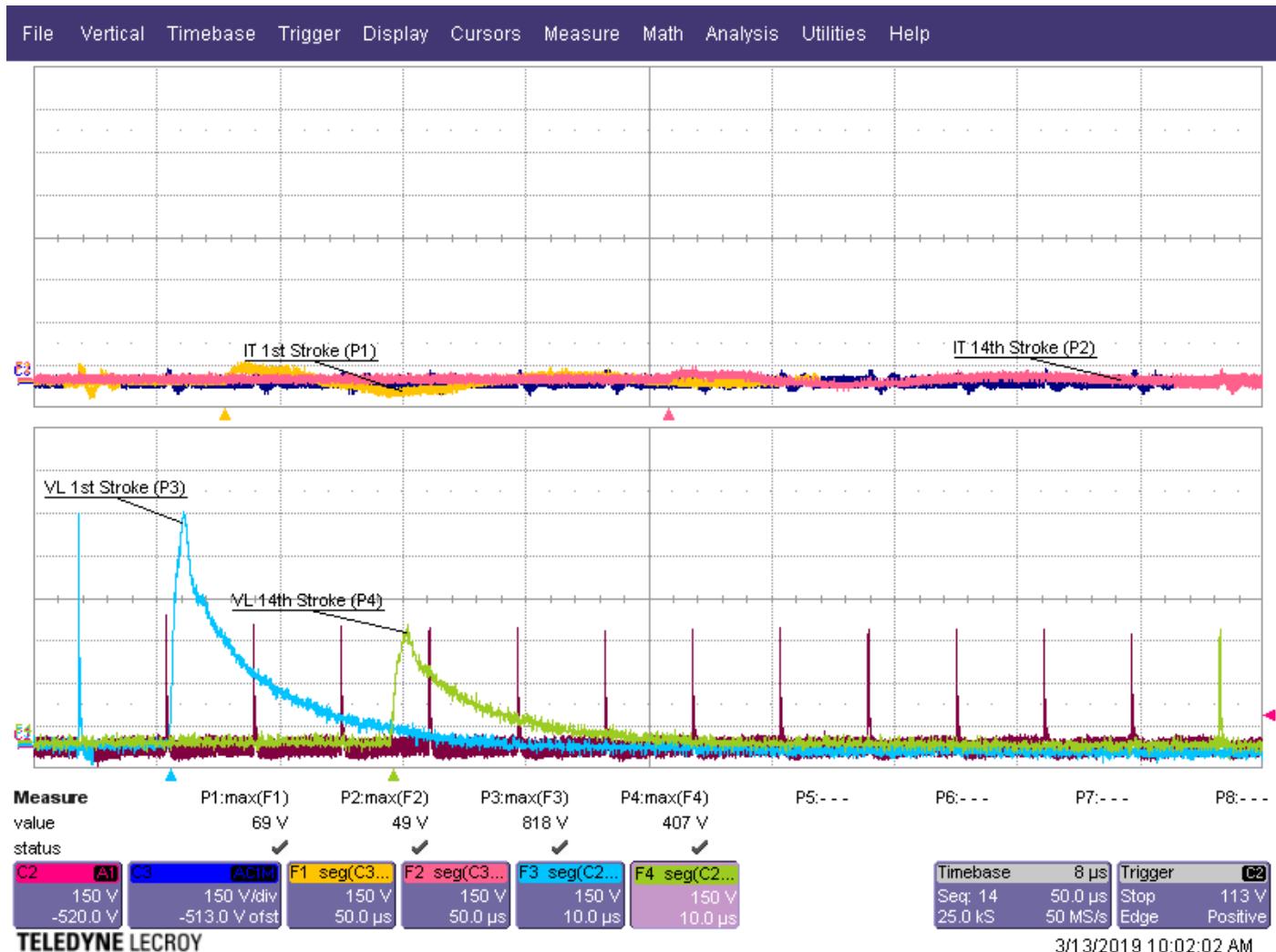
1st 750V/1500A

Sub 375V/375A

VL Reached

MS WF1 Test Pos- High Side Line 1

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 10:01:53 AM

MS WF1 Test Pos- High Side Line 1

Disasterpreparer

EMPStorm

MS WF1 Cable Bundle Test

1st 750V/1500A

Sub 375V/375A

VL Reached

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	150 V	150 V
	Offset	-520.0 V	-513.0 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	50.0 μs	Sampling Rate	50 MS/s	Segments	14
	Time / Pt	20.000 ns	Sampling Mode	Sequence		
	Pts / Div	2.5000 kS	Trigger Delay	8 μs		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	113 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 10:05:48 AM

Disasterpreparer

EMPStorm

MS WF1 Cable Bundle Test

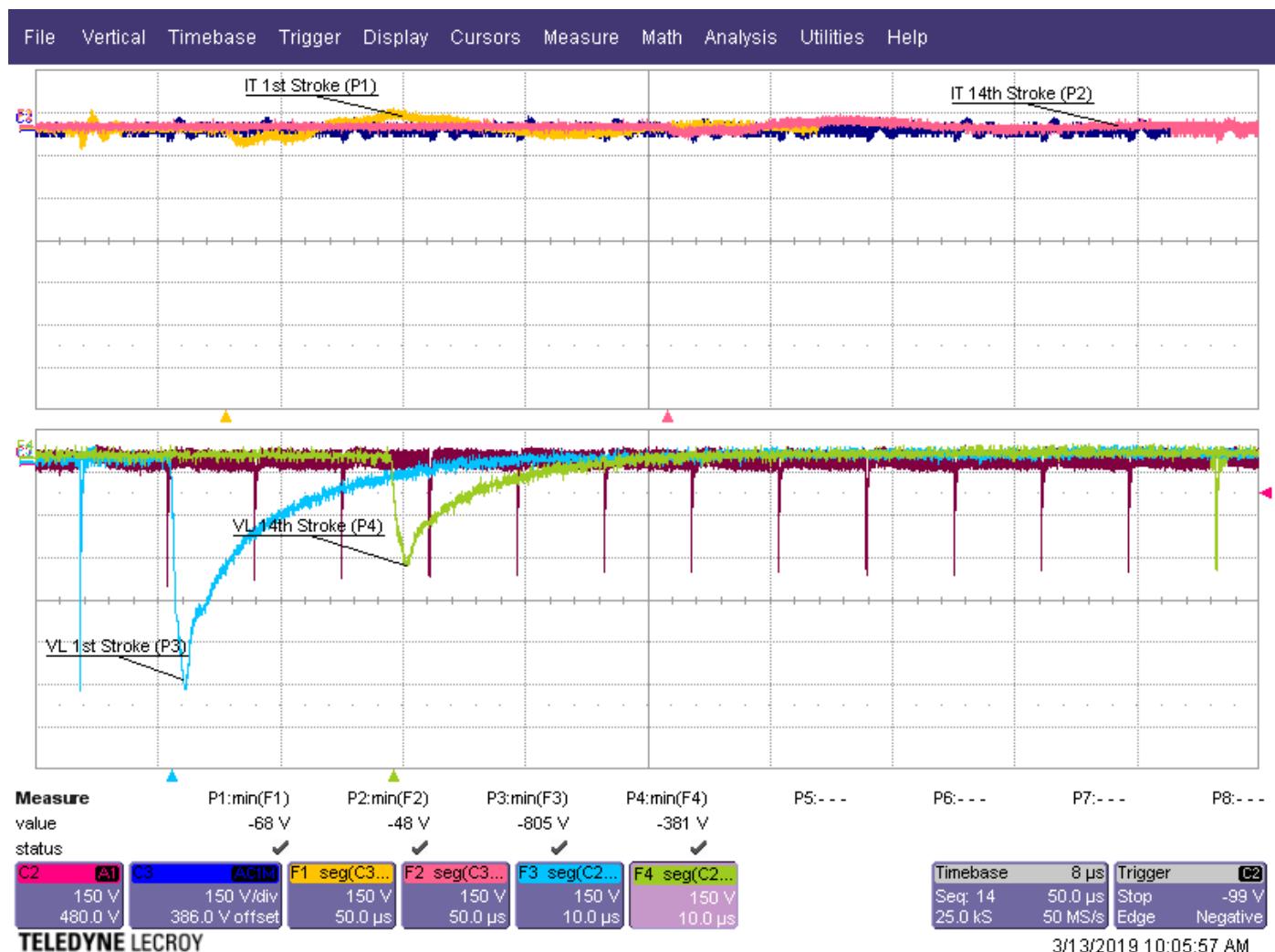
1st 750V/1500A

Sub 375V/375A

VL Reached

MS WF1 Test Neg- High Side Line 1

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 10:05:48 AM

Disasterpreparer

EMPS storm

MS WF1 Cable Bundle Test

1st 750V/1500A

Sub 375V/375A

VL Reached

MS WF1 Test Neg- High Side Line 1

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	150 V	150 V
	Offset	480.0 V	386.0 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

	Time / Div	50.0 μs	Sampling Rate	50 MS/s	Segments	14
Horizontal	Time / Pt	20.000 ns	Sampling Mode	Sequence		
	Pts / Div	2.5000 kS	Trigger Delay	8 μs		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-99 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 10:19:31 AM

Disasterpreparer

EMPStorm

MS WF1 Cable Bundle Test

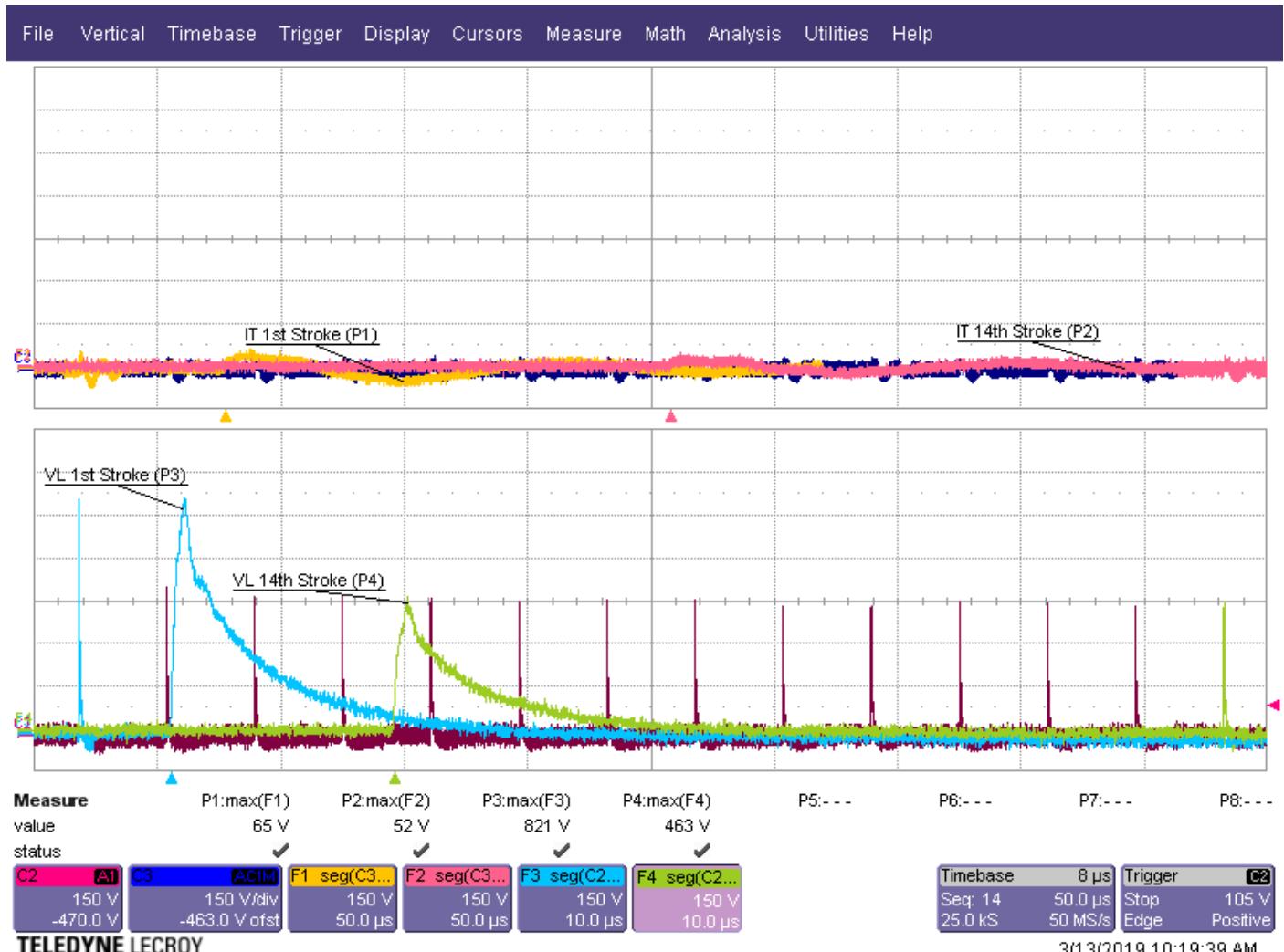
1st 750V/1500A

Sub 375V/375A

VL Reached

MS WF1 Test Pos- High Side Line 2

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 10:19:31 AM

Disasterpreparer

EMPS storm

MS WF1 Cable Bundle Test

1st 750V/1500A

Sub 375V/375A

VL Reached

MS WF1 Test Pos- High Side Line 2

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	150 V	150 V
	Offset	-470.0 V	-463.0 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	50.0 μs	Sampling Rate	50 MS/s	Segments	14
	Time / Pt	20.000 ns	Sampling Mode	Sequence		
	Pts / Div	2.5000 kS	Trigger Delay	8 μs		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	105 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 10:14:41 AM

Disasterpreparer

EMPStorm

MS WF1 Cable Bundle Test

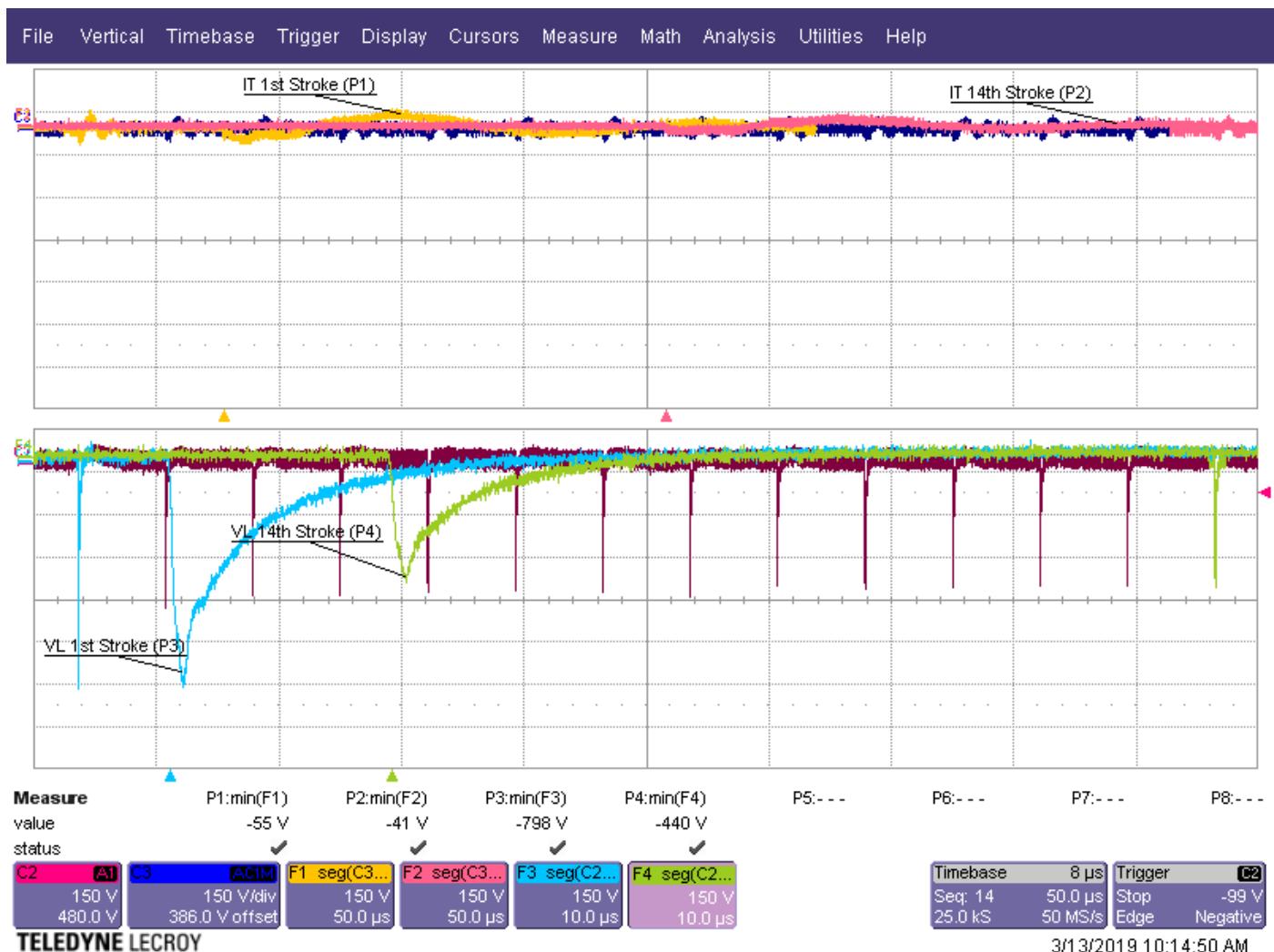
1st 750V/1500A

Sub 375V/375A

VL Reached

MS WF1 Test Neg- High Side Line 2

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 10:14:41 AM

Disasterpreparer

EMPS storm

MS WF1 Cable Bundle Test

1st 750V/1500A

Sub 375V/375A

VL Reached

MS WF1 Test Neg- High Side Line 2

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	150 V	150 V
	Offset	480.0 V	386.0 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	50.0 μs	Sampling Rate	50 MS/s	Segments	14
	Time / Pt	20.000 ns	Sampling Mode	Sequence		
	Pts / Div	2.5000 kS	Trigger Delay	8 μs		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-99 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 9:36:18 AM

Disasterpreparer

EMPStorm

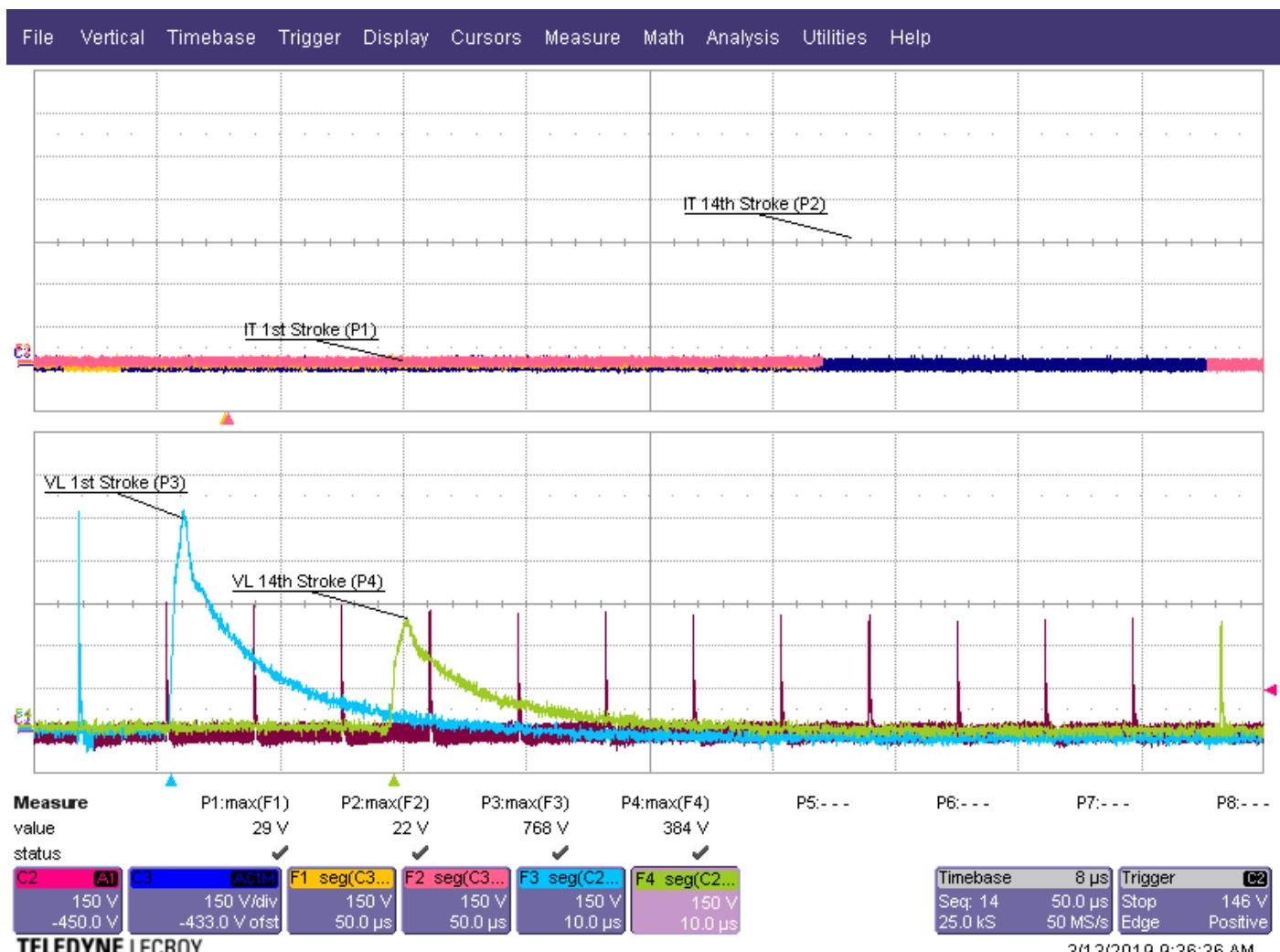
MS WF1 Cable Bundle Test

1st 750V/1500A

Sub 375V/375A

MS WF1 Test Pos- Power Bundle

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 9:36:18 AM

Disasterpreparer

EMPStorm

MS WF1 Cable Bundle Test

1st 750V/1500A

Sub 375V/375A

MS WF1 Test Pos- Power Bundle

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	150 V	150 V
	Offset	-450.0 V	-433.0 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	50.0 μs	Sampling Rate	50 MS/s	Segments	14
	Time / Pt	20.000 ns	Sampling Mode	Sequence		
	Pts / Div	2.5000 kS	Trigger Delay	8 μs		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	146 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 9:40:12 AM

Disasterpreparer

EMPStorm

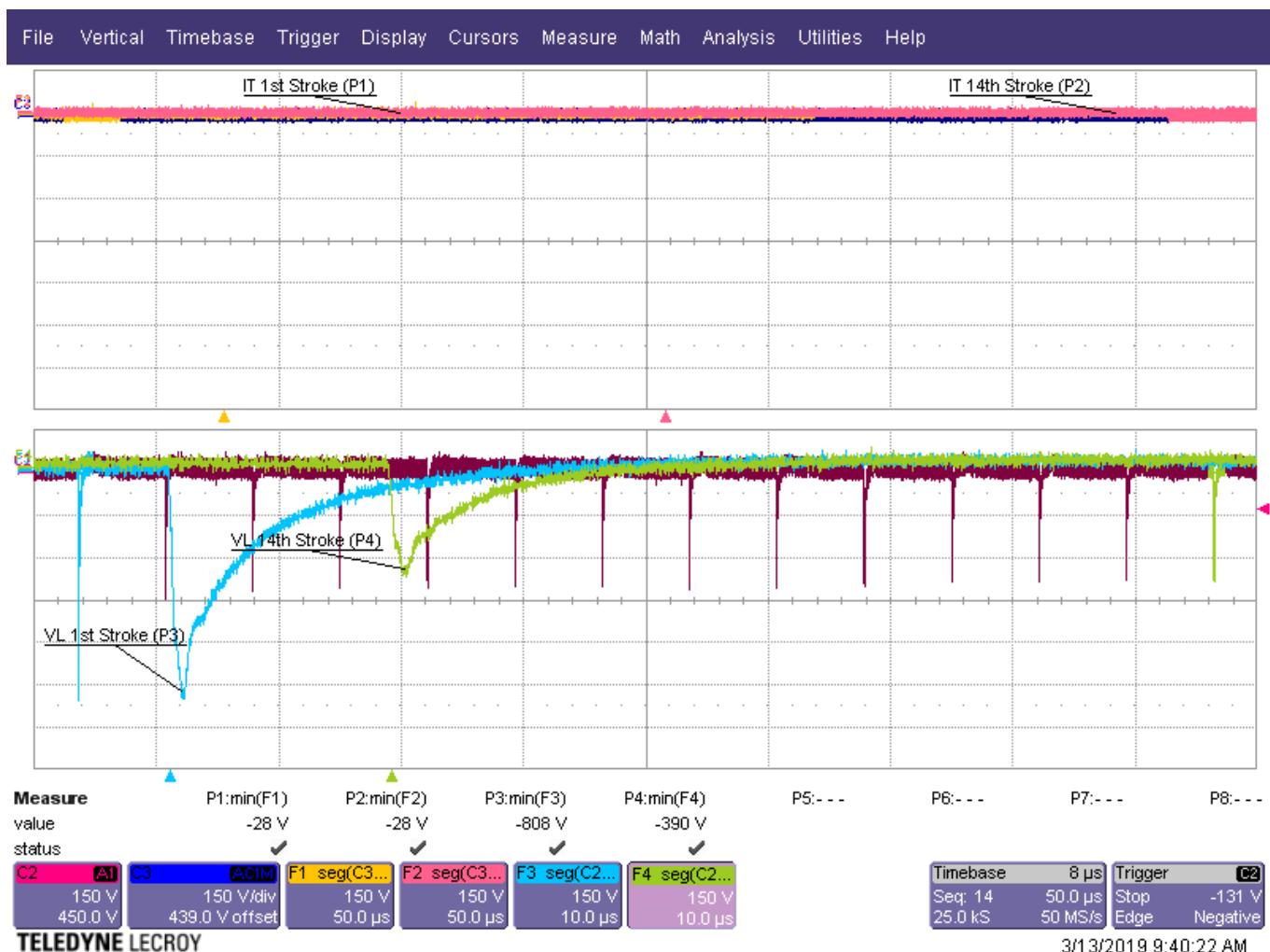
MS WF1 Cable Bundle Test

1st 750V/1500A

Sub 375V/375A

MS WF1 Test Neg- Power Bundle

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 9:40:12 AM

Disasterpreparer

EMPS storm

MS WF1 Cable Bundle Test

1st 750V/1500A

Sub 375V/375A

MS WF1 Test Neg- Power Bundle

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	150 V	150 V
	Offset	450.0 V	439.0 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	50.0 μs	Sampling Rate	50 MS/s	Segments	14
	Time / Pt	20.000 ns	Sampling Mode	Sequence		
	Pts / Div	2.5000 kS	Trigger Delay	8 μs		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-131 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

CS117

CABLE BUNDLE WF2, MS

TEST DATA SHEETS



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 3:38:41 PM

Disasterpreparer

EMPStorm

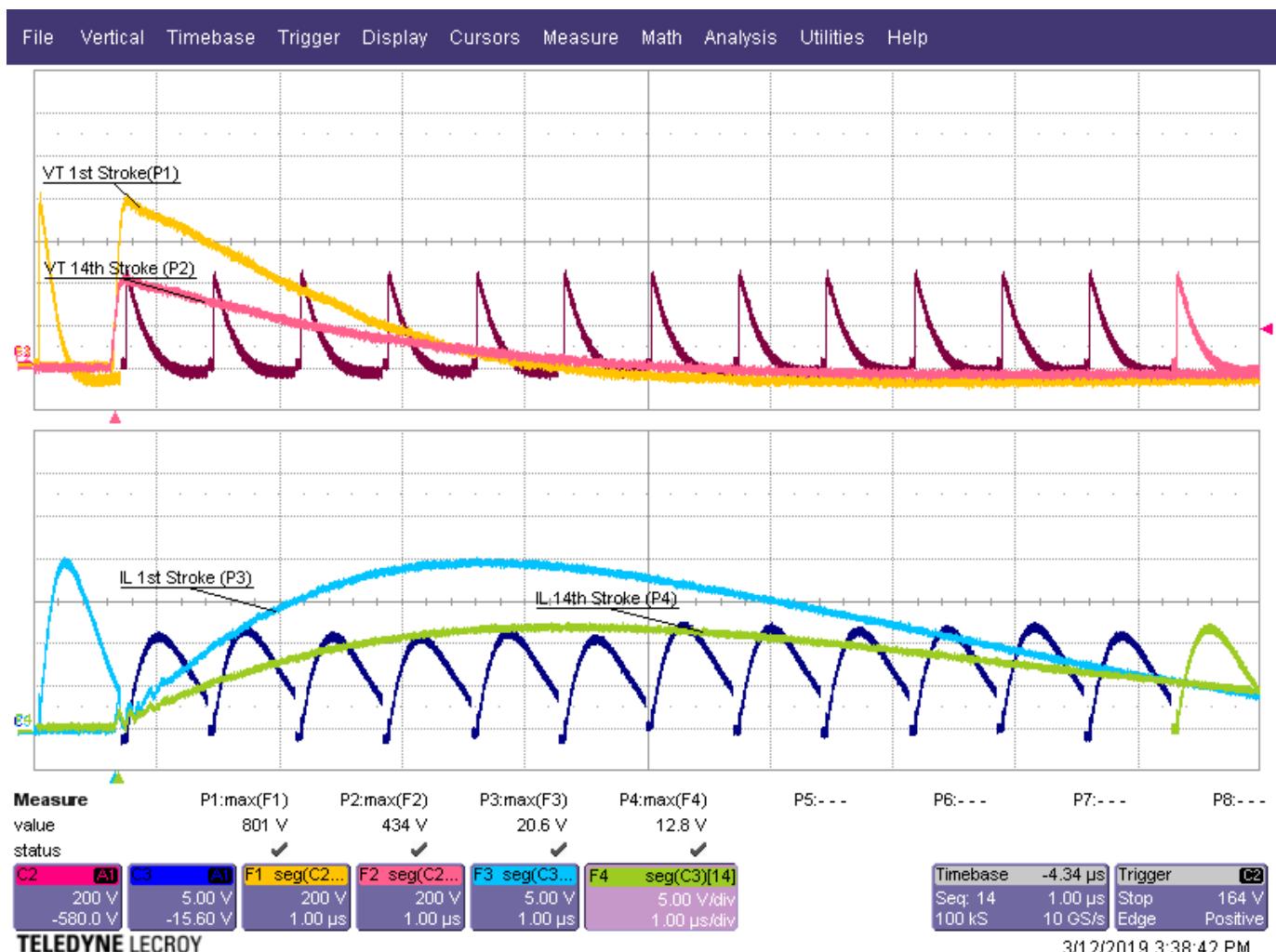
MS WF2 Cable Bundle Test

1st 750V/150A

Sub 375V/75A

MS WF2 Test Pos - High Side Line 1

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 3:38:41 PM

MS WF2 Test Pos - High Side Line 1

Disasterpreparer

EMPStorm

MS WF2 Cable Bundle Test

1st 750V/150A

Sub 375V/75A

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	200 V	5.00 V
	Offset	-580.0 V	-15.60 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	1.00 μs	Sampling Rate	10 GS/s	Segments	14
	Time / Pt	100 ps	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-4.34 μs		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	164 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 3:33:42 PM

Disasterpreparer

EMPStorm

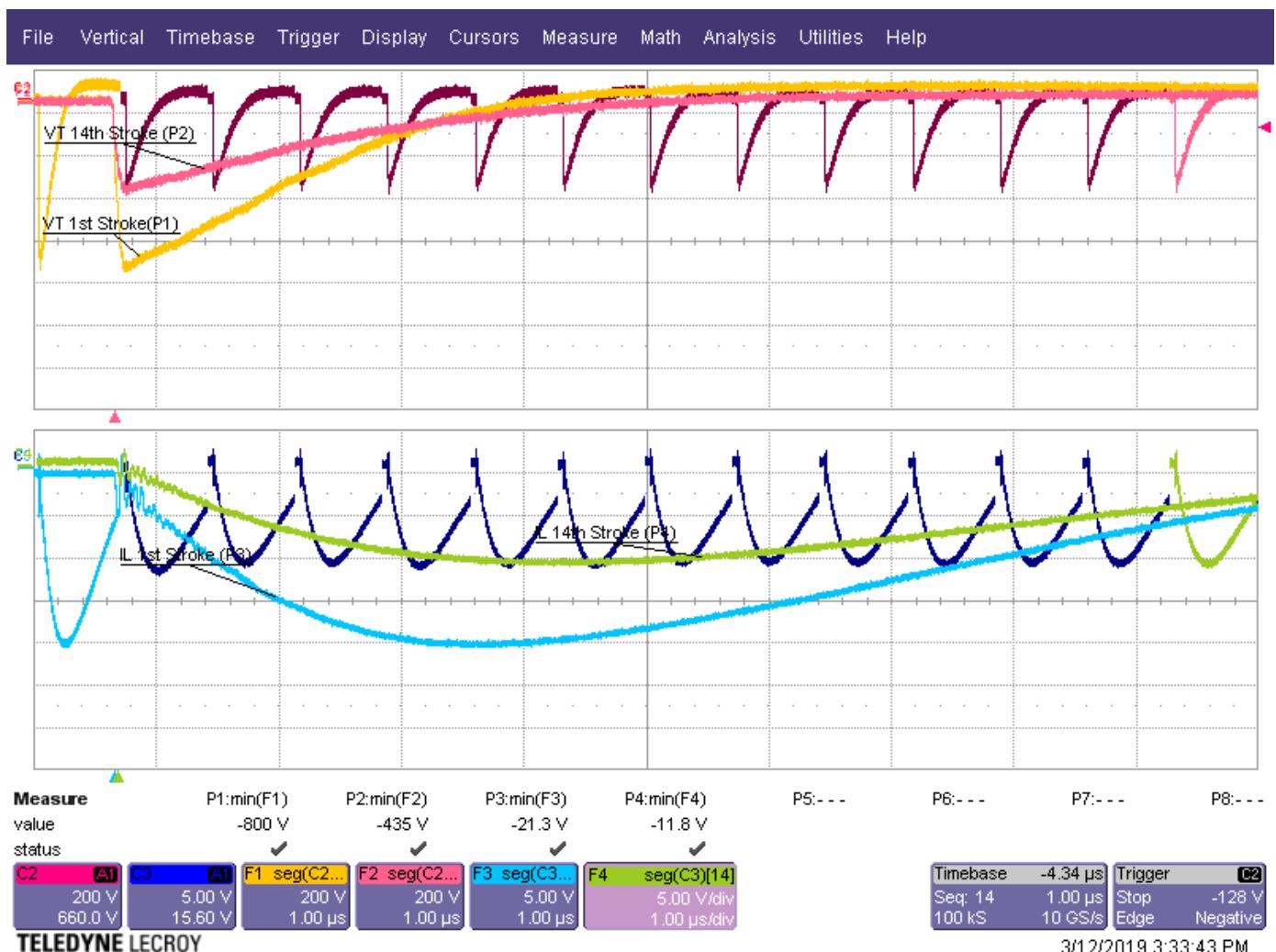
MS WF2 Cable Bundle Test

1st 750V/150A

Sub 375V/75A

MS WF2 Test Neg - High Side Line 1

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 3:33:42 PM

MS WF2 Test Neg - High Side Line 1

Disasterpreparer

EMPStorm

MS WF2 Cable Bundle Test

1st 750V/150A

Sub 375V/75A

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	200 V	5.00 V
	Offset	660.0 V	15.60 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	1.00 μs	Sampling Rate	10 GS/s	Segments	14
	Time / Pt	100 ps	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-4.34 μs		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-128 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 3:56:28 PM

Disasterpreparer

EMPStorm

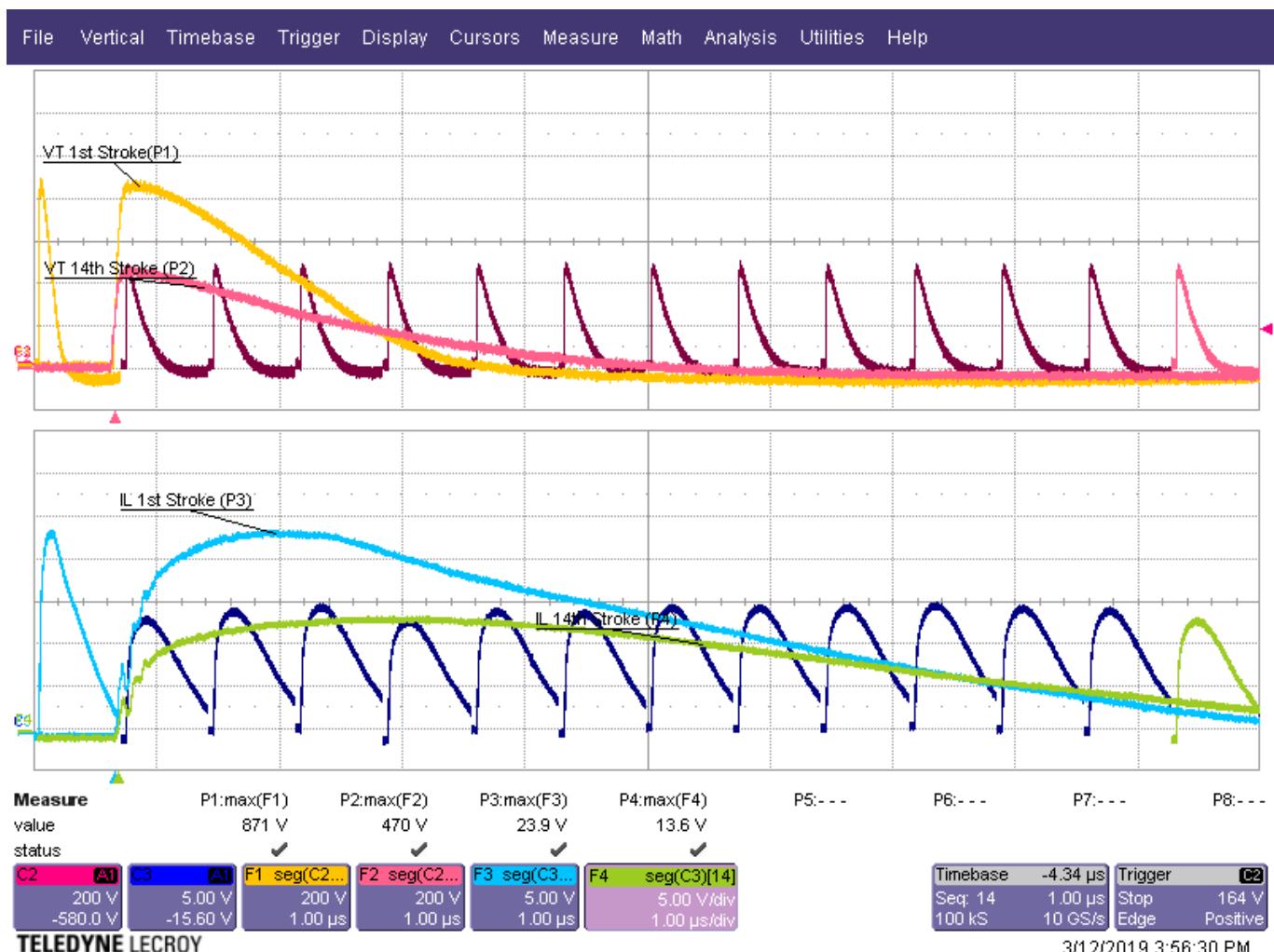
MS WF2 Cable Bundle Test

1st 750V/150A

Sub 375V/75A

MS WF2 Test Pos - High Side Line 2

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 3:56:28 PM

MS WF2 Test Pos - High Side Line 2

Disasterpreparer

EMPStorm

MS WF2 Cable Bundle Test

1st 750V/150A

Sub 375V/75A

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	200 V	5.00 V
	Offset	-580.0 V	-15.60 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	1.00 μs	Sampling Rate	10 GS/s	Segments	14
	Time / Pt	100 ps	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-4.34 μs		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	164 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 3:59:59 PM

Disasterpreparer

EMPStorm

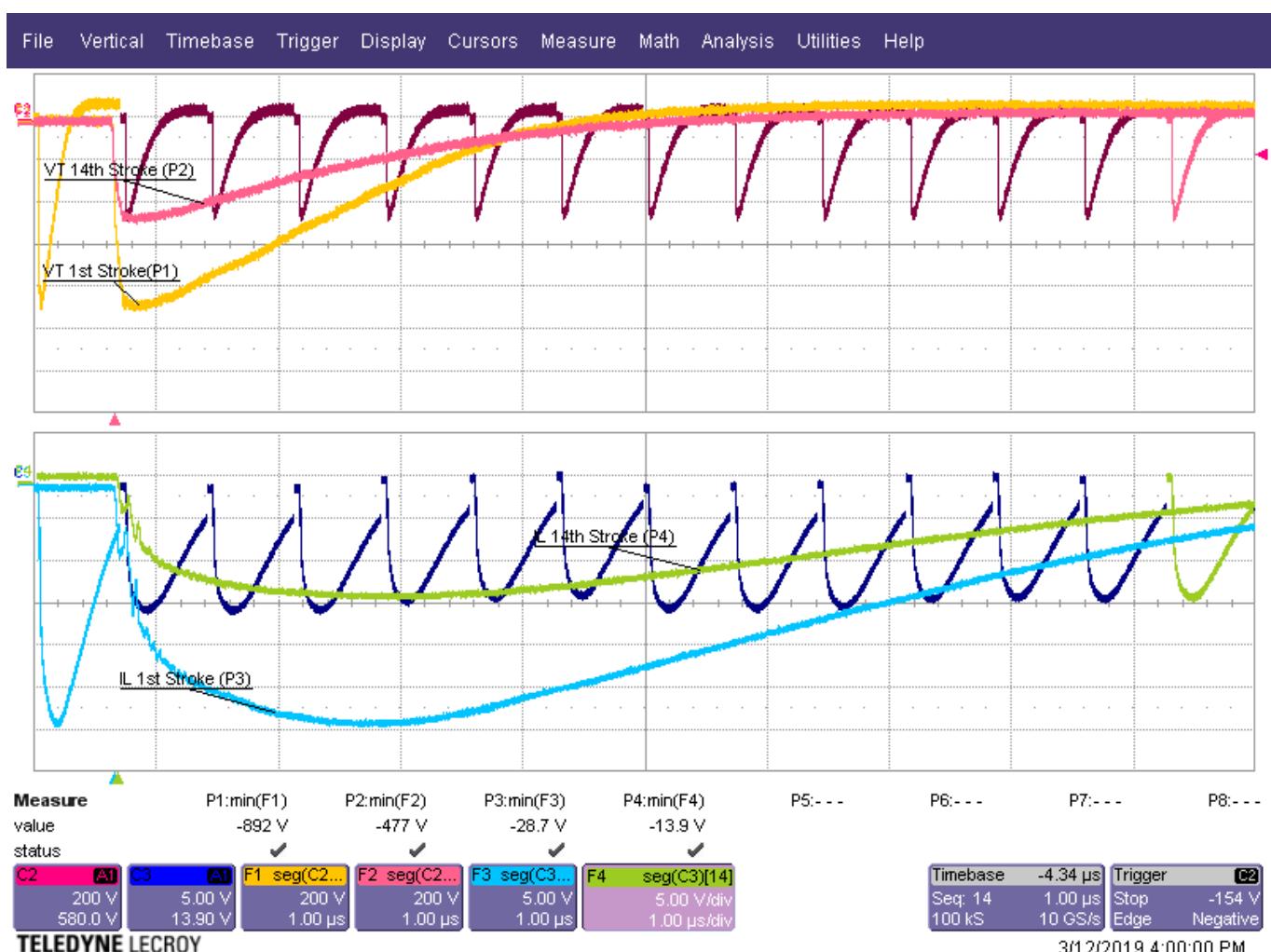
MS WF2 Cable Bundle Test

1st 750V/150A

Sub 375V/75A

MS WF2 Test Neg - High Side Line 2

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 3:59:59 PM

Disasterpreparer

EMPS storm

MS WF2 Cable Bundle Test

1st 750V/150A

Sub 375V/75A

MS WF2 Test Neg - High Side Line 2

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	200 V	5.00 V
	Offset	580.0 V	13.90 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

	Time / Div	1.00 μs	Sampling Rate	10 GS/s	Segments	14
Horizontal	Time / Pt	100 ps	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-4.34 μs		
	Mode	Stop	Slope	Negative		
Trigger	Type	Edge	Level	-154 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 3:15:19 PM

Disasterpreparer

EMPStorm

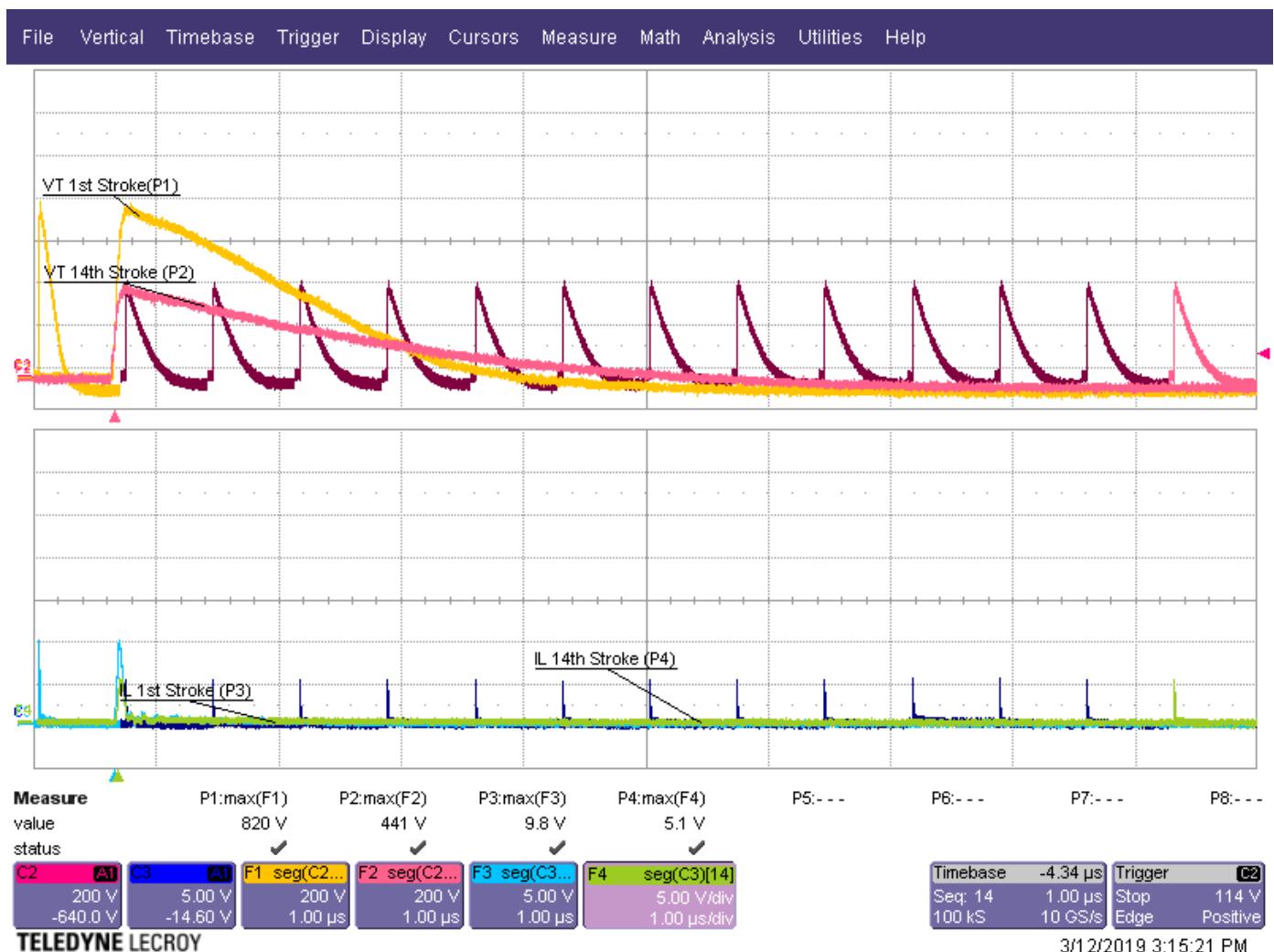
MS WF2 Cable Bundle Test

1st 750V/1500A

Sub 375V/375A

MS WF2 Test Pos - Power Bundle

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 3:15:19 PM

Disasterpreparer

EMPStorm

MS WF2 Cable Bundle Test

1st 750V/1500A

Sub 375V/375A

MS WF2 Test Pos - Power Bundle

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	200 V	5.00 V
	Offset	-640.0 V	-14.60 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	1.00 μs	Sampling Rate	10 GS/s	Segments	14
	Time / Pt	100 ps	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-4.34 μs		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	114 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 3:22:10 PM

MS WF2 Test Neg - Power Bundle

Disasterpreparer

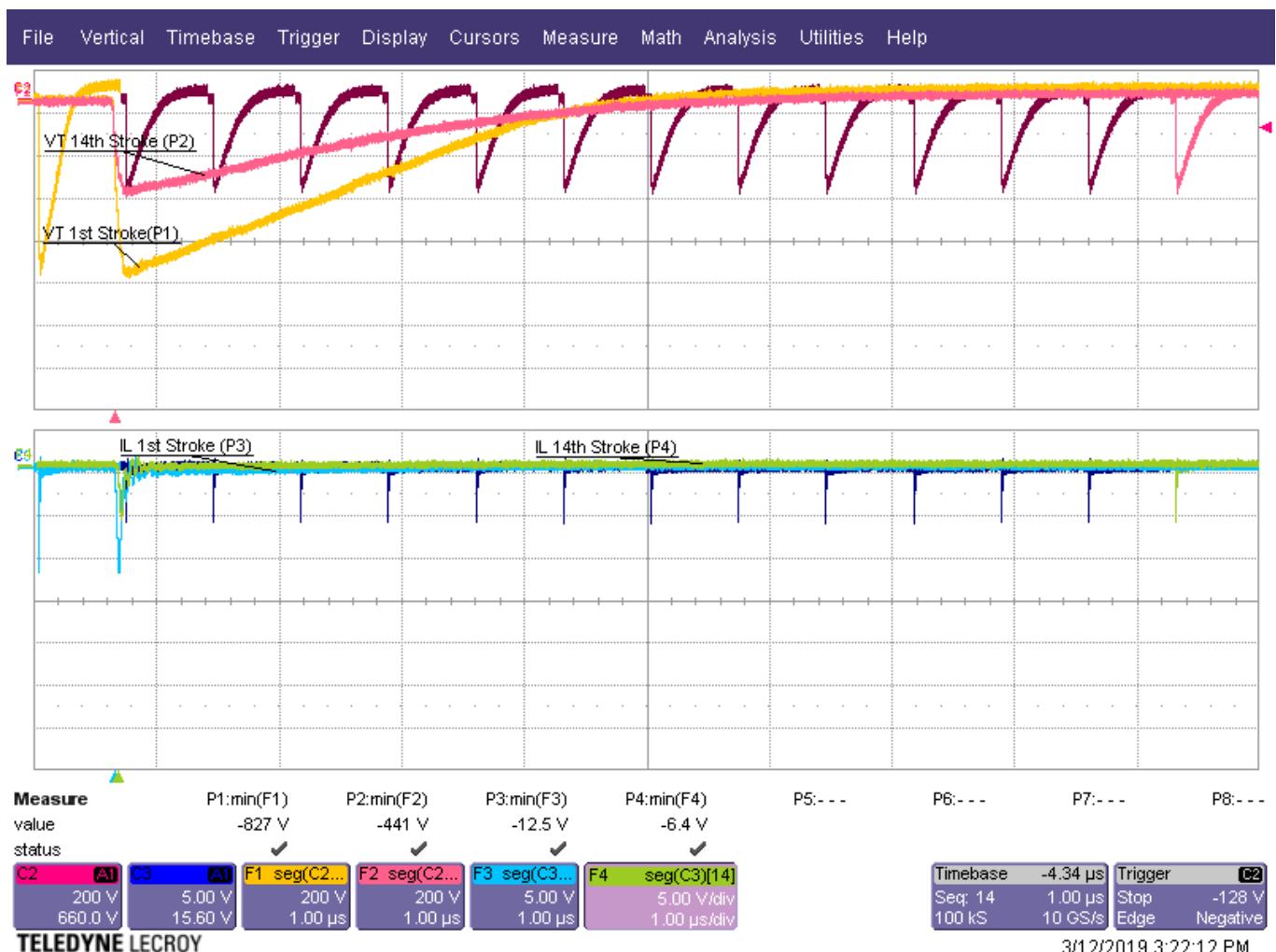
EMPStorm

MS WF2 Cable Bundle Test

1st 750V/1500A

Sub 375V/375A

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 3:22:10 PM

MS WF2 Test Neg - Power Bundle

Disasterpreparer

EMPStorm

MS WF2 Cable Bundle Test

1st 750V/1500A

Sub 375V/375A

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	200 V	5.00 V
	Offset	660.0 V	15.60 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	1.00 μs	Sampling Rate	10 GS/s	Segments	14
	Time / Pt	100 ps	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-4.34 μs		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-128 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

CS117

CABLE BUNDLE WF3, MS

TEST DATA SHEETS



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: Appendix C
MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 10:50:58 AM

Disasterpreparer

EMPS storm

MS WF3 1 MHz Cable Bundle Test

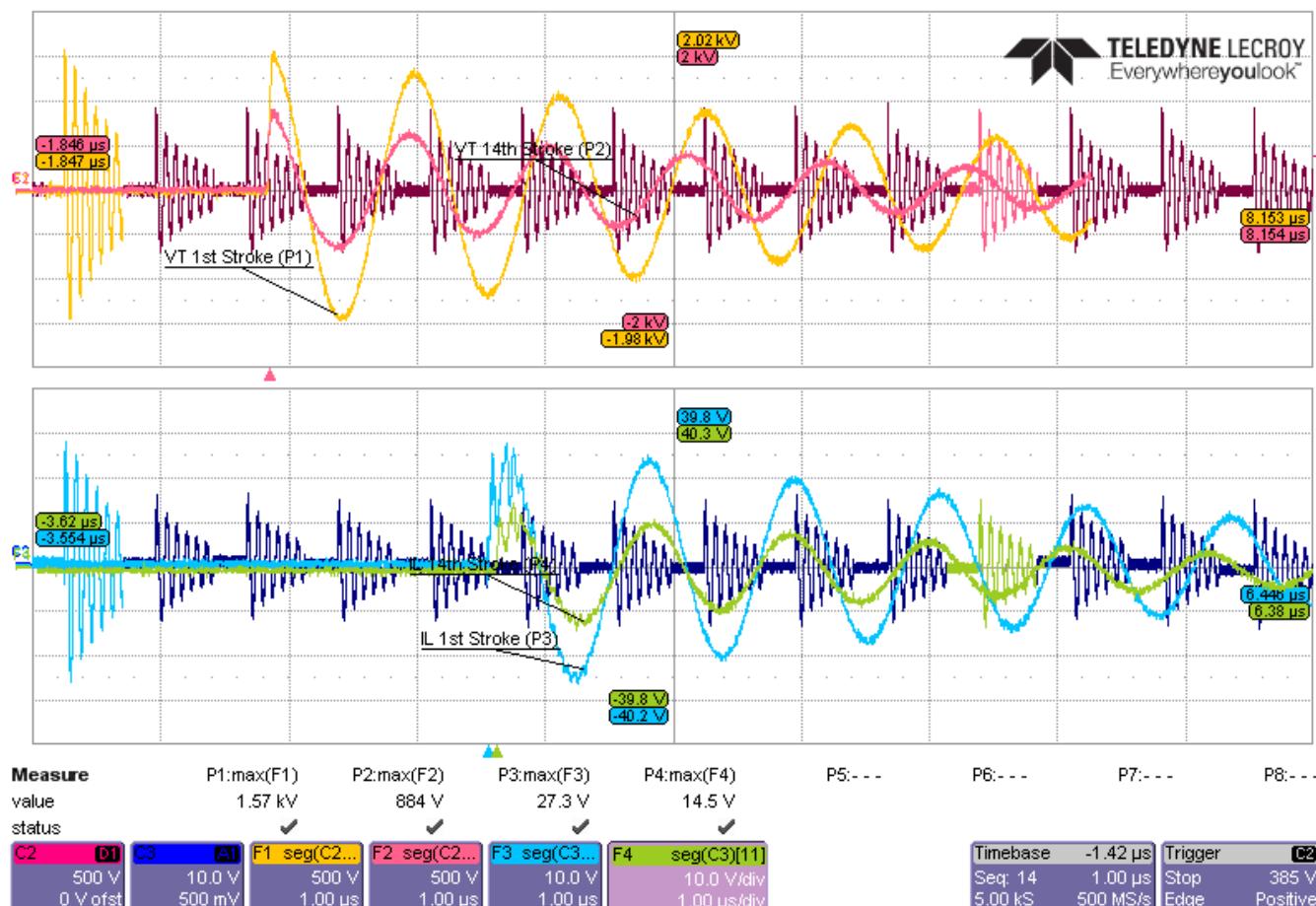
1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 1MHz Test Pos - High Side Line 1

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 10:50:58 AM

Disasterpreparer

EMPS storm

MS WF3 1 MHz Cable Bundle Test

1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 1MHz Test Pos - High Side Line 1

Page 2 of 2

Channel Status

	C2	C3
Vertical	V / Div	500 V
	Offset	0 V
	Coupling	DC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

Horizontal	Time / Div	1.00 μs	Sampling Rate	500 MS/s	Segments	14
	Time / Pt	2.000 ns	Sampling Mode	Sequence		
	Pts / Div	500.0 S	Trigger Delay	-1.42 μs		
	Mode	Stop	Slope	Positive		
Trigger	Type	Edge	Level	385 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 10:56:04 AM

Disasterpreparer

EMPS storm

MS WF3 1 MHz Cable Bundle Test

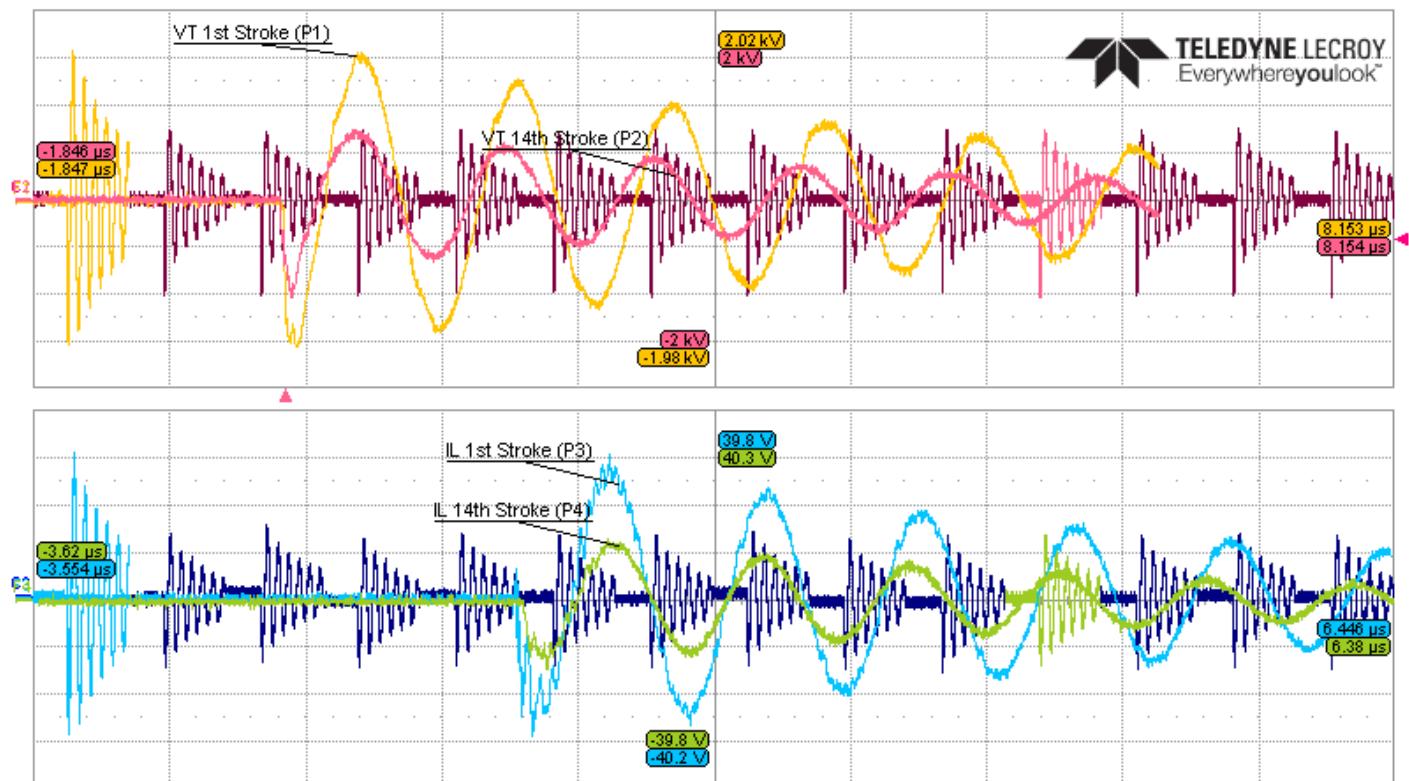
1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 1MHz Test Neg - High Side Line 1

Page 1 of 2



Measure	P1:min(F1)	P2:min(F2)	P3:min(F3)	P4:min(F4)	P5:---	P6:---	P7:---	P8:---							
value	-1.55 kV	-1.04 kV	-29.2 V	-14.6 V											
status	✓	✓	✓	✓											
C2	D1	C3	A1	F1	seg(C2...)	F2	seg(C2...)	F3	seg(C3...)	F4	seg(C3)(11)	Timebase	-1.42 µs	Trigger	C2
	500 V	10.0 V	500 mV	500 V	1.00 µs	500 V	1.00 µs	10.0 V	1.00 µs	10.0 V/div	1.00 µs/div	Seq: 14	1.00 µs	Stop Edge	-415 V Negative
	0 V offset											5.00 kS	500 MS/s		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 10:56:04 AM

Disasterpreparer

EMPS storm

MS WF3 1 MHz Cable Bundle Test

1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 1MHz Test Neg - High Side Line 1

Page 2 of 2

Channel Status

	C2	C3
Vertical	V / Div	500 V
	Offset	0 V
	Coupling	DC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

	Time / Div	1.00 μs	Sampling Rate	500 MS/s	Segments	14
Horizontal	Time / Pt	2.000 ns	Sampling Mode	Sequence		
	Pts / Div	500.0 S	Trigger Delay	-1.42 μs		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-415 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: Appendix C
MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 11:05:44 AM

Disasterpreparer

EMPS storm

MS WF3 1 MHz Cable Bundle Test

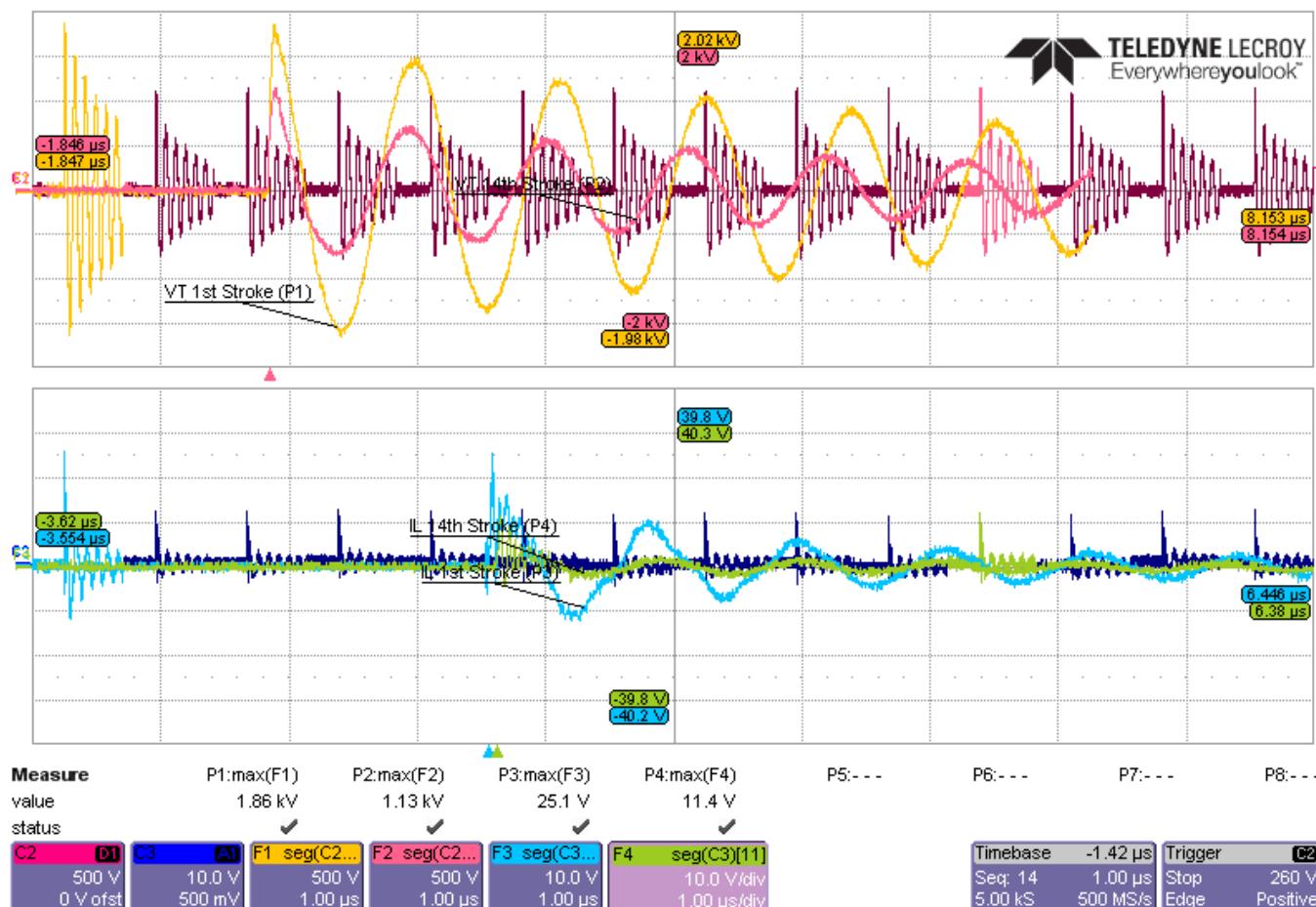
1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 1MHz Test Pos - High Side Line 2

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 11:05:44 AM

Disasterpreparer

EMPS storm

MS WF3 1 MHz Cable Bundle Test

1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 1MHz Test Pos - High Side Line 2

Page 2 of 2

Channel Status

	C2	C3
Vertical	V / Div	500 V
	Offset	0 V
	Coupling	DC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

Horizontal	Time / Div	1.00 μs	Sampling Rate	500 MS/s	Segments	14
	Time / Pt	2.000 ns	Sampling Mode	Sequence		
	Pts / Div	500.0 S	Trigger Delay	-1.42 μs		
	Mode	Stop	Slope	Positive		
Trigger	Type	Edge	Level	260 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 11:02:18 AM

Disasterpreparer

EMPS storm

MS WF3 1 MHz Cable Bundle Test

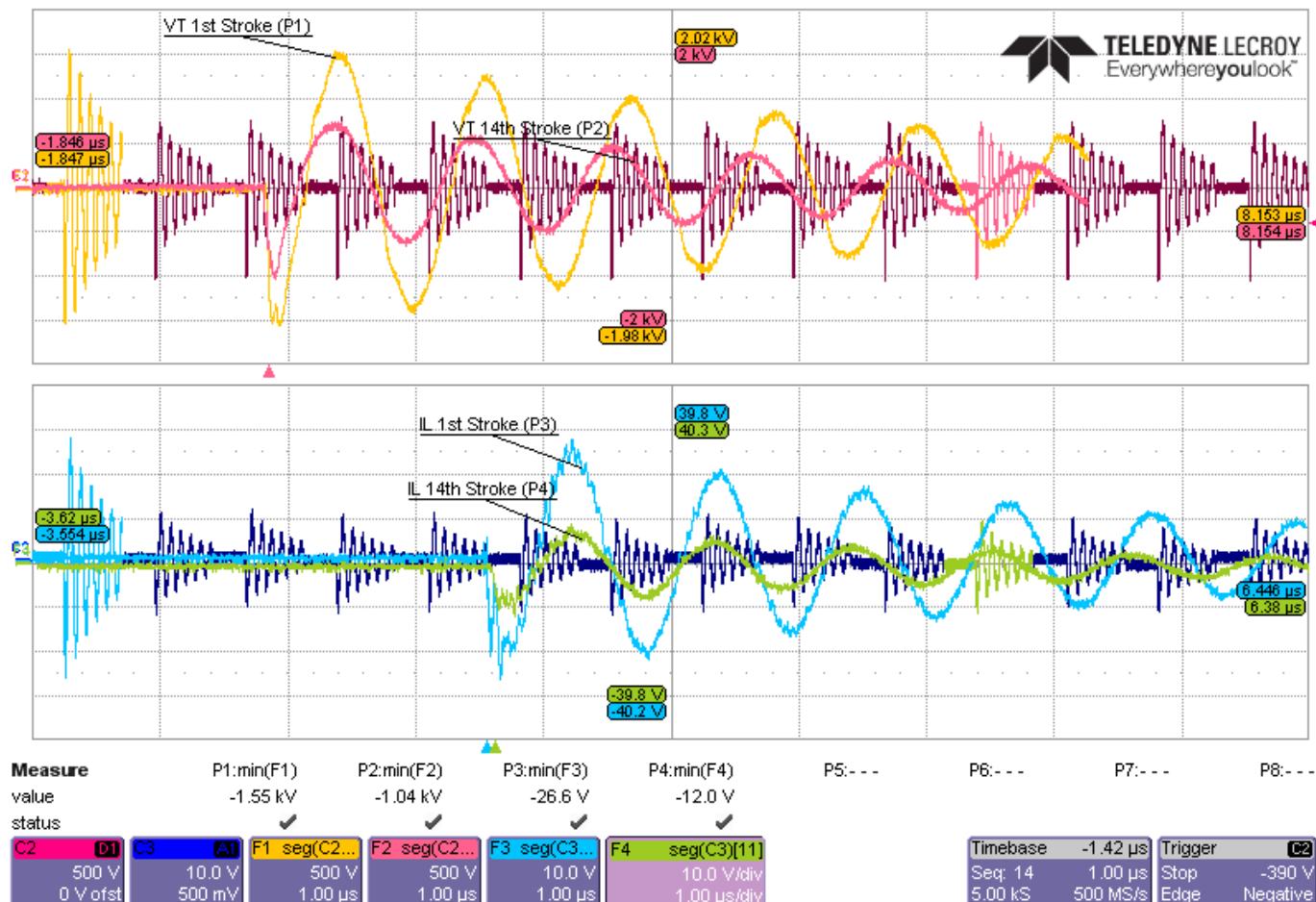
1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 1MHz Test Neg - High Side Line 2

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 11:02:18 AM

Disasterpreparer

EMPS storm

MS WF3 1 MHz Cable Bundle Test

1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 1MHz Test Neg - High Side Line 2

Page 2 of 2

Channel Status

	C2	C3
Vertical	V / Div	500 V
	Offset	0 V
	Coupling	DC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

	Time / Div	1.00 μs	Sampling Rate	500 MS/s	Segments	14
Horizontal	Time / Pt	2.000 ns	Sampling Mode	Sequence		
	Pts / Div	500.0 S	Trigger Delay	-1.42 μs		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-390 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 3:32:26 PM

Disasterpreparer

EMPS storm

MS WF3 1 MHz Cable Bundle Test

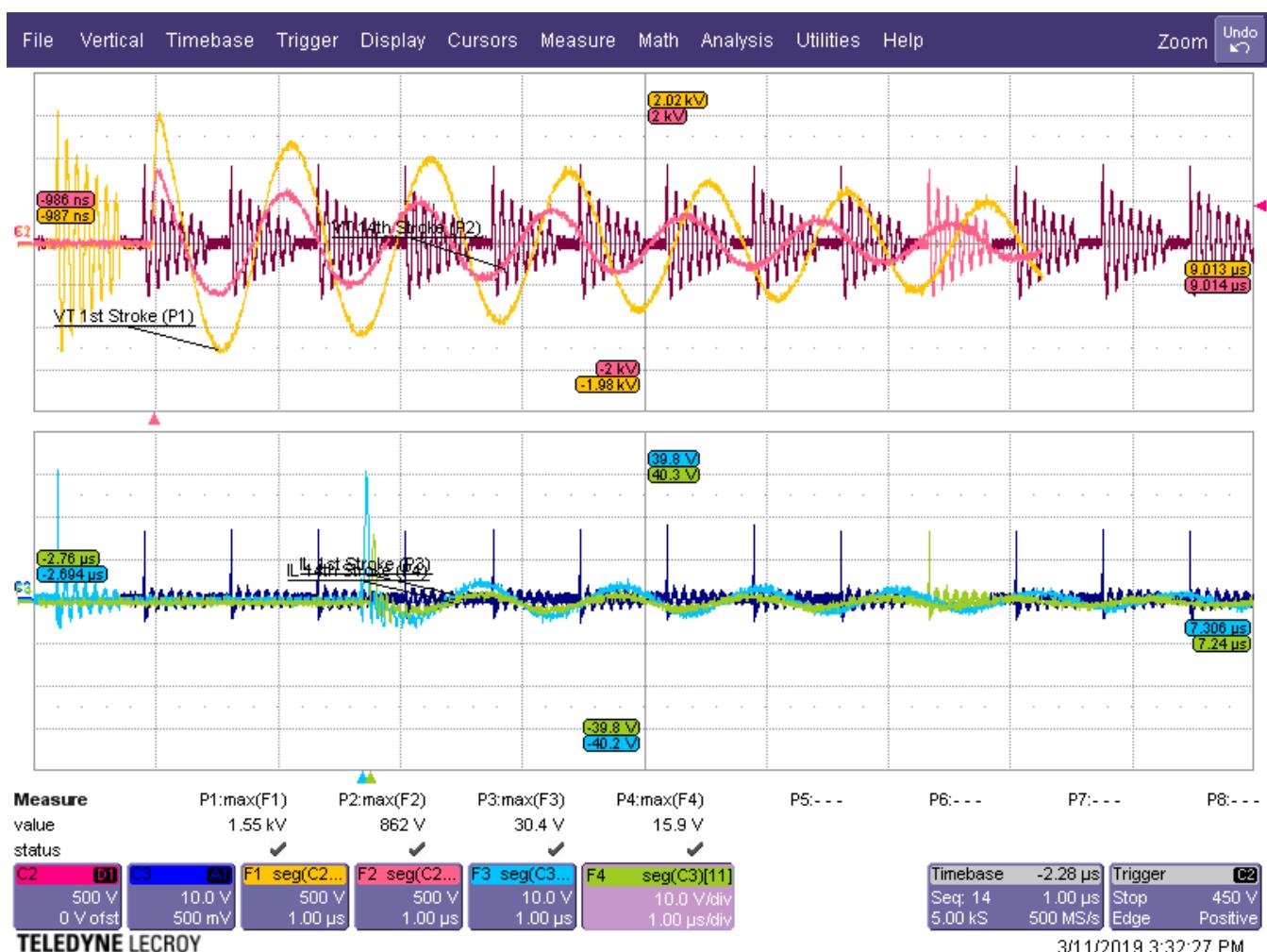
1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 1MHz Test Pos - Power Bundle

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 3:32:26 PM

Disasterpreparer

EMPS storm

MS WF3 1 MHz Cable Bundle Test

1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 1MHz Test Pos - Power Bundle

Page 2 of 2

Channel Status

	C2	C3
Vertical	V / Div	500 V
	Offset	0 V
	Coupling	DC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

Horizontal	Time / Div	1.00 μs	Sampling Rate	500 MS/s	Segments	14
	Time / Pt	2.000 ns	Sampling Mode	Sequence		
	Pts / Div	500.0 S	Trigger Delay	-2.28 μs		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	450 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 3:37:20 PM

Disasterpreparer

EMPStorm

MS WF3 1 MHz Cable Bundle Test

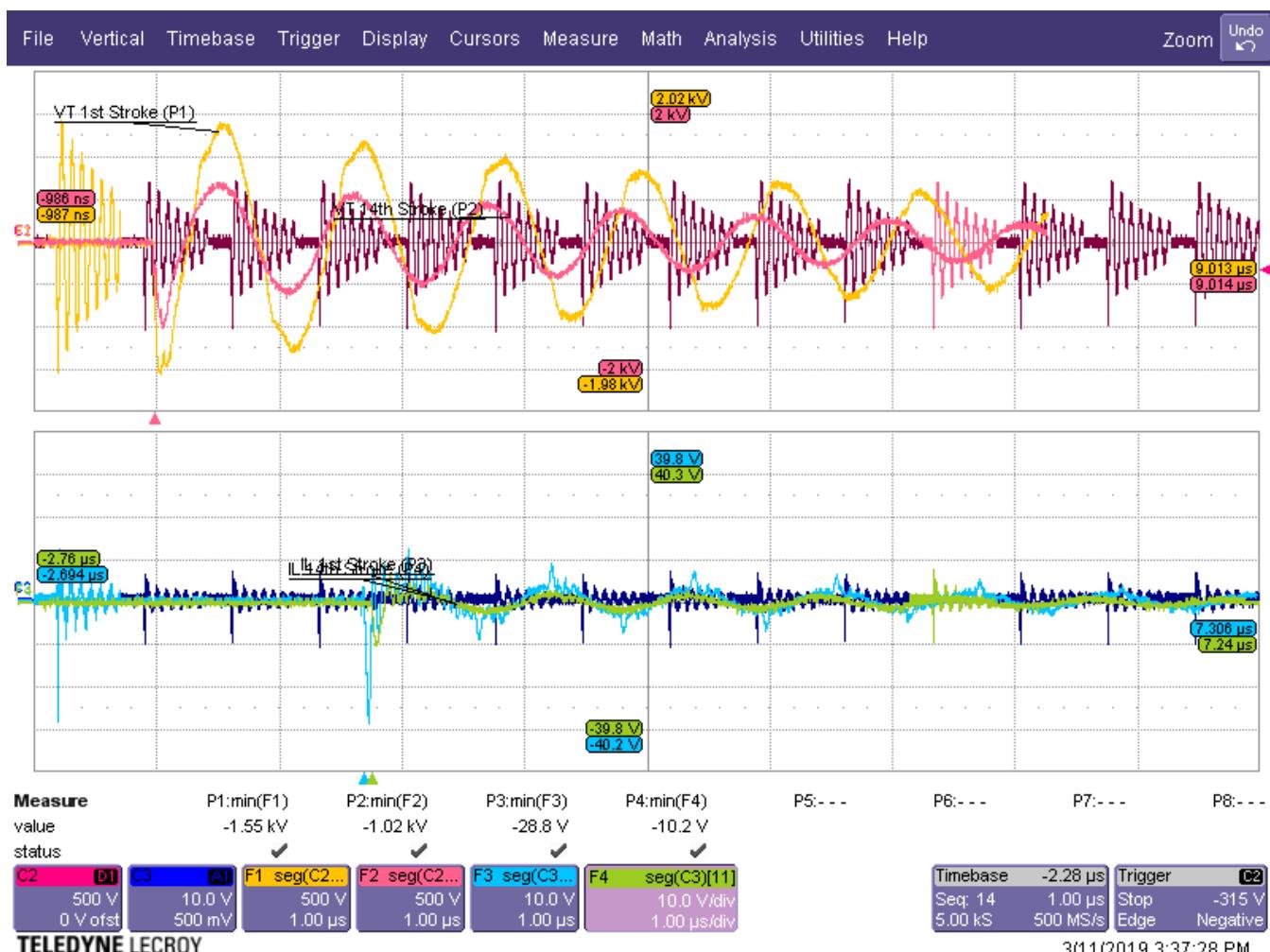
1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 1MHz Test Neg - Power Bundle

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 3:37:20 PM

Disasterpreparer

EMPS storm

MS WF3 1 MHz Cable Bundle Test

1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 1MHz Test Neg - Power Bundle

Page 2 of 2

Channel Status

	C2	C3
Vertical	V / Div	500 V
	Offset	0 V
	Coupling	DC1MO
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

Horizontal	Time / Div	1.00 μs	Sampling Rate	500 MS/s	Segments	14
	Time / Pt	2.000 ns	Sampling Mode	Sequence		
	Pts / Div	500.0 S	Trigger Delay	-2.28 μs		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-315 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 9:53:45 AM

Disasterpreparer

EMPS storm

MS WF3 10 MHz Cable Bundle Test

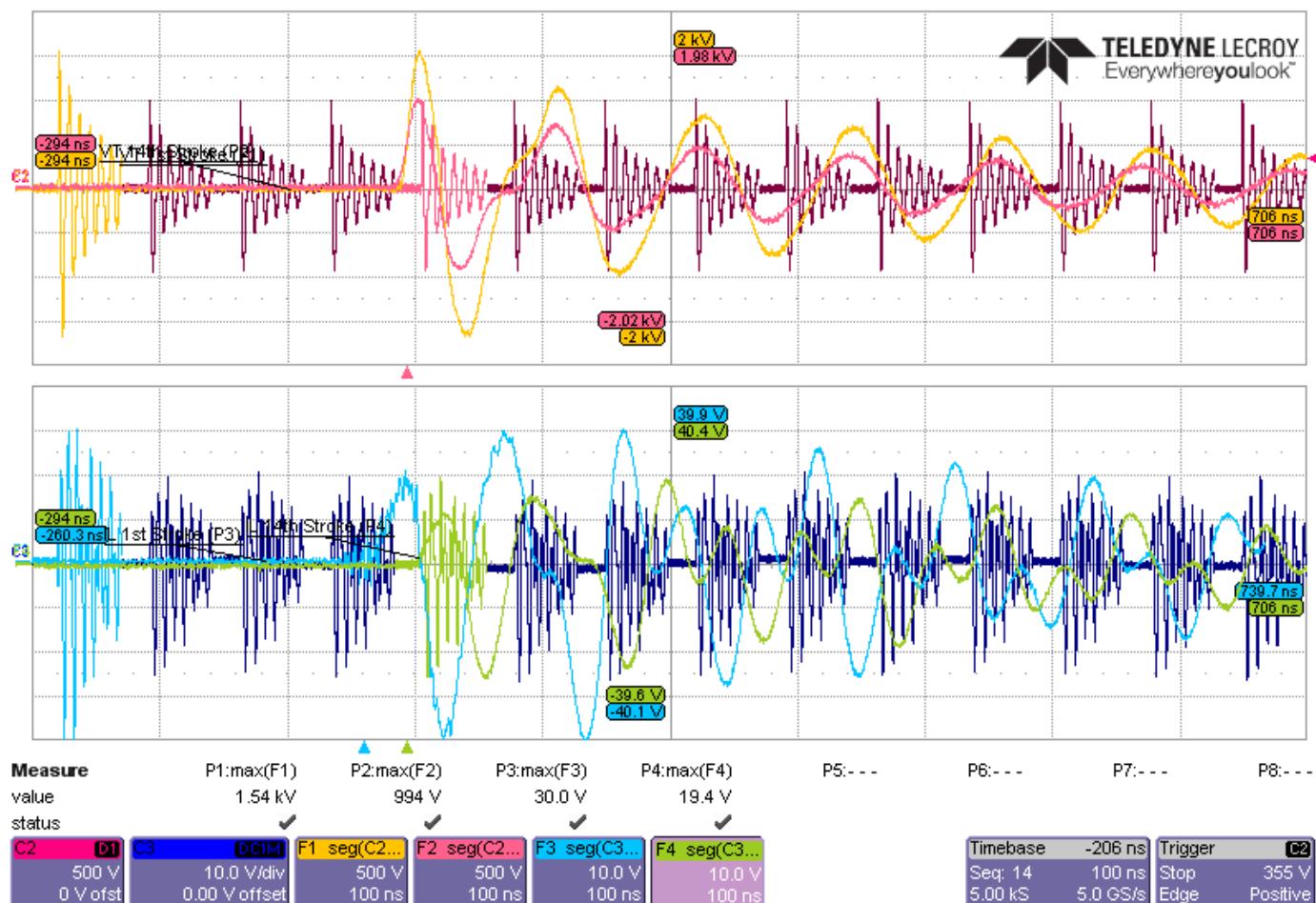
1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 10MHz Test Pos - High Side Line 1

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 9:53:45 AM

Disasterpreparer

EMPS storm

MS WF3 10 MHz Cable Bundle Test

1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 10MHz Test Pos - High Side Line 1

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	500 V	10.0 V
	Offset	0 V	0.00 V
	Coupling	DC1MΩ	DC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

	Time / Div	100 ns	Sampling Rate	5.0 GS/s	Segments	14
Horizontal	Time / Pt	200 ps	Sampling Mode	Sequence		
	Pts / Div	500.0 S	Trigger Delay	-206 ns		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	355 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 9:58:40 AM

Disasterpreparer

EMPS storm

MS WF3 10 MHz Cable Bundle Test

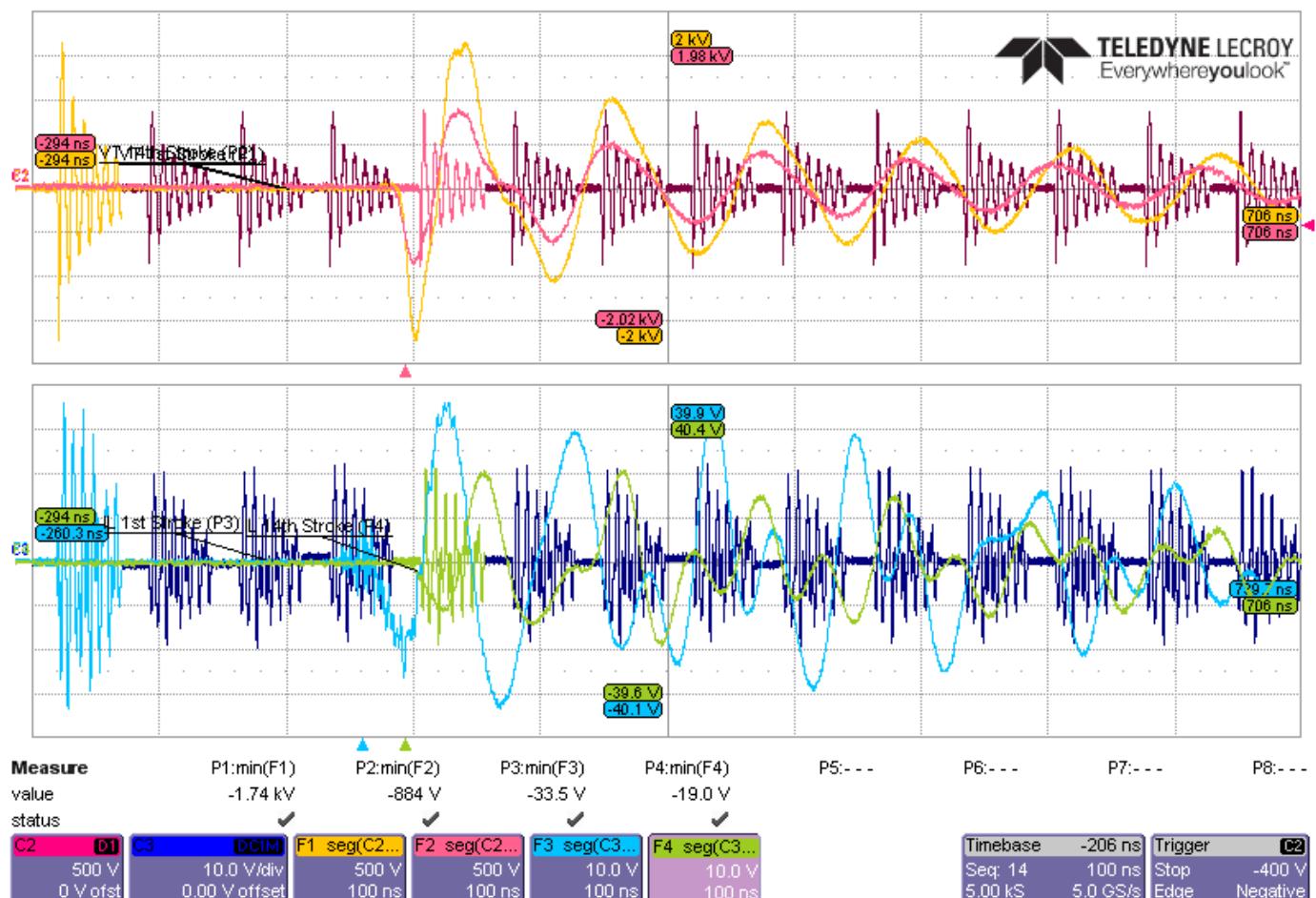
1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 10MHz Test Neg - High Side Line 1

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 9:58:40 AM

Disasterpreparer

EMPS storm

MS WF3 10 MHz Cable Bundle Test

1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 10MHz Test Neg - High Side Line 1

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	500 V	10.0 V
	Offset	0 V	0.00 V
	Coupling	DC1MΩ	DC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	100 ns	Sampling Rate	5.0 GS/s	Segments	14
	Time / Pt	200 ps	Sampling Mode	Sequence		
	Pts / Div	500.0 S	Trigger Delay	-206 ns		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-400 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: Appendix C
MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 12:48:21 PM

Disasterpreparer

EMPStorm

MS WF3 10 MHz Cable Bundle Test

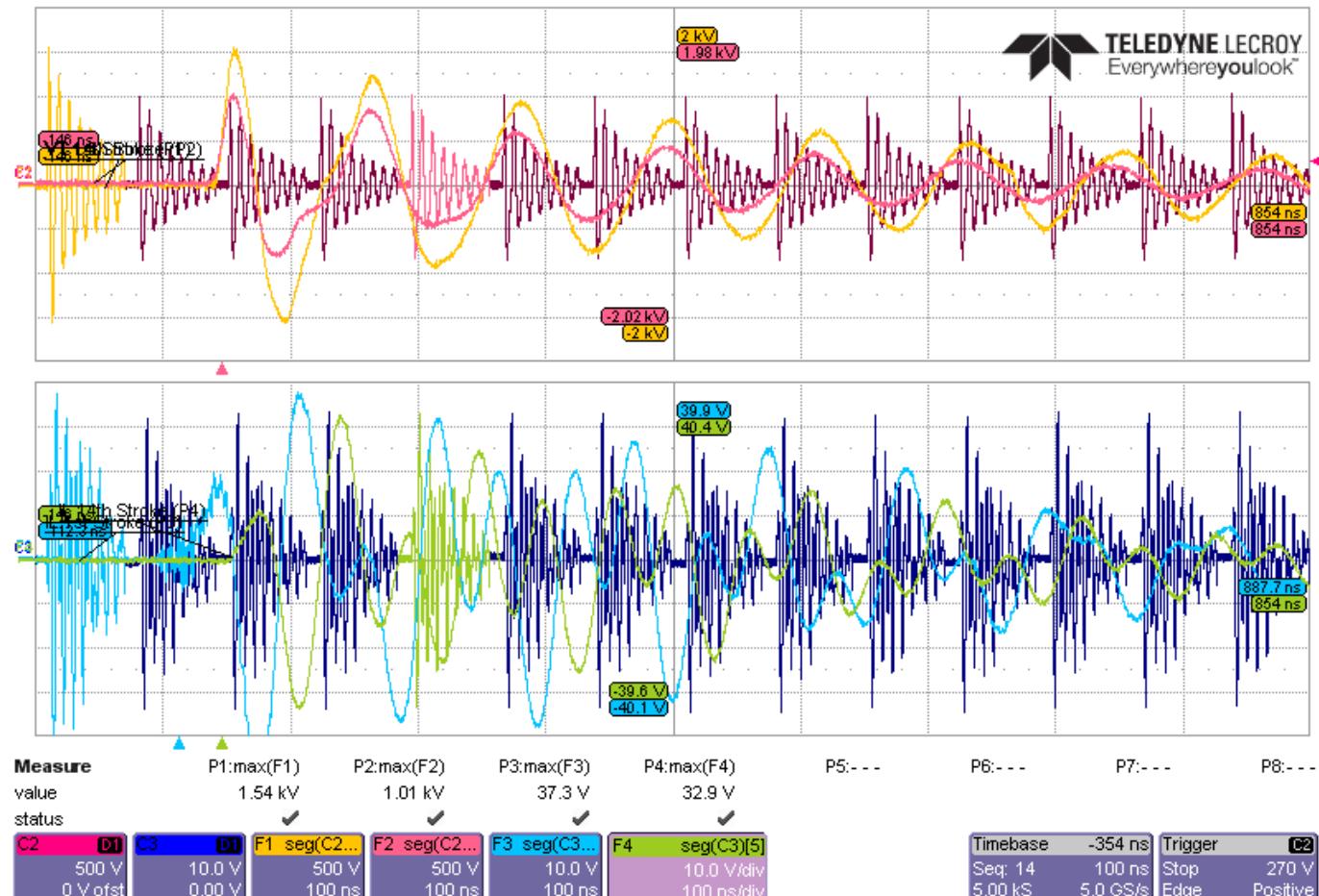
1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 10MHz Test Pos - High Side Line 2

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 12:48:21 PM

Disasterpreparer

EMPS storm

MS WF3 10 MHz Cable Bundle Test

1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 10MHz Test Pos - High Side Line 2

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	500 V	10.0 V
	Offset	0 V	0.00 V
	Coupling	DC1MΩ	DC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	100 ns	Sampling Rate	5.0 GS/s	Segments	14
	Time / Pt	200 ps	Sampling Mode	Sequence		
	Pts / Div	500.0 S	Trigger Delay	-354 ns		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	270 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 12:52:25 PM

Disasterpreparer

EMPS storm

MS WF3 10 MHz Cable Bundle Test

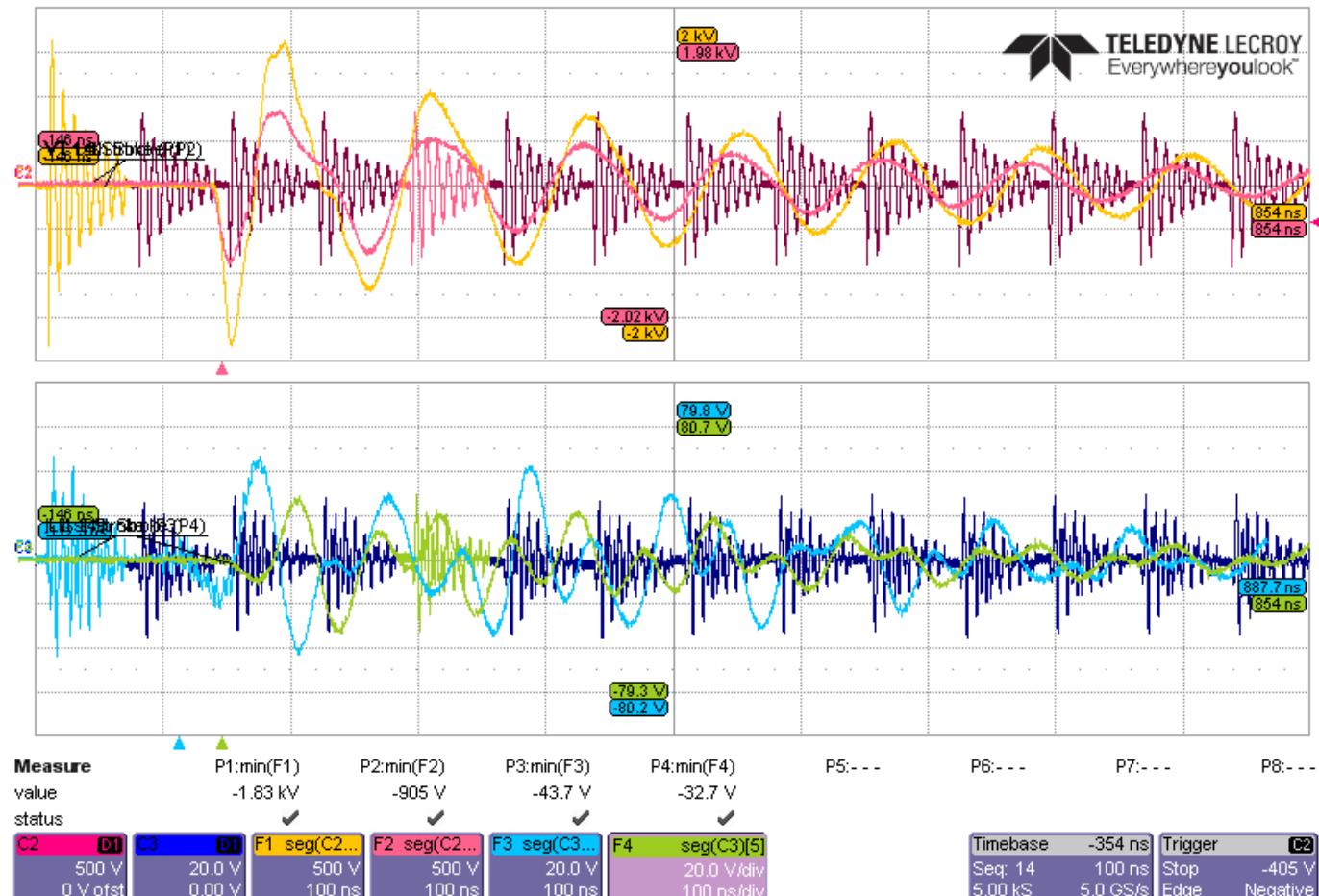
1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 10MHz Test Neg - High Side Line 2

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 12:52:25 PM

Disasterpreparer

EMPS storm

MS WF3 10 MHz Cable Bundle Test

1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 10MHz Test Neg - High Side Line 2

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	500 V	20.0 V
	Offset	0 V	0.00 V
	Coupling	DC1MΩ	DC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	100 ns	Sampling Rate	5.0 GS/s	Segments	14
	Time / Pt	200 ps	Sampling Mode	Sequence		
	Pts / Div	500.0 S	Trigger Delay	-354 ns		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-405 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 3:51:13 PM

Disasterpreparer

EMPS storm

MS WF3 10 MHz Cable Bundle Test

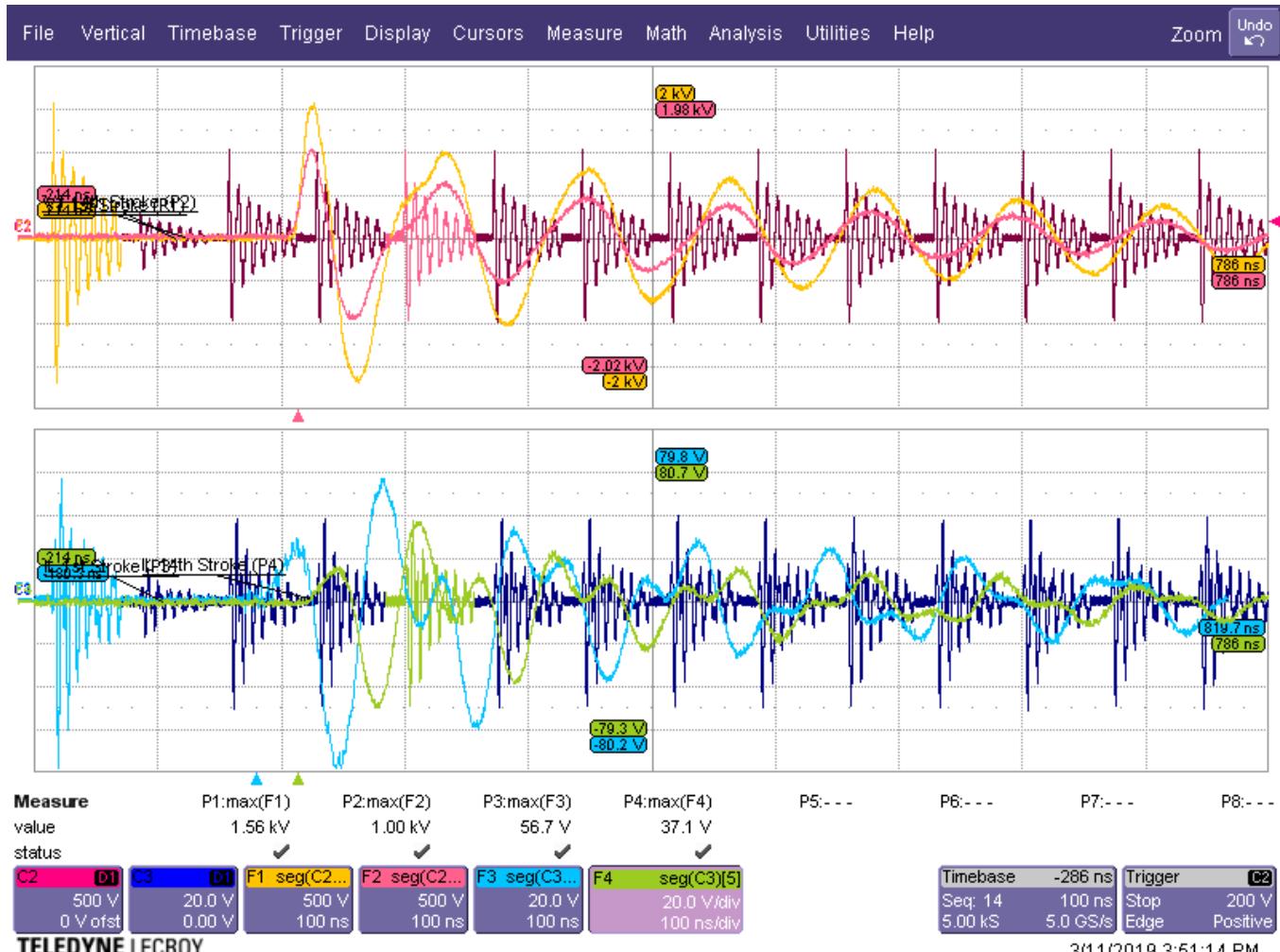
1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 10MHz Test Pos - Power Bundle

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 3:51:13 PM

Disasterpreparer

EMPS storm

MS WF3 10 MHz Cable Bundle Test

1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 10MHz Test Pos - Power Bundle

Page 2 of 2

Channel Status

	C2	C3
Vertical	V / Div	500 V
	Offset	0 V
	Coupling	DC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

Horizontal	Time / Div	100 ns	Sampling Rate	5.0 GS/s	Segments	14
	Time / Pt	200 ps	Sampling Mode	Sequence		
	Pts / Div	500.0 S	Trigger Delay	-286 ns		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	200 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: Appendix C
MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 4:04:19 PM

Disasterpreparer

EMPStorm

MS WF3 10 MHz Cable Bundle Test

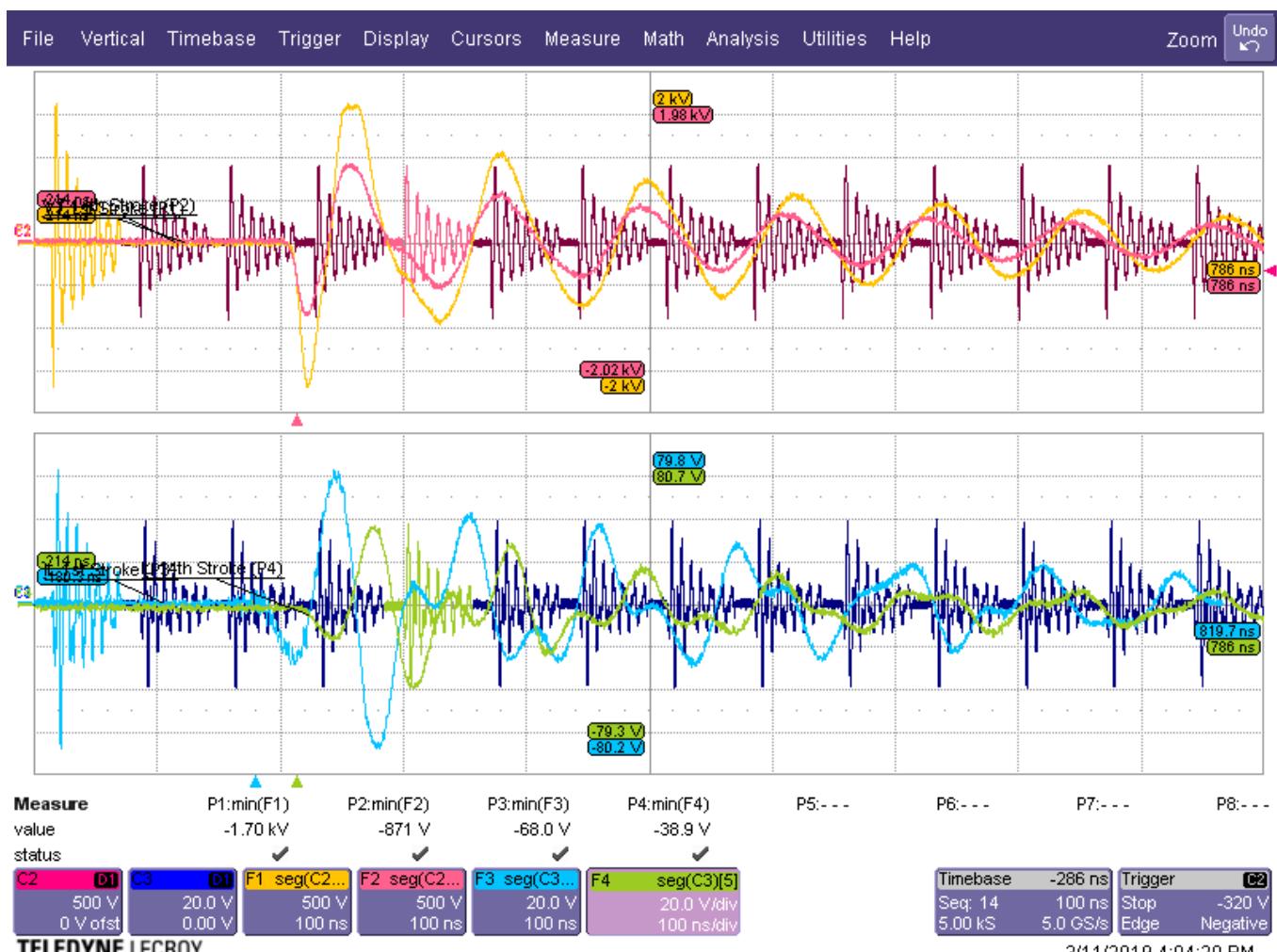
1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 10MHz Test Neg - Power Bundle

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 4:04:19 PM

Disasterpreparer

EMPS storm

MS WF3 10 MHz Cable Bundle Test

1st 1500V/300A

Sub 750V/150A

Vt Reached

MS WF3 10MHz Test Neg - Power Bundle

Page 2 of 2

Channel Status

	C2	C3
Vertical	V / Div	500 V
	Offset	0 V
	Coupling	DC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

Horizontal	Time / Div	100 ns	Sampling Rate	5.0 GS/s	Segments	14
	Time / Pt	200 ps	Sampling Mode	Sequence		
	Pts / Div	500.0 S	Trigger Delay	-286 ns		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-320 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

CS117

CABLE BUNDLE WF4, MS

TEST DATA SHEETS



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 3:22:55 PM

Disasterpreparer

EMPStorm

MS WF4 Cable Bundle Test

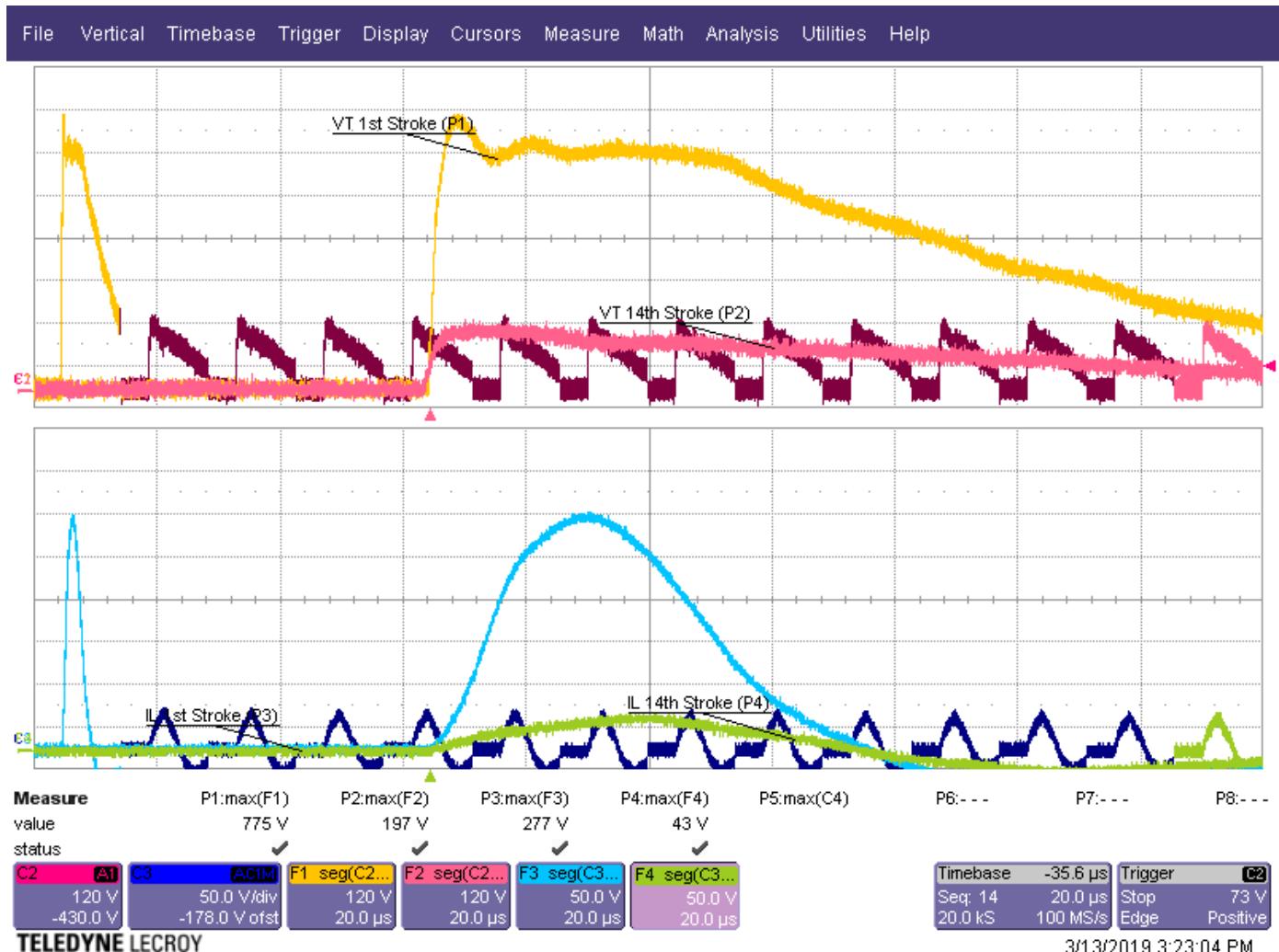
1st 750V/2000A

Sub 187.5V/400A

VT Reached

MS WF4 Test Pos- High Side Line 1

Page 1 of 2



Lab Notebook Entry from LeCroy DSO

MS WF4 Test Pos- High Side Line 1



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 3:22:55 PM

Disasterpreparer

EMPS storm

MS WF4 Cable Bundle Test

1st 750V/2000A

Sub 187.5V/400A

VT Reached

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	120 V	50.0 V
	Offset	-430.0 V	-178.0 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

	Time / Div	20.0 μs	Sampling Rate	100 MS/s	Segments	14
Horizontal	Time / Pt	10.000 ns	Sampling Mode	Sequence		
	Pts / Div	2.0000 kS	Trigger Delay	-35.6 μs		
	Mode	Stop	Slope	Positive		
Trigger	Type	Edge	Level	73 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 3:12:39 PM

Disasterpreparer

EMPS storm

MS WF4 Cable Bundle Test

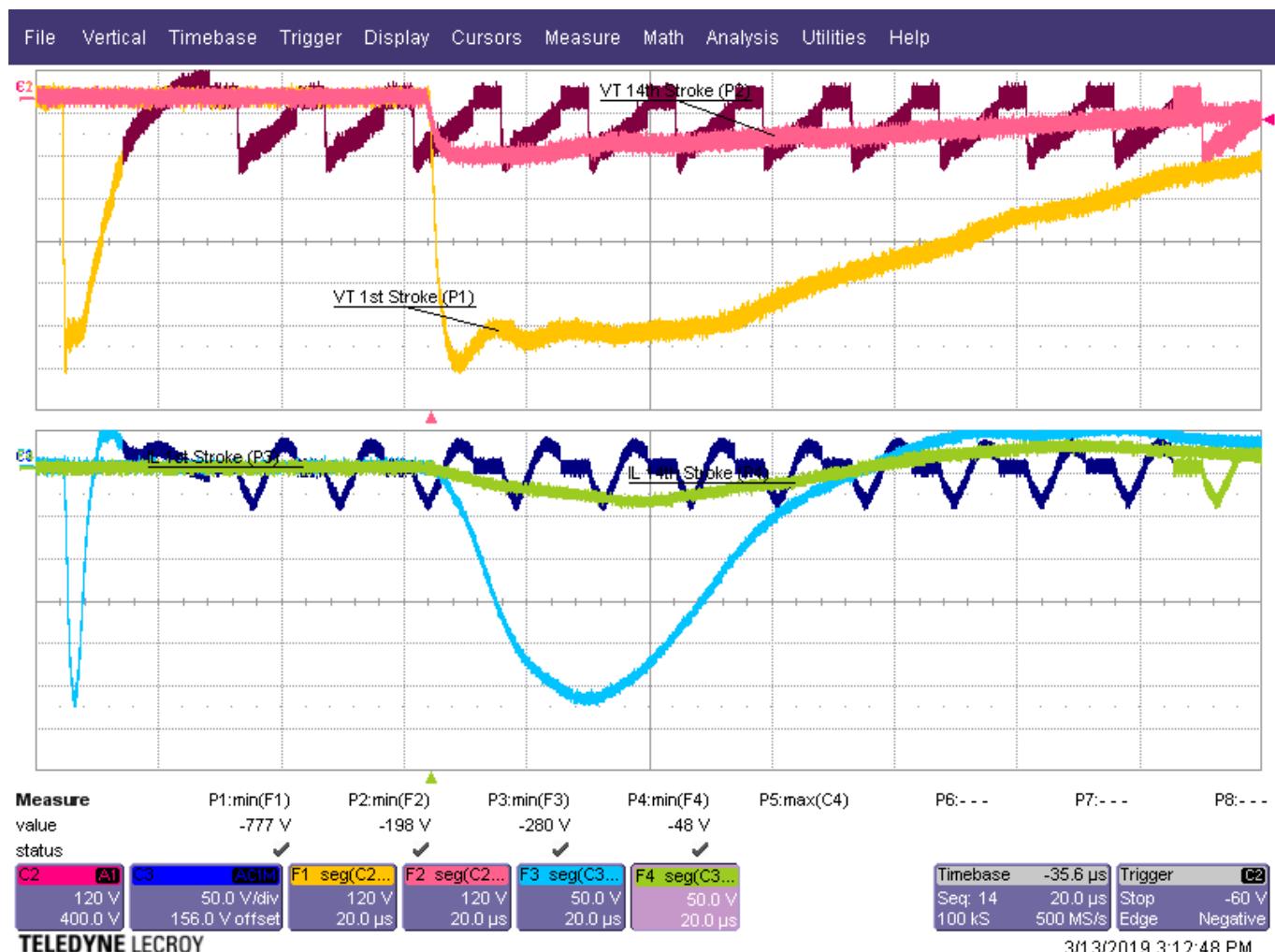
1st 750V/2000A

Sub 187.5V/400A

VT Reached

MS WF4 Test Neg- High Side Line 1

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 3:12:39 PM

Disasterpreparer

EMPStorm

MS WF4 Cable Bundle Test

1st 750V/2000A

Sub 187.5V/400A

VT Reached

MS WF4 Test Neg- High Side Line 1

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	120 V	50.0 V
	Offset	400.0 V	156.0 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	20.0 μs	Sampling Rate	500 MS/s	Segments	14
	Time / Pt	2.000 ns	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-35.6 μs		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-60 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle
Appendix C

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 3:22:55 PM

Disasterpreparer

EMPStorm

MS WF4 Cable Bundle Test

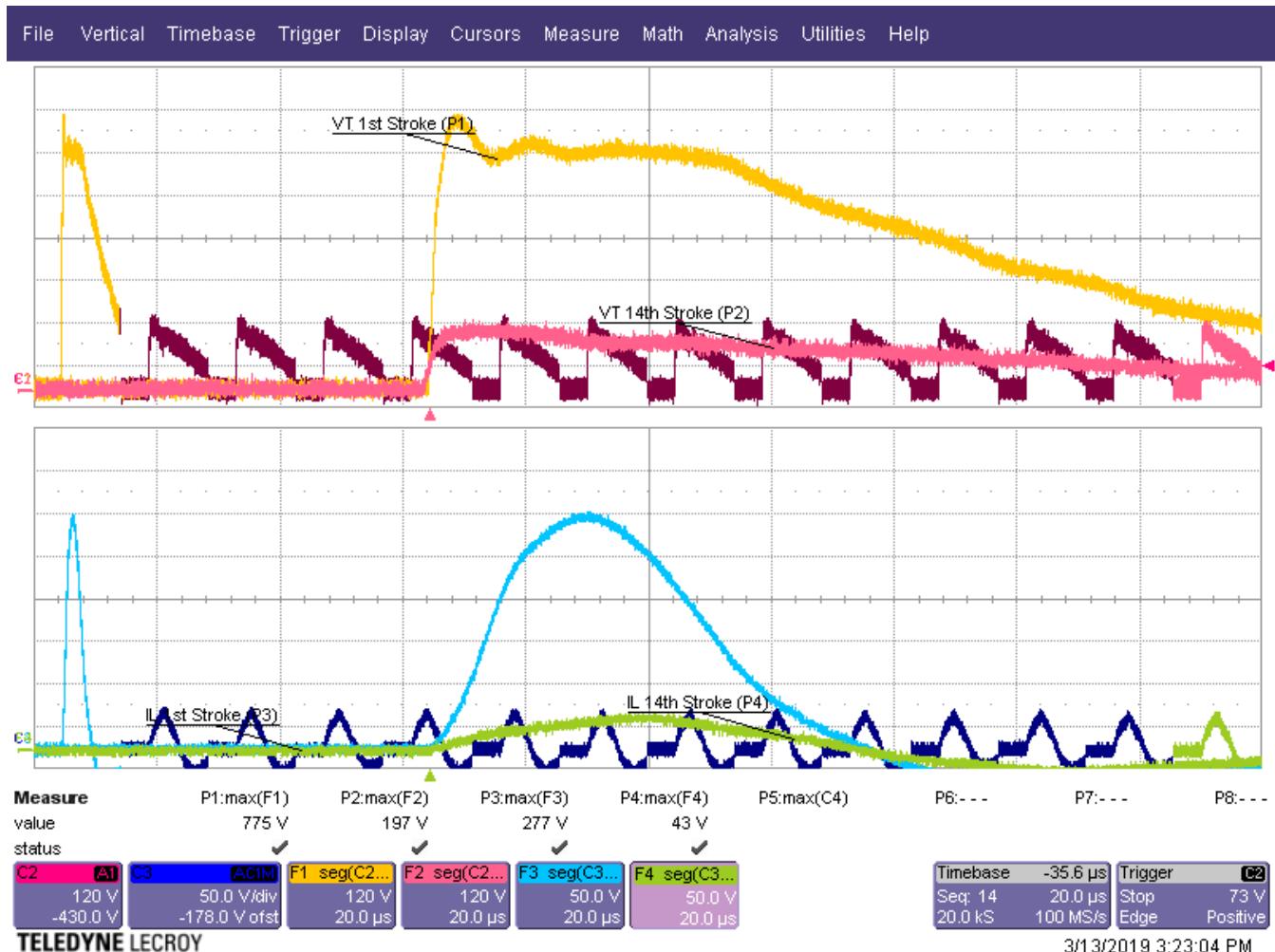
1st 750V/2000A

Sub 187.5V/400A

VT Reached

MS WF4 Test Pos- High Side Line 2

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 3:22:55 PM

Disasterpreparer

EMPStorm

MS WF4 Cable Bundle Test

1st 750V/2000A

Sub 187.5V/400A

VT Reached

MS WF4 Test Pos- High Side Line 2

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	120 V	50.0 V
	Offset	-430.0 V	-178.0 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	20.0 μs	Sampling Rate	100 MS/s	Segments	14
	Time / Pt	10.000 ns	Sampling Mode	Sequence		
	Pts / Div	2.0000 kS	Trigger Delay	-35.6 μs		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	73 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 3:30:05 PM

Disasterpreparer

EMPStorm

MS WF4 Cable Bundle Test

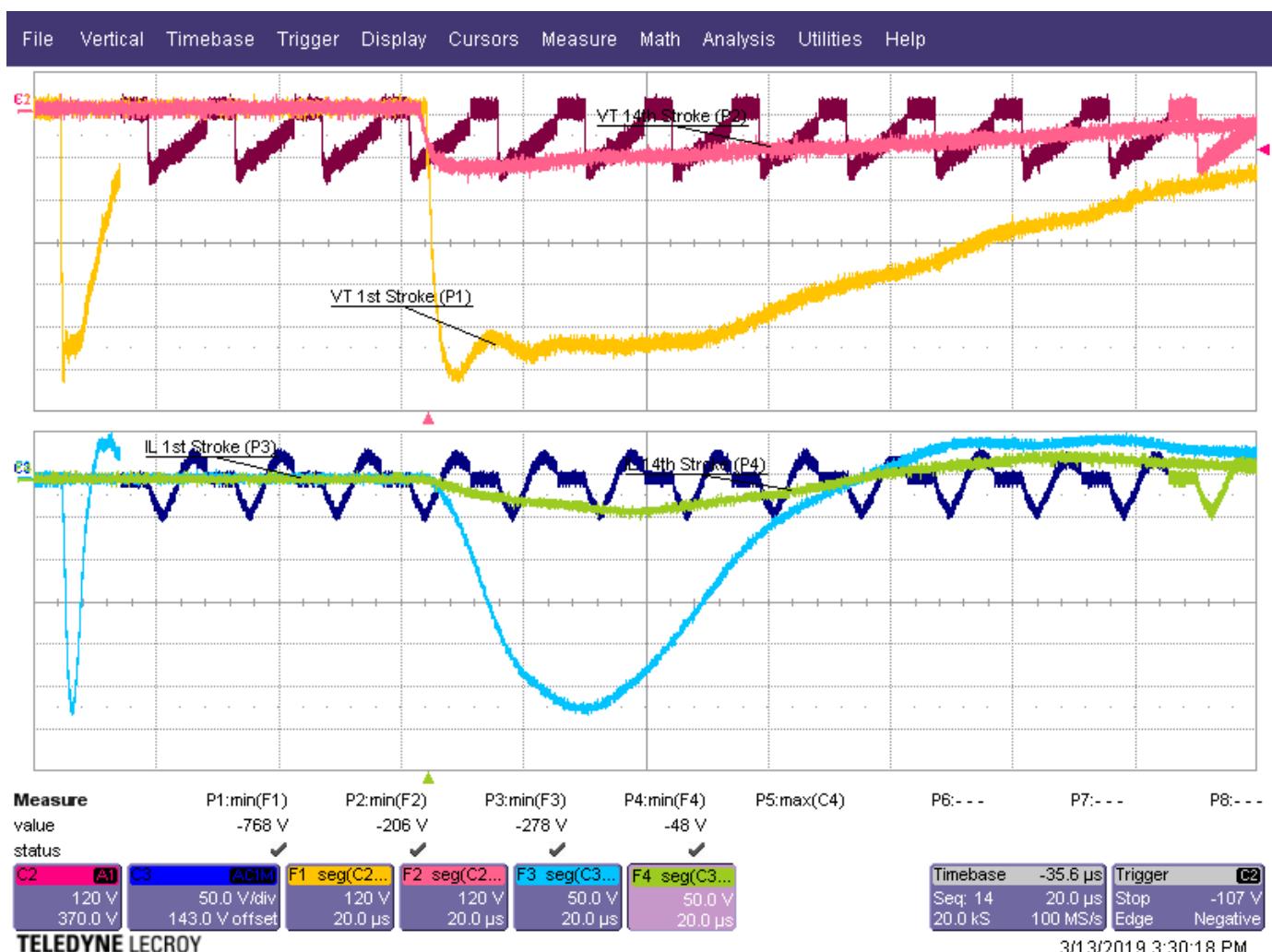
1st 750V/2000A

Sub 187.5V/400A

VT Reached

MS WF4 Test Neg- High Side Line 2

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 3:30:05 PM

Disasterpreparer

EMPStorm

MS WF4 Cable Bundle Test

1st 750V/2000A

Sub 187.5V/400A

VT Reached

MS WF4 Test Neg- High Side Line 2

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	120 V	50.0 V
	Offset	370.0 V	143.0 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	20.0 μs	Sampling Rate	100 MS/s	Segments	14
	Time / Pt	10.000 ns	Sampling Mode	Sequence		
	Pts / Div	2.0000 kS	Trigger Delay	-35.6 μs		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-107 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 2:44:43 PM

Disasterpreparer

EMPStorm

MS WF4 Cable Bundle Test

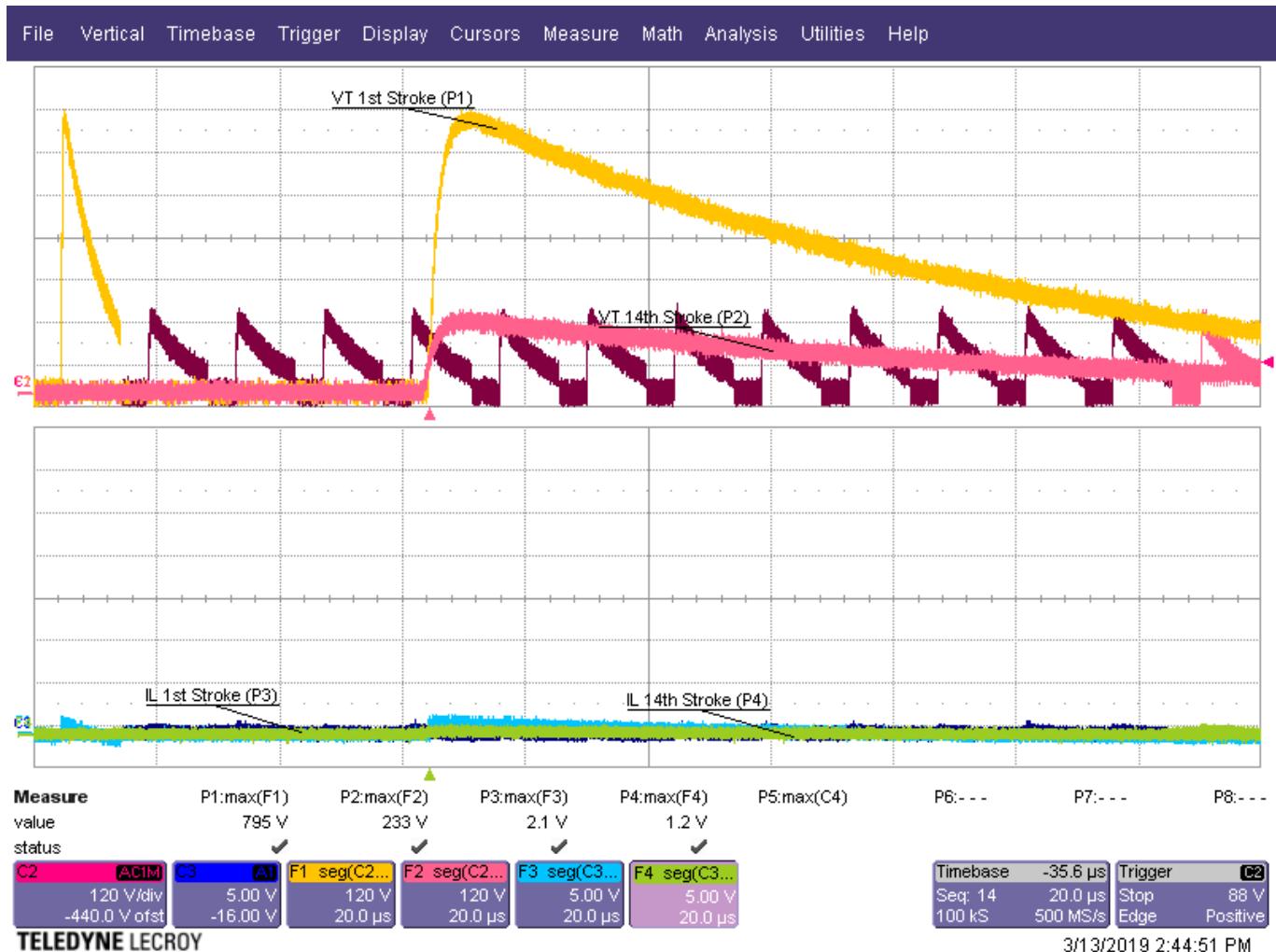
1st 750V/2000A

Sub 187.5V/400A

VT Reached

MS WF4 Test Pos- Power Bundle

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 2:44:43 PM

Disasterpreparer

EMPStorm

MS WF4 Cable Bundle Test

1st 750V/2000A

Sub 187.5V/400A

VT Reached

MS WF4 Test Pos- Power Bundle

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	120 V	5.00 V
	Offset	-440.0 V	-16.00 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	20.0 μs	Sampling Rate	500 MS/s	Segments	14
	Time / Pt	2.000 ns	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-35.6 μs		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	88 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 2:49:29 PM

Disasterpreparer

EMPStorm

MS WF4 Cable Bundle Test

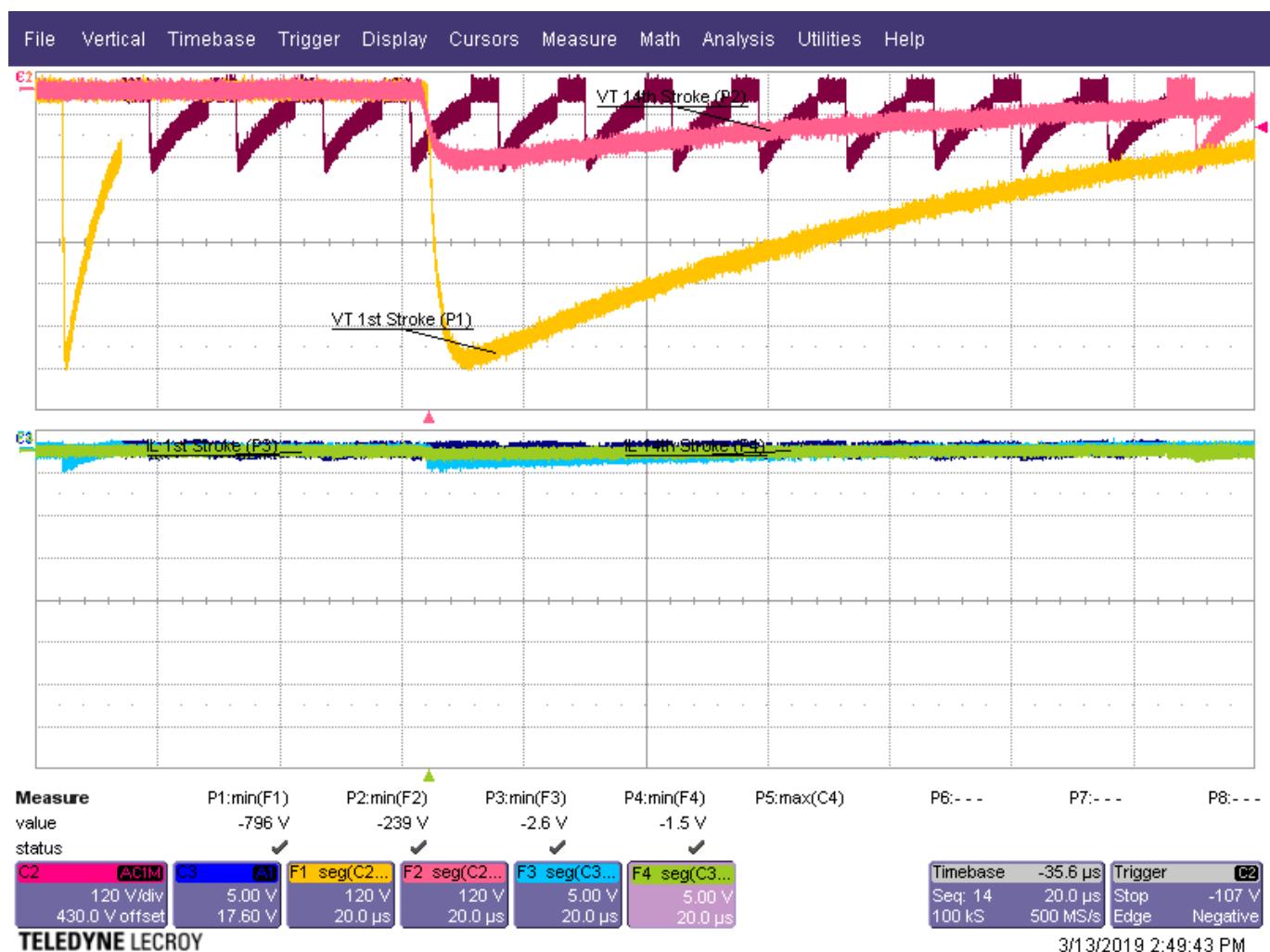
1st 750V/2000A

Sub 187.5V/400A

VT Reached

MS WF4 Test Neg- Power Bundle

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 2:49:29 PM

Disasterpreparer

EMPStorm

MS WF4 Cable Bundle Test

1st 750V/2000A

Sub 187.5V/400A

VT Reached

MS WF4 Test Neg- Power Bundle

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	120 V	5.00 V
	Offset	430.0 V	17.60 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	20.0 μs	Sampling Rate	500 MS/s	Segments	14
	Time / Pt	2.000 ns	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-35.6 μs		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-107 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

CS117

CABLE BUNDLE WF5A, MS

TEST DATA SHEETS



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 1:03:31 PM

Disasterpreparer

EMPStorm

MS WF5A Cable Bundle Test

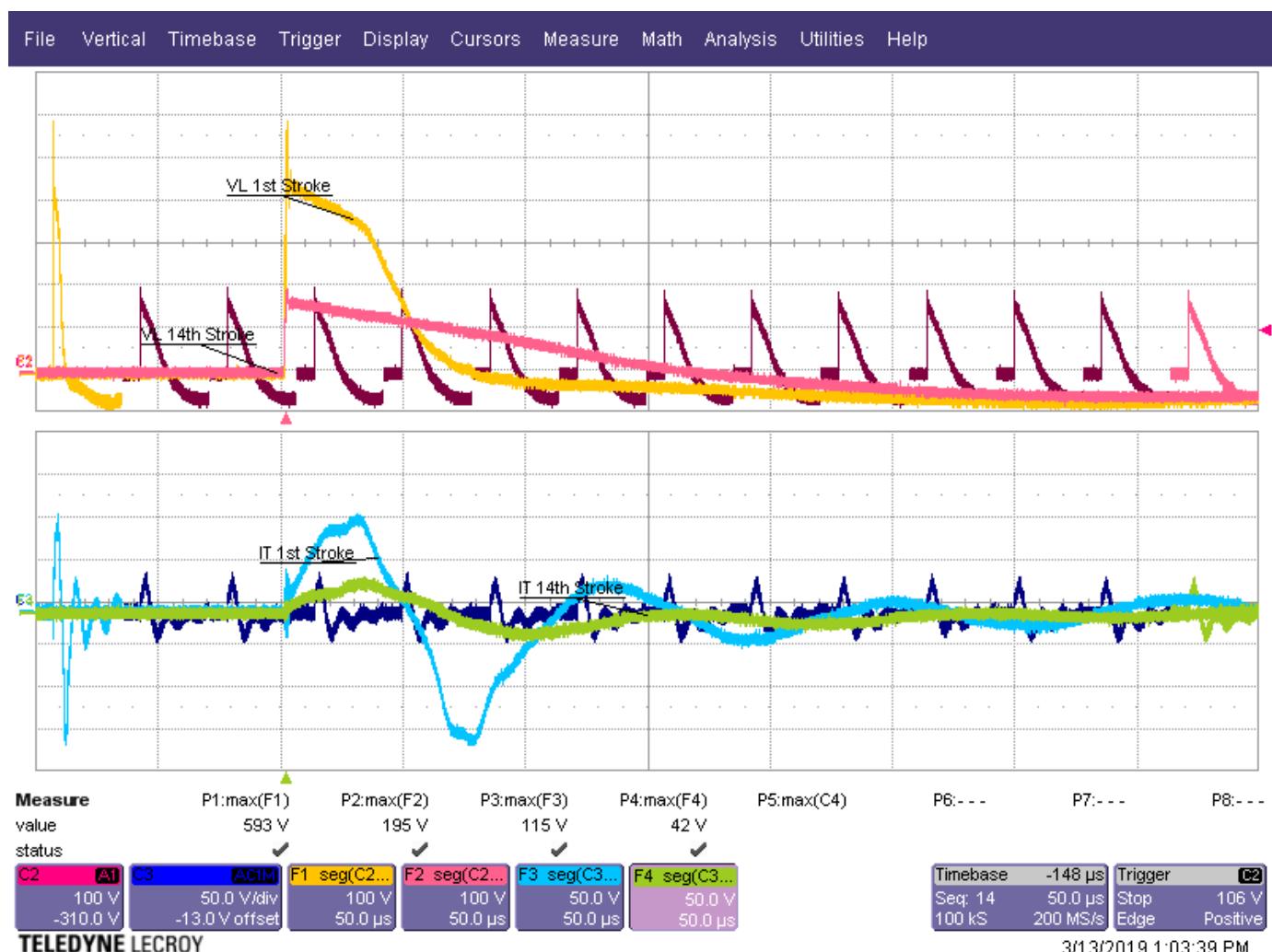
1st 750V/2000A

Sub 187.5V/400A

Max Gen - IT or VL not Reached

MS WF5A Test Pos- High Side Line 1

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 1:03:31 PM

Disasterpreparer

EMPStorm

MS WF5A Cable Bundle Test

1st 750V/2000A

Sub 187.5V/400A

Max Gen - IT or VL not Reached

MS WF5A Test Pos- High Side Line 1

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	100 V	50.0 V
	Offset	-310.0 V	-13.0 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	50.0 μs	Sampling Rate	200 MS/s	Segments	14
	Time / Pt	5.000 ns	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-148 μs		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	106 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 1:05:31 PM

Disasterpreparer

EMPStorm

MS WF5A Cable Bundle Test

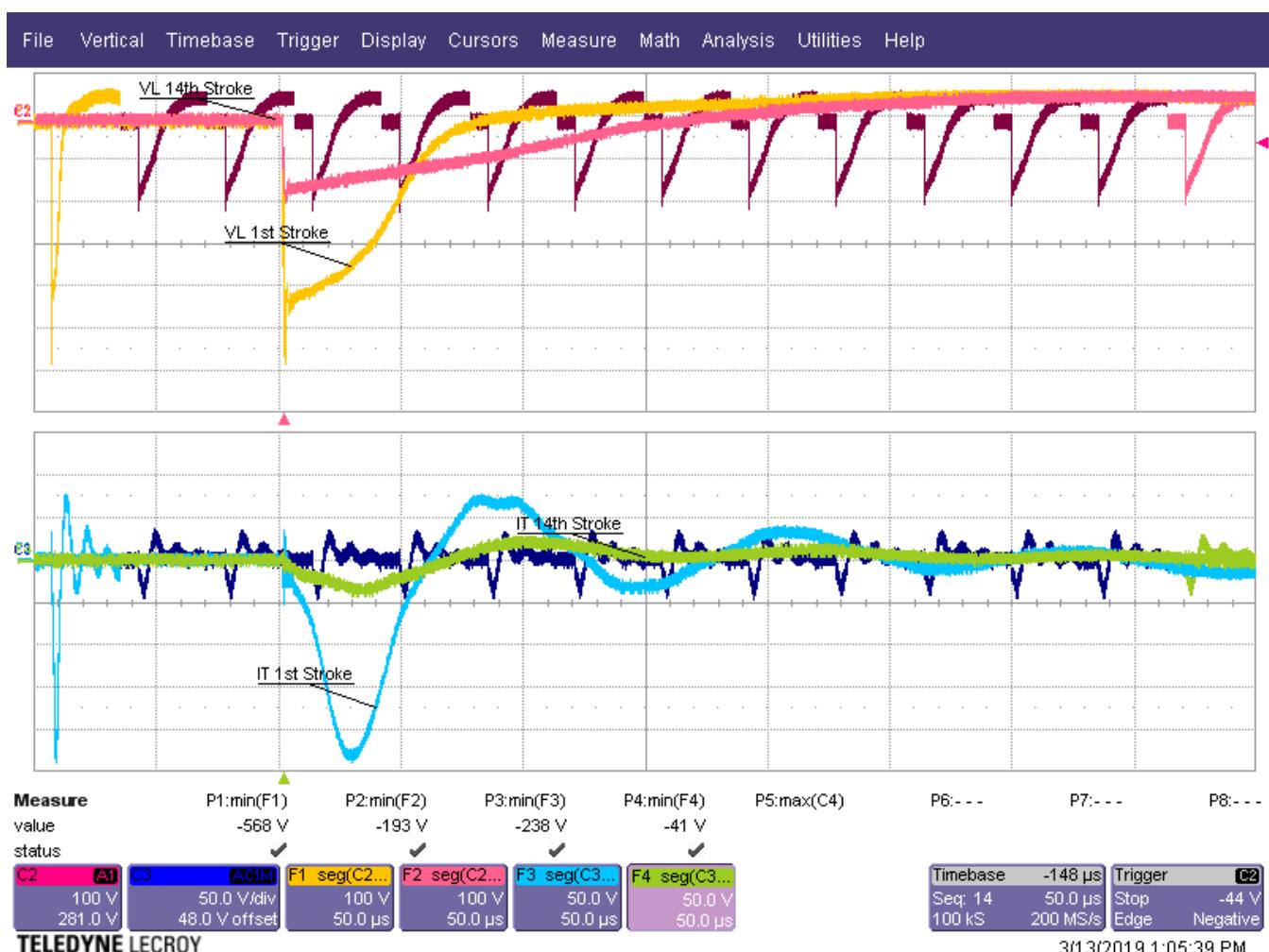
1st 750V/2000A

Sub 187.5V/400A

Max Gen - IT or VL not Reached

MS WF5A Test Neg- High Side Line 1

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 1:05:31 PM

Disasterpreparer

EMPS storm

MS WF5A Cable Bundle Test

1st 750V/2000A

Sub 187.5V/400A

Max Gen - IT or VL not Reached

MS WF5A Test Neg- High Side Line 1

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	100 V	50.0 V
	Offset	281.0 V	48.0 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	50.0 μs	Sampling Rate	200 MS/s	Segments	14
	Time / Pt	5.000 ns	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-148 μs		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-44 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 12:42:47 PM

Disasterpreparer

EMPStorm

MS WF5A Cable Bundle Test

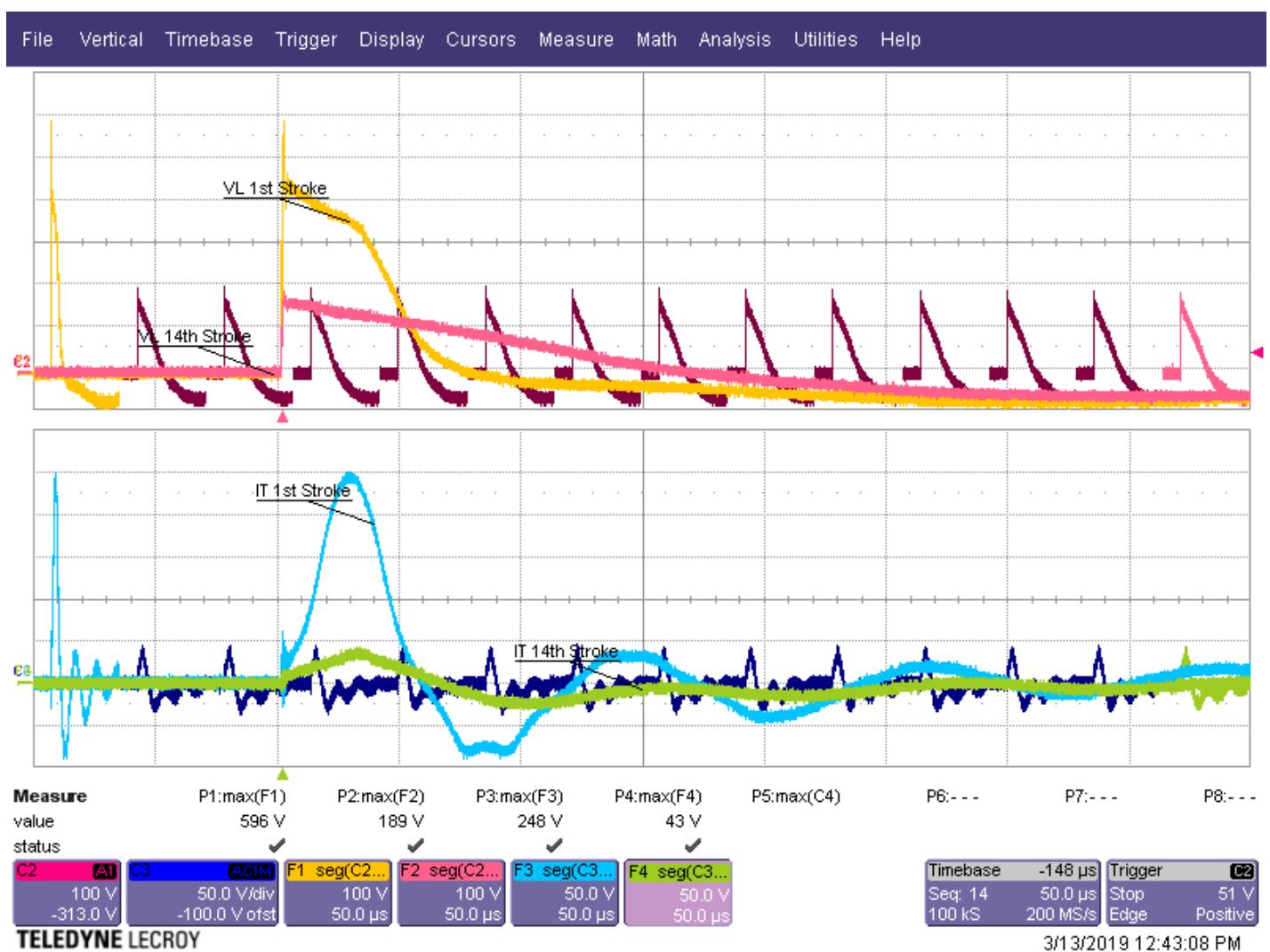
1st 750V/2000A

Sub 187.5V/400A

Max Gen - IT or VL not Reached

MS WF5A Test Pos- High Side Line 2

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 12:42:47 PM

Disasterpreparer

EMPS storm

MS WF5A Cable Bundle Test

1st 750V/2000A

Sub 187.5V/400A

Max Gen - IT or VL not Reached

MS WF5A Test Pos- High Side Line 2

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	100 V	50.0 V
	Offset	-313.0 V	-100.0 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	50.0 μs	Sampling Rate	200 MS/s	Segments	14
	Time / Pt	5.000 ns	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-148 μs		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	51 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 12:44:53 PM

Disasterpreparer

EMPStorm

MS WF5A Cable Bundle Test

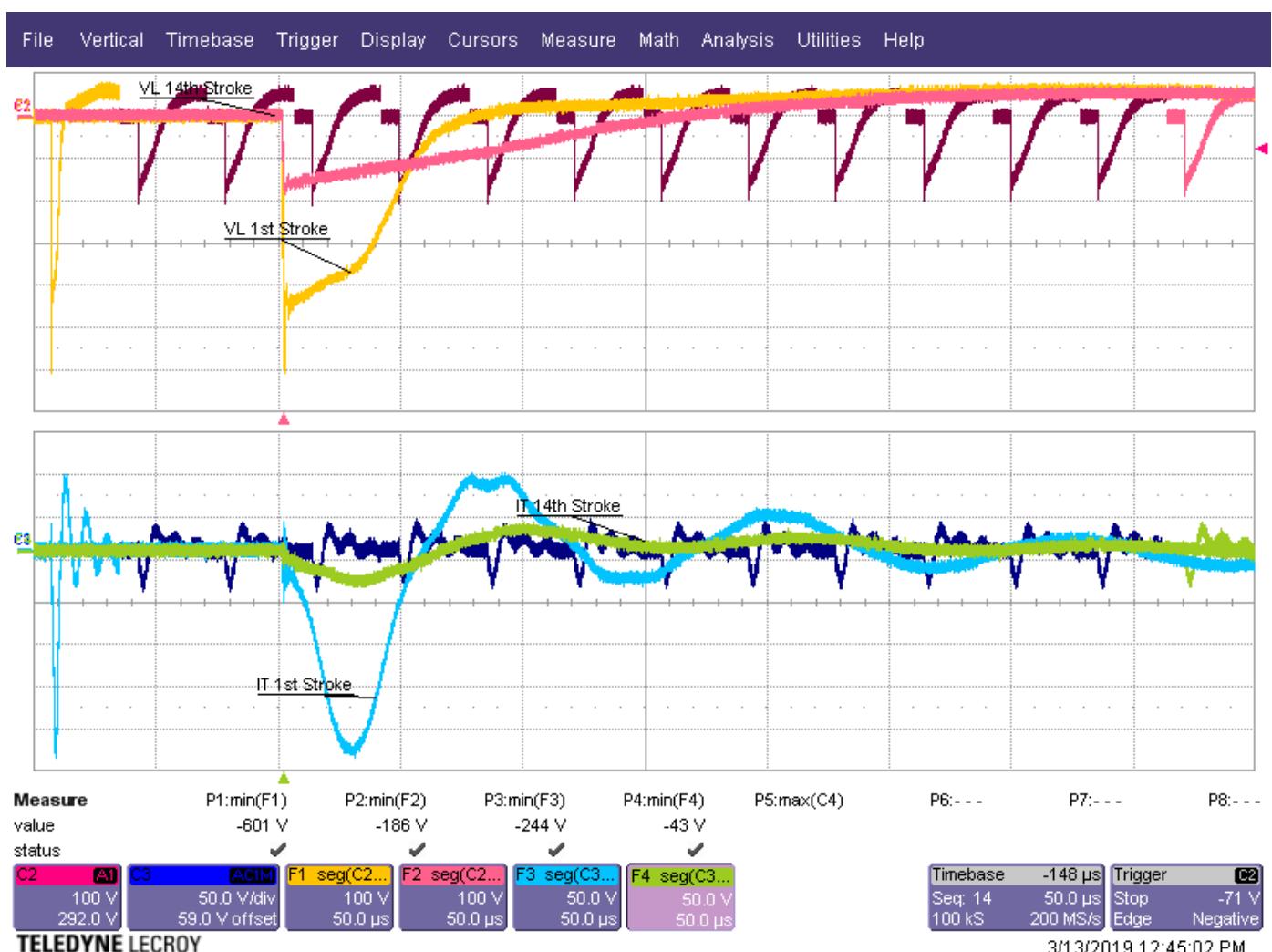
1st 750V/2000A

Sub 187.5V/400A

Max Gen - IT or VL not Reached

MS WF5A Test Neg- High Side Line 2

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 12:44:53 PM

Disasterpreparer

EMPS storm

MS WF5A Cable Bundle Test

1st 750V/2000A

Sub 187.5V/400A

Max Gen - IT or VL not Reached

MS WF5A Test Neg- High Side Line 2

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	100 V	50.0 V
	Offset	292.0 V	59.0 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	50.0 μs	Sampling Rate	200 MS/s	Segments	14
	Time / Pt	5.000 ns	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-148 μs		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-71 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 1:00:45 PM

Disasterpreparer

EMPStorm

MS WF5A Cable Bundle Test

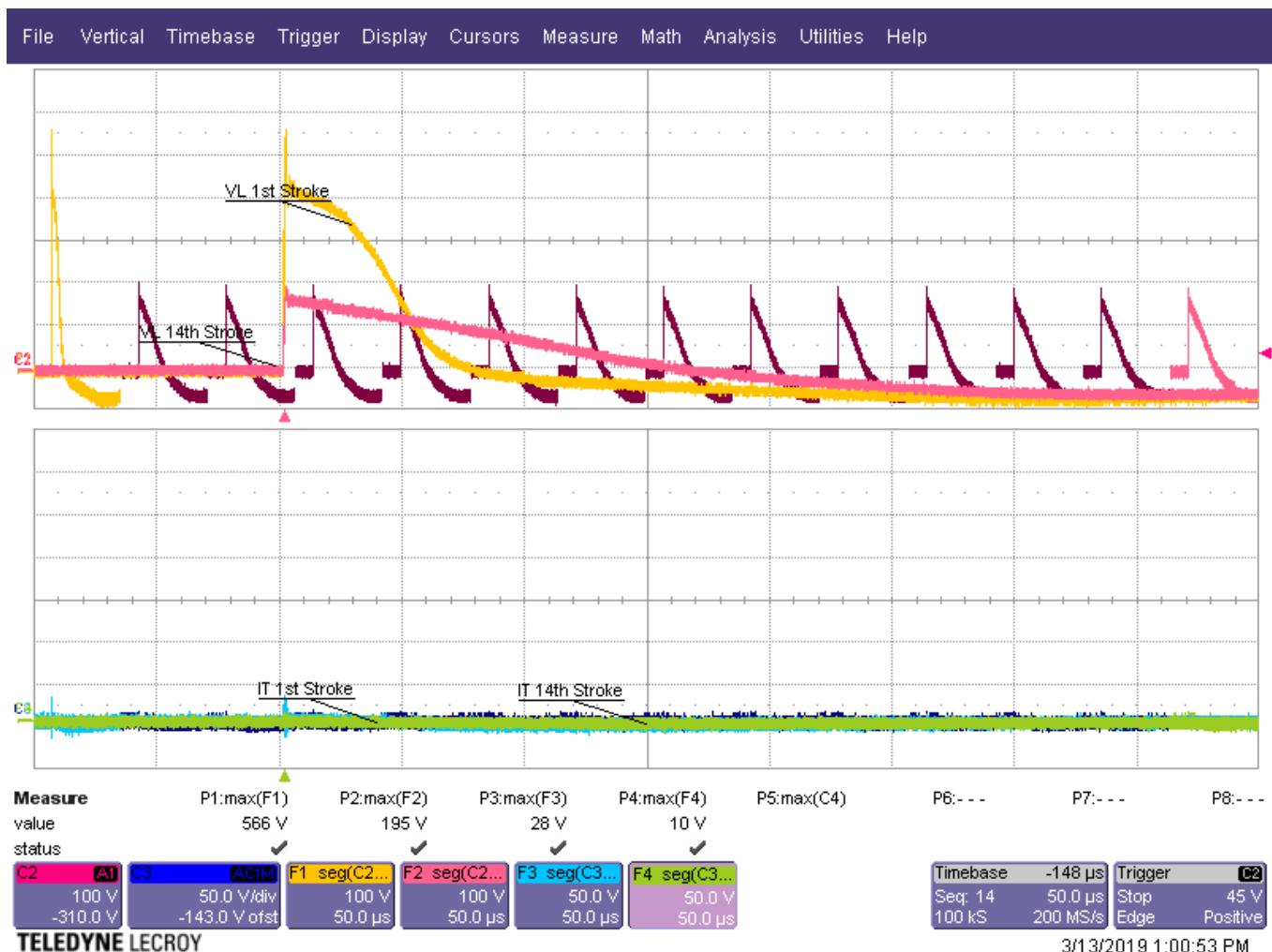
1st 750V/2000A

Sub 187.5V/400A

Max Gen - IT or VL not Reached

MS WF5A Test Pos- Power Bundle

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 1:00:45 PM

Disasterpreparer

EMPS storm

MS WF5A Cable Bundle Test

1st 750V/2000A

Sub 187.5V/400A

Max Gen - IT or VL not Reached

MS WF5A Test Pos- Power Bundle

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	100 V	50.0 V
	Offset	-310.0 V	-143.0 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	50.0 μs	Sampling Rate	200 MS/s	Segments	14
	Time / Pt	5.000 ns	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-148 μs		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	45 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 12:59:11 PM

Disasterpreparer

EMPStorm

MS WF5A Cable Bundle Test

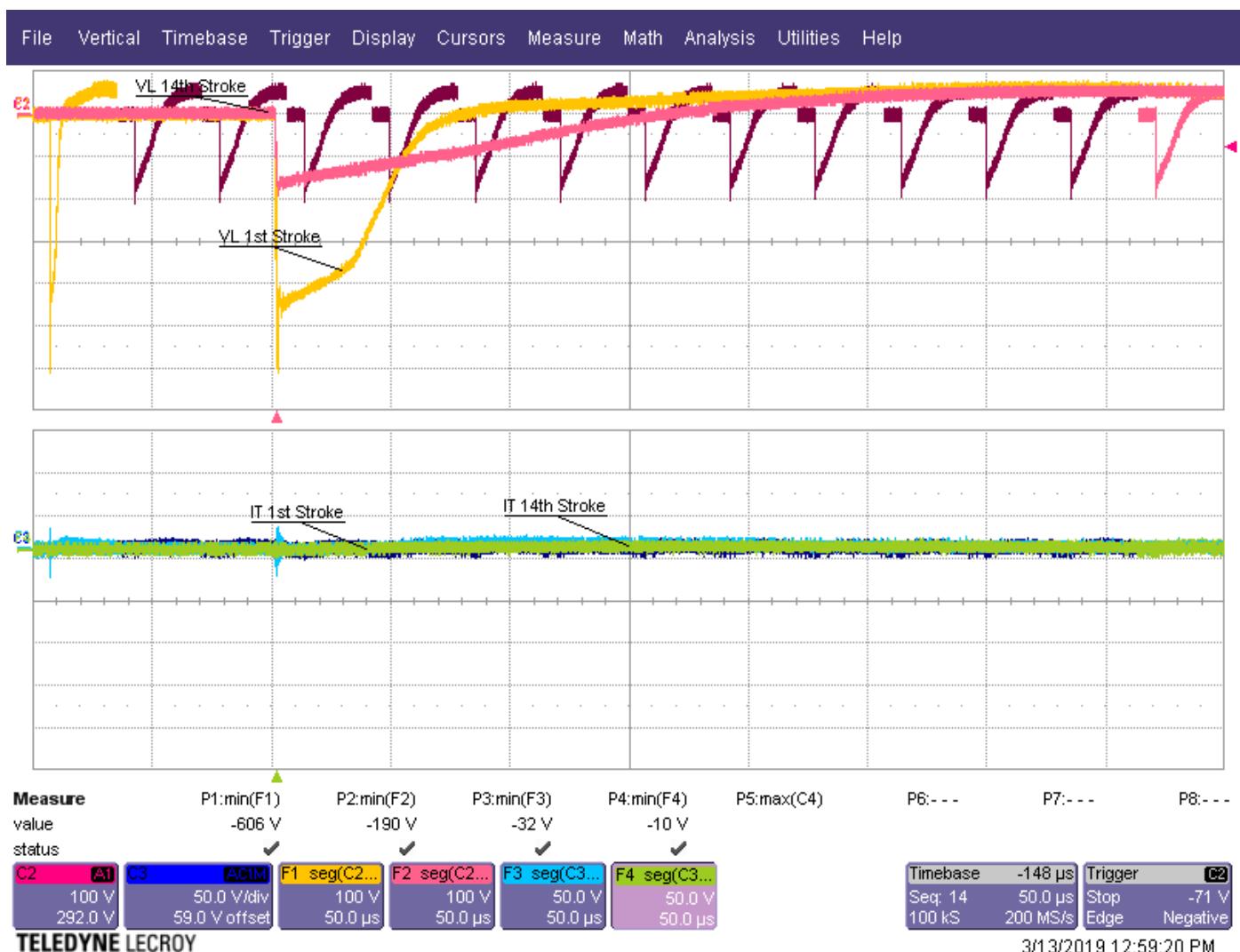
1st 750V/2000A

Sub 187.5V/400A

Max Gen - IT or VL not Reached

MS WF5A Test Neg- Power Bundle

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/13/2019 12:59:11 PM

Disasterpreparer

EMPS storm

MS WF5A Cable Bundle Test

1st 750V/2000A

Sub 187.5V/400A

Max Gen - IT or VL not Reached

MS WF5A Test Neg- Power Bundle

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	100 V	50.0 V
	Offset	292.0 V	59.0 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	50.0 μs	Sampling Rate	200 MS/s	Segments	14
	Time / Pt	5.000 ns	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-148 μs		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-71 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

CS117

CABLE BUNDLE WF3, MB

TEST DATA SHEETS



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 10:29:36 AM

Disasterpreparer

EMPS storm

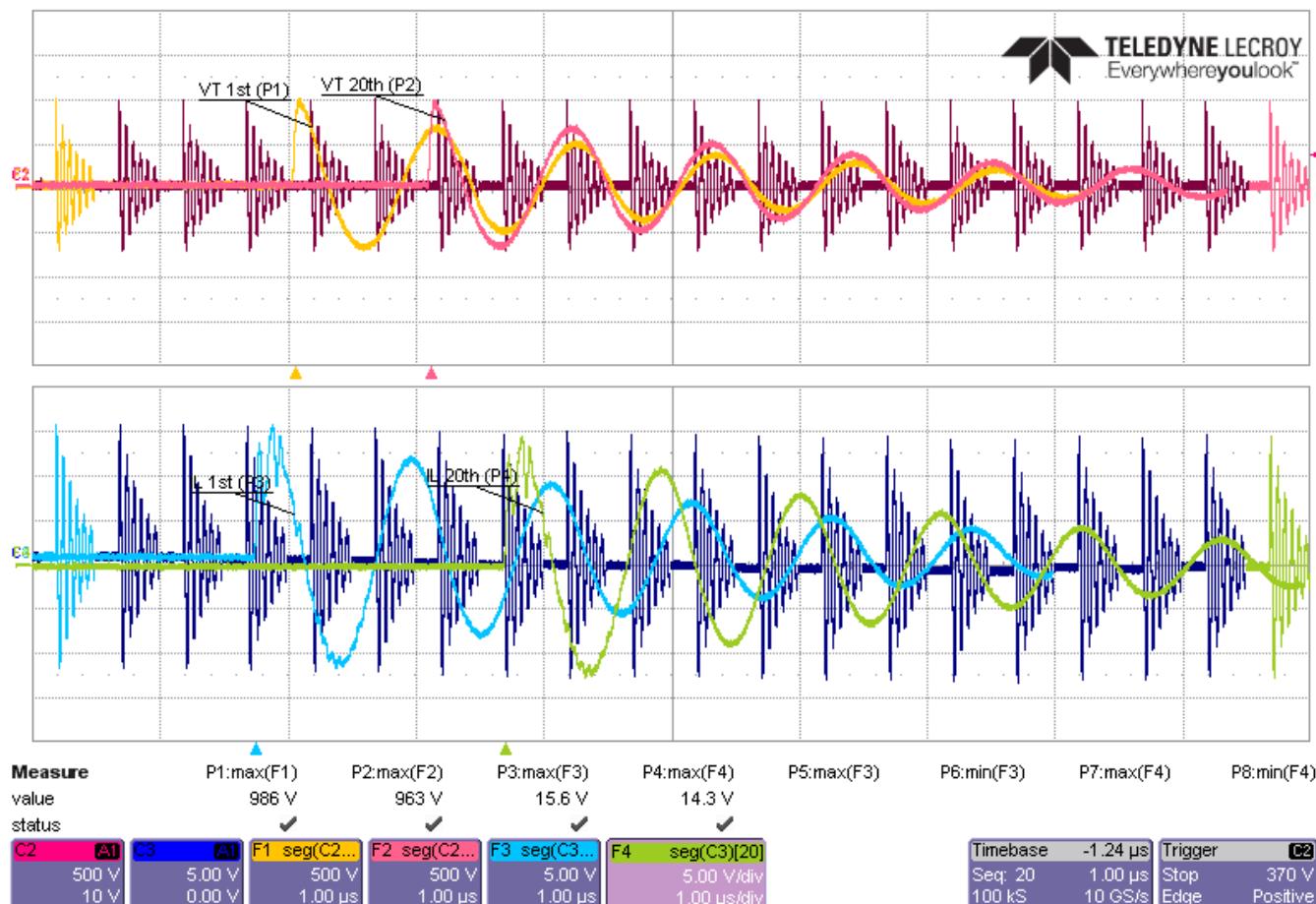
MB WF3 1 MHz Cable Bundle Test

900V/15A

VT Reached

MB WF3 1MHz Test Pos - High Side Line 1

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 10:29:36 AM

Disasterpreparer

EMPS storm

MB WF3 1 MHz Cable Bundle Test

900V/15A

VT Reached

MB WF3 1MHz Test Pos - High Side Line 1

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	500 V	5.00 V
	Offset	10 V	0.00 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	1.00 μs	Sampling Rate	10 GS/s	Segments	20
	Time / Pt	100 ps	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-1.24 μs		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	370 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Appendix C

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 10:21:07 AM

Disasterpreparer

EMPS storm

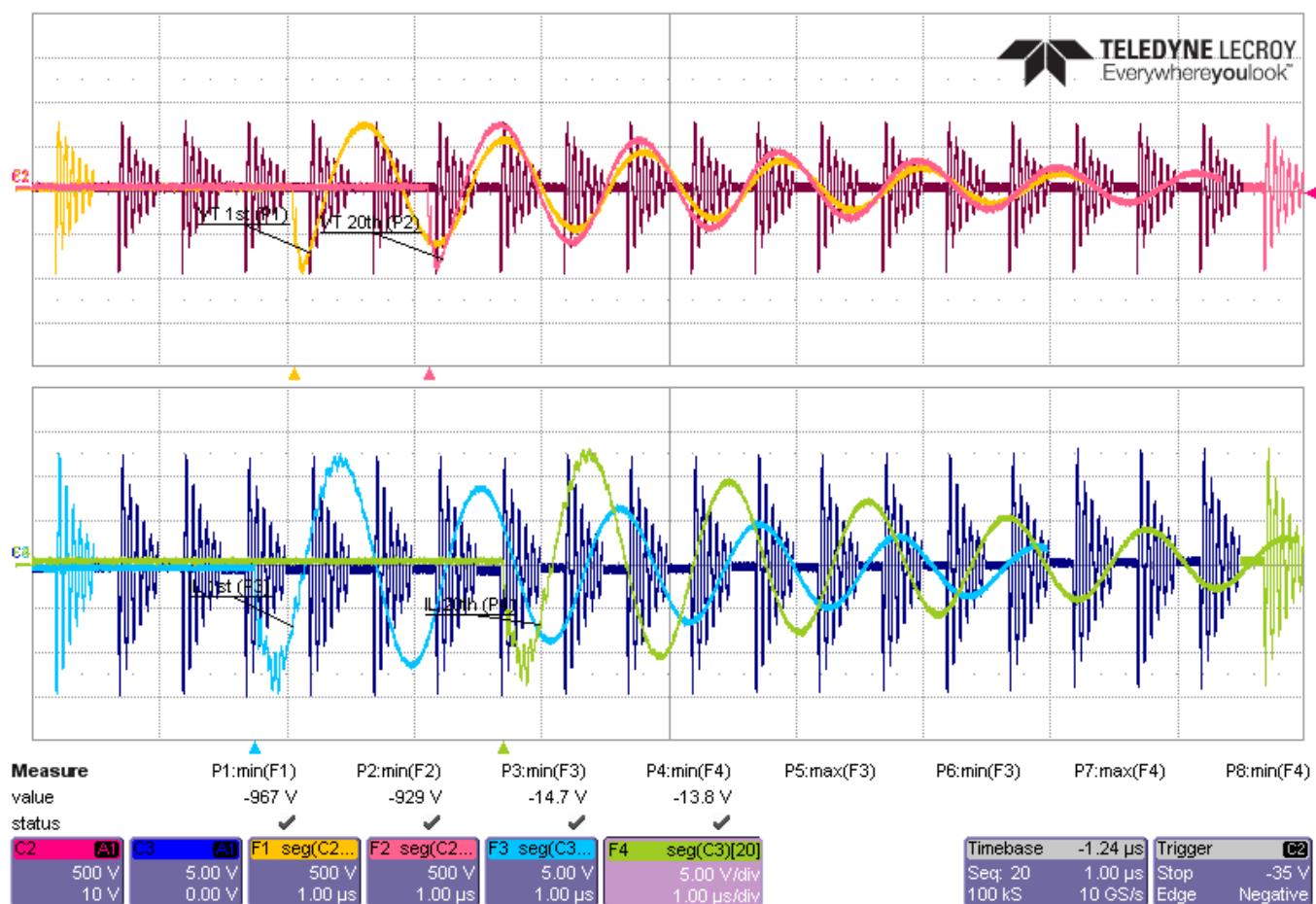
MB WF3 1 MHz Cable Bundle Test

900V/15A

VT Reached

MB WF3 1MHz Test Neg - High Side Line 1

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 10:21:07 AM

Disasterpreparer

EMPS storm

MB WF3 1 MHz Cable Bundle Test

900V/15A

VT Reached

MB WF3 1MHz Test Neg - High Side Line 1

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	500 V	5.00 V
	Offset	10 V	0.00 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	1.00 μs	Sampling Rate	10 GS/s	Segments	20
	Time / Pt	100 ps	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-1.24 μs		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-35 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 11:29:18 AM

Disasterpreparer

EMPS storm

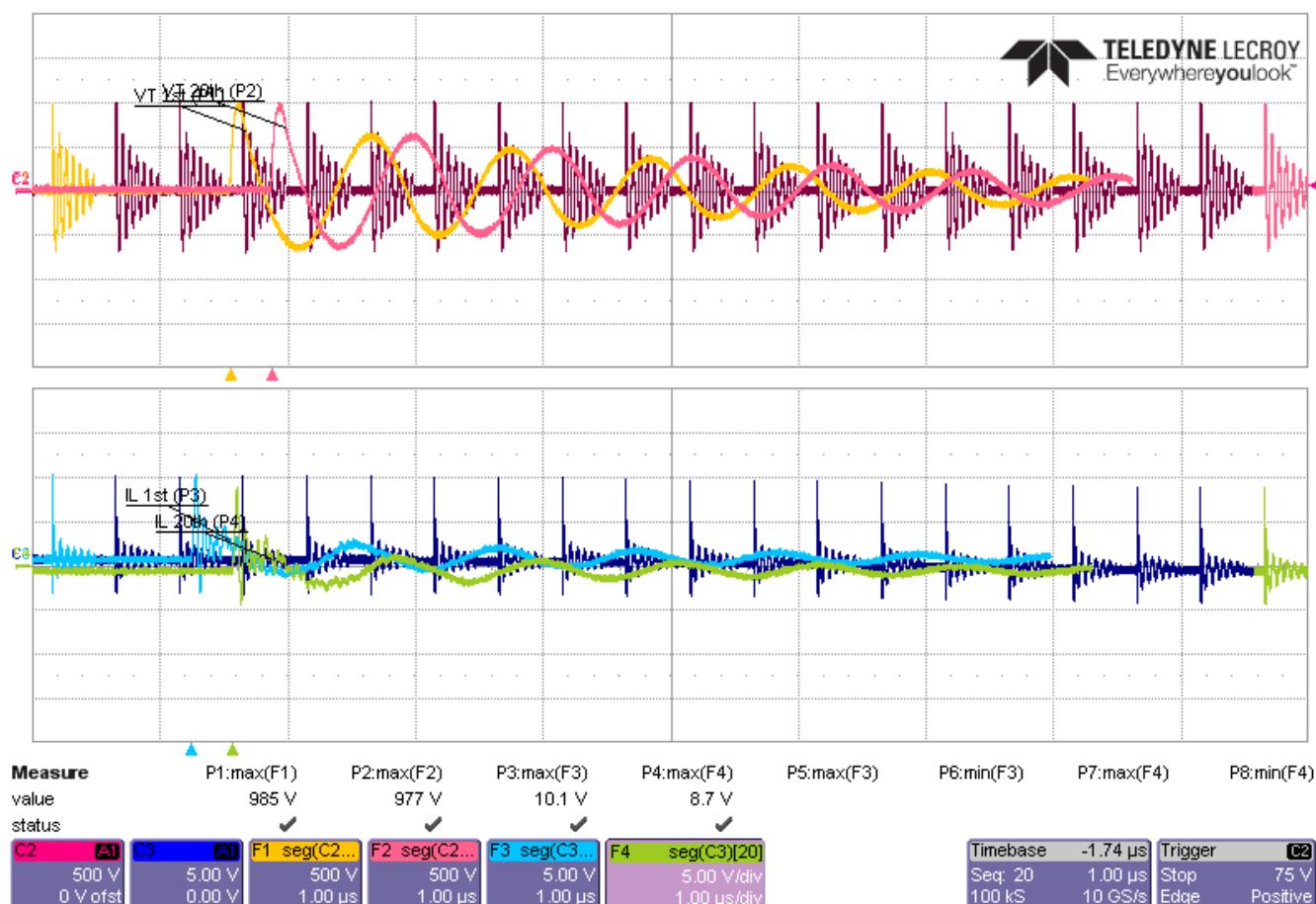
MB WF3 1 MHz Cable Bundle Test

900V/15A

VT Reached

MB WF3 1MHz Test Pos - High Side Line 2

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 11:29:18 AM

Disasterpreparer

EMPS storm

MB WF3 1 MHz Cable Bundle Test

900V/15A

VT Reached

MB WF3 1MHz Test Pos - High Side Line 2

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	500 V	5.00 V
	Offset	0 V	0.00 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	1.00 μs	Sampling Rate	10 GS/s	Segments	20
	Time / Pt	100 ps	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-1.74 μs		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	75 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 11:34:59 AM

Disasterpreparer

EMPS storm

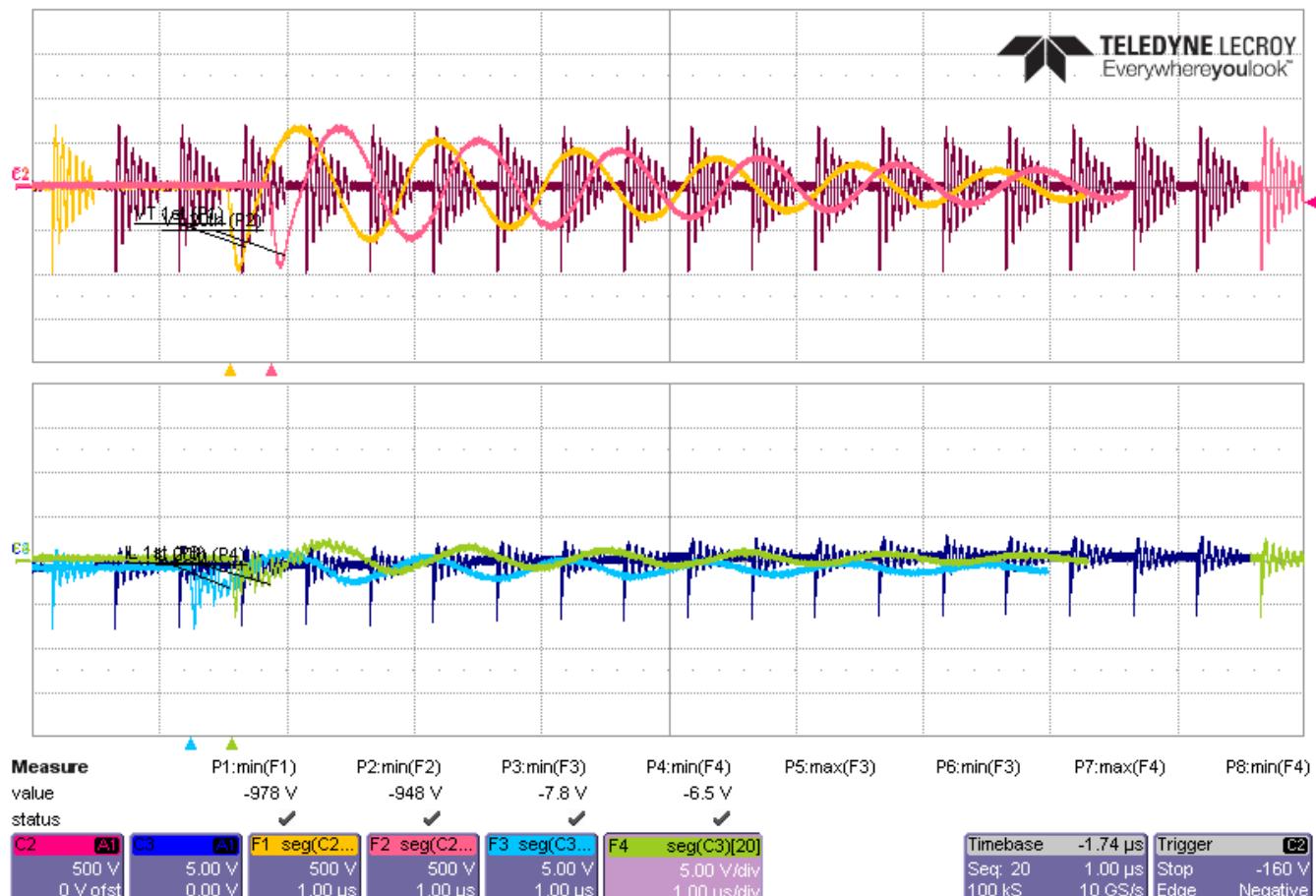
MB WF3 1 MHz Cable Bundle Test

900V/15A

VT Reached

MB WF3 1MHz Test Neg - High Side Line 2

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 11:34:59 AM

Disasterpreparer

EMPS storm

MB WF3 1 MHz Cable Bundle Test

900V/15A

VT Reached

MB WF3 1MHz Test Neg - High Side Line 2

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	500 V	5.00 V
	Offset	0 V	0.00 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

Horizontal	Time / Div	1.00 μs	Sampling Rate	10 GS/s	Segments	20
	Time / Pt	100 ps	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-1.74 μs		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-160 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 2:00:47 PM

Disasterpreparer

EMPStorm

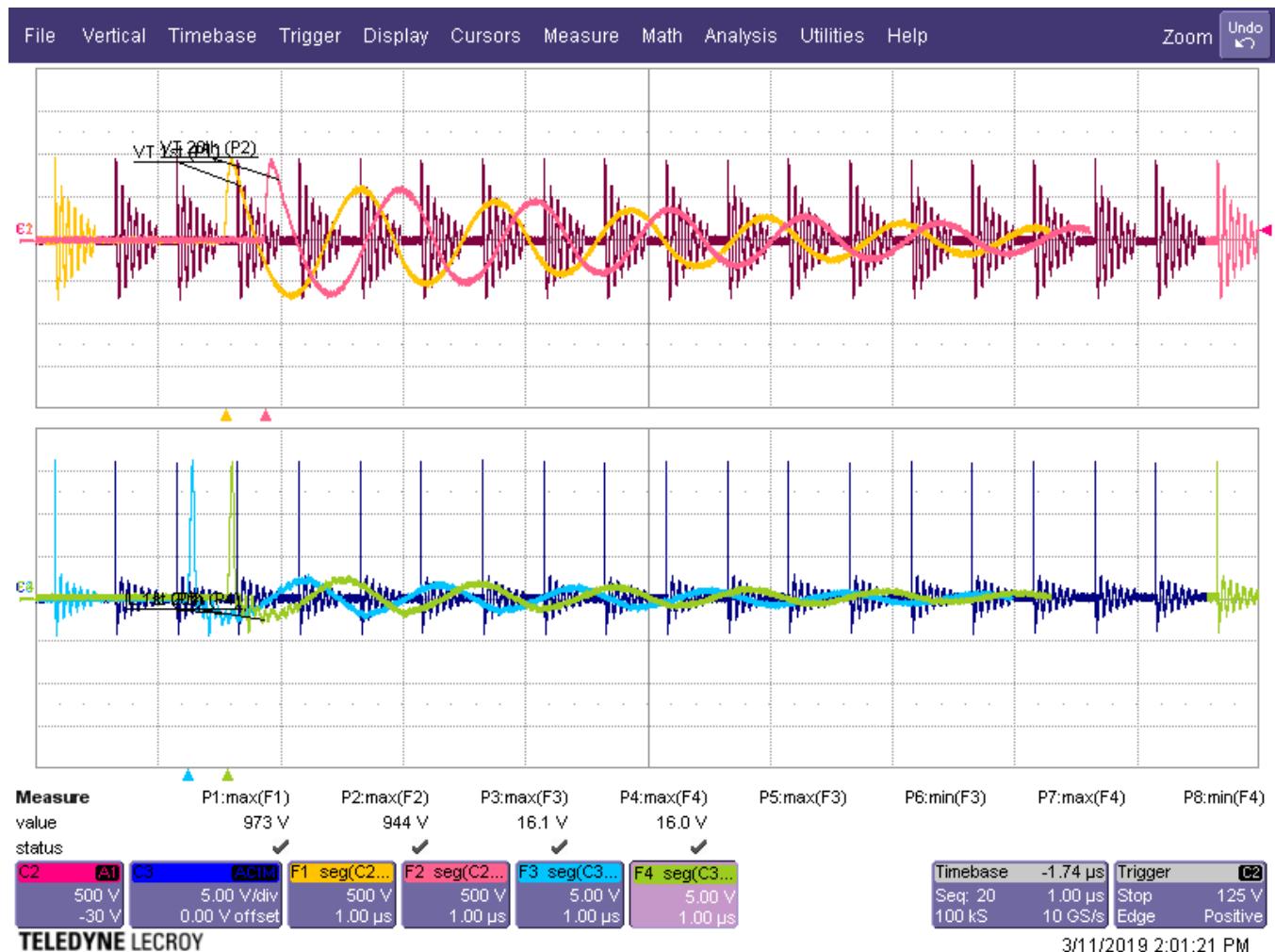
MB WF3 1 MHz Cable Bundle Test

900V/15A

VT/IL Reached

MB WF3 1MHz Test Pos - Power Bundle

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 2:00:47 PM

Disasterpreparer

EMPS storm

MB WF3 1 MHz Cable Bundle Test

900V/15A

VT/IL Reached

MB WF3 1MHz Test Pos - Power Bundle

Page 2 of 2

Channel Status

	C2	C3
Vertical	V / Div	500 V
	Offset	-30 V
	Coupling	AC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

Horizontal	Time / Div	1.00 μs	Sampling Rate	10 GS/s	Segments	20
	Time / Pt	100 ps	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-1.74 μs		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	125 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 2:06:18 PM

Disasterpreparer

EMPStorm

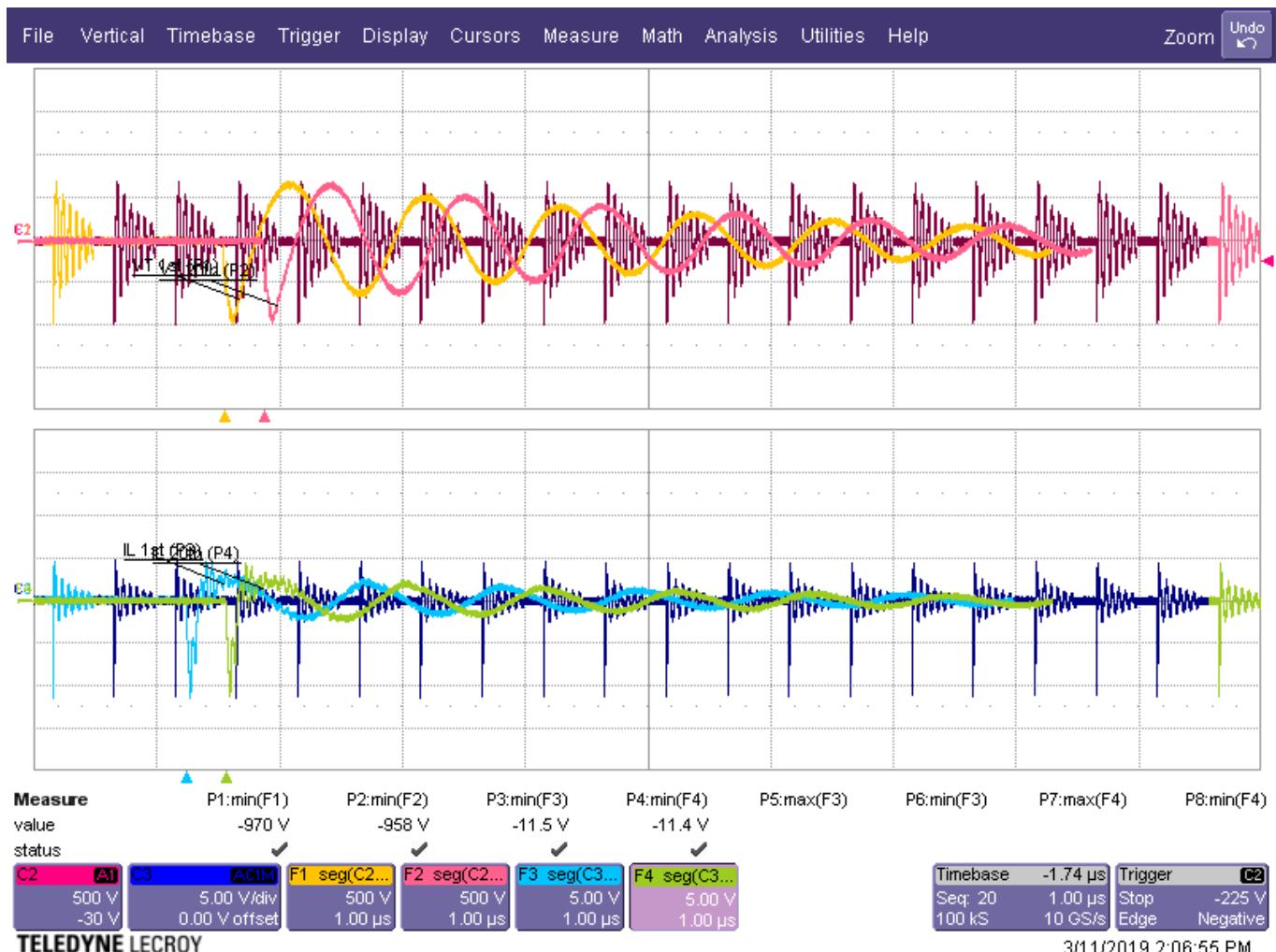
MB WF3 1 MHz Cable Bundle Test

900V/15A

VT Reached

MB WF3 1MHz Test Neg - Power Bundle

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 2:06:18 PM

Disasterpreparer

EMPStorm

MB WF3 1 MHz Cable Bundle Test

900V/15A

VT Reached

MB WF3 1MHz Test Neg - Power Bundle

Page 2 of 2

Channel Status

	C2	C3
Vertical	V / Div	500 V
	Offset	-30 V
	Coupling	AC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

	Time / Div	1.00 μs	Sampling Rate	10 GS/s	Segments	20
Horizontal	Time / Pt	100 ps	Sampling Mode	Sequence		
	Pts / Div	10.0000 kS	Trigger Delay	-1.74 μs		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-225 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 10:04:52 AM

Disasterpreparer

EMPS storm

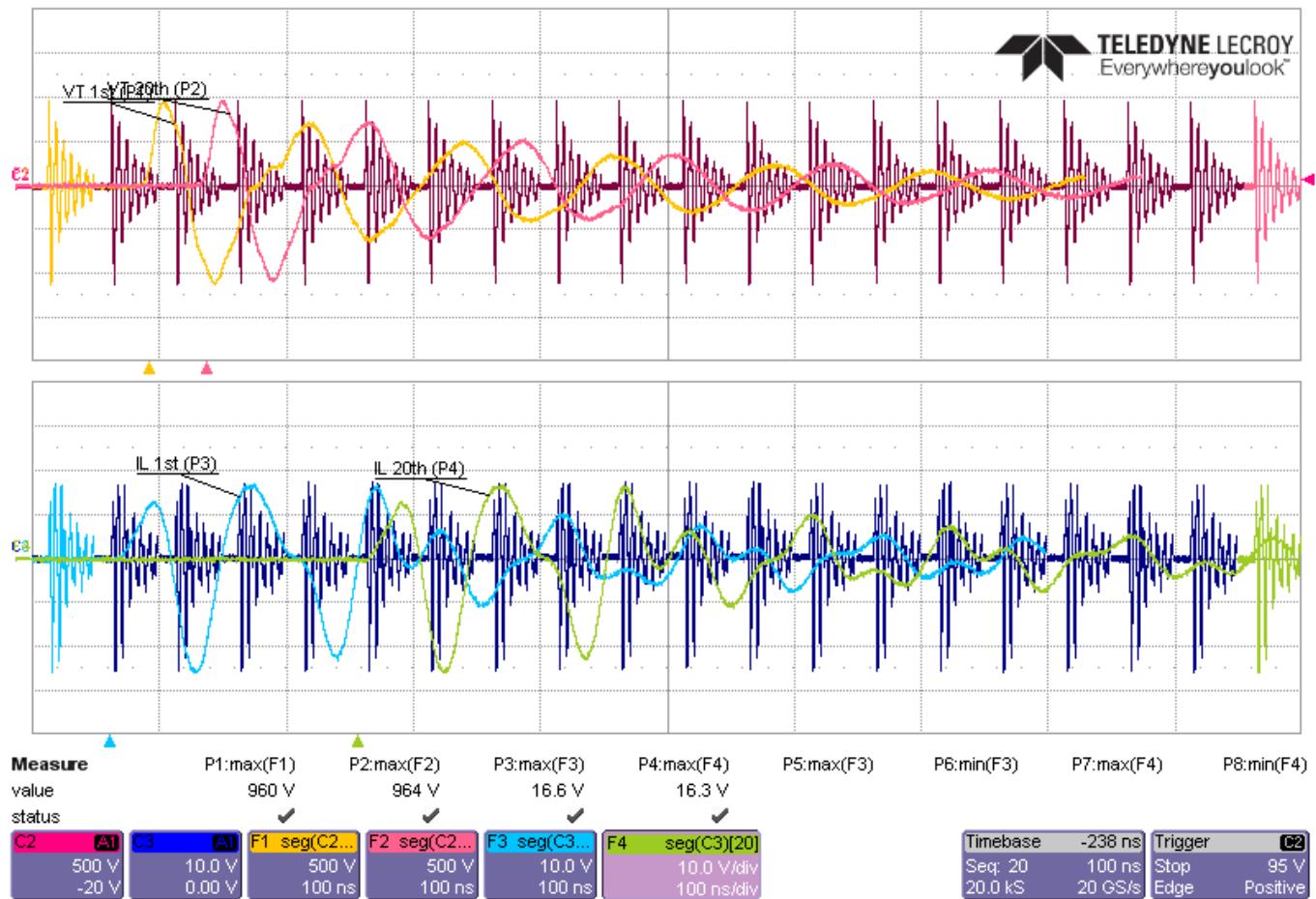
MB WF3 10 MHz Cable Bundle Test

900V/15A

VT/IL Reached

MB WF3 10MHz Test Pos - High Side Line 1

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 10:04:52 AM

Disasterpreparer

EMPStorm

MB WF3 10 MHz Cable Bundle Test

900V/15A

VT/IL Reached

MB WF3 10MHz Test Pos - High Side Line 1

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	500 V	10.0 V
	Offset	-20 V	0.00 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

	Time / Div	100 ns	Sampling Rate	20 GS/s	Segments	20
Horizontal	Time / Pt	50 ps	Sampling Mode	Sequence		
	Pts / Div	2.0000 kS	Trigger Delay	-238 ns		
	Mode	Stop	Slope	Positive		
Trigger	Type	Edge	Level	95 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle
Appendix C

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 10:12:07 AM

Disasterpreparer

EMPS storm

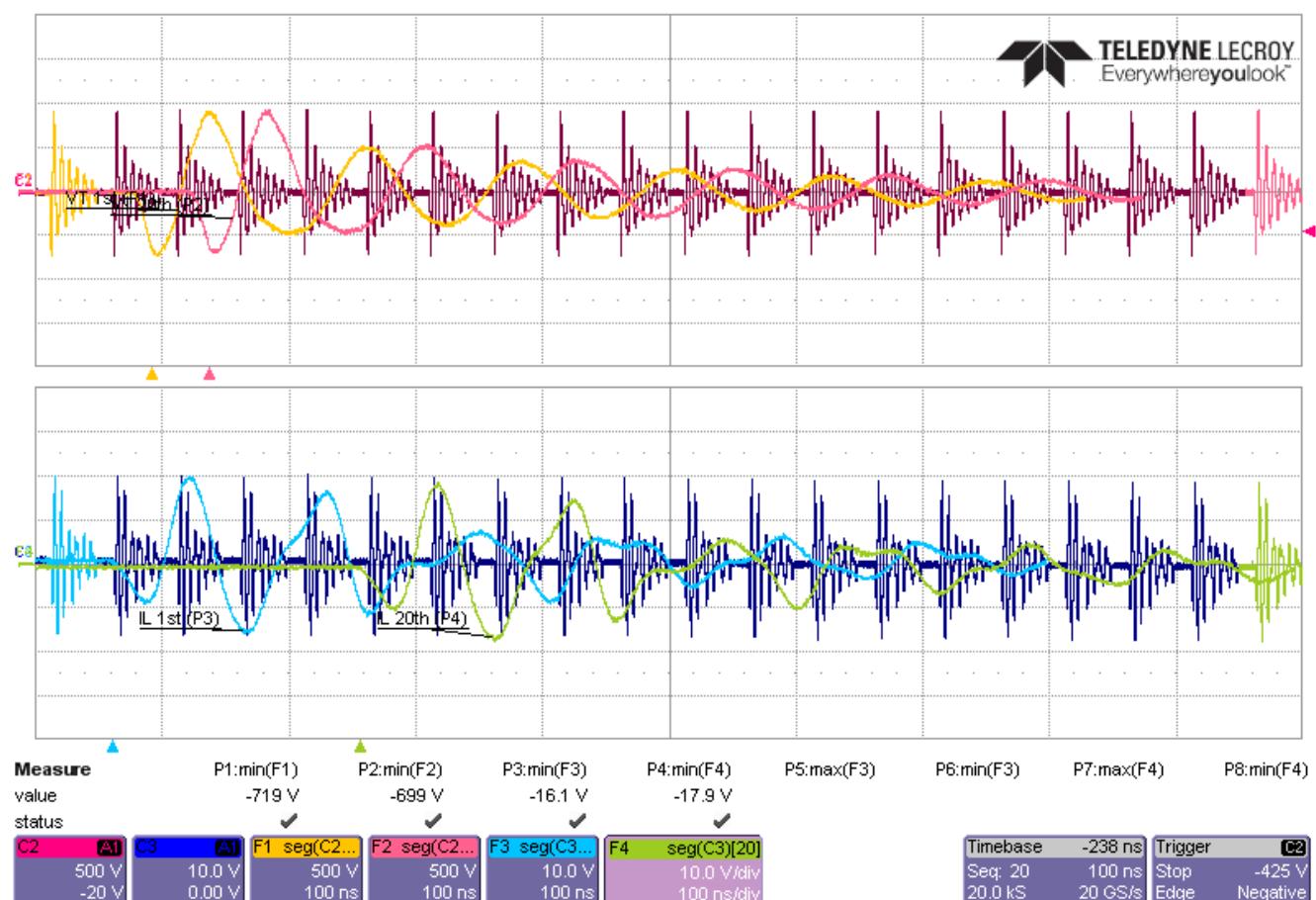
MB WF3 10 MHz Cable Bundle Test

900V/15A

IL Reached

MB WF3 10MHz Test Neg - High Side Line 1

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 10:12:07 AM

Disasterpreparer

EMPStorm

MB WF3 10 MHz Cable Bundle Test

900V/15A

IL Reached

MB WF3 10MHz Test Neg - High Side Line 1

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	500 V	10.0 V
	Offset	-20 V	0.00 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

	Time / Div	100 ns	Sampling Rate	20 GS/s	Segments	20
Horizontal	Time / Pt	50 ps	Sampling Mode	Sequence		
	Pts / Div	2.0000 kS	Trigger Delay	-238 ns		
	Mode	Stop	Slope	Negative		
Trigger	Type	Edge	Level	-425 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 12:29:05 PM

Disasterpreparer

EMPS storm

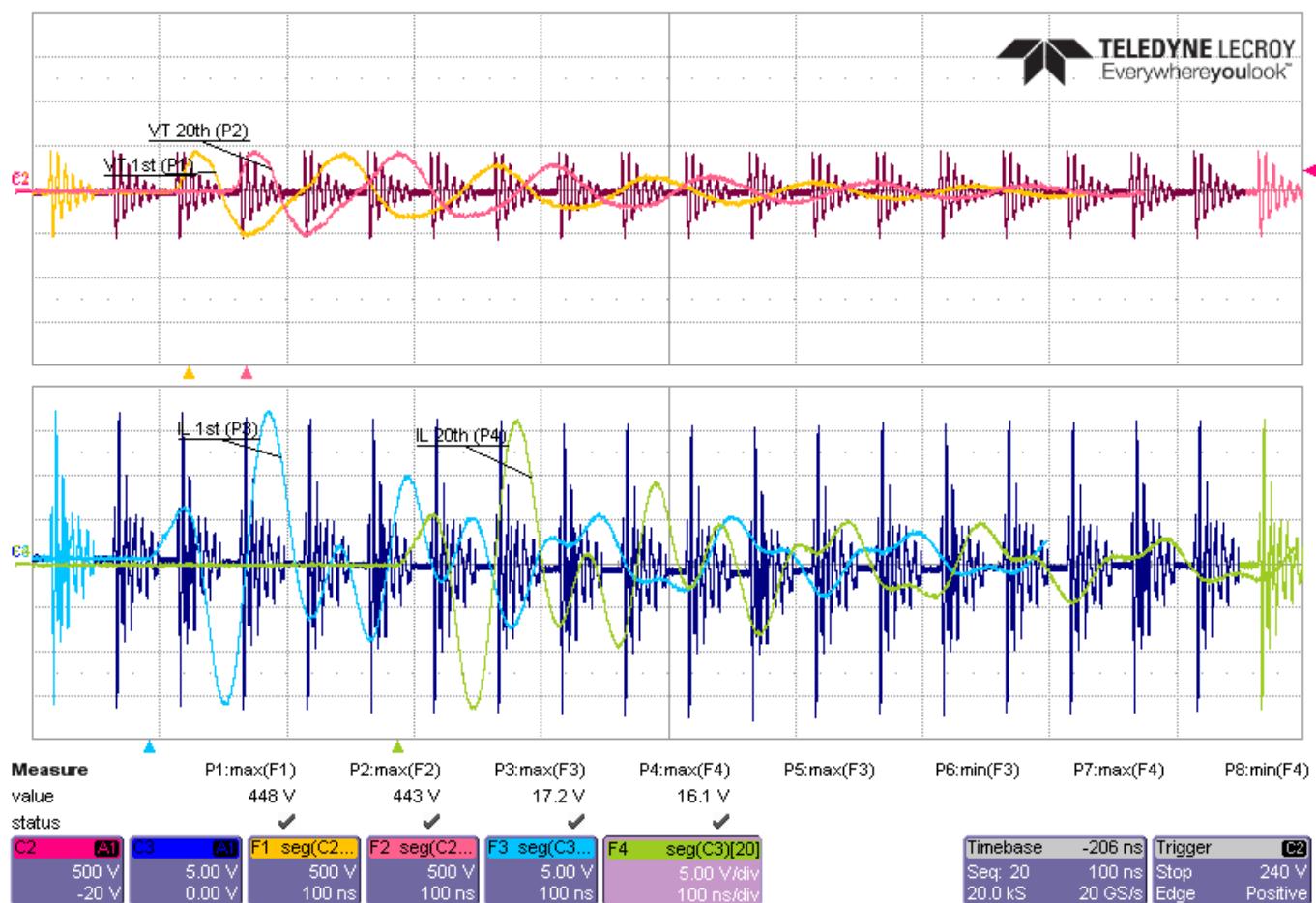
MB WF3 10 MHz Cable Bundle Test

900V/15A

IL Reached

MB WF3 10MHz Test Pos - High Side Line 2

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 12:29:05 PM

Disasterpreparer

EMPS storm

MB WF3 10 MHz Cable Bundle Test

900V/15A

IL Reached

MB WF3 10MHz Test Pos - High Side Line 2

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	500 V	5.00 V
	Offset	-20 V	0.00 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

	Time / Div	100 ns	Sampling Rate	20 GS/s	Segments	20
Horizontal	Time / Pt	50 ps	Sampling Mode	Sequence		
	Pts / Div	2.0000 kS	Trigger Delay	-206 ns		
	Mode	Stop	Slope	Positive		
Trigger	Type	Edge	Level	240 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 12:37:06 PM

Disasterpreparer

EMPS storm

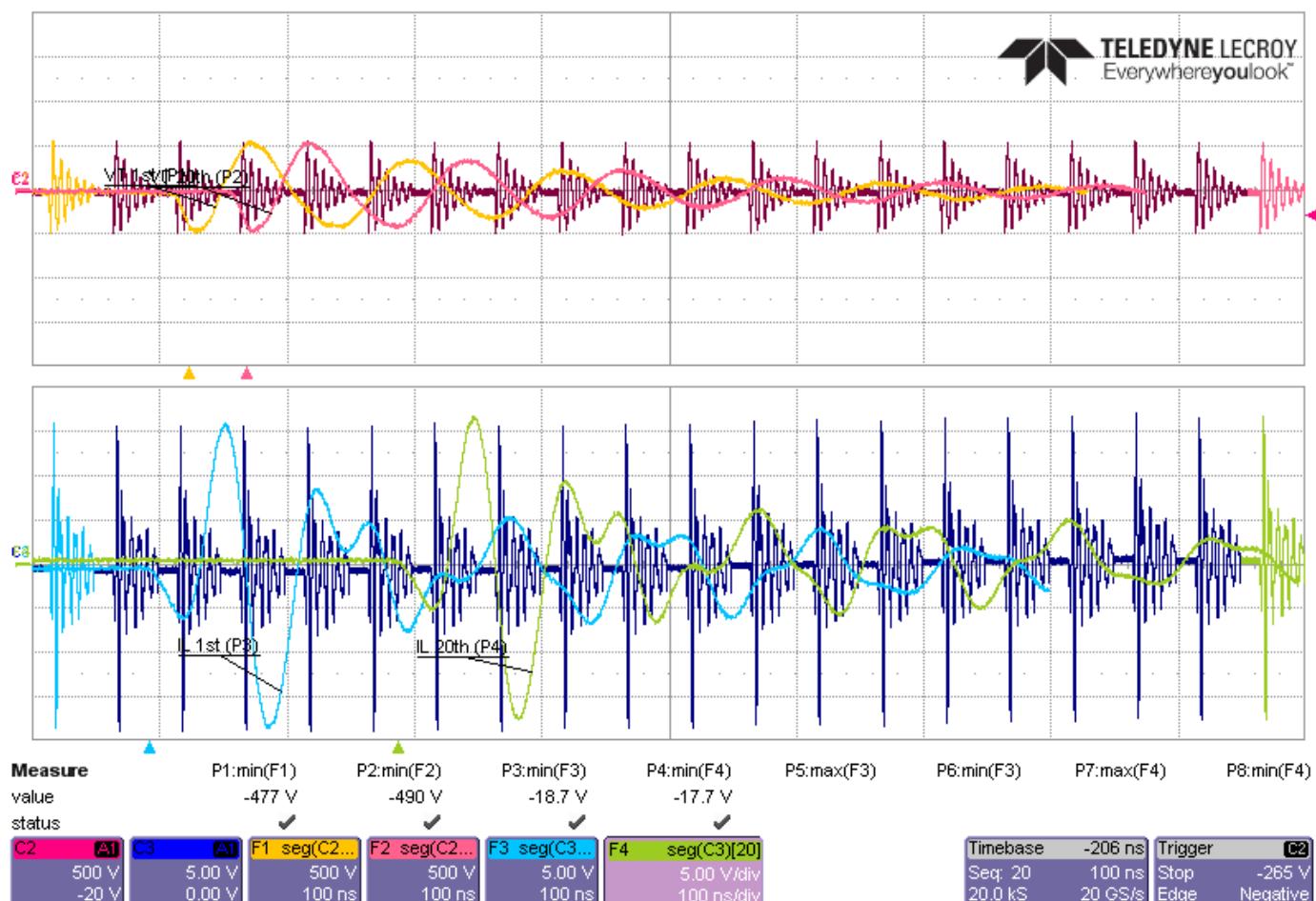
MB WF3 10 MHz Cable Bundle Test

900V/15A

IL Reached

MB WF3 10MHz Test Neg - High Side Line 2

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/12/2019 12:37:06 PM

Disasterpreparer

EMPStorm

MB WF3 10 MHz Cable Bundle Test

900V/15A

IL Reached

MB WF3 10MHz Test Neg - High Side Line 2

Page 2 of 2

Channel Status

		C2	C3
Vertical	V / Div	500 V	5.00 V
	Offset	-20 V	0.00 V
	Coupling	AC1MΩ	AC1MΩ
	BW-Limit	Full	Full
	Probe	1.000e+3	100.000
	Sweeps	1 #	1 #

Acquisition Status

	Time / Div	100 ns	Sampling Rate	20 GS/s	Segments	20
Horizontal	Time / Pt	50 ps	Sampling Mode	Sequence		
	Pts / Div	2.0000 kS	Trigger Delay	-206 ns		
	Mode	Stop	Slope	Negative		
Trigger	Type	Edge	Level	-265 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 2:13:52 PM

Disasterpreparer

EMPStorm

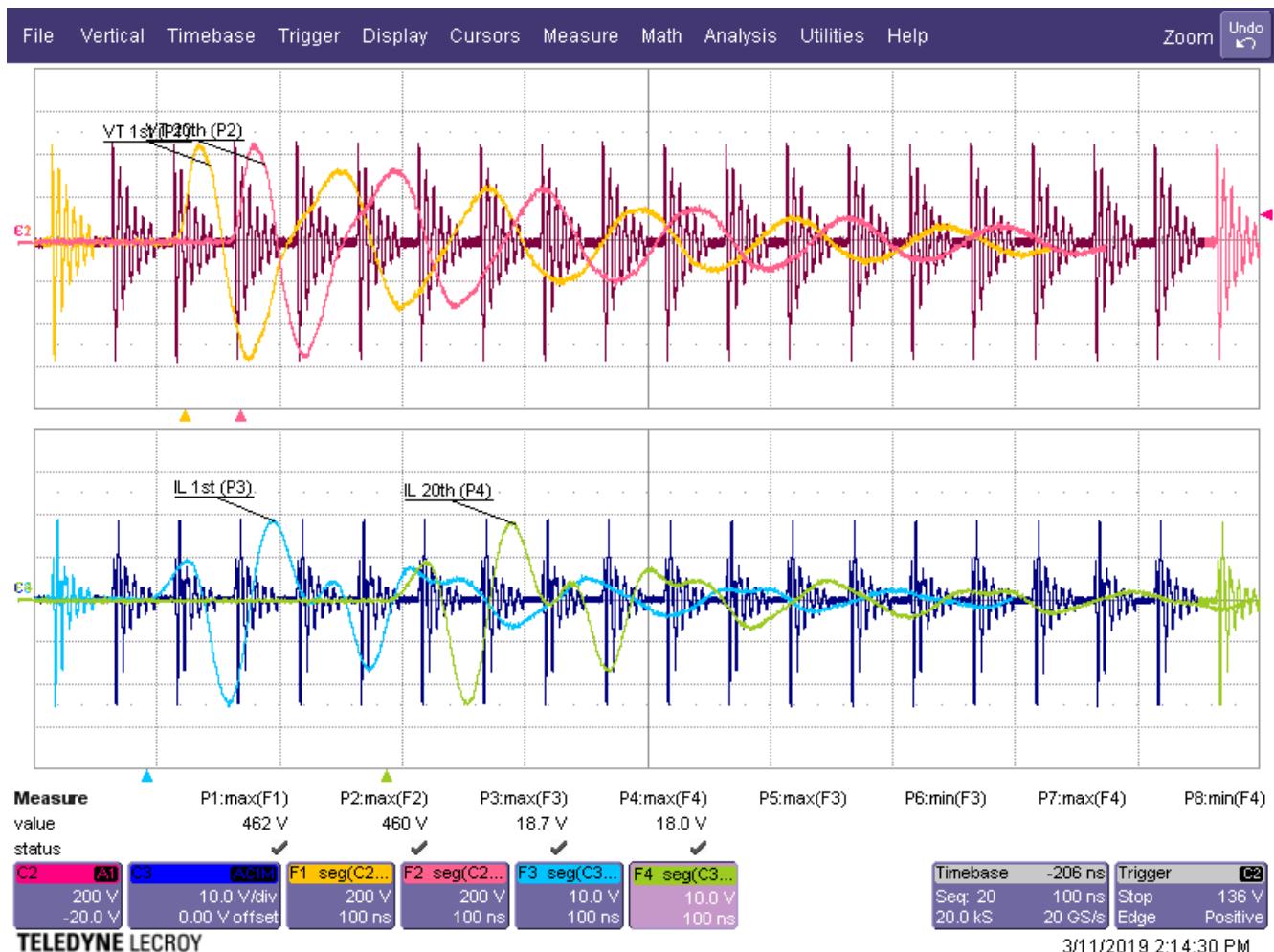
MB WF3 10 MHz Cable Bundle Test

900V/15A

IL Reached

MB WF3 10MHz Test Pos - Power Bundle

Page 1 of 2





1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 2:13:52 PM

Disasterpreparer

EMPStorm

MB WF3 10 MHz Cable Bundle Test

900V/15A

IL Reached

MB WF3 10MHz Test Pos - Power Bundle

Page 2 of 2

Channel Status

	C2	C3
Vertical	V / Div	200 V
	Offset	-20.0 V
	Coupling	AC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

Horizontal	Time / Div	100 ns	Sampling Rate	20 GS/s	Segments	20
Trigger	Time / Pt	50 ps	Sampling Mode	Sequence		
	Pts / Div	2.0000 kS	Trigger Delay	-206 ns		
Trigger	Mode	Stop	Slope	Positive		
	Type	Edge	Level	136 V		
	Source	C2	Coupling	DC		



1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 2:33:39 PM

Disasterpreparer

EMPStorm

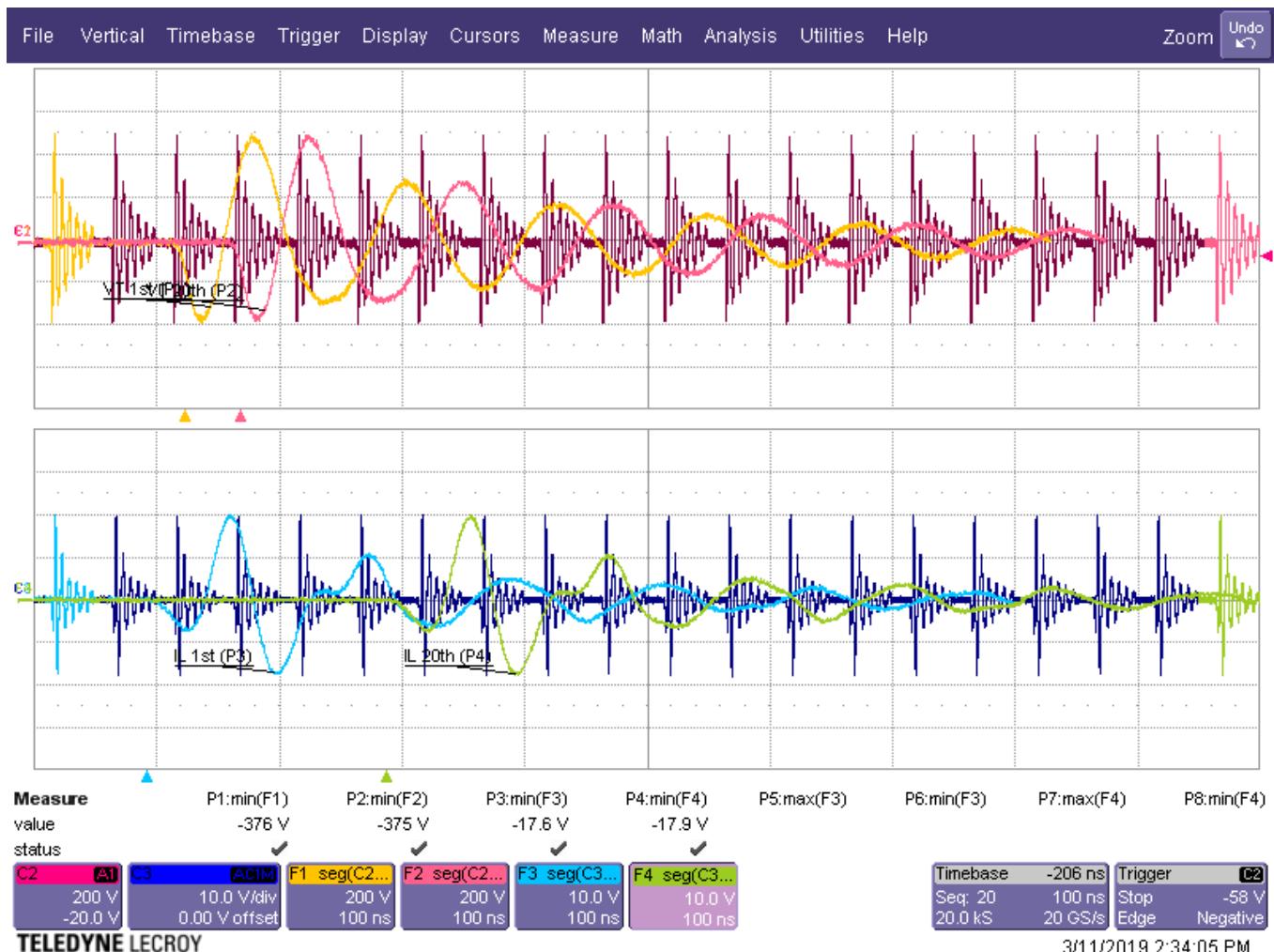
MB WF3 10 MHz Cable Bundle Test

900V/15A

IL Reached

MB WF3 10MHz Test Neg - Power Bundle

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1250 Peterson Dr., Wheeling, IL 60090

Company: Disasterpreparer LLC
Model Tested: N/A
Report Number: 24377 Appendix C
Standard: MIL-STD-461G CS117 Lightning Induced Transient Cable Bundle

Lab Notebook Entry from LeCroy DSO

DSO S/N: LCRY0705N13389

User: LeCroyUser

Time: 3/11/2019 2:33:39 PM

Disasterpreparer

EMPStorm

MB WF3 10 MHz Cable Bundle Test

900V/15A

IL Reached

MB WF3 10MHz Test Neg - Power Bundle

Page 2 of 2

Channel Status

	C2	C3
Vertical	V / Div	200 V
	Offset	-20.0 V
	Coupling	AC1MΩ
	BW-Limit	Full
	Probe	1.000e+3
	Sweeps	1 #

Acquisition Status

Horizontal	Time / Div	100 ns	Sampling Rate	20 GS/s	Segments	20
Trigger	Time / Pt	50 ps	Sampling Mode	Sequence		
	Pts / Div	2.0000 kS	Trigger Delay	-206 ns		
Trigger	Mode	Stop	Slope	Negative		
	Type	Edge	Level	-58 V		
	Source	C2	Coupling	DC		