NTS Labs, LLC
(DBA Element Materials Technology Huntsville)
Test Report for
CS116 Testing of the
Battery

Prepared For
Rubix LLC | 2310 Township Rd 444 | Sugarcreek, OH 44681

Prepared By
Element Materials Technology Huntsville | 7800 Highway 20 West | Huntsville, AL 35806 | 256-837-4411 | www.element.com

Joshua V. Bailey Digitally signed by Joshua V. Bailey Date: 2026.01.19 12:22:45 -06'00'	Lance Wallace Digitally signed by Lance Wallace Date: 2026.01.20 09:22:00 -06'00'	Tyler Thompson Digitally signed by Tyler Thompson Date: 2026-01-20 15:23-06:00
Technical Writer	EMI Project Engineer	Quality Assurance Representative

Revision History

Rev.	Description	Technical Writer	Project Engineer	Quality Assurance
0	Initial Release	—	—	—

Table of Contents

List of Tables

1.0 Introduction

This document presents the test procedures used and the results obtained during the performance of an EMI test program. The test program was conducted to assess the ability of the specified Equipment Under Test (EUT) to successfully satisfy the requirements listed in Section 2.0.

2.0 References

The following references listed below form a part of this document to the extent specified herein.

- Test Specification: MIL-STD-461G
- Rubix LLC Purchase Order(s) Credit Card
- Quote(s) QUO-000747537-0
- ISO/IEC 17025:2017(E) General Requirements for the Competence of Testing and Calibration Laboratories, dated 11/1/2017
- ISO-9001:2015, Quality Management Systems Requirements

3.0 Product Selection and Description

Rubix LLC selected and provided the following test sample(s) to be used as the Equipment Under Test.

Table 3.0-1: Product Identification - Equipment Under Test (EUT)

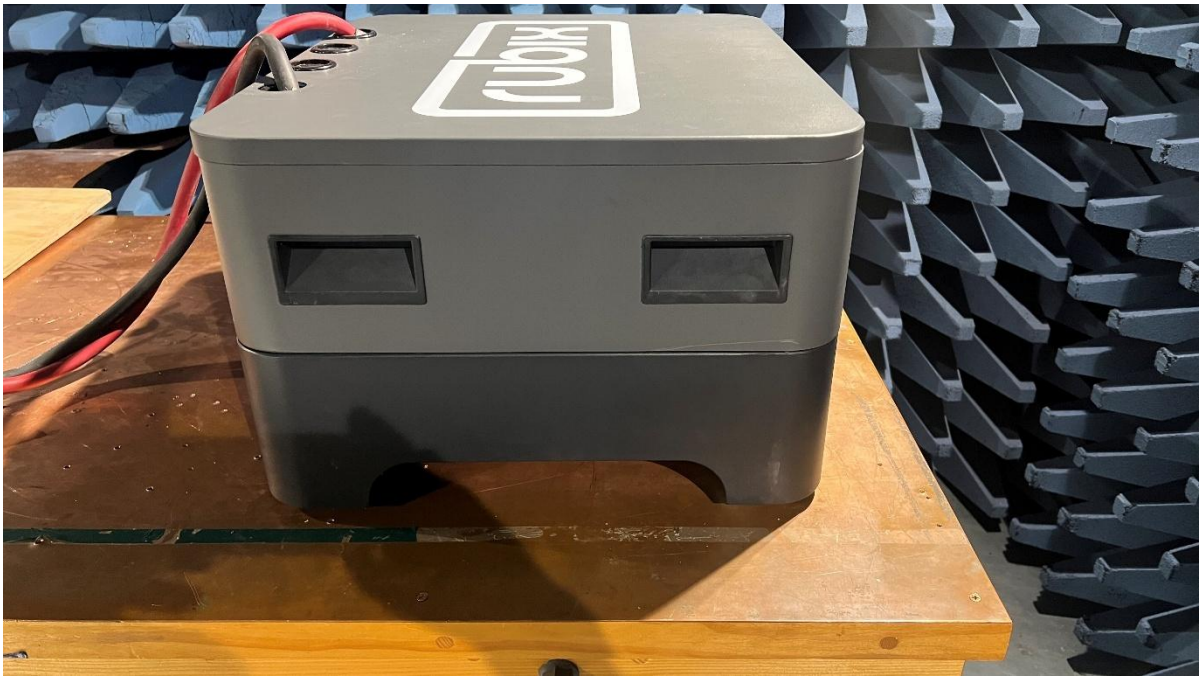
Item	Qty.	Name/Description	Part Number	Serial Number
1	1	Battery	RS51100	Element - 001

3.1 Received EUT Photographs

01 EUT - Rubix Battery

02 EUT - Rubix Battery

03 EUT - Rubix Battery



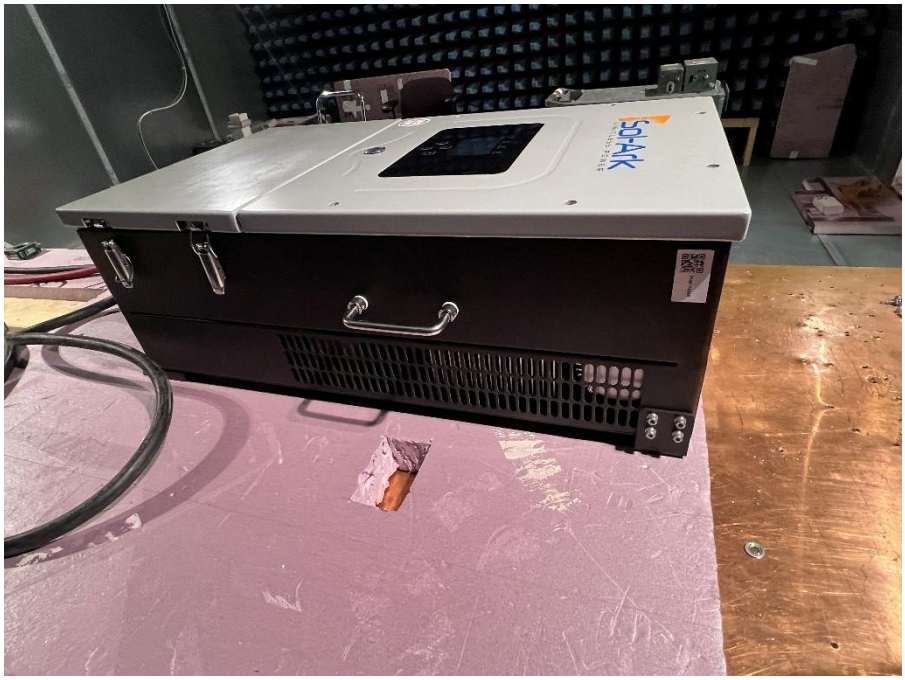
04 EUT - Rubix Battery

05 EUT - Rubix Battery

06 Light Bulb Fixture - Load

07 Support Equipment - Sol-Ark 12k-P

08 Support Equipment - Sol-Ark 12k-P



09 Support Equipment - Sol-Ark 12k-P

10 Support Equipment - Sol-Ark 12k-P

11 Support Equipment - Sol-Ark 12k-P

12 Support Equipment - Sol-Ark 12k-P

13 Support Equipment - Sol-Ark 12k-P

14 Support Equipment - Sol-Ark 12k-P

3.2 Security Classification

Non-classified

3.3 Source Inspection

Element QA

3.4 Quality Assurance

All work performed on this test program was in accordance with Element's Quality Program.

The Element Materials Technology, Huntsville Facility, Quality Management System is registered in compliance with the ISO-9001:2015 International Quality Standard. Registration has been completed by Intertek.

4.0 General Test Requirements

4.1 Test Equipment

The instrumentation used in the performance of these tests is periodically calibrated and standardized within manufacturer's rated accuracies and are traceable to the National Institute of Standards and Technology. The calibration procedures and practices are in accordance with ISO 17025:2017. Certification of calibration is on file subject to inspection by authorized personnel.

4.2 Standard Test Conditions

The EUT was configured using the method as described in MIL-STD-461G.

1. The EUT physical layout was performed by Element Materials Technology personnel with assistance from the customer's technical representative.

2. The EUT installation and operation were verified prior to the start of testing by the customer's technical representative.

3. The customer's technical representative authorization was acquired prior to test commencement.

Table 4.2-1: MIL-STD-461 Bonding Summary

Measurement Points			Measurements	Units
From	**To**	**Location**	**Bonding reading**	
Table	Table	Chamber 1	0.08	mΩ
Table	Floor		0.62	
EUT	Table		0.36	

5.0 Test Descriptions and Results

Table 5.0-1: Summary of Test Information & Results

Section	Test	Specification	Test Facility	Test Date	Part #	Serial #	Notice of Deviation (NOD)	Test Result
5.1	CS116	MIL-STD-461G	Huntsville, AL	11/26/2025 - 12/02/2025	RS51100	Element - 001	N/A	Compliant

The decision rule for Test Results was based on the Test Specification used for testing.

5.1 CS116

5.1.1 Test Procedure

CS116 testing was performed on the EUT in the manner detailed in MIL-STD-461G.

5.1.2 Test Equipment

All EMI test equipment required for this test is listed on the Test Equipment List.

Element Huntsville uses commercially purchased EMI test software. The ETS-Lindgren Test software called TILE was specifically designed for EMI testing.

5.1.3 Test Result

Conducted Susceptibility per MIL-STD-461G was performed on the EUT. During testing, the EUT showed no signs of susceptibility, and no deviations were noted. The EUT was compliant with CS116.

The test results contain the following information:

- CS116 Datasheets
- CS116 Photographs
- CS116 Test Data
- CS116 Test Equipment List

5.1.4 Test Datasheets

element Nuclear	EMI Data Sheet	
		Page 1 of 2

ELEMENT Project No.: PUS58000458

Test Dates: 11/26/2025-12/02/2025

Customer:	Rubix	**Temperature:**	69.0°F	**Humidity:**	20%
EUT:	Battery	**Measurement Point:**	See Comments below		
Model No.:	RS51100	**Interference Signal:**	Damped sinusoidal transients, 1PPS / 5 Minutes		
Serial No.:	Element - 001	**Frequency Range:**	10 kHz, 100 kHz, 1 MHz, 10 MHz, 30 MHz, 100 MHz		

Test Title CS116, Conducted Susceptibility per MIL-STD-461G

Frequency (MHz)	Calibrated Level (Amps)	Calibrated Generator Setting (Amps)	Tested Generator Setting (Amps)	Calibrated Monitor Probe Level (Amps)	Tested Monitor Probe Level (Amps)	Comments	Test Result	
							Pass	Fail
	Line Tested:	**L1, Power Bundle**						
0.01	0.1	.085	.02	.097	1.07		x	
0.1	1.0	.95	0.36	.1.00	1.03		x	
1	10.0	9.5	1.6	10.8	-10.8		x	
10	10.0	9.6	7.0	11.3	11.9		x	
30	10.0	9.7	9.7	8.3	-7.3		x	
100	3.0	3.1	3.1	2.73	0.700		x	
	Line Tested:	**L2, High Side Line**						
0.01	0.1	.085	.085	.097	-		x	
0.1	1.0	.95	.95	.1.00	.100		x	
1	10.0	9.5	9.5	10.8	7.0		x	
10	10.0	9.6	7.0	11.3	-11.5		x	
30	10.0	9.7	9.7	8.3	8.7		x	
100	3.0	3.1	3.1	2.73	1.35		x	

element Nuclear	EMI Data Sheet	
		Page 2 of 2

ELEMENT Project No.: PUS58000458

Test Dates: 11/26/2025-12/02/2025

Customer:	**Rubix**	**Temperature:**	**69.0°F**	**Humidity:**	**20%**
EUT:	**Battery**	**Measurement Point:**	**See Comments below**		
Model No.:	**RS51100**	**Interference Signal:**	**Damped sinusoidal transients, 1PPS / 5 Minutes**		
Serial No.:	**Element - 001**	**Frequency Range:**	**10 kHz, 100 kHz, 1 MHz, 10 MHz, 30 MHz, 100 MHz**		

Test Title CS116, Conducted Susceptibility per MIL-STD-461G

CS116 Generator Calibration and Damping Factor Verification:

	10 kHz	100 kHz	1 MHz	10 MHz	30 MHz	100 MHz
V_p (Peak Voltage [oscilloscope] at 1st Cycle)	0.05	0.5	5	5	5	1.5
V_n (Peak Voltage [oscilloscope] at Cycle Closest to 50% Decay)	0.0238	0.278	2.78	2.64	2.56	0.884
N (Cycle Number)	5	4	4	4	4	4
Damping Factor (Q)	16.92811139	16.0561958	16.0561958	14.75713649	14.07879652	17.82419
I_p (Peak Current at 1st Cycle)	0.100	1.000	10.000	10.000	10.000	3.000
I_n (Peak Current at Cycle Closest to 50% Decay)	0.048	0.556	5.560	5.280	5.120	1.768

Using the variables above and the formula from MIL-STD-461G below, the Excel calculations were verified manually as presented on the following pages.

Damping Factor (Q) shall be determined as follows:

$$Q = \frac{\pi(N-1)}{\ln(I_P/I_N)}$$

Where:

Q = damping factor

N = Cycle number (i.e. N = 2, 3, 4, 5,...)

I_P = Peak current at 1st cycle

I_N = Peak current at cycle closest to 50% decay

In = Natural log

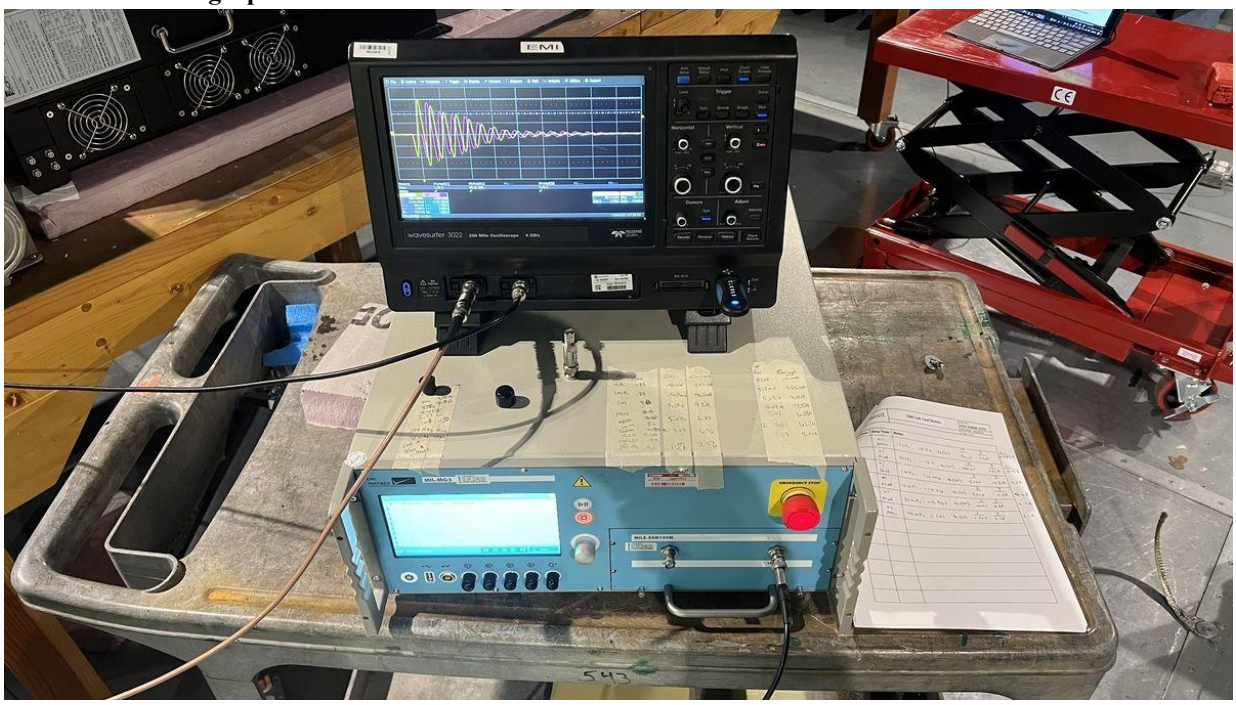
Notice of Deviation: None

Tested By: Chris Thompson
Technician

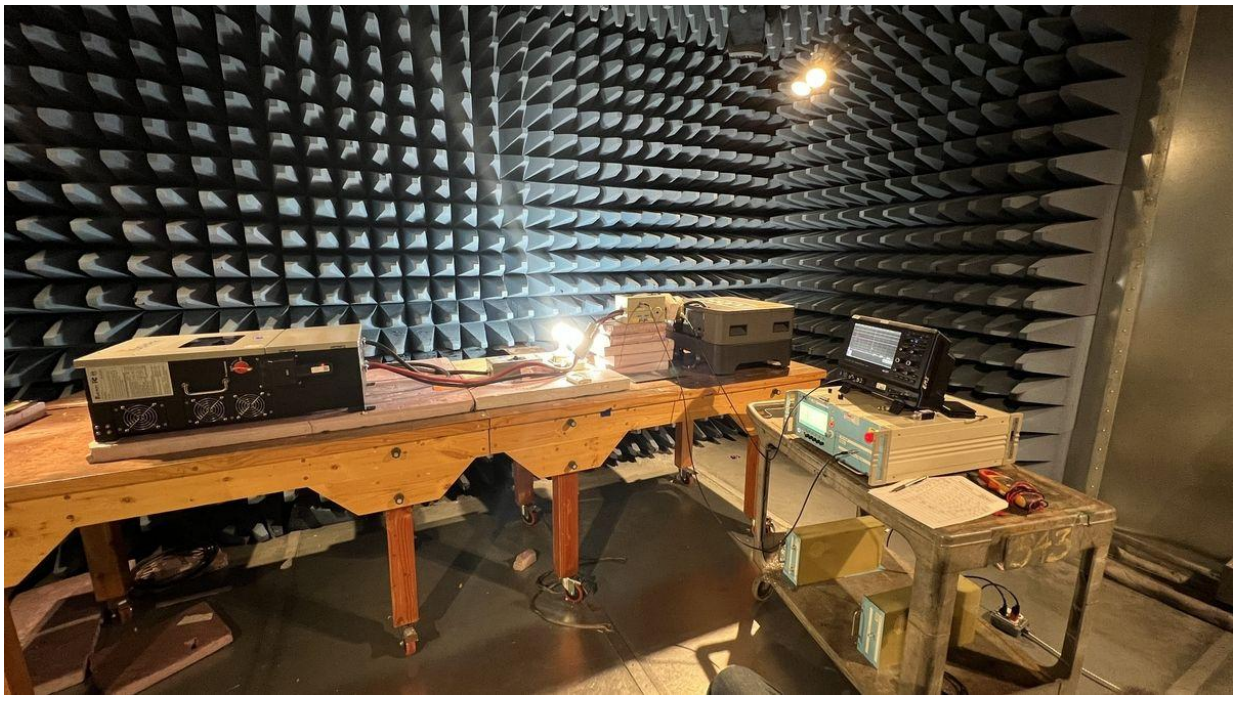
Witness: None

Approved: L. Wallace
Project Engineer

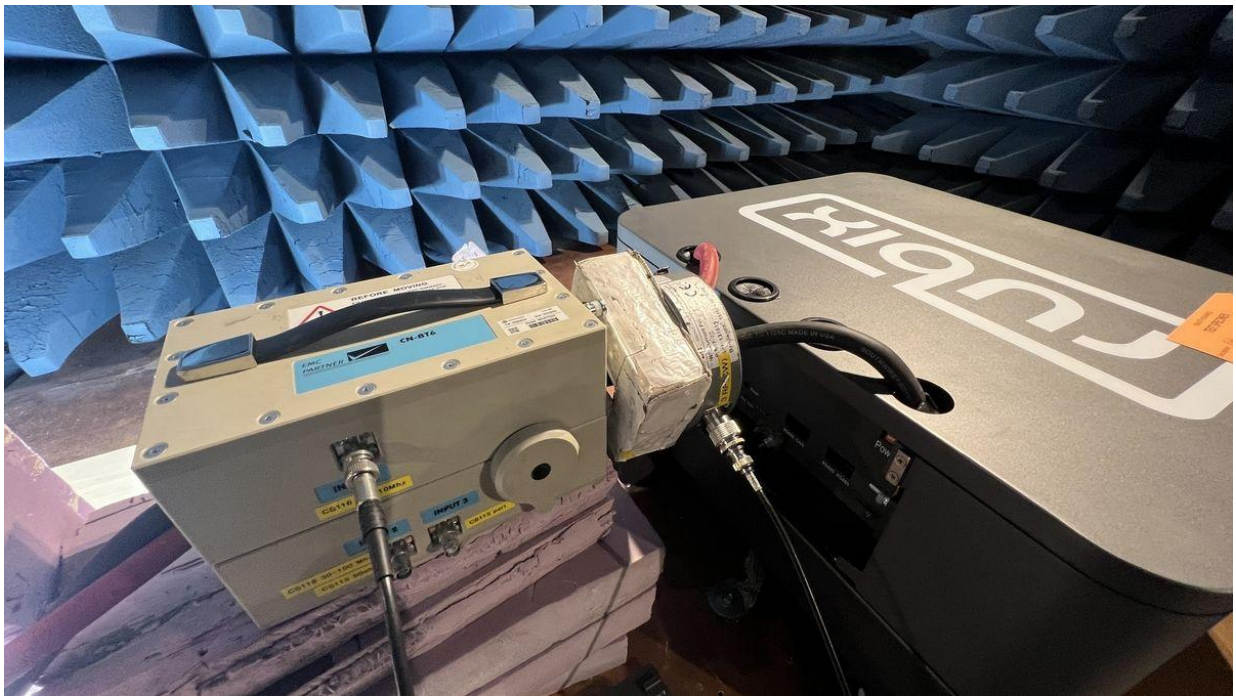
5.1.5 Test Photographs



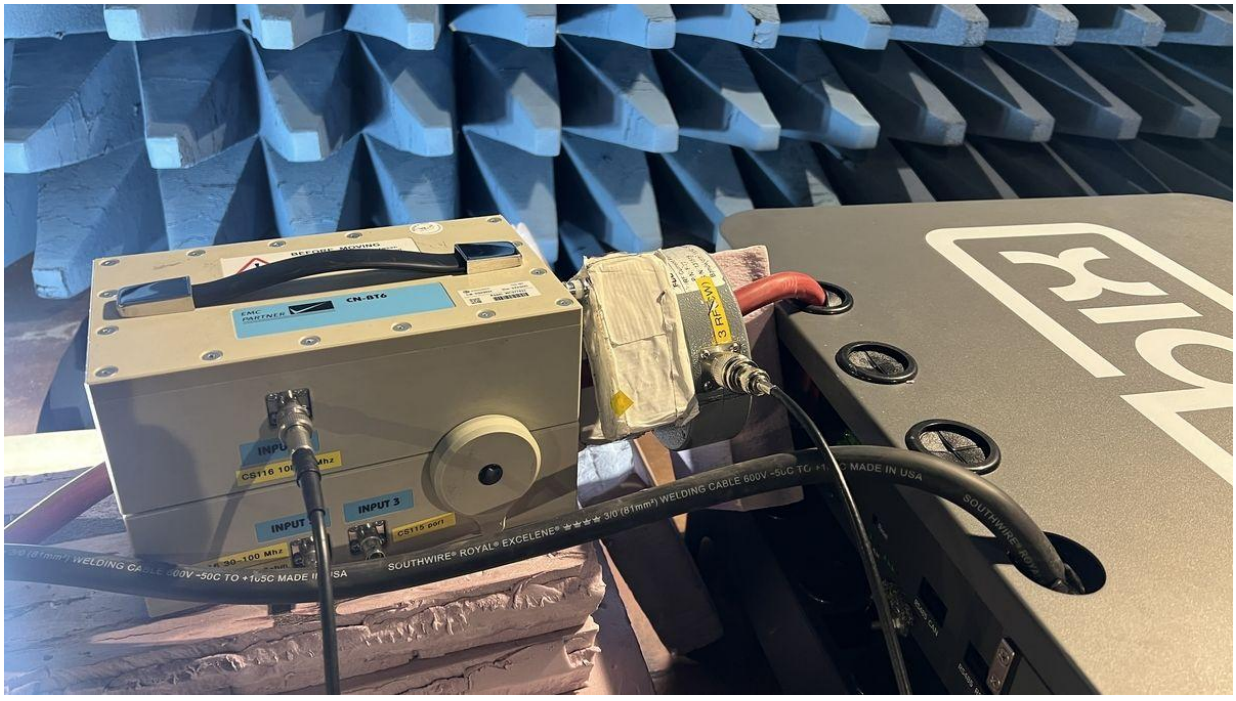
01 CS116 - Verification Setup



02 CS116 - Active - Test Setup



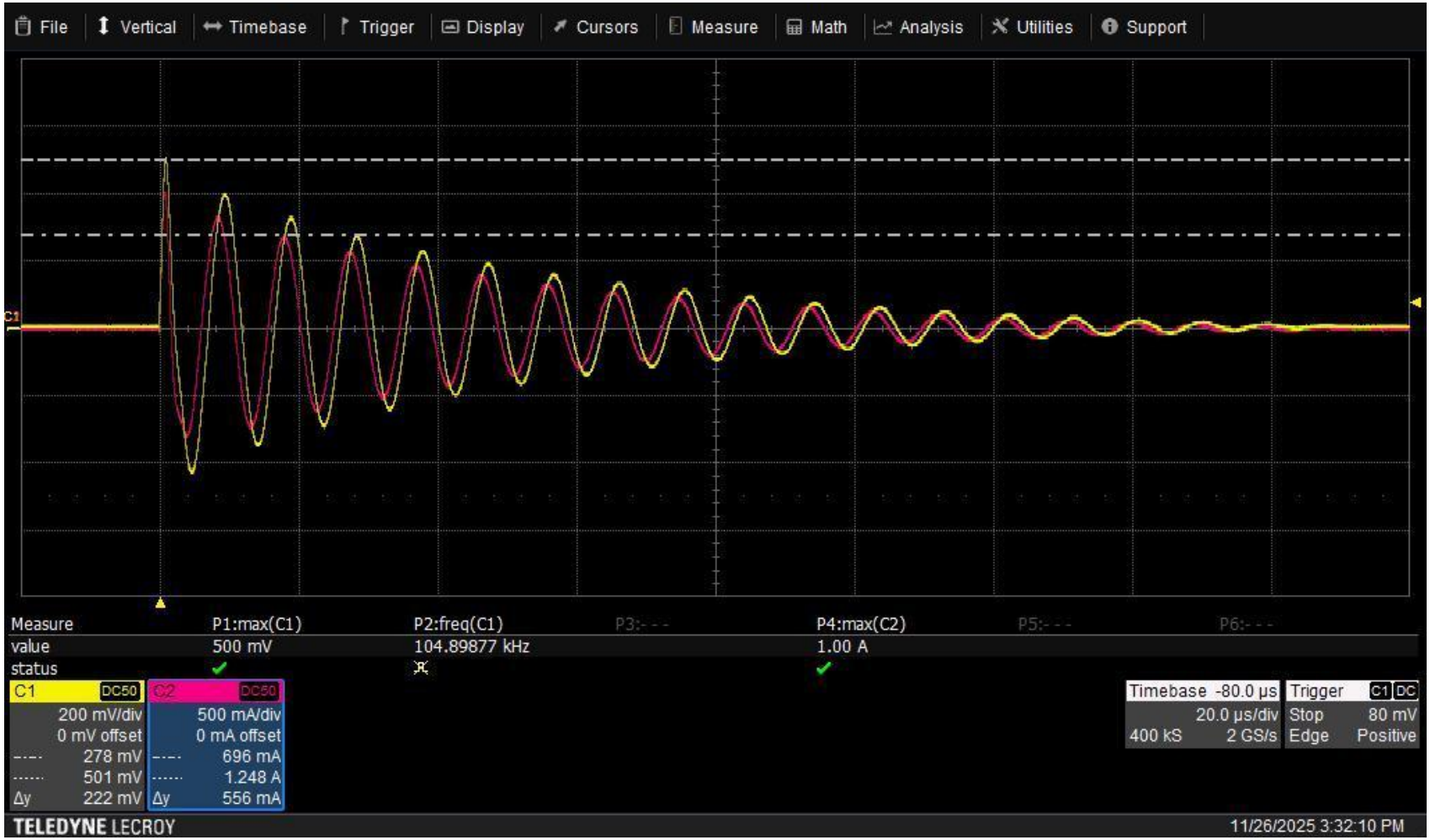
03 CS116 - Active - Power Bundle



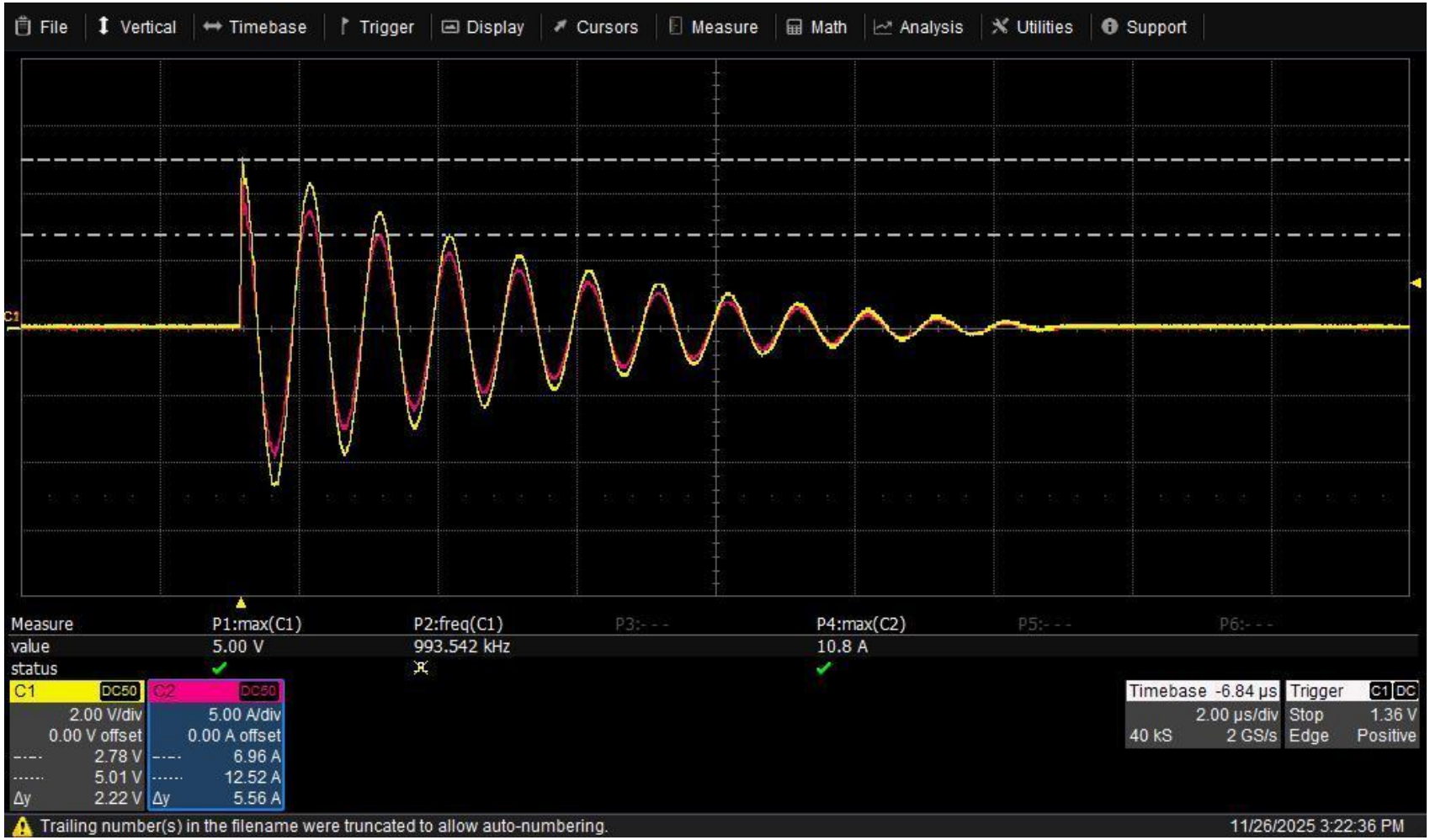
04 CS116 - Active - High Side

5.1.6 Test Data

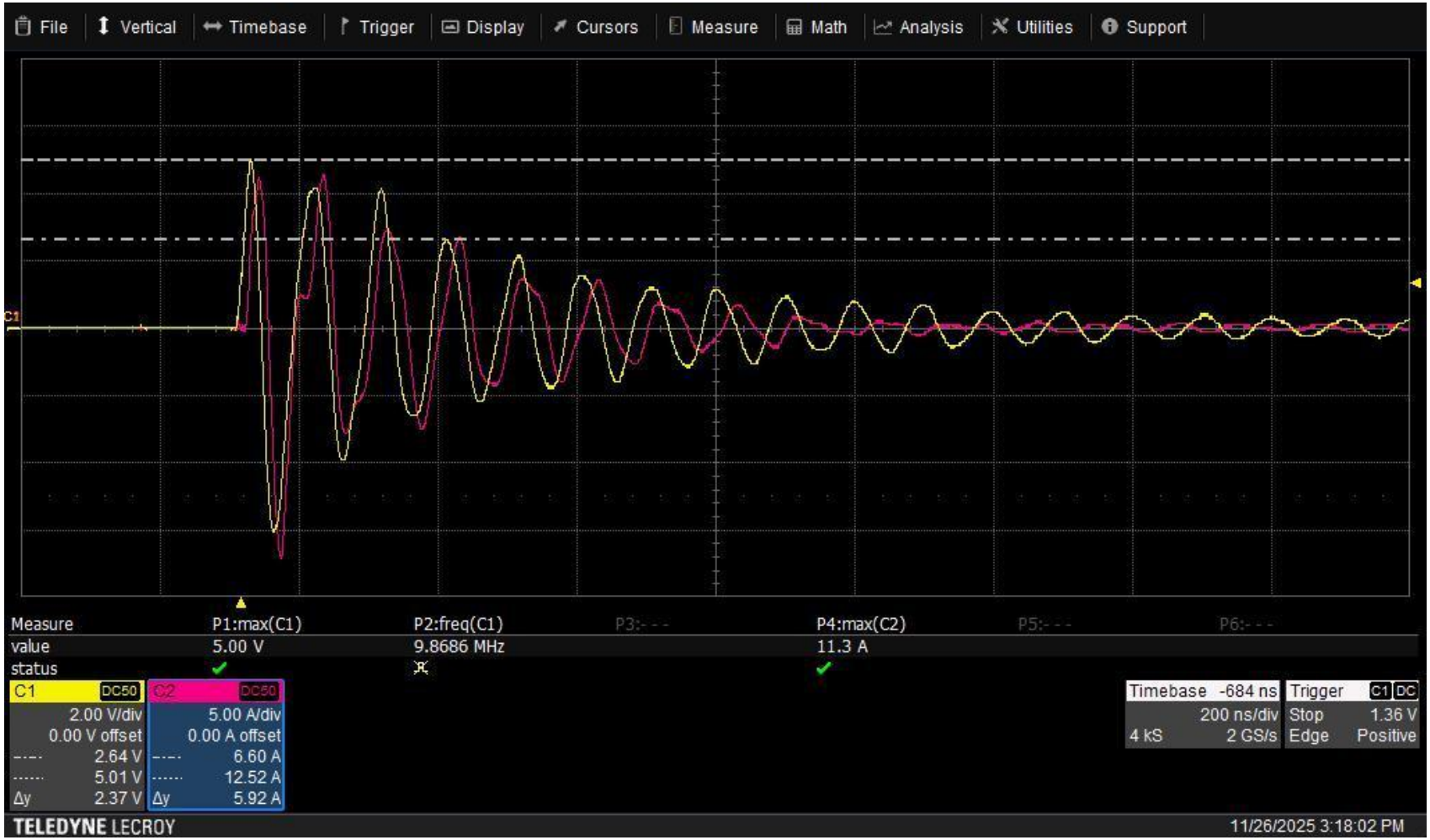
01 CS116 - Calibration - 10 kHz



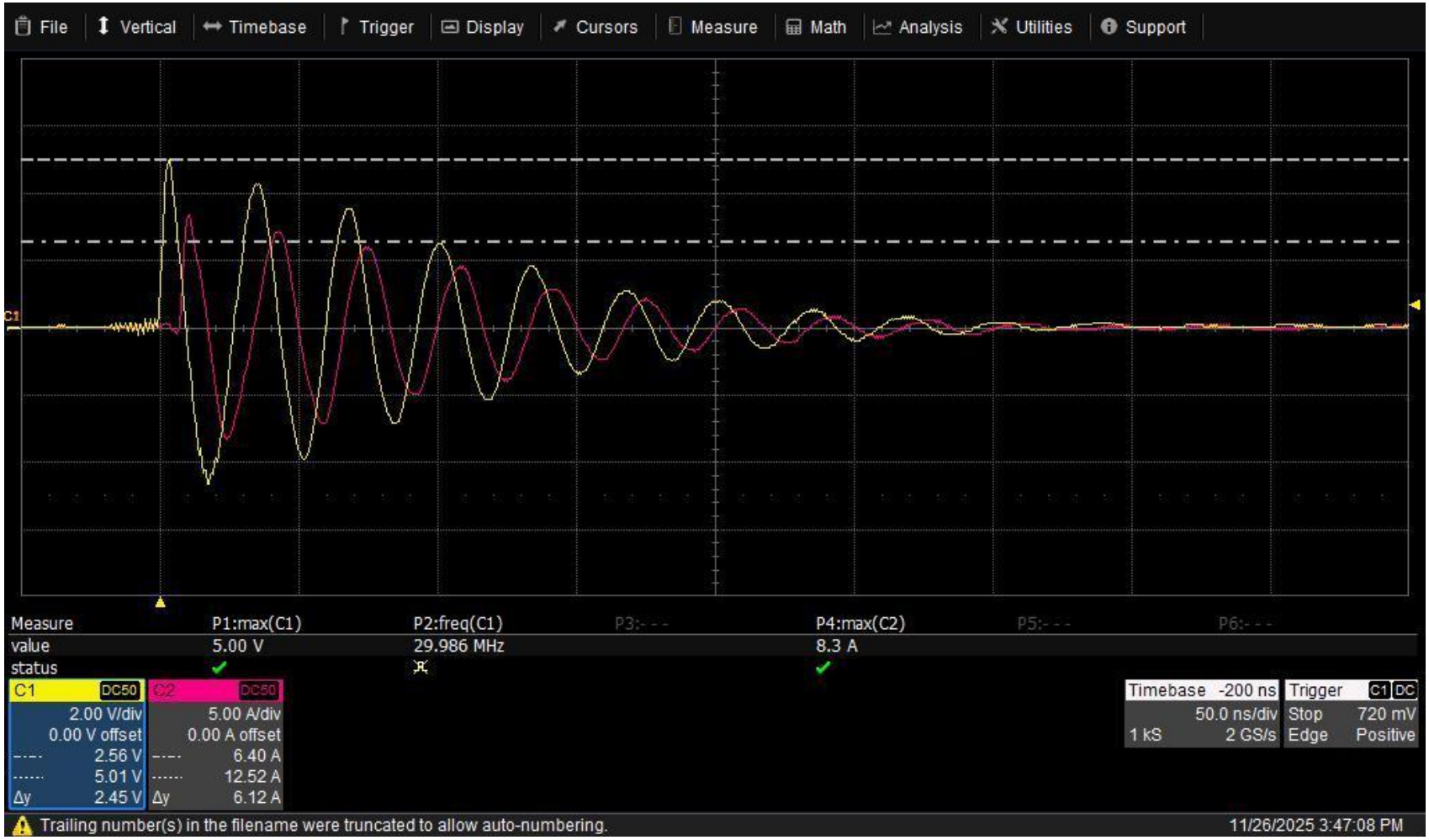
02 CS116 - Calibration - 100 kHz



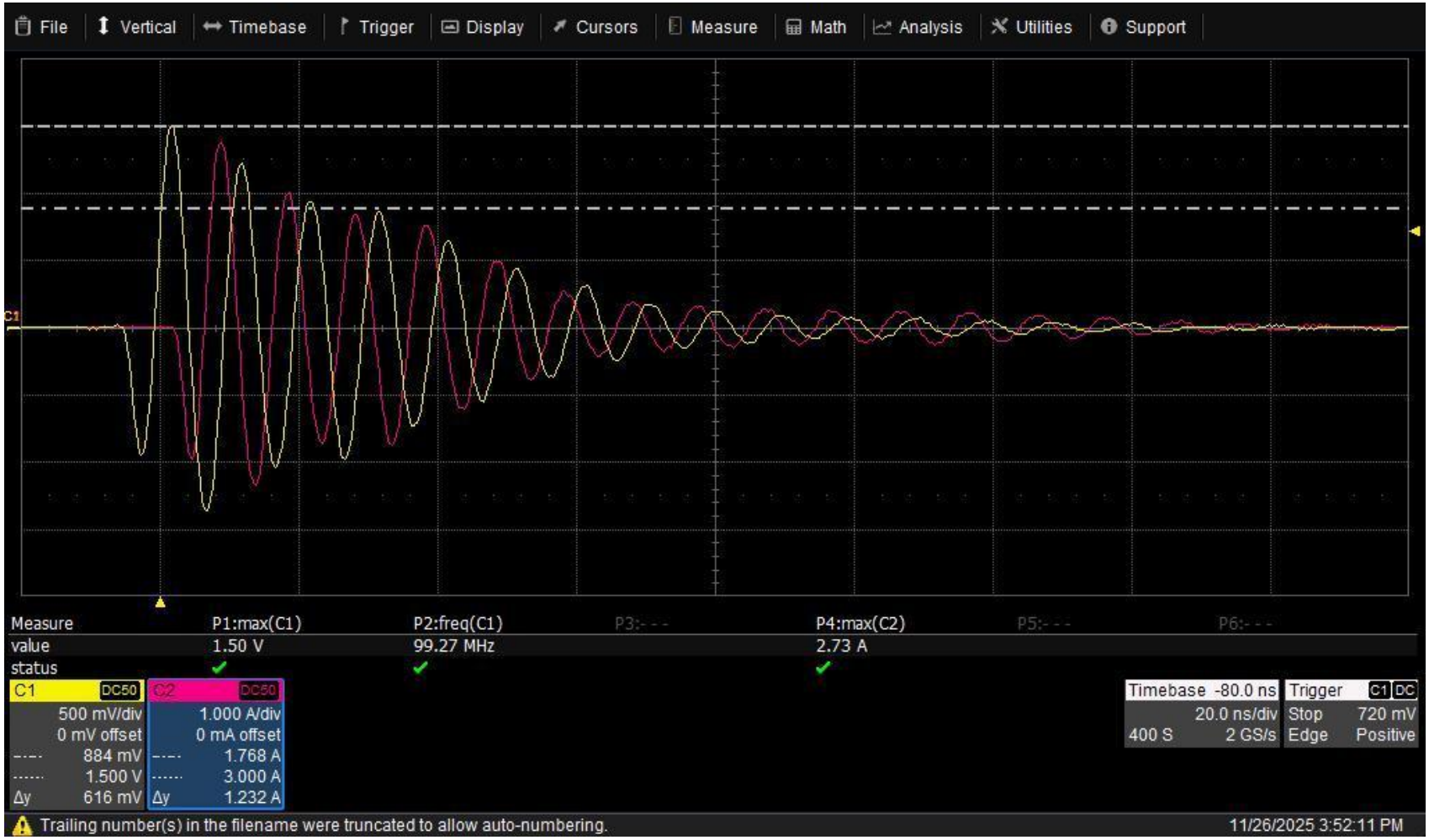
03 CS116 - Calibration - 1 MHz



04 CS116 - Calibration - 10 MHz

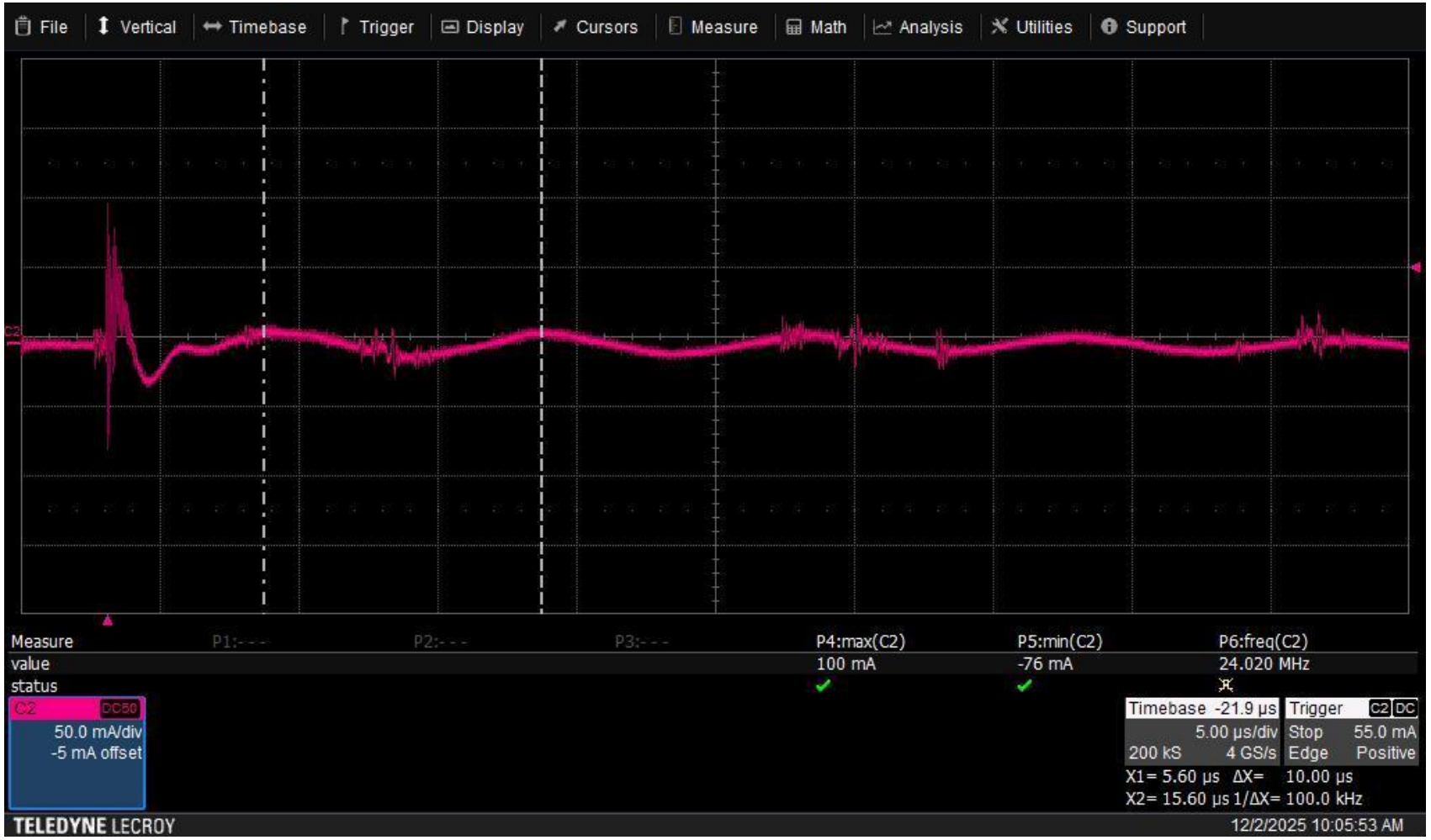


05 CS116 - Calibration - 30 MHz

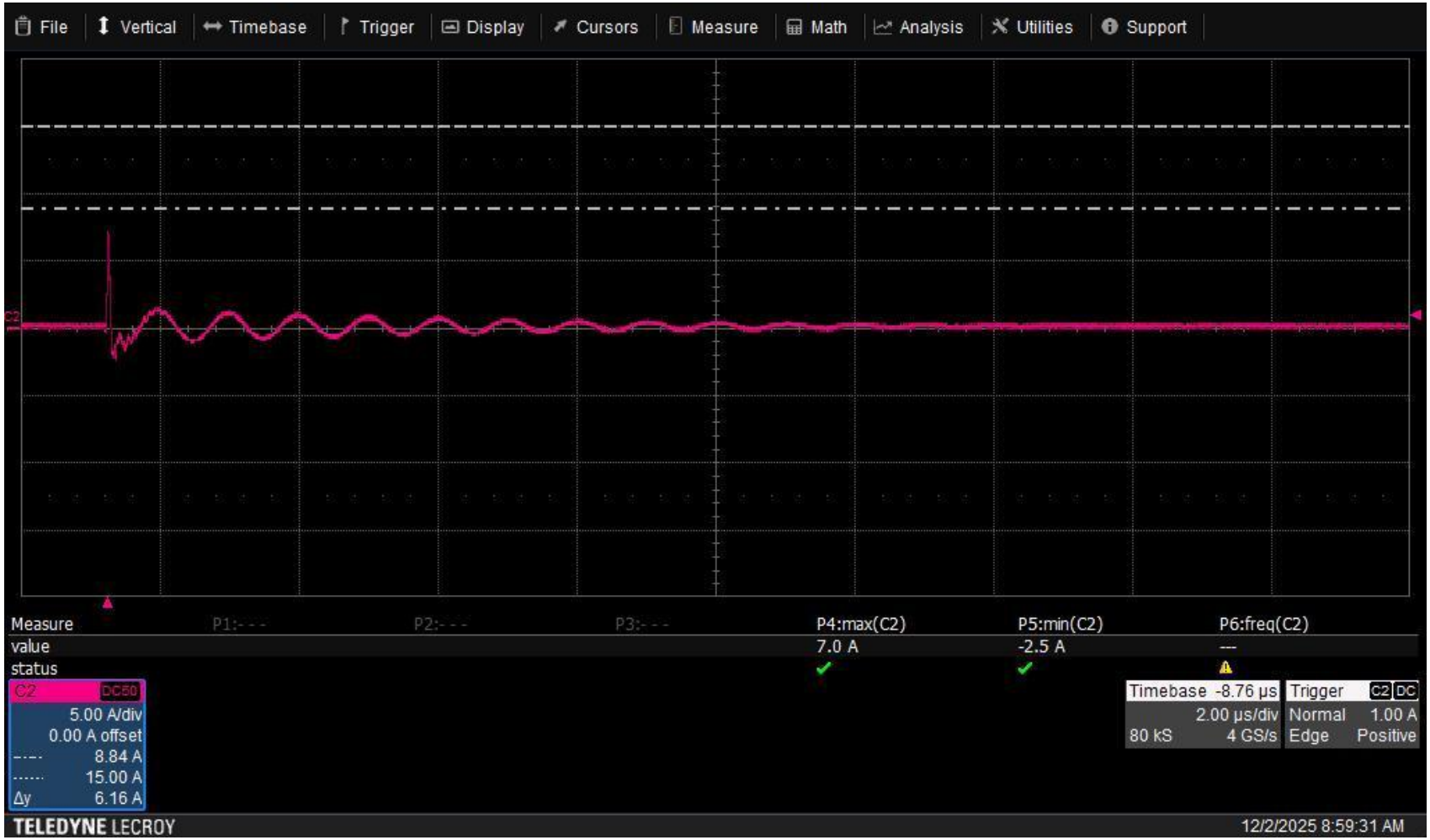


06 CS116 - Calibration - 100 MHz

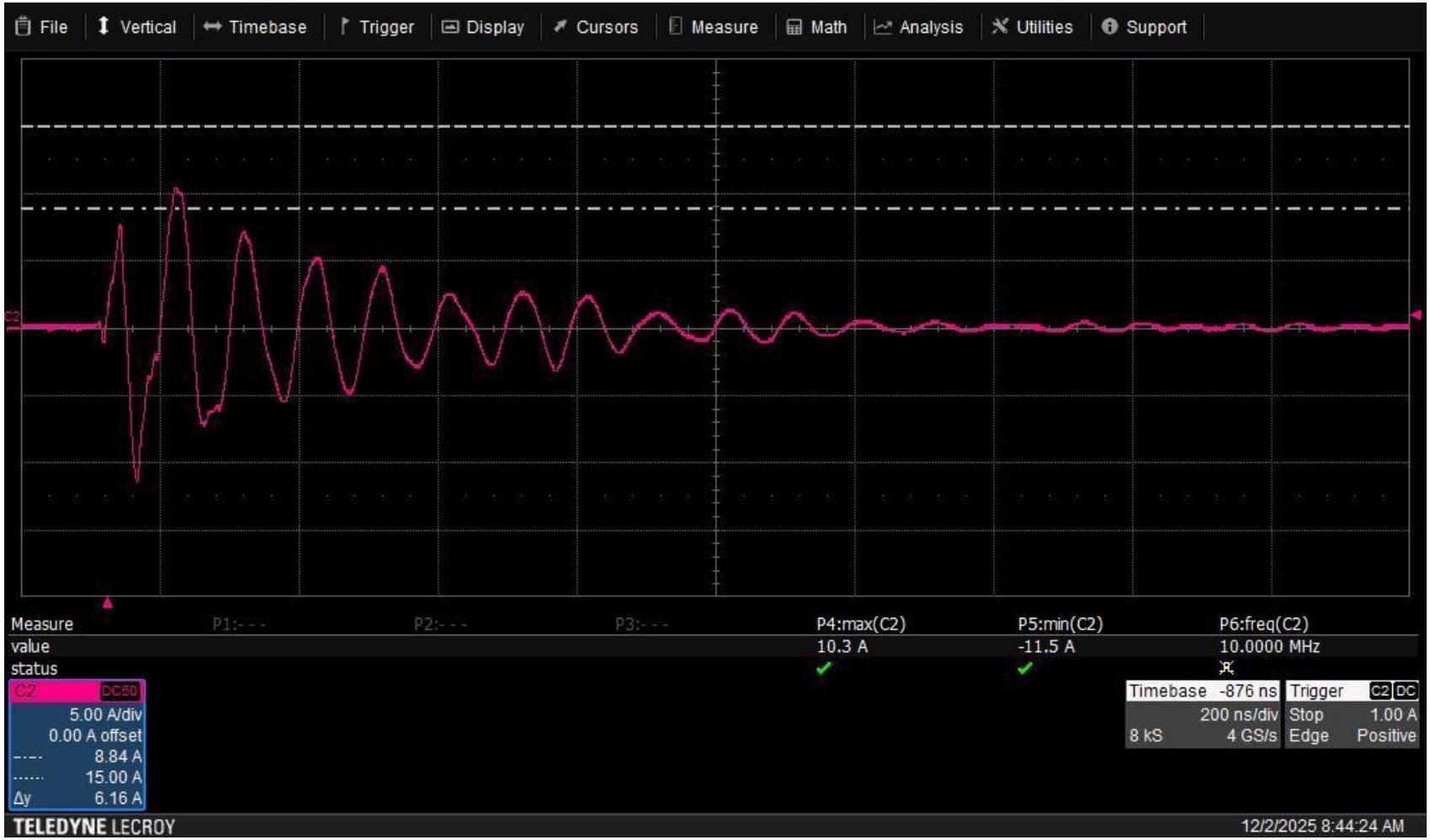
07 CS116 - Active - 10 kHz - Power Bundle



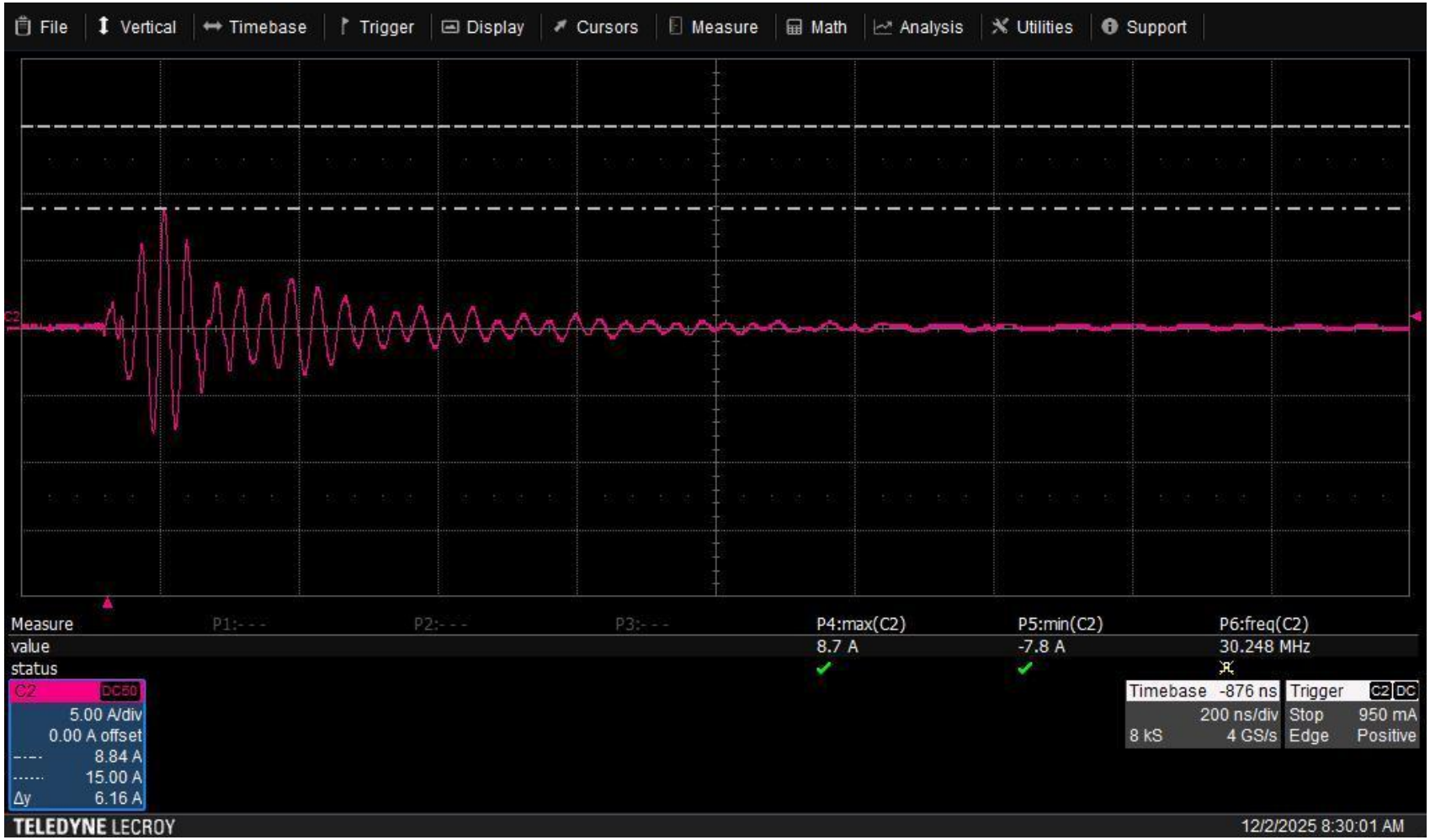
08 CS116 - Active - 100 kHz - Power Bundle



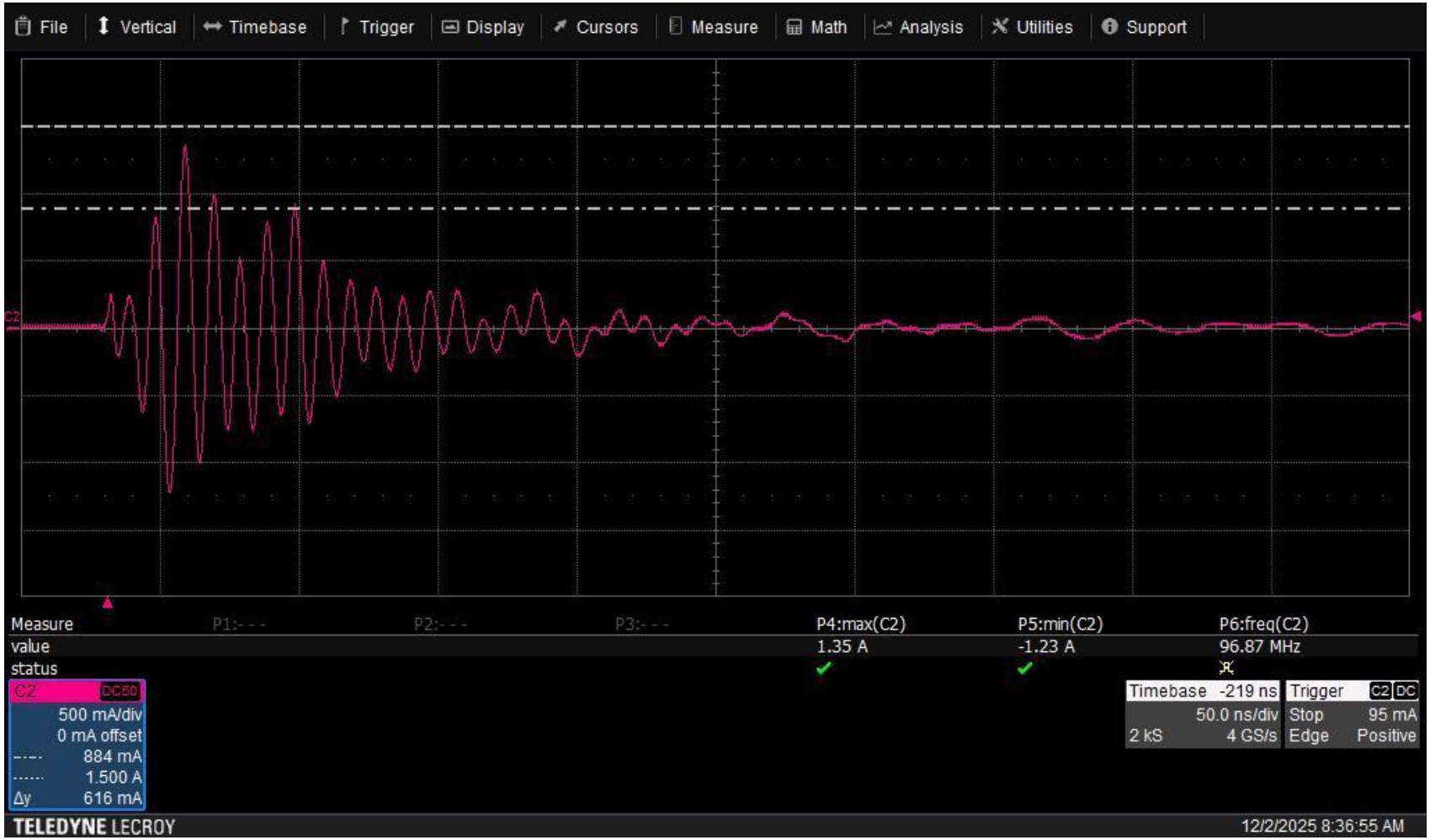
09 CS116 - Active - 1 MHz - Power Bundle



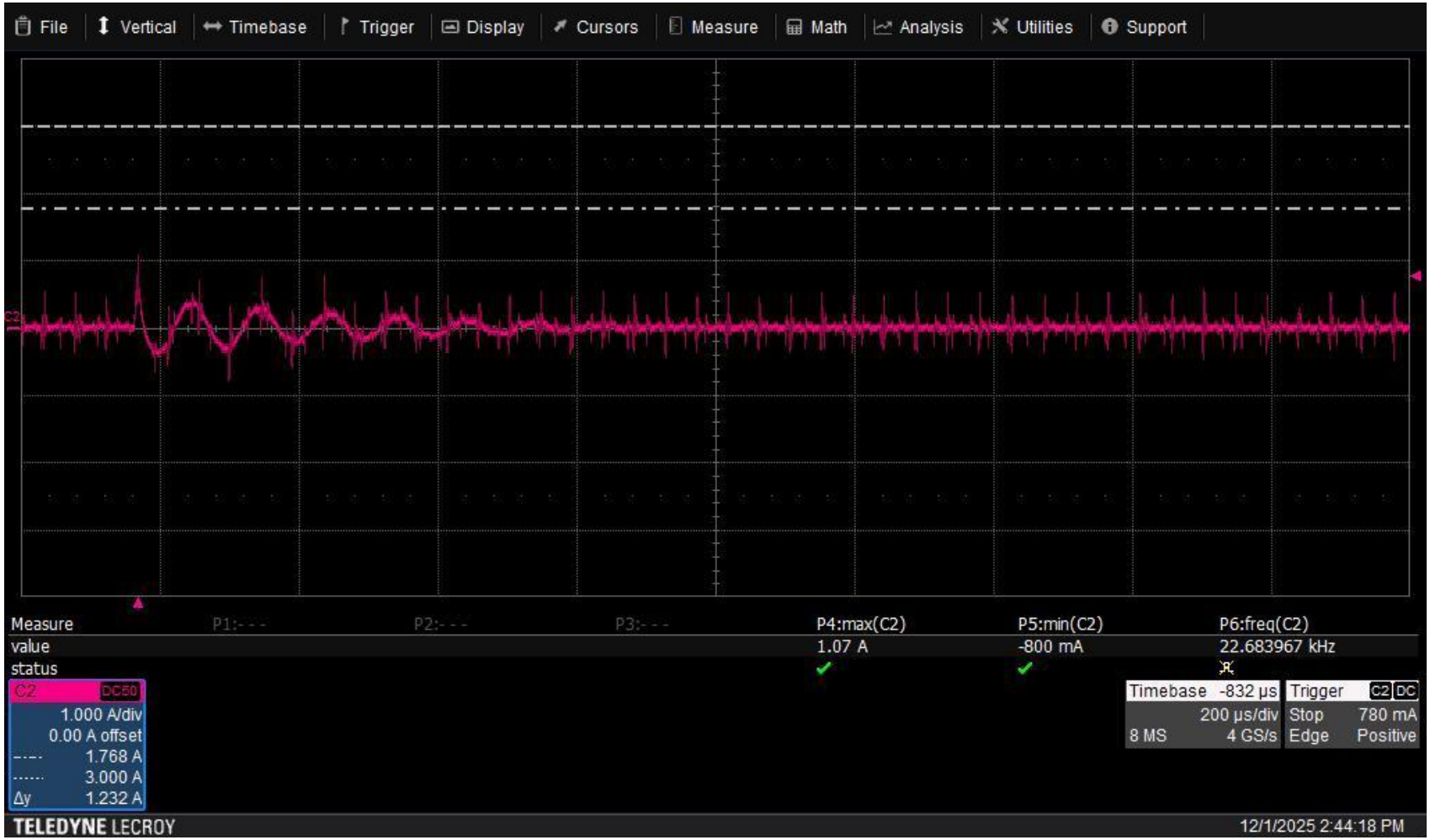
10 CS116 - Active - 10 MHz - Power Bundle



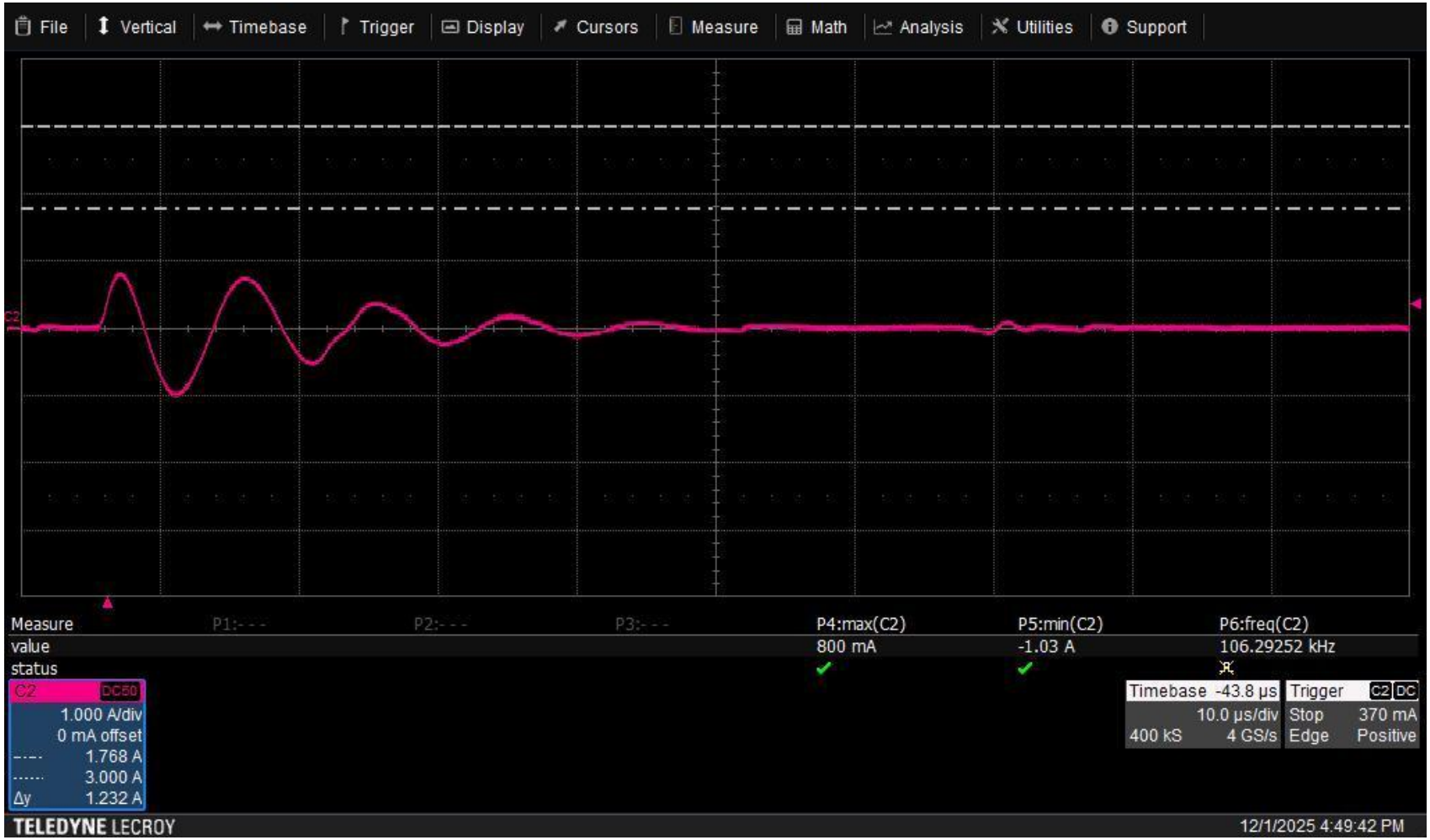
11 CS116 - Active - 30 MHz - Power Bundle



12 CS116 - Active - 100 MHz - Power Bundle

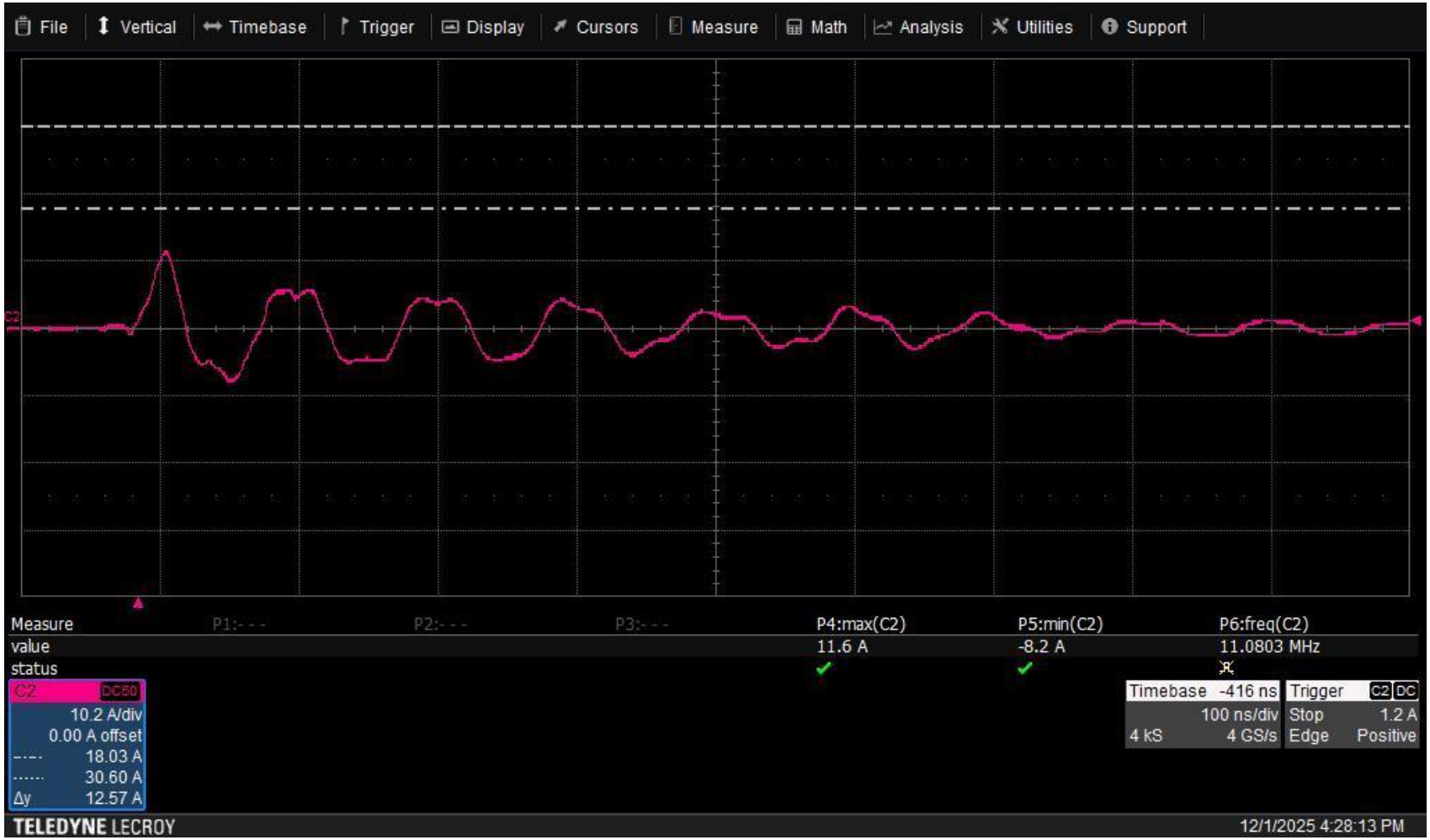


13 CS116 - Active - 10 kHz - High Side

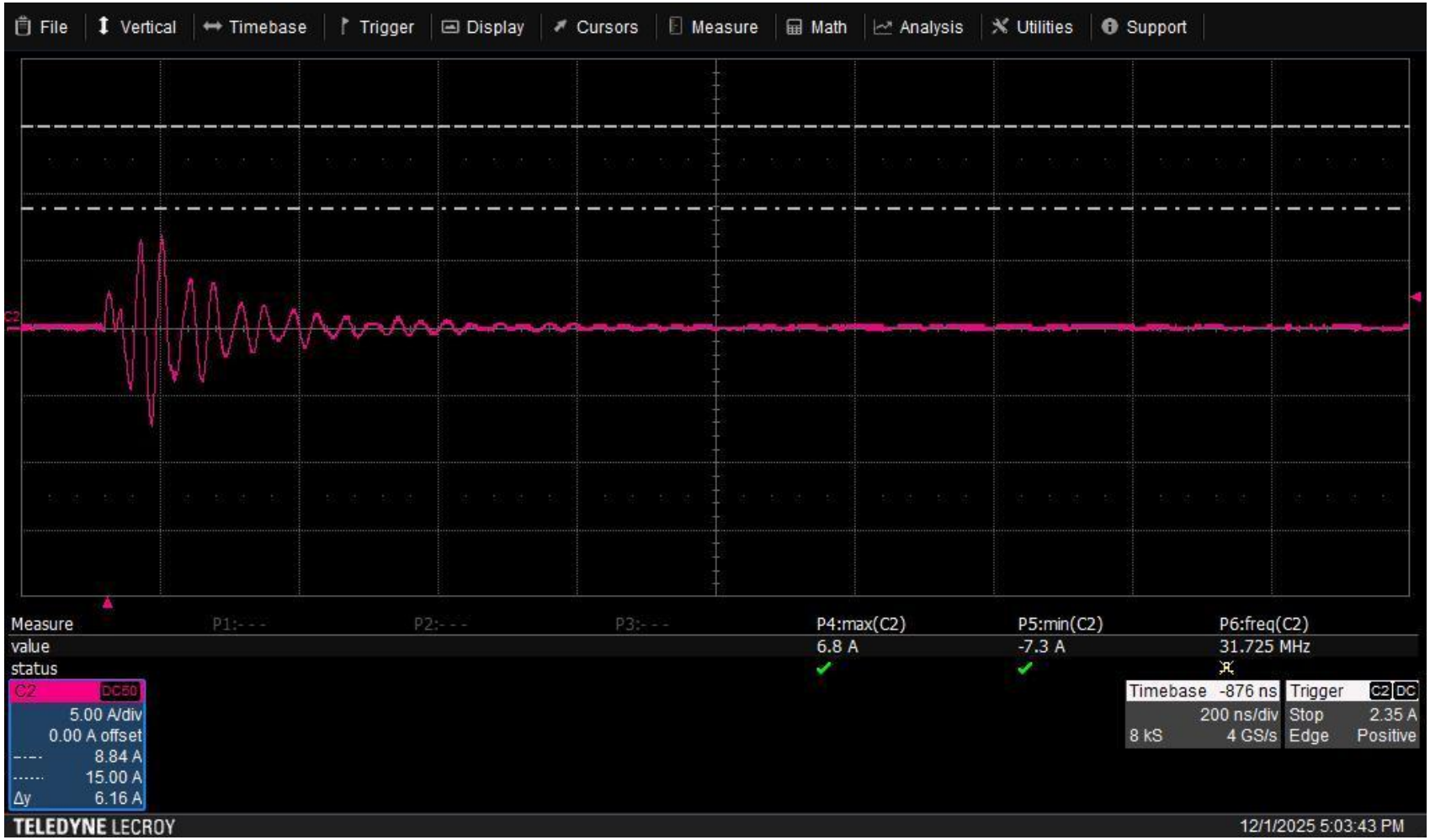


14 CS116 - Active - 100 kHz - High Side

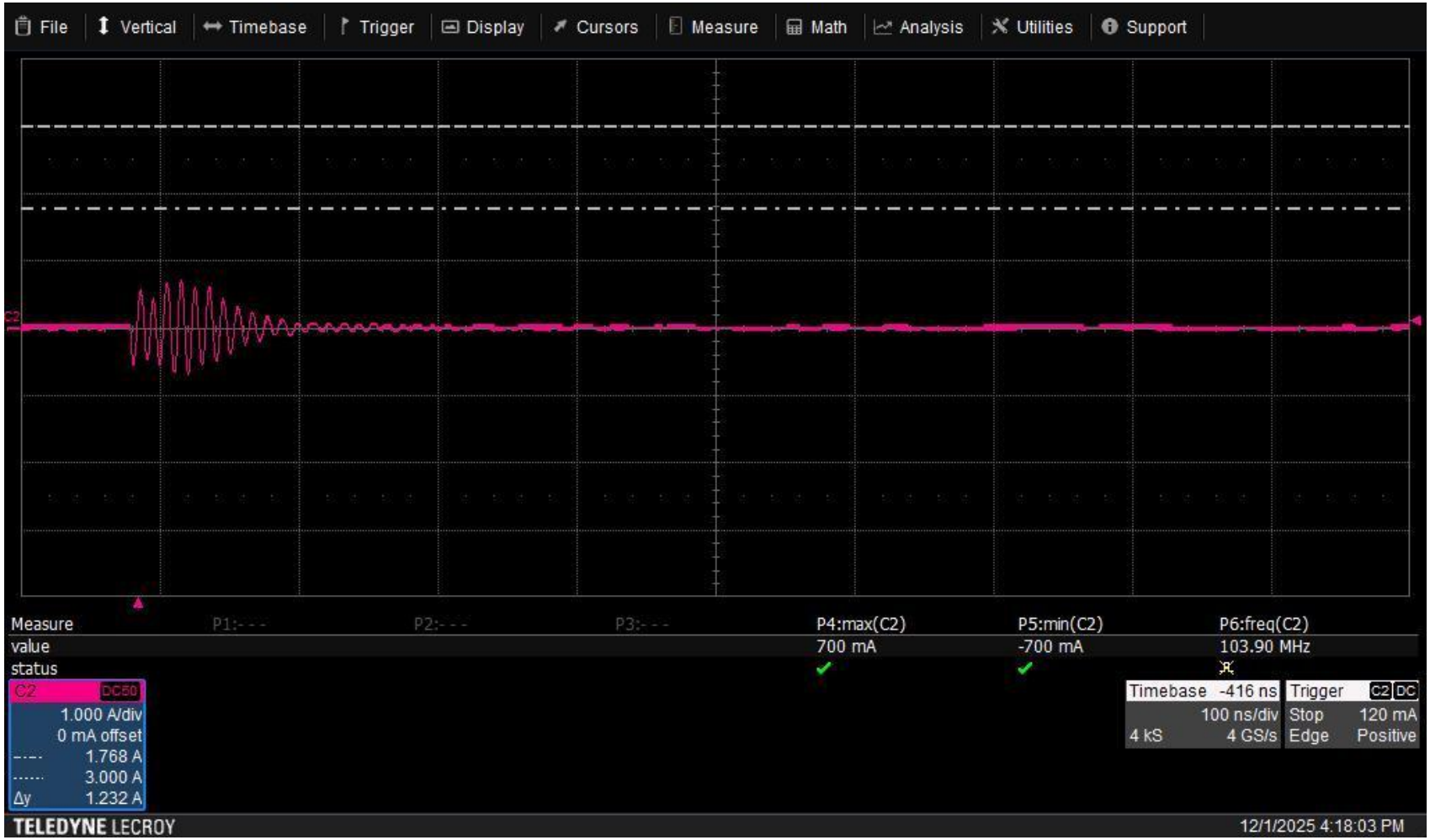
15 CS116 - Active - 1 MHz - High Side



16 CS116 - Active - 10 MHz - High Side



17 CS116 - Active - 30 MHz - High Side



18 CS116 - Active - 100 MHz - High Side

5.1.7 Test Equipment List

Table 5.1-1: CS116 Test Equipment List

Asset Number	Asset Name	Manufacturer	Model	Calibrated	Due
US58-A042494	EMIC1 17'8" x 14'8" x 9'4"	ETS-Lindgren	CH 1 (S201 8X8)	NCR	NCR
US58-A063757	Calibration Fixture	FCC	FCC-BCICF-3	09/06/2024	09/06/2026
US58-A069879	Rf Current Probes	FCC	F-75	03/25/2025	03/25/2027
US58-A048731	Resistor (Coaxial)	Bird Electronic	8201	04/19/2024	04/19/2029
US58-A043078	Oscilloscope	LeCroy	WS3022	04/02/2025	04/02/2026
US58-A041819	Hygrometer	Extech Instruments	445702	01/27/2025	01/27/2026
US58-A077833	Generator System	EMC-Partner	MIL-MG3	NCR	NCR

Calibration Abbreviations
CAL: Calibration
NCR: No Calibration Required

End of Test Report