

Test Report

Fail

Test Configuration Details

Application

Name	D9010ETHC Ethernet
Version	2.62.0.0

Device Description

Tests10BT	No
Tests100BT	No
Tests1000BT	Yes
Tests10BT_EEE	No
Tests100BT_EEE	No
Tests1000BT_EEE	No
DisturberSource	Use Keysight 33250A
ReturnLossTest	Use Vector Network Analyzer

Test Session Details

Infiniium SW Version	06.40.01001
Infiniium Model Number	DSOS204A
Infiniium Serial Number	MY55510174
Debug Mode Used	No
Compliance Limits	IEEE Std. 802.3 Specification (official)
Probe (Channel 2)	Model: User Defined Probe Serial: No Serial Num Atten: Not Calibrated, Using Default Atten (1.0000E+00) Skew: Not Calibrated, Using Default Skew
Probe (Channel 3)	Model: User Defined Probe Serial: No Serial Num Atten: Not Calibrated, Using Default Atten (1.0000E+00) Skew: Not Calibrated, Using Default Skew
Probe (Channel 4)	Model: User Defined Probe Serial: No Serial Num Atten: Not Calibrated, Using Default Atten (1.0000E+00) Skew: Not Calibrated, Using Default Skew
Last Test Date	2023-06-26 15:32:56 UTC +09:00

Summary of Results

Test Statistics		Margin Thresholds	
Failed	2	Warning	< 2 %
Passed	18	Critical	< 0 %
Total	20		

Pass	# Failed	# Trials	Test Name (click to jump)	Actual Value	Margin	Pass Limits
✓	0	4	1000 Base-T, Point A Peak Output Voltage(w/ Disturbing Signal)	728.7 mV	39.1	670.0 mV < VALUE < 820.0 mV
✓	0	4	1000 Base-T, Point B Peak Output Voltage(w/ Disturbing Signal)	729.7 mV	39.8	670.0 mV < VALUE < 820.0 mV
✓	0	4	1000 Base-T, Difference A,B Peak Output Voltage(w/ Disturbing Signal)	230 m%	77.0	VALUE < 1.00 %
✓	0	4	1000 Base-T, Point C Peak Output Voltage(w/ Disturbing Signal)	310 m%	84.5	VALUE < 2.00 %
✓	0	4	1000 Base-T, Point D Peak Output Voltage(w/ Disturbing Signal)	290 m%	85.5	VALUE < 2.00 %
✓	0	4	1000 Base-T, Point A Template Test(w/ Disturbing Signal)	0.000	100.0	No Mask Failures
✓	0	4	1000 Base-T, Point B Template Test(w/ Disturbing Signal)	0.000	100.0	No Mask Failures
✓	0	4	1000 Base-T, Point C Template Test(w/ Disturbing Signal)	0.000	100.0	No Mask Failures
✓	0	4	1000 Base-T, Point D Template Test(w/ Disturbing Signal)	0.000	100.0	No Mask Failures
✓	0	4	1000 Base-T, Point F Template Test(w/ Disturbing Signal)	0.000	100.0	No Mask Failures
✓	0	4	1000 Base-T, Point H Template Test(w/ Disturbing Signal)	0.000	100.0	No Mask Failures
✓	0	4	1000 Base-T, Point G Droop Test(w/ Disturbing Signal)	87.89 %	20.2	VALUE > 73.10 %
✓	0	4	1000 Base-T, Point J Droop Test(w/ Disturbing Signal)	87.99 %	20.4	VALUE > 73.10 %
✓	0	4	1000 Base-T, Transmitter Distortion(w/ Disturbing Signal)	2.51 mV	74.9	VALUE <= 10.00 mV
✗	2	4	1000 Base-T, MDI Common Mode Output Voltage	63.1 mV	-26.2	VALUE < 50.0 mV
✓	0	4	1000 Base-T, Jitter MASTER Filtered (w/o TX_TCLK)	211 ps	29.7	VALUE < 300 ps
✓	0	4	1000 Base-T, Jitter MASTER Unfiltered (w/o TX_TCLK)	245 ps	82.5	VALUE < 1.400 ns
i	0	4	1000 Base-T, Jitter SLAVE Filtered (w/o TX_TCLK)	-10 p	100.0	Information Only
i	0	4	1000 Base-T, Jitter SLAVE Unfiltered (w/o TX_TCLK)	20 p	100.0	Information Only
✗	5	8	1000 Base-T, MDI Return Loss	-940 mdB	-9.4	Overall = Pass

Report Detail

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✓	1000 Base-T, Point A Peak Output Voltage(w/ Disturbing Signal)	IEEE Std. 802.3 (IEEE802.3-2018 Subclause 40.6.1.2.1)
The magnitude of the voltage at Point A shall fall within the range of 0.67 V to 0.82V (0.75V +/- 0.83dB) Actual Value Measurement Name: Peak A (w/ Disturbing Signal) Pass Limits: 670.0 mV < VALUE < 820.0 mV		

Statistics & Details for all 4 Trials

Trial #	Actual Value	Margin	#Avgs (1000 Base-T Peak Voltage measurements)	Test Pair
Avg	733.5 mV	42.33 %		
StdDev	5.563 mV	3.723 %		

	Range	12.37 mV	8.267 %		
	Min	728.7 mV	39.13 %		
	Max	741.1 mV	47.40 %		
	Sum	2.934 V	169.3 %		
4 (Worst)	728.7 mV	39.1%	128.0		BI_DD
1	730.0 mV	40.0%	128.0		BI_DA
2	734.2 mV	42.8%	128.0		BI_DB
3	741.1 mV	47.4%	128.0		BI_DC

Trial 4 Images

Peak A, (Pair D)

Keysight Infiniium : Monday, June 26, 2023 3:04:14 PM



Trial 1 Images

Peak A, (Pair A)

Keysight Infiniium : Monday, June 26, 2023 2:40:30 PM



Trial 2 Images

Peak A, (Pair B)



Trial 3 Images

Peak A, (Pair C)


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1000 Base-T, Point B Peak Output Voltage(w/ Disturbing Signal)

IEEE Std. 802.3 (IEEE802.3-2018 Subclause 40.6.1.2.1)

The magnitude of the voltage at Point B shall fall within the range of 0.67 V to 0.82V (0.75V +/- 0.83dB)

Actual Value Measurement Name: Peak B (w/ Disturbing Signal)

Pass Limits: 670.0 mV < VALUE < 820.0 mV

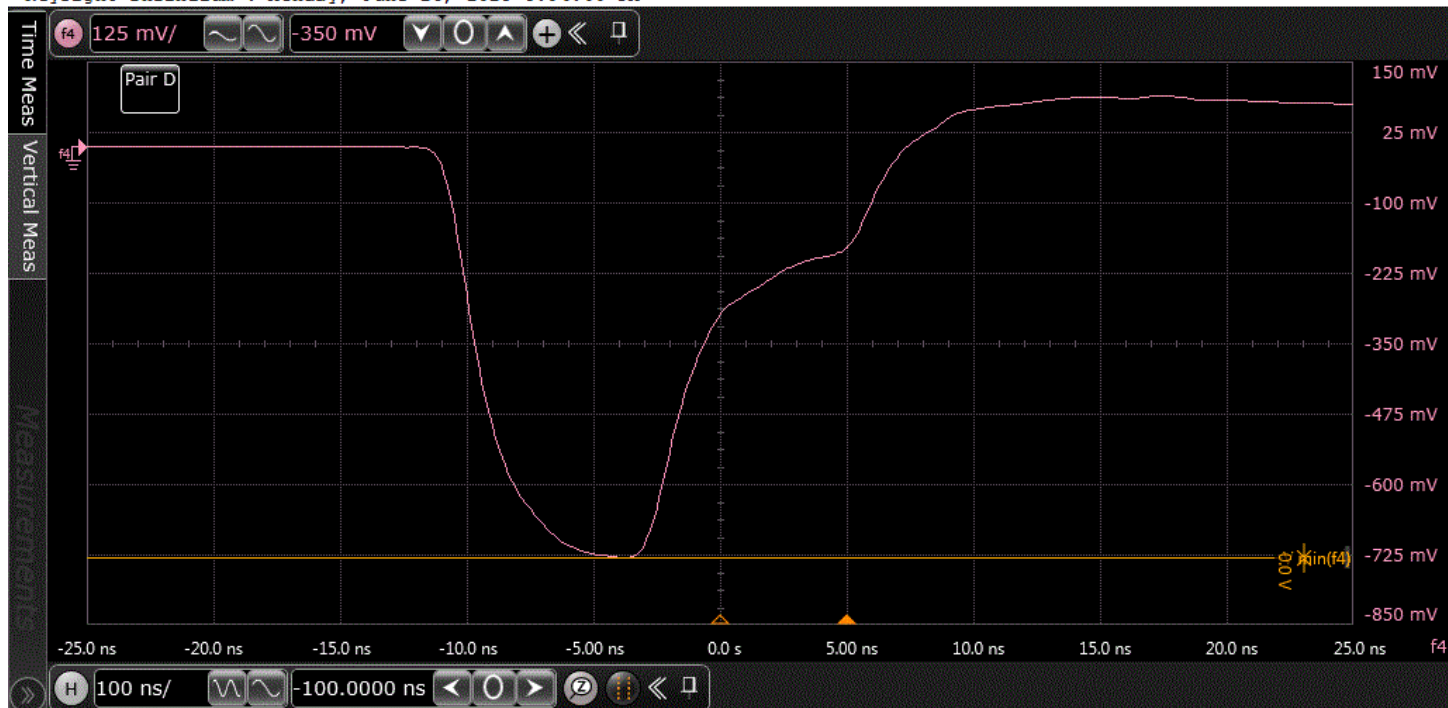
Statistics & Details for all 4 Trials

Trial #	Actual Value	Margin	#Avs (1000 Base-T Peak Voltage measurements)	Test Pair
Avg	732.8 mV	41.85 %		
StdDev	3.760 mV	2.502 %		
Range	8.054 mV	5.333 %		
Min	729.7 mV	39.80 %		
Max	737.7 mV	45.13 %		
Sum	2.931 V	167.4 %		
4 (Worst)	729.7 mV	39.8%	128.0	BI_DD
1	730.0 mV	40.0%	128.0	BI_DA
2	733.7 mV	42.5%	128.0	BI_DB
3	737.7 mV	45.1%	128.0	BI_DC

Trial 4 Images

Peak B, (Pair D)

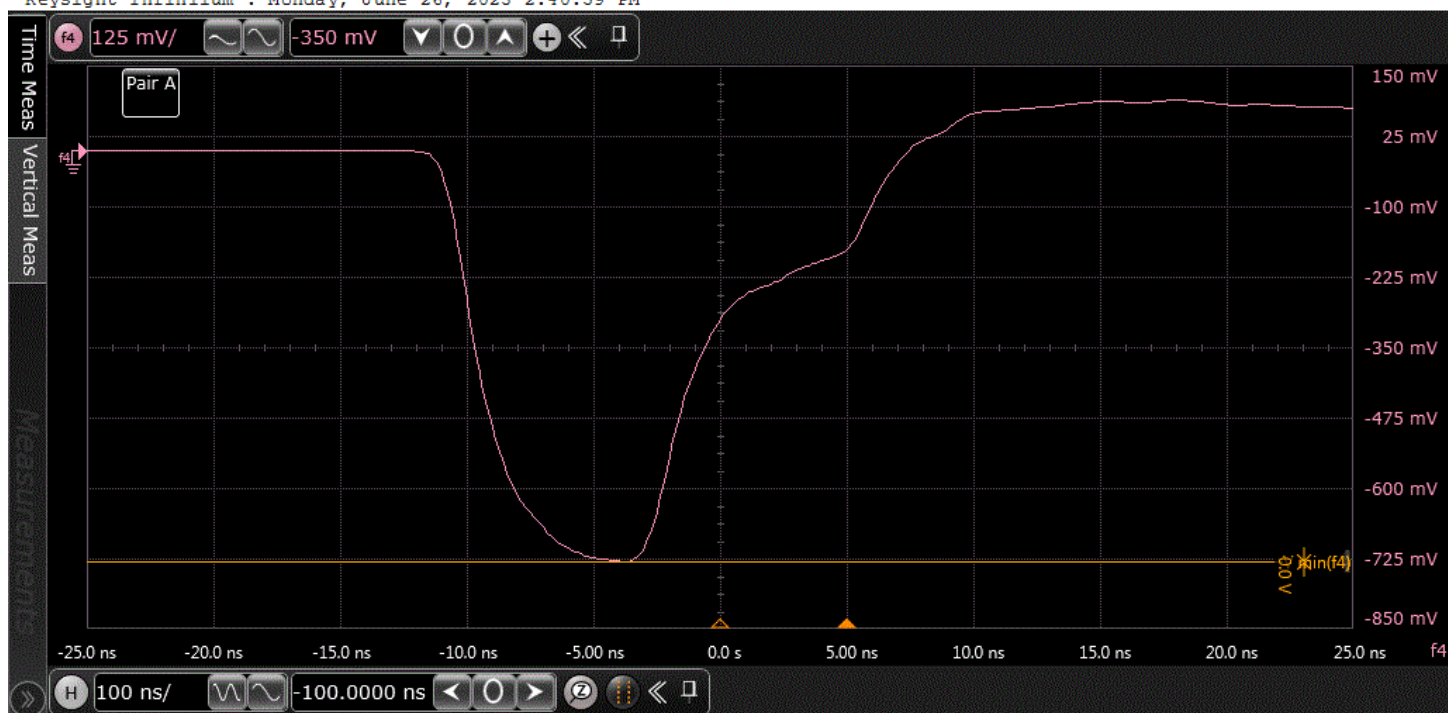
Keysight Infiniium : Monday, June 26, 2023 3:04:44 PM



Trial 1 Images

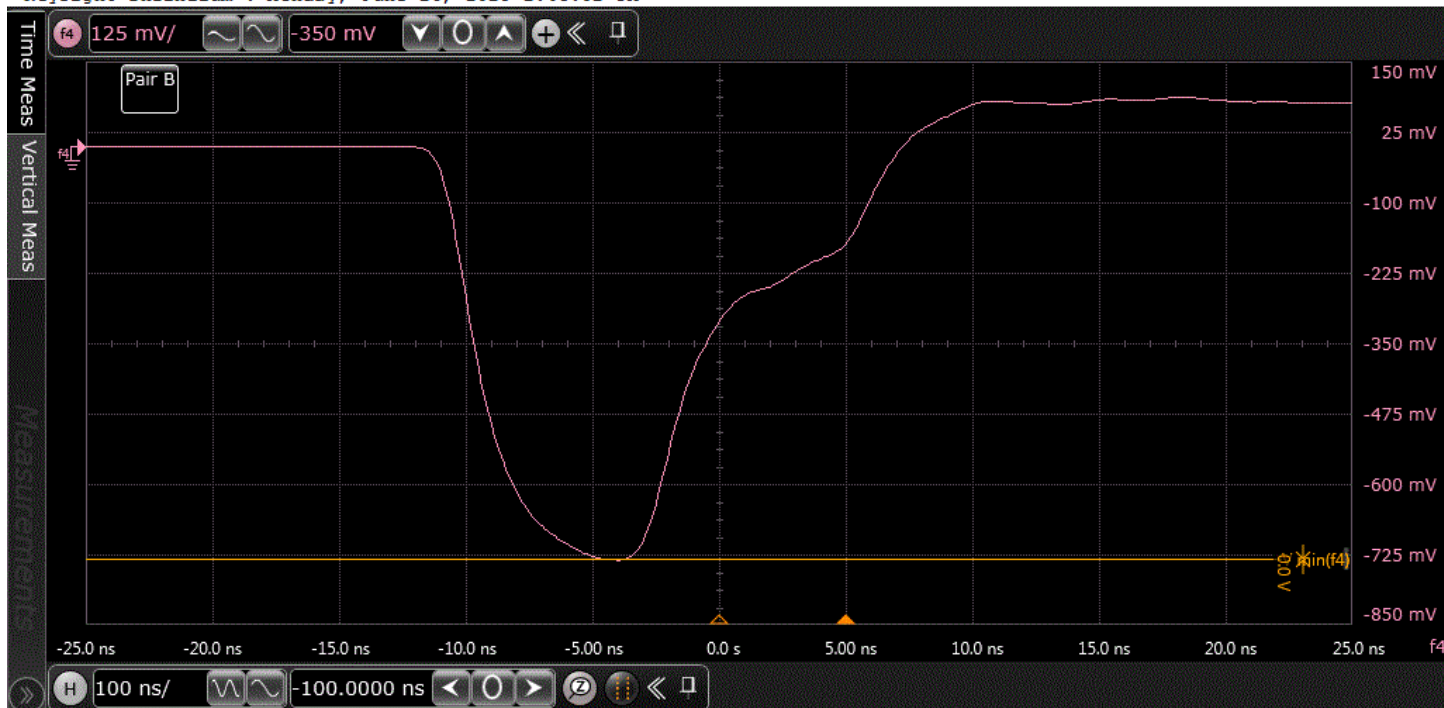
Peak B, (Pair A)

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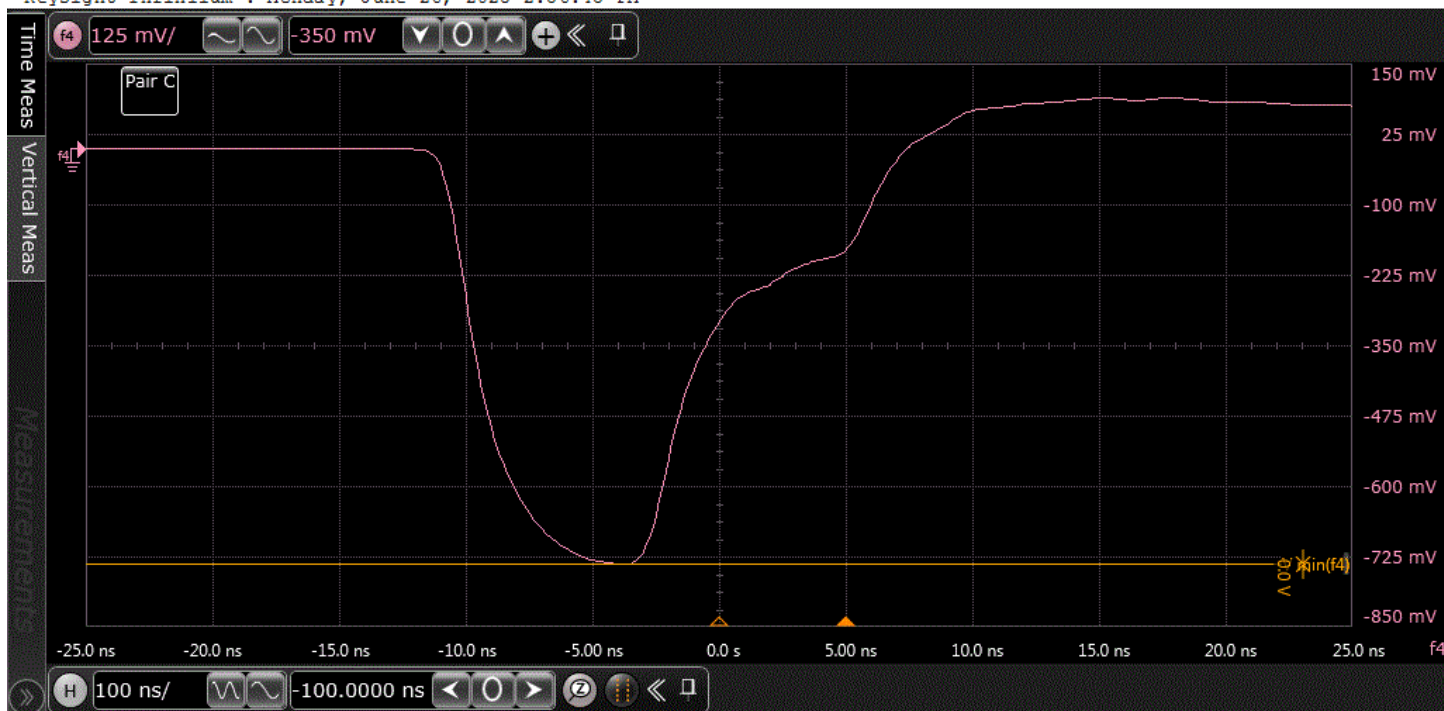
Trial 2 Images

Peak B, (Pair B)



Trial 3 Images

Peak B, (Pair C)

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1000 Base-T, Difference A,B Peak Output Voltage(w/ Disturbing Signal)

IEEE Std. 802.3 (IEEE802.3-2018 Subclause 40.6.1.2.1)

The absolute value of the peak of the waveform at points A and B shall differ by less than 1%

Actual Value Measurement Name: % Difference (1000 Base-T, Difference A,B Peak Output Voltage(w/ Disturbing Signal))

Pass Limits: VALUE < 1.00 %

Statistics & Details for all 4 Trials

Trial #	Actual Value	Margin	Peak A Volts	Peak B Volts	#Aves (1000 Base-T Peak Voltage measurements)	Test Pair
Avg	81.44 m%	91.75 %	733.5 mV	-732.8 mV		
StdDev	100.5 m%	10.24 %	5.563 mV	3.760 mV		
Range	225.8 m%	23.00 %	12.37 mV	8.054 mV		
Min	1.164 m%	77.00 %	728.7 mV	-737.7 mV		
Max	227.0 m%	100.0 %	741.1 mV	-729.7 mV		
Sum	325.7 m%	367.0 %	2.934 V	-2.931 V		
3 (Worst)	230 m%	77.0%	741.1 mV	-737.7 mV	128.0	BI_DC
4	70 m%	93.0%	728.7 mV	-729.7 mV	128.0	BI_DD
2	30 m%	97.0%	734.2 mV	-733.7 mV	128.0	BI_DB
1	1 m%	100.0%	730.0 mV	-730.0 mV	128.0	BI_DA

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1000 Base-T, Point C Peak Output Voltage(w/ Disturbing Signal)

IEEE Std. 802.3 (IEEE802.3-2018 Subclause 40.6.1.2.1)

The absolute value of the peak of the waveform at point C shall differ by less than 2 0.000000rom 0.5 times the average of the absolute values of the peaks of the waveform at points A and B
Actual Value Measurement Name: % Difference (1000 Base-T, Point C Peak Output Voltage(w/ Disturbing Signal))
Pass Limits: [VALUE] < 2.00 %

Statistics & Details for all 4 Trials

Trial #	Actual Value	Margin	Peak A Volts	Peak B Volts	Peak C	#Avgs (1000 Base-T Peak Voltage measurements)
Avg	230.8 m%	88.50 %	733.5 mV	-732.8 mV	366.7 mV	
StdDev	86.90 m%	4.243 %	5.563 mV	3.760 mV	3.282 mV	
Range	186.1 m%	9.000 %	12.37 mV	8.054 mV	6.897 mV	
Min	125.8 m%	84.50 %	728.7 mV	-737.7 mV	364.0 mV	
Max	311.9 m%	93.50 %	741.1 mV	-729.7 mV	370.9 mV	
Sum	923.3 m%	354.0 %	2.934 V	-2.931 V	1.467 V	
3 (Worst)	310 m%	84.5%	741.1 mV	-737.7 mV	370.9 mV	128.0
1	290 m%	85.5%	730.0 mV	-730.0 mV	364.0 mV	128.0
2	190 m%	90.5%	734.2 mV	-733.7 mV	367.7 mV	128.0
4	130 m%	93.5%	728.7 mV	-729.7 mV	364.1 mV	128.0

Trial #	Test Pair
Avg	
StdDev	
Range	
Min	
Max	
Sum	
3 (Worst)	BI_DC
1	BI_DA
2	BI_DB
4	BI_DD

Trial 3 Images

Peak C, (Pair C)

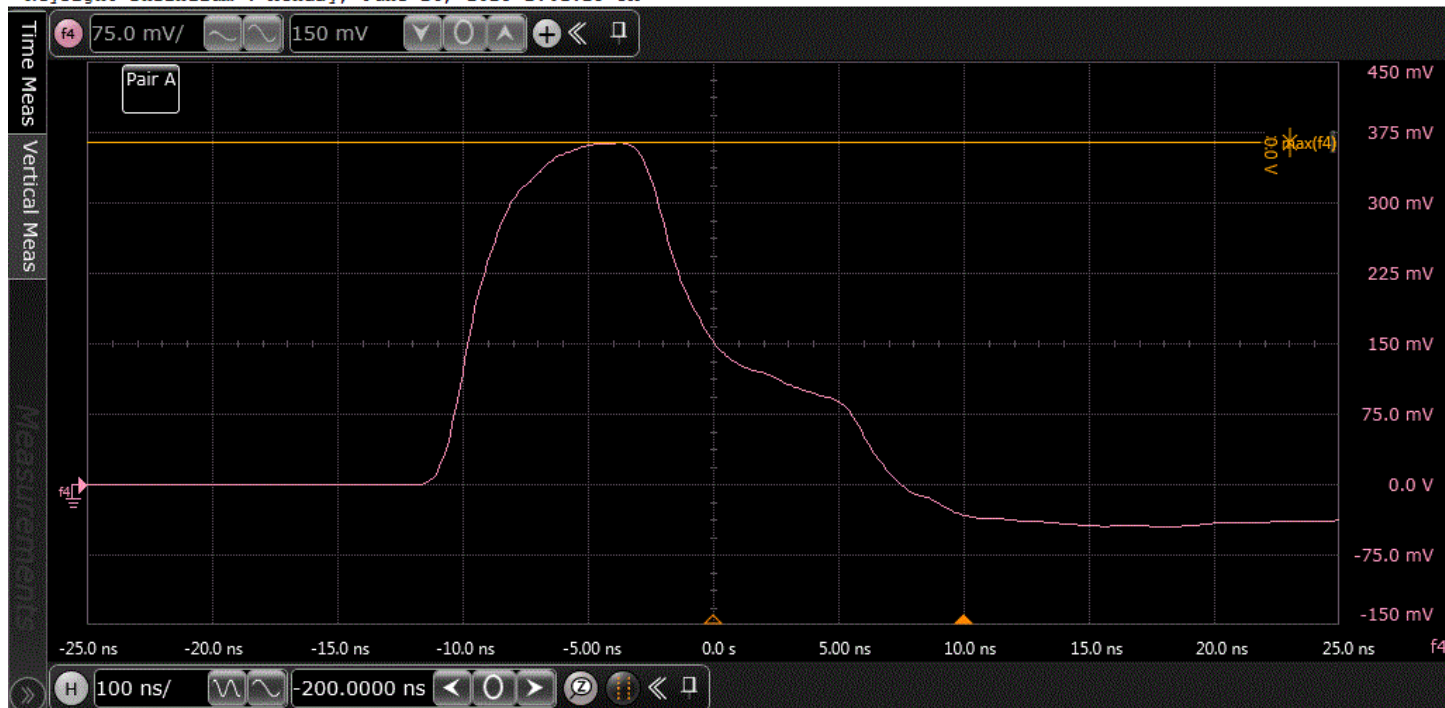
Keysight Infiniium : Monday, June 26, 2023 2:57:16 PM



Trial 1 Images

Peak C, (Pair A)

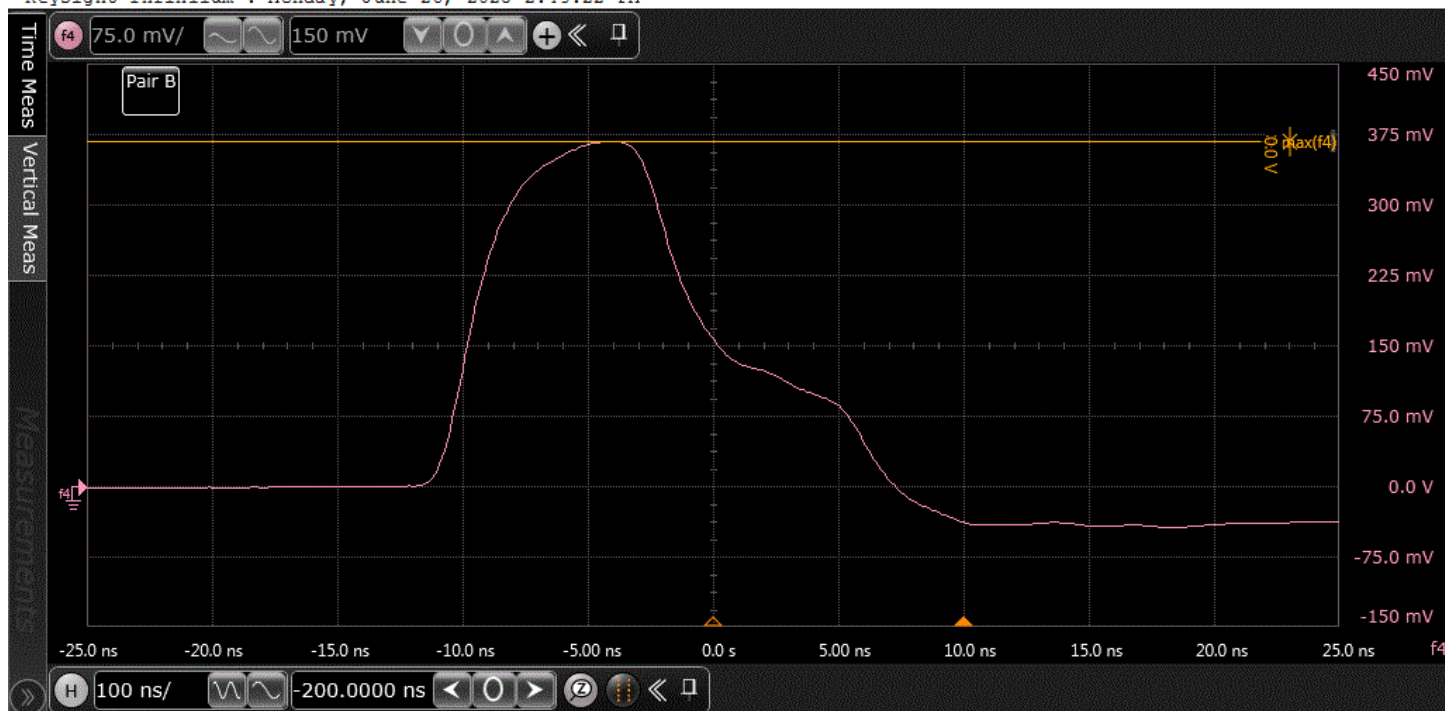
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Trial 2 Images

Peak C, (Pair B)

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Trial 4 Images

Peak C, (Pair D)


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1000 Base-T, Point D Peak Output Voltage(w/ Disturbing Signal)

IEEE Std. 802.3 (IEEE802.3-2018 Subclause 40.6.1.2.1)

The absolute value of the peak of the waveform at point D shall differ by less than 2.000000 from 0.5 times the average of the absolute values of the peaks of the waveform at points A and B

Actual Value Measurement Name: % Difference (1000 Base-T, Point D Peak Output Voltage(w/ Disturbing Signal))

Pass Limits: |VALUE| < 2.00 %

Statistics & Details for all 4 Trials

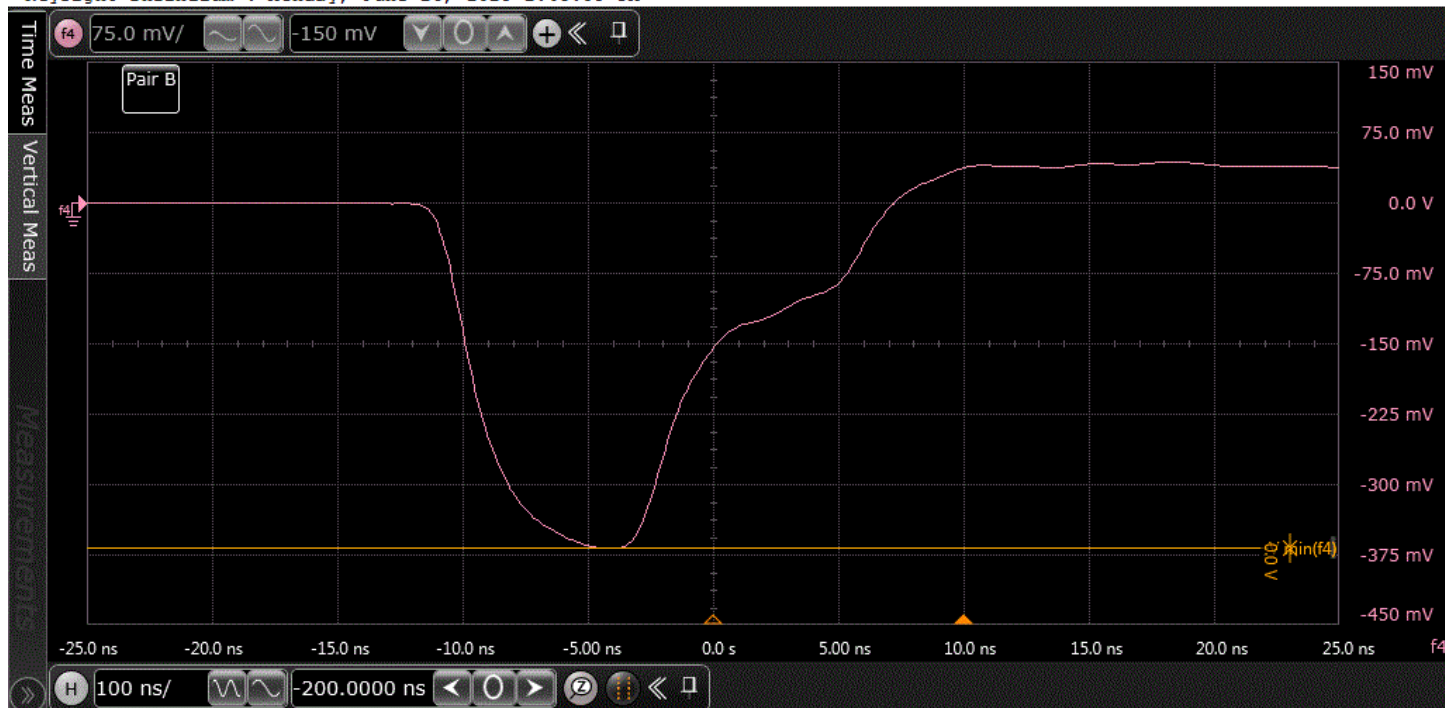
Trial #	Actual Value	Margin	Peak A Volts	Peak B Volts	Peak D	#Avgs (1000 Base-T Peak Voltage measurements)
Avg	174.3 m%	91.38 %	733.5 mV	-732.8 mV	-366.5 mV	
StdDev	135.3 m%	6.860 %	5.563 mV	3.760 mV	2.110 mV	
Range	260.4 m%	13.00 %	12.37 mV	8.054 mV	3.927 mV	
Min	34.27 m%	85.50 %	728.7 mV	-737.7 mV	-368.6 mV	
Max	294.7 m%	98.50 %	741.1 mV	-729.7 mV	-364.7 mV	
Sum	697.2 m%	365.5 %	2.934 V	-2.931 V	-1.466 V	
2 (Worst)	290 m%	85.5 %	734.17 mV	-733.70 mV	-368.05 mV	128.0
3	290 m%	85.5 %	741.08 mV	-737.72 mV	-368.65 mV	128.0
1	80 m%	96.0 %	730.03 mV	-730.05 mV	-364.72 mV	128.0
4	30 m%	98.5 %	728.71 mV	-729.66 mV	-364.72 mV	128.0

Trial #	Test Pair
Avg	
StdDev	
Range	
Min	
Max	
Sum	
2 (Worst)	BI_DB
3	BI_DC
1	BI_DA
4	BI_DD

Trial 2 Images

Peak D, (Pair B)

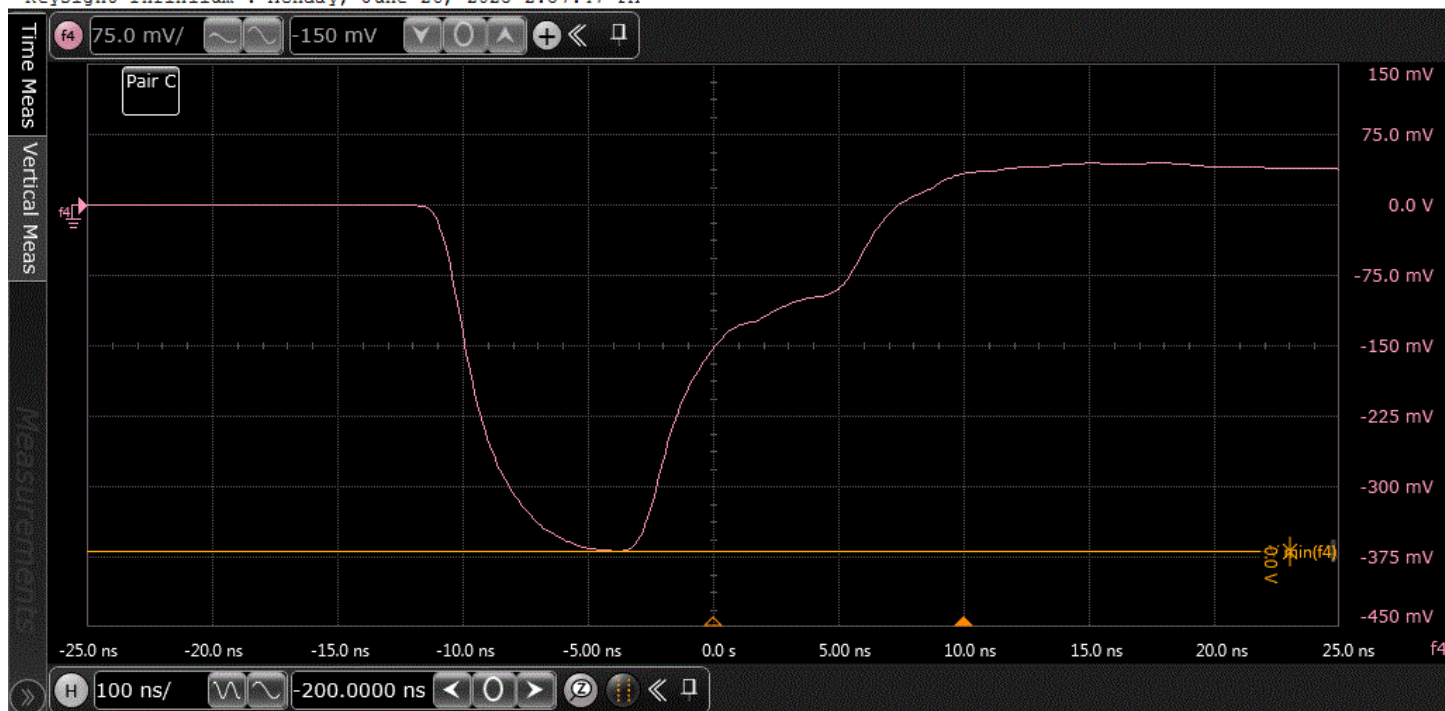
Keysight Infiniium : Monday, June 26, 2023 2:49:53 PM



Trial 3 Images

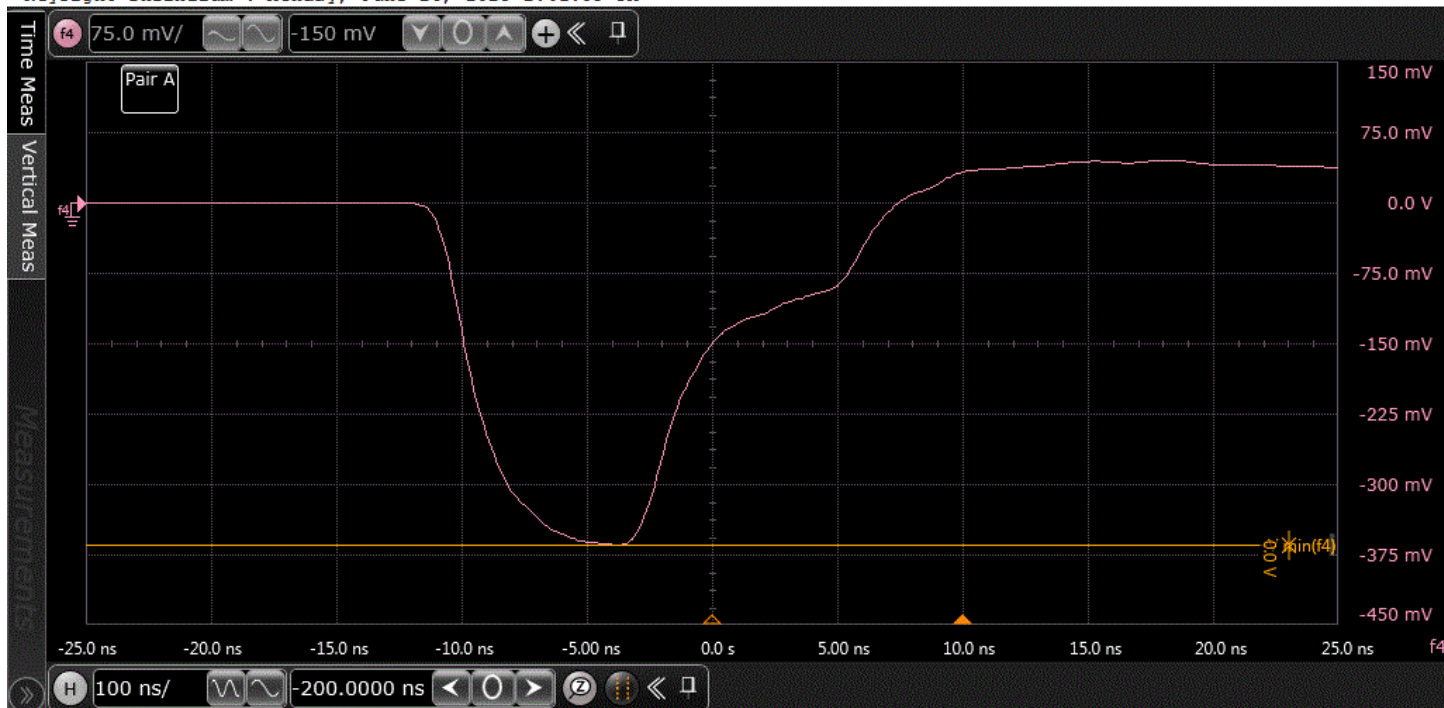
Peak D, (Pair C)

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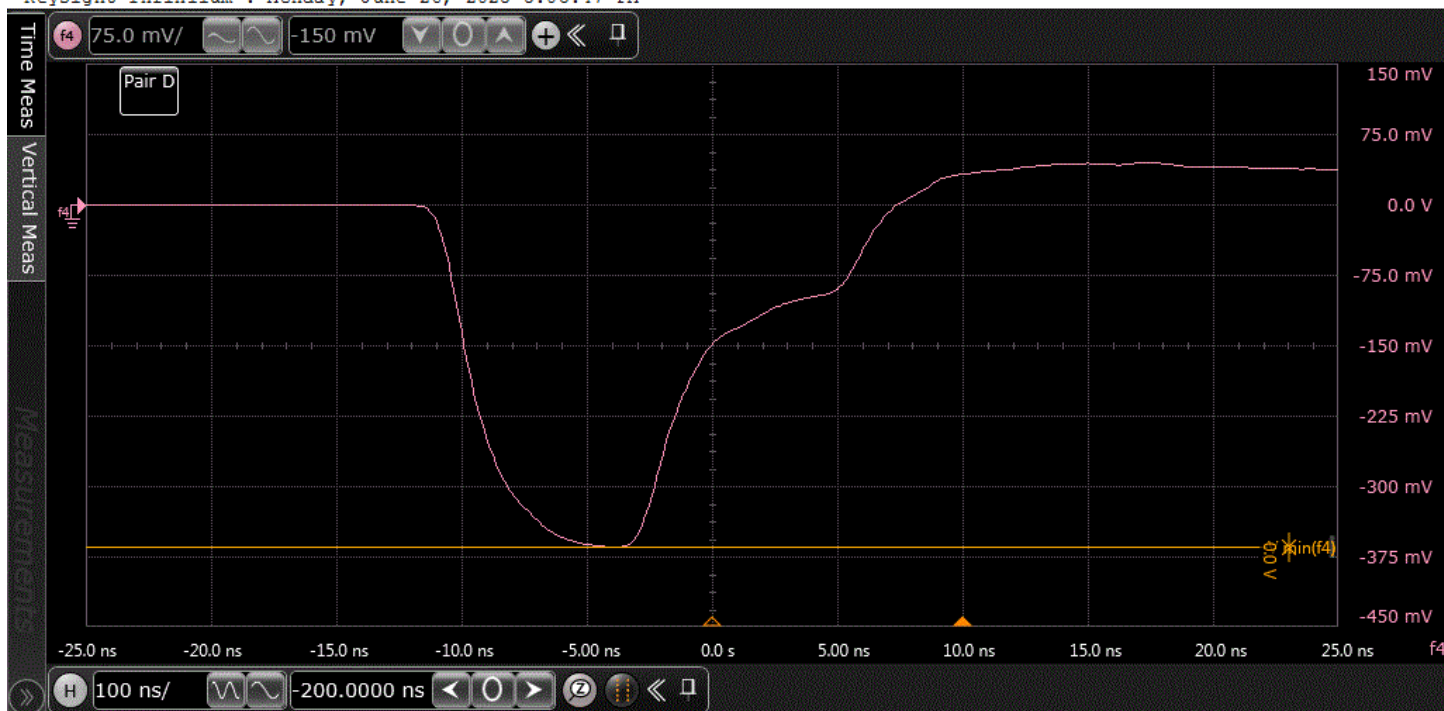
Trial 1 Images

Peak D, (Pair A)



Trial 4 Images

Peak D, (Pair D)


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1000 Base-T, Point A Template Test(w/ Disturbing Signal)

IEEE Std. 802.3 (IEEE802.3-2018 Subclause 40.6.1.2.3)

Fit The Template. The voltage waveforms around points A, B, C, D defined in Figure 40-19 (after normalization) shall lie within the time domain template 1 defined in Figure 40-26 and the piecewise linear interpolation between the points in Table 40-10. The waveform around point A is normalized by dividing by the peak value of the waveform at A.

Actual Value Measurement Name: Total # Failures (1000 Base-T, Point A Template Test(w/ Disturbing Signal))

Pass Limits: No Mask Failures

Statistics & Details for all 4 Trials

Trial #	Actual Value	Margin	Template Point A -- Failure Details	Template Point A	#Aves (1000 Base-T template tests)
Avg	0.000	100.0 %			
StdDev	0.000	0.000 %			
Range	0.000	0.000 %			
Min	0.000	100.0 %			
Max	0.000	100.0 %			
Sum	0.000	400.0 %			
1 (Worst)	0.000	100.0%	No Failure	(no value)	128.0
2	0.000	100.0%	No Failure	(no value)	128.0
3	0.000	100.0%	No Failure	(no value)	128.0
4	0.000	100.0%	No Failure	(no value)	128.0

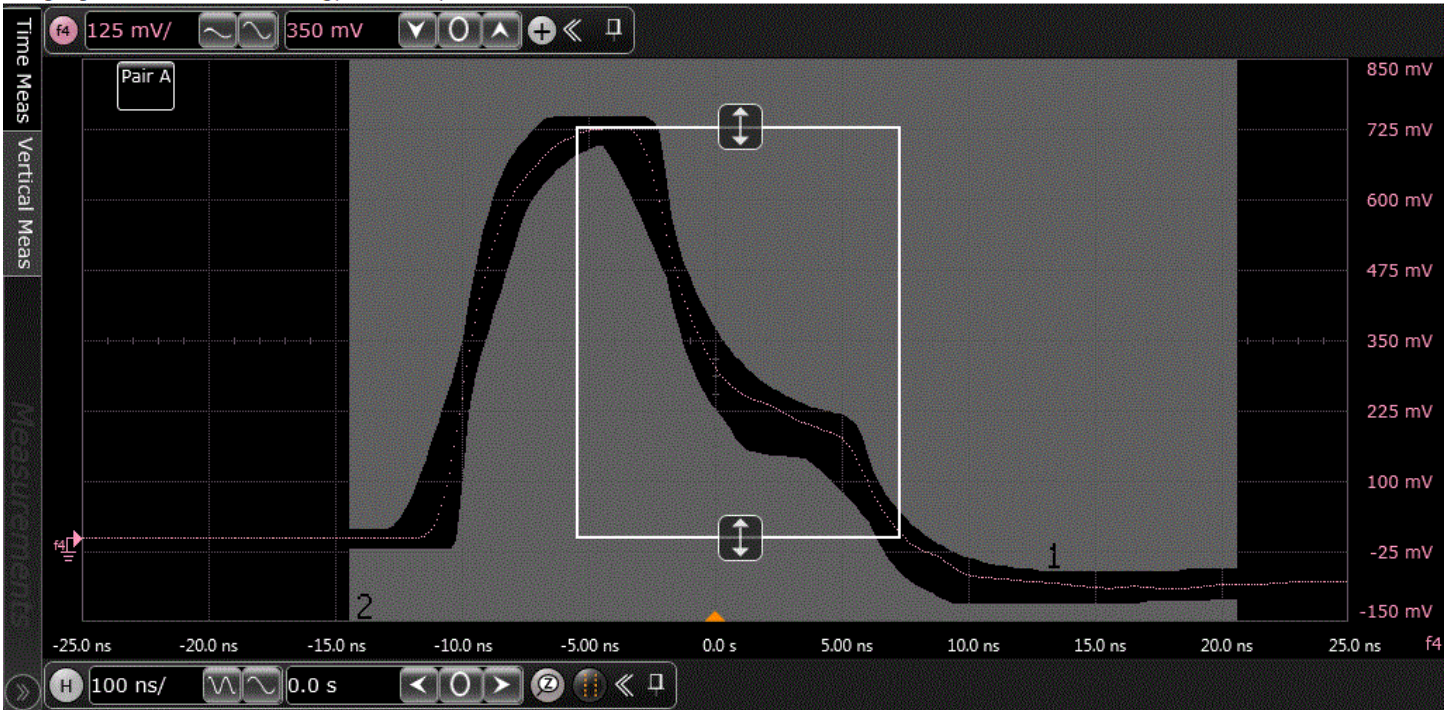
Trial #	# Waveforms (1000 Base-T Template Tests)	Test Pair
Avg		
StdDev		
Range		

	Min		
	Max		
	Sum		
✓	1 (Worst)	50.0	BI_DA
✓	2	50.0	BI_DB
✓	3	50.0	BI_DC
✓	4	50.0	BI_DD

Trial 1 Images

Template Point A -- No Failures

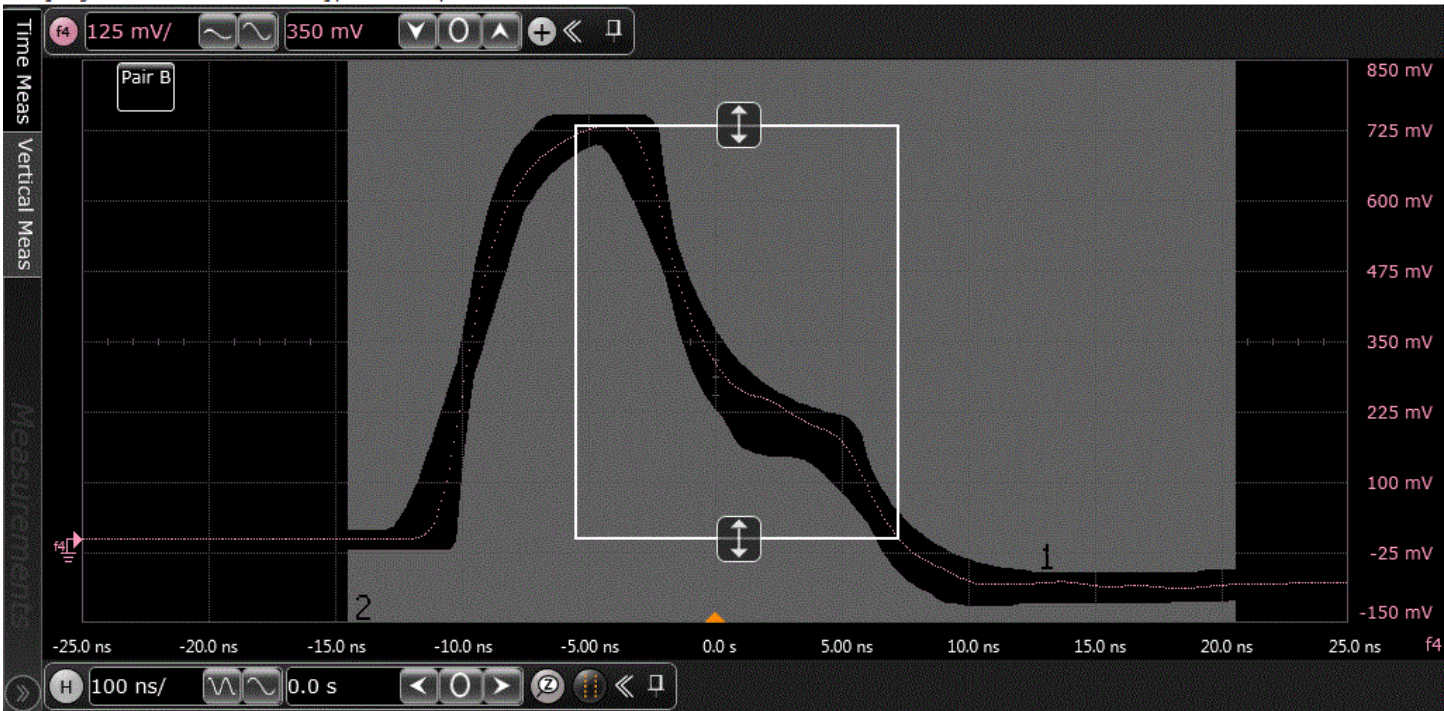
Keysight Infiniium : Monday, June 26, 2023 2:42:44 PM



Trial 2 Images

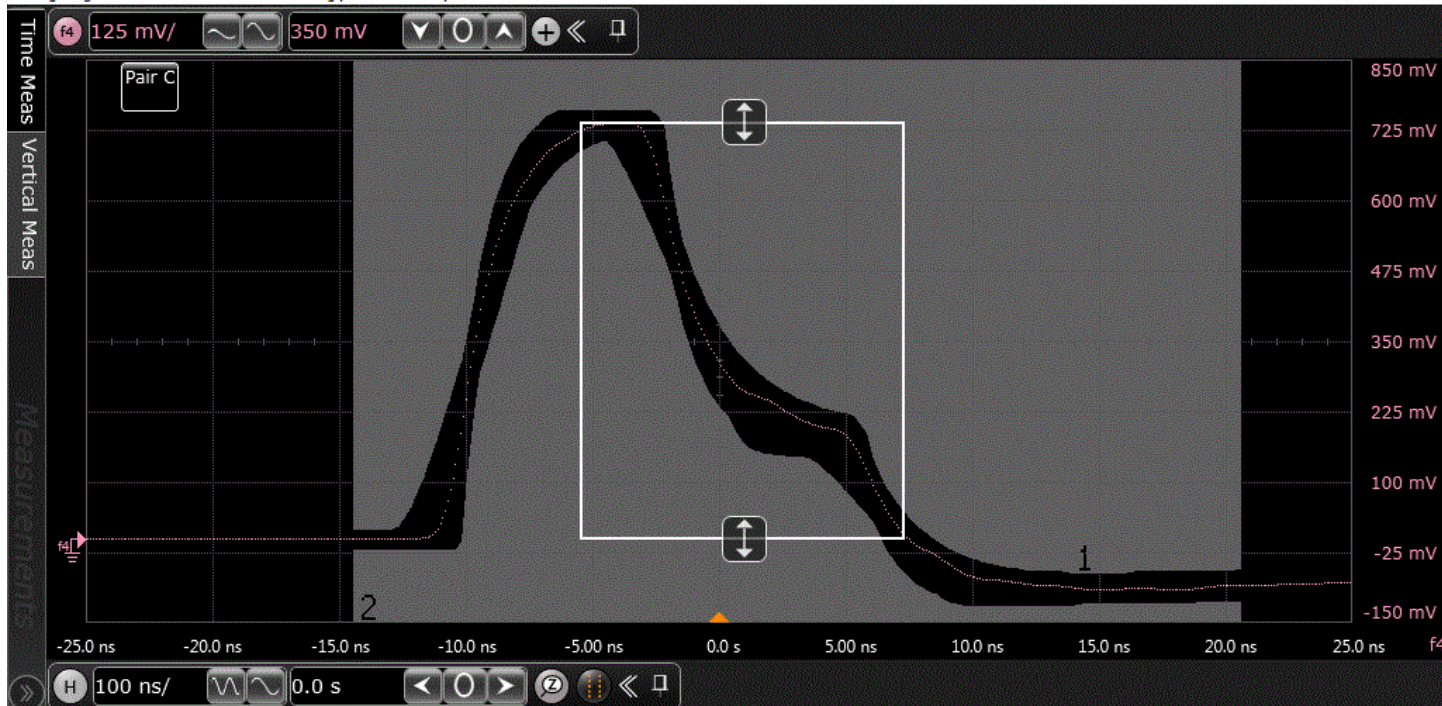
Template Point A -- No Failures

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Trial 3 Images

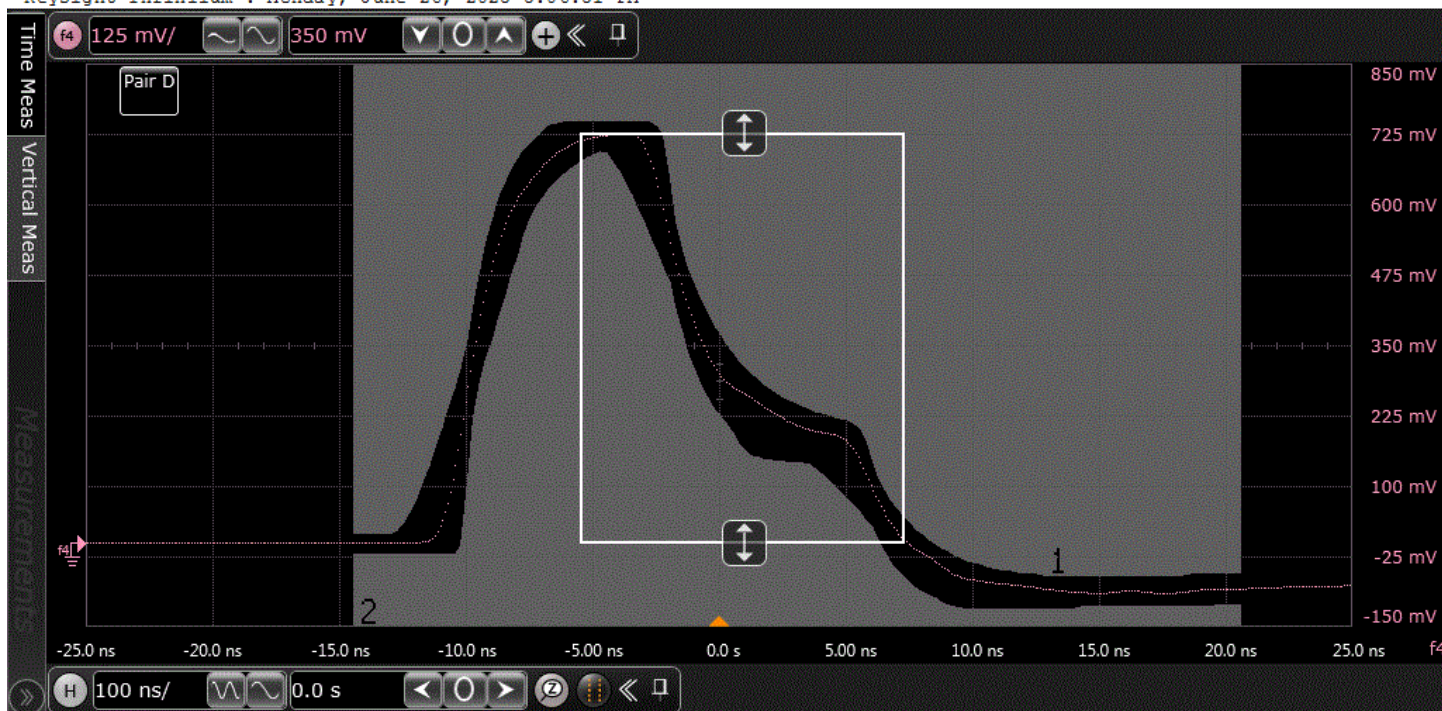
Template Point A -- No Failures



Trial 4 Images

Template Point A -- No Failures

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1000 Base-T, Point B Template Test(w/ Disturbing Signal)

IEEE Std. 802.3 (IEEE802.3-2018 Subclause 40.6.1.2.3)

Fit The Template. The voltage waveforms around points A, B, C, D defined in Figure 40-19 (after normalization) shall lie within the time domain template 1 defined in Figure 40-26 and the piecewise linear interpolation between the points in Table 40-10. The waveform around point B is normalized by dividing by the negative of the peak value of the waveform at A.

Actual Value Measurement Name: Total # Failures (1000 Base-T, Point B Template Test(w/ Disturbing Signal))

Pass Limits: No Mask Failures

Statistics & Details for all 4 Trials

Trial #	Actual Value	Margin	Template Point B -- Failure Details	Template Point B	#Aves (1000 Base-T template tests)
Avg	0.000	100.0 %			
StdDev	0.000	0.000 %			
Range	0.000	0.000 %			
Min	0.000	100.0 %			
Max	0.000	100.0 %			
Sum	0.000	400.0 %			
1 (Worst)	0.000	100.0%	No Failure	(no value)	128.0
2	0.000	100.0%	No Failure	(no value)	128.0
3	0.000	100.0%	No Failure	(no value)	128.0
4	0.000	100.0%	No Failure	(no value)	128.0

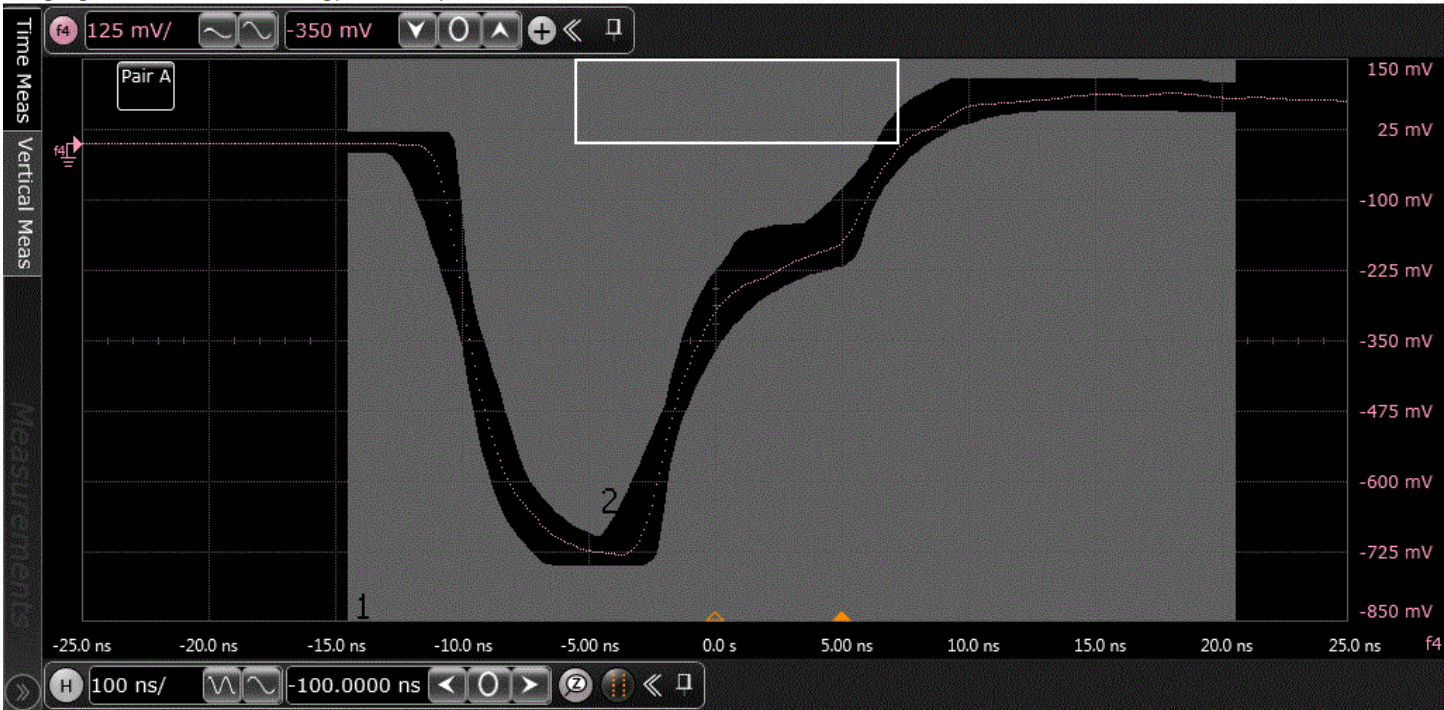
Trial #	# Waveforms (1000 Base-T Template Tests)	Test Pair
Avg		
StdDev		
Range		

	Min		
	Max		
	Sum		
✓	1 (Worst)	50.0	BI_DA
✓	2	50.0	BI_DB
✓	3	50.0	BI_DC
✓	4	50.0	BI_DD

Trial 1 Images

Template Point B -- No Failures

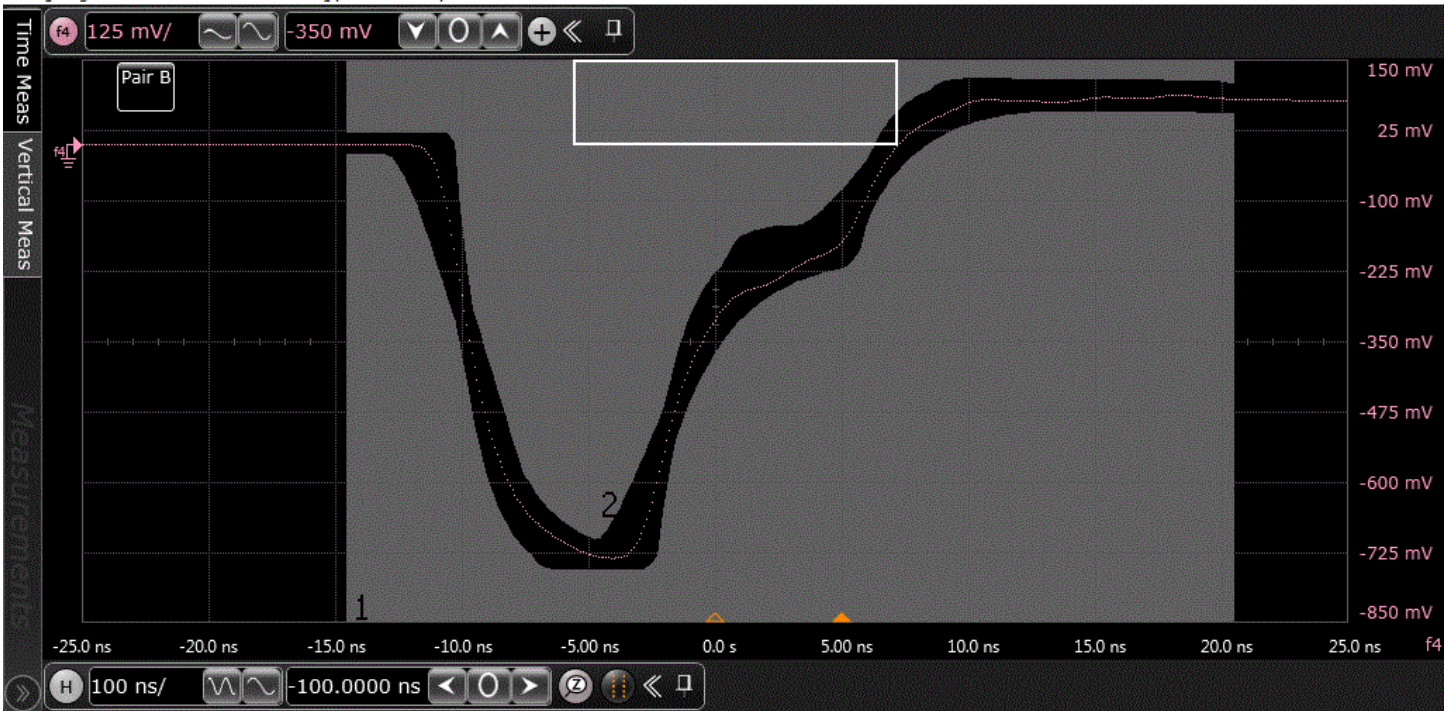
Keysight Infiniium : Monday, June 26, 2023 2:43:22 PM



Trial 2 Images

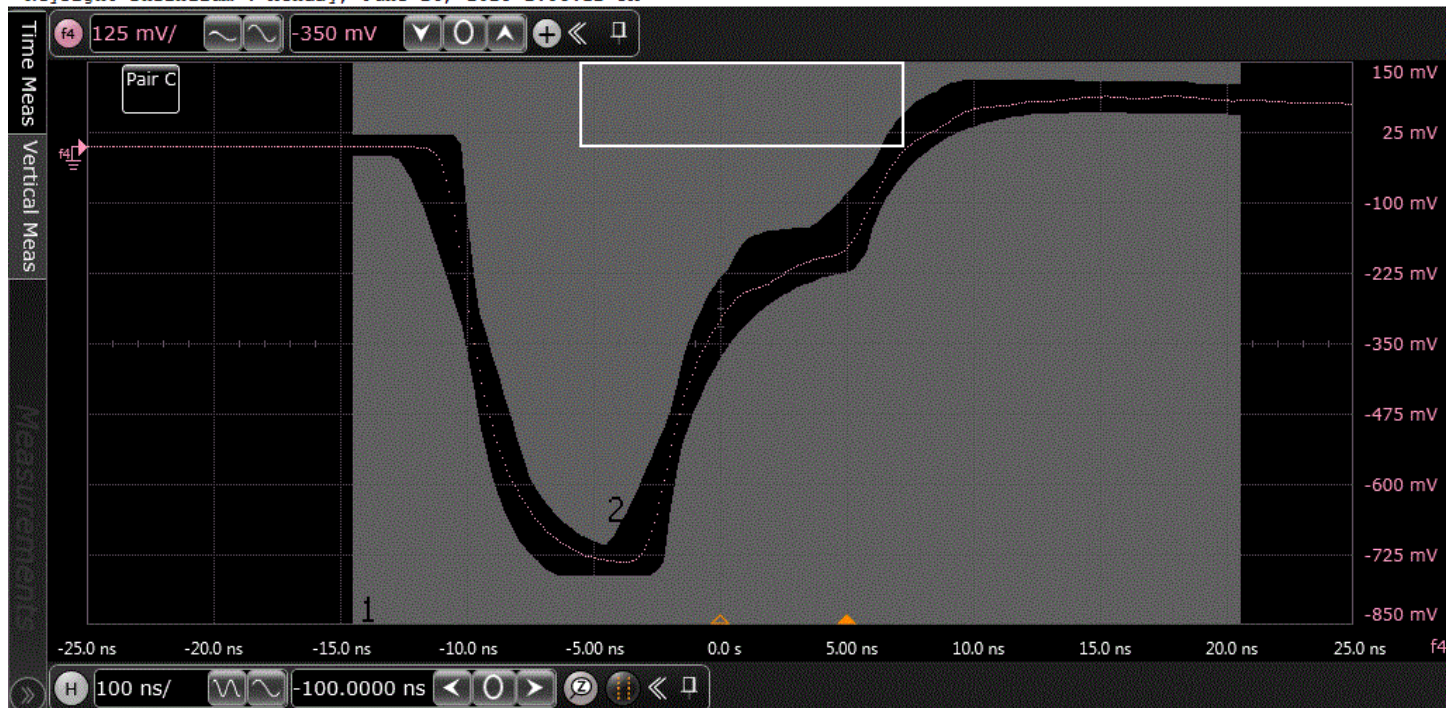
Template Point B -- No Failures

Keysight Infiniium : Monday, June 26, 2023 2:51:16 PM



Trial 3 Images

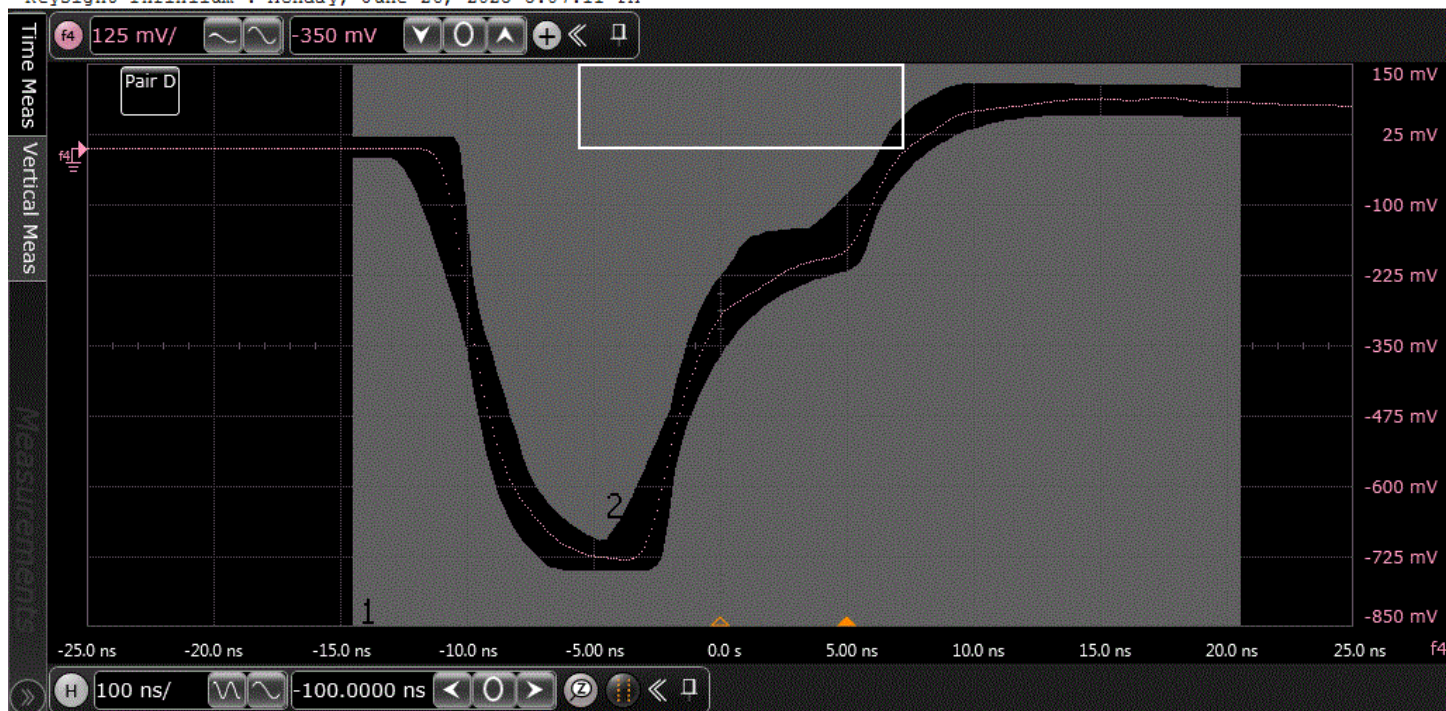
Template Point B -- No Failures



Trial 4 Images

Template Point B -- No Failures

Keysight Infiniium : Monday, June 26, 2023 3:07:11 PM

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1000 Base-T, Point C Template Test(w/ Disturbing Signal)

IEEE Std. 802.3 (IEEE802.3-2018 Subclause 40.6.1.2.3)

Fit The Template. The voltage waveforms around points A, B, C, D defined in Figure 40-19 (after normalization) shall lie within the time domain template 1 defined in Figure 40-26 and the piecewise linear interpolation between the points in Table 40-10. The waveform around point C is normalized by dividing by the 1/2 the peak value of the waveform at A.

Actual Value Measurement Name: Total # Failures (1000 Base-T, Point C Template Test(w/ Disturbing Signal))

Pass Limits: No Mask Failures

Statistics & Details for all 4 Trials

Trial #	Actual Value	Margin	Template Point C -- Failure Details	Template Point C	#Avg (1000 Base-T template tests)
Avg	0.000	100.0 %			
StdDev	0.000	0.000 %			
Range	0.000	0.000 %			
Min	0.000	100.0 %			
Max	0.000	100.0 %			
Sum	0.000	400.0 %			
1 (Worst)	0.000	100.0%	No Failure	(no value)	128.0
2	0.000	100.0%	No Failure	(no value)	128.0
3	0.000	100.0%	No Failure	(no value)	128.0
4	0.000	100.0%	No Failure	(no value)	128.0

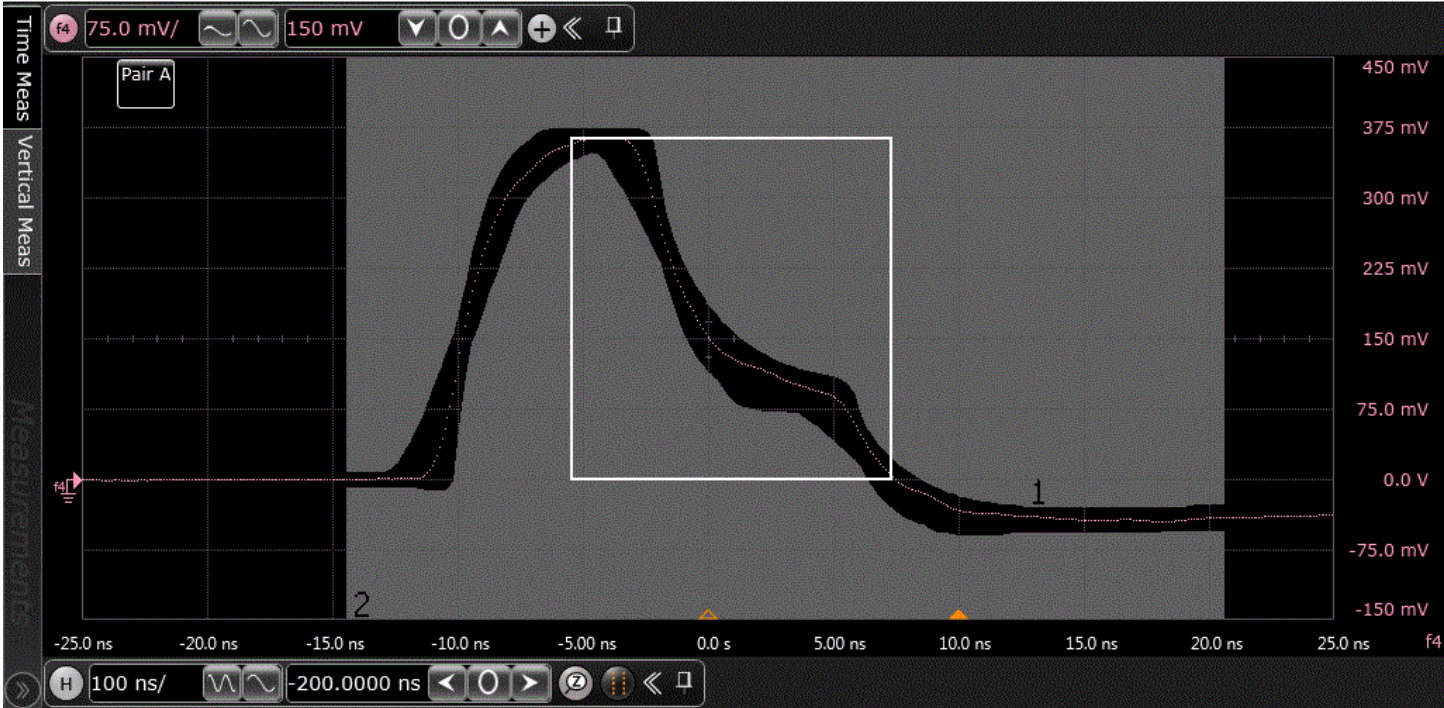
Trial #	# Waveforms (1000 Base-T Template Tests)	Test Pair
Avg		
StdDev		
Range		

	Min		
	Max		
	Sum		
✓	1 (Worst)	50.0	BI_DA
✓	2	50.0	BI_DB
✓	3	50.0	BI_DC
✓	4	50.0	BI_DD

Trial 1 Images

Template Point C -- No Failures

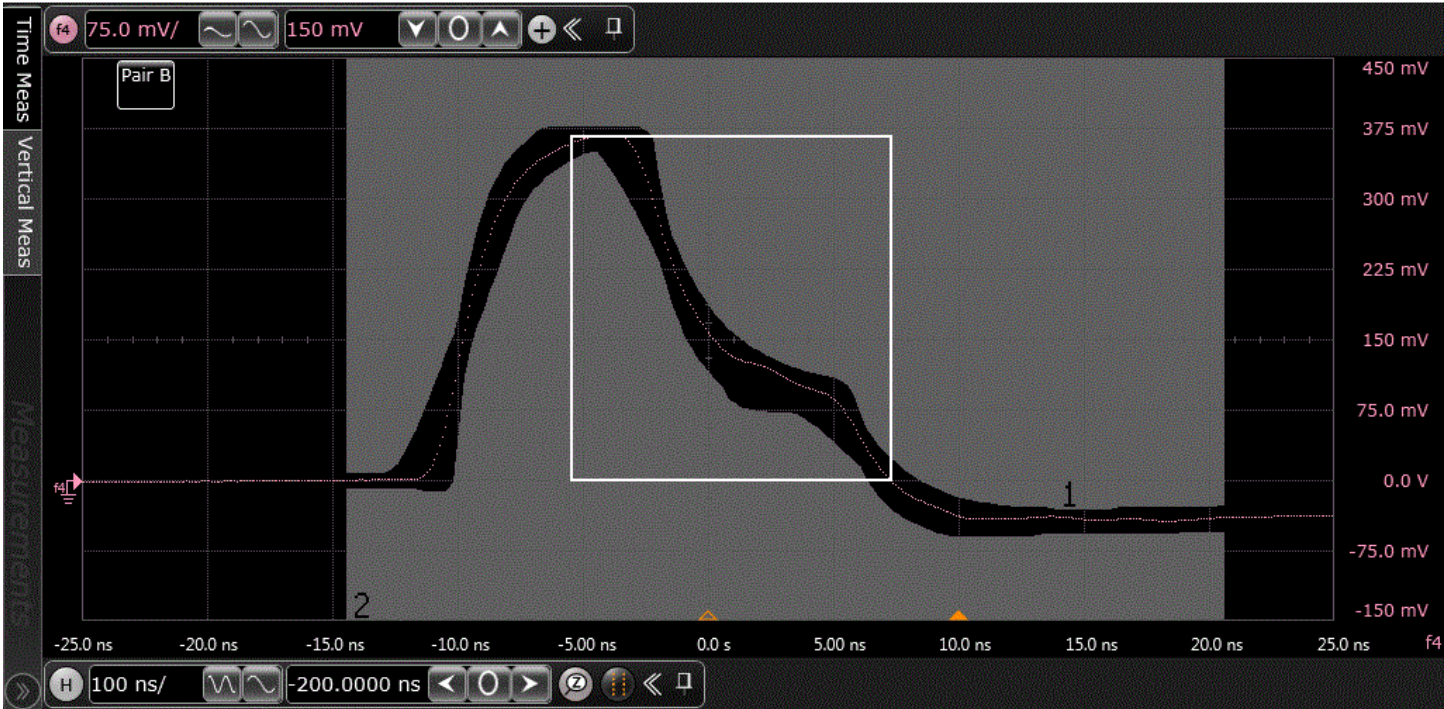
Keysight Infiniium : Monday, June 26, 2023 2:44:02 PM



Trial 2 Images

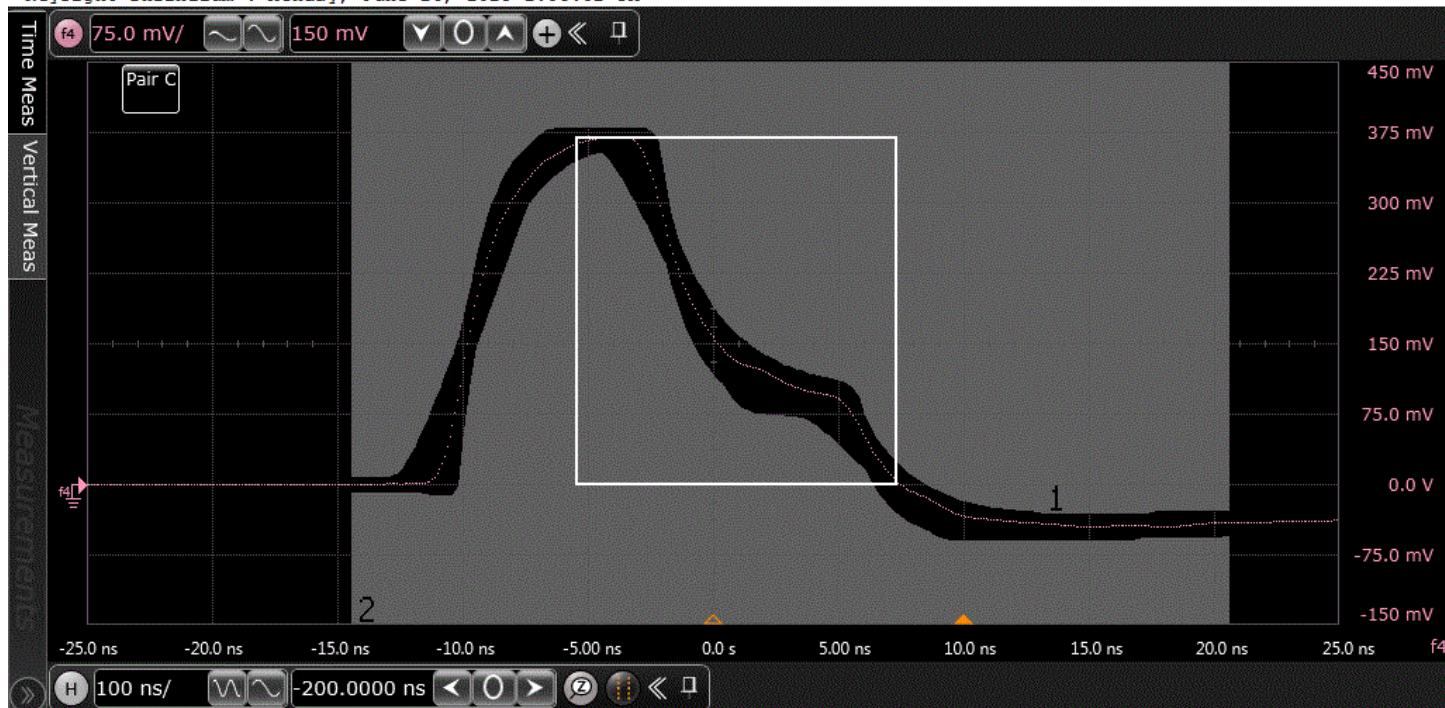
Template Point C -- No Failures

Keysight Infiniium : Monday, June 26, 2023 2:51:55 PM



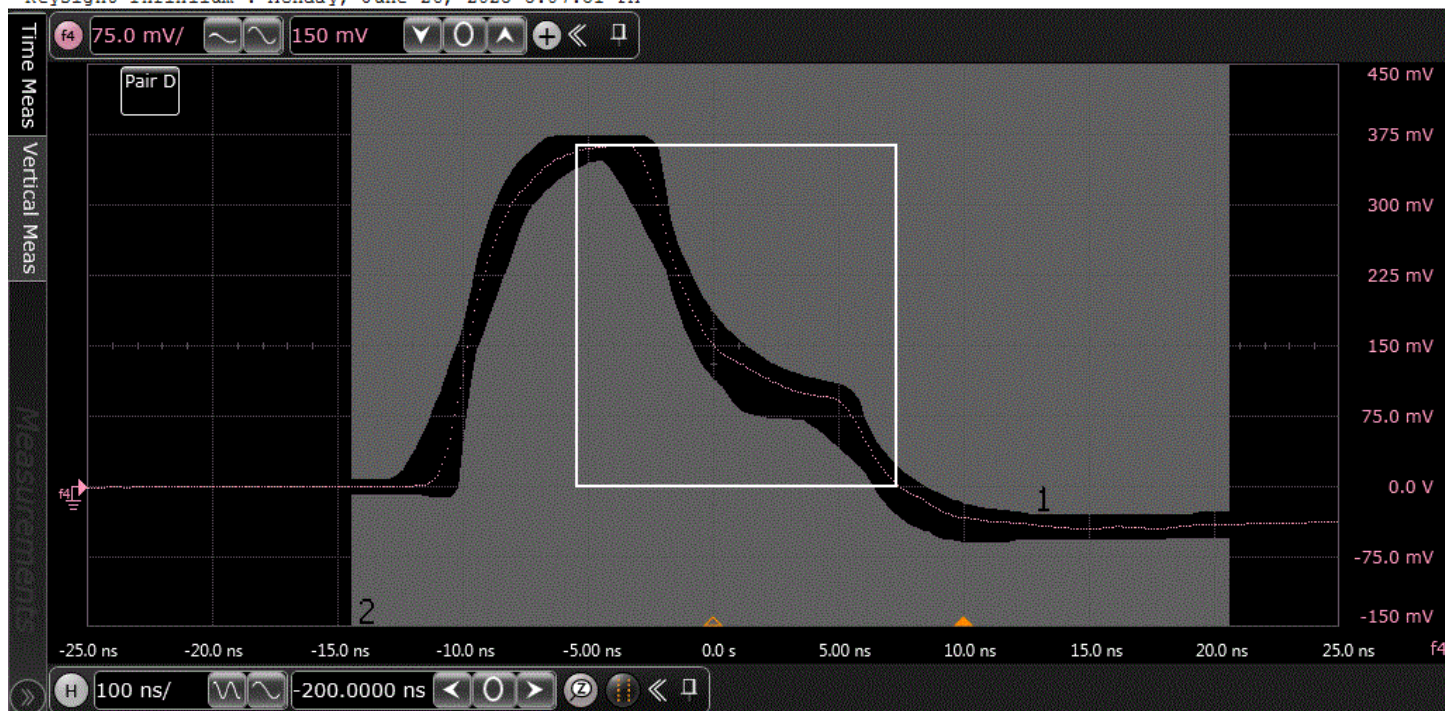
Trial 3 Images

Template Point C -- No Failures



Trial 4 Images

Template Point C -- No Failures

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1000 Base-T, Point D Template Test(w/ Disturbing Signal)

IEEE Std. 802.3 (IEEE802.3-2018 Subclause 40.6.1.2.3)

Fit The Template. The voltage waveforms around points A, B, C, D defined in Figure 40-19 (after normalization) shall lie within the time domain template 1 defined in Figure 40-26 and the piecewise linear interpolation between the points in Table 40-10. The waveform around point D is normalized by dividing by the negative of 1/2 the peak value of the waveform at A.

Actual Value Measurement Name: Total # Failures (1000 Base-T, Point D Template Test(w/ Disturbing Signal))

Pass Limits: No Mask Failures

Statistics & Details for all 4 Trials

Trial #	Actual Value	Margin	Template Point D -- Failure Details	Template Point D	#Aves (1000 Base-T template tests)
Avg	0.000	100.0 %			
StdDev	0.000	0.000 %			
Range	0.000	0.000 %			
Min	0.000	100.0 %			
Max	0.000	100.0 %			
Sum	0.000	400.0 %			
1 (Worst)	0.000	100.0%	No Failure	(no value)	128.0
2	0.000	100.0%	No Failure	(no value)	128.0
3	0.000	100.0%	No Failure	(no value)	128.0
4	0.000	100.0%	No Failure	(no value)	128.0

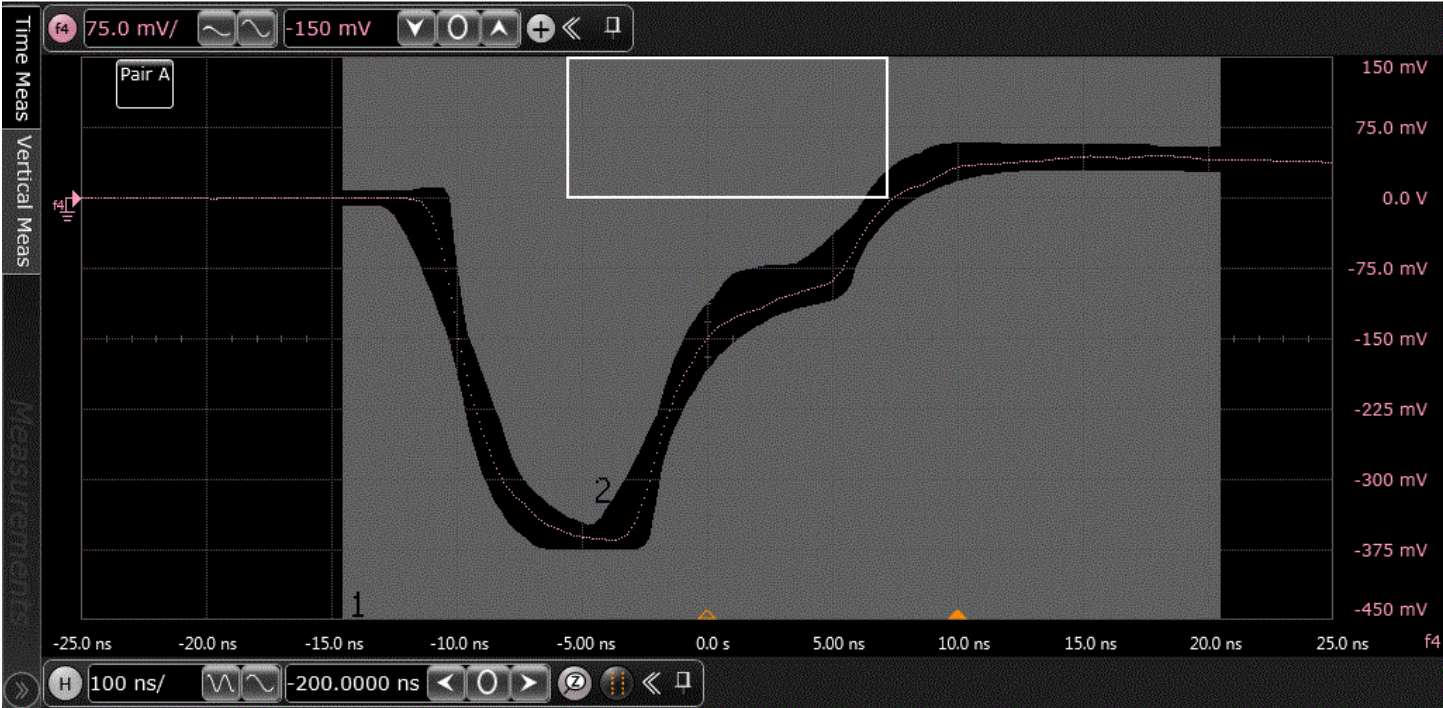
Trial #	# Waveforms (1000 Base-T Template Tests)	Test Pair
Avg		
StdDev		
Range		

	Min		
	Max		
	Sum		
✓	1 (Worst)	50.0	BI_DA
✓	2	50.0	BI_DB
✓	3	50.0	BI_DC
✓	4	50.0	BI_DD

Trial 1 Images

Template Point D -- No Failures

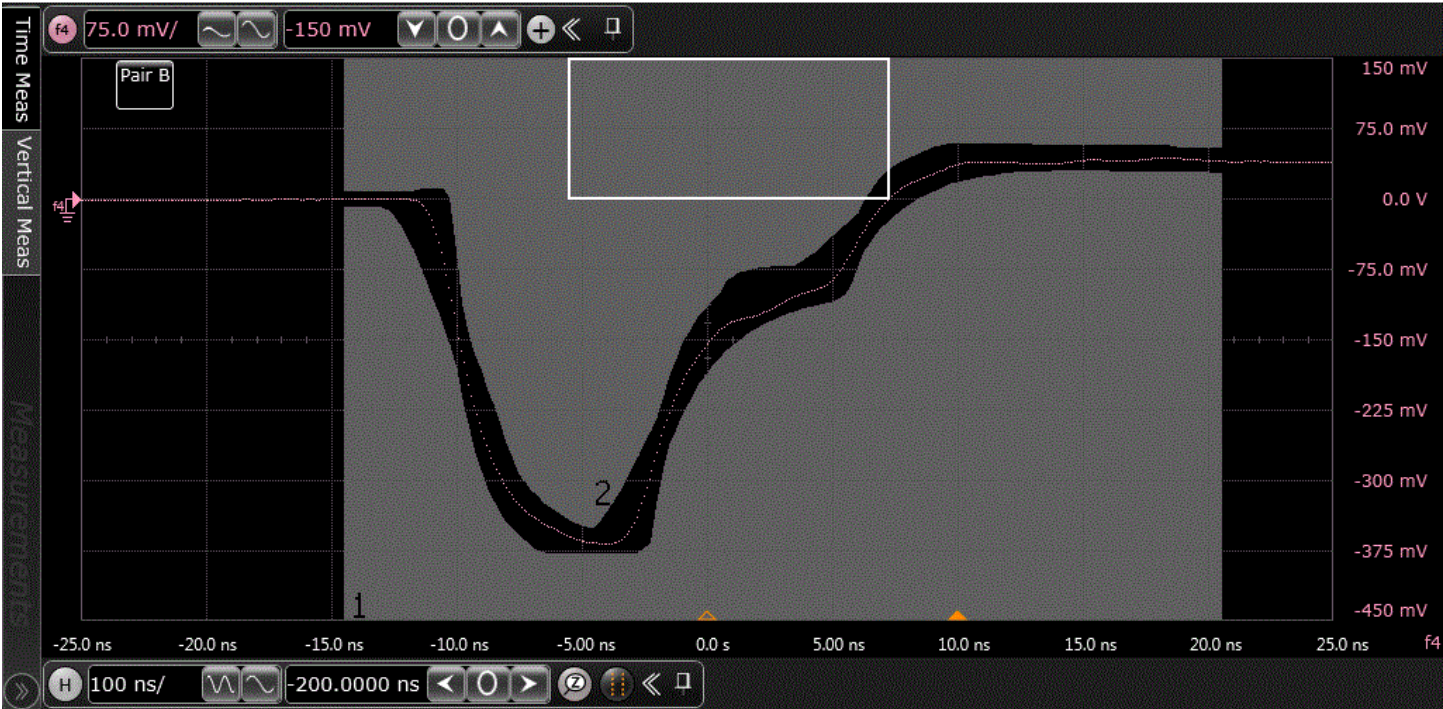
Keysight Infiniium : Monday, June 26, 2023 2:44:41 PM



Trial 2 Images

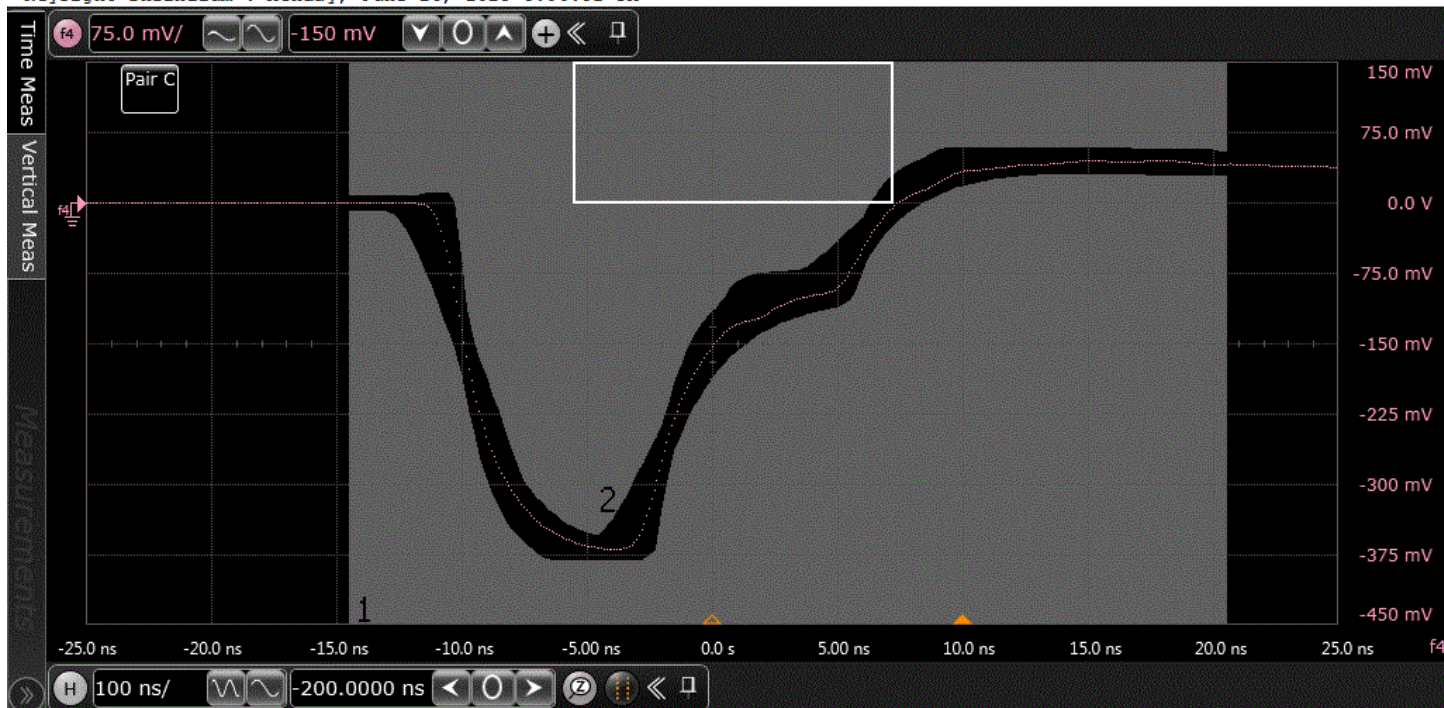
Template Point D -- No Failures

Keysight Infiniium : Monday, June 26, 2023 2:52:34 PM



Trial 3 Images

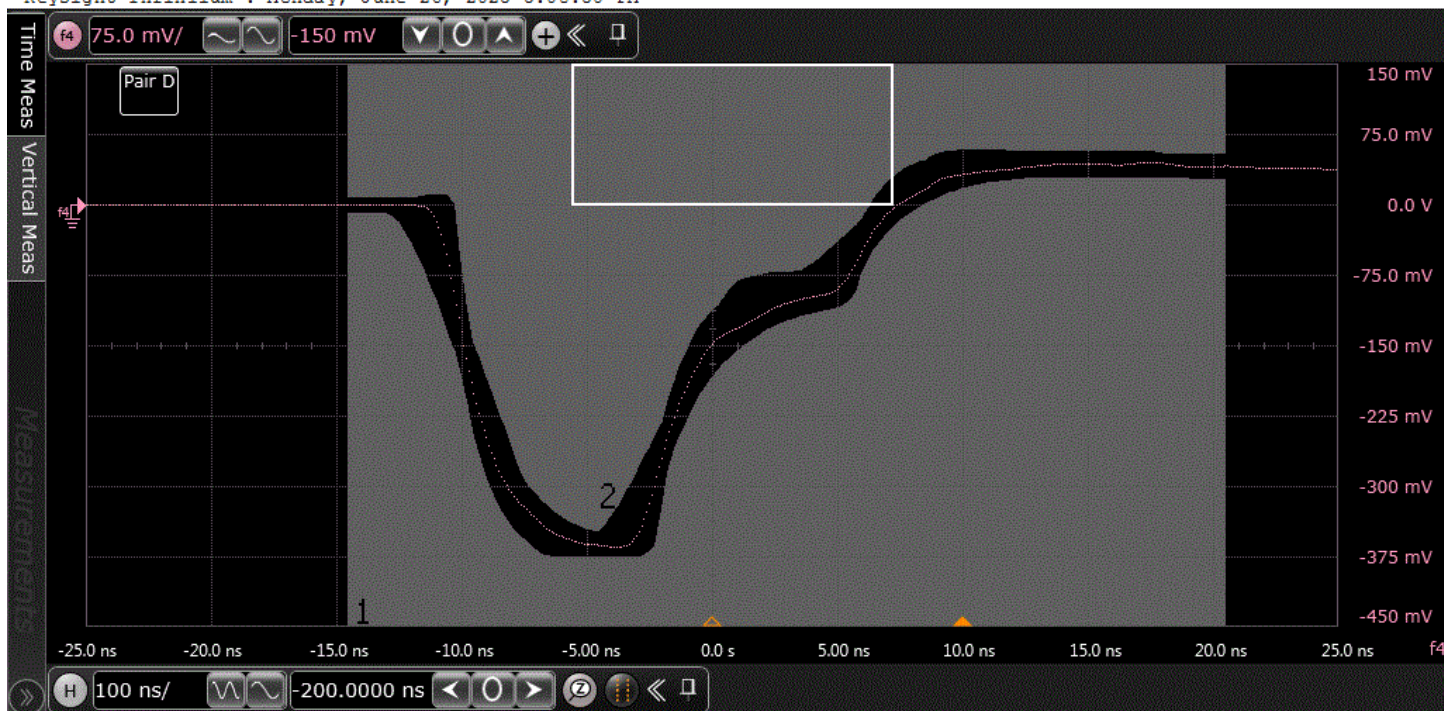
Template Point D -- No Failures



Trial 4 Images

Template Point D -- No Failures

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1000 Base-T, Point F Template Test(w/ Disturbing Signal)

IEEE Std. 802.3 (IEEE802.3-2018 Subclause 40.6.1.2.3)

Fit The Template. The voltage waveforms around points F and H defined in Figure 40-19, (after normalization) shall lie within the time domain template 2 defined in Figure 40-26 and the piecewise linear interpolation between the points in Table 40-11. The waveform around point F is normalized by dividing by the peak value of the waveform at F.

Actual Value Measurement Name: Total # Failures (1000 Base-T, Point F Template Test(w/ Disturbing Signal))

Pass Limits: No Mask Failures

Statistics & Details for all 4 Trials

Trial #	Actual Value	Margin	Template Point F -- Failure Details	Template Point F	#Avg (1000 Base-T template tests)
Avg	0.000	100.0 %			
StdDev	0.000	0.000 %			
Range	0.000	0.000 %			
Min	0.000	100.0 %			
Max	0.000	100.0 %			
Sum	0.000	400.0 %			
1 (Worst)	0.000	100.0%	No Failure	(no value)	128.0
2	0.000	100.0%	No Failure	(no value)	128.0
3	0.000	100.0%	No Failure	(no value)	128.0
4	0.000	100.0%	No Failure	(no value)	128.0

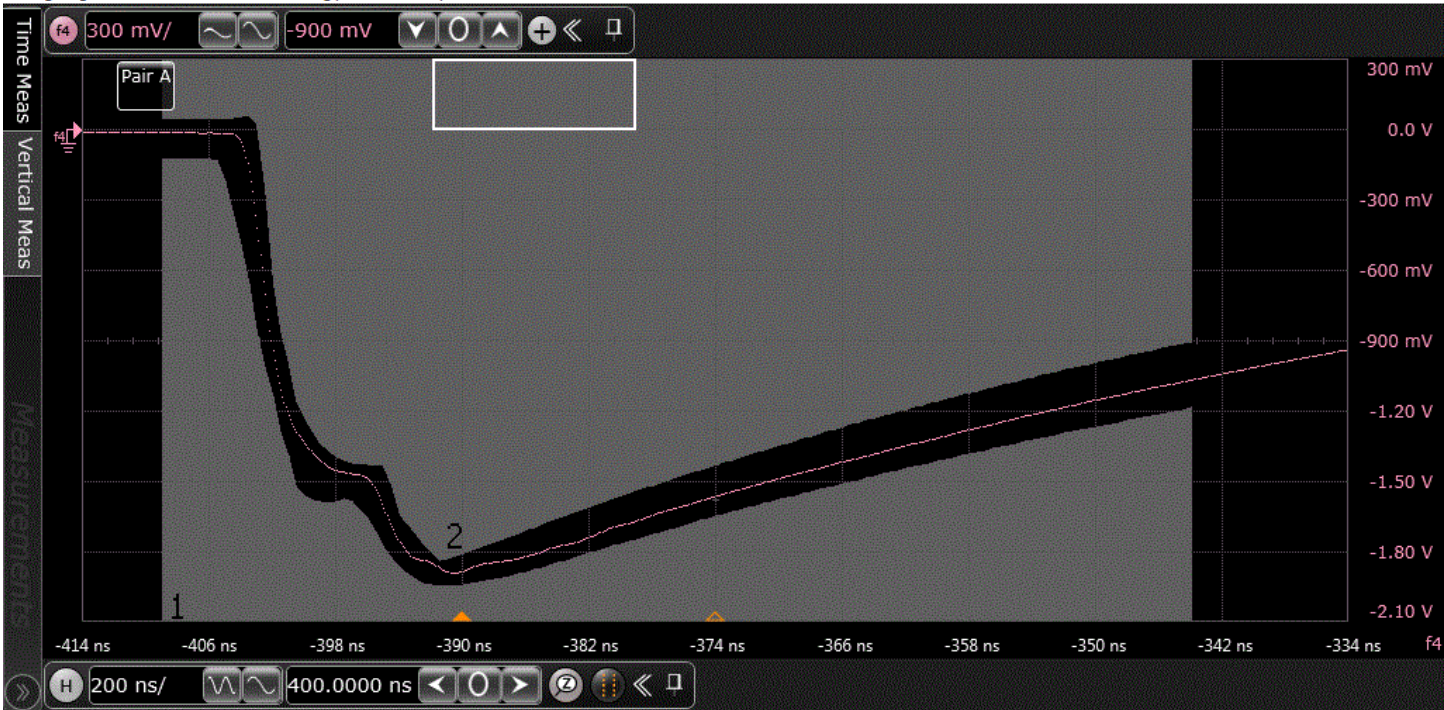
Trial #	# Waveforms (1000 Base-T Template Tests)	Test Pair
Avg		
StdDev		
Range		

	Min		
	Max		
	Sum		
✓	1 (Worst)	50.0	BI_DA
✓	2	50.0	BI_DB
✓	3	50.0	BI_DC
✓	4	50.0	BI_DD

Trial 1 Images

Template Point F -- No Failures

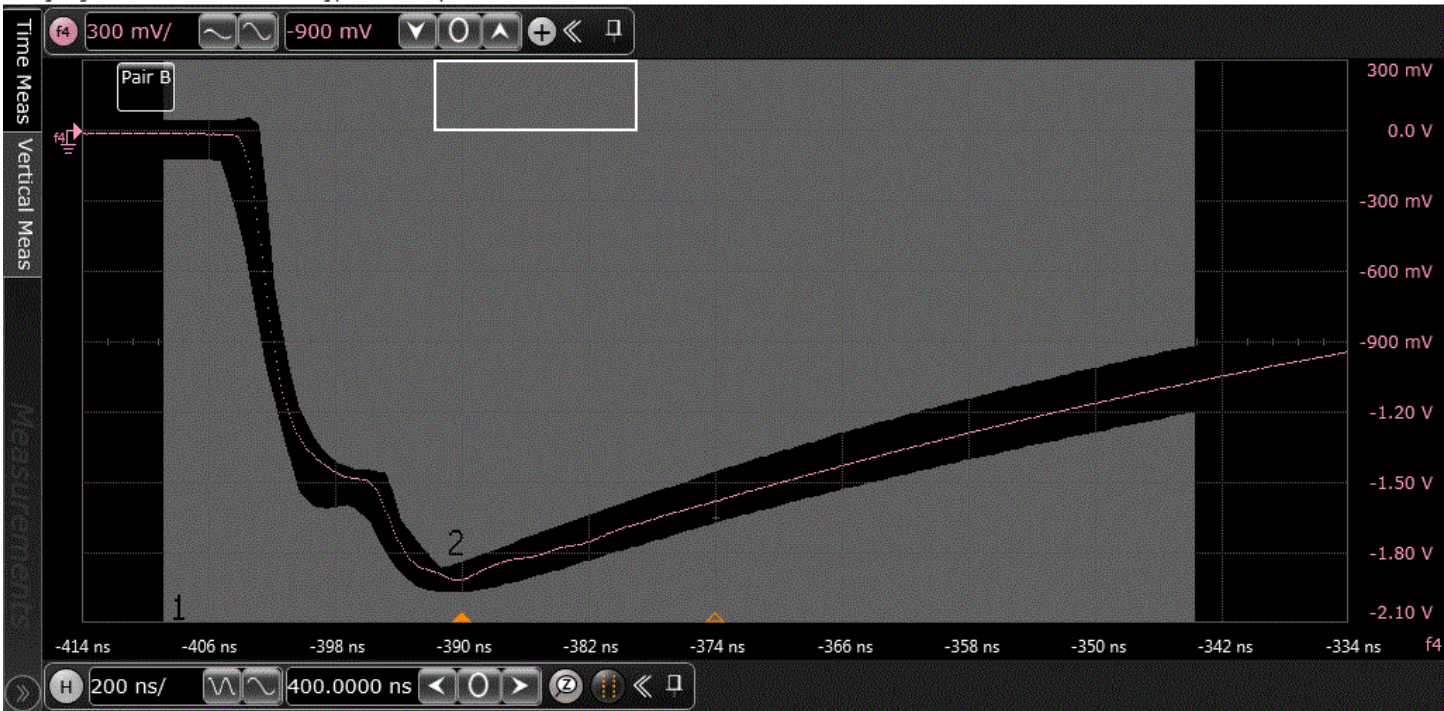
Keysight Infiniium : Monday, June 26, 2023 2:45:20 PM



Trial 2 Images

Template Point F -- No Failures

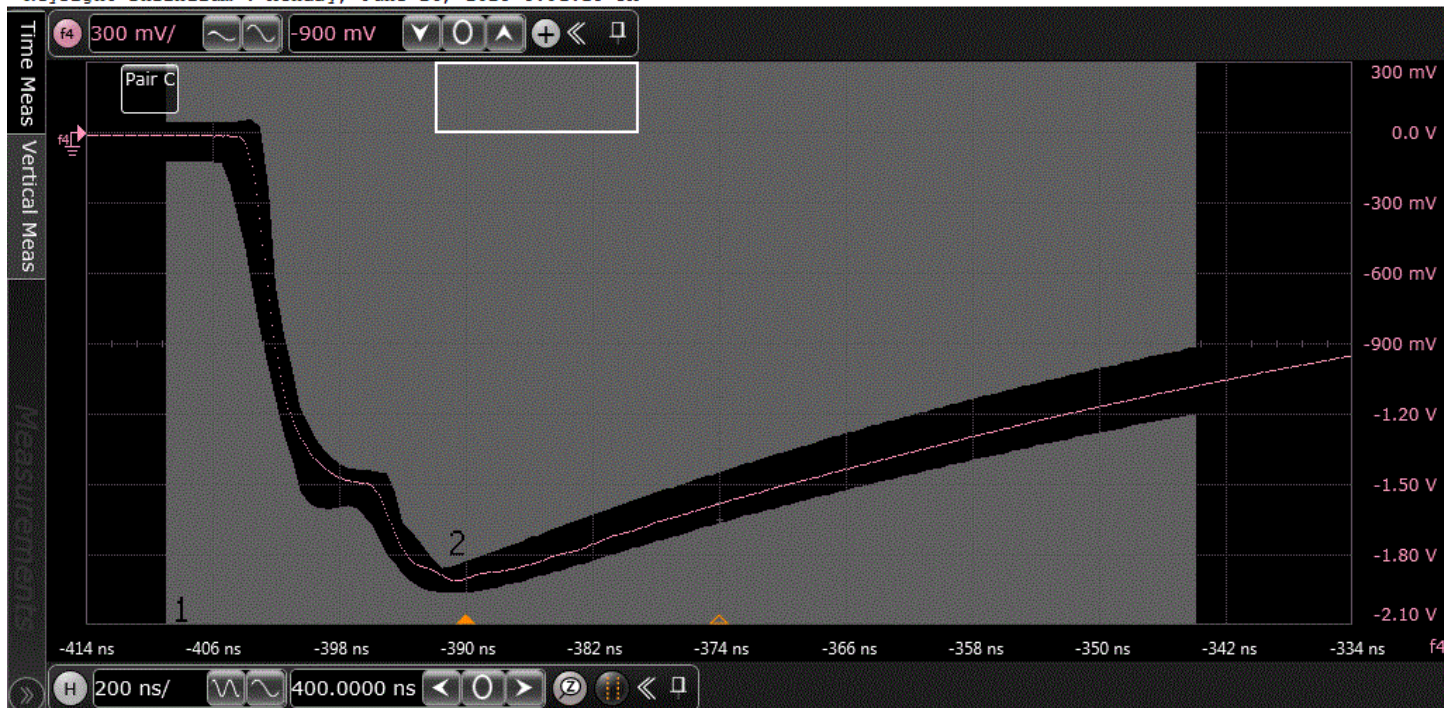
Keysight Infiniium : Monday, June 26, 2023 2:53:14 PM



Trial 3 Images

Template Point F -- No Failures

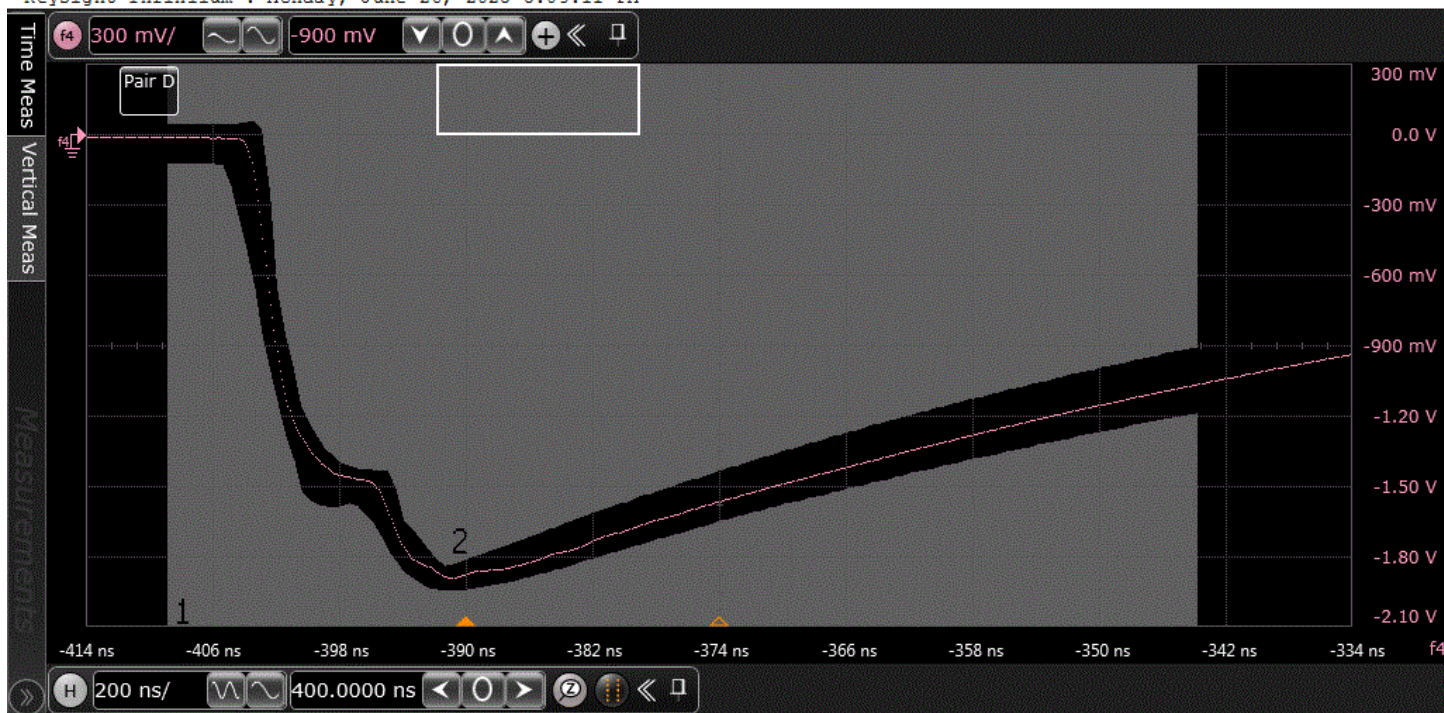
Keysight Infiniium : Monday, June 26, 2023 3:01:13 PM



Trial 4 Images

Template Point F -- No Failures

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1000 Base-T, Point H Template Test(w/ Disturbing Signal)

IEEE Std. 802.3 (IEEE802.3-2018 Subclause 40.6.1.2.3)

Fit The Template. The voltage waveforms around points F and H defined in Figure 40-19, (after normalization) shall lie within the time domain template 2 defined in Figure 40-26 and the piecewise linear interpolation between the points in Table 40-11. The waveform around point H is normalized by dividing by the peak value of the waveform at H.

Actual Value Measurement Name: Total # Failures (1000 Base-T, Point H Template Test(w/ Disturbing Signal))

Pass Limits: No Mask Failures

Statistics & Details for all 4 Trials

Trial #	Actual Value	Margin	Template Point H -- Failure Details	Template Point H	#Avg (1000 Base-T template tests)
Avg	0.000	100.0 %			
StdDev	0.000	0.000 %			
Range	0.000	0.000 %			
Min	0.000	100.0 %			
Max	0.000	100.0 %			
Sum	0.000	400.0 %			
1 (Worst)	0.000	100.0%	No Failure	(no value)	128.0
2	0.000	100.0%	No Failure	(no value)	128.0
3	0.000	100.0%	No Failure	(no value)	128.0
4	0.000	100.0%	No Failure	(no value)	128.0

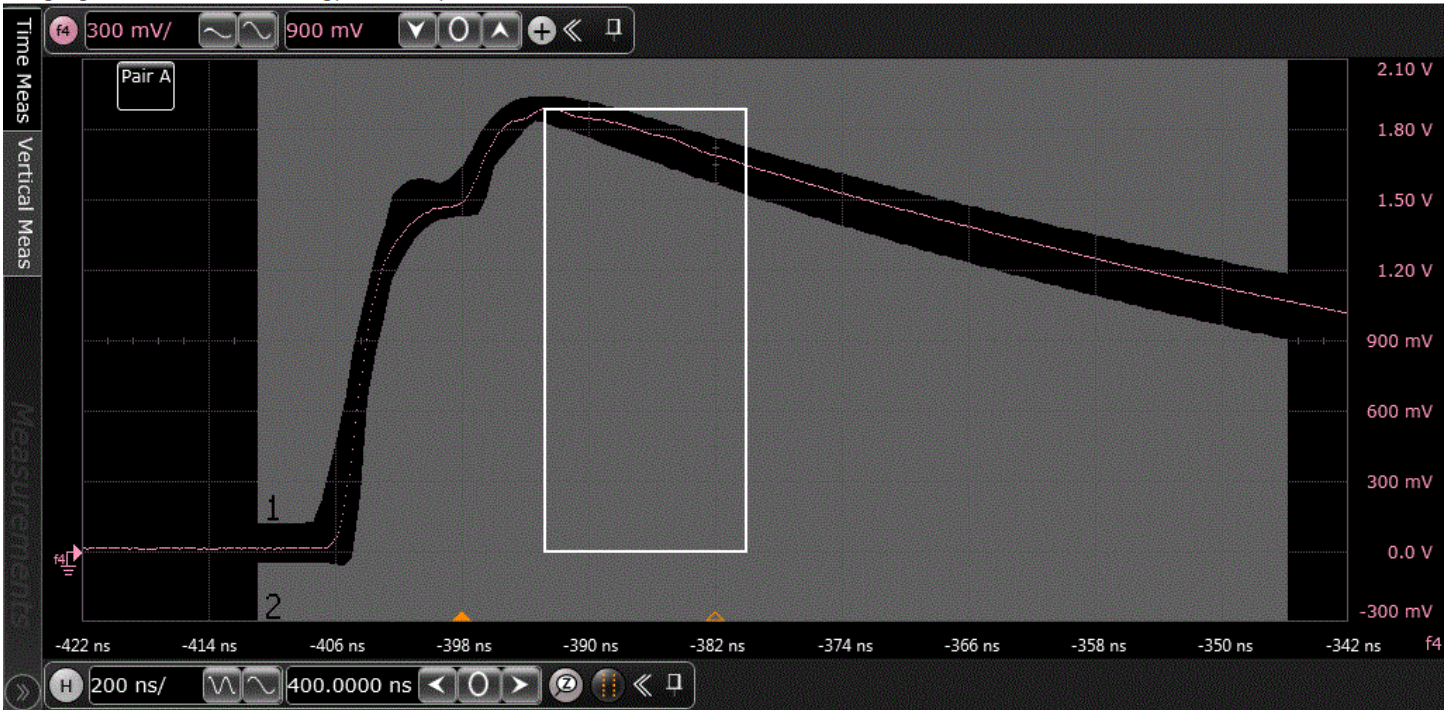
Trial #	# Waveforms (1000 Base-T Template Tests)	Test Pair
Avg		
StdDev		
Range		

	Min		
	Max		
	Sum		
✓	1 (Worst)	50.0	BI_DA
✓	2	50.0	BI_DB
✓	3	50.0	BI_DC
✓	4	50.0	BI_DD

Trial 1 Images

Template Point H -- No Failures

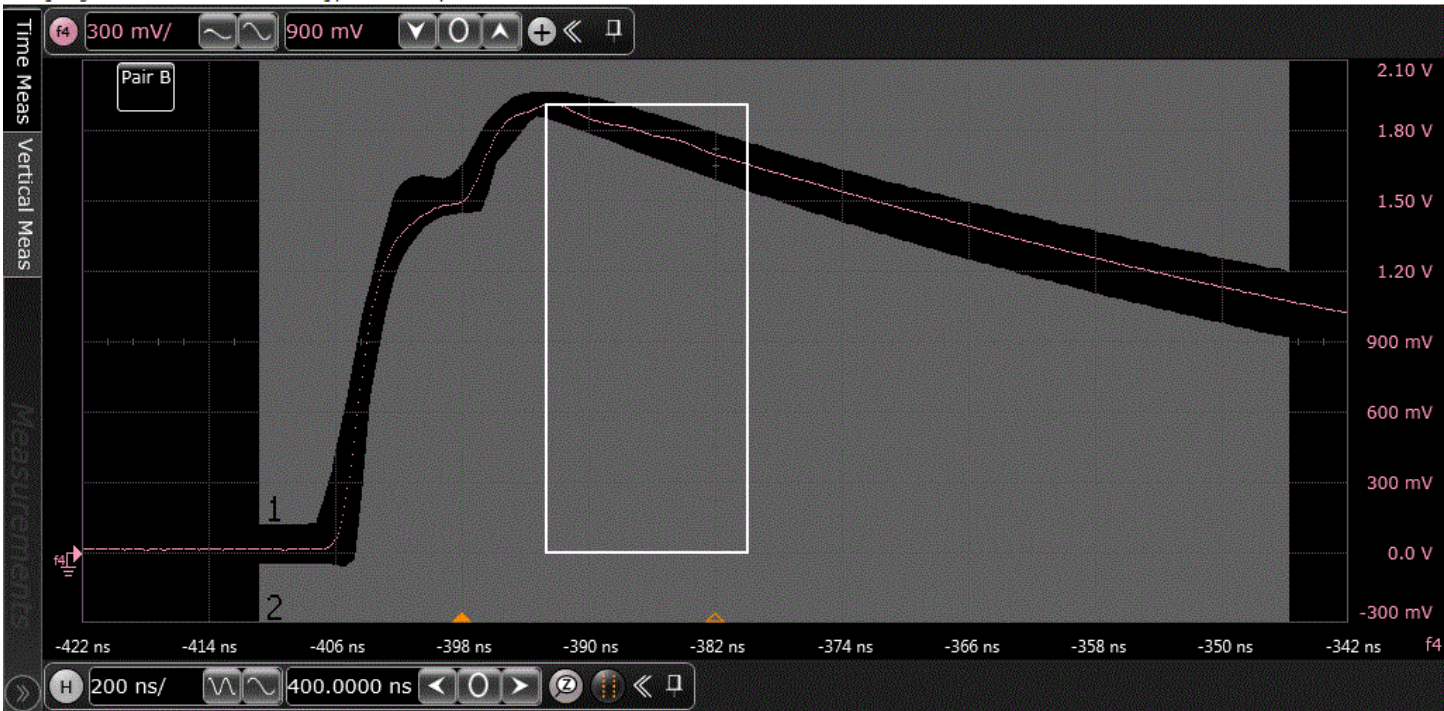
Keysight Infiniium : Monday, June 26, 2023 2:46:01 PM



Trial 2 Images

Template Point H -- No Failures

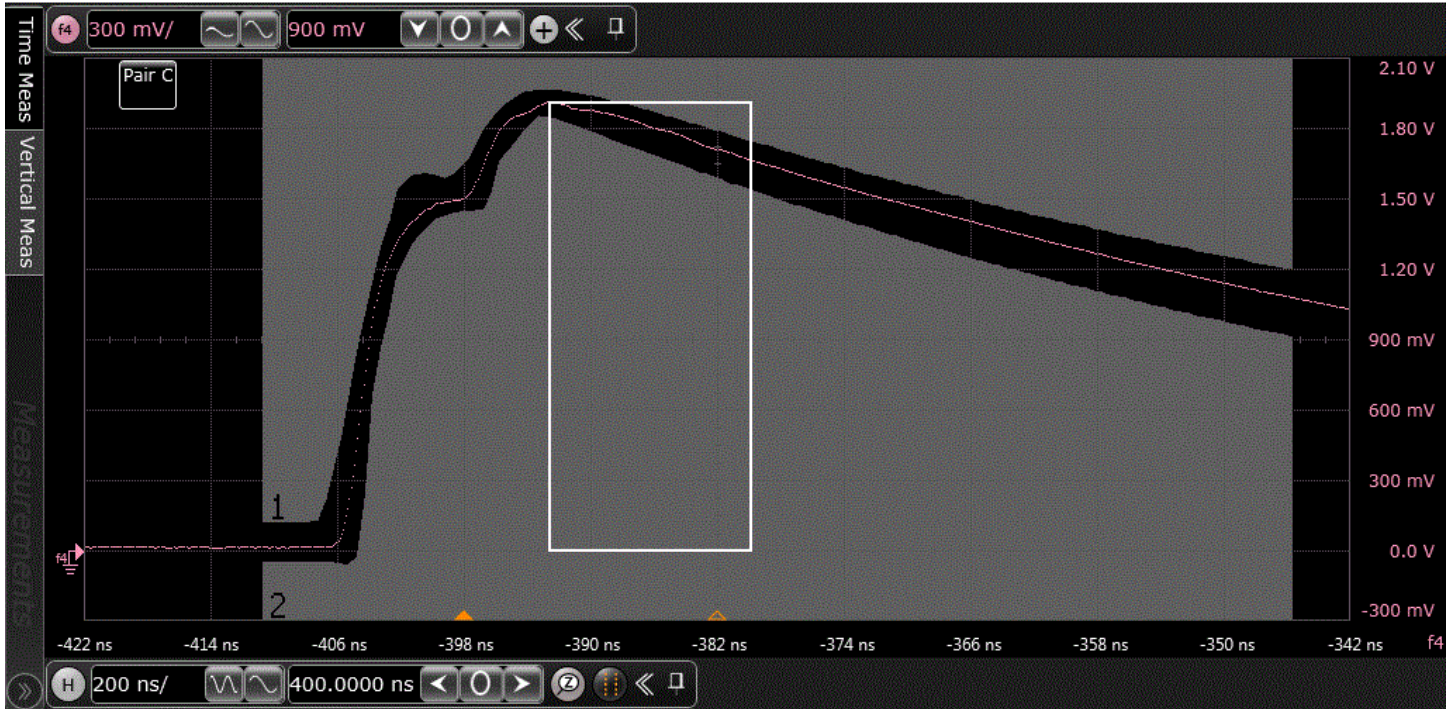
Keysight Infiniium : Monday, June 26, 2023 2:53:53 PM



Trial 3 Images

Template Point H -- No Failures

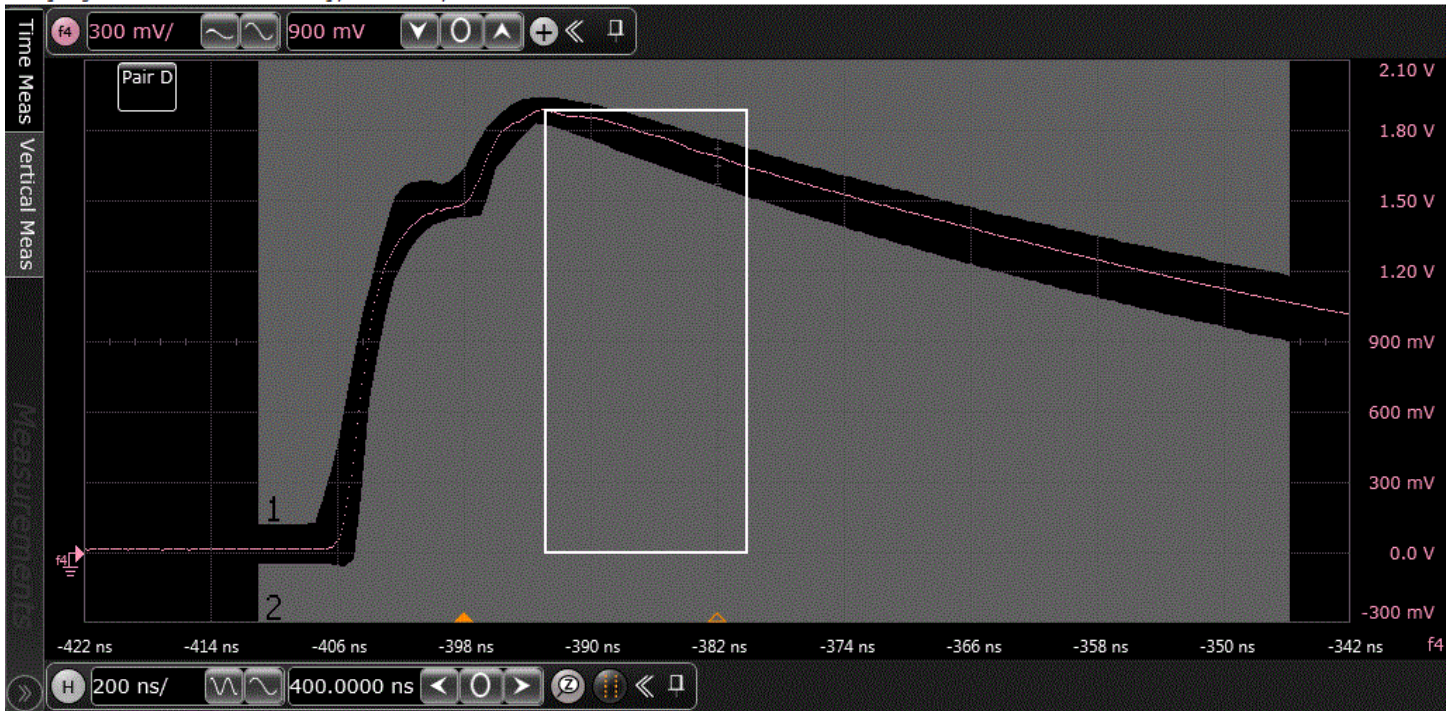
Keysight Infiniium : Monday, June 26, 2023 3:01:52 PM



Trial 4 Images

Template Point H -- No Failures

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1000 Base-T, Point G Droop Test(w/ Disturbing Signal)

IEEE Std. 802.3 (IEEE802.3-2018 Subclause 40.6.1.2.2)

The Voltage at Point G (500ns after point F) must be more than 73.1% of the negative Voltage at Peak F
Actual Value Measurement Name: % of G (w/ Disturbing Signal)
Pass Limits: VALUE > 73.10 %

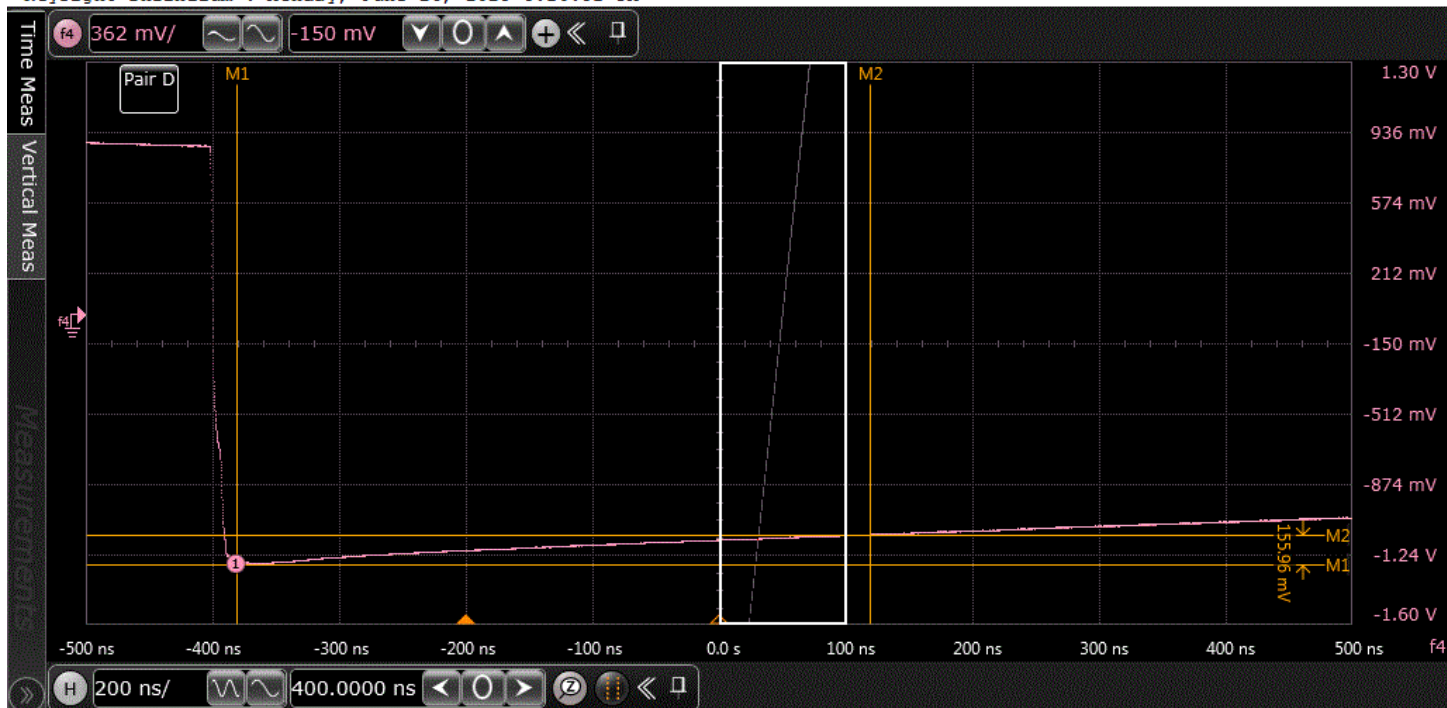
Statistics & Details for all 4 Trials

Trial #	Actual Value	Margin	V at F	V at G	#Avgs (1000 Base-T Droop Tests)	Test Pair
Avg	88.04 %	20.43 %	-1.290 V	-1.136 V		
StdDev	145.3 m%	200.5 m%	5.621 mV	4.971 mV		
Range	305.5 m%	424.1 m%	13.20 mV	10.66 mV		
Min	87.89 %	20.23 %	-1.296 V	-1.142 V		
Max	88.20 %	20.66 %	-1.283 V	-1.132 V		
Sum	352.1 %	81.74 %	-5.159 V	-4.542 V		
4 (Worst)	87.89 %	20.2%	-1.28797 V	-1.13201 V	128.0	BI_DD
2	87.94 %	20.3%	-1.29188 V	-1.13607 V	128.0	BI_DB
3	88.12 %	20.5%	-1.29638 V	-1.14238 V	128.0	BI_DC
1	88.20 %	20.7%	-1.28318 V	-1.13172 V	128.0	BI_DA

Trial 4 Images

Droop at G, (Pair D)

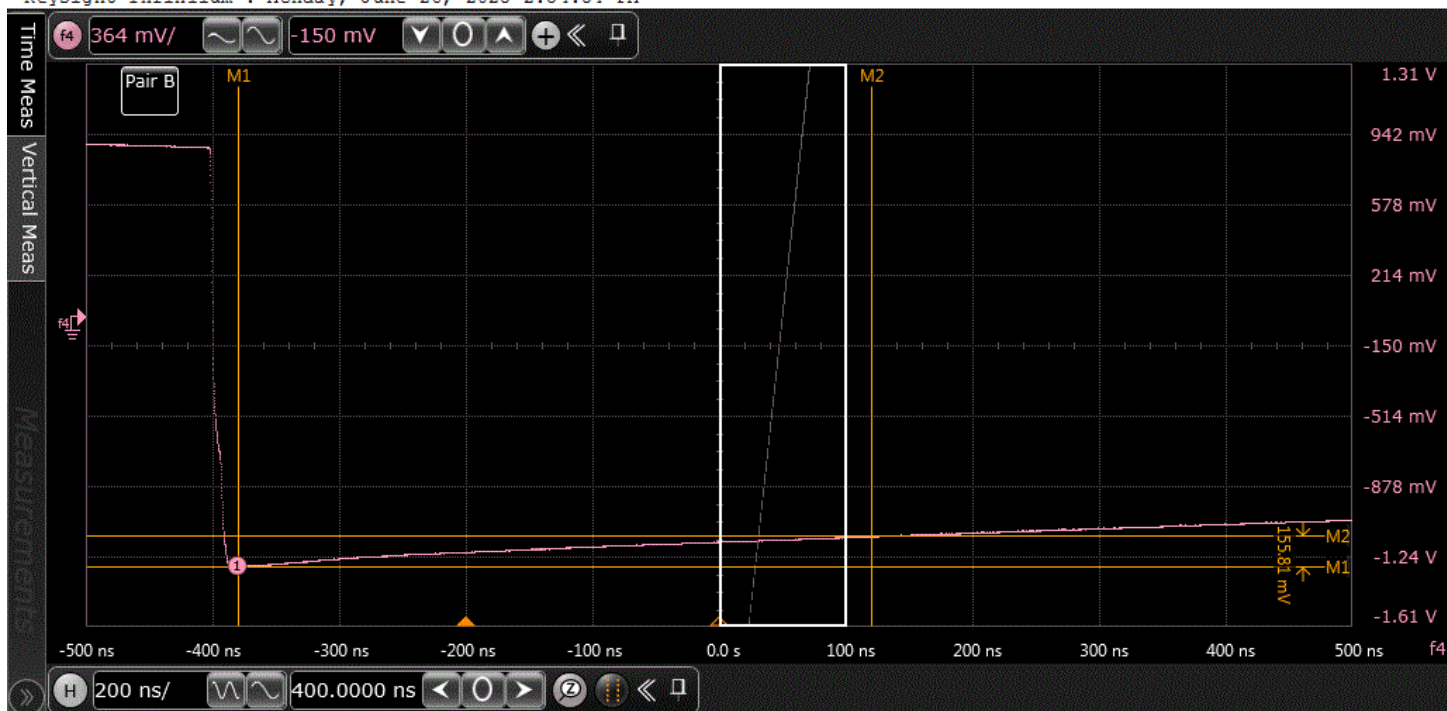
Keysight Infiniium : Monday, June 26, 2023 3:10:31 PM



Trial 2 Images

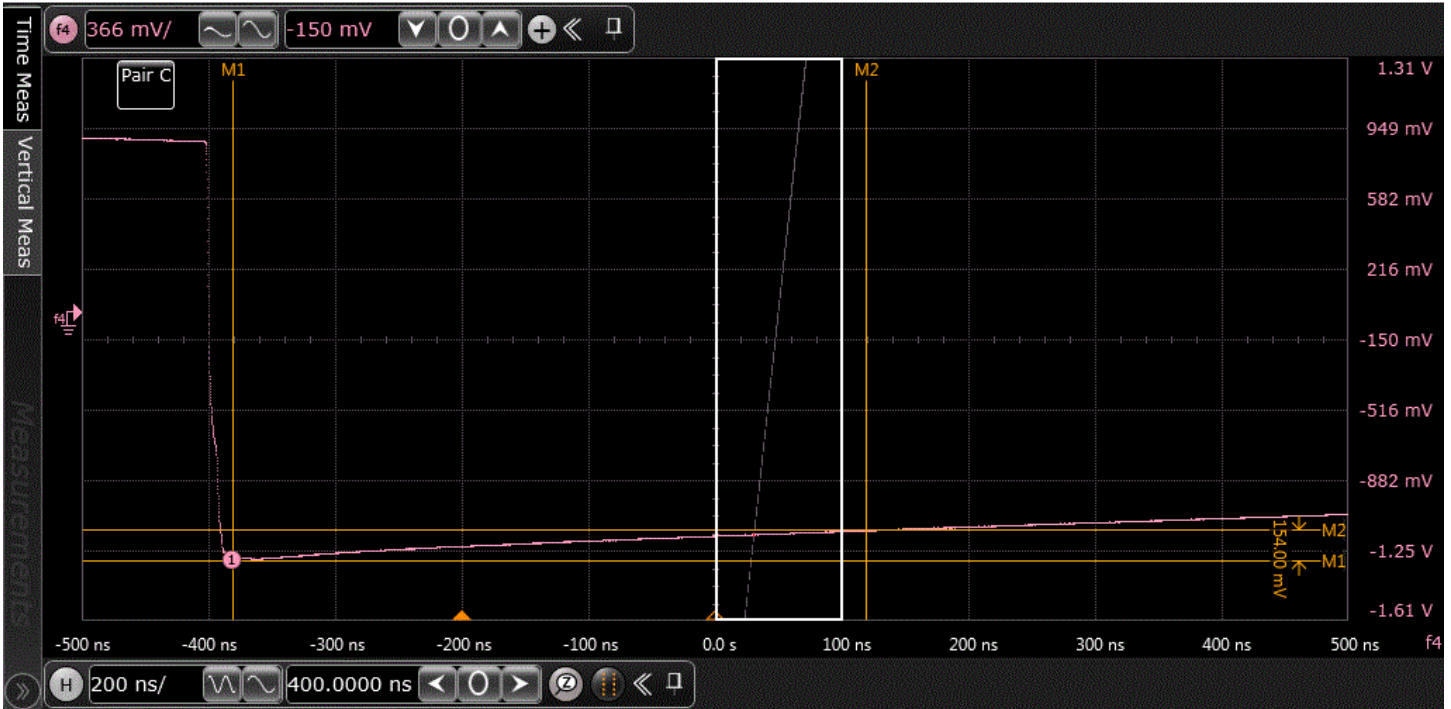
Droop at G, (Pair B)

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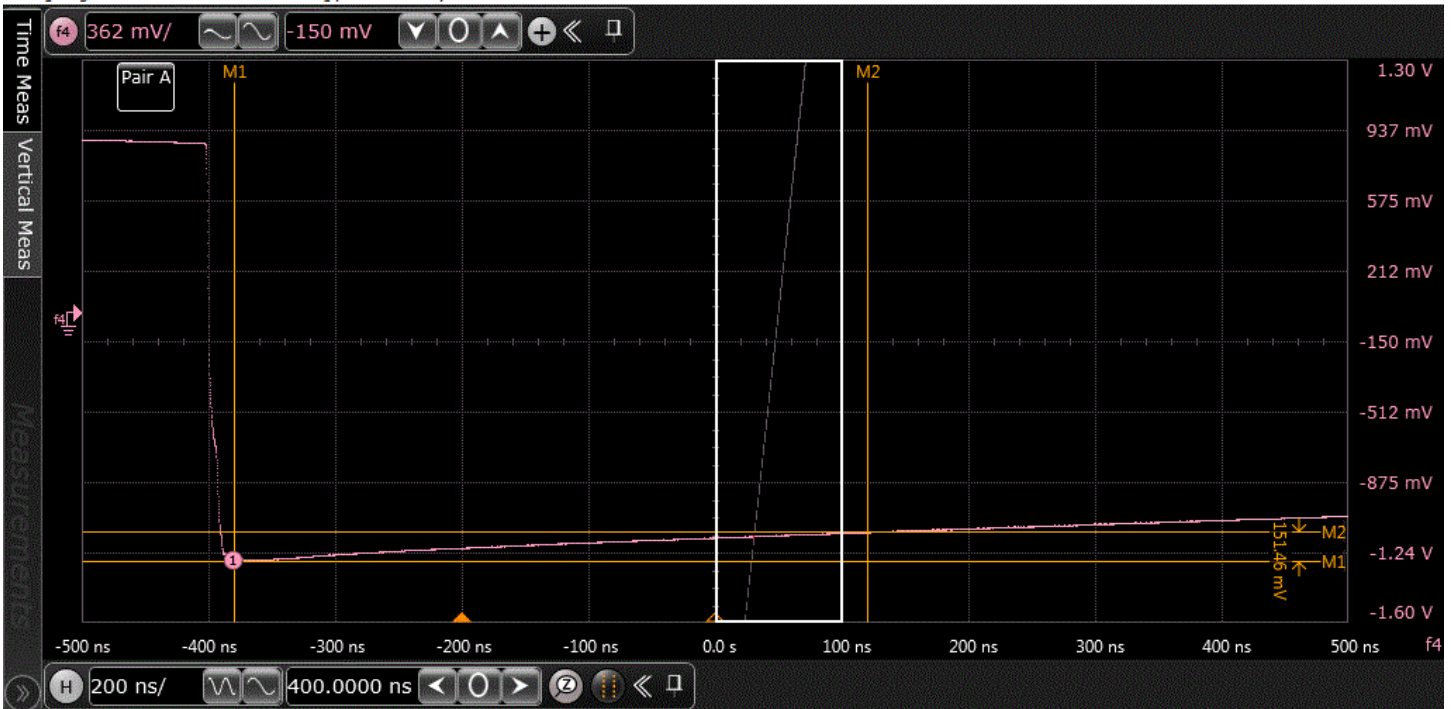
Trial 3 Images

Droop at G, (Pair C)



Trial 1 Images

Droop at G, (Pair A)

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1000 Base-T, Point J Droop Test(w/ Disturbing Signal)

IEEE Std. 802.3 (IEEE802.3-2018 Subclause 40.6.1.2.2)

The Voltage at Point J (500ns after point H) must be more than 73.1% of the Voltage at Peak H
 Actual Value Measurement Name: % of J (w/ Disturbing Signal)
 Pass Limits: VALUE > 73.10 %

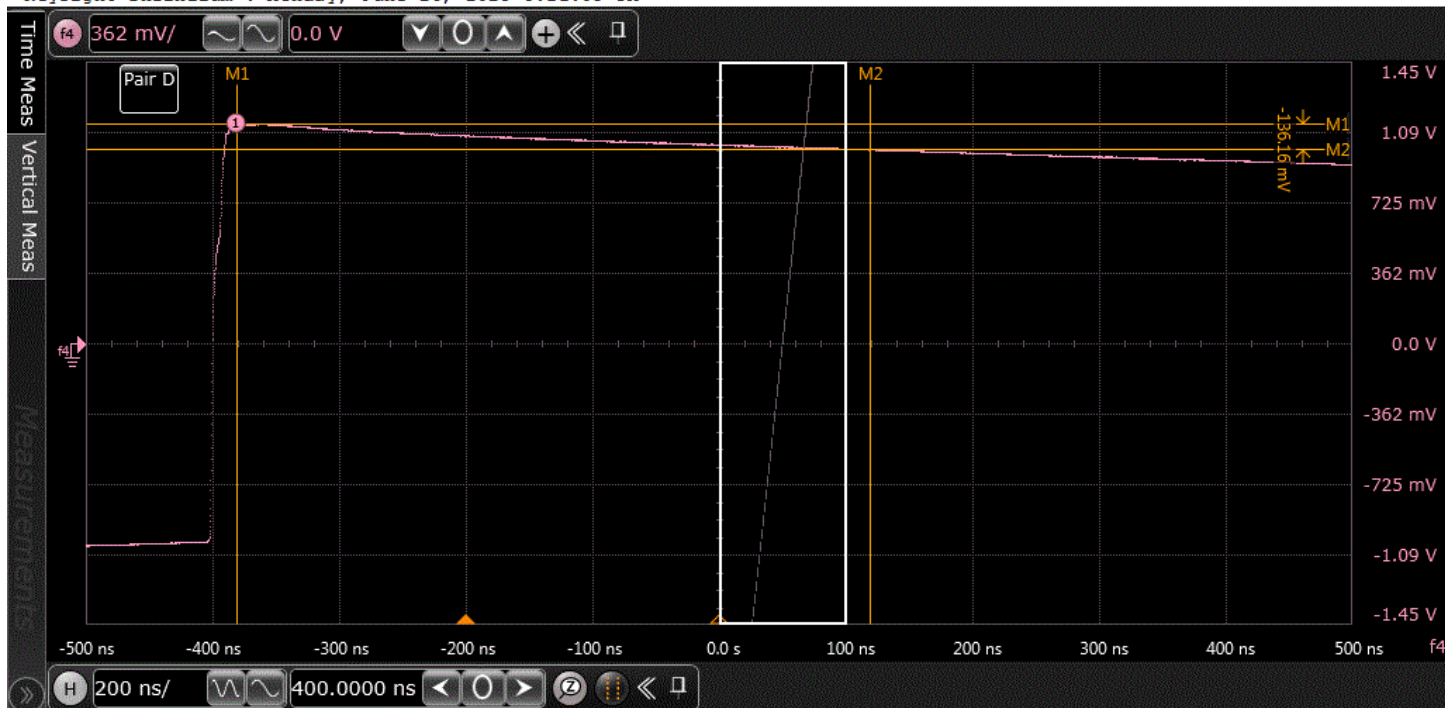
Statistics & Details for all 4 Trials

Trial #	Actual Value	Margin	V at H	V at J	#Aves (1000 Base-T Droop Tests)	Test Pair
Avg	88.06 %	20.47 %	1.140 V	1.003 V		
StdDev	51.97 m%	73.24 m%	6.090 mV	5.727 mV		
Range	125.2 m%	177.8 m%	13.77 mV	13.05 mV		
Min	87.99 %	20.37 %	1.134 V	997.6 mV		
Max	88.12 %	20.55 %	1.148 V	1.011 V		
Sum	352.2 %	81.86 %	4.558 V	4.014 V		
4 (Worst)	87.99 %	20.4%	1.1338 V	997.6 mV	128.0	BI_DD
1	88.06 %	20.5%	1.1360 V	1.0004 V	128.0	BI_DA
3	88.07 %	20.5%	1.1475 V	1.0106 V	128.0	BI_DC
2	88.12 %	20.5%	1.1408 V	1.0052 V	128.0	BI_DB

Trial 4 Images

Droop at J, (Pair D)

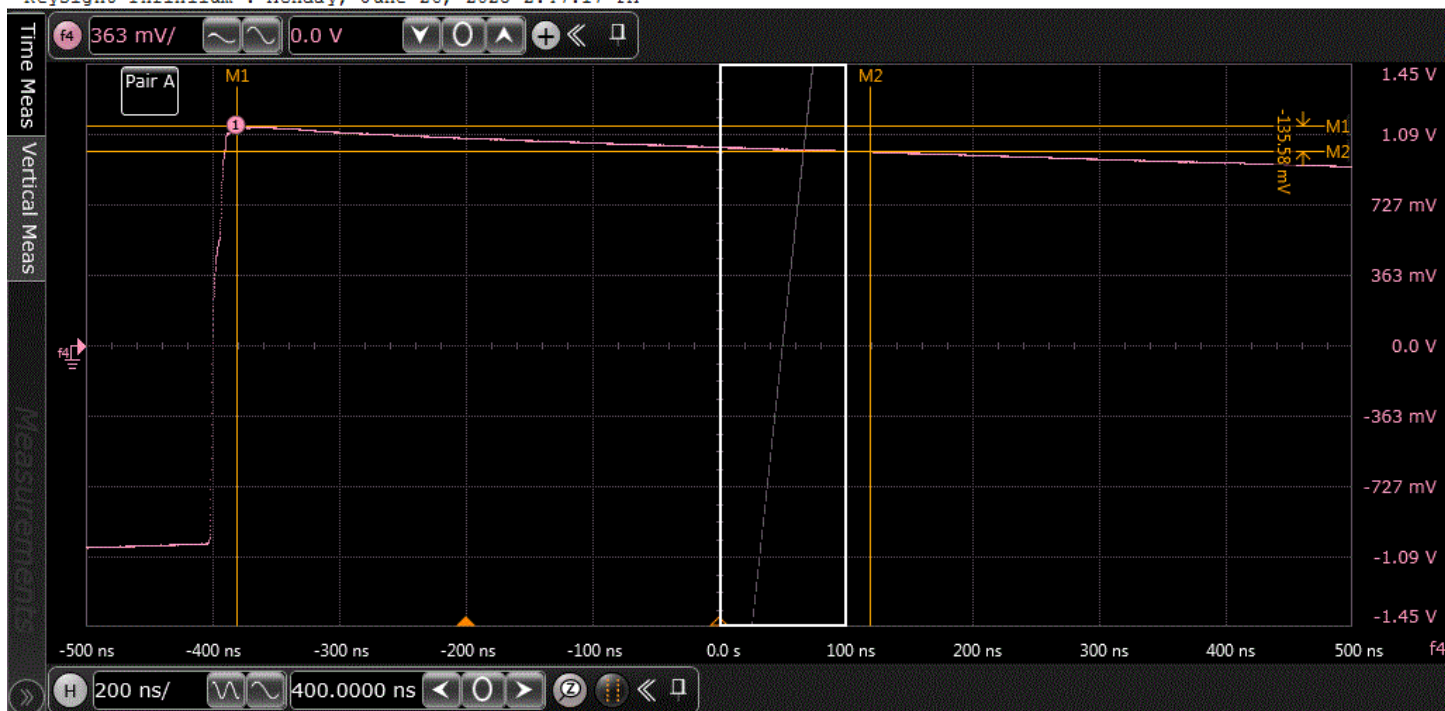
Keysight Infiniium : Monday, June 26, 2023 3:11:09 PM



Trial 1 Images

Droop at J, (Pair A)

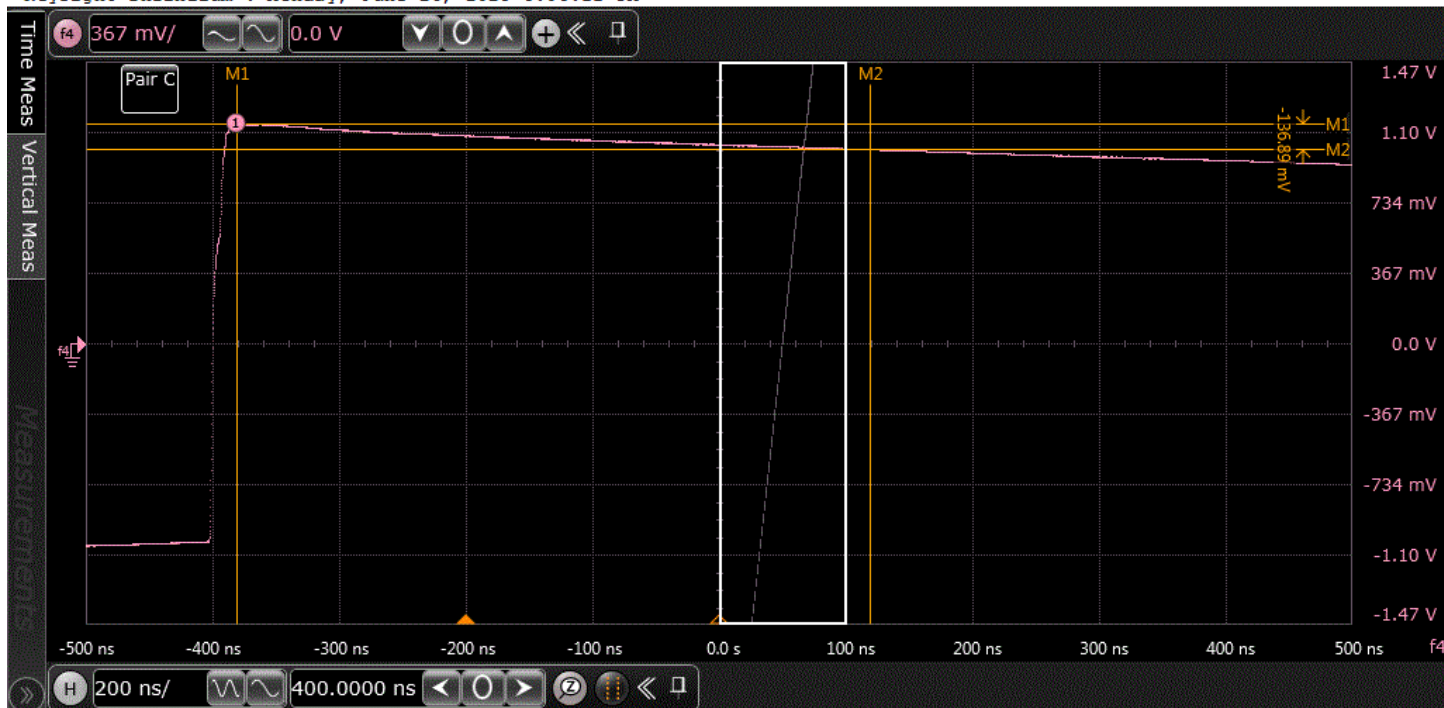
Keysight Infiniium : Monday, June 26, 2023 2:47:17 PM



Trial 3 Images

Droop at J, (Pair C)

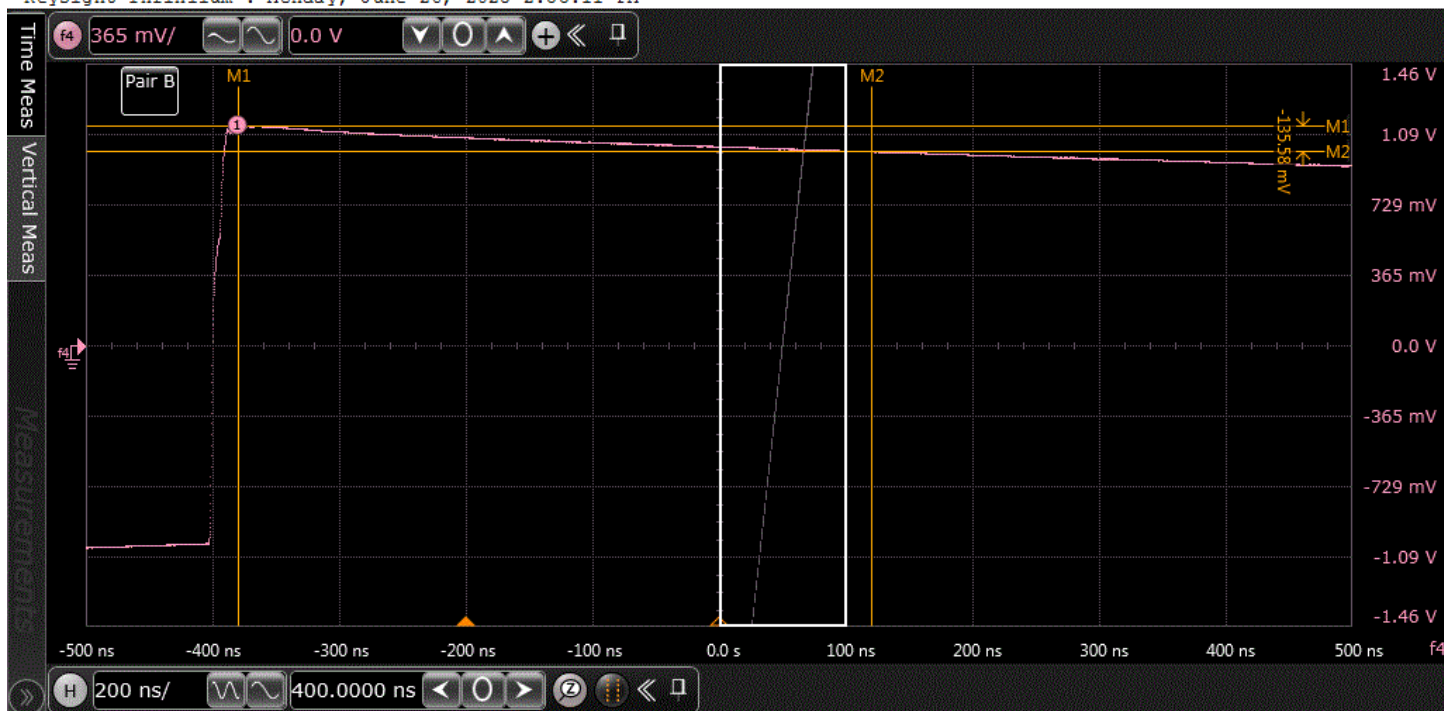
Keysight Infiniium : Monday, June 26, 2023 3:03:11 PM



Trial 2 Images

Droop at J, (Pair B)

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1000 Base-T, Transmitter Distortion(w/ Disturbing Signal)

IEEE Std. 802.3 (IEEE802.3-2018 Subclause 40.6.1.2.4)

The peak distortion must be less than 10mV.

Actual Value Measurement Name: Peak Distortion (w/ Disturbing Signal)

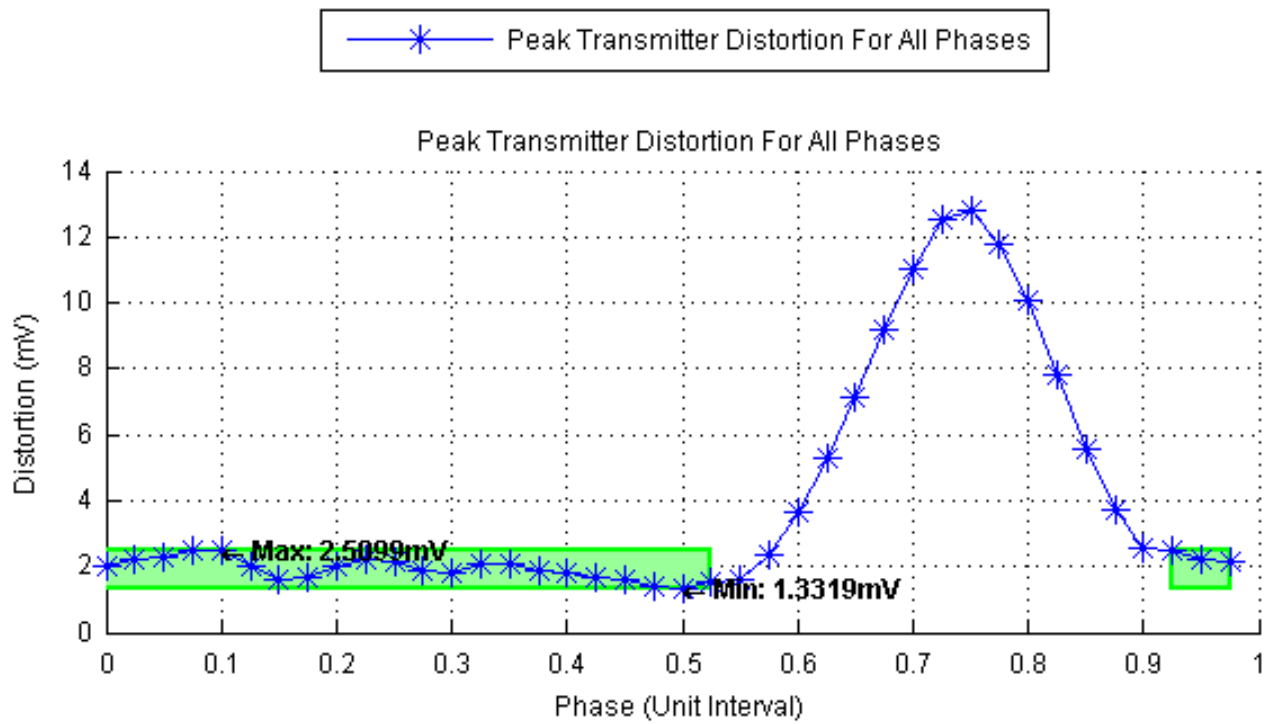
Pass Limits: VALUE <= 10.00 mV

Statistics & Details for all 4 Trials

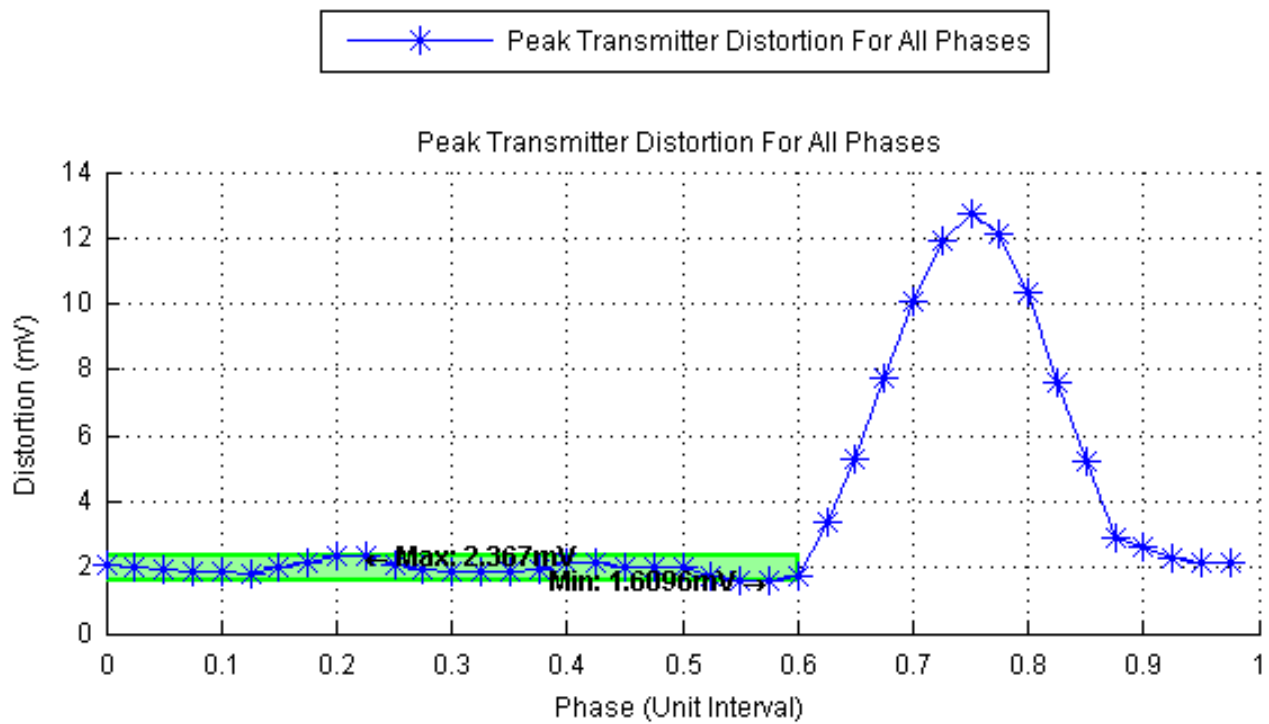
Trial #	Actual Value	Margin	1000Base-T TM4 Transmitter Distortion	SNR	Test Pair	#Avgs (TM4 Distortion test)
Avg	2.251 mV	77.48 %				
StdDev	225.7 μ V	2.257 %				
Range	478.0 μ V	4.800 %				
Min	2.032 mV	74.90 %				
Max	2.510 mV	79.70 %				
Sum	9.004 mV	309.9 %				
1 (Worst)	2.51 mV	74.9%	(See image)	N/A	BI_DA	100.0
3	2.37 mV	76.3%	(See image)	N/A	BI_DC	100.0
2	2.10 mV	79.0%	(See image)	N/A	BI_DB	100.0
4	2.03 mV	79.7%	(See image)	N/A	BI_DD	100.0

Trial 1 Images

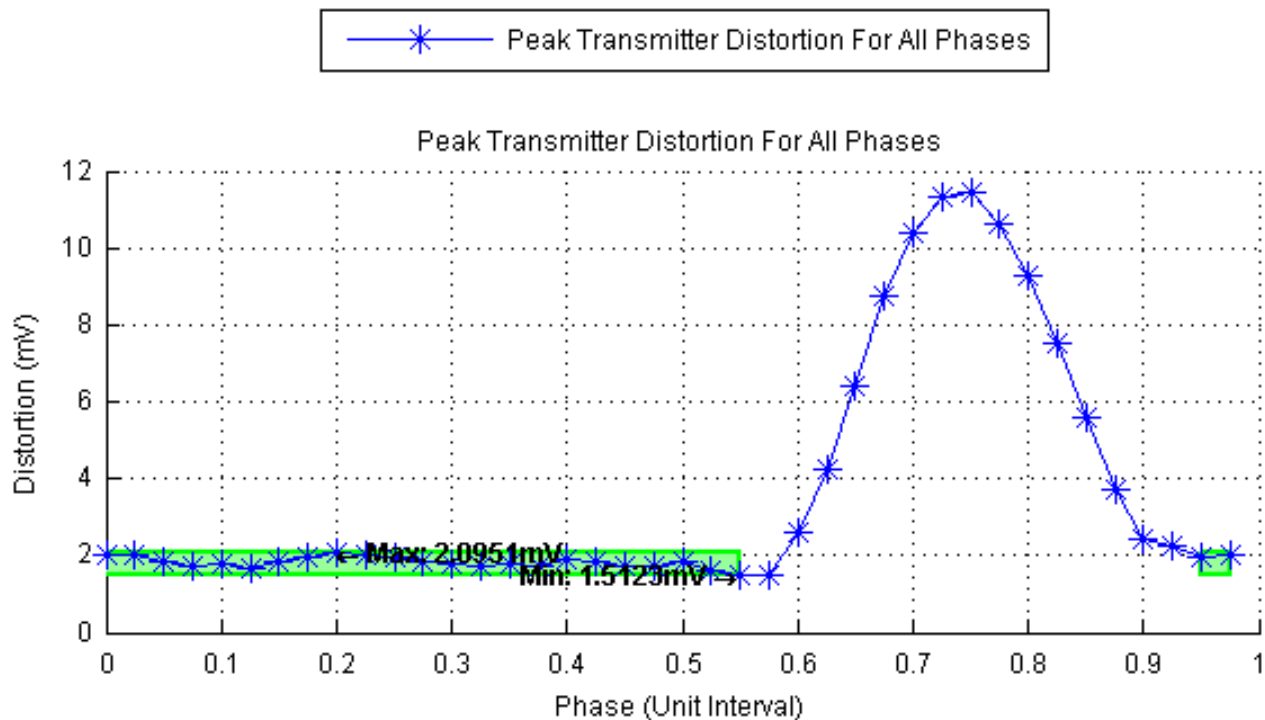
1000Base-T TM4 Transmitter Distortion



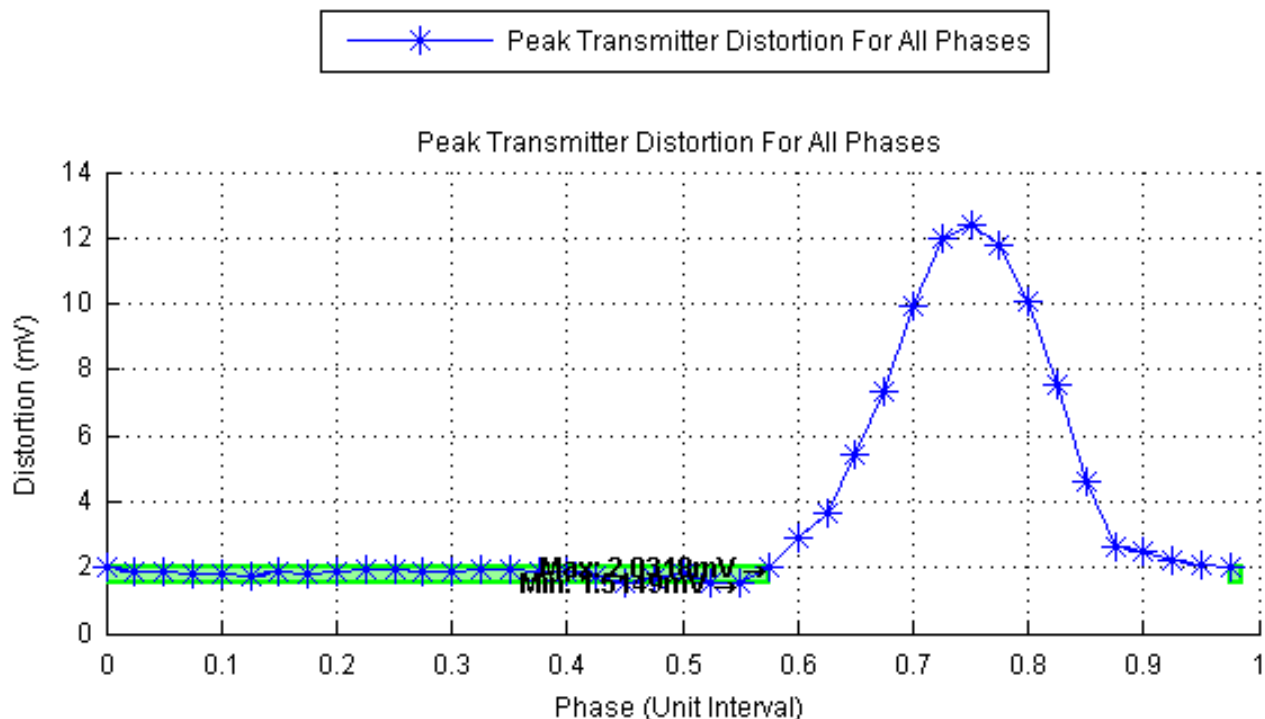
Trial 3 Images
1000Base-T TM4 Transmitter Distortion



Trial 2 Images
1000Base-T TM4 Transmitter Distortion



Trial 4 Images
1000Base-T TM4 Transmitter Distortion



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Statistics & Details for all 4 Trials

Trial #	Actual Value	Margin	Maximum +Peak	Maximum Peak	Time Range Measured	Test Pair
Avg	37.93 mV	24.15 %	18.80 mV	-19.13 mV	10.00 ms	
StdDev	23.18 mV	46.32 %	11.52 mV	11.77 mV	0.000 s	
Range	45.02 mV	90.00 %	21.64 mV	24.19 mV	0.000 s	
Min	18.11 mV	-26.20 %	8.470 mV	-33.02 mV	10.00 ms	
Max	63.13 mV	63.80 %	30.11 mV	-8.830 mV	10.00 ms	
Sum	151.7 mV	96.60 %	75.21 mV	-76.51 mV	40.00 ms	
4 (Worst)	63.1 mV	-26.2%	30.1 mV	-33.0 mV	10.0 ms	BI_DD
1	52.1 mV	-4.2%	27.4 mV	-24.8 mV	10.0 ms	BI_DA
3	18.4 mV	63.2%	8.5 mV	-9.9 mV	10.0 ms	BI_DC
2	18.1 mV	63.8%	9.3 mV	-8.8 mV	10.0 ms	BI_DB

Trial 4 Images
PkPk Common Mode Voltage

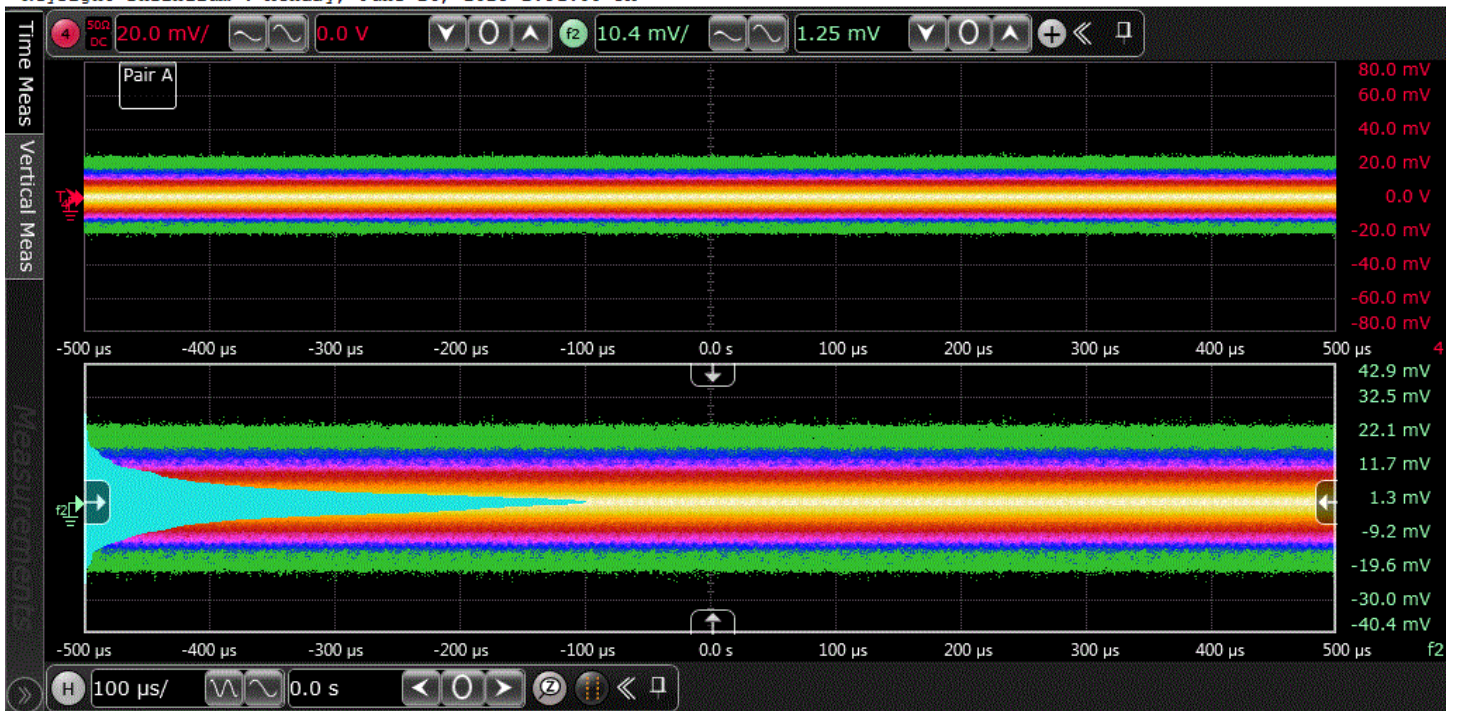
Keysight Infiniium : Monday, June 26, 2023 2:36:41 PM



Trial 1 Images

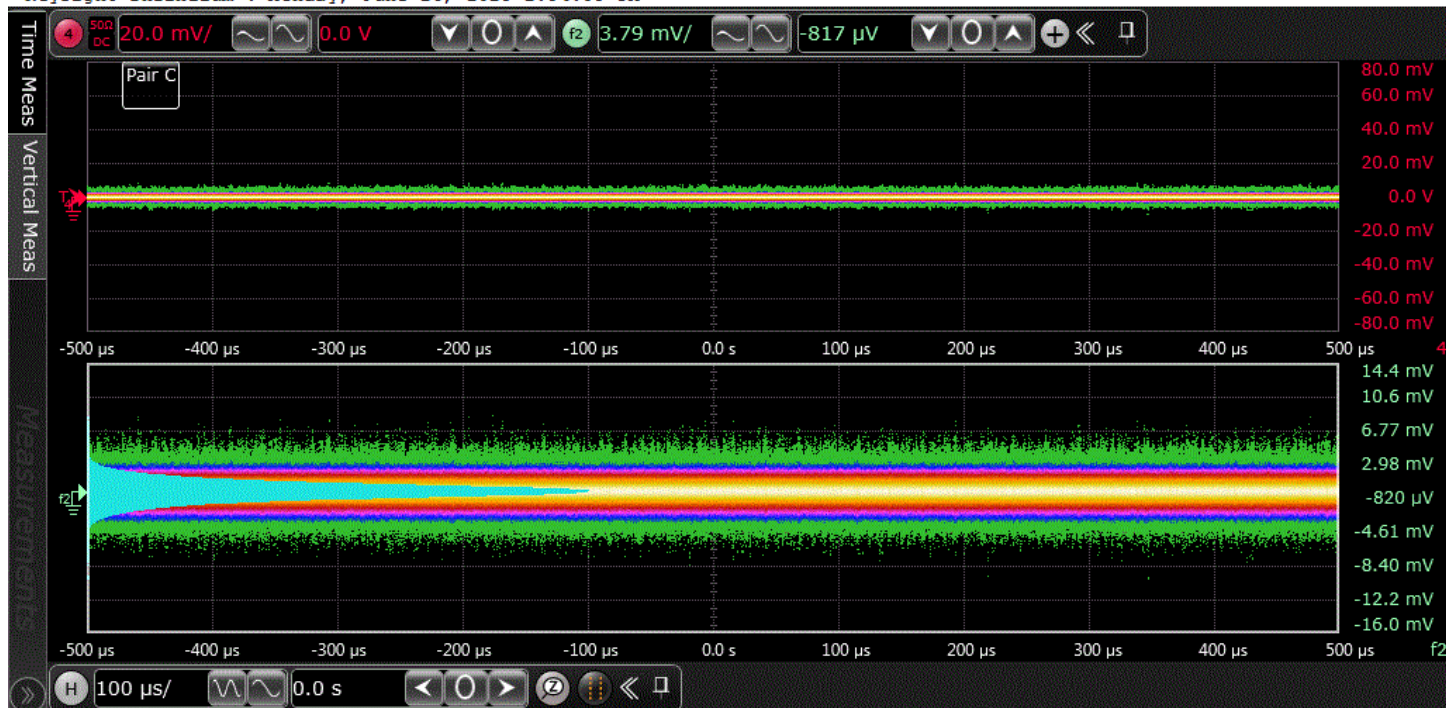
PkPk Common Mode Voltage

Keysight Infiniium : Monday, June 26, 2023 2:31:05 PM



Trial 3 Images

PkPk Common Mode Voltage



Trial 2 Images

PkPk Common Mode Voltage



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1000 Base-T, Jitter MASTER Filtered (w/o TX_TCLK)

IEEE Std. 802.3 (Appendix 40.B of the Gigabit Ethernet Consortium, Clause 40 PMA Test Suite Version 2.6 from University of New Hampshire InterOperability Laboratory)

This test measures filtered jitter on the MDI output. The MASTER output at the MDI relative to an unjittered reference is passed through a 5kHz high-pass filter (HPF). The filtered peak-to-peak jitter shall be less than 0.3ns. For further information on jitter measurements, consult the user manual.

Actual Value Measurement Name: PkPk Filtered Jitter (1000 Base-T, Jitter MASTER Filtered (w/o TX_TCLK))

Pass Limits: VALUE < 300 ps

Statistics & Details for all 4 Trials

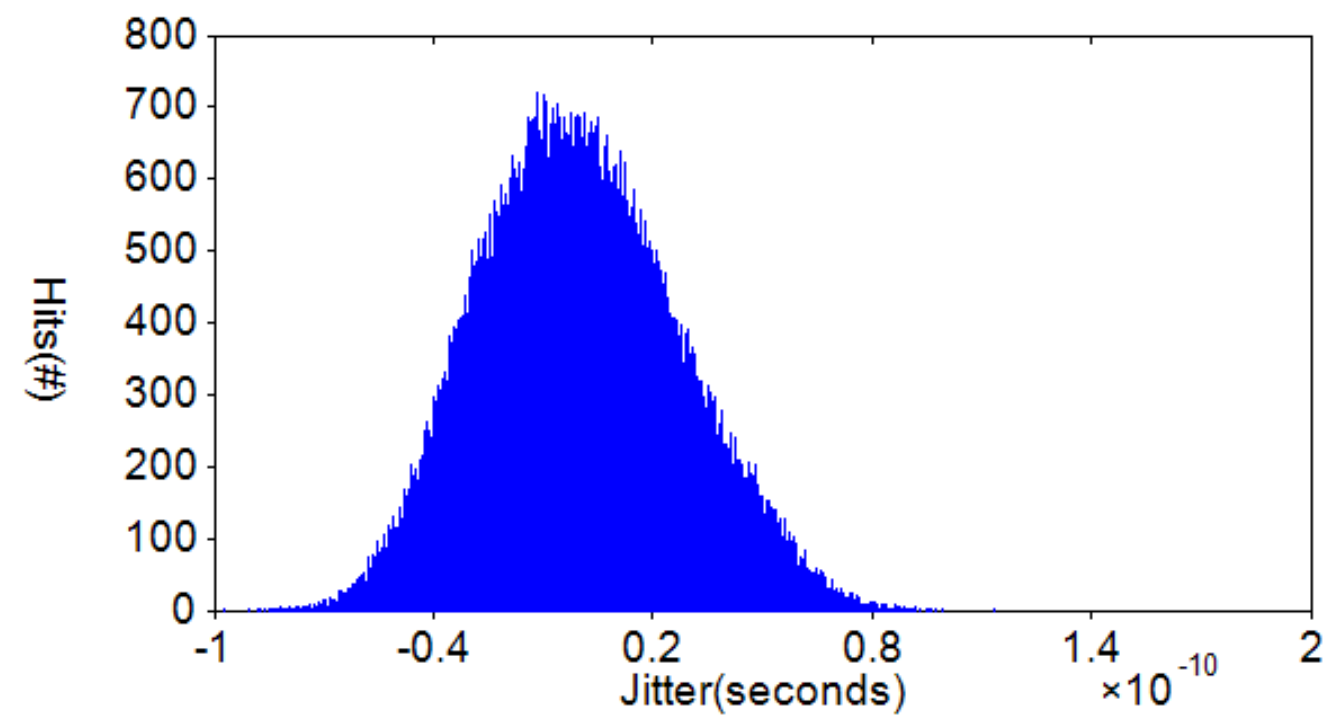
Trial #	Actual Value	Margin	# Filtered Edges Inspected	PkPk MASTER 5k filtered jitter	MASTER 5k filtered jitter
Avg	0.000 s	33.675 %	112,699.000	0.000 s	
StdDev	0.000 s	3.014 %	0.000	0.000 s	
Range	0.000 s	6.600 %	0.000	0.000 s	
Min	0.000 s	29.700 %	112,699.000	0.000 s	
Max	0.000 s	36.300 %	112,699.000	0.000 s	
Sum	0.000 s	134.700 %	450,796.000	0.000 s	
2 (Worst)	211 ps	29.7%	112.699000 k	211.0 ps	(See image)
4	201 ps	33.0%	112.699000 k	201.2 ps	(See image)
1	193 ps	35.7%	112.699000 k	193.1 ps	(See image)
3	191 ps	36.3%	112.699000 k	191.4 ps	(See image)

Trial #	REMINDER	Test Pair
Avg		
StdDev		
Range		

	Min		
	Max		
	Sum		
✓	2 (Worst)	The result of this test is inconclusive if the peak-to-peak value of filtered jitter is less than 0.3ns. Hence, it reported for informational purpose only.	BI_DB
✓	4	The result of this test is inconclusive if the peak-to-peak value of filtered jitter is less than 0.3ns. Hence, it reported for informational purpose only.	BI_DD
✓	1	The result of this test is inconclusive if the peak-to-peak value of filtered jitter is less than 0.3ns. Hence, it reported for informational purpose only.	BI_DA
✓	3	The result of this test is inconclusive if the peak-to-peak value of filtered jitter is less than 0.3ns. Hence, it reported for informational purpose only.	BI_DC

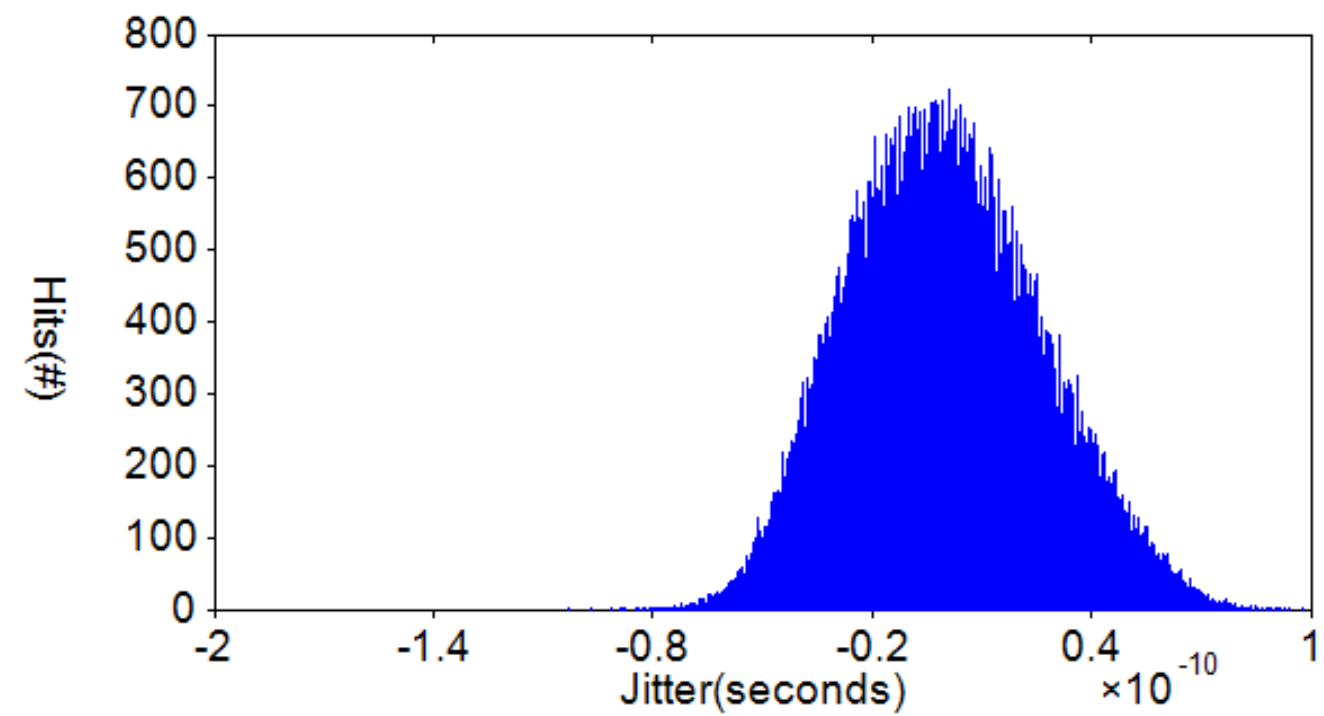
Trial 2 Images

MASTER 5k filtered jitter



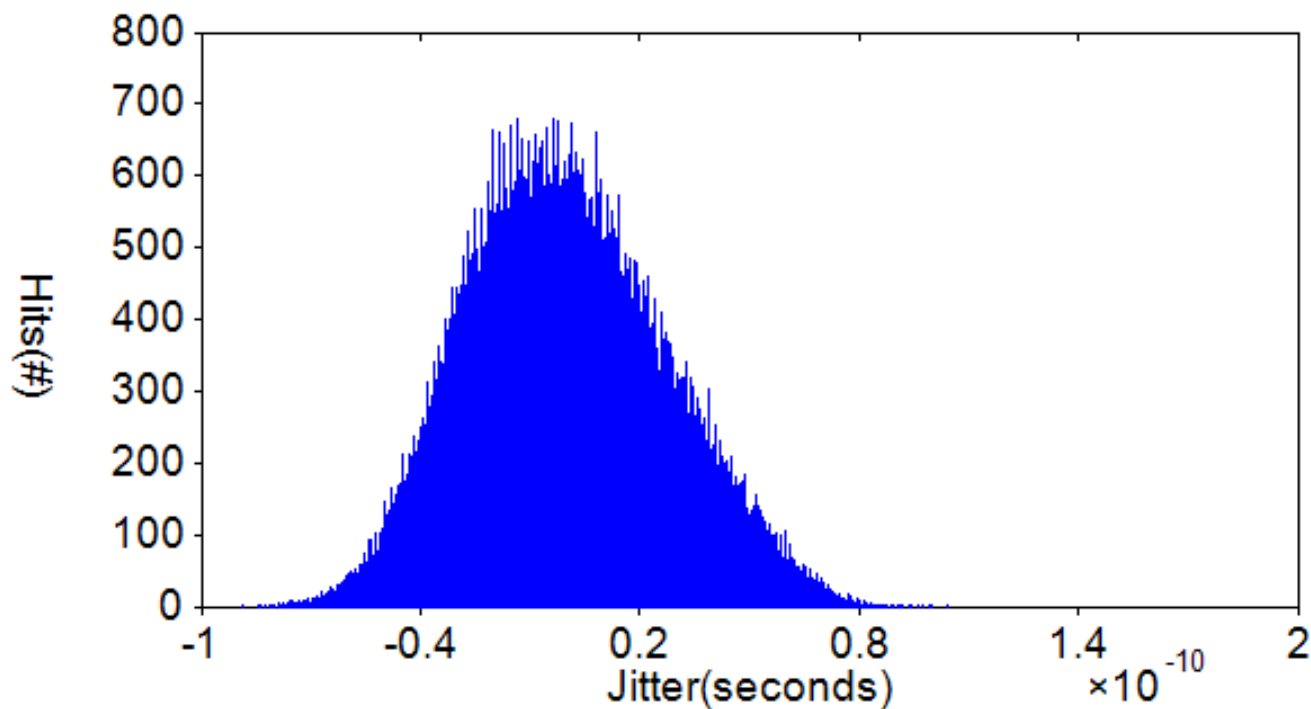
Trial 4 Images

MASTER 5k filtered jitter

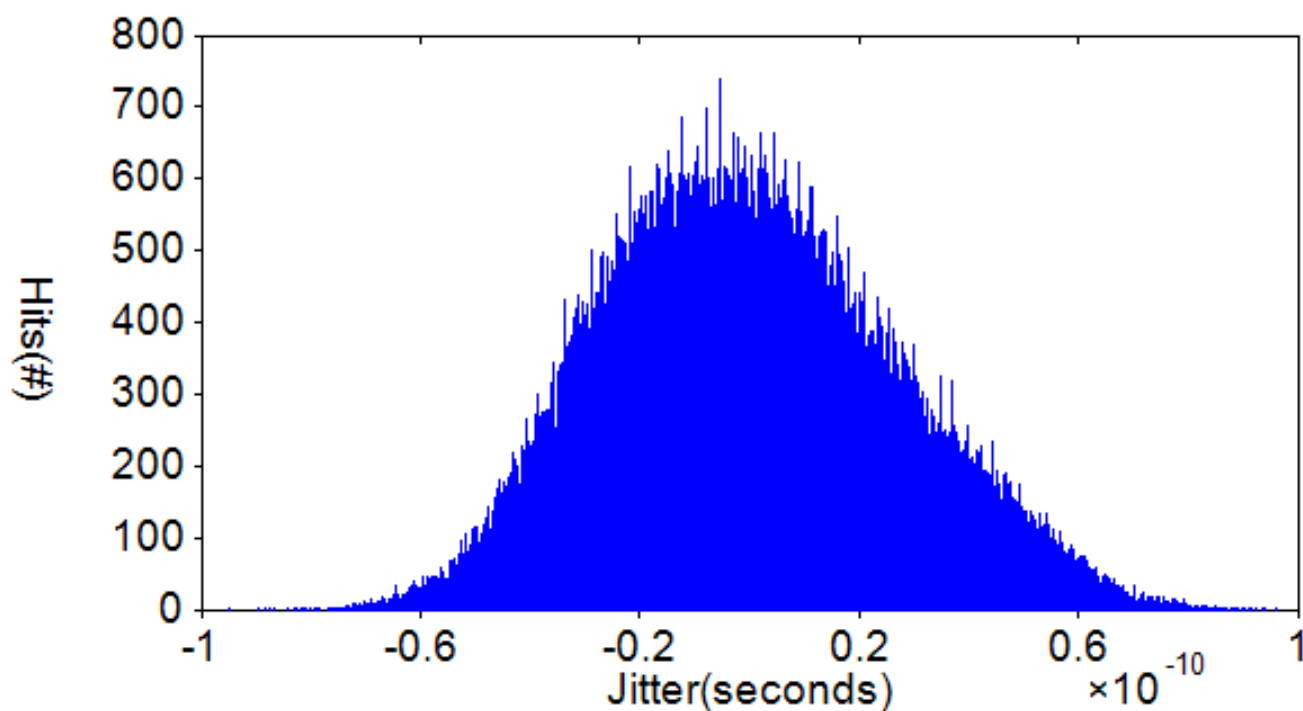


Trial 1 Images

MASTER 5k filtered jitter



Trial 3 Images
MASTER 5k filtered jitter



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	1000 Base-T, Jitter MASTER Unfiltered (w/o TX_TCLK) IEEE Std. 802.3 (Appendix 40.B of the Gigabit Ethernet Consortium, Clause 40 PMA Test Suite Version 2.6 from University of New Hampshire InterOperability Laboratory)
This test measures the peak-to-peak jitter of the MASTER output at MDI relative to an unjittered reference. The result should be less than 1.4ns. For further information on jitter measurements, consult the user manual.	
Actual Value Measurement Name: Unfiltered MASTER Jitter (1000 Base-T, Jitter MASTER Unfiltered (w/o TX_TCLK))	
Pass Limits: VALUE < 1.400 ns	

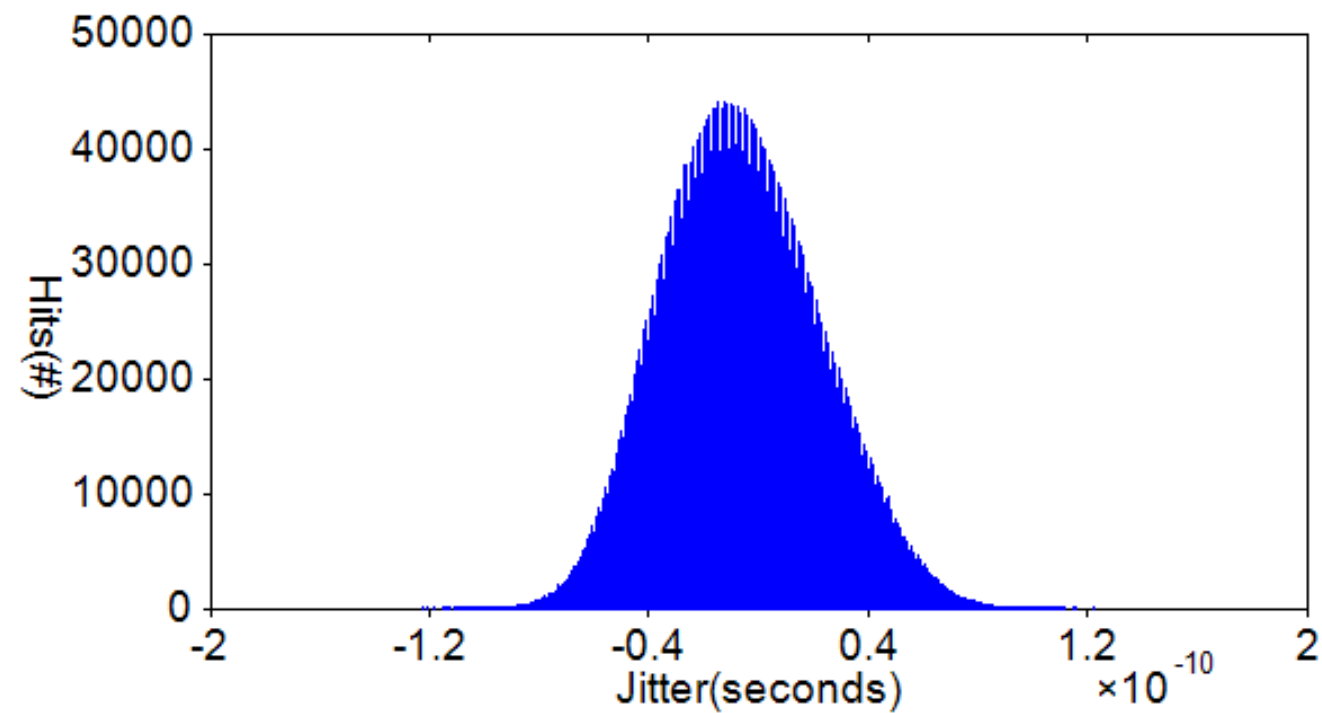
Statistics & Details for all 4 Trials

Trial #	Actual Value	Margin	# Filtered Edges Inspected	MasterUnfiltered without TX_TCLK
Avg	0.000 s	83.825 %		
StdDev	0.000 s	0.929 %		
Range	0.000 s	2.100 %		
Min	0.000 s	82.500 %		
Max	0.000 s	84.600 %		
Sum	0.000 s	335.300 %		
1 (Worst)	245 ps	82.5%	6.249952000 M	(See image)
2	226 ps	83.9%	6.249952000 M	(See image)
3	220 ps	84.3%	6.249952000 M	(See image)
4	216 ps	84.6%	6.249952000 M	(See image)
Trial #	REMINDER			Test Pair
Avg				

	StdDev		
	Range		
	Min		
	Max		
	Sum		
✓	1 (Worst)	The result of this test is inconclusive if the peak-to-peak value of unfiltered jitter is greater than 1.4ns. Hence, it reported for informational purpose only.	BI_DA
✓	2	The result of this test is inconclusive if the peak-to-peak value of unfiltered jitter is greater than 1.4ns. Hence, it reported for informational purpose only.	BI_DB
✓	3	The result of this test is inconclusive if the peak-to-peak value of unfiltered jitter is greater than 1.4ns. Hence, it reported for informational purpose only.	BI_DC
✓	4	The result of this test is inconclusive if the peak-to-peak value of unfiltered jitter is greater than 1.4ns. Hence, it reported for informational purpose only.	BI_DD

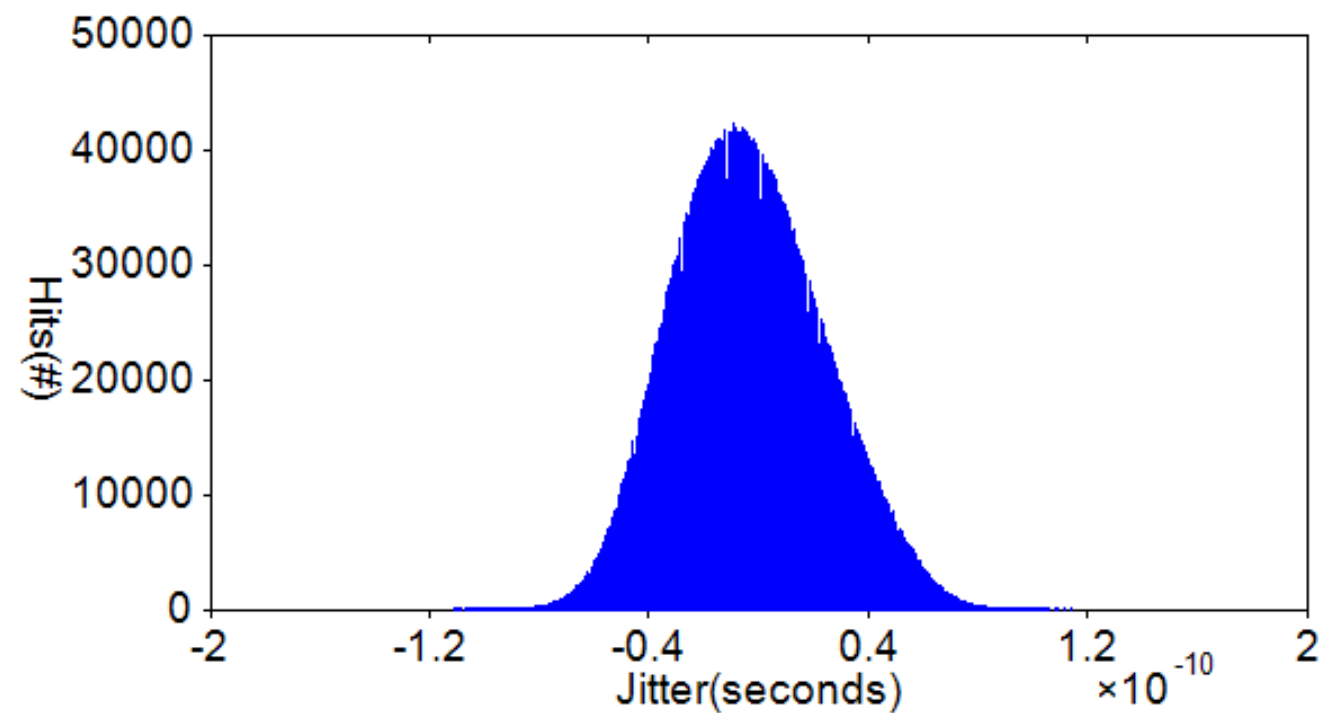
Trial 1 Images

MasterUnfiltered without TX_TCLK



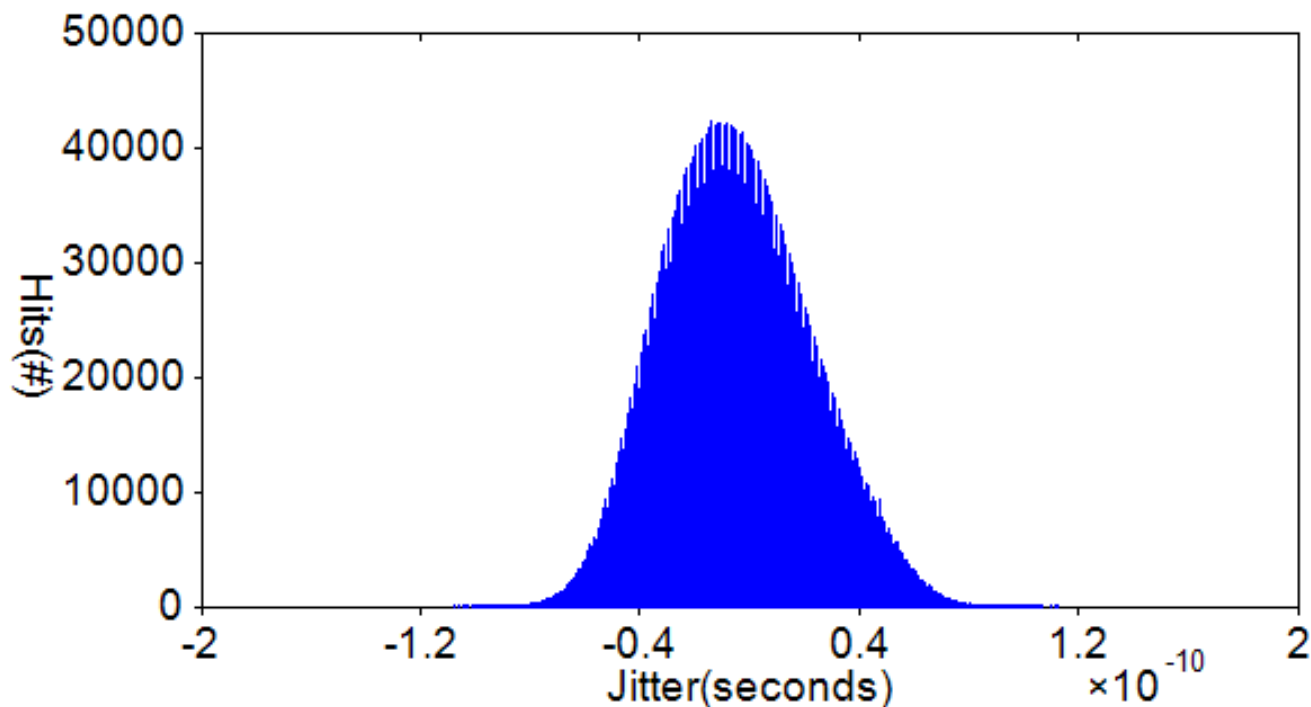
Trial 2 Images

MasterUnfiltered without TX_TCLK

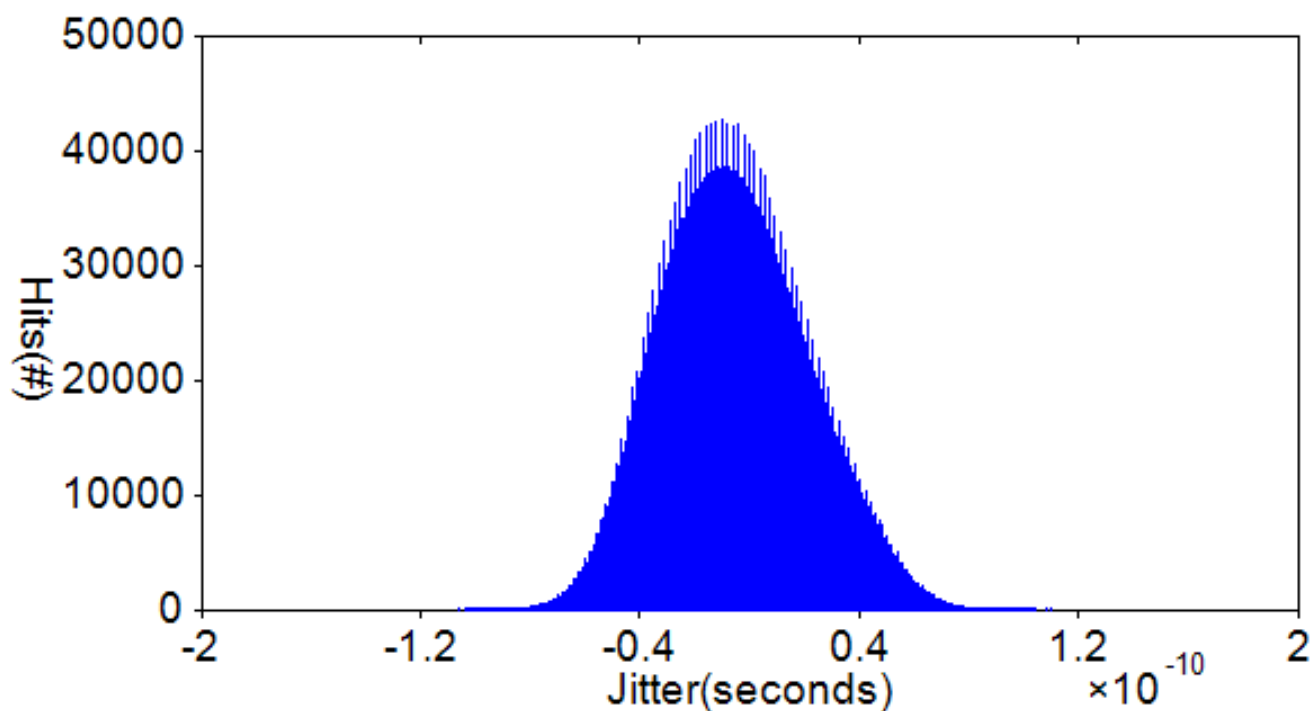


Trial 3 Images

MasterUnfiltered without TX_TCLK



Trial 4 Images
MasterUnfiltered without TX_TCLK



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1000 Base-T, Jitter SLAVE Filtered (w/o TX_TCLK)
 IEEE Std. 802.3 (Appendix 40.B of the Gigabit Ethernet Consortium, Clause 40 PMA Test Suite Version 2.6 from University of New Hampshire InterOperability Laboratory)

This test measures filtered jitter on the MDI output. The jitter on the MDI output signal relative to anunjittered reference is passed through a 5kHz high-pass filter (HPF). The 5kHz HPF filtered MASTER output at MDI and the filtered Master jitter shall be less than 0.4ns. The result is only meant for informational purposes and cannot be used as conformance limits. For further information on jitter measurements, consult the user manual.

Actual Value Measurement Name: PkPk Filtered Jitter (1000 Base-T, Jitter SLAVE Filtered (w/o TX_TCLK))

Pass Limits: Information Only

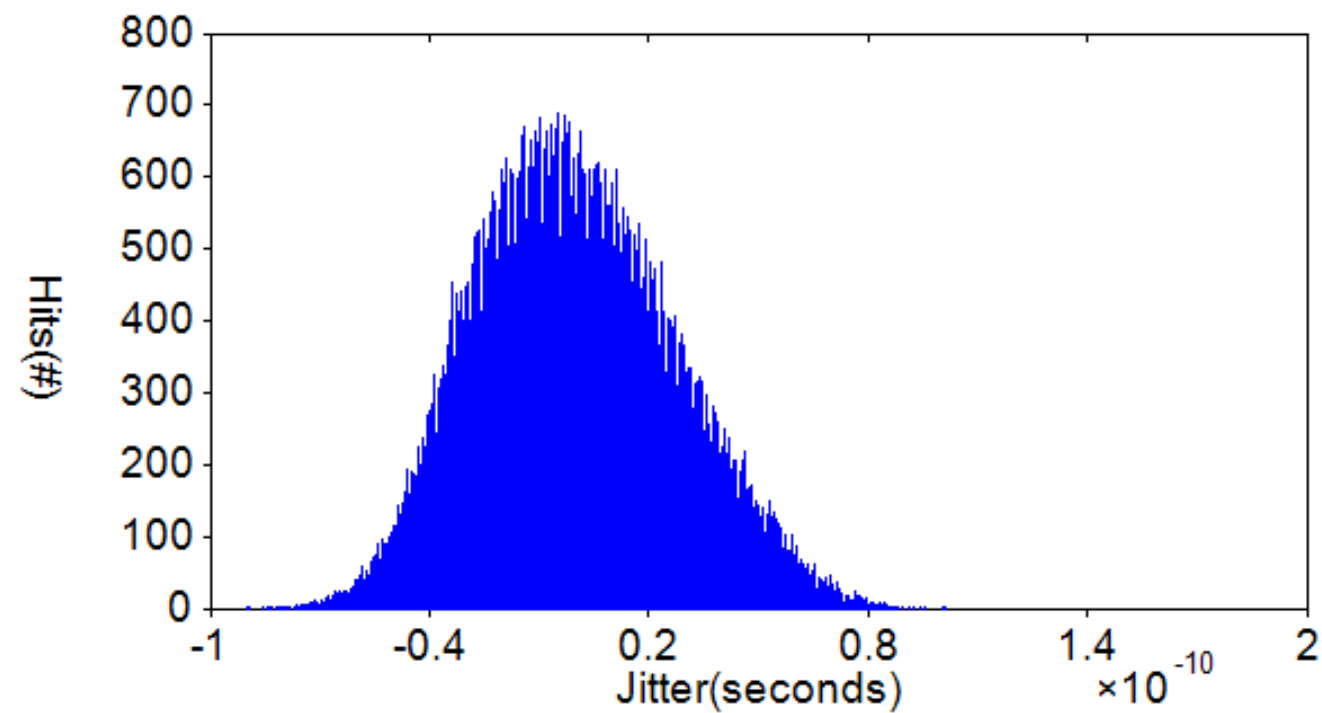
Statistics & Details for all 4 Trials

Trial #	Actual Value	Margin	# Filtered Edges Inspected	PkPk MASTER 5k filtered jitter	PkPk SLAVE 32k filtered jitter
Avg	-4.480 p	100.0 %	112.7 k	201.2 ps	196.7 ps
StdDev	3.680 p	0.000 %	0.000	0.000 s	3.680 ps
Range	8.451 p	0.000 %	0.000	0.000 s	8.451 ps
Min	-9.799 p	100.0 %	112.7 k	201.2 ps	191.4 ps
Max	-1.348 p	100.0 %	112.7 k	201.2 ps	199.9 ps
Sum	-17.92 p	400.0 %	450.8 k	804.8 ps	786.9 ps
1 (Worst)	-10 p	100.0%	112.699000 k	201.2 ps	191.4 ps
2	-1 p	100.0%	112.699000 k	201.2 ps	199.9 ps
3	-4 p	100.0%	112.699000 k	201.2 ps	197.6 ps
4	-3 p	100.0%	112.699000 k	201.2 ps	198.1 ps

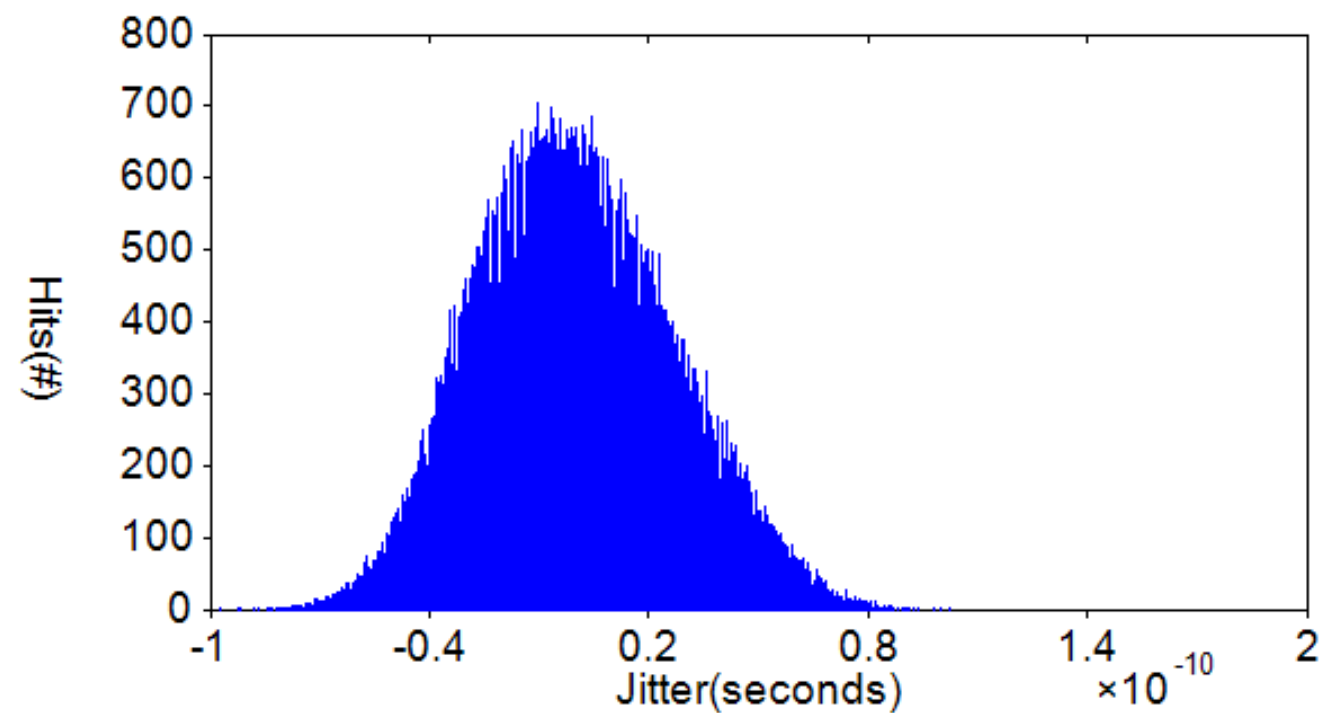
Trial #	SLAVE 32k filtered jitter	REMINDER	Test Pair
Avg			

	StdDev		
	Range		
	Min		
	Max		
	Sum		
1 (Worst)	(See image)	The result of this test is merely reported the numerical results for informational purpose only without judging them on a pass/fail basis.	BI_DA
2	(See image)	The result of this test is merely reported the numerical results for informational purpose only without judging them on a pass/fail basis.	BI_DB
3	(See image)	The result of this test is merely reported the numerical results for informational purpose only without judging them on a pass/fail basis.	BI_DC
4	(See image)	The result of this test is merely reported the numerical results for informational purpose only without judging them on a pass/fail basis.	BI_DD

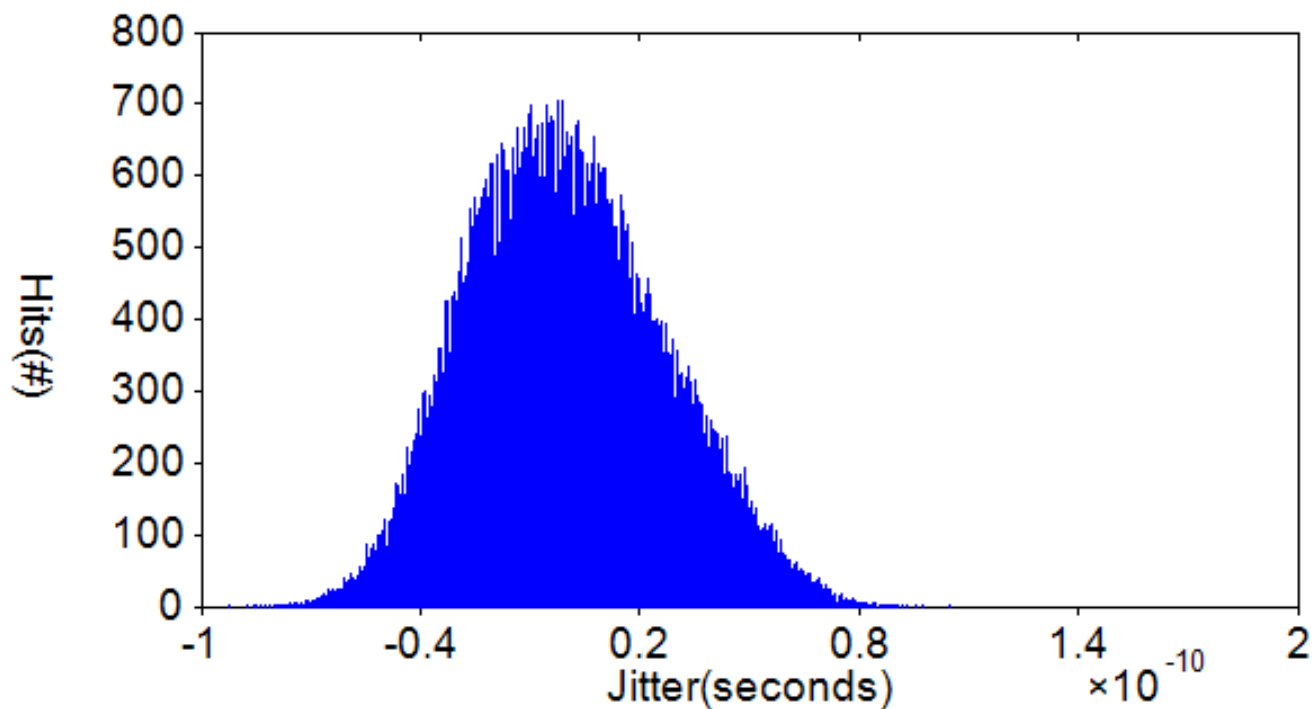
Trial 1 Images
SLAVE 32k filtered jitter



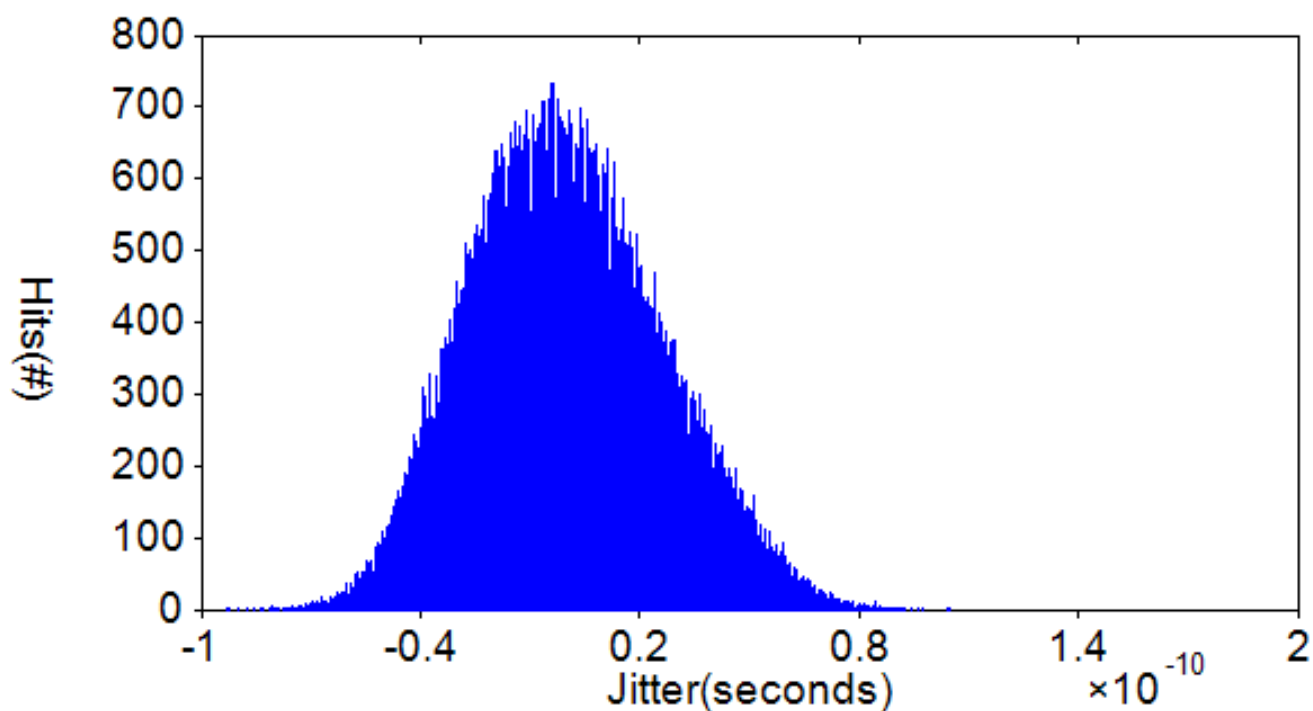
Trial 2 Images
SLAVE 32k filtered jitter




Trial 3 Images
SLAVE 32k filtered jitter



Trial 4 Images
SLAVE 32k filtered jitter



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	1000 Base-T, Jitter SLAVE Unfiltered (w/o TX_TCLK)	
	IEEE Std. 802.3 (Appendix 40.B of the Gigabit Ethernet Consortium, Clause 40 PMA Test Suite Version 2.6 from University of New Hampshire InterOperability Laboratory)	
	This test measures the unfiltered peak-to-peak jitter at the MDI output whereby the SLAVE output is relative to an unjittered reference. The resulting unfiltered SLAVE jitter peak-to-peak value will then be subtracted with the unfiltered MASTER peak-to-peak jitter. The result is only meant for informational purposes and cannot be used as conformance limits. For further information on jitter measurements, consult the user manual.	
	Actual Value Measurement Name: Unfiltered MASTER Jitter (1000 Base-T, Jitter SLAVE Unfiltered (w/o TX_TCLK))	
	Pass Limits: Information Only	

Statistics & Details for all 4 Trials

Trial #	Actual Value	Margin	# Filtered Edges Inspected	SlaveUnfiltered without TX_TCLK
Avg	16.52 p	100.0 %		
StdDev	3.282 p	0.000 %		
Range	6.737 p	0.000 %		
Min	12.53 p	100.0 %		
Max	19.26 p	100.0 %		
Sum	66.07 p	400.0 %		
1 (Worst)	20 p	100.0%	6.249952000 M	(See image)
2	20 p	100.0%	6.249952000 M	(See image)
3	20 p	100.0%	6.249952000 M	(See image)
4	10 p	100.0%	6.249952000 M	(See image)

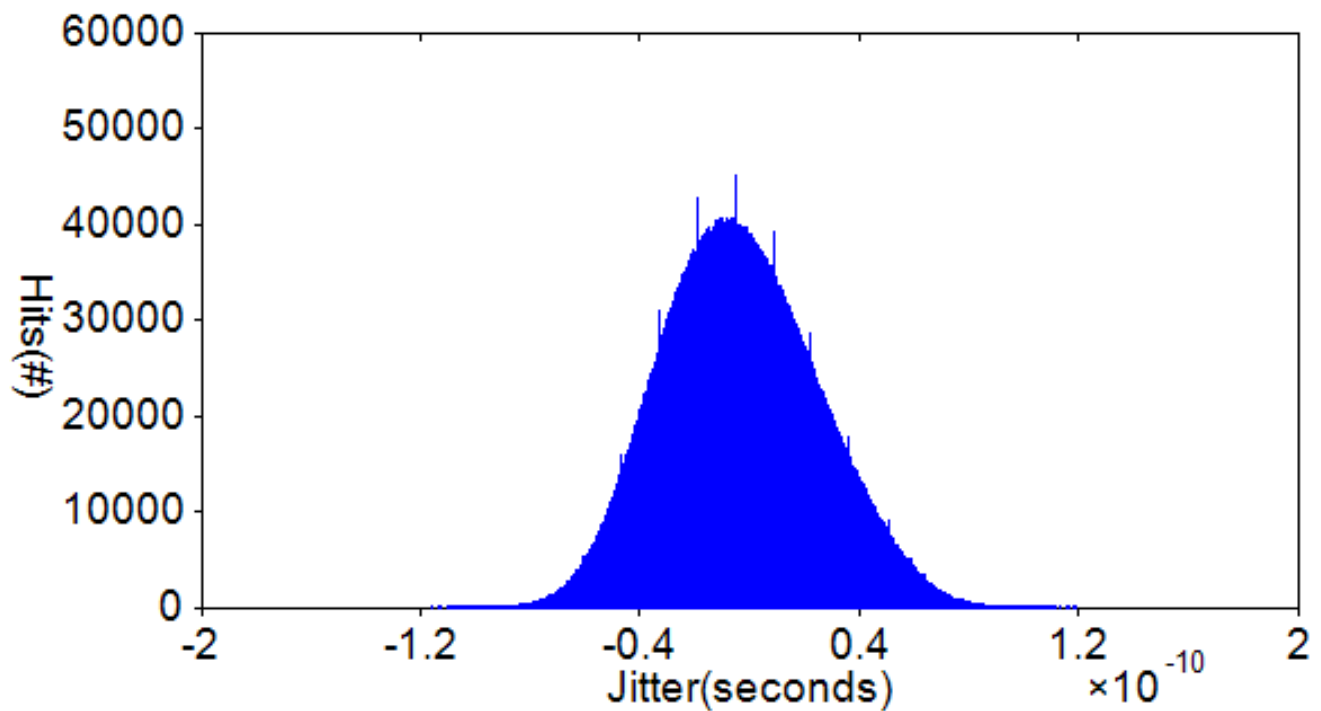
Trial #	REMINDER	PkPk MASTER Unfiltered Jitter
Avg		216.3 ps

	StdDev	0.000 s
	Range	0.000 s
	Min	216.3 ps
	Max	216.3 ps
	Sum	865.2 ps
i 1 (Worst)	The result of this test is merely reported the numerical results for informational purpose only without judging them on a pass/fail basis.	216.29 ps
i 2	The result of this test is merely reported the numerical results for informational purpose only without judging them on a pass/fail basis.	216.29 ps
i 3	The result of this test is merely reported the numerical results for informational purpose only without judging them on a pass/fail basis.	216.29 ps
i 4	The result of this test is merely reported the numerical results for informational purpose only without judging them on a pass/fail basis.	216.29 ps

Trial #	PkPk SLAVE Unfiltered Jitter	Test Pair
Avg	232.8 ps	
StdDev	3.282 ps	
Range	6.737 ps	
Min	228.8 ps	
Max	235.6 ps	
Sum	931.2 ps	
i 1 (Worst)	235.44 ps	BI_DA
i 2	231.42 ps	BI_DB
i 3	235.56 ps	BI_DC
i 4	228.82 ps	BI_DD

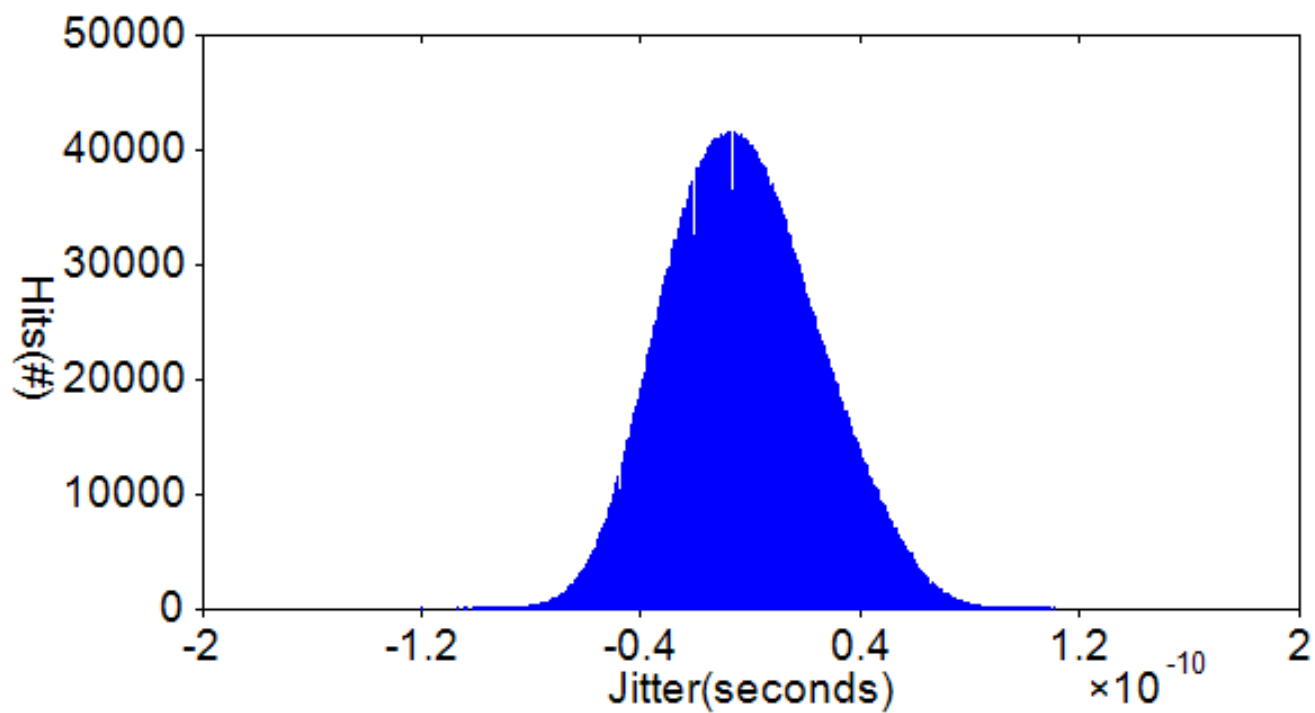
Trial 1 Images

SlaveUnfiltered without TX_TCLK

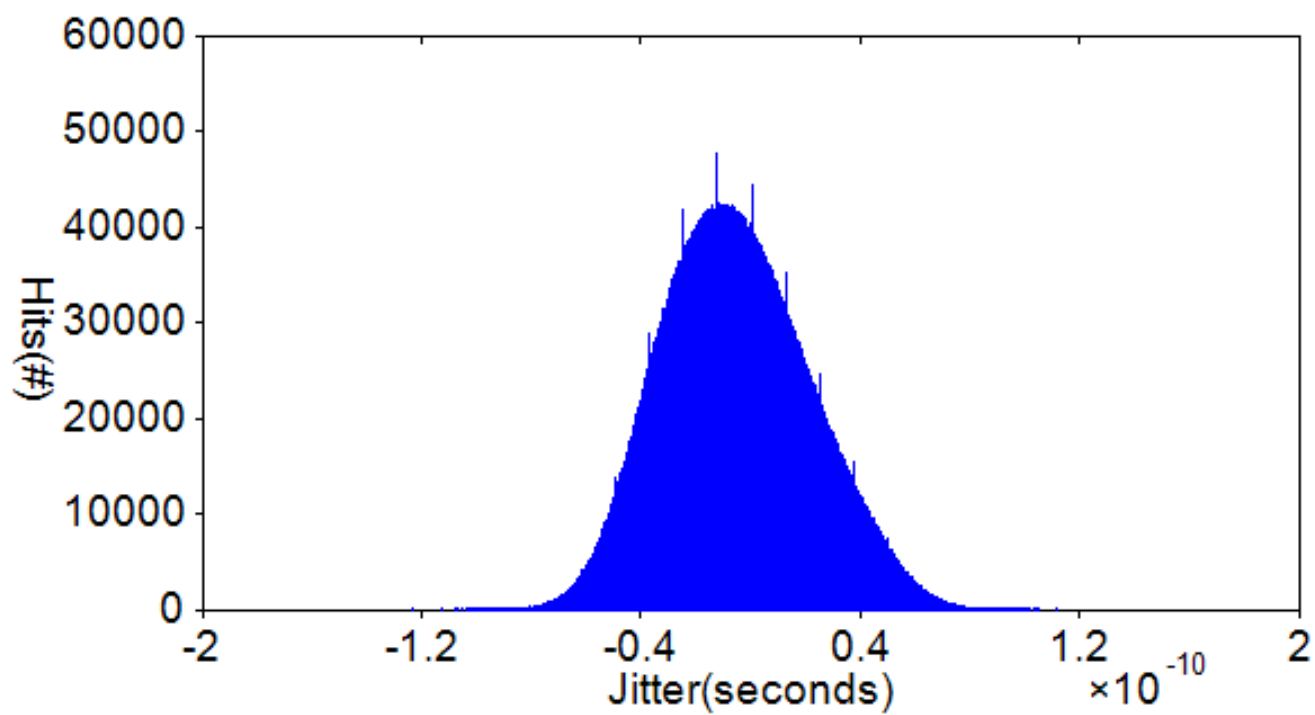


Trial 2 Images

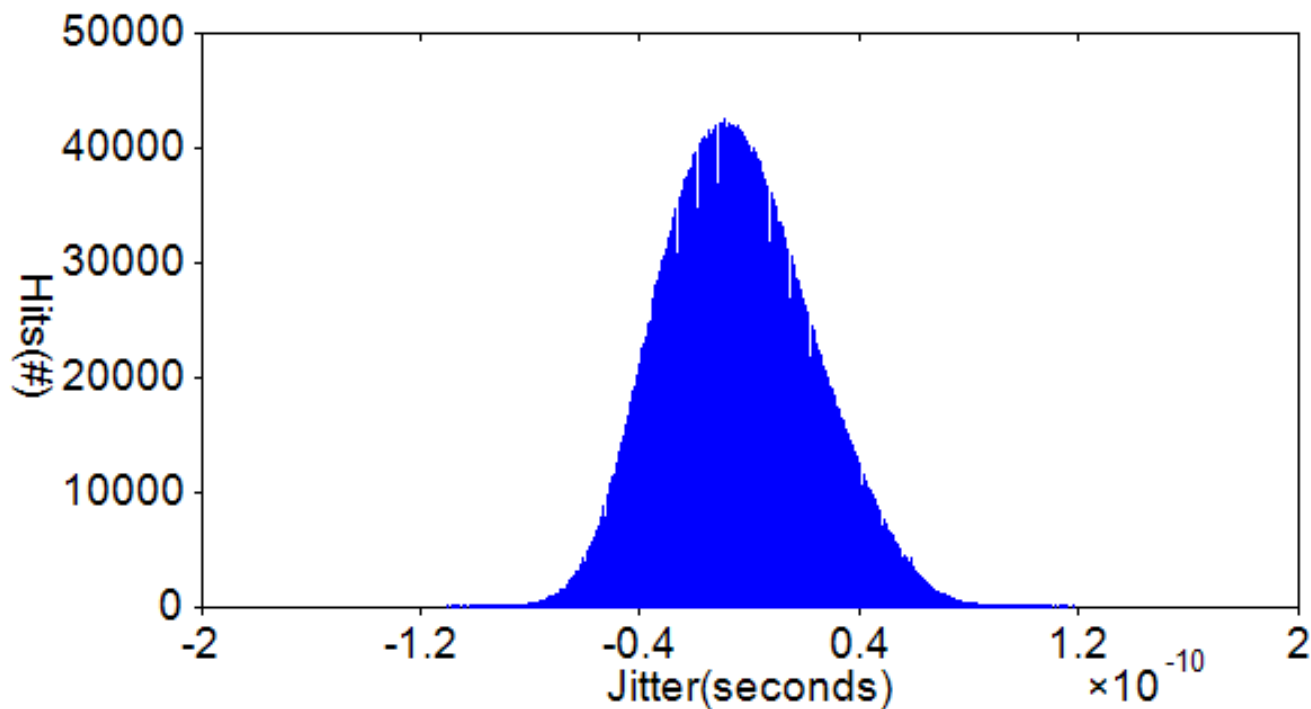
SlaveUnfiltered without TX_TCLK



Trial 3 Images
SlaveUnfiltered without TX_TCLK



Trial 4 Images
SlaveUnfiltered without TX_TCLK



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1000 Base-T, MDI Return Loss

IEEE Std. 802.3 (IEEE802.3-2018 Subclause 40.8.3.1)

The Return Loss obtained must conform to the requirements specified in IEEE802.3-2018 Subclause 40.8.3.1. Pass Limit shall be at least 16 dB over the frequency range of 1.0 MHz to 40 MHz and at least $10 - 20\log_{10}(f/80)$ dB over the frequency range 40 MHz to 100 MHz (f in MHz)

Actual Value Measurement Name: Worst Margin (1000 Base-T, MDI Return Loss)

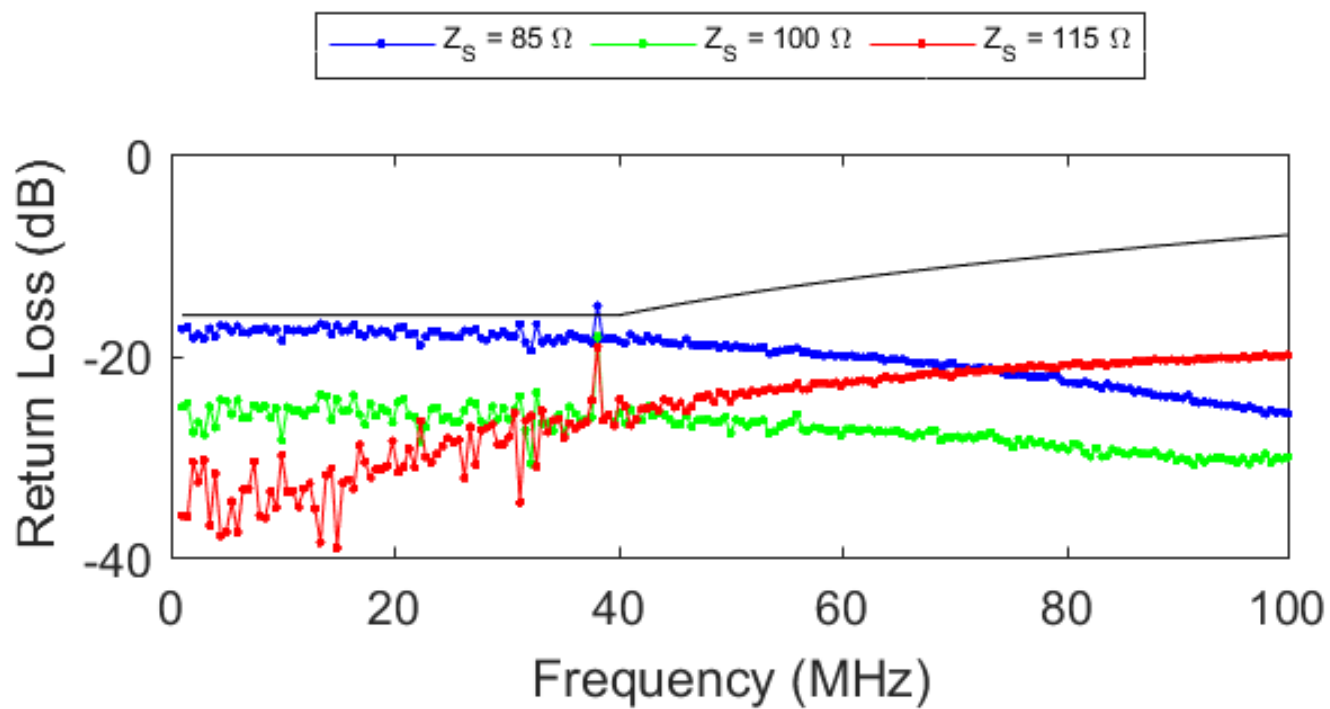
Pass Limits: Overall = Pass

Statistics & Details for all 8 Trials

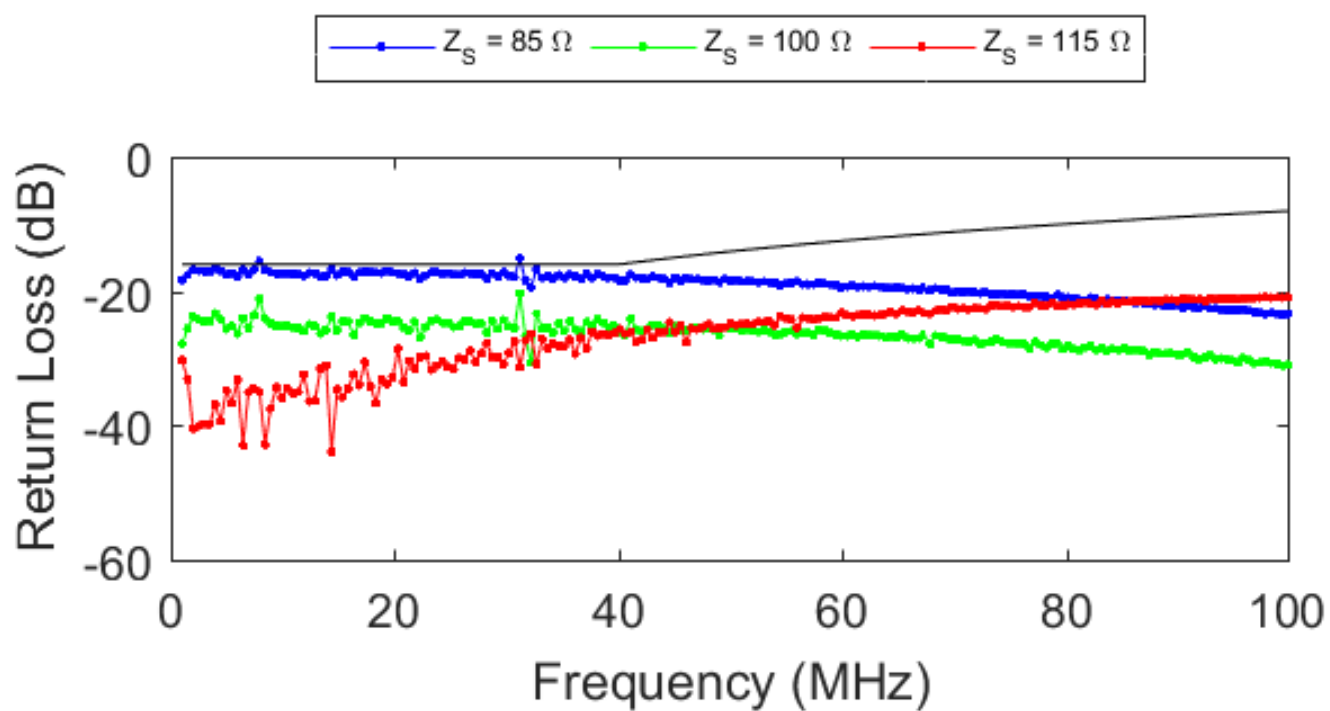
Trial #	Actual Value	Margin	Data File	Return Loss vs. Frequency	Test Pair
Avg	-253.4 mdB	-2.538 %			
StdDev	532.7 mdB	5.320 %			
Range	1.301 dB	13.00 %			
Min	-939.0 mdB	-9.400 %			
Max	362.1 mdB	3.600 %			
Sum	-2.027 dB	-20.30 %			
1 (Worst)	-940 mdB	-9.4%	Using VNA.	(See image)	BI_DA
4	-900 mdB	-9.0%	Using VNA.	(See image)	BI_DD
3	-560 mdB	-5.6%	Using VNA.	(See image)	BI_DC
6	-420 mdB	-4.2%	Using VNA.	(See image)	BI_DB
8	-140 mdB	-1.4%	Using VNA.	(See image)	BI_DD
2	260 mdB	2.6%	Using VNA.	(See image)	BI_DB
5	310 mdB	3.1%	Using VNA.	(See image)	BI_DA
7	360 mdB	3.6%	Using VNA.	(See image)	BI_DC

Trial 1 Images

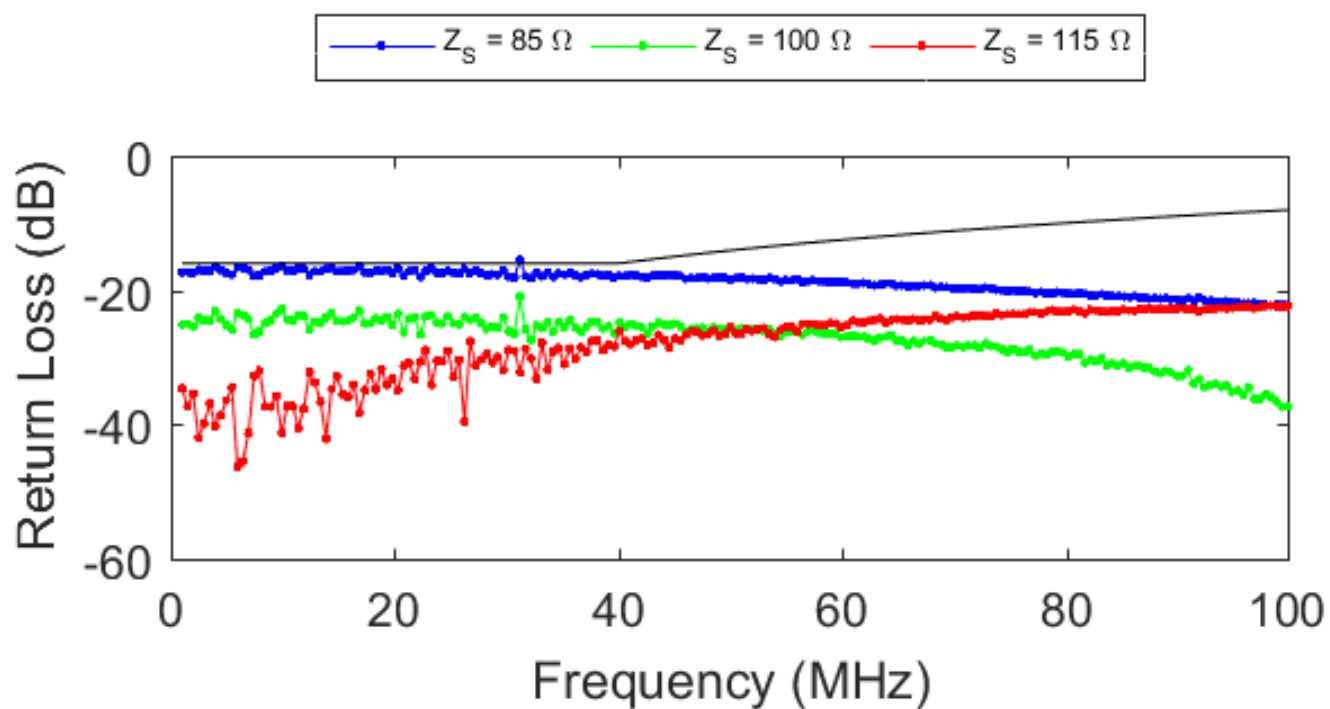
Return Loss vs. Frequency



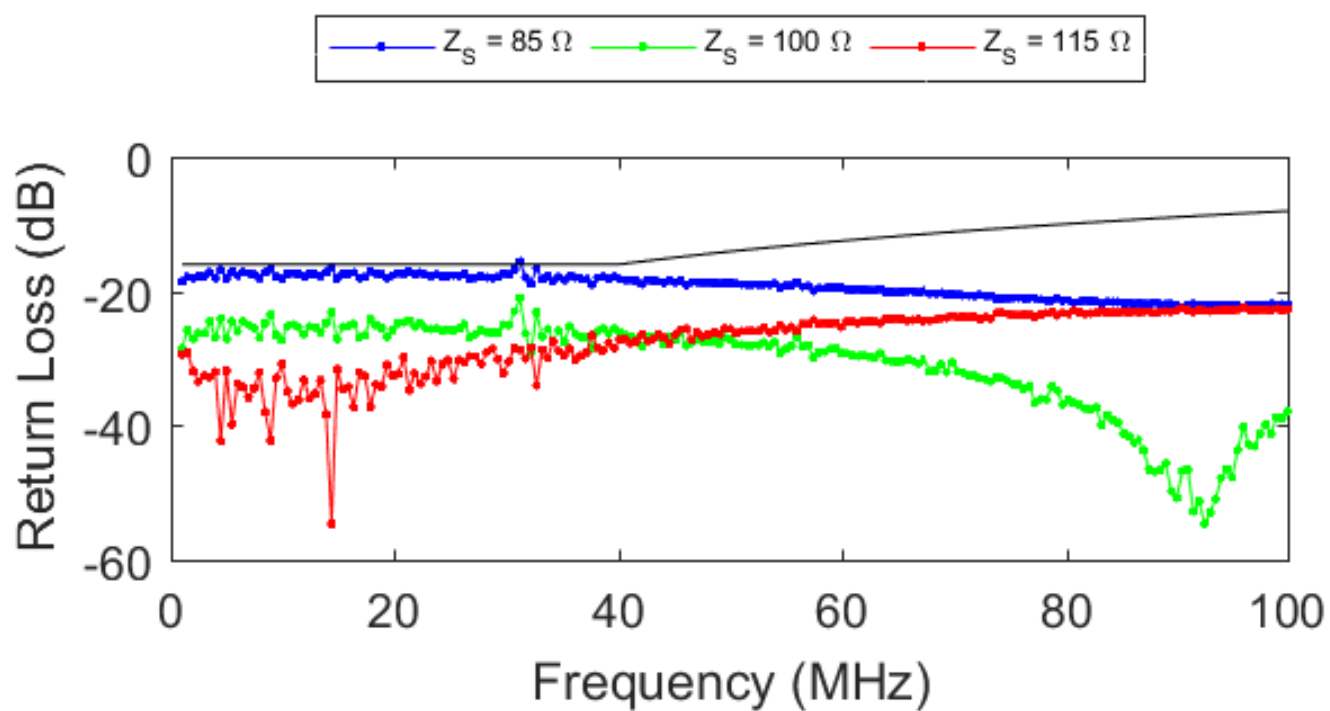
Trial 4 Images
Return Loss vs. Frequency



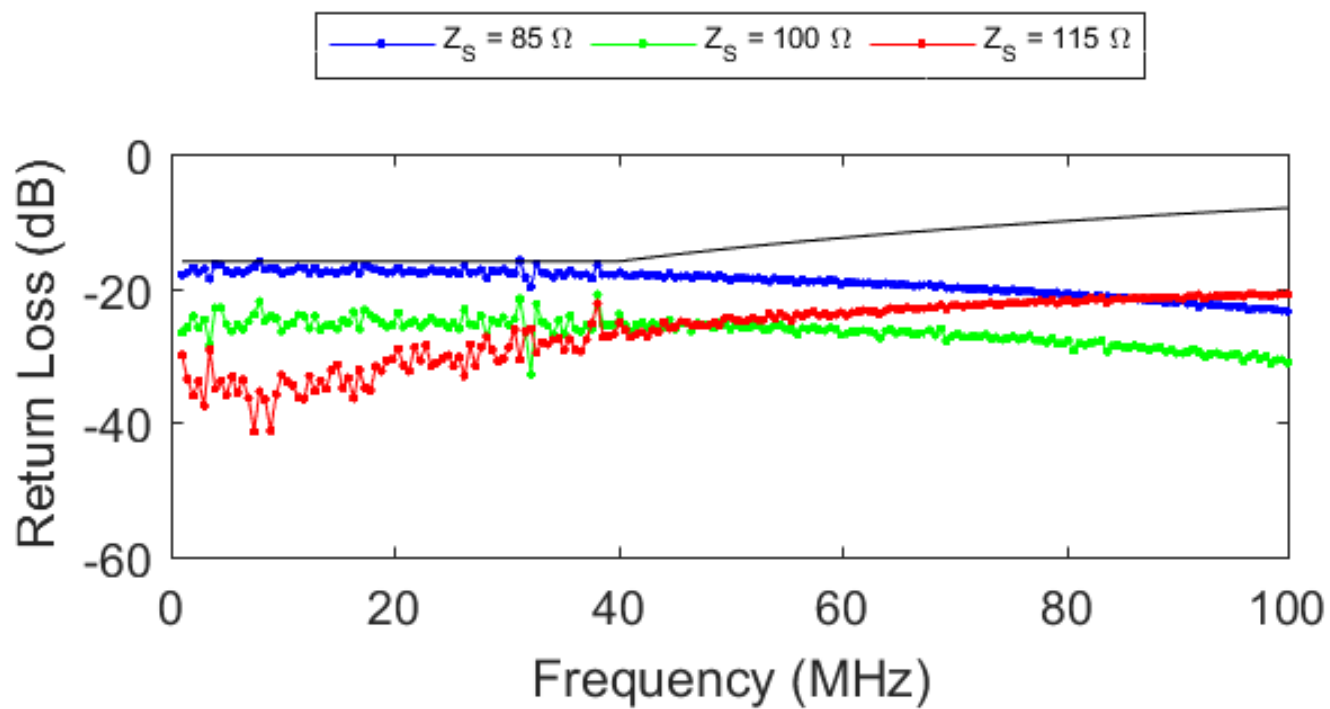
Trial 3 Images
Return Loss vs. Frequency



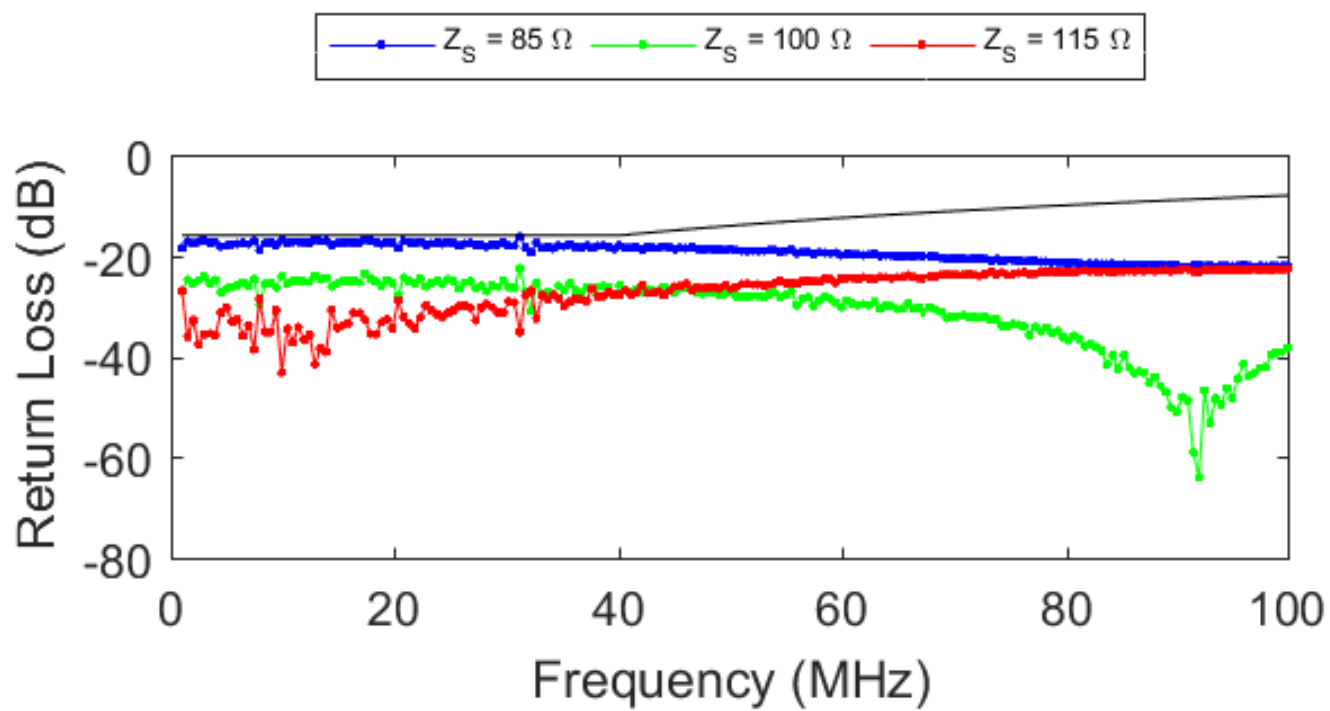
Trial 6 Images
Return Loss vs. Frequency



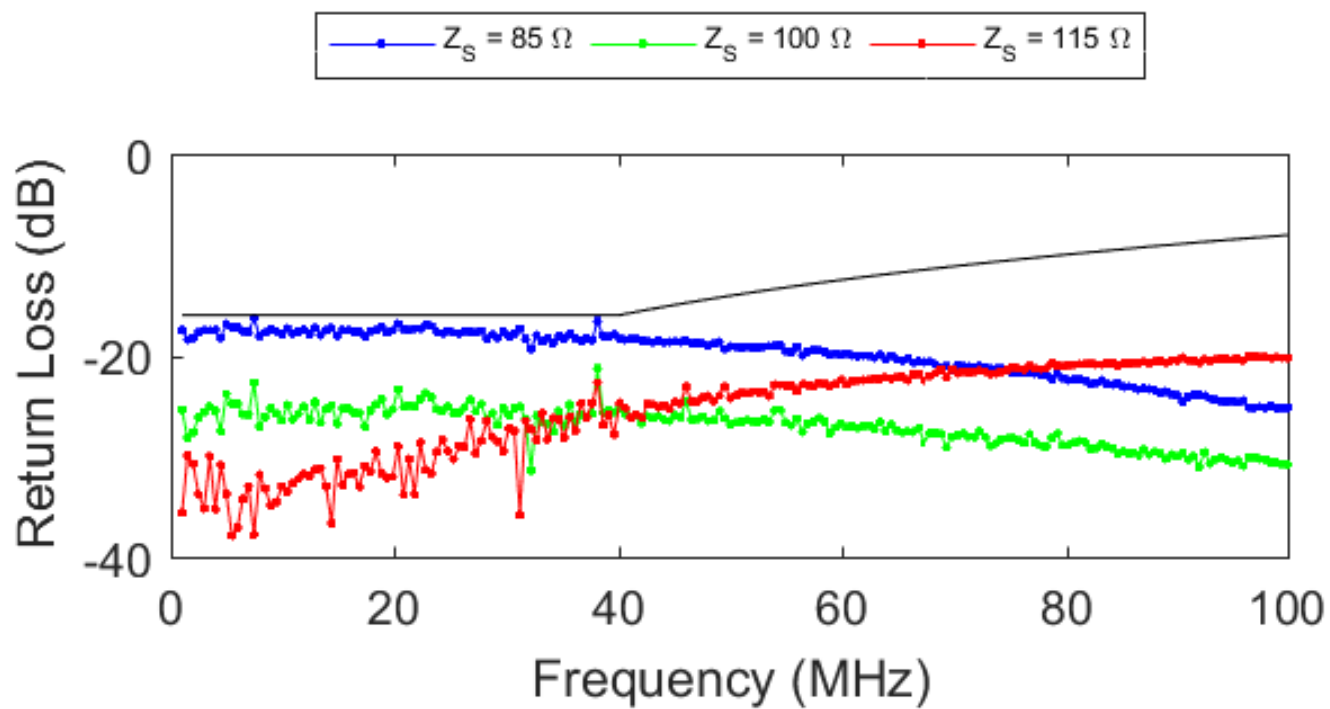
Trial 8 Images
Return Loss vs. Frequency



Trial 2 Images
Return Loss vs. Frequency



Trial 5 Images
Return Loss vs. Frequency



Trial 7 Images
Return Loss vs. Frequency

