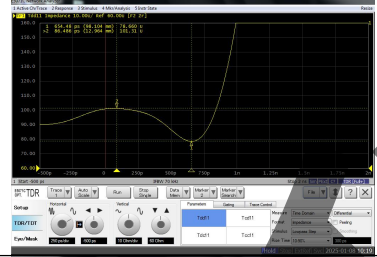
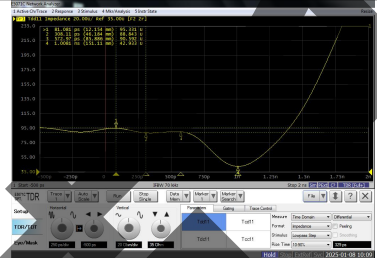


附表1

Type-A口VBus Drop下跌测试				
序号	带载条件(mA)	VBus实测电压(V)	标准要求(V)	判定结果
1	0	5.131	4.75~5.25	P
2	500	5.099		P
3	1500	5.098		P

附表2

USB2.0阻抗测试						
序号	被测端口	测试图片	阻抗最大值(Ω)	阻抗最小值(Ω)	标准要求(Ω)	判定结果
1	HSD口		101.31	78.66	70~100	P
2	Type-A口		95.331	42.933	70~100	F



附表3-HSD口高速-5m线

Test Report

Pass

Test Configuration Details	
Application	
Name	D9010USBC USB Test
Version	4.14.0.0
Device Description	
Device Test Point	Device
Embedded Host	No
TypeCEnable	No
Test Session Details	
Infiniium SW Version	06.74.00701
Infiniium Model Number	DSAV334A
Infiniium Serial Number	MY63160102
Debug Mode Used	No
Compliance Limits	Specification 1.00 (official)
Probe (Channel 1)	Model: 1169A Serial: US55012395 Head: E2678A/B Atten: Calibrated (9 JAN 2025 11:21:38), Using Cal Atten (3.2573E+00) Skew: Calibrated (9 JAN 2025 11:21:50), Using Cal Skew
Probe (Channel 2)	Model: 1169A Serial: US44240217 Head: N5380A/B Atten: Calibrated (8 JAN 2025 20:29:19), Using Cal Atten (2.0967E+00) Skew: Calibrated (8 JAN 2025 20:29:28), Using Cal Skew
Probe (Channel 3)	Model: 1169A Serial: US54031867 Head: N5380A/B Atten: Calibrated (8 JAN 2025 20:30:06), Using Cal Atten (2.0036E+00) Skew: Calibrated (8 JAN 2025 20:30:16), Using Cal Skew
Probe (Channel 4)	Model: 1169A Serial: US55012366 Head: N5380A/B Atten: Calibrated (8 JAN 2025 20:30:53), Using Cal Atten (2.1053E+00) Skew: Calibrated (8 JAN 2025 20:31:03), Using Cal Skew
Last Test Date	2025-01-09 11:37:51 UTC +08:00

Summary of Results

Test Statistics		Margin Thresholds	
Failed	0	Warning	< 5 %
Passed	4	Critical	< 0 %
Total	4		

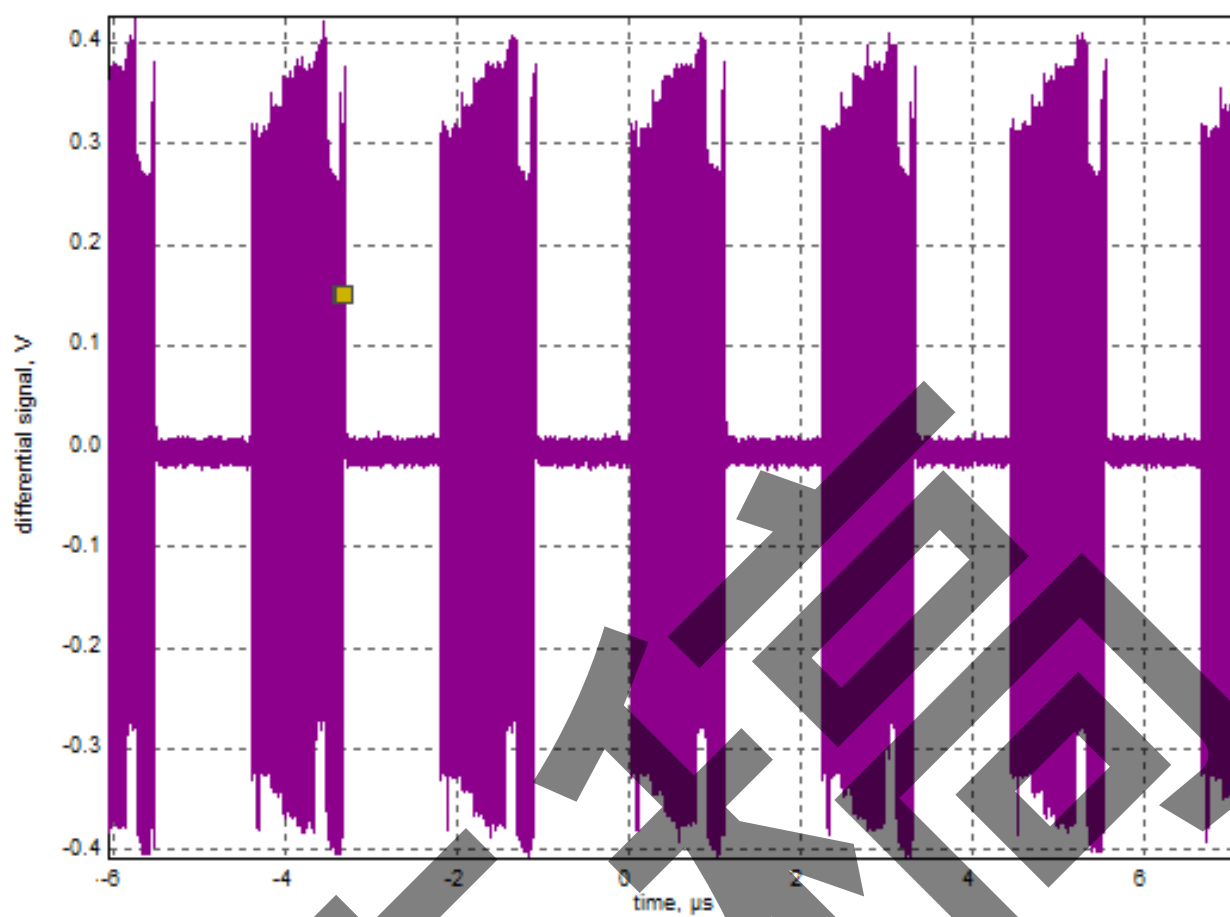
Pass	# Failed	# Trials	Test Name (click to jump)	Actual Value	Margin	Pass Limits
✓	0	1	EL_2_EL_4_EL_5 Data Eye and Mask Test	Pass	100.000 %	Pass/Fail
i	0	1	EL_6 Device Rise Time	1.138810 kps	100.000 %	Information Only
i	0	1	EL_6 Device Fall Time	1.098910 kps	100.000 %	Information Only
✓	0	1	EL_7 Device Non-Monotonic Edge Test	Pass	100.000 %	Pass/Fail

Report Detail

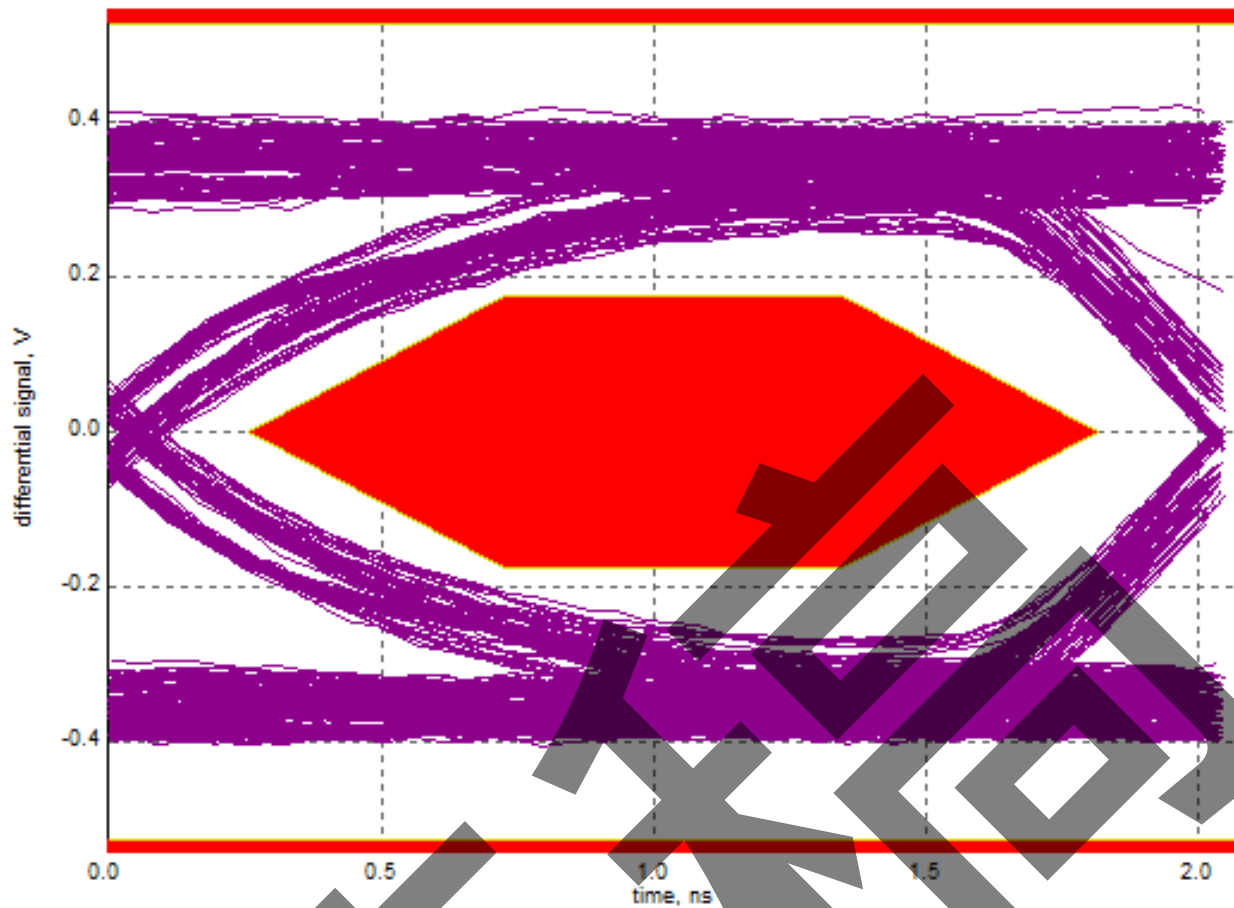
[Summary](#)[Next](#)

<

Test Packet



Eye Diagram

[Summary](#) [Previous](#) [Next](#)**EL_6 Device Rise Time**

USB 2.0 Specification, Section 7.1.2.2.

EL_6: A USB 2.0 HS driver must have a differential rise and fall times of greater than 300ps. However, slew rate measurement will be made and expressed in terms of (V/us) to ensure waveform with slow corners will not result in a measured rise/fall time that is slower than the actual edge rate. The conversion from rise time to edge rate uses the specified rise time over 80% of the nominal peak to peak signal amplitude.

Actual Value Measurement Name: Device Packet Rise Time (>300ps)

Pass Limits: Information Only

Actual Value	Margin	Test Condition	Rise Time
1.138810 kps	100.000 %	Pass	1.138810 kps

[Summary](#) [Previous](#) [Next](#)**EL_6 Device Fall Time**

USB 2.0 Specification, Section 7.1.2.2.

EL_6: A USB 2.0 HS driver must have a differential rise and fall times of greater than 300ps. However, slew rate measurement will be made and expressed in terms of (V/us) to ensure waveform with slow corners will not result in a measured rise/fall time that is slower than the actual edge rate. The conversion from rise time to edge rate uses the specified rise time over 80% of the nominal peak to peak signal amplitude.

Actual Value Measurement Name: Device Packet Fall Time (>300ps)

Pass Limits: Information Only

Actual Value	Margin	Test Condition	Fall Time
1.098910 kps	100.000 %	Pass	1.098910 kps

[Summary](#) [Previous](#)**EL_7 Device Non-Monotonic Edge Test**

USB 2.0 Specification, Section 7.1.2.2.

EL_7: A USB 2.0 HS driver must have monotonic data transitions over the vertical openings specified in the appropriate eye pattern template.

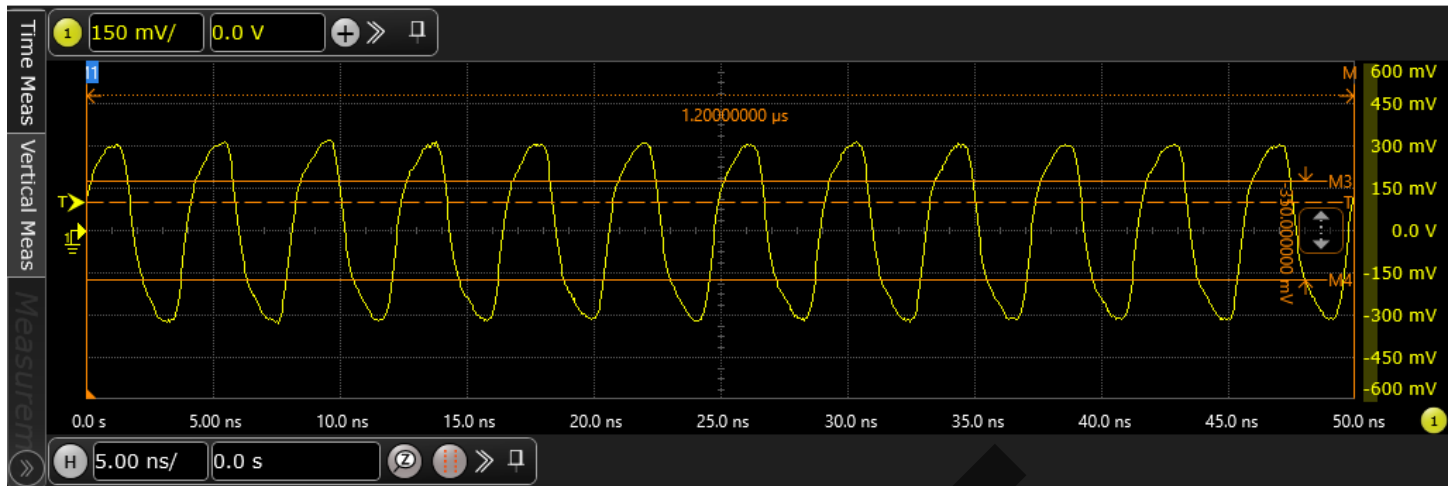
Actual Value Measurement Name: Non-Monotonic Edge

Pass Limits: Pass/Fail

Actual Value	Margin
Pass	100.000 %

Non-Monotonic Edge

Keysight Infiniium : Thursday, January 9, 2025 11:37:51 AM





附表4-HSD口高速-0.1m线

Test Report

Pass

Test Configuration Details	
Application	
Name	D9010USBC USB Test
Version	4.14.0.0
Device Description	
Device Test Point	Device
Embedded Host	No
TypeCEnable	No
Test Session Details	
Infiniium SW Version	06.74.00701
Infiniium Model Number	DSAV334A
Infiniium Serial Number	MY63160102
Debug Mode Used	No
Compliance Limits	Specification 1.00 (official)
Probe (Channel 1)	Model: 1169A Serial: US55012395 Head: E2678A/B Atten: Calibrated (9 JAN 2025 21:27:53), Using Cal Atten (3.2453E+00) Skew: Calibrated (9 JAN 2025 21:28:07), Using Cal Skew
Probe (Channel 2)	Model: 1169A Serial: US44240217 Head: E2678A/B Atten: Calibrated (9 JAN 2025 21:30:15), Using Cal Atten (3.2496E+00) Skew: Calibrated (9 JAN 2025 21:30:28), Using Cal Skew
Probe (Channel 3)	Model: 1169A Serial: US54031867 Head: N2839A Atten: Calibrated (10 JAN 2025 09:44:21), Using Cal Atten (3.1271E+00) Skew: Calibrated (10 JAN 2025 09:44:31), Using Cal Skew
Probe (Channel 4)	Model: 1169A Serial: US55012366 Head: N5380A/B Atten: Calibrated (8 JAN 2025 20:30:53), Using Cal Atten (2.1053E+00) Skew: Calibrated (8 JAN 2025 20:31:03), Using Cal Skew
Last Test Date	2025-01-10 15:21:40 UTC +08:00

Summary of Results

Test Statistics		Margin Thresholds	
Failed	0	Warning	< 5 %
Passed	4	Critical	< 0 %
Total	4		

Pass	# Failed	# Trials	Test Name (click to jump)	Actual Value	Margin	Pass Limits
✓	0	1	EL_2_EL_4_EL_5 Data Eye and Mask Test	Pass	100.000 %	Pass/Fail
i	0	1	EL_6 Device Rise Time	686.390 ps	100.000 %	Information Only
i	0	1	EL_6 Device Fall Time	678.510 ps	100.000 %	Information Only
✓	0	1	EL_7 Device Non-Monotonic Edge Test	Pass	100.000 %	Pass/Fail

Report Detail

Summary

Next

EL_2 EL_4 EL_5 Data Eye and Mask Test

Summary

Test

USB 2.0 Specification, Section 7.1.11., Section 7.1.2.2.

EL_2: A USB 2.0 hi-Speed transmitter data rate must be 480Mb/s +/- 0.05%.

EL_4: A USB 2.0 upstream facing port on a device without a captive cable must meet Template 1 transform waveform requirements measured at TP3.

EL_5: A USB 2.0 upstream facing port on a device with a captive cable must meet Template 2 transform waveform requirements measured at TP2.

Actual Value Measurement Name: Device Data Eye Test

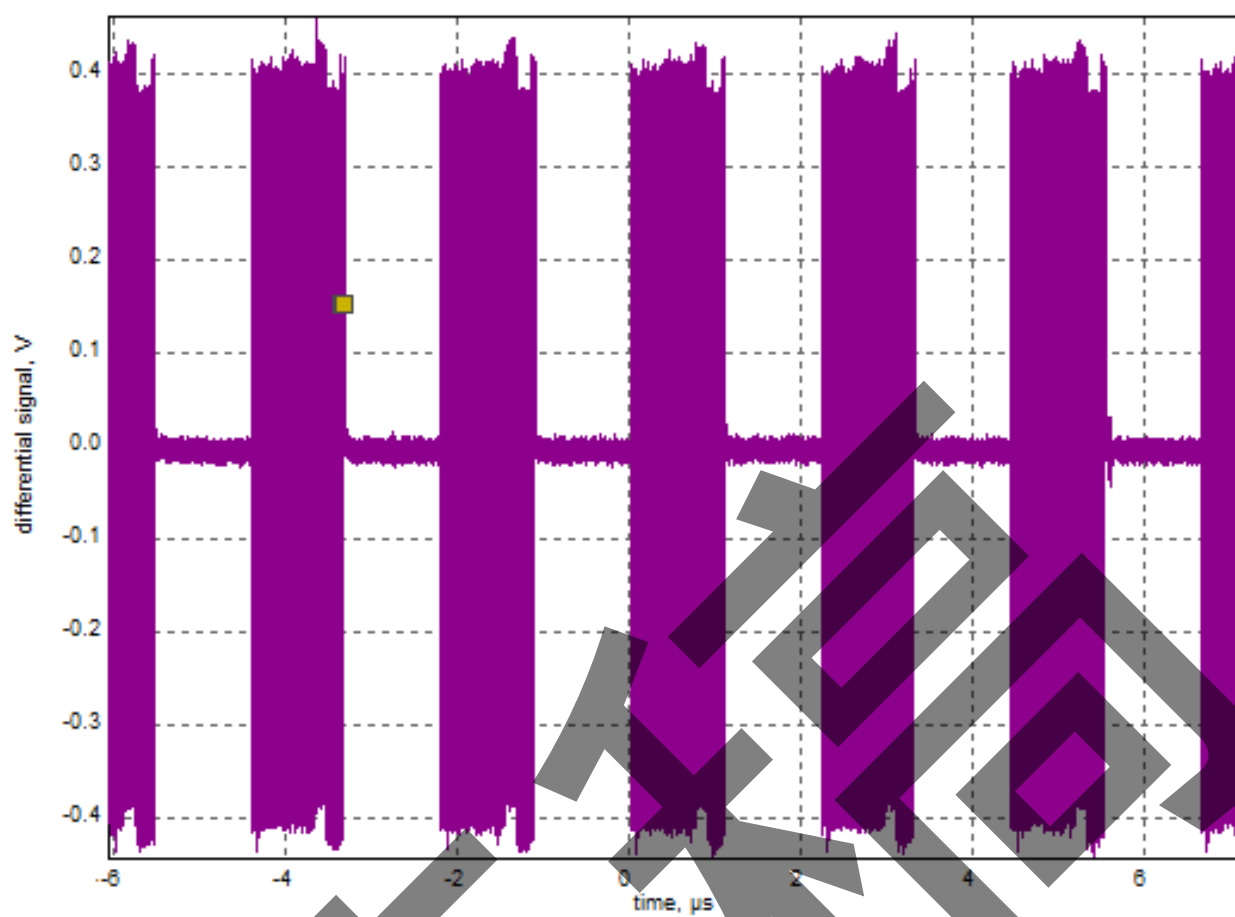
Pass Limits: Pass/Fail

Actual Value	Margin	Test Packet	Eye Diagram	OptHSSignalQuality	Test Type	Signal Eye	Signal Eye Failure	EOP Width Test
Pass	100.000 %	(See image)	(See image)	DifferentialSQ	High-Speed Far End	eye passes	N/A	Pass

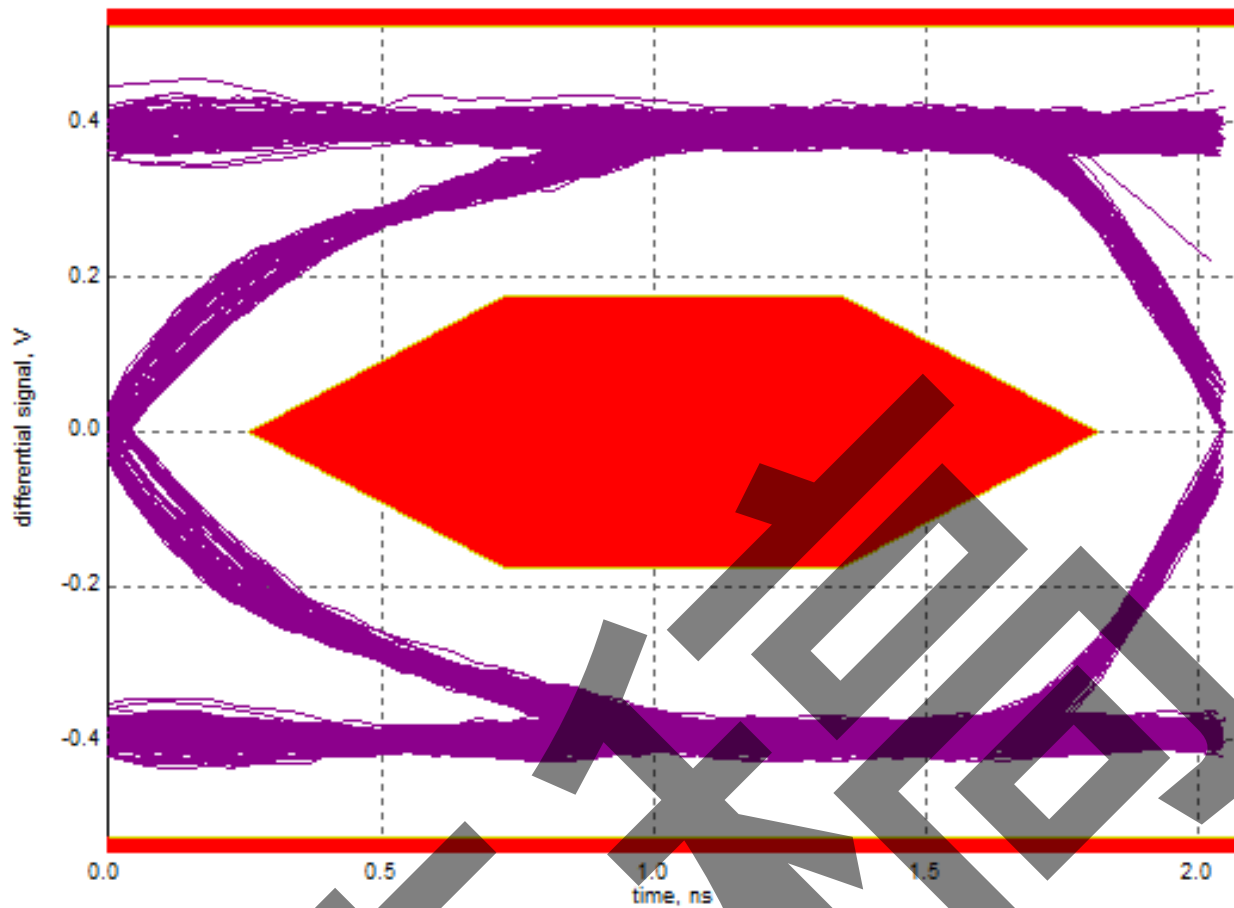
EOP Width	Signal Rate	Signal Rate Test	Signal Rate Failure	Consecutive Jitter Range	Consecutive RMS Jitter	Paired JK Jitter Range
7.94	480.0370 MHz	Pass	N/A	-37.562 ps to 45.448 ps	23.019 ps	-53.752 ps to 48.876 ps

Paired JK RMS Jitter	Paired KJ Jitter Range	Paired KJ RMS Jitter	RisngEdge	FallingEdge	USB Port Under Test
11.888 ps	-48.172 ps to 27.583 ps	10.748 ps	932.41	943.24	Port 2

Test Packet



Eye Diagram

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EL_6 Device Rise Time

USB 2.0 Specification, Section 7.1.2.2.

EL_6: A USB 2.0 HS driver must have a differential rise and fall times of greater than 300ps. However, slew rate measurement will be made and expressed in terms of (V/us) to ensure waveform with slow corners will not result in a measured rise/fall time that is slower than the actual edge rate. The conversion from rise time to edge rate uses the specified rise time over 80% of the nominal peak to peak signal amplitude.

Actual Value Measurement Name: Device Packet Rise Time (>300ps)

Pass Limits: Information Only

Actual Value	Margin	Test Condition	Rise Time
686.390 ps	100.000 %	Pass	686.390 ps

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EL_6 Device Fall Time

USB 2.0 Specification, Section 7.1.2.2.

EL_6: A USB 2.0 HS driver must have a differential rise and fall times of greater than 300ps. However, slew rate measurement will be made and expressed in terms of (V/us) to ensure waveform with slow corners will not result in a measured rise/fall time that is slower than the actual edge rate. The conversion from rise time to edge rate uses the specified rise time over 80% of the nominal peak to peak signal amplitude.

Actual Value Measurement Name: Device Packet Fall Time (>300ps)

Pass Limits: Information Only

Actual Value	Margin	Test Condition	Fall Time
678.510 ps	100.000 %	Pass	678.510 ps

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EL_7 Device Non-Monotonic Edge Test

USB 2.0 Specification, Section 7.1.2.2.

EL_7: A USB 2.0 HS driver must have monotonic data transitions over the vertical openings specified in the appropriate eye pattern template.

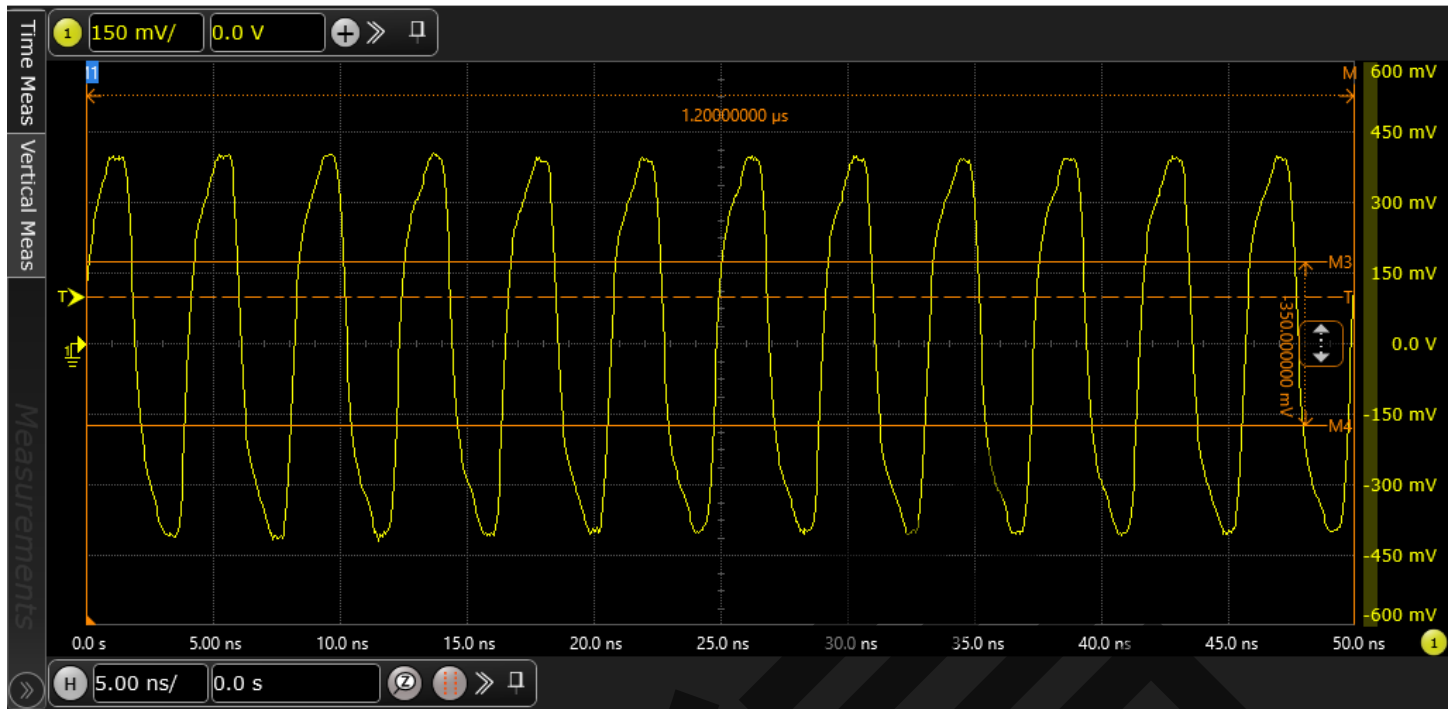
Actual Value Measurement Name: Non-Monotonic Edge

Pass Limits: Pass/Fail

Actual Value	Margin
Pass	100.000 %

Non-Monotonic Edge

Keysight Infiniium : Friday, January 10, 2025 3:21:39 PM



Test Report

Pass

Test Configuration Details

Application	
Name	D9010USBC USB Test
Version	4.14.0.0
Device Description	
Device Test Point	Device
Embedded Host	No
TypeCEnable	No
Test Session Details	
Infiniium SW Version	06.74.00701
Infiniium Model Number	DSAV334A
Infiniium Serial Number	MY63160102
Debug Mode Used	No
Compliance Limits	Specification 1.00 (official)
Probe (Channel 1)	Model: 1169A Serial: US55012395 Head: E2678A/B Atten: Calibrated (9 JAN 2025 11:21:38), Using Cal Atten (3.2573E+00) Skew: Calibrated (9 JAN 2025 11:21:50), Using Cal Skew
Probe (Channel 2)	Model: 1169A Serial: US44240217 Head: E2678A/B Atten: Calibrated (9 JAN 2025 11:48:20), Using Cal Atten (3.2714E+00) Skew: Calibrated (9 JAN 2025 11:48:49), Using Cal Skew
Probe (Channel 3)	Model: 1169A Serial: US54031867 Head: N5380A/B Atten: Calibrated (8 JAN 2025 20:30:06), Using Cal Atten (2.0036E+00) Skew: Calibrated (8 JAN 2025 20:30:16), Using Cal Skew
Probe (Channel 4)	Model: 1169A Serial: US55012366 Head: N5380A/B Atten: Calibrated (8 JAN 2025 20:30:53), Using Cal Atten (2.1053E+00) Skew: Calibrated (8 JAN 2025 20:31:03), Using Cal Skew
Last Test Date	2025-01-09 12:20:03 UTC +08:00

Summary of Results

Test Statistics		Margin Thresholds	
Failed	0	Warning	< 5 %
Passed	3	Critical	< 0 %
Total	3		

Pass	# Failed	# Trials	Test Name (click to jump)	Actual Value	Margin	Pass Limits
	0	1	Upstream Full Speed Signal Quality Test	Pass	100.000 %	Pass/Fail
	0	1	Upstream Full Speed Rise Time Test (information only)	16.380 ns	100.000 %	Information Only
	0	1	Upstream Full Speed Fall Time Test (information only)	18.770 ns	100.000 %	Information Only

Report Detail

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Upstream Full Speed Signal Quality Test

USB 2.0 Specification, Section 7.1.11.,Section 7.1.2.1.

The full-speed data rate is nominally 12.000Mb/s. For both full-speed and low-speed signaling, the crossover voltage must be between 1.3V and 2.0V.
Actual Value Measurement Name: Overall Data Eye Test
Pass Limits: Pass/Fail

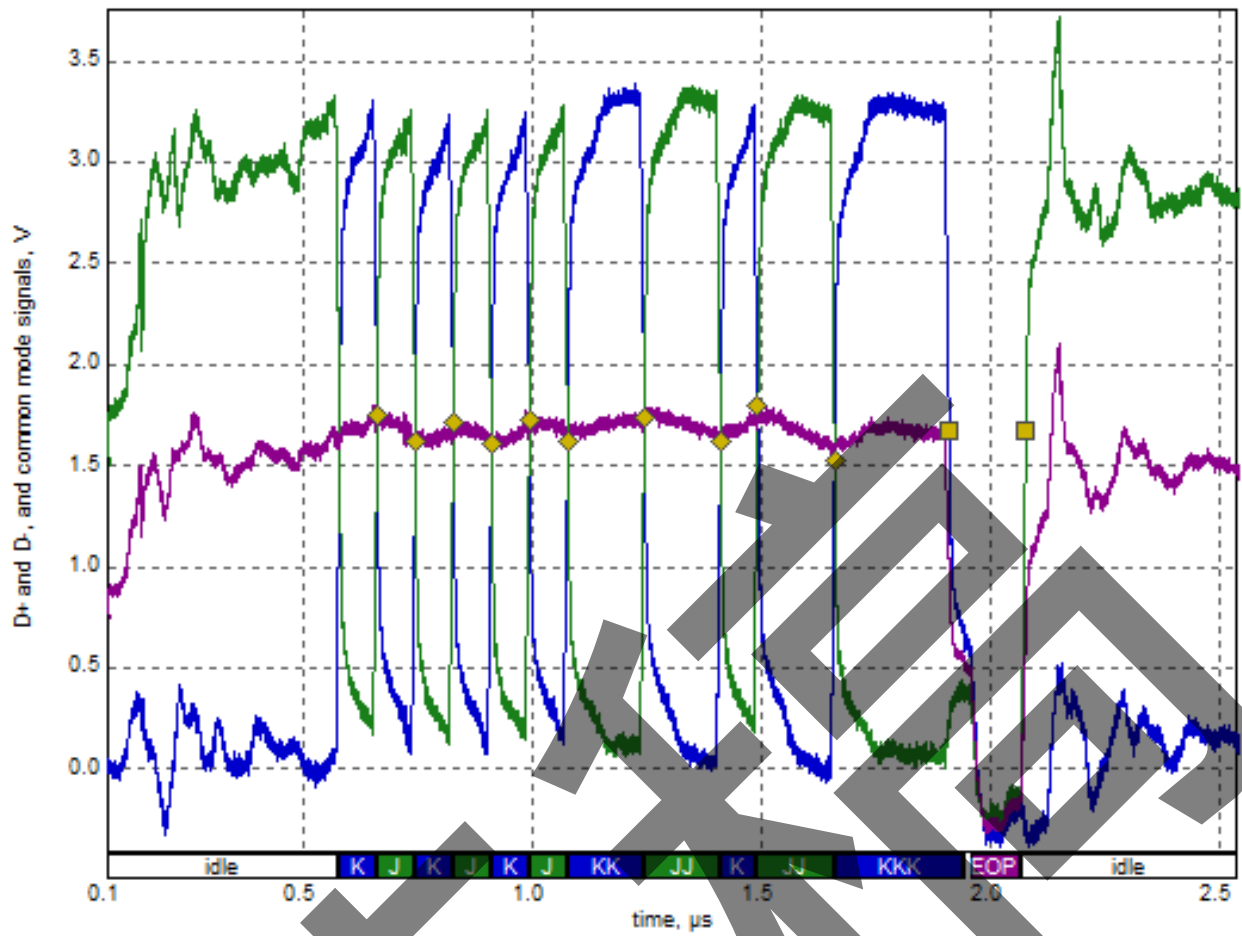
Actual Value	Margin	USB Port Under Test	Test Packet	Eye Diagram	LSFS Signal Eye	LSFS Signal Eye Failure	LSFS EOP Width Test
Pass	100.000 %	Port 1	(See image)	(See image)	eye passes	N/A	Pass

LSFS EOP Width	LSFS Receivers	LSFS Signal Rate	LSFS Signal Rate Test	LSFS Signal Rate Failure	LSFS Cross Over	LSFS Cross Over Mean
167.45 ns	N/A	12.0008 MHz	Pass	N/A	1.52 V to 1.80 V	1.67 V

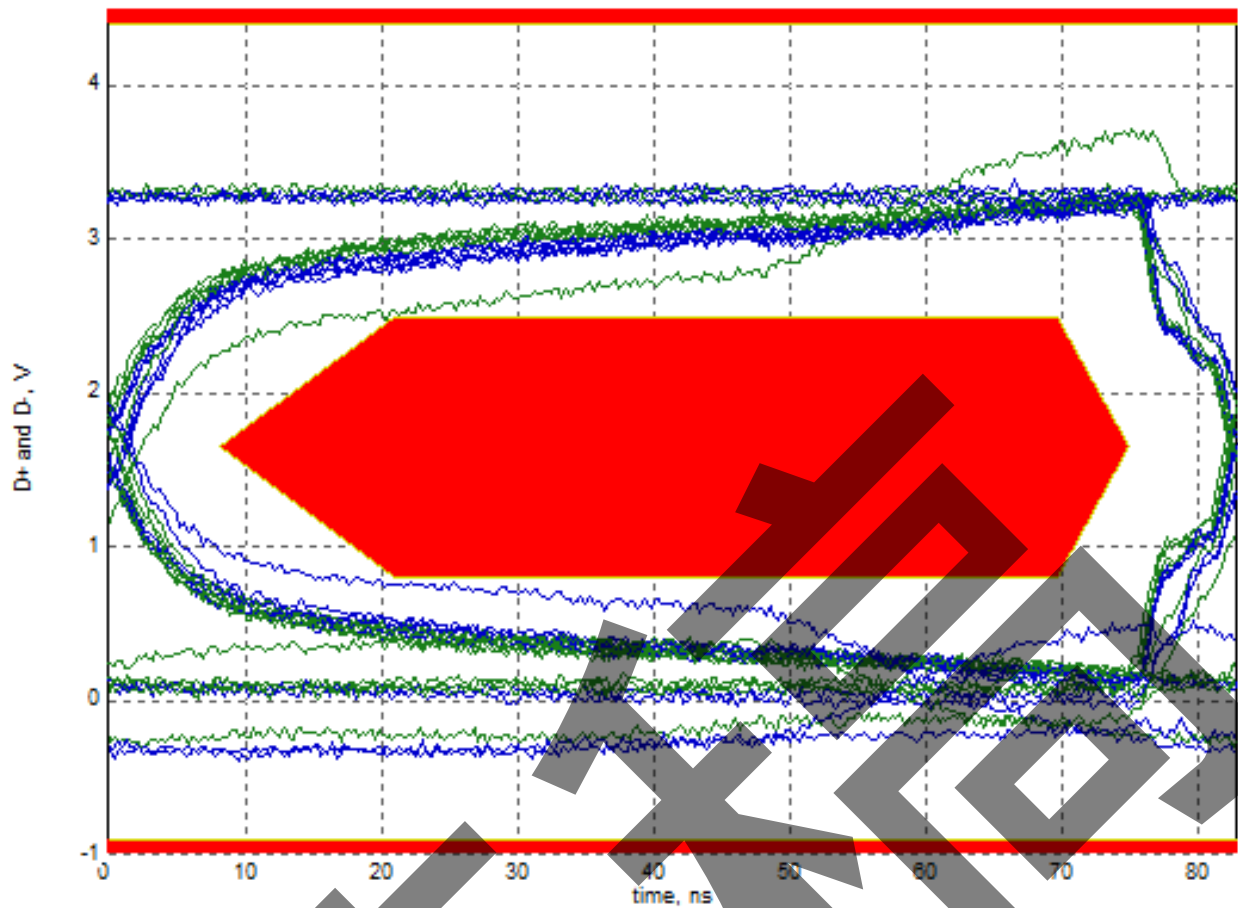
LSFS Consecutive Jitter Range	LSFS Consecutive RMS Jitter	LSFS Paired JK Jitter Range	LSFS Paired JK RMS Jitter Range
-660.320 ps to 1460.137 ps	787.511 ps	-1616.704 ps to 1694.148 ps	1359.869 ps

LSFS Paired KJ Jitter Range	LSFS Paired KJ RMS Jitter Range	LSFS Jitter	RisngEdge	FallingEdge
-1785.532 ps to -50.448 ps	1033.214 ps	Failed	161.17	140.68

Test Packet



Eye Diagram



Overall Data Eye Test

Keysight Infiniium : Thursday, January 9, 2025 12:20:02 PM

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i	Upstream Full Speed Rise Time Test (information only)	USB 2.0 Specification, Section 7.1.11., Section 7.1.2.2.
A USB Full Speed driver must have a single-ended rise and fall times between 4ns and 20ns. However, slew rate measurement will be made and expressed in terms of (V/us) to ensure waveform with slow corners will not result in a measured rise/fall time that is slower than the actual edge rate. The conversion from rise time to edge rate uses the specified rise time over 80% of the nominal peak to peak signal amplitude.		
Actual Value Measurement Name: Rise Time Test [1005]		
Pass Limits: Information Only		

Actual Value	Margin	Test Condition	Test Range	Rise Time
--------------	--------	----------------	------------	-----------

16.380 ns	100.000 %	Pass	4ns <= Actual Value <= 20ns	16.380 ns
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Upstream Full Speed Fall Time Test (information only)

USB 2.0 Specification, Section 7.1.11.,Section 7.1.2.2.

A USB Full Speed driver must have a single-ended rise and fall times between 4ns and 20ns. However, slew rate measurement will be made and expressed in terms of (V/us) to ensure waveform with slow corners will not result in a measured rise/fall time that is slower than the actual edge rate. The conversion from rise time to edge rate uses the specified rise time over 80% of the nominal peak to peak signal amplitude.

Actual Value Measurement Name: Fall Time Test [1006]

Pass Limits: Information Only

Actual Value	Margin	Test Condition	Test Range	Fall Time
18.770 ns	100.000 %	Pass	4ns <= Actual Value <= 20ns	18.770 ns



Test Report

Pass

Test Configuration Details

Application	
Name	D9010USBC USB Test
Version	4.14.0.0
Device Description	
Device Test Point	Host
Embedded Host	No
TypeCEnable	No
Test Session Details	
Infiniium SW Version	06.74.00701
Infiniium Model Number	DSAV334A
Infiniium Serial Number	MY63160102
Debug Mode Used	No
Compliance Limits	Specification 1.00 (official)
Probe (Channel 1)	Model: 1169A Serial: US55012395 Head: E2678A/B Atten: Calibrated (9 JAN 2025 21:27:53), Using Cal Atten (3.2453E+00) Skew: Calibrated (9 JAN 2025 21:28:07), Using Cal Skew
Probe (Channel 2)	Model: 1169A Serial: US44240217 Head: E2678A/B Atten: Calibrated (9 JAN 2025 21:30:15), Using Cal Atten (3.2496E+00) Skew: Calibrated (9 JAN 2025 21:30:28), Using Cal Skew
Probe (Channel 3)	Model: 1169A Serial: US54031867 Head: N5380A/B Atten: Calibrated (8 JAN 2025 20:30:06), Using Cal Atten (2.0036E+00) Skew: Calibrated (8 JAN 2025 20:30:16), Using Cal Skew
Probe (Channel 4)	Model: 1169A Serial: US55012366 Head: N5380A/B Atten: Calibrated (8 JAN 2025 20:30:53), Using Cal Atten (2.1053E+00) Skew: Calibrated (8 JAN 2025 20:31:03), Using Cal Skew
Last Test Date	2025-01-09 22:42:18 UTC +08:00

Summary of Results

Test Statistics		Margin Thresholds	
Failed	0	Warning	< 5 %
Passed	3	Critical	< 0 %
Total	3		

Pass	# Failed	# Trials	Test Name (click to jump)	Actual Value	Margin	Pass Limits
	0	1	Host Low Speed Signal Quality Test	Pass	100.000 %	Pass/Fail
	0	1	Host Low Speed Rise Time Test (information only)	179.020 ns	100.000 %	Information Only
	0	1	Host Low Speed Fall Time Test (information only)	182.820 ns	100.000 %	Information Only

Report Detail

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Host Low Speed Signal Quality Test

USB 2.0 Specification, Section 7.1.11.,Section 7.1.2.2.

The low-speed data rate is nominally 1.50Mb/s. For both full-speed and low-speed signaling, the crossover voltage must be between 1.3V and 2.0V.

Actual Value Measurement Name: Overall Data Eye Test

Pass Limits: Pass/Fail

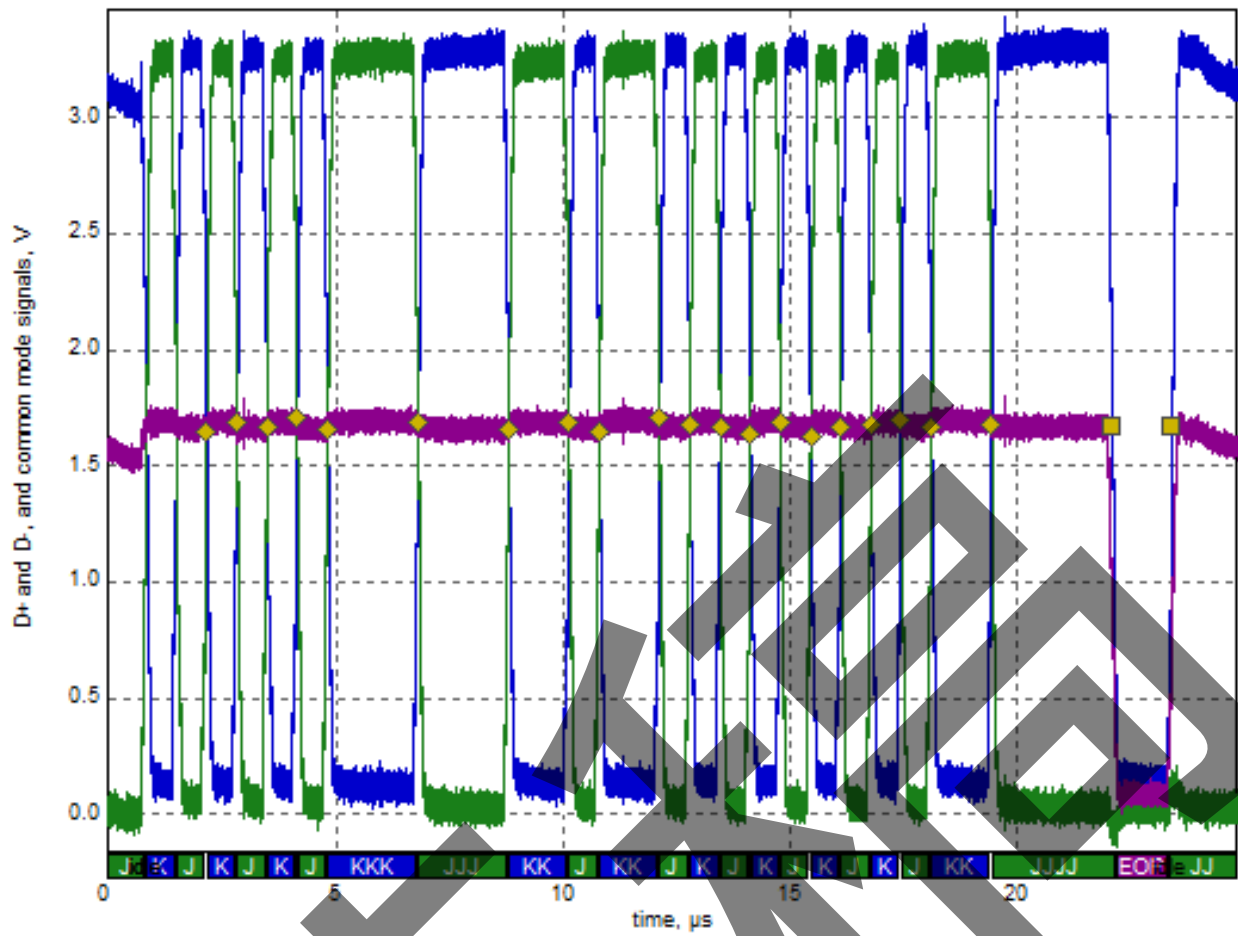
Actual Value	Margin	USB Port Under Test	Test Packet	Eye Diagram	LSFS Signal Eye	LSFS Signal Eye Failure	LSFS EOP Width Test
Pass	100.000 %	Port 1	(See image)	(See image)	eye passes	N/A	Pass

LSFS EOP Width	LSFS Receivers	LSFS Signal Rate	LSFS Signal Rate Test	LSFS Signal Rate Failure	LSFS Cross Over	LSFS Cross Over Mean
1.33 us	N/A	1.4996 MHz	Pass	N/A	1.63 V to 1.70 V	1.67 V

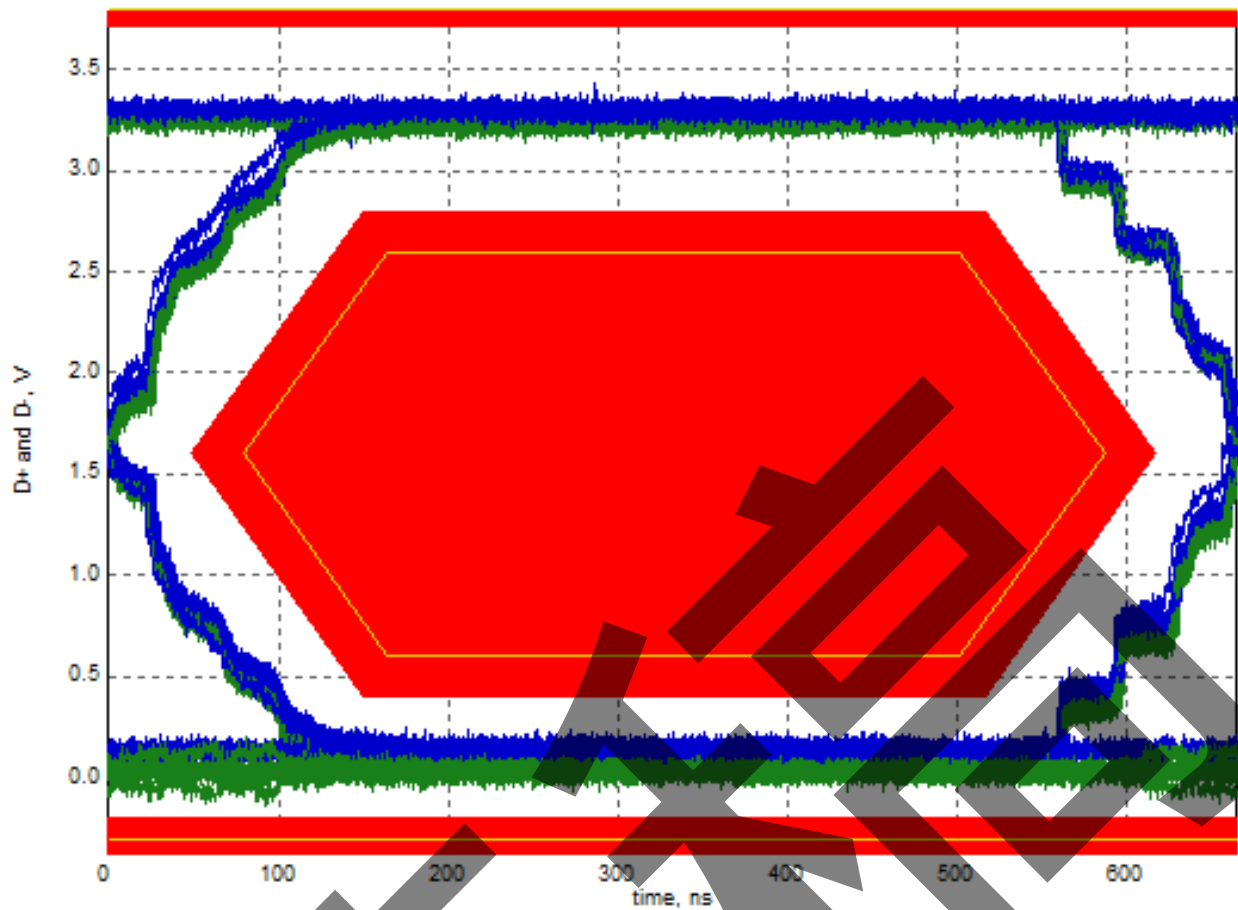
LSFS Consecutive Jitter Range	LSFS Consecutive RMS Jitter	LSFS Paired JK Jitter Range	LSFS Paired JK RMS Jitter Range
-4.757 ns to 4.682 ns	2.782 ns	-0.963 ns to 1.825 ns	0.977 ns

LSFS Paired KJ Jitter Range	LSFS Paired KJ RMS Jitter Range	LSFS Jitter	RisngEdge	FallingEdge
-0.244 ns to 1.617 ns	0.918 ns	Pass	14.75	14.44

Test Packet

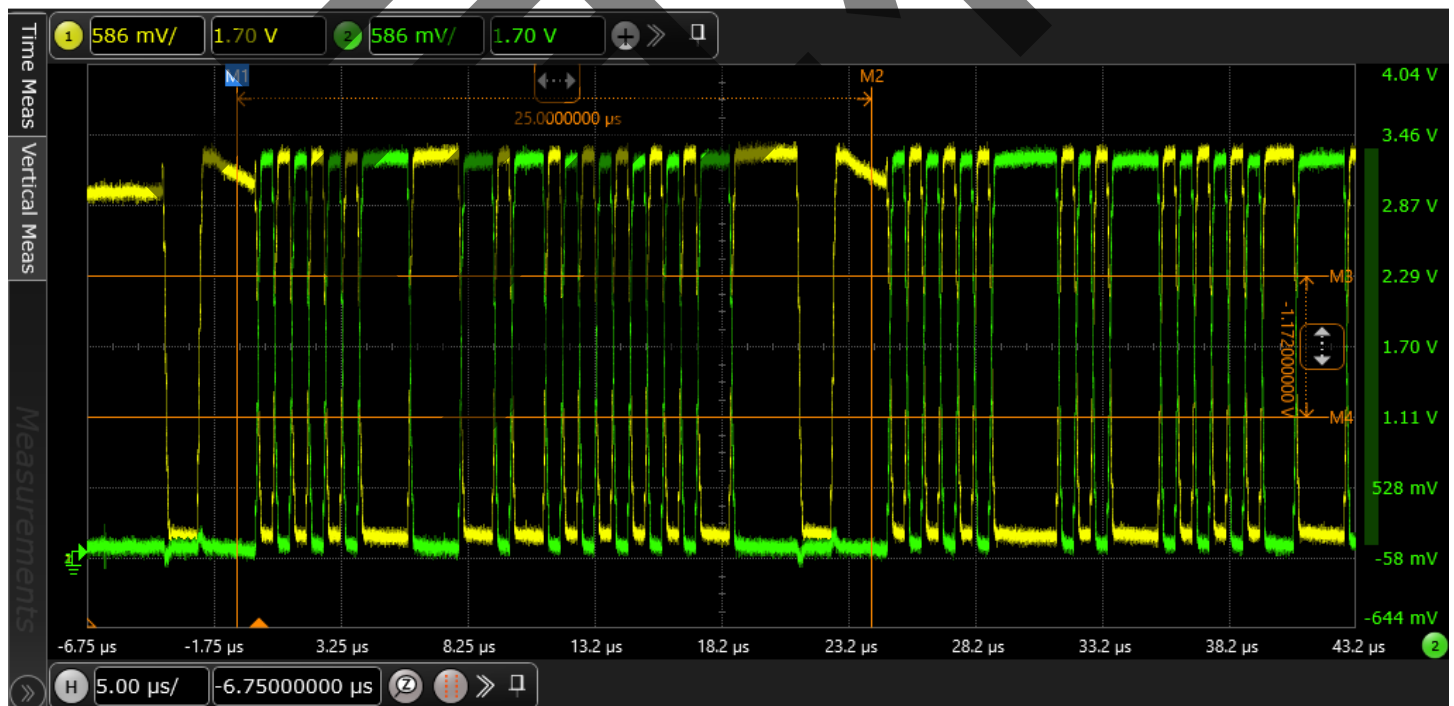


Eye Diagram



Overall Data Eye Test

Keysight Infiniium : Thursday, January 9, 2025 10:42:17 PM

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Host Low Speed Rise Time Test (information only)

USB 2.0 Specification, Section 7.1.11., Section 7.1.2.2.

A USB Low Speed driver must have a single-ended rise and fall times between 75ns and 300ns. However, slew rate measurement will be made and expressed in terms of (V/us) to ensure waveform with slow corners will not result in a measured rise/fall time that is slower than the actual edge rate. The conversion from rise time to edge rate uses the specified rise time over 80% of the nominal peak to peak signal amplitude.

Actual Value Measurement Name: Rise Time Test [1011]

Pass Limits: Information Only

Actual Value	Margin	Test Condition	Test Range	Rise Time
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179.020 ns	100.000 %	Pass	75ns <= Actual Value <= 300ns	179.020 ns
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Host Low Speed Fall Time Test (information only)

USB 2.0 Specification, Section 7.1.11.,Section 7.1.2.2.

A USB Low Speed driver must have a single-ended rise and fall times between 75ns and 300ns. However, slew rate measurement will be made and expressed in terms of (V/us) to ensure waveform with slow corners will not result in a measured rise/fall time that is slower than the actual edge rate. The conversion from rise time to edge rate uses the specified rise time over 80% of the nominal peak to peak signal amplitude.
Actual Value Measurement Name: Fall Time Test [1012]
Pass Limits: Information Only

Actual Value	Margin	Test Condition	Test Range	Fall Time
182.820 ns	100.000 %	Pass	75ns <= Actual Value <= 300ns	182.820 ns



Test Report

Pass

Test Configuration Details

Application	
Name	D9010USBC USB Test
Version	4.14.0.0
Device Description	
Device Test Point	Host
Embedded Host	No
TypeCEnable	No
Test Session Details	
Infiniium SW Version	06.74.00701
Infiniium Model Number	DSAV334A
Infiniium Serial Number	MY63160102
Debug Mode Used	No
Compliance Limits	Specification 1.00 (official)
Probe (Channel 1)	Model: 1169A Serial: US55012395 Head: E2678A/B Atten: Calibrated (9 JAN 2025 11:21:38), Using Cal Atten (3.2573E+00) Skew: Calibrated (9 JAN 2025 11:21:50), Using Cal Skew
Probe (Channel 2)	Model: 1169A Serial: US44240217 Head: E2678A/B Atten: Calibrated (9 JAN 2025 11:48:20), Using Cal Atten (3.2714E+00) Skew: Calibrated (9 JAN 2025 11:48:49), Using Cal Skew
Probe (Channel 3)	Model: 1169A Serial: US54031867 Head: N5380A/B Atten: Calibrated (8 JAN 2025 20:30:06), Using Cal Atten (2.0036E+00) Skew: Calibrated (8 JAN 2025 20:30:16), Using Cal Skew
Probe (Channel 4)	Model: 1169A Serial: US55012366 Head: N5380A/B Atten: Calibrated (8 JAN 2025 20:30:53), Using Cal Atten (2.1053E+00) Skew: Calibrated (8 JAN 2025 20:31:03), Using Cal Skew
Last Test Date	2025-01-09 14:47:22 UTC +08:00

Summary of Results

Test Statistics		Margin Thresholds	
Failed	0	Warning	< 5 %
Passed	4	Critical	< 0 %
Total	4		

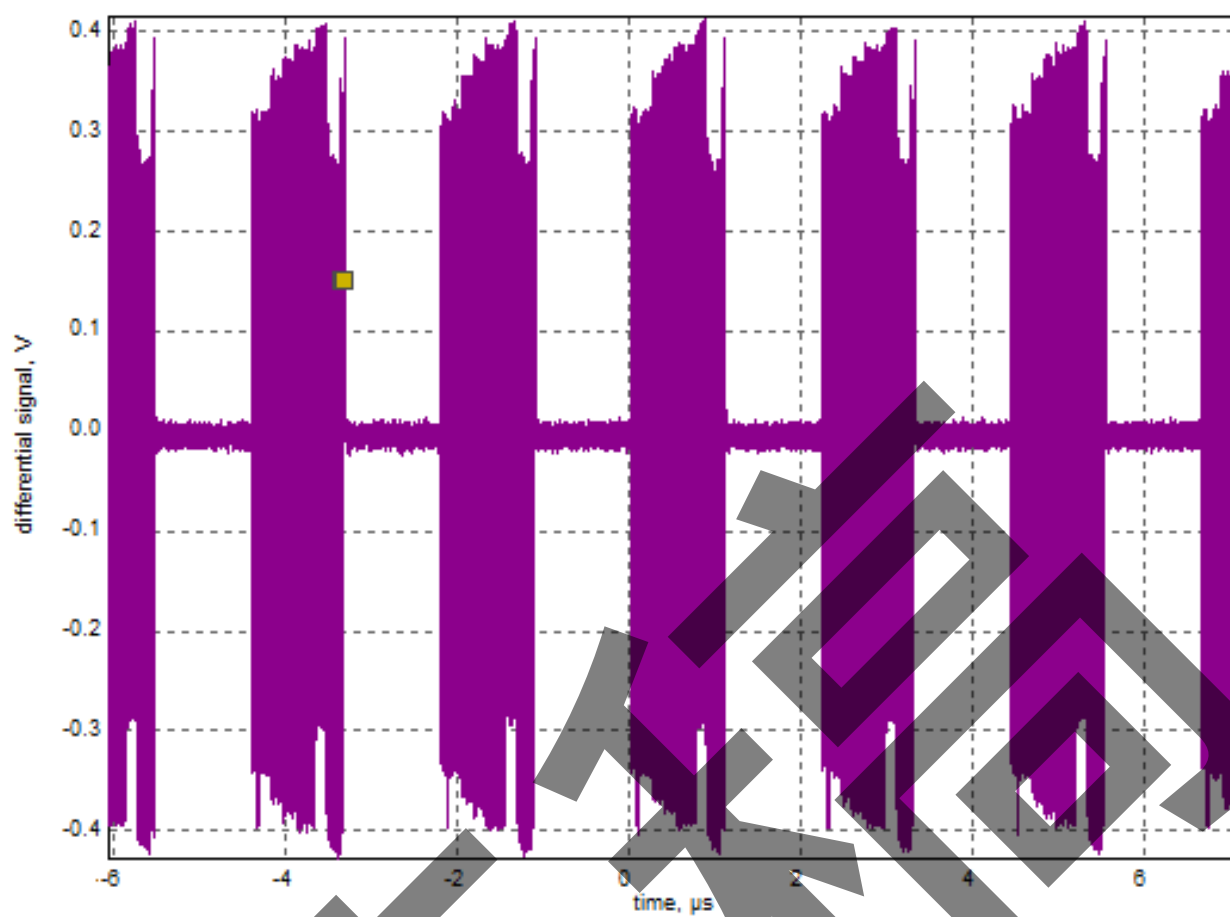
Pass	# Failed	# Trials	Test Name (click to jump)	Actual Value	Margin	Pass Limits
✓	0	1	EL_3 Data Eye and Mask Test	Pass	100.000 %	Pass/Fail
i	0	1	EL_6 Host Rise Time	1.220080 kps	100.000 %	Information Only
i	0	1	EL_6 Host Fall Time	1.160970 kps	100.000 %	Information Only
✓	0	1	EL_7 Host Non-Monotonic Edge Test	Pass	100.000 %	Pass/Fail

Report Detail

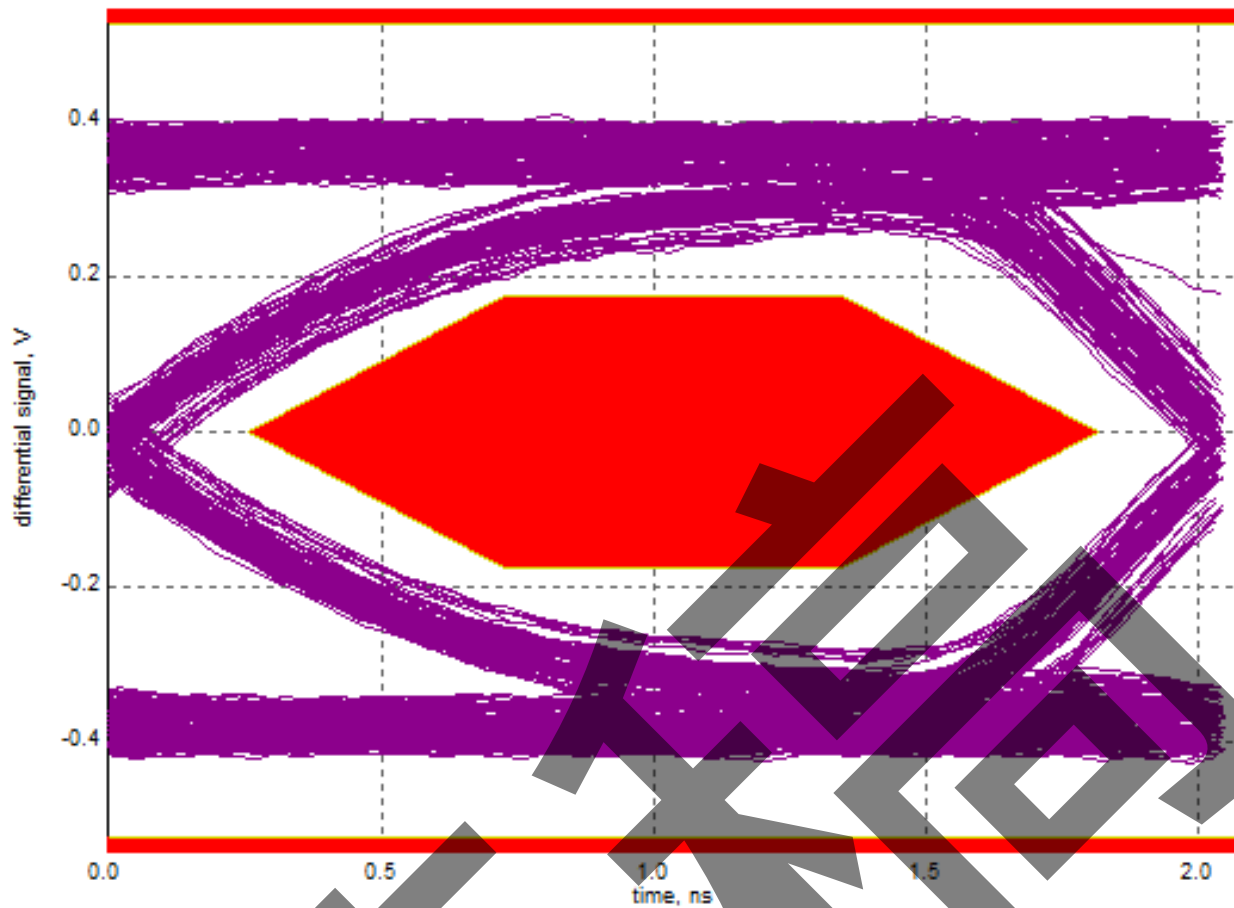
[Summary](#)[Next](#)

✓ EL_3 Data Eye and Mask Test		USB 2.0 Specification, Section 7.1.2.2.				
EL_3: A USB 2.0 downstream facing port must meet Template 1 transform waveform requirements measured at TP2 (each hub downstream). Actual Value Measurement Name: Host Data Eye Test Pass Limits: Pass/Fail						
Actual Value	Margin	Test Packet	Eye Diagram	OptHSSignalQuality	Test Type	Signal Eye
Pass	100.000 %	(See image)	(See image)	DifferentialSQ	High-Speed Far End	eye passes
Signal Eye Failure	EOP Width Test					
N/A	Pass					
EOP Width	Signal Rate	Signal Rate Test	Signal Rate Failure	Consecutive Jitter Range	Consecutive RMS Jitter	Paired JK Jitter Range
7.81	480.1115 MHz	Pass	N/A	-114.044 ps to 147.515 ps	51.463 ps	-67.943 ps to 91.642 ps
Paired JK RMS Jitter	Paired KJ Jitter Range	Paired KJ RMS Jitter	RisngEdge	FallingEdge	USB Port Under Test	
18.851 ps	-124.600 ps to 118.146 ps	23.202 ps	524.56	551.26	Port 1	

Test Packet



Eye Diagram

[Summary](#) [Previous](#) [Next](#)**EL_6 Host Rise Time**

USB 2.0 Specification, Section 7.1.2.2.

EL_6: A USB 2.0 HS driver must have a differential rise and fall times of greater than 300ps. However, slew rate measurement will be made and expressed in terms of (V/us) to ensure waveform with slow corners will not result in a measured rise/fall time that is slower than the actual edge rate. The conversion from rise time to edge rate uses the specified rise time over 80% of the nominal peak to peak signal amplitude.

Actual Value Measurement Name: Host Packet Rise Time (>300ps)

Pass Limits: Information Only

Actual Value	Margin	Test Condition	Rise Time
1.220080 kps	100.000 %	Pass	1.220080 kps

[Summary](#) [Previous](#) [Next](#)**EL_6 Host Fall Time**

USB 2.0 Specification, Section 7.1.2.2.

EL_6: A USB 2.0 HS driver must have a differential rise and fall times of greater than 300ps. However, slew rate measurement will be made and expressed in terms of (V/us) to ensure waveform with slow corners will not result in a measured rise/fall time that is slower than the actual edge rate. The conversion from rise time to edge rate uses the specified rise time over 80% of the nominal peak to peak signal amplitude.

Actual Value Measurement Name: Host Packet Fall Time (>300ps)

Pass Limits: Information Only

Actual Value	Margin	Test Condition	Fall Time
1.160970 kps	100.000 %	Pass	1.160970 kps

[Summary](#) [Previous](#)**EL_7 Host Non-Monotonic Edge Test**

USB 2.0 Specification, Section 7.1.2.2.

EL_7: A USB 2.0 HS driver must have monotonic data transitions over the vertical openings specified in the appropriate eye pattern template.

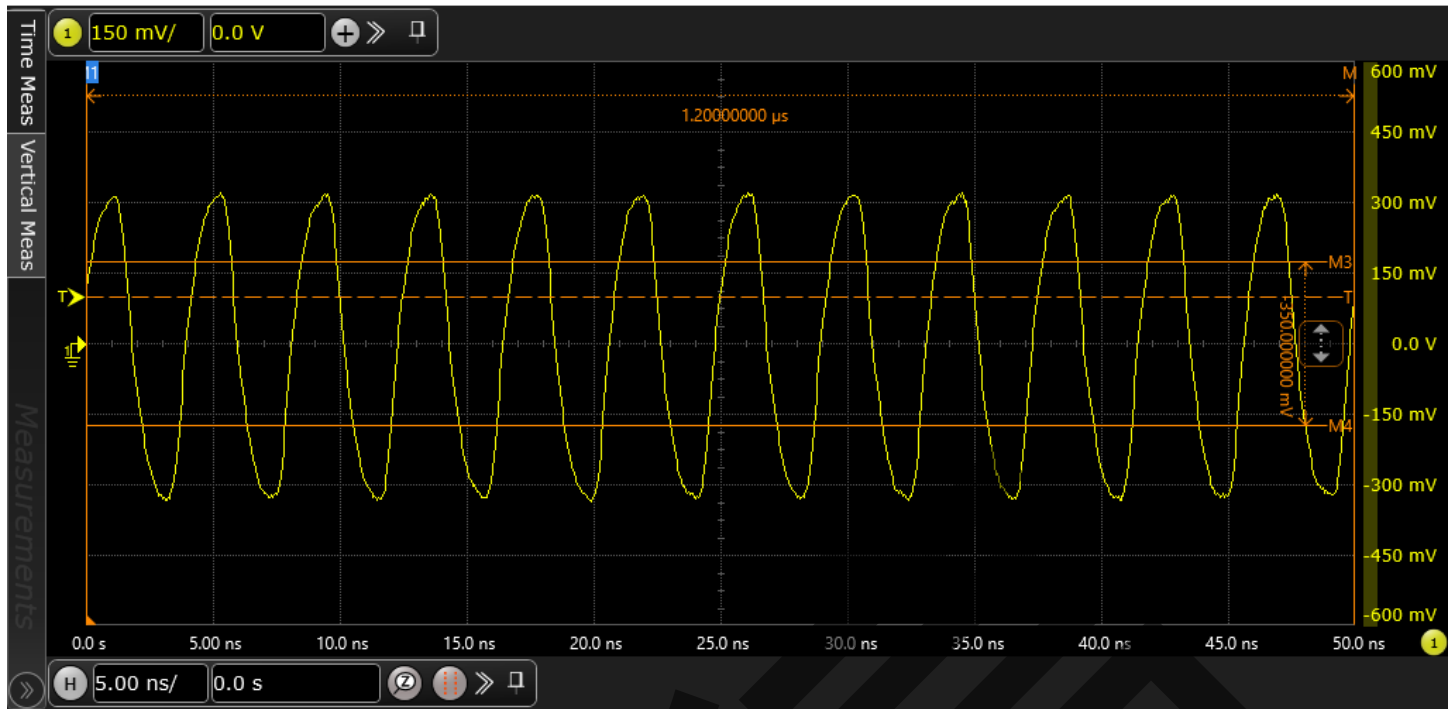
Actual Value Measurement Name: Non-Monotonic Edge

Pass Limits: Pass/Fail

Actual Value	Margin
Pass	100.000 %

Non-Monotonic Edge

Keysight Infiniium : Thursday, January 9, 2025 2:47:22 PM





Test Report

Pass

Test Configuration Details

Application	
Name	D9010USBC USB Test
Version	4.14.0.0
Device Description	
Device Test Point	Host
Embedded Host	No
TypeCEnable	No
Test Session Details	
Infiniium SW Version	06.74.00701
Infiniium Model Number	DSAV334A
Infiniium Serial Number	MY63160102
Debug Mode Used	No
Compliance Limits	Specification 1.00 (official)
Probe (Channel 1)	Model: 1169A Serial: US55012395 Head: E2678A/B Atten: Calibrated (9 JAN 2025 21:27:53), Using Cal Atten (3.2453E+00) Skew: Calibrated (9 JAN 2025 21:28:07), Using Cal Skew
Probe (Channel 2)	Model: 1169A Serial: US44240217 Head: E2678A/B Atten: Calibrated (9 JAN 2025 21:30:15), Using Cal Atten (3.2496E+00) Skew: Calibrated (9 JAN 2025 21:30:28), Using Cal Skew
Probe (Channel 3)	Model: 1169A Serial: US54031867 Head: N2839A Atten: Calibrated (10 JAN 2025 09:44:21), Using Cal Atten (3.1271E+00) Skew: Calibrated (10 JAN 2025 09:44:31), Using Cal Skew
Probe (Channel 4)	Model: 1169A Serial: US55012366 Head: N5380A/B Atten: Calibrated (8 JAN 2025 20:30:53), Using Cal Atten (2.1053E+00) Skew: Calibrated (8 JAN 2025 20:31:03), Using Cal Skew
Last Test Date	2025-01-10 15:48:13 UTC +08:00

Summary of Results

Test Statistics		Margin Thresholds	
Failed	0	Warning	< 5 %
Passed	4	Critical	< 0 %
Total	4		

Pass	# Failed	# Trials	Test Name (click to jump)	Actual Value	Margin	Pass Limits
✓	0	1	EL_3 Data Eye and Mask Test	Pass	100.000 %	Pass/Fail
i	0	1	EL_6 Host Rise Time	771.930 ps	100.000 %	Information Only
i	0	1	EL_6 Host Fall Time	763.000 ps	100.000 %	Information Only
✓	0	1	EL_7 Host Non-Monotonic Edge Test	Pass	100.000 %	Pass/Fail

Report Detail

[Summary](#)[Next](#)

EL_3 Data Eye and Mask Test

USB 2.0 Specification, Section 7.1.2.2.

EL_3: A USB 2.0 downstream facing port must meet Template 1 transform waveform requirements measured at TP2 (each hub downstream).

Actual Value Measurement Name: Host Data Eye Test

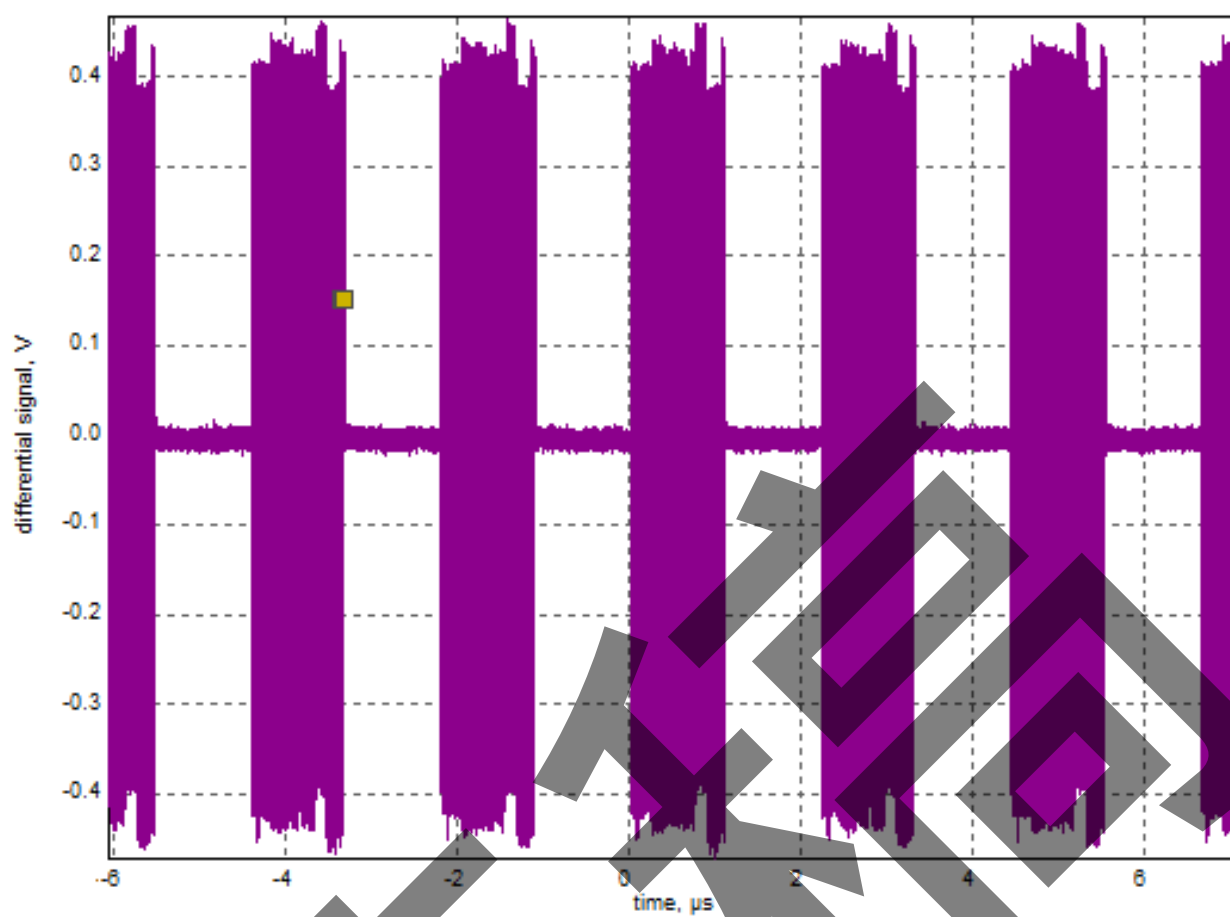
Pass Limits: Pass/Fail

Actual Value	Margin	Test Packet	Eye Diagram	OptHSSignalQuality	Test Type	Signal Eye	Signal Eye Failure	EOP Width Test
Pass	100.000 %	(See image)	(See image)	DifferentialSQ	High-Speed Far End	eye passes	N/A	Pass

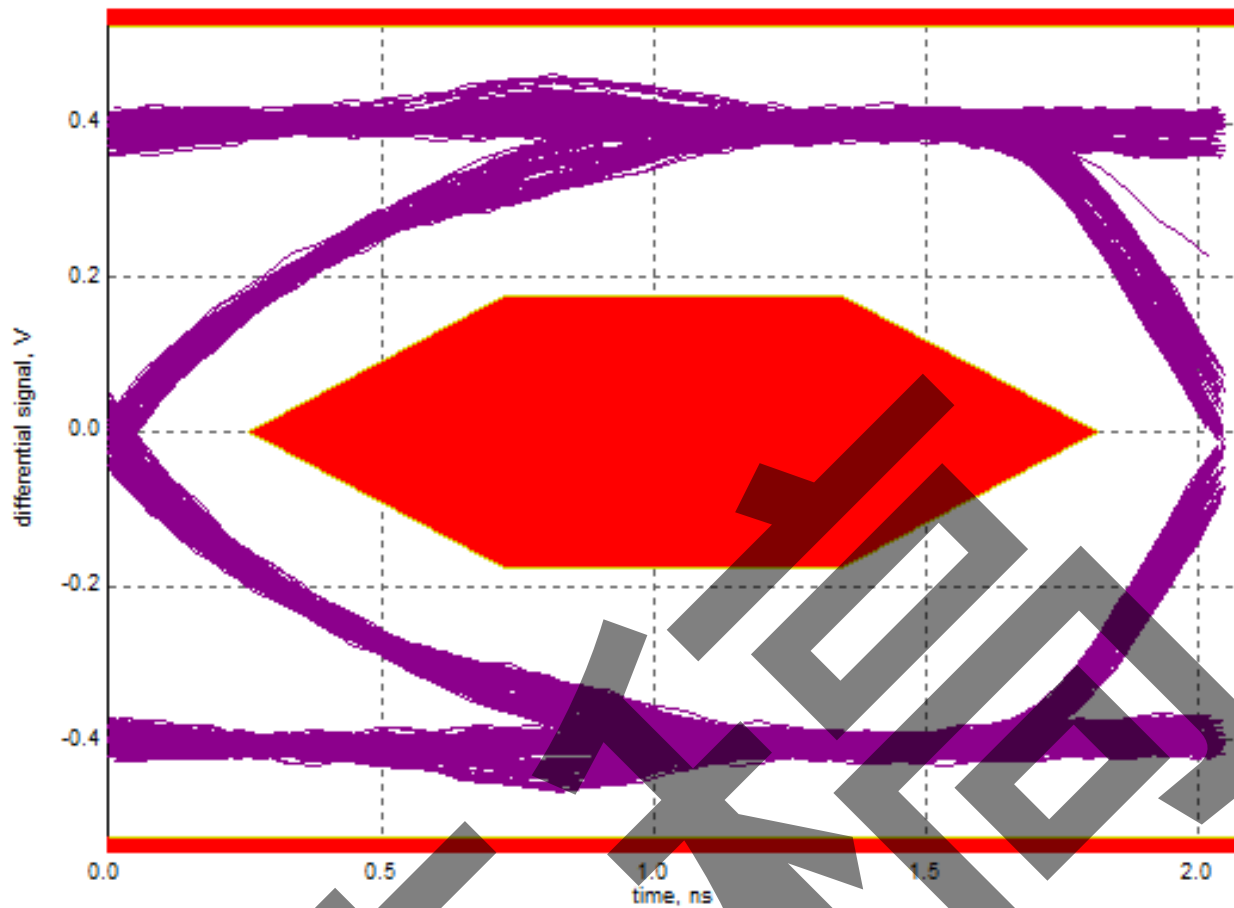
EOP Width	Signal Rate	Signal Rate Test	Signal Rate Failure	Consecutive Jitter Range	Consecutive RMS Jitter	Paired JK Jitter Range
7.94	480.0769 MHz	Pass	N/A	-55.770 ps to 55.200 ps	27.849 ps	-41.473 ps to 42.705 ps

Paired JK RMS Jitter	Paired KJ Jitter Range	Paired KJ RMS Jitter	RisngEdge	FallingEdge	USB Port Under Test
10.941 ps	-31.208 ps to 29.844 ps	9.100 ps	829.09	838.80	Port 2

Test Packet



Eye Diagram


[Summary](#) [Previous](#) [Next](#)

EL_6 Host Rise Time

USB 2.0 Specification, Section 7.1.2.2.

EL_6: A USB 2.0 HS driver must have a differential rise and fall times of greater than 300ps. However, slew rate measurement will be made and expressed in terms of (V/us) to ensure waveform with slow corners will not result in a measured rise/fall time that is slower than the actual edge rate. The conversion from rise time to edge rate uses the specified rise time over 80% of the nominal peak to peak signal amplitude.

Actual Value Measurement Name: Host Packet Rise Time (>300ps)

Pass Limits: Information Only

Actual Value	Margin	Test Condition	Rise Time
771.930 ps	100.000 %	Pass	771.930 ps

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EL_6 Host Fall Time

USB 2.0 Specification, Section 7.1.2.2.

EL_6: A USB 2.0 HS driver must have a differential rise and fall times of greater than 300ps. However, slew rate measurement will be made and expressed in terms of (V/us) to ensure waveform with slow corners will not result in a measured rise/fall time that is slower than the actual edge rate. The conversion from rise time to edge rate uses the specified rise time over 80% of the nominal peak to peak signal amplitude.

Actual Value Measurement Name: Host Packet Fall Time (>300ps)

Pass Limits: Information Only

Actual Value	Margin	Test Condition	Fall Time
763.000 ps	100.000 %	Pass	763.000 ps

[Summary](#) [Previous](#)

EL_7 Host Non-Monotonic Edge Test

USB 2.0 Specification, Section 7.1.2.2.

EL_7: A USB 2.0 HS driver must have monotonic data transitions over the vertical openings specified in the appropriate eye pattern template.

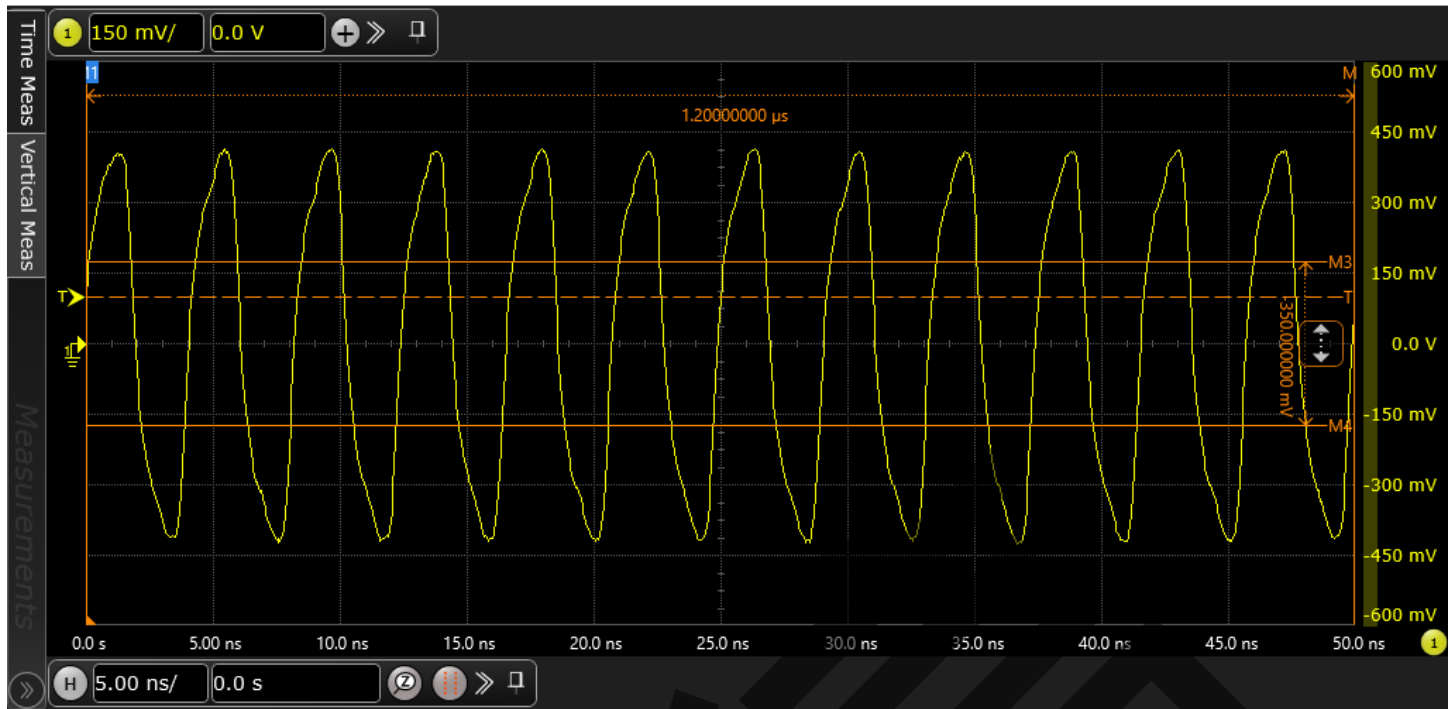
Actual Value Measurement Name: Non-Monotonic Edge

Pass Limits: Pass/Fail

Actual Value	Margin
Pass	100.000 %

Non-Monotonic Edge

Keysight Infiniium : Friday, January 10, 2025 3:48:13 PM



附表9

全速信号质量-Type-A口带5m线材

信号质量较差,无法分析,波形如下图:

Keysight Infiniium : Thursday, January 9, 2025 8:10:42 PM





附表10-Type-A全速-1m线

Test Report

Pass

Test Configuration Details	
Application	
Name	D9010USBC USB Test
Version	4.14.0.0
Device Description	
Device Test Point	Device
Embedded Host	No
TypeCEnable	No
Test Session Details	
Infiniium SW Version	06.74.00701
Infiniium Model Number	DSAV334A
Infiniium Serial Number	MY63160102
Debug Mode Used	No
Compliance Limits	Specification 1.00 (official)
Probe (Channel 1)	Model: 1169A Serial: US55012395 Head: E2678A/B Atten: Calibrated (9 JAN 2025 11:21:38), Using Cal Atten (3.2573E+00) Skew: Calibrated (9 JAN 2025 11:21:50), Using Cal Skew
Probe (Channel 2)	Model: 1169A Serial: US44240217 Head: E2678A/B Atten: Calibrated (9 JAN 2025 11:48:20), Using Cal Atten (3.2714E+00) Skew: Calibrated (9 JAN 2025 11:48:49), Using Cal Skew
Probe (Channel 3)	Model: 1169A Serial: US54031867 Head: N5380A/B Atten: Calibrated (8 JAN 2025 20:30:06), Using Cal Atten (2.0036E+00) Skew: Calibrated (8 JAN 2025 20:30:16), Using Cal Skew
Probe (Channel 4)	Model: 1169A Serial: US55012366 Head: N5380A/B Atten: Calibrated (8 JAN 2025 20:30:53), Using Cal Atten (2.1053E+00) Skew: Calibrated (8 JAN 2025 20:31:03), Using Cal Skew
Last Test Date	2025-01-09 18:11:37 UTC +08:00

Summary of Results

Test Statistics		Margin Thresholds	
Failed	0	Warning	< 5 %
Passed	3	Critical	< 0 %
Total	3		

Pass	# Failed	# Trials	Test Name (click to jump)	Actual Value	Margin	Pass Limits
	0	1	Host Full Speed Signal Quality Test	Pass	100.000 %	Pass/Fail
	0	1	Host Full Speed Rise Time Test (information only)	28.380 ns	100.000 %	Information Only
	0	1	Host Full Speed Fall Time Test (information only)	29.220 ns	100.000 %	Information Only

Report Detail

Host Full Speed Signal Quality Test

Summary

Next

USB 2.0 Specification, Section 7.1.11.,Section 7.1.2.1.

The full-speed data rate is nominally 12.000Mb/s. For both full-speed and low-speed signaling, the crossover voltage must be between 1.3V and 2.0V.

Actual Value Measurement Name: Overall Data Eye Test

Pass Limits: Pass/Fail

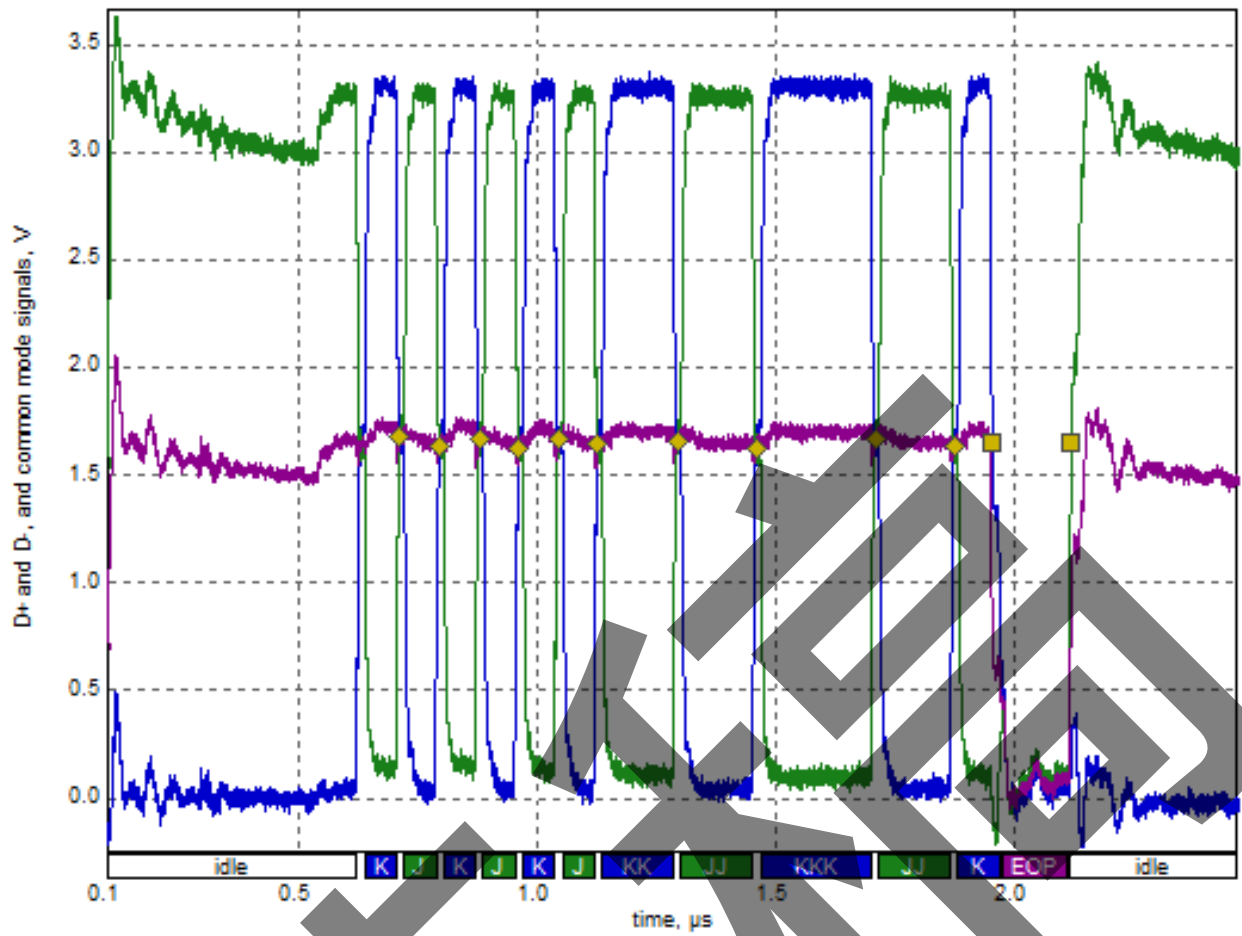
Actual Value	Margin	USB Port Under Test	Test Packet	Eye Diagram	LSFS Signal Eye	LSFS Signal Eye Failure	LSFS EOP Width Test
Pass	100.000 %	Port 1	(See image)	(See image)	eye passes	N/A	Pass

LSFS EOP Width	LSFS Receivers	LSFS Signal Rate	LSFS Signal Rate Test	LSFS Signal Rate Failure	LSFS Cross Over	LSFS Cross Over Mean
166.79 ns	N/A	12.0024 MHz	Pass	N/A	1.62 V to 1.67 V	1.65 V

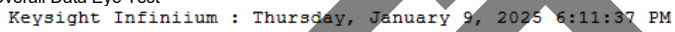
LSFS Consecutive Jitter Range	LSFS Consecutive RMS Jitter	LSFS Paired JK Jitter Range	LSFS Paired JK RMS Jitter Range
-96.723 ps to 370.371 ps	167.193 ps	-262.334 ps to 178.387 ps	200.750 ps

LSFS Paired KJ Jitter Range	LSFS Paired KJ RMS Jitter Range	LSFS Jitter	RisngEdge	FallingEdge
-387.659 ps to 112.821 ps	258.180 ps	Pass	93.01	90.33

Test Packet



Eye Diagram



USB 2.0 Specification, Section 7.1.11.,Section 7.1.2.2.

Pass Limits: Information Only

Actual Value	Margin	Test Condition	Test Range	Rise Time
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28.380 ns	100.000 %	Warning	4ns <= Actual Value <= 20ns	28.380 ns
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[Summary](#) [Previous](#)

	Host Full Speed Fall Time Test (information only)		USB 2.0 Specification, Section 7.1.11.,Section 7.1.2.2.
A USB Full Speed driver must have a single-ended rise and fall times between 4ns and 20ns. However, slew rate measurement will be made and expressed in terms of (V/us) to ensure waveform with slow corners will not result in a measured rise/fall time that is slower than the actual edge rate. The conversion from rise time to edge rate uses the specified rise time over 80% of the nominal peak to peak signal amplitude. Actual Value Measurement Name: Fall Time Test [1006] Pass Limits: Information Only			

Actual Value	Margin	Test Condition	Test Range	Fall Time
29.220 ns	100.000 %	Warning	4ns <= Actual Value <= 20ns	29.220 ns



附表11-Type-A低速-5m线

Test Report

Pass

Test Configuration Details	
Application	
Name	D9010USBC USB Test
Version	4.14.0.0
Device Description	
Device Test Point	Host
Embedded Host	No
TypeCEnable	No
Test Session Details	
Infiniium SW Version	06.74.00701
Infiniium Model Number	DSAV334A
Infiniium Serial Number	MY63160102
Debug Mode Used	No
Compliance Limits	Specification 1.00 (official)
Probe (Channel 1)	Model: 1169A Serial: US55012395 Head: E2678A/B Atten: Calibrated (9 JAN 2025 21:27:53), Using Cal Atten (3.2453E+00) Skew: Calibrated (9 JAN 2025 21:28:07), Using Cal Skew
Probe (Channel 2)	Model: 1169A Serial: US44240217 Head: E2678A/B Atten: Calibrated (9 JAN 2025 21:30:15), Using Cal Atten (3.2496E+00) Skew: Calibrated (9 JAN 2025 21:30:28), Using Cal Skew
Probe (Channel 3)	Model: 1169A Serial: US54031867 Head: N5380A/B Atten: Calibrated (8 JAN 2025 20:30:06), Using Cal Atten (2.0036E+00) Skew: Calibrated (8 JAN 2025 20:30:16), Using Cal Skew
Probe (Channel 4)	Model: 1169A Serial: US55012366 Head: N5380A/B Atten: Calibrated (8 JAN 2025 20:30:53), Using Cal Atten (2.1053E+00) Skew: Calibrated (8 JAN 2025 20:31:03), Using Cal Skew
Last Test Date	2025-01-09 21:36:16 UTC +08:00

Summary of Results

Test Statistics		Margin Thresholds	
Failed	0	Warning	< 5 %
Passed	3	Critical	< 0 %
Total	3		

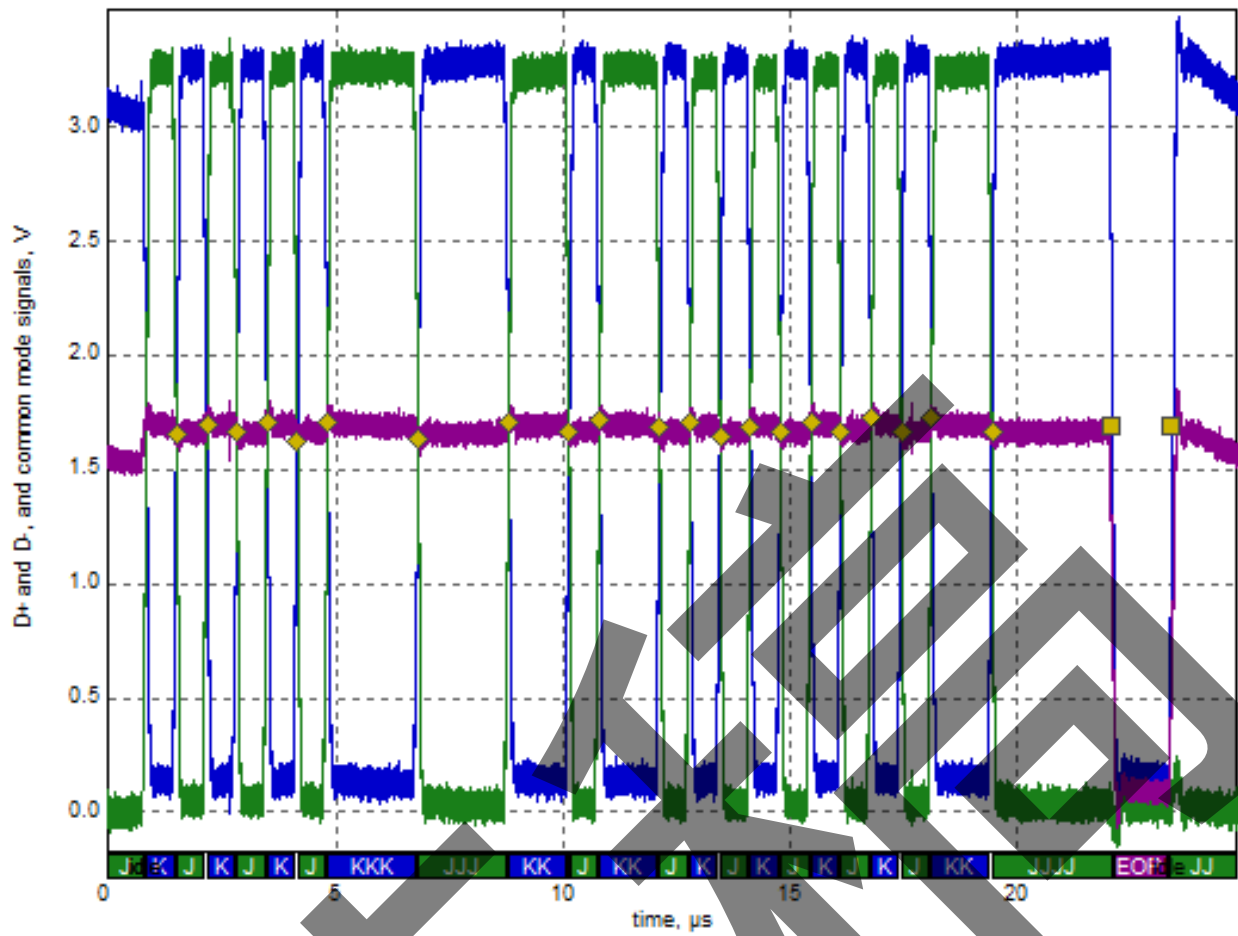
Pass	# Failed	# Trials	Test Name (click to jump)	Actual Value	Margin	Pass Limits
	0	1	Host Low Speed Signal Quality Test	Pass	100.000 %	Pass/Fail
	0	1	Host Low Speed Rise Time Test (information only)	134.150 ns	100.000 %	Information Only
	0	1	Host Low Speed Fall Time Test (information only)	137.070 ns	100.000 %	Information Only

Report Detail

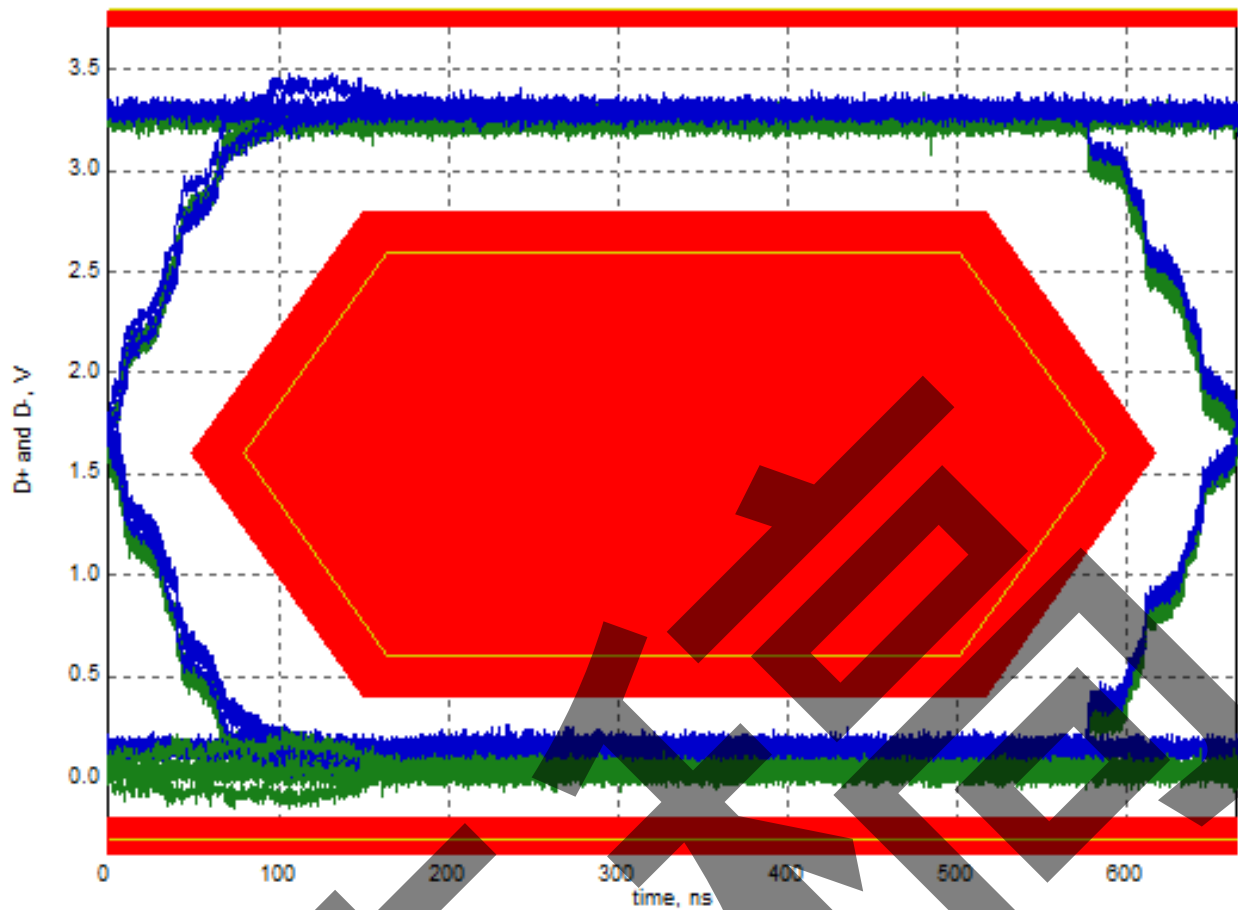
[Summary](#)[Next](#)

		Host Low Speed Signal Quality Test		USB 2.0 Specification, Section 7.1.11.,Section 7.1.2.2.			
The low-speed data rate is nominally 1.50Mb/s. For both full-speed and low-speed signaling, the crossover voltage must be between 1.3V and 2.0V. Actual Value Measurement Name: Overall Data Eye Test Pass Limits: Pass/Fail							
Actual Value	Margin	USB Port Under Test	Test Packet	Eye Diagram	LSFS Signal Eye	LSFS Signal Eye Failure	LSFS EOP Width Test
Pass	100.000 %	Port 1	(See image)	(See image)	eye passes	N/A	Pass
LSFS EOP Width	LSFS Receivers	LSFS Signal Rate	LSFS Signal Rate Test	LSFS Signal Rate Failure	LSFS Cross Over	LSFS Cross Over Mean	
1.33 us	N/A	1.4999 MHz	Pass	N/A	1.63 V to 1.73 V	1.68 V	
LSFS Consecutive Jitter Range		LSFS Consecutive RMS Jitter		LSFS Paired JK Jitter Range		LSFS Paired JK RMS Jitter Range	
-1.584 ns to 1.646 ns		1.087 ns		-0.277 ns to 0.687 ns		0.337 ns	
LSFS Paired KJ Jitter Range		LSFS Paired KJ RMS Jitter Range		LSFS Jitter	RisngEdge	FallingEdge	
-0.737 ns to 0.620 ns		0.434 ns		Pass	19.68	19.26	

Test Packet

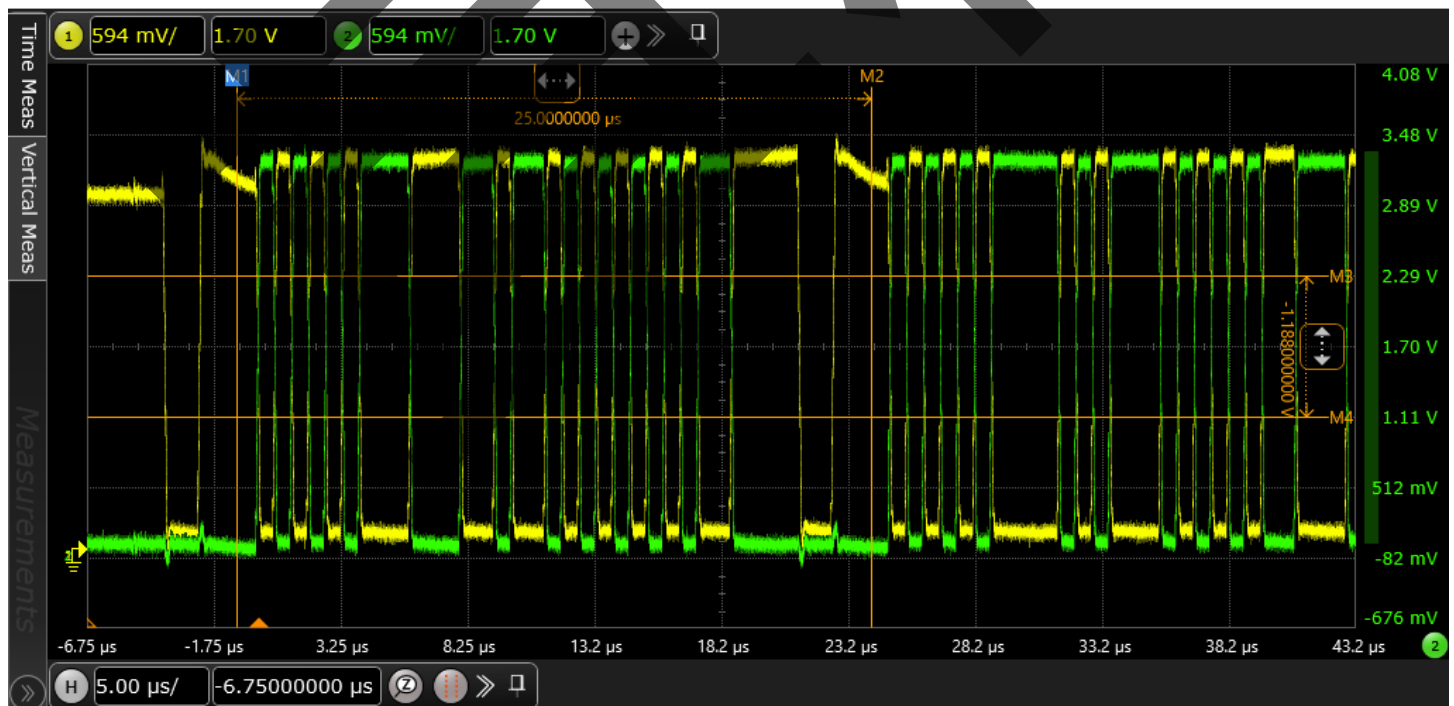


Eye Diagram



Overall Data Eye Test

Keysight Infiniium : Thursday, January 9, 2025 9:36:16 PM

[Summary](#) [Previous](#) [Next](#)

i	Host Low Speed Rise Time Test (information only)	USB 2.0 Specification, Section 7.1.11., Section 7.1.2.2.
	A USB Low Speed driver must have a single-ended rise and fall times between 75ns and 300ns. However, slew rate measurement will be made and expressed in terms of (V/us) to ensure waveform with slow corners will not result in a measured rise/fall time that is slower than the actual edge rate. The conversion from rise time to edge rate uses the specified rise time over 80% of the nominal peak to peak signal amplitude. Actual Value Measurement Name: Rise Time Test [1011] Pass Limits: Information Only	

Actual Value	Margin	Test Condition	Test Range	Rise Time
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134.150 ns	100.000 %	Pass	75ns <= Actual Value <= 300ns	134.150 ns
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[Summary](#) [Previous](#)



Host Low Speed Fall Time Test (information only)

USB 2.0 Specification, Section 7.1.11.,Section 7.1.2.2.

A USB Low Speed driver must have a single-ended rise and fall times between 75ns and 300ns. However, slew rate measurement will be made and expressed in terms of (V/us) to ensure waveform with slow corners will not result in a measured rise/fall time that is slower than the actual edge rate. The conversion from rise time to edge rate uses the specified rise time over 80% of the nominal peak to peak signal amplitude.
Actual Value Measurement Name: Fall Time Test [1012]
Pass Limits: Information Only

Actual Value	Margin	Test Condition	Test Range	Fall Time
137.070 ns	100.000 %	Pass	75ns <= Actual Value <= 300ns	137.070 ns

试验仪器设备清单

序号	仪器编号	仪器名称	仪器型号	校准有效期至
1	MY63160102	高速示波器	DSOV334A	2025-05-06
2	YQ00006271	网络分析仪	E5071C	2025-08-14
3	/	USB低速鼠标	N-360	/
4	/	USB Hub	CM688	/
5	/	USB全速触摸板	TX-E20A. 1	/

报告结束