



Test Report

Overall Result: FAIL

Test Configuration Details	
Application	
Name	D9020DPHC MIPI D-PHY Test
Version	3.90.0.0
Device Description	
High Speed Data Rate(Mbps)	1430
CTS Version	v1.2
ZID	100 ohm
CLoad	50pF
Fixture Setup	Auto Load Switching
Test Session Details	
Infiniium SW Version	06.50.00906
Infiniium Model Number	DSOV084A
Infiniium Serial Number	MY57220101
Debug Mode Used	No
Compliance Limits	MIPI D-PHY Test Limit v1.2 (official)
Probe (Channel 1)	Model: 1169B Serial: US55390644 Head: N5425A/B Atten: Calibrated (19 OCT 2022 17:27:05), Using Cal Atten (3.2276E+00) Skew: Calibrated (19 OCT 2022 17:27:23), Using Cal Skew
Probe (Channel 2)	Model: 1169B Serial: US55390676 Head: N5425A/B Atten: Calibrated (19 OCT 2022 17:28:31), Using Cal Atten (3.2304E+00) Skew: Calibrated (19 OCT 2022 17:28:45), Using Cal Skew
Probe (Channel 3)	Model: 1169B Serial: US55390699 Head: N5425A/B Atten: Calibrated (19 OCT 2022 17:30:14), Using Cal Atten (3.2298E+00) Skew: Calibrated (19 OCT 2022 17:30:26), Using Cal Skew
Probe (Channel 4)	Model: 1169B Serial: US55390726 Head: N5425A/B Atten: Calibrated (19 OCT 2022 17:31:24), Using Cal Atten (3.1287E+00) Skew: Calibrated (19 OCT 2022 17:31:35), Using Cal Skew
Last Test Date	2022-10-20 19:06:55 UTC +08:00

Summary of Results

Test Statistics	
Failed	8
Passed	24
Total	32

Margin Thresholds	
Warning	< 2 %
Critical	< 0 %

Pass	# Failed	# Trials	Test Name	Actual Value	Margin	Pass Limits
✓	0	1	1.3.7 HS Data TX Static Common Mode Voltage(Vcmtx)	182.12 mV	32.1 %	150.00 mV <= VALUE <= 250.00 mV
✓	0	1	1.3.8 HS Data TX Vcmtx Mismatch	1.48 mV	70.4 %	VALUE < 5.00 mV
✓	0	1	1.3.10 HS Data TX Common-Level Variations Above 450MHz (VCMTX(HF))	8.32 mV	44.5 %	VALUE < 15.00 mV
✗	1	1	1.3.9 HS Data TX Common-Level Variations Between 50-450MHz (VCMTX(LF))	26.86 mV	-7.4 %	VALUE < 25.00 mV
✓	0	1	1.3.4 HS Data TX Differential Voltage(VOD0 Pulse)	-194.58 mV	42.0 %	-270.00 mV <= VALUE <= -140.00 mV
✓	0	1	1.3.4 HS Data TX Differential Voltage(VOD1 Pulse)	169.64 mV	22.8 %	140.00 mV <= VALUE <= 270.00 mV
✗	1	1	1.3.5 HS Data TX Differential Voltage Mismatch (Pulse)	24.94 mV	-78.1 %	VALUE < 14.00 mV
✓	0	1	1.3.6 HS Data TX Single Ended Output High Voltage(VOHHS Pulse)	325.96 mV	9.5 %	VALUE <= 360.00 mV
✓	0	1	1.4.17 HS Clock Instantaneous (Uinst) (Max)	682 ps	94.5 %	VALUE < 12.500 ns
✓	0	1	1.3.3 HS Entry: DATA TX THS- PREPARE+THS- ZERO	183.15 ns	21.1 %	VALUE >= TXTHSPrepareTHSZero_LimitMin s

✗	1	1	1.3.11 HS Data TX 20%-80% Rise Time (tR)[Burst Data]	20.628 ns	-932E+01 %	VALUE < DataRiseTime_LimitMax s
✗	1	1	1.3.12 HS Data TX 80%-20% Fall Time (tF)[Burst Data]	52.473 ns	-239E+02 %	VALUE < DataFallTime_LimitMax s
✓	0	1	1.4.9 HS Clock TX Common-Level Variations Between 50-450MHz (VCMTX(LF))	5.86 mV	76.6 %	VALUE < 25.00 mV
✓	0	1	1.4.7 HS Clock TX Static Common Mode Voltage(Vcmtx)	187.82 mV	37.8 %	150.00 mV <= VALUE <= 250.00 mV
✓	0	1	1.4.8 HS Clock TX Vcmtx Mismatch	970 µV	80.6 %	VALUE < 5.00 mV
✓	0	1	1.4.10 HS Clock TX Common-Level Variations Above 450MHz (VCMTX(HF))	4.81 mV	67.9 %	VALUE < 15.00 mV
✓	0	1	1.4.4 HS Clock TX Differential Voltage(VOD0 Pulse)	-214.97 mV	42.3 %	-270.00 mV <= VALUE <= -140.00 mV
✓	0	1	1.4.4 HS Clock TX Differential Voltage(VOD1 Pulse)	214.41 mV	42.8 %	140.00 mV <= VALUE <= 270.00 mV
✓	0	1	1.4.5 HS Clock TX Differential Voltage Mismatch (Pulse)	560 µV	96.0 %	VALUE < 14.00 mV
✓	0	1	1.4.6 HS Clock TX Single Ended Output High Voltage(VOHHS Pulse)	306.95 mV	14.7 %	VALUE <= 360.00 mV
✗	1	1	1.4.11 HS Clock TX 20%-80% Rise Time (tR)[Continuous Clock, Burst Data]	528 ps	-141.1 %	VALUE < CLKRiseTime_LimitMax s
✗	1	1	1.4.12 HS Clock TX 80%-20% Fall Time (tF)[Continuous Clock, Burst Data]	526 ps	-140.2 %	VALUE < CLKFallTime_LimitMax s
✓	0	1	1.4.17 HS Clock Instantaneous (Uinst) (Min)	563 ps	563.0 %	VALUE >= Uinst_Min_Limit s
✗	1	1	1.4.18 Clock Lane HS Clock Delta UI (UI variation)	-9.88 %	-48.8 %	UIVariant_Limit_Min % <= VALUE <= UIVariant_Limit_Max %
✓	0	1	1.3.1 HS Entry: DATA TLPX	55.04 ns	10.1 %	VALUE >= 50.00 ns

✓	0	1	1.3.2 HS Entry: DATA TX THS-PREPARE	50.83 ns	18.0 %	THSPrepare_LimitMin s <= VALUE <= THSPrepare_LimitMax s
✓	0	1	1.3.13 HS Exit: DATA TX THS-TRAIL	82.03 ns	30.6 %	VALUE >= TXTHSTrail_LimitMin s
✓	0	1	1.3.14 HS Exit: DATA TX TREOT	-1.19 ns	103.4 %	VALUE <= 35.00 ns
✓	0	1	1.3.15 HS Exit: DATA TX TEOT	80.84 ns	28.1 %	VALUE <= TXTEOT_LimitMax s
✓	0	1	1.3.16 HS Exit: DATA TX THS-EXIT	347.16 ns	247.2 %	VALUE >= 100.00 ns
✗	1	1	1.5.4 Data-to-Clock Skew (TSKEW(TX)) (Max,Min)	500 mUinst	-75.0 %	MinMaxTSkewTest_LimitMin Uinst <= VALUE <= MinMaxTSkewTest_LimitMax Uinst
✓	0	1	1.5.4 Data-to-Clock Skew (TSKEW(TX)) (Mean)	30 mUinst	42.5 %	MeanTSkewTest_LimitMin Uinst <= VALUE <= MeanTSkewTest_LimitMax Uinst

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✓ 1.3.7 HS Data TX Static Common Mode Voltage(Vcmtx) Reference: D-PHY Specification v1.2 Section 9.1.1 Table 19, CTS v1.2(Test 1.3.7)

Test Summary: Pass Test Description: HS transmit static common-mode voltage.

Pass Limits:[150.00 mV to 250.00 mV]811_Vcmtx(Worst)182.12 mV

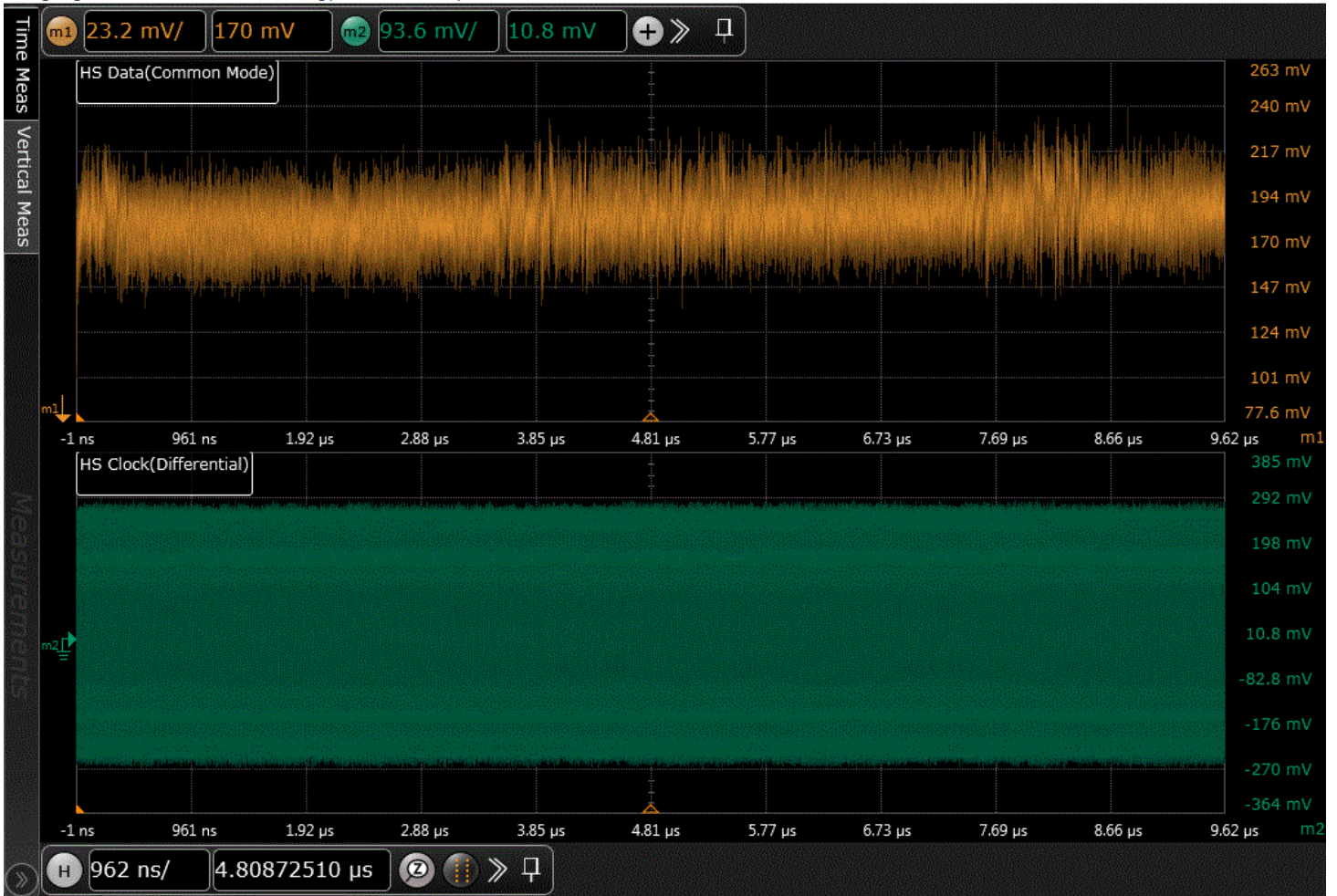
Result Details:

Result Details

HS Data TX Common Mode Voltage(See image)**Vcmtx(Differential-1)**182.12 mV**Number of Vcmtx(Differential-1) Measured**7.606000 k**Vcmtx(Differential-0)**185.08 mV**Number of Vcmtx(Differential-0) Measured**7.782000 k**ZID**100 ohm**DataLane**Lane3**Number of HS Burst**1 Trial 1

Trial 1: HS Data TX Common Mode Voltage

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✓ 1.3.8 HS Data TX Vcmtx Mismatch Reference: D-PHY Specification v1.2 Section 9.1.1 Table 19, CTS v1.2(Test 1.3.8)

Test Summary: Pass Test Description: VCMTX mismatch when output is Differential-1 or Differential-0.

Pass Limits:< 5.00 mV812_Vcmtx Mismatch1.48 mV

Result Details:

Result Details

Vcmtx(Differential-1)182.12 mV**Vcmtx(Differential-0)**185.08 mV**ZID**100

ohm**DataLane**Lane3**Number of HS Burst**1

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✓ 1.3.10 HS Data TX Common-Level Variations Above 450MHz (VCMTX(HF)) Reference: D-PHY Specification v1.2 Section 9.1.1 Table 20, CTS v1.2(Test 1.3.10)

Test Summary: Pass Test Description: Common-level variations above 450MHz.

Pass Limits:< 15.00 mV818_Vcmtx(HF)8.32 mV

Result Details:

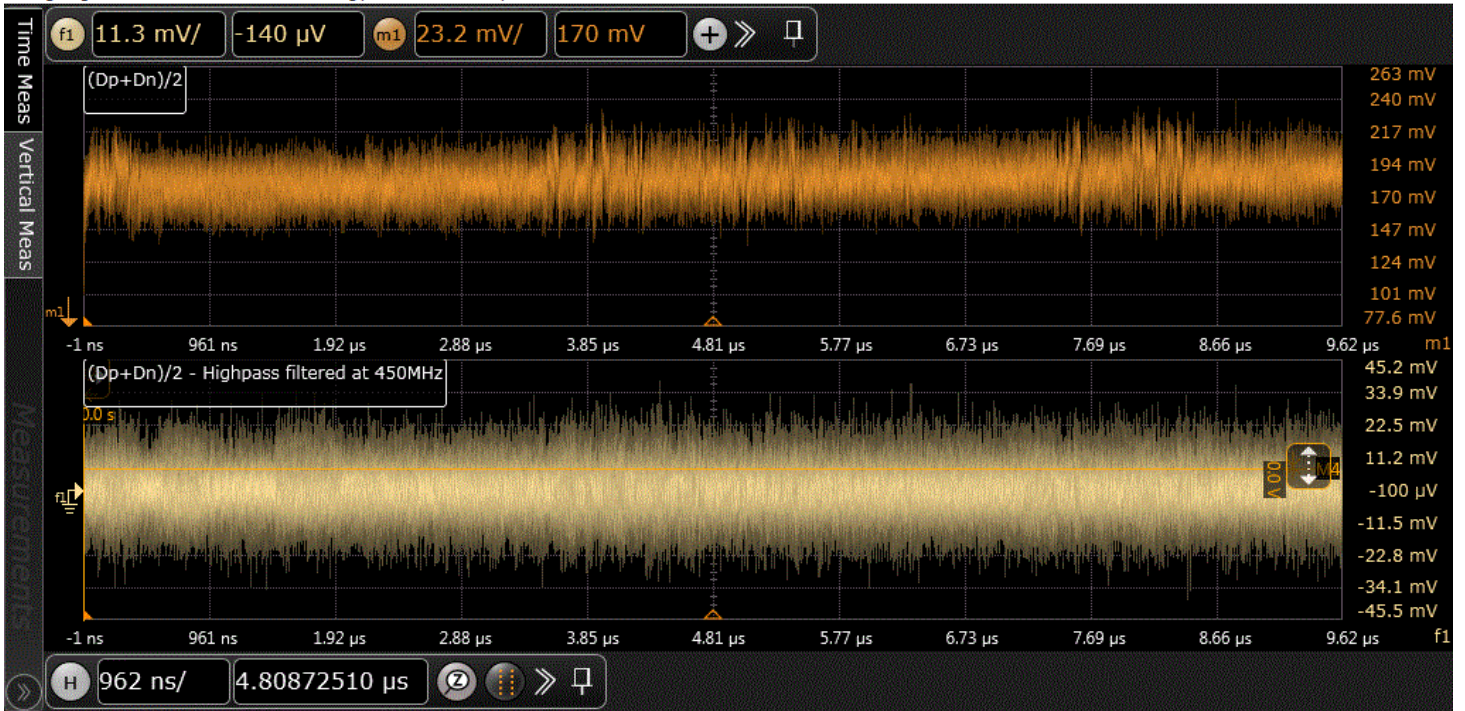
Result Details

Common Level Variations(>450Mhz)(See image)**ZID**100 ohm**DataLane**Lane3**Number of HS Burst**1

Trial 1

Trial 1: Common Level Variations(>450Mhz)

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✖ 1.3.9 HS Data TX Common-Level Variations Between 50-450MHz (VCMTX(LF)) Reference: D-PHY Specification v1.2 Section 9.1.1 Table 20, CTS v1.2(Test 1.3.9)

Test Summary: FAIL Test Description: Common-level variation between 50-450MHz.

Pass Limits:< 25.00 mV819_Vcmtx(LF)26.86 mV

Result Details:

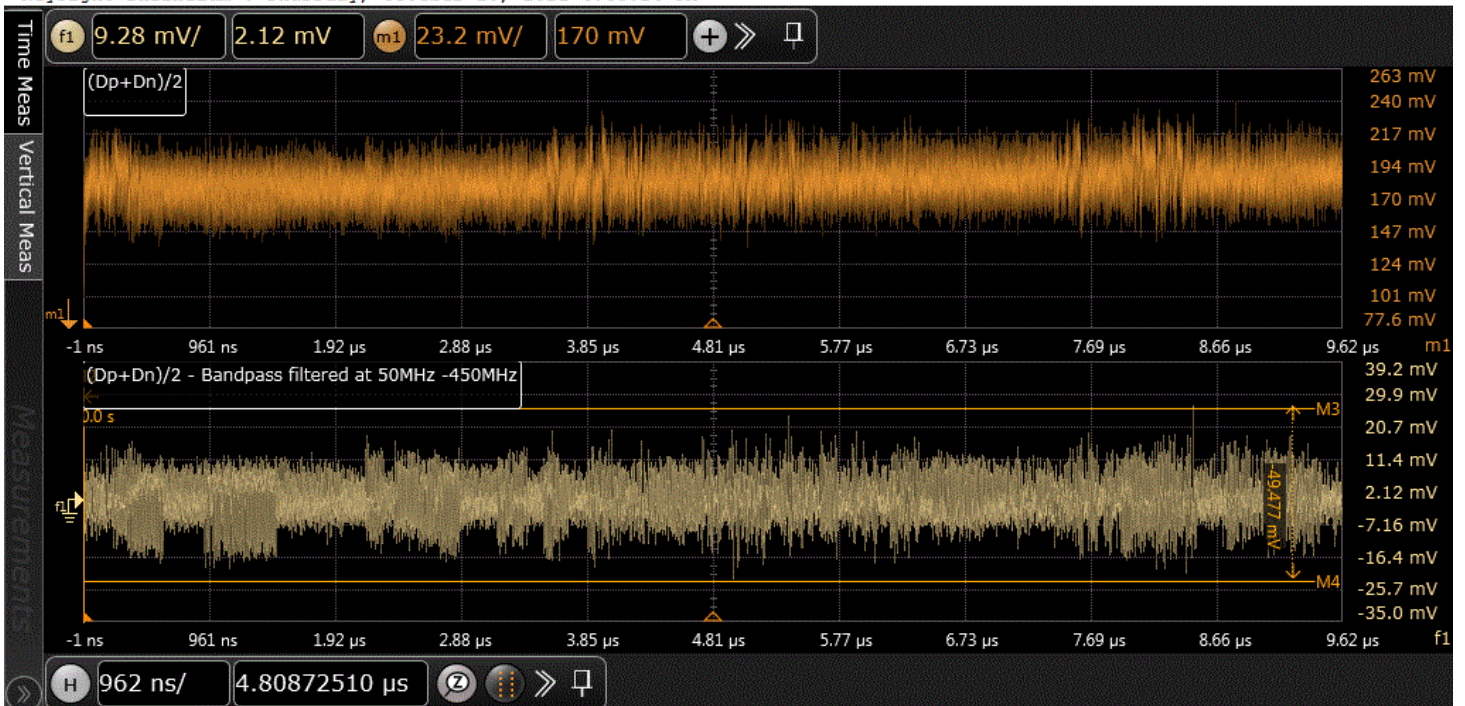
Result Details

Common Level Variations(50-450MHz)(See image)ZID100 ohmDataLaneLane3Number of HS Burst1

Trial 1

Trial 1: Common Level Variations(50-450MHz)

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✓ 1.3.4 HS Data TX Differential Voltage(VOD0 Pulse) Reference: D-PHY Specification v1.2 Section 9.1.1 Table 19, CTS v1.2(Test 1.3.4)

Test Summary: Pass **Test Description:** HS transmit differential voltage. This test will measure the VOD0 based on the reference data patterns(100000) of differential signal.

Pass Limits:[-270.00 mV to -140.00 mV]8131_Vod0(Mean)-194.58 mV

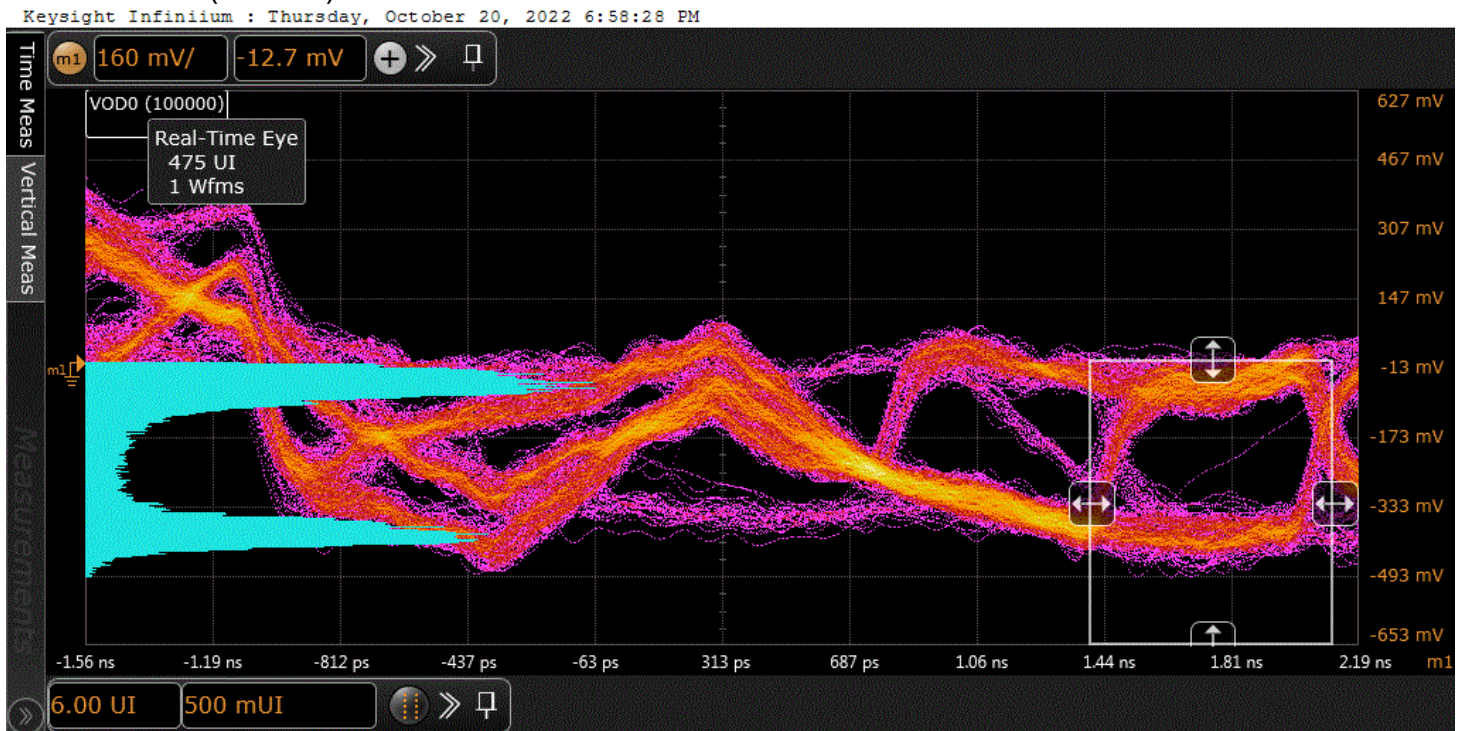
Result Details:

Result Details

VOD0 (100000)(See image)**Vod(Differential-0)**-194.58 mV**Number of measurement**475.000**ZID**100 ohm**DataLane**Lane3**Number of HS Burst**1

Trial 1

Trial 1: VOD0 (100000)


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✓ 1.3.4 HS Data TX Differential Voltage(VOD1 Pulse) Reference: D-PHY Specification v1.2 Section 9.1.1 Table 19, CTS v1.2(Test 1.3.4)

Test Summary: Pass **Test Description:** HS transmit differential voltage. This test will measure the VOD1 based on the reference data patterns(011111) of differential signal.

Pass Limits:[140.00 mV to 270.00 mV]8132_Vod1(Mean)169.64 mV

Result Details:

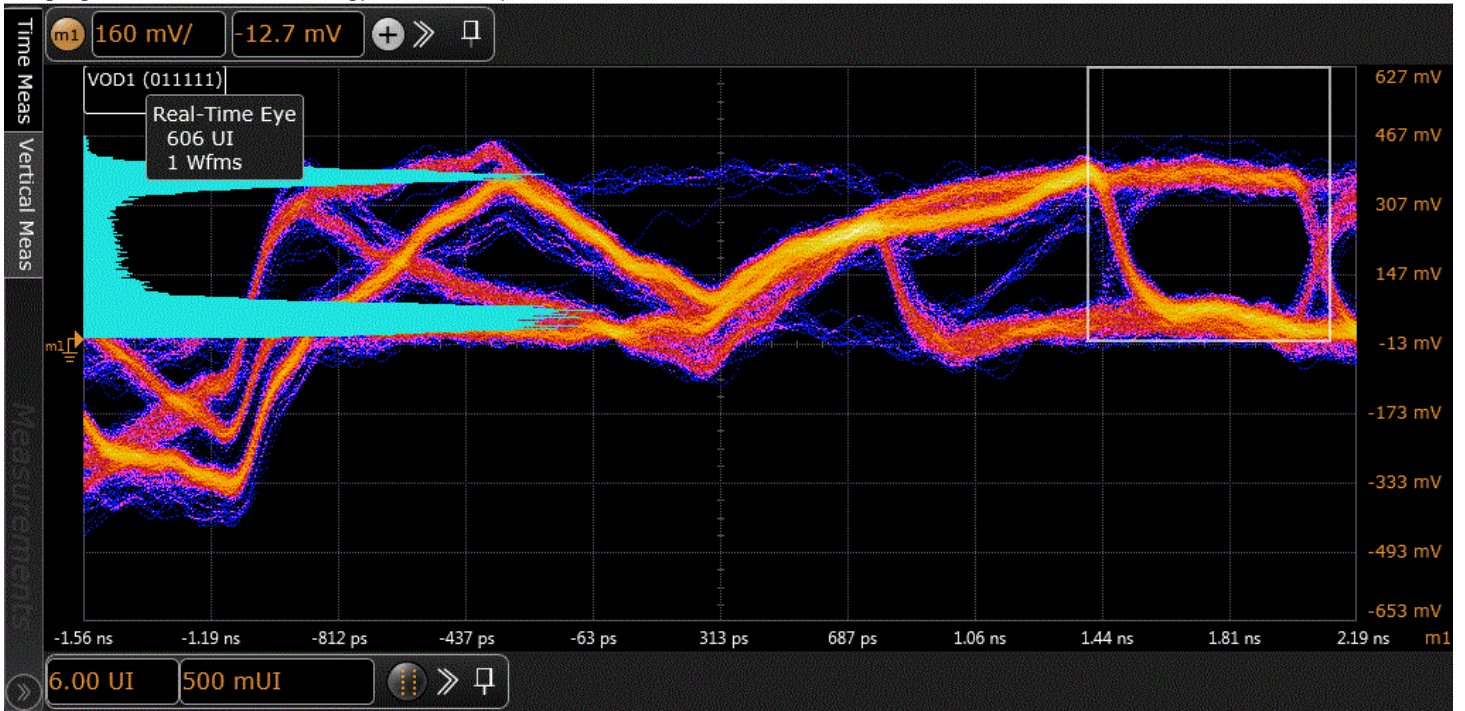
Result Details

VOD1 (011111)(See image)**Vod(Differential-1)**169.64 mV**Number of measurement**606.000**ZID**100 ohm**DataLane**Lane3**Number of HS Burst**1

Trial 1

Trial 1: VOD1 (011111)

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✗ 1.3.5 HS Data TX Differential Voltage Mismatch (Pulse) Reference: D-PHY Specification v1.2 Section 9.1.1 Table 19, CTS v1.2(Test 1.3.5)

Test Summary: FAIL Test Description: VOD mismatch when output is Differential-1 or Differential-0.

Pass Limits:< 14.00 mV8141_Vod Mismatch24.94 mV

Result Details:

Result Details

Vod(Differential-1)169.64 mV**Vod(Differential-0)**-194.58 mV**ZID**100 ohm**DataLane**Lane3**Number of HS Burst**1

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✓ 1.3.6 HS Data TX Single Ended Output High Voltage(VOHHS Pulse) Reference: D-PHY Specification v1.2 Section 9.1.1 Table 19, CTS v1.2(Test 1.3.6)

Test Summary: Pass Test Description: HS Single Ended output high voltage. This test will measure the VOHHS based on the reference pulses(100000) of single-ended Dp and Dn signals.

Pass Limits:<= 360.00 mV8151_Vohhs(Worst)325.96 mV

Result Details:

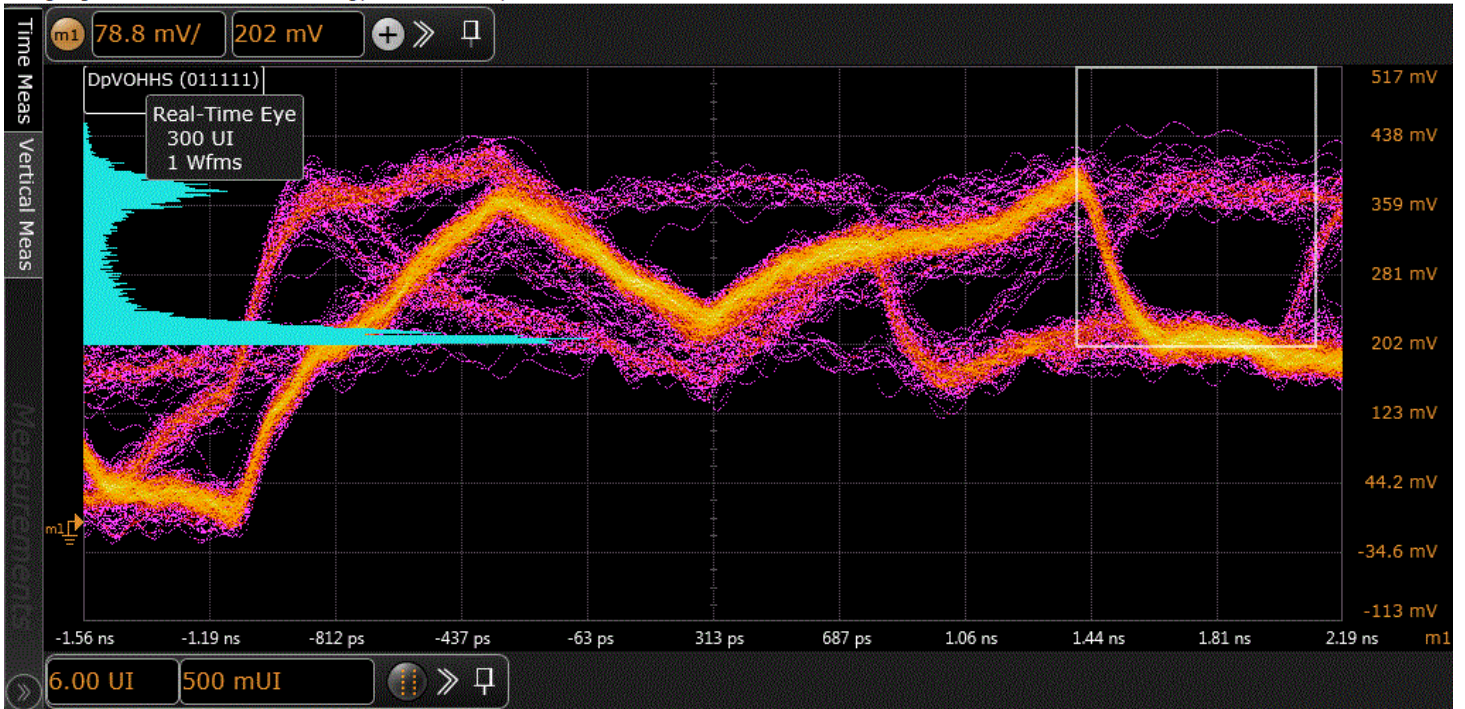
Result Details

DpVOHHS (011111)(See image)**DnVOHHS (011111)**(See image)**Vohhs(Dp)**270.55 mV**Vohhs(Dn)**325.96 mV**Number of measurement Vohhs(Dp)**300.000**Number of measurement Vohhs(Dn)**339.000**ZID**100 ohm**DataLane**Lane3**Number of HS Burst**1

Trial 1

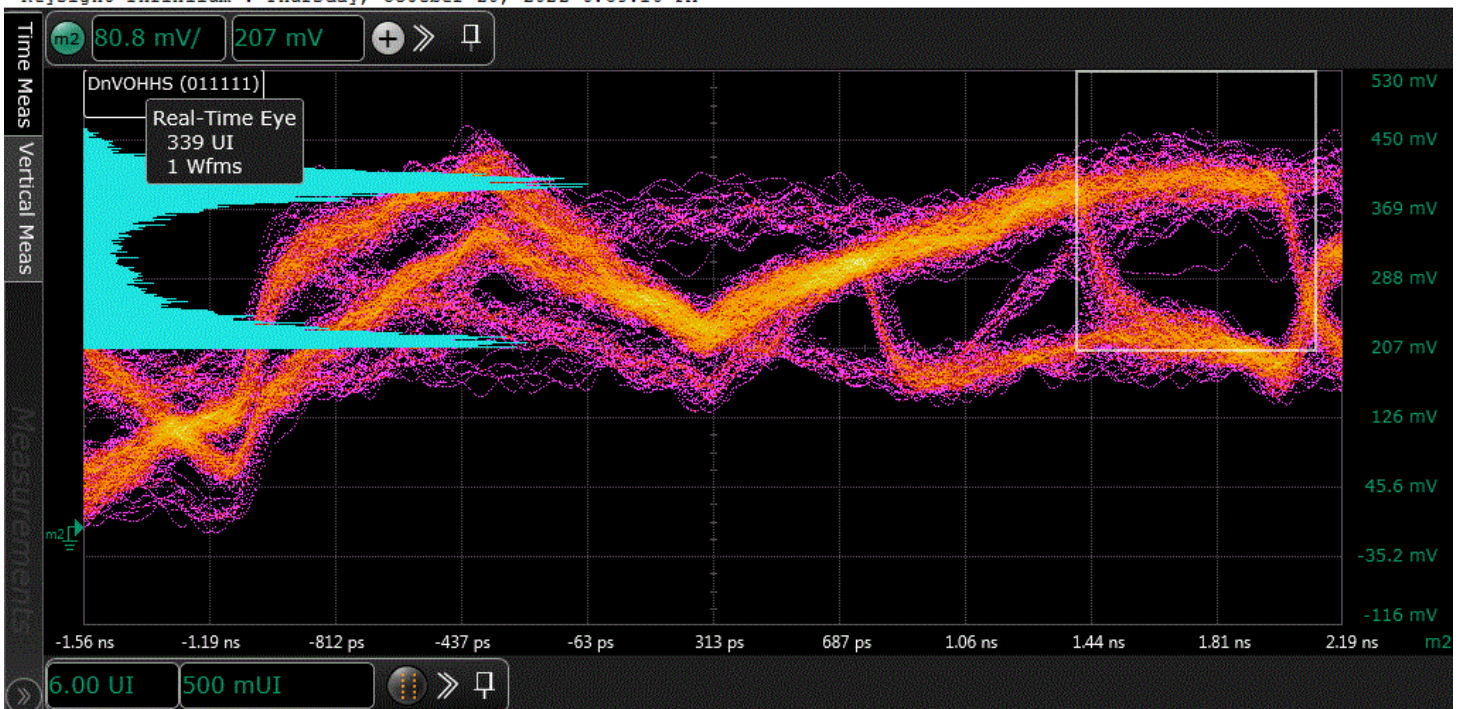
Trial 1: DpVOHHS (011111)

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Trial 1: DnVOHHS (011111)

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✓ 1.4.17 HS Clock Instantaneous (UIinst)(Max) Reference: D-PHY Specification v1.2 Section 10.1 Table 29, CTS v1.2(Test 1.4.17)

Test Summary: Pass Test Description: Maximum UI instantaneous of HS Clock.

Pass Limits: < 12.500 ns911_UIinst(Max)682 ps

Result Details:

Result Details

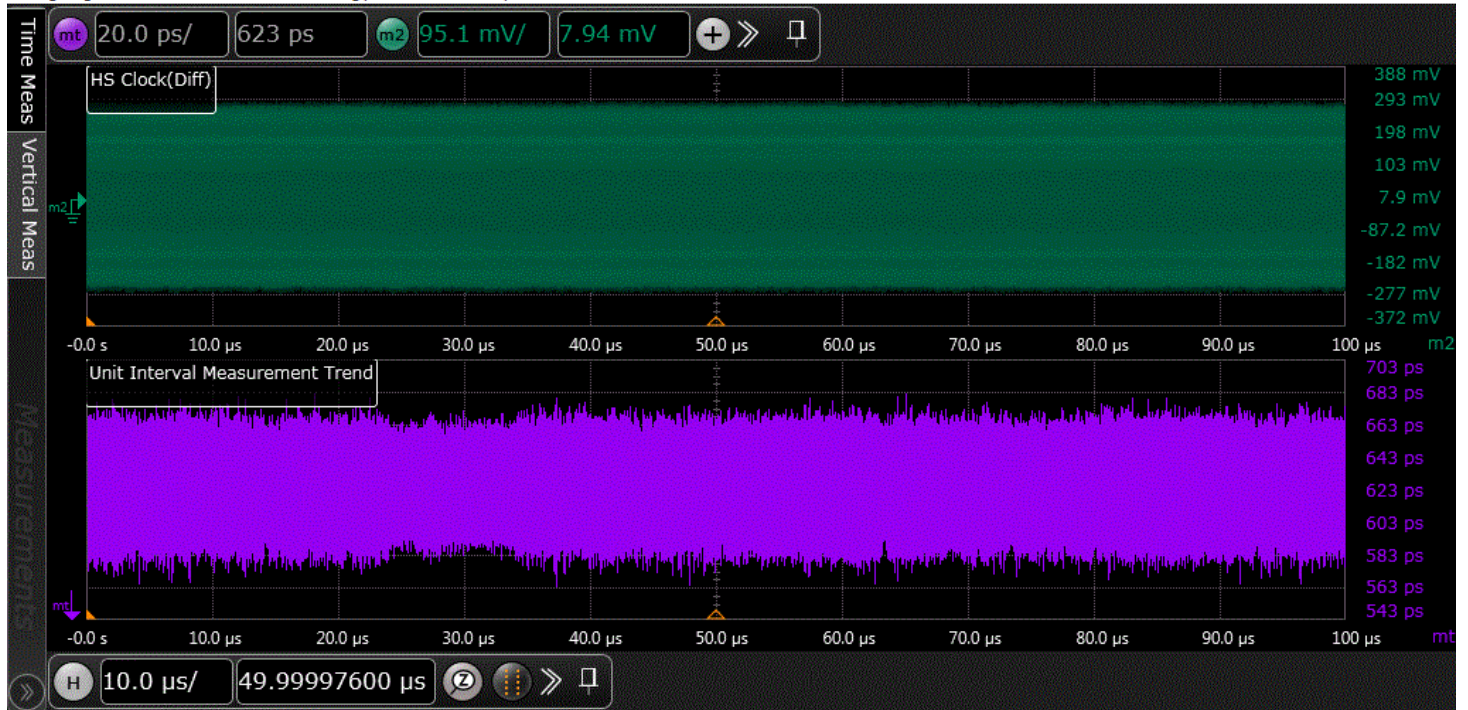
UIInst(See image)UIINST(Max)682.110 psUIINST(Mean)624.996 psNumber of UI159.999000

kZID100 ohmDataLaneLane3Number of HS Burst1

Trial 1

Trial 1: UIInst

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✓ 1.3.3 HS Entry: DATA TX THS-PREPARE+THS-ZERO Reference: D-PHY Specification v1.2
 Section 6.9 Table 14, CTS v1.2(Test 1.3.3)

Test Summary: Pass Test Description: THS-PREPARE+Time to drive HS-0 before Sync sequence.
 TXTHSPrepereTHSZero_LimitMin is based on 145ns+10*UI.

Pass Limits:>= TXTHSPrepereTHSZero_LimitMin s558_THS-PREPARE+THS-ZERO183.15 ns

Result Details:

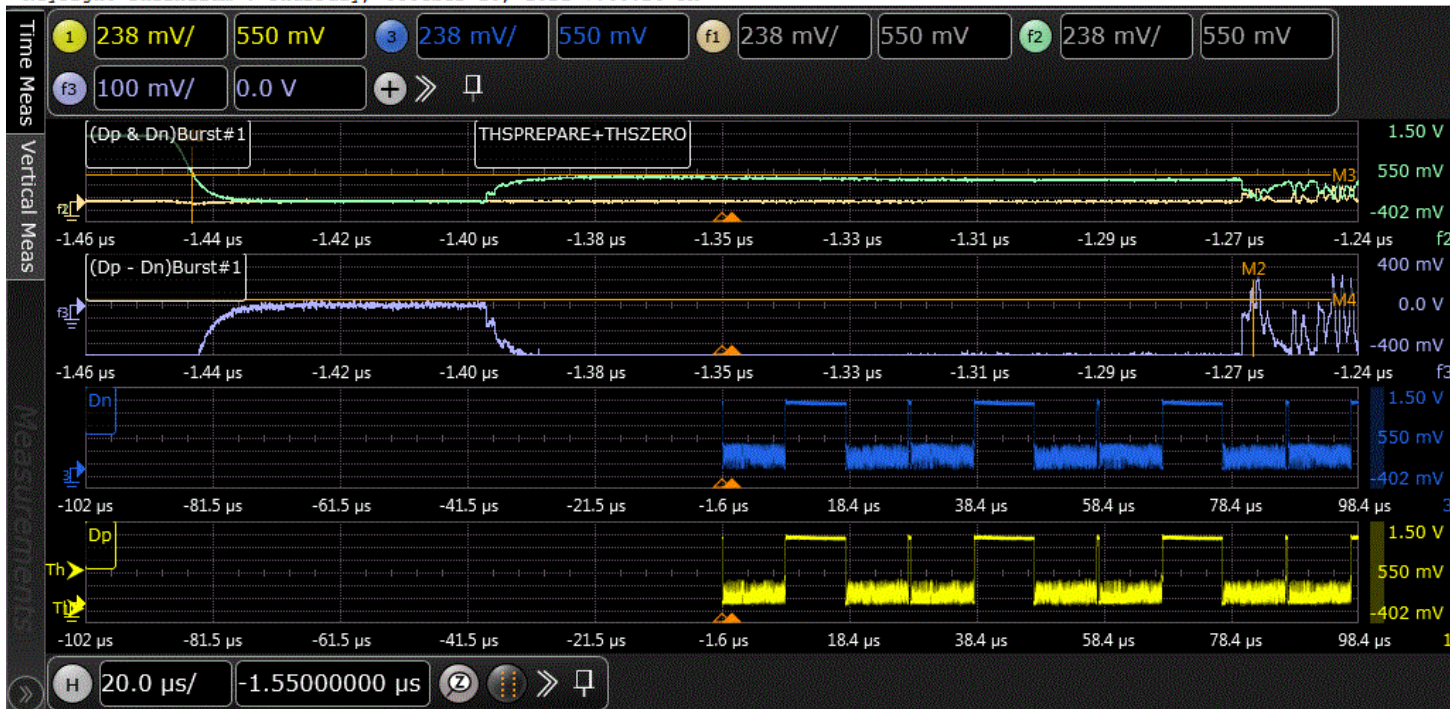
Result Details

THSPREPARE_THSZERO(See image)UIINST(Mean)624.996 psVHS_ZERO-388.81 mVZID100
 ohmDataLaneLane3PassLimit Min (TXTHSPrepereTHSZero_LimitMin)151.25 nsNumber of HS
 burst1

Trial 1

Trial 1: THSPREPARE_THSZERO

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✖ 1.3.11 HS Data TX 20%-80% Rise Time (tR)[Burst Data] Reference: D-PHY Specification v1.2 Section 9.1.1 Table 20, CTS v1.2(Test 1.3.11)

Test Summary: FAIL **Test Description:** This test is to verify that the 20%-80% rise time of the HS Differential signal is less than the maximum conformance limit(DataRiseTime_LimitMax). For CTS v1.2, the maximum conformance limit(DataRiseTime_LimitMax) is $0.3 \cdot UI$ for Datarate ≤ 1 Gbps, $0.35 \cdot UI$ for Datarate > 1 Gbps and ≤ 1.5 Gbps, $0.4 \cdot UI$ for Datarate > 1.5 Gbps. This test will measure the rise time based on the reference data patterns(000111) of differential signal. This test is applicable for Burst Data signal only. The VHS_ZERO level measured from Data Lane will be used to calculate 20/80% reference voltage for rise time measurement in this test.

Pass Limits:< DataRiseTime_LimitMax s81101_Rise Time20.628 ns

Result Details:

Result Details

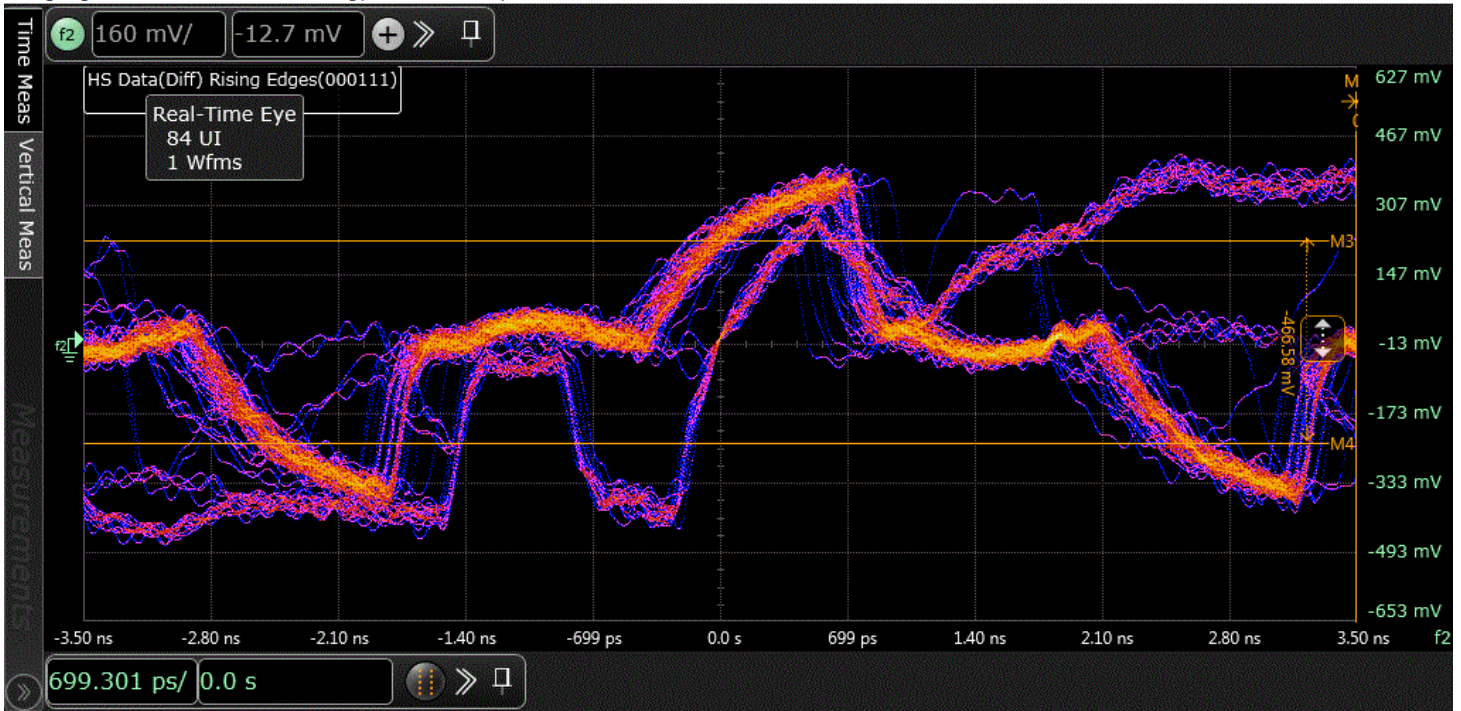
HS TX Risetime(See image)**Transition Time Measurement Lower Threshold(%)**20**Vod(1)**388.81 mV**Vod(0)**-388.81 mV**UIINST(Mean)**624.996 ps**Number of Measurement**83**ZID**100

ohm**DataLane**Lane3**PassLimit Max (DataRiseTime_LimitMax)**219 ps**Number of HS Burst**1

Trial 1

Trial 1: HS TX Risetime

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✖ 1.3.12 HS Data TX 80%-20% Fall Time (tF)[Burst Data] Reference: D-PHY Specification v1.2
Section 9.1.1 Table 20, CTS v1.2(Test 1.3.12)

Test Summary: FAIL **Test Description:** This test is to verify that the 80%-20% fall time of the HS differential signal is less than the maximum conformance limit(DataFallTime_LimitMax). For CTS v1.2, the maximum conformance limit(DataFallTime_LimitMax) is $0.3 \cdot UI$ for Datarate ≤ 1 Gbps, $0.35 \cdot UI$ for Datarate > 1 Gbps and ≤ 1.5 Gbps, $0.4 \cdot UI$ for Datarate > 1.5 Gbps. This test will measure the fall time based on the reference data patterns(111000) of differential signal. This test is applicable for Burst Data signal only. The VHS_ZERO level measured from Data Lane will be used to calculate 20/80% reference voltage for fall time measurement in this test.

Pass Limits:< DataFallTime_LimitMax s81111_Fall Time52.473 ns

Result Details:

Result Details

HS TX Faltime(See image)Transition Time Measurement Lower Threshold(%)20Vod(1)388.81

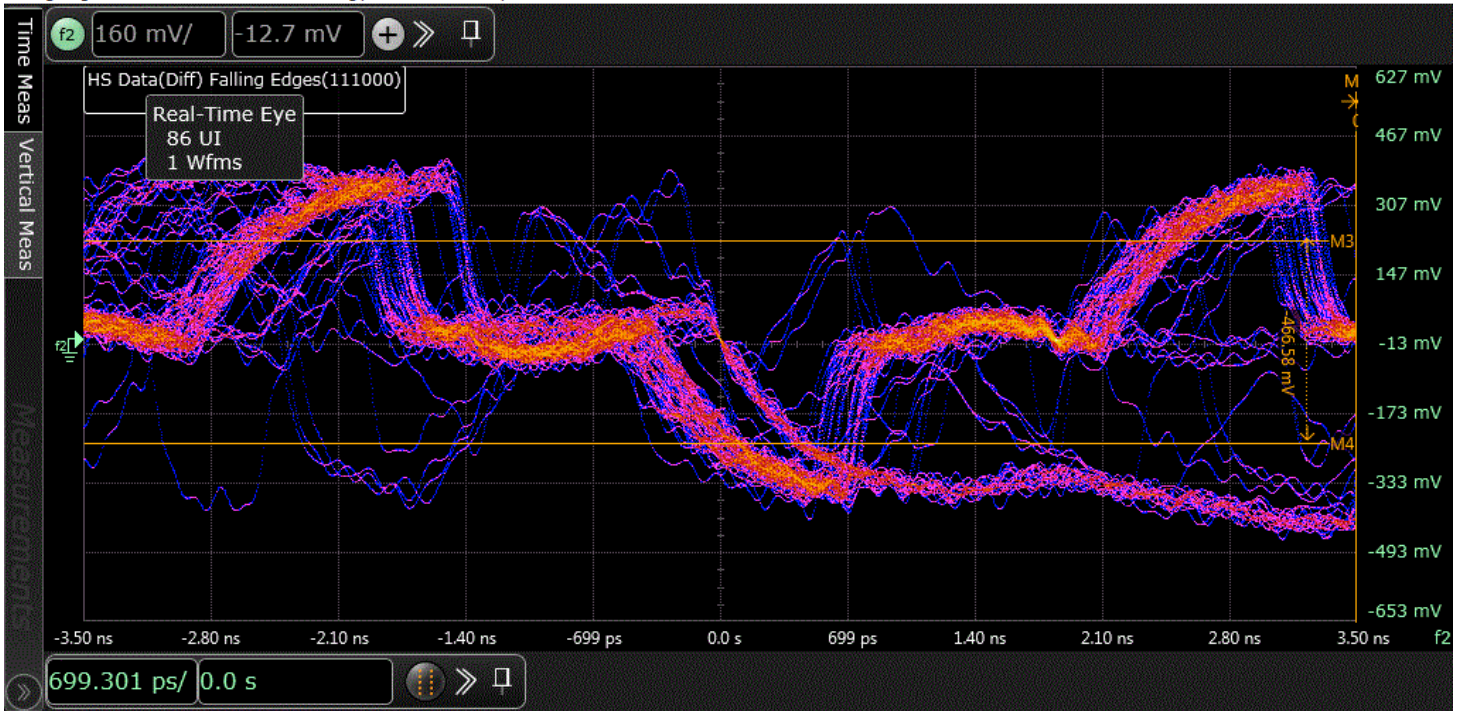
mVVod(0)-388.81 mVUIINST(Mean)624.996 psNumber of Measurement82ZID100

ohmDataLaneLane3PassLimit Max (DataFallTime_LimitMax)219 psNumber of HS Burst1

Trial 1

Trial 1: HS TX Faltime

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✓ 1.4.9 HS Clock TX Common-Level Variations Between 50-450MHz (VCMTX(LF)) Reference: D-PHY Specification v1.2 Section 9.1.1 Table 20, CTS v1.2(Test 1.4.9)

Test Summary: Pass Test Description: Common-level variation between 50-450MHz. This test is only available for CTS v1.2 and CTS v2.0 and v2.1.

Pass Limits: < 25.00 mV 1820_Vcmtx(LF) 5.86 mV

Result Details:

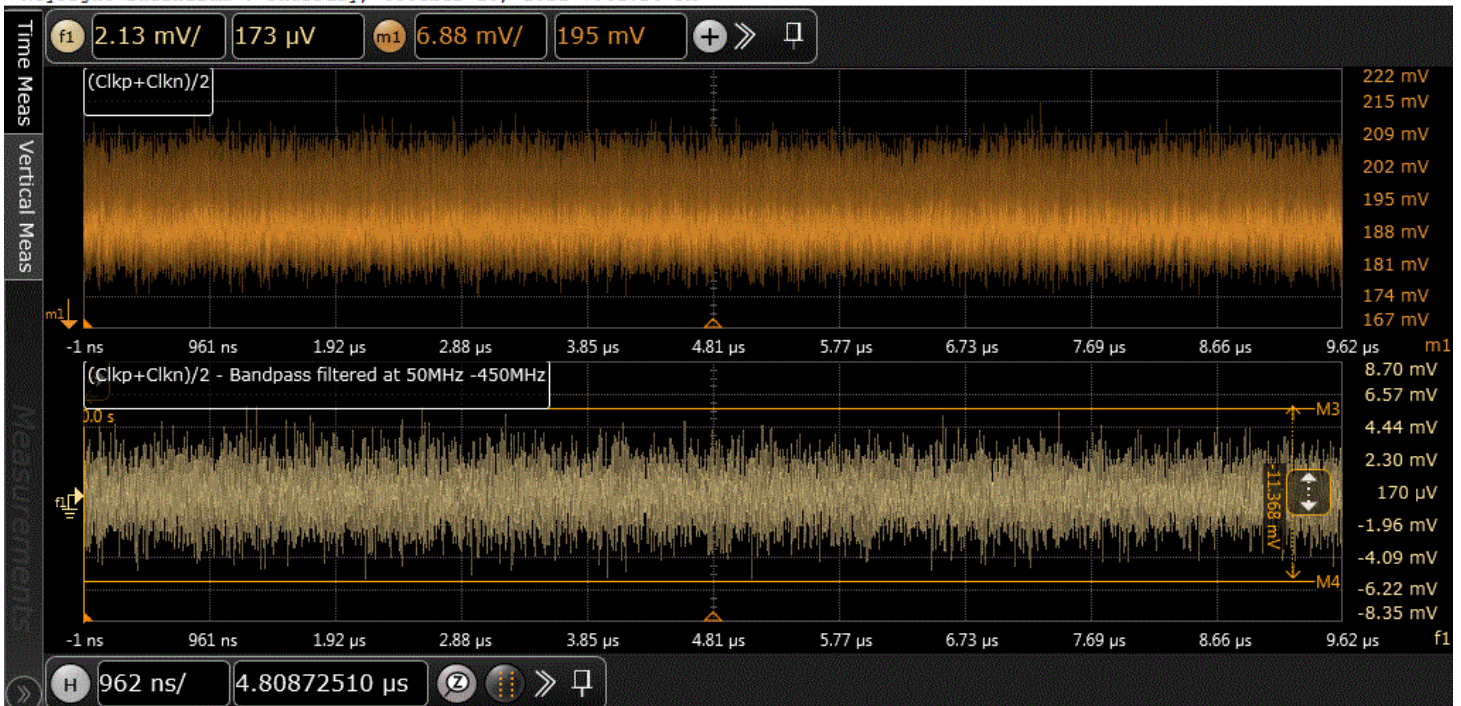
Result Details

Common Level Variations(50-450MHz)(See image) ZID100 ohm Number of HS Burst1

Trial 1

Trial 1: Common Level Variations(50-450MHz)

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✓ 1.4.7 HS Clock TX Static Common Mode Voltage(Vcmtx) Reference: D-PHY Specification v1.2 Section 9.1.1 Table 19, CTS v1.2(Test 1.4.7)

Test Summary: Pass Test Description: HS transmit static common-mode voltage for Clock.

Pass Limits:[150.00 mV to 250.00 mV]1811_Vcmtx(Worst)187.82 mV

Result Details:

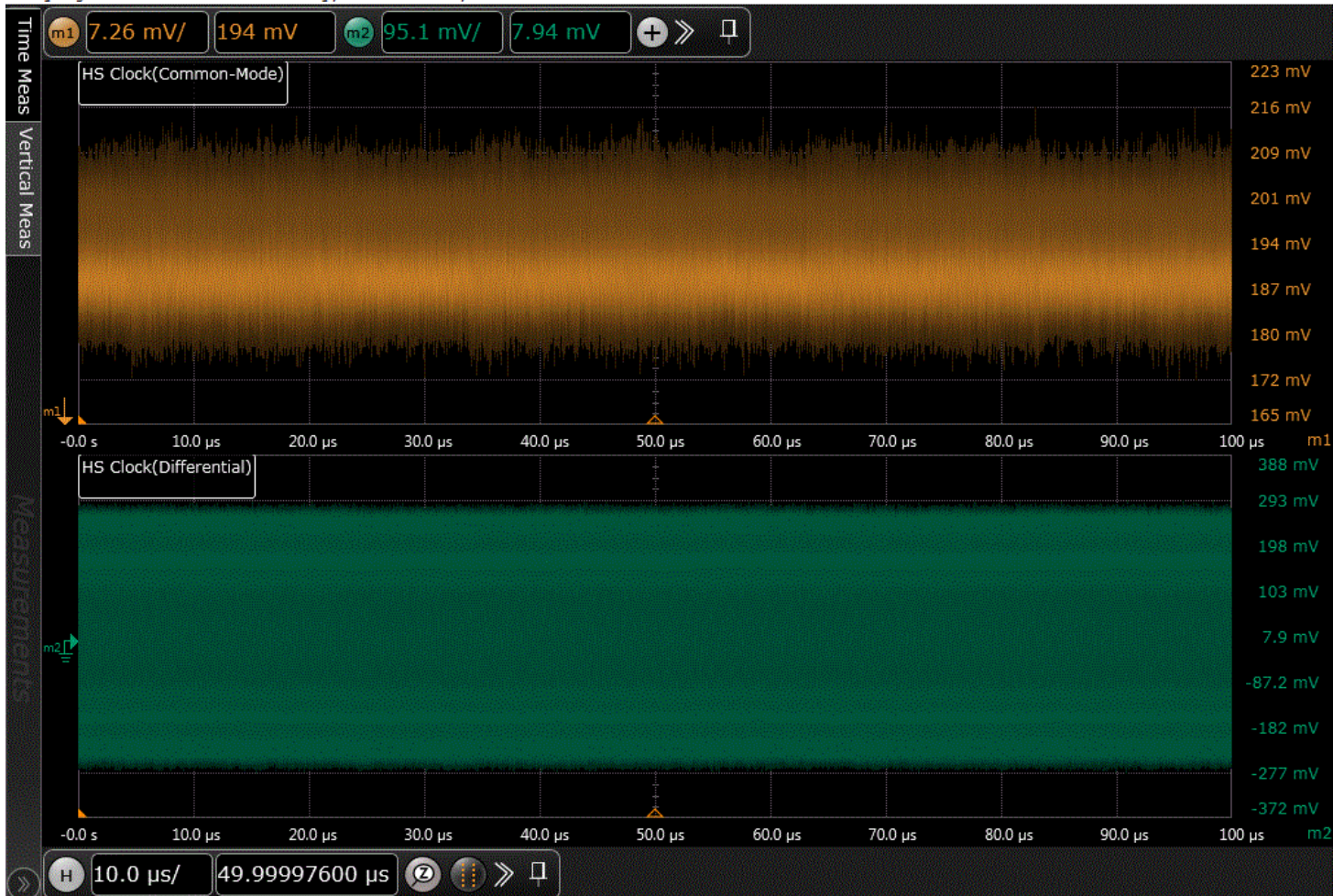
Result Details

HS Clock TX Common Mode Voltage(See image)**Vcmtx(Differential-1)**187.82 mV**Number of Vcmtx(Differential-1) Measured**80.000000 **kVcmtx(Differential-0)**189.76 mV**Number of Vcmtx(Differential-0) Measured**80.000000 **kZID**100 ohm**Number of HS Burst**1

Trial 1

Trial 1: HS Clock TX Common Mode Voltage

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✓ 1.4.8 HS Clock TX Vcmtx Mismatch Reference: D-PHY Specification v1.2 Section 9.1.1 Table 19, CTS v1.2(Test 1.4.8)

Test Summary: Pass Test Description: VCMTX mismatch when output is Differential-1 or Differential-0.

Pass Limits:< 5.00 mV1812_Vcmtx Mismatch970 μV

Result Details:

Result Details

Vcmtx(Differential-1)187.82 mV**Vcmtx(Differential-0)**189.76 mV**ZID**100 ohm**Number of HS Burst**1

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✓ 1.4.10 HS Clock TX Common-Level Variations Above 450MHz (VCMTX(HF)) Reference: D-PHY Specification v1.2 Section 9.1.1 Table 20, CTS v1.2(Test 1.4.10)

Test Summary: Pass Test Description: Common-level variations above 450MHz.

Pass Limits:< 15.00 mV1818_Vcmtx(HF)4.81 mV

Result Details:

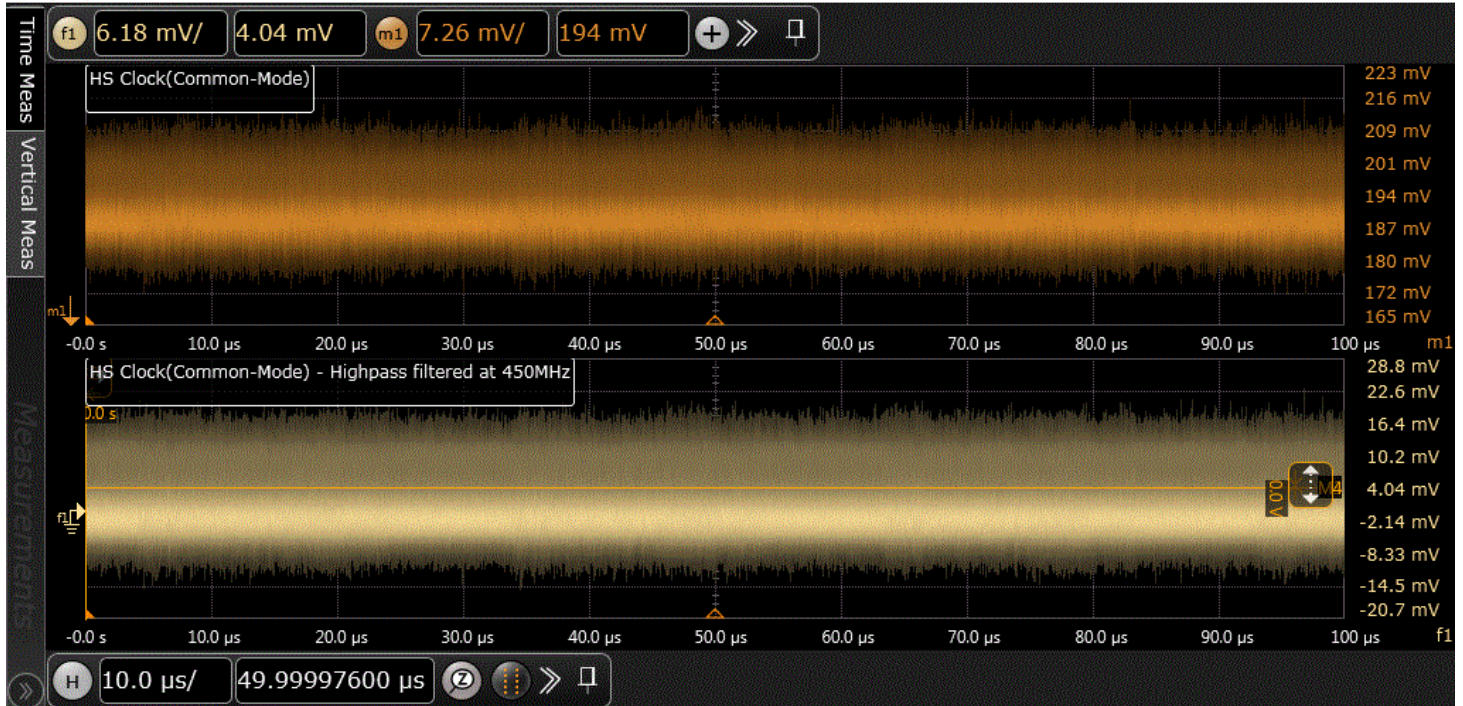
Result Details

Common Level Variations(>450Mhz)(See image)ZID100 ohmNumber of HS Burst1

Trial 1

Trial 1: Common Level Variations(>450Mhz)

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✓ 1.4.4 HS Clock TX Differential Voltage(VOD0 Pulse) Reference: D-PHY Specification v1.2 Section 9.1.1 Table 19, CTS v1.2(Test 1.4.4)

Test Summary: Pass Test Description: HS clock transmitter differential voltage.

Pass Limits: [-270.00 mV to -140.00 mV]18131_Vod0(Mean)-214.97 mV

Result Details:

Result Details

Clock VOD0 (10)(See image)Vod(Differential-0)-214.97 mVNumber of measurement80.000000

kZID100 ohmNumber of HS Burst1

Trial 1

Trial 1: Clock VOD0 (10)

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✓ 1.4.4 HS Clock TX Differential Voltage(VOD1 Pulse) Reference: D-PHY Specification v1.2 Section 9.1.1 Table 19, CTS v1.2(Test 1.4.4)

Test Summary: Pass Test Description: HS clock transmitter differential voltage.

Pass Limits:[140.00 mV to 270.00 mV]18132_Vod1(Mean)214.41 mV

Result Details:

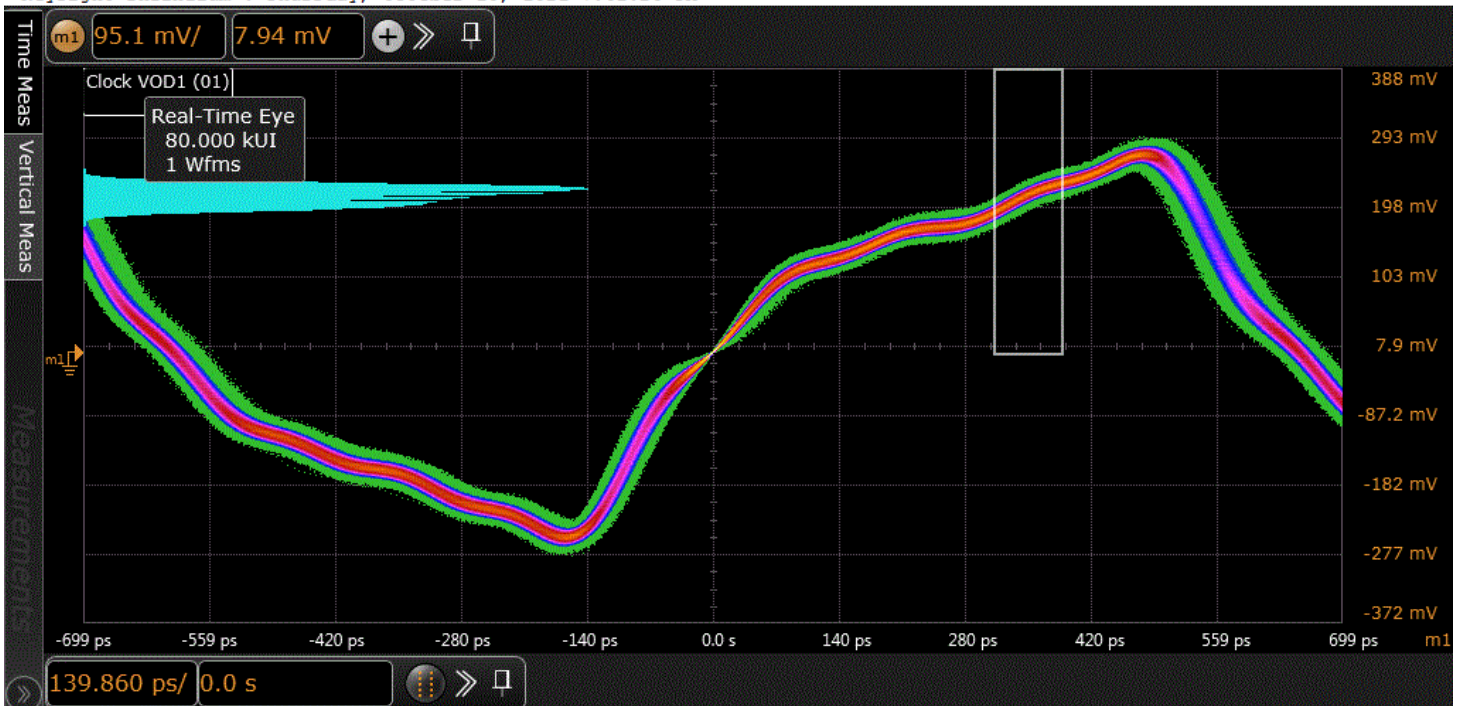
Result Details

Clock VOD1 (01)(See image)**Vod(Differential-1)**214.41 mV**Number of measurement**80.000000
kZID100 ohm**Number of HS Burst**1

Trial 1

Trial 1: Clock VOD1 (01)

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✓ 1.4.5 HS Clock TX Differential Voltage Mismatch (Pulse) Reference: D-PHY Specification v1.2
Section 9.1.1 Table 19, CTS v1.2(Test 1.4.5)

Test Summary: Pass Test Description: VOD mismatch when output is Differential-1 or Differential-0.

Pass Limits:< 14.00 mV18141_Vod Mismatch560 μ V

Result Details:

Result Details

Vod(Differential-1)214.41 mV**Vod(Differential-0)**-214.97 mV**ZID**100 ohm**Number of HS Burst**1

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✓ 1.4.6 HS Clock TX Single Ended Output High Voltage(VOHHS Pulse) Reference: D-PHY Specification v1.2 Section 9.1.1 Table 19, CTS v1.2(Test 1.4.6)

Test Summary: Pass Test Description: HS Single Ended output high voltage.

Pass Limits:<= 360.00 mV18151_Vohhs(Worst)306.95 mV

Result Details:

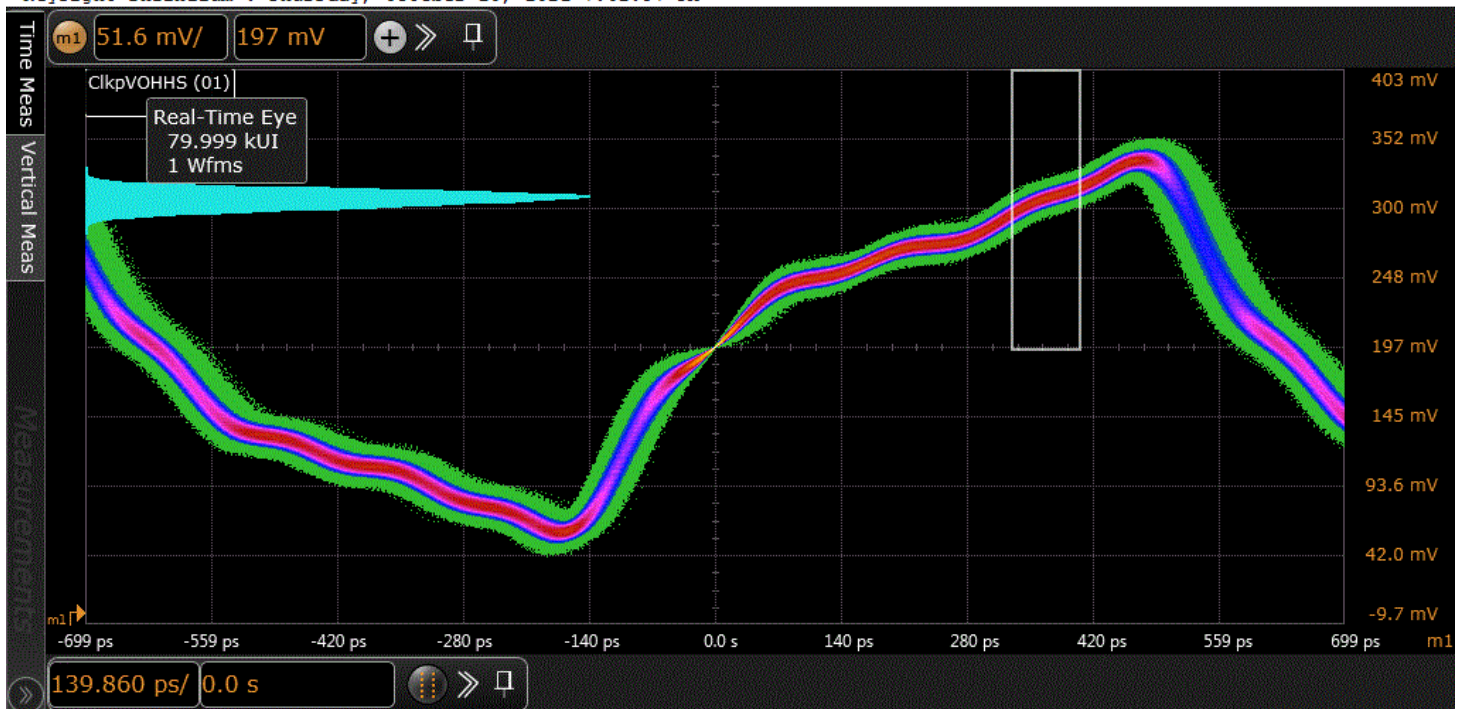
Result Details

ClkpVOHHS (01)(See image)**ClknVOHHS (01)**(See image)**Vohhs(Clkp)**306.95 mV**Vohhs(Clkn)**297.73 mV**Number of measurement Vohhs(Clkp)**79.999000 k**Number of measurement Vohhs(Clkn)**80.000000 k**ZID**100 ohm**Number of HS Burst**1

Trial 1

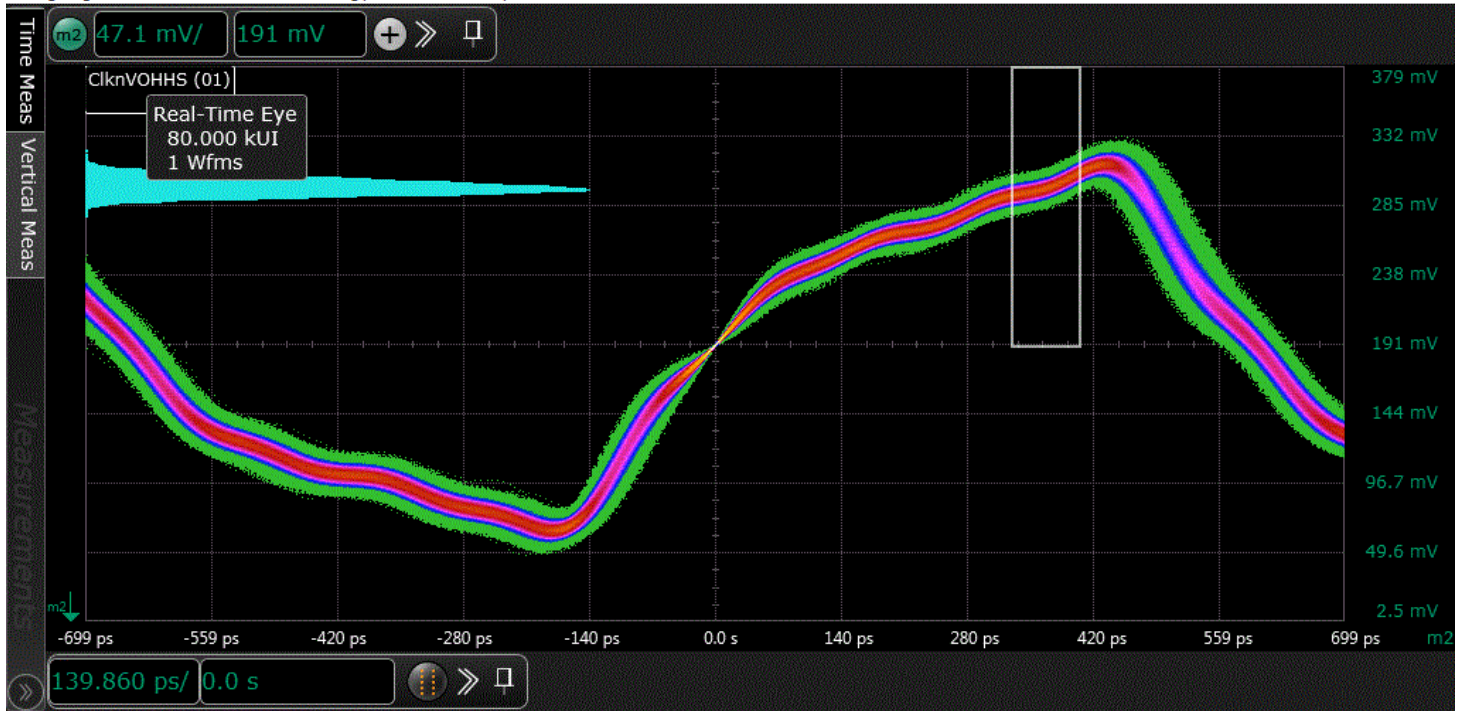
Trial 1: ClkpVOHHS (01)

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Trial 1: ClknVOHHS (01)

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✖ 1.4.11 HS Clock TX 20%-80% Rise Time (tR)[Continuous Clock, Burst Data] Reference: D-PHY Specification v1.2 Section 9.1.1 Table 20, CTS v1.2(Test 1.4.11)

Test Summary: FAIL **Test Description:** This test is to verify that the 20%-80% rise time of the HS differential signal is less than the maximum conformance limit(CLKRiseTime_LimitMax). For CTS v1.2, the maximum conformance limit(CLKRiseTime_LimitMax) is 0.3*UI for Datarate ≤ 1Gbps, 0.35*UI for Datarate > 1Gbps and ≤ 1.5Gbps, 0.4*UI for Datarate > 1.5Gbps. This test is applicable for Continuous Clock and Burst Data signal only. The VHS_ZERO level measured from Data Lane will be used to calculate 20/80% reference voltage for rise time measurement in this test.

Pass Limits: < CLKRiseTime_LimitMax s181102_Rise Time528 ps

Result Details:

Result Details

HS Clock TX Risetime(See image)Transition Time Measurement Lower

Threshold(%)20Vod(1)388.81 mVVod(0)-388.81 mVUIINST(Mean)624.996 psNumber of Measurement79.990 kZID100 ohmPassLimit Max (CLKRiseTime_LimitMax)219 psNumber of HS Burst1

Trial 1

Trial 1: HS Clock TX Risetime

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✖ 1.4.12 HS Clock TX 80%-20% Fall Time (tF)[Continuous Clock, Burst Data] Reference: D-PHY Specification v1.2 Section 9.1.1 Table 20, CTS v1.2(Test 1.4.12)

Test Summary: FAIL **Test Description:** This test is to verify that the 80%-20% fall time of the HS differential signal is less than the maximum conformance limit(CLKFallTime_LimitMax). For CTS v1.2, the maximum conformance limit(CLKFallTime_LimitMax) is $0.3 \cdot UI$ for Datarate ≤ 1 Gbps, $0.35 \cdot UI$ for Datarate > 1 Gbps and ≤ 1.5 Gbps, $0.4 \cdot UI$ for Datarate > 1.5 Gbps. This test is applicable for Continuous Clock and Burst Data signal only. The VHS_ZERO level measured from Data Lane will be used to calculate 20/80% reference voltage for fall time measurement in this test.

Pass Limits: < CLKFallTime_LimitMax s181112_Fall Time526 ps

Result Details:

Result Details

HS Clock TX Falltime(See image)Transition Time Measurement Lower

Threshold(%)20Vod(1)388.81 mVVod(0)-388.81 mVUIINST(Mean)624.996 psNumber of Measurement79.991 kZID100 ohmPassLimit Max (CLKFallTime_LimitMax)219 psNumber of HS Burst1

Trial 1

Trial 1: HS Clock TX Falltime

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✓ 1.4.17 HS Clock Instantaneous (UInst)(Min) Reference: D-PHY Specification v1.2 Section 10.1 Table 29, CTS v1.2(Test 1.4.17)

Test Summary: Pass Test Description: Minimum UI instantaneous (Min) of HS Clock.

Pass Limits: $\geq$ UInst_Min_Limit s914_UInst(Min)563 ps

Result Details:

Result Details

UIINST(Min)563.240 psUIINST(Mean)624.996 psNumber of UI159.999000 kZID100

ohmDataLaneLane3PassLimit Min (UInst_Min_Limit)0.000000000000 sNumber of HS Burst1

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✗ 1.4.18 Clock Lane HS Clock Delta UI (UI variation) Reference: D-PHY Specification v1.2 Section 10.1 Table 29, CTS v1.2(Test 1.4.18)

Test Summary: FAIL Test Description: This test is to verify that the Clock lane HS Clock Delta UI is in between the minimum conformance limit(UIVariant_Limit_Min) and the maximum conformance limit(UIVariant_Limit_Max). For CTS v1.1, UIVariant_Limit_Min is -10% and UIVariant_Limit_Max is 10% for Datarate $\leq$ 1Gbps, UIVariant_Limit_Min is -5% and UIVariant_Limit_Max is 5% for Datarate $>$ 1Gbps. For CTS v1.2, UIVariant_Limit_Min is -10% and UIVariant_Limit_Max is 10% for Datarate $\leq$ 1Gbps, UIVariant_Limit_Min is -5% and UIVariant_Limit_Max is 5% for Datarate $>$ 1Gbps and $\leq$ 1.5Gbps .

Pass Limits:[UIVariant_Limit_Min % to UIVariant_Limit_Max %]1911_UIVariant(Min)-9.88 %

Result Details:

Result Details

UIINST(Min)563.240 psUIINST(Max)682.110 psUIINST(Mean)624.996 psNumber of UI159.999000

kDataLaneLane3UIVariant_min-9.881 %UIVariant_max9.138 %ZID100 ohmPassLimit Min

(UIVariant_Limit_Min)-5.00 %PassLimit Max (UIVariant_Limit_Max)5.00 %Number of HS Burst1

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✓ 1.3.1 HS Entry: DATA TLPX Reference: D-PHY Specification v1.2 Section 6.9 Table 14, CTS v1.2(Test 1.3.1)

Test Summary: Pass Test Description: Length of any Low-Power state period.

Pass Limits: ≥ 50.00 ns 511_TLPX55.04 ns

Result Details:

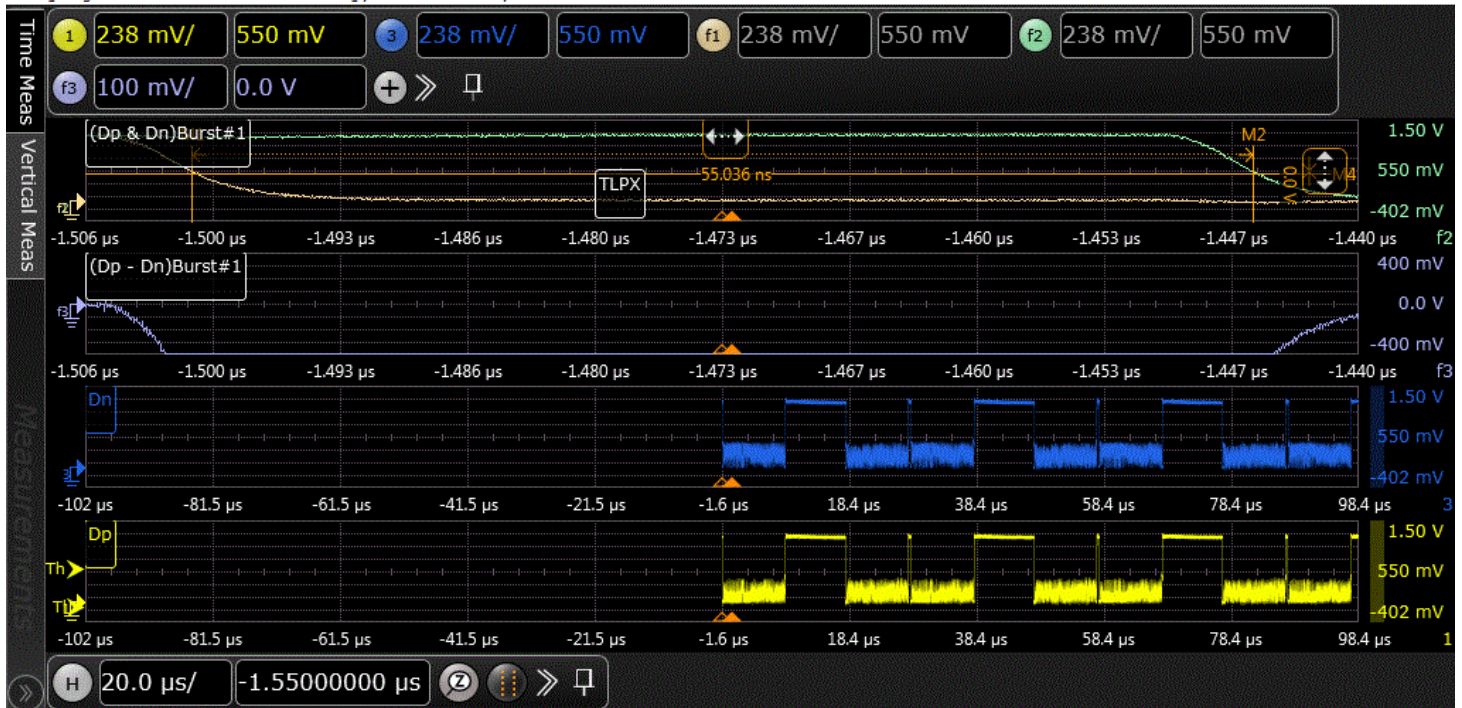
Result Details

TLPX(See image)ZID100 ohmDataLaneLane3Number of HS burst1

Trial 1

Trial 1: TLPX

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✓ 1.3.2 HS Entry: DATA TX THS-PREPARE Reference: D-PHY Specification v1.2 Section 6.9 Table 14, CTS v1.2(Test 1.3.2)

Test Summary: Pass Test Description: Time to drive LP-00 to prepare for HS Transmission.

THSPrepare_LimitMin is based on $40\text{ns} + 4 \cdot U_I$. THSPrepare_LimitMax is based on $85\text{ns} + 6 \cdot U_I$.

Pass Limits:[THSPrepare_LimitMin s to THSPrepare_LimitMax s]557_THS-PREPARE50.83 ns

Result Details:

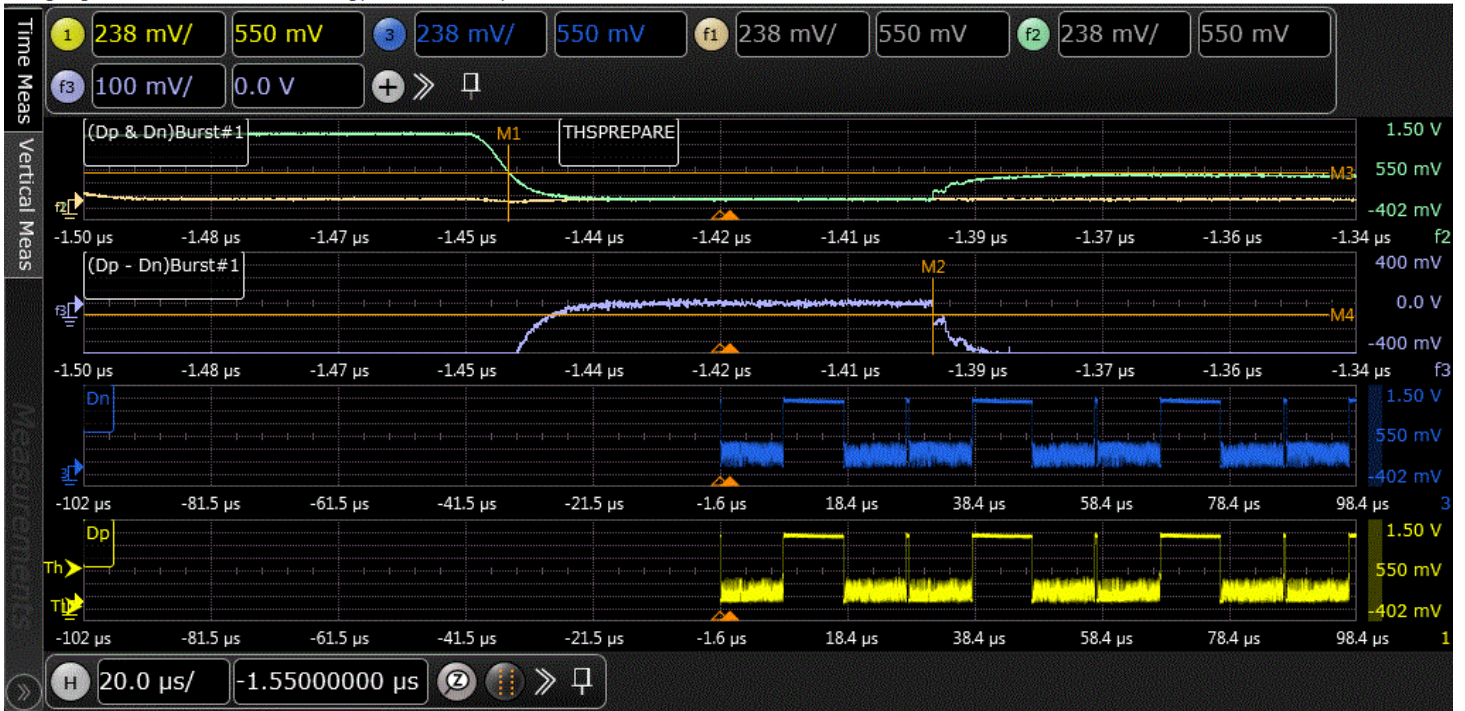
Result Details

THSPREPRE(See image)UIINST(Mean)624.996 psZID100 ohmDataLaneLane3PassLimit Min (THSPrepare_LimitMin)42.50 nsPassLimit Max (THSPrepare_LimitMax)88.75 nsNumber of HS burst1

Trial 1

Trial 1: THSPREPRE

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✓ 1.3.13 HS Exit: DATA TX THS-TRAIL Reference: D-PHY Specification v1.2 Section 6.9 Table 14, CTS v1.2(Test 1.3.13)

Test Summary: Pass **Test Description:** Time to drive flipped differential state after last payload data bit of a HS transmission burst. TXTHSTrail_LimitMin is based on $60\text{ns} + n \cdot 4 \cdot \text{UI}$. The THS-SKIP parameter is useful to avoid glitch problem during THS-TRAIL measurement. Any transition on the Data Lane in THS-SKIP time interval will be ignored when finding last payload data bit of HS transmission burst. The default value of THS-SKIP is set to 0s to prevent invalid THS-TRAIL measurement.

Pass Limits: $\geq$ TXTHSTrail_LimitMin s546_THS-TRAIL82.03 ns

Result Details:

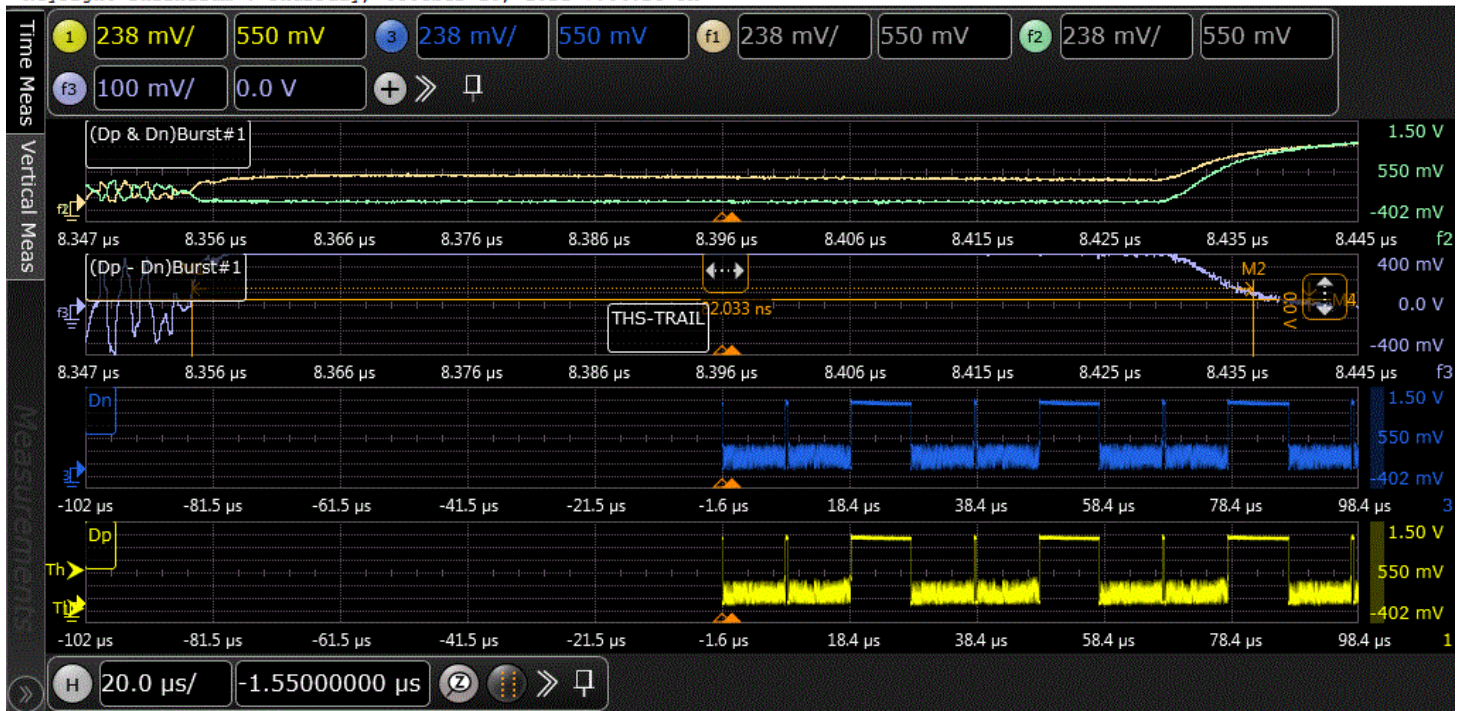
Result Details

THSTRAIL(See image)**THS-SKIP(s)**0.00000000000000 s**ZID**100 ohm**DataLane**Lane3**PassLimit Min**
(TXTHSTrail_LimitMin)62.80 ns**Number of HS burst**1

Trial 1

Trial 1: THSTRAIL

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✓ 1.3.14 HS Exit: DATA TX TREOT Reference: D-PHY Specification v1.2 Section 9.1.2 Table 22, CTS v1.2(Test 1.3.14)

Test Summary: Pass Test Description: 30%-85% rise time and fall time

Pass Limits: ≤ 35.00 ns549_TREOT-1.19 ns

Result Details:

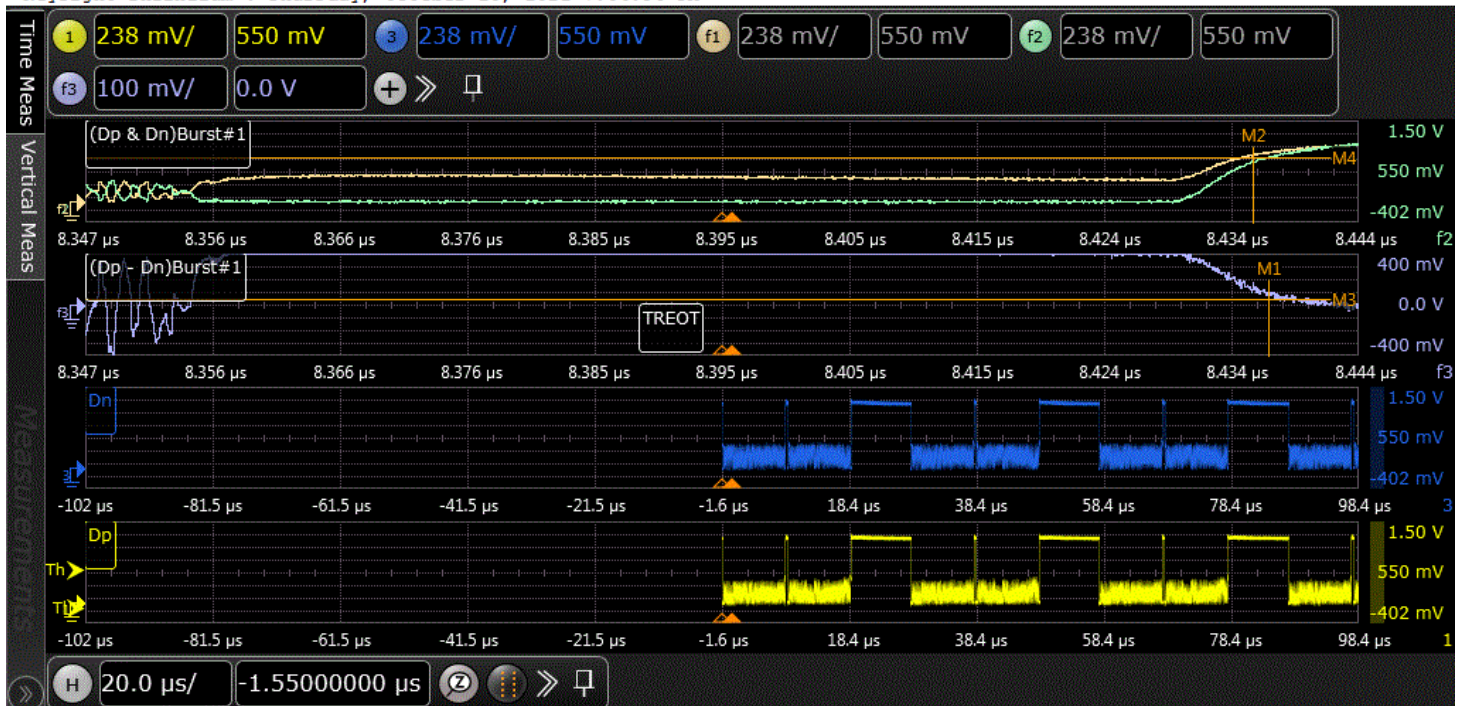
Result Details

TREOT(See image)ZID100 ohmDataLaneLane3Number of HS burst1

Trial 1

Trial 1: TREOT

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✓ 1.3.15 HS Exit: DATA TX TEOT Reference: D-PHY Specification v1.2 Section 6.9 Table 14, CTS v1.2(Test 1.3.15)

Test Summary: Pass Test Description: Time from start of THS-TRAIL period to start of LP-11 state. TXTEOT_LimitMax is based on $105\text{ns} + n \cdot 12 \cdot \text{UI}$.

Pass Limits: $\leq$ TXTEOT_LimitMax s547_TEOT80.84 ns

Result Details:

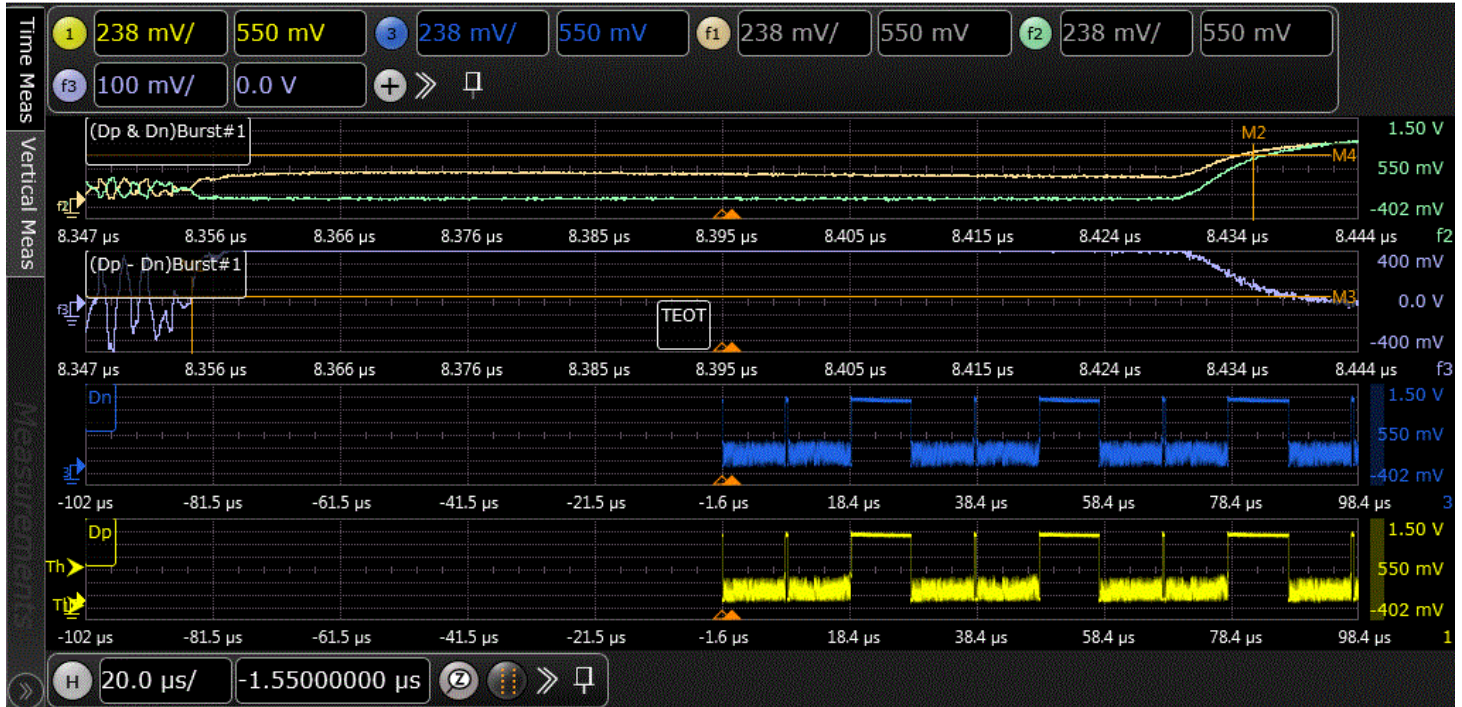
Result Details

TEOT(See image)UIINST(Mean)624.996 psZID100 ohmDataLaneLane3PassLimit Max (TXTEOT_LimitMax)112.50 nsNumber of HS burst1

Trial 1

Trial 1: TEOT

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✓ 1.3.16 HS Exit: DATA TX THS-EXIT Reference: D-PHY Specification v1.2 Section 6.9 Table 14, CTS v1.2(Test 1.3.16)

Test Summary: Pass Test Description: Time to drive LP-11 after HS burst.

Pass Limits: $\geq$ 100.00 ns548_THS-EXIT347.16 ns

Result Details:

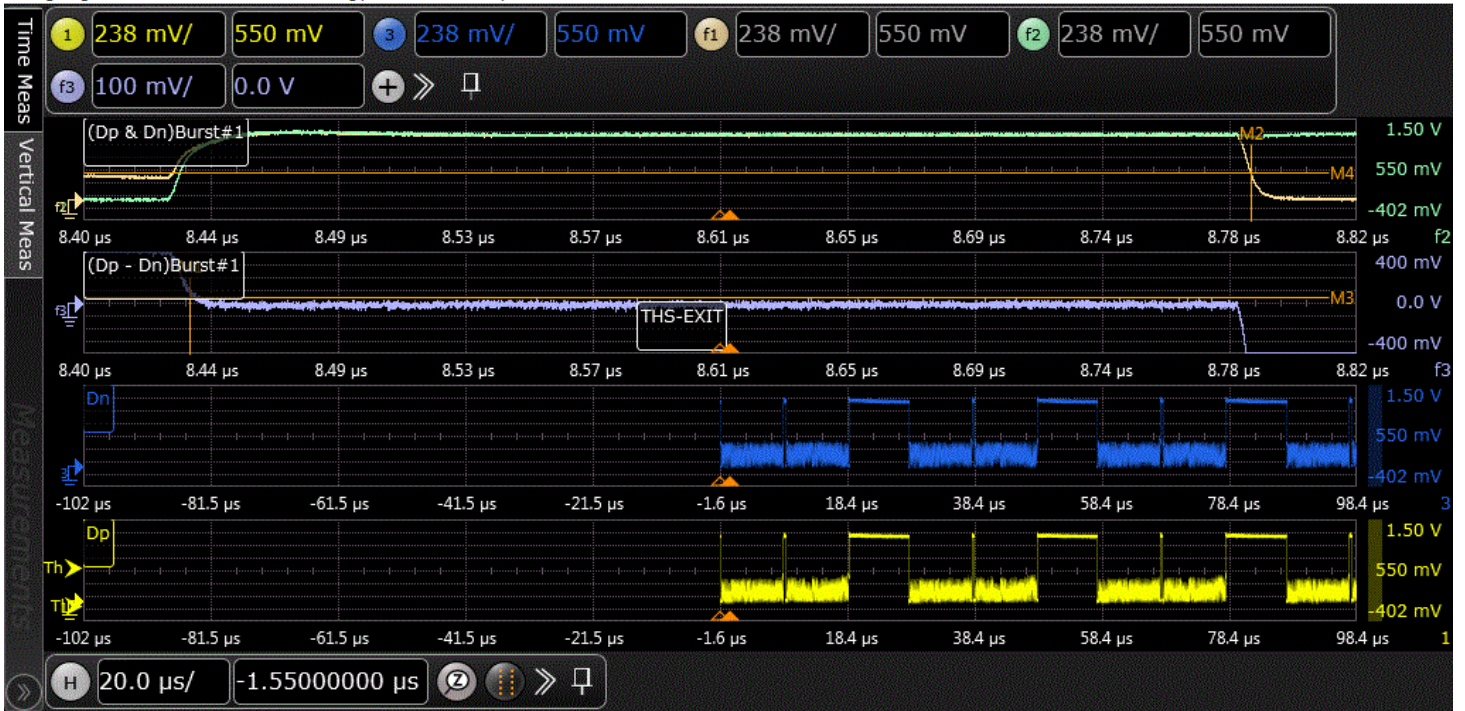
Result Details

THSEXIT(See image)ZID100 ohmDataLaneLane3Number of HS burst1

Trial 1

Trial 1: THSEXIT

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✖ 1.5.4 Data-to-Clock Skew (TSKEW(TX))(Max,Min) Reference: D-PHY Specification v1.2 Section 10.2.1 Table 30, CTS v1.2(Test 1.5.4)

Test Summary: FAIL Test Description: Data to Clock Skew [measured at transmitter].

Pass Limits:[MinMaxTSkewTest_LimitMin Ulnst to MinMaxTSkewTest_LimitMax

Ulnst]913_Tskew(Worst)500 mUlnst

Result Details:

Result Details

LeftCrossing(See image)UIINST(Mean)625.0 psTSkew(Min)-312.5 psTSkew(Max)312.5 psNo Of

Measurement15.384000 kZID100 ohmDataLaneLane3PassLimit Min

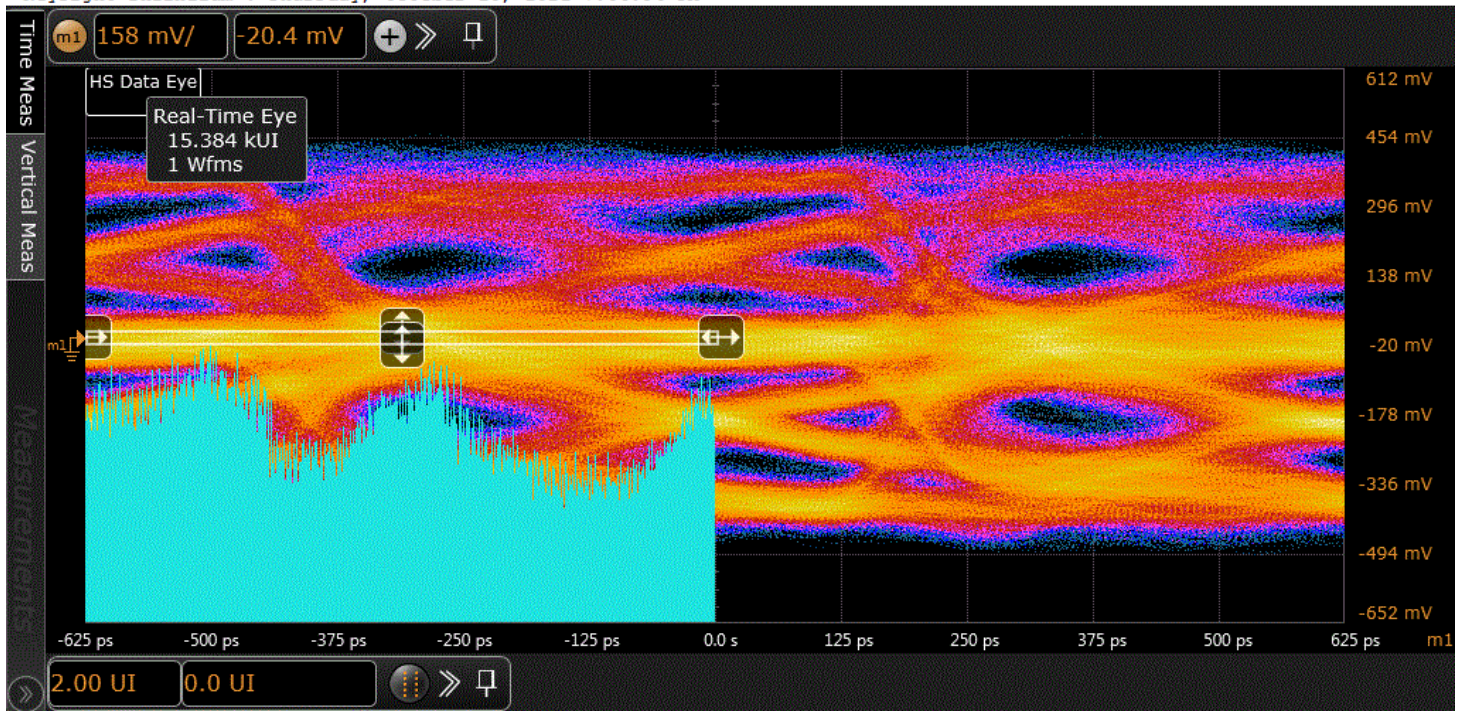
(MinMaxTSkewTest_LimitMin)-200 mUlnstPassLimit Max (MinMaxTSkewTest_LimitMax)200

mUlnstNumber of HS Burst1

Trial 1

Trial 1: LeftCrossing

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✓ 1.5.4 Data-to-Clock Skew (TSKEW(TX))(Mean) Reference: D-PHY Specification v1.2 Section 10.2.1 Table 30, CTS v1.2(Test 1.5.4)

Test Summary: Pass Test Description: Data to Clock Skew [measured at transmitter].

Pass Limits:[MeanTSkewTest_LimitMin UInst to MeanTSkewTest_LimitMax

UInst]9131_Tskew(Mean)30 mUInst

Result Details:

Result Details

UINST(Mean)625.0 psTSkew(Mean)19.0 psNo Of Measurement15.384000 kZID100

ohmDataLaneLane3PassLimit Min (MeanTSkewTest_LimitMin)-200 mUInstPassLimit Max (MeanTSkewTest_LimitMax)200 mUInstNumber of HS Burst1

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