

HDMI Test board

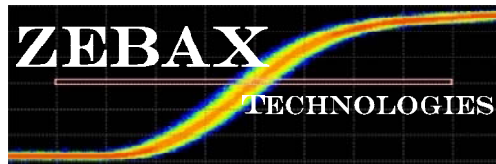
Comparison test case study using HDMI test board:

Agilent-N1080A vs. Zebax ZX200 HDMI test board

Test Case : **1080p 60 Hz 12 bit**
HDMI Clock Frequency: **2.22GHz**

The followings are comparison test results using ZX200 vs. Agilent N1080A

ZX200 full test record
Agilent-N1080A full test record



HDMI Test board

Summary of Results

Margin Thresholds	
Warning	< 2 %
Critical	< 0 %

Zebax ZX200

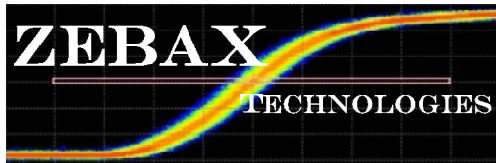
Pass	# Failed	# Trials	Test Name	Actual Value	Margin	Spec Range
✓	0	1	7-9: Clock Jitter	98mTbit	60.8 %	VALUE <= 250mTbit
✓	0	1	7-10: D0 - Mask Test	0.000	50.0 %	No Mask Failures
✓	0	1	7-10: D0 - Data Jitter	133m	55.7 %	<=0.3Tbit
✓	0	1	7-10: D1 - Mask Test	0.000	50.0 %	No Mask Failures
✓	0	1	7-10: D1 - Data Jitter	125m	58.3 %	<=0.3Tbit
✓	0	1	7-10: D2 - Mask Test	0.000	50.0 %	No Mask Failures
✓	0	1	7-10: D2 - Data Jitter	131m	56.3 %	<=0.3Tbit
✓	0	1	7-4: Clock Rise Time	207.640ps	176.9 %	VALUE >= 75.000ps
✓	0	1	7-4: Clock Fall Time	211.860ps	182.5 %	VALUE >= 75.000ps
✓	0	1	7-4: D0 - Rise Time	134.730ps	79.6 %	VALUE >= 75.000ps
✓	0	1	7-4: D0 - Fall Time	121.490ps	62.0 %	VALUE >= 75.000ps
✓	0	1	7-4: D1 - Rise Time	130.970ps	74.6 %	VALUE >= 75.000ps
✓	0	1	7-4: D1 - Fall Time	126.550ps	68.7 %	VALUE >= 75.000ps
✓	0	1	7-4: D2 - Rise Time	172.760ps	130.3 %	VALUE >= 75.000ps
✓	0	1	7-4: D2 - Fall Time	131.680ps	75.6 %	VALUE >= 75.000ps
✓	0	1	7-8: Clock Duty Cycle(Minimum)	51.320	28.3 %	>=40%
✓	0	1	7-8: Clock Duty Cycle(Maximum)	51.940	13.4 %	<=60%
✓	0	1	7-6: Inter-Pair Skew - D0/D1	3mTpixel	49.3 %	-200mTpixel <= VALUE <= 200mTpixel
✓	0	1	7-6: Inter-Pair Skew - D0/D2	5mTpixel	48.8 %	-200mTpixel <= VALUE <= 200mTpixel
✓	0	1	7-6: Inter-Pair Skew - D1/D2	1mTpixel	49.8 %	-200mTpixel <= VALUE <= 200mTpixel

Summary of Results

Margin Thresholds	
Warning	< 2 %
Critical	< 0 %

Agilent N1080A

Pass	# Failed	# Trials	Test Name	Actual Value	Margin	Spec Range
✓	0	1	7-9: Clock Jitter	120mTbit	52.0 %	VALUE <= 250mTbit
✓	0	1	7-10: D0 - Mask Test	0.000	50.0 %	No Mask Failures
✓	0	1	7-10: D0 - Data Jitter	136m	54.7 %	<=0.3Tbit
✓	0	1	7-10: D1 - Mask Test	0.000	50.0 %	No Mask Failures
✓	0	1	7-10: D1 - Data Jitter	131m	56.3 %	<=0.3Tbit
✓	0	1	7-10: D2 - Mask Test	0.000	50.0 %	No Mask Failures
✓	0	1	7-10: D2 - Data Jitter	136m	54.7 %	<=0.3Tbit
✓	0	1	7-4: Clock Rise Time	241.450ps	221.9 %	VALUE >= 75.000ps
✓	0	1	7-4: Clock Fall Time	240.170ps	220.2 %	VALUE >= 75.000ps
✓	0	1	7-4: D0 - Rise Time	163.300ps	117.7 %	VALUE >= 75.000ps
✓	0	1	7-4: D0 - Fall Time	146.450ps	95.3 %	VALUE >= 75.000ps
✓	0	1	7-4: D1 - Rise Time	138.500ps	84.7 %	VALUE >= 75.000ps
✓	0	1	7-4: D1 - Fall Time	136.300ps	81.7 %	VALUE >= 75.000ps
✓	0	1	7-4: D2 - Rise Time	173.300ps	131.1 %	VALUE >= 75.000ps
✓	0	1	7-4: D2 - Fall Time	171.390ps	128.5 %	VALUE >= 75.000ps
✓	0	1	7-8: Clock Duty Cycle(Minimum)	51.220	28.1 %	>=40%
✓	0	1	7-8: Clock Duty Cycle(Maximum)	51.840	13.6 %	<=60%
✓	0	1	7-6: Inter-Pair Skew - D0/D1	600μTpixel	49.8 %	-200mTpixel <= VALUE <= 200mTpixel
✓	0	1	7-6: Inter-Pair Skew - D0/D2	11mTpixel	47.3 %	-200mTpixel <= VALUE <= 200mTpixel
✓	0	1	7-6: Inter-Pair Skew - D1/D2	5mTpixel	48.8 %	-200mTpixel <= VALUE <= 200mTpixel



HDMI Test board

Comparison test case study:

The comparison table lists the signal measured on both ZX200 vs. Agilent HDMI test board.

Conclusion:

ZX200 exhibits improved signal measurements from 8.8% at clock jitter to 45% at clock rise time

Test Name	ZX200	Agilent	Zebax Improvements %
Clock Jitter	60.8	52	8.8
D0 Mask test	50	50	0
D0 Data Jitter	55.7	54.7	1
D1 Mask test	50	50	0
D1 Data Jitter	58.3	56.3	2
D2 Mask test	50	50	0
D2 Data Jitter	56.3	54.7	1.6
Clock Rise Time	176.9	221.9	45
Clock Fall Time	182.5	220.2	37.7
D0 Rise Time	79.6	117.7	38.1
D0 Fall Time	62	95.3	33.3
D1 Rise Time	74.6	84.7	10.1
D1 Fall Time	68.7	81.7	13
D2 Rise Time	130.3	131.1	0.8
D2 Fall Time	75.6	128.5	52.9
Clock Duty Cycle (min)	28.3	28.1	0.2
Clock Duyt Cycle(max)	13.4	13.6	-0.2
Interpair Skew-D0/D1	49.3	49.8	-0.5
Interpair Skew-D0/D2	48.8	47.3	1.5
Interpair skew-D1/D2	49.8	48.8	1