Fast XX SCSI Testing

- Next Step Goals
- Setup Hold Testing
- BIAS Issue (Wally)
- ISI Issue (Bill Gintz)

adaptec

Next Step

- **80 Mega Transfers Using Dual Edge Clocking**
  - Keeps max frequency same
- **ISI Resolved By Some Means/Suggesting Dual Strength Driver**
- **BIAS Would be Better If Lower But To Keep Compatibility Could Just Lower The Low Limit**
- **Distance - Try To Keep Same. Should Be Possible Since No Frequency Increase And We Now "Recommend" 28 Gauge Above 12 Meters.**

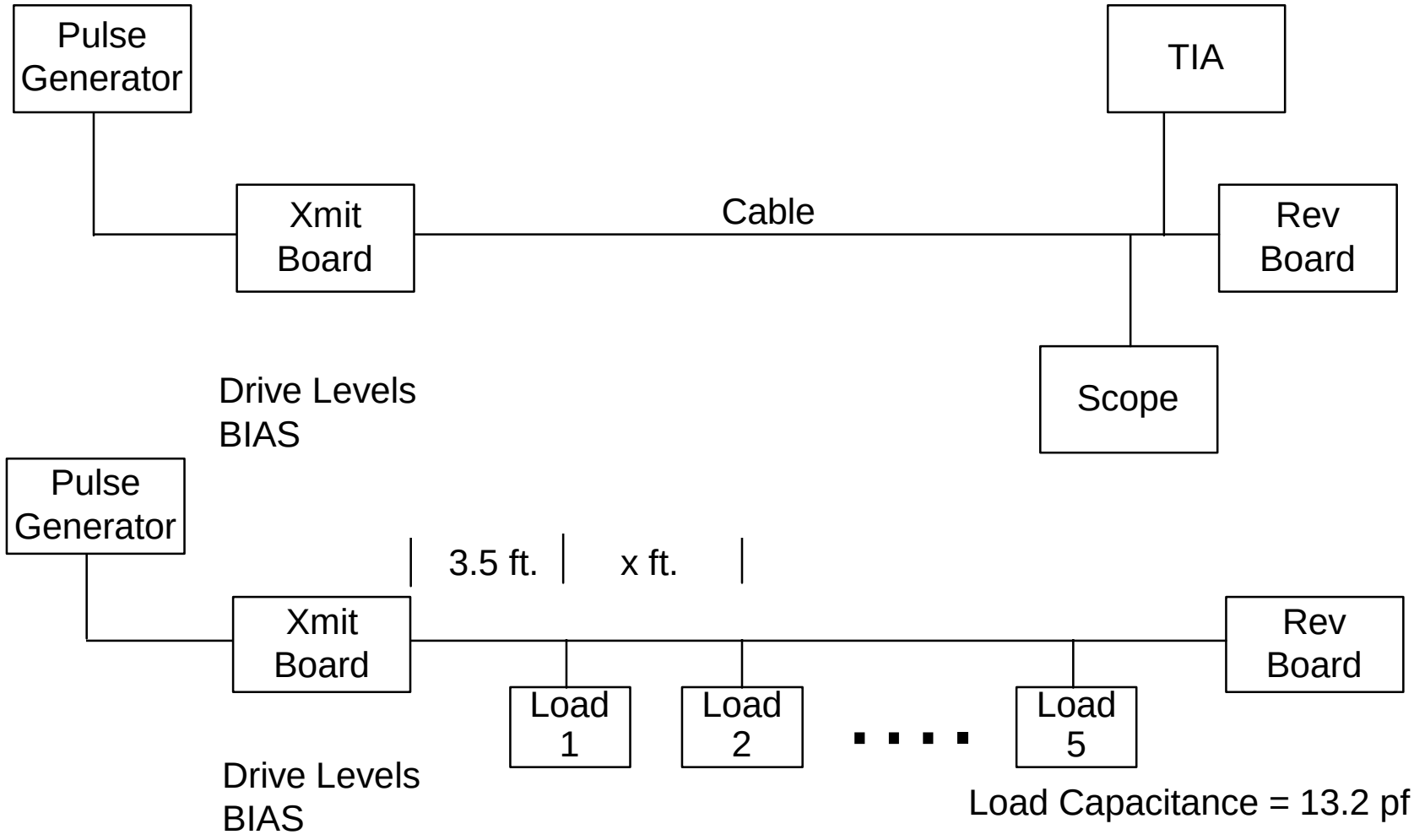
adaptec

Setup Hold Measurement

- **Used TIA (HP3310A)**
- **Measured Data Transistion To ACK Transistion With Statistic**
- **Tests Run @ 80 MHz Single Edge Which Provides Same Setup And Hold Time Allowances As 40 MHz Dual Edge**
- **Tests Run For:**
  - Short Pt to Pt cable
  - 25 meter Pt to Pt cable
  - Multipoint loaded

adaptec

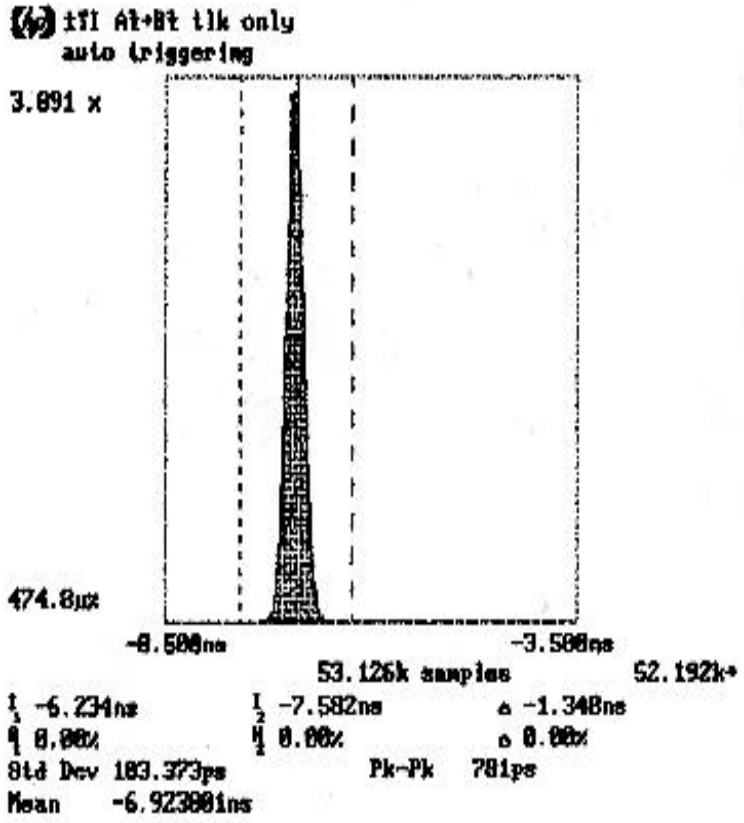
Test Setup

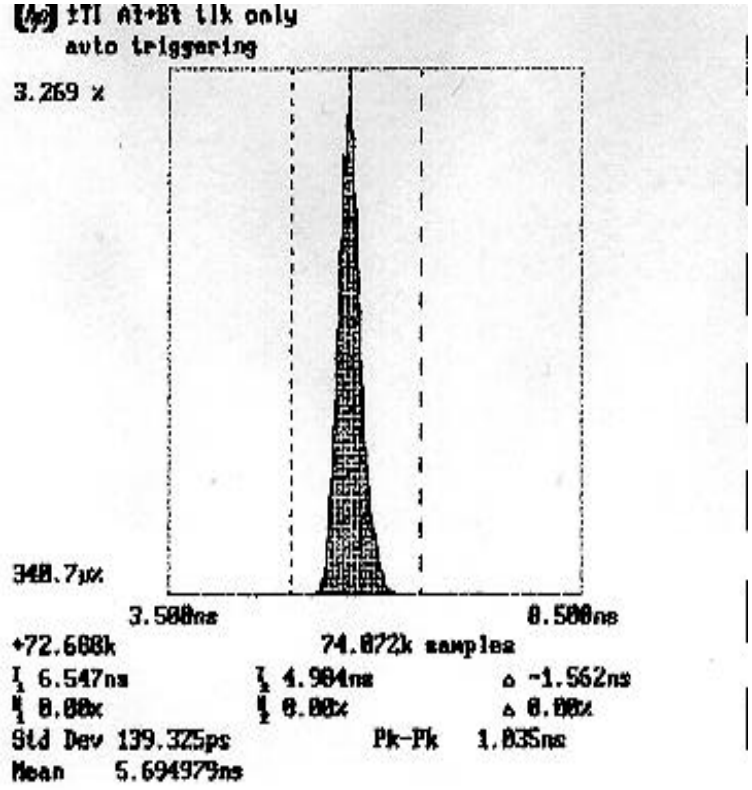

Pulse Generator
TIA
Xmit Board
Cable
Rev Board
Drive Levels
BIAS
Scope
Pulse Generator
3.5 ft.
x ft.
Xmit Board
Rev Board
Load 1
Load 2
Load 5
Drive Levels
BIAS
Load Capacitance = 13.2 pf

Comparison Short Cable Vers 5 25 Meter (Pt to Pt)

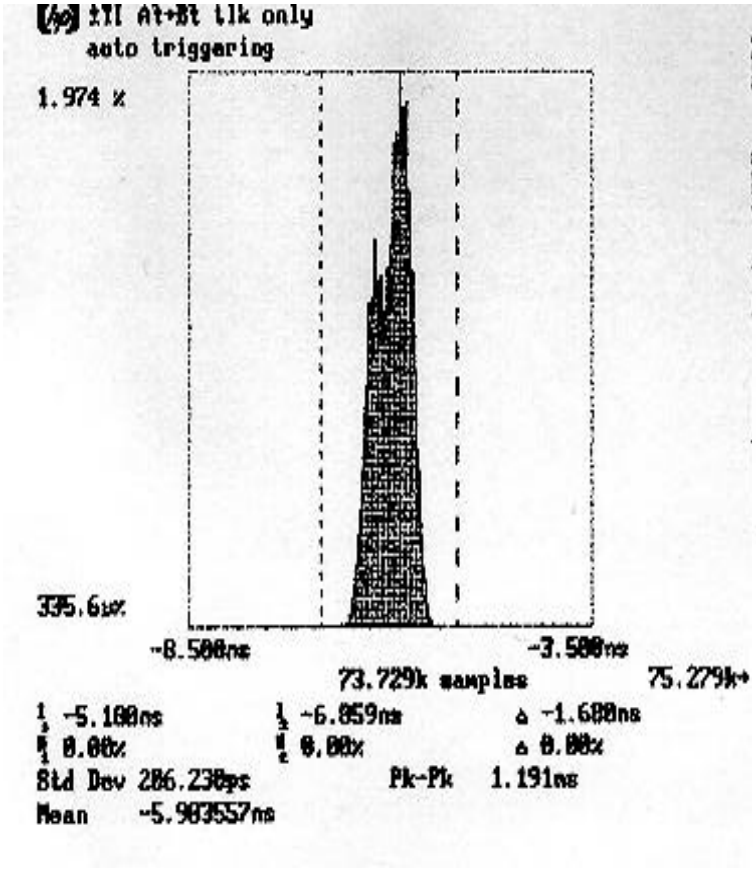
	Short	Long	
Setup			
Mean	6.92 ns	5.983 ns *	
Pk to Pk	781 ps	1.191 ns	△ 410 ps
Deviation	103 ps	206 ps	
Hold			
Mean	5.68 ns	6.601 ns *	
Pk to Pk	1.035 ns	1.465 ns	△ 430 ps
Deviation	139 ps	230 ps	

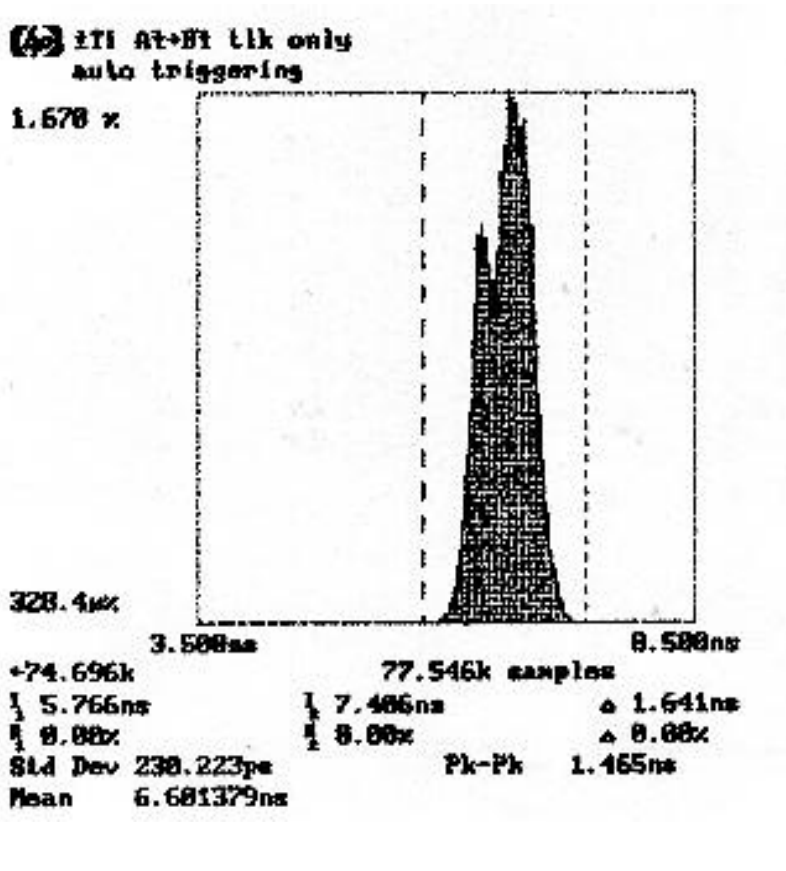
adaptec





Short Cable (PT to PT)

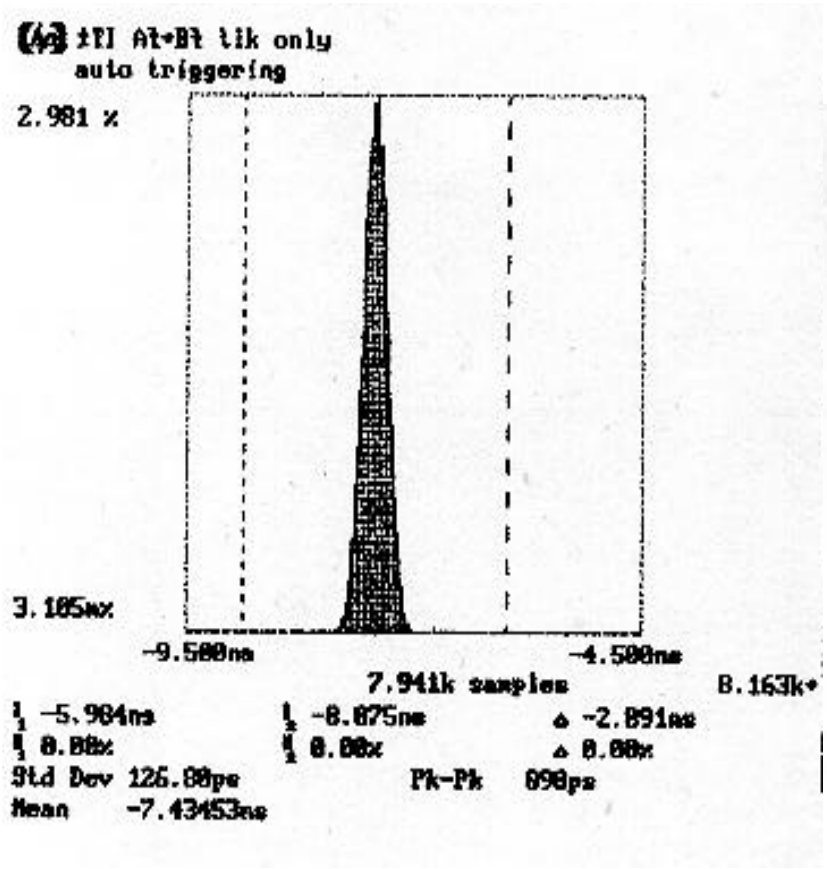


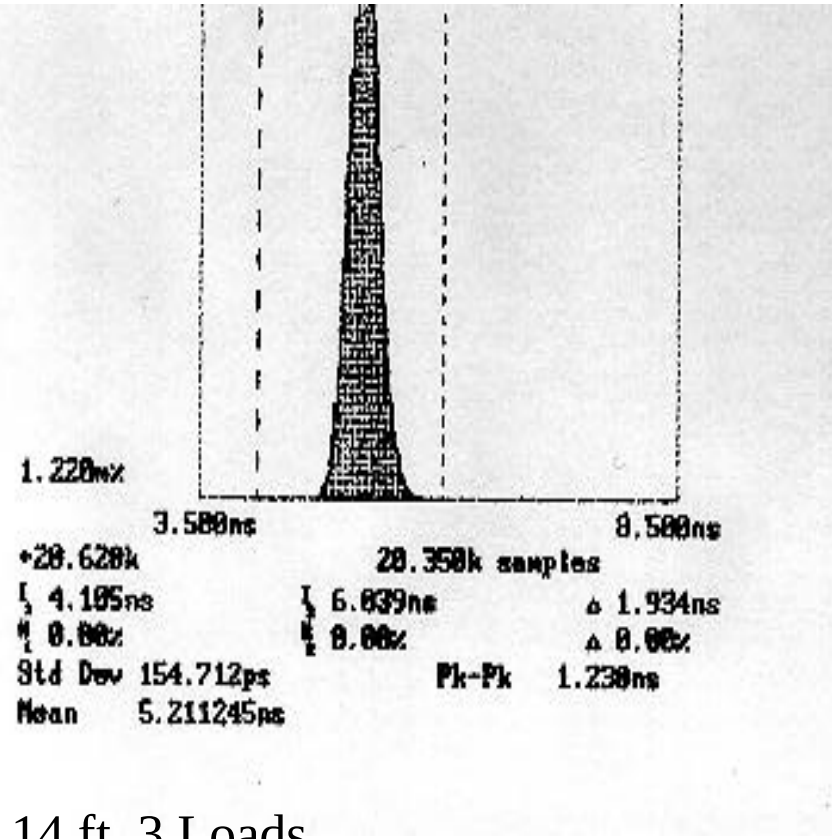


Long Cable (25 M, PT to PT)

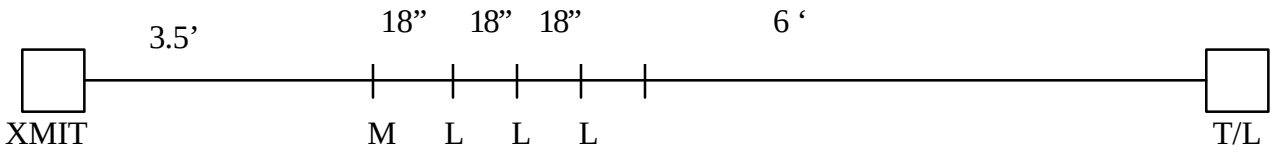
Comparison Short To 13.5 Feet Teflon MP

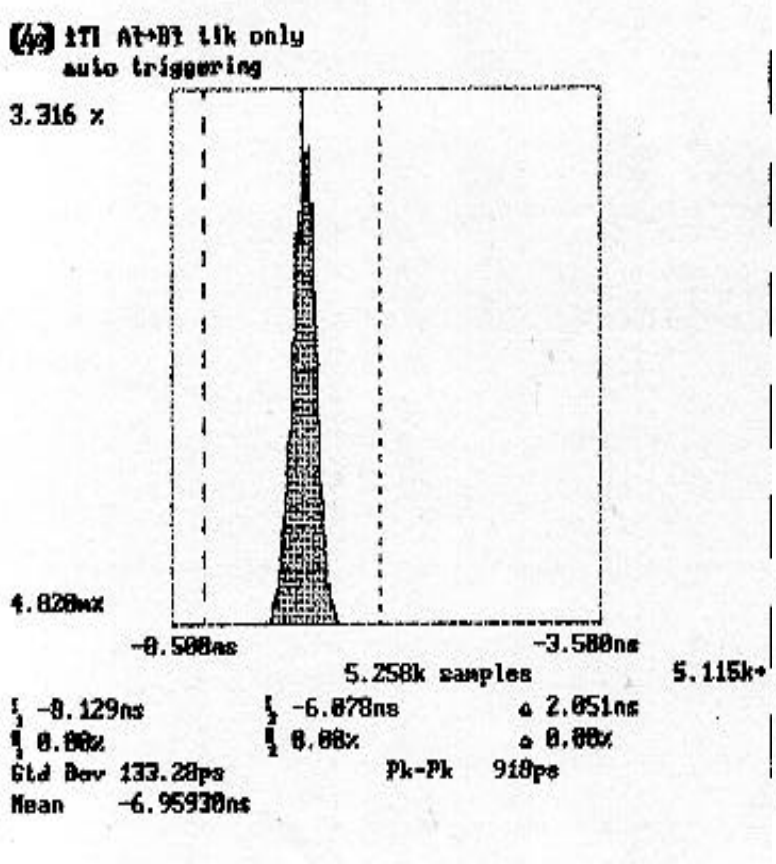
Setup	Short	1 (3 Loads)	2 3 Loads)	3 (8 Loads)	
Mean	6.92 ns	7.43 ns	6.95 ns	7.6 ns	
Pk to Pk	781 ps	898 ps	918 ps	1.426 ns	△ 645 ps
Deviation	105 ps	126 ps	133 ps	235 ps	
Hold					
Mean	5.68 ns	5.21 ns	5.63 ns	4.99 ns *	
Pk to Pk	1.035 ns	1.23 ns	1.113 ns	1.602 ns	△ 567 ps
Deviation	139 ps	154 ps	157 ps	256 ps	

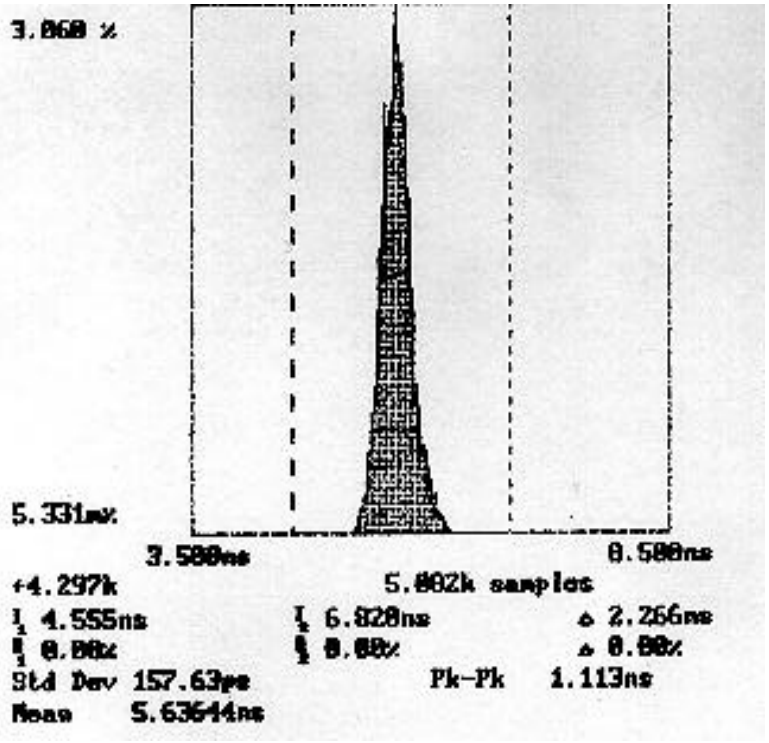




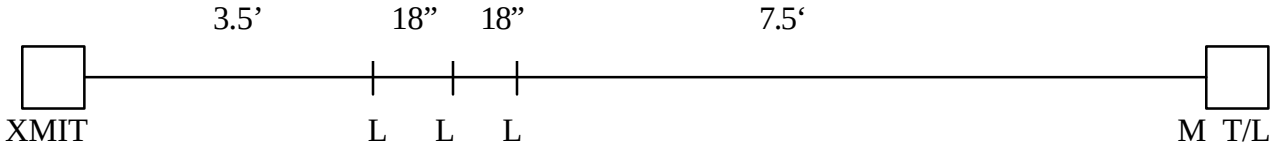
1. Flat (Teflon), 14 ft, 3 Loads

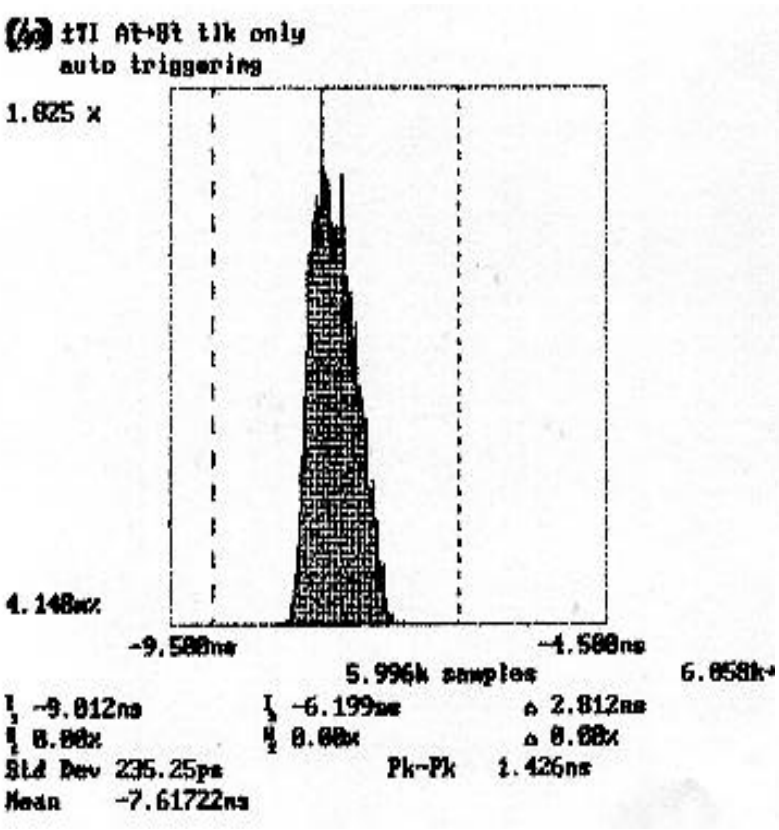


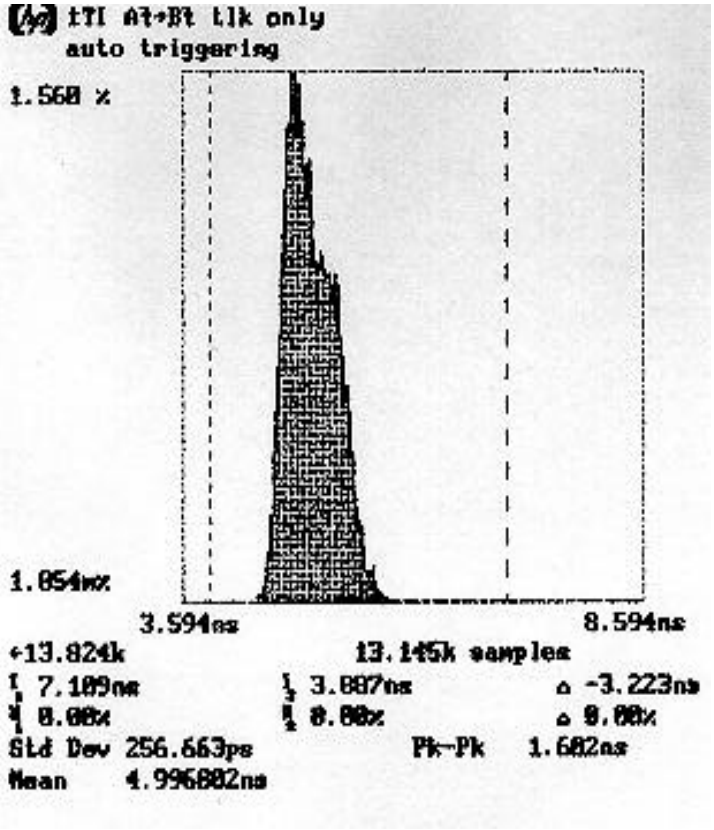




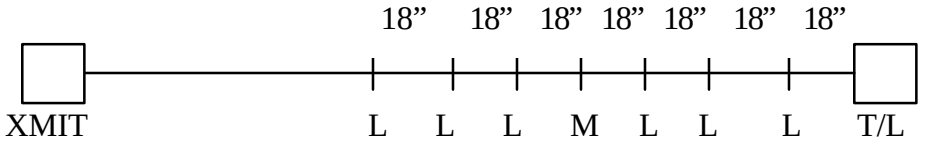
2. Flat (Teflon), 14 ft, 3 Loads





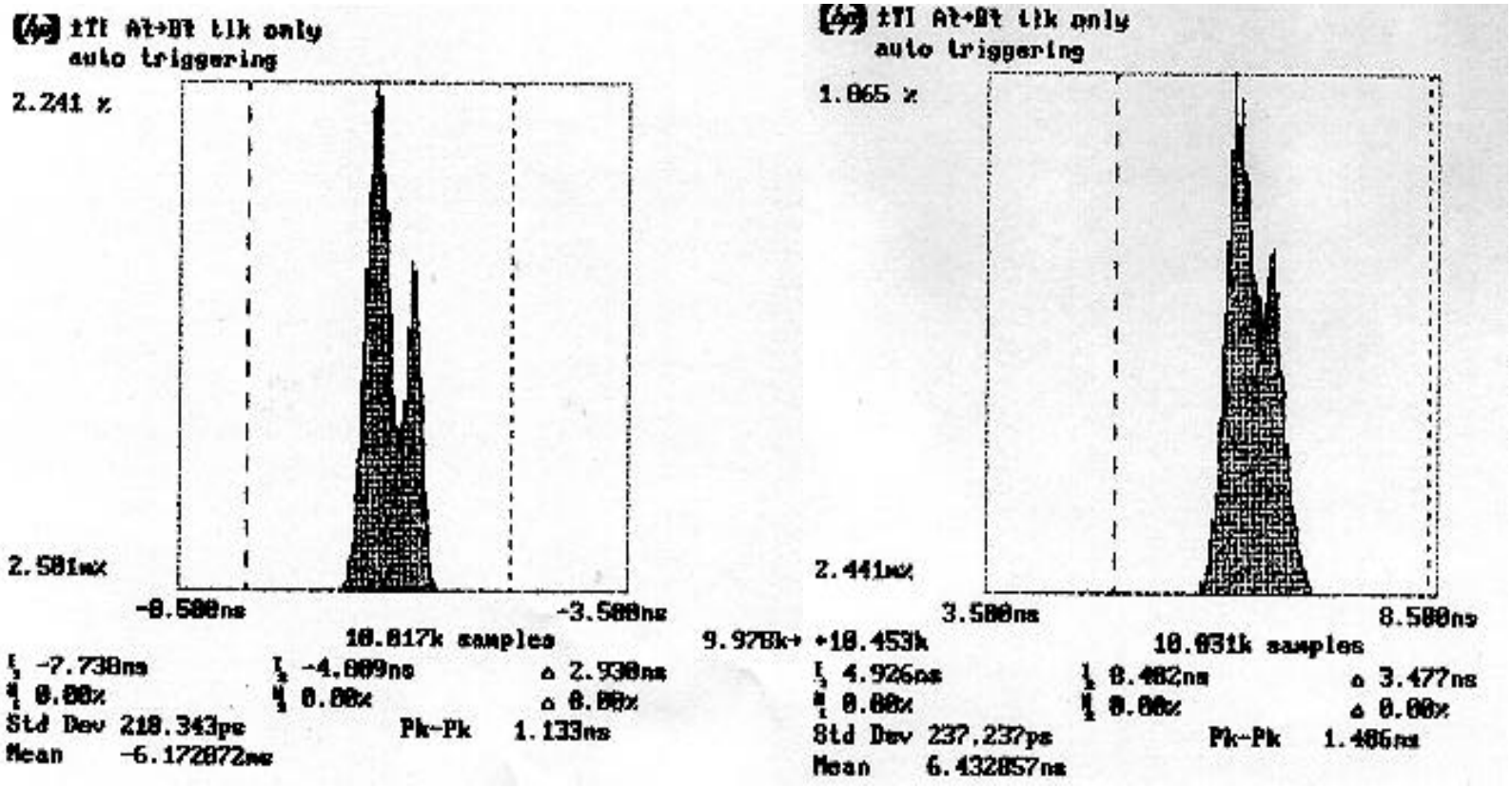


3. Flat (Teflon), 14 ft, 9 Loads

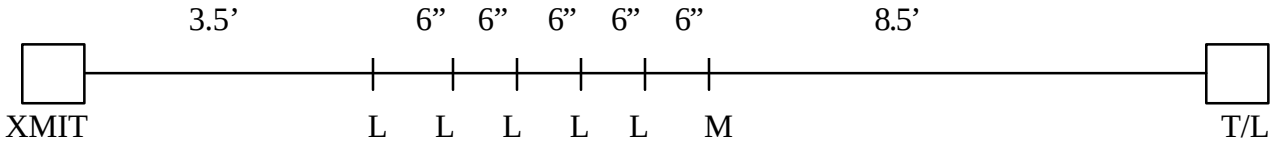


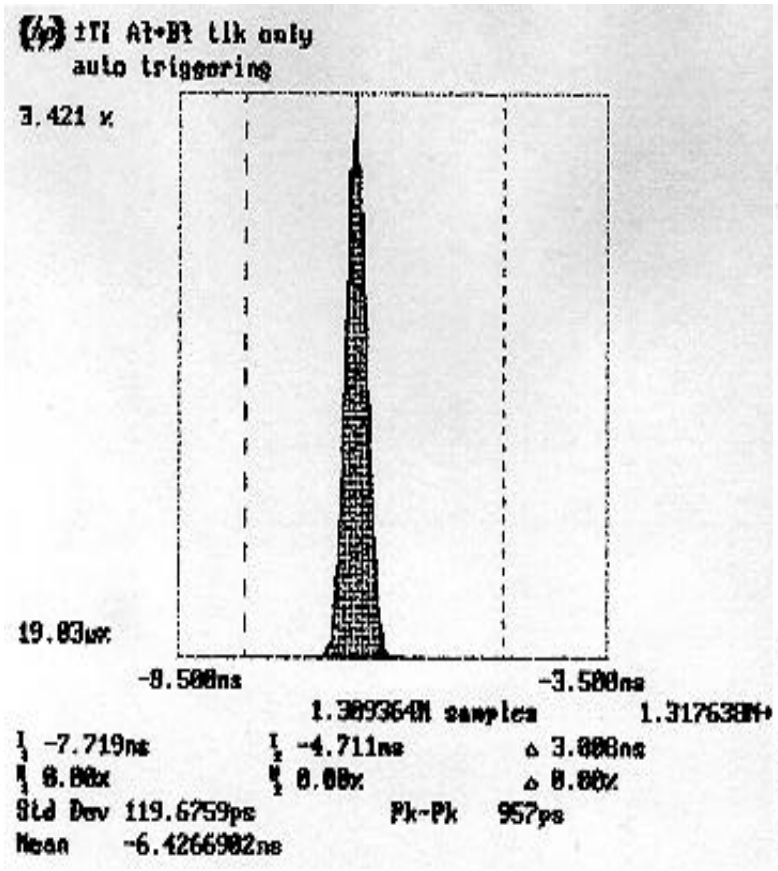
Comparisions Short To 14 Feet Twisted/Flat MP

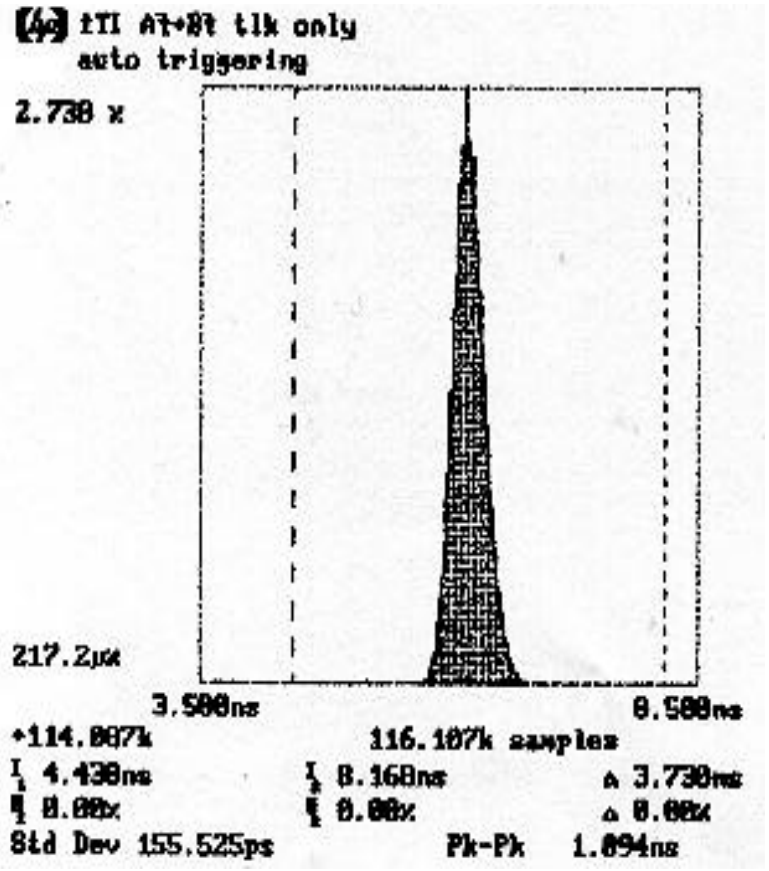
Setup	**Short**	**1** **5 Loads**	**2** **10 Loads**	**3** **10 Loads**	
Mean	6.92 ns	6.17 ns	6.42 ns	6.040 ns *	
Pk to Pk	781 ps	1.13 ns	957 ps	773 ps	△ 349 ps
Deviation	105 ps	218 ps	119 ps	122 ps	
Hold					
Mean	5.68 ns	6.432 ns	6.197 ns	6.586 ns	
Pk to Pk	1.035 ns	1.406 ns	1.094 ns	1.016 ns	△ 371 ps
Deviation	139 ps	237 ps	155 ps	157 ps	



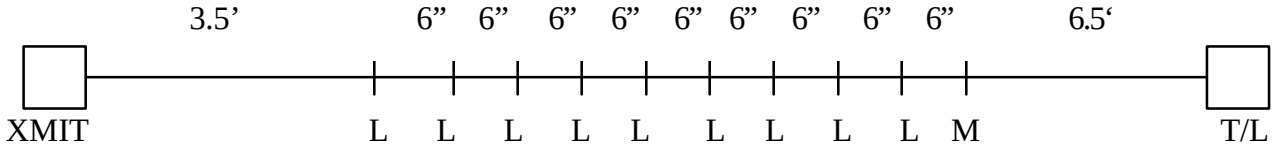
1. Twist/Flat, 14.5 ft, 5 Loads

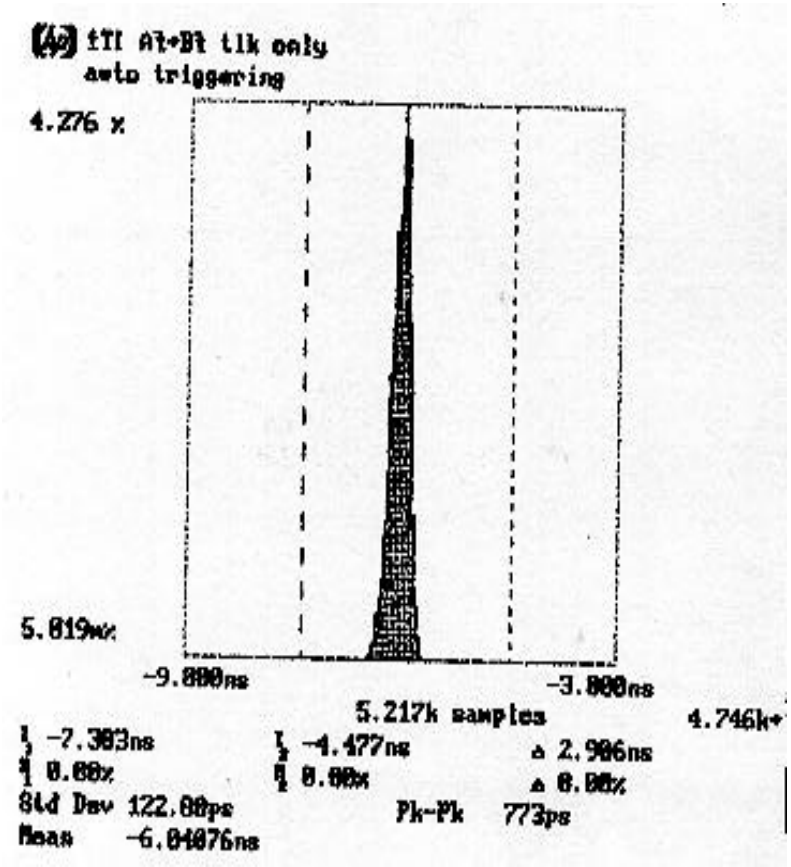


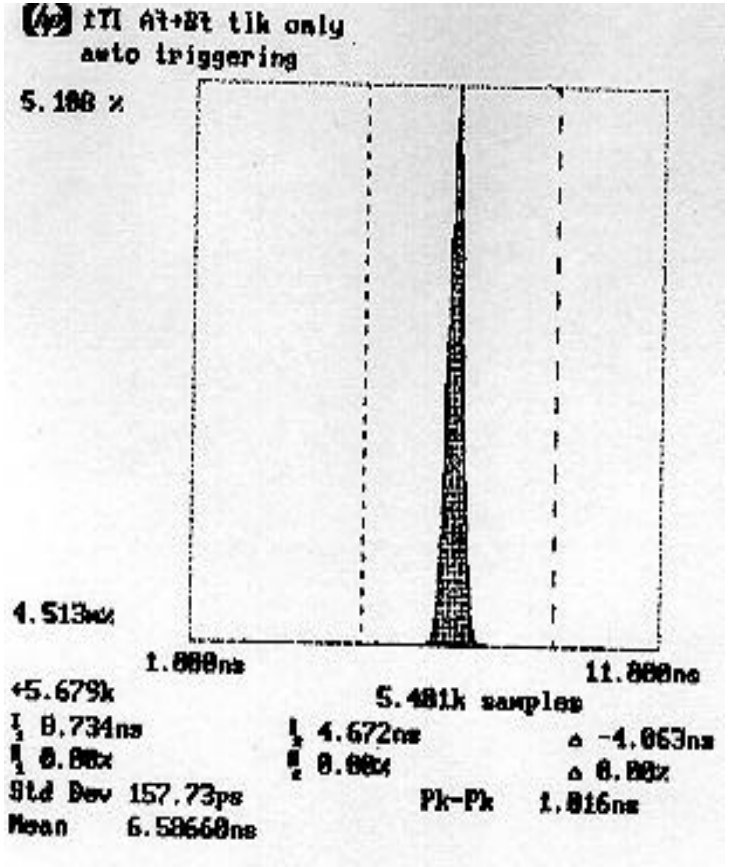




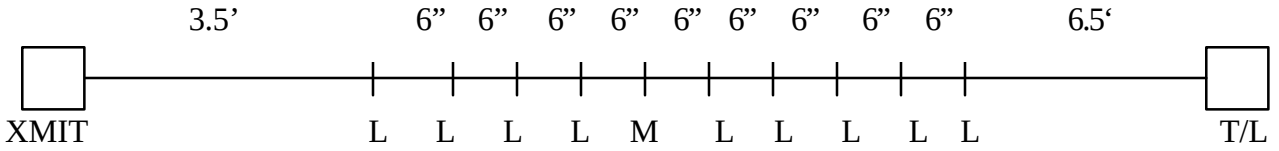
2. Twist/Flat, 14.5 ft, 10 Loads







3. Twist/Flat, 14.5 ft, 10 Loads



To The Distributions Measured One Must Add Cable Skew Factor.

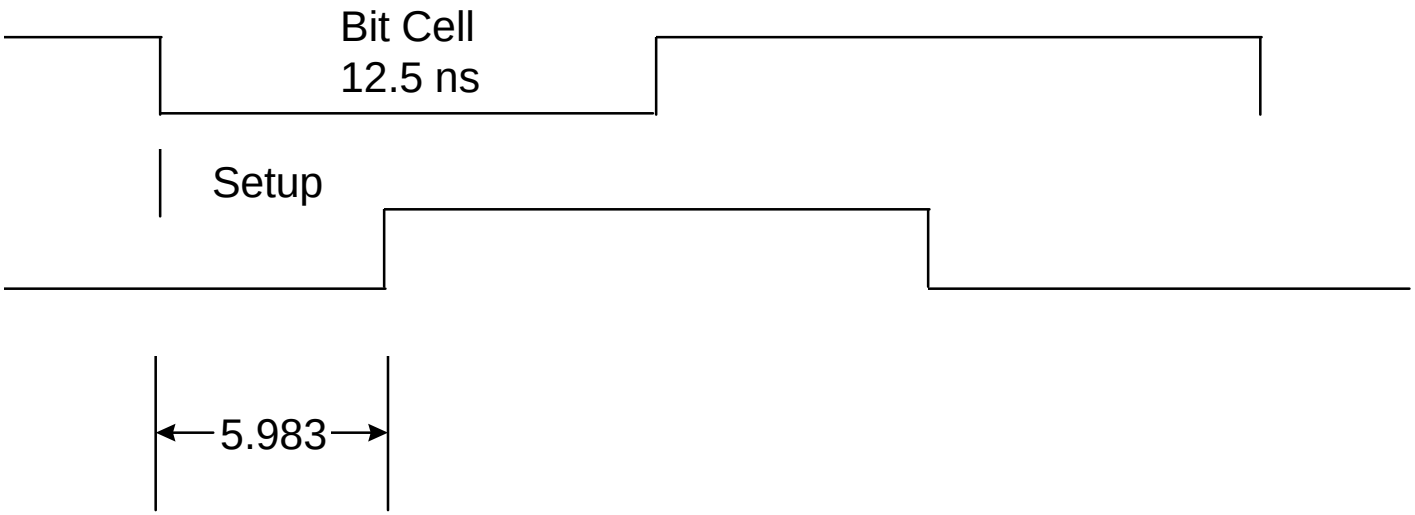
Cable Skew Pair To Pair Difference Range. Form.

0.03 ms/ft --------- 0.045 ns/ft (Hitachi Catalog)

	.03	.045
12m	1.17	1.755
25m	2.43	3.65

Margin (Setup)

25 Meter Pt to Pt



Margin = Mean - 1/2 pp - Cable Skew

Margin (Low Skew Cable) = 5.983 - 0.5955 - 2.43

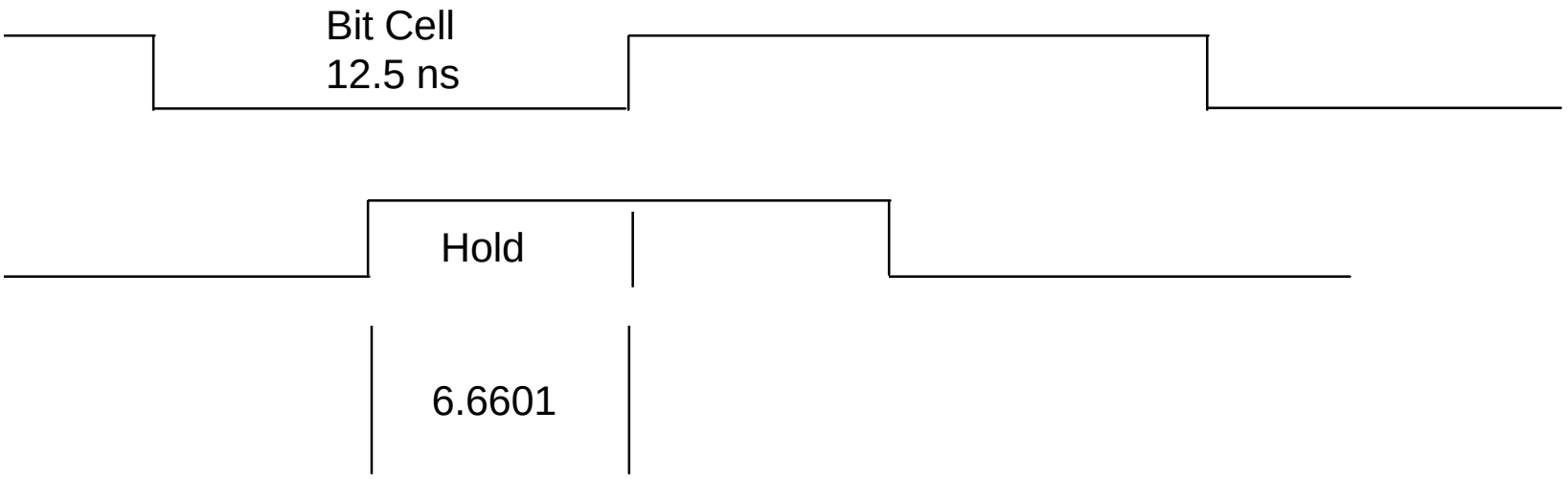
= 2.9575 ns

Margin (High Skew Cable) = 5.983 - .5955 - 3.65

= 1.7375 ns

adaptec

Margin (Hold) 25 Meter Pt to Pt



Margin = Mean - 1/2 pp - Cable Skew

Margin (Low Skiew Cable) = 6.601 - 0.7325 - 2.43

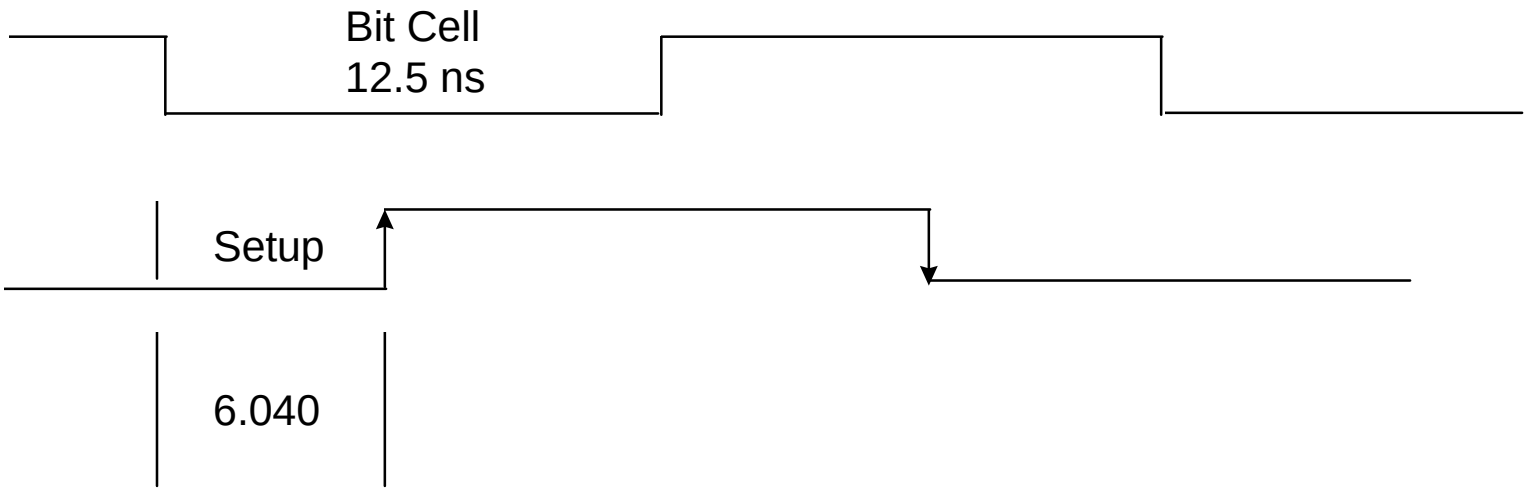
= 3.43 ns

Margin (High Skew Cable) = 6.601 - 0.7325 - 3.65

= 2.2189 ns

adaptec

Margin (Setup) Multipoint



Margin = Mean - 1/2 pp - Cable Skew

Margin (Low Skew Cable) = 6.040 - 0.386 - 1.17

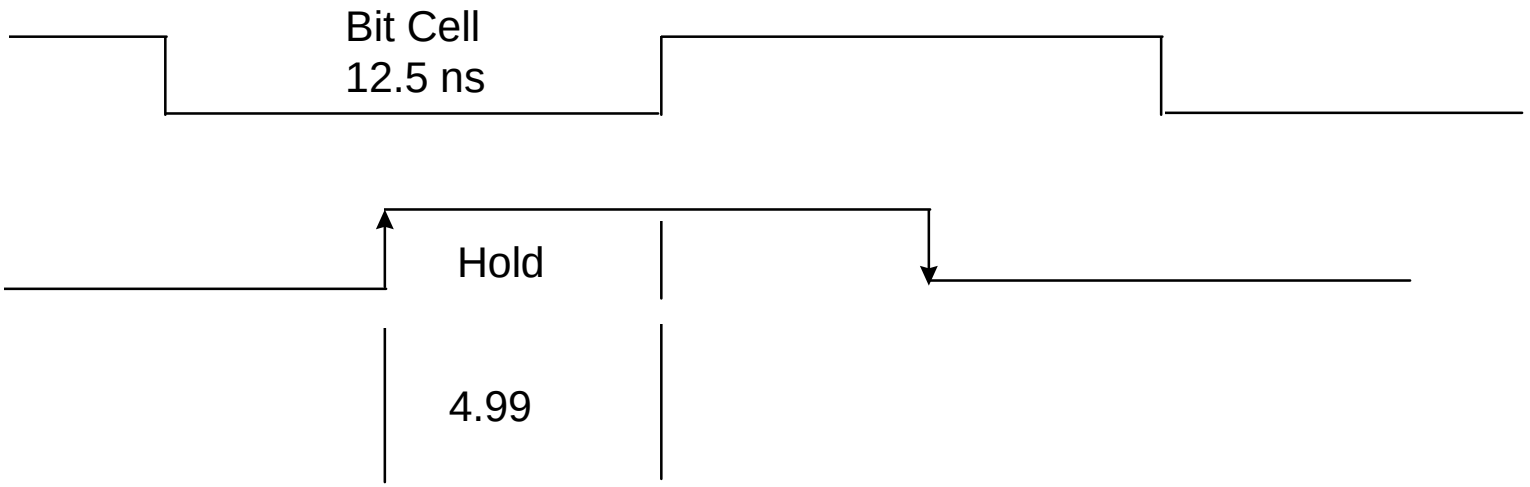
= 4.48 ns

Margin (High Skew Cable) = 6.040 - 0.386 - 1.755

= 3.899 ns

adaptec

Margin (Hold) Multipoint



Margin = Mean 1/2 pp - Cable Skew

Margin (Low Skew Cable) = 4.99 - 0.801 - 1.17

= 3.019 ns

Margin (High Skew Cable) = 4.99 - 0.801 - 1.755

= 2.434 ns

adaptec