



# TekExpress USB 3.1 Report

## Test Report

**Execution and Setup Information**

DUT ID	DUT001	DUT Type	Host
Date/Time	2019-01-21 00:27:48	Scope Model	DSA71604C
Test Point	Compliance (TP1) - Far End	Scope Serial Numer	C130125
Connector Type	Standard	Scope F/W Version	10.5.1 Build 24
Channel Type	Both Long & Short	SPC Factory:S/W Calibration	PASS;PASS
Toggle Tool	Do not use	TekExpress Version	USB:10.3.1.21 Framework:4.2.7.301
Acquisition Mode	Live	DPOJET Version	"10.0.2.1"
SigTest Version	3.2.11(Gen1)	CTS Version	v1.0
Total Acquisition Time	2 Minutes 55 Seconds		
Total Analysis Time	1 Minute 48 Seconds		
Over All Test Result	<span style="color: red;">Fail</span>		
DUT COMMENT:	General Comment - USB3.1 DUT		

UI-Unit Interval									
Measurement Details	Lane	Channel	Generation	Method	Measured Value	Test Result	Margin	Low Limit	High Limit
UI-Unit Interval	Lane1	Short	Gen1	SigTest	200.476 ps	Pass	535.548 fs & 584.452 fs	199.94 ps	201.06 ps
UI-Unit Interval	Lane1	Long	Gen1	SigTest	200.476 ps	Pass	535.558 fs & 584.442 fs	199.94 ps	201.06 ps
COMMENTS	USB 3.1 Specification, Rev 1.0, Table 6-17								

Rj-Tx random jitter-Dual Dirac									
Measurement Details	Lane	Channel	Generation	Method	Measured Value	Test Result	Margin	Low Limit	High Limit
Rj-Tx random jitter-Dual Dirac	Lane1	Short	Gen1	SigTest	1.505 ps	Informative	1.505 ps & 1.765 ps	0 s	3.27 ps
Rj-Tx random jitter-Dual Dirac	Lane1	Long	Gen1	SigTest	1.489 ps	Informative	1.489 ps & 1.781 ps	0 s	3.27 ps
COMMENTS	USB 3.1 Specification, Rev 1.0, Table 6-19								

Mask Hits									
Measurement Details	Lane	Channel	Generation	Method	Measured Value	Test Result	Margin	Low Limit	High Limit
<a href="#">Mask Hits</a>	Lane1	Short	Gen1	SigTest	0.000	Pass	0.000	N.A	0
<a href="#">Mask Hits</a>	Lane1	Long	Gen1	SigTest	0.000	Pass	0.000	N.A	0
COMMENTS	USB 3.1 Specification, Rev 1.0, Table 6-18								

TSSC-Freq-Dev-Max									
Measurement Details	Lane	Channel	Generation	Method	Measured Value	Test Result	Margin	Low Limit	High Limit
TSSC-Freq-Dev-Max (Max)	Lane1	Short	Gen1	DPOJET	-4.698 kppm (Max)	Pass	601.548 ppm & 998.452 ppm	-5.3 kppm	-3.7 kppm
TSSC-Freq-Dev-Max (Min)	Lane1	Short	Gen1	DPOJET	-4.790 kppm (Min)	Pass	510.451 ppm & 1.090 kppm	-5.3 kppm	-3.7 kppm
TSSC-Freq-Dev-Max (Max)	Lane1	Long	Gen1	DPOJET	-4.690 kppm (Max)	Pass	610.209 ppm & 989.791 ppm	-5.3 kppm	-3.7 kppm
TSSC-Freq-Dev-Max (Min)	Lane1	Long	Gen1	DPOJET	-4.746 kppm (Min)	Pass	553.528 ppm & 1.046 kppm	-5.3 kppm	-3.7 kppm
COMMENTS	USB 3.1 Specification, Rev 1.0, Table 6-16								

TSSC-Freq-Dev-Min									
Measurement Details	Lane	Channel	Generation	Method	Measured Value	Test Result	Margin	Low Limit	High Limit
TSSC-Freq-Dev-Min	Lane1	Short	Gen1	DPOJET	115.291 ppm (Max)	Pass	415.291 ppm & 184.709	-300.0 ppm	300.0 ppm

(Max)							ppm		
TSSC-Freq-Dev-Min (Min)	Lane1	Short	Gen1	DPOJET	57.691 ppm (Min)	Pass	357.691 ppm & 242.309 ppm	-300.0 ppm	300.0 ppm
TSSC-Freq-Dev-Min (Max)	Lane1	Long	Gen1	DPOJET	99.069 ppm (Max)	Pass	399.069 ppm & 200.931 ppm	-300.0 ppm	300.0 ppm
TSSC-Freq-Dev-Min (Min)	Lane1	Long	Gen1	DPOJET	38.736 ppm (Min)	Pass	338.736 ppm & 261.264 ppm	-300.0 ppm	300.0 ppm
COMMENTS		USB 3.1 Specification, Rev 1.0, Table 6-16							

TSSC-Mod-Rate - SSC Modulation rate									
Measurement Details	Lane	Channel	Generation	Method	Measured Value	Test Result	Margin	Low Limit	High Limit
<a href="#">TSSC-Mod-Rate - SSC Modulation rate</a>	Lane1	Short	Gen1	DPOJET	31.248 kHz	Pass	1.248 kHz & 1.752 kHz	30.0 kHz	33.0 kHz
<a href="#">TSSC-Mod-Rate - SSC Modulation rate</a>	Lane1	Long	Gen1	DPOJET	31.248 kHz	Pass	1.248 kHz & 1.752 kHz	30.0 kHz	33.0 kHz
COMMENTS		USB 3.1 Specification, Rev 1.0, Table 6-16							

DJ-Tx deterministic Jitter-Dual Dirac									
Measurement Details	Lane	Channel	Generation	Method	Measured Value	Test Result	Margin	Low Limit	High Limit
DJ-Tx deterministic Jitter-Dual Dirac	Lane1	Short	Gen1	SigTest	38.114 ps	Pass	38.114 ps & 47.886 ps	0 s	86.0 ps
DJ-Tx deterministic Jitter-Dual Dirac	Lane1	Long	Gen1	SigTest	46.064 ps	Pass	46.064 ps & 39.936 ps	0 s	86.0 ps
COMMENTS		USB 3.1 Specification, Rev 1.0, Table 6-19							

TJ-Tx total jitter-Dual Dirac at 1E-12 BER									
Measurement Details	Lane	Channel	Generation	Method	Measured Value	Test Result	Margin	Low Limit	High Limit
TJ-Tx total jitter-Dual Dirac at 1E-12 BER	Lane1	Short	Gen1	SigTest	59.277 ps	Pass	59.277 ps & 72.723 ps	0 s	132.0 ps
TJ-Tx total jitter-Dual Dirac at 1E-12 BER	Lane1	Long	Gen1	SigTest	66.996 ps	Pass	66.996 ps & 65.004 ps	0 s	132.0 ps
COMMENTS		USB 3.1 Specification, Rev 1.0, Table 6-19							

Eye Height - Transmitter Eye Mask									
Measurement Details	Lane	Channel	Generation	Method	Measured Value	Test Result	Margin	Low Limit	High Limit
Eye Height - Transmitter Eye Mask	Lane1	Short	Gen1	SigTest	210.893 mV	Pass	110.893 mV & 989.107 mV	100.0 mV	1.2 V
Eye Height - Transmitter Eye Mask	Lane1	Long	Gen1	SigTest	90.270 mV	Fail	-9.730 mV & 1.110 V	100.0 mV	1.2 V
COMMENTS		USB 3.1 Specification, Rev 1.0, Table 6-19							

Eye Width @ 1E-12 BER									
Measurement Details	Lane	Channel	Generation	Method	Measured Value	Test Result	Margin	Low Limit	High Limit
<a href="#">Width@BER</a>	Lane1	Short	Gen1	SigTest	140.723 ps	Pass	72.723 ps	68.0 ps	N.A
<a href="#">Width@BER</a>	Lane1	Long	Gen1	SigTest	133.004 ps	Pass	65.004 ps	68.0 ps	N.A
COMMENTS		USB 3.1 Specification, Rev 1.0, Table 6-18							

LFPS Duty Cycle									
Measurement	Lane	Channel	Generation	Method	Measured	Test Result	Margin	Low Limit	High Limit

Details					Value				
LFPS Duty Cycle (Max)	Lane1	Short	Gen1	SigTest	50.015 % (Max)	Pass	10.015 % & 9.985 %	40.0 %	60.0 %
LFPS Duty Cycle (Min)	Lane1	Short	Gen1	SigTest	49.986 % (Min)	Pass	9.986 % & 10.014 %	40.0 %	60.0 %
COMMENTS	USB 3.1 Specification, Rev 1.0, Table 6-28								

LFPS Fall Time									
Measurement Details	Lane	Channel	Generation	Method	Measured Value	Test Result	Margin	Low Limit	High Limit
LFPS Fall Time	Lane1	Short	Gen1	SigTest	880.377 ps	Pass	3.120 ns	N.A	4.0 ns
COMMENTS	USB 3.1 Specification, Rev 1.0, Table 6-28								

LFPS Rise Time									
Measurement Details	Lane	Channel	Generation	Method	Measured Value	Test Result	Margin	Low Limit	High Limit
LFPS Rise Time	Lane1	Short	Gen1	SigTest	885.869 ps	Pass	3.114 ns	N.A	4.0 ns
COMMENTS	USB 3.1 Specification, Rev 1.0, Table 6-28								

LFPS TPeriod									
Measurement Details	Lane	Channel	Generation	Method	Measured Value	Test Result	Margin	Low Limit	High Limit
LFPS TPeriod (Max)	Lane1	Short	Gen1	SigTest	64.287 ns (Max)	Pass	44.287 ns & 35.713 ns	20.0 ns	100.0 ns
LFPS TPeriod (Min)	Lane1	Short	Gen1	SigTest	64.033 ns (Min)	Pass	44.033 ns & 35.967 ns	20.0 ns	100.0 ns
COMMENTS	USB 3.1 Specification, Rev 1.0, Table 6-28								

LFPS Vcm-AC									
Measurement Details	Lane	Channel	Generation	Method	Measured Value	Test Result	Margin	Low Limit	High Limit
LFPS Vcm-AC	Lane1	Short	Gen1	SigTest	112.000 mV	Fail	12.000 mV	N.A	100.0 mV
COMMENTS	USB 3.1 Specification, Rev 1.0, Table 6-28								

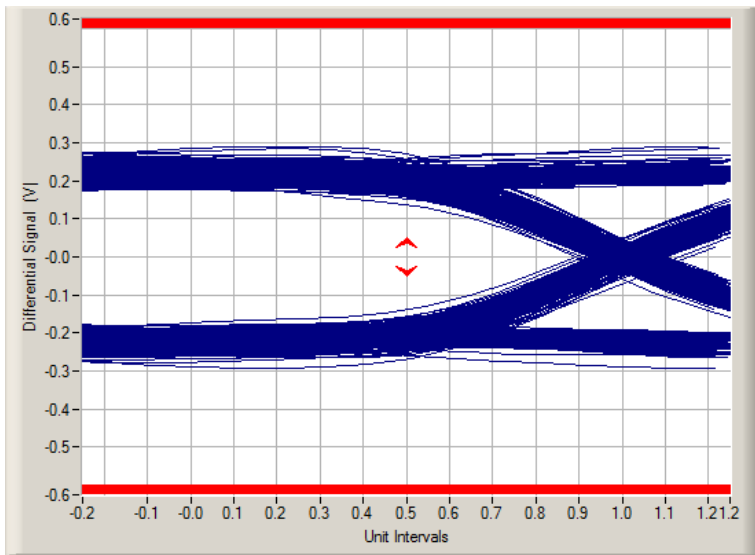
LFPS Vtx-DIFF-PP									
Measurement Details	Lane	Channel	Generation	Method	Measured Value	Test Result	Margin	Low Limit	High Limit
LFPS Vtx-DIFF-PP (Max)	Lane1	Short	Gen1	SigTest	888.000 mV (Max)	Pass	88.000 mV & 312.000 mV	800.0 mV	1.2 V
LFPS Vtx-DIFF-PP (Min)	Lane1	Short	Gen1	SigTest	780.000 mV (Min)	Fail	-20.000 mV & 420.000 mV	800.0 mV	1.2 V
COMMENTS	USB 3.1 Specification, Rev 1.0, Table 6-28								

LFPS TBurst									
Measurement Details	Lane	Channel	Generation	Method	Measured Value	Test Result	Margin	Low Limit	High Limit
LFPS TBurst (Max)	Lane1	Short	Gen1	SigTest	1.140 us (Max)	Pass	539.780 ns & 260.220 ns	600.0 ns	1.4 us
LFPS TBurst (Min)	Lane1	Short	Gen1	SigTest	1.014 us (Min)	Pass	413.600 ns & 386.400 ns	600.0 ns	1.4 us
COMMENTS	USB 3.1 Specification, Rev 1.0, Table 6-29								

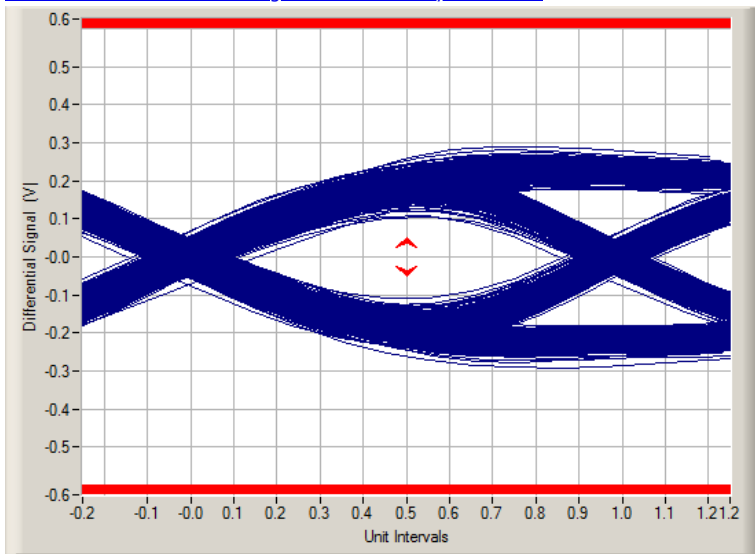
LFPS TRepeat									
Measurement Details	Lane	Channel	Generation	Method	Measured Value	Test Result	Margin	Low Limit	High Limit
LFPS TRepeat (Max)	Lane1	Short	Gen1	SigTest	12.037 us (Max)	Pass	6.037 us & 1.963 us	6.0 us	14.0 us
LFPS TRepeat (Min)	Lane1	Short	Gen1	SigTest	7.015 us (Min)	Pass	1.015 us & 6.985 us	6.0 us	14.0 us
COMMENTS	USB 3.1 Specification, Rev 1.0, Table 6-29								

[Back to Setup Information](#)

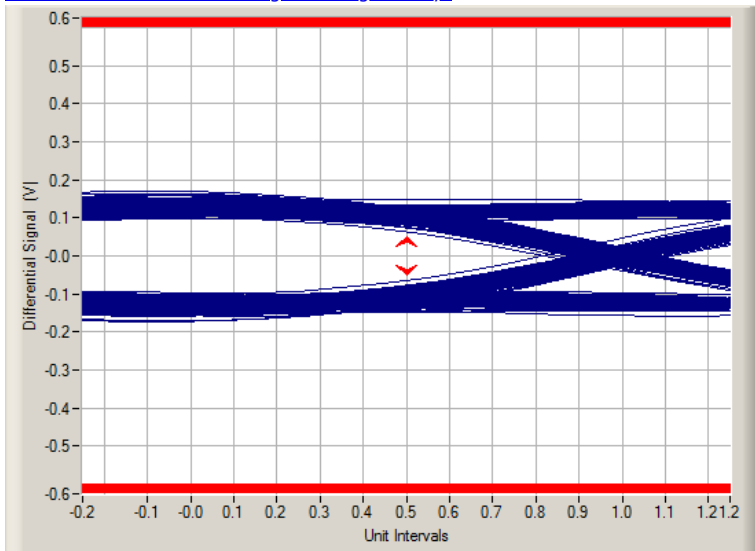
Mask Hits									
<a href="#">CP0_Lane1_Measured_Gen1_SigTest_Short_Run1Eye</a>									



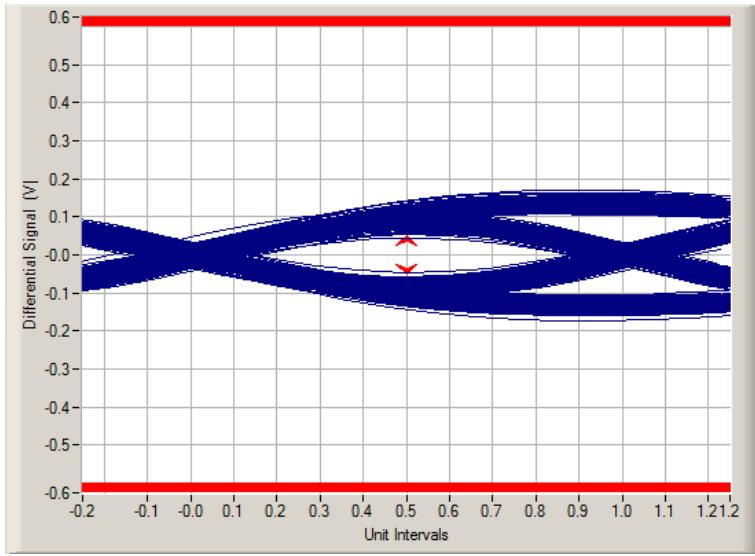
[CP0\\_Lane1\\_Measured\\_Gen1\\_SigTest\\_Short\\_Run1EyeTransition](#)



[CP0\\_Lane1\\_Measured\\_Gen1\\_SigTest\\_Long\\_Run1Eye](#)

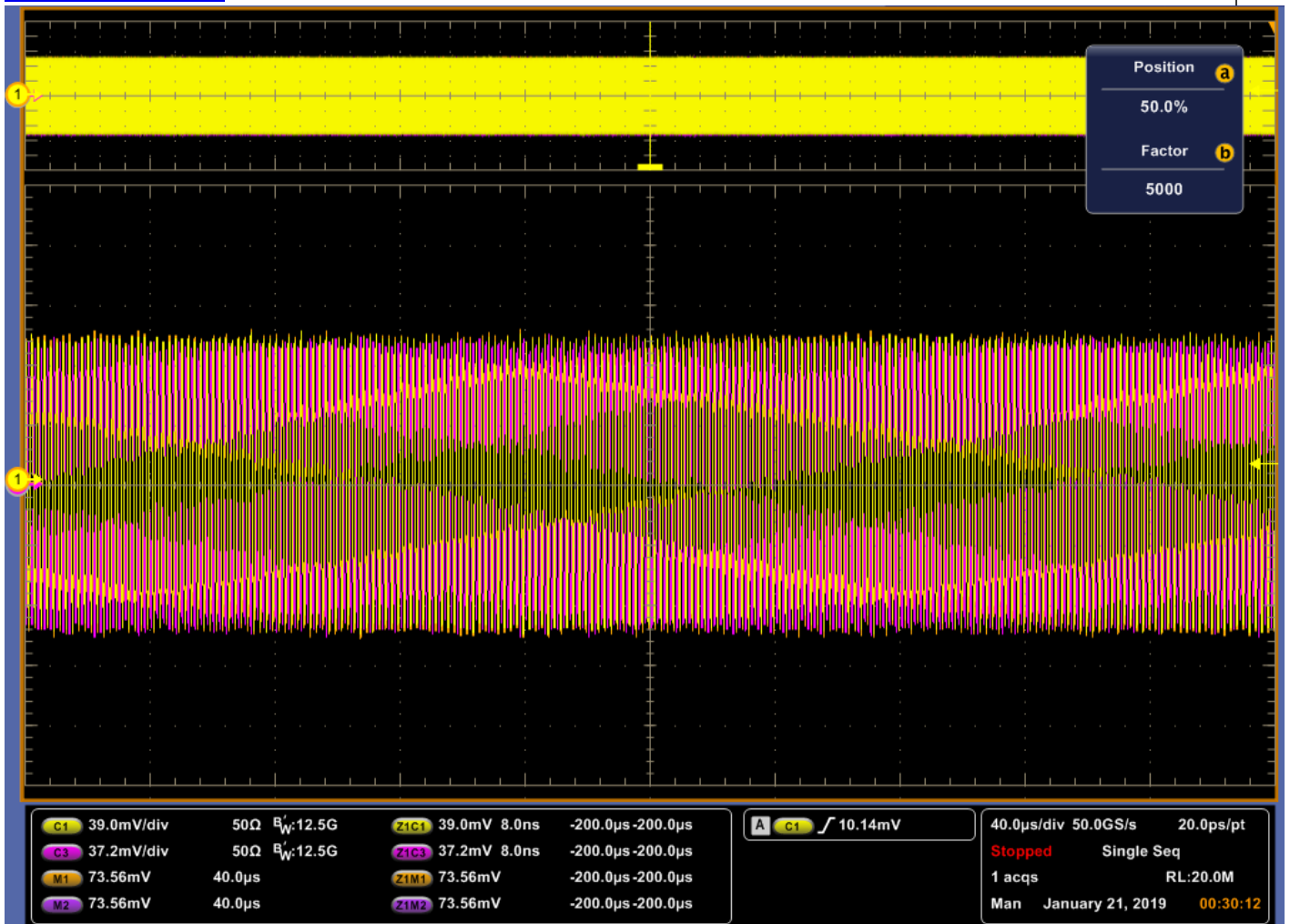


[CP0\\_Lane1\\_Measured\\_Gen1\\_SigTest\\_Long\\_Run1EyeTransition](#)

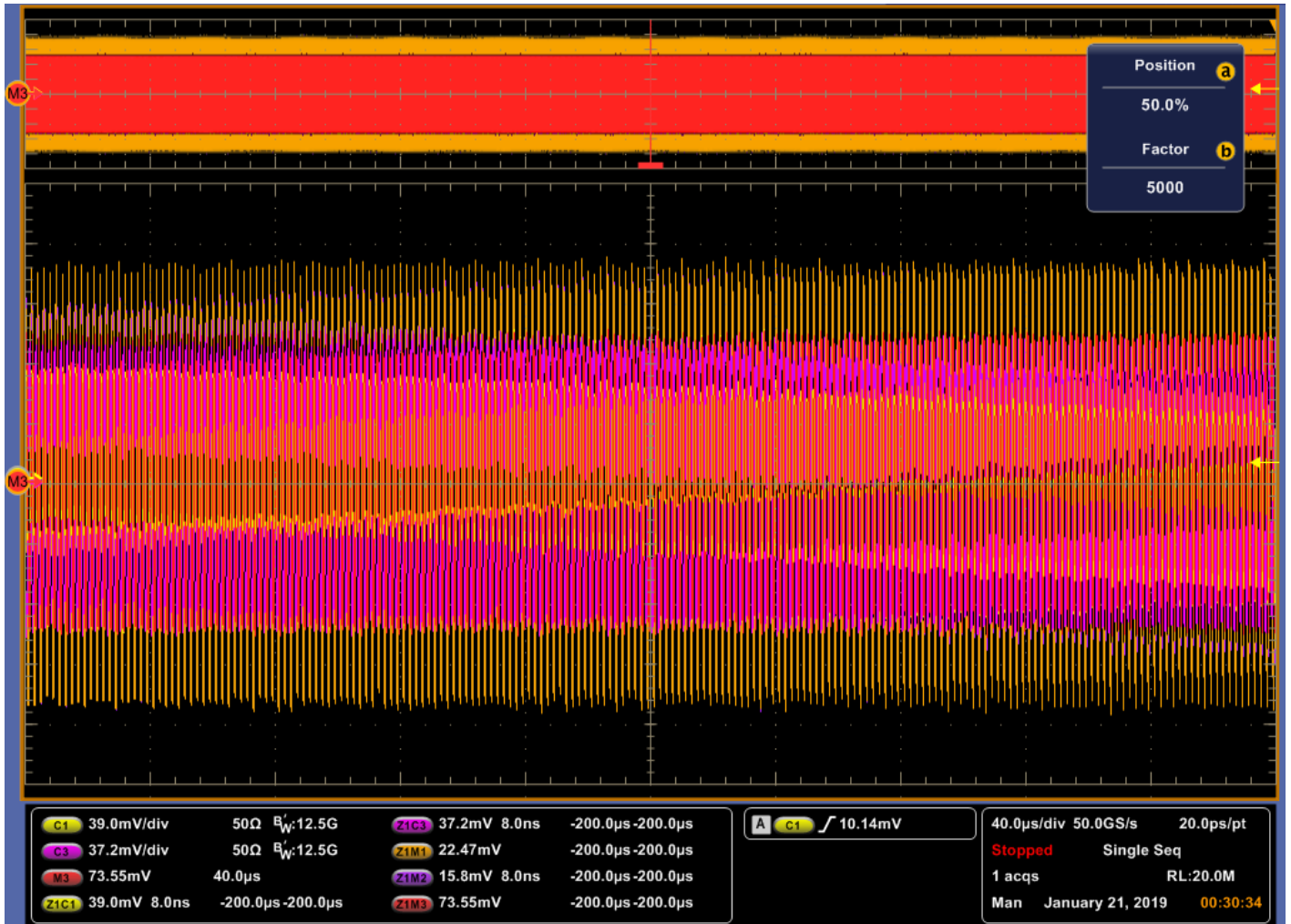


TSSC-Mod-Rate - SSC Modulation rate

CPI waveform Shortchannel



CPI waveform Longchannel



Eye Width @ 1E-12 BER

[CP0 waveform Shortchannel](#)

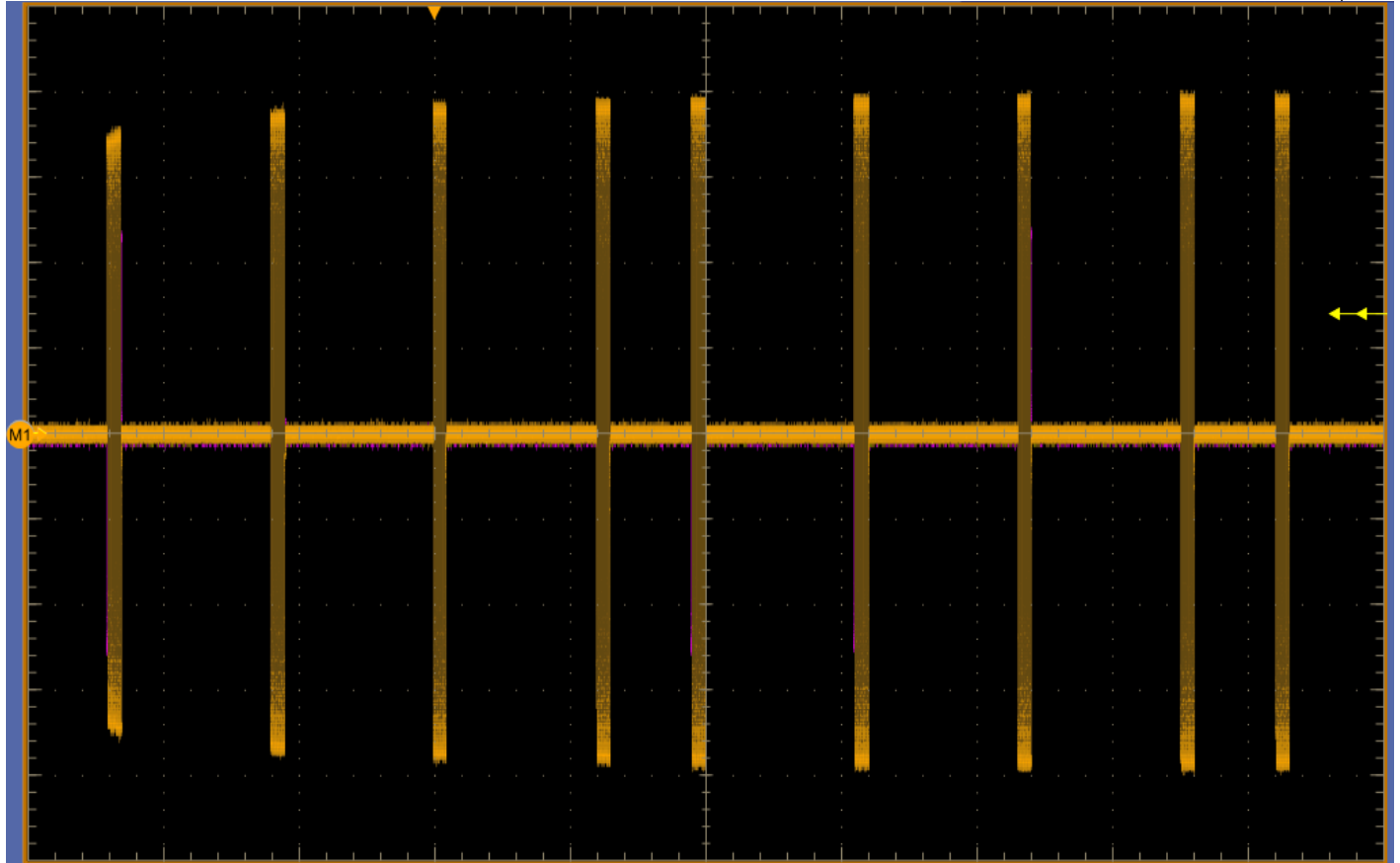


CP0 waveform Longchannel



LFPS Duty Cycle

LFPS waveform Shortchannel



C1	100.0mV/div	50Ω	B <sub>W</sub> :5.0G
C3	100.0mV/div	50Ω	B <sub>W</sub> :5.0G
M1	112.5mV	10.0μs	

A	C1	Width
		Trig Dly: 505.0ns
B	C1	Width

10.0μs/div	50.0GS/s	20.0ps/pt
Preview	Single Seq	
1 acqs	RL:5.0M	
Cons	January 21, 2019	00:28:31