

PCBsim USB2.0 Test Bench

2011年3月
シグナル工房
野田



測定ポイントTP1～4

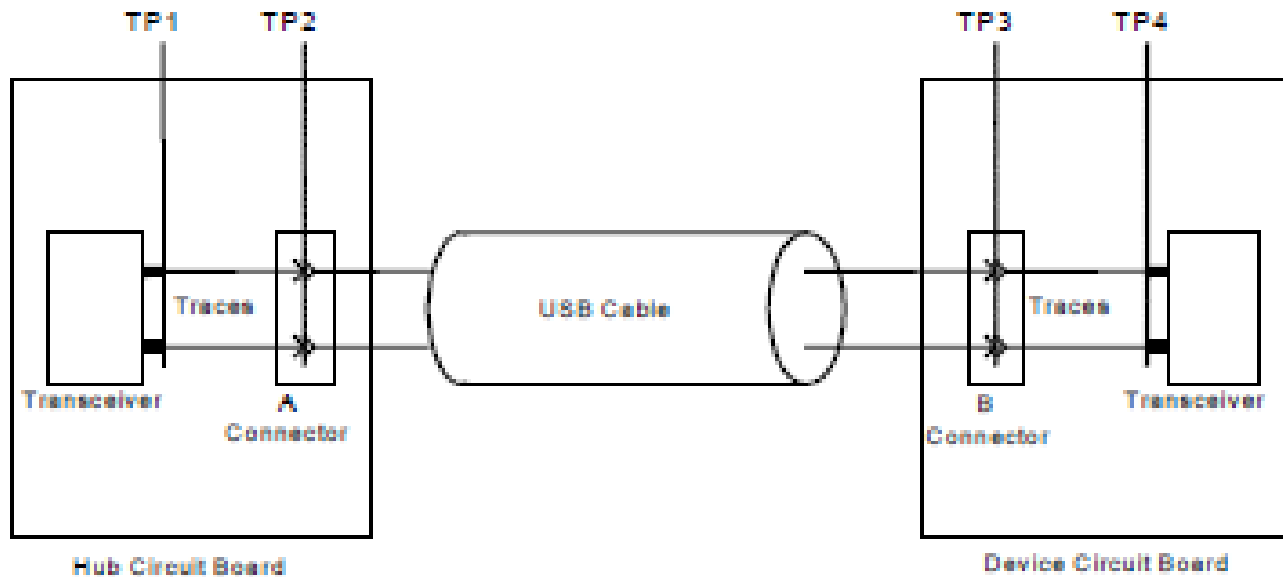
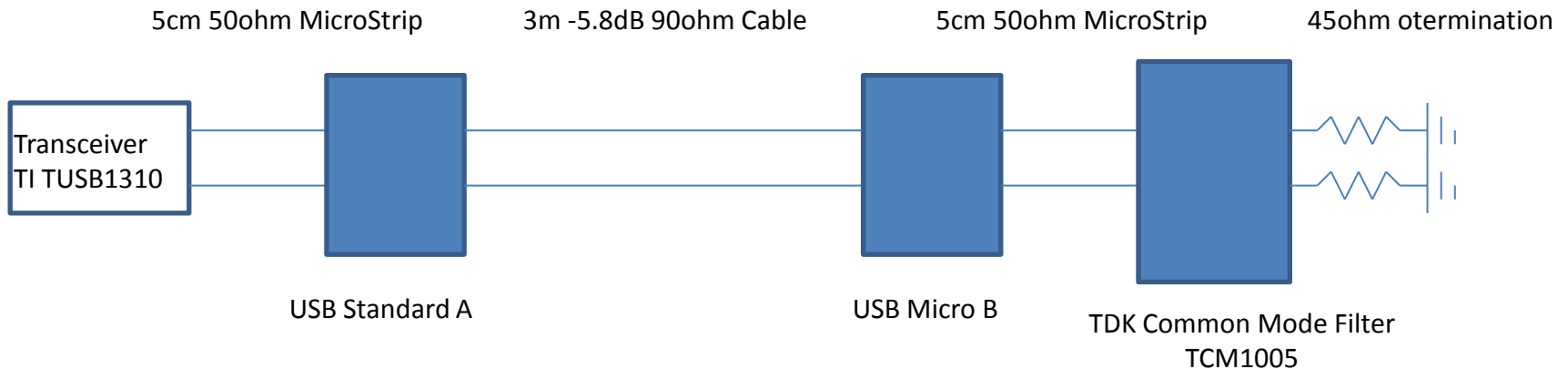


Figure 7-11. Measurement Planes



シミュレーション設定

- トランシーバーはTI社のTUSB1310のIBISモデル
- 簡単のためPCBトレース及びケーブルはシングルエンド伝送路とする
- PCBトレースは0.2幅で長さ5cm (HOST, デバイス)、長さは調整可
- ケーブルは3mで400MHz、-5.8dBのワーストケースケーブル、長さは調整可
- 終端手前にTDKのコモンモードフィルタTCM1005_900を配置
- USB standard AとMicro Bのコネクタモデルを配置

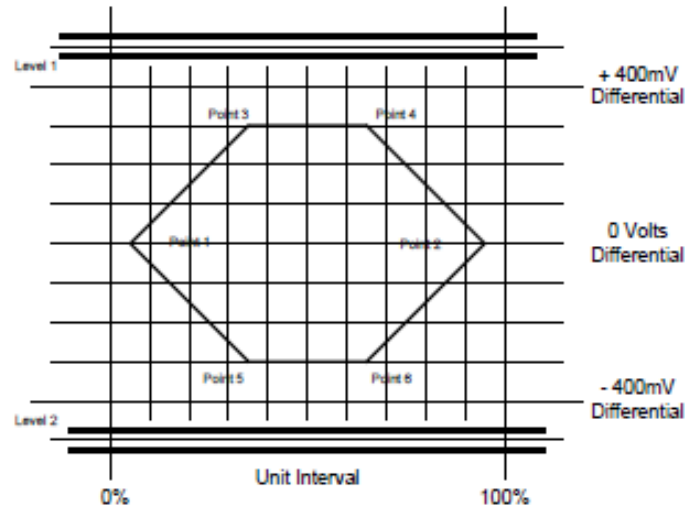


TP1

HOST用の
チップIBIS
モデル

Template 5

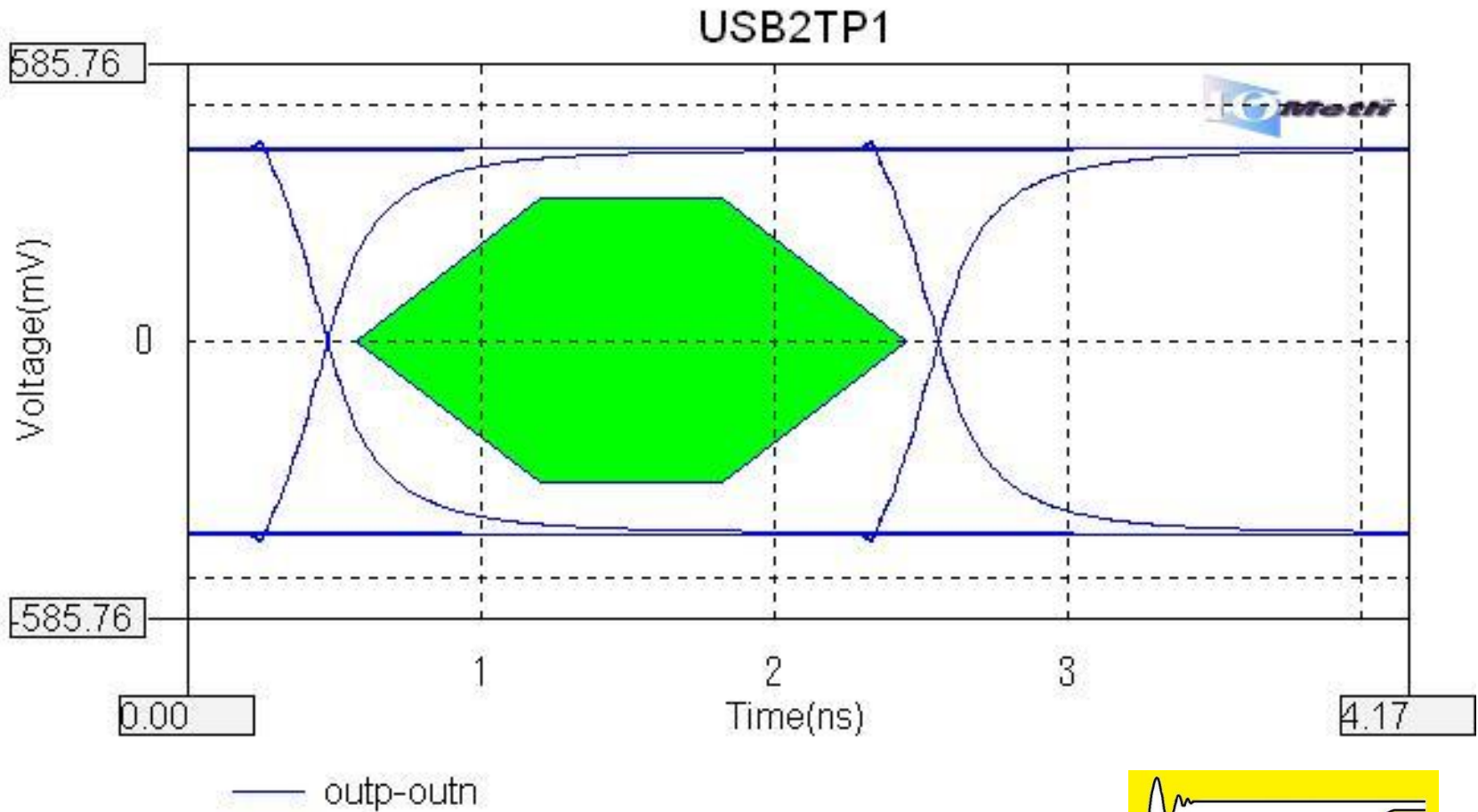
Figure 7-17 shows transmit waveform requirements for a hub transceiver measured at TP1 and for a device transceiver measured at TP4.



	Voltage Level (D+ - D-)	Time (% of Unit Interval)
Level 1	525 mV in UI following a transition, 475 mV in all others	N/A
Level 2	-525 mV in UI following a transition, -475 in all others	N/A
Point 1	0 V	5% UI
Point 2	0 V	95% UI
Point 3	300 mV	35% UI
Point 4	300 mV	65% UI
Point 5	-300 mV	35% UI
Point 6	-300 mV	65% UI



TP1 Simulation result

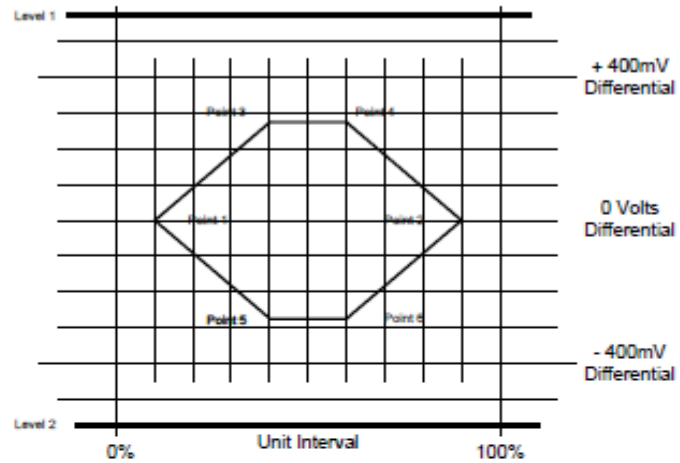


TP2

HOSTの
USB A
コネクタ出力

Template 3

Figure 7-15 shows receiver sensitivity requirements for a device (with a captive cable) when a signal is applied at TP2.

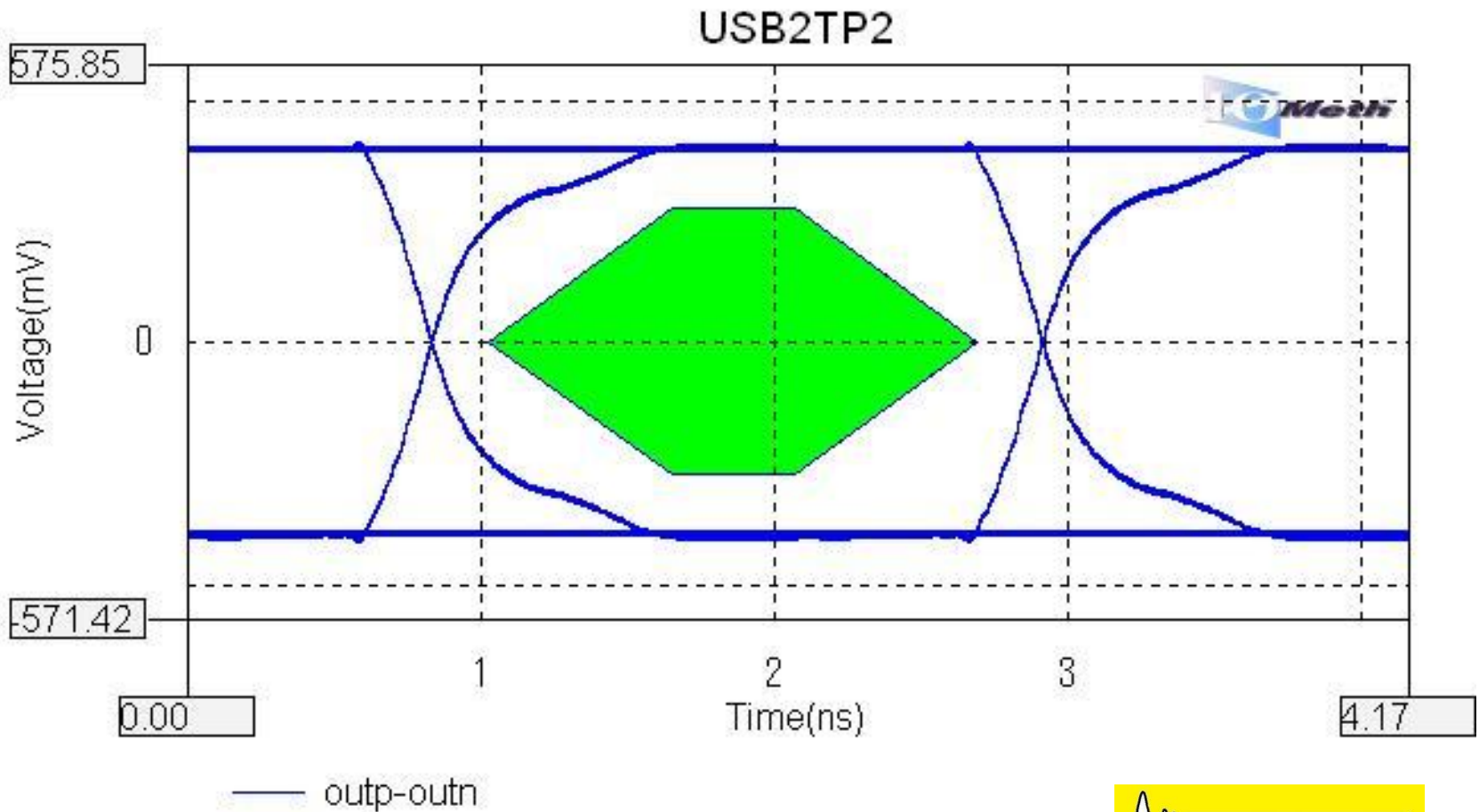


	Voltage Level (D+ - D-)	Time (% of Unit Interval)
Level 1	575 mV	N/A
Level 2	-575 mV	N/A
Point 1	0 V	10% UI
Point 2	0 V	90% UI
Point 3	275 mV	40% UI
Point 4	275 mV	60% UI
Point 5	-275 mV	40% UI
Point 6	-275 mV	60% UI

Figure 7-15. Template 3



TP2 Simulation result

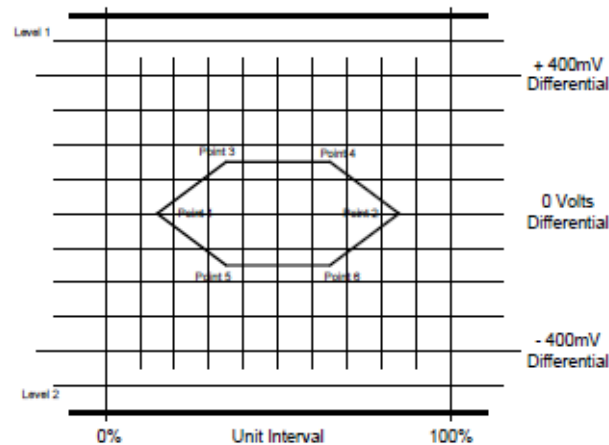


TP3

デバイスの Micro B コネクタ ケーブル 出力

Template 4

Figure 7-16 shows receiver sensitivity requirements for a device (without a captive cable) when signal is applied at TP3, and for a hub when a signal is applied at TP2.



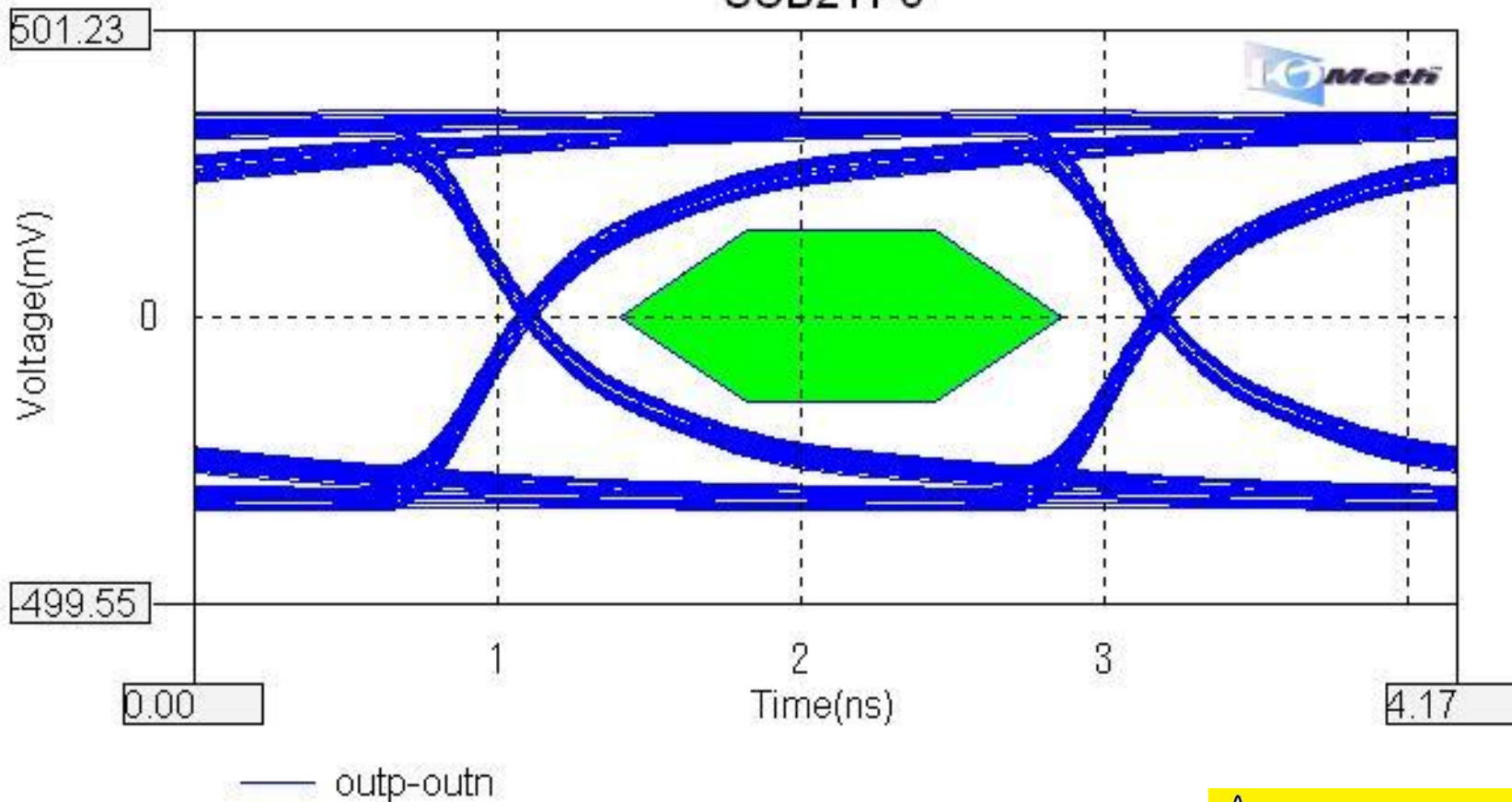
	Voltage Level (D+ - D-)	Time (% of Unit Interval)
Level 1	575 mV	N/A
Level 2	-575 mV	N/A
Point 1	0 V	15% UI
Point 2	0 V	85% UI
Point 3	150 mV	35% UI
Point 4	150 mV	85% UI
Point 5	-150 mV	35% UI
Point 6	-150 mV	85% UI

Figure 7-16. Template 4



TP3 Simulation Result

USB2TP3

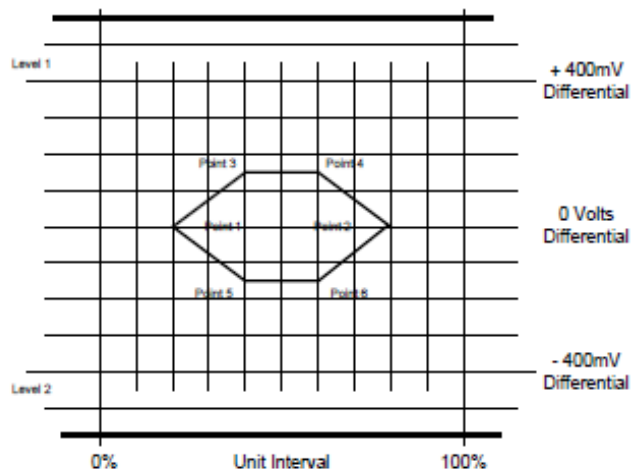


TP4

デバイス側のチップ
 終端出力
 コモンモード
 フィルター付

Template 6

Figure 7-18 shows receiver sensitivity requirements for a device transceiver when a signal is applied at TP4 and for a hub transceiver when a signal is applied at TP1.



	Voltage Level (D+ - D-)	Time (% of Unit Interval)
Level 1	575 mV	N/A
Level 2	-575 mV	N/A
Point 1	0 V	20% UI
Point 2	0 V	80% UI
Point 3	150 mV	40% UI
Point 4	150 mV	60% UI
Point 5	-150 mV	40% UI
Point 6	-150 mV	60% UI

Figure 7-18. Template 6



TP4 Simulation Result

