



SAS-2 Crosstalk Budget for Receiver Testing

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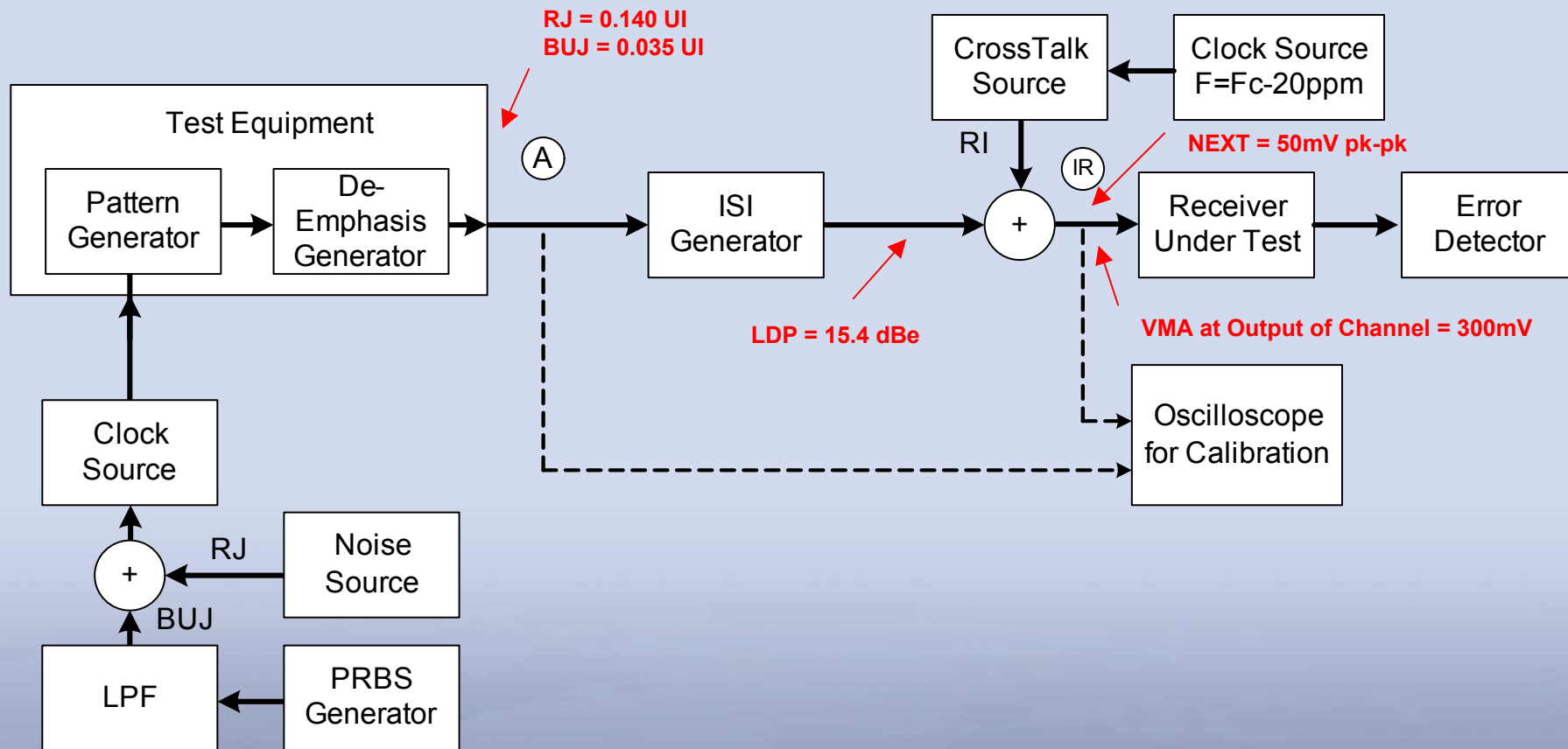


Goals

- **Present measured crosstalk data**
- **Propose crosstalk budget for link budget and receiver testing**
- **References:**
 - T10/07-380r1 Comprehensive Stressed Receiver Sensitivity Test (Kevin Witt)
 - T10/07-365r0 Enhanced WDP for 6G SAS (Mike Jenkins)

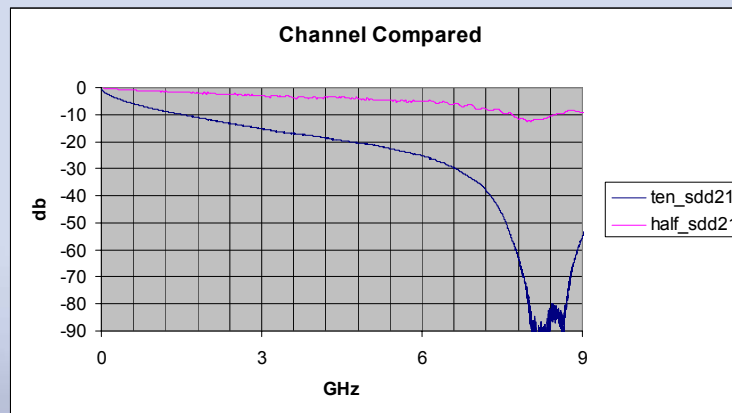


Receiver Comprehensive Sensitivity Test Set Up



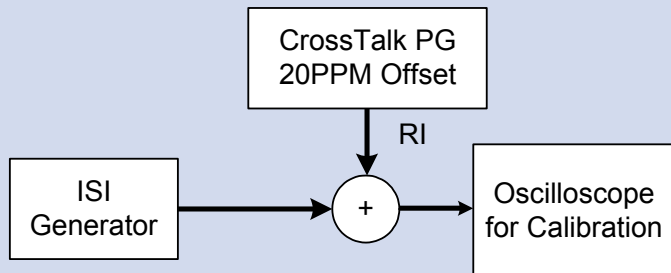
Channels Considered

- Half meter mini-sas
- Ten meter mini-sas



Crosstalk measurement setup

- Used Mini SAS 4x Cables
- NEXT – Largest Contributor is the Nearest Transmit Pair



0.5 meter MiniSAS cable			
Victim	Aggressor	Amplitude(mV)	NEXT (db)
rx3	tx1	1800	-57.8898
rx3	tx0	1800	-51.8881
rx3	tx2	1800	-48.4425
rx3	tx3	1800	-37.6878

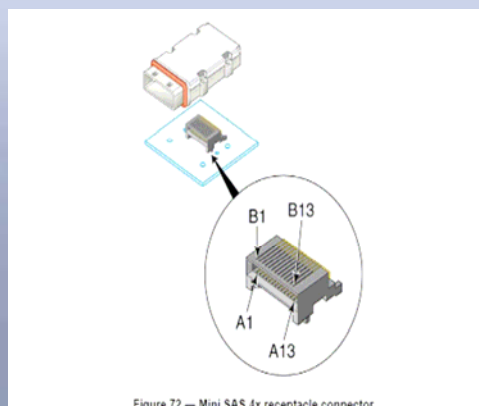
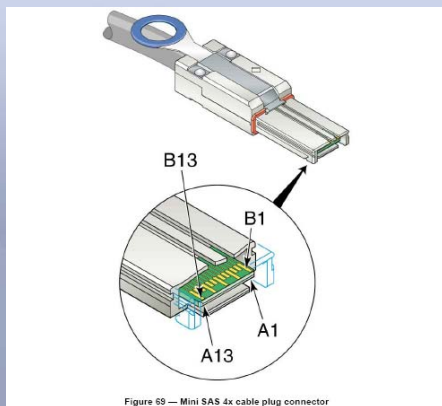


Table 33 — Mini SAS 4x connector pin assignments and physical link usage

Signal	Pin usage based on number of physical links supported by the cable assembly ^a				Mating length
	One	Two	Three	Four	
Rx 0+	A2	A2	A2	A2	Third
Rx 0-	A3	A3	A3	A3	
Rx 1+	N/C	A5	A5	A5	
Rx 1-	N/C	A6	A6	A6	
Rx 2+	N/C	N/C	A8	A8	
Rx 2-	N/C	N/C	A9	A9	
Rx 3+	N/C	N/C	N/C	A11	
Rx 3-	N/C	N/C	N/C	A12	
Tx 0+	B2	B2	B2	B2	
Tx 0-	B3	B3	B3	B3	
Tx 1+	N/C	B5	B5	B5	
Tx 1-	N/C	B6	B6	B6	
Tx 2+	N/C	N/C	B8	B8	First
Tx 2-	N/C	N/C	B9	B9	
Tx 3+	N/C	N/C	N/C	B11	
Tx 3-	N/C	N/C	N/C	B12	
SIGNAL GROUND	A1, A4, A7, A10, A13 B1, B4, B7, B10, B13				First
CHASSIS GROUND	Housing				N/A

^a N/C = not connected



Measured data

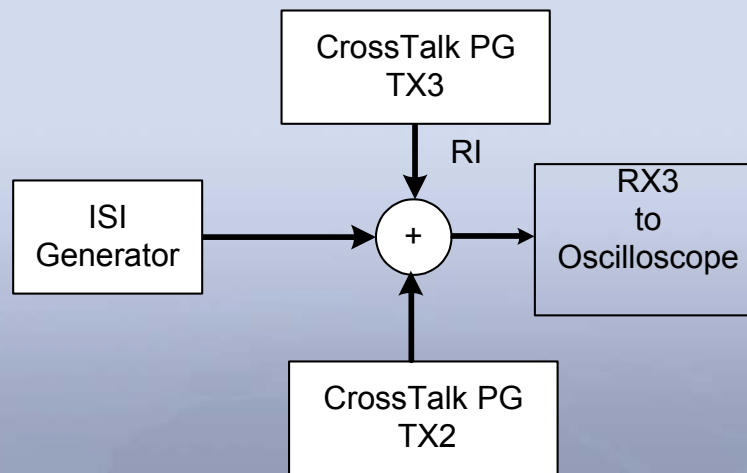
- What would it take to generate NEXT

0.5 meter MiniSAS cable				
Victim	Aggressor	Amplitude(mV)	NEXT-RMS(mV)	NEXT-p-p(mV)
RX3	TX3	1200	2.53	16.18
RX3	TX3	1600	3.33	19.41
RX3	TX3	2000	4.30	24.12



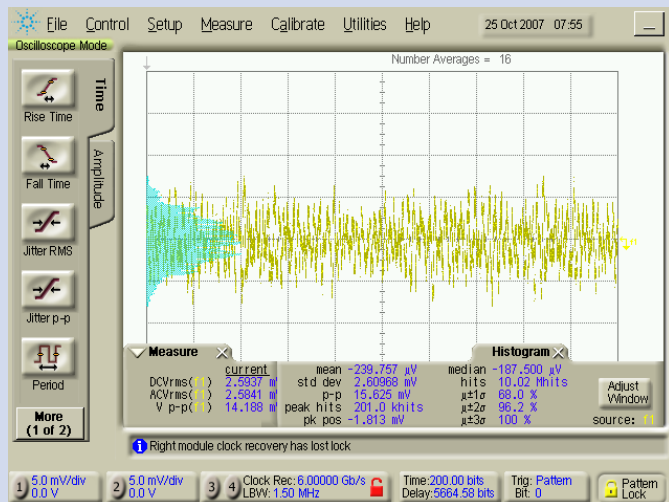
Crosstalk measurement setup

- Measured at the Victim – RX3
- Primary aggressor TX3
- Secondary aggressor TX2



Measured data

- Aggressor amplitude 1200mVp-p applied to TX3 & TX2
- Only NEXT considered for calibration



				0.5m vs 10m			
				Vrms (mV)		Vp-p(mV)	
EdgeRate	DE(-db)	Pattern		0.5m	10m	0.5m	10m
25	0	K28.5		2.52	2.22	12.25	10.63
25	0	PRBS7		2.50	2.32	14.50	13.00
25	0	SASCJT		2.68	2.42	13.38	12.00
25	3	K28.5		2.63	2.36	12.88	10.75
25	3	PRBS7		2.59	2.41	15.63	13.25
25	3	SASCJT		2.96	2.62	14.00	13.13
49	0	K28.5		1.99	1.80	9.75	9.00
49	0	PRBS7		1.94	1.79	12.00	9.25
49	0	SASCJT		2.21	2.21	10.13	9.50
49	3	K28.5		2.16	1.87	10.38	9.13
49	3	PRBS7		2.01	1.93	12.38	9.88
49	3	SASCJT		2.43	2.13	10.75	10.13



Proposal

- **NEXT Budget**
 - **4mV RMS**
 - **SASCJT Pattern offset by 20PPM**

