

WIB firmware status

WIB firmware team:

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Progress so far

Module	Status
FAST command	Working in simulation
COLDATA-customized I2C	Working in simulation
COLDATA serial receiver	Working in simulation
COLDATA data deframer	In progress
COLDATA data synchronizer	In progress
Timing endpoint	See Adrian's report

Simulation status

COLDATA data deframer

- Two formats:
 - ❖ Frame 12
 - ❖ Frame 14
- Very similar to each other
- Implemented as single module
- Detects the frame type automatically
- Output data in the same format
 - ❖ 14-bit words ready for DAQ packing
- Nearly done

Simulation status

COLDATA data synchronizer

- Data received in WIB don't have any marker of ADC channel 0
- Has to be detected using test pattern
- Test pattern is sent by ADC, using power voltages
- Full simulation requires simulating analog part of ADC
- ADC analog part's model can be used, but:
 - ❖ **decided to try a simplified approach**
- Implemented power voltage test patterns myself using simplified logic
- Can see them propagating into WIB
- Synchronizer logic in development

Plans

- Finish deframer and data synchronizer
- Implement DAQ data formatter
- ❖ DAQ data format received from David

Created: 24jun2019
Updated: -
Version: 1

	K/D	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0							
0	0001	0x00										0x00										0x00										SOF (K28.1)								
1	0000	14-bit WIB Code										Data Frame Version#										FEMB Valid		F#		WIB Slot#		WIEC Crate#												
2	0000	32-bit WIB/COLDATA Code																																						
3	0000	Timestamp [31:0]																																						
4	0000	Timestamp [63:32]																																						
5	0000	U(2) ADC[3:0]					U(1) ADC[13:0]										U(0) ADC[13:0]																							
6	0000	U(4) ADC[7:0]					U(3) ADC[13:0]										U(2) ADC[13:4]																							
7	0000	U(6) ADC[11:0]					U(5) ADC[13:0]										U(4) ADC[13:8]																							
8	0000	U(9)[1:0]		U(8) ADC[13:0]					U(7) ADC[13:0]										U(6)[13:12]																					
9	0000	U(11) ADC[5:0]					U(10) ADC[13:0]										U(9) ADC[13:2]																							
10	0000	U(13) ADC[9:0]					U(12) ADC[13:0]										U(11) ADC[13:6]																							
11	0000	U(15) ADC[13:0]					U(14) ADC[13:0]										U(13) ADC[13:10]																							
12	0000	U(18) ADC[3:0]					U(17) ADC[13:0]										U(16) ADC[13:0]																							
13	0000	U(20) ADC[7:0]					U(19) ADC[13:0]										U(18) ADC[13:4]																							
14	0000	U(22) ADC[11:0]					U(21) ADC[13:0]										U(20) ADC[13:8]																							
15	0000	U(25)[1:0]		U(24) ADC[13:0]					U(23) ADC[13:0]										U(22)[13:12]																					
16	0000	U(27) ADC[5:0]					U(26) ADC[13:0]										U(25) ADC[13:2]																							
17	0000	U(29) ADC[9:0]					U(28) ADC[13:0]										U(27) ADC[13:6]																							
18	0000	U(31) ADC[13:0]					U(30) ADC[13:0]										U(29) ADC[13:10]																							
19	0000	U(34) ADC[3:0]					U(33) ADC[13:0]										U(32) ADC[13:0]																							
20	0000	U(36) ADC[7:0]					U(35) ADC[13:0]										U(34) ADC[13:4]																							
21	0000	U(38) ADC[11:0]					U(37) ADC[13:0]										U(36) ADC[13:8]																							
22	0000	V(1)[1:0]		V(0) ADC[13:0]					U(39) ADC[13:0]										U(38)[13:12]																					
23	0000	V(3) ADC[5:0]					V(2) ADC[13:0]										V(1) ADC[13:2]																							
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