

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

INDEX LARGE

PAGE(S)	FUNCTION
2	PARALLEL I/O
3	MGT REAL TIME
4	POWER, JTAG, CPLD, IPMC, CLOCK AND ULTRAZED
5	U1 BANK65
6	U1 BANK71
7	U1 CLOCK LVDS
8	U2 BANK65
9	U2 BANK71
10	U2 CLOCK LVDS
11 - 18	U1 HIGH SPEED
19 - 30	U1 FF
31 - 40	POWER SUPPLY
41 - 48	U2 HIGH SPEED
49 - 60	U2 FF
61	CLOCK JITTER CLEANER
62	CLOCK MGT1 + MGT2
63	CLOCK MGT3 + MGT4
64	CLOCK MGT5
65	CLOCK GCK1 + GCK2
66	CLOCK CML FANOUT6 DC
67 - 68	CLOCK CML FANOUT6 AC
69 - 70	CLOCK LUPECL SI591 AC
71 - 72	CLOCK LVDSAC FANOUT8
73 - 76	CLOCK CML FANOUT6 AC
77	CLOCK LUPECL SI591 AC
78	CLOCK JITTER FIXED
79	CLOCK LUPECL SI591 AC
80	CLOCK JITTER LHC
81	CLOCK MULTIPLEXER
82 - 87	CLOCK CML FANOUT6 AC
88 - 89	IPMC
90 - 92	CPLD2
93	BACKPLNE BASE CHANNEL
94	JTAG CONNECTOR
95	CPLD1
96 - 97	CONFIG U1 + U2
98	CLOCK LVDS LVCMOS
99	CLOCK OSC
100	ULTRAZED FELIX FF + RJ45 + PMBUS
101	ULTRAZED CONNECTOR
102	ULTRAZED FF

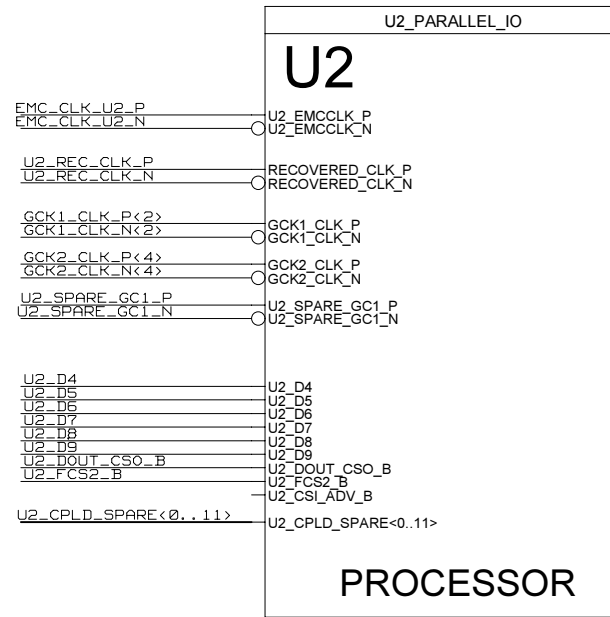
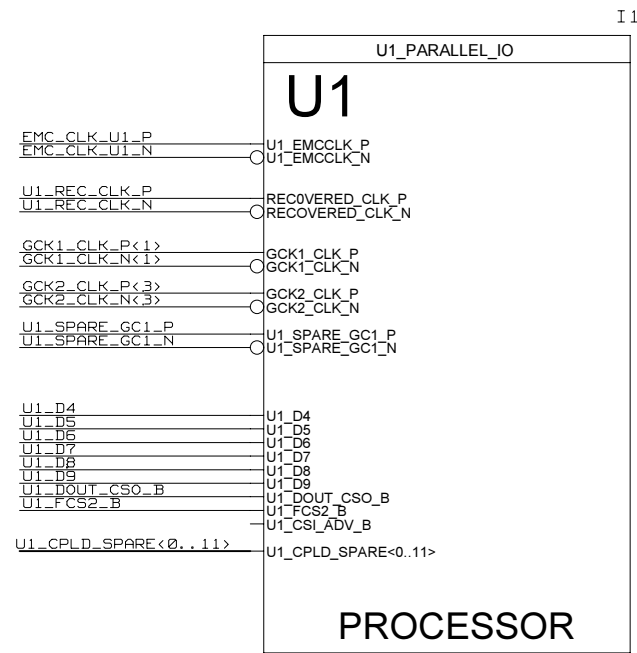
INDEX SMALL

PAGE(S)	FUNCTION
2	PARALLEL I/O
3	MGT REAL TIME
4	POWER, JTAG, CPLD, IPMC, CLOCK AND ULTRAZED
5	U1 BANK65
6	U1 BANK71
7	U1 CLOCK LVDS
8	U2 BANK65
9	U2 BANK71
10 - 17	U1 HIGH SPEED
18	FF_RX
19	FF_RX_TX
20	FF_TX
21 - 29	POWER SUPPLY
30 - 37	U2 HIGH SPEED
38	CLOCK JITTER CLEANER
39	CLOCK MGT1 + MGT2
40	CLOCK MGT3 + MGT4
41	CLOCK MGT5
42	CLOCK GCK1 + GCK2
43	CLOCK CML FANOUT6 AC
44	CLOCK LUPECL SI591 AC
45	CLOCK JITTER CLEANER
46	CLOCK MULTIPLEXER
47 - 48	IPMC
49 - 50	CPLD2
51	BACKPLNE BASE CHANNEL
52	JTAG CONNECTOR
53	CPLD1
54 - 55	CONFIG U1 + U2
56	ULTRAZED FELIX FF + RJ45 + PMBUS
57	ULTRAZED CONNECTOR

CHECKED	U.SCHAEFER	DATE	SIGN	DRAWING TITLE FFEX		
CHECKED						
CHECKED						
DRAWN	BAUSS					
BLOCK TITLE ffex_proto_v1				B. BAUSS Fri Jun 23 12:20:16 2023		
UNIVERSITY OF MAINZ				SIZE C	REV.	DRAWING NO.
				SCALE		PAGE 1 OF 102

ZONE	LTR	DESCRIPTION	DATE	APPR.

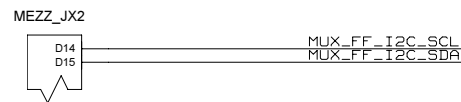
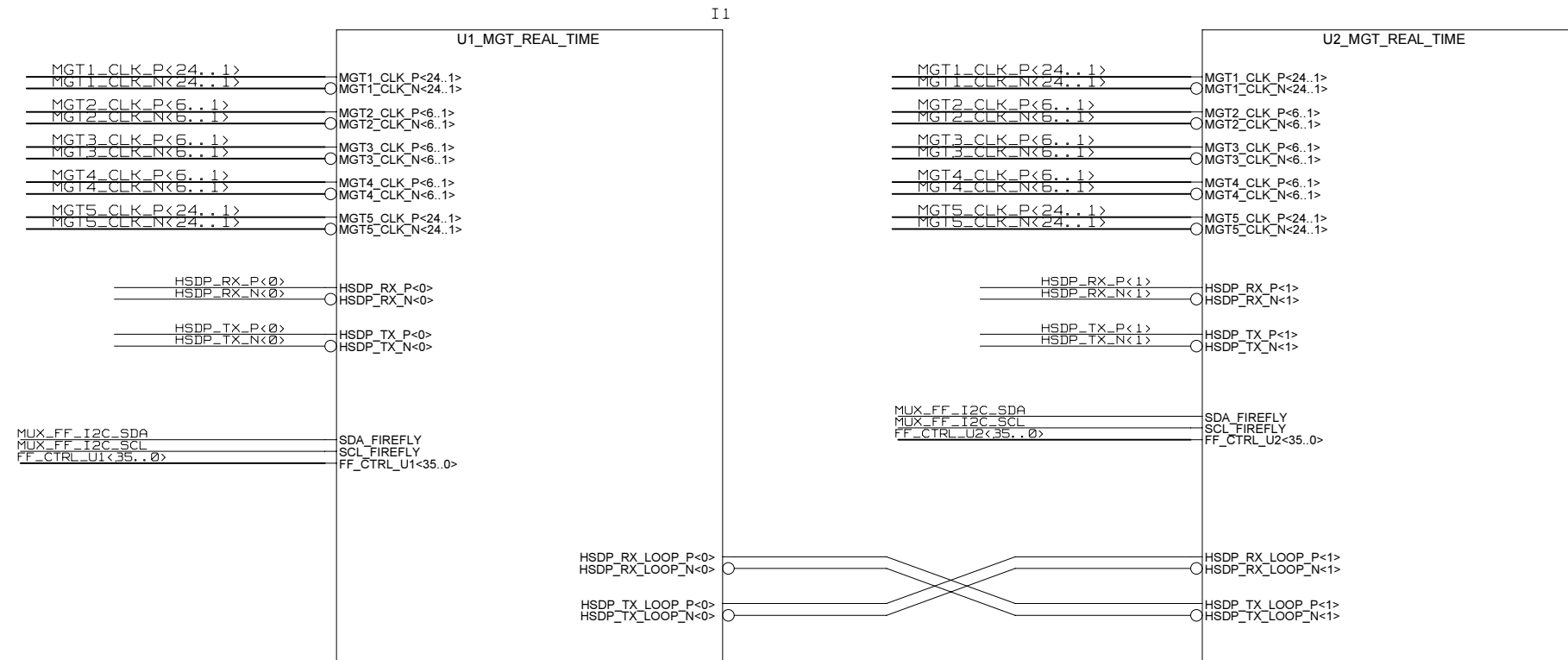
PARALLEL I/O



CHECKED	U.SCHAEFER			DRAWING TITLE FFEX B. BAUSS Thu Jun 15 14:37:54 2023
CHECKED				
CHECKED				
DRAWN	BAUSS			
BLOCK TITLE ffex_proto_v1				
UNIVERSITY OF MAINZ				SIZE C
				REV.
				DRAWING NO.
				PAGE 2 OF 102

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

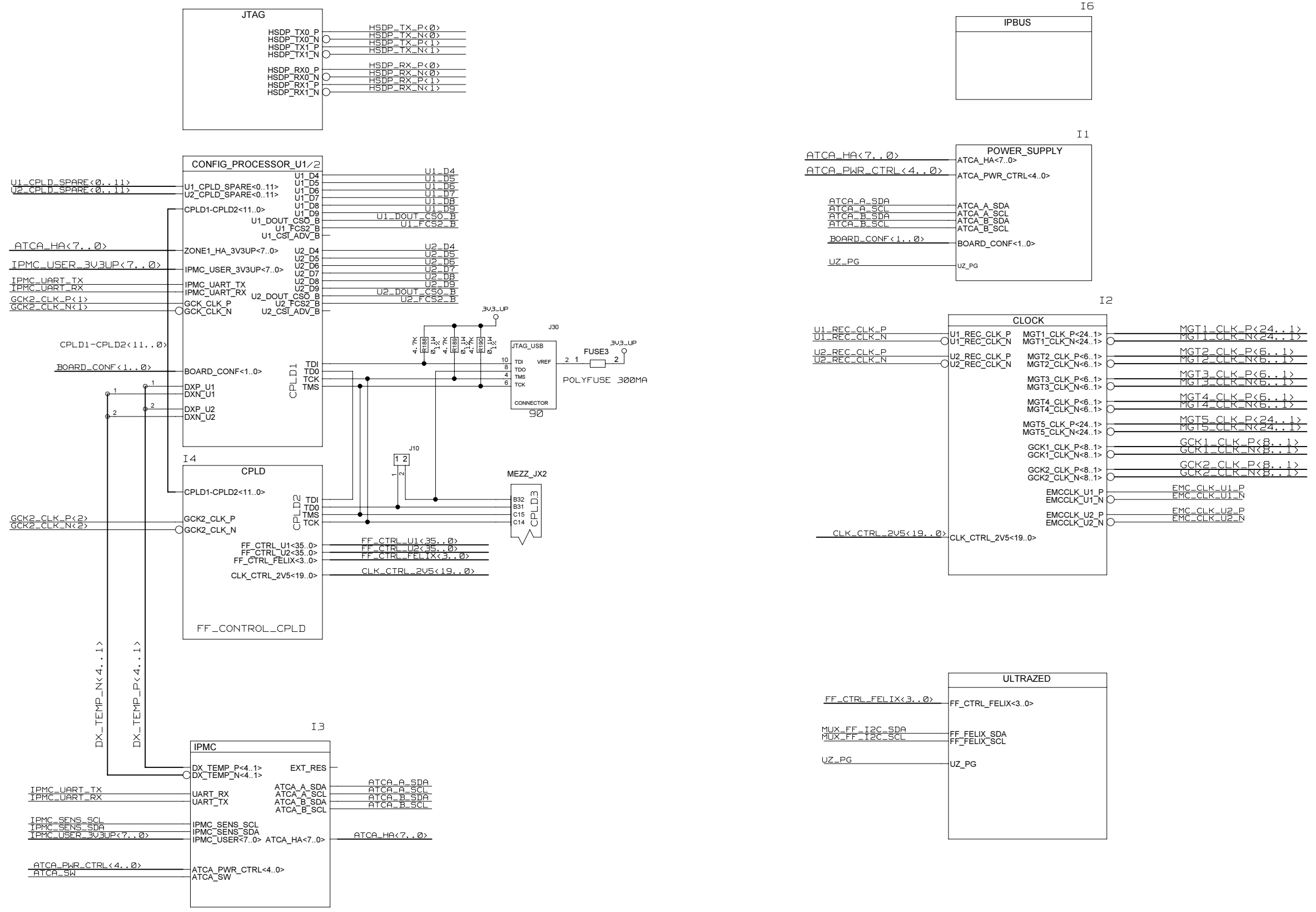
MGT REAL TIME



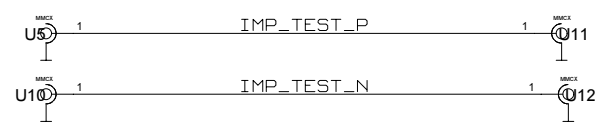
CHECKED	NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER			
CHECKED				
CHECKED				
DRAWN	BAUSS			FFEX
BLOCK TITLE				
ffex_proto_v1				B. BAUSS Fri Aug 18 09:49:33 2023
UNIVERSITY OF MAINZ			SIZE	DRAWING NO.
			C	REV.
			SCALE	PAGE
				3 OF 102

POWER, CLOCK AND CONTROL

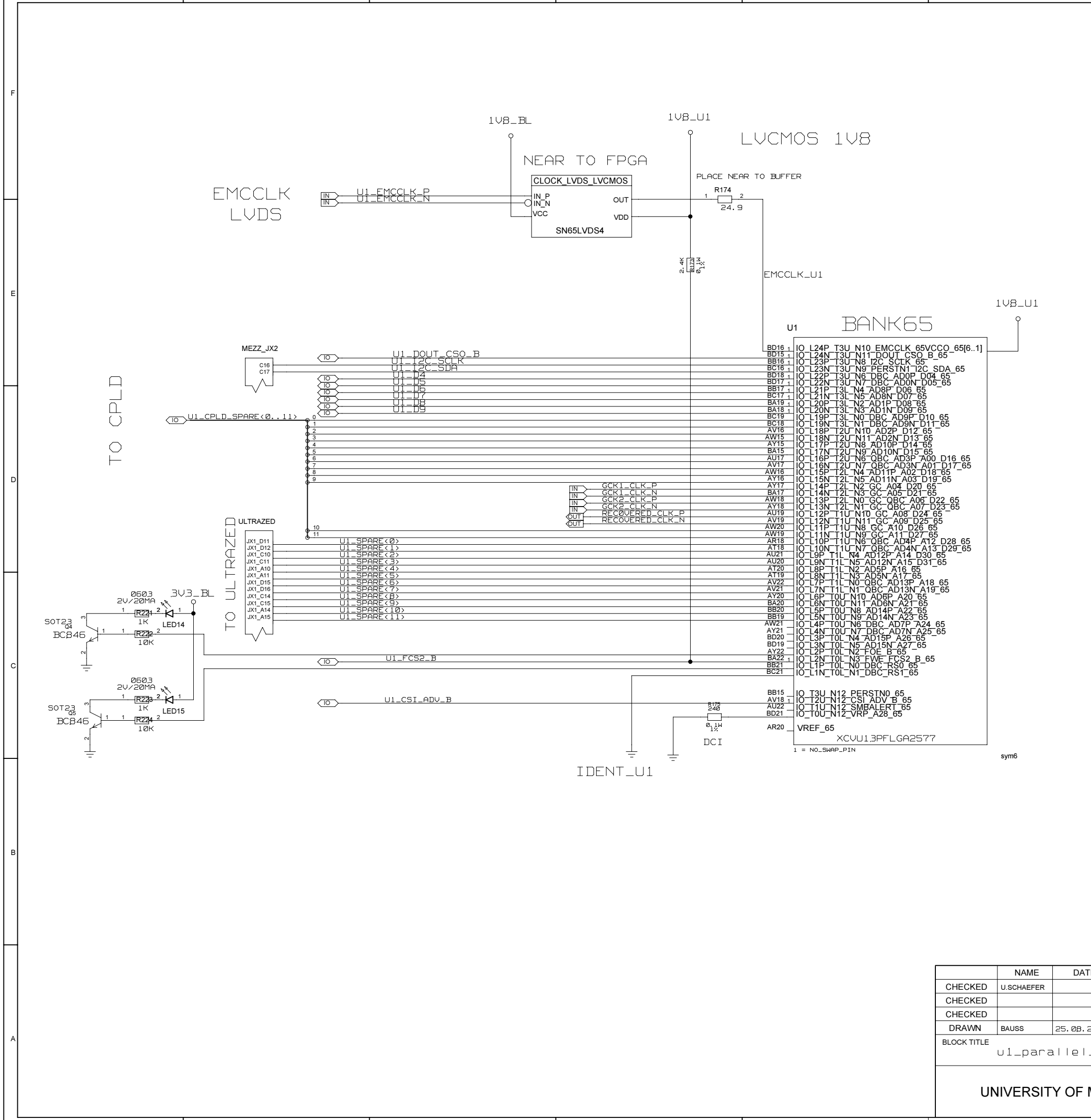
REVISIONS			
ZONE	LTR	DESCRIPTION	DATE



NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER		FFEX
CHECKED			
CHECKED			
DRAWN	BAUSS		ffex_proto_v1
BLOCK TITLE			
UNIVERSITY OF MAINZ			B. BAUSS Fri Aug 18 09:49:34 2023
SIZE	REV.	DRAWING NO.	
SCALE		PAGE 4 OF 102	

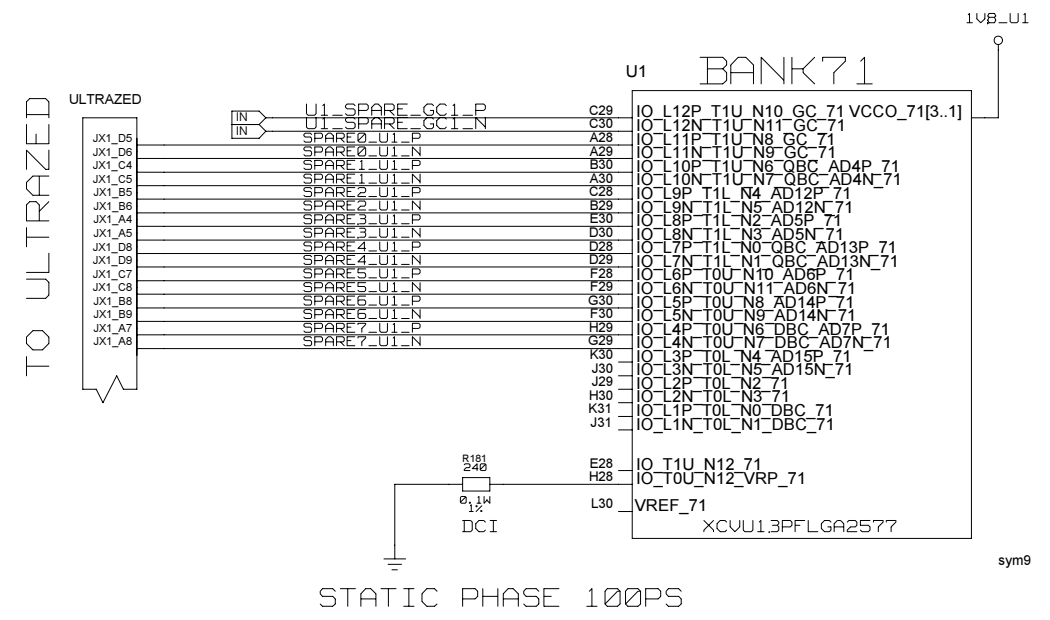


REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.



CHECKED	NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER			
CHECKED				
CHECKED				
DRAWN	BAUSS	25.08.2015		<h1 style="text-align: center;">FFEX</h1> <p style="text-align: center;">B. BAUSS Fri Aug 18 09:49:25 2023</p>
BLOCK TITLE				
UNIVERSITY OF MAINZ				SIZE C SCALE
				REV. DRAWING NO. PAGE 5 OF 102

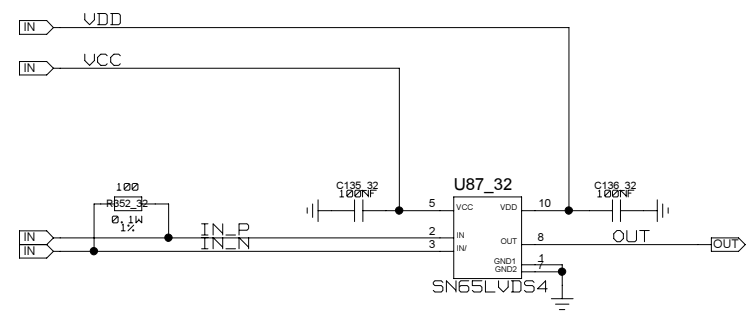
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.



CHECKED	NAME	DATE	SIGN	DRAWING TITLE		
CHECKED	U.SCHAEFER			<h1 style="text-align: center;">FFEX</h1>		
CHECKED						
CHECKED						
DRAWN	BAUSS	25.08.2015		B. BAUSS Fri Aug 18 09:49:25 2023		
BLOCK TITLE				SIZE	REV.	DRAWING NO.
u1_parallel_10				C		
UNIVERSITY OF MAINZ				SCALE		PAGE
						6 OF 102

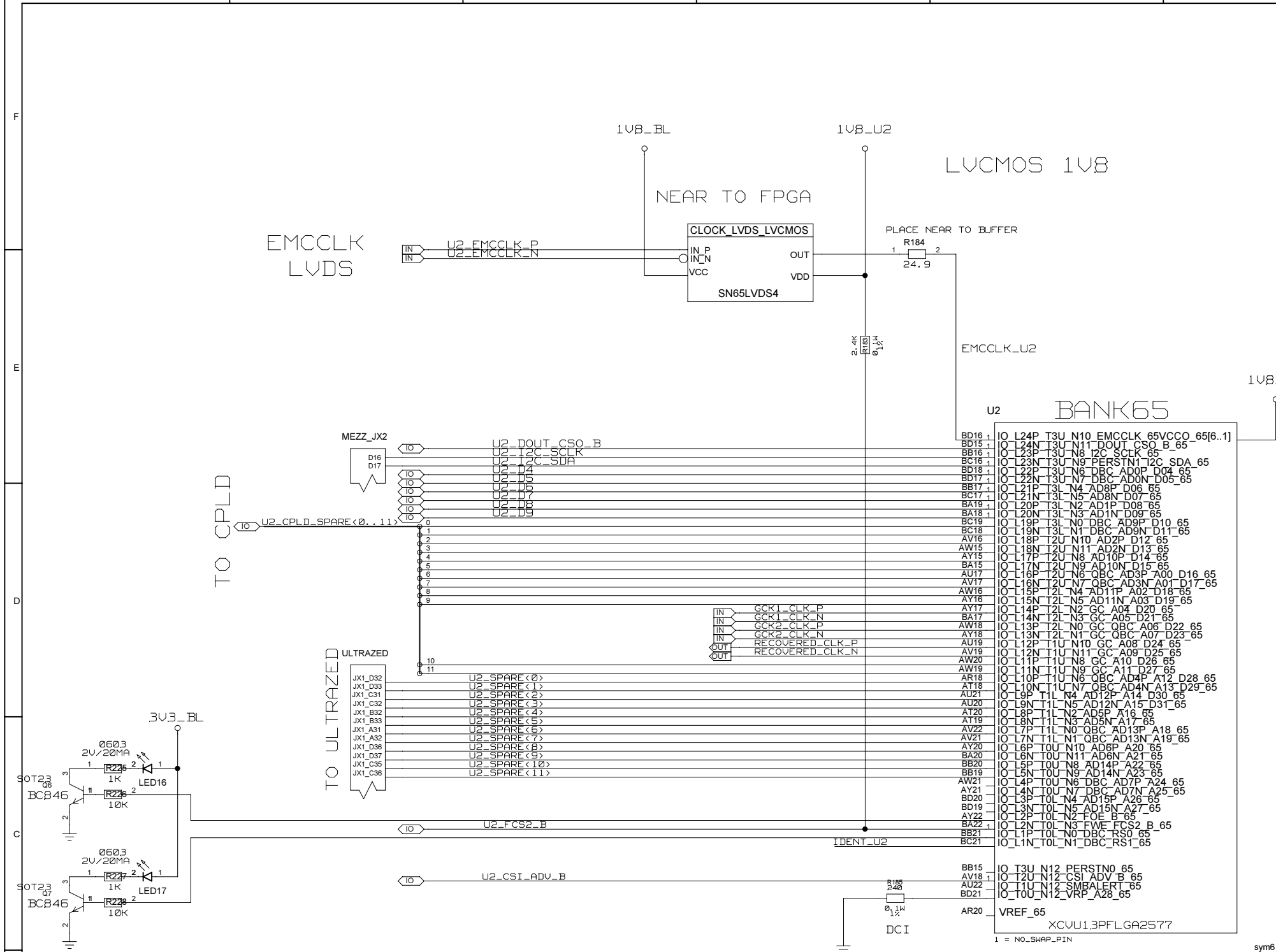
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

CLOCK_LVDS_LVCMOS



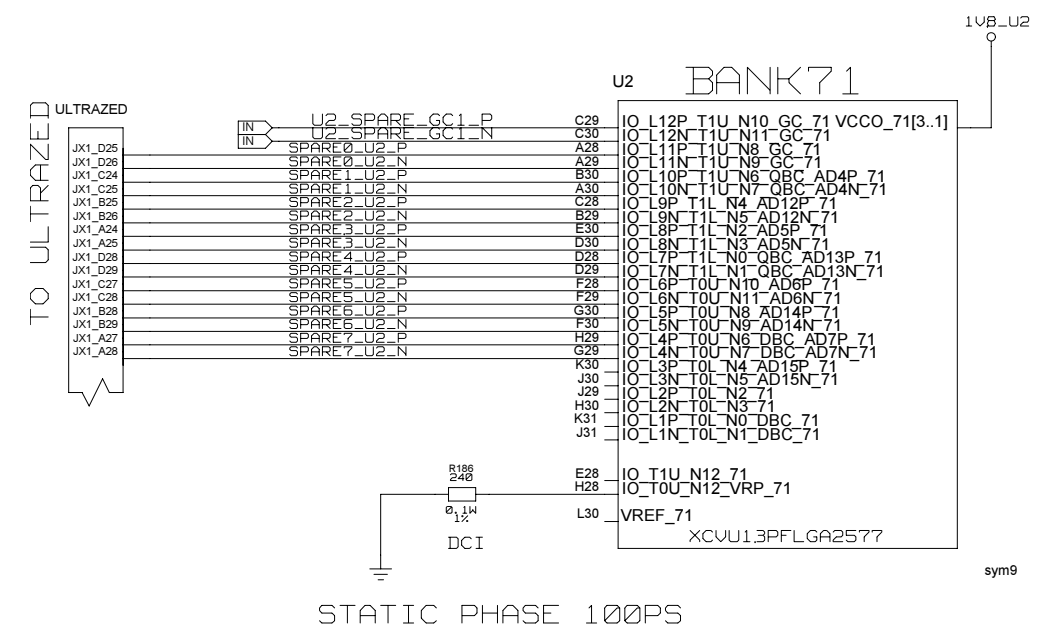
CHECKED	NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER			
CHECKED				
CHECKED				
DRAWN	BAUSS			FFEX
BLOCK TITLE				
clock_lvds_lvcmos				B. BAUSS Fri Aug 18 09:49:17 2023
UNIVERSITY OF MAINZ			SIZE	DRAWING NO.
			C	
SCALE		PAGE		
		7 OF 102		

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.



CHECKED	NAME	DATE	SIGN	DRAWING TITLE FFEX B. BAUSS Fri Aug 18 09:49:20 2023
CHECKED	U.SCHAEFER			
CHECKED				
CHECKED				
DRAWN	BAUSS	25.08.2015		
BLOCK TITLE u2_parallel_10				SIZE C
UNIVERSITY OF MAINZ				DRAWING NO.
SCALE				PAGE B OF 102

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.



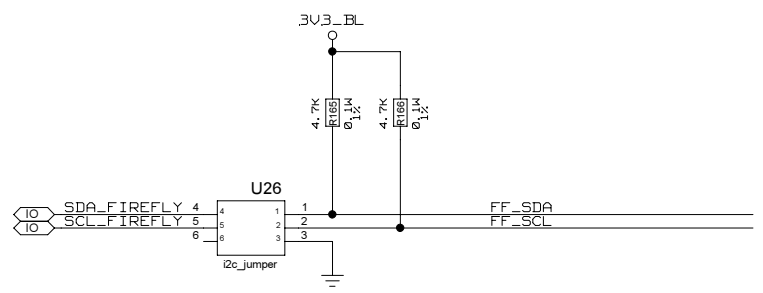
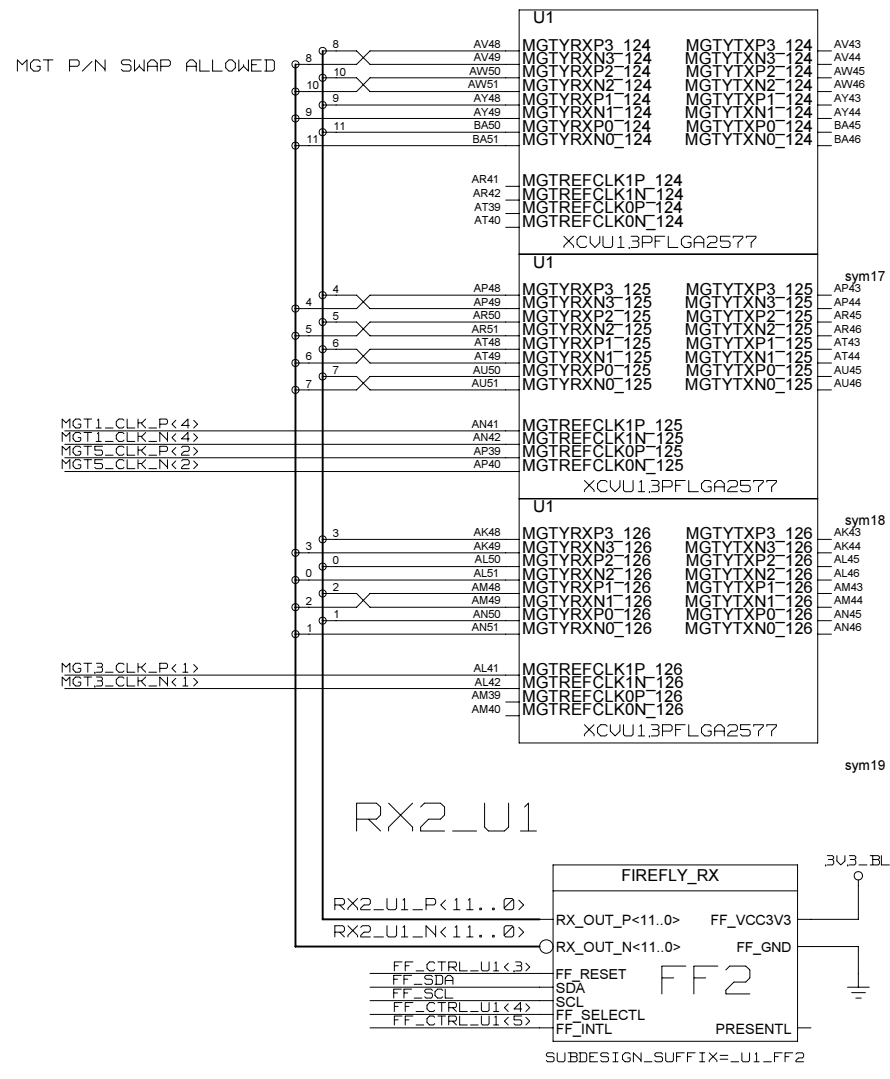
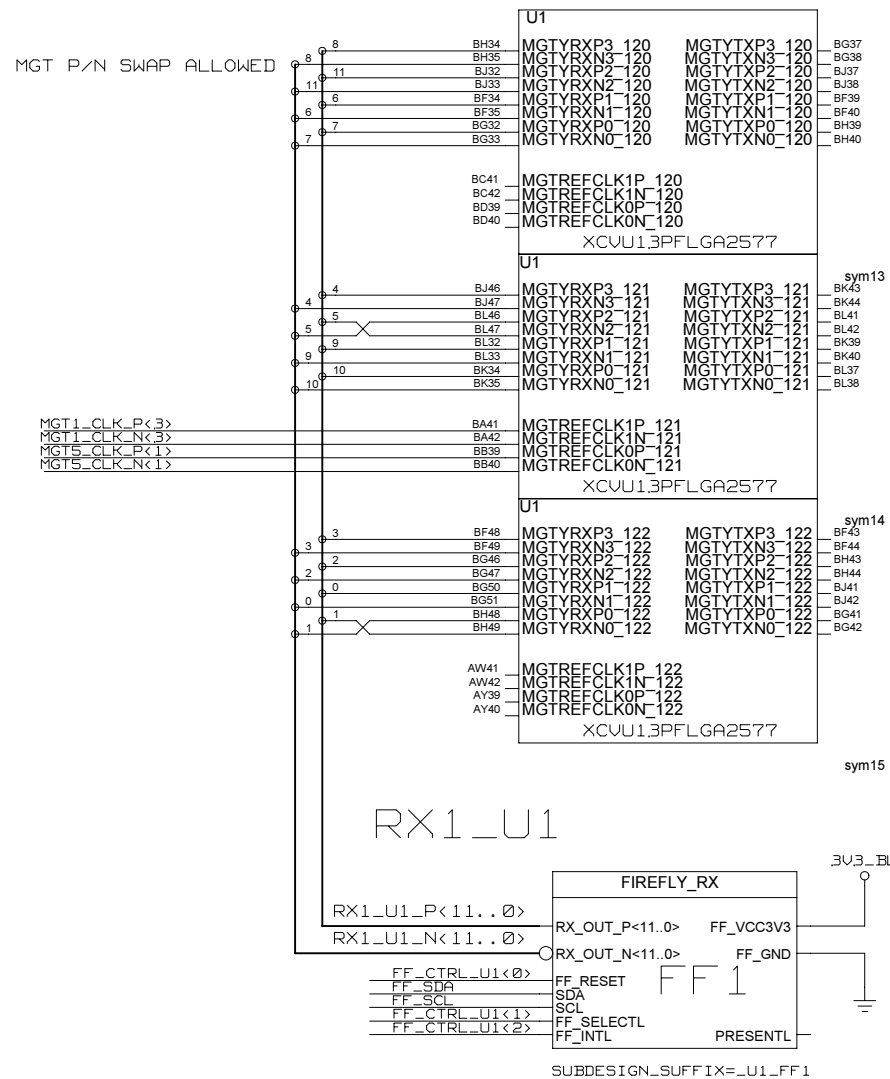
CHECKED	U.SCHAEFER			DRAWING TITLE FFEX B. BAUSS Fri Aug 18 09:49:20 2023
CHECKED				
CHECKED				
DRAWN	BAUSS25.08.2015			
BLOCK TITLE u2_parallel_10				
UNIVERSITY OF MAINZ		SIZE C	REV.	DRAWING NO.
		SCALE		PAGE 9 OF 102

HIGH SPEED OPTICAL LINKS

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

120, 121, 122

124, 125, 126



- FF_CTRL_U1<35..0>
- MGT1_CLK_P<24..1>
- MGT1_CLK_N<24..1>
- MGT2_CLK_P<6..1>
- MGT2_CLK_N<6..1>
- MGT3_CLK_P<6..1>
- MGT3_CLK_N<6..1>
- MGT4_CLK_P<6..1>
- MGT4_CLK_N<6..1>
- MGT5_CLK_P<24..1>
- MGT5_CLK_N<24..1>

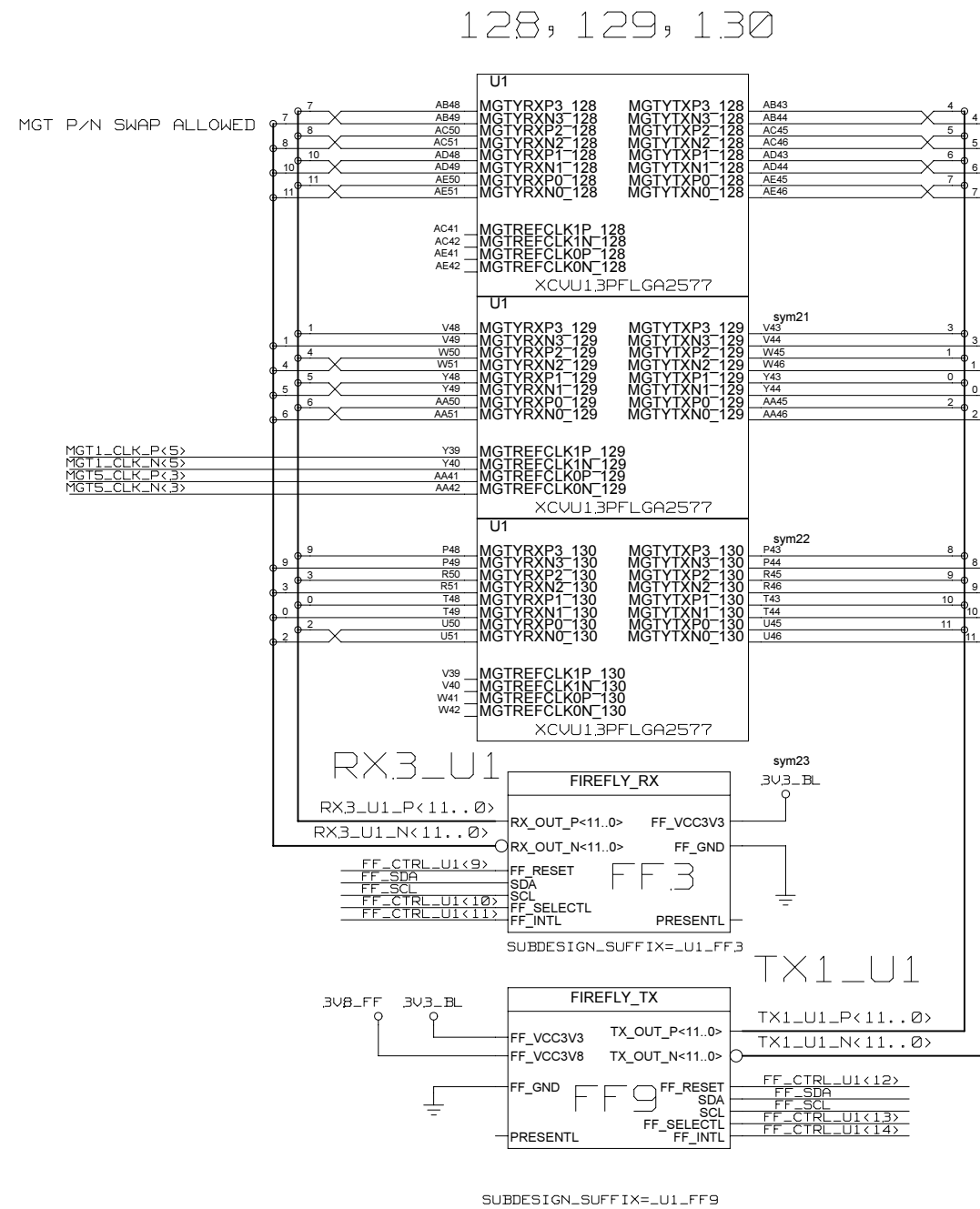
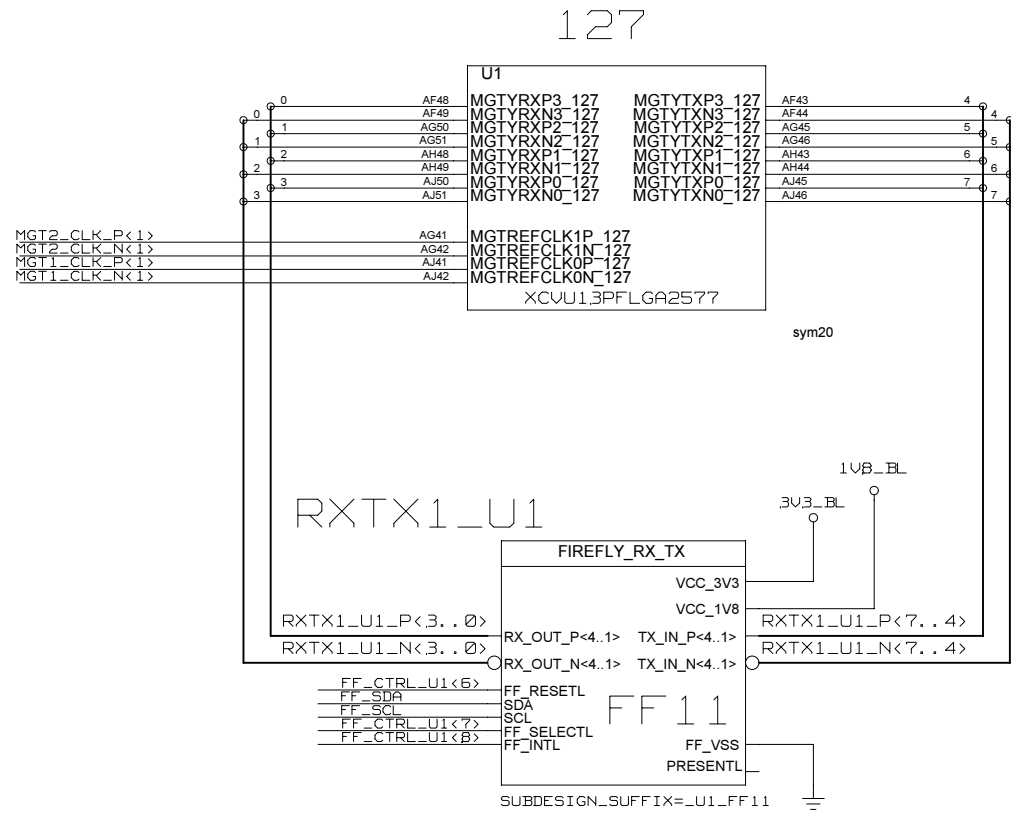
NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER		
CHECKED			
CHECKED			
DRAWN	BAUSS		
BLOCK TITLE			
u1_mgt_real_time			
UNIVERSITY OF MAINZ			
SIZE	REV.	DRAWING NO.	
C			
SCALE		PAGE	
		11 OF 102	

FFEX

B. BAUSS Fri Aug 18 09:49:22 2023

HIGH SPEED OPTICAL LINKS

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE



NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER		
CHECKED			
CHECKED			
DRAWN	BAUSS		
BLOCK TITLE			
u1_mgt_real_time			
UNIVERSITY OF MAINZ			
SIZE		REV.	DRAWING NO.
SCALE			PAGE
			12 OF 102

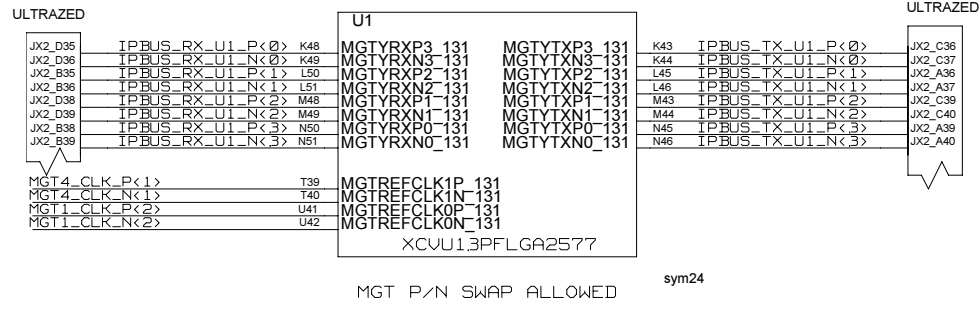
FFEX

B. BAUSS Fri Aug 18 09:49:22 2023

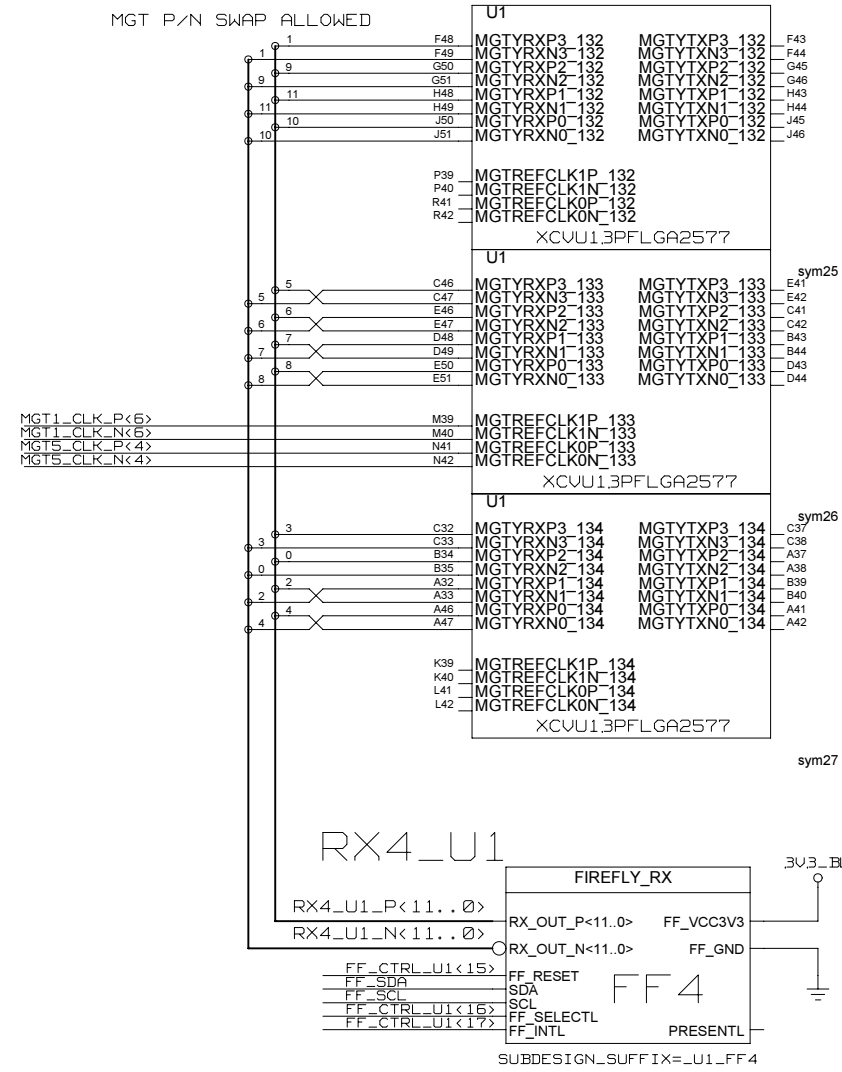
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

HIGH SPEED OPTICAL LINKS

1.31



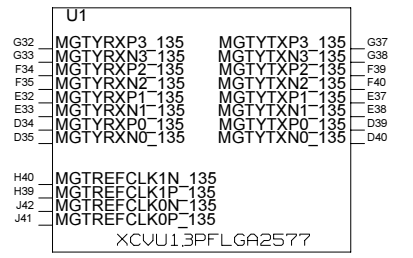
1.32, 1.33, 1.34



NAME	DATE	SIGN	DRAWING TITLE	
CHECKED	U.SCHAEFER		<h1>FFEX</h1>	
CHECKED				
CHECKED				
DRAWN	BAUSS			
BLOCK TITLE			B. BAUSS Fri Aug 18 09:49:23 2023	
UNIVERSITY OF MAINZ			SIZE C	DRAWING NO.
			SCALE	PAGE 1.3 OF 102

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPR.



sym46

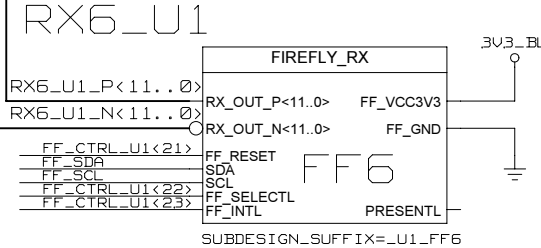
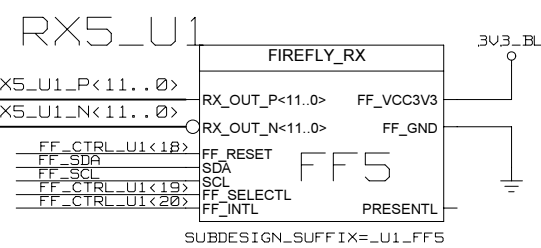
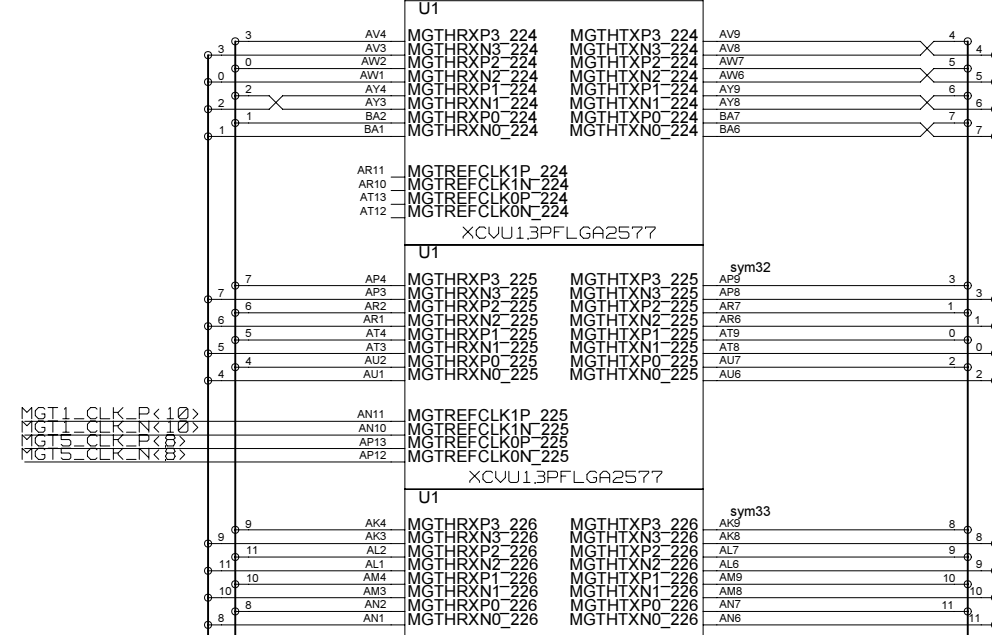
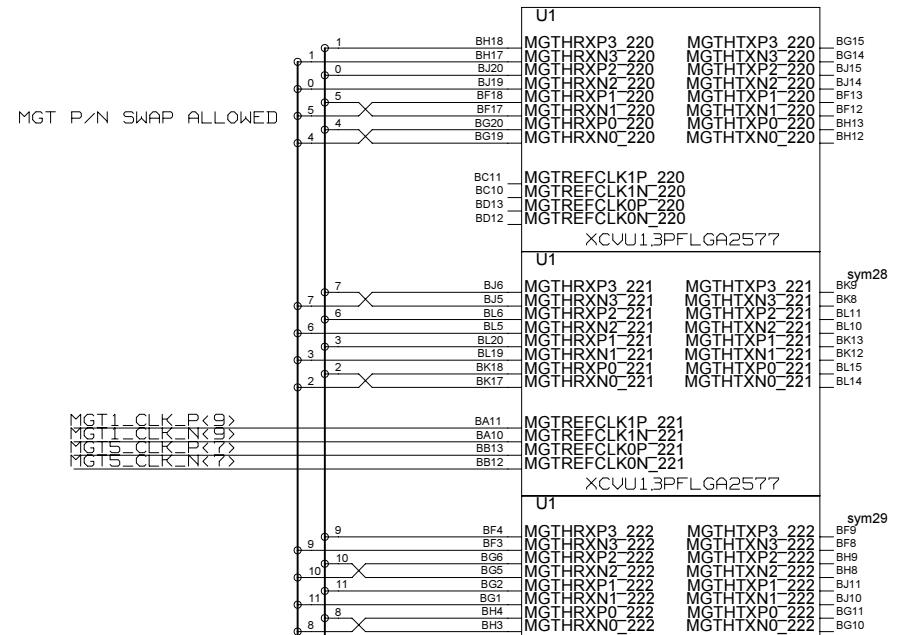
CHECKED	NAME	DATE	SIGN	DRAWING TITLE FFEX	
CHECKED	U.SCHAEFER				
CHECKED					
CHECKED					
DRAWN	BAUSS			B. BAUSS Fri Aug 18 09:24:11 2023	
BLOCK TITLE u1_mgt_real_time					
UNIVERSITY OF MAINZ				SIZE C	DRAWING NO.
				SCALE	PAGE 14 OF 102

HIGH SPEED OPTICAL LINKS

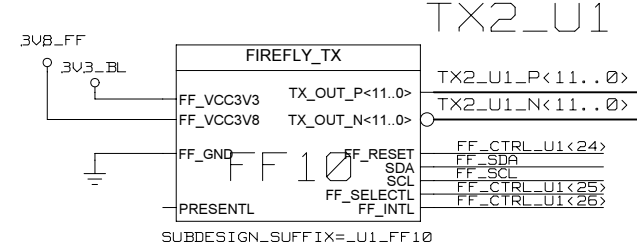
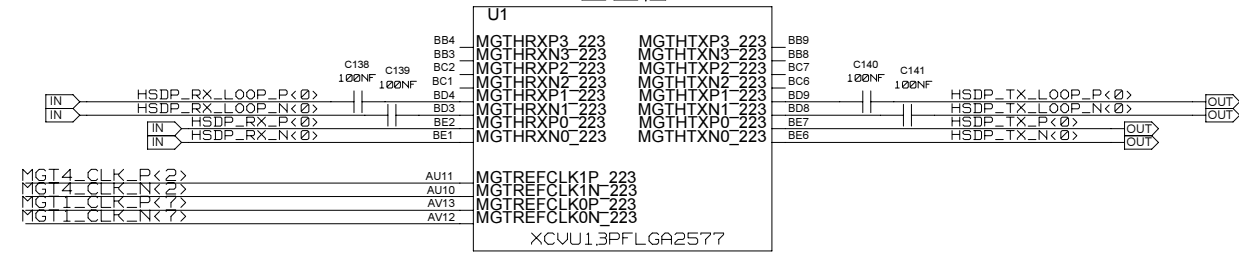
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

220, 221, 222

224, 225, 226



HSDP
223



NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER		
CHECKED			
CHECKED			
DRAWN	BAUSS		
BLOCK TITLE			
u1_mgt_real_time			
UNIVERSITY OF MAINZ			
SIZE	REV.	DRAWING NO.	
C			
SCALE			PAGE
			15 OF 102

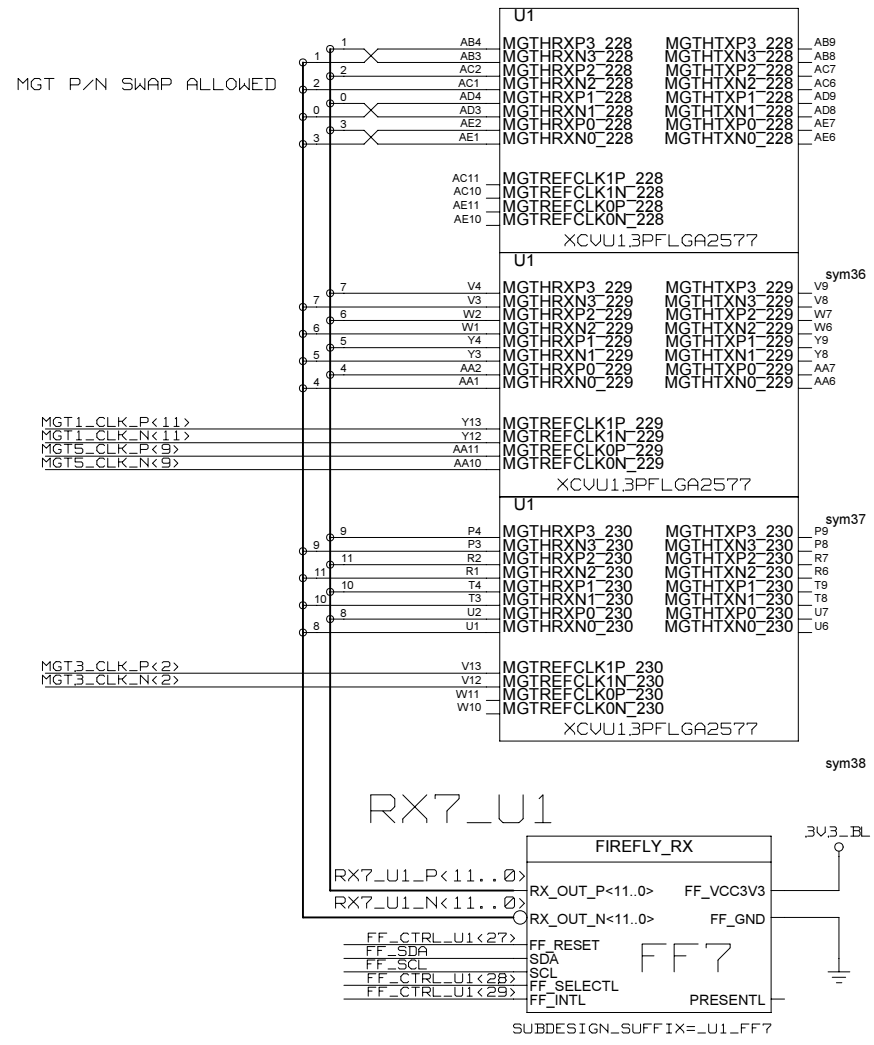
FFEX

B. BAUSS Fri Aug 18 09:49:23 2023

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

HIGH SPEED OPTICAL LINKS

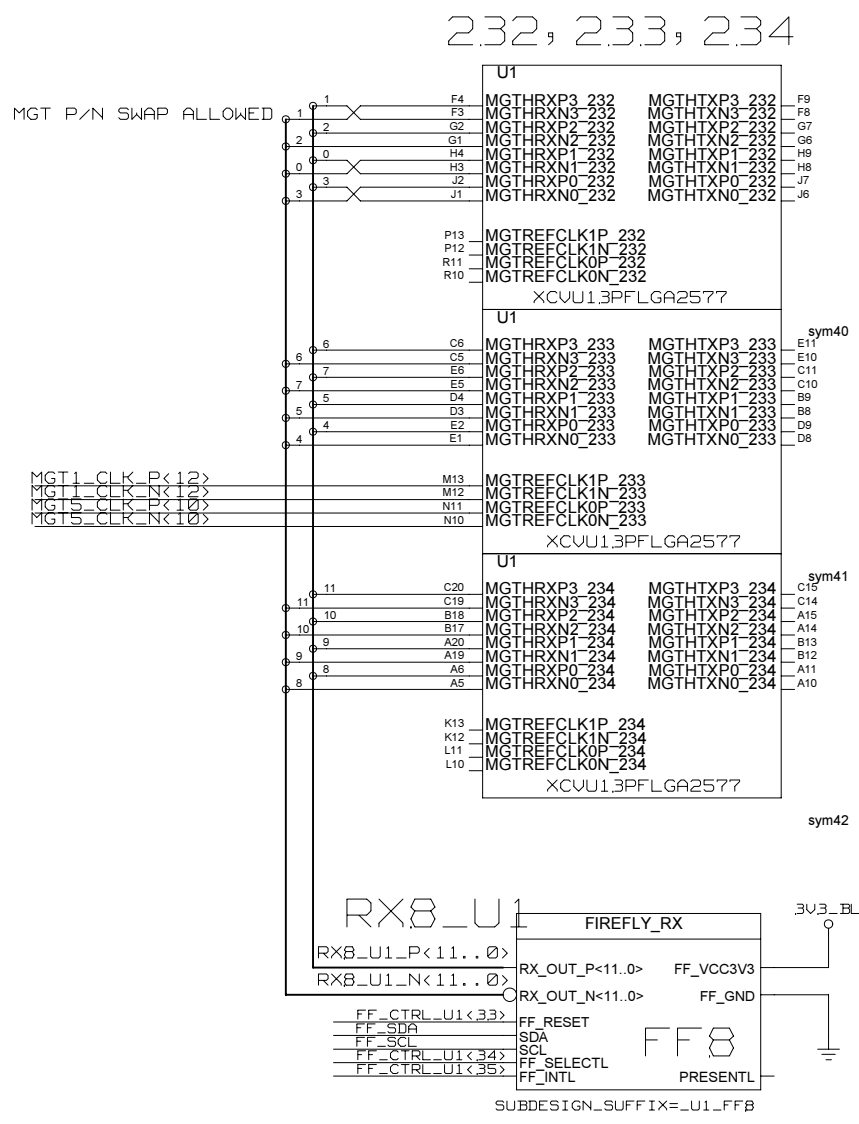
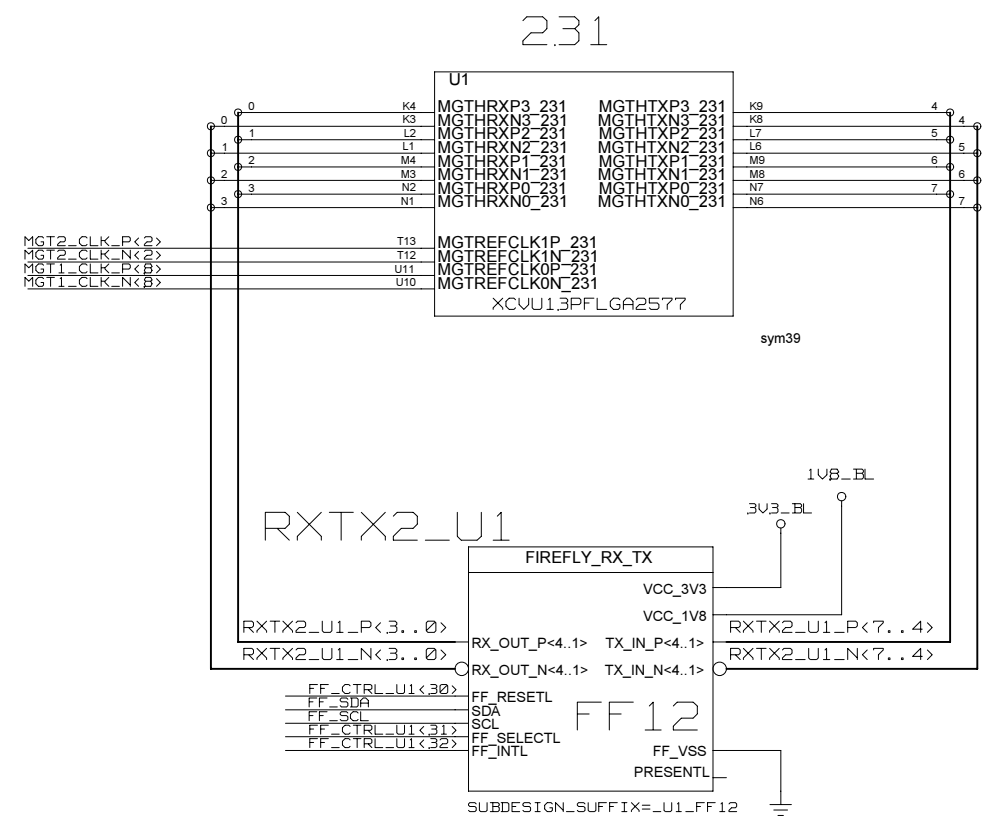
228, 229, 230



CHECKED	NAME	DATE	SIGN	DRAWING TITLE FFEX B. BAUSS Fri Aug 18 09:49:23 2023
CHECKED	U.SCHAEFER			
CHECKED				
CHECKED				
DRAWN	BAUSS			
BLOCK TITLE u1_mgt_real_time				SIZE C
UNIVERSITY OF MAINZ				REV.
SCALE				DRAWING NO.
				PAGE 16 OF 102

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

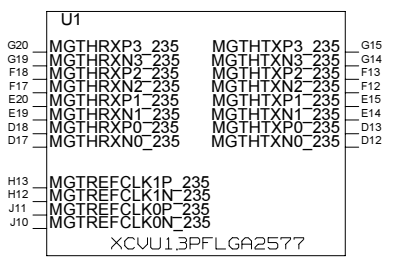
HIGH SPEED OPTICAL LINKS



NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER		FFEX
CHECKED			
CHECKED			
DRAWN	BAUSS		
BLOCK TITLE			B. BAUSS Fri Aug 18 09:49:24 2023
UNIVERSITY OF MAINZ			SIZE C REV. DRAWING NO.
SCALE			PAGE 17 OF 102

REVISIONS

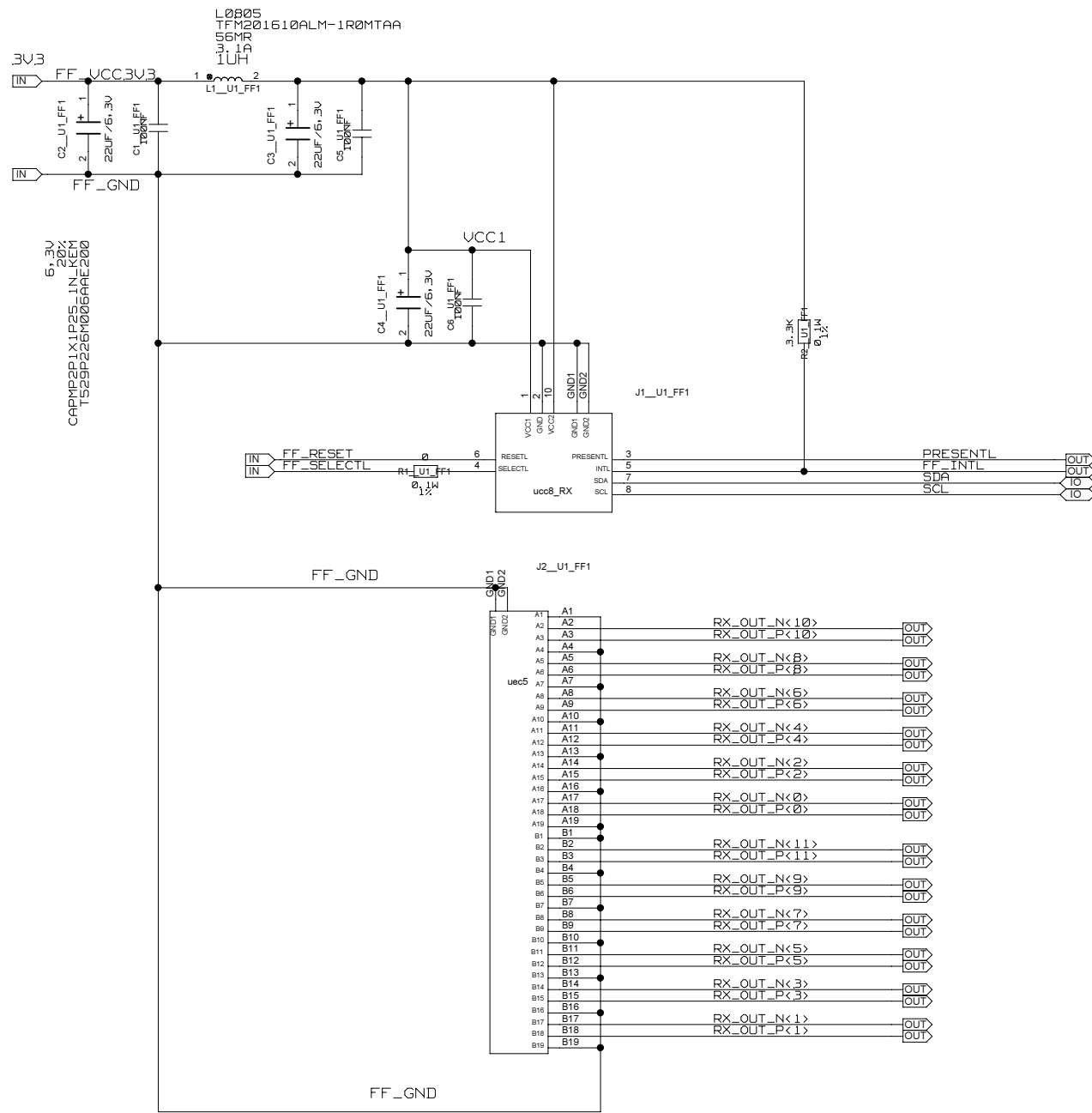
ZONE	LTR	DESCRIPTION	DATE	APPR.



sym45

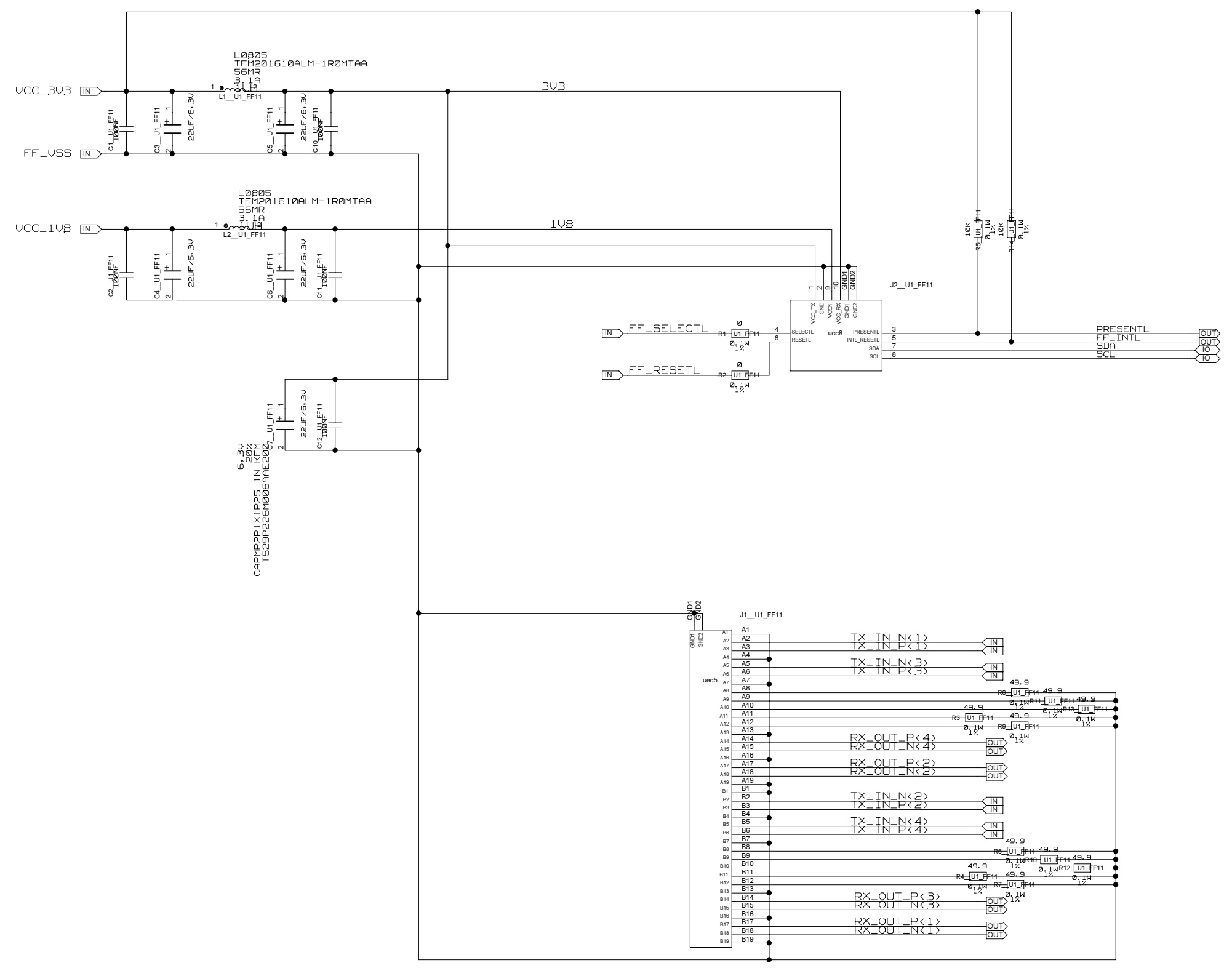
CHECKED	NAME	DATE	SIGN	DRAWING TITLE FFEX		
CHECKED	U.SCHAEFER					
CHECKED						
CHECKED						
DRAWN	BAUSS					
BLOCK TITLE u1_mgt_real_time				B. BAUSS Fri Aug 18 09:24:11 2023		
UNIVERSITY OF MAINZ				SIZE C	REV.	DRAWING NO.
				SCALE		PAGE 1B OF 102

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE



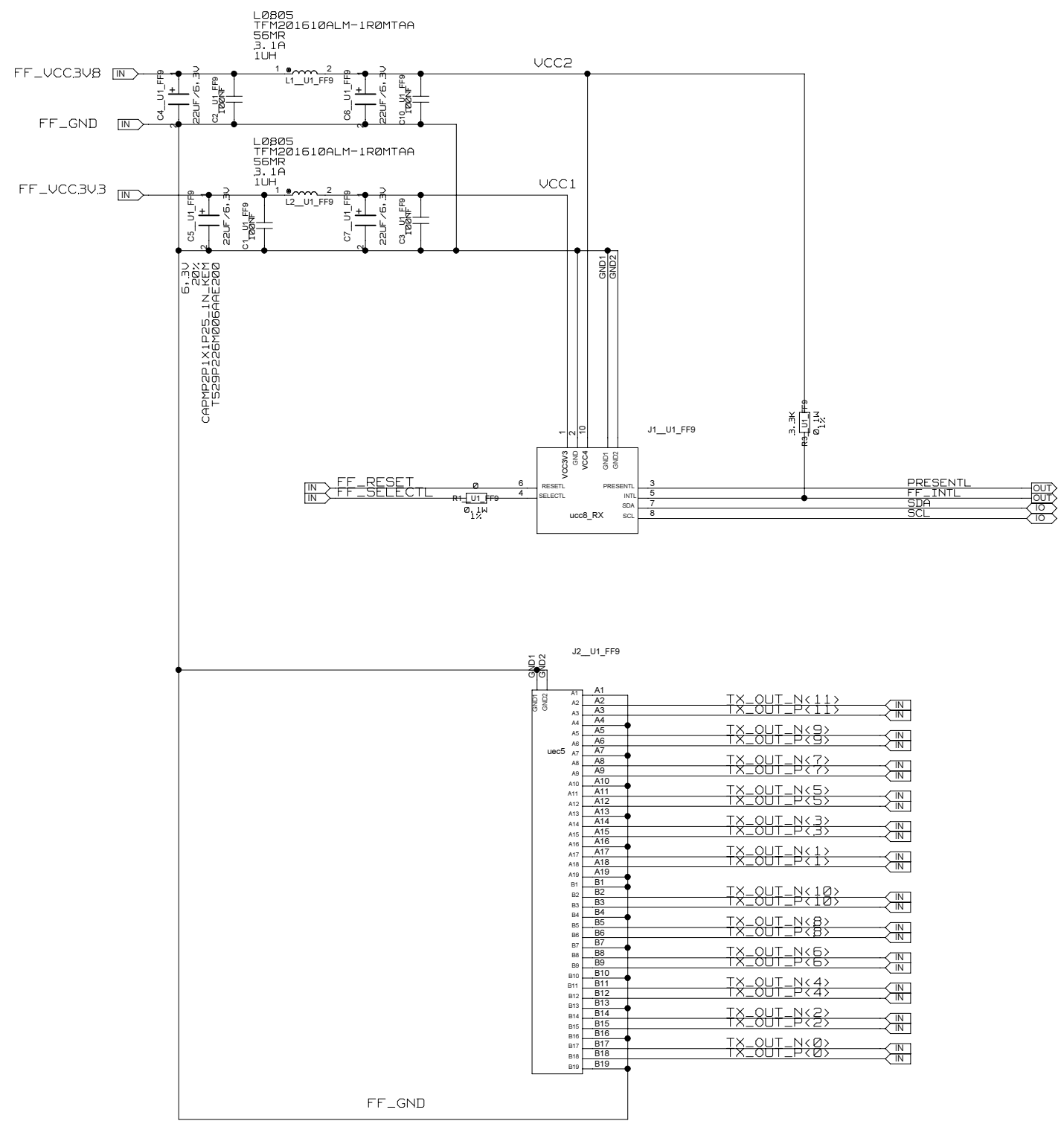
	NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER			
CHECKED				
CHECKED				
DRAWN	BAUSS			FFEX
BLOCK TITLE				
firefly_rx				B. BAUSS Thu Jun 15 14:51:14 2023
UNIVERSITY OF MAINZ		SIZE	REV.	DRAWING NO.
		C		
SCALE				PAGE
				19 OF 102

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.



CHECKED	U.SCHAEFER			DRAWING TITLE
CHECKED				
CHECKED				
DRAWN	BAUSS			
BLOCK TITLE				<h1 style="text-align: center;">FFEX</h1> <p style="text-align: center;">B. BAUSS Thu Jun 15 14:42:47 2023</p>
firefly_rx_tx				
UNIVERSITY OF MAINZ			SIZE	DRAWING NO.
SCALE			REV.	PAGE
				25 OF 102

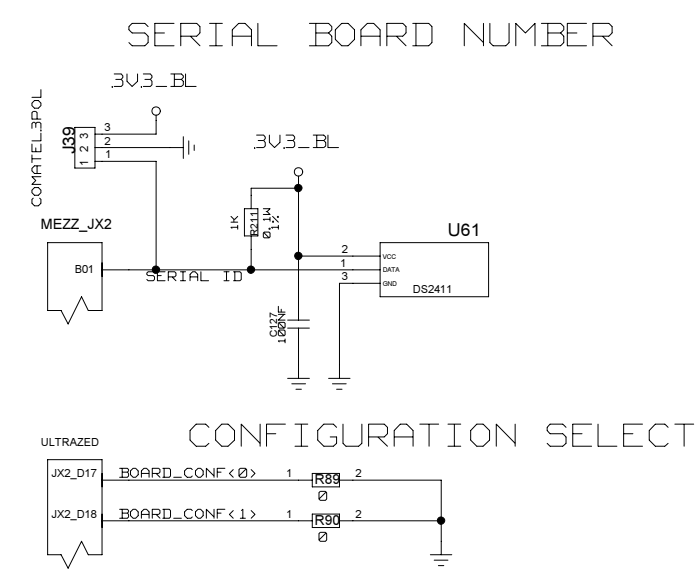
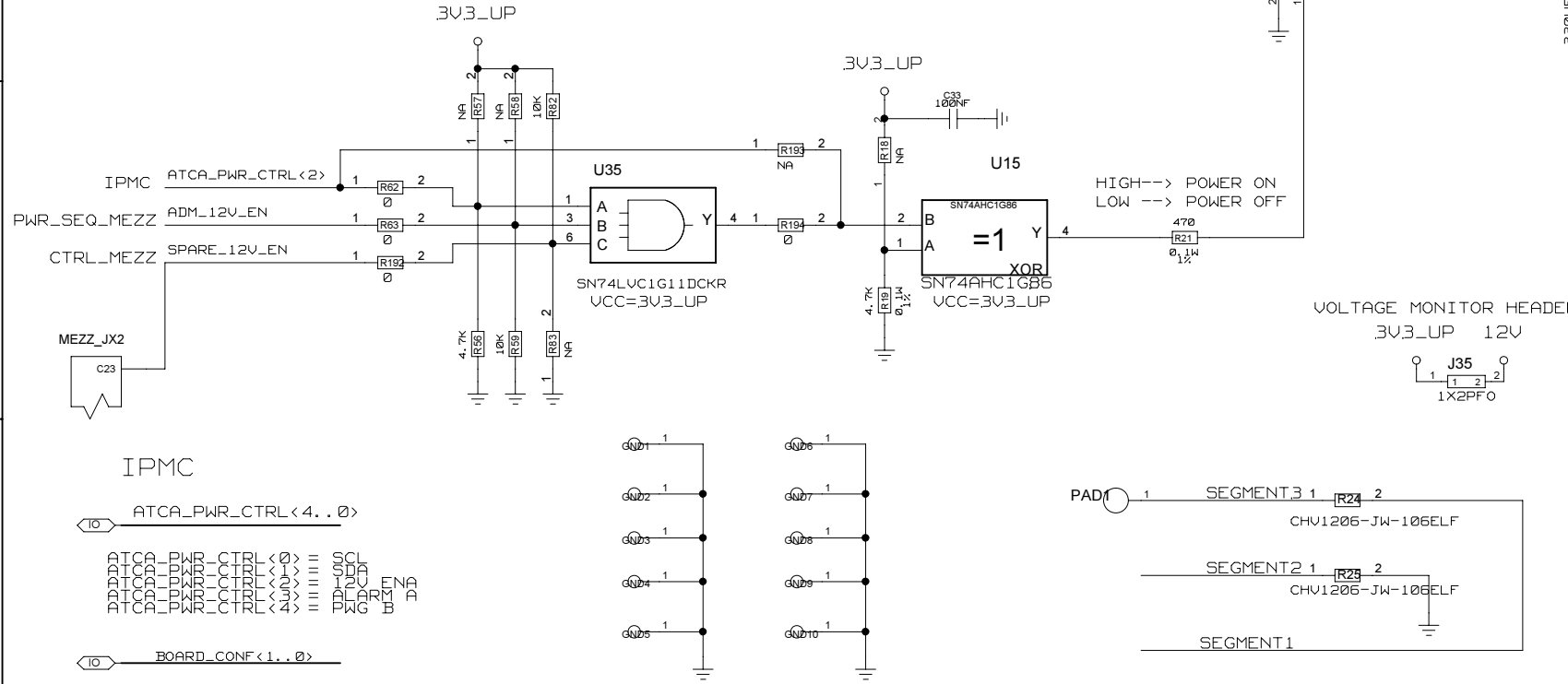
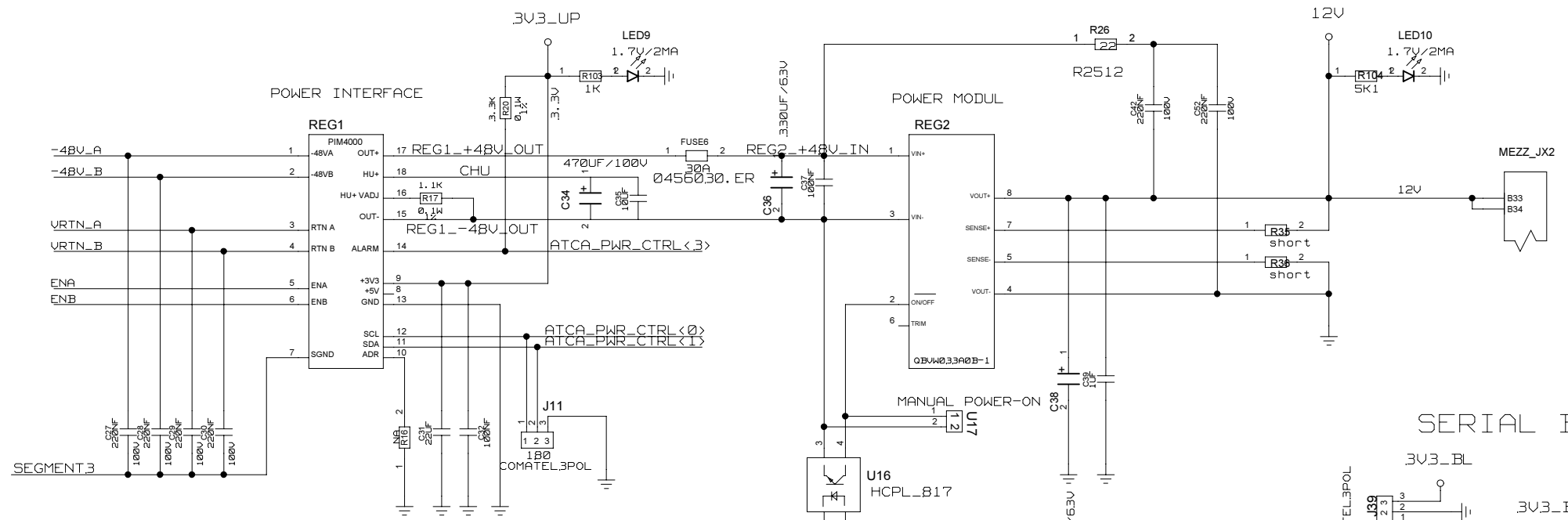
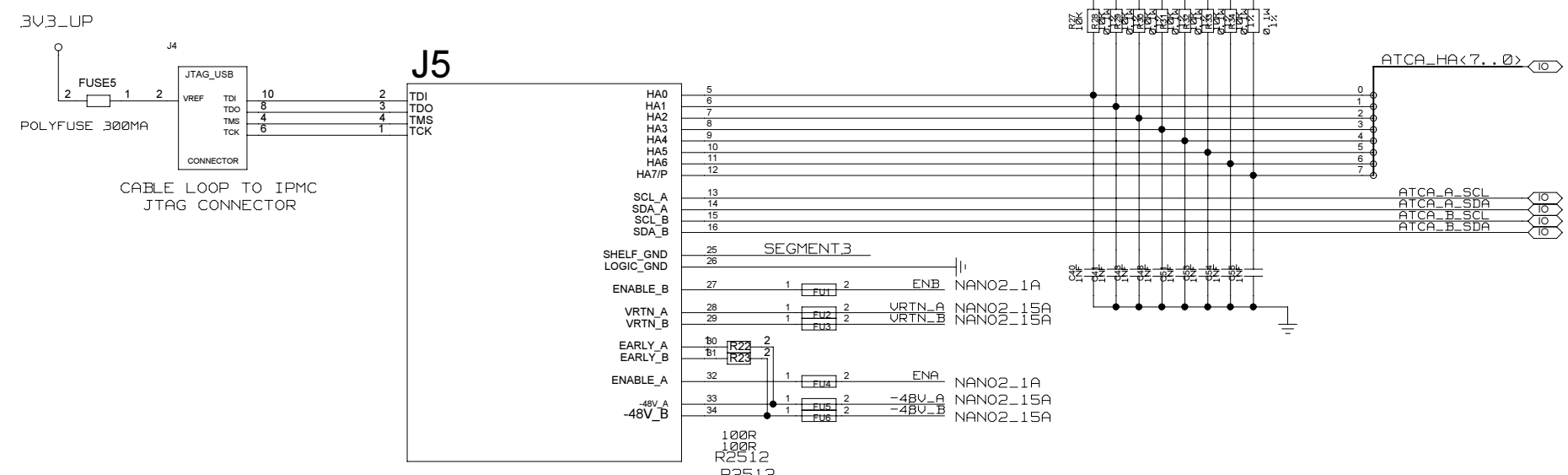
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.



CHECKED	NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER			
CHECKED				
CHECKED				
DRAWN	BAUSS			<h1 style="text-align: center;">FFEX</h1> <p style="text-align: center;">B. BAUSS Thu Jun 15 14:43:51 2023</p>
BLOCK TITLE				
firefly_tx				SIZE C
UNIVERSITY OF MAINZ				REV.
				DRAWING NO.
SCALE				PAGE 29 OF 102

ATCA POWER IN & CTRL

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

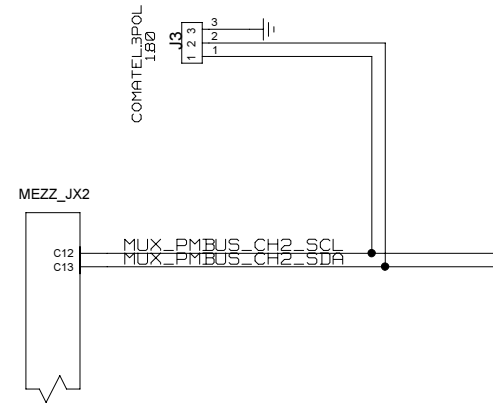


NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER		
CHECKED			
CHECKED			
DRAWN	BAUSS		
BLOCK TITLE	power_supply		
UNIVERSITY OF MAINZ			FFEX
B. BAUSS Fri Aug 18 09:49:30 2023			
SIZE	REV.	DRAWING NO.	
C			
SCALE		PAGE 31 OF 102	

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

PMBUS CONNECTORS

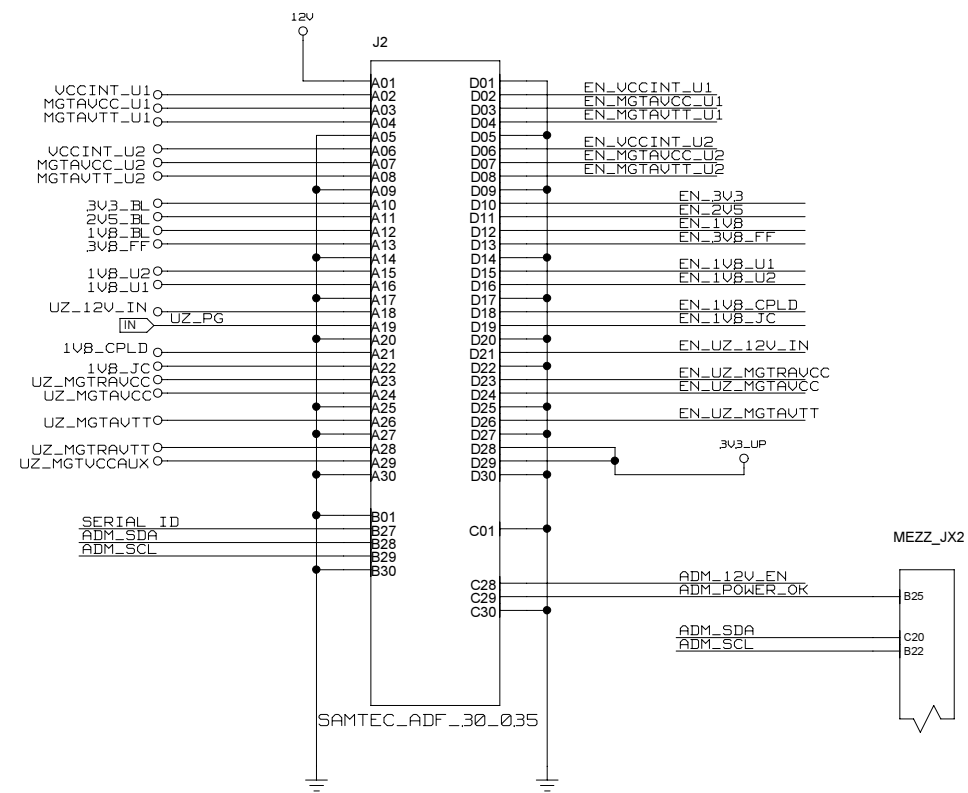
CTRL_MEZZ



CHECKED	NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER			
CHECKED				
CHECKED				
DRAWN	BAUSS			<h1>FFEX</h1> <p>B. BAUSS Fri Aug 18 09:49:30 2023</p>
BLOCK TITLE				
power_supply				SIZE C
UNIVERSITY OF MAINZ				REV. DRAWING NO.
SCALE				PAGE 32 OF 102

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

POWER SEQUENCING MEZZ CONNECTOR



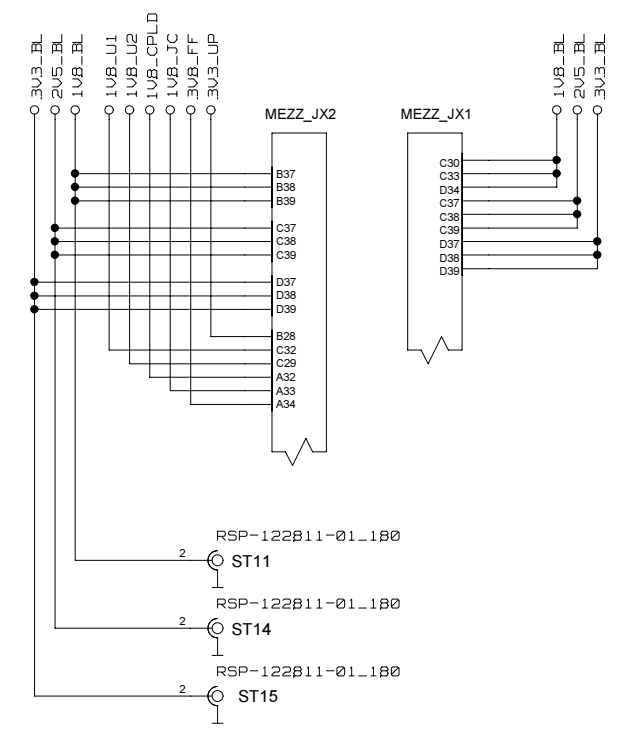
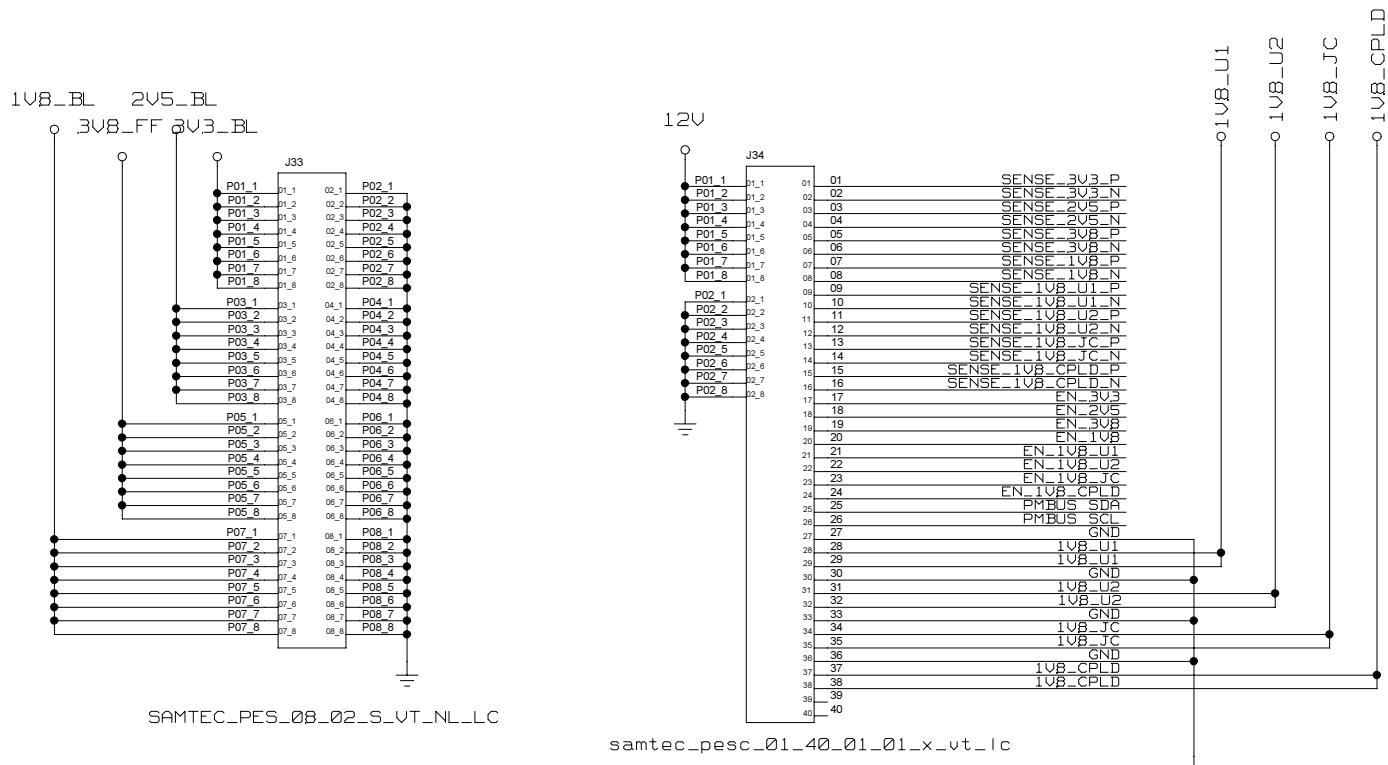
CHECKED	NAME	DATE	SIGN	DRAWING TITLE FFEX
CHECKED	U.SCHAEFER			
CHECKED				
CHECKED				
DRAWN	BAUSS			
BLOCK TITLE power_supply				
UNIVERSITY OF MAINZ				SIZE C
				REV.
DRAWING NO.				PAGE 33 OF 102

B. BAUSS Fri Aug 18 09:49:31 2023

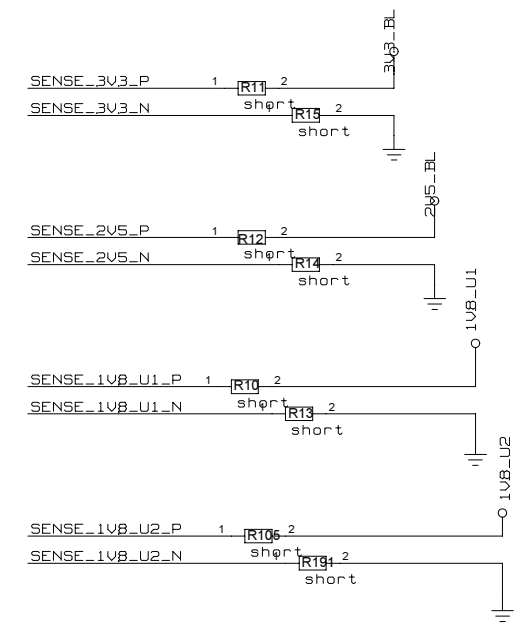
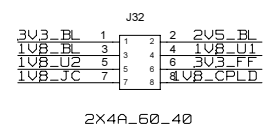
BOARDLEVEL

3V3_BL, 2V5_BL, 1V8_BL, 3V8_FF_BIAS, 1V8_U1, 1V8_U2
1V8_CPLD, 1V8_JC

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE



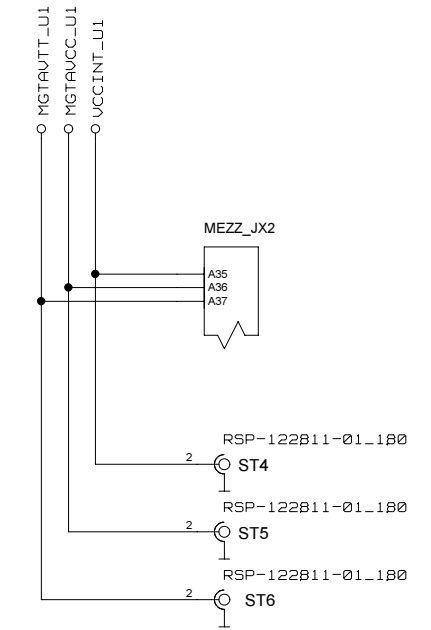
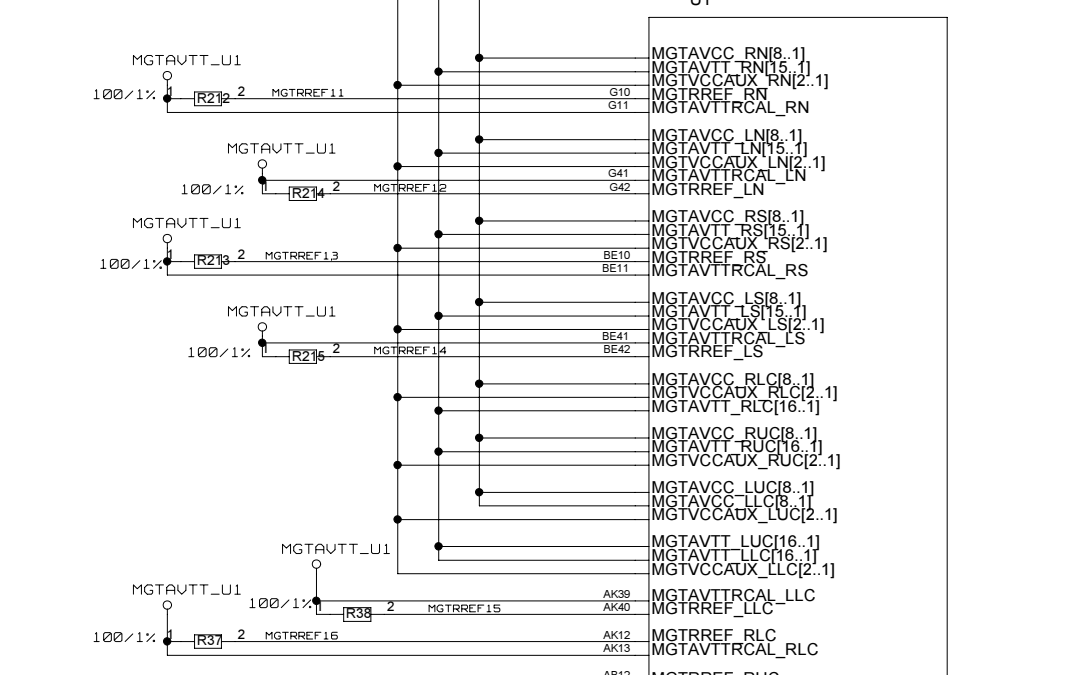
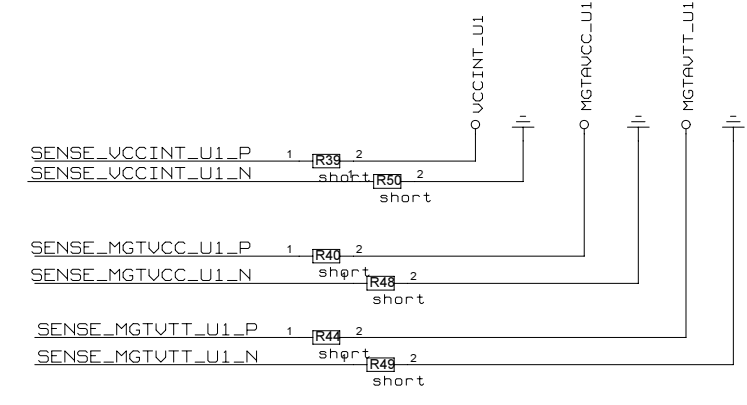
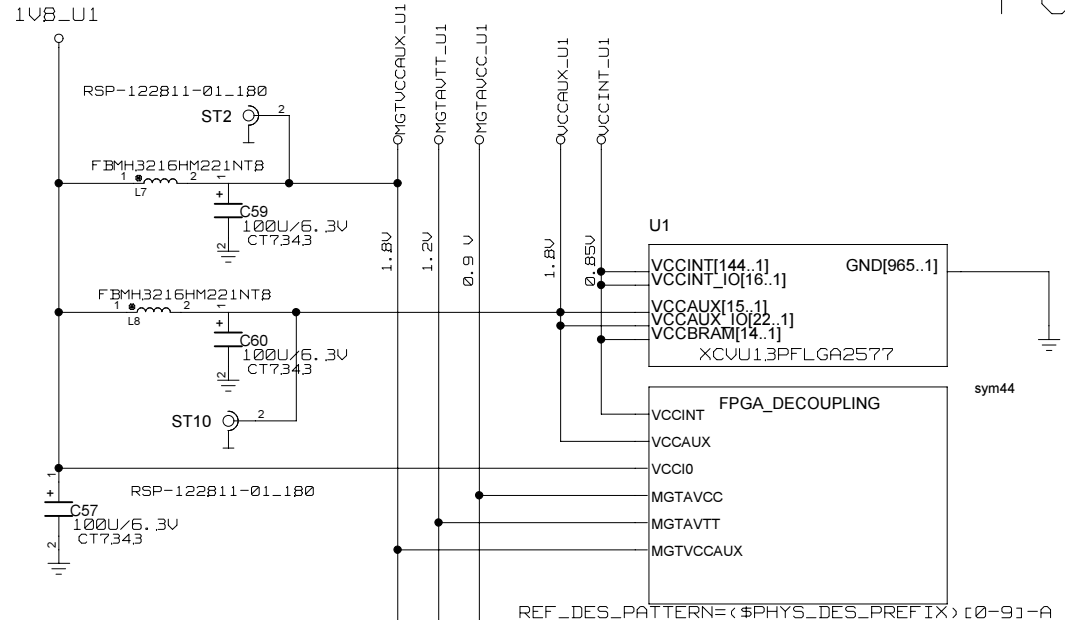
VOLTAGE MONITOR HEADERS



CHECKED	U.SCHAEFER			DRAWING TITLE FFEX
CHECKED				
CHECKED				
DRAWN	BAUSS			
BLOCK TITLE power_supply				DATE B. BAUSS Fri Aug 18 09:49:31 2023
UNIVERSITY OF MAINZ				SIZE C
				REV.
				DRAWING NO.
				PAGE 34 OF 102

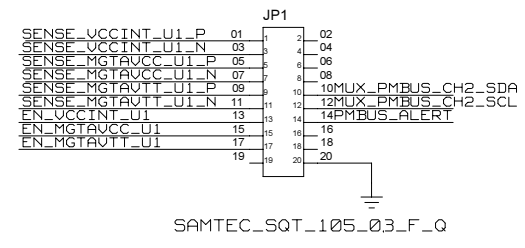
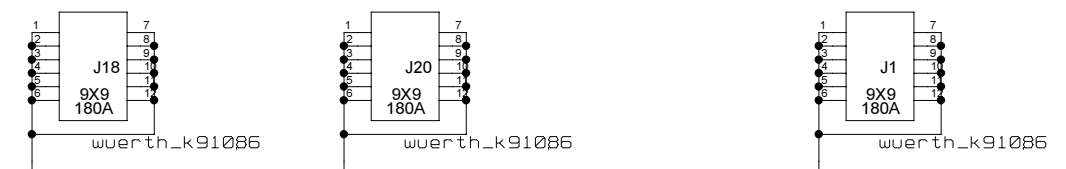
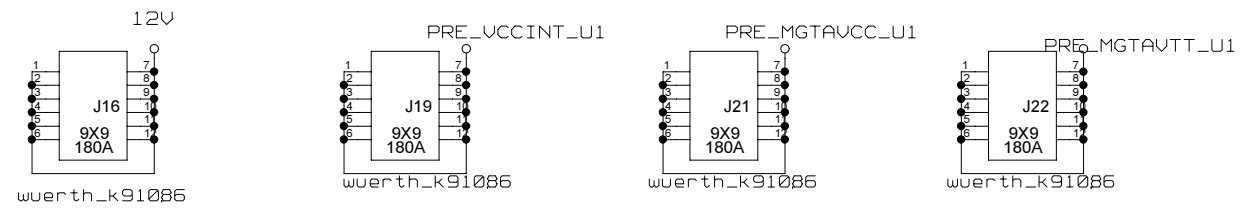
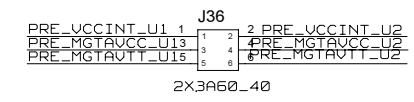
POWERSUPPLIES U1

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.



TRACE LENGTH FROM RESISTOR PINS
TO PIN SAME LENGTH
UG576 SHEET 297

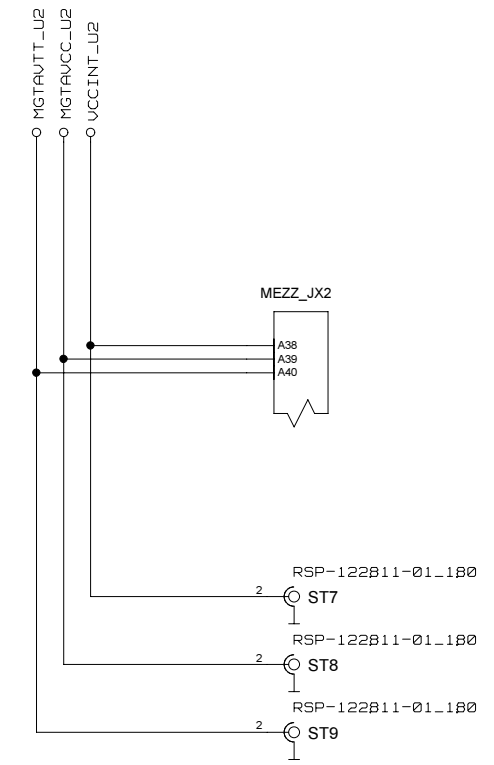
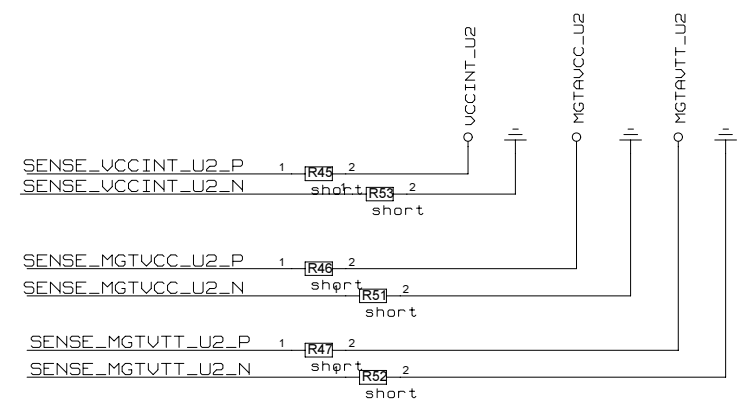
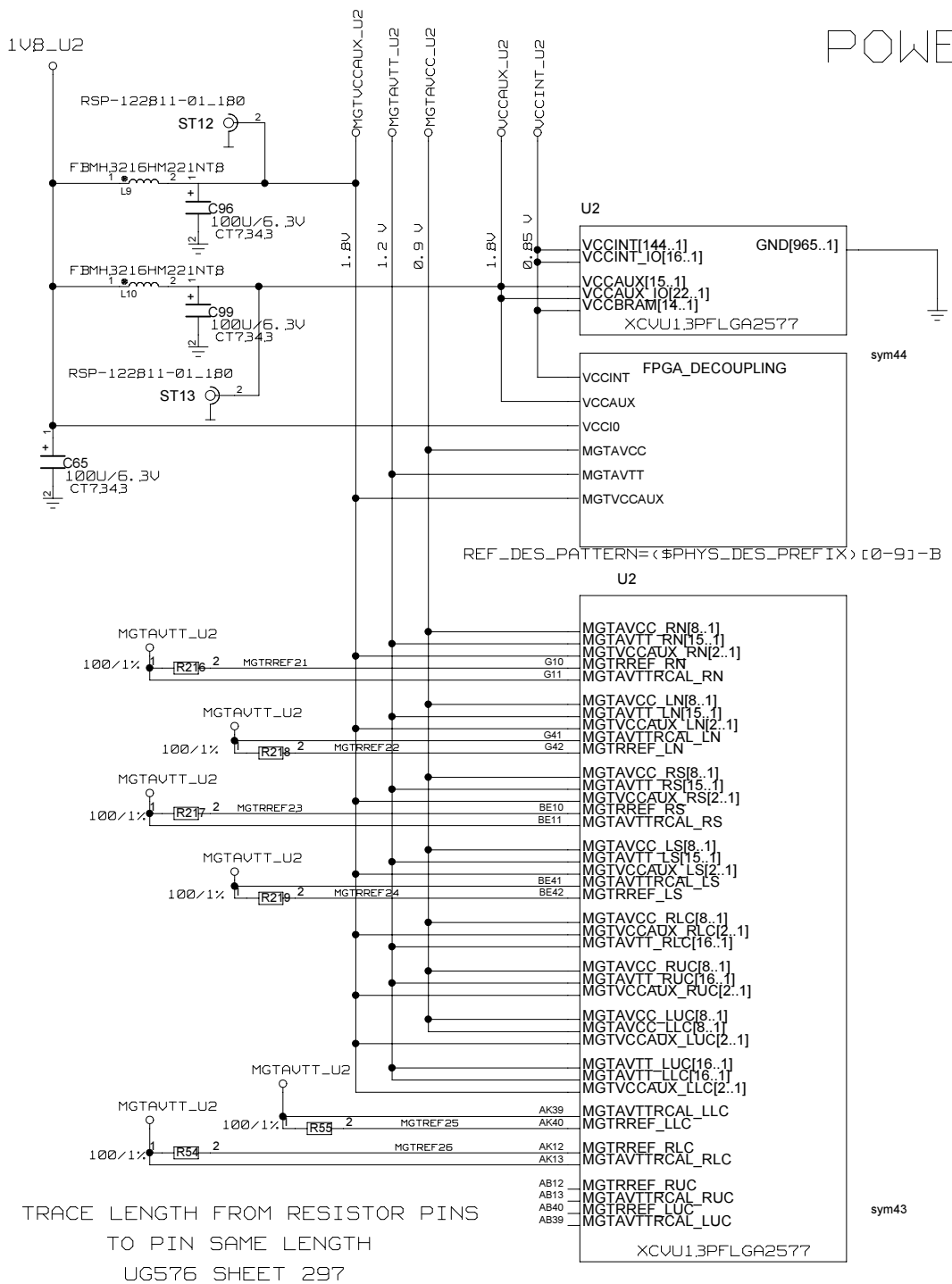
VOLTAGE MONITOR HEADERS



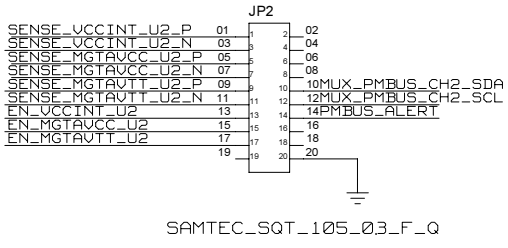
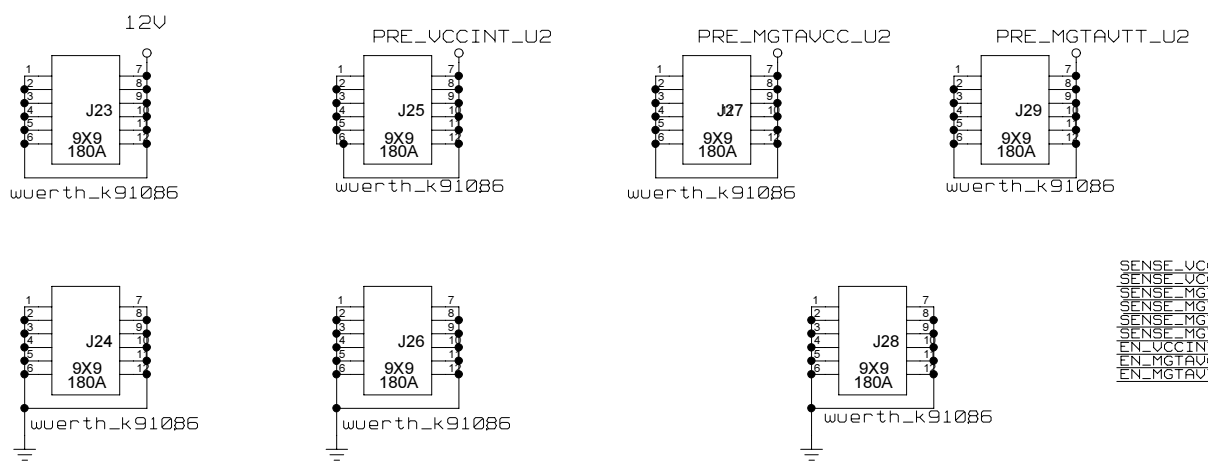
CHECKED	NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER			
CHECKED				
CHECKED				
DRAWN	BAUSS			<h1>FFEX</h1>
BLOCK TITLE				
power_supply				B. BAUSS Fri Aug 18 09:49:31 2023
UNIVERSITY OF MAINZ		SIZE	REV.	DRAWING NO.
		C		
		SCALE		PAGE
				35 OF 102

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE

POWERSUPPLIES U2



TRACE LENGTH FROM RESISTOR PINS
TO PIN SAME LENGTH
UG576 SHEET 297



NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER		
CHECKED			
CHECKED			
DRAWN	BAUSS		
BLOCK TITLE			power_supply
UNIVERSITY OF MAINZ			
SIZE	REV.	DRAWING NO.	
C			
SCALE		PAGE 36 OF 102	

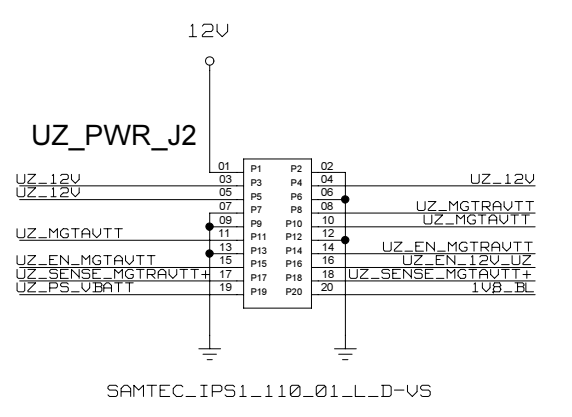
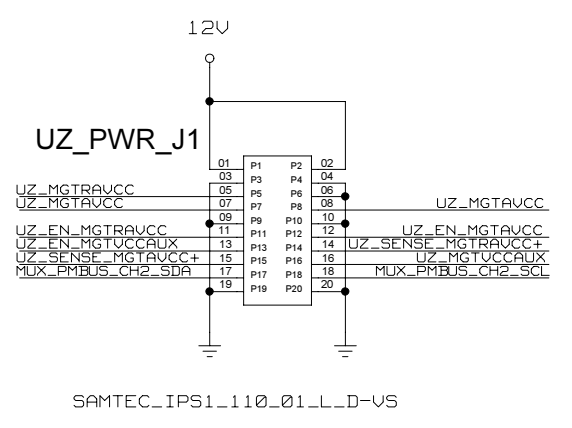
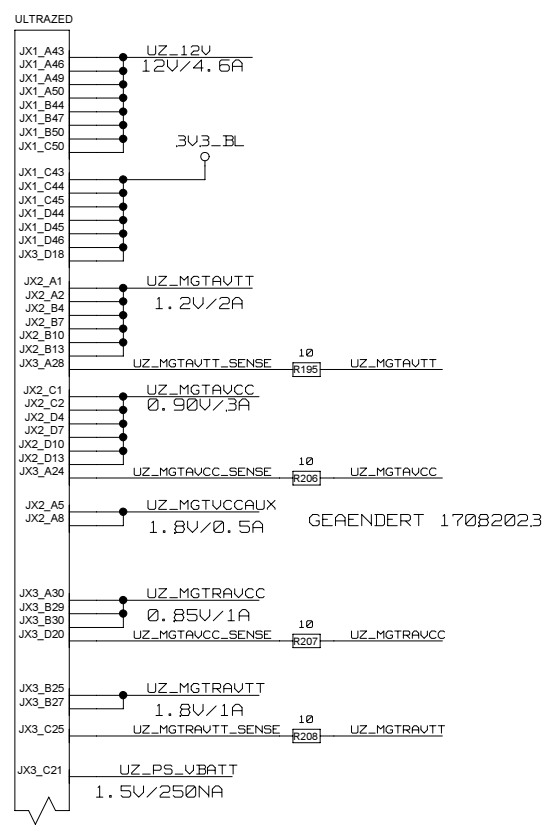
FFEX

B. BAUSS Fri Aug 18 09:49:31 2023

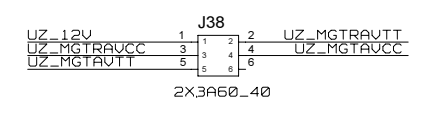
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

ULTRAZED

POWERSUPPLY ULTRAZED



VOLTAGE MONITOR HEADERS



CHECKED	NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER			
CHECKED				
DRAWN	BAUSS			
BLOCK TITLE				DRAWING NO.
power_supply				
UNIVERSITY OF MAINZ				DATE
SCALE				PAGE
				37 OF 102

FFEX

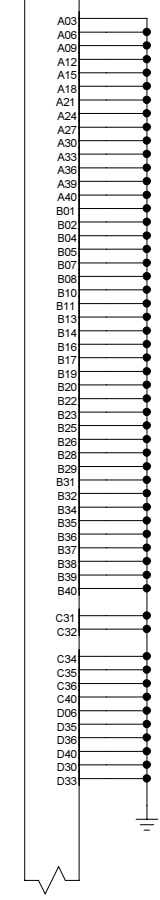
B. BAUSS Fri Aug 18 09:49:32 2023

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

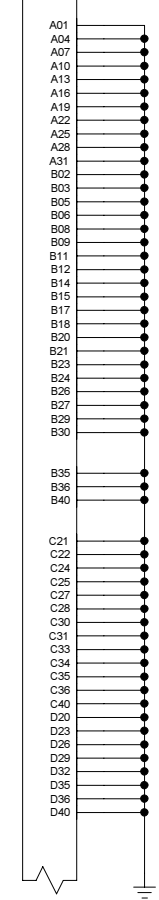
CTRL_MEZZ GND

ULTRAZED GND

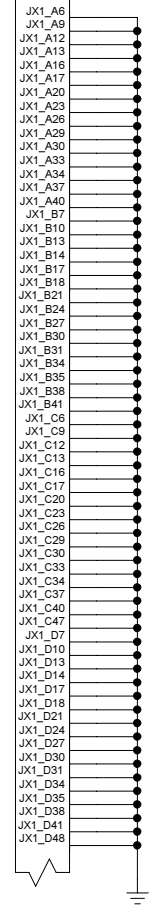
MEZZ_JX1



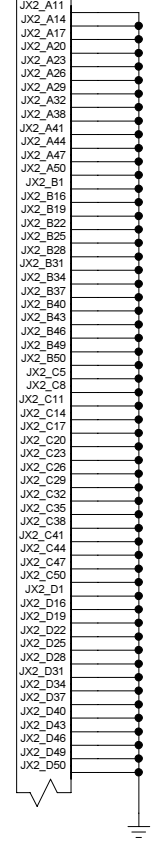
1200 MEZZ_JX2



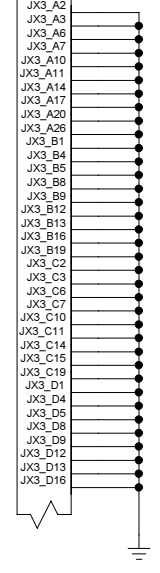
ULTRAZED



ULTRAZED



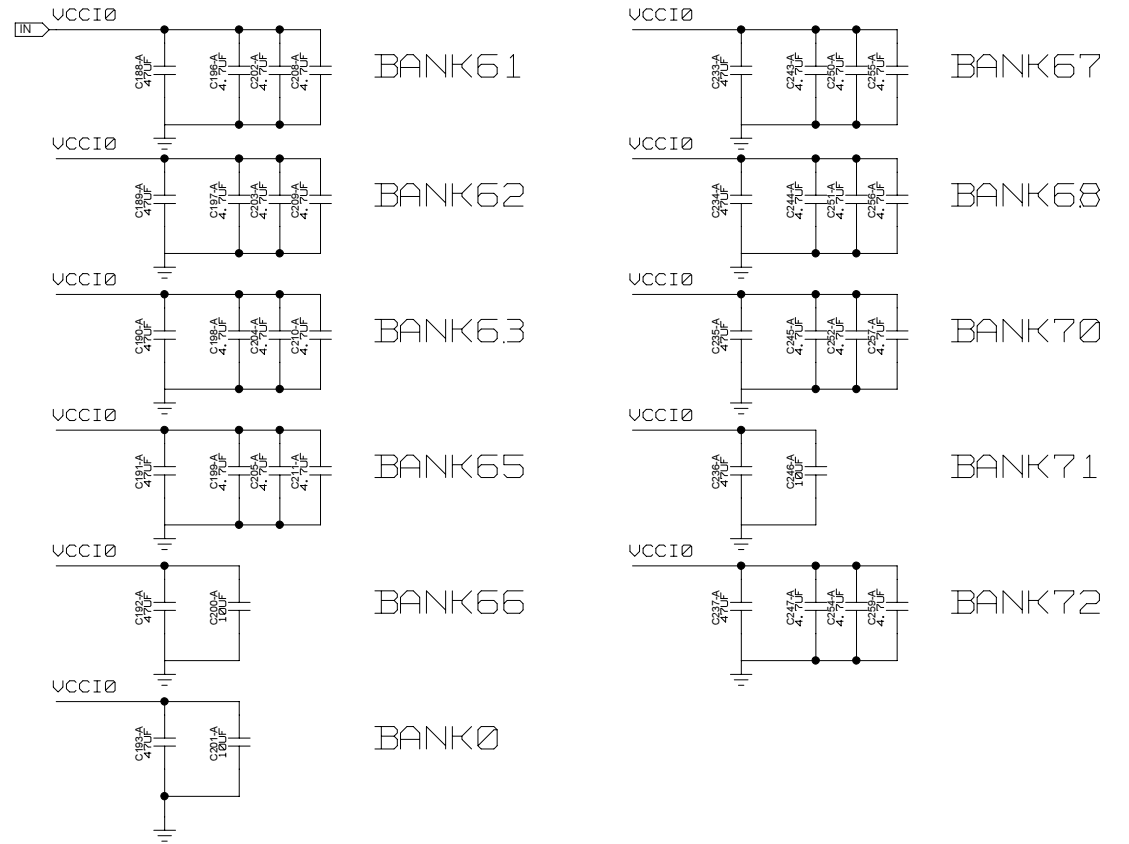
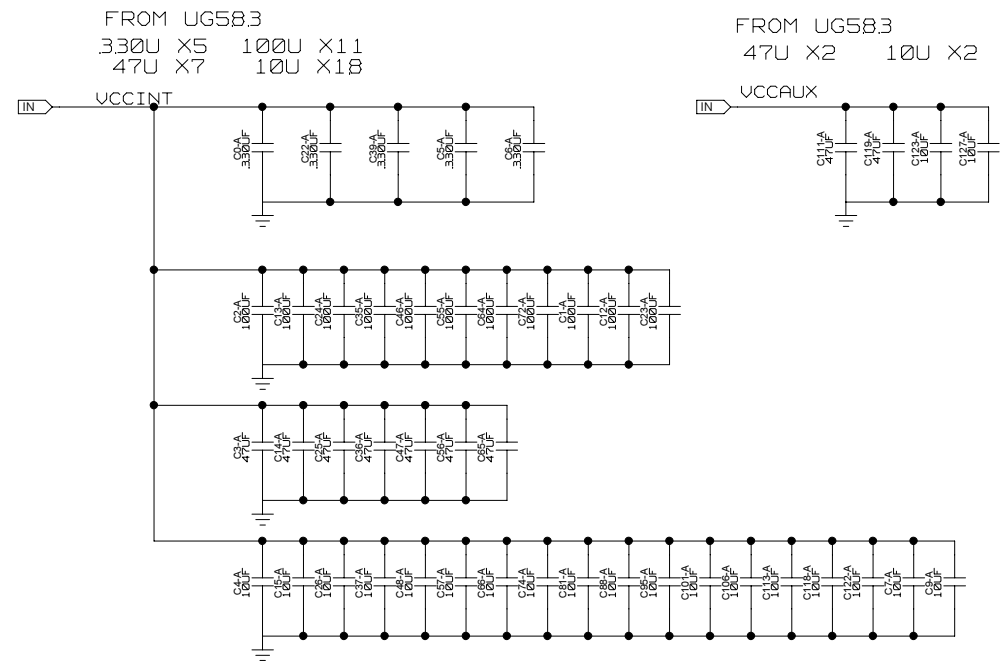
ULTRAZED



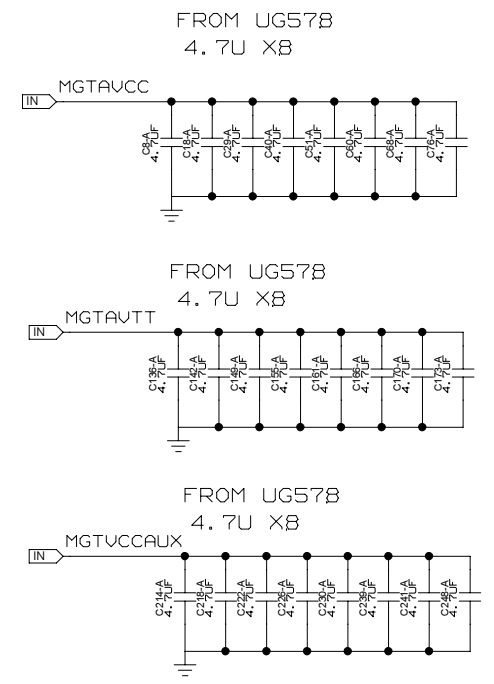
CHECKED	U.SCHAEFER			DRAWING TITLE FFEX B. BAUSS Fri Aug 18 09:49:32 2023
CHECKED				
CHECKED				
DRAWN	BAUSS			
BLOCK TITLE power_supply				DRAWING NO.
UNIVERSITY OF MAINZ				SIZE C
SCALE				REV.
PAGE 3B OF 102				

VCCINT VCCAUX VCCIO DECOUPLING

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.



MGT DECOUPLING



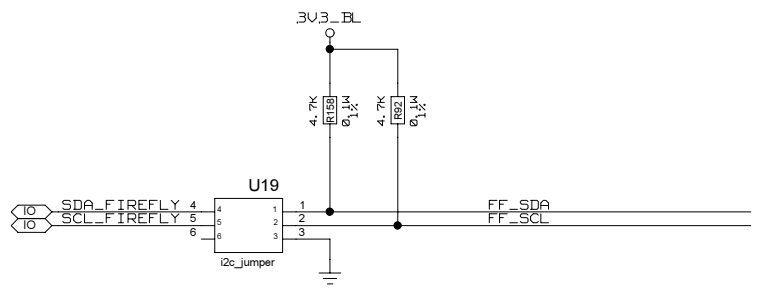
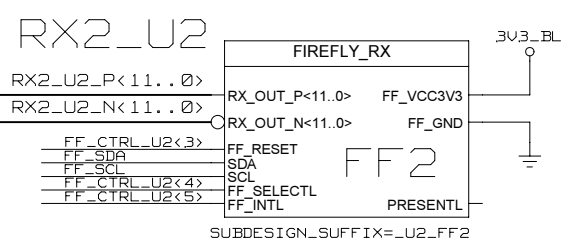
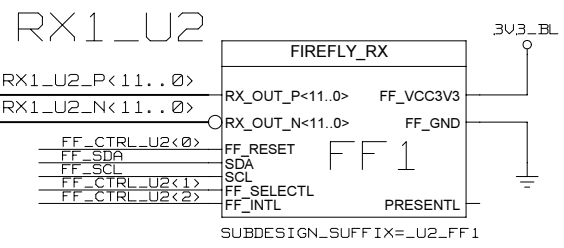
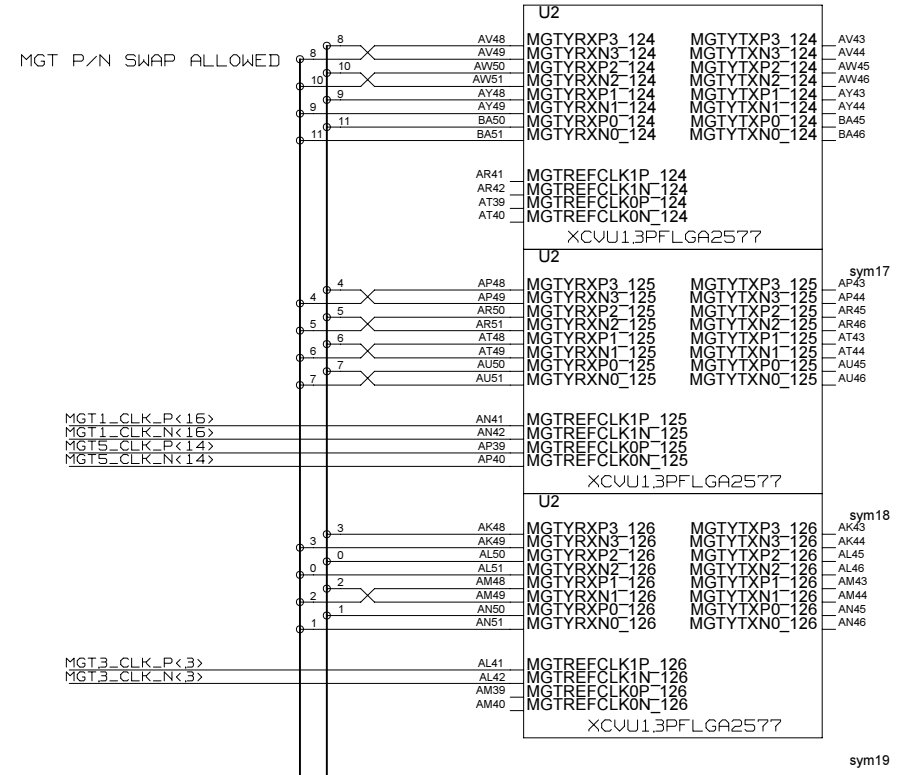
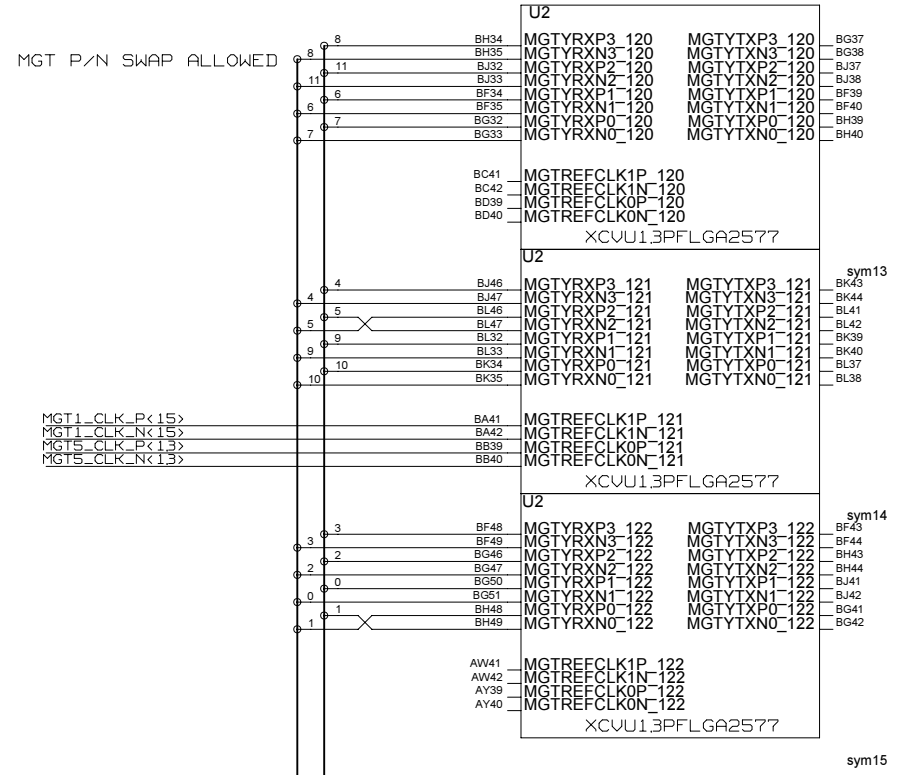
	NAME	DATE	SIGN	DRAWING TITLE	
CHECKED	U.SCHAEFER			FFEX	
CHECKED					
CHECKED					
DRAWN	BAUSS			B. BAUSS Fri Aug 18 09:49:18 2023	
BLOCK TITLE				SIZE	DRAWING NO.
fpga_decoupling				C	
UNIVERSITY OF MAINZ				SCALE	PAGE
					39 OF 102

HIGH SPEED OPTICAL LINKS

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE

120, 121, 122

124, 125, 126



- FF_CTRL_U2<35..0>
- MGT1_CLK_P<24..1>
- MGT1_CLK_N<24..1>
- MGT2_CLK_P<6..1>
- MGT2_CLK_N<6..1>
- MGT3_CLK_P<6..1>
- MGT3_CLK_N<6..1>
- MGT4_CLK_P<6..1>
- MGT4_CLK_N<6..1>
- MGT5_CLK_P<24..1>
- MGT5_CLK_N<24..1>

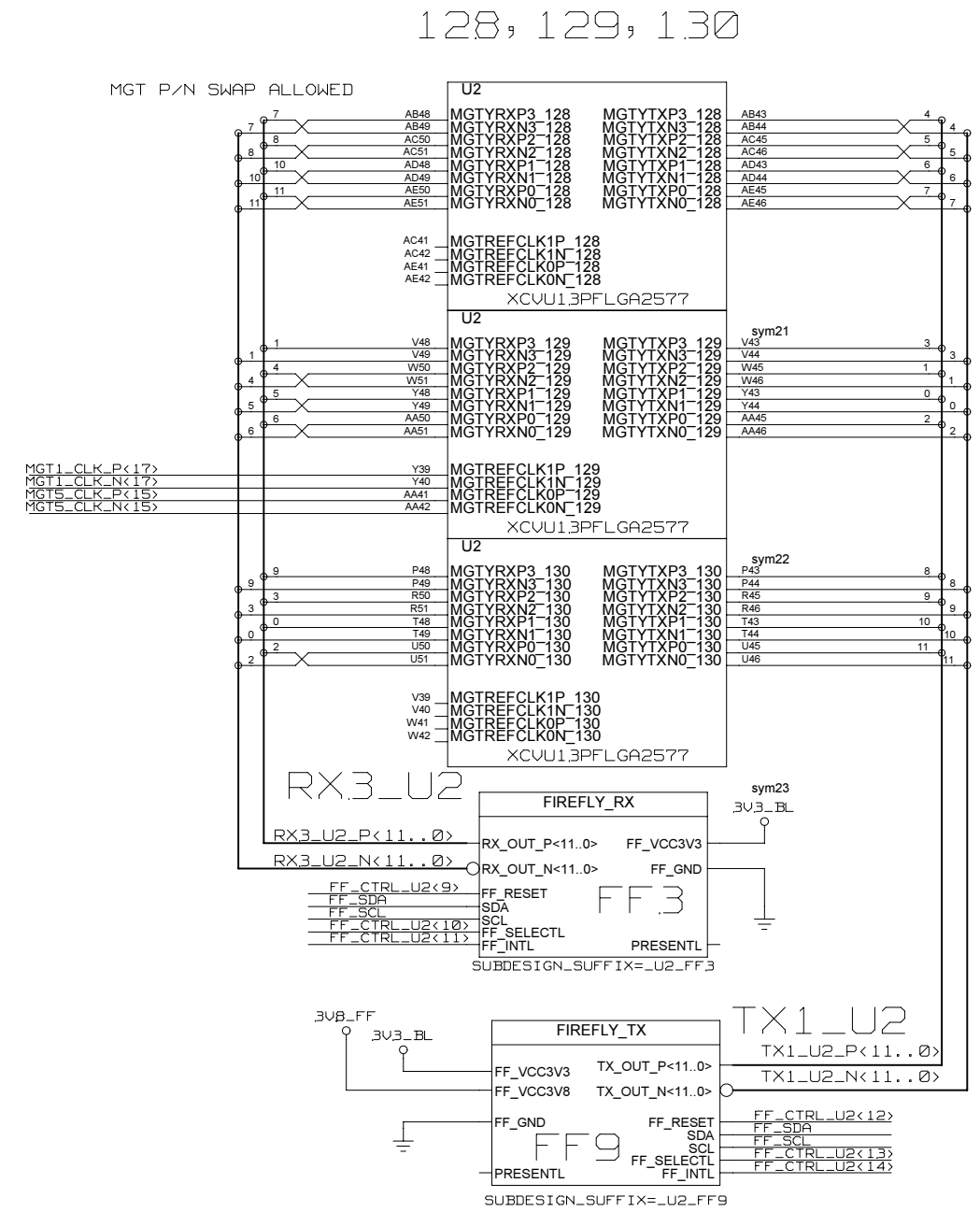
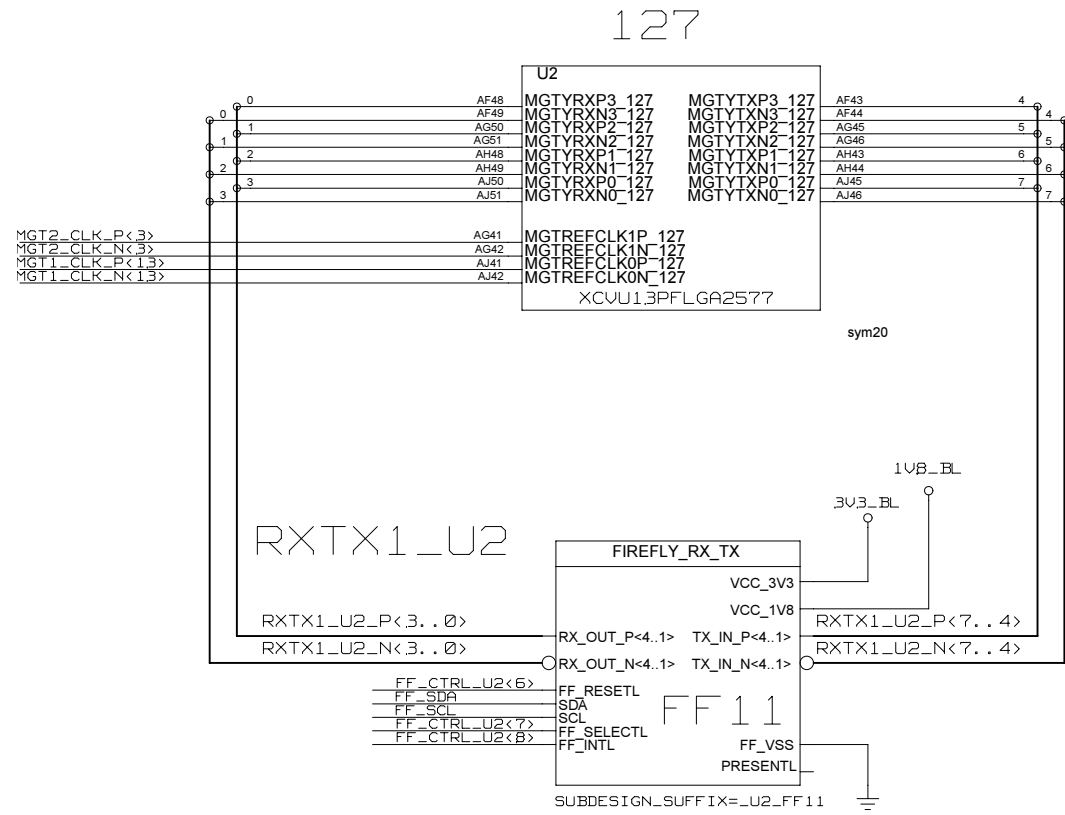
NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER		
CHECKED			
CHECKED			
DRAWN	BAUSS		
BLOCK TITLE			
u2_mgt_real_time			
UNIVERSITY OF MAINZ			
SIZE	REV.	DRAWING NO.	
C			
SCALE		PAGE	
		41 OF 102	

FFEX

B. BAUSS Fri Aug 18 09:49:20 2023

HIGH SPEED OPTICAL LINKS

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.



NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER		
CHECKED			
CHECKED			
DRAWN	BAUSS		
BLOCK TITLE			
u2_mgt_real_time			
UNIVERSITY OF MAINZ			
SIZE	REV.	DRAWING NO.	
C			
SCALE		PAGE	
		42 OF 102	

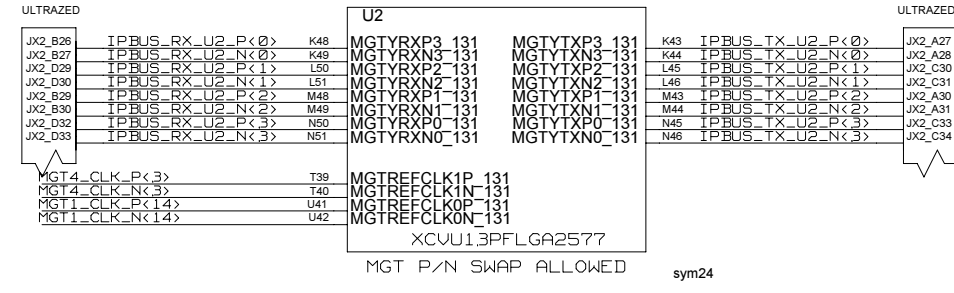
FFEX

B. BAUSS Fri Aug 18 09:49:20 2023

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

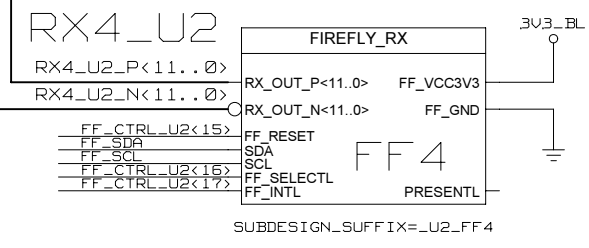
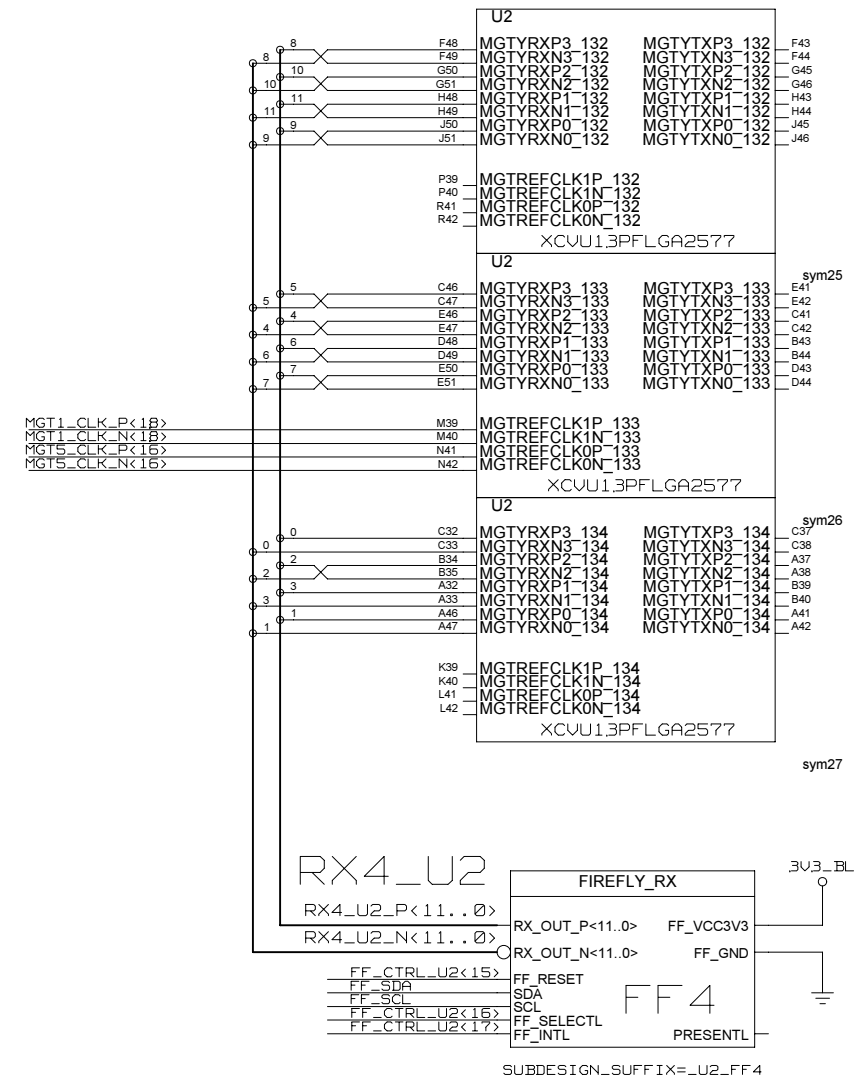
HIGH SPEED OPTICAL LINKS

1.31



MGT P/N SWAP ALLOWED

1.32, 1.33, 1.34



NAME	DATE	SIGN	DRAWING TITLE	
CHECKED	U.SCHAEFER		FFEX	
CHECKED				
CHECKED				
DRAWN	BAUSS		DRAWING NO.	
BLOCK TITLE			PAGE	
u2_mgt_real_time			43 OF 102	
UNIVERSITY OF MAINZ			SIZE	REV.
			C	
			SCALE	

FFEX

B. BAUSS Fri Aug 18 09:49:21 2023

DRAWING NO. PAGE 43 OF 102

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

U2		
G32	MGTYRXP3_135	MGTYXP3_135
G33	MGTYRXN3_135	MGTYXN3_135
F34	MGTYRXP2_135	MGTYXP2_135
F35	MGTYRXN2_135	MGTYXN2_135
E32	MGTYRXP1_135	MGTYXP1_135
E33	MGTYRXN1_135	MGTYXN1_135
D34	MGTYRXP0_135	MGTYXP0_135
D35	MGTYRXN0_135	MGTYXN0_135
H40	MGTREFCLK1N_135	
H39	MGTREFCLK1P_135	
J42	MGTREFCLK0N_135	
J41	MGTREFCLK0P_135	
XCVU13PFLGA2577		

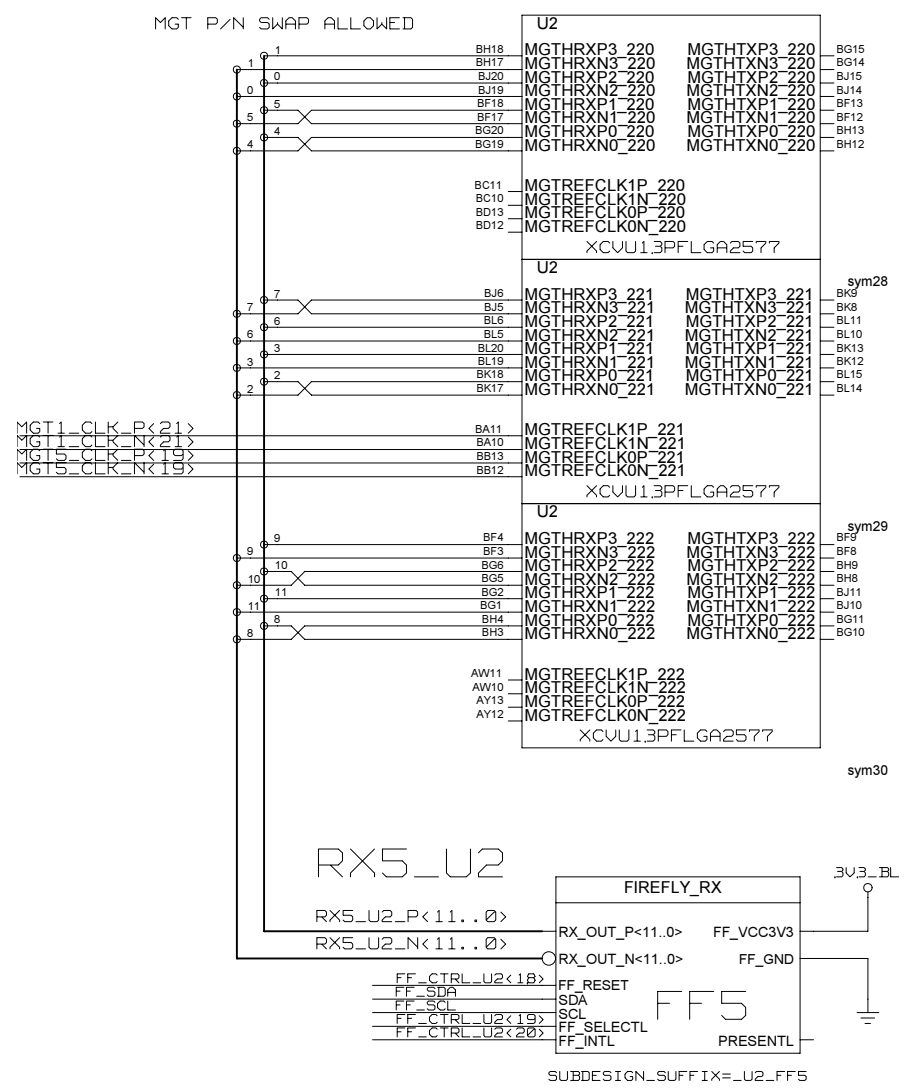
sym46

CHECKED	NAME	DATE	SIGN	DRAWING TITLE FFEX	
CHECKED	U.SCHAEFER				
CHECKED					
CHECKED					
DRAWN	BAUSS			B. BAUSS Fri Aug 18 09:24:12 2023	
BLOCK TITLE u2_mgt_real_time					
UNIVERSITY OF MAINZ				SIZE C	DRAWING NO.
				SCALE	PAGE 44 OF 102

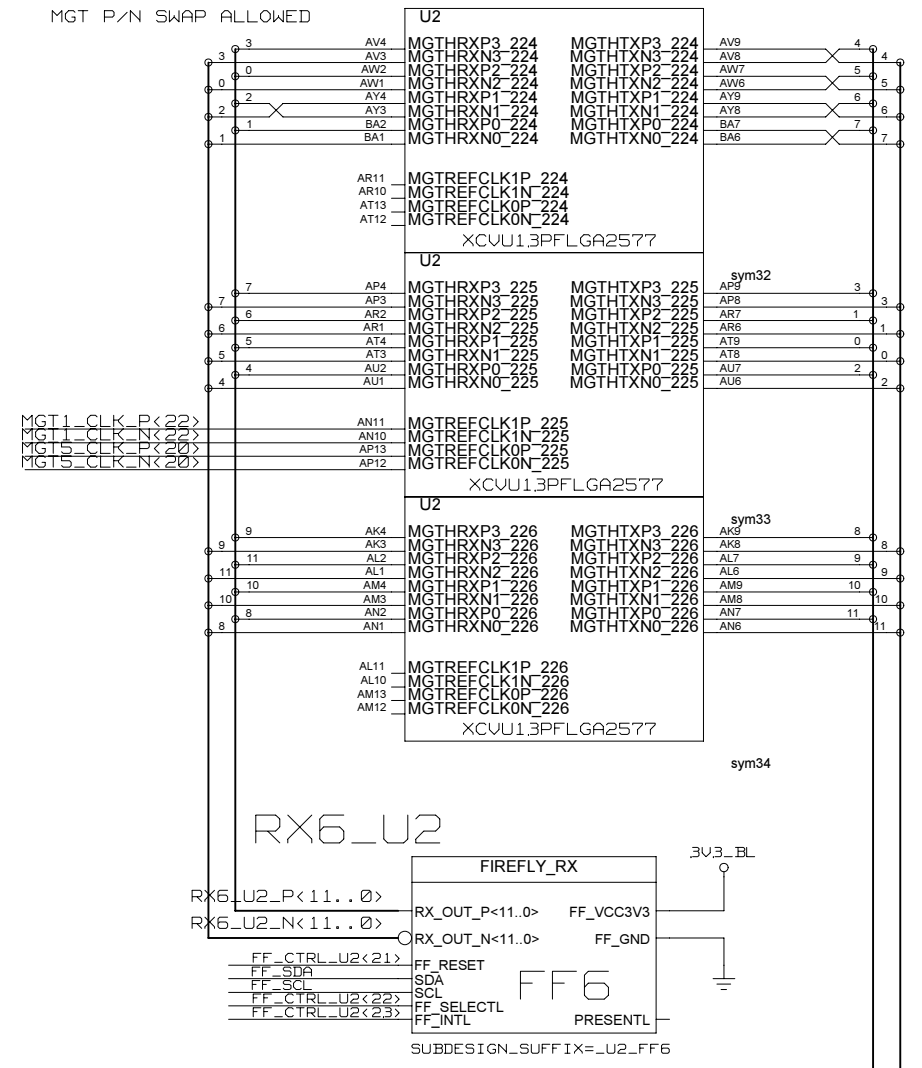
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

HIGH SPEED OPTICAL LINKS

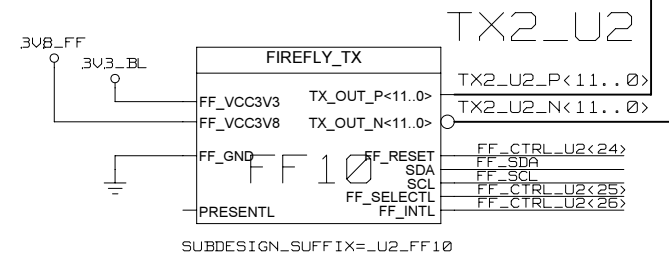
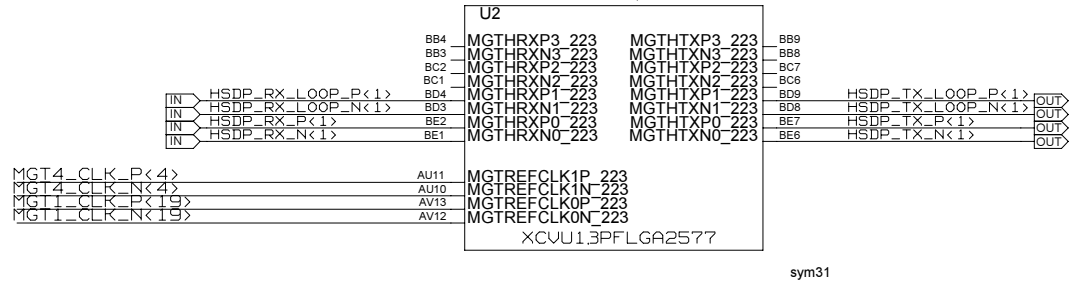
220, 221, 222



224, 225, 226



HSDP
223



NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER		
CHECKED			
CHECKED			
DRAWN	BAUSS		
BLOCK TITLE			
u2_mgt_real_time			
UNIVERSITY OF MAINZ			
SIZE	REV.	DRAWING NO.	
C			
SCALE		PAGE	
		45 OF 102	

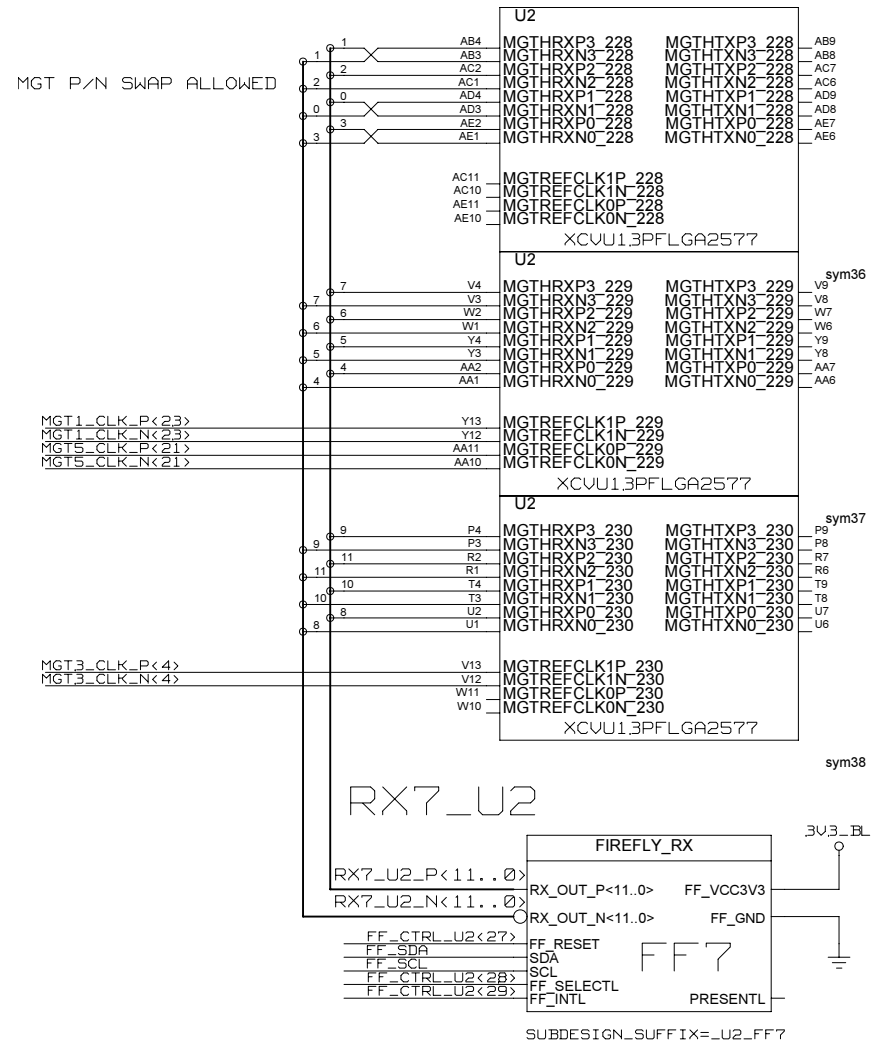
FFEX

B. BAUSS Fri Aug 18 09:49:21 2023

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

HIGH SPEED OPTICAL LINKS

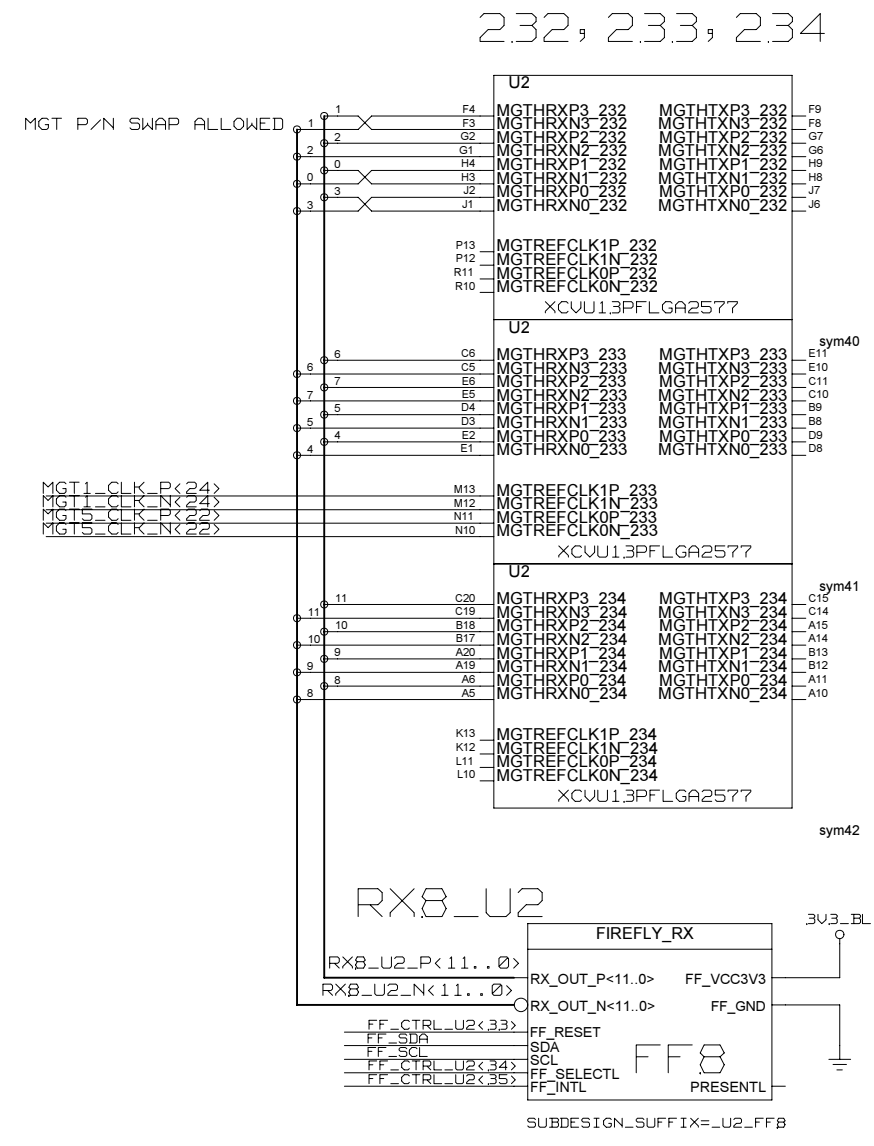
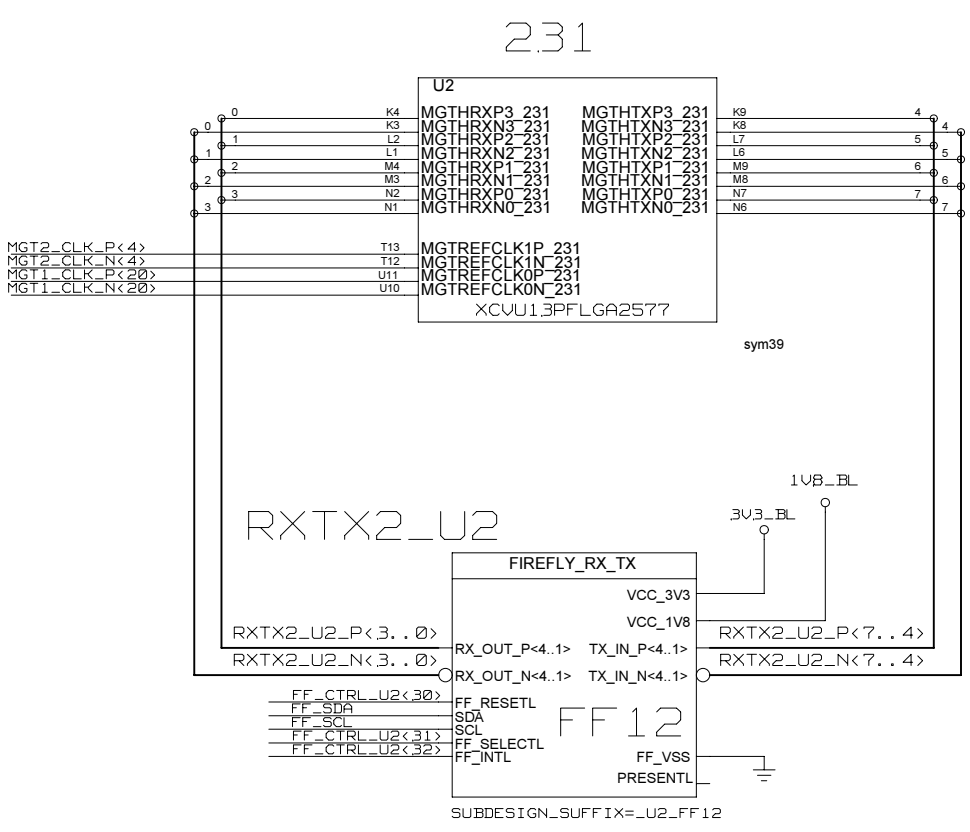
228, 229, 230



CHECKED	NAME	DATE	SIGN	DRAWING TITLE	
CHECKED	U.SCHAEFER			<h1>FFEX</h1> <p>B. BAUSS Fri Aug 18 09:49:21 2023</p>	
CHECKED					
CHECKED					
DRAWN	BAUSS			DRAWING NO.	
BLOCK TITLE				DRAWING NO.	
u2_mgt_real_time				DRAWING NO.	
UNIVERSITY OF MAINZ				SIZE	PAGE
				C	46 OF 102
				SCALE	

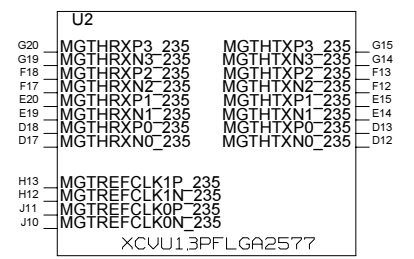
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

HIGH SPEED OPTICAL LINKS



CHECKED	NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER			
CHECKED				
CHECKED				
DRAWN	BAUSS			FFEX
BLOCK TITLE				
u2_mgt_real_time				B. BAUSS Fri Aug 18 09:49:22 2023
UNIVERSITY OF MAINZ		SIZE	REV.	DRAWING NO.
		C		
		SCALE		PAGE
				47 OF 102

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

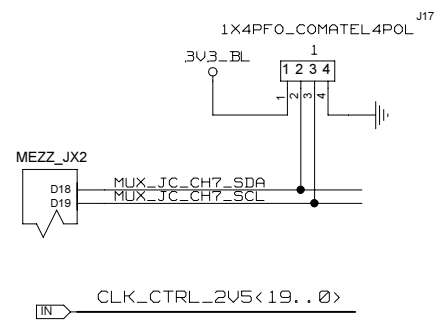
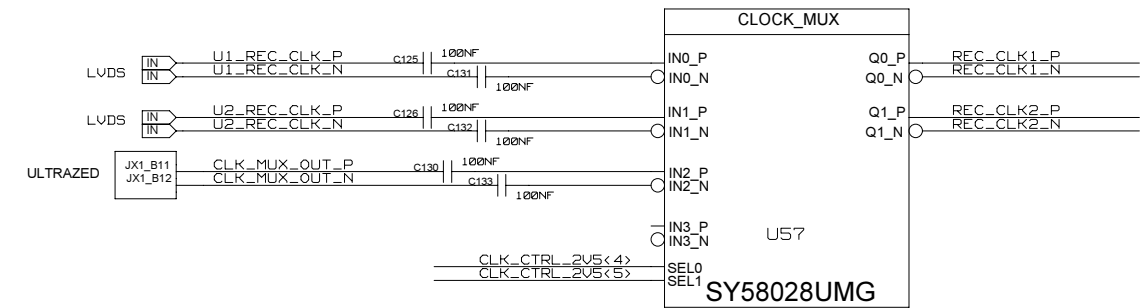
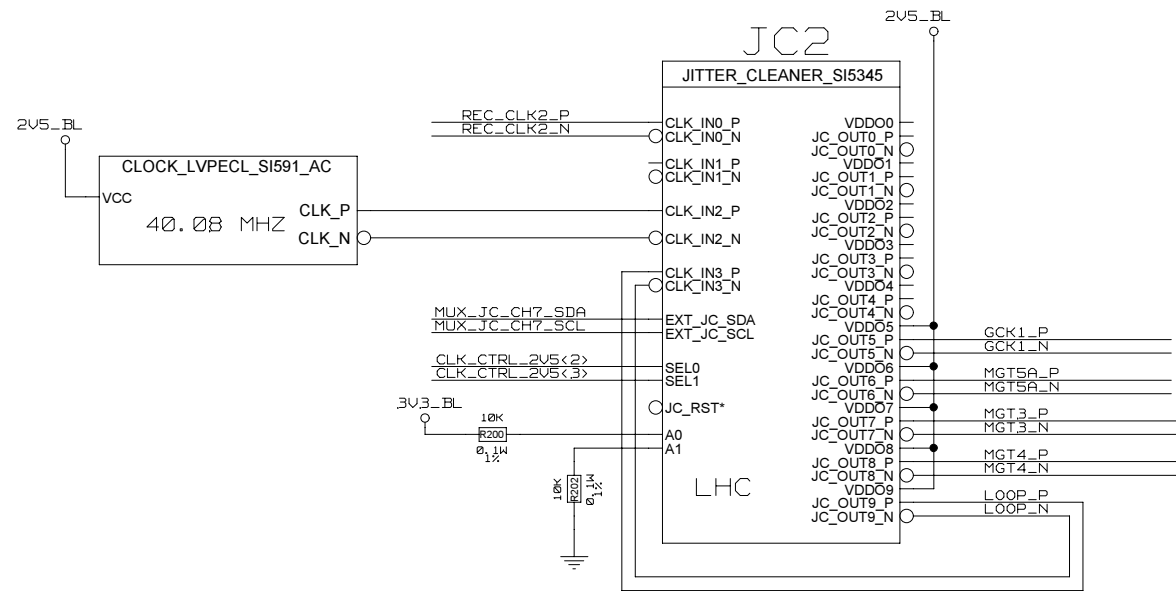
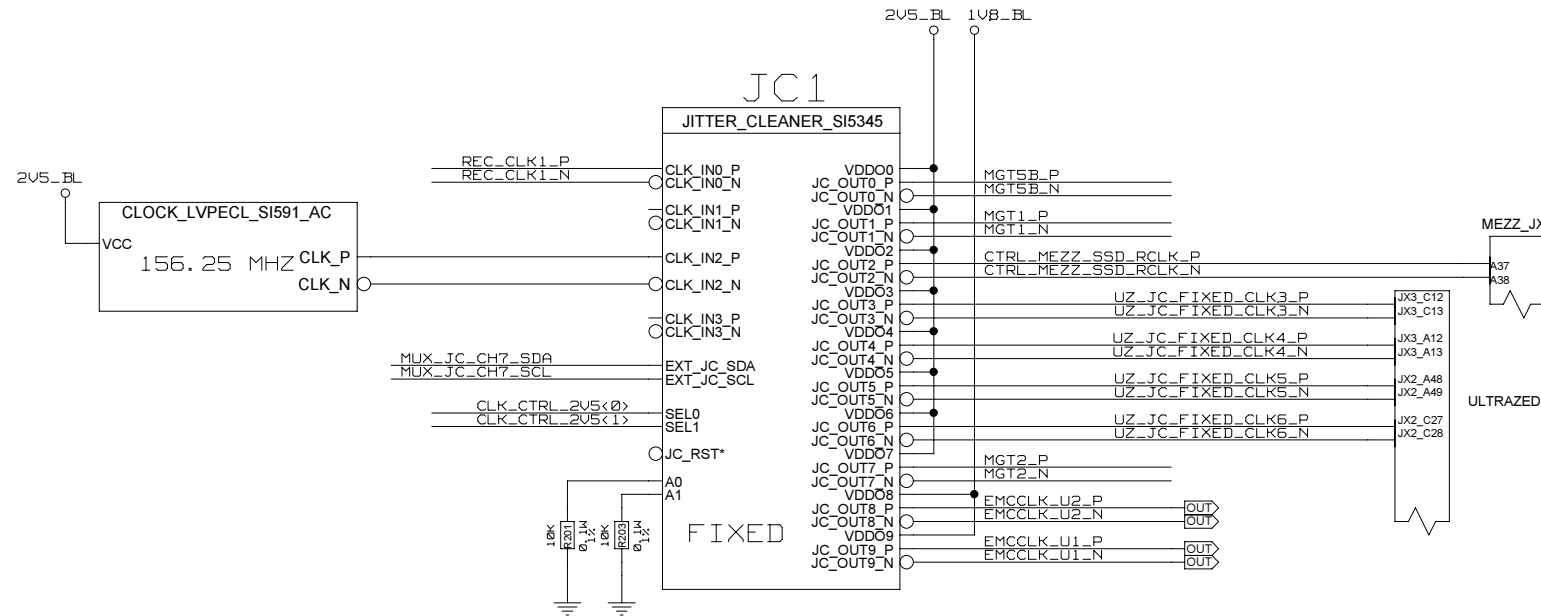


sym45

CHECKED	NAME	DATE	SIGN	DRAWING TITLE						
CHECKED	U.SCHAEFER									
CHECKED										
CHECKED										
DRAWN	BAUSS			<h1 style="text-align: center;">FFEX</h1> <p style="text-align: right; font-size: small;">B. BAUSS Fri Aug 18 09:24:12 2023</p>						
BLOCK TITLE										
u2_mgt_real_time				<table border="1" style="width: 100%;"> <tr> <td>SIZE</td> <td>REV.</td> <td>DRAWING NO.</td> </tr> <tr> <td>C</td> <td></td> <td></td> </tr> </table>	SIZE	REV.	DRAWING NO.	C		
SIZE	REV.	DRAWING NO.								
C										
UNIVERSITY OF MAINZ				<table border="1" style="width: 100%;"> <tr> <td>SCALE</td> <td>PAGE</td> </tr> <tr> <td></td> <td>48 OF 102</td> </tr> </table>	SCALE	PAGE		48 OF 102		
SCALE	PAGE									
	48 OF 102									

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

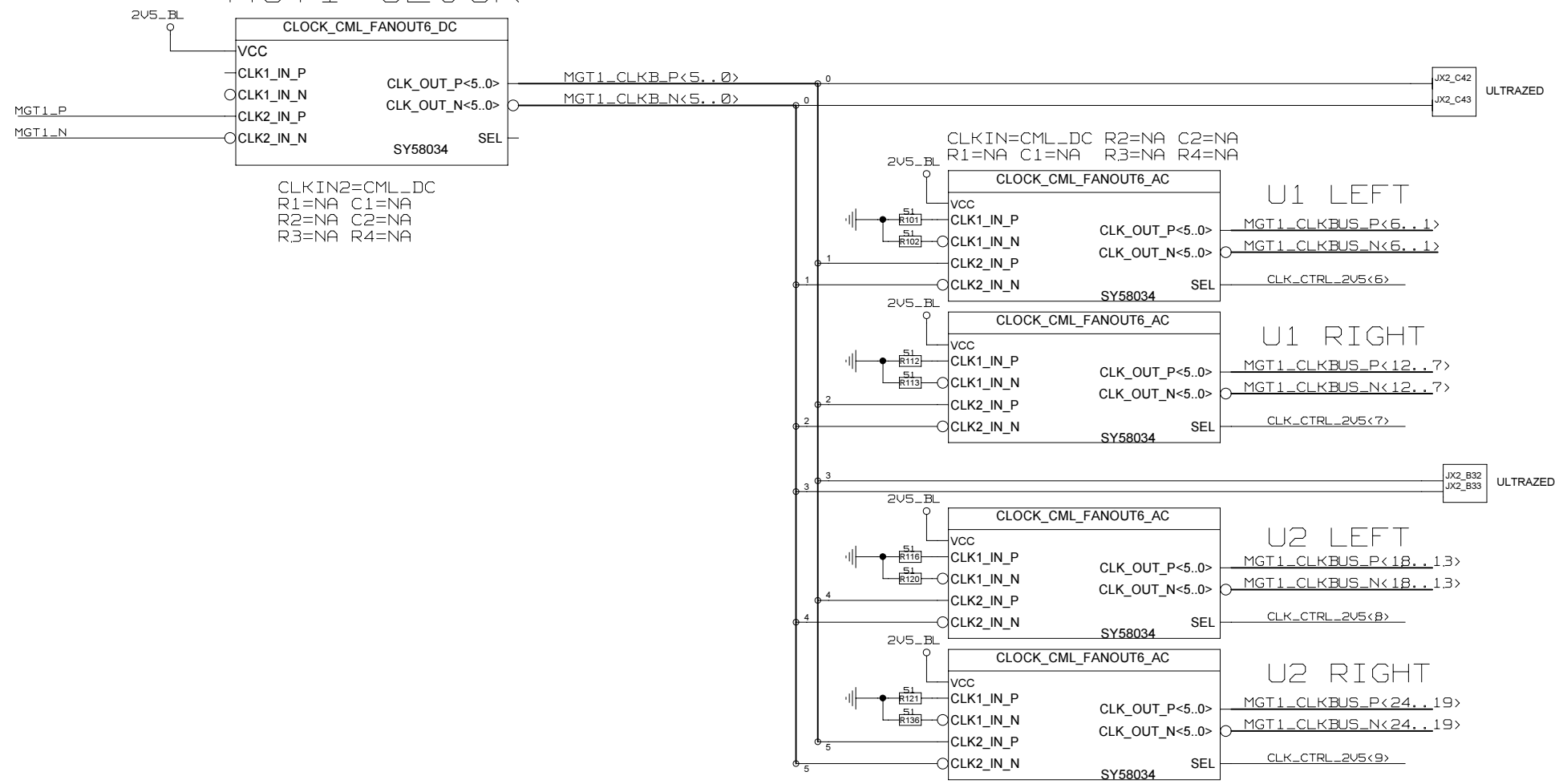
JITTER CLEANER



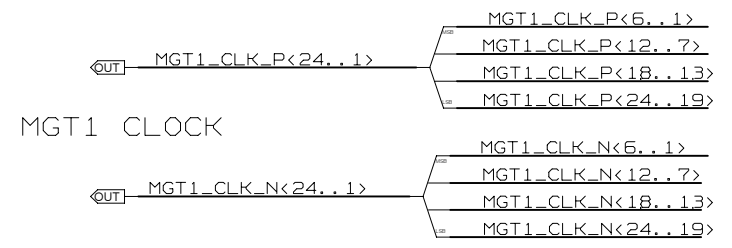
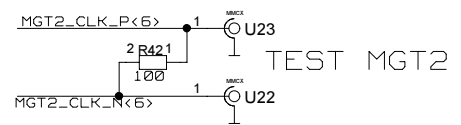
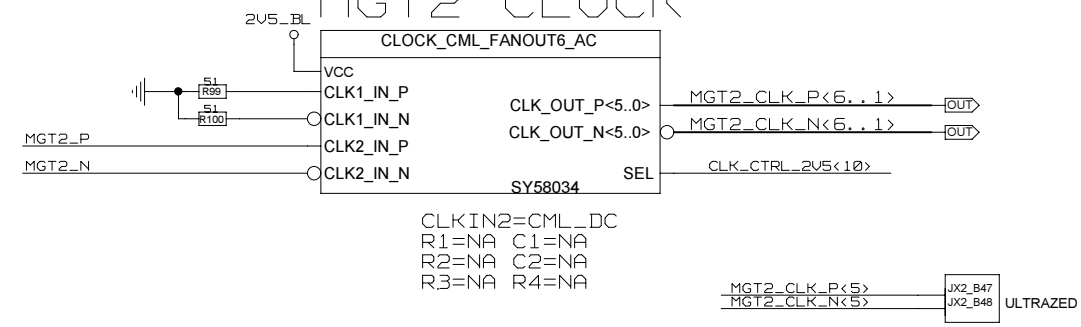
CHECKED	NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER			DRAWING TITLE
CHECKED				
CHECKED				
DRAWN	BAUSS			<h1>FFEX</h1>
BLOCK TITLE				
UNIVERSITY OF MAINZ				SIZE C REV. DRAWING NO.
SCALE				PAGE 61 OF 102

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE

MGT1 CLOCK



MGT2 CLOCK



UPDATE PICK & PLACE DATA FOR FANOUT

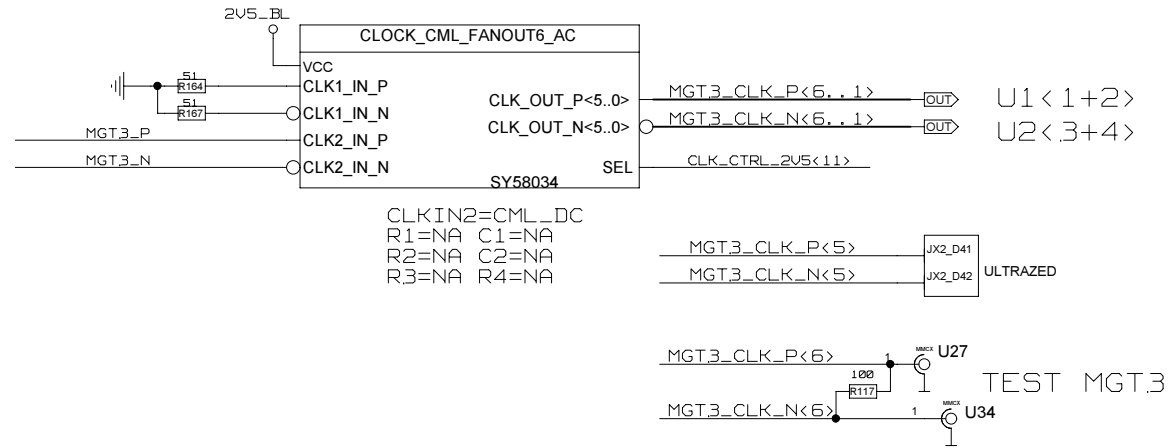
CHECKED	NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER			FFEX
CHECKED				
CHECKED				
DRAWN	BAUSS			BLOCK TITLE
				c lock
				UNIVERSITY OF MAINZ
SIZE		REV.	DRAWING NO.	
SCALE			PAGE	
			62 OF 102	

FFEX

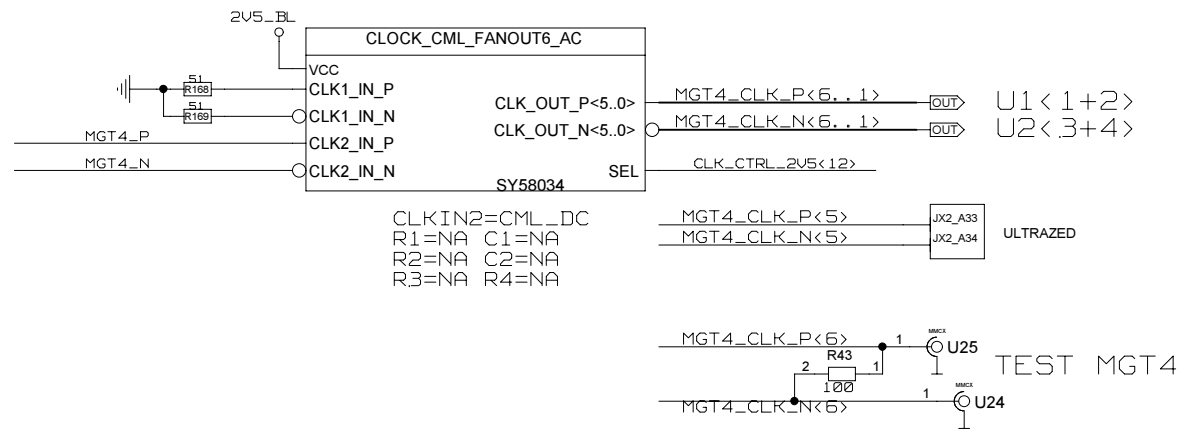
B. BAUSS Fri Aug 18 09:49:28 2023

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

MGT.3 LHC CLEANED CLOCK



MGT4 LHC CLEANED CLOCK

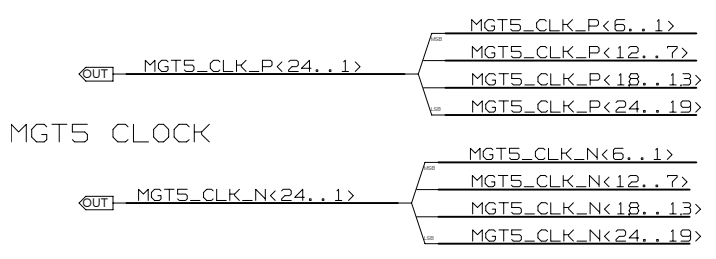
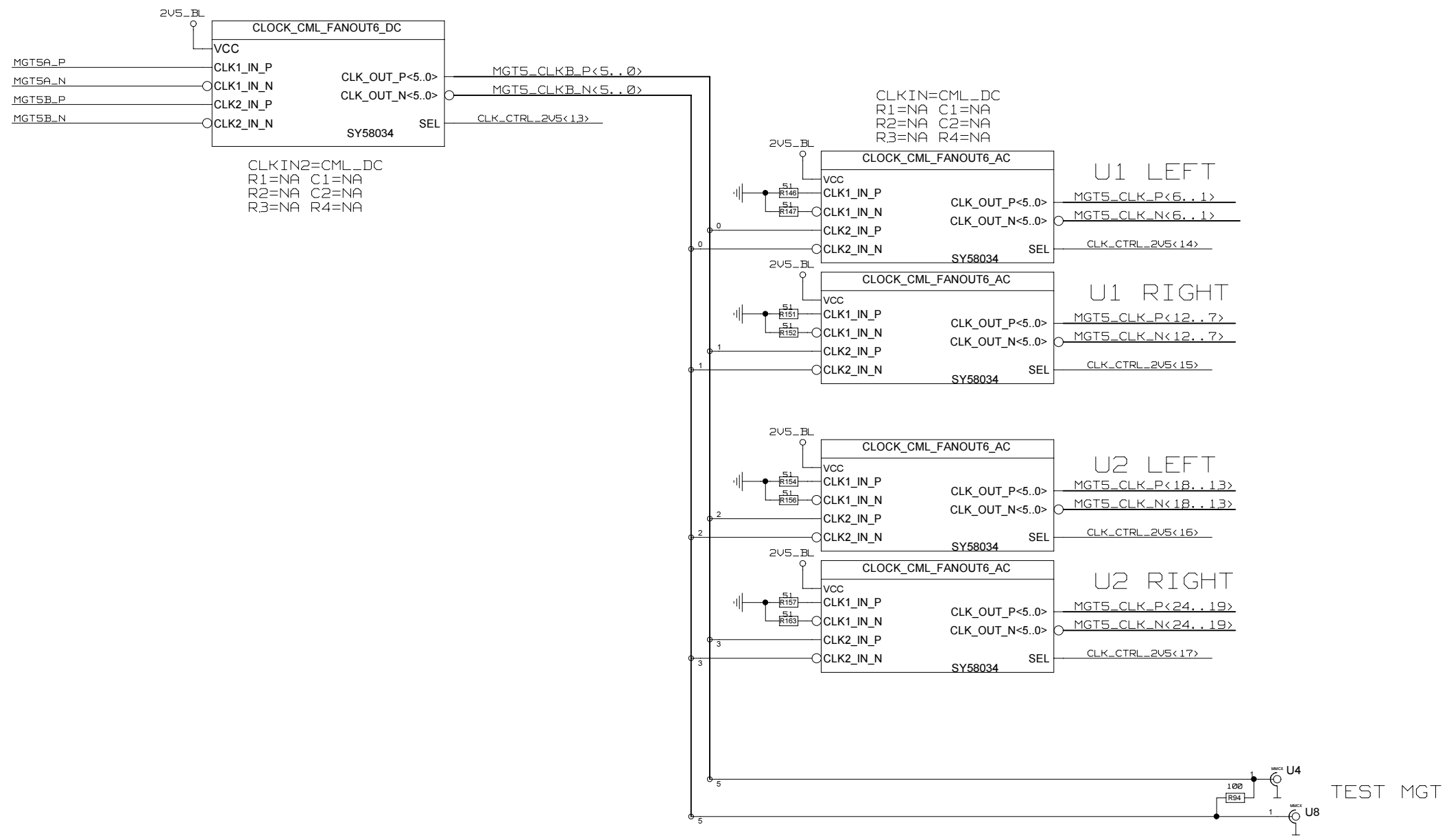


CHECKED	NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER			FFEX
CHECKED				
CHECKED				
DRAWN	BAUSS			
BLOCK TITLE				clock
UNIVERSITY OF MAINZ				SIZE C REV. DRAWING NO.
				SCALE PAGE 63 OF 102

B. BAUSS Fri Aug 18 09:49:29 2023

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

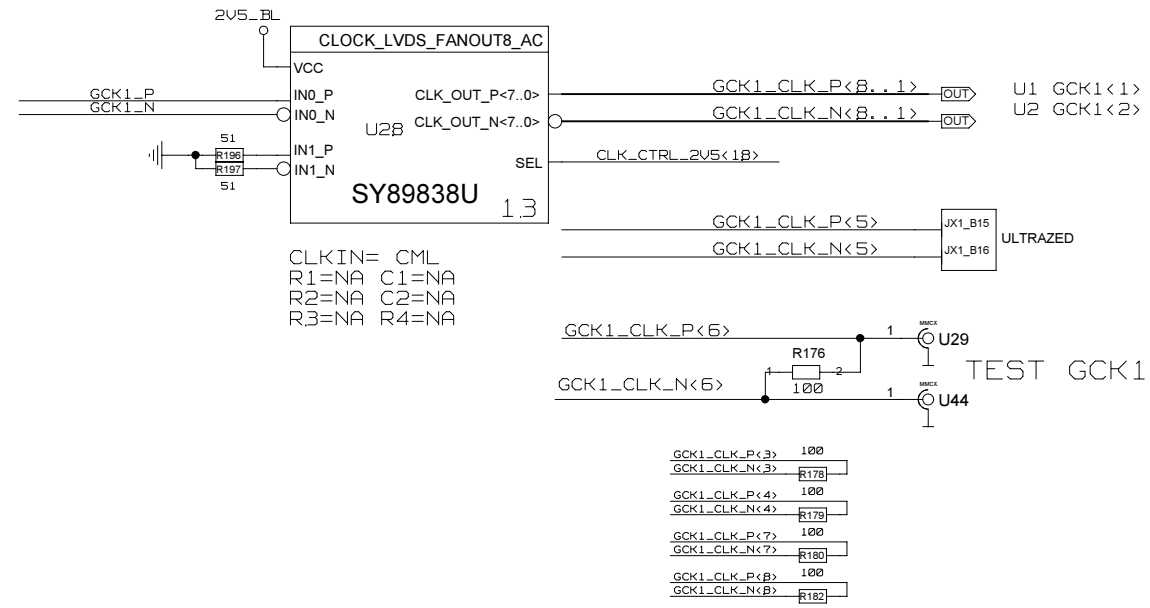
MGT5 CLOCK



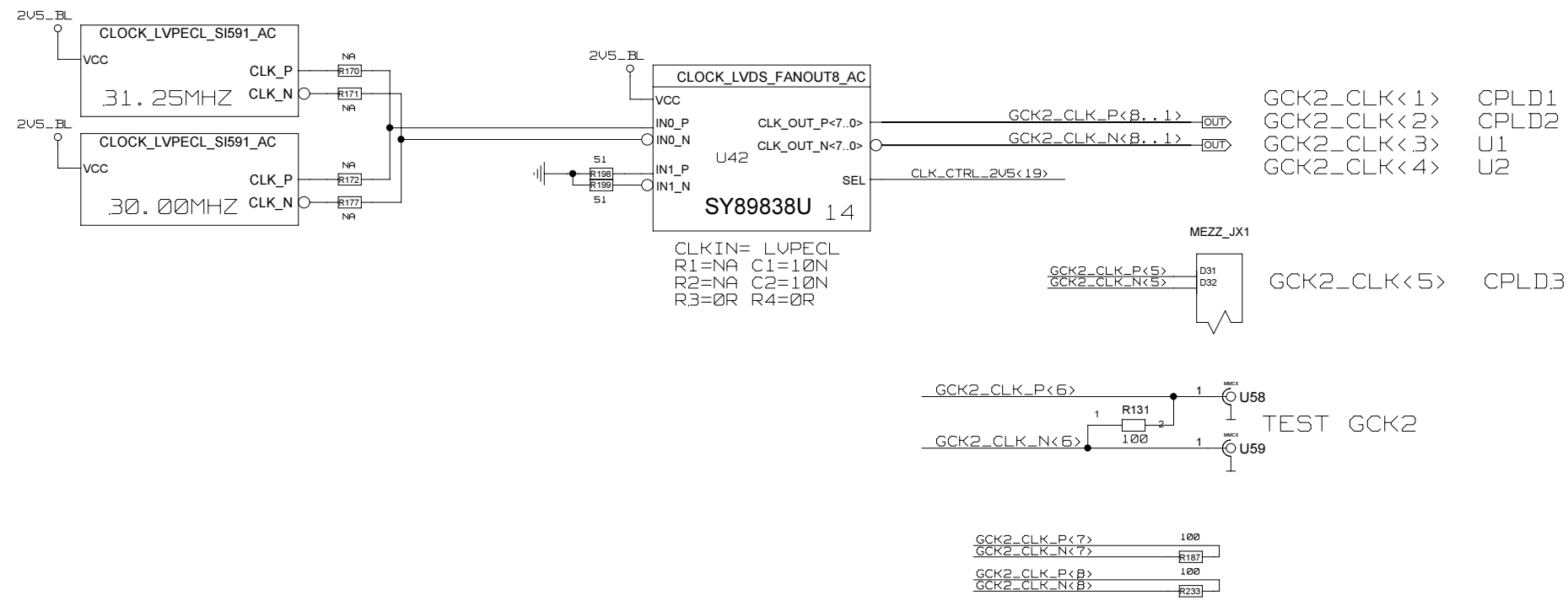
CHECKED	NAME	DATE	SIGN	DRAWING TITLE	
CHECKED	U.SCHAEFER			<h1>FFEX</h1> <p>B. BAUSS Fri Aug 18 09:49:29 2023</p>	
CHECKED					
CHECKED					
DRAWN	BAUSS				
BLOCK TITLE				DRAWING NO.	
clock				SIZE	REV.
UNIVERSITY OF MAINZ				SCALE	PAGE
					64 OF 102

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

GCK1 LHC CLEANED CLOCK



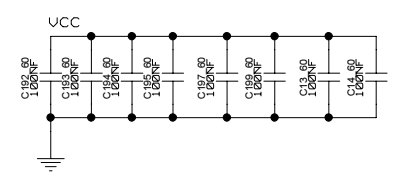
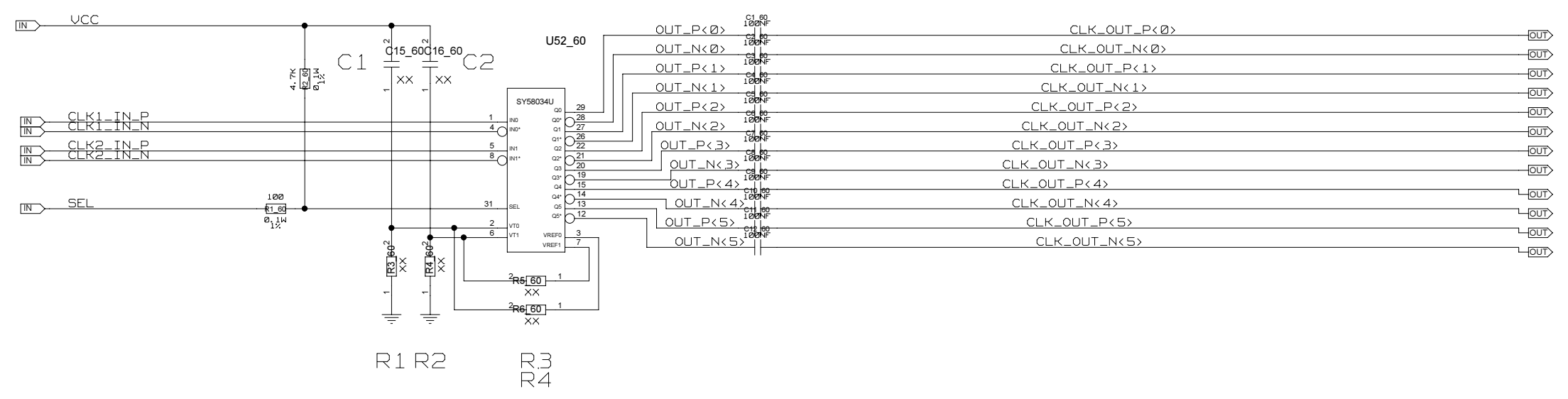
GCK2 INEPENDENT CLOCK



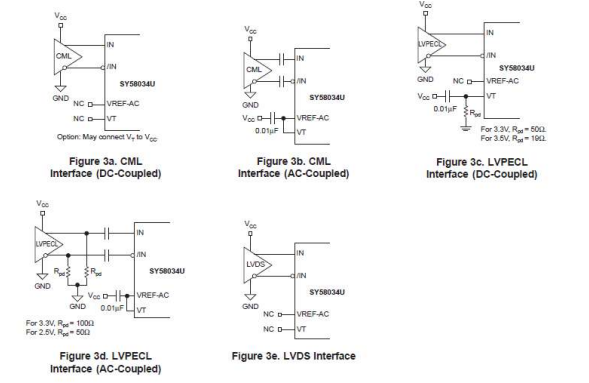
CHECKED	U.SCHAEFER	DATE	SIGN	DRAWING TITLE	
CHECKED					
CHECKED					
DRAWN	BAUSS				
BLOCK TITLE				FFEX B. BAUSS Fri Aug 18 09:49:29 2023	
CLOCK					
UNIVERSITY OF MAINZ			SIZE	REV.	DRAWING NO.
			C		
			SCALE	PAGE	
				65 OF 102	

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

CLOCK CML FANOUT6 AC



INPUT INTERFACE APPLICATIONS

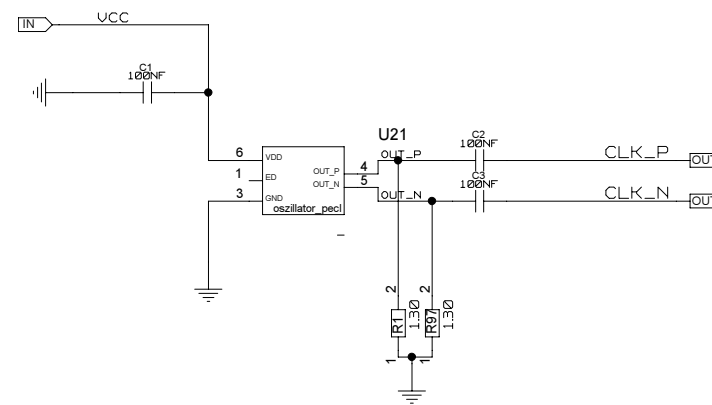


CHECKED	NAME	DATE	SIGN	DRAWING TITLE FFEX B. BAUSS Fr1 Aug 18 09:49:16 2023
CHECKED	U.SCHAEFER			
CHECKED				
CHECKED				
DRAWN	BAUSS			
BLOCK TITLE clock_cml_fanout6_ac				SIZE C
UNIVERSITY OF MAINZ				REV.
SCALE				DRAWING NO.
				PAGE 73 OF 102

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPR.

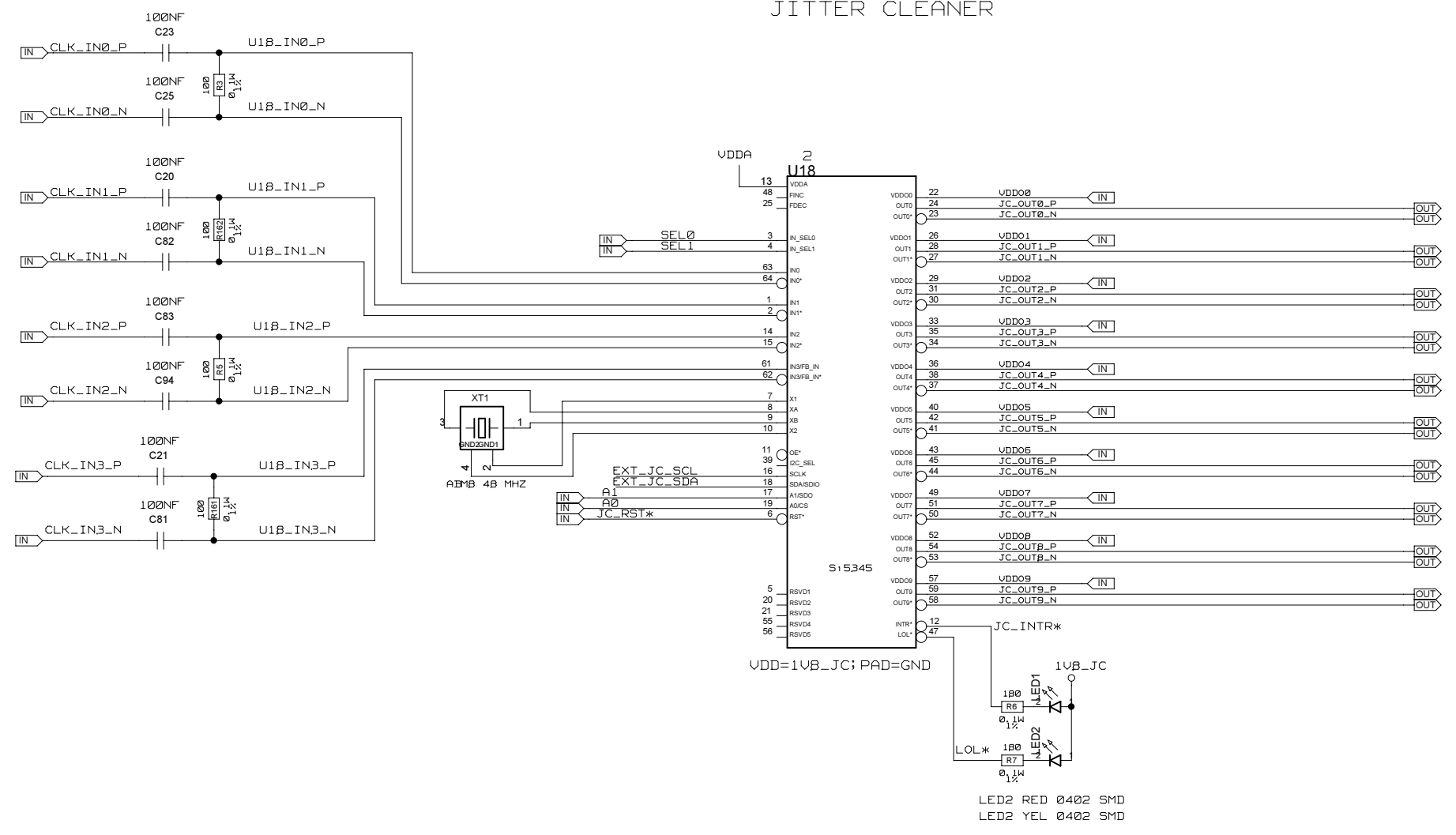
CLOCK_LVPECL_SI591_AC



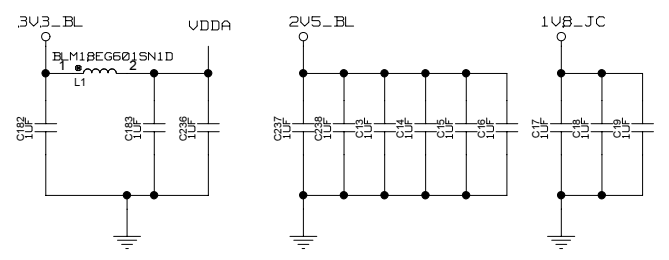
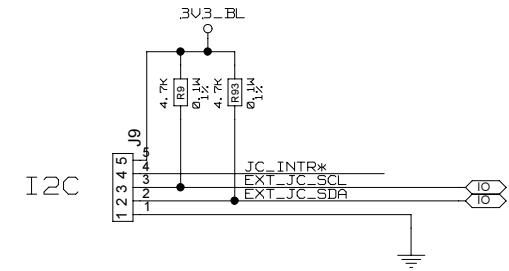
CHECKED	NAME	DATE	SIGN	DRAWING TITLE FFEX
CHECKED	U.SCHAEFER			
CHECKED				
DRAWN	BAUSS			
BLOCK TITLE clock_lvpecl_si591_ac				B. BAUSS Fri Aug 18 09:49:17 2023
UNIVERSITY OF MAINZ		SIZE C	REV.	DRAWING NO.
SCALE		PAGE 77 OF 102		

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

JITTER CLEANER



LED2 RED 0402 SMD
LED2 YEL 0402 SMD

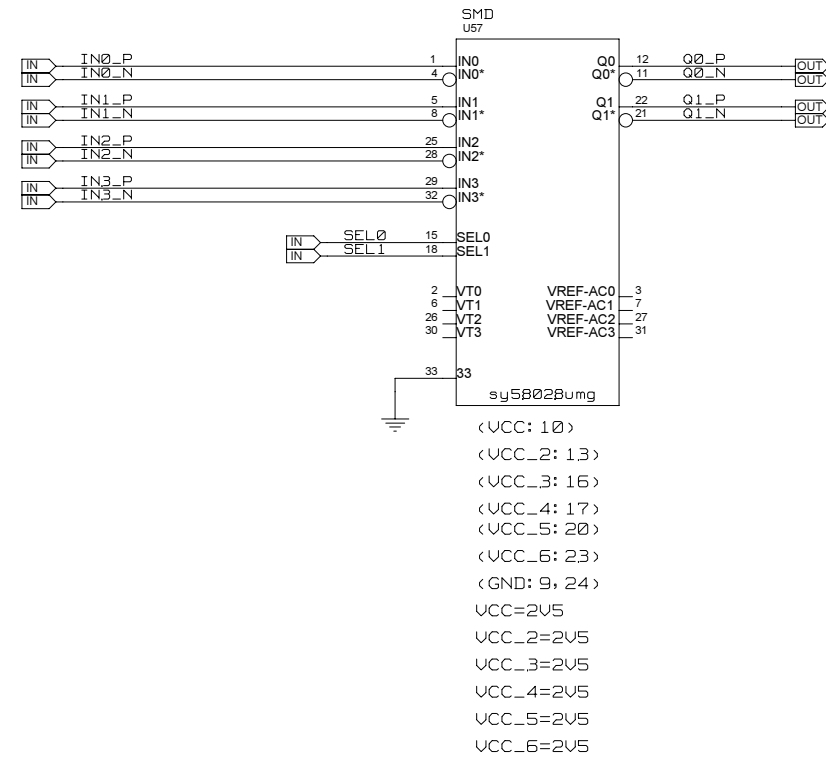


CHECKED	NAME	DATE	SIGN	DRAWING TITLE	
CHECKED	U.SCHAEFER				
CHECKED					
CHECKED					
DRAWN BAUSS				FFEX	
BLOCK TITLE jitter_cleaner_s15345					
UNIVERSITY OF MAINZ				SIZE C	DRAWING NO.
				SCALE	PAGE 7B OF 102

B. BAUSS Fri Aug 18 09:49:18 2023

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

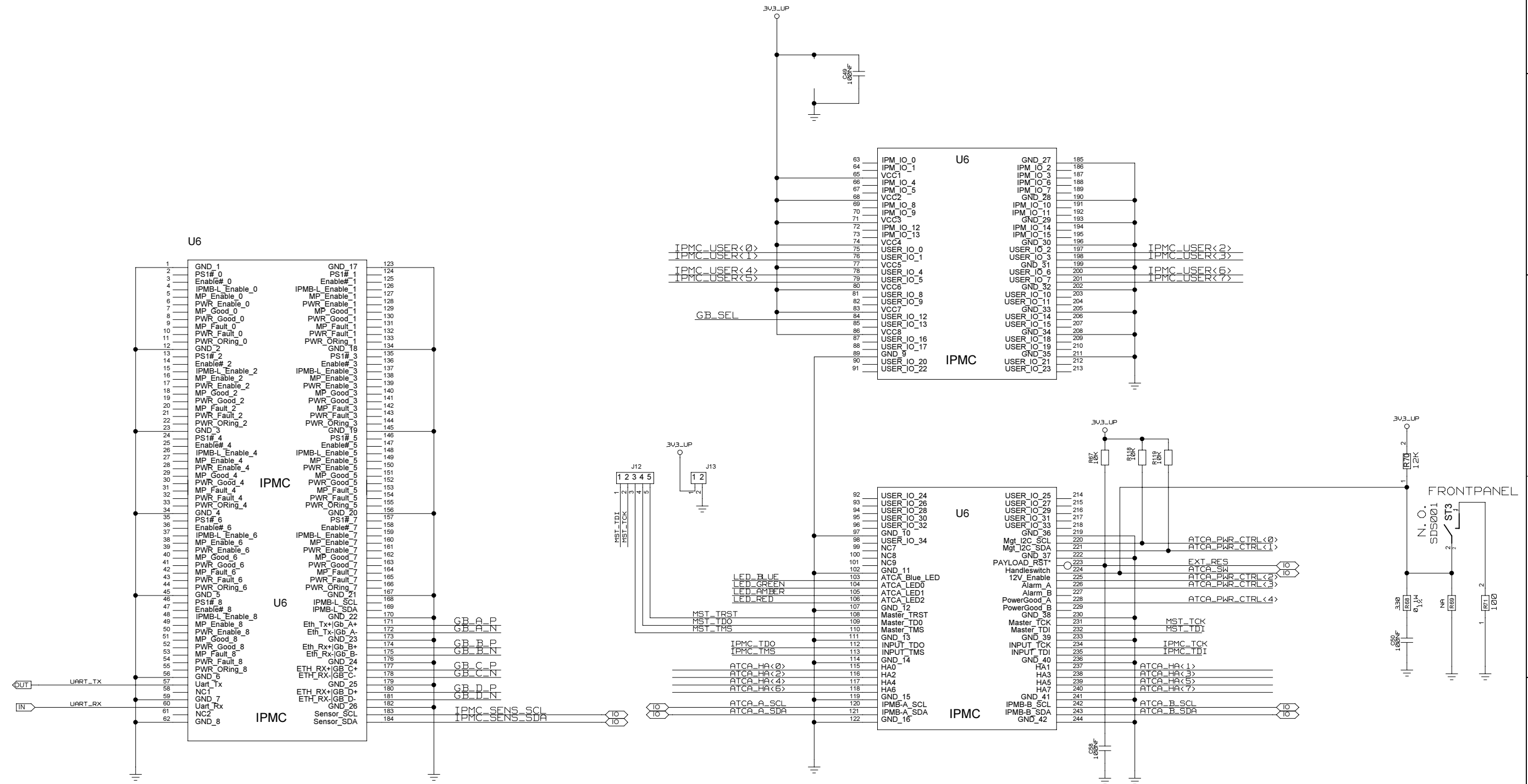
LVDS



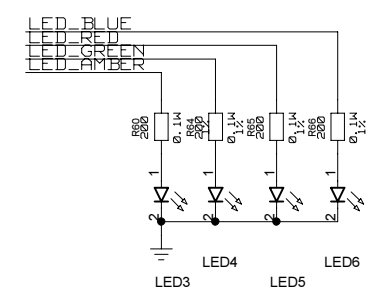
CHECKED	NAME	DATE	SIGN	DRAWING TITLE	
CHECKED	U.SCHAEFER				
CHECKED					
DRAWN	BAUSS				
BLOCK TITLE				<h1 style="text-align: center;">FFEX</h1> <p style="text-align: right; font-size: small;">B. BAUSS Fri Aug 18 09:49:19 2023</p>	
clock_mux					
UNIVERSITY OF MAINZ			SIZE	REV.	DRAWING NO.
			C		
			SCALE		PAGE
					B1 OF 102

IPMC CONNECTOR MOLEX_87782-3003

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE



ATCA_HA<7..0>
 ATCA_PWR_CTRL<4..0>
 IPMC_USER<7..0>



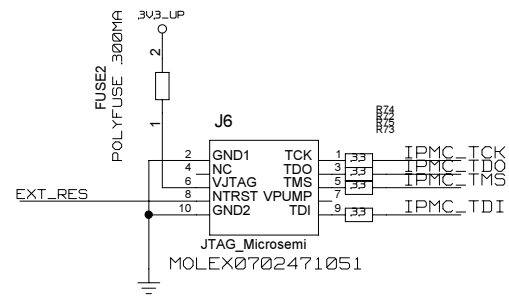
NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER		<h1 style="font-size: 2em;">FFEX</h1>
CHECKED			
CHECKED			
DRAWN	BAUSS		
BLOCK TITLE			1 pmc
UNIVERSITY OF MAINZ		REV. C	DRAWING NO.
SCALE		PAGE BB OF 102	

B. BAUSS Fri Aug 18 09:49:27 2023

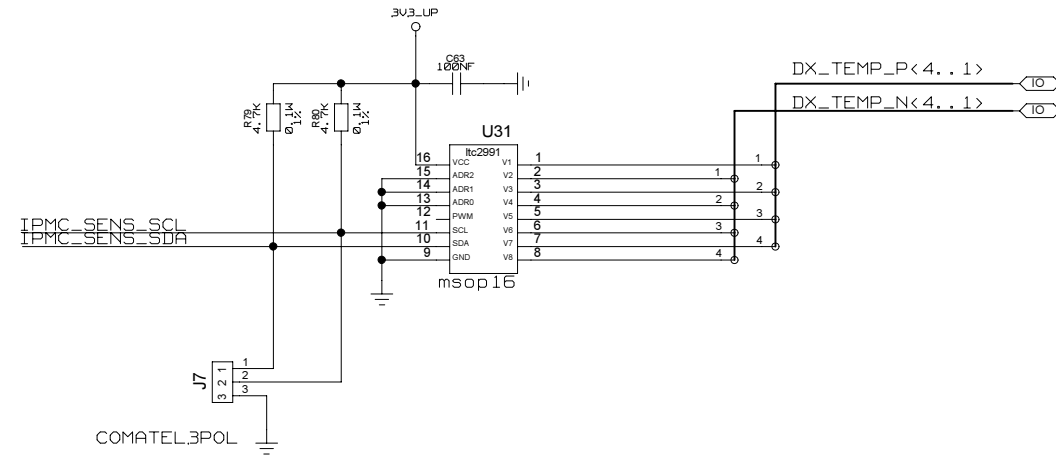
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

IPMC CONTROL

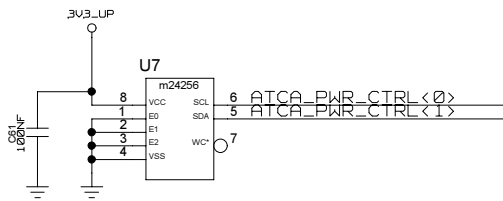
IPMC JTAG PORT
FRONTPANEL



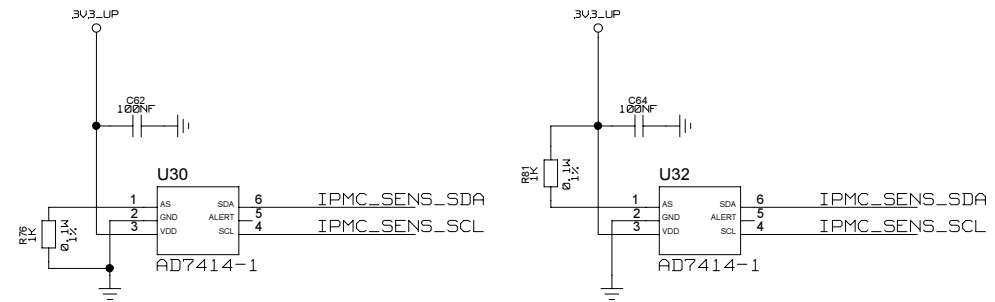
I2C FPGA TEMPERATURE



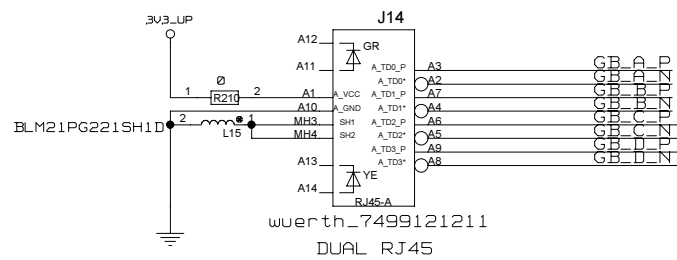
MEMORY



I2C BOARDTEMP



RJ45 FRONTPANEL

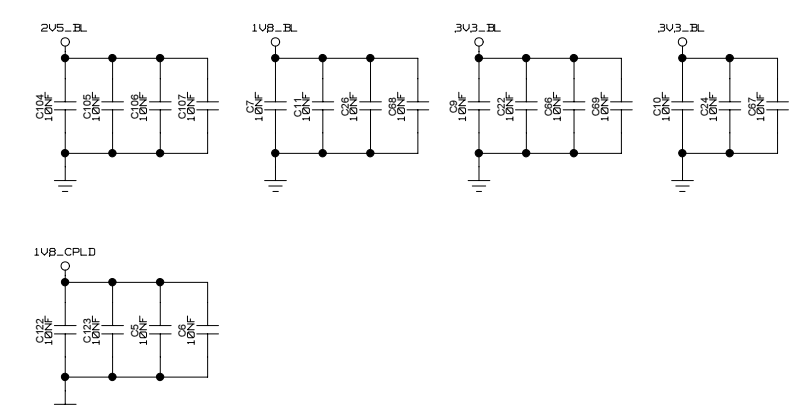
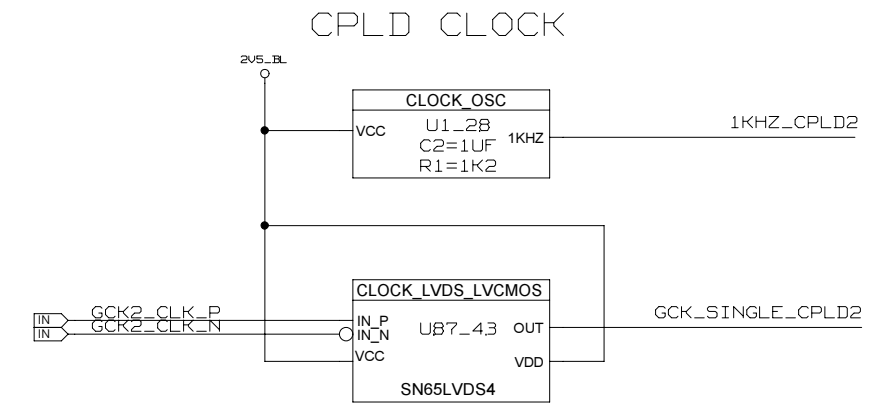
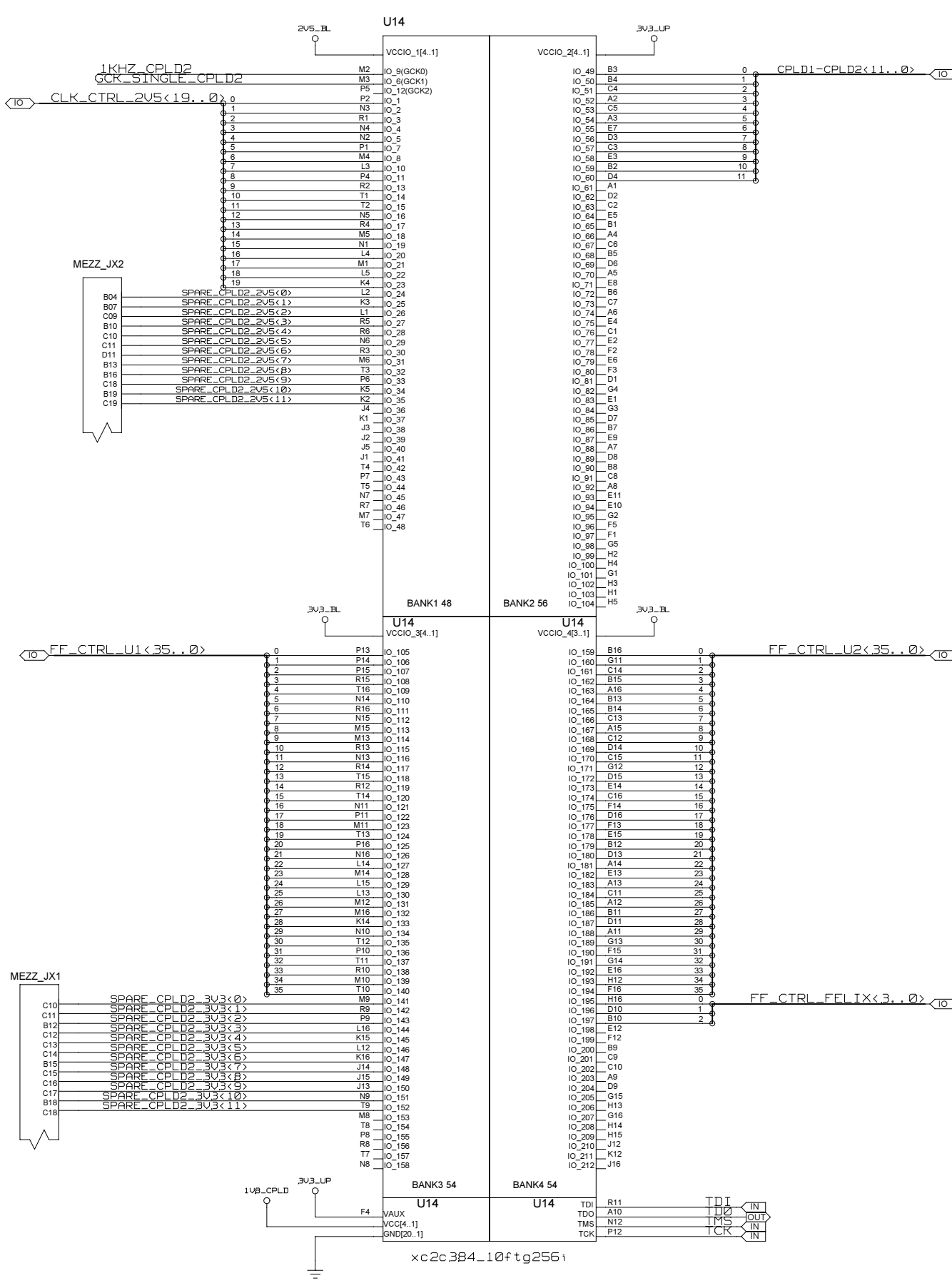


CHECKED	NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER			FFEX
CHECKED				
CHECKED				
DRAWN	BAUSS			
BLOCK TITLE				
ipmc				
UNIVERSITY OF MAINZ				
SIZE	REV.	DRAWING NO.		
C				
SCALE				PAGE
				B9 OF 102

B. BAUSS Fri Aug 18 09:49:28 2023

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

FF_CONTROL AND CTRL CPLD2



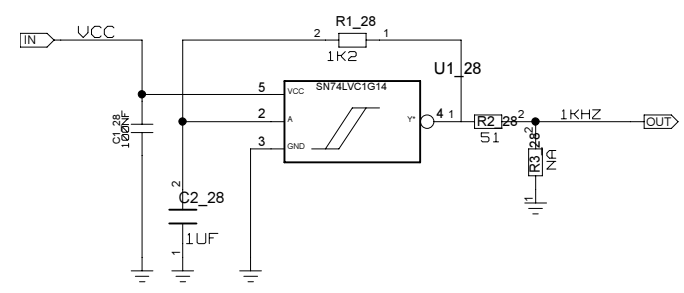
NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER		
CHECKED			
CHECKED			
DRAWN	BAUSS	22.07.2015	
BLOCK TITLE			
cpld			
UNIVERSITY OF MAINZ			
SIZE	REV.	DRAWING NO.	
C			
SCALE			PAGE
			90 OF 102

FFEX

B. BAUSS Fri Aug 18 09:49:27 2023

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

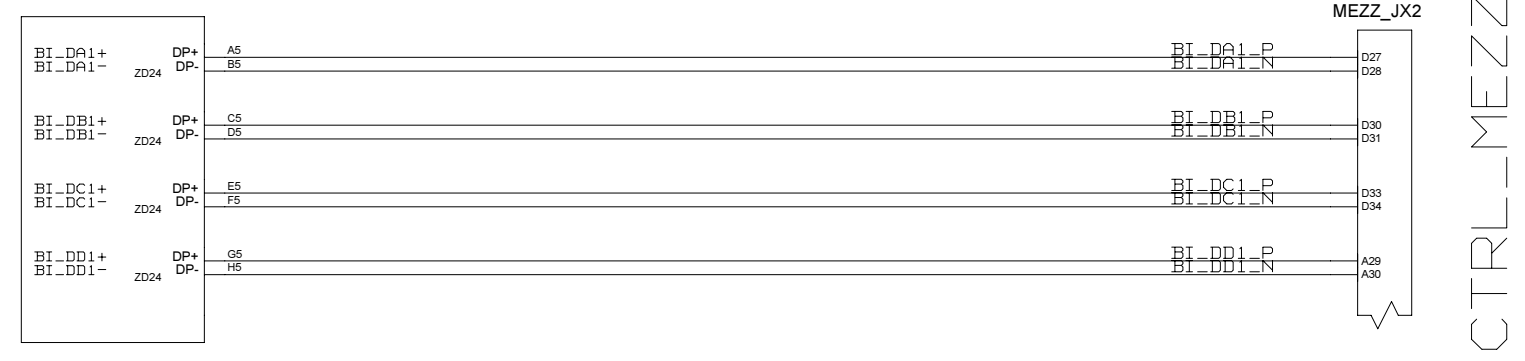
CLOCK_OSC



CHECKED	U.SCHAEFER			DRAWING TITLE
CHECKED				
CHECKED				
DRAWN	BAUSS			
BLOCK TITLE				<h1>FFEX</h1>
clock_osc				
UNIVERSITY OF MAINZ				B. BAUSS Fri Aug 18 09:49:17 2023 SIZE C REV. DRAWING NO.
SCALE				PAGE 91 OF 102

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

BACKPLANE BASE CHANNEL 1

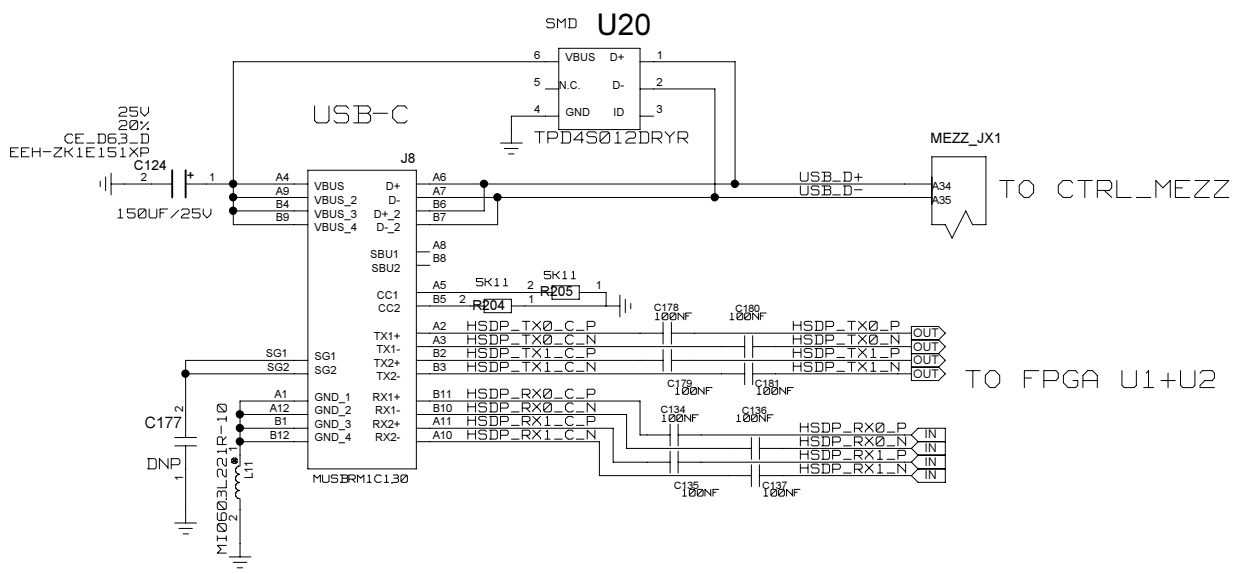


CHECKED	NAME	DATE	SIGN	DRAWING TITLE FFEX		
CHECKED	U.SCHAEFER					
CHECKED						
CHECKED						
DRAWN	BAUSS			B. BAUSS Fri Aug 18 09:49:26 2023		
BLOCK TITLE ipbus						
UNIVERSITY OF MAINZ				SIZE C	REV.	DRAWING NO.
				SCALE		PAGE 93 OF 102

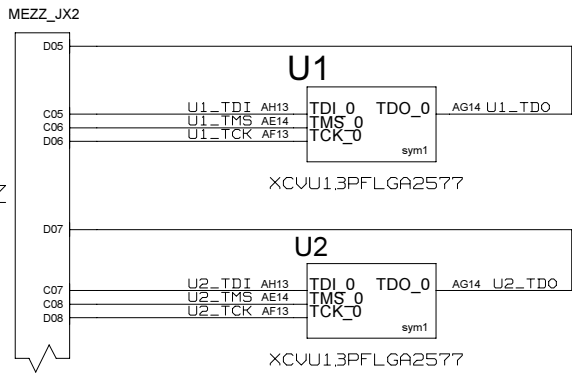
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

USB JTAG INPUT

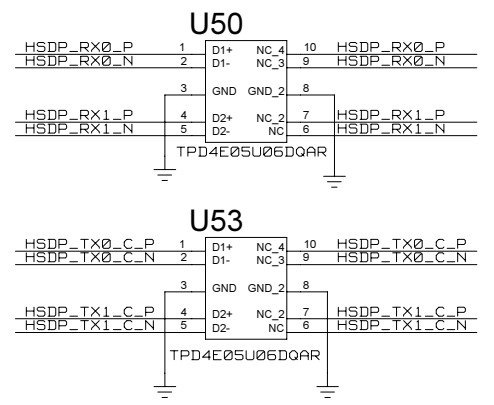
JTAG CHAIN



FROM CTRL_MEZZ



ESD PROTECTION

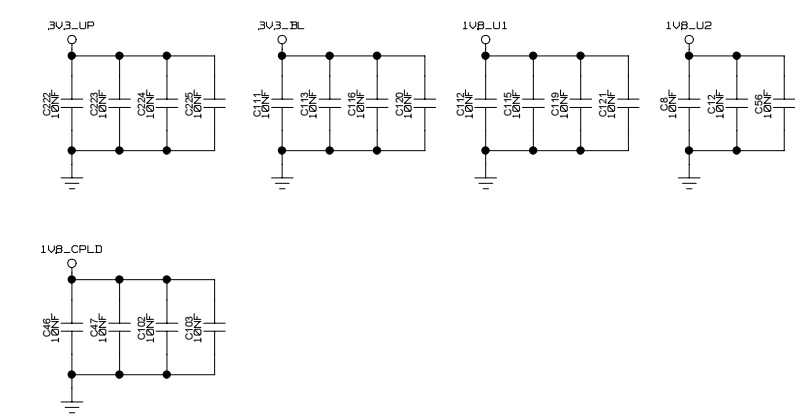
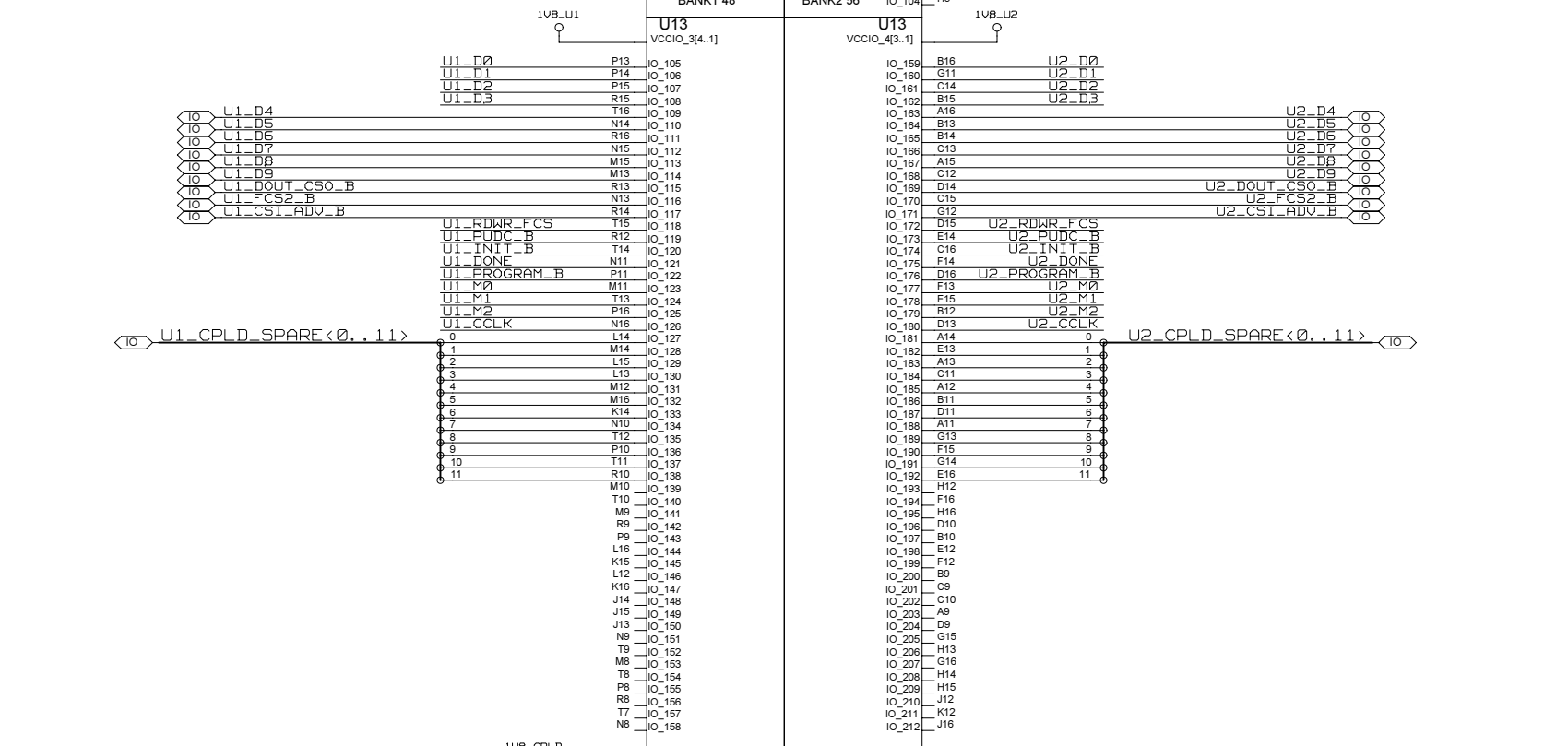
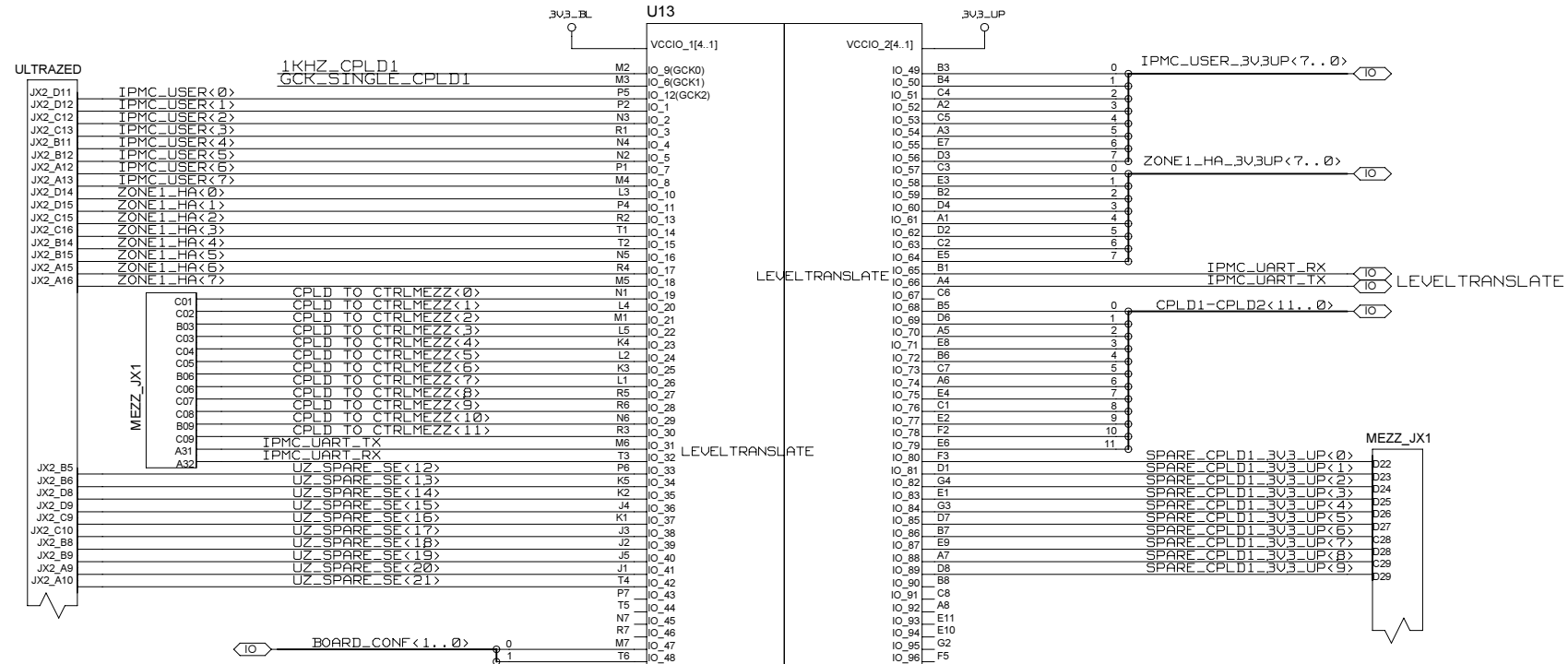
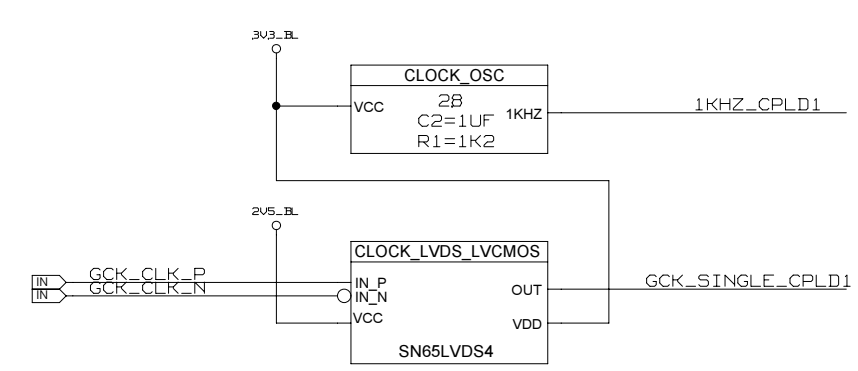


CHECKED	U.SCHAEFER			DRAWING TITLE
CHECKED				
CHECKED				
DRAWN	BAUSS	08.06.2017		
BLOCK TITLE				<h1>FFEX</h1> <p>B. BAUSS Fri Aug 18 09:49:25 2023</p>
UNIVERSITY OF MAINZ				
SIZE	REV.	DRAWING NO.		
SCALE				PAGE
				94 OF 102

FPGA CONFIG CPLD1

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE

CPLD CLOCK

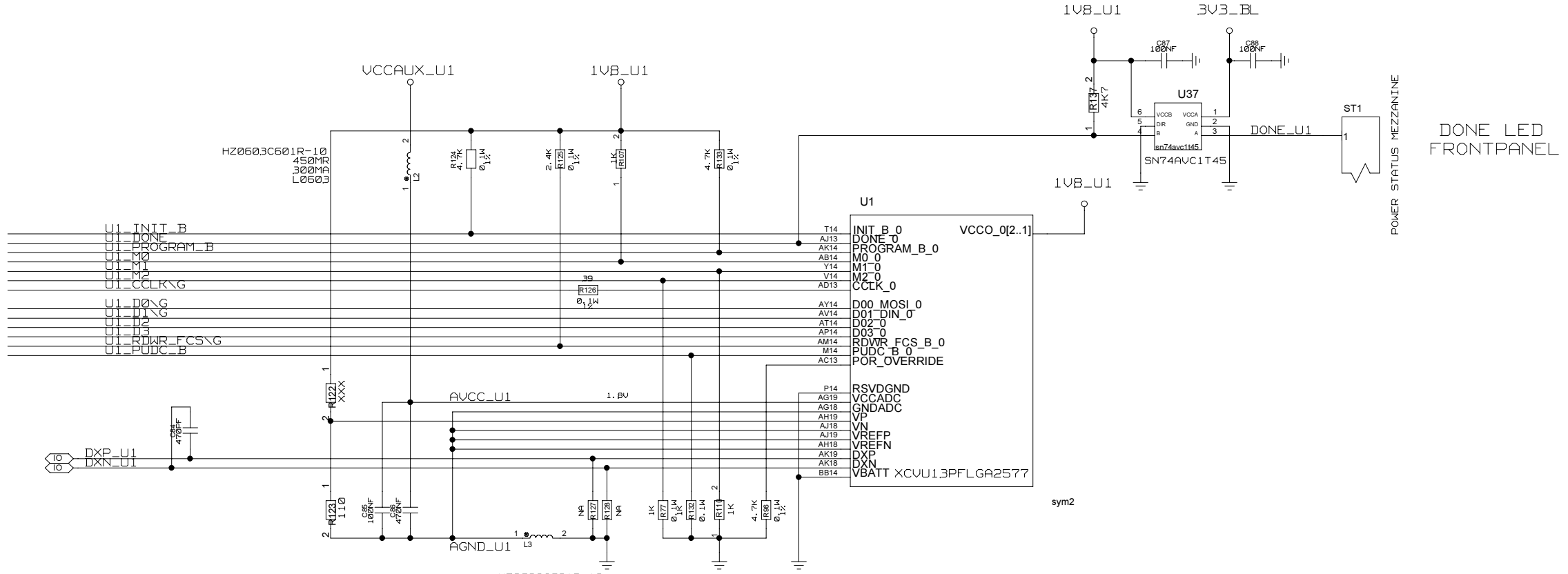


NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER		
CHECKED			
CHECKED			
DRAWN	BAUSS		
BLOCK TITLE			<h1>FFEX</h1> <p>B. BAUSS Fri Aug 18 09:49:26 2023</p>
UNIVERSITY OF MAINZ			
SIZE	REV.	DRAWING NO.	
SCALE			PAGE 95 OF 102

xc2c384-10ftg256

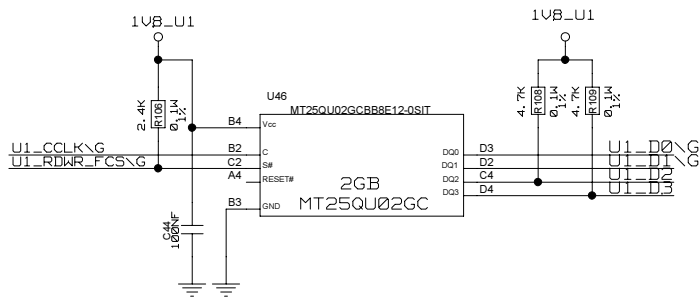
REVISIONS			
ZONE	LTR	DESCRIPTION	DATE

CONFIG U1



CCLK, D0-3 50 OHM IMPEDANCE

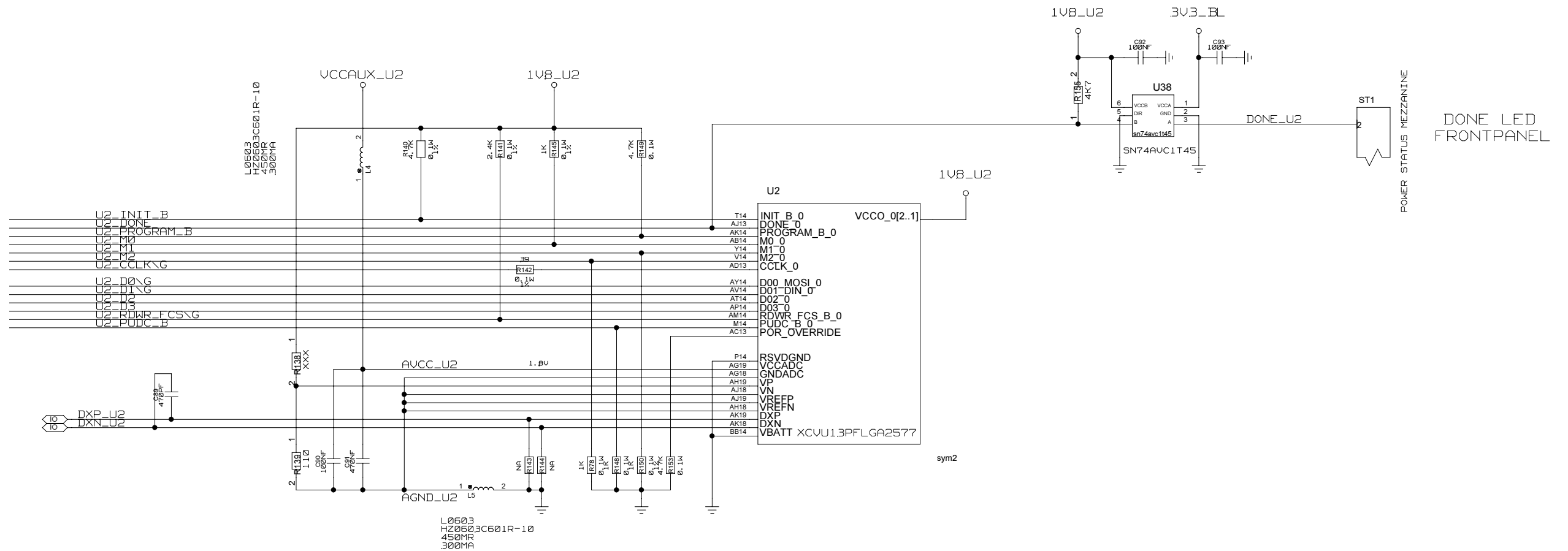
SPI NOR FLASH MEMORY AVOID STUBS



CHECKED	NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER			
CHECKED				
CHECKED				
DRAWN	BAUSS			FFEX
BLOCK TITLE				
config_processor_u1				B. BAUSS Fri Aug 18 09:49:26 2023
UNIVERSITY OF MAINZ			SIZE	DRAWING NO.
			C	REV.
			SCALE	PAGE
				96 OF 102

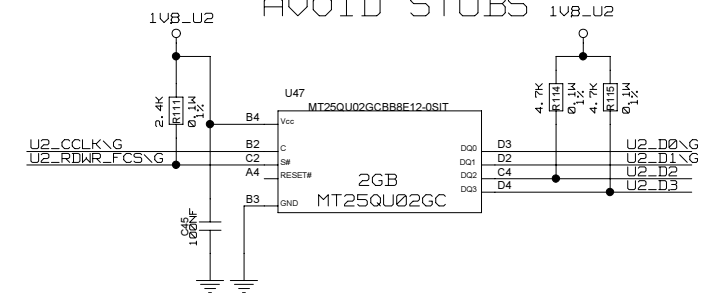
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

CONFIG U2



CCLK, D0-3 50 OHM IMPEDANCE

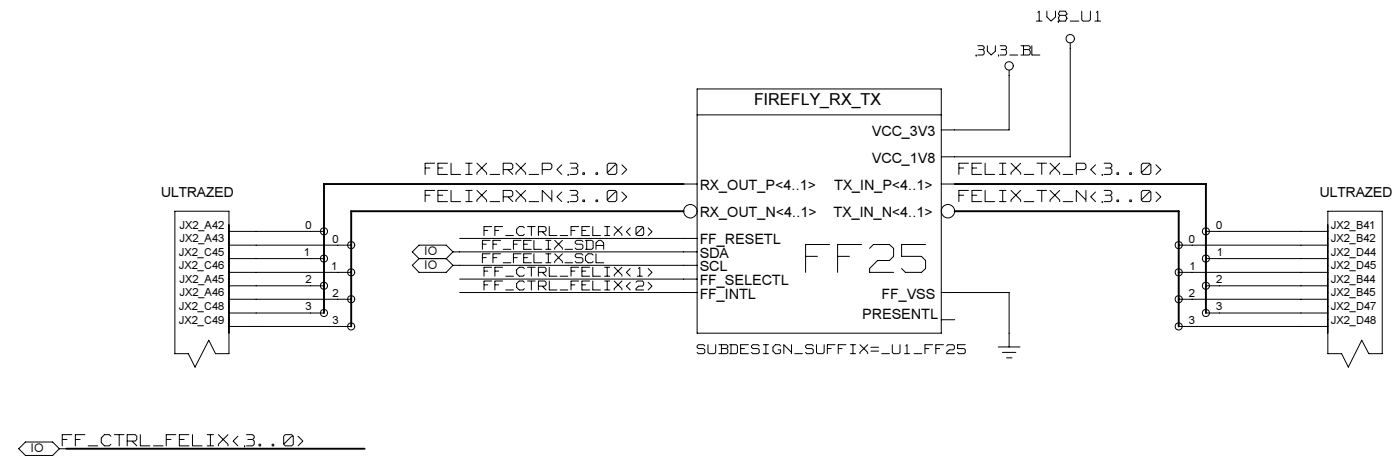
SPI NOR FLASH MEMORY AVOID STUBS



NAME	DATE	SIGN	DRAWING TITLE
CHECKED	U.SCHAEFER		
CHECKED			
CHECKED			
DRAWN	BAUSS		
BLOCK TITLE			FFEX B. BAUSS Fri Aug 18 09:49:27 2023
config_processor_u1			
UNIVERSITY OF MAINZ		SIZE C	DRAWING NO.
SCALE		REV.	PAGE 97 OF 102

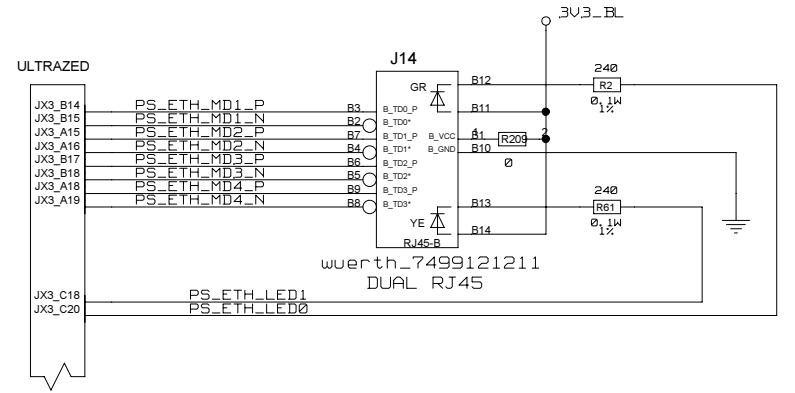
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

ULTRAZED_FELIX_FIREFLY

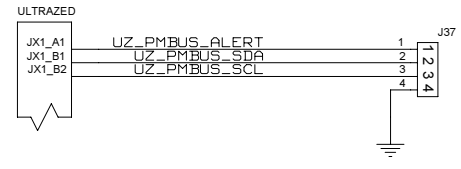


ULTRAZED TO MAINBOARD RJ45

ULTRAZED MAINBOARD



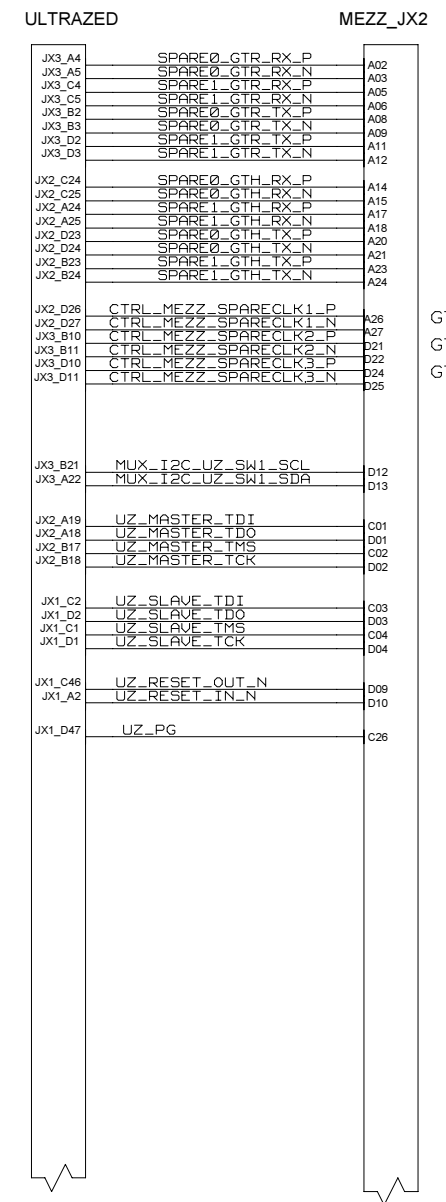
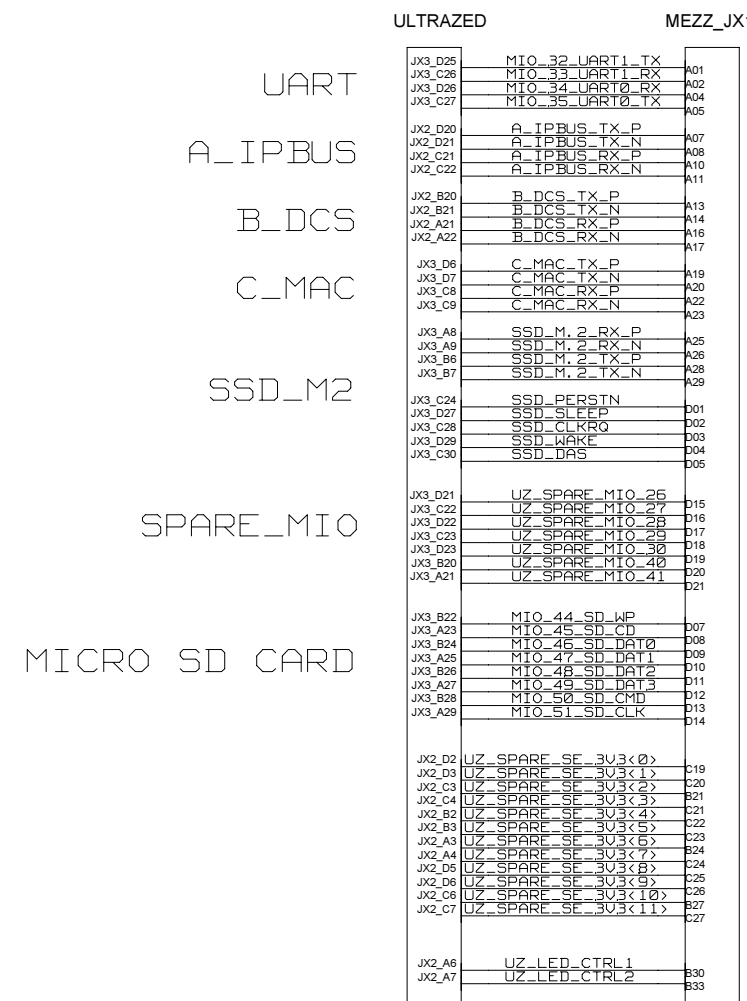
ULTRAZED PMBUS



	NAME	DATE	SIGN	DRAWING TITLE		
CHECKED	U.SCHAEFER					
CHECKED						
CHECKED						
DRAWN	BAUSS			<h1>FFEX</h1> <p>B. BAUSS Fri Aug 18 09:49:19 2023</p>		
BLOCK TITLE						
ultrazed				SIZE	REV.	DRAWING NO.
UNIVERSITY OF MAINZ				C		
				SCALE		PAGE
						100 OF 102

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPR.

ULTRAZED TO CTRL MEZZ CONNECTION



SPARE UZ GTR
 SPARE UZ GTH
 SPARE CLOCK
 MUX I2C
 MASTER_JTAG
 SLAVE_JTAG
 RESET
 PG_OUT

OUT UZ_PG

CHECKED	U.SCHAEFER	DATE	SIGN	DRAWING TITLE
CHECKED				
CHECKED				
DRAWN	BAUSS			
BLOCK TITLE				DRAWING NO.
ultrazed				
UNIVERSITY OF MAINZ				SIZE C
SCALE				REV.
PAGE 101 OF 102				DATE B. BAUSS Fri Aug 18 09:49:19 2023

FFEX