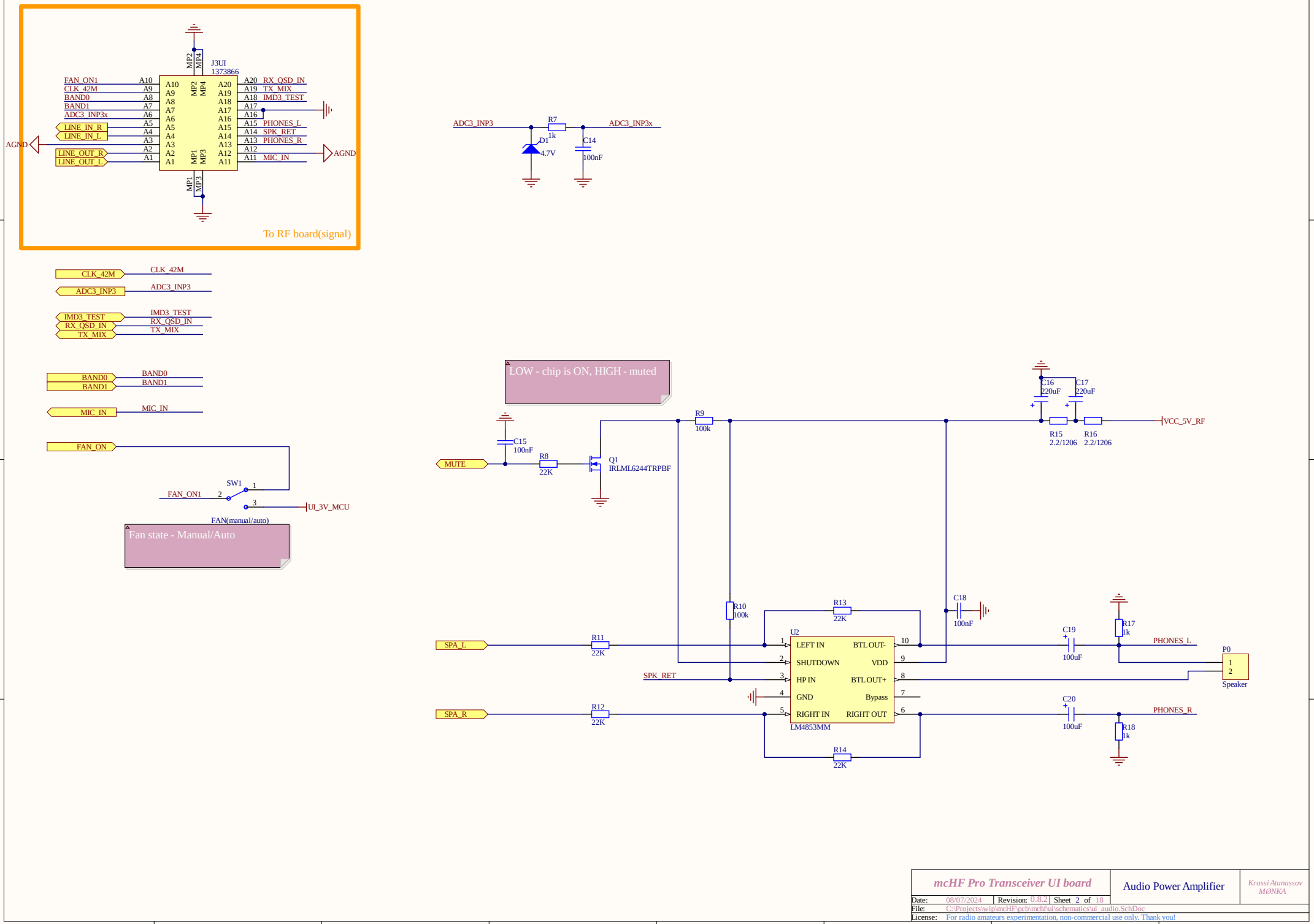
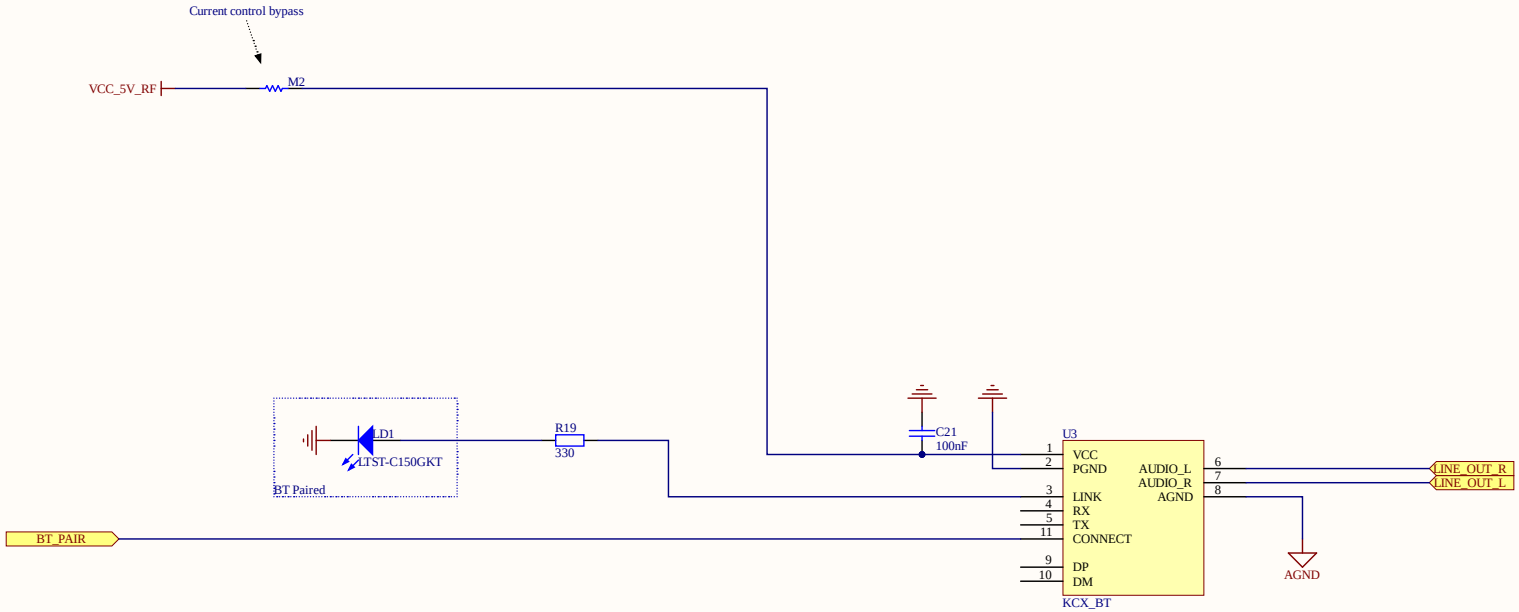


mcHF Pro Transceiver UI board	Audio Power Amplifier	Krassi Atanassov MØNKA
Date: 08/07/2024	Revision: 0.8.2	Sheet 2 of 18
File: C:\Projects\wip\mcHF\pcb\mchfui\schematics\ui_audio.SchDoc		
License: For radio amateurs experimentation, non-commercial use only. Thank you!		



mcHF Pro Transceiver UI board		LORA Baseband	*Krassi Atanassov MØNKA*
Date: 08/07/2024	Revision: 0.8.2	Sheet 12 of 18	
File: C:\Projects\wip\mcHF\pcb\mchfui\schematics\ui_bt_audio.SchDoc			
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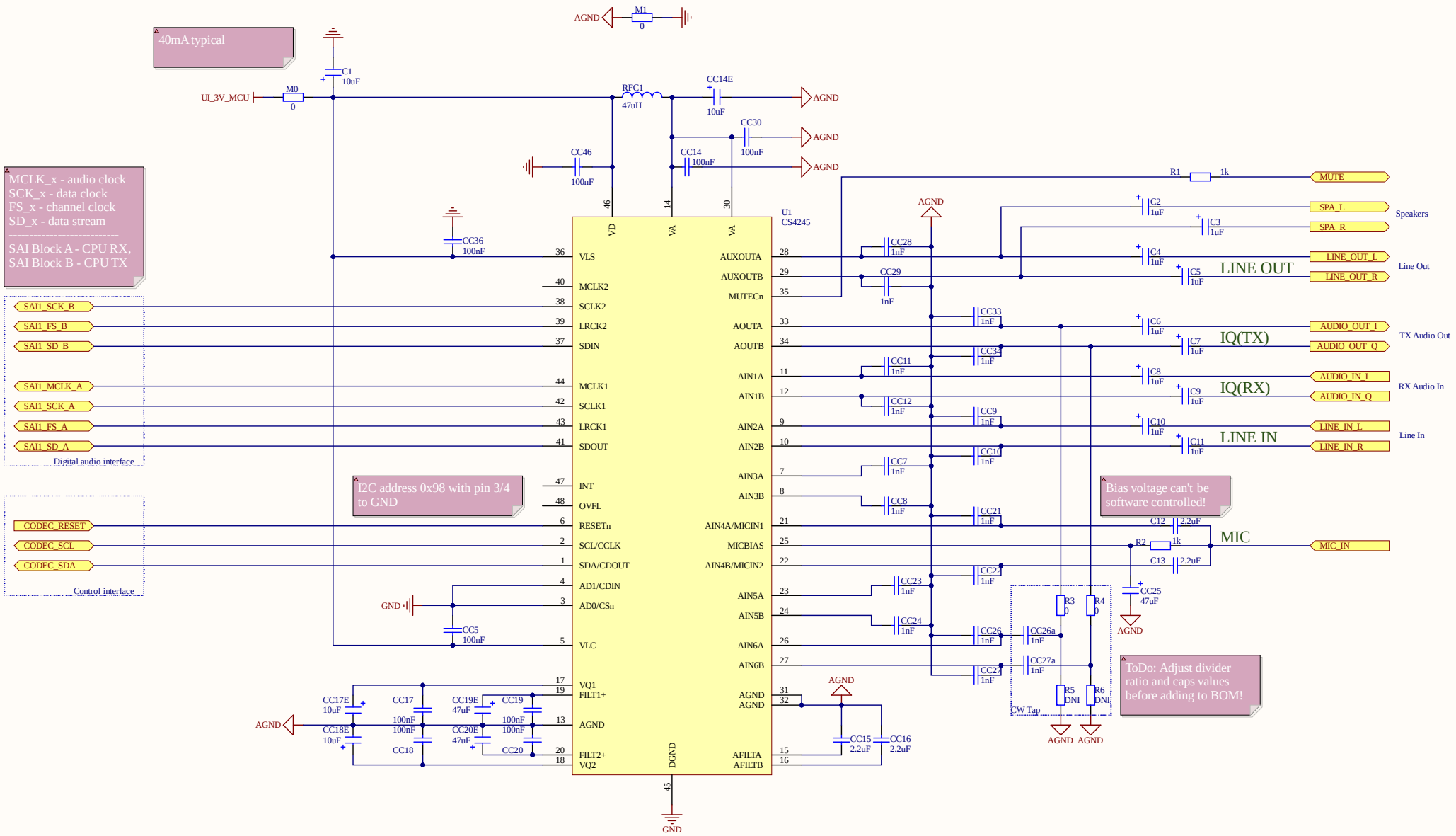
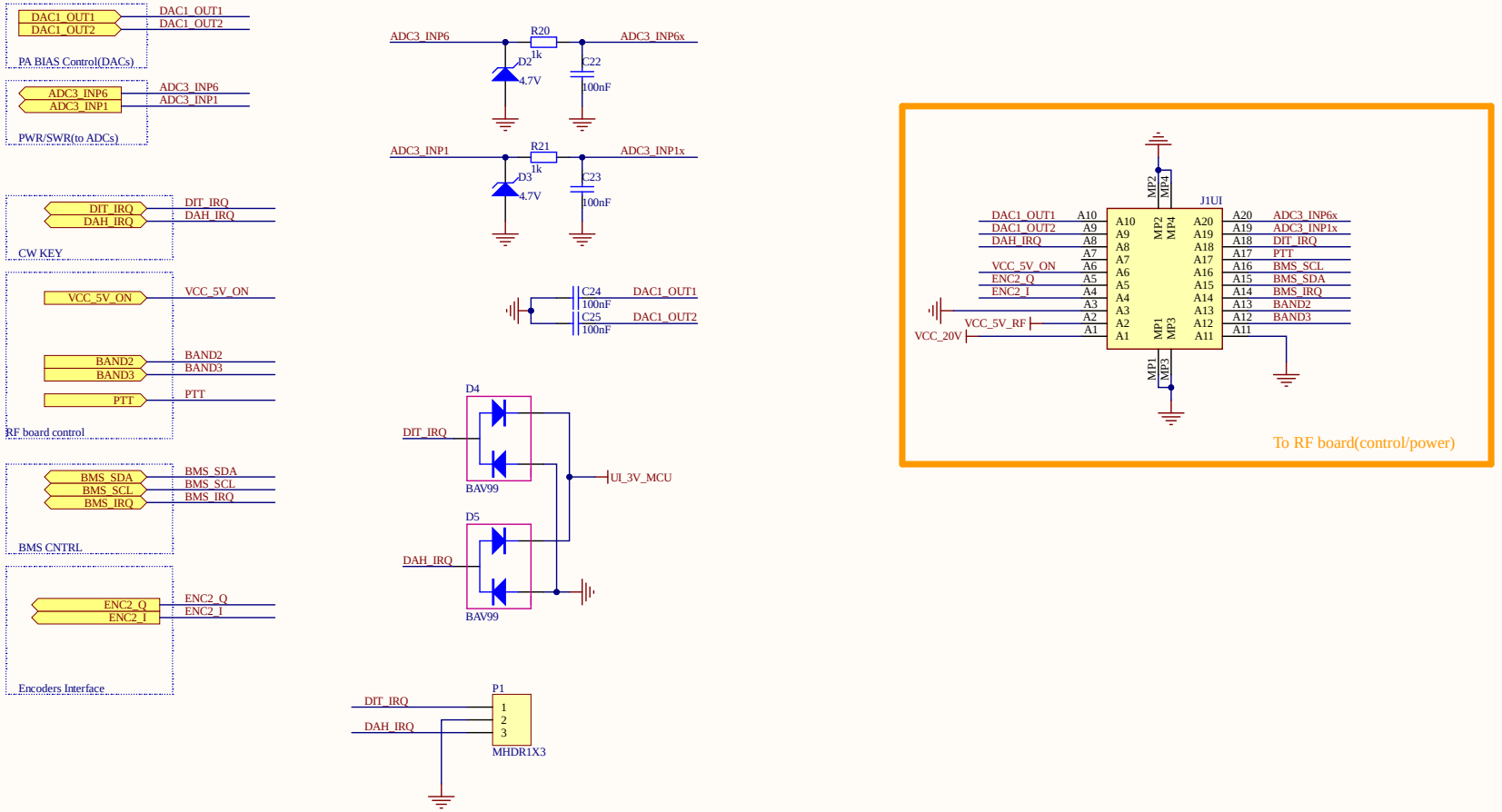
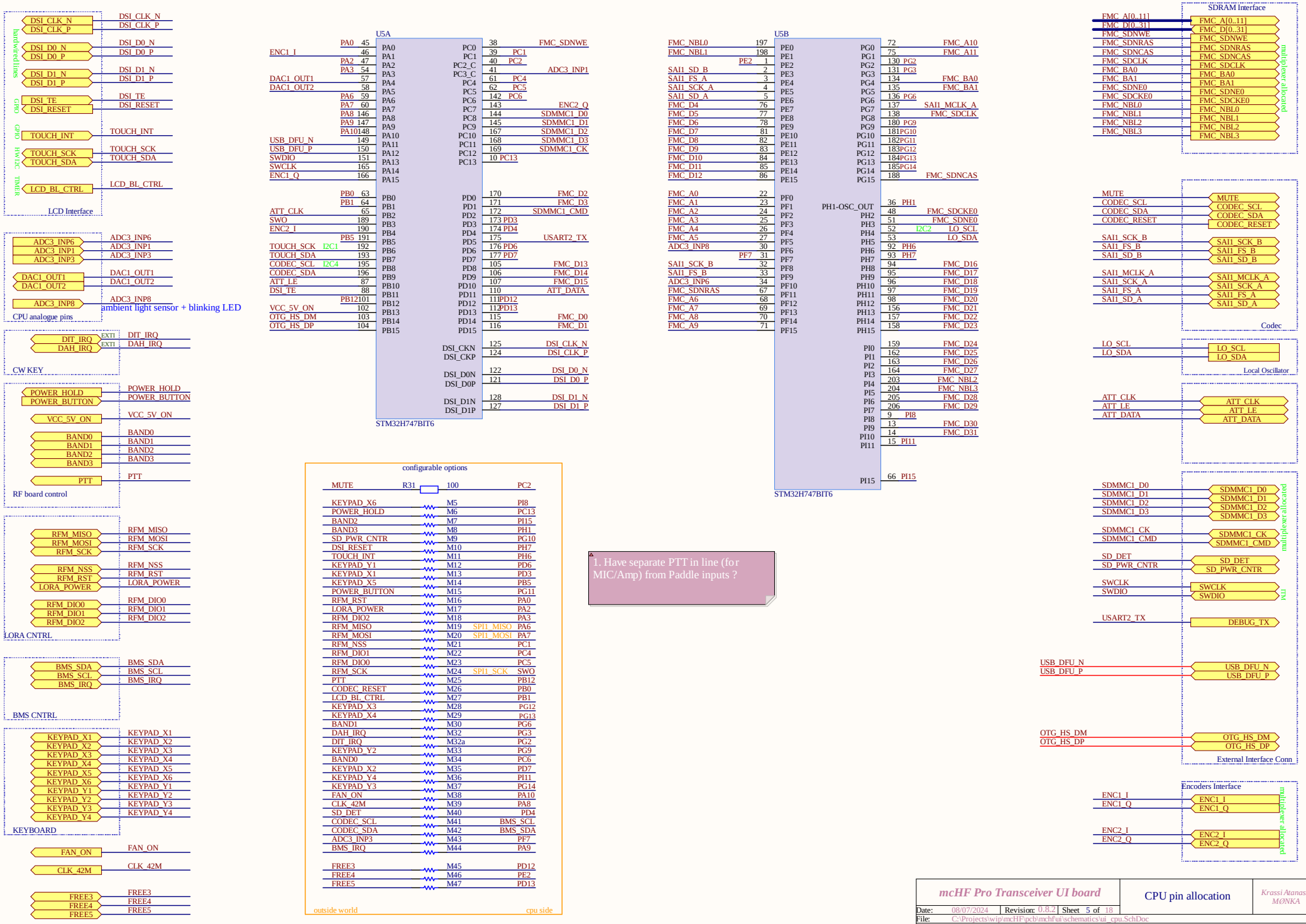
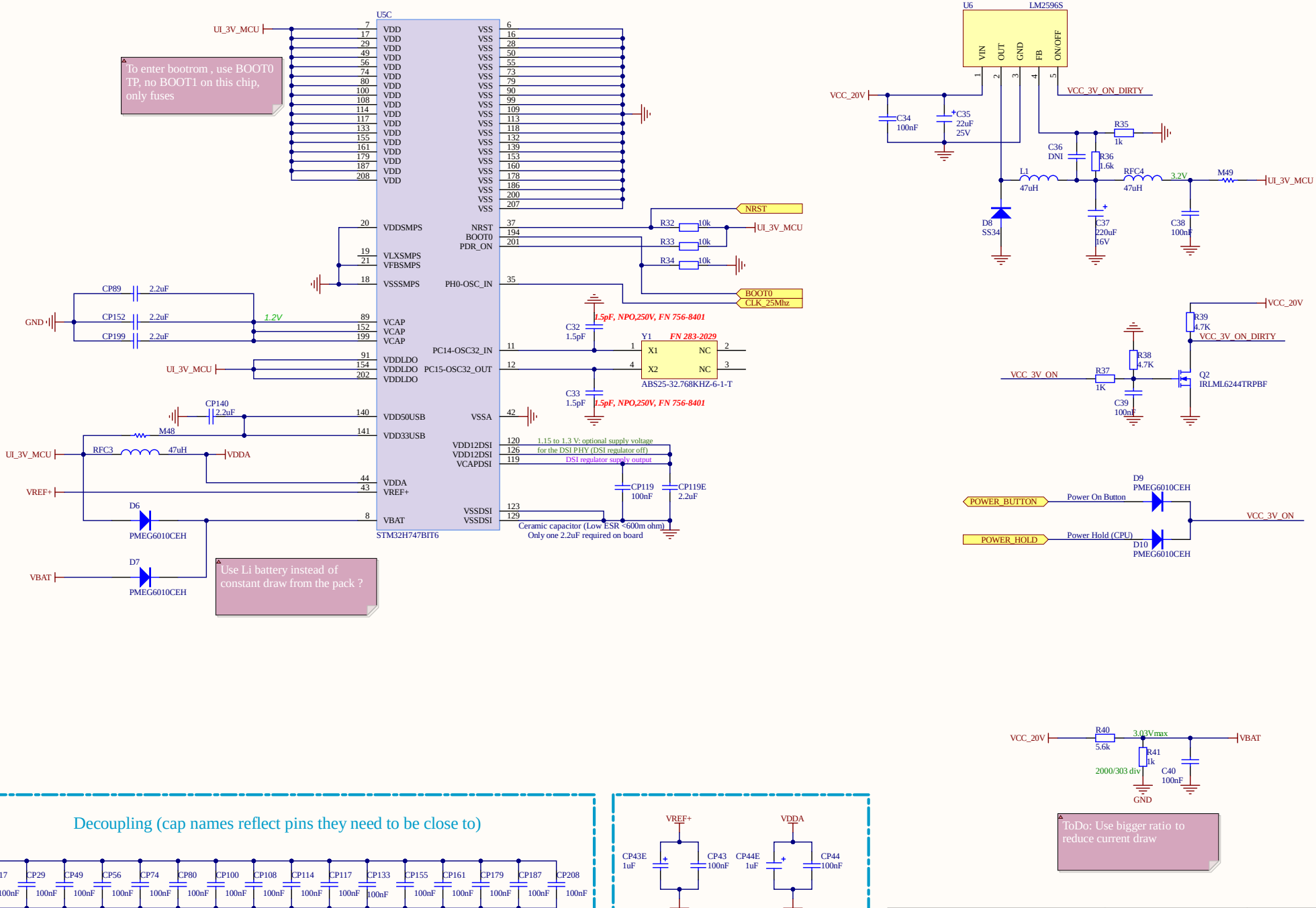

40mA typical
MCLK_x - audio clock
SCK_x - data clock
FS_x - channel clock
SD_x - data stream
SAI Block A - CPU RX,
SAI Block B - CPU TX
I2C address 0x98 with pin 3/4 to GND
Bias voltage can't be software controlled!
ToDo: Adjust divider ratio and caps values before adding to BOM!
U1
CS4245
Digital audio interface
Control interface
Speakers
Line Out
TX Audio Out
RX Audio In
Line In
LINE OUT
IQ(TX)
IQ(RX)
LINE IN
MIC
CW Tap
mcHF Pro Transceiver UI board
Audio Codec
Krassi Atanassov
MØNKA
Date: 08/07/2024
Revision: 0.8.2
Sheet 3 of 18
File: C:\Projects\wip\mcHF\pcb\mchfui\schematics\ui_codec.SchDoc
License: For radio amateurs experimentation, non-commercial use only. Thank you!

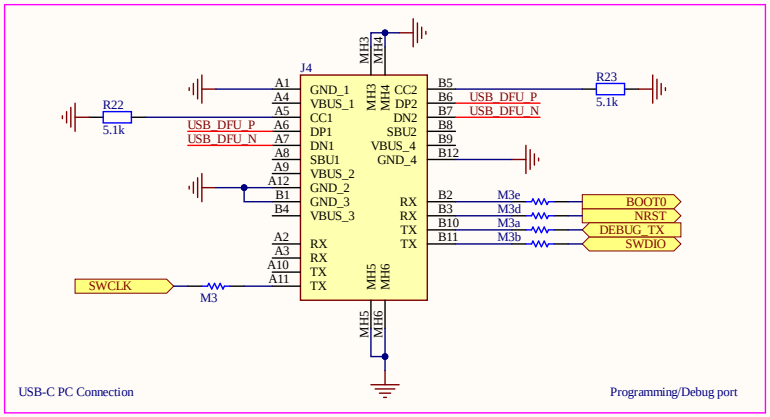


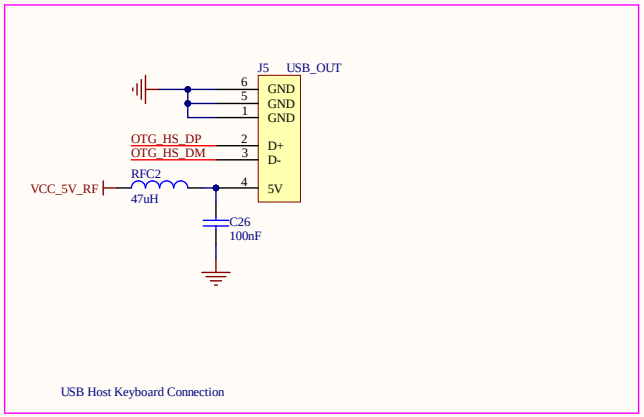
mcHF Pro Transceiver UI board		RF Board Interface	*Krassi Atanassov MØNKA*
Date: 08/07/2024	Revision: 0.8.2	Sheet 4 of 18	
File: C:\Projects\wip\mcHF\pcb\mchfui\schematics\ui_conn.SchDoc			
License: For radio amateurs experimentation, non-commercial use only. Thank you!			

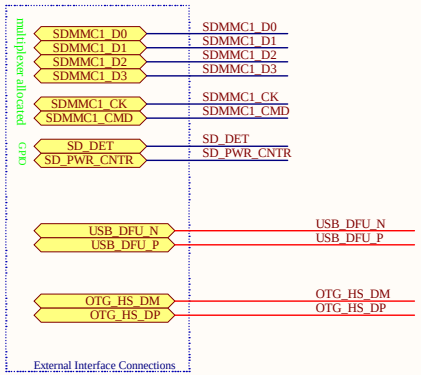

U5A
STM32H747BIT6
U5B
STM32H747BIT6
LCD Interface
CPU analogue pins
ambient light sensor + blinking LED
CW KEY
RF board control
LORA CNTRL
BMS CNTRL
KEYBOARD
configurable options
outside world
cpu side
1. Have separate PTT in line (for MIC/Amp) from Paddle inputs ?
SDRAM Interface
Codec
Local Oscillator
External Interface Conn
Encoders Interface
mcHF Pro Transceiver UI board
CPU pin allocation
Krassi Atanassov
MØNKA
Date: 08/07/2024
Revision: 0.8.2
Sheet 5 of 18
File: C:\Projects\wip\mcHP\pcb\mchfui\schematics\ui_cpu.SchDoc
License: For radio amateurs experimentation, non-commercial use only. Thank you!

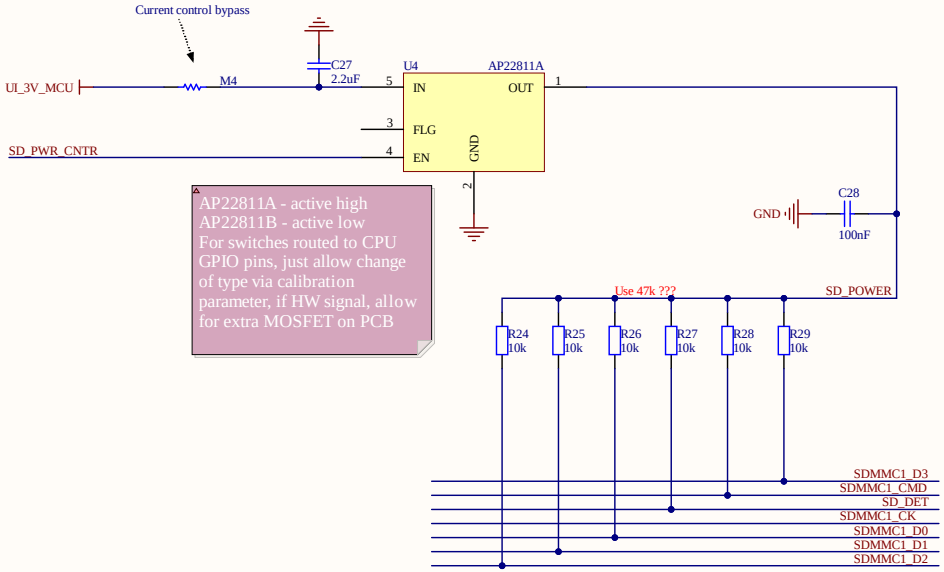


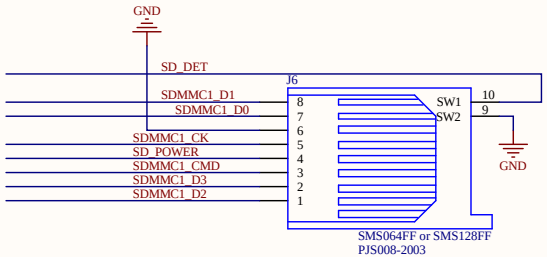
mcHF Pro Transceiver UI board	CPU power and clock	Krassi Atanassov MØNKA
Date: 08/07/2024	Revision: 0.8.2	Sheet 9 of 18
File: C:\Projects\wip\mcHP\pcb\mchfui\schematics\ui_cpu_power.SchDoc		
License: For radio amateurs experimentation, non-commercial use only. Thank you!		



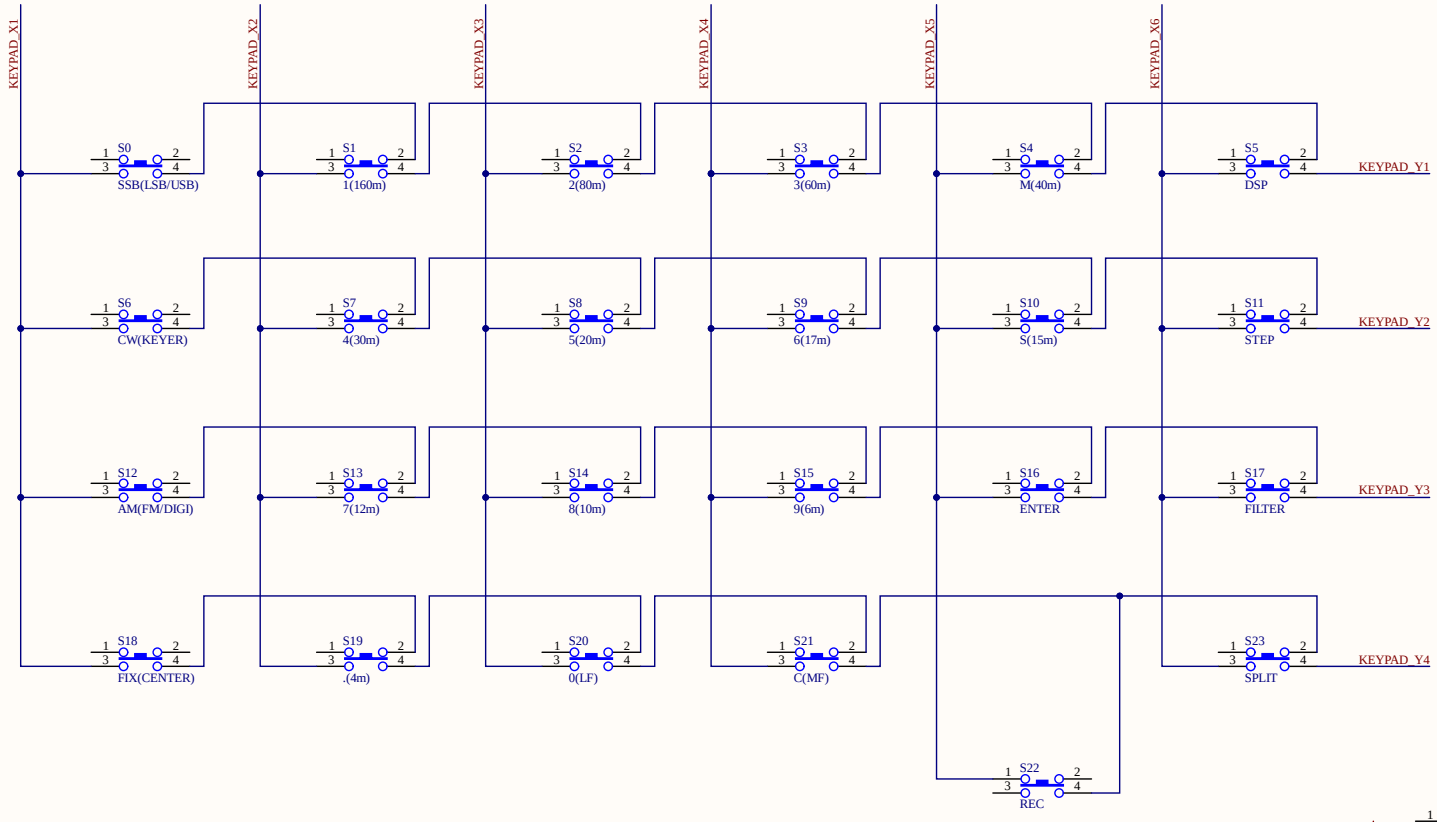


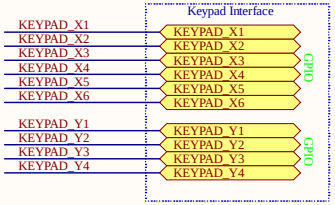


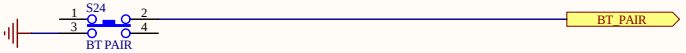


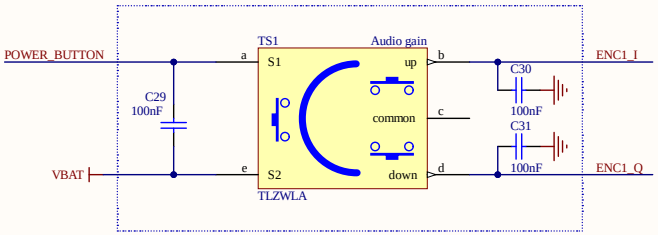


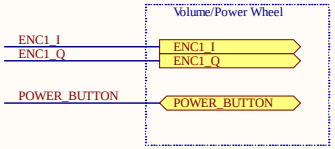
mcHF Pro Transceiver UI board	Debug and SD card	*Krassi Atanassov MØNKA*
Date: 08/07/2024	Revision: 0.8.2	Sheet 7 of 18
File: C:\Projects\wip\mcHF\pcb\mchfui\schematics\ui_ext_conn.SchDoc		
License: For radio amateurs experimentation, non-commercial use only. Thank you!		

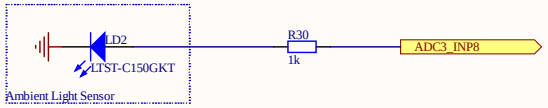












mcHF Pro Transceiver UI board		Front panel user controls	*Krassi Atanassov MØNKA*
Date: 08/07/2024	Revision: 0.8.2	Sheet 6 of 18	
File: C:\Projects\wip\mcHF\pcb\mchfui\schematics\ui_front.SchDoc			
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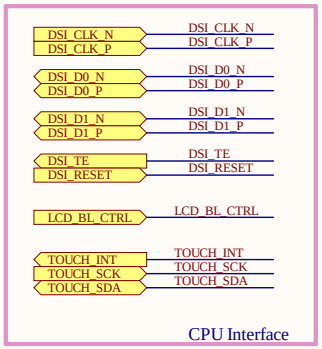

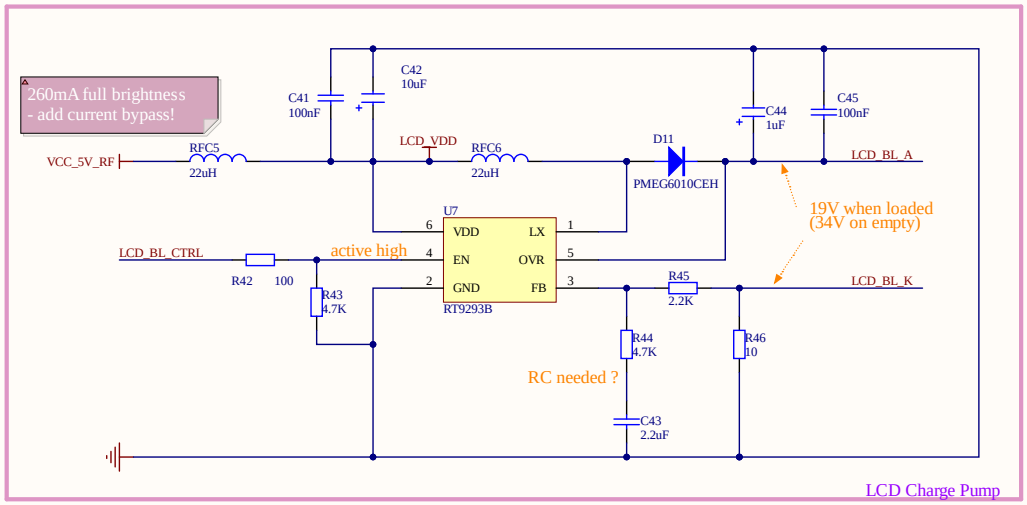

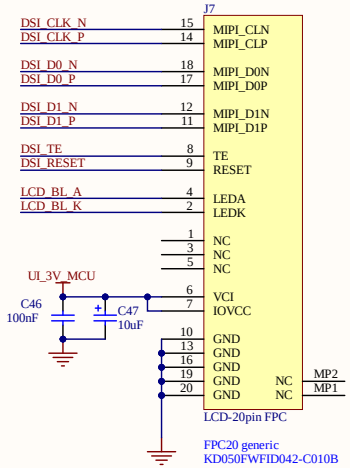

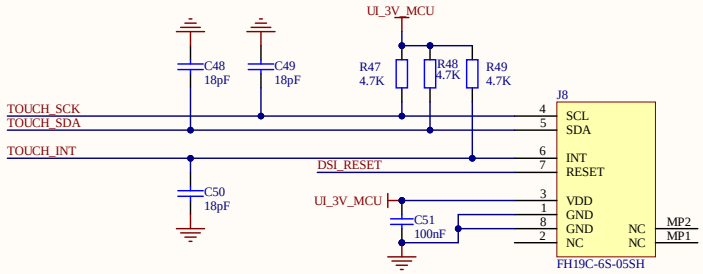

mcHF Pro Transceiver UI board	LCD Interface	*Krassi Atanassov MØNKA*
Date: 08/07/2024	Revision: 0.8.2	Sheet 10 of 18
File: C:\Projects\wip\mcHP\pcb\mchfui\schematics\ui_lcd.SchDoc		
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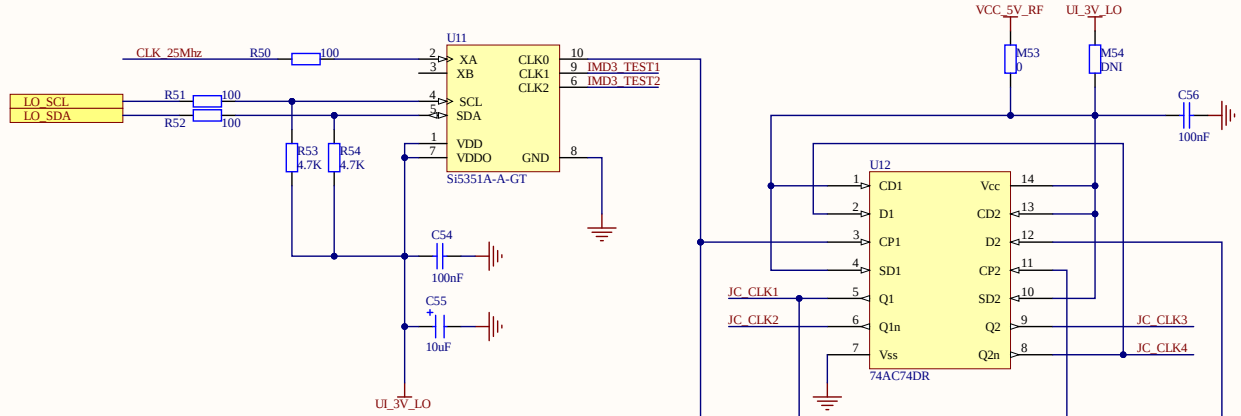
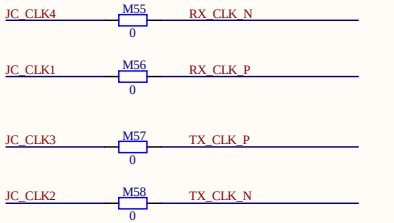


Q1	Q1N	Q2	Q2N
1	0	0	1
1	0	1	0
0	1	1	0
0	1	0	1

Johnson counter states

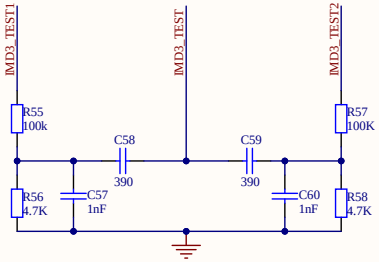


S1	S0
1	1
1	0
0	0
0	1

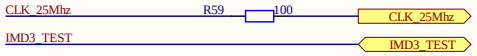
RX clock

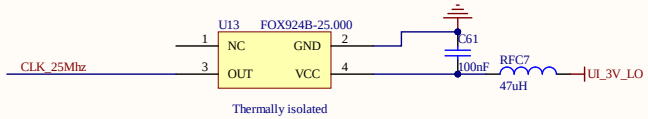
S1	S0
0	0
0	1
1	1
1	0

TX clock

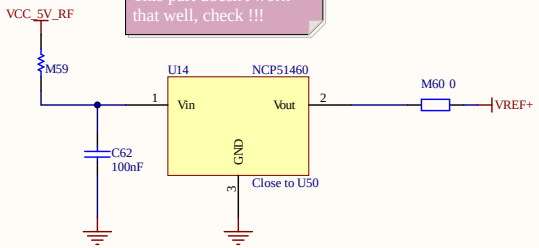


1. Do we need proper balanced mixer ?
2. Calculate ratios and caps!

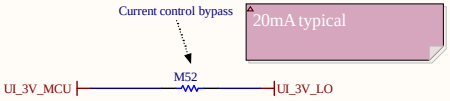




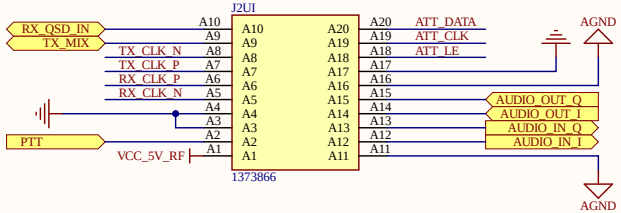
Thermally isolated



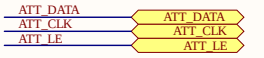
This part doesn't work that well, check !!!



20mA typical



To MIX board(clocks/rf)



ToDo: Connect to CPU!

mcHF Pro Transceiver UI board	Local Oscillator	*Krassi Atanassov MØNKA*
Date: 08/07/2024	Revision: 0.8.2	Sheet 11 of 18
File: C:\Projects\wip\mcHF\pcb\mchfui\schematics\ui_lo.SchDoc		
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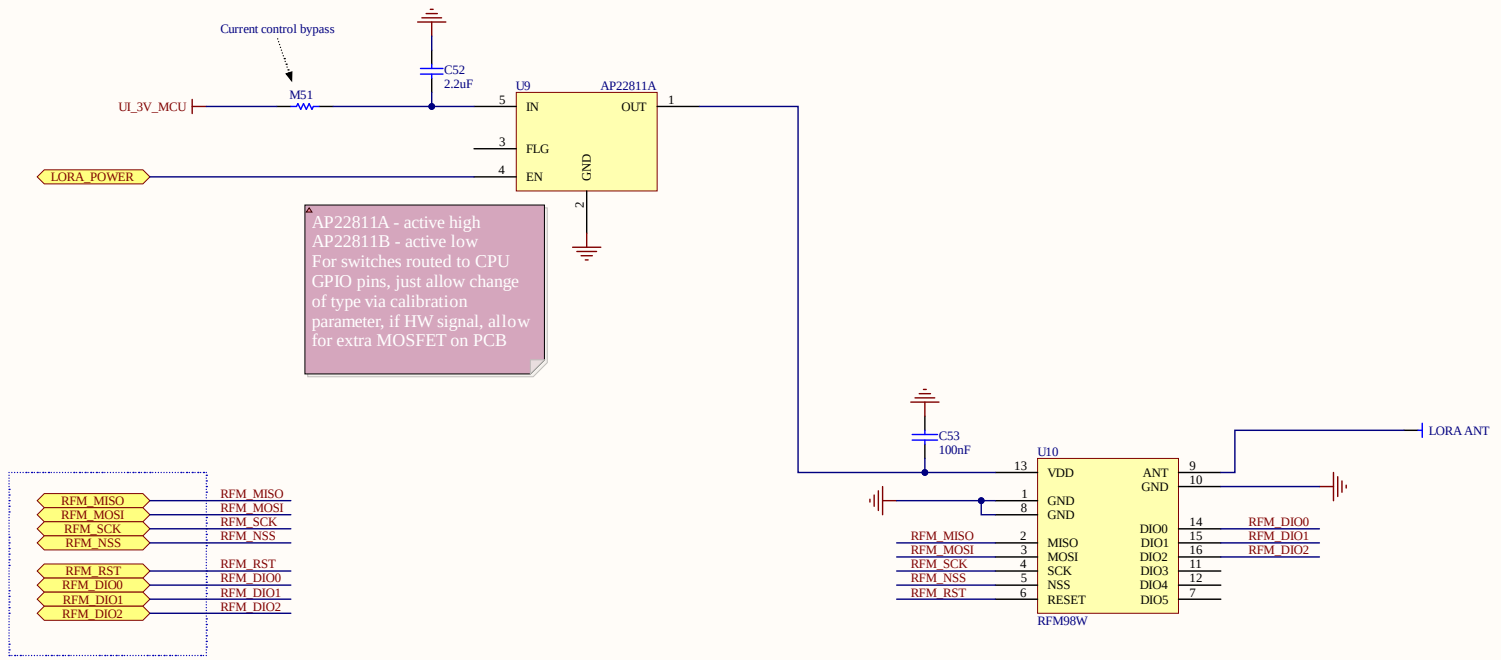

mcHF Pro Transceiver UI board	LORA Baseband	*Krassi Atanassov MØNKA*
Date: 08/07/2024	Revision: 0.8.2	Sheet 12 of 18
File: C:\Projects\wip\mcHP\pcb\mchfui\schematics\ui_lora.SchDoc		
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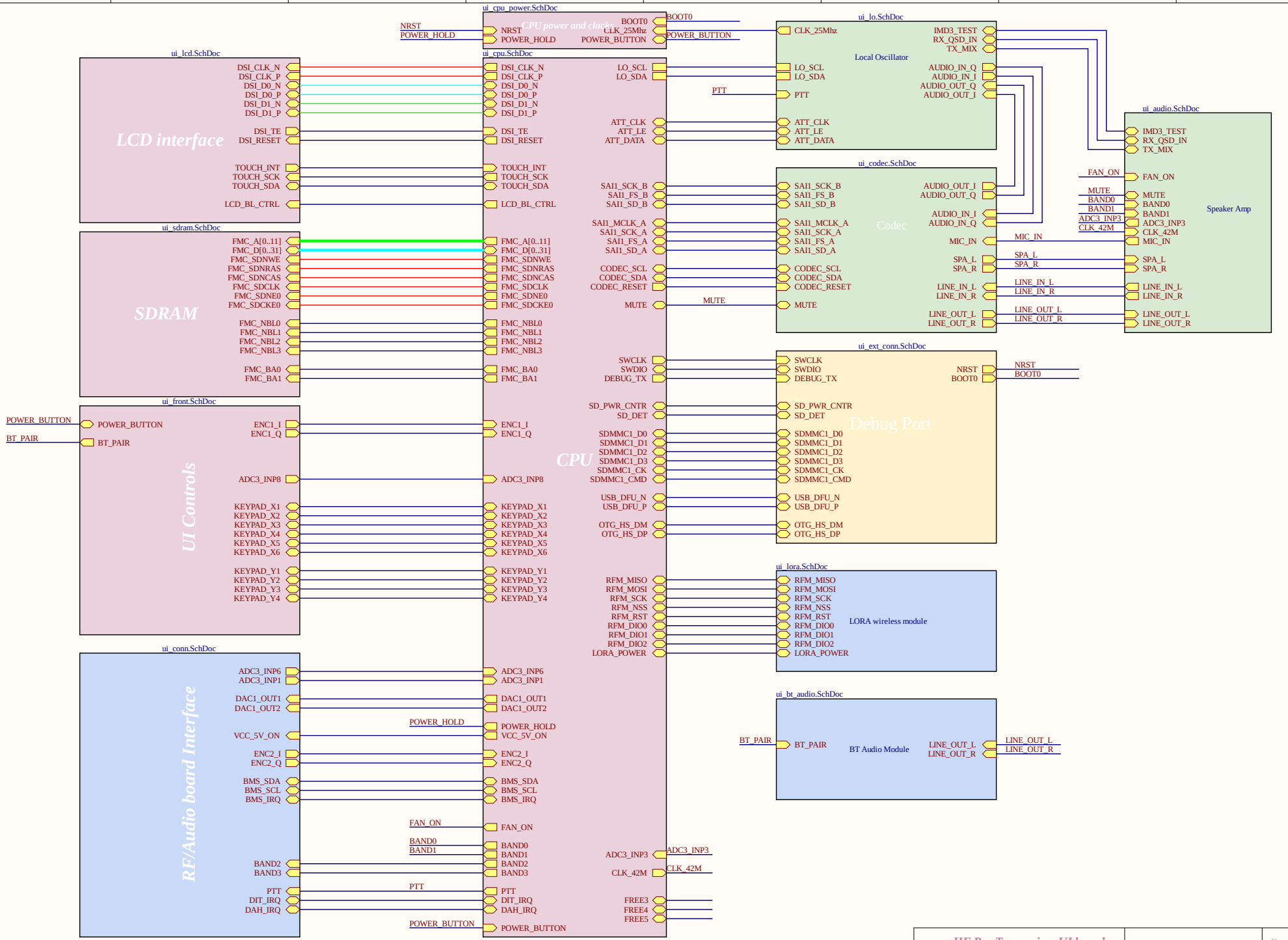

mcHF Pro Transceiver UI board	Block diagram	Krassi Atanassov MØNKA
Date: 08/07/2024	Revision: 0.8.2	Sheet 1 of 18
File: C:\Projects\wip\mcHF\pcb\mchfui\schematics\ui_main.SchDoc		
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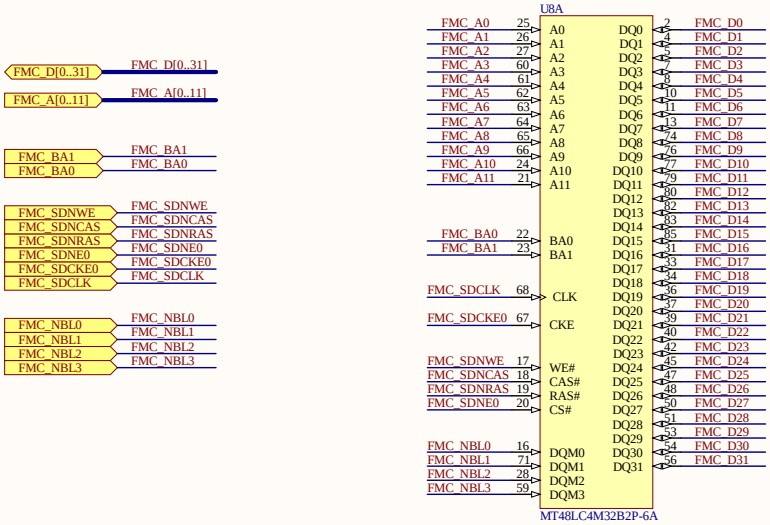
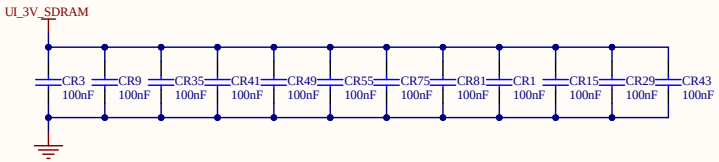
Note: SDRAM runs on 100Mhz max clock, limited by FMC controller



Decoupling (cap names reflect pins they need to be close to)



mcHF Pro Transceiver UI board	SDRAM	*Krassi Atanassov MØNKA*
Date: 08/07/2024	Revision: 0.8.2	Sheet 14 of 18
File: C:\Projects\wip\mcHP\pcb\mchfui\schematics\ui_sdram.SchDoc		
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