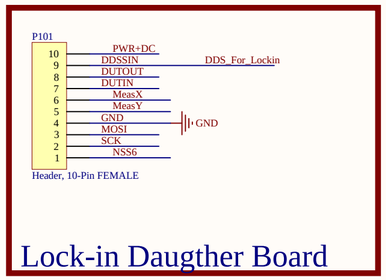

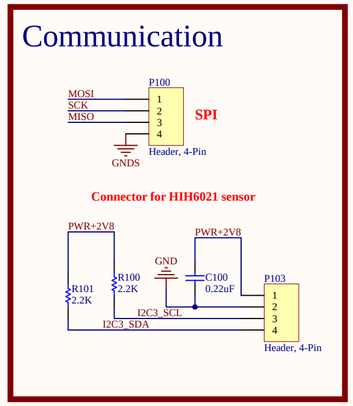

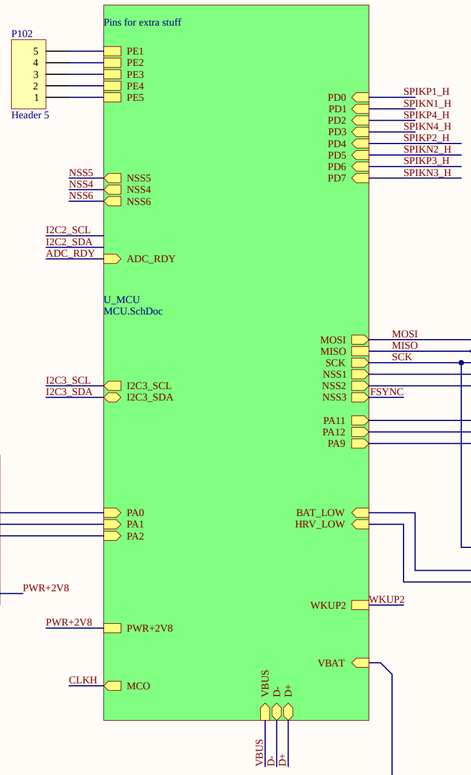

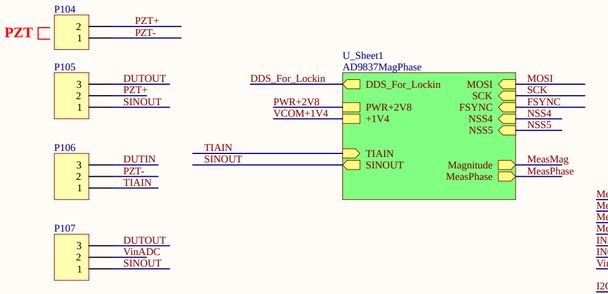

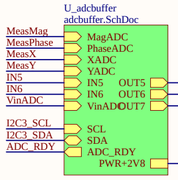

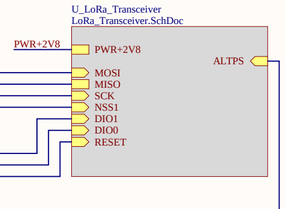

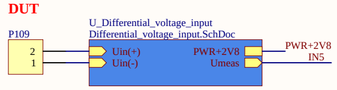

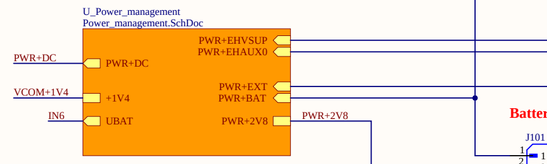

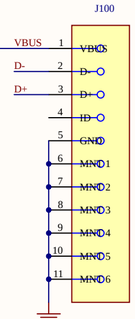

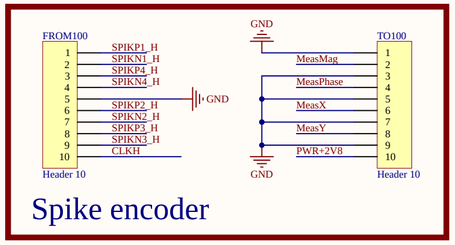

Main functionalities:

1. Lock in detection
2. Mag/Phase detection
3. Power through energy harvesting
4. LoRa communication
5. Spike encoding daugther board

Battery:
https://dk.rs-online.com/web/p/genopladelige-batterier-i-specialstoerrelser/1251266

Title		
Size: A2	Number	Revision
Date: 3/17/2025	Sheet of	
File: C:\Users\..\CorrosenseBoard_V4.2.SchDoc	Drawn By:	

All the 10ohm resistors are not needed

GNDS
C201
4.3pF
PC14
Y200
ABS07-166-32.768KHZ-T
PC15
C204
4.3pF
GNDS

GNDS
C202
4.3pF
PH0
Y201
ABM3-8.000MHZ-D2Y-T
PH1
C203
4.3pF
GNDS

GNDS
C200
100nF
NRST

U200A
1 of 3
STM32L451VCT6

		NRST	14		
CorrosenseBoard_V4.2[3C]	PA0	PA0	23		
CorrosenseBoard_V4.2[3C]	PA1	PA1	24		
CorrosenseBoard_V4.2[3C]	PA2	PA2	25		
		PA3	26		
GNDS		PA4	29		
		PA5	30		
		PA6	31		
CorrosenseBoard_V4.2[3B]	I2C3_SCL	PA7	32		
CorrosenseBoard_V4.2[3C]	MCO	PA8	67	MCO	
CorrosenseBoard_V4.2[4B]	PA9	PA9	68		
CorrosenseBoard_V4.2[4B], LoRa_Transceiver[2C]	NSS1	PA10	69		
CorrosenseBoard_V4.2[4B]	PA11	PA11	70		
CorrosenseBoard_V4.2[4B]	PA12	PA12	71		
SWDIO		PA13	72		
SWCLK		PA14	76		
GNDS		PA15	77		
CorrosenseBoard_V4.2[4B]	PD0	PD0	81	SPIKP1_H	
CorrosenseBoard_V4.2[4B]	PD1	PD1	82	SPIKN1_H	
CorrosenseBoard_V4.2[4B]	PD2	PD2	83	SPIKP2_H	
CorrosenseBoard_V4.2[4B]	PD3	PD3	84	SPIKN2_H	
CorrosenseBoard_V4.2[4B]	PD4	PD4	85	SPIKP3_H	
CorrosenseBoard_V4.2[4B]	PD5	PD5	86	SPIKN3_H	
CorrosenseBoard_V4.2[4B]	PD6	PD6	87	SPIKP4_H	
CorrosenseBoard_V4.2[4B]	PD7	PD7	88	SPIKN4_H	
GNDS		PD8	55		
		PD9	56		
GNDS		PD10	57		
		PD11	58		
		PD12	59		
		PD13	60		
CorrosenseBoard_V4.2[3B], AD9837MagPhase[7B]	NSS5	PD14	61		
CorrosenseBoard_V4.2[3B], AD9837MagPhase[7B]	NSS4	PD15	62		
		PC15-OSC32_OUT	9	PC15	
		PH1-OSC_OUT	13	PH1	
GNDS		PB0	35		
		PB1	36		
		PB2	37		
HRV_LOW	CorrosenseBoard_V4.2[4C], EM8500[5C]	PB3	89		
I2C3_SDA	CorrosenseBoard_V4.2[3B]	PB4	90		
GNDS		PB5	91		
USART1_TX		PB6	92		
USART1_RX		PB7	93		
NSS2	CorrosenseBoard_V4.2[4B], EM8500[3C]	PB8	95		
BAT_LOW	CorrosenseBoard_V4.2[4C], EM8500[5C]	PB9	96		
GNDS		PB10	47		
NSS6	CorrosenseBoard_V4.2[3B]	PB11	48		
NSS3	CorrosenseBoard_V4.2[4B]	PB12	51		
SCK	CorrosenseBoard_V4.2[4B], AD9837MagPhase[7B], EM8500[3C], LoRa_Transceiver[2C]	PB13	52		
MISO	CorrosenseBoard_V4.2[4B], EM8500[3C], LoRa_Transceiver[2C]	PB14	53		
MOSI	CorrosenseBoard_V4.2[4B], AD9837MagPhase[7B], EM8500[3C], LoRa_Transceiver[2C]	PB15	54		
		PC0	15	CPRST	
		PC1	16	STATUSLED	
		PC2	17		
		PC3	18		
		PC4	33		
		PC5	34		
		PC6	63		
		PC7	64		
GNDS		PC8	65		
		PC9	66		
		PC10	78		
		PC11	79		
		PC12	80		
		PC13	7	R201 10 WKUP2	CorrosenseBoard_V4.2[4C]
		PC14-OSC32_IN	8	PC14	

R200
150
LED200
2
1
150080RS75000
GNDS

C205
100nF
GNDS

VBUS
GNDS
C206
100nF
C207
1uF
GNDS

GNDS
U201
CP2102-GMR

		DCD	1	EPAD	29
		RI	2	DTR	28
		GND	3	DSR	27
CorrosenseBoard_V4.2[4C]	D+	D+	4	TXD	26 USART1_RX
CorrosenseBoard_V4.2[4C]	D-	D-	5	RXD	25 USART1_TX
				RTS	24
				CTS	23
				NC	22
				NC	21
				NC	20
				NC	19
				NC/VPP	18
				NC	17
				NC	16
				NC	15
CorrosenseBoard_V4.2[4C]	VBUS	VBUS	8		
		*RST	9		
CPRST		NC	10		
		*SUSPEND	11		
		SUSPEND	12		
		NC	13		
		NC	14		

C208
4.7uF
C209
100nF
C210
100nF
C211
100nF
C212
100nF
C213
100nF
C214
100nF
GNDS

VBAT Keeps RTC alive
U200C
3 of 3
STM32L451VCT6

CorrosenseBoard_V4.2[4C]	VBAT	VBAT	6
		VDD	11
		VDD	28
MCU+2V8		VDD	50
		VDD	73
		VDD	75
		VDD	100
		VDDA	22
GND		VREF-	20
MCU+2V8		VREF+	21
		VSS	10
		VSS	27
		VSS	49
		VSS	74
GNDS		VSS	99
		VSSA	19

C215
100nF
C216
1uF
C217
1uF
C218
10nF
GND
GND

Programmer
P200

SWCLK	1
SWDIO	2
NRST	3
	4

GNDS

BOOT
P201

3	MCU+2V8
2	
1	

GNDS

U200B
2 of 3
STM32L451VCT6

MCU+2V8	PH0	PH0-OSC_IN	12
		PH3-BOOT0	94
		PE0	97 GNDS
	PE1	PE1	98 CorrosenseBoard_V4.2[3B]
	PE2	PE2	1 CorrosenseBoard_V4.2[3B]
	PE3	PE3	2 CorrosenseBoard_V4.2[3B]
	PE4	PE4	3 CorrosenseBoard_V4.2[3B]
	PE5	PE5	4 CorrosenseBoard_V4.2[3B]
		PE6	37
		PE7	38
		PE8	39
		PE9	40
GNDS		PE10	41
		PE11	42
		PE12	43
		PE13	44
		PE14	45
ADC_RDY	CorrosenseBoard_V4.2[3B], adcbuffer[3C]	PE15	46

CorrosenseBoard_V4.2[3C], AD9837MagPhase[7C], adcbuffer[3A], Differential_voltage_input[2B], LoRa_Transceiver[2B], Power_management[3C] PWR+2V8
FB200
BLM21AG121SN1D
MCU+2V8

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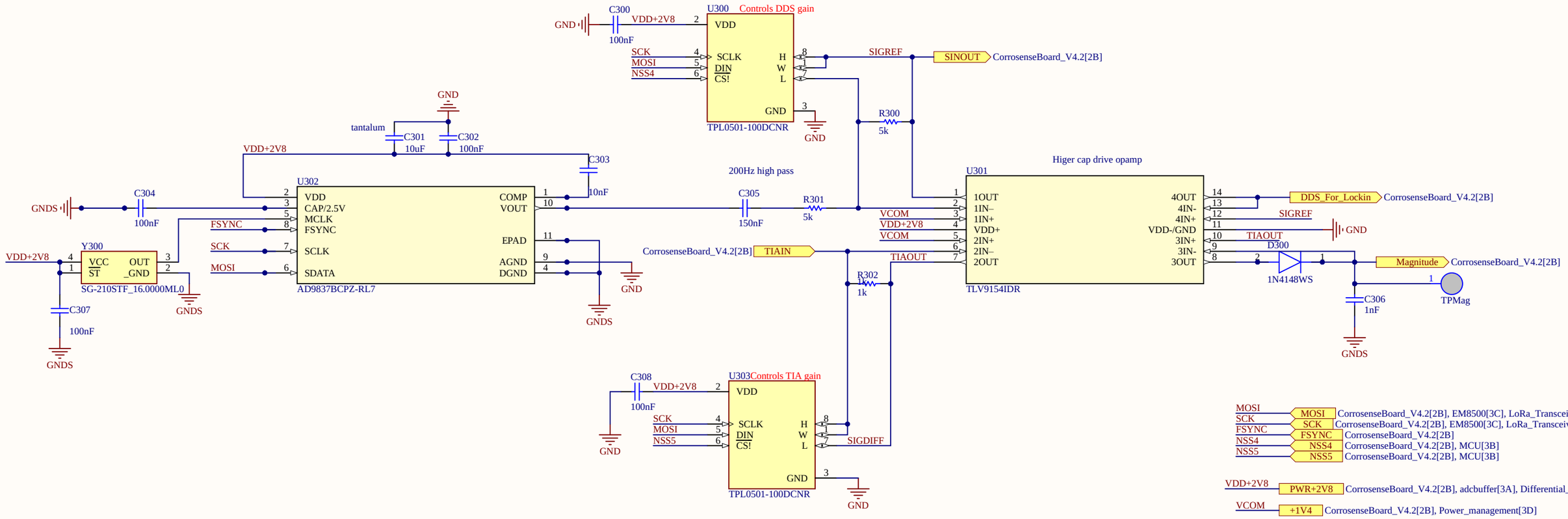

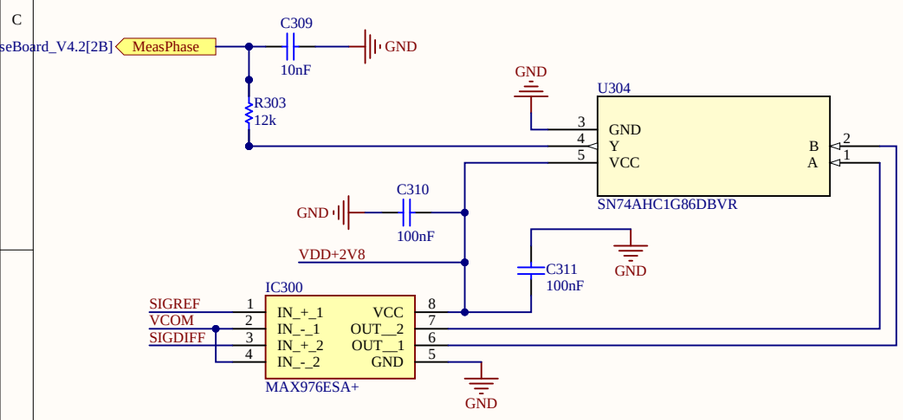

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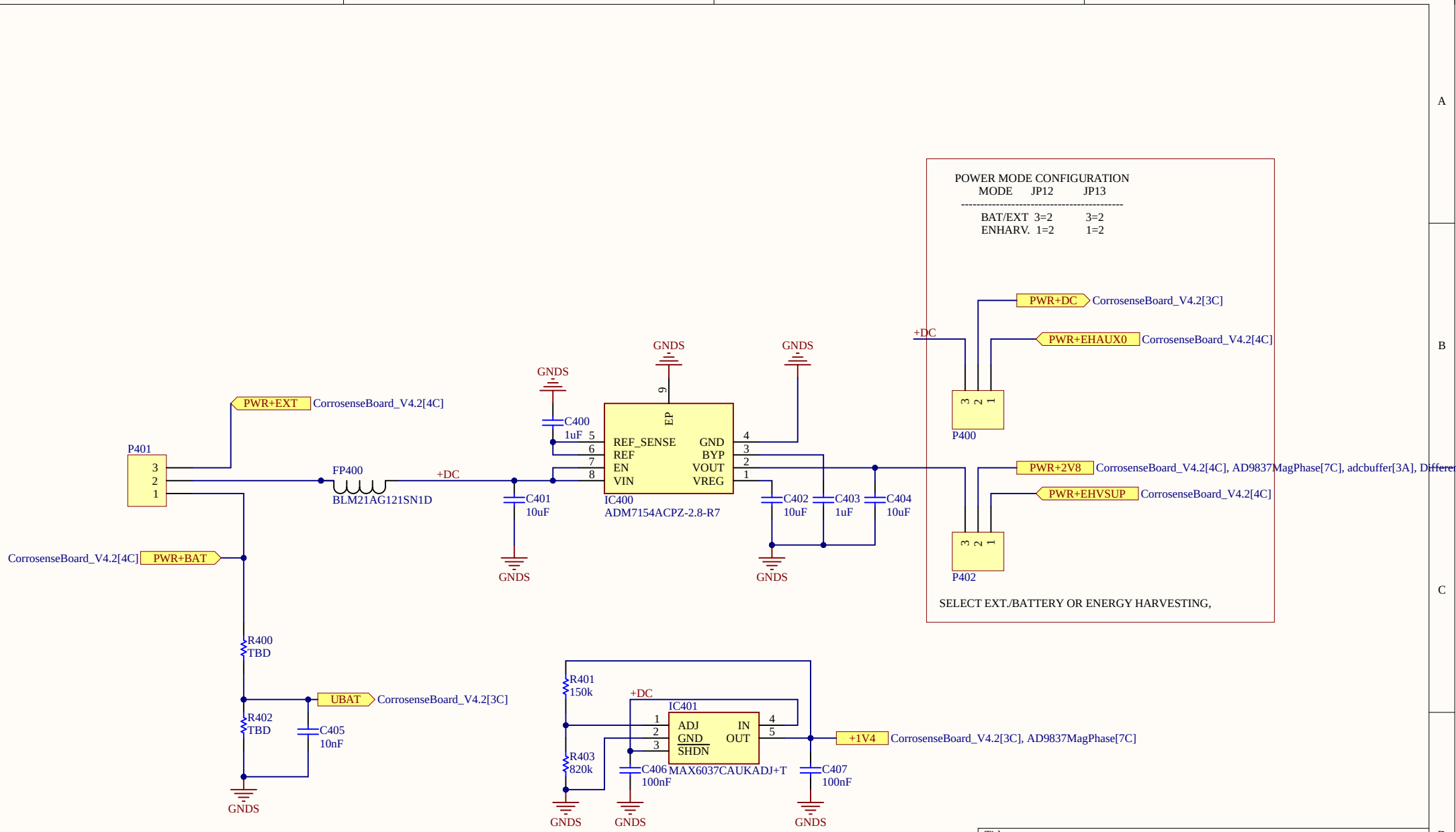

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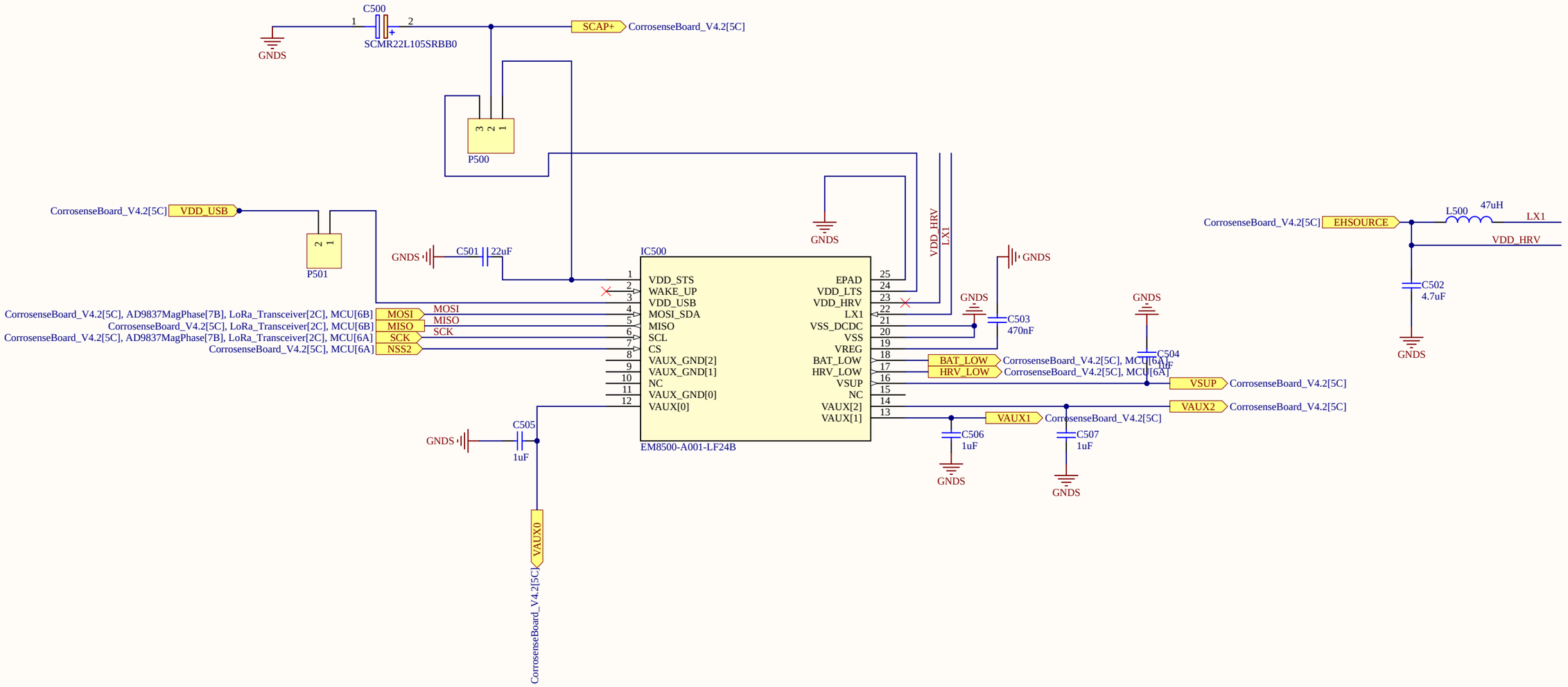

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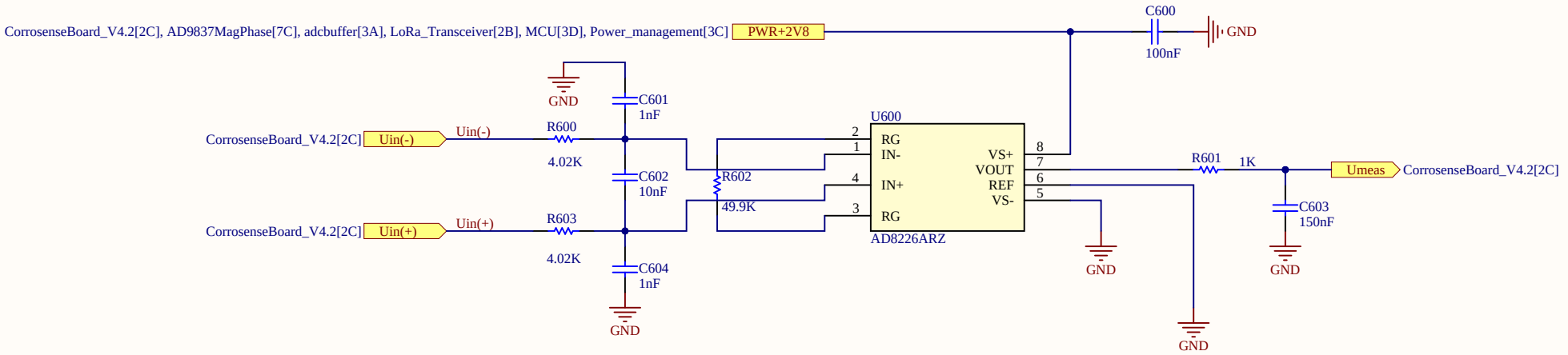

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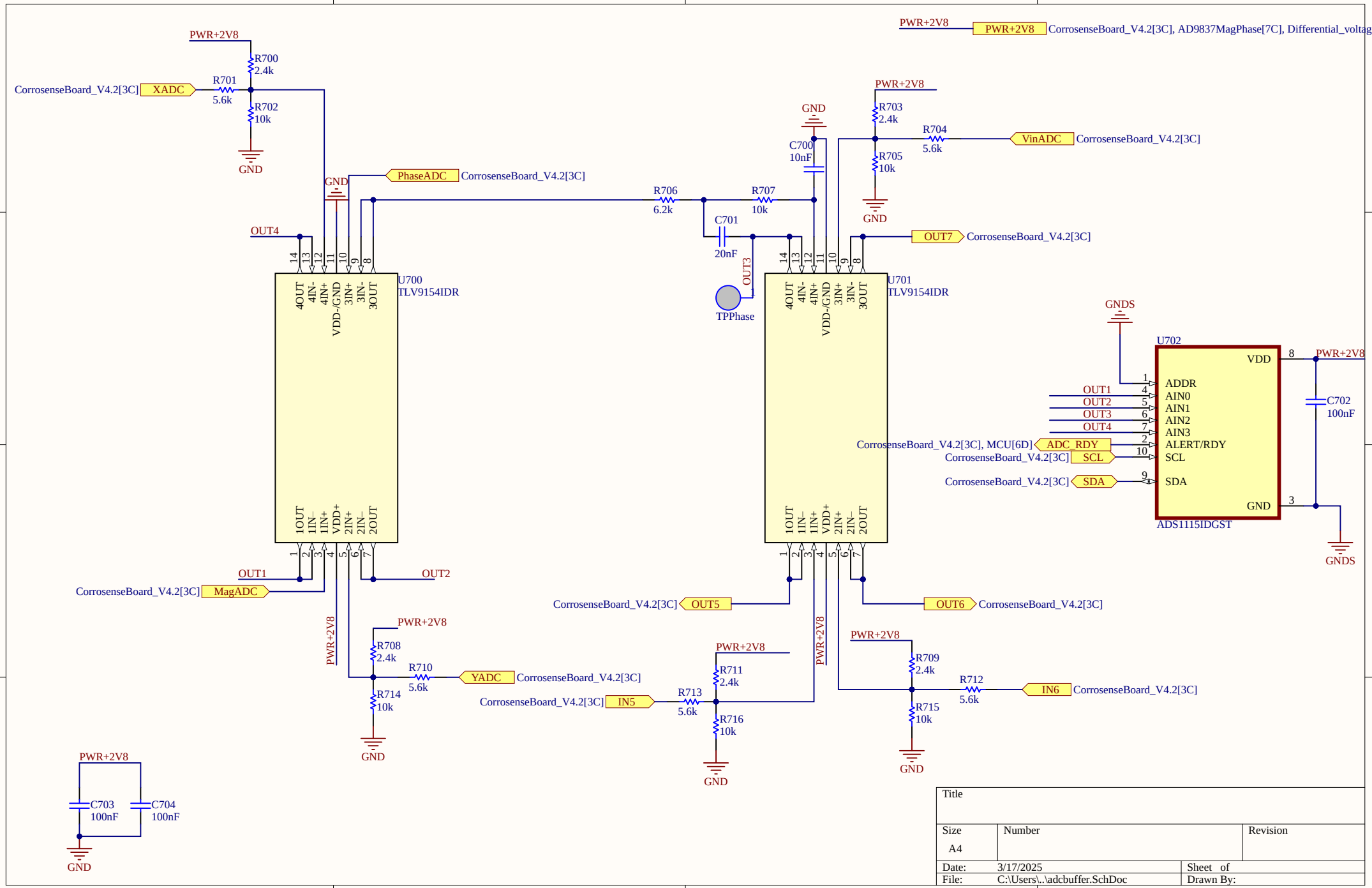
PWR+2V8
R700
2.4k
CorrosenseBoard_V4.2[3C]
XADC
R701
5.6k
R702
10k
GND
PWR+2V8
PWR+2V8
CorrosenseBoard_V4.2[3C], AD9837MagPhase[7C], Differential_voltage_in
PWR+2V8
R703
2.4k
R704
5.6k
VinADC
CorrosenseBoard_V4.2[3C]
R705
10k
GND
GND
C700
10nF
GND
PhaseADC
CorrosenseBoard_V4.2[3C]
R706
6.2k
R707
10k
C701
20nF
OUT4
OUT7
CorrosenseBoard_V4.2[3C]
OUT3
TPPhase
U700
TLV9154IDR
U701
TLV9154IDR
4OUT
4IN-
4IN+
VDD-/GND
3IN+
3IN-
3OUT
1OUT
1IN–
1IN+
VDD+
2IN+
2IN–
2OUT
GNDS
U702
VDD
ADDR
AIN0
AIN1
AIN2
AIN3
ALERT/RDY
SCL
SDA
GND
ADS1115IDGST
OUT1
OUT2
OUT3
OUT4
CorrosenseBoard_V4.2[3C], MCU[6D]
ADC_RDY
CorrosenseBoard_V4.2[3C]
SCL
CorrosenseBoard_V4.2[3C]
SDA
C702
100nF
PWR+2V8
GNDS
OUT1
CorrosenseBoard_V4.2[3C]
MagADC
OUT2
CorrosenseBoard_V4.2[3C]
OUT5
OUT6
CorrosenseBoard_V4.2[3C]
PWR+2V8
PWR+2V8
R708
2.4k
R710
5.6k
YADC
CorrosenseBoard_V4.2[3C]
R714
10k
GND
PWR+2V8
R711
2.4k
CorrosenseBoard_V4.2[3C]
IN5
R713
5.6k
R716
10k
GND
PWR+2V8
R709
2.4k
R712
5.6k
IN6
CorrosenseBoard_V4.2[3C]
R715
10k
GND
PWR+2V8
C703
100nF
C704
100nF
GND
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Size
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Number
Revision
Date:
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C:\Users\..\adcbuffer.SchDoc
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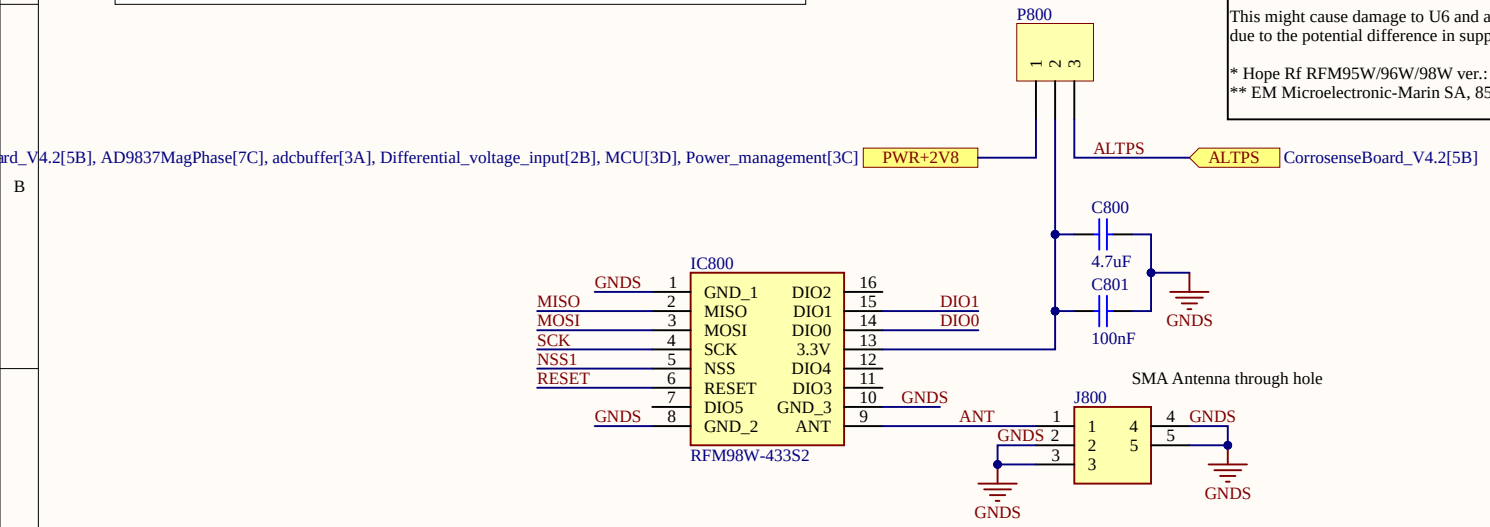
IC800 Needs 2mm header pins for correct through hole mounting

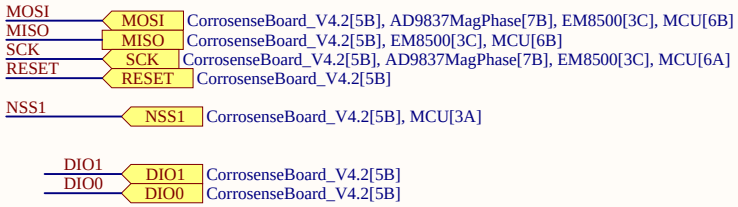
WARNING
The Absolute Maximum Ratings (AMR) of the HopeRF RFM98W is VDDmr(max): 3.9 V (*table 3) and the Operating Range (OR) is VDDop(max): 3.7 V (*table 4).

Changing JP10 to @ALTPS (2-3) (Alternative Power Source) may cause the AMR and OR to be exceeded due to EM8500 AMR Vlts and Vsts being 4.6 V(max) (**table 4-1, 4-2).

This might cause damage to U6 and all the devices connected to the SPI bus and GPIO, due to the potential difference in supply voltages.

* Hope Rf RFM95W/96W/98W ver.: 2.0.
** EM Microelectronic-Marin SA, 8500DS. ver.: 2.1, 24-May-17





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