

A

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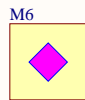
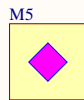
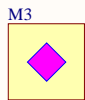
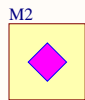
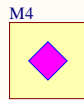
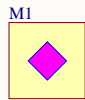
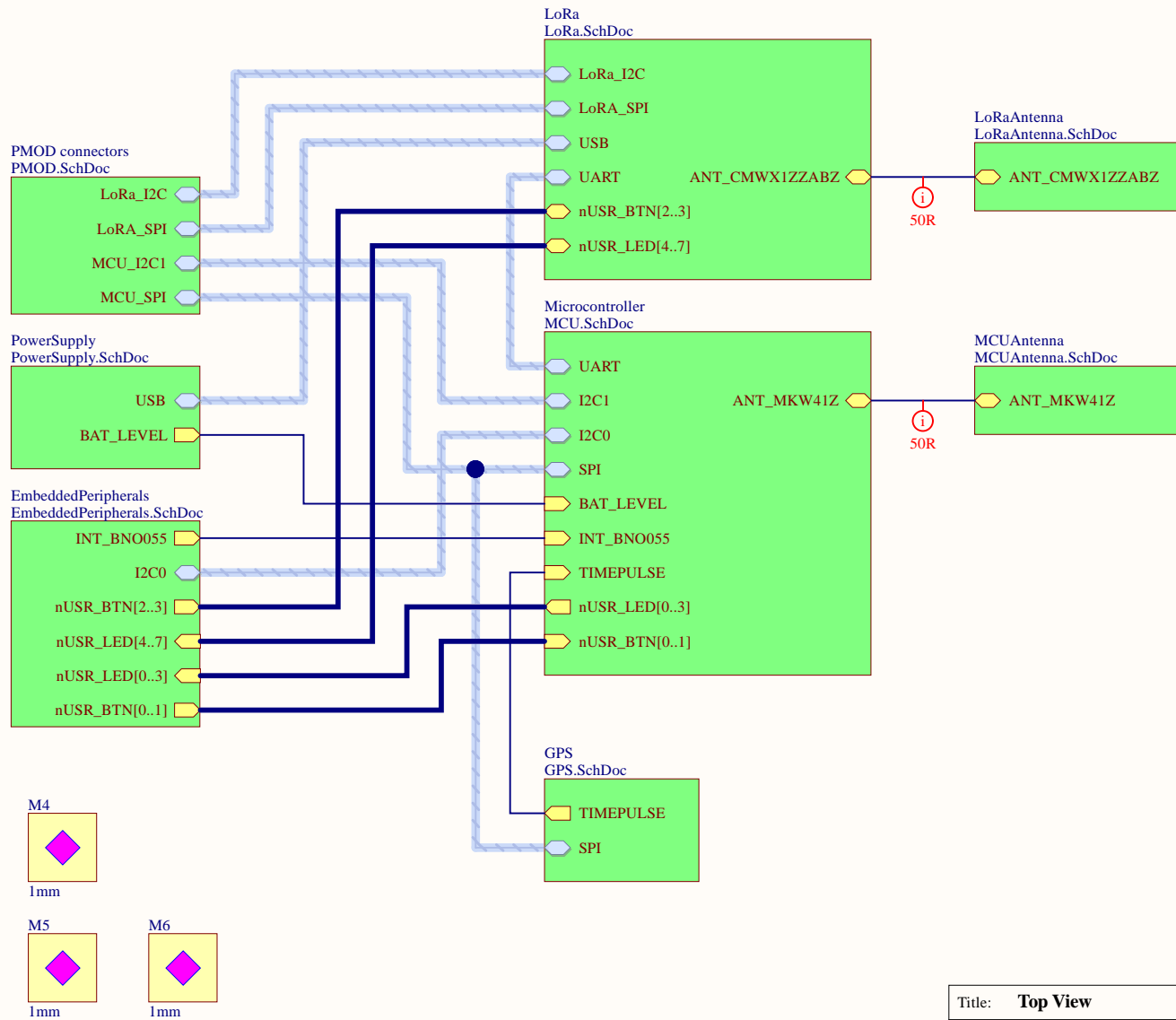
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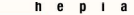
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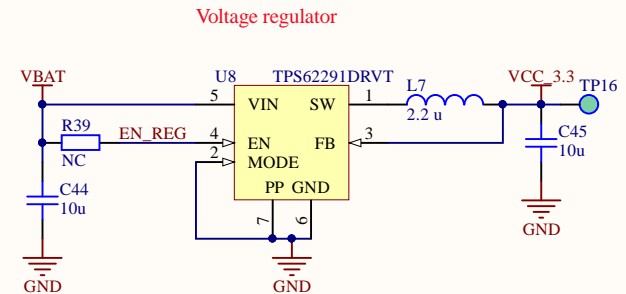
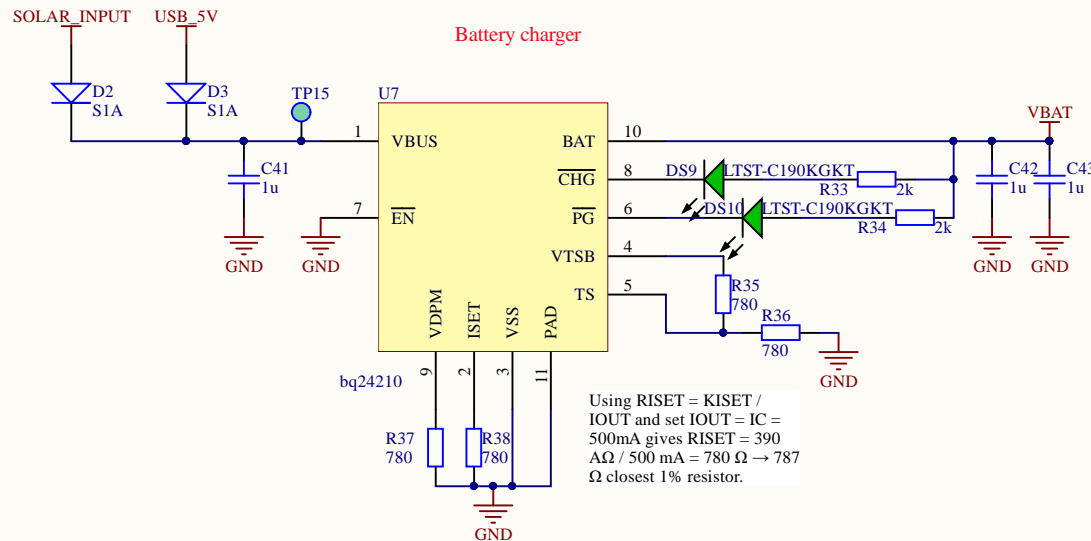
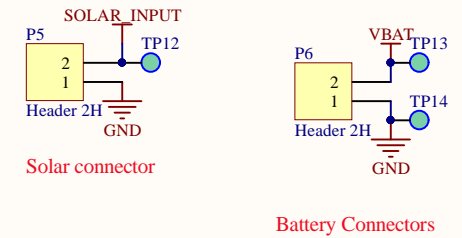
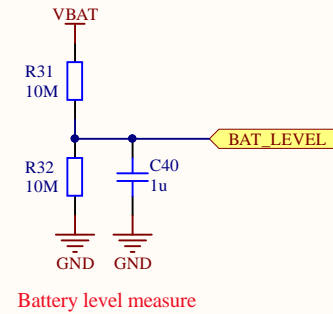
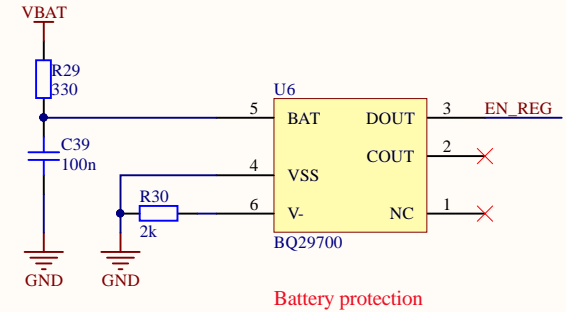
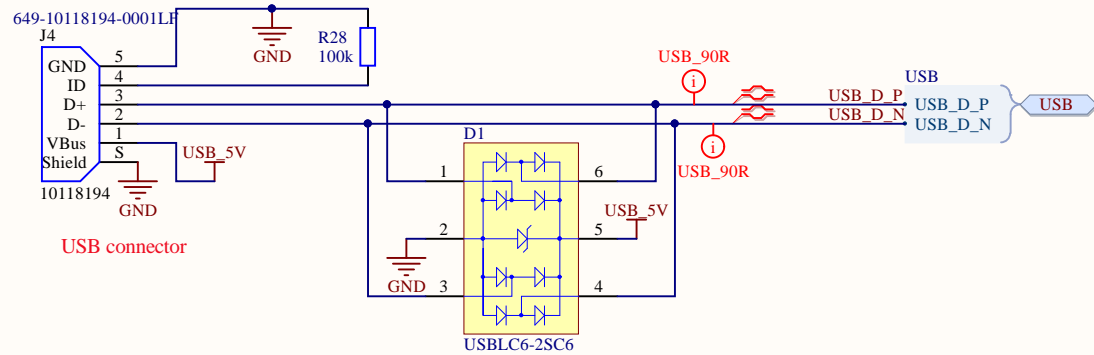
2


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4



Title: Top View			
Project: SmartCanton Dev Box		Revision: *	Labo: LSN
Date: 11.01.2018	Engineer: David	Sheet 1 of 9	
File: SmartCantonDevBox_TopPage.SchDoc		 Haute école du paysage, d'ingénierie et d'architecture de Genève	



Title: Power Supply			
Project: SmartCanton Dev Box		Revision: *	Labo: LSN
Date: 11.01.2018	Engineer: David	Sheet 2 of 9	 Haute école du paysage, d'ingénierie et d'architecture de Genève
File: PowerSupply.SchDoc			

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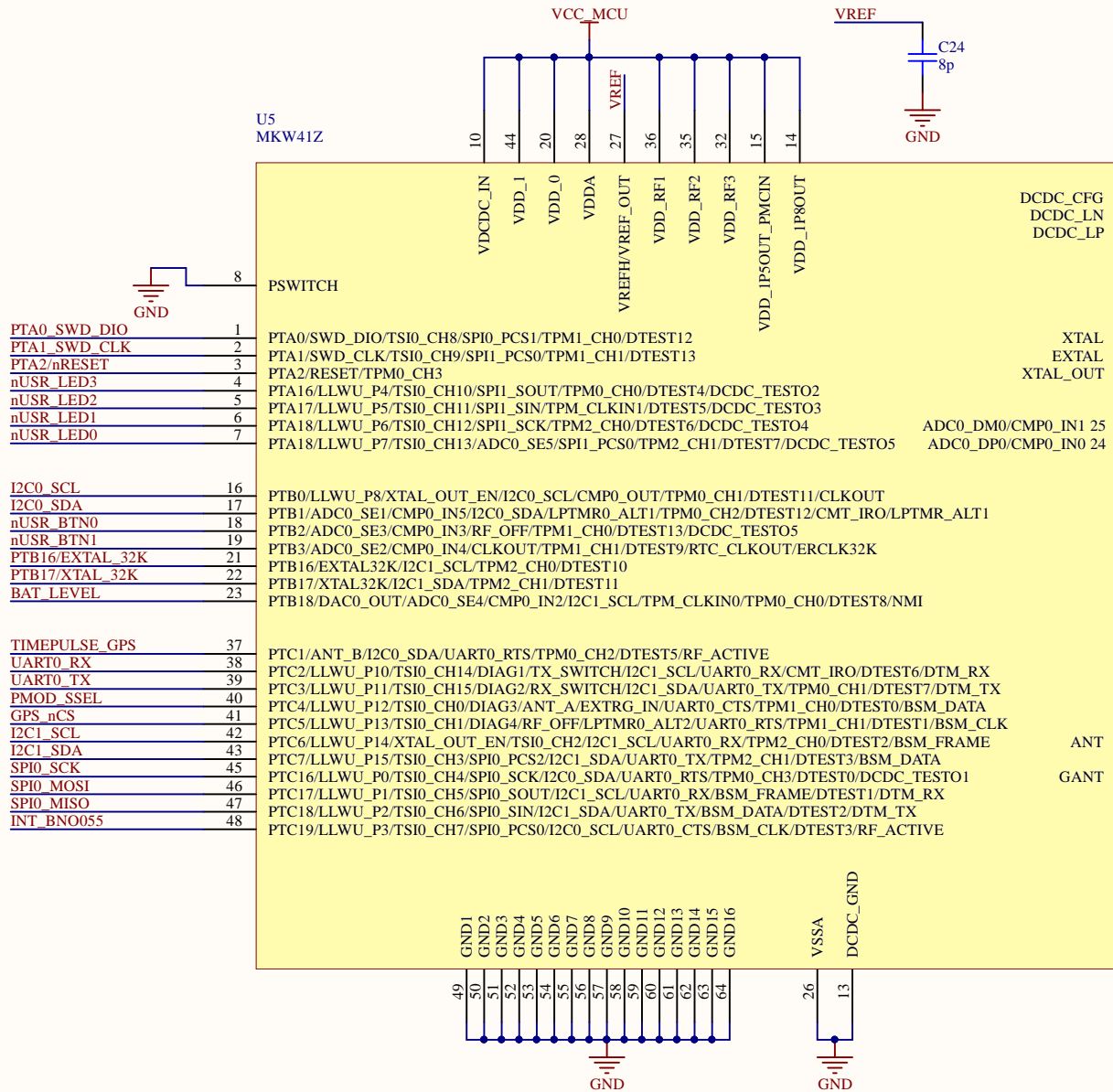
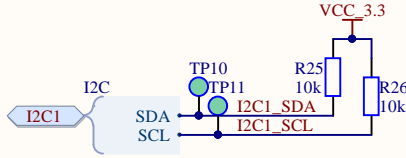
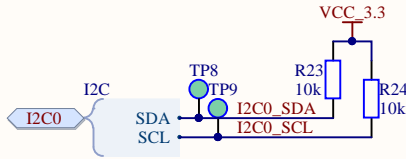
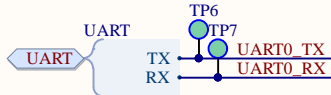
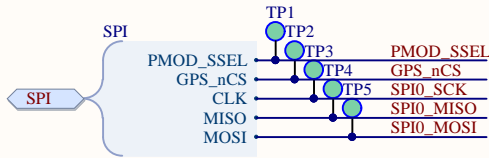
D

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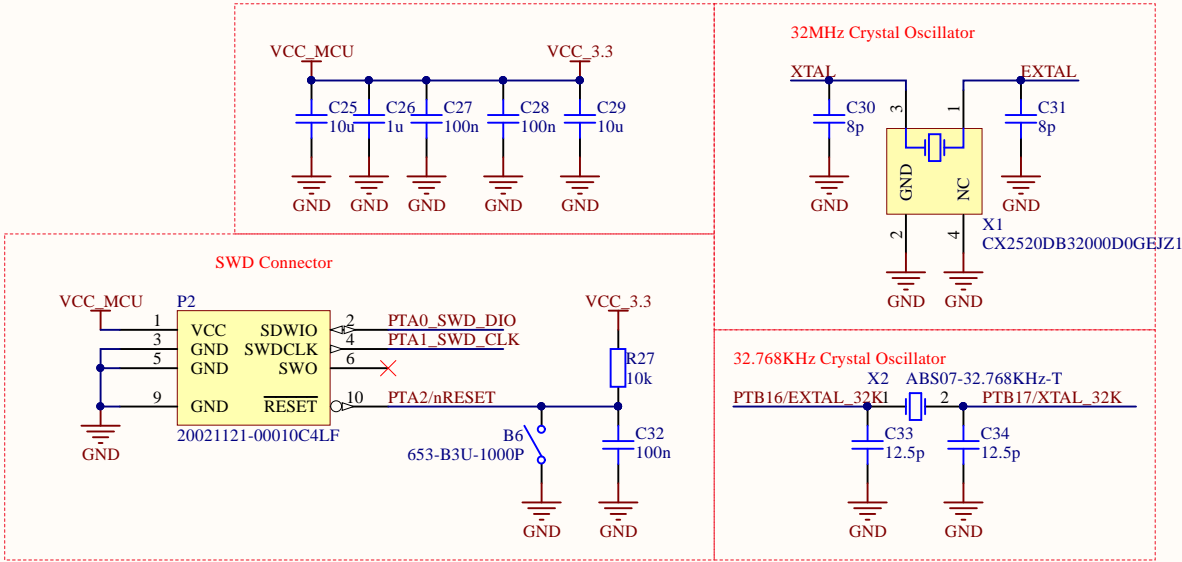
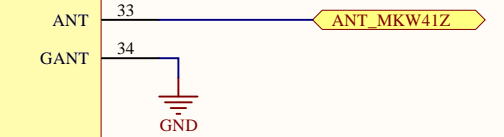
B

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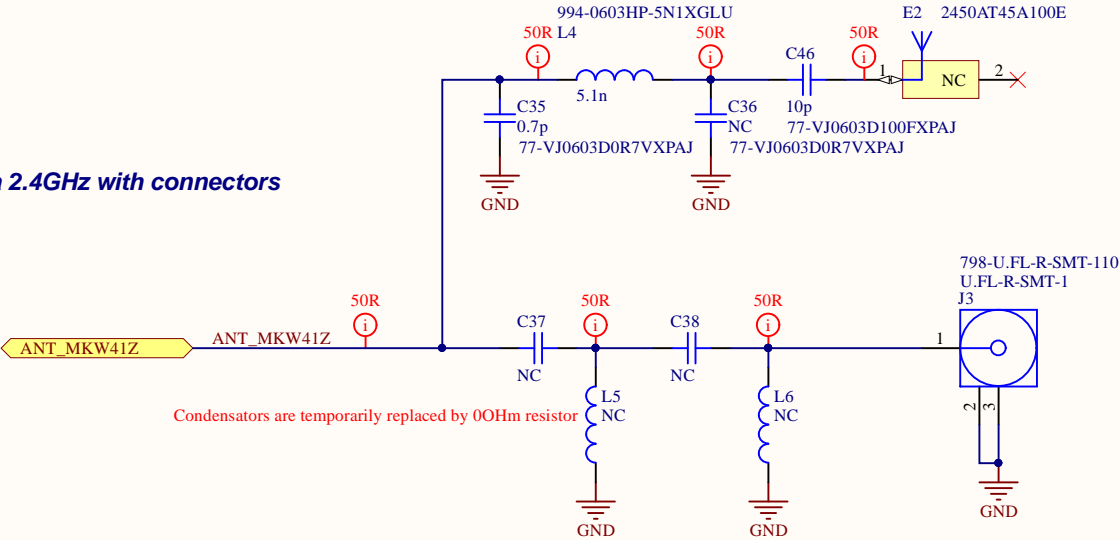


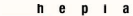
DCDC configured in BYPASS MODE (cf. p98 ref manual for more informations). The power supply is 100% from an extern converter to provide 3.3 V

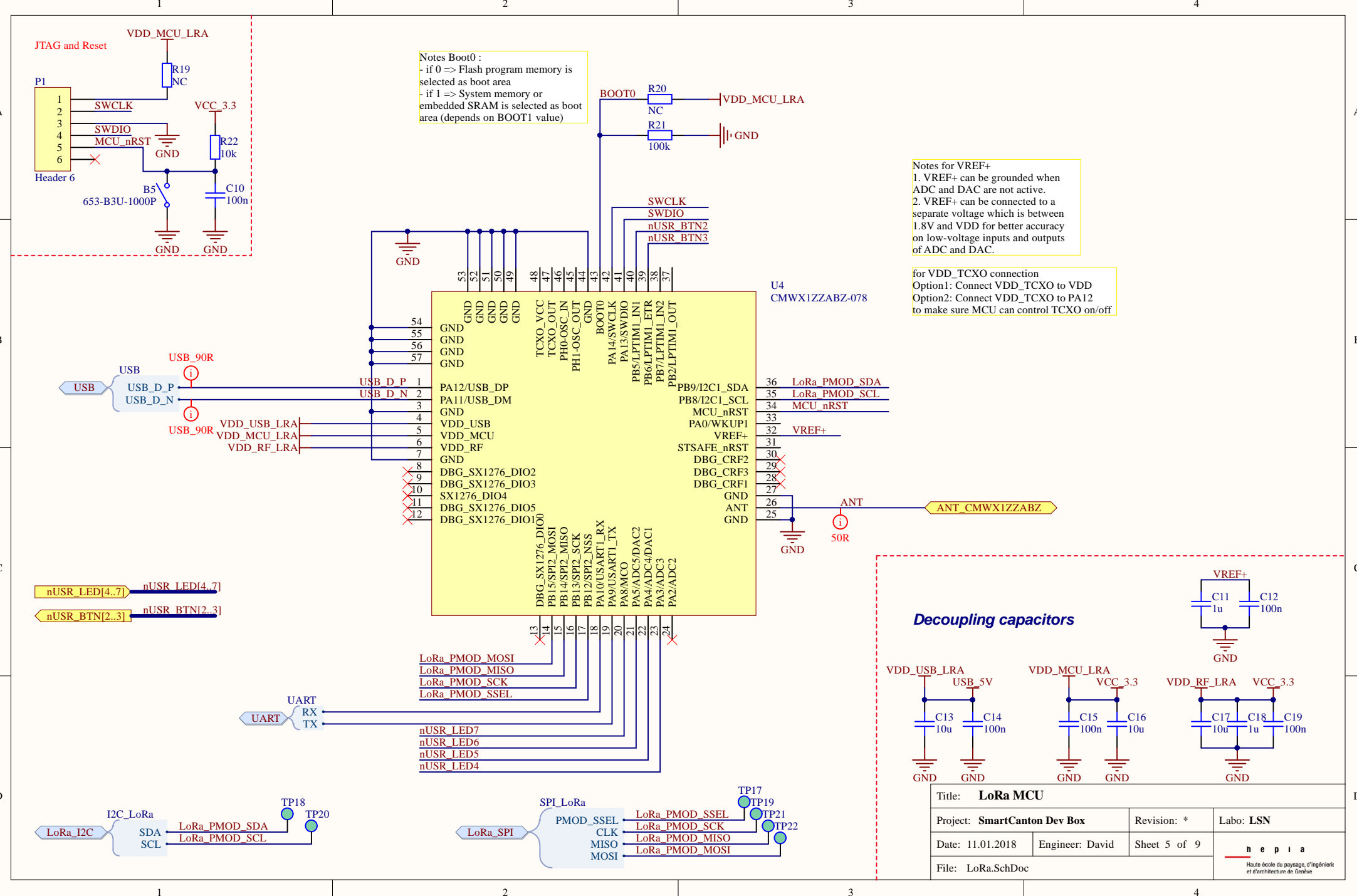


Title: Bluetooth MCU			
Project: SmartCanton Dev Box		Revision: *	Labo: LSN
Date: 11.01.2018	Engineer: David	Sheet 3 of 9	<div>h e p i a</div> <div>Haute école du paysage, d'ingénierie et d'architecture de Genève</div>
File: MCU.SchDoc			

Antenna 2.4GHz with connectors



Title: Bluetooth MCU Antenna			
Project: SmartCanton Dev Box		Revision: *	Labo: LSN
Date: 11.01.2018	Engineer: David	Sheet 4 of 9	
File: MCUAntenna.SchDoc		 Haute école du paysage, d'ingénierie et d'architecture de Genève	



Notes Boot0 :
- if 0 => Flash program memory is selected as boot area
- if 1 => System memory or embedded SRAM is selected as boot area (depends on BOOT1 value)

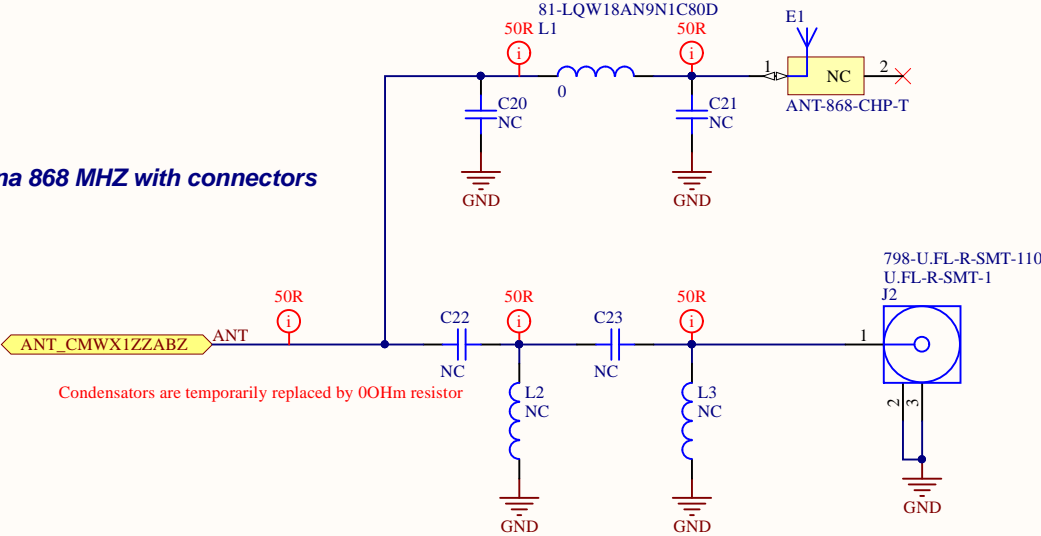
Notes for VREF+
1. VREF+ can be grounded when ADC and DAC are not active.
2. VREF+ can be connected to a separate voltage which is between 1.8V and VDD for better accuracy on low-voltage inputs and outputs of ADC and DAC.

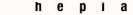
for VDD_TCXO connection
Option1: Connect VDD_TCXO to VDD
Option2: Connect VDD_TCXO to PA12 to make sure MCU can control TCXO on/off

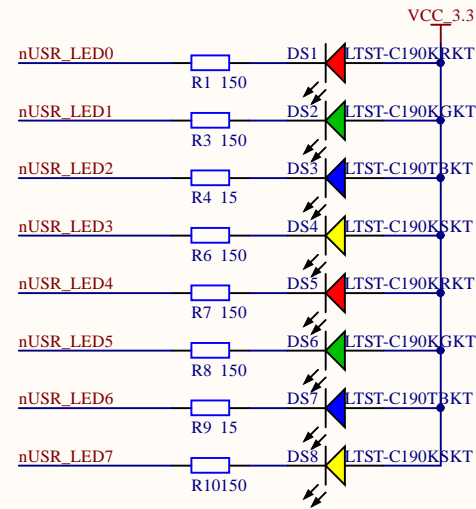
Decoupling capacitors

Title: LoRa MCU			
Project: SmartCanton Dev Box		Revision: *	Labo: LSN
Date: 11.01.2018	Engineer: David	Sheet 5 of 9	
File: LoRa.SchDoc			

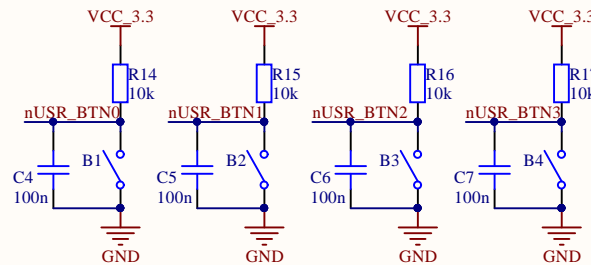
Antenna 868 MHZ with connectors



Title: LoRa Antenna			
Project: SmartCanton Dev Box		Revision: *	Labo: LSN
Date: 11.01.2018	Engineer: David	Sheet 6 of 9	
File: LoRaAntenna.SchDoc		 Haute école du paysage, d'ingénierie et d'architecture de Genève	

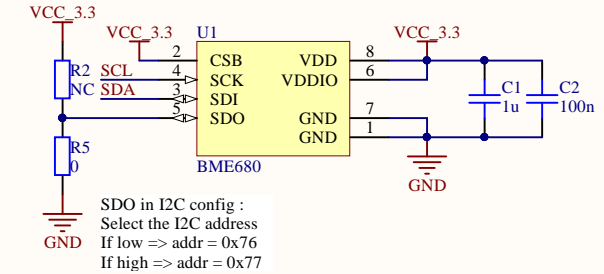


Leds controlled by the user
Half from the LoRa MCU, the other half from the bluetooth MCU

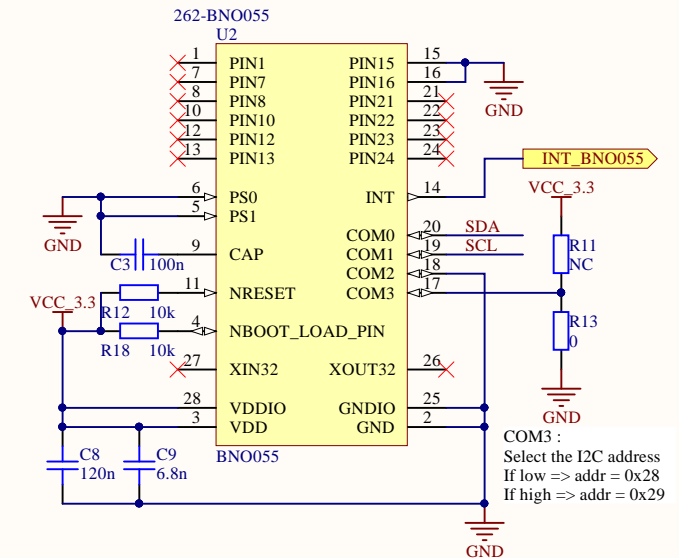


Buttons read by the user
Half from the LoRa MCU, the other half from the bluetooth MCU

Combined humidity, pressure, temp and gas sensor



Inertial platform 9Axis



Title: **Embedded Sensors**

Project: **SmartCanton Dev Box**

Revision: *

Labo: **LSN**

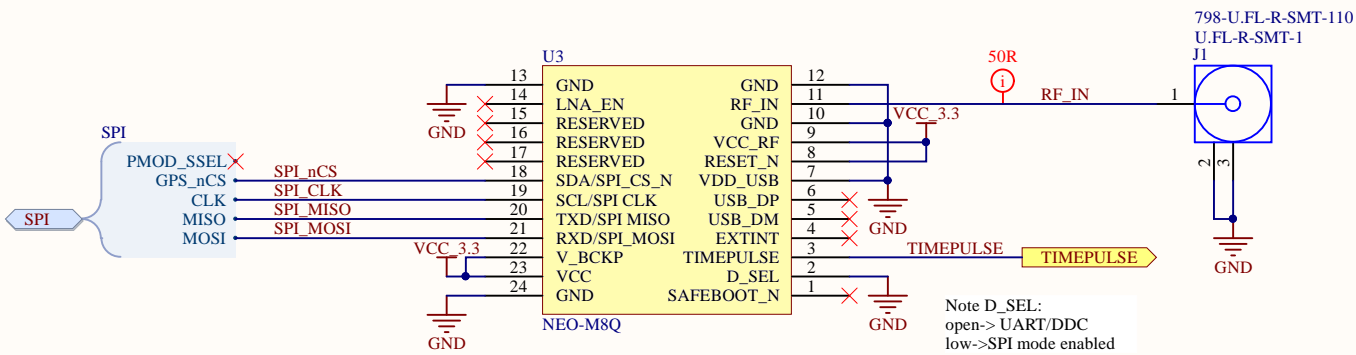
Date: 11.01.2018

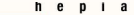
Engineer: David

Sheet 7 of 9

File: EmbeddedPeripherals.SchDoc

n e p i a
Haute école du paysage, d'ingénierie
et d'architecture de Genève



Title: GPS			
Project: SmartCanton Dev Box		Revision: *	Labo: LSN
Date: 11.01.2018	Engineer: David	Sheet 8 of 9	
File: GPS.SchDoc		 Haute école du paysage, d'ingénierie et d'architecture de Genève	

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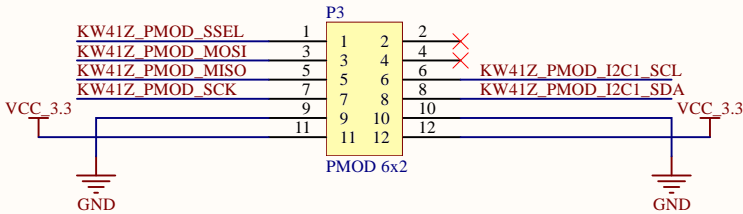
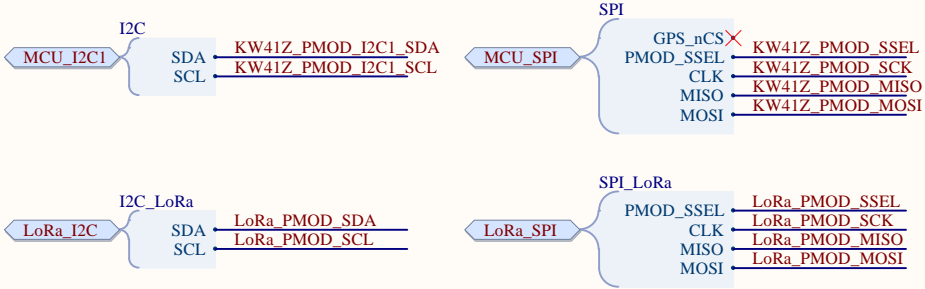
D

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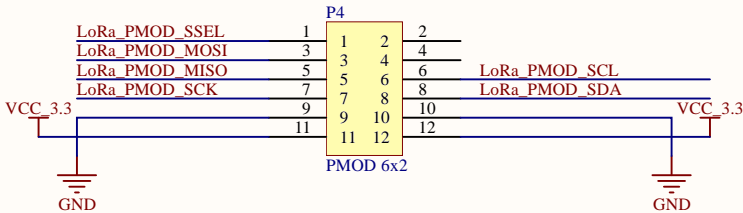
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Connector Pmod I2C and SPI connected to the KW41Z



Connector Pmod I2C and SPI connected to the LoRa module

Title: *			
Project: Project name		Revision: *	Labo: LSN
Date: 11.01.2018	Engineer: *	Sheet 9 of 9	The logo of the Haute école du paysage, d'ingénierie et d'architecture de Genève (HEP-IA) is located in the bottom right corner. It features the acronym 'h e p i a' in a stylized, lowercase font, with a red horizontal line underneath the 'h'. Below the acronym, the full name of the institution is written in a smaller, sans-serif font: 'Haute école du paysage, d'ingénierie et d'architecture de Genève'.
File: PMOD.SchDoc			

2.45 GHz antenna

GPS
U3

GPS_nCS

J1

M3

GPS antenna

P6
GND
BAT
P5
GND
SOLAR

J4

SOLAR

USB_5V

P2

R27
C32

B6
RST

UCC_3.3

R25

SSEL
MOSI
SCL
MISO
SCK
SDA

P3

SmartCanton DevBox
V1.0
HES-SO Master \ hepia
Andrade David

U1
R23
R24
SCL
SDA
R2
R5
RX
TX
R12
R13
R11
U2

C1
C2
C8
C9
C3
R18
R17
R16
R15
R14
C4
C5
C6
C7

B4
R1
DS1
B3
R3
DS2
B2
R4
DS3
B1
R6
DS4
R7
DS5
R8
DS6
R9
DS7
R10
DS8

LoRa 868MHz

J2

B5
RST

P1

U4

R20
R21

R19

SDA
SCK
MISO
SCL
MOSI
SSEL

P4

M1

M6

M5

C33 C34 X2

R34 DS10 U7 R35 R36 R38 C41 C45 C44 C42 C43 R28 R37 DS9 R33 R30 D1 6E3 L7 U8 R29 R39 R32 R31

M4

C13 C14

C15 C16 C17 C19 C18 C11

Item	Designator	Comment	Quantity	Footprint
1	B1-B6	653-B3U-1000P	6	B3U-1000P
2	C1, C11, C18, C26, C40-C43	1u	8	CAPC1608X08
3	C13, C16, C17, C25, C29, C44, C45	10u	7	CAPC1608X08N
4	C2-C7, C10, C12, C14, C15, C19, C27, C28, C32, C39	100n	15	CAPC1608X08
5	C20-C23, C36-C38, L2, L3, L5, L6, R2, R11, R19, R20, R39	NC	16	CAPC1608X08
6	C24, C30, C31	8p	3	CAPC1608X08
7	C33, C34	12.5p	2	CAPC1608X08
8	C35	0.7p	1	CAPC1608X08
9	C46	10p	1	CAPC1608X08
10	C8	120n	1	CAPC1608X08
11	C9	6.8n	1	CAPC1608X08
12	D1	USBLC6-2SC6	1	STM-SOT23-6L_V
13	D2, D3	S1A	2	DO-214AC
14	DS1, DS5	LTST-C190KRKT	2	LTST-C191KRKT_V
15	DS2, DS6, DS9, DS10	LTST-C190KGKT	4	LITE-ON-LTST-C190GKT-2_V
16	DS3, DS7	LTST-C190TBKT	2	LTST-C190TBKT-2_V
17	DS4, DS8	LTST-C190KSKT	2	LTST-C190KSKT_V
18	E1	ANT-868-CHP-T	1	ANT-868-916-CHP
19	E2	2450AT45A100E	1	Antenne 2.4ghz Ceramique
20	J1-J3	U.FL-R-SMT-1	3	U.FL-R-SMT-1
21	J4	10118194	1	10118194-0001LF
22	L1, R5, R13	0	3	INDC1608X08
23	L4	5.1n	1	INDC1608X08
24	L7	2.2 u	1	TDK-IND0805-125_V
25	M1-M6	1mm	6	Losange-1mm
26	P1	Header 6	1	HDR1X6
27	P2	20021121-00010C4LF	1	PCBComponent
28	P3, P4	PMOD 6x2	2	PMOD SMD Header 6x2
29	P5, P6	Header 2H	2	HDR1X2H
30	R1, R3, R6-R8, R10	150	6	RESC1608X06
31	R12, R14-R18, R22-R27	10k	12	RESC1608X06
32	R21	100k	1	RESC1608X06
33	R28	100K	1	RESC1608X06
34	R29	330	1	RESC1608X06
35	R31, R32	10M	2	RESC1608X06
36	R30, R33, R34	2k	3	RESC1608X06
37	R35-R38	780	4	RESC1608X06
38	R4, R9	15	2	RESC1608X06
39	TP1-TP22	5015	22	5015
40	U1	BME680	1	LGA-8-30x30x09
41	U2	BNO055	1	BOSC-LGA-28_N
42	U3	NEO-M8Q	1	NEO
43	U4	CMWX1ZZABZ-078	1	CMWX1ZZABZ-078
44	U5	MKW41Z	1	QFN50P700X700X80_HS-49M
45	U6	BQ29700	1	SON50P150X75-6M
46	U7	bq24210	1	WSON50P200X300X80-11N
47	U8	TPS62291DRV	1	DRV0006A_V
48	X1	CX2520DB32000D0GEJZ1	1	AVX- CX2520DB32000D0GEJZ1-4_V
49	X2	ABS07-32.768KHz-T	1	ABRA-ABS07-2_V

A

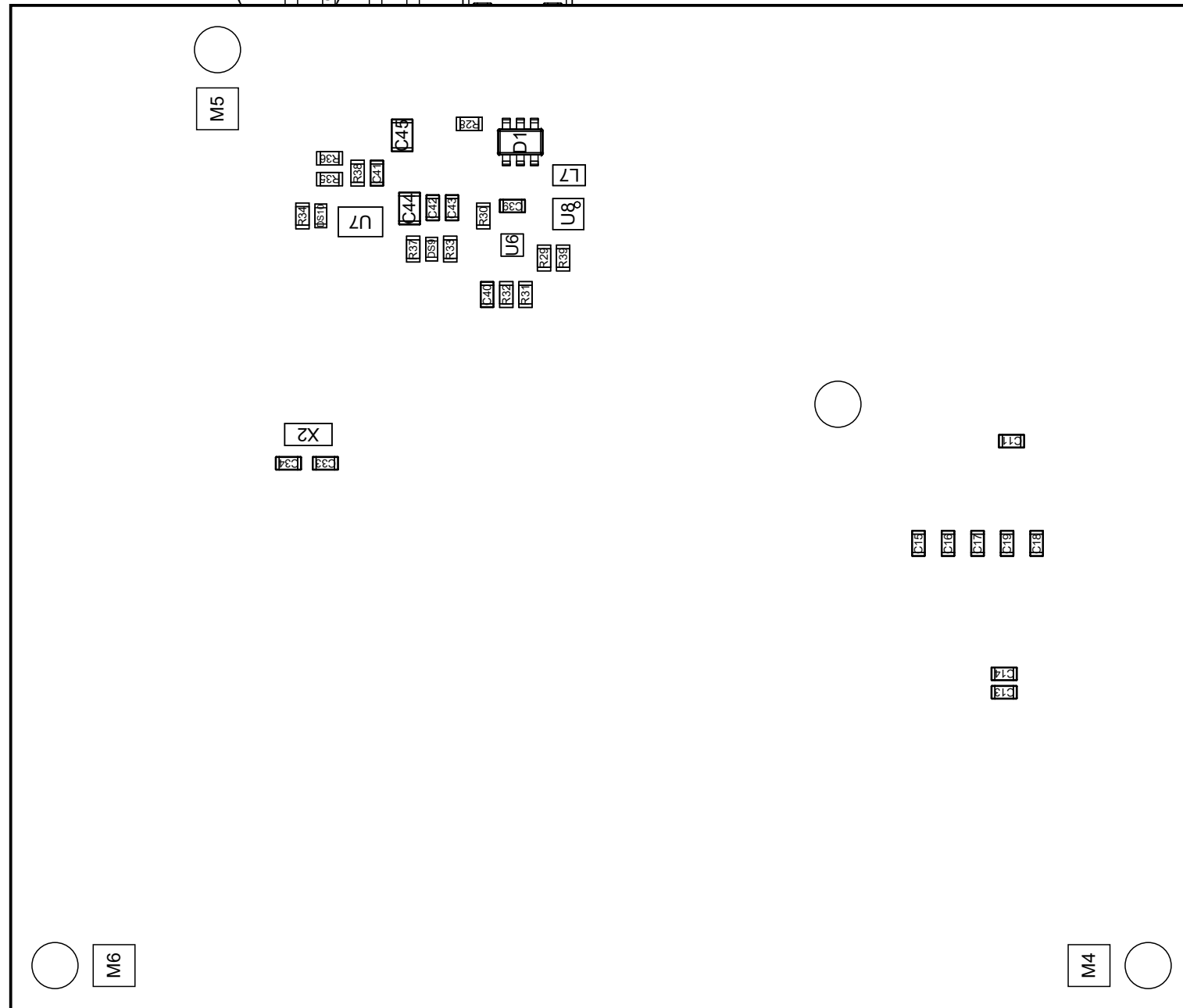
B

C

D

E

View from Bottom side (Scale 2.5)



A

B

C

D

E