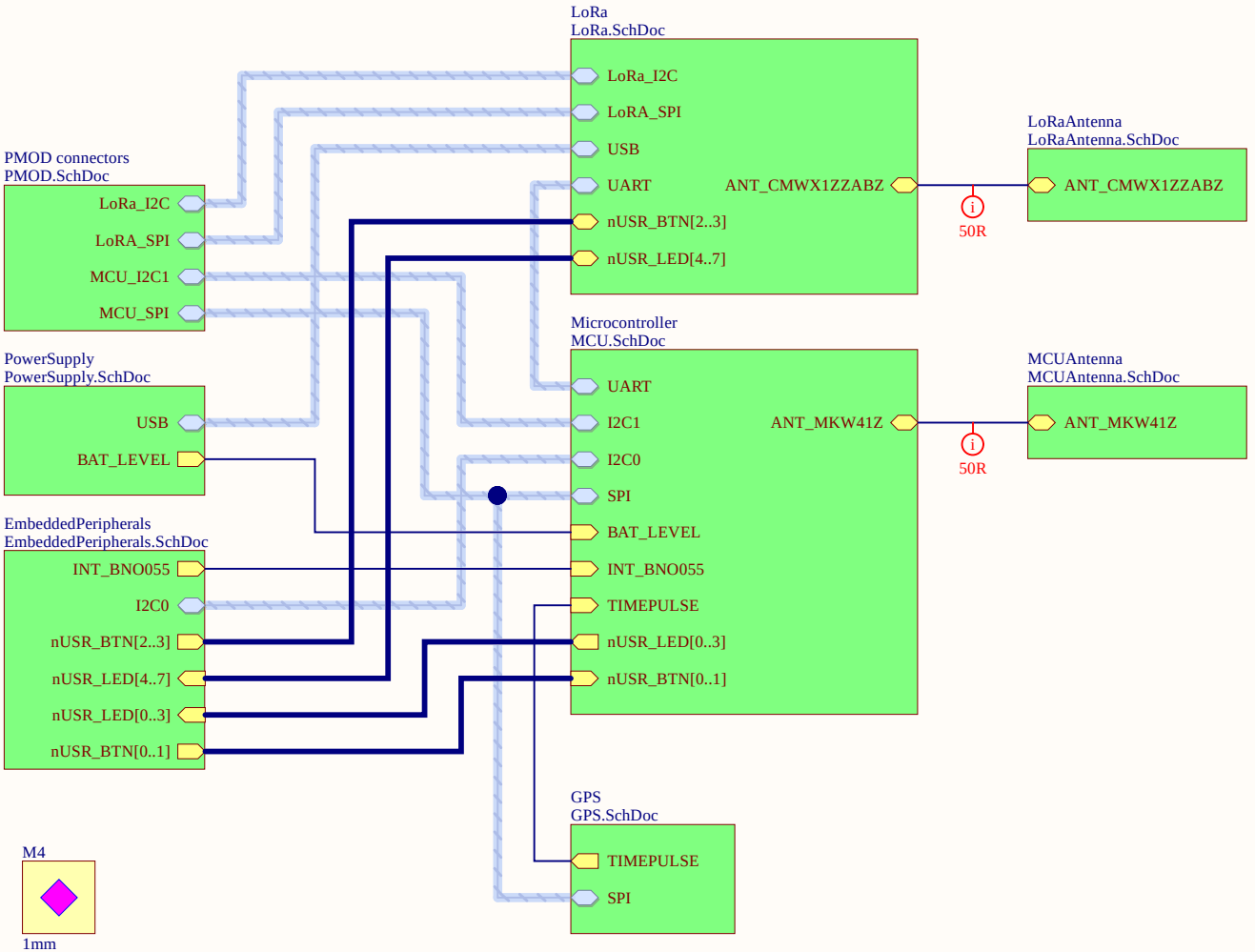
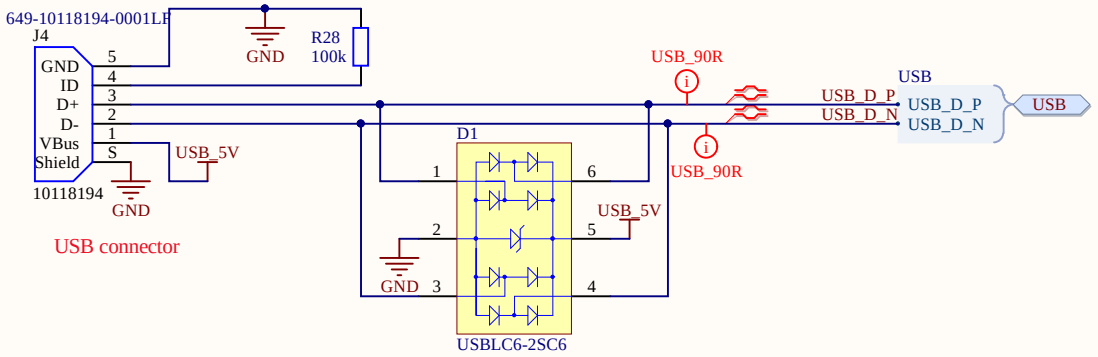
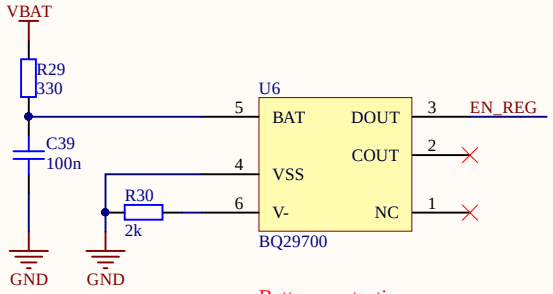
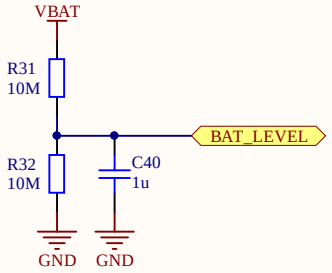
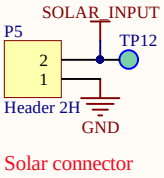


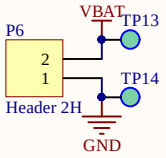
Title: **Top View**			
Project: **SmartCanton Dev Box**		Revision: *	Labo: **LSN**
Date: 11.01.2018	Engineer: David	Sheet 1 of 9	hepia Haute école du paysage, d'ingénierie et d'architecture de Genève
File: SmartCantonDevBox_TopPage.SchDoc			

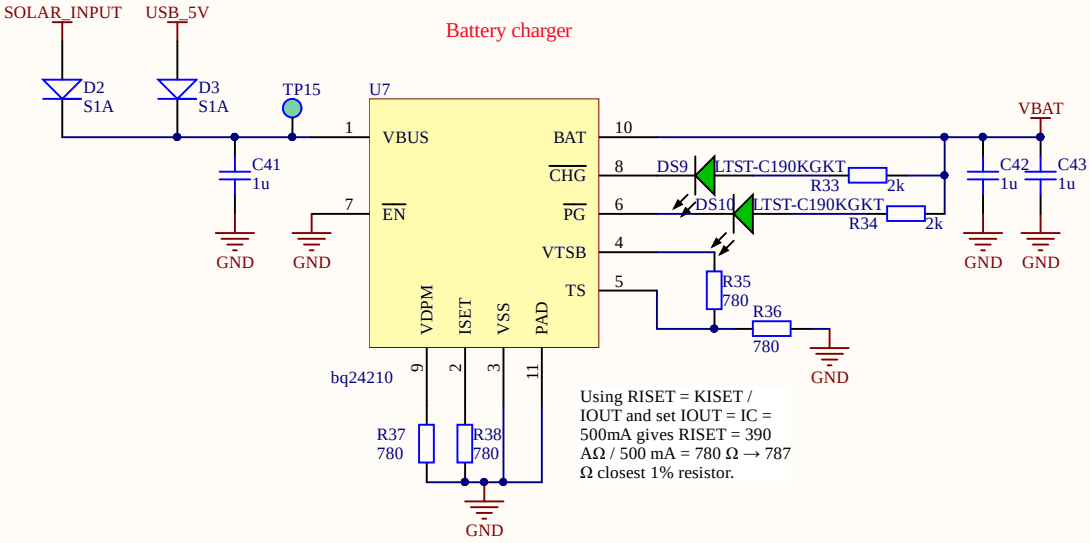


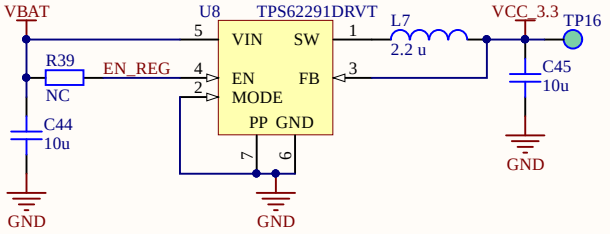




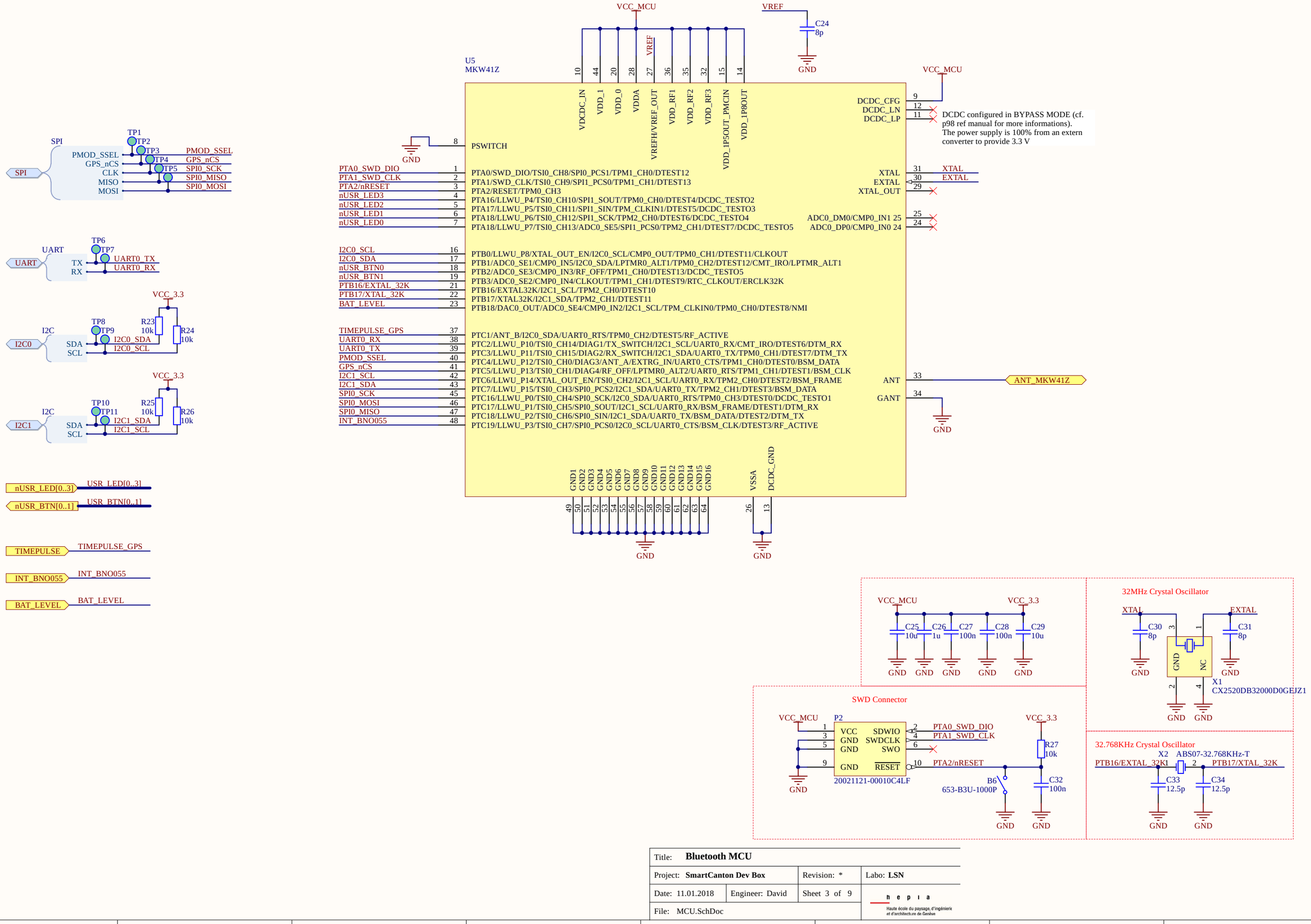




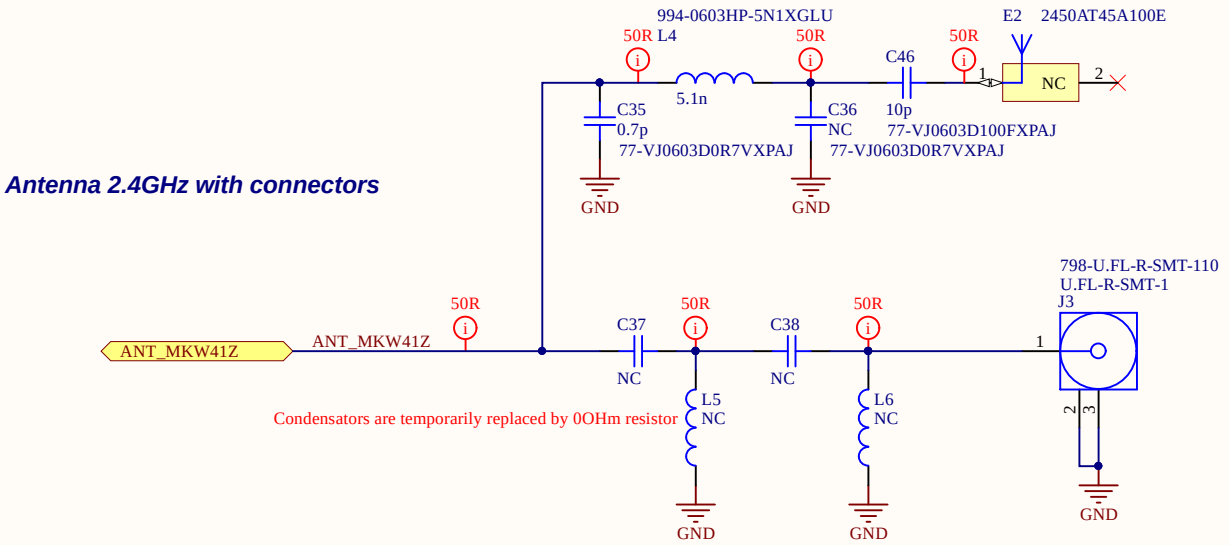




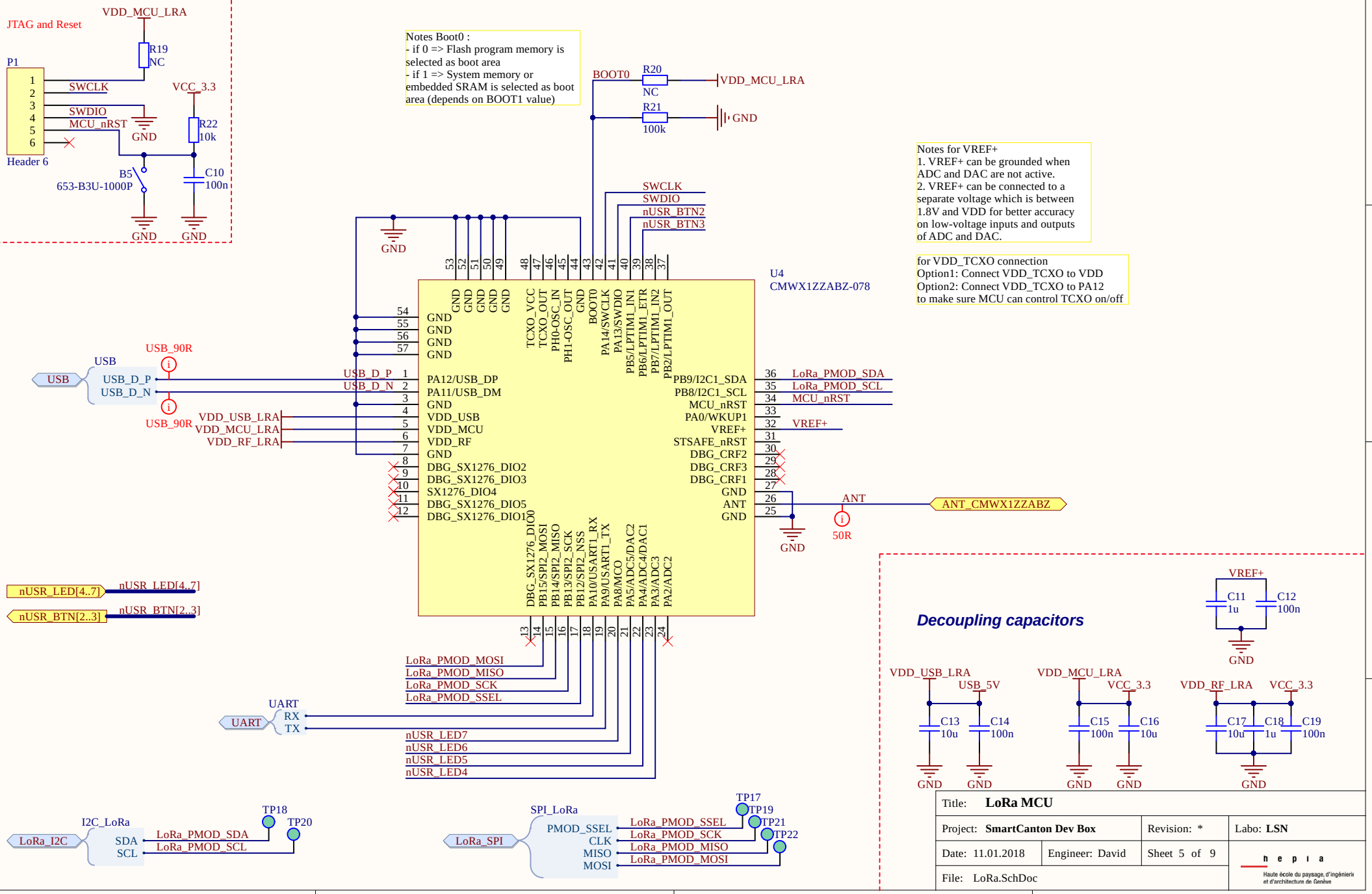
Title: **Power Supply**			
Project: **SmartCanton Dev Box**		Revision: *	Labo: **LSN**
Date: 11.01.2018	Engineer: David	Sheet 2 of 9	hepia Haute école du paysage, d'ingénierie et d'architecture de Genève
File: PowerSupply.SchDoc			

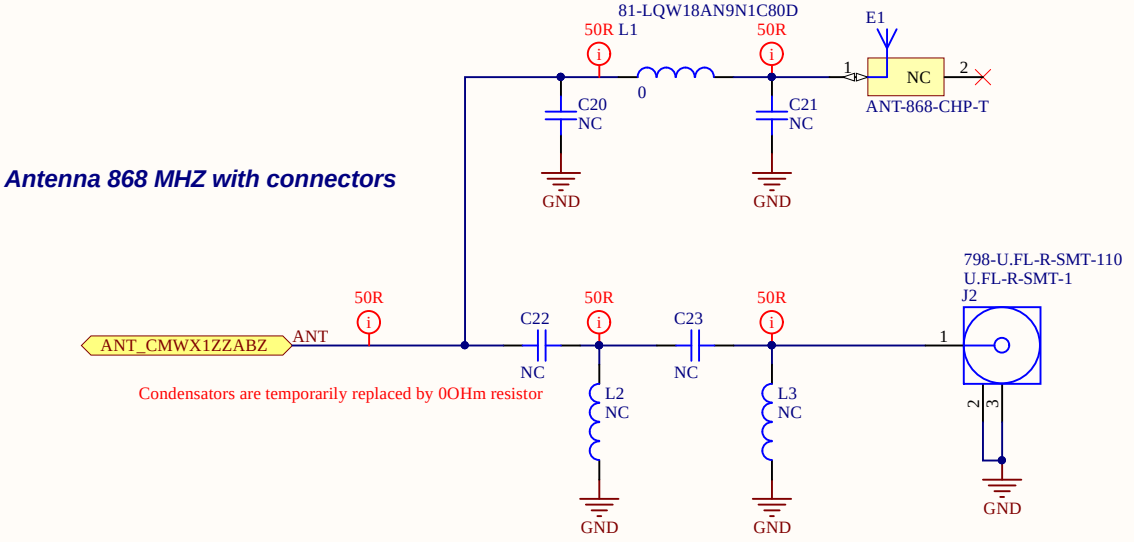


Title: **Bluetooth MCU**			
Project: **SmartCanton Dev Box**		Revision: *	Labo: **LSN**
Date: 11.01.2018	Engineer: David	Sheet 3 of 9	h e p i a Haute école du paysage, d'ingénierie et d'architecture de Genève
File: MCU.SchDoc			

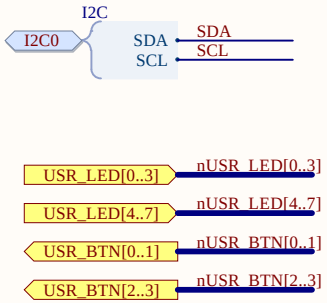


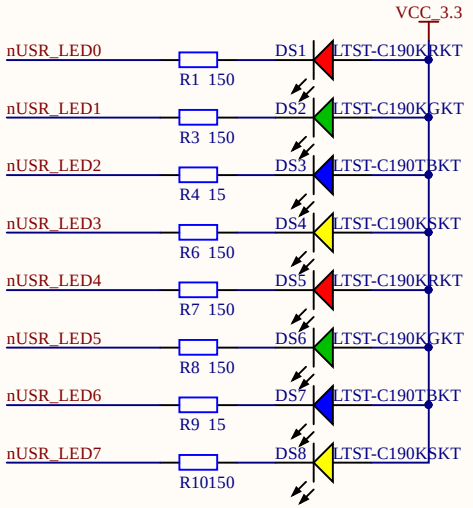
Title: **Bluetooth MCU Antenna**			
Project: **SmartCanton Dev Box**		Revision: *	Labo: **LSN**
Date: 11.01.2018	Engineer: David	Sheet 4 of 9	hepia Haute école du paysage, d'ingénierie et d'architecture de Genève
File: MCUAntenna.SchDoc			


JTAG and Reset
VDD_MCU_LRA
R19
NC
P1
SWCLK
SWDIO
MCU_nRST
VCC_3.3
R22
10k
GND
Header 6
B5
653-B3U-1000P
C10
100n
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)
BOOT0
R20
NC
R21
100k
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
U4
CMWX1ZZABZ-078
PA12/USB_DP
PA11/USB_DM
VDD_USB
VDD_MCU
VDD_RF
DBG_SX1276_DIO2
DBG_SX1276_DIO3
SX1276_DIO4
DBG_SX1276_DIO5
DBG_SX1276_DIO1
PB9/I2C1_SDA
PB8/I2C1_SCL
MCU_nRST
PA0/WKUP1
VREF+
STSAFE_nRST
DBG_CRF2
DBG_CRF3
DBG_CRF1
ANT
LoRa_PMOD_SDA
LoRa_PMOD_SCL
MCU_nRST
VREF+
ANT_CMWX1ZZABZ
50R
USB
USB_D_P
USB_D_N
USB_90R
VDD_USB_LRA
VDD_MCU_LRA
VDD_RF_LRA
nUSR_LED[4..7]
nUSR_BTN[2..3]
UART
RX
TX
LoRa_PMOD_MOSI
LoRa_PMOD_MISO
LoRa_PMOD_SCK
LoRa_PMOD_SSEL
nUSR_LED7
nUSR_LED6
nUSR_LED5
nUSR_LED4
SWCLK
SWDIO
nUSR_BTN2
nUSR_BTN3
Decoupling capacitors
VREF+
C11
1u
C12
100n
USB_5V
C13
10u
C14
100n
C15
100n
C16
10u
C17
10u
C18
1u
C19
100n
I2C_LoRa
LoRa_I2C
SDA
SCL
TP18
TP20
SPI_LoRa
LoRa_SPI
PMOD_SSEL
CLK
MISO
MOSI
TP17
TP19
TP21
TP22
Title: LoRa MCU
Project: SmartCanton Dev Box
Revision: *
Labo: LSN
Date: 11.01.2018
Engineer: David
Sheet 5 of 9
File: LoRa.SchDoc
hepia
Haute école du paysage, d'ingénierie et d'architecture de Genève

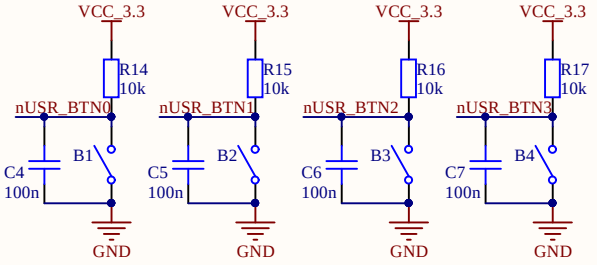


Title: **LoRa Antenna**			
Project: **SmartCanton Dev Box**		Revision: *	Labo: **LSN**
Date: 11.01.2018	Engineer: David	Sheet 6 of 9	hepia Haute école du paysage, d'ingénierie et d'architecture de Genève
File: LoRaAntenna.SchDoc			



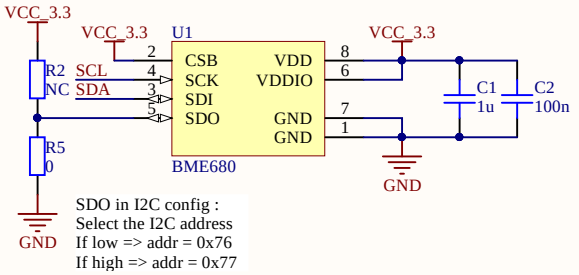


Leds controlled by the user
Half from the LoRa MCU, the other half from the bluetooth MCU

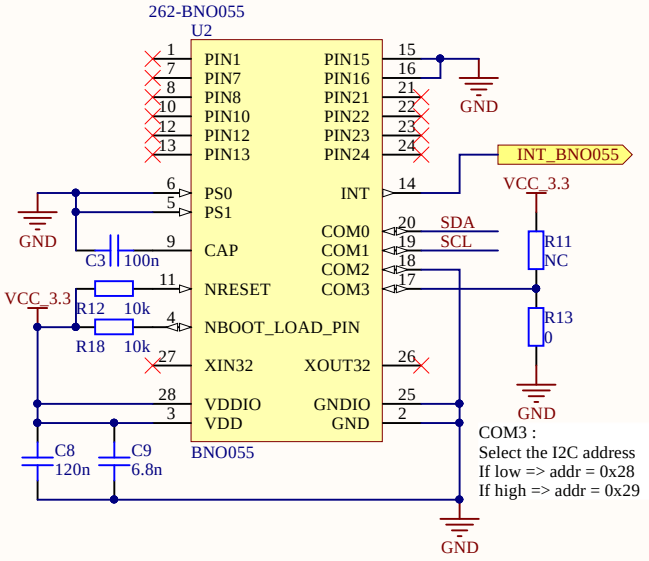


Buttons read by the user
Half from the LoRa MCU, the other half from the bluetooth MCU

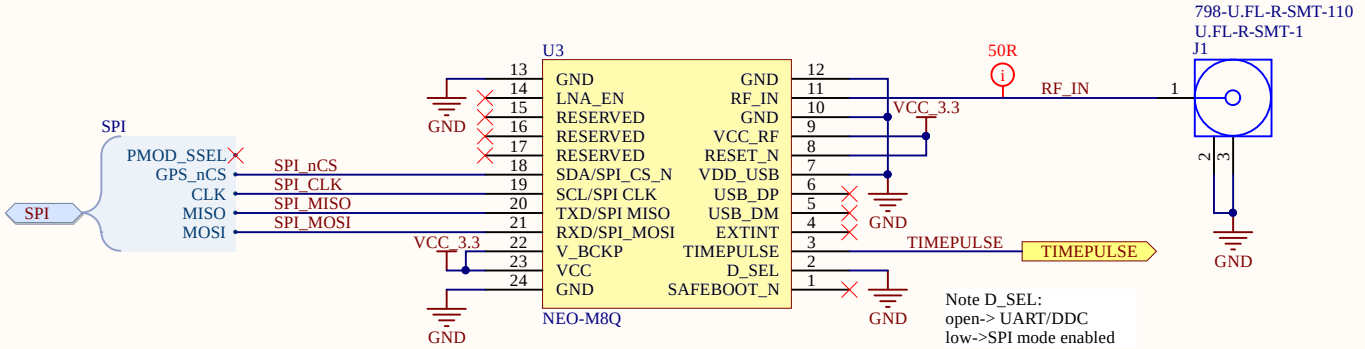
Combined humidity, pressure, temp and gas sensor



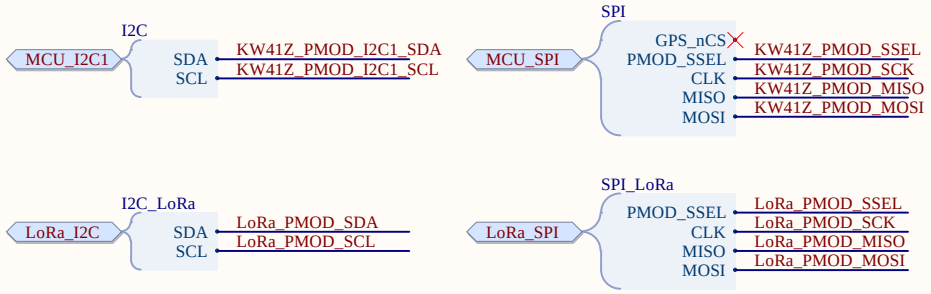
Inertial platform 9Axis

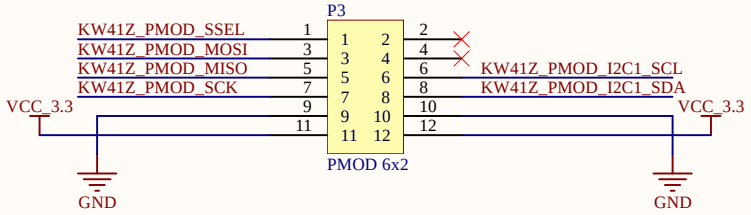


Title: **Embedded Sensors**			
Project: **SmartCanton Dev Box**		Revision: *	Labo: **LSN**
Date: 11.01.2018	Engineer: David	Sheet 7 of 9	hepia Haute école du paysage, d'ingénierie et d'architecture de Genève
File: EmbeddedPeripherals.SchDoc			

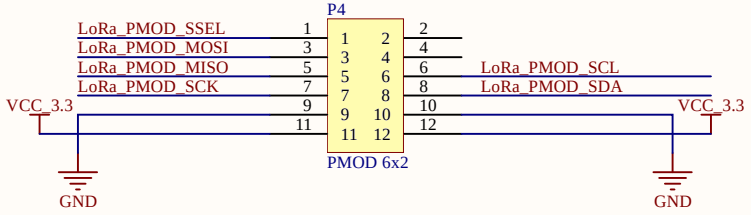


Title: **GPS**			
Project: **SmartCanton Dev Box**		Revision: *	Labo: **LSN**
Date: 11.01.2018	Engineer: David	Sheet 8 of 9	hepia Haute école du paysage, d'ingénierie et d'architecture de Genève
File: GPS.SchDoc			



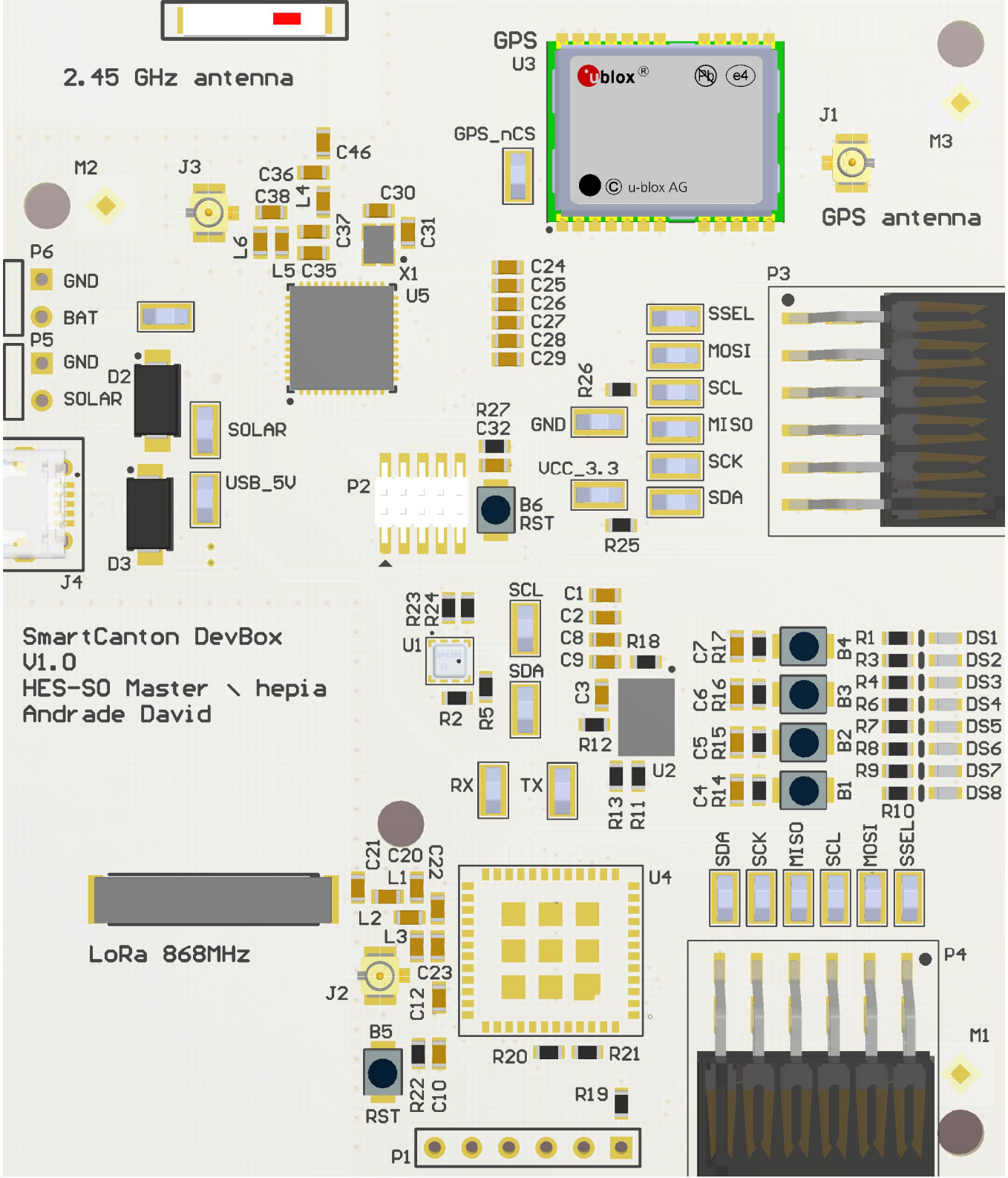


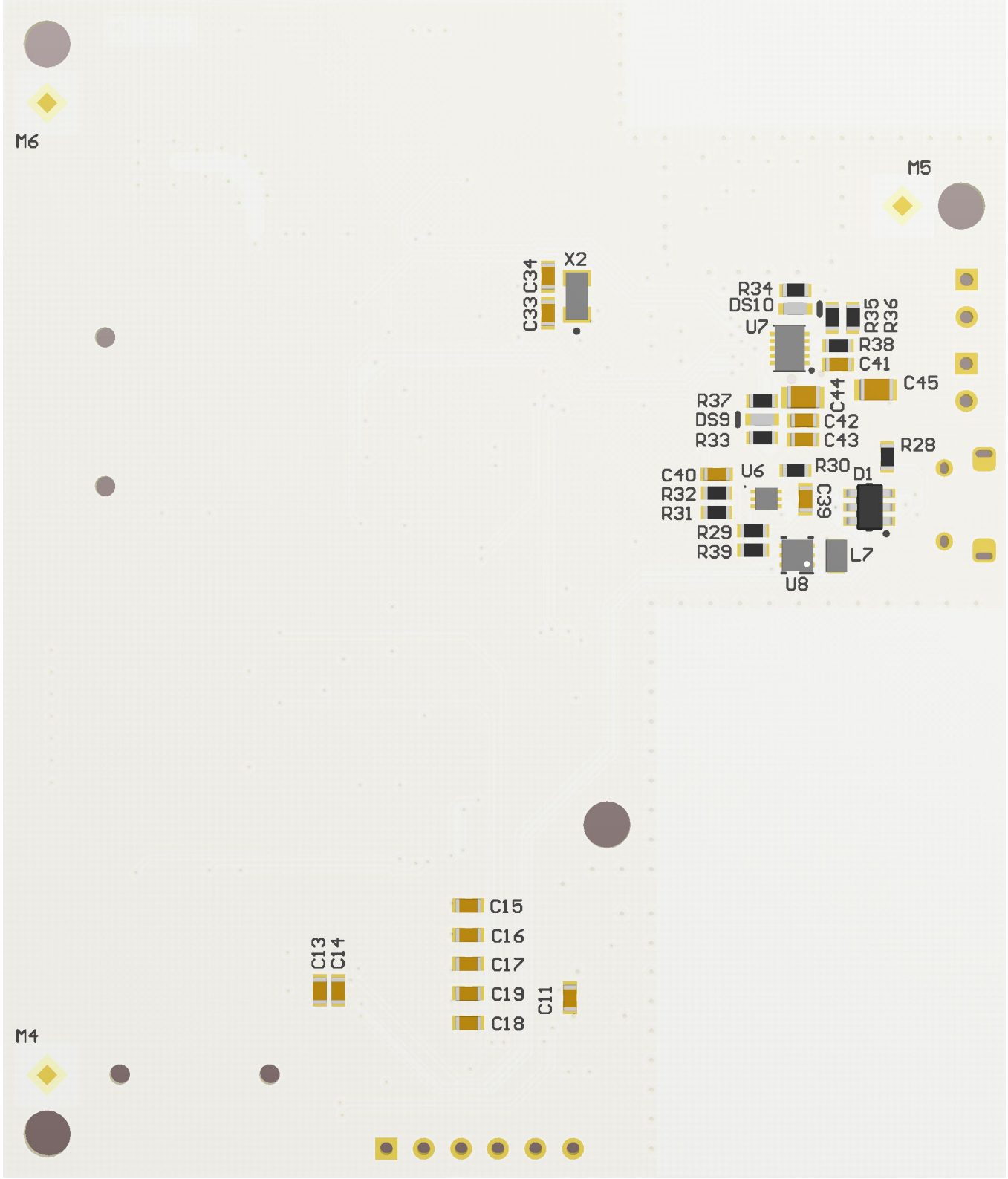
Connector Pmod I2C and SPI connected to the KW41Z



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	hepia Haute école du paysage, d'ingénierie et d'architecture de Genève
File: PMOD.SchDoc			

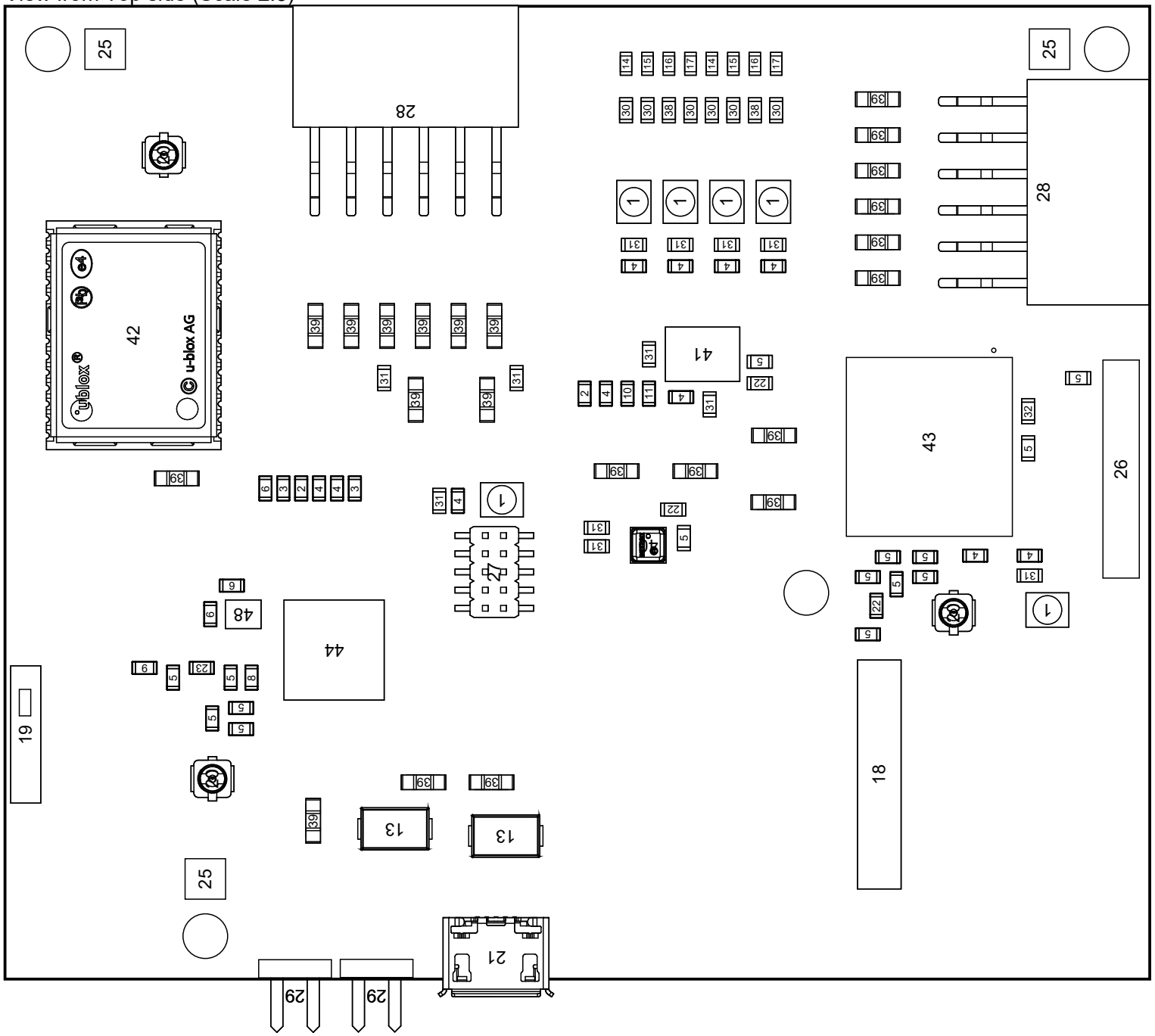

2.45 GHz antenna
GPS
U3
GPS_nCS
J1
M3
GPS antenna
M2
J3
C46
C36
C38
L4
C30
C37
C31
L6
L5
C35
X1
U5
P6
GND
BAT
P5
GND
SOLAR
D2
SOLAR
USB_5V
D3
J4
C24
C25
C26
C27
C28
C29
R26
GND
R27
C32
P2
B6
RST
VCC_3.3
R25
SSEL
MOSI
SCL
MISO
SCK
SDA
P3
SmartCanton DevBox
V1.0
HES-SO Master \ hepia
Andrade David
R23
R24
U1
R2
R5
SCL
SDA
C1
C2
C8
C9
R18
C3
R12
U2
RX
TX
R13
R11
C7
R17
B4
C6
R16
B3
C5
R15
B2
C4
R14
B1
R1
R3
R4
R6
R7
R8
R9
R10
DS1
DS2
DS3
DS4
DS5
DS6
DS7
DS8
SDA
SCK
MISO
SCL
MOSI
SSEL
LoRa 868MHz
C21
C20
C22
L1
L2
L3
J2
C23
C12
U4
B5
RST
R22
C10
R20
R21
R19
P1
P4
M1


M6
M5
X2
C34
C33
R34
DS10
U7
R35
R36
R38
C41
C45
C44
R37
DS9
C42
R33
C43
R28
C40
U6
R30
D1
R32
C39
R31
R29
R39
L7
U8
C15
C16
C17
C19
C18
C13
C14
C11
M4

Bill Of Materials

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	TPS62291DRVT	1	DRV0006A_V
48	X1	CX2520DB32000D0GEJZ1	1	AVX-CX2520DB32000D0GEJZ1-4_V
49	X2	ABS07-32.768KHz-T	1	ABRA-ABS07-2_V

View from Top side (Scale 2.5)



View from Bottom side (Scale 2.5)