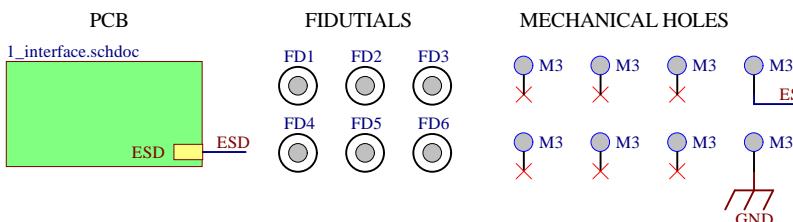


Rev	Description	Date	Author
0.5	- Update templates. - Add missing schematic to layout elements. - Update PC-104 interface. - Review circuits and architecture.	26-Aug-2020	Andre M. P. Mattos

Revision History

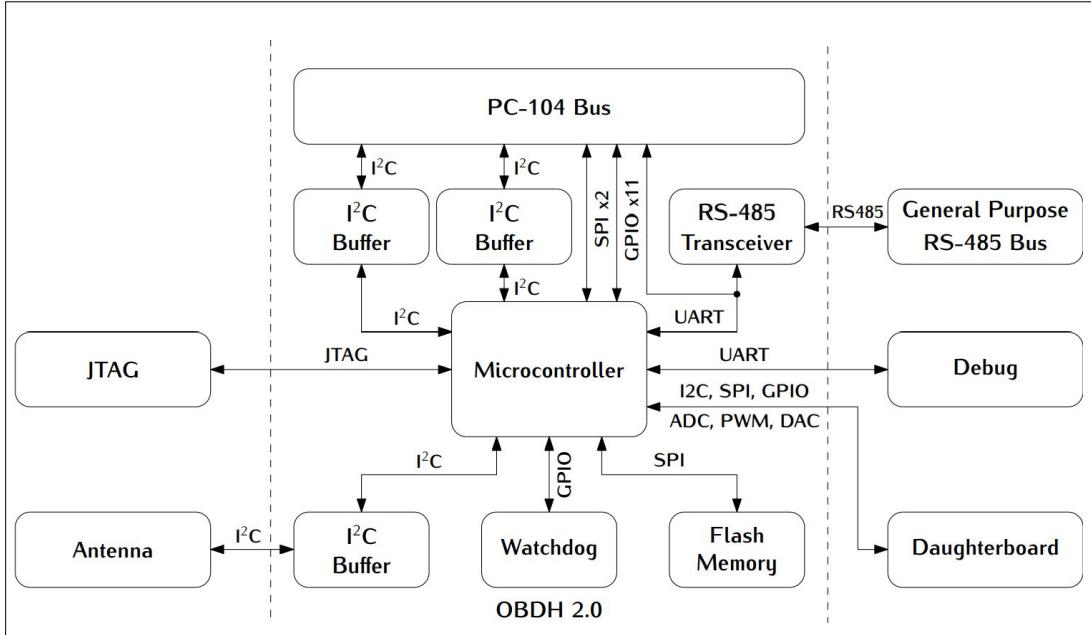


PCB Elements

OBDH2 Hardware:

- Drawn by: André M. P. Mattos
- Reviewers: Cezar A. Rigo, Kleber Gouveia and Yan C. Azeredo
- Based on FloripaSat-I OBDH designed by: Sara V. Martinez
- Support: Gabriel M. Marcelino

Project Contributions



Block Diagram

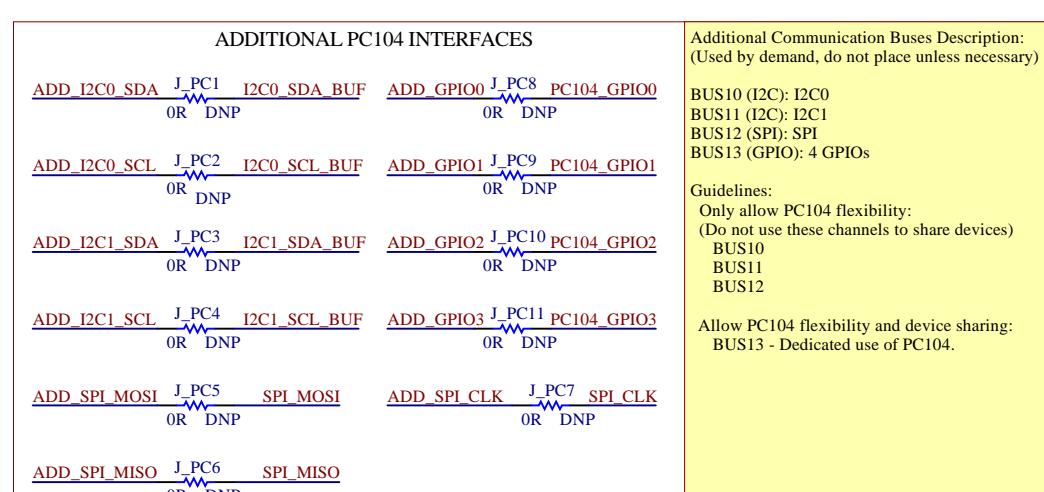
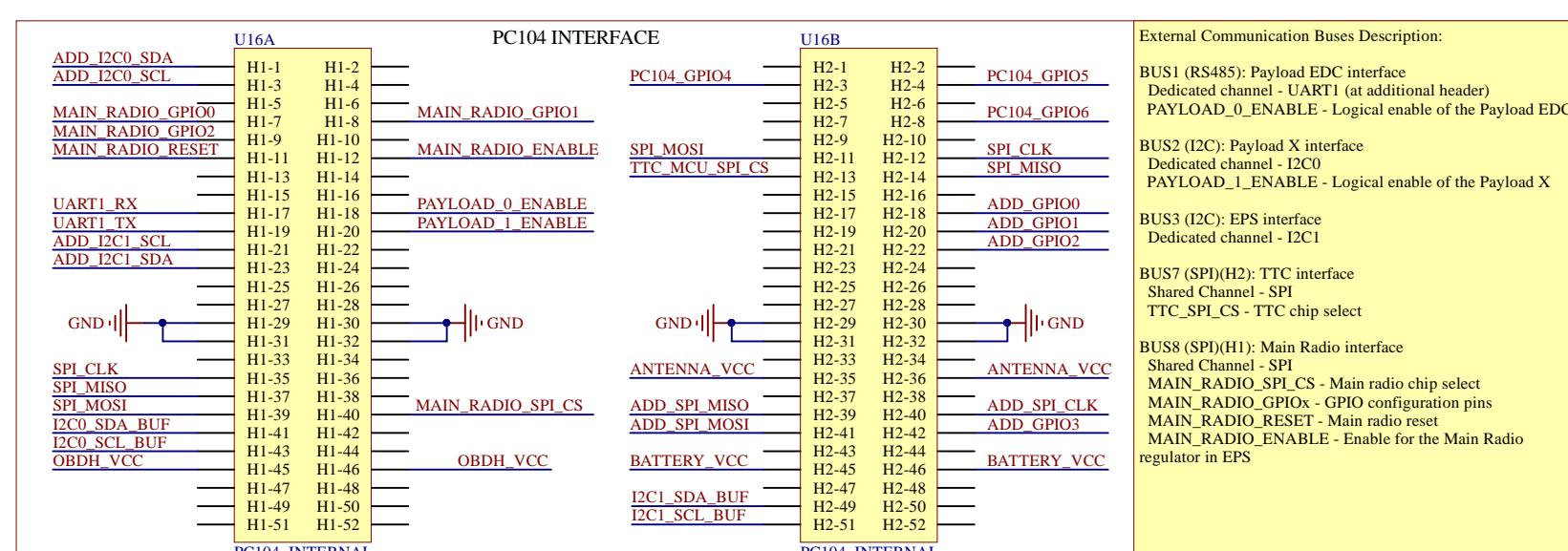
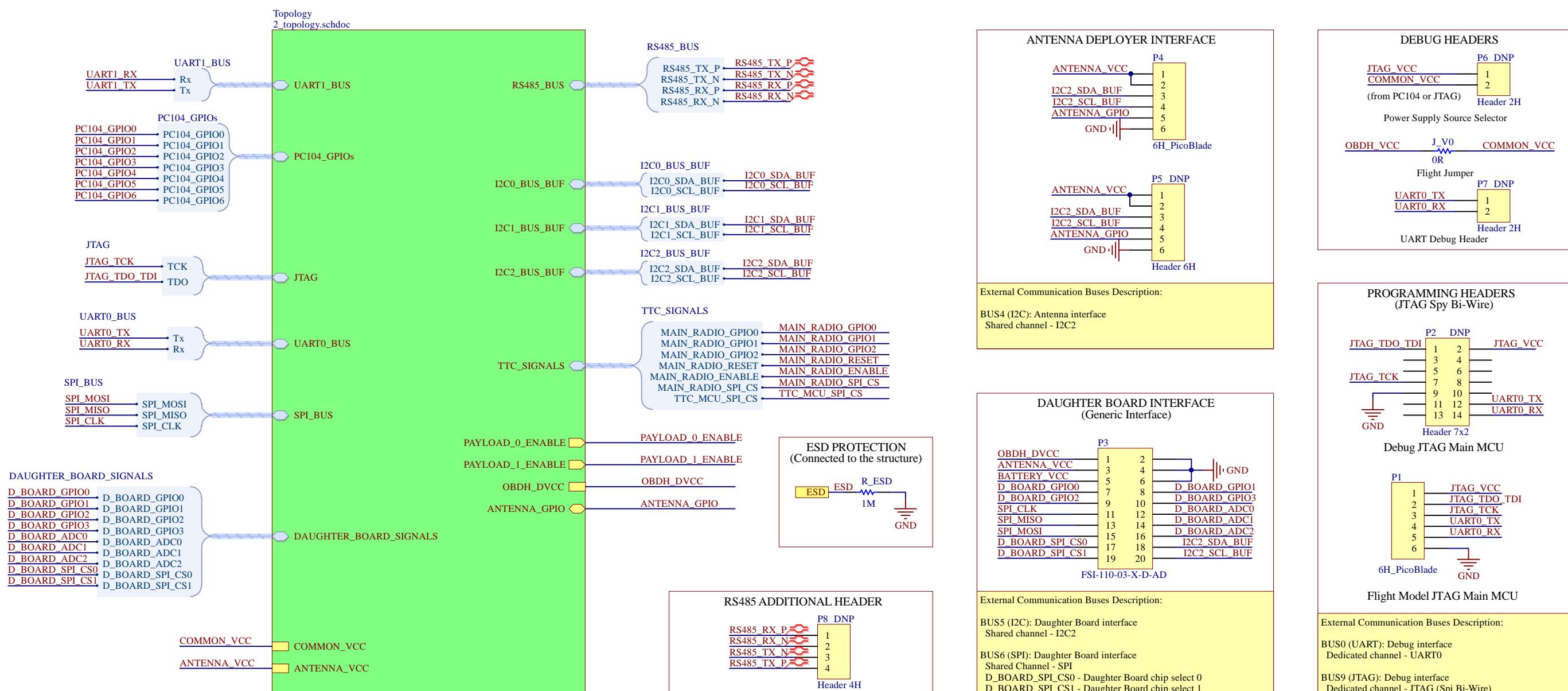
Copyright © 2019
by Universidade Federal de Santa Catarina.

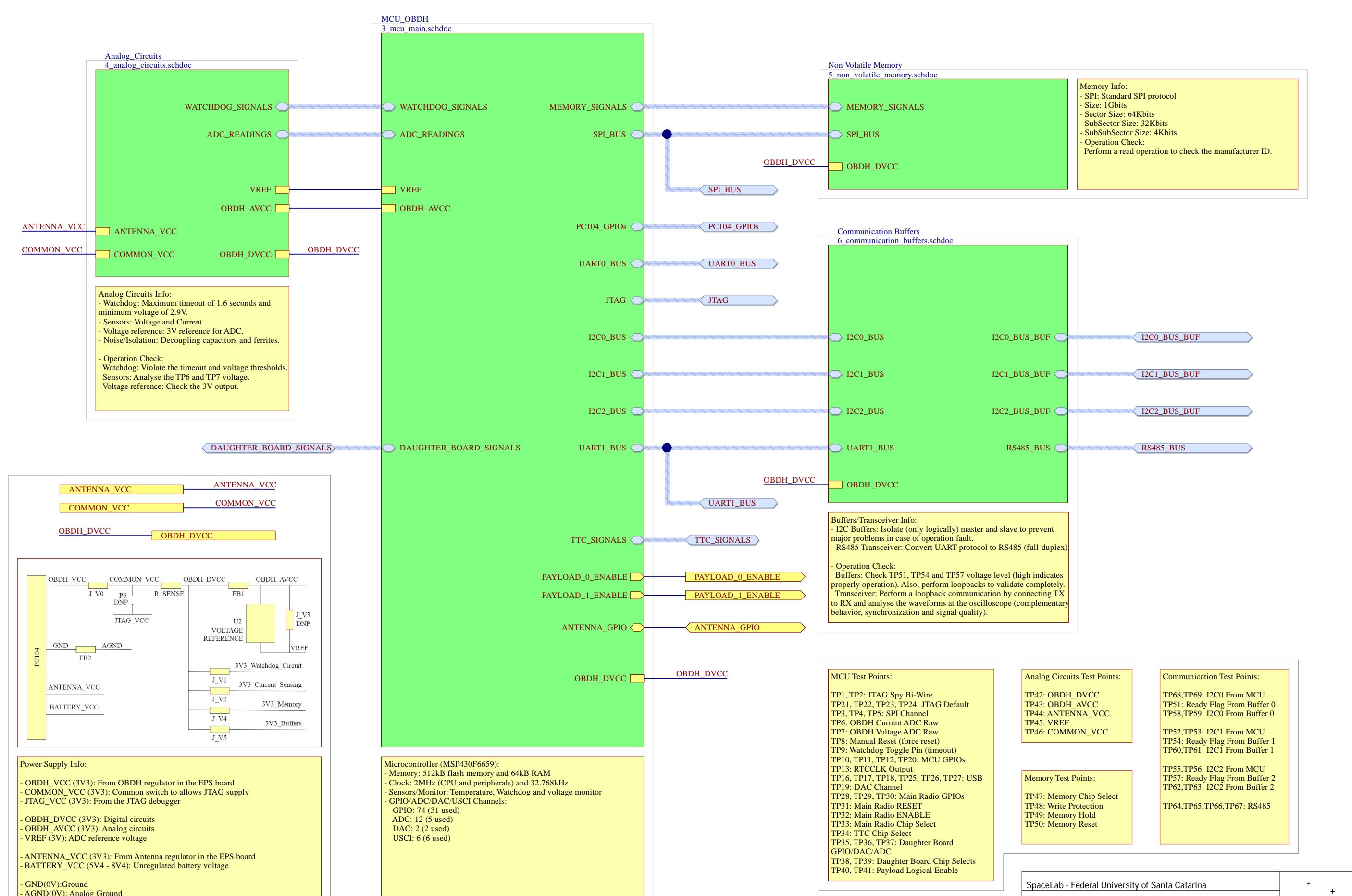
OBDH2 Hardware
Based on the FloripaSat-I OBDH 2.0

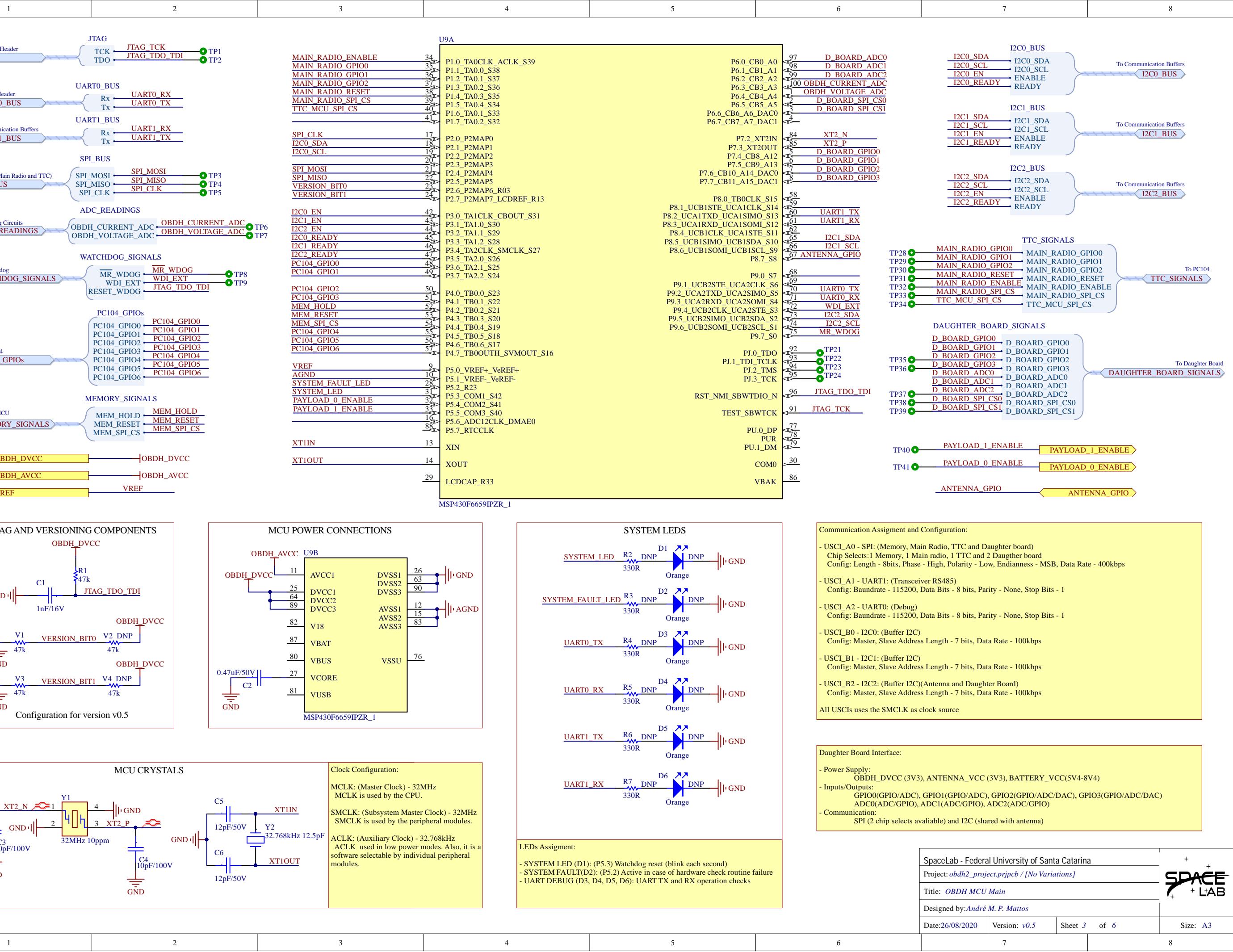
This work is licensed under the Creative Commons Attribution-ShareAlike 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-sa/4.0/>.

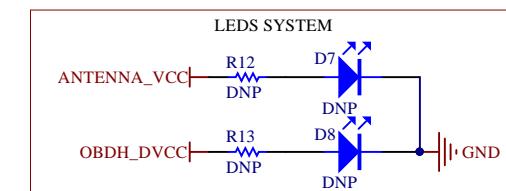
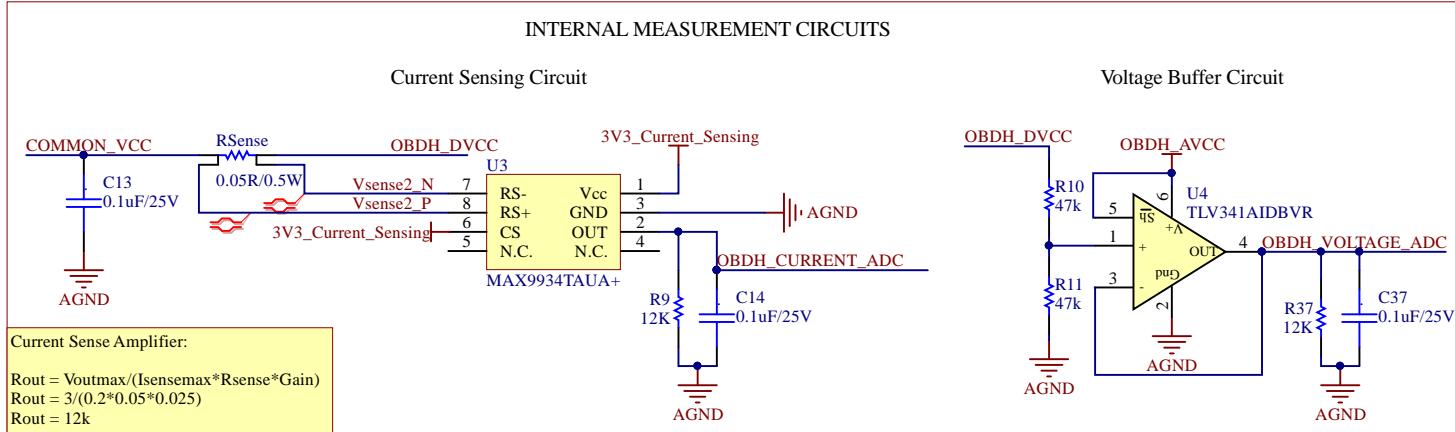
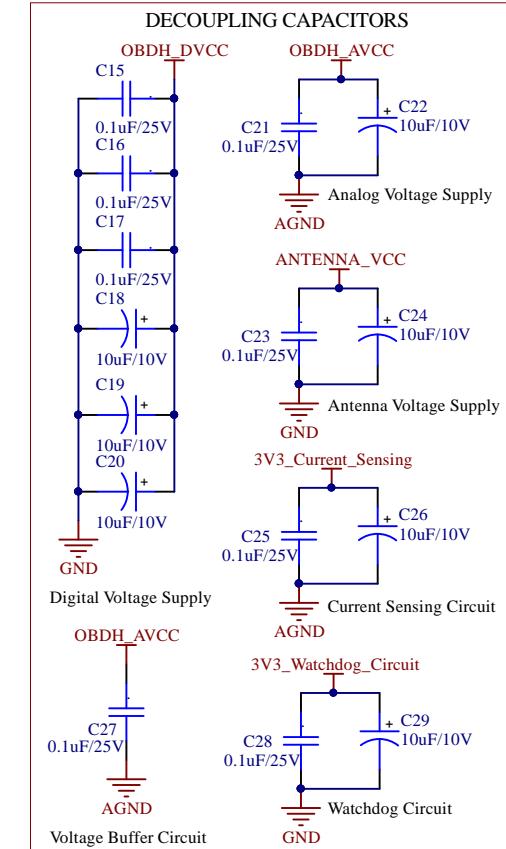
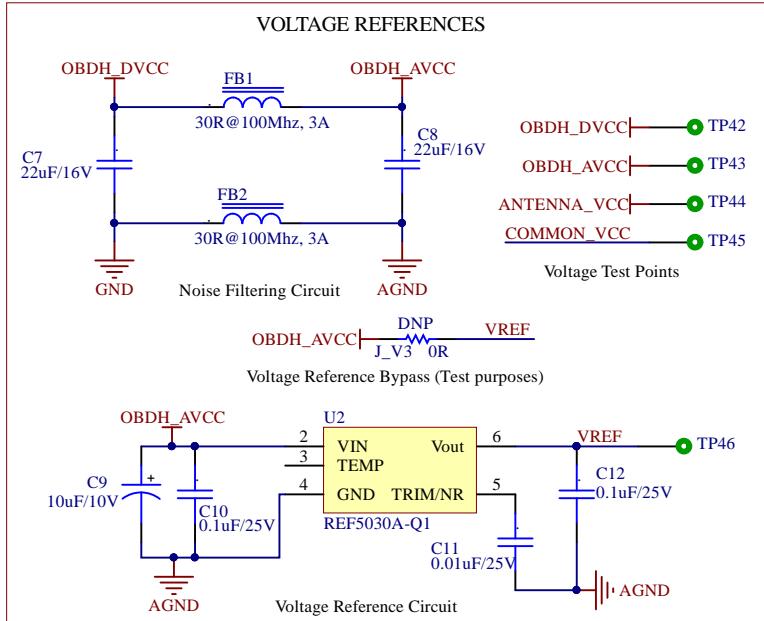
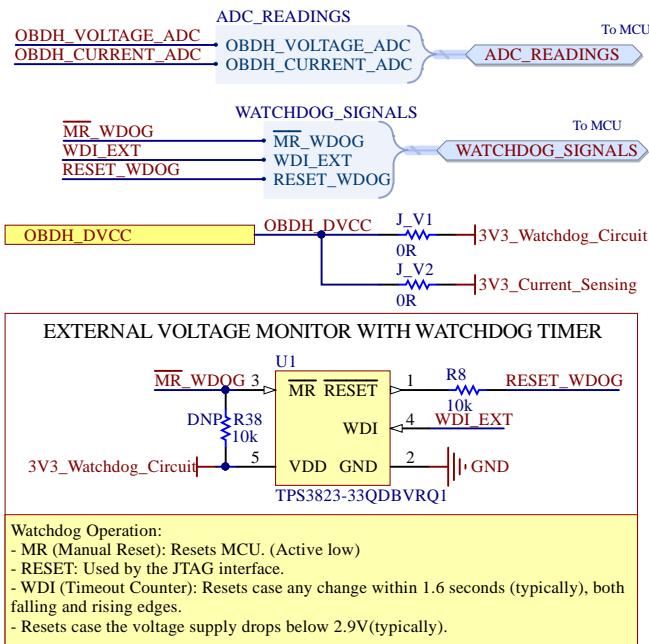
Project Information

SpaceLab - Federal University of Santa Catarina	+ + + + + + + + + +
Project: obdh2_project.prjpcb [No Variations]	
Title: OBDH Hardware Architecture	
Designed by: André M. P. Mattos	
Date: 26/08/2020	Version: v0.5
Sheet 0 of 6	Size: A4





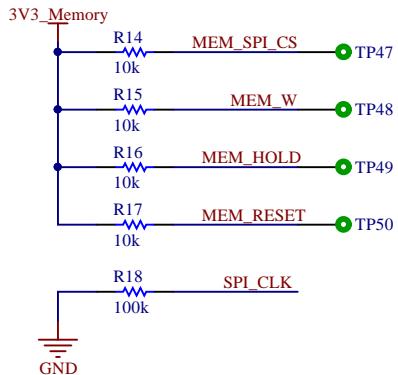




A

A

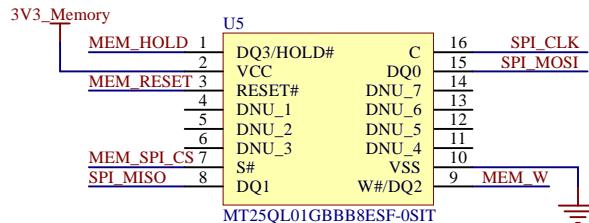
PULL-UP AND PULL-DOWN RESISTORS



B

B

NON-VOLATILE MEMORY



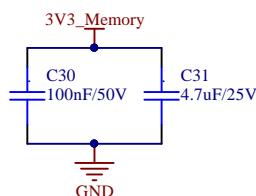
Memory Operation:

To be defined

C

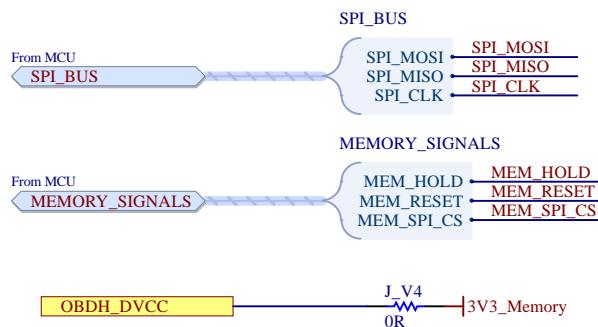
C

DECOUPLING CAPACITORS



D

D



SpaceLab - Federal University of Santa Catarina

Project: [obdh2_project.prjpcb](#) [No Variations]

Title: *Non Volatile Memory*

Designed by: André M. P. Mattos

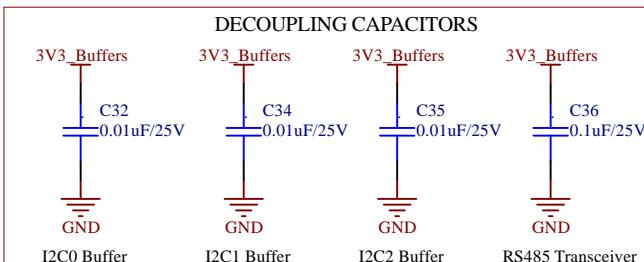
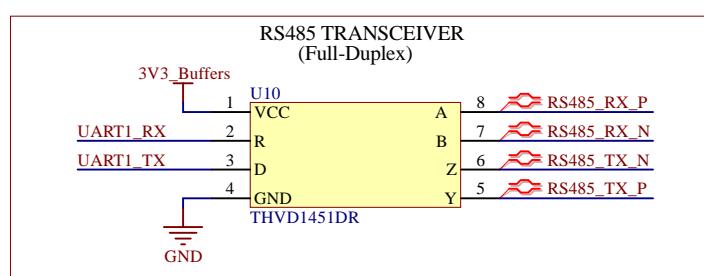
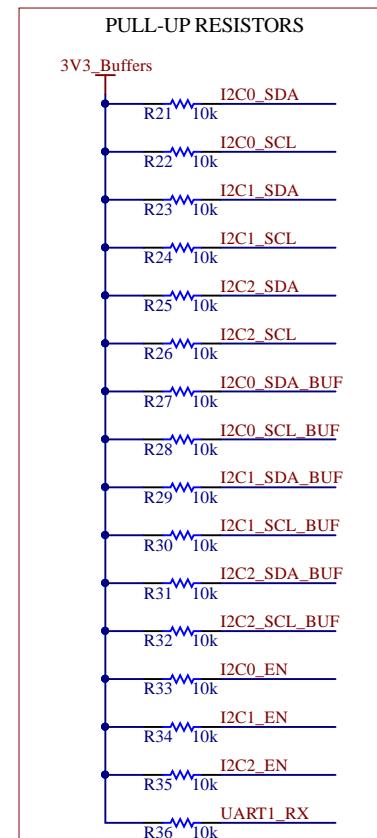
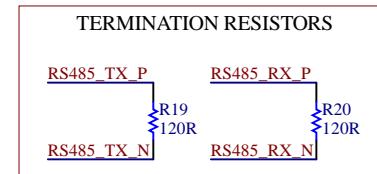
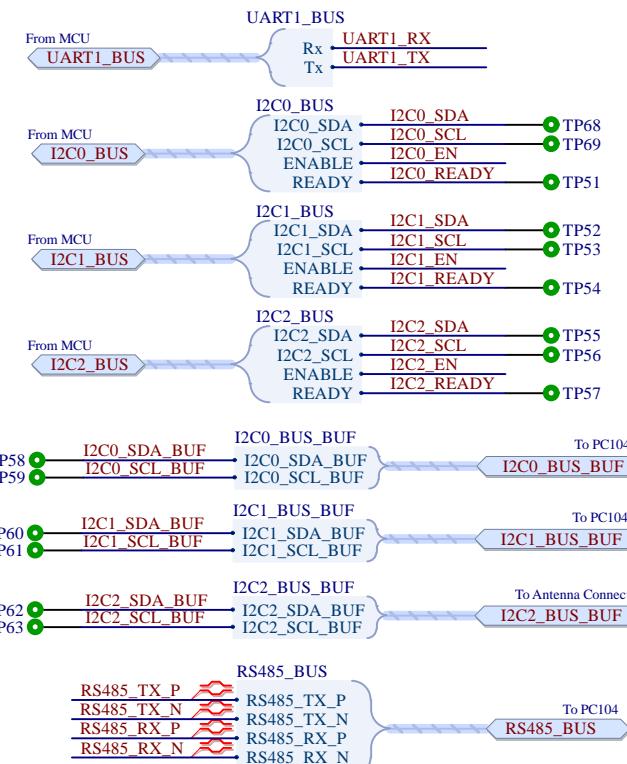
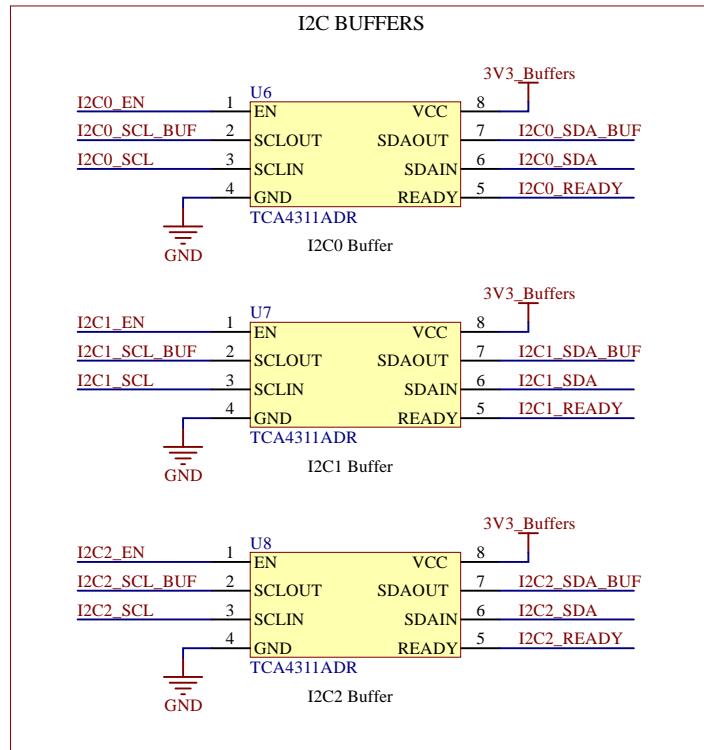
Date: 26/08/2020

Version: v0.5

Sheet 5 of 6

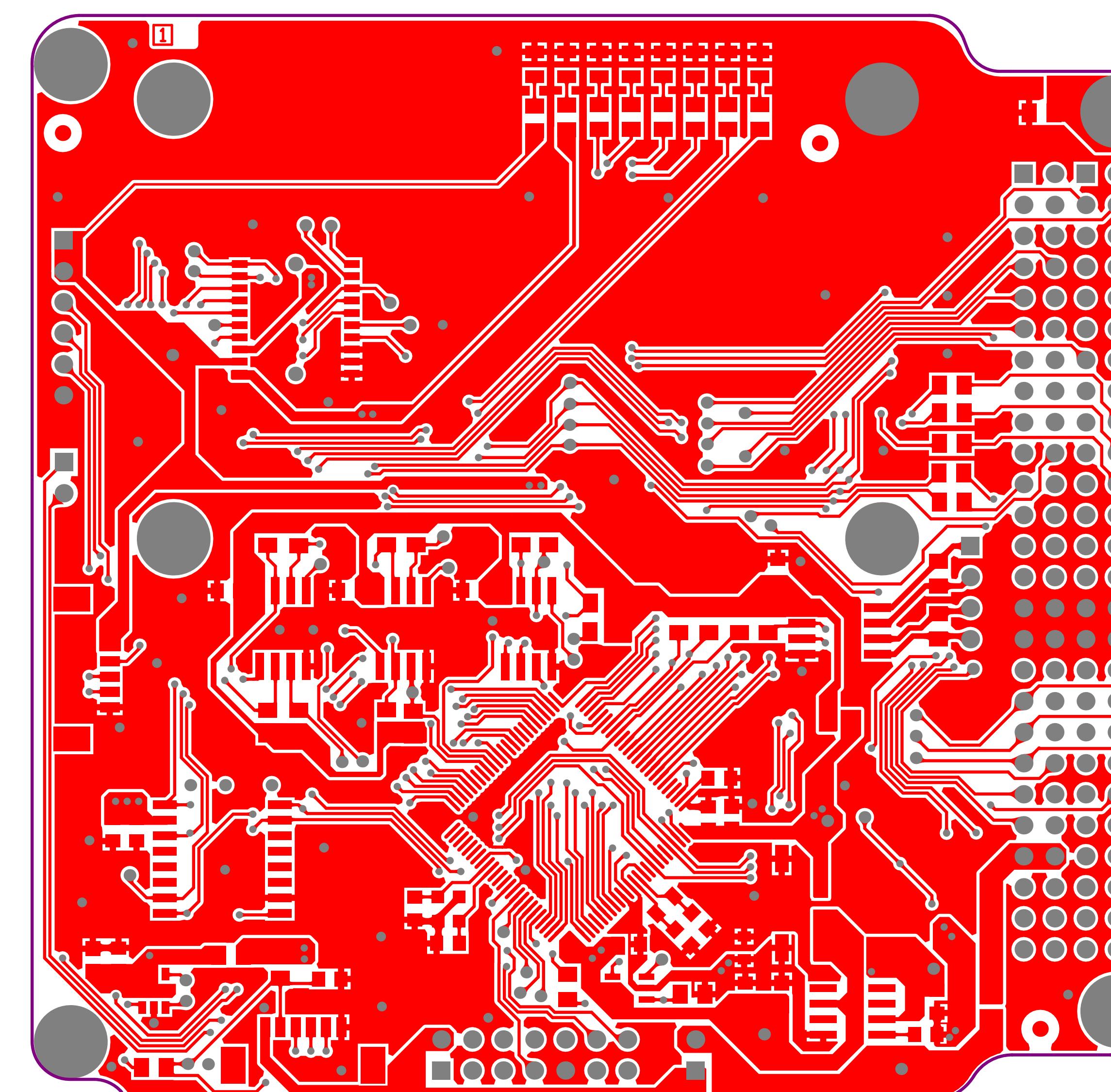


Size: A4



A

A



B

B

Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0,39mil	3,5	
3	Top Layer	Copper	1,38mil		
4	Dielectric Core	FR-4	59,06mil	4,8	
5	Bottom Layer	Copper	1,38mil		
6	Bottom Solder	Solder Resist	0,39mil	3,5	
7	Bottom Overlay				

C

C

Fabrication specifications:

- Copper base 10Z:
- PCB Material: Prepeg FR4—Standard
- PCB Thickness: 1.6mm
- PCB Surface: HASL (with lead)
- Silkscreen Color: White (top and bottom)
- Soldermask Color: Blue
- Vias: Force Complete Tenting
- Special: Stack-up (herein included)

D

D

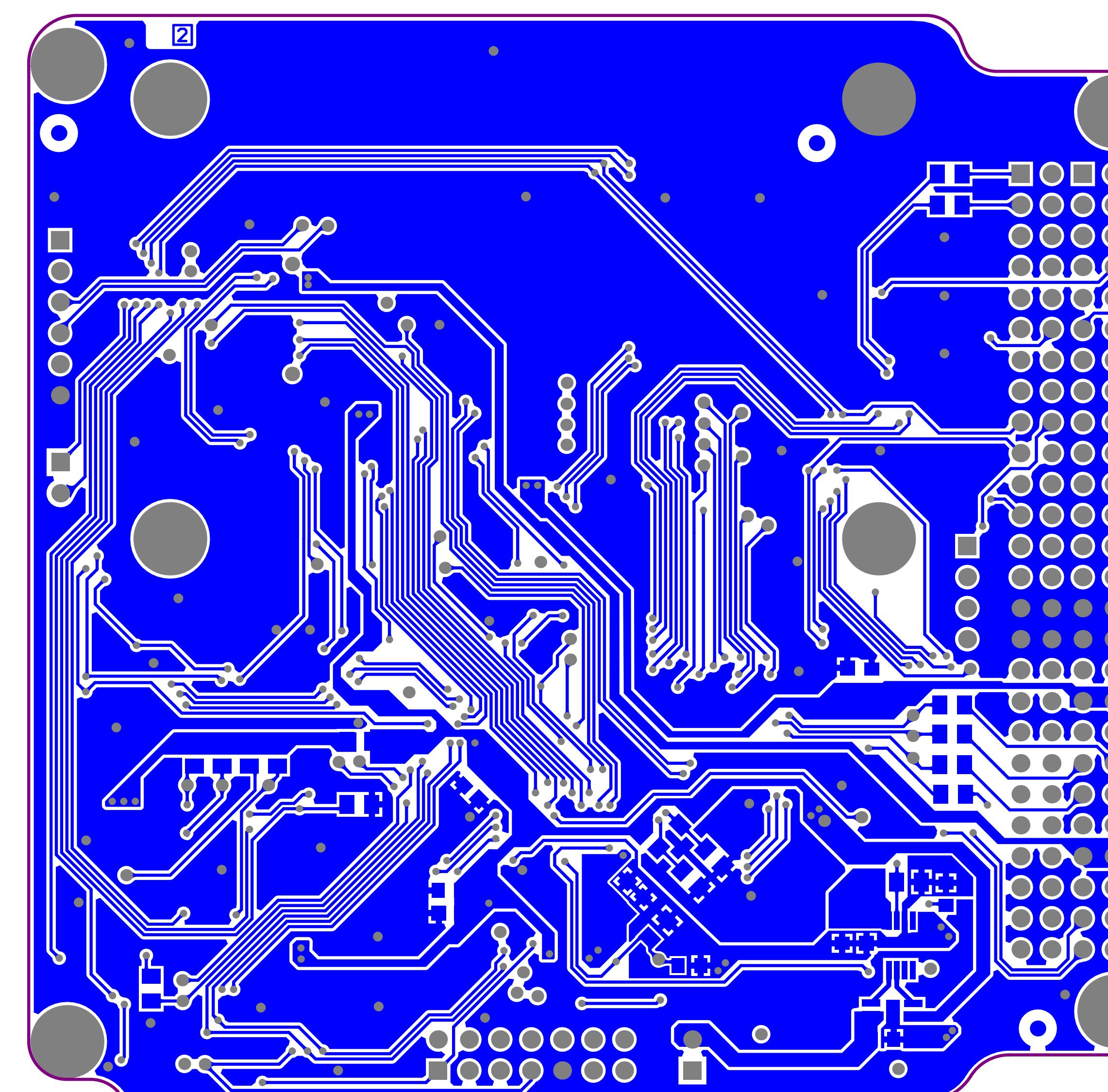
Assembly specifications:

- Solder composition: Include lead
- Fiducials: 3 top and 3 bottom available
- Check BOM for not placed components

SpaceLab - Federal University of Santa Catarina	
Project: OBDH2	
Layer: Top Layer	
Designed by: Andre M. P. Mattos	
Date: 26/08/2020	Project Code: OBDH2
Version: v0.5	Size: A4

A

A



Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0,39mil	3,5	
3	Top Layer	Copper	1,38mil		
4	Dielectric Core	FR-4	59,06mil	4,8	
5	Bottom Layer	Copper	1,38mil		
6	Bottom Solder	Solder Resist	0,39mil	3,5	
7	Bottom Overlay				

B

B

Fabrication specifications:

- Copper base 10Z:
- PCB Material: Prepeg FR4—Standard
- PCB Thickness: 1.6mm
- PCB Surface: HASL (with lead)
- Silkscreen Color: White (top and bottom)
- Soldermask Color: Blue
- Vias: Force Complete Tenting
- Special: Stack-up (herein included)

C

C

Assembly specifications:

- Solder composition: Include lead
- Fiducials: 3 top and 3 bottom available
- Check BOM for not placed components

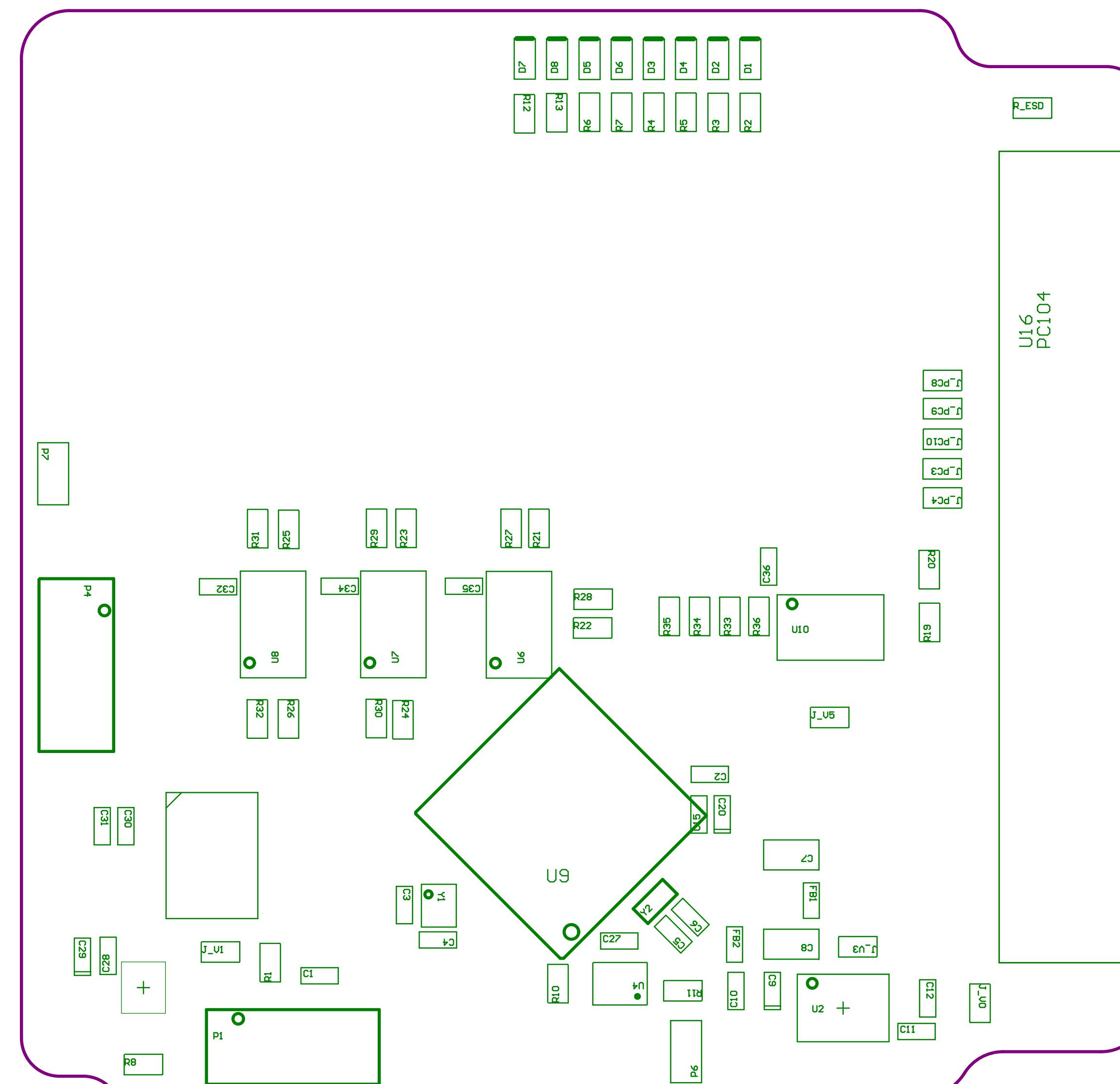
D

D

SpaceLab - Federal University of Santa Catarina	 + LAB
Project: OBDH2	
Layer: Bottom Layer	
Designed by: Andre M. P. Mattos	
Date: 26/08/2020	Project Code: OBDH2
Version: v0.5	Size: A4

A

A



B

B

Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0,39mil	3,5	
3	Top Layer	Copper	1,38mil		
4	Dielectric Core	FR-4	59,06mil	4,8	
5	Bottom Layer	Copper	1,38mil		
6	Bottom Solder	Solder Resist	0,39mil	3,5	
7	Bottom Overlay				

C

C

Fabrication specifications:

- Copper base 10Z:
- PCB Material: Prepeg FR4—Standard
- PCB Thickness: 1.6mm
- PCB Surface: HASL (with lead)
- Silkscreen Color: White (top and bottom)
- Soldermask Color: Blue
- Vias: Force Complete Tenting
- Special: Stack-up (herein included)

D

D

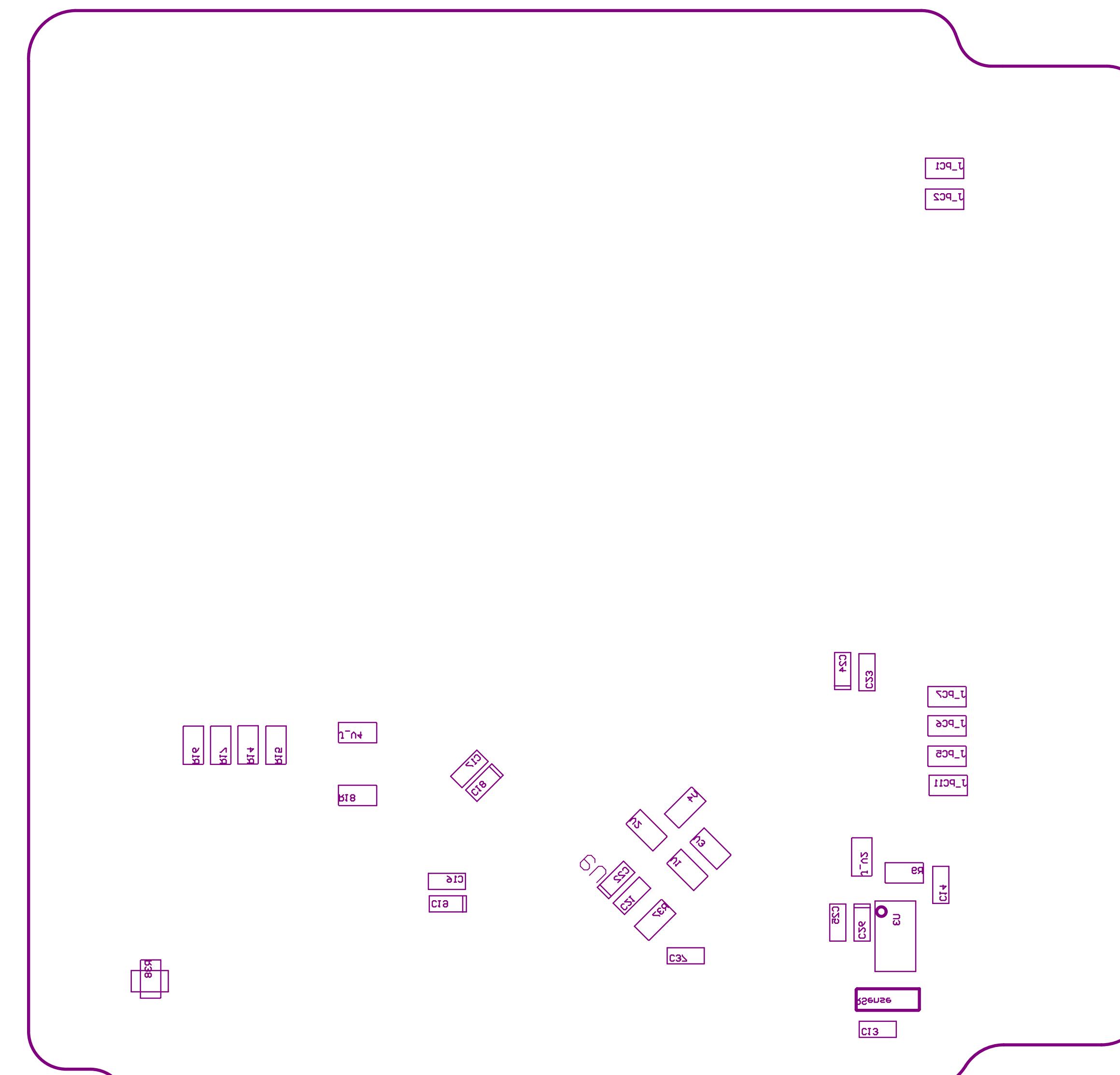
Assembly specifications:

- Solder composition: Include lead
- Fiducials: 3 top and 3 bottom available
- Check BOM for not placed components

SpaceLab - Federal University of Santa Catarina	+ SPACE + LAB
Project: OBDH2	
Layer: ASM Top	
Designed by: Andre M. P. Mattos	
Date: 26/08/2020	Project Code: OBDH2
Version: v0.5	Size: A4

A

A



B

B

Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0,39mil	3,5	
3	Top Layer	Copper	1,38mil		
4	Dielectric Core	FR-4	59,06mil	4,8	
5	Bottom Layer	Copper	1,38mil		
6	Bottom Solder	Solder Resist	0,39mil	3,5	
7	Bottom Overlay				

C

C

Fabrication specifications:

- Copper base 10Z:
- PCB Material: Prepeg FR4—Standard
- PCB Thickness: 1.6mm
- PCB Surface: HASL (with lead)
- Silkscreen Color: White (top and bottom)
- Soldermask Color: Blue
- Vias: Force Complete Tenting
- Special: Stack-up (herein included)

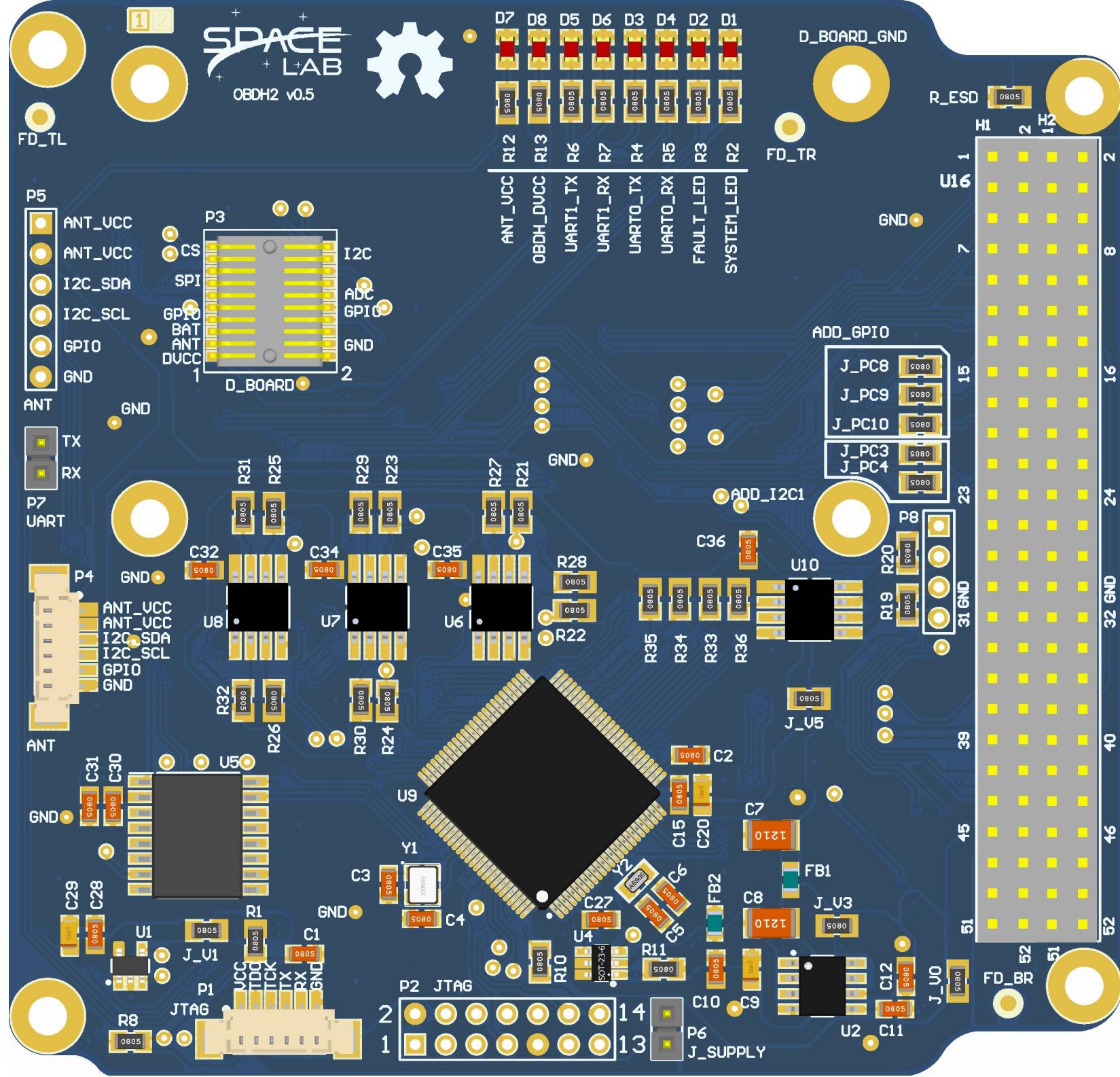
D

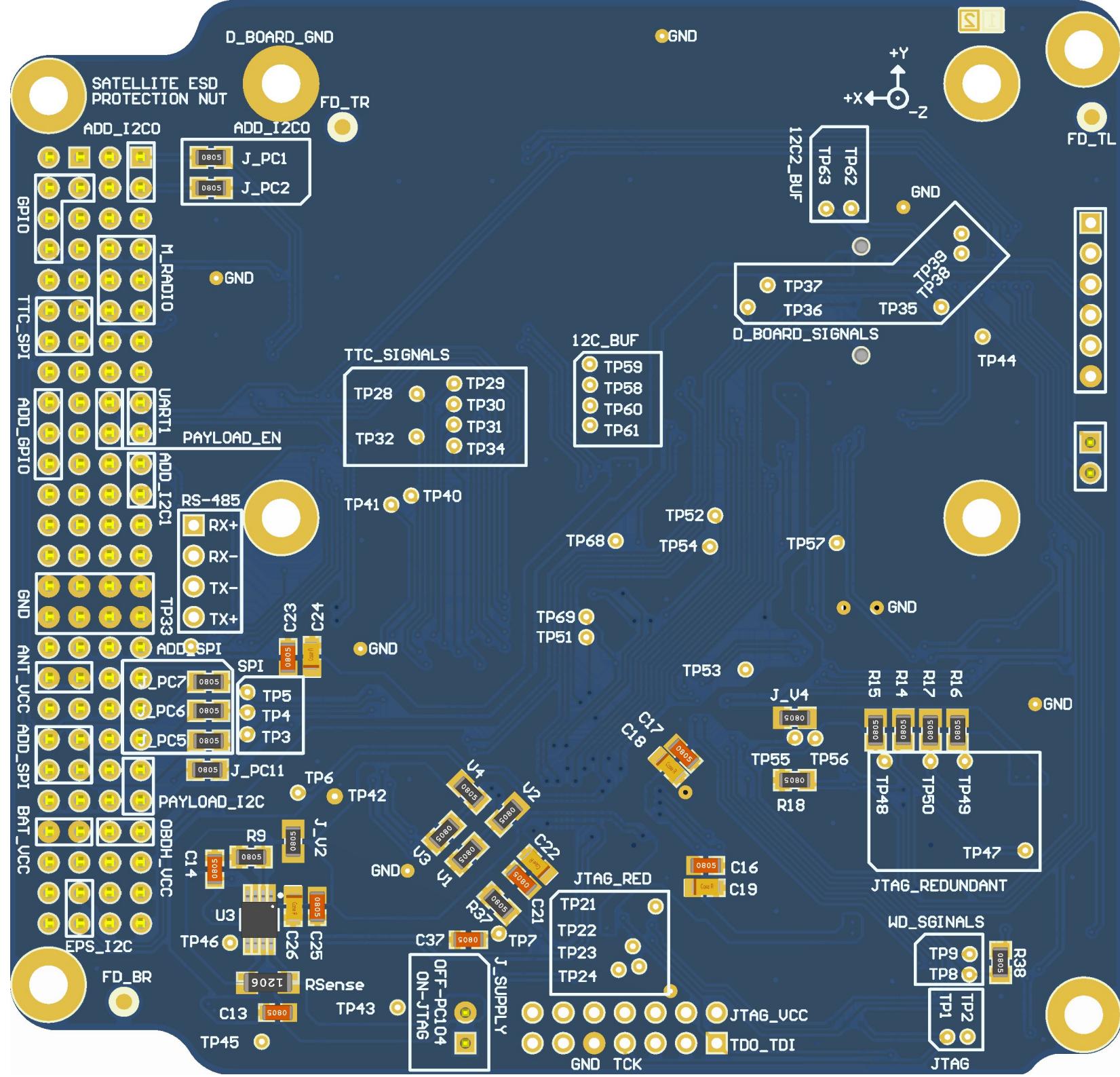
D

Assembly specifications:

- Solder composition: Include lead
- Fiducials: 3 top and 3 bottom available
- Check BOM for not placed components

SpaceLab - Federal University of Santa Catarina	 + SPACE + LAB + L+AB
Project: OBDH2	
Layer: ASM Bottom	
Designed by: Andre M. P. Mattos	
Date: 26/08/2020	Project Code: OBDH2
Version: v0.5	Size: A4







Bill of Materials

Source Data From:	obdh2_project.prjpcb
Project:	obdh2_project.prjpcb
Variant:	None
Project Code:	OBDH2

Report Date:	26/08/2020	20:34:12
Print Date:	26/08/2020	20:34:36

#	Partnumber	Comment	Description	Quantity	Designator	Fitted
1	CRCW080510K0FKEA	10k	RES 10K OHM 1/8W 1% 0805	22	R8, R14, R15, R16, R17, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R38	Fitted
2	CRCW08050000Z0EA	0R	RES OR OHM 1/16W JUMPER 0805	17	J_PC1, J_PC2, J_PC3, J_PC4, J_PC5, J_PC6, J_PC7, J_PC8, J_PC9, J_PC10, J_PC11, J_V0, J_V1, J_V2, J_V3, J_V4, J_V5	Fitted
3	CC0805KRX7R8BB104	0.1uF/25V	CAP CER 0.1uF 25V 10% X7R 0805	14	C10, C12, C13, C14, C15, C16, C17, C21, C23, C25, C27, C28, C36, C37	Fitted
4	TPSR106K006R1000, TPSP106M010R2000	10uF/10V	CAP Tantalum 10uF 6.3V 10% 0805, CAP Tantalum 10uF 10V 20% 0805	8	C9, C18, C19, C20, C22, C24, C26, C29	Fitted
5	RC0805FR-0747KL	47k	RES 47k OHM 1/10W 1% 0805	7	R1, R10, R11, V1, V2, V3, V4	Fitted
6	RC0805FR-07330RL	330R	RES 330R OHM 1/4W 1% 0805	6	R2, R3, R4, R5, R6, R7	Fitted
7	LTST-C170KFKT	Orange	SMD Orange LED	6	D1, D2, D3, D4, D5, D6	Fitted
8	CL21B103KAANNNC	0.01uF/25V	CAP CER 0.01uF 25V 10% X7R 0805	4	C11, C32, C34, C35	Fitted
9	LTST-C171GKT, RC0805FR-071KL	DNP	SMD Green LED, RES 1.0K OHM 1/8W 1% 0805	4	D7, D8, R12, R13	Fitted
10	TCA4311ADR	TCA4311ADR	IC SIGNAL BUFFER I2C 8SOIC	3	U6, U7, U8	Fitted
11	53398-0671	6H_PicoBlade	Header, 6-Pin, Right Angle	2	P1, P4	Fitted
12	08051A100FAT2A	10pF/100V	CAP CER 10pF 100V 0805	2	C3, C4	Fitted
13	PCF0805R-1K65BT1	12K	RES 1.65K OHM 1/10W 0.1% 0805	2	R9, R37	Fitted
14	CL21C120FBANNNC	12pF/50V	CAP CER 12pF 50V 0805	2	C5, C6	Fitted
15	C3225XTR1C226K250AC	22uF/16V	CAP CER 22uF 16V 10% X7R 1210	2	C7, C8	Fitted
16	BLM21PG300SN1D	30R@100MHz, 3A	Ferrite Bead 30 OHM 3A 100MHz	2	FB1, FB2	Fitted
17	CRGCQ0805F120R	120R	RES 120R OHM 1/8W 1% 0805	2	R19, R20	Fitted
18	826646-2	Header 2H	Header, 2-Pin	2	P6, P7	Fitted
19	LVK12R050DER	0.05R/0.5W	Current Sense Resistors - SMD 0.05ohm .5% 4 Terminal	1	R\$ense	Fitted
20	C0805C474K5RACTU	0.47uF/50V	CAP CER 0.47uF 50V 10% X7R 0805	1	C2	Fitted
21	AC0805FR-13100KL	1M	RES 100K OHM 1/8W 1% 0805	1	R_ESD	Fitted
22	C0603X102J4RECAUTO	1nF/16V	CAP CER 1nF 16V 0603 5%	1	C1	Fitted
23	C0805C475K3RACAUTO	4.7uF/25V	CAP CER 4.7uF 25V 10% X7R 0805	1	C31	Fitted
24	ABMX-102-32.000MHZ-T	32MHz 10ppm	32MHz ±10ppm Crystal 10pF 60 Ohm -40°C - 125°C	1	Y1	Fitted
25	ECS-.327-12.5-34S-TR	32.768kHz 12.5pF	32.768kHz ±20ppm Crystal 12.5pF 70 kOhm -40°C - 125°C	1	Y2	Fitted
26	AC0805FR-13100KL	100k	RES 100K OHM 1/8W 1% 0805	1	R18	Fitted
27	C0603C104K5RAC3121	100nF/50V	CAP CER 100nF 50V 0603 10%	1	C30	Fitted
28	FSI-110-03-G-D-AD	FSI-110-03-X-D-AD	Contact Connector	1	P3	Fitted
29		Header 4H	Header, 4-Pin	1	P8	Fitted
30		Header 6H	Header, 6-Pin, Right Angle	1	P5	Fitted
31		Header 7x2	Header, 7-Pin, Dual row	1	P2	Fitted
32	MAX9934TAU+	MAX9934TAU+	MAX9934TAU+	1	U3	Fitted
33	MSP430F6659IPZR	MSP430F6659IPZR_1	Imported	1	U9	Fitted
34	MT25QL01GBBB8ESF-0SIT	MT25QL01GBBB8ESF-0SIT	IC FLASH 1GBIT 108MHZ 16SOIC	1	U5	Fitted
35	SSW-126-04-G-D	PC104_INTERNAL	PC104	1	U16	Fitted
36	REF5030A-Q1	REF5030A-Q1	REF5030A-Q1	1	U2	Fitted
37	THVD1451DR	THVD1451DR	IC INTERFACE RS422_RS485 8SOIC	1	U10	Fitted
38	TLV341AIDBVR	TLV341AIDBVR	TLV341AIDBVR	1	U4	Fitted
39	TPS3823-33QDBVRQ1	TPS3823-33QDBVRQ1	Processor Supervisory Circuit, 1 Supply Monitored, -40 to 85 degC, 5-Pin SOT-23 (DBV), Green (RoHS & no Sb/Br)	1	U1	Fitted