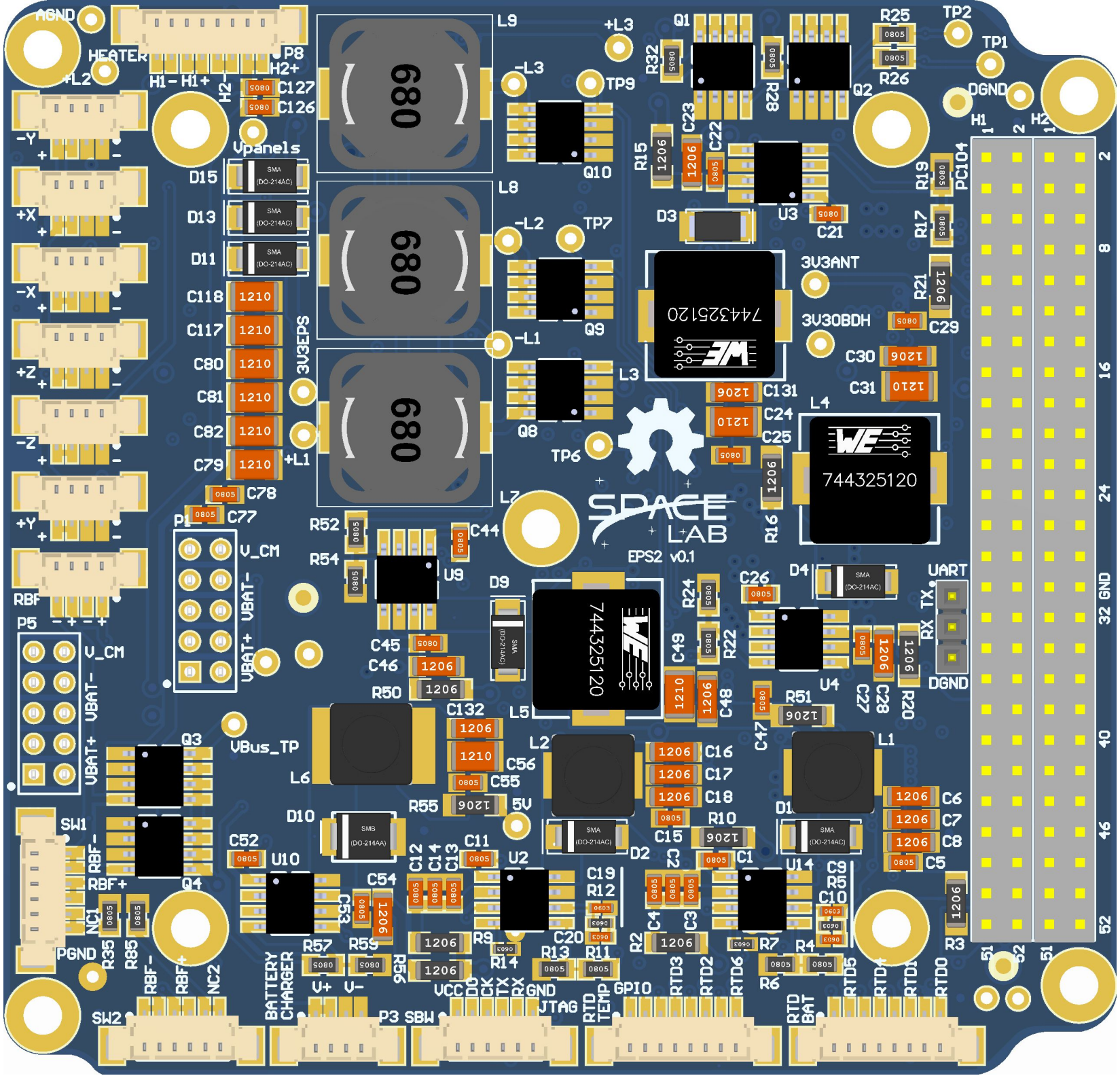
AGND
HEATER
P8
H1- H1+
H2-
H2+
C127
C126
+L2
L9
L8
L7
L6
L5
L4
L3
L2
L1
-L3
+L3
-L2
-L1
+L1
TP9
TP7
TP6
Q10
Q9
Q8
Q1
Q2
Q3
Q4
R32
R28
R25
R26
TP2
TP1
DGND
H1
H2
-Y
+X
-X
+Z
-Z
+Y
RBF
Vpanels
D15
D13
D11
SMA (DO-214AC)
C118
C117
C80
C81
C82
C79
C78
C77
3V3EPS
P1
V_CM
VBAT-
VBAT+
P5
SW1
RBF-
RBF+
NC1
PGND
R35
R85
NC2
SW2
BATTERY CHARGER
V+
V-
P3 SBW
VCC
DO
CK
TX
RX
GND
JTAG
RTD TEMP
GPIO
RTD BAT
RTD3
RTD2
RTD6
RTD5
RTD4
RTD1
RTD0
PC104
R19
R17
R21
C29
3V3ANT
3V3OBDH
C30
C31
C131
C24
C25
R16
744325120
EPS2 v0.1
SPACE LAB
D3
U3
C21
R15
C23
C22
D4
U4
C26
R24
R22
C49
C48
C47
R51
C27
C28
R20
UART
TX
RX
DGND
U9
R52
R54
C44
C45
C46
R50
C132
C56
C55
R55
5V
VBus_TP
D9
D10
SMB (DO-214AA)
C52
U10
C54
C53
R57
R59
R56
C12
C14
C13
C11
U2
R9
R14
R13
R11
C20
C19
R12
D2
C16
C17
C18
C15
R10
C1
C2
C4
C3
U14
C9
R5
C10
R7
R4
R6
R2
C6
C7
C8
C5
R3
D1
L1
L2
L5
L6
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2
8
16
24
32 GND
40
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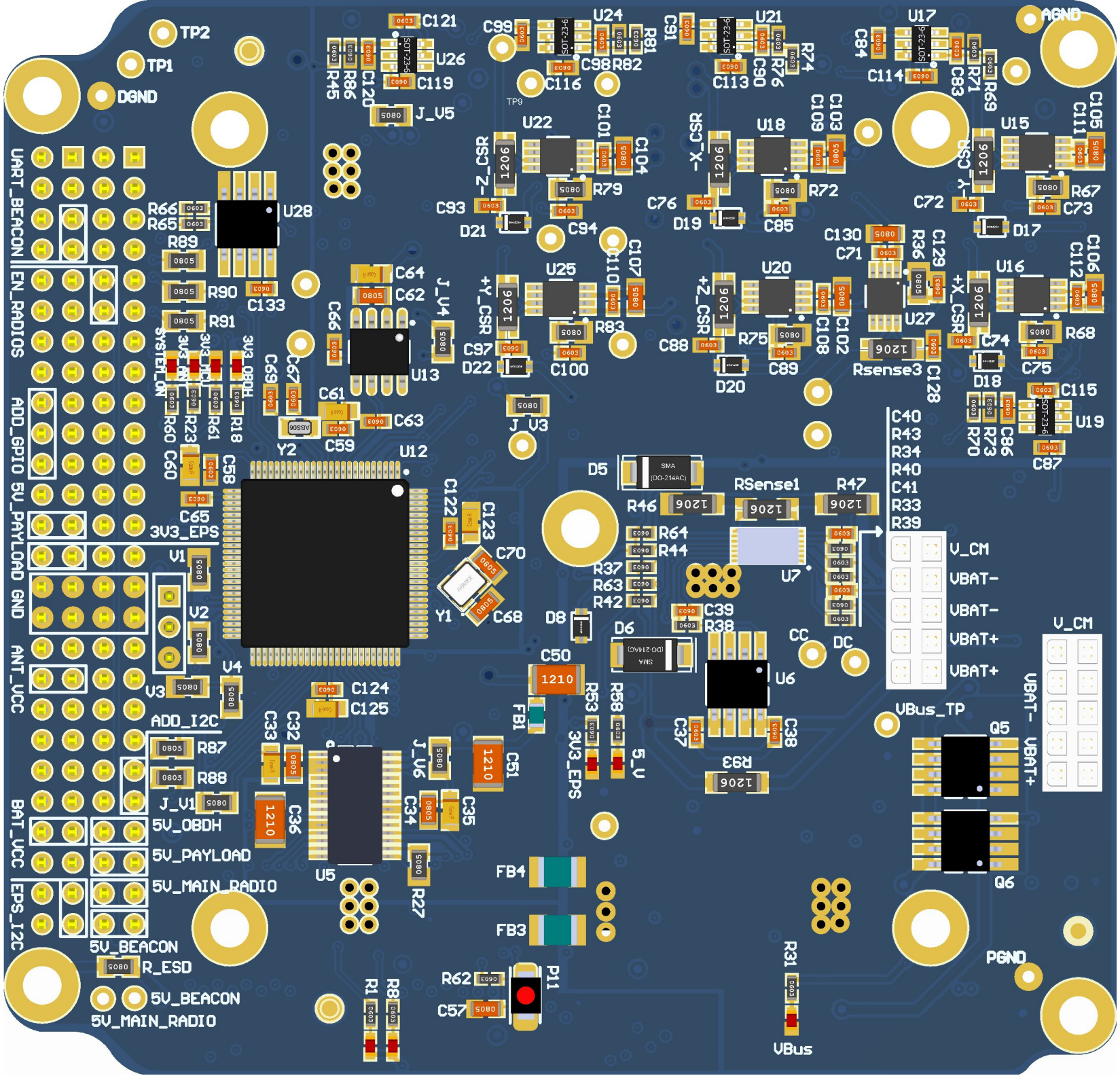
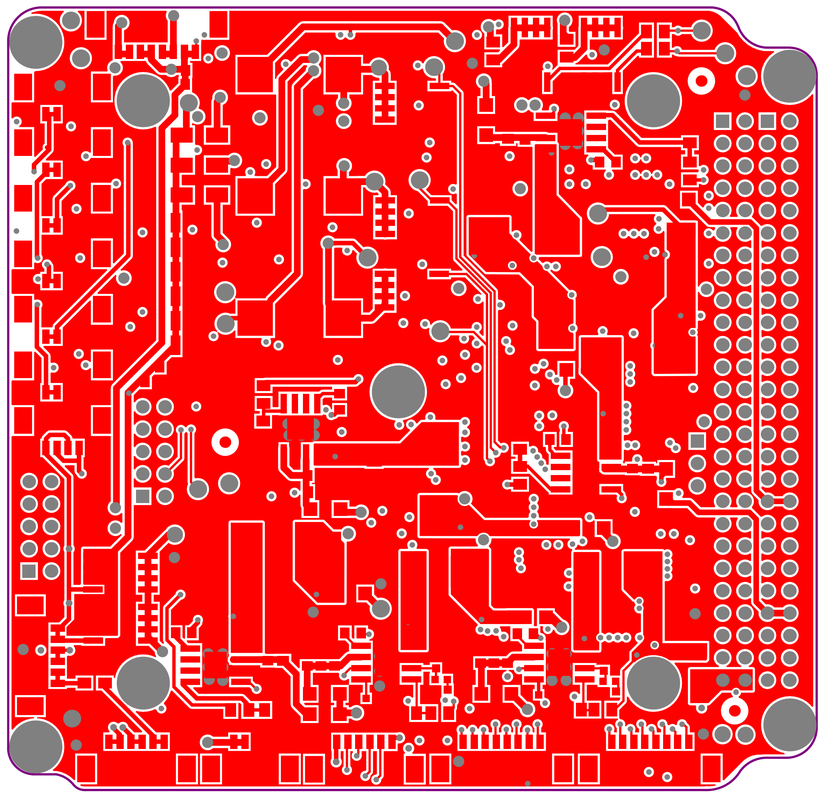
52
51


TP2
TP1
DGND
AGND
UART_BEACON
EN_RADIOS
ADD_GPIO
5V_PAYLOAD
GND
ANT_VCC
BAT_VCC
EPS_I2C
SYSTEM_ON
3V3_PAY
3V3_ICU
3V3_OBDH
3V3_EPS
ADD_I2C
5V_OBDH
5V_PAYLOAD
5V_MAIN_RADIO
5V_BEACON
R_ESD
5V_BEACON
5V_MAIN_RADIO
+Y_CSR
-Z_CSR
-X_CSR
-Y_CSR
+Z_CSR
+X_CSR
Rsense3
RSense1
V_CM
VBAT-
VBAT-
VBAT+
VBAT+
VBus_TP
VBus
PGND
CC
DC
5_V
3V3_EPS



Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0,010mm	3,5	
3	Top Layer	Copper	0,035mm		
4	Dielectric 1		0,100mm	4,2	
5	Signal Layer 1	Copper	0,018mm		
6	Core	FR-4	1,265mm	4,2	
7	Signal Layer 2	Copper	0,018mm		
8	Dielectric 2		0,100mm	4,2	
9	Bottom Layer	Copper	0,035mm		
10	Bottom Solder	Solder Resist	0,010mm	3,5	
11	Bottom Overlay				

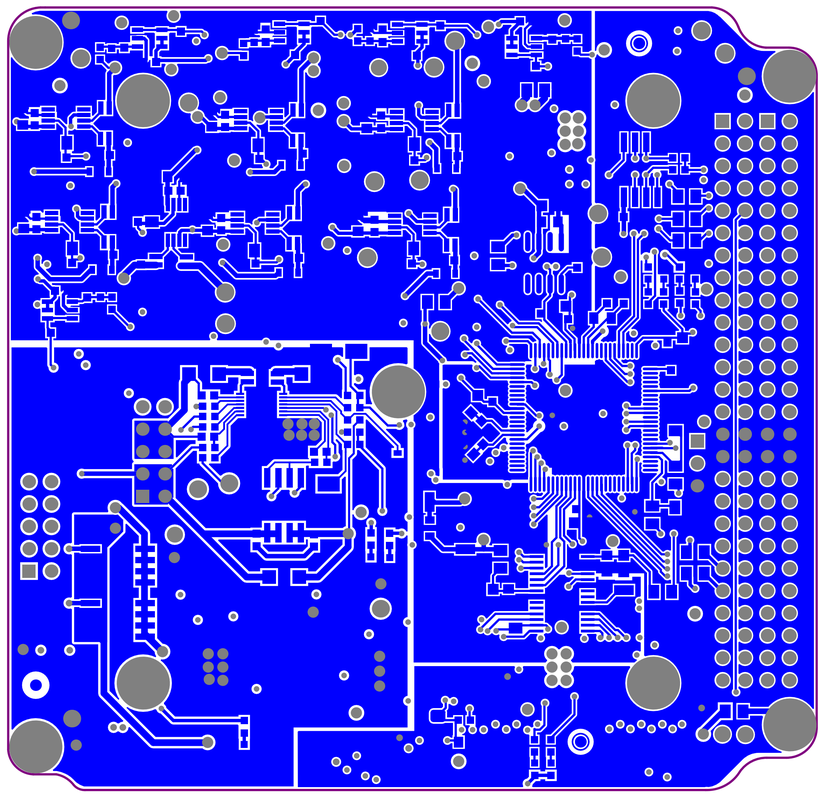
Fabrication specifications:

- Copper base 1OZ:
- PCB Material: Prepeg FR4–Standard
- PCB Tickness: 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)

Assembly specifications:

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

SpaceLab - Federal University of Santa Catarina		SPACE LAB
Project: EPS2		
Layer: Top Layer		
Designed by: Andre M. P. Mattos (based on FSat-I EPS)		Project Code: EPS2
Date: 31/08/2020	Version: v0.1	Size: A4



Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0,010mm	3,5	
3	Top Layer	Copper	0,035mm		
4	Dielectric 1		0,100mm	4,2	
5	Signal Layer 1	Copper	0,018mm		
6	Core	FR-4	1,265mm	4,2	
7	Signal Layer 2	Copper	0,018mm		
8	Dielectric 2		0,100mm	4,2	
9	Bottom Layer	Copper	0,035mm		
10	Bottom Solder	Solder Resist	0,010mm	3,5	
11	Bottom Overlay				

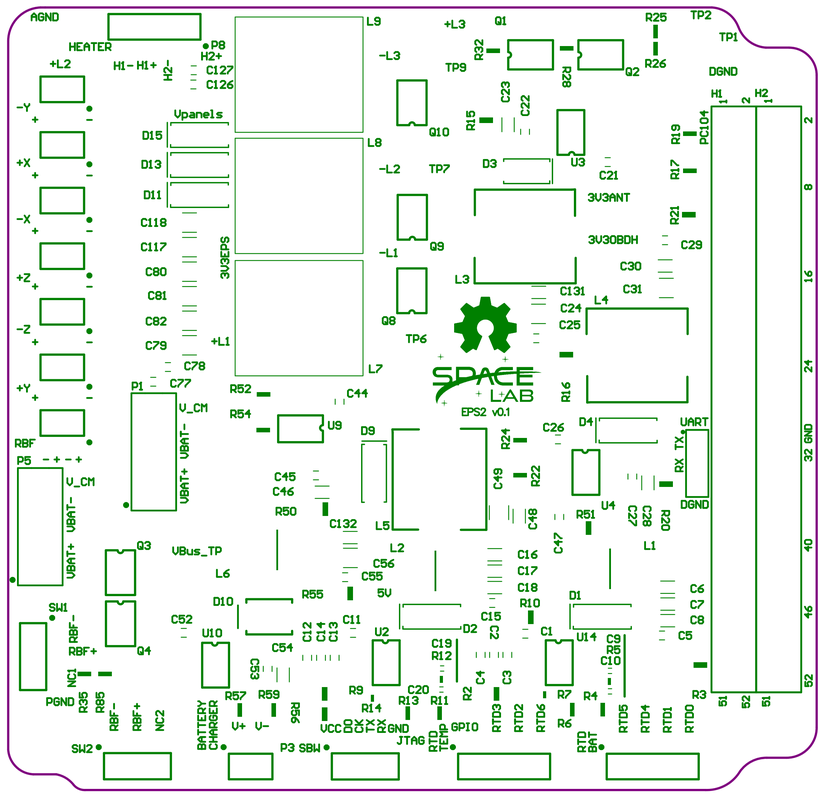
Fabrication specifications:

- Copper base 1OZ:
- PCB Material: Prepeg FR4–Standard
- PCB Tickness: 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)

Assembly specifications:

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

SpaceLab - Federal University of Santa Catarina		
Project: EPS2		
Layer: Bottom Layer		
Designed by: Andre M. P. Mattos (based on FSat-I EPS)		Project Code: EPS2
Date: 31/08/2020	Version: v0.1	Size: A4



Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0,010mm	3,5	
3	Top Layer	Copper	0,035mm		
4	Dielectric 1		0,100mm	4,2	
5	Signal Layer 1	Copper	0,018mm		
6	Core	FR-4	1,265mm	4,2	
7	Signal Layer 2	Copper	0,018mm		
8	Dielectric 2		0,100mm	4,2	
9	Bottom Layer	Copper	0,035mm		
10	Bottom Solder	Solder Resist	0,010mm	3,5	
11	Bottom Overlay				

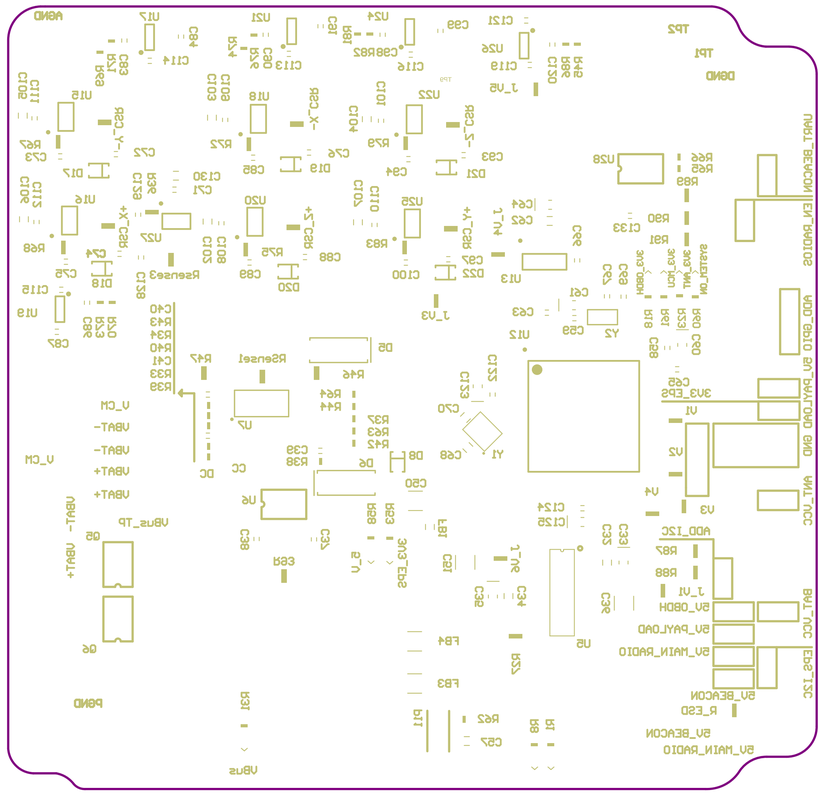
Fabrication specifications:

- Copper base 1OZ:
- PCB Material: Prepeg FR4–Standard
- PCB Tickness: 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)

Assembly specifications:

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

SpaceLab - Federal University of Santa Catarina		
Project: EPS2		
Layer: Top Overlay		
Designed by: Andre M. P. Mattos (based on FSat-I EPS)		Project Code: EPS2
Date: 31/08/2020	Version: v0.1	Size: A4



Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0,010mm	3,5	
3	Top Layer	Copper	0,035mm		
4	Dielectric 1		0,100mm	4,2	
5	Signal Layer 1	Copper	0,018mm		
6	Core	FR-4	1,265mm	4,2	
7	Signal Layer 2	Copper	0,018mm		
8	Dielectric 2		0,100mm	4,2	
9	Bottom Layer	Copper	0,035mm		
10	Bottom Solder	Solder Resist	0,010mm	3,5	
11	Bottom Overlay				

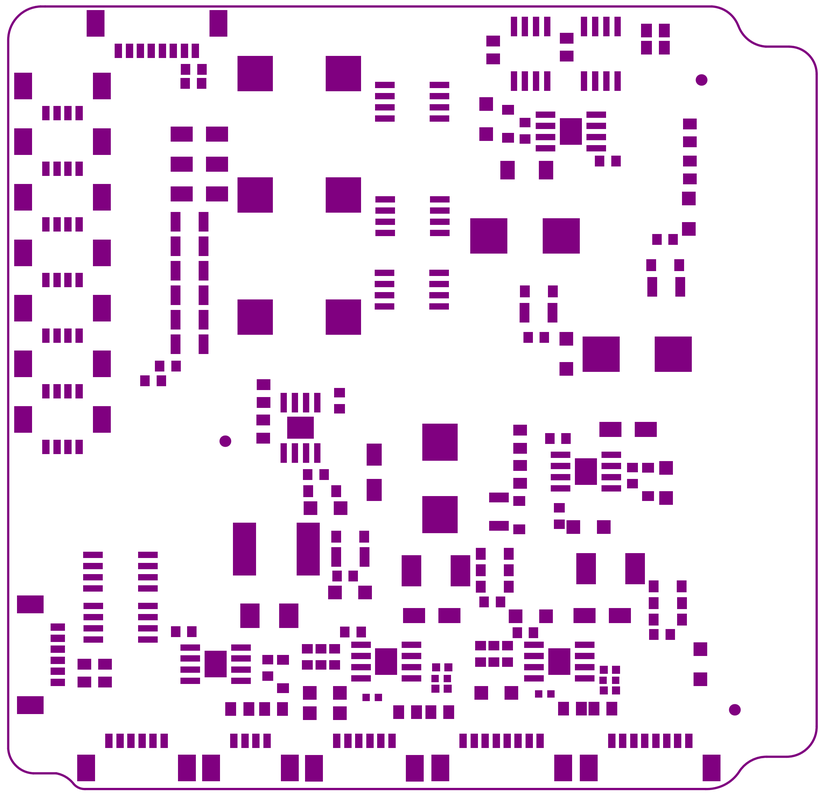
Fabrication specifications:

- Copper base 1OZ:
- PCB Material: Prepeg FR4–Standard
- PCB Tickness: 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)

Assembly specifications:

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

SpaceLab - Federal University of Santa Catarina		
Project: EPS2		
Layer: Bottom Overlay		
Designed by: Andre M. P. Mattos (based on FSat-I EPS)		Project Code: EPS2
Date: 31/08/2020	Version: v0.1	Size: A4



Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0,010mm	3,5	
3	Top Layer	Copper	0,035mm		
4	Dielectric 1		0,100mm	4,2	
5	Signal Layer 1	Copper	0,018mm		
6	Core	FR-4	1,265mm	4,2	
7	Signal Layer 2	Copper	0,018mm		
8	Dielectric 2		0,100mm	4,2	
9	Bottom Layer	Copper	0,035mm		
10	Bottom Solder	Solder Resist	0,010mm	3,5	
11	Bottom Overlay				

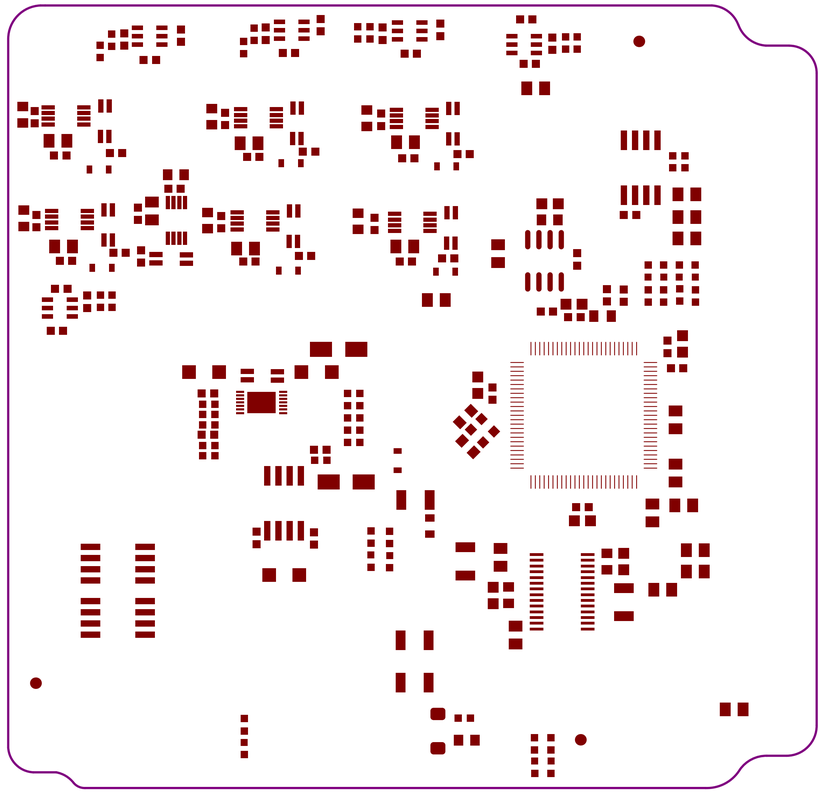
Fabrication specifications:

- Copper base 1OZ:
- PCB Material: Prepeg FR4–Standard
- PCB Tickness: 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)

Assembly specifications:

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

SpaceLab - Federal University of Santa Catarina		
Project: EPS2		
Layer: Top Paste		
Designed by: Andre M. P. Mattos (based on FSat-I EPS)		Project Code: EPS2
Date: 31/08/2020	Version: v0.1	Size: A4



Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0,010mm	3,5	
3	Top Layer	Copper	0,035mm		
4	Dielectric 1		0,100mm	4,2	
5	Signal Layer 1	Copper	0,018mm		
6	Core	FR-4	1,265mm	4,2	
7	Signal Layer 2	Copper	0,018mm		
8	Dielectric 2		0,100mm	4,2	
9	Bottom Layer	Copper	0,035mm		
10	Bottom Solder	Solder Resist	0,010mm	3,5	
11	Bottom Overlay				

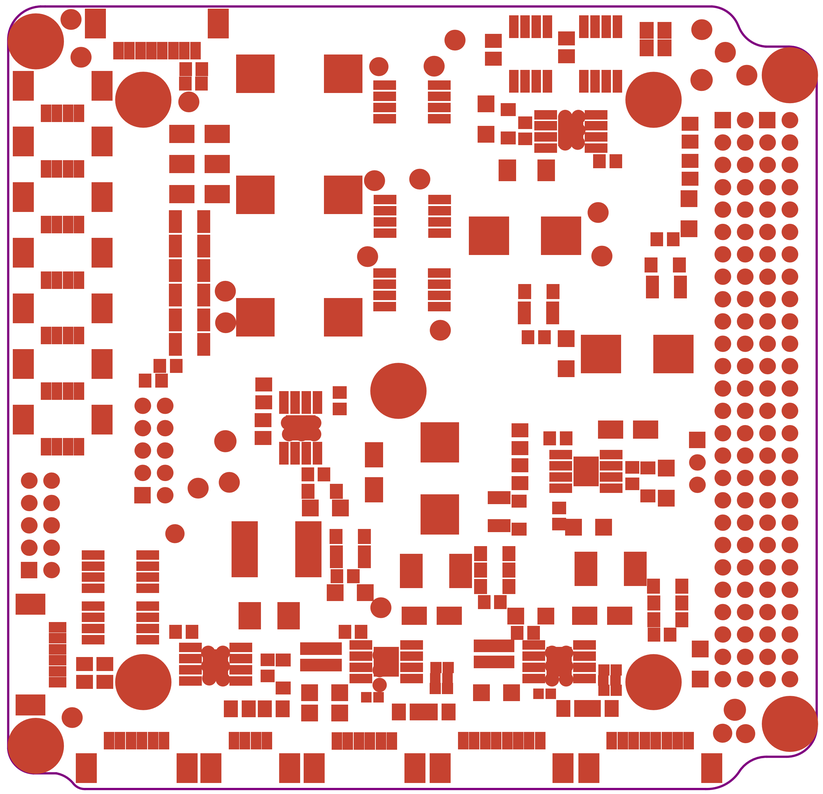
Fabrication specifications:

- Copper base 1OZ:
- PCB Material: Prepeg FR4–Standard
- PCB Tickness: 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)

Assembly specifications:

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

SpaceLab - Federal University of Santa Catarina		SPACE LAB
Project: EPS2		
Layer: Bottom Paste		
Designed by: Andre M. P. Mattos (based on FSat-I EPS)		Project Code: EPS2
Date: 31/08/2020	Version: v0.1	Size: A4



Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0,010mm	3,5	
3	Top Layer	Copper	0,035mm		
4	Dielectric 1		0,100mm	4,2	
5	Signal Layer 1	Copper	0,018mm		
6	Core	FR-4	1,265mm	4,2	
7	Signal Layer 2	Copper	0,018mm		
8	Dielectric 2		0,100mm	4,2	
9	Bottom Layer	Copper	0,035mm		
10	Bottom Solder	Solder Resist	0,010mm	3,5	
11	Bottom Overlay				

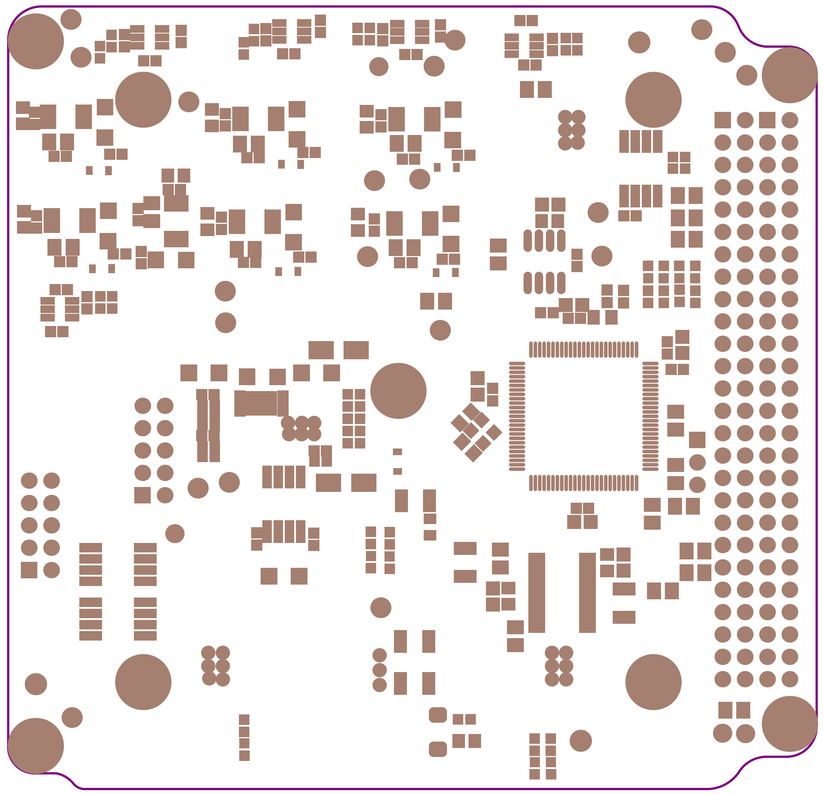
Fabrication specifications:

- Copper base 1OZ:
- PCB Material: Prepeg FR4–Standard
- PCB Tickness: 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)

Assembly specifications:

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

SpaceLab - Federal University of Santa Catarina		SPACE LAB
Project: EPS2		
Layer: Top Solder		
Designed by: Andre M. P. Mattos (based on FSat-I EPS)		Project Code: EPS2
Date: 31/08/2020	Version: v0.1	Size: A4



Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0,010mm	3,5	
3	Top Layer	Copper	0,035mm		
4	Dielectric 1		0,100mm	4,2	
5	Signal Layer 1	Copper	0,018mm		
6	Core	FR-4	1,265mm	4,2	
7	Signal Layer 2	Copper	0,018mm		
8	Dielectric 2		0,100mm	4,2	
9	Bottom Layer	Copper	0,035mm		
10	Bottom Solder	Solder Resist	0,010mm	3,5	
11	Bottom Overlay				

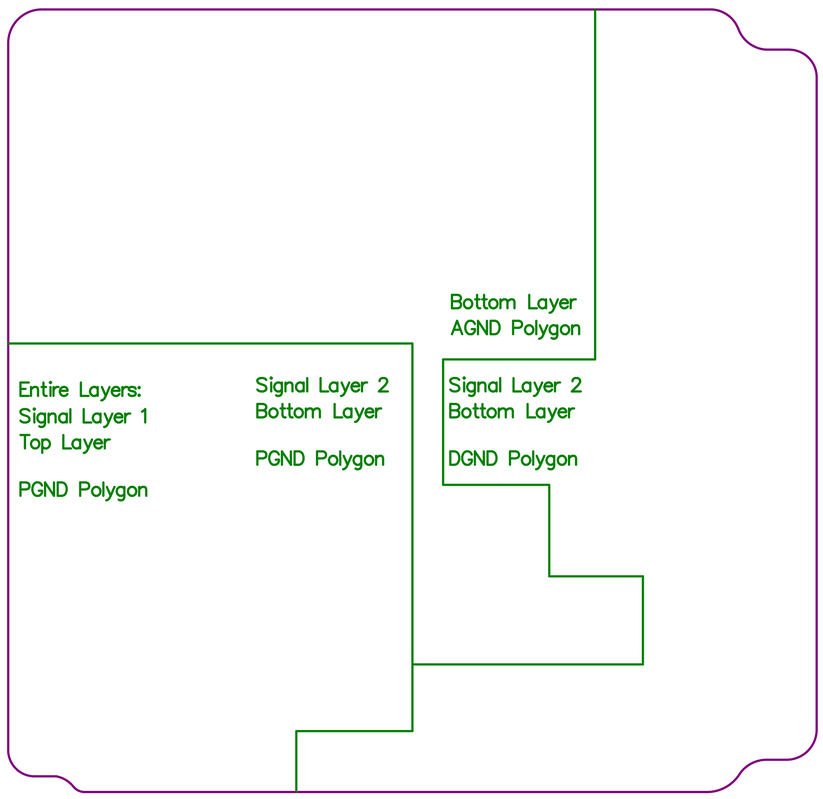
Fabrication specifications:

- Copper base 1OZ:
- PCB Material: Prepeg FR4–Standard
- PCB Tickness: 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)

Assembly specifications:

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

SpaceLab - Federal University of Santa Catarina		
Project: EPS2		
Layer: Bottom Solder		
Designed by: Andre M. P. Mattos (based on FSat-I EPS)		Project Code: EPS2
Date: 31/08/2020	Version: v0.1	Size: A4



Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0,010mm	3,5	
3	Top Layer	Copper	0,035mm		
4	Dielectric 1		0,100mm	4,2	
5	Signal Layer 1	Copper	0,018mm		
6	Core	FR-4	1,265mm	4,2	
7	Signal Layer 2	Copper	0,018mm		
8	Dielectric 2		0,100mm	4,2	
9	Bottom Layer	Copper	0,035mm		
10	Bottom Solder	Solder Resist	0,010mm	3,5	
11	Bottom Overlay				

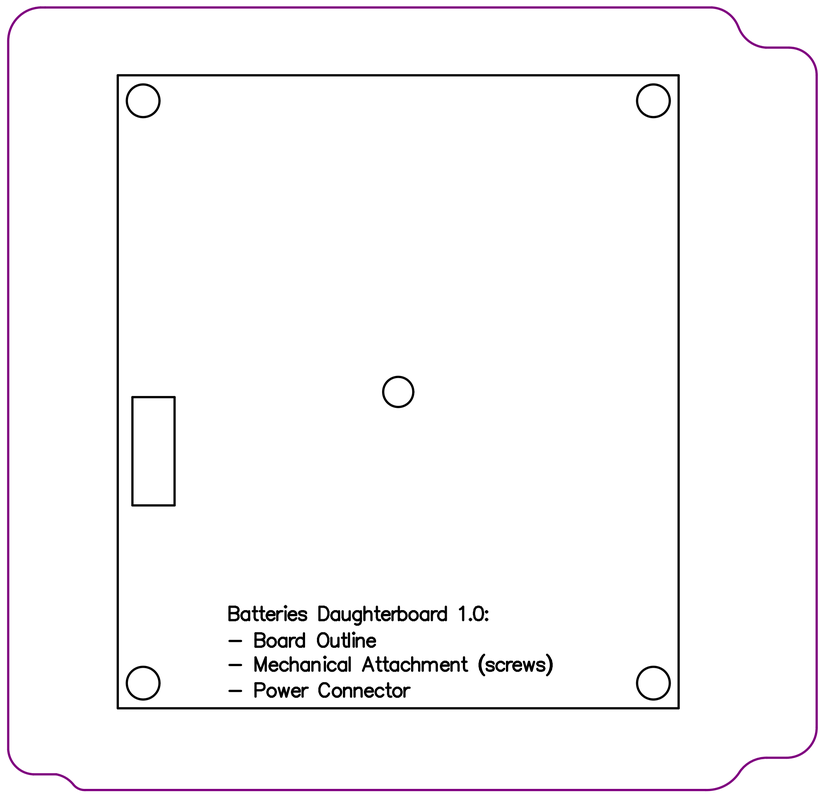
Fabrication specifications:

- Copper base 1OZ:
- PCB Material: Prepeg FR4–Standard
- PCB Tickness: 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)

Assembly specifications:

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

SpaceLab - Federal University of Santa Catarina		SPACE LAB
Project: EPS2		
Layer: Grounding Splits		
Designed by: Andre M. P. Mattos (based on FSat-I EPS)		Project Code: EPS2
Date: 31/08/2020	Version: v0.1	Size: A4



Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0,010mm	3,5	
3	Top Layer	Copper	0,035mm		
4	Dielectric 1		0,100mm	4,2	
5	Signal Layer 1	Copper	0,018mm		
6	Core	FR-4	1,265mm	4,2	
7	Signal Layer 2	Copper	0,018mm		
8	Dielectric 2		0,100mm	4,2	
9	Bottom Layer	Copper	0,035mm		
10	Bottom Solder	Solder Resist	0,010mm	3,5	
11	Bottom Overlay				

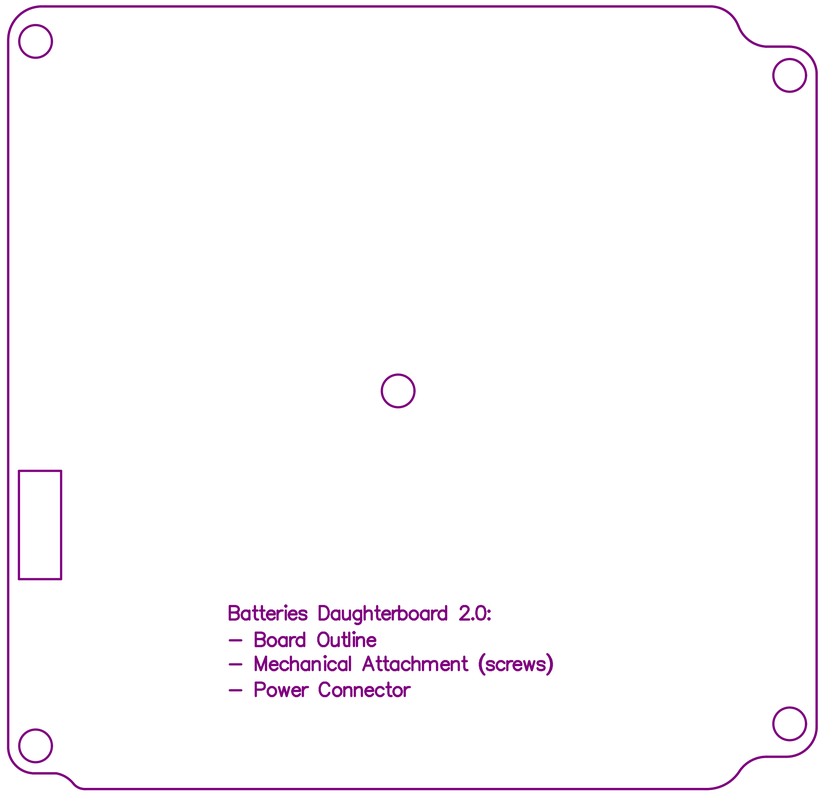
Fabrication specifications:

- Copper base 1OZ:
- PCB Material: Prepeg FR4–Standard
- PCB Tickness: 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)

Assembly specifications:

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

SpaceLab - Federal University of Santa Catarina		SPACE LAB
Project: EPS2		
Layer: Batteries Board 1.0		
Designed by: Andre M. P. Mattos (based on FSat-I EPS)		Project Code: EPS2
Date: 31/08/2020	Version: v0.1	Size: A4



Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0,010mm	3,5	
3	Top Layer	Copper	0,035mm		
4	Dielectric 1		0,100mm	4,2	
5	Signal Layer 1	Copper	0,018mm		
6	Core	FR-4	1,265mm	4,2	
7	Signal Layer 2	Copper	0,018mm		
8	Dielectric 2		0,100mm	4,2	
9	Bottom Layer	Copper	0,035mm		
10	Bottom Solder	Solder Resist	0,010mm	3,5	
11	Bottom Overlay				

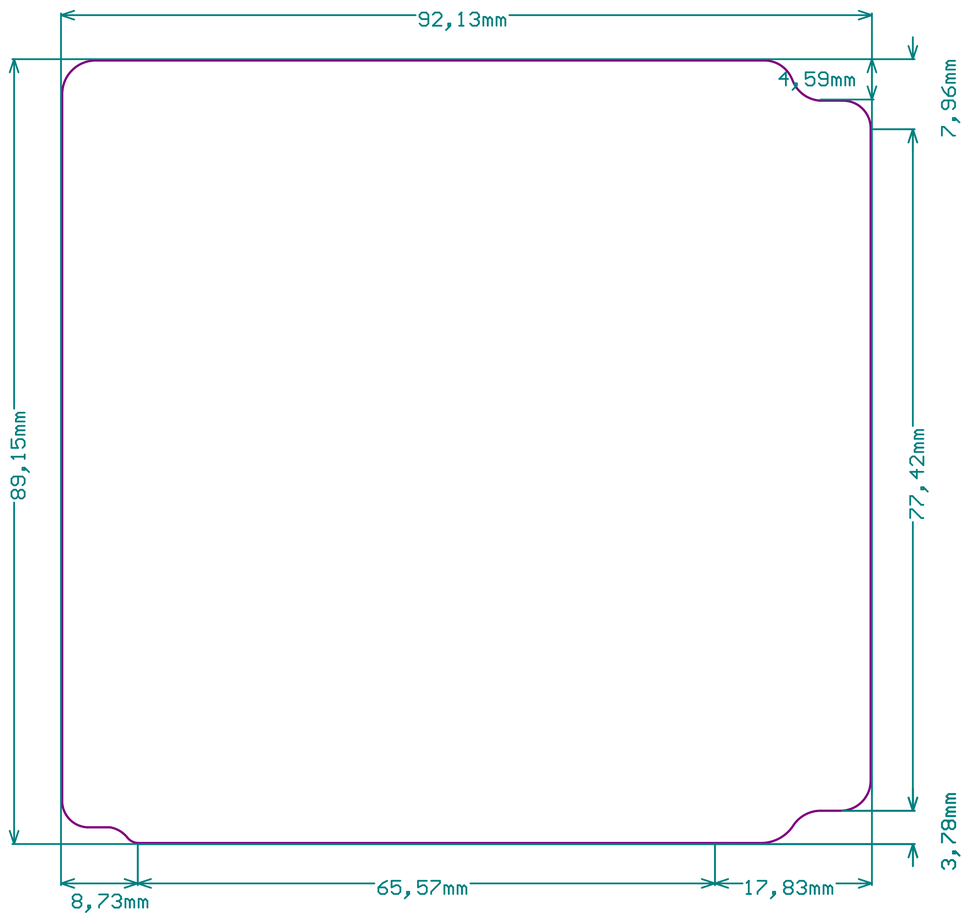
Fabrication specifications:

- Copper base 1OZ:
- PCB Material: Prepeg FR4–Standard
- PCB Tickness: 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)

Assembly specifications:

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

SpaceLab - Federal University of Santa Catarina		SPACE LAB
Project: EPS2		
Layer: Batteries Board 2.0		
Designed by: Andre M. P. Mattos (based on FSat-I EPS)		Project Code: EPS2
Date: 31/08/2020	Version: v0.1	Size: A4



Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0,010mm	3,5	
3	Top Layer	Copper	0,035mm		
4	Dielectric 1		0,100mm	4,2	
5	Signal Layer 1	Copper	0,018mm		
6	Core	FR-4	1,265mm	4,2	
7	Signal Layer 2	Copper	0,018mm		
8	Dielectric 2		0,100mm	4,2	
9	Bottom Layer	Copper	0,035mm		
10	Bottom Solder	Solder Resist	0,010mm	3,5	
11	Bottom Overlay				

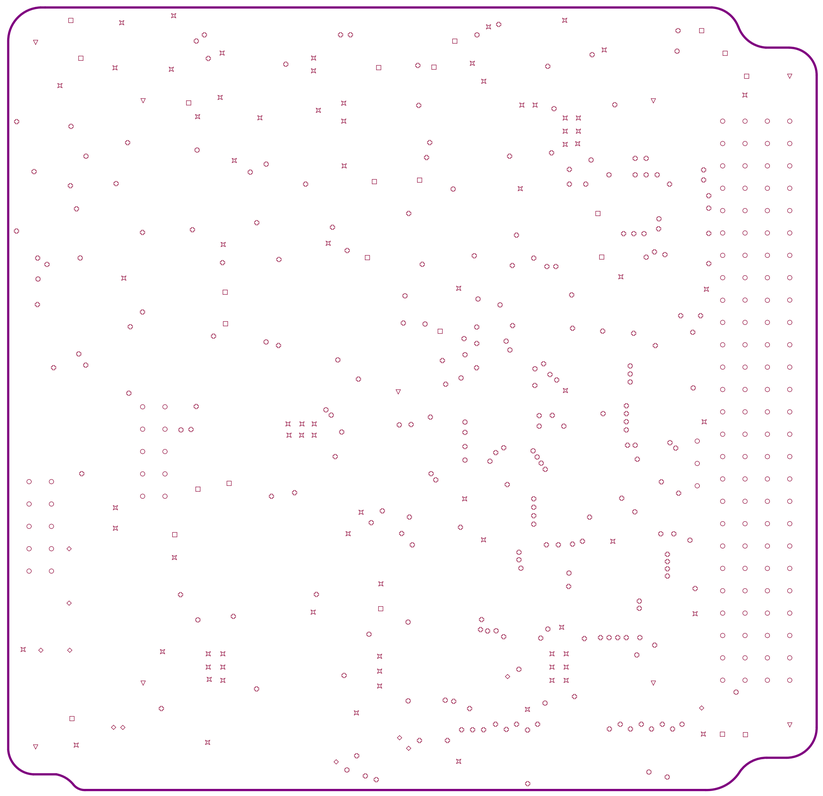
Fabrication specifications:

- Copper base 1OZ:
- PCB Material: Prepeg FR4–Standard
- PCB Tickness: 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)

Assembly specifications:

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

SpaceLab - Federal University of Santa Catarina		SPACE LAB
Project: EPS2		
Layer: Dimension		
Designed by: Andre M. P. Mattos (based on FSat-I EPS)		Project Code: EPS2
Date: 31/08/2020	Version: v0.1	Size: A4



Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0,010mm	3,5	
3	Top Layer	Copper	0,035mm		
4	Dielectric 1		0,100mm	4,2	
5	Signal Layer 1	Copper	0,018mm		
6	Core	FR-4	1,265mm	4,2	
7	Signal Layer 2	Copper	0,018mm		
8	Dielectric 2		0,100mm	4,2	
9	Bottom Layer	Copper	0,035mm		
10	Bottom Solder	Solder Resist	0,010mm	3,5	
11	Bottom Overlay				

Symbol	Count	Hole Size	Plated	Hole Type	Drill Layer Pair	Via/Pad
▽	9	3,200mm (125,98mil)	PTH	Round	Top Layer - Bottom Layer	Pad
◇	11	0,381mm (15,00mil)	PTH	Round	Top Layer - Bottom Layer	Via
□	24	1,000mm (39,37mil)	PTH	Round	Top Layer - Bottom Layer	Pad
⌘	80	0,711mm (28,00mil)	PTH	Round	Top Layer - Bottom Layer	Via
○	127	0,900mm (35,43mil)	PTH	Round	Top Layer - Bottom Layer	Pad
✪	255	0,254mm (10,00mil)	PTH	Round	Top Layer - Bottom Layer	Via
	506 Total					

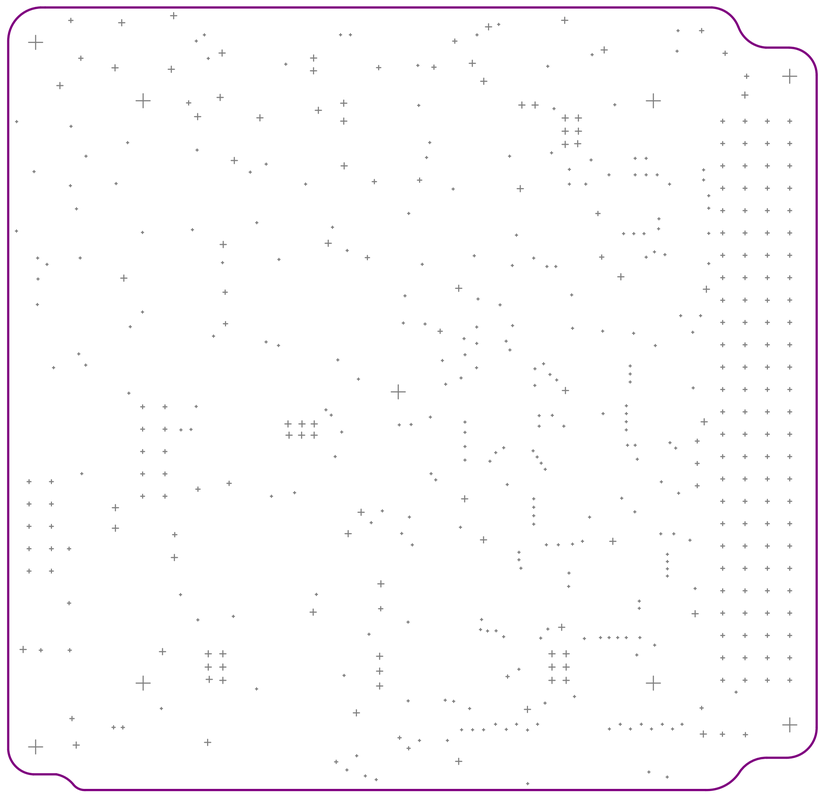
Fabrication specifications:

- Copper base 1OZ:
- PCB Material: Prepeg FR4–Standard
- PCB Tickness: 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)

Assembly specifications:

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

SpaceLab - Federal University of Santa Catarina		SPACE LAB
Project: EPS2		
Layer: Drill Drawing		
Designed by: Andre M. P. Mattos (based on FSat-I EPS)		Project Code: EPS2
Date: 31/08/2020	Version: v0.1	Size: A4



Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0,010mm	3,5	
3	Top Layer	Copper	0,035mm		
4	Dielectric 1		0,100mm	4,2	
5	Signal Layer 1	Copper	0,018mm		
6	Core	FR-4	1,265mm	4,2	
7	Signal Layer 2	Copper	0,018mm		
8	Dielectric 2		0,100mm	4,2	
9	Bottom Layer	Copper	0,035mm		
10	Bottom Solder	Solder Resist	0,010mm	3,5	
11	Bottom Overlay				

Fabrication specifications:

- Copper base 1OZ:
- PCB Material: Prepeg FR4–Standard
- PCB Tickness: 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)

Assembly specifications:

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

SpaceLab - Federal University of Santa Catarina		
Project: EPS2		
Layer: Drill Guide		
Designed by: Andre M. P. Mattos (based on FSat-I EPS)		Project Code: EPS2
Date: 31/08/2020	Version: v0.1	Size: A4