

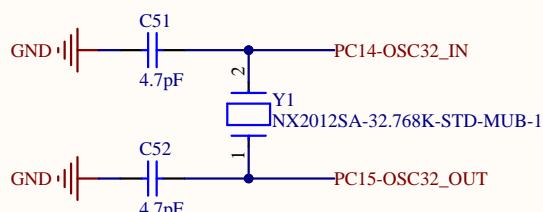
1

2

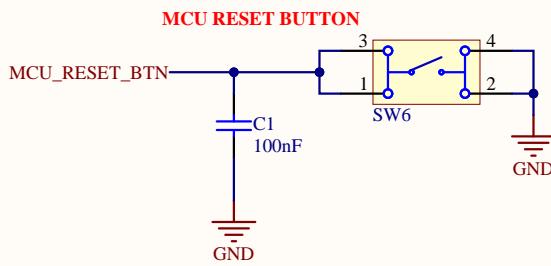
3

4

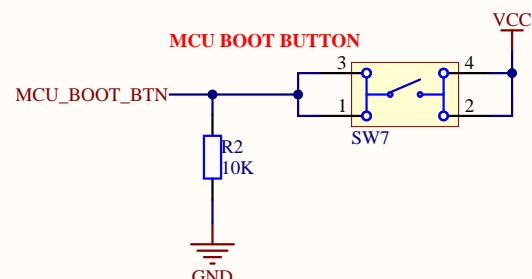
A



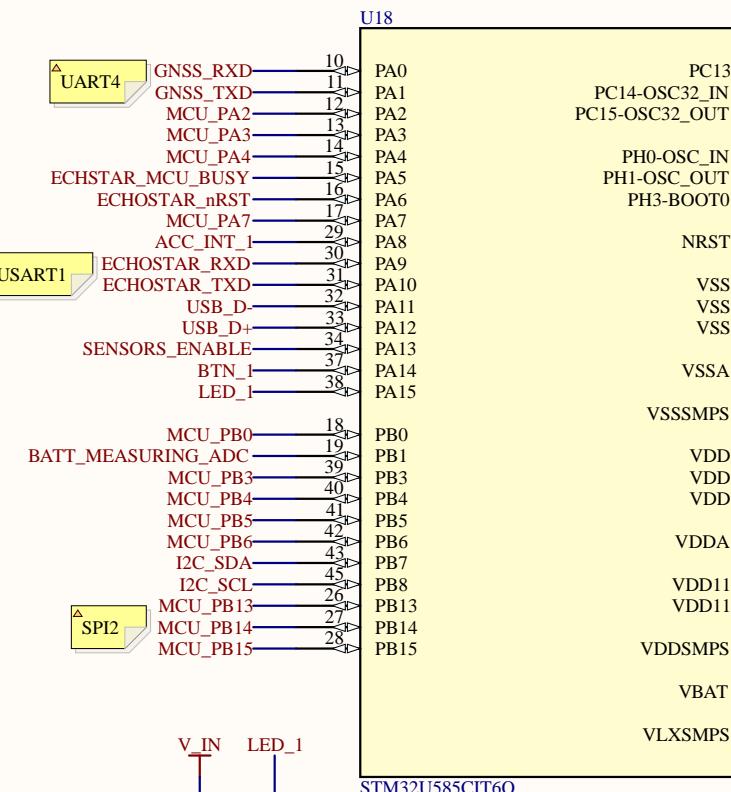
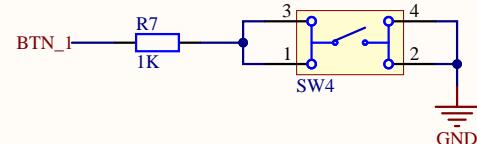
B



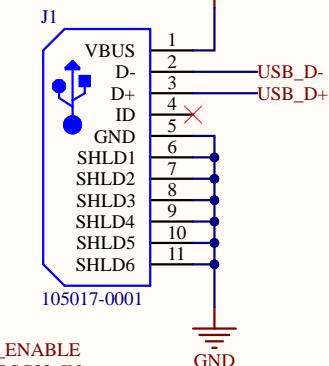
C



D



PROGRAMMING USB V_USB



A

B

C

D

Title

Size

A

Number

Revision

Date: 5/14/2024

Sheet of

File: D:\thaonm\..\MCU.SchDoc

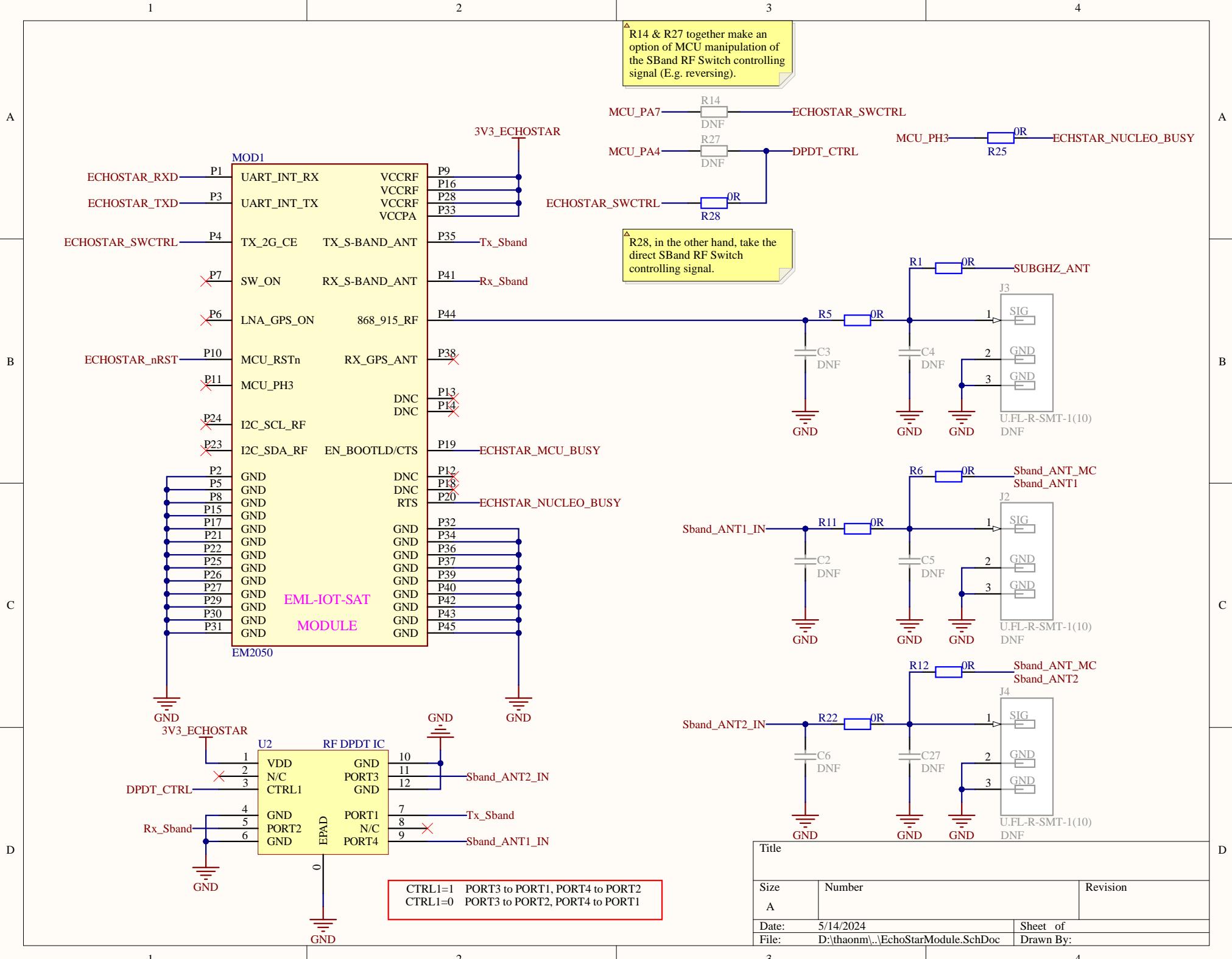
Drawn By:

1

2

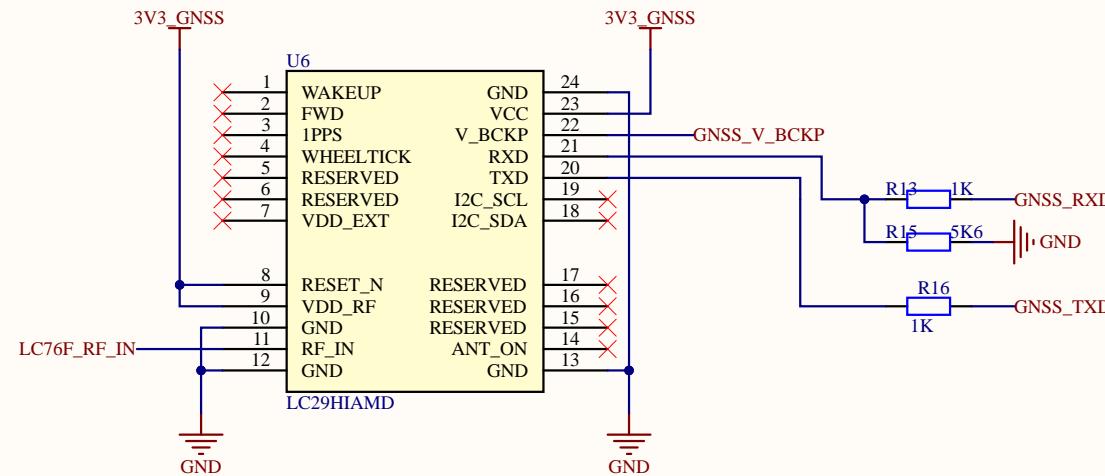
3

4



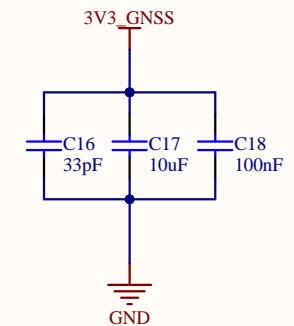
A

A



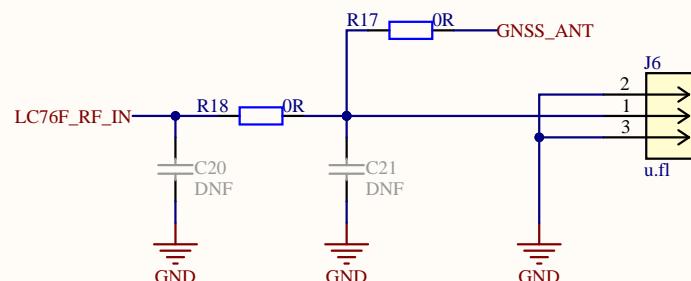
B

B



C

C



D

D

Title

Size
A

Number

Revision

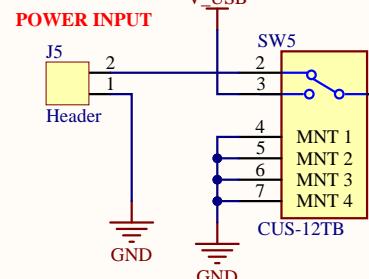
Date: 5/14/2024

Sheet of

File: D:\thaonm\..\GNSS.SchDoc

1

A



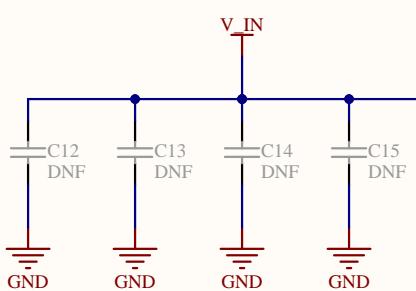
ECHOSTAR_ENABLE → U3
U3: NCV8170AXV300T2G
IN 1 → OUT 3
EN 6 → NC 4
GND 2 → GND 5

ECHOSTAR_ENABLE → U4
U4: NCV8170AXV300T2G
IN 1 → OUT 3
EN 6 → NC 4
GND 2 → GND 5

ECHOSTAR_ENABLE → U5
U5: NCV8170AXV300T2G
IN 1 → OUT 3
EN 6 → NC 4
GND 2 → GND 5
DNF 3 → GND

3V3_ECHOSTAR
C7, C8, C9, C10, C11
DNF 1 → GND
DNF 2 → GND
DNF 3 → GND
DNF 4 → GND
DNF 5 → GND
DNF 6 → GND

B



V_{IN} → U10
U10: NCV8170AXV300T2G
IN 1 → OUT 3
EN 6 → NC 4
GND 2 → GND 5
C23 DNF
GND

3V3_SENSORS
SENSENS_ENABLE → U10
R20 DNF
GND

V_{IN} → U7
U7: NCV8170AXV300T2G
IN 1 → OUT 3
EN 6 → NC 4
GND 2 → GND 5
C22 DNF
GND

3V3_GNSS
GNSS_ENABLE → U7
R19 DNF
GND

C

V_{IN} → U16
U16: NCV8170AXV300T2G
IN 1 → OUT 3
EN 6 → NC 4
GND 2 → GND 5
C43 DNF
C44 DNF
GND

Title

Size
A

Number

Revision

Date: 5/14/2024

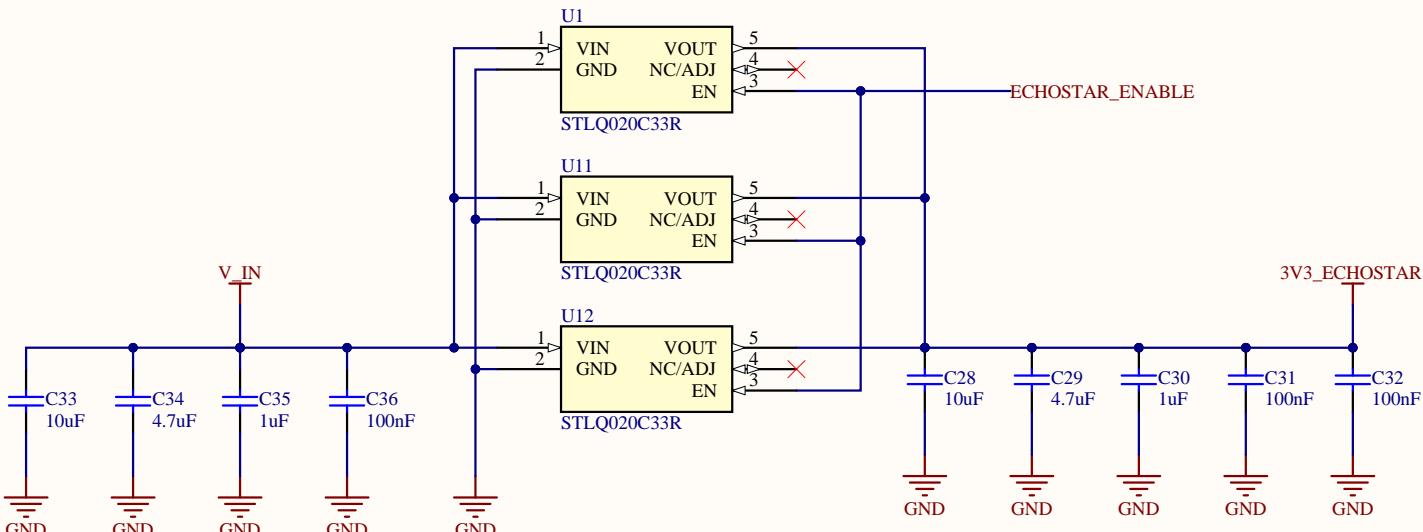
Sheet of

File: D:\thaonm\..\Power - NCV8170.SchDoc

Drawn By:

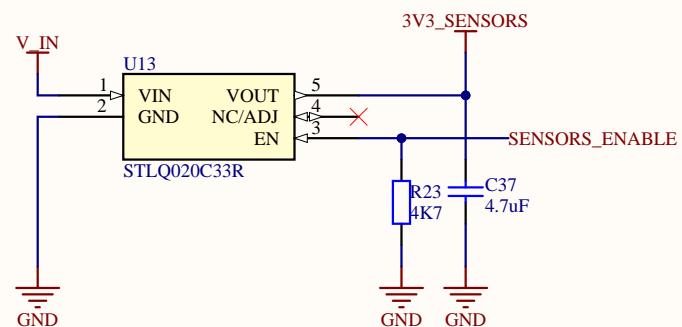
This sheet is alternative power option using the LDO of STLQ020

A



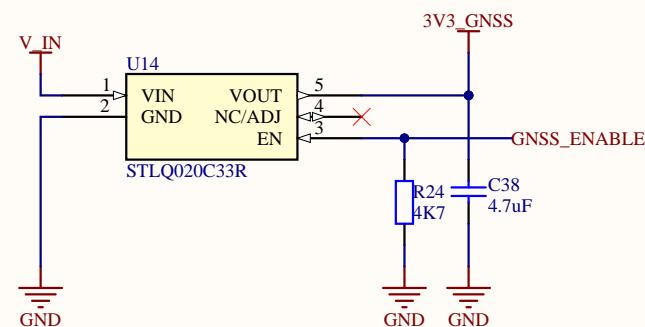
B

A



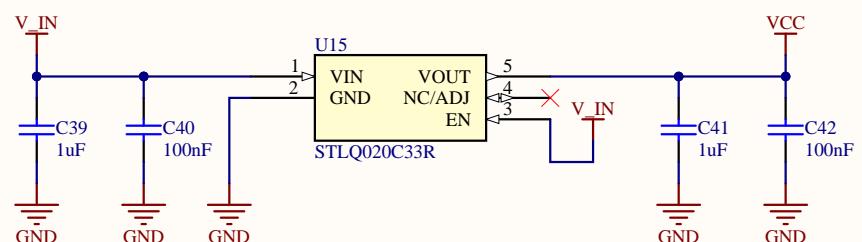
C

B



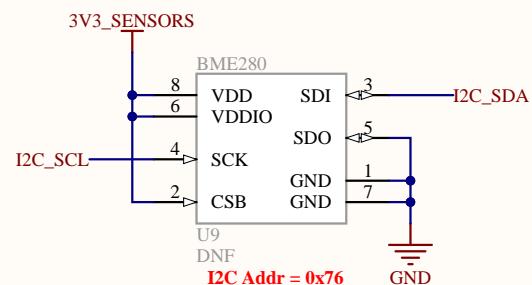
D

C

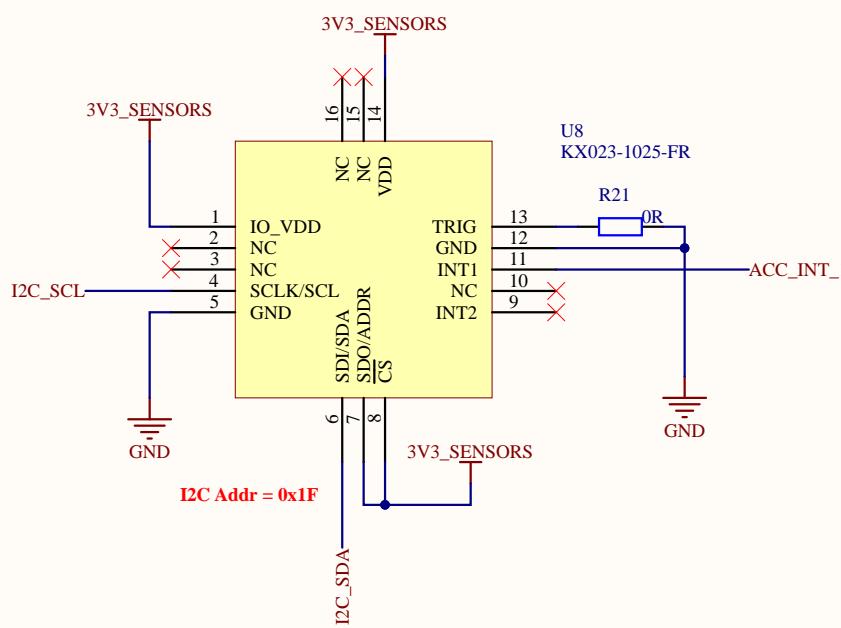


Title		
Size	Number	Revision
A		
Date:	5/14/2024	Sheet of
File:	D:\thaonm\..\Power - STQL020.SchDoc	Drawn By:

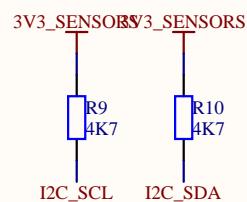
A



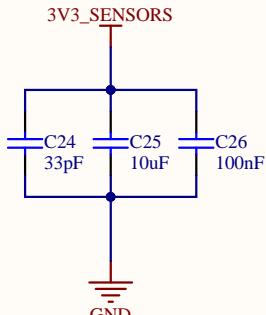
B



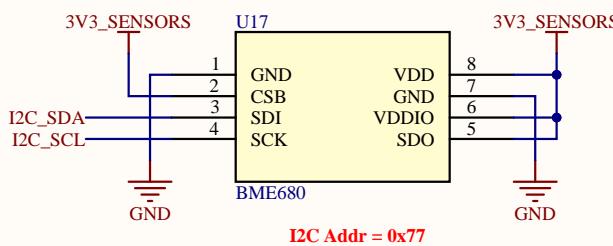
A



C



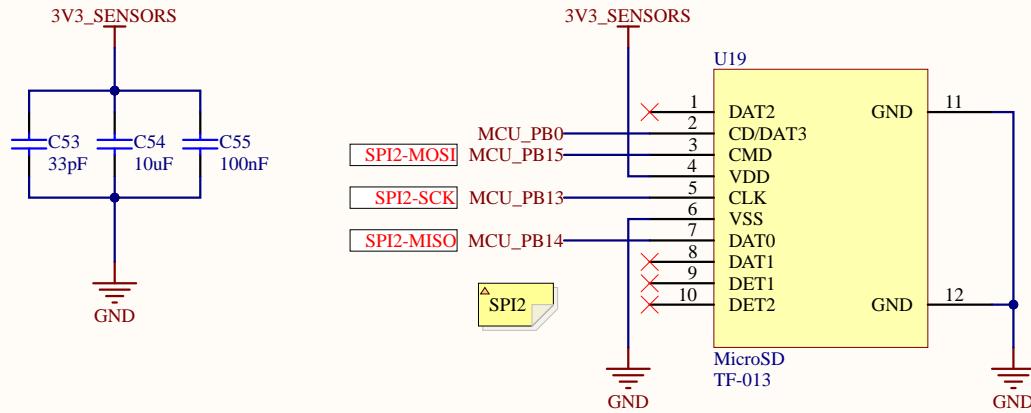
D



Title		
Size	Number	Revision
A		
Date: 5/14/2024	Sheet of	
File: D:\thaonm\..\\Sensors.SchDoc	Drawn By:	

A

A



B

B

C

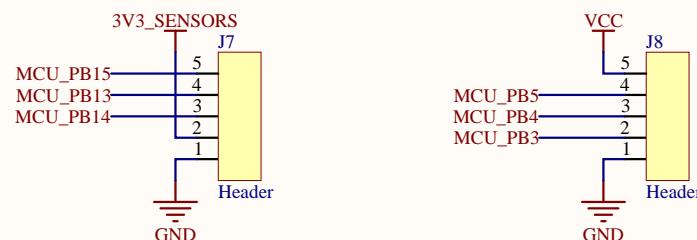
C

D

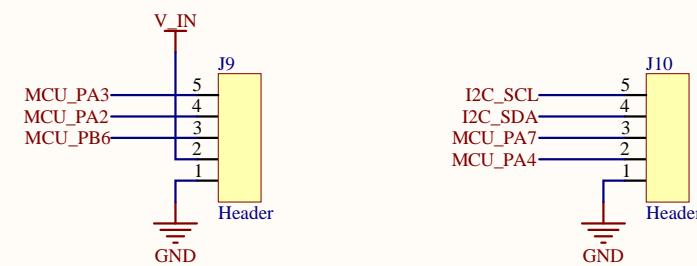
D

Title		
Size	Number	Revision
A		
Date: 5/14/2024	Sheet of	
File: D:\thaonm\..\SDCard.SchDoc	Drawn By:	

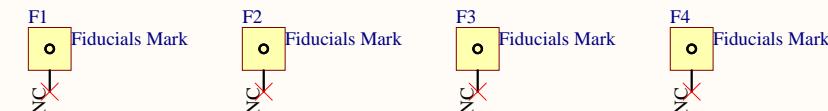
A



B

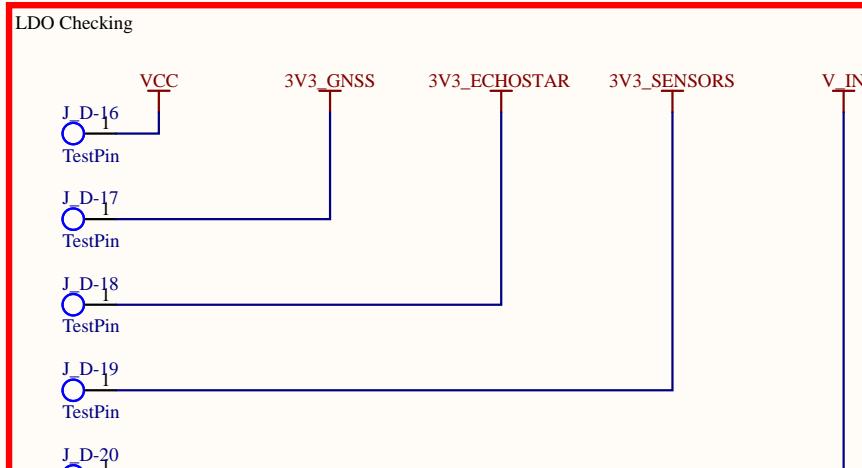
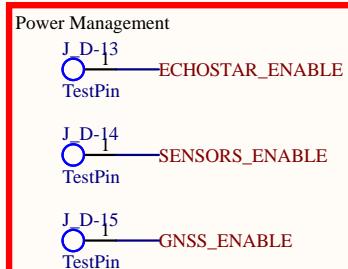
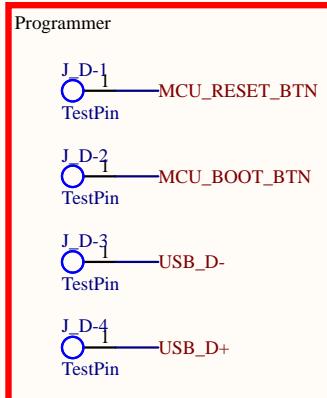


C

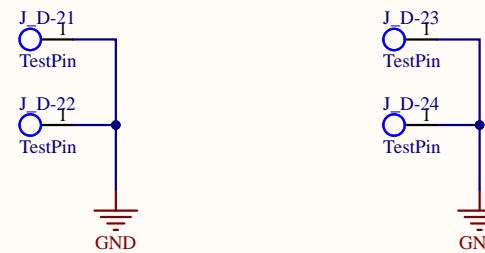
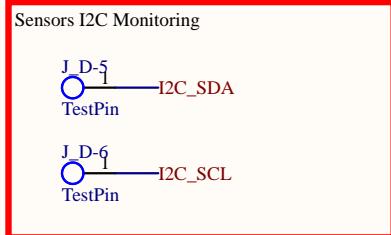


Title		
Size	Number	Revision
A		
Date: 5/14/2024		Sheet of
File: D:\thaonm\..\IO.SchDoc		Drawn By:

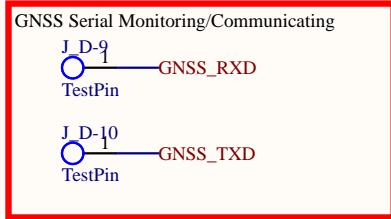
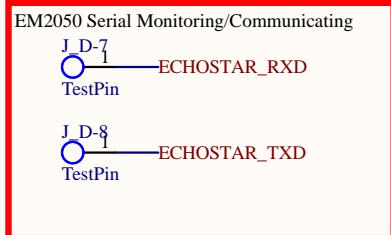
A



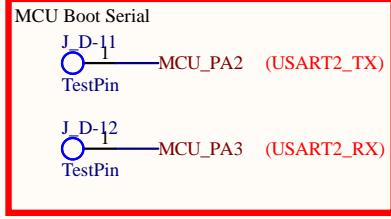
B



C



D



Title		
Size	Number	Revision
A		
Date:	5/14/2024	Sheet of
File:	D:\thaonm\..\TestPoints.SchDoc	Drawn By:

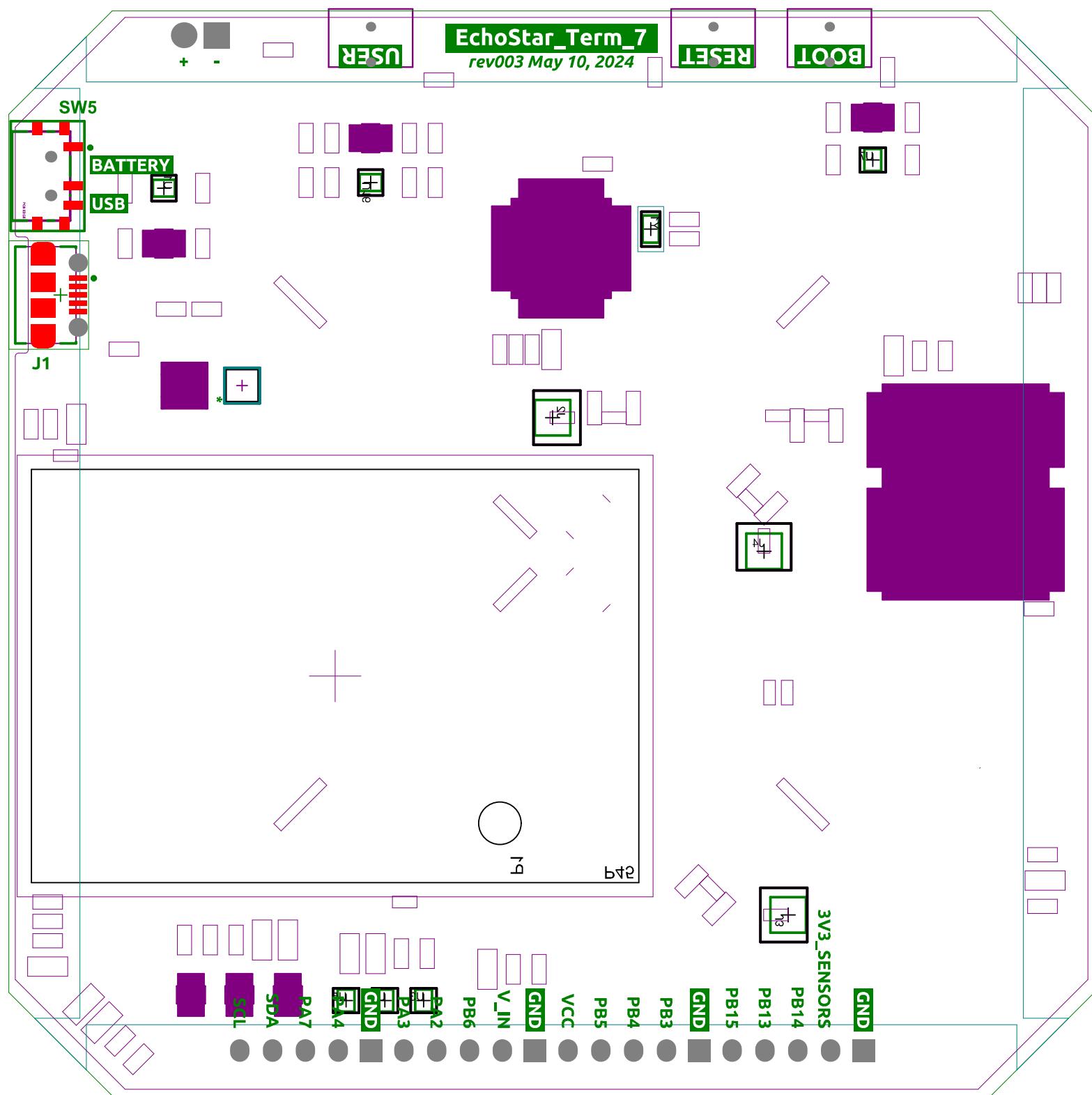
Comment	Description	Designator	Footprint	LibRef	Quantity	Value	Manufacture	Manufacturer	Manufacturer Packaging 1	Manufacturer P/N	Manufacturer Part Number	Manufacturer URL
Cap	Capacitor SMD	C1, C18, C19, C25, C31, C32, C36, C40, C42, C50, C55	rC_603_smd_small	Cap	11	100nF						
Cap	Capacitor SMD	C2, C3, C4, C5, C6, C20, C21, C27	rC_603_smd	Cap	8	DNF						
Cap	Capacitor SMD	C7, C8, C12, C13	rC_805_smd_small	Cap	4	DNF						
Cap	Capacitor SMD	C9, C10, C11, C14, C15, C22, C23, C43, C44, C45, C46	rC_603_smd_small	Cap	11	DNF						
Cap	Capacitor SMD	C16, C24, C33	rC_603_smd_small	Cap	3	33pF						
Cap	Capacitor SMD	C17, C25, C28, C33, C54	rC_805_smd_small	Cap	5	10uF						
Cap	Capacitor SMD	C29, C34	rC_805_smd_small	Cap	2	4.7uF						
Cap	Capacitor SMD	C30, C35, C39, C41	rC_603_smd_small	Cap	4	1uF						
Cap	Capacitor SMD	C37, C38	rC_603_smd_small	Cap	2	4.7uF						
Cap	Capacitor SMD	C47, C48	rC_603_smd_small	Cap	2	2.2uF						
Cap	Capacitor SMD	C49	rC_603_smd_small	Cap	1	10uF						
Cap	Capacitor SMD	C51, C52	rC_603_smd_small	Cap	24	7pF						
LED	LED	D1	OD1608-0603	LED	1							
Fiducials Mark		F1, F2, F3, F4	Fiducial_JLCPCB_2D	Fiducials	4							
105017-0001	Micro-USB-B Receptacle, Right Angle, Bottom Mount, Surface Mount, with Solder tabs, -30 to 85 degC, 5-Pin USB, RoHS Tape and Reel	J1	USB-MICRO-B_V	CMP-2000-05827-1	1		Molex					http://www.molex.com/
U.FL-R-SMT-1(10)	CONN UFL-RPRT SIR 50 OHM SMD	J2, J3, J4	FPU_FLR-R-SMT-1_10-MRG	CMP-2000-05152-3	3	DNF						
Header	Header 1x2Pin 2.54mm	J5	Header 1x2Pin 2.54mm	Header 1x2Pin 2.54mm	1							
u.fl	No Description Available	J6	URLConnector	U.FL-R-SMT	1	Value						
Header	Header 1x5Pin 2.54mm	J7, J8, J9, J10	HEADER1x5PIN 2.54mm	Header 1x5Pin 2.54mm	4							
TestPin	Test contact for pogo pins	JD1, J.D2, J.D3, J.D4, J.D5, J.D6, J.D7, J.D8, J.D9, J.D10, J.D11, J.D12, J.D13, J.D14, J.D15, J.D16, J.D17, J.D18, J.D19, J.D20, J.D21, J.D22, J.D23, J.D24	TestPin_1mm	TestPin_1mm	24							
Inductor small symbol	Inductor	L1	rC_805_smd_small	Inductor_small	1	2.2uH						
IOT SAT module	Echostar Mobile IOT SATModule - Basic version	M001	BM2050	BM2050	1	BM2050	Echostar Mobile Ltd		BM2050			
Resistor	Resistor SMD - IEC symbol version	R1, R5, R6, R11, R12, R17, R18, R22, R28	rC_402_smd	Resistor	100R							
Resistor	Resistor SMD - IEC symbol version	R2	rC_603_smd_small	Resistor	10K							
Resistor	Resistor SMD - IEC symbol version	R3	rC_603_smd_small	Resistor	1M							
Resistor	Resistor SMD - IEC symbol version	R4, R7, R13, R16	rC_603_smd_small	Resistor	41K							
Resistor	Resistor SMD - IEC symbol version	R8	rC_603_smd_small	Resistor	12M							
Resistor	Resistor SMD - IEC symbol version	R9, R10, R23, R24	rC_603_smd_small	Resistor	44K							
Resistor	Resistor SMD - IEC symbol version	R14, R27	rC_402_smd	Resistor	2DNF							
Resistor	Resistor SMD - IEC symbol version	R15	rC_603_smd_small	Resistor	19K6							
Resistor	Resistor SMD - IEC symbol version	R19, R20	rC_603_smd_small	Resistor	2DNF							
Resistor	Resistor SMD - IEC symbol version	R21	rC_603_smd_small	Resistor	10R							
436333045822	WSTASJU-Bend-J Band SMD Tact Switch with boss design 4.7x3.5 mm side push	SW4, SW6, SW7	436333045822	436333045822	3		Wuerth Elektronik					
CUS12TB	SWITCH SLIDE SPDT 300mA 4V	SWS	FP-CUS12TB-MFG	CMP-71745-00005-2	1							
STLQ020C33R	No Description Available	U1, U11, U12, U13, U14, U15	SOT323-5L_STM	STLQ020C33R	6							
RFDPDT1C	RF-Switch IC DPDT 3 GHz 50ohm 12-QFN (2x2)	U2	SKY13396-397LF	SKY13396-397LF	1							
NCV8170AX/300T2G	IC REG LINEAR 3V 150mA SOT563-6	U3, U4, U5, U7, U10, U16	FP-463A-MFG	CMP-07128-000037-1	6	DNF						
LC291AAVD	Modules GNSS/ GPS	U6	LC291 QMIS	LC291AAVD	1							
KX023-1025-FR	Accelerometer X, Y, Z Axis ±2g, 4g, 8g 0.39Hz ~ 800Hz 16-LGA (3x3)	U8	KX023-1025-FR	KX023-1025-FR	1		Konix Inc.					
BME280		U9	Bosch_BME280_0	BME280	1	DNF						
BME680	No Description Available	U17	LG48_BME680_BOS	BME680	1							
STM32UB685QT8Q	No Description Available	U18	LOFPA8-7x7mm_STM	STM32UB685QT8Q	1							
MicroSD	-20°C~+60°C 1.8mm MicroSD SMD SD Card Connectors ROHS	U19	TF-013_1	TF-013	1		Korean Hiports Bsc					
NX2012SA-32.768K-STD-MUB-1	CRYSTAL 32.768kHz 12.5PF SMD	Y1	FP-NX2012SA-MFG	CMP-200220-000019-1	1							

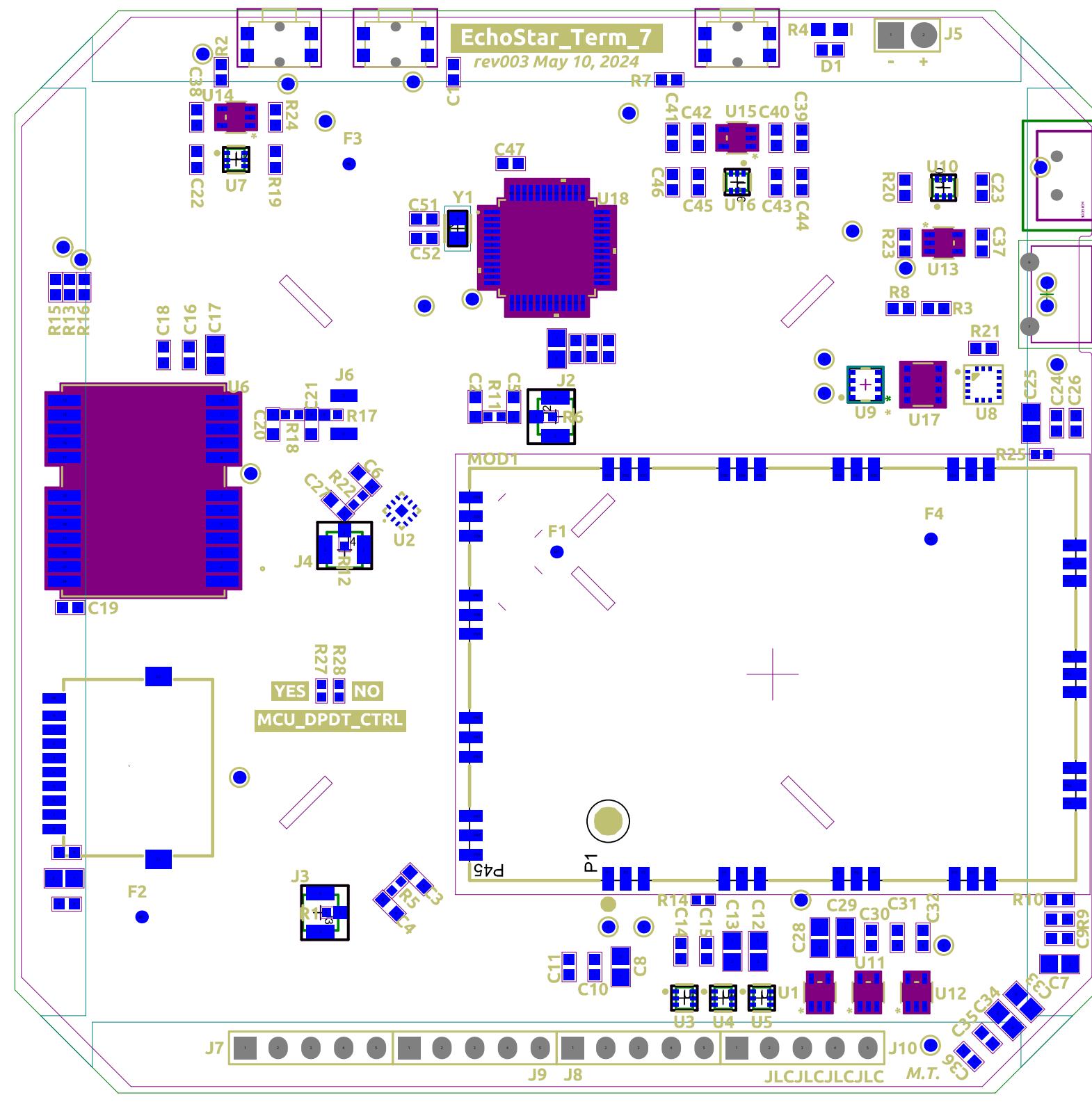
Board Stack Report

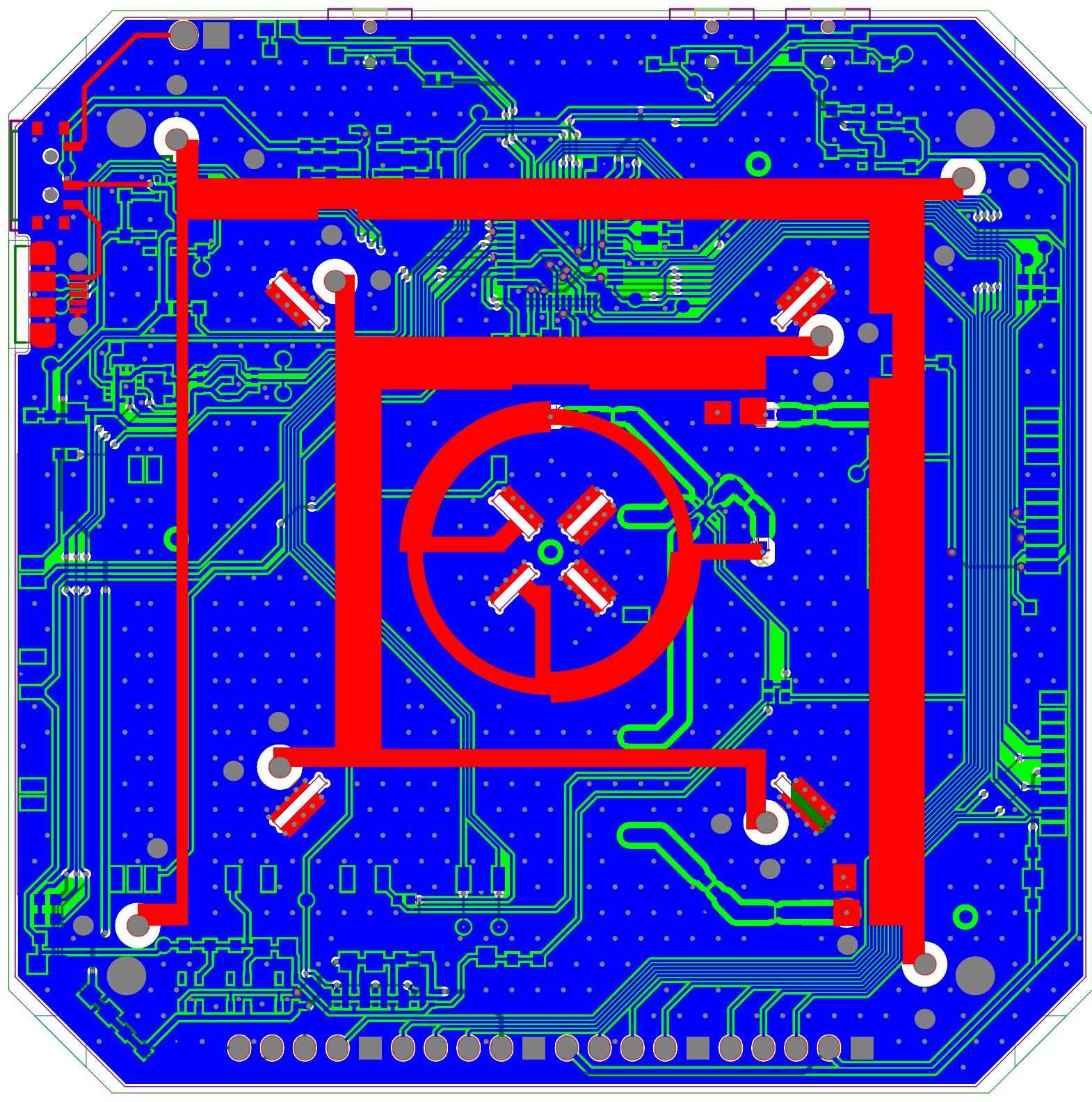
Stack Up		Layer Stack			
Layer	Board Layer Stack	Name	Material	Thickness	Constant
1		Top Paste			
2		Top Overlay			
3		Top Mask	Solder Resist	0.015mm	3.8
4		Top Copper	Copper	0.035mm	
5		Dielectric 1	7628	0.200mm	4.6
6		Signal Layer 1	Copper	0.018mm	
7		Core	FR-4	0.465mm	4.5
8		Signal Layer 2	Copper	0.018mm	
9		Dielectric 2	7628	0.200mm	4.6
10		Bottom Copper	Copper	0.035mm	
11		Bottom Mask	Solder Resist	0.015mm	3.8
12		Bottom Overlay			
13		Bottom Paste			
Height : 1.000mm					

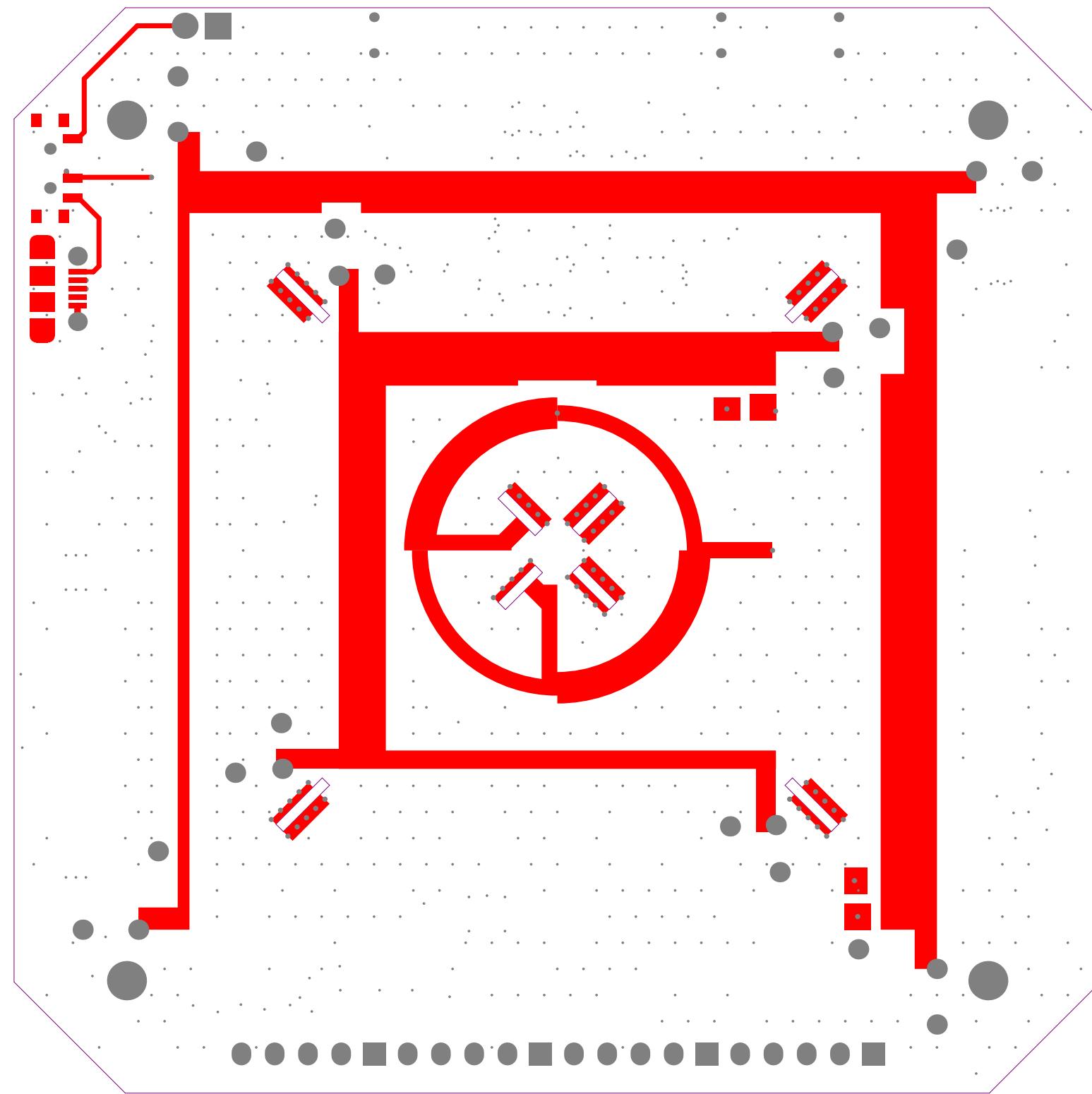
EchoStar_Term_7

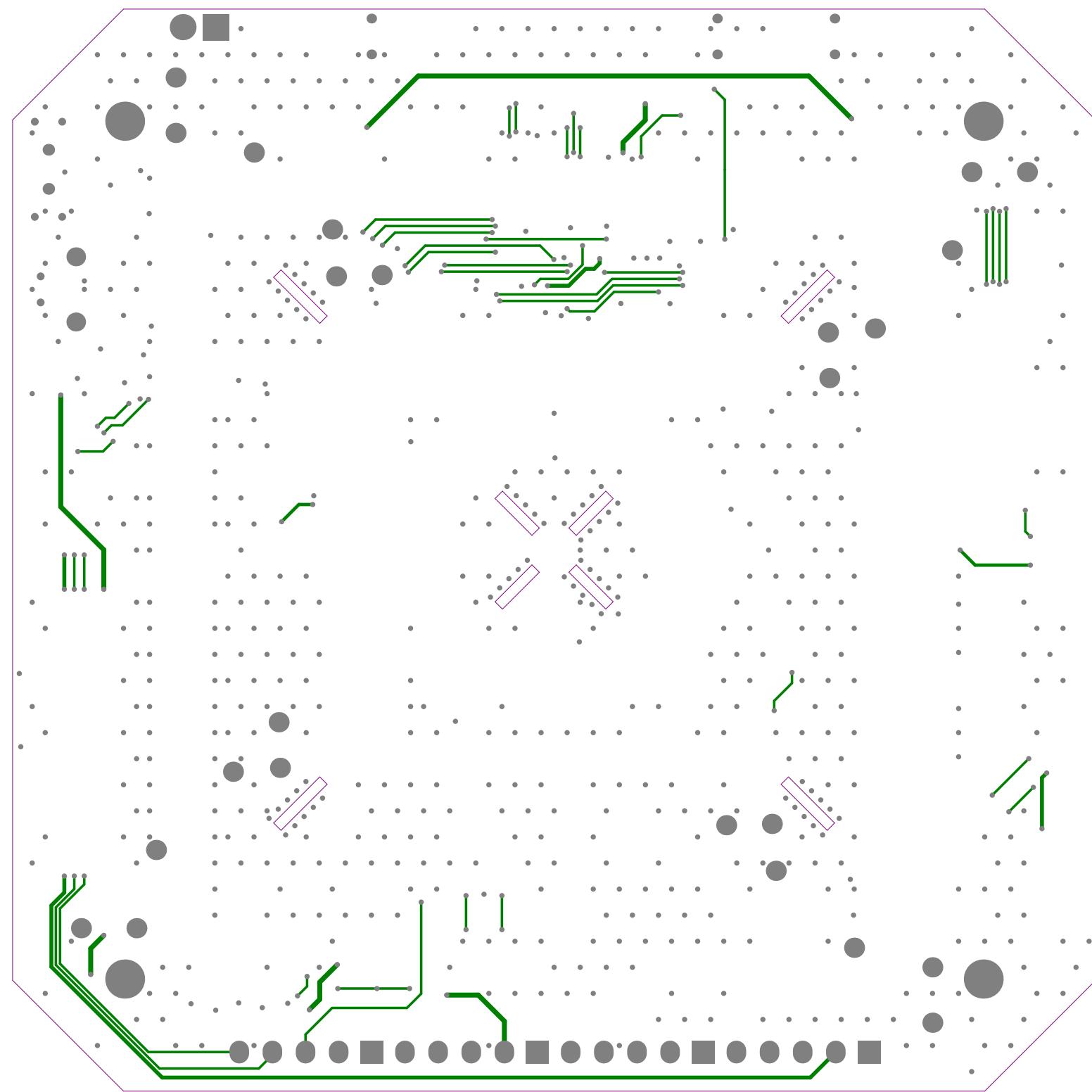
rev003 May 10, 2024

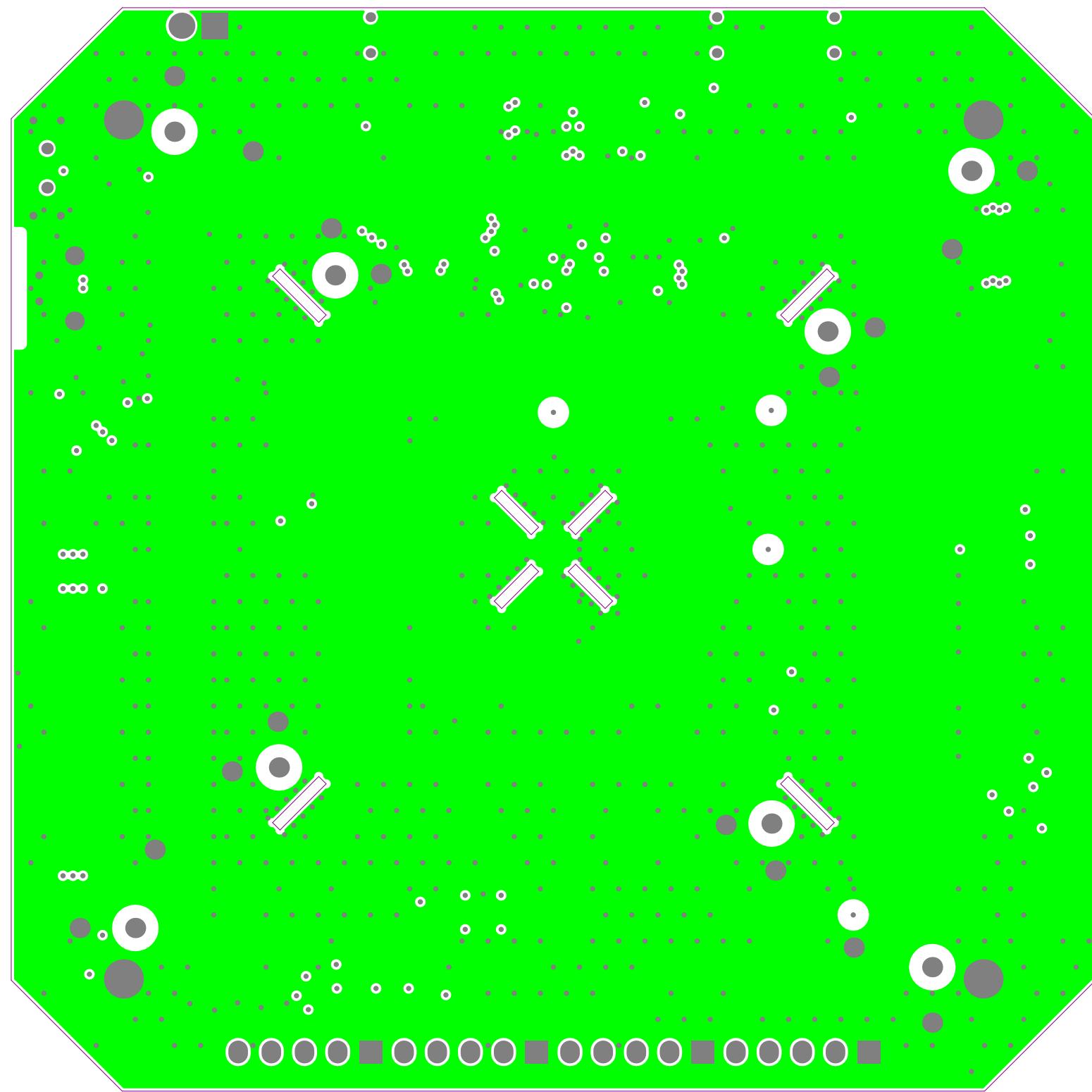


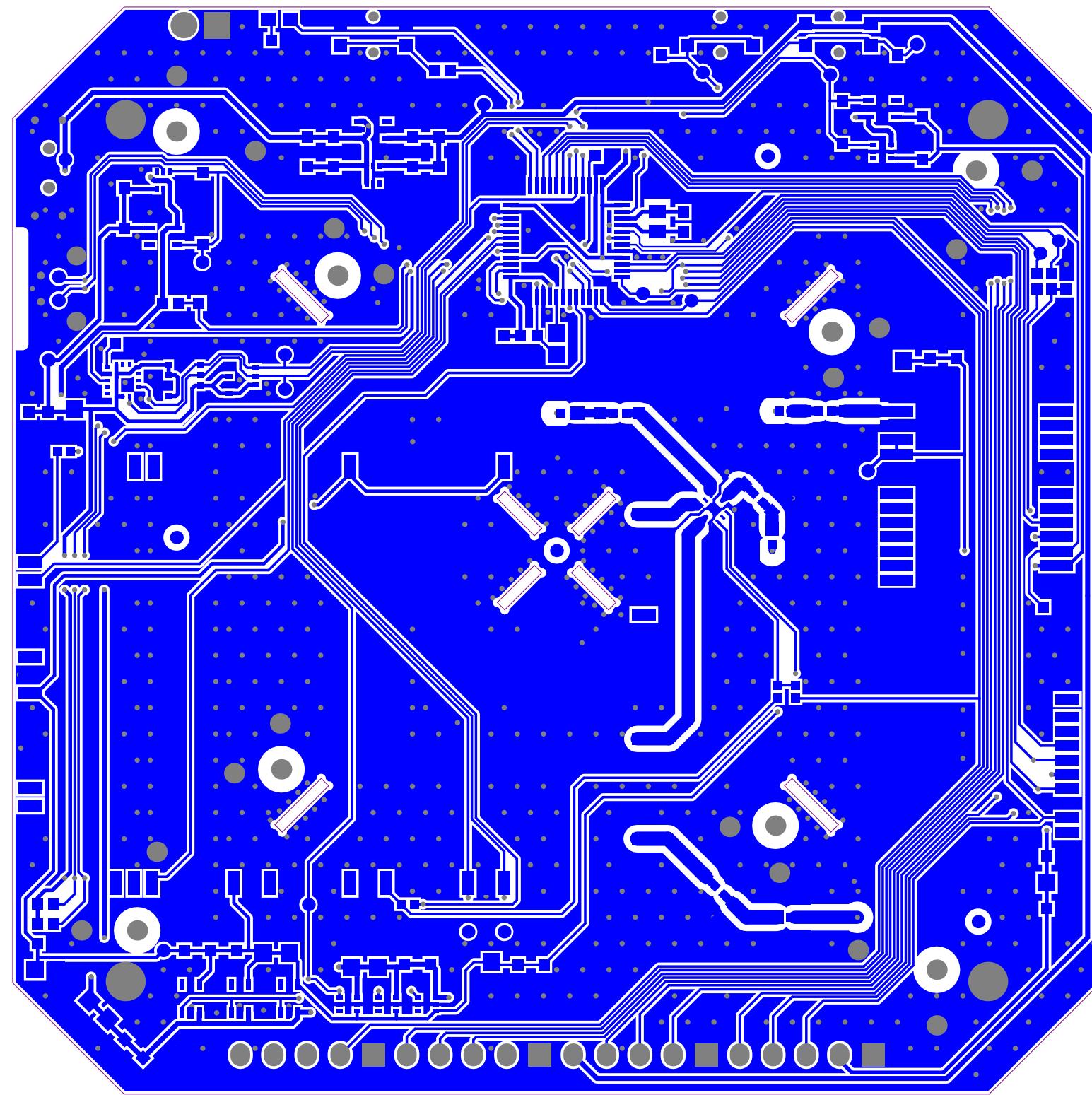






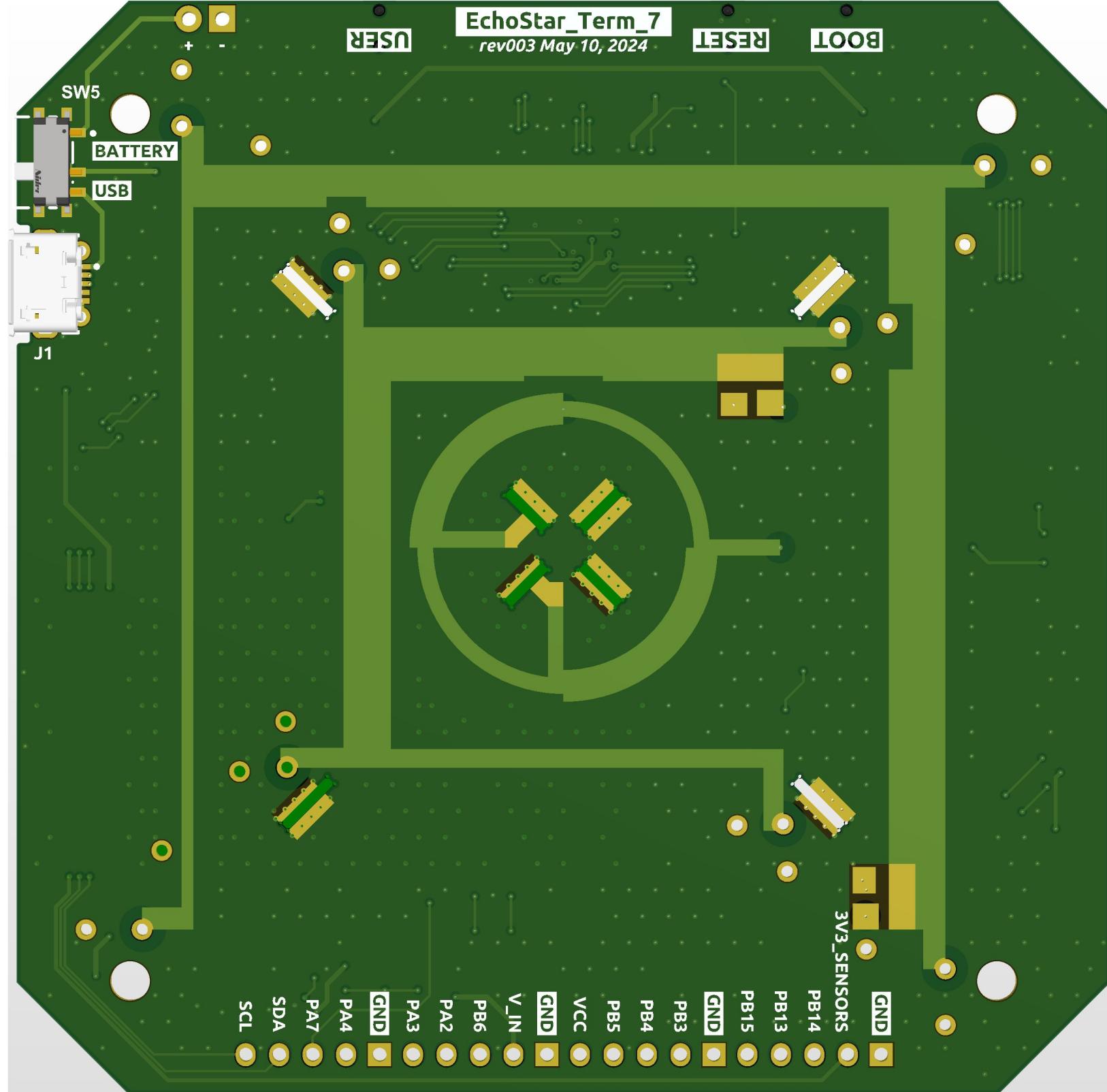






EchoStar_Term_7

rev003 May 10, 2024



EchoStar_Term_7

rev003 May 10, 2024

