Low Gain 700mm Antenna
Page 3

←— RF —→ Connector: To Comms

Antenna Deploy Release
Page 3

←— Power — Connector: To EPS

GPS Patch Antenna
Page 3

— RF —→ Connector: To Avionics

Photodiodes
Page 2

—→ ADC

←— Power — Connector: To ADCS

←— PC —→

Cougs in Space EE

Title:	Block Diagram	Size:	A
Project:	CougSat-1: +X Panel	SKU:68-0006	
Designer:	Reid Collins	Rev:	1.0.0
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CAD Note:
Place facing outwards
in the center of the board

AVDD

5V
6.3nA/lx
±60°
66-0003
SFH 2430
D1

R1
150Ω 1%
21-1500
1608
1/10W
100ppm/°C

AVREF

C12
10µF 10%
11-106A
1608
6.3V
X5R

U3

IN0 18
IN1 19
IN2 20
IN3 1
IN4 2
IN5 3
IN6 4
IN7 5

VREF 7

AGND 6
DGND 9*2

AD7291
27-0003

AVDD   3.3V

VDD 10
VDRIVE 16

PD/RST 17

ALERT 12

SCL 15
SDA 14
AS1 13
AS0 11

DCAP 8

R3
1kΩ 0.1%/1/8W
1608/25ppm/°C
21-1001

I2C_SCL_ADCS   IN 2A4>
I2C_SDA_ADCS   BI <2A4>

C1
1µF 10%
11-105A
1608
6.3V
X5R

J1
1
2
3
4

3.3V

I2C_SDA_ADCS   BI <2B3>
I2C_SCL_ADCS   Out 2B3>

ADCS Connector
04-0001
PicoLock

P

3.3V

R4
0Ω <20mΩ
21-0000
1608
1/10W
70°C Max 2A

CAD Note: Decoupling

3.3V

C3
100nF 10%
11-104A
1608
50V
X7R

3.3V

U2

VDD OUT 7
1
3
SHDN
2*5
AGND FB 8

MCP1501-18
62-0004
1.800V

AVREF

TP1

Out 2A1>

C2
270pF 1%
11-271A
1608
100V
C0G

Note:
Differential ADC voltage reference is 1.800V
At 16b, 13.73µV/LSB
Maximum input is ±900mV

R10
0Ω <20mΩ
21-0000
1608
1/10W
70°C Max 2A

R11
0Ω <20mΩ
21-0000
1608
1/10W
70°C Max 2A

R12
0Ω <20mΩ
21-0000
1608
1/10W
70°C Max 2A

R13
0Ω <20mΩ
21-0000
1608
1/10W
70°C Max 2A

P   D   A   RF0   RF1

3.3V

FB1
1.5kΩ @ 100MHz/1608
500mA/500mΩ
36-152A

AVDD

TP2

C4
4.7µF 10%
16-475A
Tant-B
20V
Max 900mΩ

C5
100nF 10%
11-104A
1608
50V
X7R

Note:
Single-Ended ADC voltage reference is 3.3V
At 16b, 25.18µΩV/LSB
Maximum input is ±1.65V

Title:	Photodiode	Size: A
Project:	CougSat-1: +X Panel	SKU: 68-0006
Designer:	Reid Collins	Rev: 1.0.0
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Cougs in
Space EE

J2
1
Low Gain +
05-0002
Socket Ø0.38~0.56mm

J3
1
Low Gain -
05-0002
Socket Ø0.38~0.56mm

Z1
Balun 1:1/CD542
DC 30mA/RF 2W
39-0001
RF0

J4
Low Gain Coax
04-0008
U.FL

AE1
GPS Antenna
65-0002
Patch
RF1

J5
GPS Coax
04-0008
U.FL

IN <3A5
SENSE

H1
M2
48-003x

H2
M2
48-003x

J6
1
2
3
4
SENSE Out >3A4>
ADCS Connector
04-0001
PicoLock

R8
15Ω 5%
25-15.0
THT 15mm
1W
-40~275°C

R9
15Ω 5%
25-15.0
THT 15mm
1W
-40~275°C

P

H3
M2
48-003x

H4
M2
48-003x

PGND
P

H5
M2
48-003x
C

C6
100nF 10%
11-104A
1608
50V
X7R
P

R2
0Ω <20mΩ
21-0000
1608
1/10W
70°C Max 2A
P

H6
M2
48-003x
C

C7
100nF 10%
11-104A
1608
50V
X7R
P

R5
0Ω <20mΩ
21-0000
1608
1/10W
70°C Max 2A
P

H7
M2
48-003x
C

C8
100nF 10%
11-104A
1608
50V
X7R
P

R6
0Ω <20mΩ
21-0000
1608
1/10W
70°C Max 2A
P

H8
M2
48-003x
C

C9
100nF 10%
11-104A
1608
50V
X7R
P

R14
0Ω <20mΩ
21-0000
1608
1/10W
70°C Max 2A
P

H9
M2
48-003x
C

C10
100nF 10%
11-104A
1608
50V
X7R
P

R15
0Ω <20mΩ
21-0000
1608
1/10W
70°C Max 2A
P

H10
M2
48-003x
C

C11
100nF 10%
11-104A
1608
50V
X7R
P

R16
0Ω <20mΩ
21-0000
1608
1/10W
70°C Max 2A
P

Cougs in
Space EE

Title:	Antennae	Size: A
Project:	CougSat-1: +X Panel	SKU: 68-0006
Designer:	Reid Collins	Rev: 1.0.0
Date:	7/9/2019 7:56 PM	Page: 3/4
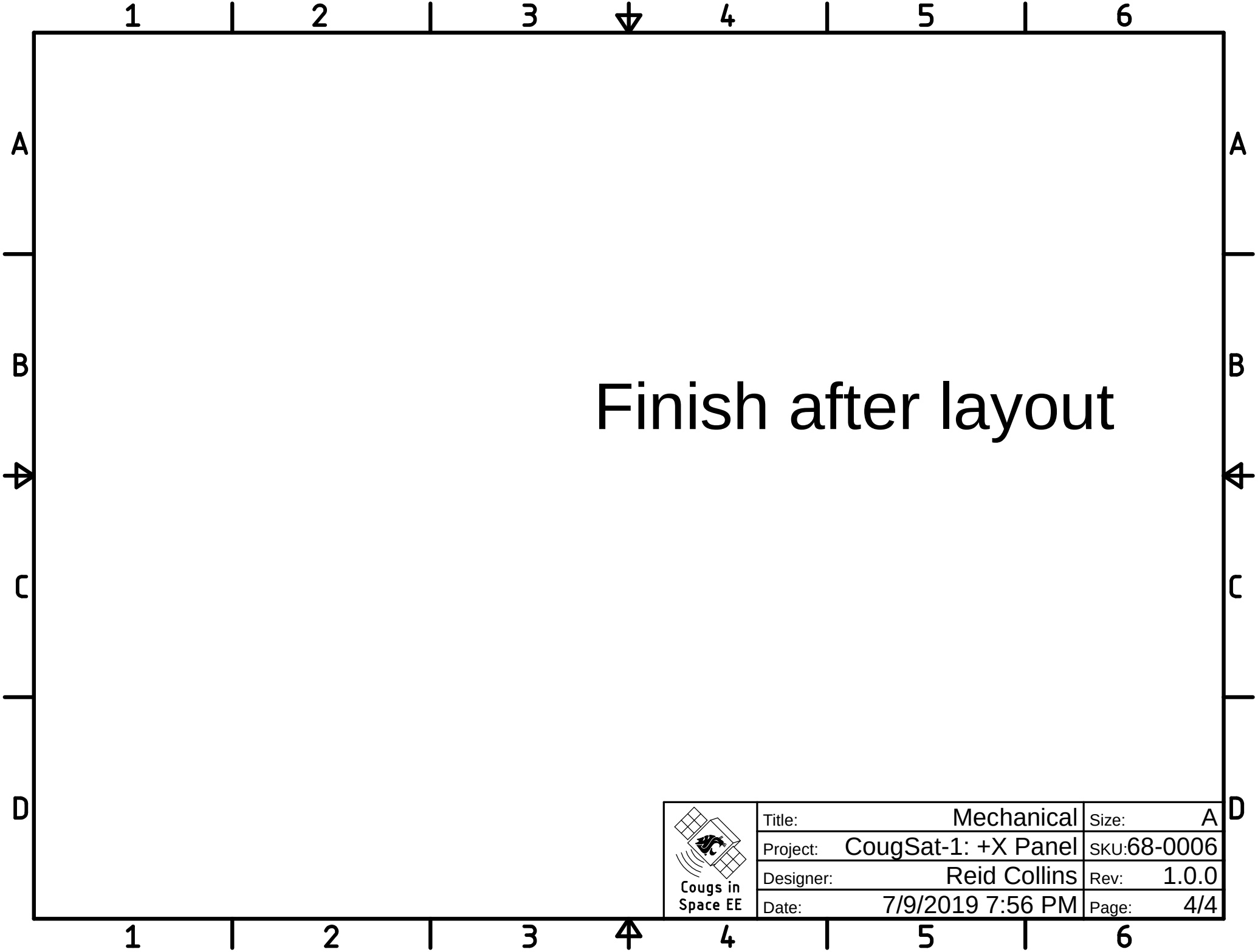
Finish after layout

Title:	Mechanical	Size:	A
Project:	CougSat-1: +X Panel	SKU:68-0006	
Designer:	Reid Collins	Rev:	1.0.0
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Cougs in Space EE