TITLE PAGE

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Shield Connectors
Connectors.SchDoc

ECO
ECO LIST.SchDoc

IMPORTANT NOTES ABOUT THIS SCHEMATIC

DESIGN NOTE: Example text for the design note to show the note inside the colored box.

1) DESIGN NOTES in grey are information notes.

DESIGN NOTE: Example text for the design note to show the note inside the colored box.

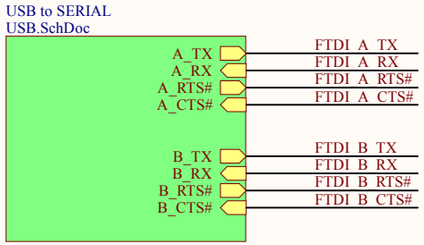
2) DESIGN NOTES in red are critical, and must be understood and followed.

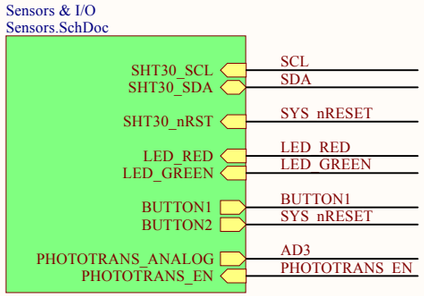
3) A red X indicates suppression of error checking on a pin/net. Commonly suppressed errors include: single-pin net, no driving source, etc.

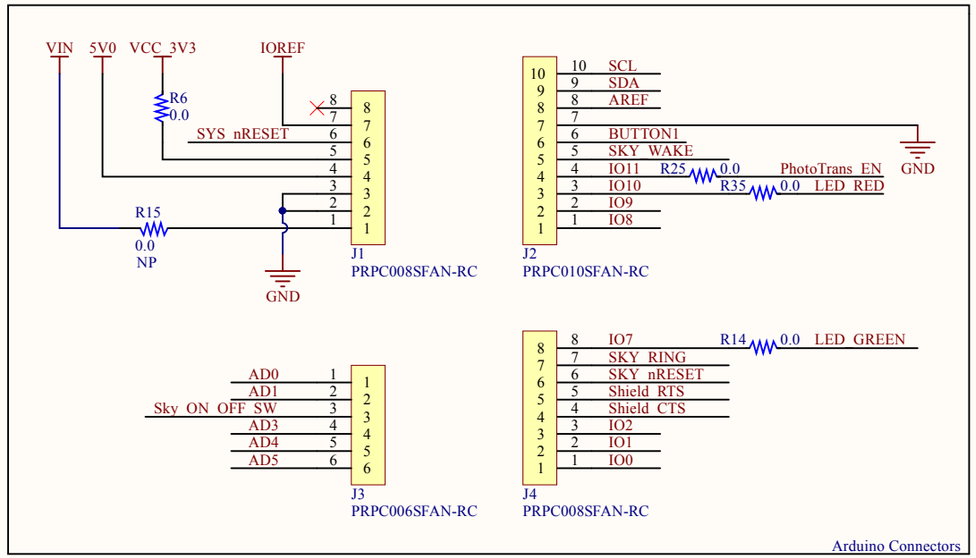
4) All unique components in this schematic should have a manufacturer's part number displayed; exceptions to this rule are commodity passives such as resistors and capacitors.

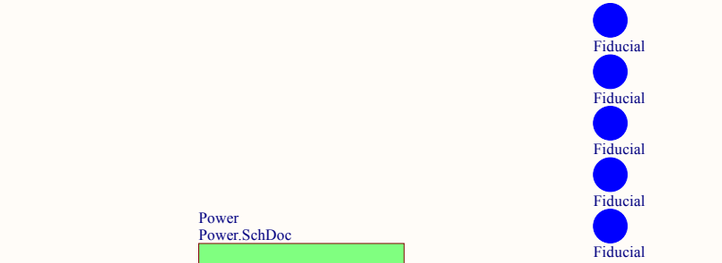
5) Finally, population vs. non-population intent is indicated by adding "NP" next to the part. All parts with "NP" next to the part are intended to be unplaced during assembly.

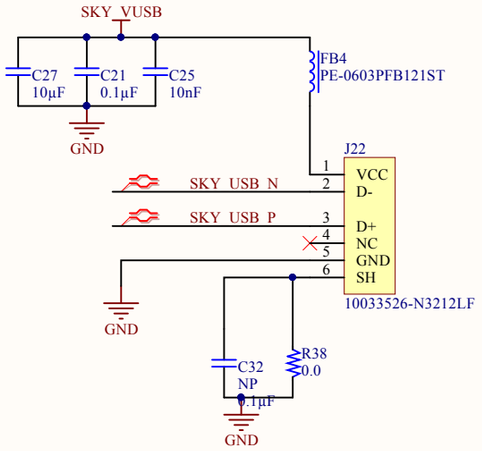
NimbeLink		www.nimbelink.com MINNEAPOLIS	
Title: TITLE			
Project: CAT M1 Dev Kit		Size: B	Sheet 1 of 7
Number: 20052	Rev: D	Modified:	12/20/2016 10:20:01 AM
Prepared for: Nimbelink			

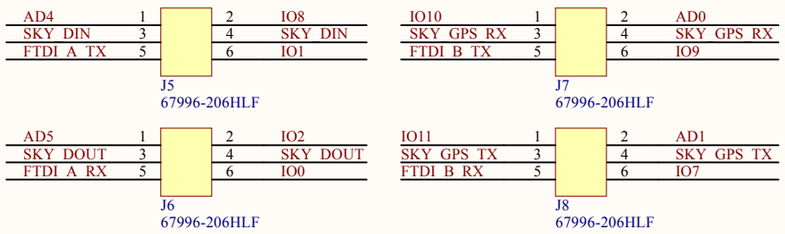












DESIGN NOTE:

J5, J6, J7, and J8 are used for selecting which Arduino Shield pins the Skywire's UART connnections are routed to. This allows the shield to be used with several different development kits.

Each position is mapped to specific UART connections for the USB-Serial interface or the specific development kits shown below. Use a 2-Pin, 100 mil jumper to short the two designated pins together.

-Position 1: ST Nucleo L476: Connect pins 2 and 4 on header J5, J6, J7, & J8.

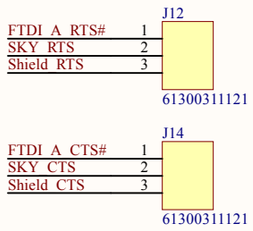
-Position 2: ST Nucleo L476 or L073 Low Power UART: Connect pins 2 and 4 on headers J7, & J8, then connect pins 1 and 3 on headers J5 & J6. This configuration routes the Skywire DIN/DOUT to the LPUART and the GPS to a regular UART.

-Position 3: NXP FRDM-K64F: Connect pins 4 and 6 on headers J5, J6, J7 &J8.

-Position 4: Arduino Leonardo: Connect pints 4 and 6 on headers J5 & J6, then connect pins 1 and 3 on J7 & J8.

-Position 5: On board USB-Serial converter: Connect pins 3 and 5 on headers J5, J6, J7 &J8.

DESIGN NOTE:
The user should make sure that the RTS/CTS jumpers are properly configured before powering up for the board. DO NOT connect RTS/CTS to the USB-Serial converter when it is not in use.



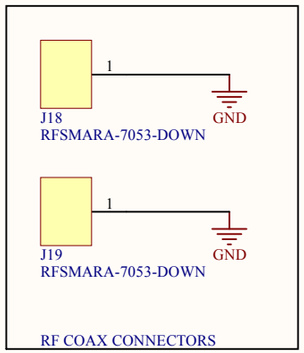
DESIGN NOTE:
Connect a 2 Pin jumper between J12-1 and J12-2 to enable RTS use with a development kit board.

Connect a 2 Pin jumper between J12-3 and J12-2 to enable CTS user with the onboard USB-Serial Converter.

DESIGN NOTE:
Connect a 2 Pin jumper between J14-1 and J14-2 to enable CTS use with a development kit board.

Connect a 2 Pin jumper between J14-3 and J14-2 to enable CTS user with the onboard USB-Serial Converter.

NimbeLink	www.nimbelink.com MINNEAPOLIS		
Title: CONNECTORS			
Project: CAT M1 Dev Kit		Size: B	Sheet 2 of 7
Number: 20052	Rev: D	Modified:	12/20/2016 10:20:01 AM
Prepared for: Nimbelink			



DESIGN NOTE: J13 is available for users to use to do current measurements of the Skywire.

DESIGN NOTE: Skywire socket is two 2mm pitch 1x10 sockets, NPPN101BFLC-RC

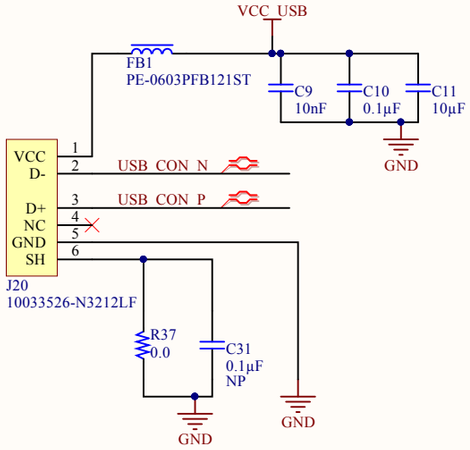
DESIGN NOTE: SKY_ONOFF is an open drain assertion and should NOT have a pullup.

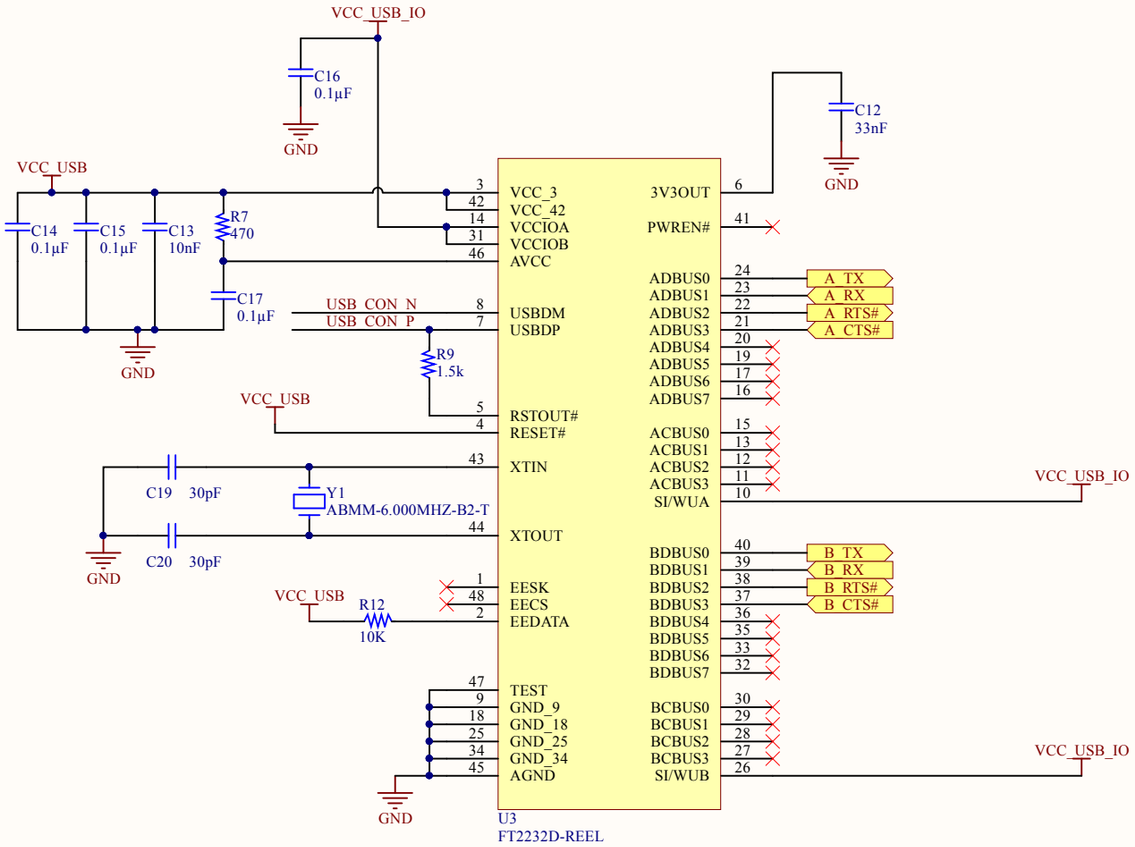
DESIGN NOTE: R19 will cause the Skywire to automatically turn on

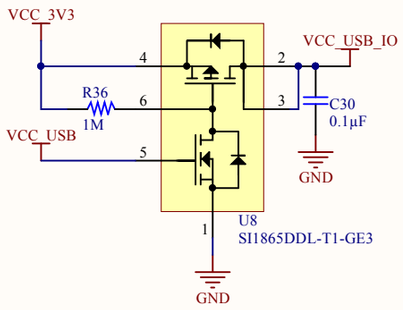
DESIGN NOTE: R14/R15 population TBD.

DESIGN NOTE: Sky USB DM and DP are not connected to the debug headers.

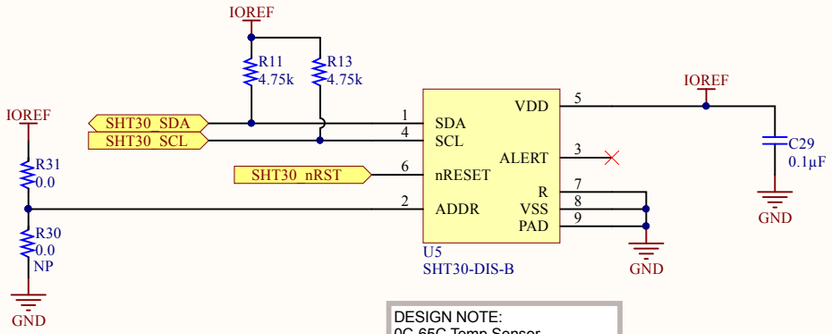
NimbeLink	www.nimbelink.com MINNEAPOLIS		
Title: SKYWIRE			
Project: CAT M1 Dev Kit		Size: B	Sheet 3 of 7
Number: 20052	Rev: D	Modified:	12/20/2016 10:20:02 AM
Prepared for: Nimbelink			



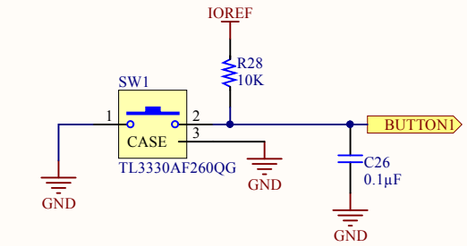


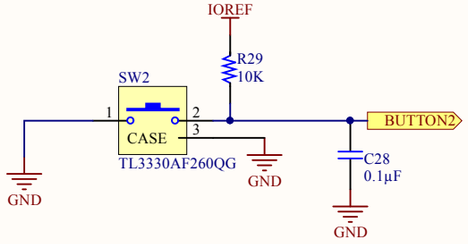


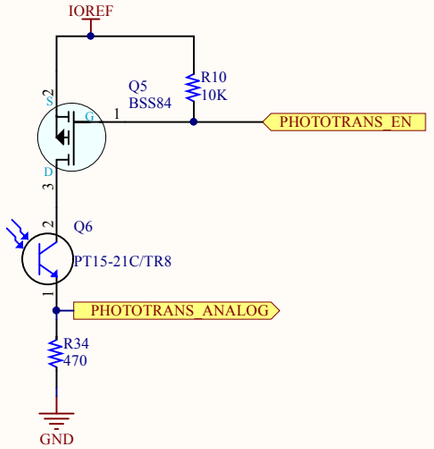
NimbeLink		www.nimbelink.com MINNEAPOLIS	
Title: USB			
Project: CAT M1 Dev Kit		Size: B	Sheet 4 of 7
Number: 20052	Rev: D	Modified:	12/20/2016 10:20:02 AM
Prepared for: Nimbelink			

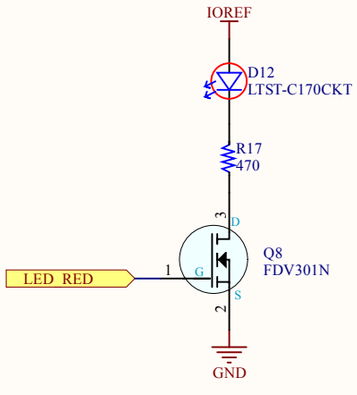


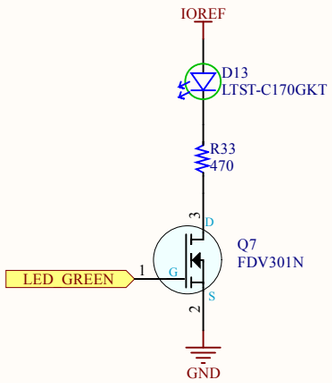
DESIGN NOTE:
0C-65C Temp Sensor
0-100% RH Humidity Sensor
I2C Address: 0x45











NimbeLink		www.nimbelink.com MINNEAPOLIS	
Title: SENSORS			
Project: CAT M1 Dev Kit		Size: B	Sheet 5 of 7
Number: 20052	Rev: D	Modified:	12/20/2016 10:20:02 AM
Prepared for: Nimbelink			

DESIGN NOTE: System requires a 5V input. Do not use any other voltage.

DESIGN NOTE: Power must be applied to J9.

J9
PJ-202A

D3
PMEG3020EP,115

D4
PTVS5V0S1UR,115

VIN

VCC_USB

D2
PMEG3020EP,115
NP

SKY_VUSB

D10
PMEG3020EP,115
NP

C3
0.1µF

R4 1k

nCHG

DESIGN NOTE: TS circuitry designed for use with a 10Kohm NTC thermistor. If using a battery mounted NTC, rmove R8. Additionally, R1 and R3 may need to be changed to allow for proper operating temperatures.

LDO

C1
0.1µF

R1
20.5k

TS

R3
8.66k

R8
10k

U1
BQ25060DQCR

IN
OUT
LDO
EN
CHG
BGATE
TS
BAT
ISET
PAD
VSS

Q1
SI2301CDS-T1-GE3

VCC_SYS

C2
1µF

C4
0.1µF

R5
1k

DESIGN NOTE: Charge current is set to 1A.

LDO

R32
10K

Q4
BSS84

nCHG

R2
470

D1
LTST-C170GKT

J10
S3B-PH-K-S(LF)(SN)
NP

DESIGN NOTE: Use BatterySpace CU-J821-V4 battery with J10.

DESIGN NOTE: DO NOT connect two batteries to the system at the same time.

J11
S2B-PH-K-S(LF)(SN)

DESIGN NOTE: Use Sparkfun PRT-08483 or BatterySpace CU-J1032 battery with J11.

VCC_SYS

C5
0.1uF

C6
10uF

R26
0

U2
LP38693SD-3.3/NOPB

VIN_1
VIN_6
VOUT
SNS
GND
TAB
EN

C7
0.1uF

C8
4.7uF

VCC_3V3

GND

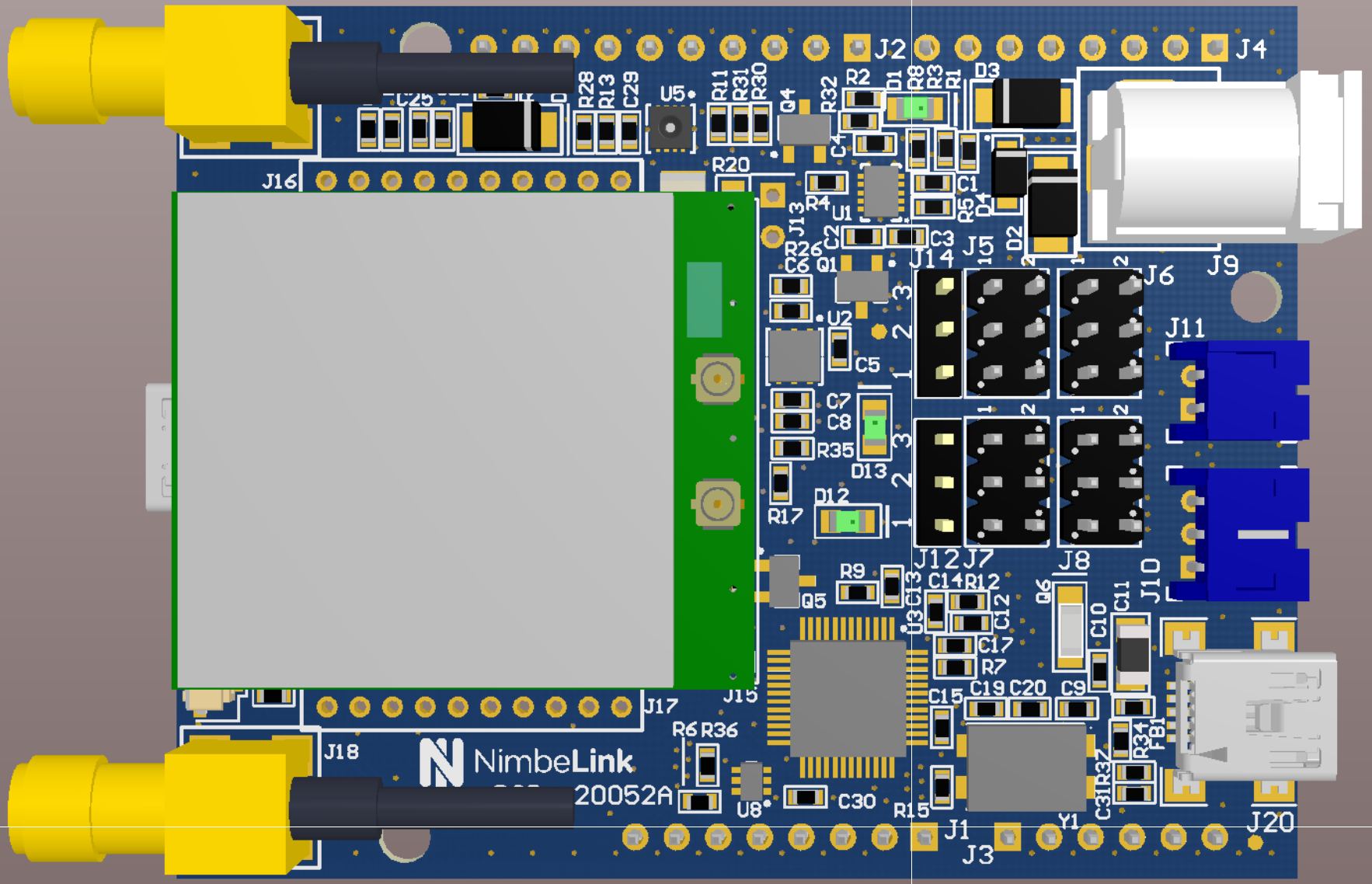
NimbeLink		www.nimbelink.com MINNEAPOLIS	
Title: POWER			
Project: CAT M1 Dev Kit		Size: B	Sheet 6 of 7
Number: 20052	Rev: D	Modified:	12/20/2016 10:20:02 AM
Prepared for: Nimbelink			

ECO LIST

Revision Control			
Assy Part Number	Rev	Description of Change	Date
20052	A	Alpha Release	2016-08-09
20052	B	-Changed R27 to populated	2016-08-31
20052	C	SCH CHANGES: -Changed R4,R23 to 1Kohm -Changed R3 to 8.66k	2016-9-1
20052	D	SCH CHANGES: -Changed R5 to 1Kohm -Changed D2 and D10 to no pop	2016-12-20

Revision Control			
Assy Part Number	Rev	Description of Change	Date

NimbeLink		www.nimbelink.com MINNEAPOLIS	
Title: ECO LIST			
Project: CAT M1 Dev Kit		Size: C	Sheet 7 of 7
Number: 20052	Rev: D	Modified:	12/20/2016 10:20:02 AM
Prepared for: Nimbelink			


J2
J4
J16
J9
J6
J11
J5
J14
J12
J7
J8
J10
J15
J17
J18
J20
J1
J3
NimbeLink
20052A