TITLE PAGE

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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.

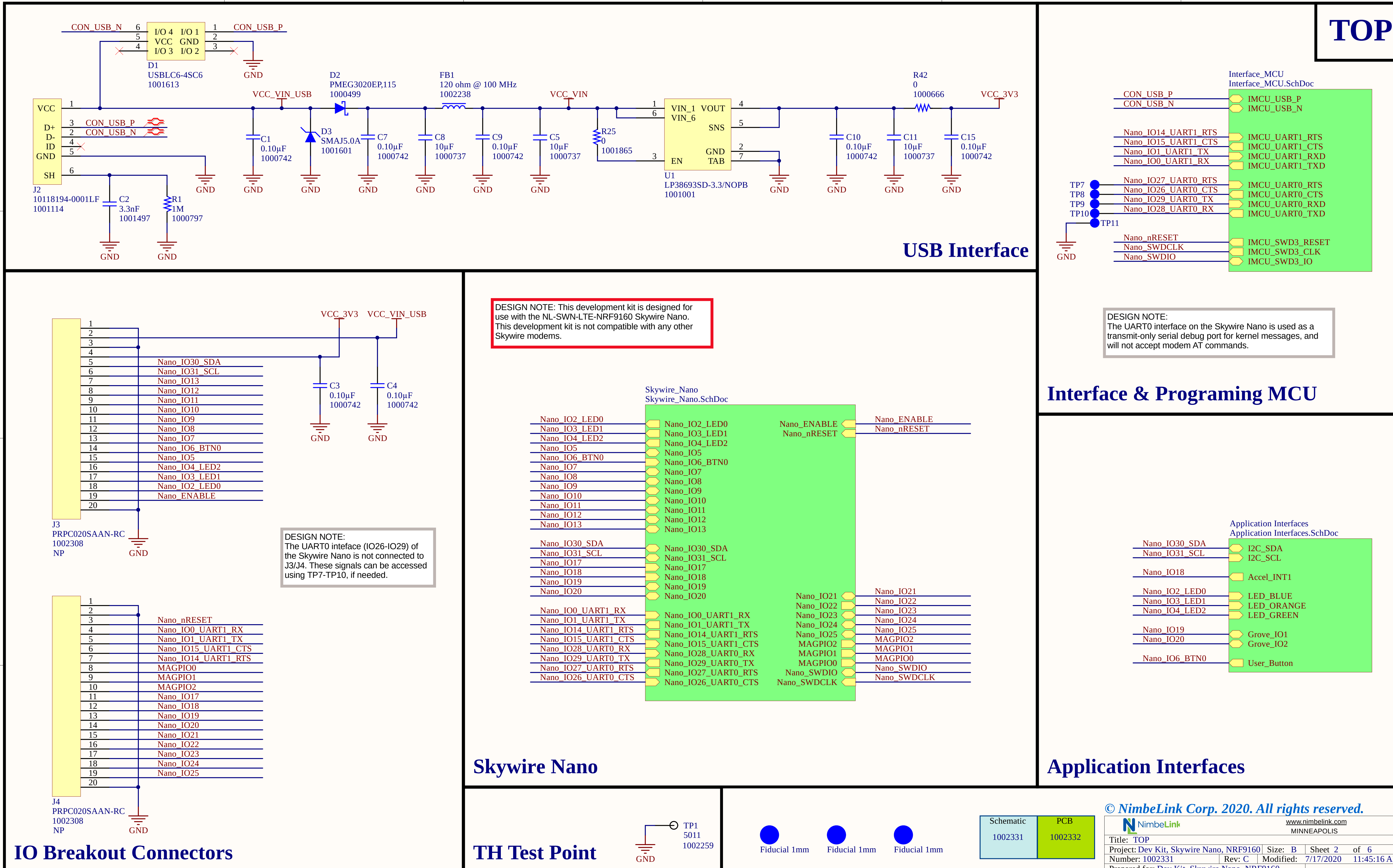
DESIGN NOTE: Example text for the design note to show the note inside the colored box.

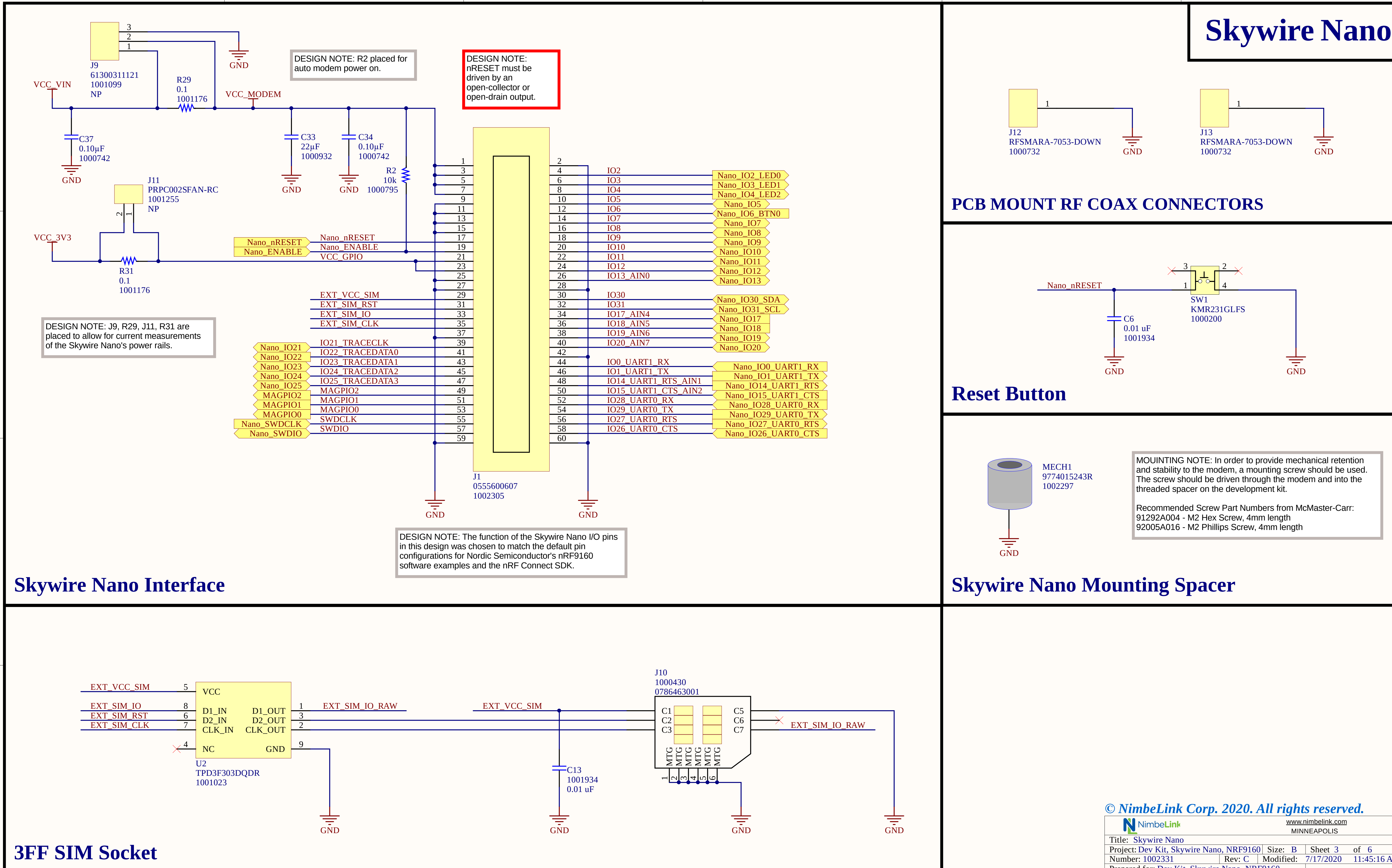
2) DESIGN NOTES in red are critical, and must be understood and followed.

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.


TOP
USB Interface
J2
10118194-0001LF
1001114
VCC
D+
D-
ID
GND
SH
CON_USB_P
CON_USB_N
D1
USBLC6-4SC6
1001613
I/O 4 I/O 1
VCC GND
I/O 3 I/O 2
D2
PMEG3020EP,115
1000499
D3
SMAJ5.0A
1001601
FB1
120 ohm @ 100 MHz
1002238
U1
LP38693SD-3.3/NOPB
1001001
VIN_1 VOUT
VIN_6
SNS
GND
EN TAB
R42
0
1000666
R25
0
1001865
R1
1M
1000797
C2
3.3nF
1001497
C1 0.10µF 1000742
C7 0.10µF 1000742
C8 10µF 1000737
C9 0.10µF 1000742
C5 10µF 1000737
C10 0.10µF 1000742
C11 10µF 1000737
C15 0.10µF 1000742
VCC_VIN_USB
VCC_VIN
VCC_3V3
GND
Interface_MCU
Interface_MCU.SchDoc
IMCU_USB_P
IMCU_USB_N
IMCU_UART1_RTS
IMCU_UART1_CTS
IMCU_UART1_RXD
IMCU_UART1_TXD
IMCU_UART0_RTS
IMCU_UART0_CTS
IMCU_UART0_RXD
IMCU_UART0_TXD
IMCU_SWD3_RESET
IMCU_SWD3_CLK
IMCU_SWD3_IO
Nano_IO14_UART1_RTS
Nano_IO15_UART1_CTS
Nano_IO1_UART1_TX
Nano_IO0_UART1_RX
Nano_IO27_UART0_RTS
Nano_IO26_UART0_CTS
Nano_IO29_UART0_TX
Nano_IO28_UART0_RX
Nano_nRESET
Nano_SWDCLK
Nano_SWDIO
TP7
TP8
TP9
TP10
TP11
DESIGN NOTE:
The UART0 interface on the Skywire Nano is used as a transmit-only serial debug port for kernel messages, and will not accept modem AT commands.
Interface & Programing MCU
J3
PRPC020SAAN-RC
1002308
NP
Nano_IO30_SDA
Nano_IO31_SCL
Nano_IO13
Nano_IO12
Nano_IO11
Nano_IO10
Nano_IO9
Nano_IO8
Nano_IO7
Nano_IO6_BTN0
Nano_IO5
Nano_IO4_LED2
Nano_IO3_LED1
Nano_IO2_LED0
Nano_ENABLE
C3 0.10µF 1000742
C4 0.10µF 1000742
J4
PRPC020SAAN-RC
1002308
NP
Nano_nRESET
Nano_IO0_UART1_RX
Nano_IO1_UART1_TX
Nano_IO15_UART1_CTS
Nano_IO14_UART1_RTS
MAGPIO0
MAGPIO1
MAGPIO2
Nano_IO17
Nano_IO18
Nano_IO19
Nano_IO20
Nano_IO21
Nano_IO22
Nano_IO23
Nano_IO24
Nano_IO25
DESIGN NOTE:
The UART0 inteface (IO26-IO29) of the Skywire Nano is not connected to J3/J4. These signals can be accessed using TP7-TP10, if needed.
IO Breakout Connectors
DESIGN NOTE: This development kit is designed for use with the NL-SWN-LTE-NRF9160 Skywire Nano. This development kit is not compatible with any other Skywire modems.
Skywire_Nano
Skywire_Nano.SchDoc
Nano_ENABLE
Nano_nRESET
Nano_IO28_UART0_RX
Nano_IO29_UART0_TX
Nano_IO27_UART0_RTS
Nano_IO26_UART0_CTS
Nano_SWDIO
Nano_SWDCLK
Skywire Nano
Application Interfaces
Application Interfaces.SchDoc
I2C_SDA
I2C_SCL
Accel_INT1
LED_BLUE
LED_ORANGE
LED_GREEN
Grove_IO1
Grove_IO2
User_Button
Application Interfaces
TP1
5011
1002259
TH Test Point
Fiducial 1mm
Fiducial 1mm
Fiducial 1mm
Schematic
1002331
PCB
1002332
NimbeLink
www.nimbelink.com
MINNEAPOLIS
Title: TOP
Project: Dev Kit, Skywire Nano, NRF9160 Size: B Sheet 2 of 6
Number: 1002331 Rev: C Modified: 7/17/2020 11:45:16 AM
Prepared for: Dev Kit, Skywire Nano, NRF9160



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MINNEAPOLIS

Title:	Skywire Nano
Project:	Dev Kit, Skywire Nano, NRF9160
Size:	B
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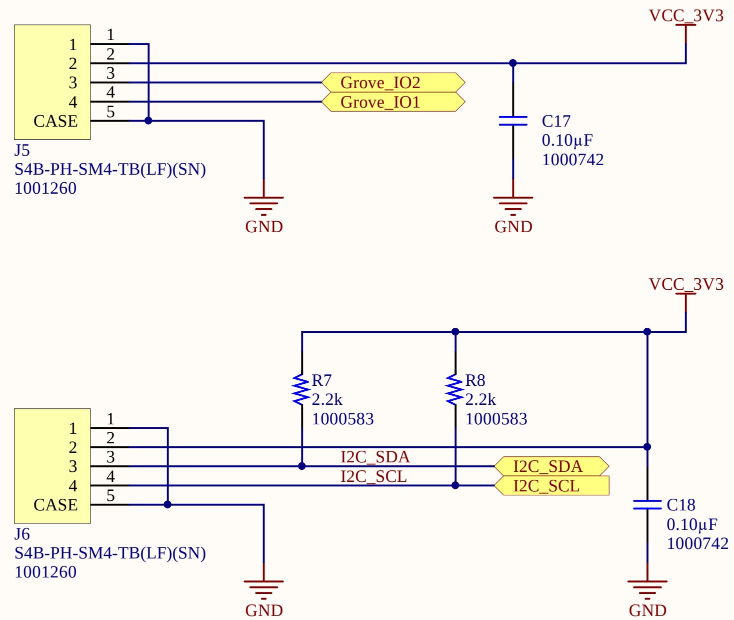
Prepared for:	Dev Kit, Skywire Nano, NRF9160

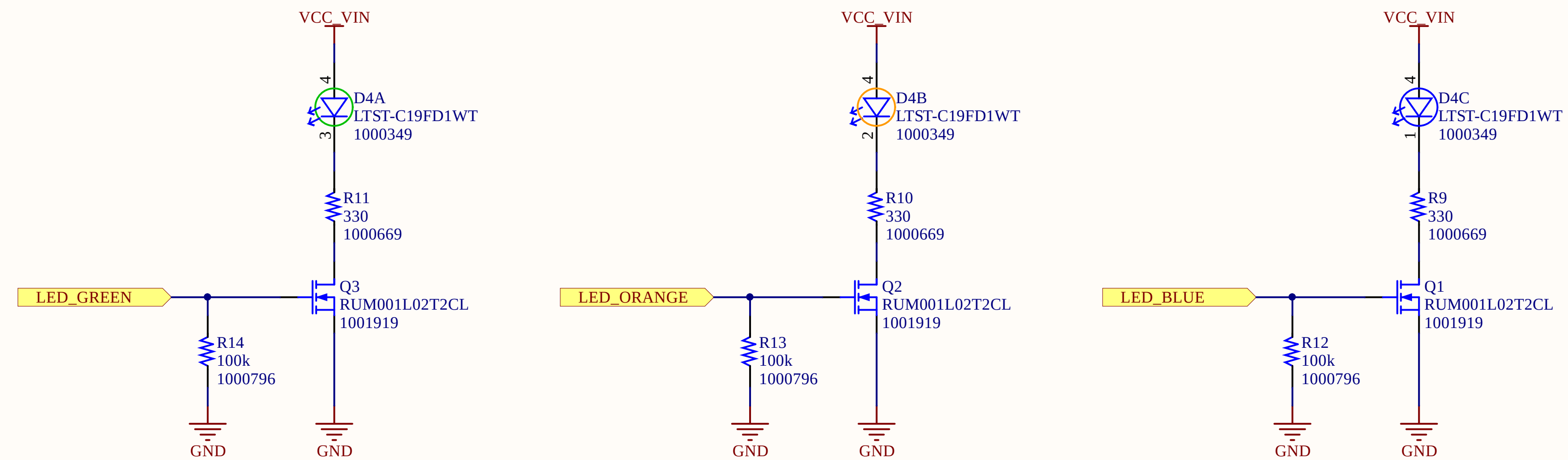
Application Interfaces

DESIGN NOTE:
D4A Vf = 2.9V @ 5 mA
D4B Vf = 2.1V @ 5 mA
D4C Vf = 2.8V @ 5 mA



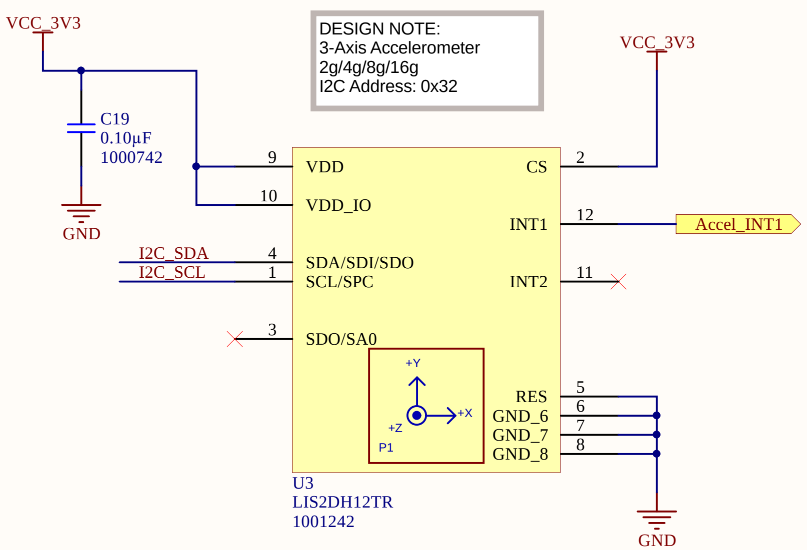
DESIGN NOTE:
Keying for SMT Grove connectors is reversed and requires the pin interface to be mirrored from grove standard.

Grove Connectors



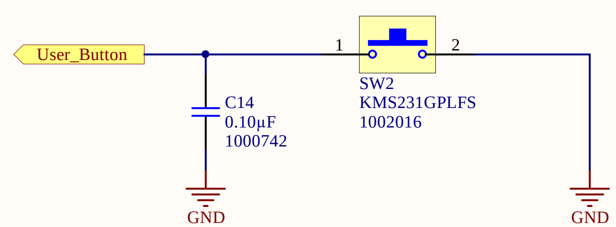
LED's

DESIGN NOTE:
3-Axis Accelerometer
2g/4g/8g/16g
I2C Address: 0x32



Accelerometer

LAYOUT NOTE:
C14 is used for switch debouncing and should be placed as close as possible to SW2.



DESIGN NOTE:
User_Button should be pulled up to VCC_GPIO using an internal pull-up resistor on the nRF9160 module.

User Button

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Title: Application Interfaces		
Project: Dev Kit, Skywire Nano, NRF9160	Size: B	Sheet 4 of 6
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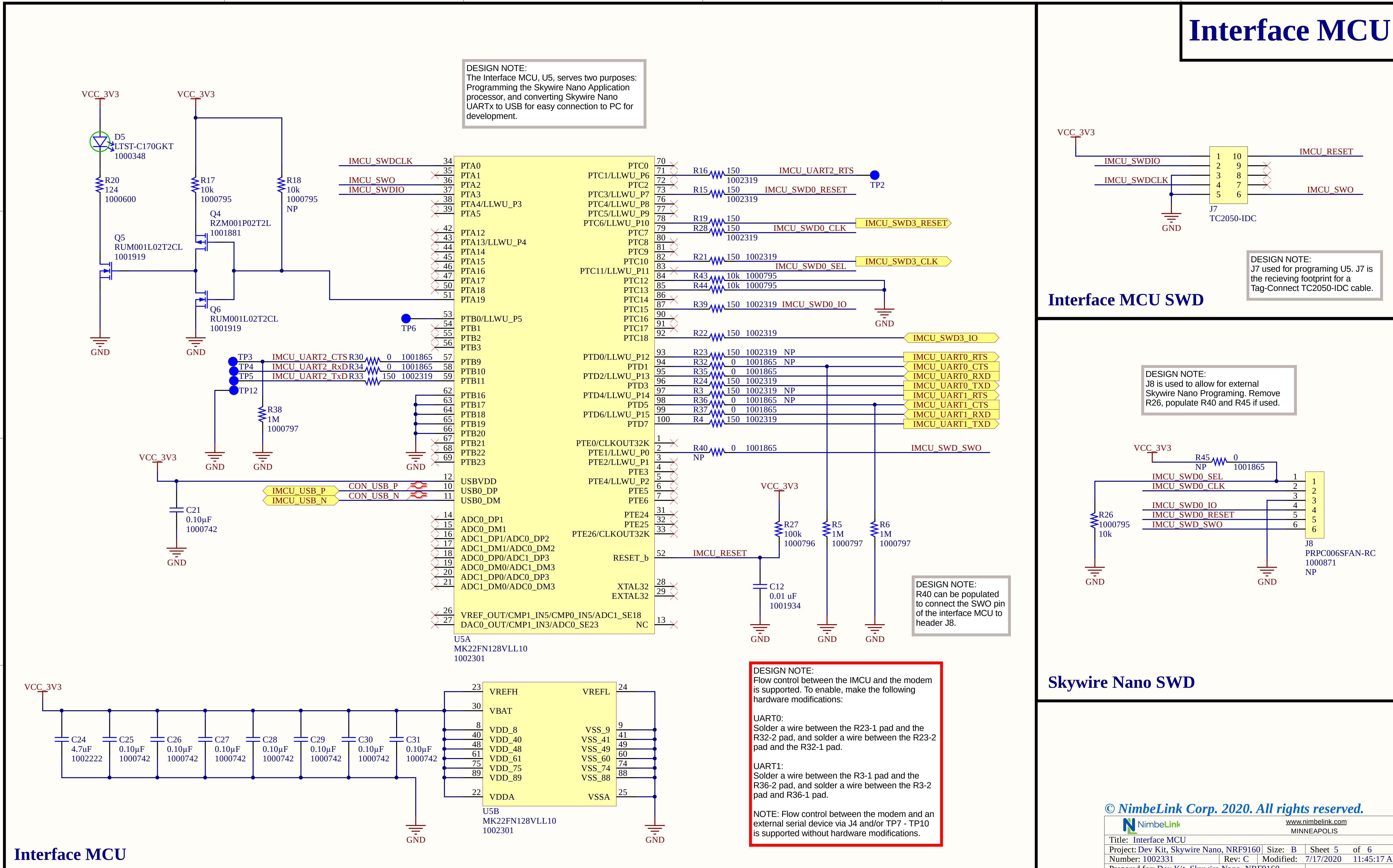
Prepared for: Dev Kit, Skywire Nano, NRF9160		

Interface MCU



DESIGN NOTE:
The Interface MCU, U5, serves two purposes: Programming the Skywire Nano Application processor, and converting Skywire Nano UARTx to USB for easy connection to PC for development.

DESIGN NOTE:
J7 used for programing U5. J7 is the recieving footprint for a Tag-Connect TC2050-IDC cable.

DESIGN NOTE:
J8 is used to allow for external Skywire Nano Programing. Remove R26, populate R40 and R45 if used.

DESIGN NOTE:
R40 can be populated to connect the SWO pin of the interface MCU to header J8.

DESIGN NOTE:
Flow control between the IMCU and the modem is supported. To enable, make the following hardware modifications:

UART0:
Solder a wire between the R23-1 pad and the R32-2 pad, and solder a wire between the R23-2 pad and the R32-1 pad.

UART1:
Solder a wire between the R3-1 pad and the R36-2 pad, and solder a wire between the R3-2 pad and the R36-1 pad.

NOTE: Flow control between the modem and an external serial device via J4 and/or TP7 - TP10 is supported without hardware modifications.

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Title: Interface MCU			
Project: Dev Kit, Skywire Nano, NRF9160	Size: B	Sheet 5 of 6	
Number: 1002331	Rev: C	Modified: 7/17/2020	11:45:17 AM
Prepared for: Dev Kit, Skywire Nano, NRF9160			

ECO LIST

Revision Control

Assy Part Number	Rev	Description of Change	Date
1002333	A	Alpha Release	11/25/19
1002333	B	Changed J1-23 to be connected to VCC_GPIO, added pull-down to SWD2_SELECT, swapped SWD3_CLK and SWD3_IO on the Nano Interface, removed R2 pull-up from VCC_VIN and added it to VCC_MODEM, removed IO26_UART0_CTS from header J4 and replaced it with GND, removed IO22_TRACEDATA0 from MCU SWO because nRF9160 does not support it, modified net labels to reflect changes made to the Skywire Nano modem design.	03/20/20
1002333	B	Added a note on the Interface_MCU page about hardware flow control being supported, and provided instructions on how to enable it.	07/17/20

Revision Control

Assy Part Number	Rev	Description of Change	Date

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Title: ECO LIST		
Project: Dev Kit, Skywire Nano, NRF9160	Size: C	Sheet 6 of 6
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Prepared for: Dev Kit, Skywire Nano, NRF9160		CONFIDENTIAL