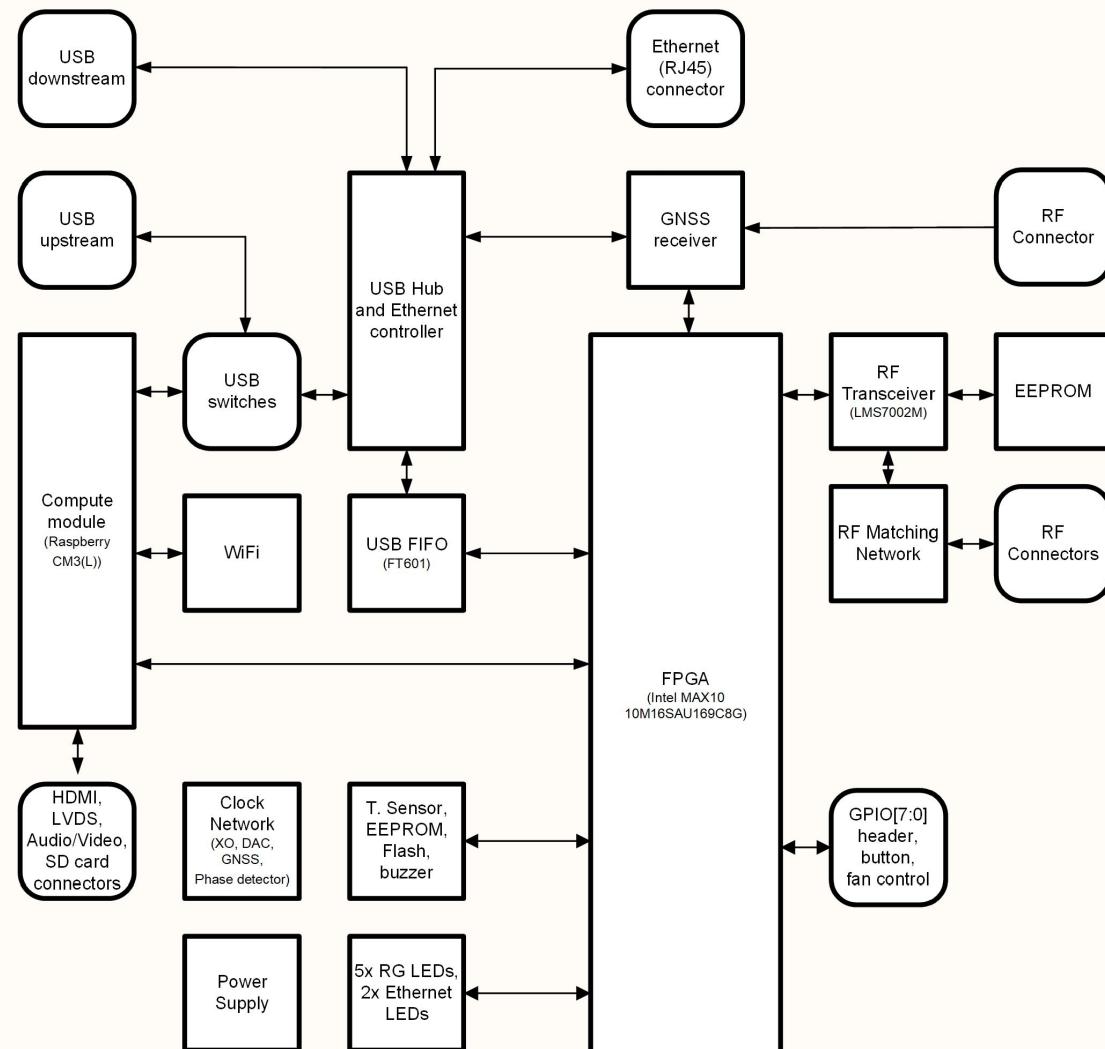


Block diagram



Project name: **LimeNet-Micro_2v0.PnjPcb**

Title: **Block diagram**

Size: **A4** Revision: **v2.0**

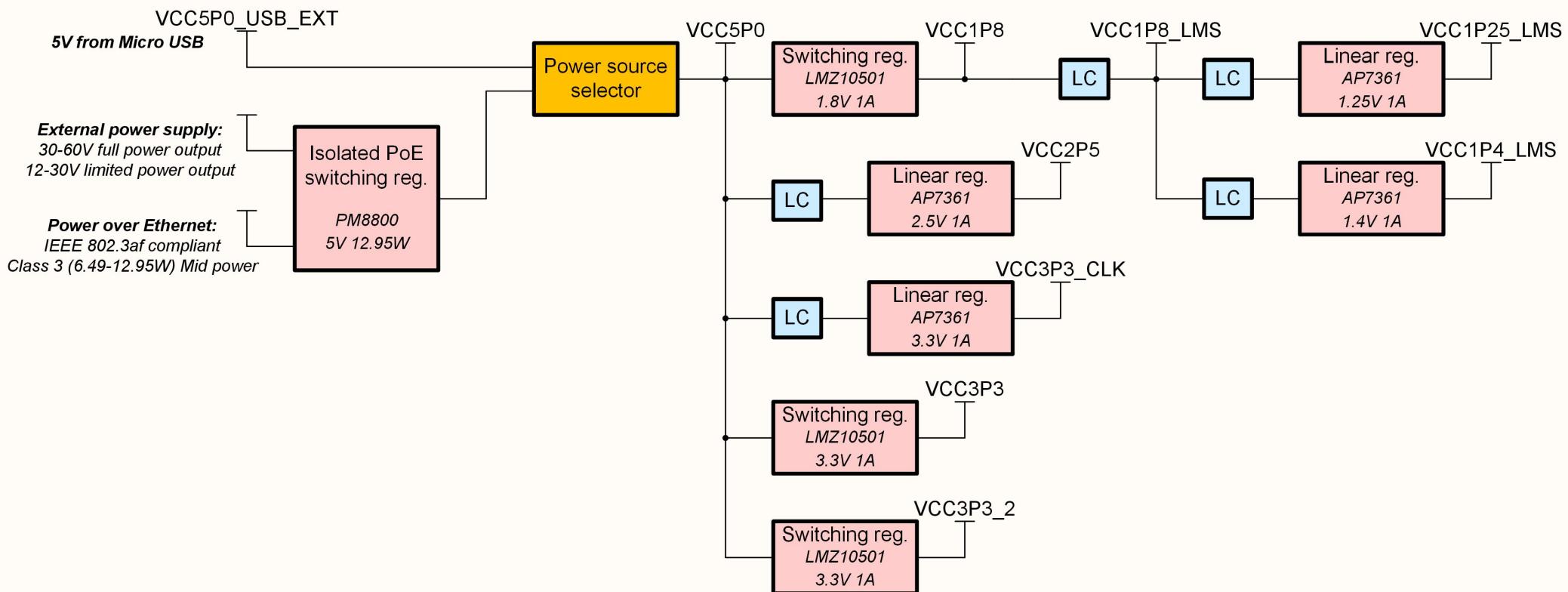
Date: **2018-11-22** Time: **12:14:13** Sheet**1** of **15**

File: **01_BlockDiagram.SchDoc**

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Surrey
United Kingdom



Power diagram



Project name: [LimeNet-Micro_2v0.PrjPcb](#)

Title: **Power diagram**

Size: **A4** Revision: **v2.0**

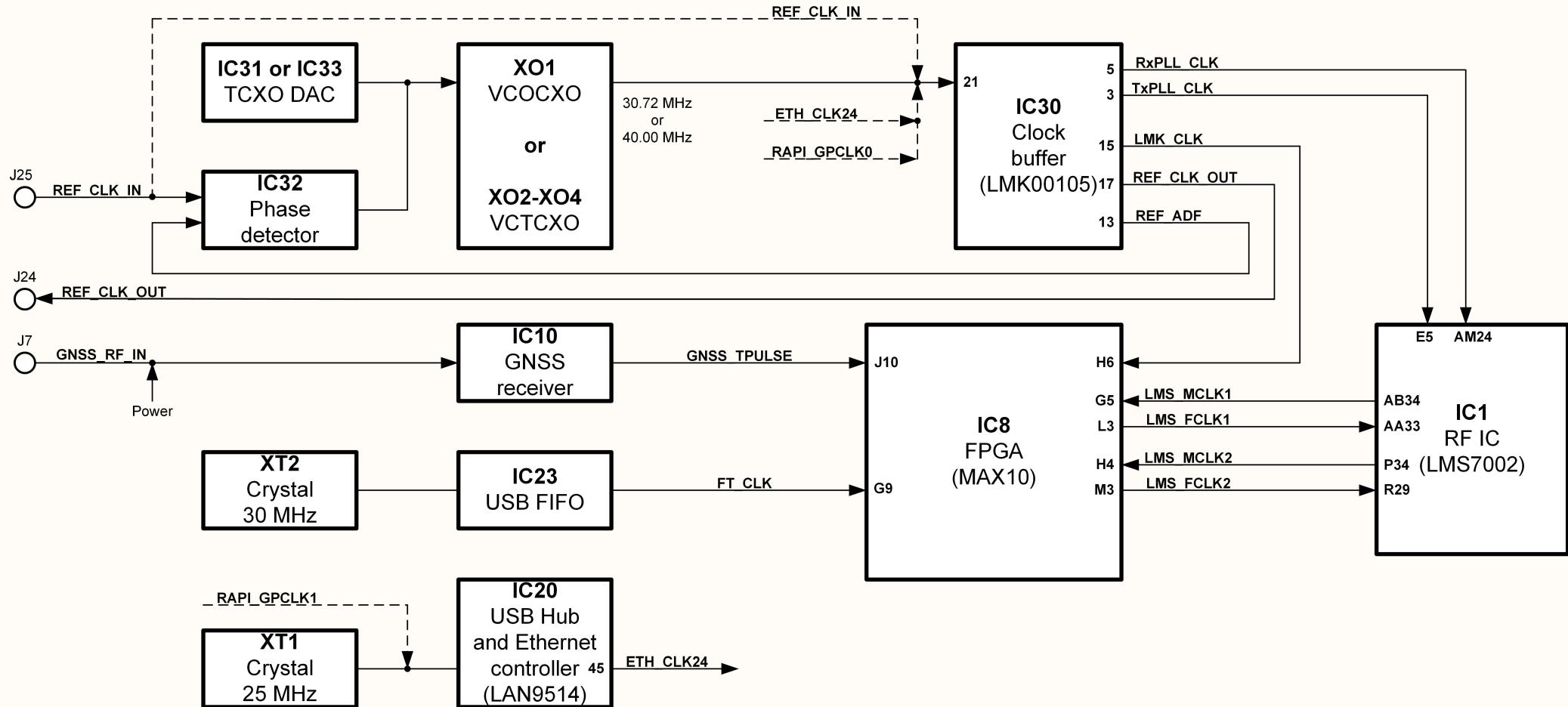
Date: **2018-11-22** Time: **12:14:17** Sheet**2** of **15**

File: **02_PowerDiagram.SchDoc**

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Surrey
United Kingdom



Clock diagram



Project name: *LimeNet-Micro_2v0.PpjPcb*

Title: *Clock diagram*

Size: **A4** Revision: **v2.0**

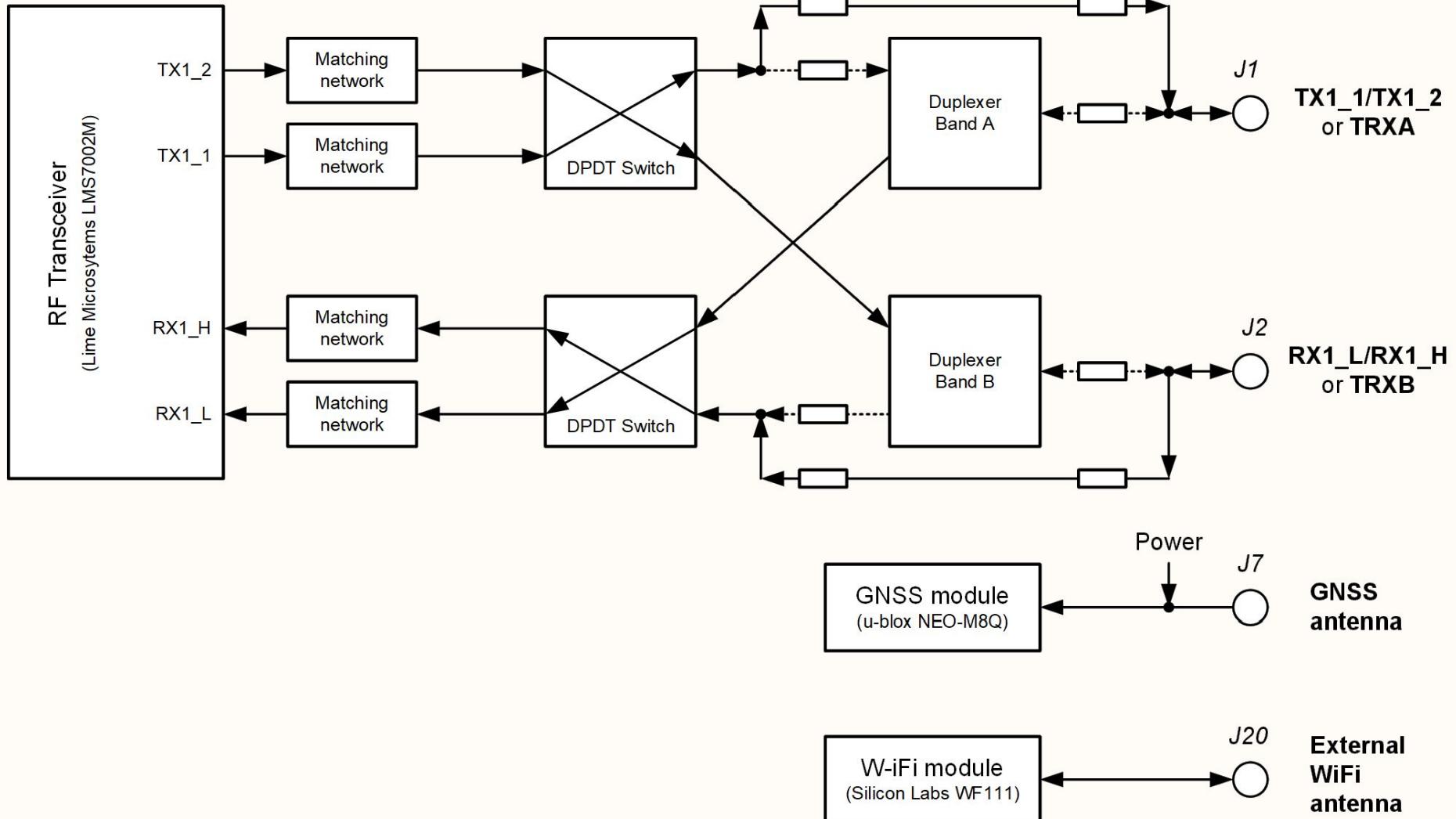
Date: **2018-11-22** Time: **12:14:23** Sheet**3** of **15**

File: **03_ClockDiagram.SchDoc**

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Surrey
United Kingdom



RF diagram



Project name: **LimeNet-Micro_2v0.PnjPcb**

Title: **RF diagram**

Size: **A4** Revision: **v2.0**

Date: **2018-11-22** Time: **12:14:32** Sheet **4** of **15**

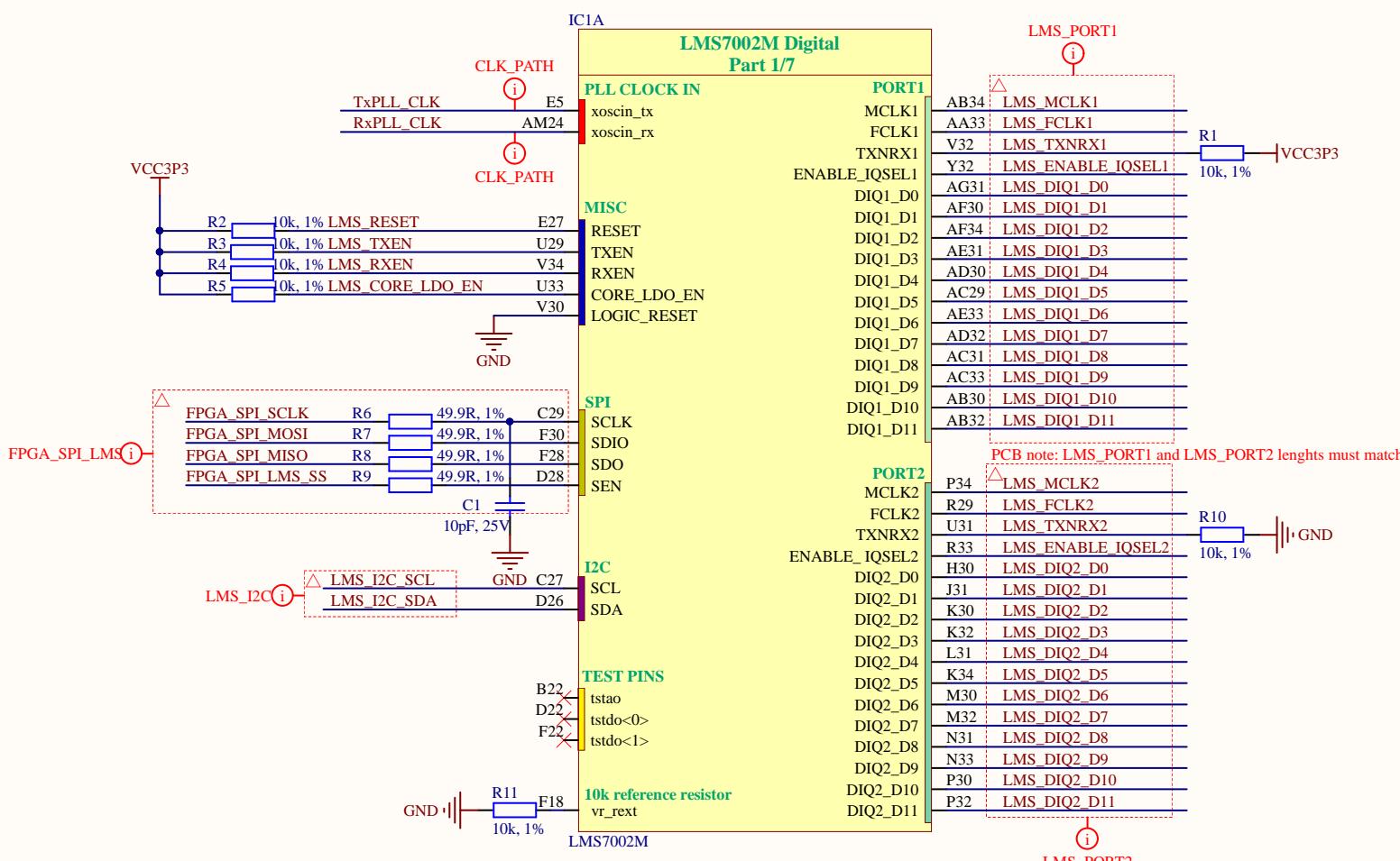
File: **04_RFDiagram.SchDoc**

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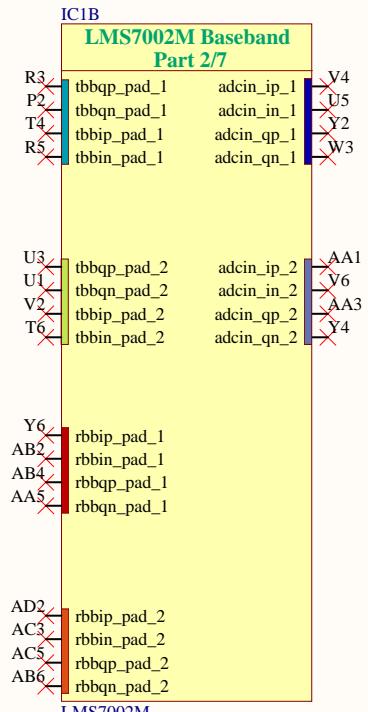


NF elements on sheet: IC2
Number of NF elements on sheet: 1

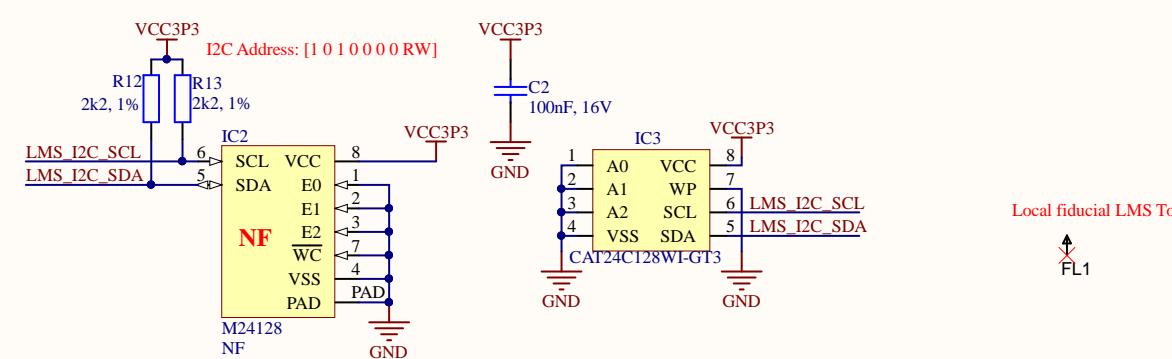
LMS7002M misc



Baseband external IO



LMS EEPROM



Project name: LimeNet-Micro_2v0.PrfPcb

Title: LMS7002M misc

Size: A3 | Revision: v2.0

Date: 2018-11-22 Time: 12:14:35 Sheet 5 of 15

File: 05_LMS7002M_Misc.SchDoc

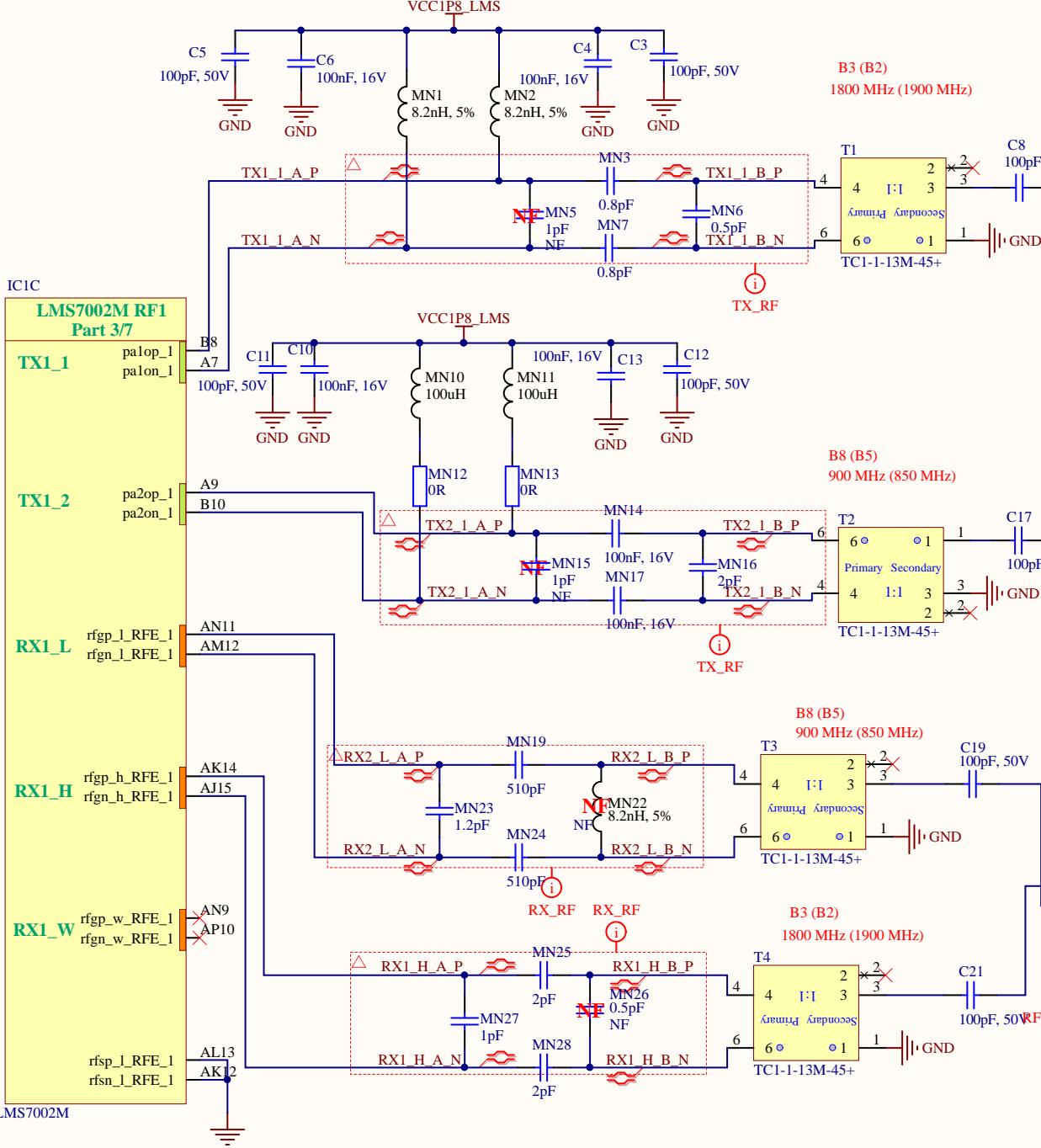
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United Kingdom



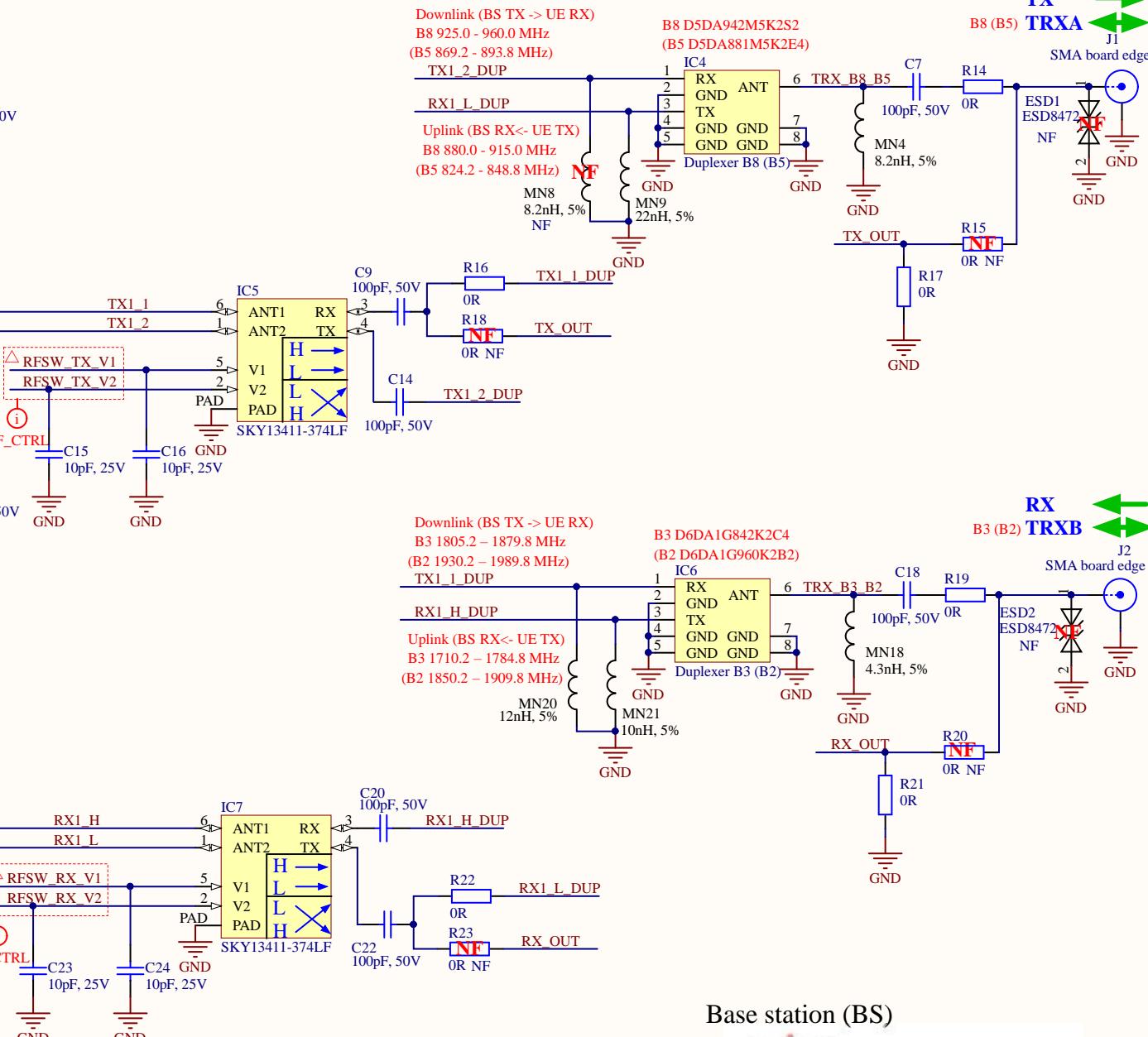
NF elements on sheet: ESD1, MN5, MN8, R15, R18, MN15, R20, ESD2, MN22, MN26, R

Number of NF elements on sheet: 11

LMS RF Channel 1



Miso



Base station (BS)



User equipment (UE)

Duplexer alternative pair

| Part Number | System | Band | Type | Function | Loss(typ)[dB] | Attenuation(typ)[dB] | Isolation(typ)[dB] | Size(LxWxT) | Temp.[°C] |
|----------------------|---------------------|---------------|------|----------|---------------|----------------------|--------------------|-------------|-----------------|
| D6DA1G960K2B2 | W-CDMA / CDMA | Band 2 / BC 1 | SAW | Duplexer | 1.8/2.3 | 55/55 | 1.8x1.4x0.57 | -30 to +85 | RoHS compliance |
| D6PF1G960M3B6 | W-CDMA / CDMA | Band 2 / BC 1 | SAW | Duplexer | 2.2/2.7 | 55/52 | 2.0x1.6x0.57 | -30 to +85 | RoHS compliance |
| D6PF1G960M3B9 | W-CDMA / CDMA | Band 2 / BC 1 | SAW | Duplexer | 2.2/2.7 | 57/52 | 2.0x1.6x0.57 | -30 to +85 | RoHS compliance |
| FAR-D5PF-881M50-M3E7 | W-CDMA / CDMA | Band 5 / BC 0 | SAW | Duplexer | 1.5/1.8 | 58/51 | 2.0x1.6x0.5 | -30 to +85 | RoHS compliance |
| FAR-D5PF-881M50-M3E9 | W-CDMA / CDMA | Band 5 / BC 0 | SAW | Duplexer | 1.5/1.8 | 58/51 | 2.0x1.6x0.5 | -30 to +85 | RoHS compliance |
| D5DA881M5K2E4 | W-CDMA / CDMA | Band 5 / BC 0 | SAW | Duplexer | 1.4/1.7 | 58/59 | 1.8x1.4x0.5 | -30 to +85 | RoHS compliance |
| D5RB881M5E1BH | W-CDMA / CDMA | Band 5 / BC 0 | SAW | Duplexer | 1.4/1.7 | 58/52 | 1.8x1.4x0.47 | -30 to +85 | RoHS compliance |
| D6DA1G842K2C4 | LTE | Band 3 | SAW | Duplexer | 2.3/2.1 | 56/56 | 1.8x1.4x0.6 | -20 to +85 | RoHS compliance |
| D5DA942M5K2G6 | W-CDMA / LTE | Band 8 | SAW | Duplexer | 1.7/1.8 | 58/59 | 1.8x1.4x0.5 | -20 to +85 | RoHS compliance |
| D5DA942M5K2S2 | W-CDMA / CDMA / LTE | Band 8 | SAW | Duplexer | 1.3/1.5 | 58/56 | 1.8x1.4x0.6 | -30 to +85 | RoHS compliance |

Project name: LimeNet-Micro 2v0.PriPcb

Title: **LMS7002M RF**

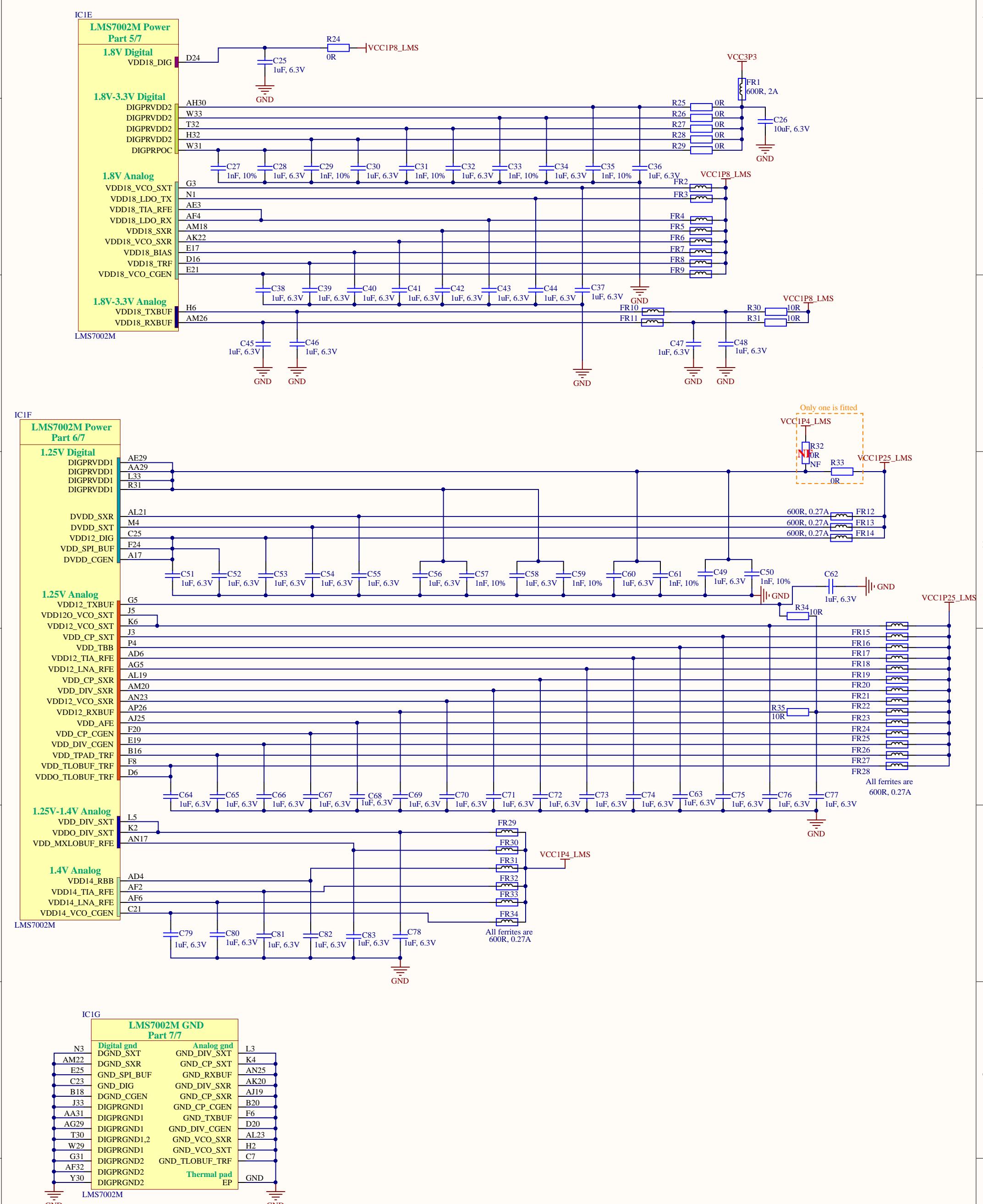
Singer A3 Revision v2.0

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Surrey
United Kingdom*



NF elements on sheet: R32
Number of NF elements on sheet: 1

LMS7002M power supply circuit

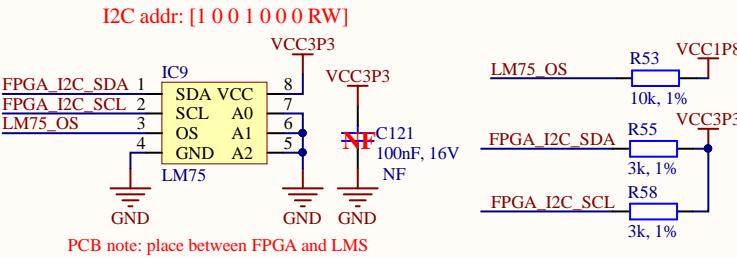


NF elements on sheet: C121, R57, R59, R62, R63, R65, R67, J6, ESD3, IC12, IC17, R69, R73, R81

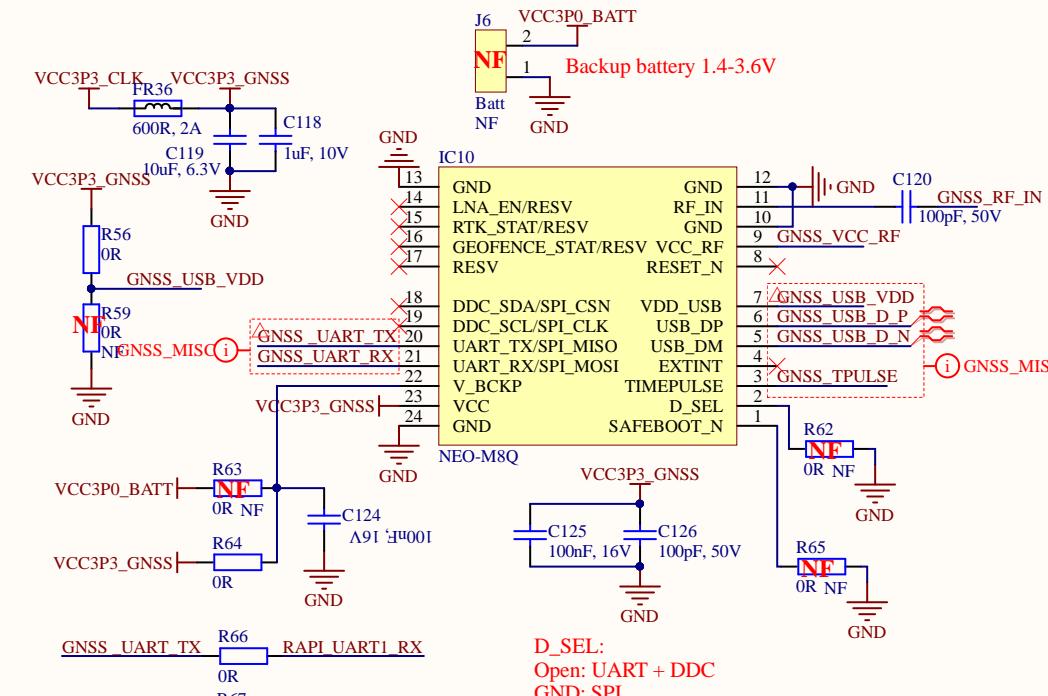
Number of NF elements on sheet: 14

Mis

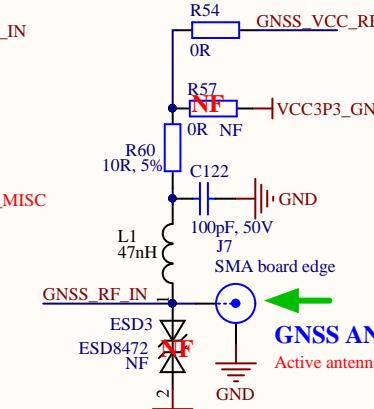
I2C Temperature sensor



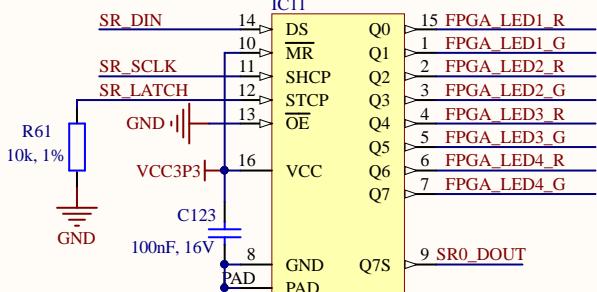
GNSS receiver (u-blox)



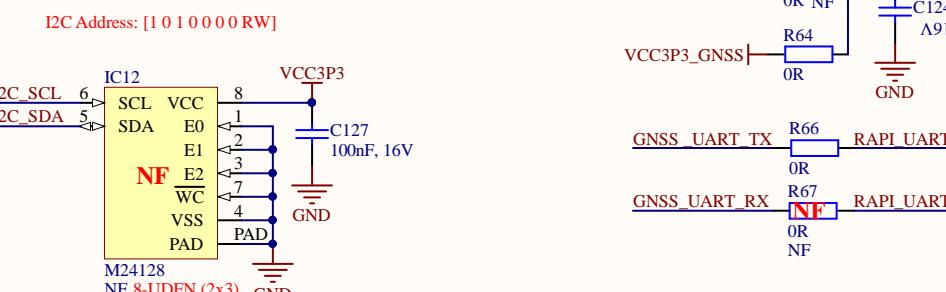
External GNSS antenna (active)



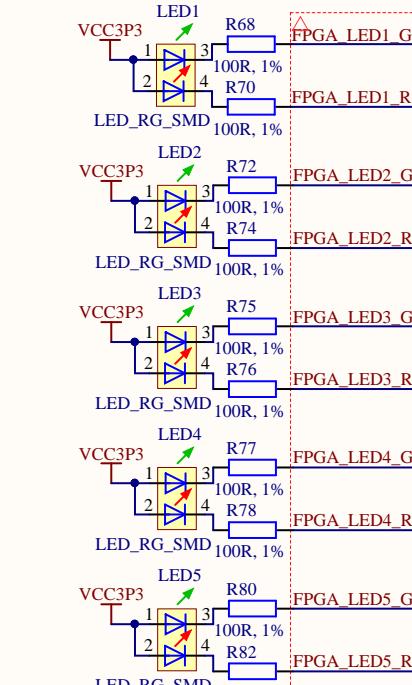
Shift registers (Outputs)



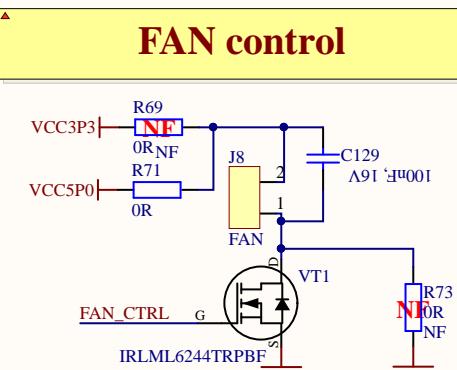
I2C EEPROM



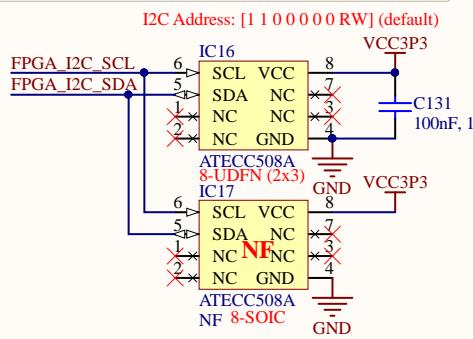
FPGA LEDs



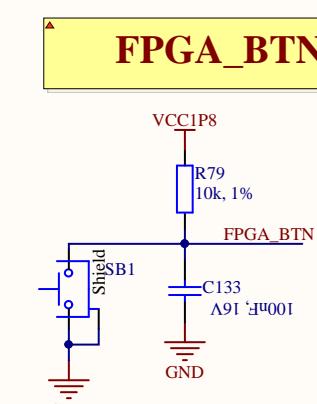
FAN control



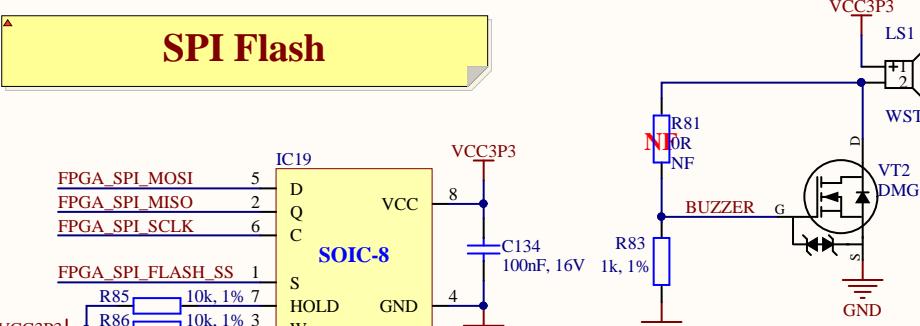
I2C secure key storage



FPGA_BT



SPI Flash



Project name: **LimeNet-Micro_2v0.PrjPcb**

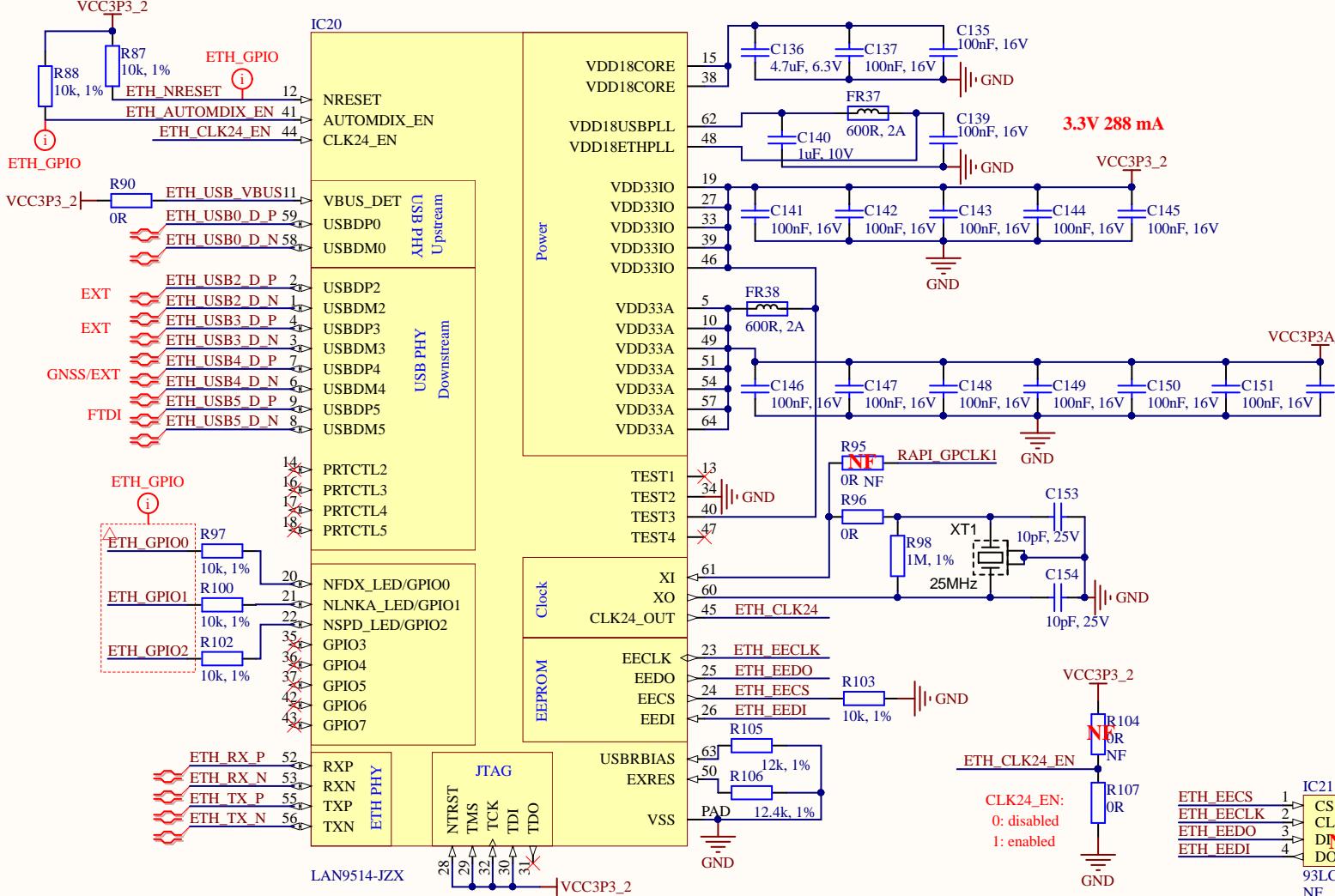
| | | | | | |
|----------------|----------------|---------|-------|--|--|
| Misc | | | | Lime Microsystems Surrey Tech Centre Guildford GU2 7YG Surrey United Kingdom |  Lime microsystems |
| A3 | Revision: v2.0 | | | | |
| 2018-11-22 | Time: 12:14:50 | Sheet 9 | of 15 | | |
| 09_Misc.SchDoc | | | | | |

NF elements on sheet: R95, R104, IC21, C155, J11, J12, R112

Number of NF elements on sheet: 7

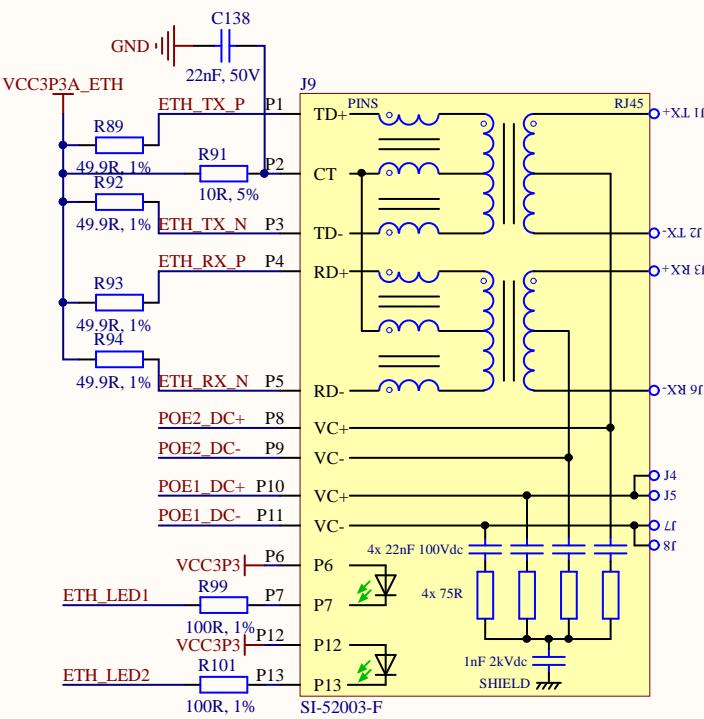
Misc

USB hub + Ethernet

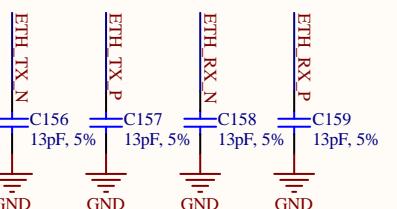


RJ45 connector

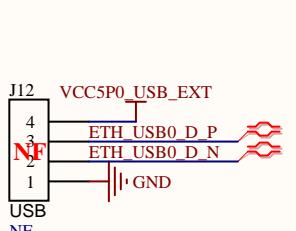
PCB note:
Place 49.9 Ohm resistors near LAN9514.
Place 10 Ohm resistor near transformer.



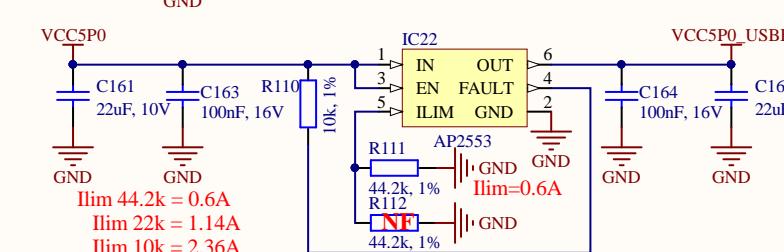
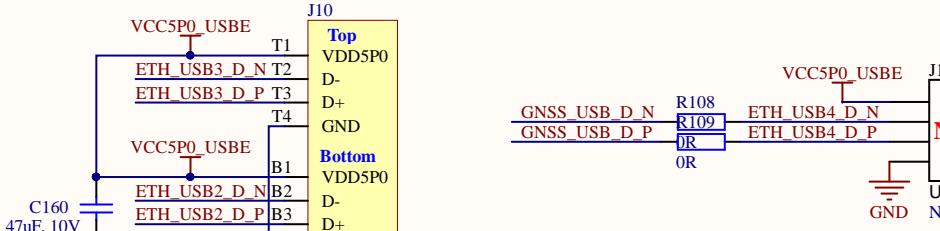
These capacitors are required for operation in an EMI constrained environment.



USB upstream



USB downstream



Ilim 44.2k = 0.6A
Ilim 22k = 1.14A
Ilim 10k = 2.36A

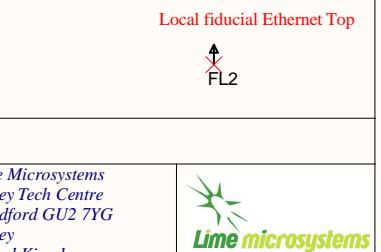
Project name: LimeNet-Micro_2v0.PrbPcb

Title: USB Ethernet

Size: A3 Revision: v2.0

Date: 2018-11-22 Time: 12:14:54 Sheet 10 of 15

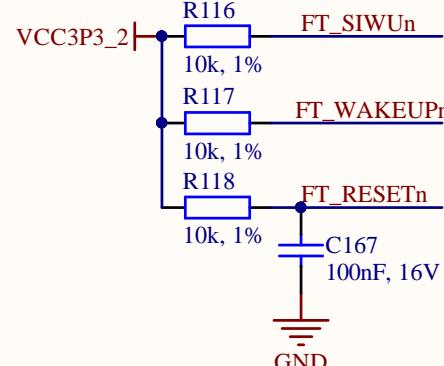
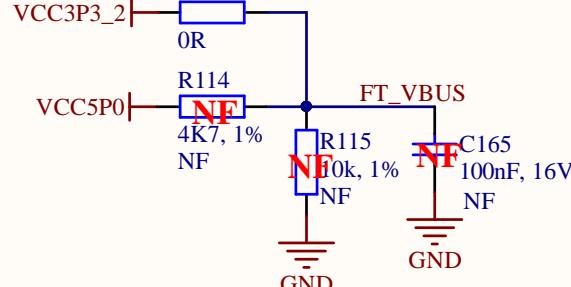
File: 10_USB_Ethernet.SchDoc



NF elements on sheet: R114, R115, C165

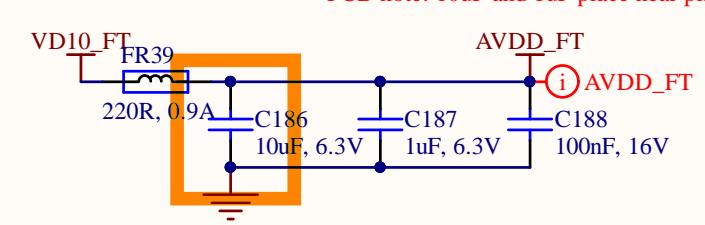
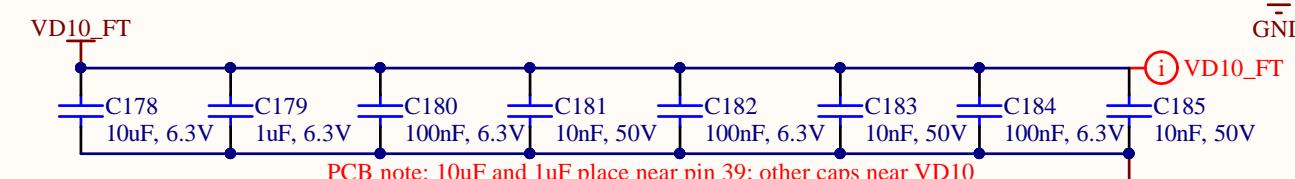
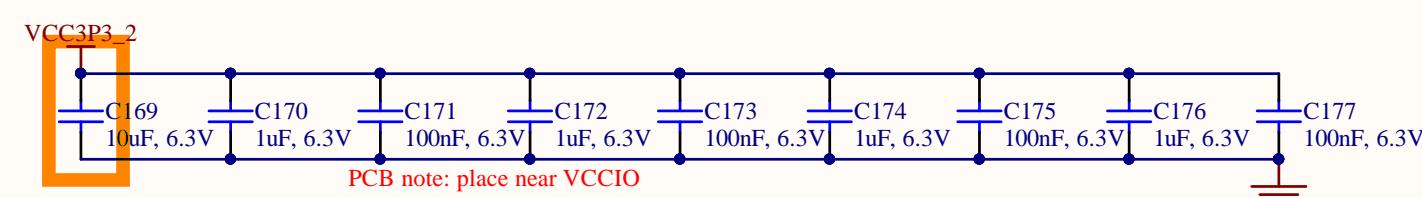
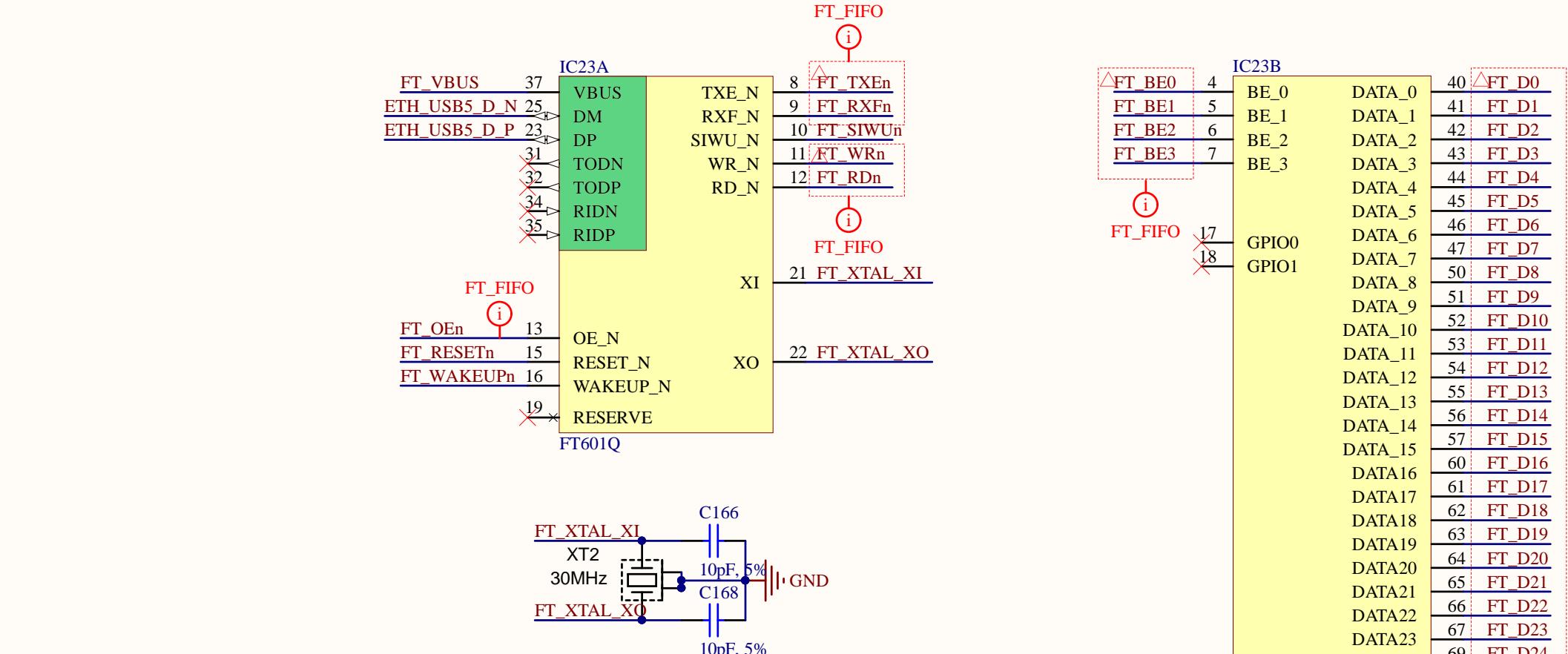
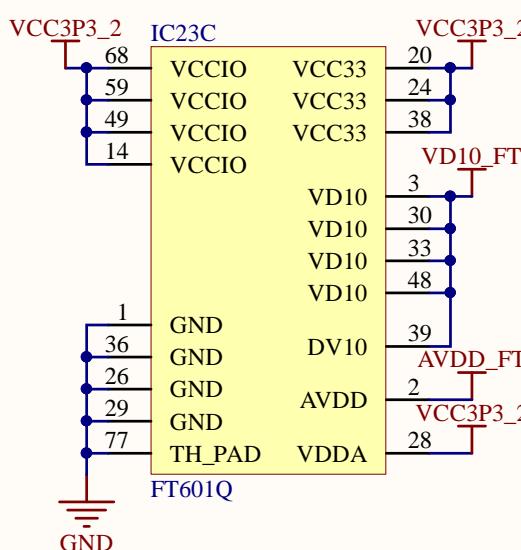
Number of NF elements on sheet: 3

USB FIFO interface



FTDI Power

3.3V 190 mA



Schematic note: marked 10uF caps not crucial and can be removed to reduce BOM price

Project name: **LimeNet-Micro_2v0.PjPcb**

Title: **USB FIFO**

Size: **A4** Revision: **v2.0**

Date: **2018-11-22** Time: **12:14:57** Sheet **11** of **15**

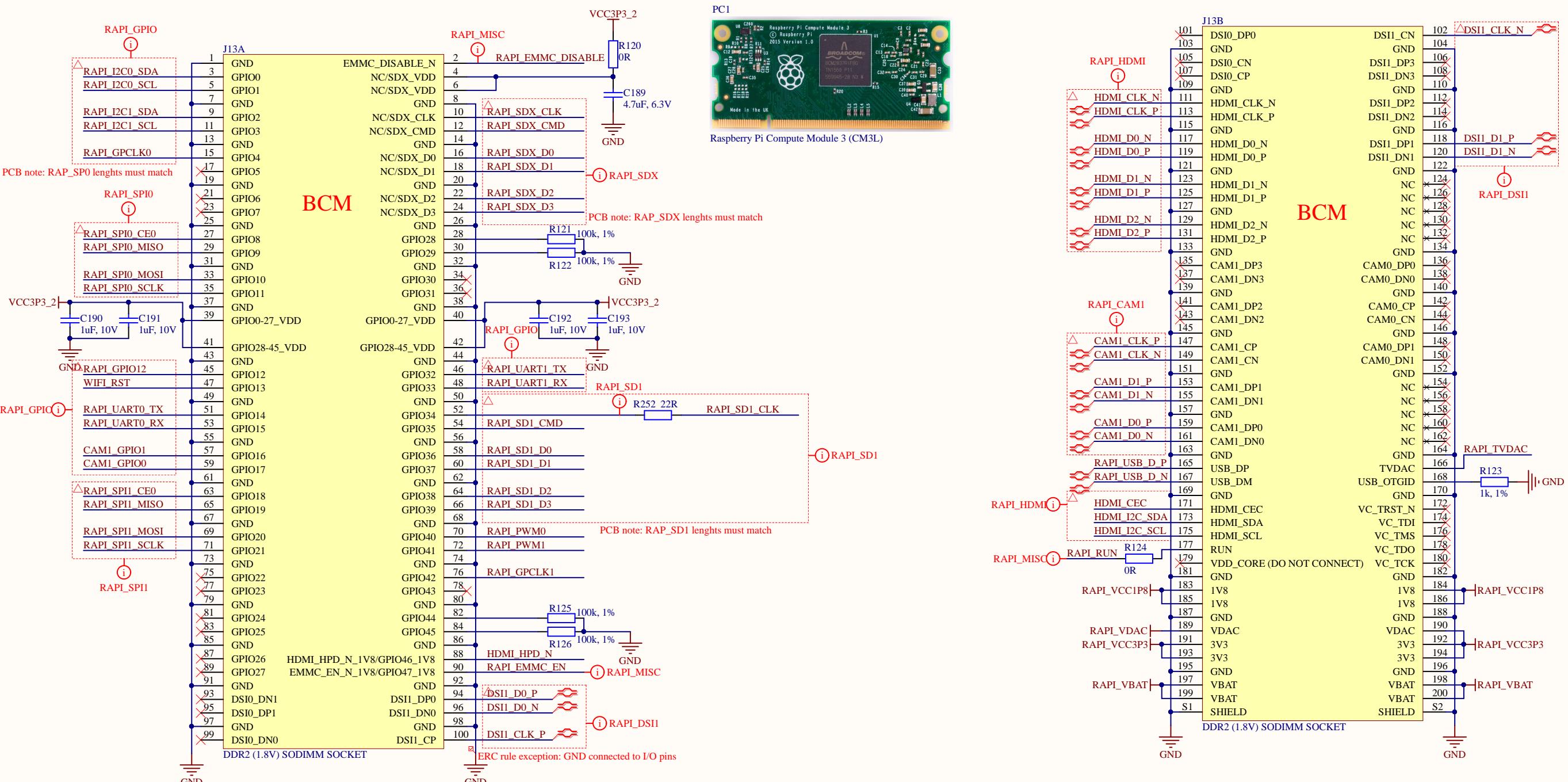
File: **11_USB_FIFO.SchDoc**

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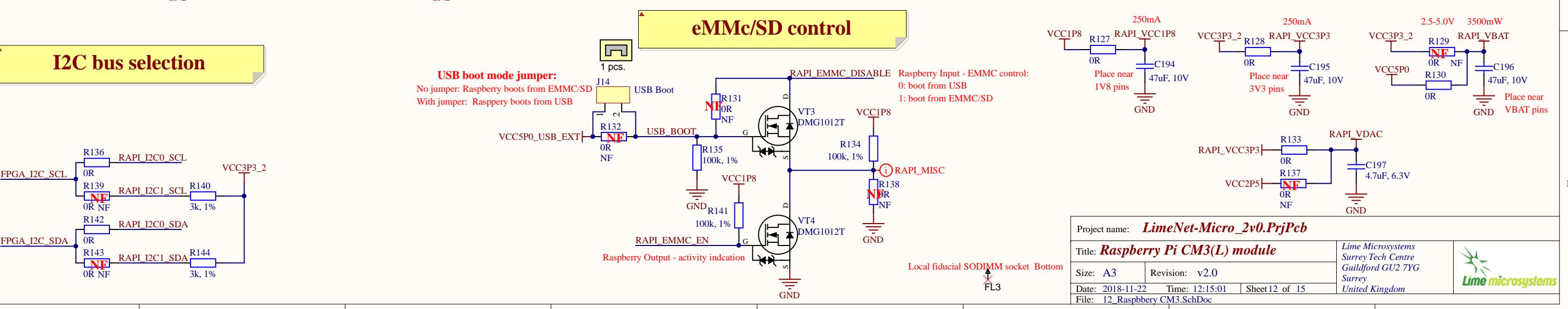


NF elements on sheet: R129, R131, R132, R137, R138, R139, R143
Number of NF elements on sheet: 7

Raspberry Pi CM3(L)



I2C bus selection

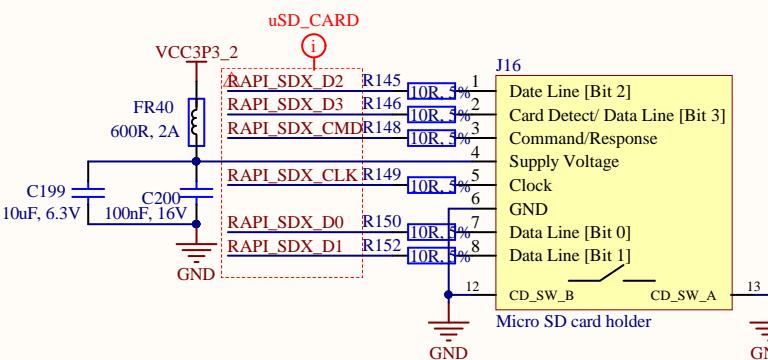


NF elements on sheet: JMP2, R153, R154, R158, R159, ESD4
Number of NF elements on sheet: 6

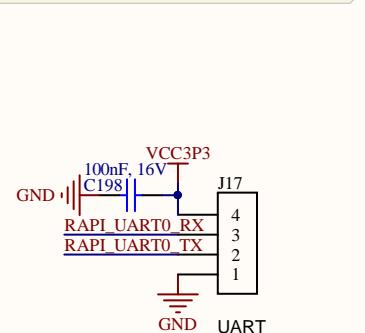
Raspberry Misc

uSD card

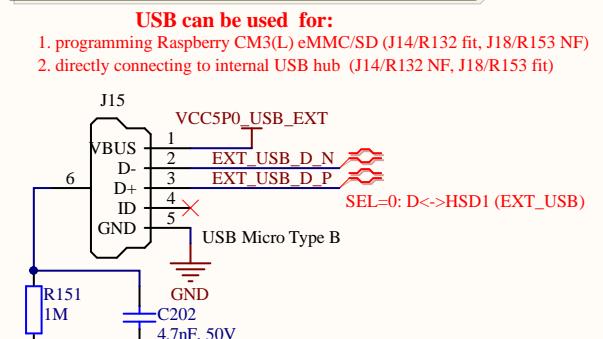
Only for CM3L with no on-board Flash (eMMC)



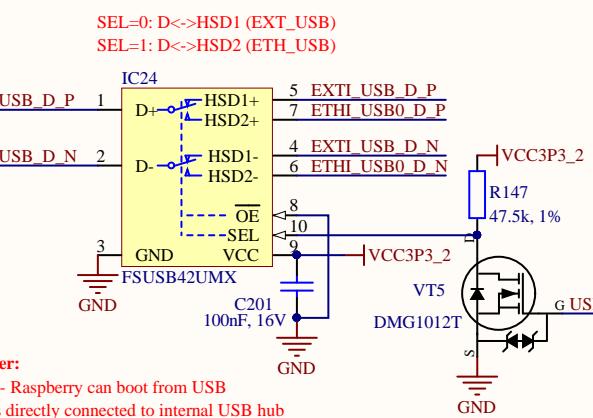
EXT_UART



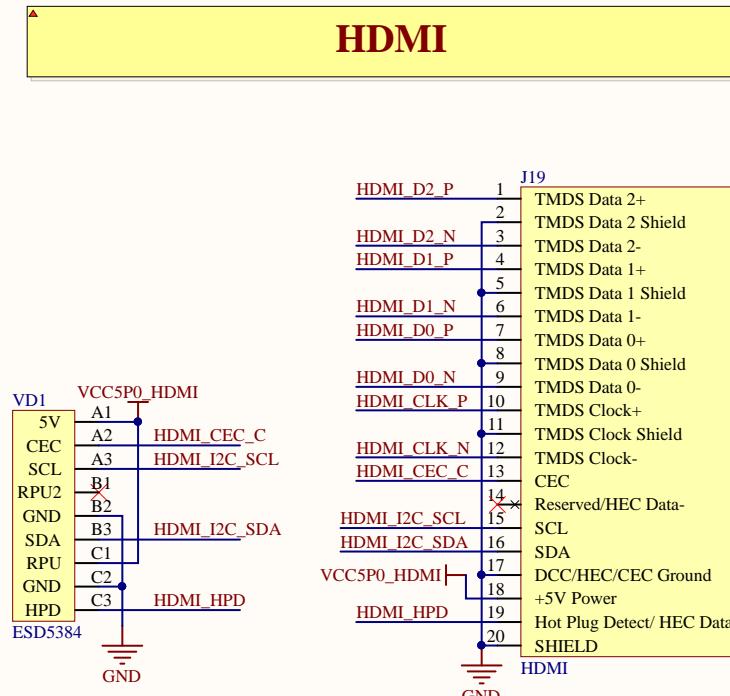
Micro USB socket



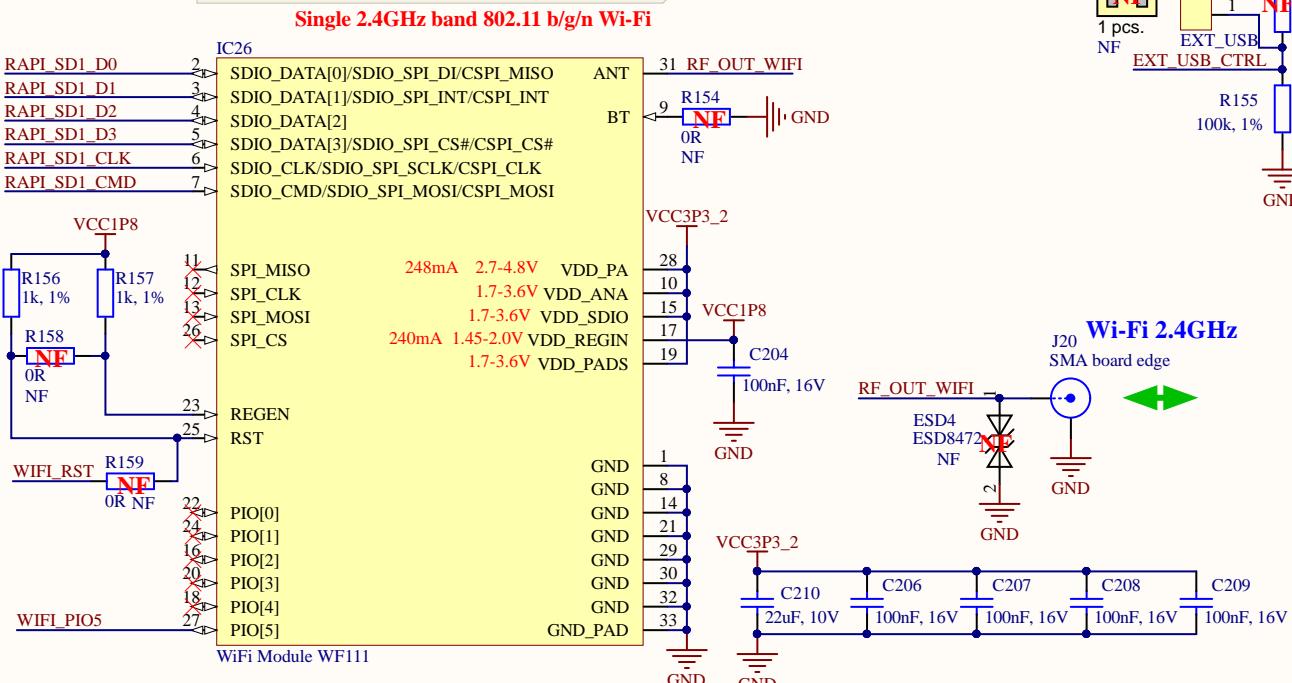
USB switches



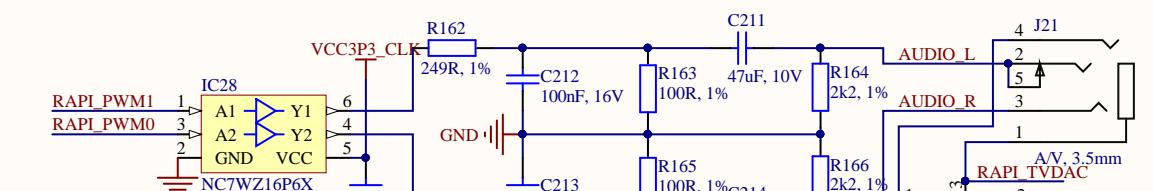
HDMI



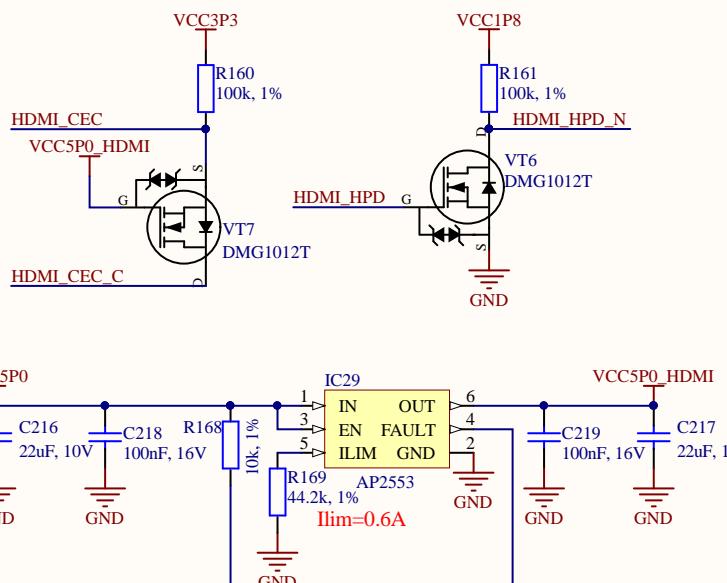
SDIO Wi-Fi



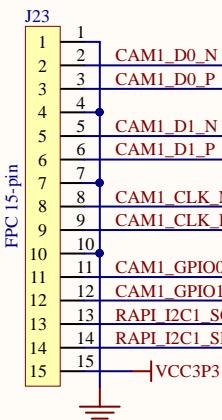
Analog audio + Composite video out



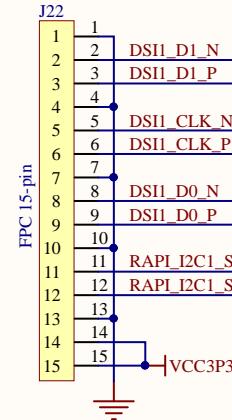
LVDS (Camera + Display)



Camera



Display



Project name: LimeNet-Micro_2v0.PrbPcb

Title: Raspberry Misc

Size: A3 Revision: v2.0

Date: 2018-11-22 Time: 12:15:06 Sheet 13 of 15

File: 13_Raspberry_Misc.SchDoc

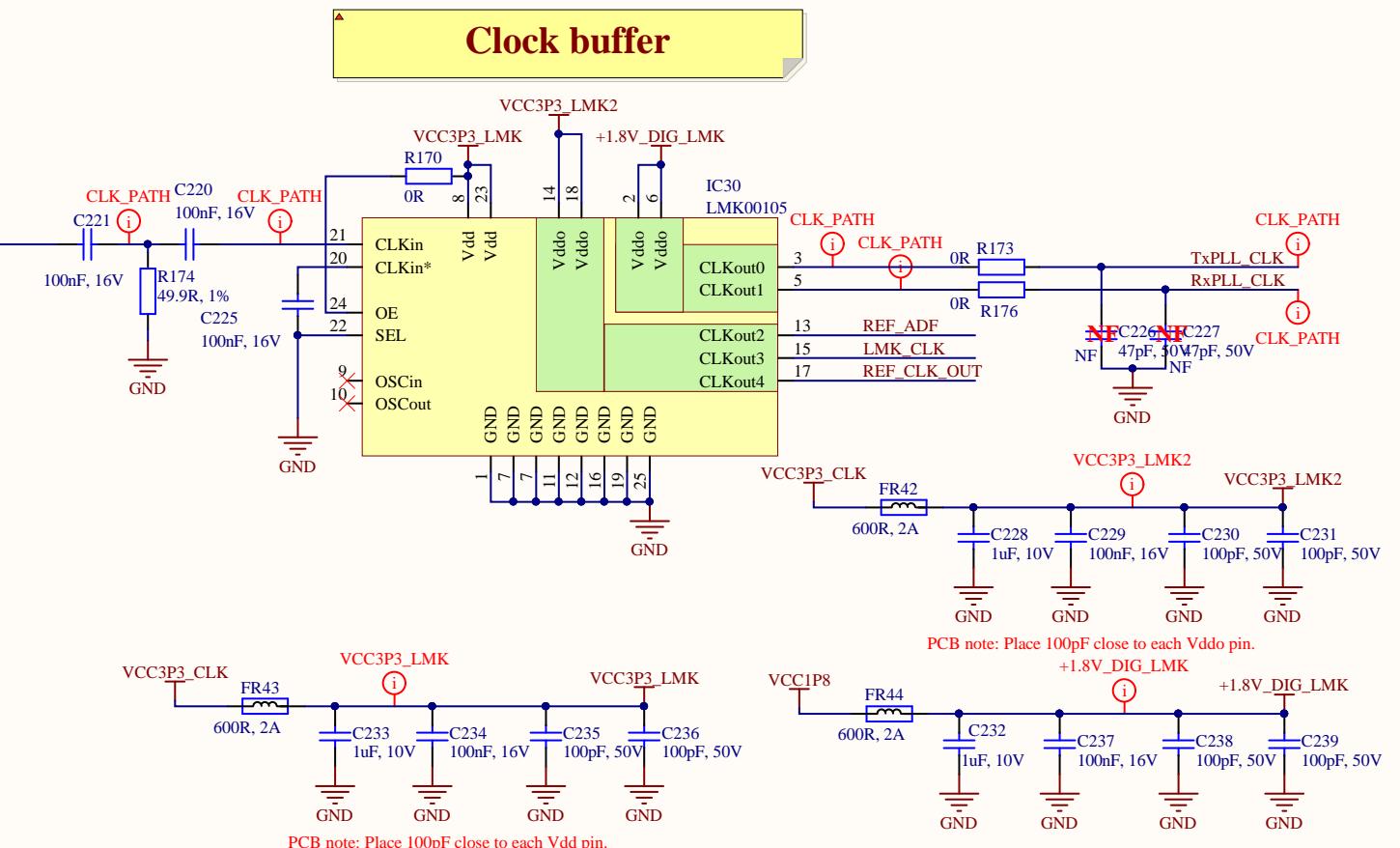
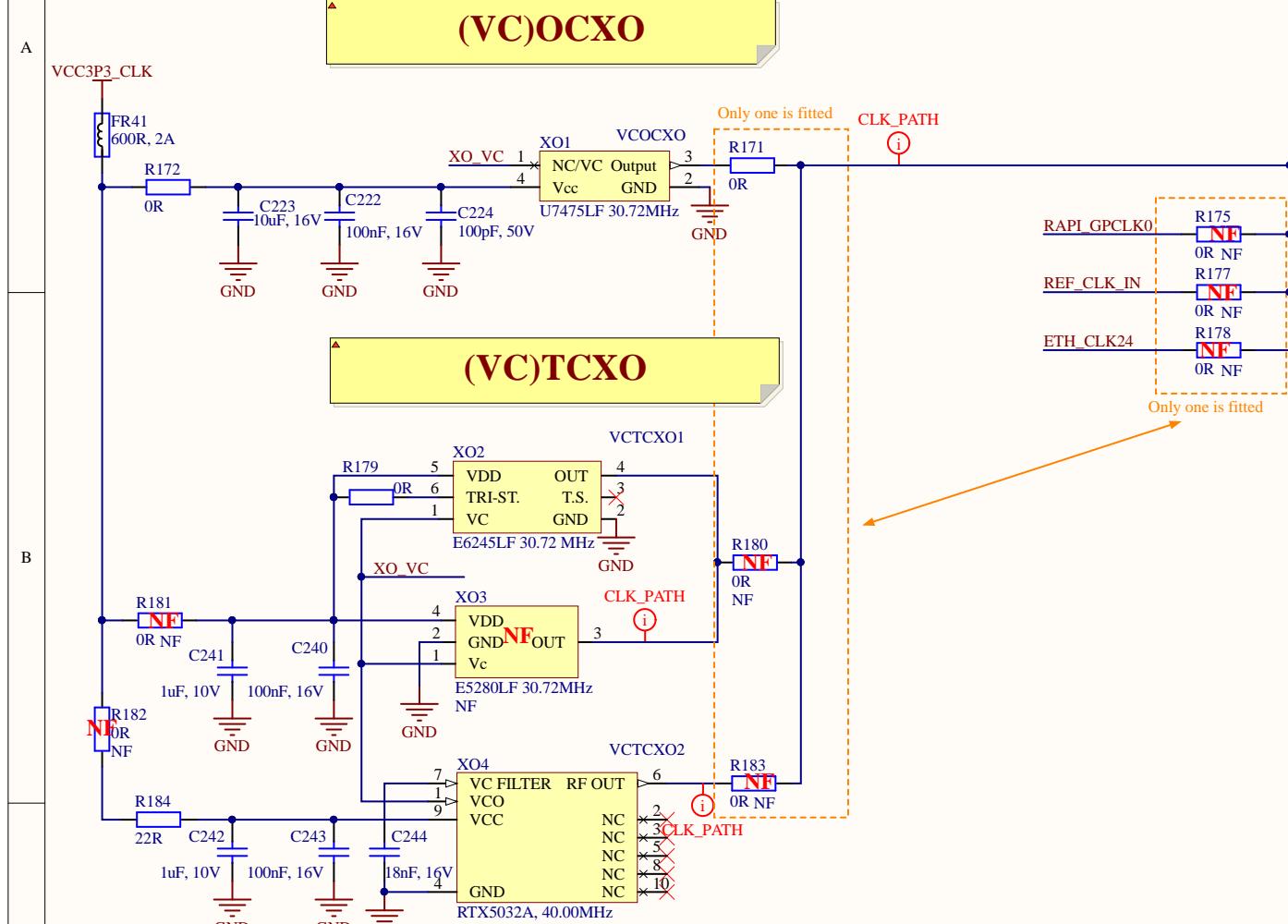
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NF elements on sheet: XO3, R175, R177, R178, R180, R181, R182, R183, C226, C227, R195, C257, R204, IC33, R18

Number of NF elements on sheet: 15

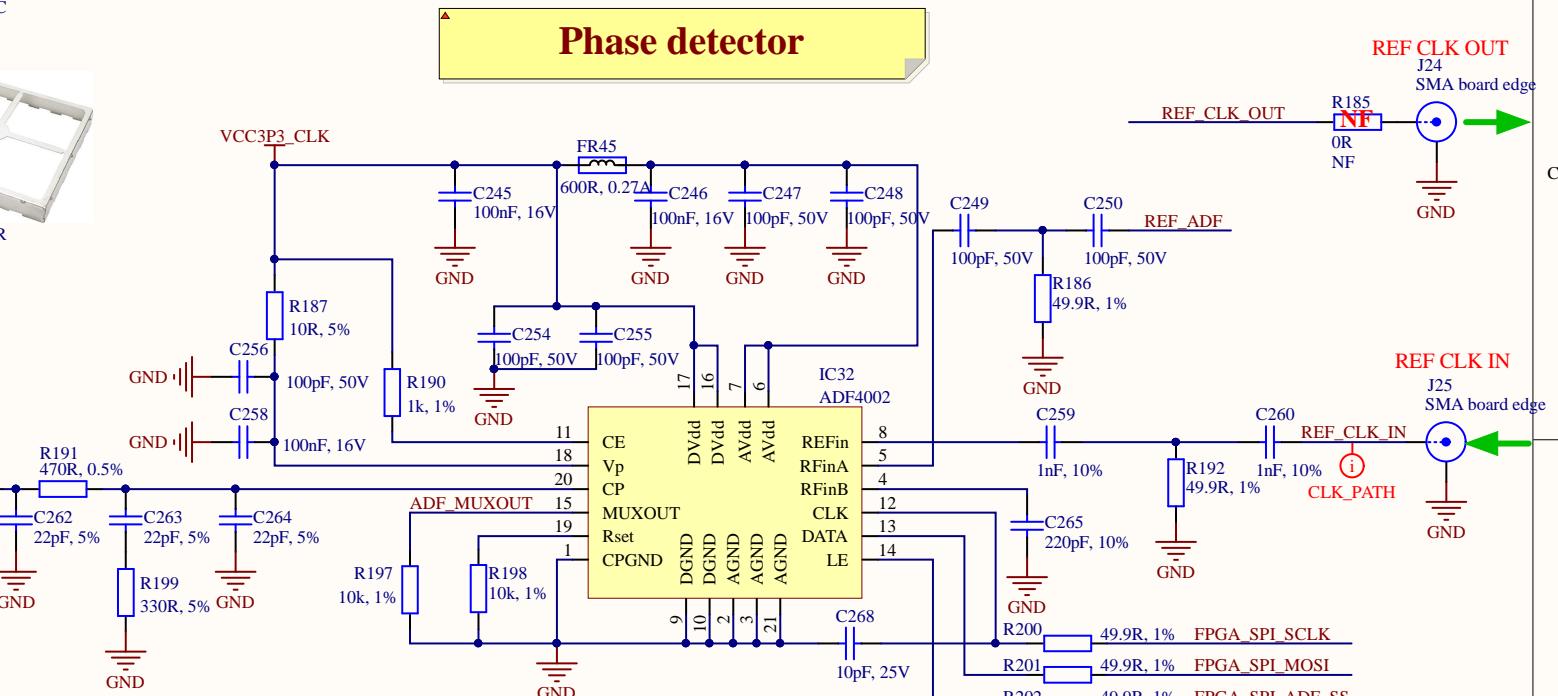
Clock circuit



BMI-S-230



BMI-S-230-F



Project name: LimeNet-Micro_2v0_PriPch

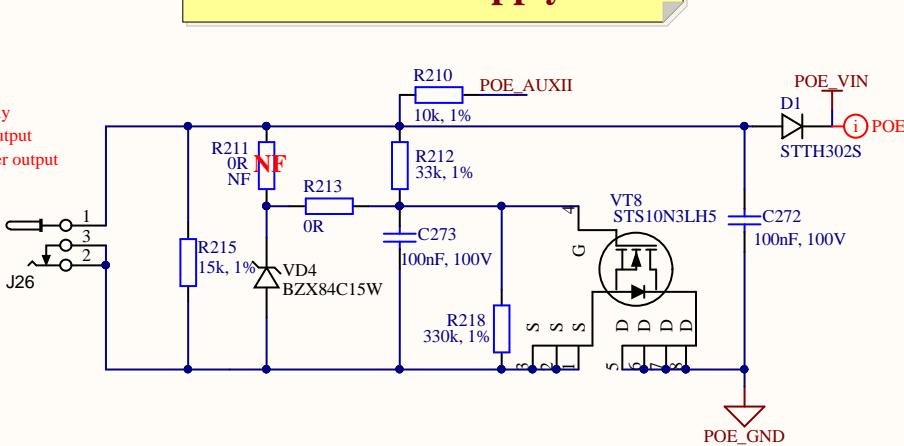
| | | | |
|------------------------|----------------|--|---|
| Title: Clocks | | Lime Microsystems Surrey Tech Centre Guildford GU2 7YG Surrey United Kingdom |  Lime microsystems |
| Size: A3 | Revision: v2.0 | | |
| Date: 2018-11-22 | Time: 12:15:10 | Sheet 14 of 15 | |
| File: 14_Clocks.SchDoc | | | |

NF elements on sheet: R211, J27, VD7, FR47, C302, IC37, R235, R239, C303, R250, R251, C280, C281, J28
Number of NF elements on sheet: 14
Total number of NF elements on all sheets: 82

Board power circuits

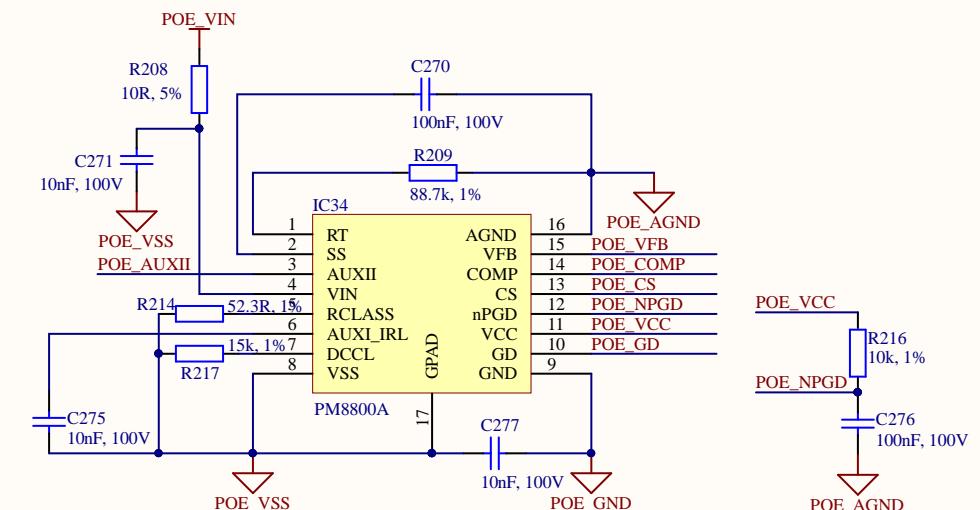
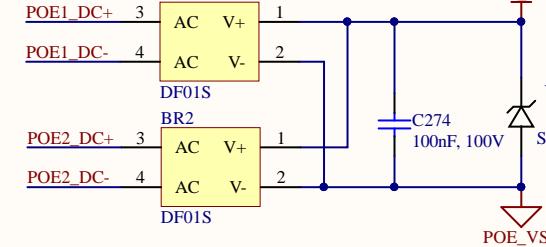
External supply

External power supply
30-60V full power output
12-30V limited power output
Positive polarity

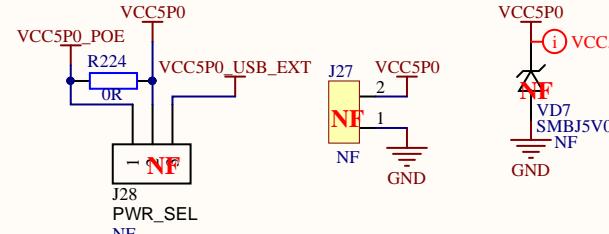


Power over Ethernet

IEEE 802.3af compliant
Class 3 (6.49-12.95W) Mid power

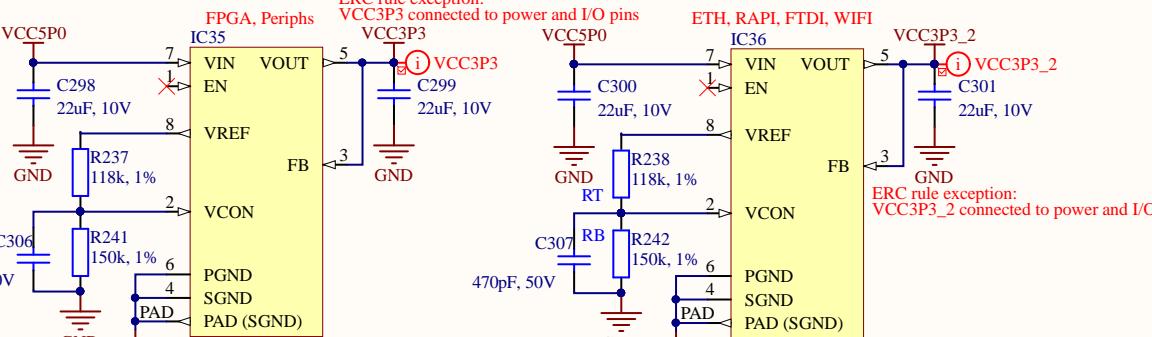


Power source selection (5V)

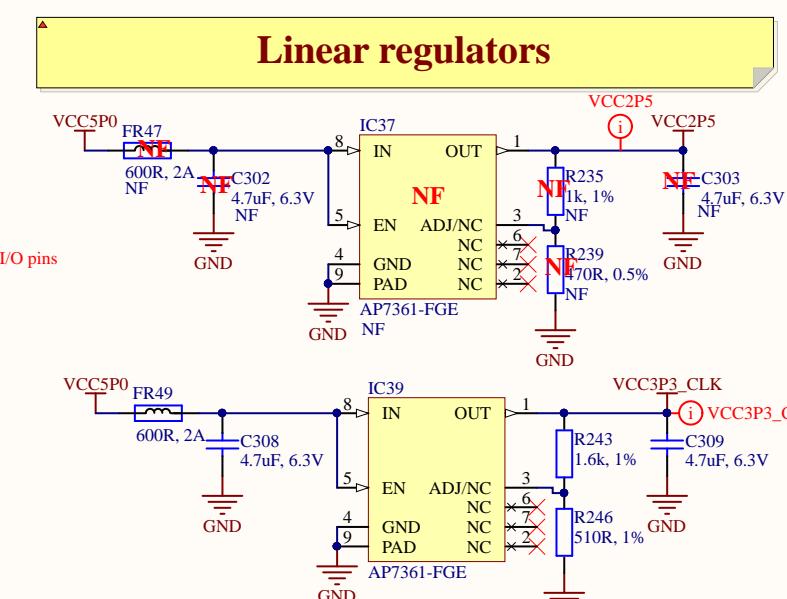


PWR_SEL:
1-2 shorted: board is powered from Poe or external PS (12-60V)
2-3 shorted: board is powered from Micro USB (5V)

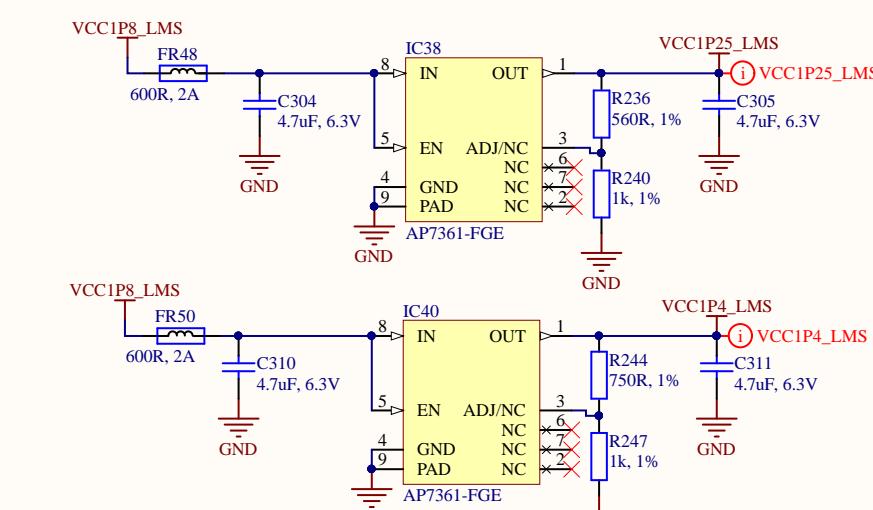
Switching regulators



Linear regulators



Linear regulators (LMS)



Project name: LimeNet-Micro_2v0.PrbPcb

Title: Board power supply

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Size: A3 Revision: v2.0

Date: 2018-11-22 Time: 12:15:13 Sheet 15 of 15

File: 15_PowerSupply.SchDoc