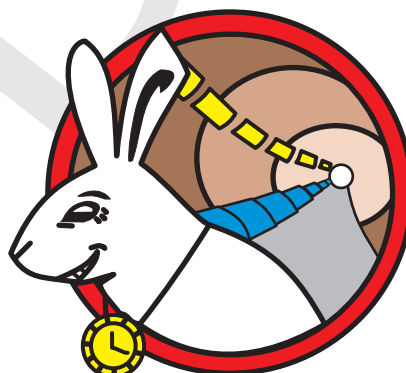


Multi SFP System

G C Visser & P Jansweijer

16-0-2016

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Revision History

| Revision | Date | Author(s) | Description |
|----------|-----------|------------|-------------|
| 0.0 | 16-0-2016 | G C Visser | Created. |

1 Safety directions

Please read this chapter before using the Multi SFP board.



(a)



(b)

- Never exceed the maximum rated input voltage, a higher voltage as stated as maximum will damage the device. See section 4 for maximum allowed voltages.
- The electronics are **ESD** sensitive, use a safe **ESD** workplace.
- Never over-tightening the SMA coax connectors, use a special **torque wrench!!**

2 Introduction

2.1 Overview of the MultiSFP Board

The multi SFP board consist dived in 3 parts a Power supply section witch convert the 12V in to 3V3, A USB interface to provide I2C serial data via a multiplexer to the SFP+ cages and senses also loss,txfault and module presents lines from the cages.The high speed data IO lines are routed to the SMA connectors.

3 Measurement results

In this chapter are the measurements results presented, the following sub chapters will provide the measurement data for DC, and the high speed part.

3.1 DC Power

As first the 3,3V DC-DC converter with external pi-filter switch on behavior is tested, to observe ringing on the 3V3 rails due the large inductance in the pi filter. All the cages where loaded with SFP modules.

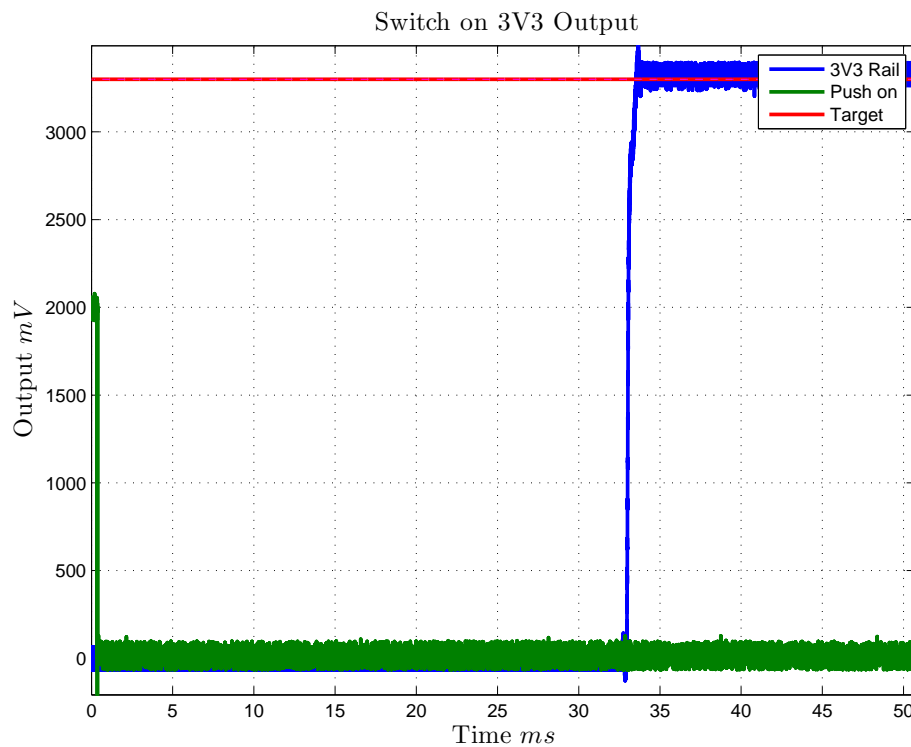


Figure 1: Switch on behavior 3V3 Rails.

After a delay of 33ms the DC-DC converter is switched on, see figure 1. Maximum overshoot is 3.5 V for a 0.5ms and stabilizes very quickly to an end voltage of 3.33V, which is 30mV higher than planned.

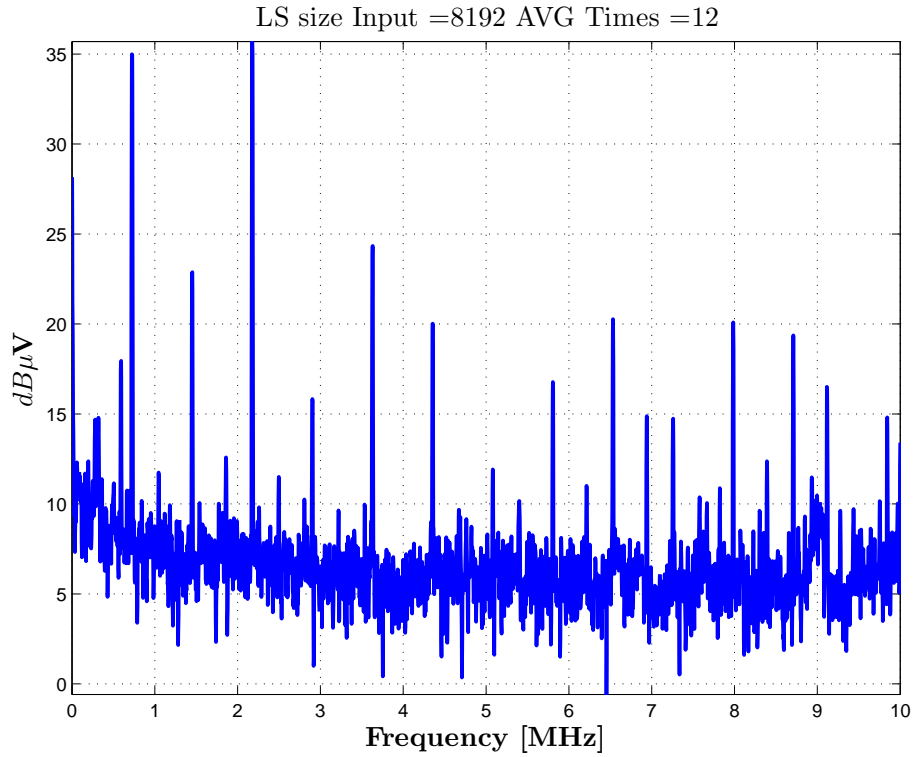


Figure 2: 3V3 DC Rail noise.

Figure 2 shows the switching noise on 3V3 power rail after the pi-filter. All the spurious and switching noise are well below $-85dBV$ or $130\mu V_{rms}$ over a $10MHz$ bandwidth.

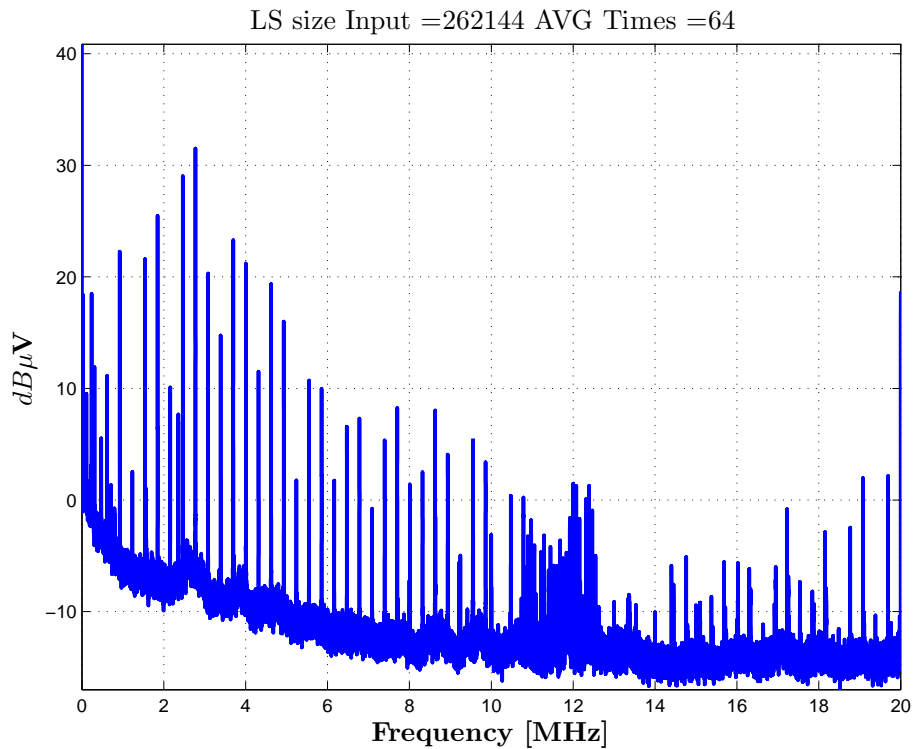


Figure 3: Conducted EMI on 12V input power.

3.2 High speed on IO

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4 Power requirements



Never exceed the stated maximum supply voltage!

In table 2 are the power requirements cited and maximum allowed supply voltage.

| Parameter | Value | Unit |
|---|------------|------|
| minimum supply voltage | 11 | V |
| Nominal supply voltage | 12 | V |
| Maximum supply voltage | 13 | V |
| Nominal supply current | <i>TBD</i> | A |
| Maximum environment operating temperature | 45 | °C |

Table 2: Power requirement and maximum rated voltage.

A green led indicated that the module has been powered.

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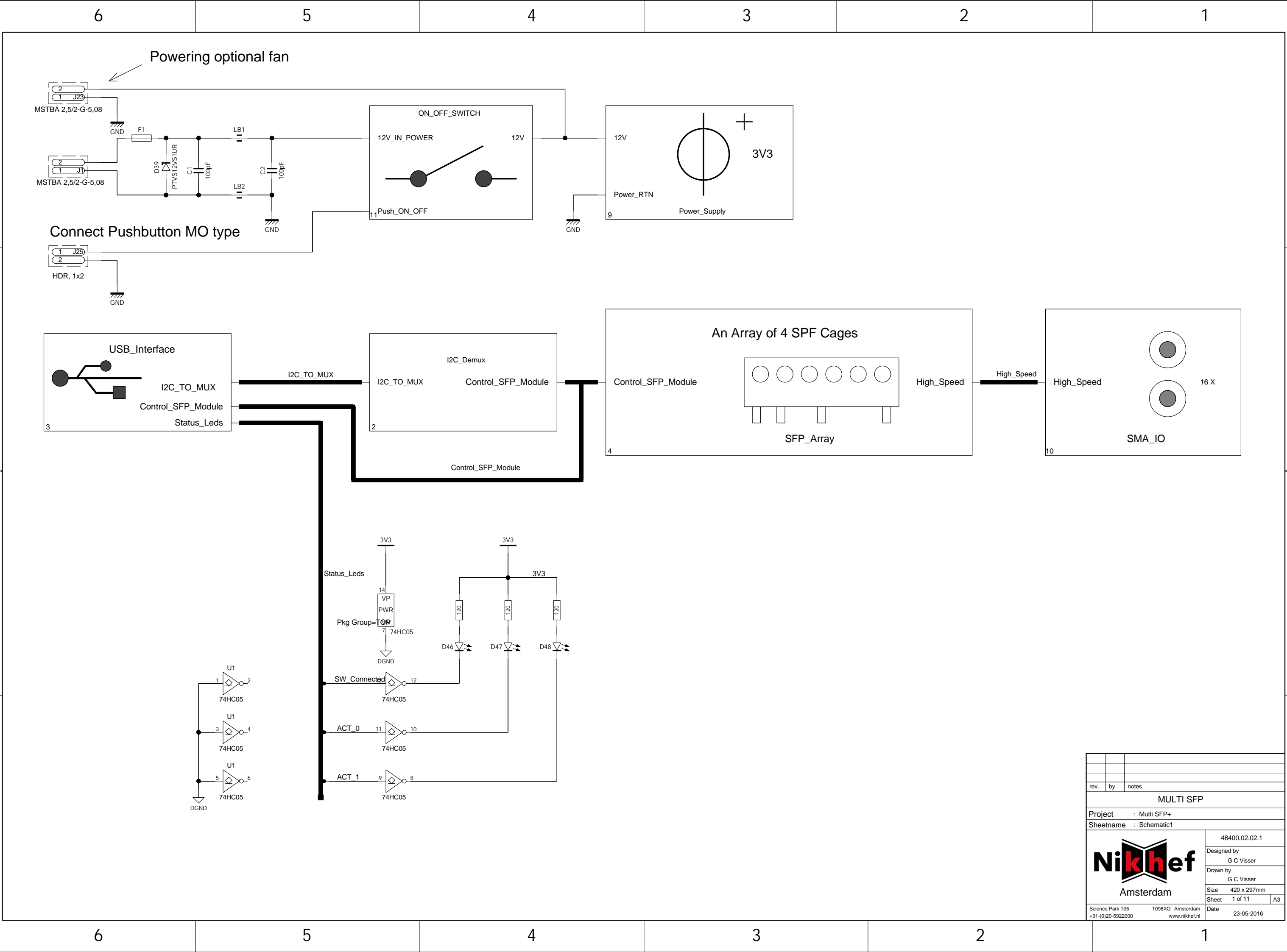
Appendices

A Schematic SFP+ calibration module

In this appendix the schematic presented of the SFP+ Calibration module.

File Name **46400.02.02.1_SCH.PDF**

In the next pages the schematic is included. For convenience a drawing of the board with ref designators is included. It should be noted that the following resistors R7 & R8 are not placed.



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| rev. | by | notes |
| MULTI SFP | | |
| Project : Multi SFP+ | | |
| Sheetname : Schematic1 | | |
|  | | 46400.02.02.1 |
| | | Designed by G C Visser |
| | | Drawn by G C Visser |
| | | Size 420 x 297mm |
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| Date 23-05-2016 | | |

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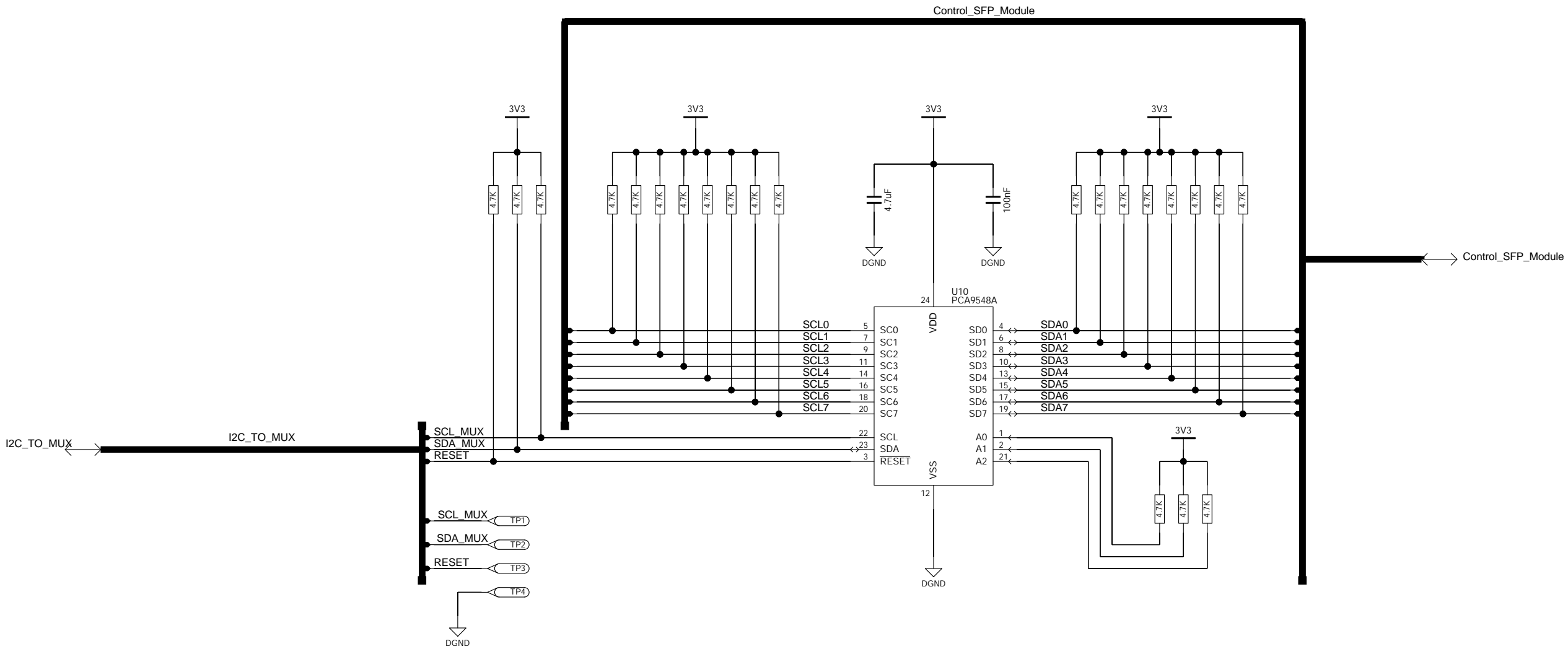
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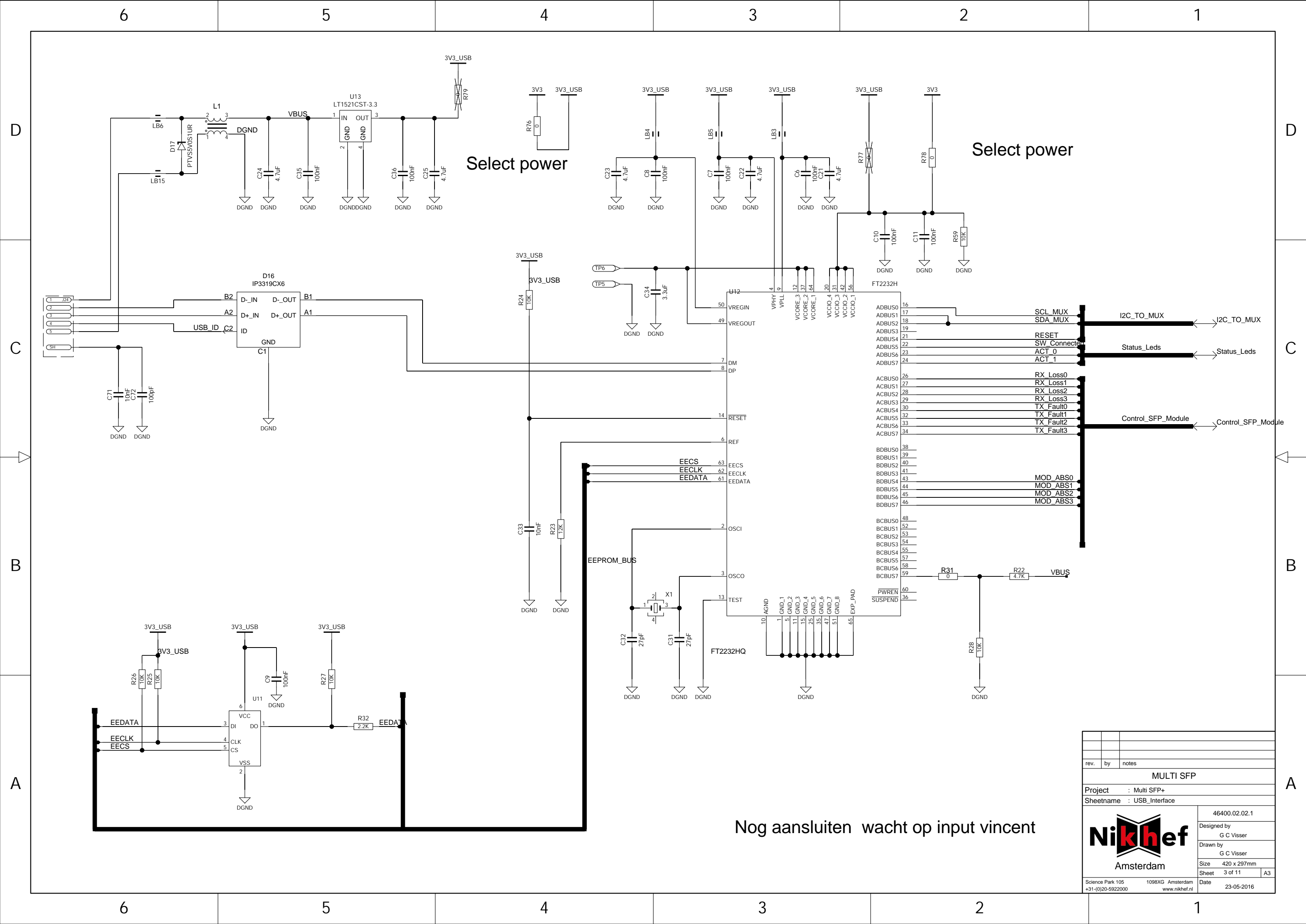
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| Project : Multi SFP+ | | |
| Sheetname : I2C_DEMUX | | |
| | | 46400.02.02.1 |
| | | Designed by G C Visser |
| | | Drawn by G C Visser |
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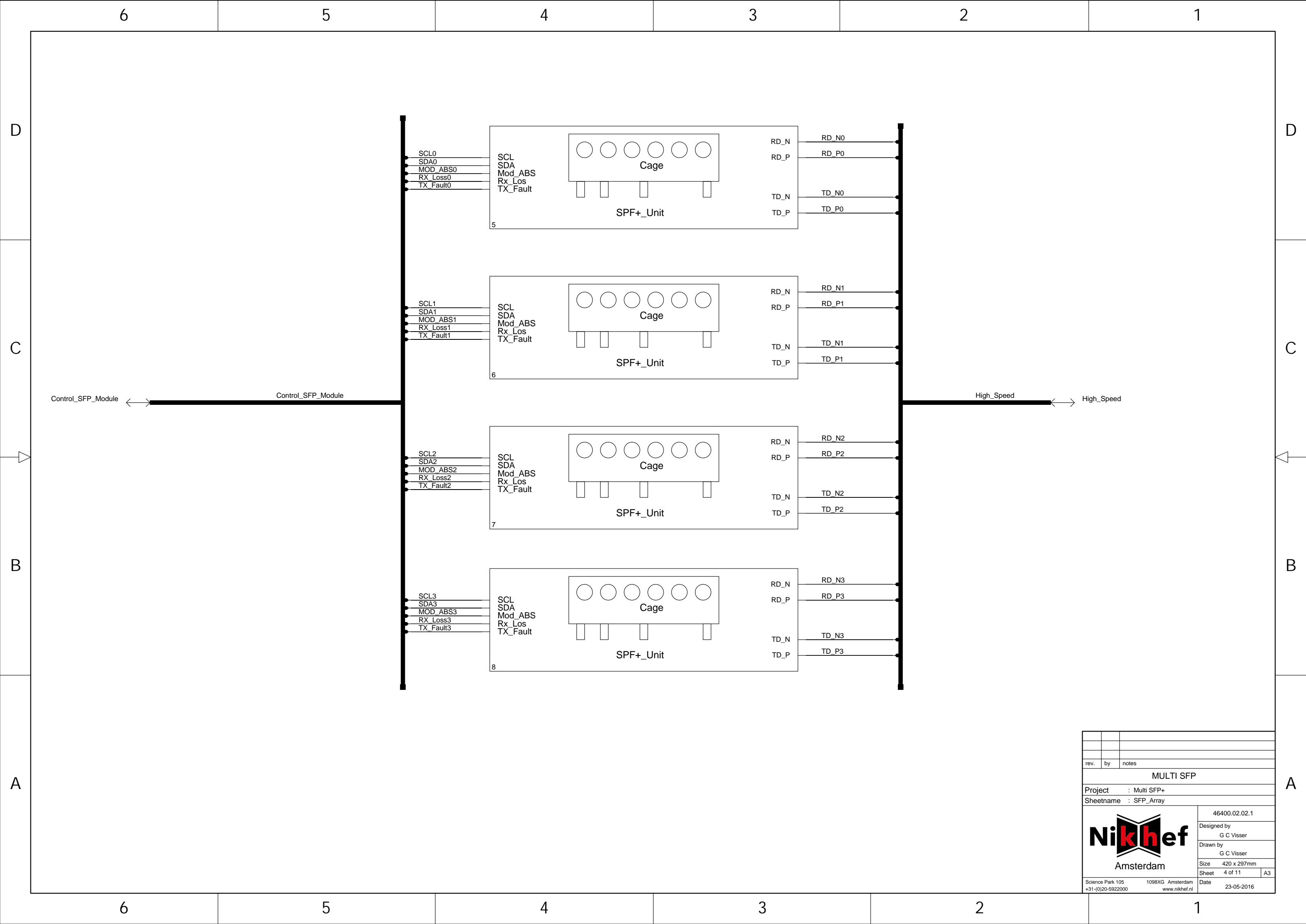


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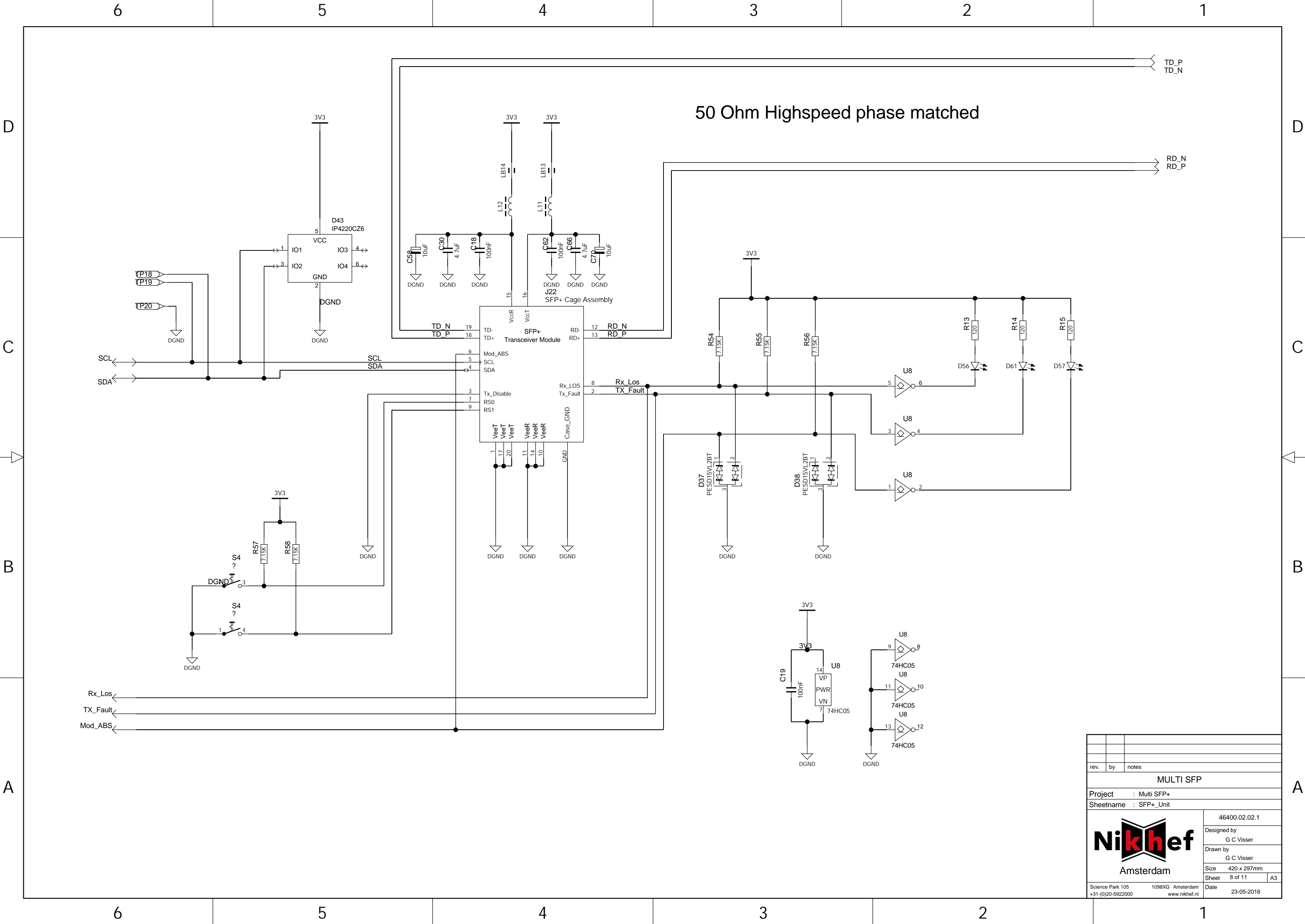
Select power

Nog aansluiten wacht op input vincent

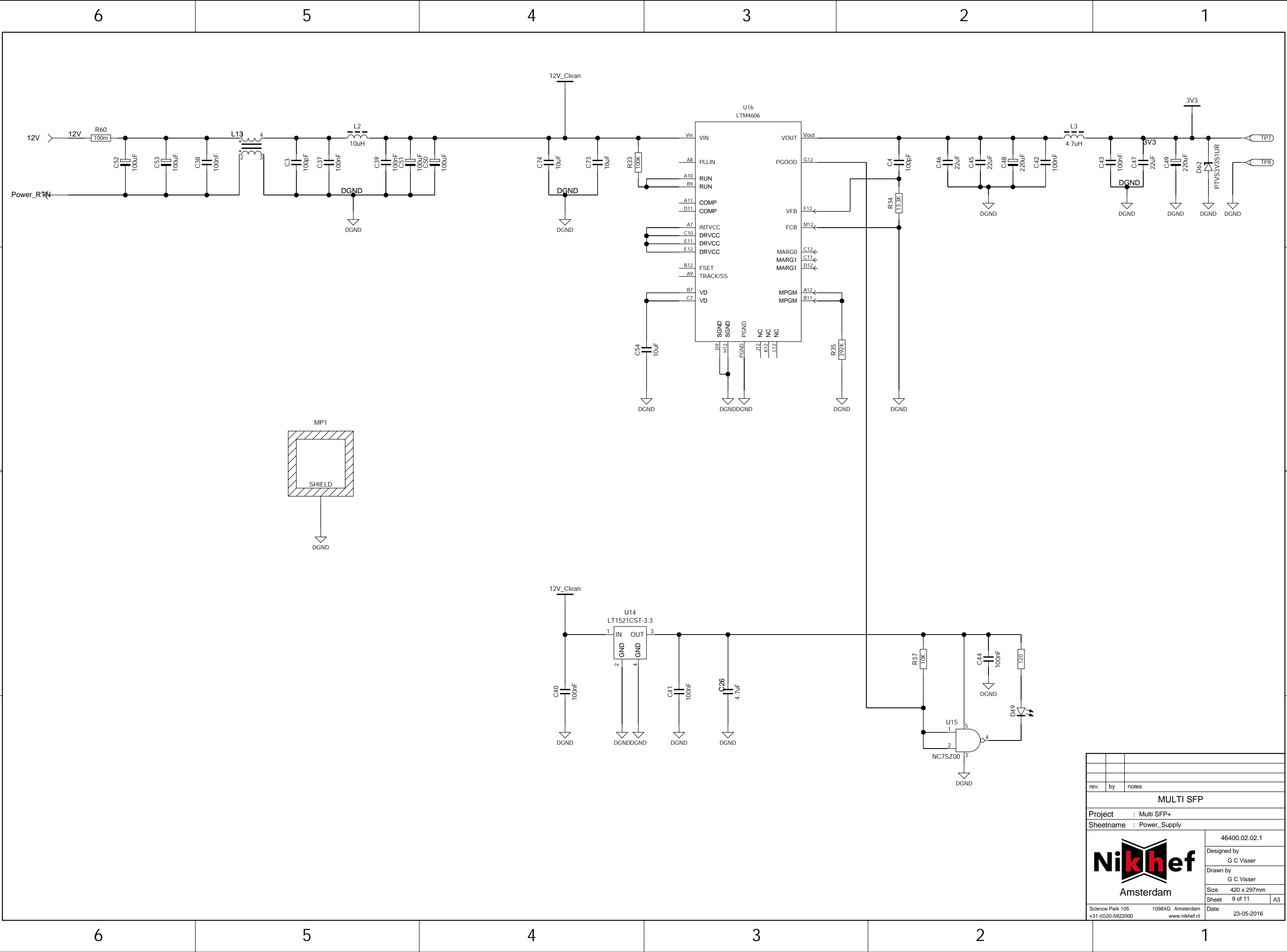
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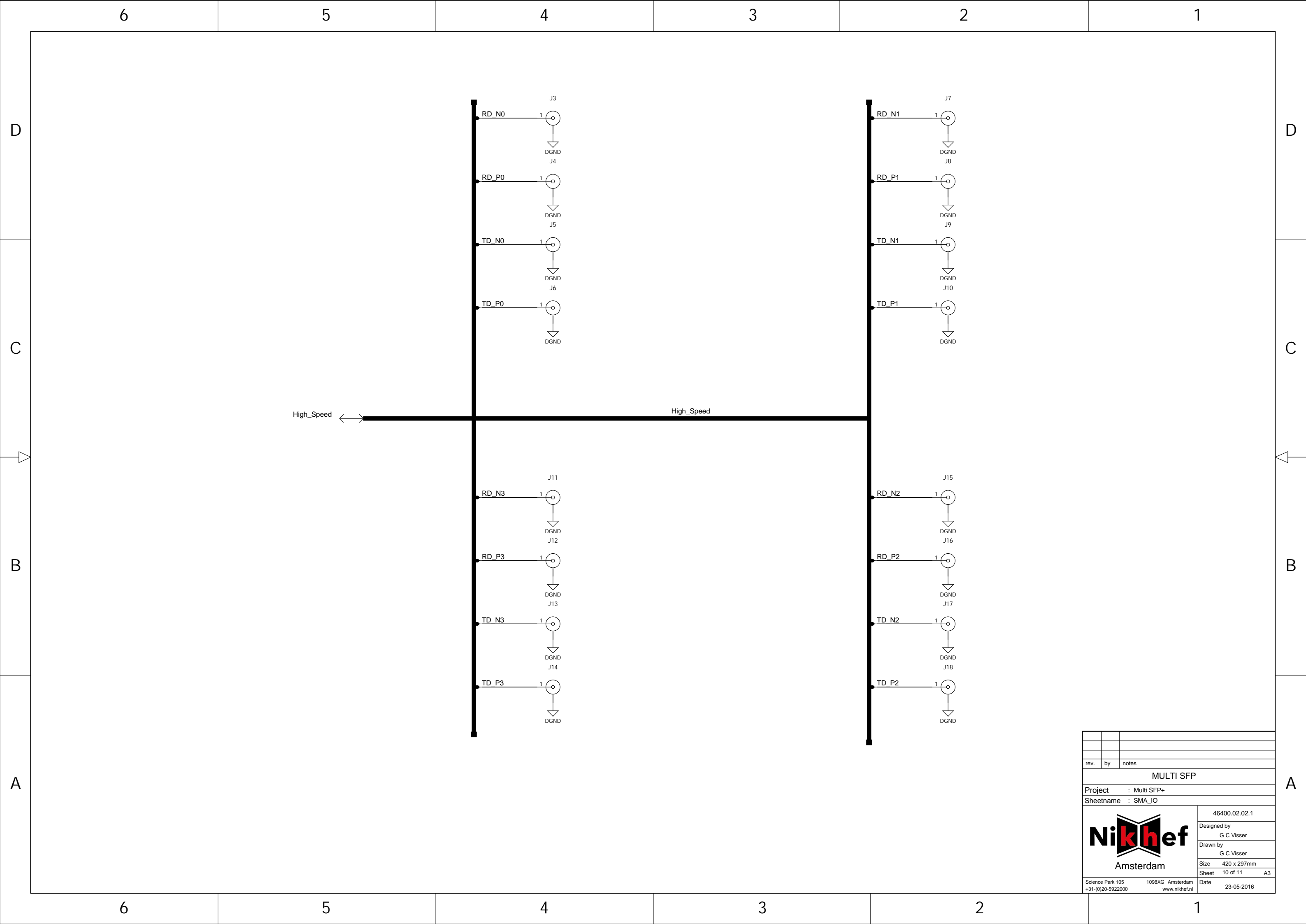
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| Project : Multi SFP+ | | |
| Sheetname : SFP+_Unit | | |
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| Project : Multi SFP+ | | |
| Sheetname : Power_Supply | | |
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Project

: Multi SFP+

Sheetname

: ON_OFF_SWITCH

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Optional Rescue circuit

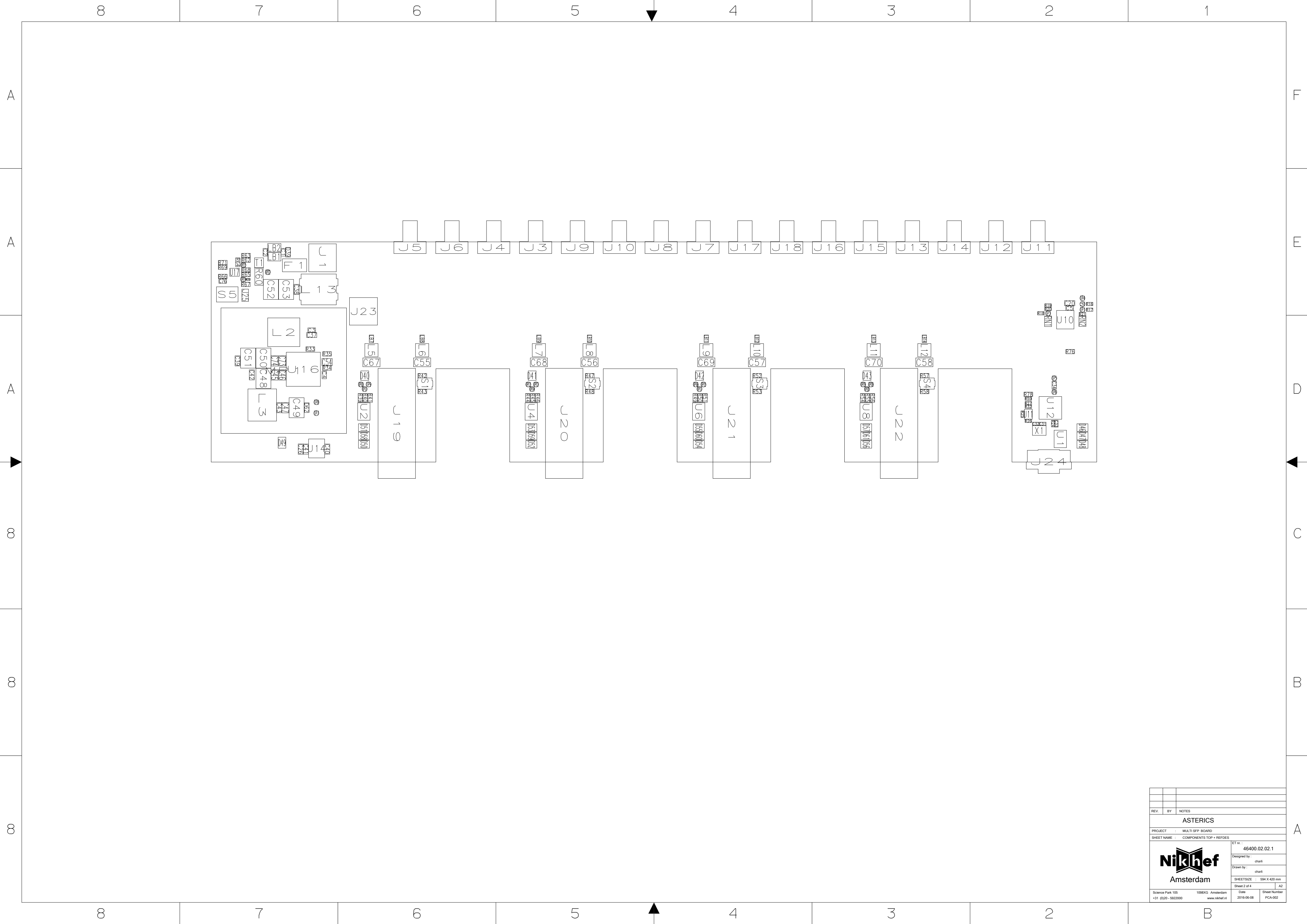
MULTI SFP

Project : Multi SFP+

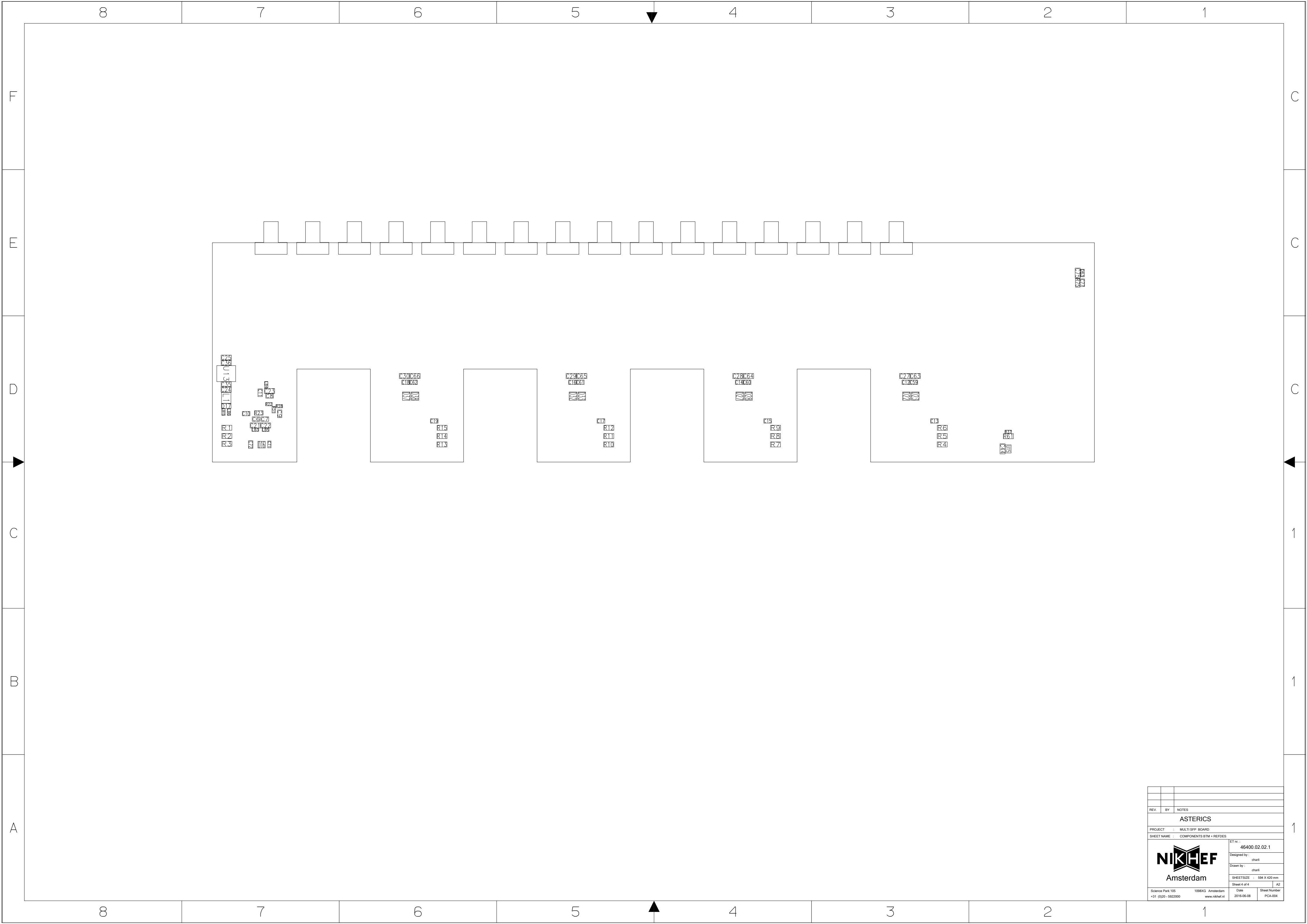
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11 of 11
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B Component location



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| REV. | BY | NOTES |
| ASTERICS | | |
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| | | Designed by : charli |
| | | Drawn by : charli |
| | | SHEETSIZE : 594 X 420 mm |
| | | Sheet 2 of 4 A2 |
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| | | Sheet Number PCA-004 | |