

- Unless Otherwise Specified:  
 All components 0402  
 All resistors are in ohms, 5%, 1/16 Watt  
 All capacitors are in uF, 20%, 50V  
 All voltages are DC  
 All polarized capacitors are Tantalum  
 AEC-Qxxx or at minimum Industrial grade

- Signals connected to other sheets will have off sheet connectors
- Symbols drawn in Grey are not fitted for this variant

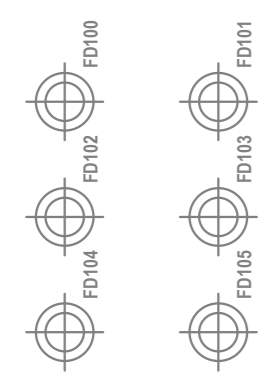
GENERAL DESIGN NOTES

- Critical components that require tolerances tighter than listed in Note 1 are labeled with required tolerance on schematic. Non-critical components may be filled with tighter tolerance parts for BOM consolidation purposes, but may be changed to meet the general tolerances of Note 1 if desired.

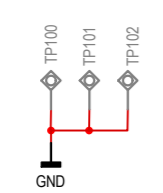
All splitter resistors are 0-ohms, 5%, 1/16 Watt

- all grayed out components are DNP (Don Not Place)

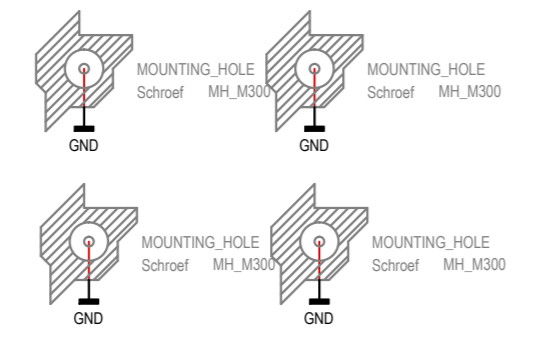
Fiducial Markers



GND TestPoints



Mounting Holes

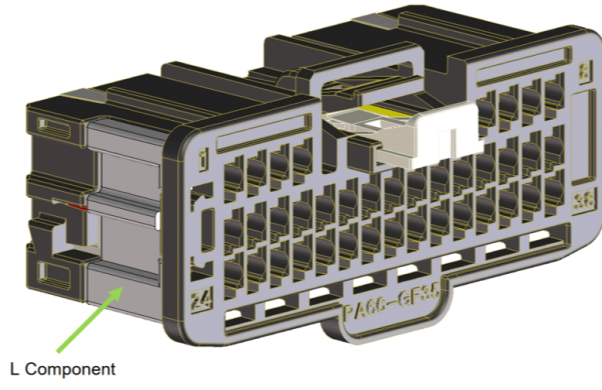


**CONFIDENTIAL AND PROPRIETARY**

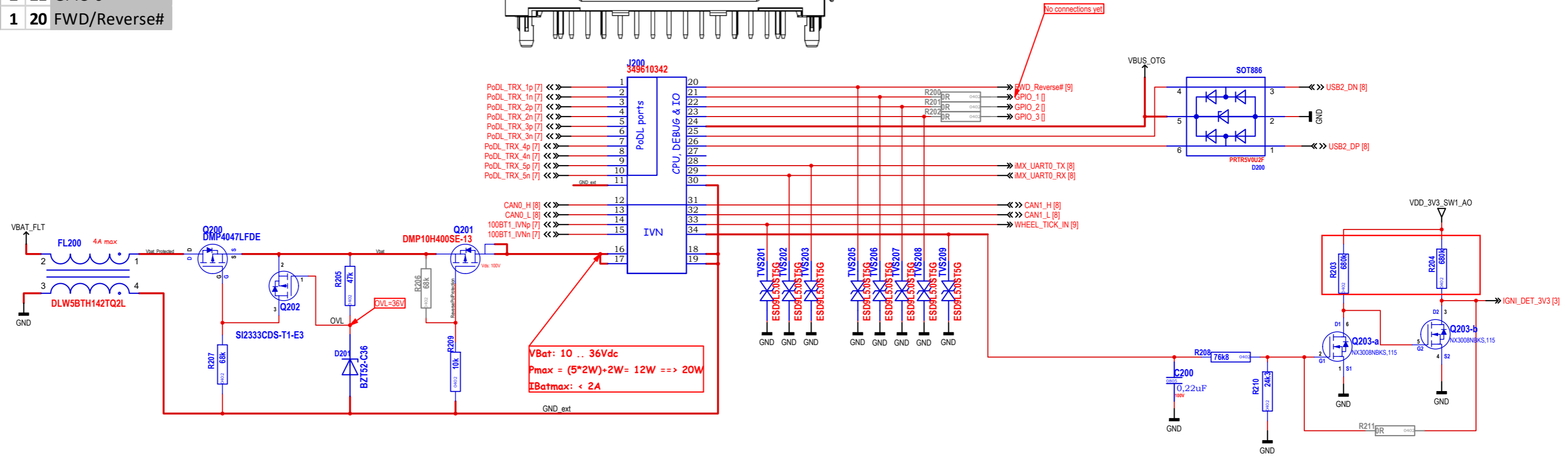
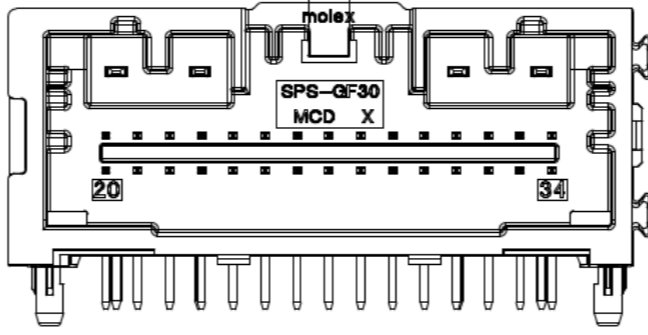
CUSTOMER:	PROJECTNAME:	Revision history	
DATE: 7-3-2022	<b>S592200_A</b>	01	01-02-2022 MB
Design Variant: DNP		02	07-03-2022 MB
NAME: M. Broens	<b>FRONT_PAGE</b>		
	<b>smartOBU</b>		
PROJECTNR: <b>S952200</b>		SH: 1	of 10
SPECTRUM FIFTYNINE Spectrum FiftyNine Middelweg 8a, NL-6554 AH Molenhoek info@spectrumfiftynine.com		SIZE	<b>A3</b>

Alle rechten voorbehouden. Verveelvoudiging of openbaarmaking van inhoud of afbeeldingen is niet toegestaan zonder schriftelijke toestemming van de afzender.

Molex mini50: 349590340			
		Pin	
		15 34	Ignition
GND	19	100BT1_IVNp 14 33	Tacho
		CAN0-L 13 32	CAN1-L
GND	18	CAN0-H 12 31	CAN1-H
		GND 11 30	GND
		PoDL_TRX_5n 10 29	Console_RXD
		PoDL_TRX_5p 9 28	Console_TXD
		PoDL_TRX_4n 8 27	USB_GND
		PoDL_TRX_4p 7 26	USB_DP
		PoDL_TRX_3n 6 25	USB_DN
		PoDL_TRX_3p 5 24	Vbus
VBAT	17	PoDL_TRX_2n 4 23	GPIO 2
		PoDL_TRX_2p 3 22	GPIO 1
VBAT	16	PoDL_TRX_1n 2 21	GPIO 0
		PoDL_TRX_1p 1 20	FWD/Reverse#



L Component

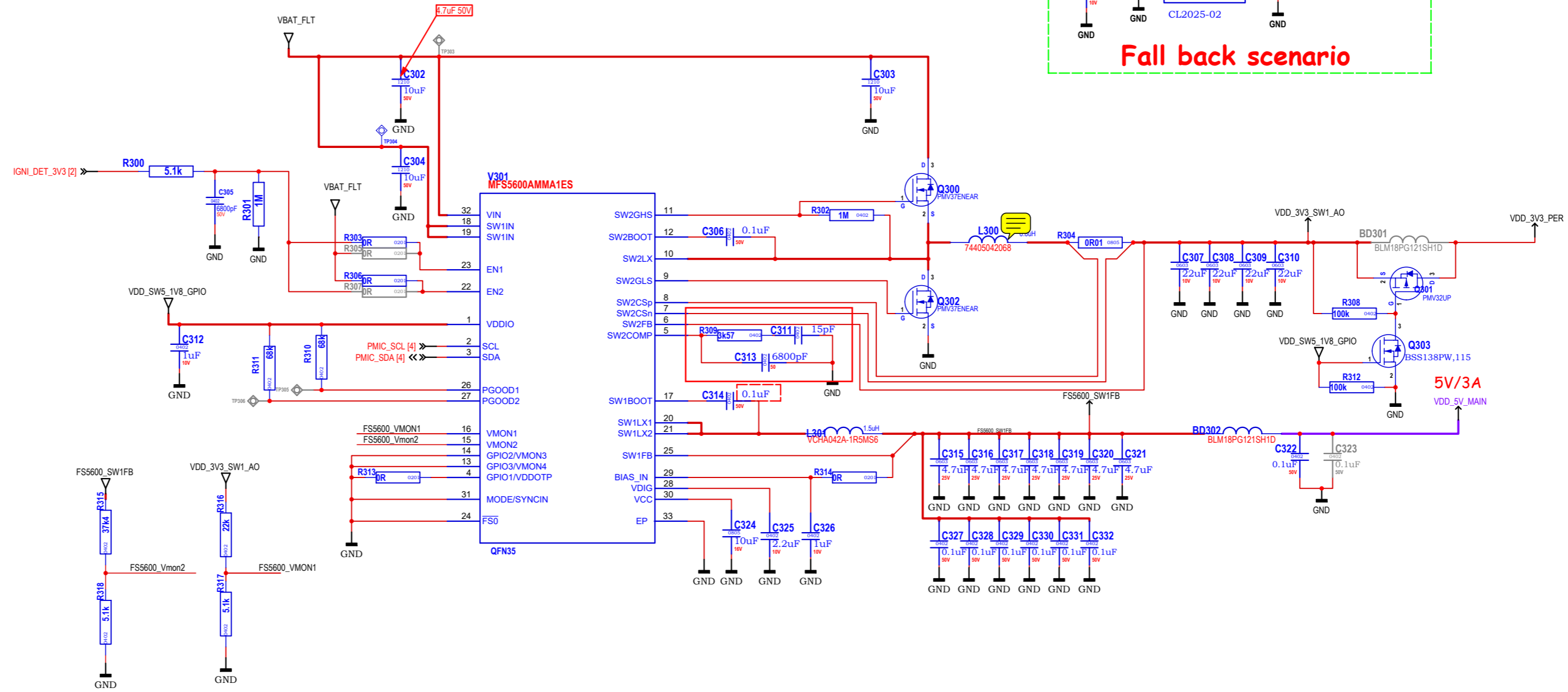


Alle rechten voorbehouden. Verveelvoudiging of openbaarmaking van inhoud of afbeeldingen is niet toegestaan zonder schriftelijke toestemming van de auteursrechtshouder.

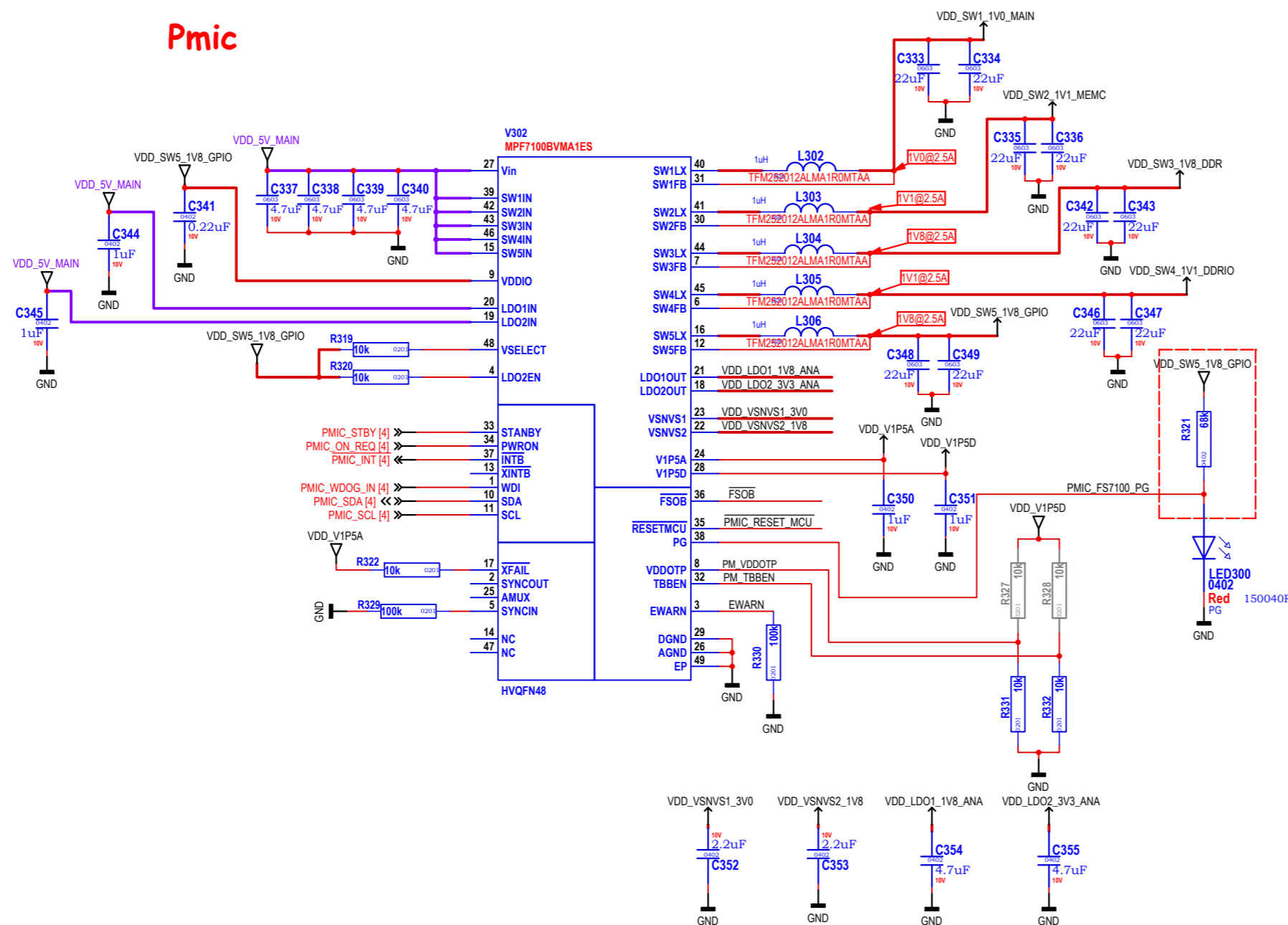
All rights strictly reserved. Reproduction in whole or in part is prohibited without the written consent of the copyright owner.

CUSTOMER:	PROJECTNAME:	Revision history	
DATE: 7-3-2022	<b>S592200_A</b>	01	01-02-2022 MB
Design Variant: DNP		02	07-03-2022 MB
NAME: M. Broens	<b>Connector</b>		
	<b>smartOBU</b>		
SPECTRUM FIFTYNINE		PROJECTNR: S952200	
Spectrum Fiftynine Middelweg 8a, NL-6554 AH Molenhoek info@spectrumfiftynine.com		SH: 2 of 10	SIZE: A3

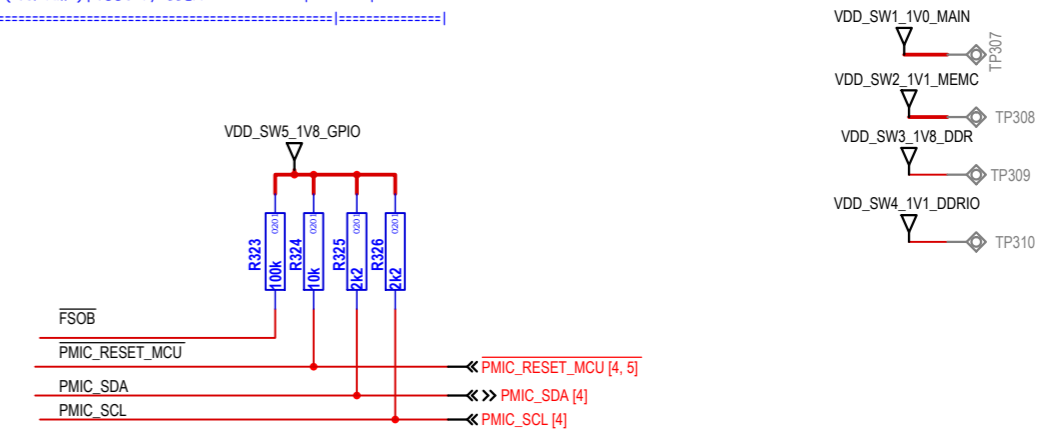
# Power In



# Pmic

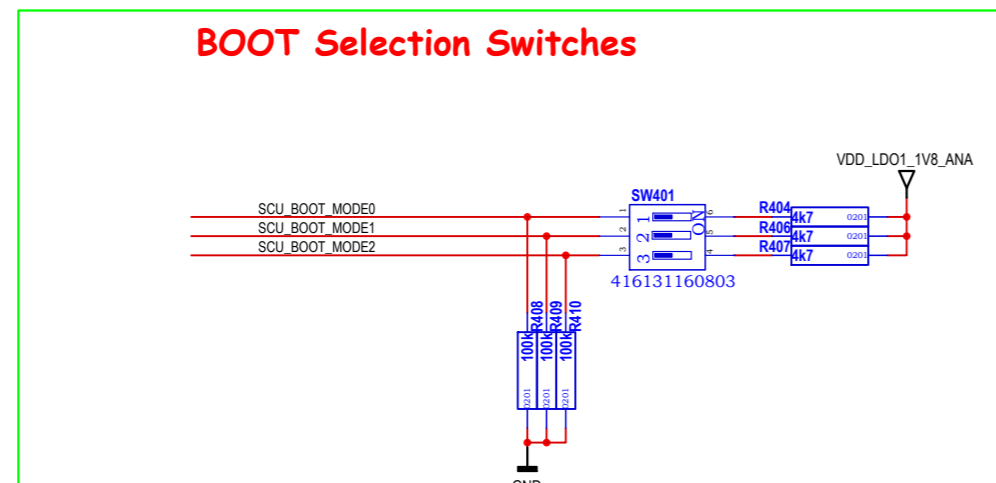
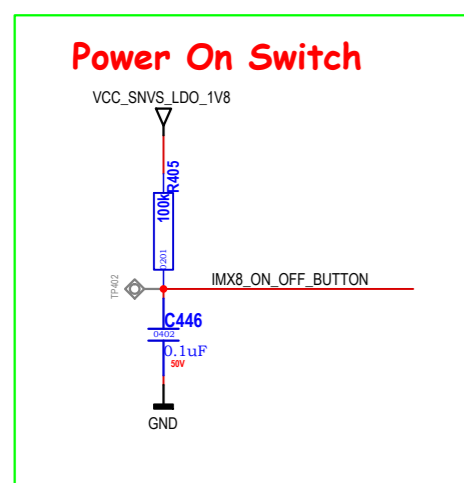
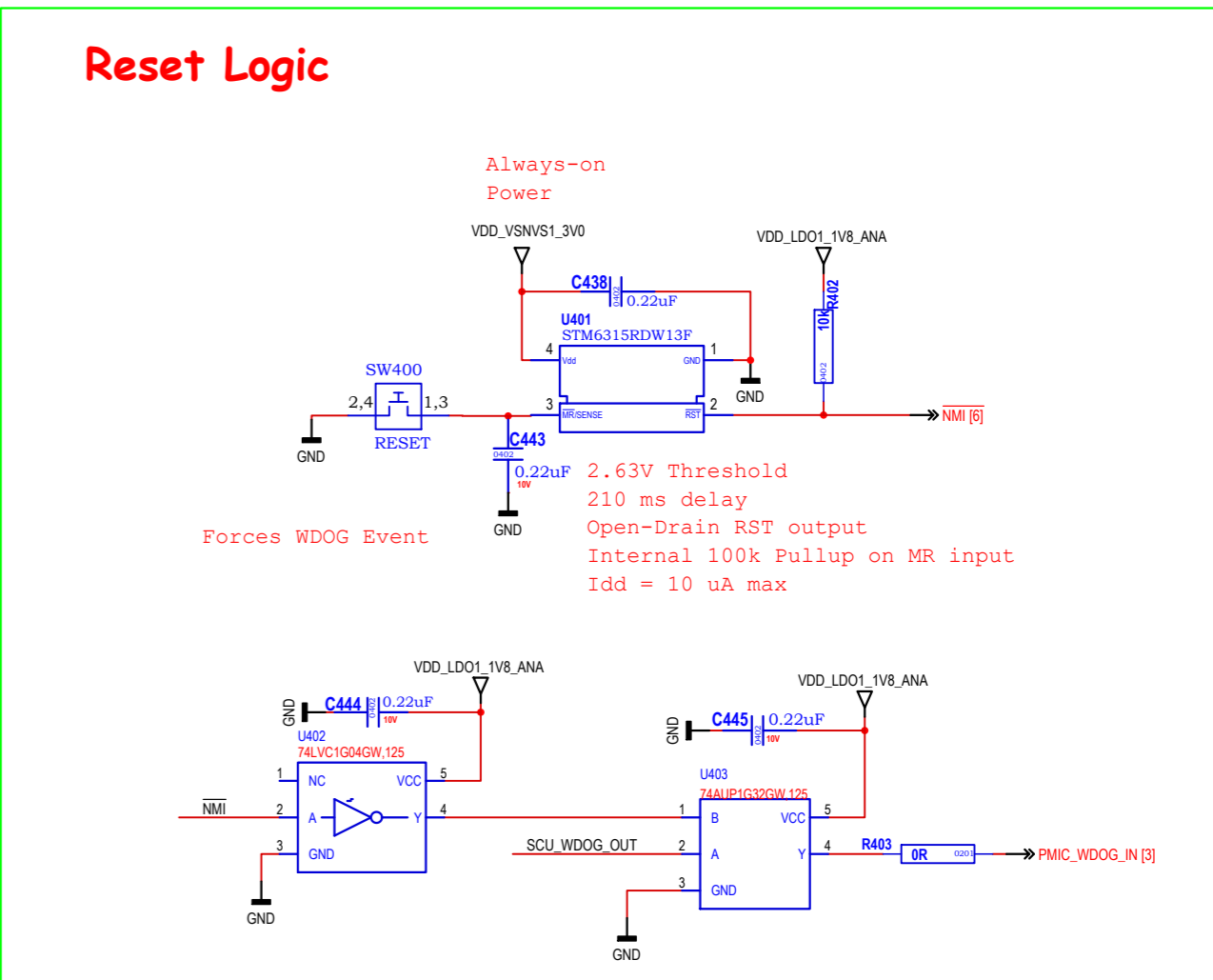
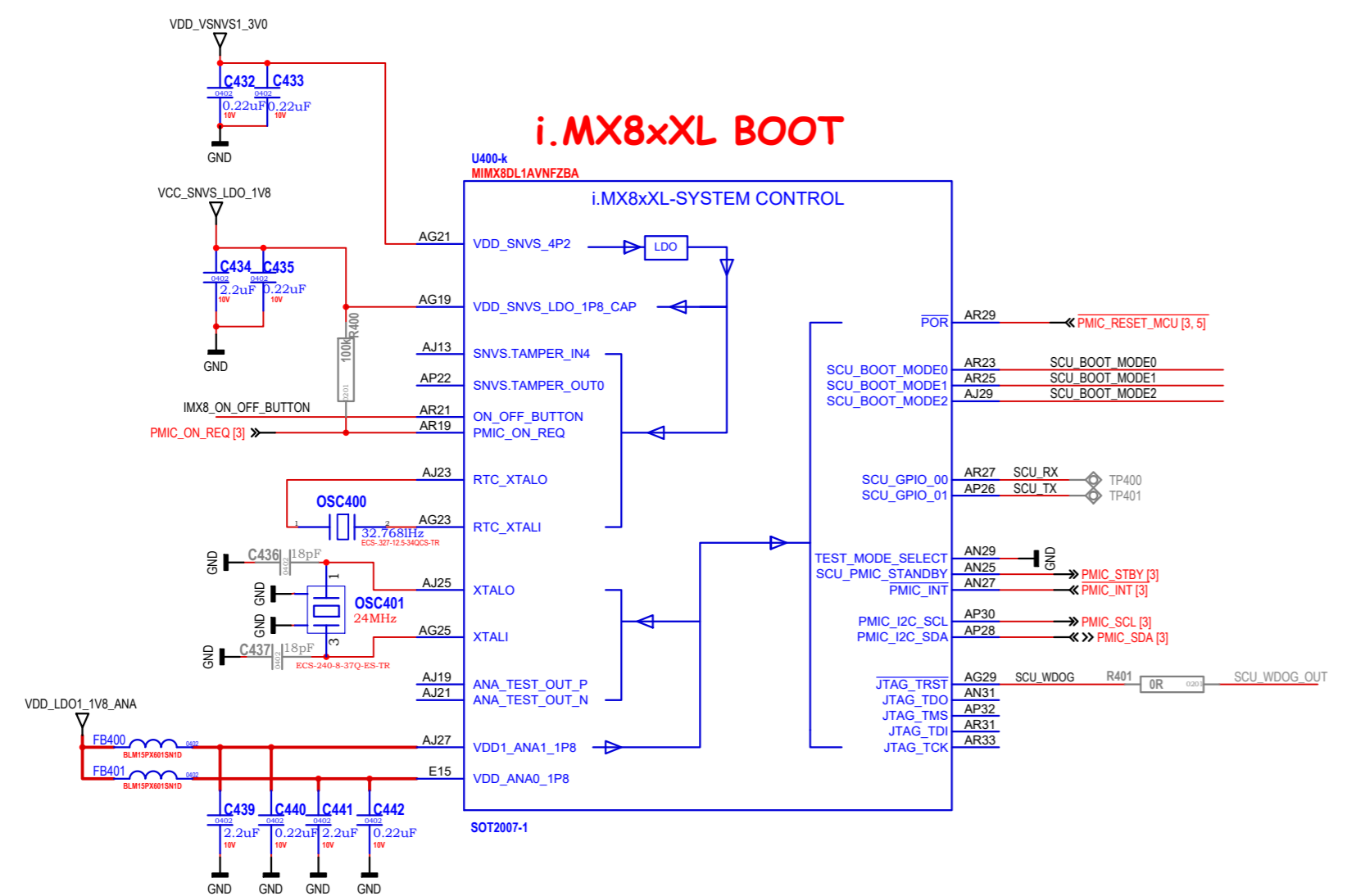
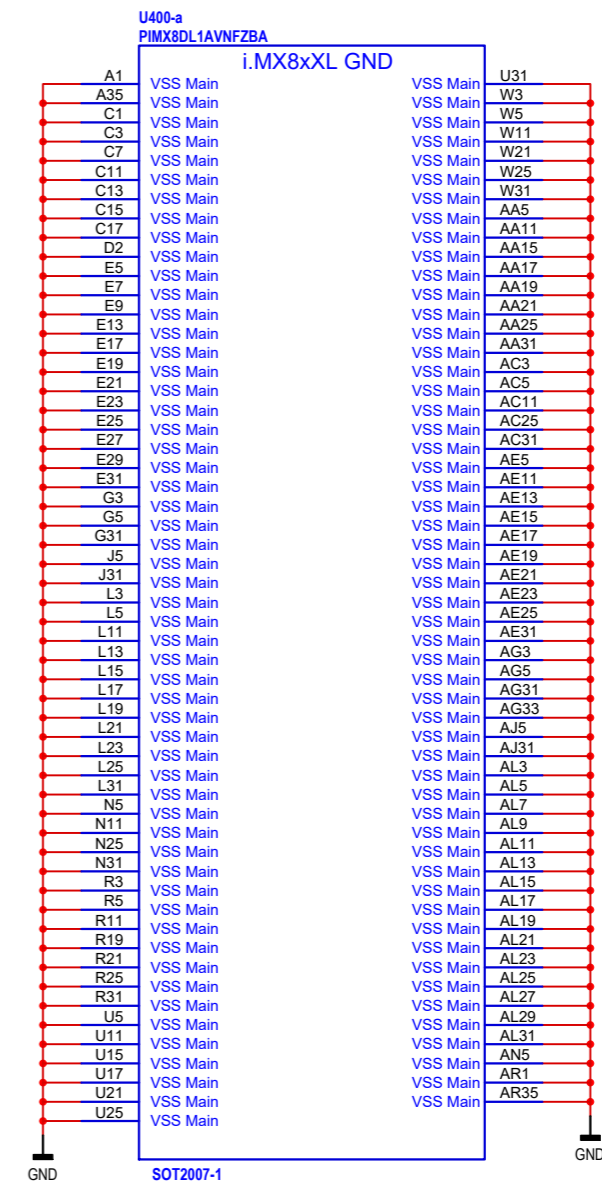
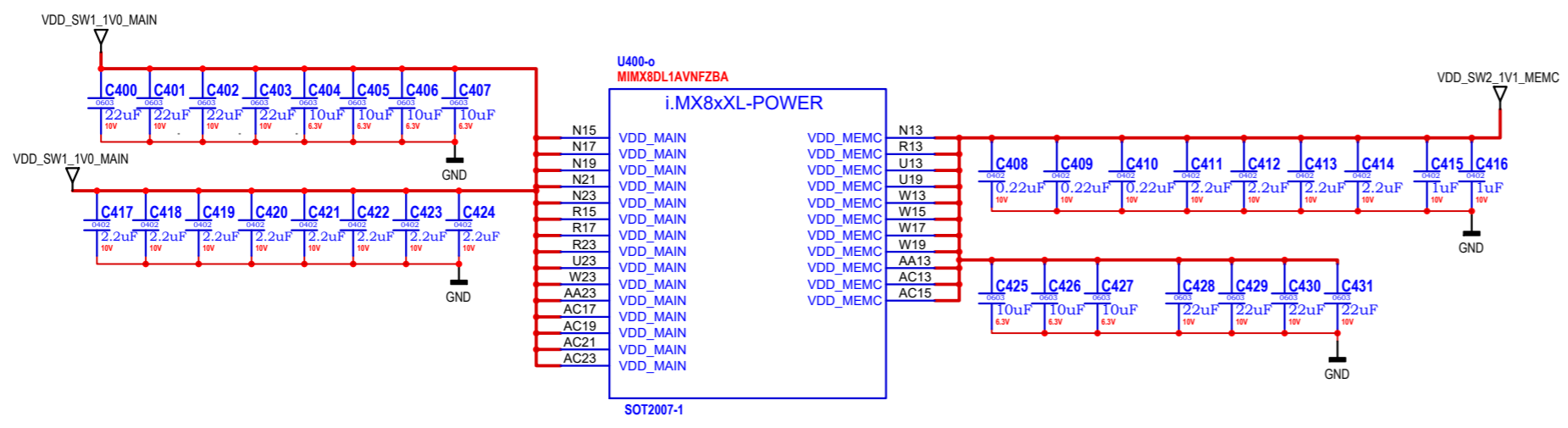


Source	Rating	Loads	Expected [mA]
VDD_SW1_1V0_MAIN	(1V0/2.5A)	IMX8 VDD_MAIN	
VDD_SW2_1V1_MEMC	(1V1/2.5A)	IMX8 VDD_MEMC	
VDD_SW3_1V8_DDRIO	(1V8/2.5A)	lpDDR-VDD1 IMX8 VDD_DDR_PLL_IP8 lpDDR-VDD2 IMX8 VDD_DDR_VVDQ	
VDD_SW4_1V1_DDRIO	(1V1/2.5A)	lpDDR-VDD1 lpDDR-VDD2 IMX8 VDD_DDR_VVDQ	
VDD_SW5_1V8_GPIO	(1V8/2.5A)	PF7100 VDDIO	
VDD_LDO1_1V8_ANA	(1V8/400mA)	PF7100 Vselect	
VDD_LDO2_3V3_ANA	(3V3/400mA)	PF7100 LDO2EN	
VDD_VSNVS1_3V0	(3V0/10mA)	PF7100 FSOB, PMIC_RESET_MCU, PMIC_I2C	
VDD_VSNVS2_1V8	(1V8/10mA)	VDD_1V8_S3A100 IMX8 VDD_USB_IP8 IMX8 VDD1_EMMCO_IP8_3P3 IMX8 VDD2_EMMCO_IP8_3P3	
VDD_VIPSA	(1V5/xxmA)	eMMC VCCq	
VDD_VIPSD	(1V5/xxmA)	eMMC RSTn Pullup	



CUSTOMER:	PROJECTNAME:	Revision history	
DATE: 7-3-2022	<b>S592200_A</b>	01	01-02-2022 MB
Design Variant: DNP		02	07-03-2022 MB
NAME: M. Broens	<b>Pmic</b>		
	<b>smartOBU</b>	SH: 3 of 10	
SPECTRUM FIFTYNINE		PROJECTNR: S952200	SIZE: A3

Alle rechten voorbehouden. Verveelvoudigen of openbaarstellen geheel of gedeeltelijk is niet toegestaan zonder schriftelijke toestemming van de auteursrechtshouder.



BOOT MODE	BOOT SOURCE
2 1 0	eFuse selection
0 0 0	USB serial download
0 0 1	eMMC
0 1 1	USDHC1 SD
1 0 0	NAND 128 page
1 0 1	DFT-M4 infinite loop
1 1 0	FLEX SPI read 3b support
1 1 1	DFT-Burnin

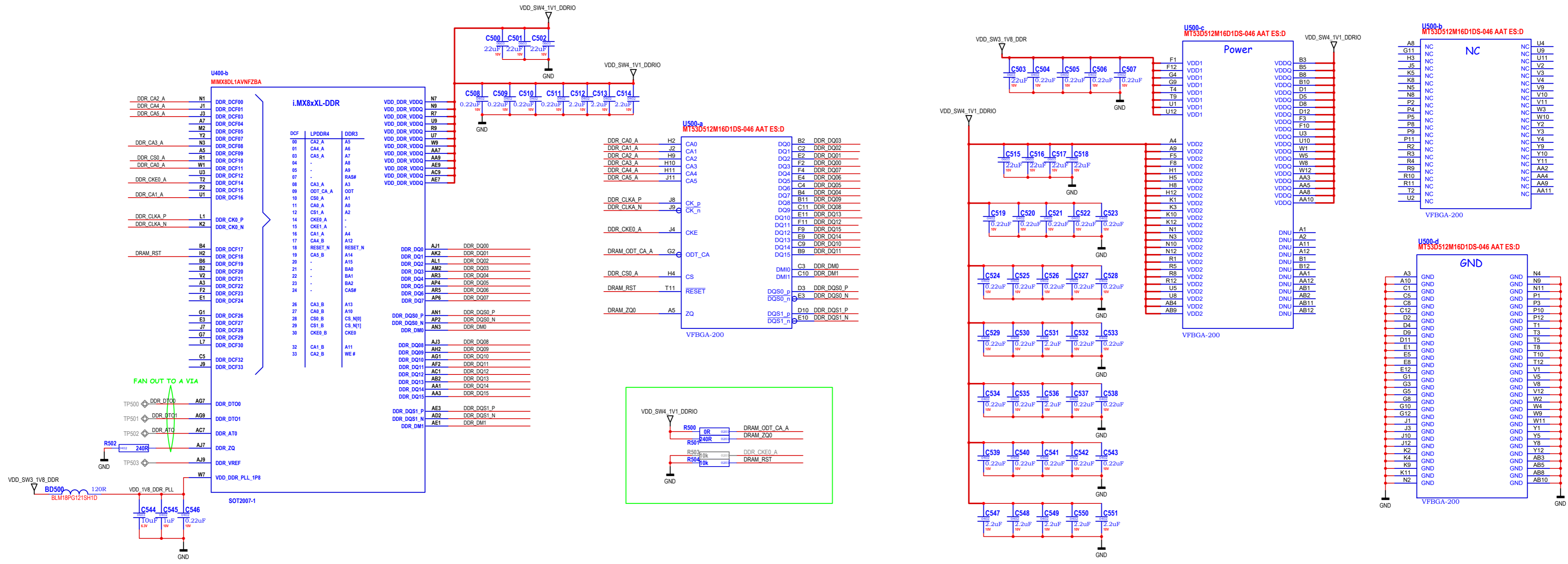
Alle rechten voorbehouden. Verveelvoudigen of openbaarstellen geheel of gedeeltelijk is niet toegestaan zonder schriftelijke toestemming van de auteursrechtshouder.

All rights strictly reserved. Reproduction in whole or in part is prohibited without the written consent of the copyright owner.

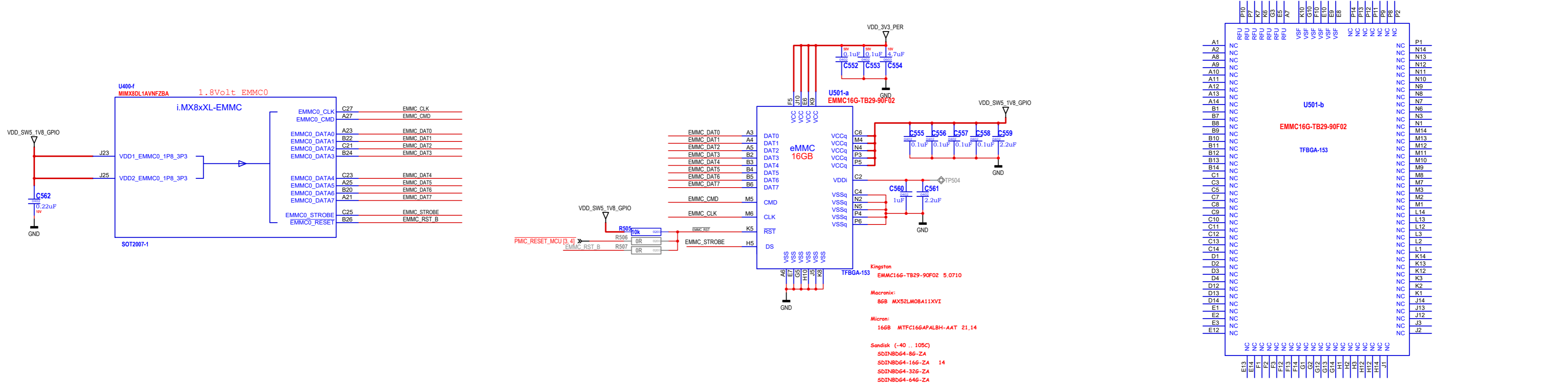
Spectrum Fitynine

CUSTOMER:	PROJECTNAME:	<b>S592200_A</b>		Revision history	
DATE: 7-3-2022	Design Variant: DNP	<b>i.MX Power</b>		01 01-02-2022 MB	
NAME: M. Broens	PROJECTNR:	<b>smartOBU</b>		02 07-03-2022 MB	
SPECTRUM FITYNINE	Spectrum Fitynine Middelweg 5a, NL-6554 AH Molenhoek info@spectrumfitynine.com	SH: 4 of 10		SIZE	A3
			<b>S952200</b>		

# LPDDR4 DRAM 8Gb



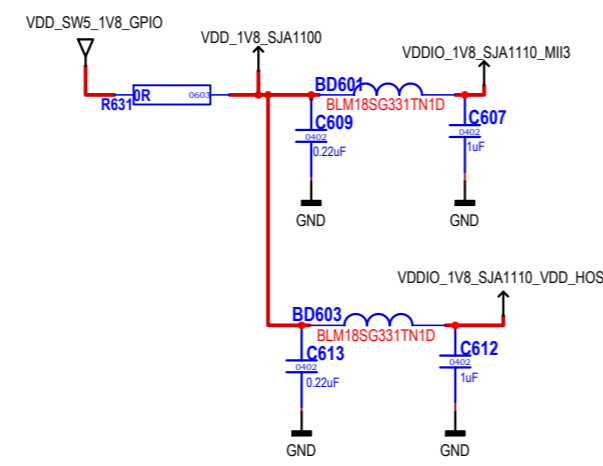
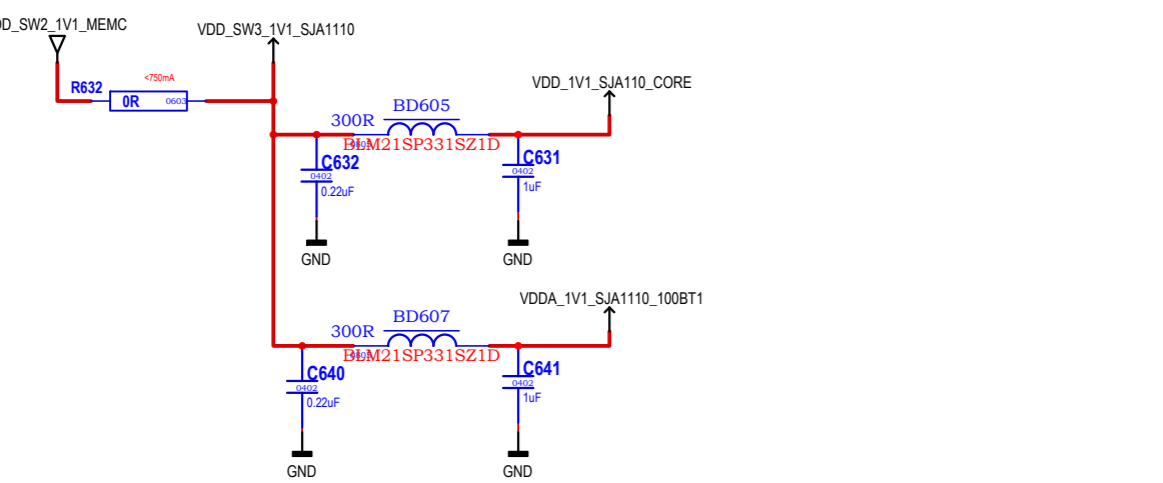
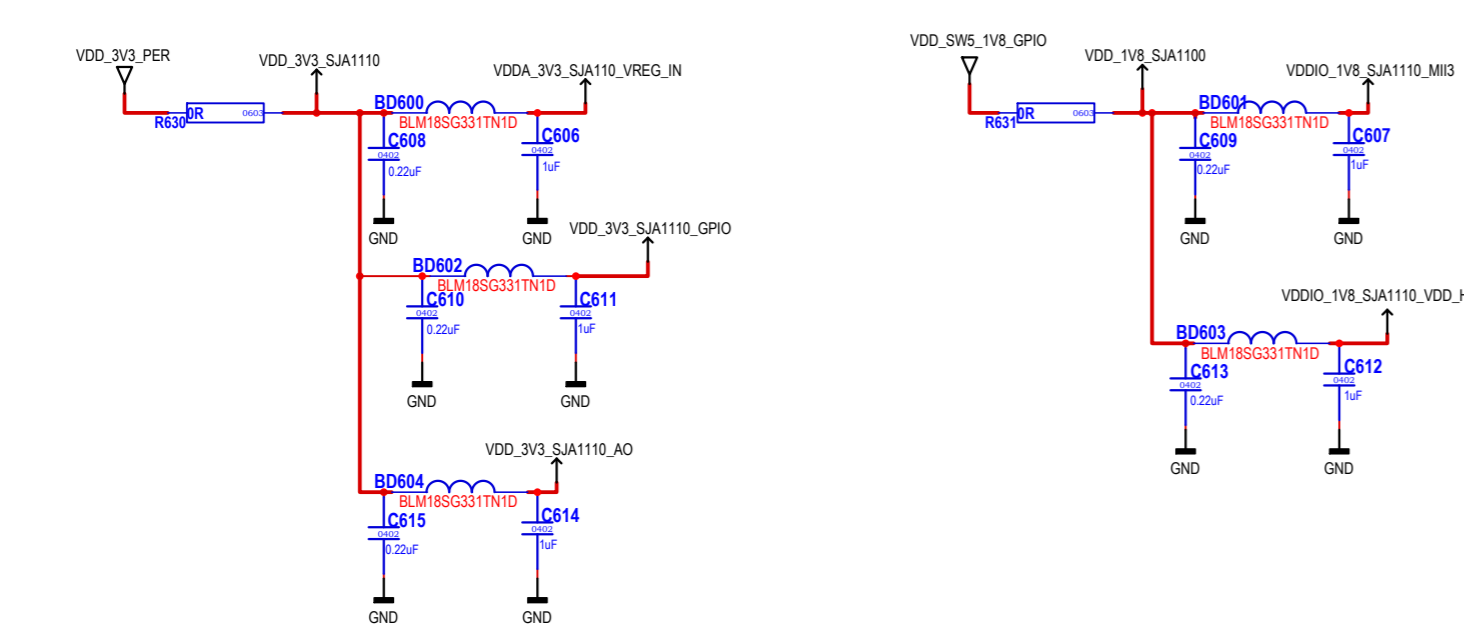
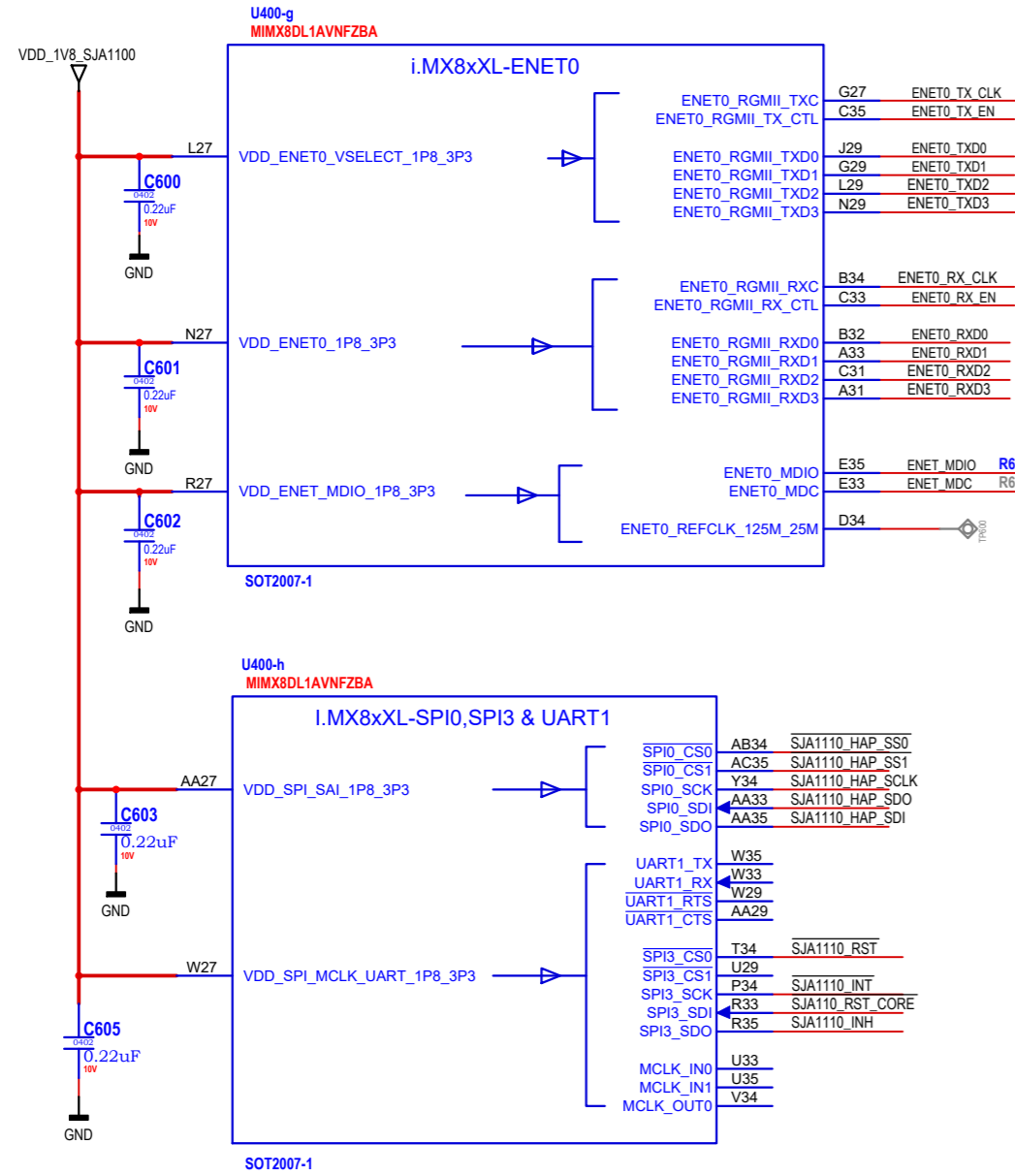
# i.MX8xXL 16GB eMMC



CUSTOMER:	PROJECTNAME:	<b>S592200_A</b>		Revision history	
DATE: 7-3-2022	Design Variant: <b>DNP</b>	<b>i.MX Memory</b>		01	01-02-2022 MB
NAME: <b>M. Broens</b>		<b>smartOBU</b>		02	07-03-2022 MB
<b>SPECTRUM FIFTYNINE</b>	Spectrum Fiftynine Middelweg 8a, NL-6554 AH Molenhoek info@spectrumfiftynine.com	PROJECTNR:	<b>S952200</b>	SIZE	<b>A3</b>
				SH: 5	of 10

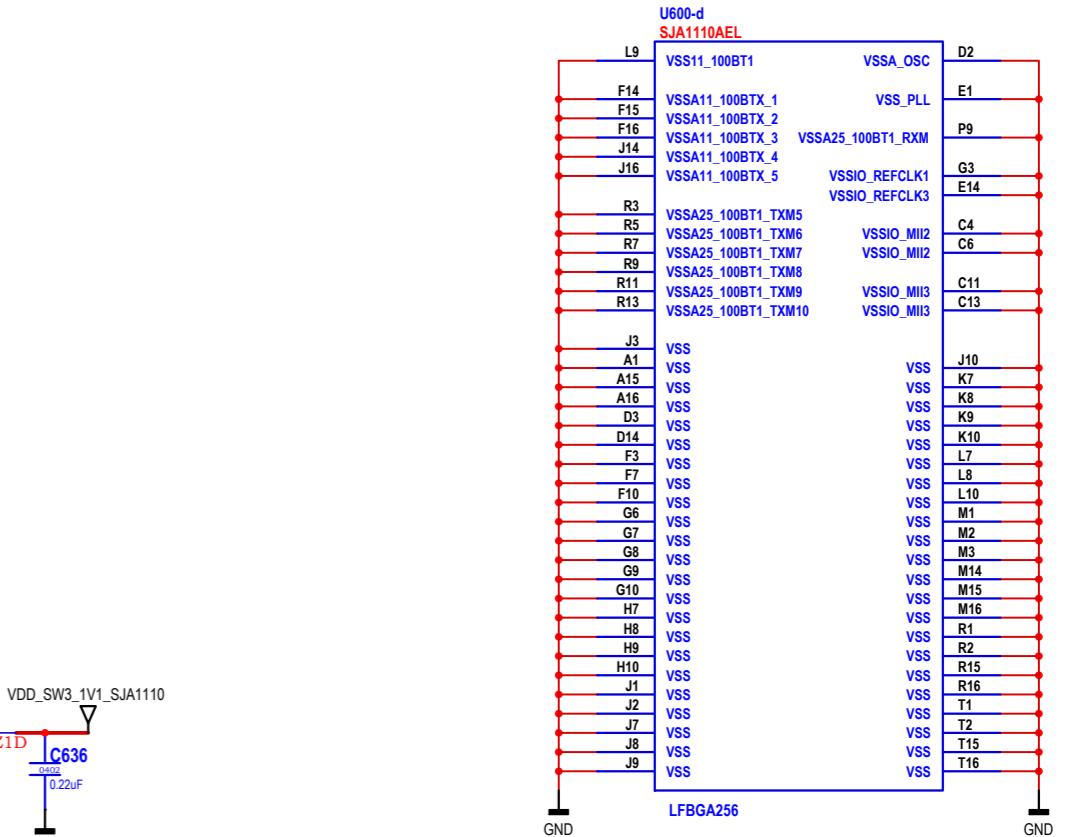
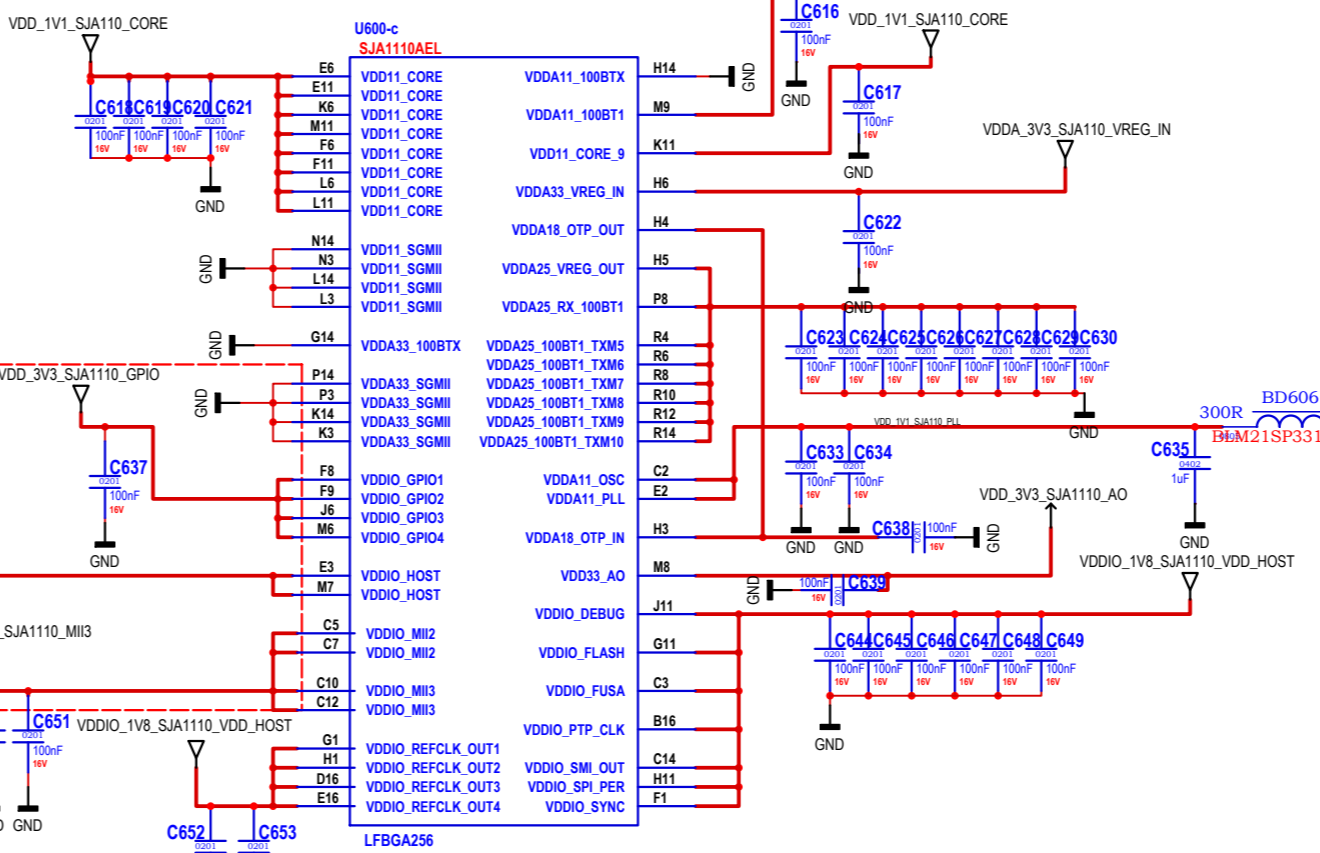
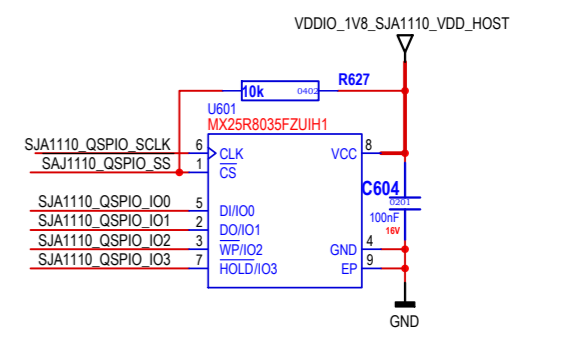
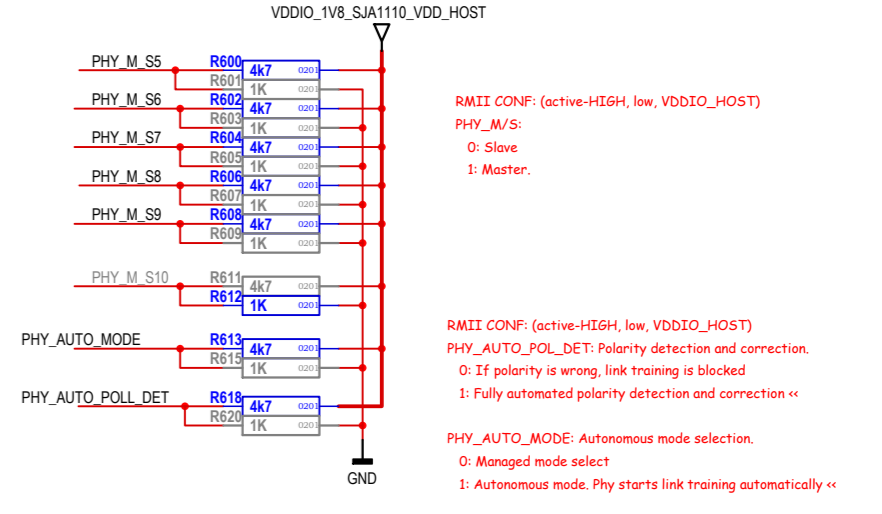
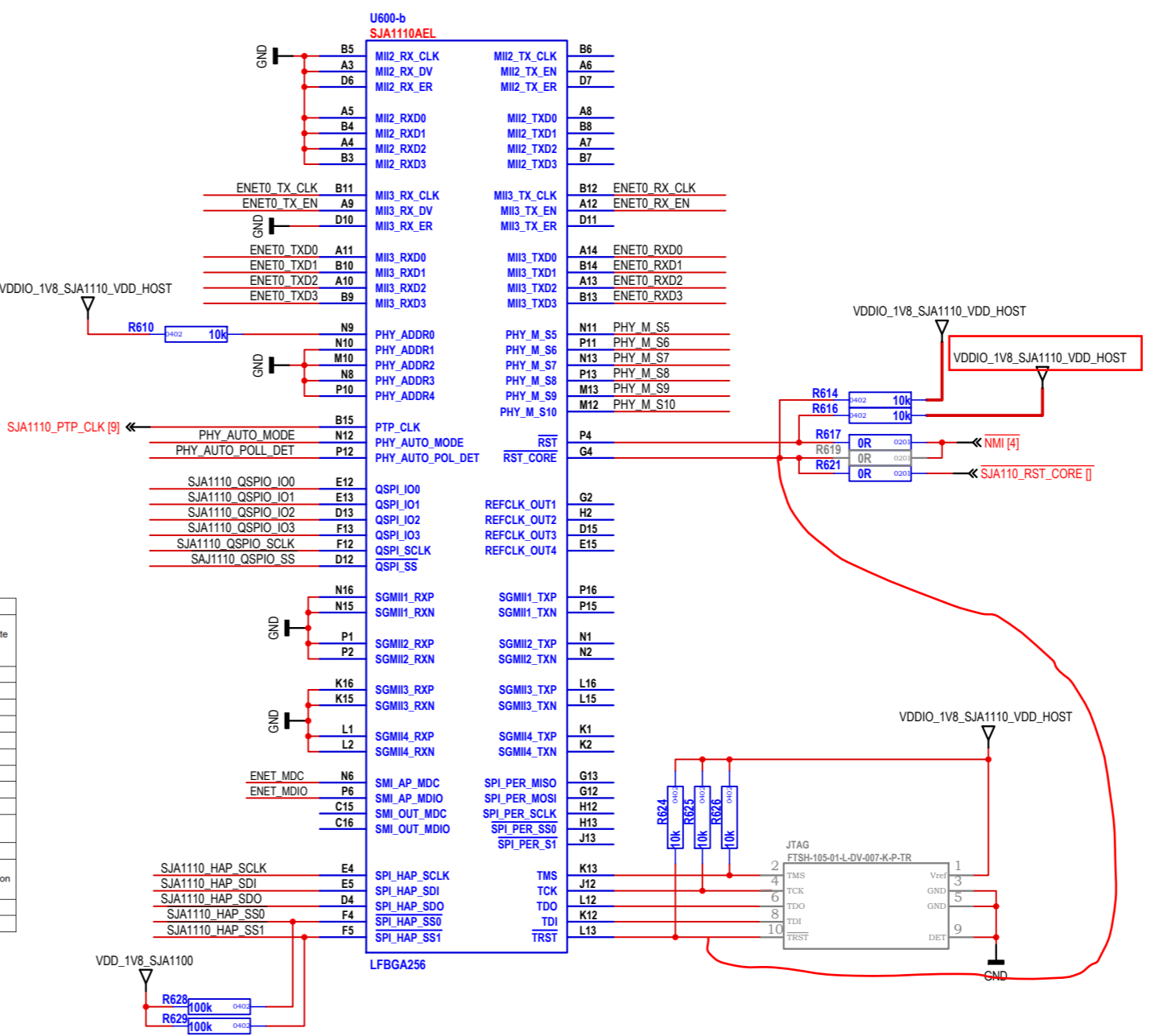
All rights strictly reserved.  
 Reproduction in whole or in part is  
 prohibited without the written  
 consent of the copyright owner.  
 Spectrum Fiftynine

# ETHERNET PHY



**Table 57. RGMII/RMMI pin mapping**

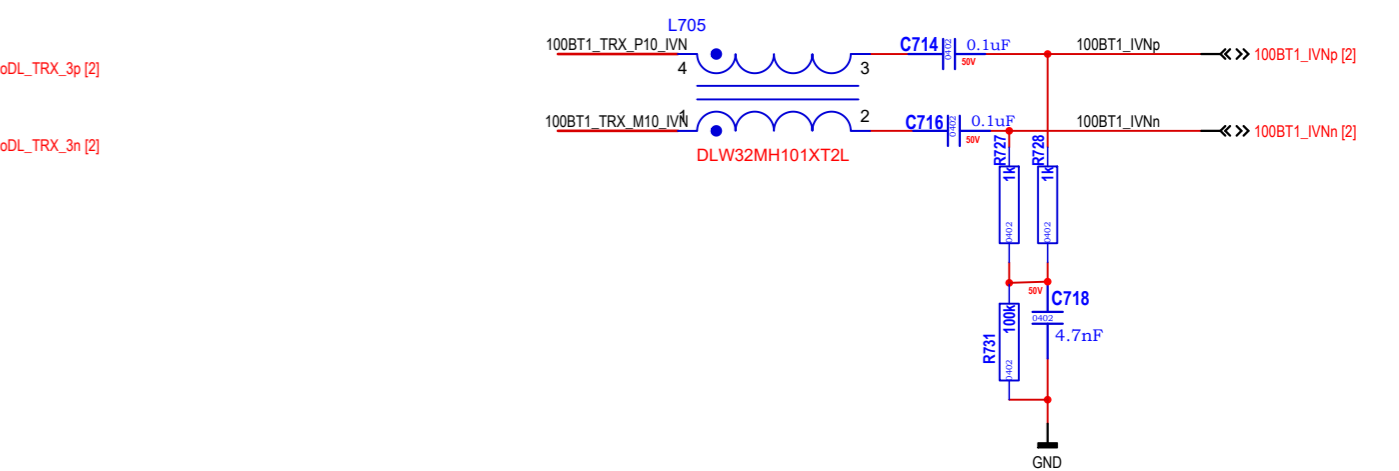
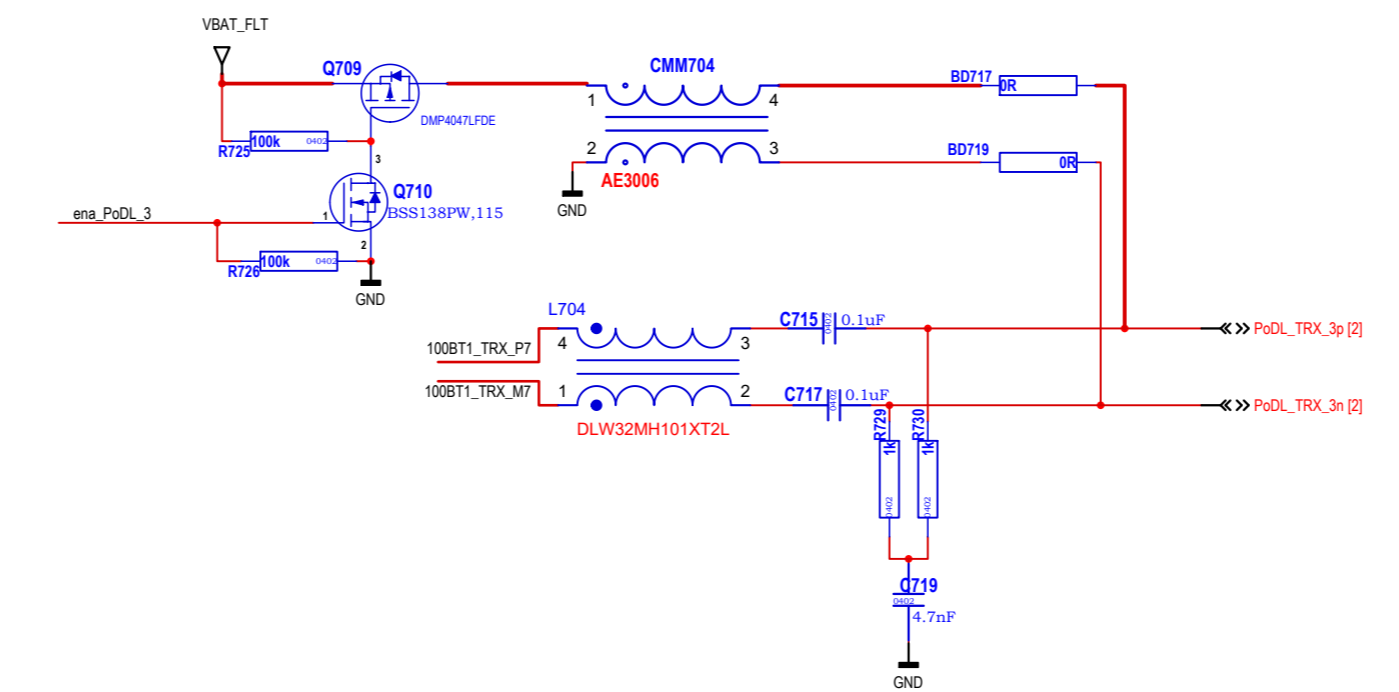
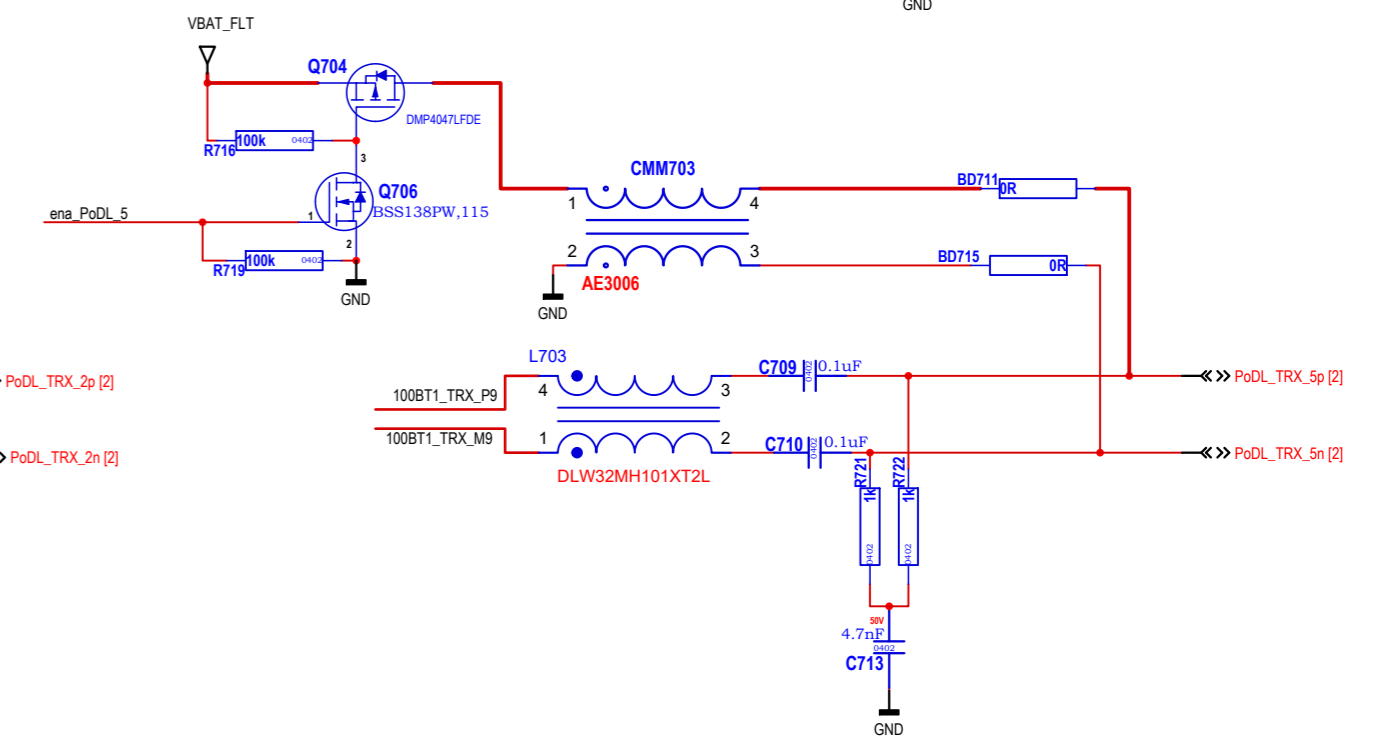
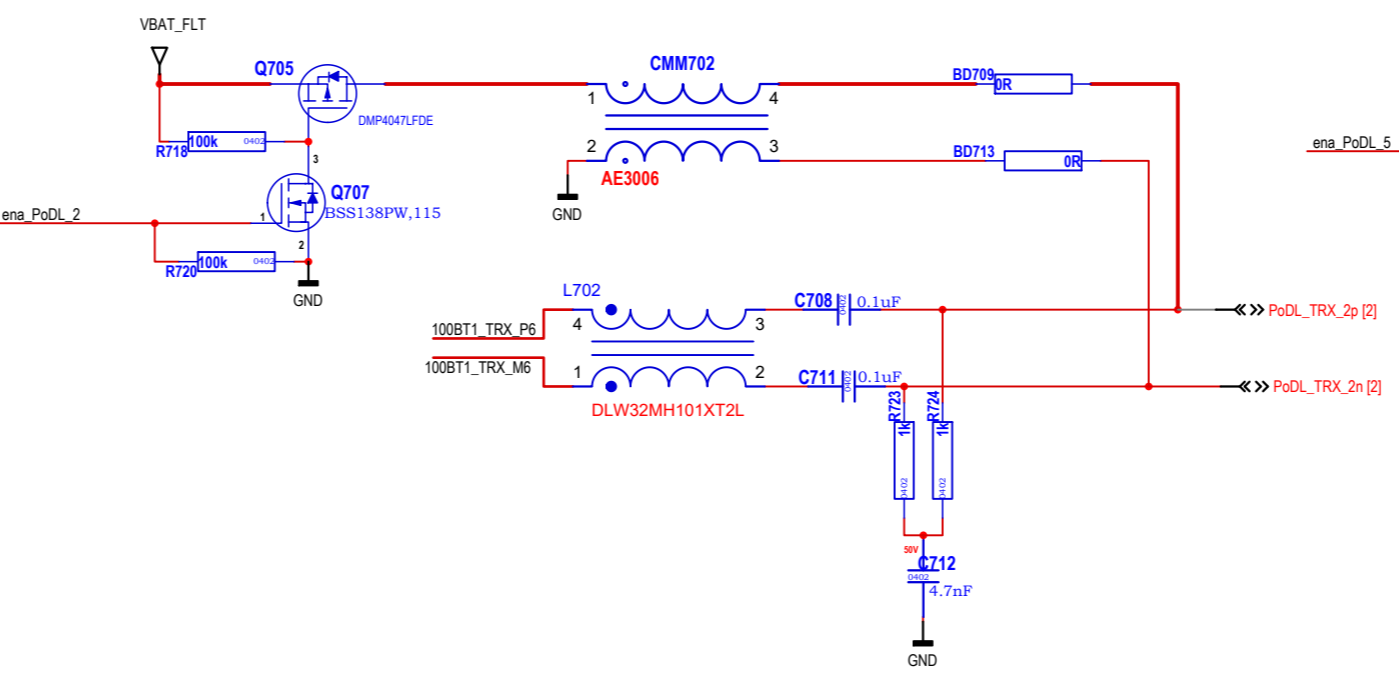
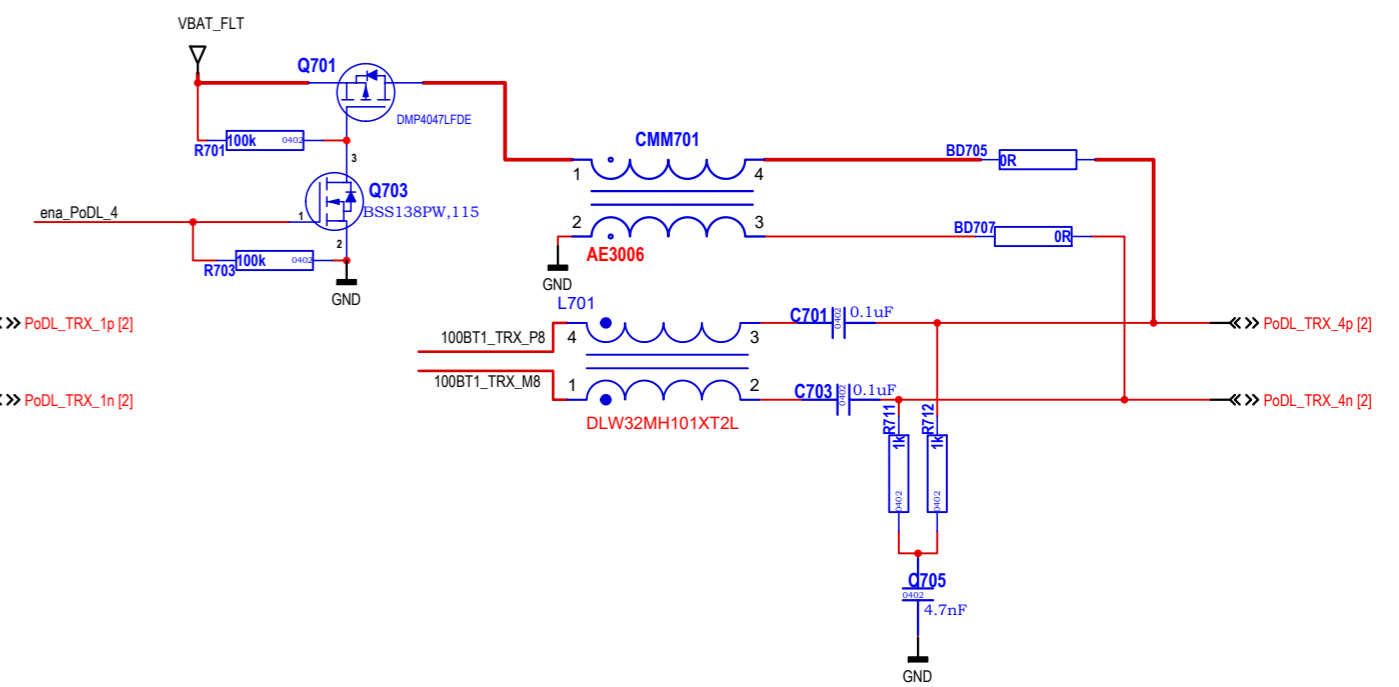
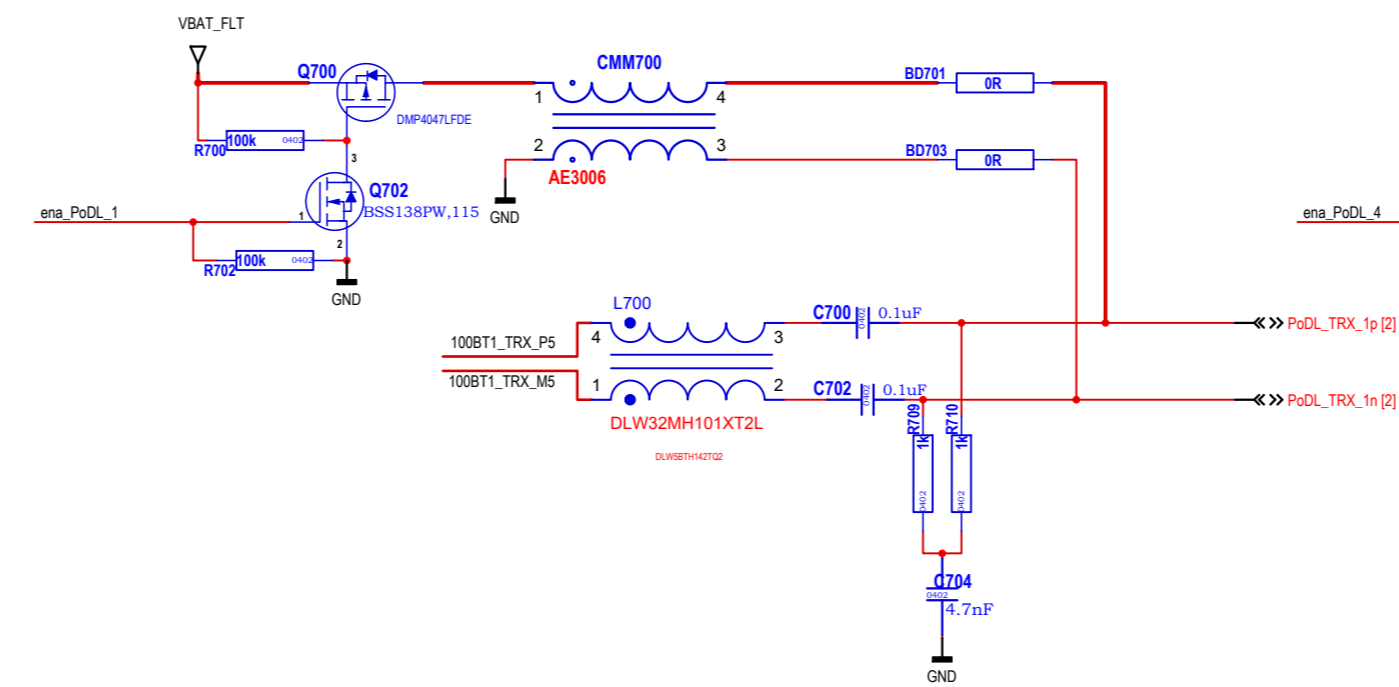
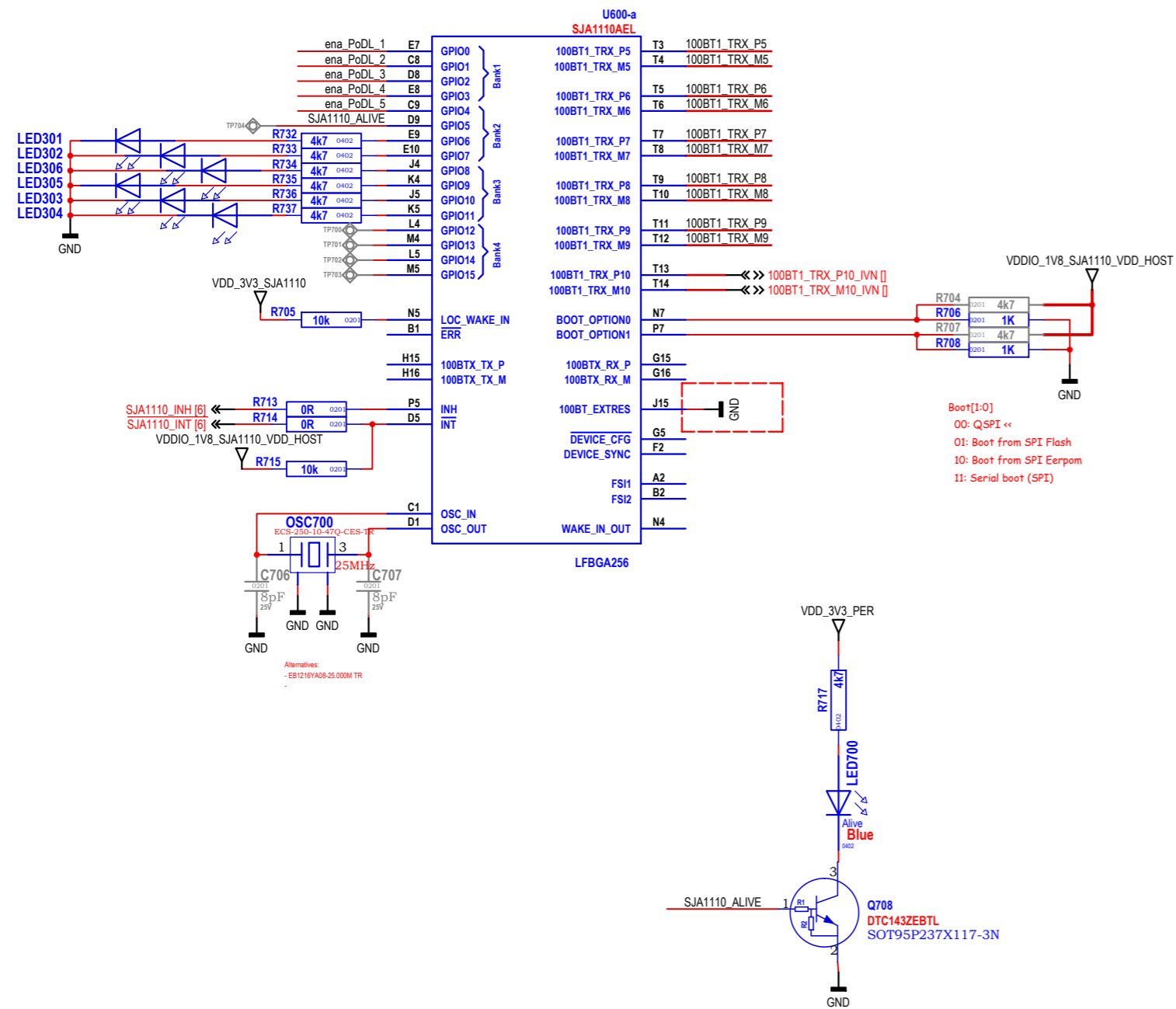
Pin name	RGMII	RMMI	Comment
ENETx_RGMII_TXC	RGMII_TXC	RCLKSSM	RCLKSSM can be an input or an output. It's using different Alternate pin muxing modes. Refer to pin muxing for details.
ENETx_RGMII_TXD0	RGMII_TXD0	RMMI_TXD0	
ENETx_RGMII_TXD1	RGMII_TXD1	RMMI_TXD1	
ENETx_RGMII_TXD2	RGMII_TXD2	N/A	
ENETx_RGMII_TXD3	RGMII_TXD3	N/A	
ENETx_RGMII_RXC	RGMII_RXC	N/A	
ENETx_RGMII_RXD0	RGMII_RXD0	RMMI_RXD0	
ENETx_RGMII_RXD1	RGMII_RXD1	RMMI_RXD1	
ENETx_RGMII_RXD2	RGMII_RXD2	RMMI_RXD2	RMMI_RXD2 is mapped on ALT1 mode of pin muxing.
ENETx_RGMII_RXD3	RGMII_RXD3	N/A	
ENETx_REFCLK_125M_25M	RGMII_REF_CLK	N/A	RGMII_REF_CLK is optional for RGMII operation and dependent on the intended clock configuration.
ENETx_MDIO	RGMII_MDIO	RMMI_MDIO	
ENETx_MDC	RGMII_MDC	RMMI_MDC	



All rights strictly reserved.  
 Reproduction in whole or in part is prohibited without the written consent of the copyright owner.  
 Spectrum Fiftynine

CUSTOMER:	PROJECTNAME:	<b>S592200_A</b>		Revision history	
DATE:	7-3-2022	<b>SJA1110</b>		01	01-02-2022 MB
Design Variant:	DNP			02	07-03-2022 MB
NAME:	M. Broers	<b>smartOBU</b>		SH: 6 of 10	
SPECTRUM FIFTYNINE		Spectrum Fiftynine Middelweg 5a, NL-6554 AH Molenhoek info@spectrumfiftynine.com		PROJECTNR:	<b>S952200</b>
				SIZE:	<b>A3</b>

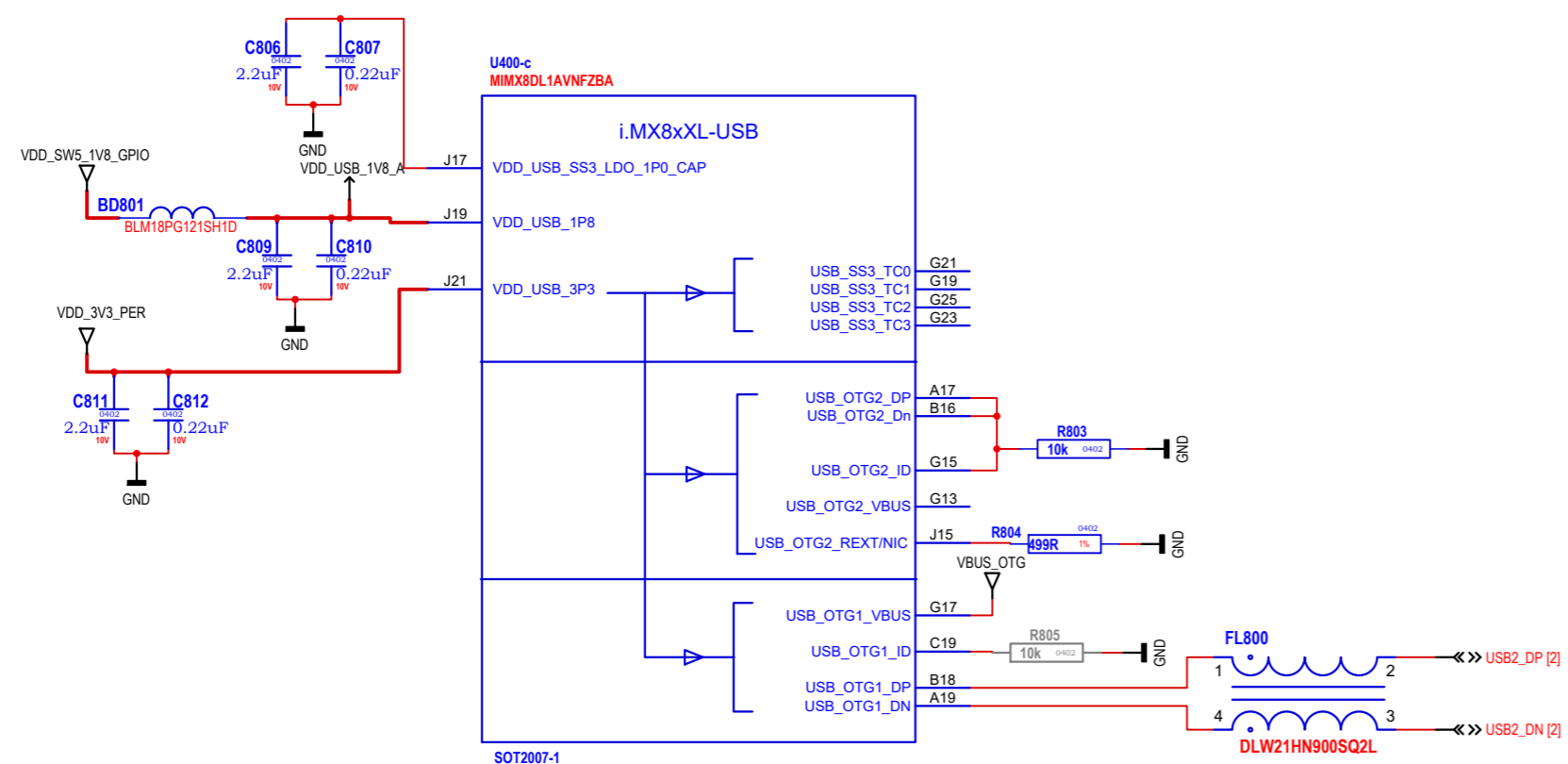
PoDL ports



Alle rechten voorbehouden. Verveelvoudigen of openbaar maken van dit document is niet toegestaan zonder schriftelijke toestemming van de auteursrechtshouder.

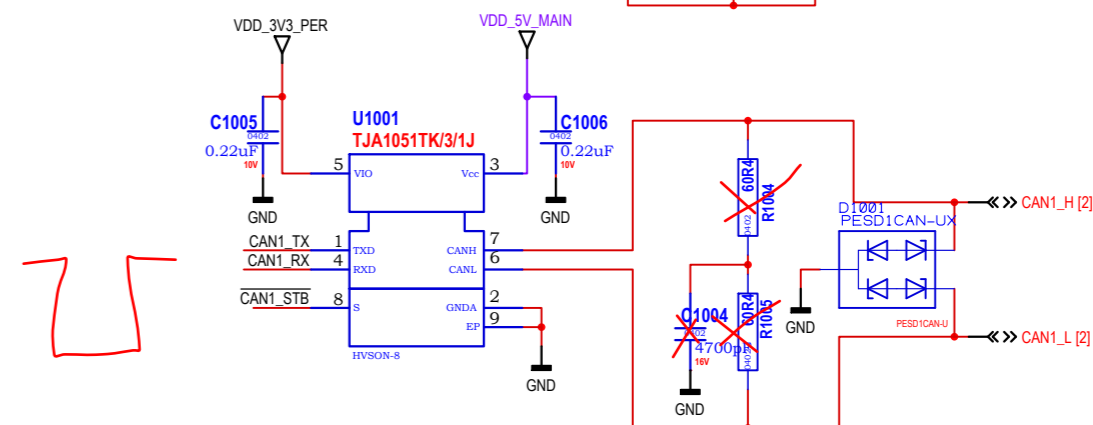
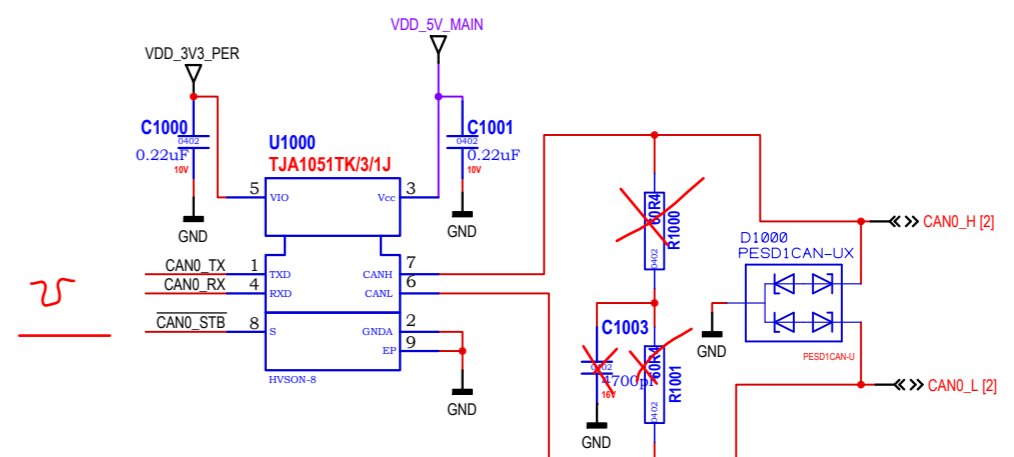
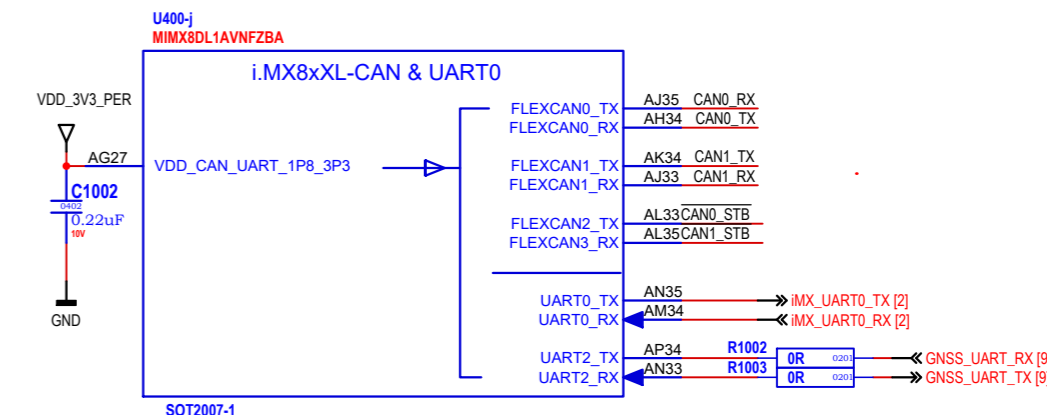
CUSTOMER:	PROJECTNAME:	Revision history	
DATE: 7-3-2022	<b>S592200_A</b>	01	01-02-2022 MB
Design Variant: DNP		02	07-03-2022 MB
NAME: M. Broens	<b>SJA1110-T1</b>		
SPECTRUM FIFTYNINE	smartOBU		
Spectrum Fiftynine Middelweg 5a, NL-6554 AH Molenhoek info@spectrumfiftynine.com	PROJECTNR:	SH: 7 of 10	SIZE
	<b>S952200</b>		<b>A3</b>

## USB DEVICE only

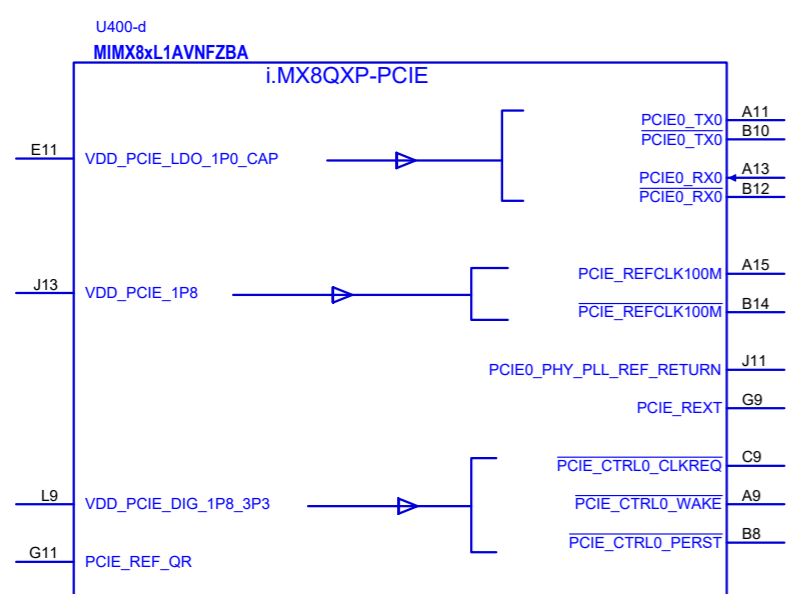


USB ID is connected to GROUND (HOST = 0).  
USB ID is pulled high (DEVICE = 1).

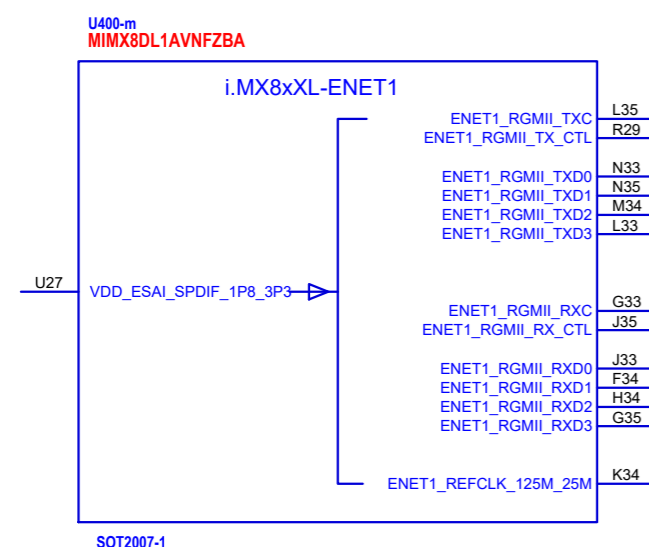
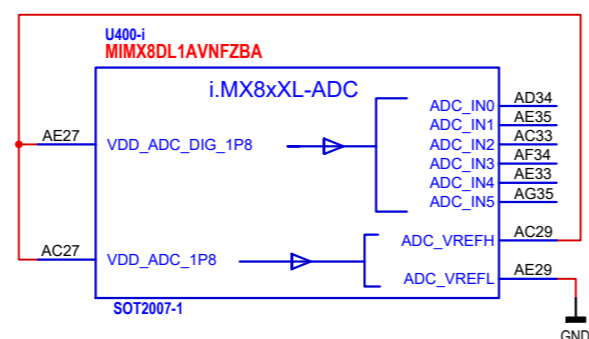
## UART & CAN Interface



## Unused IP



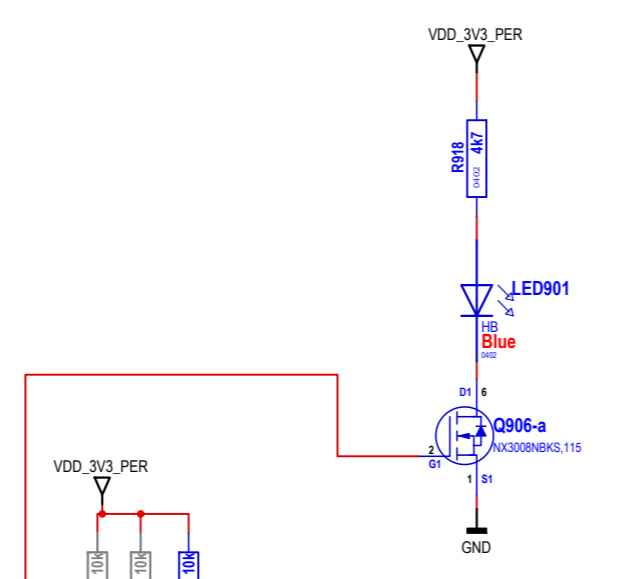
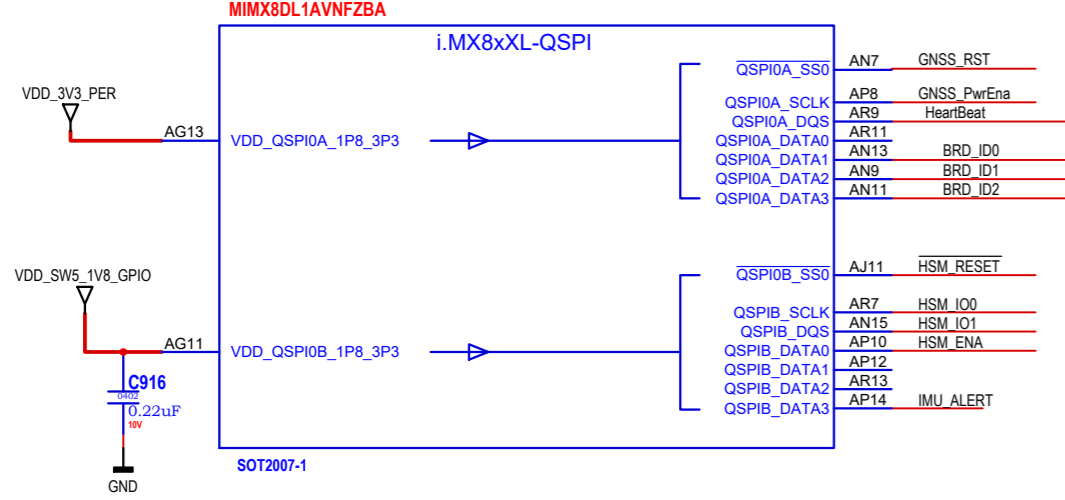
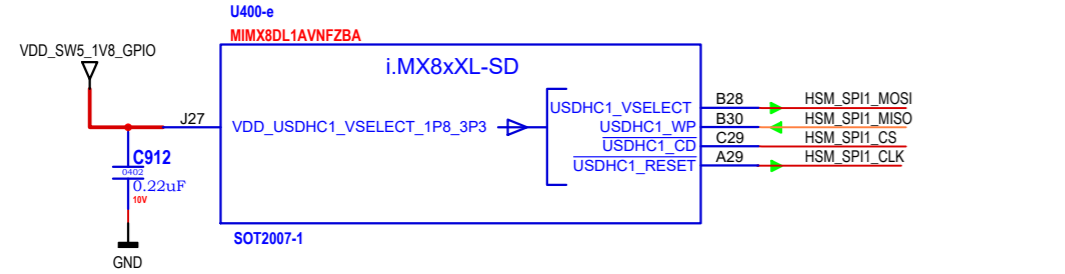
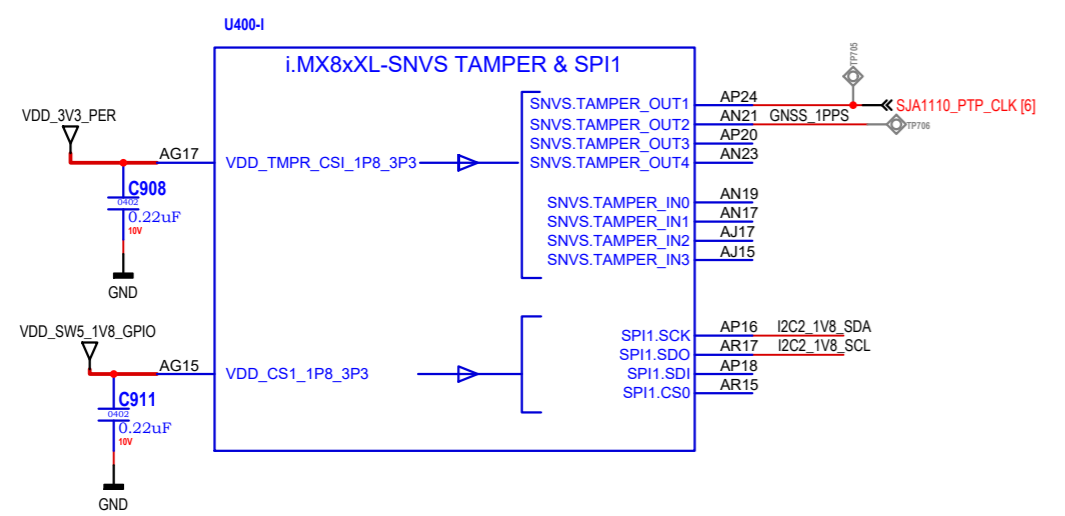
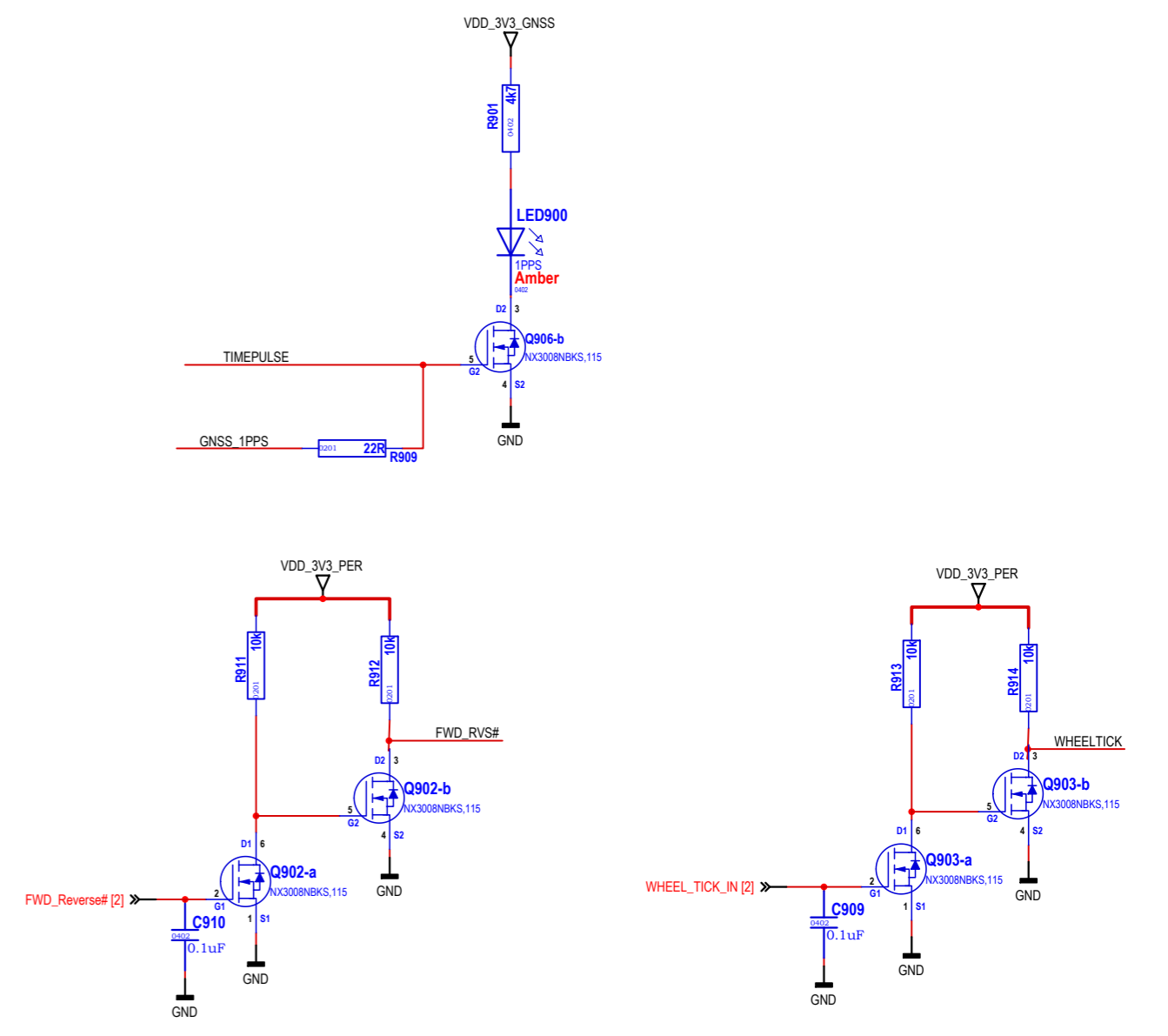
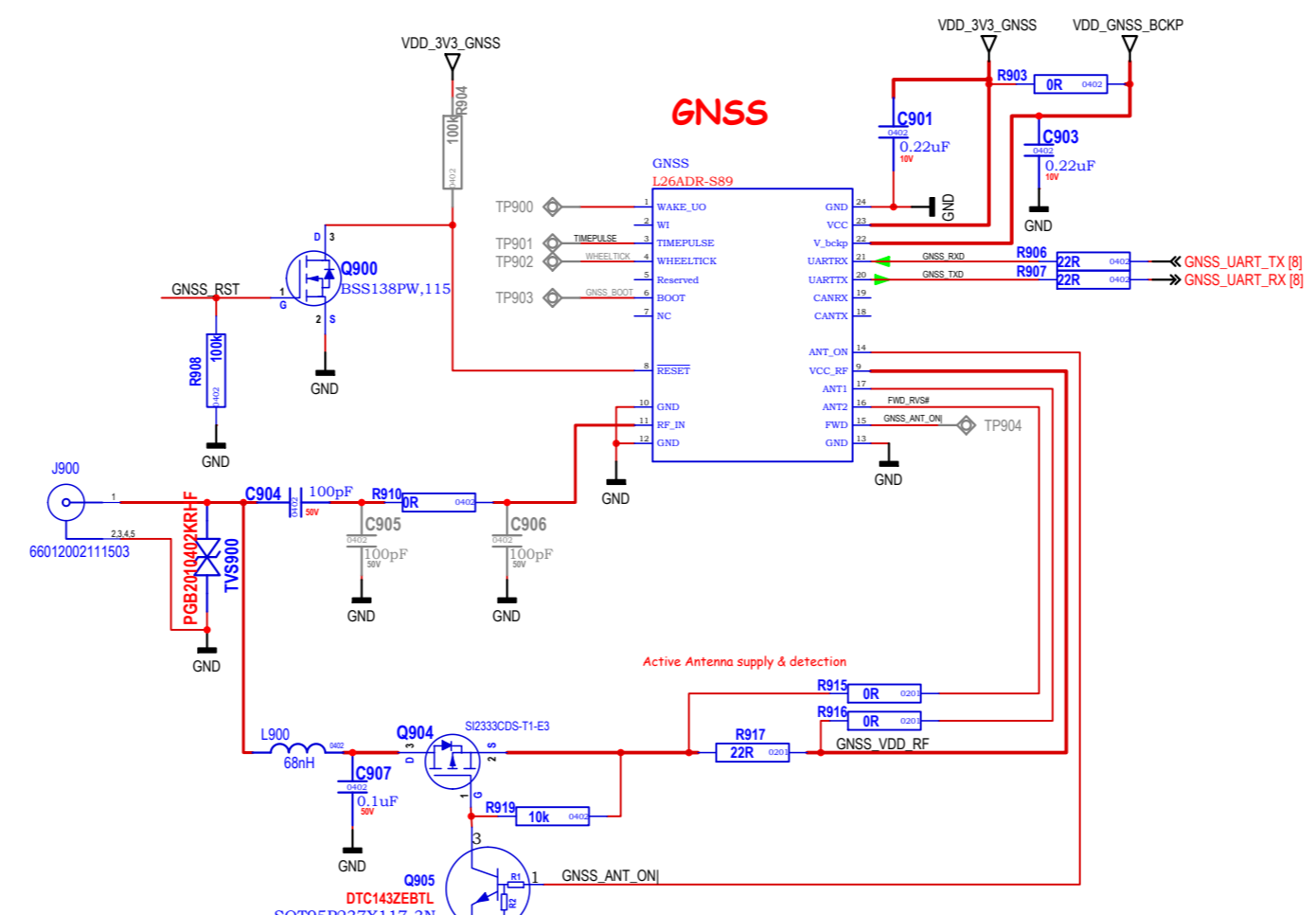
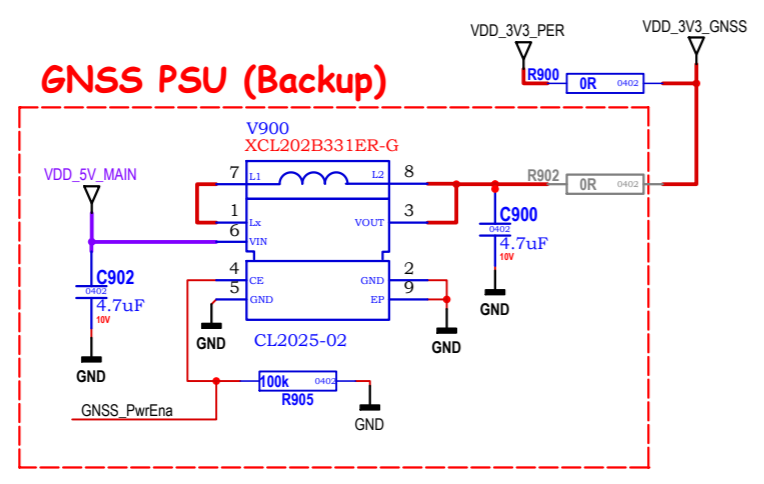
## ADC Interface



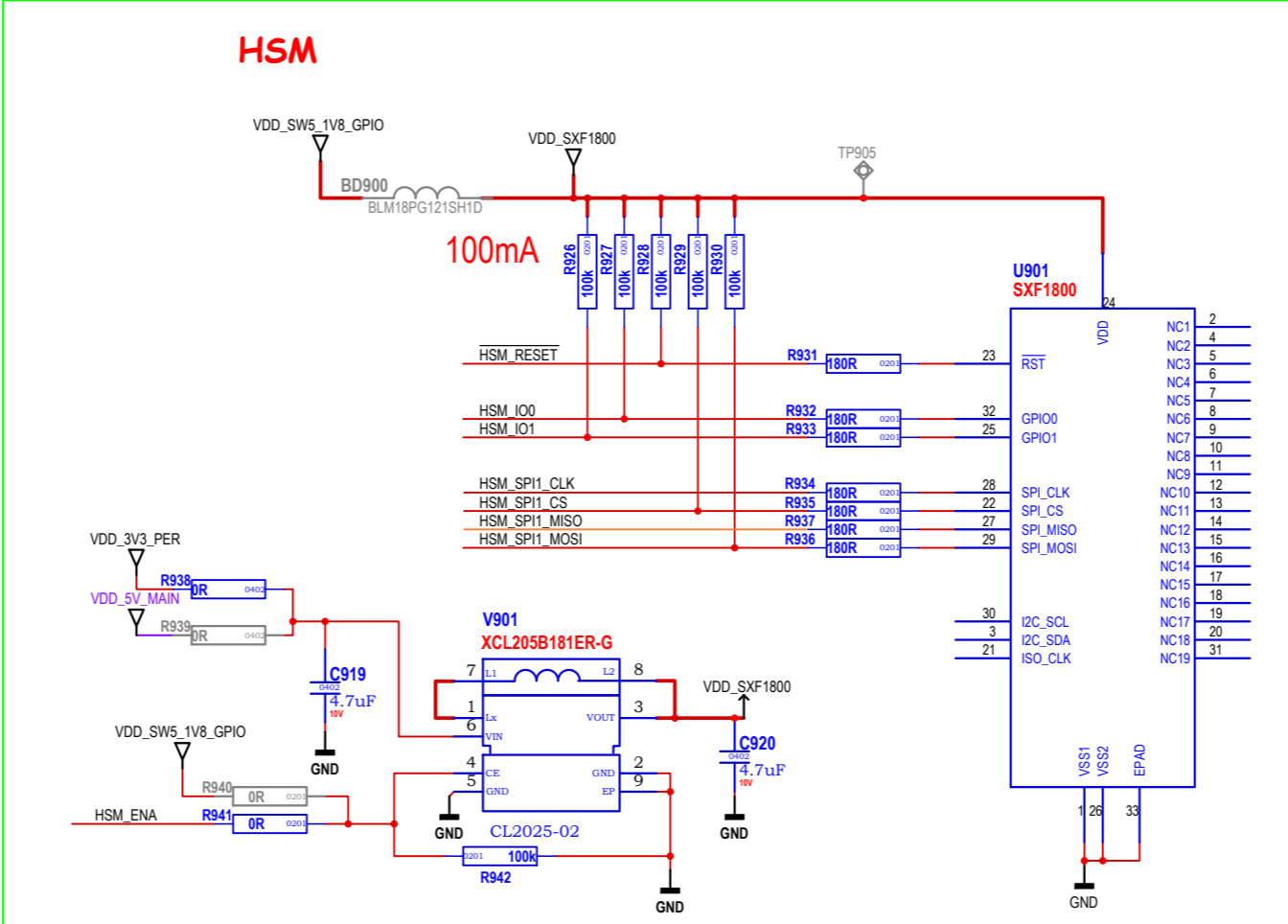
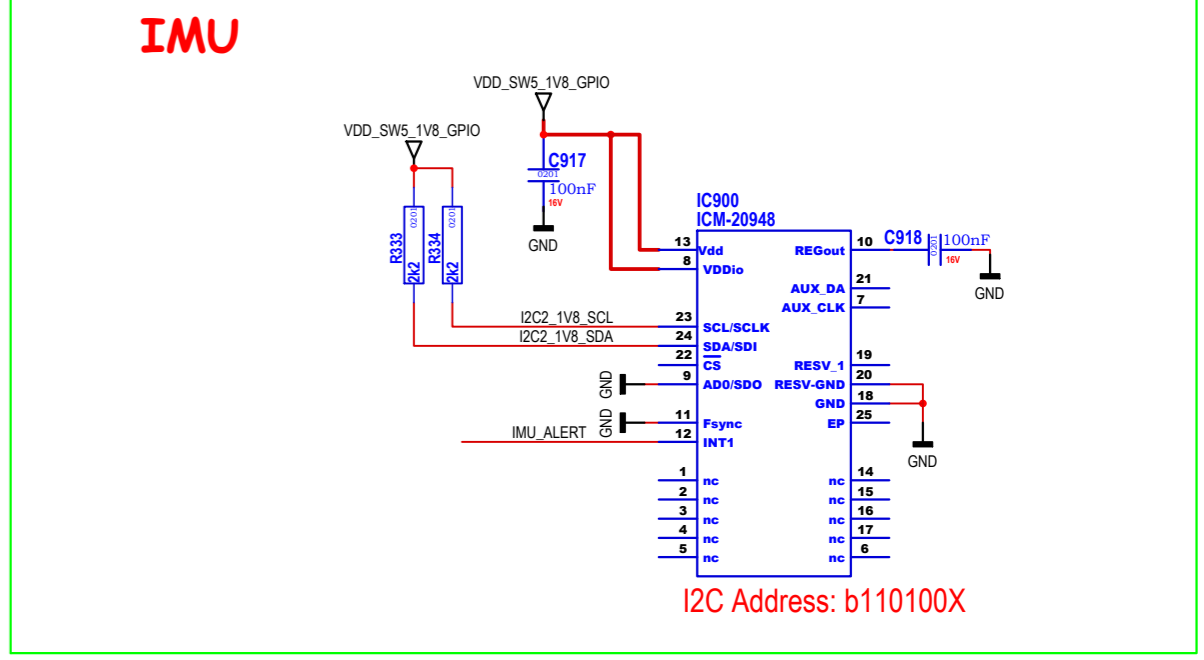
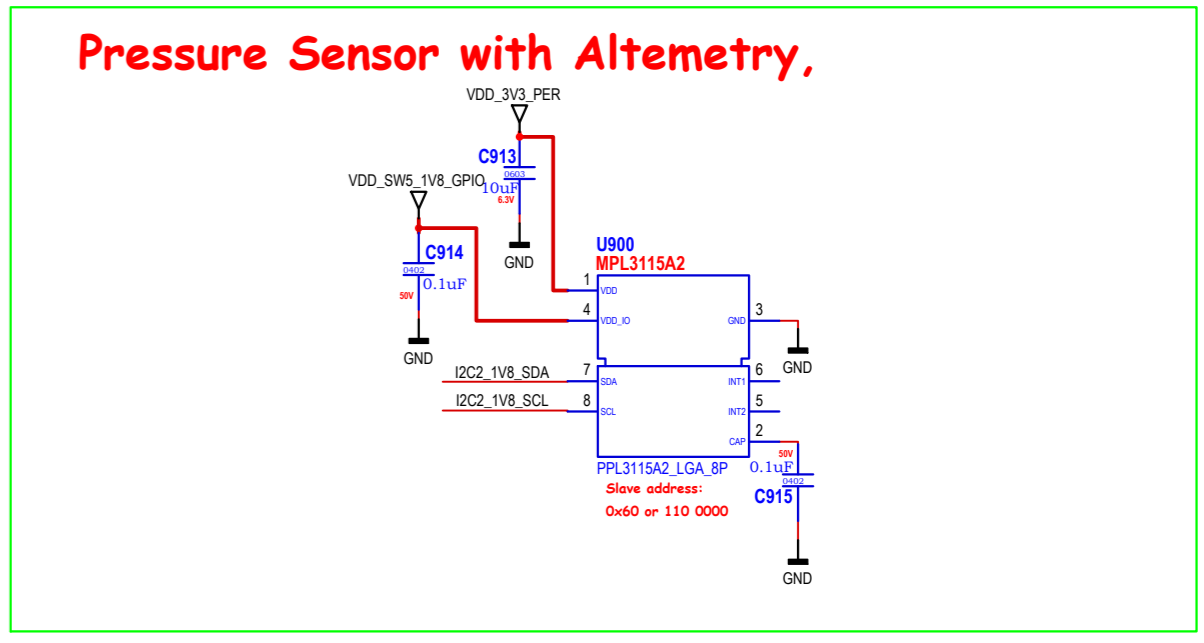
Alle rechten voorbehouden. Verveelvoudiging of openbaarmaking van dit document is niet toegestaan zonder schriftelijke toestemming van de auteursrechtshouder.

CUSTOMER:	PROJECTNAME:	<b>S592200_A</b>		Revision history	
DATE: 7-3-2022	Design Variant:	<b>USB_UART_CAN</b>		01	01-02-2022 MB
	<b>DNP</b>			02	07-03-2022 MB
NAME: <b>M. Broens</b>		<b>smartOBU</b>			
SPECTRUM FIFTYNINE		Spectrum Fiftynine Middelweg 5a, NL-6554 AH Molenhoek info@spectrumfiftynine.com		PROJECTNR:	<b>S952200</b>
				SH: 8	of 10
				SIZE	<b>A3</b>





**Board ID/Variant No.**  
**001: A-Sample**  
**010:**



CUSTOMER:	PROJECTNAME:	<b>S592200_A</b>		Revision history	
DATE: 7-3-2022	Design Variant: <b>DNP</b>	<b>Sensors</b>		01 01-02-2022 MB	02 07-03-2022 MB
NAME: <b>M. Broens</b>	<b>smartOBU</b>		SH: 9 of 10		SIZE
SPECTRUM FIFTYNINE		Spectrum Fiftynine Middelweg 5a, NL-6554 AH Molenhoek info@spectrumfiftynine.com		PROJECTNR:	<b>S952200</b>

Alle rechten voorbehouden. Verkeuring  
 of openbaarmaking geheel of gedeeltelijk  
 is niet toegestaan zonder schriftelijke  
 toestemming van de auteursrechtshouder.  
 Spectrum Fiftynine