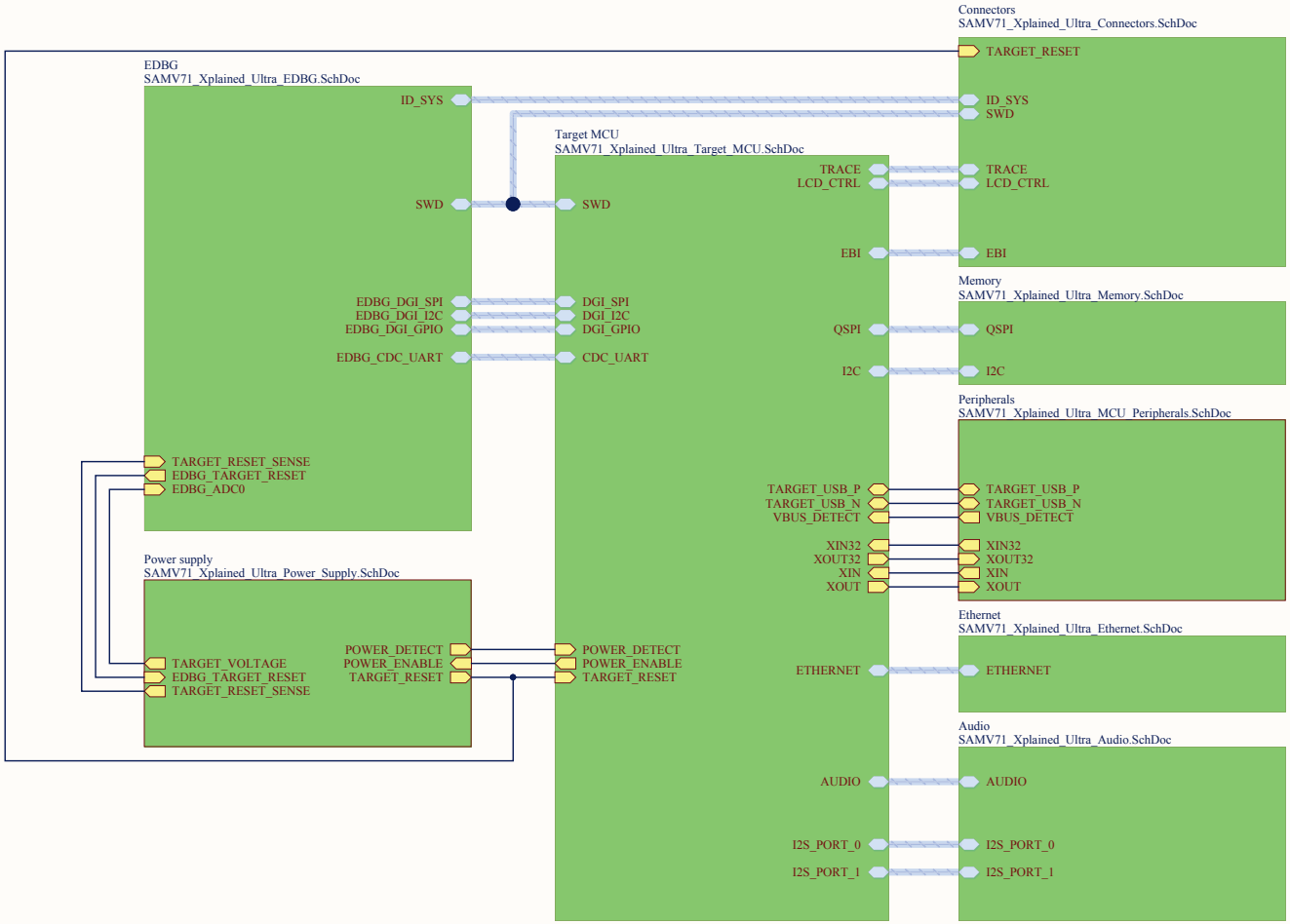
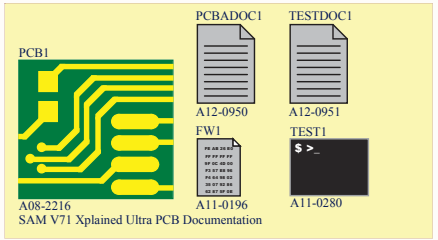
SAM V71 Xplained ULTRA



LABEL1

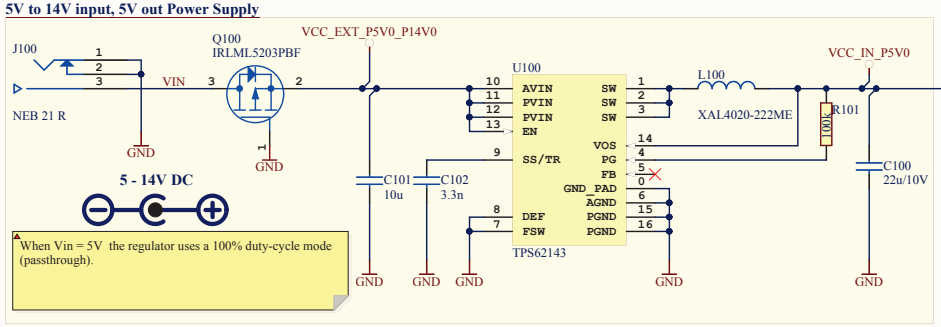
Product number/revision
Serial number

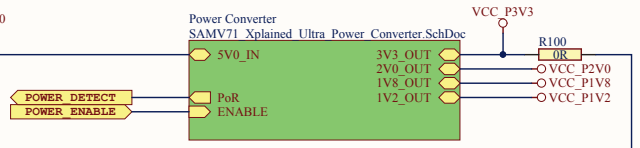
PCBA Label



ATMEL Norway	*		Atmel Enabling Unlimited Possibilities
Vestre Rosten 79	*		
N-7075 TILLER	*		
NORWAY			
Date:	09.08.2017	19:36:42	PAGE: 1 of 10
Document number:	A09-2407		Revision: 3
TITLE: Top Level Schematics			
SAMV71_Xplained_Ultra_TopLevel.SchDoc			

5V to 14V input, 5V out Power Supply





Power inputs to SAM V71 Xplained Ultra:
VCC_EXT_P5V0_P14V0:
2.1mm power jack with positive center. This voltage is used to generate VCC_EXT_P5V0, the regulator supports 5V to 17V input voltage.

VCC_EXT_P5V0:
This power input can be used to power the whole board and it has a higher priority as the USB power inputs.

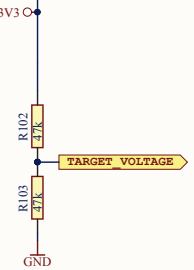
VCC_EDBG_USB_P5V0:
EDBG USB power input. This supply is used when VCC_EXT_P5V0 is not present.

VCC_TARGET_USB_P5V0:
Target MCU USB power input. It is used to power the whole board when no other 5V power supply is present.

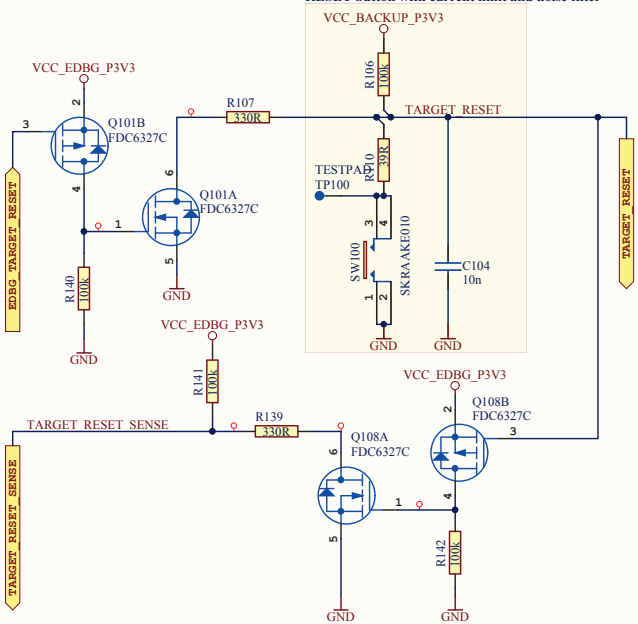
Other voltages:
VCC_P5V0:
This supply is connected to either VCC_EXT_P5V0, VCC_EDBG_USB_P5V0 or VCC_TARGET_USB_P5V0, based on the availability and priority ot these supplies.

VCC_P3V3: Regulated 3.3V from VCC_P5V0
VCC_P2V0: Regulatred 2.0V from VCC_P5V0
VCC_P1V8: Regulated 1.8V from VCC_P5V0
VCC_P1V2: Regulatred 1.2V from VCC_P5V0

VCC_TARGET_P3V3: Target supply voltage (target MCU, peripherals, connectors)
VCC_BACKUP_P3V3: Powers target MCU, can be supplied from either VCC_TARGET_P3V3.



RESET button with current limit and noise filter



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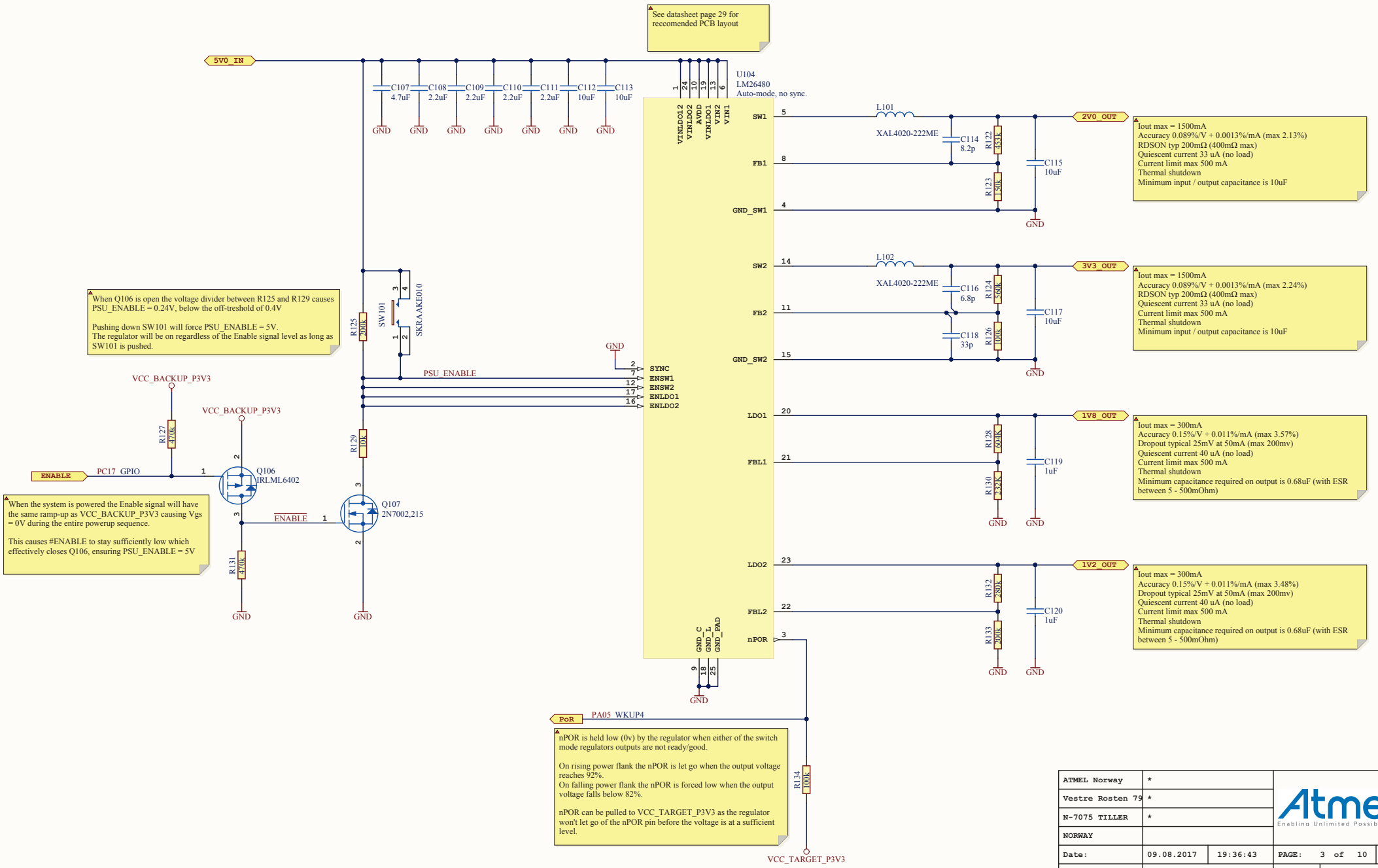
NORWAY			
Date:	09.08.2017	19:36:42	PAGE: 2 of 10
Document number:	A09-2407		Revision 3
TITLE: Power supply			
SAMV71_Xplained_Ultra_Power_Supply.SchDoc			



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NORWAY			
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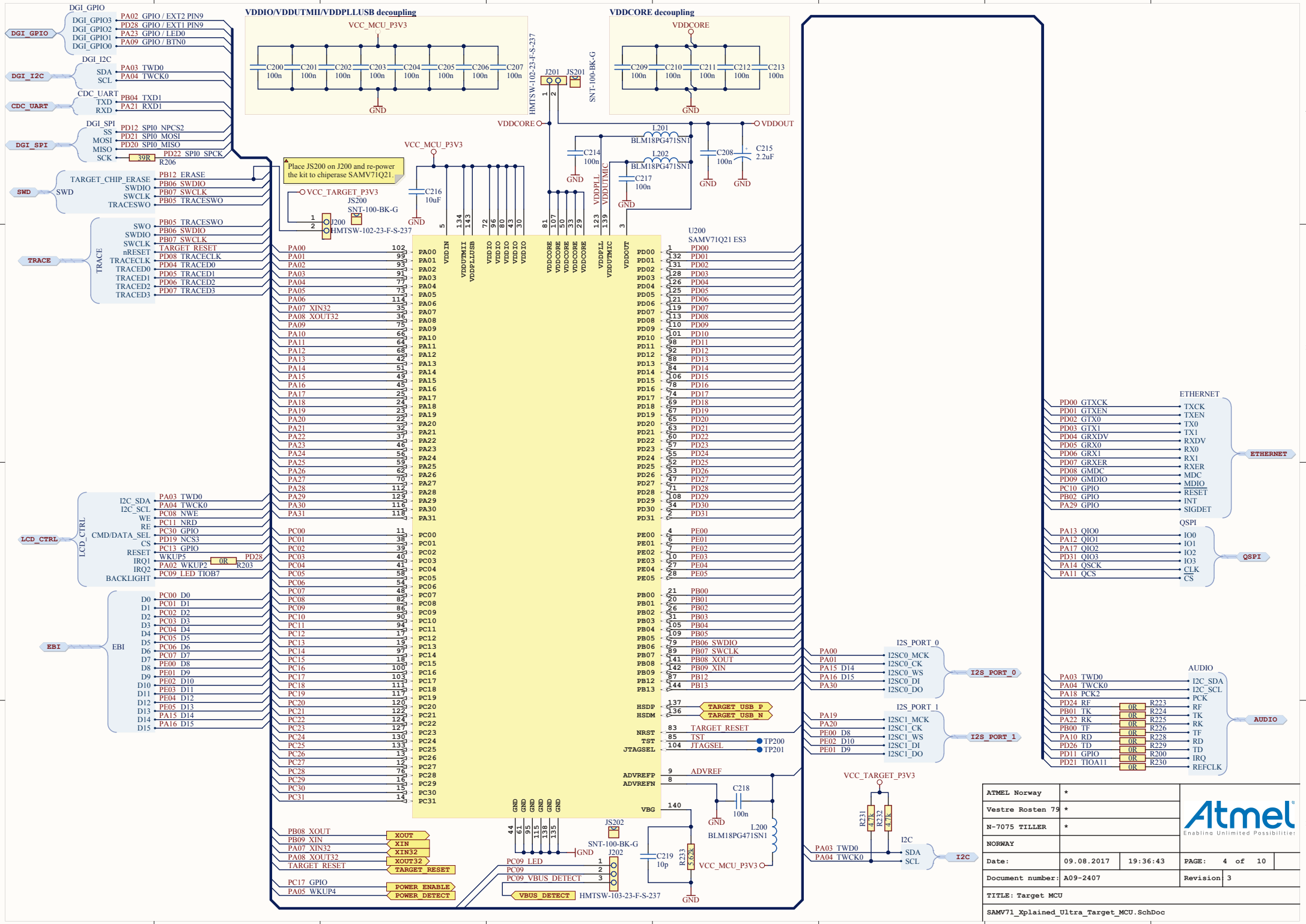
Document number:	A09-2407		Revision: 3
TITLE: Power Converter			
SAMV71_Xplained_Ultra_Power_Converter.SchDoc			


VDDIO/VDDUTMII/VDDPLLUSB decoupling
VDDCORE decoupling
VCC_MCU_P3V3
VDDCORE
VDDOUT
GND
U200
SAMV71Q21 ES3
Place JS200 on J200 and re-power the kit to chiperase SAMV71Q21.
VCC_TARGET_P3V3
DGI_GPIO
DGI_I2C
CDC_UART
DGI_SPI
SWD
TRACE
LCD_CTRL
EBI
ETHERNET
QSPI
AUDIO
I2S_PORT_0
I2S_PORT_1
I2C
TARGET_USB_P
TARGET_USB_N
TARGET_RESET
XOUT
XIN
XIN32
XOUT32
POWER_ENABLE
POWER_DETECT
VBUS_DETECT
ATMEL Norway
Vestre Rosten 79
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Date: 09.08.2017 19:36:43
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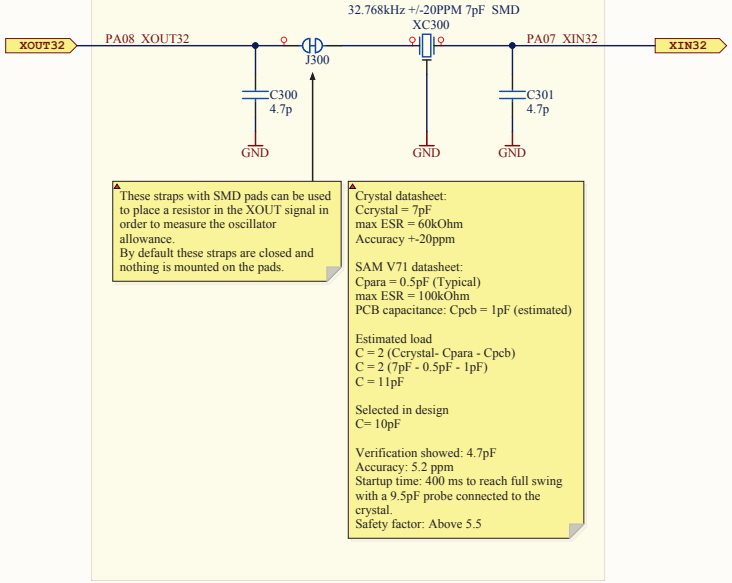
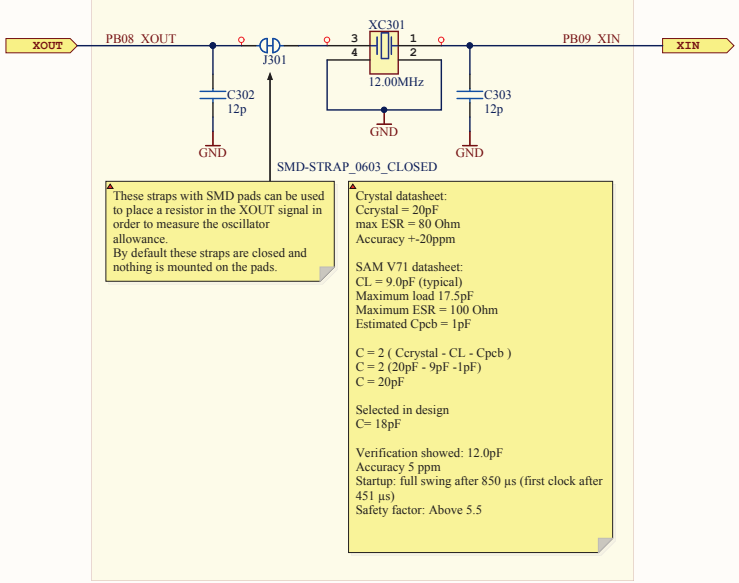
Document number: A09-2407
Revision 3
TITLE: Target MCU
SAMV71_Xplained_Ultra_Target_MCU.SchDoc

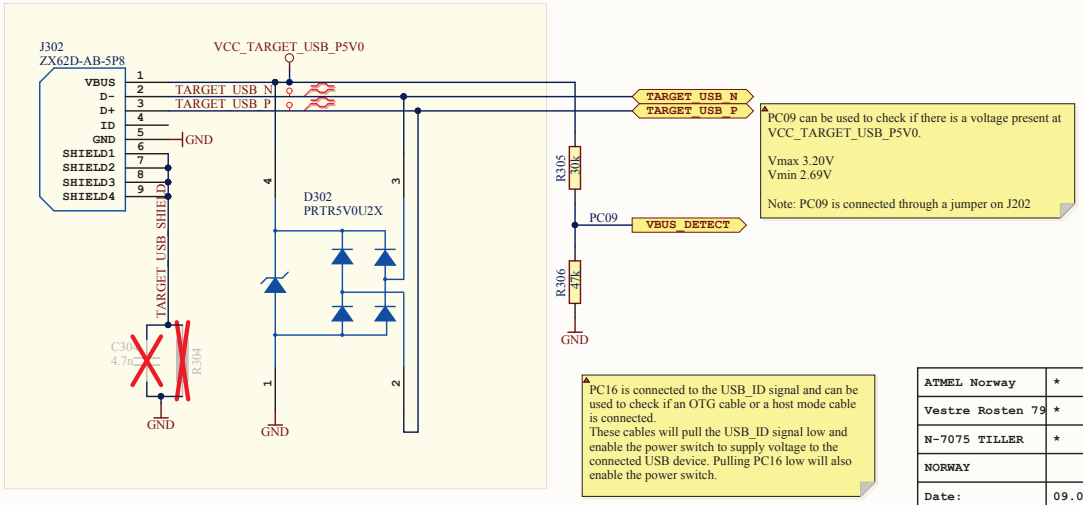
32.768 kHz Crystal



12 MHz Crystal



TARGET USB



Since you do not plan to use USB HOST I removed USB ID parts
Also, since we removed power multiplexer, VCC_TARGET_USB_P5V0 - can not be used for board supply

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NORWAY			
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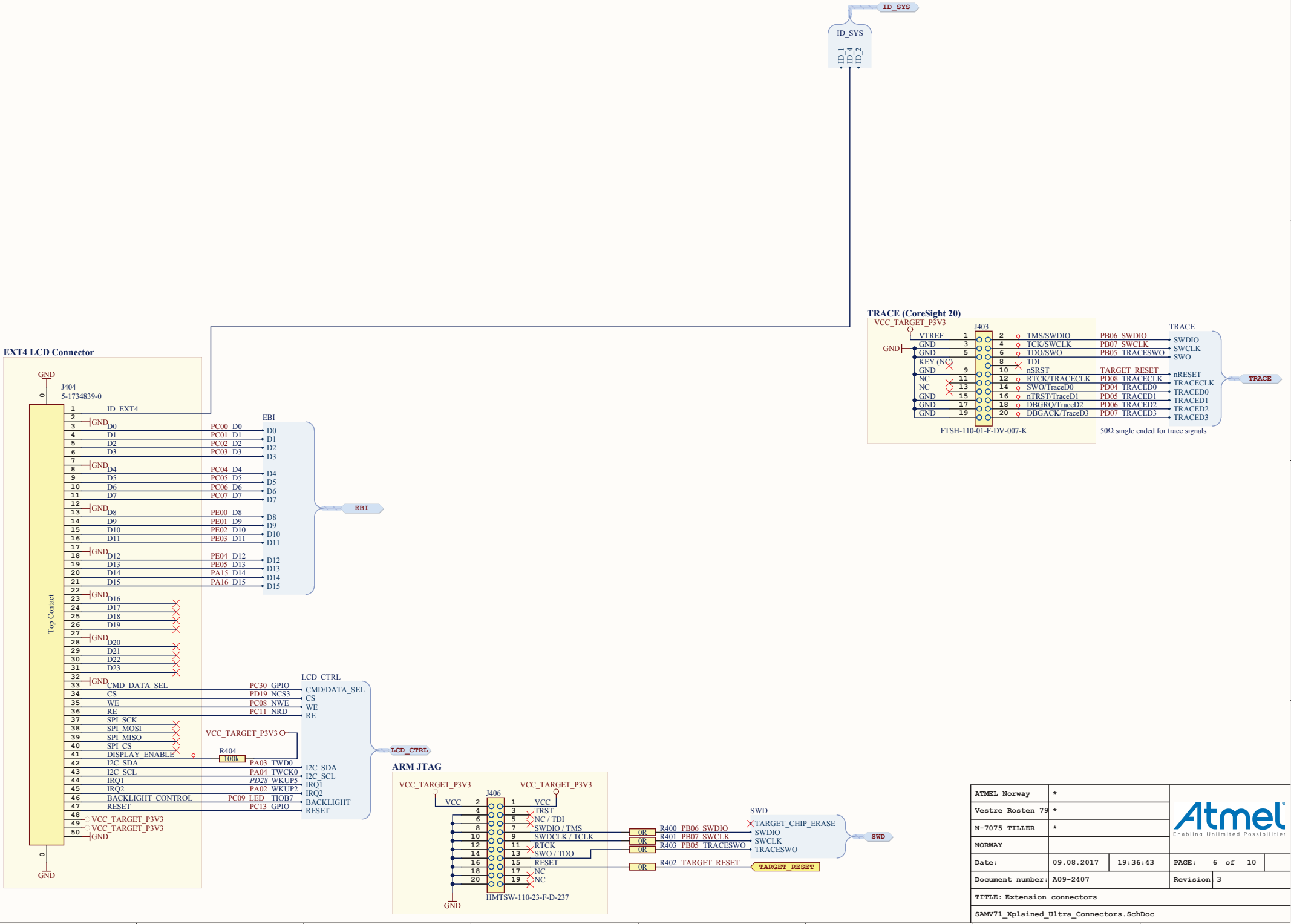
Document number:	A09-2407		Revision: 3
TITLE: Target MCU Peripherals			
SAMV71_Xplained_Ultra_MCU_Peripherals.SchDoc			



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Vestre Rosten 79	*		
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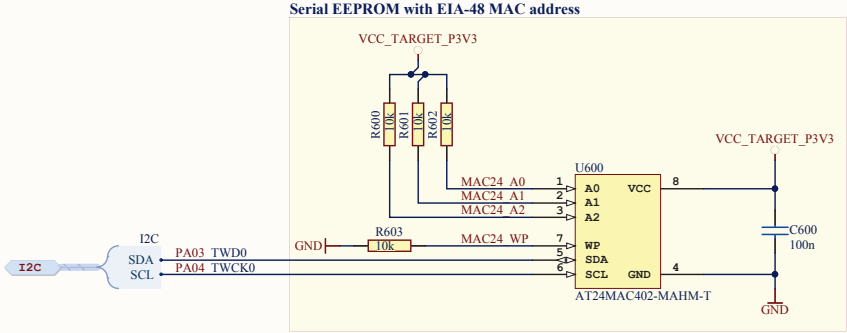
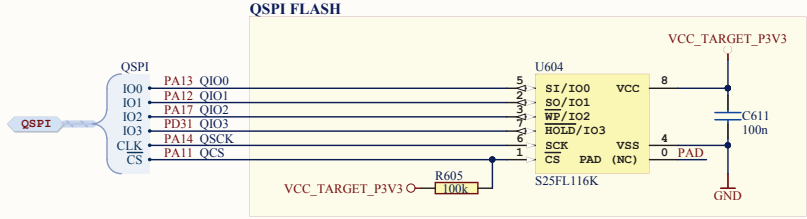
NORWAY			
Date:	09.08.2017	19:36:43	PAGE: 6 of 10
Document number:	A09-2407		Revision: 3
TITLE: Extension connectors			
SAMV71_Xplained_Ultra_Connectors.SchDoc			

Serial EEPROM with EIA-48 MAC address



QSPI FLASH



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Vestre Rosten 79	*		
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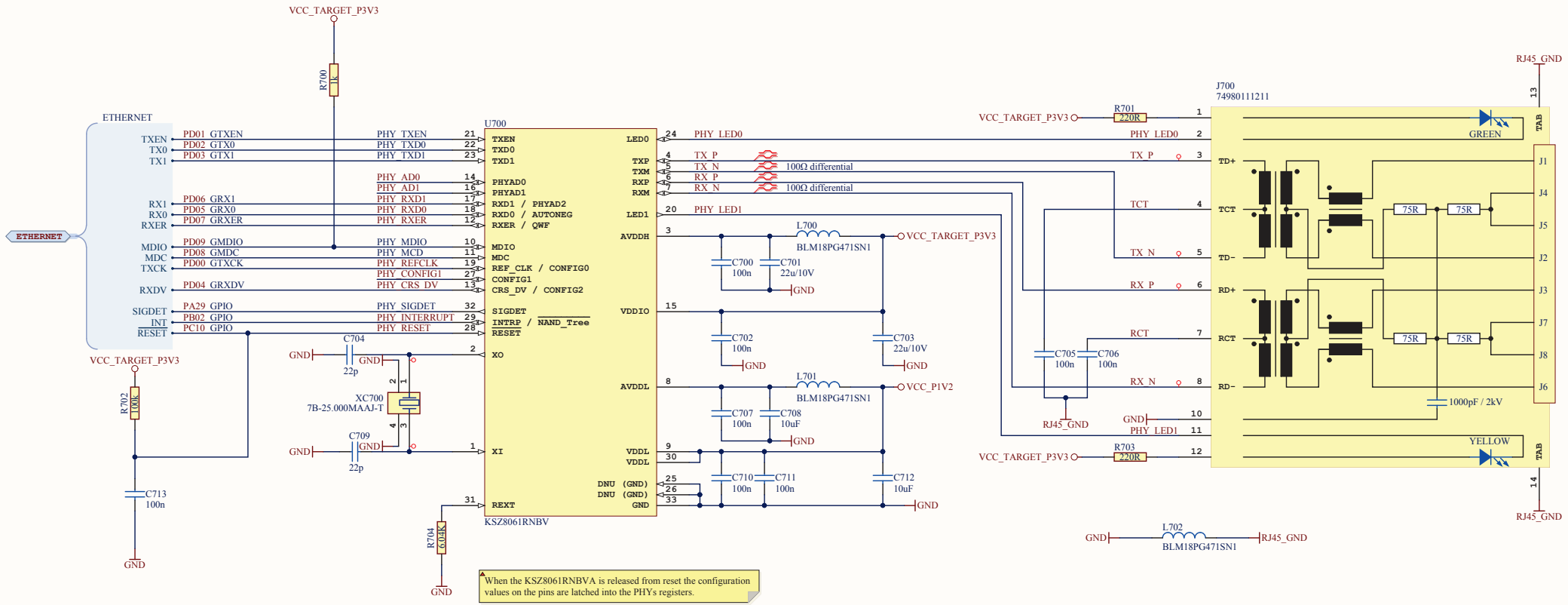
NORWAY			
Date:	09.08.2017	19:36:43	PAGE: 7 of 10
Document number:	A09-2407		Revision: 3
TITLE: Memory			
SAMV71_Xplained_Ultra_Memory.SchDoc			



PHYAD[2:0] is used to set the PHYs address:
001 (default on board)
010
....
110
111

CONFIG[2:0] is used to select operation mode.
001 = RMII normal, MDI/MDI-X disabled
101 = RMII back to back
111 = RMII normal MDI/MDI-X enabled

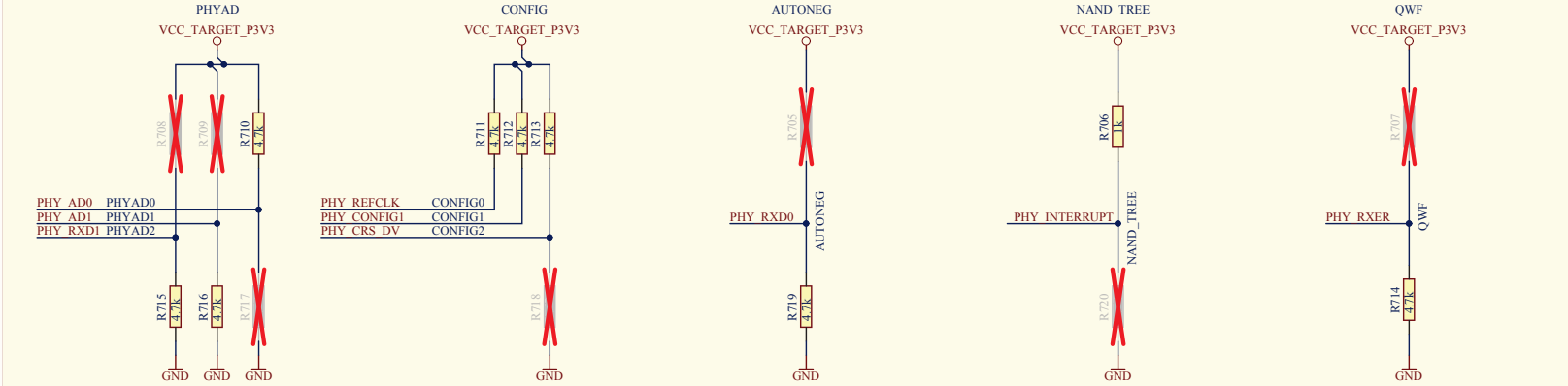
Not configurable on board as back to back

AUTONEG is used to select if auto negotiation of link speed should be enabled.
1 = disable Auto-Negotiation
0 = enable Auto-Negotiation (default on board)

NAND_TREE enables a test mode for all pins connected to the SAMV71Q21.
1 = Disable NAND_TREE (default on board)
0 = Enable NAND_TREE

QWF is used to enable/disable Quiet-WIRE Filtering
1 = Disale Quiet-WIRE Filtering
0 = Enable Quiet-WIRE Filtering (defaul on board)

PHY Configuration



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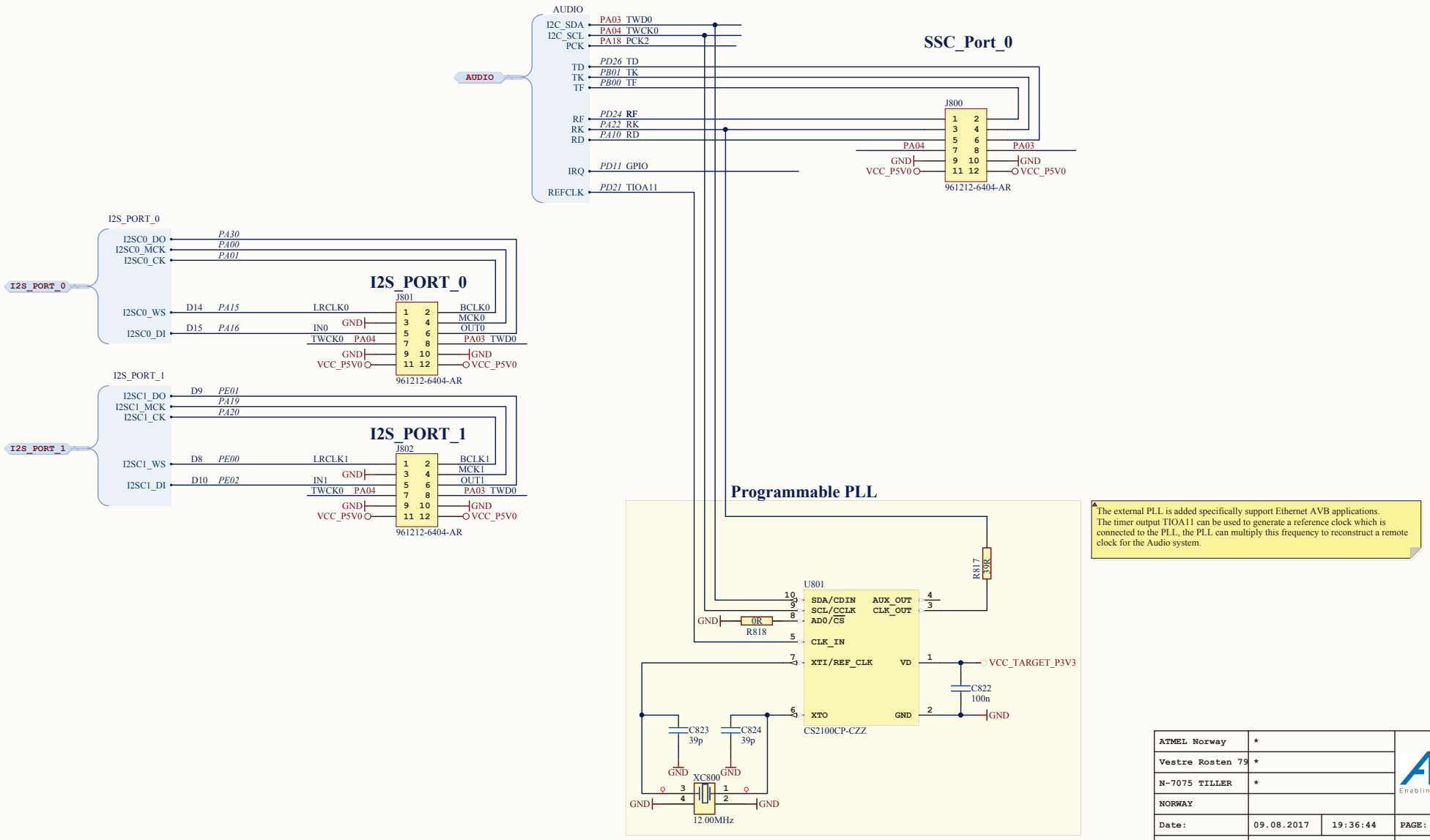
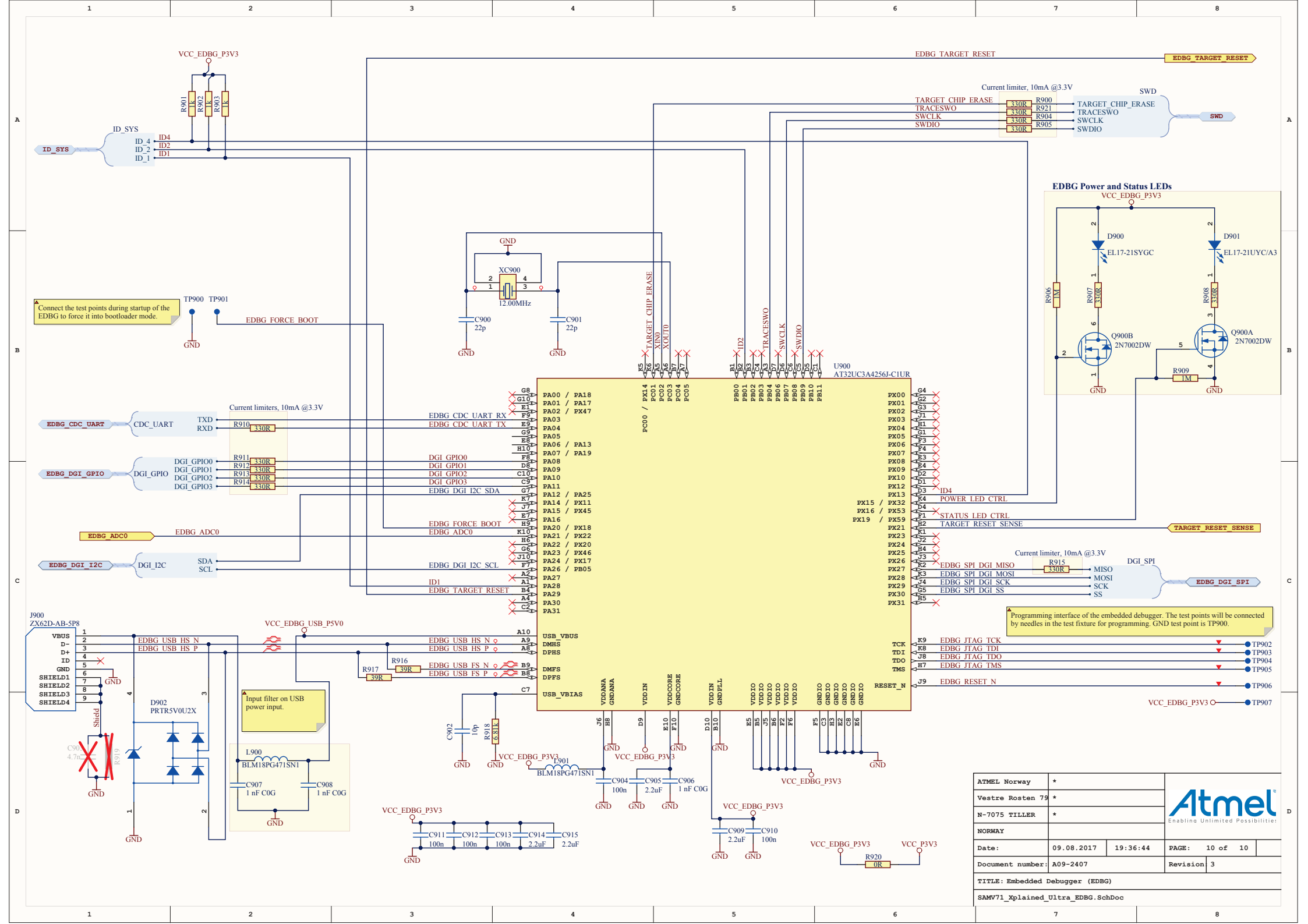
NORWAY			
Date:	09.08.2017	19:36:44	PAGE: 8 of 10
Document number:	A09-2407		Revision 3
TITLE: Ethernet			
SAMV71_Xplained_Ultra_Ethernet.SchDoc			



ATMEL Norway	*		
Vestre Rosten 79	*		
N-7075 TILLER	*		
NORWAY			
Date:	09.08.2017	19:36:44	PAGE: 9 of 10
Document number:	A09-2407		Revision: 3
TITLE: Audio			
SAMV71_Xplained_Ultra_Audio.SchDoc			


VCC_EDBG_P3V3
R901 1k
R902 1k
R903 1k
ID_SYS
ID_SYS
ID_4
ID_2
ID_1
ID4
ID2
ID1
EDBG_TARGET_RESET
EDBG_TARGET_RESET
Current limiter, 10mA @3.3V
TARGET_CHIP_ERASE
TRACESWO
SWCLK
SWDIO
R900 330R
R921 330R
R904 330R
R905 330R
SWD
TARGET_CHIP_ERASE
TRACESWO
SWCLK
SWDIO
SWD
EDBG Power and Status LEDs
VCC_EDBG_P3V3
D900
EL17-21SYGC
D901
EL17-21UYC/A3
R906 1M
R907 330R
R908 330R
Q900B 2N7002DW
Q900A 2N7002DW
R909 1M
GND
Connect the test points during startup of the EDBG to force it into bootloader mode.
TP900
TP901
EDBG_FORCE_BOOT
GND
GND
XC900
12.00MHz
C900 22p
C901 22p
GND
GND
TARGET_CHIP_ERASE
XIN0
XOUT0
ID2
TRACESWO
SWCLK
SWDIO
U900
AT32UC3A4256J-C1UR
PA00 / PA18
PA01 / PA17
PA02 / PX47
PA03
PA04
PA05
PA06 / PA13
PA07 / PA19
PA08
PA09
PA10
PA11
PA12 / PA25
PA14 / PX11
PA15 / PX45
PA16
PA20 / PX18
PA21 / PX22
PA22 / PX20
PA23 / PX46
PA24 / PX17
PA26 / PB05
PA27
PA28
PA29
PA30
PA31
PC00 / PX14
PC01
PC02
PC03
PC04
PC05
PB00
PB01
PB02
PB03
PB04
PB06
PB07
PB08
PB09
PB10
PB11
PX00
PX01
PX02
PX03
PX04
PX05
PX06
PX07
PX08
PX09
PX10
PX12
PX13
PX15 / PX32
PX16 / PX53
PX19 / PX59
PX21
PX23
PX24
PX25
PX26
PX27
PX28
PX29
PX30
PX31
USB_VBUS
DMHS
DPHS
DMFS
DPFS
USB_VBIAS
VDDANA
GNDANA
VDDIN
VDDCORE
GNDCORE
VDDIN
GNDPLL
VDDIO
GNDIO
RESET_N
TCK
TDI
TDO
TMS
ID4
POWER_LED_CTRL
STATUS_LED_CTRL
TARGET_RESET_SENSE
EDBG_SPI_DGI_MISO
EDBG_SPI_DGI_MOSI
EDBG_SPI_DGI_SCK
EDBG_SPI_DGI_SS
EDBG_JTAG_TCK
EDBG_JTAG_TDI
EDBG_JTAG_TDO
EDBG_JTAG_TMS
EDBG_RESET_N
Current limiters, 10mA @3.3V
EDBG_CDC_UART
CDC_UART
TXD
RXD
R910 330R
EDBG_CDC_UART_RX
EDBG_CDC_UART_TX
EDBG_DGI_GPIO
DGI_GPIO
DGI_GPIO0
DGI_GPIO1
DGI_GPIO2
DGI_GPIO3
R911 330R
R912 330R
R913 330R
R914 330R
DGI_GPIO0
DGI_GPIO1
DGI_GPIO2
DGI_GPIO3
EDBG_DGI_I2C_SDA
EDBG_ADC0
EDBG_ADC0
EDBG_DGI_I2C
DGI_I2C
SDA
SCL
EDBG_DGI_I2C_SCL
EDBG_FORCE_BOOT
EDBG_ADC0
ID1
EDBG_TARGET_RESET
Current limiter, 10mA @3.3V
R915 330R
DGI_SPI
MISO
MOSI
SCK
SS
EDBG_DGI_SPI
Programming interface of the embedded debugger. The test points will be connected by needles in the test fixture for programming. GND test point is TP900.
TP902
TP903
TP904
TP905
TP906
TP907
VCC_EDBG_P3V3
J900
ZX62D-AB-5P8
VBUS
D-
D+
ID
GND
SHIELD1
SHIELD2
SHIELD3
SHIELD4
Shield
EDBG_USB_HS_N
EDBG_USB_HS_P
VCC_EDBG_USB_P5V0
EDBG_USB_HS_N
EDBG_USB_HS_P
EDBG_USB_FS_N
EDBG_USB_FS_P
R916 39R
R917 39R
D902
PRTR5V0U2X
Input filter on USB power input.
L900
BLM18PG471SN1
C907 1 nF C0G
C908 1 nF C0G
C902 10p
R918 6.81k
L901
BLM18PG471SN1
C904 100n
C905 2.2uF
C906 1 nF C0G
C909 2.2uF
C910 100n
C911 100n
C912 100n
C913 100n
C914 2.2uF
C915 2.2uF
R920 0R
VCC_P3V3
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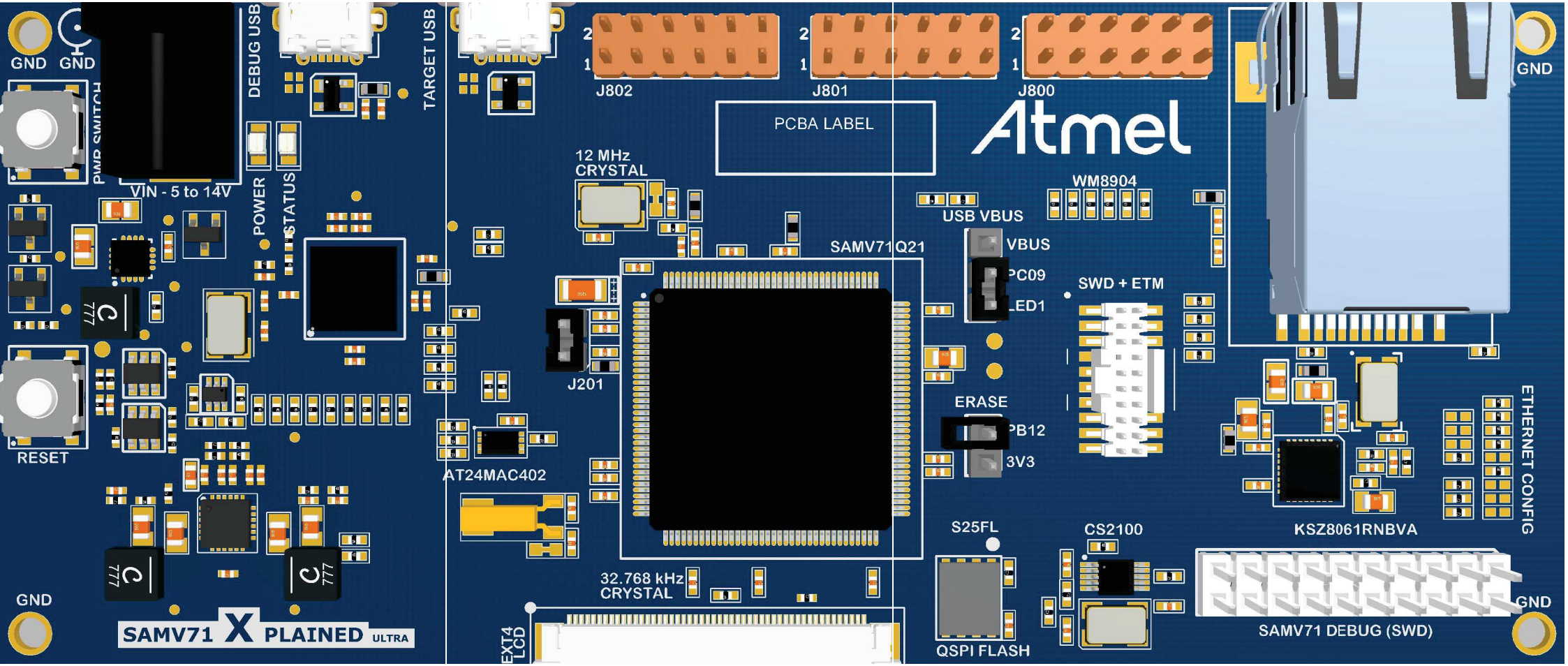
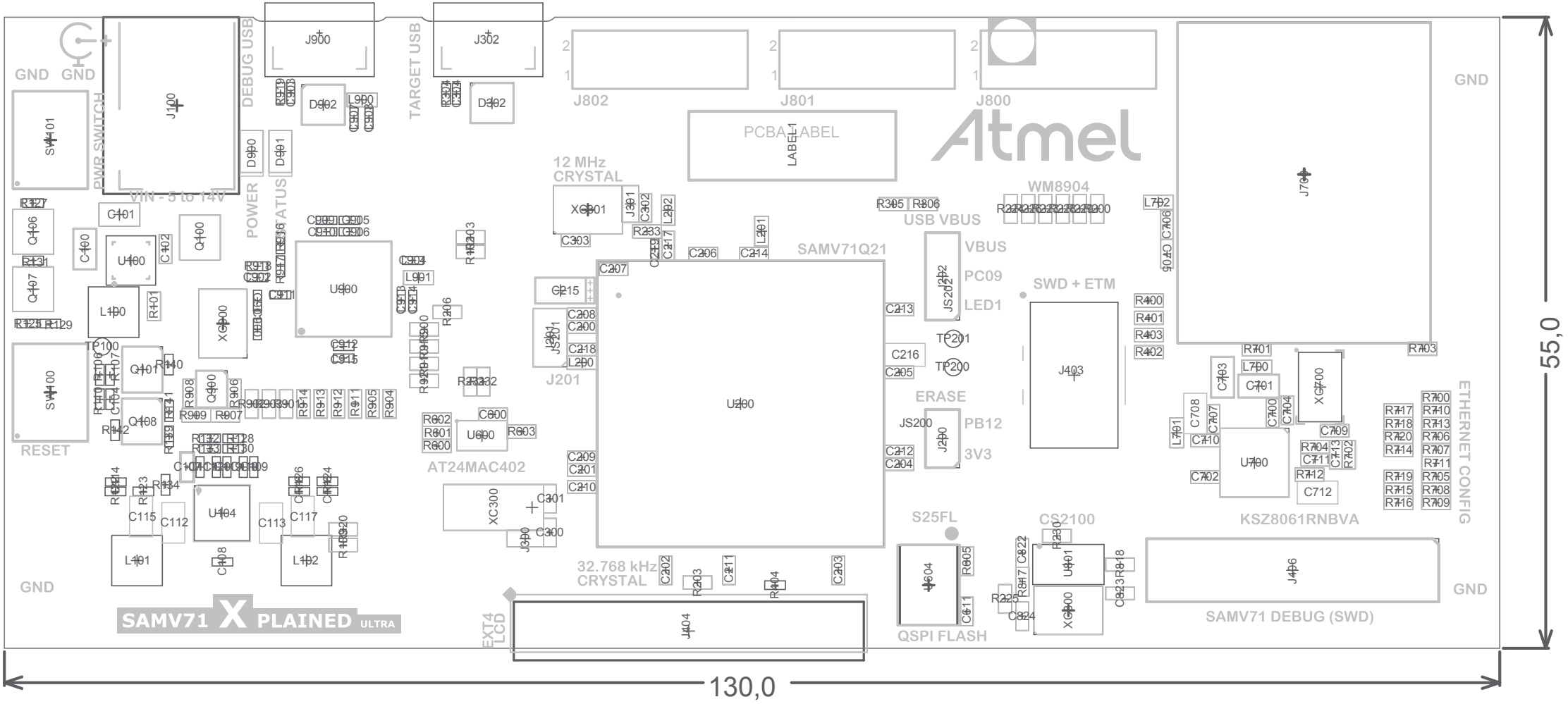
NORWAY
Atmel
Enabling Unlimited Possibilities
Date: 09.08.2017 19:36:44
PAGE: 10 of 10
Document number: A09-2407
Revision 3
TITLE: Embedded Debugger (EDBG)
SAMV71_Xplained_Ultra_EDBG.SchDoc


GND
GND
PWR SWITCH
DEBUG USB
TARGET USB
VIN - 5 to 14V
POWER
STATUS
RESET
J802
J801
J800
PCBA LABEL
Atmel
12 MHz
CRYSTAL
SAMV71Q21
WM8904
USB VBUS
VBUS
PC09
LED1
J201
SWD + ETM
ERASE
PB12
3V3
AT24MAC402
32.768 kHz
CRYSTAL
S25FL
CS2100
KSZ8061RNBVA
ETHERNET CONFIG
QSPI FLASH
SAMV71 DEBUG (SWD)
EXT4
LCD
SAMV71 XPLAINED ULTRA


GND
GND
SW401
PWR SWITCH
J100
VIN - 5 to 14V
DEBUG USB
J900
TARGET USB
J902
D902
D900
D901
POWER
STATUS
J802
J801
J800
PCBA LABEL
LABEL1
Atmel
GND
J704
12 MHz
CRYSTAL
XG901
WM8904
USB VBUS
SAMV71Q21
VBUS
PC09
LED1
SWD + ETM
J403
U2900
TP201
TP200
ERASE
JS200
PB12
3V3
J201
TP100
SW400
RESET
U1000
AT24MAC402
XC300
32.768 kHz
CRYSTAL
S25FL
QSPI FLASH
CS2100
U1401
U1400
XG1400
U700
KSZ8061RNBVA
ETHERNET CONFIG
J406
SAMV71 DEBUG (SWD)
GND
GND
EXT4
LCD
J404
SAMV71 X PLAINED ULTRA
130,0
55,0

A08-2216 Rev 3

TMS TDI TCK
GND
VCC BOOT
TDO RST