

BeagleBone-Headers

UART1_RX
UART1_TX
UART2_RX
UART2_TX

SPI1_CS0
SPI1_MISO
SPI1_MOSI
SPI1_SCLK

I2C1_SDA
I2C1_SCL
I2C2_SDA
I2C2_SCL

AIN0
GPIO0_26

GPIO1_12
GPIO1_14
eCAP0_IN

GPIO1_17
PWM1A
AIN2

eQEP0_A
eQEP0_B

GPIO1_28
GPIO3_17

GPIO0_27
GPIO2_1

UTCape-BBHeaders.sch

UART Wiring

UART1_RX
UART1_TX
UART2_RX
UART2_TX

UTCape-UART.sch
SPI Wiring

SPI0_CS0
SPI0_MISO
SPI0_MOSI
SPI0_SCLK

UTCape-SPI.sch
I2C Wiring

I2C1_SDA
I2C1_SCL
I2C2_SCL
I2C2_SDA

UTCape-I2C.sch
ADC Wiring

AIN0
GPIO0_26

UTCape-ADC.sch
eCAP Wiring

GPIO1_12
GPIO1_14
eCAP0

UTCape-eCAP.sch
PWM Wiring

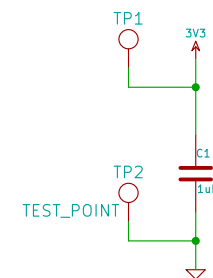
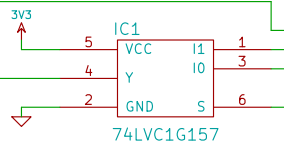
eCAP0
PWM1A
AIN2

UTCape-PWM.sch
eQEP Wiring

eQEP0_A
eQEP0_B

GPIO1_28
GPIO3_17

UTCape-eQEP.sch



Notes:

1. Is IC1 really needed, or am I just not seeing a second eCAP input?

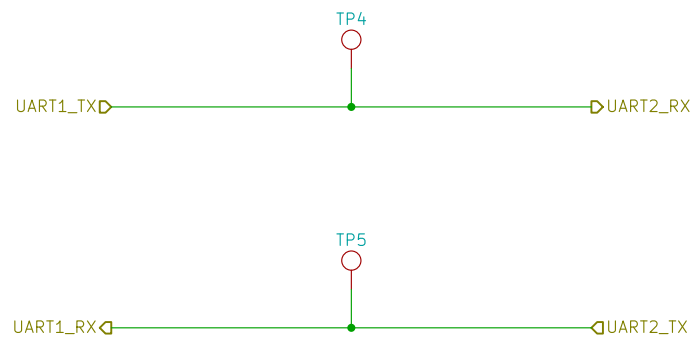


<https://github.com/graycatlabs/UTCape>

Gray Cat Labs
<http://graycat.io>

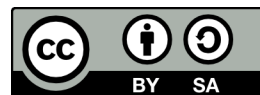
File: UTCape.sch		
Sheet: /		
Title: UTCape		
Size: A4	Date: 24 feb 2015	Rev: 0
KiCad E.D.A.		Id: 1/9

UART1 and UART2 are just wired together, TX on one and RX on the other
No need to get much fancier than that



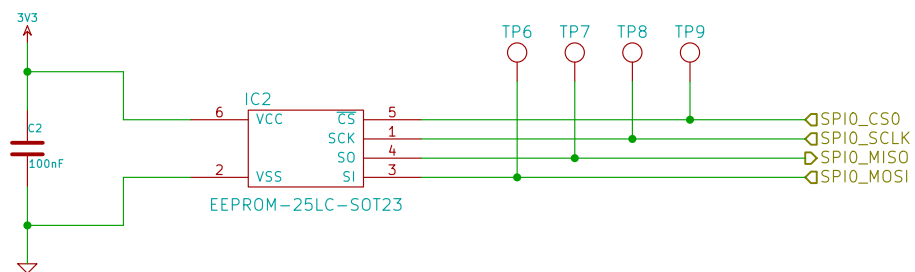
Notes:

1. Should this include CTS/RTS flow control?



File: UTCape--UART.sch	
Sheet: /UART Wiring/	
Title: UART Unit Test Wiring	
Size: A4	Date: 24 feb 2015
KiCad E.D.A.	Rev: Id: 2/9

Test SPI by writing some data to the EEPROM on SPI0 then reading it back



Notes:

1. Software should randomize start address to prolong EEPROM life



File: UTCape-SPI.sch

Sheet: /SPI Wiring/

Title: SPI Unit Test Wiring

Size: A4

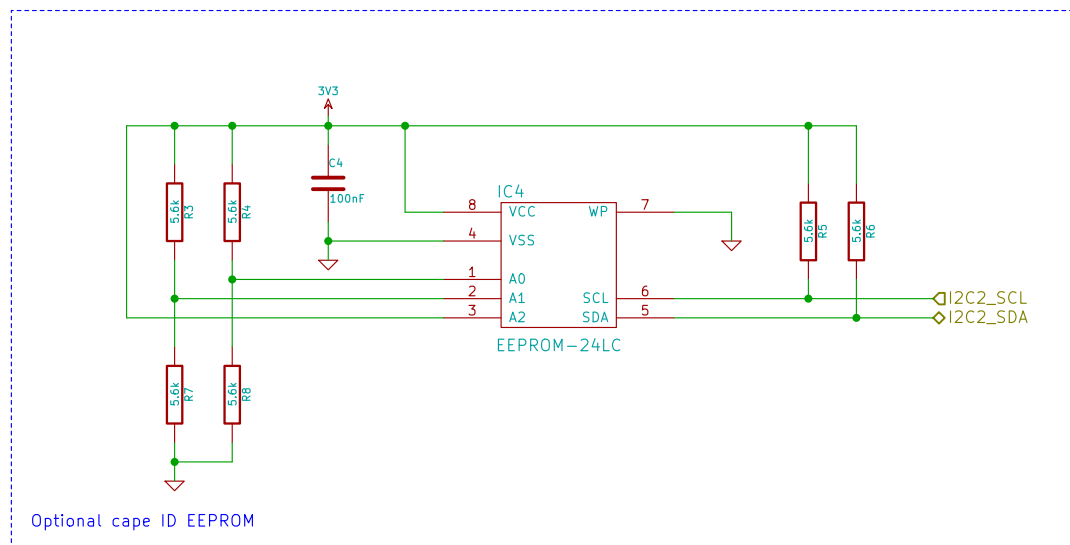
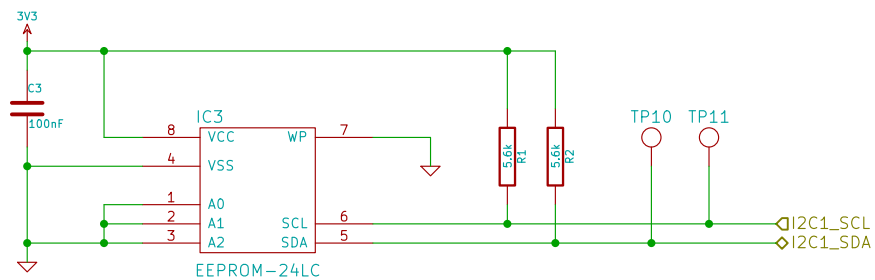
Date: 24 feb 2015

Rev:

KiCad E.D.A.

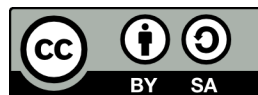
Id: 3/9

I2C can be tested by writing data to the EEPROM on I2C1 and then reading it back



Notes:

1. The cape ID EEPROM isn't good for testing because the BBB muxes the I2C2 pins at boot, whereas the I2C1 pins must be muxed from userspace before using
2. Software should randomize start address to prolong EEPROM life



File: UTCape-I2C.sch

Sheet: /I2C Wiring/

Title: I2C Unit Test Wiring

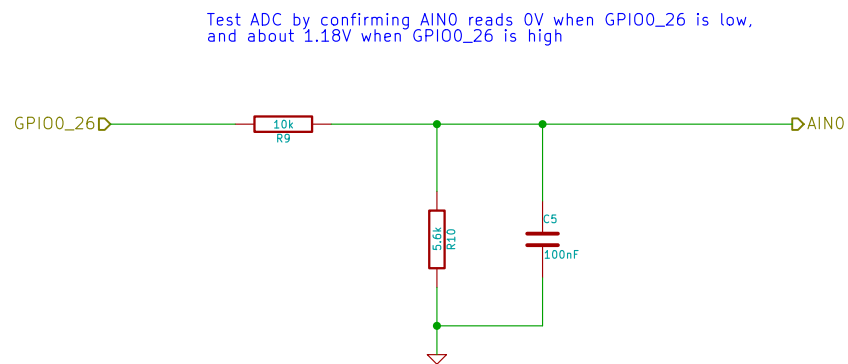
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Rev:

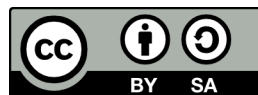
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Id: 4/9



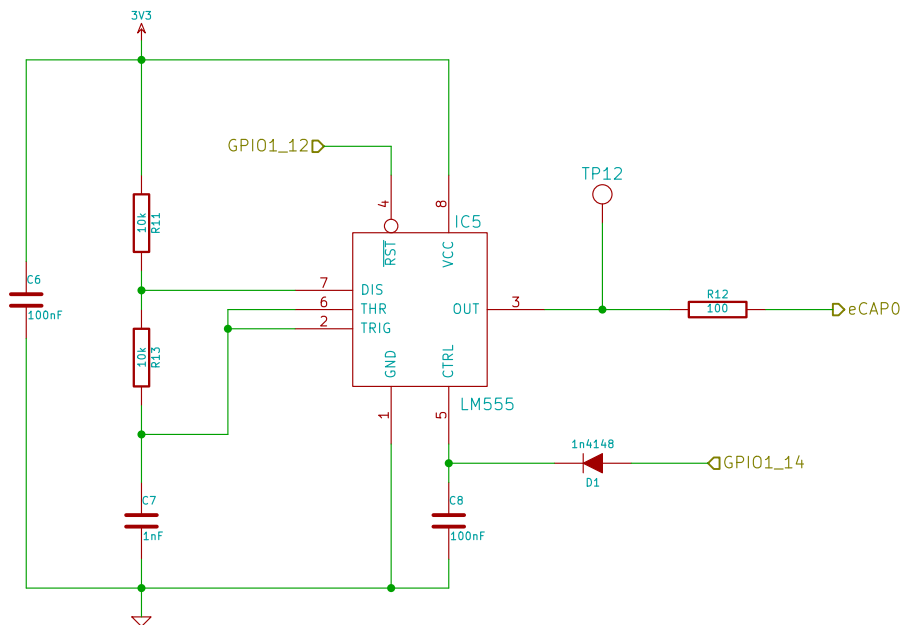
Notes:

1.



File: UTCape-ADC.sch		
Sheet: /ADC Wiring/		
Title: ADC Unit Test Wiring		
Size: A4	Date: 24 feb 2015	Rev:
KiCad E.D.A.		Id: 5/9

When GPIO1_14 is high eCAP0 should measure 21kHz,
when GPIO1_14 is low it should measure 36kHz



Notes:

1. GPIO1_12 must be set high to enable the astable circuit to test the eCAP.
It can be set low when not in use to avoid noise coupling



File: UTCape--eCAP.sch

Sheet: /eCAP Wiring/

Title: eCAP Unit Test Wiring

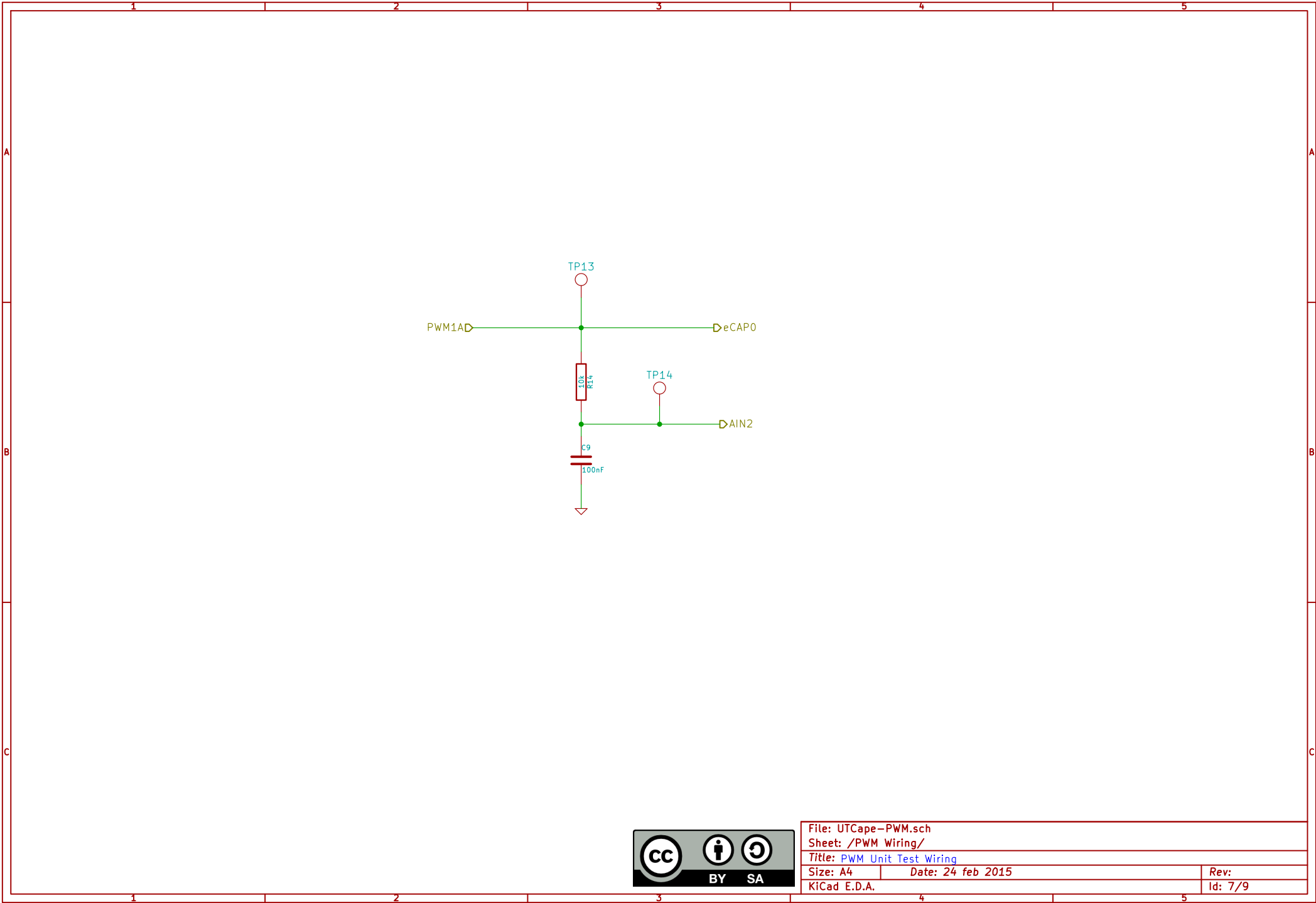
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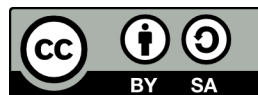
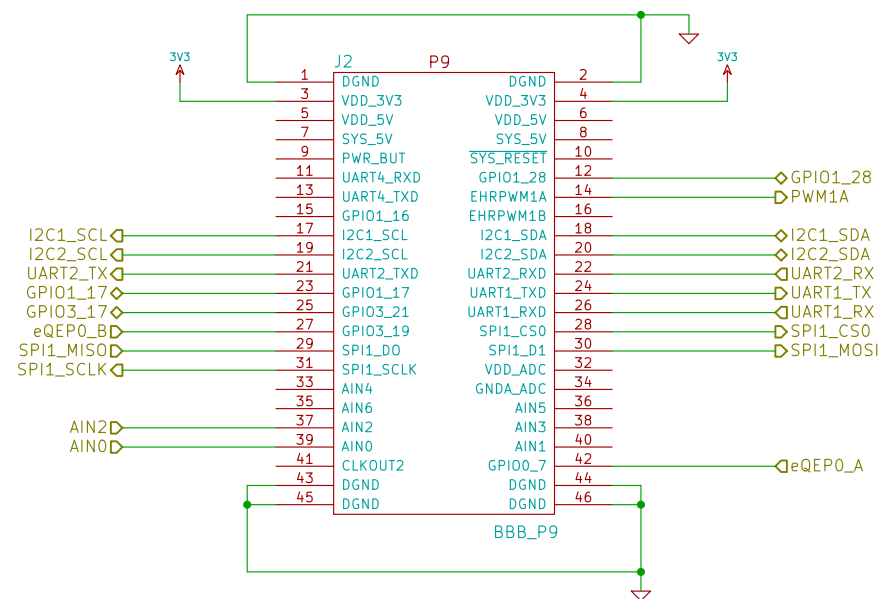
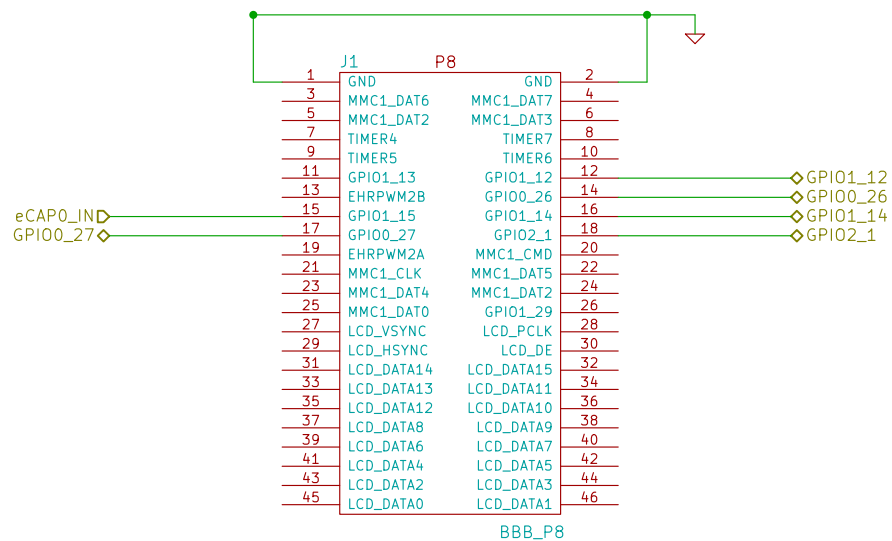
Rev:

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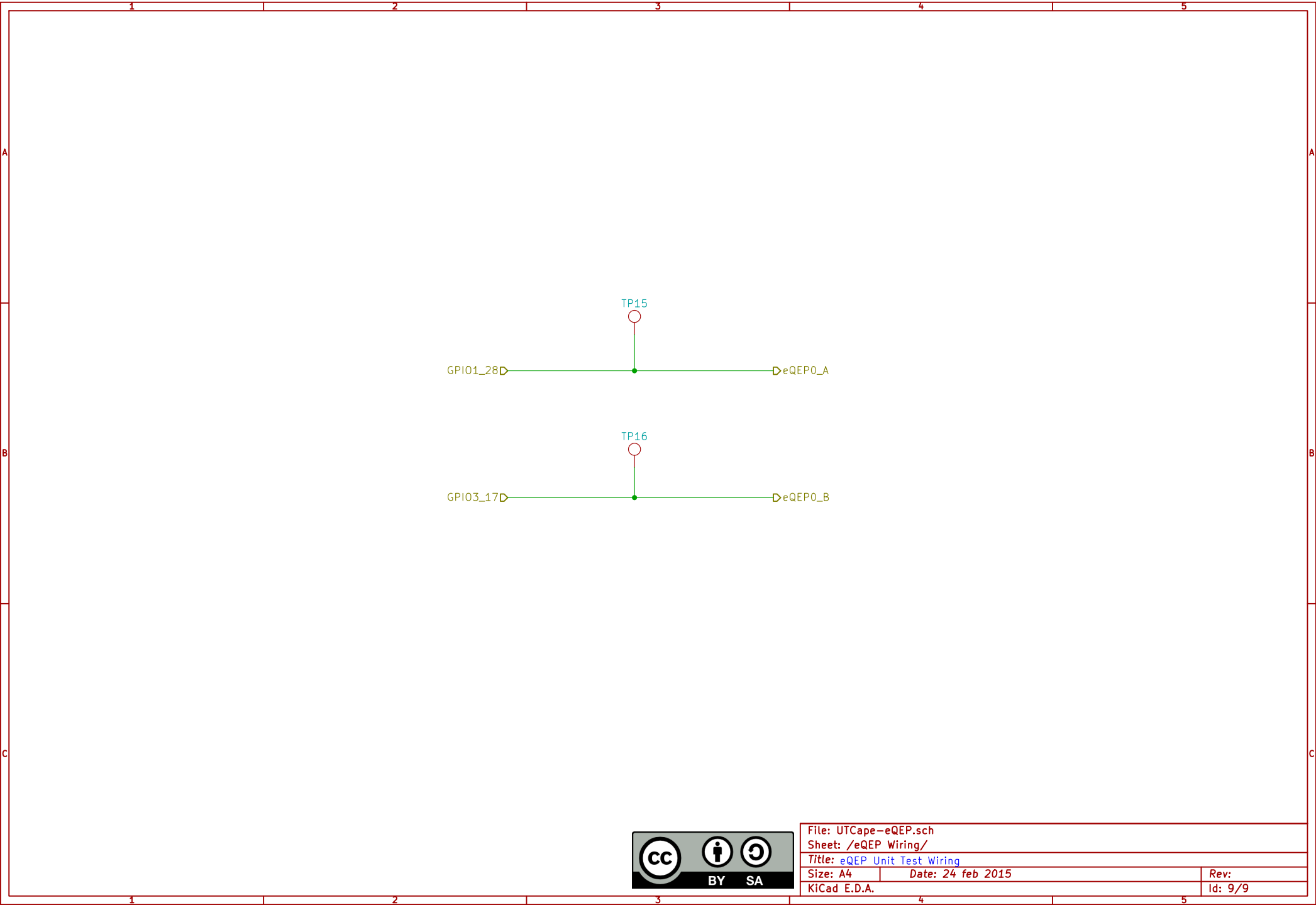
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File: UTCape-PWM.sch		
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Title: PWM Unit Test Wiring		
Size: A4	Date: 24 feb 2015	Rev:
KiCad E.D.A.		Id: 7/9



File: UTCape-BBHeaders.sch		
Sheet: /BeagleBone Headers/		
Title: BeagleBone Headers		
Size: A4	Date: 24 feb 2015	Rev:
KiCad E.D.A.		Id: 8/9



File: UTCape-eQEP.sch		
Sheet: /eQEP Wiring/		
Title: eQEP Unit Test Wiring		
Size: A4	Date: 24 feb 2015	Rev:
KiCad E.D.A.		Id: 9/9