

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

AIN2
GPIO1_17

GPIO1_12
GPIO0_26
eCAP0_IN

GPIO0_27
PWM1A
AIN0

eQEP0_A
eQEP0_B

GPIO0_20
GPIO3_17

GPIO1_14
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

AIN2
GPIO1_17

UTCape-ADC.sch
eCAP Wiring

GPIO1_12
GPIO0_26
eCAP0

UTCape-eCAP.sch
PWM Wiring

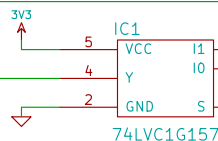
eCAP0
PWM1A
AIN0

UTCape-PWM.sch
eQEP Wiring

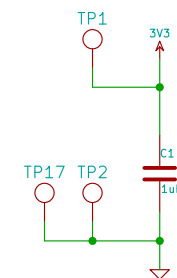
eQEP0_A
eQEP0_B

GPIO0_20
GPIO3_17

UTCape-eQEP.sch



IC1
74LVC1G157



Notes:

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

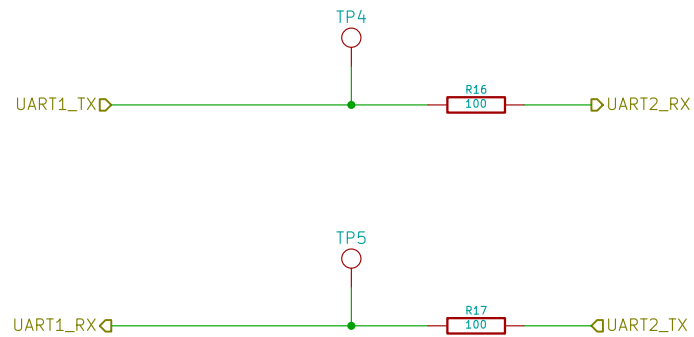


<https://github.com/graycatlabs/UTCape>

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

File: UTCape.sch		
Sheet: /		
Title: UTCape		
Size: A4	Date: 24 mar 2015	Rev: 1
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



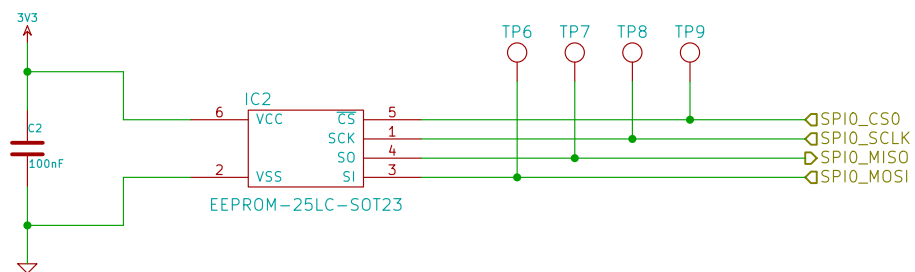
Notes:

1. Should this include CTS/RTS flow control?



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

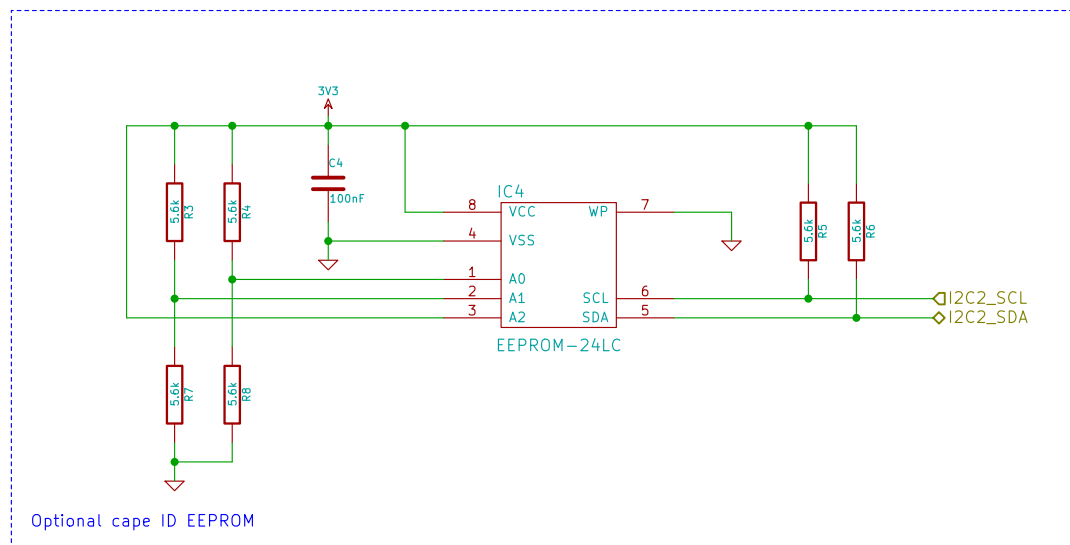
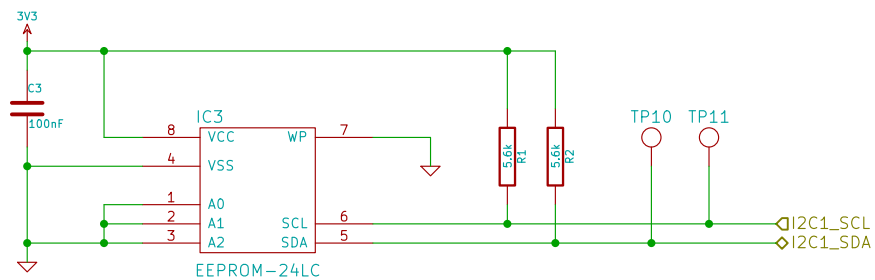
Date: 24 mar 2015

Rev:

KiCad E.D.A.

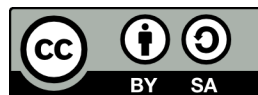
Id: 3/9

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

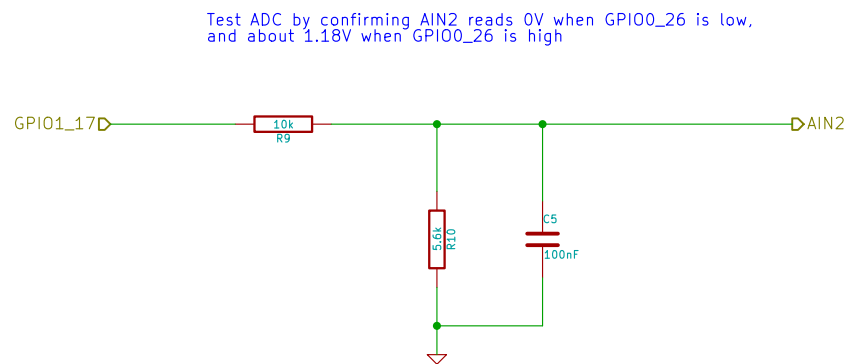
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Date: 24 mar 2015

Rev:

KiCad E.D.A.

Id: 4/9



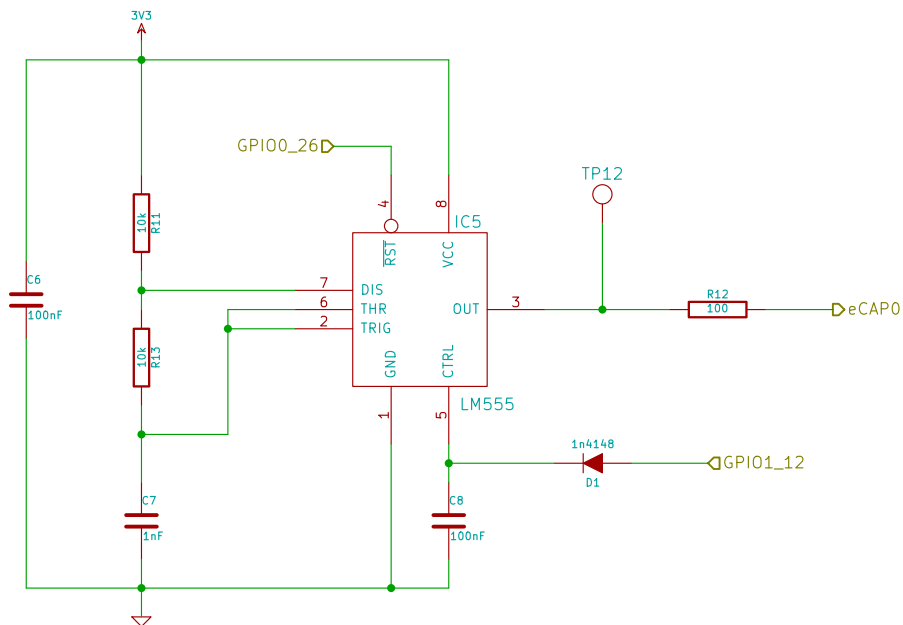
Notes:

1.



File: UTCape-ADC.sch		
Sheet: /ADC Wiring/		
Title: ADC Unit Test Wiring		
Size: A4	Date: 24 mar 2015	Rev:
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When GPIO1_12 is high eCAP0 should measure 21kHz,
when GPIO1_12 is low it should measure 36kHz



Notes:

1. GPIO0_26 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

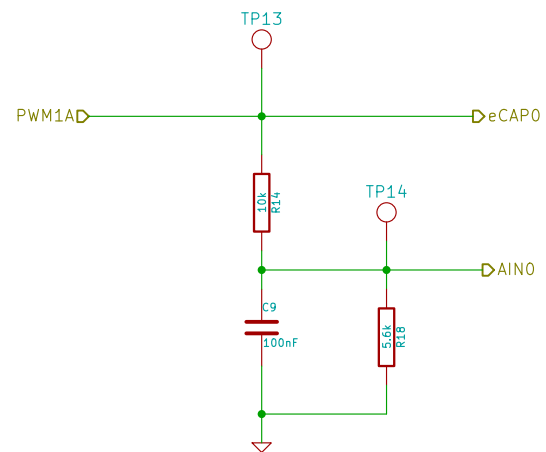
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Date: 24 mar 2015

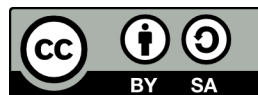
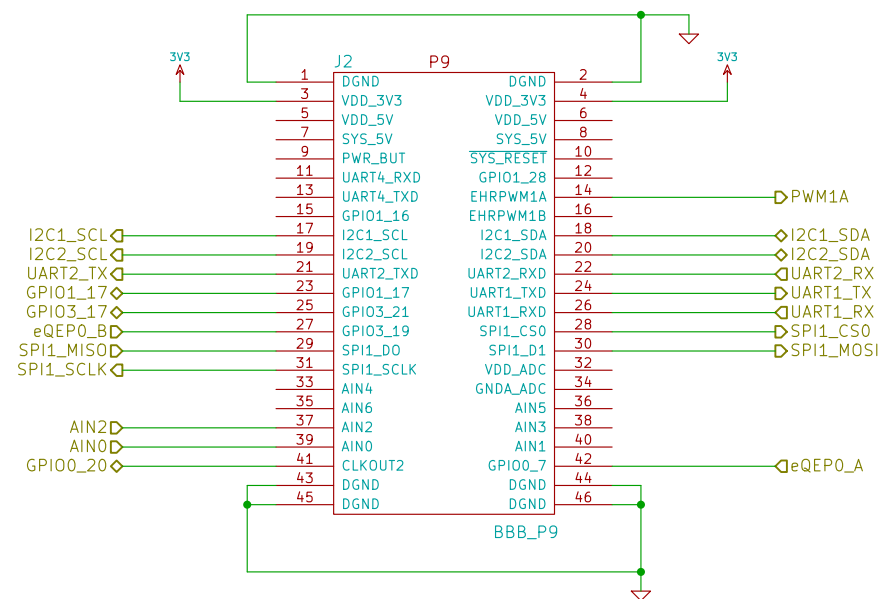
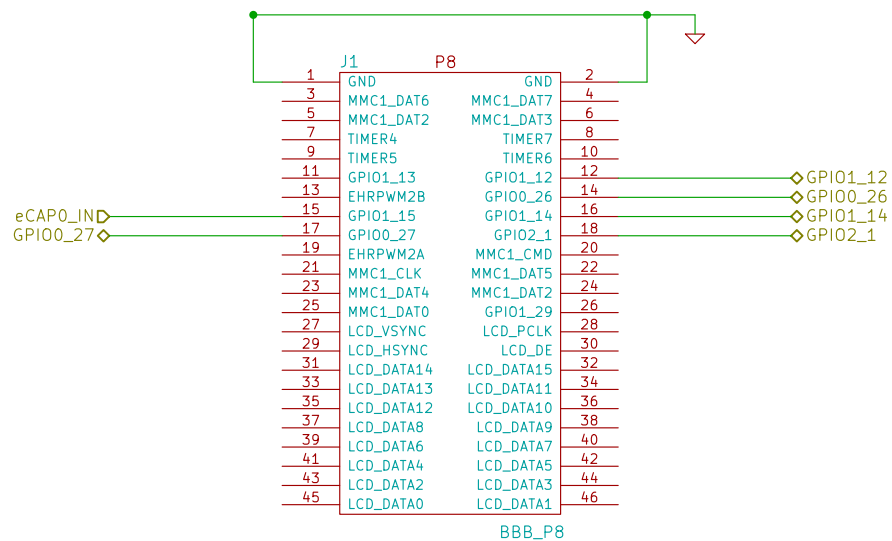
Rev:

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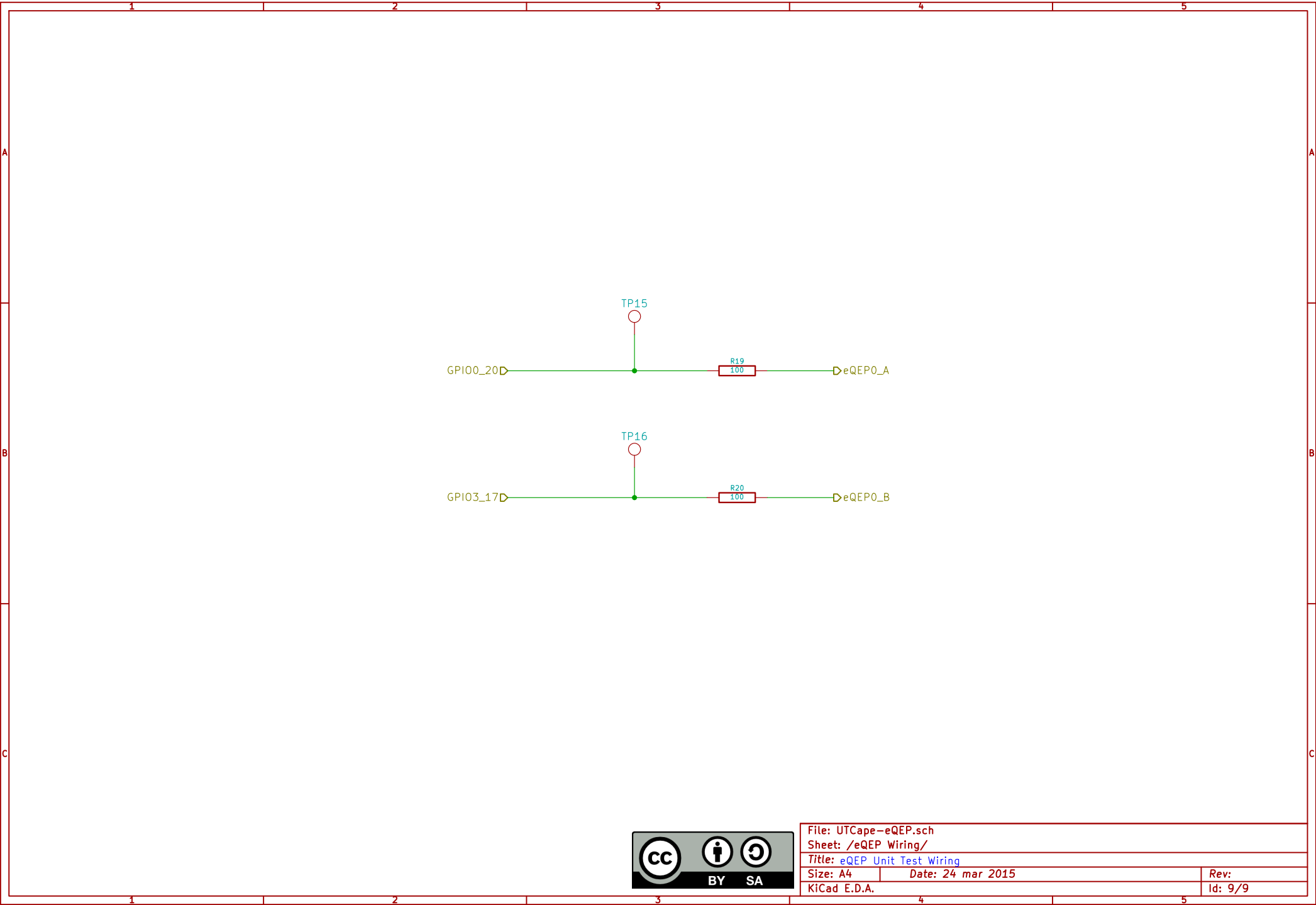
Id: 6/9



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



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