

Analysis report document

1. Problem description

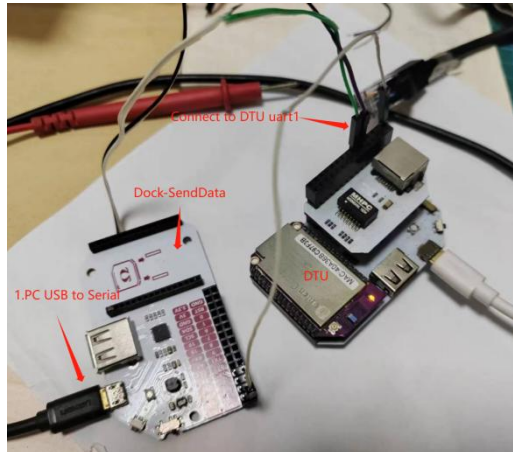
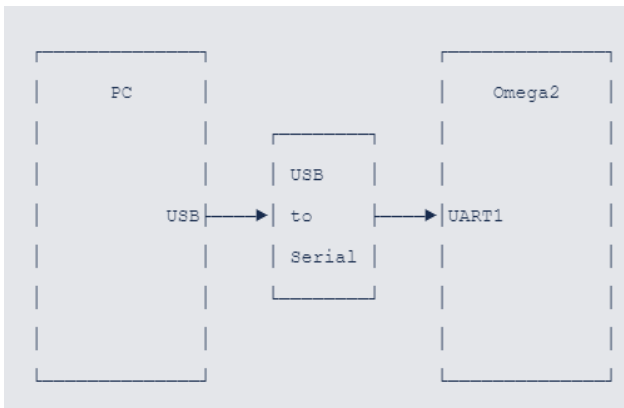
There's a customer reporting issues with serial transmissions on UART1 when the Omega's network is restarted.

2. Build testing environment

Here i used two expansion dock (USB to Serial) to build the testing environment.

Dock-SendData: Send data to DTU(Omega2).

DTU :receive data from Dock-SendData.



3. TestFlow

1) Sending device.

Using "TestUart.exe" Tool to send data from pc to DTU's uart1(ttyS1).

Test CMD : TestUart.exe [COM]:[Baudrate],n,8,1

Example : TestUart.exe COM4:9600,n,8,1

| | |
|--|------------|
|  TestUart.exe | 2023/10/23 |
|  TestUart.lpi | 2023/10/23 |
|  TestUart.lpr | 2023/10/23 |
|  TestUart.lps | 2023/10/23 |

```

D:\TestUart>TestUart.exe COM4:9600,n,8,1
Rs232 test: COM4:9600,n,8,1
Press ESC to stop, G to start transmit.
[G] Pressed. Now transmission starts.
^G
  
```

When it show "Press ESC to sop,G to start transmit", just enter "G", it will send the data to uart1.

2) Receiving device

Using onion's Python receive script — [pyser.py](#)

Test CMD : python pyser.py

```

root@Omega-4127:/etc#
root@Omega-4127:/etc# python pyser.py
Reading data from /dev/ttyS1. Press Ctrl+C to exit.
Read 0xf0 instead of: 0x0
Received 5000 bytes.
Received 10000 bytes.
Received 15000 bytes.
Received 20000 bytes.
Received 25000 bytes.
Received 30000 bytes.
Received 35000 bytes.
Received 40000 bytes.
Received 45000 bytes.
Received 50000 bytes.
  
```

4. Problem confirmation

Test 01: Baudrate :9600

Operation: Start received script , After a few moments, stop the received script.During the testing,we don't change the ethernet state.

Test result: [Data reception is normal.](#)

```
root@Omega-4127:/etc#
root@Omega-4127:/etc#
root@Omega-4127:/etc# python pyser.py
Reading data from /dev/ttyS1. Press Ctrl+C to exit.
Read 0x60 instead of: 0x0
Received 5000 bytes.
Received 10000 bytes.
Received 15000 bytes.
Received 20000 bytes.
Received 25000 bytes.
Received 30000 bytes.
Received 35000 bytes.
Received 40000 bytes.
Received 45000 bytes.
Received 50000 bytes.
Received 55000 bytes.
Received 60000 bytes.
Received 65000 bytes.
Received 70000 bytes.
Received 75000 bytes.
Received 80000 bytes.
Received 85000 bytes.
Received 90000 bytes.
Received 95000 bytes.
Received 100000 bytes.
Received 105000 bytes.
Received 110000 bytes.
Received 115000 bytes.
Received 120000 bytes.
Received 125000 bytes.
```

Test 02: Baudrate :9600

Operation: Start received script , After a few moments, stop the received script.During the testing,**we change the ethernet state by pulling out or inserting a the ethernet cable.**

Test result: [Data reception is normal.](#)

```
root@Omega-4127:/etc#
root@Omega-4127:/etc#
root@Omega-4127:/etc#
root@Omega-4127:/etc# python pyser.py
Reading data from /dev/ttyS1. Press Ctrl+C to exit.
Read 0x60 instead of: 0x0
Received 5000 bytes.
Received 10000 bytes.
[ 2711.735208] rt3050-esw 10110000.esw: link changed 0x00
Received 15000 bytes.
[ 2721.181992] rt3050-esw 10110000.esw: link changed 0x01
Received 20000 bytes.
Received 25000 bytes.
Received 30000 bytes.
Received 35000 bytes.
Received 40000 bytes.
Received 45000 bytes.
Received 50000 bytes.
Received 55000 bytes.
Received 60000 bytes.
Received 65000 bytes.
Received 70000 bytes.
Received 75000 bytes.
Received 80000 bytes.
Received 85000 bytes.
Received 90000 bytes.
Received 95000 bytes.
Received 100000 bytes.
Received 105000 bytes.
Received 110000 bytes.
Received 115000 bytes.
Received 120000 bytes.
Received 125000 bytes.
```

```
D:\TestUart>TestUart.exe COM4:9600,n,8,1
Rs232 test: COM4:9600,n,8,1
Press ESC to stop, G to start transmit.
[G] Pressed. Now transmission starts.
^C
```

Test 03: Baudrate :115200

Operation: Start received script , After a few moments, stop the received script.During the testing,we don't change the ethernet state.

Test result: [Data reception is normal.](#)

```
root@Omega-4127:/etc#
root@Omega-4127:/etc#
root@Omega-4127:/etc# python pyser.py
Reading data from /dev/ttyS1. Press Ctrl+C to exit.
Read 0x60 instead of: 0x0
Received 5000 bytes.
Received 10000 bytes.
Received 15000 bytes.
Received 20000 bytes.
Received 25000 bytes.
Received 30000 bytes.
Received 35000 bytes.
Received 40000 bytes.
Received 45000 bytes.
Received 50000 bytes.
Received 55000 bytes.
Received 60000 bytes.
Received 65000 bytes.
Received 70000 bytes.
Received 75000 bytes.
Received 80000 bytes.
Received 85000 bytes.
Received 90000 bytes.
Received 95000 bytes.
Received 100000 bytes.
Received 105000 bytes.
Received 110000 bytes.
Received 115000 bytes.
Received 120000 bytes.
Received 125000 bytes.
Received 130000 bytes.
Received 135000 bytes.
Received 140000 bytes.
Received 145000 bytes.
Received 150000 bytes.
Received 155000 bytes.
Received 160000 bytes.
Received 165000 bytes.
Received 170000 bytes.
```

115200

```
C
D:\TestUart>TestUart.exe COM4:115200,n,8,1

Rs232 test: COM4:115200,n,8,1
Press ESC to stop, G to start transmit.
[G] Pressed. Now transmission starts.
^C
```

Test 04: Baudrate :115200

Operation: Start received script , After a few moments, stop the received script. During the testing, **we change the ethernet state by pulling out or inserting a the ethernet cable.**

Test result: Data reception is **abnormal.**

```
root@Omega-4127:/etc#
root@Omega-4127:/etc#
root@Omega-4127:/etc# python pyser.py
Reading data from /dev/ttyS1. Press Ctrl+C to exit.
Read 0x60 instead of: 0x0
Received 5000 bytes.
Received 10000 bytes.
[ 3348.372376] rt3050-esw 10110000.esw: link changed 0x00
Received 15000 bytes.
Received 20000 bytes.
Received 25000 bytes.
[ 3353.751836] rt3050-esw 10110000.esw: link changed 0x01
Received 30000 bytes.
Received 35000 bytes.
Received 40000 bytes.
Received 45000 bytes.
Received 50000 bytes.
Read 0x0 instead of: 0x51
Read 0x51 instead of: 0x1
Read 0x8d instead of: 0x67
Received 55000 bytes.
Received 60000 bytes.
Received 65000 bytes.
Received 70000 bytes.
Received 75000 bytes.
Received 80000 bytes.
Received 85000 bytes.
Received 90000 bytes.
Received 95000 bytes.
Received 100000 bytes.
Received 105000 bytes.
Received 110000 bytes.
Read 0x0 instead of: 0xdf
Read 0xdf instead of: 0x1
Read 0x2a instead of: 0xf5
Received 115000 bytes.
Received 120000 bytes.
Received 125000 bytes.
Received 130000 bytes.
Received 135000 bytes.
Received 140000 bytes.
Received 145000 bytes.
Received 150000 bytes.
Received 155000 bytes.
Received 160000 bytes.
```

115200

Test 05: Baudrate :230400

Operation: Start received script , After a few moments, stop the received script.During the testing,we don't change the ethernet state.

Test result: Data reception is normal.

```
root@Omega-4127:/etc#
root@Omega-4127:/etc#
root@Omega-4127:/etc# python pyser.py
Reading data from /dev/ttyS1. Press Ctrl+C to exit.
Read 0x74 instead of: 0x0
Received 5000 bytes.
Received 10000 bytes.
Received 15000 bytes.
Received 20000 bytes.
Received 25000 bytes.
Received 30000 bytes.
Received 35000 bytes.
Received 40000 bytes.
Received 45000 bytes.
Received 50000 bytes.
Received 55000 bytes.
Received 60000 bytes.
Received 65000 bytes.
Received 70000 bytes.
Received 75000 bytes.
Received 80000 bytes.
Received 85000 bytes.
Received 90000 bytes.
Received 95000 bytes.
Received 100000 bytes.
Received 105000 bytes.
Received 110000 bytes.
Received 115000 bytes.
Received 120000 bytes.
Received 125000 bytes.
Received 130000 bytes.
Received 135000 bytes.
Received 140000 bytes.
Received 145000 bytes.
Received 150000 bytes.
```

230400

Test 06: Baudrate :230400

Operation: Start received script , After a few moments, stop the received script.During the testing,**we change the ethernet state by pulling out or inserting a the ethernet cable.**

Test result: Data reception is **abnormal**.

```
root@Omega-4127:/etc#
root@Omega-4127:/etc# python pyser.py
Reading data from /dev/ttyS1. Press Ctrl+C to exit.
Read 0xb4 instead of: 0x0
Received 5000 bytes.
Received 10000 bytes.
[ 3524.027290] rt3050-esw 10110000.esw: link changed 0x00
Received 15000 bytes.
Received 20000 bytes.
[ 3528.405274] rt3050-esw 10110000.esw: link changed 0x01
Received 25000 bytes.
Received 30000 bytes.
Received 35000 bytes.
Received 40000 bytes.
Received 45000 bytes.
Received 50000 bytes.
Received 55000 bytes.
Received 60000 bytes.
Received 65000 bytes.
Received 70000 bytes.
Received 75000 bytes.
Received 80000 bytes.
Received 85000 bytes.
Received 90000 bytes.
Received 95000 bytes.
Received 100000 bytes.
Received 105000 bytes.
Read 0x0 instead of: 0x8c
Read 0x8c instead of: 0x1
Read 0x14 instead of: 0xa2
Received 110000 bytes.
Received 115000 bytes.
Received 120000 bytes.
Received 125000 bytes.
Received 130000 bytes.
Received 135000 bytes.
Received 140000 bytes.
Received 145000 bytes.
```

230400

5. Analysis results

Using the latest python test program, when the baudrate above 9600, the uart data reception is abnormal when the ethernet changes.