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1.Introduction

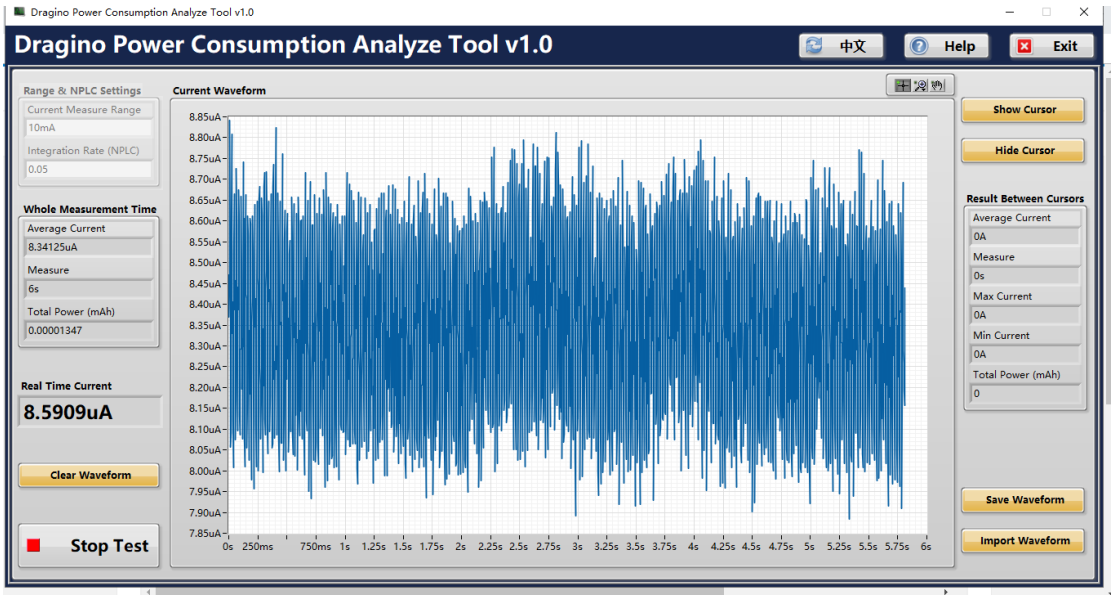
This article is a test report for Dragino LSE01 Sensor Node power consumption. It is to provide reference for system integrator to install the sensor node.
With the test result here, system integrator can estimate the battery life time for LSE01.

Hardware version： V2.0
Software version： V1.0

2.EU868 Power consumption test results

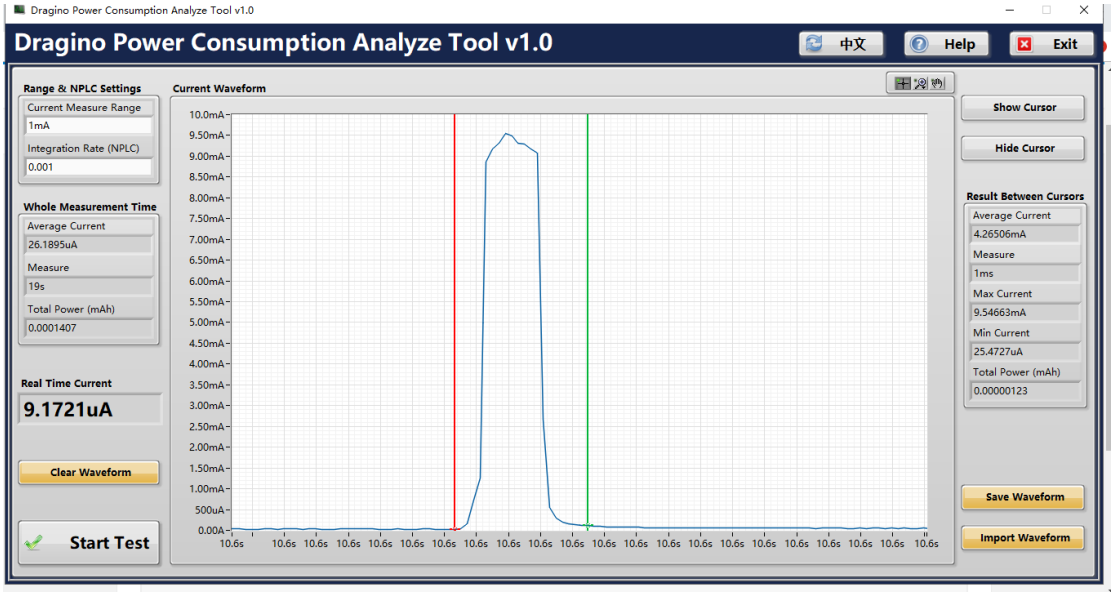
2.1 Deep Sleep Mode

Average: 8.6uA.



2.2 Watchdog Power

Max 10mA Average 4.26506mA in 1ms for every 18 seconds (watchdog period)



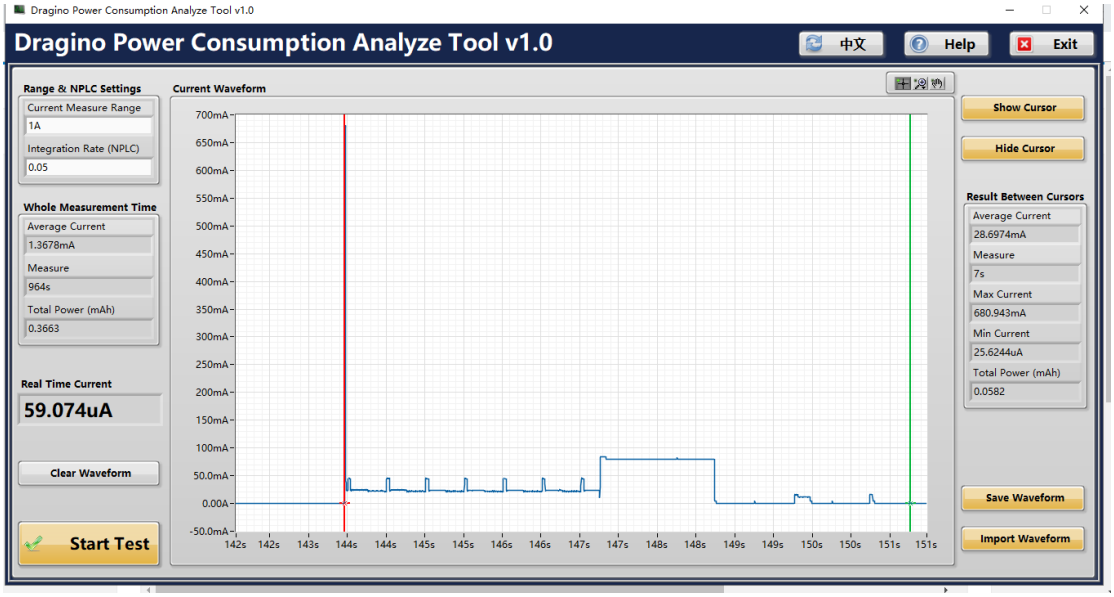
2.3 DR=0,TXP=0

Transmit Time: 7s

Average Current in transmit time: 28.6974mA

The total current to send a packet is

28.6974mA * 7s = 200.8818mA*s



Analyze Result

With Above test result and battery info, we can estimate the battery life.

and let is working in set up DR=0. Transmit one uplink every 20 minutes.

- ✓ Deep Sleep Mode Current : 0.0086mA*20*60s= (10.32mA*s)
- ✓ Watch Dog Current: 0.001s*4.2651mA*(20*60s/18s) = (0.2843mA*s)
- ✓ The total current to send a packet is : 200.8818mA*s

So **total Average Current is :(200.8818+10.32+0.2843)/(20*60)= 0.1762mA.**

The battery used in LSE01 is 4000mAh and of stable voltage in the most of life. With considering a max 2% discharge rate from the battery spec.So the battery life is y. so

4000(1 - 2%*y) = **0.1762**mA * 24 * 365 * y

So Y = 4000/ (**0.1762***24*365+80) =2.4(Years)

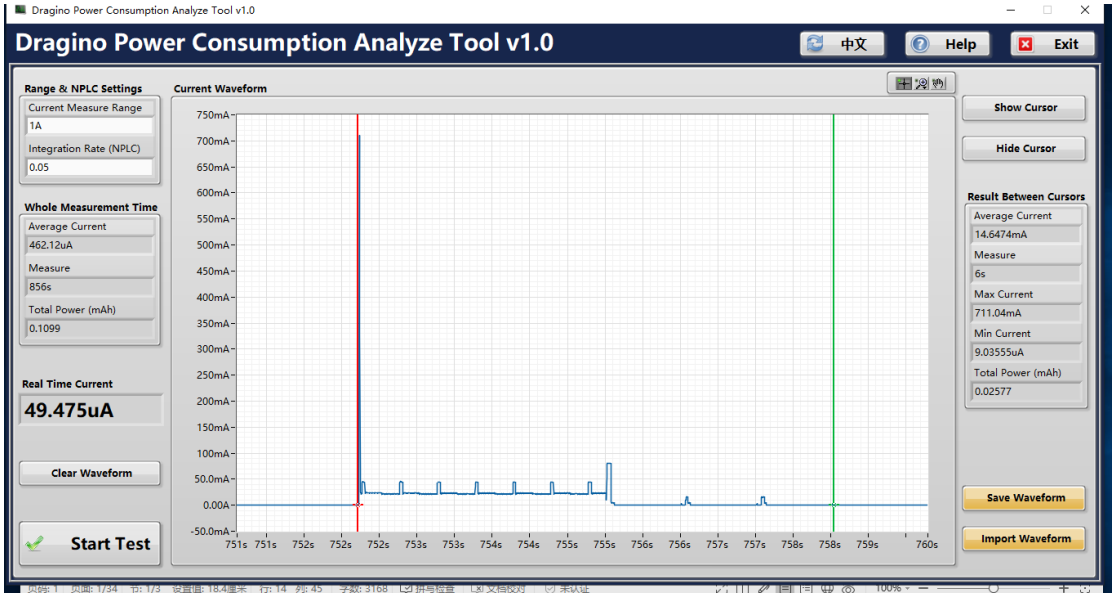
2.4 DR=5,TXP=0

Transmit Time: 6s

Average Current in transmit time: 14.6474mA

The total current to send a packet is

14.6474mA *6s = 87.8844mA*s



Analyze Result

With Above test result and battery info, we can estimate the battery life.

and let is working in set up DR=5. Transmit one uplink every 20 minutes.

- ✓ Deep Sleep Mode Current : 0.0086mA*20*60s= (10.32mA*s)
- ✓ Watch Dog Current: 0.001s*4.2651mA*(20*60s/18s) = (0.2843mA*s)
- ✓ The total current to send a packet is : 87.8844mA*s

So **total Average Current is :(87.8844+10.32+0.2843)/(20*60)= 0.0821mA.**

The battery used in LSE01 is 4000mAh and of stable voltage in the most of life. With considering a max 2% discharge rate from the battery spec.So the battery life is y. so

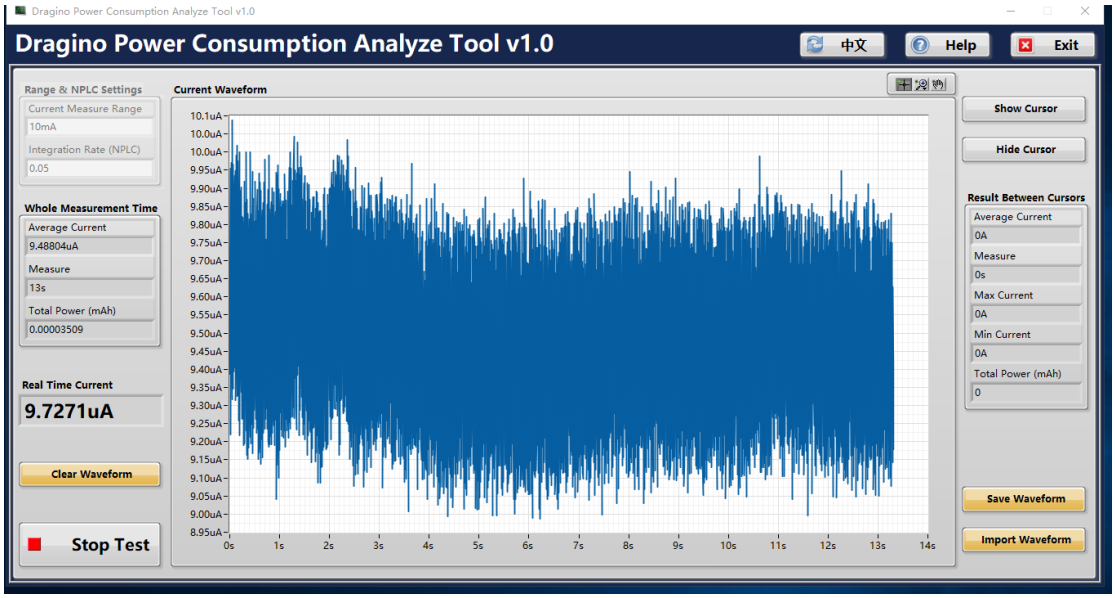
4000(1 - 2%*y) = **0.0821**mA * 24 * 365 * y

So Y = 4000/ (**0.0821***24*365+80) =5(Years)

3. EU868 Power consumption test results （ Device connection DS18B20 Temperature and humidity sensor）

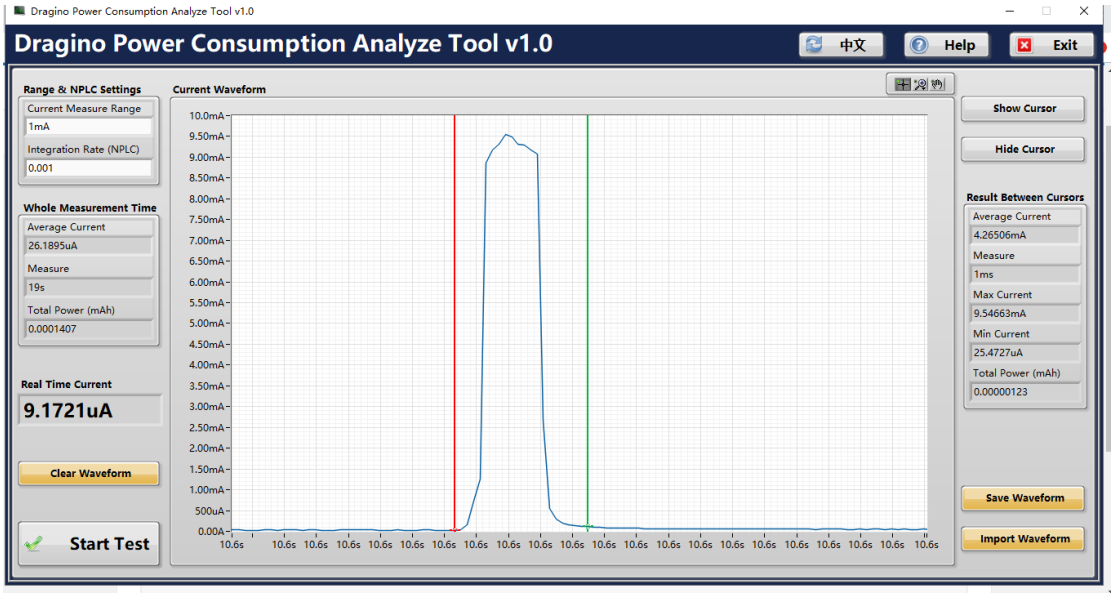
3.1 Deep Sleep Mode

Average: 9.7uA



3.2 Watchdog Power

Max 10mA Average 4.26506mA in 1ms for every 18 seconds (watchdog period)



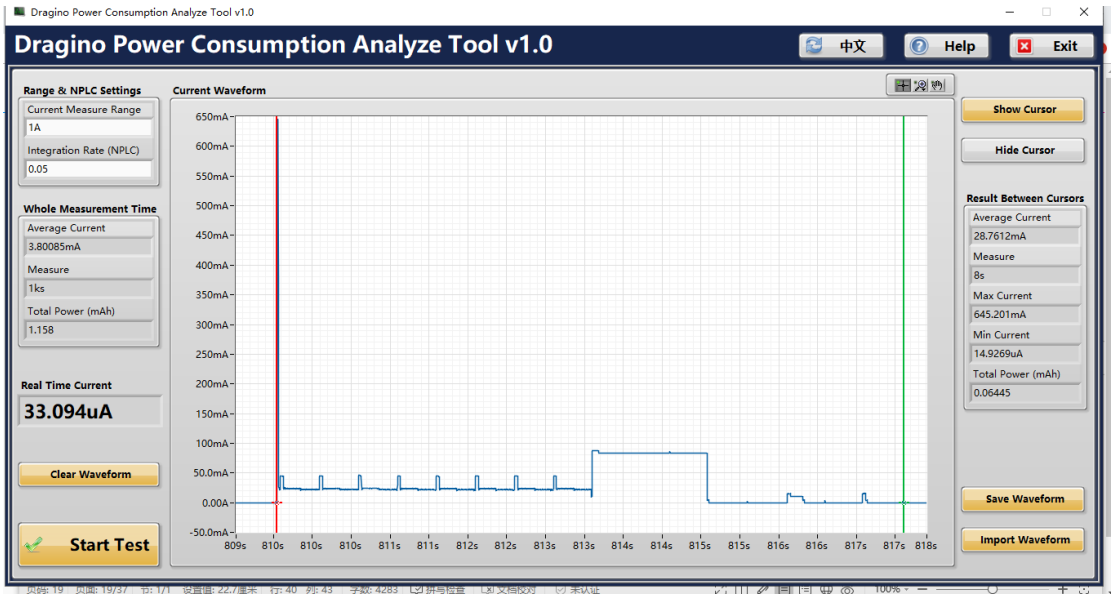
3.3 DR=0,TXP=0

Transmit Time: 6s

Average Current in transmit time: 28.7612mA

The total current to send a packet is

28.7612mA * 8s =230.0896 mA



Analyze Result

With Above test result and battery info, we can estimate the battery life.

and let is working in set up DR=0. Transmit one uplink every 20 minutes.

- ✓ Deep Sleep Mode Current : 0.0097mA*20*60s= (11.64mA*s)
- ✓ Watch Dog Current: 0.001s*4.2651mA*(20*60s/18s) = (0.2843mA*s)
- ✓ The total current to send a packet is : 87.8844mA*s

So **total Average Current is :(230.0896+11.64+0.2843)/(20*60)= 0.2017mA.**

The battery used in LSE01 is 4000mAh and of stable voltage in the most of life. With considering a max 2% discharge rate from the battery spec.So the battery life is y. so

4000(1 - 2%*y) = **0.2017**mA * 24 * 365 * y

So Y = 4000/ (**0.2017***24*365+80) =2.1(Years)

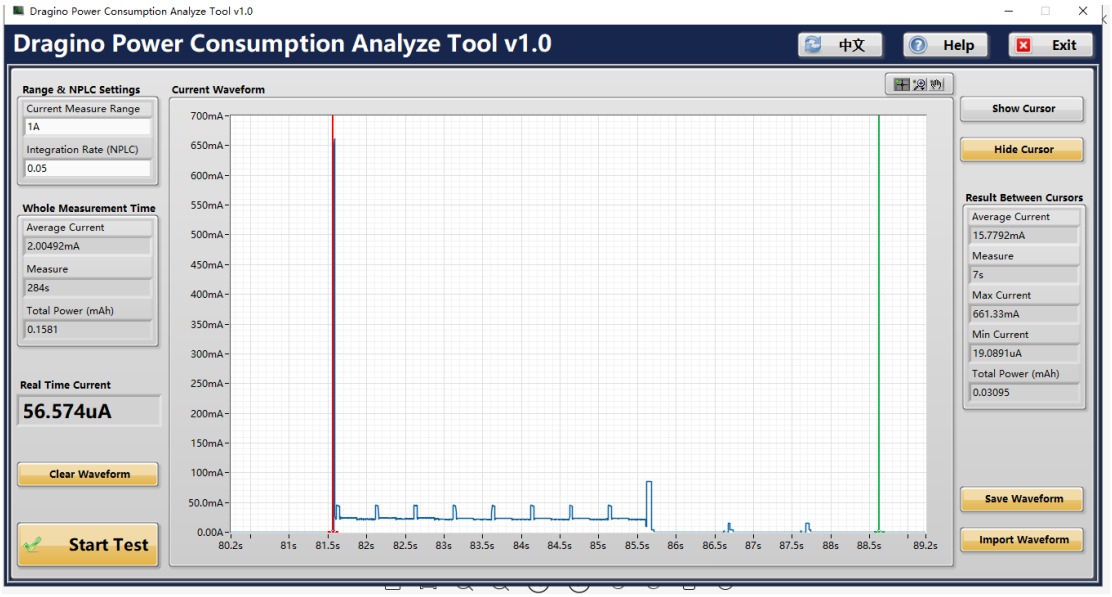
3.4 DR=5,TXP=0

Transmit Time: 7s

Average Current in transmit time:15.7792mA

The total current to send a packet is

15.7792mA * 7s =110.4544 mA



Analyze Result

With Above test result and battery info, we can estimate the battery life.

and let is working in set up DR=5. Transmit one uplink every 20 minutes.

- ✓ Deep Sleep Mode Current : 0.0097mA*20*60s= (11.64mA*s)
- ✓ Watch Dog Current: 0.001s*4.2651mA*(20*60s/18s) = (0.2843mA*s)
- ✓ The total current to send a packet is : 110.4544mA*s

So **total Average Current is :(110.4544+11.64+0.2843)/(20*60)= 0.102mA.**

The battery used in LSE01 is 4000mAh and of stable voltage in the most of life. With considering a max 2% discharge rate from the battery spec.So the battery life is y. so

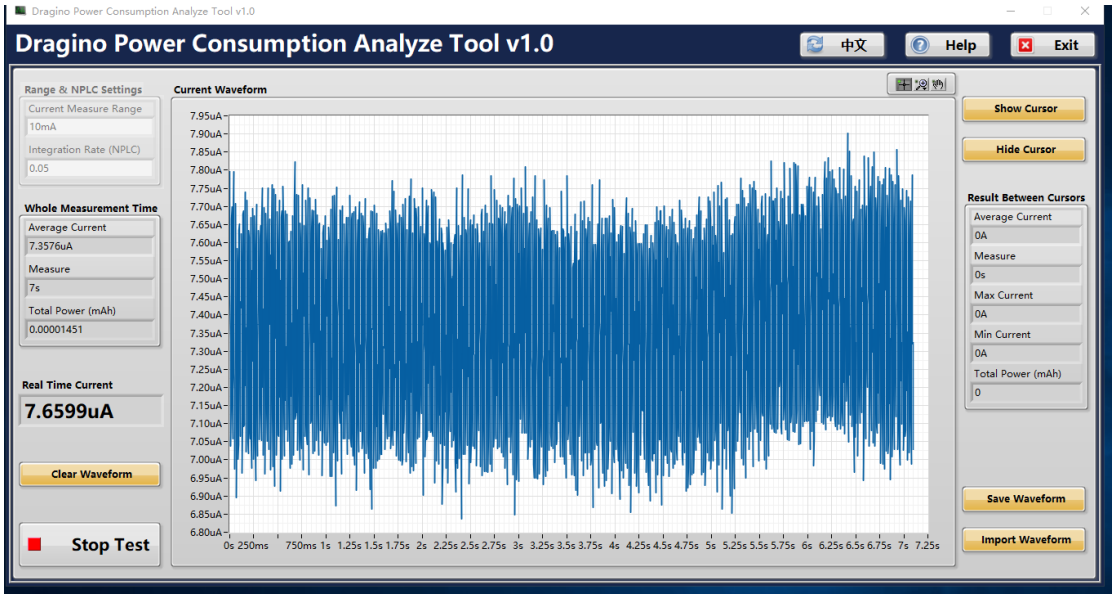
4000(1 - 2%*y) = **0.102**mA * 24 * 365 * y

So Y = 4000/ (**0.102***24*365+80) =4.1(Years)

4. US915 Power consumption test results

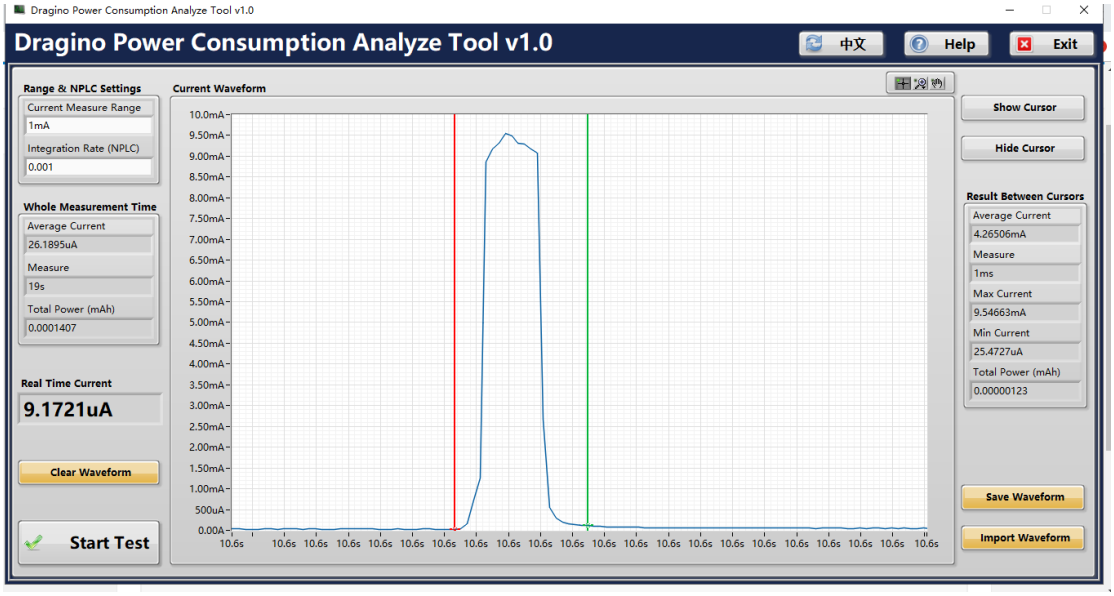
4.1 Deep Sleep Mode

Average: 8uA



4.2 Watchdog Power

Max 10mA Average 4.26506mA in 1ms for every 18 seconds (watchdog period)



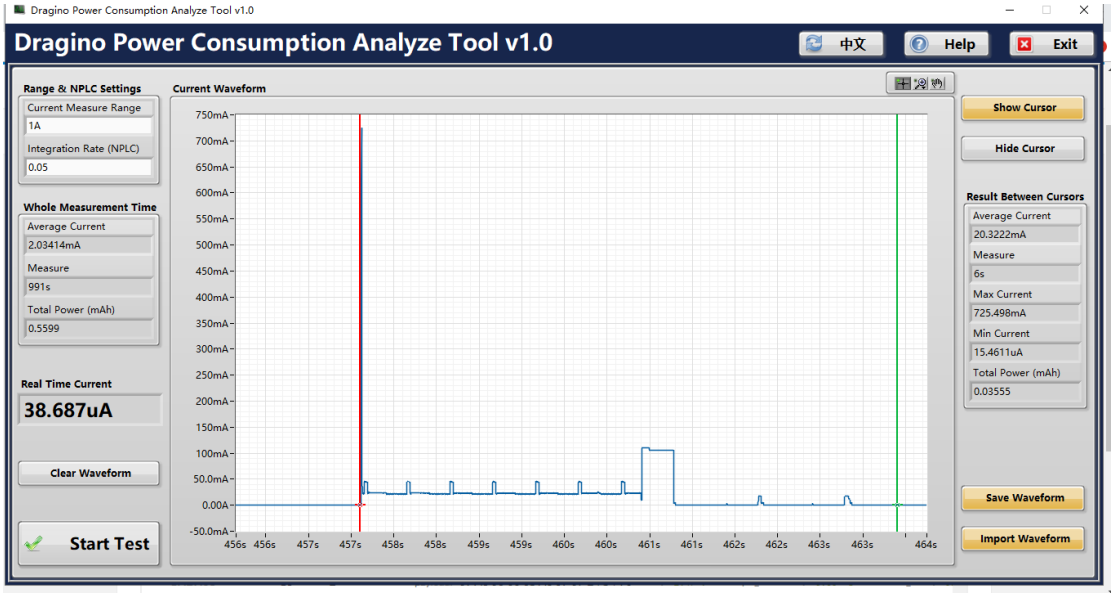
4.3 DR=0,TXP=0

Transmit Time: 6s

Average Current in transmit time: 20.3222mA

The total current to send a packet is

20.3222mA * 6s =121.9332 mA*s



Analyze Result

With Above test result and battery info, we can estimate the battery life.

and let is working in set up DR=0. Transmit one uplink every 20 minutes.

- ✓ Deep Sleep Mode Current : 0.008mA*20*60s= (9.6mA*s)
- ✓ Watch Dog Current: 0.001s*4.2651mA*(20*60s/18s) = (0.2843mA*s)
- ✓ The total current to send a packet is : 121.9332mA*s

So **total Average Current is :(121.9332+9.6+0.2843)/(20*60)= 0.1098mA.**

The battery used in LSE01 is 4000mAh and of stable voltage in the most of life. With considering a max 2% discharge rate from the battery spec.So the battery life is y. so

4000(1 - 2%*y) = **0.1098**mA * 24 * 365 * y

So Y = 4000/ (**0.1098***24*365+80) =3.8(Years)

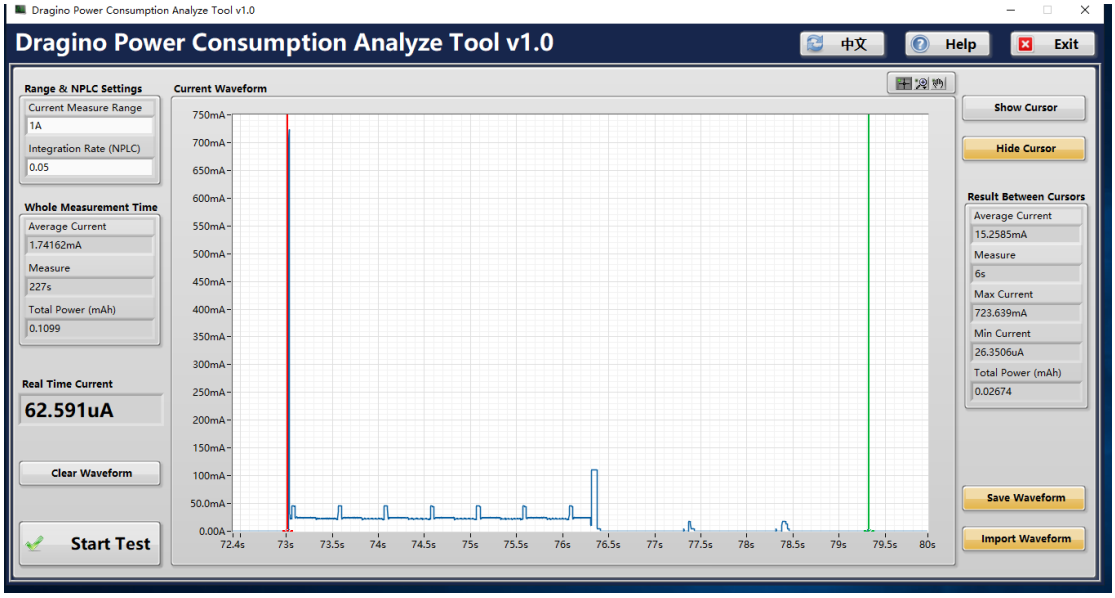
4.4 DR=3,TXP=0

Transmit Time: 6s

Average Current in transmit time: 15.2585mA

The total current to send a packet is

15.2585mA * 6s =91.551 mA*s



Analyze Result

With Above test result and battery info, we can estimate the battery life.

and let is working in set up DR=3. Transmit one uplink every 20 minutes.

- ✓ Deep Sleep Mode Current : 0.008mA*20*60s= (9.6mA*s)
- ✓ Watch Dog Current: 0.001s*4.2651mA*(20*60s/18s) = (0.2843mA*s)
- ✓ The total current to send a packet is : 91.551mA*s

So **total Average Current is :(91.551+9.6+0.2843)/(20*60)= 0.0845mA.**

The battery used in LSE01 is 4000mAh and of stable voltage in the most of life. With considering a max 2% discharge rate from the battery spec.So the battery life is y. so

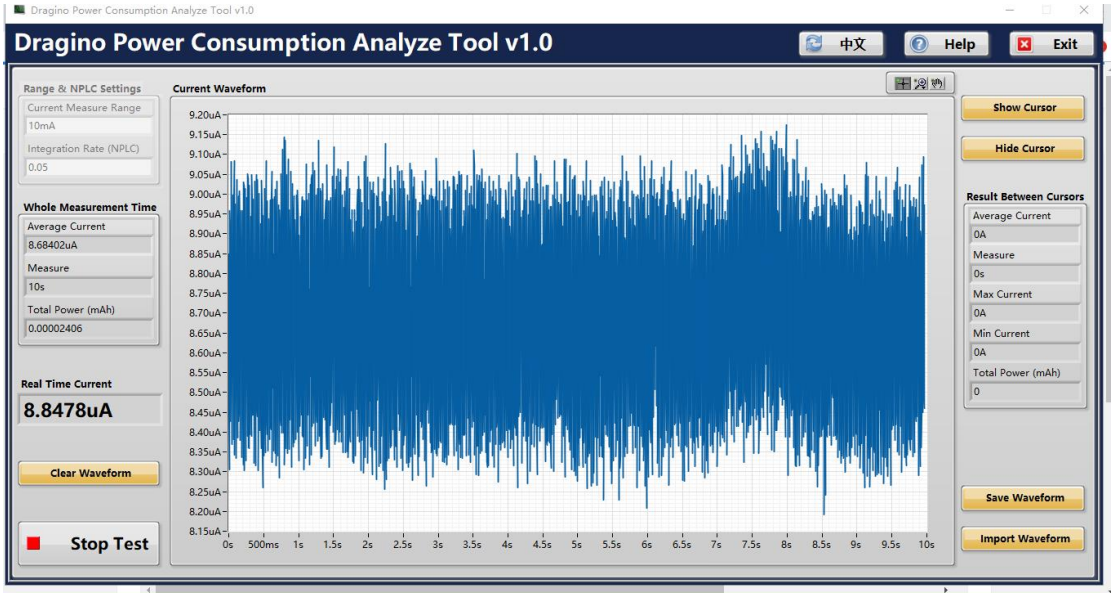
4000(1 - 2%*y) = **0.0845**mA * 24 * 365 * y

So Y = 4000/ (**0.0845***24*365+80) =4.8(Years)

5. US915 Power consumptio7n test results （ Device connection DS18B20 Temperature and humidity sensor）

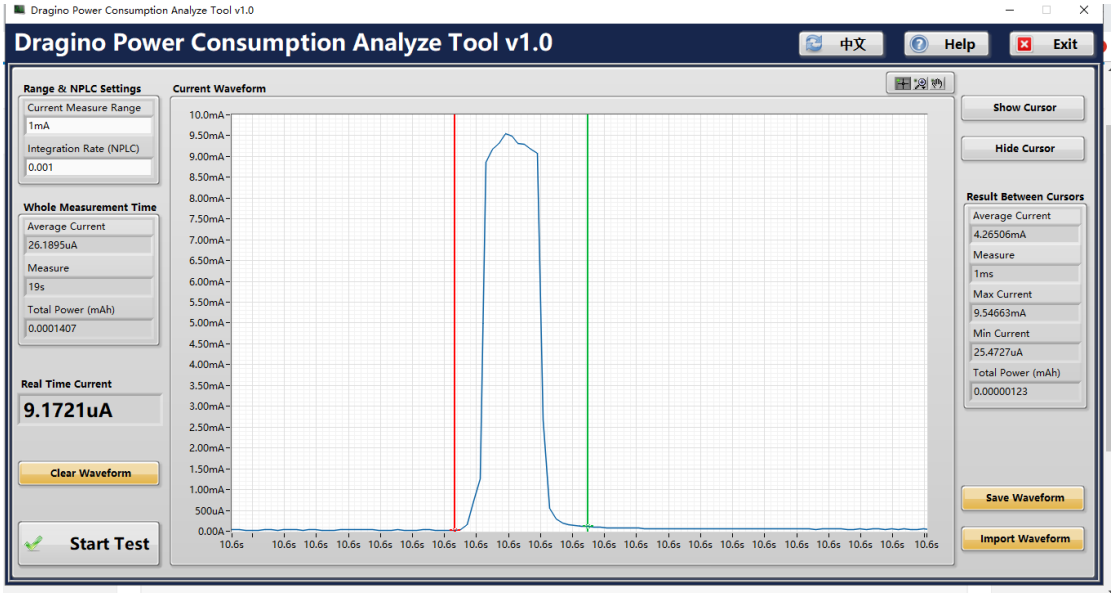
5.1 Deep Sleep Mode

Average: 9uA



5.2 Watchdog Power

Max 10mA Average 4.26506mA in 1ms for every 18 seconds (watchdog period)



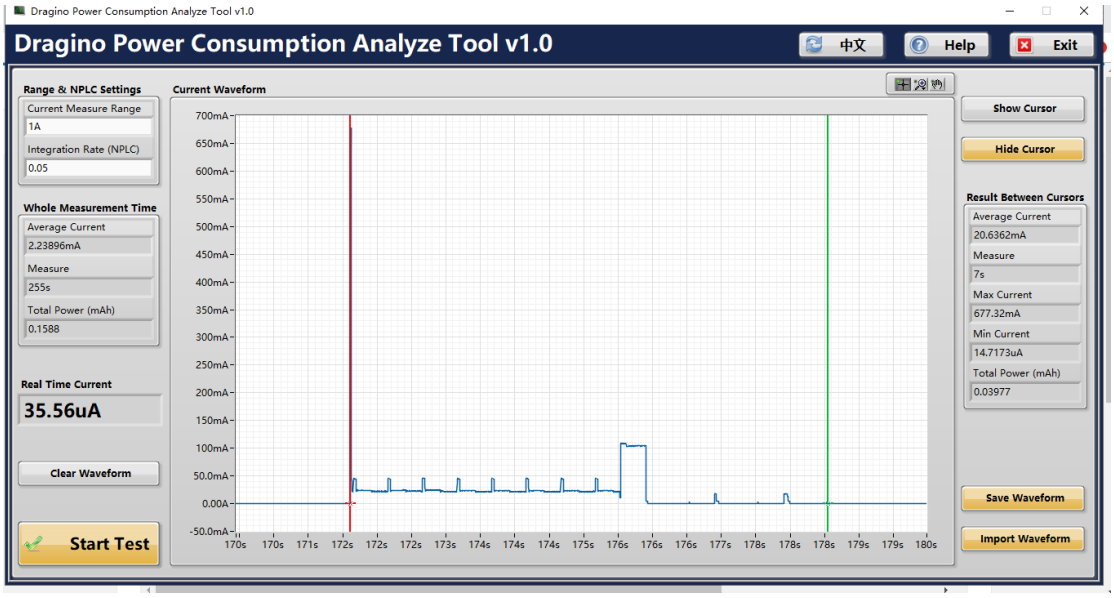
5.3 DR=0,TXP=0

Transmit Time: 7s

Average Current in transmit time: 20.6362mA

The total current to send a packet is

20.6362mA * 7s =144.4534 mA*s



Analyze Result

With Above test result and battery info, we can estimate the battery life.

and let is working in set up DR=0. Transmit one uplink every 20 minutes.

- ✓ Deep Sleep Mode Current :0.0088mA*20*60s = (10.56mA*s)
- ✓ Watch Dog Current: 0.001s*4.2651mA*(20*60s/18s) = (0.2843mA*s)
- ✓ The total current to send a packet is : **144.4534**mA*s

So **total Average Current is :(10.56 + 0.2843 +144.4534)/(20*60)= 0.1294mA.**

The battery used in LSE01 is 4000mAh and of stable voltage in the most of life. With considering a max 2% discharge rate from the battery spec.So the battery life is y. so

4000(1 - 2%*y) = **0.1294**mA * 24 * 365 * y

So Y =4000/ (**0.1294** *24*365+80) = 3.2(Years)

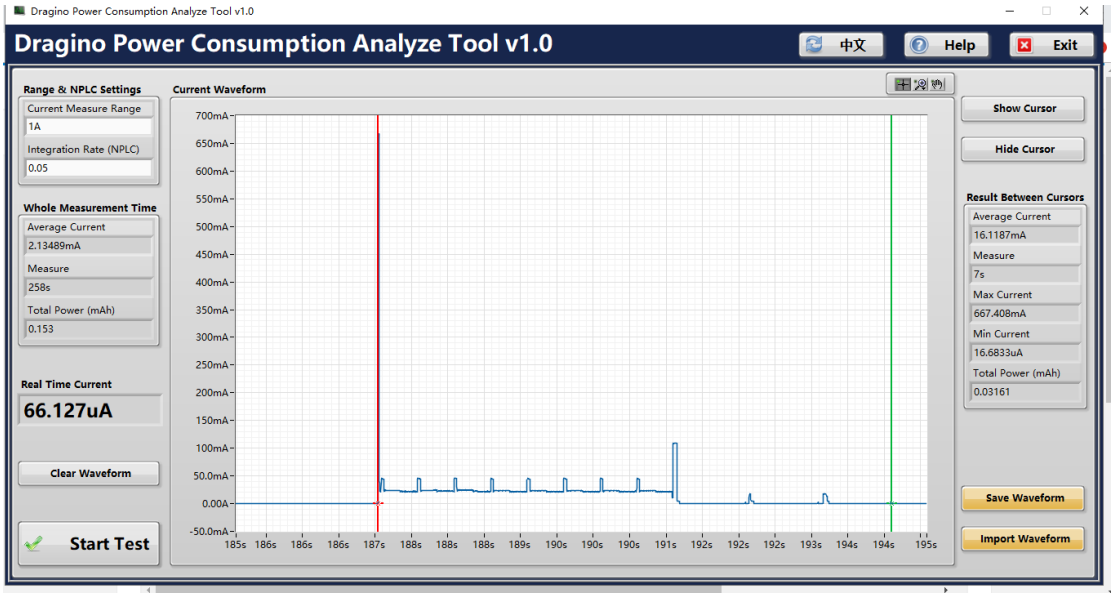
5.4 DR=3,TXP=0

Transmit Time: 7s

Average Current in transmit time: 16.1187mA

The total current to send a packet is

16.1187mA * 7s =112.8309 mA*s



Analyze Result

With Above test result and battery info, we can estimate the battery life.

and let is working in set up DR=3. Transmit one uplink every 20 minutes.

- ✓ Deep Sleep Mode Current :0.0088mA*20*60s = (10.56mA*s)
- ✓ Watch Dog Current: 0.001s*4.2651mA*(20*60s/18s) = (0.2843mA*s)
- ✓ The total current to send a packet is : **112.8309**mA*s

So **total Average Current is :(10.56 + 0.2843 +112.8309)/(20*60)= 0.103mA.**

The battery used in LSE01 is 4000mAh and of stable voltage in the most of life. With considering a max 2% discharge rate from the battery spec.So the battery life is y. so

4000(1 - 2%*y) = **0.103**mA * 24 * 365 * y

So Y =4000/ (**0.103** *24*365+80) = 4(Years)