Test Engineer:	Lu Herong
Date:	2020-08-01

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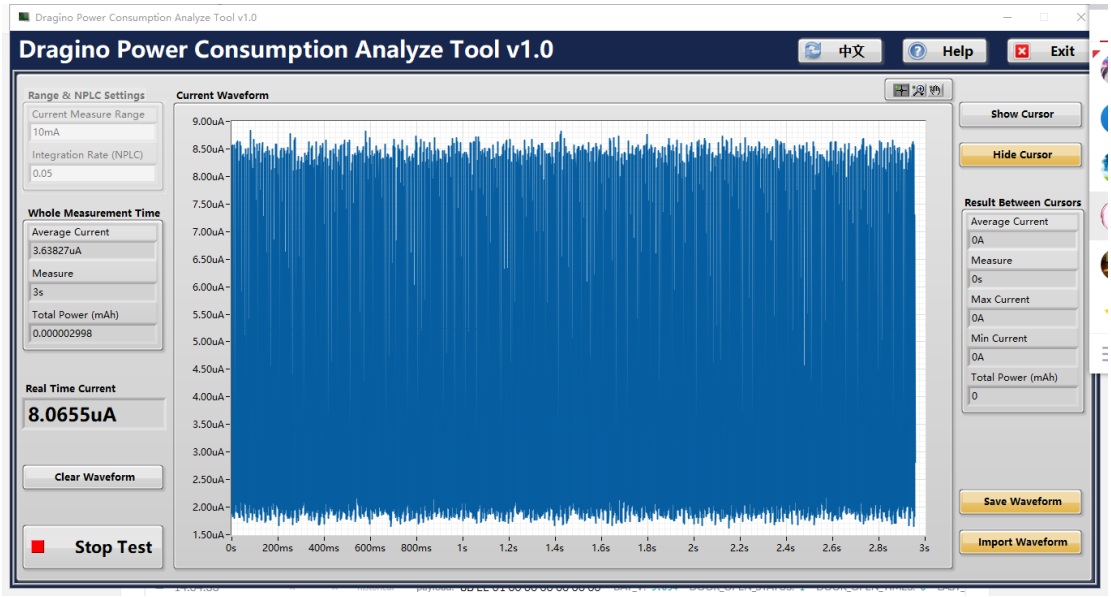
1. Test Result

1.1 Mode1 LDS01 EU868

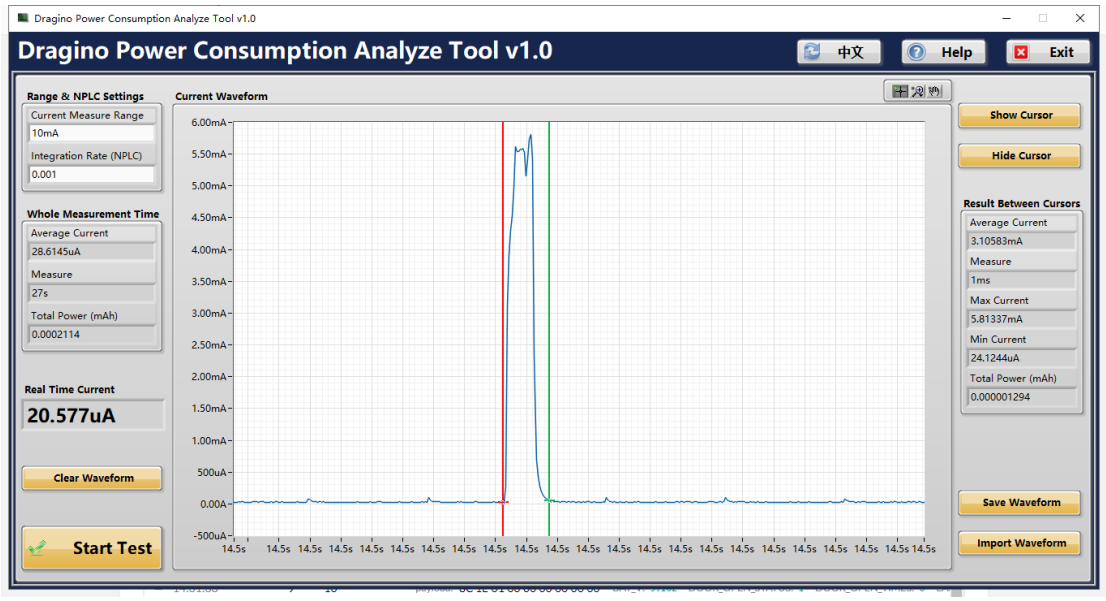
1.1.1 Deep Sleep Mode

Average:8.1uA



1.1.2 Count Power

Average 3.10583mA in 1ms for every 60 seconds (count period)



1.1.3 DR=0,TXP=0

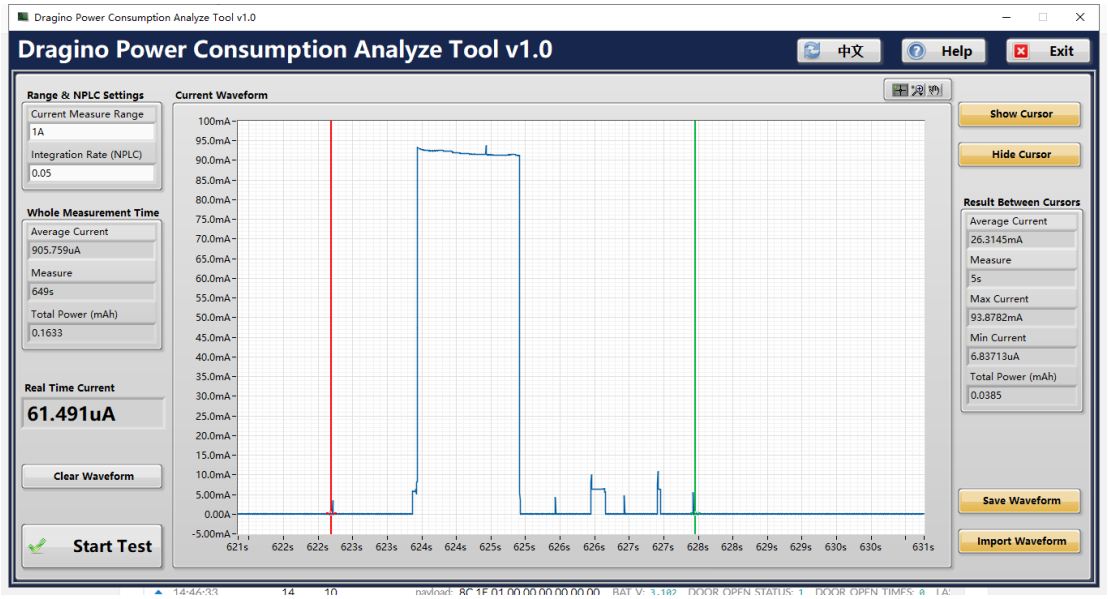
Send packet

Transmit: 5s

Average Current in transmit time: 26.3145mA

The total current to send a packet is

26.3145mA * 5s = 131.5725mA*s



Analyze Result

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

For example, if we install the sensor node where the DR=0, Transmit one uplink every one hour.

The average current for the end node composed of:

- ✓ Deep Sleep Mode Power Consumption in one period : 0.0081mA*60*60s=(29.16mA*s)
- ✓ Count Power Consumption in one period: 0.001s*3.1058mA*(60*60s/60s)=(0.1864mA*s)
- ✓ Sampling & Uplink & Downlink Power Consumption Power Consumption in one period:**131.5725**mA*s

AV_Current is :(29.16mA*s + 0.1864mA*s+ 131.5725mA*s)/(60*60s)= 0.0447mA.

The battery used in LDS01 is 240mAh 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

240(1 - 2%*y) =**0.0447**mA * 24 * 365 * y

So 240 – 4.8*y = **AV_CURRENT** * 8760 *y

So240=(**AV_CURRENT** * 8760 +4.8) * Y

So Y = 240/ (**AV_CURRENT** * 8760+4.8) = 240/ (**0.0447*** 8760+4.8) = 0.6(Years)

1.1.4 DR=5,TXP=0

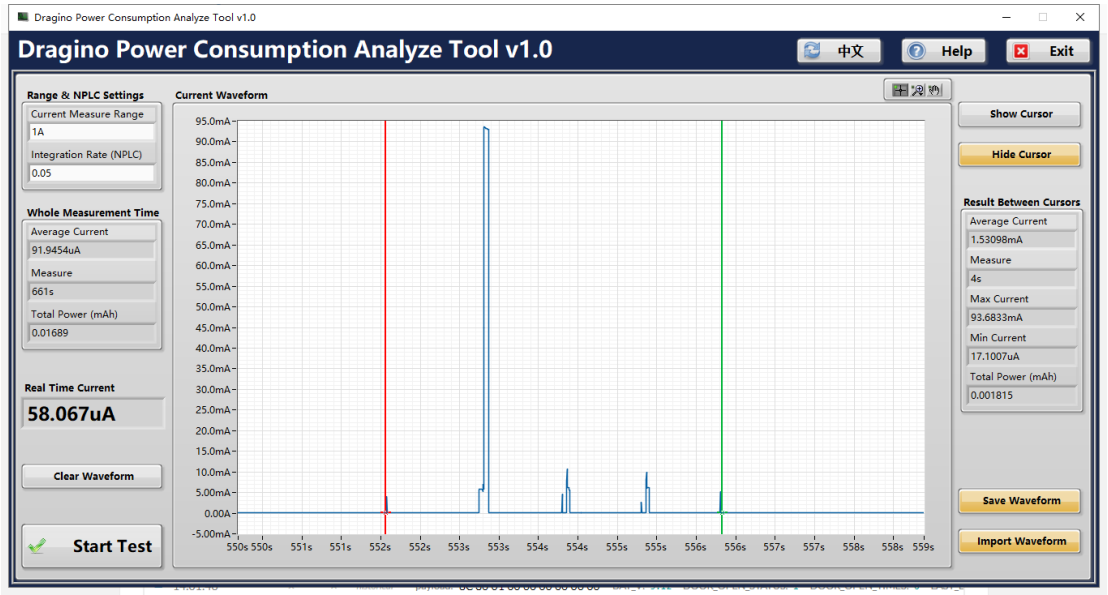
Send packet

Transmit: 4s

Average Current in transmit time: 1.53098mA

The total current to send a packet is

1.53098mA * 4s = 6.124mA*s



Analyze Result

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

For example, if we install the sensor node where the DR=5, Transmit one uplink every one hour.

The average current for the end node composed of:

- ✓ Deep Sleep Mode Power Consumption in one period : 0.0081mA*60*60s=(29.16mA*s)
- ✓ Count Power Consumption in one period: 0.001s*3.1058mA*(60*60s/60s)=(0.1864mA*s)
- ✓ Sampling & Uplink & Downlink Power Consumption Power Consumption in one period:**6.124**mA*s

AV_Current is :(29.16mA*s + 0.1864mA*s+ 6.124mA*s)/(60*60s)= 0.0099mA.

The battery used in LDS01 is 240mAh 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

240(1 - 2%*y) =**0.0099**mA * 24 * 365 * y

So 240 – 4.8*y = **AV_CURRENT** * 8760 *y

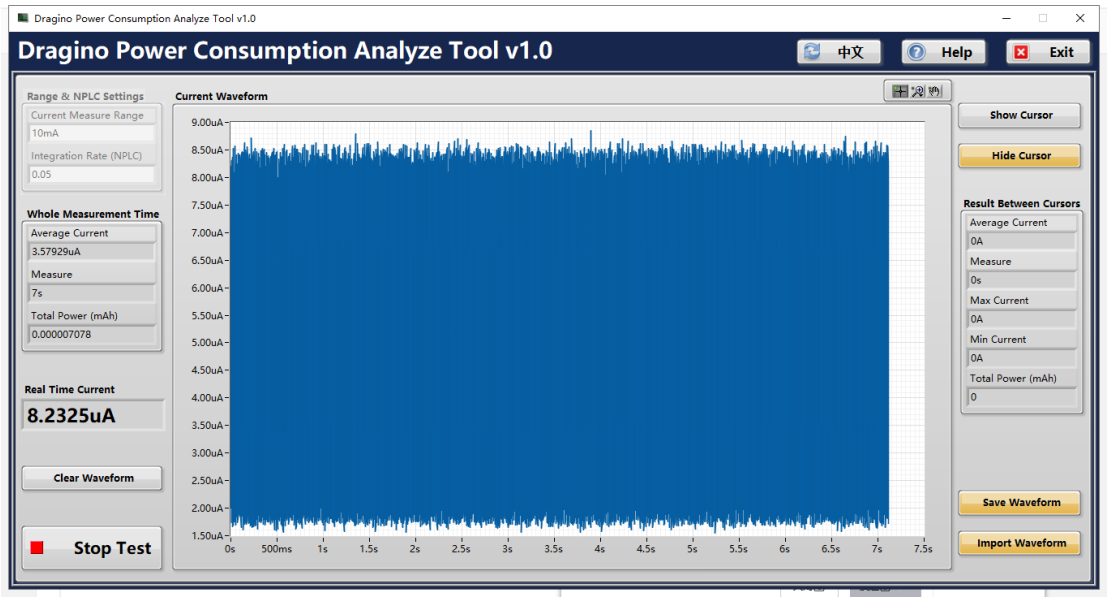
So240=(**AV_CURRENT** * 8760 +4.8) * Y

So Y = 240/ (**AV_CURRENT** * 8760+4.8) = 240/ (**0.0099*** 8760+4.8) = 2.6(Years)

1.2 Mode1 LDS01 US915

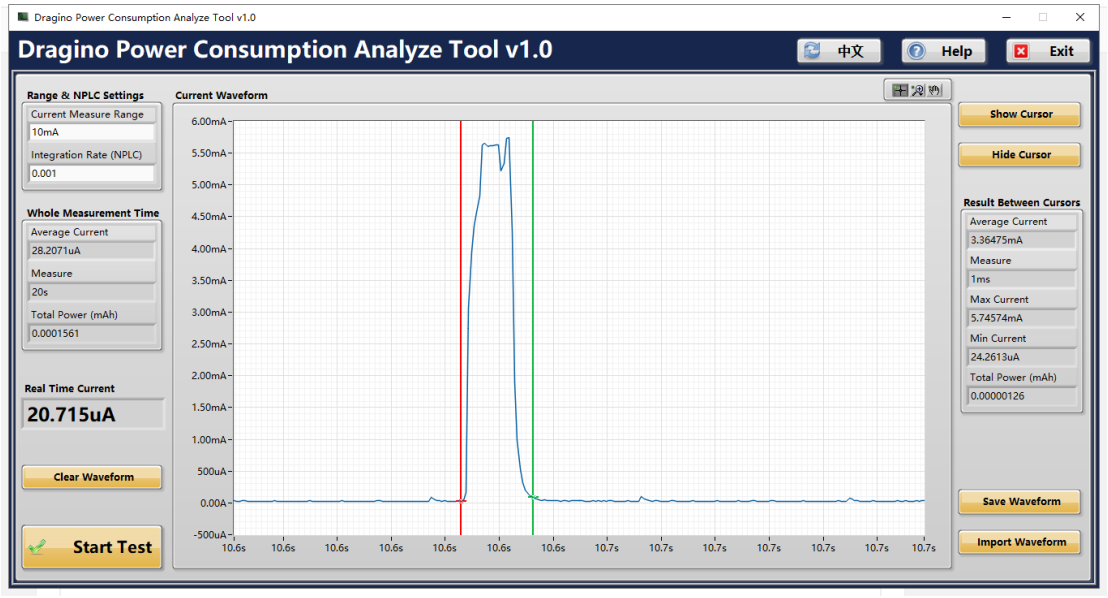
1.2.1 Deep Sleep Mode

Average:8.3uA



1.2.2 Count Power

Average 3.36475mA in 1ms for every 60 seconds (count period)



1.2.3 DR=0,TXP=0

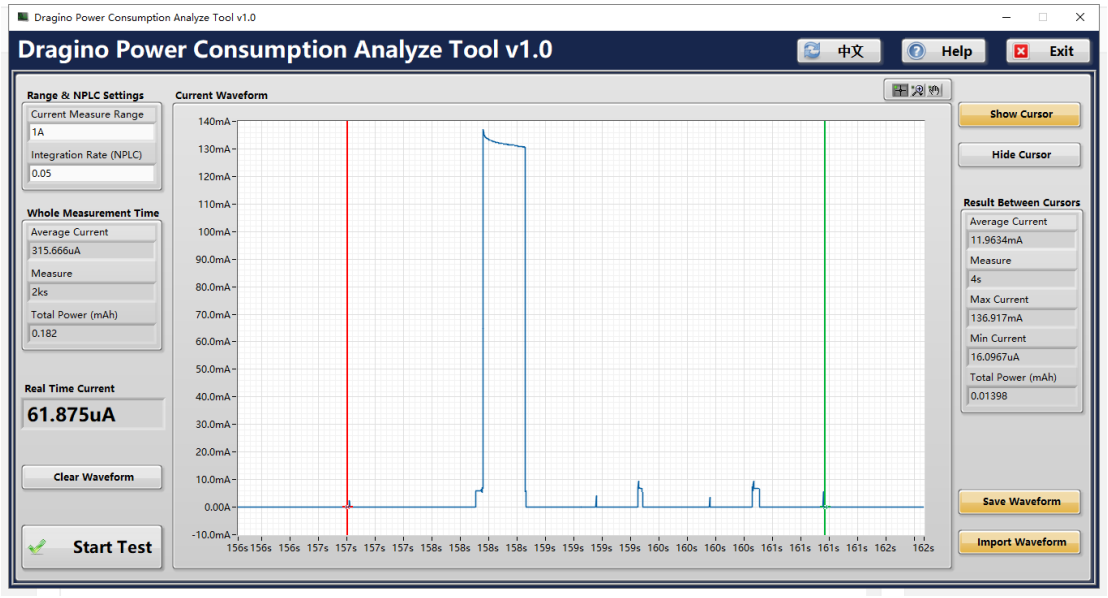
Send packet

Transmit: 4s

Average Current in transmit time: 11.9634mA

The total current to send a packet is

11.9634mA * 4s = 47.8536mA*s



Analyze Result

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

For example, if we install the sensor node where the DR=0, Transmit one uplink every one hour.

The average current for the end node composed of:

- ✓ Deep Sleep Mode Power Consumption in one period : 0.0083mA*60*60s=(29.88mA*s)
- ✓ Count Power Consumption in one period: 0.001s*3.3648mA*(60*60s/60s)=(0.202mA*s)
- ✓ Sampling & Uplink & Downlink Power Consumption Power Consumption in one period:47.8536mA*s

AV_Current is :(29.88mA*s + 0.202mA*s+ 47.8536mA*s)/(60*60s)= 0.02165mA.

The battery used in LDS01 is 240mAh 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

240(1 - 2%*y) =0.02165mA * 24 * 365 * y

So 240 – 4.8*y = AV_CURRENT * 8760 *y

So240=(AV_CURRENT * 8760 +4.8) * Y

So Y = 240/ (AV_CURRENT * 8760+4.8) = 240/ (0.02165* 8760+4.8) = 1.2(Years)

1.2.4 DR=3,TXP=0

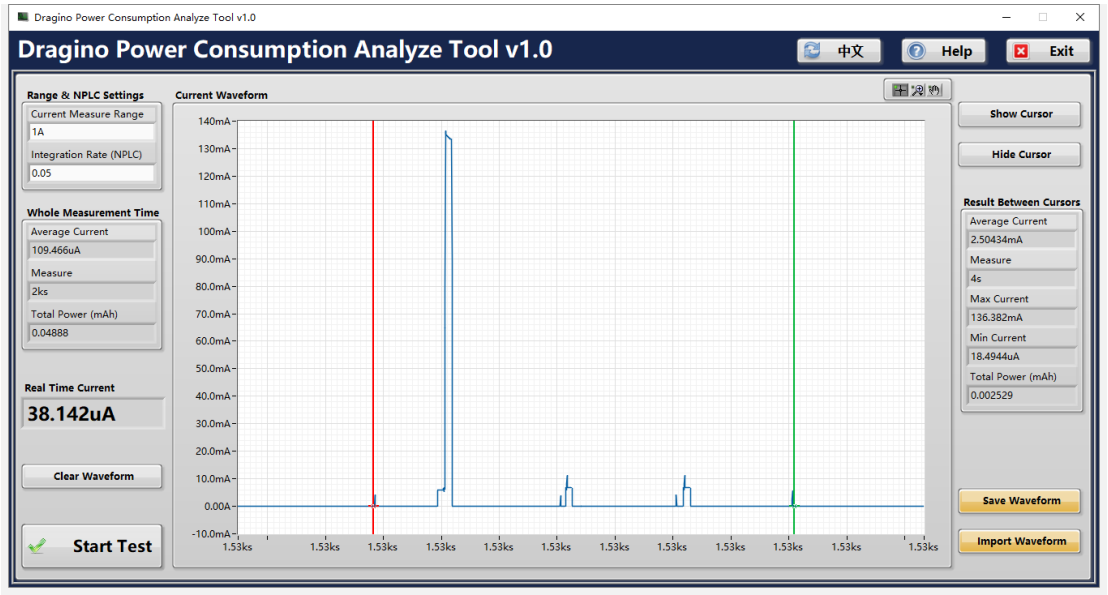
Send packet

Transmit: 4s

Average Current in transmit time: 2.50434mA

The total current to send a packet is

2.50434mA * 4s = 10.0174mA*s



Analyze Result

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

For example, if we install the sensor node where the DR=3, Transmit one uplink every one hour.

The average current for the end node composed of:

- ✓ Deep Sleep Mode Power Consumption in one period : 0.0083mA*60*60s=(29.88mA*s)
- ✓ Count Power Consumption in one period: 0.001s*3.3648mA*(60*60s/60s)=(0.202mA*s)
- ✓ Sampling & Uplink & Downlink Power Consumption Power Consumption in one period:**10.0174**mA*s

AV_Current is :(29.88mA*s + 0.202mA*s+ 10.0174mA*s)/(60*60s)= 0.01114mA.

The battery used in LDS01 is 240mAh 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

240(1 - 2%*y) =**0.01114**mA * 24 * 365 * y

So 240 – 4.8*y = **AV_CURRENT** * 8760 *y

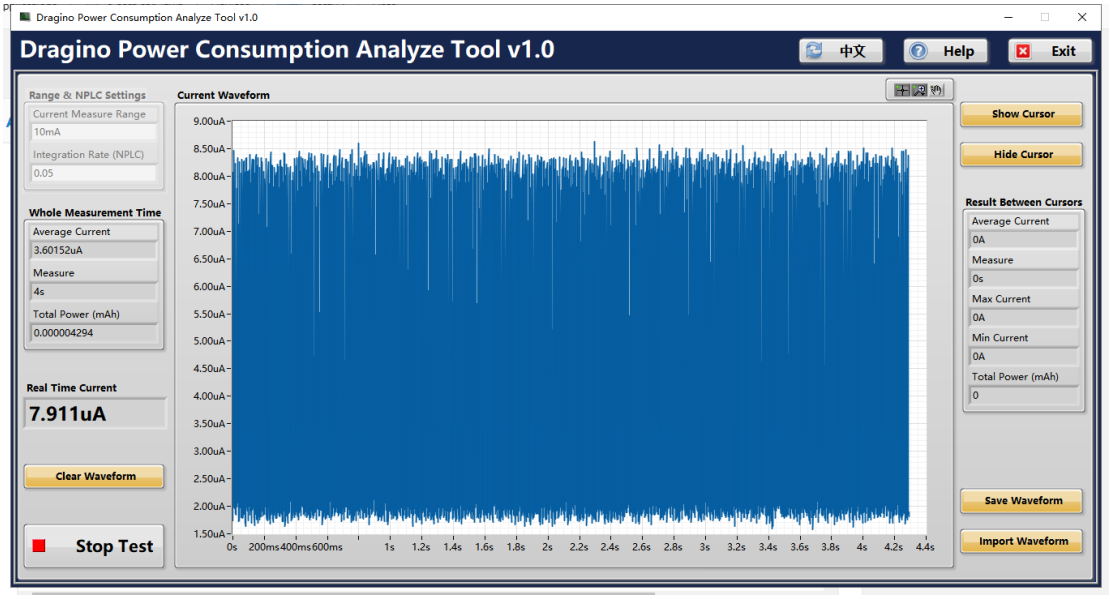
So240=(**AV_CURRENT** * 8760 +4.8) * Y

So Y = 240/ (**AV_CURRENT** * 8760+4.8) = 240/ (**0.01114*** 8760+4.8) = 2.3(Years)

1.3 Mode2 LWL01 EU868

1.3.1 Deep Sleep Mode

Average:8uA



1.3.2 DR=0,TXP=0

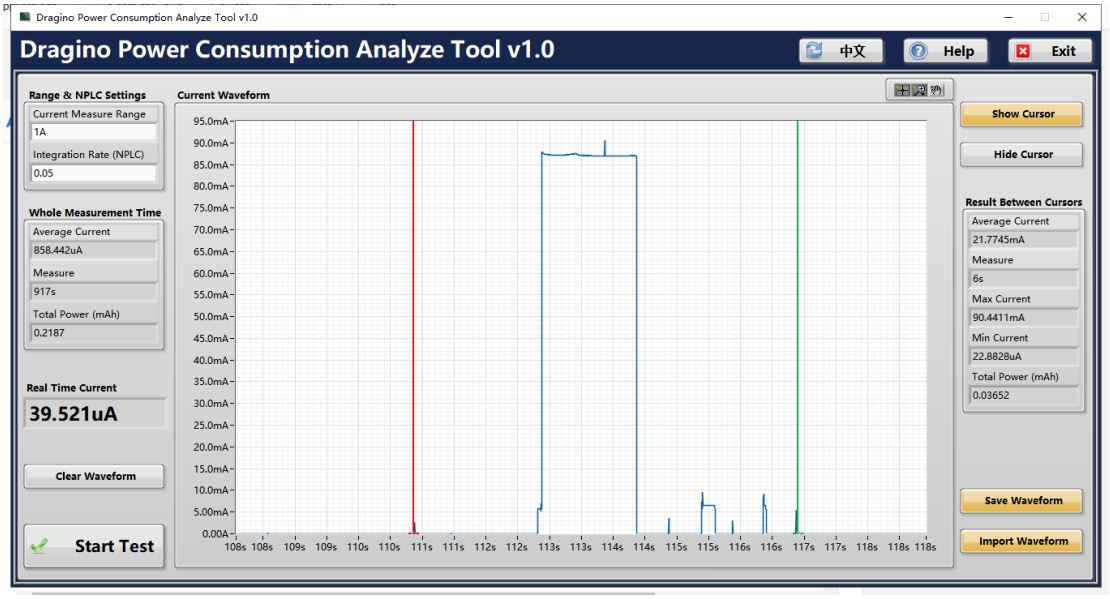
Send packet

Transmit: 6s

Average Current in transmit time: 21.7745mA

The total current to send a packet is

21.7745mA * 6s = 130.647mA*s



Analyze Result

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

For example, if we install the sensor node where the DR=0, Transmit one uplink every one hour.

The average current for the end node composed of:

- ✓ Deep Sleep Mode Power Consumption in one period : 0.008mA *60*60s=(28.8mA*s)
- ✓ Sampling & Uplink & Downlink Power Consumption Power Consumption in one period:130.647mA*s

AV_Current is :(28.8mA*s + 130.647mA*s)/(60*60s)= 0.04429mA.

The battery used in LWL01 is 240mAh 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

240(1 - 2%*y) =0.04429mA * 24 * 365 * y

So 240 – 4.8*y = AV_CURRENT * 8760 *y

So240=(AV_CURRENT * 8760 +4.8) * Y

So Y = 240/ (AV_CURRENT * 8760+4.8) = 240/ (0.04429* 8760+4.8) = 0.6(Years)

1.3.3 DR=5,TXP=0

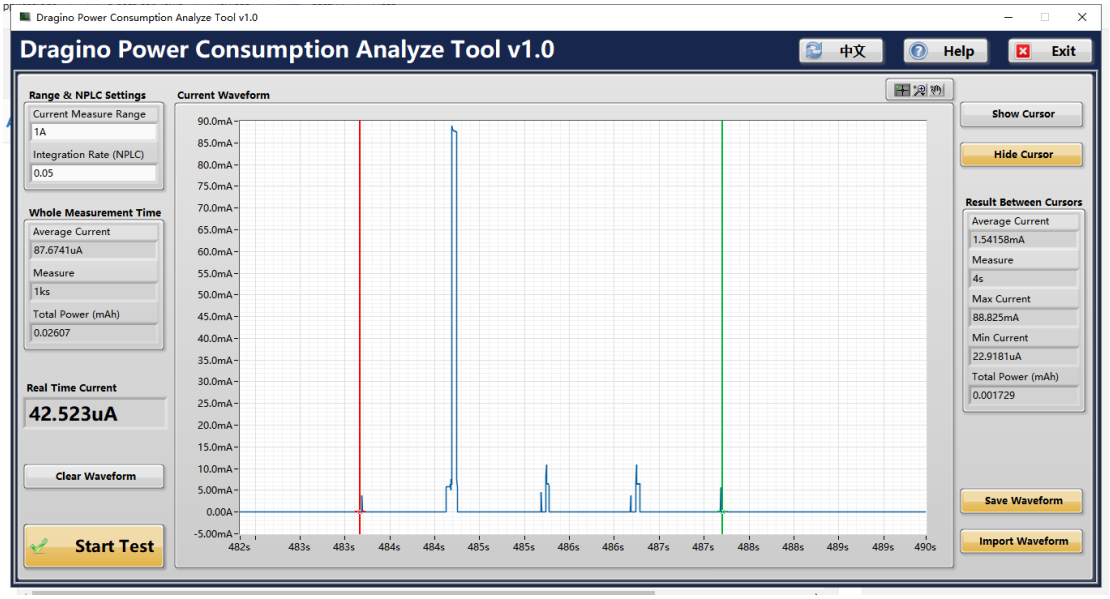
Send packet

Transmit: 4s

Average Current in transmit time: 1.54158mA

The total current to send a packet is

1.54158mA * 4s = 6.16632mA*s



Analyze Result

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

For example, if we install the sensor node where the DR=5, Transmit one uplink every one hour.

The average current for the end node composed of:

- ✓ Deep Sleep Mode Power Consumption in one period : 0.008mA *60*60s=(28.8mA*s)
- ✓ Sampling & Uplink & Downlink Power Consumption Power Consumption in one period:6.16632mA*s

AV_Current is :(28.8mA*s + 6.16632mA*s)/(60*60s)= 0.0097mA.

The battery used in LWL01 is 240mAh 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

240(1 - 2%*y) =0.0097mA * 24 * 365 * y

So 240 – 4.8*y = AV_CURRENT * 8760 *y

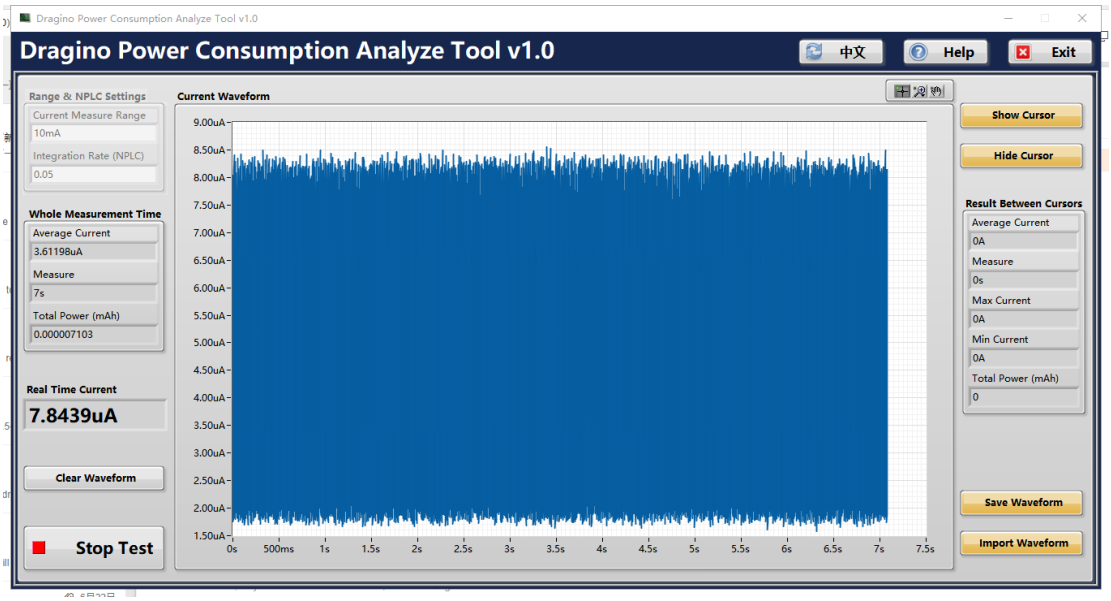
So240=(AV_CURRENT * 8760 +4.8) * Y

So Y = 240/ (AV_CURRENT * 8760+4.8) = 240/ (0.0097* 8760+4.8) = 2.6(Years)

1.4 Mode2 LWL01 US915

1.4.1 Deep Sleep Mode

Average:8uA



1.4.2 DR=0,TXP=0

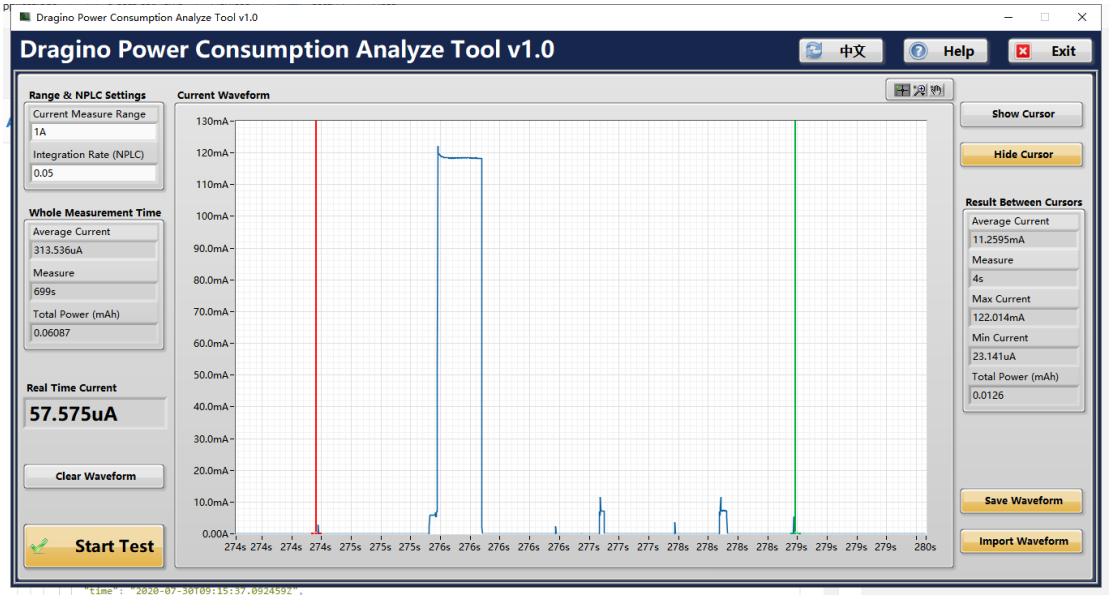
Send packet

Transmit: 4s

Average Current in transmit time: 11.2595mA

The total current to send a packet is

11.2595mA * 4s = 45.038mA*s



Analyze Result

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

For example, if we install the sensor node where the DR=0, Transmit one uplink every one hour.

The average current for the end node composed of:

- ✓ Deep Sleep Mode Power Consumption in one period : 0.008mA *60*60s=(28.8mA*s)
- ✓ Sampling & Uplink & Downlink Power Consumption Power Consumption in one period:45.038mA*s

AV_Current is :(28.8mA*s + 45.038mA*s)/(60*60s)= 0.0205mA.

The battery used in LWL01 is 240mAh 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

240(1 - 2%*y) =0.0205mA * 24 * 365 * y

So 240 – 4.8*y = AV_CURRENT * 8760 *y

So240=(AV_CURRENT * 8760 +4.8) * Y

So Y = 240/ (AV_CURRENT * 8760+4.8) = 240/ (0.0205* 8760+4.8) = 1.3(Years)

1.4.3 DR=3,TXP=0

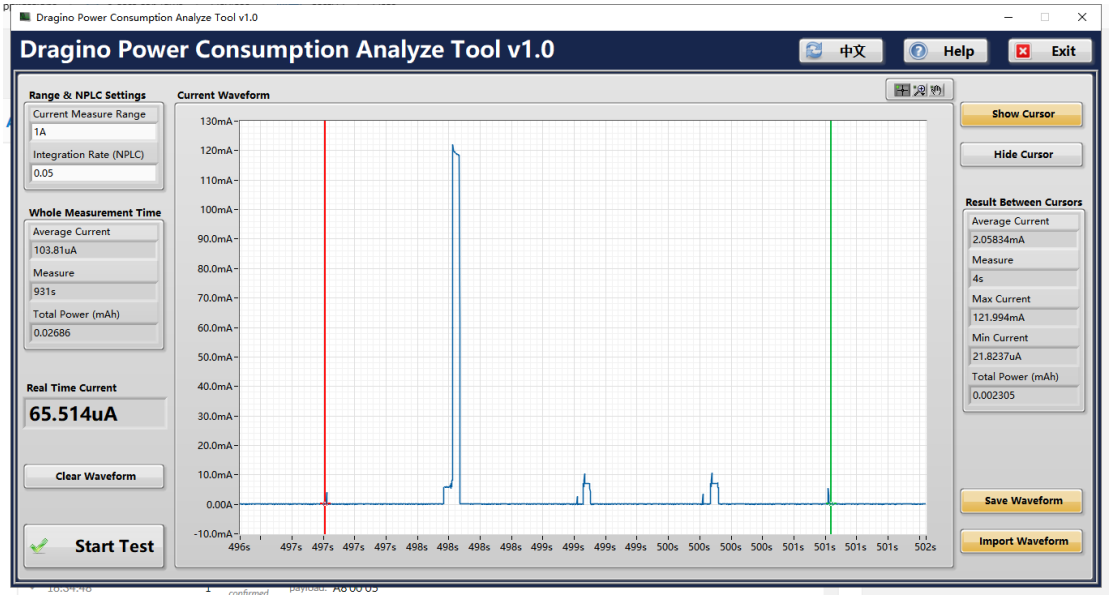
Send packet

Transmit: 4s

Average Current in transmit time: 2.05843mA

The total current to send a packet is

2.05843mA * 4s = 8.23372mA*s



Analyze Result

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

For example, if we install the sensor node where the DR=3, Transmit one uplink every one hour.

The average current for the end node composed of:

- ✓ Deep Sleep Mode Power Consumption in one period : 0.008mA *60*60s=(28.8mA*s)
- ✓ Sampling & Uplink & Downlink Power Consumption Power Consumption in one period:**8.23372**mA*s

AV_Current is :(28.8mA*s + 8.23372mA*s)/(60*60s)= 0.01029mA.

The battery used in LWL01 is 240mAh 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

240(1 - 2%*y) =**0.01029**mA * 24 * 365 * y

So 240 – 4.8*y = **AV_CURRENT** * 8760 *y

So240=(**AV_CURRENT** * 8760 +4.8) * Y

So Y = 240/ (**AV_CURRENT** * 8760+4.8) = 240/ (**0.01029*** 8760+4.8) = 2.5(Years)