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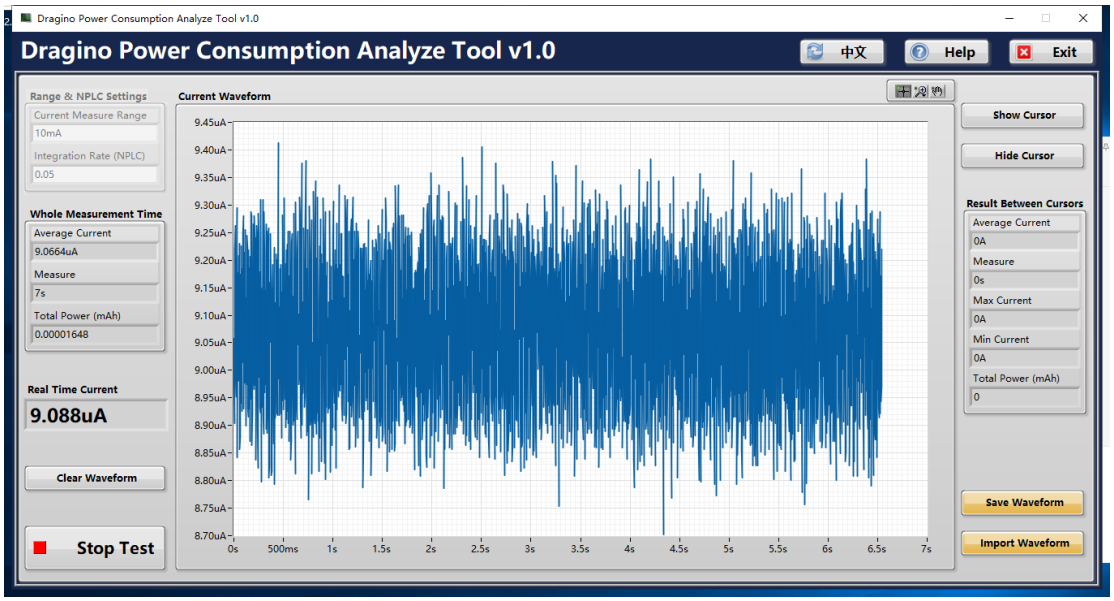
Date:	2021-03-02

目录

Test Result

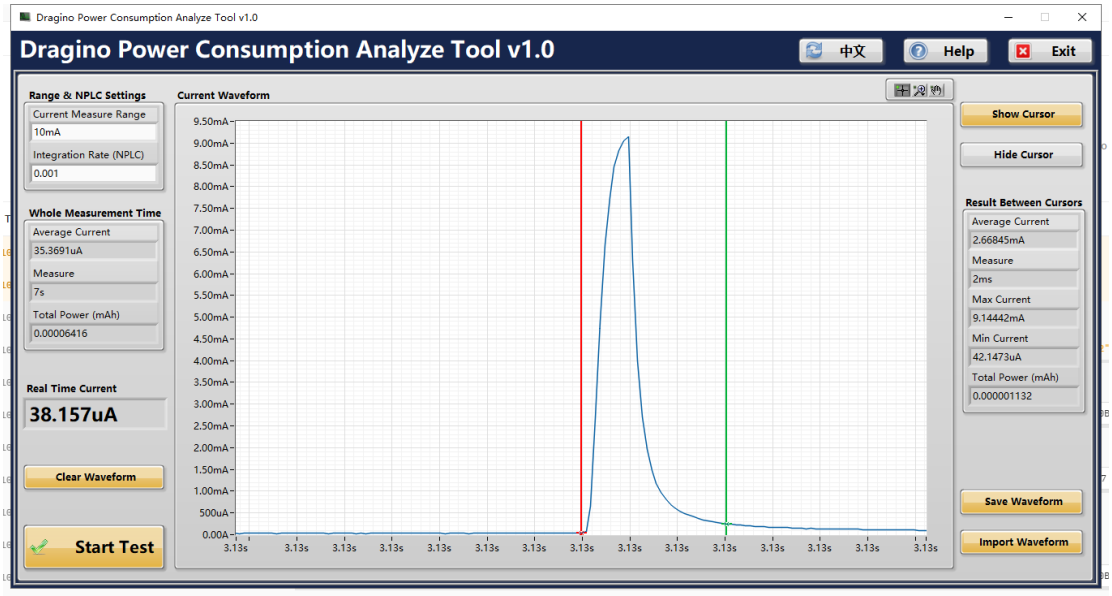
1. 1. Deep Sleep Mode

Average:9uA



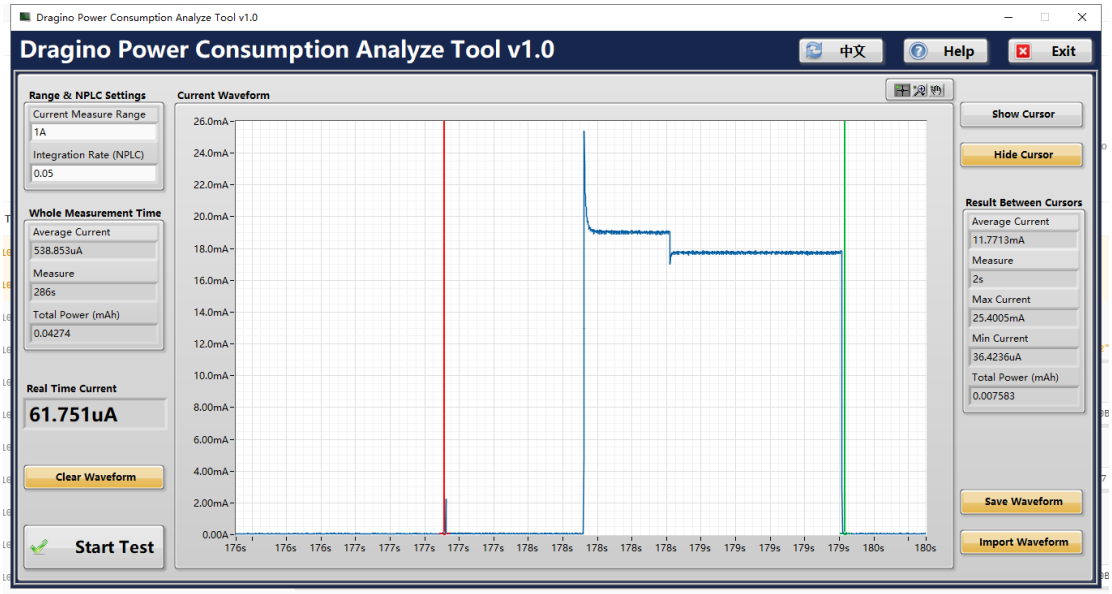
1. 2. Watchdog Power

Average 2.68845mA in 2ms for every 18 seconds (watchdog period)



1. 3. Detection power

Average 11.7713mA in 2s for every 60seconds



1.4. EU868

1.4.1. DR=0,TXP=0

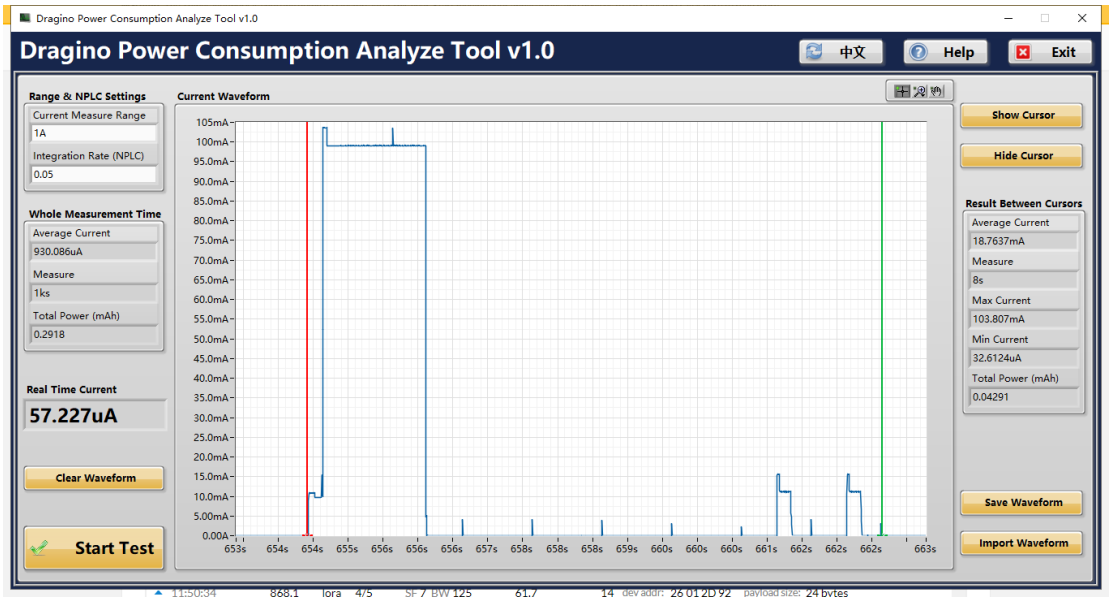
send data

Transmit Time: 8s

Average Current in transmit time: 18.7637mA

The total current to send a packet is

18.7637mA * 8s = 150.1096mA*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 20 minutes .

The average current for the end node composed of:

- ✓ Deep Sleep Mode Power Consumption in one period : 0.009mA *20*60s=(10.8mA*s)
- ✓ Watch Dog Current Power Consumption in one period: 0.002s*2.68845mA*(20*60s/18 s)=(0.3585mA*s)
- ✓ Detection power Consumption in one period：2s*11.7713mA*(20*60s/60s)=470.852mA*s
- ✓ Sampling & Uplink & Downlink Power Consumption Power Consumption in one period:**150.1096**mA*s

AV_Current is :(10.8mA*s + 0.3585mA*s+ 470.852mA*s+150.1096mA*s)/(20*60s)= 0.5268mA.

The battery used in LSN50 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) =**0.5268**mA * 24 * 365 * y

So 4000 – 80*y = **AV_CURRENT** * 8760 *y

So 4000=(**AV_CURRENT** * 8760 +80) * Y

So Y = 4000/ (**AV_CURRENT** * 8760+80) = 4000/ (**0.5268**** 8760+80) = 0.8(Years)=9.6(month)

1. 4. 2. DR=5,TXP=0

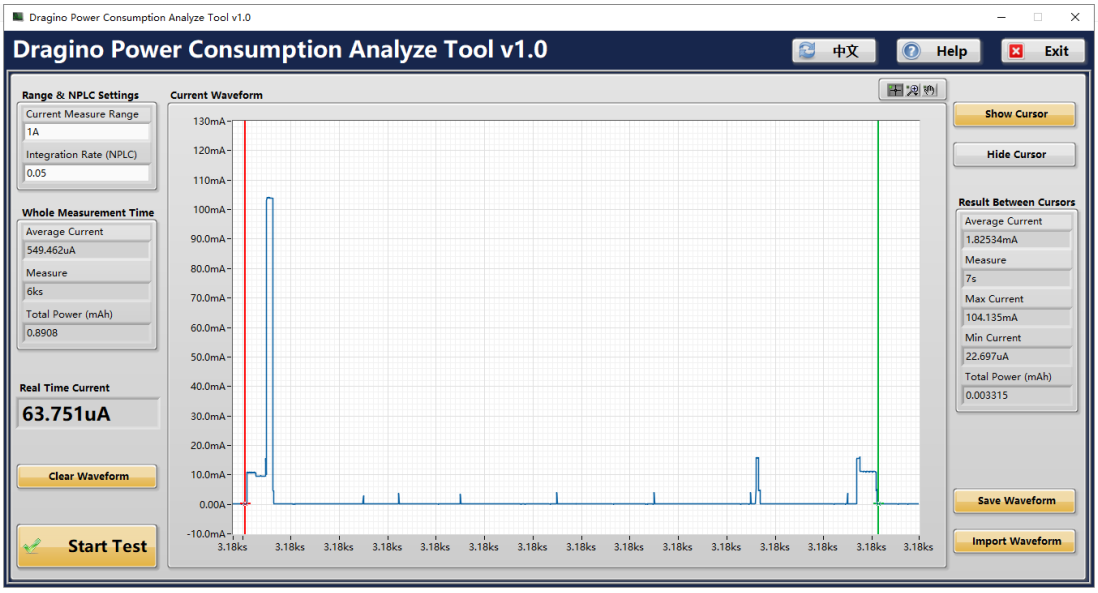
send data

Transmit Time: 7s

Average Current in transmit time: 1.82534mA

The total current to send a packet is

1.82534mA * 7s = 12.7774mA*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 20 minutes .

The average current for the end node composed of:

- ✓ Deep Sleep Mode Power Consumption in one period : 0.009mA *20*60s=(10.8mA*s)
- ✓ Watch Dog Current Power Consumption in one period: 0.002s*2.68845mA*(20*60s/18 s)=(0.3585mA*s)
- ✓ Detection power Consumption in one period：2s*11.7713mA*(20*60s/60s)=470.852mA*s
- ✓ Sampling & Uplink & Downlink Power Consumption Power Consumption in one period:**12.7774**mA*s

AV_Current is :(10.8mA*s + 0.3585mA*s+ 470.852mA*s+12.7774mA*s)/(20*60s)= 0.4123mA.

The battery used in LSN50 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) =**0.4123**mA * 24 * 365 * y

So 4000 – 80*y = **AV_CURRENT** * 8760 *y

So4000=(**AV_CURRENT** * 8760 +80) * Y

So Y = 4000/ (**AV_CURRENT** * 8760+80) = 4000/ (**0.4123**** 8760+80) = 1(Years)=12(month)

1.5. US915

1.5.1. DR=0,TXP=0

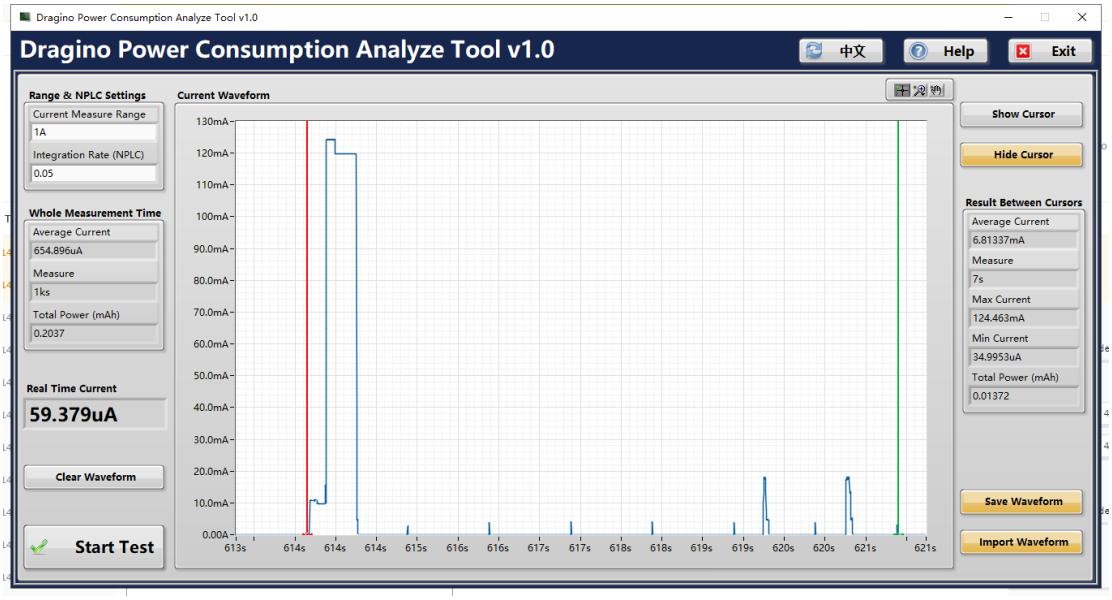
send data

Transmit Time: 7s

Average Current in transmit time: 6.81137mA

The total current to send a packet is

6.81137mA * 7s = 47.6796mA*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 20 minutes .

The average current for the end node composed of:

- ✓ Deep Sleep Mode Power Consumption in one period : 0.009mA *20*60s=(10.8mA*s)
- ✓ Watch Dog Current Power Consumption in one period: 0.002s*2.68845mA*(20*60s/18 s)=(0.3585mA*s)
- ✓ Detection power Consumption in one period：2s*11.7713mA*(20*60s/60s)=470.852mA*s
- ✓ Sampling & Uplink & Downlink Power Consumption Power Consumption in one period:**47.6796**mA*s

AV_Current is :(10.8mA*s + 0.3585mA*s+ 470.852mA*s+47.6796mA*s)/(20*60s)= 0.4414mA.

The battery used in LSN50 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) =**0.4414**mA * 24 * 365 * y

So 4000 – 80*y = **AV_CURRENT** * 8760 *y

So4000=(**AV_CURRENT** * 8760 +80) * Y

So Y = 4000/ (**AV_CURRENT** * 8760+80) = 4000/ (**0.4414*** 8760+80) = 1(Years)=12(month)

1.5.2. DR=3,TXP=0

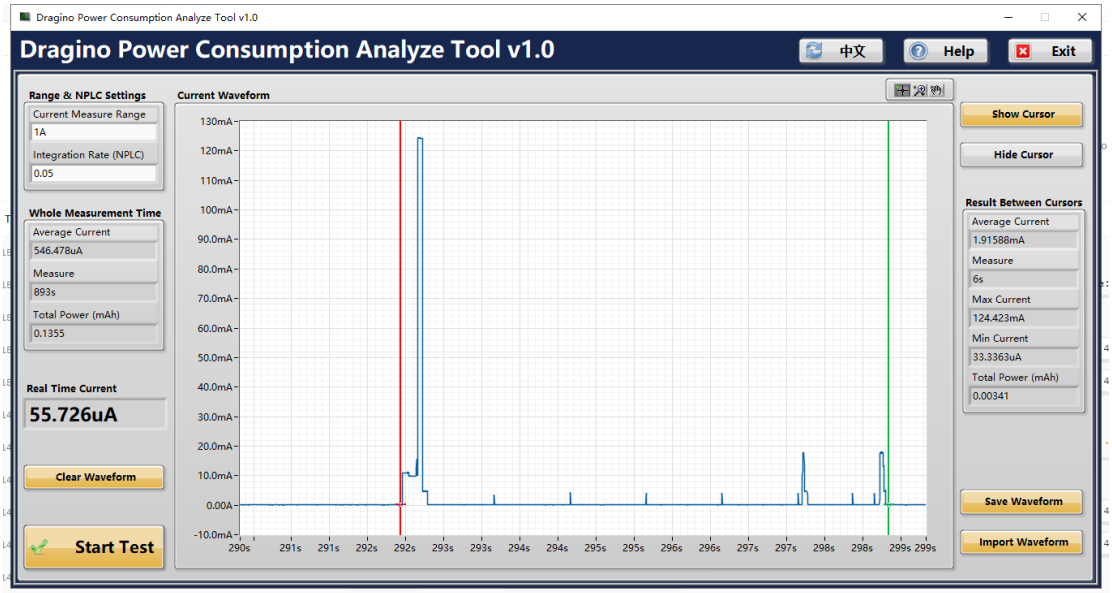
send data

Transmit Time: 6s

Average Current in transmit time: 1.91588mA

The total current to send a packet is

1.91588mA * 6s = 11.4953mA*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 20 minutes .

The average current for the end node composed of:

- ✓ Deep Sleep Mode Power Consumption in one period : 0.009mA *20*60s=(10.8mA*s)
- ✓ Watch Dog Current Power Consumption in one period: 0.002s*2.68845mA*(20*60s/18 s)=(0.3585mA*s)
- ✓ Detection power Consumption in one period：2s*11.7713mA*(20*60s/60s)=470.852mA*s
- ✓ Sampling & Uplink & Downlink Power Consumption Power Consumption in one period:**11.4953**mA*s

AV_Current is :(10.8mA*s + 0.3585mA*s+ 470.852mA*s+11.4953mA*s)/(20*60s)= 0.4113mA.

The battery used in LSN50 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) =**0.4113**mA * 24 * 365 * y

So 4000 – 80*y = **AV_CURRENT** * 8760 *y

So4000=(**AV_CURRENT** * 8760 +80) * Y

So Y = 4000/ (**AV_CURRENT** * 8760+80) = 4000/ (**0.4113*** 8760+80) = 1(Years)=12(month)

1. 6. Deep sleep mode