Test Basic on Firmware version v1.6

Introduction

This article is a test report for Dragino LSN50 LoRa 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 LSN50.

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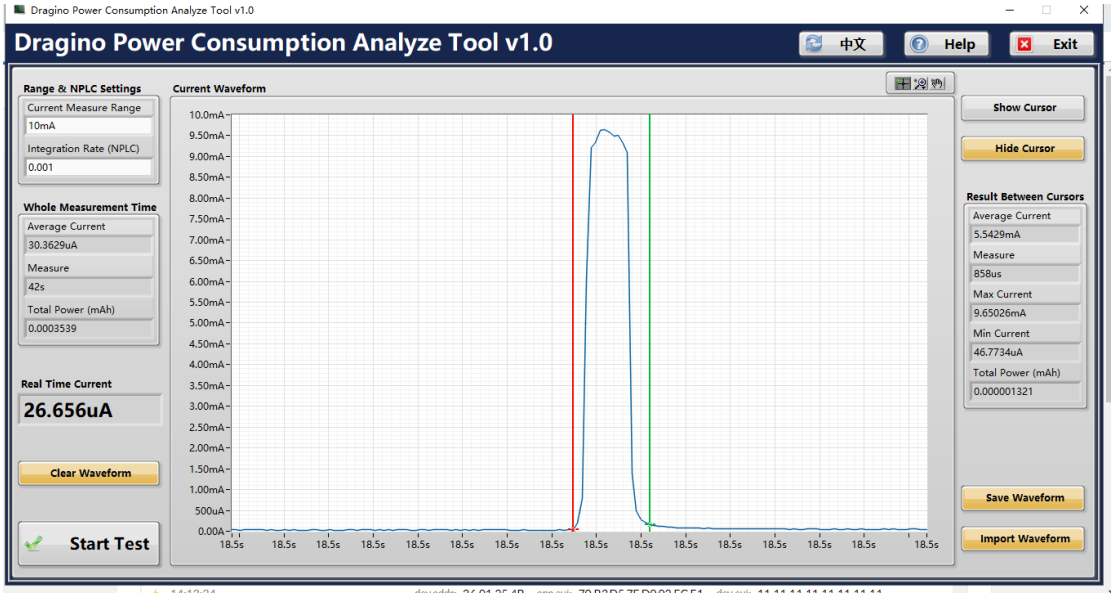
1. Test Result

1.1 Watchdog Power

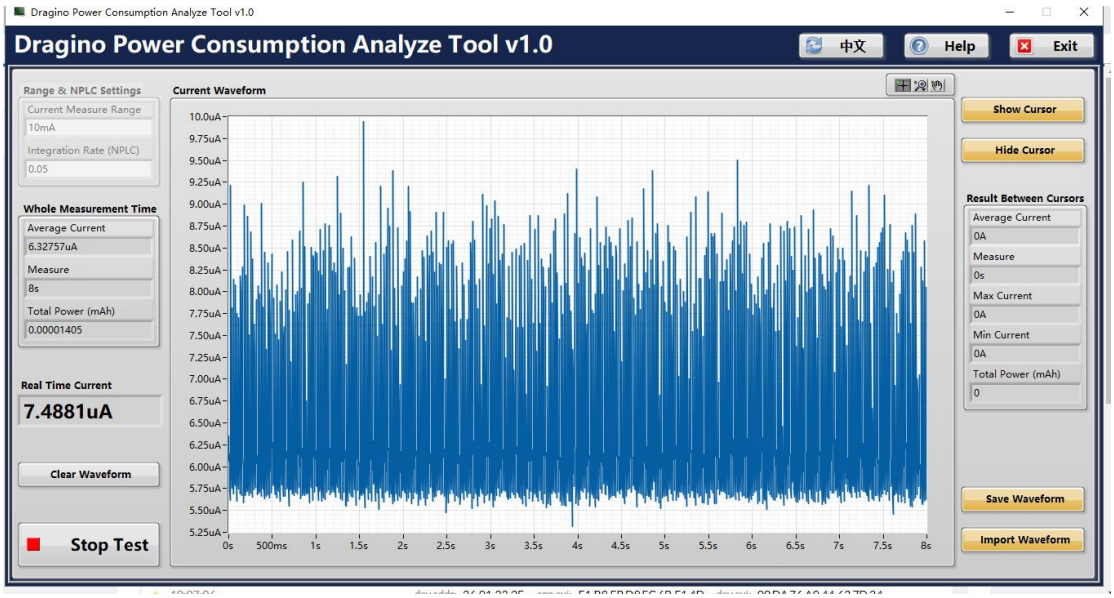
Max 10mA Average 5.5429mA in 1ms for every 18 seconds (watchdog period)



1.2 MOD=1

Deep Sleep Mode

Average: 8uA



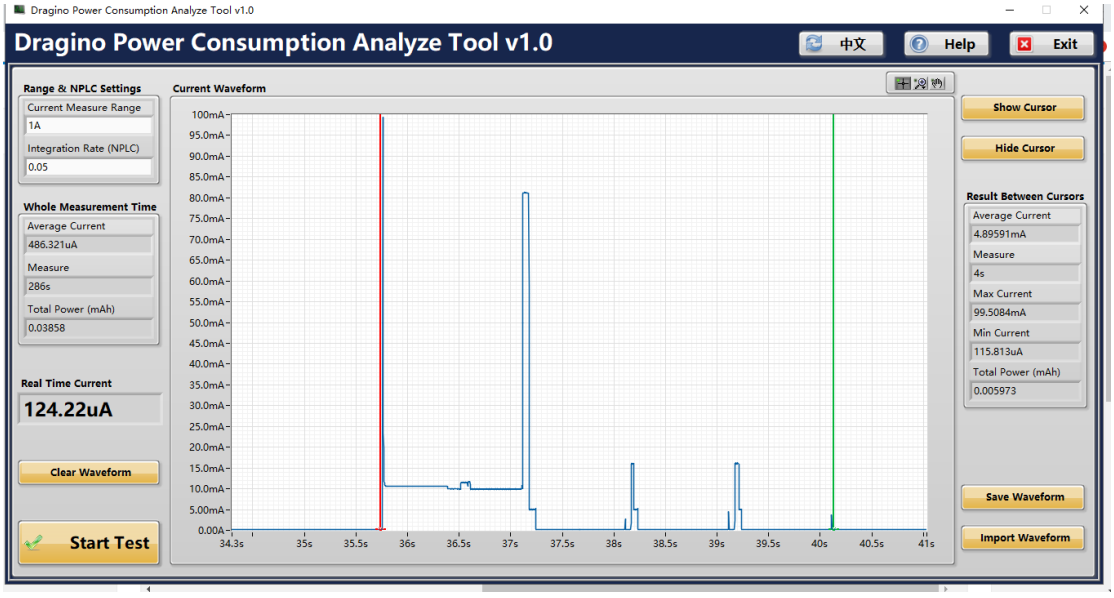
send data

Transmit Time: 4s

Average Current in transmit time: 4.89591mA

The total current to send a packet is

4.8959mA * 4s = 19.58364mA



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 : 8uA*20*60 (10.32mA)

- ✓ Watch Dog Current: 0.001*10*20*60/18 (0.67mA)
- ✓ The total current to send a packet is : 19.58364mA

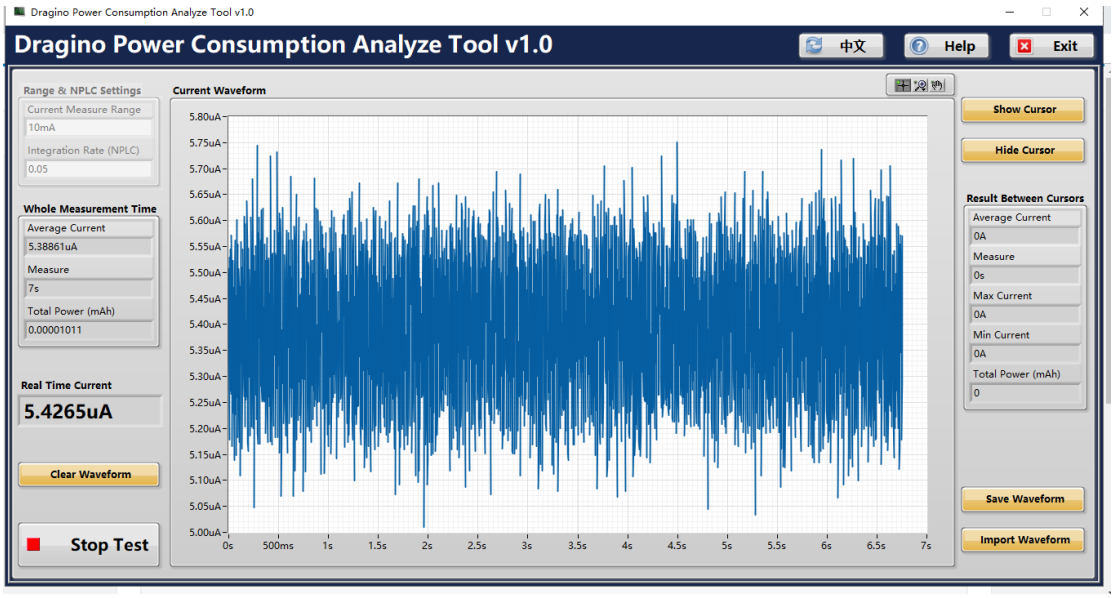
So **total Average Current is :(19.58364+10.32+0.67)/(20*60)= 0.025478mA.**
The battery used in LSN50 is 4000mAh and of stable voltage in the most of life. With considering a max 2% discharge rate from the battery spec.So the battery life is y. so

4000(1 - 2%*y) = **0.025478**mA * 24 * 365 * y

So Y = 4000/ (**0.025478***24*365+80) =13.1(Years)

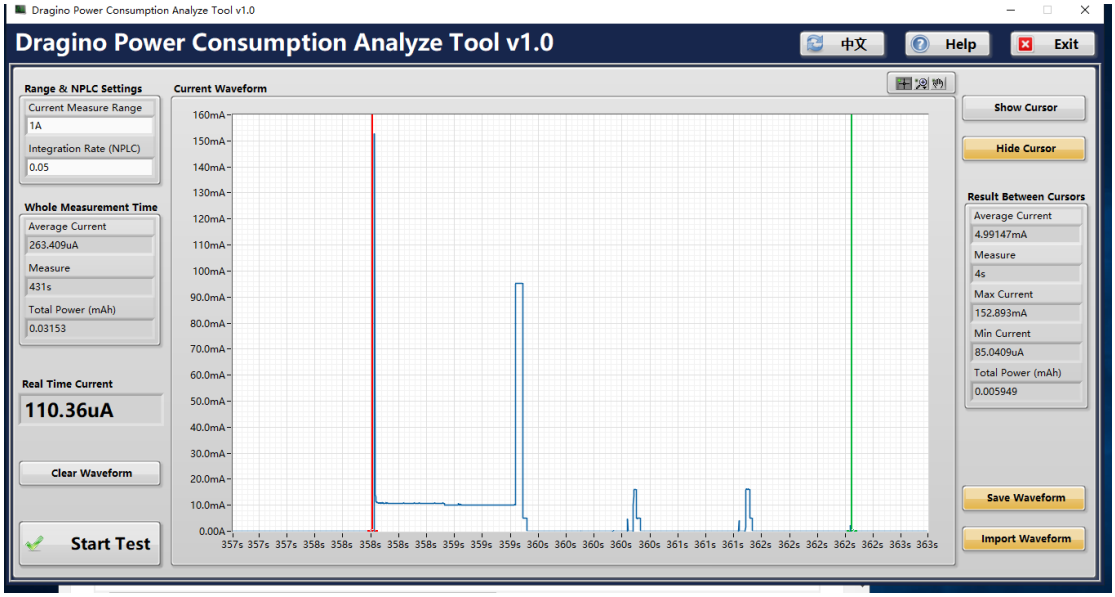
1.2 MOD=2(3VHP)

Deep Sleep Mode
Average: 6uA



send data
Transmit Time: 4s
Average Current in transmit time: 4.99147mA
The total current to send a packet is

4.99147mA * 4s = 19.96588mA



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 : 6uA*20*60 (7.2mA)
- ✓ Watch Dog Current: 0.001*10*20*60/18 (0.67mA)
- ✓ The total current to send a packet is : 19.96588mA

So **total Average Current is :(19.96588+7.2+0.67)/(20*60)= 0.023197mA.**

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

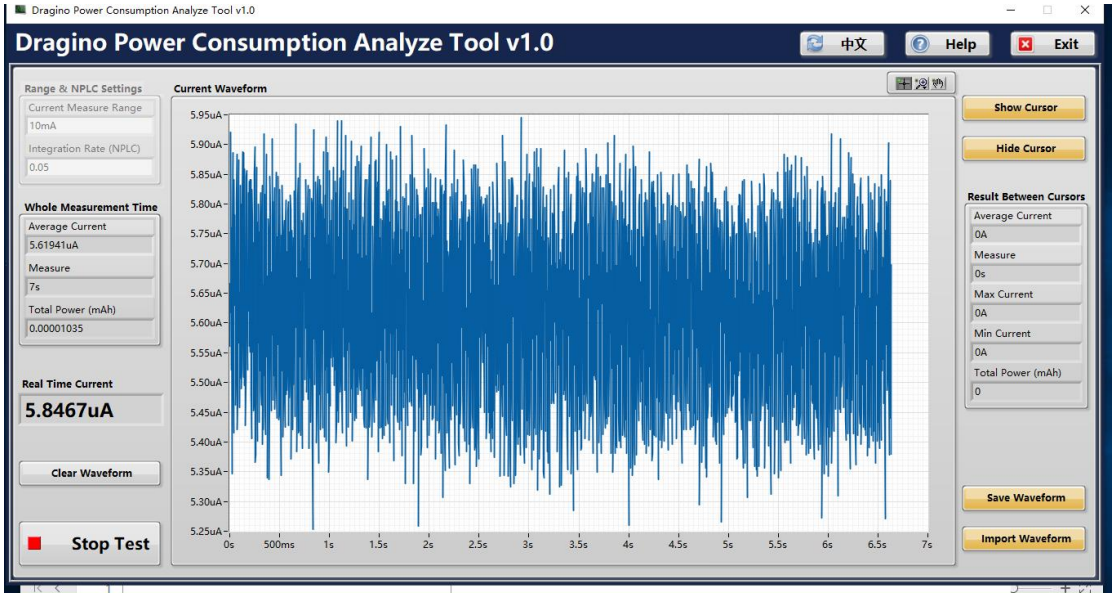
4000(1 - 2%*y) = **0.023197**mA * 24 * 365 * y

So Y = 4000/ (**0.023197***24*365+80) =14.1(Years)

1.3 MOD=2(JSN)

Deep Sleep Mode

Average: 6uA



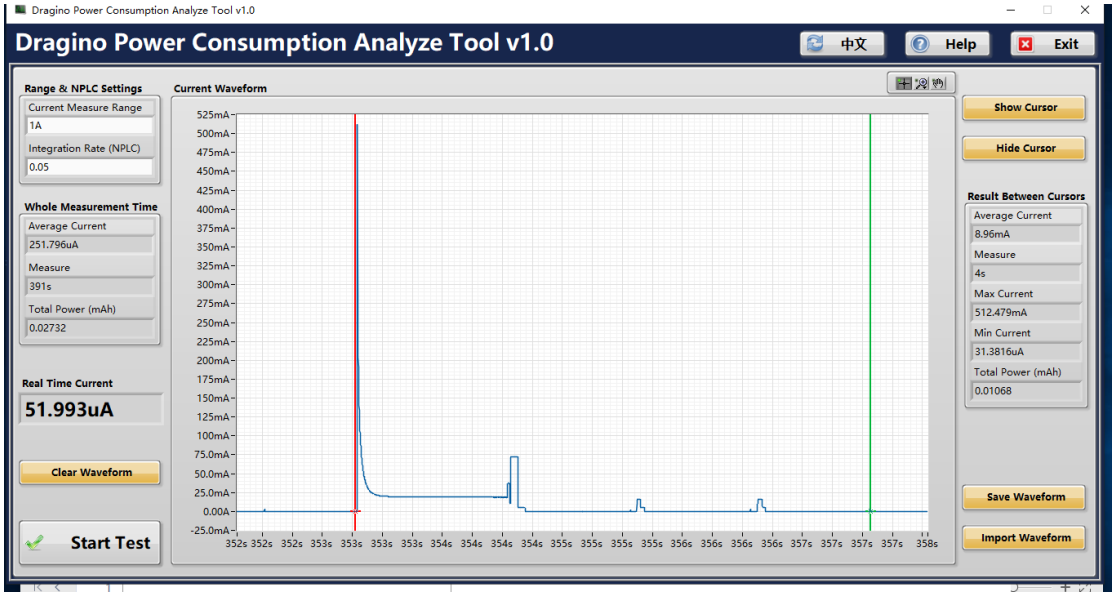
send data

Transmit Time: 4s

Average Current in transmit time: 8.96mA

The total current to send a packet is

8.96mA * 4s = 35.84mA



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 : 6uA*20*60 (7.2mA)

- ✓ Watch Dog Current: 0.001*10*20*60/18 (0.67mA)
- ✓ The total current to send a packet is : 35.84mA

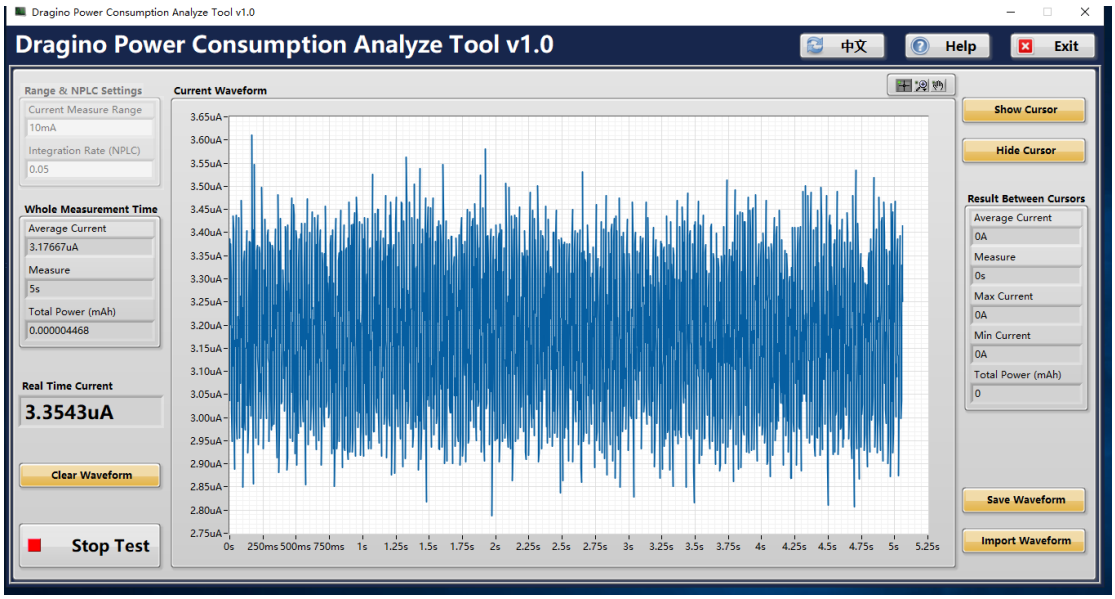
So **total Average Current is :(35.84+7.2+0.67)/(20*60)= 0.036425mA.**
The battery used in LSN50 is 4000mAh and of stable voltage in the most of life. With considering a max 2% discharge rate from the battery spec.So the battery life is y. so

4000(1 - 2%*y) = **0.036425**mA * 24 * 365 * y

So Y = 4000/ (**0.036425***24*365+80) =10.0(Years)

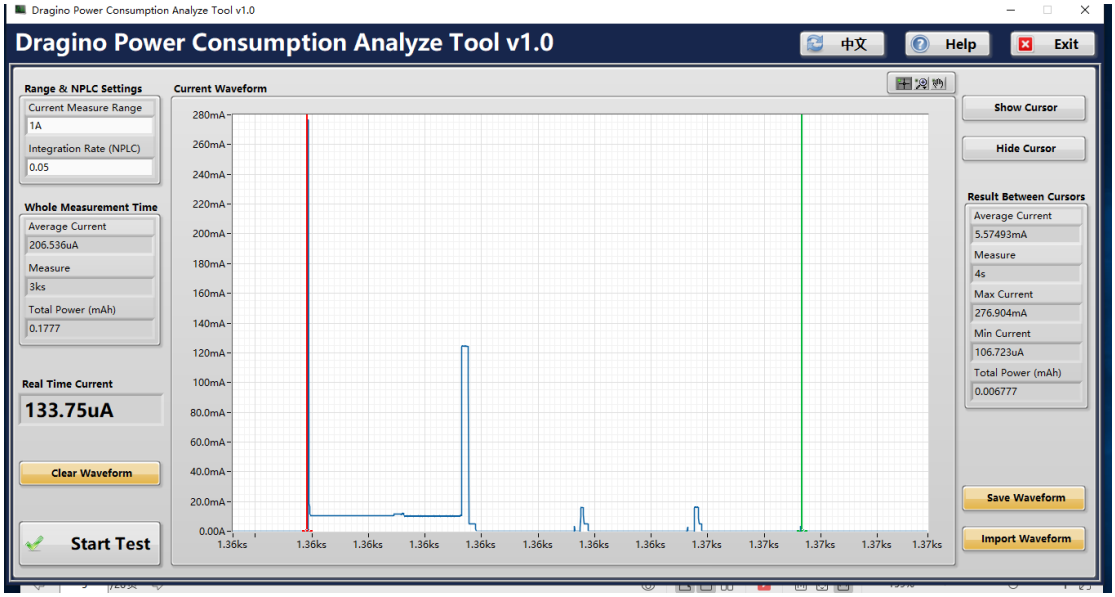
1.4 MOD=3

Deep Sleep Mode
Average: 4uA



send data
Transmit Time: 4s
Average Current in transmit time: 8.96mA
The total current to send a packet is

8.96mA * 4s = 35.84mA



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 : 4uA*20*60 (4.8mA)
- ✓ Watch Dog Current: 0.001*10*20*60/18 (0.67mA)
- ✓ The total current to send a packet is : 35.84mA

So **total Average Current is :(35.84+4.8+0.67)/(20*60)= 0.034425mA.**

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

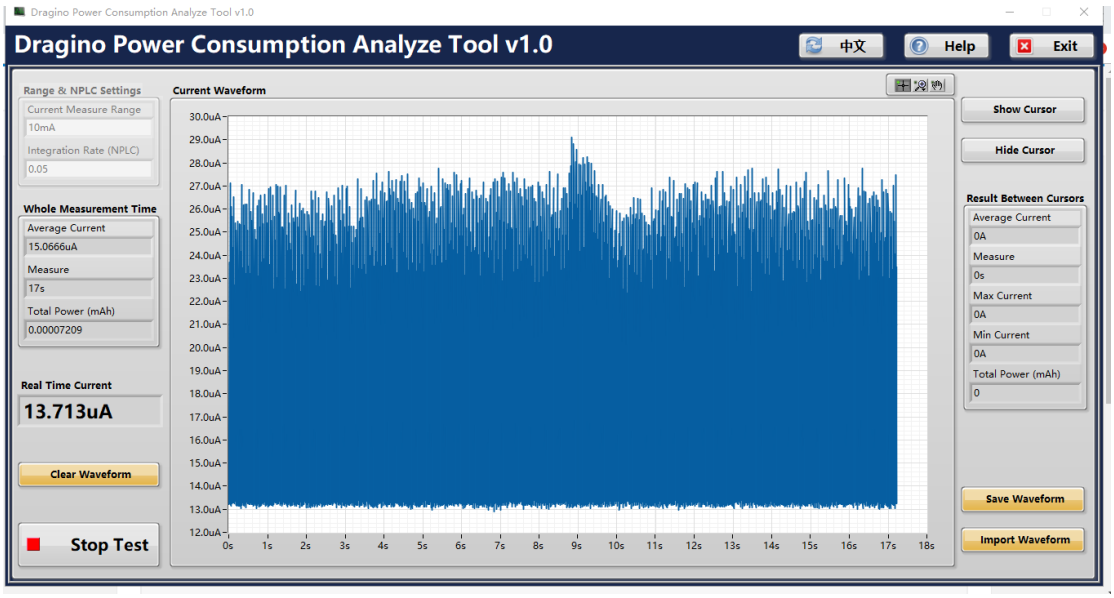
4000(1 - 2%*y) = **0.034425**mA * 24 * 365 * y

So Y = 4000/ (**0.034425***24*365+80) =10.4(Years)

1.5 MOD=4

Deep Sleep Mode

Average: 14uA



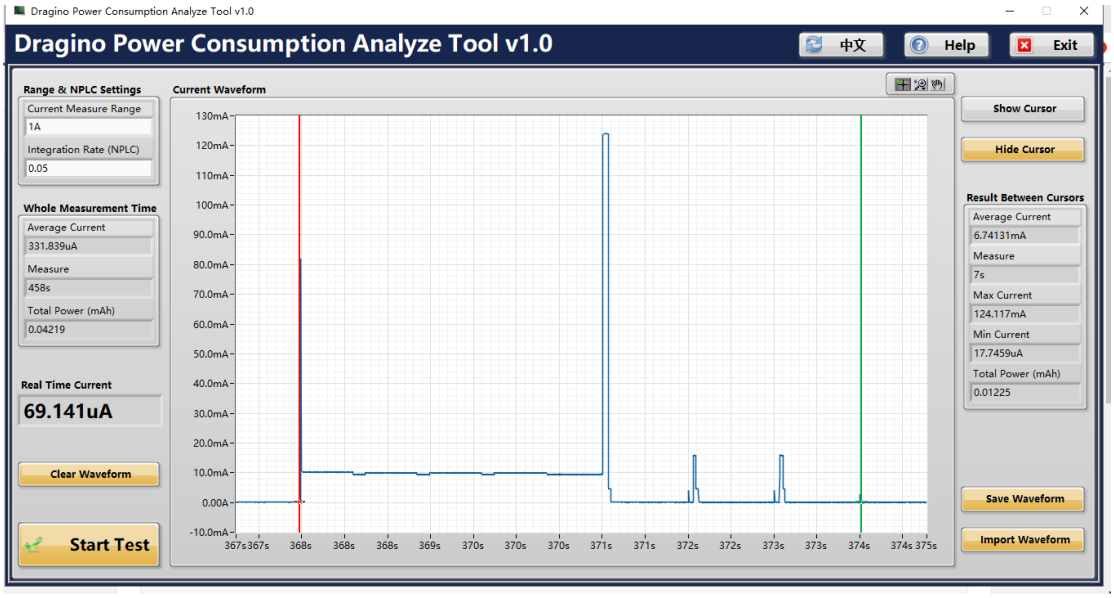
send data

Transmit Time: 7s

Average Current in transmit time: 6.74131mA

The total current to send a packet is

6.74131mA * 7s = 47.18917mA



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 : 14uA*20*60 (16.8mA)

- ✓ Watch Dog Current: 0.001*10*20*60/18 (0.67mA)
- ✓ The total current to send a packet is : 47.18917mA

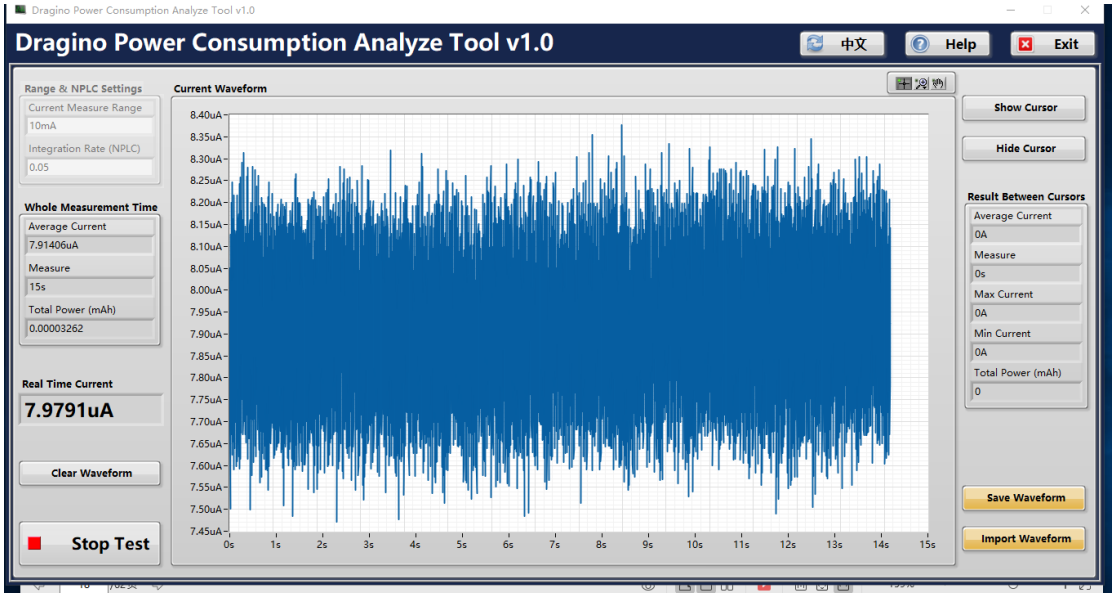
So **total Average Current is :(47.18917+16.8+0.67)/(20*60)= 0.053877mA.**
The battery used in LSN50 is 4000mAh and of stable voltage in the most of life. With considering a max 2% discharge rate from the battery spec.So the battery life is y. so

4000(1 - 2%*y) = **0.053877**mA * 24 * 365 * y

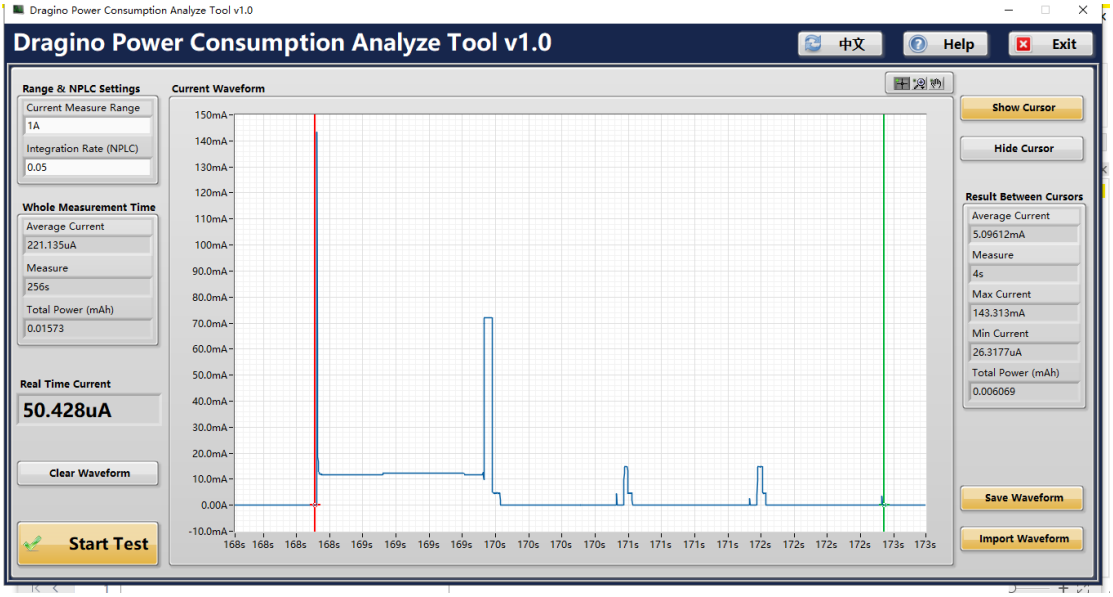
So Y = 4000/ (**0.053877***24*365+80) =7.2(Years)

1.6 MOD=5

Deep Sleep Mode
Average: 8uA



send data
Transmit Time: 4s
Average Current in transmit time: 5.09612mA
The total current to send a packet is
5.06912mA * 4s = 20.27648mA



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 : 8uA*20*60 (10.32mA)
- ✓ Watch Dog Current: 0.001*10*20*60/18 (0.67mA)
- ✓ The total current to send a packet is : 20.27648mA

So **total Average Current is :(20.27648+10.32+0.67)/(20*60)= 0.026055mA.**

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) = **0.026055**mA * 24 * 365 * y

So Y = 4000/ (**0.026055***24*365+80) =12.9(Years)