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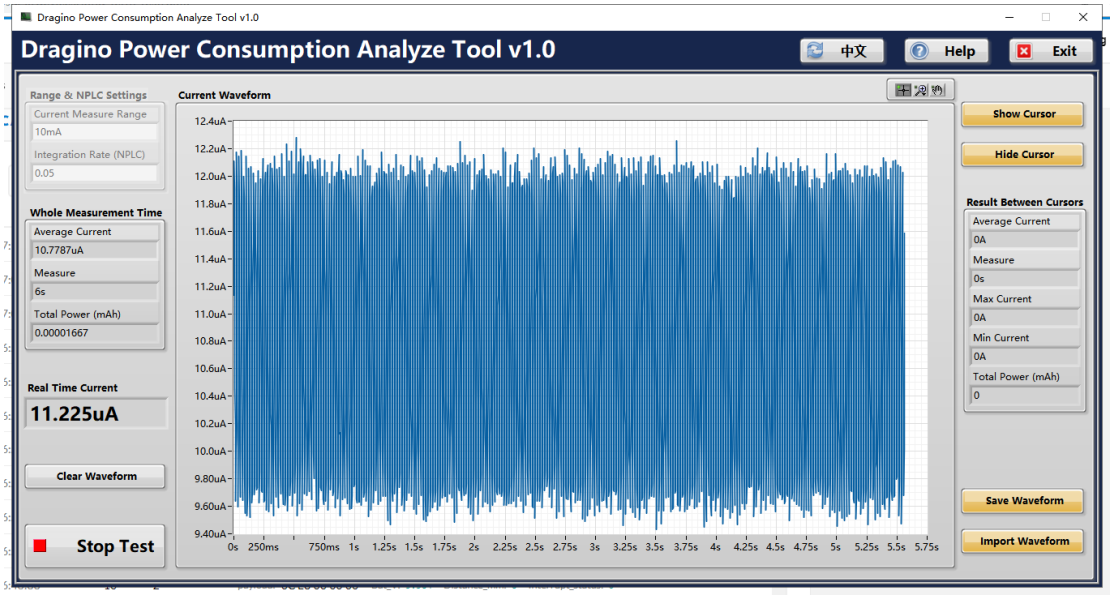
Date:	2020-11-17

目录

1. Test Result

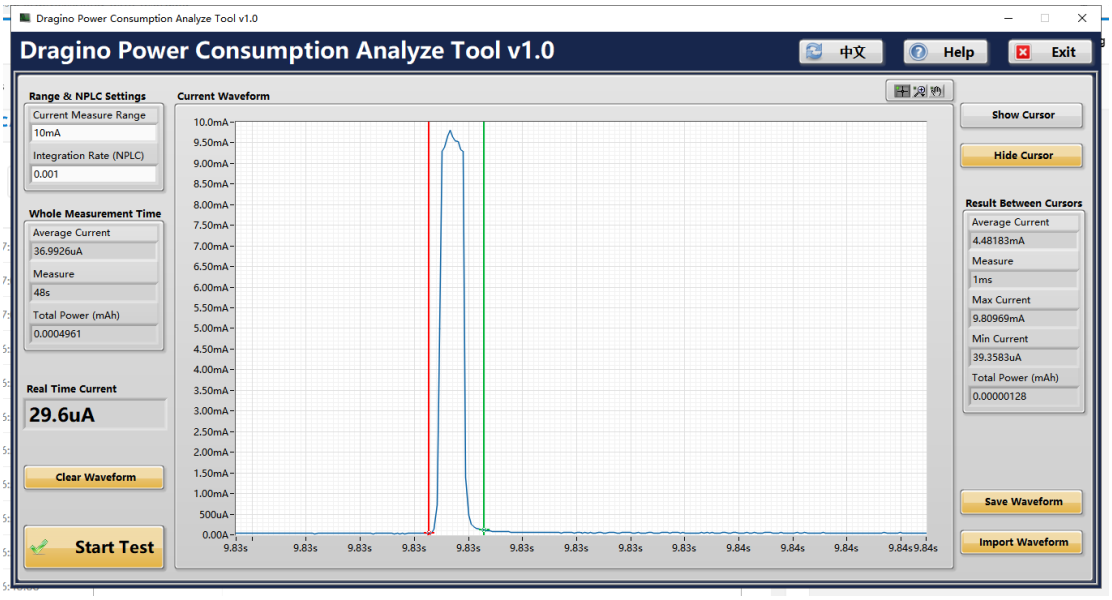
1. 1. Deep Sleep Mode

Average:12uA



1. 2. Watchdog Power

Average 4.48183mA in 1ms for every 18 seconds (watchdog period)



1. 3. EU868

1. 3. 1. DR=0,TXP=0

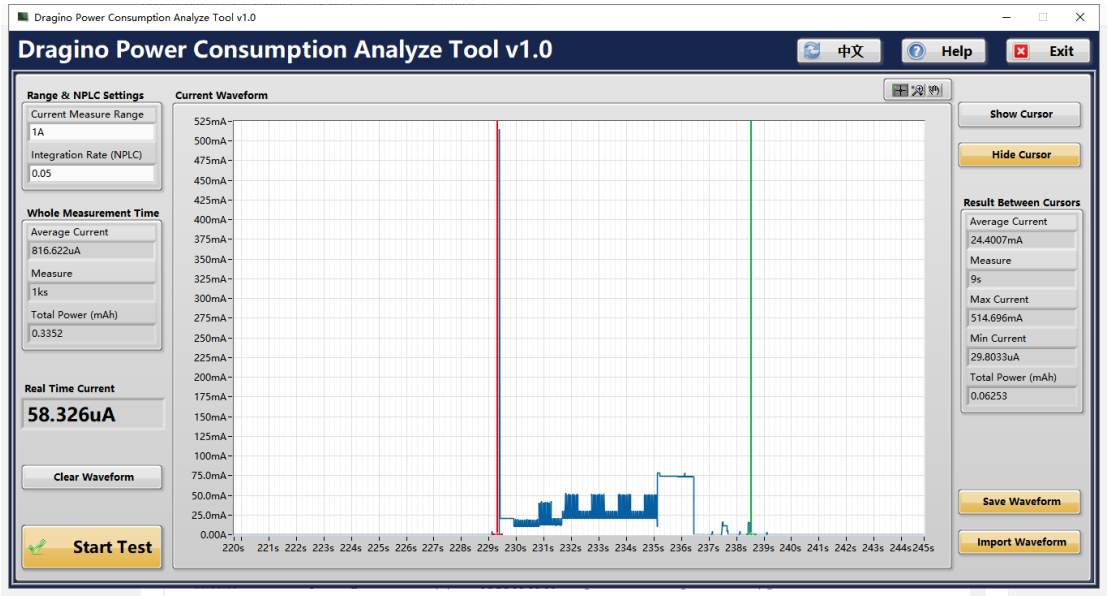
send data

Transmit Time: 9s

Average Current in transmit time: 24.4007mA

The total current to send a packet is

24.4007mA * 9s = 219.6063mA*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 : 0.012mA *20*60s(14.4mA*s)
- ✓ Watch Dog Current Power Consumption in one period: 0.001s*4.48183mA*(20*60s/18 s)=(0.2988mA*s)
- ✓ Sampling & Uplink & Downlink Power Consumption Power Consumption in one period:219.6063mA*s

AV_Current is :(14.4mA*s + 0.2988mA*s+ 219.6063mA*s)/(20*60s)= 0.1953mA.

The battery used in LDDS20 is 8500mAh 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

8500(1 - 2%*y) =0.1953mA * 24 * 365 * y

So 8500 – 170*y = AV_CURRENT * 8760 *y

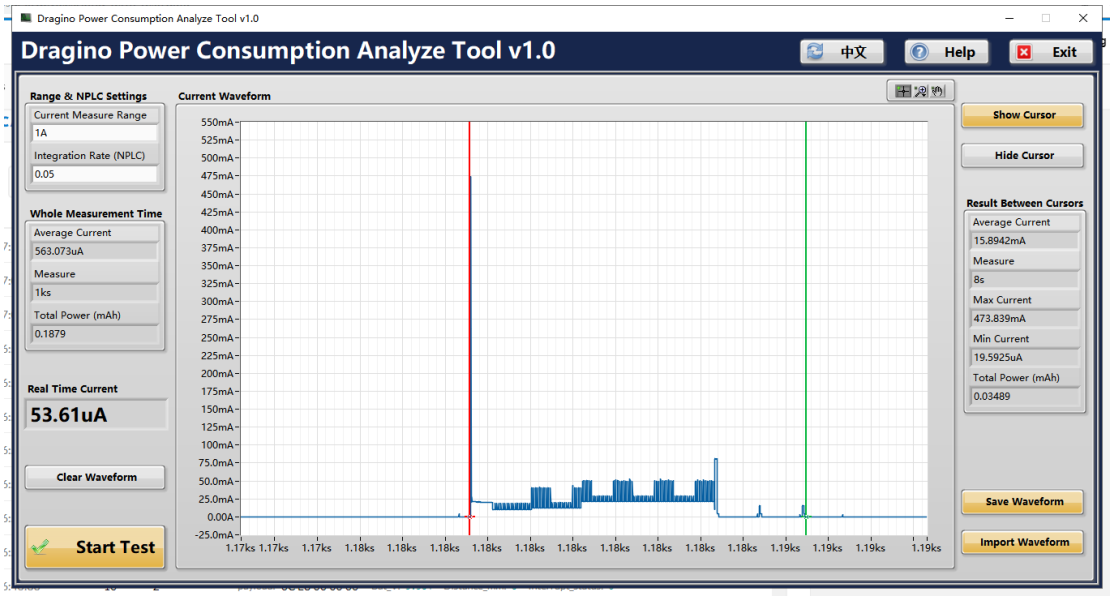
So8500=(AV_CURRENT * 8760 +170) * Y

So Y = 8500/ (AV_CURRENT * 8760+170) = 8500/ (0.1953* 8760+170) = 4.5(Years)

1. 3. 2. DR=5,TXP=0

send data
Transmit Time: 8s
Average Current in transmit time: 15.8942mA
The total current to send a packet is

15.8942mA * 8s = 127.1536mA*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 : 0.012mA *20*60s=(14.4mA*s)
- ✓ Watch Dog Current Power Consumption in one period: 0.001s*4.48183mA*(20*60s/18 s)=(0.2988mA*s)
- ✓ Sampling & Uplink & Downlink Power Consumption Power Consumption in one period:127.1536mA*s

AV_Current is :(14.4mA*s + 0.2988mA*s+ 127.1536mA*s)/(20*60s)= 0.1182mA.

The battery used in LDDS20 is 8500mAh 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
8500(1 - 2%*y) =0.1182mA * 24 * 365 * y

So 8500 – 170*y = AV_CURRENT * 8760 *y

So8500=(AV_CURRENT * 8760 +170) * Y

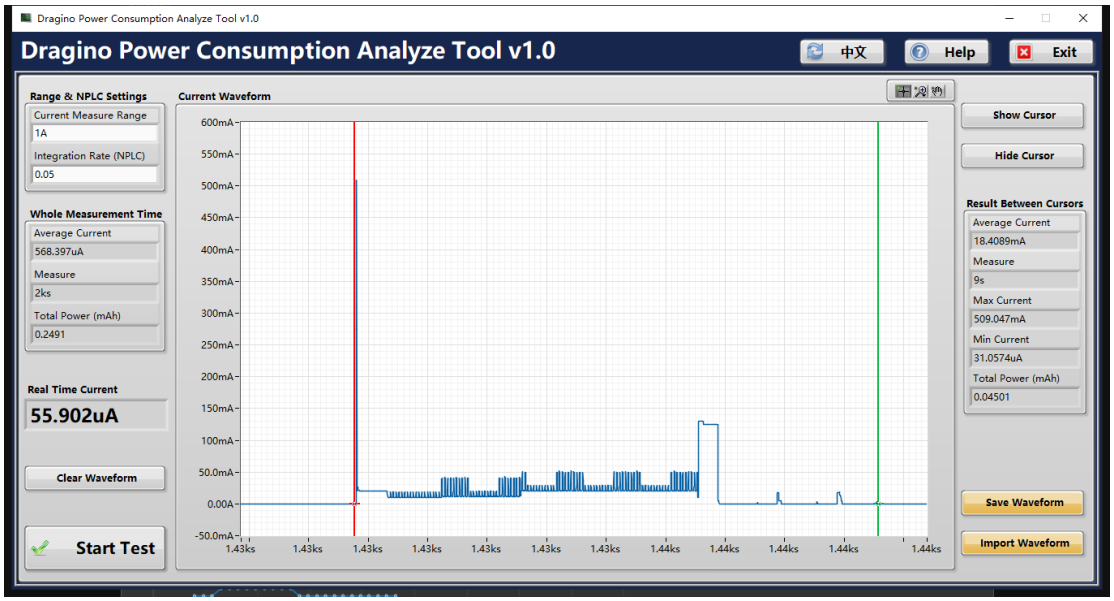
So Y = 8500/ (AV_CURRENT * 8760+170) = 8500/ (0.1182* 8760+170) = 7(Years)

1. 4. US915

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

send data
Transmit Time: 9s
Average Current in transmit time: 18.4089mA
The total current to send a packet is

18.4089mA * 9s =165.6801mA*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 : 0.012mA *20*60s(14.4mA*s)
- ✓ Watch Dog Current Power Consumption in one period: 0.001s*4.48183mA*(20*60s/18 s)=(0.2988mA*s)
- ✓ Sampling & Uplink & Downlink Power Consumption Power Consumption in one period:165.6801mA*s

AV_Current is :(14.4mA*s + 0.2988mA*s+ 165.6801mA*s)/(20*60s)= 0.15032mA.

The battery used in LDDS20 is 8500mAh 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
8500(1 - 2%*y) =0.15032mA * 24 * 365 * y

So 8500 – 170*y = AV_CURRENT * 8760 *y

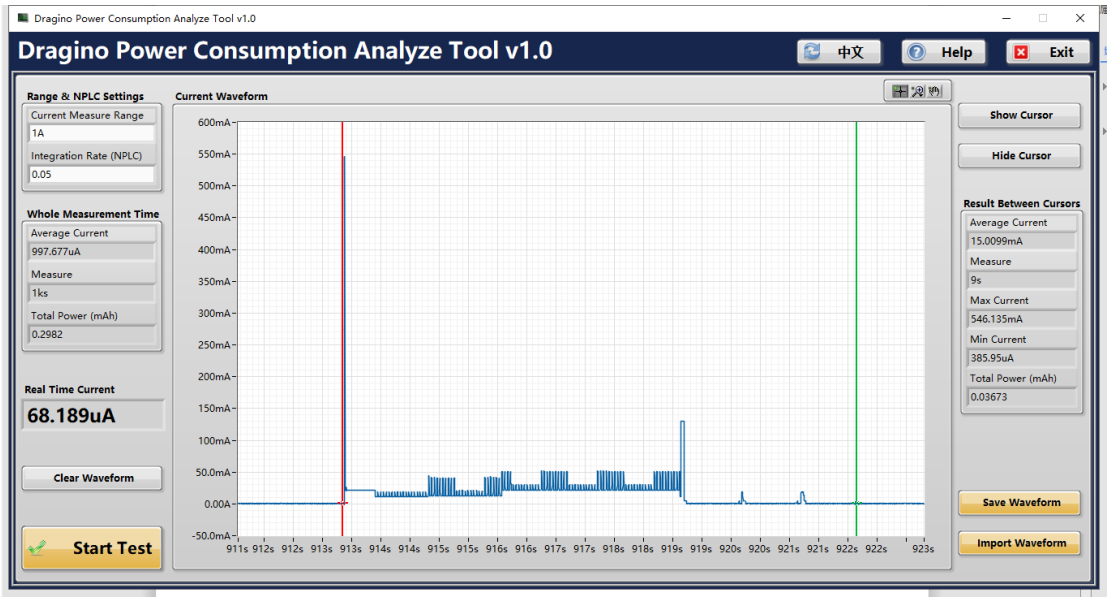
So8500=(AV_CURRENT * 8760 +170) * Y

So Y = 8500/ (AV_CURRENT * 8760+170) = 8500/ (0.15032* 8760+170) = 5.7(Years)

1. 4. 2. DR=3,TXP=0

send data
Transmit Time: 9s
Average Current in transmit time: 15.0099mA
The total current to send a packet is

15.0099mA * 9s =135.0891mA*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 : 0.012mA *20*60s(14.4mA*s)
- ✓ Watch Dog Current Power Consumption in one period: 0.001s*4.48183mA*(20*60s/18 s)=(0.2988mA*s)
- ✓ Sampling & Uplink & Downlink Power Consumption Power Consumption in one period:135.0891mA*s

AV_Current is :(14.4mA*s + 0.2988mA*s+ 135.0891mA*s)/(20*60s)= 0.12482mA.

The battery used in LDDS20 is 8500mAh 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

8500(1 - 2%*y) =**0.12482**mA * 24 * 365 * y

So 8500 – 170*y = **AV_CURRENT** * 8760 *y

So 8500=(**AV_CURRENT** * 8760 +170) * Y

So Y = 8500/ (**AV_CURRENT** * 8760+170) = 8500/ (**0.12482*** 8760+170) = 6.7(Years)