**Summary**

Trial 1

Trial 2

Trial 3

**Trial 1**

PUB GetCX | a

a := 970

cFilterX := (a\*(cFilterX-GetRy\*200/10000)/1000 + (1000-a)\*GetAx\*100/100/1000)

return cFilterX



Comment:

When it tilted to positive-value-side, compFilter values look better. But not the other side.

**Trial 2** – 97 % gyro but less portion of current gyro

PUB GetCX | a

a := 970

cFilterX := (a\*(cFilterX-GetRy\*150/10000)/1000 + (1000-a)\*GetAx\*100/100/1000)

return cFilterX



Comment:

I have reduced the portion of current gyro value. Overall compFilter value looks similar when the drone tilts to the positive side. But not the other side. For the same reason, the motor runs quite stable when it is tilted to the positive-value-side. But not the other side.

**Trial 3** – less portion of current gyro value

PUB GetCX | a

a := 970

cFilterX := (a\*(cFilterX-GetRy\*50/10000)/1000 + (1000-a)\*GetAx\*100/100/1000)

return cFilterX



Comment:

I have more reduce the portion of current gyro value as underline above formula with yellow. Result is quite same as Trial 2. However, when it is tilted to the negative-value-side, it generates lots of oscillation. About this point, the equation looks like almost lone-integration of accelerometer.

**Comparison of Complementary Filters through three trials.**

Comment:

1. Periods are not synced. So it could be confusing. But when it comes to each line, degree of noise can be seen.

2. Common trend is that when the drone is tilted to the negative-value side, noise is amplified compared to positive-value side.

3. If negative-value sides are compared, 2% of gyro (red line) has least oscillation. But when it comes to the other side, they are chaotic.