INTT Sensor Test Result Check

NCU

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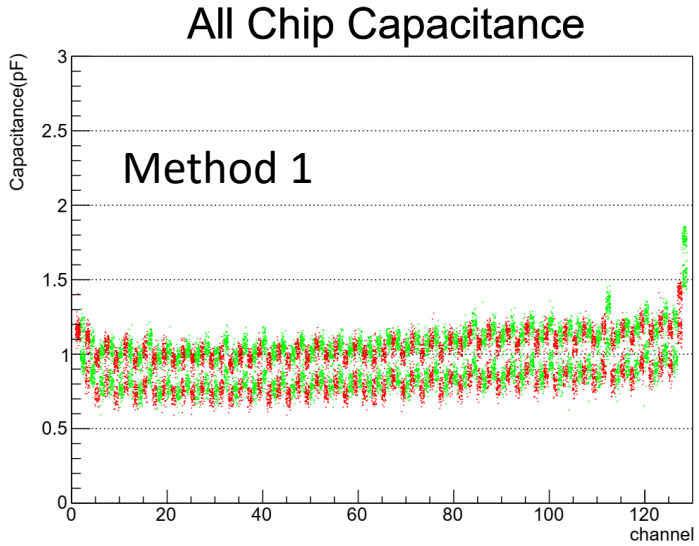
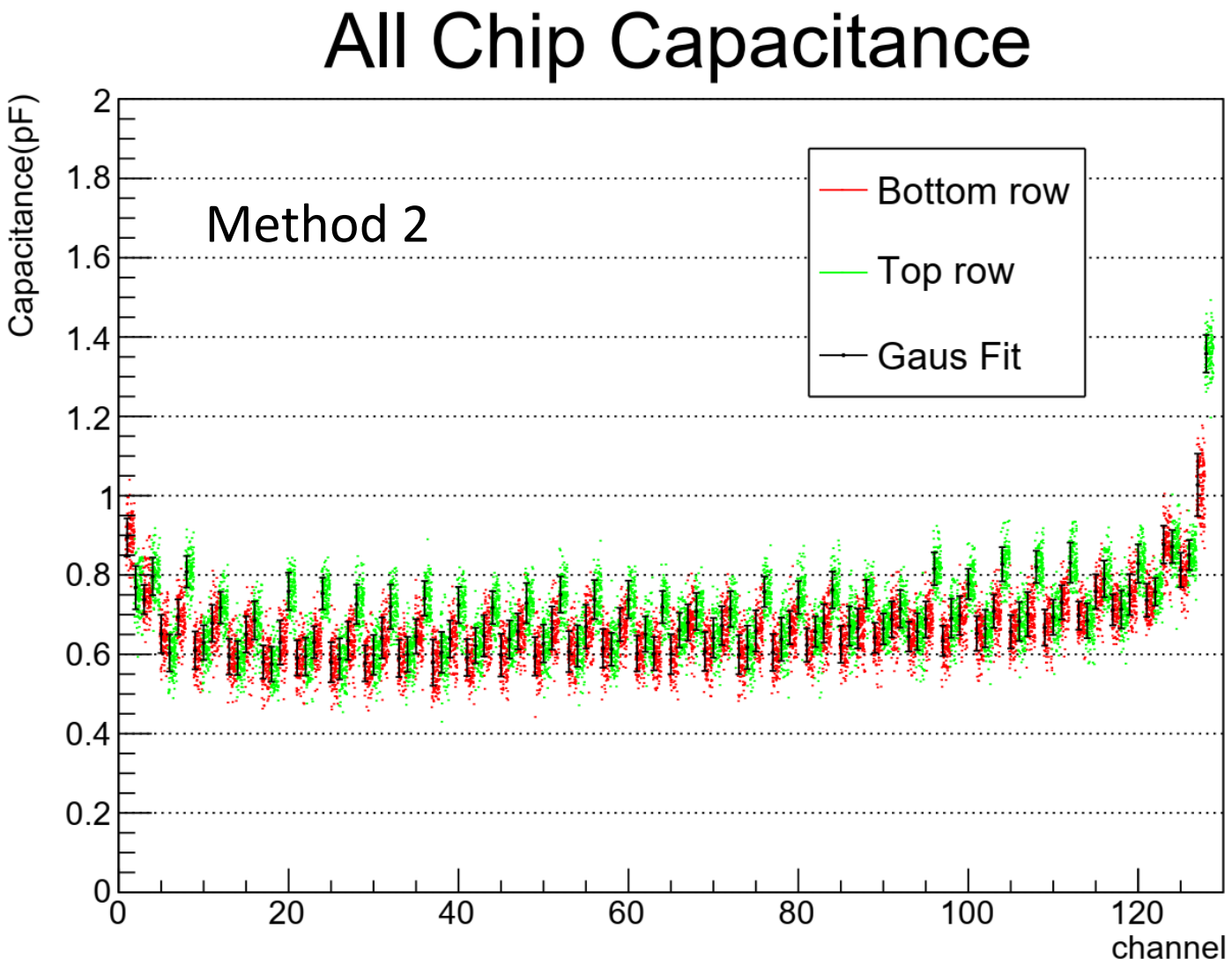
Capacitance Distribution of all Chips

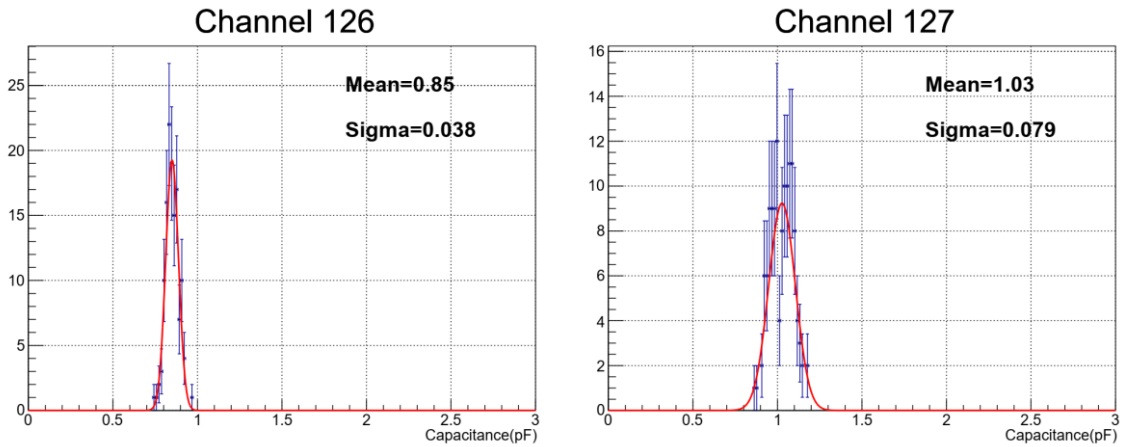
- Include even chips from sensor 1134-1149. There are 128 chips data in the histogram.
- Red and green markers show the bottom and top readout pads. Usually the top rows have higher capacitance.
- Black markers show the mean and RMS value of single gaussian fit.

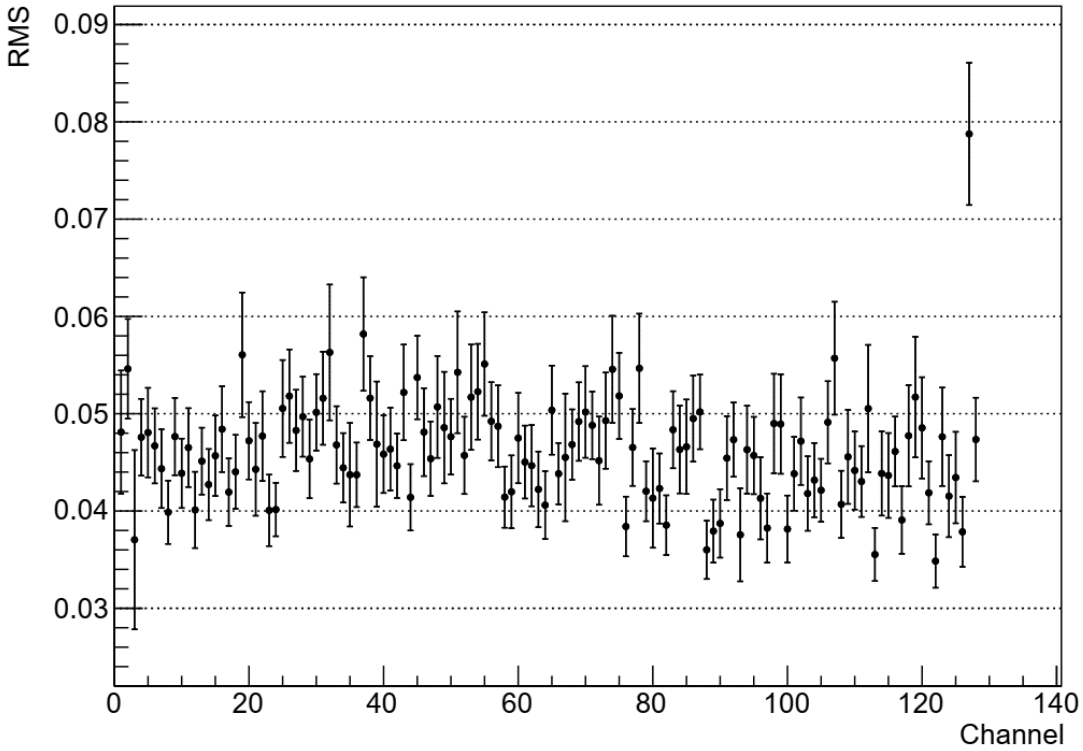




RMS of all Channels

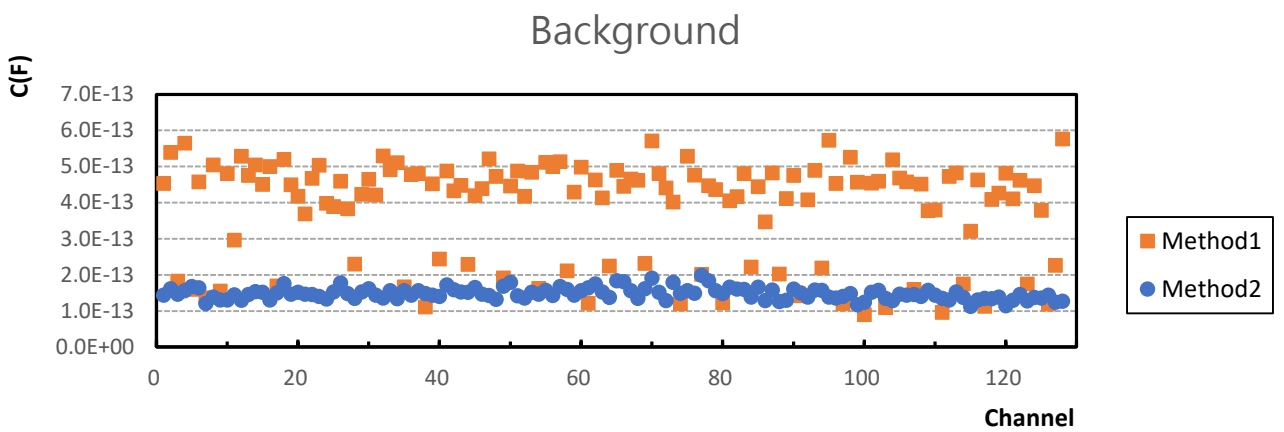
- The bottom plot shows the variety of RMS with channels.
- The RMS of almost channels are similar, but channel 127 has wide distribution. It could be caused by circuit or doesn't have enough events?
- All measurements are located in distribution (<4σ)

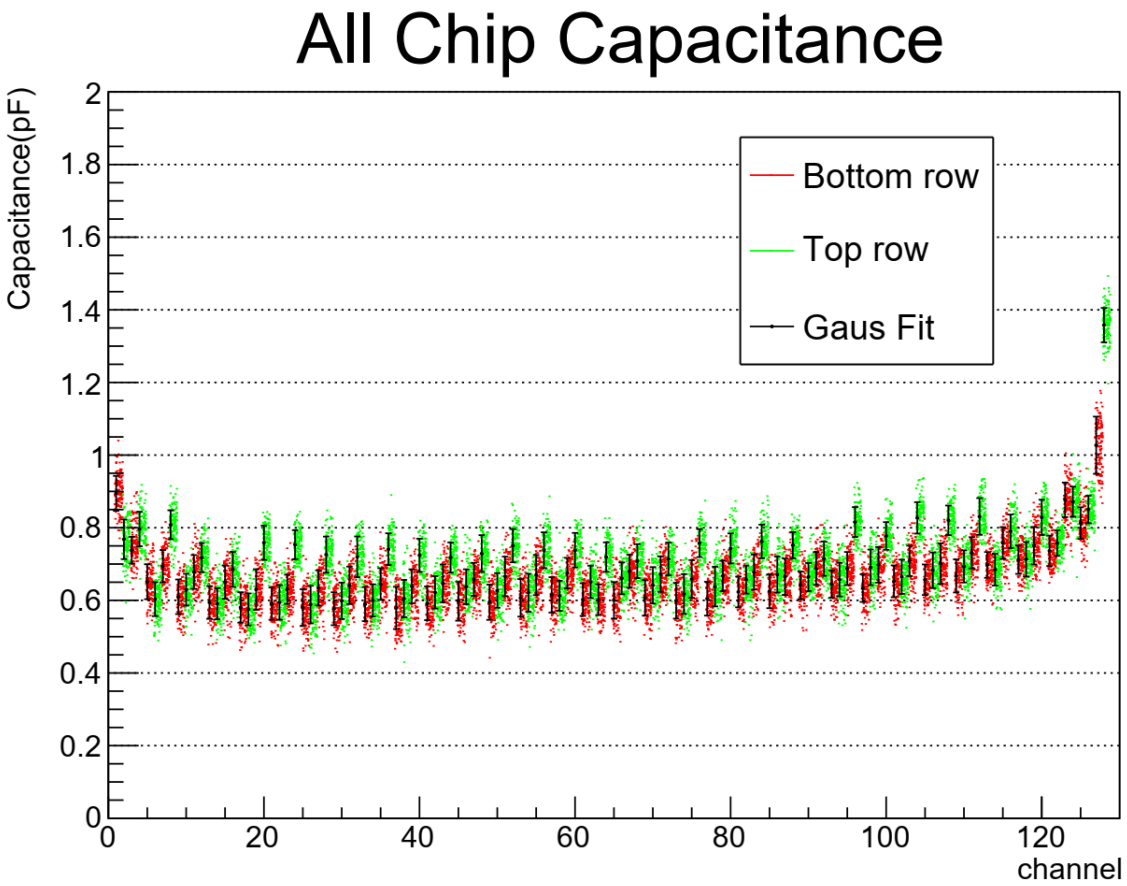




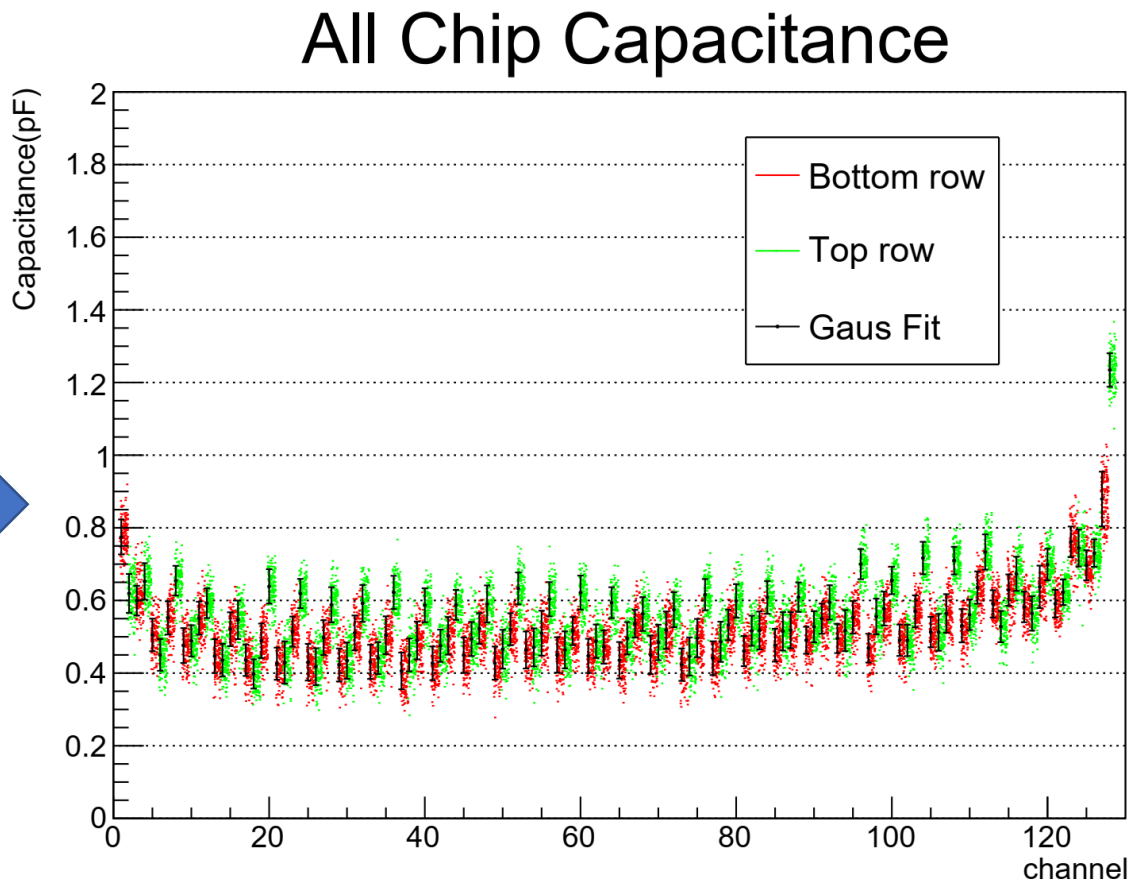
Back Ground Subtraction

- Measure the floating value with 100 samples.
- After BG subtraction, the value just shift 0.1pF. The trend didn't have oblivious change.





-BG



Summary

- The capacitance distribution in method 2 is single gaussian. We can define the rule of rank from this distribution.
- Type-A sensor 1134 to 1149 are done, but the odd chips are measured by method 1. The sensor 1131 and 1132 had been assembled. I use sensor1133 to do the reference, so I done the other sensors first.
- The IV testing is tried now. First, I need make sure that I can measure the single channel current, so I try to test with 3 method to study it : measure one channel with backside and front side voltage(100V and -100V) and measure one chip current. Use the sample sensor to do this test.
- However, there is little technique issue in program, so if I can't solve it in today (Wed), I will go to measure the capacitance of type-B first.

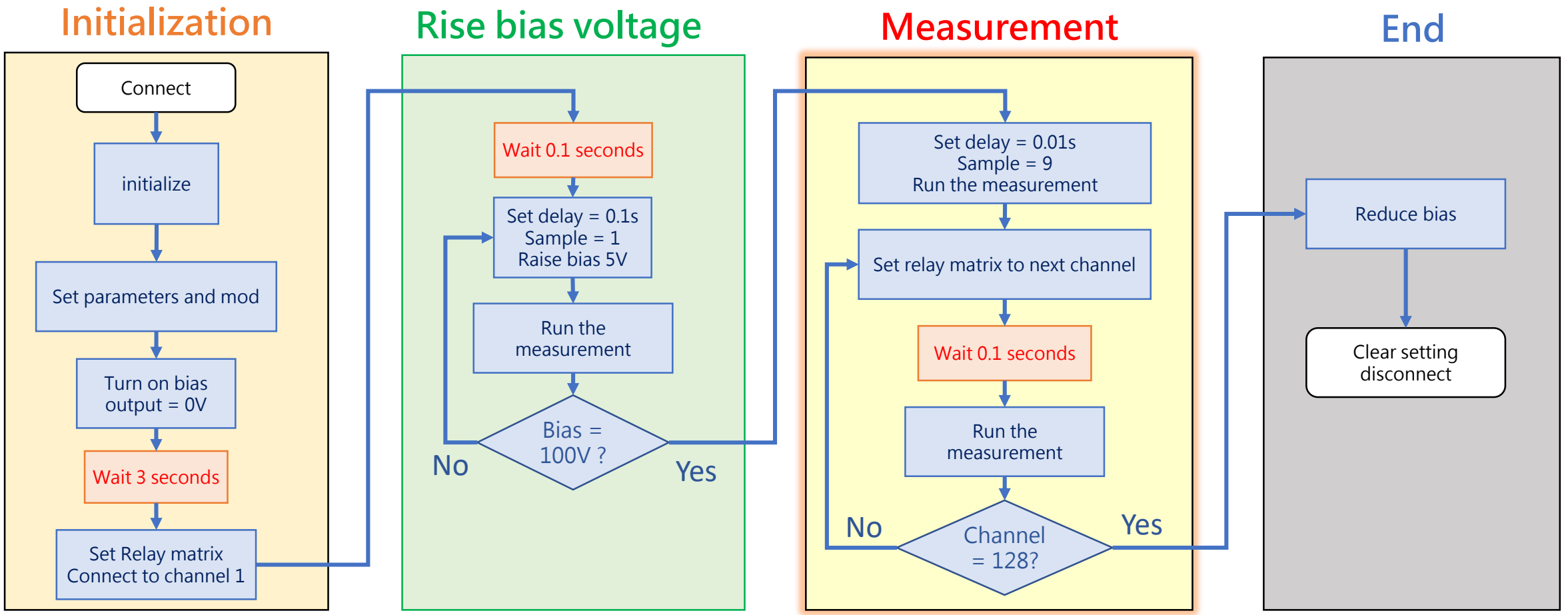
The State of testing

Serial No. TypeA	TypeA-I Done?	TypeA-II Done?	Serial No. TypeB	TypeB-I Done?	TypeB-II Done?
1131	☑	☑	1131	☑	☑
1132	☑	☑	1132	☑	☑
1133	☑	☐	1133	☐	☐
1134	☑	☑	1134	☐	☐
1135	☑	☑	1135	☐	☐
1136	☑	☑	1136	☐	☐
1137	☑	☑	1137	☐	☐
1138	☑	☑	1138	☐	☐
1139	☑	☑	1139	☐	☐
1140	☑	☑	1140	☐	☐
1141	☑	☑	1141	☐	☐
1142	☑	☑	1142	☐	☐
1143	☑	☑	1143	☐	☐
1144	☑	☑	1144	☐	☐
1145	☑	☑	1145	☐	☐
1146	☑	☑	1146	☐	☐
1147	☑	☑	1147	☐	☐
1148	☑	☑	1148	☐	☐
1149	☑	☑	1149	☐	☐
1150	☐	☐	1150	☐	☐
1151	☐	☐	1151	☐	☐
1152	☐	☐	1152	☐	☐
1153	☐	☐	1153	☐	☐
1154	☐	☐	1154	☐	☐
1155	☐	☐	1155	☐	☐
1156	☐	☐	1156	☐	☐
1157	☐	☐	1157	☐	☐
1158	☐	☐	1158	☐	☐
1159	☐	☐	1159	☐	☐

Back up

Process of Program

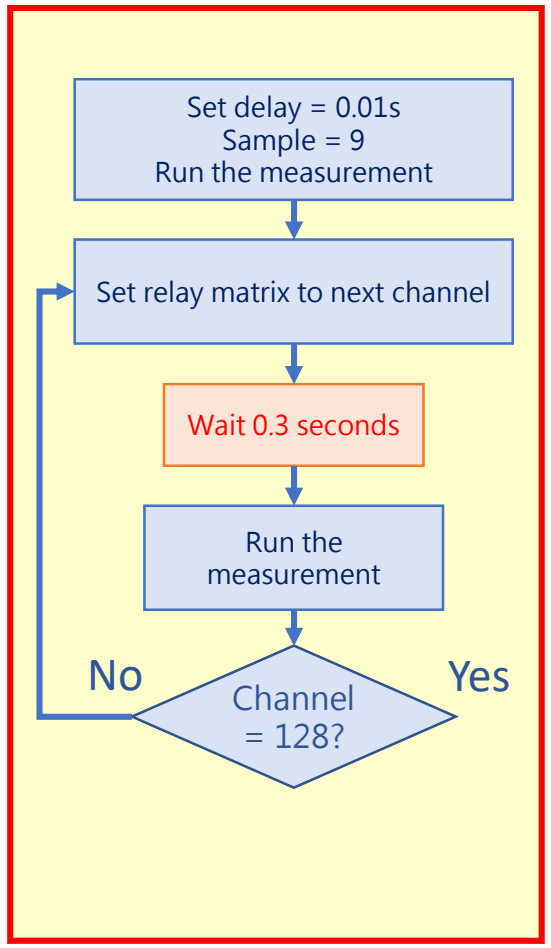
- The bias voltage and AC test signal are come from different models (same instrument but different model).



Measurement Process Test

- Because result of CV curve and integral time test didn't change, I try to add one extra step between measurement to test.
- After step of bias rise, the voltage always keep at 100V, but in method 2 I set again the bias from 100V to 100V before the measurement.

Method 1 (initial)



Method 2