

Live 2025-11-03

November 6, 2025

1 2025-11-03 Live INTEUM War Stories

```
[2]: import numpy as np  
import pandas as pd  
import matplotlib.pyplot as plt
```

```
[17]: filenames = [ "../Labs/Data/4Stu_2022_1117_1219_DataWithToolInfo.csv", "../Labs/  
        ↪Data/4Stu_2023_0118_0127_DataWithToolInfo.csv" ]  
  
X = pd.DataFrame()  
  
for f in filenames:  
    Xn = pd.read_csv(f,  
                     sep=";",  
                     parse_dates = ["timestamp_skv"],  
                     dayfirst = True,  
                     encoding = None,  
                     encoding_errors = 'replace')  
    X = pd.concat([X,Xn])
```

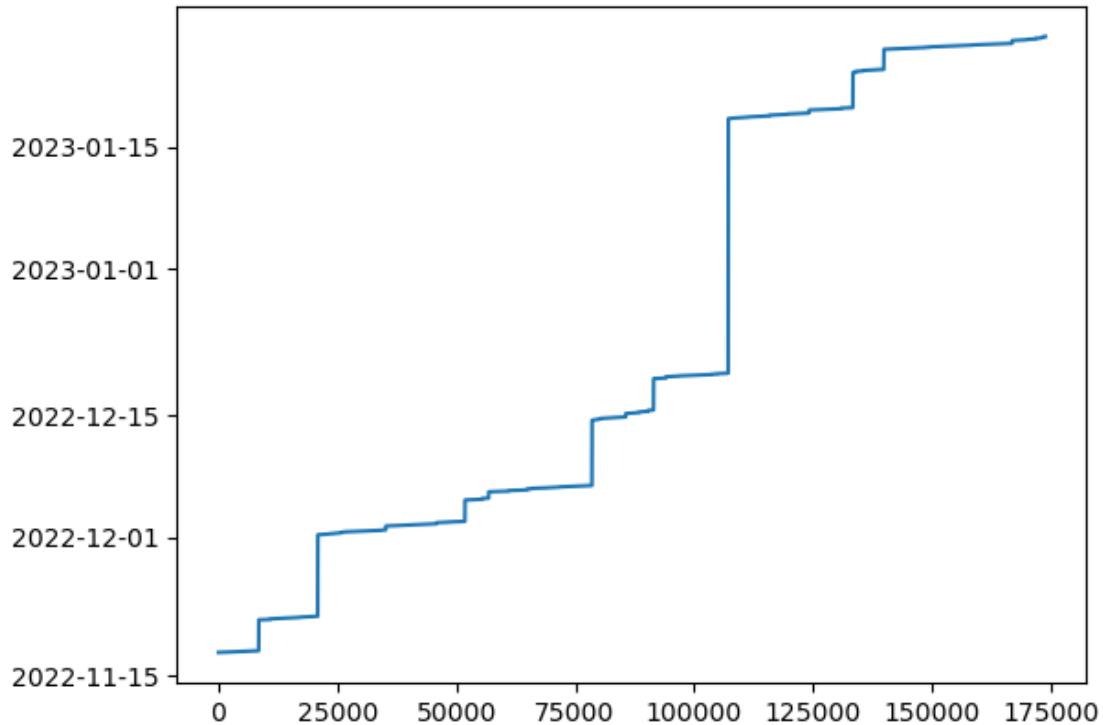
```
[18]: X.index = range(0,X.shape[0])
```

```
[19]: X.shape
```

```
[19]: (173863, 165)
```

```
[20]: plt.plot(X.index,X.timestamp_skv)
```

```
[20]: [<matplotlib.lines.Line2D at 0x7f3c547a97e0>]
```



```
[25]: # Write code to make code :-  
print("[")  
for c in X.columns:  
    print(f"'{c}'", " ")  
print("]")
```

```
[  
'timestamp_skv',  
'timediff_skv',  
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'timediff_sensor',  
'SynchroDiff',  
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'ST_CH1_P_F1',  
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```
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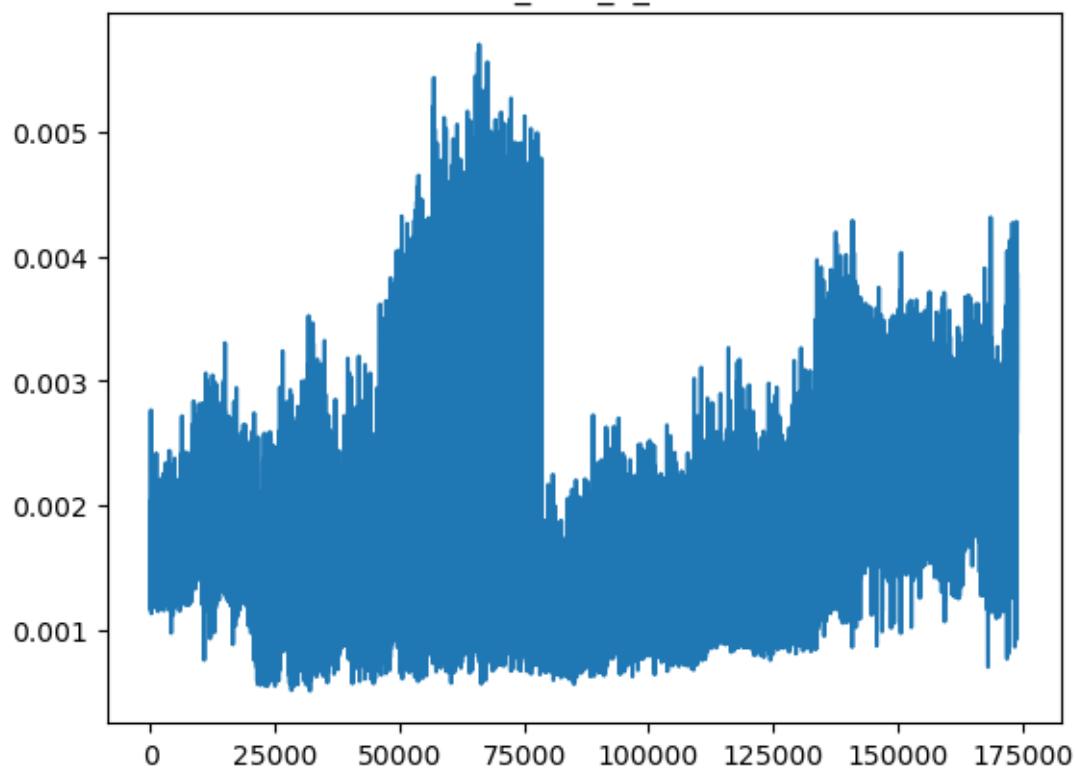
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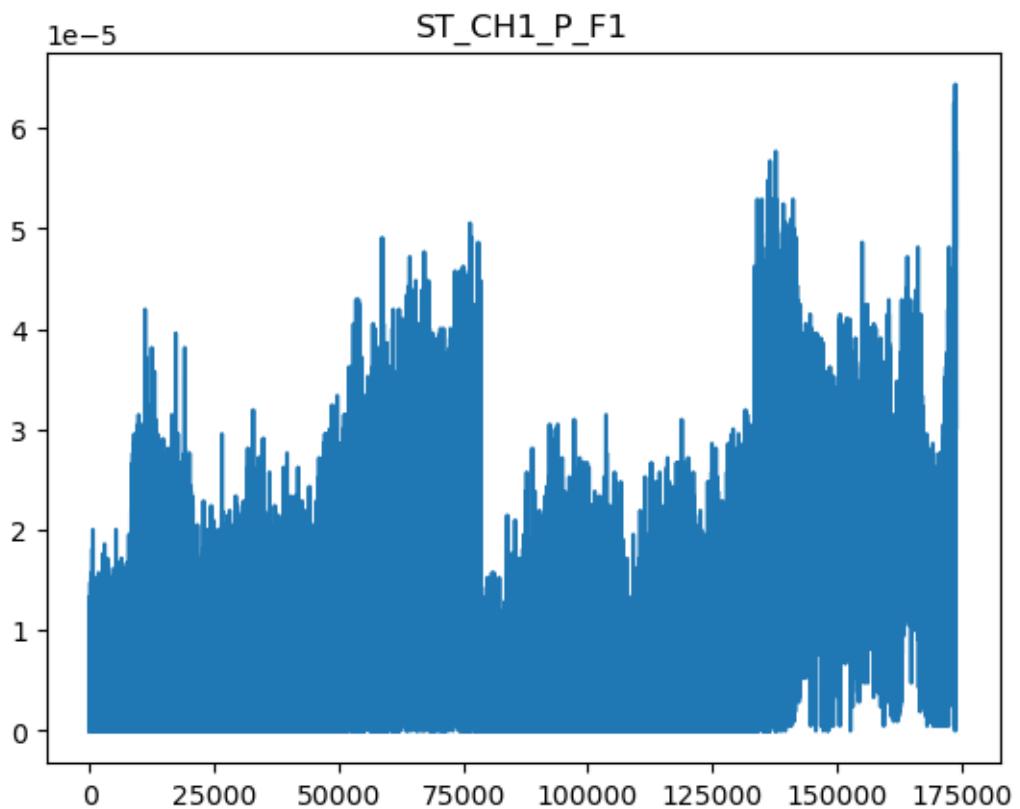
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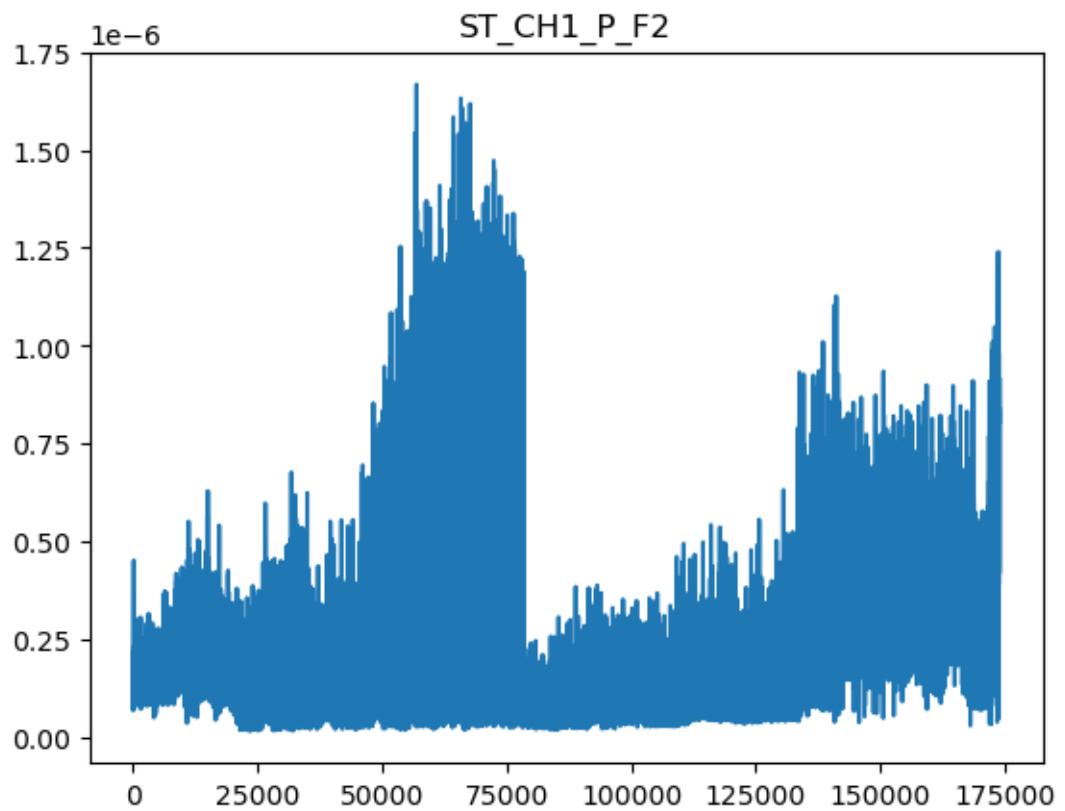
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```
[32]: for f in interestingColumns:
    plt.plot(X.index,X[f])
    plt.title(f)
    plt.show()
```

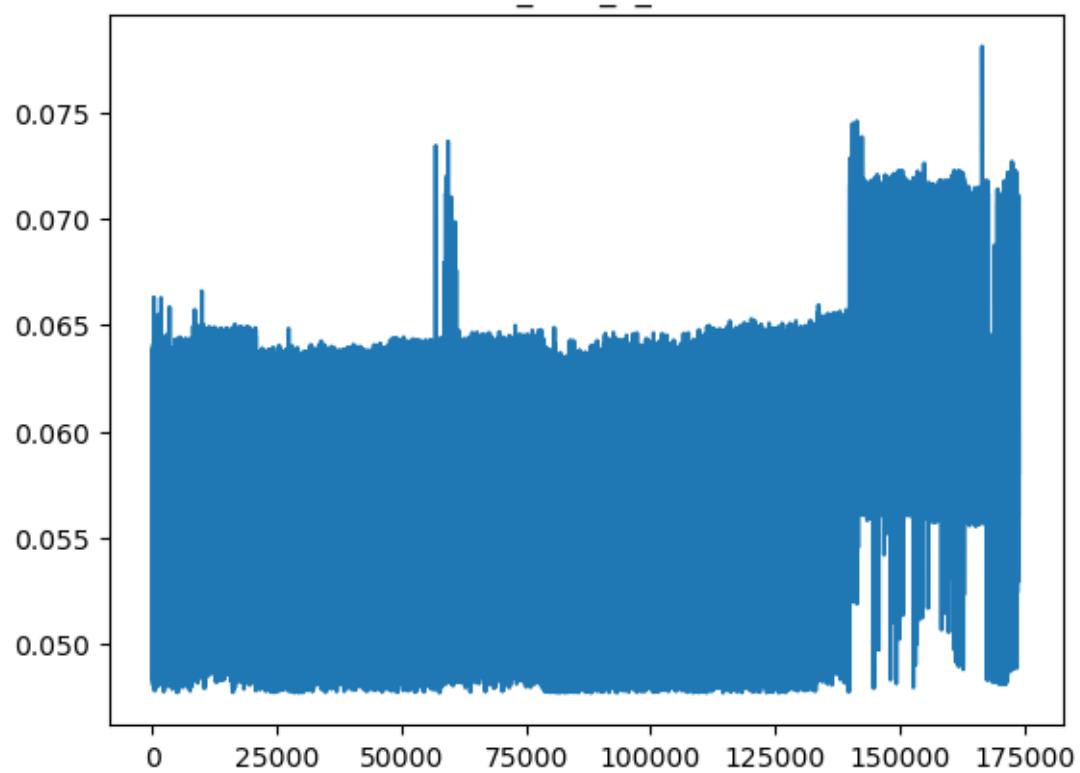
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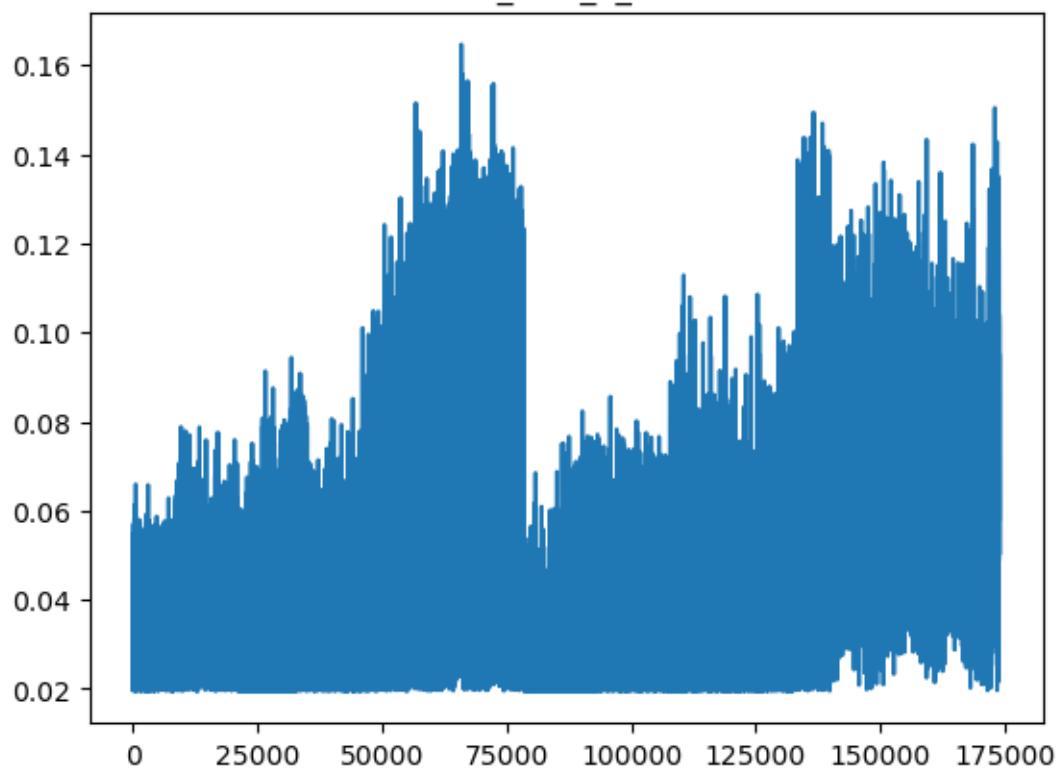




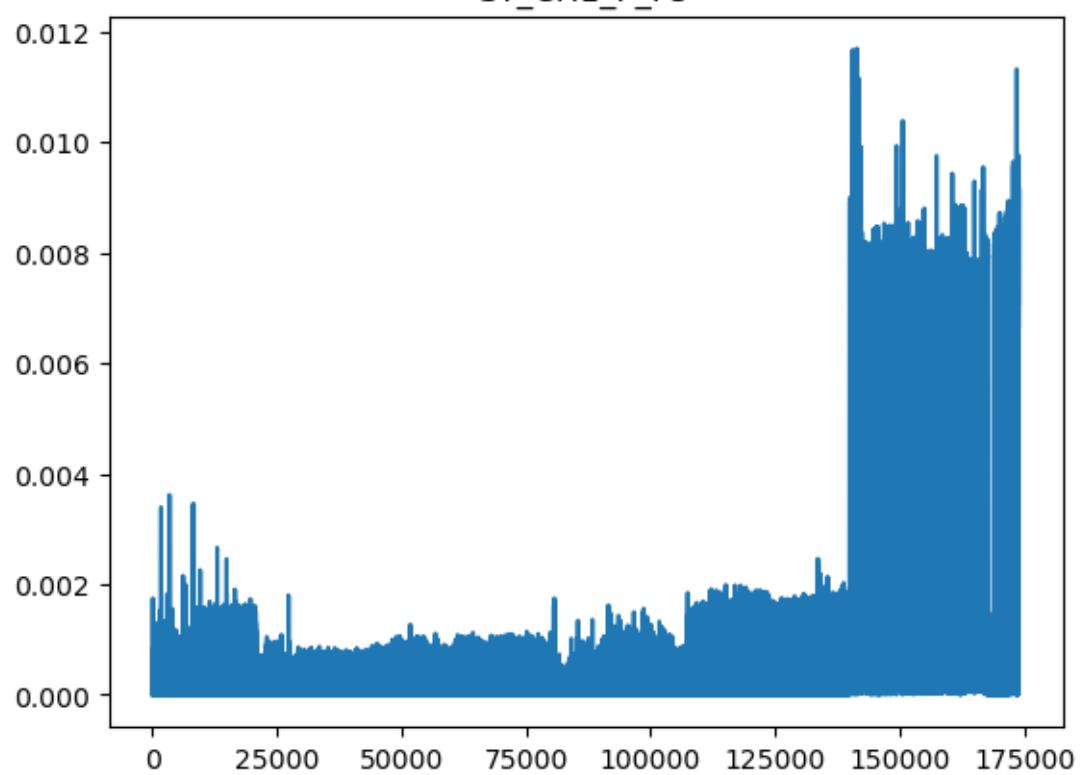
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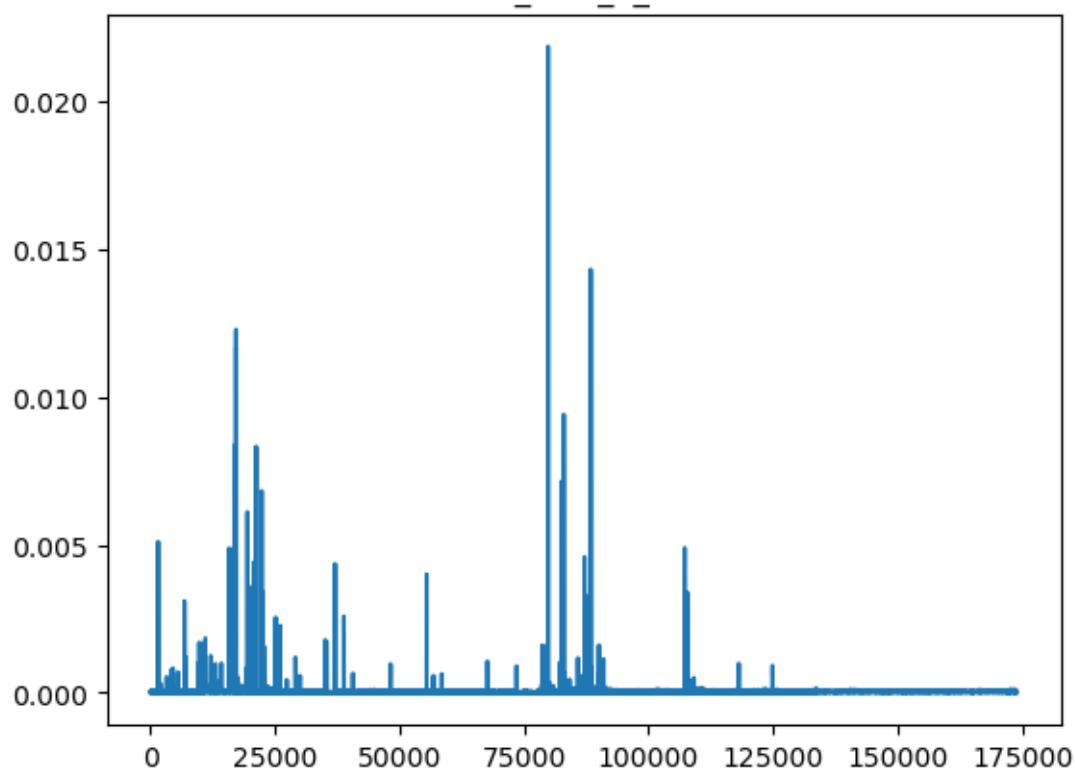
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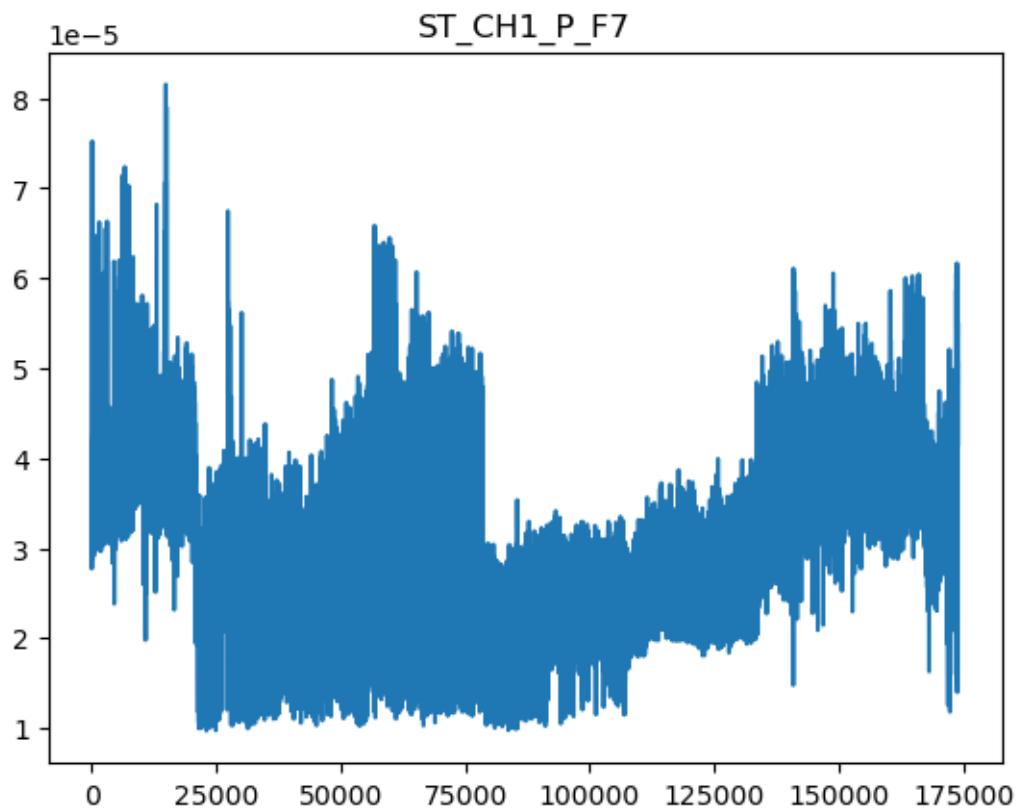


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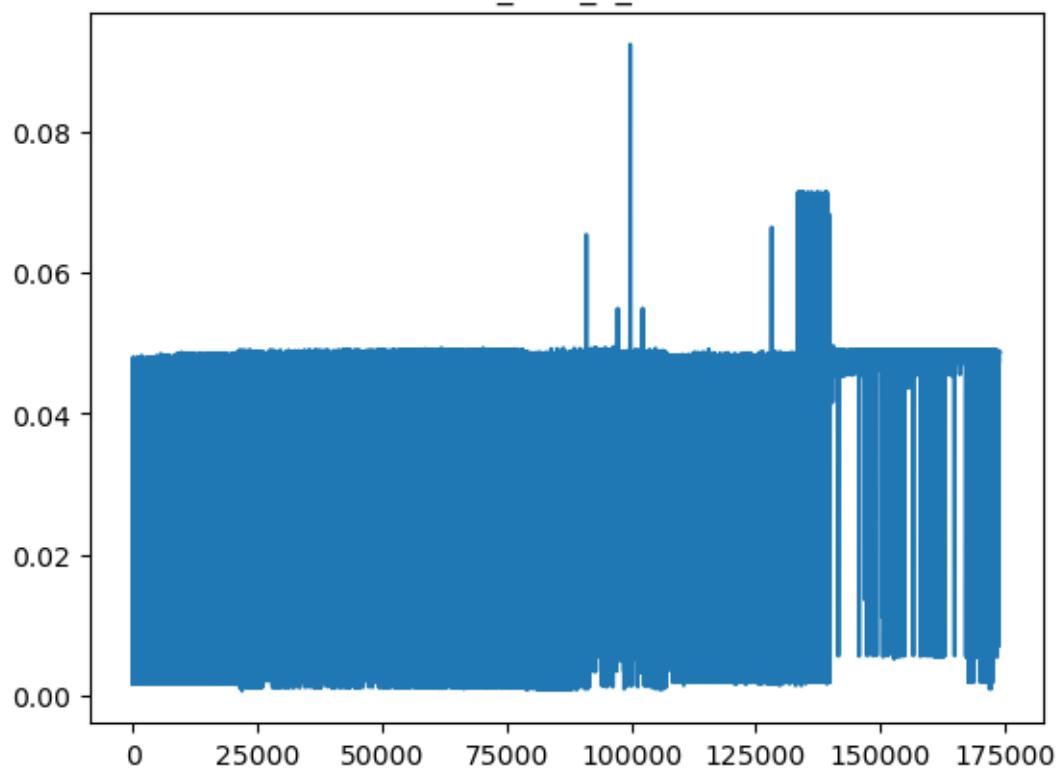


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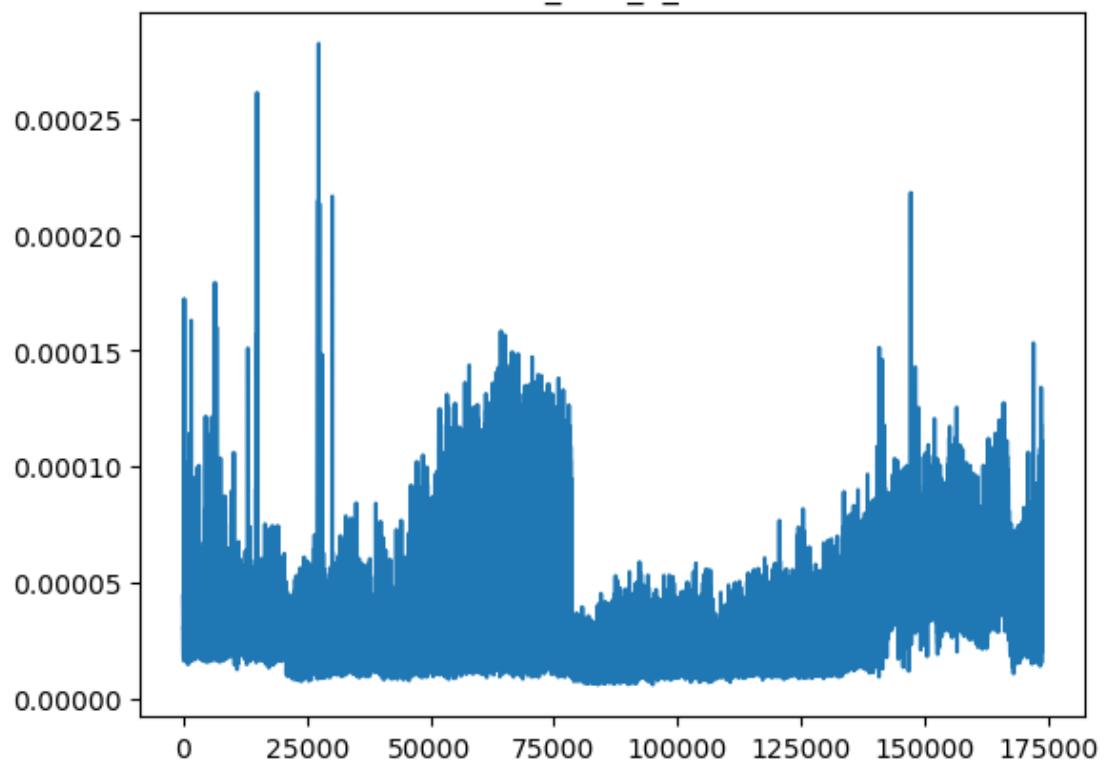




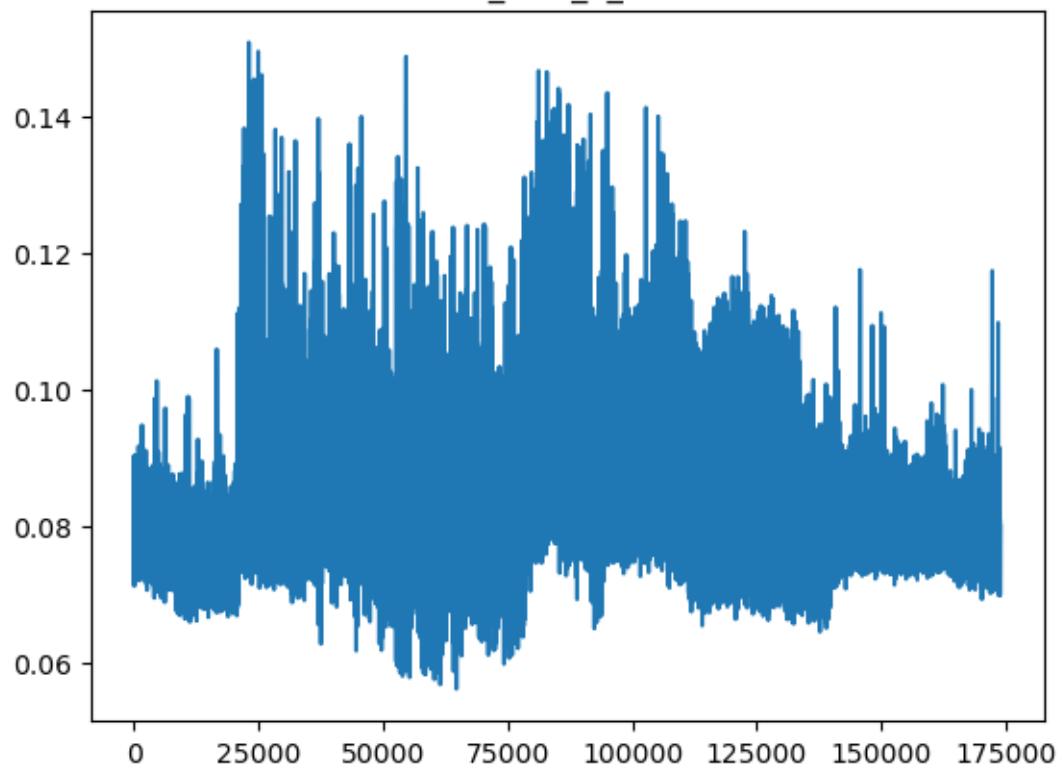
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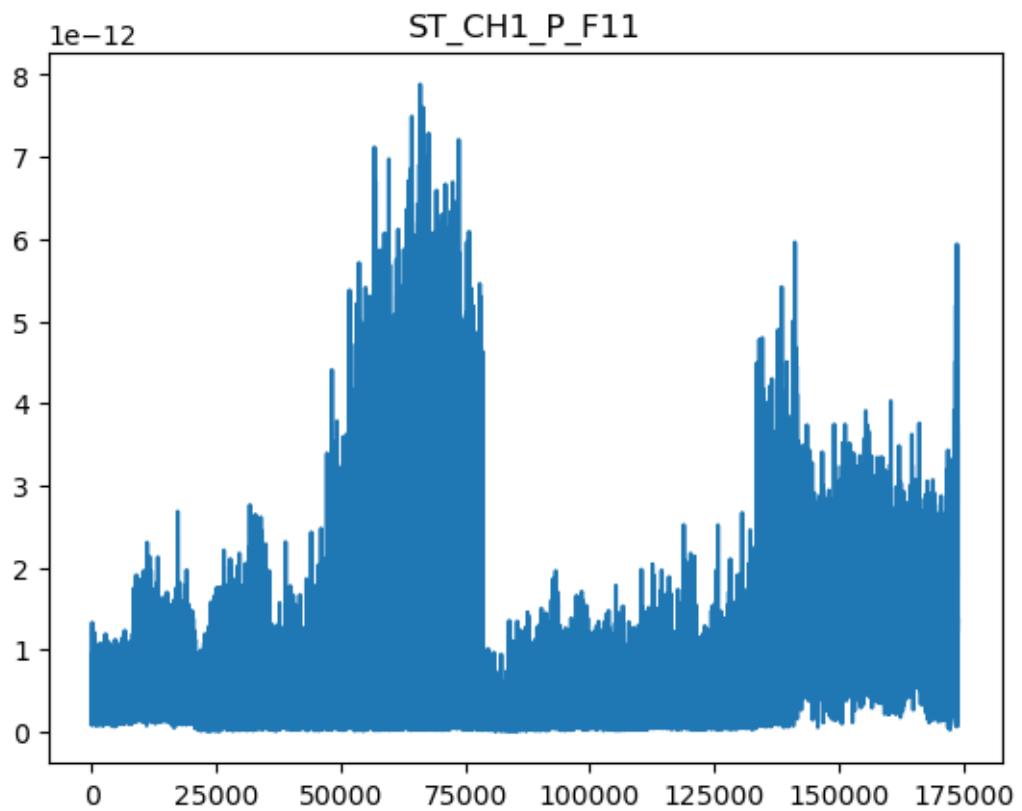


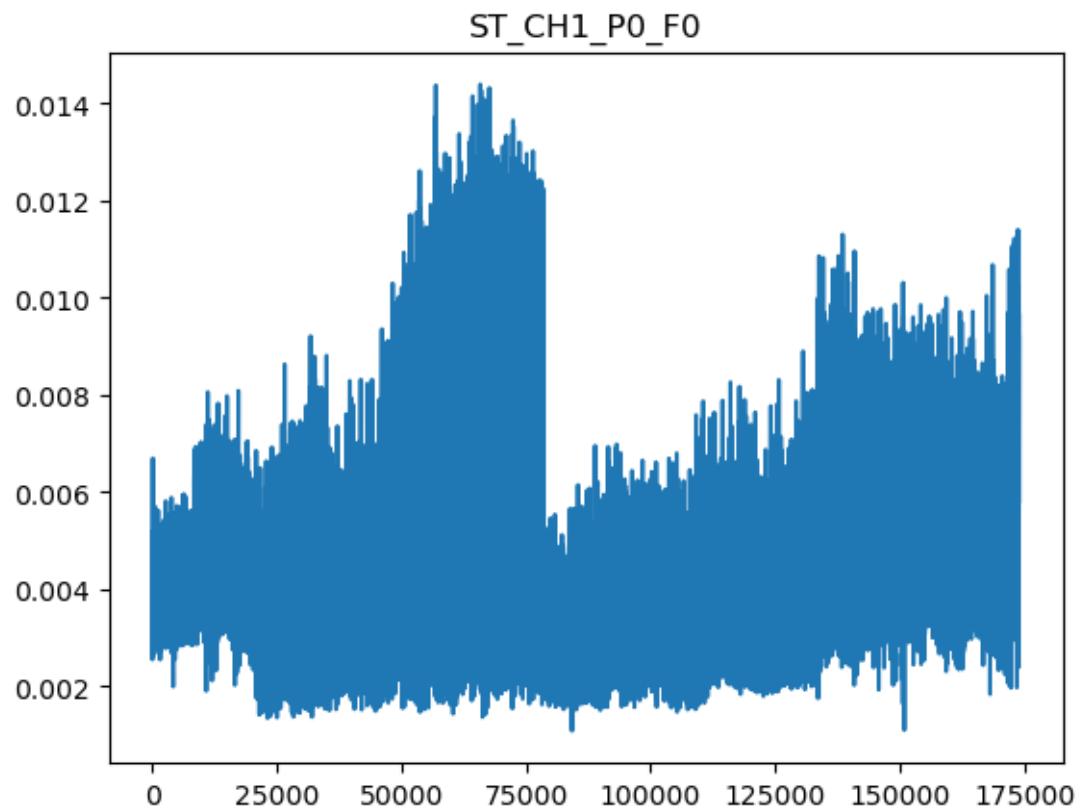
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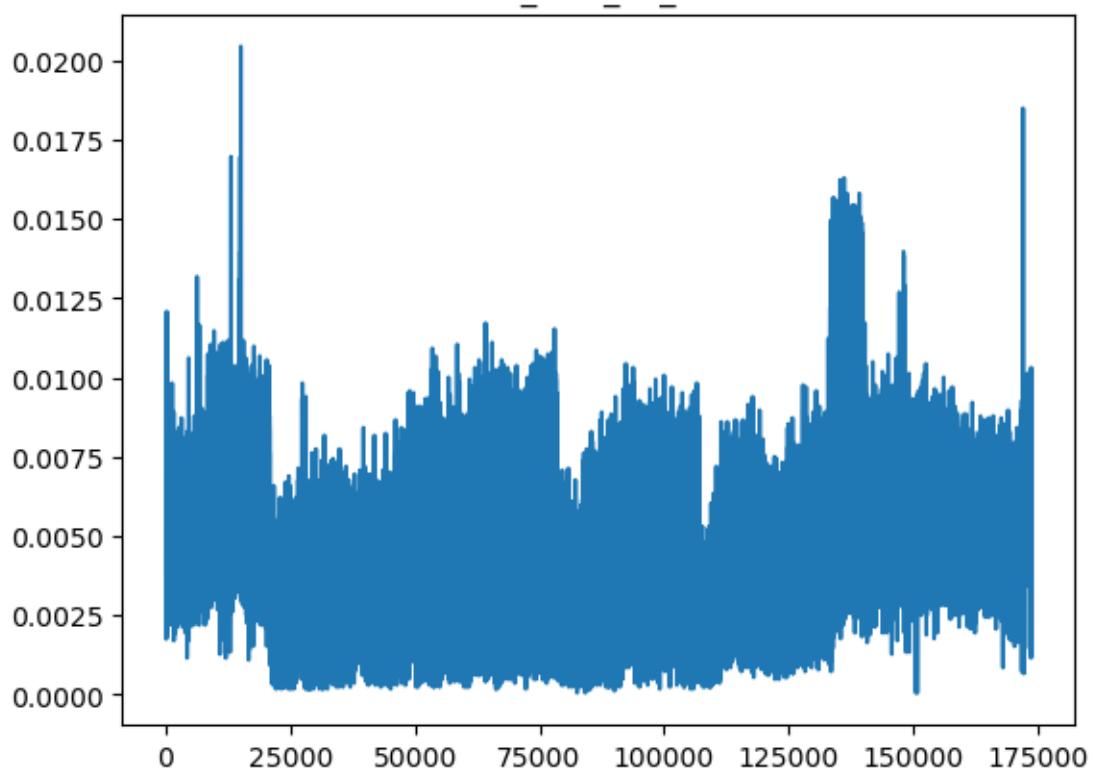
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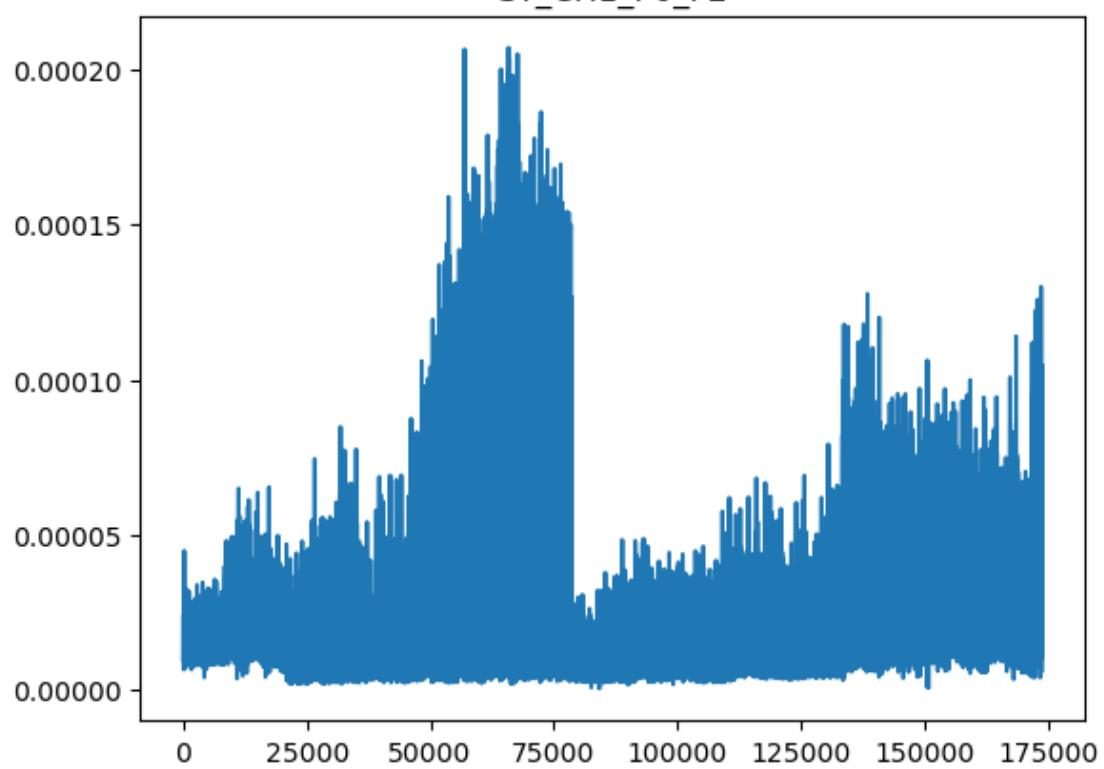




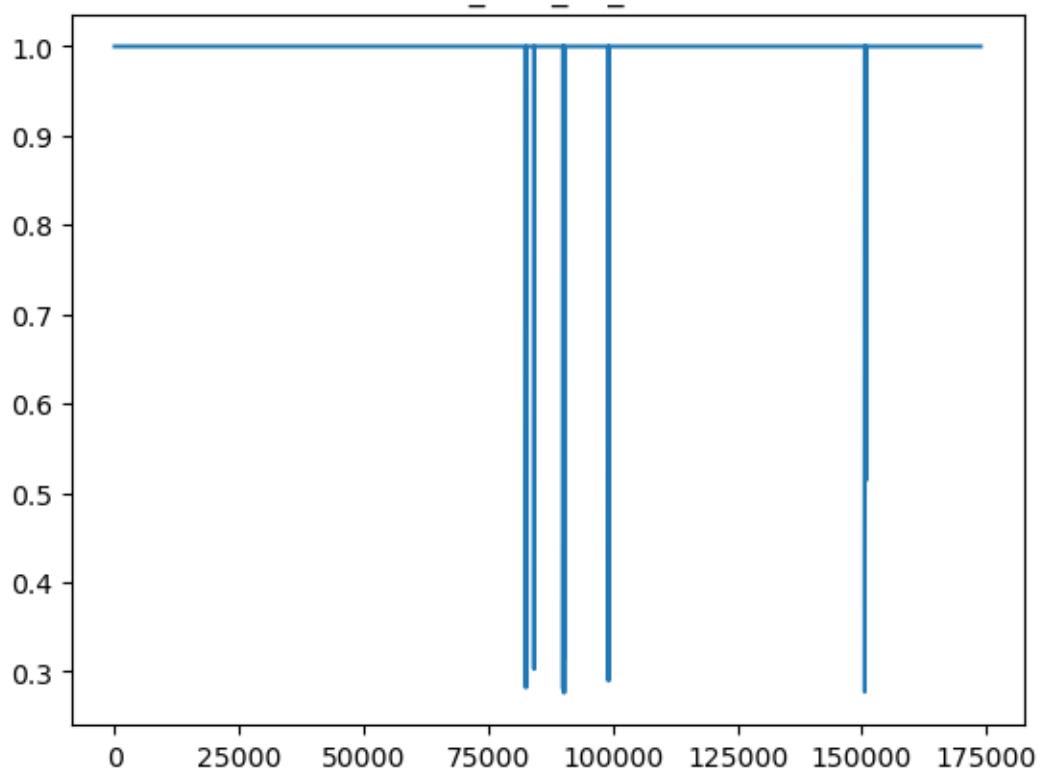
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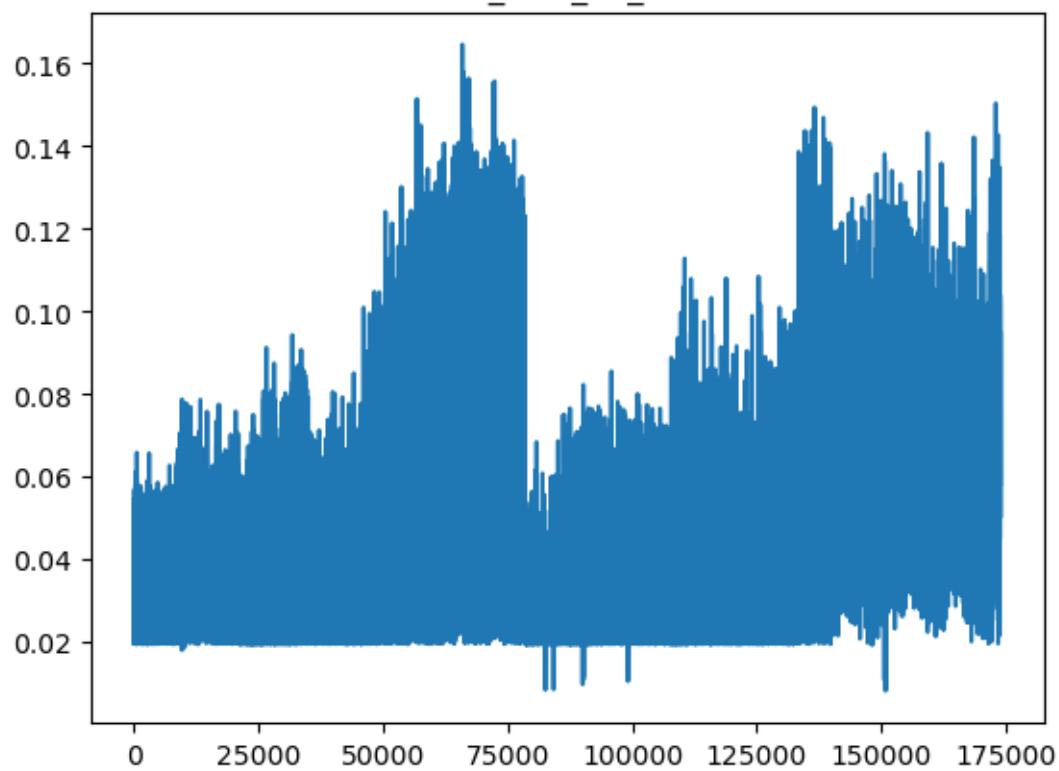
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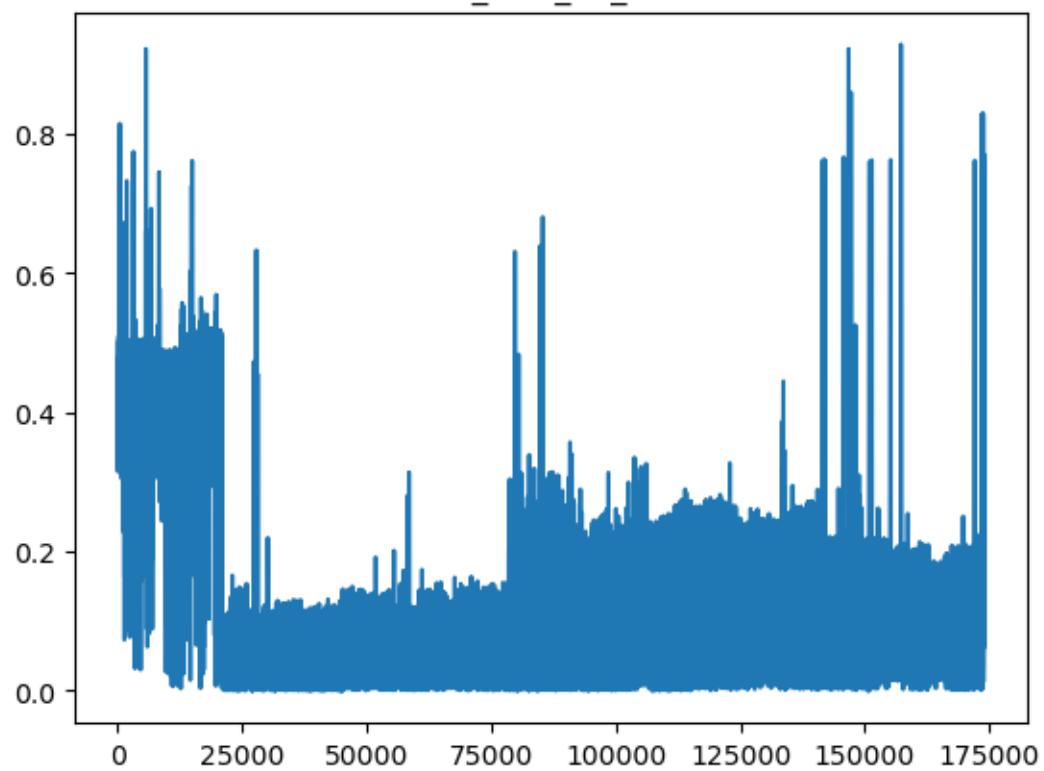
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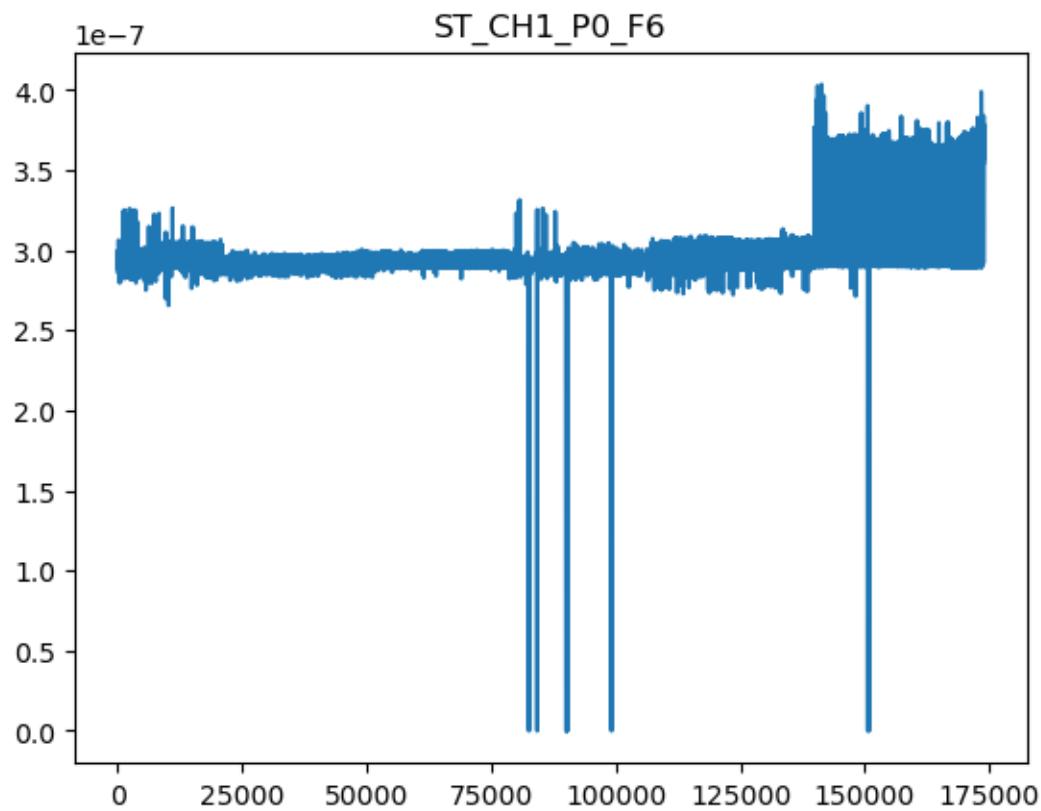


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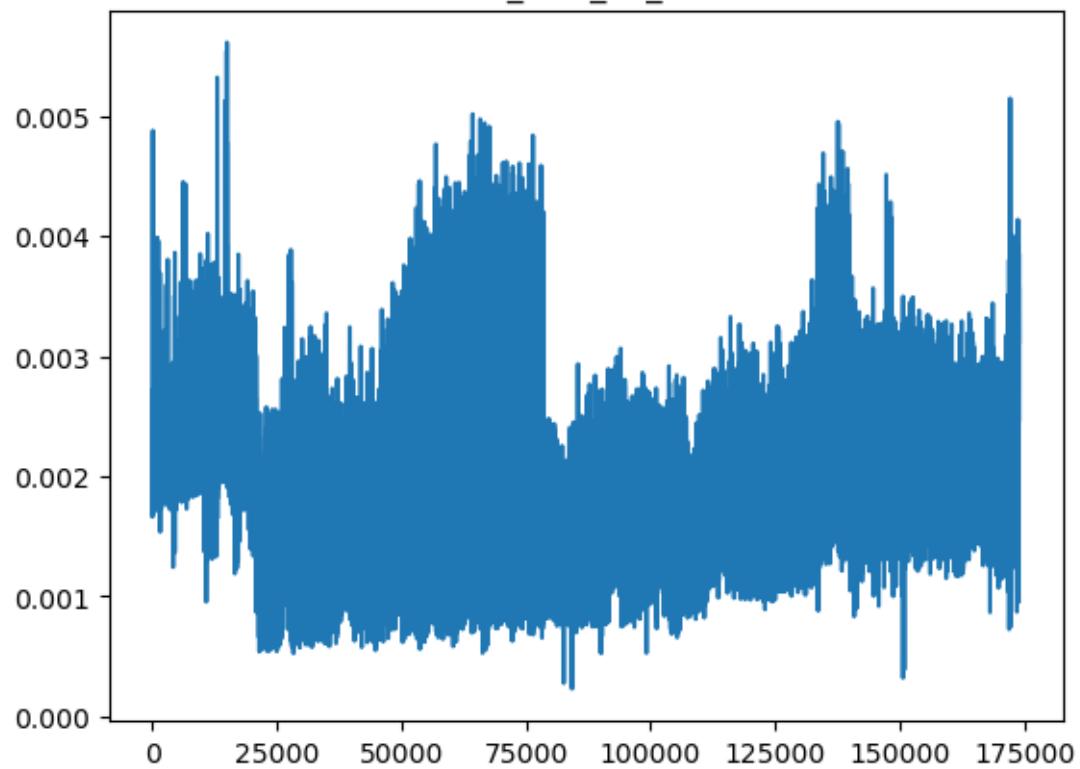


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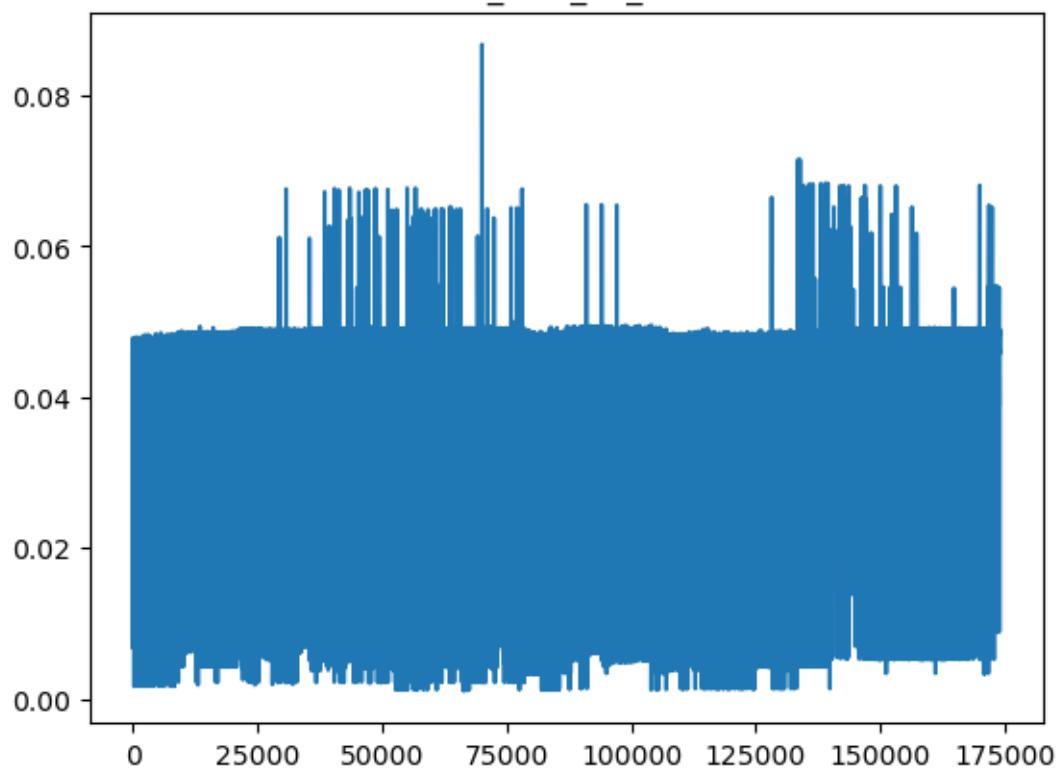




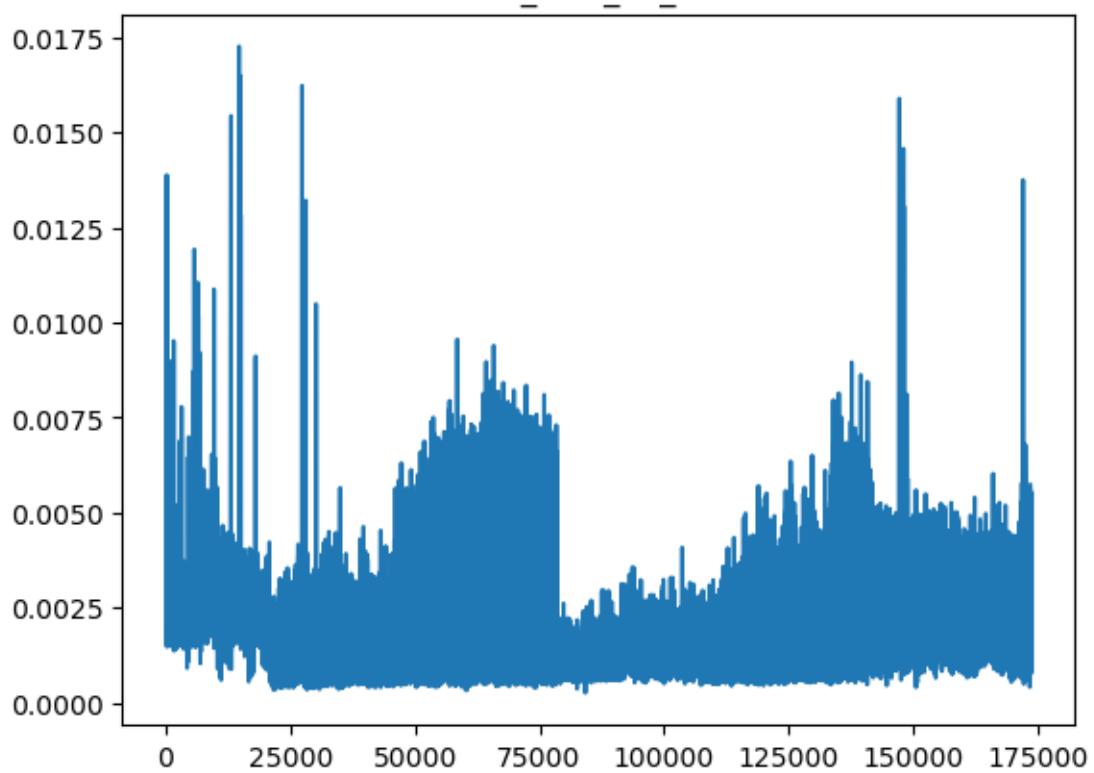
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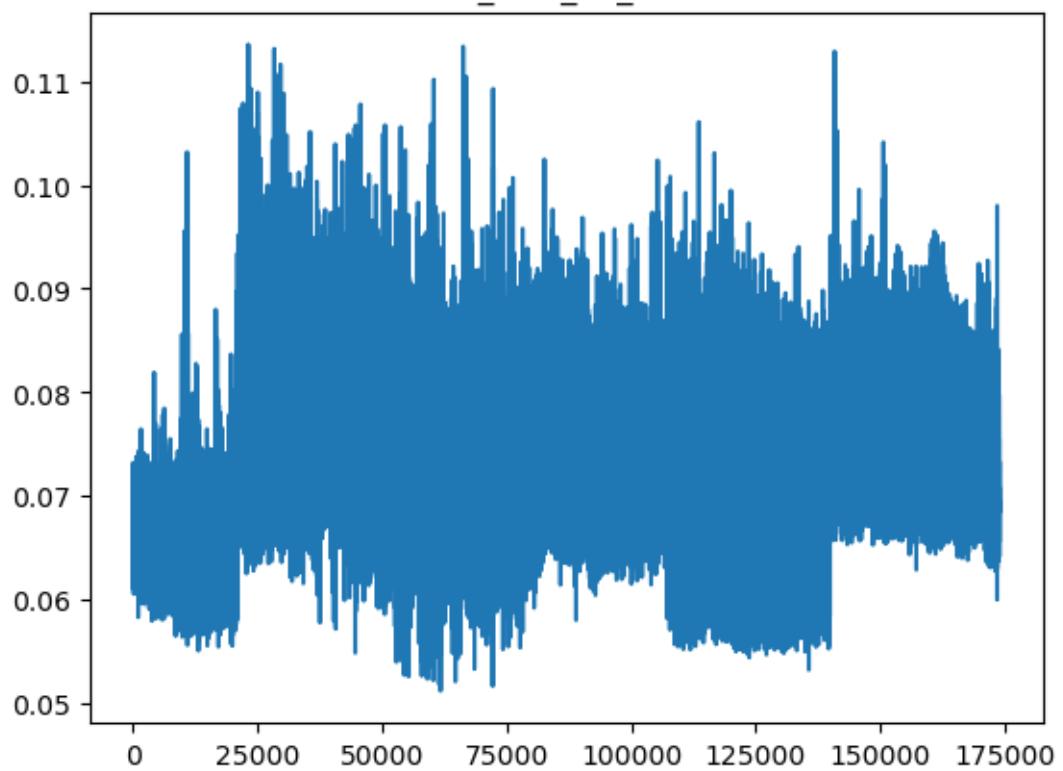
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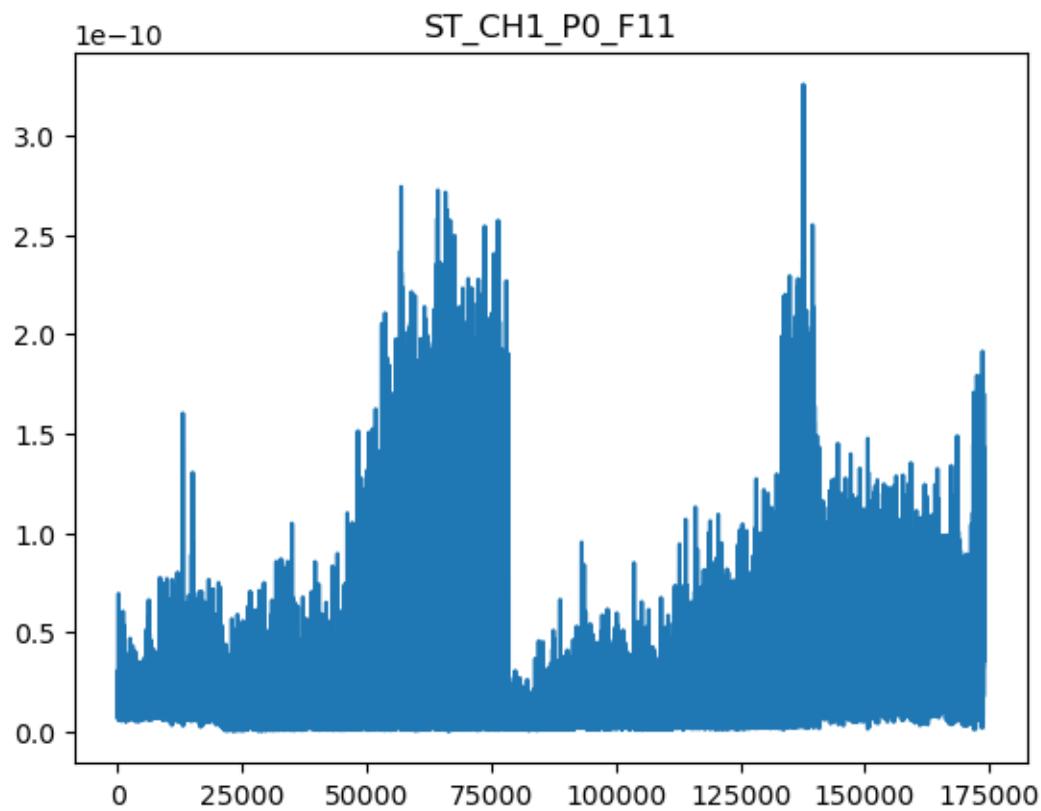


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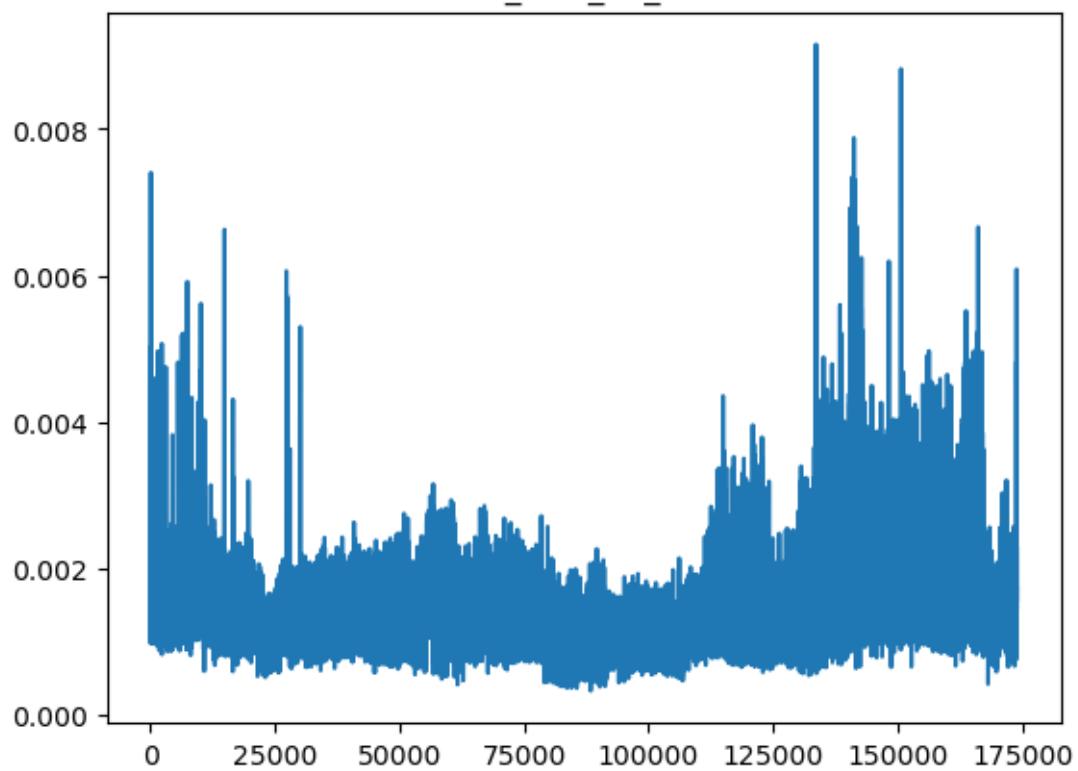


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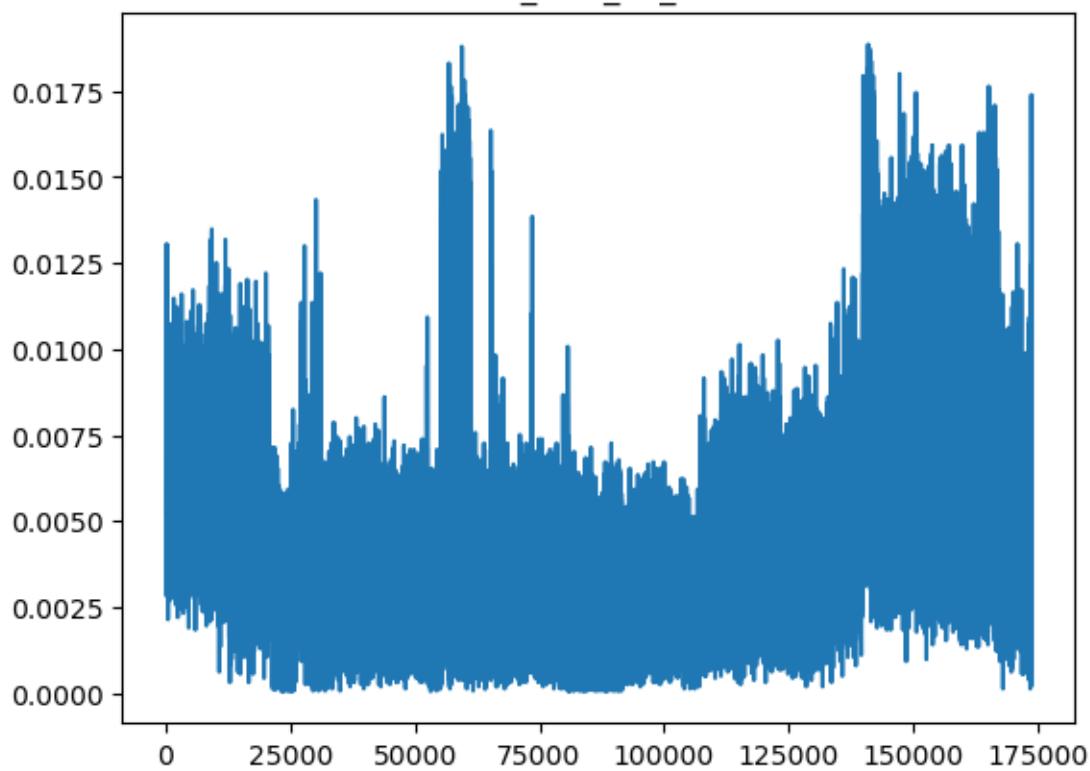


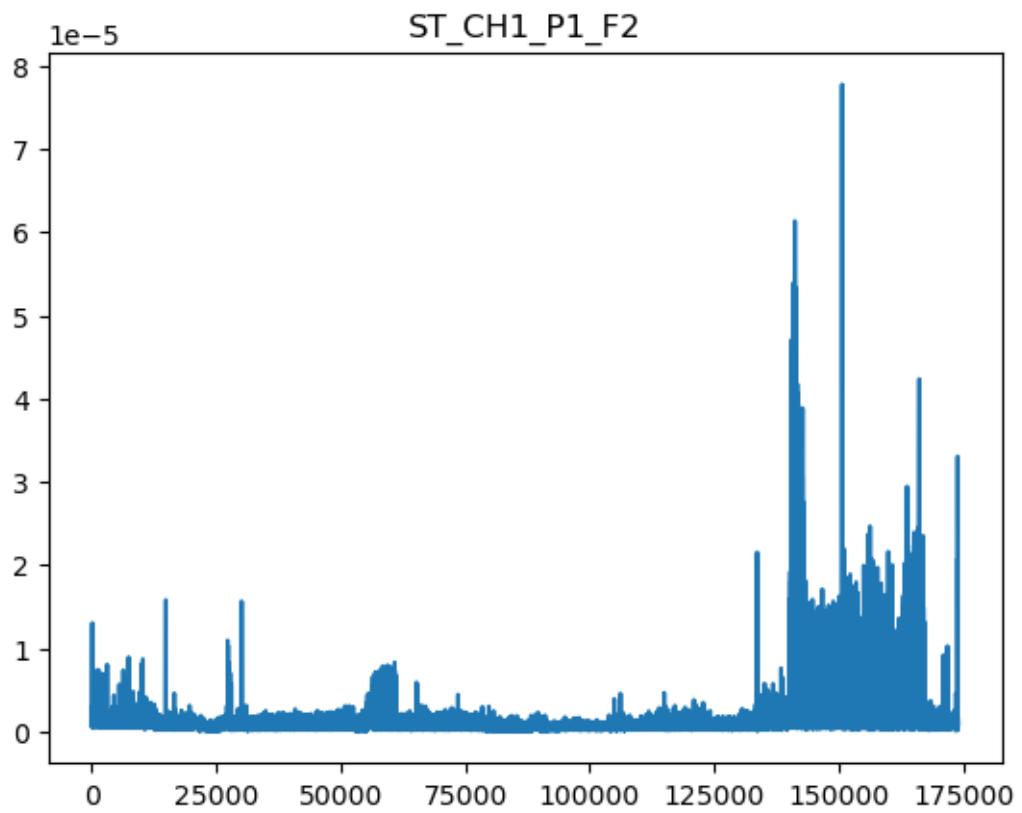


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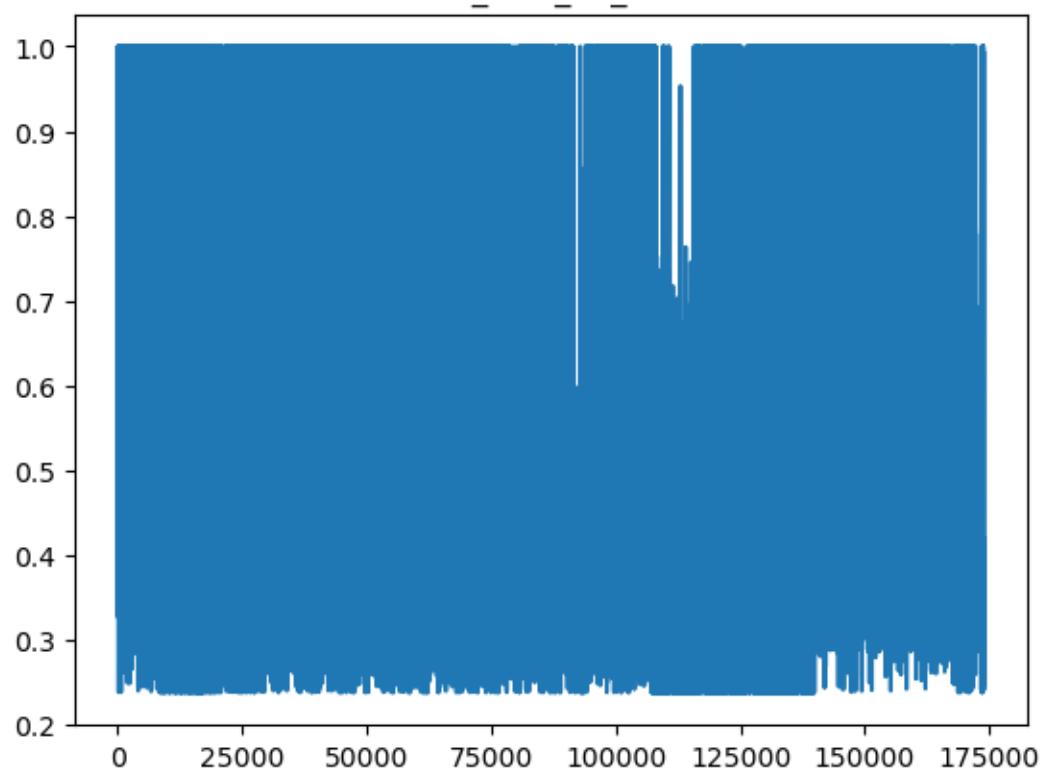


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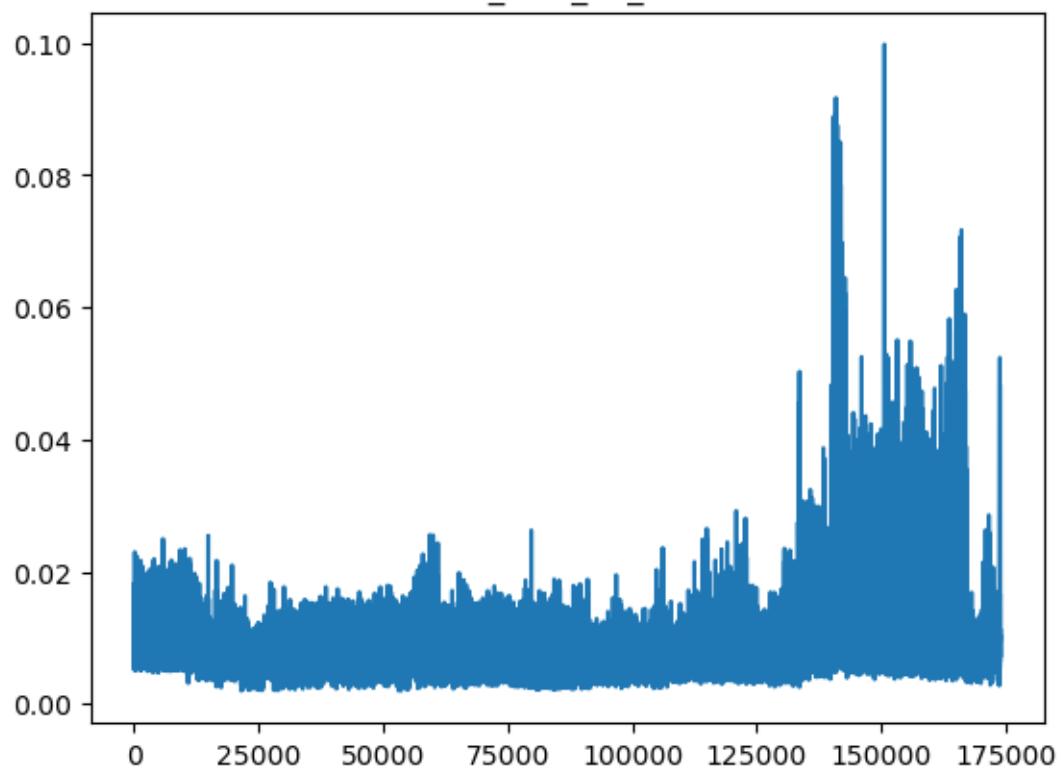




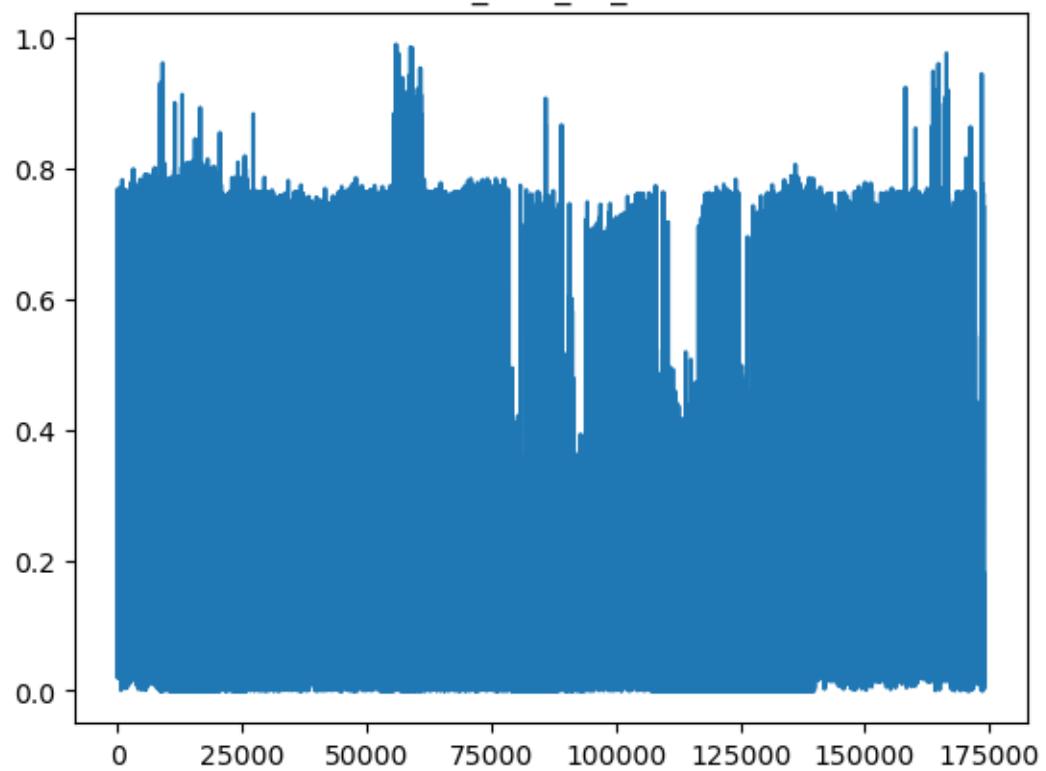
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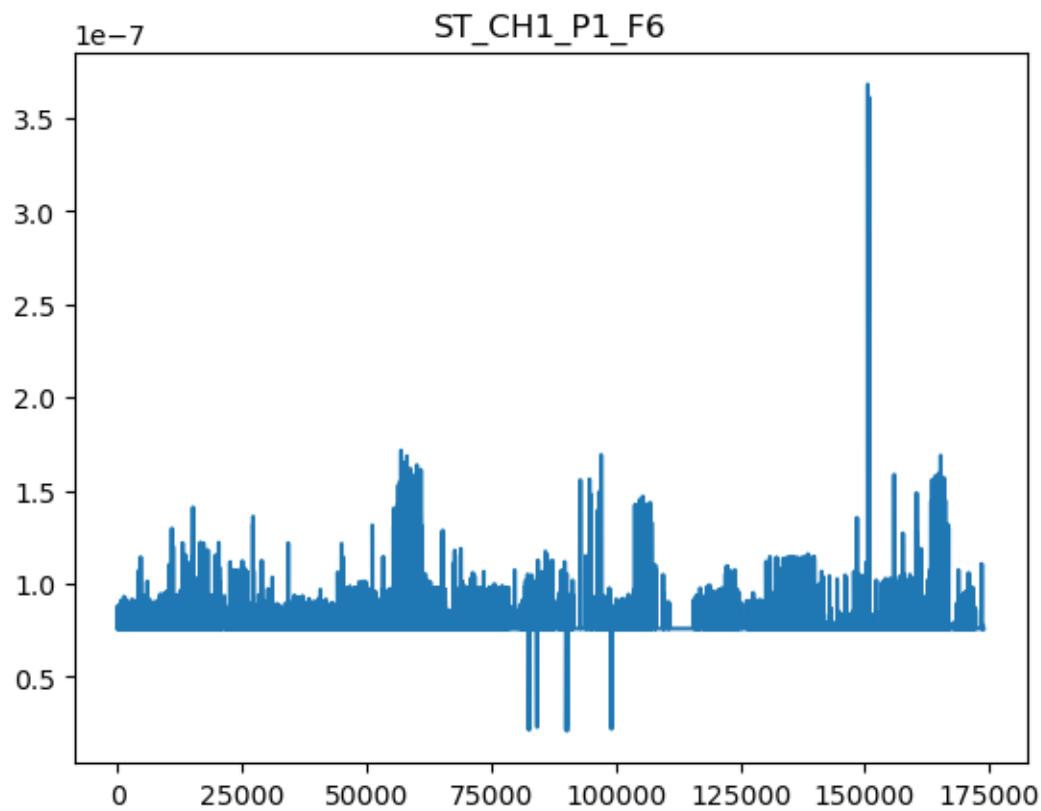


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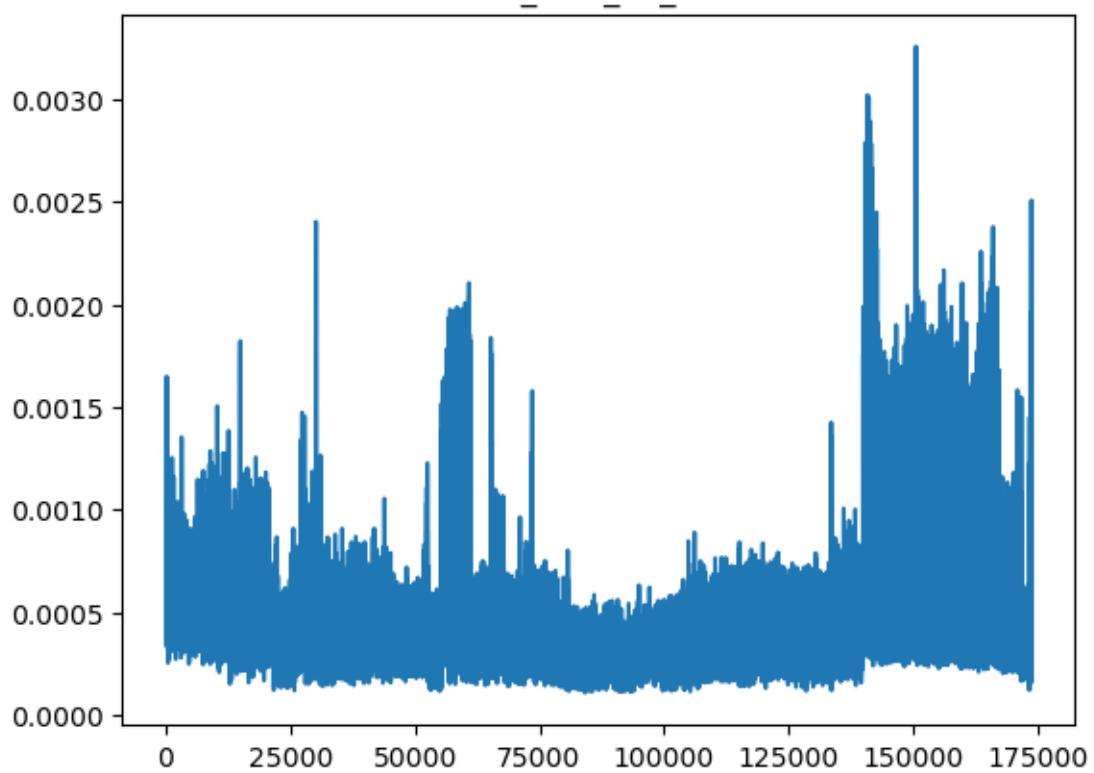


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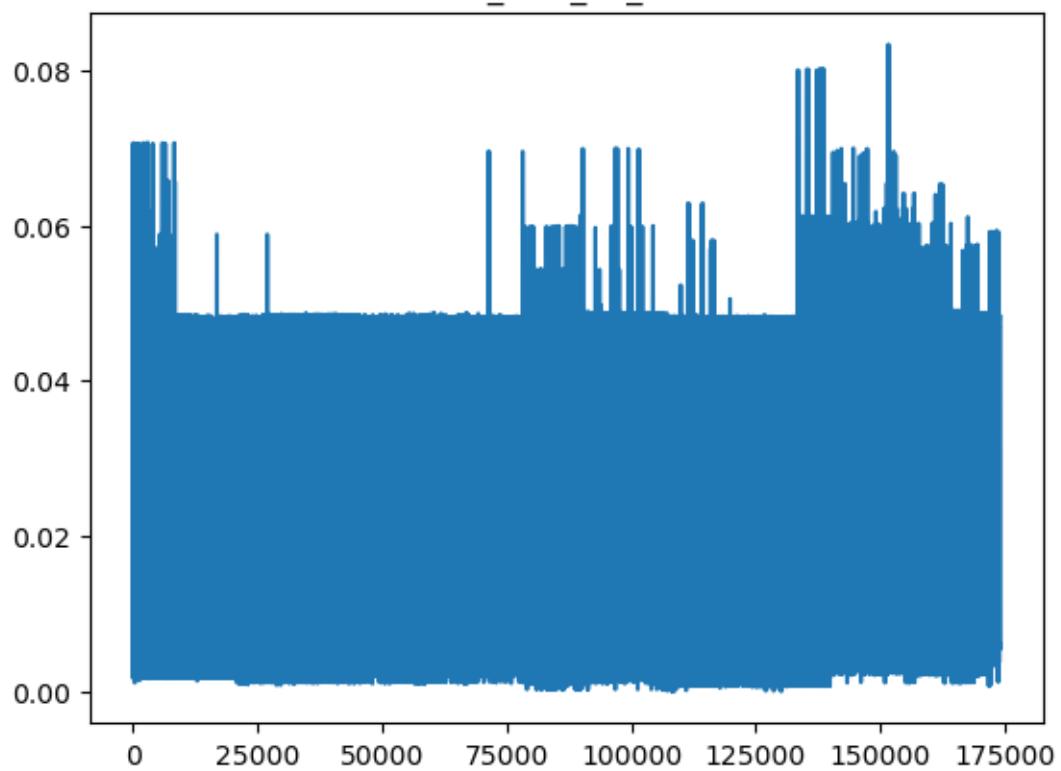




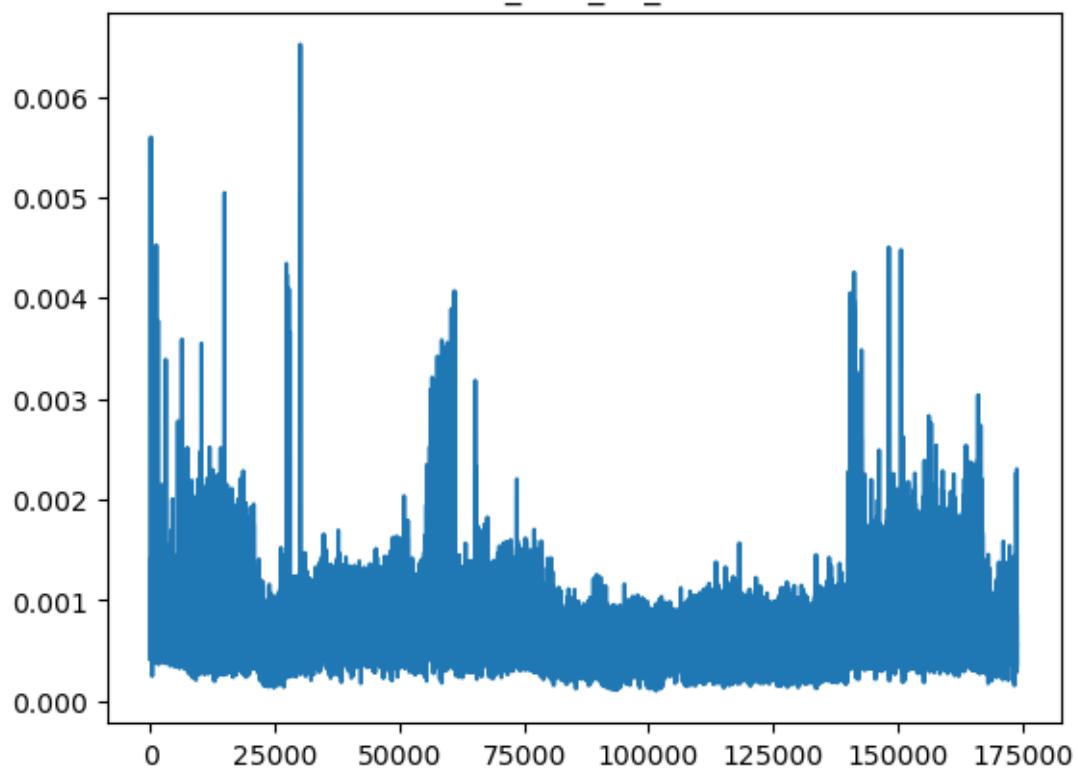
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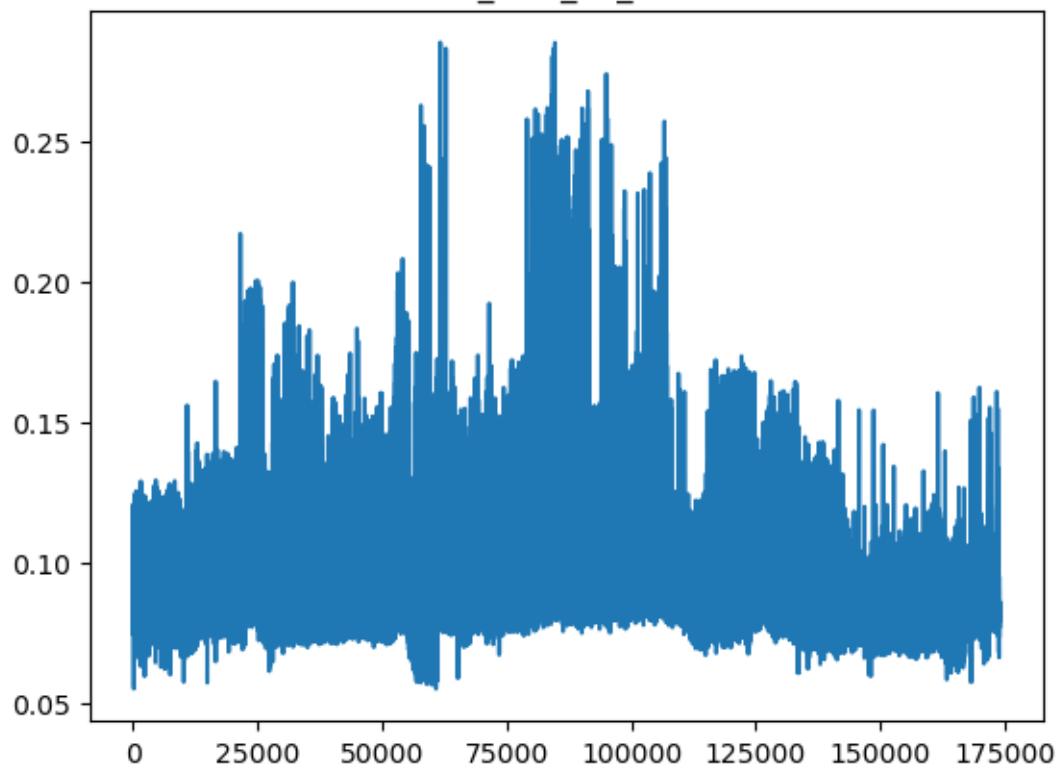
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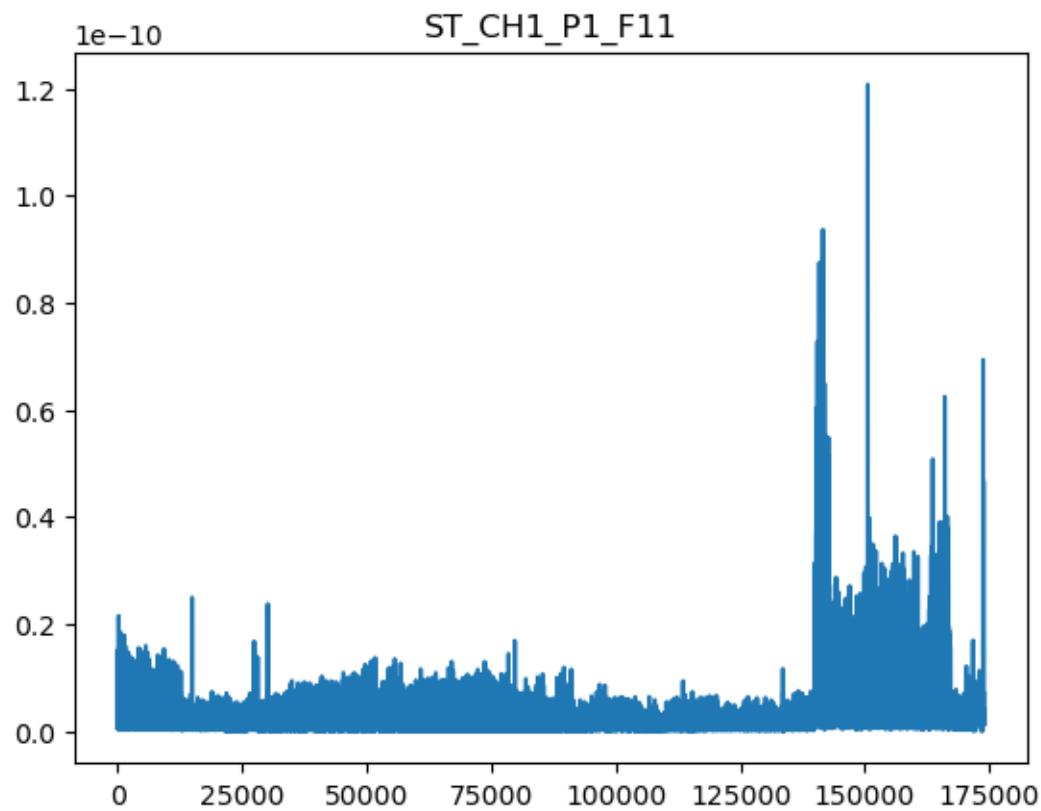


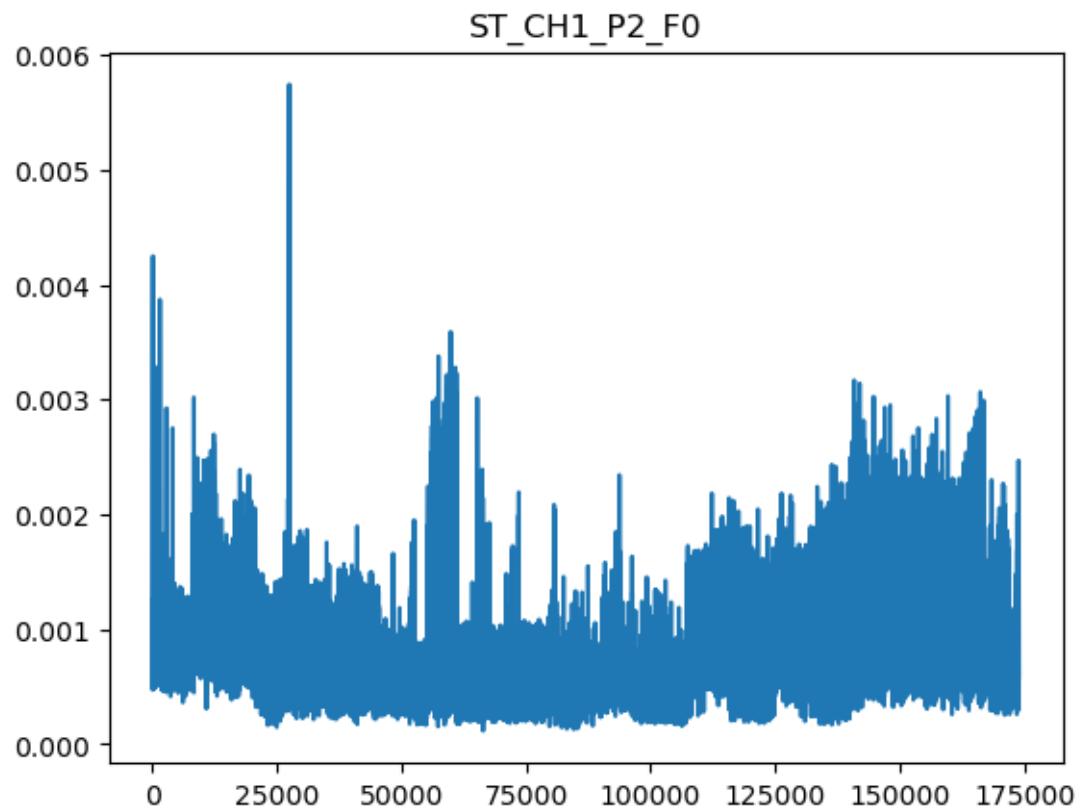
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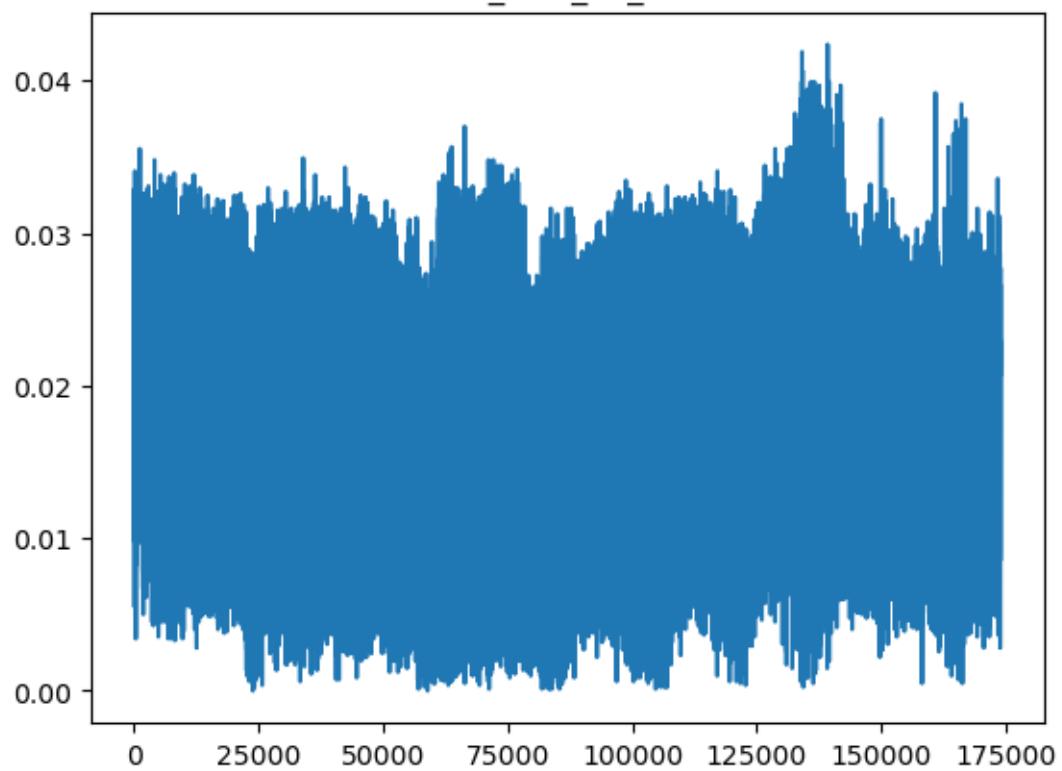
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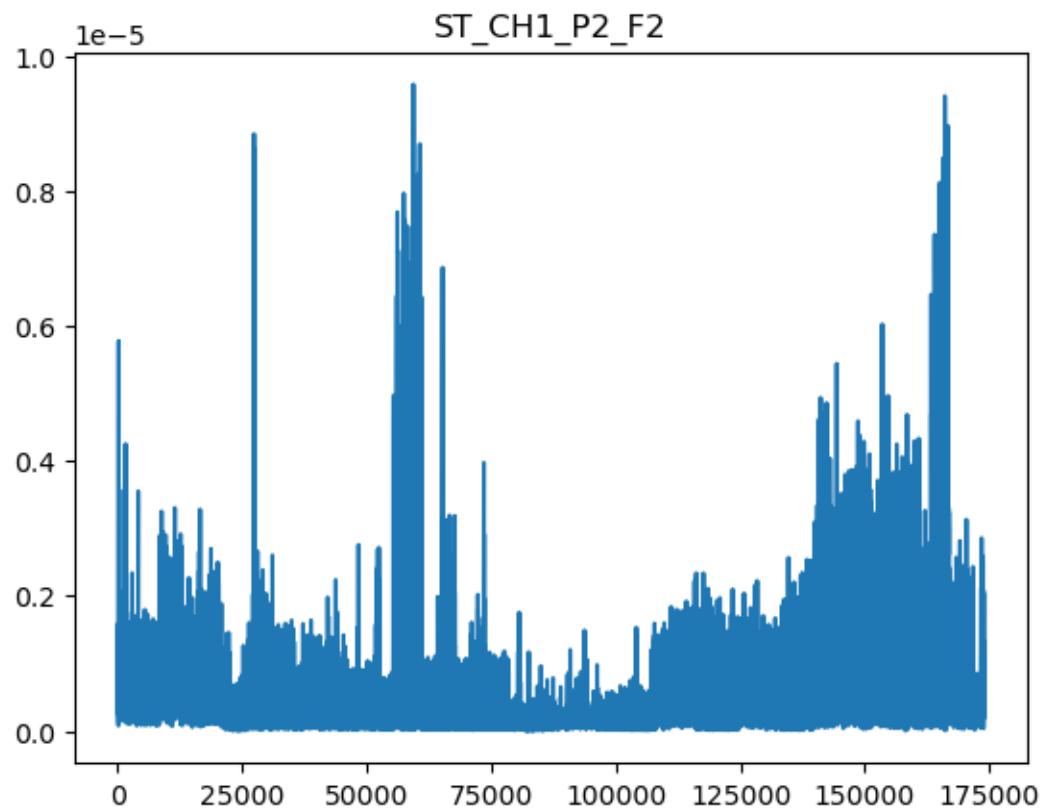




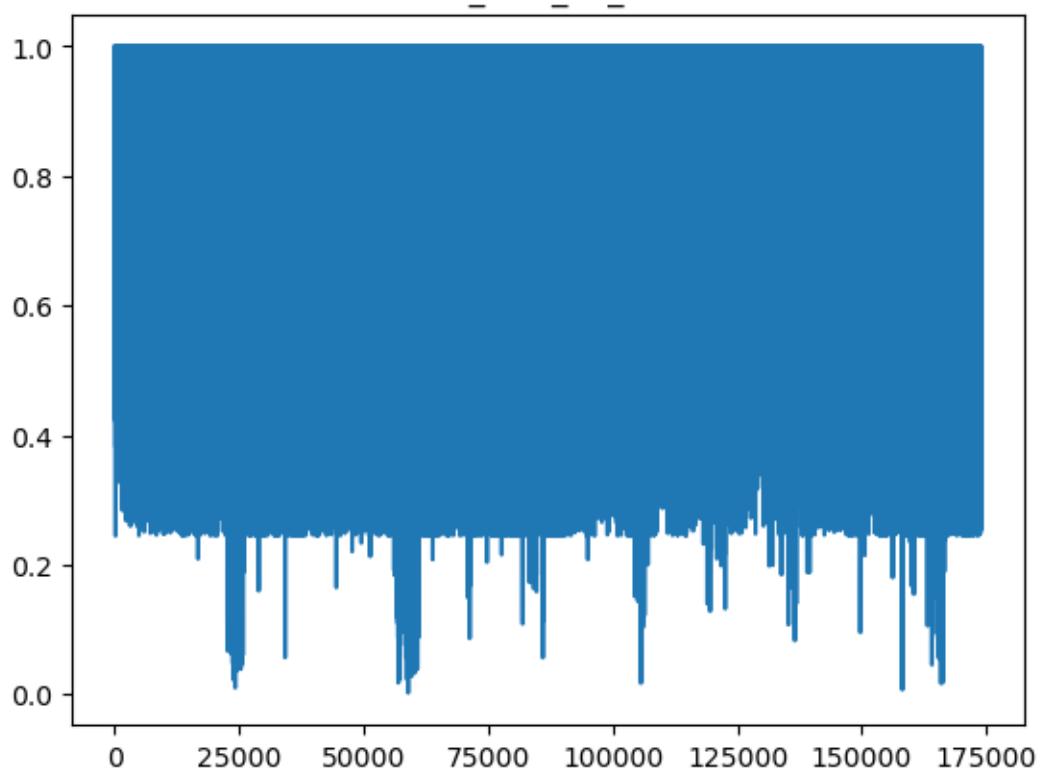


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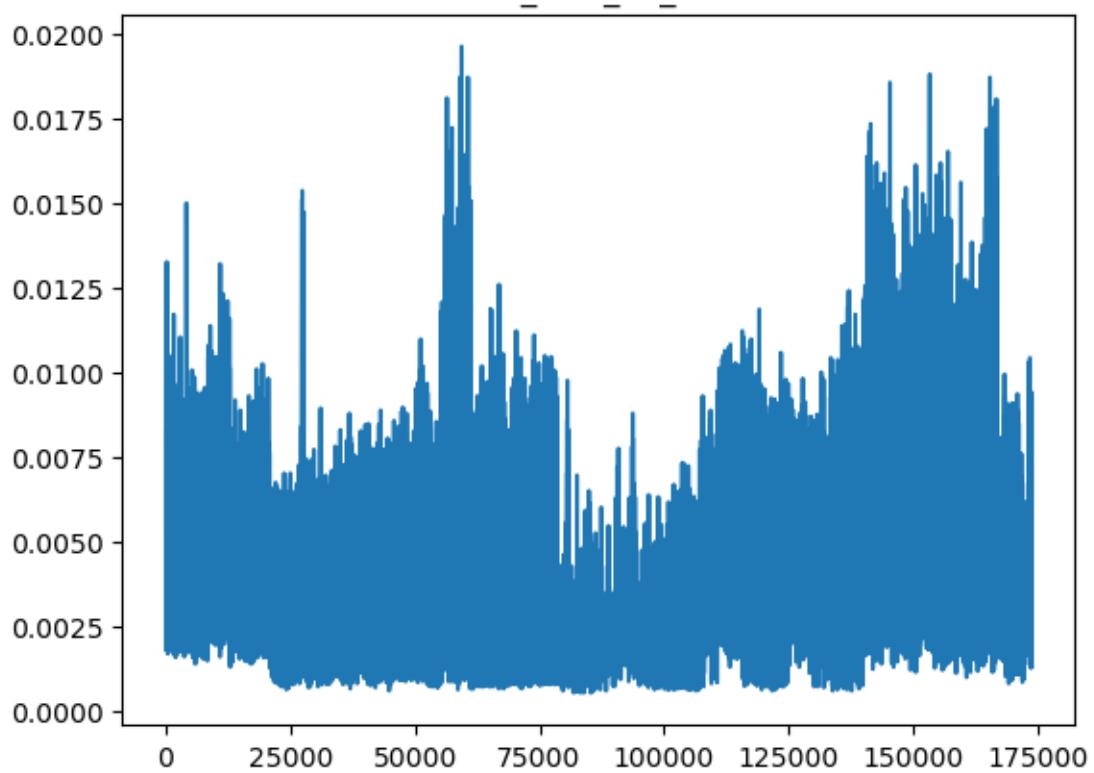




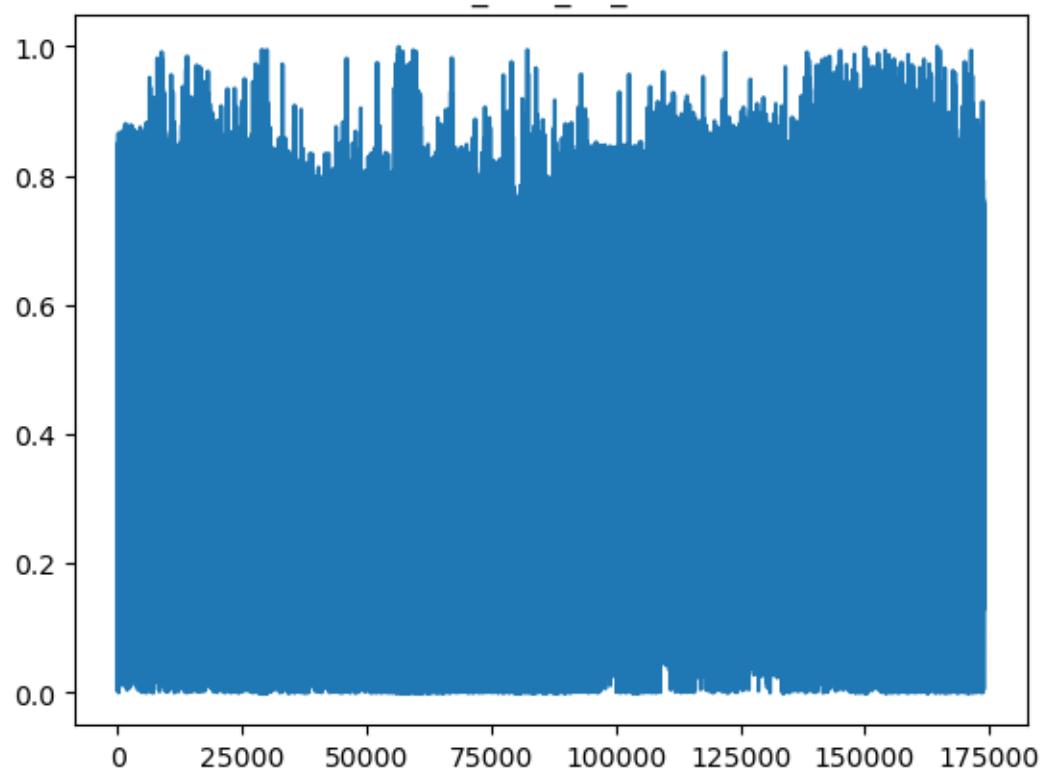
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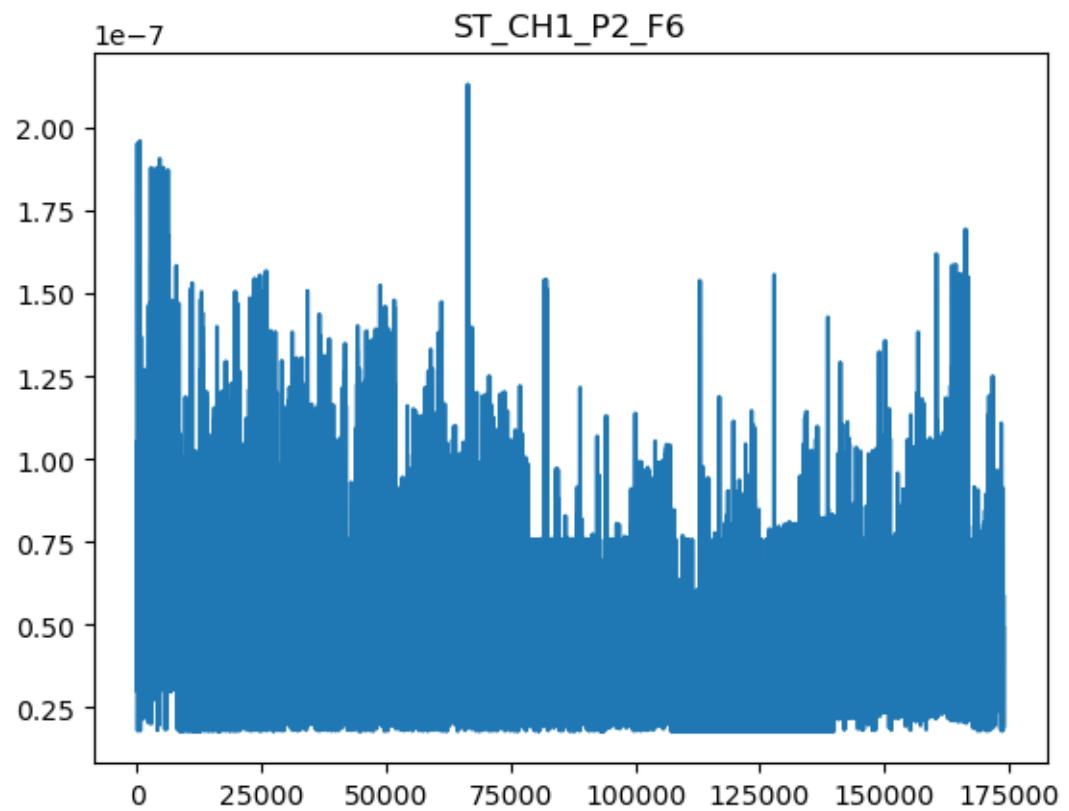


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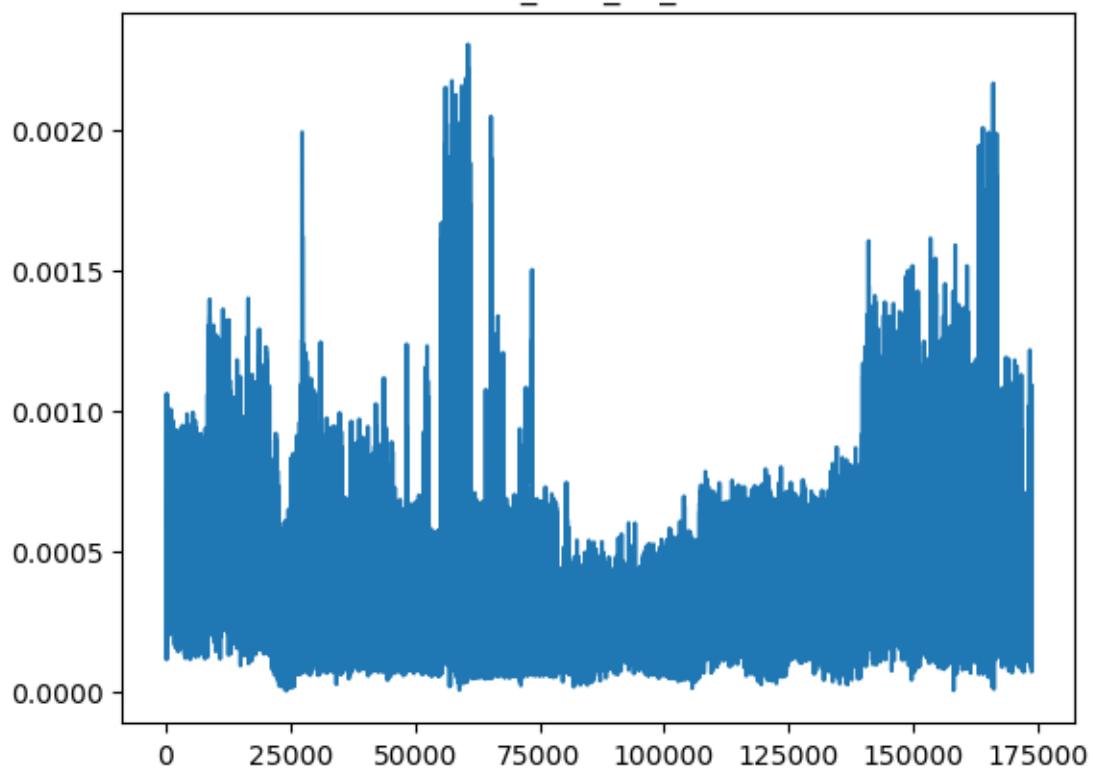


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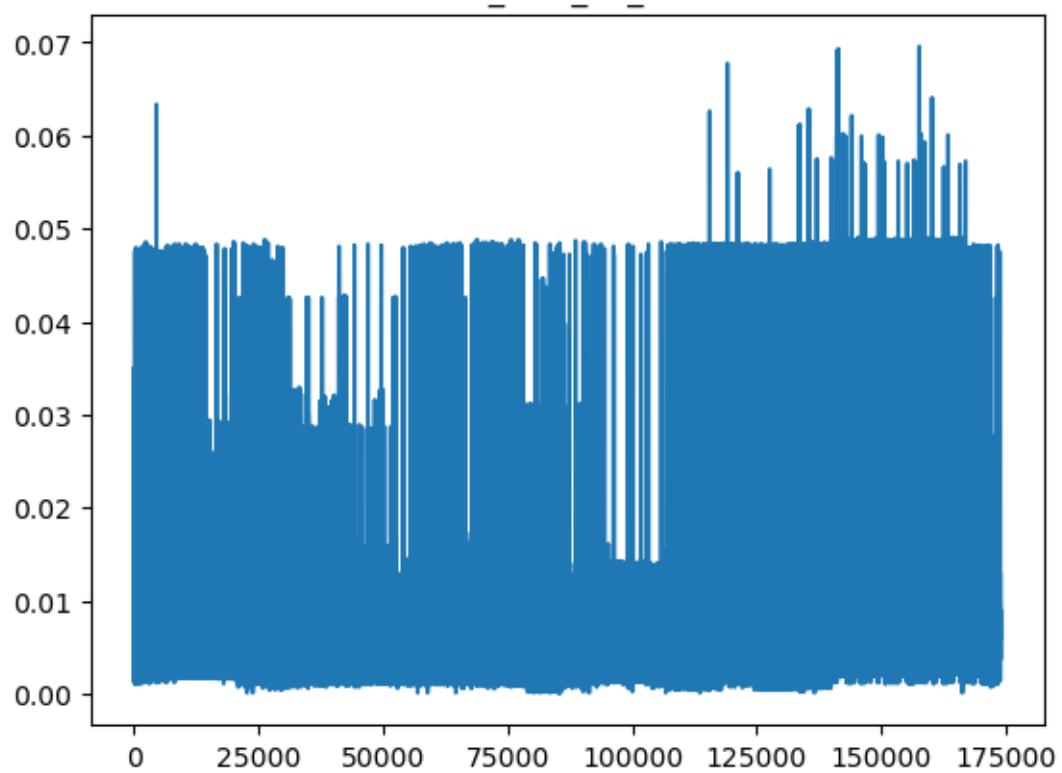




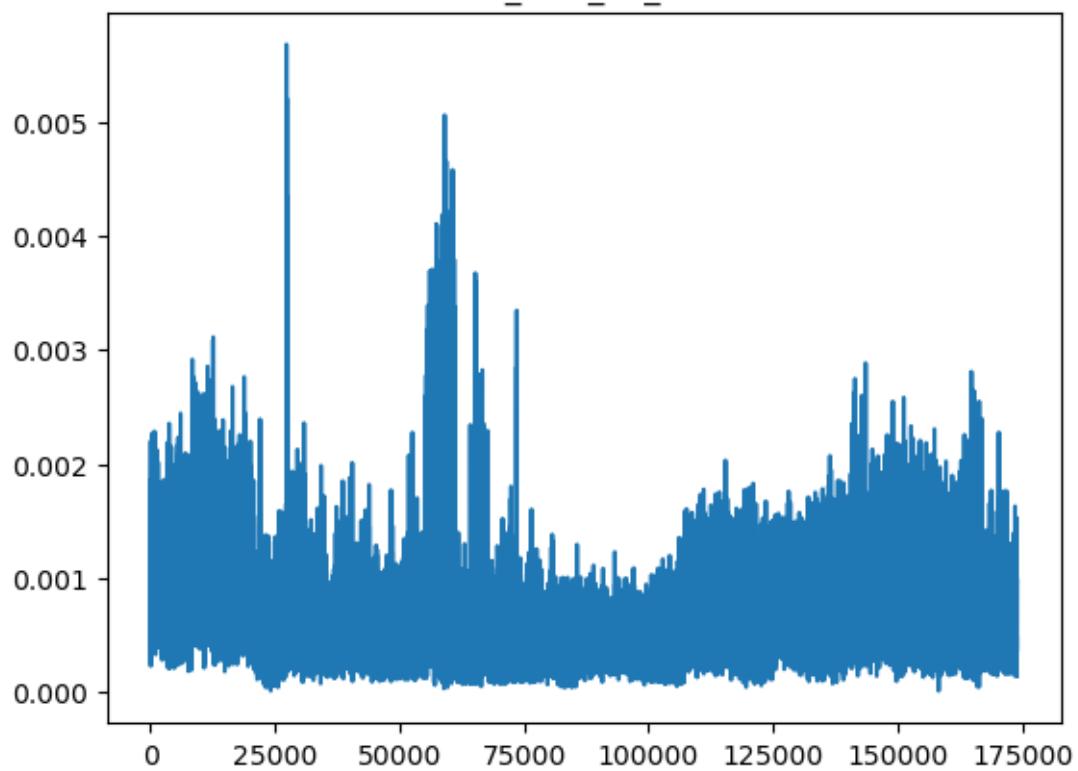
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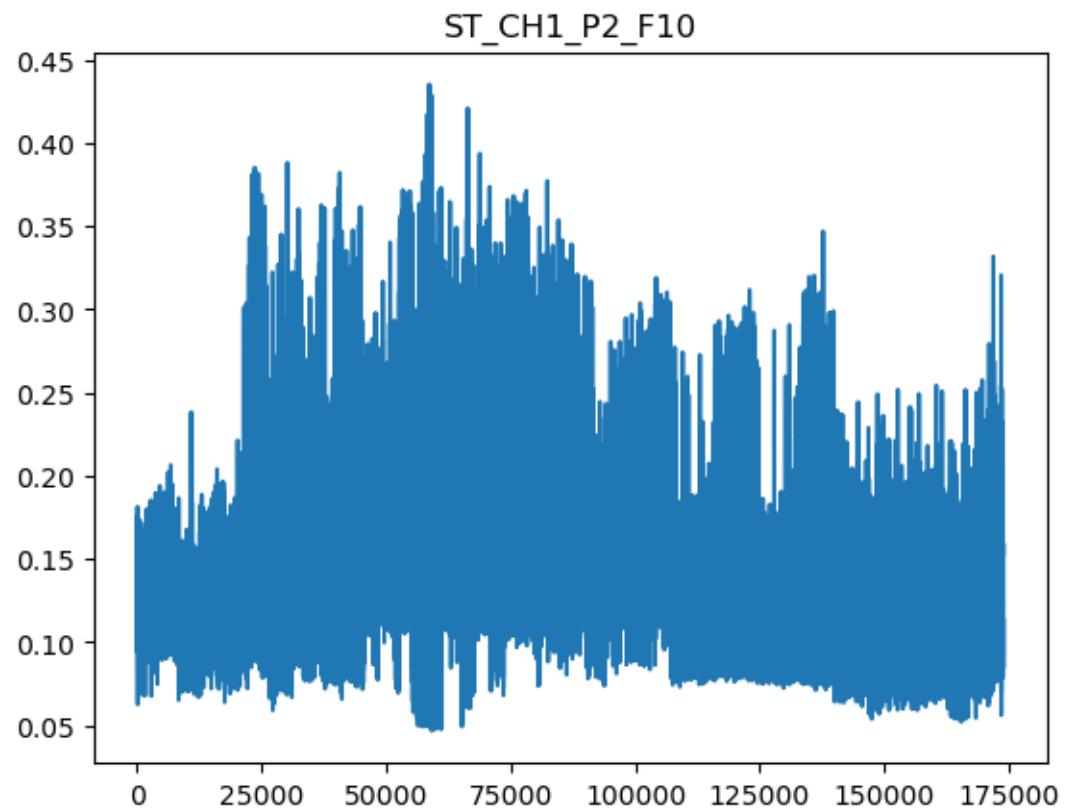


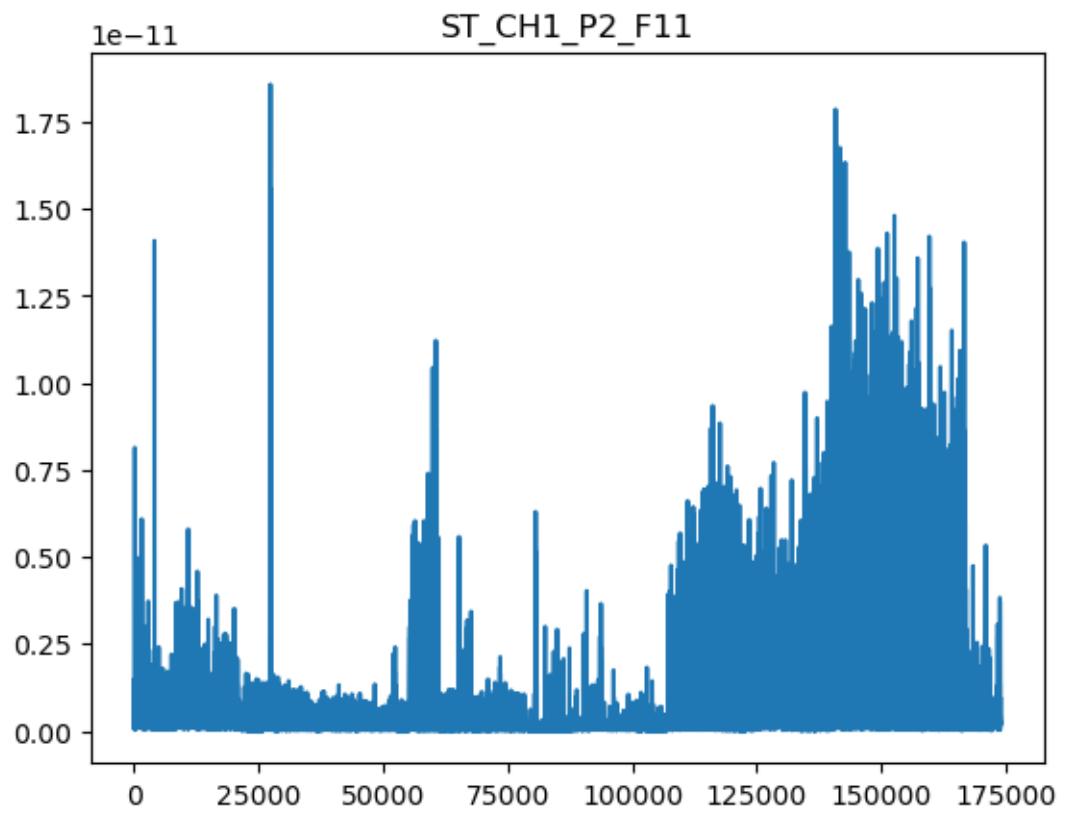
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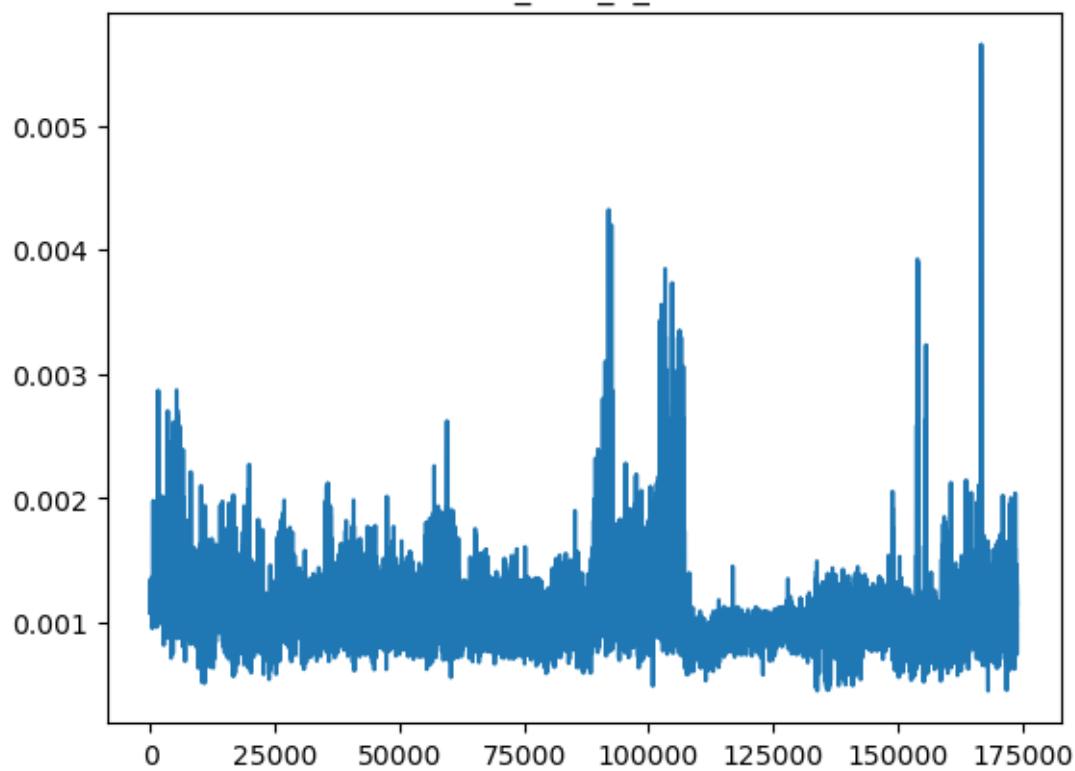
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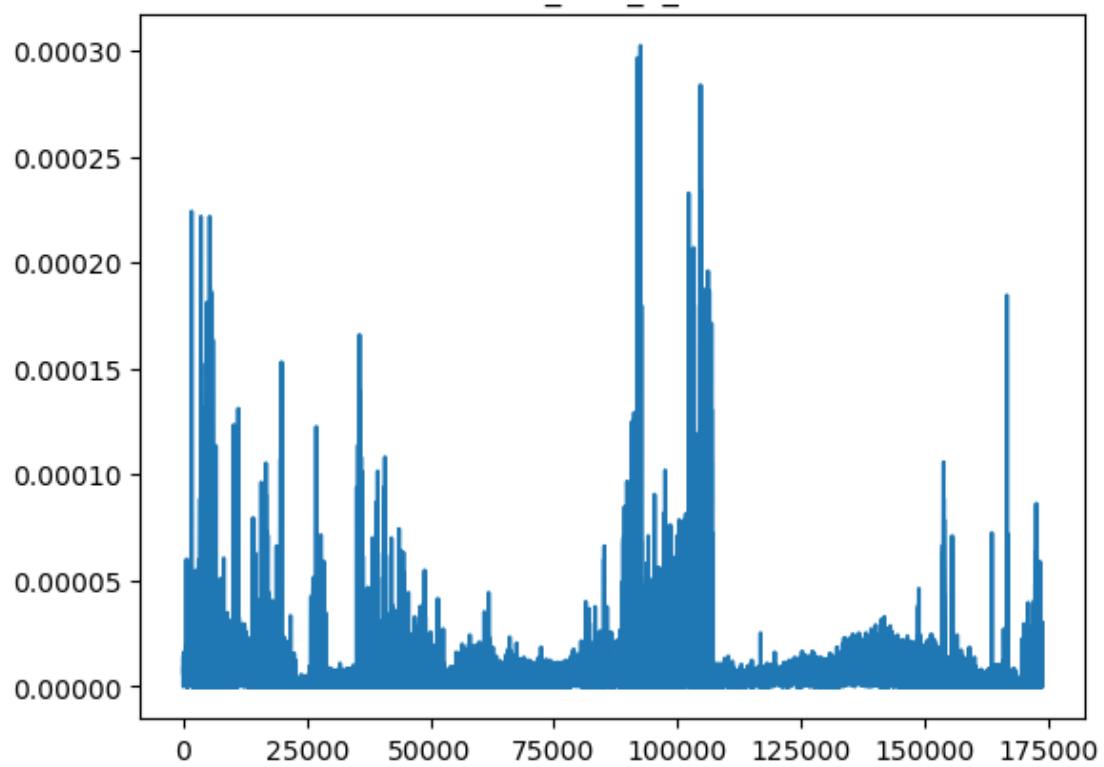


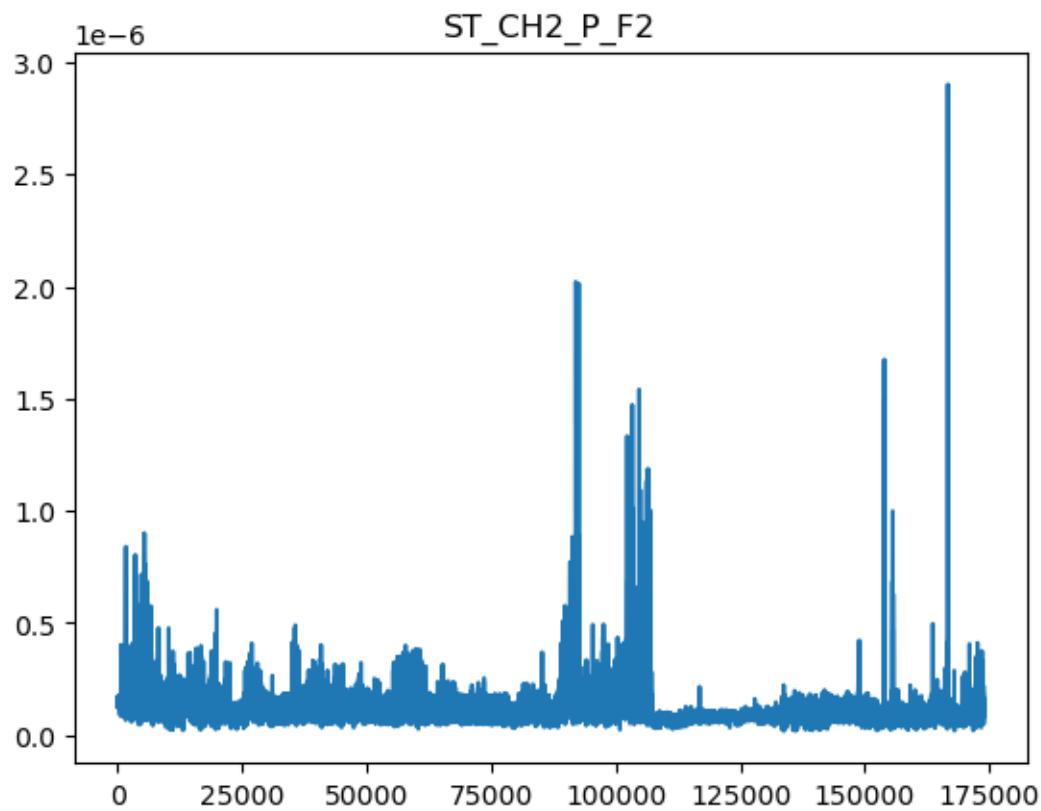


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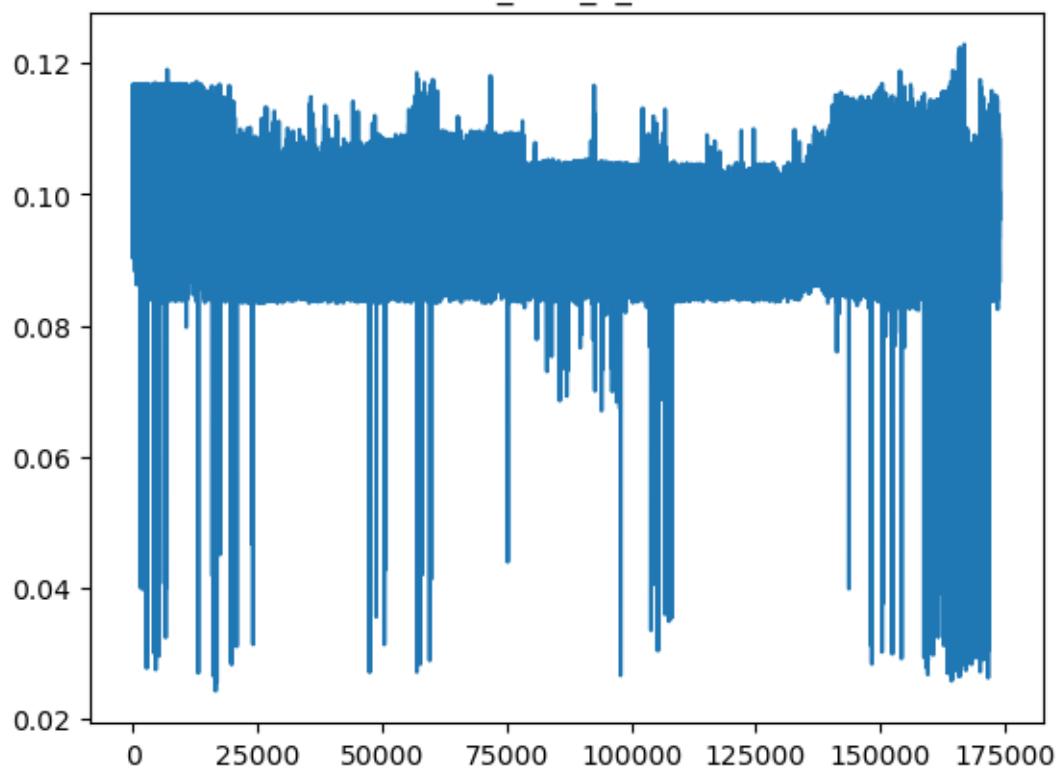


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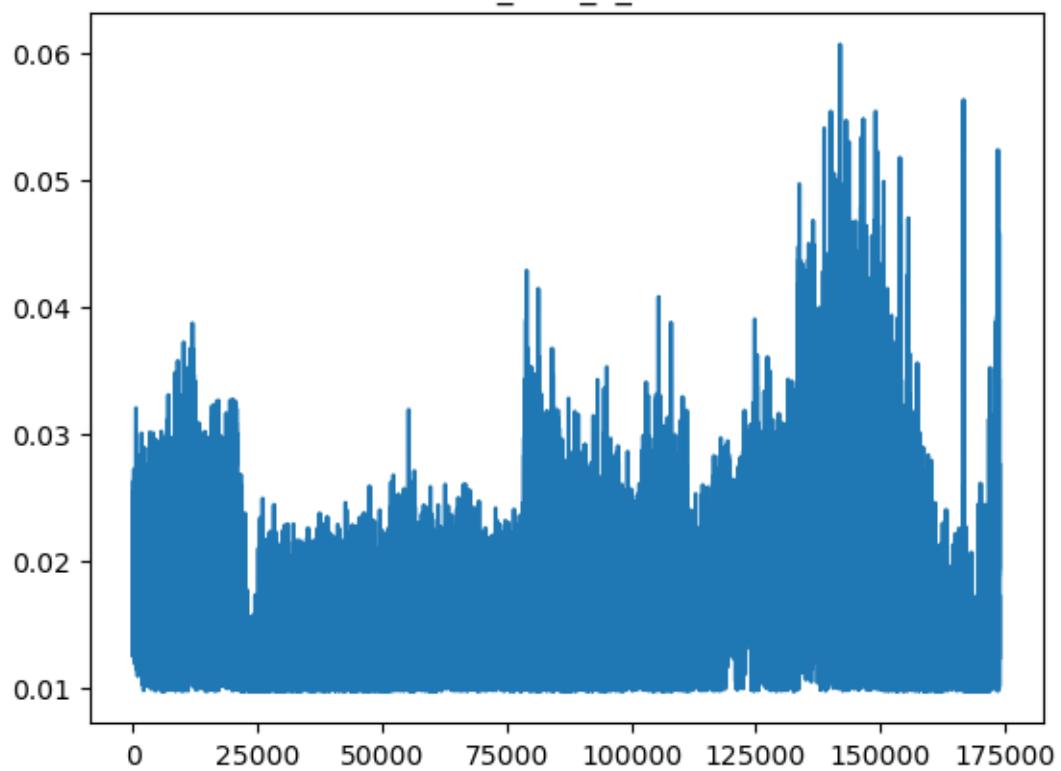




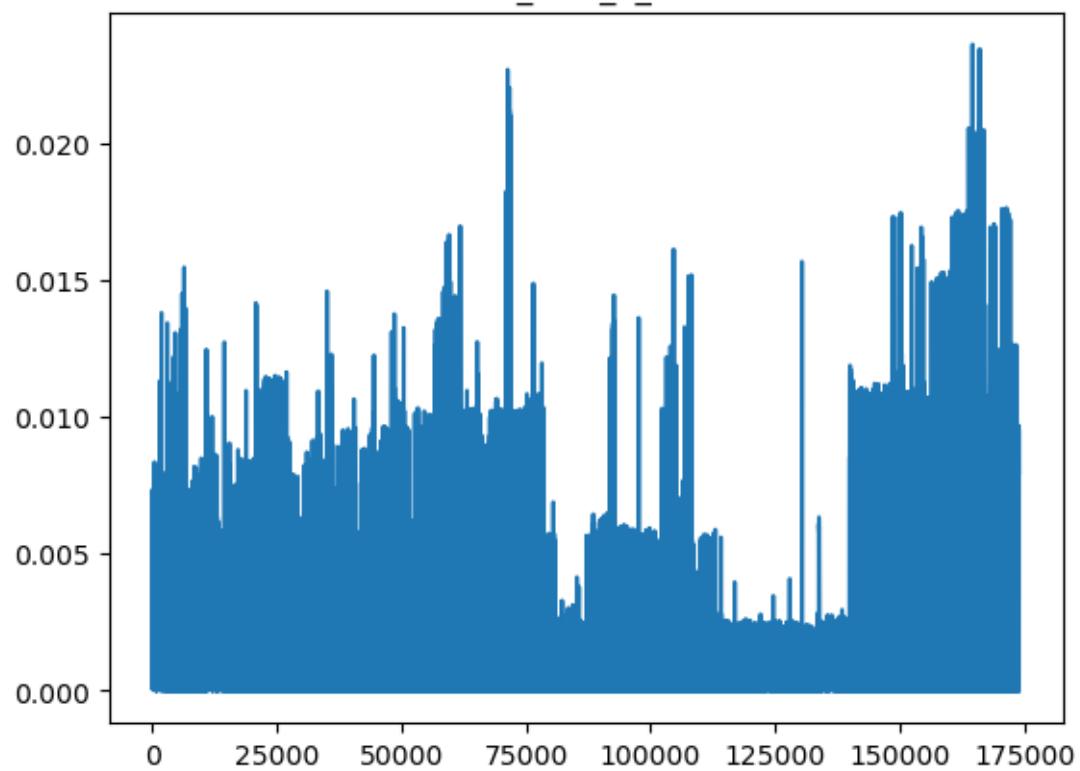
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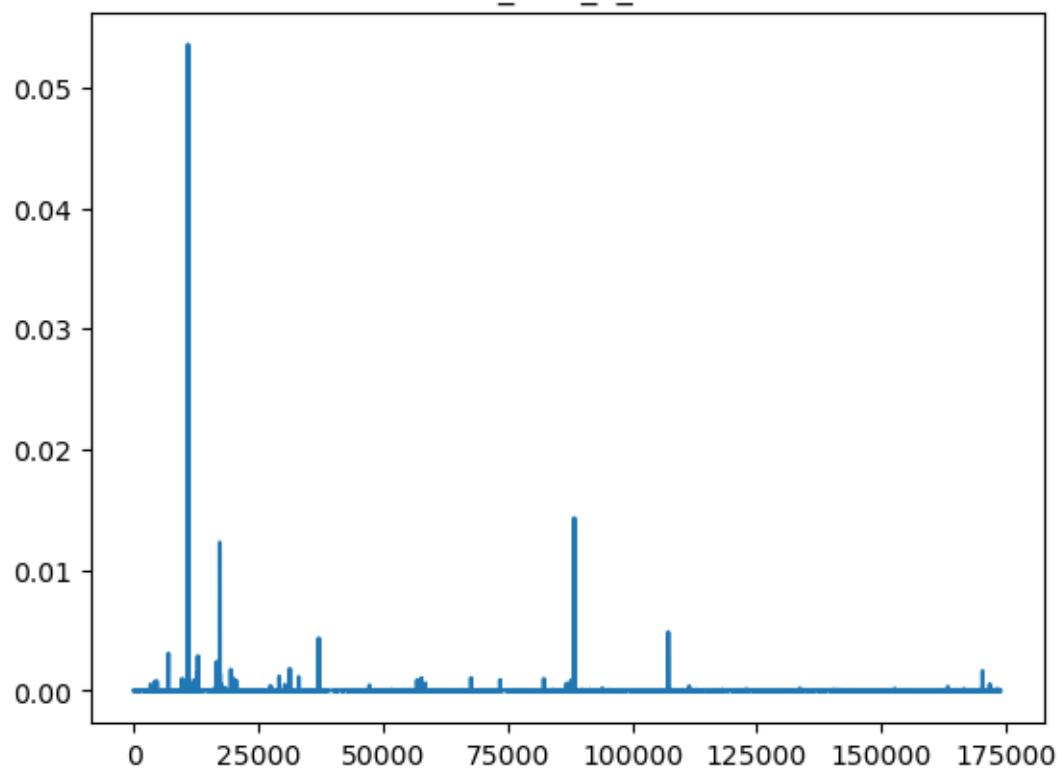
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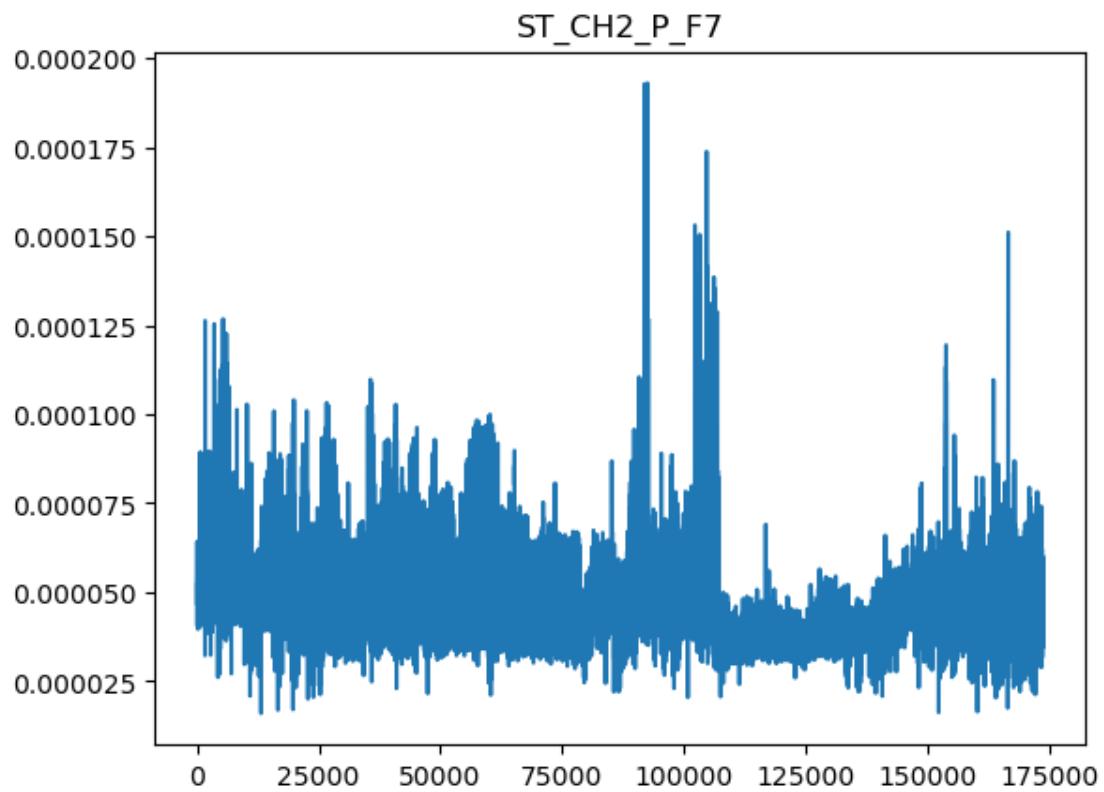


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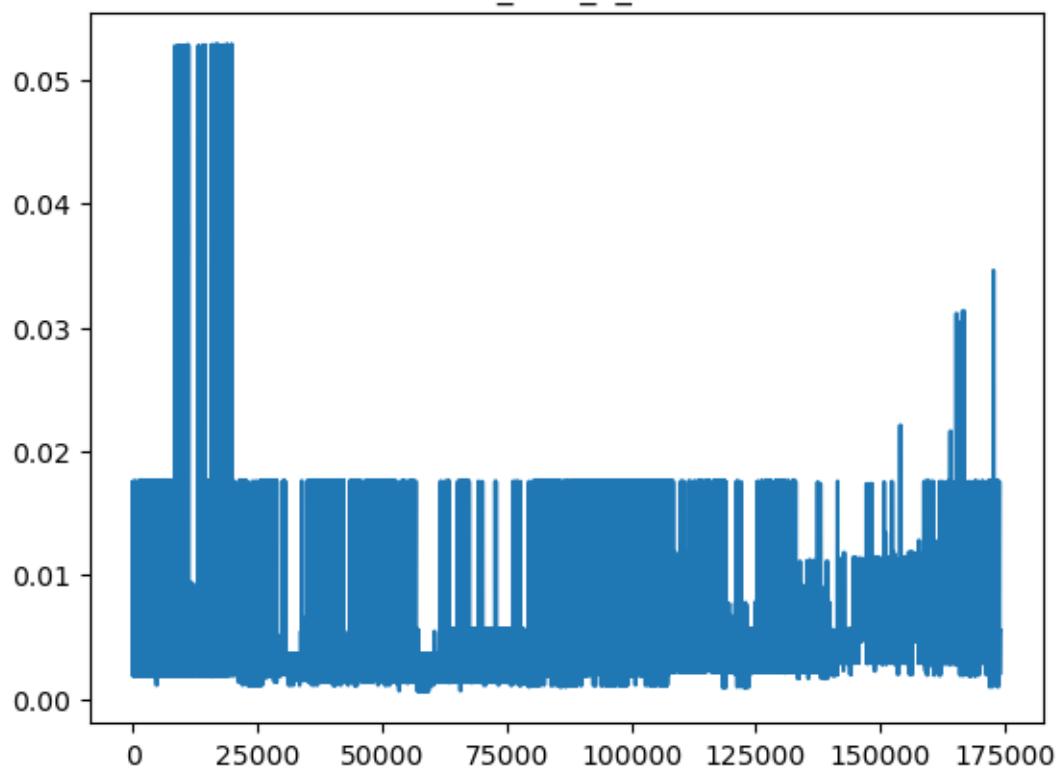


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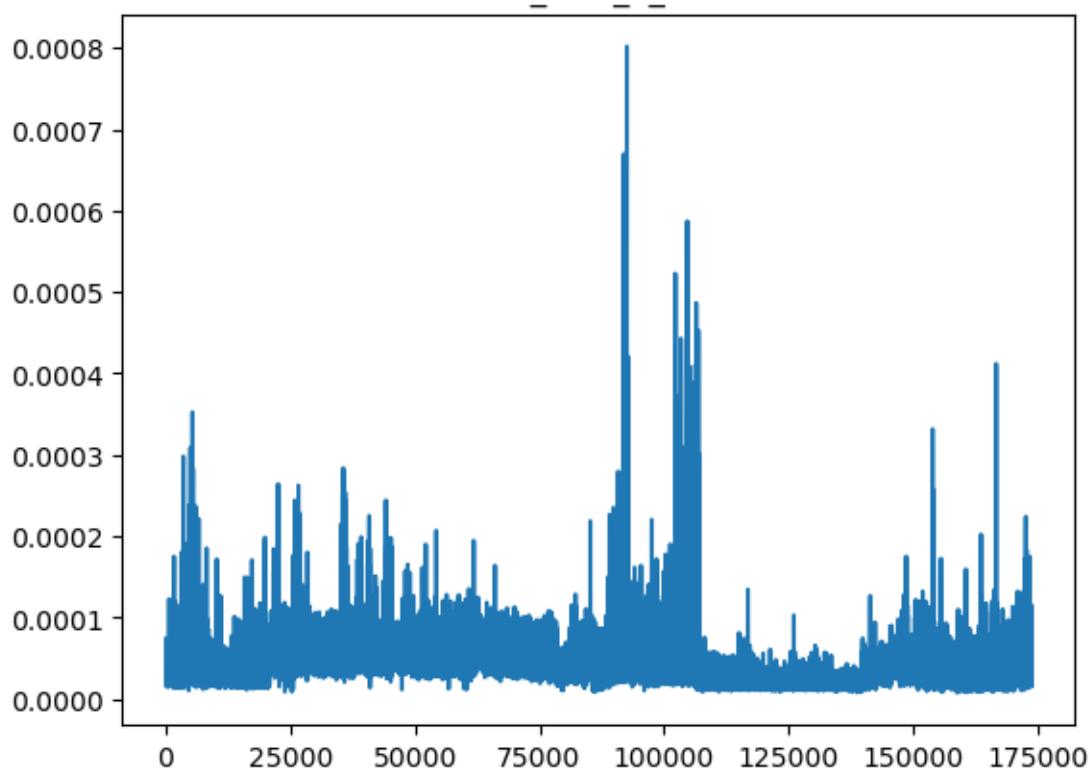




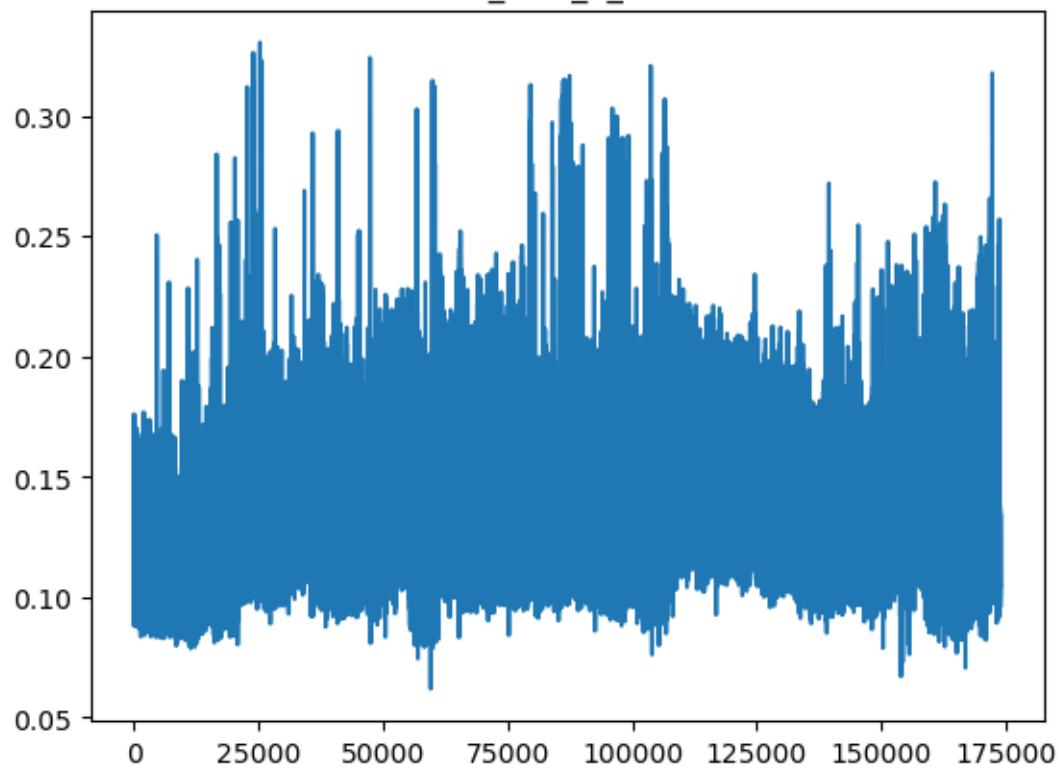
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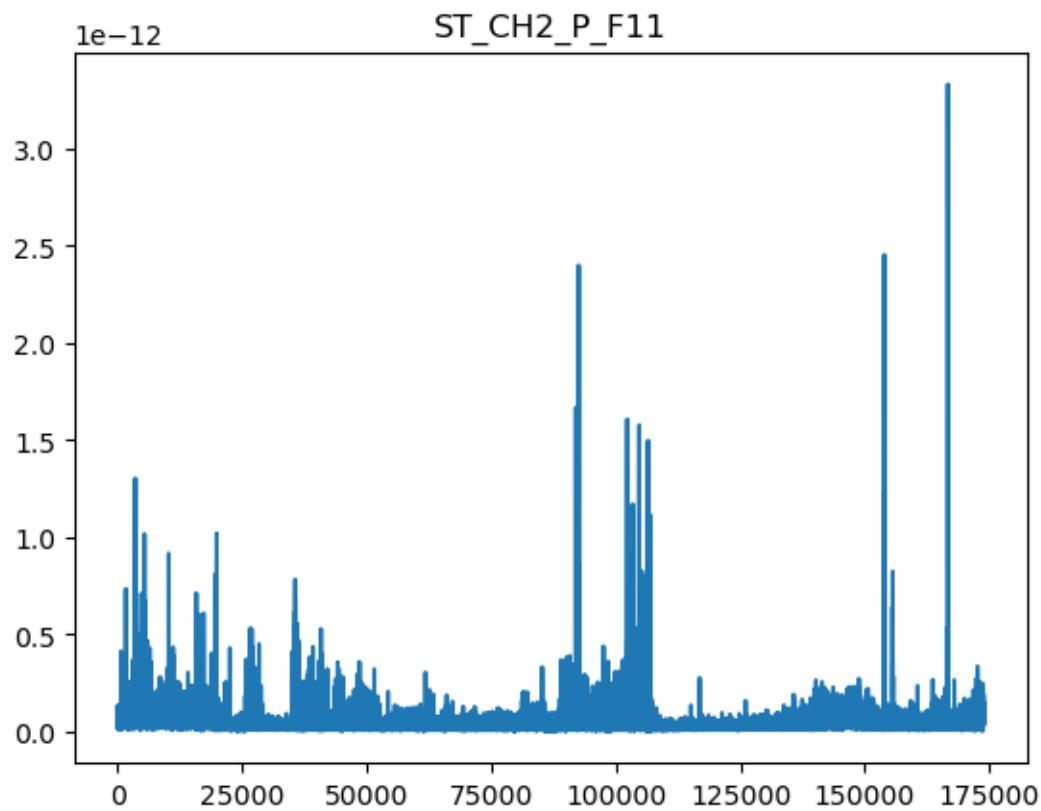


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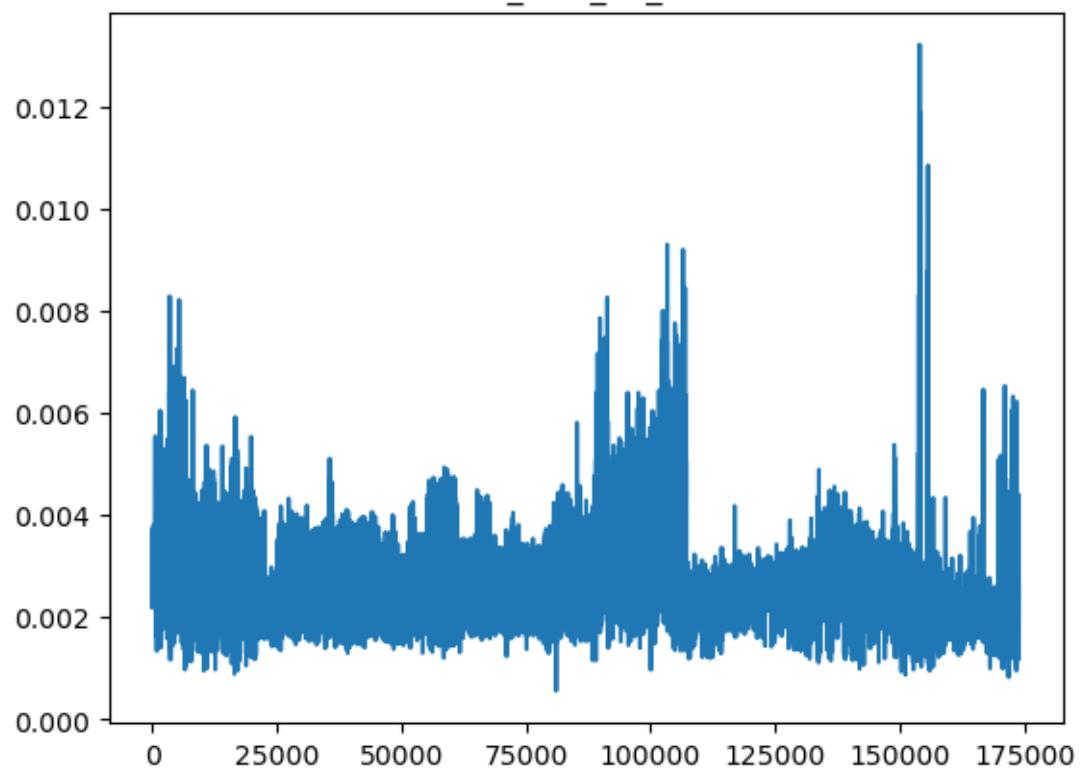


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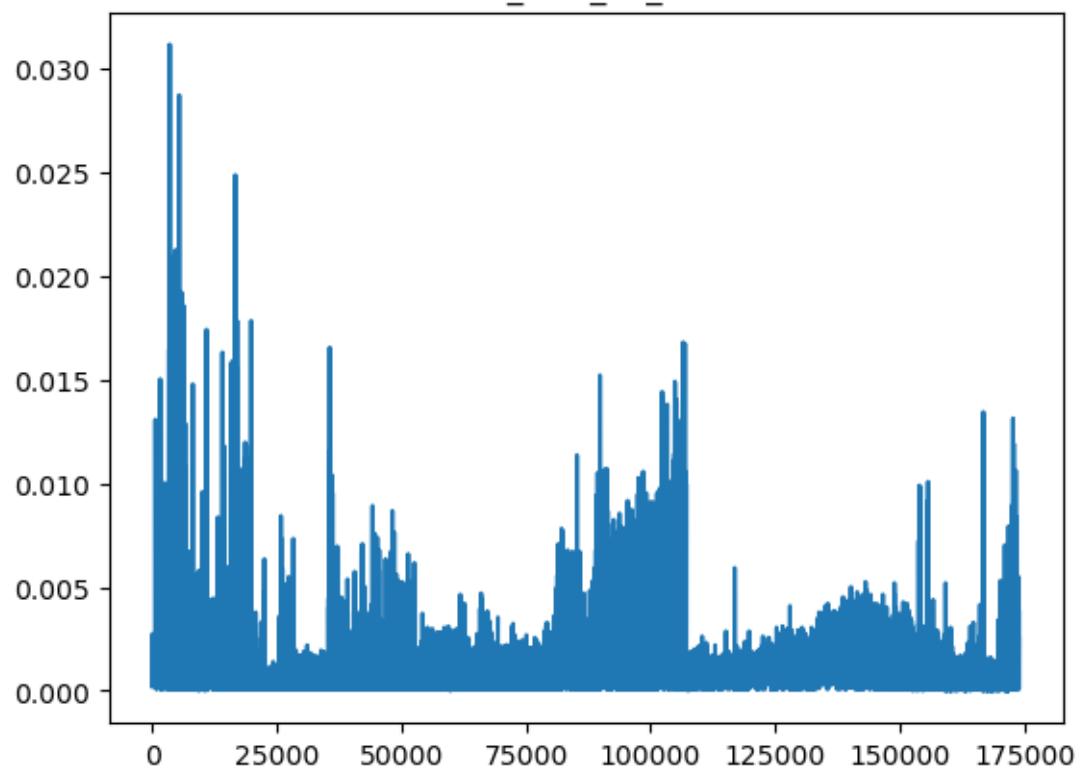




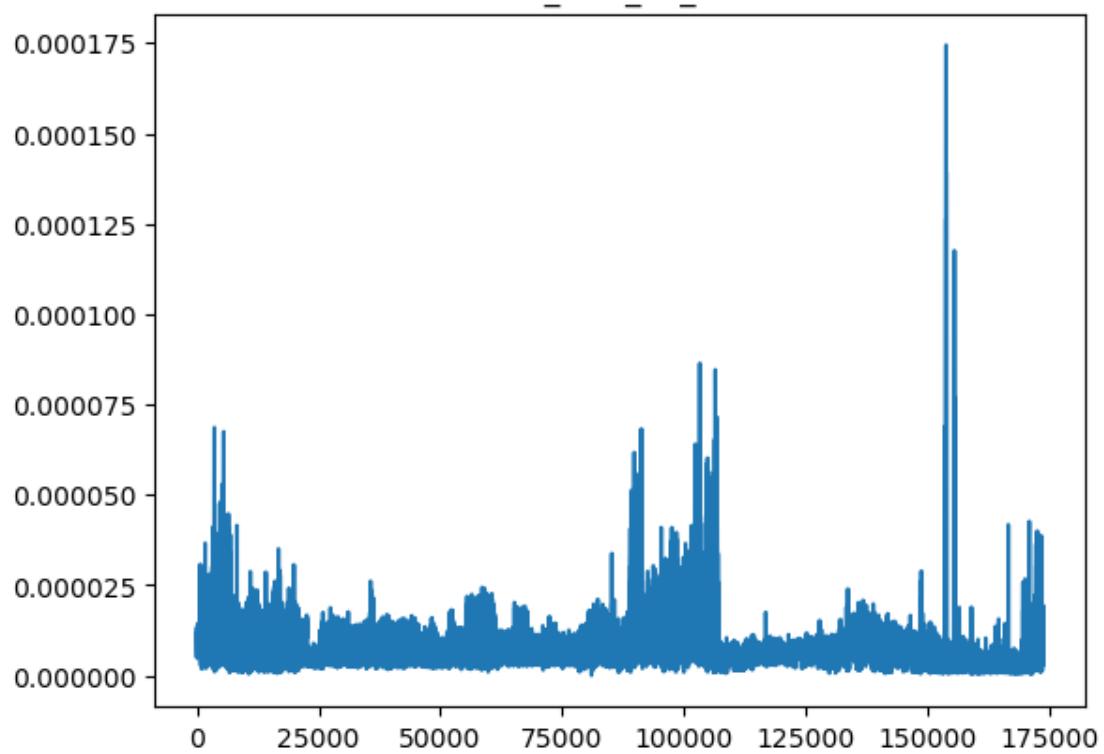
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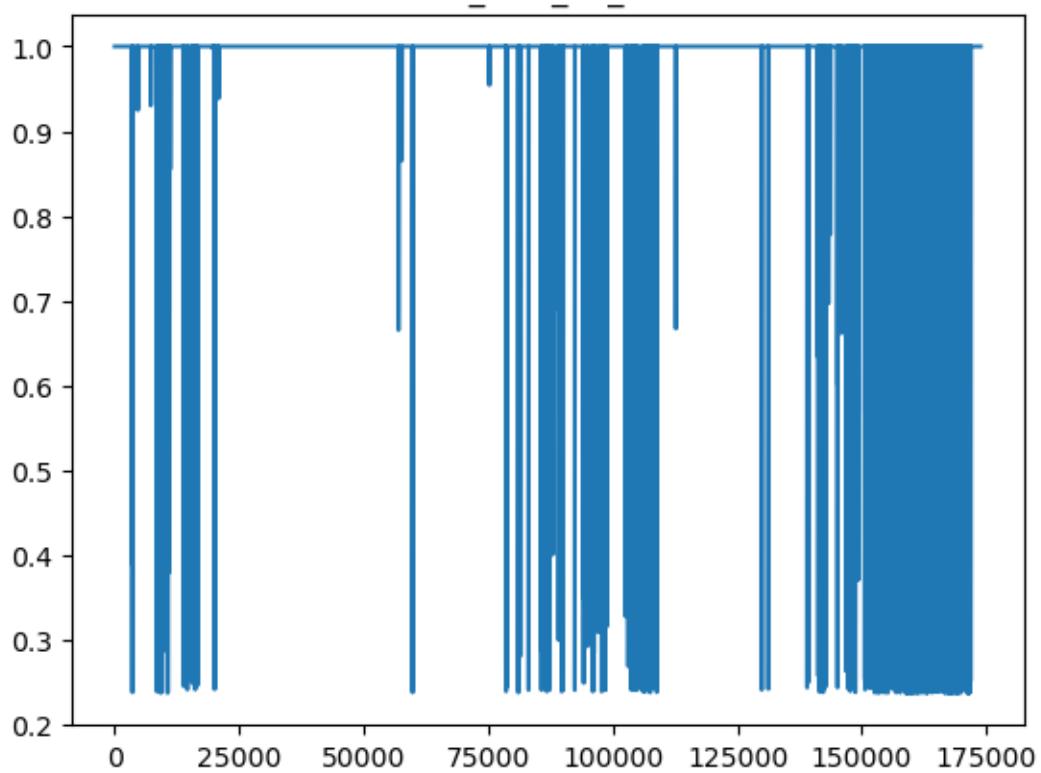
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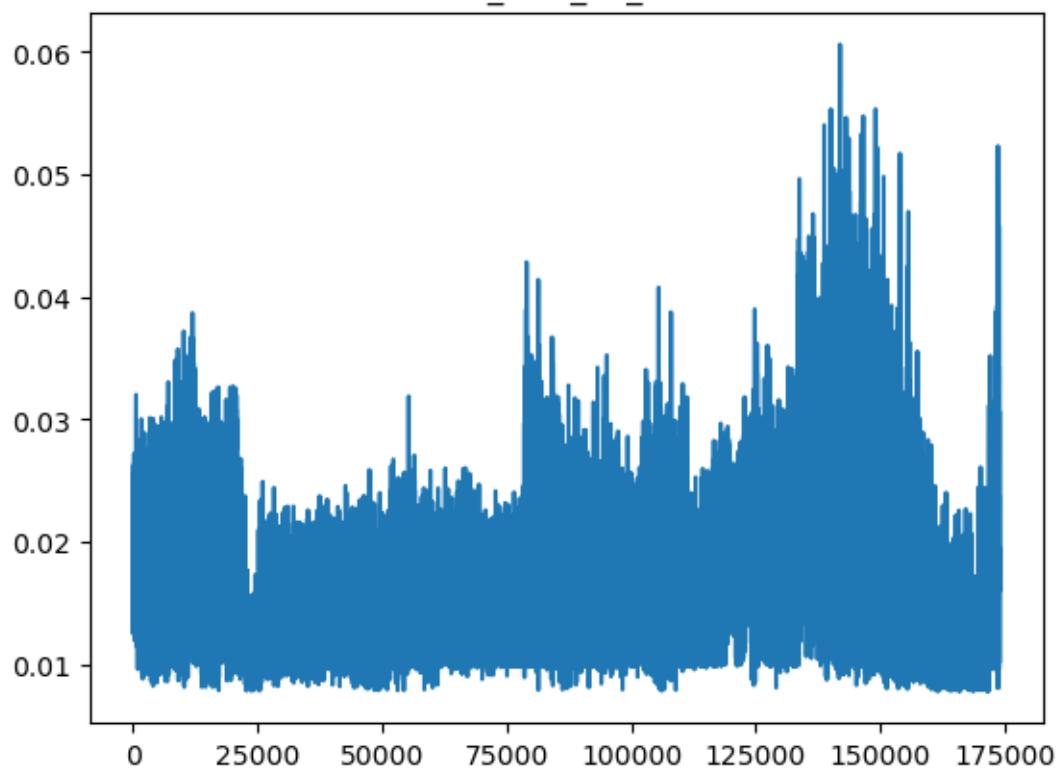
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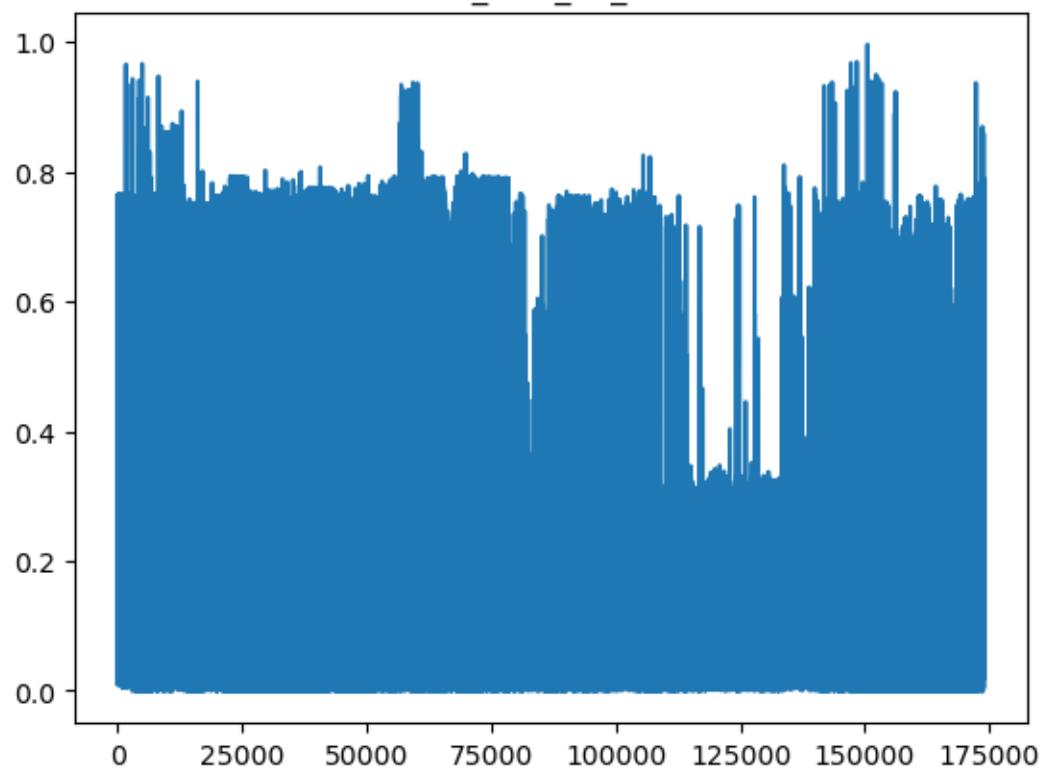
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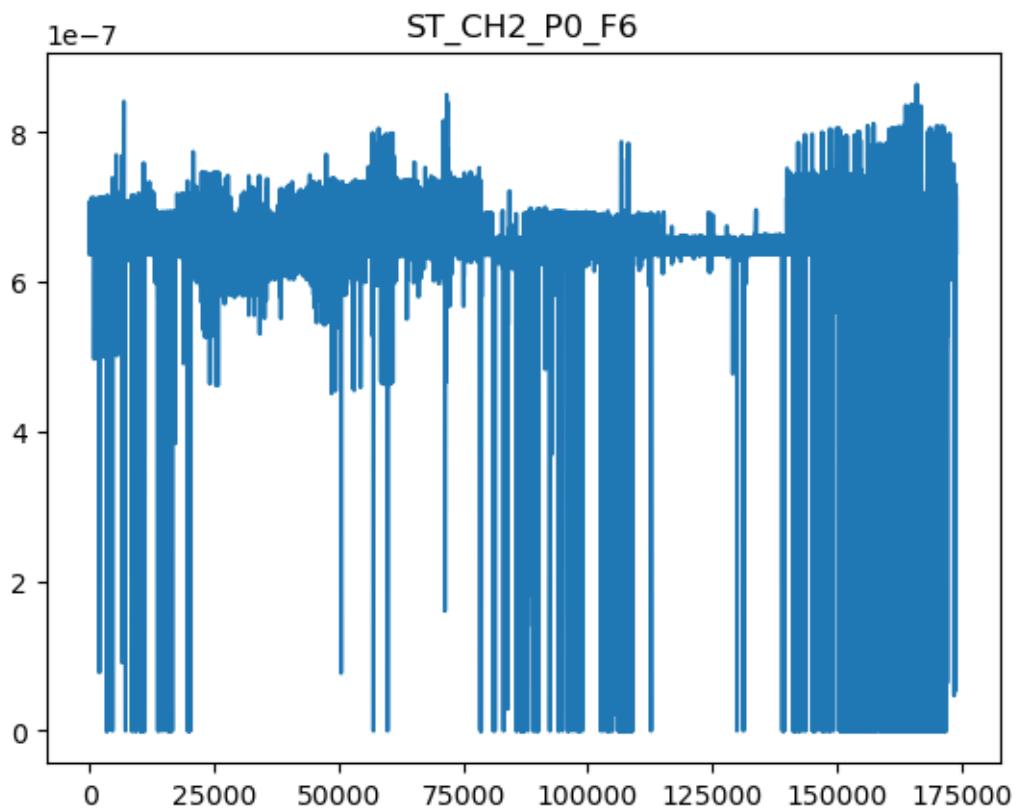


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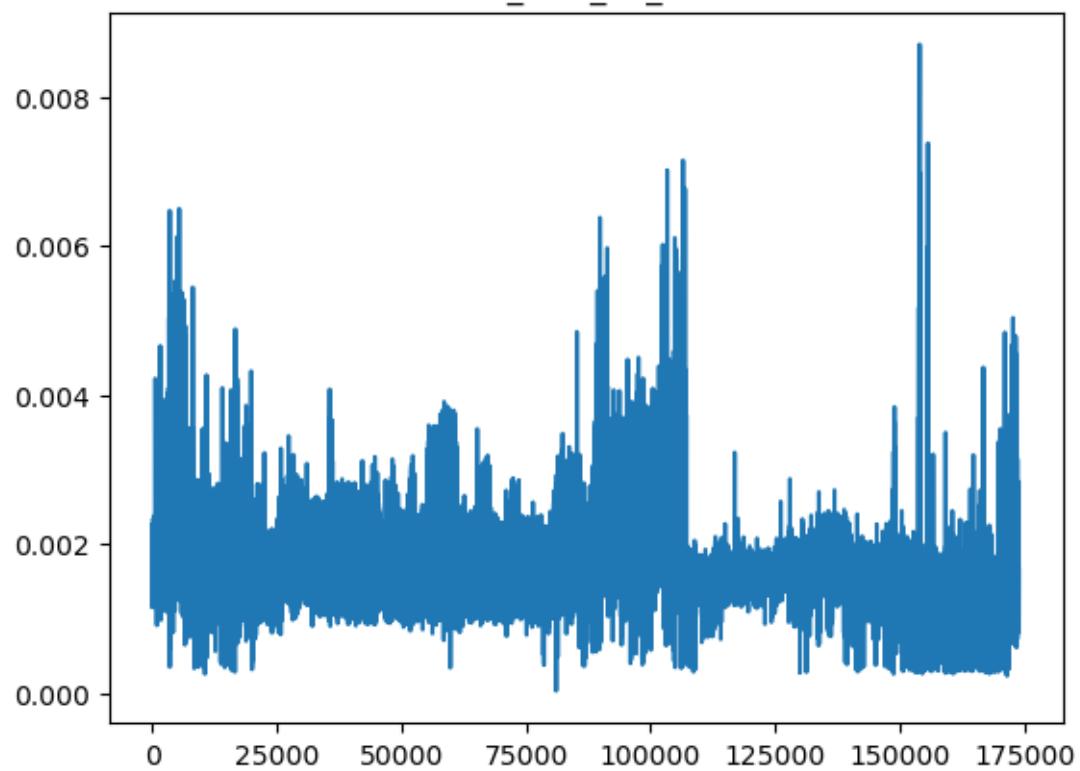


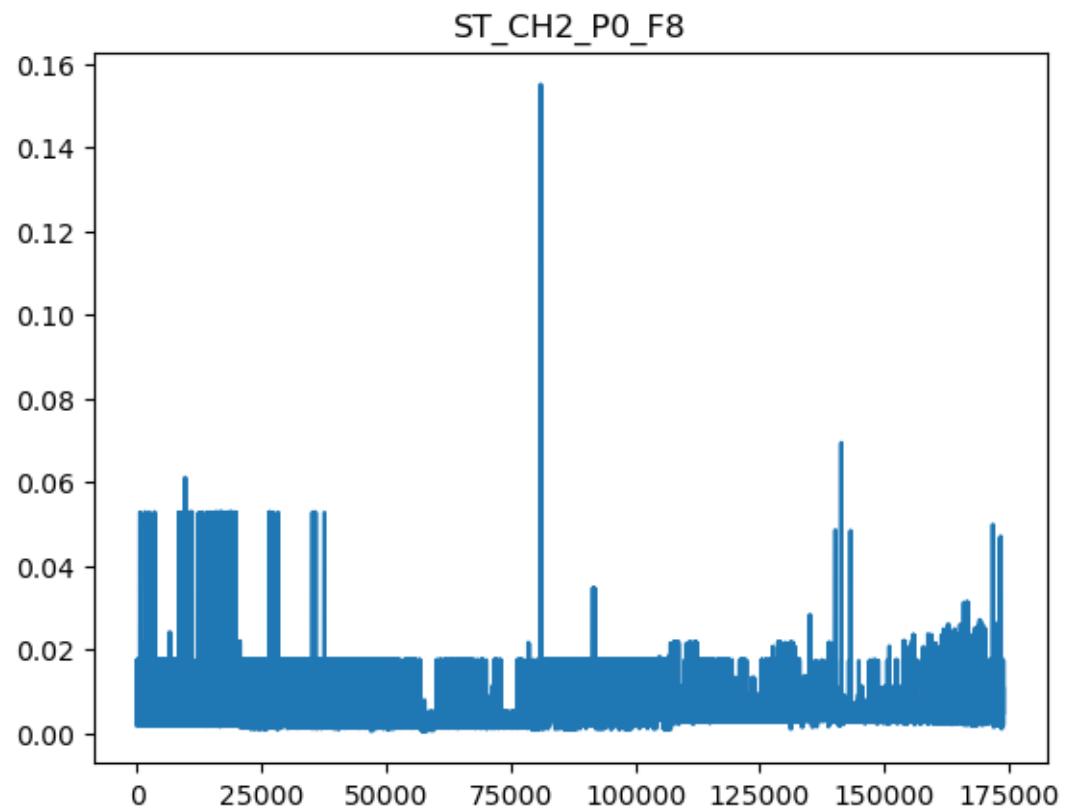
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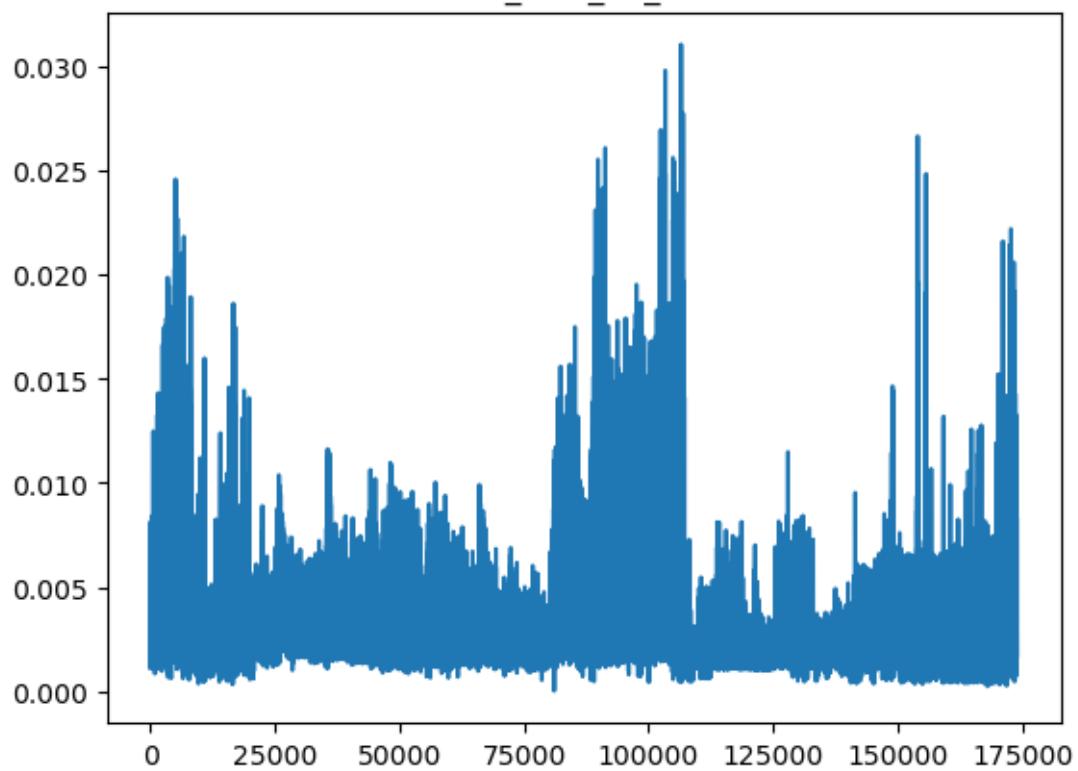


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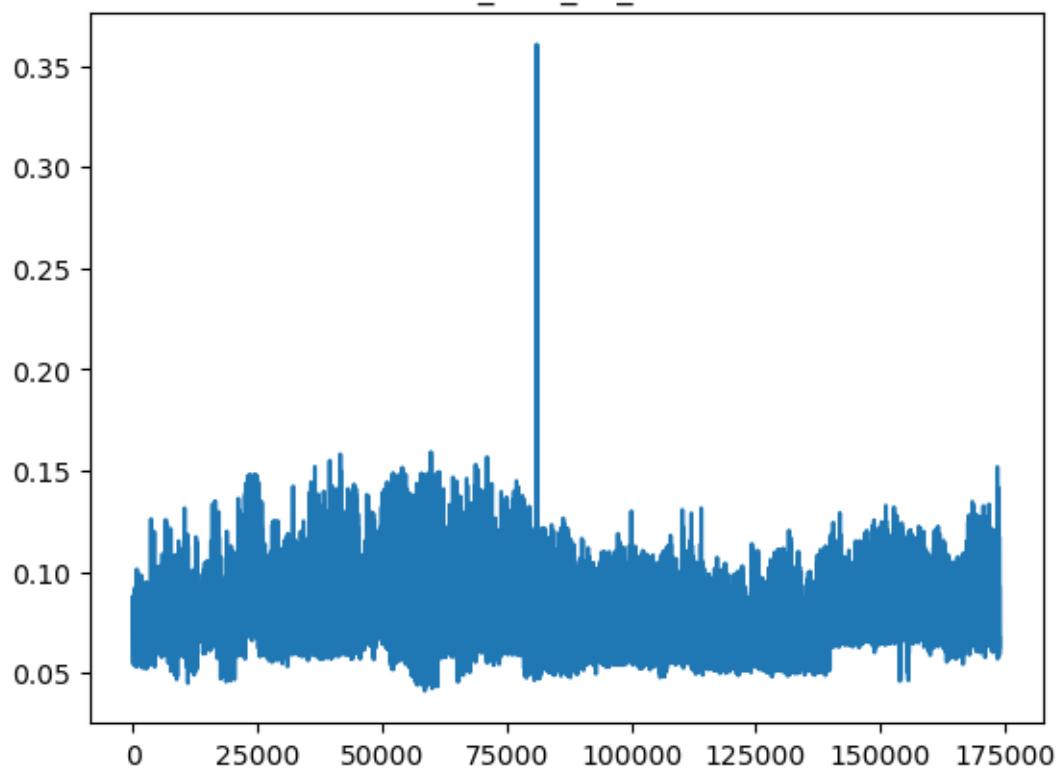


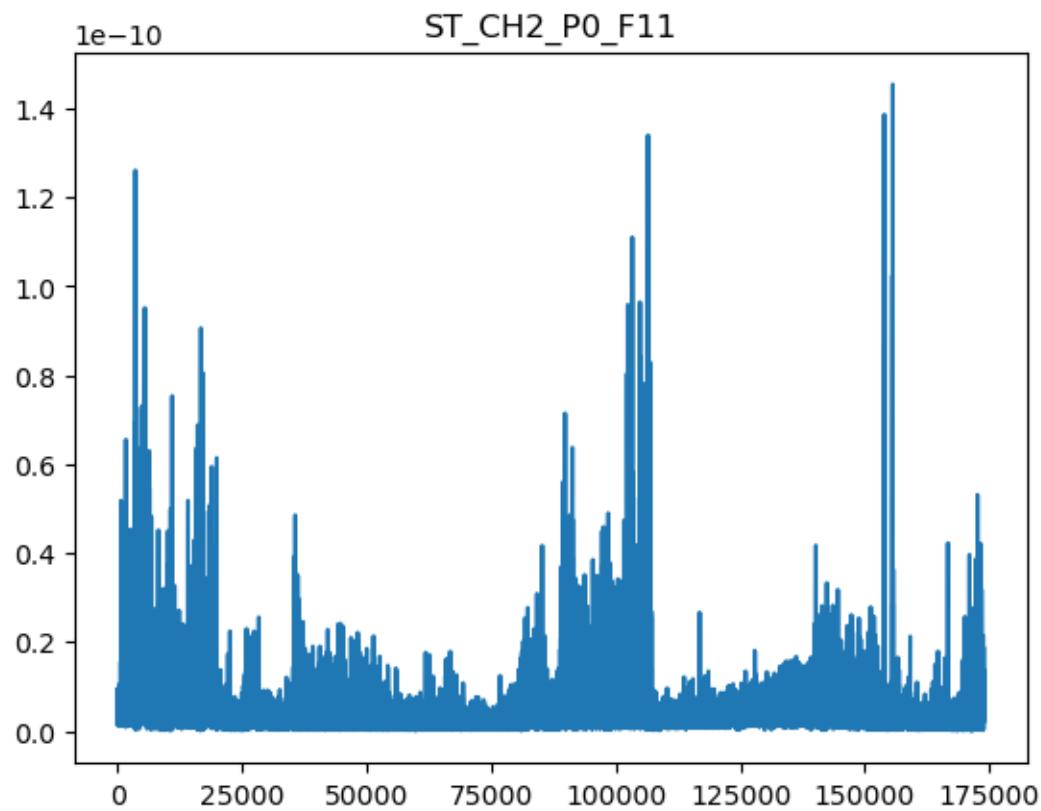


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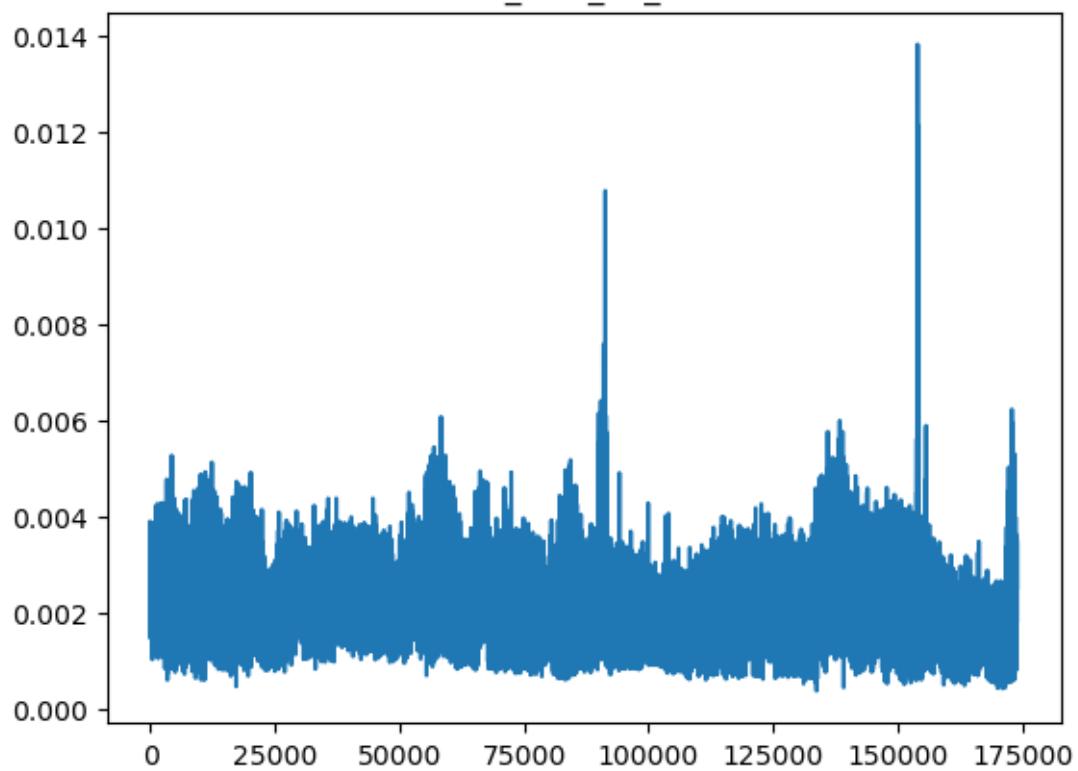


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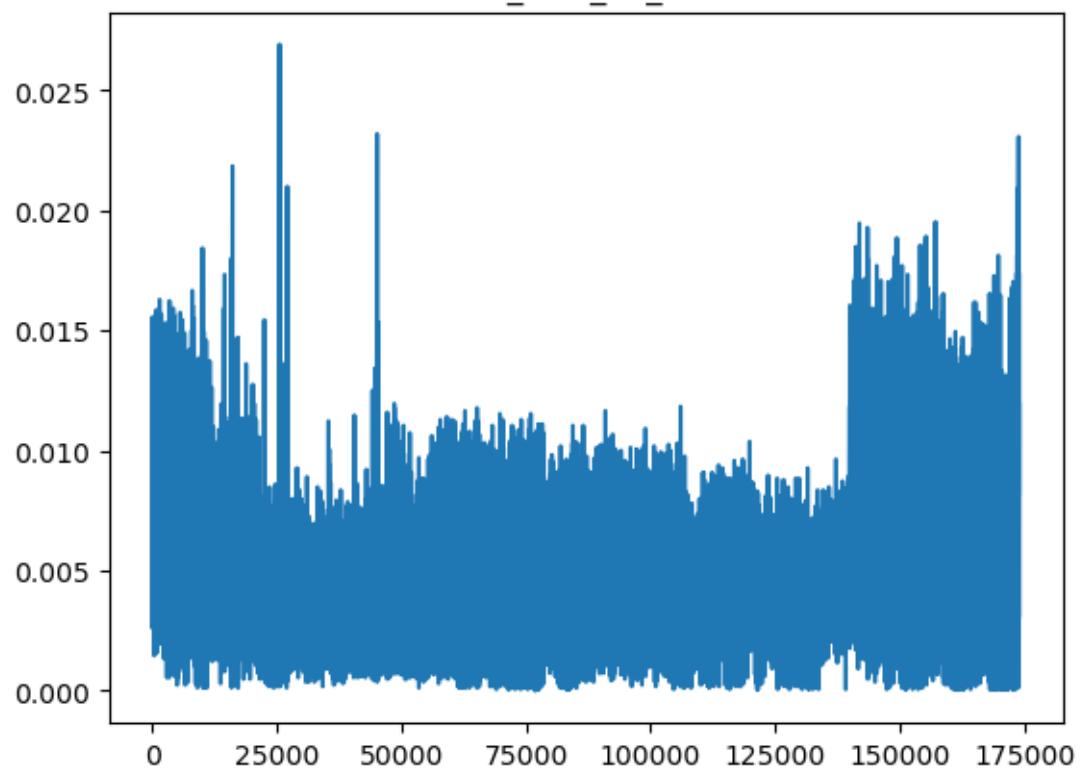


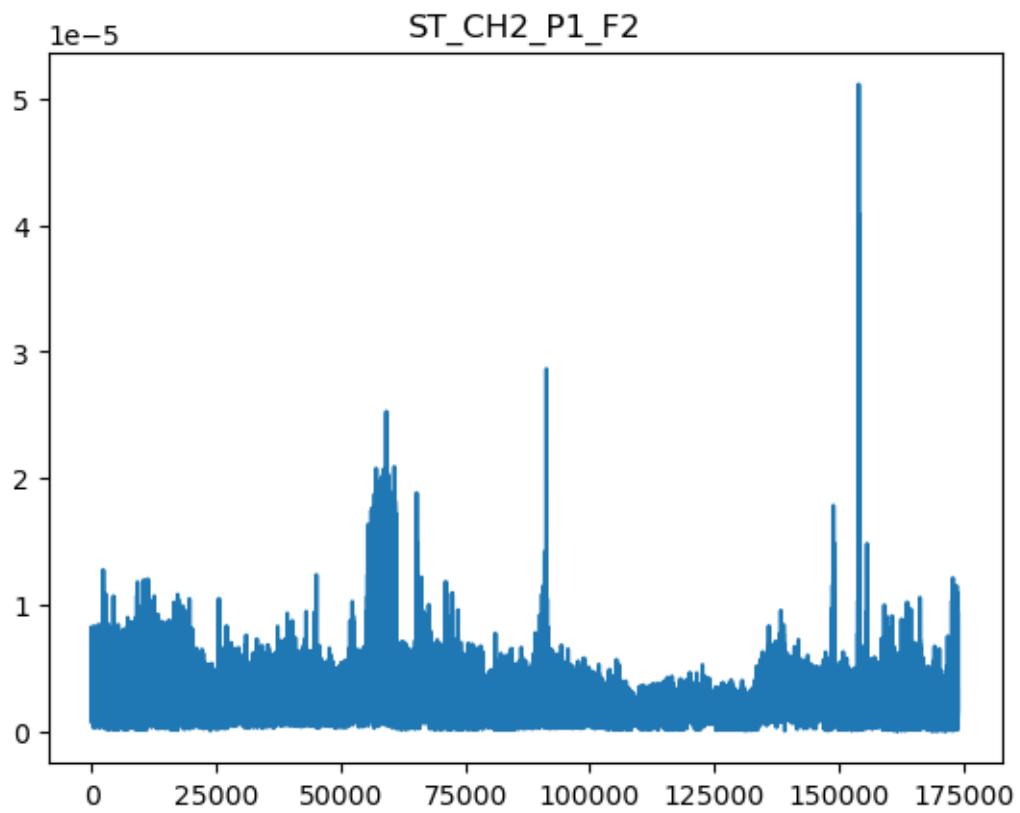


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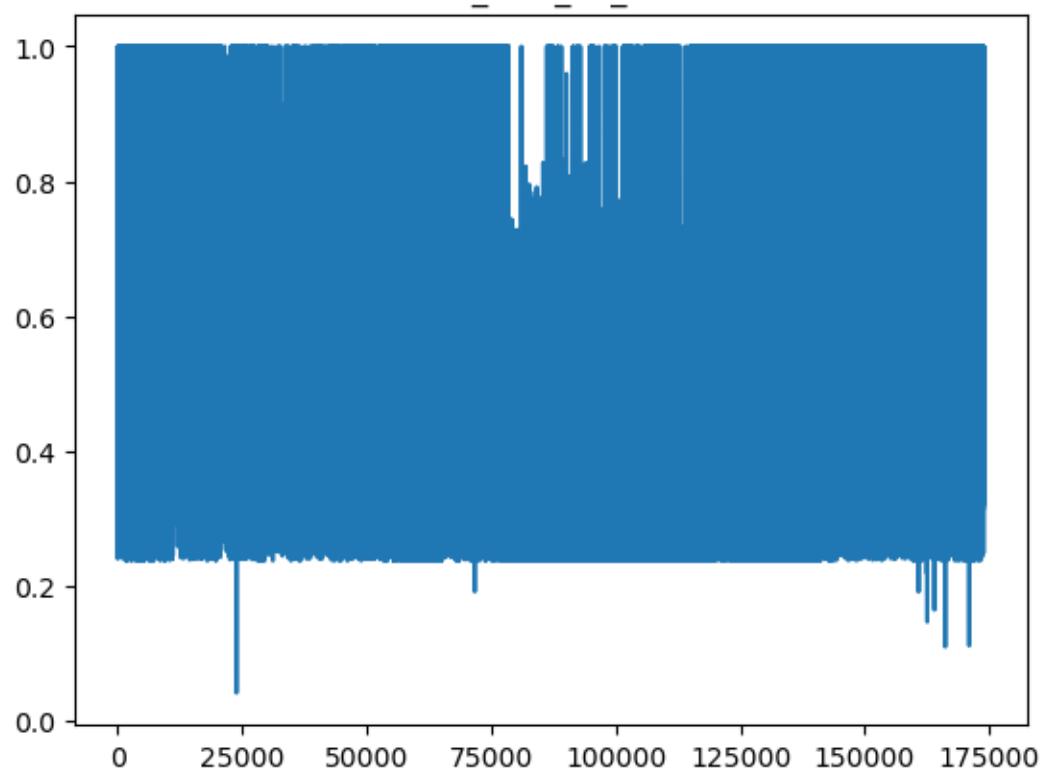


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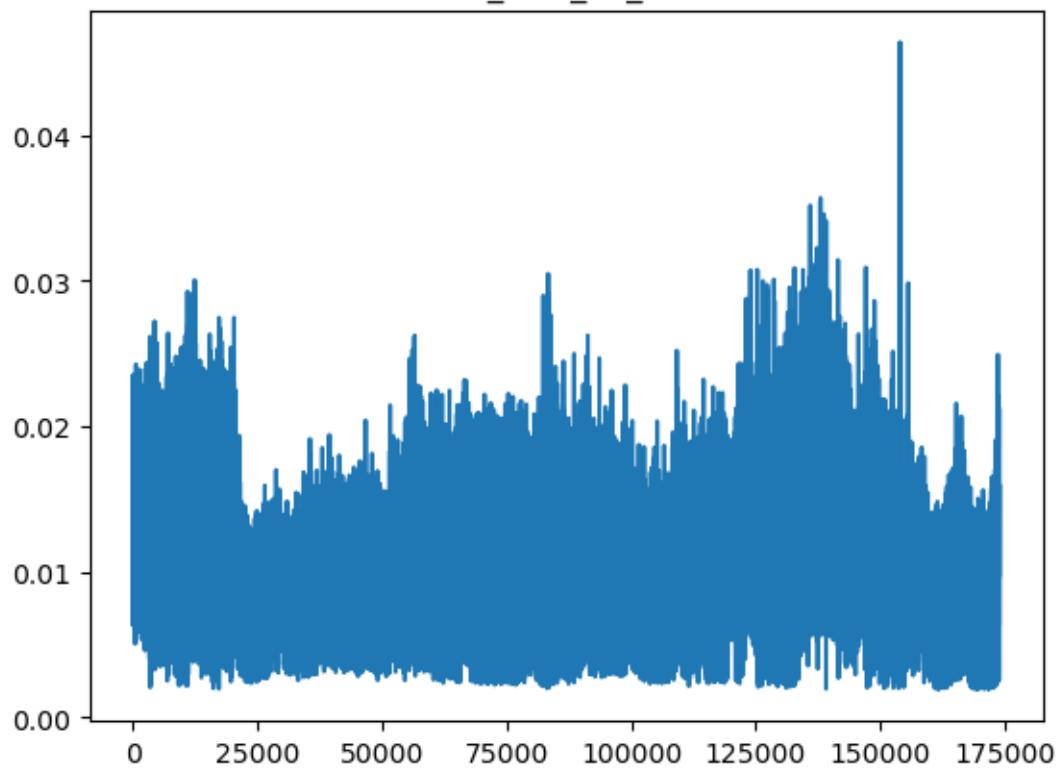




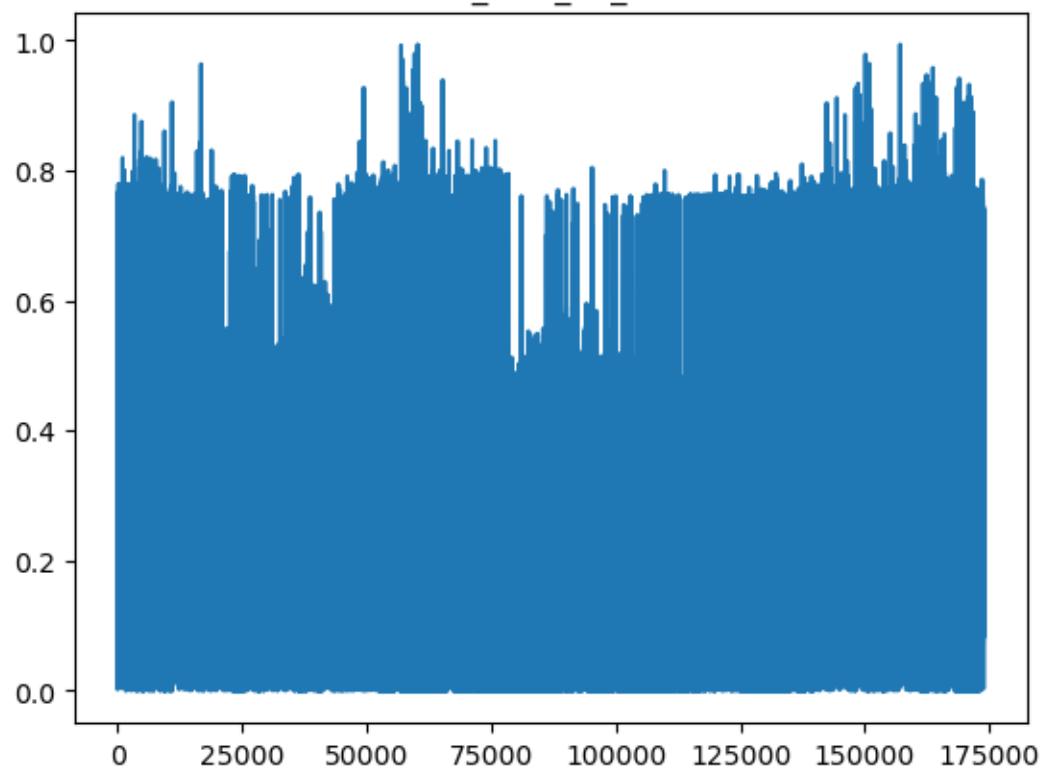
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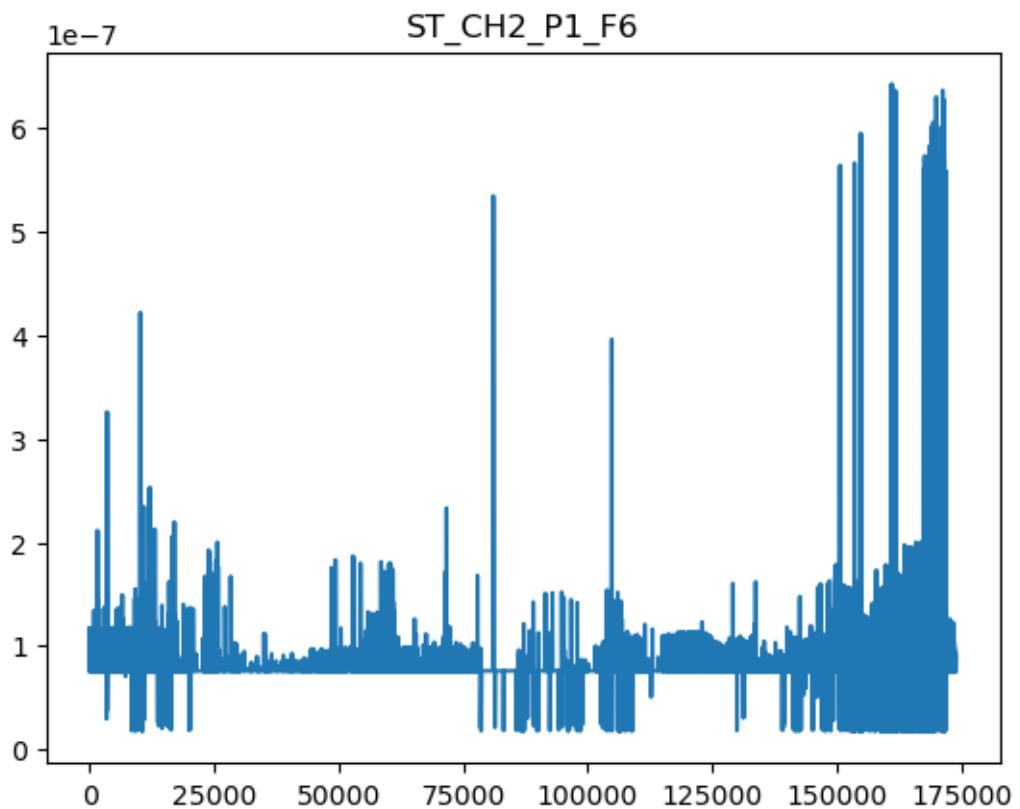


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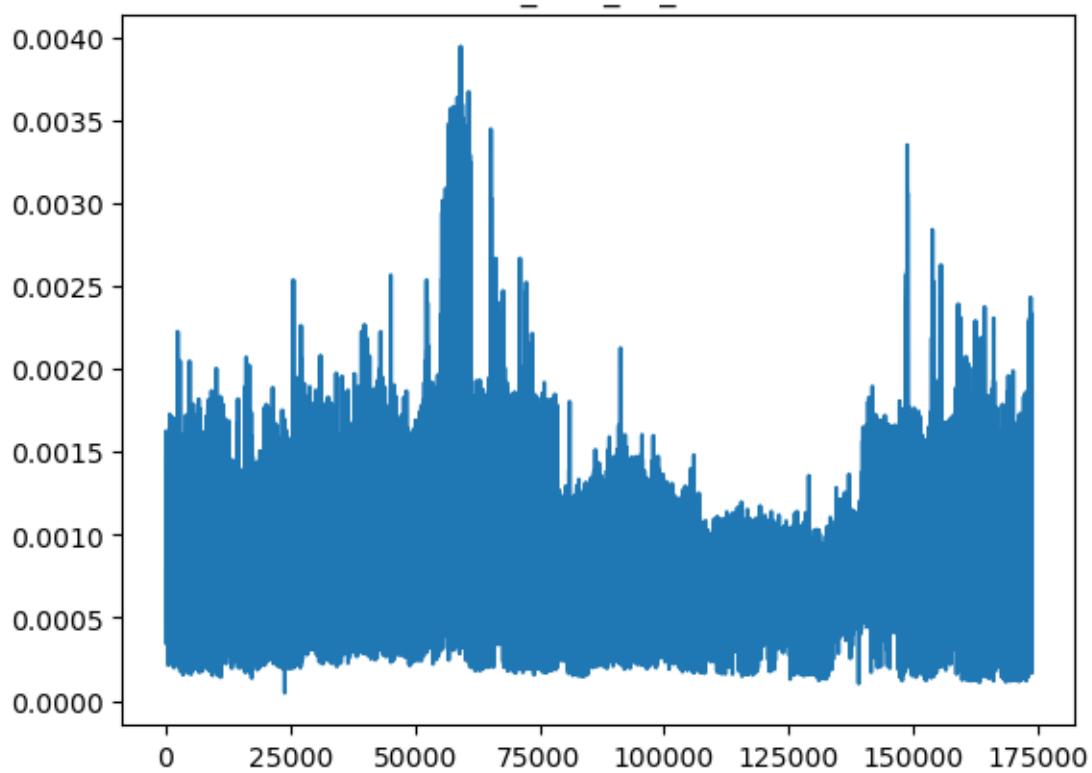


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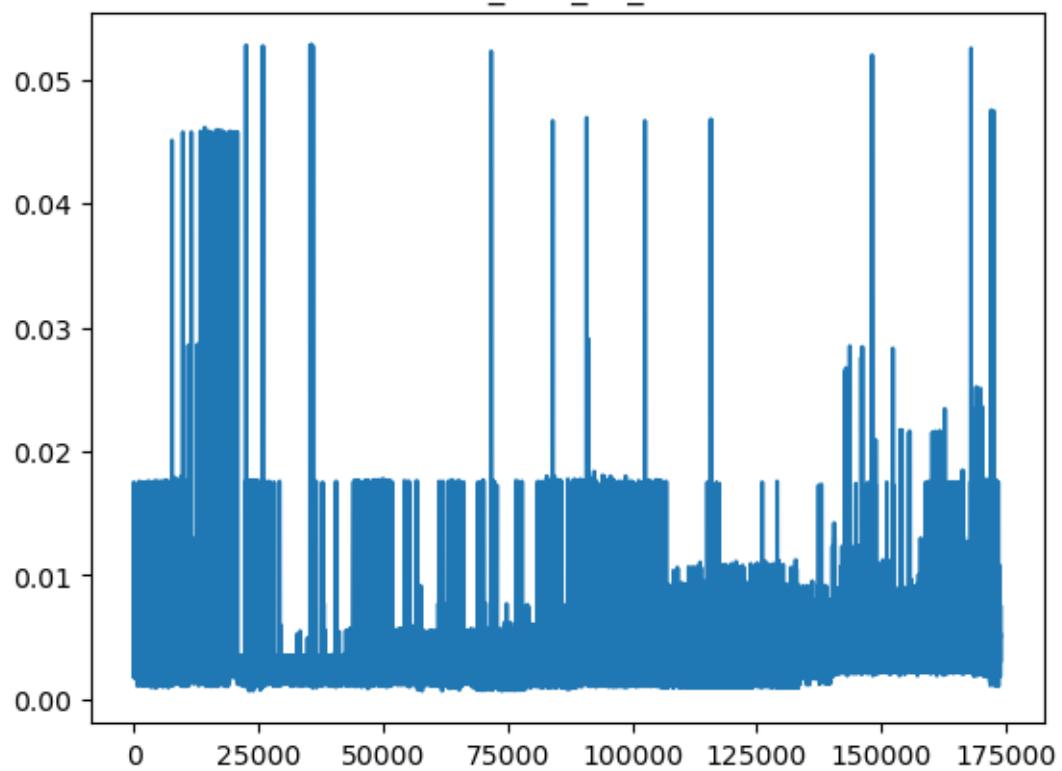




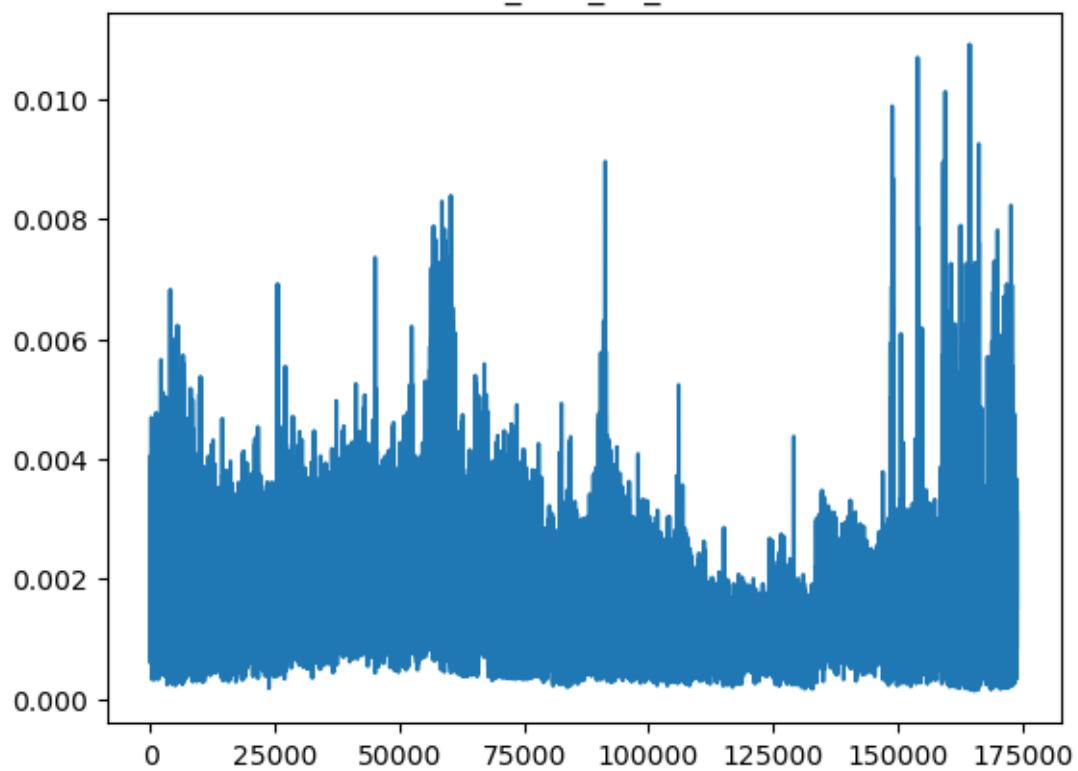
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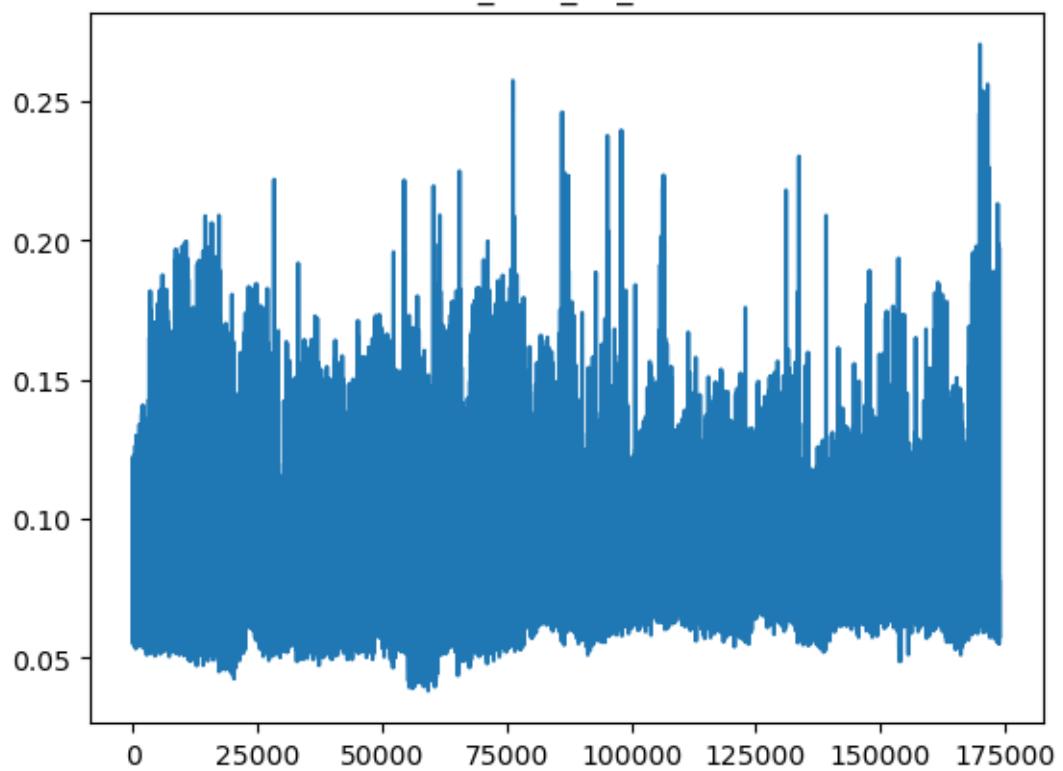
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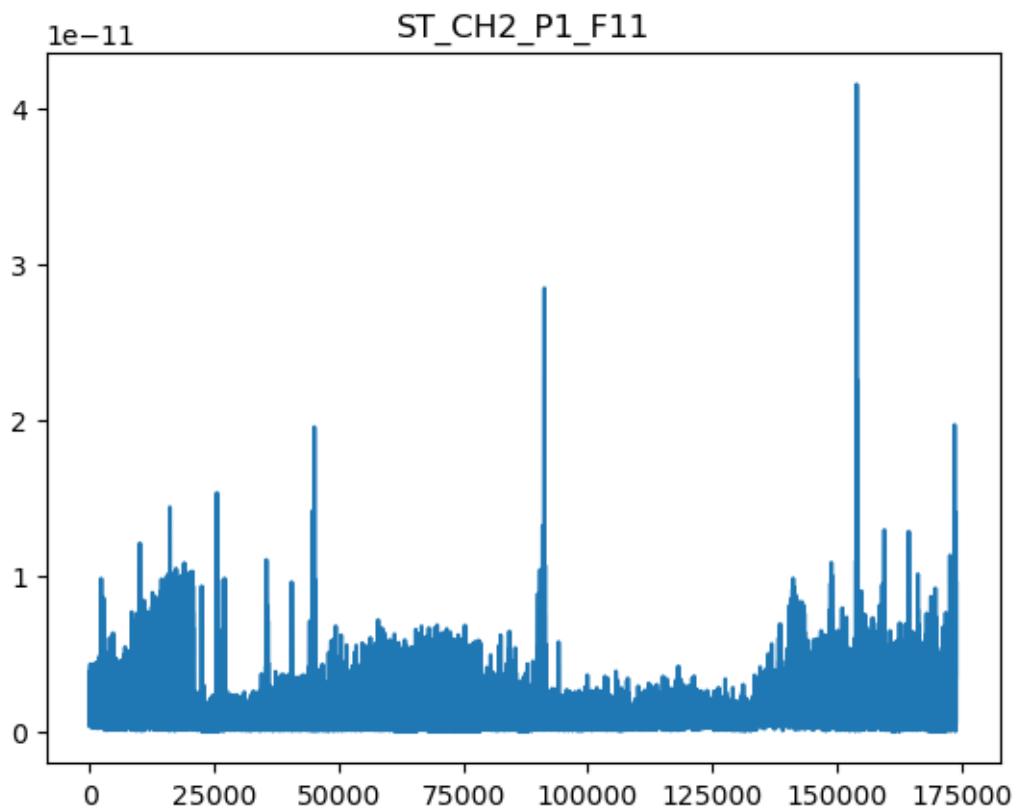


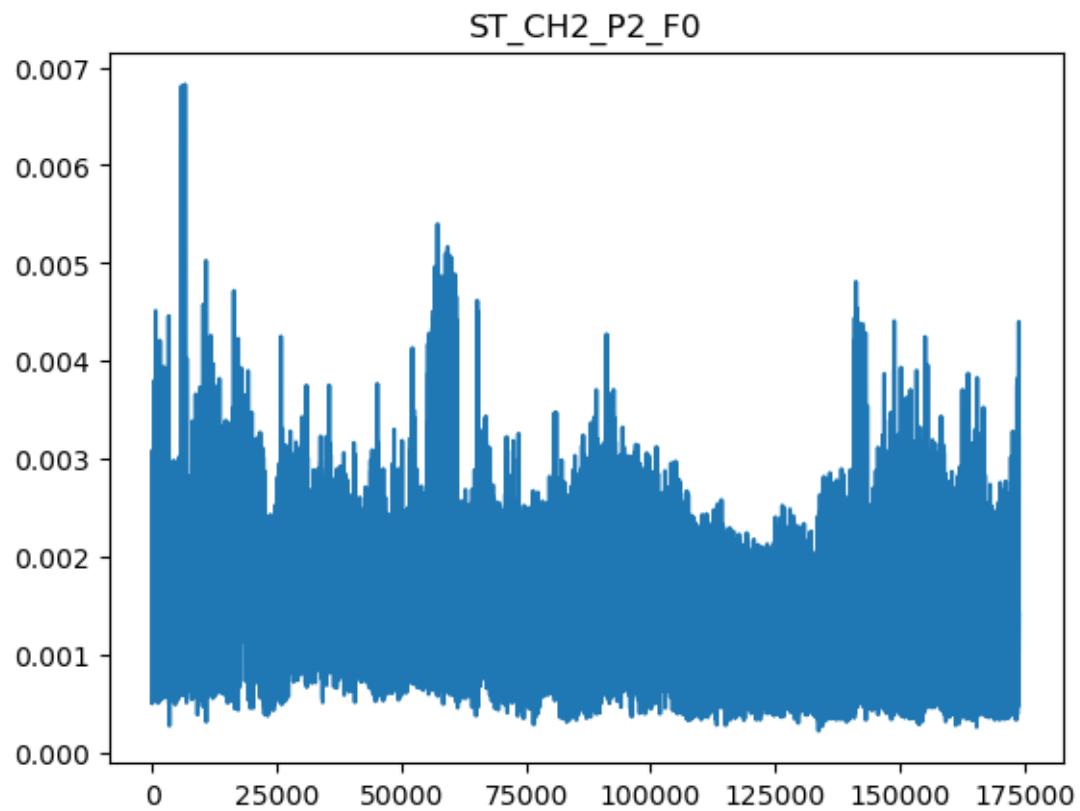
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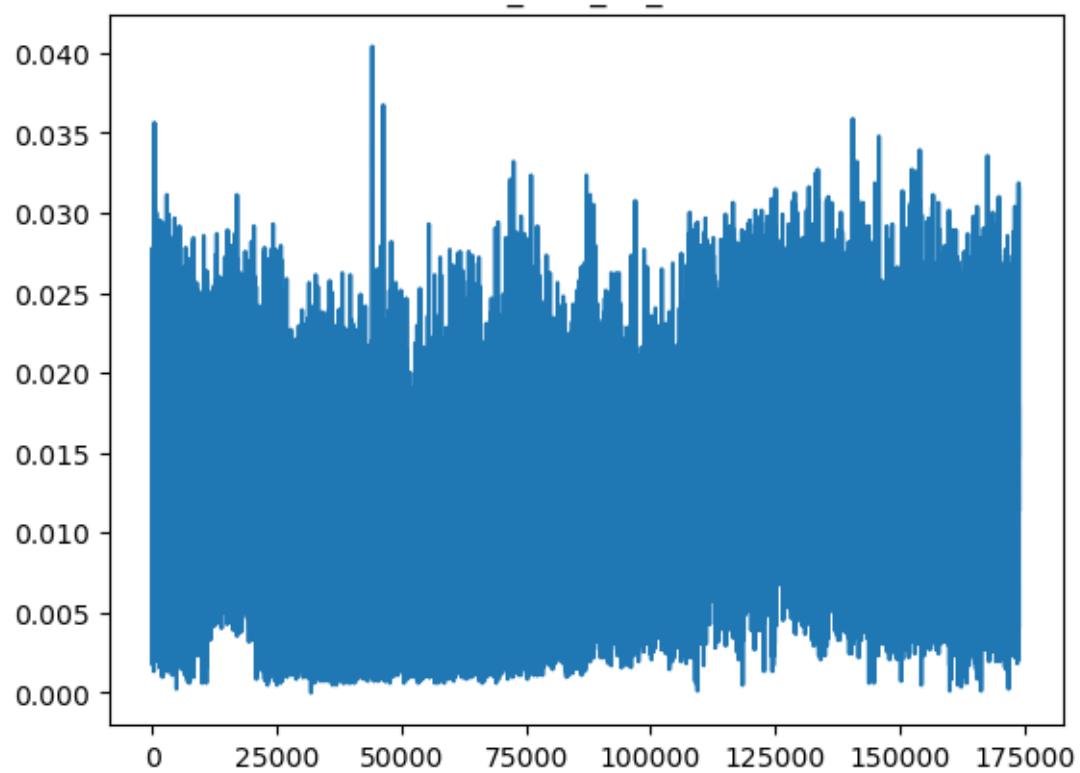
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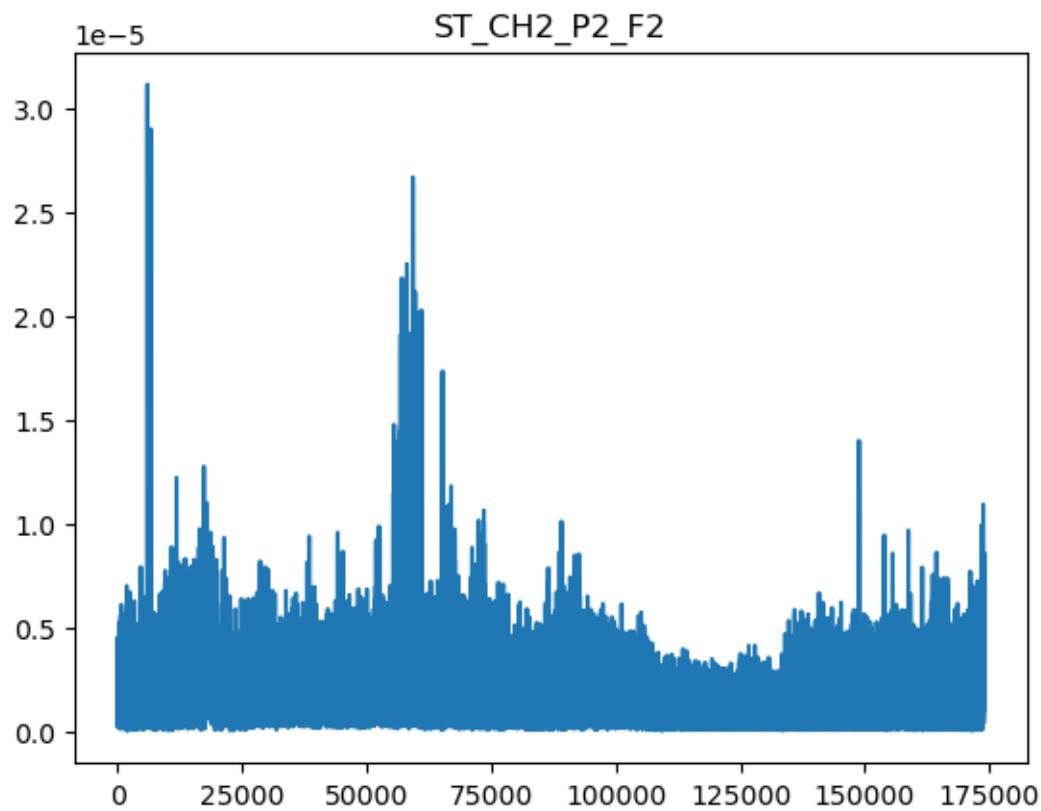




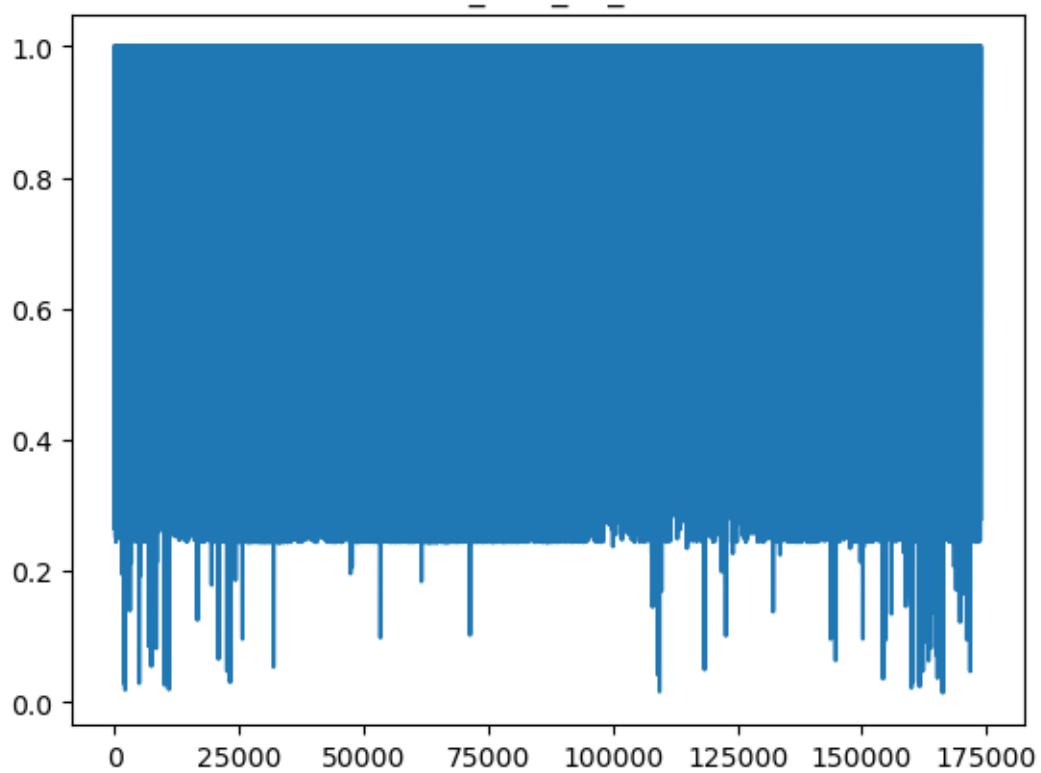


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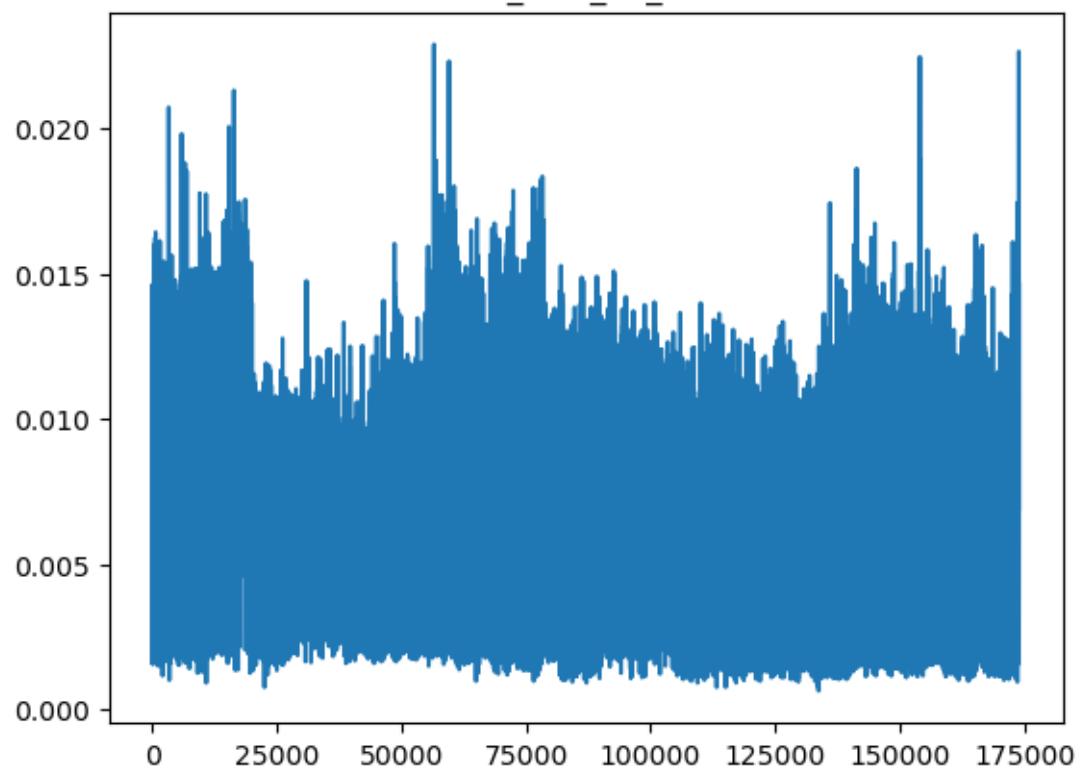




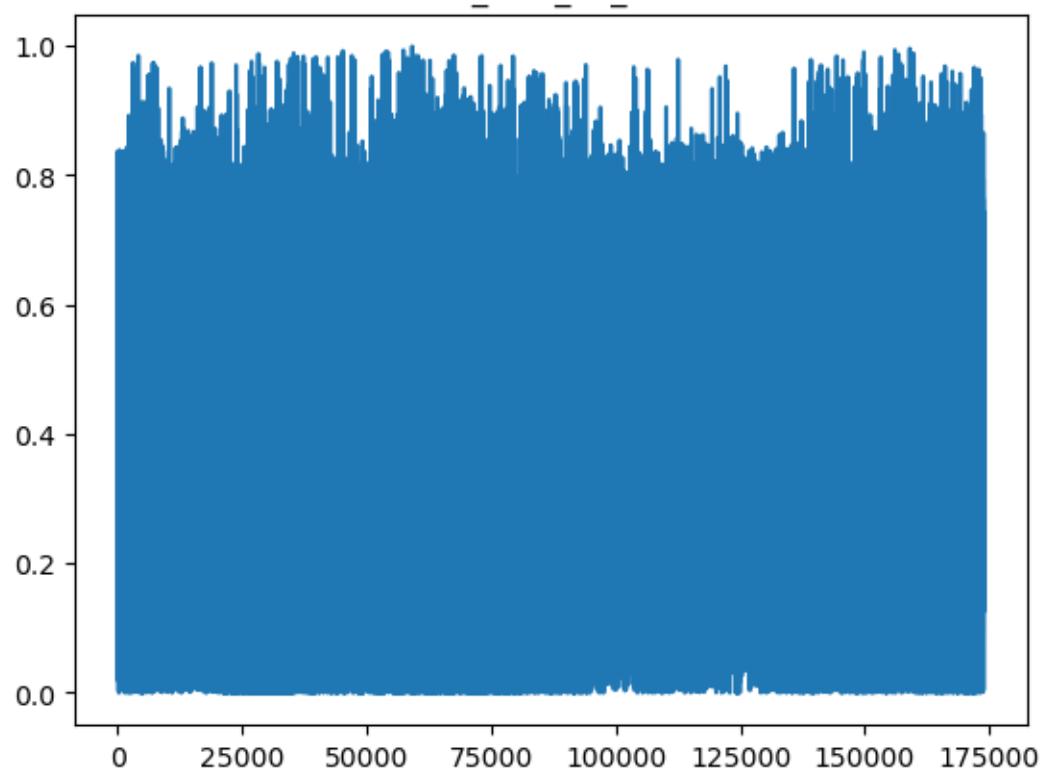
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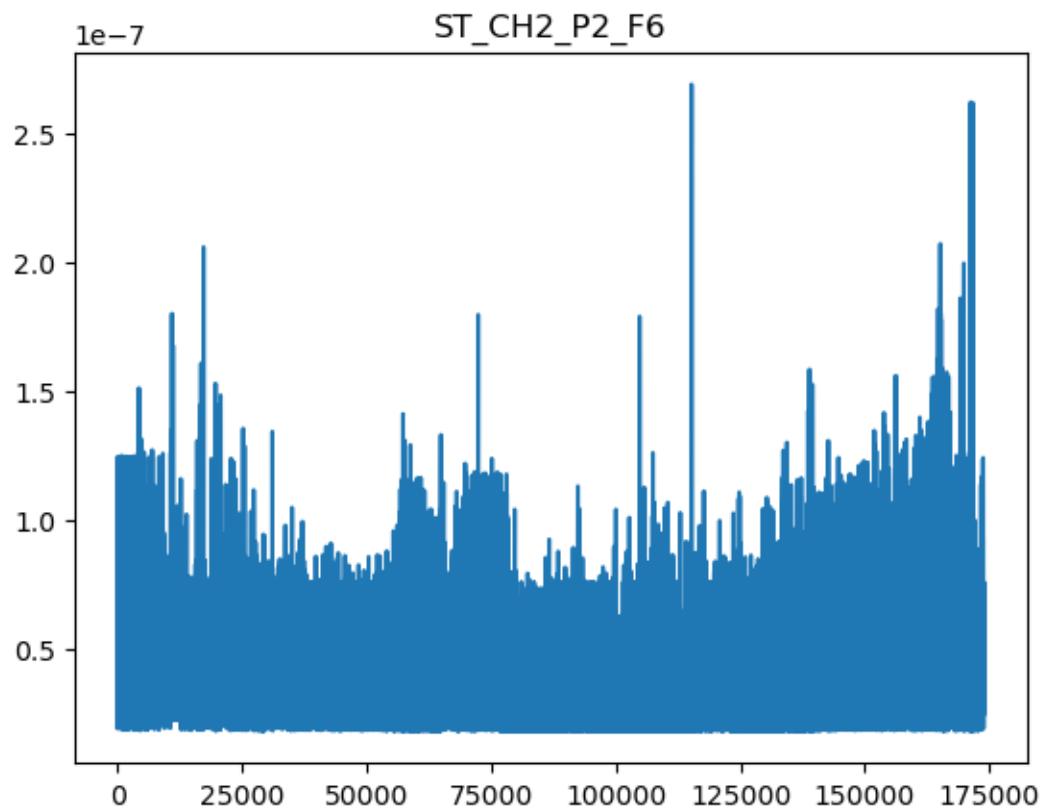


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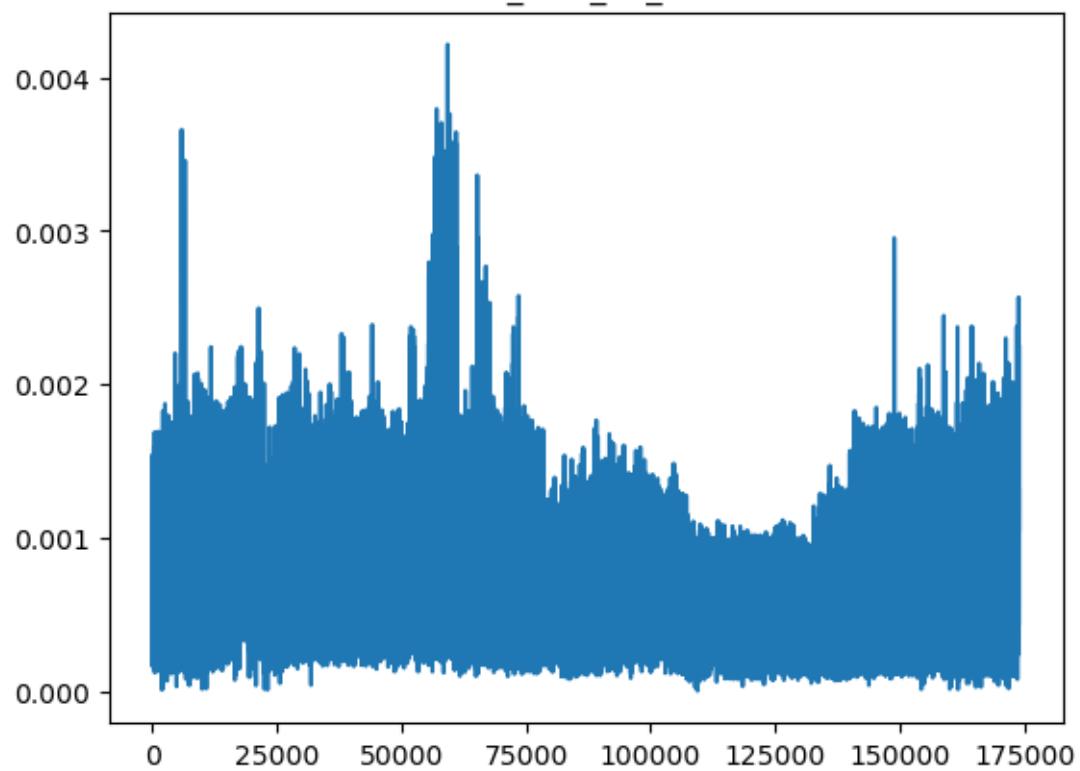


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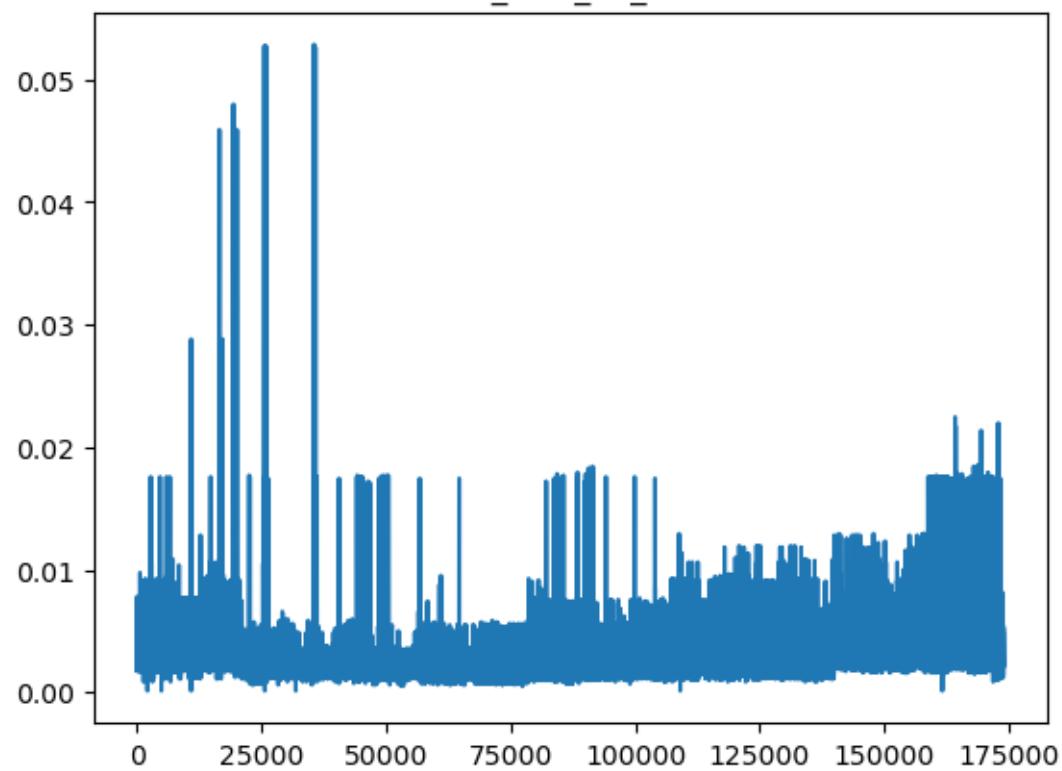




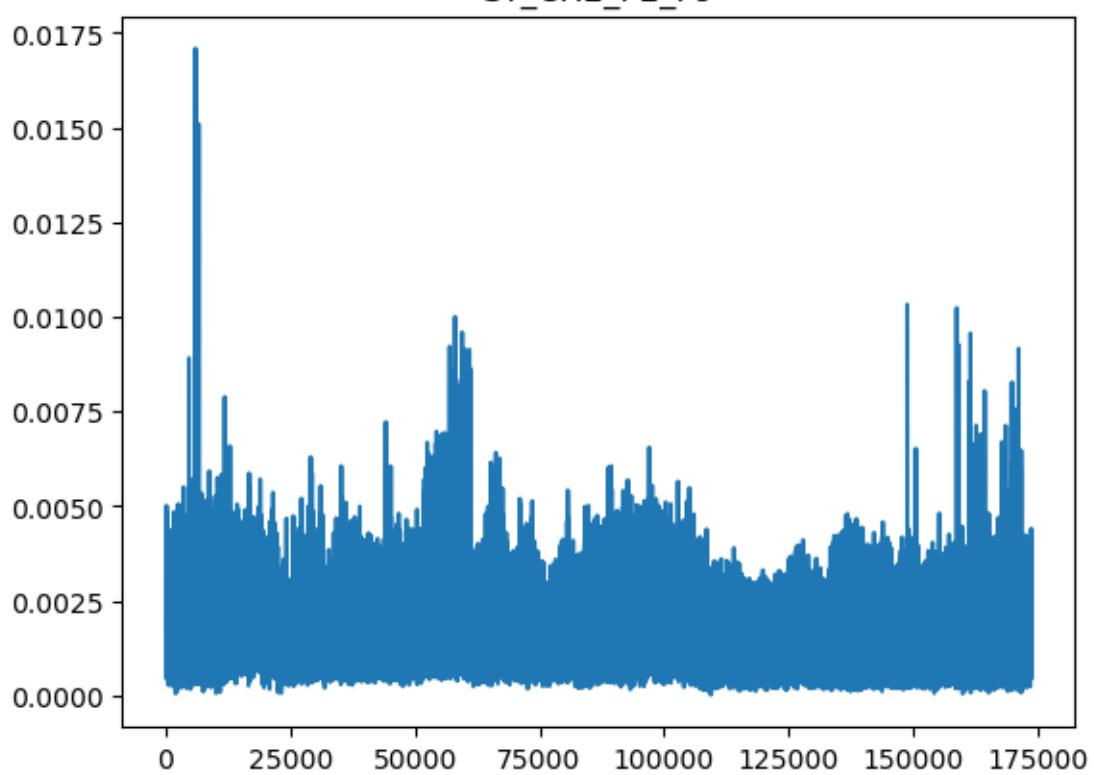
ST_CH2_P2_F7



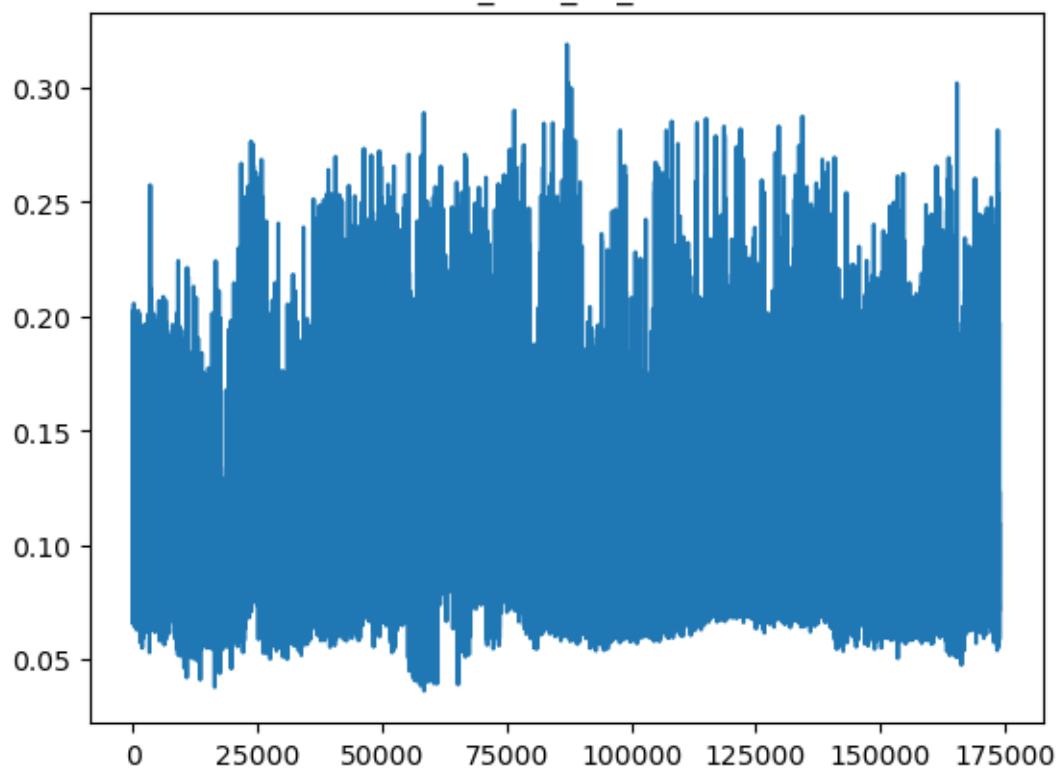
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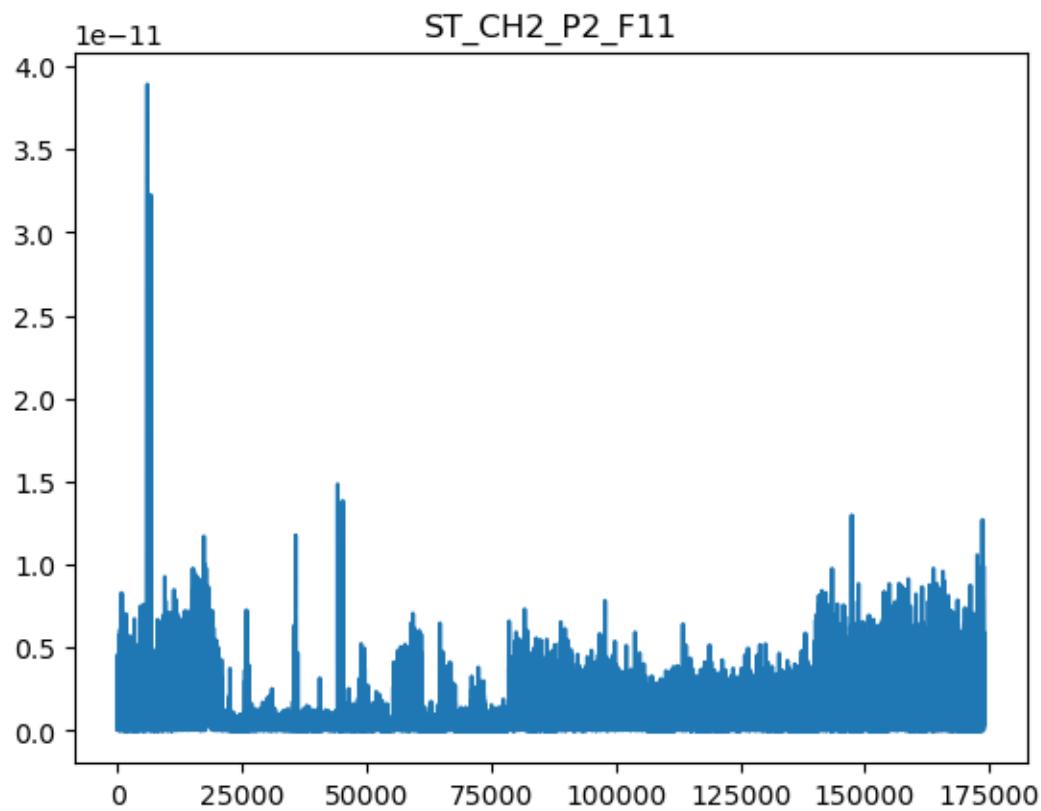


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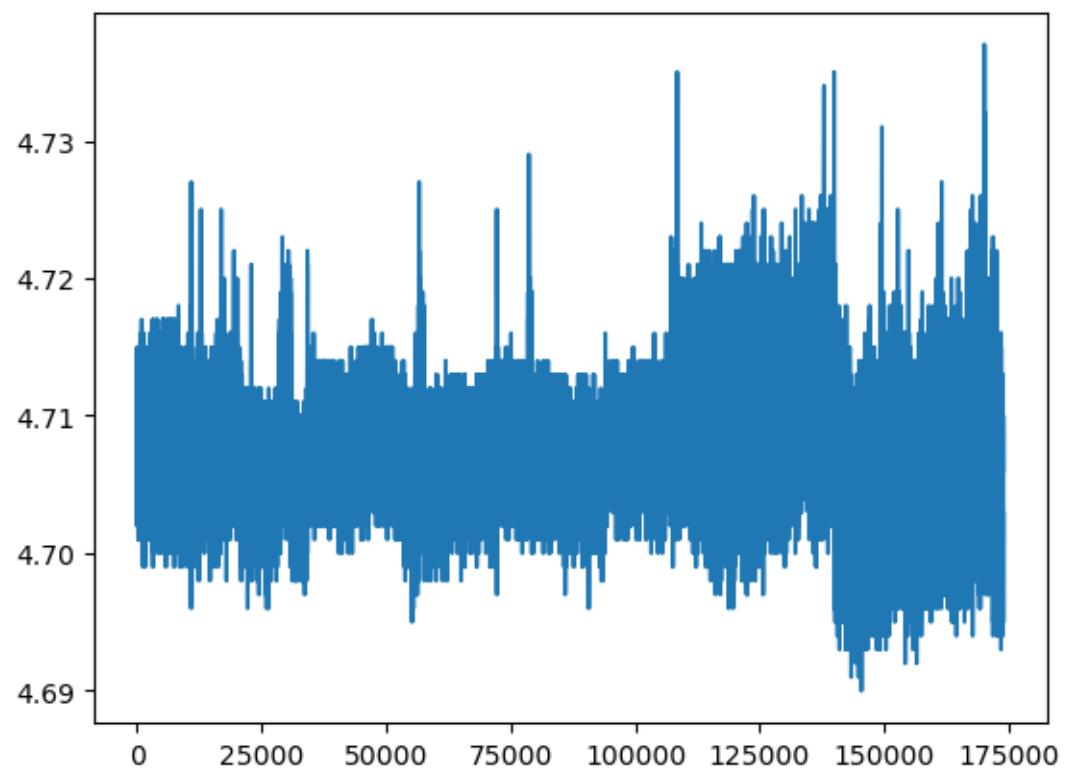


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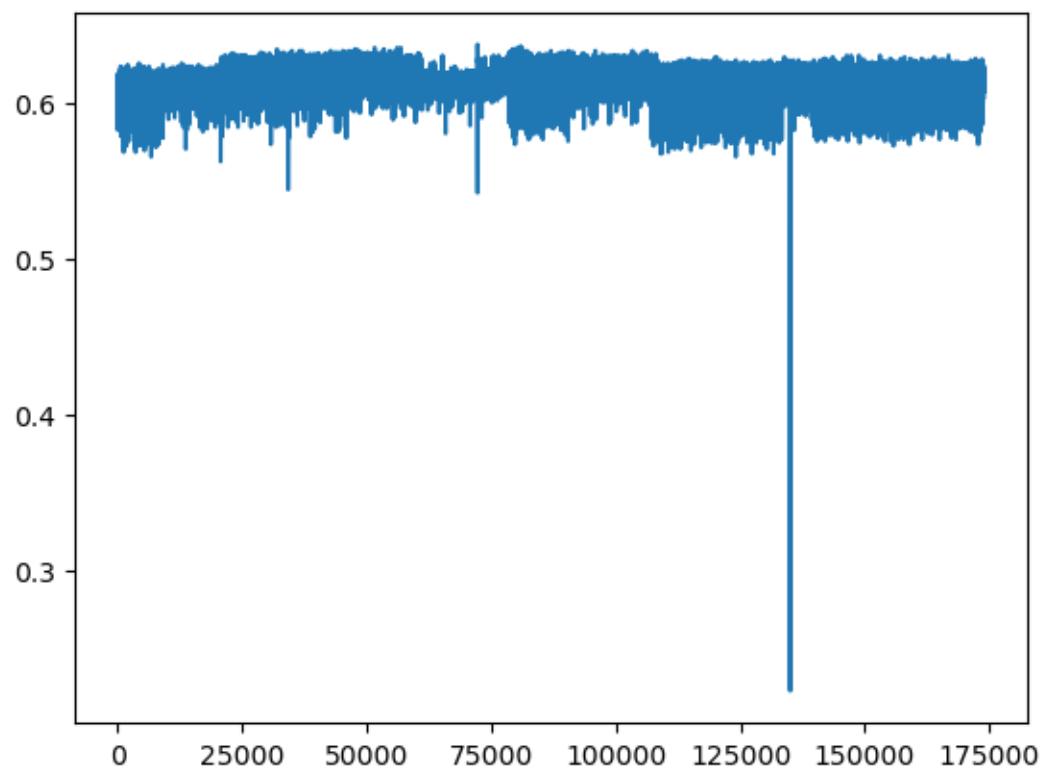




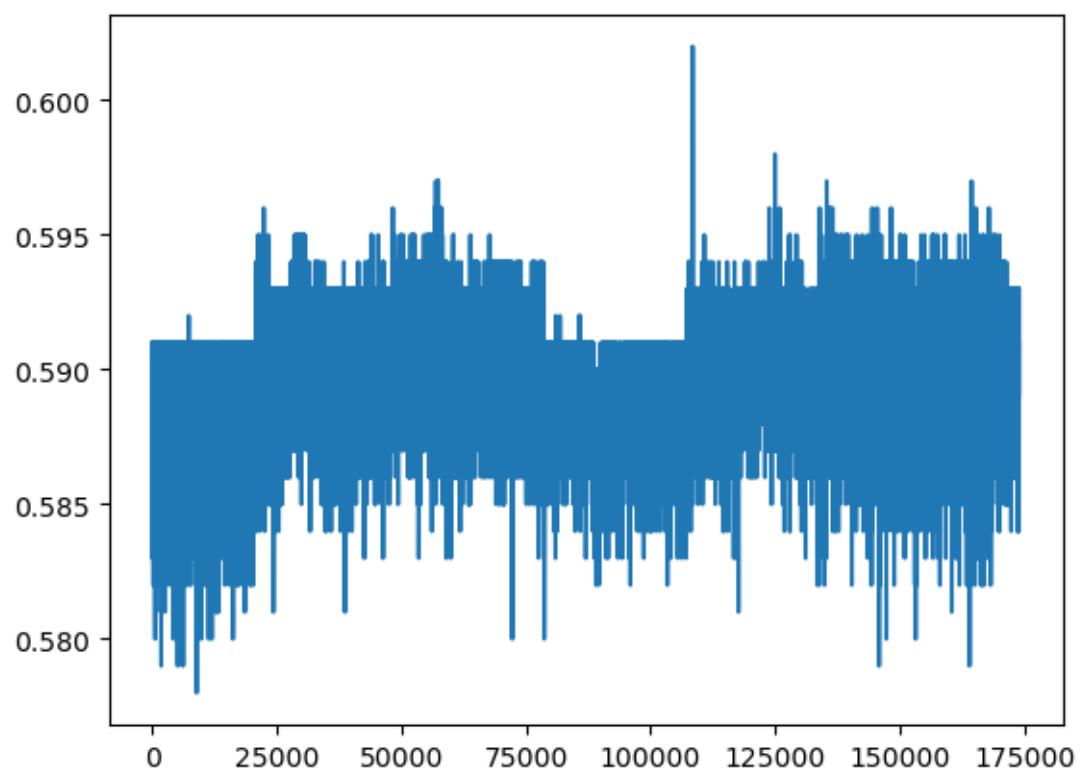
4.713 SKV#1

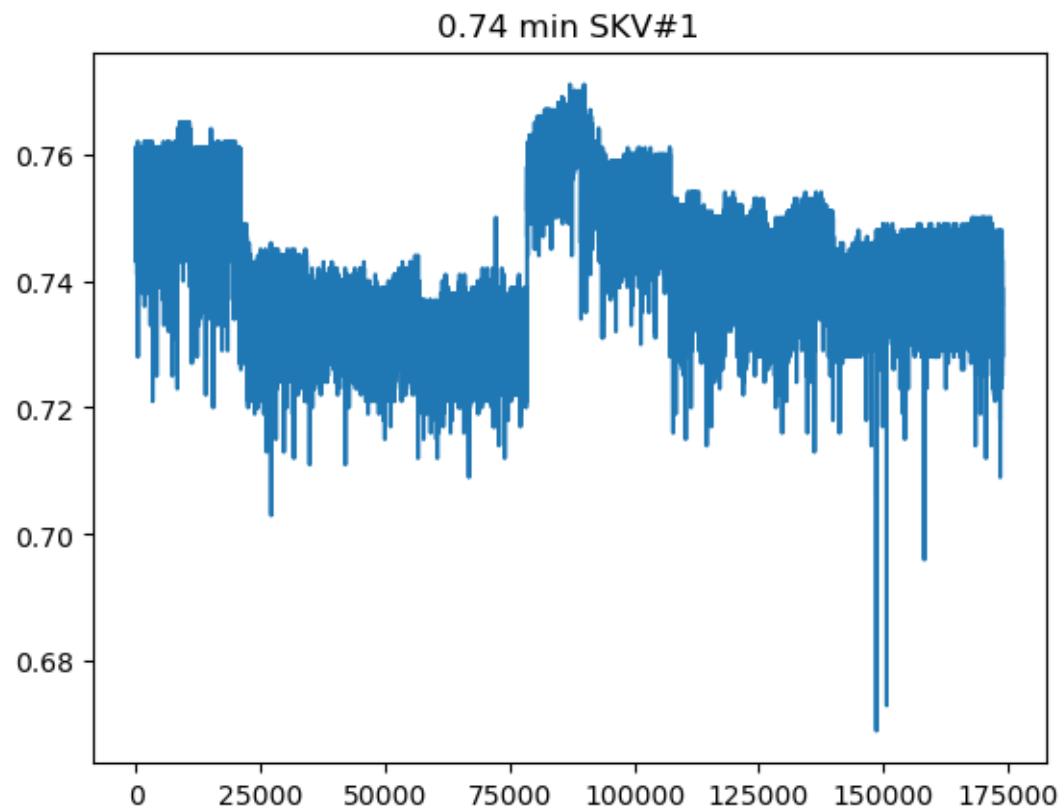


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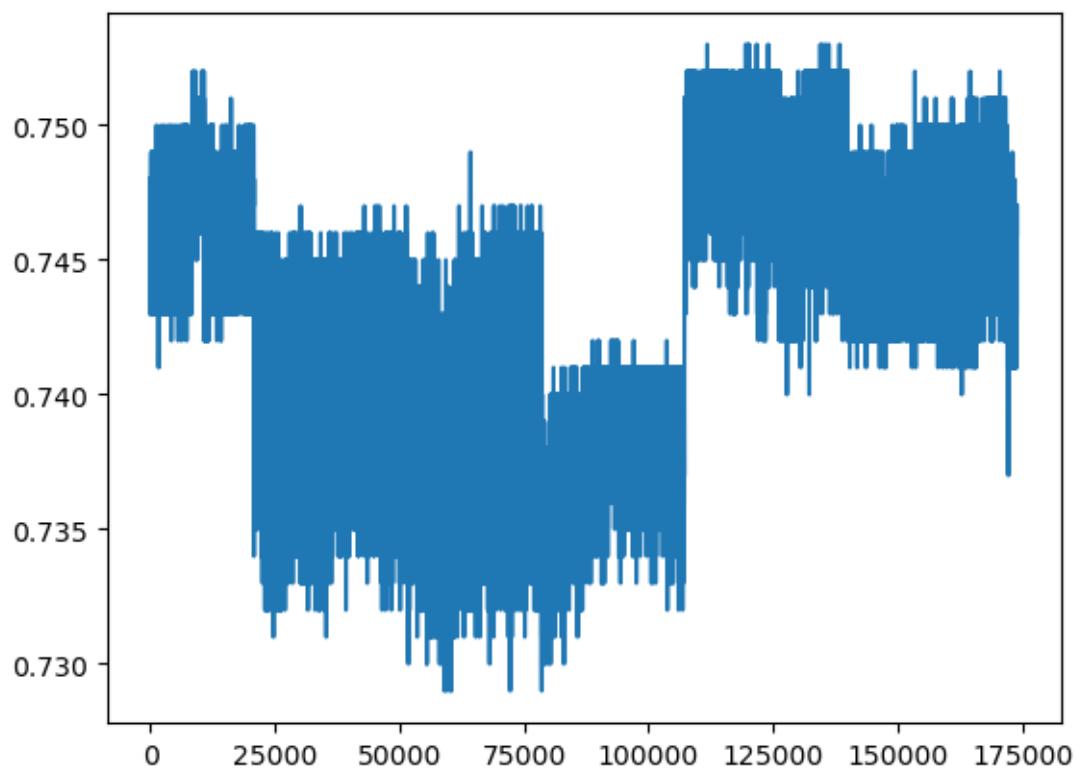


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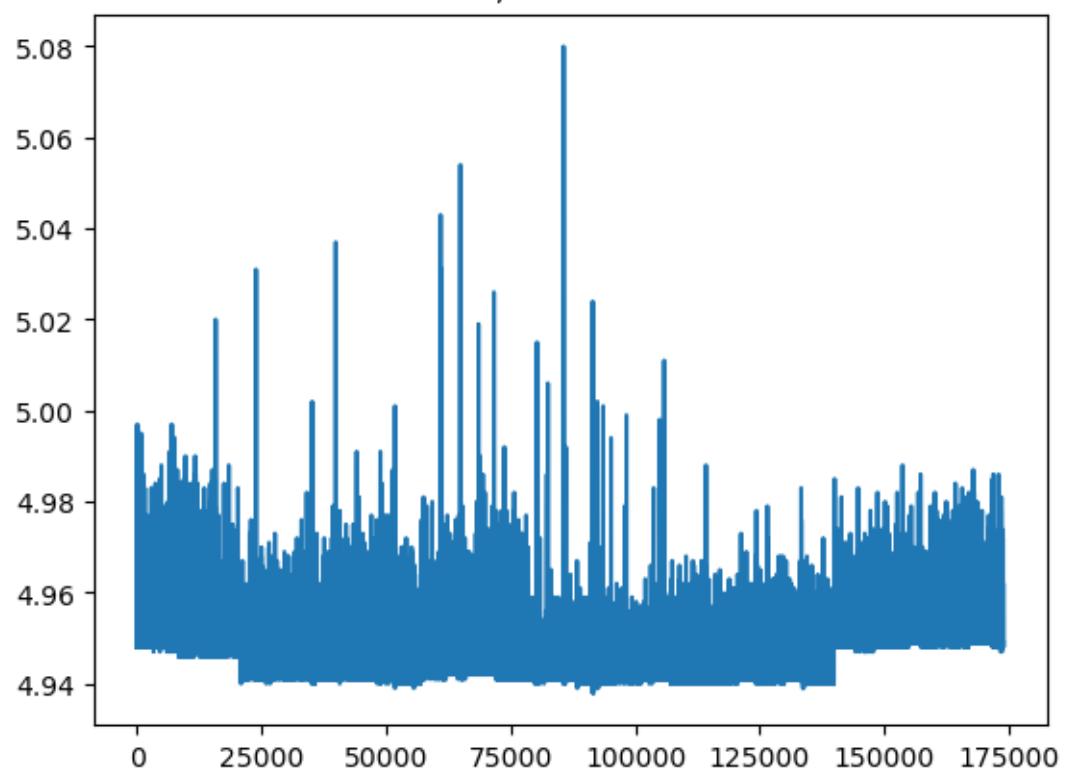




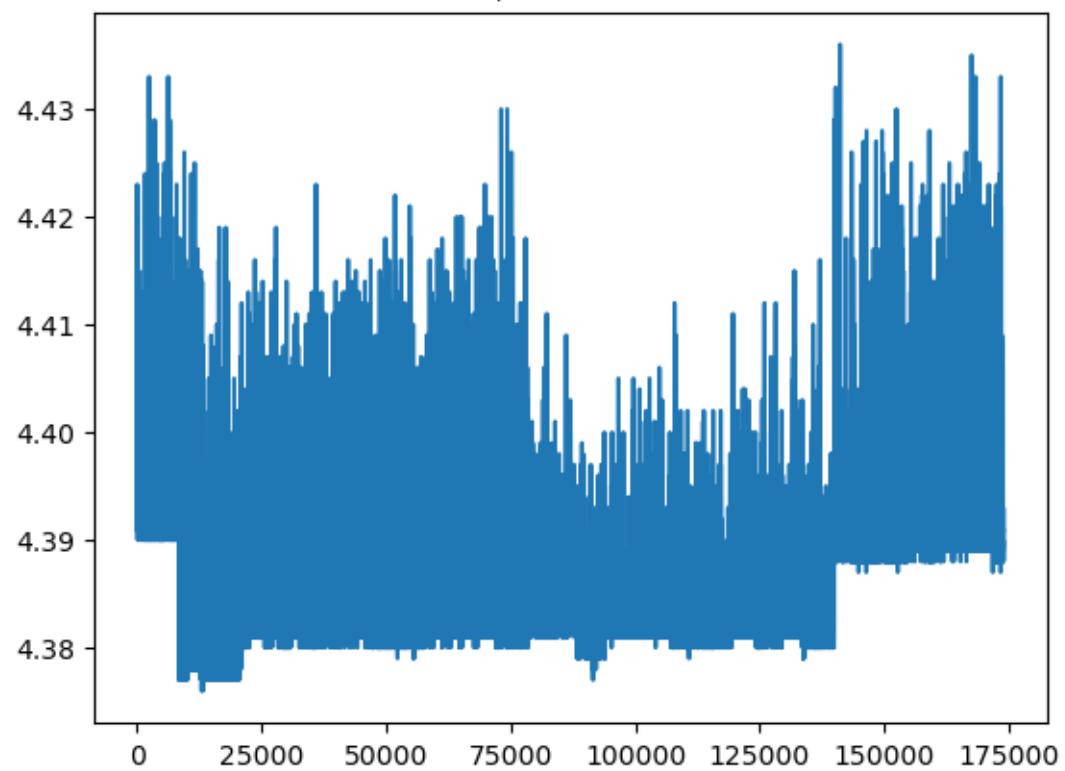
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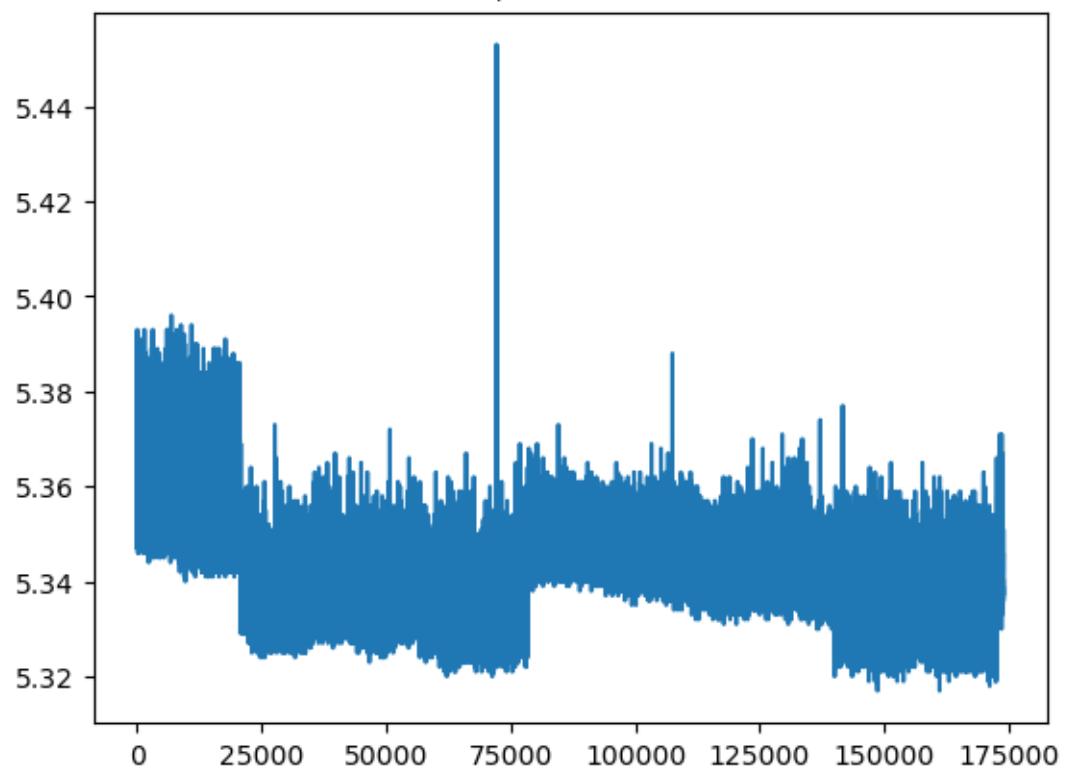
4,96 SKV#1



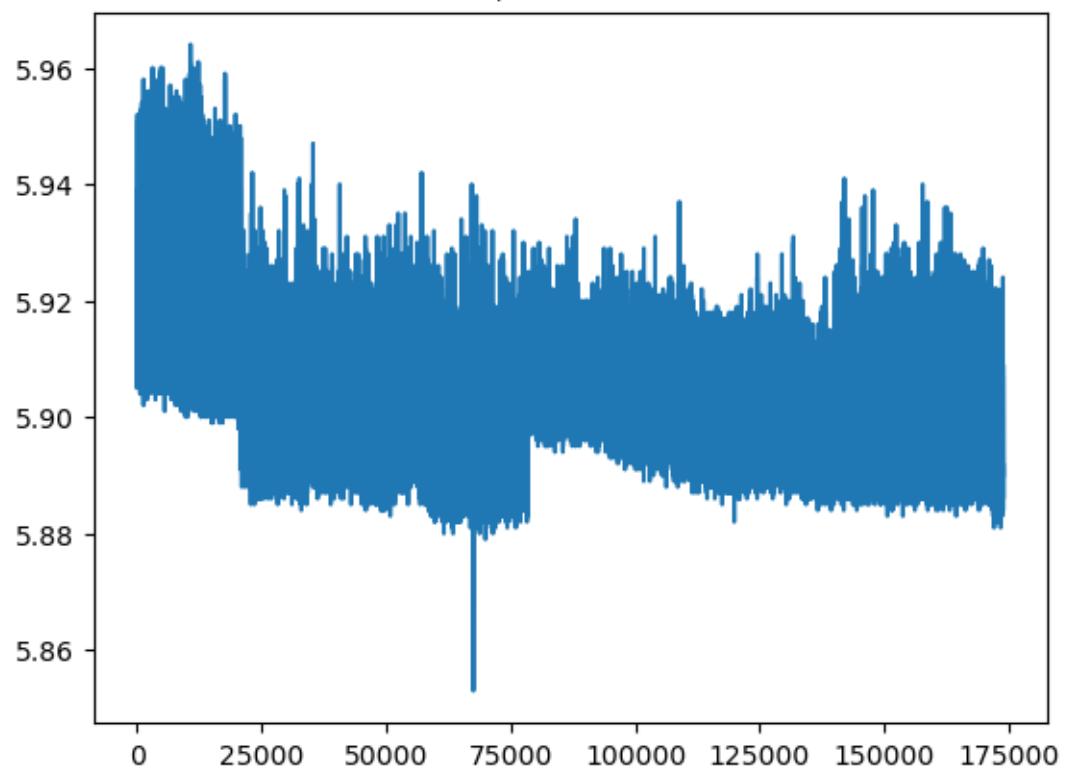
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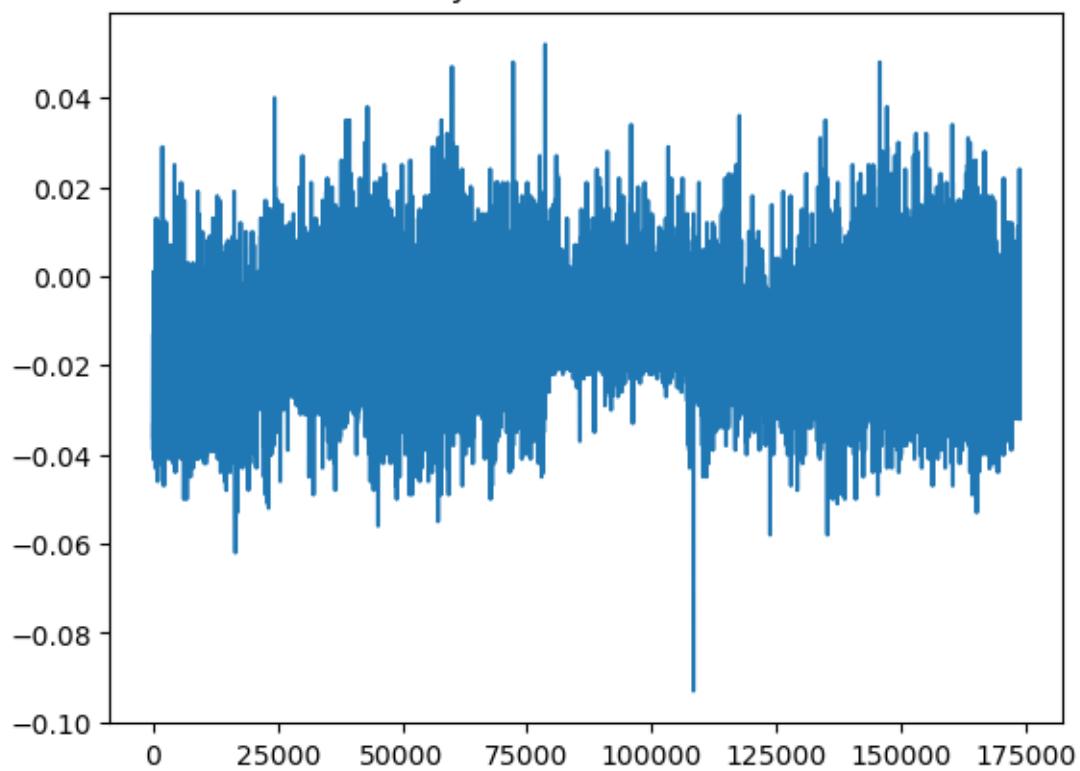
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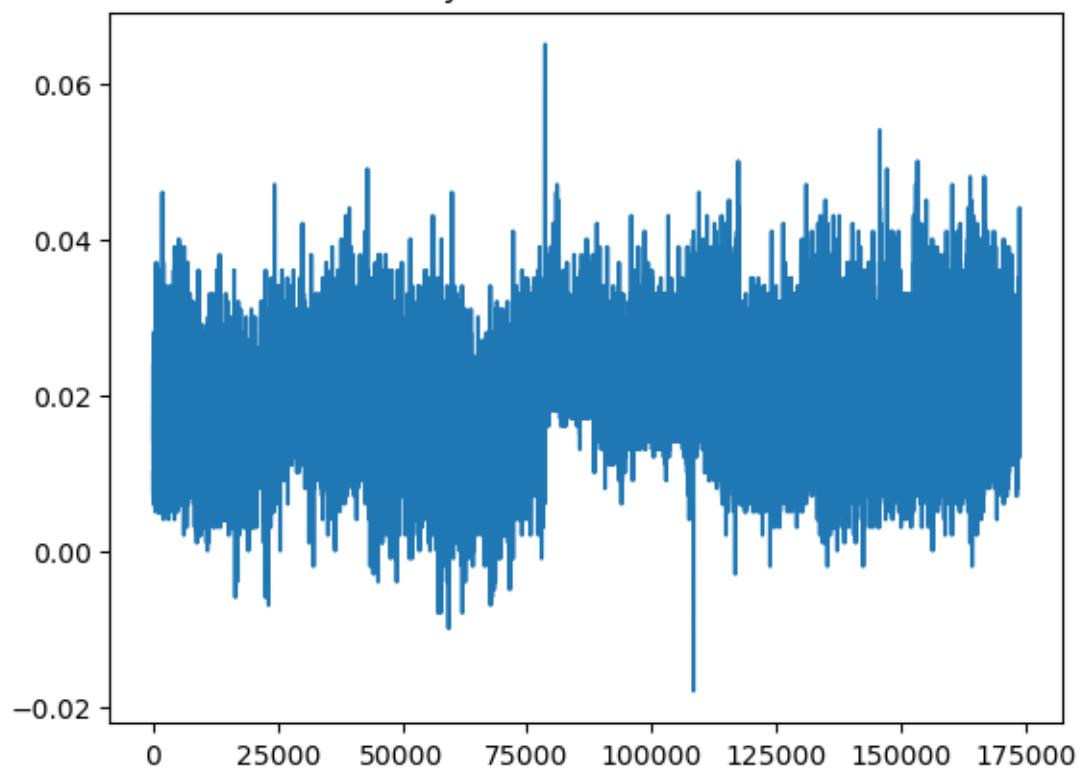
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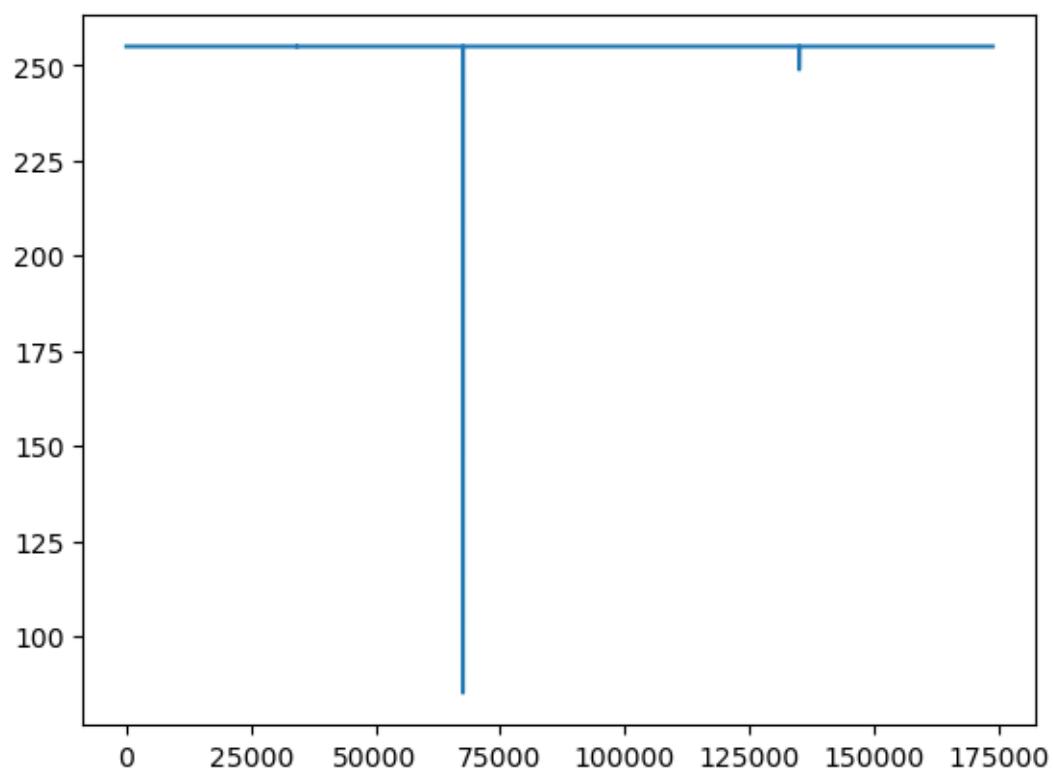
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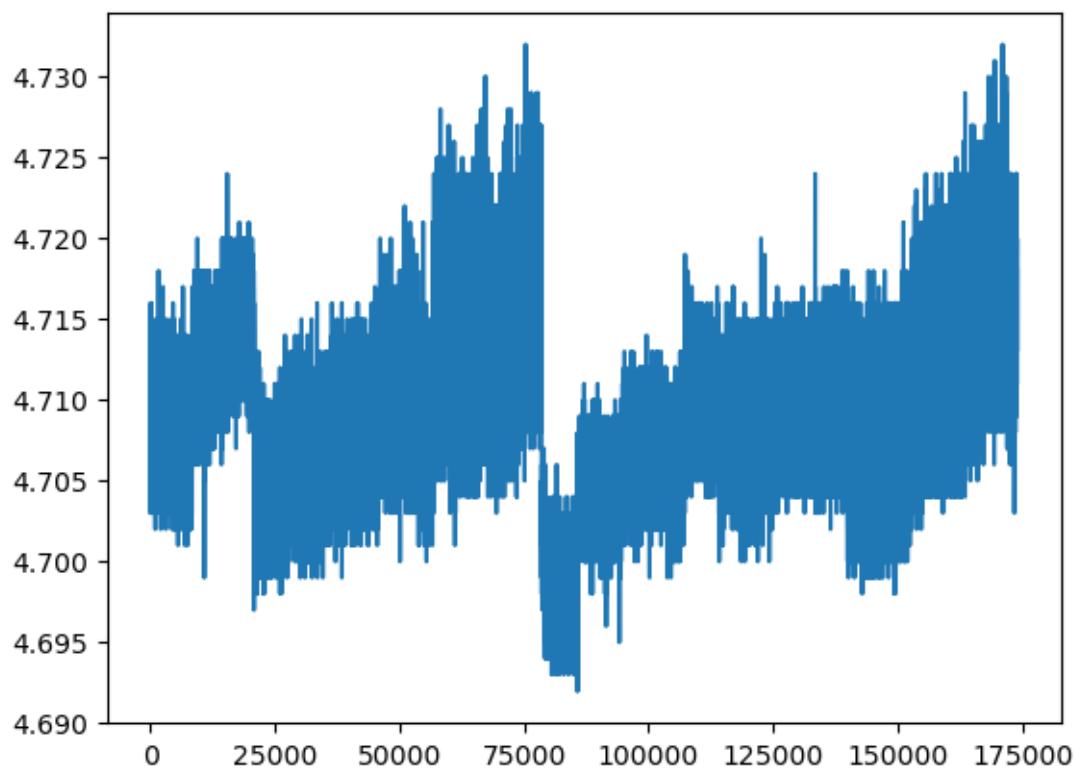
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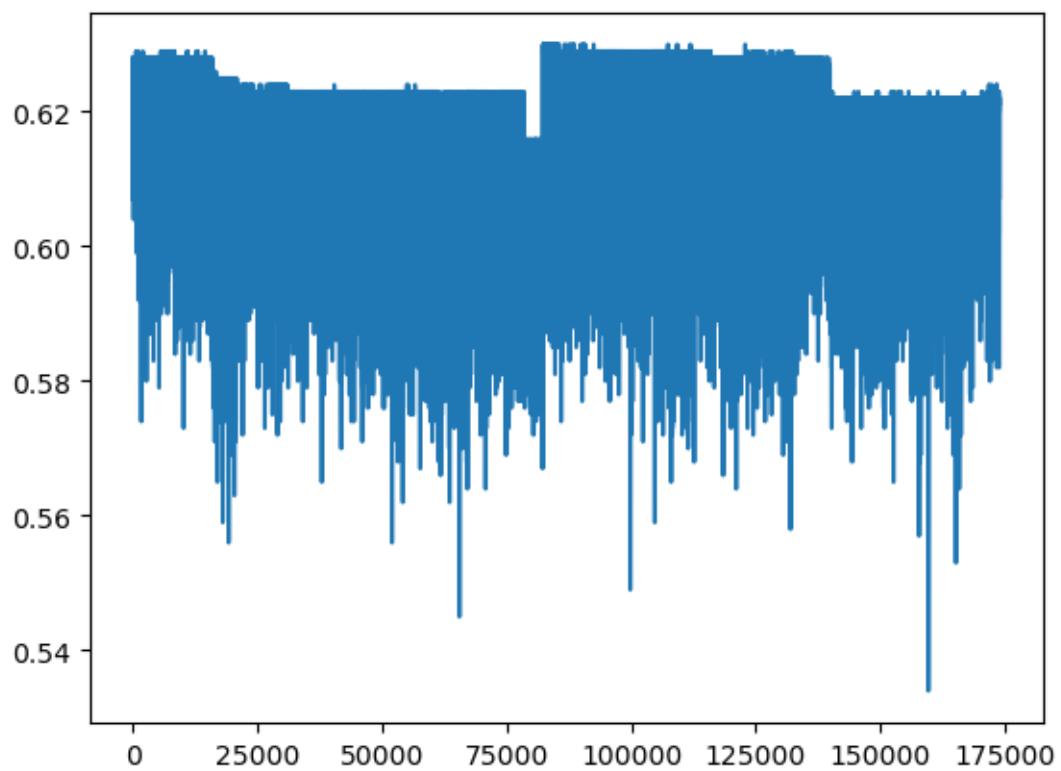
Licht-Einstich frei SKV#1



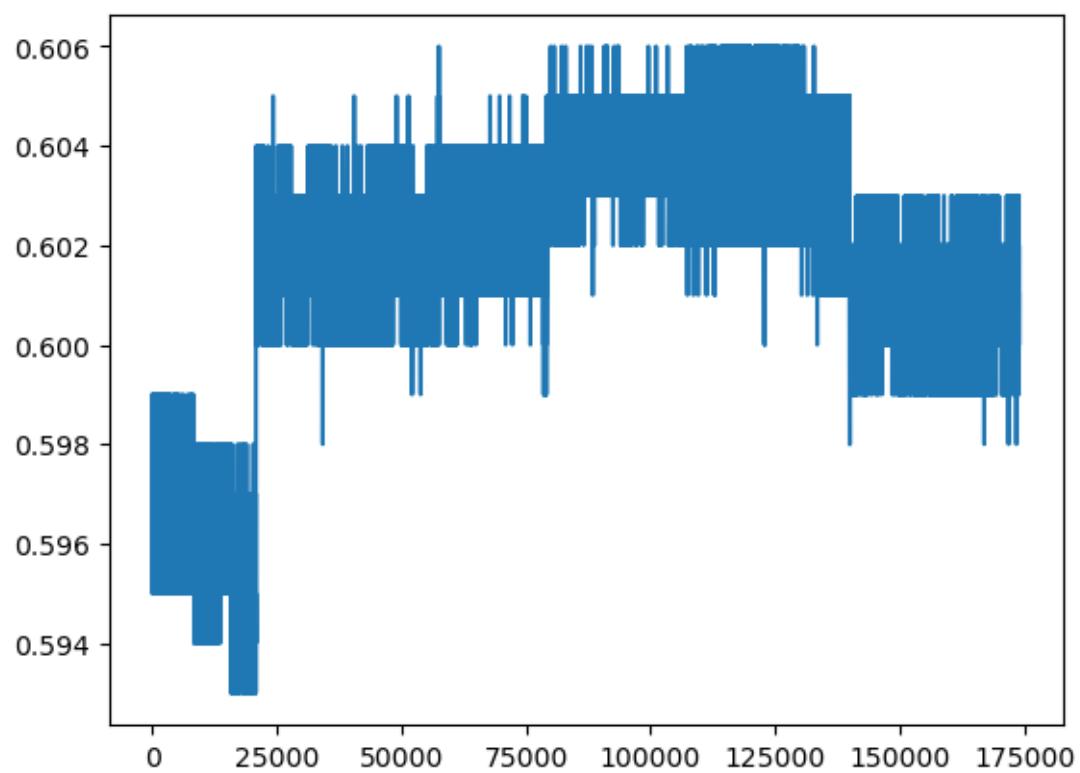
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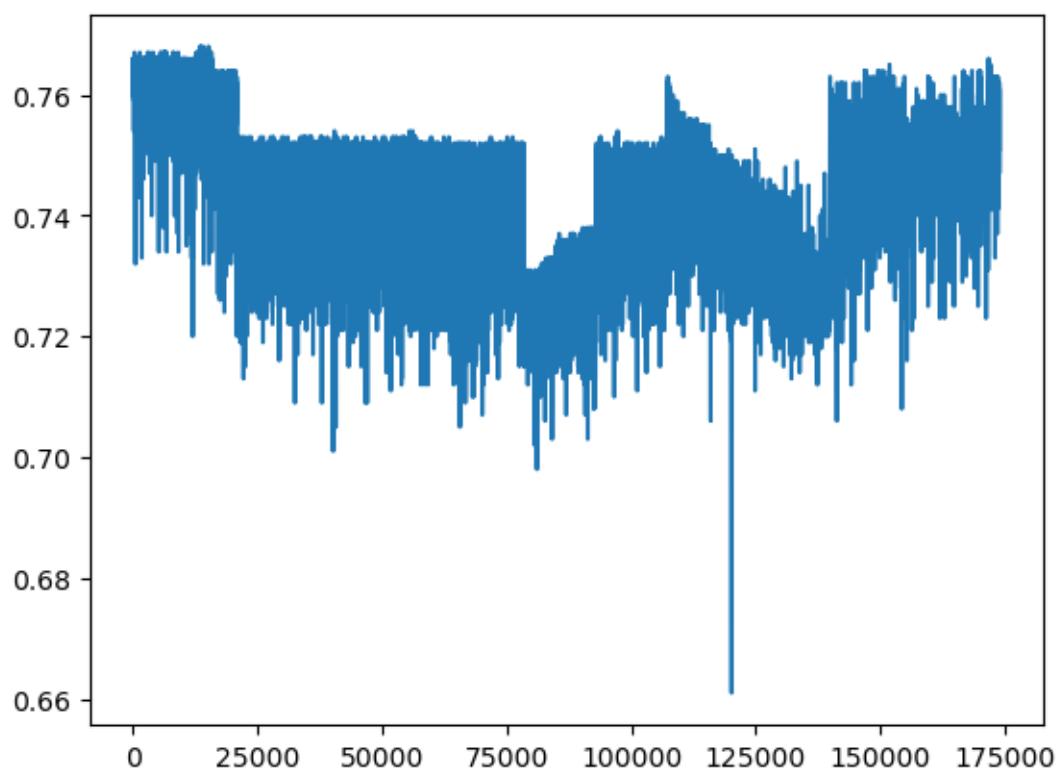
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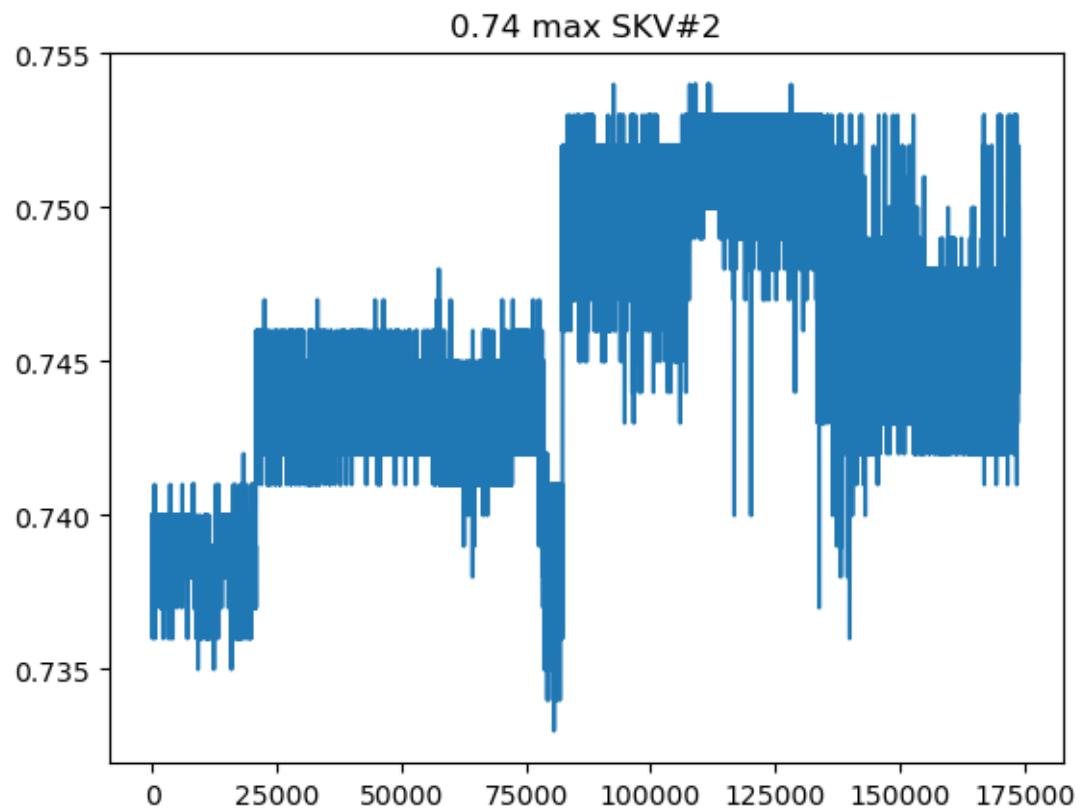


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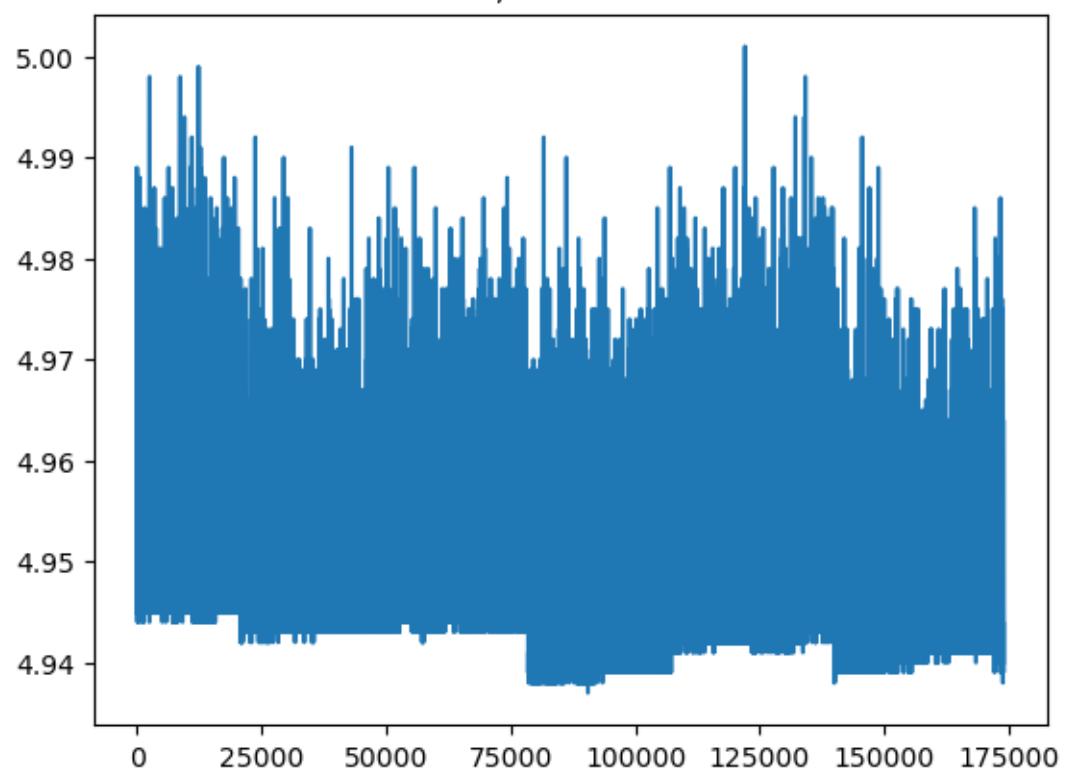


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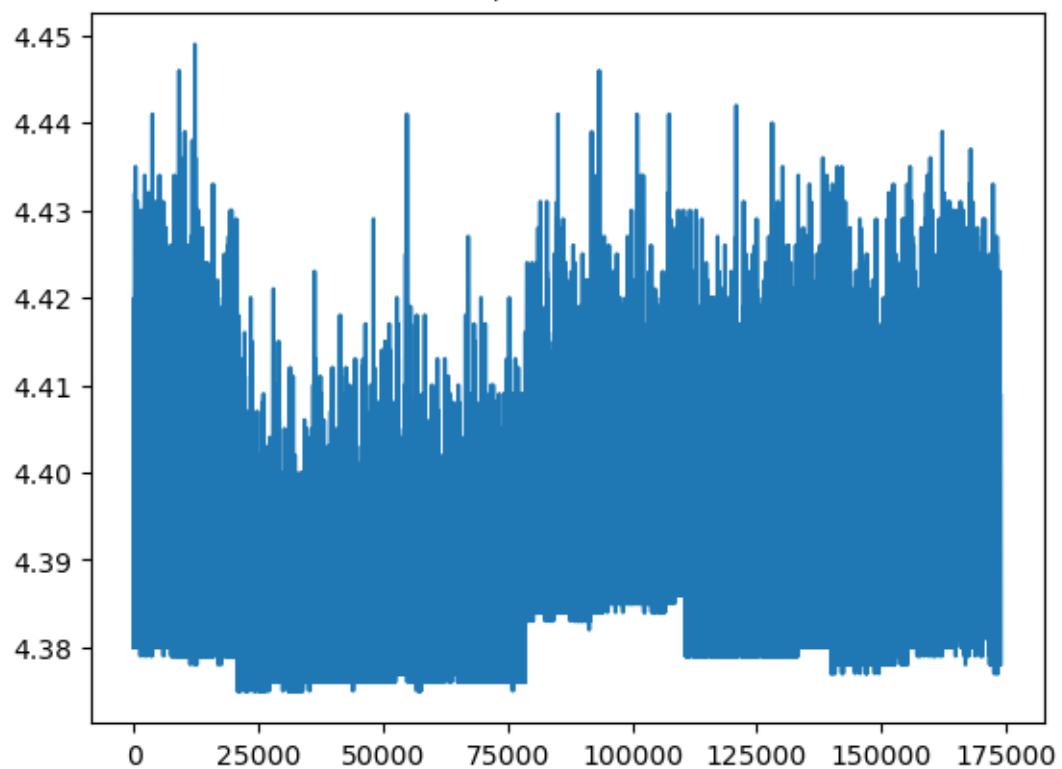




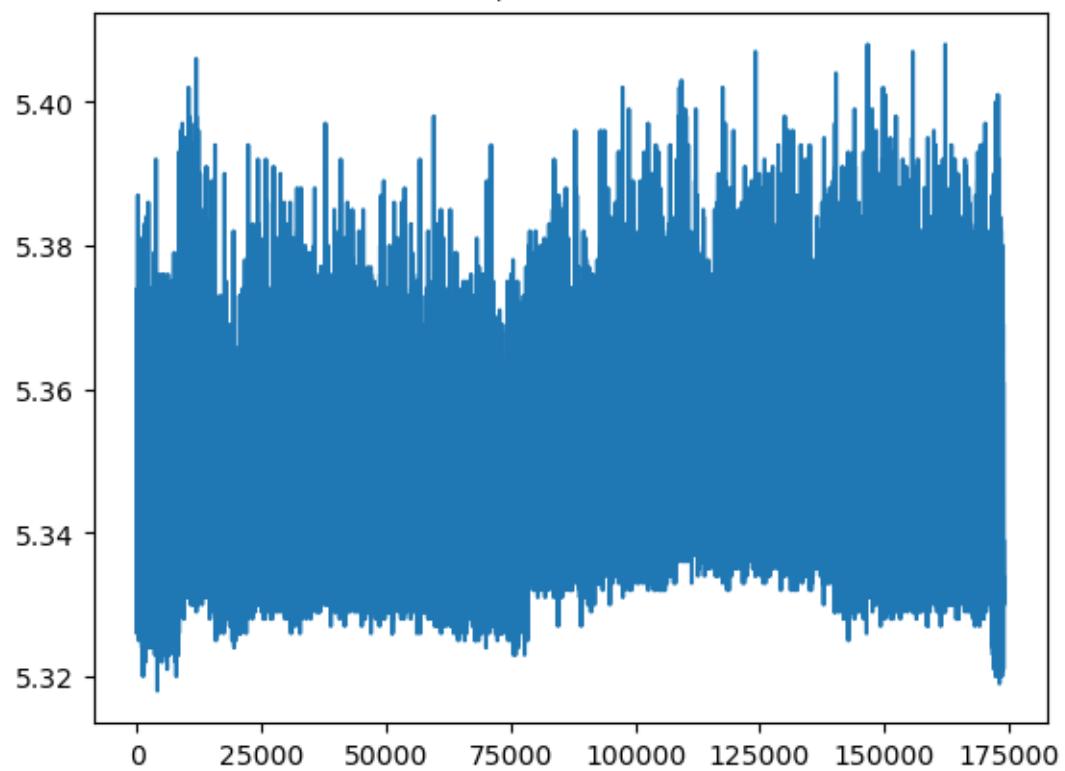
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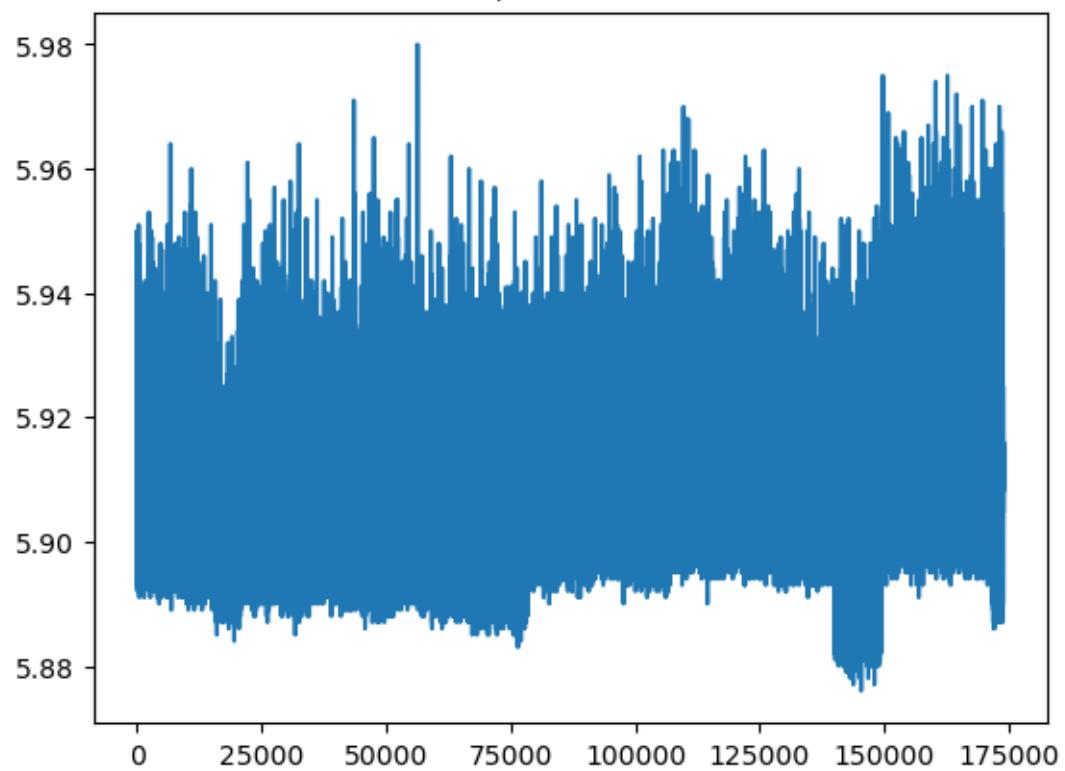
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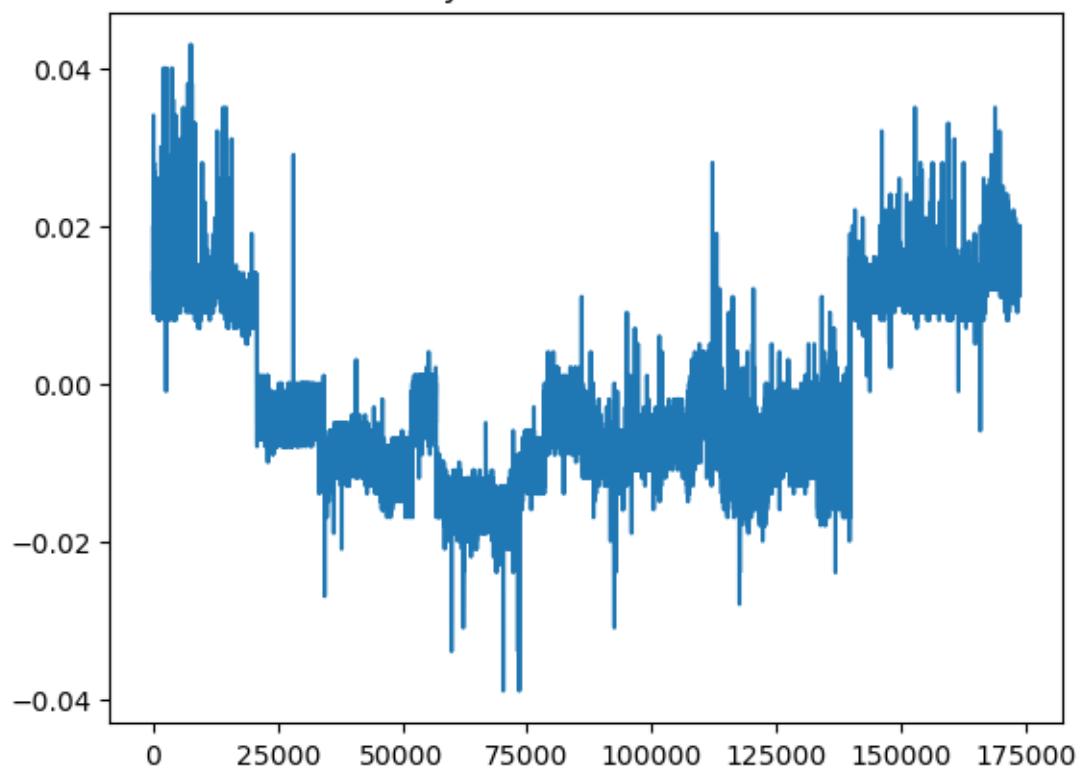
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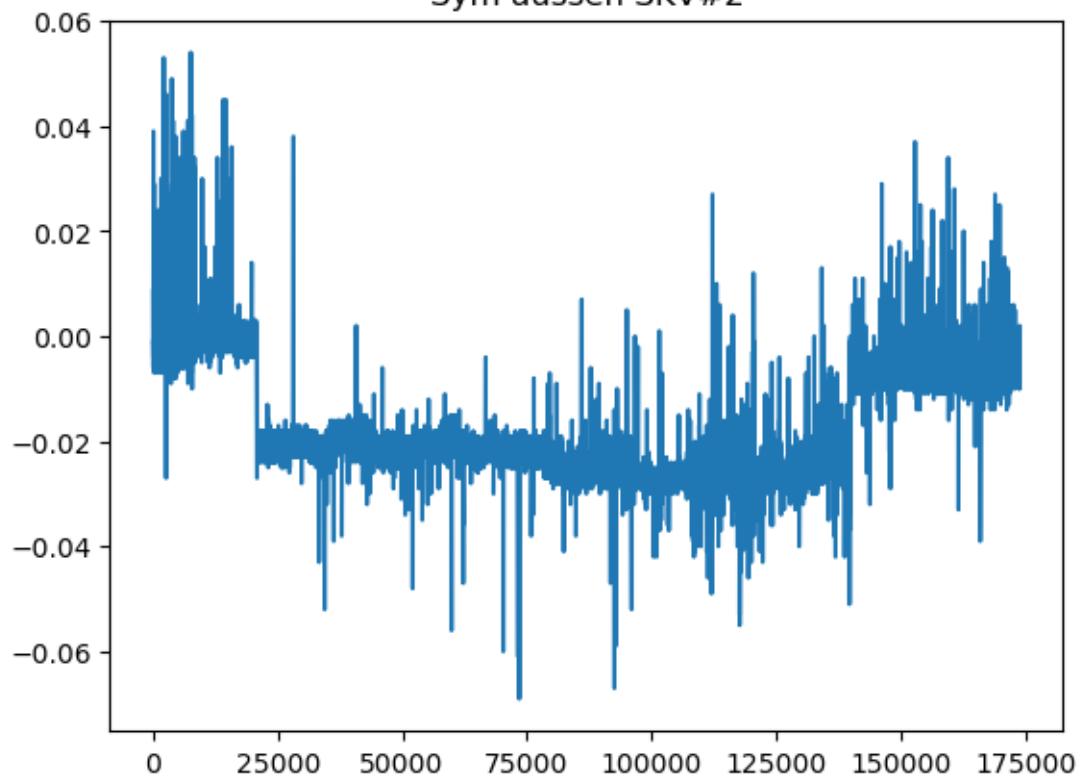
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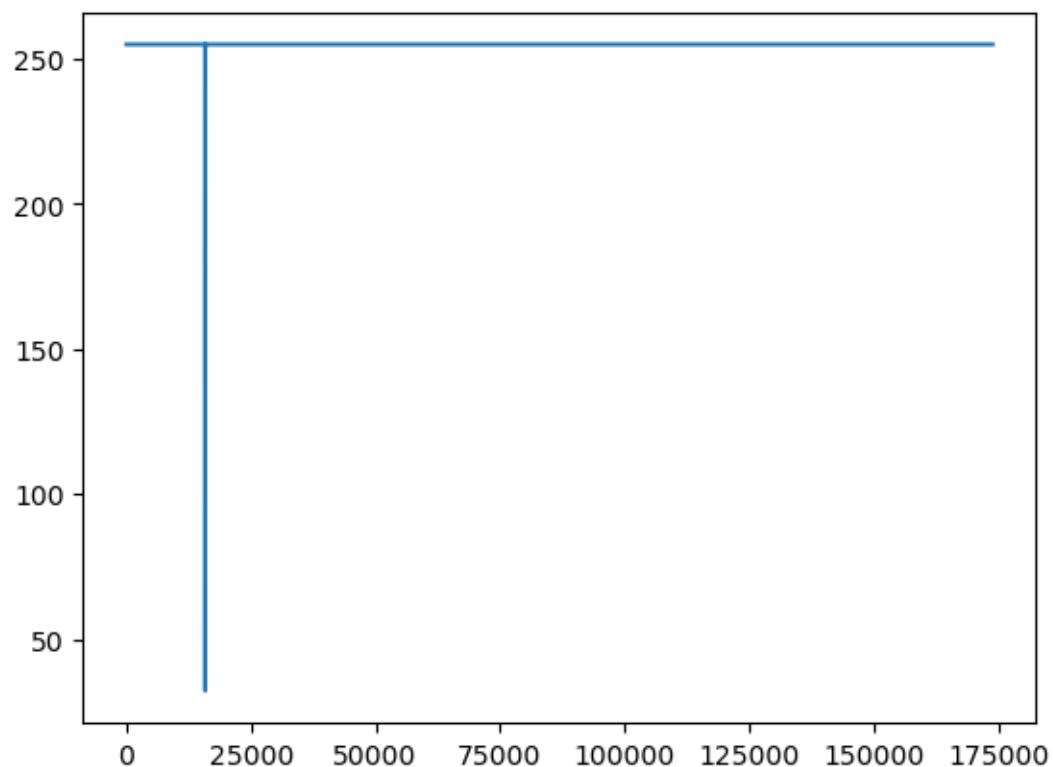
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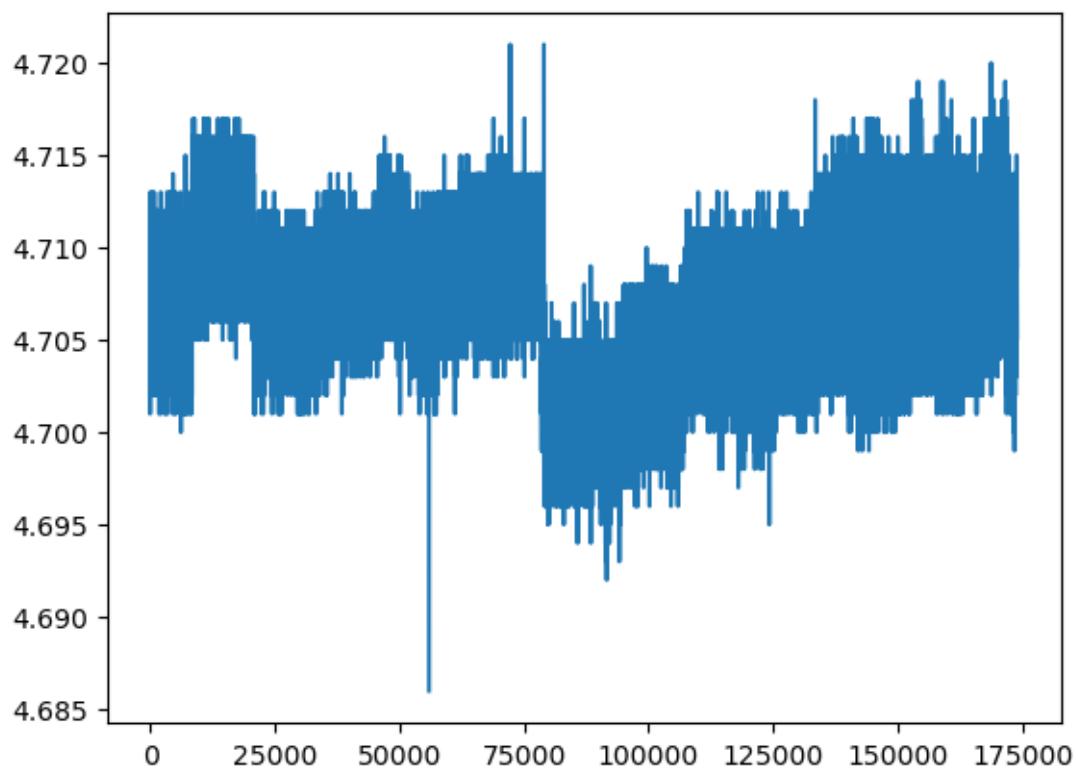
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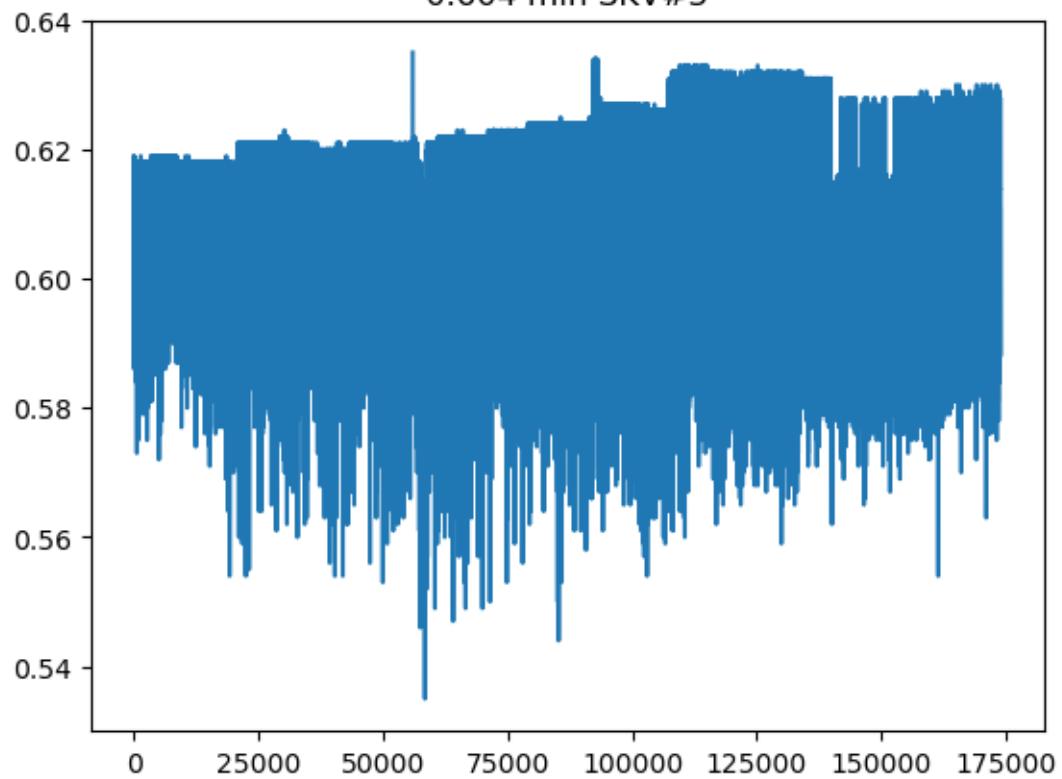
Licht-Einstich frei SKV#2



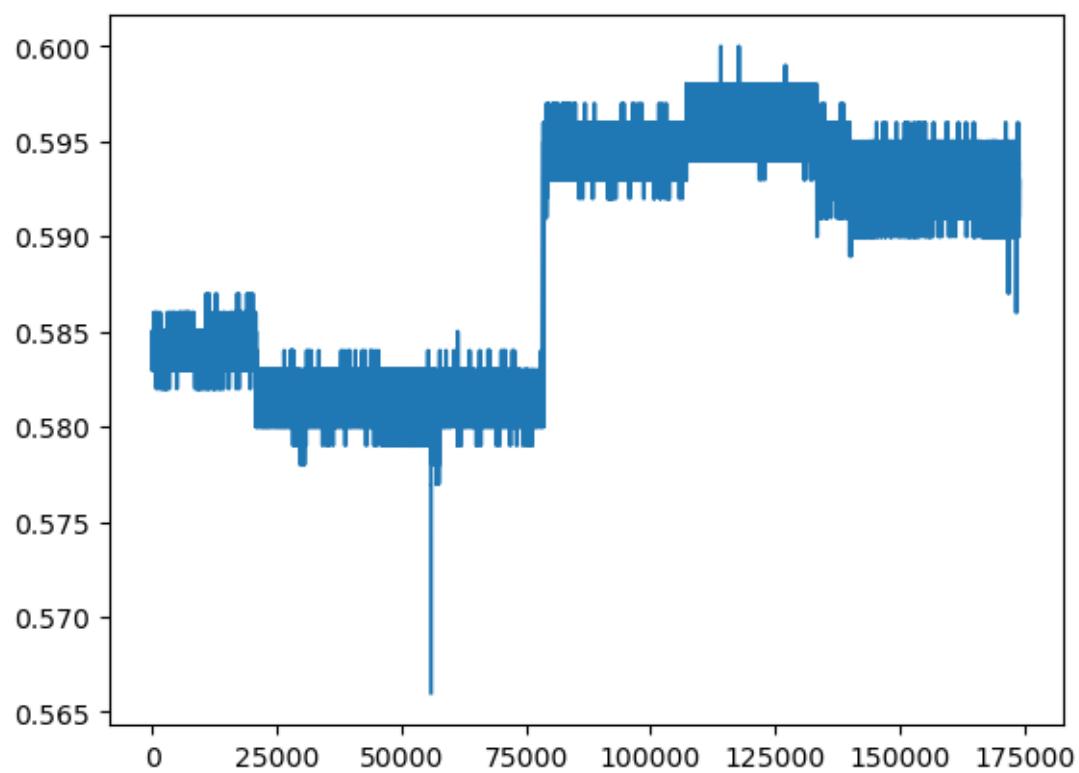
4.713 SKV#3



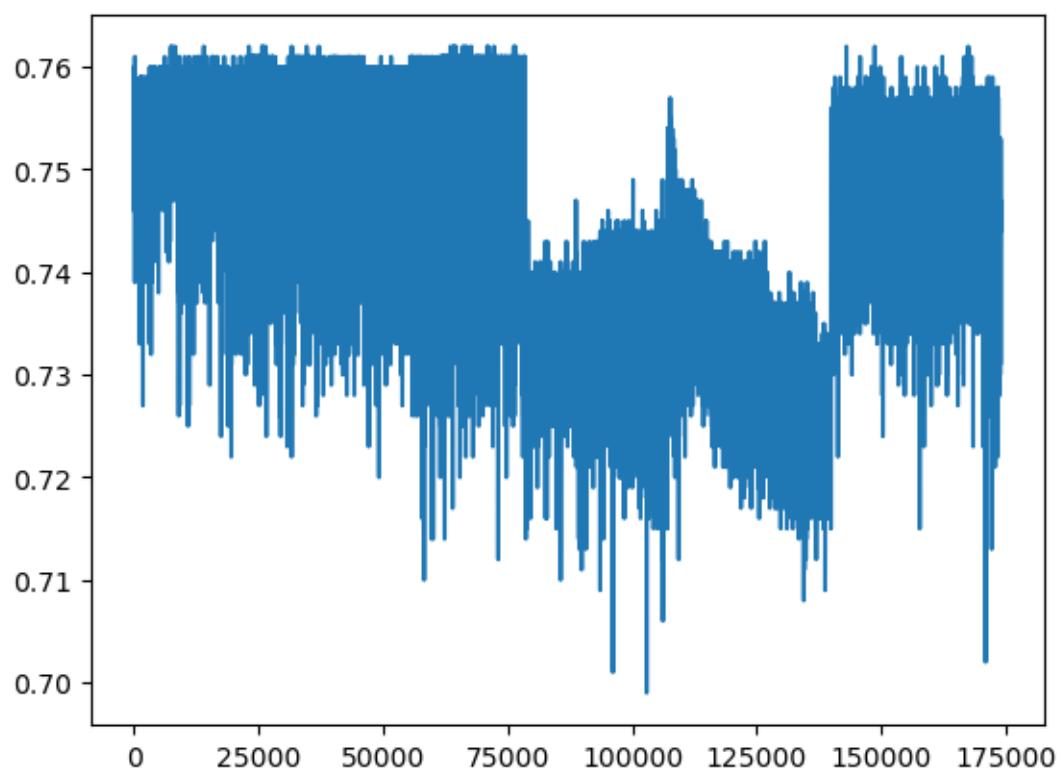
0.604 min SKV#3



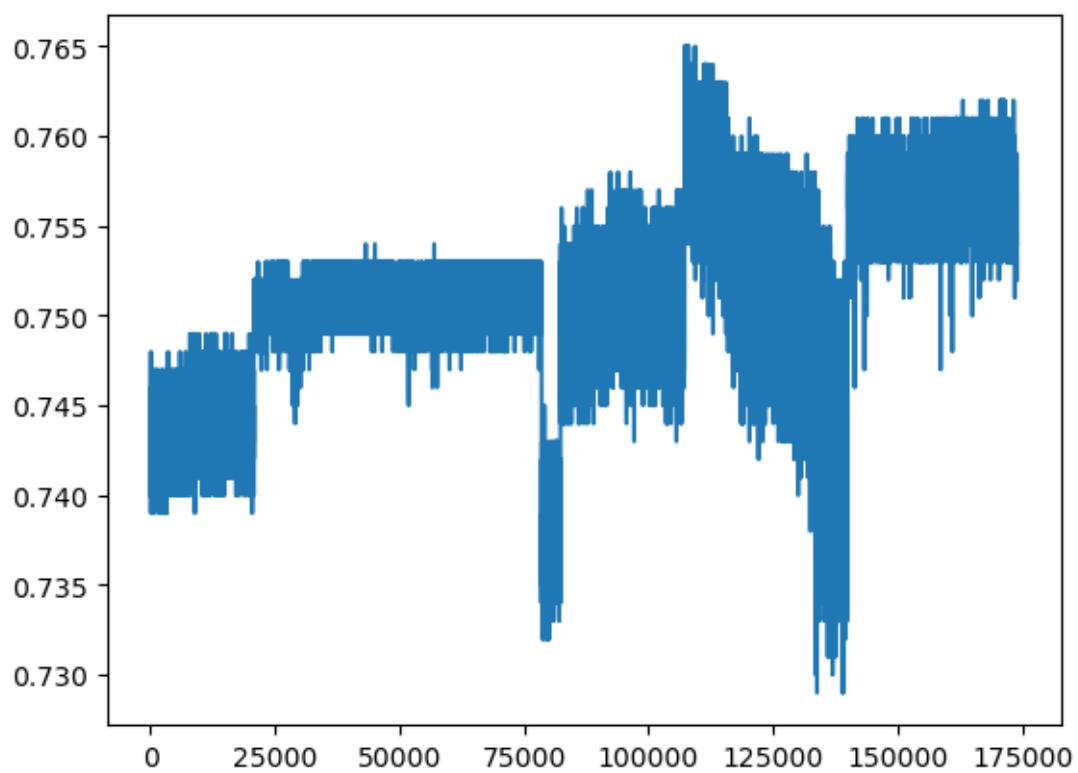
0.604 max SKV#3



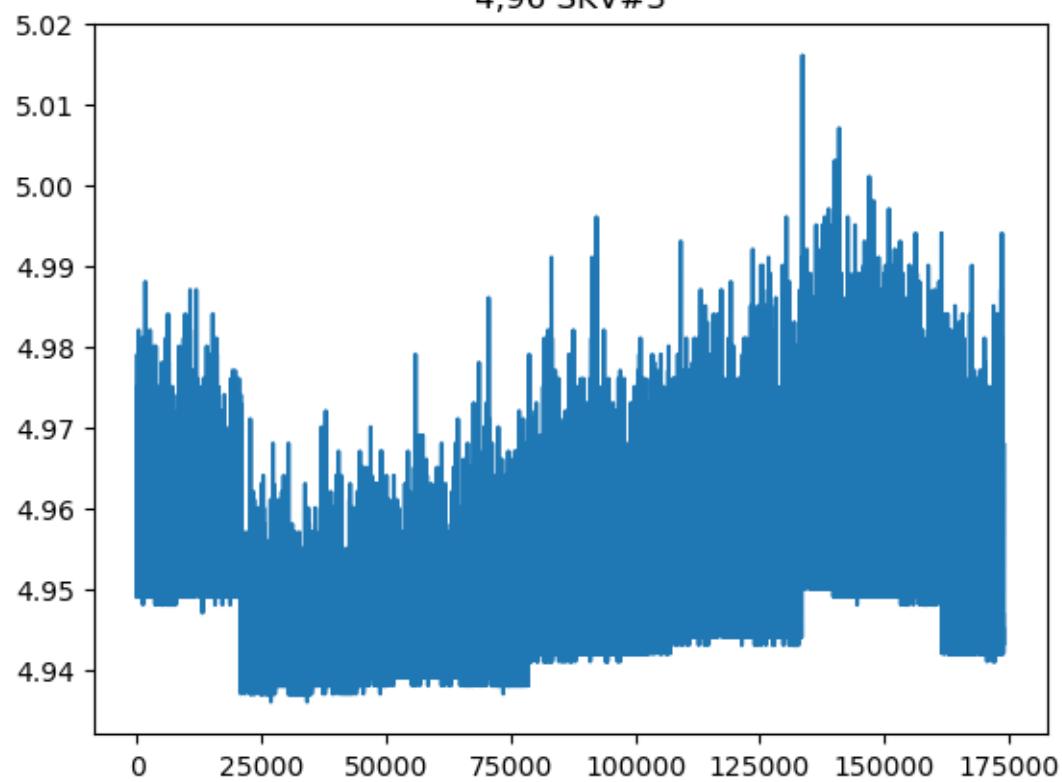
0.74 min SKV#3



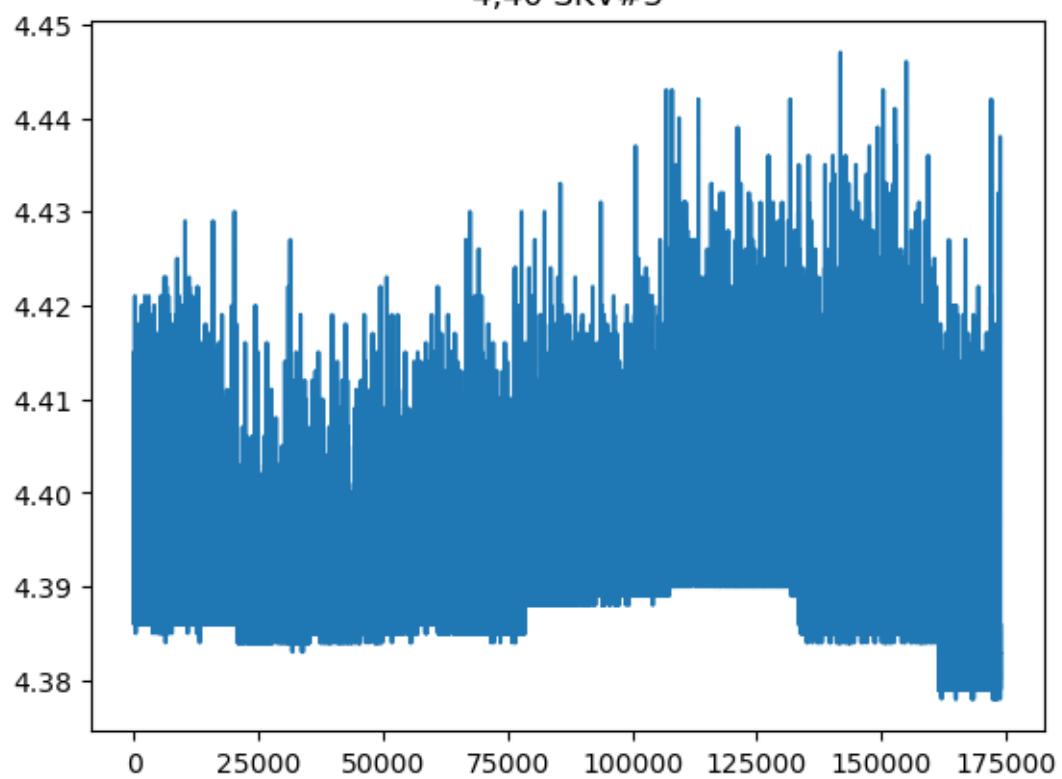
0.74 max SKV#3



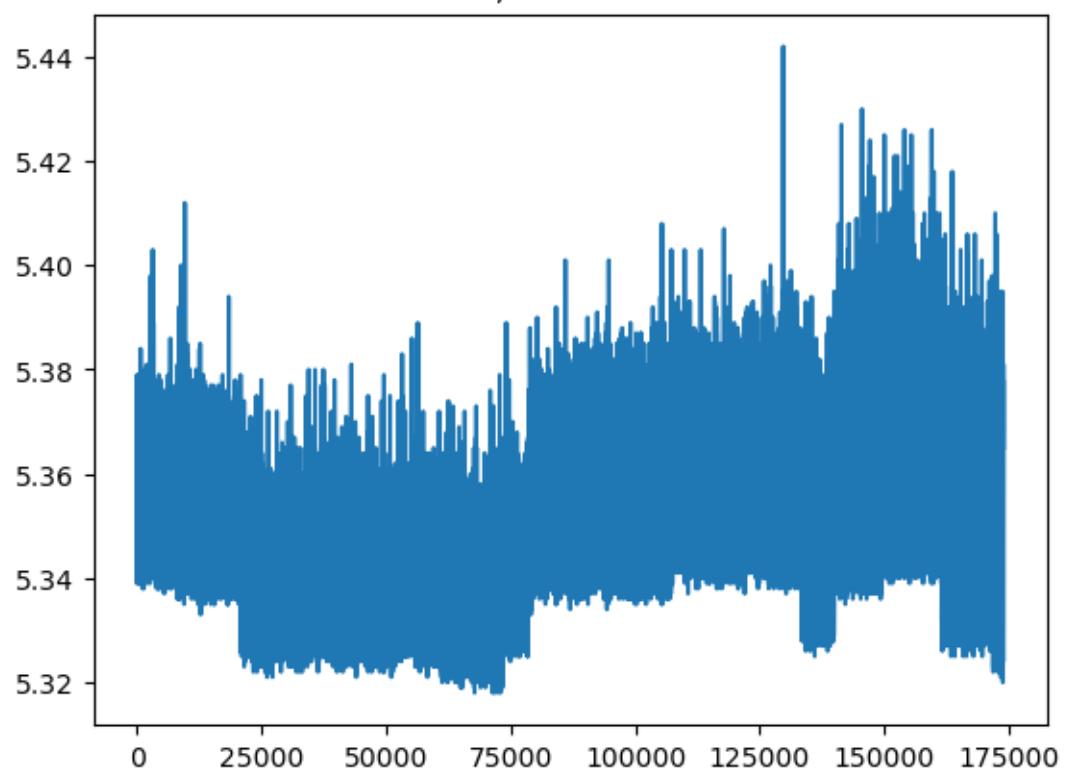
4,96 SKV#3



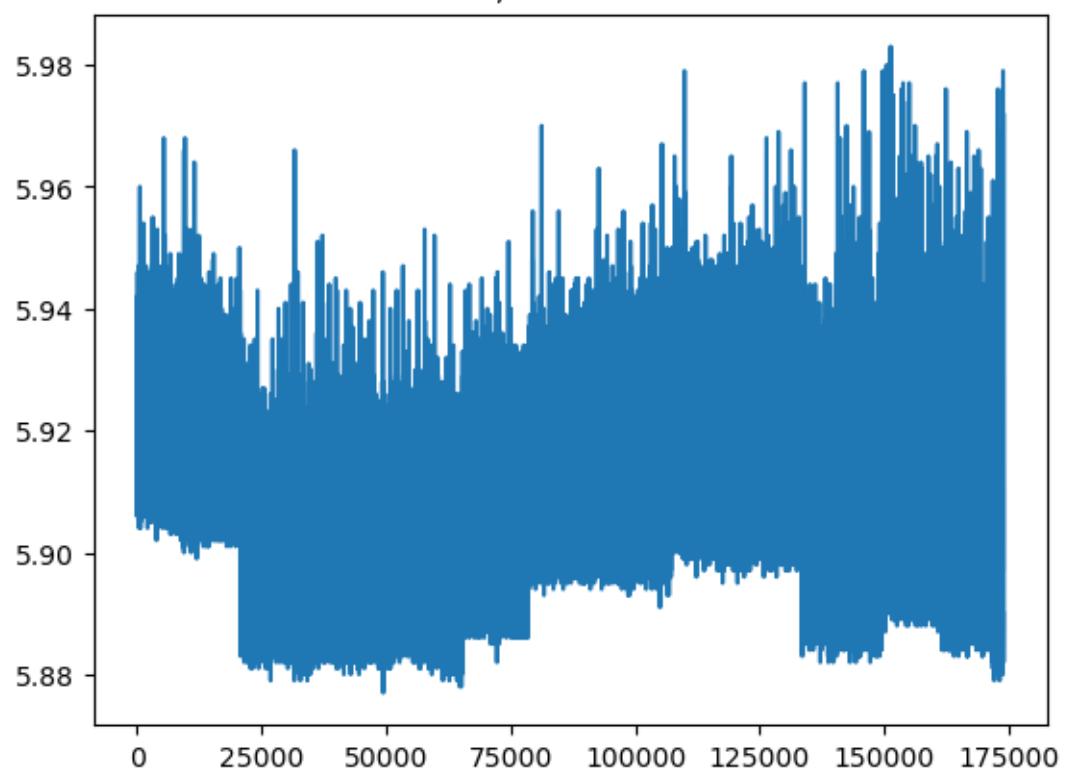
4,40 SKV#3



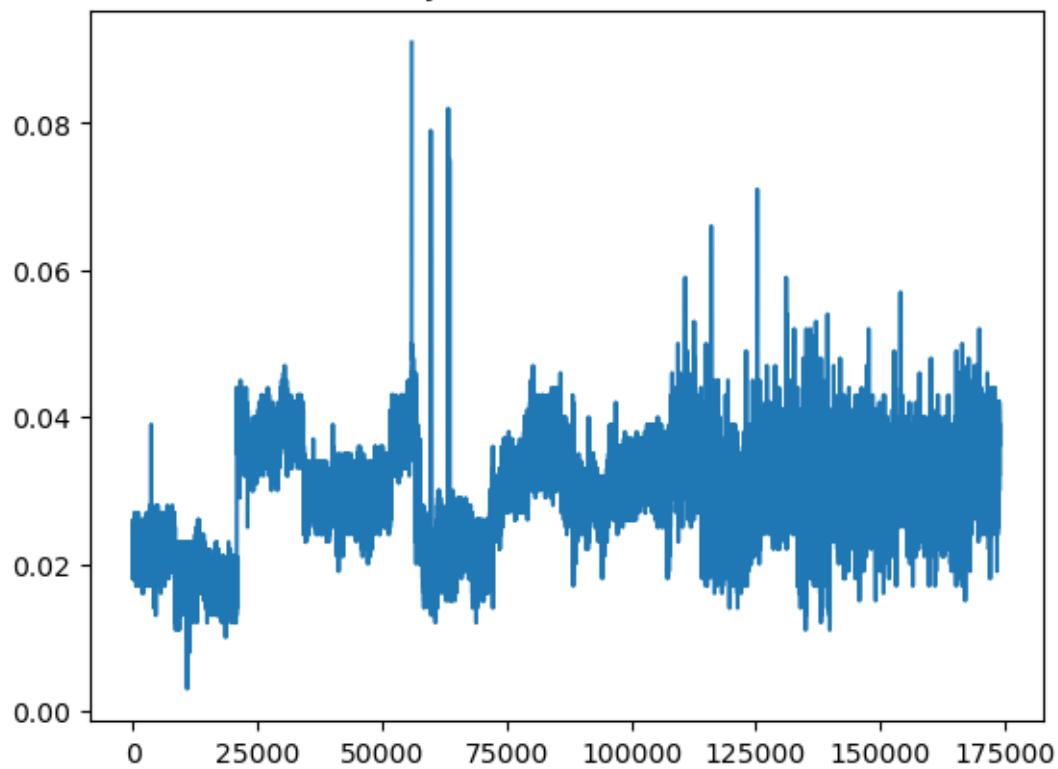
5,36 SKV#3



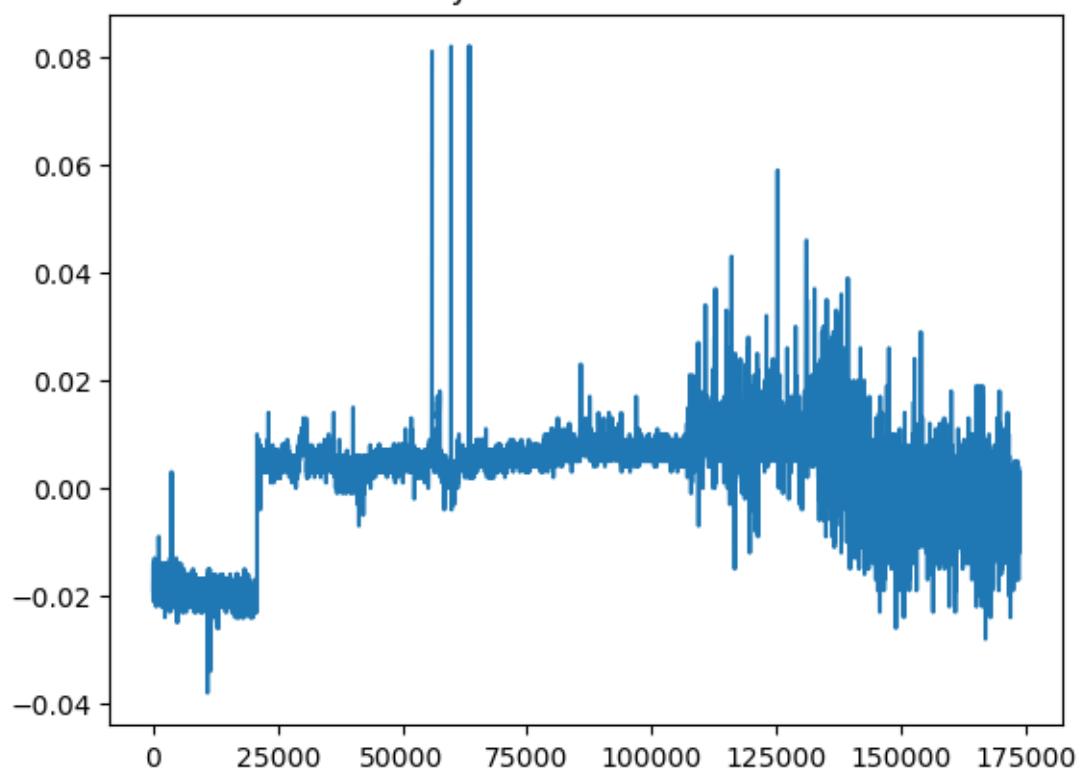
5,92 SKV#3



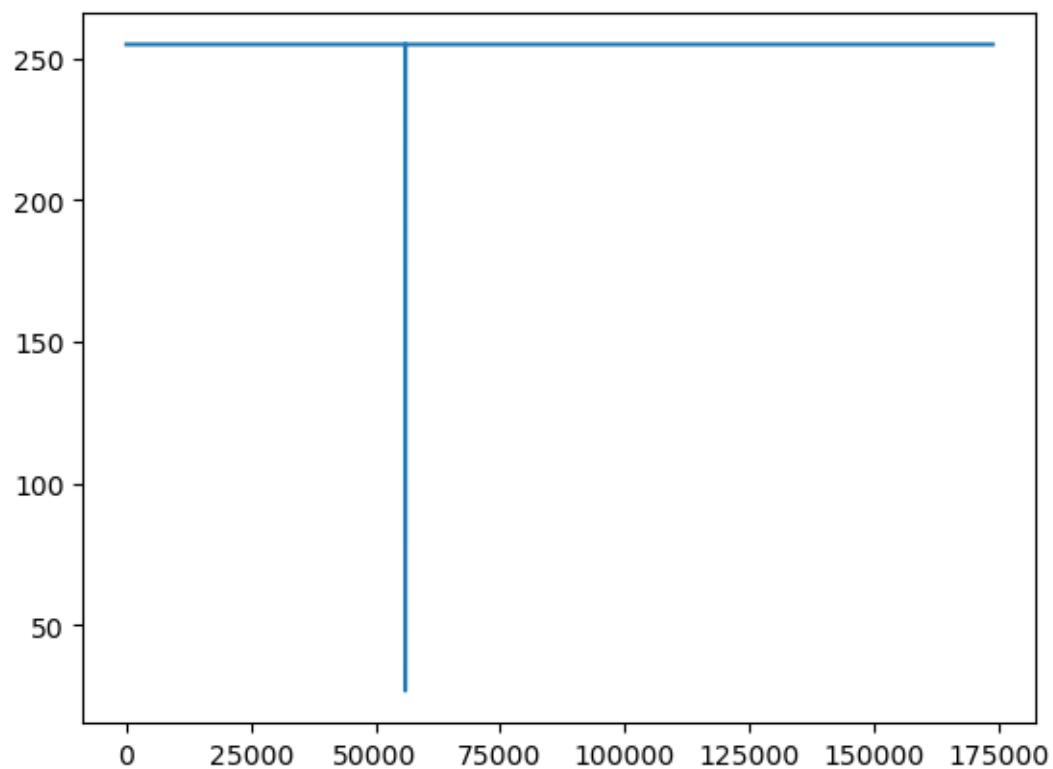
Sym Einstich SKV#3



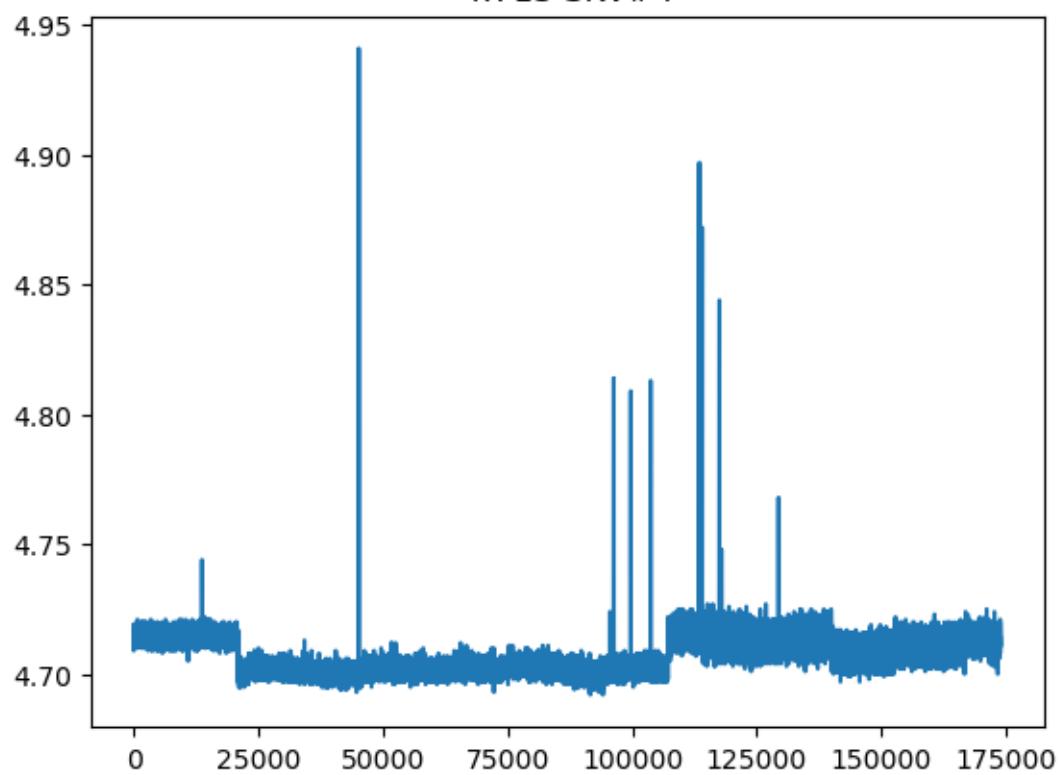
Sym aussen SKV#3



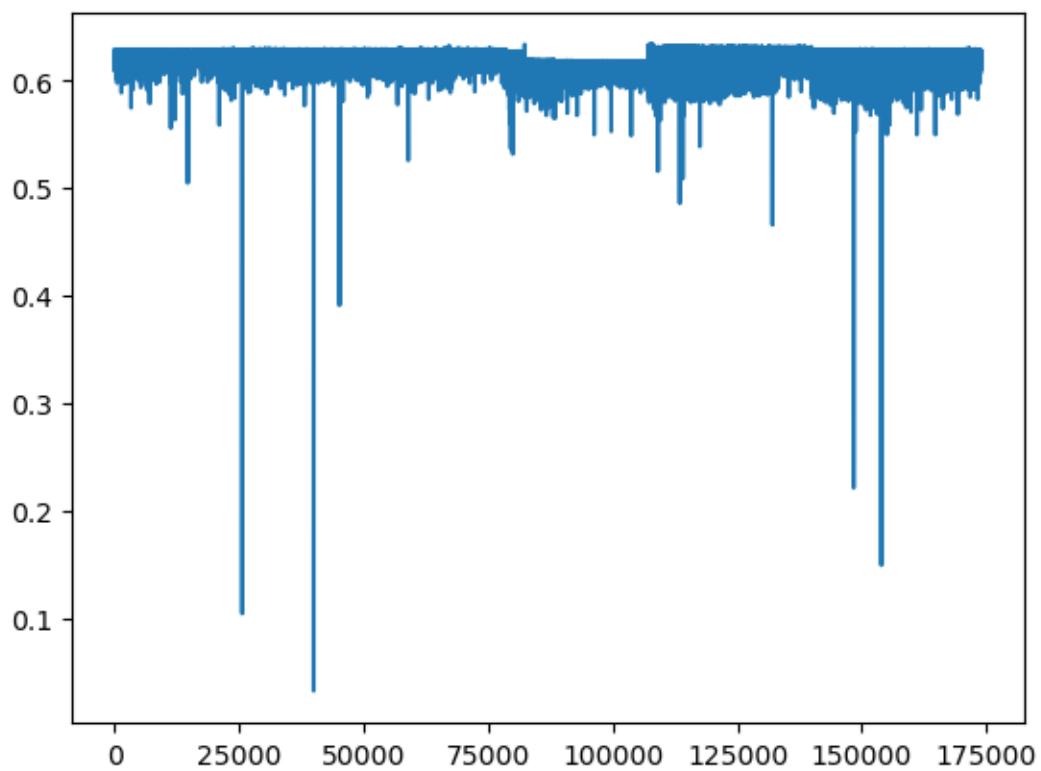
Licht-Einstich frei SKV#3



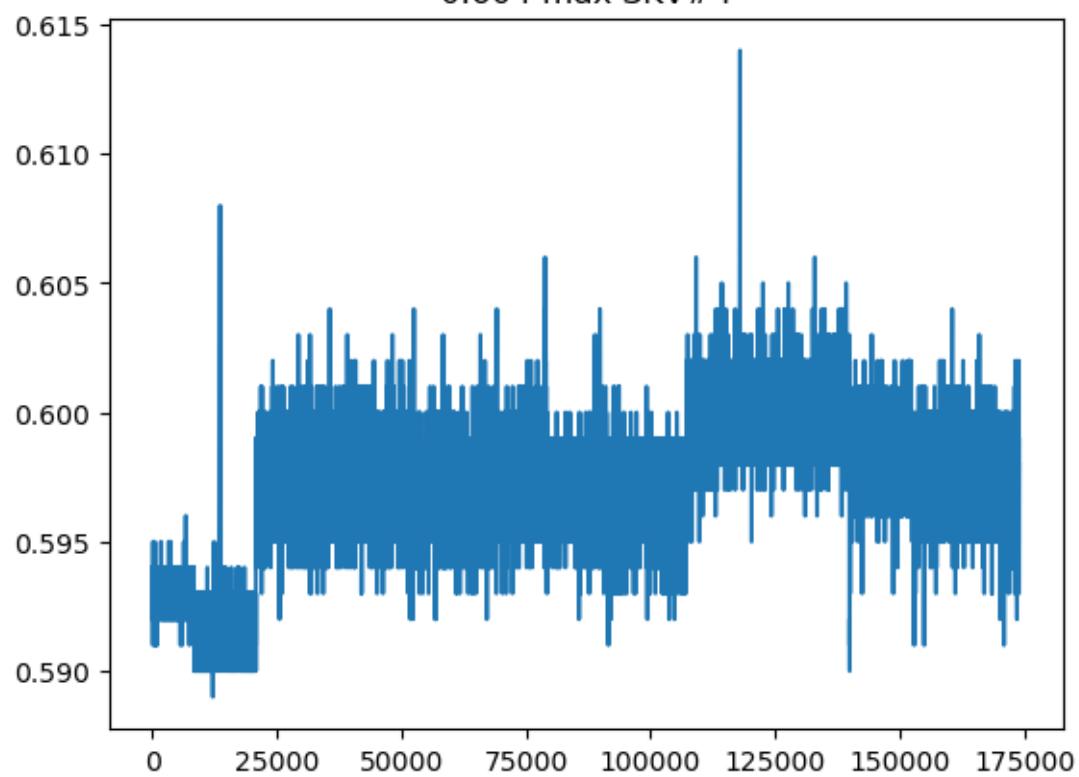
4.713 SKV#4



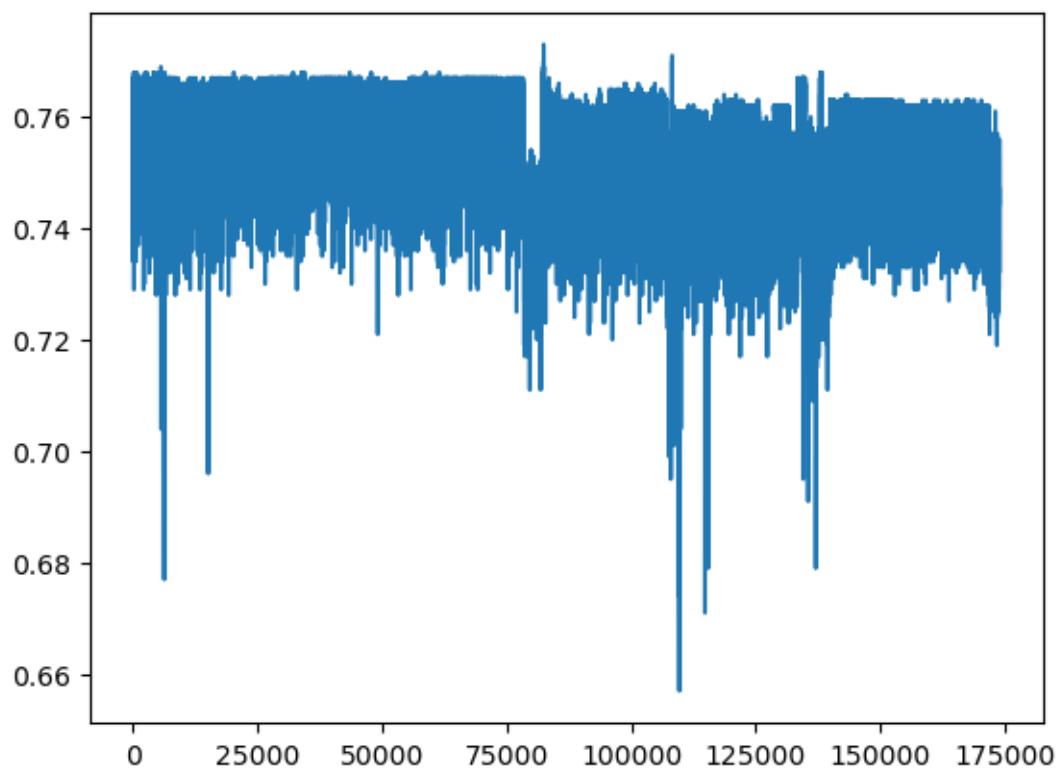
0.604 min SKV#4



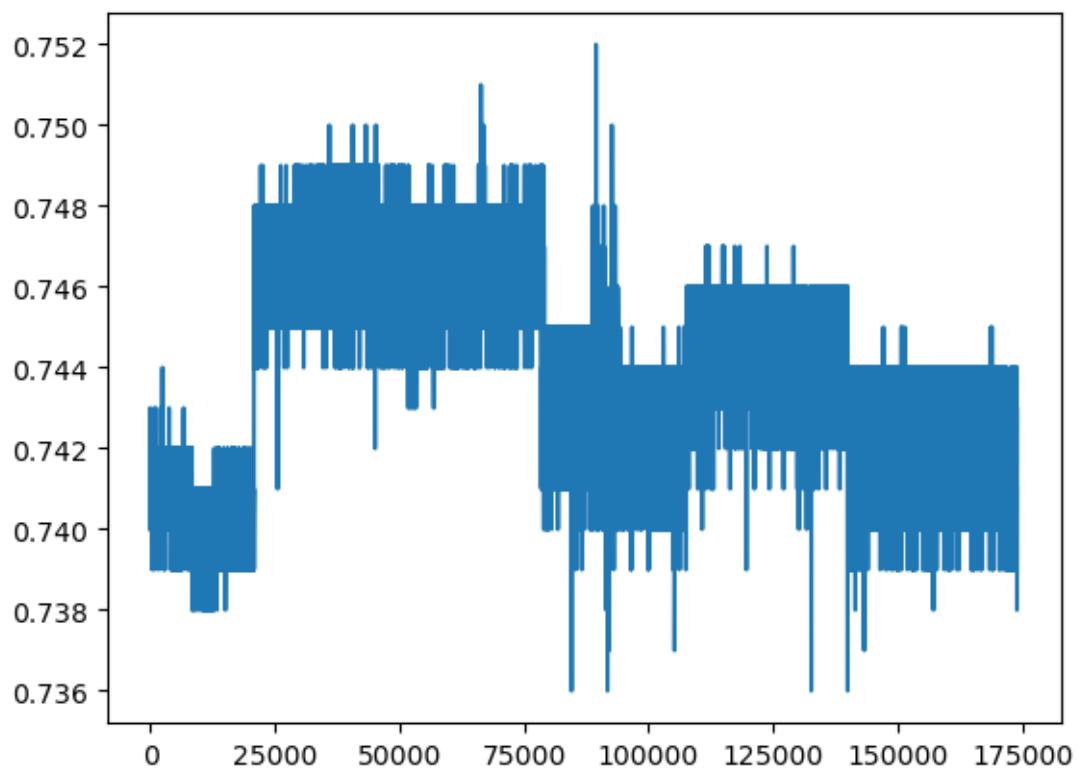
0.604 max SKV#4



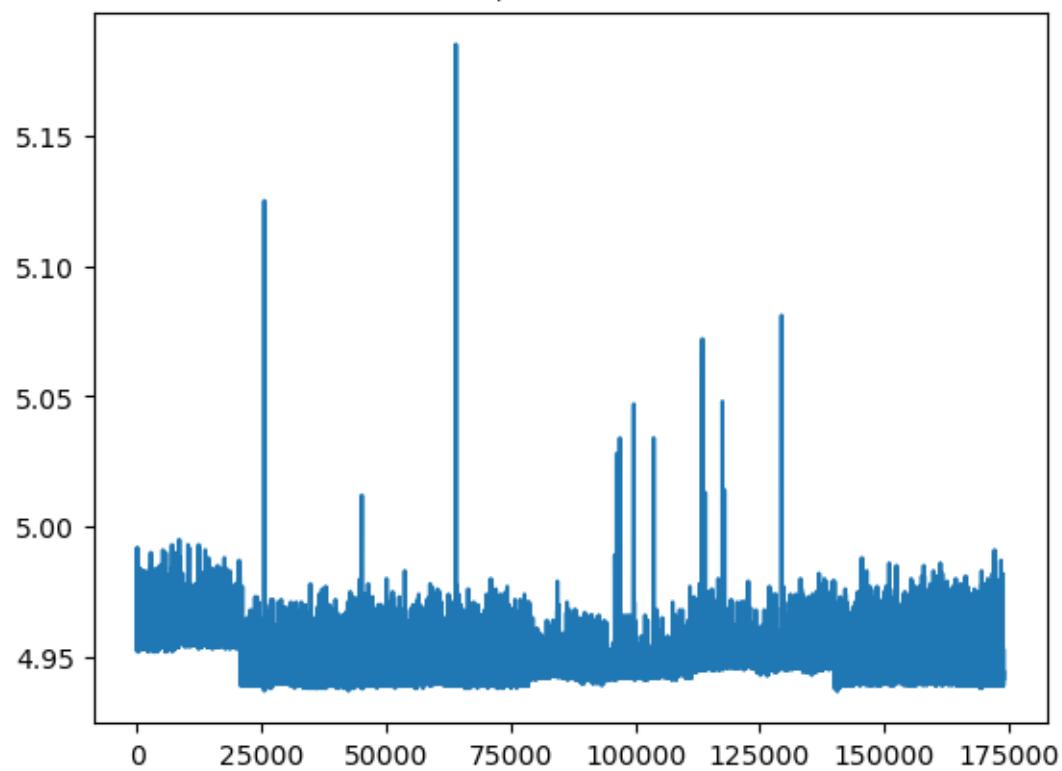
0.74 min SKV#4



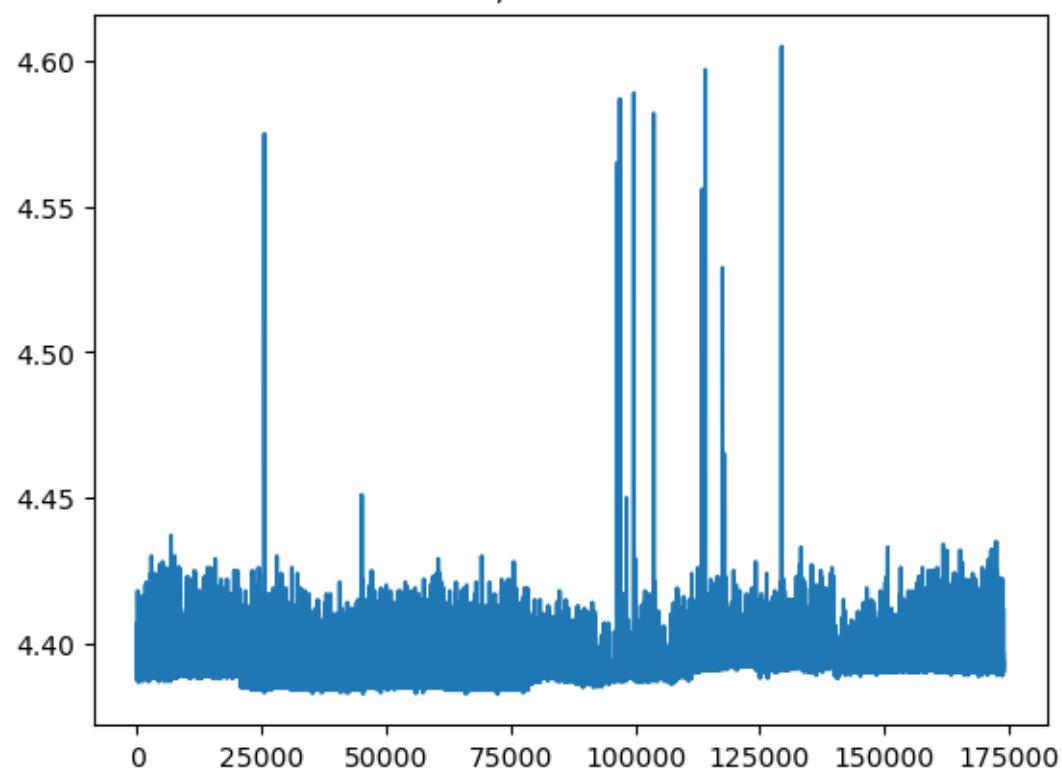
0.74 max SKV#4



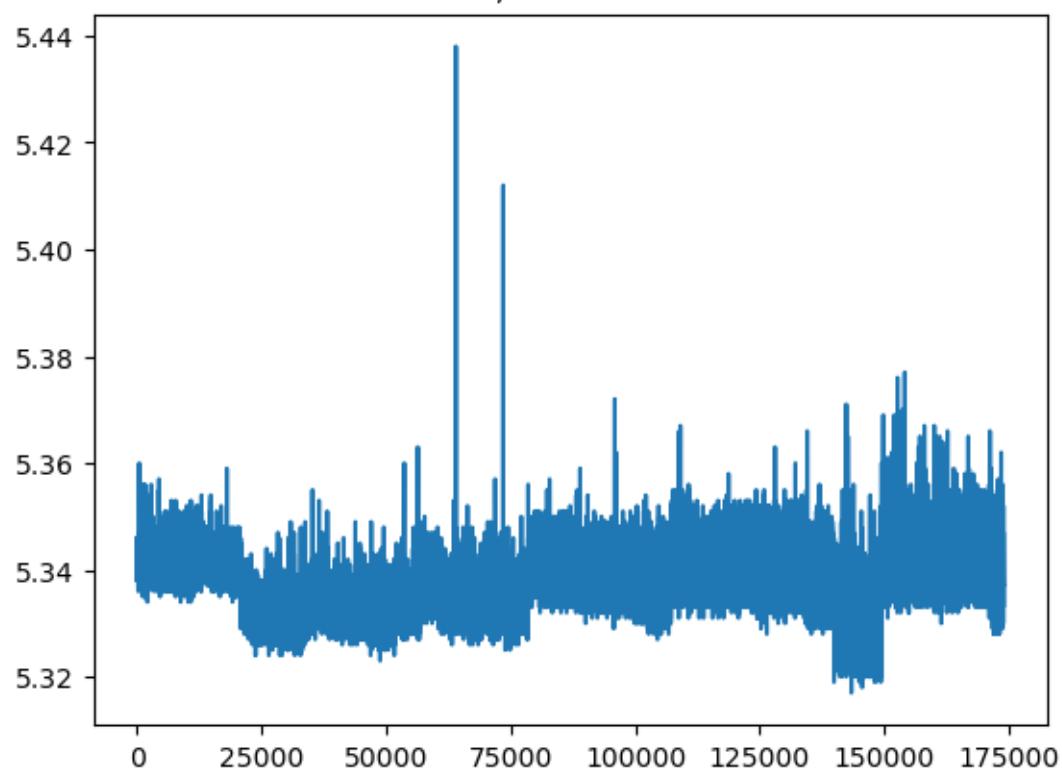
4,96 SKV#4



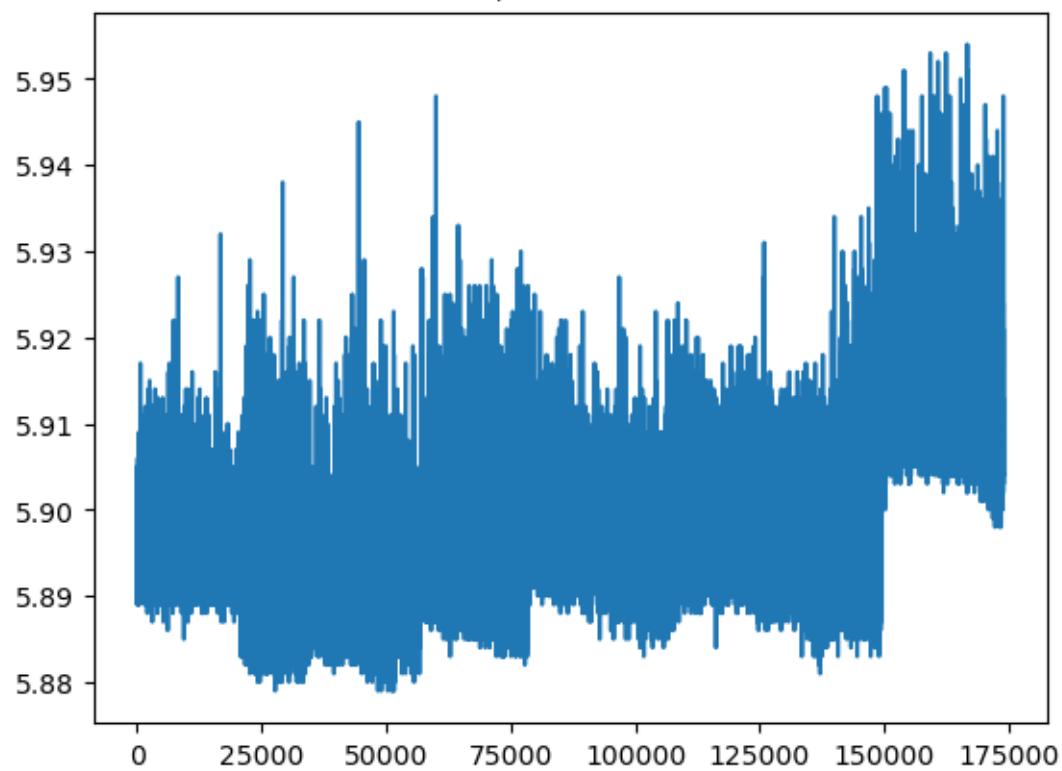
4,40 SKV#4



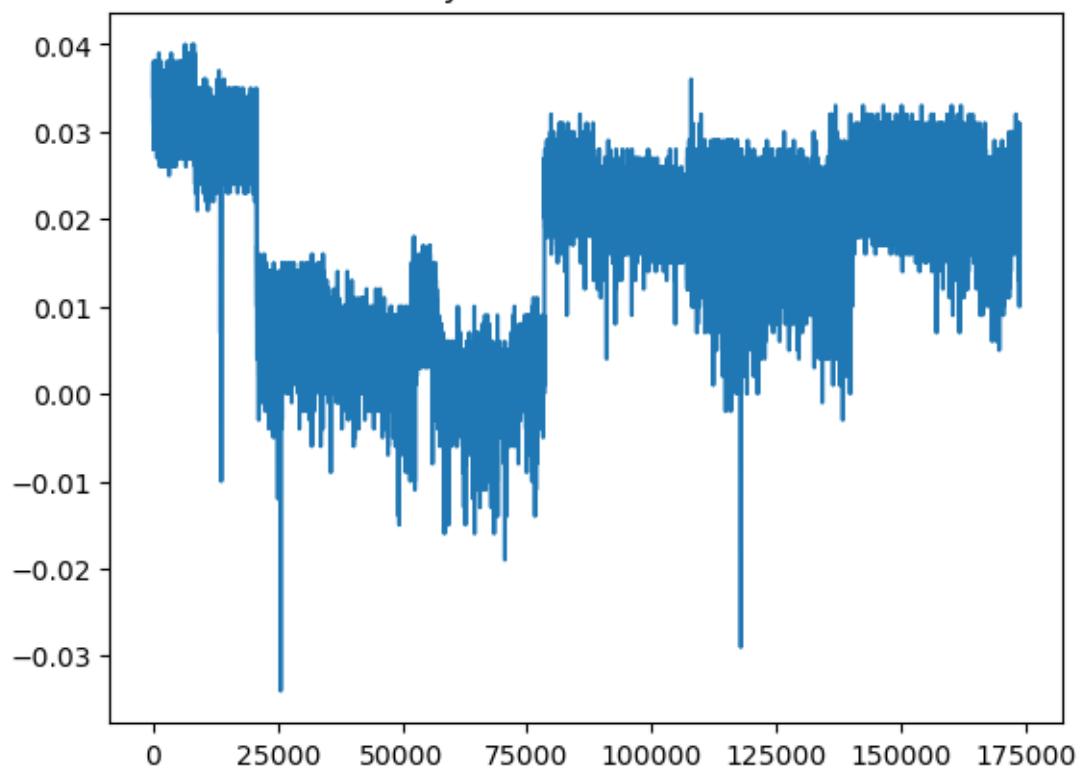
5,36 SKV#4



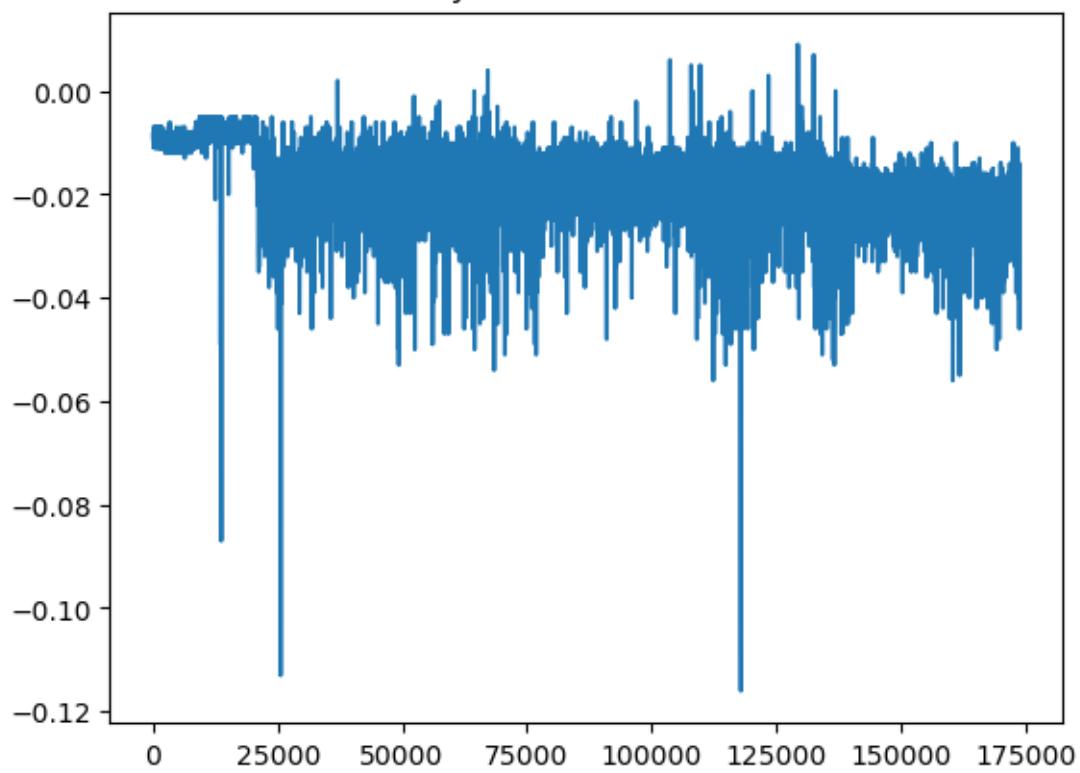
5,92 SKV#4



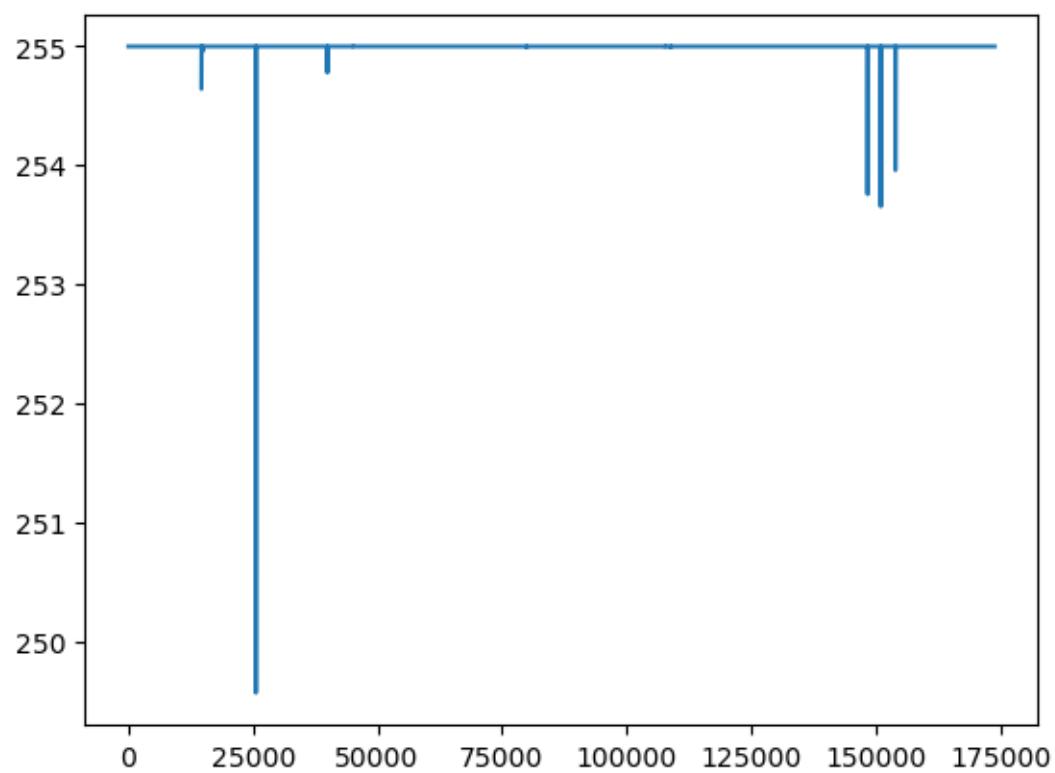
Sym Einstich SKV#4



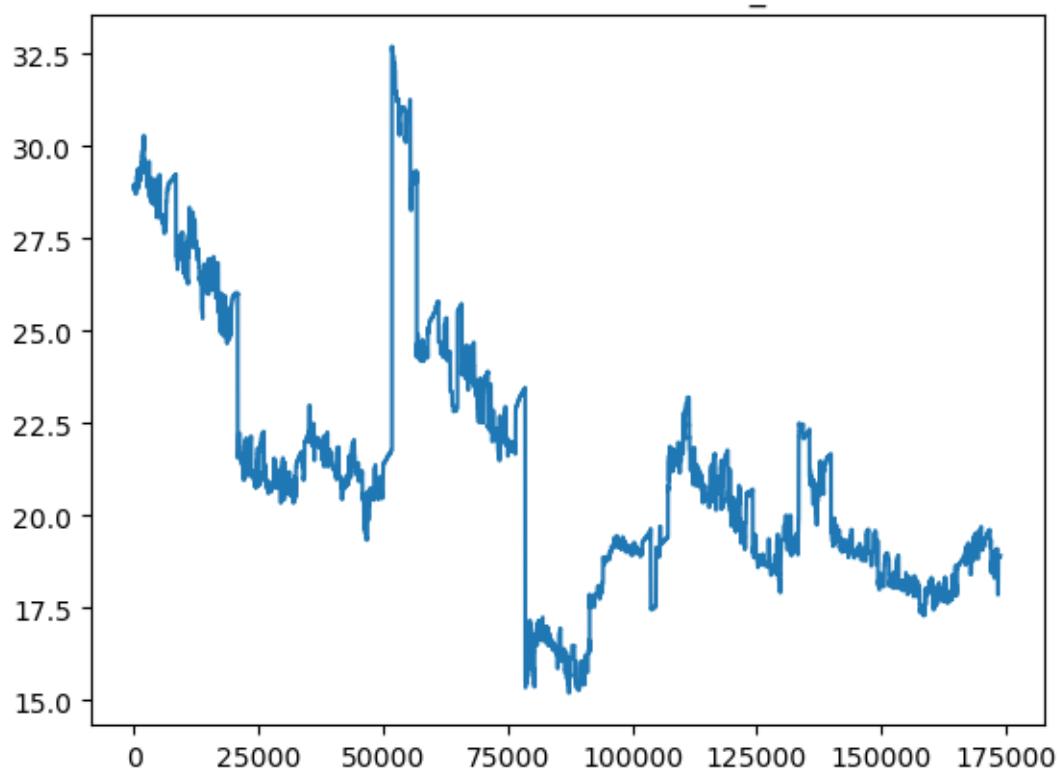
Sym aussen SKV#4



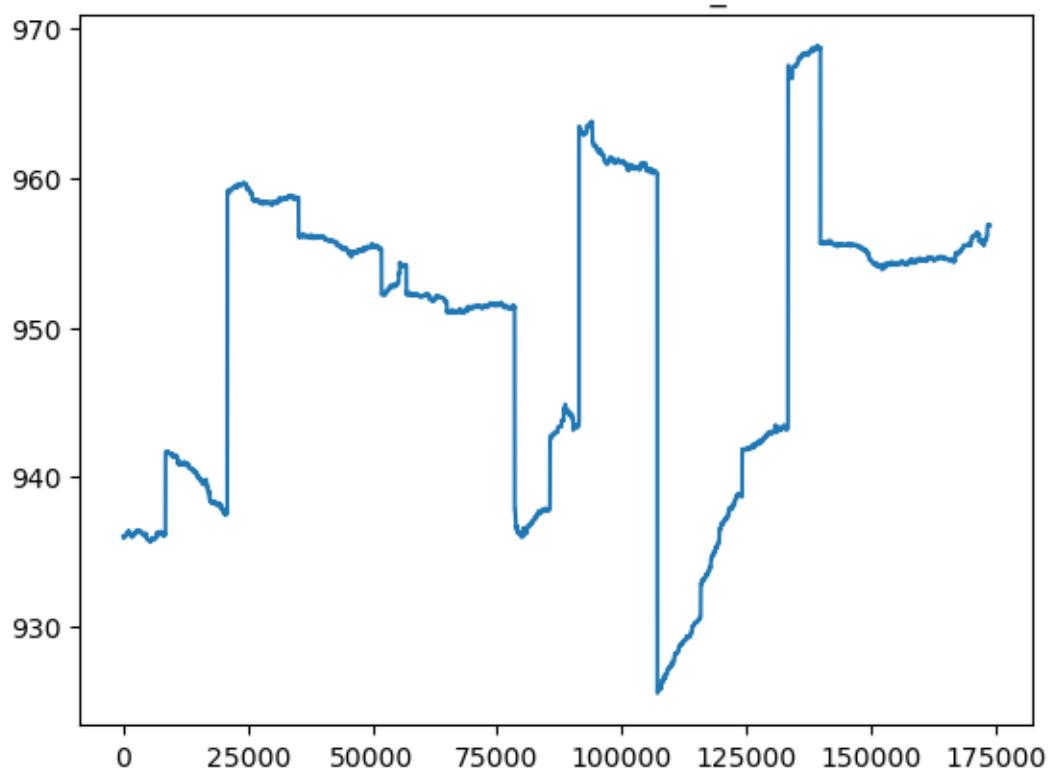
Licht-Einstich frei SKV#4

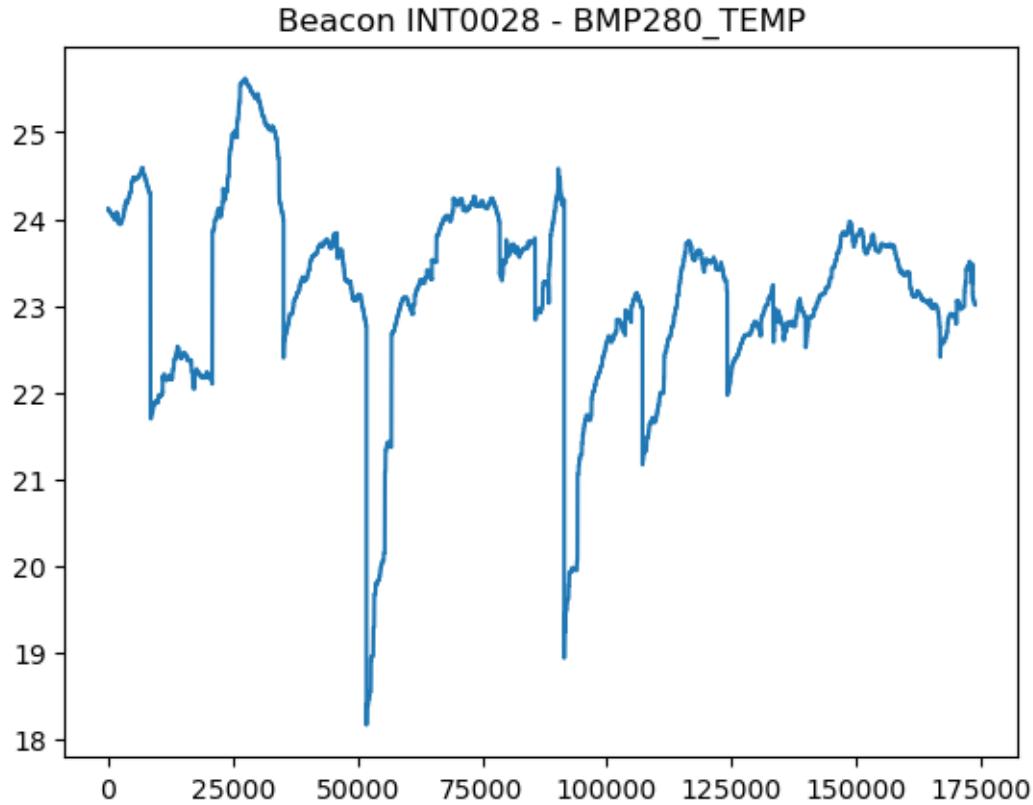


Beacon INT0028 - BME280_RH



Beacon INT0028 - BMP280_PRESS





```
[41]: for f in interestingColumns:
    na = X[f].isna()
    toDrop = X[na].index
    print(f"{f} dropped {toDrop}")
    X = X.drop(toDrop)

#Xna = X[na > 0].drop()
```

```
ST_CH1_P_F0 dropped Index([], dtype='int64')
ST_CH1_P_F1 dropped Index([], dtype='int64')
ST_CH1_P_F2 dropped Index([], dtype='int64')
ST_CH1_P_F3 dropped Index([], dtype='int64')
ST_CH1_P_F4 dropped Index([], dtype='int64')
ST_CH1_P_F5 dropped Index([], dtype='int64')
ST_CH1_P_F6 dropped Index([], dtype='int64')
ST_CH1_P_F7 dropped Index([], dtype='int64')
ST_CH1_P_F8 dropped Index([], dtype='int64')
ST_CH1_P_F9 dropped Index([], dtype='int64')
ST_CH1_P_F10 dropped Index([], dtype='int64')
ST_CH1_P_F11 dropped Index([], dtype='int64')
ST_CH1_P0_F0 dropped Index([], dtype='int64')
```

```
ST_CH1_P0_F1 dropped Index([], dtype='int64')
ST_CH1_P0_F2 dropped Index([], dtype='int64')
ST_CH1_P0_F3 dropped Index([], dtype='int64')
ST_CH1_P0_F4 dropped Index([], dtype='int64')
ST_CH1_P0_F5 dropped Index([], dtype='int64')
ST_CH1_P0_F6 dropped Index([], dtype='int64')
ST_CH1_P0_F7 dropped Index([], dtype='int64')
ST_CH1_P0_F8 dropped Index([], dtype='int64')
ST_CH1_P0_F9 dropped Index([], dtype='int64')
ST_CH1_P0_F10 dropped Index([], dtype='int64')
ST_CH1_P0_F11 dropped Index([], dtype='int64')
ST_CH1_P1_F0 dropped Index([], dtype='int64')
ST_CH1_P1_F1 dropped Index([], dtype='int64')
ST_CH1_P1_F2 dropped Index([], dtype='int64')
ST_CH1_P1_F3 dropped Index([], dtype='int64')
ST_CH1_P1_F4 dropped Index([], dtype='int64')
ST_CH1_P1_F5 dropped Index([], dtype='int64')
ST_CH1_P1_F6 dropped Index([], dtype='int64')
ST_CH1_P1_F7 dropped Index([], dtype='int64')
ST_CH1_P1_F8 dropped Index([], dtype='int64')
ST_CH1_P1_F9 dropped Index([], dtype='int64')
ST_CH1_P1_F10 dropped Index([], dtype='int64')
ST_CH1_P1_F11 dropped Index([], dtype='int64')
ST_CH1_P2_F0 dropped Index([], dtype='int64')
ST_CH1_P2_F1 dropped Index([], dtype='int64')
ST_CH1_P2_F2 dropped Index([], dtype='int64')
ST_CH1_P2_F3 dropped Index([], dtype='int64')
ST_CH1_P2_F4 dropped Index([], dtype='int64')
ST_CH1_P2_F5 dropped Index([], dtype='int64')
ST_CH1_P2_F6 dropped Index([], dtype='int64')
ST_CH1_P2_F7 dropped Index([], dtype='int64')
ST_CH1_P2_F8 dropped Index([], dtype='int64')
ST_CH1_P2_F9 dropped Index([], dtype='int64')
ST_CH1_P2_F10 dropped Index([], dtype='int64')
ST_CH1_P2_F11 dropped Index([], dtype='int64')
ST_CH2_P_F0 dropped Index([], dtype='int64')
ST_CH2_P_F1 dropped Index([], dtype='int64')
ST_CH2_P_F2 dropped Index([], dtype='int64')
ST_CH2_P_F3 dropped Index([], dtype='int64')
ST_CH2_P_F4 dropped Index([], dtype='int64')
ST_CH2_P_F5 dropped Index([], dtype='int64')
ST_CH2_P_F6 dropped Index([], dtype='int64')
ST_CH2_P_F7 dropped Index([], dtype='int64')
ST_CH2_P_F8 dropped Index([], dtype='int64')
ST_CH2_P_F9 dropped Index([], dtype='int64')
ST_CH2_P_F10 dropped Index([], dtype='int64')
ST_CH2_P_F11 dropped Index([], dtype='int64')
ST_CH2_P0_F0 dropped Index([], dtype='int64')
```

```
ST_CH2_P0_F1 dropped Index([], dtype='int64')
ST_CH2_P0_F2 dropped Index([], dtype='int64')
ST_CH2_P0_F3 dropped Index([], dtype='int64')
ST_CH2_P0_F4 dropped Index([], dtype='int64')
ST_CH2_P0_F5 dropped Index([], dtype='int64')
ST_CH2_P0_F6 dropped Index([], dtype='int64')
ST_CH2_P0_F7 dropped Index([], dtype='int64')
ST_CH2_P0_F8 dropped Index([], dtype='int64')
ST_CH2_P0_F9 dropped Index([], dtype='int64')
ST_CH2_P0_F10 dropped Index([], dtype='int64')
ST_CH2_P0_F11 dropped Index([], dtype='int64')
ST_CH2_P1_F0 dropped Index([], dtype='int64')
ST_CH2_P1_F1 dropped Index([], dtype='int64')
ST_CH2_P1_F2 dropped Index([], dtype='int64')
ST_CH2_P1_F3 dropped Index([], dtype='int64')
ST_CH2_P1_F4 dropped Index([], dtype='int64')
ST_CH2_P1_F5 dropped Index([], dtype='int64')
ST_CH2_P1_F6 dropped Index([], dtype='int64')
ST_CH2_P1_F7 dropped Index([], dtype='int64')
ST_CH2_P1_F8 dropped Index([], dtype='int64')
ST_CH2_P1_F9 dropped Index([], dtype='int64')
ST_CH2_P1_F10 dropped Index([], dtype='int64')
ST_CH2_P1_F11 dropped Index([], dtype='int64')
ST_CH2_P2_F0 dropped Index([], dtype='int64')
ST_CH2_P2_F1 dropped Index([], dtype='int64')
ST_CH2_P2_F2 dropped Index([], dtype='int64')
ST_CH2_P2_F3 dropped Index([], dtype='int64')
ST_CH2_P2_F4 dropped Index([], dtype='int64')
ST_CH2_P2_F5 dropped Index([], dtype='int64')
ST_CH2_P2_F6 dropped Index([], dtype='int64')
ST_CH2_P2_F7 dropped Index([], dtype='int64')
ST_CH2_P2_F8 dropped Index([], dtype='int64')
ST_CH2_P2_F9 dropped Index([], dtype='int64')
ST_CH2_P2_F10 dropped Index([], dtype='int64')
ST_CH2_P2_F11 dropped Index([], dtype='int64')
4.713 SKV#1 dropped Index([], dtype='int64')
0.604 min SKV#1 dropped Index([67529], dtype='int64')
0.604 max SKV#1 dropped Index([], dtype='int64')
0.74 min SKV#1 dropped Index([], dtype='int64')
0.74 max SKV#1 dropped Index([], dtype='int64')
4.96 SKV#1 dropped Index([], dtype='int64')
4.40 SKV#1 dropped Index([], dtype='int64')
5.36 SKV#1 dropped Index([], dtype='int64')
5.92 SKV#1 dropped Index([], dtype='int64')
Sym aussen SKV#1 dropped Index([], dtype='int64')
Sym Einstich SKV#1 dropped Index([], dtype='int64')
Licht-Einstich frei SKV#1 dropped Index([], dtype='int64')
4.713 SKV#2 dropped Index([15807, 15808, 15809, 15810, 15811, 15812, 15813,
```

```

15900, 16556, 17224,
    18655, 19591, 19649, 20690, 20694, 82760],
      dtype='int64')
0.604 min SKV#2 dropped Index([], dtype='int64')
0.604 max SKV#2 dropped Index([], dtype='int64')
0.74 min SKV#2 dropped Index([], dtype='int64')
0.74 max SKV#2 dropped Index([], dtype='int64')
4,96 SKV#2 dropped Index([], dtype='int64')
4,40 SKV#2 dropped Index([], dtype='int64')
5,36 SKV#2 dropped Index([], dtype='int64')
5,92 SKV#2 dropped Index([], dtype='int64')
Sym Einstich SKV#2 dropped Index([], dtype='int64')
Sym aussen SKV#2 dropped Index([], dtype='int64')
Licht-Einstich frei SKV#2 dropped Index([], dtype='int64')
4.713 SKV#3 dropped Index([55958, 55959, 55960, 55961, 55962, 55963, 55964,
55965, 55966, 55967,
    55968, 55969, 55970],
      dtype='int64')
0.604 min SKV#3 dropped Index([], dtype='int64')
0.604 max SKV#3 dropped Index([], dtype='int64')
0.74 min SKV#3 dropped Index([], dtype='int64')
0.74 max SKV#3 dropped Index([], dtype='int64')
4,96 SKV#3 dropped Index([], dtype='int64')
4,40 SKV#3 dropped Index([], dtype='int64')
5,36 SKV#3 dropped Index([], dtype='int64')
5,92 SKV#3 dropped Index([], dtype='int64')
Sym Einstich SKV#3 dropped Index([], dtype='int64')
Sym aussen SKV#3 dropped Index([], dtype='int64')
Licht-Einstich frei SKV#3 dropped Index([], dtype='int64')
4.713 SKV#4 dropped Index([25593], dtype='int64')
0.604 min SKV#4 dropped Index([], dtype='int64')
0.604 max SKV#4 dropped Index([], dtype='int64')
0.74 min SKV#4 dropped Index([], dtype='int64')
0.74 max SKV#4 dropped Index([], dtype='int64')
4,96 SKV#4 dropped Index([], dtype='int64')
4,40 SKV#4 dropped Index([35250], dtype='int64')
5,36 SKV#4 dropped Index([], dtype='int64')
5,92 SKV#4 dropped Index([], dtype='int64')
Sym Einstich SKV#4 dropped Index([], dtype='int64')
Sym aussen SKV#4 dropped Index([], dtype='int64')
Licht-Einstich frei SKV#4 dropped Index([], dtype='int64')
Beacon INT0028 - BME280_RH dropped Index([], dtype='int64')
Beacon INT0028 - BMP280_PRESS dropped Index([], dtype='int64')
Beacon INT0028 - BMP280_TEMP dropped Index([], dtype='int64')

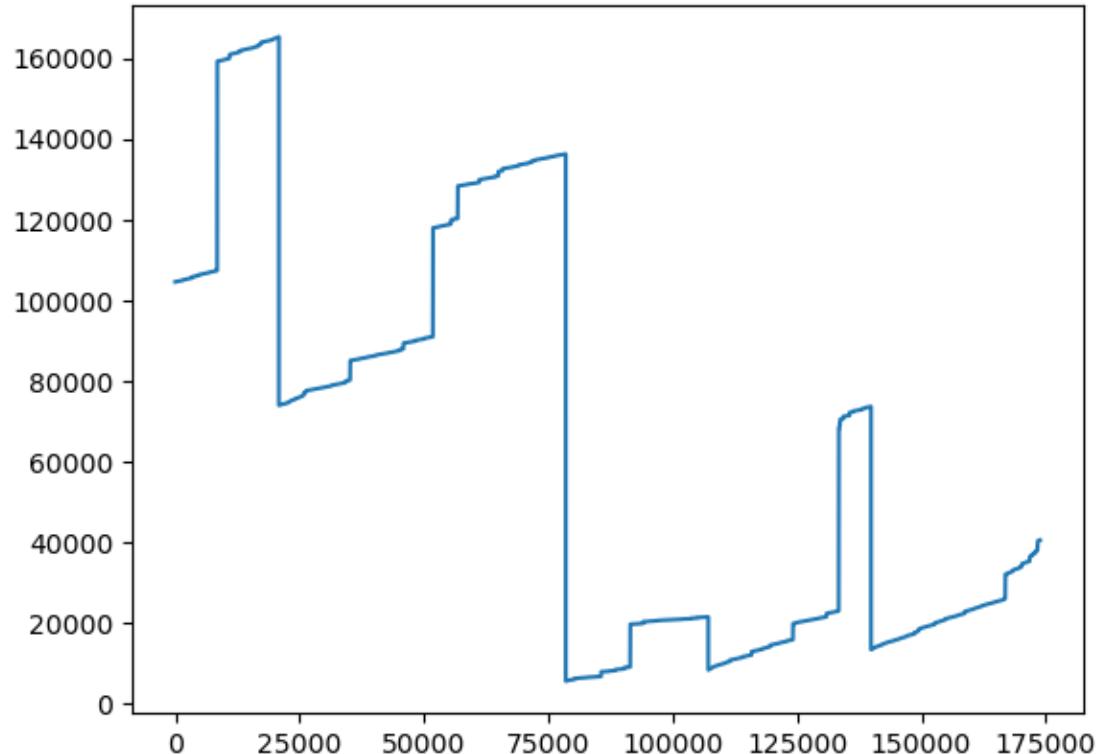
```

[42]: X.isna().sum()

```
[42]: timestamp_skv          0
timediff_skv            7
timestamp_sensor         0
timediff_sensor          7
SynchroDiff              0
..
Beacon INT0028 - BMP280_PRESS 0
timestamp.2              0
Beacon INT0028 - BMP280_TEMP 0
pieces                   0
tool io                  0
Length: 165, dtype: int64
```

```
[43]: plt.plot(X.index,X.pieces)
```

```
[43]: [matplotlib.lines.Line2D at 0x7f3c5192c2e0]
```



```
[ ]:
```