Question	Report deliverable
Task 1	Do not report
Task 2	Report training loss
Task 2	Report test loss
Task 2	Paragraph with conclusions drawn from the fact that this neural network does *not* work
Task 3	Do not report
Task 4	Report test loss
Task 4	Paragraph with conclusions drawn from the fact that this neural network *does* work

Task 2: Training Loss and Test Loss
epoch 1 / 30. Loss 0.003330809762701392
epoch 2 / 30. Loss 0.003330756211653352
epoch 3 / 30. Loss 0.0033307024277746677
epoch 4 / 30. Loss 0.0033306488767266273
epoch 5 / 30. Loss 0.0033305955585092306
epoch 6 / 30. Loss 0.003330541541799903
epoch 7 / 30. Loss 0.003330487757921219
epoch 8 / 30. Loss 0.003330434672534466
epoch 9 / 30. Loss 0.003330380655825138
epoch 10 / 30. Loss 0.0033303273376077414
epoch 11 / 30. Loss 0.003330273786559701
epoch 12 / 30. Loss 0.0033302204683423042
epoch 13 / 30. Loss 0.003330167382955551
epoch 14 / 30. Loss 0.00333011313341558
epoch 15 / 30. Loss 0.0033300595823675394
epoch 16 / 30. Loss 0.0033300069626420736
epoch 17 / 30. Loss 0.003329952945932746
epoch 18 / 30. Loss 0.0033298993948847055
epoch 19 / 30. Loss 0.003329846076667309
epoch 20 / 30. Loss 0.003329792758449912
epoch 21 / 30. Loss 0.0033297392074018717
epoch 22 / 30. Loss 0.0033296861220151186
epoch 23 / 30. Loss 0.003329632570967078

epoch 24 / 30. Loss 0.003329578787088394
epoch 25 / 30. Loss 0.003329525701701641
epoch 26 / 30. Loss 0.0033294723834842443
epoch 27 / 30. Loss 0.003329418832436204
epoch 28 / 30. Loss 0.0033293655142188072
epoch 29 / 30. Loss 0.0033293121960014105
epoch 30 / 30. Loss 0.00332925864495337

Mean squared error evolution
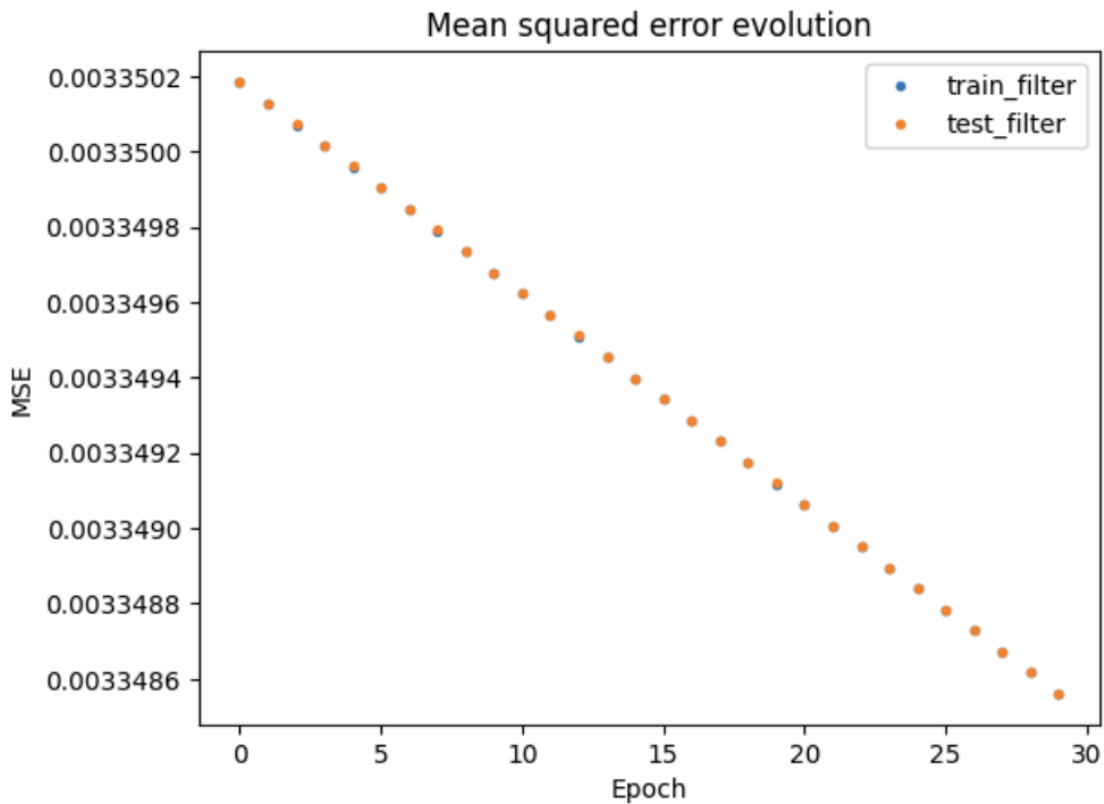
Conclusions:

The neural network does not work, as the audio files have not been cleaned. This is because we are processing data with a high N value (N = 64,000). Since the data is high dimensional and complex, the learning parametrization of the neural network failed to work. Based on this, we conclude that we need to find a more effective parametrization that leverages the signal structure.

Task 4: Test and Training Loss
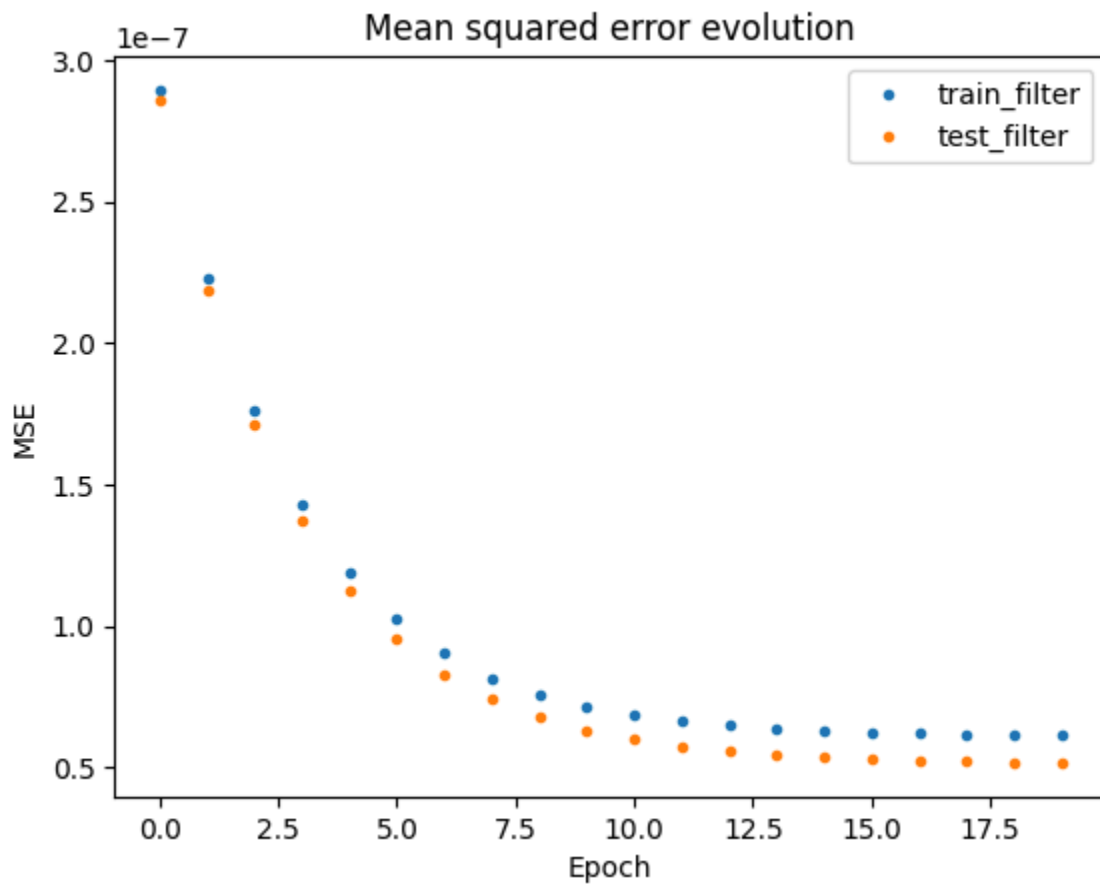
Conclusions:
The neural network works well and effectively cleans the audio file. This is because we use a convolutional filter (with K=81) taps to remove background noise. A convolutional filter considers the signal structure of the audio file by considering how audio readings look around each single audio reading, thus efficiently and effectively cleaning the audio. We can also see that the MSE for this result is significantly lower than our previous result (all the values are scaled by a 10^-7).