Task 2 | 1170685

Commands

At first, I used those 2 commands to compress the video, and get the new video data (QP, Size, Rate and PSNR).

```
ffmpeg -i Original_Video.mp4 -qp 8 qp_8.mp4
```

```
ffmpeg -i qp_8.mp4 -i Original_Video.mp4 -filter_complex "psnr" -f null /dev/null
```

Because for the first 2 videos this command didn't work:

```
ffmpeg -i Original_Video.mp4 -qp 8 qp_8.mp4 -psnr
```

but, for the third video for some reason it started working so I used it instead of the first 2 commands.

Getting the Data

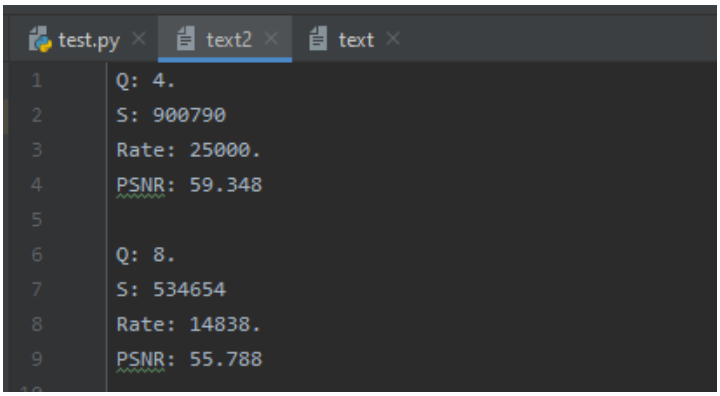
To make getting the data easier, I added

```
 &>> data.txt
```

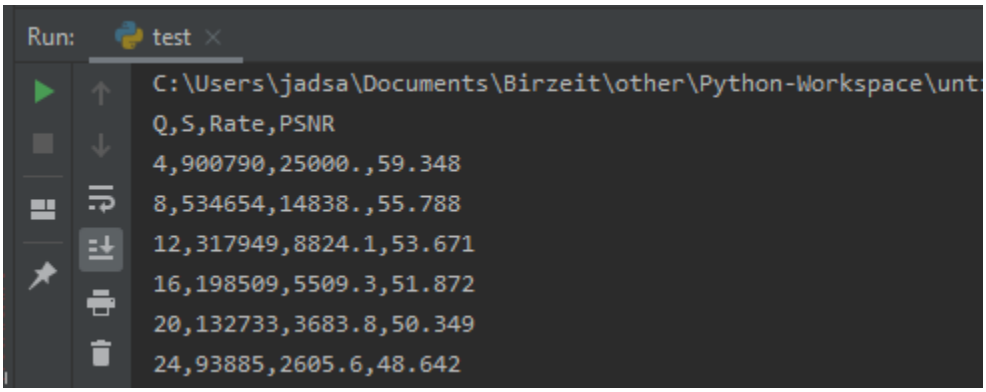
To the end of the commands to save the result of the commands into a .txt file so that I can get the data for each video after finishing testing the compression for different QP values.

To get the important data from the results of each command, I made 2 Python programs to save the (QP, Size, Rate and PSNR) data of each video.

The first Python program transformed the results into easy-to-read data like below.



Then the second program turned this data into a .csv format looking like below.



Then when the .csv file is opened with Excel we get a table looking like below.

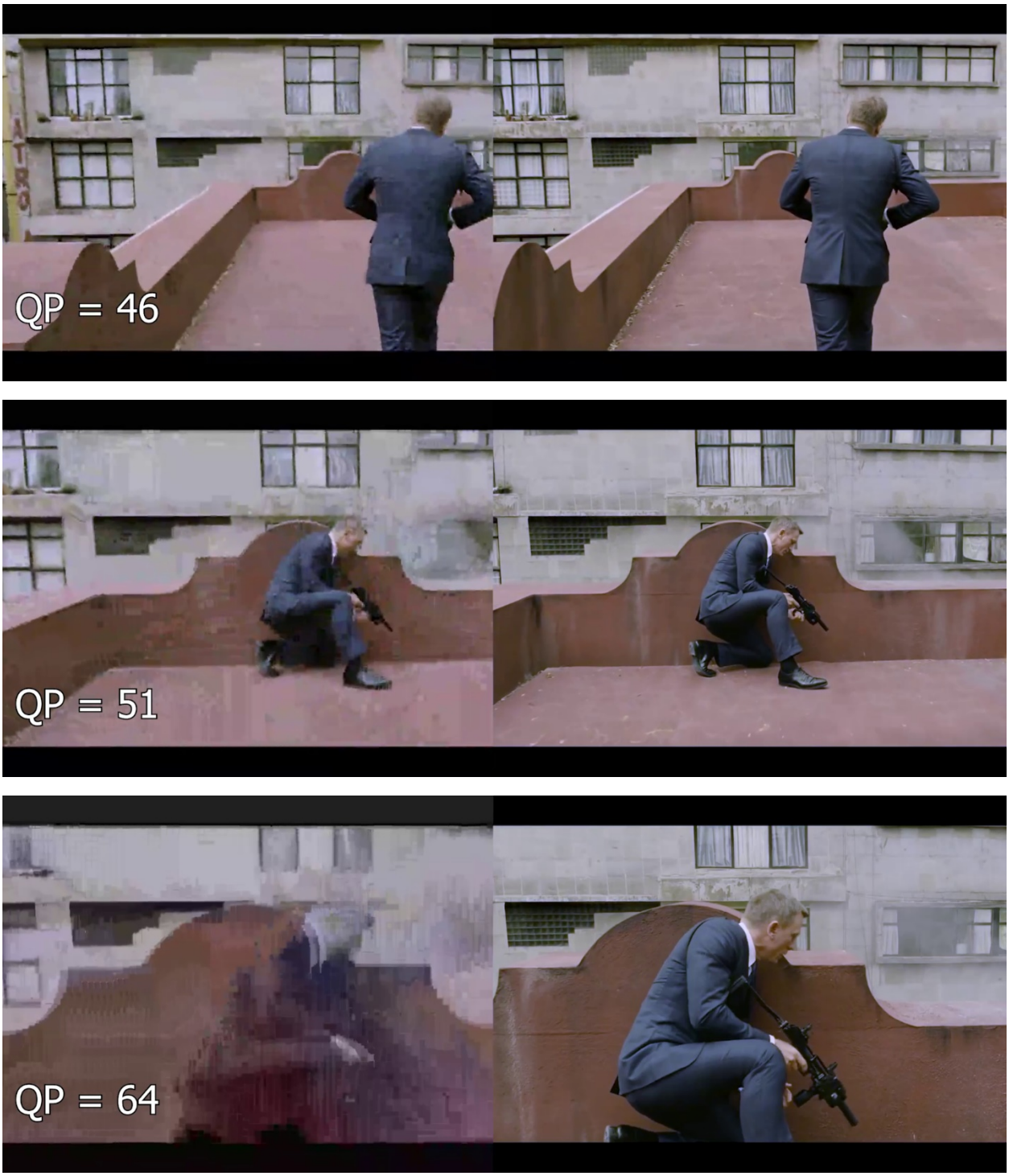
	A	B	C	D
1	Q	S	Rate	PSNR
2	4	900790	25000	59.348
3	8	534654	14838	55.788
4	12	317949	8824.1	53.671
5	16	198509	5509.3	51.872
6	20	132733	3683.8	50.349
7	24	93885	2605.6	48.642
8	28	67115	1862.6	46.299
9	32	47333	1313.6	43.535
10	36	32878	912.45	40.843
11	40	22915	635.95	38.179
12	44	16140	447.92	35.389
13	48	11443	317.58	32.506
14	52	8512	236.21	29.626

Now after getting the data, we can plot different diagrams.

Comparisons

Below are some pictures showing the quality difference of using different QP values for the ffmpeg compression. The video comparisons can be found in this link: https://drive.google.com/drive/folders/1ZTpNsyhWo1QbxjQg0e4oHkxPGXFOFQoc

This is a prime example why its recommended to use QP with values from 0-51.




Original Video


QP : 27


QP : 24

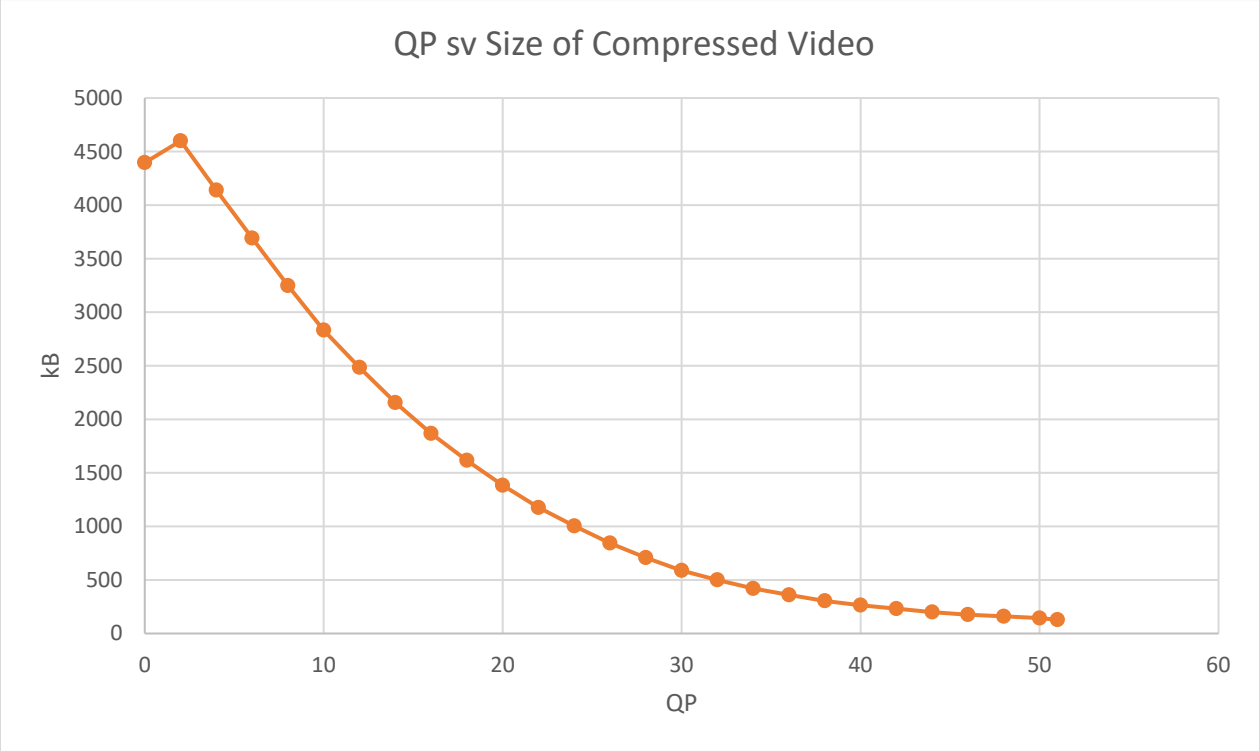

QP : 51

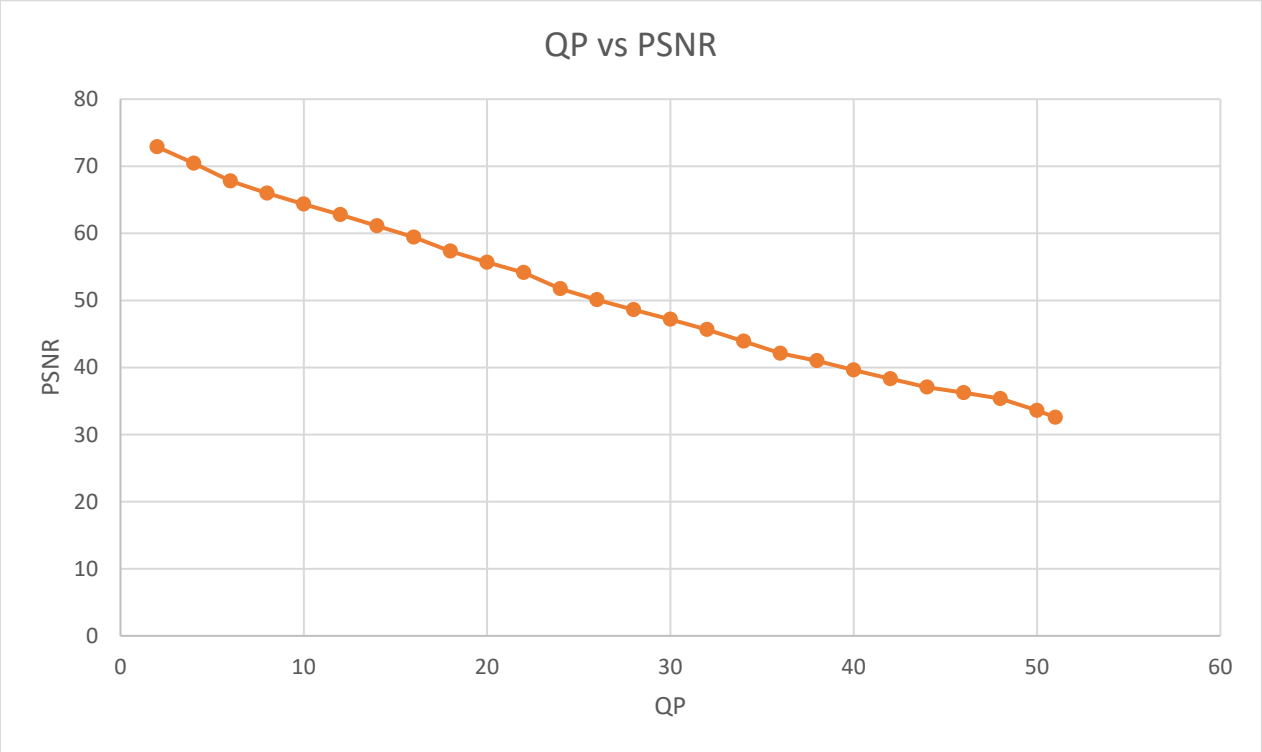
:)

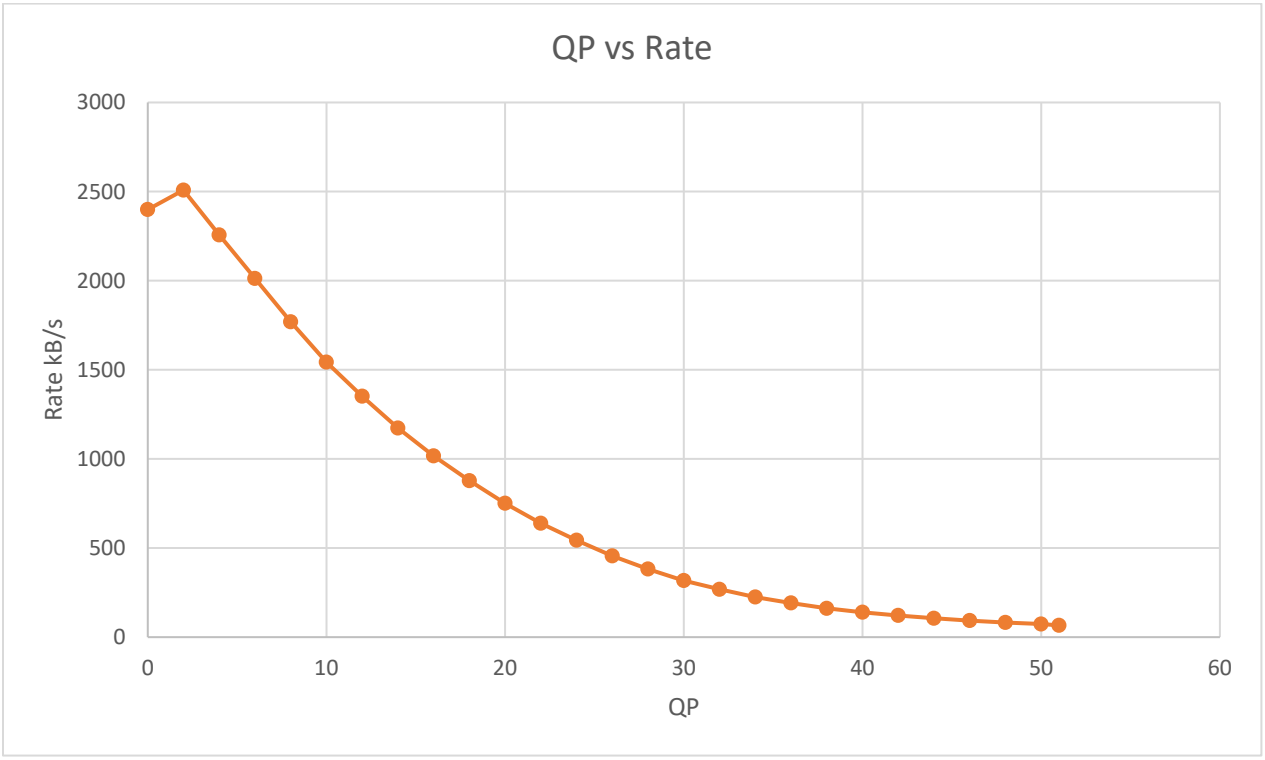

QP = 52
QP = 44
QP = 36
QP = 28
QP = 20
QP = 12
QP = 4
QP = 0
QP = 8
QP = 16
QP = 24
QP = 32
QP = 40
QP = 48

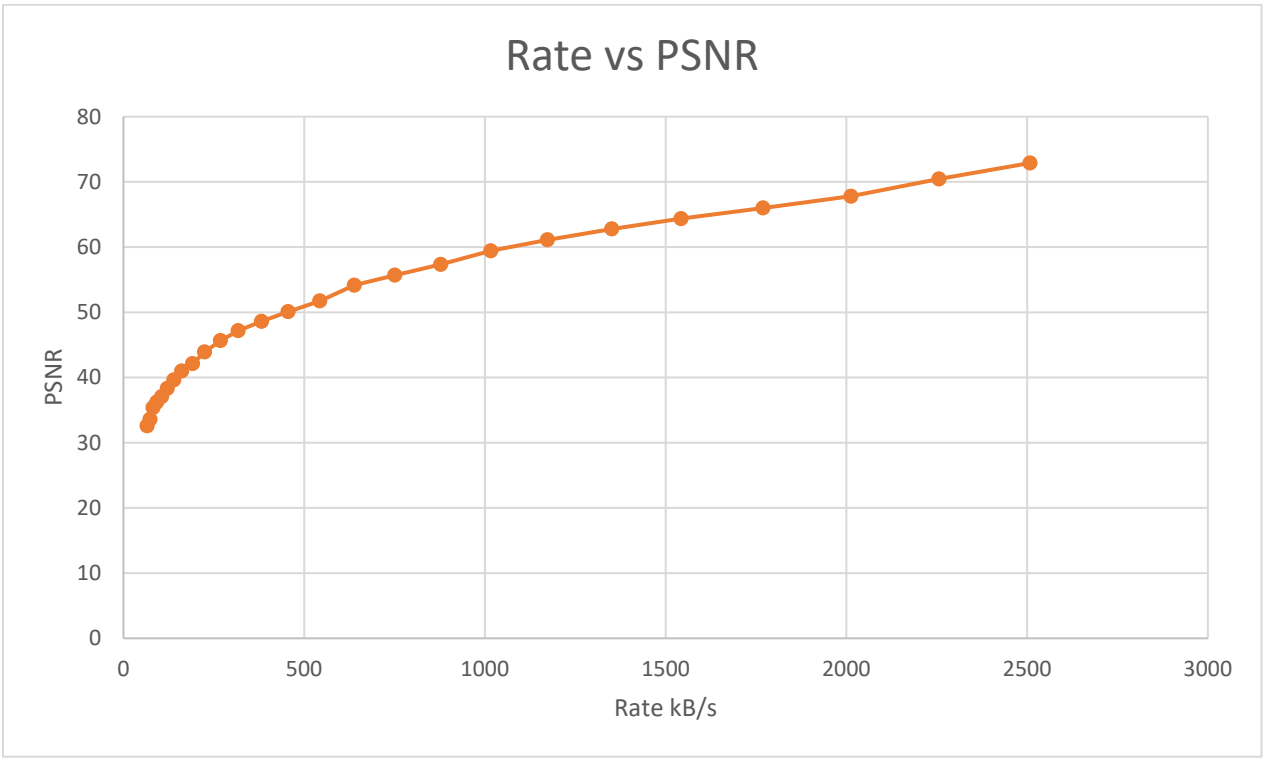

QP = 52
QP = 44
QP = 36
QP = 28
QP = 20
QP = 12
QP = 4
QP = 0
QP = 8
QP = 16
QP = 24
QP = 32
QP = 40
QP = 48

First Video: 15 Seconds

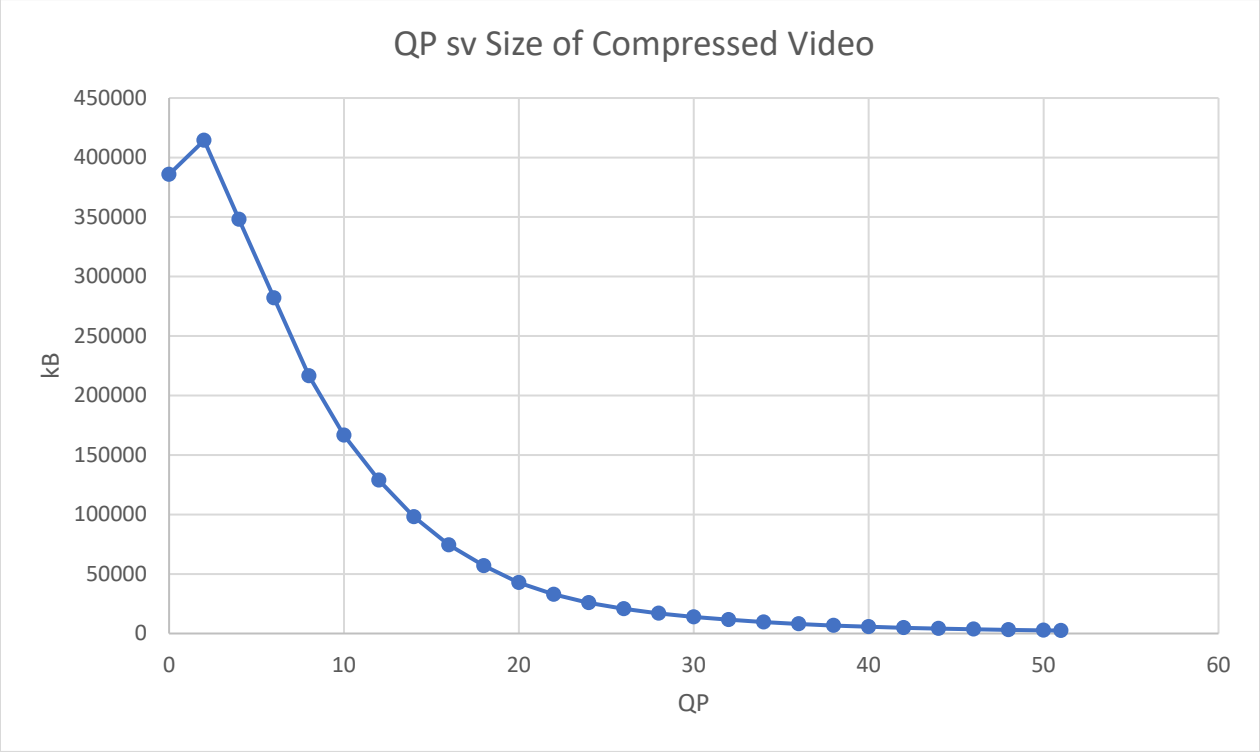


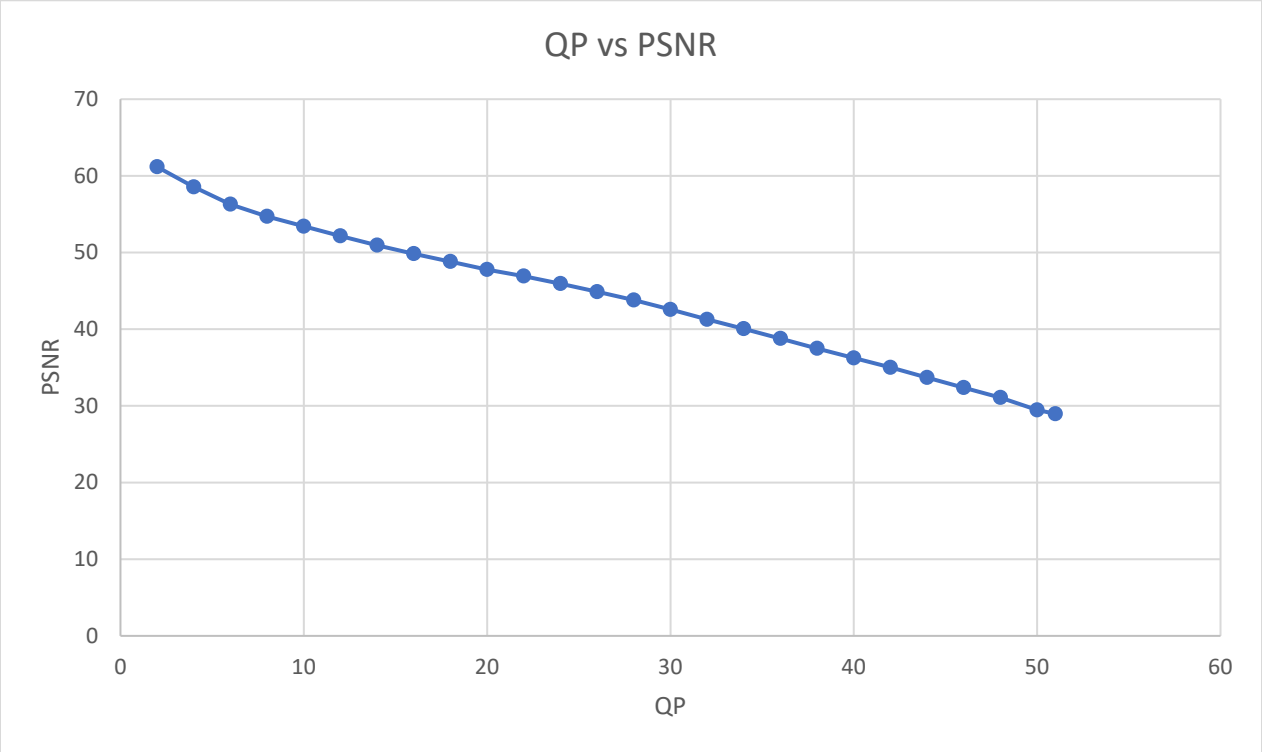


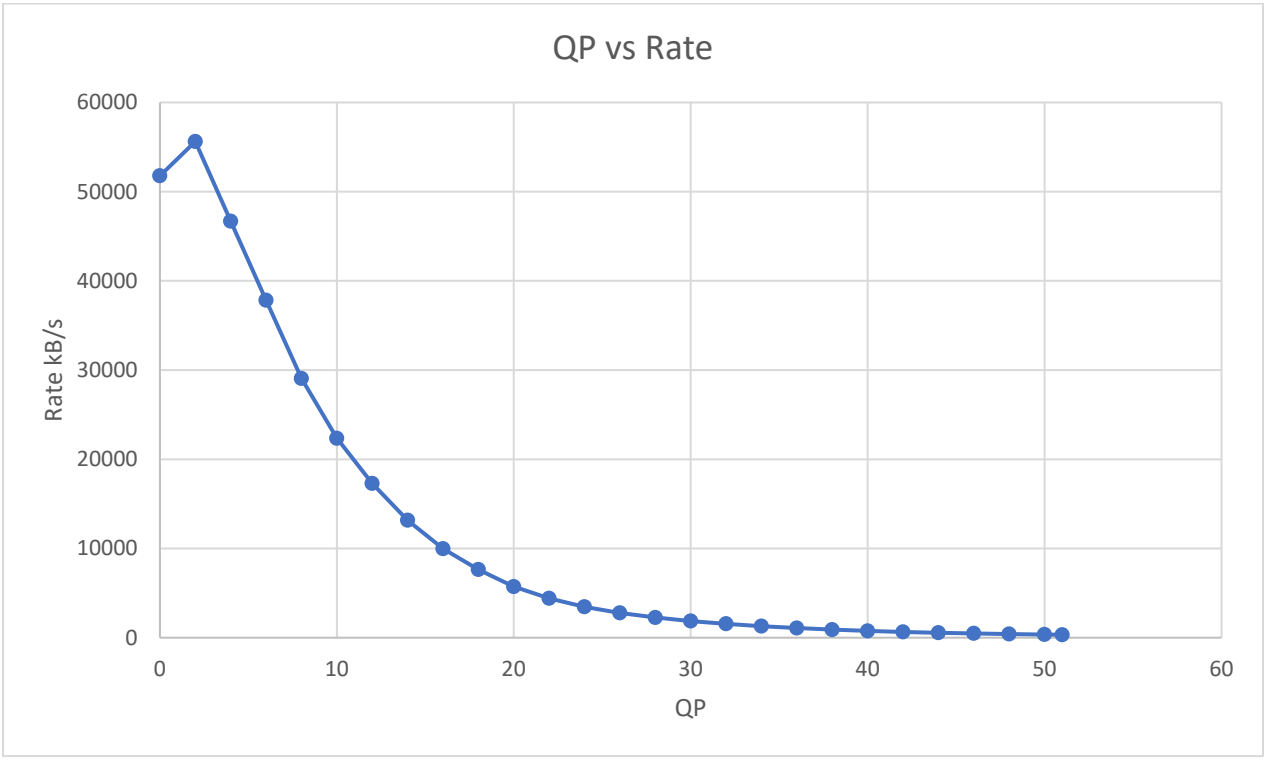

QP vs Rate
Rate kB/s
3000
2500
2000
1500
1000
500
0
0
10
20
30
40
50
60
QP

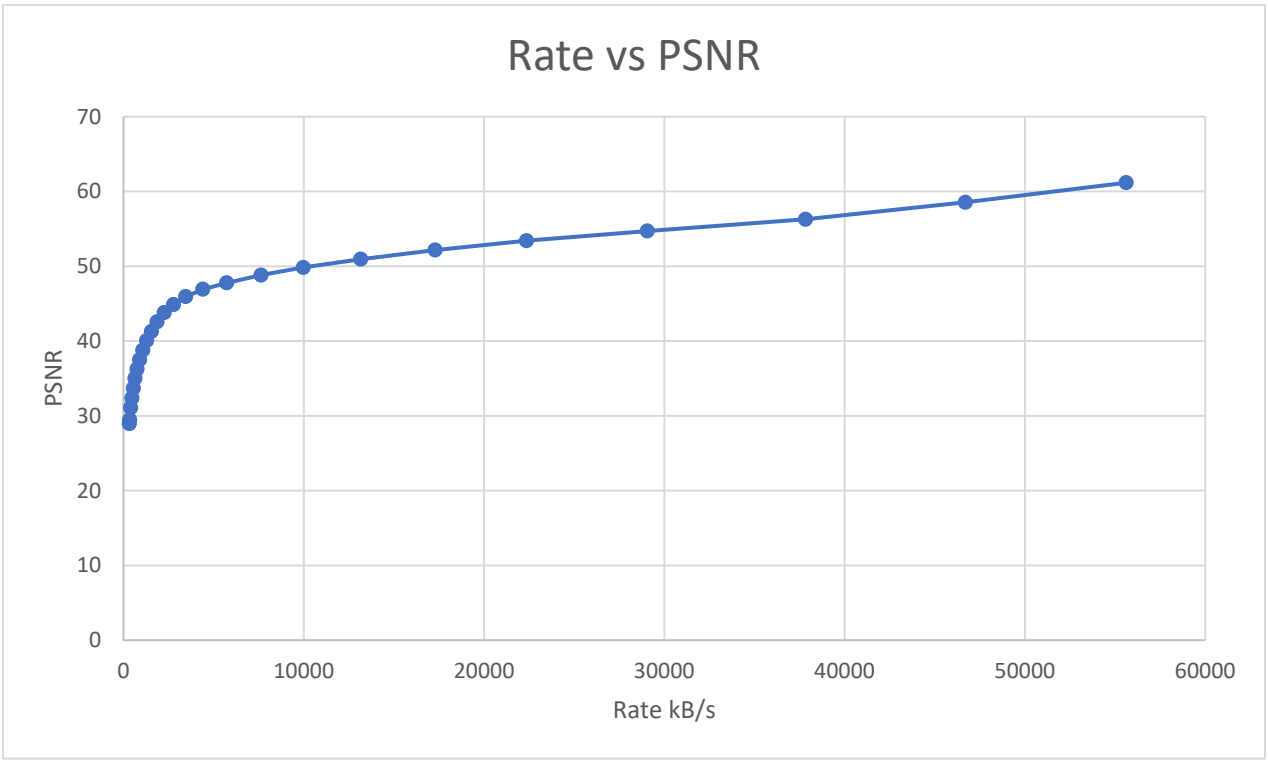

Rate vs PSNR
PSNR
80
70
60
50
40
30
20
10
0
0
500
1000
1500
2000
2500
3000
Rate kB/s

Second Video: 1 Minute

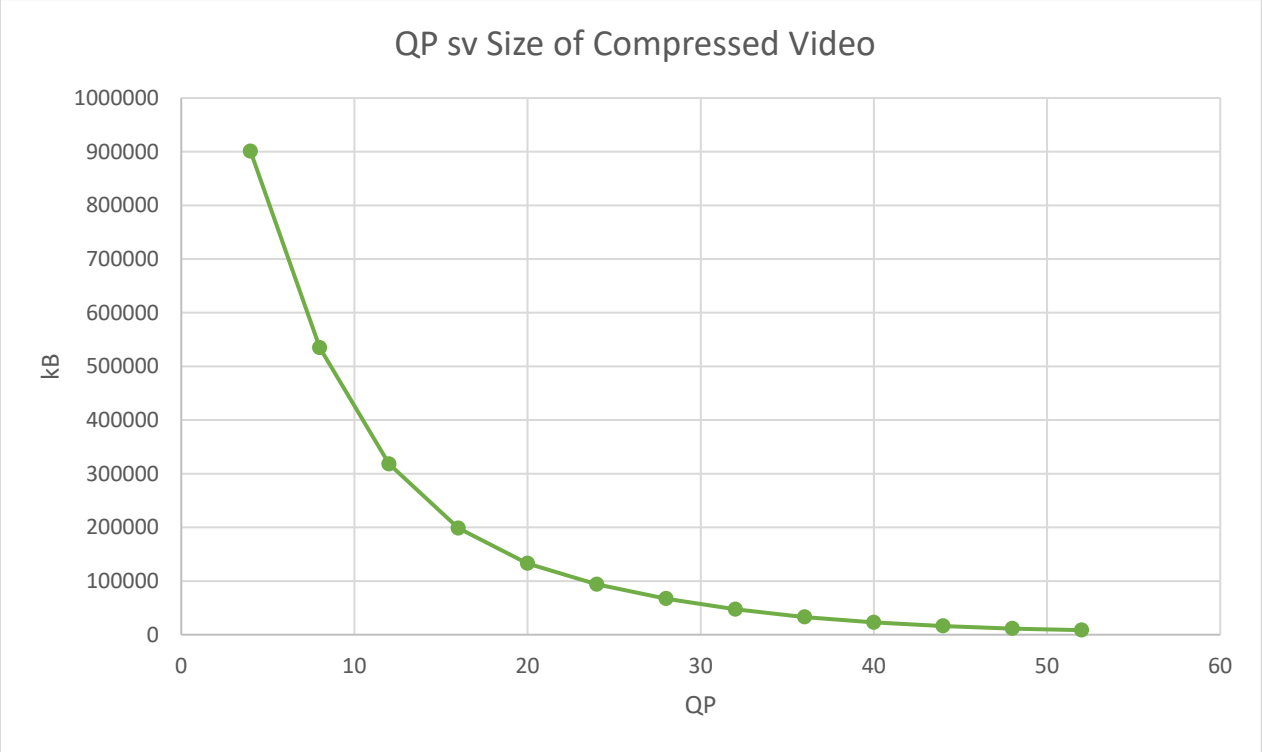


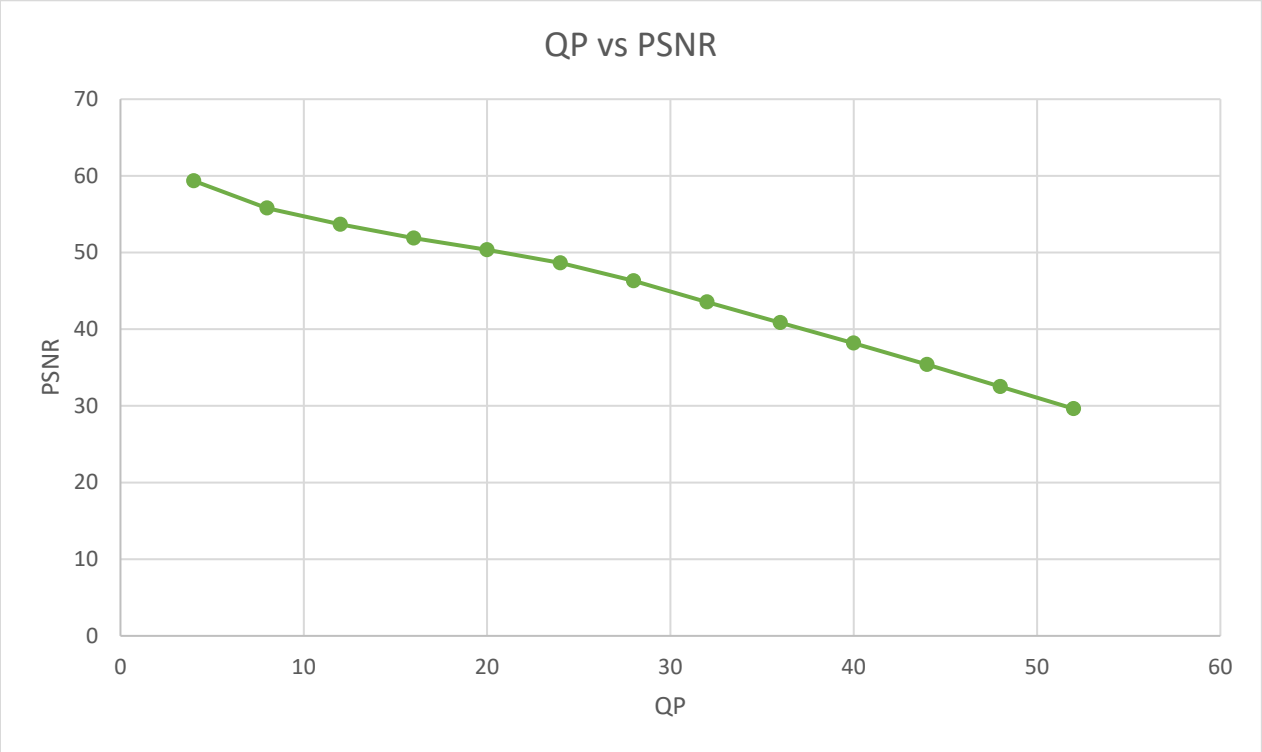


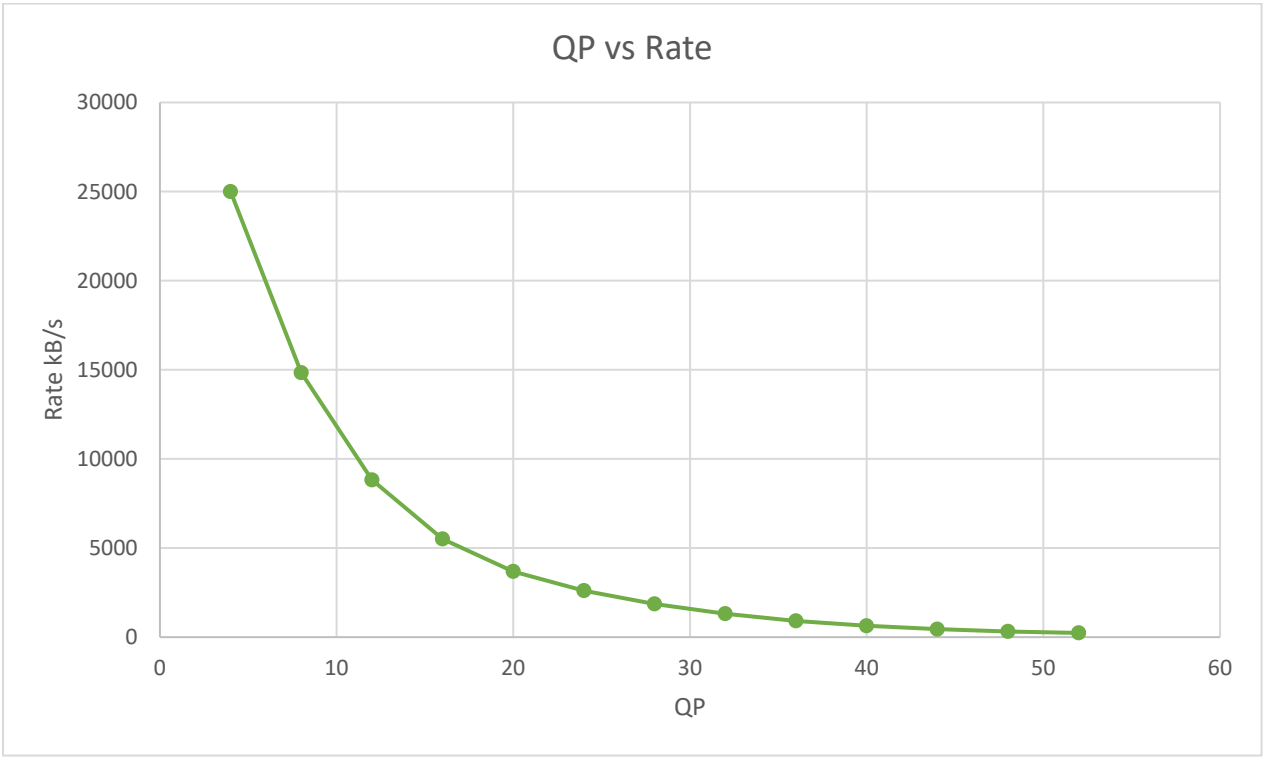

QP vs Rate
60000
50000
40000
30000
20000
10000
0
Rate kB/s
0
10
20
30
40
50
60
QP

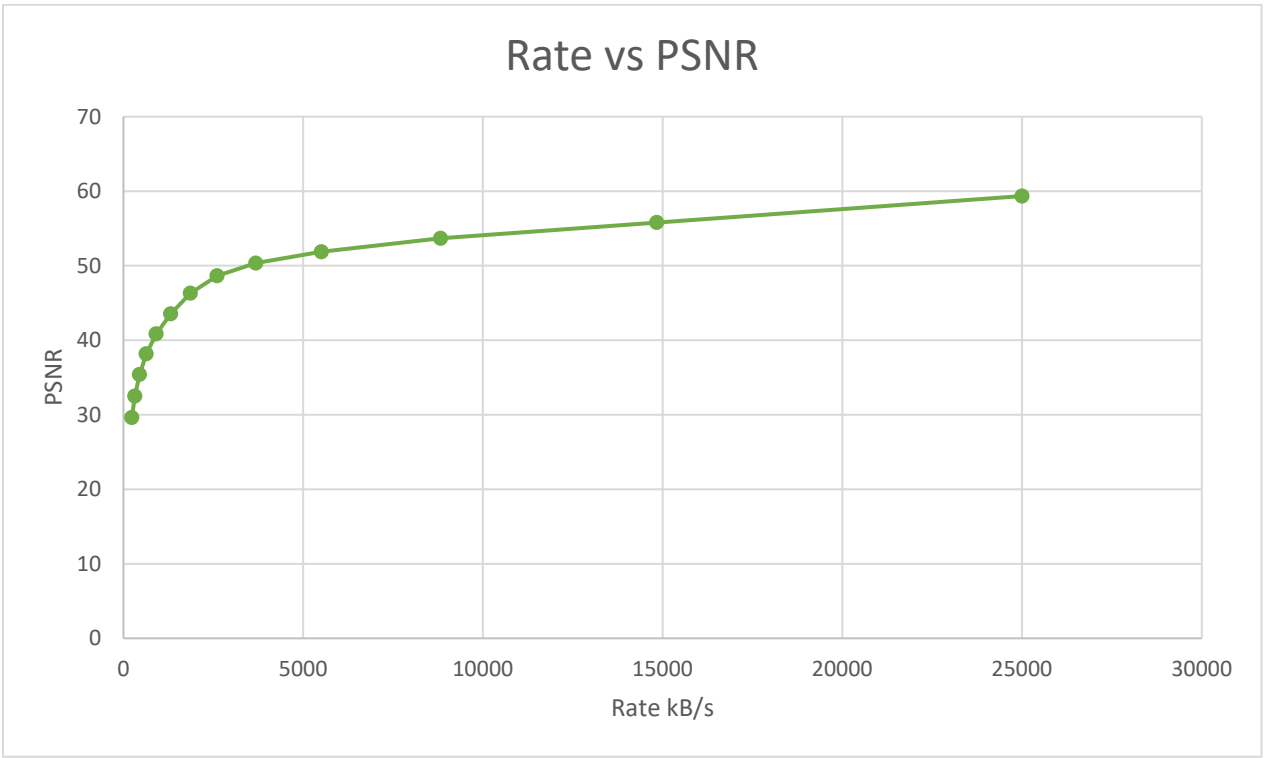

Rate vs PSNR
70
60
50
40
30
20
10
0
PSNR
0
10000
20000
30000
40000
50000
60000
Rate kB/s

Third Video: 4 Minutes






QP vs Rate
30000
25000
20000
15000
10000
5000
0
Rate kB/s
0
10
20
30
40
50
60
QP


Rate vs PSNR
70
60
50
40
30
20
10
0
PSNR
0
5000
10000
15000
20000
25000
30000
Rate kB/s