

Table of Contents

1. Introduction.....	2
2. Experimental Design and Data Collection.....	2
Fig 2.1 : Tachometer and Roller Rig.....	2
3. Theory and Key Parameters.....	3
4. Data Before and After Processing - Graphical Presentation.....	4
4.1 Removing the DC offset.....	4
4.2 Butterworth Filter: Low Pass Filter.....	4
4.3 FFT program.....	4
4.4 Simulation Graphs.....	4
Fig 4.4.1: Lateral Acceleration (Raw) – Low speed.....	5
Fig 4.4.2: Lateral Acceleration (Filtered) – Low speed.....	5
Fig 4.4.3: Lateral Acceleration (Raw vs Filtered) – Low speed.....	5
Fig 4.4.4: Lateral Acceleration (Raw) - Medium Speed.....	6
Fig 4.4.5: Lateral Acceleration (Filtered) - Medium Speed.....	6
Fig 4.4.6 : Lateral Acceleration (Raw vs Filtered) - Medium Speed.....	6
Fig 4.4.7: Lateral Acceleration (Raw) - High speed.....	7
Fig 4.4.8: Lateral Acceleration (Filtered) - High speed.....	7
Fig 4.4.9: Lateral Acceleration (Raw vs Filtered) - High speed.....	7
Fig 4.4.10: Lateral Acceleration (fk extraction) FFT - Low Speed.....	8
Fig 4.4.11: FFT of Lateral Acceleration (fk extraction) - Medium Speed.....	8
Fig 4.4.12: FFT of Lateral Acceleration (fk extraction) - High Speed.....	8
Fig 4.4.13: FFT of Tachometer Signal (ftp extraction) - Low Speed.....	9
Fig 4.4.14: FFT of Tachometer Signal (ftp extraction) - Medium speed.....	9
Fig 4.4.15: FFT of Tachometer Signal (ftp extraction) - High Speed.....	9
5. Obtained Results and Parameters.....	10
Table 1 : Acquired Dynamic Parameters At Different Speed Runs.....	10
6. Obtained Numerical Results and Discussion.....	10
Figure 6.1 : Results of matlab simulation (img. 1st part).....	10
Figure 6.2: Results of matlab simulation (img. 2nd part).....	11
7. Error, Noise and Reliability Analysis.....	11
8. Summary of Characteristics Extracted and Validation.....	11
9. References.....	12