RACELOGIC

Application Note

Coastdown Test

Introduction

The objective of this test was to perform a Coastdown test extracting delta time and distance every 10Kph from 100Kph down to 10kph in a small test area. The small test area forcing the test to be performed over three runs.

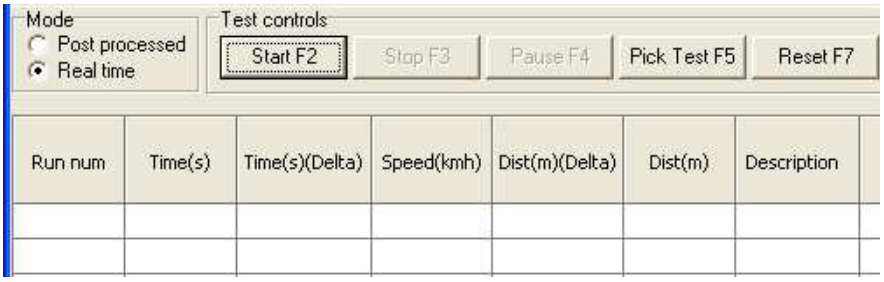
Equipment used

1 x Car.
1 x VBOXIIDCF (VBOX lite or VBOXIII also applicable)
1 x Cigar lighter adapter, RLVBCAB10
1 x GPS Magnetic Aerial, RLVBACS001
1 x 32Mb Compact Flash Card, RLVBACS005.
1 X PC running latest VBOX software and Report Generator
1x Hand held brake trigger RLVBACS009

Test Set-up

We placed the magnetic GPS Aerial on the roof of the test vehicle and run the cable into the vehicle, though the door seal. Ensuring the aerial cable did not become damaged or trapped

We then connected the aerial cable to the VBOXII, ensuring the connection is free from dirt. The power was then connected to the VBOXII using the cigar lighter adapter (a battery pack could have been used).
An empty compact flash card was into the compact flash card slot in the VBOXII.
We waited until the green 'ST' light on the VBOX was flashing at least 6 times, indicating that the VBOX has detected 6 satellites.
A hand held brake trigger was also connected to the VBOX.
The computer is connected to the VBOX via the serial port and the Report Generator software was opened.
The column heads where set as shown below.



Test Set-up continued

In the Test setup screen the start and end conditions where set to brake trigger. The 'line conditions' were set to make a line every 10kph. Then in 'options' 'generate lines only during brake trigger' is ticked. This causes report lines only to be made when a brake trigger is pressed but it also forces the start of a test to occur on the leading edge of a brake trigger and an end test to occur on the trailing edge of a brake trigger signal. The 'real time mode' option is then selected.

Test Procedure

The 'Start' or F2 button was pressed before the test to start the Rep Gen software scanning the VBOX live data.
The vehicle was then driven up to over 100Kph then the clutch dipped and then the Hand held brake trigger pressed and held pressed. This was held pressed until the vehicle had to be slowed down and turned around because the end of the test area was fast approaching. In the second run down the test area the vehicle is accelerated to just over the speed that was achieved at the end of the first run. Then the clutch dipped and the hand held brake trigger held pressed until again the brakes had to be applied due to the test area running out.
This was repeated for a third run to get the last speed section.

Analysis Procedure cont'd

Because the Report Generator software was running in 'Real time' mode, the screen showed the data at the end of the test, this is shown below.
The compact flash card was then removed and the file loaded into the VBOX software graph screen. This is also shown below, it shows the three coastdown runs and the hand held triggers presence in each run.

The data on the screen of the report generator was saved out to a Excel format document and opened in Excel. The uneeded overlap data lines where deleted. The column totals calculated from the delta time and distance lines.

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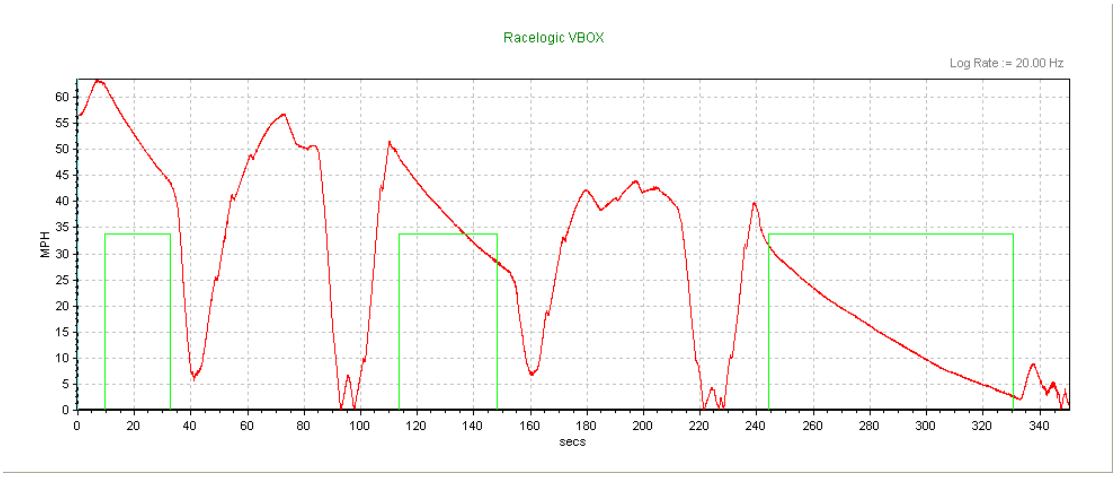
Application Note

Coastdown Test

Mode
- Post processed
- Real time

Test controls: Start F2 | Stop F3 | Pause F4 | Pick Test F5 | Reset F7

Run num	Time(s)	Time(s)(Delta)	Speed(kmh)	Dist(m)(Delta)	Dist(m)	Description
1	0	0	100.5	0.00	0.00	Trigger start
1	0.27	0.27	100.0	7.81	7.81	Speed line
1	6.76	6.49	90.0	171.07	178.88	Speed line
1	14.35	7.59	80.0	179.25	358.13	Speed line
1	23.05	8.70	70.2	181.61	539.75	Trigger end
2	0	0	78.1	0.00	0.00	Trigger start
2	6.69	6.69	70.0	137.66	137.66	Speed line
2	16.92	10.23	60.0	184.36	322.02	Speed line
2	28.62	11.70	50.0	177.97	499.99	Speed line
2	34.45	5.83	45.8	77.54	577.53	Trigger end
3	0	0	51.0	0.00	0.00	Trigger start
3	0.79	0.79	50.0	11.34	11.34	Speed line
3	12.74	11.95	40.0	148.25	159.58	Speed line
3	28.93	16.19	30.0	155.93	315.51	Speed line
3	47.20	18.27	20.0	126.43	441.94	Speed line
3	69.49	22.28	10.0	90.64	532.58	Speed line
3	86.50	17.01	4.3	33.99	566.57	Trigger end



Results / Conclusion

The table below shows the data loaded into Excel from the Report Generator screen. This shows that the total time for the Coastdown deceleration from 100Kph to 10Kph is 113.67 seconds and the distance it was done in is 1423 meters

Run num	Time(s)(Delta)	Speed(kmh)	Dist(m)(Delta)	Description
1	0	100.5	0	Trigger start
1	0.27	100	7.81	Speed line
1	6.49	90	171.07	Speed line
1	7.59	80	179.25	Speed line
1	8.7	70.2	181.61	Trigger end
2	10.23	60	184.36	Speed line
2	11.7	50	177.97	Speed line
3	11.95	40	148.25	Speed line
3	16.19	30	155.93	Speed line
3	18.27	20	126.43	Speed line
3	22.28	10	90.64	Speed line
Total	113.67		1423.32	

As can be seen this was a very simple method to extract coast down information from a multi run coast down test.