

Lampiran 1

UJI DYNOTEST DENGAN INTERFACE ELM327

Spesifikasi kendaraan :

Tipe mesin : K3- VE DOHC VVT-i

Berat kosong/ Total Kendaraan (kg) : 1065/1585

Panjang x lebar x tinggi : 4140 x 1660 x1695

Kapasitas silinder : 1298cc

Rasio kompresi : 1 : 11

Jumlah silinder : 4 silinder

Perbandingan gigi : I. 3769 IV. 1000

II. 2045 V. 0838

III. 1376 R. 4128

F.5125

Ban : 185/70R14

Hasil Uji* :

Bahan bakar	Power (HP) / RPM	Torsi (N.m) / RPM
Pertalite 90	82,73 / 6306,25	109,91 / 4720,5
Pertamax 92	79,77 / 6409,5	110,87 / 4652,75
Pertamax Turbo 98	79,13 / 6512,25	109,45 / 4605

*Pengujian dilakukan sebanyak 4 (empat) kali. Data diatas merupakan rata-rata data tiap sampel bahan bakar.

Keterangan :

Berdasarkan hasil pengujian diatas, mesin K3-VE mendapatkan power terbesar saat menggunakan bahan bakar Pertalite dan Torsi maksimal lebih cepat didapatkan saat menggunakan bahan bakar Pertamax Turbo. Mesin K3-VE cocok menggunakan bahan bakar Pertamax Turbo, yaitu memiliki kelebihan akselerasi yang lebih baik, pembakaran yang lebih sempurna, serta lebih irit konsumsi bahan bakar.

Lampiran 2

Data untuk Analisis dengan Program SPSS

	Jenis_bahan_bakar	Torsi_mesin	Power_mesin
1	1,00	105,08	78,24
2	1,00	110,15	79,03
3	1,00	111,78	84,53
4	1,00	112,62	89,10
5	2,00	109,56	75,73
6	2,00	113,55	76,06
7	2,00	111,75	79,23
8	2,00	108,61	88,06
9	3,00	113,01	76,44
10	3,00	107,51	77,64
11	3,00	109,08	77,67
12	3,00	108,19	83,30
13	.	.	.
14	.	.	.
15	.	.	.
16	.	.	.

Lampiran 3

Output Software SPSS : Power Mesin

```
NPART TESTS  
  /K-S(NORMAL)=Power_mesin  
  /MISSING ANALYSIS.
```

NPar Tests

One-Sample Kolmogorov-Smirnov Test

		Power_mesin
N		12
Normal Parameters ^{a,b}	Mean	80.4192
	Std. Deviation	4.66258
Most Extreme Differences	Absolute	.267
	Positive	.267
	Negative	-.157
Test Statistic		.267
Asymp. Sig. (2-tailed)		.018 ^c

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

```
NPART TESTS  
  /K-W=Power_mesin BY Jenis_bahan_bakar(1 3)  
  /STATISTICS DESCRIPTIVES  
  /MISSING ANALYSIS.
```

NPar Tests

Kruskal-Wallis Test

Ranks

	Jenis_bahan_bakar	N	Mean Rank
Power_mesin	Pertalite	4	8.75
	Pertamax_92	4	5.50
	Pertamax_Turbo_98	4	5.25
	Total	12	

Test Statistics^{a,b}

	Power_mesin
Chi-Square	2.346
df	2
Asymp. Sig.	.309

a. Kruskal Wallis Test

b. Grouping Variable: Jenis_bahan_bakar

NPAR TESTS

```
/K-W=Power_mesin BY Jenis_bahan_bakar(1 3)  
/MISSING ANALYSIS.
```

Lampiran 4

Output Software SPSS : Torsi Mesin

```

NPAR TESTS
  /K-S(NORMAL)=Torsi_mesin
  /MISSING ANALYSIS.

```

NPar Tests

[DataSet0]

One-Sample Kolmogorov-Smirnov Test

		Torsi_mesin
N		12
Normal Parameters ^{a,b}	Mean	110.0742
	Std. Deviation	2.54717
Most Extreme Differences	Absolute	.161
	Positive	.086
	Negative	-.161
Test Statistic		.161
Asymp. Sig. (2-tailed)		.200 ^{c,d}

- a. Test distribution is Normal.
- b. Calculated from data.
- c. Lilliefors Significance Correction.
- d. This is a lower bound of the true significance.

```

ONEWAY Torsi_mesin BY Jenis_bahan_bakar
  /STATISTICS HOMOGENEITY
  /MISSING ANALYSIS
  /POSTHOC=BONFERRONI GH ALPHA(0.05) .

```

Oneway

Test of Homogeneity of Variances

Torsi_mesin

Levene Statistic	df1	df2	Sig.
.259	2	9	.777

ANOVA

Torsi_mesin

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.199	2	2.100	.281	.761
Within Groups	67.170	9	7.463		
Total	71.369	11			

Post Hoc Tests

Multiple Comparisons

Dependent Variable: Torsi_mesin

	(I) Jenis_bahan_bakar	(J) Jenis_bahan_bakar	Mean Difference (I-J)	Std. Error
Bonferroni	Pertalite	Pertamax_92	-.96000	1.93175
		Pertamax_Turbo_98	.46000	1.93175
	Pertamax_92	Pertalite	.96000	1.93175
		Pertamax_Turbo_98	1.42000	1.93175
	Pertamax_Turbo_98	Pertalite	-.46000	1.93175
		Pertamax_92	-1.42000	1.93175
Games-Howell	Pertalite	Pertamax_92	-.96000	2.02089
		Pertamax_Turbo_98	.46000	2.08944
	Pertamax_92	Pertalite	.96000	2.02089
		Pertamax_Turbo_98	1.42000	1.65686
	Pertamax_Turbo_98	Pertalite	-.46000	2.08944
		Pertamax_92	-1.42000	1.65686

Multiple Comparisons

Dependent Variable: Torsi_mesin

	(I) Jenis_bahan_bakar	(J) Jenis_bahan_bakar	Sig.	95% ... Lower Bound
Bonferroni	Pertalite	Pertamax_92	1.000	-6.6264
		Pertamax_Turbo_98	1.000	-5.2064
	Pertamax_92	Pertalite	1.000	-4.7064
		Pertamax_Turbo_98	1.000	-4.2464
	Pertamax_Turbo_98	Pertalite	1.000	-6.1264
		Pertamax_92	1.000	-7.0864
Games-Howell	Pertalite	Pertamax_92	.886	-7.4533
		Pertamax_Turbo_98	.974	-6.1292
	Pertamax_92	Pertalite	.886	-5.5333
		Pertamax_Turbo_98	.685	-3.6792
	Pertamax_Turbo_98	Pertalite	.974	-7.0492
		Pertamax_92	.685	-6.5192



3Dara Dynolog

Mainline DynoLog Chassis Dyno Report

Allan Severino
 Jl Turen Pandeyan
 Sukoharjo

Test ID: **XENIA 1.3 74.7WHP**

Customer: **WARDOYO / UMY**

Test Date: **1-Mar-2017 10:33**

Test #: **4696**

Operator: **KRESNA**

Reg No: **AA 9404 EC**

VIN:

Vehicle: **DAIHATSU**

Capacity: **0.0 cc**

Air Density: **93.0%**

Correction: **8.68 SAE J607**

(30°C, 993mBar, 81%)

Heads:

Camshaft:

Exhaust:

Manifolds:

Induction: **N/a**

Odometer: **0**

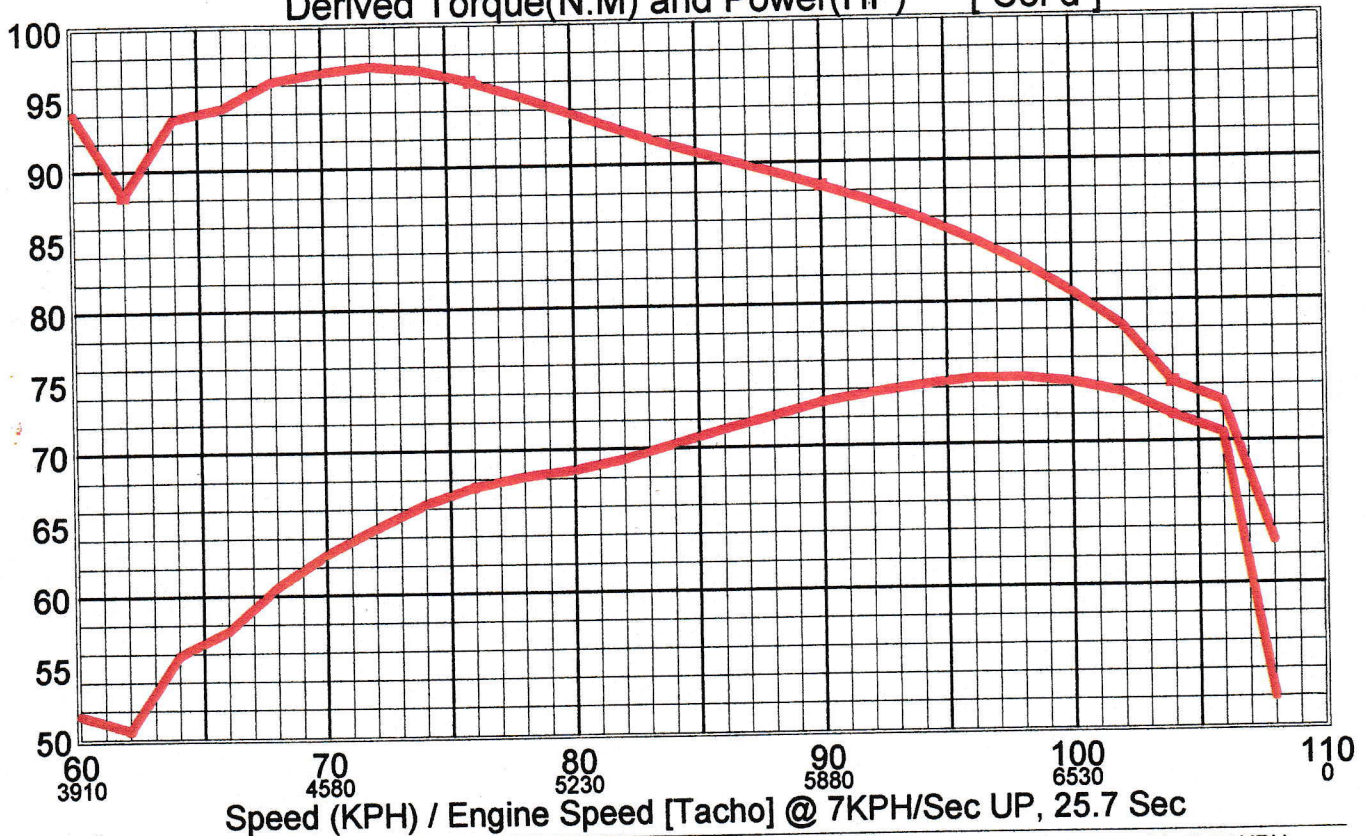
Cylinders: **4**



Fuel: **PERTALITE 90**

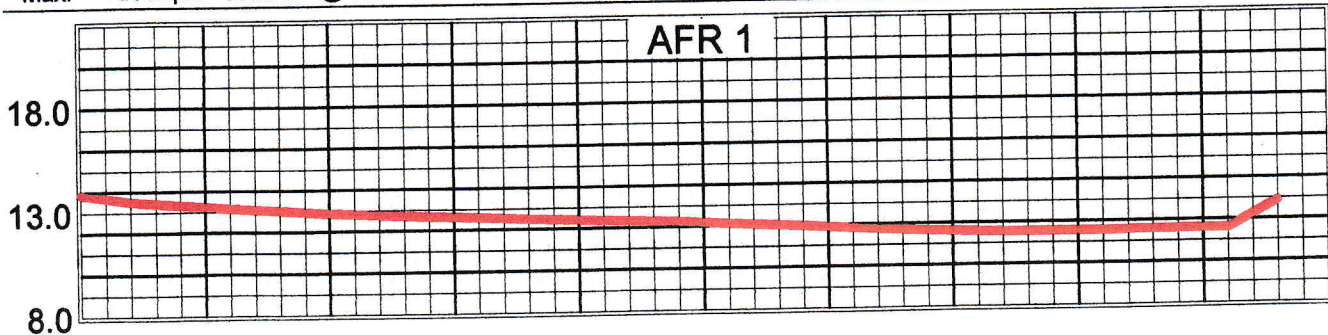
Gear: **3**

Derived Torque(N.M) and Power(HP) [Cor'd]



Max: ■ dTorque= 97.2N.M @ 72KPH ● Power= 74.7HP @ 98KPH ▲ Motive Force= 541.9Lb @ 70KPH

AFR 1





3Dara Dynalog

Mainline DynoLog Chassis Dyno Report

Allan Severino
JI Turen Pandeyan
Sukoharjo

Test ID: **XENIA 1.3 74.6WHP**

Customer: **WARDOYO / UMY**

Test Date: **1-Mar-2017 10:20**

Test #: **4695** Operator: **KRESNA**

Reg No: **AA 9404 EC** VIN:

Vehicle: **DAIHATSU**

Capacity: **0.0 cc**

Correction: **8.63 SAE J607**

Air Density: **93.1%**

(30°C, 993mBar, 82%)

Heads:

Camshaft:

Exhaust:

Manifolds:

Induction: **N/a**

Odometer: **0**

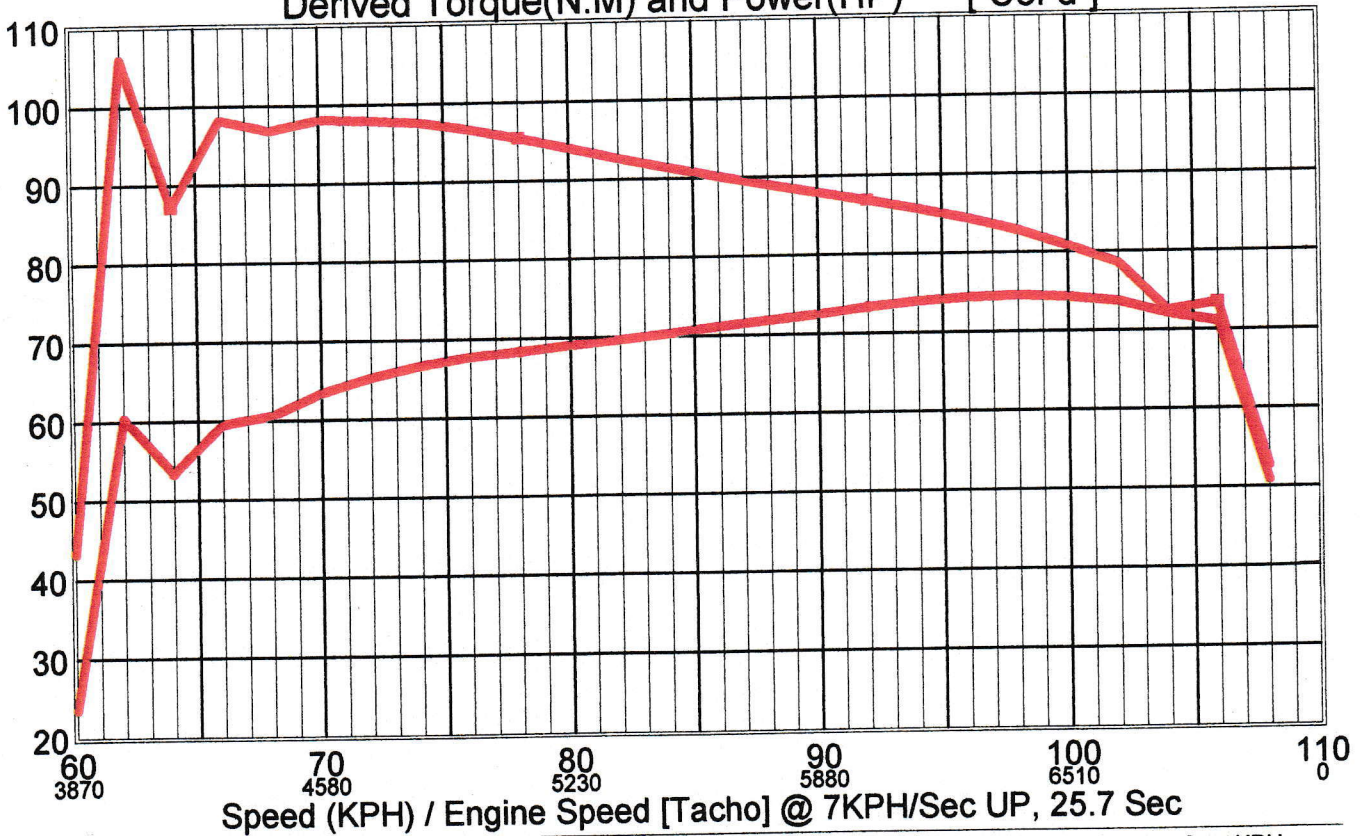
Cylinders: **4**



Fuel: **PERTAMAX 92**

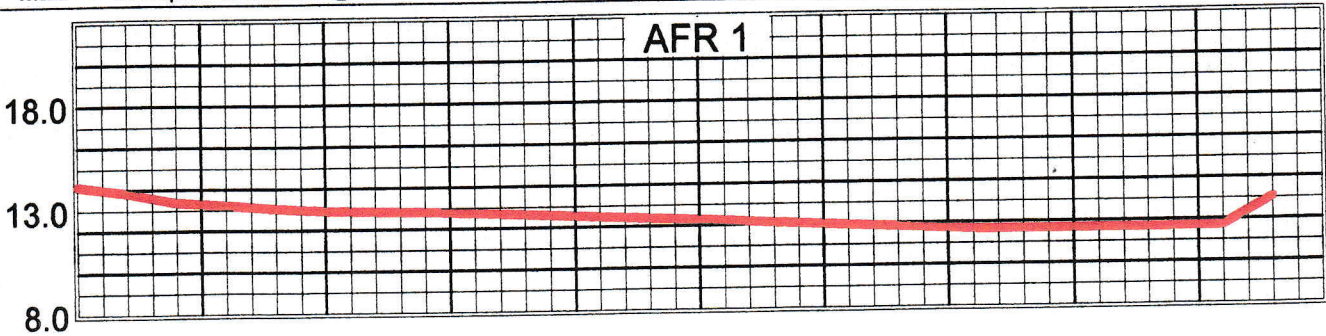
Gear: **3**

Derived Torque(N.M) and Power(HP) [Cor'd]



Max: ■ dTorque= 106.0N.M @ 62KPH ● Power= 74.6HP @ 98KPH ▲ Motive Force= 587.9Lb @ 62KPH

AFR 1





3Dara Dynolog

Mainline DynoLog Chassis Dyno Report

Allan Severino
JI Turen Pandeyan
Sukoharjo

Test ID: **XENIA 1.3 74.1WHP**

Customer: **WARDOYO / UMY**

Test Date: **1-Mar-2017 10:04**

Test #: **4694**

Operator: **KRESNA**

Reg No: **AA 9404 EC**

VIN:

Vehicle: **DAIHATSU**

Capacity: **0.0 cc**

Air Density: **93.2%**

Correction: **8.58 SAE J607**

(30°C, 993mBar, 85%)

Heads:

Camshaft:

Exhaust:

Manifolds:

Induction: **N/a**

Odometer: **0**

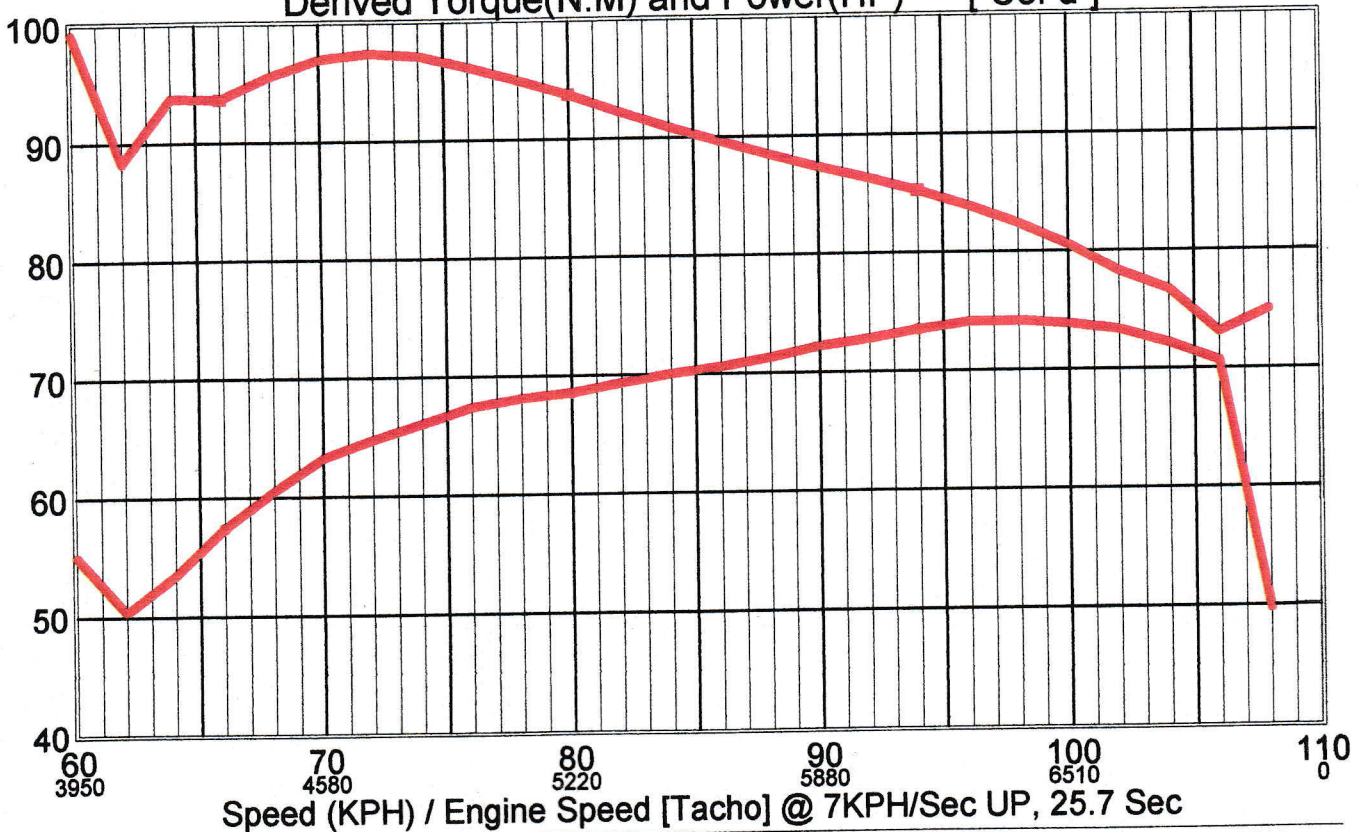
Cylinders: **4**



Fuel: **PERTAMAX TURBO**

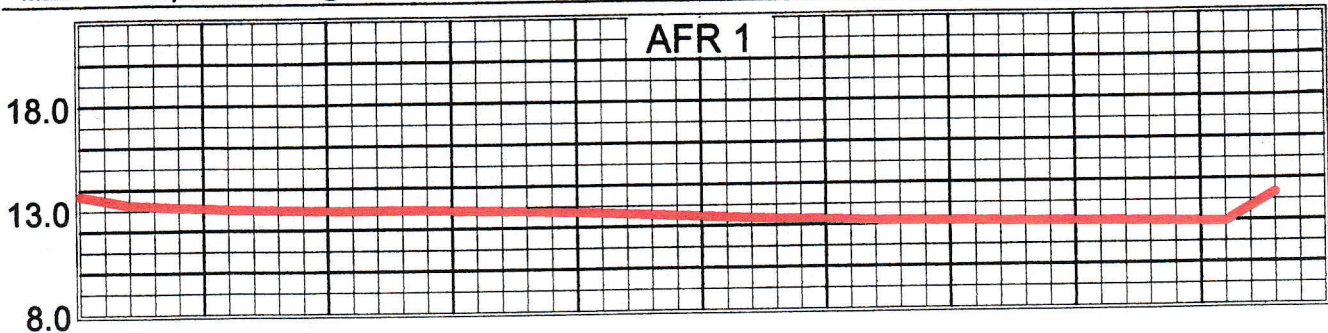
Gear: **3**

Derived Torque(N.M) and Power(HP) [Cor'd]



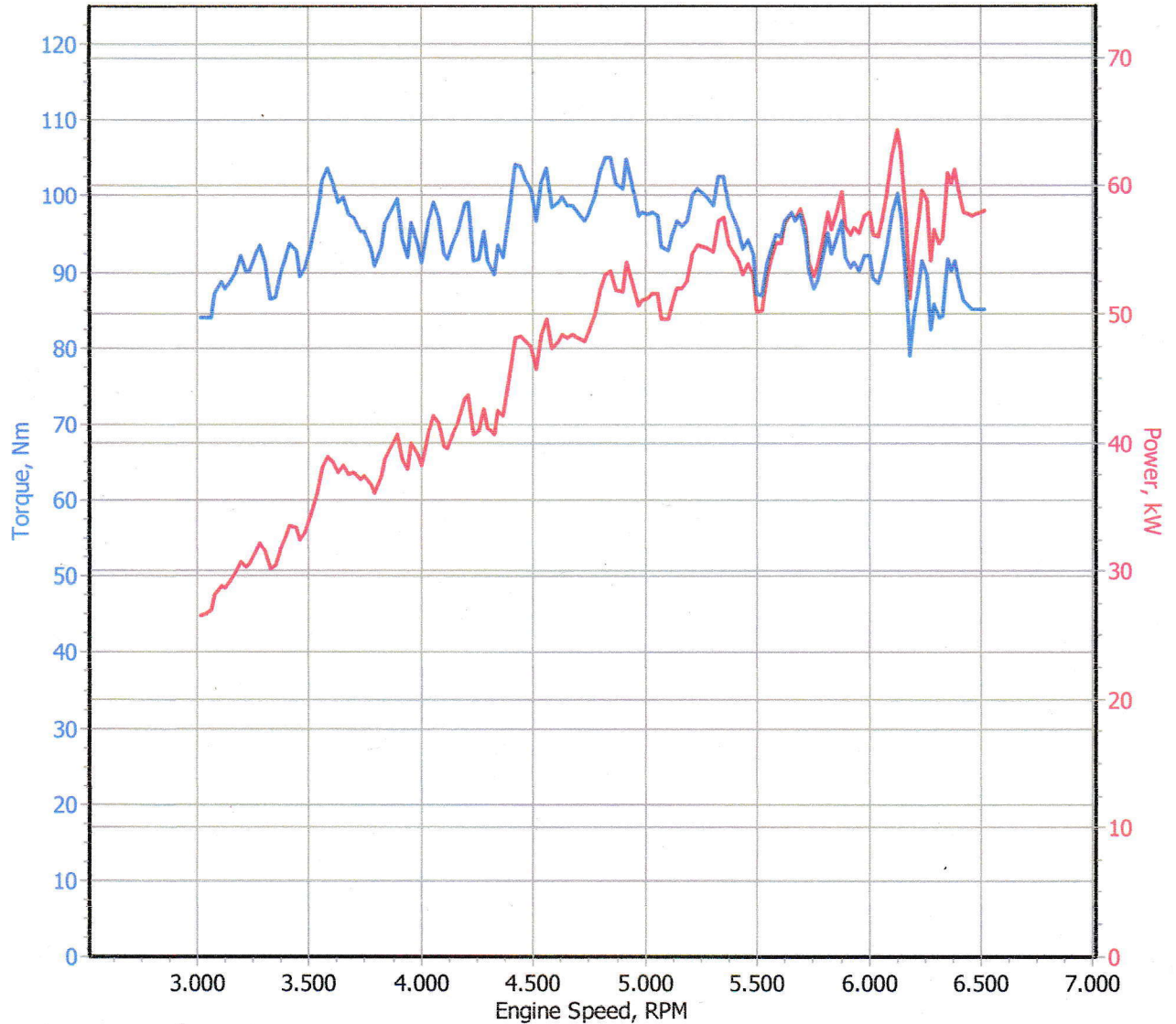
Max: ■ dTorque= 99.2N.M @ 60KPH ● Power= 74.1HP @ 98KPH ▲ Motive Force= 553.4Lb @ 60KPH

AFR 1



Dyno Test

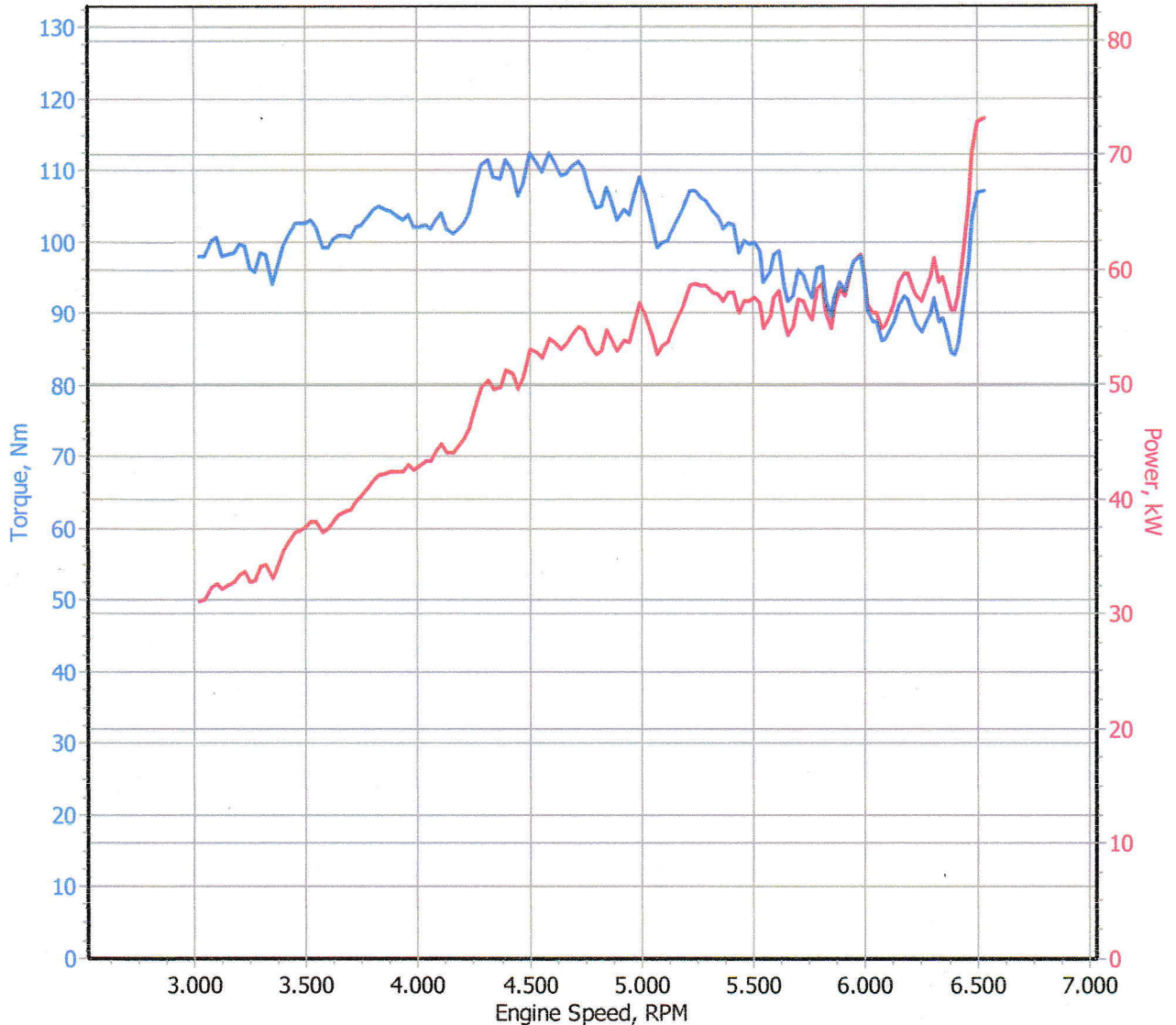
Vehicle:	Xenia MT 1.3	Engine Type:	Petrol
License Plate Number:	AA 9404 EC	Intercooler:	Air
Test Technician:		Gearbox:	Manual
Vehicle Owner:	Wardoyo (Pertalite 90)	Powertrain:	Rear-wheel drive
Measurement Date:	01/03/2017	Vehicle Type:	Normal



Atmospheric Conditions		Dyno Data	
Temperature:	25 °C	Correction:	EWG 80/1269
Humidity:	46 %	Correction Coefficient:	0,97
Atmospheric Pressure:	1013 mbar	Engine Power:	64,36 kW (87,54 hp)
Vehicle Data		Wheel Power:	57,53 kW (78,24 hp)
Gross Weight:	1188,725 kg	Max. Power RPM:	6127 rpm
Frontal Surface:	2,21 m2	Torque:	105,08 Nm
Cw Coefficient:	0,30	Max. Torque RPM:	4820 rpm
		Gear:	3rd Gear

Dyno Test

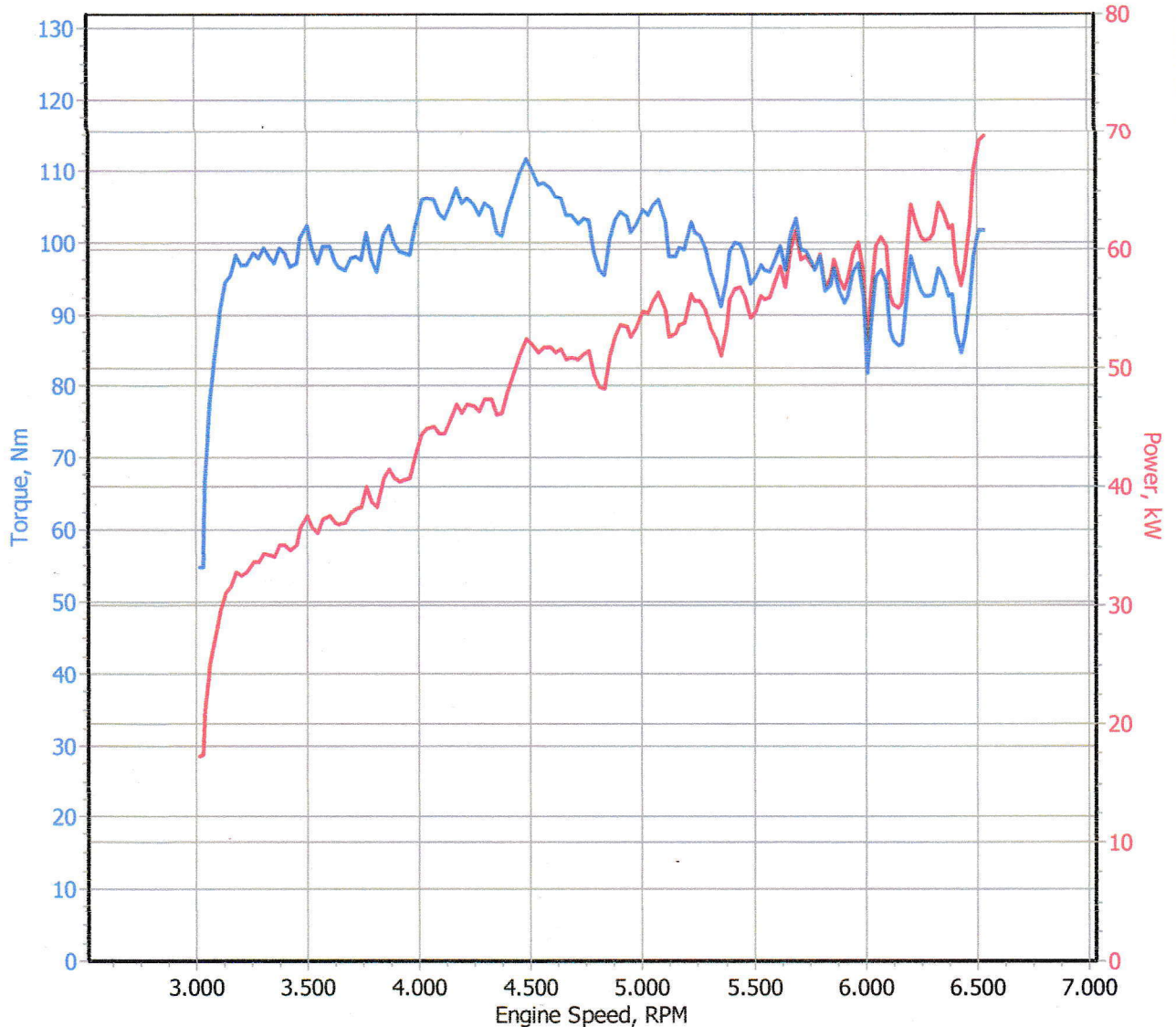
Vehicle:	Xenia MT 1.3	Engine Type:	Petrol
License Plate Number:	AA 9404 EC	Intercooler:	Air
Test Technician:		Gearbox:	Manual
Vehicle Owner:	Wardoyo (Peralite 90)	Powertrain:	Rear-wheel drive
Measurement Date:	01/03/2017	Vehicle Type:	Normal



Atmospheric Conditions		Dyno Data	
Temperature:	25 °C	Correction:	EWG 80/1269
Humidity:	46 %	Correction Coefficient:	0,97
Atmospheric Pressure:	1013 mbar	Engine Power:	73,29 kW (99,68 hp)
Vehicle Data		Wheel Power:	65,51 kW (89,10 hp)
Gross Weight:	1188,725 kg	Max. Power RPM:	6533 rpm
Frontal Surface:	2,21 m ²	Torque:	112,62 Nm
Cw Coefficient:	0,30	Max. Torque RPM:	4501 rpm
		Gear:	3rd Gear

Dyno Test

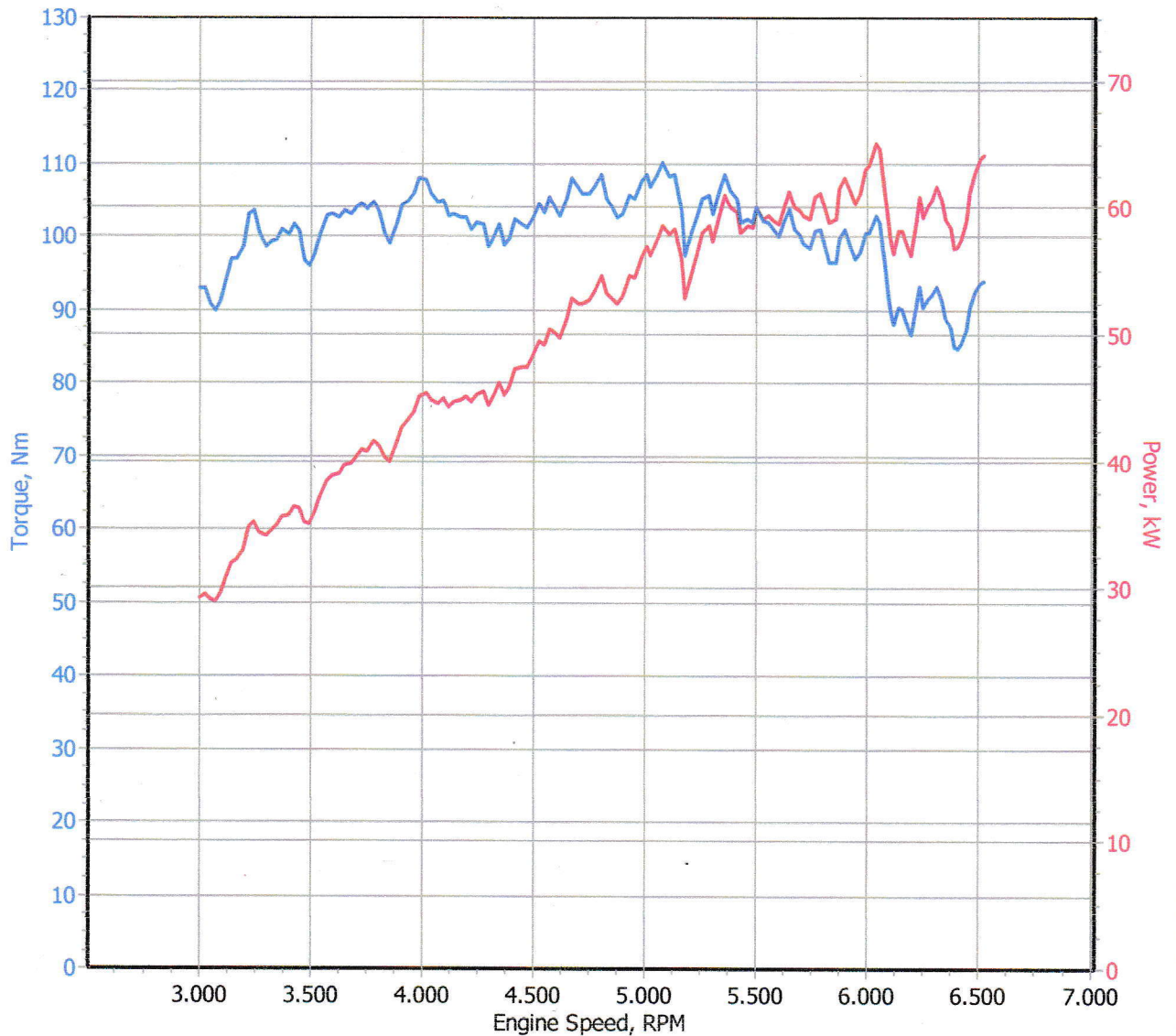
Vehicle:	Xenia MT 1.3	Engine Type:	Petrol
License Plate Number:	AA 9404 EC	Intercooler:	Air
Test Technician:		Gearbox:	Manual
Vehicle Owner:	Wardoyo (Peralite 90)	Powertrain:	Rear-wheel drive
Measurement Date:	01/03/2017	Vehicle Type:	Normal



Atmospheric Conditions		Dyno Data	
Temperature:	25 °C	Correction:	EWG 80/1269
Humidity:	46 %	Correction Coefficient:	0,97
Atmospheric Pressure:	1013 mbar	Engine Power:	69,53 kW (94,57 hp)
Vehicle Data		Wheel Power:	62,15 kW (84,53 hp)
Gross Weight:	1188,725 kg	Max. Power RPM:	6532 rpm
Frontal Surface:	2,21 m2	Torque:	111,78 Nm
Cw Coefficient:	0,30	Max. Torque RPM:	4481 rpm
		Gear:	3rd Gear

Dyno Test

Vehicle:	Xenia MT 1.3	Engine Type:	Petrol
License Plate Number:	AA 9404 EC	Intercooler:	Air
Test Technician:		Gearbox:	Manual
Vehicle Owner:	Wardoyo (Pertalite 90)	Powertrain:	Rear-wheel drive
Measurement Date:	01/03/2017	Vehicle Type:	Normal



Atmospheric Conditions

Temperature:	25 °C
Humidity:	46 %
Atmospheric Pressure:	1013 mbar

Vehicle Data

Gross Weight:	1188,725 kg
Frontal Surface:	2,21 m ²
Cw Coefficient:	0,30

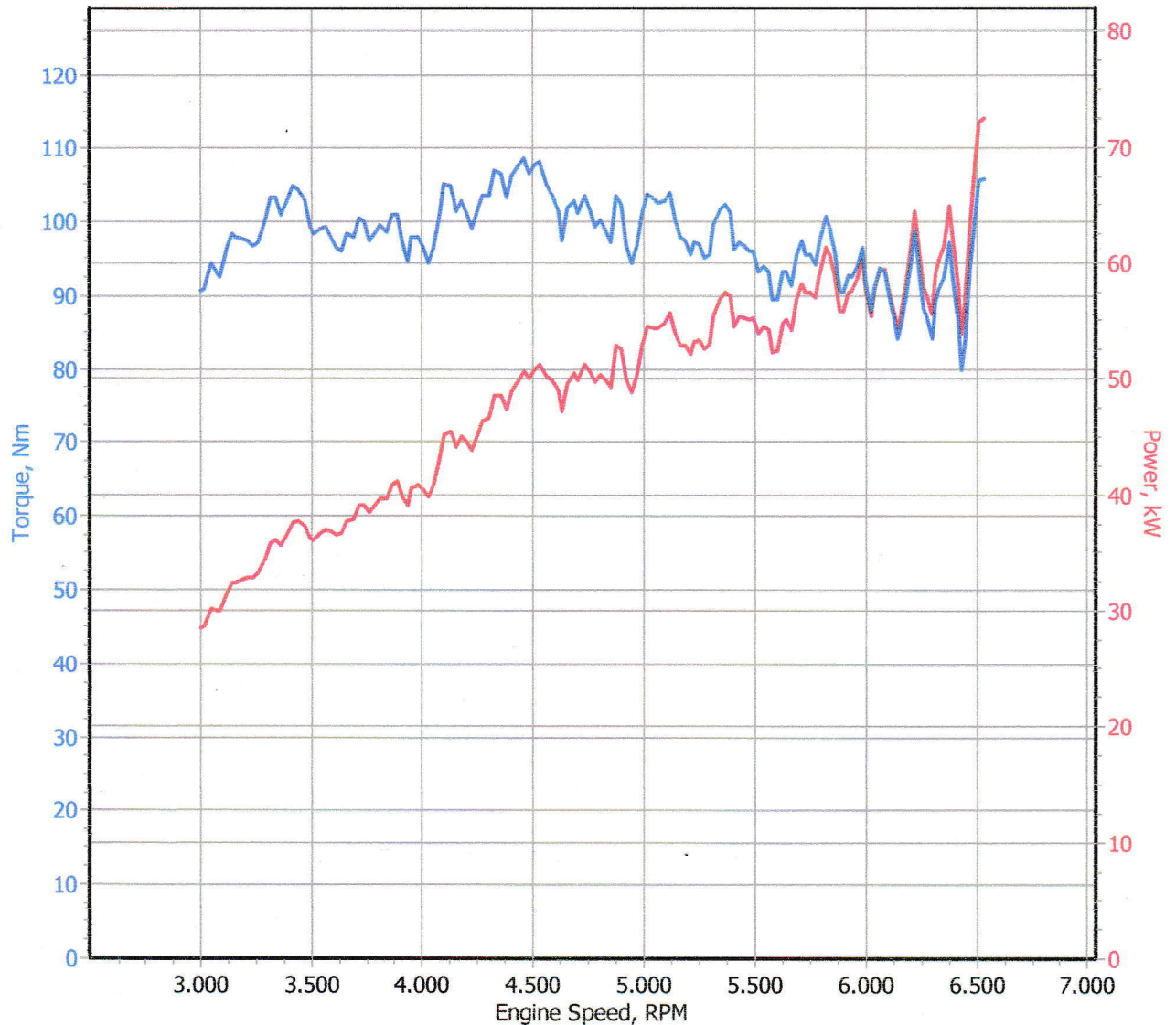
Dyno Data

Correction:	EWG 80/1269
Correction Coefficient:	0,97
Engine Power:	65,01 kW (88,42 hp)
Wheel Power:	58,11 kW (79,03 hp)
Max. Power RPM:	6033 rpm
Torque:	110,15 Nm
Max. Torque RPM:	5080 rpm
Gear:	3rd Gear

Dyno Test

WGSoft.de
AUTOMOTIVE DIAGNOSTIC SOFTWARE

Vehicle:	Xenia MT 1.3	Engine Type:	Petrol
License Plate Number:	AA 9404 EC	Intercooler:	Air
Test Technician:		Gearbox:	Manual
Vehicle Owner:	Wardoyo (Pertamax 92)	Powertrain:	Rear-wheel drive
Measurement Date:	01/03/2017	Vehicle Type:	Normal



Atmospheric Conditions

Temperature:	25 °C
Humidity:	46 %
Atmospheric Pressure:	1013 mbar

Vehicle Data

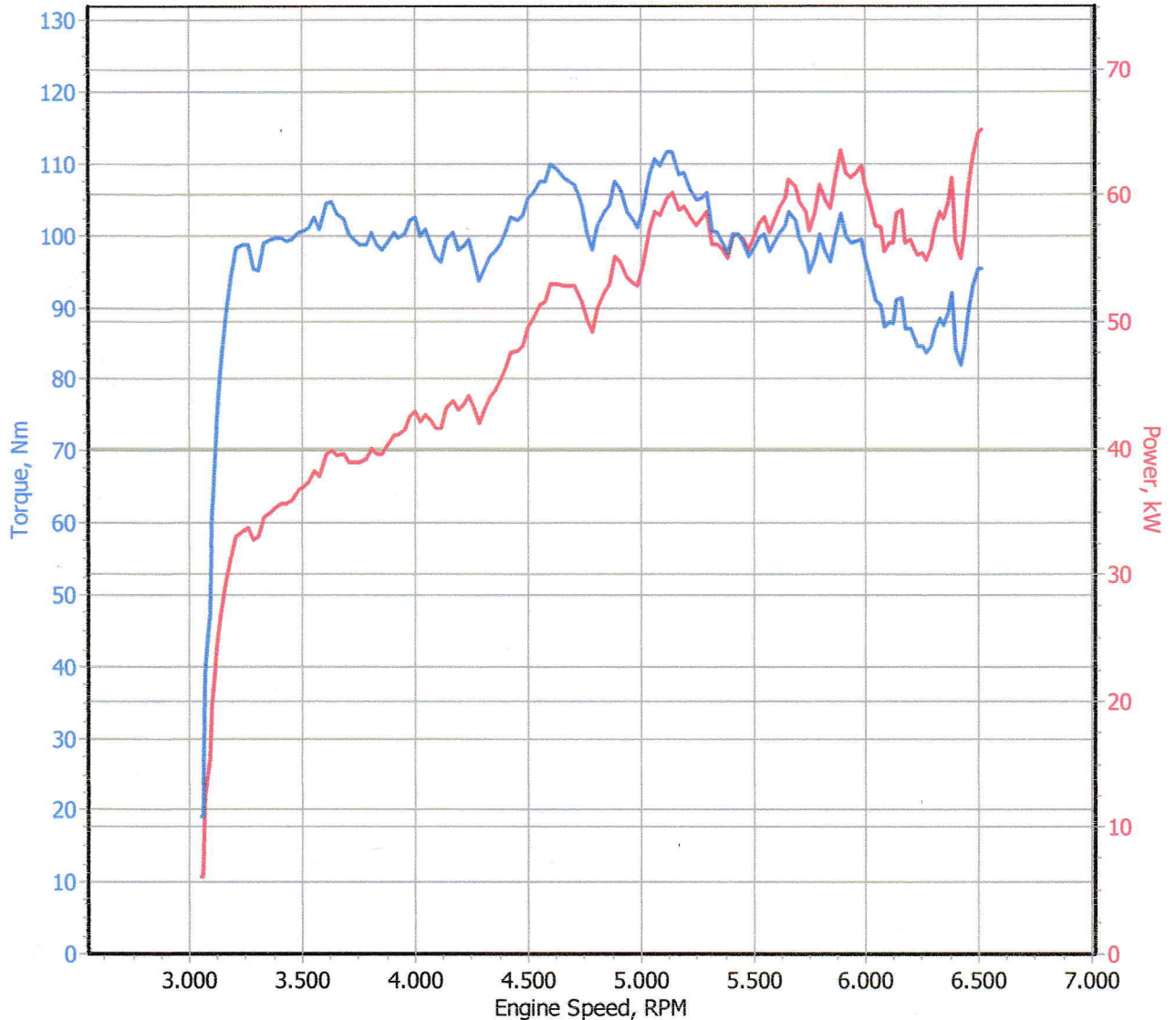
Gross Weight:	1188,725 kg
Frontal Surface:	2,21 m2
Cw Coefficient:	0,30

Dyno Data

Correction:	EWG 80/1269
Correction Coefficient:	0,97
Engine Power:	72,43 kW (98,51 hp)
Wheel Power:	64,75 kW (88,06 hp)
Max. Power RPM:	6536 rpm
Torque:	108,61 Nm
Max. Torque RPM:	4457 rpm
Gear:	3rd Gear

Dyno Test

Vehicle:	Xenia MT 1.3	Engine Type:	Petrol
License Plate Number:	AA 9404 EC	Intercooler:	Air
Test Technician:		Gearbox:	Manual
Vehicle Owner:	Wardoyo (Pertamax 92)	Powertrain:	Rear-wheel drive
Measurement Date:	01/03/2017	Vehicle Type:	Normal

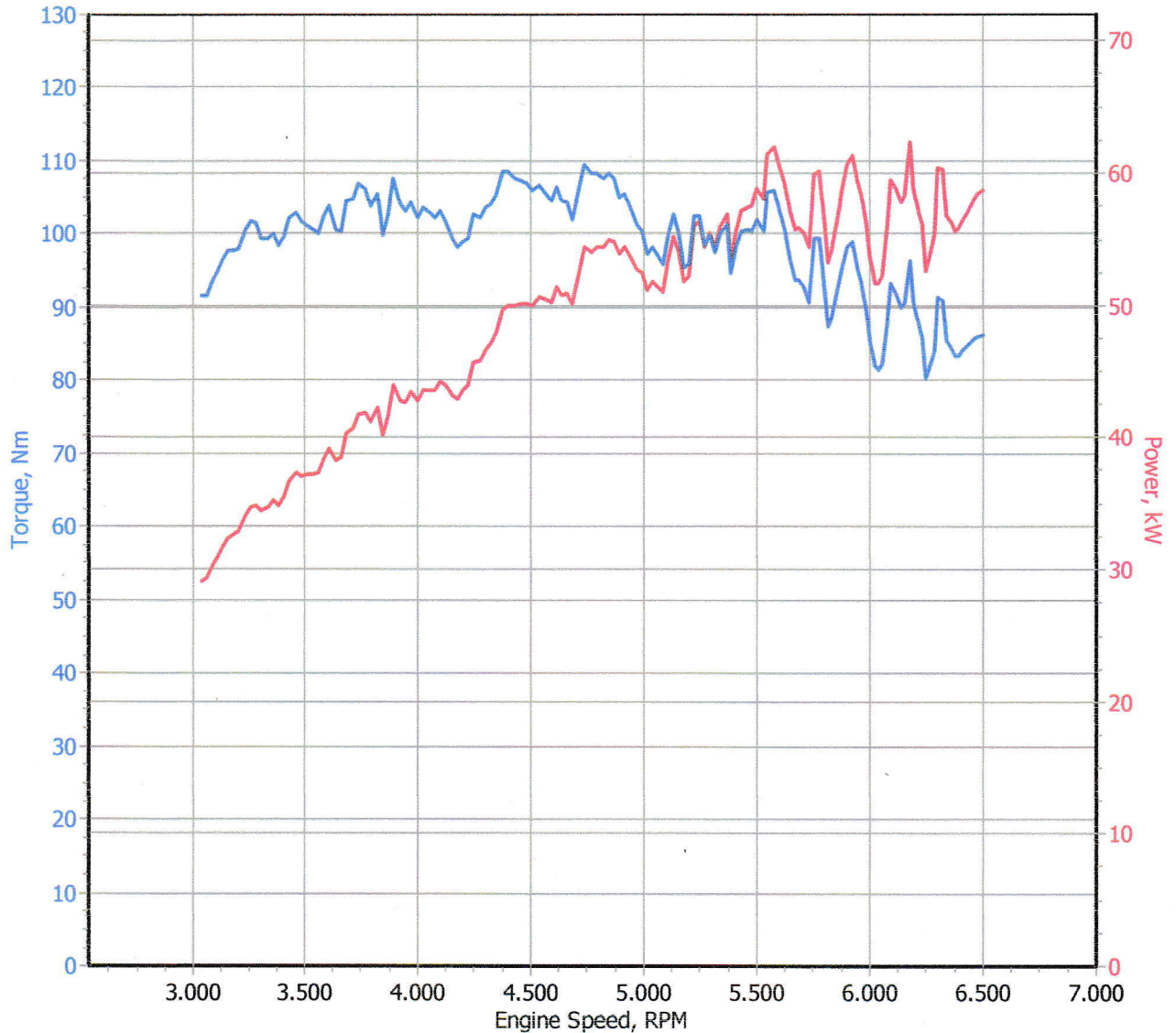


Atmospheric Conditions		Dyno Data	
Temperature:	25 °C	Correction:	EWG 80/1269
Humidity:	46 %	Correction Coefficient:	0,97
Atmospheric Pressure:	1013 mbar	Engine Power:	65,17 kW (88,64 hp)
Vehicle Data		Wheel Power:	58,26 kW (79,23 hp)
Gross Weight:	1188,725 kg	Max. Power RPM:	6516 rpm
Frontal Surface:	2,21 m2	Torque:	111,75 Nm
Cw Coefficient:	0,30	Max. Torque RPM:	5143 rpm
		Gear:	3rd Gear

Dyno Test

WGSoft.de
AUTOMOTIVE DIAGNOSTIC SOFTWARE

Vehicle:	Xenia MT 1.3	Engine Type:	Petrol
License Plate Number:	AA 9404 EC	Intercooler:	Air
Test Technician:		Gearbox:	Manual
Vehicle Owner:	Wardoyo (Pertamax 92)	Powertrain:	Rear-wheel drive
Measurement Date:	01/03/2017	Vehicle Type:	Normal



Atmospheric Conditions

Temperature:	25 °C
Humidity:	46 %
Atmospheric Pressure:	1013 mbar

Vehicle Data

Gross Weight:	1188,725 kg
Frontal Surface:	2,21 m2
Cw Coefficient:	0,30

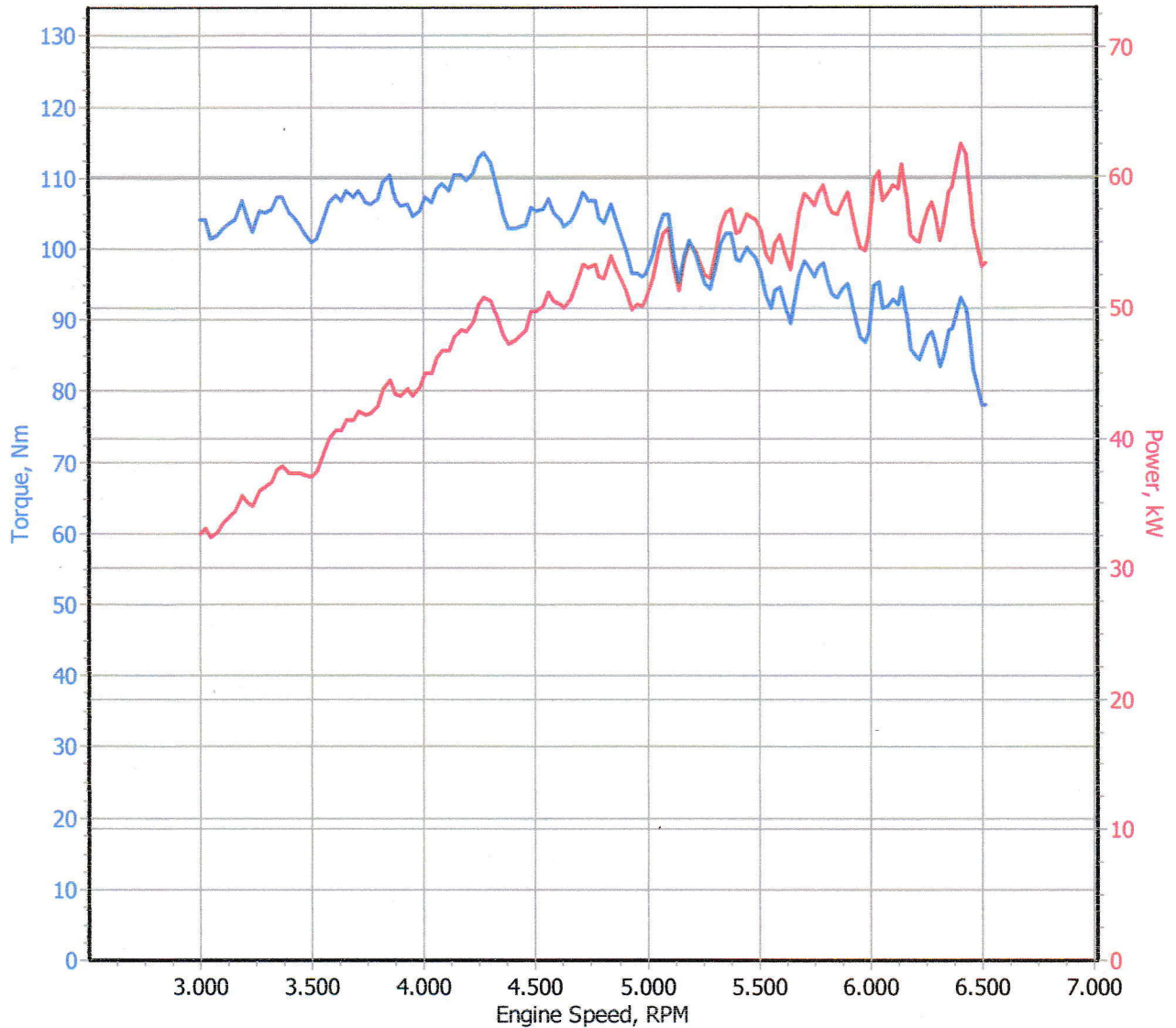
Dyno Data

Correction:	EWG 80/1269
Correction Coefficient:	0,97
Engine Power:	62,30 kW (84,73 hp)
Wheel Power:	55,69 kW (75,73 hp)
Max. Power RPM:	6178 rpm
Torque:	109,56 Nm
Max. Torque RPM:	4737 rpm
Gear:	3rd Gear

Dyno Test

WGSoft.de
AUTOMOTIVE DIAGNOSTIC SOFTWARE

Vehicle:	Xenia MT 1.3	Engine Type:	Petrol
License Plate Number:	AA 9404 EC	Intercooler:	Air
Test Technician:		Gearbox:	Manual
Vehicle Owner:	Wardoyo (Pertamax 92)	Powertrain:	Rear-wheel drive
Measurement Date:	01/03/2017	Vehicle Type:	Normal



Atmospheric Conditions

Temperature:	25 °C
Humidity:	46 %
Atmospheric Pressure:	1013 mbar

Vehicle Data

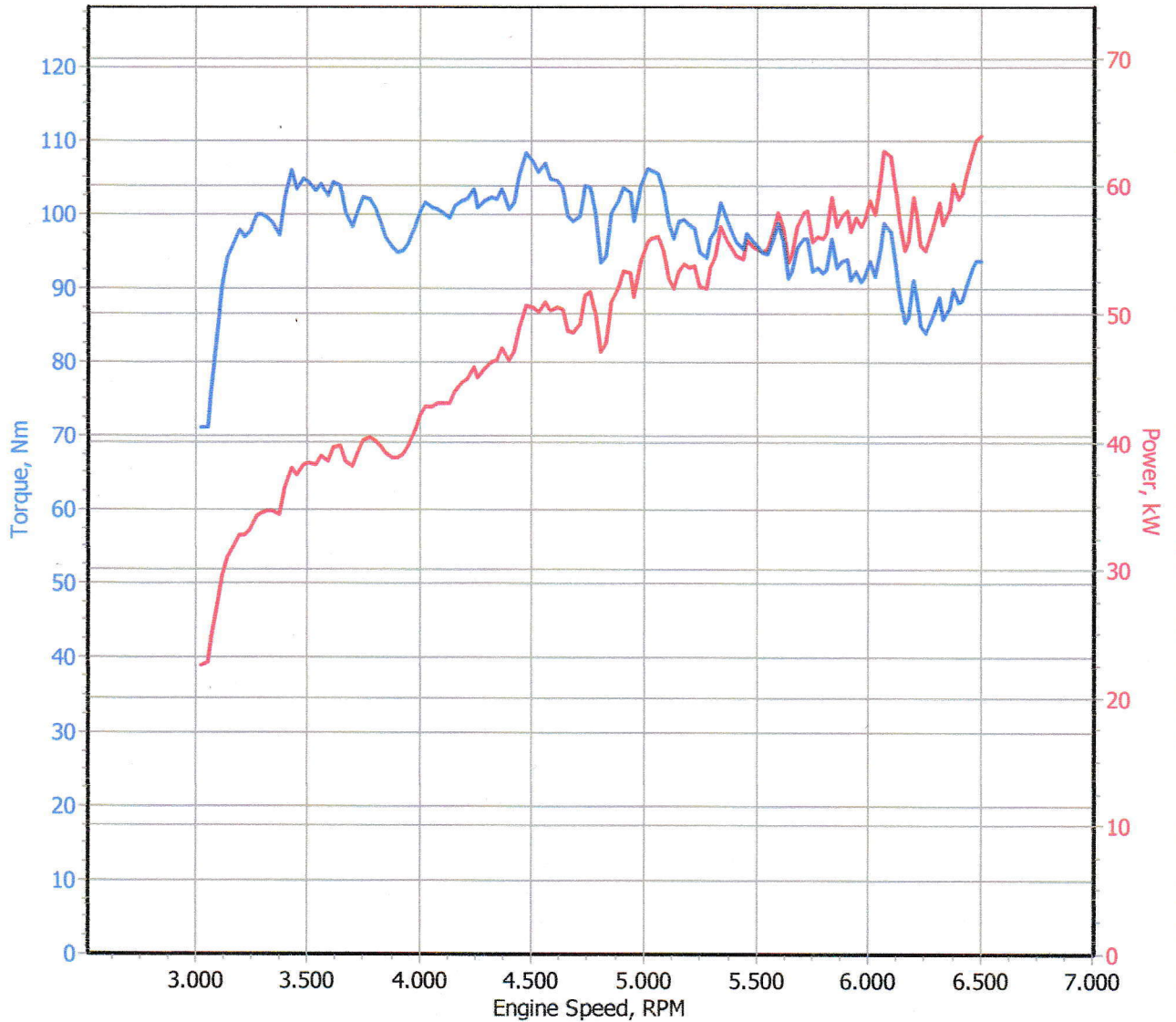
Gross Weight:	1188,725 kg
Frontal Surface:	2,21 m ²
Cw Coefficient:	0,30

Dyno Data

Correction:	EWG 80/1269
Correction Coefficient:	0,97
Engine Power:	62,57 kW (85,09 hp)
Wheel Power:	55,92 kW (76,06 hp)
Max. Power RPM:	6408 rpm
Torque:	113,55 Nm
Max. Torque RPM:	4274 rpm
Gear:	3rd Gear

Dyno Test

Vehicle:	Xenia MT 1.3	Engine Type:	Petrol
License Plate Number:		Intercooler:	Air
Test Technician:		Gearbox:	Manual
Vehicle Owner:	Wardoyo	Powertrain:	Rear-wheel drive
Measurement Date:	01/03/2017	Vehicle Type:	Normal

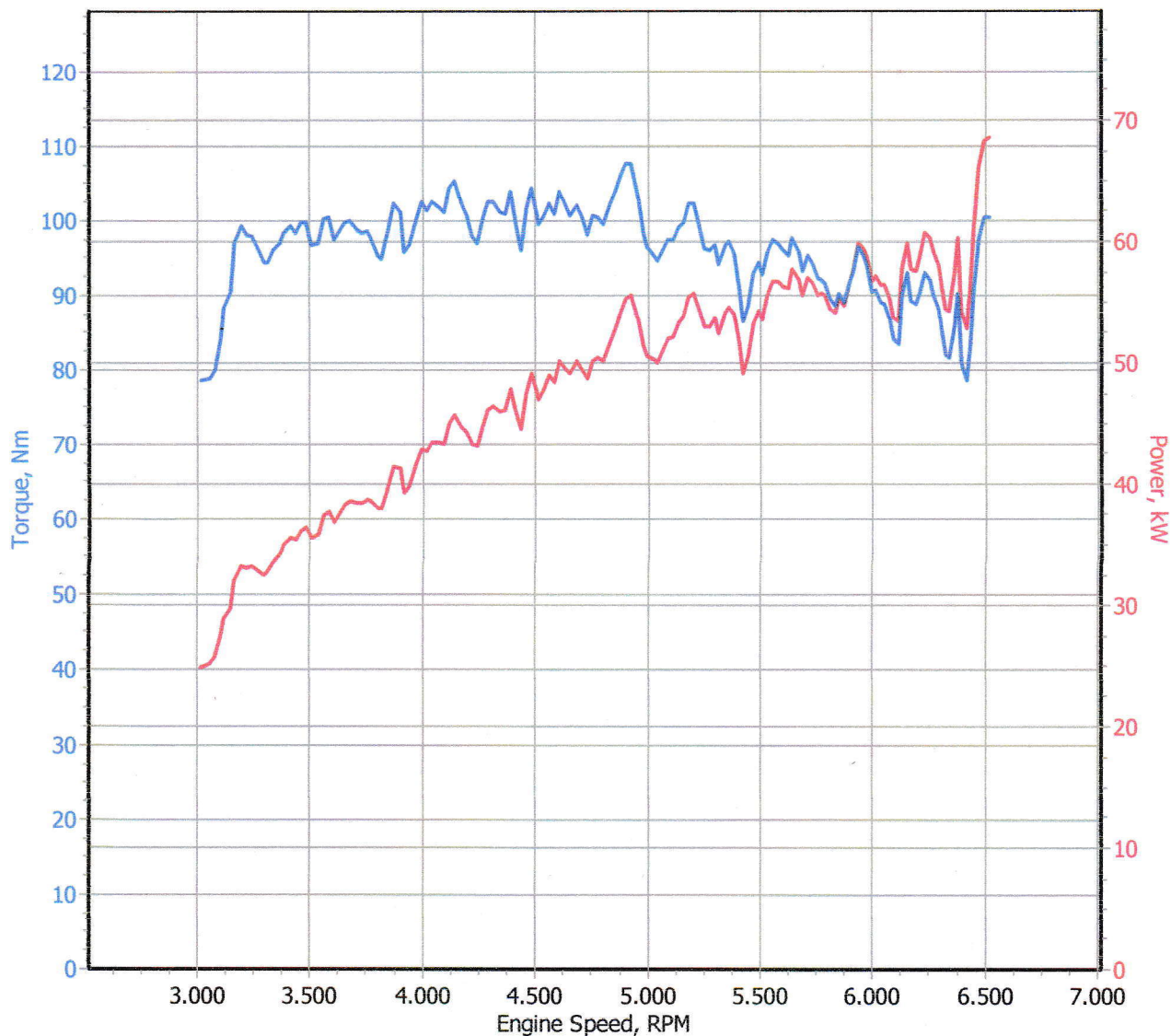


Atmospheric Conditions		Dyno Data	
Temperature:	25 °C	Correction:	EWG 80/1269
Humidity:	46 %	Correction Coefficient:	0,97
Atmospheric Pressure:	1013 mbar	Engine Power:	63,89 kW (86,89 hp)
Vehicle Data		Wheel Power:	57,11 kW (77,67 hp)
Gross Weight:	1188,85 kg	Max. Power RPM:	6505 rpm
Frontal Surface:	2,21 m ²	Torque:	108,19 Nm
Cw Coefficient:	0,30	Max. Torque RPM:	4476 rpm
		Gear:	3rd Gear

Dyno Test

WGSoft.de
AUTOMOTIVE DIAGNOSTIC SOFTWARE

Vehicle:	Xenia MT 1.3	Engine Type:	Petrol
License Plate Number:		Intercooler:	Air
Test Technician:		Gearbox:	Manual
Vehicle Owner:	Wardoyo	Powertrain:	Rear-wheel drive
Measurement Date:	01/03/2017	Vehicle Type:	Normal



Atmospheric Conditions

Temperature:	25 °C
Humidity:	46 %
Atmospheric Pressure:	1013 mbar

Vehicle Data

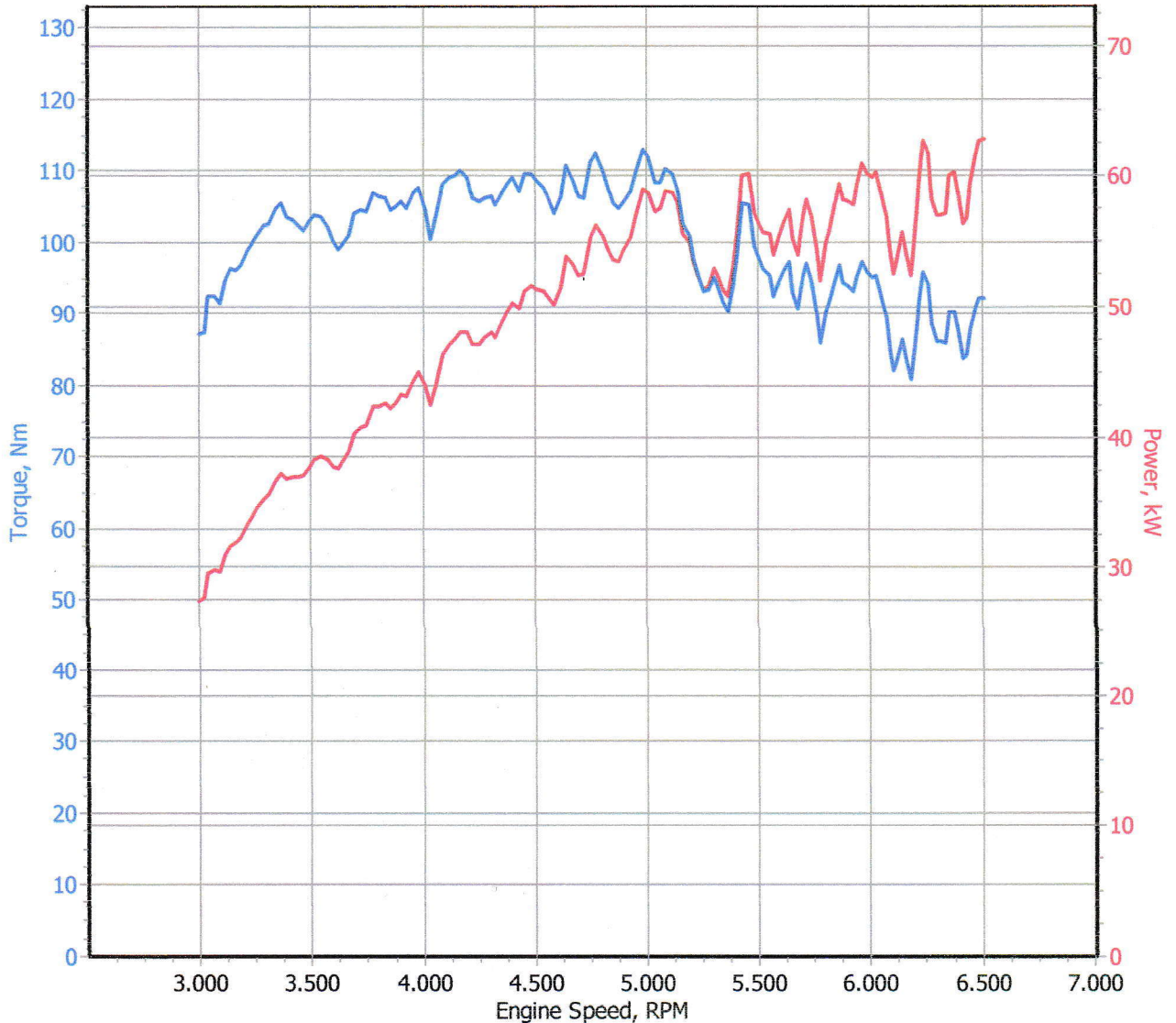
Gross Weight:	1188,85 kg
Frontal Surface:	2,21 m ²
Cw Coefficient:	0,30

Dyno Data

Correction:	EWG 80/1269
Correction Coefficient:	0,97
Engine Power:	68,52 kW (93,19 hp)
Wheel Power:	61,25 kW (83,30 hp)
Max. Power RPM:	6515 rpm
Torque:	107,51 Nm
Max. Torque RPM:	4906 rpm
Gear:	3rd Gear

Dyno Test

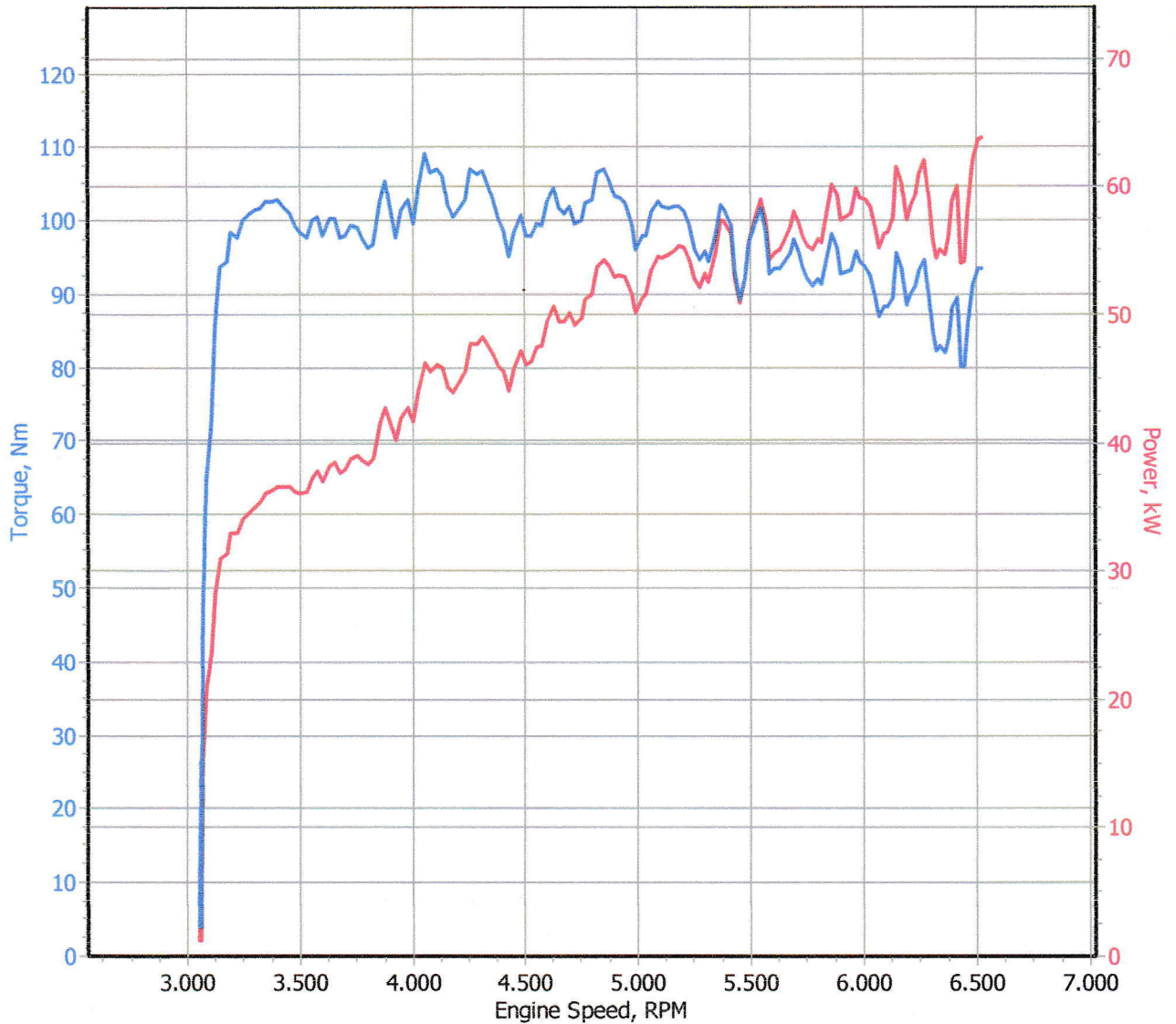
Vehicle:	Xenia MT 1.3	Engine Type:	Petrol
License Plate Number:		Intercooler:	Air
Test Technician:		Gearbox:	Manual
Vehicle Owner:	Wardoyo	Powertrain:	Rear-wheel drive
Measurement Date:	01/03/2017	Vehicle Type:	Normal



Atmospheric Conditions		Dyno Data	
Temperature:	25 °C	Correction:	EWG 80/1269
Humidity:	46 %	Correction Coefficient:	0,97
Atmospheric Pressure:	1013 mbar	Engine Power:	62,88 kW (85,52 hp)
Vehicle Data		Wheel Power:	56,21 kW (76,44 hp)
Gross Weight:	1188,85 kg	Max. Power RPM:	6509 rpm
Frontal Surface:	2,21 m2	Torque:	113,01 Nm
Cw Coefficient:	0,30	Max. Torque RPM:	4984 rpm
		Gear:	3rd Gear

Dyno Test

Vehicle:	Xenia MT 1.3	Engine Type:	Petrol
License Plate Number:		Intercooler:	Air
Test Technician:		Gearbox:	Manual
Vehicle Owner:	Wardoyo	Powertrain:	Rear-wheel drive
Measurement Date:	01/03/2017	Vehicle Type:	Normal



Atmospheric Conditions		Dyno Data	
Temperature:	25 °C	Correction:	EWG 80/1269
Humidity:	46 %	Correction Coefficient:	0,97
Atmospheric Pressure:	1013 mbar	Engine Power:	63,86 kW (86,86 hp)
Vehicle Data		Wheel Power:	57,09 kW (77,64 hp)
Gross Weight:	1188,85 kg	Max. Power RPM:	6520 rpm
Frontal Surface:	2,21 m2	Torque:	109,08 Nm
Cw Coefficient:	0,30	Max. Torque RPM:	4054 rpm
		Gear:	3rd Gear