2014 VW Passat PEMS Testing Summary
Vehicle Ex. 6 Personal Privacy (PP)
2014 VW Passat Genll 2.0L CI
Consent Decree Emissions Level

| | |
|---|---|
| **Exhaust Emission standard =** | **g/mi** |
| **Test Group SFTP FEL =** | **g/mi** |

Cold Start Bag 1 = 0.055
Cold Start Bag 2 = 0.002
Cold Start Bag 3 = 0.013

Suspect data =

| Test Route | Date | Start | Stop | Miles | Avg. Amb Temp (C) | Avg. Amb Temp (F) | ECT @ Start (F) | NOX g/mi | HC g/mi | Sum g/mi | Calc NMHC | Calc Sum | FE | Avg Speed | Notes | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 3/8/2017 | 10:20 AM | 10:42 AM | 7.72 | 10.9 | 51.6 | 82.4 | **0.186** | **0.093** | **0.279** | **0.016** | **0.202** | 23.6 | 22.4 | | 1238 | 1238 | 10.881 | 10.89927184 | 7.648 | 7.717527778 | 0.327 | 0.32651 | 23.424 | 23.63642087 | 1.433 | 1.43288 | 0.187 | 0.185665674 | 0.719 | 0.71911 | 0.094 | 0.093178803 | 82.4 | 10:20:55.088 | 10:42:02.088 | 22.44192246 |
| A | 3/9/2017 | 10:01 AM | 10:27 AM | 7.69 | 0.2 | 32.4 | n/a | **0.132** | **0.016** | **0.148** | **0.012** | **0.144** | 36.3 | 23.5 | | 17783 | 1180 | 6.4 | 0.210786795 | 166.434 | 7.687638889 | 4.848 | 0.211958 | 34.331 | 36.26963308 | 8.06 | 1.01462 | 0.048 | 0.131980705 | 1.156 | 0.12414 | 0.007 | 0.016148001 | n/a | 10:01:03.819 | 10:27:20.322 | 23.45381356 |
| A | 3/16/2017 | 9:03 AM | 9:23 AM | 7.73 | -3.0 | 26.6 | 24.8 | **0.281** | **0.020** | **0.301** | **0.004** | **0.285** | 35.5 | 23.8 | Outdoor Cold Start | 1168 | 1168 | -3.012 | -3.017152659 | 7.653 | 7.732666667 | 0.218 | 0.217671 | 35.159 | 35.52456077 | 2.173 | 2.17313 | 0.284 | 0.281032417 | 0.158 | 0.15788 | 0.021 | 0.020417277 | 24.8 | 09:03:36.455 | 09:23:43.455 | 23.83356164 |
| B | 3/8/2017 | 10:41 AM | 11:11 AM | 10.65 | 10.2 | 50.3 | N/A | **0.052** | **0.002** | **0.054** | **0.002** | **0.054** | 37.6 | 22.2 | | 1726 | 1726 | 10.144 | 10.15545244 | 11.683 | 10.6465 | 0.283 | 0.282984 | 41.284 | 37.6222684 | 0.552 | 0.55209 | 0.047 | 0.051856479 | 0.026 | 0.02586 | 0.002 | 0.002428967 | | 10:41:59.088 | 11:11:13.088 | 22.20590962 |
| B | 3/10/2017 | 9:41 AM | 10:14 AM | 10.77 | -1.1 | 30.1 | 28.0 | **0.211** | **0.012** | **0.223** | **0.002** | **0.213** | 33.6 | 19.4 | ECT data ng; Startup ambient was -1 deg C | 5124 | 2000 | -1.645 | -1.076376415 | 34.296 | 10.77266667 | 0.424 | 0.320219 | 80.815 | 33.64155989 | 2.819 | 2.27235 | 0.082 | 0.21093663 | 0.136 | 0.12532 | 0.004 | 0.011633146 | | 09:41:23.360 | 10:14:42.360 | 19.3908 |
| B | 3/17/2017 | 8:06 AM | 8:35 AM | 10.78 | -2.3 | 27.9 | 32.0 | **0.188** | **0.015** | **0.203** | **0.003** | **0.191** | 35.8 | 21.9 | Outdoor Cold Start | 1768 | 1768 | -2.261 | -2.263816535 | 10.667 | 10.77591667 | 0.301 | 0.301422 | 35.39 | 35.75026596 | 2.022 | 2.02193 | 0.19 | 0.187634153 | 0.166 | 0.1662 | 0.016 | 0.015423282 | 32 | 08:06:00.509 | 08:35:56.509 | 21.94191176 |
| C | 3/8/2017 | 11:11 AM | 11:57 AM | 30.78 | 10.0 | 50.0 | 203.0 | **0.046** | **0.002** | **0.048** | **0.001** | **0.047** | 37.8 | 39.9 | | 2776 | 2776 | 10.014 | 10.02072819 | 31.296 | 30.77977778 | 0.815 | 0.81464 | 38.417 | 37.78328805 | 1.414 | 1.41406 | 0.045 | 0.045941202 | 0.059 | 0.05896 | 0.002 | 0.001915543 | 203 | 11:11:10.088 | 11:57:25.088 | 39.91613833 |
| C | 3/16/2017 | 10:48 AM | 11:43 AM | 29.66 | 0.1 | 32.2 | 201.2 | **0.066** | **0.000** | **0.067** | **0.000** | **0.067** | 44.1 | 32.0 | | 3333 | 3333 | 0.137 | 0.137496247 | 29.415 | 29.65688889 | 0.672 | 0.672235 | 43.757 | 44.11684737 | 1.972 | 1.97164 | 0.067 | 0.066481687 | 0.011 | 0.01097 | 0 | 0.000369897 | 201.2 | 10:48:10.455 | 11:43:42.455 | 32.03264326 |
| CCD | 3/9/2017 | 1:28 PM | 2:36 PM | 38.65 | 1.6 | 34.9 | n/a | **0.071** | **0.007** | **0.078** | **0.005** | **0.076** | 39.6 | 33.8 | | 17783 | 4114 | 6.4 | 1.584112255 | 166.434 | 38.64844444 | 4.848 | 0.975434 | 34.331 | 39.62179342 | 8.06 | 2.73748 | 0.048 | 0.070830276 | 1.156 | 0.2812 | 0.007 | 0.007275843 | n/a | 13:28:08.067 | 14:36:45.067 | 33.81973748 |
| CCD | 3/9/2017 | 2:36 PM | 3:42 PM | 38.68 | 1.3 | 34.3 | 203.0 | **0.052** | **0.005** | **0.057** | **0.004** | **0.056** | 40.2 | 35.4 | | 17783 | 3932 | 6.4 | 1.289033238 | 166.434 | 38.68397222 | 4.848 | 0.962831 | 34.331 | 40.17732315 | 8.06 | 1.99404 | 0.048 | 0.05154693 | 1.156 | 0.21174 | 0.007 | 0.005473585 | 203 | 14:36:47.067 | 15:42:18.067 | 35.41767548 |
| CCD | 3/16/2017 | 12:12 PM | 1:36 PM | 38.79 | 2.7 | 36.9 | n/a | **0.126** | **0.003** | **0.129** | **0.002** | **0.128** | 37.8 | 27.7 | | 5034 | 5034 | 2.721 | 2.72217806 | 38.483 | 38.79208333 | 1.026 | 1.026101 | 37.503 | 37.80532651 | 4.885 | 4.88542 | 0.127 | 0.125938583 | 0.1 | 0.09982 | 0.003 | 0.002573205 | n/a | 12:12:26.775 | 13:36:19.775 | 27.74165673 |
| D | 3/9/2017 | 10:27 AM | 11:55 AM | 82.50 | 1.8 | 35.2 | n/a | **0.016** | **0.006** | **0.021** | **0.004** | **0.020** | 40.7 | 58.7 | | 17783 | 5059 | 6.4 | 1.803919915 | 166.434 | 82.49919444 | 4.848 | 2.02814 | 34.331 | 40.67726806 | 8.06 | 1.28471 | 0.048 | 0.015572394 | 1.156 | 0.48278 | 0.007 | 0.005851936 | n/a | 10:27:22.322 | 11:55:43.322 | 58.70668116 |
| D | 3/16/2017 | 9:23 AM | 10:48 AM | 82.34 | -1.6 | 29.2 | 165.2 | **0.075** | **0.004** | **0.079** | **0.001** | **0.075** | 37.4 | 58.7 | Regeneration | 5049 | 5049 | -1.574 | -1.574400634 | 81.812 | 82.33894444 | 2.203 | 2.202875 | 37.139 | 37.37794675 | 6.147 | 6.14701 | 0.075 | 0.074654953 | 0.361 | 0.36112 | 0.004 | 0.004385774 | 165.2 | 09:23:40.455 | 10:48:13.455 | 58.70869479 |
| D | 3/17/2017 | 8:35 AM | 9:56 AM | 82.32 | 0.5 | 33.0 | 194.0 | **0.065** | **0.001** | **0.066** | **0.001** | **0.066** | 42.2 | 61.6 | | 4812 | 4812 | 0.54 | 0.54047817 | 81.798 | 82.31916667 | 1.951 | 1.95086 | 41.929 | 42.19634759 | 5.367 | 5.36672 | 0.066 | 0.065194052 | 0.106 | 0.10551 | 0.001 | 0.001281719 | 194 | 08:35:53.509 | 09:56:32.509 | 61.58541147 |
| E | 3/9/2017 | 11:55 AM | 1:28 PM | 29.50 | 1.5 | 34.7 | n/a | **0.035** | **0.002** | **0.037** | **0.001** | **0.036** | 44.1 | 30.4 | | 17783 | 3494 | 6.4 | 1.512327766 | 166.434 | 29.49627778 | 4.848 | 0.669572 | 34.331 | 44.05243615 | 8.06 | 1.0285 | 0.048 | 0.034868806 | 1.156 | 0.05541 | 0.007 | 0.001878542 | n/a | 11:55:45.322 | 13:28:06.067 | 30.39112765 |
| E | 3/17/2017 | 9:56 AM | 10:52 AM | 29.67 | 1.7 | 35.0 | 201.2 | **0.068** | **0.000** | **0.068** | **0.000** | **0.068** | 44.4 | 32.0 | | 3342 | 3342 | 1.673 | 1.673922156 | 29.435 | 29.66908333 | 0.668 | 0.668068 | 44.061 | 44.4102746 | 2.012 | 2.01212 | 0.068 | 0.067818745 | 0.004 | 0.004 | 0 | 0.00013482 | 201.2 | 09:56:29.509 | 10:52:10.509 | 31.95951526 |
| Steady | 3/20/2017 | 9:24 AM | 10:12 AM | 30.69 | 6.4 | 43.6 | n/a | **0.074** | **0.011** | **0.085** | **0.008** | **0.082** | 38.9 | 38.7 | DEC drove several steady states around AA - 35-75 mph | 2856 | 2856 | 6.419 | 6.423405746 | 0 | 30.68911111 | 0.789 | 0.788814 | 0 | 38.90538341 | 2.276 | 2.27556 | 0 | 0.074148775 | 0.33 | 0.32911 | 0 | 0.010723999 | n/a | 09:24:31.365 | 10:12:06.365 | 38.6837535 |
| "D" | 3/16/2017 | 9:42 AM | 9:53 AM | 13.10 | -0.3 | 31.4 | 204.8 | **0.062** | **0.020** | **0.082** | **0.015** | **0.077** | 27.6 | 69.6 | Regen portion of D cycle only 1100 to 1778 seconds | 5049 | 678 | -1.574 | -0.340400238 | 81.812 | 13.10425 | 2.203 | 0.473938 | 37.139 | 27.64971368 | 6.147 | 0.81146 | 0.075 | 0.061923422 | 0.361 | 0.26557 | 0.004 | 0.020265944 | 204.8 | 09:42:00.455 | 09:53:17.455 | 69.5800885 |
| A, D, E, CCD | 3/9/2017 | 10:01 AM | 3:42 PM | 197.02 | 6.4 | 43.5 | 203.0 | **0.041** | **0.006** | **0.047** | **0.004** | **0.045** | 40.6 | 39.9 | Amalgamated results from 3/9 | 17783 | 17783 | 6.4 | 6.400629886 | 166.434 | 197.0155278 | 4.848 | 4.847935 | 34.331 | 40.63906133 | 8.06 | 8.05935 | 0.048 | 0.040907182 | 1.156 | 1.15527 | 0.007 | 0.005863853 | 203 | 10:01:03.819 | 15:42:18.067 | 39.88392847 |

**Cell:** M6
**Comment:** Cullen, Daniel:
If starting ECT < 80 F, used Bag 1 NMHC %, if starting ECT >80 and <170 used Bag 3 NMHC %, otherwise used fully warmed up NMHC %

2014 VW Passat PEMS Testing Summary
Vehicle Ex. 6 Personal Privacy (PP)
2014 VW Passat GenII 2.0L CI
Consent Decree Emissions Level

| | | |
|---|---|---|
| **Exhaust Emission standard =** | **0** | **g/mi** |
| **Test Group SFTP FEL =** | **0** | **g/mi** |

Cold Start Bag 1 = 0.055
Cold Start Bag 2 = 0.002
Cold Start Bag 3 = 0.013

Suspect data =

| Off Time sec. | Off Time min. | Date | Start | Stop | Miles | Start. Amb Temp (C) | Start Amb Temp (F) | ECT @ Start (F) | DPF Temp @ Start (C) | NOX g/mi | HC g/mi | FE mpg | Avg Speed mph | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 570 | 9.5 | 3/10/2017 | 10:19 AM | 10:28 AM | 2.63 | -3.0 | 26.6 | N/A | 172.8 | **0.201** | **0.004** | 26.7 | 16.0 | Preceded by a Run B & soak |
| 3600 | 60 | 3/10/2017 | 11:29 AM | 11:39 AM | 2.79 | 1.0 | 33.8 | N/A | 81.5 | **0.404** | **0.015** | 29.2 | 16.0 | |
| 7200 | 120 | 3/10/2017 | 1:39 PM | 1:49 PM | 2.76 | 0.0 | 32.0 | N/A | 41.0 | **0.367** | **0.045** | 23.1 | 15.7 | |

Transpose Paste Column

| Start Time | Stop Time | Test Distance (Miles) | Start Ambient (deg C) | Start ECT (deg F) | Start DPF Temp (deg C) | NOx g total | NOx g/mile | HC g total | HC g/mile | Test fuel economy (MPG) | Run average speed (MPH) | Off time before run(sec) | Start Row |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10:19:03.360 | 10:28:53.360 | 2.63 | -3.00 | | 172.80 | 0.528 | 0.201 | 0.010 | 0.004 | 26.71 | 16.03 | 570 | 2263 |
| 11:29:06.360 | 11:39:32.360 | 2.79 | 1.00 | | 81.50 | 1.125 | 0.404 | 0.041 | 0.015 | 29.16 | 16.03 | | 1078 |
| 13:39:03.360 | 13:49:36.360 | 2.76 | 0.00 | | 41.00 | 1.015 | 0.367 | 0.124 | 0.045 | 23.12 | 15.72 | | 905 |

2014 VW Passat PEMS Testing Summary
Vehicle Ex. 6 Personal Privacy (PP)
2014 VW Passat GenII 2.0L CI
Consent Decree Emissions Level

| Test Cycle | Date | NOX g/mi |
|---|---|---|
| FTP | 3/7/2017 | 0.016 |
| HWFE | 3/7/2017 | 0.001 |
| US06 | 3/7/2017 | 0.076 |
| Spl 4 - Warm | 3/7/2017 | 0.072 |
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Reference VW Lab test Summary
Vehicle

LDV

SFTP Calculated from EPA FTP average **#DIV/0!**

| Test Cycle | Date | NOX g/mi |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

SFTP Calculated from GM data **0.000**

| | |
|---|---|
| **Exhaust Emission standard =** | |
| **Test Group SFTP FEL =** | |

Inertia =

| NMHC g/mi | CO g/mi | CO2 g/mi | FE | Bag 1 Nox g/mi |
|---|---|---|---|---|
| 0.031 | 0.081 | 278.2 | 36.6 | 0.055 |
| 0.035 | 0.000 | 195.0 | 52.2 | |
| 0.028 | 0.013 | 292.8 | 34.7 | 0.089 |
| 0.007 | 0.000 | 272.2 | 37.4 | 0.000 |
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g/mi

| NMHC g/mi | CO g/mi | CO2 g/mi | FE | Bag 1 Nox g/mi |
|---|---|---|---|---|
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|---|---|
| **0.000** | **g/mi** |
| **0.000** | **g/mi** |

3500 #

| Bag 2 NOx g/mi | Bag 3 NOx g/mi | Bag 4 NOx g/mi | Notes |
|---|---|---|---|
| 0.002 | 0.013 | | |
| | | | |
| 0.073 | | | |
| 0.000 | 0.002 | 0.003 | |
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THC

Max US06 Allowed assuming valid SC03 & FTP = **-0.115** g/mi

| Bag 2 NOx g/mi | Bag 3 NOx g/mi | Bag 4 NOx g/mi | Notes |
|---|---|---|---|
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| | | | |

Suspect data =

NMHC
%

HC to NMHC %

| | | HC | | | | | NMHC | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Test Date | Test | Bag 1 | Bag 2 | Bag 3 | Bag 4 | Weighted | Bag 1 | Bag 2 | Bag 3 | Bag 4 | Weighted |
| 3/7/2017 | Spl 4 | 0.108 | 0.031 | 0.044 | 0.106 | 0.072 | 0.007 | 0.004 | 0.006 | 0.012 | 0.007 |
| 3/7/2017 | FTP | 0.301 | 0.06 | 0.078 | | 0.115 | 0.061 | 0.005 | 0.057 | | 0.031 |
| 3/7/2017 | HWFE | 0.047 | | | | 0.047 | 0.035 | | | | 0.035 |

| | THC | NMHC | % |
|---|---|---|---|
| Weighted Average | 0.078 | 0.024 | 31.2% |
| Warm Average | 0.066 | 0.012 | 17.4% |
| Cold Start Avergage | 0.301 | 0.061 | 20.3% |
| Hot Start Average | 0.078 | 0.057 | 73.1% |