NCAT – National Center for Advanced Technology

National Vehicle and Fuel Emissions Laboratory
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

The following material was prepared by FEV Engine Technology under EPA Contract EP-C-12-014 and describes the test procedures performed by FEV on the 2.5L Ecotec LCV engine. Use of any NCAT material provided below, included as part of the complete test data package, should reference the suggested citation provided.

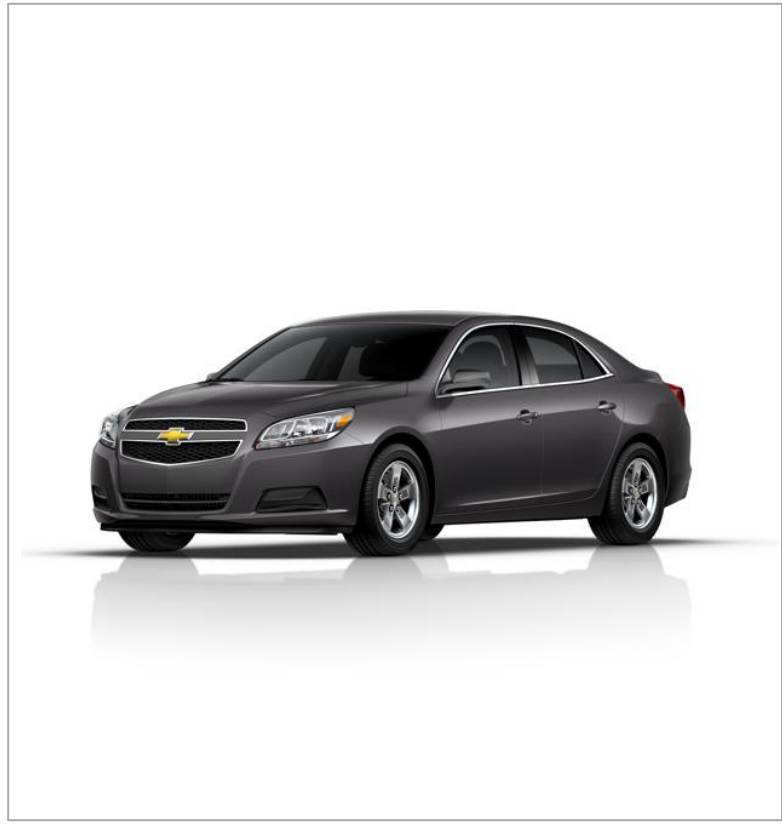
SUGGESTED CITATION: *2013 Chevrolet 2.5L Ecotec LCV Engine Reg E10 Fuel – Test Data Package*. Version 2018-02. Ann Arbor, MI: US EPA, National Vehicle and Fuel Emissions Laboratory, National Center for Advanced Technology, 2018.

P310798-01

EPA Benchmarking

2013 Chevrolet Malibu, 2.5L [LCV] I4 GDI

Engine Dynamometer Testing Summary



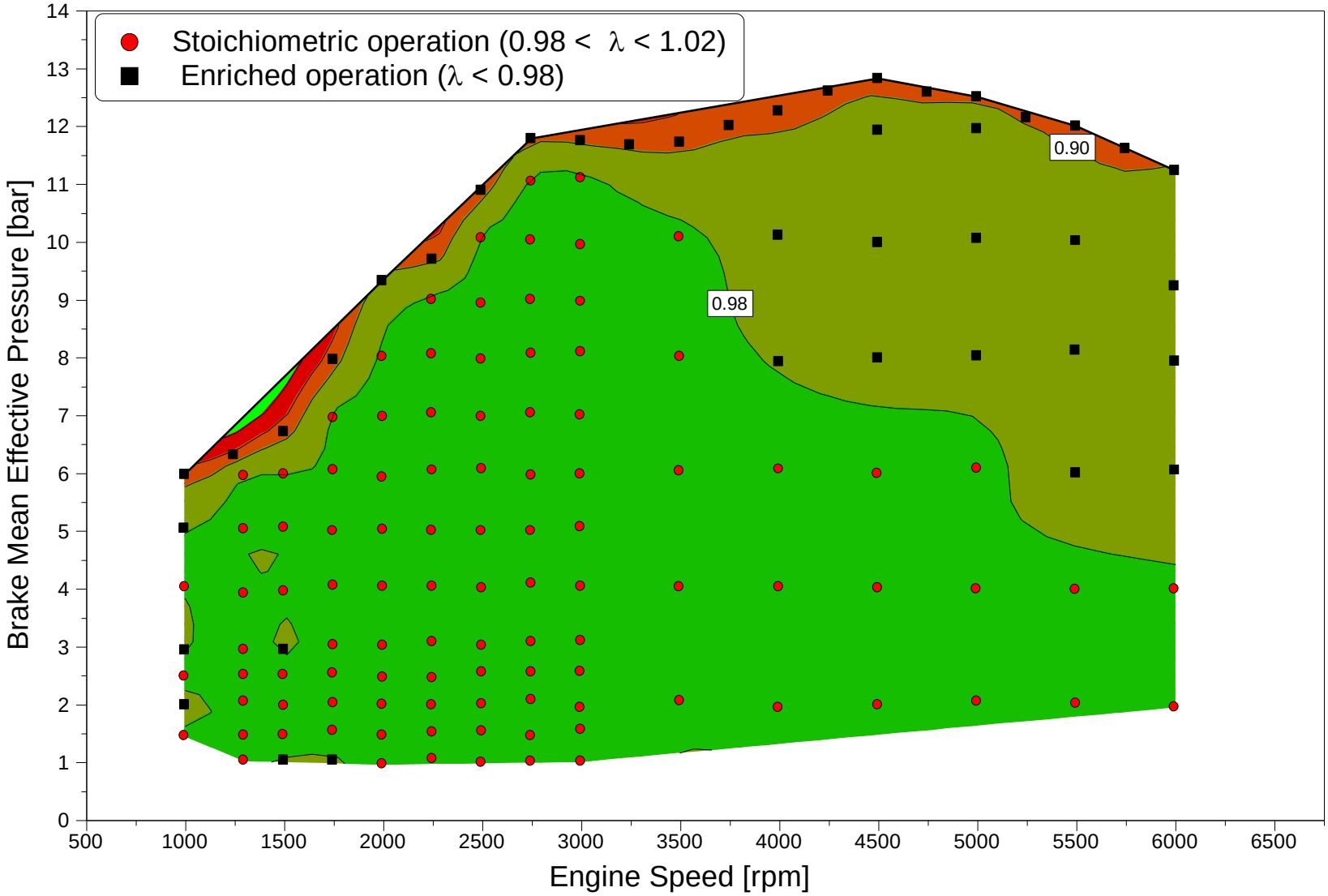
Contract No. EP-C-12-014, Work Assignment 1-5

July 31st, 2013

EPA did not request a final report for this task; this presentation serves as documentation of completion for this work assignment. Further information on this project is contained in the SAE paper 2015-01-1140 "Benchmarking and Modeling of a Conventional Mid-Size Car Using ALPHA."

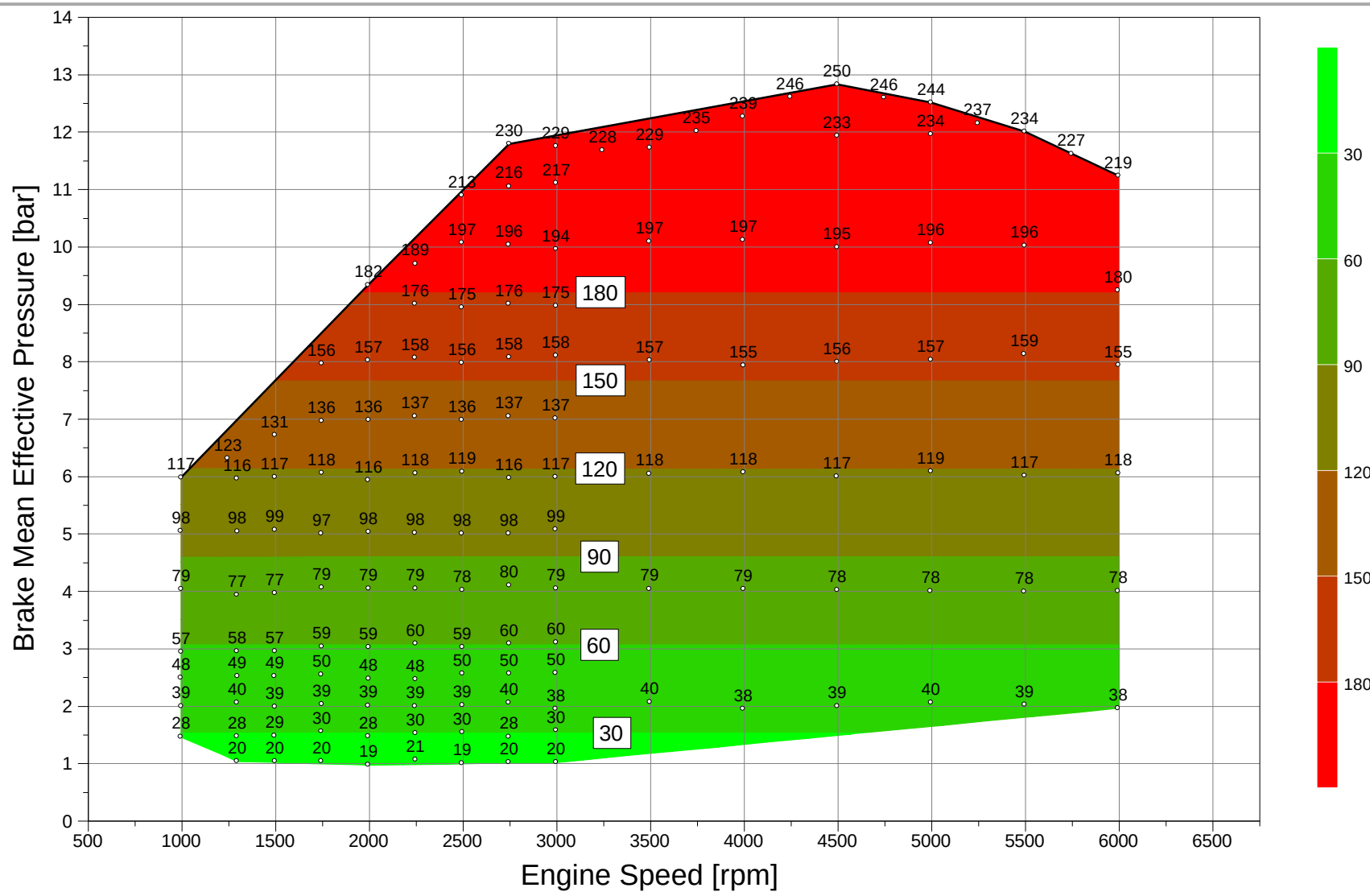
FEV

EPA Benchmarking: 2013 Chevrolet Malibu 2.5L I-4 16V GDI [LCV]
Engine Dyno Testing - Mapping: Controls Overview

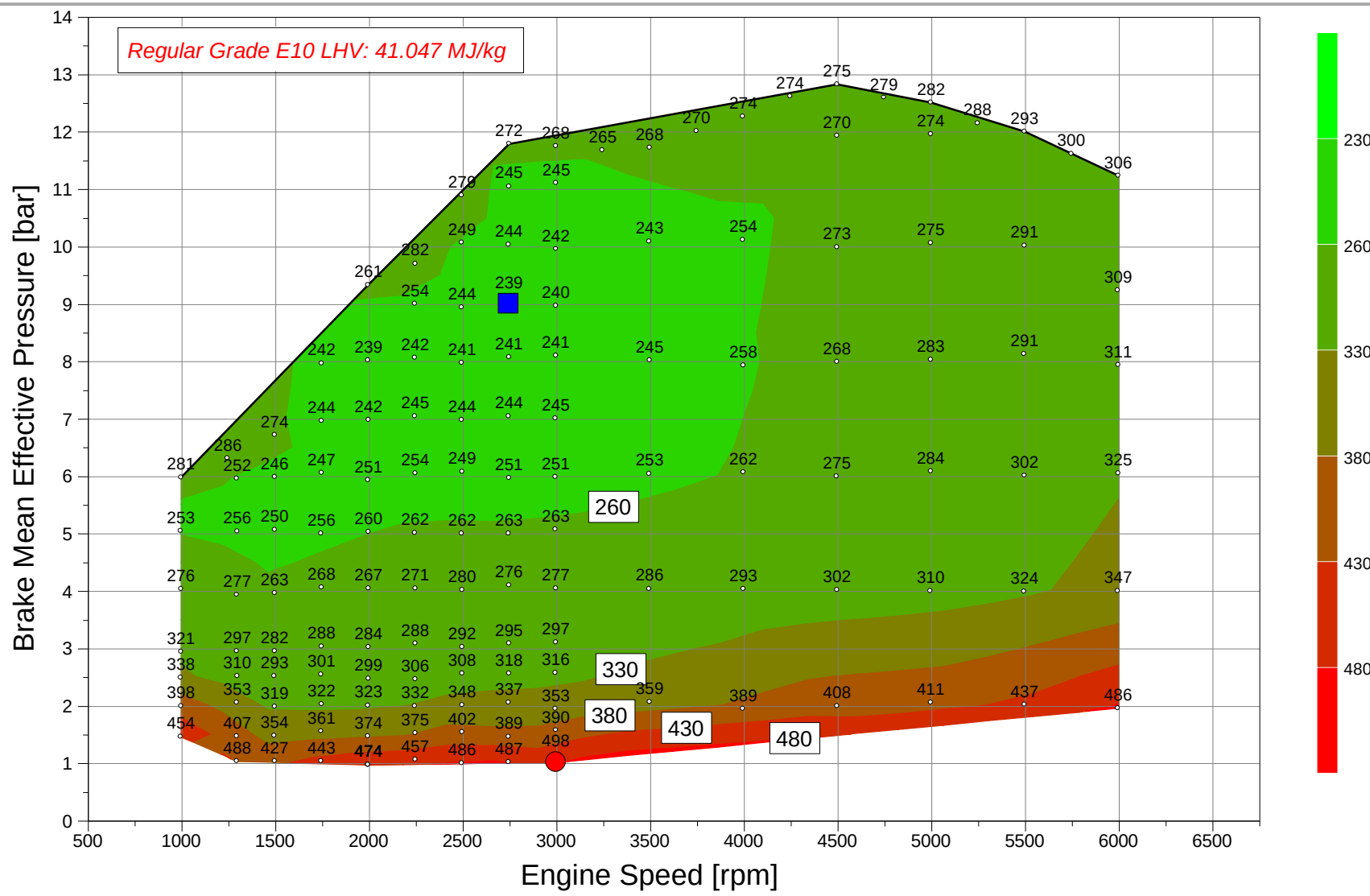


This lambda plot is provided to illustrate the location of the test points used to generate the remaining data plots.

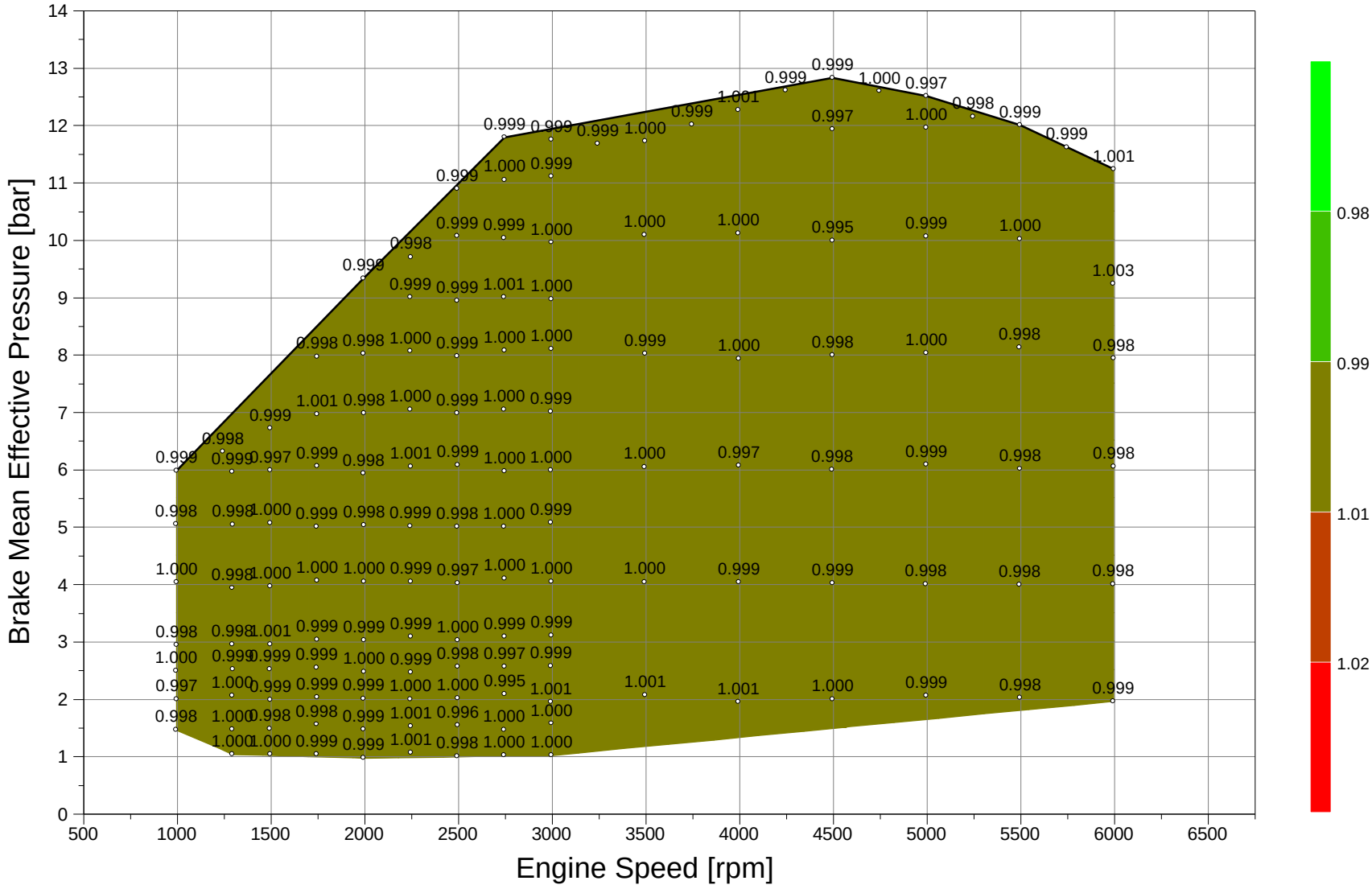
EPA Benchmarking: 2013 Chevrolet Malibu 2.5L I-4 16V GDI [LCV]
Engine Dyno Testing - Mapping: Measured Torque [Nm]



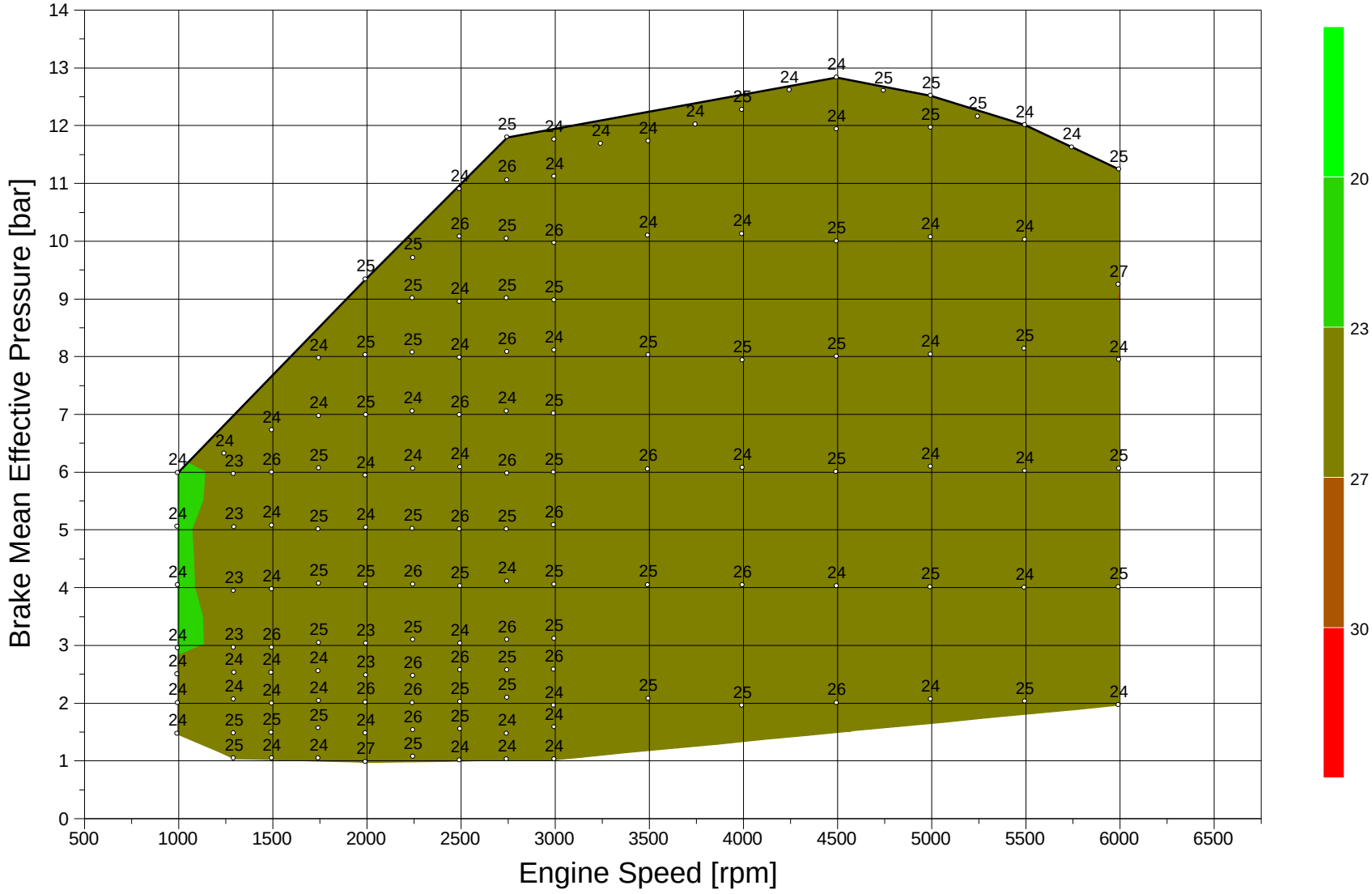
EPA Benchmarking: 2013 Chevrolet Malibu 2.5L I-4 16V GDI [LCV]
Engine Dyno Testing - Mapping: Measured (Raw) BSFC [g/kWhr]



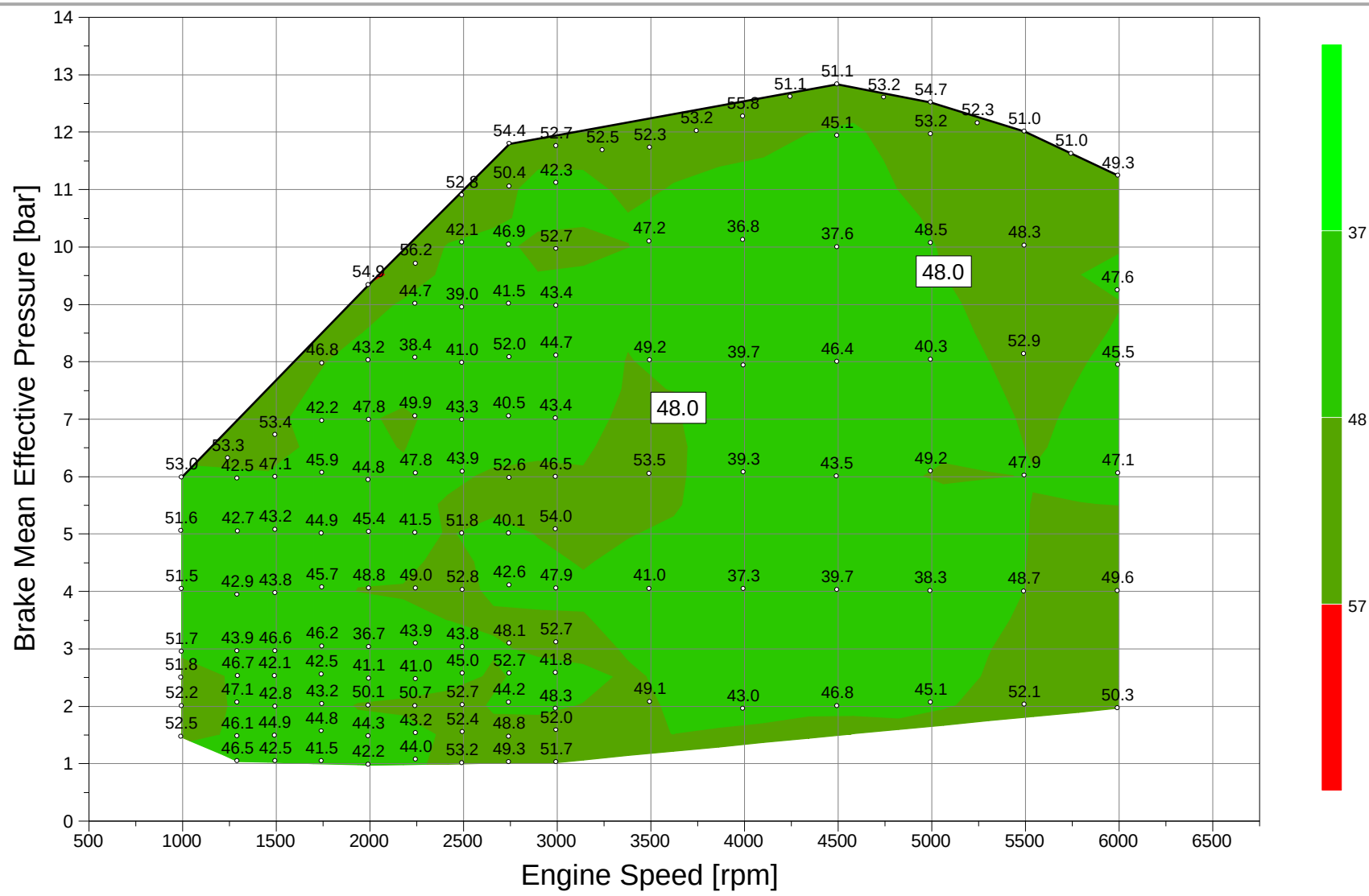
EPA Benchmarking: 2013 Chevrolet Malibu 2.5L I-4 16V GDI [LCV]
Engine Dyno Testing - Mapping: Pressure Before Air Filter [barA]



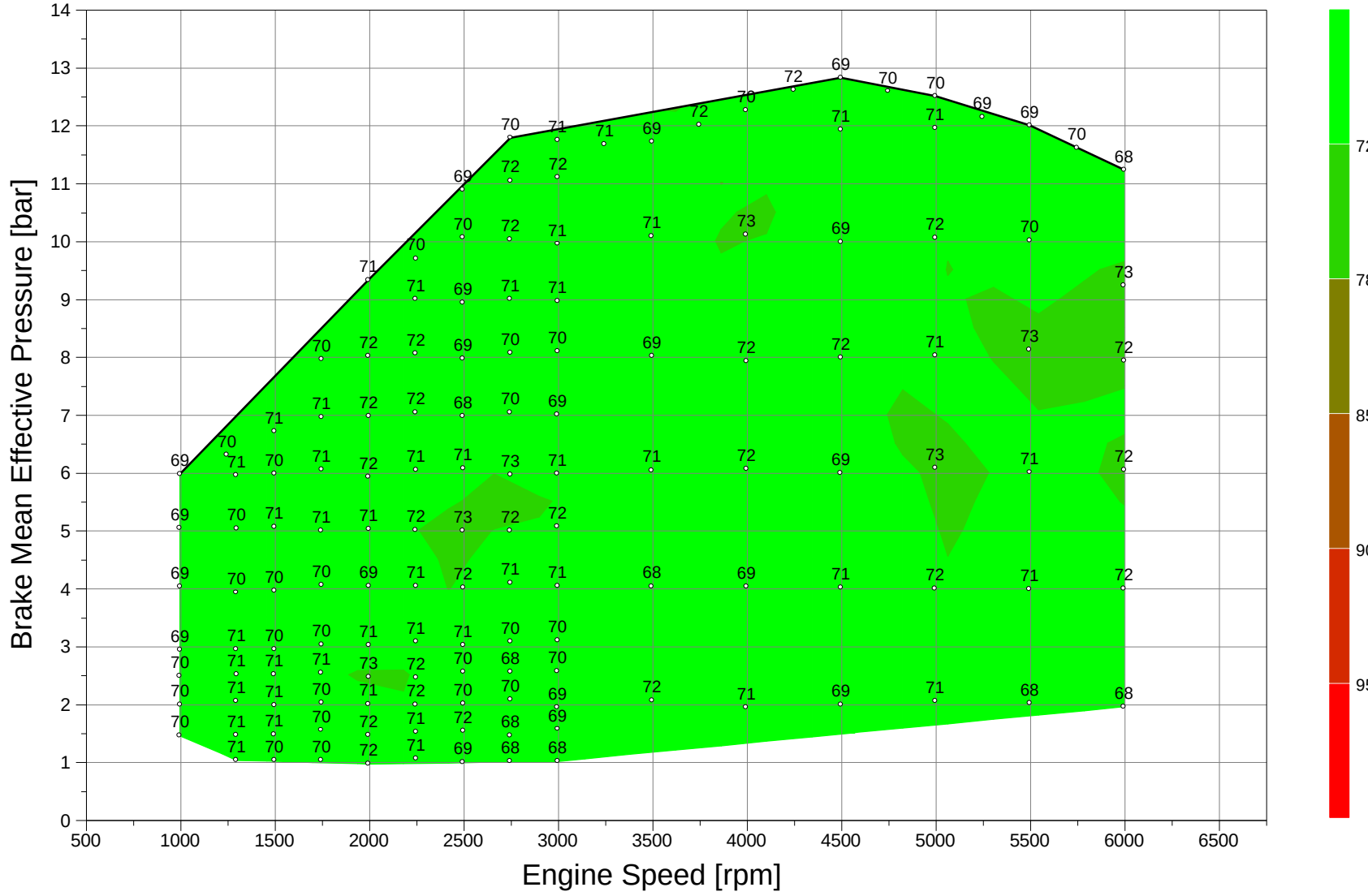
EPA Benchmarking: 2013 Chevrolet Malibu 2.5L I-4 16V GDI [LCV]
Engine Dyno Testing - Mapping: Temperature before Air Filter [°C]



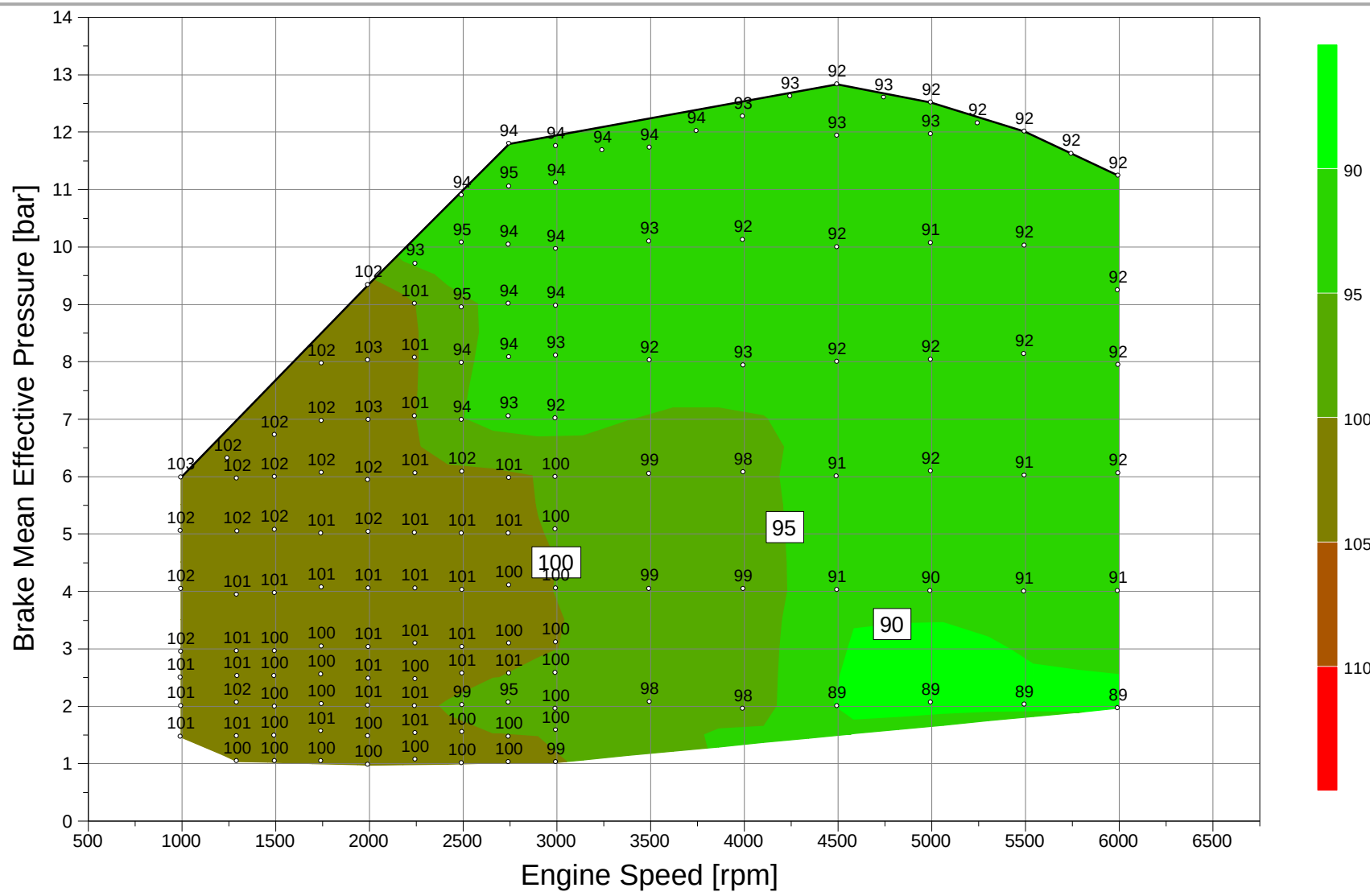
EPA Benchmarking: 2013 Chevrolet Malibu 2.5L I-4 16V GDI [LCV]
Engine Dyno Testing - Mapping: Absolute Humidity [grains / lb]



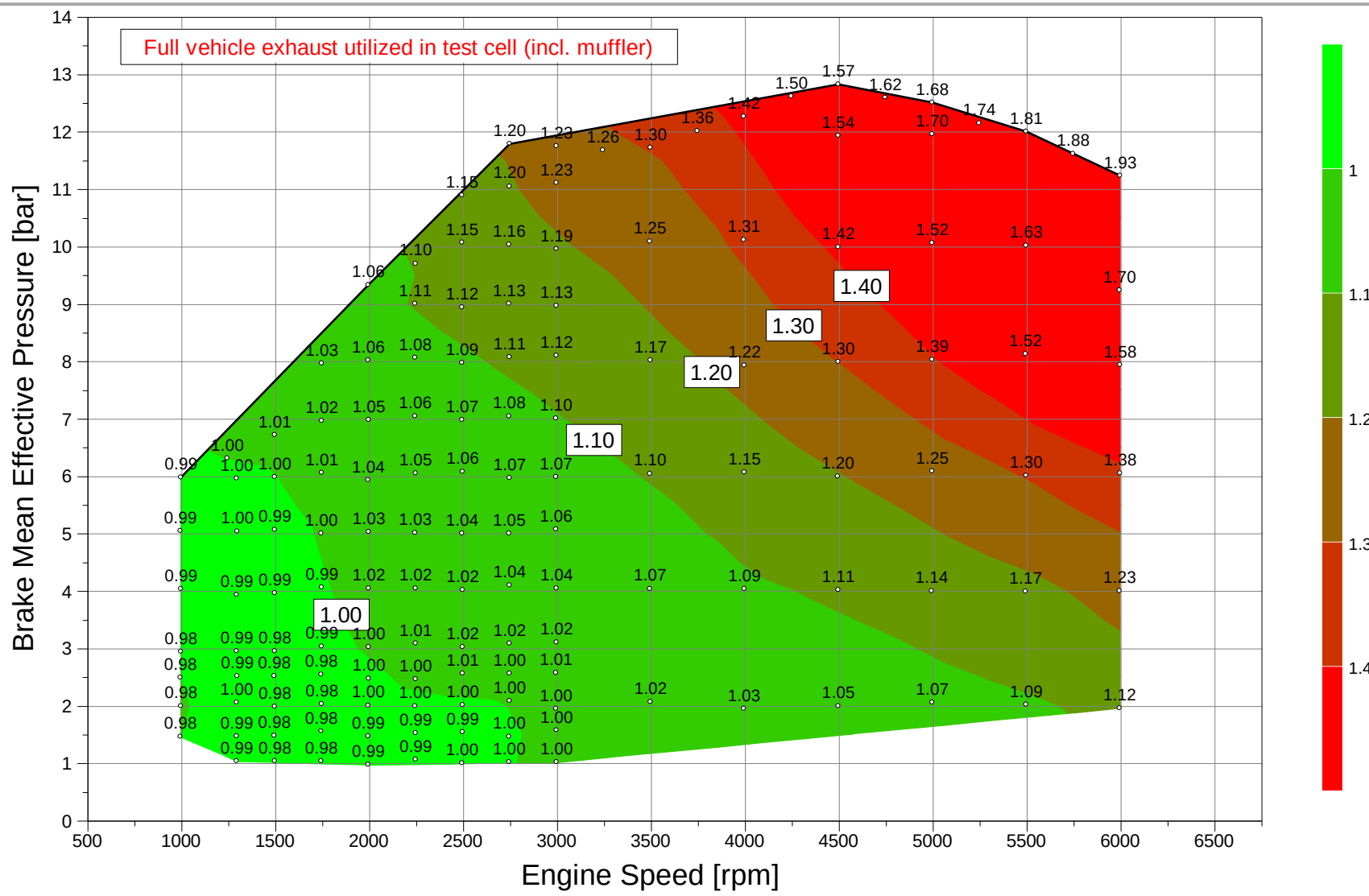
EPA Benchmarking: 2013 Chevrolet Malibu 2.5L I-4 16V GDI [LCV]
Engine Dyno Testing - Mapping: Coolant Inlet Temperature [°C]



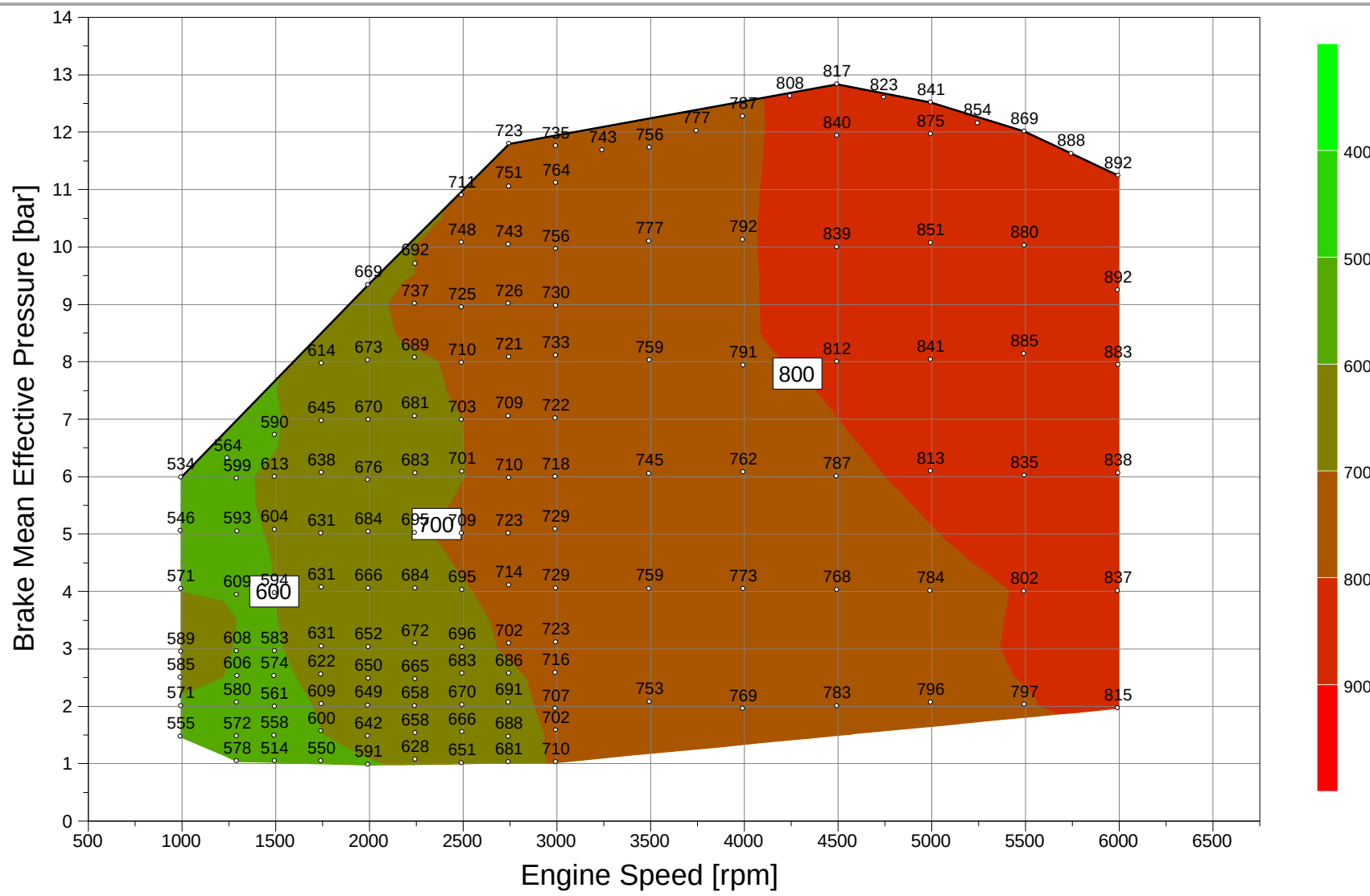
EPA Benchmarking: 2013 Chevrolet Malibu 2.5L I-4 16V GDI [LCV]
Engine Dyno Testing - Mapping: Coolant Outlet Temperature [°C]



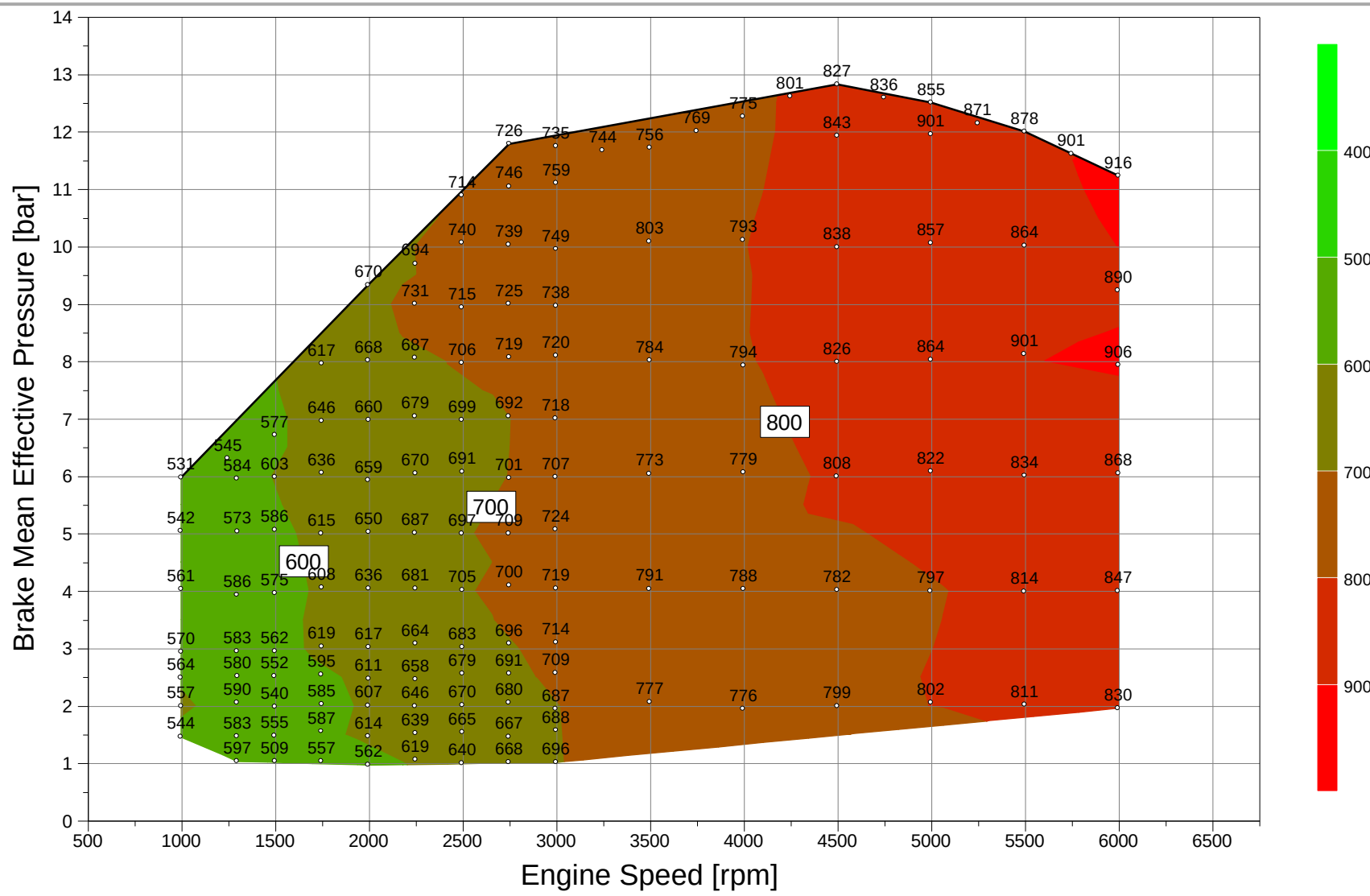
EPA Benchmarking: 2013 Chevrolet Malibu 2.5L I-4 16V GDI [LCV]
Engine Dyno Testing - Mapping: Exhaust BP before Catalyst [barA]



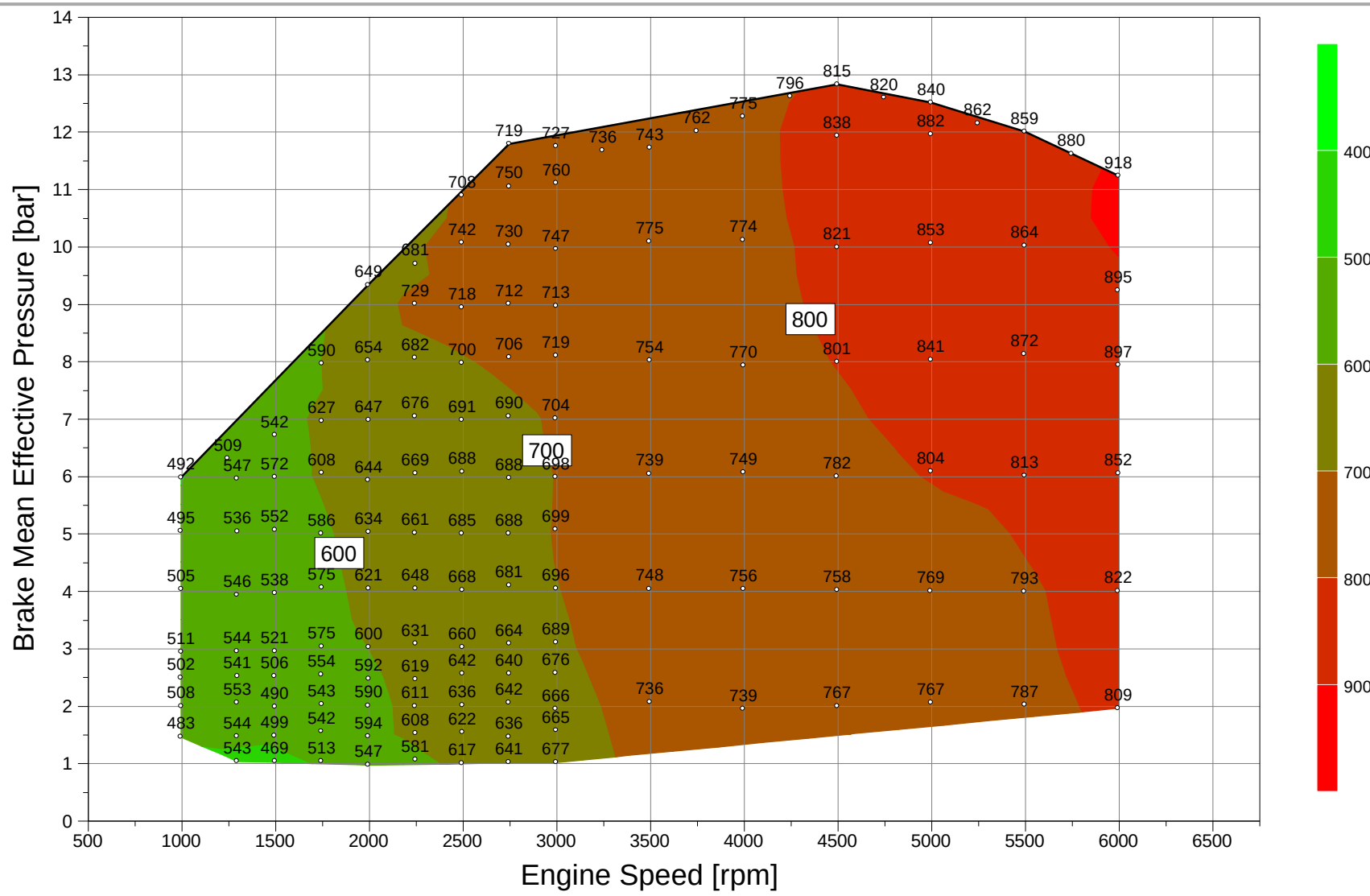
EPA Benchmarking: 2013 Chevrolet Malibu 2.5L I-4 16V GDI [LCV]
Engine Dyno Testing - Mapping: Exhaust Port 1 Temperature [°C]



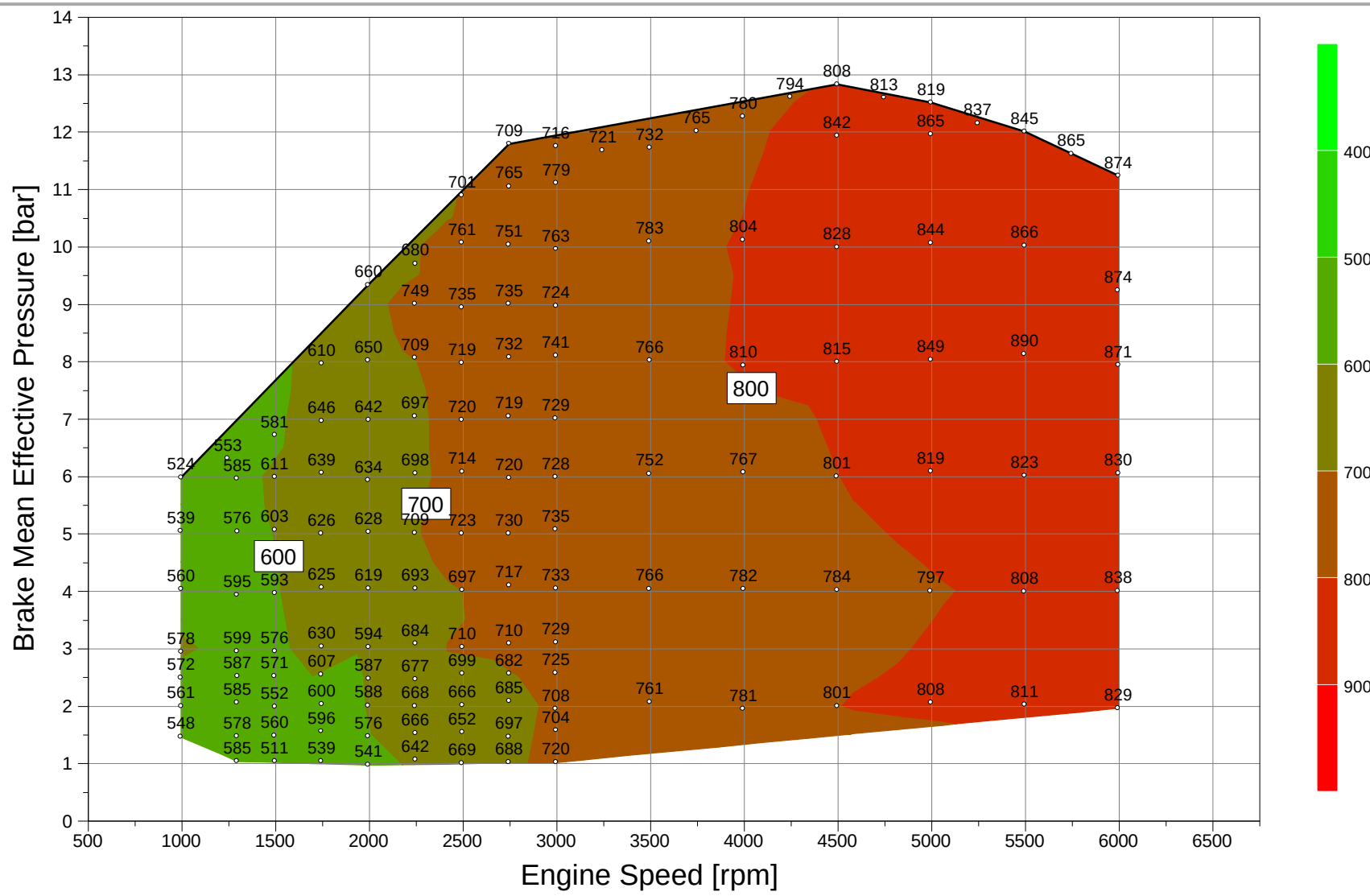
EPA Benchmarking: 2013 Chevrolet Malibu 2.5L I-4 16V GDI [LCV]
Engine Dyno Testing - Mapping: Exhaust Port 2 Temperature [°C]



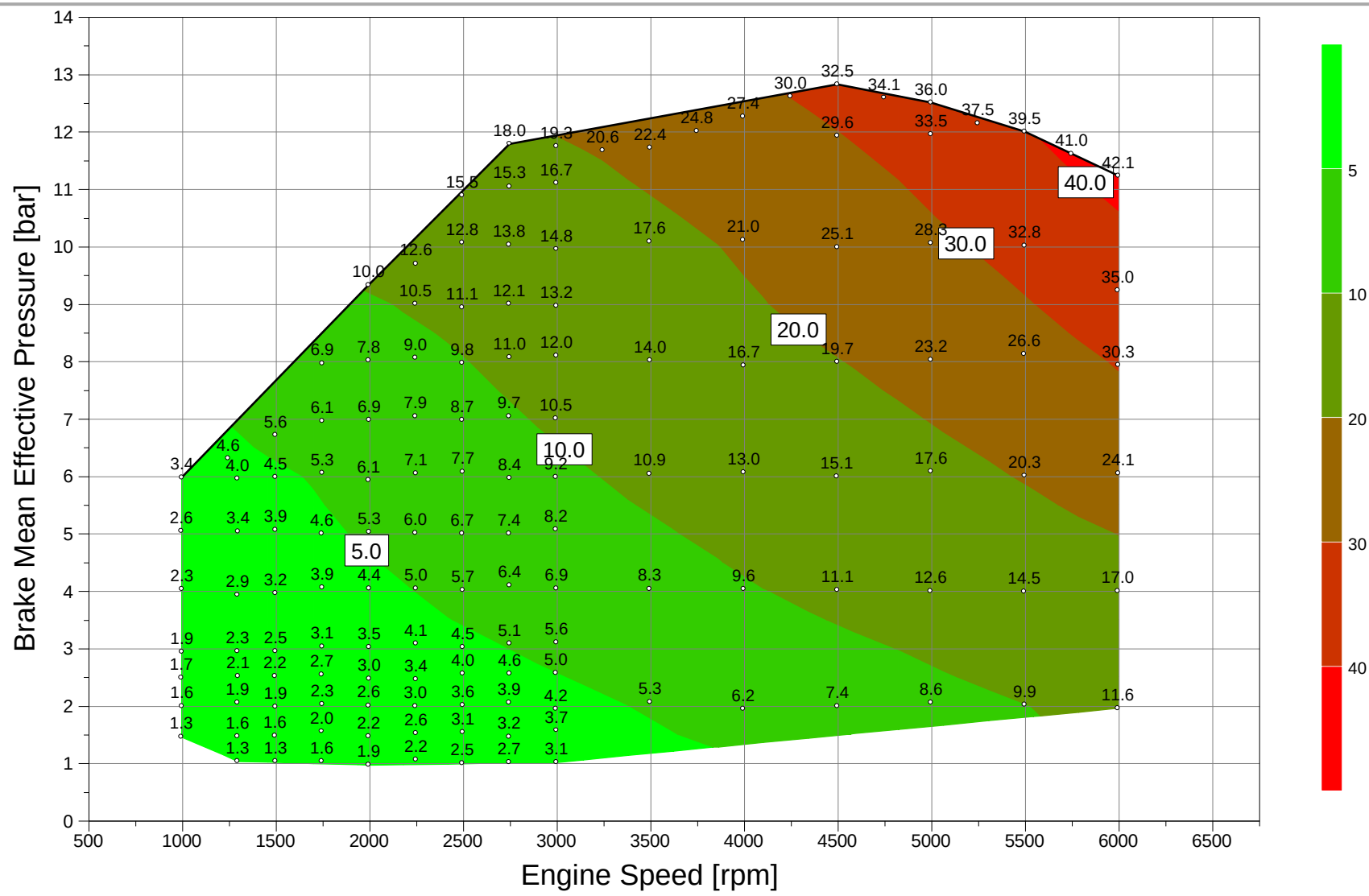
EPA Benchmarking: 2013 Chevrolet Malibu 2.5L I-4 16V GDI [LCV]
Engine Dyno Testing - Mapping: Exhaust Port 3 Temperature [°C]



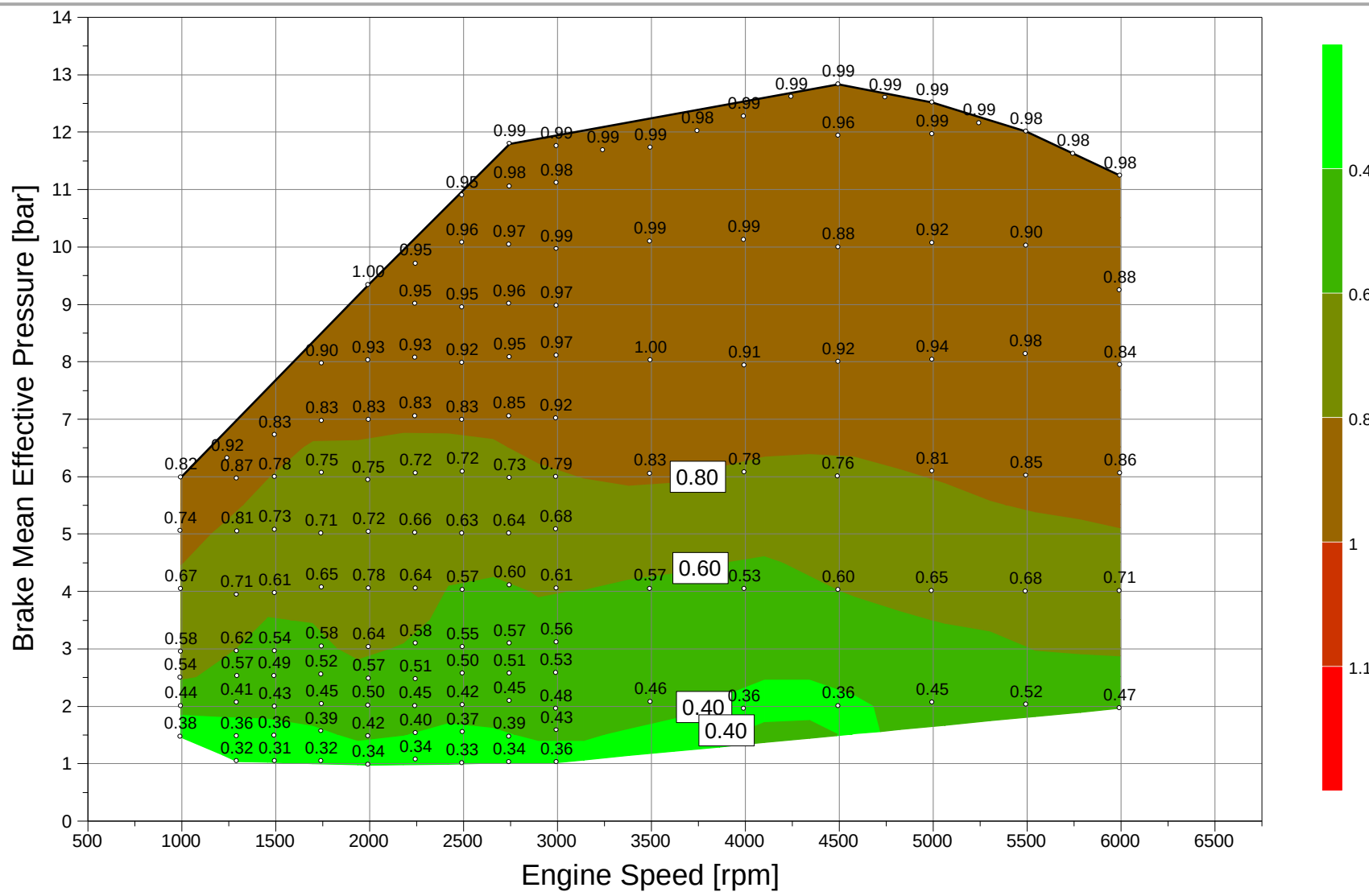
EPA Benchmarking: 2013 Chevrolet Malibu 2.5L I-4 16V GDI [LCV]
Engine Dyno Testing - Mapping: Exhaust Port 4 Temperature [°C]



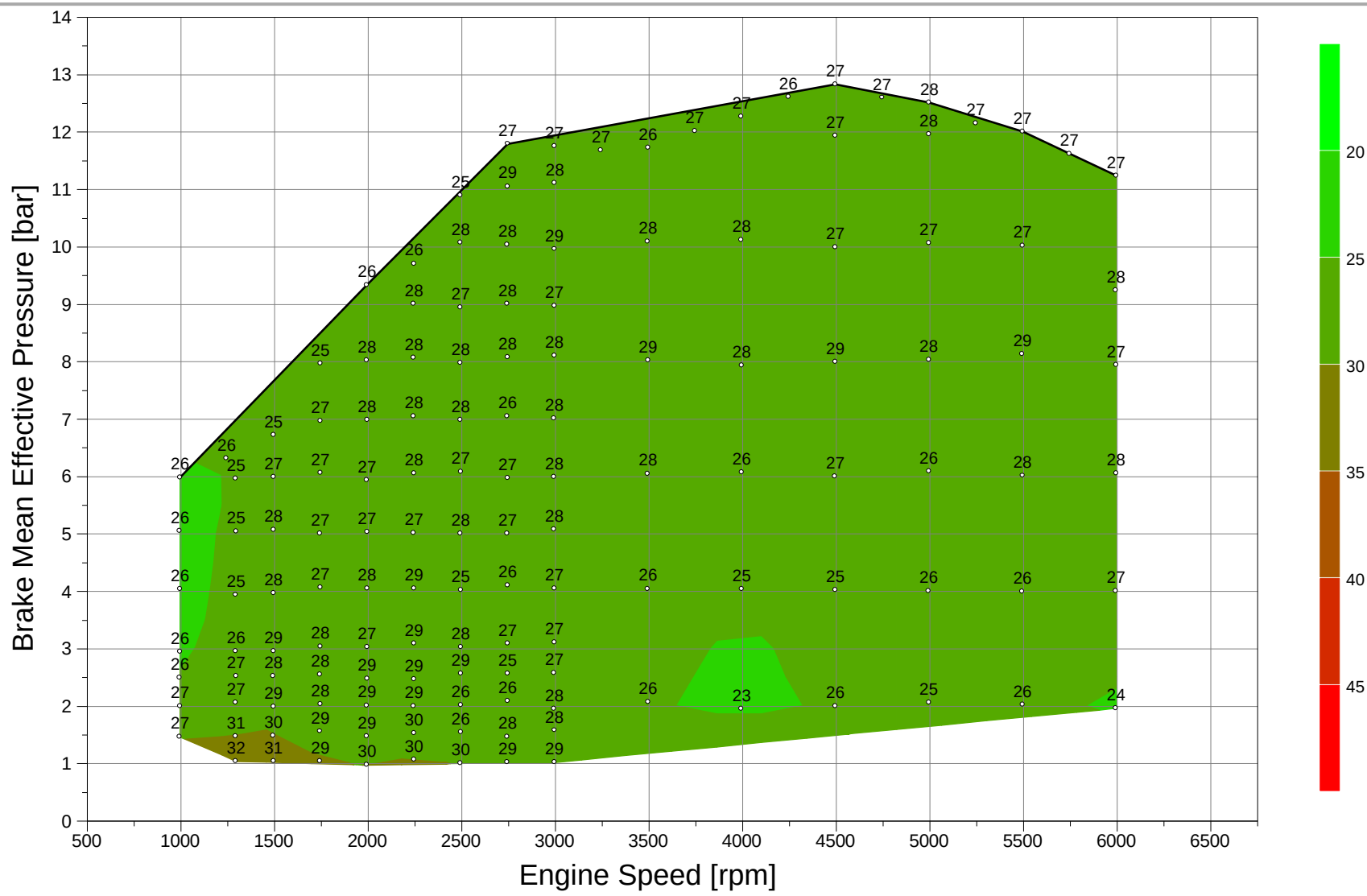
EPA Benchmarking: 2013 Chevrolet Malibu 2.5L I-4 16V GDI [LCV]
Engine Dyno Testing - Mapping: Flow Rate of Fuel [kg/hr]



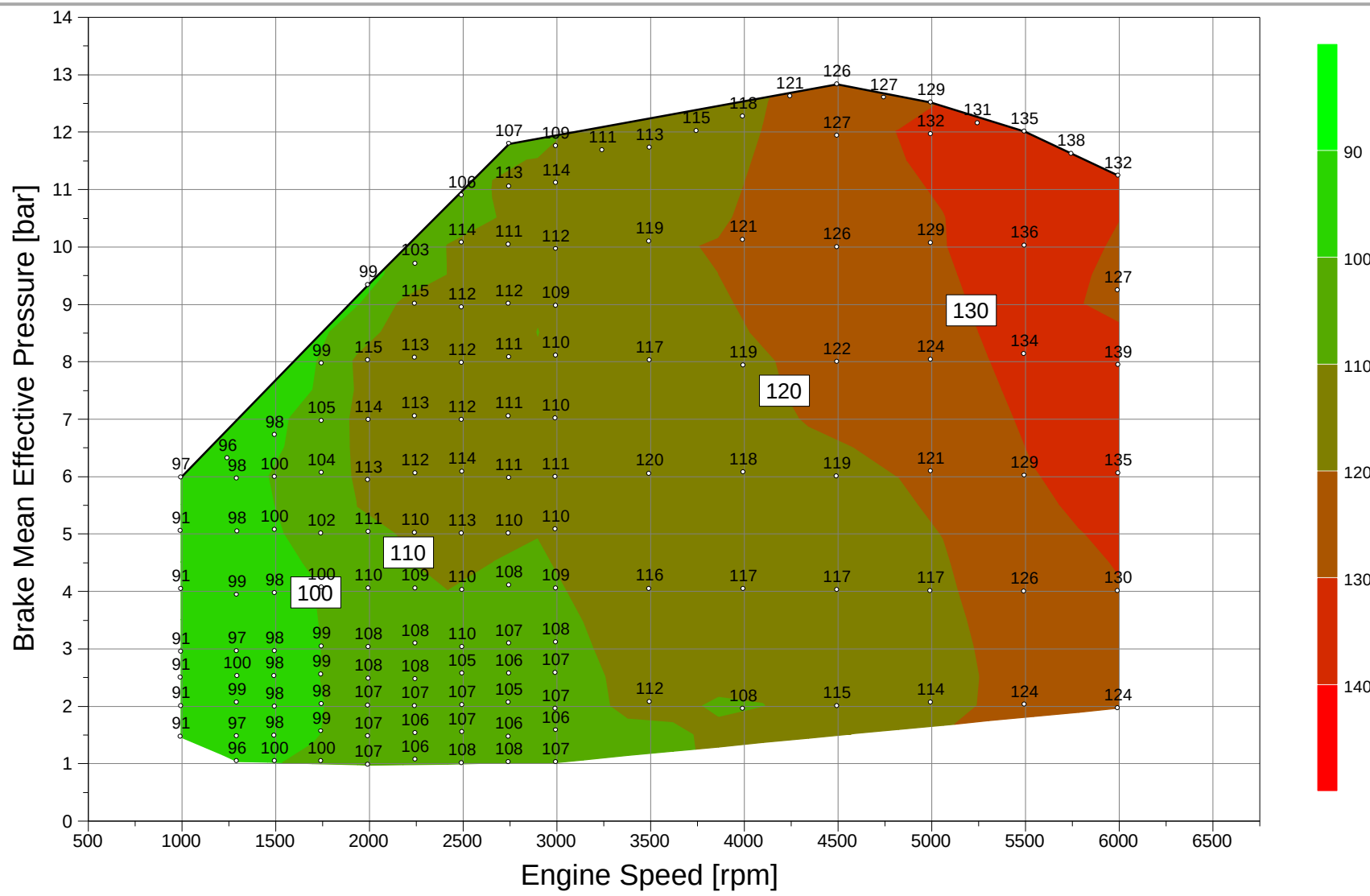
EPA Benchmarking: 2013 Chevrolet Malibu 2.5L I-4 16V GDI [LCV]
Engine Dyno Testing - Mapping: Pressure in Intake Manifold [barA]



EPA Benchmarking: 2013 Chevrolet Malibu 2.5L I-4 16V GDI [LCV]
Engine Dyno Testing - Mapping: Temperature at Intake Manifold [°C]



EPA Benchmarking: 2013 Chevrolet Malibu 2.5L I-4 16V GDI [LCV]
Engine Dyno Testing - Mapping: Oil pan Temperature [°C]



EPA Benchmarking: 2013 Chevrolet Malibu 2.5L I-4 16V GDI [LCV]
Engine Dyno Testing - Mapping: Throttle Position [% open]