XB Exhaust Shootout Test Report

By Al Lighton

Introduction

Several Buell XB series mufflers exist in the US marketplace. There is published performance data for most of them, either from the manufacturer or aftermarket sources. Much anecdotal information also exists on these mufflers, and comparisons of the mufflers based on this data and anecdotal information is widespread. But the only true way to make a valid comparison of the mufflers is to have the performance information developed on the same bike, on the same dynamometer (dyno), with the same methods. And for the test to be truly valid, the bikes would need to be fueled properly with each muffler fitted, something that wasn't possible until recently with the advent of DirectLink tuning software. A thread discussing this on the Bad Weather Bikers bulletin board (Badweb) proposed that a comprehensive test needed to be done, and several badwebbers volunteered to make the test a reality.

In order to perform such a test, all the necessary equipment, bikes, dyno, mufflers, etc. would need to be collected together in one place. Vendors and Badweb sponsors generously contributed the necessary HW. This includes:

- Silver Eagle HD/Buell of Waterloo, Iowa provided the dyno room and service area to do all the equipment changes for an entire weekend.
- Craig Davis of Silver Eagle HD/Buell provided the 05 XB9SX test bike.
- Troy Walbaum of Silver Eagle HD/Buell provided the 04 XB12R test bike.
- Kevin Drum of KD Fab provided XB12 and XB9 Drummer and SS Drummer mufflers.
- D&D provided a D&D XB muffler
- Travis Kay of Jardine provided a Jardine RD-1 Titanium muffler
- Doug Cameron of Micron provided two Micron full XB exhaust systems, tools, and SPL (dB) meter.
- Mike Oldfield (Odie) provided a Special Ops XB9 and XB12 muffler.
- Mike Norris of Norris Performance provided two XB catch cans for the test bikes.
- Giamberto Scaccia of TechnoResearch provided the DirectLink tuning system and the 2 required keys for optimizing the fueling on both test bikes.
- Terry Parsley of Vallejo HD/Buell (and now Vallejo Performance Services) provided bung equipped headers so that sideband O2 sensors could be easily fitted to each bike for testing, and provided his DirectLink equipped laptop for doing the tuning.
- Al Lighton of American Sport Bike (A.S.B) provided a Latus muffler and open air box kits for each of the test bikes, and provided the audio recording gear.

None of this equipment would be worth anything if the necessary people weren't there to run it. Again, Badwebbers and sponsors generously stepped forward, donating a long weekend worth of time and their own travel arrangements to Waterloo, Iowa to perform the testing. The participants were:

- Terry Parsley of Vallejo HD/Buell (and now Vallejo Performance Services) volunteered his dyno operation and DirectLink tuning skills for operating the dyno room
- Kevin Drum of KD Fab volunteered his wrenching skills

- Warren Tandoc of Tandoc Tools volunteered his wrenching skills and took pictures
- Craig Davis and Troy Walbaum of Silver Eagle HD/Buell provided their wrenching and other assistance all weekend.
- Doug Cameron of Micron drove his motorcycle 4 hours each way from Chicago on Sunday to help any way he could.
- Al Lighton of American Sport Bike volunteered his DirectLink tuning skills and provided the audio recording system, coordinated much of the pre-test logistics, performed much of the post test data reduction, and authored this test report.

The testing could not have been possible without the generous time and equipment donations from the above people. Very special thanks go to Doug Bruns, the GM of Silver Eagle HD/Buell, for allowing us to take over his dyno room and service area for the weekend. We tested until the early AM hours on both Saturday and Sunday, and he kept the doors open for us to complete the task. I don't know of many dealers that would have let us do what we did there.

Purpose

The purpose of the testing was to establish the relative performance metrics for all of the XB exhausts systems readily available in the U.S., with as many variables removed as possible.

Test Equipment

2004 XB12R
2005 XB9SX
Dynojet 250dynamometer with WinPep7 SW
DirectLink tuning SW with a USB key for each test bike
PC Based CoolEdit2000 Digital Audio recording SW
Shure SM57 Microphone
RNC Compressor
Mackie 1202VLZ mixing board
Radio Shack SPL meter
Scale
Buell Stock XB9 muffler
Buell Stock XB12 muffler
Buell Race XB12/XB9 muffler
D&D XB12/XB9 Exhaust
Drummer standard XB9 muffler
Drummer Standard XB12 muffler
SS Drummer XB9 muffler
SS Drummer XB12 muffler
Jardine TI muffler XB12/XB9 muffler
Latus XB12/XB9 muffler
Micron Serpent XB12/XB9 exhaust system
Special Ops XB9 muffler
Special Ops XB12 muffler

XB9 and XB12 stock headers equipped with O2 sensor bungs to allow wideband O2 sensors to independently sample front and rear exhaust gas mixtures
Micron headers similarly equipped with O2 sensor bungs

Exhaust Descriptions

Each of the mufflers tested are described briefly below. All of the mufflers tested except the Micron are slip-on mufflers which used the stock XB9 or XB12 headers. All except the Jardine use the rear crescent mount with perimeter straps for the rear mount. Pictures below show the mufflers sitting next to the Buell stock muffler, as well as installed on the bike without the chin cowl in place.

Buell Race muffler

The Buell Race XB9/XB12 muffler (Figures 1 & 2) is a silver ceramic coated mild steel muffler. The race muffler is similar in design to the stock muffler, but with dual exhaust tips and a modified internal tube routing design. It has been officially discontinued by Buell as of this writing, though many may still available through Buell and aftermarket parts dealers. It is (was) available in a matte and polished ceramic coated finish. The mufflers do not use packing, so no re-packing is required. Standard OEM mounting methods are used, and the bike can be lifted by the muffler. Integrated brackets are welded in place to support the chin cowl in all of the OEM locations.

D&D

The D&D XB9/XB12 muffler (Figures 3 & 4) is a black coated mild steel glass pack muffler. It is a unique design that splits the single pipe on the collector into two independent, non-cross-over small mufflers with straight cut out-turned tips. The mufflers are not re-packable, but appear to be designed so that it won't be necessary. A section reinforced carrier plate provides the structure. The front shoe mount is replaced by a single bolted mount through the engine hard point. It appears that the muffler is sturdy enough to pick up the bike from below, but I have not tested that. Integrated brackets are welded in place to support the chin cowl in all of the OEM locations.

Drummer

The Drummer mufflers from KD Fab (Figures 5-8) are modified stock XB9 and XB12 mufflers. Kevin cuts each muffler open to remove the labyrinth core, and lines the resultant chamber with sound absorbing material. The rear of the mufflers is machined plate with a single exhaust tip that is bolted to the shell. The mufflers use the same mounting methods as the stock muffler, and the standard lift points may be used. The mufflers are not re-packable, but appear to be designed so that it won't be necessary. The XB12 version of the muffler removes the internal valve used in the stock pipe. The OEM brackets are retained to support the chin cowl in all of the OEM locations.

SS Drummer

The SS Drummer mufflers from KD Fab (Figures 9-12) are custom built stainless steel shell with aluminum end cap XB9 and XB12 mufflers. The XB12 and XB9 mufflers have different internal volumes that are tuned to the pulse size of each engine. The end caps are beautiful billet aluminum with very nice machined details. Mike Norris of NorrisPerformance builds these parts for KD Fab. As in the regular Drummers, Kevin lines the chamber with sound absorbing material. The rear of the mufflers is machined plate with a single exhaust tip that is bolted to the shell. The front of the muffler is a flat plate

with a nice billet front hanger that picks up the engine hard point directly. The mufflers are not re-packable, but appear to be designed so that it won't be necessary. Brackets that support the OEM chin cowl side mounting points are optional. The left side bracket uses existing engine bolts to support the chin cowl, and the right side bracket uses the two idler pulley studs and one engine bolt in the front. No supports are provided for the two holes in the front of the chin cowl. The muffler can be run without the chin cowl and looks very nice when run "naked".

Jardine

The Jardine XB9/XB12 mufflers (Figures 13 & 14) are oval can glass pack style mufflers similar to those found on many metric sportbikes. The muffler is available with a titanium, polished aluminum, or carbon fiber outer shell. The mufflers use a wrap around mounting bracket in the rear that does not use the stock Buell crescent support. The front has a bracket that attaches to the engine hard point The mufflers are re-packable, and repacking is likely required every 5000 miles, or less if the bike is ridden aggressively with a lot of hard decel popping. Brackets that support the OEM chin cowl side mounting points are included with the mufflers. The left side bracket uses existing engine bolts to support the chin cowl, and the right side bracket uses the two idler pulley studs and one engine bolt in the front. No supports are provided for the two holes in the front of the chin cowl. As with the SS Drummer, the muffler can be run without the chin cowl and looks nice when run naked.

Latus

The Latus XB9/XB12 muffler (Figures 15 & 16) is based upon a stainless steel Edelbrock car muffler, and was the first domestic pipe released for the XB9, even before the Buell Race muffler. The inlet stub pipe, chin cowl support brackets, and twin chrome plated slash cut exhaust tips are welded to the muffler to convert it to XB use. The mufflers use the same mounting methods as the stock muffler. I would not recommend lifting the bike by this muffler, though it may be possible. The muffler is not re-packable, but appears to be designed so that it won't be necessary. In its automotive form, it is guaranteed for life. The brackets welded to the muffler support the chin cowl in all of the OEM locations.

Micron

The Micron Serpent exhaust system (Figures 17 & 18) was the only full system (i.e., headers and muffler) tested. A single design is used for both the XB9 and the XB12. The stainless steel headers are hydro-formed, which uses high pressure water to expand the tubing into dies. This allows the header pipes to have any cross sectional shape desired instead of just being round. The headers have wider than thick cross sections at the bends to control flow velocity gradient across the bend. No collector is used, an both header pipes connect directly to the front of the muffler. The stainless steel muffler has an internal cross-over collector and features dual hydroformed tips. It is available in either standard or a Ulysses variant that has the tips turned down a little for belt guard clearance. The same mounting methods as the stock muffler are used at the rear, and the front has a bracket that attaches to the engine hard point . Lifting the engine by the pipe is not recommended. The muffler is not re-packable, but appears to be designed so that it won't be necessary. The muffler has welded on hat-section attachment points for included brackets that support the chin cowl in the side OEM locations only. Usage of the chin cowl is optional, but the hat section brackets are visible if not used.

Special Ops

The Special Ops mufflers from Mike Oldfield (Odie) (Figures 19 & 20) are modified stock XB9 and XB12 mufflers. Odie cuts each muffler open to remove the labyrinth core and welds on a new rear back plate with a single exhaust tip that is bolted to the shell. The mufflers use the same mounting methods as the stock muffler, and the standard lift points may be used. The mufflers are not re-packable, but appear to be designed so that it won't be necessary. The XB12 version of the muffler (not shown in pictures) retains the internal valve used in the stock XB12 muffler which can be activated normally if used with the stock XB12 ECM. The OEM brackets are retained to support the chin cowl in all of the OEM locations. Note: the Special Ops mufflers tested were cosmetically blemished units that were functionally and internally fine, but weren't as attractive as normal mufflers that Odie sells.

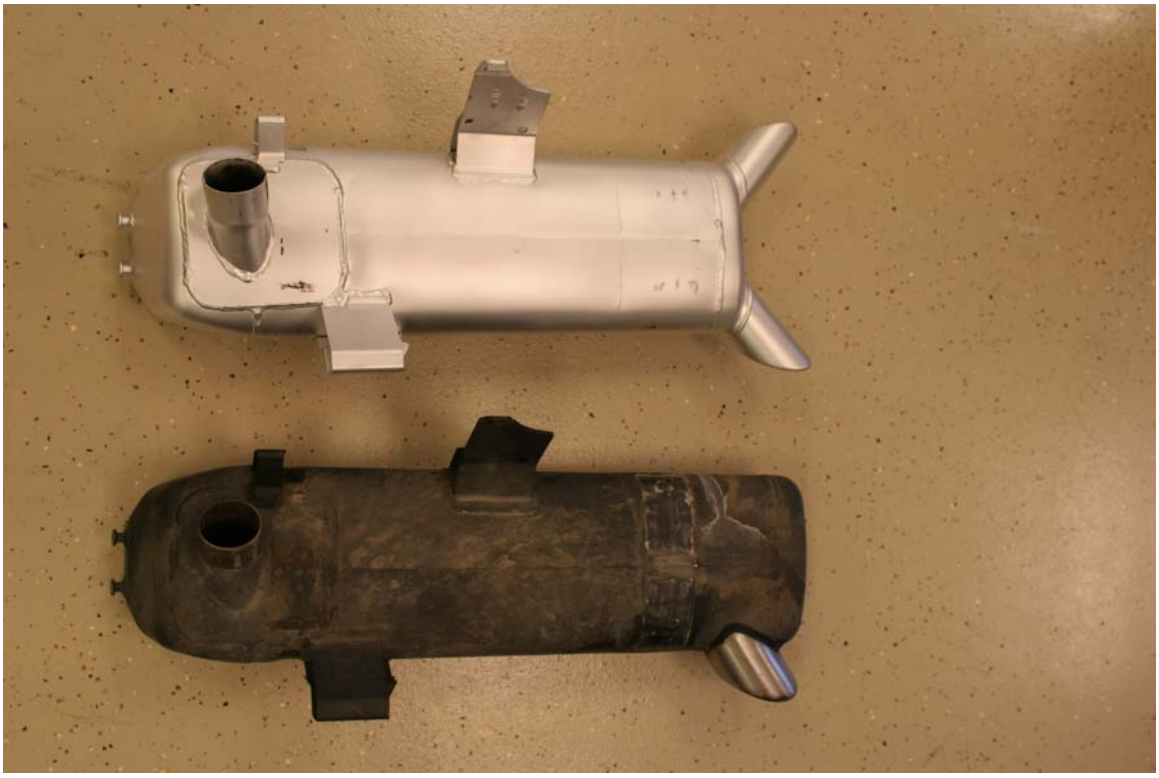

Figure 1 Buell Race and Stock Muffler

Figure 2 Buell Race Muffler on XB12R Firebolt

Figure 3 D&D and Stock Muffler

Figure 4 D&D Mounted on XB12R Firebolt

Figure 5 XB9 Drummer and Stock Muffler

Figure 6 XB 9 Drummer on XB9SX CityX

Figure 7 XB12 Drummer and Stock muffler

Figure 8 XB12 Drummer on XB12R Firebolt

Figure 9 SS drummer and stock XB9 muffler

Figure 10 SS Drummer on XB9SX CityX

Figure 9 XB12 SS Drummer and Stock Muffler

Figure 10 XB12 SS Drummer on XB12R Firebolt

Figure 11 Jardine XB9/XB12 muffler and Stock XB9 Muffler

Figure 12 Jardine Muffler on XB9SX CityX

Figure 13 Latus XB9/XB12 muffler and Stock XB9 Muffler

Figure 14 Latus Muffler On XB9SX CityX

Figure 15 Micron XB9/XB12 muffler and Stock XB9 Muffler

Figure 16 Micron Muffler On XB9SX CityX

Figure 17 Special Ops XB9 Muffler and Stock XB9 Muffler

Figure 18 Special Ops XB9 Muffler On XB9SX CityX

Figure 19 1/2 Air Box Configuration*
(*Note: identical to what was tested, but on a different bike)

Figure 19 3/4 Catch Can Setup

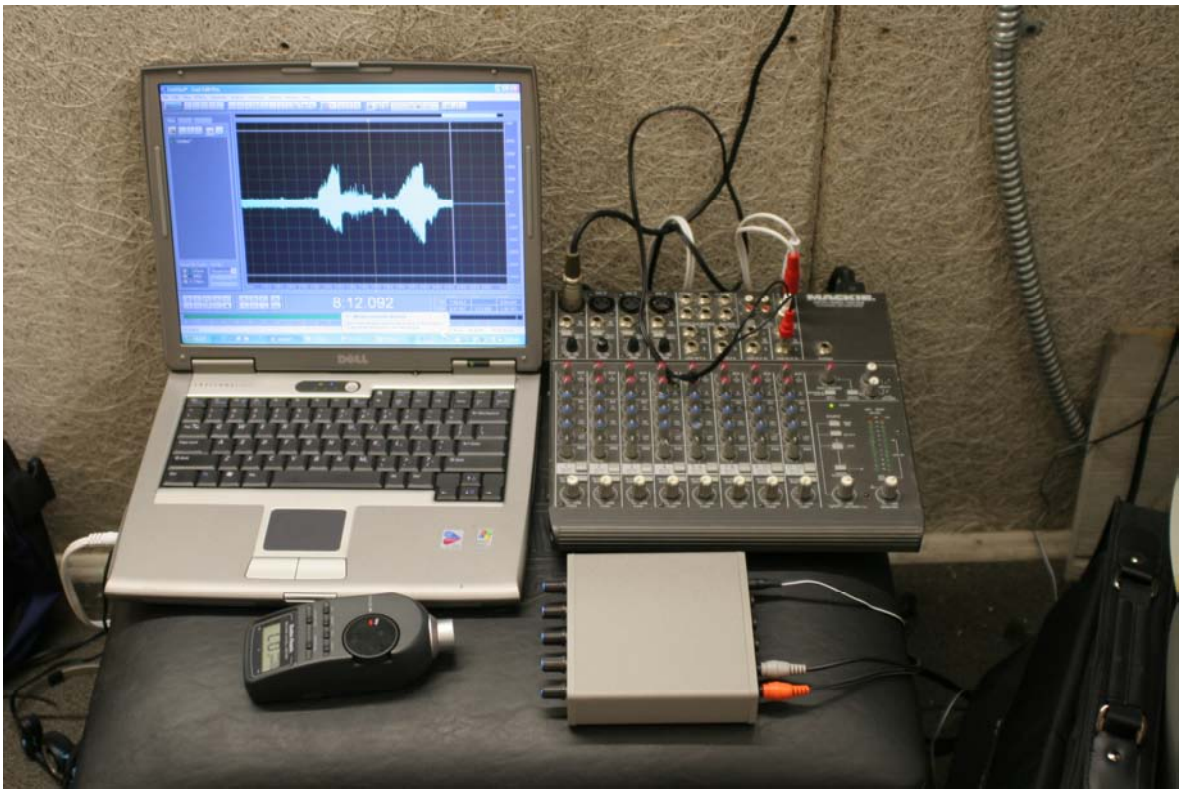

Figure 19 Audio Test Setup

Figure 20 WinPep and DirectLink setups

Test Procedure

The general test procedure is as follows:

1) Weigh each exhaust system
2) Photograph each muffler (both off and on the bike)
3) Mount the bung equipped headers on the test bikes so that Air/Fuel measurements can be made.
4) Record some baseline runs with the bikes in stock configuration.
5) Modify the bike intake to an open airbox configuration, and then sequentially modify the exhaust configuration to each test configuration.
6) For each configuration, perform the following:
    a. Warm up the bike on the dyno
    b. Turn off room blowers, record the sound of the bike on a dyno pull.
    c. Load the stock ECM map, perform a couple repeatable dyno pulls.
    d. Load the race ECM map, perform a couple repeatable dyno pulls.
    e. Remap the ECM front and rear cylinder full throttle fuel map to optimize the fueling for a 13.5:1 A/F ratio, or as close as possible given the time constraints. Perform an acceptance run once the tuning is completed.

Some general notes about the test procedures that were actually followed are noted below.

1) Time was at a premium during the testing, and we did not have a documented and reviewed Test Procedure to follow due to Blake's unexpected absence. In a test without time constraints, we would have performed a more thorough baselining by qualifying the effects of the stock unmodified headers vs the bung equipped headers, and by qualifying the effects of the open airbox more thoroughly. As it was, we got a late start the first day and were a bit unorganized at the beginning. So some of the optimal base line runs weren't performed.
2) Related to 1) above, the bikes already had the A.S.B. open airbox kits installed. The installation of that kit routes the crankcase breathers out of the airbox. They were installed prior to the team arriving, and re-routing the breathers back into the airbox for the stock baseline runs was not possible due to time constraints. Previous testing has shown that this alone can add 2-4 rear wheel horsepower (RWHP). So the relative performance of the stock baseline is higher than what a true bone-stock bike will normally have.
3) The race ECM map was created for the XB9SX from some DirectLink maps we had on a hard drive. In that process, the spark map for the race ECM was inadvertently created with the front cylinder spark map from an 03 XB9 race ECM, and the rear cylinder spark map from an 05 XB9 race ECM. The difference isn't a large one, but there are differences across the entire table. The difference was discovered late in the testing process after the Micron runs, which started with a pre-developed map. The XB9 runs could not re-run with the corrected spark map, but the Micron was rerun with the same spark map that the other XB9 mufflers were tested with so that the playing field was level. All the final results for all the exhausts were with the same spark map. The difference between the two spark maps tested on the Micron system were compared and no significant performance difference was noted.
4) The dyno was originally equipped with WinPep 6 SW. WinPep 7 is far easier to tune with and was loaded onto the dyno PC. The drum calibration file was not the correct file for the Silver Eagle HD/Buell dyno, and the results obtained indicate that the dyno drum that the SW was calibrated for was slightly heavier than the drum on the dyno that was used. The absolute power and torque values obtained were therefore on the high side (about 5%) of the actual bike outputs.

But all of the tests were performed on the same dyno, so the relative results are valid for comparison between the mufflers and for the power and torque plot curve shapes.

5) The system that recorded the sound files experienced some problems that were traced to the audio compressor late in the testing. There were some gain issues that affected the noise floor on several of the runs. In addition, the threshold was set improperly due to the inability to monitor the audio in real time with the audio system in the dyno room. This resulted in the low amplitude idle audio being attenuated more than would be optimum. Also, the noise associated with the dyno drum contact with the wheel is more noticeable than expected. If we were to do it over again, some engine rev-ups with the bike in neutral would be recorded in addition to the engine-under-load recordings.
6) The sound pressure level meter was used the same on all of the runs except that the stock and race muffler readings were taken on the 110dB scale, and the rest were on the 120dB scale. The reading on the XB12 SS Drummer was inadvertently not taken.

Results

The weight of each of the exhaust systems is tabulated in Table 1.

The maximum sound level measured for each of the exhaust systems is shown in Table 2, along with hyperlinks to the .wav files.

The MSRP for each of the exhaust systems is shown in Table 3.

The maximum performance levels achieved by each system for each significant run type are shown in Table 4.

Exhaust System	Muffler Weight (Pounds)	Header Weight (Pounds)	Total Weight (Pounds)	Comments
Buell Stock XB9	15	2.5	17.5	
Buell Stock XB12	18.5	3	21.5	
Buell Race XB9	10.5	2.5	13	
Buell Race XB12	10.5	3	13.5	
Drummer XB9	11	2.5	13.5	
Drummer XB12	13	3	16	
Drummer SS XB9	10.5	2.5	13.75	Includes 1 lb of Chin Fairing Mounting Brackets
Drummer SS XB12	11	3	14.75	Includes 1 lb of Chin Fairing Mounting Brackets
Drummer CF XB9	TBD	TBD	TBD	
Drummer CF XB12	7.75	3	10.75	Includes 1 lb of Chin Fairing Mounting Brackets, Wasn't run on dyno, but dimensionally identical to SS
Latus XB9	11.5	2.5	14	
Latus XB12	11.5	3	14.5	
D&D XB9	12.5	2.5	15	
D&D XB12	12.5	3	15.5	
Jardine TI	6.25	2.5	8.75	Includes 1.75 lbs of Chin Fairing mounting and other mounting brackets
Jardine TI	6.25	3	9.25	Includes 1.75 lbs of Chin Fairing mounting and other mounting brackets
Jardine AL	6.9	2.5	2.5	Includes 1.75 lbs of Chin Fairing mounting and other mounting brackets
Jardine AL	6.9	3	3	Includes 1.75 lbs of Chin Fairing mounting and other mounting brackets
Special Ops XB9	11	2.5	13.5	
Special Ops XB12	13.5	3	16.5	
Micron	10	7	17	Includes all chin fairing Mounting Backets

Table 1 Exhaust System Weights

Muffler	Peak dB reading	Audio File (See Audio_files Subdirectory)	Comments
Buell Stock XB9	113	XB9Stock.mp3	110 db scale
Buell Stock XB12	116	XB12Stock.mp3	110 db scale
Buell Race XB9	120	XB9Race.mp3	110 db scale, peaked at 120 but barely
Buell Race XB12	120	XB12Race.mp3	
Drummer XB9	122	XB9_Drummer.mp3	
Drummer XB12	123	XB12_Drummer.mp3	
Drummer SS XB9	121	XB9_SSDrummer.mp3	
Drummer SS XB12	N/A	XB12_SSDrummer.mp3	Didn't record peak value, was quieter than most
Latus XB9	124	XB9Latus.mp3	
Latus XB12	123	XB12Latus.mp3	
D&D XB9	124	XB9_D&D.mp3	Sustained, not just peak
D&D XB12	124	XB12_D&D.mp3	Sustained, not just peak
Jardine XB9	122	XB9Jardine.mp3	Apparent Volume was much louder
Jardine XB12	123	XB12Jardine.mp3	
Special Ops XB9	123	XB9Special_Ops.mp3	
Special Ops XB12	123	XB12Special_Ops.mp3	
Micron XB9	123	XB9_Micron.mp3	
Micron XB12	123	XB12_Micron.mp3	

Table 2- Audio data

Muffler	MSRP	Comments
Buell Stock XB9		
Buell Stock XB12		
Buell Race XB9	$359.00	Discontinued by Buell starting May 31, 2006, no mounting HW provided
Buell Race XB12	$359.00	Discontinued by Buell starting May 31, 2006, no mounting HW provided
Drummer XB9	$400.00	
Drummer XB12	$400.00	
Drummer SS XB9	$625.00	
Drummer SS XB12	$625.00	
Drummer CF XB9	TBD	
Drummer CF XB12	TBD	
Latus XB9/XB12	$395.00	Discontinued, but may be resurrected. Costing in progress, price shown is the price when it was discontinued
D&D XB9/XB12	$595.00	Comes with 1 new rear clamp
Jardine TI XB9/XB12	$395.95	Comes with all required mounting HW and chin cowl brackets
Jardine AL XB9/XB12	$291.95	Comes with all required mounting HW and chin cowl brackets
Jardine CF XB9/XB12	$434.95	Comes with all required mounting HW and chin cowl brackets, Not recommended for street use
Special Ops XB9	$330.00	$250 if you furnish your own stock pipe for modification. Price includes domestic ground shipping.
Special Ops XB12	$330.00	$250 if you furnish your own stock pipe for modification. Price includes domestic ground shipping.
Micron	$799.00	Comes with all required mounting HW and chin cowl brackets

Table 3 Exhaust System MSRP

Table 4 XB9 Exhaust Performance Data

Exhaust	Run Class	Peak Torque (ft-lbs)	Peak Torque RPM	Peak Power (RWHP)	Peak Power RPM	Time, 45-120 MPH (Seconds)
Buell Stock	Stock Map	65.27	5400	79.61*	6800*	N/A
Buell Race	Stock Map	67.25	5600	86.4	7200	
	Race Map	69.31	5600	86.59	7200	
	Best Torque	70.76	5600	89.35	7200	8.78
	Best Power	70.76	5600	89.35	7200	
	Flattest A/F curve	69.25	5600	86.71	7200	8.91
	Acceptance Run	69.19	5600	87.13	7200	
D&D	Stock Map	67.15	5800	83.31*	6800*	
	Race Map	68.52	5200	84.53	7400	
	Best Torque	68.75	4800	84.32	7400	9.08
	Best Power	68.17	4800	85.01	7400	
	Flattest A/F curve	68.17	4800	85.01	7400	9.16
	Acceptance Run	68.17	4800	85.01	7400	
Drummer	Stock Map	68.07	5600	88.76	7400	
	Race Map	69.72	5900	88.33	7400	
	Best Torque	70.17	5900	89.55	7400	8.59
	Best Power	70.01	5900	89.87	7400	
	Flattest A/F curve	69.96	5900	89.67	7400	8.65
	Acceptance Run	69.96	5900	89.67	7400	
Drummer SS	Stock Map	68.25	5900	89.4	7300	
	Race Map	69.6	5800	87.67*	6800*	
	Best Torque	69.6	5800	87.67*	6800*	8.86**
	Best Power	68.97	6200	90.31	7400	
	Flattest A/F curve	69.25	6200	89.78	7300	8.89
	Acceptance Run	69.25	6200	89.78	7300	
Jardine	Stock Map	69.29	5800	90.74	7300	
	Race Map	70.68	5800	90.21	7400	
	Best Torque	70.68	5800	90.21	7400	8.86
	Best Power	70.03	6000	90.98	7400	
	Flattest A/F curve	70.03	6000	90.98	7400	8.84
	Acceptance Run	70.03	6000	90.98	7400	
Latus	Stock Map	68.2	6000	89.59	7400	
	Race Map	70.49	5700	89.99	7400	
	Best Torque	70.49	5700	89.99	7400	8.75
	Best Power	70.24	5900	91.57	7400	
	Flattest A/F curve	70.34	6000	91.11	7400	8.64
	Acceptance Run	70.34	6000	91.11	7400	
Micron	Stock Map	68.53	6200	93.04	7400	
	Race Map	69.13	6400	93.17	7400	
	Best Torque	70.52	6500	95.78	7400	8.51
	Best Power	70.2	6500	95.98	7400	
	Flattest A/F curve	70.2	6500	95.98	7400	8.66

	Acceptance Run	70.2	6500	95.98	7400	
Special Ops	Stock Map	68.86	5900	89.38	7300	
	Race Map	68.41	5000	89.31	7200	
	Best Torque	71.11	5500	90.89	7400	8.60
	Best Power	71.11	5500	90.89	7400	
	Flattest A/F curve	70	5600	89.22	7400	8.96
	Acceptance Run	70	5600	89.22	7400	

*Premature Redline Cutoff
**Extrapolated end of run time, margin of error less than .02 seconds

Table 5 XB12 Exhaust Performance Data

Exhaust	Run Class	Peak Torque (ft-lbs)	Peak Torque (RPM)	Peak Power (RWHP)	Peak Power (RPM)	Time, 50-125MPH (Seconds)
Buell Stock	Stock Map	84.19	5900	101	6800	7.57
Buell Race	Stock Map	88.94	5500	102.89	6600	
	Race Map	89.85	5200	102.26	6500	
	Best Torque	90.86	5300	103.23	6500	7.28
	Best Power	90.09	5200	103.27	6500	
	Flattest A/F curve	90.09	5200	103.27	6500	7.30
	Acceptance Run	90.09	5200	103.27	6500	
D&D	Stock Map	86.71	4900	94.73	6300	
	Race Map	88.05	4900	93.3	6500	
	Best Torque	90.23	4700	96.66	6300	7.40
	Best Power	90.23	4700	96.66	6300	
	Flattest A/F curve	89.67	4600	96.02	6300	7.46
	Acceptance Run	89.67	4600	96.02	6300	
Drummer	Stock Map	86.01	5400	100.12	6800	
	Race Map	86.53	5100	99.48	6800	
	Best Torque	87.27	5300	99.09	6800	7.28
	Best Power	87.22	5300	99.64	6500	
	Flattest A/F curve	87.17	5200	99.38	6600	7.30
	Acceptance Run	87.17	5200	99.38	6600	
Drummer SS	Stock Map	84.85	5900	103.19	6600	
	Race Map	83.86	5800	100.43	6600	
	Best Torque	86.73	5800	103.04	6700	7.25
	Best Power	86.57	5800	103.52	6700	
	Flattest A/F curve	86.57	5800	103.52	6700	7.29
	Acceptance Run	86.57	5800	103.52	6700	
Jardine	Stock Map	85.35	5700	101.61	6700	
	Race Map	85.73	4500	101	6700	
	Best Torque	85.24	4400	101.36	6800	7.48
	Best Power	85.24	4400	101.36	6800	
	Flattest A/F curve	83.53	4600	99.01	6600	7.65
	Acceptance Run	83.53	4600	99.01	6600	
Latus	Stock Map	83.21	5700	101.18	6700	
	Race Map	83.38	4500	100.36	6600	
	Best Torque	85.16	4400	100.56	6700	7.25
	Best Power	83.88	4200	100.83	6700	
	Flattest A/F curve	83.65	4700	100.43	6700	7.40
	Acceptance Run	83.65	4700	100.43	6700	
Micron	Stock Map	84.24	5400	102.1	6700	
	Race Map	88.02	5300	105.16	6700	
	Best Torque	89.12	5100	104.72	6700	7.14
	Best Power	88.38	5100	105.43	6700	

	Flattest A/F curve	87.81	5300	104.26	6700	7.20
	Acceptance Run	87.81	5300	104.26	6700	
Special Ops	Stock Map	86.31	5200	100.13	6800	
	Race Map	87.77	5100	99.59	6800	
	Best Torque	89.15	4900	101.54	6800	7.26
	Best Power	89.15	4900	101.54	6800	
	Flattest A/F curve	89.2	4900	100.97	6800	7.23
	Acceptance Run	89.2	4900	100.97	6800	

Dyno plots are not easily parsed if there are more than three runs given per plot. See Figures 21 and 22 for an example of this. This presents a challenge when trying to compare 8 different exhaust systems. The performance characteristics of each exhaust system, and the comparison of the different exhaust systems, is presented in the following way:

1. One graph for each exhaust with the stock ECM map plot, the Buell Race ECM map plot, and the optimized fuel curve plot. These are title Fueling.
2. One graph for each exhaust with the maximum torque plot, the maximum HP plot, and the optimized fuel curve plot. These are titled Max Output (although a few are mistakenly labeled "Max Power"
3. One graph for each exhaust with the stock ECM map plot, the Buell Race ECM map plot, and the maximum torque plot.
4. One graph that compares the maximum torque plot of each exhaust with the maximum torque plot obtained from the stock configuration (with crank breathers routed out of the airbox as explained above) and the maximum torque plot obtained from the Buell Race muffler.
5. One graph each for the XB9 and the XB12 that compares the three exhausts with the highest peak torque, with the maximum torque plot for each pipe compared.
6. One graph each for the XB9 and the XB12 that compares the three exhausts with the highest peak HP, with the maximum torque plot for each pipe compared.
7. One graph each for the XB9 and the XB12 that compares the three exhausts with the highest MSRP, with the maximum torque plot for each pipe compared.
8. One graph each for the XB9 and the XB12 that compares the three exhausts with the lowest MSRP, with the maximum torque plot for each pipe compared.
9. One graph each for the XB9 and the XB12 that compares the three loudest exhausts, with the maximum torque plot for each pipe compared.
10. One graph each for the XB9 and the XB12 that compares the three quietest exhausts, with the maximum torque plot for each pipe compared.
11. One graph each for the XB9 and the XB12 that compares the two modified stock mufflers (i.e., Drummer and Special Ops) with the actual stock exhaust, with the maximum torque plot for each pipe compared.

Note that I used the maximum torque plots for the comparisons. Originally, I was going to use the best fueling plot for each pipe for the comparison, but the maximum torque plots are often the best midrange plots for each pipe. With more time I might have done both. But if you look at the max output plots for each pipe, you'll see that it doesn't make a whole lot of difference. The max output, max torque, and best fueling curves are, for the most part, very similar.

But there is nothing quite like being able to see ALL the plots stacked against each other, with the ability to highlight each pipes plot individually. This is doable in WinPep, but not easily in a WORD document like this test report. I have included the Best Fueling winpep files in the test report Zip file (under the Dyno_runs folder). You can download the Winpep 7 viewer program for free from the Dynojet website and open up each of those files on the same plot. By selecting each run individually, you can highlight it and see how it stacks up against the others. The filenames are viewable in Figures 21 & 22.

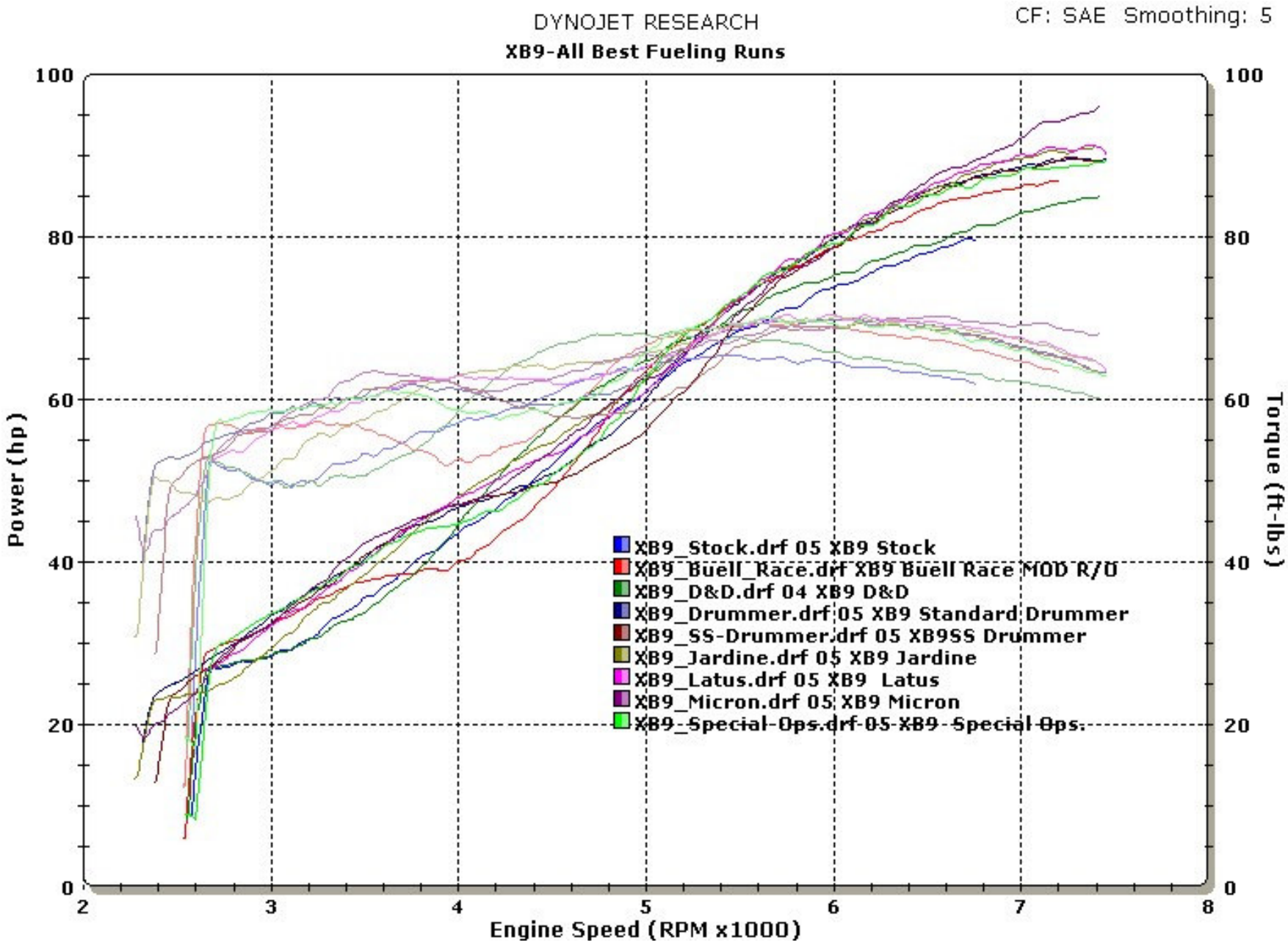

Figure 21 – All XB9 Flattest Fueling Runs

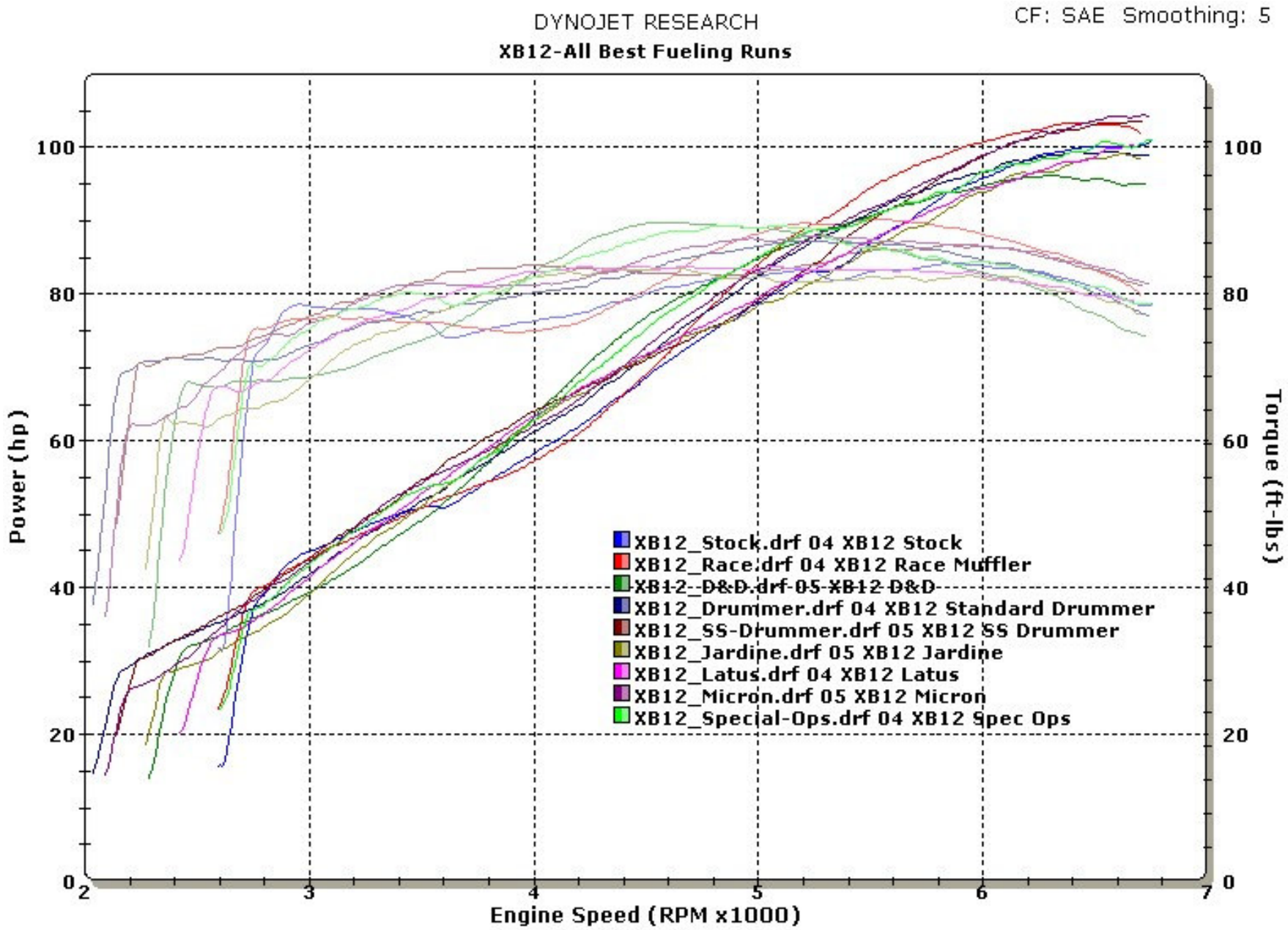

Figure 22 – All XB12 Flattest Fueling Runs

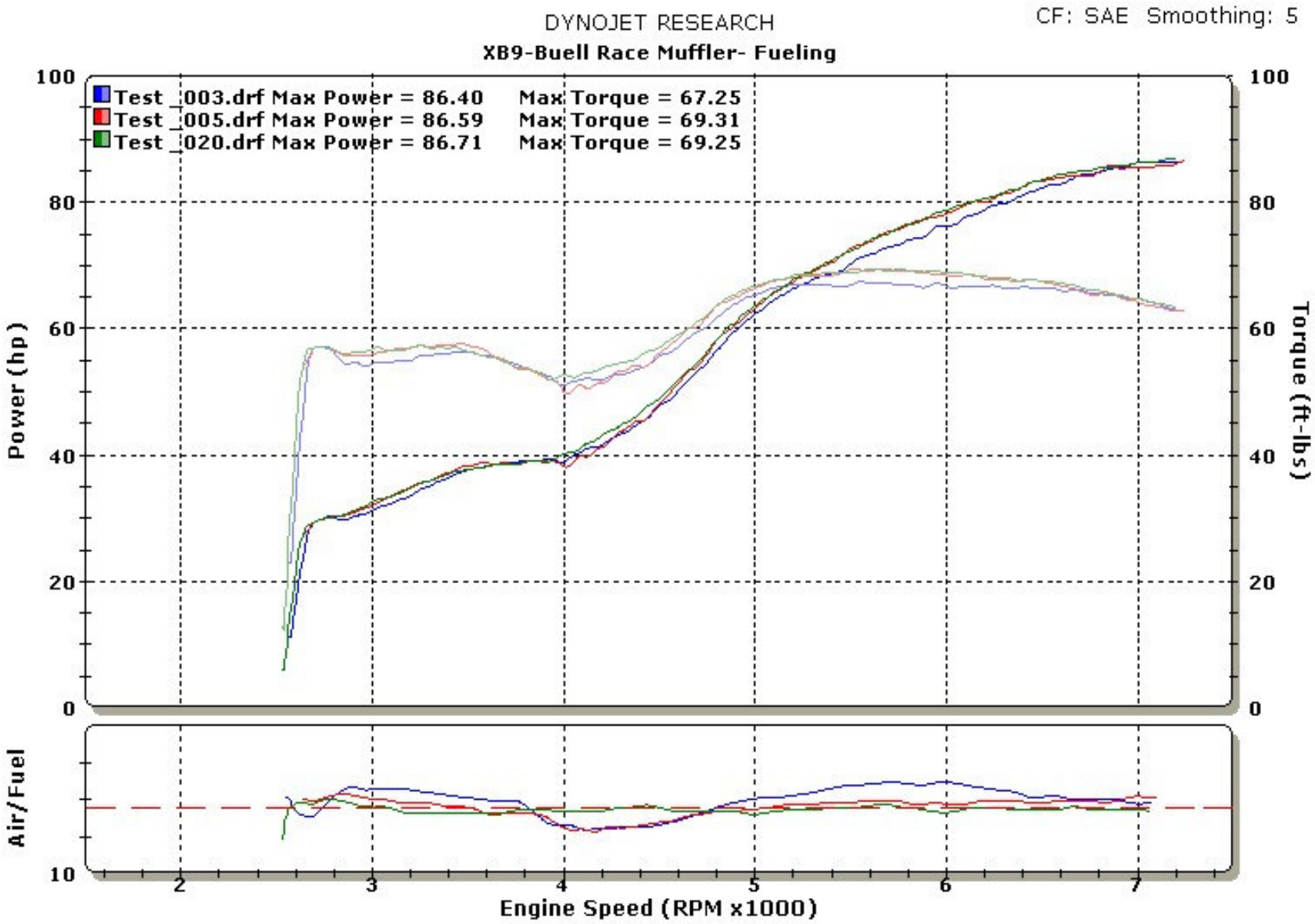

Figure 23 –XB9 Buell Race Muffler Fueling Runs

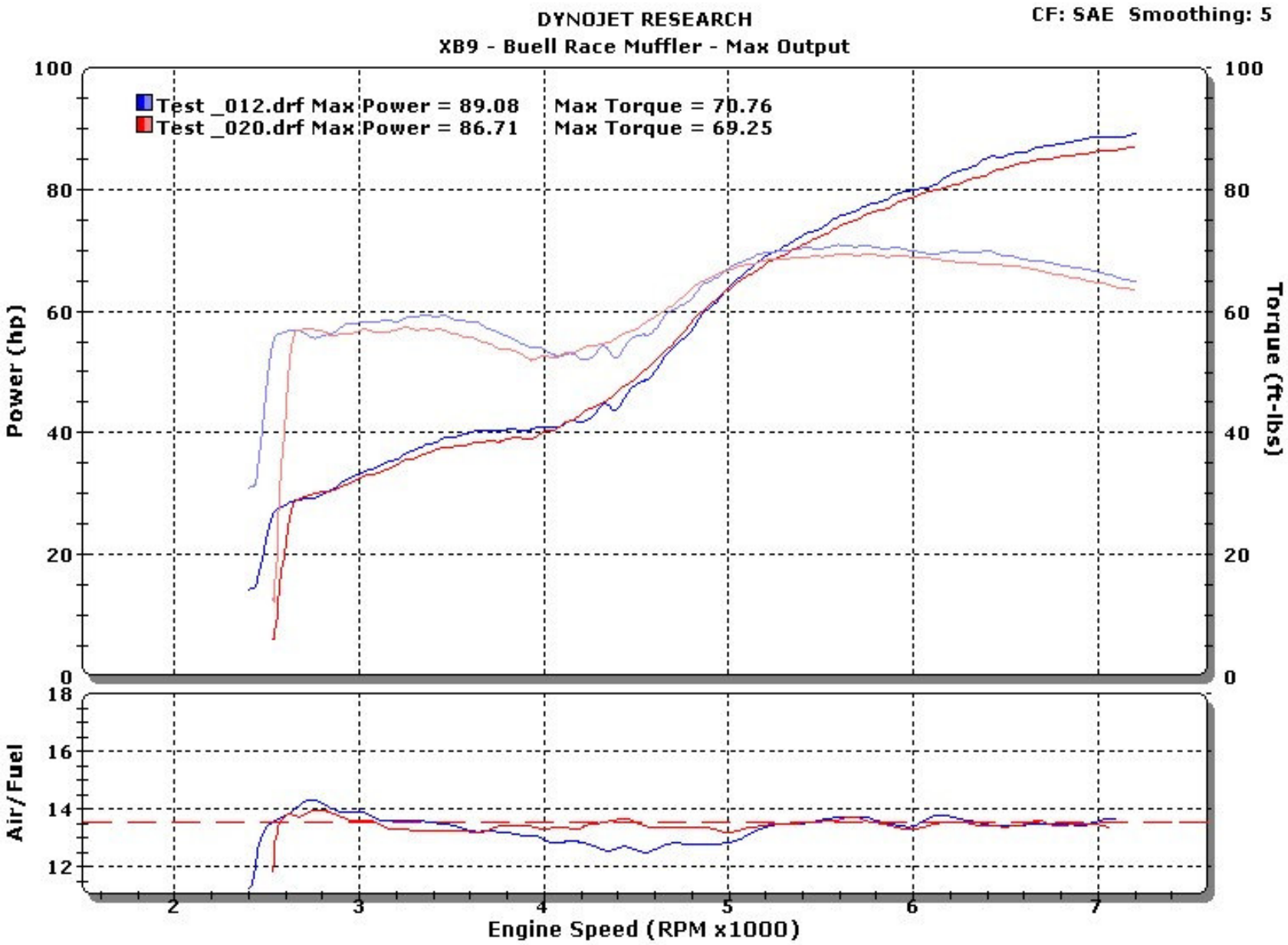

Figure 24 –XB9 Buell Race Muffler Max Ouput Runs

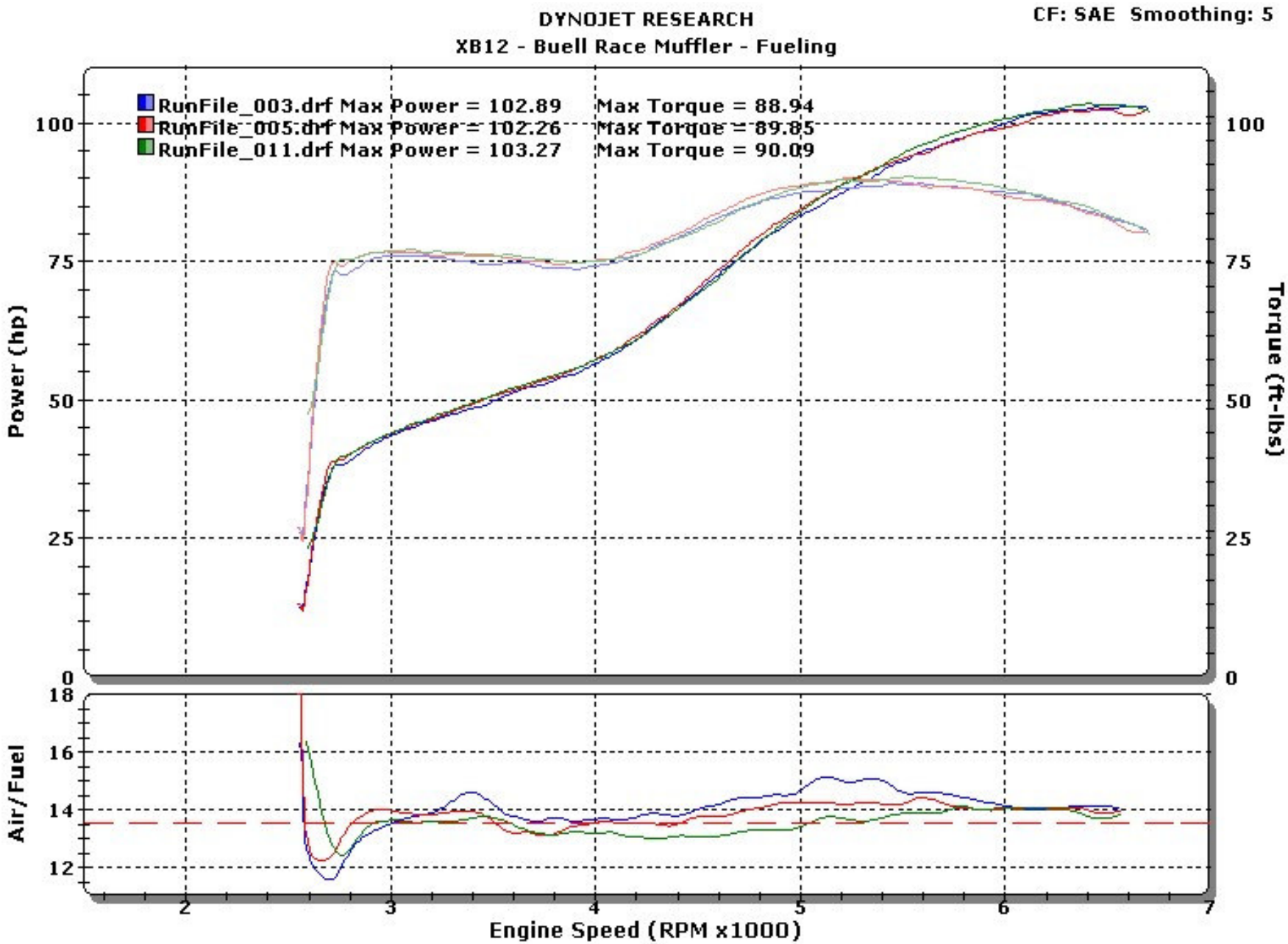

Figure 25 – XB12 Buell Race Muffler Fueling Runs

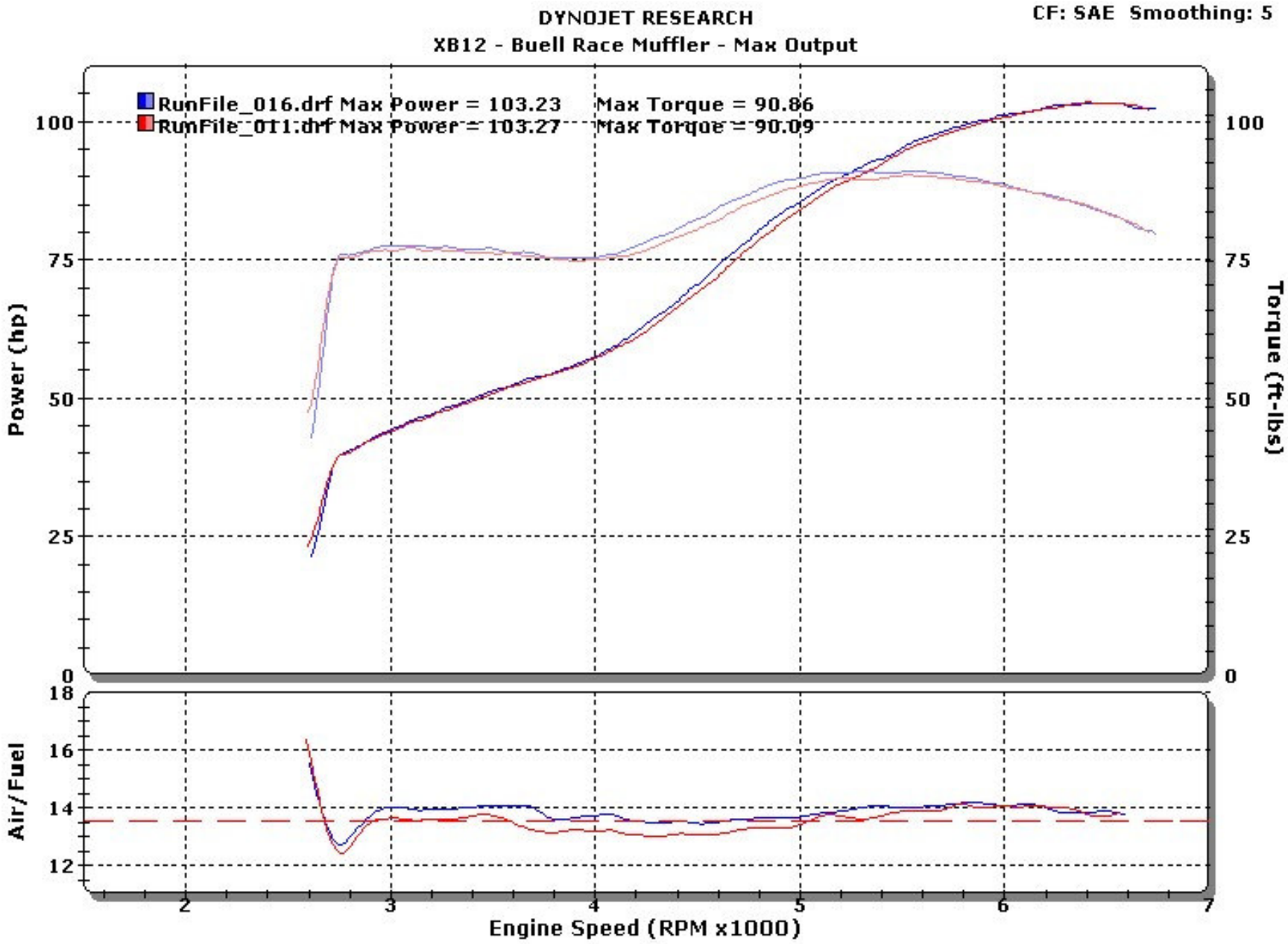

Figure 26 –XB12 Buell Race Muffler Max Ouput Runs

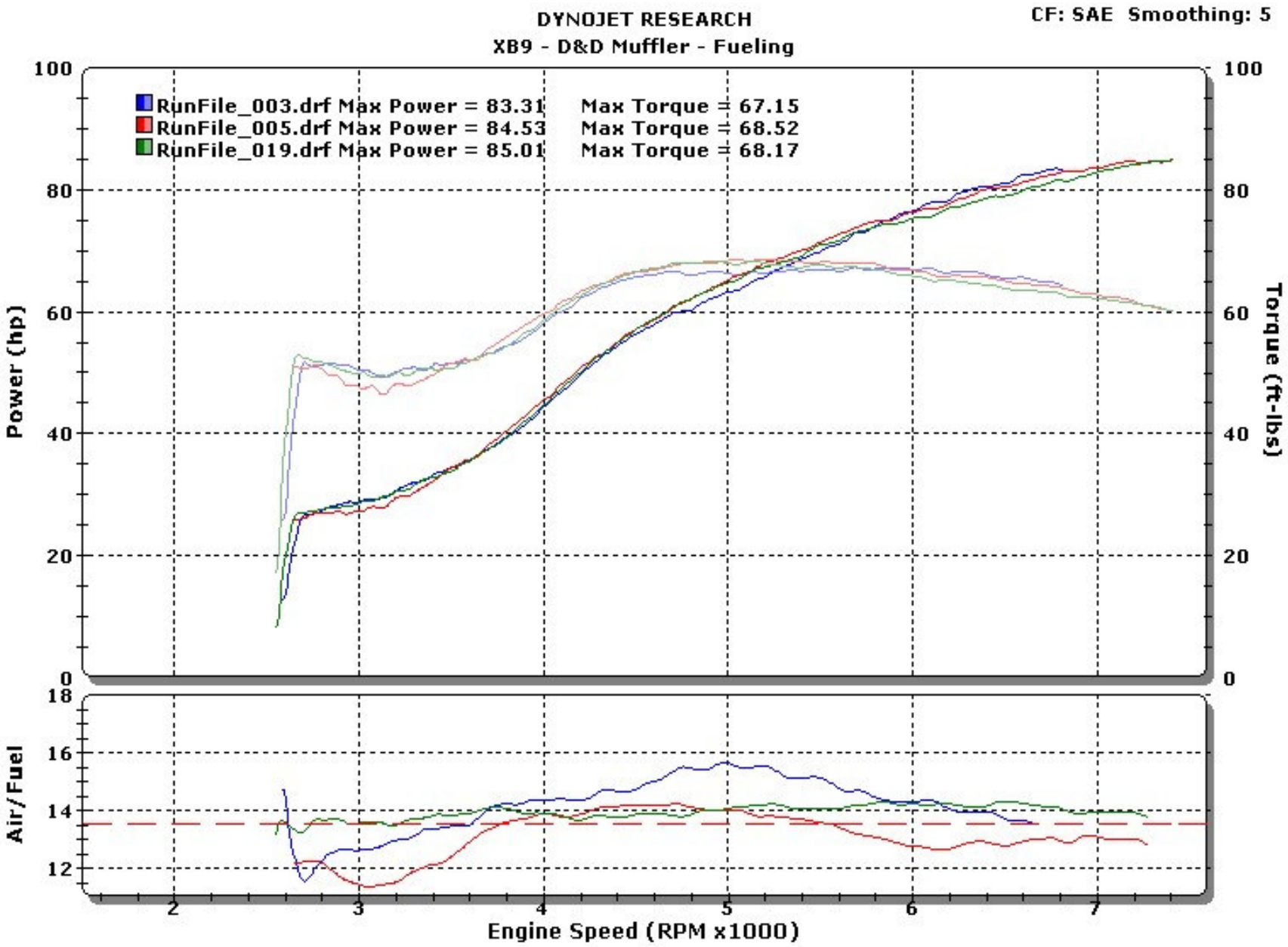

Figure 27 –XB9 D&D Fueling Runs

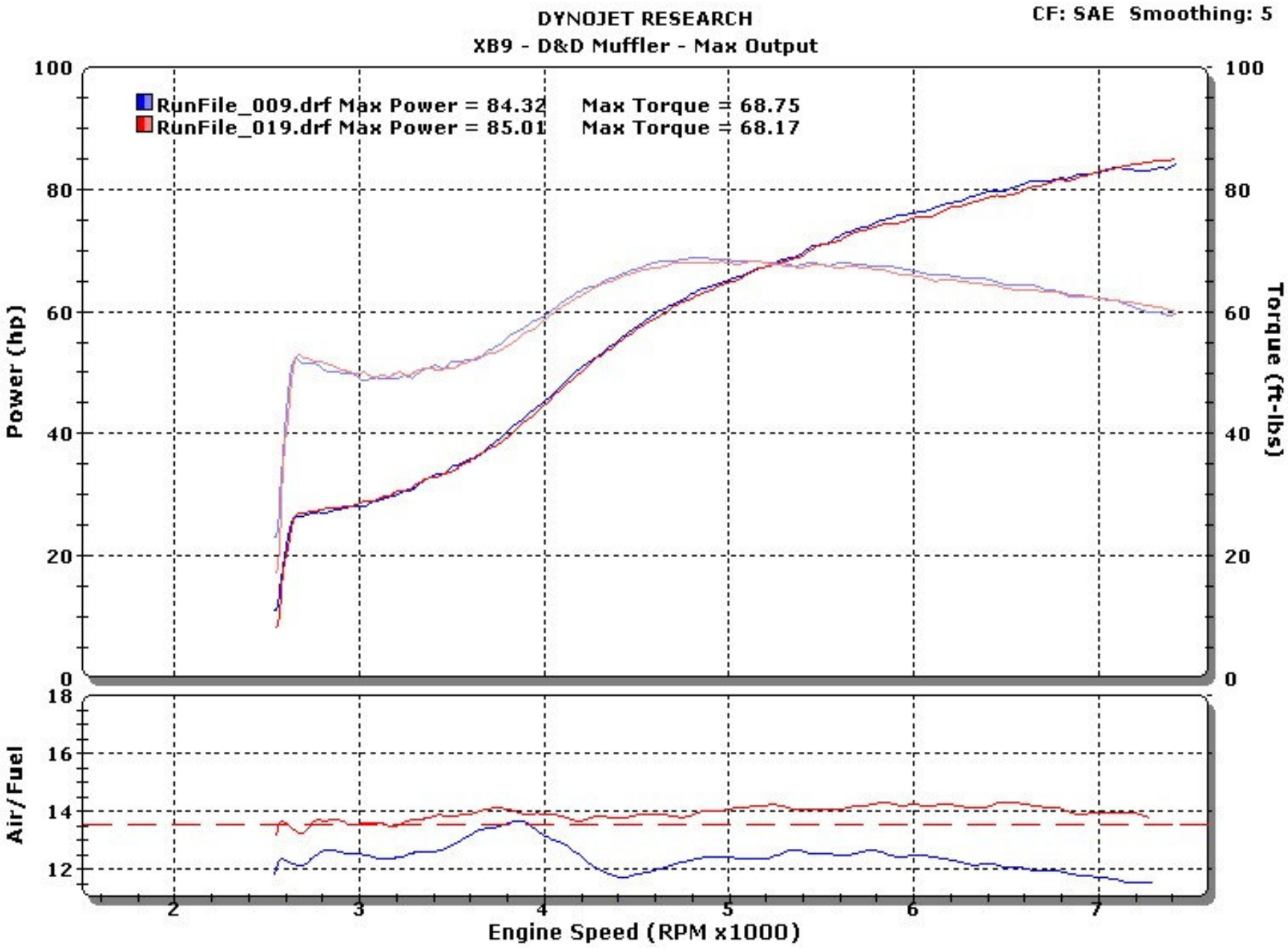

Figure 28 –XB9 D&D Max Ouput Runs

Figure 29 –XB9 D&D Vs. Stock Vs. Race

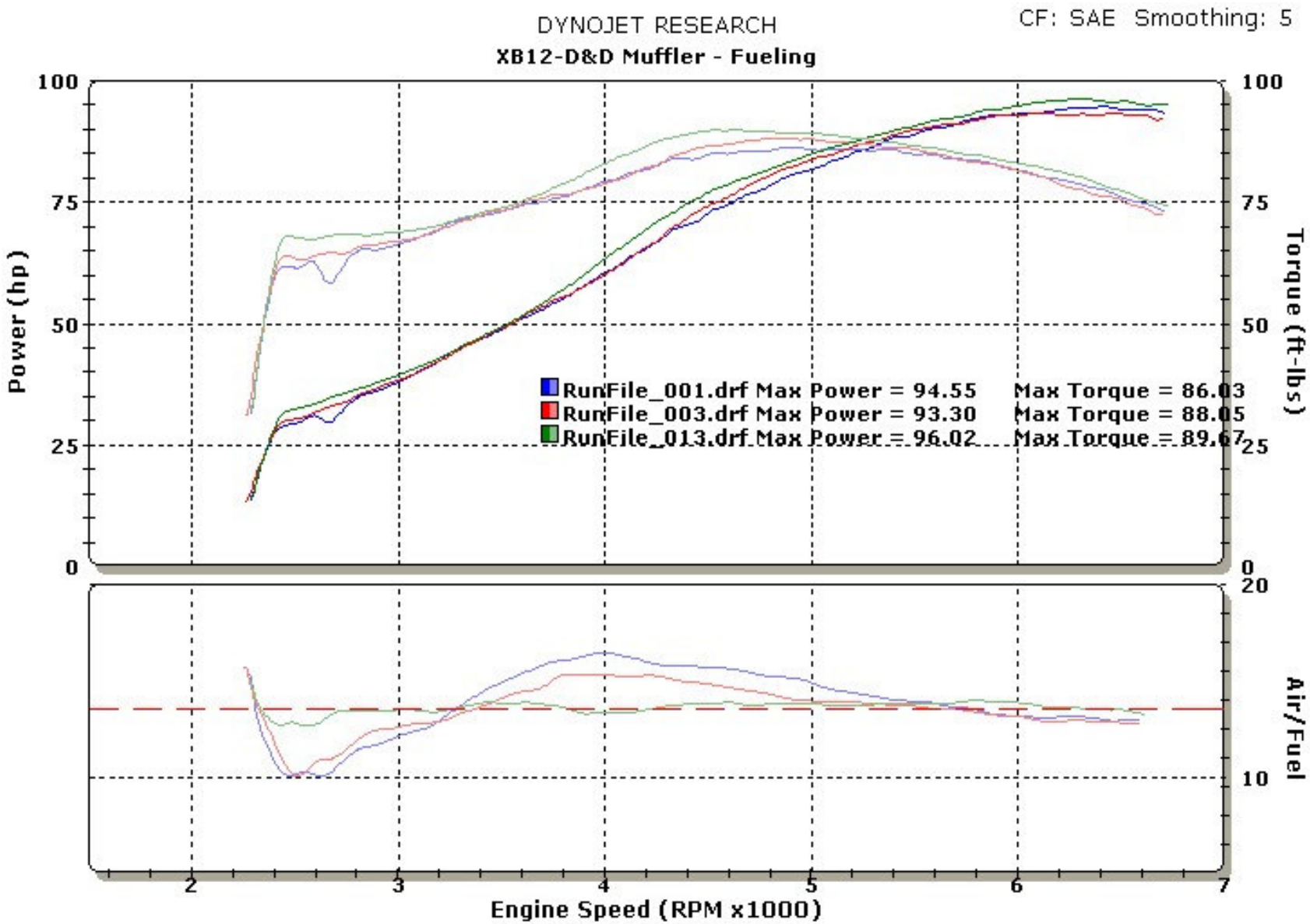

Figure 30 –XB12 D&D Fueling Runs

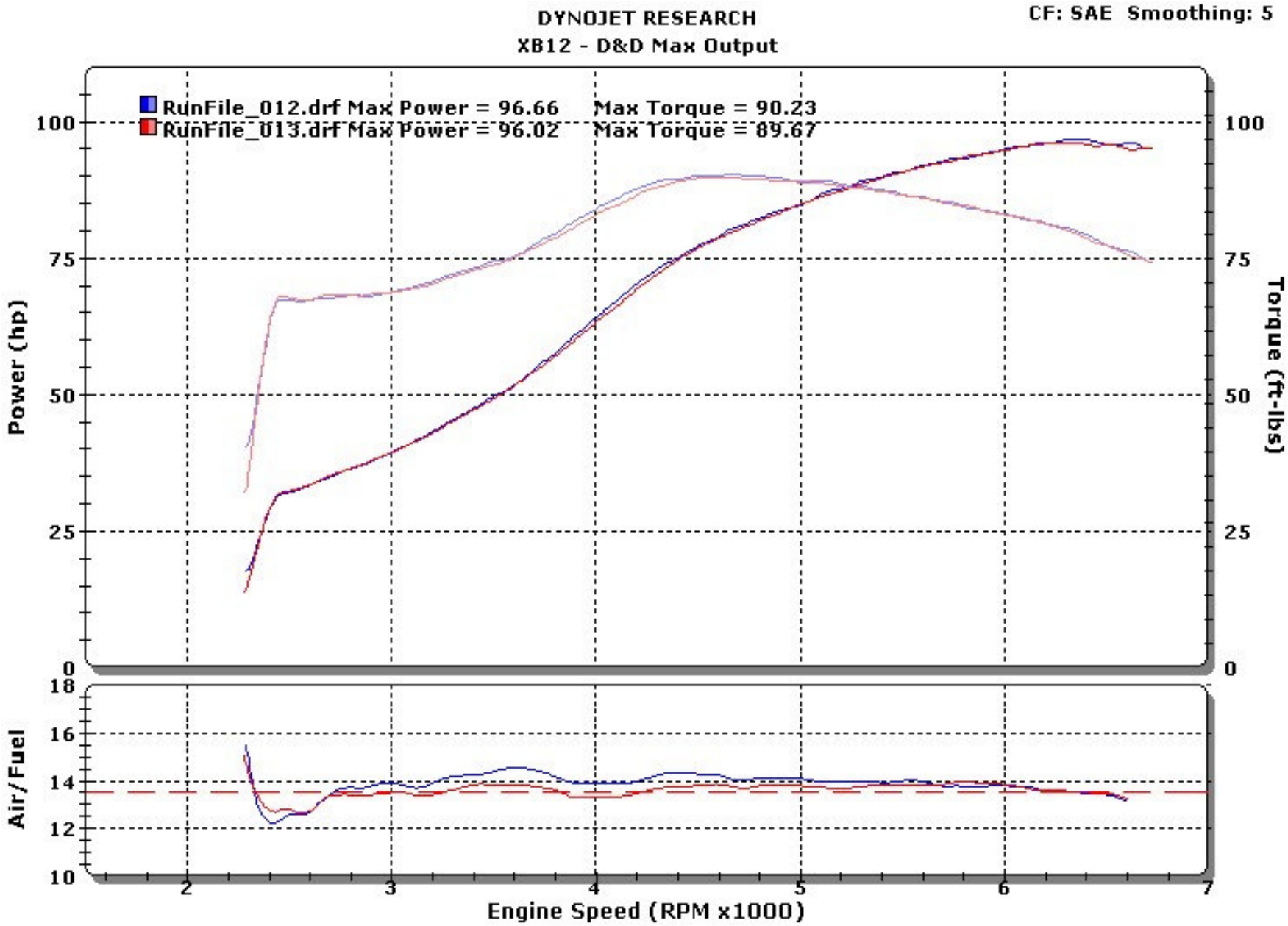

Figure 31 –XB12 D&D Max Output Runs

Figure 32 –XB12 D&D Vs. Stock Vs. Race

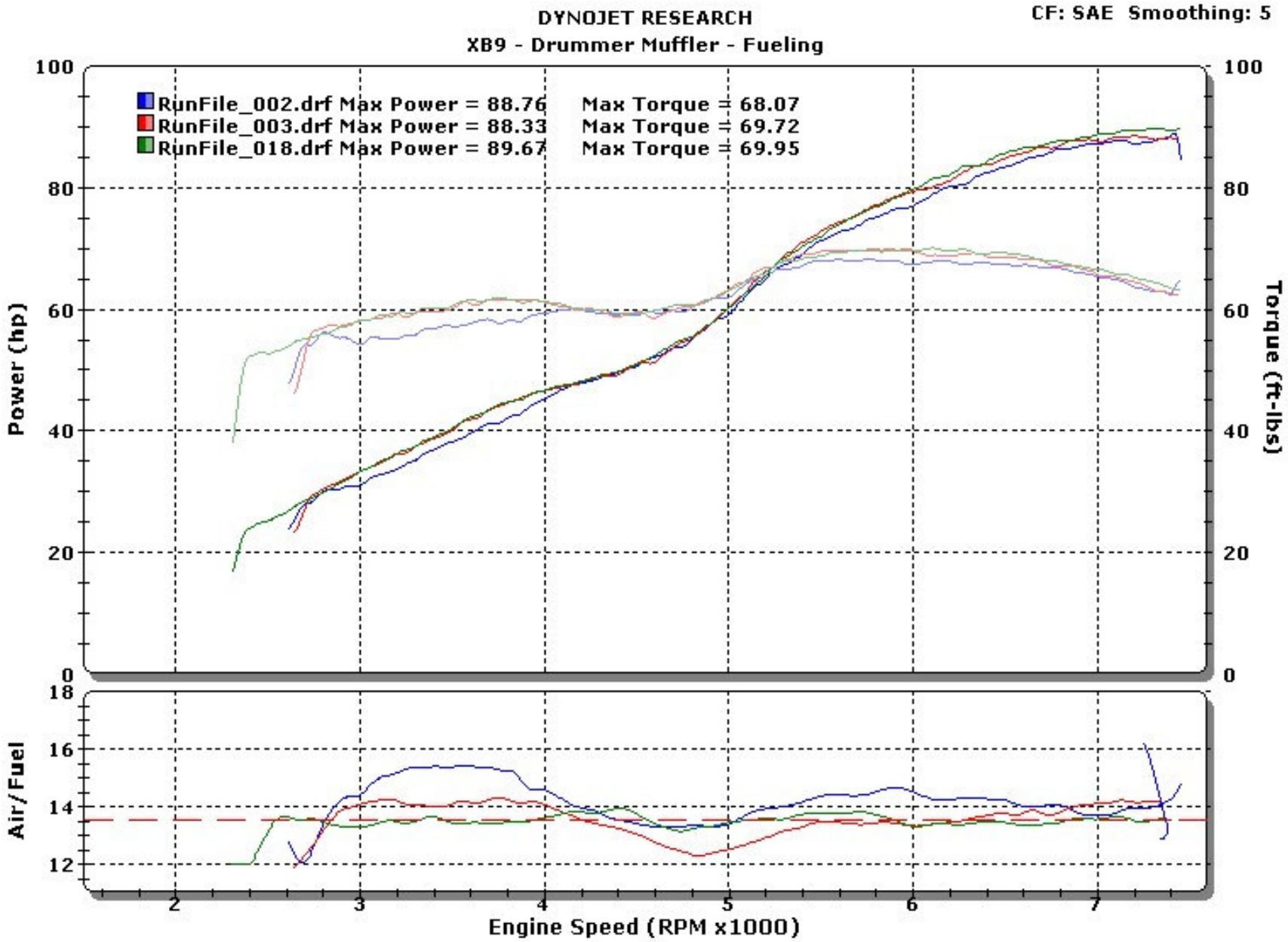

Figure 33 –XB9 Drummer Fueling Runs

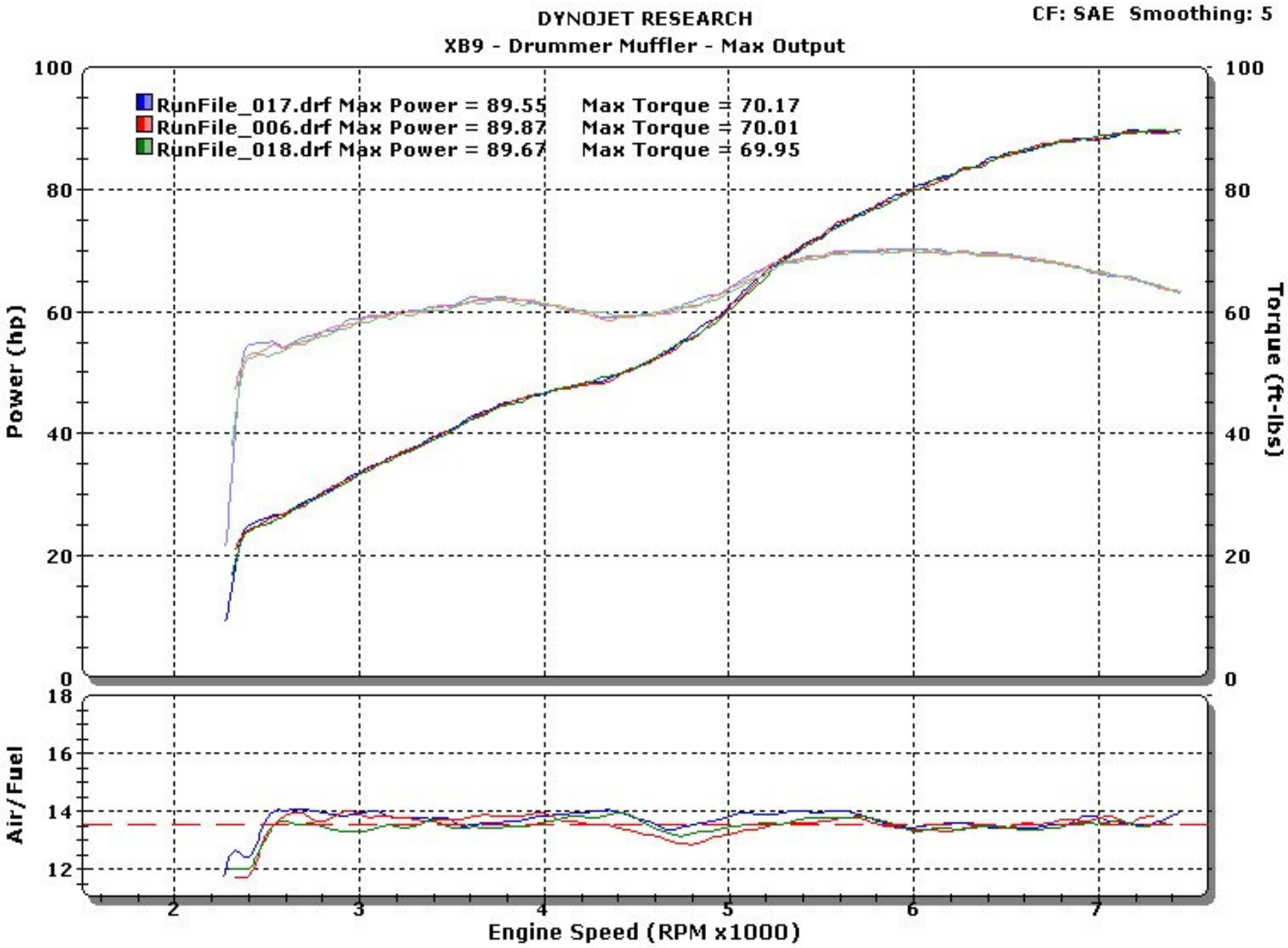

Figure 34 –XB9 Drummer Max Output Runs

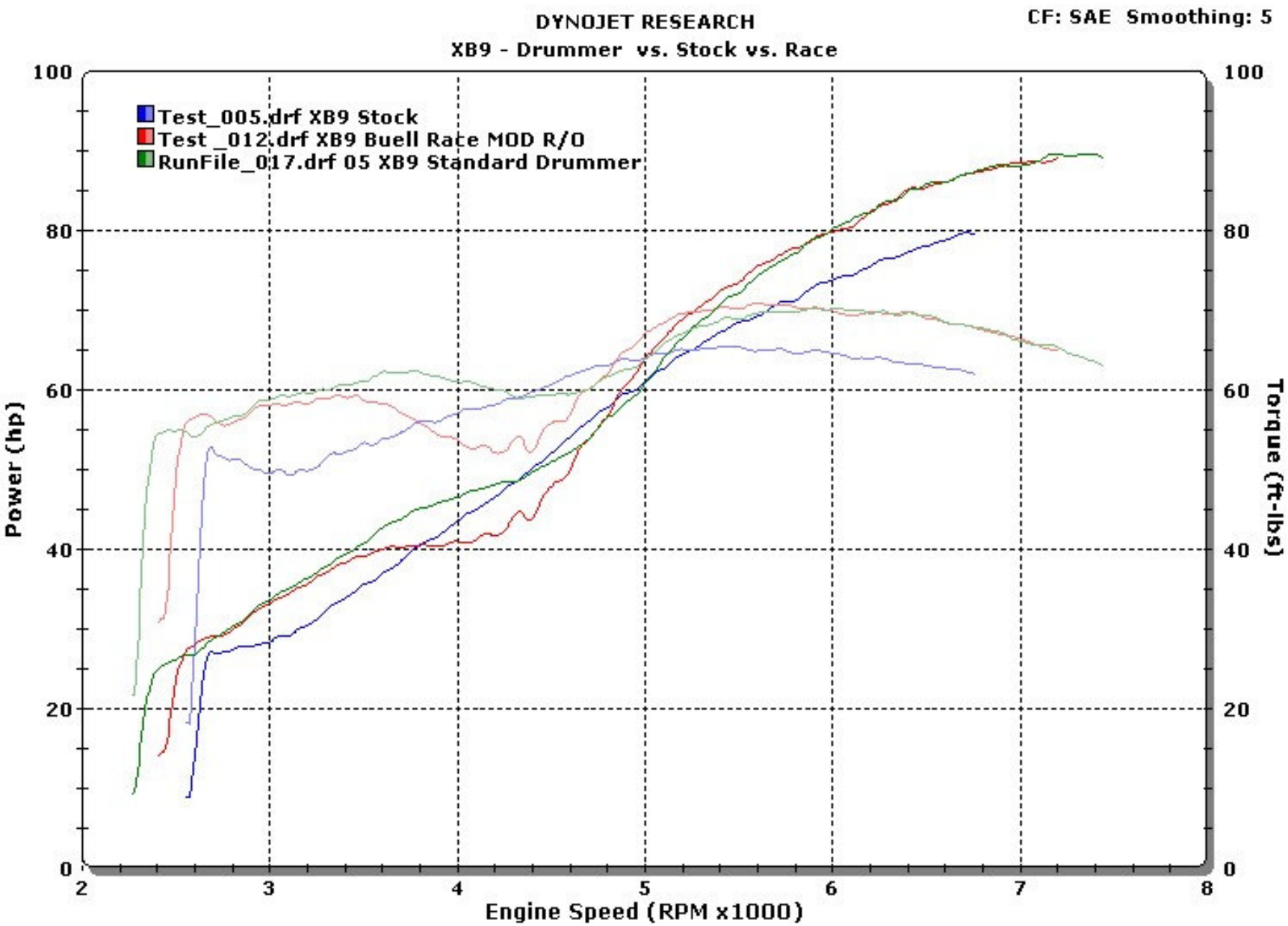

Figure 35 –XB9 Drummer Vs Stock Vs Race

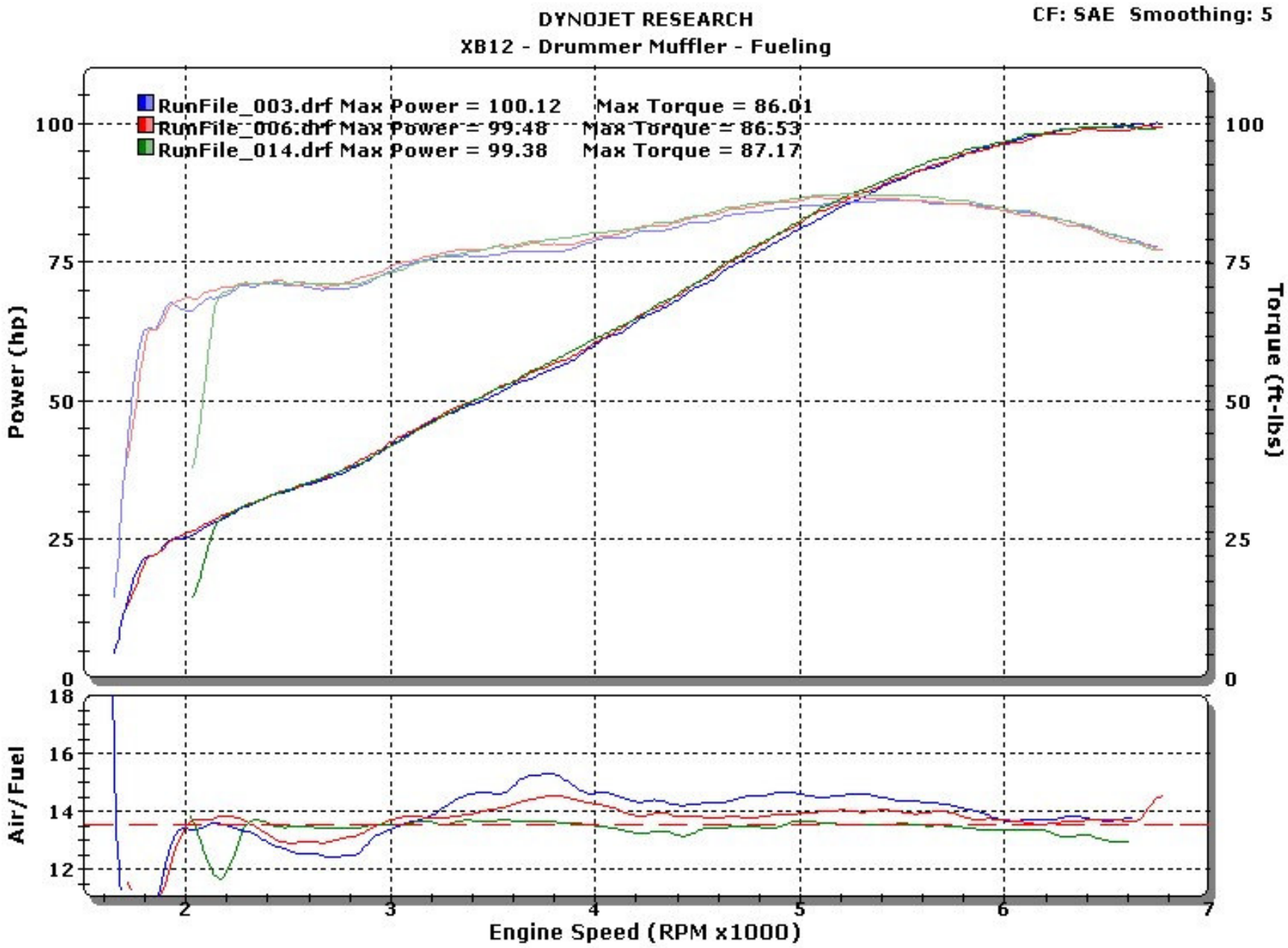

Figure 36 –XB12 Drummer Fueling Runs

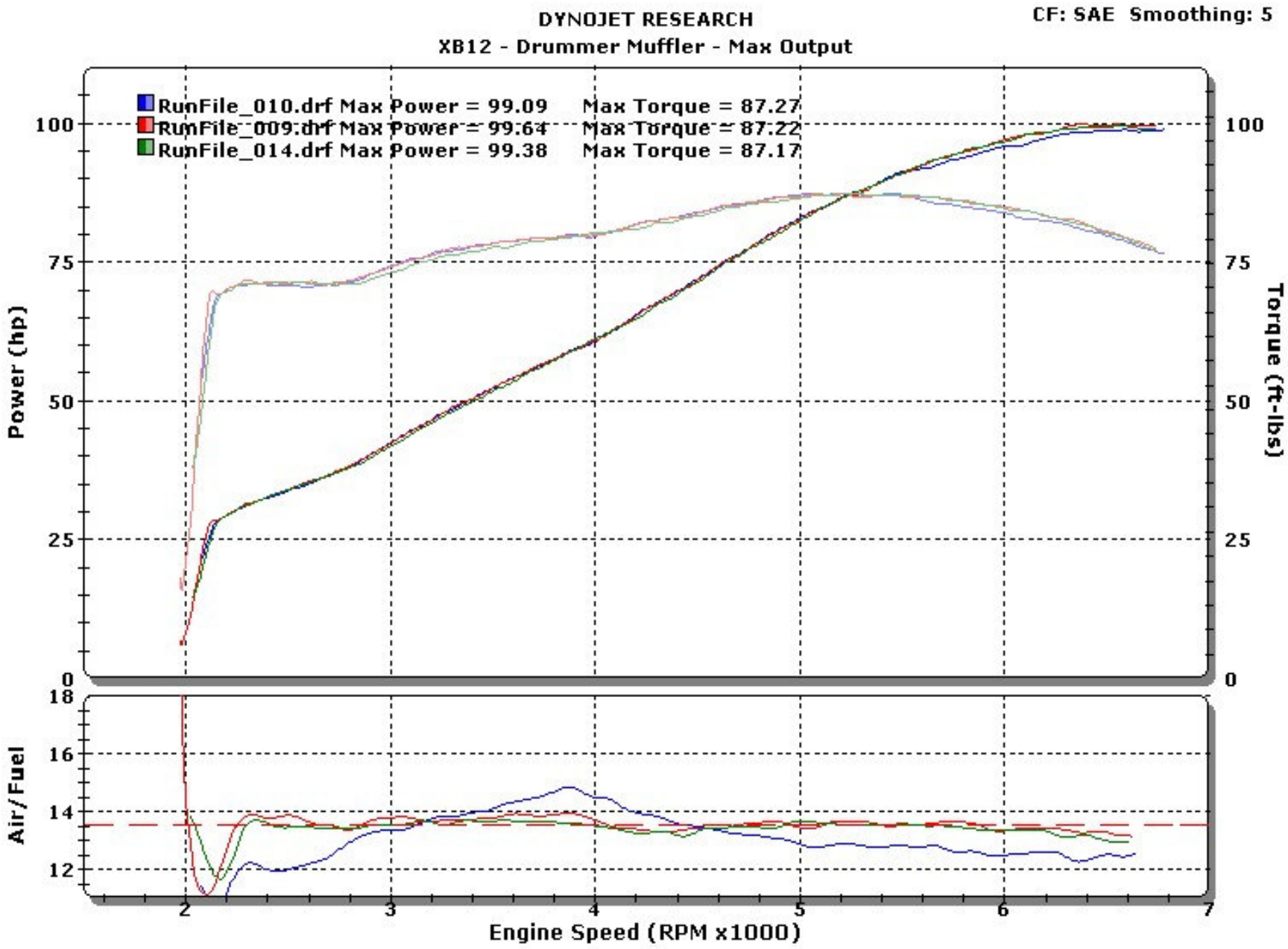

Figure 37 –XB12 Drummer Max Output Runs

Figure 38 –XB12 Drummer Vs Stock Vs Race

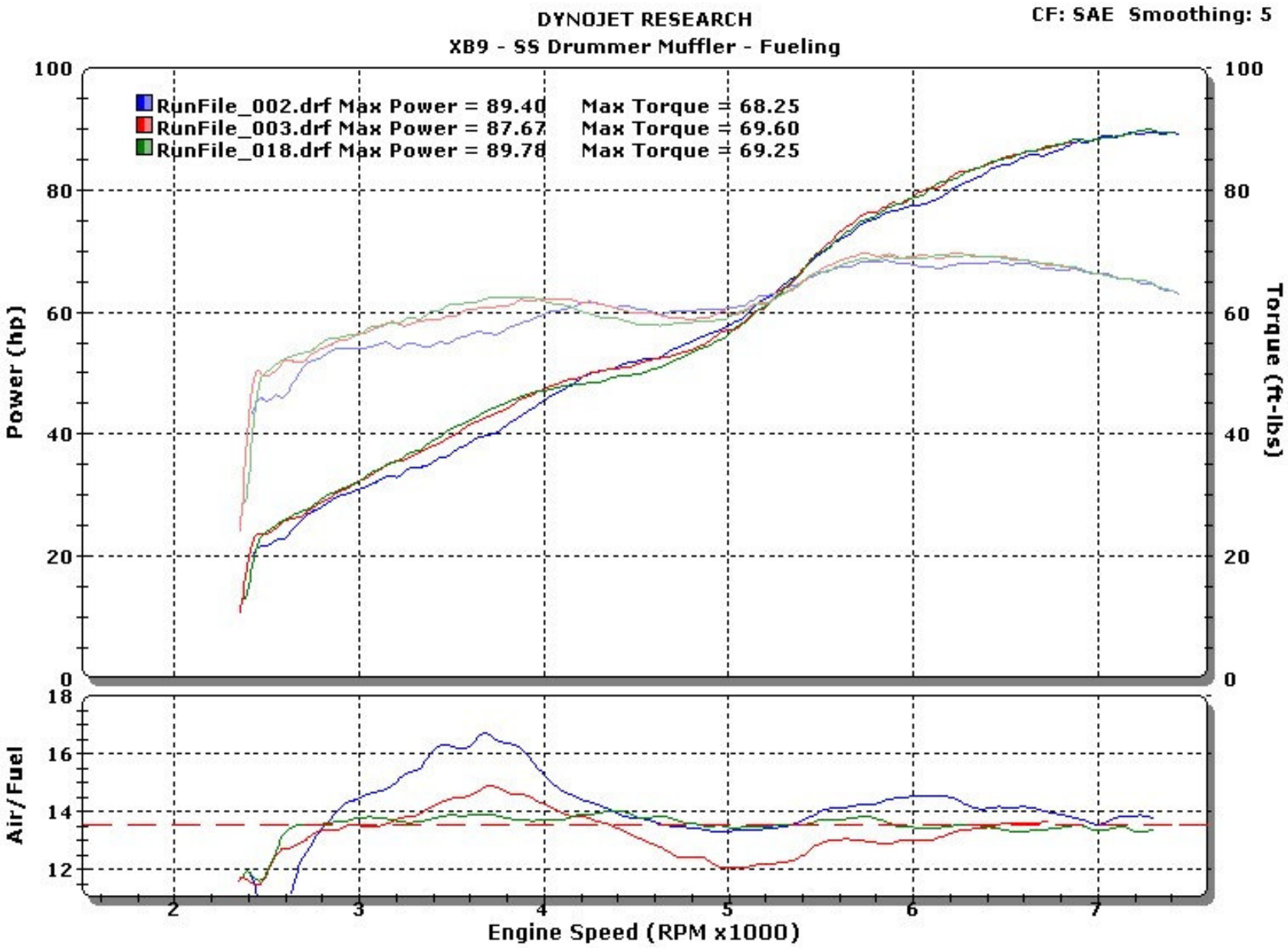

Figure 39 –XB9 SS-Drummer Fueling Runs

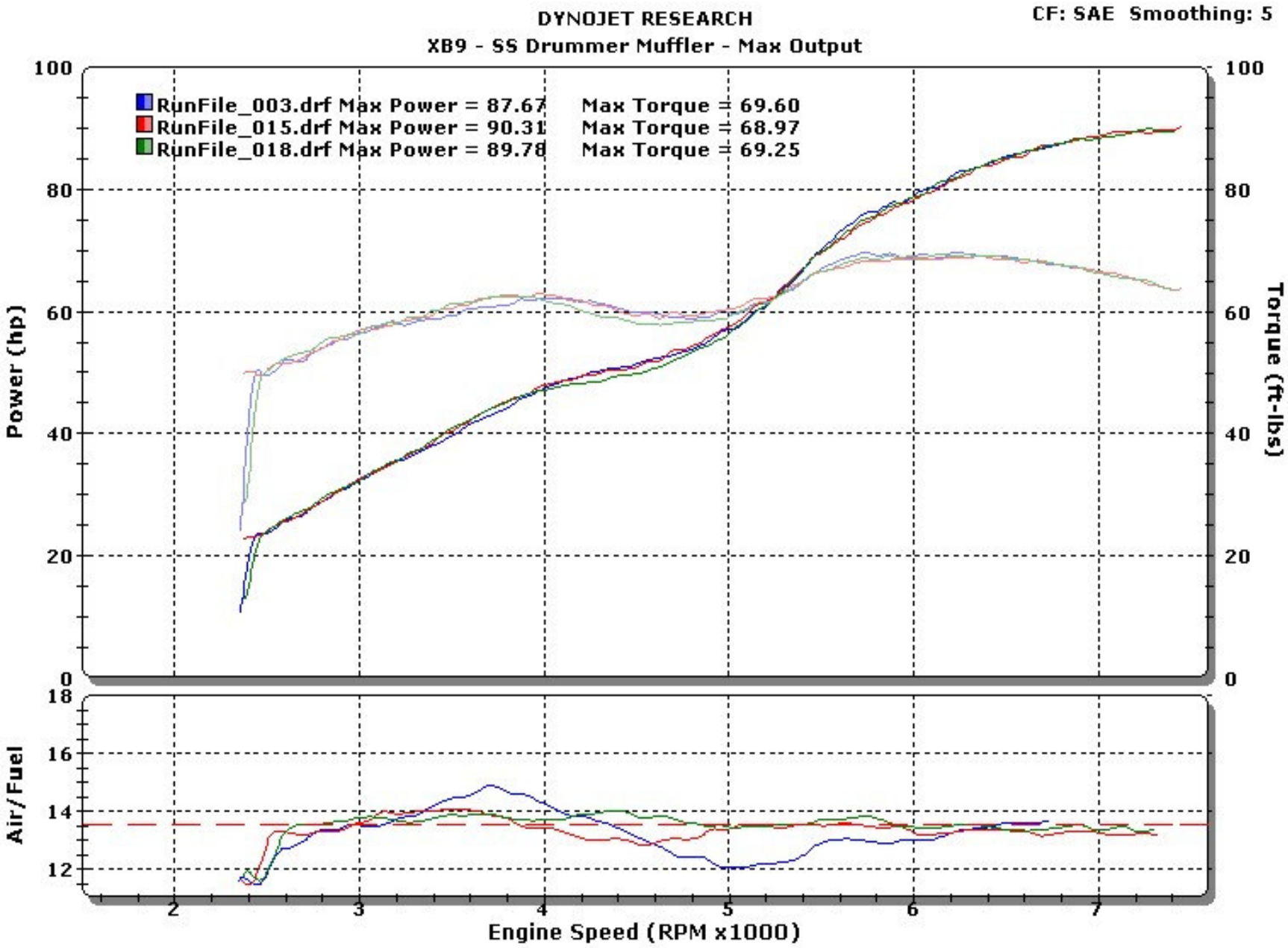

Figure 40 –XB9 SS-Drummer Max Ouput Runs

Figure 41 –XB9 SS-Drummer Vs. Stock Vs. Race

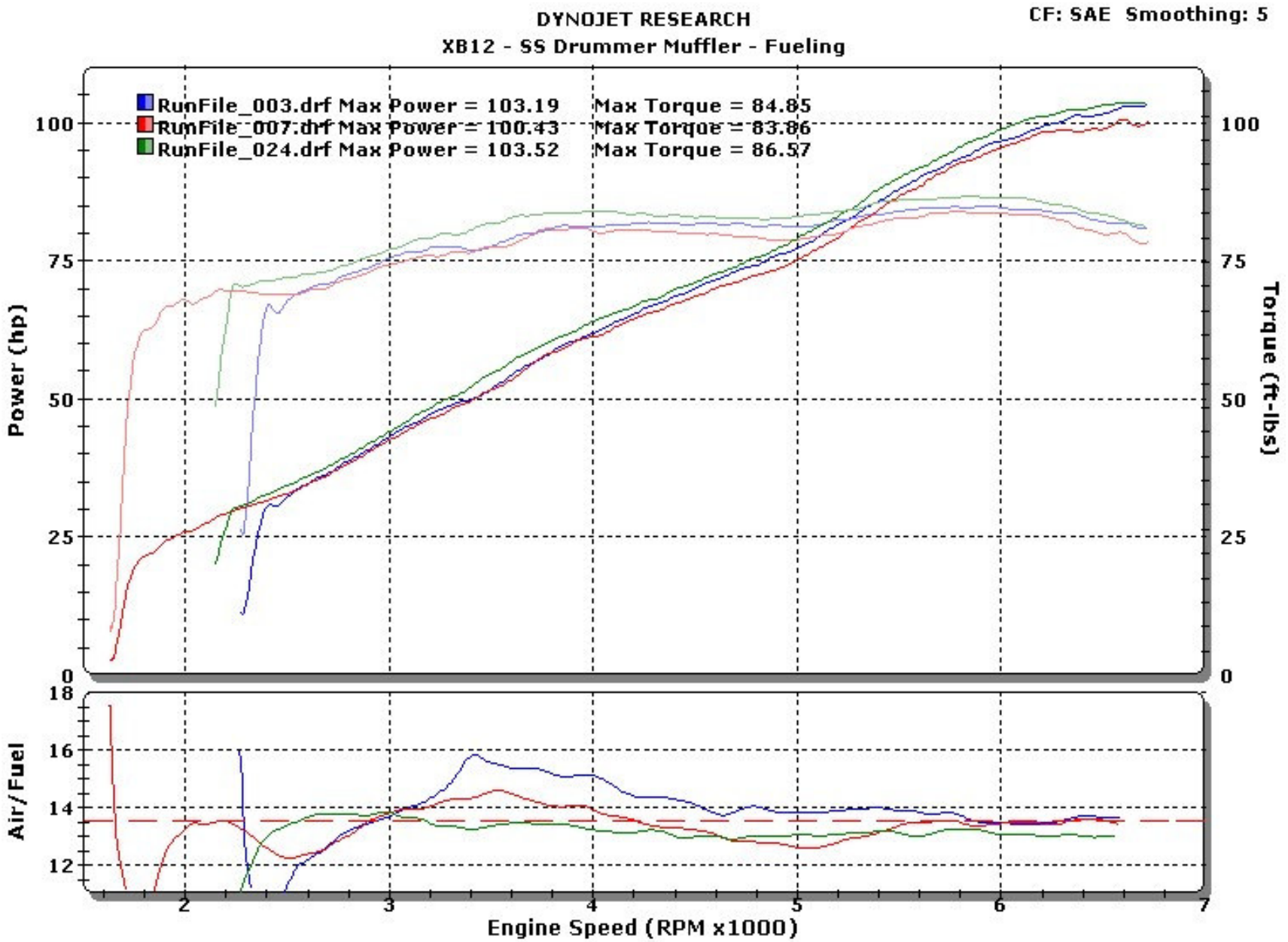

Figure 42 –XB12 SS-Drummer Fueling Runs

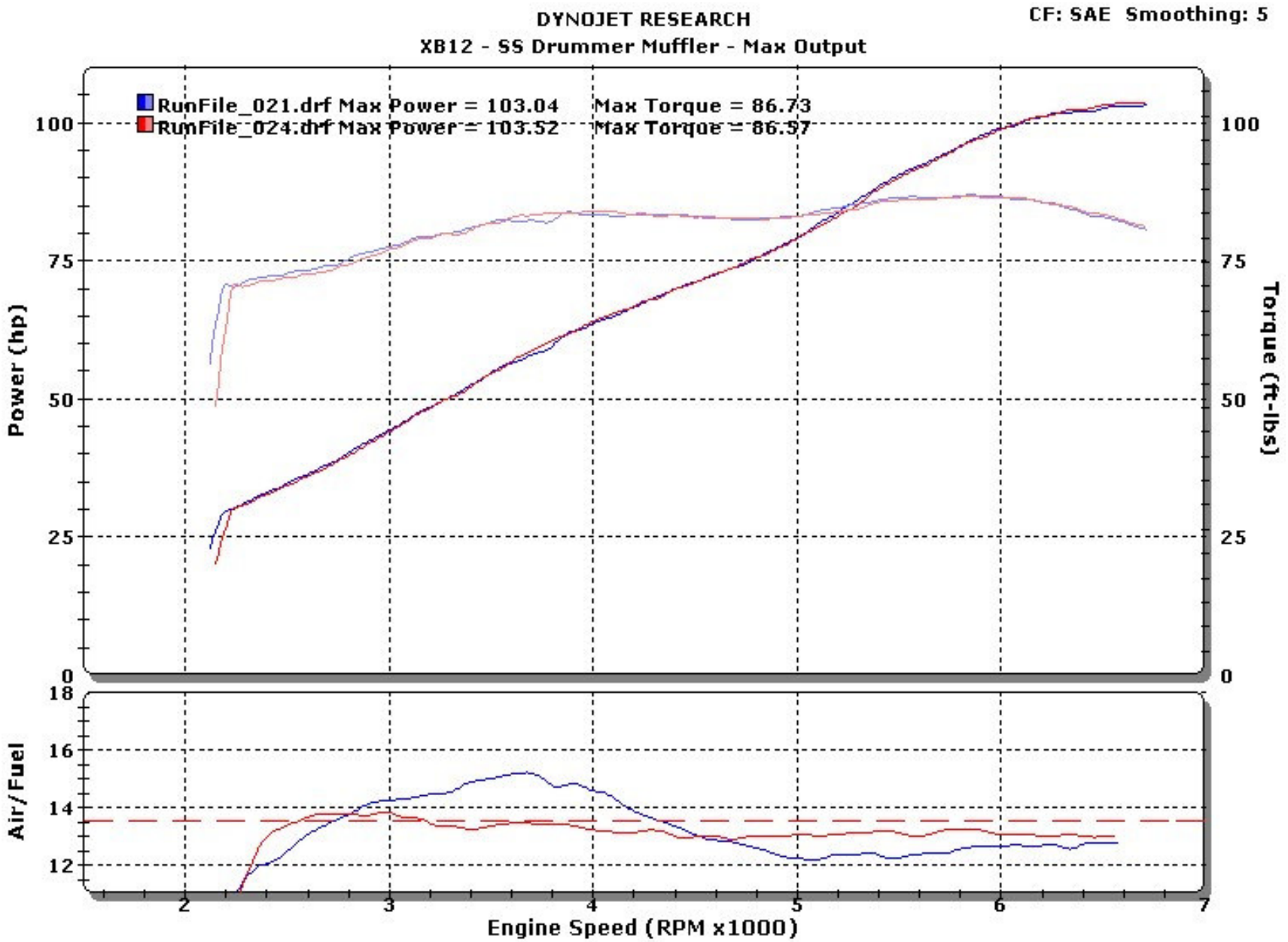

Figure 43 –XB12 SS-Drummer Max Output Runs

Figure 44 –XB12 SS-Drummer Vs. Stock Vs. Race

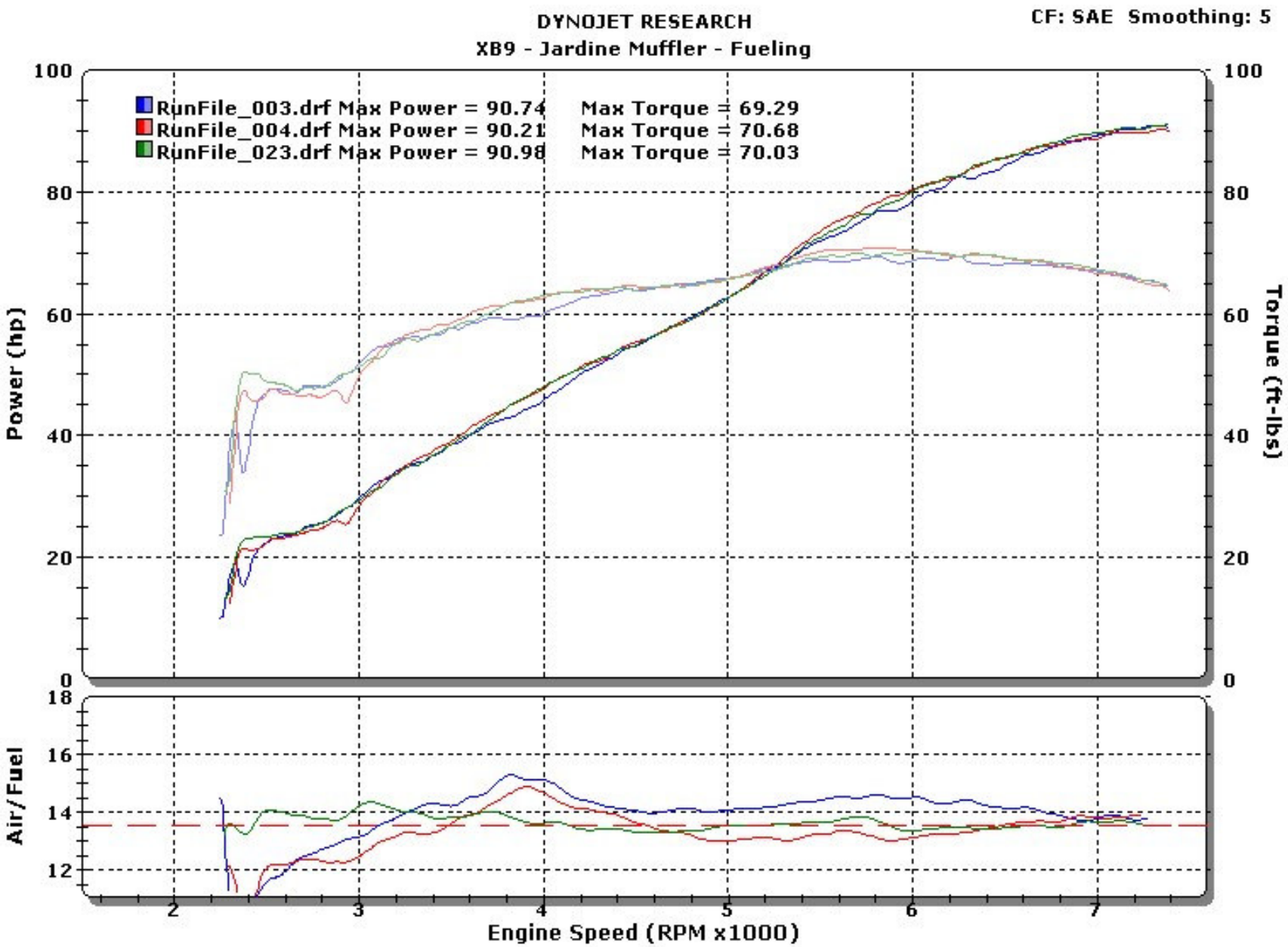

Figure 45 –XB9 Jardine Fueling Runs

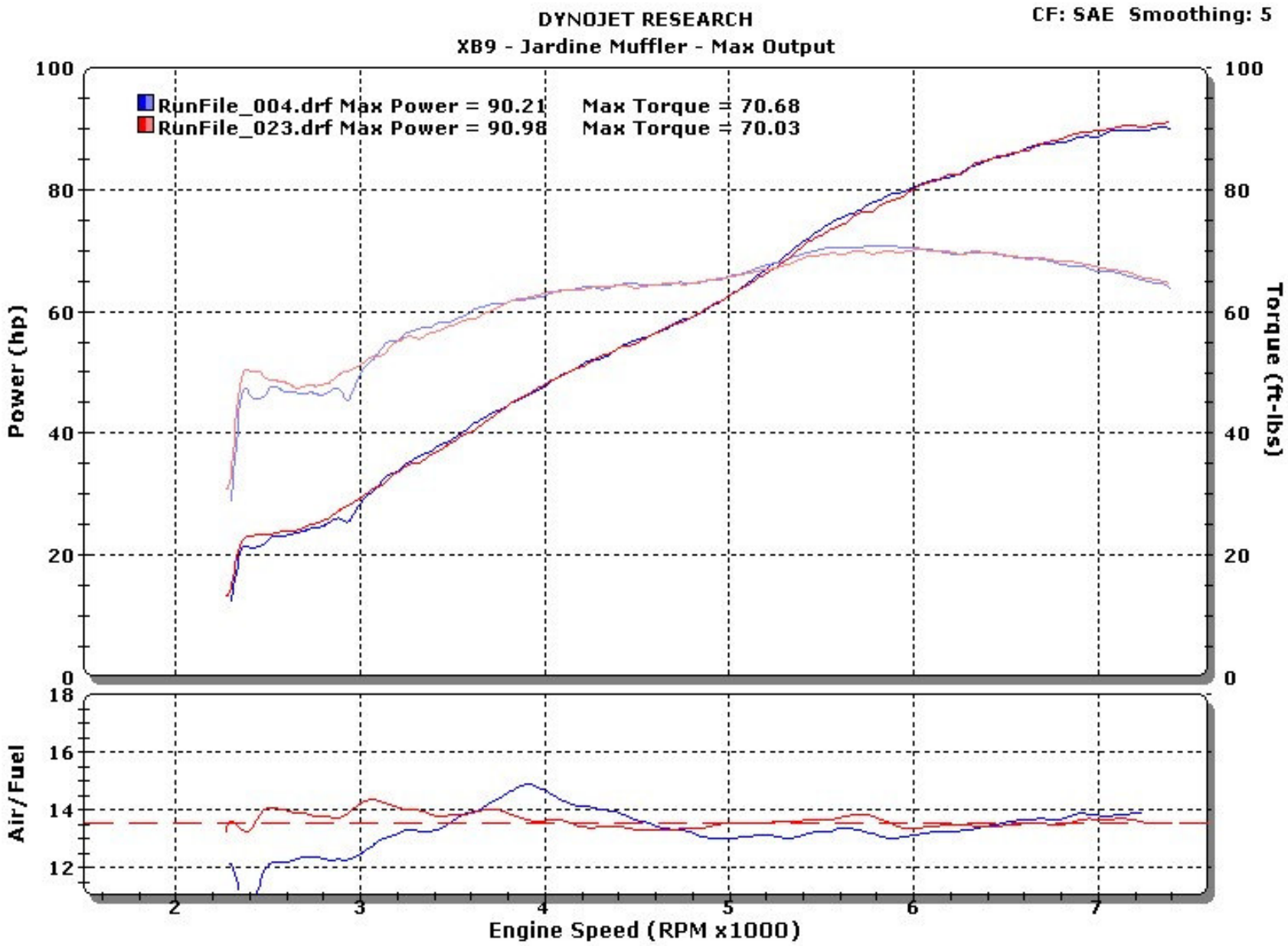

Figure 46 –XB9 Jardine Max Output Runs

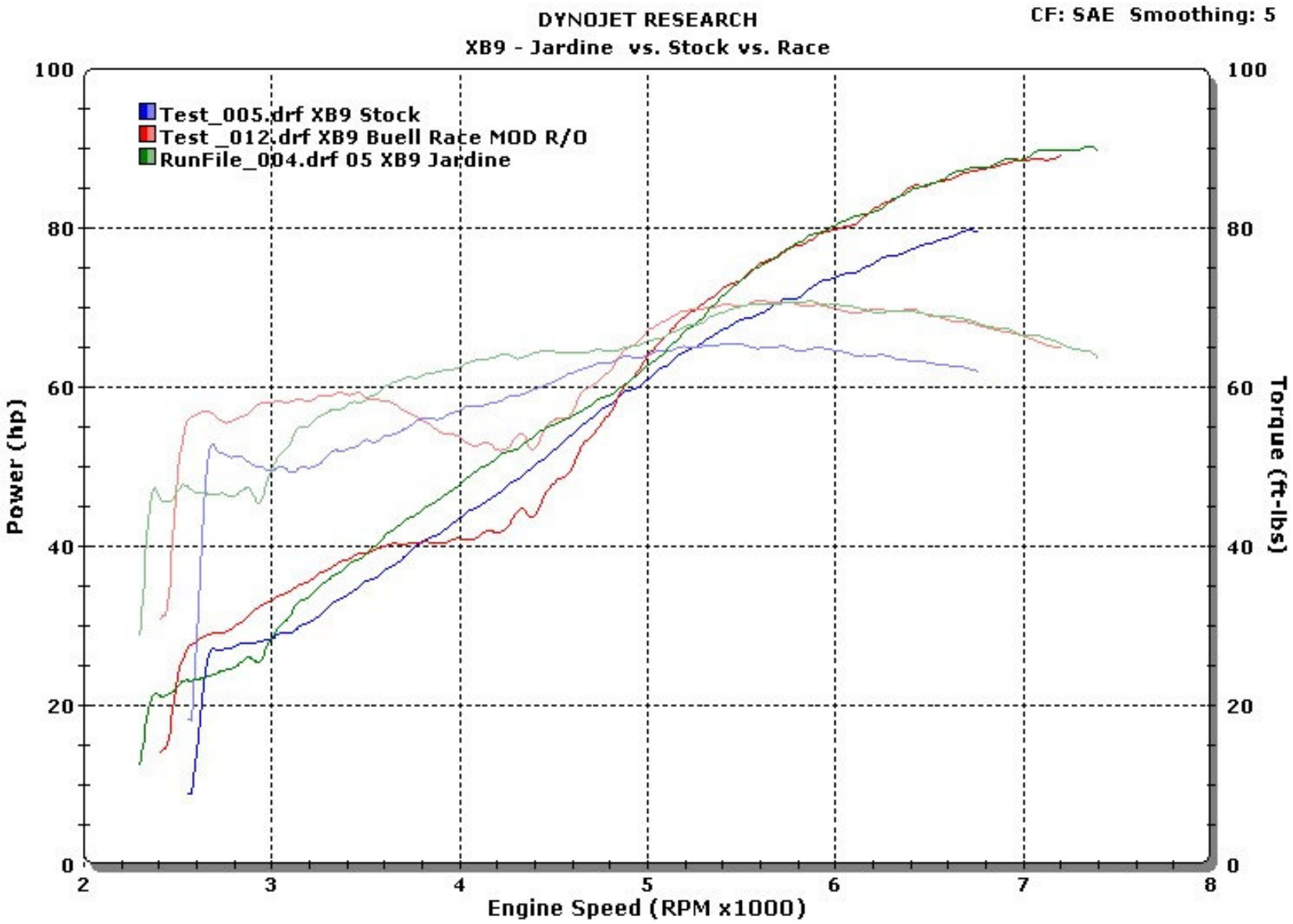

Figure 47 –XB9 Jardine Vs. Stock Vs. Race

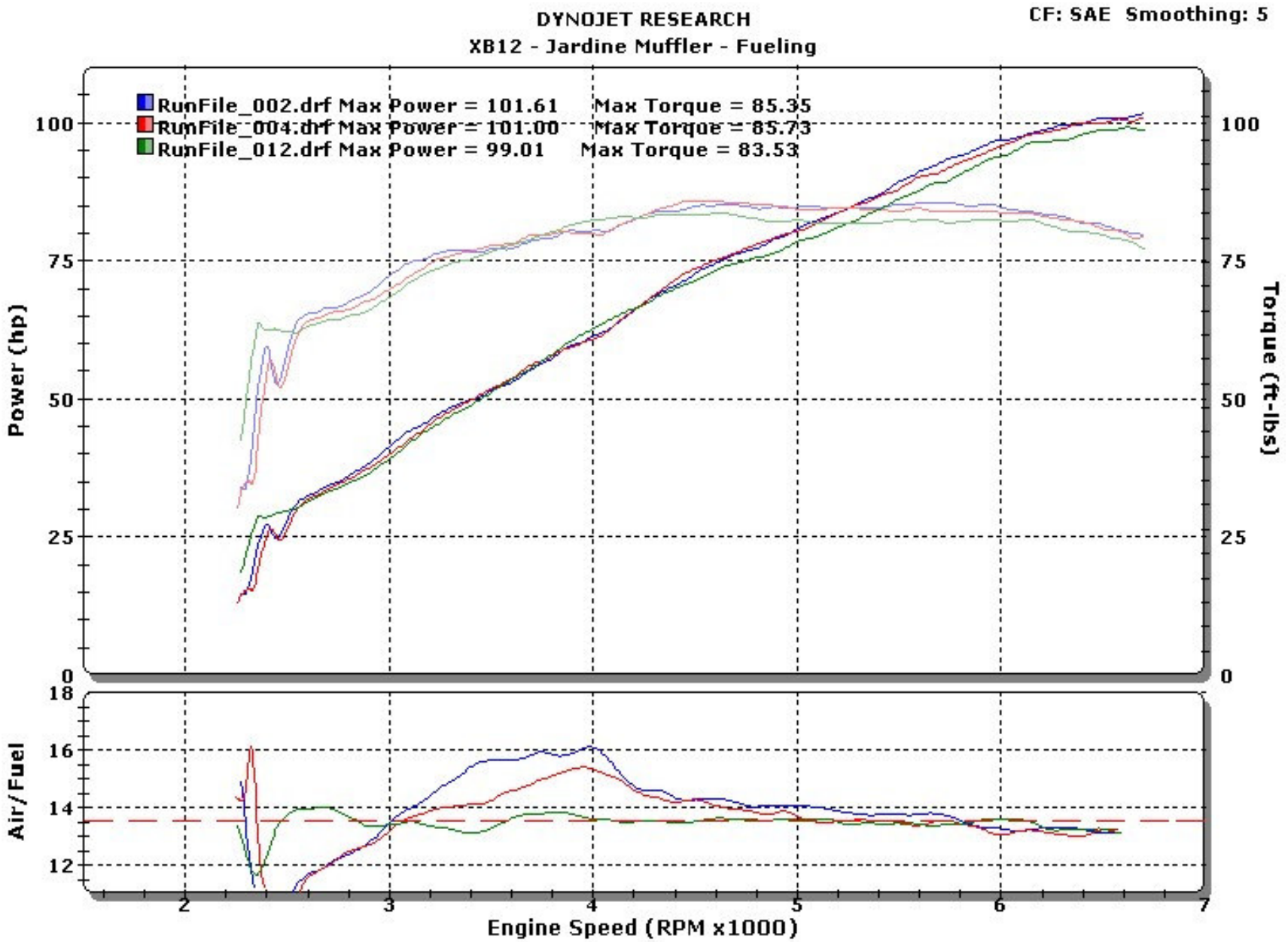

Figure 48 –XB12 Jardine Fueling Runs

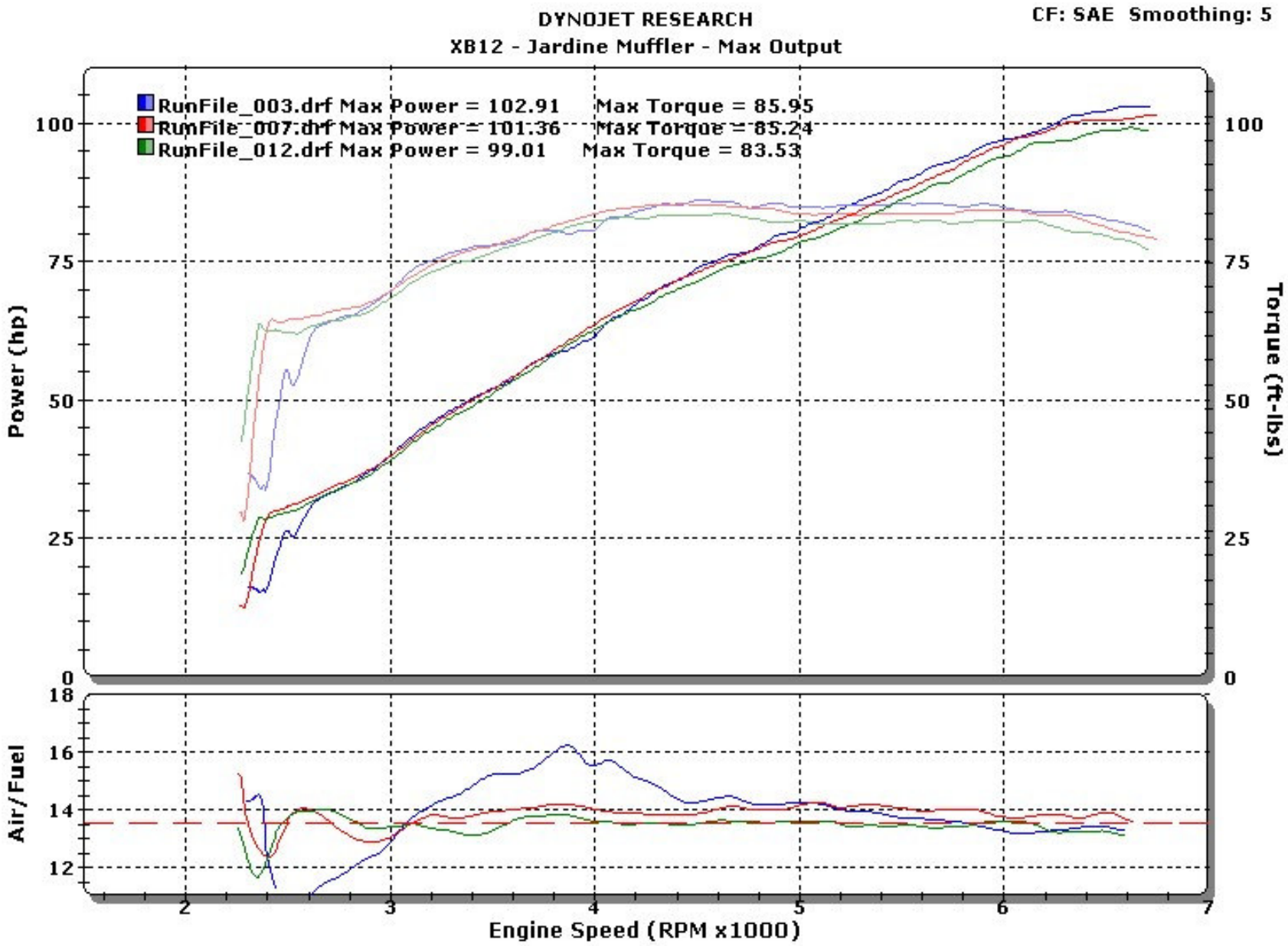

Figure 49 –XB12 Jardine Max Output Runs

Figure 50 –XB12 Jardine Vs. Stock Vs. Race

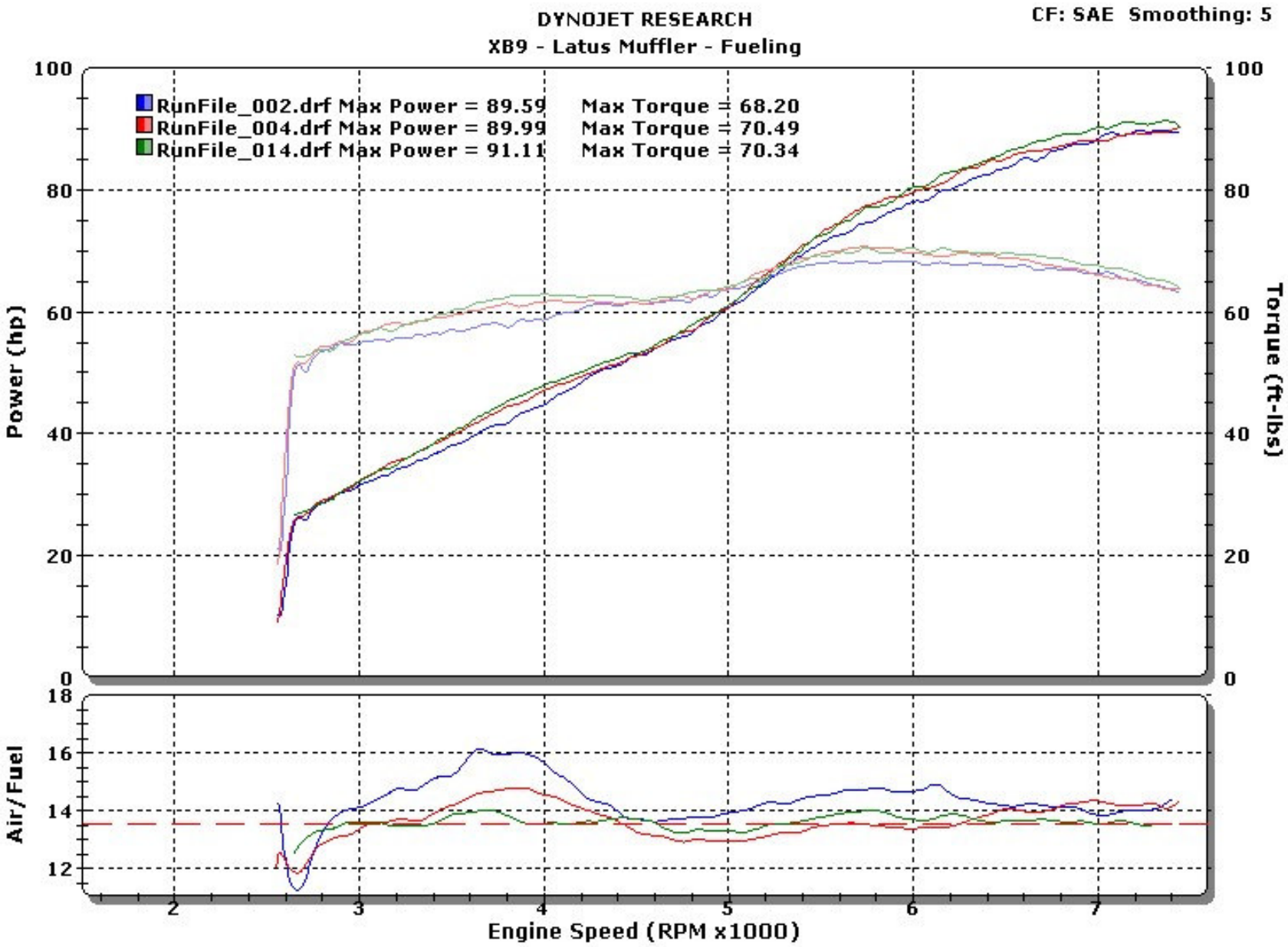

Figure 51 –XB9 Latus Fueling Runs

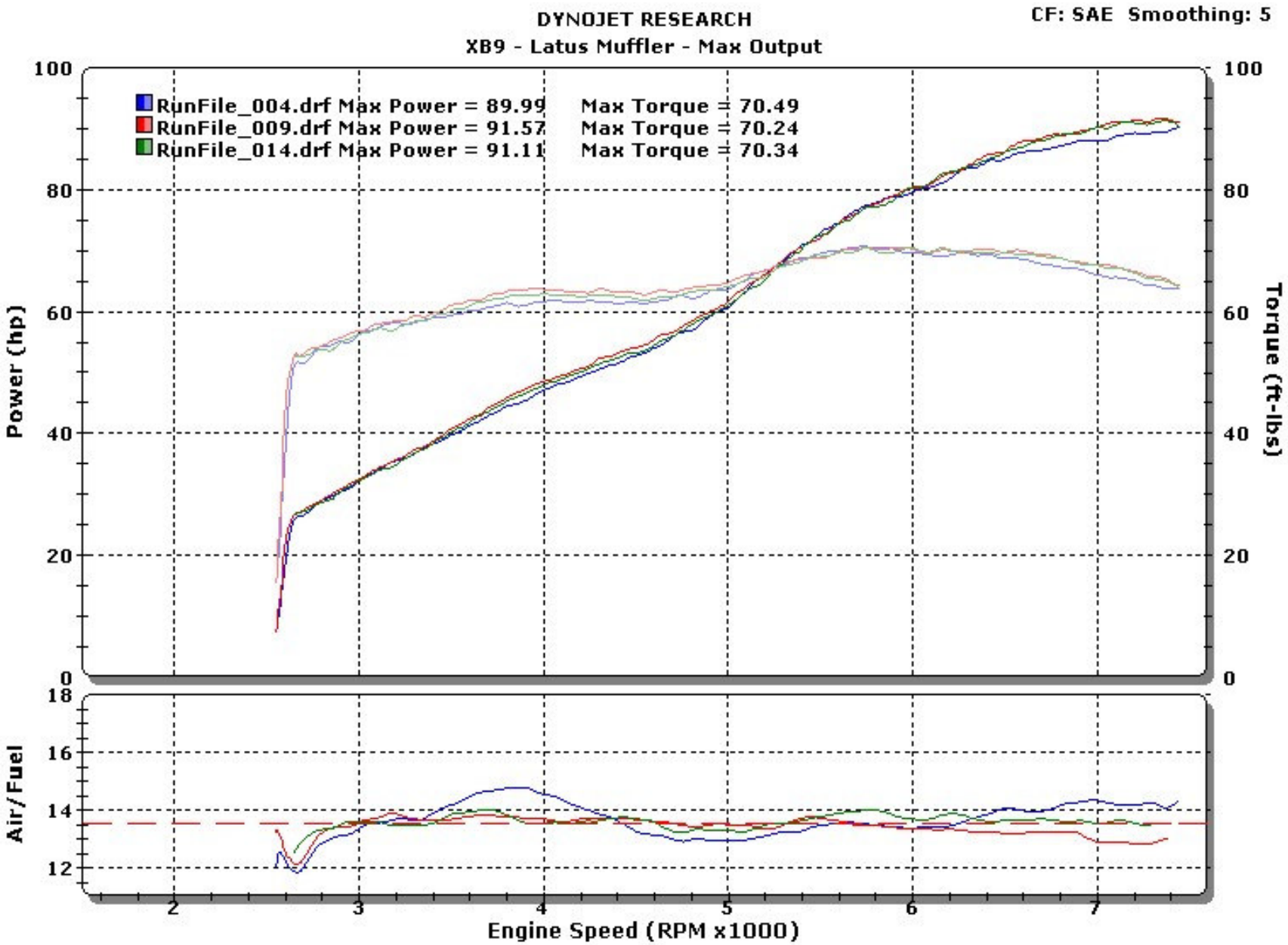

Figure 52–XB9 Latus Max Output Runs

Figure 53–XB9 Latus Vs. Stock Vs. Race

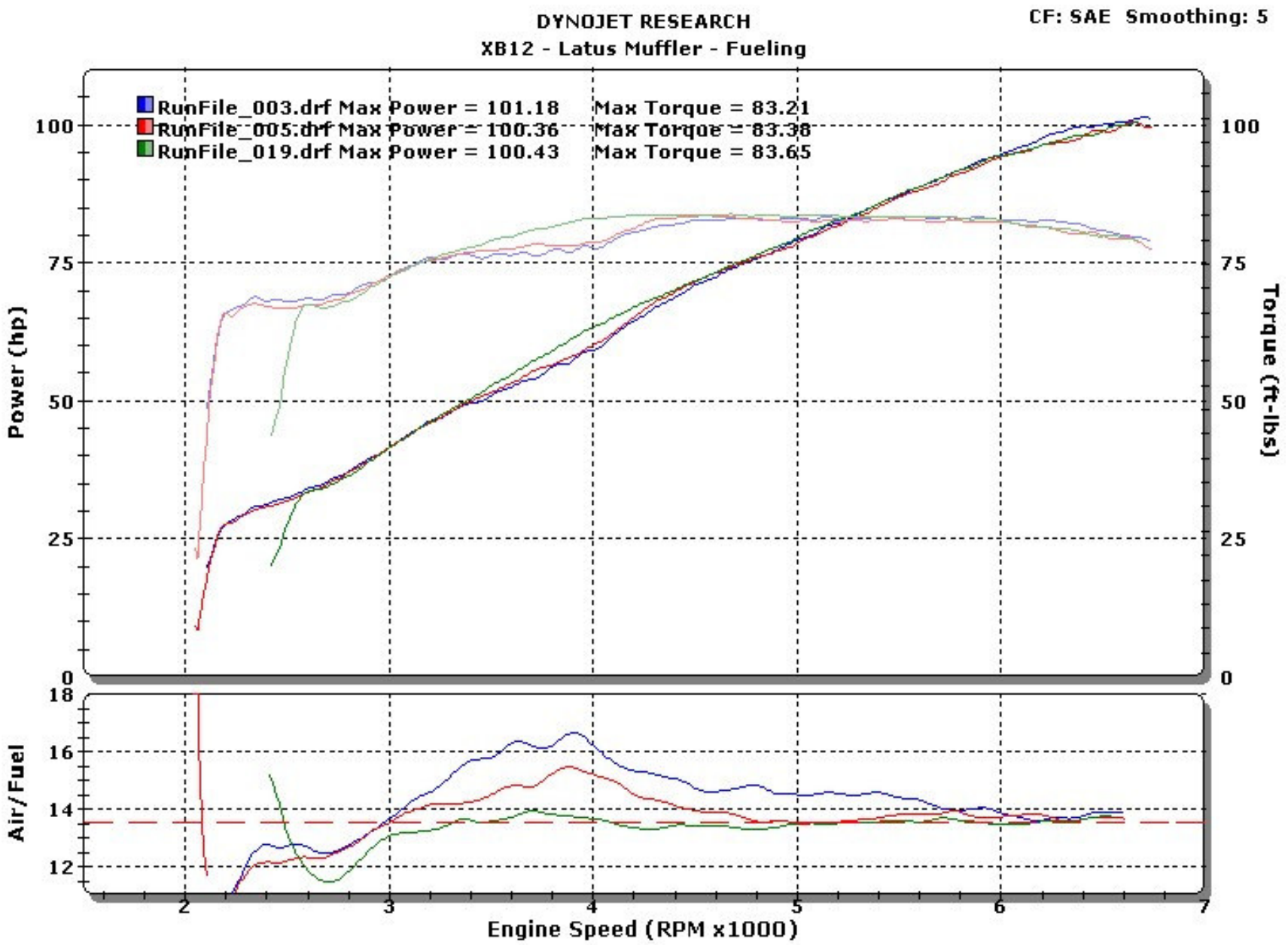

Figure 54–XB12 Latus Fueling Runs

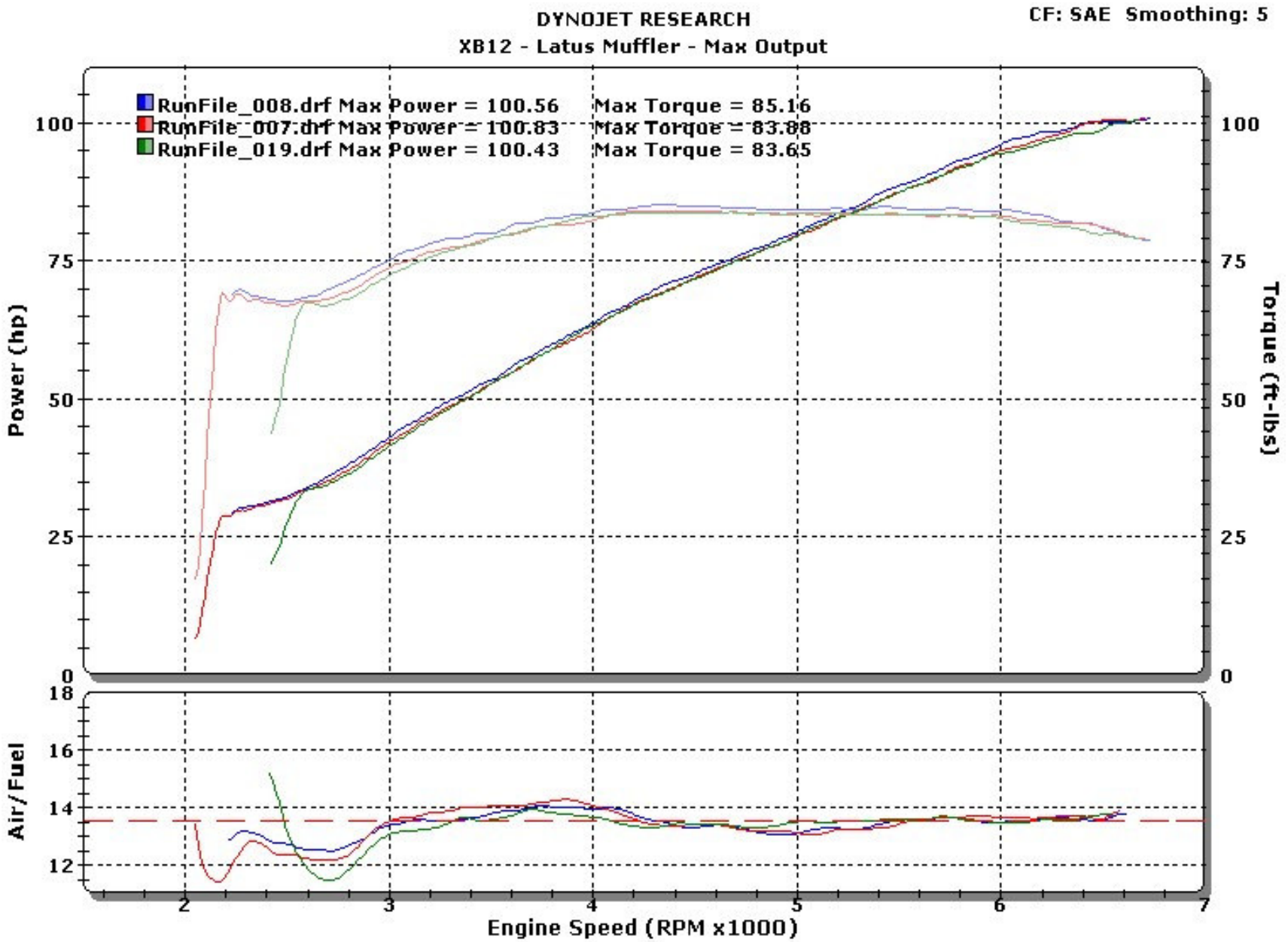

Figure 55–XB12 Latus Max Output Runs

Figure 56–XB12 Latus Vs. Stock Vs. Race

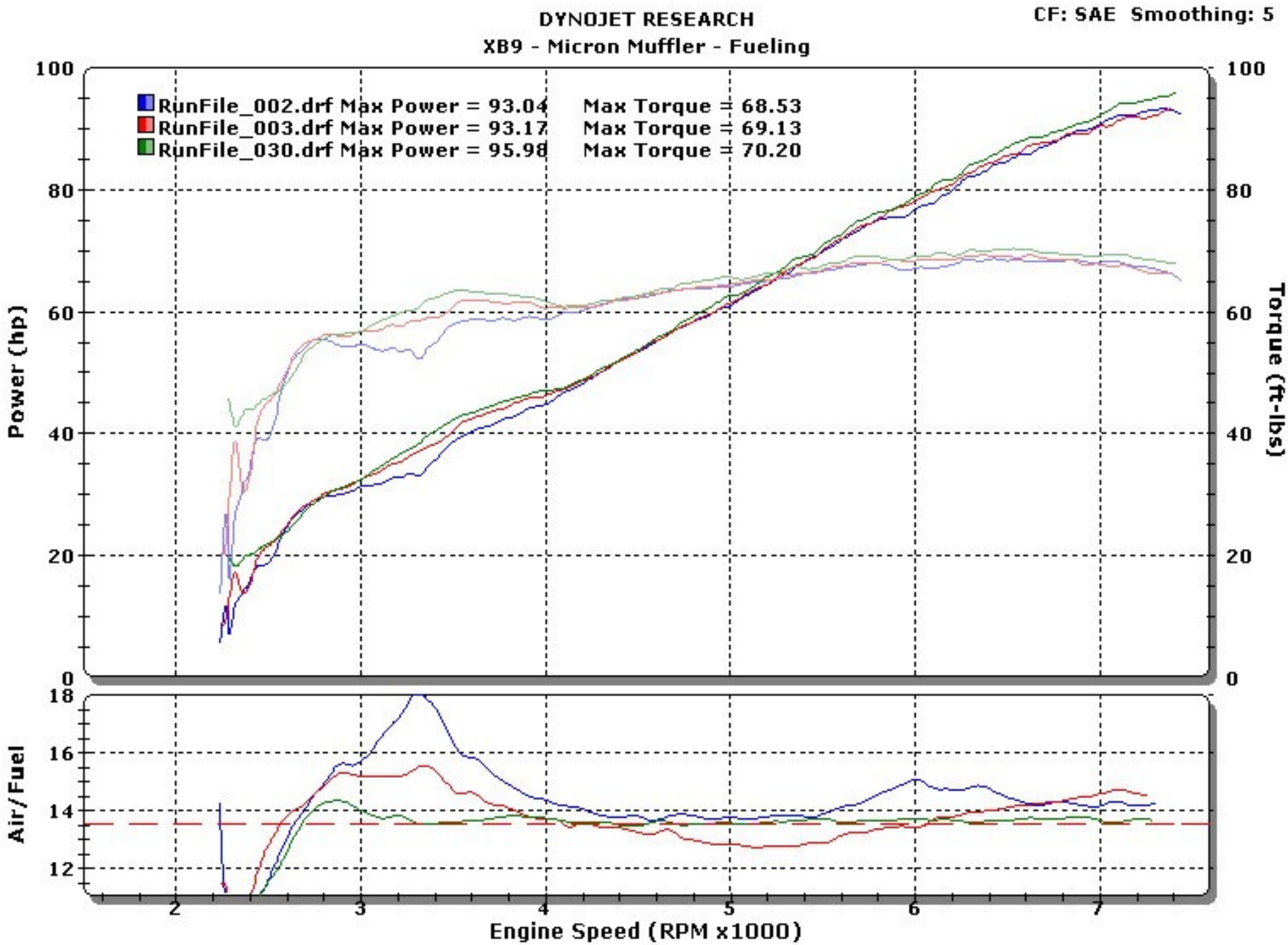

Figure 57–XB9 Micron Fueling Runs

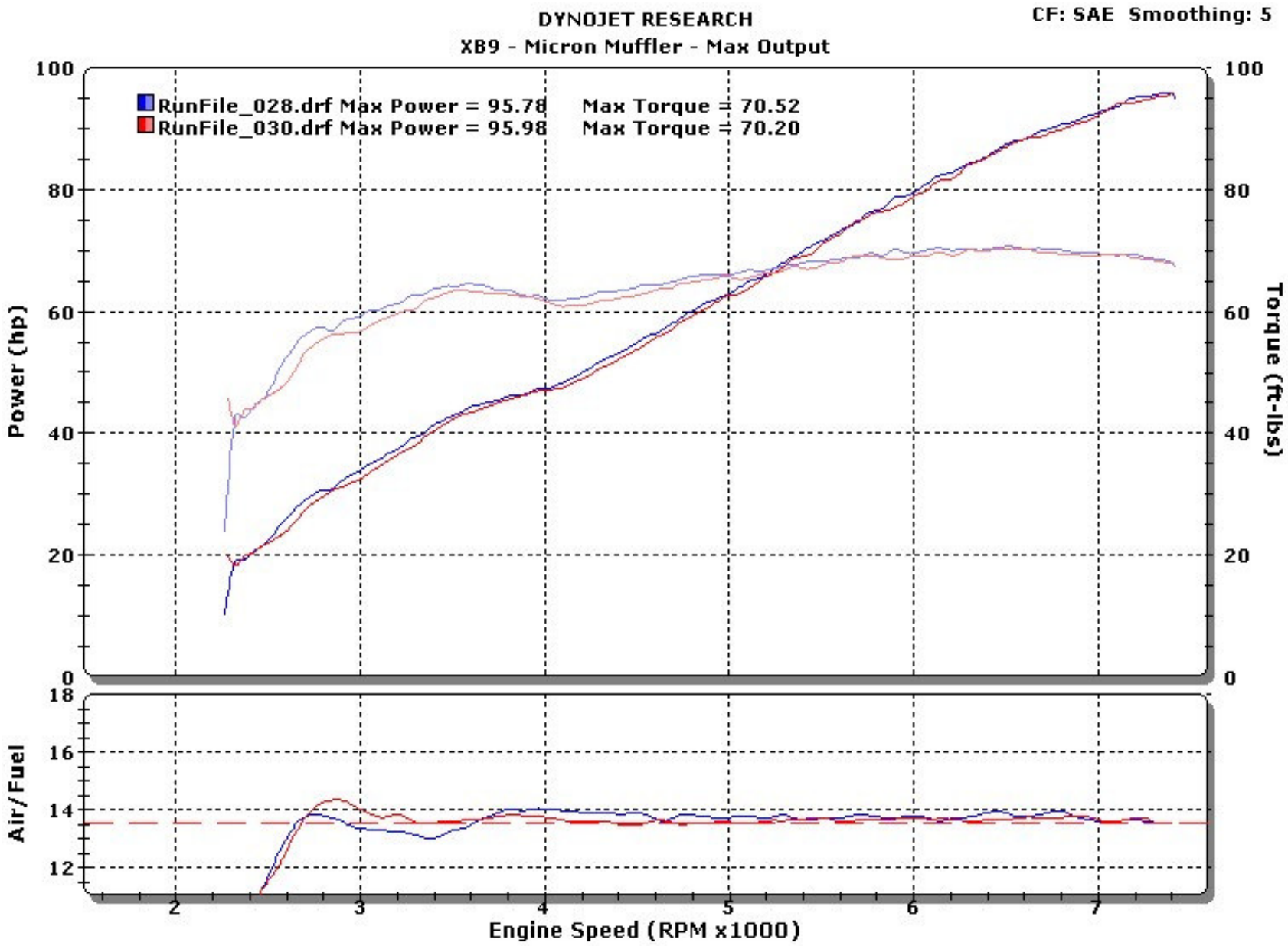

Figure 58–XB9 Micron Max Output Runs

Figure 59–XB9 Micron Vs. Stock Vs. Race

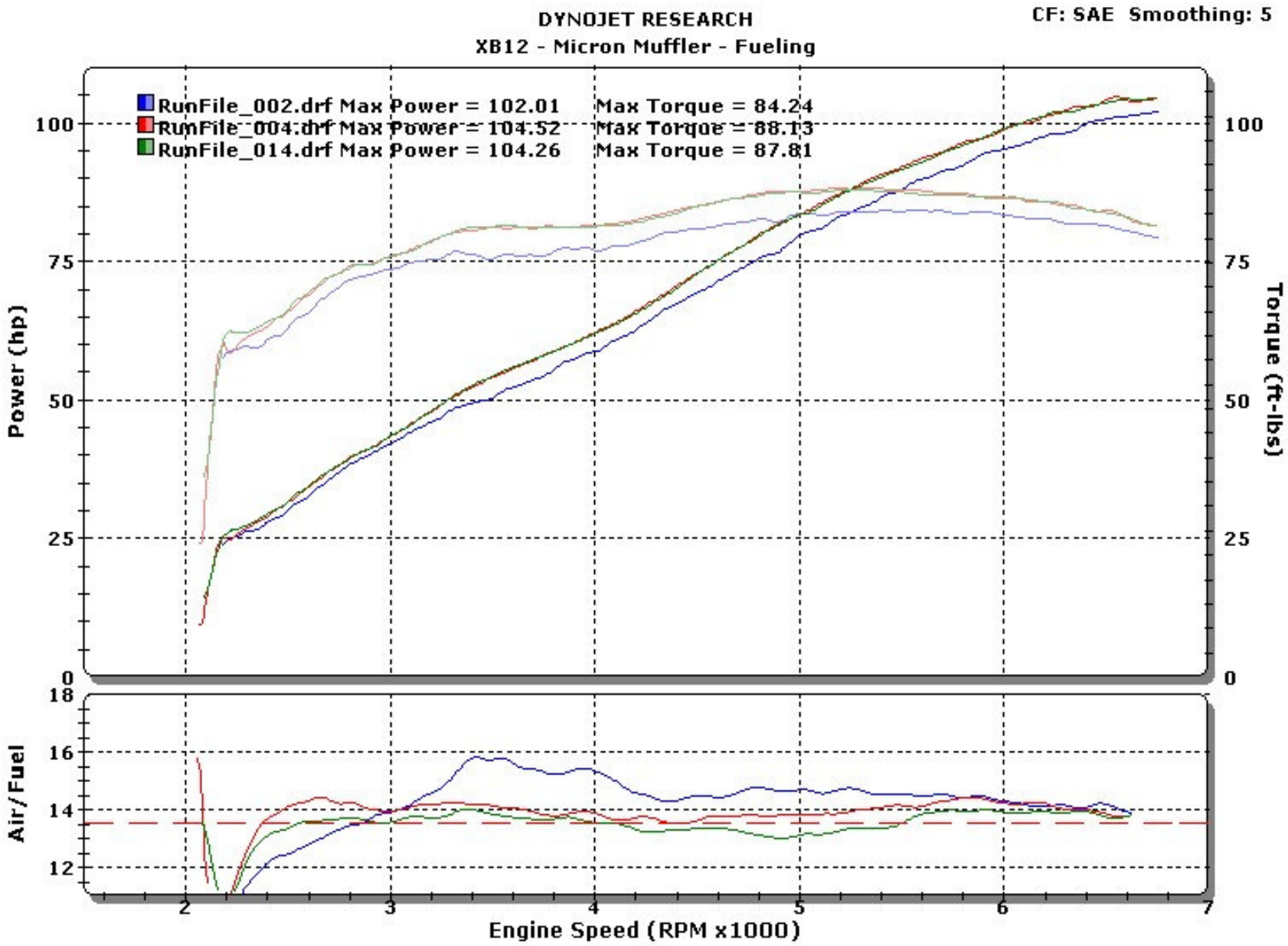

Figure 60–XB12 Micron Fueling Runs

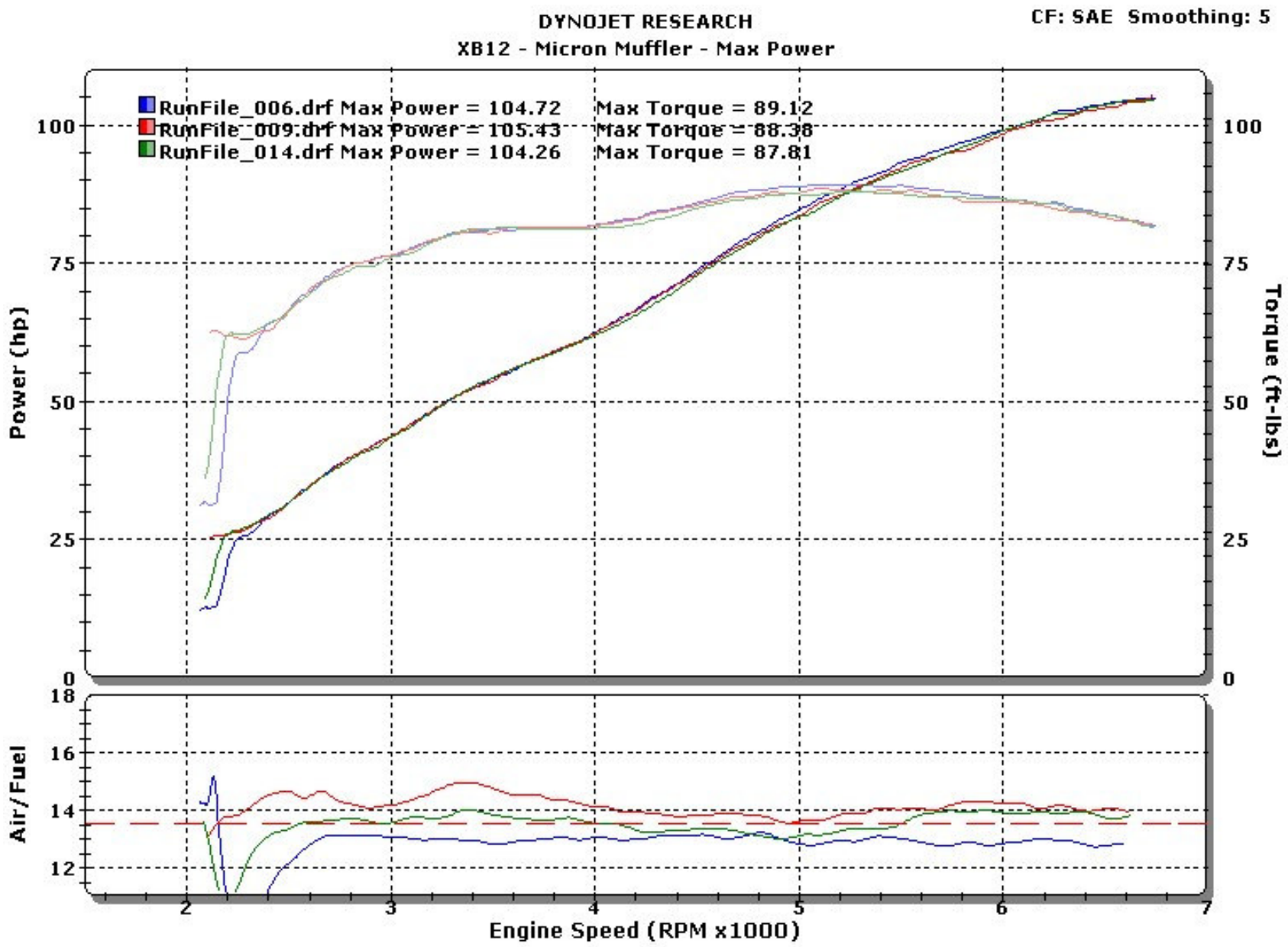

Figure 61–XB12 Micron Max Output Runs

Figure 62–XB12 Micron Vs. Stock Vs. Race

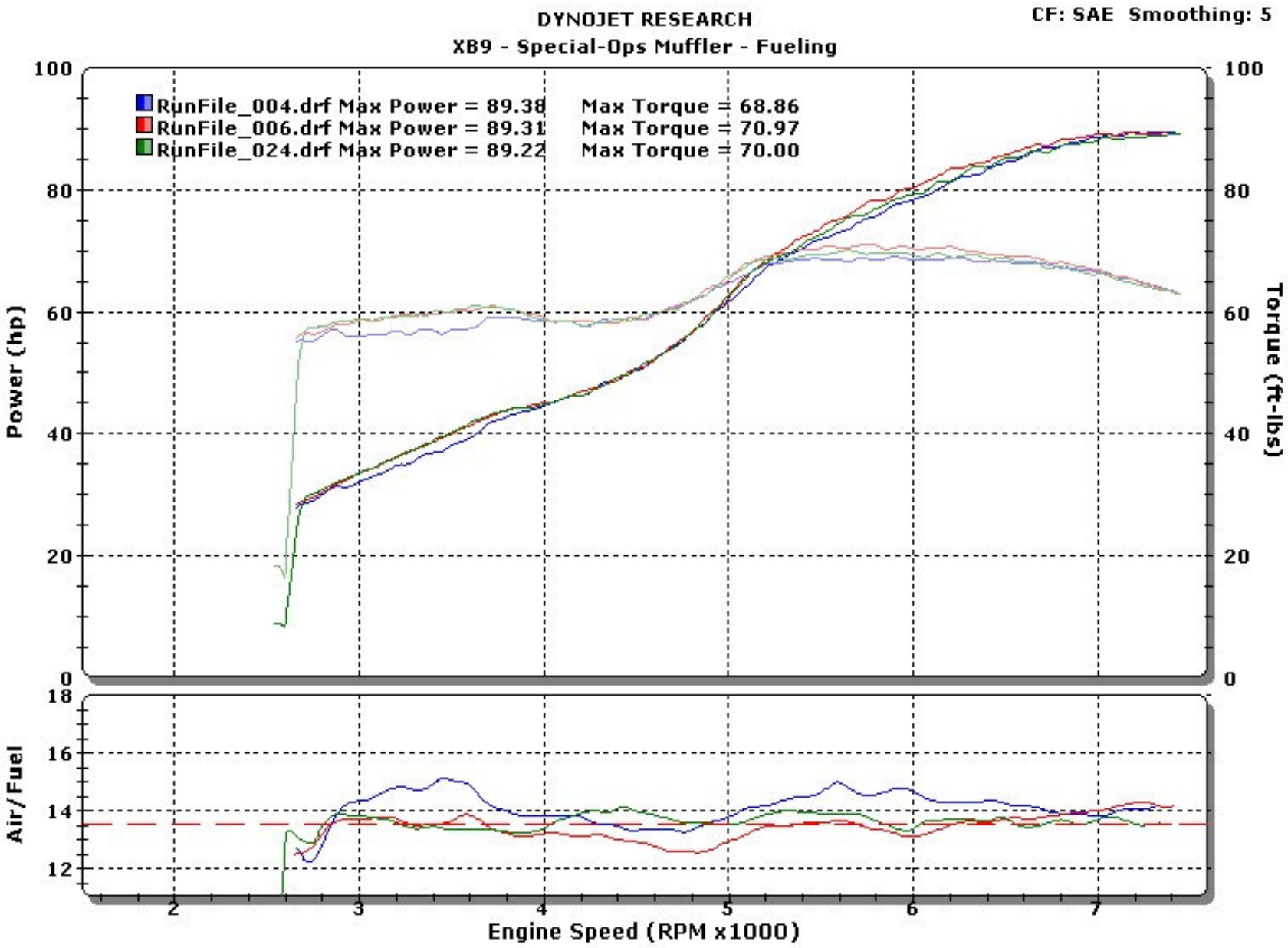

Figure 63–XB9 Special-Ops Fueling Runs

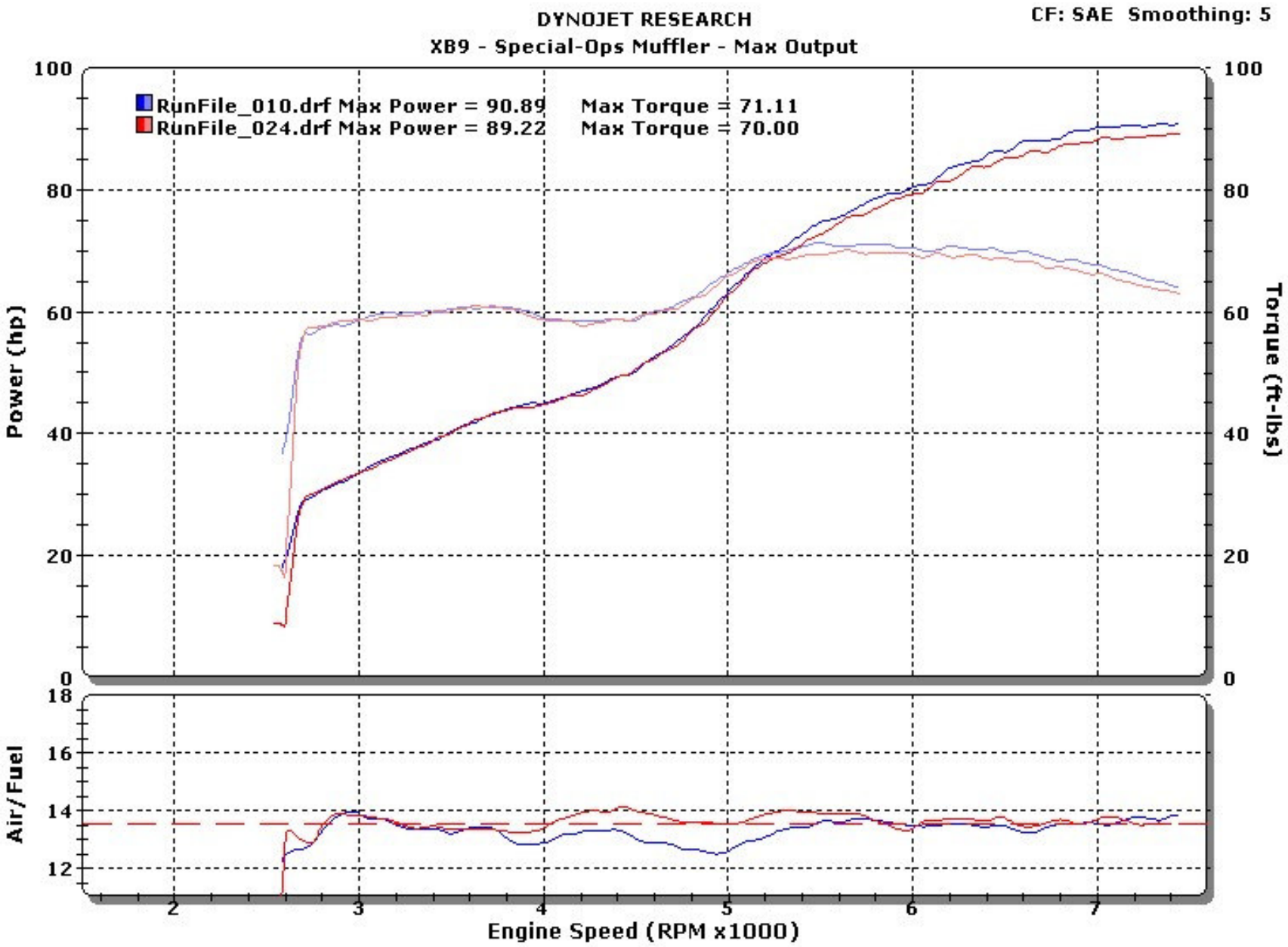

Figure 64–XB9 Special-Ops Max Outputs Runs

Figure 65 –XB9 Special-Ops Vs. Stock Vs. Race

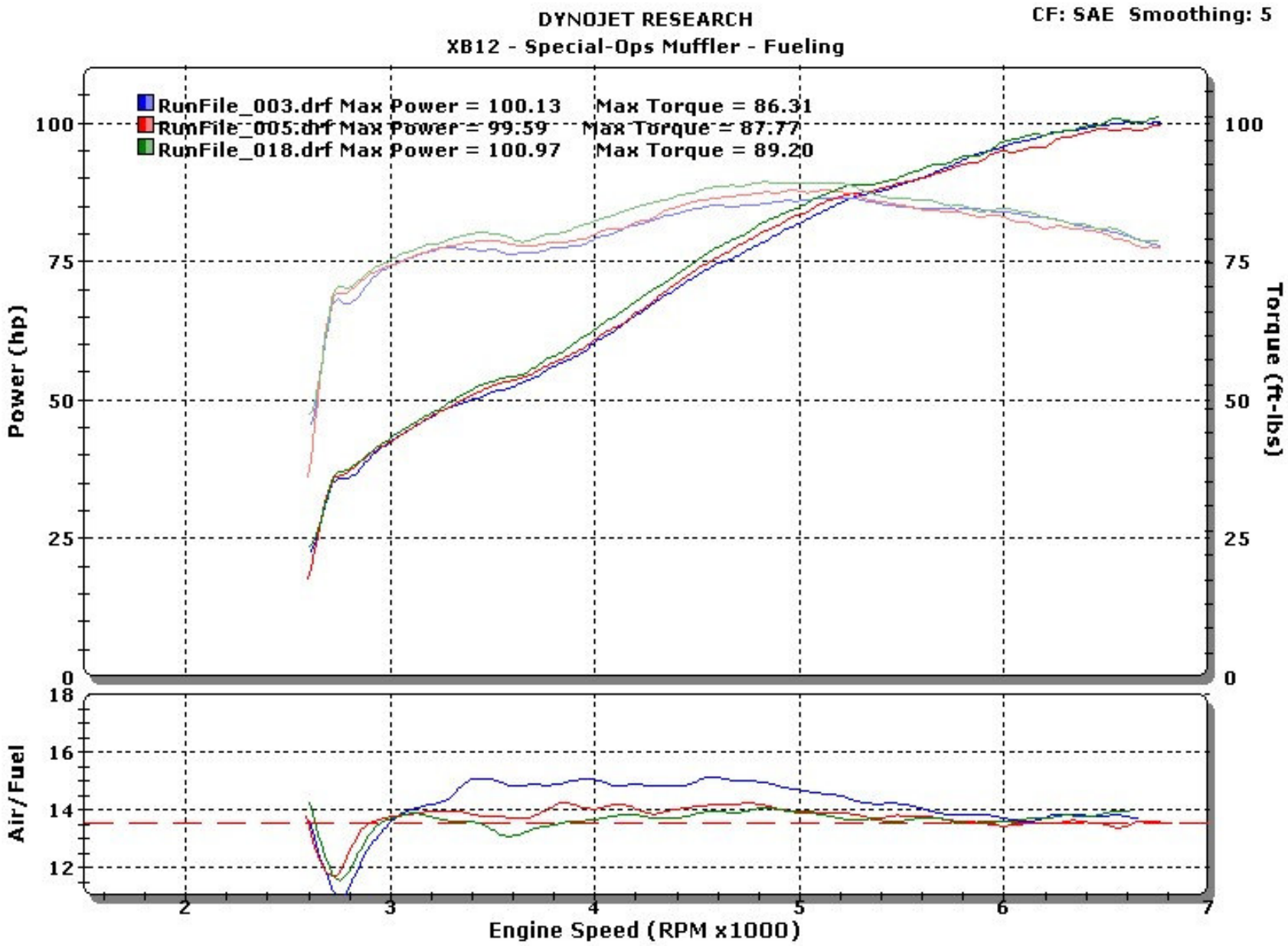

Figure 66–XB12 Special-Ops Fueling Runs

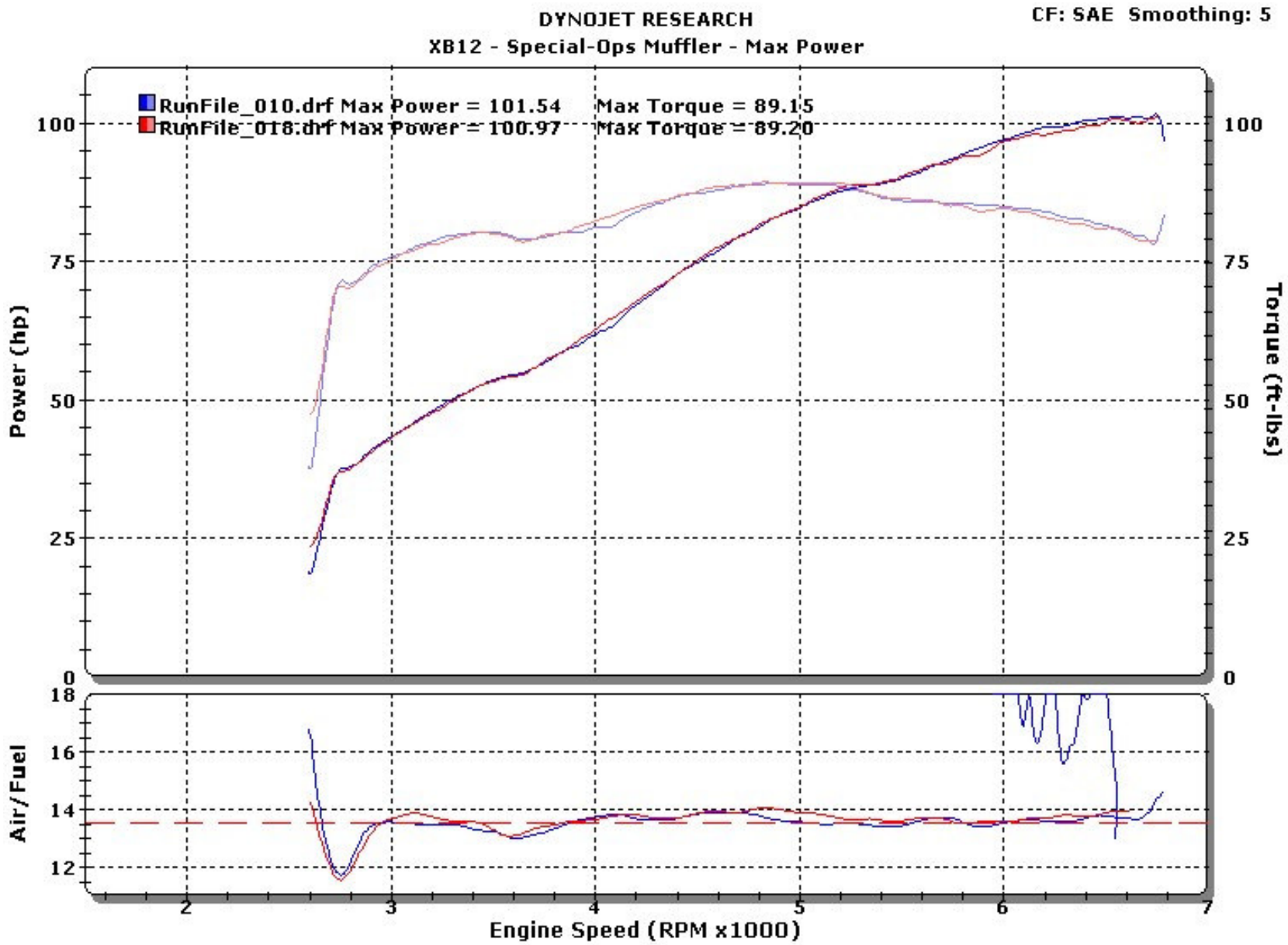

Figure 67–XB12 Special-Ops Max Output Runs

Figure 68–XB12 Special-Ops Vs. Stock Vs. Race

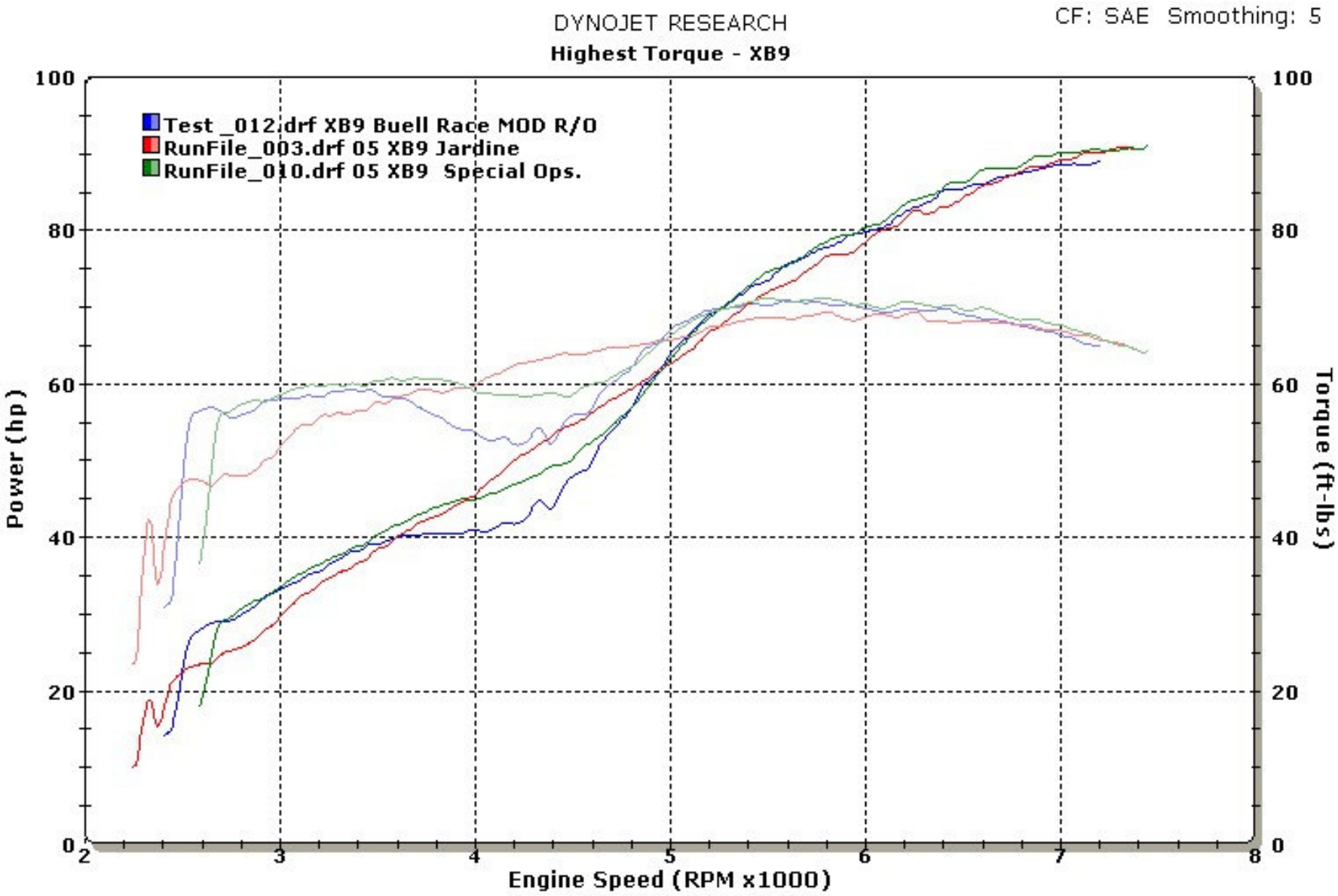

Figure 69–XB9 Three Highest Peak Torque

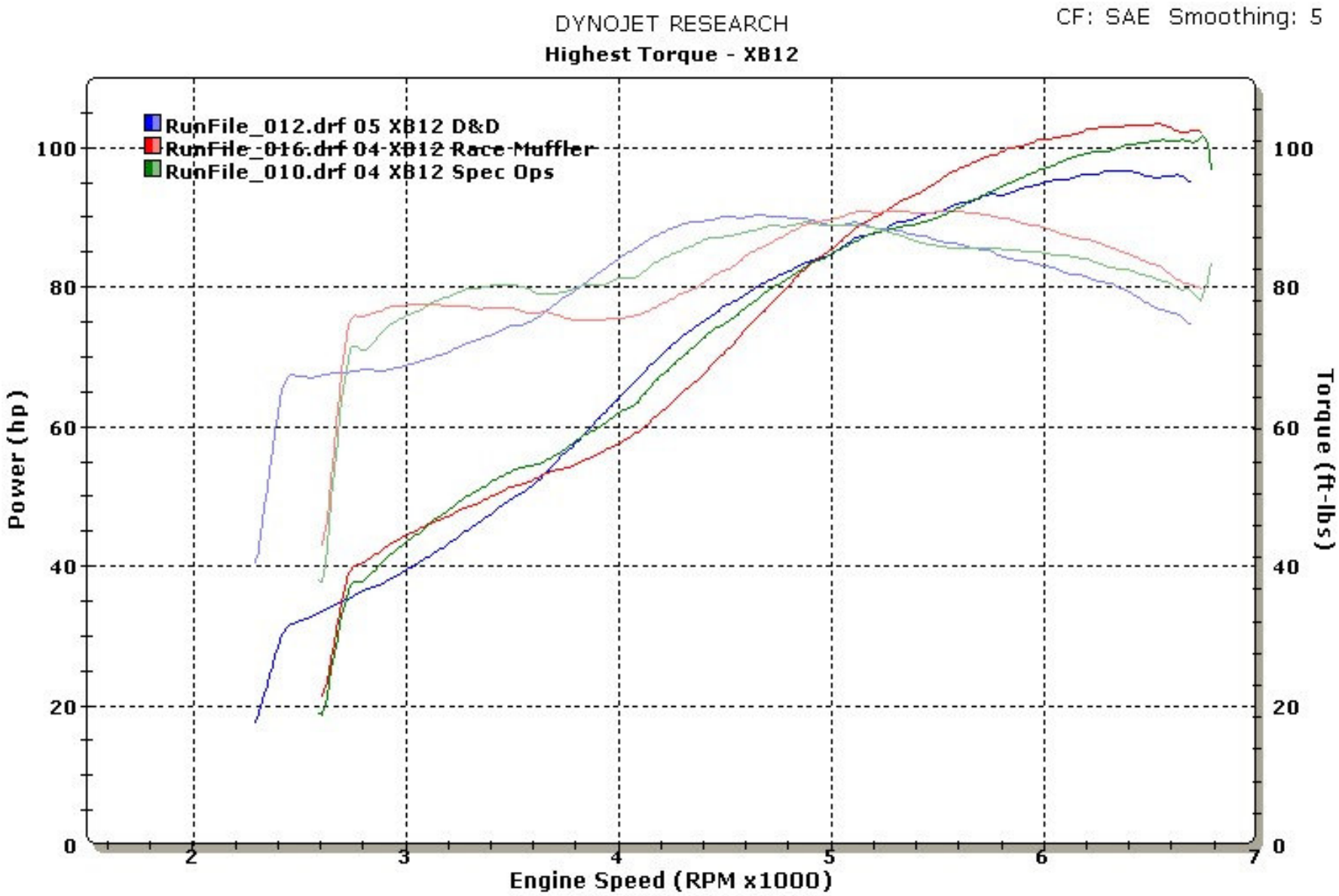

Figure 70–XB12 Three Highest Peak Torque

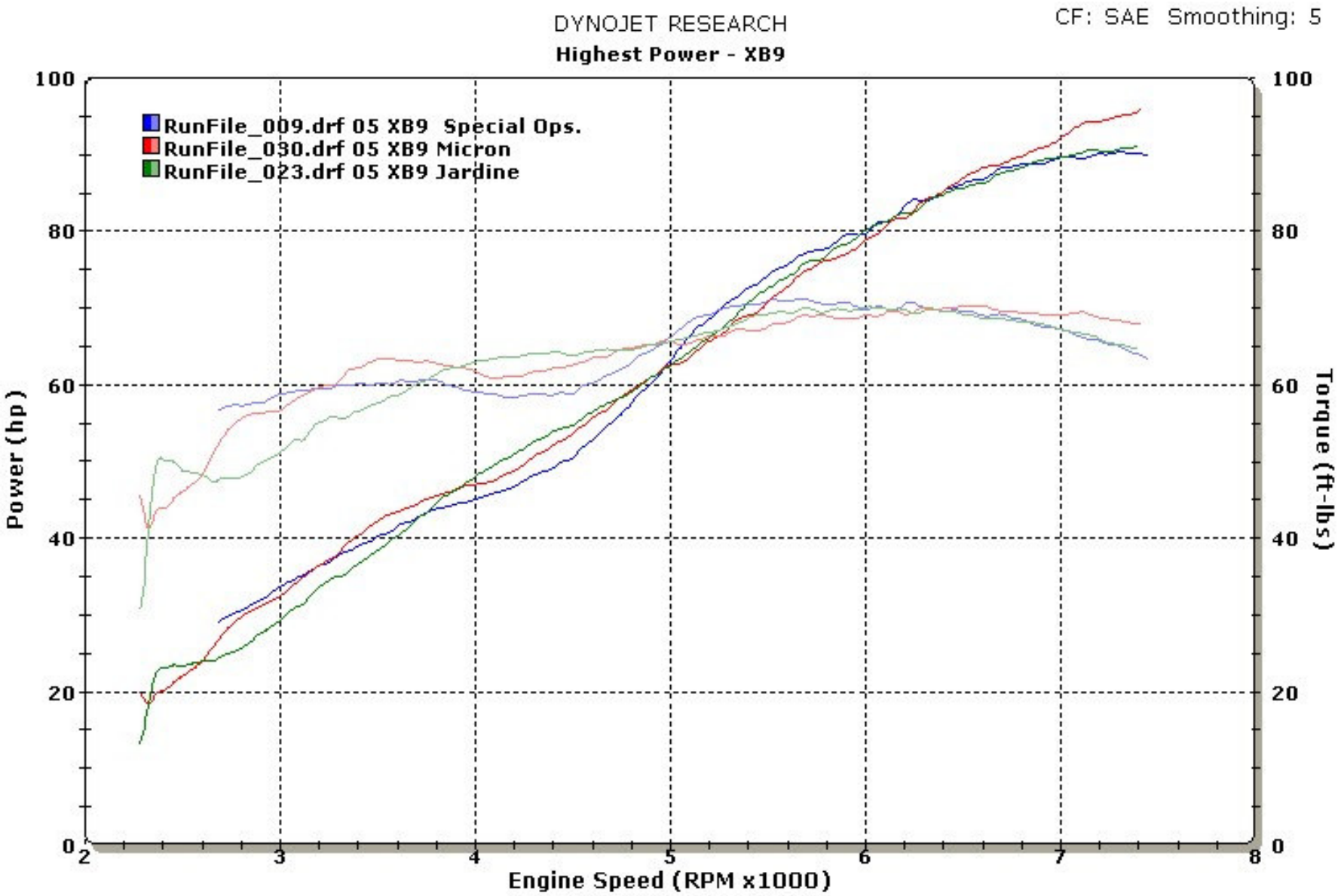

Figure 71–XB9 Three Highest Peak Power

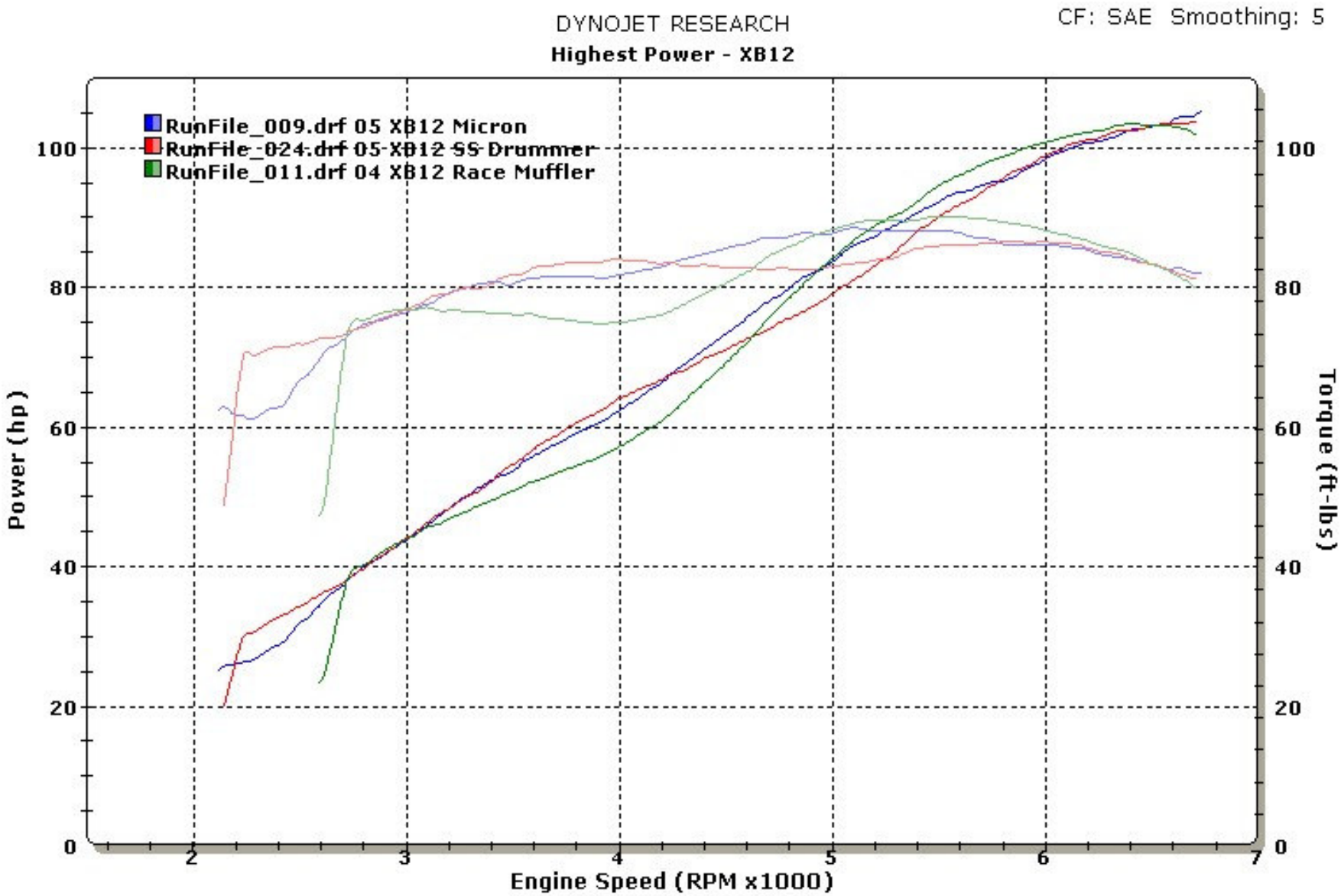

Figure 72–XB12 Three Highest Peak Power

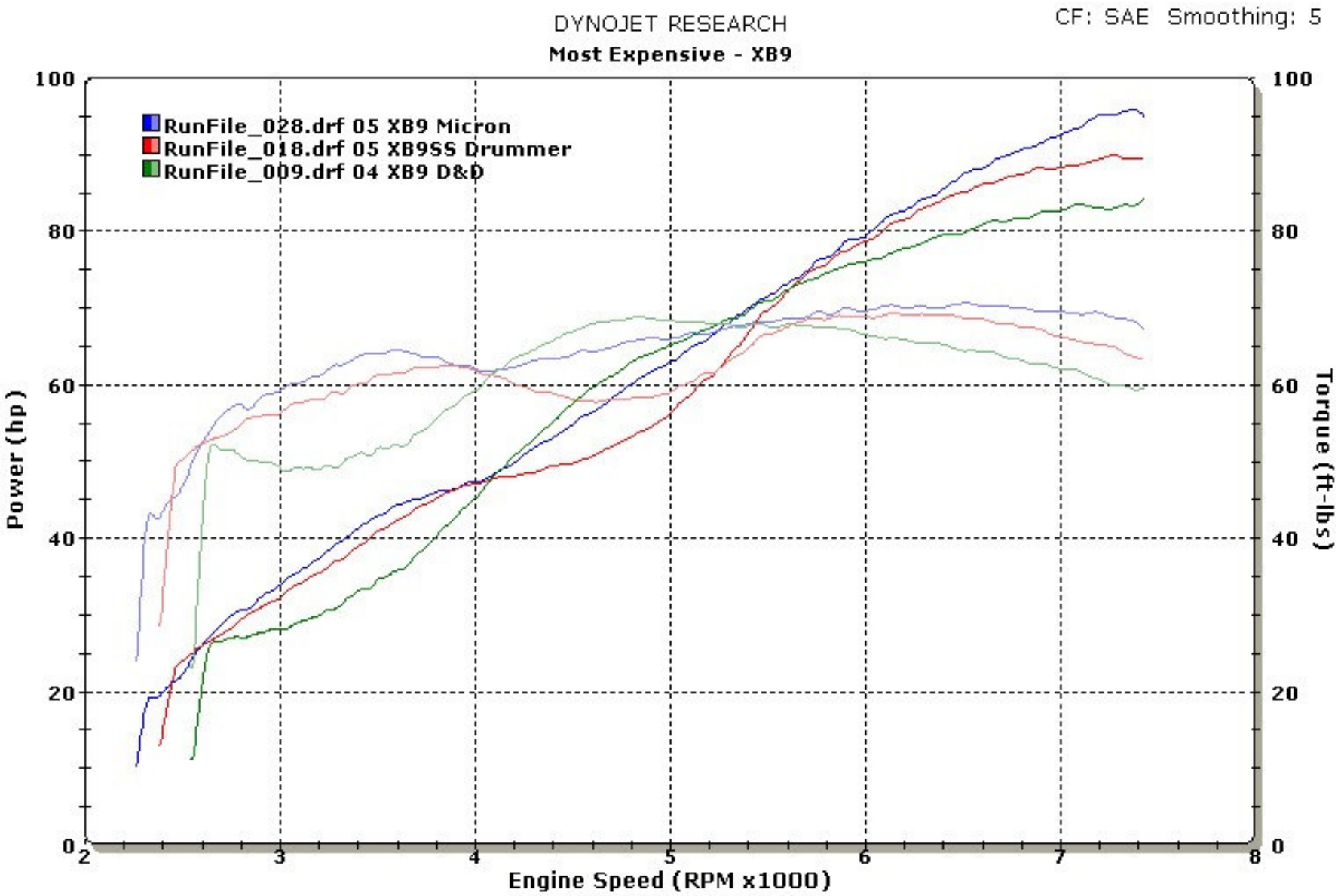

Figure 73–XB9 Three Most Expensive

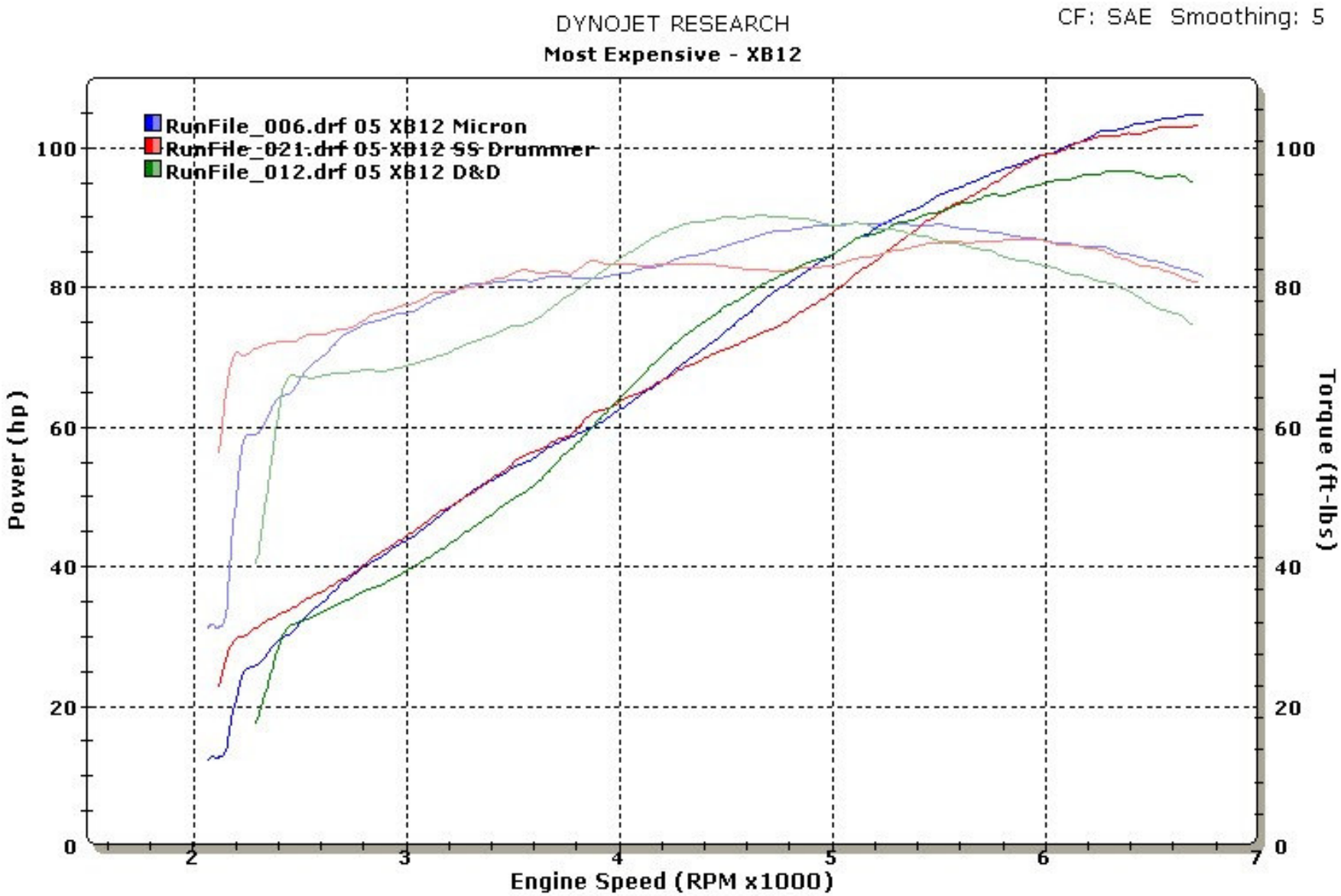

Figure 74–XB12 Three Most Expensive

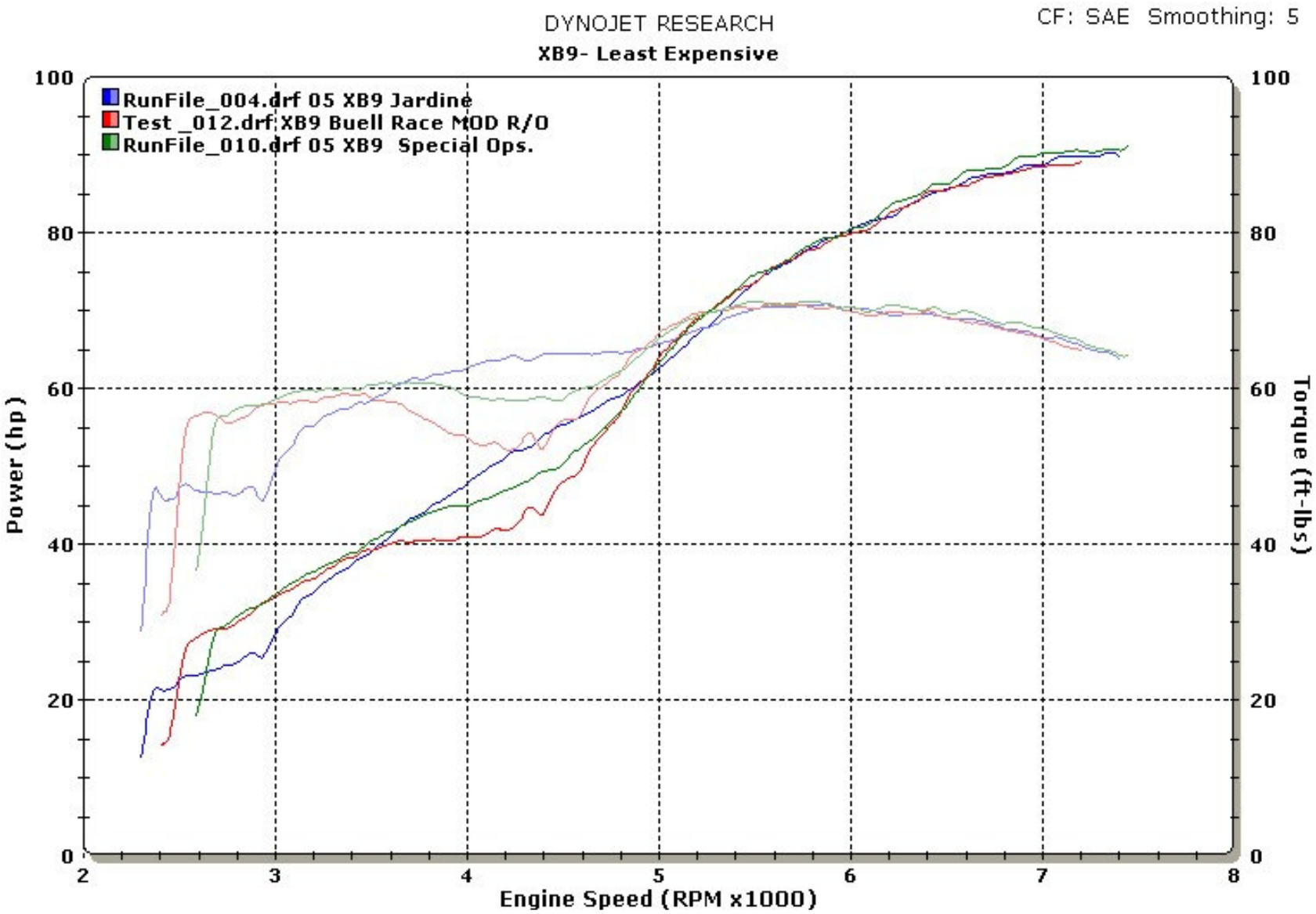

Figure 75–XB9 Three Least Expensive

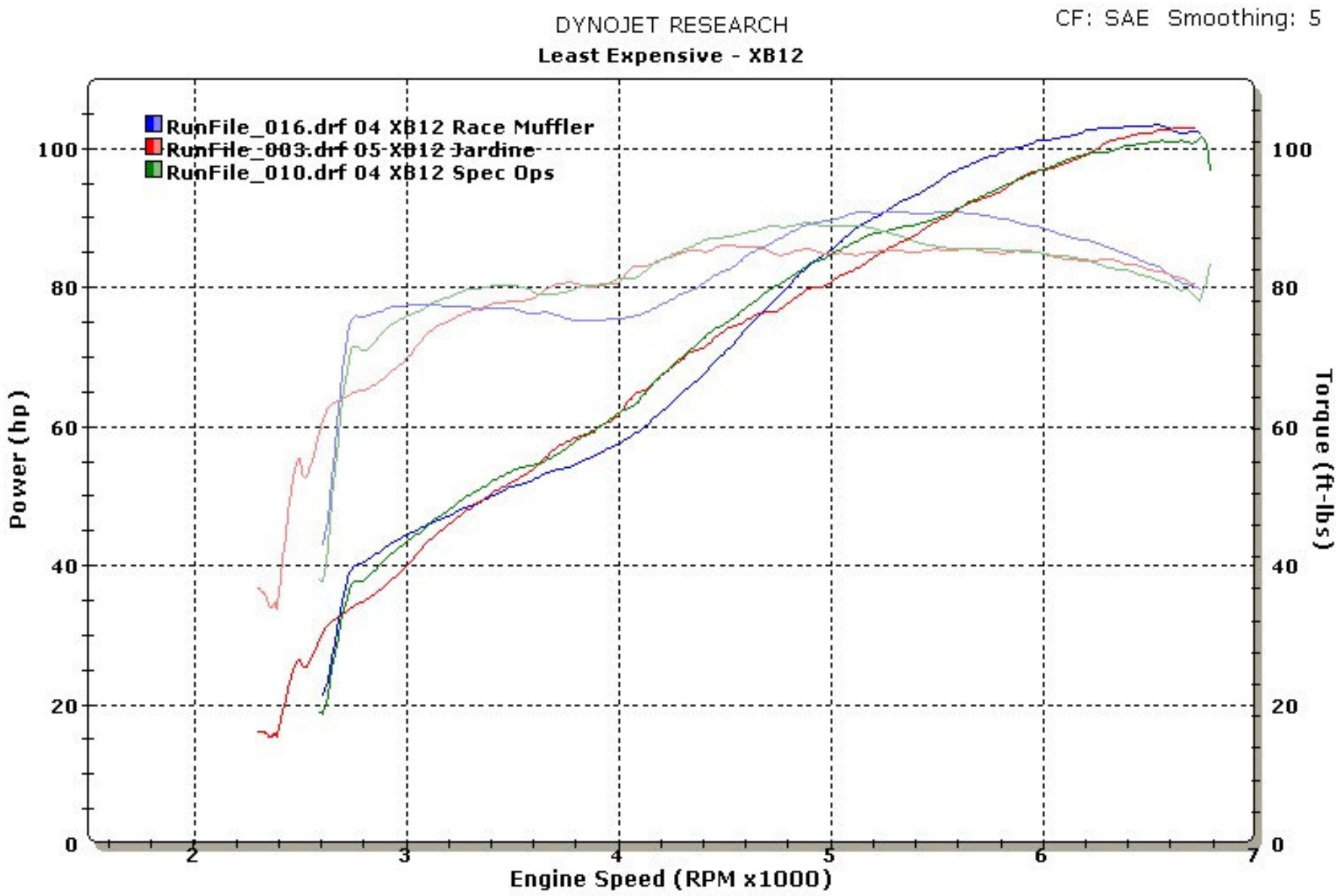

Figure 76–XB12 Three Least Expensive

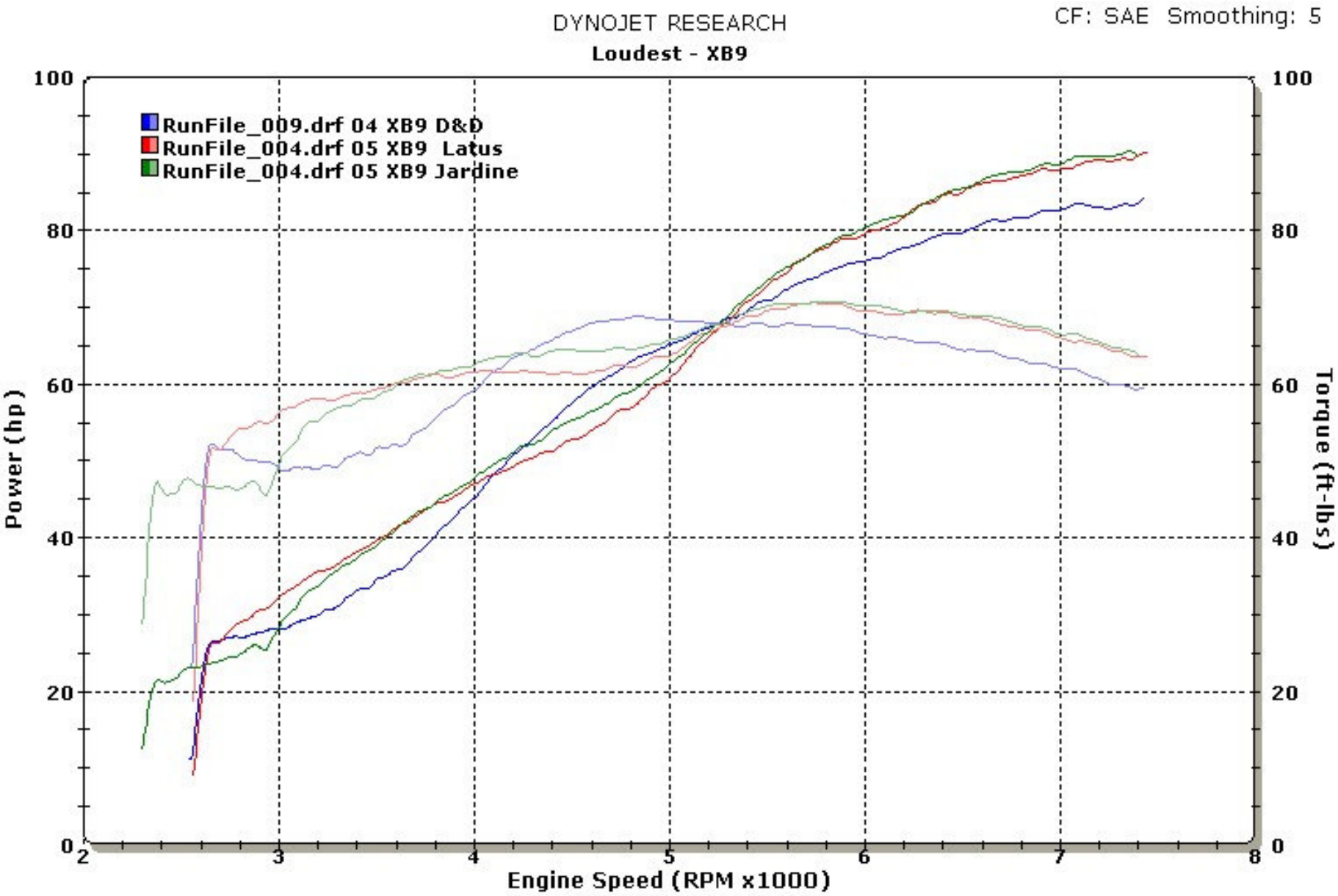

Figure 77–XB9 Three Loudest

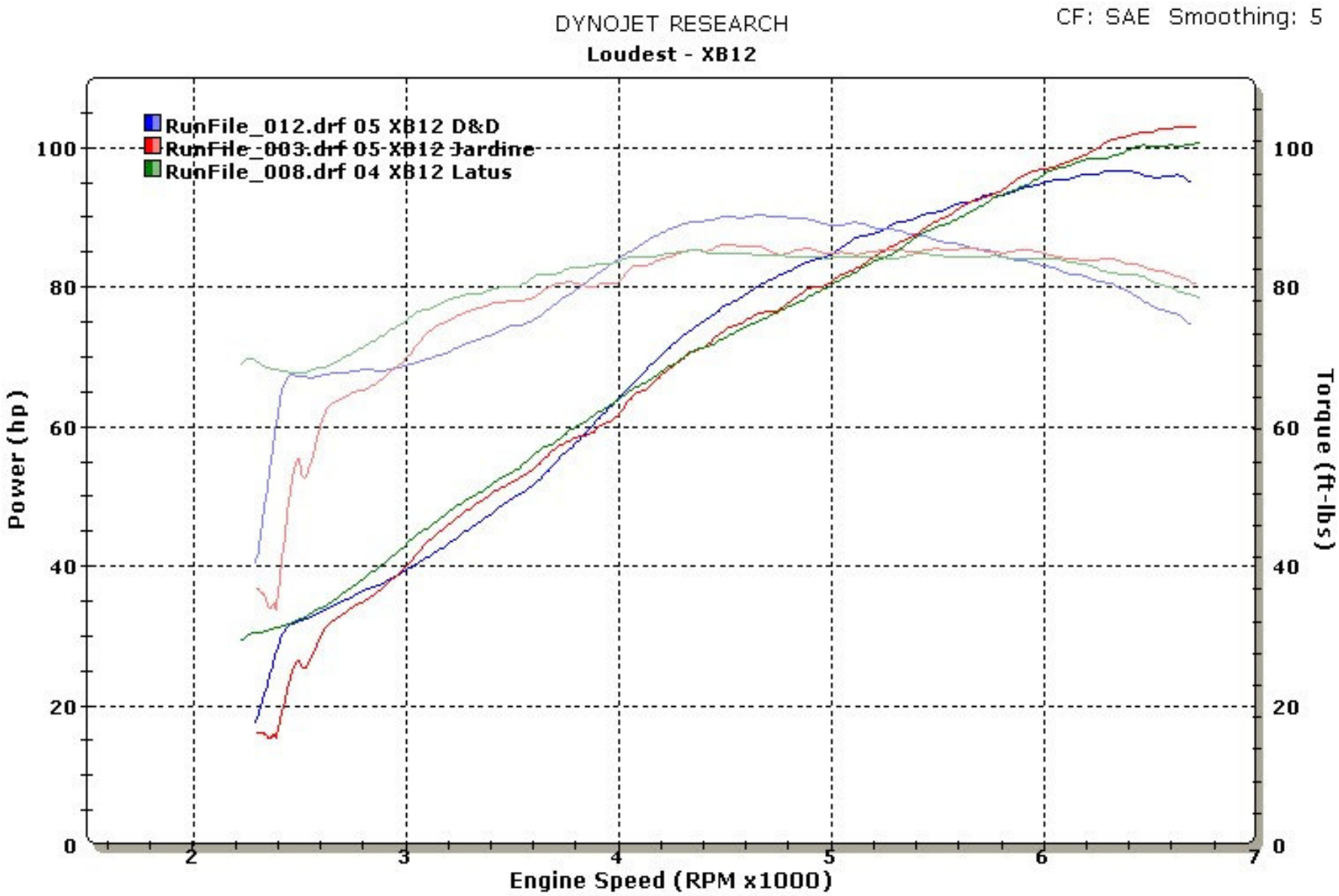

Figure 78–XB12 Three Loudest

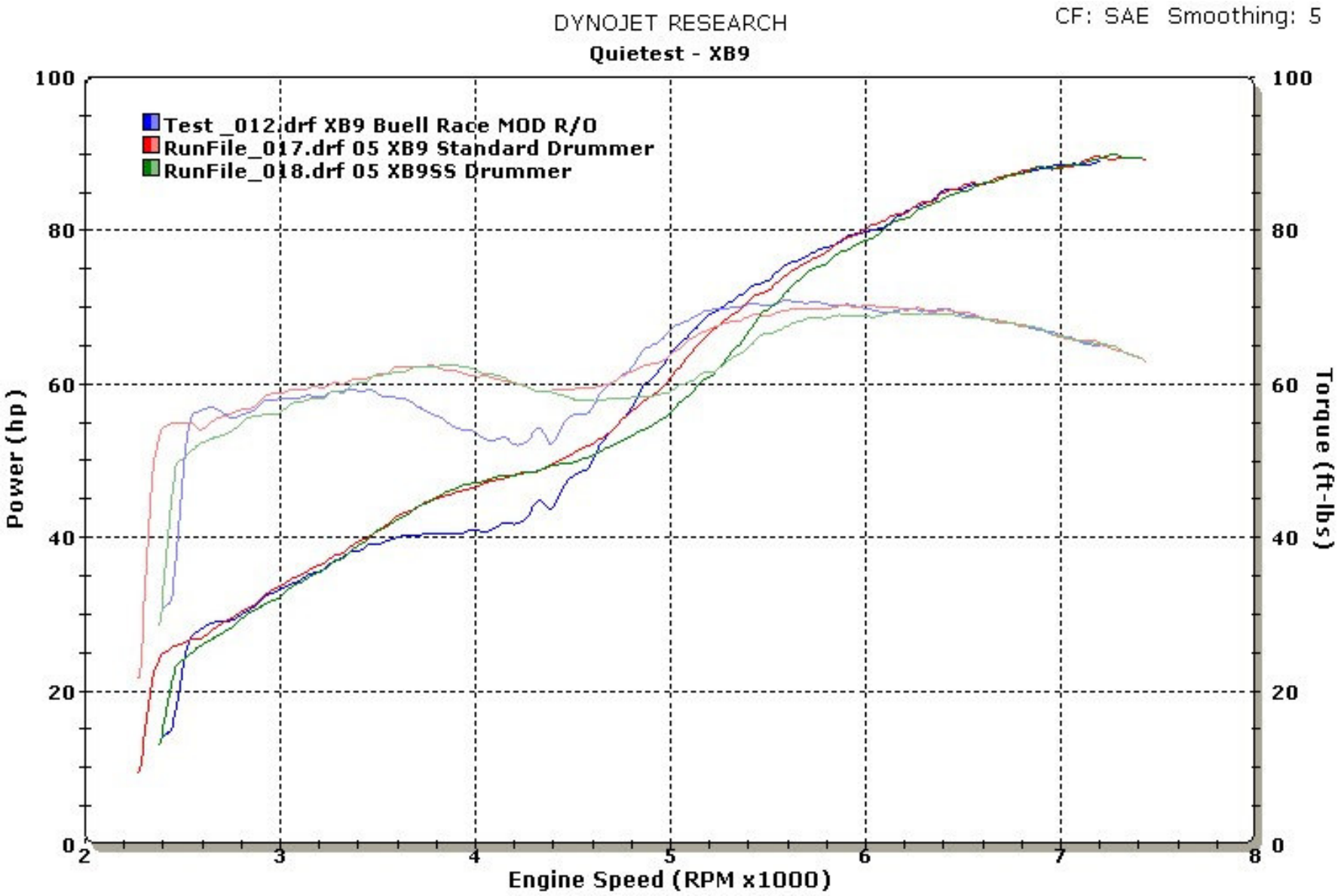

Figure 79–XB9 Three Quietest

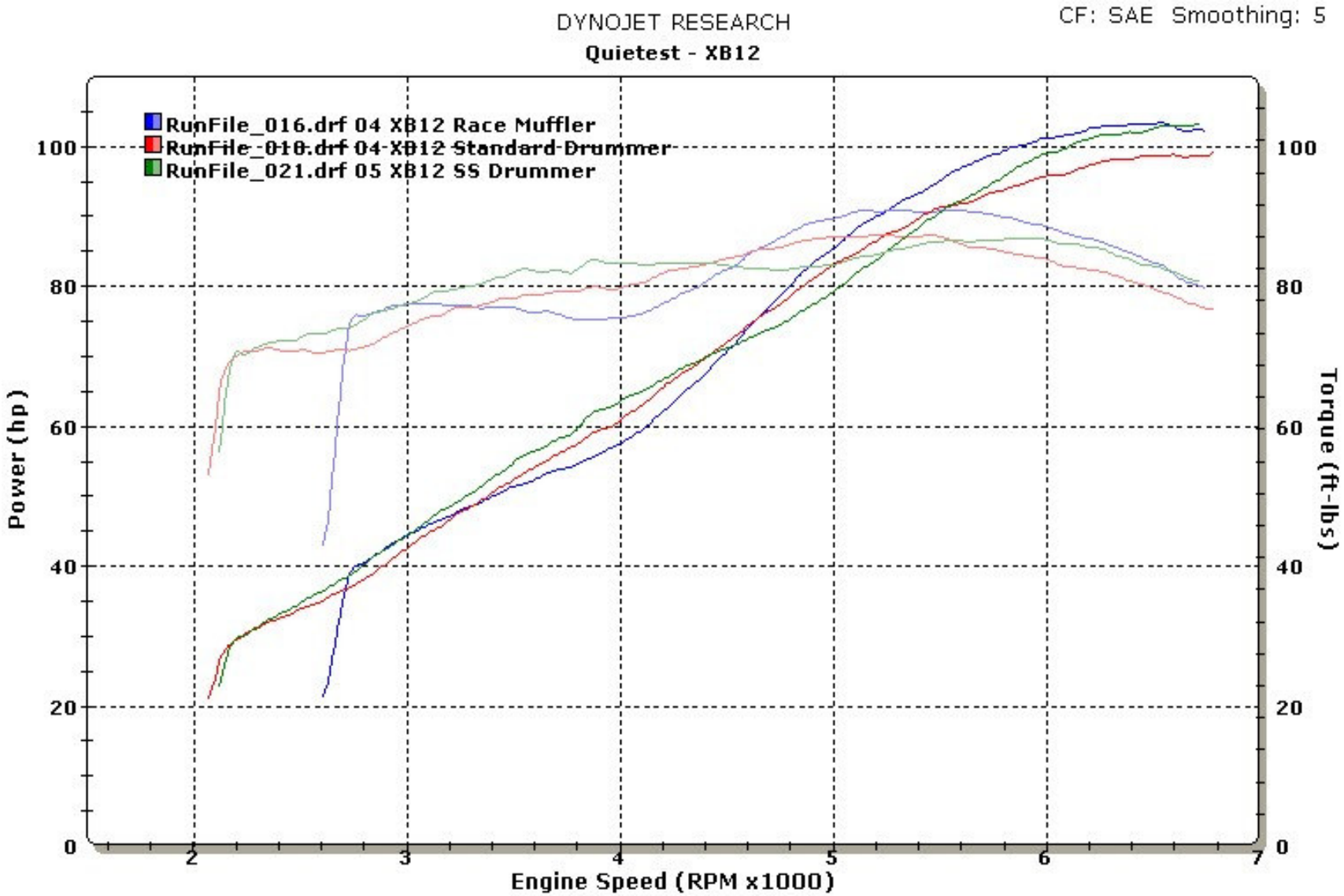

Figure 80–XB12 Three Quietest

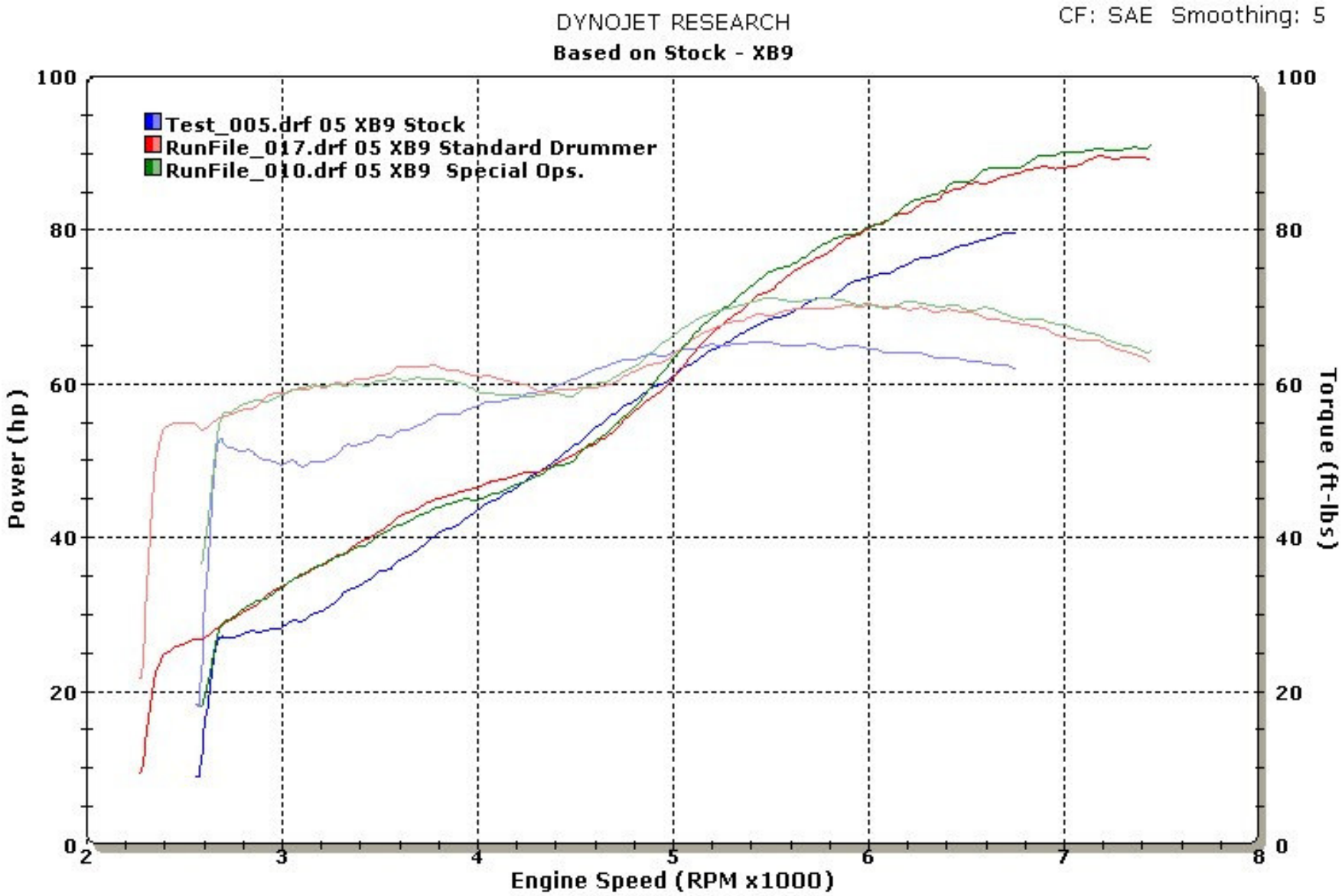

Figure 81–XB9 Stock Based Mufflers

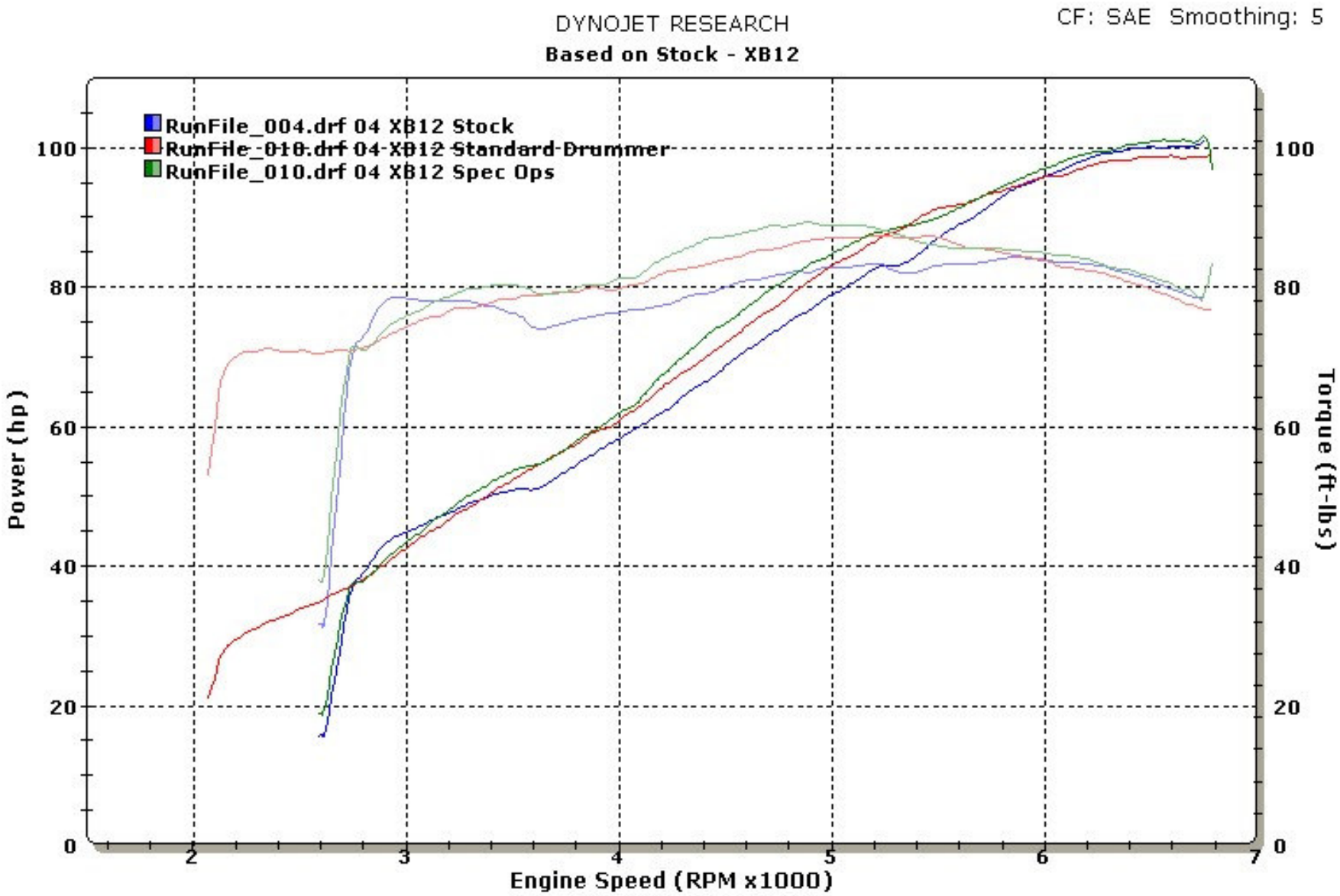

Figure 82–XB12 Stock Based Mufflers

Conclusions

The intention of this report is to provide the objective data so that the reader can make his own conclusions. However, I will provide some general conclusions based on the experiences obtained during the testing and the subsequent data analysis.

Going into this test, I believed that none of the pipes for the XB series we were testing were "bad", and nothing I saw or heard changed this. I also believed that any slip on pipe that uses the stock header can be designed to produce power in the low, middle, or top end of the RPM range, but that it isn't possible to have it all with the stock header runner length. Again, nothing I saw during this testing changes that belief. The stock header does a great job, but if you want to spread the torque peak out even further than possible with the stock header, longer header runners are required. The Micron exhaust system proved to be more capable of having higher performance across more of the band because of this. Interestingly enough, most of the slip-on mufflers that had a good top end response also had a good low end response, but were weaker in the midrange. Each of the slip-on mufflers has its strengths in different power bands, and it is up to the user to choose where he/she wants his/her power and choose accordingly.

During the course of the testing, Kevin described that he changes the volume of the muffler for the XB9 vs the XB12 due to the difference is sizes of the exhaust pulses. This makes sense, and the results certainly corroborate his theories. What makes a good XB9 pipe does not necessarily make a good XB12 pipe, and vice versa. Some of the exhausts that are one-size-fits-all definitely perform better on one bike vs the other. For instance, the Buell race muffler has a stellar top end on the XB12, but is much less so on the XB9. The Micron climbs to the moon on the XB9, but only marginally edges out some of the others on the XB12. The Jardine and the Latus are excellent XB9 pipes, but are not top runners on the XB12.

As a result of this, it is important to draw conclusions about each pipe only in context of the bike model it will be used on. Many of the comments are similar across the two models, but the power delivery comments are different for each. I've summarized some of my conclusions for each pipe on each of the XB models below. I've attempted to be as objective as possible in my conclusions below. But there is some subjectivity to these conclusions. Each reader is encouraged to review ALL the data presented above and reach his/her own conclusions.

It is important to understand that ALL of the data collected and displayed in this report is Wide Open Throttle (WOT) data only. The frequency response (RPM) of the pipe is well characterized by this type of testing. But the Fueling curves that are shown represent ONLY the WOT response. Since the FI maps in the ECM are different for each throttle setting, the fueling matches displayed may not be typical of the fueling response at other throttle settings. The Buell ECM compensating mechanism (AFV scaling) is only capable of scaling the entire fueling curve up or down. It is not capable of flattening peaks and raising valleys in the fueling curves. Based on the fueling responses we saw during this testing, I would be very hesitant to run a stock ECM on ANY bike equipped with these exhaust systems. In some cases, the Race ECM provides a decent match to the fueling needs. But in most, a remapping of the ECM would be the best way to assure that the fueling is neither too rich, or worse yet, too lean.

XB9

Buell Race muffler

The Buell Race XB9 muffler is a good RACE muffler. Its power band is decidedly skewed to the top, and it is a decent performer in the upper RPMs as you would expect to see on the track. However, there are other mufflers that have the same or better top end but have a stronger mid-range. The much lamented "hole in the middle" IS there. And only the stock and D&D mufflers had less power at redline, but just below redline the Race pipe makes decent power. The power at the very bottom near the pull start is good until it hits the hole at 3500-4800 RPM. The Buell Race ECM has been tuned for this muffler and this makes it a virtual bolt-on kit (a TPS reset is required). The sound is a little "smeary" and "tinny" compared to some of the others that have more distinctive and staccato power pulses. Fit is excellent, the chin cowl mounting is perfect, and the durability is good. Some users have complained of rusting issues in some cases, but this is not any more of an issue than it is with the stock pipe.

D&D

The D&D XB9 muffler is essentially a mid-range tuned drag pipe. As with most drag pipes, it has a high-Q (narrow bandwidth, high peak) response centered on the mid-range. In the 4200-5200 RPM range, it is king. Unfortunately, the price to pay for that big middle is a very soft bottom and top, where it is essentially the same performance as the stock muffler. The sound is very harmonically rich, with both low and high frequency components. It is decidedly the most staccato sounding of the mufflers tested, and definitely the loudest, which will win many fans that are looking for the most aggressive sounding pipe they can get. The fueling mismatch is large on the D&D, matching neither the stock map nor the race map particularly well, largely due to the fact that it is making biggest power over the same range that the Buell and race pipes are making the least relative power. Tuning the D&D took longer than all of the other pipes. Fit is excellent, the chin cowl mounting is perfect, and the durability is good. Some early users have complained of the front chin cowl support breaking, but later model D&D's have a rigid support that should make this a thing of the past.

Drummer

The Drummer modified stock XB9 mufflers are tuned by Kevin Drum by using timed runs from 1500 RPM. As such, the low end response at the very bottom of the RPM range is excellent, better than anything else. No other pipe (other than the similar SS-Drummer) can roll-on below 2000 RPM with authority the way a Drummer can. It also has a very nice top end response, within 1 HP of any of the other slip-ons at the top of the range. But like the Buell race pipe, with a good bottom and top response, the middle in the 4200-5200 range is weaker than most. It is the Anti-D&D pipe, strong where the D&D is weak and vice versa. The fueling curve was similar to the Buell Race ECM map, which is no accident since Kevin designs this in, so tuning for optimal fuel delivery was easier than most. The sound of the Drummer pipe is nice, not too loud, not too quiet, with a nice staccato pulse down low and a beefier sound than the Buell Race pipe. Since it is based on the stock pipe, the fit is excellent. And Kevin's workmanship is very good, and the rear plate and exhaust tip is a work of art.

SS Drummer

The SS-Drummer custom XB9 mufflers are tuned by Kevin using the same timed run methods from low RPM. The low end response at the very bottom of the RPM range is similarly excellent, better than anything else. It also has a virtually identical top end response as the regular XB9 Drummer. But the middle in the 4200-5600 range is a bit weaker than the regular Drummer. The fueling curves were not

quite as close to the Buell Race ECM map, but no dangerously lean spots were noted. The sound of the SS Drummer pipe is similar to the regular Drummer, not too loud, not too quiet, with a nice staccato pulse down low and a beefier sound than the Buell Race pipe. The fit is excellent, with a beautifully crafted front fixed mount and innovative swiveling inlet stub pipe that can help with tolerance take-out. The workmanship is excellent, and the pipe is quite beautiful overall. For those looking for excellent low end roll on with a finely crafted appearance, the SS Drummer is the one.

Jardine

The Jardine XB9 muffler is a very well matched pipe for the XB9, with an almost straight line HP curve and a top end response beaten only by the Micron and the Latus. It has a surprisingly strong mid range response for how good it is on the top, but the bottom of the curve below 3500 RPM is weaker than most. The Jardine would be an excellent track pipe, given its top end emphasis with a linear response, and it is also very light. The fueling match to the XB9 race ECM is pretty decent, about on par with that of the SS Drummer but not as nice as the regular Drummer. The sound is aggressive and quite loud, with a somewhat hollow sound to the bark. It tended to have more decel popping than most of the other pipes. The pipe is well built, but there have been some durability issues when the packing gets blown out. The outer shell stresses go up when the packing blows, and that stress is resolved at the rivets, which have been known to get loose. Keeping the pipe well packed at all times prevents this from becoming an issue.

Latus

The Latus XB9/XB12 muffler is very well matched for the XB9, with the same straight line response and excellent top end as the Jardine. But where the Jardine falls off below 3500 RPM, the Latus stays linear right down to the start of the pull. The fueling response is almost as linear as that of the regular Drummer as well. It has a nice sound to it, louder and more aggressive than the Buell race muffler but not as loud or percussive as the D&D. The Edelbrock muffler itself is well built, but the weld quality on the brackets and the design of the brackets themselves is a little substandard. The reverse flame edge cut on the front muffler support is particularly cheesy. The fit is fine, however. The Latus is the best performer of all of the slip-ons tested, but there is one catch: You can't buy it, it is currently discontinued. Latus HD/Buell ceased being a Buell dealer in mid-05, and they stopped production on this pipe at that time. A.S.B is attempting to bring it back alive, but only if the quality issues can be improved and the muffler can be produced at a good price point. At this point in time, this is all T.B.D.

Micron

The Micron Serpent exhaust is the best overall performer on the XB9. It is either on top or within 1 HP of the top pipe from 2800RPM to redline, and the response is very linear the whole way up. But at 6300 RPM, the Micron kicks in with a lot more when all the others are starting to sign off. The dyno graphs don't show it, but the roll-ons from 1500-2500 RPM are better with either of the Drummers than the Micron. But anywhere north of 2800 RPM, the Micron reins king overall. The Fueling match isn't great, especially down low where the Micron has a decidedly leaner response. I would recommend a DirectLink map instead of merely a race ECM for a Micron, as it does not have a highly linear response and the AFV compensating mechanisms will not yield a flat curve. The sound of a Micron is unlike any other muffler. It is very low and rumbly at idle, but as the revs increase, there is a "shred" to the sound that no other pipe has. Some will love it, others may not, as it is decidedly un-harley and more small block chevy with open headers. It isn't particularly loud down low, but gets louder up top. Fit is excellent, weld quality is so-so. The muffler is seam crimped rather than riveted at the end caps, which should prove very durable. It comes with only one cheesy rear worm-screw clamp, I would highly recommend replacing it with a more industrial T-Bolt clamp as is used on other Buell mufflers.

Special Ops

The Special Ops XB9 muffler performs very similarly to the regular Drummer pipe, which is not surprising given that they are both made from a stock muffler with similar, but not identical, modifications. The best Torque plots of Figure 81 show a bigger difference than the optimal fuel curve plots, which practically overlay each other. The low end and top end response is good, but there is a small hole in the middle. The fueling match is almost identical to the Drummer as well, and a race ECM would work reasonably well for running a Special Ops XB9 muffler. Soundwise, the Drummer gets the nod, as the Special Ops pipe is a bit "blatt-ier" than the Drummer. The Drummer has a smoother overall sounding response, especially in the lower RPM areas where the Special Ops XB9 pipe had a funky resonance (that wasn't apparent on the XB12 Special Ops pipe, and isn't particularly apparent in the sound clip, but Craig and I both noticed it at the test). The Special Ops mufflers we had for testing were cosmetic blemished pipes, so they didn't reflect the cosmetic appearance of a normal customer delivered product. The end caps are perfectly functional but not as aesthetically pleasing as the machined stainless Drummer end cap.

XB12

Buell Race muffler

Even more so than on the XB9, the Buell Race XB12 muffler is an excellent RACE muffler. Its power band is similarly skewed to the upper RPM band. Its top end performance is better than all other pipes, including the Micron, which only edges it out for peak HP in the final 200 RPM before redline. The "hole in the middle" is still there, and from 3800-4300 RPM, it has the lowest output of all the pipes tested, including the stock pipe. But it charges ahead of everything by 5000 RPM. The power at the very bottom is also quite good until it starts sinking into the hole at 3500 RPM. The Buell Race ECM has been tuned for this muffler and this makes it a virtual bolt-on kit (A TPS reset is required). The sound is a little "smeary" and "tinny" compared to some of the others that have more distinctive and staccato power pulses. Fit is excellent, the chin cowl mounting is perfect, and the durability is good. Some users have complained of rusting issues in some cases, but this is not any more of an issue than it is with the stock pipe.

D&D

The D&D XB12 muffler is has the same high-Q (narrow bandwidth, high peak) response centered on the mid-range that it has on the XB9. It beats all comers the 4000-5000 RPM range. But as a result of being optimized for there, it has a soft bottom and top. From 3000-3600, and again from 6200-redline, even the stock pipe outperforms it. The sound is very harmonically rich, with both low and high frequency components. It is decidedly the most staccato sounding of the mufflers tested, and definitely the loudest, which will win many fans that are looking for the most aggressive sounding pipe they can get. The fueling mismatch is not as large on the XB12 as it was on the XB9. Tuning the D&D took longer than all of the other pipes. Fit is excellent, the chin cowl mounting is perfect, and the durability is good. Some early users have complained of the front chin cowl support breaking, but later model D&D's have a rigid support that should make this a thing of the past.

Drummer

The Drummer modified stock XB12 mufflers are tuned by Kevin Drum by using timed runs from 1500 RPM. As such, the low end response at the very bottom of the RPM range is excellent, better than anything else. No other XB12 pipe (other than the similar SS-Drummer) can roll-on below 2500 RPM with authority the way a Drummer can. It has a fairly linear response from bottom to top, with no significant holes in its curve anywhere and only nosing over at the very top end. The fueling curve was even closer to the Buell Race ECM map than on the XB9, so tuning for optimal fuel delivery was easily done. The sound of the Drummer pipe is nice, not too loud, not too quiet, with a nice staccato pulse down low and a beefier sound than the Buell Race pipe. Since it is based on the stock pipe, the fit is excellent. And Kevin's workmanship is very good, and the rear plate and exhaust tip is a work of art.

SS Drummer

The SS-Drummer custom XB9 mufflers are tuned by Kevin using the same timed run methods from low RPM. The low end response at the very bottom of the RPM range is similarly excellent, better than anything else. But its curve elsewhere is not as identical to the regular XB12 Drummer as it was on the XB9. It is a top performer up through 4000 RPM, then it softens somewhat into a hole in the 4500-5500 RPM range. Above that, it makes excellent power, matching the Micron up until 6400 RPM. The fueling curves are not really close to the Buell Race ECM map, but no dangerously lean spots were noted. The sound of the SS Drummer pipe is similar to the regular Drummer, not too loud, not too quiet, with a nice staccato pulse down low and a beefier sound than the Buell Race pipe. The fit is excellent, with a beautifully crafted front fixed mount and innovative swiveling inlet stub pipe that can help with tolerance take-out. The workmanship is excellent, and the pipe is quite beautiful overall. For those looking for excellent low end roll on with a finely crafted appearance, the SS Drummer is the one.

Jardine

The Jardine XB12 muffler is not as well matched to the XB12 as it is for the XB9. It's midrange performance from 3500-5000 RPM runs mid-pack, but it falls behind the group from 5000 RPM and up, being bested by even the stock pipe. The bottom end below 3500RPM is similarly soft. The response overall is fairly linear, with no substantial dips. The fueling match to the XB12 race ECM is not as good as on the XB9, with a substantial lean bump in the lower midrange. The sound is aggressive and quite loud, with a somewhat hollow sound to the bark. It tended to have more decel popping than most of the other pipes. The pipe is well built, but there have been some durability issues when the packing gets blown out. The outer shell stresses go up when the packing blows, and that stress is resolved at the rivets, which have been known to get loose. Keeping the pipe well packed at all times prevents this from becoming an issue.

Latus

As with the Jardine, the Latus XB12 muffler is not as well matched to the XB12 as it is for the XB9. It is a decent low and and midrange performer through 4600RPM, but gets soft above that, falling to stock pipe performance levels from 5600RPM to redline. Fueling is decent from 4500RPM and up, but there is a substantial lean spot in the lower midrange. It has a nice sound to it, louder and more aggressive than the Buell race muffler but not as loud or percussive as the D&D. The Edelbrock muffler itself is well built, but the weld quality on the brackets and the design of the brackets themselves is a little substandard. The reverse flame edge cut on the front muffler support is particularly cheesy. The fit is fine, however. The Latus is currently discontinued. A.S.B is attempting to bring it back alive, but only if the quality issues can be improved and the muffler can be produced at a good price point. At this point in time, this is all T.B.D.

Micron

The Micron Serpent exhaust is a solid performer on the XB12, but is not the dominant performer it is on the XB9. It has a VERY linear response from bottom to top, and runs near the top of the pack for the entire range. But there are several RPM ranges where it is bested by another pipe (i.e., D&D and Special ops from 4000-5000RPM, and Buell Race pipe from 5000-6000RPM). As on the XB9, it is king at redline, but only for the top 400 RPM. The Fueling match to the Race ECM is actually quite good on the XB12, much better than on the XB9. The sound of a Micron is unlike any other muffler. It is very low and rumbly at idle, but as the revs increase, there is a "shred" to the sound that no other pipe has. Some will love it, others may not, as it is decidedly un-harley and more small block chevy with open headers. It isn't particularly loud down low, but gets louder up top. Fit is excellent, weld quality is so-so. The muffler is seam crimped rather than riveted at the end caps, which should prove very durable. It comes with only one cheesy rear worm-screw clamp, I would highly recommend replacing it with a more industrial T-Bolt clamp as is used on other Buell mufflers.

Special Ops

The Special Ops XB12 muffler is based on the stock pipe like the regular Drummer, but the modifications are decidedly different and it shows up in the curves. The low end and top end responses are similar, with good solid low end performance and a top end response that is a bit off the leaders but as good or better than stock. But from 4000-5200RPM, the XB12 Special Ops pipe makes big power, better than anything except the D&D. The fueling match is to the Race ECM is pretty good overall, but since the Special Ops uses the exhaust servo, a remapped stock ECM is a better choice. As in the XB9, the Special Ops pipe is a bit "blatt-ier" than the Drummer, but the funky resonance that was heard on the XB9 wasn't there on the XB12. The Special Ops mufflers we had for testing were cosmetic blemished pipes, so they didn't reflect the cosmetic appearance of a normal customer delivered product. The end caps are perfectly functional but not as aesthetically pleasing as the machined stainless Drummer end cap.

Final Comments

Every effort was made to make this report as accurate and objective as possible. There are a hundred things I'd do differently if we had it to do over again, which isn't likely any time soon. It was an immense amount of work to do the testing, crunch the data, and generate this report.

It is up to YOU to digest the raw data and reach your own conclusions. My conclusions above were based on what I saw and experienced during the testing; your conclusions may be different. You may see other raw data on these exhausts from other sources that won't match exactly. This is to be expected, all bikes and dynos are a little bit different. In the end, look only to the curve shapes and the relative performance differences between the exhausts presented here and ignore the absolute values. The absolute values are virtually meaningless.

Look at the curves, think about the way you ride, look at your wallet, figure out what kind of sound you want, and pick the pipe that is right for YOU. There is no "BEST" here, only what is best for you.

Revision Notes:
Rev A- Initial release
Rev B- Added catch can and airbox picture, added page numbers, fixed D&D XB12 Fueling Plot, quantified the happy dyno factor