



# Seminar Series

*Bringing Data Support and Training to You*

**Racing Data Acquisition**  
**for Powerboat Racers & Enthusiasts**

*January 2018*



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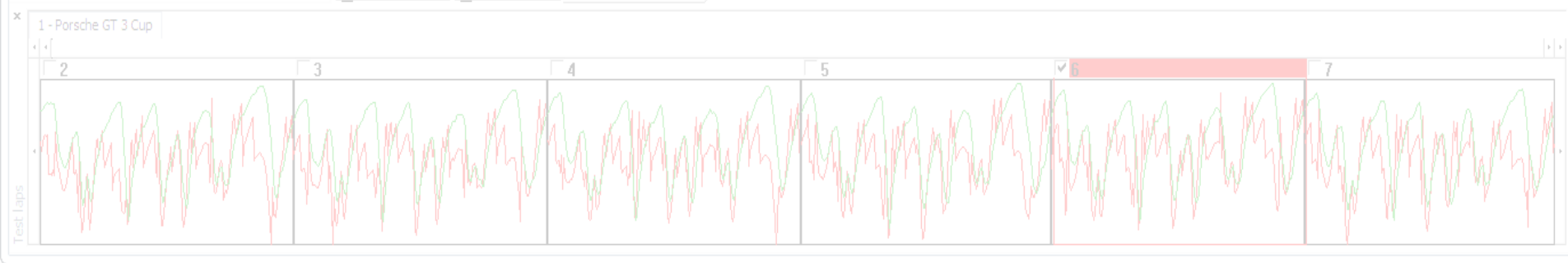
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- What is Data Acquisition?
- Why use Data Acquisition?
- How to use Data Acquisition
- MyChron5 Data Logger
- About AiM Sports
- Available Resources



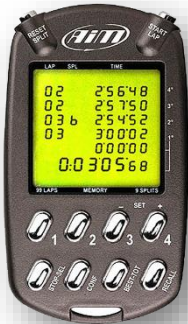
# What Is Data Acquisition



# What is Data Acquisition

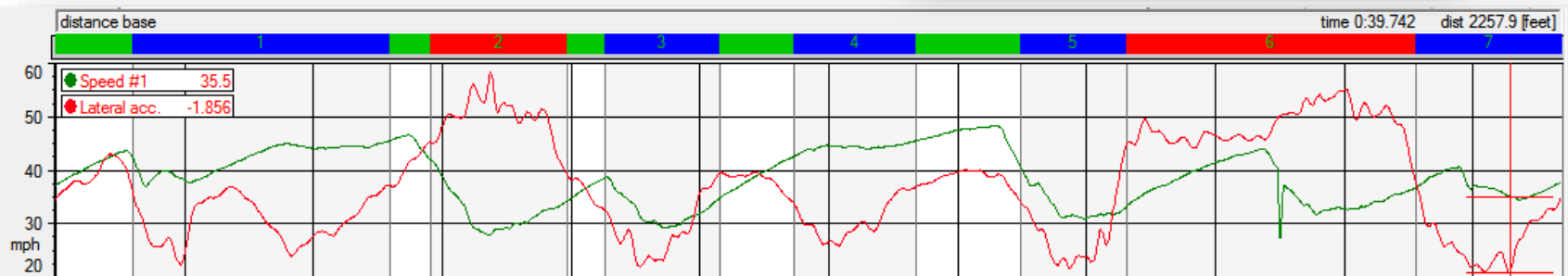
## Different Methods

- Seat of the Pants
- Stopwatch
- Video, Especially 'SmartVideo'
- Data Acquisition Systems
  - Hardware and Software



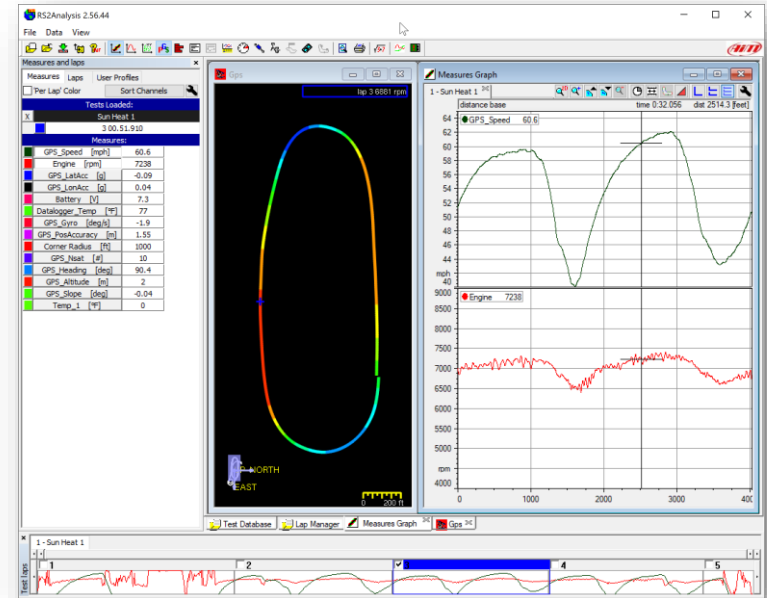


- Just like an engine dyno, your data system simply measures and records performance
- Not just *Vehicle* performance
- Not just *Driver* performance
- But *Overall* performance!
- Sensors gather values and hardware stores the data of the dynamics of what the vehicle is doing
- Software makes the detailed data analysis possible



# What is Data Acquisition

Data = Knowledge



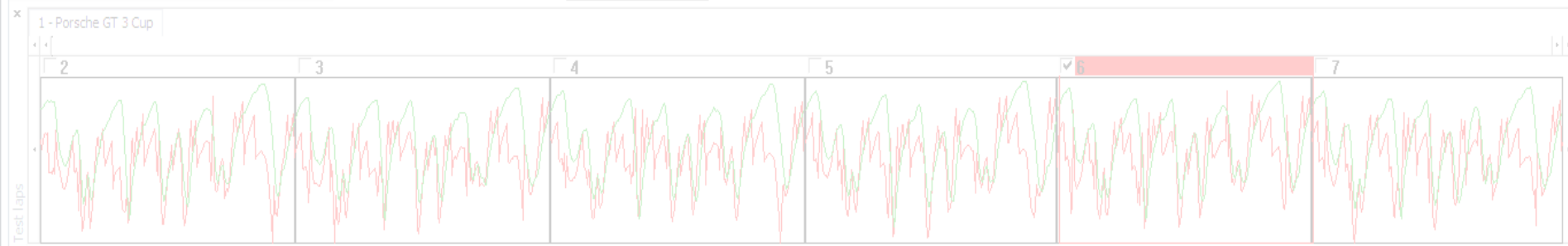
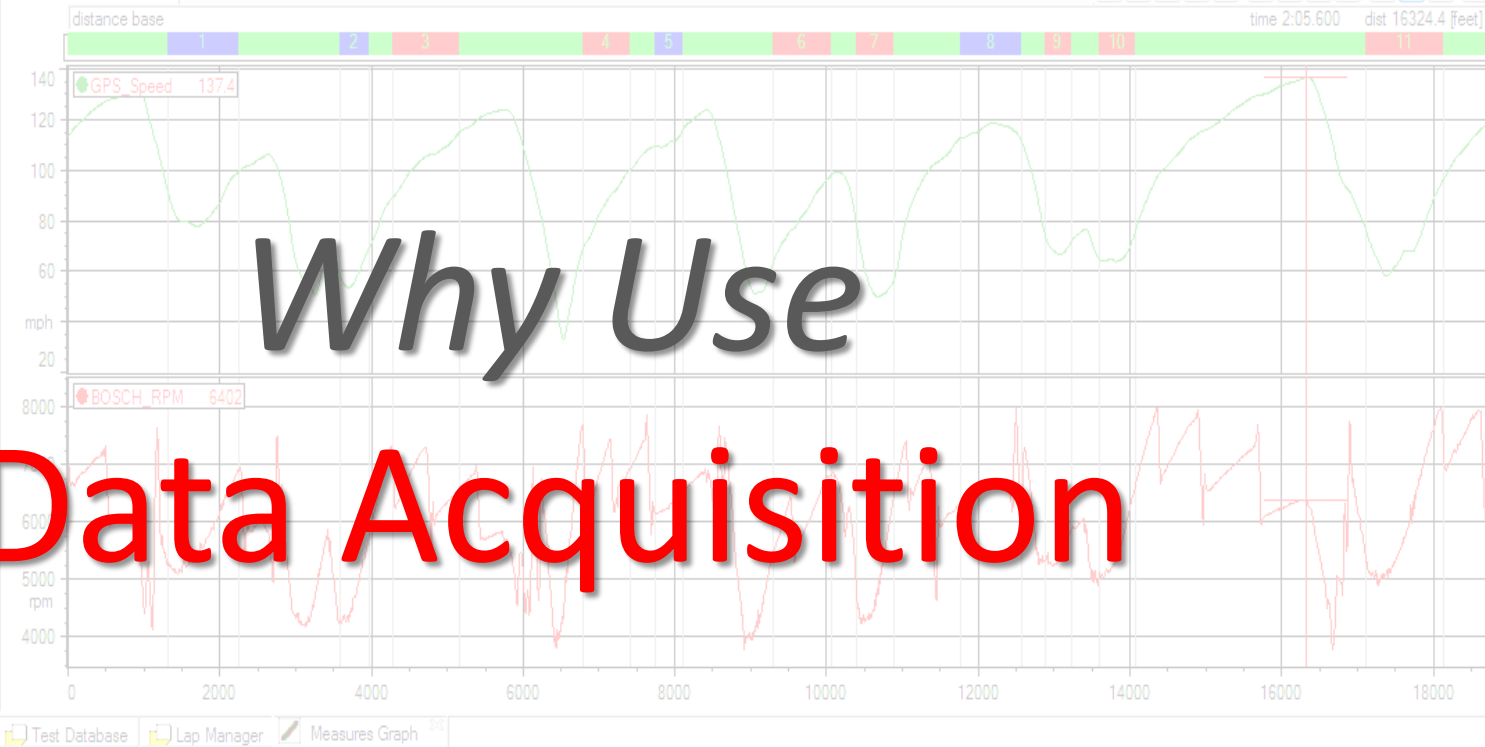
Knowledge = *Speed* ... How **Fast** Do You Want to Go?



Measures and laps

Measures		
Laps		
User Profiles		
Per Lap Color		
Sort Channels		
Tests Loaded:		
Porsche GT 3 Cup		
6 02.24.310		
Measures:		
1	GPS_Speed [mph]	137.4
1	Steer [deg]	-473.4
1	Brake Pressure [psi]	20
1	LatG [g]	0.14
2	BOSCH_RPM [rpm]	6402
1	BOSCH_SPEED1 [mph]	137.4
1	BOSCH_SPEED2 [mph]	135.7
1	BOSCH_FUEL_PRE [psi]	0
1	Battery [V]	13.9
1	BOSCH_ATM_PRES [mbar]	995
1	BOSCH_TRANS_TE [°F]	203
1	BOSCH_OIL_TEMP [°F]	201
1	BOSCH_ENGINE_T [°F]	172
1	BOSCH_AIR_TEMP [°F]	93
3	BOSCH_THROTT_A [%]	0.0
1	BOSCH_IGNIT_AN [deg]	-51
1	BOSCH_AIR_CHAR [%]	47
1	BOSCH_INJEC_TI [ms]	1.43
1	BOSCH_LAMBDA1 [#]	0.966
1	BOSCH_LAMBDA2 [#]	0.921
1	BOSCH_FUEL_FLOW [g/s]	44.70

1 - Porsche GT 3 Cup



# Why Use Data Acquisition

*To Improve:*

- Driver Performance
- Vehicle Performance
- Vehicle Health
- Results!



*With the Proper and Consistent use of Data, Your Race Program Will Improve*  
*Remember, it is just as important to understand what went 'right' as well as what went 'wrong'*



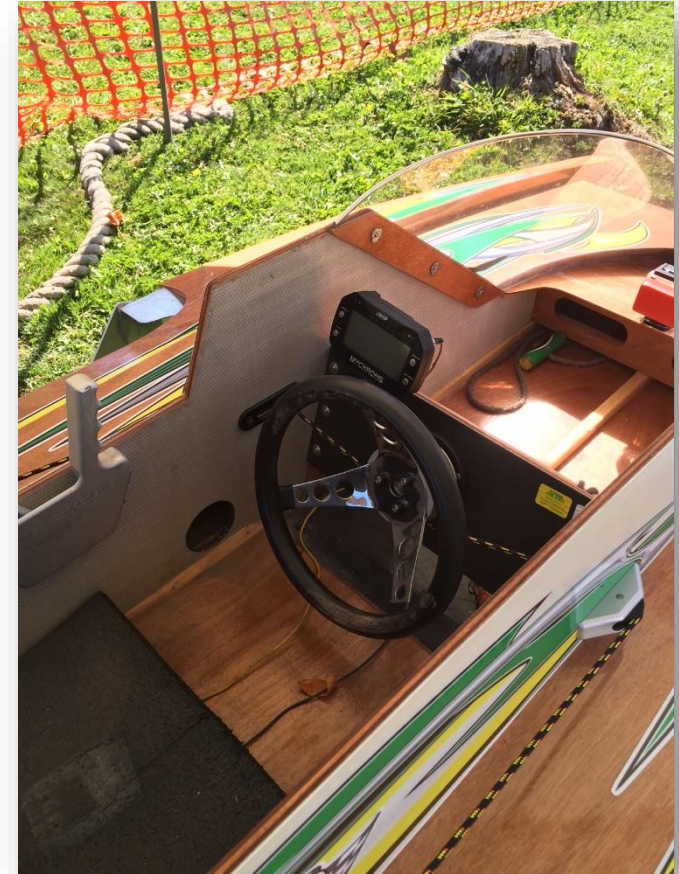
# How to Use

# Data Acquisition

# How to Use Data Acquisition

## Data Analysis Concepts

- **Basic Data Analysis Steps**
  - What **is Happening** (many stop here!)
  - Where **is it Happening**
  - Why **is it Happening**
- **Data Analysis Triangle**
  - Driver **Performance**
  - Vehicle **Performance**
  - Vehicle **Health**
- **Money Channels**
  - Lap Times **and** Speed
  - All **Other Channels** Strongly **Support the** Money Channels
- **Vehicle or Driver**
  - Is the Driver **Reacting to the Vehicle Movement**
  - Or is the Driver **Creating the Vehicles Movement**
  - Critical **Component of the Why is it Happening**



# How to Use Data Acquisition

- Hardware

- Design
- Install
- Configure
- Calibrate
- *Use*
- *Download*

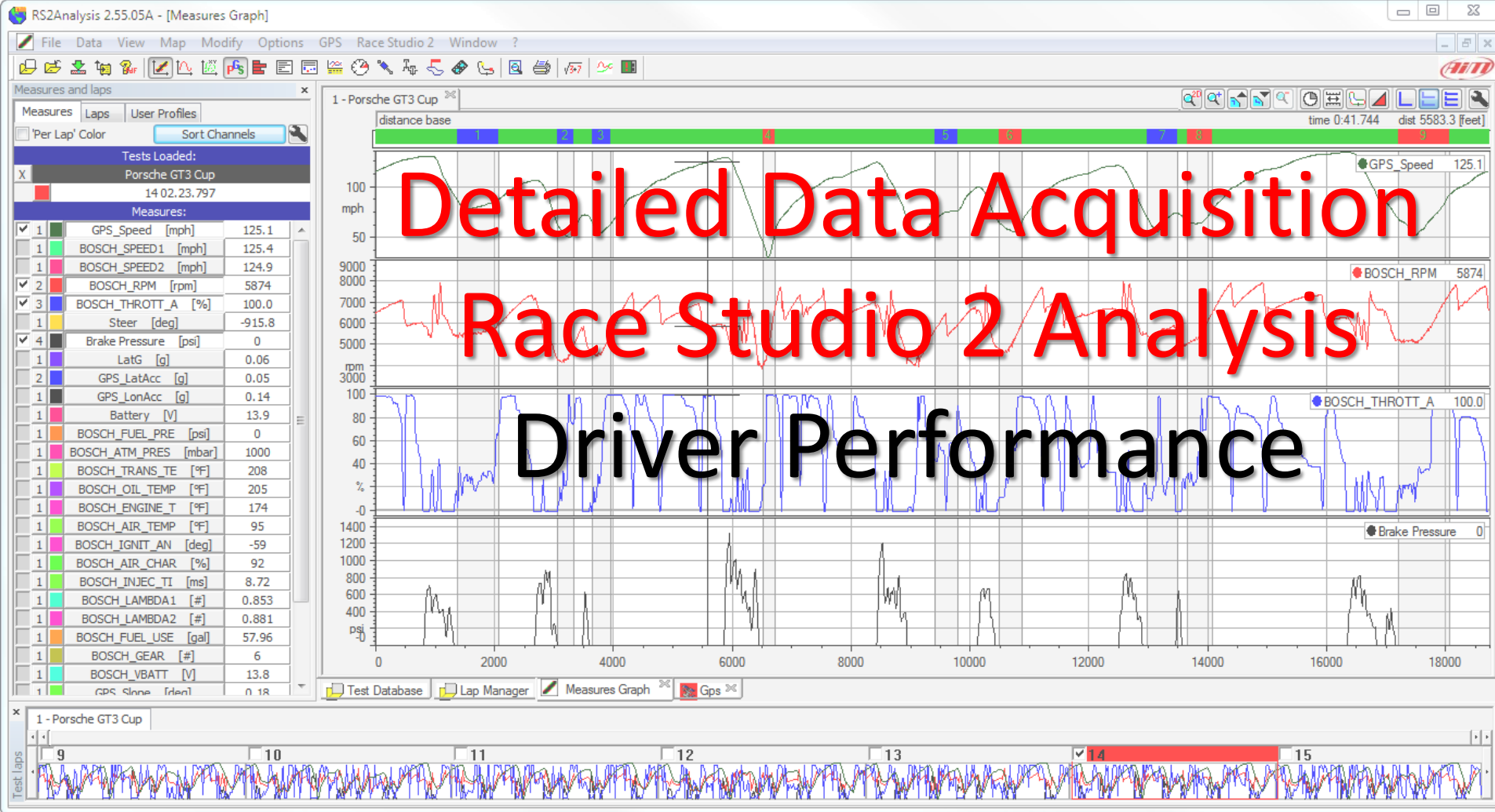
- Software

- *Open*
- *Analyze*
  - *What Happened?*
  - *Where Did it Happen?*
  - *Why Did it Happen?*

← Repeat

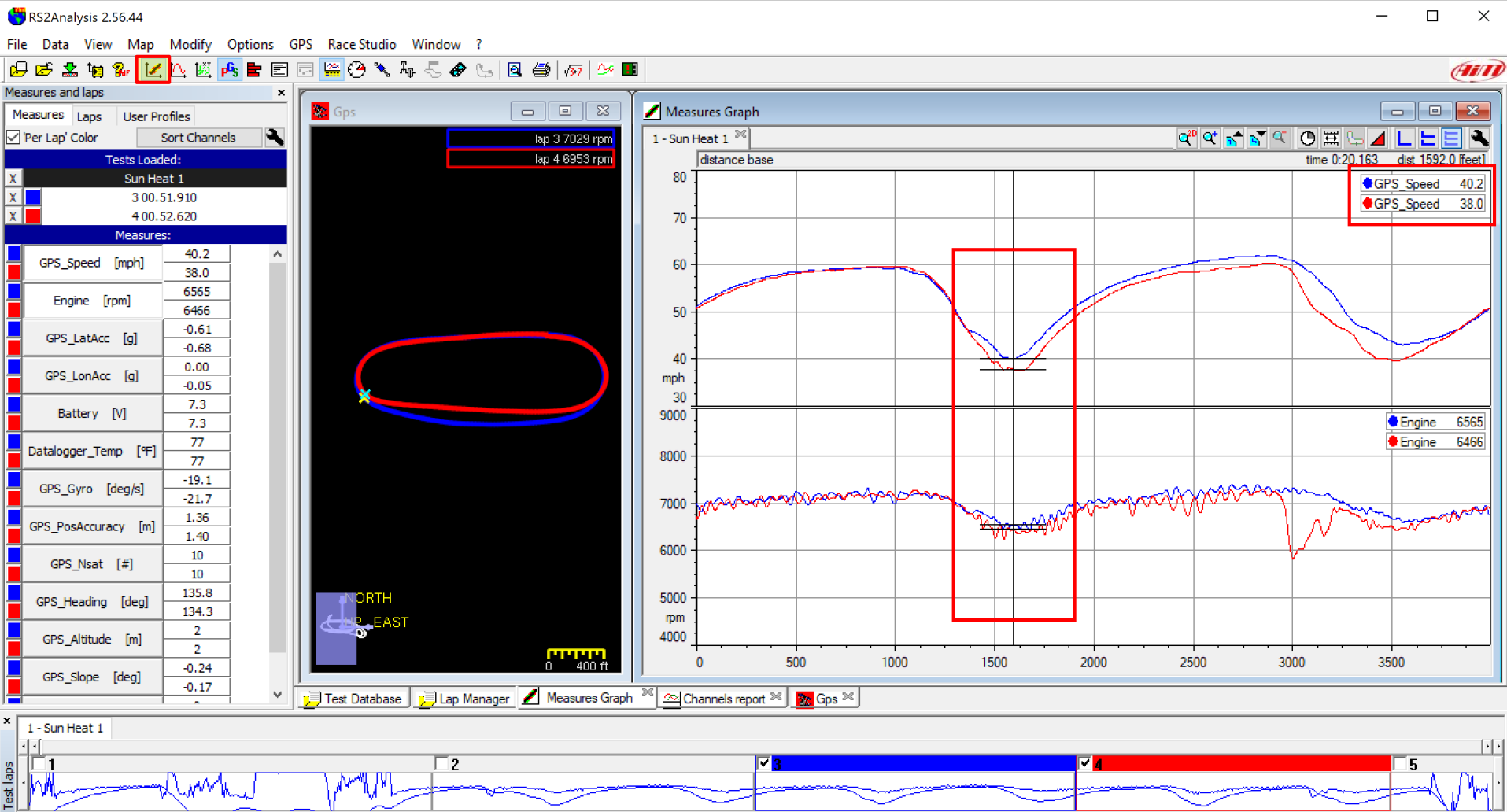






Let's look at several detailed Race Studio 2 Analysis examples to help you with Driver Performance.

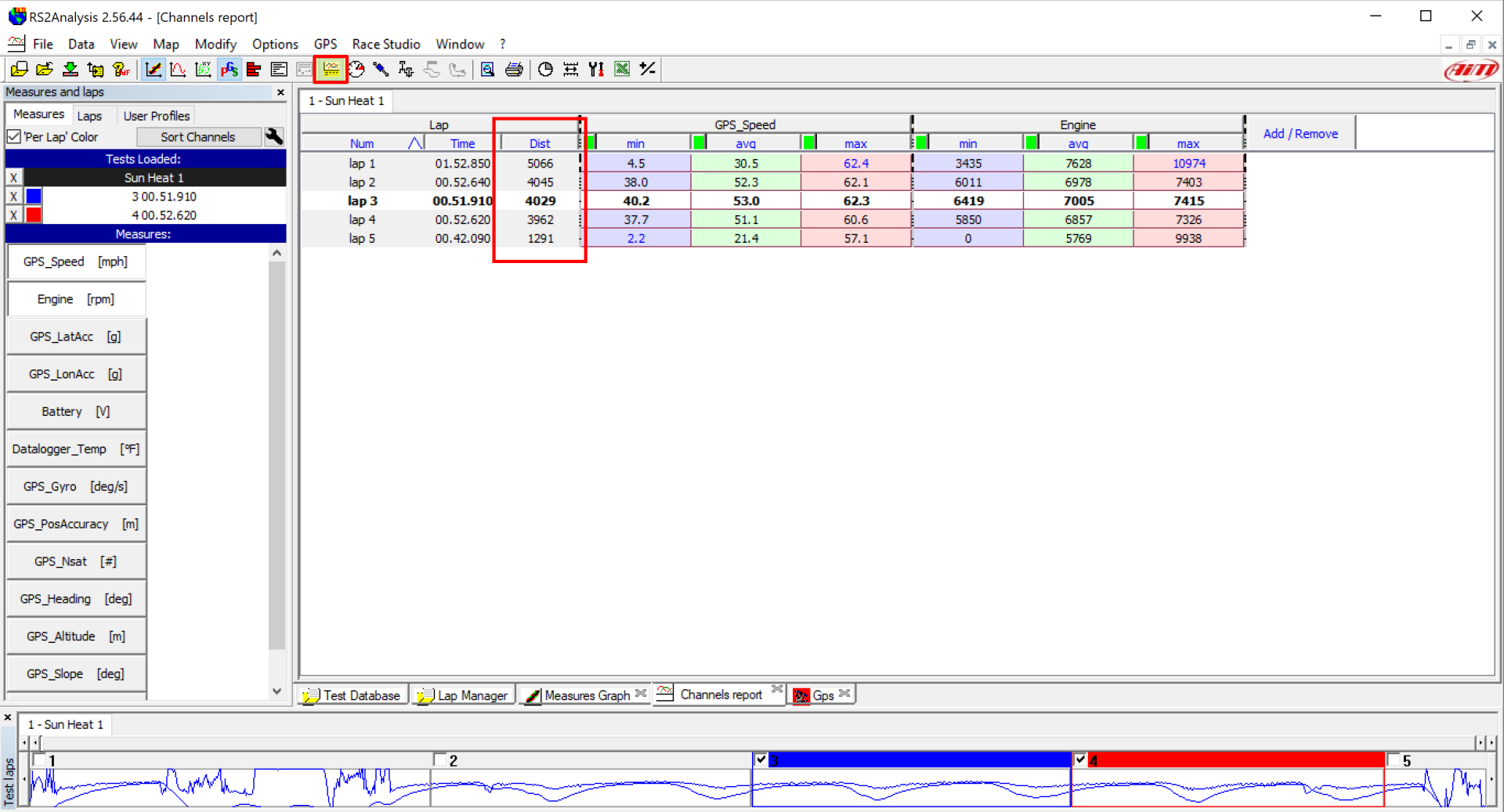




This is 2 laps from 1 session. With the GPS Map we can see the different driving lines the driver took and any possible speed differences. Here the 'Red' lap takes a very tight corner exit and has an exit speed of over 2 mph slower than than the 'Blue' lap.

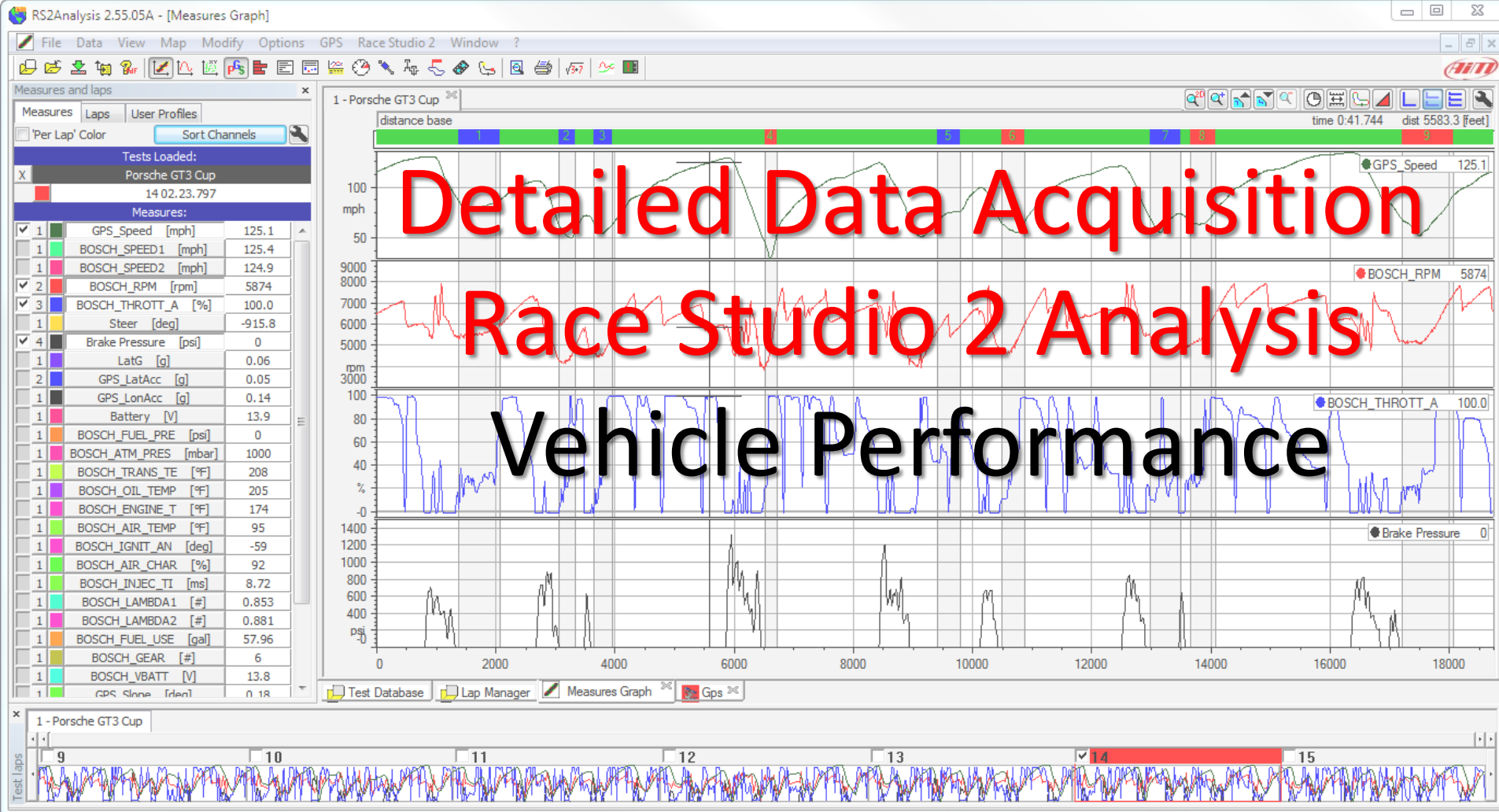


This is the same 2 laps but viewed in the Google Earth where we can see even more 'local' detailed info.



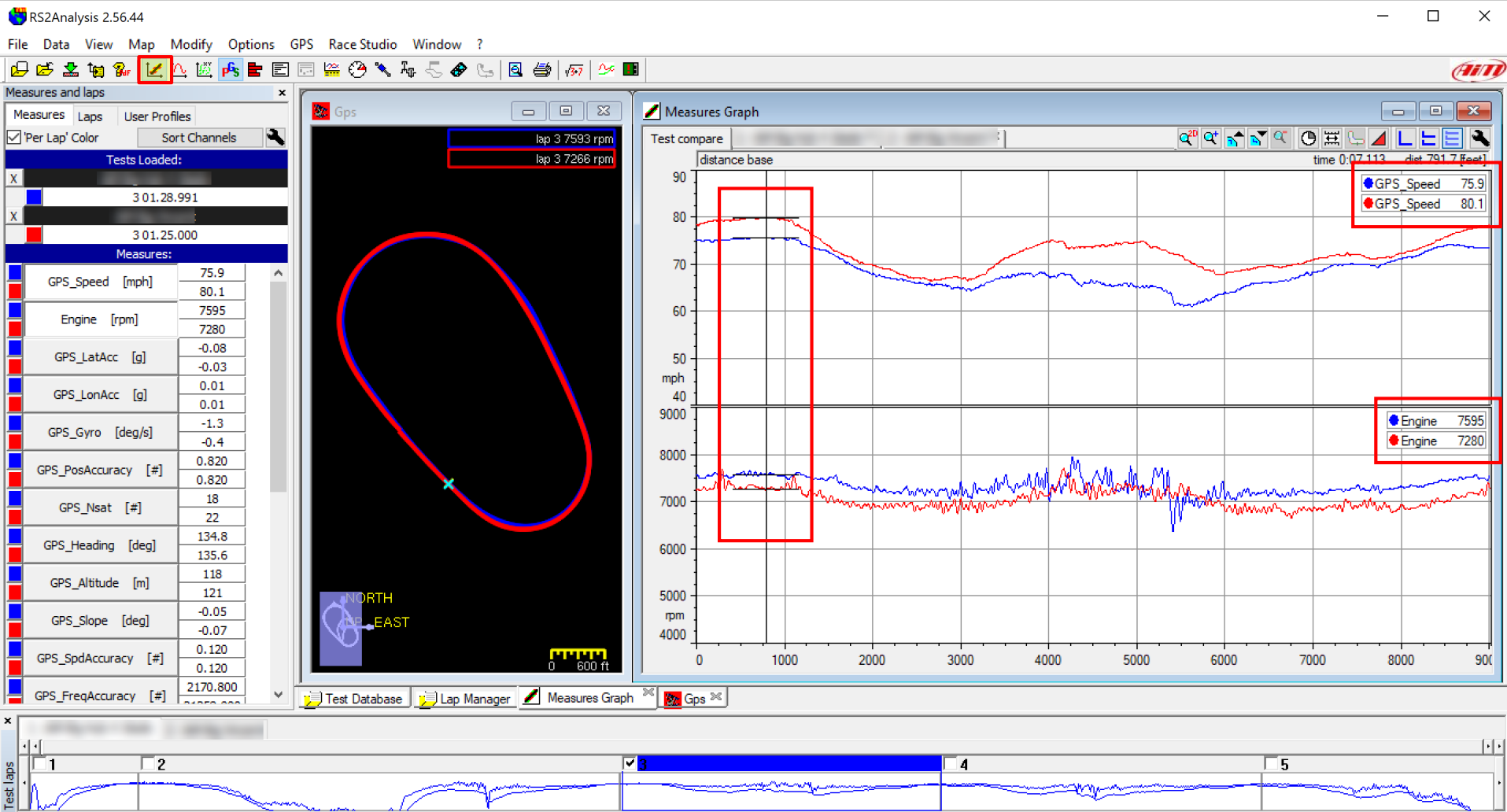
This is the same session but we are looking at the data in a different way, a 'Channel Report'. Here we can see the 'Distance' traveled for all laps, another tool to help understand the correct driving line. In Channel Reports we can also see user defined important values reported on each lap.



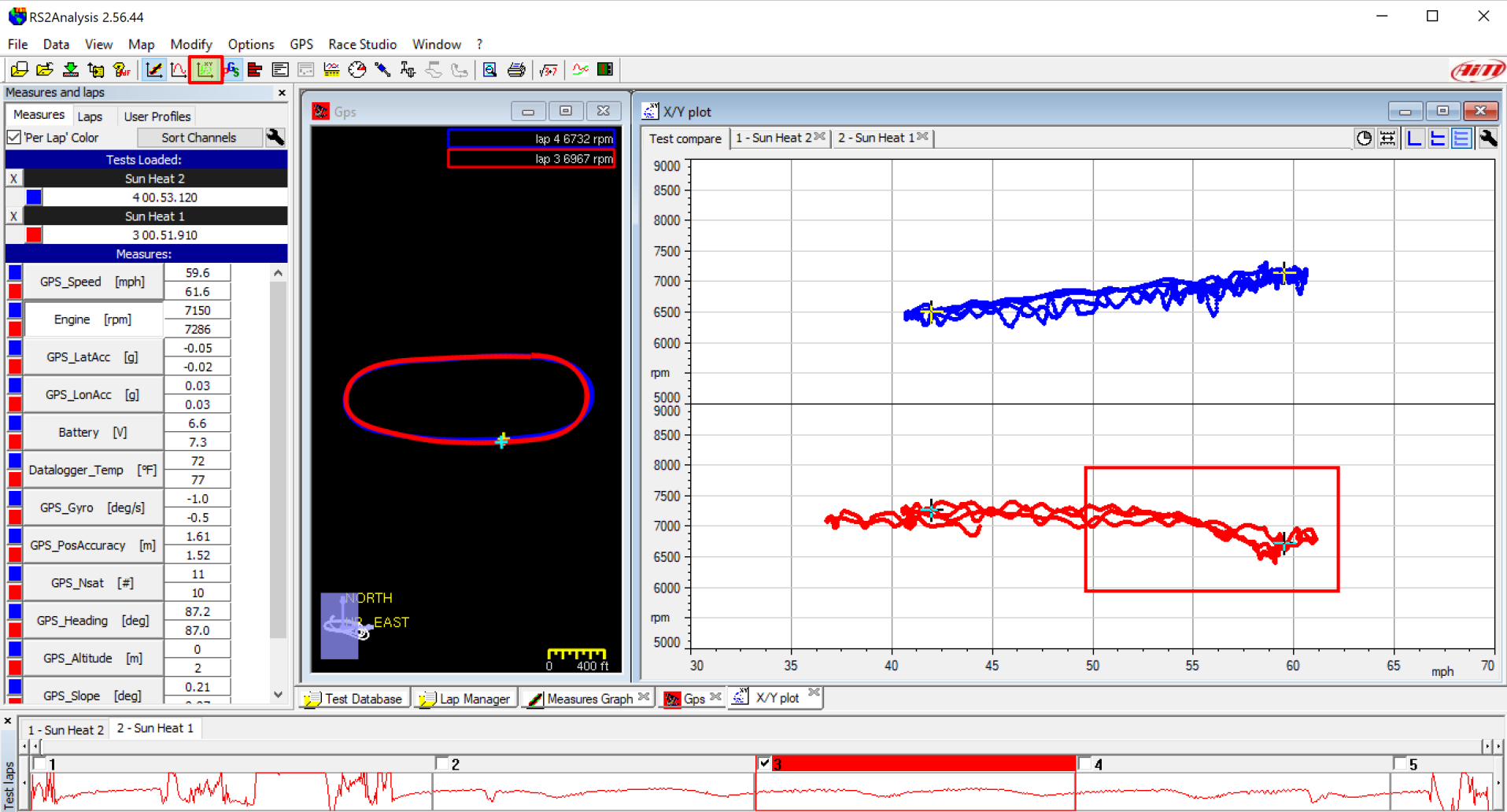


Let's look at several detailed Race Studio 2 Analysis examples to help you with Vehicle Performance.





This is the best lap from 2 different sessions but after a propeller change. The faster Red lap has better higher speed and lower RPM.



Here is another way of looking at the 2 fastest laps of 2 sessions with a propeller change. It is a X/Y plot with Speed on the X axis and RPM on the Y axis. You can quickly see the trend that the RPM on the red lap was dropping as the boat was going faster.

# MyChron5

The MyChron5 can display your 3 best laps.

You will be presented with not only the 3 best laps times but also the high and low RPM, speed, and temp for each of these 3 laps.

There is even more detailed data review available



27/09/2015 13:31				
Lap	Best Laps	RPM	mph	T2
7	0:50.06	14008 7234	67 31	61 59
9	0:50.08	13963 6953	67 29	60 58
11	0:50.13	14085 6811	67 31	59 58

# MyChron5

- Graphical Display
- 7 Display Background Colors
- 5 Configurable RGB Shift Lights
- 2 Configurable RGB Alarm Lights
- Lap Times With up to 5 Split Times
- Light Sensor for the Automated Backlight
- Integrated GPS08 AiM GPS Module
- Wi-Fi Communication
- 4 GB Memory
- Internal Accelerometer & Gyroscope
- Quick Swap Rechargeable Lithium Battery
- Same Connections as the MyChron4





# MyChron5

The MyChron5 uses modern technology and configures, calibrates, and downloads your data using WiFi technology.

There is no need to take your valuable computer near the wet boat, connect wirelessly from a safe distance!

iOS phone and tablet apps will be released in the future.



# MyChron5

The MyChron5 is listed as  
**'IP67'** and this means:

“Protected from immersion  
between 15 centimeters (6in)  
and 1 meter (39in) in depth”

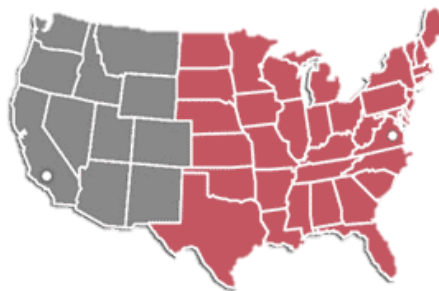


- **AiM Sports, LLC**

- AiM Sports has been providing cutting-edge data and video solutions for the motorsports industry for over 21 years. From track-day users to top tier teams, when it comes to electronic instrumentation, data acquisition, and video, AiM Sports is the most trusted name in racing
- Many AiM Sports products combine the functions of traditional tachometer, speedometer, temperature gauge, pressure gauge and lap timer all into one compact, high performance unit
- Opened in 1996 in Lake Elsinore, CA and expanded to Roanoke, VA in 2002

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**About AiM Sports, LLC**

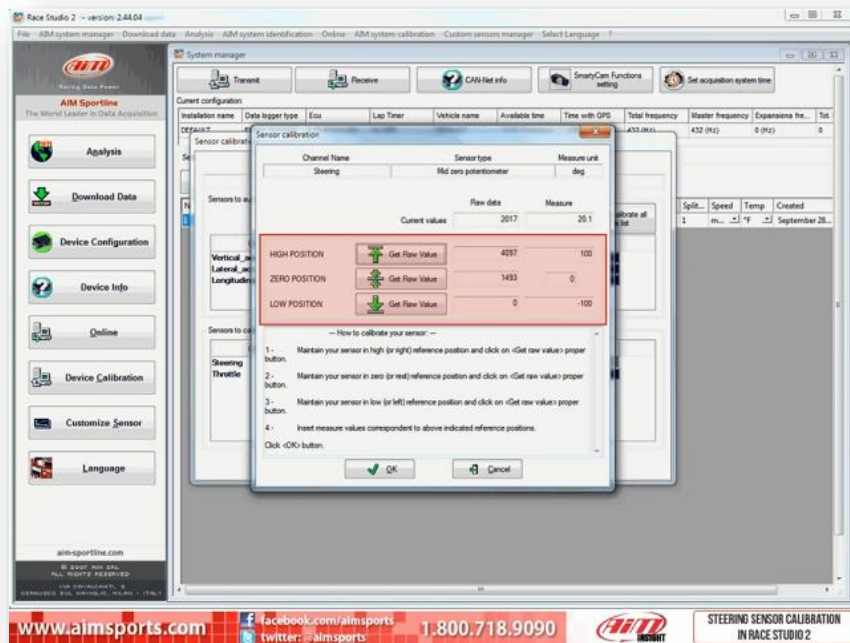
**Contact Information**



# LearnFast™ E-Training Video

Currently 60 Videos and Growing

[www.youtube.com/aimdata](http://www.youtube.com/aimdata)



- 25 New 'Data Analysis' Videos in 2017!
- Software Updates with Race Studio 3
- Pre-Calculated Gear Position Function
- Configuring WiFi Communication
- Customizing AiM Device Logos
- Race Studio 3 Basic Configuration - Part 1
- Race Studio 3 Basic Configuration - Part 2
- *\*I Have Downloaded my Data, Now What - Part 1*
- *\*I Have Downloaded my Data, Now What - Part 2*
- GPS Lap Insert
- Data Views
- Measure Units
- Sort Channels
- Test Properties
- Per Lap Color
- Export Tests
- Channel Reports
- Setting Time
- Track Mapping
- Selection Criteria
- Sensor Calibration
- Conditional Alarms
- Gear Position
- Firmware Update
- Solo Configuration
- Transmit Tracks
- Gps Manager Overview
- New GPS Track
- Webinars

*\* Most Popular and Recommended*



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Additional Materials

LearnFast™ E-Training Video





- Data is great... but you still need to understand and interpret the data correctly
- Always look for trends... never make a decision based on one section of one lap
- There is not a button that tells you which prop to select or what lane to run
- YOU are still in charge
- YOU still make all of the decisions, just with more accurate information and data





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LearnFast™ Video: [www.youtube.com/aimdata](http://www.youtube.com/aimdata)



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