Battery Electrical System Analyser (12-1015)

For testing all 12V automotive starting batteries rated in CCA, SAE, DIN, JIS#, IEC, EN and CA. Also for testing vehicle Electrical System.

Quick Start Guide

Caution: Never lay tools on the battery top. You may short the terminals together causing harm to yourself, the tools or the battery. Always follow Battery Council International safety recommendations.

Warning: Battery terminals contain lead compounds which is hazardous to our body if consumed. **Please wash your hand immediately after handling.**

LIMITED WARRANTY

This Battery Electrical System Analyser [12-1015] is warranted to be free from defects in material and workmanship for a period of 12 months from the date of purchase and is subjected to the following terms and conditions:

1. Within the warranty period, the manufacturer will repair or replace, at their options, any defective parts and return to the owner in good working order.

2. Any repaired or replaced parts will be warranted for the balance of the original warranty or 90 days from the date of repair, whichever is longer.

3. Cost of delivery charges incurred for the repair of the product (to and from the manufacturer) will be borne by the owner.

4. The warranty covers only the defects arises as a result of normal use and does not cover those arise from:

   - Unauthorized modification and repair
   - Improper operation or misuse
   - Accident or neglect such as dropping onto hard surfaces.
   - Contact with water, rain or extreme humidity or heat.
   - Physical damages such as cables broken, surface cracks, etc.

Performing Battery Test while it is still in the car:

Vehicle that was running has to have its engine OFF first and then switch ON the headlights for 30 seconds to remove the surface charge. After the headlights had switched OFF, let the battery rest for at least 1 minute to recover before testing commences.

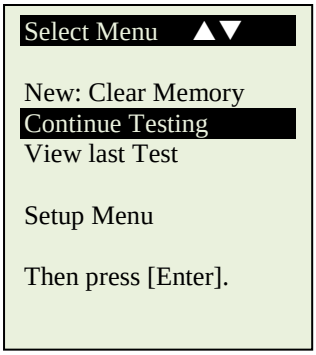
The car engine and all other accessory loads must be **OFF** during test in order to have an accurate result. When attaching the analyser clips, make sure that the battery posts were not oxidized or badly corroded. Clean them first before clamping to it. Do not clamp onto the steel bolts directly which may give inaccurate and inconsistent results.

Testing on stand-alone batteries:

Clean the battery posts with a wire brush prior testing. For side- post batteries, install stud adaptors. Do not use steel bolts for better results.

1. Connect the tester clamps to the battery posts, Red to the positive (+) terminal and Black to the negative (-) terminal. Rock each clamp back and forth for better contact.

2. It will run through a self-test and when completed it displays the Main Menu as shown below:



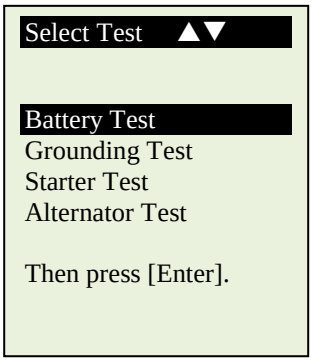
New: Clear Memory
Selecting this item will allow the tester to clear the last tested results stored in its memory and begin a new test.

Continue Testing
Selecting this item will allow you to continue the last test on the same car from where you had stopped.

View Last Test
Review the test results of the last tested car

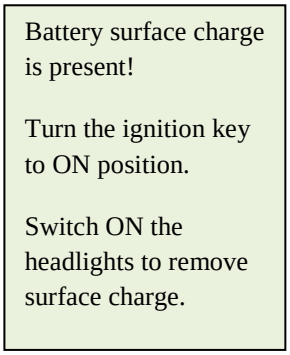
After you have made your choice, selecting "New: Clear Memory" or "Continue Test…" press key will proceed to the display below:

3. After you have made your choice, selecting "New: Clear Memory" or "Continue…Test" will proceed to the display below:

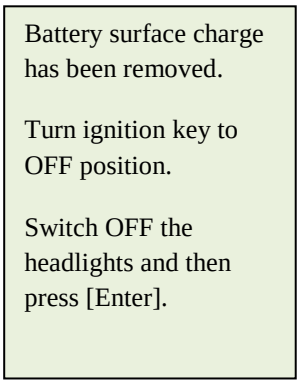


BATTERY TEST

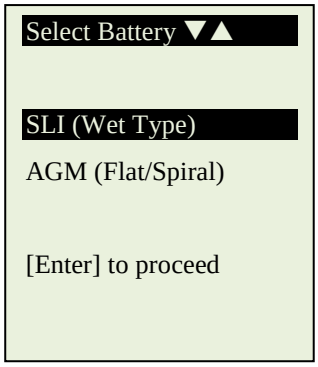
4. If the surface charge is too great for the analyser to handle, it will prompt you with the instructions as shown below:



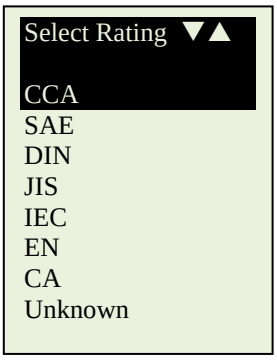
5. Wait until the surface charge removal had completed, the tester will advise as follows and then press key.



6. If there is no surface charge present, then it will straight away enter into "Select Battery" menu screen as shown below:



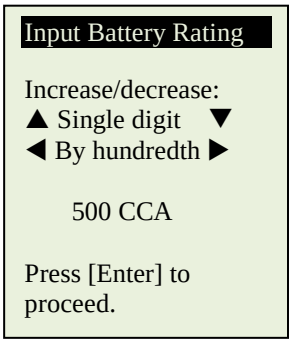
7. Pressing ↵ again will proceed to Battery Test as shown below.



8. Select the rating system: CCA, SAE, DIN, JIS#, IEC, EN, CA; according to the battery rating. If you cannot find its rating then select Unknown.

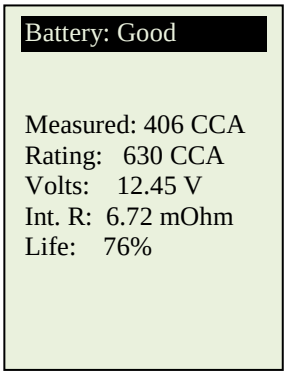
9. If the battery is rated in JIS#, refer to the conversion list provided to convert to CCA rating before keying into the Analyser.

10. Once you had the system rating in mind, select and press ↵ key and the display will show:



Key in the battery rating values using the ◀◀ or ▶▶ key for increase or decreases the values by step of 100 units. For double digits increase or decrease, use the ▲ or ▼ key by step of 5 units each press.

11. Once the rating is confirmed, press ↵ key will start the testing process and will display the result in less than 5 sec.



RESULTS: Good

'Good' indicates the battery in good condition. 'Replace' indicates that the battery needs to be replaced.

Voltage: 12.45V

This indicates the tested battery voltage (12.45V). It depends on the stage of charge on the battery:

CCA (Cold Cranking Amps): 406 CCA

CCA rating is being used here. If other rating (SAE or DIN or JIS# or IEC or EN or CA) then it will base on the selected respective rating to calculate the results.

Int. R (Internal Resistance): 6.72mΩ

Internal resistance should fall between **2.0mΩ ~ 15.0mΩ** for normal condition.

LIFE: 76%

Indicates the battery life expectancy in percentage.

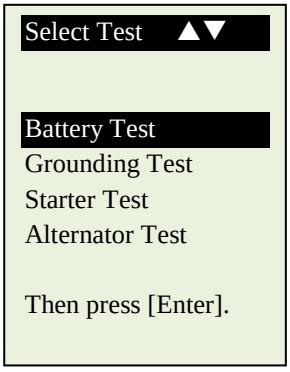
If the reading is greater than 45%, RESULT will display Good. Anything less than 45%, RESULT display Replace.

ROUGH CCA GUIDE

Given below is a rough CCA ratings guide for any unknown battery model basing on the capacity of the vehicle:

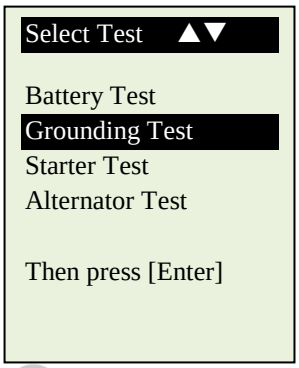
Vehicle Capacity	Approximate Battery CCA Rating
1200 ~ 1600 cc	350 CCA
1600 ~ 2000 cc	500 CCA
2000 ~ 3000 cc	650 CCA
3000 cc and above	750 CCA
M. Benz over 3000 cc	760 A

12. Press key will return to the Main Menu as shown below:

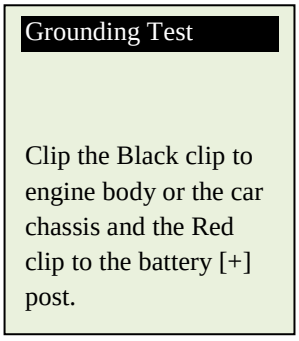


Grounding Test

13. Pressing ▼ key once will scroll down to the "Grounding Test"

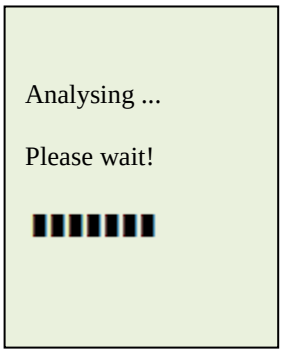


14. Press key will proceed to the display as follows.

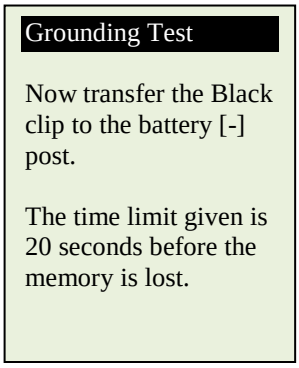


15. Now transfer the BLACK tester clip from the battery [-] terminal to a suitable position on the engine or chassis body leaving the RED clip still attached to the battery [+] terminal.

16. Now press key again and it will starts analysing.

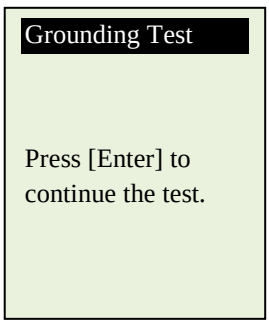


17. Once it has finished analysing, it will prompt you with an instruction stating that you should unclamp the Black tester clip from the engine or chassis body and transfer to the battery negative [-] terminal within 20 seconds time limit if not the testing procedure has to be repeated again as the gathered data will be lost.

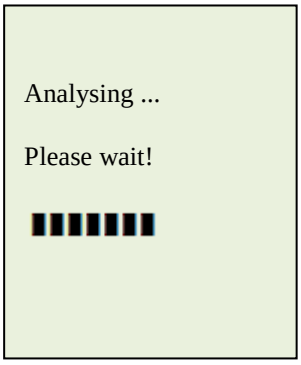


NOTE: 20 seconds is given to establish the contact to the battery [-] post failing which the data obtained earlier will be lost. Then you need to repeat the whole testing procedures again.

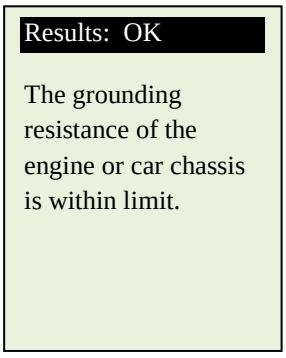
18. Once the Black clip is clamped onto the battery [-] terminal, the Analyser display will light up as shown.



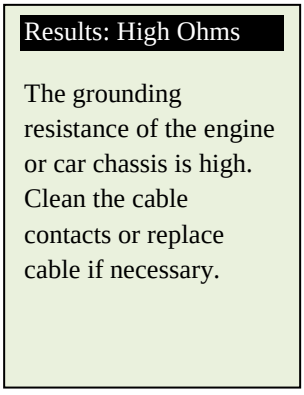
19. Now you need to press  key to proceed and the display will show as follows



20. If the measured resistance reading is within limits, then it will display as follows:



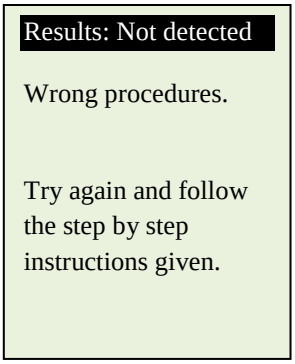
21. If the measured resistance reading has gone beyond the limits, then it will display the screen as follows:



Note:

The above indicates that the ground contact from the engine body to the battery is bad. Check for rusted or corroded point of contacts. If found, dismantle it for cleaning or replace before fixing back. Repeat the test again after fixing.

22. If you did not follow the right procedures during the testing, it will display the results as follows:



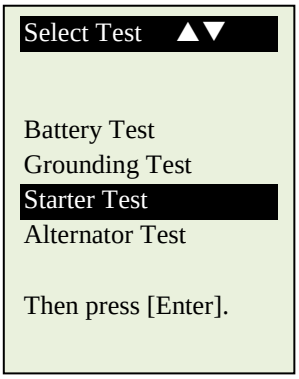
23. To exit the program, pressing the  key at any moment will exit and return back to main menu screen

Starter Test

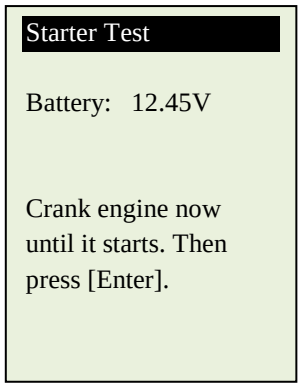
Note: ***Before performing this test, make sure that the battery is fully charged and in good condition.***

24. With engine OFF, place the vehicle transmission in NEUTRAL for Manual and PARK for Automatic then apply the parking brake.

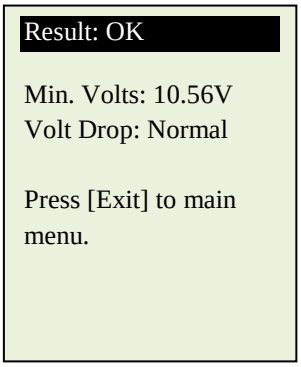
25. Pressing ▼ key once will scroll down to the "Starter Test"



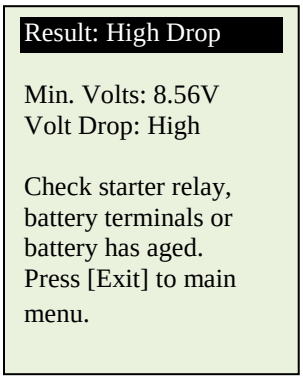
26. Press ↵ key to continue and the display will show as follows:



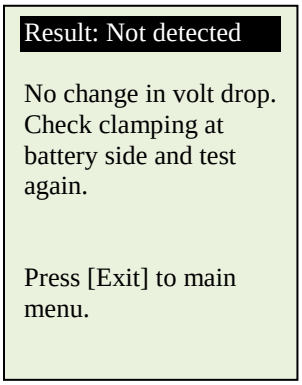
27. Switch the ignition key to ON and start cranking the engine until it starts. Immediately after that press ↵ key and the results will show as follows:



28. If the voltage drop is too great during the cranking, the tested results will display as follows and will prompt you to check the starter system.



29. During cranking when it detects that there is no drop in voltage, it will display the following screen:



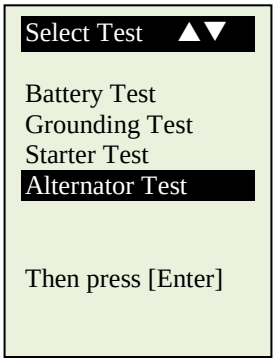
30. To exit the program, pressing the ↱ key at any moment will exit and return back to the main menu screen.

Alternator Test

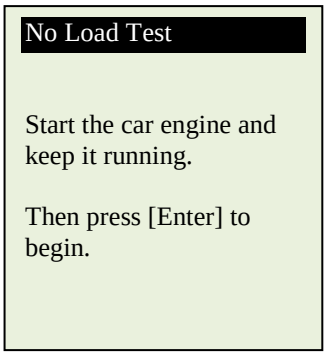
No load testing at 3000 RPM:

31. With engine OFF, place the vehicle transmission in NEUTRAL for Manual and PARK for Automatic and apply the parking brake.

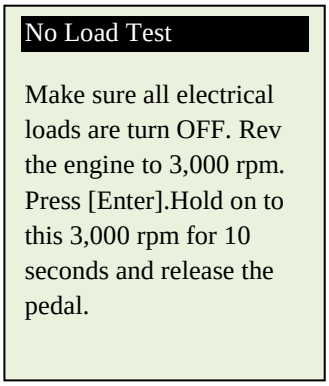
32. Pressing ▼ key once will scroll down to the "Alternator Test"



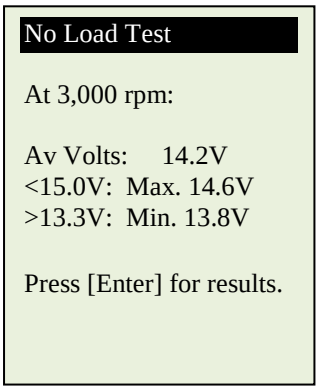
33. Press key to continue and the display will show:



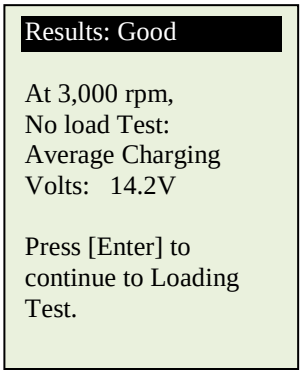
34. Starts the engine then press key again and the screen will prompt you as shown below:



35. After that press key again and it show as below:



36. Press key will show the results of the test:



37. If either minimum or maximum charging volts are not within the voltage range limits then it will display one of the screen as below (Fig. 1 & Fig. 2) and it will prompt you to check the alternator system for the fault.

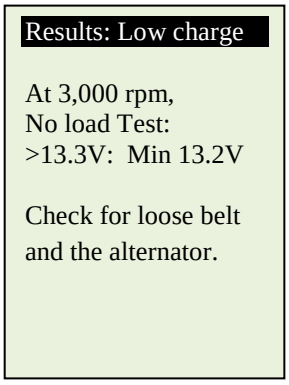
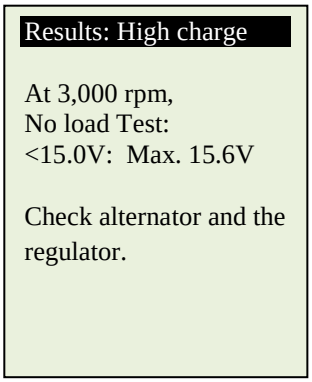


Fig.1



Testing with load at 2,000 RPM:

This test is to check the alternator's behavior during loading.

38. Continue from the previous test, proceed to the next step by pressing key will enter to the display as follows.

Loading Test

Switch ON all electrical loads. Rev engine up to 2,000 rpm. Press [Enter].Hold on to this 2,000 rpm for 10 seconds and release the pedal.

39. You need to switch ON all loads (Head Lights, Radio, Air-condition, Heater, etc) and press key and it show as below:

Loading Test

At 2,000 rpm:
Av.Volts: 13.3V
>13.5V: Max. 13.8V
>12.5V: Min. 12.8V

Press [Enter] for results.

40. Press key again and the result will be shown as below:

Results: Good

At 2,000 rpm,
Loading Test:
Average Charging Volts: 13.3V

41. If either minimum or maximum charging volts are not within the voltage range limits then it will display one of the screen as below (Fig. 3 & Fig. 4) and it will prompt you to check the alternator system for the fault.

Fig.3

Results: Low charge

At 2,000 rpm,
Loading Test:
>13.5V: Max. 13.3V

Check for loose belt and the alternator.

Fig.4

Results: Low charge

At 2,000 rpm,
Loading Test:
>12.5V: Min. 12.4V

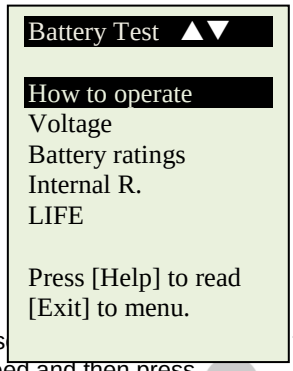
Check for loose belt and the alternator.

42. To exit the program, pressing the key at any moment will exit and return back to the main menu screen.

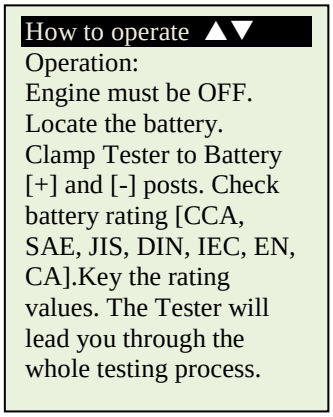
HELP KEY

43. Selecting this key will help you familiarize with the analyser by explaining the various functions and the results.

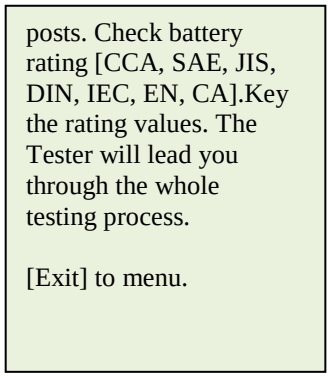
    To access to this function, just press the ? key during the wakeup and the display:



44. Use ▲▼ to the item you need and then press ↵



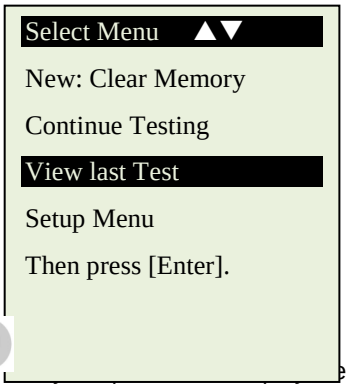
45. Press ➤➤ key to scroll to next page.



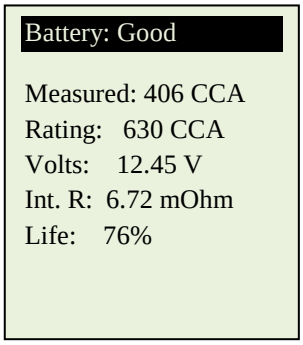
46. To exit this function, just press the ↵ key will return back to the main menu display.

PRINTING THE LAST TEST RESULTS

Printing all the Last Test Results can only be done while in this View Last Test mode. This is to ensure that the results printed will be the final ones as every test redone will be updated in its memory.



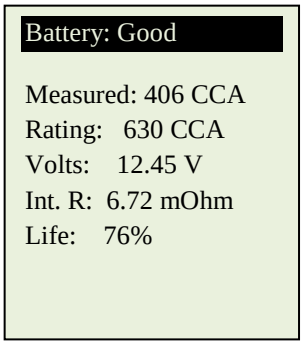
Press ↵ last test results depends on the type of test you had performed earlier.



Important:

The tester has to be connected to a 12V battery in order to work with the mobile printer. This is because it needs higher Amps to operate which the PC USB output is unable to provide.

To print 1 test at a time, just press 🖶 key on, while the test results are still on the screen. The mobile printer will start printing.



PRINTER SETUP

1. The printer will only work when connected directly to a 12Volt car battery because it needs higher amps than an USB port from the PC can provide. The red LED indicates the printer is ON and the green LED will blink when the printer has run out of paper. If there is paper present and it still blinks then the printer has overheating problem. The green LED will also stay lighted up when there is no paper if BST 12 is connected to the PC through the USB port.

2. Open the printer cover (Fig. 5a). Place the thermo paper roll into the slot with the paper edge facing up (Fig. 5b). Make sure the paper is about ¾ in out when the printer cover is closed (Figure 5c).

Figure 5a

Figure 5b

Figure 5c

SELECT DISPLAY LANGUAGE

1. To change the display language of the Analyser, first go to Setup Menu by pressing key until it has been highlighted and then press key to enter.

Select Menu ▲▼
New: Clear Memory
Continue Testing
View last Test
Setup Menu
Then press [Enter].

Inside the Setup Menu press to gain access to the Language Menu

Setup Menu ▲▼
Language
LCD Brightness
Printer
PC Link
[Enter] to proceed.
[Exit] to quit.

Select the preferred language by pressing key to scroll to the item.

Select Language ▲▼
English
Deutsch
Español
Italiano
[Enter] to save.

Then confirm it by pressing save. Once it had been saved, the display will change to the language selected. Press key to exit and get back to the Main menu screen to continue your test.

PC LINK

2. This analyser is also designed to link with PC for data storage and printout through normal printer. To do so, the PC has to install the driver and the software provided in order to operate.

3. Select the correct driver for your computer operating system and double click on the icon followed by the PC set-up.

4. Now link up BESA with PC. In the Setup Menu display press key to highlight "PC Link" and then press key to activate.

5. To confirm the whether there is communication; click on [Get Data From] tab and the Last Test Result will appear. See example below.