



Fall Harvest



Arbin System Compared

Arbin recognizes that there is a paper circulating in the battery testing industry published by one of Arbin major competitors with regards to Arbin testing system. The paper presents a comparison between Arbin testing system and this competitor's testing system on several features and tests. Of course, this paper does not award a good image to Arbin testing system.

While, Arbin believes that the competitor did not make up the results claimed as Arbin's results, Arbin believes that the comparisons are made on

wrong bases, and most importantly, on out-of-date information about Arbin system. Below are the five major claims presented in the paper about Arbin system and our responses to the claims.

Claim 1: The competitor performed one-second and two-second timing test at different current level. On Arbin results, step time was consistently off by 30%.

Response: Looking at the results of Arbin pulse profile presented in the paper, we could tell that the competitor had performed the timing test

using a wrong procedure of testing on Arbin system. With Arbin system, a one-second or two-second step is classified as slow pulse, and there is a specific procedure under the **Pulse** menu in the software to do this timing test (see **Figure 1** on the next page for this pulse screen). The results the competitor had obtained were performed using Arbin regular step function procedure.

As far as our test records, there is less than 1% of error in timing in either slow pulse

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Europe Tech Support Established

Expanding customer support beyond North America and Asia, Arbin has officially established a brand-new customer support hub in Europe. Located in Hamburg, Germany, the hub is managed by Mr. James Lee and provides technical services for customers from all over Europe.

Graduated with a master degree in theoretical physics in 1985, Mr. Lee has worked many years as technical development and technical support engineer in the field of electronics and computer communications before join-



ing Arbin early this year. He has received an intensive training for the service of the hardware and software of Arbin testing systems during his 4-month stay at Arbin headquarters in College Station, TX.

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Arbin Exhibition

2001 Joint Int'l Meeting of ECS and Int'l Society of Electrochemistry
Sep 2-7, 2001
San Francisco, CA
www.electrochem.org

Power2001
Sep 30-Oct 3, 2001
Anaheim, CA
www.power-conference.com

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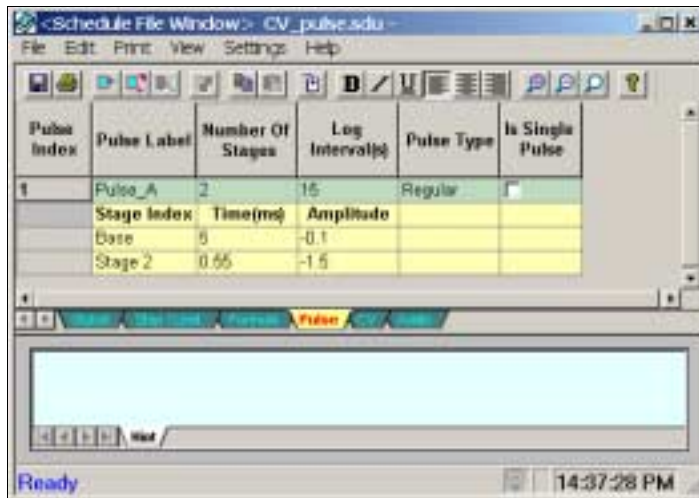


Figure 1. Arbin MITS Pro Pulse Programming Screen.

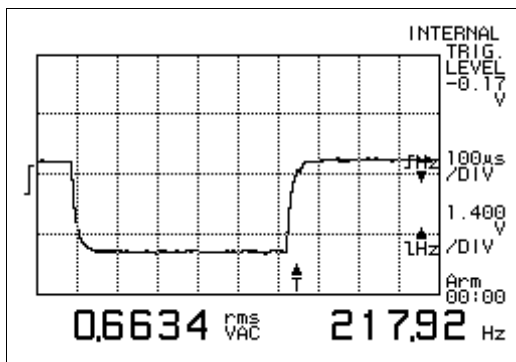


Figure 2. GSM current profile of a 550µs pulse, the base at 0.1A discharge current, the pulse at -1.0A discharge current. The rising time is less than 50µs.

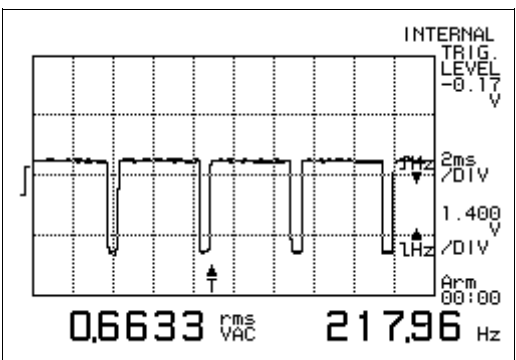


Figure 3. GSM current profile of four pulses, the base width is of 4.05ms, the pulse width is of 550µs.

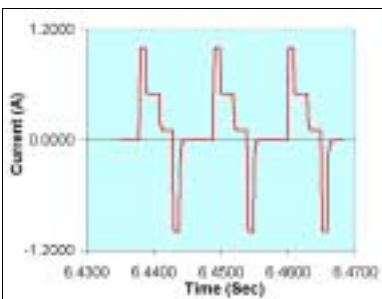


Figure 4. Bipolar pulse.

or high speed pulse in Arbin system performed using the proper pulse-testing procedure

Claim 2: The competitor performed GSM tests on NiCd battery using 1-ohm and 10-ohm resistors to observe the effect of changing loads on the pulse. On the 1-ohm resistor test, Arbin pulse profile has overshoot and imperfect shape, while on the 10-ohm test, Arbin pulse profile is beyond recognition. In addition, Arbin GSM pulse has a rise time of at least 200 micro-second.

Response: We wonder the validity of such a test done on a 10-ohm circuit when the normal battery impedance is in milli-ohms. Arbin GSM/CDMA testing system is designed specifically for GSM battery, which normally has internal resistance smaller than a few hundred milli-ohms. The system is optimally designed for battery applications, and hence may exhibit erratic behavior when used outside the tolerable range of the pulse system. The maximum rise time for Arbin GSM pulse is less than 50 micro-second. **Figure 2 & 3** on this page are two oscilloscope captures of Arbin GSM pulse profile.

On another note, Arbin system tests are done according to user-defined sampling rate and pulse widths. It samples data at defined position and time of the pulses and records current and voltage data simultaneously, which is essential for internal resistance measurement and consistency.

Claim 3: The competitor per-

formed a range-switching-time test for multiple current range channels. Arbin result shows a long switching time before reaching the desired current level, almost 24,000% longer than the competitor's system.

Response: Arbin's graph looks more like a bipolar current pulse, where current crosses zero and travels from negative to positive values or vice versa (see **Figure 4**). Bipolar current/voltage output guarantees cross zero linearity and accuracy, and improves other functions such as IR measurement. All of Arbin charge-discharge testing systems have bipolar current/voltage output feature.

Claim 4: Arbin's software is difficult and cumbersome to use. These difficulties include: a single step-test requires a minimum of two screens to program; data file needs to be converted to ASCII and viewed with Notepad; modifying a test on one channel causes unintentional changes to other channels running the same test without warning.

Response: The competitor is definitely operating an outdated version of Arbin testing software during these comparison testing. Today, Arbin software, the MITS Pro, offers much more functions and features compared to what this competitor's software has to offer. Most noted, Arbin has been using MS Access and Excel to treat data file for more than four years.

Separation in defining the test process (schedule file) and test condition (batch file) in MITS Pro makes scheduling

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more universal (i.e., a schedule can be shared among many channels) and easier. It is true that when using a universal schedule on several channels, modifying the schedule on one channel would automatically affect the schedules on other channels as well (this does not apply when modifying the batch file). The software however does give user a warning of possible effect before the change. A simple way to modify a schedule on a single channel is to save the schedule with different name and run it on a specific channel. In addition, MITS Pro also offers the batch file procedure to provide convenience to define test conditions for each channel separately.

With all the added testing functionalities and flexibilities for customers' benefits, Arbin is continuously working on making the software user-friendly based on Windows GUI (Graphical User Interface) concept. The simplicity of a software certainly cannot be rated without looking at what capabilities the software offers.

Claim 5: In order to repair some channels, the entire Arbin system must be shipped back to Arbin.

Response: The competitor is apparently missing the boat on Arbin's **Modular Plug & Play** system introduced early last year. It is Arbin who first introduces the plug and play modular system to the industry, and many competitors have followed the concept.

The unique plug and play design creates a testing system that is compact and efficient. Not only easy to service, it is also easy for customers to add more channel modules by themselves, providing that the power supply and space are accommodating. And not only modular on the channel-board level, most system can also be made of modular, stackable units (see **Figure 5 & 6**).

When on-site service is needed, Arbin has an expanded service across the globe for this task; it has service personnel stationed in ten countries: USA, Canada, China, Japan, Taiwan, Malaysia, Israel, India, Korea and Germany.



Figure 5. Plug & play module within a unit.

Figure 6. 4-stackable units with plug & play modules.



Conclusion:

Arbin warrants customers to be critical when presented with a product comparison such as this. Out-of-date product and information, different test conditions and procedures, and most importantly, different capabilities each system offers make it difficult to compare products in fairness. The best suggestion we offer is to visit us in-person either at Arbin's facility or at conferences where we are exhibiting, or rent a demo system to be used at your own facility to have the hand-on testing experience and make your own informed judgments.

Last but not least, the existence of such comparative documents has always been a way for competitors to bring down strong opponents. Arbin takes pride in this acknowledgement of position through this competitor's paper. In other words, we are glad to be compared to. ♦

A New Sight at Arbin.com

Since the beginning of July 2001, Arbin website has a new look. The new site carries most of the same information from the previous website, but with better organization and surfer-friendly approach. Long pages are broken down to several, fast-loading pages; a new form to report technical-related issue is added; as well as a more

eye-pleasing style of web design. The most recent electronic version of software manual is available to be downloaded from the web. A plan to add an electronic store for customers to place a secured online-order of accessories such as battery holders and cables is in progress. Visit Arbin website at: www.arbin.com. ♦





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Software Updates

Beginning with version 2.6, Arbin testing software, MITS Pro, has included samples of application schedules in the software. Customers may use the schedules according to his/her applications and modify the schedules to suit the growing testing needs as necessary. Currently, the library contains samples of testing schedule for applications in

electric vehicle battery, electrochemistry, electrochromatic, R&D, lithium ion and polymer, supercapacitor, and quality assurance testing. Most of these schedules are derived from ANSI/EIC standard testing procedures for each respective application. A few schedules are exemplary of customers' specific testing applications. ♦



Arbin Factory Training

Aug 6-7 & 20-21
Sep 10-11 & 24-25
Oct 8-9 & 22-23
Nov 12-13 & 26-27
Dec 10-11

Contact: Kevin Duff
kevin.d@arbin.com
(979) 693-0260 x154

Software FAQ Corner

Q: How do I find what version of software I am running?

A: Many times in support situations, it is important for us to know exactly the version of software you are running. This may also include the software's build date. In Arbin software, this can always be found by going to <Arbin><About...> from any screens. An example of the version information could be:

**ABT (2ADC) version 4.0, Mar 30, 1998 or Version: MITS Pro Smart Edition
Build Date: Sept 14, 2000**