

I have reviewed the test procedure and discussed certain aspects with colleagues. We all agree on the following observations:

The Test Methodology For Determining the Energy Efficiency of Battery Charging Systems, Draft - July 2005 defines Nominal Battery Energy as that value calculated by multiplying nominal battery voltage by rated battery capacity. For the following reasons, I would recommend a different method.

1. Pack manufacturers sometimes make errors in the specifications. One common error is in the nominal voltage. For example, some E-One Moli lithium-ion cells are specified at 3.75V but, often, the pack assembler puts 3.6V on the battery pack specification.
2. As cell manufacturers make improvements to a particular cell, they may not change the part number to reflect a higher capacity until it has increased by a value that fits into their plans. For instance, a cell specified as 2200mAh is performing at 2350mAh but the manufacturer does not change the specification until the cells are performing at 2400mAh.
3. Different cell manufacturers specify their cells differently. Vendors A and B specify their cells at 2200mAh. Vendor A indicates that 2200mAh is nominal and vendor B indicates that 2200mAh is minimum. So, the former cells will average 2200mAh capacity and the latter cells will always be greater than 2200mAh.
4. Due to variations in manufacturing processes, there will be variation in capacity for the same part number cell. For some manufacturers, this is a narrow band of variation but it can be significant for other manufacturers.

To ensure a greater degree of objectivity and accuracy in the calculation of Nominal Battery Energy, the battery should be discharged per IEC standards following each charge. Energy should be accumulated in Watt-hours using measured current and voltage.

Best regards,
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