



ITI CA Battery Charger Specification Feedback

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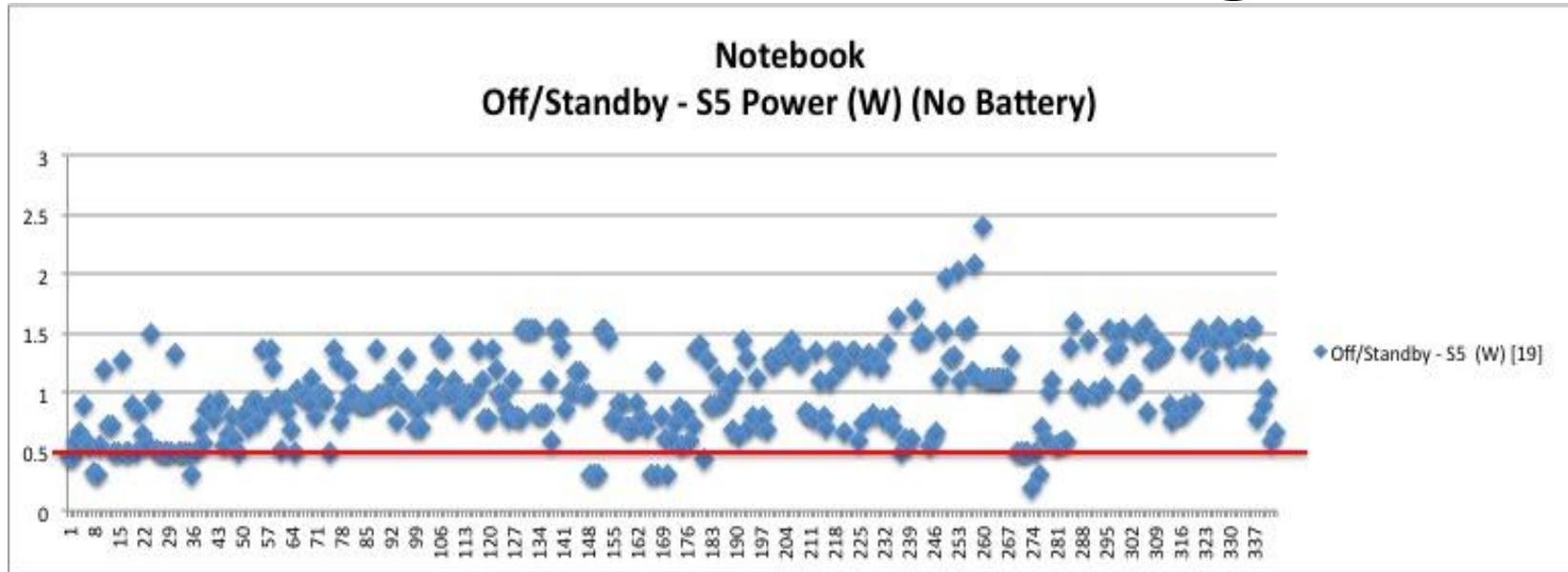
Battery Charging Specification Issues

Table W-2
Standards for Small Battery Charger Systems

<u>Performance Parameter</u>	<u>Standard</u>
<u>Maximum 24 hour charge and maintenance energy (Wh)</u> <u>(E_b = capacity of all batteries in ports and N = number of charger ports)</u>	<u>For E_b of 2.5 Wh or less:</u> <u>16 × N</u>
	<u>For E_b greater than 2.5 Wh and less than or equal to 100 Wh:</u> <u>12 × N + 1.6E_b</u>
	<u>For E_b greater than 100 Wh and less than or equal to 1000 Wh:</u> <u>22 × N + 1.5E_b</u>
	<u>For E_b greater than 1000 Wh:</u> <u>36.4 × N + 1.486E_b</u>
<u>Maintenance Mode Power and No Battery Mode Power (W)</u> <u>(E_b = capacity of all batteries in ports and N = number of charger ports)</u>	<u>The sum of maintenance mode power and no battery mode power must be less than or equal to:</u> <u>1 × N + 0.0021 × E_b Watts</u>

- Maintenance + No_battery Power is too tight for computer systems <50Whr.
- 24hour test excessively challenging for mobile computers <50Whr
 - 12 (Whr) is equivalent to **0.5W** for 24hrs.
 - **1.6** multiplier for battery charging, maintenance, and everything else

ENERGY STAR v5.0 Setting Data



- Off condition for notebooks w/o battery. Battery attachment increases these power levels
- Variance for other product groups are greater

0.5W is VERY Challenging even without the battery

Technology and Manufacturing Impact on Multiplier

Stage	Efficiency@Load	Impact on Multiplier (1+ ...)
AC to DC	80%	0.20
5V USB	90%	0.10
Battery Charging	80%	0.20
Eb_discharge	90%	0.10
S5 w/o battery	-0.5W	0.25 (for 50Whr)
Manufacturing	95%	0.05
		1 + 0.90

1.6 Multiplier Insufficient to Comprehend Technology and Manufacturability

Sample Impact to Very Small Battery Systems

Battery Capacity (WHr)	24 Hour Mfg Limit (Whr)	24 Hour Measuremt (Whr)	24 Hour Result (P/F)	No-Battery Measuremt (W)	Maintn Measuremt (W)	Combined No-Batt & Maintn Mfg Limit (W)	Combined No-Batt & Maint Calc (W)	Combined No-Batt & Maintn Result (P/F)
23	46.3	41.11	PASS	0.25	0.5	.99	0.75	PASS
5.18	19.27	35.79	FAIL	0.03	0.982	.96	1.012	FAIL
10.3	27.05	54.44	FAIL	0.08	1.53	.97	1.61	FAIL
40	72.2	65.52	PASS	0.239	0.834	1.03	1.073	FAIL
5.18	19.37	31.22	FAIL	0.03	0.943	.96	0.973	FAIL

Significant Yield (Cost) Impact to Very Small (<50Whr) Battery Powered Computer Systems

Recommendation

Test	Limit	Comments
<i>50Whr < Devices ≤ 100Whr</i>		
24 hr test	$(12 * N) + 1.6E_b$	E_b =battery capacity; N=ports
Maintenance + Off	1.20	
<i>Devices ≤ 50Whr</i>		
24 hr test	$20 + 1.6E_b$	fixed loss
Maintenance + Off	1.20	fixed loss/advantages low E_b

- Still very challenging for computers but technically feasible
- Slightly more margin for smaller battery sized systems consistent with AC grid burden reduction goals.

Labeling

- Inappropriate and may conflict with other regulations
- Additional cost and may cause additional debris
- Product labeling is NOT recommended
- If documentation needed, could be done through accompanying literature or referenced electronically



Backup