



ENERGY STAR Imaging Equipment Program Version 1.1

RICOH's Comment on Recovery/Delay Time
from/to Sleep mode

May 7th, 2008

Ricoh Company, Ltd.

RICOH

ES Requirement: Statement for Future Revision

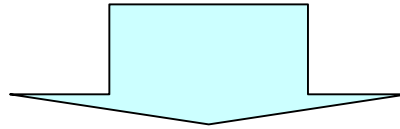
Future Specification Revisions: EPA reserves the right to change the specification should technological and/or market changes affect its usefulness to consumers, industry, or the environment. In keeping with current policy, revisions to the specification are arrived at through stakeholder discussions. EPA will periodically assess the market in terms of energy efficiency and new technologies. As always, stakeholders will have an opportunity to share their data, submit proposals, and voice any concerns. EPA will strive to ensure that the specification recognizes the most energy-efficient models in the marketplace and reward those manufacturers who have made efforts to further improve energy efficiency.

A. Color Testing: Based on submitted test data, future consumer preferences, and engineering advancements, EPA may modify this specification at some point in the future to include color imaging in the test method.

B. Recovery Time: EPA will closely monitor incremental and absolute recovery times as reported by partners testing to the TEC method, as well as partner-submitted documentation regarding recommended default delay settings. [EPA will consider modification of this specification to address recovery time should it become apparent that manufacturer practices are resulting in user disabling of power management modes.](#)

Concerns for ENERGY STAR Tier 1 Spec

Critical Issue for Existing ES Tier 1 Specification:
There is no guideline/requirement for Recovery Time



Products with slow recovery-time can be registered with **lower TEC Data** by minimizing default delay time to Sleep Mode

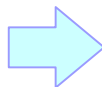
-> Some Partner companies have begun taking advantage of this "Loophole" to get their products qualified. As EPA outlined during previous spec development, it is important for ENERGY STAR to add new criteria for recovery time.

Recovery Time Customers Can Wait

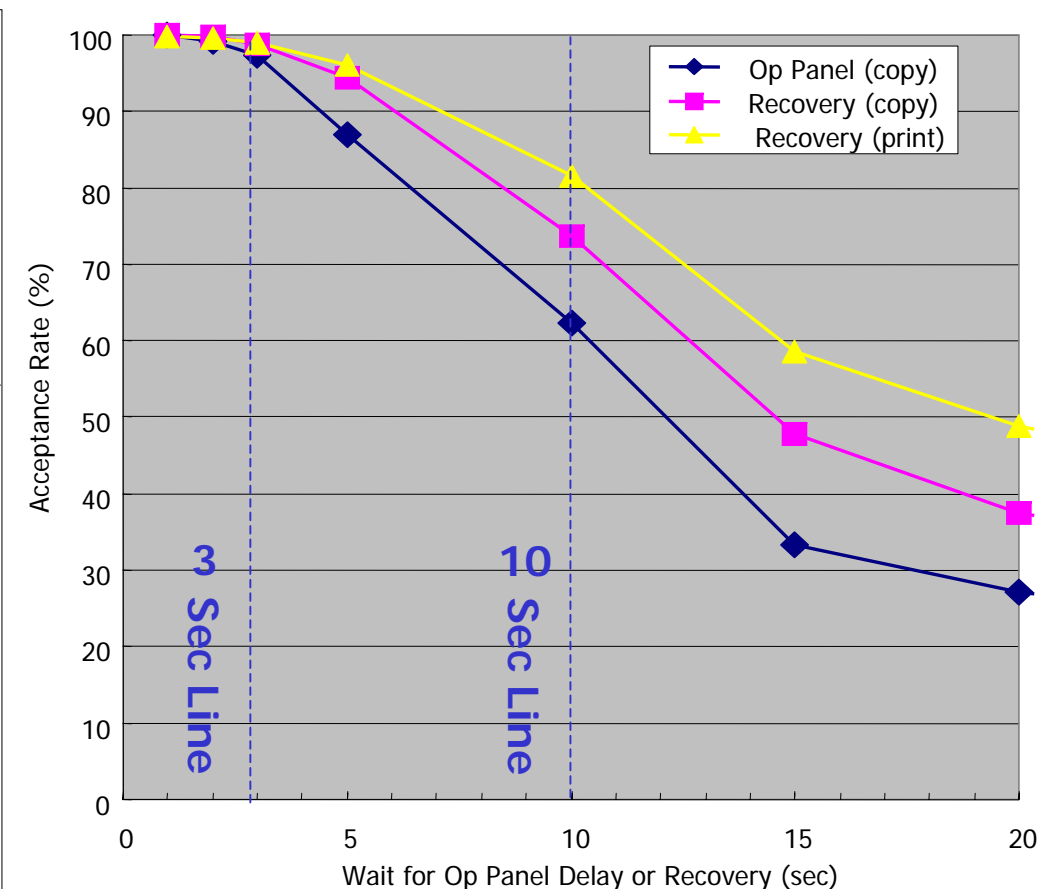
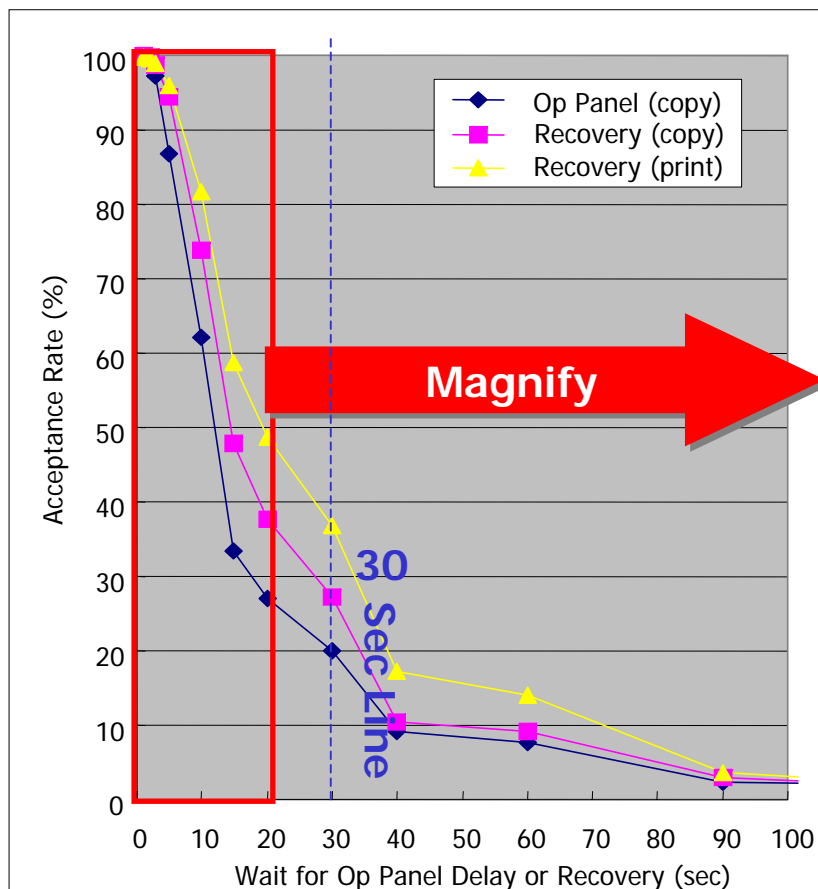
Web Survey conducted by Ricoh
 Period: July 27, 2005 – July 29, 2005
 # of Response: 843 ppl (Color MFP/LP user)

How long a customer can wait w/o stress?

- Recovery := 3sec (copy) → 95% of users find acceptable
- Recovery := 10sec (copy) → 75% of users find acceptable
- Recovery := 30sec (copy) → 28% of users find acceptable



“Min. Recovery Time” needed for product development

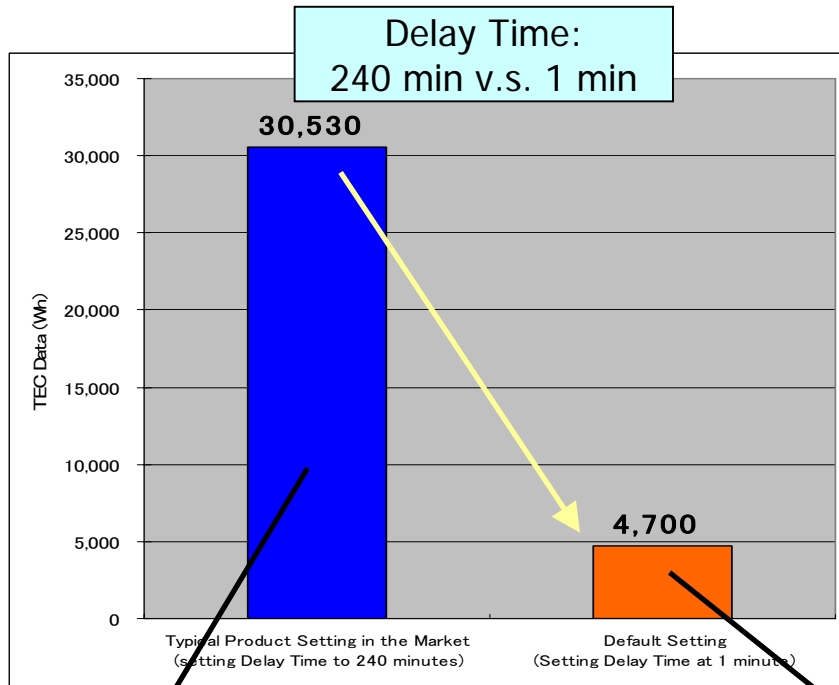


Some can wait for 30 seconds, others can not wait for 3 seconds. ⇒
 However, trend shows a product with faster recovery time has a better chance of its Sleep Mode function enabled/utilized

Benefit of Quick Recovery Time

Quick recovery makes the following scenario possible:

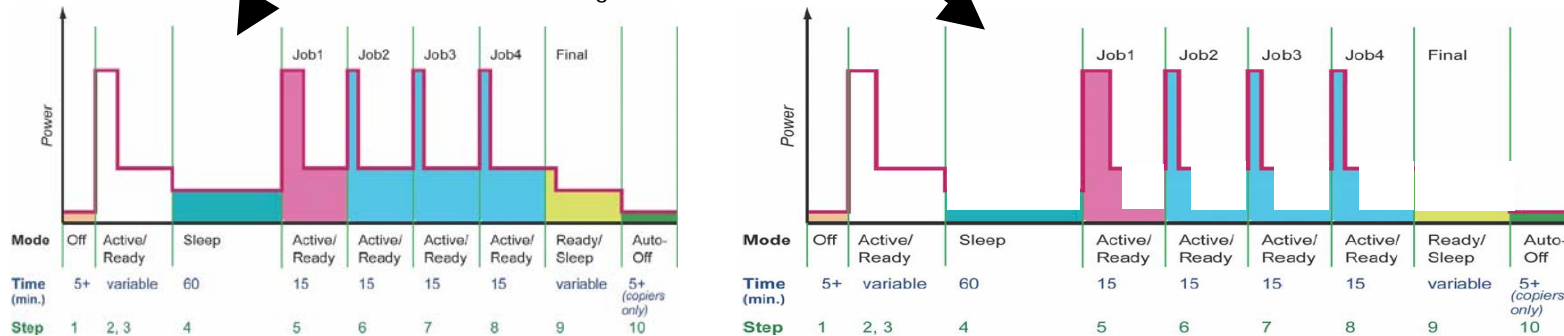
- ⇒ Customer wouldn't mind product being in Sleep (with shorter delay time)
- ⇒ **Quick Recovery + Shorter Delay Time = Significant Energy Reduction**



In order to ensure ES's effectiveness in energy saving

Sleep Mode needs to be effectively implemented

Simulation based on imagio MP C4500SP TEC Data



Recommendation for Recovery (from Sleep Mode) and Delay Time

Revised Specification:

- Set up a new requirement with a revised test condition which is designed to give advantage (TEC) to products with faster recovery from Sleep Mode.

ENERGY STAR Revised Specification

- Depending upon the recovery time from Sleep Mode, new test condition sets delay time (to Sleep Mode) accordingly
 - Product with fast recovery can go back to Sleep mode quickly (short delay time)
- Also, under this condition, spec should shorten max. delay time in order to further reduce energy consumption during standby.

→ Refer to the next slide

Recommendation for Recovery (from Sleep Mode) and Delay Time

1. Spec. to give incentive to products w/ fast recovery time from Sleep Mode

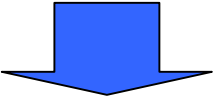
Example

Recovery Time	Delay Time Test Condition	Max Delay Time
≥ 30s	15min	60min
29s	15min	60min
28s	14min	60min
27s	14min	60min
26s	13min	60min
25s	13min	60min
24s	12min	60min
23s	12min	60min
22s	11min	60min
21s	11min	60min
20s	10min	60min
19s	10min	55min
18s	9min	50min
17s	8min	45min
16s	7min	40min
15s	6min	35min
14s	5min	30min
13s	4min	25min
12s	3min	20min
11s	2min	15min
10s	1min	10min
9s	1min	10min
8s	1min	10min
7s	1min	10min
6s	1min	10min
5s	1min	10min
4s	1min	10min
3s	1min	10min
2s	1min	10min
≤ 1s	1min	10min

According to our survey, many finds 30 sec recovery unacceptable. Therefore, ES should set delay time test condition of 15 min for products with longer than 30 sec recovery

More than 75% of customers can accept if machine comes back less than 10 seconds

Having longer delay time would increase TEC value. Manufacturers need to develop technologies to shorten recovery time to achieve lower TEC value.



Contribute to further energy reduction by pushing trend toward faster recovery time.



Ricoh's Request for today

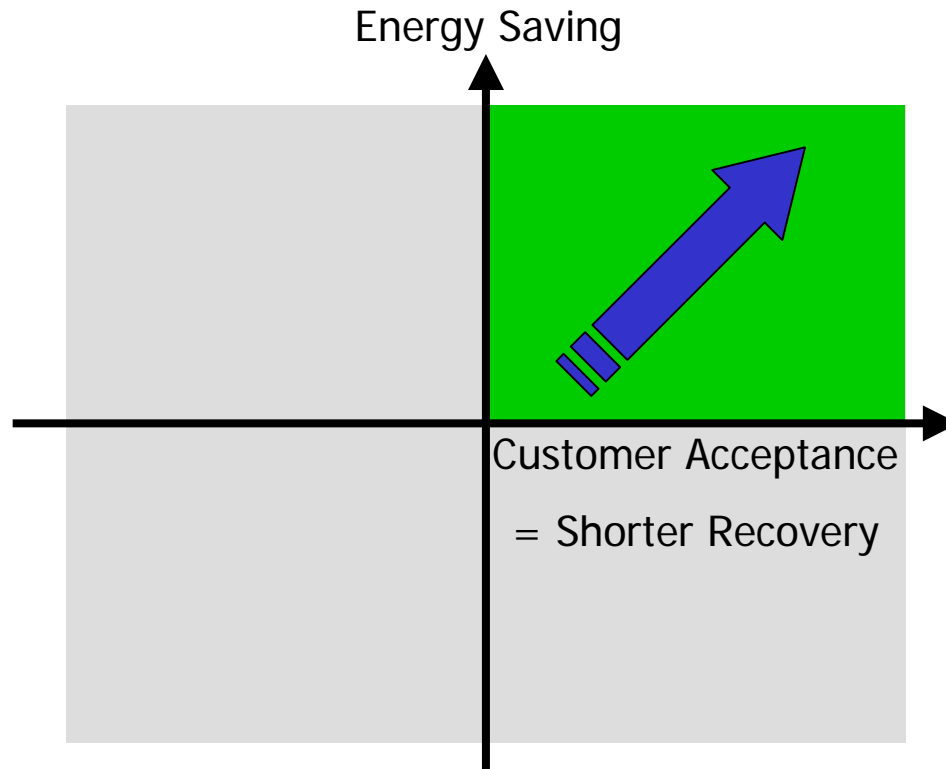
Create an additional tier (Tier 3)

- * Starting collecting data during Tier 2
 - TEC Value and Active 1 Time (existing data)
- * Tier 3 implementation
 - April 1, 2011 (or 2 years after Tier 2 implementation)

Tier 3:

- Include a revised test condition which is designed to give advantage to products with faster recovery from Sleep Mode
 - New TEC value addresses:
 - Energy Consumption reflecting *customers'* use pattern
 - Fast Recovery/Short Delay = Low TEC #
 - Slow Recovery/Long Delay = High TEC #

Conclusion



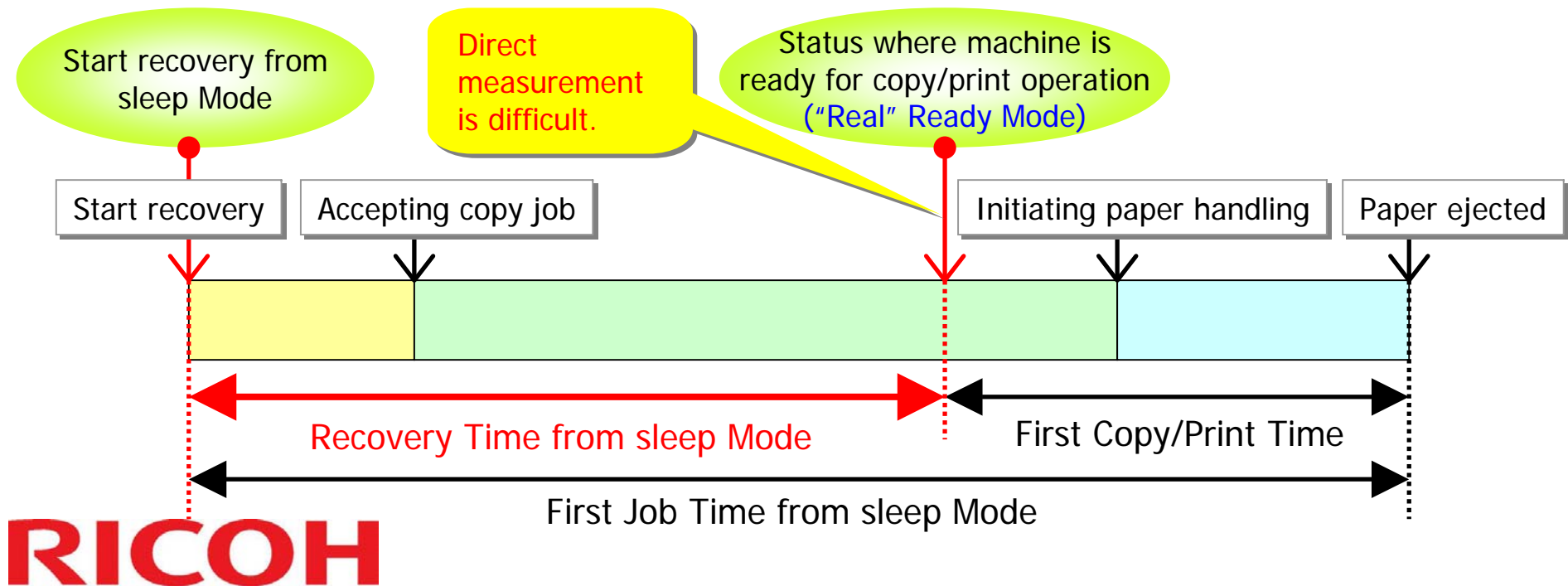
Specification which accommodates practical usage pattern (customer acceptance) has greater potential for energy saving in market place

As a pioneer in energy saving program, ENERGY STAR Imaging Equipment Program needs to set a direction which further accelerate industry's technological innovation

Definition of Recovery Time (measurement)

Recovery Time from Sleep Mode =
[First Job Time from Sleep Mode] – [First Copy/Print Time]*2

*2: First Copy/Print Time as defined by ISO/IEC 11159:1996 (JISX6910)



Information/Data Disclosure

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Information/Data Disclosure

We request ENERGY STAR program to disclose the following “existing” data:

- TEC Data
- Active 1 Time

Rationale:

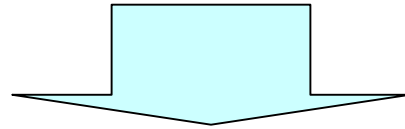
- Products with faster recovery time have a better chance of keeping Sleep Mode enabled, contributing overall CO2 emission reduction in market place.
- It is important that, future ENERGY STAR-qualified products to display TEC data as well as recovery time so that customer can use such data when making their purchase decision for energy-efficient products.
- Also, by disclosing such data, any “unreasonable/impractical” default setting which does not reflect real-life usage pattern would become visible, therefore, this makes correction process easy and fair.

Network Environment During Sleep Mode

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Concerns for ENERGY STAR Tier 1 Spec

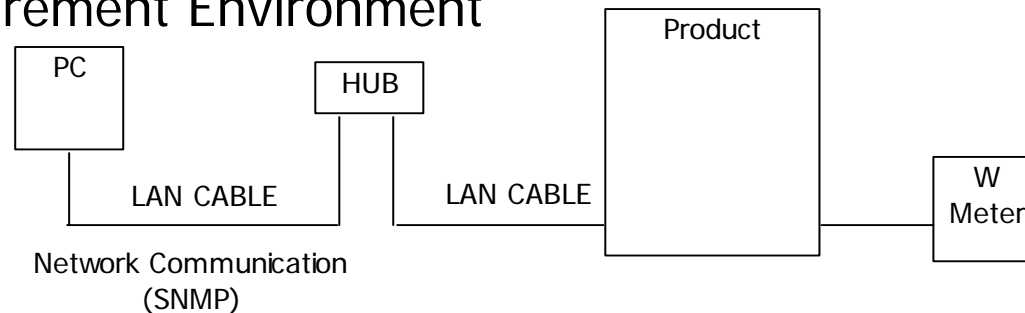
Critical Issue for Existing ES Tier 1 Specification:
There is no measurement guideline set for “Network Environment “



There exists certain products in marketplace with **lower TEC data** calculated with a condition which is not reflecting actual network environment.

Typical PC Network environment, such as Windows OS, utilizes “Network Communication (SNMP: Simple Network Management Protocol) signal”

TEC Measurement Environment

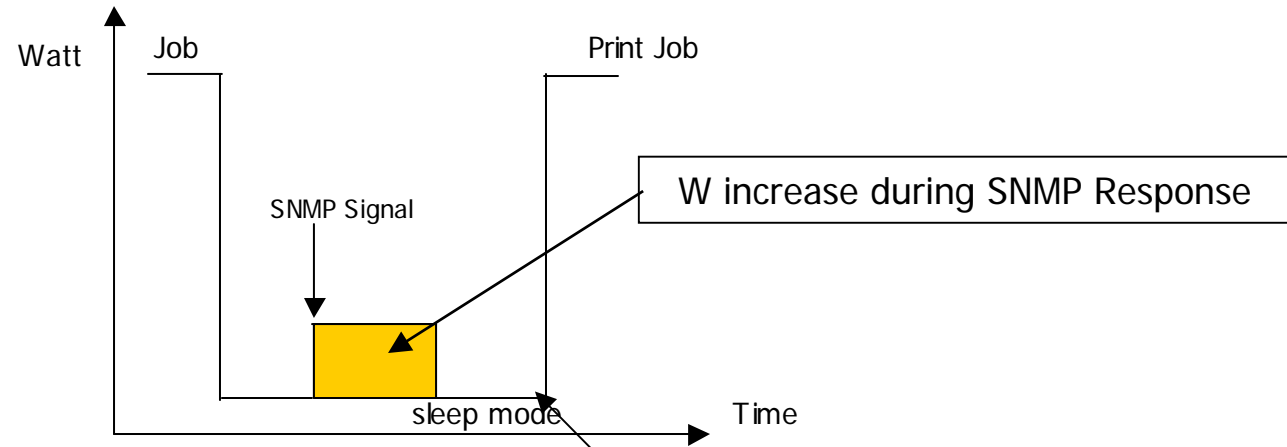


Under certain manufacturer's testing, SNMP signal from PC is intentionally disabled during TEC measurement, achieving better result

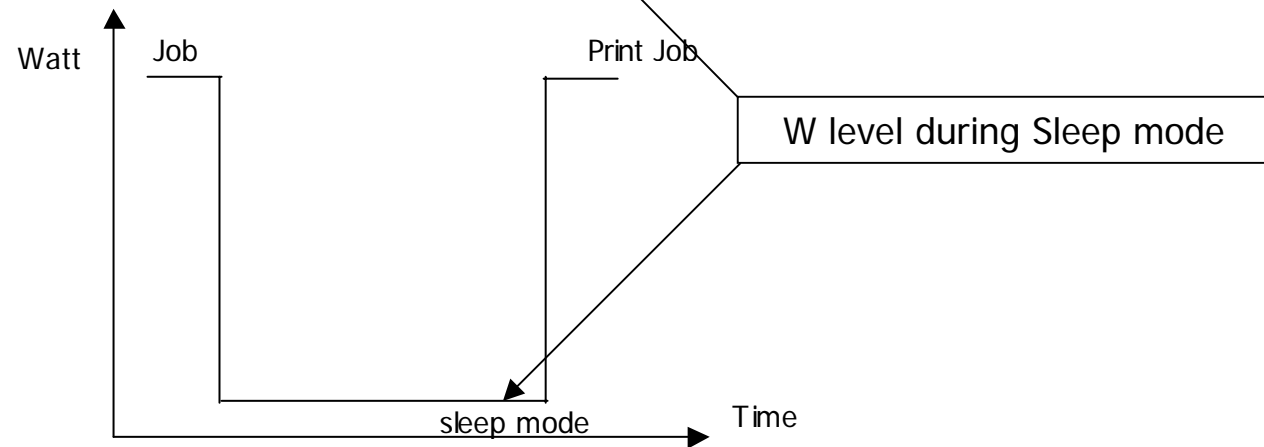
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Network communication (SNMP) and Sleep Mode Energy

SNMP Enabled



SNMP Disabled



Recommendation for Network Environment during Sleep Mode

In order to minimize the gap between TEC data and real-life energy consumption, it is important to clearly define measurement condition for network environment during Sleep Mode.

For details, please refer to the proposal submitted by JBMIA. Ricoh supports the measurement condition outlined in JBMIA's comment.