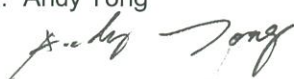





<b>TEST REPORT</b> <b>PPP 10040B:2013 Rev. 01</b> <b>TÜV SÜD Test Report for</b> <b>ENERGY STAR® Program Requirements for Imaging Equipment, Version 2.0</b>	
Report reference No. ....:	68.182.14.107.01
Date of issue .....	2014-09-12
Project handler.....:	Andy Tong
Testing laboratory .....	TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Address .....	Building12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District, 518052 Shenzhen CHINA
Testing Procedure .....	<input type="checkbox"/> TMP <input type="checkbox"/> WMTL <input type="checkbox"/> SMTL <input type="checkbox"/> LTR
Testing location.....:	as above
Client .....	Frama AG
Client number.....:	89796
Address .....	Dorfstrasse 6, 3438 Lauperswil, SWITZERLAND
Contact person.....:	Christoph Reimann
Standard.....:	This TÜV SÜD test report form is based on the following requirements: ENERGY STAR Program Requirements for Imaging Product Version 2.0 Rev. June 2013  Test method: ENERGY STAR Imaging Equipment Test Method (Rev. Jun-2013)
TRF originated by. ....:	TÜV SÜD Product Service GmbH, Mr. Alex Kong
Copyright blank test report.....:	This test report is based on the content of the standard (see above). The test report considered selected clauses of the a.m. standard(s) and experience gained with product testing. It was prepared by TÜV SÜD Product Service GmbH.  TÜV SÜD Group takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.
Test procedure .....	<input type="checkbox"/> ENERGY STAR certification <input checked="" type="checkbox"/> without certification
Non-standard test method.....:	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, see details under Summary
National deviations.....:	None
Number of pages (Report).....:	32
Number of pages (Attachments).....:	2
Compiled by.....: Andy Tong (+ signature) 	Approved by.....: Daniel Chen (+ signature) 





Test sample.....	: One ( Series production)										
Type of test object .....	: Mailing Machine										
Trademark .....	: Frama Matrix F										
Model and/or type reference .....	: Matrix F22										
Rating(s) .....	: 24VDC, 700mA										
	Remark: The Mailing Machine Is Supplied By An External Adaptor, Model Name: SAW40-24.0-1600, Manufactured By Fujikon International Ltd.With Following Rating: - Input: 100-240VAC, 50/60Hz, 1.5A - Output: 24VDC, 1600mA										
Manufacturer .....	: Same as client										
Manufacturer number.....	: Same as client										
Address .....	: Same as client										
Sub-contractors/ tests (clause) .....	: N										
Name .....	: N										
Order description.....	<table border="1"> <tr> <td><input checked="" type="checkbox"/></td> <td>Complete test according to TRF</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Partial test according to manufacturer's specifications</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Preliminary test</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Spot check</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Others: Verification test</td> </tr> </table>	<input checked="" type="checkbox"/>	Complete test according to TRF	<input type="checkbox"/>	Partial test according to manufacturer's specifications	<input type="checkbox"/>	Preliminary test	<input type="checkbox"/>	Spot check	<input type="checkbox"/>	Others: Verification test
<input checked="" type="checkbox"/>	Complete test according to TRF										
<input type="checkbox"/>	Partial test according to manufacturer's specifications										
<input type="checkbox"/>	Preliminary test										
<input type="checkbox"/>	Spot check										
<input type="checkbox"/>	Others: Verification test										
Date of order.....	: 2014-08-27										
Date of receipt of test item .....	: 2014-08-28										
Date(s) of performance of test .....	: 2014-08-28 to 2014-09-12										
Test item particulars:											
Target market of product.....	<input type="checkbox"/> North America, Taiwan (115V, 60Hz) <input checked="" type="checkbox"/> Europe, Australia, New Zealand (230V, 50Hz) <input type="checkbox"/> Japan (100V, 50/60Hz) Client also required to test with voltage 115V/60Hz although they are not intended to sell in North America and Taiwan markets.										
Product type.....	<input type="checkbox"/> Printer <input type="checkbox"/> Scanner <input type="checkbox"/> Copier <input type="checkbox"/> Facsimile (Fax) Machine <input type="checkbox"/> Multifunction Device (MFD) <input type="checkbox"/> Digital Duplicator <input checked="" type="checkbox"/> Mailing Machine										

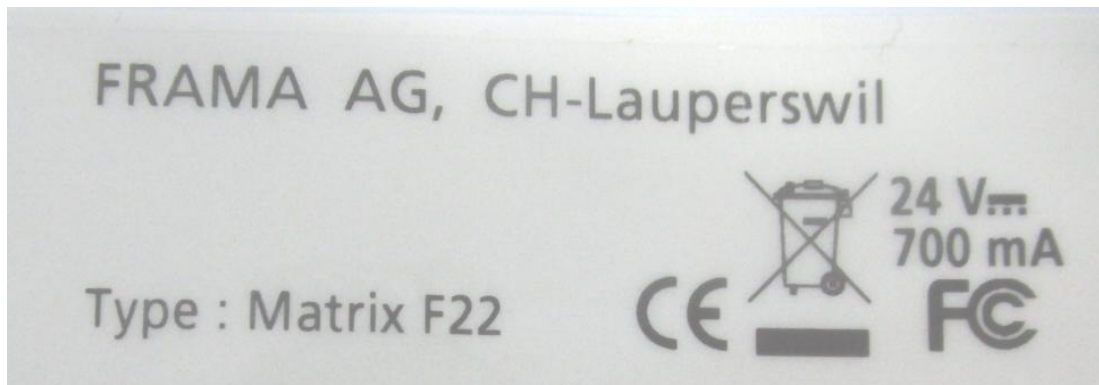


Color Capability..... :	<input type="checkbox"/> colour <input checked="" type="checkbox"/> monochrome
Power source ..... :	<input checked="" type="checkbox"/> Ac Power <input type="checkbox"/> USB <input type="checkbox"/> Power over Ethernet (PoE) <input type="checkbox"/> USB Plus Power <input type="checkbox"/> IEEE 1394 <input type="checkbox"/> Other:
Power supply ..... :	<input type="checkbox"/> Internal power supply <input checked="" type="checkbox"/> External power supply Type: Ac/Dc Nameplate output power - P <sub>OUT</sub> (W): 38.4W (24VDC, 1600mA) Performance level: V
Product Requirements ..... :	<input type="checkbox"/> Typical Electricity Consumption (TEC) <input checked="" type="checkbox"/> Operational Mode (OM)
Marking Technologies ..... :	<input type="checkbox"/> Direct Thermal (DT) <input type="checkbox"/> Dye Sublimation (DS) <input type="checkbox"/> Electro-photographic (EP) <input type="checkbox"/> Impact <input checked="" type="checkbox"/> Ink Jet (IJ) <input type="checkbox"/> High Performance IJ <input type="checkbox"/> Solid Ink (SI) <input type="checkbox"/> Stencil <input type="checkbox"/> Thermal Transfer (TT)
Media Format Size ..... :	<input checked="" type="checkbox"/> Smal <input type="checkbox"/> Standard <input type="checkbox"/> Large <input type="checkbox"/> A3-capability <input type="checkbox"/> Continious form
Network or Data Connection ..... :	<input checked="" type="checkbox"/> Wired: 100 Mb/s Ethernet (RJ45 network connection) <input type="checkbox"/> Fax Modem <input type="checkbox"/> Wireless : N <input type="checkbox"/> None
Cordless Handset..... :	<input type="checkbox"/>
Memory (internal)..... (GB):	None
Scanner ..... :	<input type="checkbox"/>

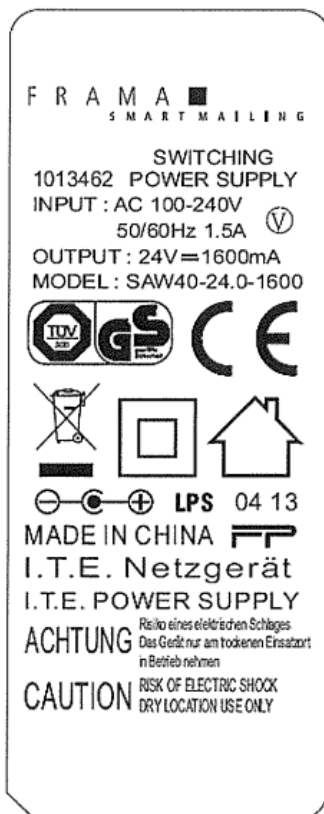


Touch Panel Display..... :	Yes		
Internal Disk Drives..... :	None		
Digital Front-end (DFE) functionality .....	<input type="checkbox"/> Type 1 <input type="checkbox"/> Type 2  Features: <input type="checkbox"/> Network connectivity in various environments; <input type="checkbox"/> Mailbox functionality <input type="checkbox"/> Job queue management <input type="checkbox"/> Machine management (e.g., waking the imaging equipment from a reduced power state) <input type="checkbox"/> Advanced graphic user-interface (UI) <input type="checkbox"/> Ability to initiate communication with other host servers and client computers (e.g., scanning to email, polling remote mailboxes for jobs) <input type="checkbox"/> Ability to post-process pages (e.g., reformatting pages prior to printing) <input type="checkbox"/> Auxiliary Processing Accelerator (APA) <input type="checkbox"/> 2 ore more CPS's		
Attachments: 1. Test Equipment List 2. Constructional Data Form			
General remarks: "(see remark #)" refers to a remark appended to the report. "(see appended table)" refers to a table appended to the report. Throughout this report a comma is used as the decimal separator. The test results presented in this report relate only to the object tested. This report shall not be reproduced except in full without the written approval of the testing laboratory.			
Summary of testing: <input type="checkbox"/> deviation(s) found <input checked="" type="checkbox"/> no deviations found  The specification is met .  If additional information is necessary, please provide  <table border="1"> <tr> <td><b>Specification Effective Date</b></td> </tr> <tr> <td>January 1, 2014</td> </tr> </table>		<b>Specification Effective Date</b>	January 1, 2014
<b>Specification Effective Date</b>			
January 1, 2014			

Copy of marking plate:



Label for mailing machine



Label for EPS

Picture of the product:



Figure 1 – Outside view 1



Figure 2 – Outside view 2



Figure 3 – Outside view 3

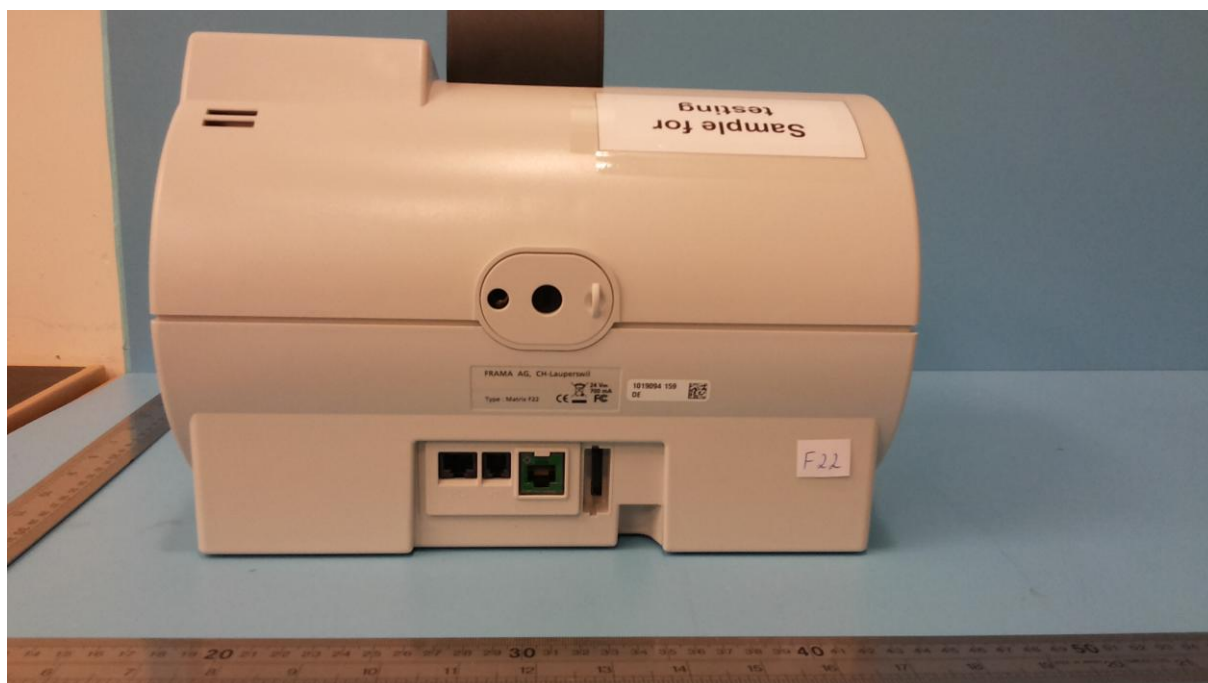


Figure 4 – Outside view 4



Figure 5 – Outside view 5

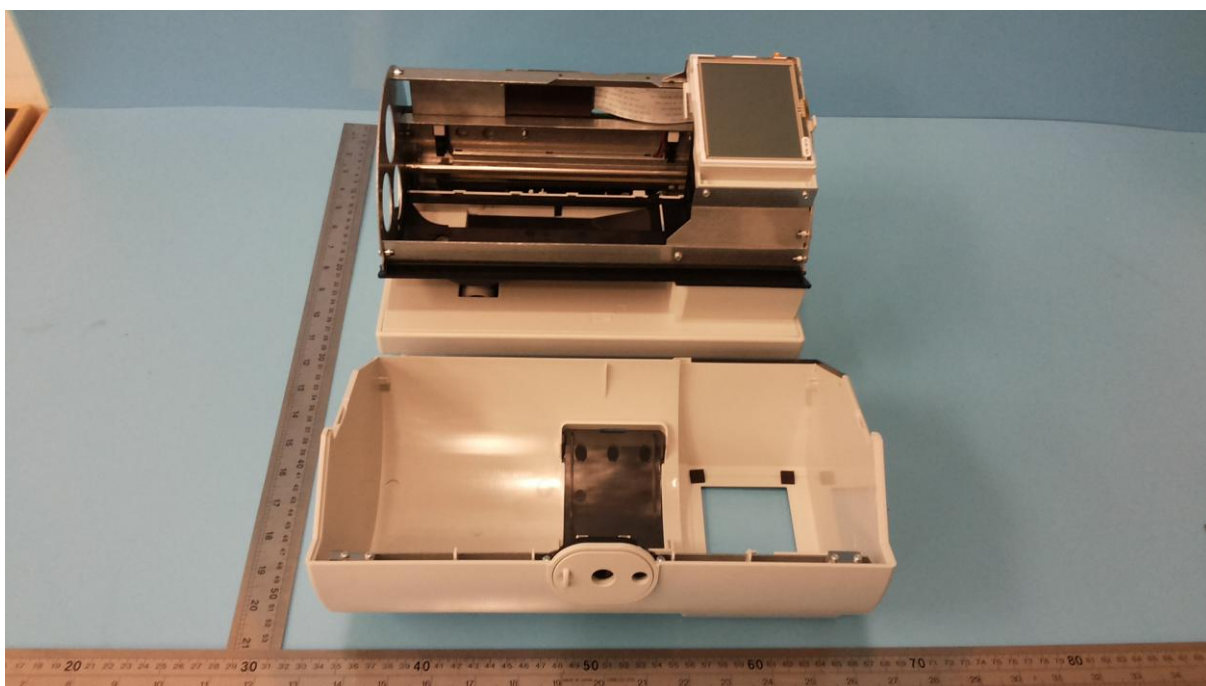


Figure 6 – Internal view 1



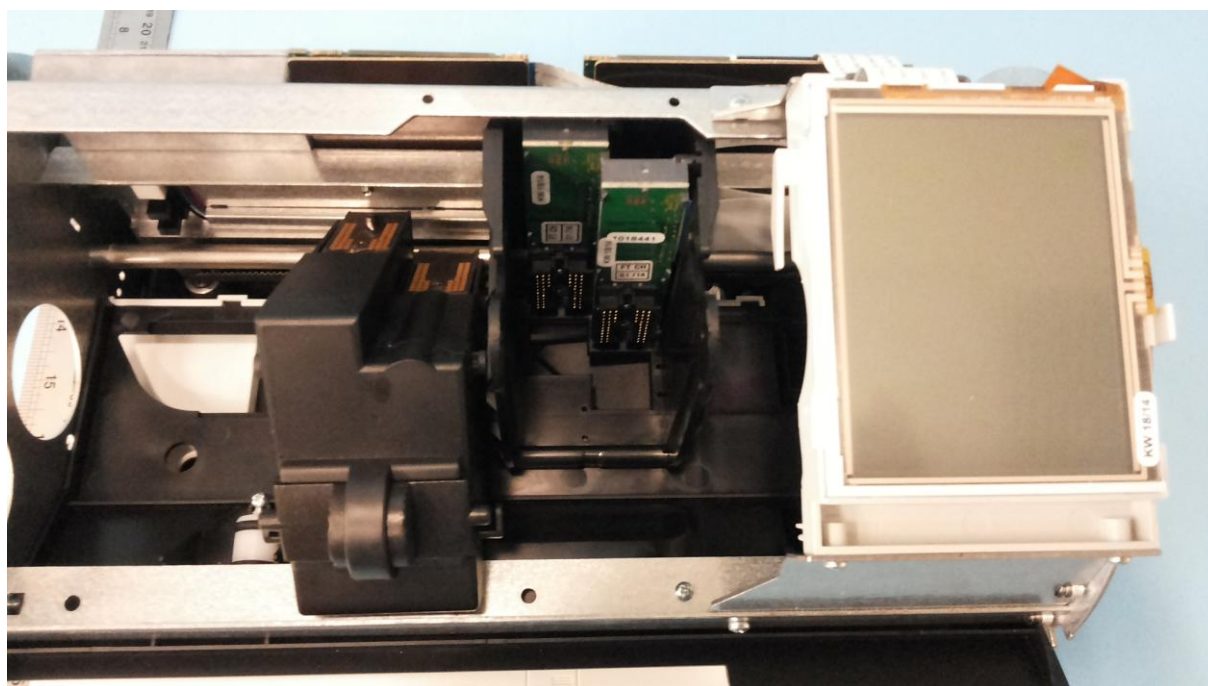


Figure 7 - Internal view 2

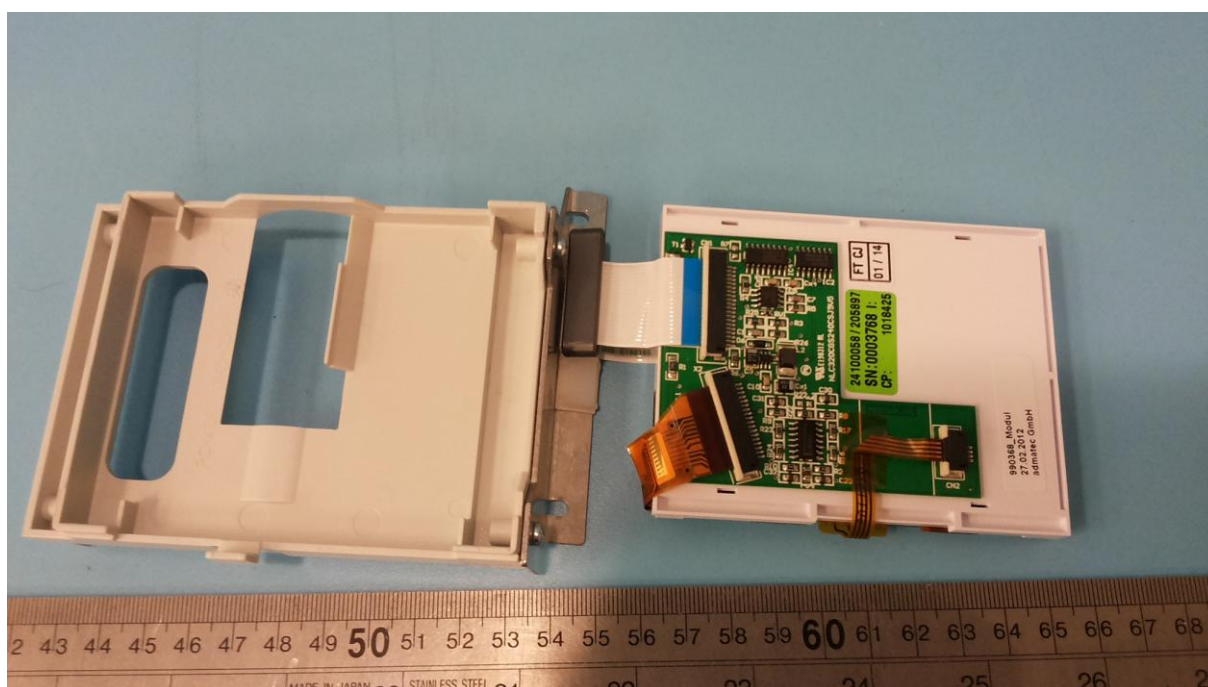


Figure 8 - Internal view 3

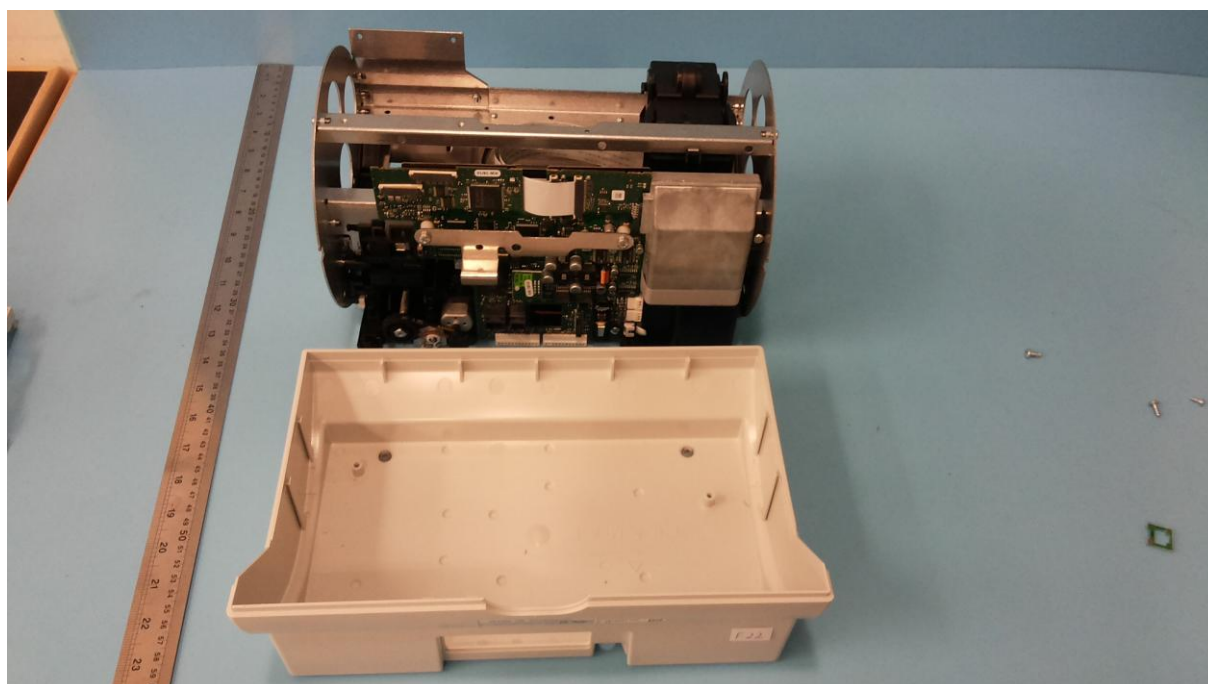


Figure 9 – PCB under touch panel display

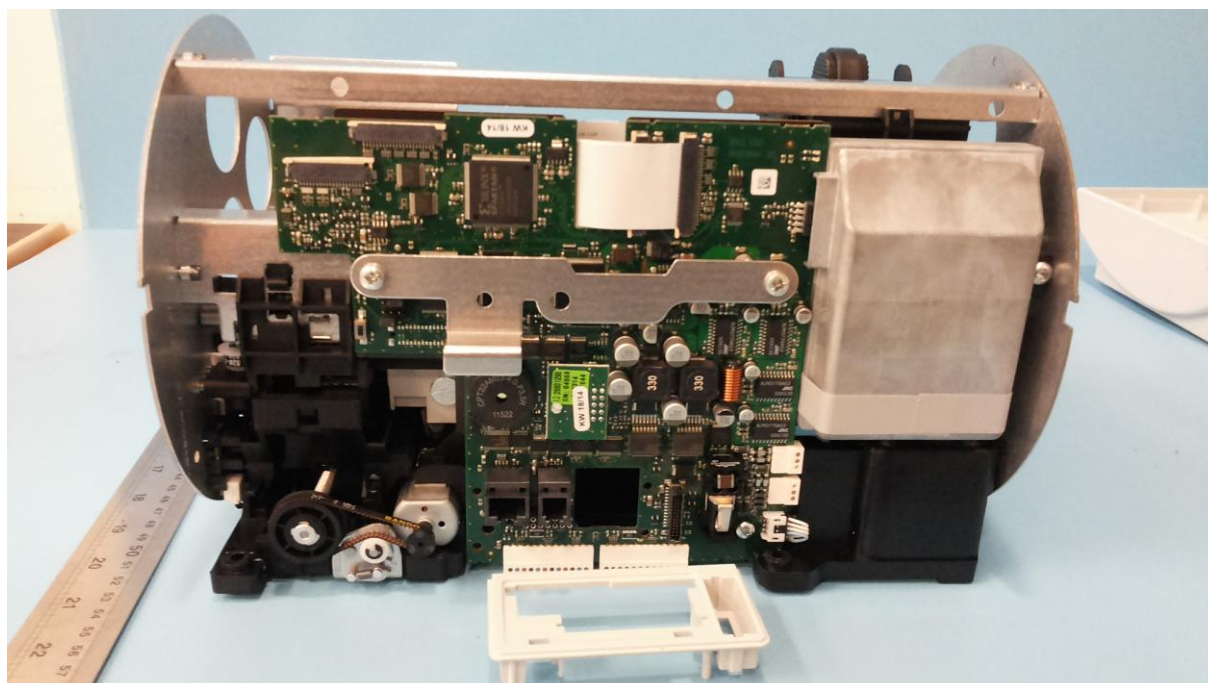


Figure 10 – Main board view



Figure 11 – Outside view 1 of external power supply



Figure 12 – Outside view 2 of external power supply



Figure 13 – Internal view 1 of external power supply

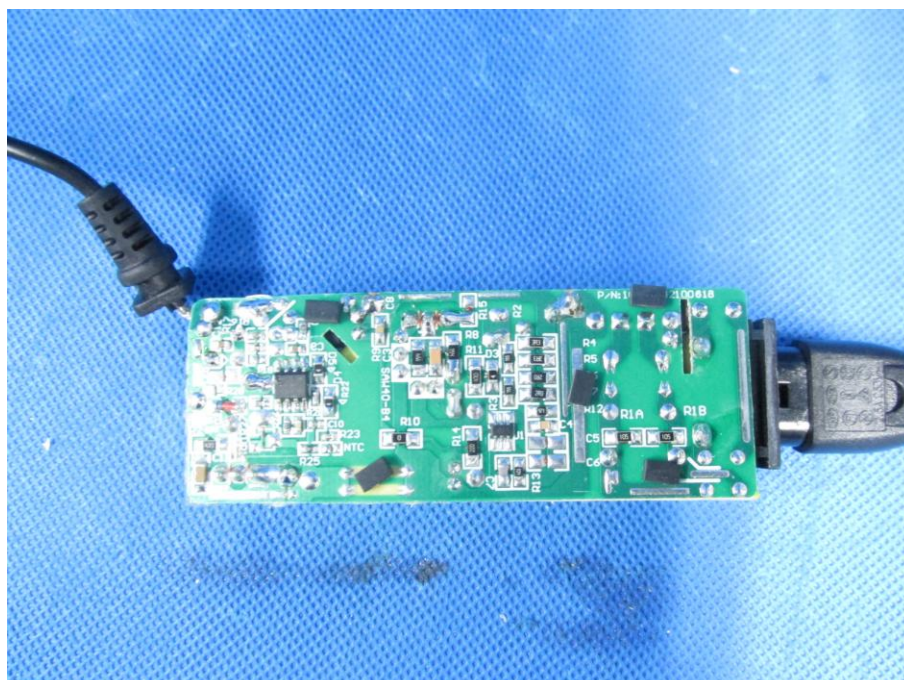


Figure 14 – Internal view 2 of external power supply

<p>Characteristic data (not shown on the marking plate)</p> <p>Weight: Approx.6.8kg</p>
<p>Name and address of Factory (only if certification is provided)</p> <p>Frama AG Dorfstrasse 6, 3438 Lauperswil, SWITZERLAND</p>
<p>Purpose of the product (Description of intended use)</p> <p>Mailing Machine</p>
<p>Possible test case verdicts:</p> <ul style="list-style-type: none"><li>- test case does not apply to the test object ..... : N(.A.) / not included in the order</li><li>- test object does meet the requirement ..... : P(ass)</li><li>- test object does not meet the requirement..... : F(ail)</li></ul> <p>Possible suffixes to the verdicts:</p> <ul style="list-style-type: none"><li>- suffix for detailed information for the client.....: - C(omment)</li><li>- suffix for important information for factory inspection...: - M(anufacturing)</li></ul>



Clause	Requirement – Test	Measuring result – Remark	Verdict
<b>3</b>	<b>Qualification criteria</b>		P
<b>3.1</b>	<b>Significant Digits and Rounding</b>		—
3.1.1	All calculations shall be carried out with actual measured or observed values.		P
3.1.2	Unless otherwise specified, compliance with specification limits shall be evaluated using exact values without any benefit from further rounding.		P
3.1.3	Directly measured or calculated values that are submitted for reporting on the ENERGY STAR website shall be rounded to the nearest significant digit as expressed in the corresponding specification limit.		P
<b>3.2</b>	<b>General Requirements</b>		—
3.2.1	External Power Supply (EPS):		
i	i. If the product is shipped with a <b>single-voltage EPS</b> , the EPS shall meet the level V performance requirements under the International Efficiency Marking Protocol and include the level V marking. Additional information on the Marking Protocol is available at <a href="http://www.energystar.gov/powersupplies">www.energystar.gov/powersupplies</a> .	See table 5.1, 5.2 and attachment 2 for details	P
	<ul style="list-style-type: none"> <li>• <b>Single-output EPS</b> shall meet level V requirements when tested using the <b>Test Method for Calculating the Energy Efficiency of Single-Voltage External Ac-Dc and Ac-Ac Power Supplies, Aug. 11, 2004</b>.</li> </ul>		P
	<ul style="list-style-type: none"> <li>• <b>Multiple-voltage EPS</b> shall meet the level V requirements when tested using the EPRI 306 <b>Generalized Internal Power Supply Efficiency Test Protocol, Rev. 6.6</b>. Power Supply data generated using Rev. 6.4.2 (as required in Version 1.2) is acceptable provided the test was conducted prior to the effective date of Version 2.0.</li> </ul>		N
ii	ii. The above requirements shall not apply to any EPSs shipped with a Digital Front End (DFE).		N
3.2.2	Additional Cordless Handset:		N
	Fax machines and MFDs with fax capability that are sold with additional cordless handsets shall use an ENERGY STAR qualified handset, or one that meets the ENERGY STAR Telephony specification when tested to the ENERGY STAR test method on the date the Imaging Equipment product is qualified as ENERGY STAR. The ENERGY STAR specification and test method for telephony products may be found at <a href="http://www.energystar.gov/products">www.energystar.gov/products</a> .	No Cordless Handset	N
3.2.3	Functionality Integrated MFD:		N
	If an MFD consists of a set of functionally integrated components (i.e., the MFD is not a single physical device), the sum of the measured energy or power consumption for all components shall be less than the relevant MFD energy or power consumption requirements for ENERGY STAR qualification.	Not MFD	N
3.2.4	DFE Requirements:		N

Clause	Requirement – Test	Measuring result – Remark	Verdict														
	<p>The Typical Electricity Consumption (TEC<sub>DFE</sub>) of a Type 1 or Type 2 DFE sold with an Imaging Equipment product at the time of sale shall be calculated using Equation 1 for a DFE without Sleep Mode or Equation 2 for a DFE with Sleep Mode.</p> <p><b>Equation 1: TEC<sub>DFE</sub> Calculation for Digital Front Ends without Sleep Mode</b></p> $TEC_{DFE} = \frac{168 \times P_{DFE\_READY}}{1000}$ <p>Where:</p> <ul style="list-style-type: none"> <li>TEC<sub>DFE</sub> is the typical weekly energy consumption for DFEs, expressed in kilowatt-hours (kWh) and rounded to the nearest 0.1 kWh;</li> <li>P<sub>DFE_READY</sub> is Ready State power measured in the test procedure in watts.</li> </ul> <p><b>Equation 2: TEC<sub>DFE</sub> Calculation for Digital Front Ends with Sleep Mode</b></p> $TEC_{DFE} = \frac{(45 \times P_{DFE\_READY}) + (123 \times P_{DFE\_SLEEP})}{1000}$ <p>Where:</p> <ul style="list-style-type: none"> <li>TEC<sub>DFE</sub> is the typical weekly energy consumption for DFEs, expressed in kilowatt-hours (kWh) and rounded to the nearest 0.1 kWh;</li> <li>P<sub>DFE_READY</sub> is the DFE Ready State power measured in the test procedure in watts.</li> <li>P<sub>DFE_SLEEP</sub> is the DFE Sleep Mode power measured in the test procedure in watts.</li> </ul>	No DFE	N														
	<p>The resulting TEC<sub>DFE</sub> value shall be less than or equal to the maximum TEC<sub>DFE</sub> requirement specified in Table 2 for the given DFE type.</p> <p>Table 2: Maximum TEC<sub>DFE</sub> Requirements for Type 1 and Type 2 DFEs</p> <table border="1"> <thead> <tr> <th rowspan="2">DFE Category</th> <th rowspan="2">Category Description</th> <th colspan="2">Maximum TEC<sub>DFE</sub> (kWh/week, rounded to the nearest 0.1 kWh/week for reporting)</th> </tr> <tr> <th>Type 1 DFE</th> <th>Type 2 DFE</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>All DFEs that do not meet the definition of Category B will be considered under Category A for ENERGY STAR qualification.</td> <td>10.9</td> <td>8.7</td> </tr> <tr> <td>B</td> <td>To qualify under Category B DFEs must have: 2 or more physical CPUs or 1 CPU and ≥ 1 discrete Auxiliary Processing Accelerators (APAs)</td> <td>22.7</td> <td>18.2</td> </tr> </tbody> </table>	DFE Category	Category Description	Maximum TEC <sub>DFE</sub> (kWh/week, rounded to the nearest 0.1 kWh/week for reporting)		Type 1 DFE	Type 2 DFE	A	All DFEs that do not meet the definition of Category B will be considered under Category A for ENERGY STAR qualification.	10.9	8.7	B	To qualify under Category B DFEs must have: 2 or more physical CPUs or 1 CPU and ≥ 1 discrete Auxiliary Processing Accelerators (APAs)	22.7	18.2		N
DFE Category	Category Description			Maximum TEC <sub>DFE</sub> (kWh/week, rounded to the nearest 0.1 kWh/week for reporting)													
		Type 1 DFE	Type 2 DFE														
A	All DFEs that do not meet the definition of Category B will be considered under Category A for ENERGY STAR qualification.	10.9	8.7														
B	To qualify under Category B DFEs must have: 2 or more physical CPUs or 1 CPU and ≥ 1 discrete Auxiliary Processing Accelerators (APAs)	22.7	18.2														
	Evaluation TEC <sub>DFE</sub> : TEC <sub>DFE</sub> ≤ Maximum TEC <sub>DFE</sub>		N														
i	The TEC value or Ready State power of a DFE that meets the maximum TEC <sub>DFE</sub> requirements should be excluded or subtracted from the TEC energy and OM power measurements of the Imaging Equipment product as appropriate.		N														
ii	Section 3.3.2i provides further detail on subtracting TEC DFE values from TEC products;		N														
iii	Section 3.4.2 provides further detail for excluding DFEs from OM Sleep and Standby levels.		N														
iv	DFEs that fail to meet these requirements will not only <u>not</u> have their power subtracted from that of the Imaging Equipment product as a whole, but will disqualify the product from ENERGY STAR. Therefore, such DFEs may not be sold with ENERGY STAR qualified Imaging Equipment.		N														
<b>3.3</b>	<b>Requirement for Typical Electricity Consumption (TEC) Products</b>		N														



Clause	Requirement – Test	Measuring result – Remark	Verdict																
3.3.1	Automatic Duplexing Capability:		N																
i	<p>For all copiers, MFDs, and printers subject to the TEC test method, automatic duplexing capability shall be present at the time of purchase as specified in Table 3 and Table 4. Printers whose intended function is to print on special single-sided media for the purpose of single sided printing (e.g., release coated paper for labels, direct thermal media, etc.) are exempt from this requirement.</p> <p style="text-align: center;"><b>Table 3: Automatic Duplexing Requirements for Color TEC Copiers, MFDs, and Printers</b></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Monochrome Product Speed, <i>s</i>, as calculated in the Test Method (ipm)</th> <th>Automatic Duplexing Requirement</th> </tr> </thead> <tbody> <tr> <td><math>s \leq 19</math></td> <td>None</td> </tr> <tr> <td><math>19 &lt; s &lt; 35</math></td> <td>integral to the base product or optional accessory</td> </tr> <tr> <td><math>s \geq 35</math></td> <td>Integral to the base product</td> </tr> </tbody> </table> <p style="text-align: center;"><b>Table 4: Automatic Duplexing Requirements for all Monochrome TEC Copiers, MFDs, and Printers</b></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Monochrome Product Speed, <i>s</i>, as Calculated in the Test Method (ipm)</th> <th>Automatic Duplexing Equipment</th> </tr> </thead> <tbody> <tr> <td><math>s \leq 24</math></td> <td>None</td> </tr> <tr> <td><math>24 &lt; s &lt; 37</math></td> <td>Integral to be base product or optional accessory</td> </tr> <tr> <td><math>s \geq 37</math></td> <td>Integral to the base product</td> </tr> </tbody> </table>	Monochrome Product Speed, <i>s</i> , as calculated in the Test Method (ipm)	Automatic Duplexing Requirement	$s \leq 19$	None	$19 < s < 35$	integral to the base product or optional accessory	$s \geq 35$	Integral to the base product	Monochrome Product Speed, <i>s</i> , as Calculated in the Test Method (ipm)	Automatic Duplexing Equipment	$s \leq 24$	None	$24 < s < 37$	Integral to be base product or optional accessory	$s \geq 37$	Integral to the base product	OM test method	N
Monochrome Product Speed, <i>s</i> , as calculated in the Test Method (ipm)	Automatic Duplexing Requirement																		
$s \leq 19$	None																		
$19 < s < 35$	integral to the base product or optional accessory																		
$s \geq 35$	Integral to the base product																		
Monochrome Product Speed, <i>s</i> , as Calculated in the Test Method (ipm)	Automatic Duplexing Equipment																		
$s \leq 24$	None																		
$24 < s < 37$	Integral to be base product or optional accessory																		
$s \geq 37$	Integral to the base product																		
ii	<p>If a product is not certain to be bundled with an automatic duplex tray, the partner must make clear in their product literature, on their Web site, and in institutional sales literature that although the product meets the ENERGY STAR energy efficiency requirements, the product only fully qualifies for ENERGY STAR when bundled with or used with a duplexer tray. EPA asks that partners use the following language to convey this message to customers:                      "Achieves ENERGY STAR energy savings; product fully qualifies when packaged with (or used with) a duplex tray."</p>		N																
3.3.2	Typical Electricity Consumption (TEC)		N																





Clause	Requirement – Test	Measuring result – Remark	Verdict																																																					
	<p>Calculated Typical Electricity Consumption (TEC) per Equation 3 or Equation 4 shall be less than or equal to the Maximum TEC Requirement (TEC<sub>MAX</sub>) specified in Equation 6.</p> <p><b>Equation 6: Maximum TEC Requirement Calculation</b></p> $TEC_{MAX} = TEC_{REQ} + Adder_{A3}$ <p>Where:</p> <ul style="list-style-type: none"> <li>• <i>TEC<sub>MAX</sub></i> is the maximum TEC requirement in kilowatt-hours per week (kWh/wk), rounded to the nearest 0.1 kWh/wk for reporting;</li> <li>• <i>TEC<sub>REQ</sub></i> is the TEC requirement specified in Table 5, in kWh; and</li> <li>• <i>Adder<sub>A3</sub></i> is a 0.3 kWh/wk allowance provided for A3-capable products.</li> </ul> <p><b>Table 5: TEC Requirement Before A3 Allowance (If Applicable)</b></p> <table border="1" data-bbox="328 786 1045 1653"> <thead> <tr> <th data-bbox="333 792 491 958">Color Capability</th> <th data-bbox="496 792 719 958">Monochrome Product Speed, <i>s</i>, as Calculated in the Test Method (ipm)</th> <th data-bbox="724 792 1040 958">TEC<sub>REQ</sub> (kWh/week, to the nearest 0.1 kWh/week for reporting)</th> </tr> </thead> <tbody> <tr> <td data-bbox="333 965 491 1171" rowspan="6">Monochrome Non-MFD</td> <td data-bbox="496 965 719 987"><math>s \leq 5</math></td> <td data-bbox="724 965 1040 987">0.3</td> </tr> <tr> <td data-bbox="496 994 719 1016"><math>5 &lt; s \leq 20</math></td> <td data-bbox="724 994 1040 1016"><math>(s \times 0.04) + 0.1</math></td> </tr> <tr> <td data-bbox="496 1023 719 1046"><math>20 &lt; s \leq 30</math></td> <td data-bbox="724 1023 1040 1046"><math>(s \times 0.06) - 0.3</math></td> </tr> <tr> <td data-bbox="496 1052 719 1075"><math>30 &lt; s \leq 40</math></td> <td data-bbox="724 1052 1040 1075"><math>(s \times 0.11) - 1.8</math></td> </tr> <tr> <td data-bbox="496 1081 719 1104"><math>40 &lt; s \leq 65</math></td> <td data-bbox="724 1081 1040 1104"><math>(s \times 0.16) - 3.8</math></td> </tr> <tr> <td data-bbox="496 1111 719 1133"><math>65 &lt; s \leq 90</math></td> <td data-bbox="724 1111 1040 1133"><math>(s \times 0.2) - 6.4</math></td> </tr> <tr> <td data-bbox="333 1140 491 1323" rowspan="5">Monochrome MFD</td> <td data-bbox="496 1146 719 1169"><math>s &gt; 90</math></td> <td data-bbox="724 1146 1040 1169"><math>(s \times 0.55) - 37.9</math></td> </tr> <tr> <td data-bbox="496 1176 719 1198"><math>s \leq 5</math></td> <td data-bbox="724 1176 1040 1198">0.4</td> </tr> <tr> <td data-bbox="496 1205 719 1227"><math>5 &lt; 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s \leq 75</math></td> <td data-bbox="724 1422 1040 1444"><math>(s \times 0.2) - 2.15</math></td> </tr> <tr> <td data-bbox="496 1451 719 1473"><math>s &gt; 75</math></td> <td data-bbox="724 1451 1040 1473"><math>(s \times 0.7) - 39.65</math></td> </tr> <tr> <td data-bbox="496 1480 719 1503"><math>s \leq 10</math></td> <td data-bbox="724 1480 1040 1503">1.5</td> </tr> <tr> <td data-bbox="496 1509 719 1532"><math>10 &lt; s \leq 15</math></td> <td data-bbox="724 1509 1040 1532"><math>(s \times 0.1) + 0.5</math></td> </tr> <tr> <td data-bbox="496 1538 719 1561"><math>15 &lt; s \leq 30</math></td> <td data-bbox="724 1538 1040 1561"><math>(s \times 0.13) + 0.05</math></td> </tr> <tr> <td data-bbox="496 1568 719 1590"><math>30 &lt; s \leq 70</math></td> <td data-bbox="724 1568 1040 1590"><math>(s \times 0.2) - 2.05</math></td> </tr> <tr> <td data-bbox="496 1597 719 1619"><math>70 &lt; s \leq 80</math></td> <td data-bbox="724 1597 1040 1619"><math>(s \times 0.7) - 37.05</math></td> </tr> <tr> <td data-bbox="496 1626 719 1648"><math>s &gt; 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Clause	Requirement – Test	Measuring result – Remark	Verdict
i	For Imaging Equipment with a Type 2 DFE that meet the Type 2 DFE maximum $TEC_{DFE}$ requirement in Table 2, the measured energy consumption of the DFE shall be divided by 0.80 to account for internal power supply losses and then excluded when comparing the product's measured TEC value to $TEC_{MAX}$ . The DFE shall not interfere with the ability of the Imaging Equipment to enter or exit its lower-power modes. The energy use of a DFE can only be excluded if it meets the DFE definition in Section 1 and is a separate processing unit that is capable of initiating activity over the network.	No DFE	N
ii	The DFE shall not interfere with the ability of the Imaging Equipment to enter or exit its lower-power modes.		N
iii	The energy use of a DFE can only be excluded if it meets the Type 2 DFE definition in Section 1 and is a separate processing unit that is capable of initiating activity over the network.		N
iv	<p>For printers, fax machines, digital duplicators with print capability, and MFDs with print capability, TEC shall be calculated per Equation 3.</p> <p><b>Equation 3: TEC Calculation for Printers, Fax Machines, Digital Duplicators with Print Capability, and MFDs with Print Capability</b></p> $TEC = 5 \times \{ E_{JOB\_DAILY} + (2 \times E_{FINAL}) + [ 24 - (N_{JOBS} \times 0.25) - (2 \times t_{FINAL}) ] \times E_{SLEEP} / t_{SLEEP} \} + 48 \times E_{SLEEP} / t_{SLEEP}$ <p>Where:</p> <ul style="list-style-type: none"> <li>• <math>TEC</math> is the typical weekly energy consumption for printers, fax machines, digital duplicators with print capability, and MFDs with print capability, expressed in kilowatt-hours (kWh) and rounded to the nearest 0.1 kWh;</li> <li>• <math>E_{JOB\_DAILY}</math> is the daily job energy, as calculated per Equation 5, converted to kWh;</li> <li>• <math>E_{FINAL}</math> is the final energy, as measured in the test procedure in kWh;</li> <li>• <math>N_{JOBS}</math> is the number of jobs per day, as calculated in the test procedure,</li> <li>• <math>t_{FINAL}</math> is the final time to Sleep, as measured in the test procedure, converted to hours;</li> <li>• <math>E_{SLEEP}</math> is the Sleep energy, as measured in the test procedure, converted to kWh; and</li> <li>• <math>t_{SLEEP}</math> is the Sleep time, as measured in the test procedure, converted to hours.</li> </ul>		-



Clause	Requirement – Test	Measuring result – Remark	Verdict
v	<p>For copiers, digital duplicators without print capability, and MFDs without print capability, TEC shall be calculated per Equation 4.</p> <p style="text-align: center;"><b>Equation 4: TEC Calculation for Copiers, Digital Duplicators without Print Capability, and MFDs without Print Capability</b></p> $TEC = 5 \times \{ E_{JOB\_DAILY} + (2 \times E_{FINAL}) + [24 - (N_{JOBS} \times 0.25) - (2 \times t_{FINAL})] \times E_{AUTO} / t_{AUTO} \} + 48 \times E_{AUTO} / t_{AUTO}$ <p>Where:</p> <ul style="list-style-type: none"> <li>• TEC is the typical weekly energy consumption for copiers, digital duplicators without print capability, and MFDs without print capability, expressed in kilowatt-hours (kWh) and rounded to the nearest 0.1 kWh;</li> <li>• E<sub>JOB_DAILY</sub> is the daily job energy, as calculated per Equation 5, in kWh;</li> <li>• E<sub>FINAL</sub> is the final energy, as measured in the test procedure, converted to kWh;</li> <li>• N<sub>JOBS</sub> is the number of jobs per day, as calculated in the test procedure;</li> <li>• t<sub>FINAL</sub> is the final time to Sleep, as measured in the test procedure, converted to hours;</li> <li>• E<sub>AUTO</sub> is the Auto-off energy, as measured in the test procedure, converted to kWh; and</li> <li>• t<sub>AUTO</sub> is the Auto-off time, as measured in the test procedure, converted to hours.</li> </ul>		-
vi	<p>Daily Job Energy shall be calculated per Equation 5.</p> <p style="text-align: center;"><b>Equation 5: Daily Job Energy Calculation for TEC Products</b></p> $E_{JOB\_DAILY} = (2 \times E_{JOB1}) + [(N_{JOBS} - 2) \times (E_{JOB2} + E_{JOB3} + E_{JOB4}) / 3]$ <p>Where:</p> <ul style="list-style-type: none"> <li>• E<sub>JOB_DAILY</sub> is the daily job energy, expressed in kilowatt-hours (kWh);</li> <li>• E<sub>JOBi</sub> is the energy of the ith job, as measured in the test procedure, in kWh; and</li> <li>• N<sub>JOBS</sub> is the number of jobs per day, as calculated in the test procedure.</li> </ul>		-
3.3.3	Additional Test Results Reporting Requirements:		N
i.	Recovery times from various modes (Active 0, Active 1, Active 2 times) and Default Delay Time shall be reported for all products tested using the TEC test method.		N
ii.	DFE model name/number, Ready State power, Sleep Mode power, and TECDFE shall be reported for any Type 1 DFE sold with an Imaging Equipment product, including those not tested with the Imaging Equipment product as part of the highest energy using configuration per Section 4.2.1iii.		N
<b>3.4</b>	<b>Requirement for Operational Mode (OM) Products</b>		P
3.4.1	Multiple Sleep Modes:		P



Clause	Requirement – Test	Measuring result – Remark	Verdict
	If a product is capable of automatically entering multiple successive Sleep Modes, the same Sleep Mode shall be used to determine qualification under the Default Delay Time to Sleep requirements specified in Section 3.4.3 and the Sleep Mode power consumption requirements specified in Section 3.4.4.		P
3.4.2	DFE Requirements:		N
	For Imaging Equipment with a functionally-integrated DFE that relies on the Imaging Equipment for its power, and that meets the appropriate maximum $TEC_{DFE}$ requirement found in Table 2, the DFE power shall be excluded subject to the following conditions:	No DFE	N
i	<b>Ready State power</b> of the DFE, as measured in the test method, shall be <b>divided by 0.60</b> to account for internal power supply losses.		N
	<u>Sleep Mode Requirements:</u> If the resultant power in Paragraph i, above, is less than or equal to the Ready State or Sleep Mode power of the Imaging Equipment, then the power shall be excluded from the Imaging Equipment's measured Ready State or Sleep Mode power when comparing to the Sleep Mode requirements in Section 3.4.4, below. Otherwise, the Sleep Mode power of the DFE, as measured in the test method, shall be <b>divided by 0.60</b> and excluded from the Ready or Sleep Mode power of the Imaging Equipment for comparing to the requirements.		N
	<u>Standby Requirements:</u> If the resultant power in Paragraph i, above, is less than or equal to the Ready State, Sleep Mode, or Off Mode power of the Imaging Equipment, then the power shall be excluded from the Imaging Equipment's Ready State, Sleep Mode, or Off Mode power when comparing to the Standby requirements in Section 3.4.5, below. Otherwise, the Sleep Mode power of the DFE, as measured in the test method, shall be <b>divided by 0.60</b> and excluded from the Ready State, Sleep Mode, or Off Mode power of the Imaging Equipment for comparing to the requirements.		N
ii	The DFE must not interfere with the ability of the Imaging Equipment to enter or exit its lower-power modes.		N
iii	In order to take advantage of this exclusion, the DFE must meet the Type 2 definition in Section 1 and be a separate processing unit that is capable of initiating activity over the network.		N
3.4.3	Default Delay Time:		P



Clause	Requirement – Test	Measuring result – Remark	Verdict																																																				
	<p>Measured Default Delay Time to Sleep (<math>t_{\text{SLEEP}}</math>) shall be less than or equal to the Required Default Delay Time to Sleep (<math>t_{\text{SLEEP\_REQ}}</math>) requirement specified in Table 6, subject to the following conditions:</p> <p><b>Table 6: Required Default Delay Time to Sleep for OM Products</b></p> <table border="1"> <thead> <tr> <th>Product Type</th> <th>Media Format</th> <th>Monochrome Product Speed, <math>s</math>, as Calculated in the Test Method (ipm or mppm)</th> <th>Required Default Delay Time to Sleep, <math>t_{\text{SLEEP\_REQ}}</math> (minutes)<sup>*</sup></th> </tr> </thead> <tbody> <tr> <td rowspan="2">Copier</td> <td rowspan="2">Large</td> <td><math>s \leq 30</math></td> <td>30</td> </tr> <tr> <td><math>s &gt; 30</math></td> <td>60</td> </tr> <tr> <td>Fax Machine</td> <td>Small or Standard</td> <td>All</td> <td>5</td> </tr> <tr> <td rowspan="4">MFD</td> <td rowspan="2">Small or Standard</td> <td><math>s \leq 10</math></td> <td>15</td> </tr> <tr> <td><math>10 &lt; s \leq 20</math></td> <td>30</td> </tr> <tr> <td rowspan="2">Large</td> <td><math>s \leq 30</math></td> <td>30</td> </tr> <tr> <td><math>s &gt; 30</math></td> <td>60</td> </tr> <tr> <td rowspan="4">Printer</td> <td rowspan="2">Small or Standard</td> <td><math>s \leq 10</math></td> <td>5</td> </tr> <tr> <td><math>10 &lt; s \leq 20</math></td> <td>15</td> </tr> <tr> <td rowspan="2">Large</td> <td><math>20 &lt; s \leq 30</math></td> <td>30</td> </tr> <tr> <td><math>s &gt; 30</math></td> <td>60</td> </tr> <tr> <td>Scanner</td> <td>All</td> <td>All</td> <td>15</td> </tr> <tr> <td rowspan="3">Mailing Machine</td> <td rowspan="3">All</td> <td><math>s \leq 50</math></td> <td>20</td> </tr> <tr> <td><math>50 &lt; s \leq 100</math></td> <td>30</td> </tr> <tr> <td><math>100 &lt; s \leq 150</math></td> <td>40</td> </tr> <tr> <td></td> <td></td> <td></td> <td>60</td> </tr> </tbody> </table>	Product Type	Media Format	Monochrome Product Speed, $s$ , as Calculated in the Test Method (ipm or mppm)	Required Default Delay Time to Sleep, $t_{\text{SLEEP\_REQ}}$ (minutes) <sup>*</sup>	Copier	Large	$s \leq 30$	30	$s > 30$	60	Fax Machine	Small or Standard	All	5	MFD	Small or Standard	$s \leq 10$	15	$10 < s \leq 20$	30	Large	$s \leq 30$	30	$s > 30$	60	Printer	Small or Standard	$s \leq 10$	5	$10 < s \leq 20$	15	Large	$20 < s \leq 30$	30	$s > 30$	60	Scanner	All	All	15	Mailing Machine	All	$s \leq 50$	20	$50 < s \leq 100$	30	$100 < s \leq 150$	40				60	<p><math>t_{\text{SLEEP\_REQ}}</math>: 20 min (mailing machine with print speed 26 mppm)</p>	-
Product Type	Media Format	Monochrome Product Speed, $s$ , as Calculated in the Test Method (ipm or mppm)	Required Default Delay Time to Sleep, $t_{\text{SLEEP\_REQ}}$ (minutes) <sup>*</sup>																																																				
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i	The Default Delay Time to Sleep may not be adjusted by the user to be greater than the Maximum Machine Delay Time. This Maximum Machine Delay Time shall be set by the manufacturer at less than or equal to 4 hours.		P																																																				
ii	When reporting data and qualifying products that can enter Sleep Mode in multiple ways, partners should reference a Sleep level that can be reached automatically. If the product is capable of automatically entering multiple, successive Sleep levels, it is at the manufacturer's discretion which of these levels is used for qualification purposes; however, the default-delay time provided must correspond with whichever level is used.		-																																																				
iii	Default Delay Time does not apply to OM products that can meet Sleep Mode requirements in Ready State.	<p><math>P_{\text{READY}} = 5.62 \text{ W}</math></p> <p><math>P_{\text{SLEPP\_1}} = 5.62 \text{ W}</math></p> <p><math>P_{\text{SLEPP\_2}} = 5.33 \text{ W}</math> (Record unfavourable value under different test voltage, see table 4 for details)</p> <p><math>P_{\text{SLEPP\_Max}} = 6.1 \text{ W}</math></p>	P																																																				
	Evaluation t: $t_{\text{SLEEP}} \leq t_{\text{SLEEP\_REQ}}$	<p><math>t_{\text{SLEEP\_1}}</math>: 10 min</p> <p><math>t_{\text{SLEEP\_2}}</math>: 20 min</p> <p>( See table 4 for details)</p>	P																																																				

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3.4.4	<p>Sleep Mode Power Consumption:</p> <p>Measured Sleep Mode power consumption (<math>P_{SLEEP}</math>) shall be less than or equal to the maximum Sleep Mode power consumption requirement (<math>P_{SLEEP\_MAX}</math>) determined per Equation 7, subject to the following conditions:</p> <p><b>Equation 7: Calculation of Maximum Sleep Mode Power Consumption Requirement for OM products</b></p> $P_{SLEEP\_MAX} = P_{MAX\_BASE} + \sum_1^n Adder_{INTERFACE} + \sum_1^m Adder_{OTHER}$ <p>Where:</p> <ul style="list-style-type: none"> <li><math>P_{SLEEP\_MAX}</math> is the maximum Sleep Mode power consumption requirement, expressed in watts (W), and rounded to the nearest 0.1 watt;</li> <li><math>P_{MAX\_BASE}</math> is the maximum Sleep Mode power allowance for the base marking engine, as determined per Table 7, in watts;</li> <li><math>Adder_{INTERFACE}</math> is the power allowance for the interface functional adders used during the test, including any fax capability, and as selected by the manufacturer from Table 8, in watts;</li> <li><math>n</math> is the number of allowances claimed for interface functional adders used during the test, including any fax capability, and is less than or equal to 2;</li> <li><math>Adder_{OTHER}</math> is the power allowance for any non-interface functional adders in use during the test, as selected by the manufacturer from Table 8, in watts; and</li> <li><math>m</math> is the number of allowances claimed for any non-interface functional adders in use during the test, and is unlimited.</li> </ul> <p><b>Table 7: Sleep Mode Power Allowance for Base Marking Engine</b></p> <table border="1"> <thead> <tr> <th rowspan="2">Product Type</th> <th rowspan="2">Media Format</th> <th colspan="4">Marking Technology</th> <th rowspan="2"><math>P_{MAX\_BASE}</math> (watts)</th> </tr> <tr> <th>Impact</th> <th>Ink Jet</th> <th>All Other</th> <th>Not Applicable</th> </tr> </thead> <tbody> <tr> <td>Copier</td> <td>Large</td> <td></td> <td></td> <td>x</td> <td></td> <td>8.2</td> </tr> <tr> <td>Fax Machine</td> <td>Standard</td> <td></td> <td>x</td> <td></td> <td></td> <td>0.6</td> </tr> <tr> <td>Mailing Machine</td> <td>N/A</td> <td></td> <td>x</td> <td>x</td> <td></td> <td>5.0</td> </tr> <tr> <td rowspan="2">MFD</td> <td>Standard</td> <td>x</td> <td>x</td> <td></td> <td></td> <td>0.6</td> </tr> <tr> <td>Large</td> <td></td> <td>x</td> <td></td> <td></td> <td>4.9</td> </tr> <tr> <td rowspan="3">Printer</td> <td>Small</td> <td>x</td> <td>x</td> <td>x</td> <td></td> <td>4.0</td> </tr> <tr> <td>Standard</td> <td>x</td> <td>x</td> <td></td> <td></td> <td>0.6</td> </tr> <tr> <td>Large</td> <td>x</td> <td></td> <td>x</td> <td></td> <td>2.5</td> </tr> <tr> <td>Scanner</td> <td>Any</td> <td></td> <td>x</td> <td></td> <td>x</td> <td>4.9</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>2.5</td> </tr> </tbody> </table>	Product Type	Media Format	Marking Technology				$P_{MAX\_BASE}$ (watts)	Impact	Ink Jet	All Other	Not Applicable	Copier	Large			x		8.2	Fax Machine	Standard		x			0.6	Mailing Machine	N/A		x	x		5.0	MFD	Standard	x	x			0.6	Large		x			4.9	Printer	Small	x	x	x		4.0	Standard	x	x			0.6	Large	x		x		2.5	Scanner	Any		x		x	4.9							2.5	<p><math>P_{MAX\_BASE} = 5.0W</math>; (Mailing machine)</p> <p><math>P_{ADDER\_INTERFACE} = 0.4W</math>; (RJ45 network connection)</p> <p><math>P_{ADDER\_EPS} = 0.568W</math>; (EPS)</p> <p><math>P_{ADDER\_TOUCH\_PANEL\_DISPLAY} = 0.2W</math>; (touch panel display)</p> <p><math>P_{SLEEP\_Max} = 6.1W</math></p>	P
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	Evaluation t: $P_{SLEEP} \leq P_{SLEEP\_MAX}$	$P_{SLEPP\_1} = 5.62 \text{ W}$ $P_{SLEPP\_2} = 5.33 \text{ W}$	P																																																																		
i	Only those interfaces that are present and used during the test, including any fax interface, may be considered functional adders.		P																																																																		



Clause	Requirement – Test	Measuring result – Remark	Verdict				
ii	Product functionality offered through a DFE shall not be considered a functional adder.		N				
iii	A single interface that performs multiple functions may be counted only once.		N				
iv	Any interface that meets more than one interface type definition shall be classified according to the functionality used during the test.		N				
v	For products that meet the Sleep Mode power requirement in Ready State, no further automatic power reductions are required to meet Sleep Mode requirements.	$P_{\text{READY}} = 5.62$	P				
3.4.5	Standby Power Consumption		P				
	Standby Mode power, which is the lesser of the Ready State Power, Sleep Mode Power, and Off Mode Power, as measured in the test procedure, shall be less than or equal to the Maximum Standby Power specified in Table 9, subject to the following condition. <b>Table 9: Maximum Standby Power Requirement</b>	$P_{\text{STANDBY}} = 0.38$ W (A standby switch on touch panel display, see table 4 for details)	P				
	<table border="1"> <thead> <tr> <th>Product Type</th> <th>Maximum Standby Power (watts)</th> </tr> </thead> <tbody> <tr> <td>All OM Products</td> <td>0.5</td> </tr> </tbody> </table>	Product Type	Maximum Standby Power (watts)	All OM Products	0.5		
Product Type	Maximum Standby Power (watts)						
All OM Products	0.5						
i	The Imaging Equipment shall meet the Standby Power requirement independent of the state of any other devices (e.g., a host PC) connected to it.		P				
	Evaluation: $P_{\text{STANDBY}} \leq 0.5$ W		P				
	Note: Products intended for sale in the US market are subject to minimum toxicity and recyclability requirements. Please see ENERGY STAR Program Requirements for Imaging Equipment: Partner Commitments for details.		-				



<b>Table 1 Power measurement – DC Source unloaded</b>						
Rated voltage (V):			--		T <sub>amb</sub> (23 ±5°C) (°C): --	
Rated frequency (Hz):			--		Rh (10-80%) (%): --	
THD (%):			--		Airspeed (m/s): --	
Model	Test	U <sub>IN</sub> (V)	F (Hz)	I <sub>IN</sub> (mA)	P <sub>S</sub> (W)	Remarks
--	--	--	--	--	--	--
Supplementary information:						
<ul style="list-style-type: none"> <li>- Accessory configuration:</li> <li>- Setting: as shipped</li> <li>- Connection: none</li> <li>-</li> </ul>						
Remarks:						
<ol style="list-style-type: none"> <li>1. Test: I: initial test, A: additional test, 1,2,3: number of test</li> <li>2. Voltage &amp; Frequency tolerance: ±1.0%, THD &lt;2.0% (if P rated &gt; 1500W is voltage tolerance ±4.0%, THD &lt;5.0%)</li> </ol>						

<b>Table 2 Power/ENERGY measurement – DFE</b>							
Rated voltage (V):			--		T <sub>amb</sub> (23 ±5°C) (°C):		--
Rated frequency (Hz):			--		Rh (10-80%) (%):		--
THD (%):			--		Airspeed (m/s):		--
Model	Test	U <sub>IN</sub> (V)	F (Hz)	I <sub>IN</sub> (mA)	P <sub>DFE_READY</sub> (W)	P <sub>DFE_SLEEP</sub> (W)	Remarks
--	--	--	--	--	--	--	--
Supplementary information:							
<ul style="list-style-type: none"> <li>- Accessory configuration:</li> <li>- Setting: as shipped</li> <li>- Connection:</li> </ul>							
Remarks:							
<ol style="list-style-type: none"> <li>1. Test: I: initial test</li> <li>2. Voltage &amp; Frequency tolerance: ±1.0%, THD &lt;2.0% (if P rated &gt; 1500W is voltage tolerance ±4.0%, THD &lt;5.0%)</li> </ol>							

<b>Table 3</b>										<b>Energy measurement – TEC test</b>
Model :			--							
Rated voltage (V):		--		T <sub>amb</sub> (23 ±5°C) (°C):		--				
Rated frequency (Hz):		--		Rh (10-80%) (%) :		--				
THD (%) :		--		Airspeed (m/s):		--				
<b>Part 1</b>										
Test	U <sub>IN</sub> (V)	F (Hz)	E <sub>OFF</sub> (Wh)	t <sub>OFF</sub> (s)	t <sub>Active0</sub> (s)	E <sub>SLEEP</sub> (Wh)	t <sub>SLEEP</sub> (s)	N <sub>JOBS</sub> (calculated)	Remarks	
--	--	--	--	--	--	--	--	--	--	
<b>Part 2</b>										
Test	E <sub>JOB1</sub> (Wh)	t <sub>Active1</sub> (s)	E <sub>JOB2</sub> (Wh)	t <sub>Active2</sub> (s)	E <sub>JOB3</sub> (Wh)	E <sub>JOB4</sub> (Wh)	E <sub>JOB_DAILY</sub> (calculated) (kWh)	Remarks		
--	--	--	--	--	--	--	--	--		
<b>Part 3</b>										
Test	E <sub>FINAL</sub> (Wh)	t <sub>Final</sub> (s)	E <sub>AUTO</sub> (Wh)	t <sub>AUTO</sub> (min)	TEC (calculated) (kWh/wk)			Remarks		
--	--	--	--	--	--			--		
Supplementary information:										
Remarks:										
<ol style="list-style-type: none"> <li>1. Test: I: initial test</li> <li>2. Voltage &amp; Frequency tolerance: ±1.0%, THD &lt;2.0% (if P rated &gt; 1500W is voltage tolerance ±4.0%, THD &lt;5.0%)</li> </ol>										

Table 4 Power measurement – OM test												
Model :					Matrix F22							
Rated voltage (V):			24VDC			T <sub>amb</sub> (23 ±5°C) (°C):			23.5			
Rated frequency (Hz):			--			Rh (10-80%) (%) :			50.0			
THD (%) :			0.13			Airspeed (m/s):			0.1			
Test	U <sub>IN</sub> (V)	F (Hz)	P <sub>STANDBY</sub> (W)	P <sub>READY</sub> (W)	t <sub>SLEEP</sub> (min)		P <sub>Sleep</sub> (W)		P <sub>Auto-OFF</sub> (W)	t <sub>AUTO-OFF delay</sub> (min)	P <sub>OFF</sub> (W)	Remarks
					t <sub>SLEEP_1</sub>	t <sub>SLEEP_2</sub>	P <sub>Sleep_1</sub>	P <sub>Sleep_2</sub>				
I/1	115.1	59.9	0.34	5.52	10	20	5.52	5.24	--	--	0.34	--
I/2	230.0	49.9	0.38	5.62	10	20	5.62	5.33	--	--	0.38	--
Supplementary information:												
<ul style="list-style-type: none"> <li>- Accessory configuration: EPS;</li> <li>- Setting: as shipped;</li> <li>- Network or data connection for use in test: RJ45 network interface;</li> <li>- Test image: unit default output;</li> <li>- Ready mode: Measured after printing and print head sealed;</li> <li>- Display in sleep_1 mode: "Touch and go" with backlight;</li> <li>- Display in sleep_2 mode: "Touch and go" with backlight turn off;</li> <li>- A standby switch on touch panel display.</li> </ul>												
Remarks:												
<ol style="list-style-type: none"> <li>1. Test: I: initial test</li> <li>2. Voltage &amp; Frequency tolerance: ±1.0%, THD &lt;2.0% (if P rated &gt; 1500W is voltage tolerance ±4.0%, THD &lt;5.0%)</li> </ol>												

<b>Table 5.1</b>		<b>Efficiency measurement for external Power Supply (EPS)</b>			
Manufacturer:	Fujikon International Ltd.	Model:	SAW40-24.0-1600		
Rated voltage (V):	100-240VAC	T <sub>amb</sub> (23 ±5 °C) (°C):	24.5		
Rated frequency (Hz):	50/60Hz	Rh (10-80%) (%):	65.1		
Rated output power (W):	38.4	Airspeed (m/s):	0.1		
	Measurement and calculation				
	Load 1	Load 2	Load 3	Load 4	Load 5
	100% ± 2%	75% ± 2%	50% ± 2%	25% ± 2%	0%
Input voltage (V)	115.22	115.229	115.36	115.68	115.47
Frequency (Hz)	60.0	60.0	60.0	60.0	60.0
Input current (mA)	761.6	578.7	404.5	219.9	11.97
Input Power (W)	43.86	32.78	21.91	11.23	0.233
True Power Factor	0.499	0.491	0.476	0.454	0.168
THD <sub>Input</sub> (%)	1.62	1.32	0.99	0.61	0.09
Output current (mA)	1600	1200	800	400	
Output Voltage (V)	23.78	23.88	23.98	24.08	
Active Output Power (W)	38.05	28.66	19.18	9.63	
Power Consumed by UUT (W)	5.81	4.12	2.73	1.60	0.233
Efficiency (%)	86.75	87.42	87.56	85.77	
Average Efficiency(%)	86.87				
Calculation information: True Power Factor = Input Power / (Input Voltage * Input current) Power consumed = Input Power – Active Output Power Efficiency = Active Output Power / Input Power Average Efficiency = (Efficiency 1 + Efficiency 2 + Efficiency 3 + Efficiency 4)/4 No Load Power consumption = Input Power @ 0% load					
Remarks: Output wire: 22AWG, 200cm.					
<b>Limit for efficiency mark level V:</b> Average active mode efficiency limit $\geq [0.0626 * \ln (P_{no})] + 0.622 = 85.04\%$ No load power limit: $\leq 0.3W$ .					

<b>Table 5.2</b>		<b>Efficiency measurement for external Power Supply (EPS)</b>			
Manufacturer:	Fujikon International Ltd.	Model:	SAW40-24.0-1600		
Rated voltage (V):	100-240VAC	T <sub>amb</sub> (23 ±5 °C) (°C):	24.5		
Rated frequency (Hz):	50/60Hz	Rh (10-80%) (%):	65.1		
Rated output power (W):	38.4	Airspeed (m/s):	0.1		
	Measurement and calculation				
	Load 1	Load 2	Load 3	Load 4	Load 5
	100% ± 2%	75% ± 2%	50% ± 2%	25% ± 2%	0%
Input voltage (V)	229.28	229.31	229.92	229.64	229.45
Frequency (Hz)	50.0	50.0	50.0	50.0	50.0
Input current (mA)	436.3	338.7	238.4	131.9	17.48
Input Power (W)	43.34	32.66	22.04	11.37	0.264
True Power Factor	0.433	0.421	0.402	0.374	0.065
THD <sub>Input</sub> (%)	0.56	0.46	0.35	0.22	0.06
Output current (mA)	1600	1200	800	400	
Output Voltage (V)	23.77	23.86	23.97	24.07	
Active Output Power (W)	38.03	28.63	19.18	9.63	
Power Consumed by UUT (W)	5.31	4.03	2.86	1.74	0.264
Efficiency (%)	87.75	87.67	87.00	84.68	
Average Efficiency(%)	86.78				
Calculation information: True Power Factor = Input Power / (Input Voltage * Input current) Power consumed = Input Power – Active Output Power Efficiency = Active Output Power / Input Power Average Efficiency = (Efficiency 1 + Efficiency 2 + Efficiency 3 + Efficiency 4)/4 No Load Power consumption = Input Power @ 0% load					
Remarks: Output wire: 22AWG, 200cm.					
<b>Limit for efficiency mark level V:</b> Average active mode efficiency limit $\geq [0.0626 * \ln (P_{no})] + 0.622 = 85.04\%$ No load power limit: $\leq 0.3W$ .					

<b>Table 6</b>		<b>Measurement and calculation : Multiple-voltage External Power Supply</b>				--
Manufacturer:	--	Model:			--	
Rated input voltage (V):	--	Rated input frequency (Hz):			--	
t <sub>Ambient</sub> (23 ±5°C) (°C)	--	Air speed (≤ 0.5 m/s) (m/s)			--	
	--	Fan :			Internal/ external/ none	
	Load condition	Load condition	Load condition	Load condition	Load condition 5	
	100%	50%	20%	10%	Other: %	
1 Output current (mA)						
1 Output Voltage (V)						
1 Output Power (W)						
2 Output current (mA)						
2 Output Voltage (V)						
2 Output Power (W)						
3 Output current (mA)						
3 Output Voltage (V)						
3 Output Power (W)						
4 Output current (mA)						
4 Output Voltage (V)						
4 Output Power (W)						
5 Output current (mA)						
5 Output Voltage (V)						
5 Output Power (W)						
6 Output current (mA)						
6 Output Voltage (V)						
6 Output Power (W)						
Total Output Power (W)						
Input Voltage (V)						
Input Frequency (Hz)						
Input Current (A)						
Input Current THD (%)						
Input Power (W)						
Input Power Factor						
Efficiency						
Calculation information: Power Factor = Input Power / (Input Voltage * Input current) Efficiency = Total Output Power / Input Power						
Supplementary information: - - Derating factor for loading used: - Setting: - Test load: - Stability achieved: - Power supply fan: cycles/ does not cycle - Power supply fan external signal : enabled / disabled						



**Attachment 1: Equipment List**

<b>Equipment</b>	<b>ID No.</b>	<b>Model</b>	<b>Brand/Manufacturer</b>	<b>Calibration due date</b>
Power meter	68-1-32-06-009	WT210	YOKOGAWA	10/23/2014
Stop watch	68-1-39-09-007	TS2106RT	Timestar	4/22/2015
Electronic balance	68-1-47-06-002	UWA-003	United Trade	11/7/2014
Temperature and humidity recorder	68-1-53-10-016	SK-L200RT	SATO	1/5/2015
Anemometer	68-1-11-11-003	471-1	Dwyer	1/9/2015
Multi-meter	68-1-34-07-009	179	FLUKE	11/15/2014
Tape	68-1-18-06-021	3.6M	TAJIMA	3/7/2015

**Attachment 2: Constructional data form**

Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Mark(s) of conformity
External Power Supply	Fujikon International Ltd.	SAW40-24.0-1600	Input: 100-240VAC, 50/60Hz, 1.5A  Output: 24VDC, 1600mA	--
DC Motor, eject	Johnson Electric Engineering Ltd.	NF143G	13V  0,042A (no load) 0,63A (stall)	---
DC Motor, Service	Johnson Electric Engineering Ltd.	NF243G	13V  0,045A (no load) 1,83A (stall)	---
Marking Engine	FRAMA AG Lauperswil Hewlett-Packard	---	13,0V	---