

美國環保署能源之星(ENERGY STAR®)計畫發展現況及申請認證方式

TAF 實驗室認證處

盛念伯

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美國能源之星(ENERGY STAR®)計畫 3rd Party Certification介紹

美國能源之星(ENERGY STAR®)

計畫概述

- 美國能源之星ENERGY STAR®計畫是由美國能源部(U.S. Department of Energy)與美國環保署(U.S. EPA)共同推行，為更有效益地使用能源、保護環境，於1992即開始推行之**自願性**標章計畫。
- 此計畫希望能清楚地標示並宣傳**各類節能產品**之**節能效率**，以有效降低溫室氣體排放。
- 目前國內外各大國際品牌公司與製造商，多將能源之星標章視為產品上市前必須取得之**必要**認證。

美國能源之星(ENERGY STAR®)

計畫概述

- 不同產品類別 (Product categories)定義不同之計畫要求(program requirement)
- 計畫要求又分兩塊: 夥伴承諾(Partner Commitment)與合格標準(eligibility criteria)
- Enhanced Testing and Verification
 - Accreditation Body, AB
 - Certification Body, CB
 - Accredited Laboratory, Lab (SMTL, WMTL)

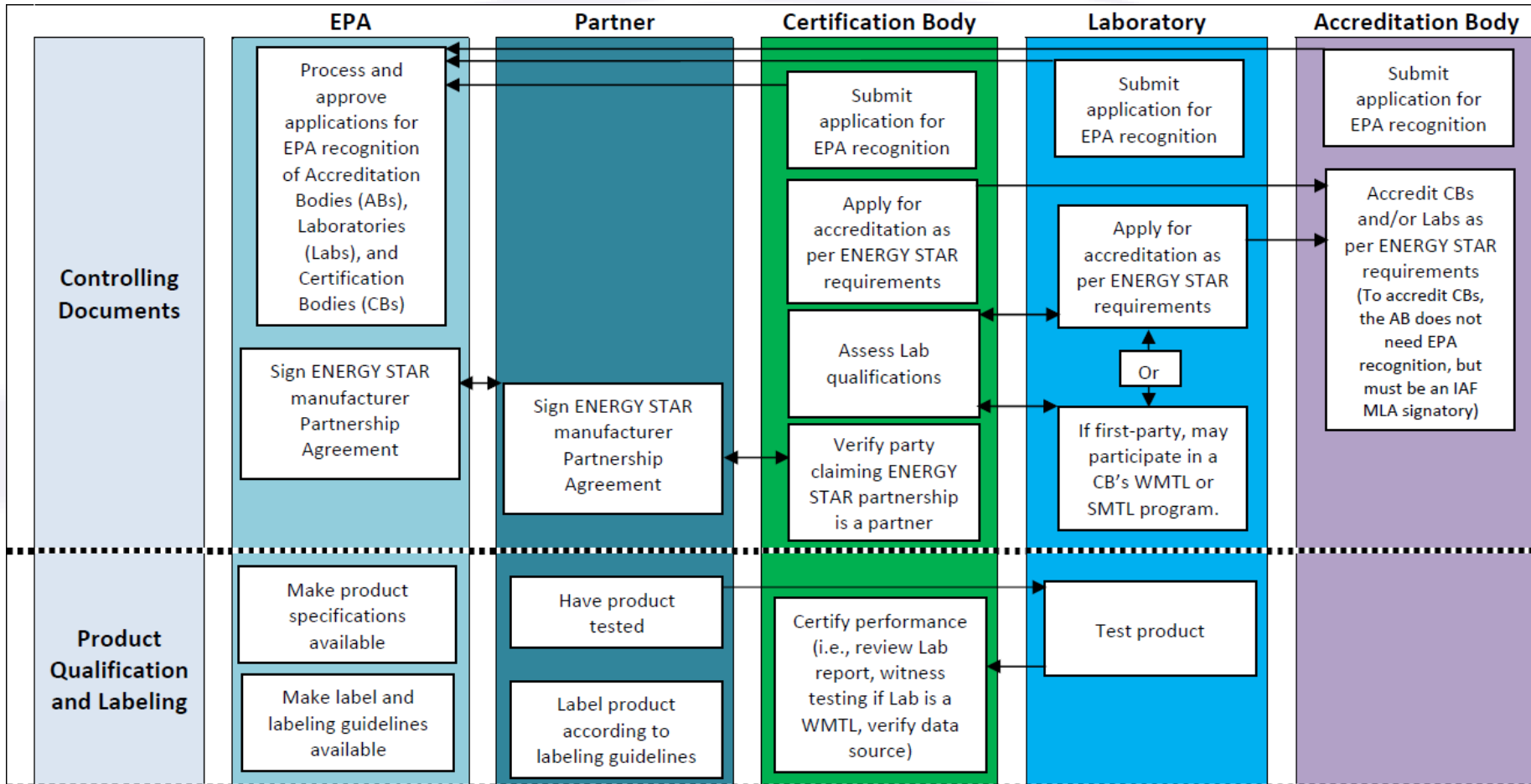
Stakeholders of ENERGY STAR[®] program

- US EPA/DoE
- Accreditation Body:
 - provide accreditation for laboratories and certification bodies (CBs). ABs must be recognized by EPA to accredit laboratories. To accredit certification bodies, an AB must be a signatory to the International Accreditation Forum Multilateral Recognition Agreement (IAF MLA). ABs provide ongoing accreditation and auditing of both CBs and laboratories
- Certification Body:
 - certify products meet ENERGY STAR requirements and report information on those products to EPA. A CB must be EPA-recognized to certify products. One of the key criteria for recognition is accreditation to ISO/IEC Guide 65 by an accreditation body that is an International Accreditation Forum Multilateral Recognition Agreement (IAF MLA) signatory. CBs must verify that test results are from an EPA-recognized laboratory. CBs are expected to maintain open correspondence with EPA and cooperate with their AB for ongoing accreditation. CBs are also responsible for administering verification testing and challenge testing.

Stakeholders of ENERGY STAR[®] program

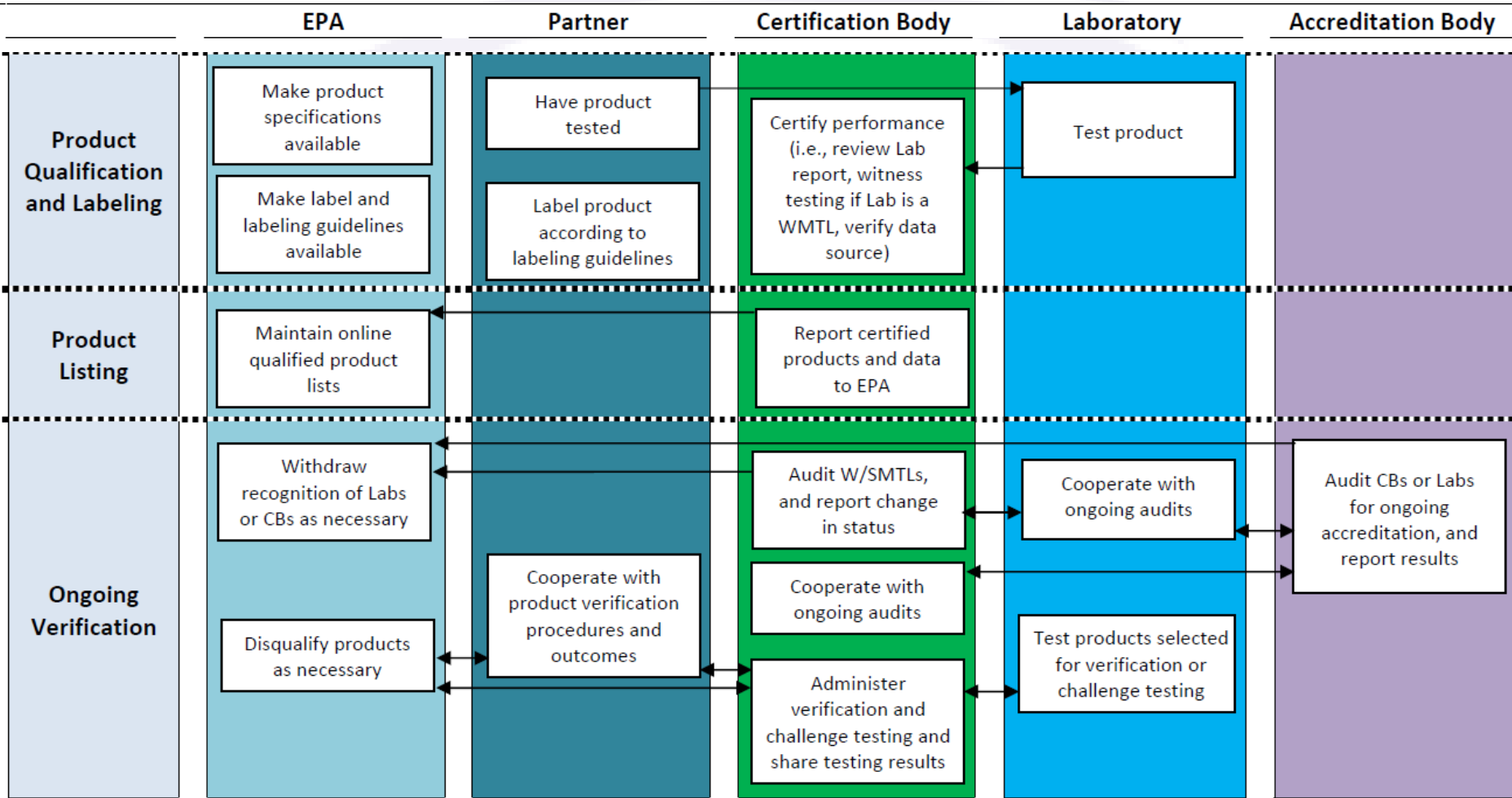
- Accredited Lab:
 - test products according to the test methods referenced in ENERGY STAR specifications. In order for EPA-recognized certification bodies (CBs) to certify a product as ENERGY STAR, the test results for that product must come from an EPA-recognized lab. EPA provides recognition to labs that are either accredited to ISO/IEC 17025 by an EPA-recognized accreditation body (AB) or participate in a CB's witnessed or supervised manufacturers' test lab (W/SMTL) program for the relevant ENERGY STAR test methods. Laboratories may also test products for verification or challenge testing.
- Partner (WMTL/SMTL)
 - Manufacturers (WMTL /SMTL); Retailers; State Utility and Regional Energy Efficiency program/ Residential New Construction Industry; Commercial, Industrial, Congregations and Government Orgs.; Commercial and Industrial Service & Product provider; Commercial Architects and Design Firm; Small business

ENERGY STAR process



From: USEPA ENERGY STAR website

ENERGY STAR process



From: USEPA ENERGY STAR website

Specification and Test Method

- ENERGY STAR qualified products are available in more than **60** categories. Each product has its own **SPECIFICATION**.
- The requirement and criteria of the product are detail in the specification.
- Some Specification detail the testing procedures (methods); Some refer to other standards.
- One product **specification** may includes several **test methods** to measure the performance, power consumption or other characteristic of the product.

ENERGY STAR Specifications

- **Appliances** :Clothes Washers Dehumidifiers Dishwashers Refrigerators Room Air Cleaners Room Air Conditioners Water Coolers....
- **Heating & Cooling** : Boilers Ceiling Fans Central AC/Air-source Heat Pumps Furnaces ...
- **Home Envelope** : Roof Products
- **Home Electronics** : Battery Charging Systems Cordless Phones Televisions
- **Office Equipment** : Computers Copiers & Fax Machines Computer Servers ...
- **Lighting** : Compact Fluorescent Light Bulbs (CFLs) Decorative Light Strings Luminaires ...
- **Commercial Food Service** : Commercial Dishwashers ...
- **Other Commercial Products** :Vending Machines

Required Test methods

- Outlines the test methods that must appear in a laboratory's scope of accreditation
- Example:

Televisions/ENERGY STAR Program Requirements Product Specification for Televisions Version 4.2

ENERGY STAR Test Method for Televisions, ENERGY STAR Program Requirements for Televisions

IEC 62087, Ed 2.0: Methods of Measurement for the Power Consumption of Audio, Video and Related Equipment

CEA-2037: Determination of Television Average Power Consumption IEC 62301, Ed 1.0: Household Electrical Appliances – Measurement of Standby Power.

CEA: Procedure for DAM Testing



申請並成為US EPA 指定實驗室(Lab)說明

Responsibilities

- **Test products according to the required test methods in the relevant ENERGY STAR specification**
- **Cooperate with ongoing audits by ABs, CBs, and EPA**
- **Maintain accreditation and keep updated on revised and new specifications and test methods**
- **Participate in inter-laboratory comparison testing or proficiency testing when required**

How Accredited Laboratories Apply for EPA Recognition?

- Comply with [Conditions and Criteria](#) for Recognition of Laboratories
- Obtain or maintain accreditation to [ISO/IEC 17025](#) from an EPA-recognized AB for the relevant [ENERGY STAR specifications](#)
- Develop separate test procedures for each accredited ENERGY STAR test method
- Complete and sign the [application](#) for Recognition of Laboratories
- Submit scope of accreditation from an EPA-recognized AB and signed application to EPA
- To update recognition, submit an updated or new scope of accreditation, and updated application to

Conditions and Criteria

- **General Requirements:**
 - Maintain IEC/ISO 17025
 - Develop and maintain separate laboratory test procedures for each accredited ENERGY STAR test method
 - Notify EPA/DOE immediately of any attempt to hide or exert undue influence over test results
 - Have recorded in its Scope of Accreditation
 - Allow EPA or an EPA-appointed representative to witness any testing
- **Inter-laboratory Comparison Testing:**
 - Agree to participate
 - Carry out ILC in accordance with normal testing/calibration and reporting procedures
 - Submit to EPA/DOE upon request: The results and analysis of ILC
- **Reporting:**
 - copies of assessment documentation
 - 30 days of any major changes
 - Forward any questions related to ENERGY STAR test methods to EPA

WMTL and SMTL

- Witnessed Manufacturers' Testing Laboratory (WMTL)
 - all tests are carried out by personnel of the WMTL
 - all critical aspects of the tests must be supervised by CB
 - Final data acquisition must be witnessed by CB
- Supervised Manufacturers' Testing Laboratory (SMTL)
 - testing and all other elements that contribute to the establishment of confidence in the SMTL's quality processes must be witnessed by CB;
 - Supervision may gradually shift away from witnessing tests; As the CB gains experience with and confidence in the SMTL
 - At least once per year, audit the SMTL's procedures on-site against the requirements of ISO/IEC 17025 and the applicable test method(s).

WMTL/SMTL or Accredited Lab?

- WMTL/SMTL 須為製造商
- WMTL SMTL須配合CB, 接受 ISO/IEC 17025評鑑，年度Impartiality查核，能力試驗。
- WMTL/SMTL不會列在EPA網站上。
- WMTL/SMTL須附屬於特定CB。
- WMTL每次測試，皆須接受CB之現場見證(witness)
- SMTL 可依CB之信任程度，不須再接受現場見證(witness)，改以至少每年一次的方式，接受CB的現場監督(supervised)。



申請US EPA 驗證機構(CB)說明

Responsibilities

- Maintain accreditation to ISO/IEC Guide 65 as per ENERGY STAR requirements
- Certify product performance according to the **Standard Operating Procedure for Evaluation of Products Against ENERGY STAR Specifications**
- **Enroll first-party laboratories** in (W/SMTL) program (optional)
- **Report certified products** and corresponding data to EPA through the Qualified Product Exchange system
- Upload Microsoft Excel templates through [My ENERGY STAR Account \(MESA\)](#)
- [Submit data via XML web services](#) using well-formed, valid XML documents compliant with the web-services definition provided
- Report **products ineligible for ENERGY STAR certification** to EPA
- Administer verification and challenge testing, and share testing results
- Complete and Submit Verification Testing Summary Report
- Submit Failures from Verification Testing
- Use the **Certified Subcomponent Database (CSD)** to support certification of luminaires. Note, use of the CSD is optional
- Cooperate with ongoing assessments and audits from accreditors and from EPA
- Participate in **all required meetings and conference calls** with EPA
- Stay engaged in the development of all relevant new and revised product specifications and test procedures

How to Apply for EPA Recognition ?

- Agree to comply with the **Conditions and Criteria** for Recognition of Certification Bodies
- Obtain or maintain accreditation to **ISO/IEC Guide 65** from an AB that is an IAF MLA signatory
- Develop internal procedures to include all requirements in the **Conditions and Criteria Recognition of Certification Bodies**, including but not limited to:
 - Verification testing
 - Re-evaluation in the Event of Significant Changes
 - Challenge Testing
 - Process for Resolving Discrepancies
 - Complete and sign an **application** for Recognition of Certification Bodies
- Submit all internal procedures and signed application to EPA

Conditions and Criteria

- **General Requirements:**
 - Maintain IEC/ISO Guide 65
 - Maintain test reports the longer of 5 years
- **ENERGY STAR Qualification :**
 - data review cycle time
 - Determination of qualification
 - meets the performance parameters
 - a group of models
 - from an EPA-recognized laboratory
 - Report to EPA certified products

Conditions and Criteria

- ENERGY STAR Verification:
 - Verification Testing
 - Operate an ENERGY STAR partner-funded verification testing procedure
 - Annually test at least 10% of all ENERGY STAR qualified models
 - performed at an EPA-recognized, third-party laboratory or CB witness the test
 - Re-evaluation in the Event of Significant Changes
 - Have procedures to re-evaluate product performance in the event of changes that could affect the ENERGY STAR qualification status
 - Report to EPA any changes in product performance
 - Challenge Testing
 - Failure, notify the ENERGY STAR partner and EPA within two business days.
 - Resolving Discrepancies
 - Have in place a procedure to resolve discrepancies between data resulting from product re-testing and the data previously certified by the CB.



認可實驗室管理 特殊計劃要求

- 光學照明實驗室，能力試驗要求
- 風扇實驗室，校正求要求
- 標準改版，實驗室是否更新？
- 新光學標準→**AB**提出新的認證服務計劃。
- **Must listed test Methods**



申請TAF美國能源之星 實驗室(Lab)認證服務

成為US EPA指定實驗室三部曲！

- 選擇目標產品範圍，建立相關測試能量與維持品質系統。
- 取得TAF認證。
- 向US EPA申請，成為EPA認可 (Recognized) 實驗室

申請TAF美國能源之星認證服務說明

認證準則

- 實驗室與檢驗機構認證服務手冊 (TAF-CNLA-A01)
- 美國能源之星實驗室認證服務計畫(TAF-CNLA-A19)
- Condition and Criteria for Recognition of Laboratory for ENERGY STAR[®] Program
- ENERGY STAR[®] program公告之各種類產品之program requirement。
- Required test methods (Requested by EPA)

申請TAF美國能源之星認證服務說明

申請

- 填寫
 - 實驗室認證申請書(TAF-CNLA-B01)
 - 實驗室資訊表(TAF-CNLA-B02)
 - 美國能源之星實驗室認證服務計畫實驗室自評表暨評鑑記錄表 (TAF-CNLA-B15)
 - **正確**填寫”申請認證內容”
 -

申請認證內容

- **測試件:** 請依EPA公告之EPA認可實驗室要求之product Category填寫。以英文原文為主，中文翻譯可參考『申請範圍填寫說明』
- **測試項目:**
 - 單純電性測試 E005 能源效率(Energy Efficiency)
 - 若該試驗件之program requirement，除電性測試項目外，另含非電性測試項目(如光學)，須分開標示(例: 全光通量O995)。
- **試驗方法:**
 - 請依EPA公告之不同產品之Program Requirements填寫，無須填寫中文翻譯。
 - 若實驗室可執行該產品之Program Requirements之所有測試方法，僅需標該Program Requirements之全名。
 - 若僅能執行該Program Requirements之部分試驗方法，則需詳列可執行之部分試驗方法。(以正面或是負面表列方式皆可)
 - **不須**標示Program Requirements之版本。(部分EPA特別要求例外)
- **試驗範圍:** 依實驗室能量標示

例:

測試件 Product/Item name	試驗項目名稱 Testing Item	試驗方法(中英文皆相同) Testing Method	試驗範圍/其他 說明 Scope	註 Remark
電源供給及相關零 組件 Battery Charging Systems (BCSs)	能源效率 Energy Efficiency E005	ENERGY STAR [®] Program Requirements for Products with Battery Charging Systems (BCSs)		表示該LAB可執行ENERGY STAR [®] Program Requirements for Products with Battery Charging Systems之 所有 測試方法
家用照明燈具及設 備 Residential Light Fixtures	能源效率 Energy Efficiency E005	ENERGY STAR [®] Program Requirements for Residential Light Fixtures 1. Power Factor -ANSI C82.11 3.3.1		1. 表示該 LAB 僅 可執行 部 分 測試方法 2. 該測試項目屬 電 性領域
家用照明燈具及設 備 Residential Light Fixtures	能源效率 Energy Efficiency E005	ENERGY STAR [®] Program Requirements for Residential Light Fixtures		1. 表示該 LAB 可執行 全部 測試方法
聖誕燈串 Decorative Light Strings	光通量 Luminous Flux O999	ENERGY STAR [®] Program Requirements for Decorative Light Strings 1. The Measurement of Luminous Flux CIE 84/UV Condition/ASTM G 154		1. 表示該 LAB 僅 可執行聖 誕燈串之 部分 測試方法 2. 該部分測試項目屬 光 領 域

例:

測試件 Product/Item name	試驗項目名 稱 Testing Item	試驗方法(中英文皆相同) Testing Method	試驗範圍/其 他說明 Scope	註 Remark
Solid-State Lighting (SSL) 固態照明燈具	光通量 Luminous Flux O999	ENERGY STAR® Program Requirements for Solid-State Lighting Luminaries 1. Luminaire Efficacy / Light output / Input Power -ANSI C82.2-2002 -LM 79-08 2. Lumen Maintenance -LM 80-08		1. 表示該 LAB 僅可執行部分 SSL 測試方法。 2. 該部分測試方法屬光領域。
Solid-State Lighting (SSL) 固態照明燈具	能源效率 Energy Efficiency	ENERGY STAR® Program Requirements for Solid-State Lighting Luminaries 1. Power Factor		1. 表示該 LAB 僅可執行部分 SSL 測試方法。

『自願性認證項目』與『特定認證服務計畫』差異

自願性認證項目

測試件 Product/Item name	試驗項目名稱 Testing Item	試驗方法(中英文皆相同) Testing Method	試驗範圍/其他說明 Scope	註 Remark
電視機	能源效率 E005	ENERGY STAR® Program Requirements for Televisions 節能標章能源效率基準與標示方法		
電視機	安規 E001	IEC 60065		
Televisions	Energy Efficiency E005	ENERGY STAR® Program Requirements for Television Energy Efficiency Criteria and Labeling Method for Energy Label		

美國能源之星實驗室認證服務計畫

測試件 Product/Item name	試驗項目名稱 Testing Item	試驗方法(中英文皆相同) Testing Method	試驗範圍/其他說明 Scope	註 Remark
電視機	能源效率 E005	ENERGY STAR® Program Requirements for Televisions		
Televisions	Energy Efficiency E005	ENERGY STAR® Program Requirements for Television		

現場評鑑

- 依據實驗室自評表,評審員評估符合之狀況
- 評審員評估實驗室執行試驗之所有數據及報告內容
- 評鑑小組建議認可範圍呈現ENERGY STAR®公告之試驗方法
- 同意US EPA人員擔任觀察員參與現場評鑑

TAF能源之星 認證現況

- 38 Lab accredited. 28 recognized by EPA
- Audio/Video, Battery Chargers, Computers, Displays, Imaging Equipment, Servers, Set-Top Boxes, Telephony, Televisions, Water Coolers, CFLs, Integral LED Lamps , Luminaires, Air Cleaners, Certified Lighting Subcomponents, Ceiling Fans, Decorative Light Strings
- No accredited CB

窗口/聯結

- TAF 申請窗口:
 - 范桂雯(Lab 申請認證流程、評鑑安排)
 - 陳清環(CB申請認證流程、評鑑安排)
 - 盛念伯(技術事務)
- 能源之星計劃申請窗口:
 - ENERGYSTARVerificationProgram@energystar.gov
- 能源之星網站:
 - http://www.energystar.gov/index.cfm?c=partners.enhanced_test_verification

Thank you for your attention!



Roger Sheng (盛念伯)

Taipei T:+886-2-28090828 ext 55 / F:+886-2-28090979

Hsinchu T:+886-3-5714848 ext 243 / F:+886-3-5726308

Email: roger@taftw.org.tw