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Asia-Pacific Economic Cooperation

UNIVERSITI KEBANGSAAN MALAYSIA
National University of Malaysia

SIRIM

NMIM
NATIONAL METROLOGY INSTITUTE OF MALAYSIA

Haslina Abdul Kadir

Evaluation of software controlled measuring instrument- Malaysia practice

Technical Director, NMIM

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Capacity Building Workshop On Understanding Conformity Requirements For Software Controlled Weight And Measuring Instruments For Sustainable Trade 2022

NMIM is special Business Unit under SIRIM

Facilitating domestic and international trade as well as ensuring safety, health and environment for Malaysians through measurement

The diagram illustrates the organizational structure. At the top is the 'MINISTRY OF INTERNATIONAL TRADE AND INDUSTRY' logo. Below it is the 'NATIONAL MEASUREMENT COUNCIL'. To the left of the NMC is the 'Secretariat of MPK'. To the right of the NMC is the 'SIRIM' logo. A bracket connects the NMC and SIRIM, labeled 'SBU-Statutory'. Below the SIRIM logo is the 'NMIM' logo.

- **Mandate under National Measurement System Act 2007 (Act 675):**
NMIM is appointed as the **National Measurement Standards Laboratory (NMSL)** and responsible to realise, establish and maintain or cause to be maintained the National Measurement Standards and Certified Reference Materials (CRMs).
- **Mandate under Weights and Measures Act 1972 (Act 71):**
NMIM is the **Custodian of Weights and Measures** and shall advise the Minister on all matters related to calibration, verification and testing of weights and measures or instruments for weighing and measuring and other matters related to metrology.

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Software in Measuring instrument - Malaysia Practice

- The *Weights And Measures Act 1972* provides the legal basis for examining and approving patterns (designs) of measuring instruments suitable for use for trade and other legal purposes.
- Evaluation of software measuring instrument is carried out on voluntary basis.
- Awareness and discussion with regulators has been carried out frequently to promote quality assurance and protection against manipulation of software-controlled instruments since the use of such measuring instruments are increasing.
- Received 30 application of software evaluation.



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Software fraud of measuring instrument in Malaysia

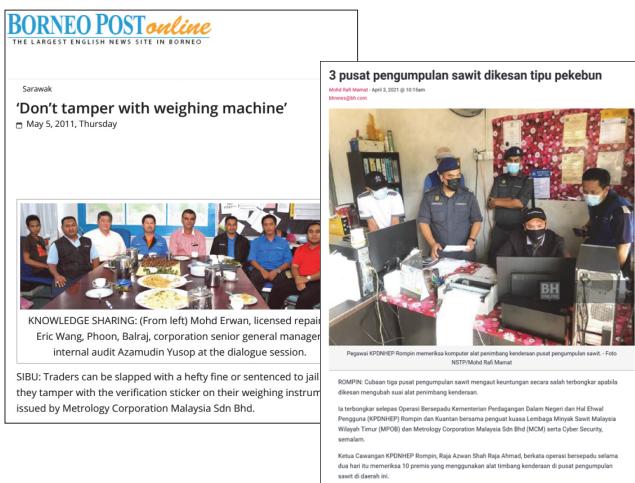
BORNEO POST online
THE LARGEST ENGLISH NEWS SITE IN BORNEO

Sarawak
'Don't tamper with weighing machine'
May 5, 2011, Thursday

KNOWLEDGE SHARING: (From left) Mohd Erwan, licensed repairer Eric Wang, Phoon, Balraj, corporation senior general manager internal audit Azamudin Yusop at the dialogue session.

SIBU: Traders can be slapped with a hefty fine or sentenced to jail if they tamper with the verification sticker on their weighing instruments issued by Metrology Corporation Malaysia Sdn Bhd.

3 pusat pengumpulan sawit dikesan tipu pekebum
Metro Post Online - April 5, 2021 @ 12:11am
Photo Call Photos



Inspection



KPDNHEP
Ministry of Domestic Trade and Consumer Affairs

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When did we start....

2010: Workshop on Software Controlled Measuring Instrument – APEC CTI 46/2009T (Bangkok)

2013: Collaboration with local university

2017: PTB Software Testing for Measuring Instruments for ASEAN Member States

2019 Malaysia's Software Examination

Challenges

- Most of the applicants are not ready on the new software requirements in pattern approval.
- Software examination requires a combination of sound understanding in IT and some programming knowledge as well as experience in metrology.
- Software and IT is a fast-pace technology.
- Difficult to get the experts in the Asia Pacific region.
- Wide variety of software design and implementation.
- Dissemination of knowledge and requirements to software developers.

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Pattern approval of software examination process flow

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    graph LR
        A([01  
Applicant request for software examination]) --> B([02  
Document review])
        B --> C([03  
Lab test on software sample])
        C --> D([04  
Functional test])
        D --> E([05  
Present for approval])
    
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CERTIFICATE OF APPROVAL

WEIGHT AND MEASURE ACT 1972
WEIGHT AND MEASURE EXAMINER'S OFFICE OF THE GOVERNMENT OF MALAYSIA
(Registration No. 15)

Approved No. AT14024-19

Description: Non-Adhesive Weighing Instruments Class (Q1)

Manufacturer: ZYXEL INSTRUMENTS (M) SDN BHD
12, Jalan 1/100, Taman Desa, 50450 Kuala Lumpur, Malaysia

Brand: ZYXEL

Model: MY100 and MY102

Type of Measurement: ZYXEL

Tactical Specification: Metro Technical Specification MM2019/1171

Remarks: This is to certify that the above Non-Adhesive Weighing Instruments Class (Q1) has been approved as conforming to the requirements of the Weight and Measure Act 1972.

Any modification of the above item shall be informed and be approved by the Controller of Weights and Measures.

Date: 11-10-2019

DR. OMAR ZAKARIA
National Measurement Institute of Malaysia (NMIM)

Note:
 1. This certificate entitles to the marketing of the above item for trade only in respect of its commercial use only. It does not entitle the user to use it for any other purpose.
 2. This approval shall be used for a period of 10 years from the date of approval.
 The original issued copy of this certificate shall be kept by the controller of weights and measures.

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Pattern approval of software controlled measuring instruments



OIML R 46-1-2
Edition 2012 (E)

INTERNATIONAL RECOMMENDATION

Active electrical energy meters.
Part 1: Metrological and technical requirements
Part 2: Metrological controls and performance tests

Compteurs actifs d'énergie électriques.
Partie 1 : Exigences métrologiques et techniques
Partie 2 : Contrôles métrologiques et essais de performance

Energy meter Instrument

- Requirement is based on OIML R 46-1-2 clause 3.6 (Protection of metrological properties)
- Examination is based on OIML R 46-3:2013 Item 3 (Validation procedure)



OIML R 76-1
Edition 2006 (E)

INTERNATIONAL RECOMMENDATION

Non-automatic weighing instruments

Part 1: Metrological and technical requirements - Tests

Instruments de pesage - fonctionnement non automatique

Partie 1 : Exigences métrologiques et techniques - Essais

Non- Automatic Weighbridge Instrument (NAWI)

- Requirement is based on OIML R 76-1 clause 5.5 (Additional requirements for software-controlled electronic devices)
- Examination is based on OIML R 76-1 Annex G
- Reporting is based on R 76-2 Item 17.4

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Pattern approval of software controlled measuring instruments

Software evaluation

- The general characteristics of software such as identification, correctness of algorithms and functions.
- Protection of software such as prevention of misused, protection against falsification
- Support of hardware functions such as fault detection
- Determination and separation of the corresponding parts of software and interface; either separation of devices and components or separation of software parts
- Data storage, transmission by communication
- Maintenance and reconfiguration (tested updating, traced)

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Required documents

Required software design documentation for pattern approval.

- Description of legally relevant software
- Description of system and hardware requirements
- Description of security
- Description of functionality
- Description of durability
- Description of data sets stored or transmitted
- Software Operating Manual



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Thank You



FOR FURTHER INFORMATION:

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