Australian Government
Department of Industry, Science, Energy and Resources

National Measurement Institute

36 Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

NMI 13/1/34

Issued by the Chief Metrologist under Regulation 60
of the
National Measurement Regulations 1999

This is to certify that an approval for use for trade has been granted in respect of the instruments herein described.

Leopard Systems Model Leopard Cube Dimensional Measuring Instrument

submitted by Leopard Systems Pty Ltd
Suite 1, 322 St Kilda Road
St Kilda VIC 3182

NOTE: This Certificate relates to the suitability of the pattern of the instrument for use for trade only in respect of its metrological characteristics. This Certificate does not constitute or imply any guarantee of compliance by the manufacturer or any other person with any requirements regarding safety.

This approval has been granted with reference to document NMI R 129, *Multi-dimensional Measuring Instruments*, dated July 2004.

This approval becomes subject to review on 1/05/25, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern approved – certificate issued	12/05/20

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with approval number 'NMI 13/1/34' and only by persons authorised by the submittor.

It is the submittor's responsibility to ensure that all instruments marked with this approval number are constructed as described in the documentation lodged with the National Measurement Institute (NMI) and with the relevant Certificate of Approval and Technical Schedule. Failure to comply with this Condition may attract penalties under Section 19B of the National Measurement Act and may result in cancellation or withdrawal of the approval, in accordance with document NMI P 106.

Auxiliary devices used with this instrument shall comply with the requirements of General Supplementary Certificate No S1/0B.

Special

Instruments are only approved for use for determination of the dimensions and volume of the smallest rectangular box that could contain an object, for the purposes of determining freight, postal or storage charges.

The dimensions determined may also be used for the calculation (by peripheral equipment) of a volume and/or 'dimensional weight' (*) value of the object, also for the purposes of determining freight, postal or storage charges.

(*) A 'dimensional weight' value is a calculated value deemed to be a weight value obtained by applying a conversion factor to the object's volume.

Signed by a person authorised by the Chief Metrologist to exercise their powers under Regulation 60 of the *National Measurement Regulations 1999*.

Darryl Hines
Manager
Policy and Regulatory Services

TECHNICAL SCHEDULE No 13/1/34

1. Description of Pattern approved on 12/05/20

A Leopard Systems model Leopard Cube dimensional measuring instrument (Figure 1) which is approved for use for the determination of the linear dimensions of certain objects.

1.1 Details

The instrument is approved for use for the determination of the linear dimensions of rectangular box-shaped (parallelepiped (#1), cuboidal) objects only having maximum dimensions (i.e. length × width × height) of 500 × 500 × 500 cm and minimum dimensions 10 × 10 × 10 cm, with a scale interval of measurement (*d*) of 1 cm.

The Leopard Cube instrument comprises a Zebra TC56 battery-operated hand-held scanning unit (Figure 2) or equivalent (*) and a separate Leopard Cube extendable tape measure (Figure 3).

The dimensions of objects are determined by manually extending the separate extendable tape against each of the dimensions of the object being measured. Matrix type barcode markings along the blade of the tape are scanned by the optical barcode reader built into the hand-held device, to measure each dimension of the object being measured.

The dimensions determined may also be used for the calculation of volume and/or 'dimensional weight' value (#2) of the item (refer to the Special Conditions of Approval).

(#1) A rectangular box (parallelepiped) is a polyhedron having six faces that are parallel in pairs; each face is a parallelogram and adjacent edges are perpendicular.

(#2) A **'dimensional weight'** value is a calculated value deemed to be a weight value obtained by applying a conversion factor to the object's volume as calculated from the measured dimensions.

1.2 Hand-held scanning unit

The Leopard Systems model Leopard Cube comprises a Zebra TC56 hand-held scanning unit or equivalent (*), which includes a touchscreen display and optical barcode scanner. The scanning unit operates an Android based operating system running Leopard Cube version 2.0 software.

When the optical barcode scanner detects the Matrix type barcode on the blade of the tape and the serial number barcode on the housing of the tape, the measurement is then recorded for each dimension of the object. Measurement results are not processed by the unit until three dimensions (i.e. length × width × height) of the object have been recorded.

Measurement results are stored in the memory of the device and may be transferred to peripheral devices using the USB data connection or using wireless connectivity.

(*) 'Equivalent' is defined to mean other proprietary equipment of the same or better specifications requiring no changes to the software specified in this approval for satisfactory operation of the system.

1.3 Leopard Cube Extendable Tape

The system also comprises a Leopard Cube Extendable Tape which is a separate tape with a maximum length of 500 cm.

Unique matrix type barcode markings are positioned along the blade tape at intervals of the approved scale interval of measurement (d).

A matrix barcode of the instruments serial number is positioned on the housing of the extendable tape to allow the barcode scanner to detect both the barcode on the housing and the current measurement barcode (Figure 4).

Note: The readable centimetre and millimetre scale markings on the tape itself are not approved for trade use. The instrument shall be display 'LEGAL FOR TRADE USE WITH VERIFIED LEOPARD CUBE SOLUTION ONLY', or similar wording.

1.4 Typical Operation

- Scan a barcode of the item to be measured.
- The tape is then extended along one side of the item, aligning the hook (end protector) and the edge of the stop on the housing to contact the edge of the item.
- The hand-held scanning unit simultaneously detects the current measurement barcode on the tape blade and the serial number barcode on the housing.
- This is repeated for the other two dimensions of the item.
- The unit may then indicate the calculated volume and/or dimensional weight for the determined dimensions.
- The results are then stored or transferred wirelessly to other devices.

1.5 Indications

The hand-held scanning unit includes an LCD display for indication of results, however measurement data from the Leopard Cube is made available to other systems for indication and/or printing.

Printed and displayed information must be made available for verification and must comply with the requirements set out in document NMI R129, *Multidimensional Measuring Instruments*, in particular as per the extract below.

> 7.9.1 Any printed ticket or displayed indication shall include sufficient information to identify the transaction, for example:
> (a) dimensions: length (*L*), width (*W*) and height (*H*);
> (b) volume (vol);
> (c) weight (Wt) if the instrument includes a weighing instrument;
> (d) dimensional weight (Dim Wt ... kg or DW ... kg);
> (e) dimensional tare (DT ... kg);
> (f) conversion factor (F);
> (g) quantity for charging, for example dimensions, vol or DW ... kg;
> (h) price rate and price; and
> (i) date, transaction number or other identification of the object.
>
> *Note 1:* Icons may be used to identify indications.
> *Note 2:* When the customer is not present during the measurement process the above information need not be displayed or printed out at the time but shall be available on request.

Note 3: The price interval and the price rate shall comply with the national regulations applicable for trade.

7.9.2 A printed ticket shall also contain the following printed or pre-printed information:
(a) that the dimensions and/or volume shown are those of the smallest rectangular box that fully encloses the object; and
(b) that the dimensional weight is a calculated value deemed to be a weight value obtained by applying a conversion factor to the object's volume or dimensions.

1.6 Descriptive Markings

(a) The Leopard Cube Extendable Tape shall carry the following markings:

Manufacturer's mark, or name written in full	Leopard Systems Pty Ltd
Model designation	.....
Serial number	..... (#1)
Year of manufacture	.....
Pattern approval mark	NMI 13/1/34
Maximum dimension for each axis	*Max* ..... mm
Minimum dimension for each axis	*Min* ..... mm
Scale interval	*d* = ... mm

(#1) The serial number is marked at the junction where the blade of the tape extends from the housing.

(b) The Leopard Cube Extendable Tape shall display 'LEGAL FOR TRADE USE WITH VERIFIED LEOPARD CUBE SOLUTION ONLY', or similar wording, by permanent label.

1.7 Verification Provision

Provision is made for the application of a verification mark on the Leopard Cube Extendable Tape.

1.8 Sealing Provision

Provision is made for sealing the housing of the Leopard Cube Extendable Tape by means of a sealing label (Figure 5).

TEST PROCEDURE No 13/1/34

Instruments shall be tested in accordance with any relevant tests specified in the National Instrument Test Procedures.

Note: Refer to clause **1.5 Indications** – Printed and displayed information must be made available for verification and must comply with the requirements set out in document NMI R 129, *Multi-dimensional Measuring Instruments*, dated July 2004.

Maximum Permissible Errors

The maximum permissible errors are specified in the *National Trade Measurement Regulations 2009*.

Instruments shall be tested as follows:

(a) Test objects shall be used with known linear dimensions such that each axis (i.e. length × width × height) is tested for at least five dimensions between and including the minimum and maximum dimensions (approximately) specified on the descriptive markings. Each test object shall be rigid and with well-defined edges to simulate the edges of a rectangular box. All adjacent faces and edges shall be perpendicular to each other. The dimensions of the test objects shall be equal to N × *d* and shall be known to an uncertainty equal to or better than ±1/5 of the maximum permissible error, which is equal to the scale interval (*d*). N is a whole number.

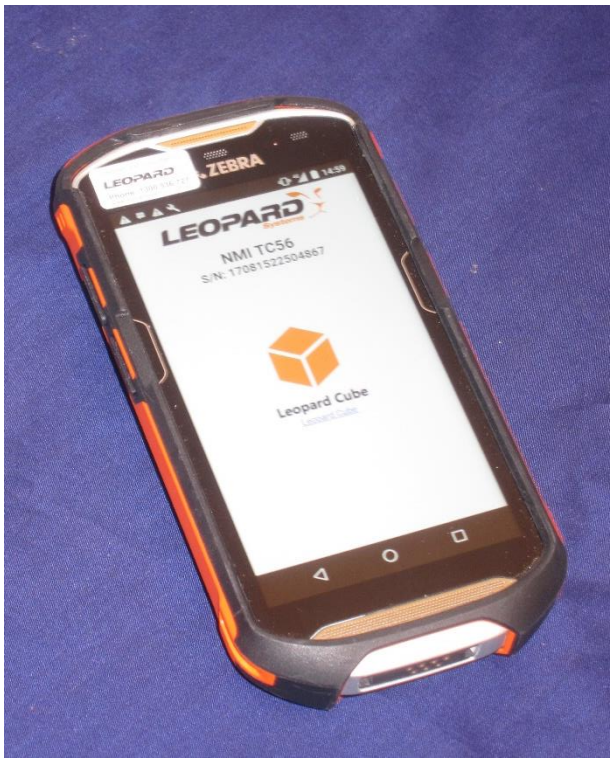
(b) Carry out at least three test runs for each dimension. Each measurement shall be within the maximum permissible error.

(c) Check that instruments are marked in accordance with clause **1.6 Descriptive Markings**.

FIGURE 13/1/34 – 1

Leopard Cube Dimensional Measuring Instrument

FIGURE 13/1/34 – 2

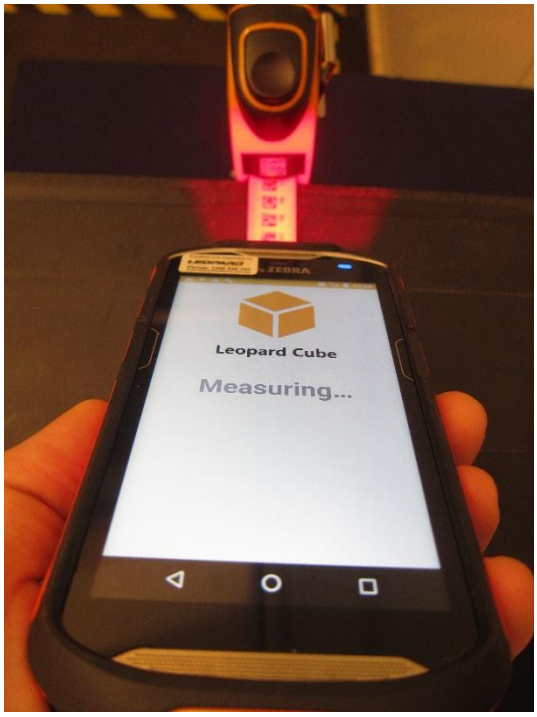


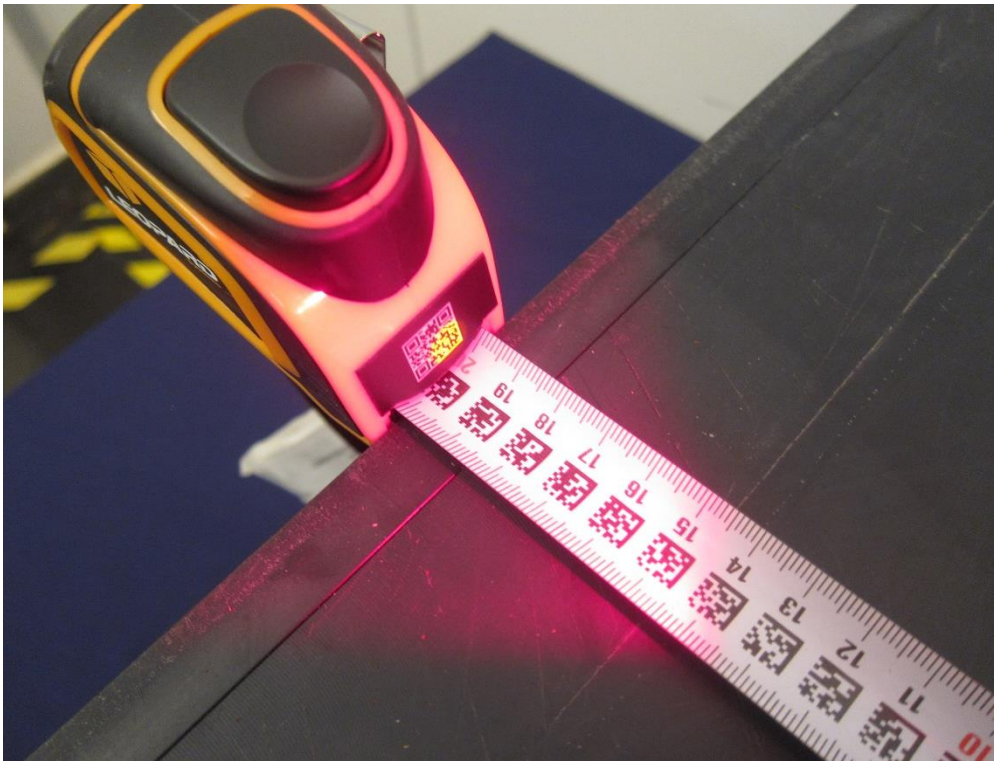
Zebra TC56 battery-operated hand-held scanning unit

FIGURE 13/1/34 – 3

Leopard Cube extendable tape measure

FIGURE 13/1/34 – 4





Measurement scanning barcodes

FIGURE 13/1/34 – 5

Typical Sealing of Leopard Cube extendable tape measure

~ End of Document ~