

**Multiple Dimension Measuring Device Work Group May 7-8, 2019
Meeting Summary**

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Glossary of Acronyms and Terms

Acronym	Term	Acronym	Term
NIST	National Institute of Standards and Technology	NTEP	National Type Evaluation Program
MDMD	Multiple Dimension Measuring Device	OIML	International Organization of Legal Metrology
MC	Measurement Canada	OWM	Office of Weights and Measures
MRA	Mutual Recognition Arrangement	R	Recommendation
NCWM	National Conference on Weights and Measures	WG	Work Group

Introduction and Welcome

i. Introductions and Welcome

Mr. Chris Senneff, (Rice Lake Weighing Systems and WG Chair) welcomed everyone to the 2019 Work Group (WG) Meeting. Introductions were made around the room and the meeting was called to order.

ii. Reiteration of NTEP MDMD Work Group Mission

Discussion: Mr. Darrell Flocken (NTEP) reviewed the mission of the WG which is to deal with specific issues concerning MDMDs related to the requirements in NIST Handbook 44, NTEP type evaluation checklist in Publication 14, and maintaining the NTEP/MC Requirements Comparison Document.

iii. Sector secretary assignment

After a request for volunteers Mr. Chris Senneff volunteered to fulfill the role of secretary for this meeting.

iv. Report – 2019 NCWM Interim Meeting

Discussion: Mr. Darrell Flocken (NTEP) reported that during the NCWM, Interim Meeting in January 2019, the S&T Committee had 2 items dealing with MDMDs. These items and their background information have been discussed during this MDMD WG meeting.

ii. Report – Recent Measurement Canada Type Evaluation Activity

Due to the OIML R 129 meeting in Ottawa, no representatives from Measurement Canada were present to report on their MDMD type evaluation activity.

iii. Report – Recent NTEP MDMD Type Evaluation

Discussion: Mr. Tom Buck (Ohio, NTEP Laboratory) reported the following evaluation activity occurred since the May 2017 WG Meeting.

- 11 assignments were received having 4 for static systems, 6 for dynamic systems and 1 handheld system.
- The evaluations were received from 8 manufacturers and resulted in the issuing of 6 new and 5 amended CCs.

Carry Over Items

1. Review meeting summary from May 2018 meeting

A copy of the May 2018 Meeting Summary can be downloaded at www.ncwm.net/ntep/sectors/mdmd/archive. Please bring a copy of the summary with you to the meeting.

Discussion: Mr. Chris Senneff asked if there were any comments, corrections, or changes for the meeting minutes from the 2018 WG Meeting.

Hearing no other comments, a call for approval of the minutes was made and a positive vote was received from all voting members of the WG.

2. Review changes to NIST, Handbook 44, MDMD code since last meeting

During the NCWM, Annual Meeting in July 2018, no new items were adopted into Handbook 44.

3. Review changes to Measurement Canada MDMD Code, and Terms and Conditions Documents

Discussion, as needed, regarding any changes to the Canadian MDMD Code since the Work Group's May 2018 meeting. However,

No input on changes to Measurement Canada MDMD Code, and Terms and Conditions Documents was available.

4. Review OIML Activity Related to R129 CD2

Discussion, as needed, regarding activity of the OIML Committee responsible for revising the International Recommendation 129 for MDMD instruments.

Discussion: Mr. Richard Harshman (NIST OWM) reported that at the time of this MDMD WG meeting there is a meeting of the OIML R 129 work group in Ottawa. US representative is Ralph Richter of NIST.

At this moment CD3 is available. The NIST is looking for volunteers to review the draft and submit comments. Although CD3 is freely downloadable from the OIML website Richard Harshman can provide a copy.

5. Review changes to 2019 edition of NCWM, Publication 14, MDMD Checklist

The following change(s), as agreed to during the May 2018 MDMD Work Group meeting, and approved by the NTEP Committee was made to the MDMD Checklist in the 2019 edition of Publication 14:

Section	Amendment	Pages
1.	Updated "Marking Requirements" to include Note: 9 and reformat to match the table in HB44.	MDMD-6
1.	Revised marking requirement for Minimum and Maximum Dimensions in Table to identify that in multi-interval operation, the marking requirement applies to each range in each axis.	MDMD-6
3.10.	Added examples of units of measures	MDMD- 11

8.6.	Added new sentence defining limitation of tare value on multi- Interval operation.	MDMD- 14
8.7.	Added new sentence defining the mathematical agreement of calculation of Net Values, including examples.	MDMD- 14
16.	Replace the words “length”, “width”, and “height” with the word “measurement” in step 10 thru 15 of the test procedures.	MDMD- 20

There was no further discussion about the amendments above.

6. In-motion Forklift based Pallet Dimensioning

Recently, several NTEP Certificates of Conformance have been issued to devices designed to measure palletized freight while being transported (in-motion) on a forklift truck. The Ohio Lab, in conjunction with the device manufacturer, has created a series of tests used during the evaluation.

At the 2018 MDMD Meeting, a sub-workgroup was formed to focus on the topic. Mr. Bruce Budinger (Northrup Grumman/AOA Xinetics) volunteered to Chair the group. J. An update on the progress of the sub-workgroup will be provided by Mr. Budinger.

Discussion: No progress was made on this subject. The WG agreed that for now the test procedure as developed by the Ohio test lab should be used.

7. Recommendation to add Tolerance information to Pub 14

This Carryover item originated from a discussion of Item 7 Publication 14, MDMD Checklist (Recommendation 4) of the 2018 MDMD Work Group agenda. See Item 7, Recommendation 4 the 2018 MDMD Meeting summary for additional details.

During the May 2018 MDMD Work Group (WG) Meeting it was determined that information related to the tolerance value, and how this value should be applied to the various operation modes, should be included in to the MDMD Checklist and Test Procedures of Publication 14.

During the meeting, it was agreed to that the existing sub work group would stay intact and develop a recommendation for the WG member to consider adopting at the May 2019 WG Meeting.

The following is the sub work groups recommendation.

XX. Device Tolerances

Code References: T.2. and T.3.

XX.1. The acceptance and maintenance tolerance values shall be ± 1 division.

XX.1.1. For type evaluations, the tolerance values apply to tests within the influence factor limits of temperature and power supply voltage specified in T.5.1. Temperature and T.5.2. Power Supply Voltage.

XX.1.2. For devices that measure to a different division value in at least one dimensioning axes and all axes are single range, the tolerance values shall be based on the value of the division of the axis in use.

XX.1.3. When there exist two or more partial measuring ranges (or segments) specified for any of the “dimensioning” axes (length (x), width (y), or height (z)) and the division values corresponding to those partial measuring ranges (or segments) within the same “dimensioning” axis differ, the tolerance values shall be based on the value of the division of the range in use.

The sub work group also recommends that this be numbered paragraph “12.” And all remaining paragraphs be renumbered.

Discussion: Besides the correction of a spelling error (“all axis” in XX.1.2) there were no comments. The WG agreed on adopting this proposal in pub 14.

8. Misc. Items for General discussion

8.1. Definition of measurement area or work area “Pub 14, section D.

Discussion: The WG agreed on applying the definition of “measurement field” as defined in appendix D of HB44.

8.2. Testing of shrink wrap? Latest request for are new cert. Shrink wrap can add to the overall dimension, but is difficult to measure, if covering the bottom of a pallet.

Discussion: There was a brief discussion but the WG did not come to a conclusion on this subject.

8.3. Measuring pallets while in motion or static with forklift within the measuring area. Test objects should include a pallet with fork channels and the height of that pallet should be measured from the floor and inclusive of the bottom of the pallet. This is also a test request for our new stop n go system, that includes the forklift in the measuring area...

Discussion: There was a broad discussion about the ‘tare function’ on MDMDs. The final conclusion of the WG was that cancellation of the pallet from the measurement cannot be considered as a tare function since the term “tare” implies that there is a net calculation $\text{Net} = \text{Gross} - \text{Tare}$. This calculation is not possible for a MDMD. In reality, the MDMD shifts its zero position to cancel out the pallet, measuring the object on the pallet only. Therefore, the WG came to the conclusion that such cancellation of the pallet should be called a “dimensional offset”. Mr. Darrell Flocken (with help of several WG members) made a proposal for adopting HB44 accordingly. The WG agreed with this proposal. A request for change will be submitted to NTEP to implement this proposal in HB44.

New Items

9. National S&T Committee Agenda Item Discussion

9.1. MDM-1: S.1.11. Provisions for Sealing

A few years ago, the Grain Analyzer Sector submitted a proposal dealing with the use of removable digital storage devices; specifically, how to address the sealing of these storage devices since they contain metrologically significant information used in the calculation of a payment for grain and other commodities. During the first opening hearing on this item, it was decided that while the conference members could not agree on the value of the proposal, NIST, OWM felt that the item had merit and felt that any proposed wording change should be considered for other device type. NIST, OWM agreed to take ownership in the item for the intend of developing wording for each device type. Following is the proposed wording for the MDMD Code in NIST Handbook 44.

Following is an extract for the National S&T Committee report.

This item has a voting status.

B3: MDM-1 V S.1.11. Provision for Sealing.

Item Under Consideration:

Modify Multiple Dimension Measuring Devices Code as follows:

S.1.11. Provision for Sealing. - For devices and systems in which the configuration or calibration parameters can be changed by use of a removable digital storage device, security shall be provided for those parameters as specified in G-S.8.2. For parameters adjusted using other means, the following applies:

- (a) ~~A~~ ~~The device~~ or system shall be designed with provision(s) for applying a security seal that must be broken, or for using other approved means of providing security (e.g., data change audit trail available at the time of inspection), before any change that detrimentally affects the metrological integrity ~~of the device~~ can be made to any measuring element.
- (b) Audit trails shall use the format set forth in Table S.1.11. Categories of Devices and Methods of Sealing for Multiple Dimension Measuring Systems.

Discussion: There was no discussion on this subject. The WG agreed with the proposal of this voting item.

9.2. MDM-2: S.1.7 Minimum Measurement

Last November the National S&T Committee received a proposal from Parcel Tools, an Australia based manufacturer of MDMD's, proposing that the 12 d minimum requirement be removed for devices referred to as "mobile tape based MDMD devices". The proposal went through several regional W&M association meetings and found little support. At the NCWM Interim Meeting in January 2019, the S&T Committee hear opposition for the item from every speaker except one. The individual felt that the idea had merit and commented that the 12 d minimum requirement should be reviewed for all MDMDs. The individual also commented that he would support the withdrawn of the item but felt it should be discussed during the 2019 MDMD Work Group Meeting. (The S&T Committee agreed to withdraw the item from their agenda.)

Following is an extract for the National S&T Committee report.

MDM-2 W S.1.7. Minimum Measurement

Source:

Parceltool P/L (2019)

Purpose:

Accept mobile tape based MDMD devices from the 12D minimum measurement.

Item Under Consideration:

Amend NIST Handbook 44 Multiple Dimension Measuring Devices Code as follows:

S.1.7. Minimum Measurement. – Except for entries of tare and mobile tape based MDMD devices, the minimum measurement by a device is 12 d. The manufacturer may specify a longer minimum measurement. For multi-interval devices, this applies only to the first measuring range (or segment) of each measurement axis (length, width, and height).

Discussion: There was no discussion on this subject. The WG agreed with the proposal withdraw this item.

10. Palletized Irregular Shaped Object, Bounding Box Calculation

A question has been raised regarding the proper way to determine the size of a bounding box for a palletized irregular shaped object, based on current specifications and test notes found in NIST Handbook 44.

The requirements to measure irregular shapes currently apply for any and all loose or palletized objects and are repeated below:

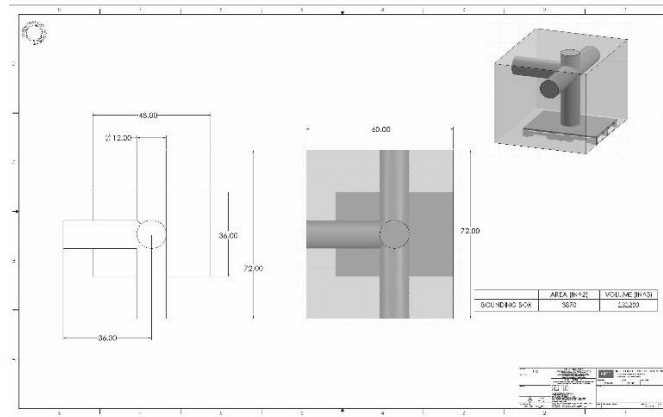


Figure 2

One needs to question if the rotations requirements for a palletized irregular shaped objects is the correct or only requirements that should be permitted. Should the specifications be changed to allow systems that can measure irregular shaped objects to report the smallest hexahedron dimension as well as the loading dimensions. In this situation, the customer can choose the dimensions for proper use case and charges.

Discussion: There was a long and intense discussion within the WG. Representatives from LTL companies argued that in LTL transport the loading dimensions as calculated in figure 2 is preferred to determine tariffs instead of the smallest hexahedron as shown in figure 1. However, regulations require that the smallest hexahedron is being used for determining tariffs and therefore it is not possible to offer the customer the choice of calculation. The WG concluded not to move forward with a change request for HB44 on this subject.

11. Test Standards Discussion

The following topic for discussion was submitted by Jeff Fantozzi, Deputy Weights and Measures Inspector, Erie County, Ohio.

My concerns are based on proper testing of MDMD devices and having the proper standards to do so. A problem is with the cost of standards, will a registered service company or the owner of the device be required to have certified standards for testing purposes. I believe Weights and Measures Officials were told they could not test or be allowed in certain establishments. My duties included investigating complaints and I would like to know what if that arises from these devices and the workgroups recommendation on resolving.

Could an Ohio Weights and Measures Inspector have their own standards professionally made so that they could be certified and recognized by N.I.S.T. and the ODA?

Discussion: There was a brief discussion but the WG did not come to a conclusion on this subject.

12. Next meeting

The work group is encouraged to recommend a date and location for the next work group meeting. The recommendation will be presented to the NTEP Committee for review and approval. The work group should maintain, at a minimum, a yearly meeting schedule.

Discussion: The members agreed that the 2020 meeting will be held Tuesday, May 5th from 12:00 pm to 5:00 pm and Wednesday, May 6th from 9:00 am to 3:00 pm. The meeting will be held at the Ohio Department of Agriculture, Administration Building.

