



Document: **ISO/TC 30/SC 7 N 421**

Secretariat of ISO/TC 30/SC 7
Flow measurement in closed conduits
- Volume methods including water meters

Date: 4 April 2012

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To the Members of ISO/TC 30/SC 7

Dear Member,

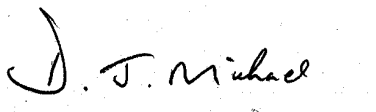
ISO/DIS 4064-2 - OIML R 49-2 Water meters intended for the metering of cold potable water and hot water — Part 2: Test methods

- Resolution of comments

Further to document N 412, in which the result of voting and comments on the above document were given, the comments on the draft have now been addressed as indicated in the attached compilation, following the meeting of the Joint Working Group (JWG) in Gaithersburg in November 2011 and subsequent further consultation within the JWG.

The draft has been duly revised and, in accordance with the decision of ISO/TC 30/SC 7 in Gaithersburg, will now proceed to issue as ISO/DIS 4064-2.2 (2nd DIS) for enquiry. Corresponding ballots will take place in OIML and CEN.

Yours sincerely,



D J Michael
for the Secretariat of ISO/TC 30/SC 7

Template for comments and secretariat observations

Date:2012-03

Document: ISO_DIS_4064-2 – OIML R 49-2 (2CD)

1	2	(3)	4	5	(6)	(7)
MB ¹	Clause No./ Subclause No./ Annex (e.g. 3.1)	Paragraph/ Figure/ Table/ Note (e.g. Table 1)	Type of comm ent ²	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
JP			ge	We cannot accept DIS 4064-2 to proceed to FDIS as it is. We have technically important comments on amendments of test procedures of EMC tests and a lot of inconsistencies with CD 4064-3.		The comments have been addressed below.
JP 002			ge	The clause numbers in CD 4064-3 were systematically renumbered this time and we estimate they are reasonable in whole even though there are still a little wrong numbers. Therefore, we propose to replace the corresponding number in DIS 4064-2 with the new number in CD 4064-3 if it is different. Many of our specific comments are related to this matter.		Part 3 depends on Part 2, not the other way round.
GB 004	General			This is a wandering document that contains much that is not required and would benefit greatly from a more focussed approach	Remove everything that is not necessary for the document.	Proposed change too vague.
PL	vii		ed	Section, which starts with the words "This publication - reference OIML R 49-1..." - The reference to OIML R 49-1 is wrong - correct reference is to OIML R 49-2. This mistake is repeated three times on this page.		Agreed.
ISO 005	Title		ed	The "meter" concept occurs twice in the stem title	Edit to "Water meters intended for cold potable water and hot water"	Agreed (excluding 'intended').
DE 006	0	General	te	According to ISO/IEC Directives Part 2:2004, 6.5.1, notes integrated in the text of a document shall only be used for giving additional information intended to assist the understanding or use of the document. These elements shall not contain requirements or any information considered indispensable for the use of the document. Ensure that all notes fulfil this rule.		Agreed.
DE 007	0	General	te	Ensure that no Figure is distorted (check e. g. for Figure H.3).		Agreed. Figures to be checked.

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ISO 008	1	para 1	ed	"ISO 4064/OIML R 49"	This is not a joint publication with OIML. Delete "OIML R 49". If necessary, explain the relationship with OIML R 49 in an introduction and list OIML R 49 in the bibliography	During the drafting stages, OIML is using this draft as well as ISO. Reference to R 49 should remain until final publication.
ISO 009	1	para 1	ed	A verbal form indicating permission, "may", appears in the scope	Redraft as a statement of fact (e.g. delete "may", insert "can") or move the information to another location in the main body of the text	Agreed ('can').
JP 010	1	4 th line	ed	"of this Part" is not needed.	Delete "of this Part".	Agreed.
PL	2		ed	<p>ISO 4064-1:201x: need to remember to complete year of edition referenced documents (may be 2011 ?). Text in brackets OIML R 49-1:201x is preceded superfluous sign "≡".</p> <p>ISO 4064-3:201x: need to remember to complete year of edition referenced documents (may be 2011 ?). Text in brackets OIML R 49-3:201x is preceded superfluous sign "≡".</p> <p>In our opinion the order of referred standards is slightly random. We suggest to re-order the lists of standards according to the rules applied in standardisation.</p>		<p>Agreed.</p> <p>Normative references to be ordered as in ISO Directives</p>
ISO 011	2		ed		Place the list in ascending alphanumeric order	Agreed (ISO, IEC first, etc.)
ISO 012	2		ed	"Guide to the expression ..."	This document is now known as "ISO/IEC Guide 98-3:2008, <i>Uncertainty of measurement — Part 3: Guide to the expression of uncertainty in</i>	Agreed

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					<i>measurement (GUM:1995)"</i>	
ISO 013	2	ISO 4064-4	ed	This document is not publicly available, and thus cannot be cited as a normative reference. It is not cited in the text anyway and also appears in the bibliography	Since the details are given in the foreword, delete the entry in Clause 2 and the bibliography	Deleted in Clause 2.
ISO 014	2	IEC 61000-4-2:2001	ed	Normative reference is made in 8.11.2 to a superseded edition	Since no specific part or perishable element of the document is cited, delete the date and ensure the title aligns with the 2008 edition	Agreed.
ISO 015	2	IEC 61000-4-3:2006	ed	Normative reference is made in 8.12.2 to a superseded edition	Since no specific part or perishable element of the document is cited, delete the date and ensure the title aligns with the 2010 edition	Agreed
ISO 016	2	IEC 61000-4-5:2001	ed	Normative reference is made in 8.14.2 to a superseded edition	Since no specific part or perishable element of the document is cited, delete the date and ensure the title aligns with the 2005 edition	Agreed.
ISO 017	2	IEC 61000-6-1:1997	ed	Normative reference is made in 8.8.2 to a superseded edition	Since no specific part or perishable element of the document is cited, delete the date and ensure the title aligns with the 2005 edition	Agreed
ISO 018	2	IEC 61000-6-2:1999	ed	Normative reference is made in 8.8.2 to a superseded edition	Since no specific part or perishable element of the document is cited, delete the date and ensure the title aligns with the 2005 edition	Agreed
ISO 019	2	IEC 61000-4-6 am 2:2006	ed	The amendment has presumably been incorporated into IEC 61000-4-6:2008 and the normative reference in 8.13.2 is to a superseded document	Update the reference to cite the 2008 edition. Only if a specific part or perishable element of the document is cited does the reference require dating	Agreed
DE 020	2		te	Ensure that all documents fulfil the first sentence "The following referenced documents are indispensable for the application of this document".		Agreed
DE 021	2		te	Ensure that all documents are referenced to in the text and the other way around and that they are up to date.		Agreed
GB 022	2	First	ed	Correct spelling of indispensable		Agreed

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		paragraph				
ID 023	Figure 2		ed	In figure b there is written notation of ΔP_1 , it should be changed into ΔP_2 .	ΔP_1 should be changed into ΔP_2	Agreed: the figure needs to be changed.
ISO 024	3		ed	"Terminology"	The Std template names this clause "Terms and definitions". Use this title and adapt the associated preamble in the Std template to make normative reference to "ISO 4064-1" and "IEC 60068-1". These documents should not be listed in the bibliography. See also Directives, Part 2, D.1.4, which specifies how to quote adapted versions of previously published definitions	Clause to be updated.. 2 nd sentence can be deleted, since this Part of ISO 4064 contains no terms or definitions. Any standards listed in clause 2 to be removed from the Bibliography. IEC 60068-1 to remain in Bibliography
GB 025	3	Second paragraph	te	there are no definitions used in this part	change "definitions" used to "terms used"	See above
ISO 026	4 and throughout		ed	Symbol Q is used for "flowrate"	Adopt the symbol from ISO 80000-4:2006, i.e. q_V , or q . (See also the TC30 vocabulary, ISO 4006:1991)	Retain Q
GB 027	6.2	First paragraph	ed/te	it should not be necessary to say this	if such a clause is necessary it should be put in a place to apply to all tests	No change.
AU	6.3.1		ge	The second sentence refers to "Part 1", is this appropriate? Should it refer to OIML R 49-1 instead?		To be left unchanged. This is a significant editorial issue.
JP 028	6.3.1		ed	We propose to add numbering as 1), 2) and 3) to each sentence.		Agreed.
JP 029	6.3.1		ed	The clause number of test report "6.6(a) – (q) in 4.1.1" is wrong.	6.6.1 – 6.6.2 (q) in 4.4.1	Agreed.

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PL	6.3.1		ed	<p>Last sentence: Check list for water meter examination is presented in clause 4.4.1 OIML R 49-3, not in 4.1.1.</p> <p>The wrong indication of relevant clause of OIML R 49-3 is repeated in many following places in OIML R 49-2. It is advisable to carefully check all the references to OIML R 49-3.</p> <p>We inform about it only once, but this comment is valid for many references to OIML R 49-3.</p>		Agreed
GB 030	6.3.2.1	5)	ed/te	it should not be necessary to say fill in the test report	delete section 5) and all other references to filling in the test report e.g.6.3.2.2 paragraph 3	Clause references useful – retain
JP 031	6.3.2.1 5)		ed	The clause number of test report “4.1.1” is wrong.	4.4.1	Agreed
JP 032	6.3.2.2		ed	We propose to add numbering as 1), 2) and 3) to each sentence.		Agreed
JP 033	6.3.2.2		ed	The clause number of test report “4.1.1” is wrong.	4.4.1	Agreed
GB 034	6.3.2.3	1)	ed/te	Reference to table 5 of part 1 is unnecessary	delete reference to table 5 of part 1	Change to part 1 has affected this clause.
JP 035	6.3.2.3		ed	We propose to replace the numbers I), II) and III) with 1), 2) and 3).		Agreed
JP 036	6.3.2.3		ed	The clause number of test report “4.1.1” is wrong.	4.4.1	Agreed

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NL	6.3.2.3			We refer to our comments on part 1, page 27, clause 6.1.7.3		Change to part 1 has affected this clause.
NL	6.3.2.3, second indent			The use of units in the calculation is not clear. We suggest to describe the formula as follows: $V_i (m^3) = Q_3 (m^3/h) \times 1580 (h) \text{ or } V_i = Q_3 \times 1580 (m^3)$		Equation no longer used
JP 037	6.3.2.3.2.3 6)		ed	The clause number of test report “4.1.1” is wrong.	4.4.1	Agreed (I think this is 6.3.2.6.2.3 6))
AU	6.3.2.4, 6.3.2.5.1, 6.3.2.5.2 and 6.3.2.6.2.2		ed	Remove the “dashes” used in listed items and replace with letters, numbers or roman numerals.		Agreed
JP 038	6.3.2.4 3)		ed	The clause number of test report “4.1.1” is wrong.	4.4.1	Agreed
JP 039	6.3.2.5.1 7)		ed	The clause number of test report “4.1.1” is wrong.	4.4.1	Agreed
JP 040	6.3.2.5.2 5)		ed	The clause number of test report “4.1.1” is wrong.	4.4.1	Agreed
JP 041	6.3.2.5.3 2)		ed	The clause number of test report “4.1.1” is wrong.	4.4.1	Agreed
JP 042	6.3.2.6.1 4)		ed	The clause number of test report “4.1.1” is wrong.	4.4.1	Agreed
JP 043	6.3.2.6.2.1 5)		ed	The clause number of test report “4.1.1” is wrong.	4.4.1	Agreed

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JP 044	6.3.2.6.2.2 5)		ed	The clause number of test report “4.1.1” is wrong.	4.4.1	Agreed
FR 045	6.3.2.6.2.3			Editorial comment : It would be clearer to write units (m ³ and %) between parenthesis or to write “in m ³ ” and “in %” instead of having m ³ and % directly after the mathematical expression. Reason : commonly there is no units in a mathematical expression, the way it is written looks like multiplied by.		The expressions will be improved.
GB 046	6.3.2.6.2.3		ed/te	The requirement on the resolution error should be in part 1 not in part 2	move requirement to part 1	It is in Part 1. No change
NL	6.3.2.6.2.3, 2)			We refer to 6.3.2.3		See above
JP	6.3.2.6.2.3 6)		ed	The clause number in Part 3 “ 4.1.1 ” should be corrected to “ 4.4.1 .”		Agreed
JP 047	6.3.2.6.2.3	NOTE 1 NOTE 2	ed	As both notes are not for the item 6), they should not be indented.	Move to the head of the line.	Agreed
JP 048	6.3.3 2)		ed	The clause numbers of test report “6.8.1 in 4.1.1 and 6.8.2.1 – 6.8.2.3 in 4.1.2” are wrong.	6.8.1 – 6.8.2.3 in 4.4.1	Agreed
NL	7.1		ed	Suggest to change title to: “ Required conditions common to all tests” to avoid mixing up with the “measurement requirements” as specified in Part 1		Agreed: 'Required conditions for all tests'
GB 049	7.1.2.1	Last paragraph	ed/te	this should not be a requirement as test rigs must be calibrated	delete last paragraph	Agreed

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GB 050	7.1.2.2		ed/te	"Interaction between meters, and test rigs, shall be eliminated" is an impossible requirement	Delete	Replace sentence by 'The presence of any meter in the test rig shall not contribute significantly to the test error of any other meter.' This text has removed the reference to test rigs, which are covered in 7.1.2.1.
GB 051	7.1.2.2		te	"When meters are tested in series, the pressure at the exit of each meter shall be sufficient to prevent cavitation."	further guidance should be provided	Moved to 7.1.2.1. True for individual meters.
AU	7.2.3.1		ed	Alignment of list needs adjustment.		Agreed
JP 052	7.2.3.1.5)		ed	The clause number of test report "5.1" is wrong.	4.5.1	Agreed.
AU	7.3.2.1		ed	Alignment of list needs adjustment.		Agreed
NL	7.3.2.1, h)			This clause refers to the measurement/ calculation of the density if "necessary". The phrase "necessary" is not defined. Furthermore the Annex F refers to distilled water.	We suggest: - Define a maximum and a minimum density related to a atmospheric temperature and pressure as listed in clause 4 - Delete annex F	No change agreed – unnecessary
NL	7.3.2.1, h)			This clause refers to conductivity if "necessary". The phrase "necessary" is not defined.	We suggest: Define a minimum conductivity related to a atmospheric temperature and pressure as listed in clause 4	No change agreed.
AU	7.3.2.2.1		ed	Last sentence is already stated in 7.1.2.1 – although wording is slightly different.		This sentence has been deleted. In 7.1.2.1 'gauge pressure' has replaced 'pressure'.
Fr 053	7.3.2.2.1			Positive or negative pressure are terms related to relative pressure. An absolute pressure is always positive. The proposal is to withdraw "positive"		See above.

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				of the sentence in order to avoid confusion between relative and absolute pressure.		
NL	7.3.2.2.1			Description pipe work. Indent i) listed a filter. Is it required that the maximum particle size is described?		This change cannot be made at this stage.
AU	7.3.2.2.4.2		ed	Remove the “dashes” used in listed items and replace with letters, numbers or roman numerals.		Agreed
JP 054	7.3.2.2.6.1		ed	The letter <i>k</i> of <i>k</i> = 2 should not be in roman but in italic.		To be italicised.
AU	7.3.2.2.7.2		ge	There should be a reference to the GUM when specifying uncertainty.		Agreed. Reference to ISO/IEC Guide 98-3 to be made.
JP 055	7.3.2.2.7.2		ed	The letter <i>k</i> of <i>k</i> =2 should not be in roman but in italic.		To be italicised.
GB 056	7.3.2.6.3		te	This requirement is not clear nor is it quantified -	Delete the clause	7.3.2.2.6.3 Agreed.
GB 057	7.3.3.1		te	5% of what?	specify what it is 5% of	Replace ‘5% of Qx2’ by ‘5% of the assumed value of Qx2’, and similarly for Qx1.
JP 058	7.3.3.1 3)		ed	The clause number of test report “5.2” is wrong.	4.5.2	Agreed.
PL	7.3.3.1		ed	In OIML R 49 recommendation, which is being prepared now, the definition of the term "change-over flowrates" is presented in OIML R 49-1 3.3.6, not in OIML R 49-2 7.3.3.1. Wording of this clause is the same as in 6.3.3.2 OIML R 49-2:2006, where it referred to clause		Agreed. Replace ‘7.3.3.1’ by ‘3.3.6 of Part 1’.

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				6.3.3.1. Clause 6.3.3.1 of OIML R 49-2:2006 contained the definition of change-over flowrates; so reference was correct. Now, in document which is being prepared now, the definitions are moved to OIML R 49-1 and wording "as defined in 7.3.3.1" is wrong.		
JP 059	7.3.4 6)		ed	The clause number of test report "5.3" is wrong.	4.5.3	Agreed
Fr 060	7.3.5			See our comment on R49-1 (we do not accept the acceptance rule described)		This is about Type Approval. Not agreed to change.
GB 061	7.3.5		ed/te	It should not be necessary to duplicate or refer to the acceptance criteria. These requirements should be in part 1. This comment applies to all succeeding acceptance criteria	Delete clause(s)	Not agreed – but see above
JP 062	7.3.6.3		ed	We propose to replace the numbers of three sentences a), b) and c) with 1), 2) and 3).		Agreed.
JP 063	7.3.6.3 c)		ed	The clause number of test report is missing.	ISO 4064-3/OIML R 49-3, 4.5.4	Agreed
DE 064	7.3.6.4	2 nd paragraph	te	The value of MPE itself is meant to be read as a symmetric tolerance, i.e.: $\pm X \%$	Change from "... $\pm 0,5$ MPE..." to "...0,5 MPE..." and from "... $\pm 1,0$ MPE..." to "...1,0 MPE...".	Agreed
JP 065	7.4.3 4)		ed	The clause number of test report "5.4" is wrong.	4.5.5	Agreed
DK	7.5		ed	We find this requirement (see comment to part		Not agreed for Part 1.

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				1) not necessary and accordingly we suggest to delete test 7.5. If maintained it must be clarified – in 7.5.3 2) it says “after recovery” – recovery to what?		
SE	7.5		ed	We find this requirement (see comment to part 1) not necessary and accordingly we suggest to delete test 7.5. If maintained it must be clarified – in 7.5.3 2) it says “after recovery” – recovery to what?		See above
AU	7.5.3		ed	What does expose mean? Presumably this test will be performed by passing water through the meter, should a flowrate be defined? Perhaps Q2 or the reference flowrate?		Flowrate to be defined. AW to offer sentence.
JP 066	7.5.3 2),3), 4)		ed	Test procedures should be made clearer like 7.4.3.	2) after recovery, measure the error (of indication) of a meter at the flowrate Q_2 at the reference temperature; 3) calculate the relative error (of indication) in accordance with Annex B; 4) during the test, the reference conditions for all other influence quantities shall be remained.; 5) complete test report ISO 4064-3/OIML R 49-3, 4.5.5.	Agreed.
JP 067	7.5.4		ed	We propose to replace the numbers of Acceptance criteria a), b) and c) with 1), 2) and 3).		Agreed.
JP 068	7.6.3 4)		ed	The clause number of test report “5.5” is wrong.	4.5.6	Agreed
JP 069	7.7.3.1 4)		ed	The clause number of test report “5.6.1” is wrong.	4.5.7.1	Agreed

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JP 070	7.7.3.2 5)		ed	The clause number of test report “5.6.2” is wrong.	4.5.7.2	Agreed
JP 071	7.7.3.3		ed	The number 2) is duplicated. The numbering should be corrected.	1) through 6)	Agreed
JP 072	7.7.3.3 5)		ed	The clause number of test report “5.6.3” is wrong.	4.5.7.3	Agreed
ISO 073	7.8.2	Figure 1	ed	Symbol <i>D</i> , usually associated with "external diameter", is used for "internal diameter"	Use <i>d</i> to align with ISO 80000-3:2006, 3-1.7	Not agreed. <i>D</i> commonly used for internal diameter in flow measurement
ISO 074	7.8.2	Figure 1	ed	Italics are used for non-variables	Give physical objects, e.g. the water meter, a number and list them in the key. Planes could be labelled P (upright, since there is no variable). Present the flow direction and measuring section as footnotes	Figures 1, 2 a) and 2 b) and legend to be changed.
JP 075	7.8.2	The last paragraph	ed	The letter <i>k</i> of <i>k</i> = 2 should not be in roman but in italic.		To be italicised.
NL	7.8.2			The description of the states the following sentence: “These specifications give minimum lengths and longer lengths are acceptable, but excessive pressure loss due to long lengths of pipe is to be avoided”	We suggest either to describe the “excessive pressure loss.....” or to modify the sentence as follows: “ <i>These specifications give minimum lengths and longer lengths are acceptable</i> ”	Agreed.
JP 076	7.8.3	Paragraph 2	ed	The letter <i>k</i> of <i>k</i> =2 should not be in roman but in italic.		Duplicate sentence has been deleted – see below.
JP 077	7.8.3	Formula	ed	The subscript “t” of <i>Q_t</i> should not be in italic but in roman.		Subscript t is not italicised.

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1	2	(3)	4	5	(6)	(7)
MB ¹	Clause No./ Subclause No./ Annex (e.g. 3.1)	Paragraph/ Figure/ Table/ Note (e.g. Table 1)	Type of comm ent ²	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
AU	7.8.3.1		ed	<p>Clarification should be given regarding the maximum expanded uncertainty allowed in the determination of pressure loss. At the moment the clause is somewhat ambiguous.</p> <p>Currently the second paragraph could be read as follows – pressure loss should be measured with a maximum expanded uncertainty of <i>5% of the pressure loss</i>. This level of uncertainty is very difficult to achieve when testing full-bore meters (mags, ultrasonics) where the pressure loss due to the meter is a very small value. The required uncertainty in the measurement of pressure loss is 5% of that value. Such uncertainty in the measurement of pressure is very difficult to achieve and highly costly.</p> <p>What we believe it should be stating is that, pressure loss should be determined via measurements of pressure where the maximum expanded uncertainty in the measurement of pressure is 5%.</p> <p>It is requested that the clause be amended to remove this ambiguity.</p>		5% of the maximum acceptable pressure loss for the pressure loss class has been specified in 7.8.2. Moreover, the clause in 7.8.3.1 duplicates that in 7.8.2 and has been removed.
ISO 078	7.8.3.2 and throughout	Figure 2	ed	The symbol ΔP , usually associated with "power", is used for "pressure". There is also a risk of confusion with P for "plane"	To align with ISO 80000-4:2006, 4-15.1, use the symbol Δp	Agreed
ISO 079	7.8.3.2 and throughout	Figure 2	ed	The symbol P , usually associated with "power", is used for "pressure"	To align with ISO 80000-4:2006, 4-15.1, use the symbol p If P_1 and P_2 refer to planes, ensure the two concepts are distinguished	Agreed

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ISO 080	7.8.4		ed	The presentation of the equation is in direct contravention of Directives, Part 2, 6.6.10.1.1, "Descriptive terms or names of quantities shall not be arranged in the form of an equation"	Use suitable symbols in the equation, e.g. $\Delta p_{q_{V,t}}$ for pressure loss at $q_{V,t}$, $q_{V,meas}$ for measured flow rate and Δp_{meas} for measured pressure loss. Define the variables in a list underneath the formula	Agreed
DE 081	7.8.4		te	According to ISO/IEC Directives Part 2:2004, 6.6.10.1.1, equations shall be expressed in mathematically correct form, the variables being represented by letter symbols (not by words) the meanings of which are explained in connection with the equations.		Agreed
JP 082	7.8.4	Paragraph 4	ed	The clause number of test report "5.7" is wrong.	4.5.8	Agreed
NL	7.8.5			Add to the last sentence;inclusive and determine the pressure class according to table 4 of part 1 of this document.:		A change has been made. A similar change was also made to 7.8.1 and the reference to Table 4 of Part 1 made at that point.
ID 083	7.9.3		ed	The writing of item a) to f) is not justified	The writing should be justified both left and right	Format to be corrected
JP 084	7.9.3 3)		ed	The clause number of test report "5.8" is wrong.	4.5.9	Agreed
JP 085	7.10.1.2.4		ed	We propose to replace the numbers of flowrate cycle a), b), c) and d) with 1), 2), 3) and 4).		Change to be made.
JP 086	7.10.1.3.4	Table 1	ed	The third column: Combination meters: The number "2" should not be in italic but in roman.		Agreed
JP 087	7.10.1.3 9)		ed	The clause number of test report "5.9.1" is wrong. As there are two cases of discontinuous flow test for	9) Complete test report ISO 4064-3/OIML R 49-3, 4.5.10.1 for meters $Q_3 \leq 16 \text{ m}^3/\text{h}$ and 4.5 10.3 for	Agreed

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1	2	(3)	4	5	(6)	(7)
MB ¹	Clause No./ Subclause No./ Annex (e.g. 3.1)	Paragraph/ Figure/ Table/ Note (e.g. Table 1)	Type of comm ent ²	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
				meters $Q_3 \leq 16 \text{ m}^3/\text{h}$ and for combination meters, the item 9) should be written clearly.	combination meters. (4.5.9.2 and 4.5.9.4 in CD 4064-3 are wrong and should be corrected to 4.5.10.1 and 4.5.10.3 respectively.)	
JP 088	7.10.2.3 8)		ed	The clause number of test report “5.9.2” is wrong.	4.5.10.2 (4.5.9.3 in CD 4064-3 is wrong and should be corrected to 4.5.10.2.)	Agreed
AU	7.11		ed	See AU’s comments on clause 7.2.7 of Part 1.		For future consideration
JP 089	7.12.1 - 7.12.4		ed	All “supplementary devices” should be replaced with “ancillary devices” according to the title of this clause.		Agreed
JP 090	7.12.1 - 7.12.4		ed	We propose to replace the numbers of in each clause a), b), and c) with 1), 2), and 3).		Changes made.
ID 091	7.12.3		ed	The title is inconsistent with the content of standard (test procedure)	The title should be changed from “Procedure” to be “Test Procedure”	Agreed
JP 092	7.12.3 c)		ed	The clause number of test report is missing. However, we cannot find the corresponding clause in CD 4064-3.		Agreed.
AU	Section 8		te	For tests of disturbances, should we also specify an acceptability criterion that the error of indication is within the MPE? Currently, the variation in error is to be less than on half of the MPE, however if this variation extends beyond the MPE, it is currently acceptable.		No change agreed.
JP 093	8.1	Paragraph 2	ed	“8.1.1” should be corrected to “8.1.1 and 8.1.2”.		Agreed. In 8.1, before 'class' insert environmental/electromagnetic

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						Change 8.1.1 title to Mechanical and climatic classification Change 8.1.2 title to 'Electromagnetic classification'
JP 094	8.1	Paragraph 4	ed	"section 6" should be corrected to "section 7".		Agreed
NL	8.1.5			This clause embodies 2 options to execute this test. The note under text states that option 1 is preferred. Is it to be expected that testing according to option 1 or option 2 the same results will be obtained? It is not clear why option 1 is preferred above option 2.	We suggest adding an elucidation on this test about the differences and how to deal with possible differences in the examination results or delete option 2.	Much discussed - no further change can be agreed
ID 095	8.2.3, and the rest of document		ed	Inconsistency of writing	The word "Test procedure (in brief)" should be changed to be "Test procedure"	Not agreed
JP 096	8.2.3 5)		ed	The clause number of test report "6.1" is wrong.	4.6.1	Agreed.
JP 097	8.3.3 8)		ed	The clause number of test report "6.2" is wrong.	4.6.2	Agreed.
JP 098	8.4.3 7)		ed	The clause number of test report "6.3" is wrong.	4.6.3	Agreed.
AU	8.4.4		te	The clause refers to 'Damp Heat, Cyclic' as an influence factor. Whereas the Annex A (A.5.3) of Part 1 refers to Damp Heat, Cyclic as a Disturbance.		It is a Disturbance. 8.4.4 to be corrected in 1st line.

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MB ¹	Clause No./ Subclause No./ Annex (e.g. 3.1)	Paragraph/ Figure/ Table/ Note (e.g. Table 1)	Type of comm ent ²	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
				Is Damp Heat, Cyclic an influence factor or a disturbance?		
JP 099	8.4.4.2)		ed	We propose to replace “measuring system” with “EUT” for clarification, because “the EUT” is commonly used in section 8. The same proposals in Acceptance criteria in 8.6.4 2); 8.7.4 2); 8.8.4 2); 8.9.4 2); 8.10.4 2); 8.11.4 2); 8.12.4 2) 8.13.4 2) 8.14.4 2) and 8.15.4 2).		Agreed.
JP 100	8.5.1.3 8)		ed	The clause number of test report “6.4.1” is wrong.	4.6.4.1	Agreed.
JP 101	8.5.2.3 6)		ed	The clause number of test report “6.4.2” is wrong.	4.6.4.2	Agreed.
JP 102	8.5.3.2		ed	The completion of test report is missing.	4) Complete the section reference ISO 4064-1/OIML R 49-1, 5.2.3 in 4.4.2.2 of report ISO 4064-3/OIML R 49-3.	Agreed.
JP	8.6.1 Vibration... / Object of the test and 8.7.1 Mechanical shock / Object of the test		te	“ 8.6 Vibration ” has a note “ <i>Applicable only to mobile installations</i> ” while “ 8.7 Mechanical shock ” does not have such a note. Meanwhile, “ A.5.6 Mechanical shock ” in Part 1 (p.42) states “ <i>apply to mobile installations only</i> ” while this expression is not included in “ A.5.5 Vibration ” in Part 1 (p.42).	It is better to harmonize the expressions on mobile installation in Part 1 (2CD) and Part 2 (2CD) by adding the same description. Therefore, “ <u>NOTE Applicable only to meters for mobile installations</u> ” should be added in 8.7.1 .	Vibration confirmed to be a Disturbance and not an Influence Factor. Agreed.
JP 103	8.6.3		ed	The numbers of Additional requirements should be replaced with a), b), c) and d) to distinguish from the numbers of test procedures. Otherwise, it is not clear which numbers “steps 1, 2 and 3” in the second sentence of		Change to be made.

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1	2	(3)	4	5	(6)	(7)
MB ¹	Clause No./ Subclause No./ Annex (e.g. 3.1)	Paragraph/ Figure/ Table/ Note (e.g. Table 1)	Type of comm ent ²	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
				Additional requirements mean.		
JP 104	8.6.3 7)		ed	The clause number of test report "6.5" is wrong.	4.6.5	Agreed.
JP 105	8.7.1		te	The same note as written in 8.6.1 should be added.	NOTE Applicable only to meters for mobile installations.	Agreed.
JP 106	8.7.3		ed	The numbers of Additional requirements should be replaced with a), b) and c) to distinguish from the numbers of test procedures.		Change to be made.
JP 107	8.7.3 8)		ed	The clause number of test report "6.6" is wrong.	4.6.6	Agreed.
JP 108	8.8.3 6)		ed	The clause number of test report "6.7" is wrong.	4.6.7	Agreed.
JP 109	8.9.3 6)		ed	The clause number of test report "6.8" is wrong.	4.6.8	Agreed.
JP 110	8.10.3 6)		ed	The clause number of test report "6.8" is wrong.	4.6.9	Agreed.
JP 111	8.11.3 7)		ed	The clause number of test report "6.9" is wrong.	4.6.10	Agreed.
JP 112	8.12.3 a)	Paragraph 2	te	When the test of section 8.13 is applicable, the frequency range of the test of section 8.12 should be changed 80 MHz – 2 GHz according to OIML D 11.	In the last of the paragraph the following sentence should be added. When the test of section 8.13 is applicable, the frequency range at the application of radiated electromagnetic fields is 80 MHz – 2 GHz.	Agreed

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MB ¹	Clause No./ Subclause No./ Annex (e.g. 3.1)	Paragraph/ Figure/ Table/ Note (e.g. Table 1)	Type of comm ent ²	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
JP 113	8.12.3 d)		te	The definition of RVM is not clear and this term is not found in OIML D 11 or in IEC 61000-4-3. The test can be carried out correctly even if this sentence is deleted.	We propose to delete the following sentence. The dwell time will depend on the test equipment used and the resolution of the reference values of the measurand (RVM) measurements.	Agreed
JP 114	8.12.3 11)		ed	The clause number of test report "6.10" is wrong.	4.6.11	Agreed.
JP	8.13.3. Conducted EMF / Test procedure	Table 4	te	It seems most of the requirements were transferred from the test procedure for radiated EMF (8.12.3). However, the followings should be corrected for the test on conducted EMF according to OIML D11.	<p>4) Correct "Table <u>4</u>" to "Table <u>5</u>."</p> <p>8) Delete the entire sentence "<i>Change the polarization of the antenna.</i>"</p> <p>11) Correct the clause number in Part 3 from "<u>6.10</u>" to "<u>4.6.12</u>".</p> <p>a) At the end, add the following sentence: "<i>This test is not applicable when the EUT has no mains or other input port.</i>"</p> <p>b) Change as follows: "<i>The EUT shall be subjected to conducted electromagnetic fields at RF amplitude of either 3 V (e.m.f.) for environmental class E1 instruments, or 10 V (e.m.f.) for environmental class E2 instruments (see 8.1.2).</i>"</p> <p>c) Delete the sentence "<i>The frequency range should be divided into 3 equal time sections.</i>"</p> <p>d) Delete the first sentence "<i>The test is performed ashorizontal antenna.</i>"</p>	<p>Agreed</p> <p>Agreed</p> <p>Agreed.</p> <p>Changes agreed.</p> <p>New tables 4 and 5 have been prepared.</p>

1	2	(3)	4	5	(6)	(7)																					
MB ¹	Clause No./ Subclause No./ Annex (e.g. 3.1)	Paragraph/ Figure/ Table/ Note (e.g. Table 1)	Type of comm ent ²	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted																					
					<p>d), e), f) and g): Correct all of "Table 4" to "Table 5.", and insert the new Table 5 shown below:</p> <p style="text-align: center;">Table 5 – Start and stop carrier frequencies</p> <table><tr><td>MHz</td><td>MHz</td><td>MHz</td></tr><tr><td>0.15</td><td>0.75</td><td>30</td></tr><tr><td>0.25</td><td>0.85</td><td>40</td></tr><tr><td>0.35</td><td>0.95</td><td>50</td></tr><tr><td>0.45</td><td>1</td><td>60</td></tr><tr><td>0.55</td><td>10</td><td>70</td></tr><tr><td>0.65</td><td>20</td><td>80</td></tr></table> <p>(This table was created based on the 17 frequency ranges in Part 3)</p> <p>f) Delete the sentence below: <i>“The dwell time will depend on the test equipment used and the resolution of the reference values of the measurand (RVM) measurements.”</i></p>	MHz	MHz	MHz	0.15	0.75	30	0.25	0.85	40	0.35	0.95	50	0.45	1	60	0.55	10	70	0.65	20	80	
MHz	MHz	MHz																									
0.15	0.75	30																									
0.25	0.85	40																									
0.35	0.95	50																									
0.45	1	60																									
0.55	10	70																									
0.65	20	80																									
PL	8.13.3		te	We suggest to check this clause carefully again. Seem it has a few mistakes i.e.: 1. using the antenna or not - some requirements refer to the antenna, while other refer to coupling/decoupling devices which simulate the influence of EM fields without antenna;; It seems that this test is conducted without antenna.		See above																					

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				2. frequency applied during this test; what is valid - wording of additional requirements point c) or referencing to Table 4? 3. the units of measure (V or V/m); during test we control the level of induced voltage, not the strength of magnetic field causing induction, so the unit of measure should rather be V, not V/m.		
JP 115	8.14.3		ed	We propose to replace the numbers of Test procedure with 1), 2), 3) ... 7) and the numbers of Additional requirements with a). b), c)... h) like 8.2 through 8.13.		Agreed.
JP 116	8.14.3 g)		ed	The clause number of test report "6.10" is wrong.	4.6.13	Agreed.
JP 117	8.14.4		ed	We propose to replace the numbers of Acceptance criteria a) and b) with 1) and 2) like 8.2 through 8.13.		Agreed
JP 118	8.15.3		ed	Below f), two sentences are missing.	Add as following: g) Examine the EUT for correct functioning. h) Complete test report ISO 4064-3/OIML R 49-3, 4.6.14.	Agreed.
JP 119	8.15.3		ed	We propose to replace the numbers of Test procedure with 1), 2), 3) ... 8) and the numbers of Additional requirements with a). b), c)... i) like 8.2 through 8.13.		Agreed
JP 120	8.15.4		ed	We propose to replace the numbers of Acceptance criteria a) and b) with 1) and 2) like 8.2 through 8.13.		Agreed
ID 121	8.16.1.1		te	Indonesia would like to request clarification on the use of retentivity range between 385 mT and 400 mT. Indonesia views that the given retentivity is too narrow and 385 mT is to high. Retentivity range used in Indonesia is 250 mT to 400 mT .	Indonesia proposes to change the retentivity range to be 250 mT to 400 mT .	No change agreed.

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JP 122	8.16.4		ed	We propose to replace the numbers of Test procedure with 1), 2), 3) ... 5).		Agreed
JP 123	8.16.4 c)		ed	“ISO 4064-1/OIML R 49-1, 7.3” is wrong, and “where appropriate” is not needed.	Propose to change just like 8.2 through 8.15 as following: “When measuring the error (of indication), the installation and operational conditions described in 7.3.2 shall be followed and the reference conditions shall be applied unless otherwise specified. Meters not marked”	Agreed.
JP 124	8.16.4 e)		ed	The clause number of test report “5.10” is wrong.	4.5.11 (4.5.10 in CD 4064-3 is wrong.)	Agreed.
JP 125	8.16.5		ed	The present text of the last line is not correct. Propose to change like 8.2.4 and 8.3.4.	The relative error (of indication) of the EUT, at the test conditions, shall not exceed the maximum permissible error of the upper zone (ISO 4064-1/OIML R 49-1, 4.2)	Agreed.
JP 126	8.16.5		ed	We propose to give numbers to Acceptance criteria with 1) and 2).		Agreed
JP 127	8.17.3		ed	We propose to replace the numbers of Test procedure with 1), 2), 3) ... 7).		Agreed
JP 128	8.17.3 g)		ed	The clause number of test report “6.15” is wrong.	4.6.15	Agreed.
NL	9 and 9.4		ed	Change “type approval” to “type evaluation” (see argument in comment NL on 7.2 Part 1)		Agreed. Also in 9.5, A.2.2.2.3 and Annex E.
JP 129	9.2	Paragraph 1	ed	If a new Table 5 is added in 8.13.3 according to our comments, the number of the table should be amended.	Table 5 to Table 6	Agreed.

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JP 130	9.2	Table 5	ed	The same comment as above.	The title of the table from Table 5 to Table 6	Agreed. And elsewhere.
NL	9.2			All tests are listed in a sequel number order running 1 up 14.	We suggest splitting up table 5 in 2 tables. Table 5a and Table 5b. Table 5a contains the tests to be followed in any order. Table 5b contains the tests with a prescribed order, starting with the first test to be executed.	Table to be modified. Q: can the test numbering be changed?
ISO 131	A.2.2.2.2		ed	The symbol <i>c</i> , usually associated with "concentration", is used for "conductivity"	To align with IEC 80000-6:2008, 6-43, use the symbol σ	Agreed
ISO 132	A.2.2.2.2		ed	The symbol <i>c</i> , usually associated with "concentration", is used for "conductivity"	To align with IEC 80000-6:2008, 6-43, use the symbol σ	Agreed
ISO 133	B.3.3.2		ed	Symbol <i>D</i> , usually associated with "external diameter", is used for "duration"	Use t_d instead, since "duration" is a time	Agreed. Also elsewhere in B.3.
ID 134	Figure I.1	Annex I	ed	The number pointing the figure is not clear	It should be made clear	Agreed. To be done.
JP 135	Annex A	Paragraph 5	ed	Section number of test report "in section 4.1.2" is wrong.	in section 5.1.3 in 4.4.1	Agreed.
DE 136	6 6.3 7 7.3.2.2.5 7.3.3 7.5 7.10.1.3 7.10.2.3 8.1 8.1.7 8.5		te	According to ISO/IEC Directives Part 2:2004, 5.2.4, "Hanging paragraphs" shall be avoided since reference to them is ambiguous. The first paragraph of a clause shall be numbered as a subclause. The first subclause can often be named "General". Renumbering concerns also cross references.		Agreed.

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	8.17 Annex A					
NL	Annex D D3, tested meter			This clause states the criteria on selecting meters to be selected to be submitted to the tests. The second indent states: “The smallest meter of any family of meters shall always be tested.	We suggest to modify this sentence as follows: <i>The meter of any family of meters the smallest Q 3 with the highest measuring range shall always be tested,</i>	No change agreed. Members of family have the same measuring range.
DK	D.3 4 th paragraph on page 79		te	“Tests in more than one orientation are <i>only required</i> in the meter size for which the endurance test is carried out”. We are strongly against limiting this test to one size. Experience show that different meter sizes of same design perform differently in different orientations.		Evidence for this is needed.
DK	D.3 6 th paragraph on page 79		te	We are strongly against limiting this test to one / two sizes. Experience show that different meter sizes of same design perform differently in these tests.		Evidence for this is needed.
ISO 003	Biblio		ed	Entries in bibliographies are published under the responsibility of the TC or SC secretariat; ISO CS has few resources to devote to checking them all, except for International Standards.	List International Standards first, with any other standards following in alphanumeric order. Any literature references should go at the end. Do not duplicate entries which already appear in the normative references or foreword. Models for presentation of literature and online references can be found in ISO 690	References already in Normative References to be removed. Remaining references have been listed in the order in which they are referred to in the text.