

Transmitted by Chair of IWG MU

Informal Document **GRBP 73-14**
73rd GRBP, January 26-29, 2021,
agenda item 3

Status report to 73rd session of GRBP (January 2021)

Informal Working Group on Measurement Uncertainty

Background and roles:

The Informal Working Group (previously Task Force) was established in 2019 to consider measurement uncertainty in order to

- improve test methods (Regulation No.51 and Regulation No.117 as a start)
- compensation if possible (systematic errors)
- evaluate the influence of remaining quantities (random errors)

• Roles

- Chair: Norway
- Secretariat: OICA

• IWG MU homepage:

<https://wiki.unece.org/pages/viewpage.action?pageId=92012814>

Meetings and participants:

- 1st TF MU: May 22-23, 2019, (Brussels)
- 2nd TF MU: November 28-29, 2019, (Brussels)
- 3rd TF MU: January 3-4, 2020, (Brussels)
- 4th TF MU: Cancelled
- 5th TF MU: April 28, 2020, (web conference)
- 6th IWG MU: October 6-7, 2020, (web conference)
- 7th IWG MU: December 1-2, 2020, (web conference)
- 8th IWG MU: January 12, 2021, (web conference)

Participants:

CP: Netherlands, Italy, UK, China, Norway, Germany, France, Russian Federation, India, Spain, European Commission

NGO's: OICA, ETRTO, JASIC, CLEPA, ISO

Work since 72nd session of GRBP (September 2020):

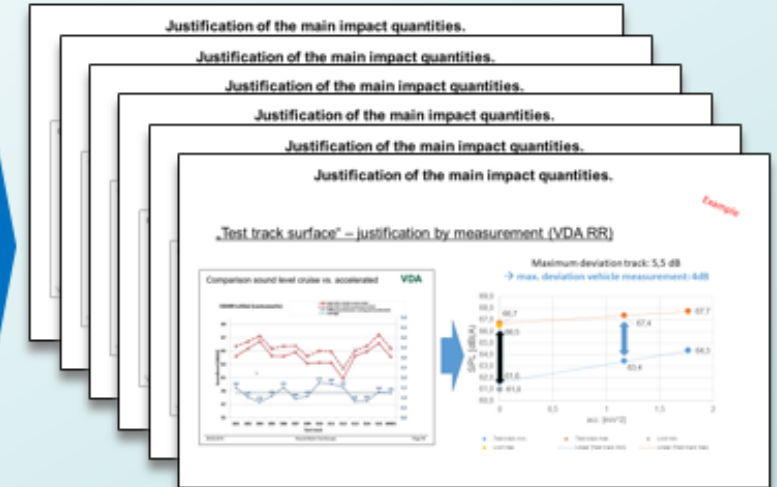
- The main part of the work has been to identify the statistical influence of different quantities on the test procedures (mainly Regulation No.51.03) (see next slide: example for uncertainty values for M1/N1, IWGMU-06-02).
- OICA has proposed amendments to Regulation No.51.03 regarding ambient conditions and preparations for testing (IWGMU-07-03, IWGMU-07-04).
- A small group representing the HCV manufacturers has had ten separate meetings to evaluate the influence of quantities which can be similar to or deviate from testing of M1 and N1-vehicles (IWGMU-07-05 Rev.1).
- ETRTO has provided information on tyre temperature and tyre aging effects on Regulation No.51.03 (IWGMU-07-02).
- A first draft Document of Reference (general guidelines how to handle measurement uncertainty) has been presented and discussed within the IWG (IWGMU-08-02 Rev.1).



Justification of the main impact quantities.

Situation	Input Quantity	estimated deviations of the meas. result (peak-peak)		Impact on Lurb	Status	Justification by		
		low	high			measurement	statistical methods	theoretical derivations
Run to Run	Micro climate wind effect	0,40	0,77	0,53	done	X		
	DRIVER #1: Deviation from centered driving	0,50	0,50	0,50	done			X
	DRIVER #2: Start of acceleration	0,50	0,00	0,33	done	X		
	DRIVER #3: Speed variations of +/- 1km/h	0,30	0,30	0,30	done		X	
	DRIVER #4: Load variations during cruising	0,00	0,50	0,17	done		X	
	Varying background noise	0,10	0,10	0,10	done	X		
	Variation on operating temperature of engine (WOT) and tyres (WOT&CRS) ==> See ISO 362-1 NOTE	1,20	0,50	0,96	done	X		
Day to Day	Barometric pressure (Weather +/- 30 hPa)	0,60	0,00	0,40	done			X
	Air temperature effect on tyre noise (5-10°C)	1,00	2,00	1,34	done	X		
	Air temperature effect on tyre noise (10-40°C)	1,00	2,00	1,34	done	X		
	Varying background noise during measurement	0,60	1,00	0,74	done	X		
	Air intake temperature variation	1,50	0,00	0,99	done	X		
	Residual humidity on test track surface	0,70	1,00	0,80	done	X		
Site to Site	Altitude (Location of Test Track) -100 hPa/1000m (from 1015 to 915 hPa)	1,00	0,00	0,66	done			X
	Test Track Surface	3,50	5,00	4,01	done	X		
	Microphone Class 1 IEC 61672	1,00	1,00	1,00	done	X		
	Sound calibrator IEC 60942	0,80	0,80	0,80	done	X		
	Speed measuring equipment continuous at PP	0,07	0,13	0,09	done		X	
	Acceleration calculation from vehicle speed measurement	0,50	0,00	0,33	done			X
Vehicle to Vehicle	Production Variation on Tyres; Aging of Tyres until delivery to customer (1dB after one year)	0,75	1,50	1,00	done	X		
	Variation on Tyre Size and Brand (non-OSM)	0,00	0,00	0,00	done			
	Production Variation in Power	0,40	0,00	0,26	done			X
	Battery state of charge for HEVs (3 dB(A))	0,00	0,00	0,00	done			
	Production Variability of Sound Reduction Components	1,00	0,50	0,83	done	X		
	Impact of variation of vehicle mass	1,40	0,60	1,13	done	X		

Status of completeness: 100%



Status per January 2021:

- Due to the pandemic situation, ETRTO has not been able to further work on the influence of quantities on Regulation No.117 and proposals how to handle and reduce measurement uncertainty. This is however, planned to be completed during spring of 2021.
- An Informal Document on amendments for Regulation No.117 will be presented at the 74th session of GRBP.
- Based on the feedback from GRBP experts, the IWG shall update the Informal Document on Regulation No.51.03, in order to produce a Working Document to the 74th session in September 2021. This document shall cover both M and N vehicles.
- A revised Informal Document of Reference shall be presented at the 74th session.
- The 9th and 10th meetings of IWG MU have been scheduled for February and April 2021.

Thank you!