Type 6 - Type Approval approach

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European Commission
DG GROW C.4 – Automotive and Mobility Industries

Type approval approach for type 6 testing

- Scope
- Family principle & selection of test vehicles
- Test procedures
- Required parameters

Scope
Low temp type approval testing

Powertrain	*Pollutant emissions*	*CO_2 emissions*	*Electric Consumption*	*Electric range*
ICE	Yes	Yes	N/A	N/A
NOVC-HEV	Yes	Yes	N/A	N/A
OVC-HEV	Yes	Yes	Yes (2)	AER, EAER
PEV	N/A	N/A	Yes (2)	PER, PERcity(2)
FCHV	N/A	N/A	Exempt from initial phase	

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Family principle & selection of test vehicles

- Type 6 family*
  See 'Type 6 family building' proposal

- See proposal for 'selection of vehicles for Type 6 testing'

*RDE PEMS family in EU, PEV <TBC>

Type approval approach
ICE and NOVC-HEV

- Pollutant emissions and CO2 emissions measured according to Type 6 test procedure

- A single test to cover both 3 and 4 phase WLTC

Type approval approach
OVC-HEV

- Pollutant emissions & CO2 emissions measured according to Type 6 procedure*
  - **Pollutant & CO2 Charge Depleting emissions**

    JPN: WLTC 3 phase

    EU: WLTC 4 phase
  - **Pollutant & CO2 Charge Sustaining emissions**

    WLTC 4 phase
  - **CO2 UF-weighted emissions**

    JPN: WLTC 3 phase

    EU: WLTC 4 phase

*Auxiliaries activated: HVAC @22°C, dipped-beam, defrost/demist

Type approval approach
OVC-HEV

- Measure Electric Consumption
- Determine All Electric Range
- Determine Type 6 Ratio for Equivalent All Electric Range
  - **$EAER_{Ratio} = EAER_{-7°C} / EAER_{23°C}$**

    JPN: WLTC 3 phase

    EU: WLTC 4 phase

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Type approval approach
PEV

- Determine Type 6 Ratio for Pure Electric Range

  - **$PER_{Ratio} = PER_{-7°C} / PER_{23°C}$**

Required parameters

		pollutants		CO2	Electric Consumption（Wh/km）							Range（km）		
		Total		Total		Total	L	M	H	ex-H	City		Total	City
ICE		✓		✓	-	-	-	-	-	-	-	-	-	-
NOVC-HEV		✓		✓	-	-	-	-	-	-	-	-	-	-
OVC -HEV	CD	each cycle	✓	✓	EC	✓	-	-	-	-	-	EAER	✓	-
					EC_{DC}	✓	-	-	-	-	-	AER	✓	-
		combine all CD cycle	✓		$EC_{AC,CD}$	-	-	-	-	-	-	R_{CDA}	-	-
					$EC_{AC,weighted}$	-	-	-	-	-	-	R_{CDC}	-	-
	CS	✓		✓	-	-	-	-	-	-	-	-	-	-
	Combined	✓		✓	-	-	-	-	-	-	-	-	-	-
PEV		-		-	EC	✓	✓	✓	✓	✓	✓	PER	✓	✓

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