WLTP-DTP Presentation by Indian Experts						
Sr No	**Description**		**EPA procedure**	**Indian** (TAP Issue 4)	**EU (715/2008/EC)**	**Japanese (Attachment 42)**
1	Vehicle preconditioning		One Urban Dynamometer Driving Schedule (UDDS)	Diesel - 3 EUDC Gasoline - 1UDC+ 2EUDC (at Manufacturer request)	Diesel - 3 EUDC Gasoline - 1UDC+ 2EUDC (at Manufacturer request)	JC08
2	Vehicle Soaking	Period	laboratory ambient temperature conditions for at least 6 hours	6 - 30 hrs	6 - 30 hrs	6-36 hrs
		Temp	68 to 86 °F (20 to 30 °C)	(20 to 30 °C)	(20 to 30 °C)	(20 to 30 °C)
		Humidity	NA	NA	NA	30-75 % RH
4	Test-cell conditioning	Temp	68 to 86 °F (20 to 30 °C)	(20 to 30 °C)	(20 to 30 °C)	(20 to 30 °C)
		Humidity	NA	5.5 to 12.2 g/kg dry air	5.5 to 12.2 g/kg dry air	30-75 % RH
5	Test Cycle	Time	1877 s (exl soak)	1180 s	1180 s	1204 s (JC 08)
		Distance	17860 m	10643 m	11007 m	8172 m
		Max speed	91.2 km/h	90 kmph	120 kmph	81.6 km/h
		Phases	3	2	2	2
		Time tolerance	The upper limit is 2 mph (3.2 km/ h) higher than the highest point on the trace within 1 second of the given time. (2) The lower limit is 2 mph (3.2 km/ h) lower	± 1 s	± 1 s	± 1 s

		Speed tolerance	than the lowest point on the trace within 1 second of the given time.	± 2 kmh	± 2 kmh	± 2 kmh
6	Dyno. preparation	Calibration of Dyno	As per SAE J2264 dyno road load determination.	Without vehicle for Table method, With veh+ driver for coast down method	Without vehicle for Table method, With veh+ driver for coast down method	With vehicle
7	Dyno. load / coast down option	Table method / Road coast down	To determine road load power, test weight, and inertial weight class, follow SAE J2263, track road load determination	Both (Choice with Manufacturer)	Both (Choice with Manufacturer)	Coast Down & Wheel torque method
8	Definition of ULW		Empty & dry vehicle" + Fluids+ Fuel+ Tools+ Spare wheel+ Optional equipments (over 33%)	Means the mass of the vehicle in running order without crew, passengers or load, but with the fuel tank 90% full and the usual set of tools and spare wheel on board where applicable.	Means the mass of the vehicle in running order without crew, passengers or load, but with the fuel tank 90% full and the usual set of tools and spare wheel on board where applicable.	Empty & dry vehicle" + Fluids+ Fuel+ Optional equipments
9	Definition of Ref. Mass		ULW + 300 lbs (136 kg)	ULW + 150 kg	ULW + 100 kg	Vehicle weight+ 110 kg
10	Ref Mass Vs Equi Inertia table			Same as ECE	Table attached	Same as ECE additional 4 nos. of Inertia classes
11	Vehicle Cooling Blower	Dimension	Not specified	0.2 m^2	0.2 m^2	Not Specified
		Const. speed operation	The fan capacity shall normally not exceed 5300 cfm (2.50 m3/sec)	At least 21.6 kmph	At least 21.6 kmph	During the test running, the test vehicle shall be cooled by a cooling fan

		Speed proportional to Dyno speed	Optional	Yes	Yes	or the like so that actual running conditions may be simulated. (bonnet closed)
12	Chassis Dynamometer	Single / double roller	An electric dynamometer that has a single roll with a nominal diameter of 48 inches (1.20 to 1.25 meters). (c) Other dynamometer configurations may be used for testing if it can be demonstrated that the simulated road load power and inertia are equivalent, and if approved in advance by the Administration.	Single / double roller	Single / double roller	Not Specified
		Diameter		Not specified	Not specified	
		Surface	Not specified	Not specified	Not specified	Not specified
		Inertia simulation Tolerance	± 2.0 pounds or ± 1 % of the target value	± 5%	± 5%	± 5%
		Speed Accuracy		± 1 kmph	± 1 kmph	

13	Particulate probe type		The distance from the sampling tip to the filter holder shall be at least 5 probe diameters (for filters located inside of the tunnel), but not more than 40.0 inches (102 cm) for filters located outside of the dilution tunnel. (v) Free from sharp bends. (vi) Configured so that a clean particulate filter (including back-up filter) can be selected simultaneously with the selection of an empty gaseous emissions bag. (9) The flow rate through the particulate probe shall be maintained to a constant value within ±5 percent of the set flow rate.	It must be installed in the vicinity of the tunnel centerline; roughly 10 tunnel diameters downstream of the gas inlet, and have an internal diameter of at least 12 mm. The distance from the sampling tip to the filter mount must be at least five probe diameters, but must not exceed 1020 mm.	It must be installed in the vicinity of the tunnel centerline; roughly 10 tunnel diameters downstream of the gas inlet, and have an internal diameter of at least 12 mm. The distance from the sampling tip to the filter mount must be at least five probe diameters, but must not exceed 1020 mm.	The sampling probe for PM to be installed in the main dilution tunnel shall measure 12 mm or more in inner diameter. Furthermore, it shall measure 1020 mm or less in length (distance from the forward end of the said sampling probe for PM to the filter holder). Its bend section shall have the largest possible curvature.

15	Regulated Pollutants		CO, HC, NOX, PM, HCHO, NMOG	CO, HC, NOX, PM(For Diesel), NMHC (For CNG), RHC (For LPG)	CO, HC, NOX, PM(For Diesel), NMHC (For CNG), RHC (For LPG)	CO, NMHC, NOX, PM(only CI & SIDI)
16	Weighting factor		Applicable	NA	NA	Applicable

17	CVS	Dilution Air filter requirement	For removing background PM, we recommend that you filter all dilution air, including primary full-flow dilution air, with high-efficiency particulate air (HEPA) filters that have an initial minimum collection efficiency specification of 99.97 % (see §1001 for procedures related to HEPA-filtration fficiencies). Ensure that HEPA filters are installed properly so that background PM does not leak past the HEPA filters. If you choose to correct for background PM without using HEPA filtration, demonstrate that the background PM in the dilution air contributes less than 50 % to the net PM collected on the sample filter. You may correct net PM without restriction if you use HEPA filtration.	Filter for the dilution air, which can be preheated, if necessary. This filter shall consist of activated charcoal sandwiched between two layers of paper, and shall be used to reduce and stabilise the hydrocarbon concentrations of ambient emissions in the dilution air.	Filter for the dilution air, which can be preheated, if necessary. This filter shall consist of activated charcoal sandwiched between two layers of paper, and shall be used to reduce and stabilise the hydrocarbon concentrations of ambient emissions in the dilution air.	A dust-proof filter shall be provided at the dilution air inlet section of the main dilution tunnel. Moreover, in addition to this, the following filter may be installed: (a) Filter having the HEPA performance or higher; and (b) Active carbon filter.

		calibration	CFV, SSV, Flow	CFV &Propane Injection Check	CFV &Propane Injection Check	CFV &Propane Injection Check
		Heat exchanger	You may use a heat exchanger to control the temperature upstream of any flow meter, but you must take steps to prevent aqueous condensation	If compensation for varying flow is not possible then a heat exchanger (H) and temperature control system (TC) as described in Paragraph 2.2.3 of this Chapter will be required to ensure constant flow through the ventury (MV) and thus proportional flow through 83.	If compensation for varying flow is not possible then a heat exchanger (H) and temperature control system (TC) as described in Paragraph 2.2.3 of this Chapter will be required to ensure constant flow through the ventury (MV) and thus proportional flow through 83.	The CVS system shall have a heat exchanger.
		volume correction at 20°C / 0°C	20°C	20°C	0°C	20°C
18	Analyzer accuracy		± 2%	± 2%	± 2%	± 2%
19	gases	Calibration Gas	± 2%	± 2%	± 2%	± 2%

		Accuracy				
		Operational Gases Impurities	Purified Synthetic Air THC≤0.05 µmol/mol, CO≤ 1µmol/mol, CO2 ≤ 10µmol/mol, O2 0.205 to 0.215 mol/mol, NOx≤0.02µmol/mol, N2O2 ≤ 0.05µmol/mol	Purified synthetic air (purity ≤ 1 ppm C, ≤ 1ppm CO, ≤ 400 ppm CO2, ≤ 0.1 ppm NO); oxygen content between 18% & 21% vol.	Purified synthetic air (purity ≤ 1 ppm C, ≤ 1ppm CO, ≤ 400 ppm CO2, ≤ 0.1 ppm NO); oxygen content between 18% & 21% vol.	Purified synthetic air (HC ≤ 1 ppm C, CO ≤ 1ppm, CO2 ≤ 400 ppm, NO ≤ 0.1 ppm); oxygen content between 18% & 21% vol.
			Purified N2 THC≤0.05 µmol/mol, CO≤ 1µmol/mol, CO2 ≤ 10 µmol/mol, O2 ≤ 2 µmol/mol, NOx≤0.02µmol/mol, N2O2 ≤ 0.05µmol/mol	Purified nitrogen (purity ≤ 1 ppm C, ≤ 1ppm CO, ≤ 400 ppm CO2, ≤ 0.1 ppm NO)	Purified nitrogen (purity ≤ 1 ppm C, ≤ 1ppm CO, ≤ 400 ppm CO2, ≤ 0.1 ppm NO)	High-purity N2 (HC: 1ppmC equivalent or lower, CO: 1ppm or lower, CO2: 400ppm or lower, NO: 0.1ppm or lower)
			Use FID fuel with a stated H2 concentration of (0.39 to 0.41) mol/mol, balance He, and a stated total hydrocarbon concentration of 0.05 µmol/mol or less.	Purified hydrogen (and mixture containing hydrogen) (Purity ≤ 1ppm C, ≤ 400 ppm CO2).	Purified hydrogen (and mixture containing hydrogen) (Purity ≤ 1ppm C, ≤ 400 ppm CO2).	H2: 40±2% (HC ≤ 1ppm C, ≤ 400 ppm CO2).
				Purified oxygen (purity ≤ 99.5 per cent Vol O2)	Purified oxygen (purity ≤ 99.5 per cent Vol O2)	Purified oxygen (purity ≤ 99.5 per cent Vol O2)
20	Mass emision calculation	corrected at 20°C / 0°C	20°C	20°C	0°C	20°C

		Dilution factor calculation	For Petroleum fueled $13.4/[CO_{2e}+(HC_e+CO_e)10^{-4}$	For ptrol & Diesel $13.4/(C_{CO2}+(C_{Hc}+C_{co}))*10^{-4}$	For ptrol & Diesel $13.4/(C_{CO2}+(C_{Hc}+C_{co}))*10^{-4}$	For ptrol & LPG $13.4/(C_{CO2}+(C_{Hc}+C_{co}))*10^{-4}$
				For LPG $11.9/(C_{CO2}+(C_{Hc}+C_{co}))*10^{-4}$	For LPG $11.9/(C_{CO2}+(C_{Hc}+C_{co}))*10^{-4}$	For Diesel $13.3/(C_{CO2}+(C_{Hc}+C_{co}))*10^{-4}$
				For CNG $9.5/(C_{CO2}+(C_{Hc}+C_{co}))*10^{-4}$	For CNG $9.5/(C_{CO2}+(C_{Hc}+C_{co}))*10^{-4}$	For CNG $9.9/(C_{CO2}+(C_{Hc}+C_{co}))*10^{-4}$
			For Methanol fuel vehicle different DF	Not Applicable	Not Applicable	Not Applicable

21	Particulate Filter	Paper quality	Pure PTFE filter material that does not have any flow-through support bonded to the back and has an overall thickness of 40 ±20 mm. An inert polymer ring may be bonded to the periphery of the filter material for support and for sealing between the filter cassette parts. We consider Poly methylpentene (PMP) and PTFE inert materials for a support ring, but other inert materials may be used. See the cassette specifications in paragraph (c)(1)(vii) of this section. We allow the use of PTFE-coated glass fiber filter material, as long as this filter media selection does not affect your ability to demonstrate compliance with the applicable standards, which we base on a pure PTFE filter material.	• The filter surface consists of a material that is hydrophobic and inert towards the components of exhaust gas (fluorocarbon coated glass fibre filters or equivalent).	• The filter surface consists of a material that is hydrophobic and inert towards the components of exhaust gas (fluorocarbon coated glass fibre filters or equivalent).	The collecting filter shall be a fluorine carbide-coated glass fiber or Polytetrafluoroethylene (PTFE)

		size	The filter must be circular, with an overall diameter of 46.50 ±0.6 mm and an exposed diameter of at least 38 mm.	70 mm / 47mm	70 mm / 47mm	47mm
		no. of filters (Primary & secondary)	Primary & secondary	Primary & secondary	Primary & secondary	Two separate filters for one for sample other for dilution air
22	Fuel Specifications		At Appendix I			
23	Vehicle : can't achieve required cycle speed		Speeds lower than those prescribed are acceptable, provided the vehicle is operated at maximum available power during such occurrences.	Full Throttle Driving	Full Throttle Driving	Full Throttle Driving
25	Filter Weighing Accuracy		Precision (standard deviation) and a readability of one microgram.	The microgram balance used to determine the weight of all filters must have an accuracy of 5 µg and readability of 1 µg.	The microgram balance used to determine the weight of all filters must have an accuracy of 5 µg and readability of 1 µg.	The readable limit of the weighing balance shall be 0.1 µg or less, and the standard deviation shall be 0.25 µg or less.

Reference Gasoline Fuel of US, EU, India , and Japan **Appendix I**

Parameter	Unit	EURO IV Fuel as per legislation		CFR-40, 86.113-04	EURO V Fuel as per legislation (E5)		Japan Fuel as per legislation	
		Min	Max		Min	Max	Regular	Premium
Research Octane number, RON		95	-	93 min	95	-	90-92	99-101
Motor Octane number, MON		85	-	-	85	-	80-82	86-88
Sensitivity		-	-	7.5 min.	-	-		
Density at 15 ^{o}C ISO 12185	kg/m^3	-	-	-	-	-		
Density at 15 ^{o}C ISO 3675	kg/m^3	740	754	-	743	756	0.72-0.77 g/cm3	
Reid vapor pressure	kPa	56	60	60 - 63.4	56	60	56-60	
Water content	%v/v					0.015		
Distillation:								
Initial boiling point	^{o}C	-	-	23.9 - 35	-	-		
10 pct point	^{o}C	-	-	48.9-57.2	-	-	45-55	
50 pct point	^{o}C	-	-	93.3-110	-	-	90-100	
90 pct point	^{o}C	-	-	148.9-162.8	-	-	140-170	
DIST at 70 ^{o}C	% volume	24	40	-	24	44		
DISt at 100 ^{o}C	% volume	50	58	-	48	60		
DIST at 150 ^{o}C	% volume	83	89	-	82	90		
final boiling point	^{o}C	190	210	-	190	210		
final distillation temperature	^{o}C						215 or less	
EP	^{o}C			212.8				
Residue	% volume	-	2	-	-	2		

MTBE	% volume	-		-	-		Not to be detected
Hydrocarbon Analysis							
olefins	% v/v	-	10	10 max	3	13	15-25
aromatics	% v/v	29	35	35 max	29	35	20-45
benzene	% v/v	-	1		-	1	1 or less
saturates	% v/v	-	-	remainder	Report		
Oxygenates	% v/v	-	-	-	Report		
Hydrogen	% wt	-	-	-	-	-	
Carbon	% wt	-	-	-	-	-	
Carbon/ hydrogen ratio		-	-	-	Report		
Carbon/ oxygen ratio					Report		
H/C ratio		-	-	-	-	-	
Oxidation stability	minutes	480	-	-	480	-	
Oxygen content	% wt	-	-	-	-	-	Not to be detected
Unwashed gum / 100 ml	mg		-	-		-	
Existent Gum	mg/ml				-	0.04	5 mg/100ml or less
Solvent washed gum / 100 ml	mg	-	-	-	-	-	
Sulpher content(3)	mg/kg	-	10	0.0015-0.008 wt. pct	-	10	10 or less
	% wt.						
Copper corrosion		-	1	-	-	Class 1	
Lead content	mg/l	-	5	13 max	-	5	Not to be detected
Prosperous content	g/l	-	0.0013	0.0013	-	0.0013	
Induction Period	minutes				480	-	
Ethanol	%v/v				4.7	5.3	Not to be detected
Methanol							Not to be detected
Kerosene							Not to be detected

Reference Diesel Fuel of US, EU, India , and Japan

Parameter	**Unit**	**EURO IV Fuel as per legislation**		**CFR-40, 86.113-04**	**EURO IV Fuel as per legislation (B5)**		**JapanFuel as per legislation**
		Min	**Max**		**Min**	**Max**	
Cetane number		52	54	40-45	52	54	53-57
Density at 15 °C	g/ml	0.833	0.837	32-37 ^{0} API	0.833	0.837	0.824-.840
Distillation:							
IBP	°C			171.1-204.4			
10 pct point	°C			204.4-237.8			
50 pct point	°C	245	-	243.3-282.2	245	-	225-295
95 pct point	°C	345	350		345	350	
90 pct point	°C			293.3-282.2			300-345

final boiling point	°C	-	370		-	370	370 or less
EP	°C			321.1-365.6			
Flash Point	°C	55		54.4	55	-	58
CFPP	°C	-	-5		-	-5	
Viscosity at 40oC	mm2/sec	2.3	3.3		2.3	3.3	
Polycyclic aromatic hydrocarbons	% m/m	3	6	27	2	6	5 vol % or less
All aromatic series							25 vol % or less
Fatty acid methyl ester							0.1% vol or less
Triglyceride							0.1% vol or less
Sulpher content	mg/kg	-	10	7-15 ppm	-	10	10 ppm
Copper corrosion		-	1		-	Class 1	
Conrad son carbon residue(10%DR)	% m/m	-	0.2		-	0.2	
Ash Content	% m/m	-	0.01		-	0.01	
Water Content	% m/m		0.02			0.02	
Neutralization (strong acid) number	mg/KOH/g		0.02		-	0.02	

Oxidation stability	mg/ml	-	0.025		-	0.025	
Viscosity at 40oC	Centistokes			2.0-3.2			
Kinetic Viscosity at 30oC	mm2/s						3.0-4.5
Lubricity (HFRR wear scan diameter at 60 0c	µm	-	-	-	-	400	
Oxidation Stability at 110 oc	h	-	-	-	20		
FAME	%v/v	-	-	-	4.5	5.5	