Pauly & Partner Am Westkai 45A 70329 Stuttgart

Landgericht Stuttgart
Urbanstr. 20
70182 Stuttgart

Duplikat

04.11.2020

Sachverständiger: Herr Riester
Sekretariat: Frau Krauß
Telefon: 0711 932332 - 0

GUTACHTEN J0O1129368

Az.: 20 O 327/18

Rechtssache

[redacted]

gegen

Daimler AG, Mercedesstr. 137, 70327 Stuttgart

PAULY & PARTNER
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Sitz Stuttgart
USt-IdNr.: DE 147527021
Geschäftsführer: Joachim Rössle

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1.0 Vorwort:

Gemäß der schriftlichen Beauftragung vom 21.01.2020 durch das Landgericht Stuttgart wird in vorstehend genannter Rechtssache ein Gutachten erstattet, in welchem zur Behauptung der Klagepartei im Beweisbeschluss vom 03.01.2020 Stellung genommen wird,

> der Stickoxidausstoß des streitgegenständlichen Fahrzeuges liege oberhalb des gesetzlich zulässigen Grenzwertes von 180 mg/km.

Der Sachverständige hat dazu Testfahrten im Realbetrieb vorzunehmen. Dabei haben die Testfahrten unter "normalen Nutzungsbedingungen" (Art. 4 Abs. 2 Unterabsatz 2 der Verordnung (EG) Nr. 715/2007) bzw. "normalen Betriebsbedingungen" (Art. 5 Abs. 1 der Verordnung (EG) Nr. 715/2007) stattzufinden. Insoweit wird dem Sachverständigen in rechtlicher Hinsicht mitgeteilt, dass - was die Außentemperaturen angeht - "normale Nutzungsbedingungen" bzw. "normale Betriebsbedingungen" jedenfalls im Temperaturbereich von -10° C bis +35° C vorliegen. Regen, Schneefall oder Straßenglätte sind in rechtlicher Hinsicht mit dem Begriff "normale Nutzungsbedingungen" bzw. "normale Betriebsbedingungen" vereinbar. Auch das Vorhandensein von Wind (außer Extremer Wind, z. B. Orkan) ist damit vereinbar. Ebenfalls wird in rechtlicher Hinsicht mitgeteilt, dass Geschwindigkeiten von über 130 km/h nicht als normal anzusehen sind.

Der Sachverständige möge Testfahrten bei verschiedenen Nutzungs- bzw. Betriebsbedingungen vornehmen einschließlich jeweils einer Wiederholungsfahrt im soeben erwähnten Sinne. Den Verlauf der Testfahrten (z. B. städtischer Verkehr oder Landstraße oder Autobahn, gerade Fläche oder Fahrten bergauf oder bergab) kann der Sachverständige selbst festlegen. Auch

hier kommt es allein darauf an, dass die Fahrten unter normalen Nutzungs- bzw. Betriebsbedingungen stattfinden.

Mit der schriftlichen Beauftragung ist am 03.02.2020 die bislang angefallene Akte Bl. 1 - 179 eingegangen.

Die Überprüfung des streitgegenständlichen Fahrzeuges sollte zunächst im Zeitraum zwischen den Kalenderwochen 13 - 15 stattfinden. Aufgrund des Lockdowns durch die Bundesregierung in Verbindung mit der Corona-Pandemie mussten die geplanten Untersuchungen abgesagt werden.

Mit den Schreiben vom 08.06.2020, 31.07.2020, 28.08.2002 und 04.09.2020 wurden das Gericht sowie die Parteien über die Besichtigungstermine und einzelnen Überprüfungsschritte informiert. Die vorbereitenden Maßnahmen am streitgegenständlichen Fahrzeug fanden in der Kalenderwoche 36 statt. Die Validierung und die Lastanpassung des Fahrzeuges auf dem Rollenprüfstand fanden am 14.09.2020 statt. die Realmessfahrten konnten am 15.09.2020 und 16.09.2020 durchgeführt werden. Bei der Validierung und Lastanpassung war der Mitarbeiter der Beklagten, Herr Reinke, anwesend. Bei der ersten Realmessfahrt war Herr Reinke ebenfalls anwesend. Bei der dritten Realmessfahrt am 16.09.2020 war der Klägervertreter anwesend.

Das Gutachten stützt sich auf den Akteninhalt sowie auf die Überprüfung des streitgegenständlichen Fahrzeuges.

Es wurden Lichtbilder gefertigt, welche dem Gutachten als Anlage beigefügt sind.

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2.0 Sachverhalt:

Nach Aktenlage erwarb der Kläger das streitgegenständliche Fahrzeug am 14.04.2016 mit einer Laufleistung von 87.918 km als Gebrauchtfahrzeug von der Beklagten. Der Kläger geht davon aus, dass im streitgegenständlichen Fahrzeug eine oder mehrere unzulässige Abschalteinrichtungen verbaut sind. Der Kläger behauptet, dass das Fahrzeug den Grenzwert für Stickoxidemissionen von 180 mg/km nur auf dem Prüfstand, nicht jedoch im realen Fahrbetrieb, einhält. Die Beklagte bestreitet dies.

3.0 Sachverständige Ausführungen:

3.1 Angaben zum Fahrzeug:

Amtliches Kennzeichen:	[redacted]
Fahrzeughalter:	[redacted]
Fahrzeugart:	Pkw
Fahrzeugaufbau:	Kombi
Fahrzeughersteller:	Mercedes-Benz
Fahrzeugtyp:	E 350 CDI
Fahrzeugidentnummer:	[redacted]
Kraftstoffart:	Diesel
Nationale Emissionsklasse:	Euro 5
Leistung:	195 kW
Hubraum:	2.987 ccm
Erstzulassung:	03.01.2011

Laufleistung am 03.09.2020:	133.007 km
Laufleistung am 16.09.2020:	133.336 km

Die vorstehend aufgeführten Daten basieren auf der Besichtigung sowie der überlassenen Zulassungsbescheinigung Teil I.

3.2 Erste Inaugenscheinnahme und vorbereitende Maßnahmen:

Die erste Inaugenscheinnahme des streitgegenständlichen Fahrzeuges fand zu Beginn der Kalenderwoche 36 statt. Das Fahrzeug wurde vorab durch die Firma Car Connection's vom Kläger zur Firma Car Connection's in Ostfildern-Kemnat verbracht. Die Lichtbilder Nr. 1 - 4 zeigen das streitgegenständliche Fahrzeug in der Übersicht. Die Lichtbilder Nr. 5 und Nr. 6 dokumentieren die Fahrzeugidentnummer sowie die Laufleistung zum Besichtigungszeitpunkt. Bei der ersten Inaugenscheinnahme des Fahrzeuges fiel auf, dass der Fahrzeuginnenraum extrem verschmutzt und verdreckt war. Aus diesem Grund wurde durch die Firma Car Connections vor Beginn der Untersuchungen eine Fahrzeuginnenraumreinigung durchgeführt. Das Lichtbild Nr. 7 zeigt beispielhaft den Zustand des Fahrzeuginnenraumes vor der Reinigung.

Im ersten Schritt wurde der Fehlerspeicher des Fahrzeuges ausgelesen. Innerhalb des Fehlerspeichers befanden sich keine relevanten Fehlerspeichereinträge. Das Lichtbild Nr. 8 zeigt einen Bildschirmausschnitt des Diagnosetesters auf dem zu erkennen ist, dass innerhalb des Motorsteuergerätes und des Getriebesteuergerätes keine Fehlerspeichereinträge hinterlegt sind.

Im Anschluss an die Fehlerspeicherauslesung wurde ein Ölwechsel inklusive Ölfilter durchgeführt. Hierbei wurde das vom Hersteller vorgeschriebene Motorenöl verwendet.

Die Lichtbilder Nr. 9 - 11 zeigen das Fahrzeug während der Achsvermessung. Sowohl die Spur als auch der Sturz an der Vorderachse waren verstellt. Beide Werte wurden nach den Vorgaben des Herstellers eingestellt. Das Achsmessprotokoll wird dem Gutachten als Anlage beigefügt.

Zum Abschluss wurden alle vier Räder auf Freigängigkeit überprüft und der Luftdruck der Reifen laut der Herstellervorgaben korrigiert. Nach Abschluss der vorbereitenden Maßnahmen wurde das Fahrzeug durch die Firma Car Connection's zur Firma Fakt in Benningen verbracht.

3.3 Lastanpassung und Validierung des Realmessgerätes (PEMS):

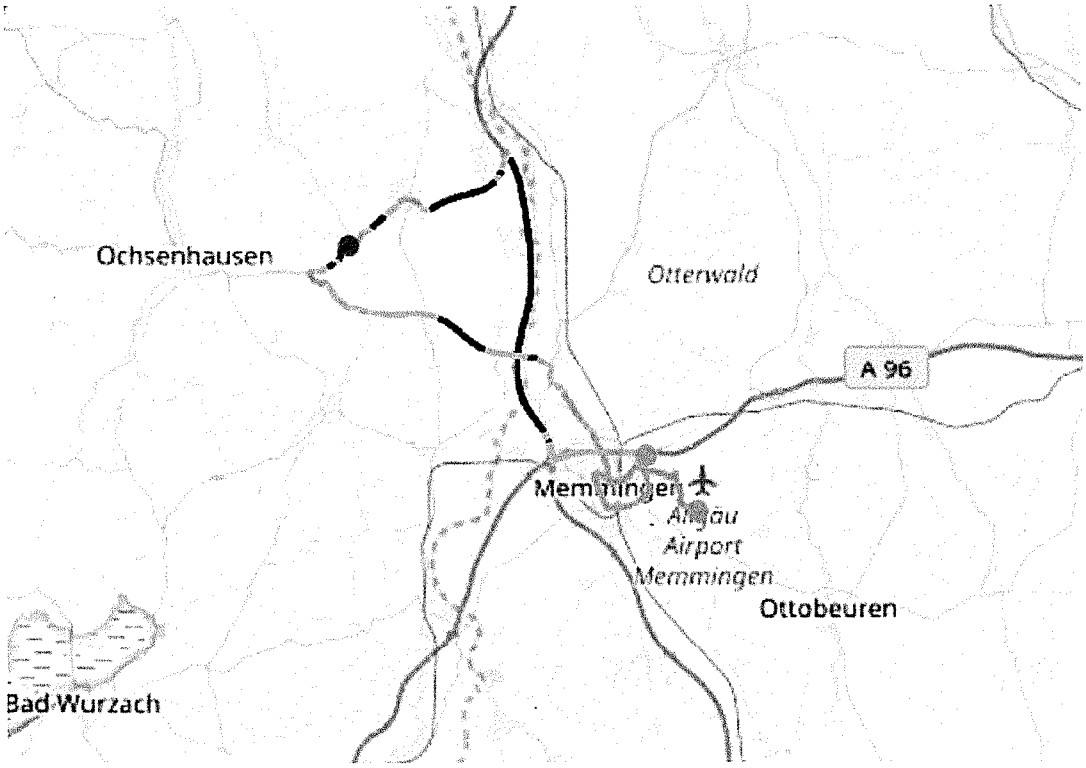
Die Validierung des Realmessgerätes, kurz PEMS (Portable Emissions Measurement System) fand am 14.09.2020 bei der Firma Fakt in Benningen auf dem Rollenprüfstand statt. Das Lichtbild Nr. 12 zeigt den Allradrollenprüfstand der Firma Fakt in der Übersicht. Die Lichtbilder Nr. 13 - 15 zeigen das für die Validierung auf dem Rollenprüfstand vorbereitete streitgegenständliche Fahrzeug. Das Lichtbild Nr. 16 zeigt das Realmessgerät.

Zunächst wurde auf dem Rollenprüfstand ein sogenannter Precon zur Vorkonditionierung gefahren. Dieser entspricht einem NEFZ-Zyklus bei kaltem Motorstart. Nach erfolgreichem Abschluss des Precon wurde eine Lastanpassung des Fahrzeuges an den Rollenprüfstand durchgeführt. Hierzu wurde das Fahrzeug mehrfach auf dem Rollenprüfstand bis auf 130 km/h beschleunigt und anschließend ausgerollt. Hierbei sind bestimmte Zeiten vorgegeben, in welchen ein gewisser Geschwindigkeitsverlust stattfinden muss. Nach dem sechsten Durchlauf konnten die vorgegebenen Zeiten eingehalten werden.

Im nächsten Schritt fand die eigentliche Validierung des Realmessgerätes (PEMS) statt. Hierzu wurde ein NEFZ-Zyklus im betriebswarmen Zustand des Motors gefahren. Währenddessen wurden die Abgaswerte, insbesondere NOx, CO und CO_2 sowohl durch das Realmessgerät als auch durch die Messtechnik des Rollenprüfstandes gemessen. Hierbei darf der Messwert des Realmessgerätes nur zu einem gewissen Prozentsatz vom Messergebnis des Rollenprüfstandes abweichen. Die Validierung des Messgerätes konnte erfolgreich durchgeführt werden. Das Validierungsergebnis sowie die Messergebnisse des NEFZ im warmen Zustand werden dem Gutachten als Anlage beigefügt.

3.4 Realmessfahrten:

Vor Beginn der Realmessfahrten musste eine geeignete Strecke für die Messungen festgelegt werden. Die Fahrstrecke beginnt bei der Firma Fakt und führt dann zunächst nach Memmingen. Hier wird eine Runde im Stadtbetrieb absolviert. Anschließend verläuft die Strecke größtenteils über Land Richtung Ochsenhausen. Von dort aus führt die Strecke ebenfalls hauptsächlich über Land Richtung der Autobahn A7. Von dort aus folgt die Strecke der A7 zurück bis nach Memmingen. Das Ende der Teststrecke befindet sich am Ende der Autobahnausfahrt Memmingen auf einem park-and-ride-Parkplatz. Sowohl der Stadt-, der Überland-, als auch der Autobahnanteil der gewählten Teststrecke beträgt in etwa jeweils 1/3. Die nachfolgende Karte zeigt die gewählte Teststrecke in der Draufsicht.



Die Teststrecke weist insgesamt eine Länge von ca. 56 km auf und dauert ca. eine Stunde.

Vor Beginn der Messungen wurde das streitgegenständliche Fahrzeug mit der entsprechenden Messtechnik ausgestattet. Das Lichtbild Nr. 17 zeigt das Realmessgerät (PEMS) der Firma AVL. Das Typenschild des PEMS ist auf Lichtbild Nr. 18 dargestellt. Das Lichtbild Nr. 19 zeigt den Prozessor und die Energieversorgung des Messgerätes. Das Lichtbild Nr. 20 zeigt die am PEMS angeschlossene Wetterstation. Die Wetterstation dient der Ermittlung der Umgebungsbedingungen. Sie misst die relative Luftfeuchte, den Luftdruck sowie die Lufttemperatur. Das Lichtbild Nr. 21 zeigt die am PEMS angeschlossene GPS-Antenne. Über die GPS-Antenne werden während der Fahrt die Fahrzeuggeschwindigkeit sowie der Messstreckenverlauf aufgezeichnet. Die Lichtbilder Nr. 22 und Nr. 23 zeigen den fertigen Messaufbau des PEMS. Der im

Heckbereich zusätzlich angebrachte Abgasträger führt zum einen die Abgase in das Realmessgerät (PEMS) und misst zum anderen über einen Sensor den Luftmassenstrom. Innerhalb des PEMS sind verschiedene Analysatoren verbaut. Diese können NO - und NO_2 -Anteile im Abgas ermitteln. Aus den beiden Größen wird anschließend der zusammengefasste Stickoxid-Wert NOx berechnet. Des Weiteren kann das Realmessgerät (PEMS) CO, CO_2 und O_2 detektieren. Das entnommene Abgas wird vor der Einführung in das PEMS über einen Filter gereinigt, um das Messgerät nicht zu beschädigen. Die Messdaten werden anschließen über den Systemrechner verarbeitet und auf einer integrierten Festplatte gespeichert.

Das Lichtbild Nr. 24 zeigt eine Kamera, mit welcher die Realmessfahrten aufgezeichnet wurden. Das Lichtbild Nr. 25 zeigt das an der Windschutzscheibe angebrachte Navigationsgerät, in welchem die ausgewählte Route hinterlegt ist, um sicherzustellen, dass die Teststrecke korrekt abgefahren wird. Während aller vier Realmessfahrten war die Klimaanlage auf Automatikbetrieb eingeschaltet. Es wurde eine Soll-Temperatur von 22° C eingestellt, vgl. Lichtbild Nr. 26.

Vor Beginn und nach Abschluss jeder Realmessfahrt werden in das Realmessgerät (PEMS) Prüfgase eingeleitet, welche einen exakten prozentualen Anteil an Schadstoffen aufweisen, um zu überprüfen, ob das Realmessgerät exakt misst. Die Überprüfung des Messgerätes durch die Einleitung der Prüfgase dauert ca. 20 Minuten.

Die erste Realmessfahrt sollte am 15.10.2020 um 09:00 Uhr starten. Aufgrund einer leeren Starterbatterie, welche zunächst geladen werden musste, verzögerte sich der Start um ca. eine Stunde. Die erste Realmessfahrt konnte ca. gegen 10:00 Uhr starten. Der Start erfolgte mit kaltem Motor. Während der Fahrt folgte der Mitarbeiter der Beklagten, Herrn Reinke, dem streitgegenständlichen

Fahrzeug mit seinem eigenen Pkw. Im streitgegenständlichen Fahrzeug befanden sich während der Messfahrt zwei Personen. Die Fahrt wurde durch den Unterzeichner durchgeführt und durch den Mitarbeiter der Firma Fakt, Herrn Klaus, begleitet. Hierbei saß Herr Klaus auf dem Sitz hinten rechts. Die erste Realmessfahrt dauerte 61 Minuten und konnte erfolgreich durchgeführt werden. Die Temperaturen während der ersten Messung lagen zwischen 21,5 und 24° C. Nach Abschluss der Messfahrt wurden die Prüfgase erneut in das Messgerät eingeleitet, um zu überprüfen, ob eine korrekte Messung stattgefunden hat.

Die zweite Messfahrt konnte pünktlich um 13:00 Uhr gestartet werden. Vorab wurde das streitgegenständliche Fahrzeug warmgefahren, sodass die zweite Messfahrt mit betriebswarmem Motor gestartet werden konnte. Auch die zweite Messfahrt konnte erfolgreich durchgeführt werden. Während der zweiten Messfahrt befanden sich ebenfalls zwei Personen im Fahrzeuginnenraum. Jedoch war nicht mehr der Mitarbeiter der Firma Fakt, Herr Klaus, sondern der Mitarbeiter der Firma Pauly und Partner, Herr Grimm, im Fahrzeug anwesend. Der Mitarbeiter der Beklagten, Herr Reinke, war während der zweiten Messung ebenfalls nicht mehr anwesend. Die zweite Messfahrt dauerte 57 Minuten. Die Außentemperaturen lagen zwischen 27 und 29° C. Nach Abschluss der Messfahrt wurden erneut Prüfgase in das PEMS eingeleitet und somit bereits für die Messfahrten am Folgetag vorbereitet.

Die dritte Messfahrt konnte pünktlich um 09.00 Uhr des Folgetages am 16.09.2020 gestartet werden. Die Messung erfolgte wie am Tag zuvor mit kaltem Motor. Das streitgegenständliche Fahrzeug war erneut mit zwei Personen besetzt. Zum einen durch den Unterzeichner und zum anderen durch den Mitarbeiter der Firma Pauly & Partner, Herrn Grimm. Während der Realmessfahrt folgte der Klägervertreter dem streitgegenständlichen Fahrzeug mit seinem Pkw. Die Messfahrt konnte erneut erfolgreich durchgeführt werden. Die Messfahrt

dauerte 62 Minuten und es herrschten währenddessen Temperaturen zwischen 18 und 21° C.

Die vierte und letzte Messfahrt konnte ebenfalls erfolgreich durchgeführt werden. Während der letzten Messfahrt war der Klägervertreter nicht mehr anwesend. Die Messfahrt dauerte 57 Minuten und wurde, wie am Vortag, mit betriebswarmem Motor gestartet. Die Temperaturen während der Messung betrugen zwischen 22 und 25° C.

Nach Abschluss der Messungen wurde das streitgegenständliche Fahrzeug in den darauffolgenden Tagen durch die Firma Fakt zurückgebaut und durch die Firma Car Connection's zum Kläger zurückverbracht.

Am 17.09.2020 übermittelte Herr Klaus von der Firma Fakt die Messergebnisse der Realmessfahrten per E-Mail. Sämtliche Messprotokolle werden dem Gutachten als Anlage beigefügt.

3.5 Beantwortung der Beweisfragen:

Alle vier Realmessfahrten konnten auf Anhieb erfolgreich durchgeführt werden. Es wurden jeweils zwei Messfahrten mit kaltem und zwei Messfahrten mit betriebswarmem Motor durchgeführt. Des Weiteren wurden jeweils eine Messfahrt morgens und eine Messfahrt nachmittags durchgeführt, um einen größtmöglichen Temperaturunterschied zwischen den Messungen vorliegen zu haben. Zwischen dem niedrigsten Temperaturmesswert und dem höchsten Temperaturmesswert liegen ca. 10° C. Während aller Messfahrten herrschten Sonnenschein und nur geringe Windgeschwindigkeiten.

Die Auswertung der Messwerte ergab folgende Ergebnisse:

1. Messfahrt:	681,12 mg/km
2. Messfahrt:	625,54 mg/km
3. Messfahrt:	452,28 mg/km
4. Messfahrt:	593,41 mg/km

Aus den Messergebnissen ergibt sich, dass das streitgegenständliche Fahrzeug während der durchgeführten Messfahrten den Grenzwert von 180 mg/km um das 2,51 - 3,78-fache überschritten hat. Die Messergebnisse zwischen den einzelnen Messfahrten zeigen keine signifikanten Unterschiede zwischen kaltem und warmem Motorstart. Ebenfalls scheinen die Außentemperaturen keinen wesentlichen Einfluss auf die ermittelten NOx-Werte zu haben. Es fällt sogar auf, dass während der dritten Messfahrt, bei welcher die kühlsten Außentemperaturen vorlagen, die besten Werte erzielt werden konnten. Die Auswertung der Videodateien ergab, dass gerade im dritten Durchlauf lange Zeit auf der Landstraße hinter einem Lkw hergefahren werden musste. Hieraus ergibt sich eine besonders günstige Situation in Bezug auf den Schadstoffausstoß. Hieraus lässt sich ableiten, dass der Schadstoffausstoß am streitgegenständlichen Fahrzeug hauptsächlich von der Fahrweise und vom Verkehrsaufkommen abhängig ist. Jedoch zeigen die Messungen eindeutig, dass obwohl nahezu optimale Wetterbedingungen vorlagen, der Wert von 180 mg/km um ein Vielfaches überschritten wurde. Aufgrund der großen Datenmenge der erstellten Videos werden diese bei der Firma Pauly & Partner asserviert und können bei Bedarf eingesehen werden.

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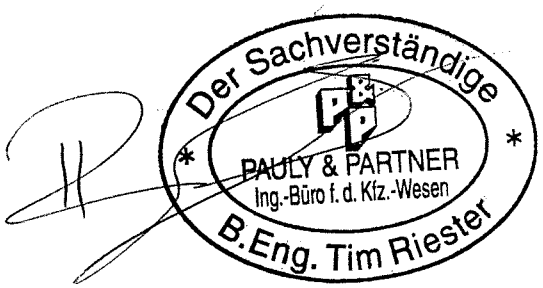
4.0 Zusammenfassung:

Die Realmessfahrten mit dem streitgegenständlichen Fahrzeug konnten am 15.09.2020 und 16.09.2020 erfolgreich durchgeführt werden.

Die Messungen haben ergeben, dass der Wert von 180 mg/km während aller vier Messfahrten um das 2,51 - 3,78-fache überschritten wurde.

5.0 Schlusswort:

Dieses Gutachten wurde unparteiisch und nach bestem Wissen und Gewissen erstellt.



Der Sachverständige
B.Eng. Tim Riester

Anlagen
27 Lichtbilder
1 Messprotokoll NEFZ warm
1 Messprotokoll Validierung
4 Messprotokolle Realmessfahrten
1Achsmessprotokoll

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Bild Nr. 001

Bild Nr. 002

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Bild Nr. 003

Bild Nr. 004

Bild Nr. 005

Bild Nr. 006

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Bild Nr. 007

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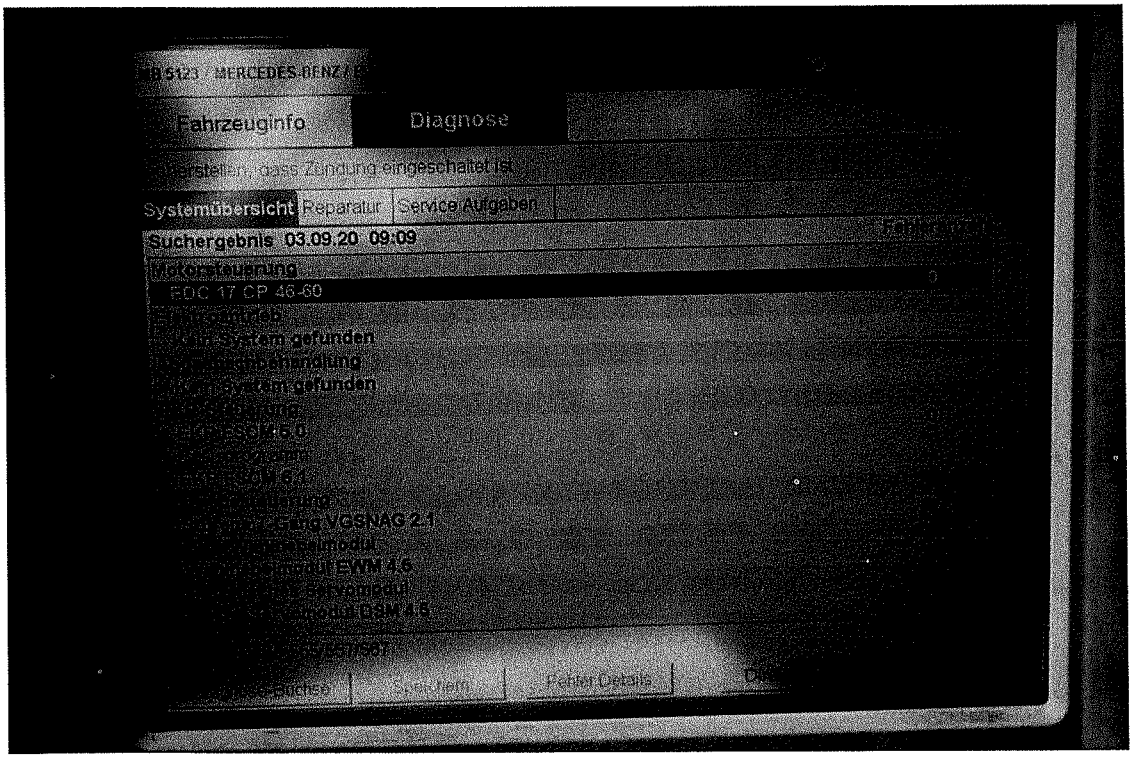

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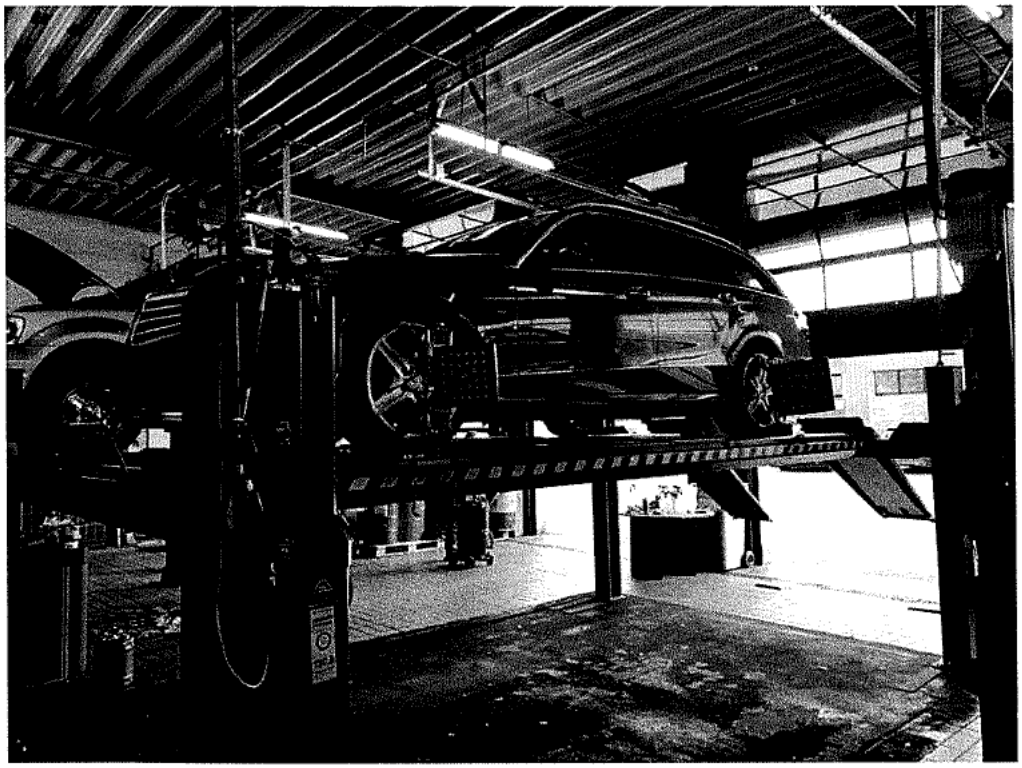

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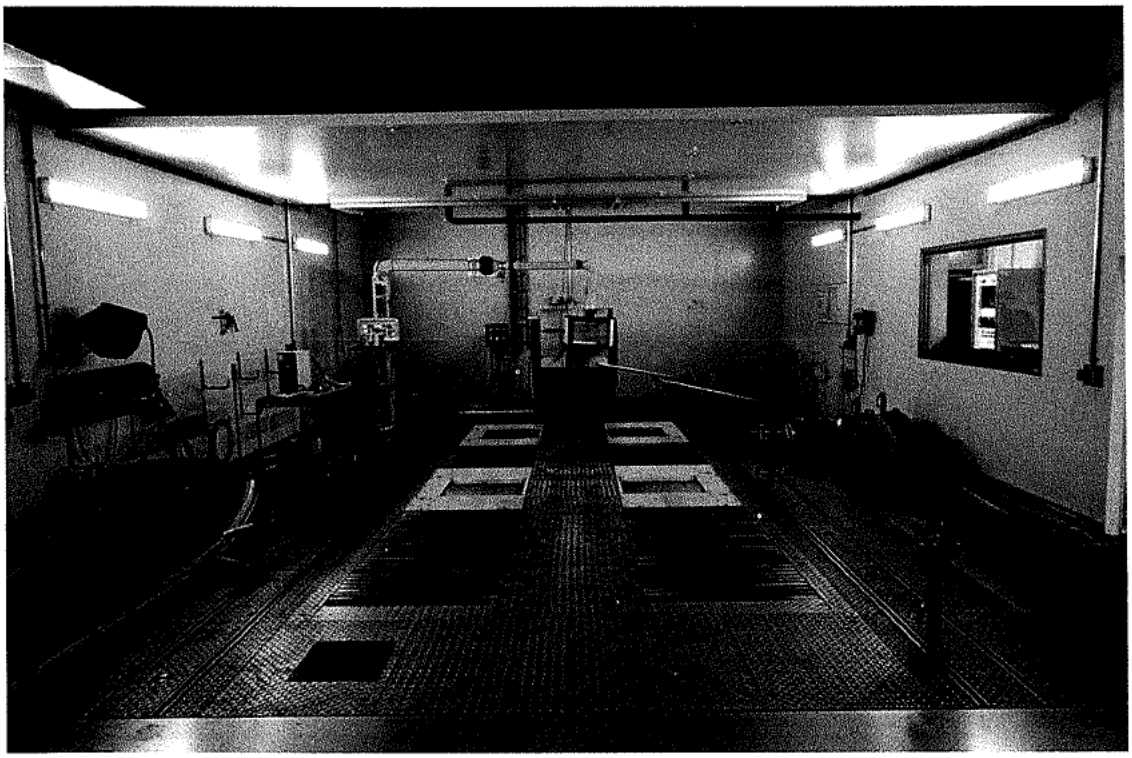

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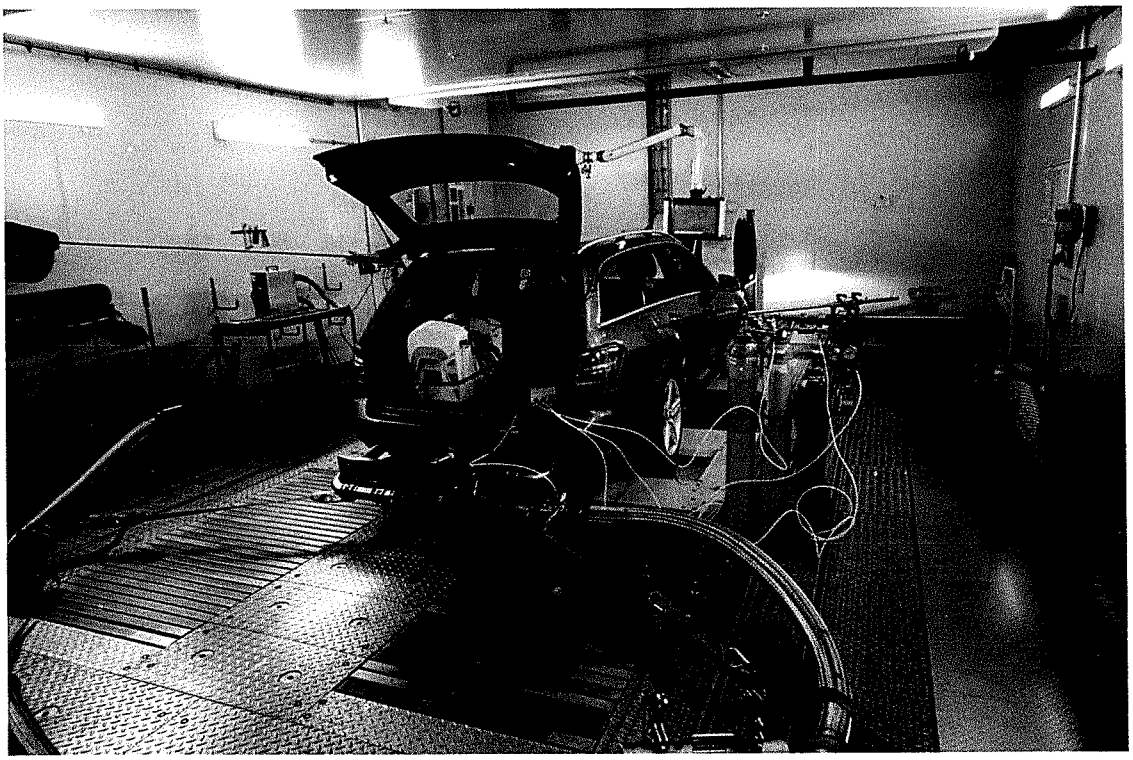

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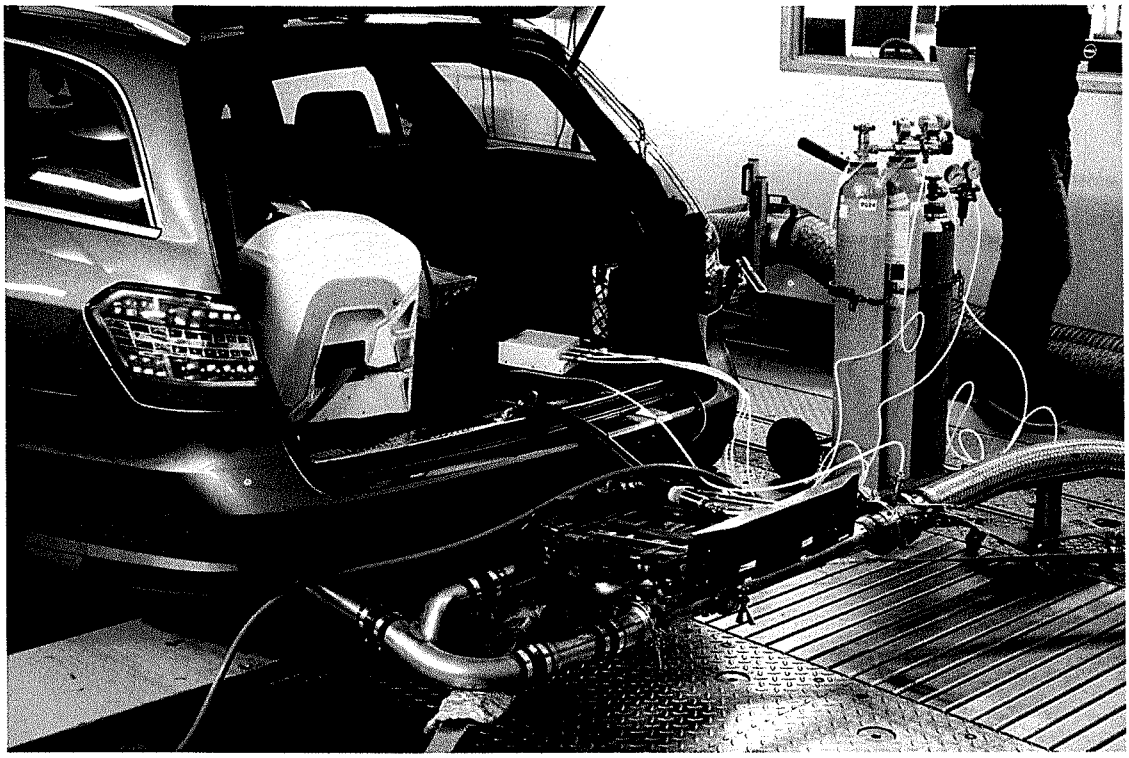

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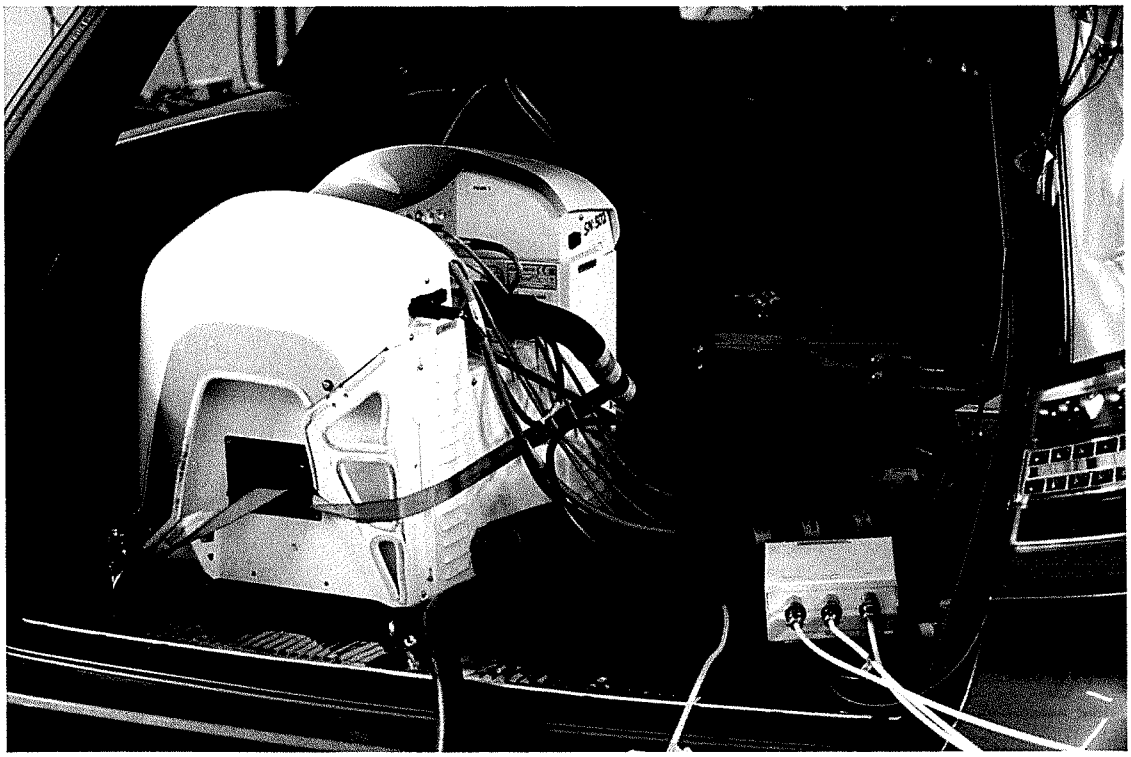

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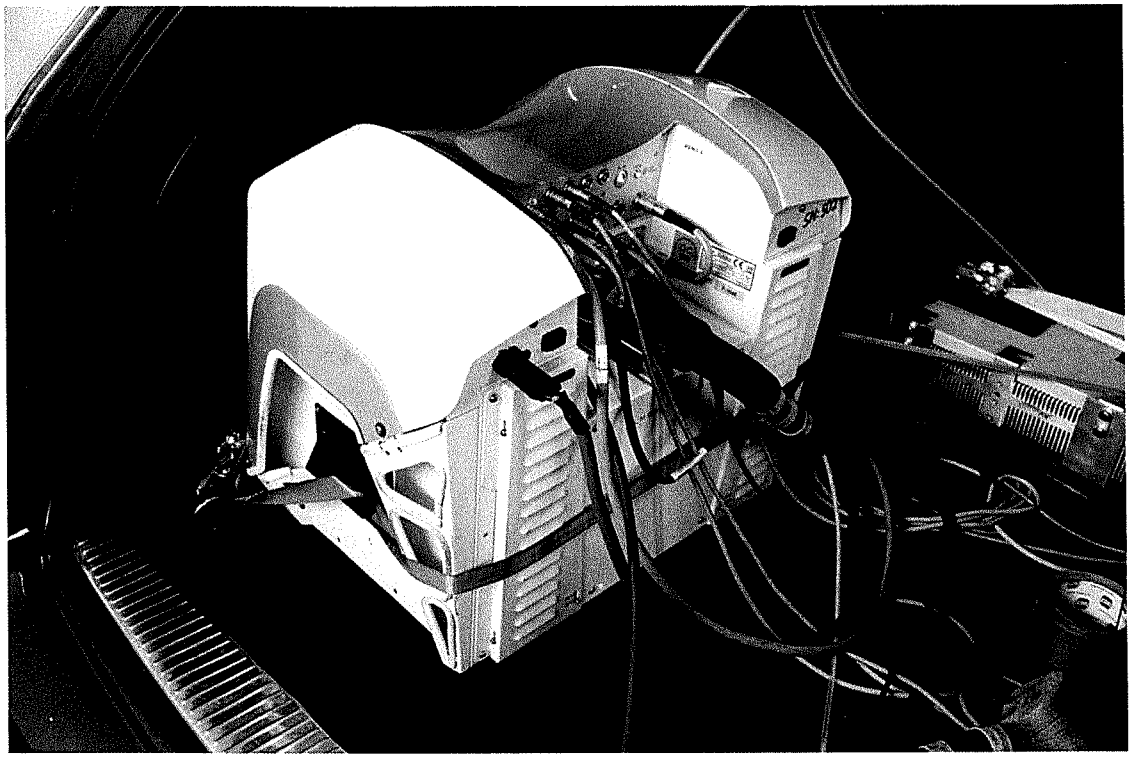

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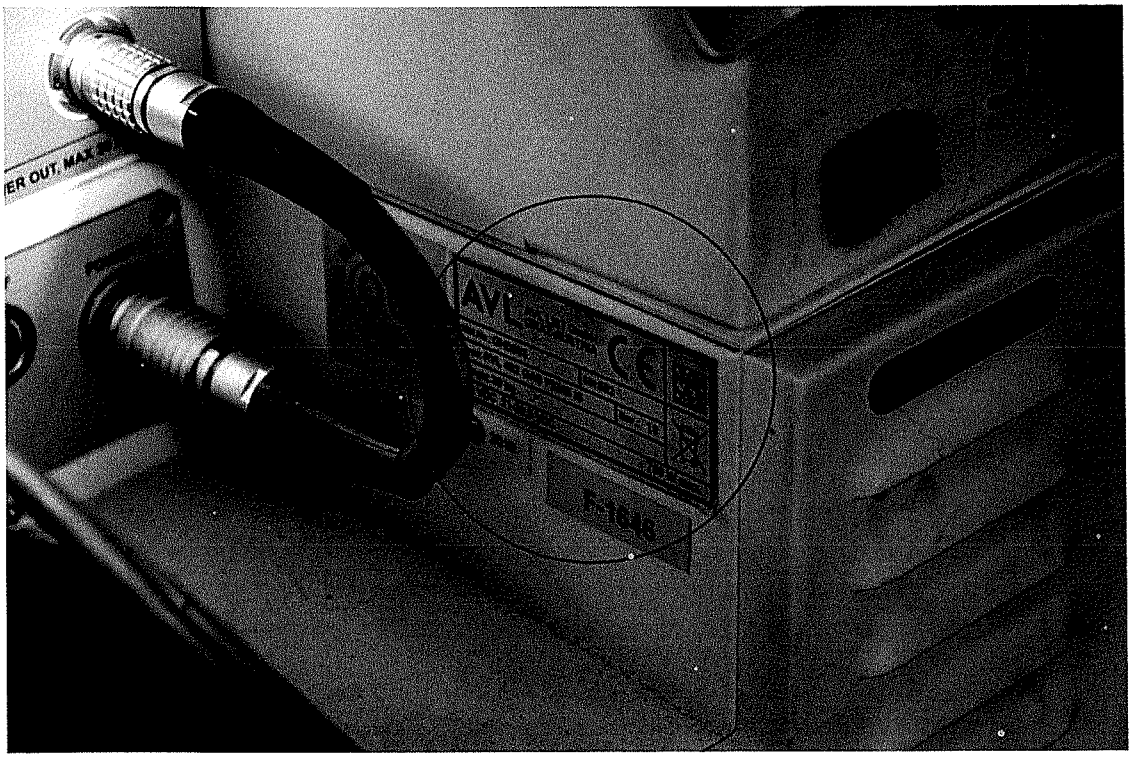

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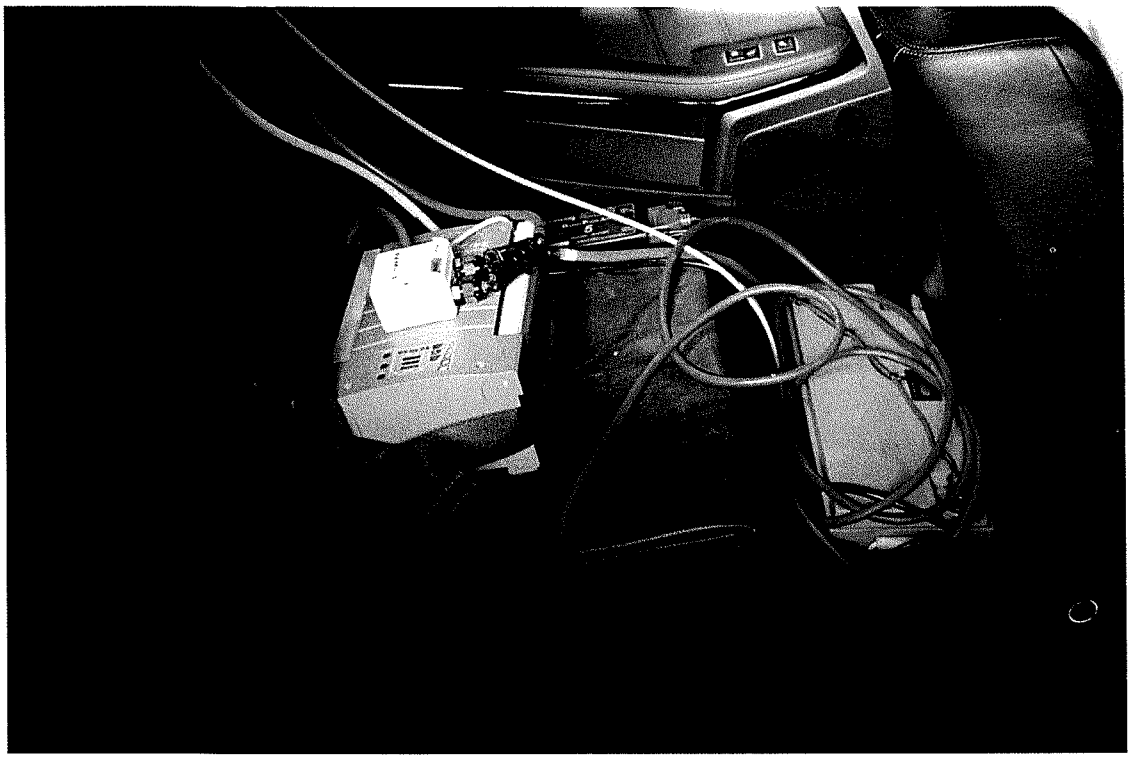


Bild Nr. 020

Bild Nr. 021

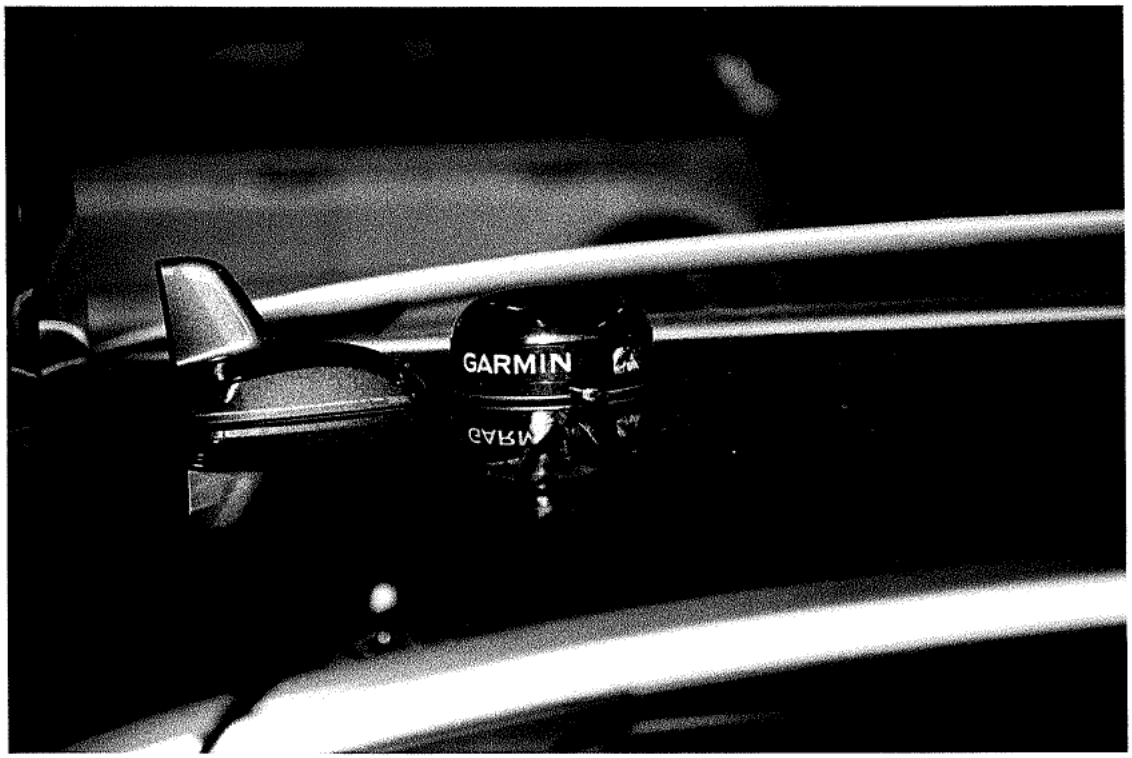


Bild Nr. 022

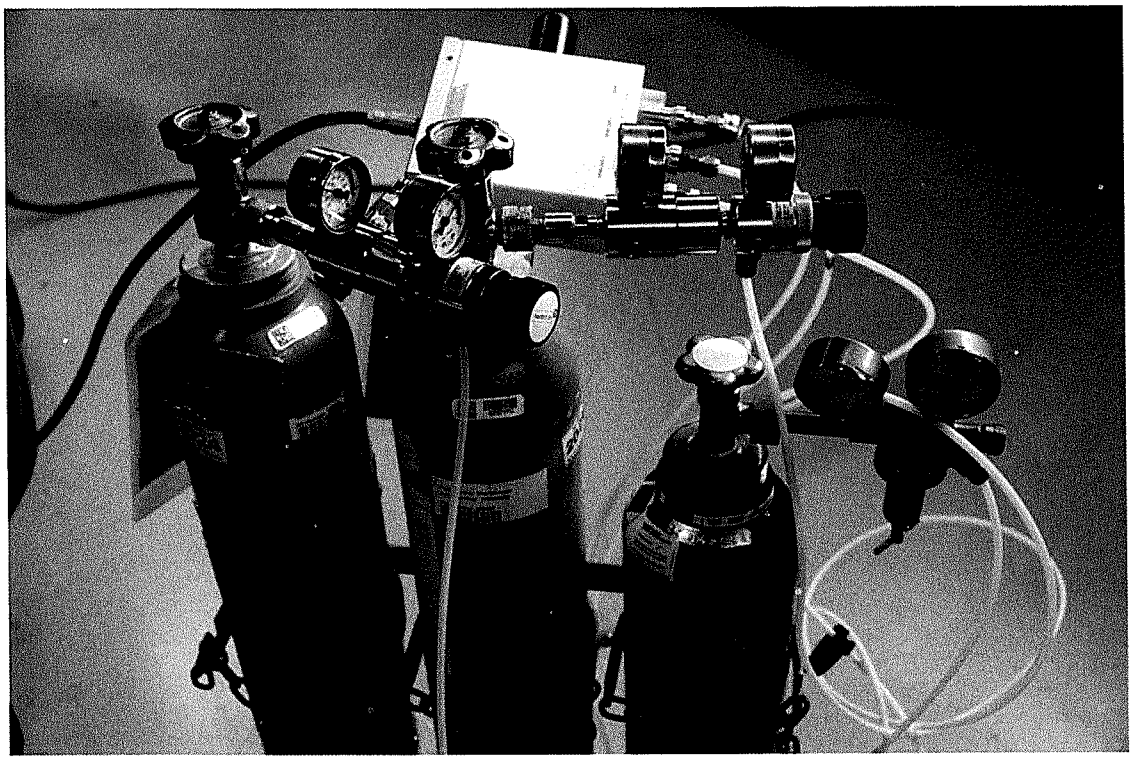
Bild Nr. 023

Bild Nr. 024

Bild Nr. 025

Bild Nr. 026

Bild Nr. 027



FAKT Emission Test Center

Testbegleitdaten	NEDC.AUTO;DIESEL;2 Beutel;dil		Testnummer:	FAK-01-20200914-09
Datum u. Startzeit:	14.09.2020	15:49	Region:	Europa
Auftraggeber:	Pauly & Partner		Berechnungsmethode:	EU
Fahrer:	A. Ulinez		Schaltpunkttabelle:	AUTO
CVS Weg:	DIESEL		Phasensteuerung:	2 Beutel
Solltemperatur [°C]:			Fahrzyklus:	NEDC.AUTO
FWG:	Proportional		Versuchszweck:	Abgastest
Staehle Baumuster				
Steigung:	0			

Fahrzeugdaten	[redacted]	Fahrzeugkonfig:			
Marke:	Mercedes-Benz	Fahrgestellnummer:	[redacted]	Öltemp. vor Test [°C]	24.0
Modell:	E350	Hubraum [cm³]:	2987	Tacho Anfang [km]	133078
Karosserieform:		MKB:	-	Tacho Ende [km]	
Amtliches Kennzeichen:	[redacted]	Getriebe:	AT		

Konfiguration:					Straßenlast	Rollenlast
Schwungmasse eingest. [kg]:	1930	Reifendruck VA [bar]		F0 [N]:	182.0	92.8
Schwungmasse [kg]:	1930	Reifendruck HA [bar]		F1 [N/(km/h)]:	0.620	-0.6400
Radstand [mm]:		Antriebsart:	HECK	F2 [N/(km/h)2]:	0.03300	0.03820

Kraftstoff	DIESEL_EU5_B5				
Kraftstoffart	B5	Dichte [kg/l]:	0.8350	C-Gehalt:	0.861
Batch-Nr	CAF-G19/1096	KST-Normtemp. [°C]	15.0		
Heizwert [BTU/lb]:	18430	Ethanol [Vol%]			

Allgemeine Daten		Phase 1	Phase 2	Phase 3	Phase 4	Gesamt
Umgebungstemperatur	[°C] :	23.0	23.2			23.1
Luftdruck	[mbar] :	952	952			952
Relative Luftfeuchtigkeit	[%] :	49.8	49.4			49.6
Absolute Luftfeuchtigkeit	[g/kg] :	9.24	9.32			9.27
NOx-Korrekturfaktor	[-] :	0.954	0.956			0.955
DF (Beutel)	[-] :	32.91	15.23			26.92
CVS-Vol. (0°C,1013,25 mbar)	[m³] :	128.714	66.110			194.824
Wegstrecke	[km] :	4.015704	6.923379			10.93908
Phasendauer	[s] :	780	400			1180
Fahrfehler Anzahl:	[-] :	0	0			0
Anzahl Toleranzverletzungen	[-] :					

Konzentrationen		Ph1 Abgas	Ph1 Luft	Ph2 Abgas	Ph2 Luft	Ph3 Abgas	Ph3 Luft	Ph4 Abgas	Ph4 Luft	Gesamt	RF CH4
CH4	[ppmC1] :	2.61	2.19	2.66	2.19						
THC (HFID)	[ppmC3] :	4.55	1.67	2.42	1.46						1.0000
CO	[ppm] :	10.20	0.71	0.70	0.36						
NOx	[ppm] :	4.68	0.29	12.00	0.05						
NO	[ppm] :	4.49	0.27	11.10	0.09						
N2O	[ppm] :	0.28	0.28	0.27	0.28						
CO2	[%] :	0.408	0.051	0.885	0.047						

NO2	[g/km] :	0.0115	0.0177

Phasenergebnis		Phase 1	Phase 2	Phase 3	Phase 4
CH4	[mg/km] :	11.0892	4.2101		
THC	[mg/km] :	174.8291	18.8403		
HC+NOx	[mg/km] :	450.8720	242.6706		
NMHC	[mg/km] :	164.0096	14.7326		
CO	[mg/km] :	381.1820	4.3496		
NOx	[mg/km] :	276.0428	223.8303		
NO2	[mg/km] :	11.4745	17.6970		
N2O	[mg/km] :	0.0646	0.1520		
CO2	[g/km] :	225.3508	157.8472		

Berechnungsmethode: **EU** Grenzwert Euro 5a DIESEL

Gesamtergebnis		ohne VF	GW	% v. GW	VF	mit VF	% v. GW
CH4	[mg/km] :	6.7354					
THC	[mg/km] :	76.1033					
HC+NOx	[mg/km] :	319.1007	230	139 %	1.100	351.0108	153 %
NMHC	[mg/km] :	69.5317					
NMHC+NOx	[mg/km] :	312.5291					
CO	[mg/km] :	142.6836	500	29 %	1.500	214.0254	43 %
NOx	[mg/km] :	242.9974	180	135 %	1.100	267.2971	148 %
N2O	[mg/km] :	0.1199					
CO2	[g/km] :	182.6276					

Verbrauch		Phase 1	Phase 2	Phase 3	Phase 4	Gesamt	GW	% v. GW
Verbrauch	[l/100km]	8.5902	5.9890			6.9439		
FE	[mpg]	27.3788	39.2704			33.8701		
FE	[km/l]	11.6411	16.6973			14.4011		0.00 %

Massen und Verbrauchswerte sind nicht nach ASTM gerundet

Bemerkungen/Sonstiges:

FAKT GmbH
Grüntenstraße 3-5
87751 Heimertingen

Case: FAKT_Validierung

Page: Chassis Dyno vs. PEMS

'Validierung'
Start Date: 09/14/2020
Start Time: 14:14:29.0

AVL
Concerto M.O.V.E, 2019

		Chassis Dyno *	PEMS **	Delta abs.	Delta rel.	Limit abs.	Limit rel.	pass/fail
					%	+/-	%	
Distance	km	10.94	10.917	-0.022	-0.2	0.250		pass
NOx	mg/km	243.00	274.32	31.32	12.9	15	15	pass
CO	mg/km	142.68	127.65	-15.03	-10.5	150	15	pass
CO2	g/km	182.63	197.92	15.29	8.4	10	10	pass
NMHC	mg/km	0.00	0.00	0.00	n/a	20	20	n/a
CH4	mg/km	0.00	0.00	0.00	n/a	15	15	n/a
THC	mg/km	0.00	0.00	0.00	n/a	15	15	n/a
PN	#/km	0.000e+00	0.000e+00	0.000e+00	n/a	1e+011	50	n/a
RDE ECU velocity factor		1.002						

* reference
** pollutant mass/number divided by distance obtained from chassis dynamometer

Test Cell Name: FAK-01-20200914-09
Project Name:
Test Series:
Test Result Name:
Flow Stream:
System Parameters:
Test Field Parameters:
Unit Under Test:
Test Cycle Name:

Concerto Version: 503 Build 82, Serial Number: 9-721D44C0
M.O.V.E Post-Processing: DT_1R3.2_B319
Legislation:

Vehicle: Mercedes-Benz E350 / [redacted]
Engine: - / 2987ccm/195kW
NOx Ambient Condition Corr.: 8 - NONE
Dry / Wet Corr.: 1 - ISO16183 [Default]

COMMISSION REGULATION (EU) 2018/1832

Measurement Files:

FAKT_P03_MB_E350_5463_RDE1_kalt_20200915_1_3_PRE.001
FAKT_P03_MB_E350_5463_RDE1_kalt_20200915_1_4_MAIN.003
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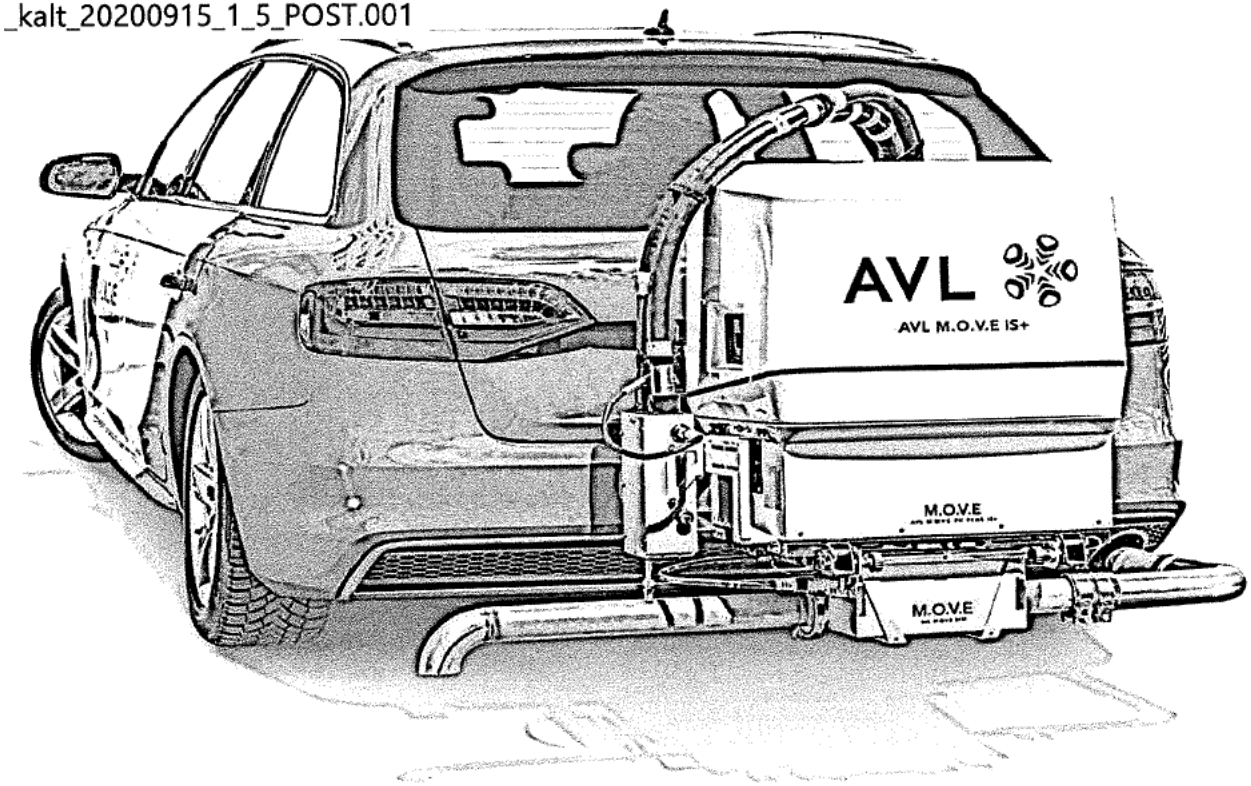


Concerto Version: 503 B82, MOVE DT 1R3.2 B319 Concerto Serial Number: 9-721D44C0 MOVE Version: V2.6_204 Windows Version: Microsoft Windows 10 Pro	Test Id: [redacted] / Mercedes-Benz E350 Engine: -/2987ccm/195kW fuel: Diesel EU B7 Engine at test start: Cold Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI	ECU velocity factor: 1.002 extended cond.: 0% (0% cold start) Propulsion Type: ICE Date/Time: 2020-09-15/08:36:05	Page Test	n/a 11 fails

Trip Summary
Emission Summary

Summary

AVL

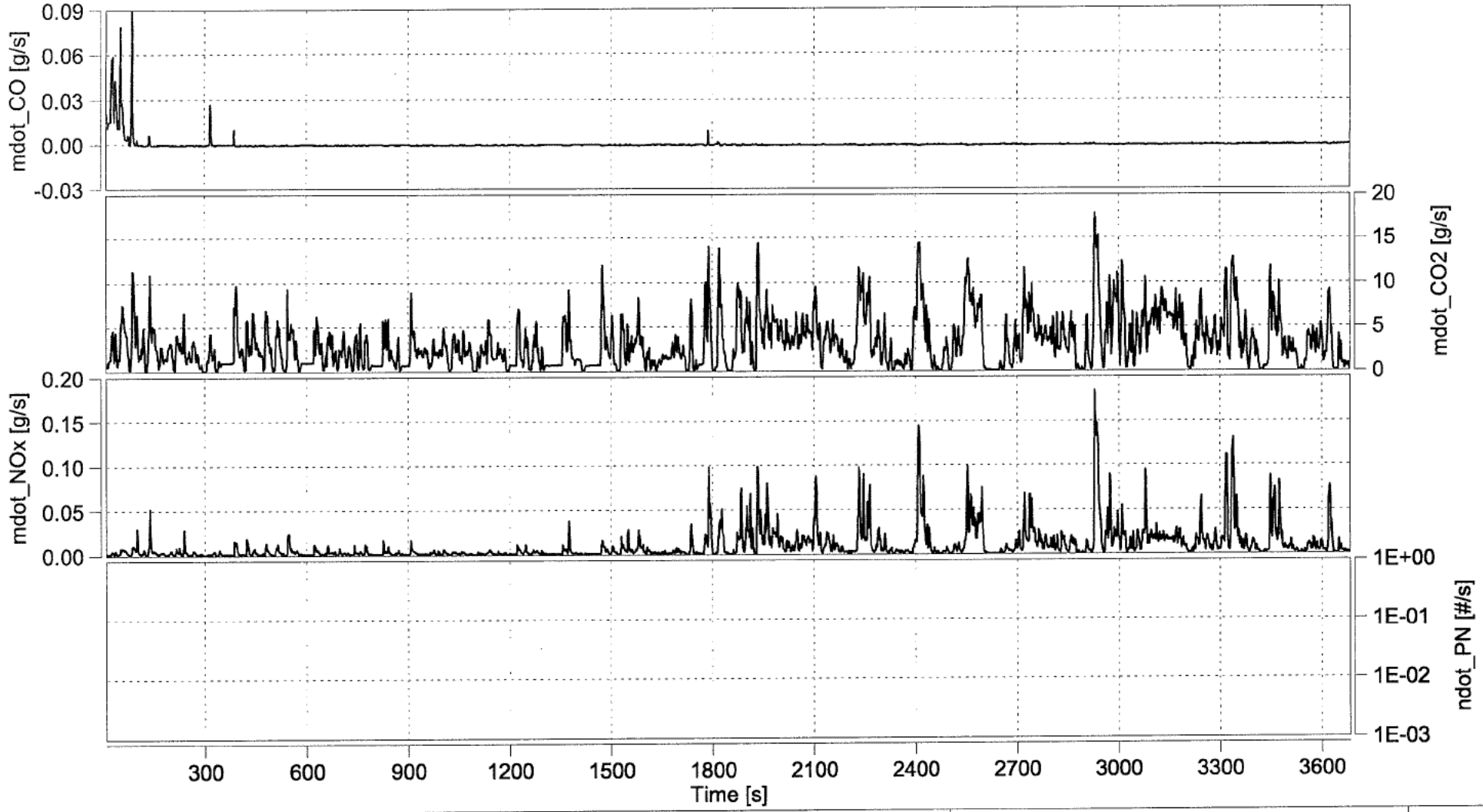
	urban	rural	motorway	trip	
Duration	2218	804	652	3674	s
Distance	20.18	17.35	17.95	55.48	km
Avg. Velocity	32.76	77.70	99.10	54.37	km/h
Fuel	1.57	1.01	1.00	3.58	kg
Exhaust Mass	50.39	30.19	28.44	109.02	kg

	total					distance specific					
	urban	rural	motorway	trip		urban	rural	motorway	trip	avg.	
CO [g]	1.39	-0.33	-0.31	0.76	**CO [mg/km]**	69.08	-18.82	-17.26	13.66	13.25	ppm
CO2 [g]	5012.81	3202.58	3174.59	11389.97	**CO2 [g/km]**	248.39	184.55	176.88	205.29	6.54	%
N2O [g]					**N2O [mg/km]**						ppm
NO [g]	8.95	12.45	10.90	32.30	**NO [mg/km]**	443.34	717.62	607.09	582.10	132.77	ppm
NO2 [g]	1.00	2.33	2.16	5.49	**NO2 [mg/km]**	49.69	134.44	120.24	99.02	23.05	ppm
NOx [g]	9.9501	14.786	13.054	37.790	**NOx [mg/km]**	493.04	852.05	727.33	681.12	155.82	ppm
PN [#]	0.000e+00	0.000e+00	0.000e+00	0.000e+00	**PN [#/km]**	0.000e+00	0.000e+00	0.000e+00	0.000e+00	0	#/cm³

wet gas and particle number

Emissions

AVL

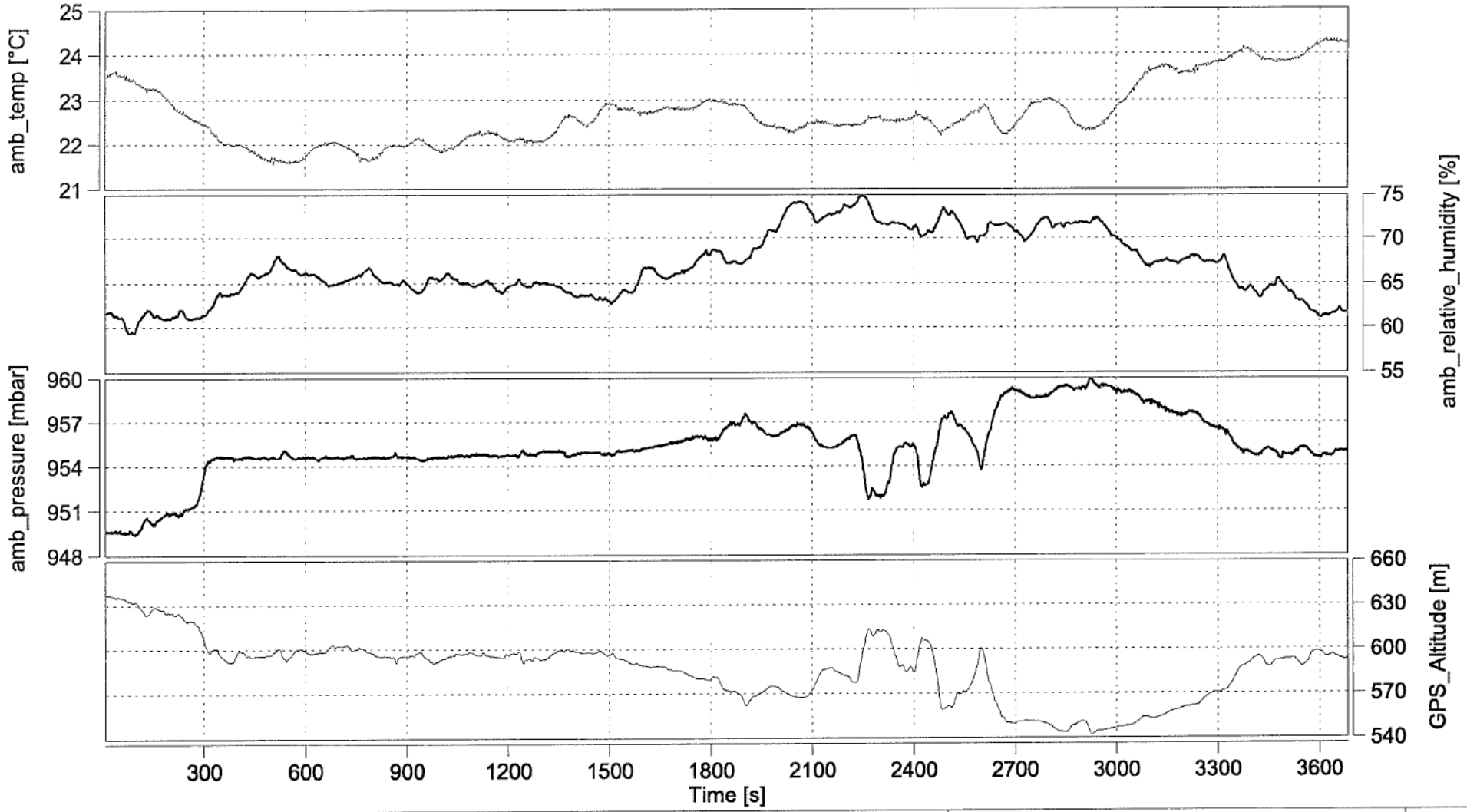


Concerto Version: 503 B82, MOVE DT 1R3.2 B319 Concerto Serial Number: 9-721D44C0 MOVE Version: V2.6_204 Windows Version: Microsoft Windows 10 Pro	Test Id: [redacted] / Mercedes-Benz E350 Engine: -/2987ccm/195kW fuel: Diesel EU B7 Engine at test start: Cold Euro6d-TEMP/AG;BG;CG;DG/M;N1classl/CI	ECU velocity factor: 1.002 extended cond.: 0% (0% cold start) Propulsion Type: ICE Date/Time: 2020-09-15/08:36:05	Page n/a Test 11 fails

ambient conditions
and GPS altitude

Ambient

AVL

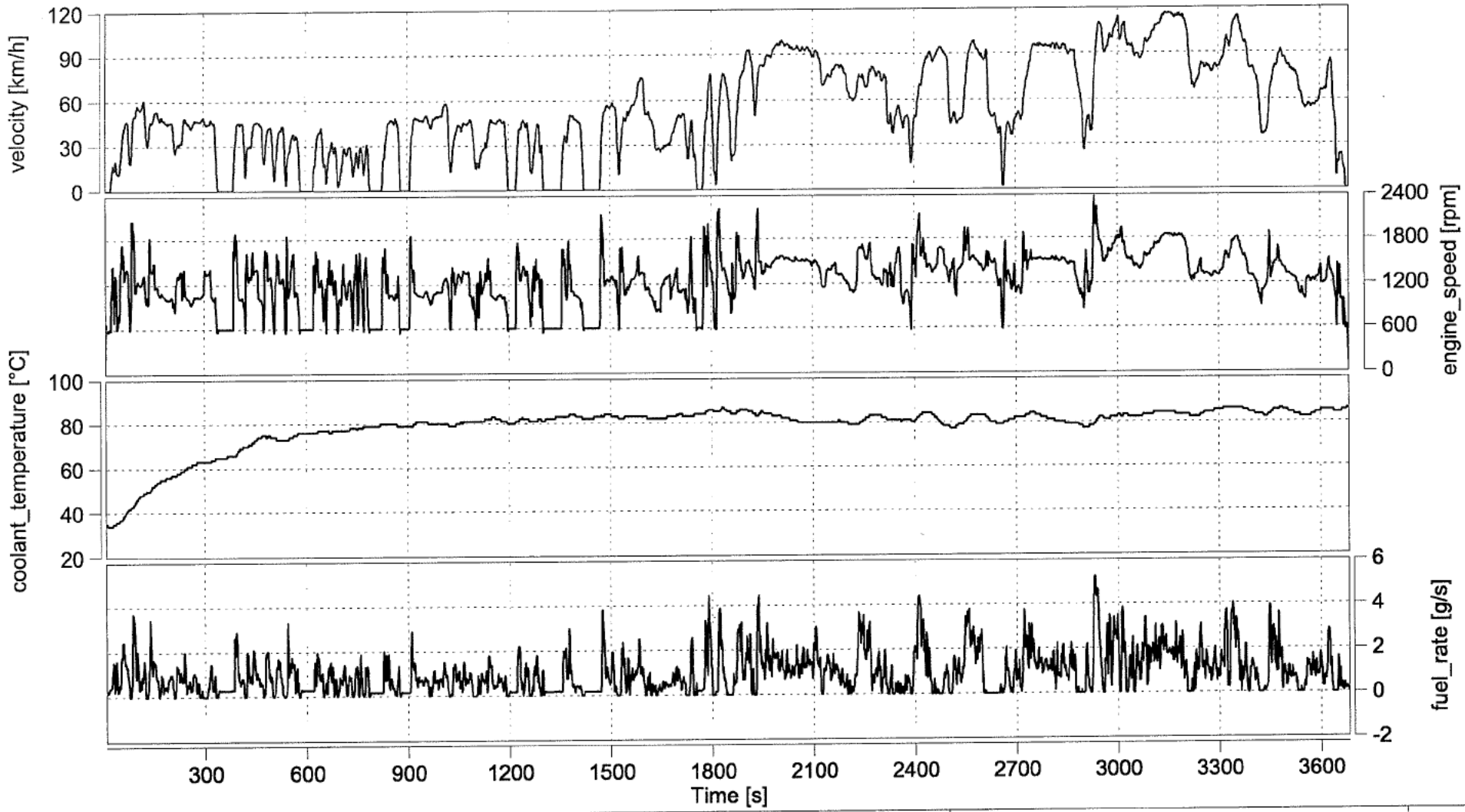


Concerto Version: 503 B82, MOVE DT 1R3.2 B319 Concerto Serial Number: 9-721D44C0 MOVE Version: V2.6_204 Windows Version: Microsoft Windows 10 Pro	Test Id: [redacted] / Mercedes-Benz E350 Engine: -/2987ccm/195kW fuel: Diesel EU B7 Engine at test start: Cold Euro6d-TEMP/AG;BG;CG;DG/M;N1classl/CI	ECU velocity factor: 1.002 extended cond.: 0% (0% cold start) Propulsion Type: ICE Date/Time: 2020-09-15/08:36:05	Page n/a Test 11 fails

Vehicle ECU Channels

Vehicle

AVL



Concerto Version: 503 B82, MOVE DT 1R3.2 B319 Concerto Serial Number: 9-721D44C0 MOVE Version: V2.6_204 Windows Version: Microsoft Windows 10 Pro	Test Id: [redacted] / Mercedes-Benz E350 Engine: -/2987ccm/195kW fuel: Diesel EU B7 Engine at test start: Cold Euro6d-TEMP/AG;BG;CG;DG/M;N1classl/CI	ECU velocity factor: 1.002 extended cond.: 0% (0% cold start) Propulsion Type: ICE Date/Time: 2020-09-15/08:36:05	Page n/a Test 11 fails

Zero/Span

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA App1 6.1	Permissible analyser abs zero response drift CO2	abs zero response drift <= 2000 ppm	**0.0**	**ppm**	pass
	Permissible analyser abs span response drift CO2	abs span response drift <= 3588 ppm	**100.0**	**ppm**	pass
	Permissible analyser abs zero response drift CO	abs zero response drift <= 75 ppm	**5.5**	**ppm**	pass
	Permissible analyser abs span response drift CO	abs span response drift <= 199.62 ppm	**4.1**	**ppm**	pass
	Permissible analyser abs zero response drift NOx	abs zero response drift <= 5 ppm	**2.1**	**ppm**	pass
	Permissible analyser abs span response drift NOx	abs span response drift <= 32.02 ppm	**1.2**	**ppm**	pass
ANNEX IIIA App1 4.6	pre test, zero check PN: ..the final concentration shall not exceed 5 000 particles per cubic-centimetre	PN pre zero check <= 5000 #/cm3	**n/a**	**#/cm3**	n/a
	post test, zero check PN: ..the final concentration shall not exceed 5 000 particles per cubic-centimetre	PN post zero check <= 5000 #/cm3	**n/a**	**#/cm3**	n/a

Validity of calibration gas

Span Gases

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA App1 6.3	Span gas shall cover at least 90% of the conc. values from 99% of the valid parts of the emissions test. - CO2	span gas CO2 > 10 %	**17.9**	**%**	pass
	It is permissible that 1 % of the total number of measurements exceeds the used span gas by up to a factor of two. - CO2	(perc. measurement points > (2 * span gas)) <= 1%	**0.0**	**%**	pass
	Span gas shall cover at least 90% of the conc. values from 99% of the valid parts of the emissions test. - CO	span gas CO > 1180 ppm	**9981.0**	**ppm**	pass
	It is permissible that 1 % of the total number of measurements exceeds the used span gas by up to a factor of two. - CO	(perc. measurement points > (2 * span gas)) <= 1%	**0.0**	**%**	pass
	Span gas shall cover at least 90% of the conc. values from 99% of the valid parts of the emissions test. - NOx	span gas NOx > 654 ppm	**1601.0**	**ppm**	pass
	It is permissible that 1 % of the total number of measurements exceeds the used span gas by up to a factor of two. - NOx	(perc. measurement points > (2 * span gas)) <= 1%	**0.0**	**%**	pass

ANNEXIIIa 5.3
Vehicle conditioning for cold engine-start testing

PRECON and SOAK

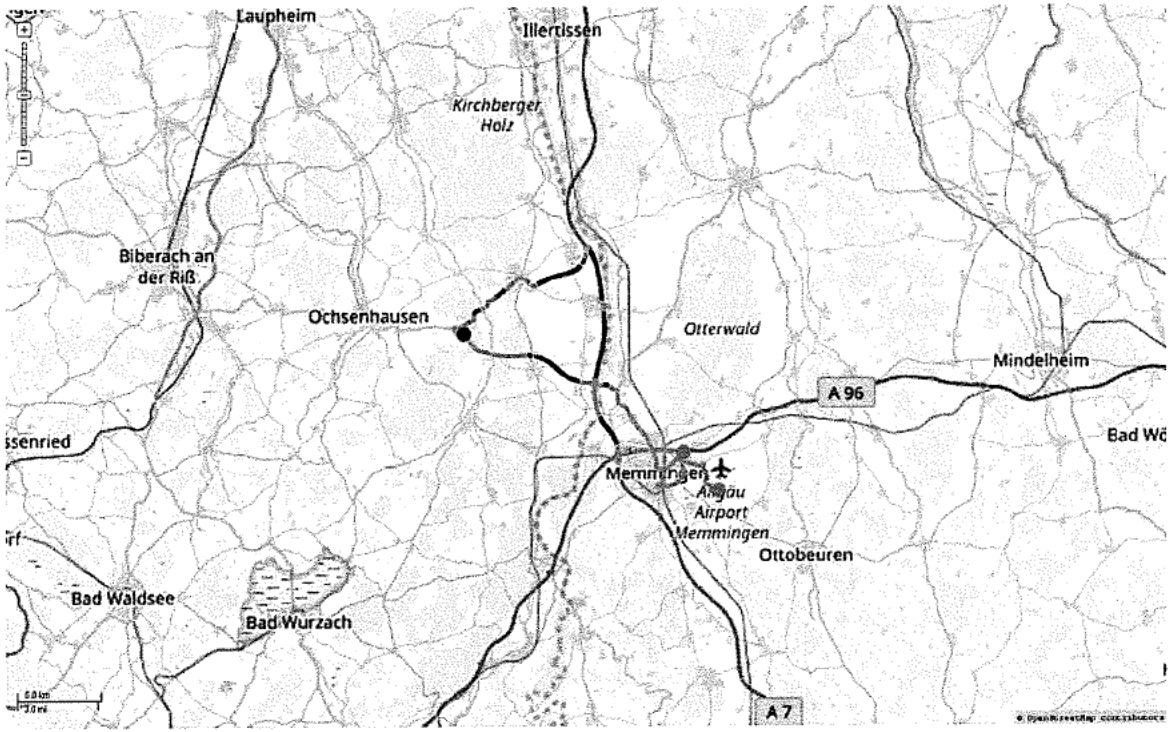
AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA 5.3	Before RDE testing, the vehicle shall be preconditioned in the following way: Driven for at least 30 min	time (vehicle velocity > 1 km/h) >= 30 min	**00:00**	**mm:ss**	fail
	..parked with doors and bonnet closed and kept in engine-off status between 6 and 56 hours	6h <= time soak phase <= 56h	**00:00**	**hh:mm**	fail
	vehicle conditioning for cold engine start shall be within moderate or extended temperatures conditions	-7°C <= ambient temperature during soak phase <=35°C	**n/a** **n/a**	**°C**	n/a
ANNEX IIIA 9.6	If the vehicle was conditioned for the last three hours prior to the test at an average temperature that falls within the extended range, cold start emissions are divided by 1.6	if during last 3 hours of the soak phase, avg. amb. temperature has been in extended conditions [-7/0] or [30/35] °C, then a correction of 1.6 is applied to cold start	**n/a**	**°C**	not applied

ANNEXIIIa Appendix 1 5.1
Vehicle with internal combustion engine
criterium test start: ignition on/engine up, criterium test end: ignition off/engine off

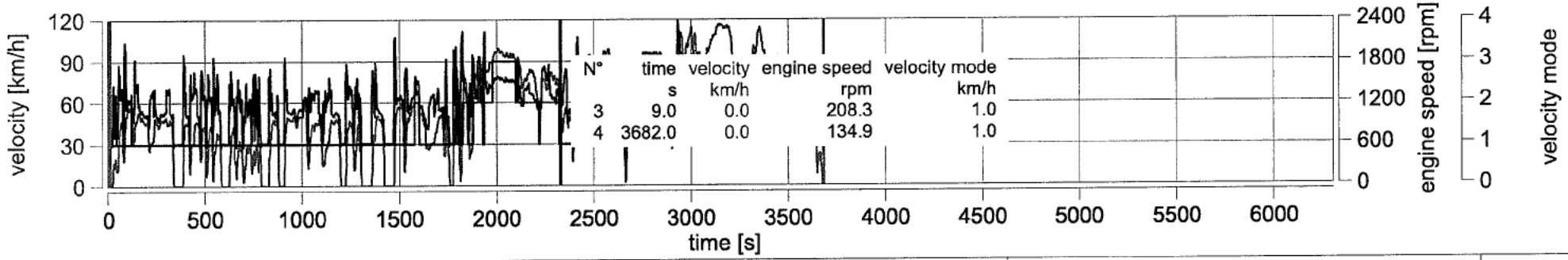
Test Start/End

AVL



TEST START
s
9

TEST END
s
3682



N°	time s	velocity km/h	engine speed rpm	velocity mode km/h
3	9.0	0.0	208.3	1.0
4	3682.0	0.0	134.9	1.0

Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Cold
Euro6d-TEMP/AG;BG;CG;DG/M;N1classl/Cl

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-15/08:36:05

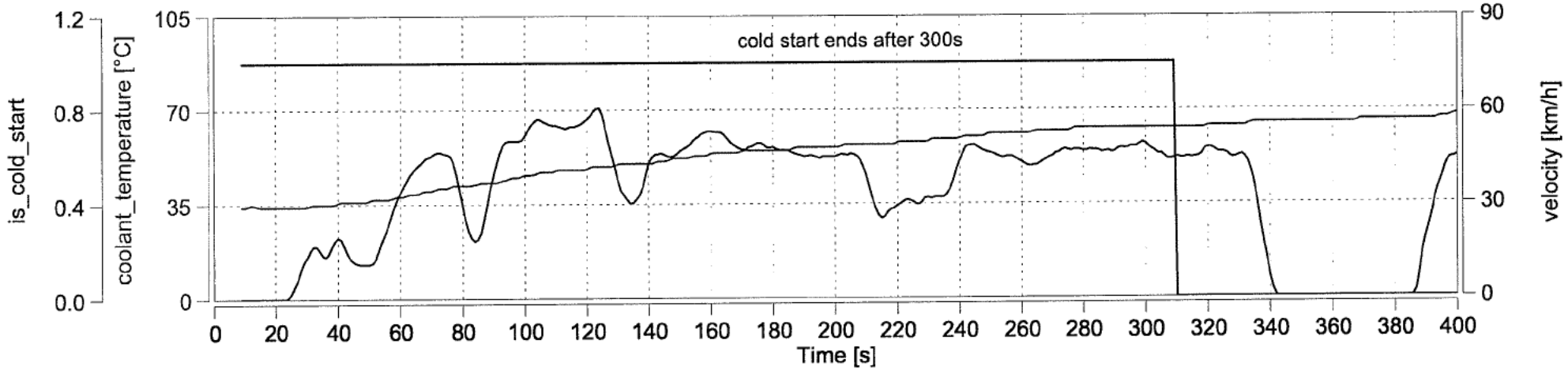
Page n/a
Test 11 fails

ANNEXIIIa
cold or hot start

Cold Start

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA 6.13	The average speed (including stops) during cold start period shall be between 15 and 40 km/h.	15 km/h <= velocity during cold start <= 40 km/h	**38.32**	**km/h**	pass
	The maximum speed during the cold start period shall not exceed 60 km/h.	max velocity during cold start <= 60 km/h	**60.52**	**km/h**	fail
ANNEX IIIA 7.6	At the test start the vehicle shall move within 15 seconds.	vehicle stop @test start <= 15s	**16**	**s**	fail
	The vehicle stop during the entire cold start period shall be kept to the minimum possible and it shall not exceed in total 90s.	sum of vehicle stop times during cold start <= 90 seconds	**16**	**s**	pass



Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Cold
Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-15/08:36:05

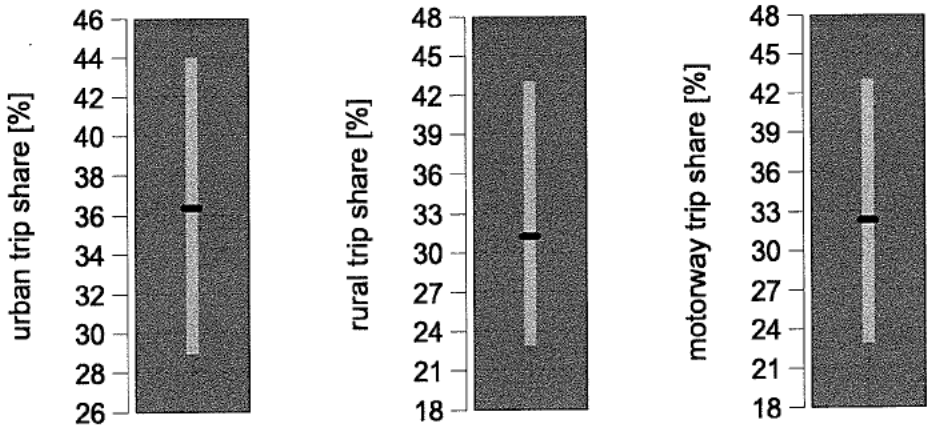
Page fail
Test 11 fails

ANNEXIIIA
trip shares urban/rural/motorway

Trip Shares

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA 6.2	The trip shall always start with urban driving followed by rural and motorway driving (avg. velocity of first 16km max. 40 km/h)	6.2 urban first	**YES**		pass
ANNEX IIIA 6.12	The minimum distance of the urban operation shall be 16 km.	distance urban min 16km	**20**	**km**	pass
	The minimum distance of the rural operation shall be 16 km.	distance rural min 16km	**17**	**km**	pass
	The minimum distance of the motorway operation shall be 16 km.	distance motorway min 16km	**18**	**km**	pass
ANNEX IIIA 6.6	The trip shall consist of approximately 34 ±10% urban. The urban driving shall however never be less than 29%.	share distance urban	**36.4**	**%**	pass
	The trip shall consist of approximately 33 ±10% rural.	share distance rural	**31.3**	**%**	pass
	The trip shall consist of approximately 33 ±10% motorway.	share distance motorway	**32.3**	**%**	pass



Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Cold
Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-15/08:36:05

Page pass
Test 11 fails

Trip Requirements

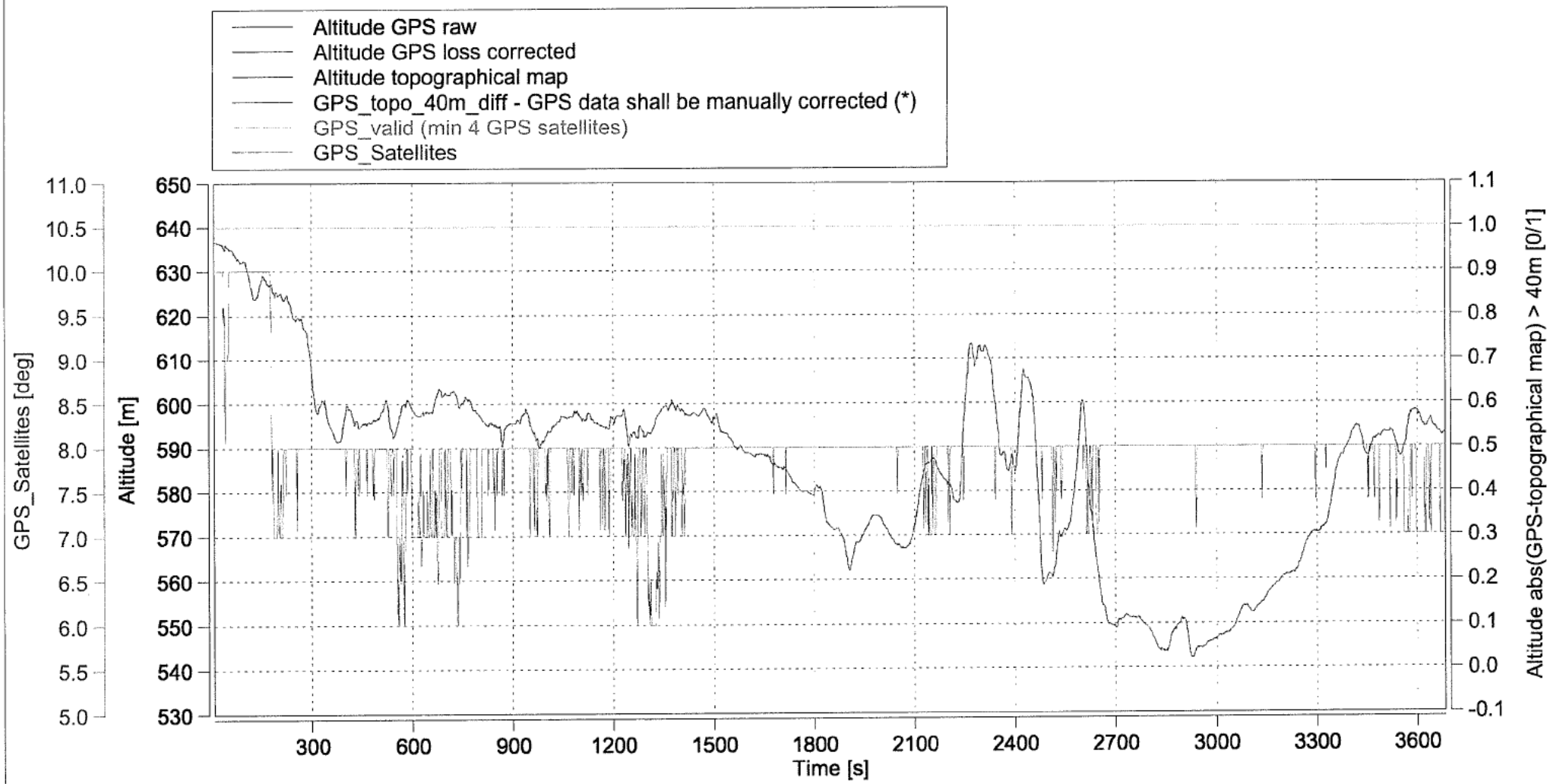
AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA 6.7	The vehicle velocity shall not exceed 160 km/h.	max(v) <= 160 km/h	**116.2**	**km/h**	pass
	The maximum speed (145 km/h) may be exceeded by a tolerance of 15 km/h for not more than 3 %.	motorway time share vehicle velocity more than 145 km/h <= 3%	**0.0**	**%**	pass
ANNEX IIIA 6.8	The average speed (including stops) of the urban driving part of the trip should be between 15 and 40 km/h.	urban driving average speed 15 -40 km/h	**32.8**	**km/h**	pass
	Stop periods, defined by vehicle speed of less than 1 km/h, shall account for 6-30 % of the time duration of urban operation.	urban time share vehicle stop 6-30%	**13.8**	**%**	pass
	Individual stop periods shall not exceed 300 consecutive seconds.	vehicle stop max time 300s	**53**	**s**	pass
ANNEX IIIA 6.9	The speed range of the motorway driving shall properly cover a range between 90 and at least 110 km/h.	motorway driving time >= 90 km/h	**10:52**	**mm:ss**	pass
	The vehicle's velocity shall be above 100 km/h for at least 5 minutes	motorway driving time >= 100 km/h	**03:20**	**mm:ss**	fail
ANNEX IIIA 6.10	The trip duration shall be between 90 and 120 minutes.	trip duration 90 - 120 minutes	**61**	**min**	fail
ANNEX IIIA 6.11	The start and the end point shall not differ in their elevation above sea level by more than 100 m.	trip start/end altitude diff max 100m	**44**	**m**	pass
	The proportional cumulative positive altitude gain over the entire trip shall be less than 1200 m/100 km.	cumulative pos elevation gain trip max 1200m	**383**	**m**	pass
	The proportional cumulative positive altitude gain over the urban part of the trip shall be less than 1200 m/100 km.	cumulative pos elevation gain urban part max 1200m	**246**	**m**	pass
ANNEX IIIA 5.2.1	If a part of the test or the entire test is performed outside of normal or extended conditions, the test shall be invalid.	test performed outside extended conditions in terms of ambient temperature and altitude	**NO**		pass

GPS Altitude

Consistency check of Vehicle Altitude

AVL



(*) according to EU 2017/1151 - ANNEX IIIA App. 4 (6)

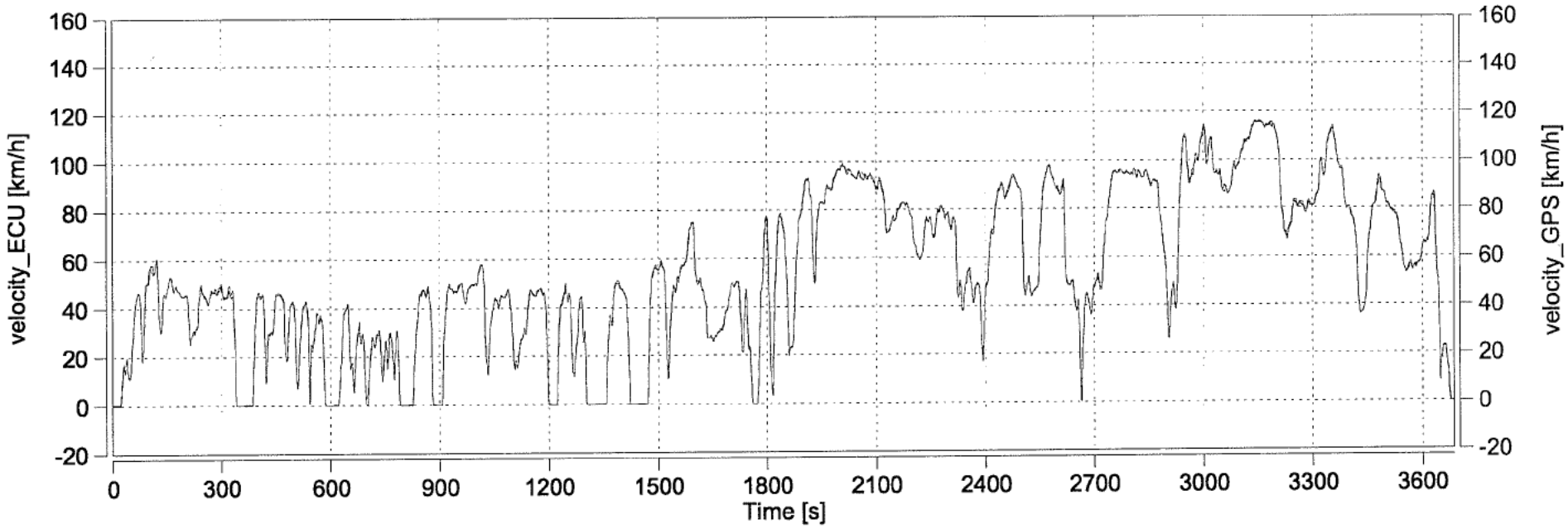
Concerto Version: 503 B82, MOVE DT 1R3.2 B319 Concerto Serial Number: 9-721D44C0 MOVE Version: V2.6_204 Windows Version: Microsoft Windows 10 Pro	Test Id: [redacted] / Mercedes-Benz E350 Engine: -/2987ccm/195kW fuel: Diesel EU B7 Engine at test start: Cold Euro6d-TEMP/AG;BG;CG;DG/M;N1classl/CI	ECU velocity factor: 1.002 extended cond.: 0% (0% cold start) Propulsion Type: ICE Date/Time: 2020-09-15/08:36:05	Page n/a Test 11 fails

Consistency check of GPS Vehicle Speed

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA App4 7	The total trip distance as calculated from the corrected GPS data shall deviate by no more than 4 % from the reference.	difference GPS distance (55.688 km) vs. ECU distance (55.483 km) <= 4%	**0.4**	**%**	pass
	The corrected GPS data shall not exceed an uninterrupted time period of 120 s.	GPS loss max time <= 120s	**0**	**s**	pass
	The corrected GPS data shall not exceed a total of 300 s	GPS loss toal time <= 300 s	**0**	**s**	pass

velocity used: ECU



Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Cold
Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-15/08:36:05

Page pass
Test 11 fails

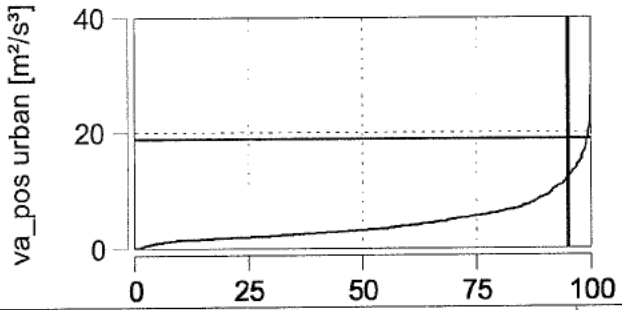
ANNEXIIIa Appendix 7a

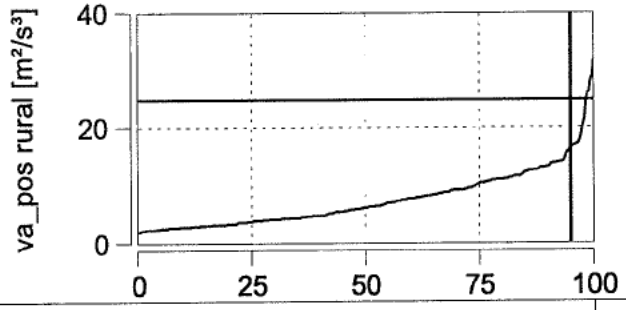
Trip Dynamics

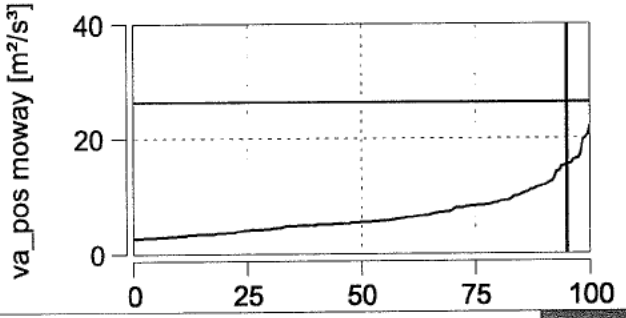
AVL

Verification of trip dynamics based on vehicle velocity and acceleration

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA App7a 3.1.	The number of datasets with acceleration values ai>0.1m/s2 shall be bigger or equal to 100 in the urban speed bin.	npoints(a_pos) >= 100	**776**		pass
	The number of datasets with acceleration values ai>0.1m/s2 shall be bigger or equal to 100 in the rural speed bin.	npoints(a_pos) >= 100	**292**		pass
	The number of datasets with acceleration values ai>0.1m/s2 shall be bigger or equal to 100 in the motorway speed bin.	npoints(a_pos) >= 100	**192**		pass
ANNEX IIIA App7a 4.1.	Verification of va_pos95 per speed bin.	va_pos_urban <= 18.895 [m^2/s^3]	**12.051**	**m^2/s^3**	pass
	Verification of va_pos95 per speed bin.	va_pos_rural <= 24.732 [m^2/s^3]	**16.641**	**m^2/s^3**	pass
	Verification of va_pos95 per speed bin.	va_pos_moway <= 26.319 [m^2/s^3]	**15.442**	**m^2/s^3**	pass
ANNEX IIIA App7a 4.1.	Verification of RPA per speed bin.	RPA_urban >= 0.123 [m/s^2]	**0.167**	**m/s^2**	pass
	Verification of RPA per speed bin.	RPA_rural >= 0.051 [m/s^2]	**0.126**	**m/s^2**	pass
	Verification of RPA per speed bin.	RPA_moway >= 0.025 [m/s^2]	**0.072**	**m/s^2**	pass







Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Cold
Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-15/08:36:05

Page pass

Test 11 fails

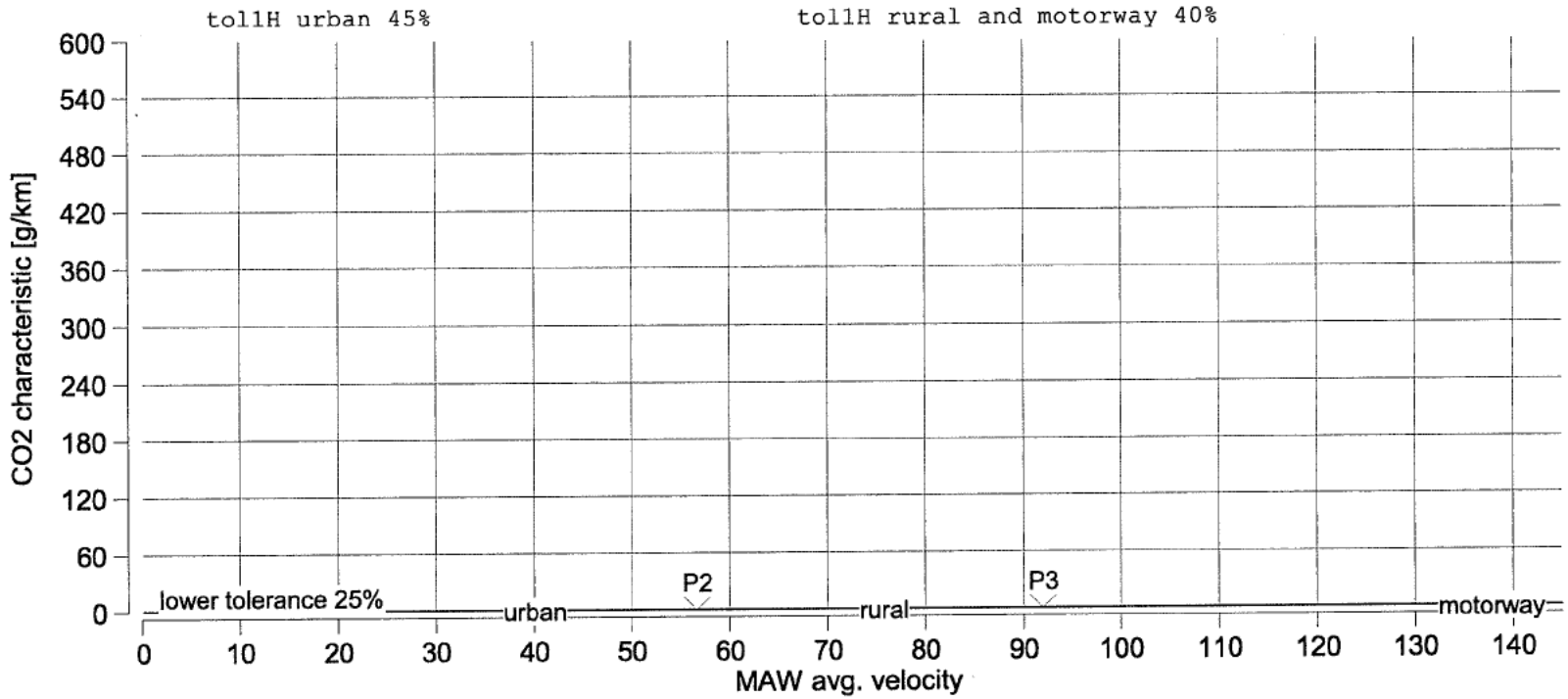
ANNEXIIIa Appendix 5

Test Validity

AVL

Verification of overall trip dynamics using the moving averaging window method

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA App5 4.5	The test is valid when at least 50% of the urban windows are within the tolerances defined for the CO2 characteristic.	50% valid urban windows	**0.0**	**%**	fail
	The test is valid when at least 50% of the rural windows are within the tolerances defined for the CO2 characteristic.	50% valid rural windows	**0.0**	**%**	fail
	The test is valid when at least 50% of the motorway windows are within the tolerances defined for the CO2 characteristic.	50% valid motorway windows	**0.0**	**%**	fail



ANNEXIIIa Appendix 6
Final RDE emissions results

Conformity of Emissions

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA 2.1.1	CF max = 1 + margin NOx with margin NOx = 1.1	conformity factor NOx urban <= 2.1	**2.74**		fail
	CF max = 1 + margin NOx with margin NOx = 1.1	conformity factor NOx trip <= 2.1	**3.78**		fail
	CF max = 1 + margin PN with margin PN = 0.5	conformity factor PN urban <= 1.5	**0.00**		n/a
	CF max = 1 + margin PN with margin PN = 0.5	conformity factor PN trip <= 1.5	**0.00**		n/a

urban		CO2	CO	NOx	PN
correction	factor	g/km	mg/km	mg/km	#/km
none		248.39	69.08	493.04	0.000e+00
EXTC	1.60		69.08	493.04	0.000e+00
RF	1.00		69.08	493.04	0.000e+00
ki			69.08	493.04	
final result *			69.08	493.04	0.000e+00
WLTP limit			**500.00**	**180.00**	**0.000e+00**
conformity factor				**2.74**	**0.00**

trip		CO2	CO	NOx	PN
correction	factor	g/km	mg/km	mg/km	#/km
none		205.29	13.66	681.12	0.000e+00
EXTC	1.60		13.66	681.12	0.000e+00
RF	1.00		13.66	681.12	0.000e+00
ki			13.66	681.12	
final result *			13.66	681.12	0.000e+00
WLTP limit			**500.00**	**180.00**	**0.000e+00**
conformity factor				**3.78**	**0.00**

Ki Offset		CO2 [g/km]		CO [mg/km]		NOx [mg/km]	
Ki factor		CO2		CO		NOx	

Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Cold
Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-15/08:36:05

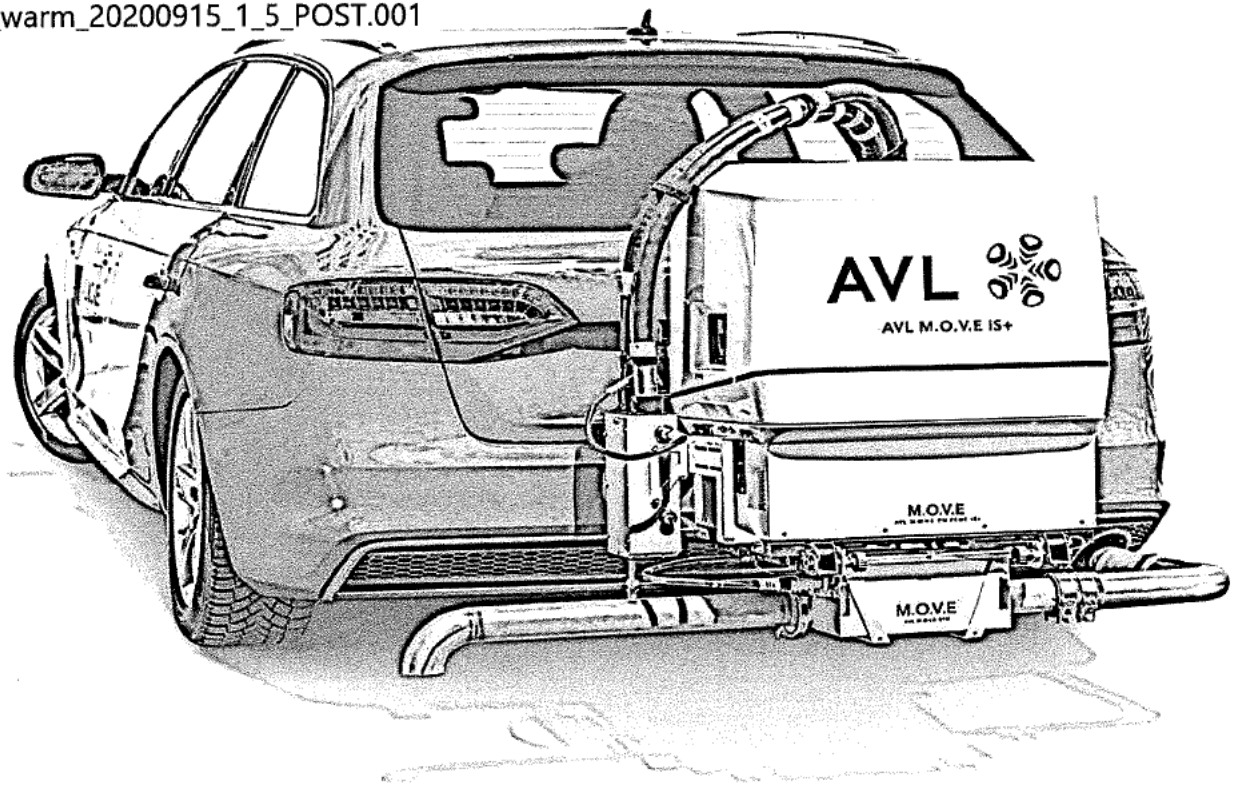
Page fail
Test 11 fails

* Negative final results shall be set to zero

COMMISSION REGULATION (EU) 2018/1832

Measurement Files:

FAKT_P03_MB_E350_5463_RDE2_warm_20200915_1_3_PRE.001
FAKT_P03_MB_E350_5463_RDE2_warm_20200915_1_4_MAIN.001
FAKT_P03_MB_E350_5463_RDE2_warm_20200915_1_5_POST.001



Concerto Version: 503 B82, MOVE DT 1R3.2 B319 Concerto Serial Number: 9-721D44C0 MOVE Version: V2.6_204 Windows Version: Microsoft Windows 10 Pro	Test Id: [redacted] / Mercedes-Benz E350 Engine: -/2987ccm/195kW fuel: Diesel EU B7 Engine at test start: Hot Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI	ECU velocity factor: 1.002 extended cond.: 0% (0% cold start) Propulsion Type: ICE Date/Time: 2020-09-15/12:35:37	Page Test	n/a 9 fails

Summary

AVL

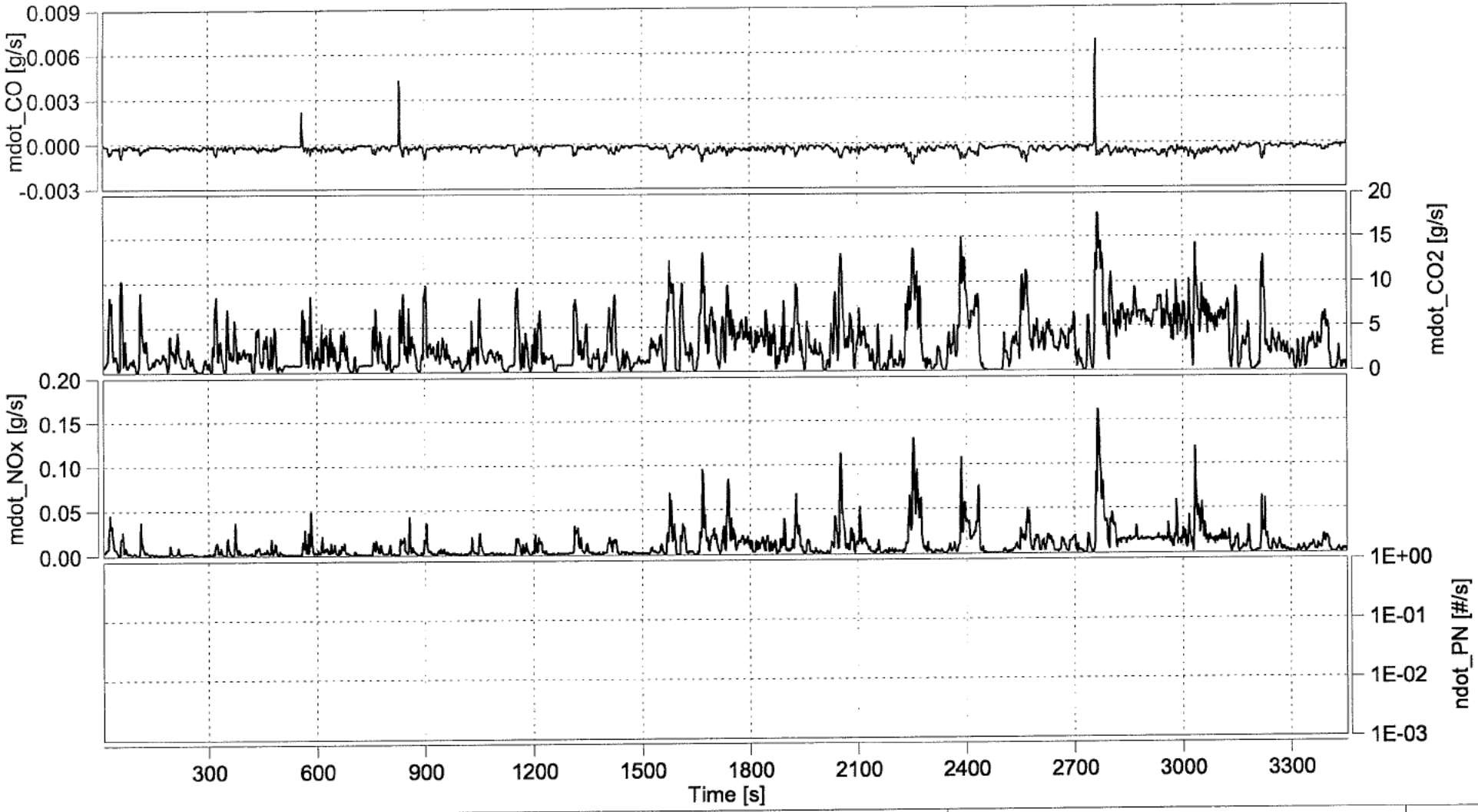
	urban	rural	motorway	trip	
Duration	2059	699	687	3445	s
Distance	21.49	14.72	19.88	56.10	km
Avg. Velocity	37.58	75.82	104.18	58.62	km/h
Fuel	1.37	0.84	1.10	3.31	kg
Exhaust Mass	48.99	24.74	29.98	103.71	kg

	total					distance specific					
	urban	rural	motorway	trip		urban	rural	motorway	trip	avg.	
CO [g]	-0.52	-0.29	-0.37	-1.17	**CO [mg/km]**	-24.13	-19.68	-18.37	-20.92	-11.88	ppm
CO2 [g]	4444.76	2655.00	3537.16	10636.92	**CO2 [g/km]**	206.79	180.35	177.92	189.62	6.30	%
N2O [g]					**N2O [mg/km]**						ppm
NO [g]	10.57	9.17	9.71	29.45	**NO [mg/km]**	491.66	623.06	488.33	524.96	133.77	ppm
NO2 [g]	1.63	1.77	2.24	5.64	**NO2 [mg/km]**	75.76	120.30	112.79	100.57	27.78	ppm
NOx [g]	12.196	10.943	11.951	35.090	**NOx [mg/km]**	567.41	743.36	601.13	625.54	161.55	ppm
PN [#]	0.000e+00	0.000e+00	0.000e+00	0.000e+00	**PN [#/km]**	0.000e+00	0.000e+00	0.000e+00	0.000e+00	0	#/cm³

wet gas and particle number

Emissions

AVL

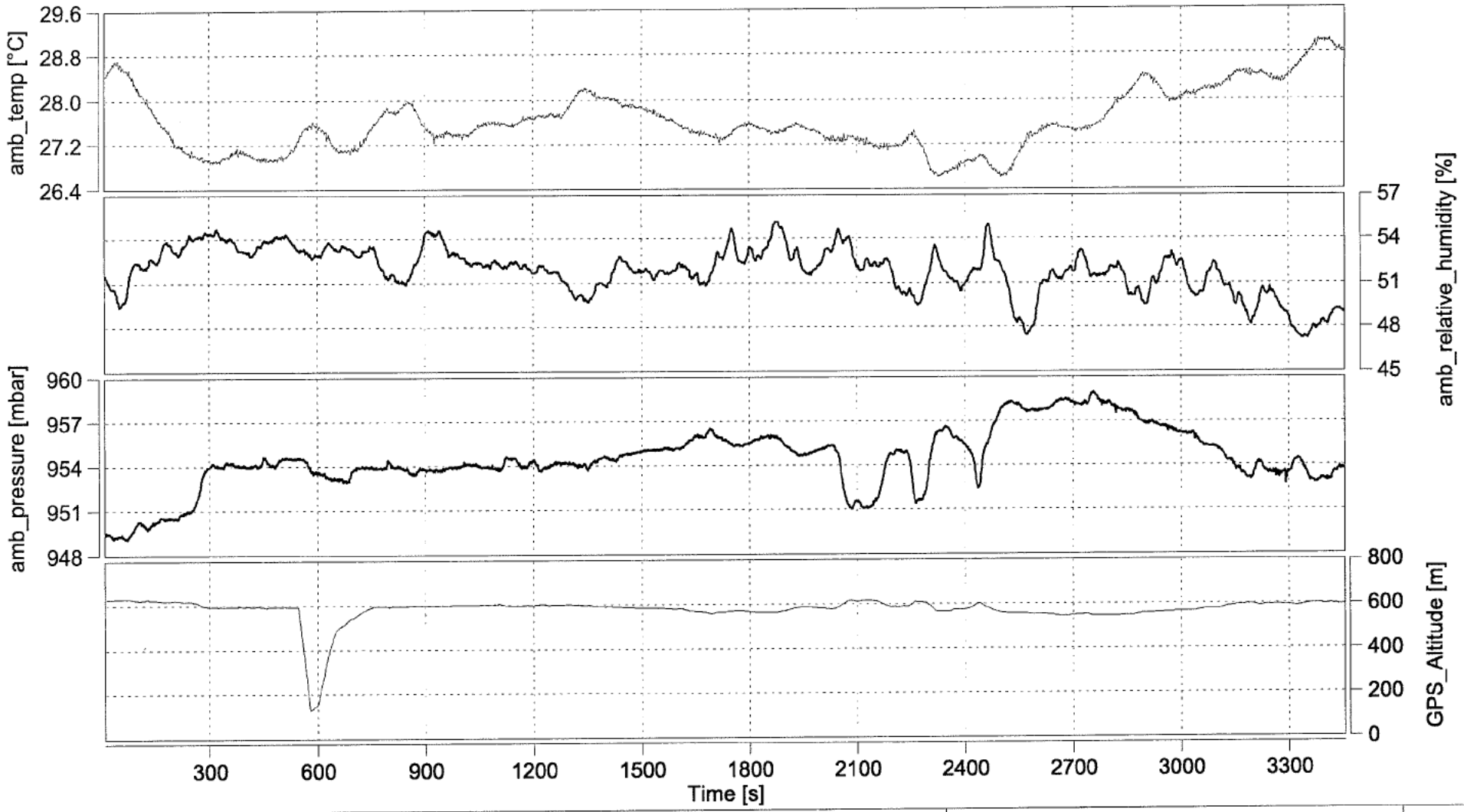


Concerto Version: 503 B82, MOVE DT 1R3.2 B319 Concerto Serial Number: 9-721D44C0 MOVE Version: V2.6_204 Windows Version: Microsoft Windows 10 Pro	Test Id: [redacted] / Mercedes-Benz E350 Engine: -/2987ccm/195kW fuel: Diesel EU B7 Engine at test start: Hot Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI	ECU velocity factor: 1.002 extended cond.: 0% (0% cold start) Propulsion Type: ICE Date/Time: 2020-09-15/12:35:37	Page n/a Test 9 fails

ambient conditions
and GPS altitude

Ambient

AVL

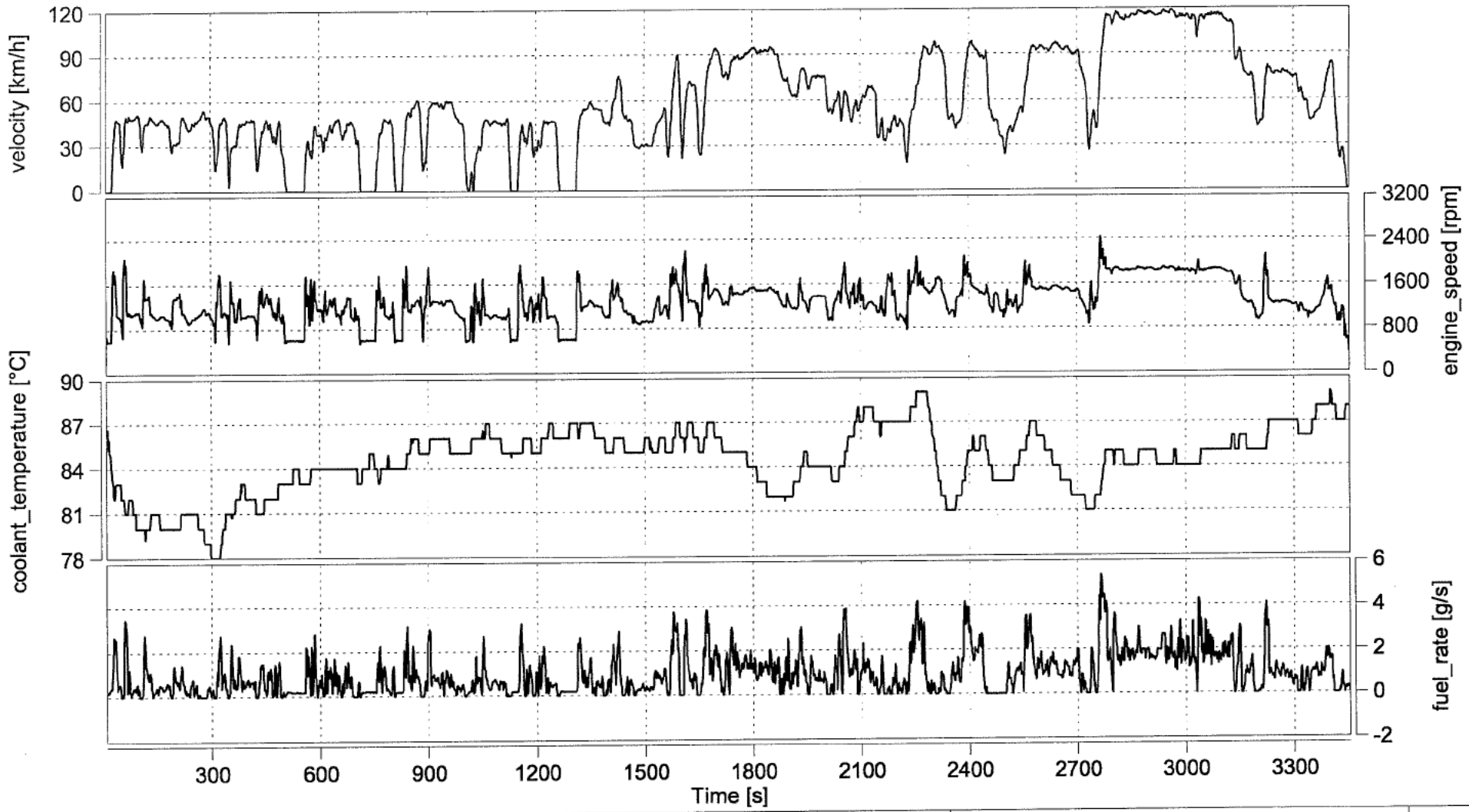


Concerto Version: 503 B82, MOVE DT 1R3.2 B319 Concerto Serial Number: 9-721D44C0 MOVE Version: V2.6_204 Windows Version: Microsoft Windows 10 Pro	Test Id: [redacted] / Mercedes-Benz E350 Engine: -/2987ccm/195kW fuel: Diesel EU B7 Engine at test start: Hot Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI	ECU velocity factor: 1.002 extended cond.: 0% (0% cold start) Propulsion Type: ICE Date/Time: 2020-09-15/12:35:37	Page n/a Test 9 fails

Vehicle ECU Channels

Vehicle

AVL



Concerto Version: 503 B82, MOVE DT 1R3.2 B319 Concerto Serial Number: 9-721D44C0 MOVE Version: V2.6_204 Windows Version: Microsoft Windows 10 Pro	Test Id: [redacted] / Mercedes-Benz E350 Engine: -/2987ccm/195kW fuel: Diesel EU B7 Engine at test start: Hot Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI	ECU velocity factor: 1.002 extended cond.: 0% (0% cold start) Propulsion Type: ICE Date/Time: 2020-09-15/12:35:37	Page n/a Test 9 fails

Zero/Span

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA App1 6.1	Permissible analyser abs zero response drift CO2	abs zero response drift <= 2000 ppm	**0.0**	**ppm**	pass
	Permissible analyser abs span response drift CO2	abs span response drift <= 3588 ppm	**0.0**	**ppm**	pass
	Permissible analyser abs zero response drift CO	abs zero response drift <= 75 ppm	**5.0**	**ppm**	pass
	Permissible analyser abs span response drift CO	abs span response drift <= 199.62 ppm	**3.7**	**ppm**	pass
	Permissible analyser abs zero response drift NOx	abs zero response drift <= 5 ppm	**3.2**	**ppm**	pass
	Permissible analyser abs span response drift NOx	abs span response drift <= 32.02 ppm	**3.1**	**ppm**	pass
ANNEX IIIA App1 4.6	pre test, zero check PN: ..the final concentration shall not exceed 5 000 particles per cubic-centimetre	PN pre zero check <= 5000 #/cm3	**n/a**	**#/cm3**	n/a
	post test, zero check PN: ..the final concentration shall not exceed 5 000 particles per cubic-centimetre	PN post zero check <= 5000 #/cm3	**n/a**	**#/cm3**	n/a

Validity of calibration gas

Span Gases

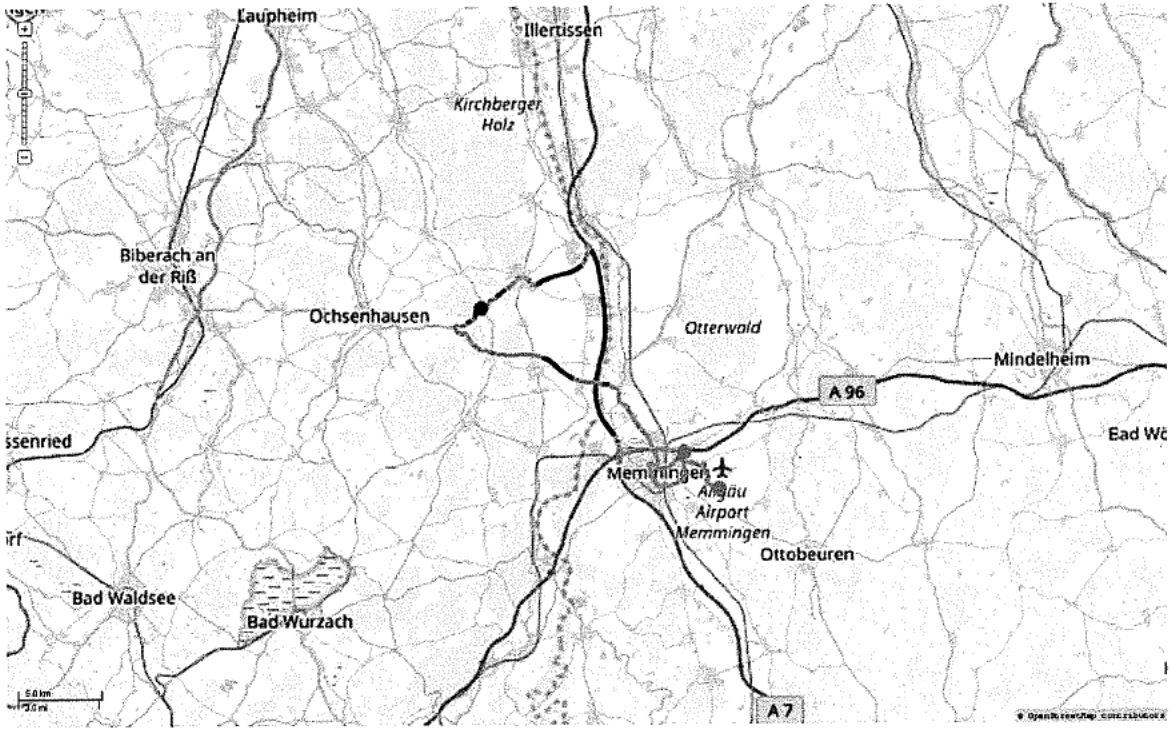
AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA App1 6.3	Span gas shall cover at least 90% of the conc. values from 99% of the valid parts of the emissions test. - CO2	span gas CO2 > 10 %	**17.9**	**%**	pass
	It is permissible that 1 % of the total number of measurements exceeds the used span gas by up to a factor of two. - CO2	(perc. measurement points > (2 * span gas)) <= 1%	**0.0**	**%**	pass
	Span gas shall cover at least 90% of the conc. values from 99% of the valid parts of the emissions test. - CO	span gas CO > -4 ppm	**9981.0**	**ppm**	pass
	It is permissible that 1 % of the total number of measurements exceeds the used span gas by up to a factor of two. - CO	(perc. measurement points > (2 * span gas)) <= 1%	**0.0**	**%**	pass
	Span gas shall cover at least 90% of the conc. values from 99% of the valid parts of the emissions test. - NOx	span gas NOx > 580 ppm	**1601.0**	**ppm**	pass
	It is permissible that 1 % of the total number of measurements exceeds the used span gas by up to a factor of two. - NOx	(perc. measurement points > (2 * span gas)) <= 1%	**0.0**	**%**	pass

ANNEXIIIa Appendix 1 5.1
Vehicle with internal combustion engine
criterium test start: ignition on/engine up, criterium test end: ignition off/engine off

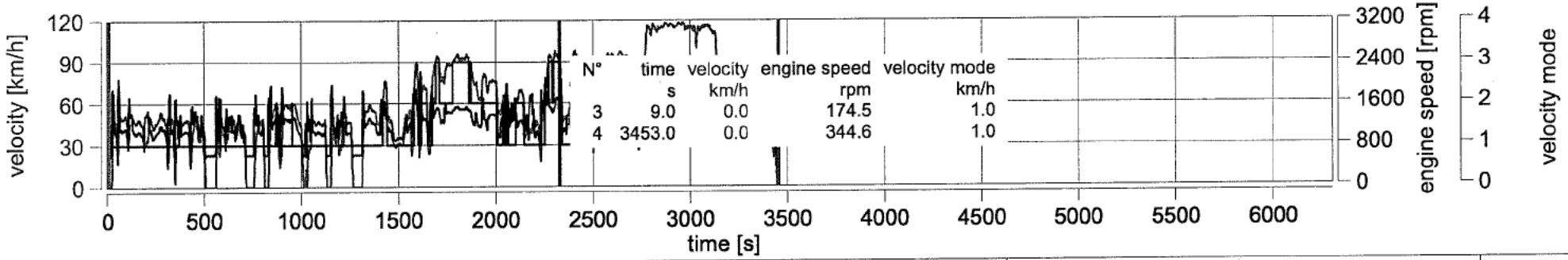
Test Start/End

AVL



TEST START
s
9

TEST END
s
3453



N°	time s	velocity km/h	engine speed rpm	velocity mode km/h
3	9.0	0.0	174.5	1.0
4	3453.0	0.0	344.6	1.0

Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Hot
Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-15/12:35:37

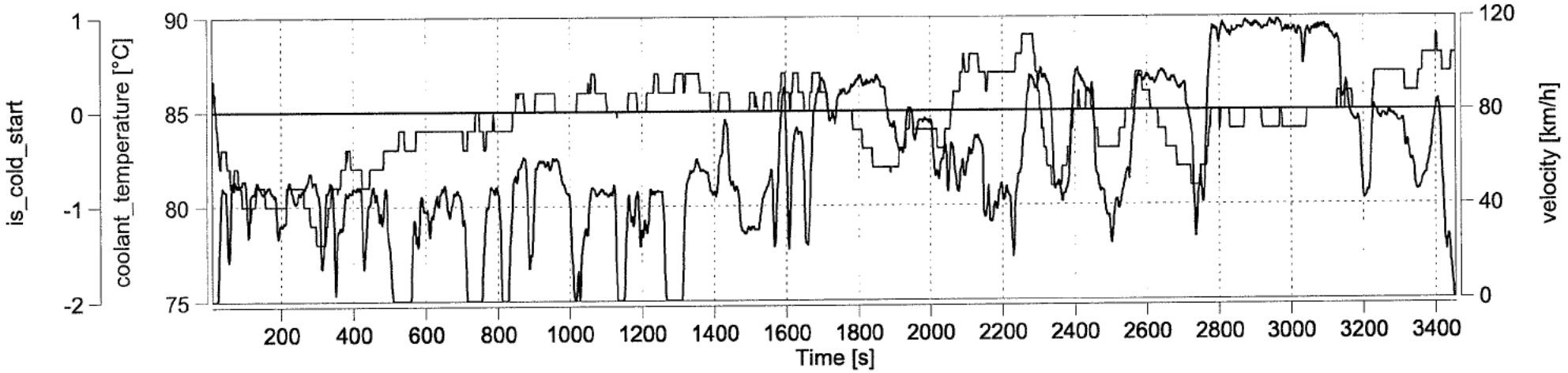
Page n/a
Test 9 fails

ANNEXIIIa
cold or hot start

Hot Start

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA 4.5	..shall be tested with a warm engine with engine coolant temperature and/or engine oil temperature above 70 °C	coolant temperature @test start >= 70 °C	**85.0**	**°C**	pass
ANNEX IIIA 7.6	At the test start the vehicle shall move within 15 seconds.	vehicle stop @test start <= 15s	**16**	**s**	fail



Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Hot
Euro6d-TEMP/AG;BG;CG;DG/M;N1classl/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-15/12:35:37

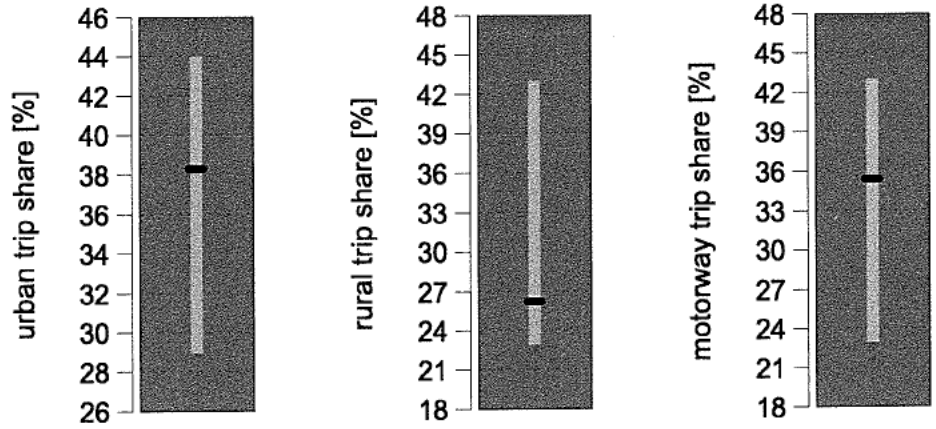
Page: fail
Test: 9 fails

ANNEXIIIA
trip shares urban/rural/motorway

Trip Shares

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA 6.2	The trip shall always start with urban driving followed by rural and motorway driving (avg. velocity of first 16km max. 40 km/h)	6.2 urban first	**YES**		pass
ANNEX IIIA 6.12	The minimum distance of the urban operation shall be 16 km.	distance urban min 16km	**21**	**km**	pass
	The minimum distance of the rural operation shall be 16 km.	distance rural min 16km	**15**	**km**	fail
	The minimum distance of the motorway operation shall be 16 km.	distance motorway min 16km	**20**	**km**	pass
ANNEX IIIA 6.6	The trip shall consist of approximately 34 ±10% urban. The urban driving shall however never be less than 29%.	share distance urban	**38.3**	**%**	pass
	The trip shall consist of approximately 33 ±10% rural.	share distance rural	**26.2**	**%**	pass
	The trip shall consist of approximately 33 ±10% motorway.	share distance motorway	**35.4**	**%**	pass



Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Hot
Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-15/12:35:37

Page fail
Test 9 fails

Trip Requirements

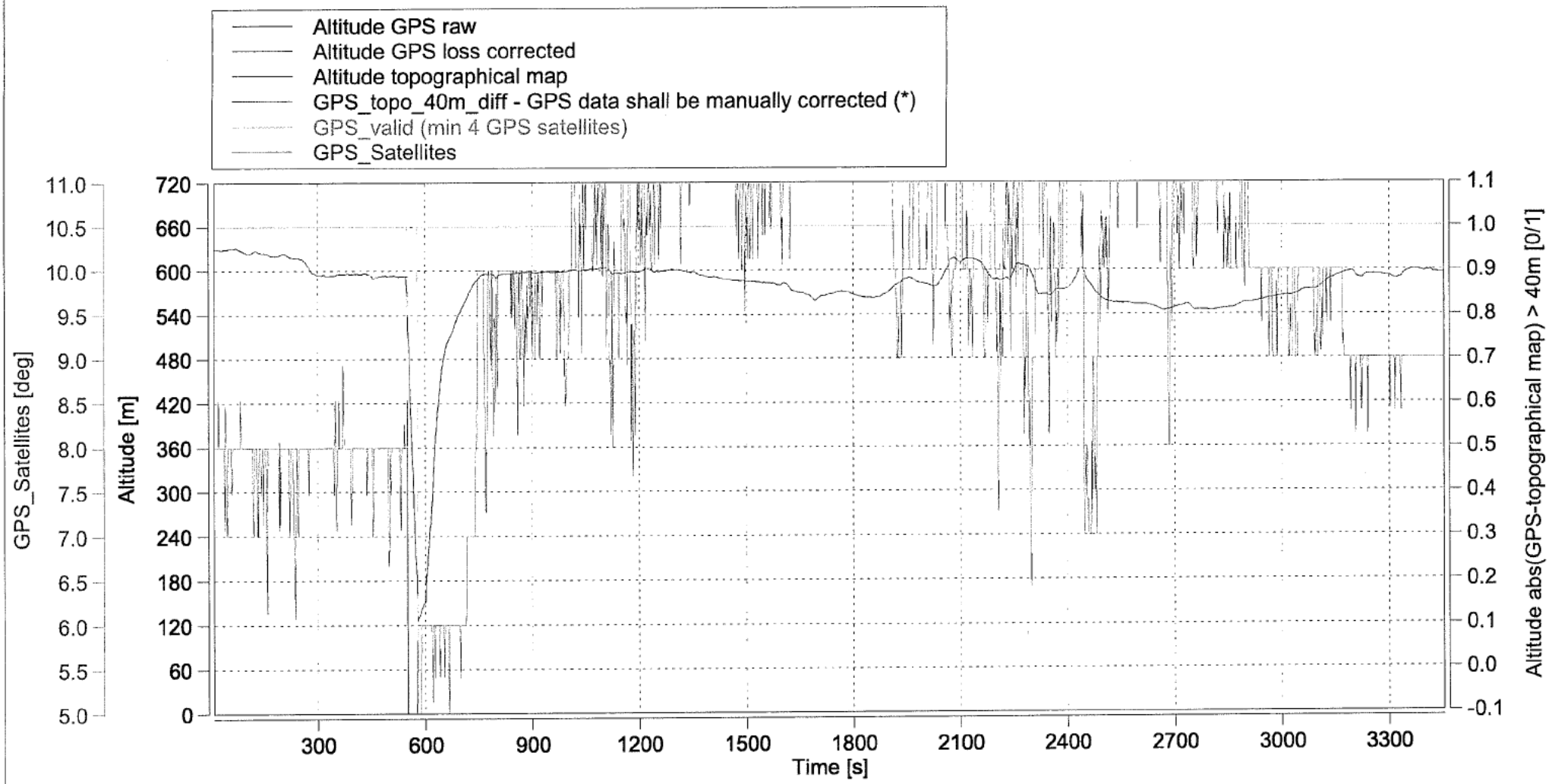
AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA 6.7	The vehicle velocity shall not exceed 160 km/h.	max(v) <= 160 km/h	**118.2**	**km/h**	pass
	The maximum speed (145 km/h) may be exceeded by a tolerance of 15 km/h for not more than 3 %.	motorway time share vehicle velocity more than 145 km/h <= 3%	**0.0**	**%**	pass
ANNEX IIIA 6.8	The average speed (including stops) of the urban driving part of the trip should be between 15 and 40 km/h.	urban driving average speed 15 -40 km/h	**37.6**	**km/h**	pass
	Stop periods, defined by vehicle speed of less than 1 km/h, shall account for 6-30 % of the time duration of urban operation.	urban time share vehicle stop 6-30%	**9.6**	**%**	pass
	Individual stop periods shall not exceed 300 consecutive seconds.	vehicle stop max time 300s	**50**	**s**	pass
ANNEX IIIA 6.9	The speed range of the motorway driving shall properly cover a range between 90 and at least 110 km/h.	motorway driving time >= 90 km/h	**11:27**	**mm:ss**	pass
	The vehicle's velocity shall be above 100 km/h for at least 5 minutes	motorway driving time >= 100 km/h	**06:01**	**mm:ss**	pass
ANNEX IIIA 6.10	The trip duration shall be between 90 and 120 minutes.	trip duration 90 - 120 minutes	**57**	**min**	fail
ANNEX IIIA 6.11	The start and the end point shall not differ in their elevation above sea level by more than 100 m.	trip start/end altitude diff max 100m	**33**	**m**	pass
	The proportional cumulative positive altitude gain over the entire trip shall be less than 1200 m/100 km.	cumulative pos elevation gain trip max 1200m	**1011**	**m**	pass
	The proportional cumulative positive altitude gain over the urban part of the trip shall be less than 1200 m/100 km.	cumulative pos elevation gain urban part max 1200m	**1943**	**m**	fail
ANNEX IIIA 5.2.1	If a part of the test or the entire test is performed outside of normal or extended conditions, the test shall be invalid.	test performed outside extended conditions in terms of ambient temperature and altitude	**NO**		pass

GPS Altitude

Consistency check of Vehicle Altitude

AVL



(*) according to EU 2017/1151 - ANNEX IIIA App. 4 (6)

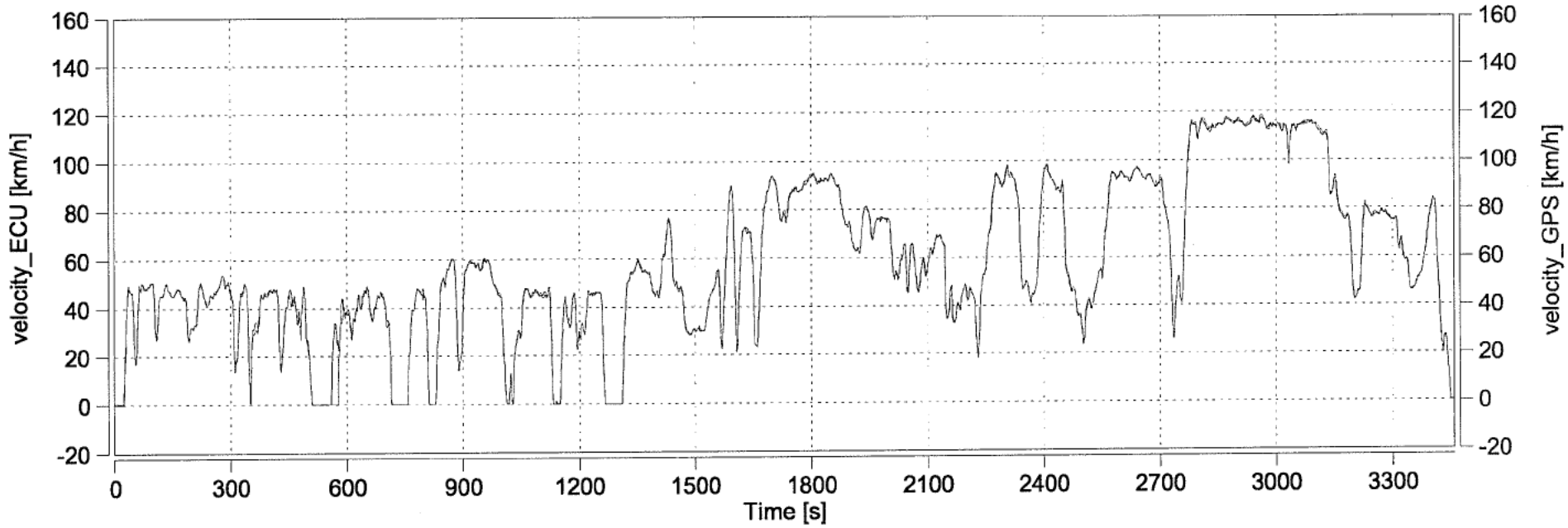
Concerto Version: 503 B82, MOVE DT 1R3.2 B319 Concerto Serial Number: 9-721D44C0 MOVE Version: V2.6_204 Windows Version: Microsoft Windows 10 Pro	Test Id: [redacted] / Mercedes-Benz E350 Engine: -/2987ccm/195kW fuel: Diesel EU B7 Engine at test start: Hot Euro6d-TEMP/AG;BG;CG;DG/M;N1classl/CI	ECU velocity factor: 1.002 extended cond.: 0% (0% cold start) Propulsion Type: ICE Date/Time: 2020-09-15/12:35:37	Page n/a Test 9 fails

Consistency check of GPS Vehicle Speed

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA App4 7	The total trip distance as calculated from the corrected GPS data shall deviate by no more than 4 % from the reference.	difference GPS distance (56.167 km) vs. ECU distance (56.096 km) <= 4%	**0.1**	**%**	pass
	The corrected GPS data shall not exceed an uninterrupted time period of 120 s.	GPS loss max time <= 120s	**28**	**s**	pass
	The corrected GPS data shall not exceed a total of 300 s	GPS loss toal time <= 300 s	**28**	**s**	pass

velocity used: ECU



Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Hot
Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-15/12:35:37

Page pass
Test 9 fails

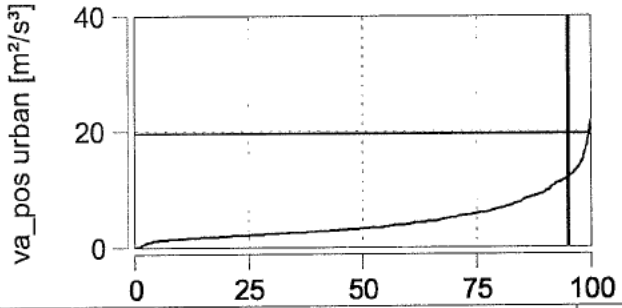
ANNEXIIIa Appendix 7a

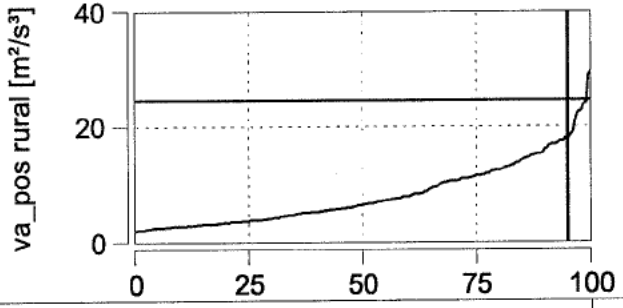
Trip Dynamics

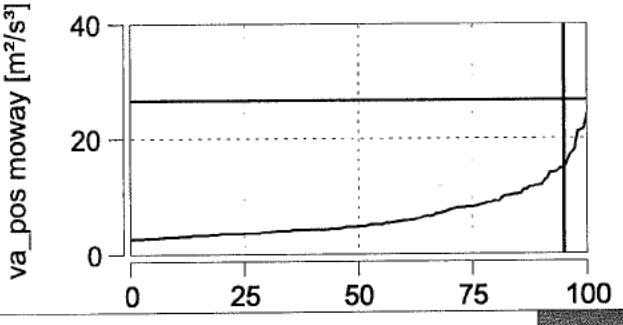
AVL

Verification of trip dynamics based on vehicle velocity and acceleration

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA App7a 3.1.	The number of datasets with acceleration values ai>0.1m/s2 shall be bigger or equal to 100 in the urban speed bin.	npoints(a_pos) >= 100	**713**		pass
	The number of datasets with acceleration values ai>0.1m/s2 shall be bigger or equal to 100 in the rural speed bin.	npoints(a_pos) >= 100	**241**		pass
	The number of datasets with acceleration values ai>0.1m/s2 shall be bigger or equal to 100 in the motorway speed bin.	npoints(a_pos) >= 100	**153**		pass
ANNEX IIIA App7a 4.1.	Verification of va_pos95 per speed bin.	va_pos_urban <= 19.551 [m^2/s^3]	**11.839**	**m^2/s^3**	pass
	Verification of va_pos95 per speed bin.	va_pos_rural <= 24.592 [m^2/s^3]	**17.938**	**m^2/s^3**	pass
	Verification of va_pos95 per speed bin.	va_pos_moway <= 26.696 [m^2/s^3]	**15.019**	**m^2/s^3**	pass
ANNEX IIIA App7a 4.1.	Verification of RPA per speed bin.	RPA_urban >= 0.115 [m/s^2]	**0.150**	**m/s^2**	pass
	Verification of RPA per speed bin.	RPA_rural >= 0.054 [m/s^2]	**0.134**	**m/s^2**	pass
	Verification of RPA per speed bin.	RPA_moway >= 0.025 [m/s^2]	**0.051**	**m/s^2**	pass







Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Hot
Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-15/12:35:37

Page pass
Test 9 fails

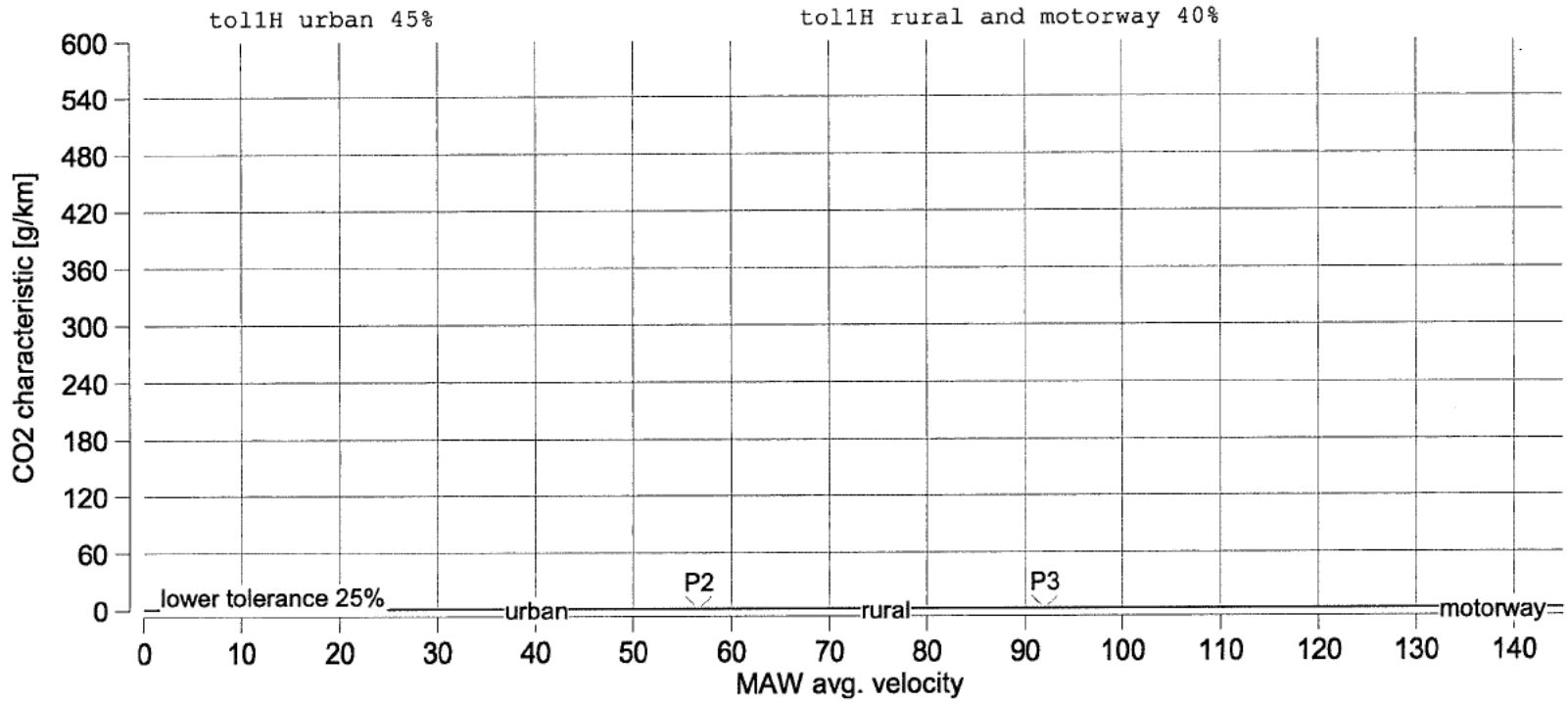
ANNEXIIIa Appendix 5

Test Validity

AVL

Verification of overall trip dynamics using the moving averaging window method

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA App5 4.5	The test is valid when at least 50% of the urban windows are within the tolerances defined for the CO2 characteristic.	50% valid urban windows	**0.0**	**%**	fail
	The test is valid when at least 50% of the rural windows are within the tolerances defined for the CO2 characteristic.	50% valid rural windows	**0.0**	**%**	fail
	The test is valid when at least 50% of the motorway windows are within the tolerances defined for the CO2 characteristic.	50% valid motorway windows	**0.0**	**%**	fail



Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Hot
Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-15/12:35:37

Page fail
Test 9 fails

ANNEXIIIa Appendix 6
Final RDE emissions results

Conformity of Emissions

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA 2.1.1	CF max = 1 + margin NOx with margin NOx = 1.1	conformity factor NOx urban <= 2.1	**3.15**		fail
	CF max = 1 + margin NOx with margin NOx = 1.1	conformity factor NOx trip <= 2.1	**3.48**		fail
	CF max = 1 + margin PN with margin PN = 0.5	conformity factor PN urban <= 1.5	**0.00**		n/a
	CF max = 1 + margin PN with margin PN = 0.5	conformity factor PN trip <= 1.5	**0.00**		n/a

urban		CO2	CO	NOx	PN
correction	factor	g/km	mg/km	mg/km	#/km
none		206.79	-24.13	567.41	0.000e+00
EXTC	1.60		-24.13	567.41	0.000e+00
RF	1.00		-24.13	567.41	0.000e+00
ki			-24.13	567.41	
final result *			0.00	567.41	0.000e+00
WLTP limit			**500.00**	**180.00**	**0.000e+00**
conformity factor				**3.15**	**0.00**

trip		CO2	CO	NOx	PN
correction	factor	g/km	mg/km	mg/km	#/km
none		189.62	-20.92	625.54	0.000e+00
EXTC	1.60		-20.92	625.54	0.000e+00
RF	1.00		-20.92	625.54	0.000e+00
ki			-20.92	625.54	
final result *			0.00	625.54	0.000e+00
WLTP limit			**500.00**	**180.00**	**0.000e+00**
conformity factor				**3.48**	**0.00**

Ki Offset		CO2 [g/km]		CO [mg/km]		NOx [mg/km]	
Ki factor		CO2		CO		NOx	

Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Hot
Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-15/12:35:37

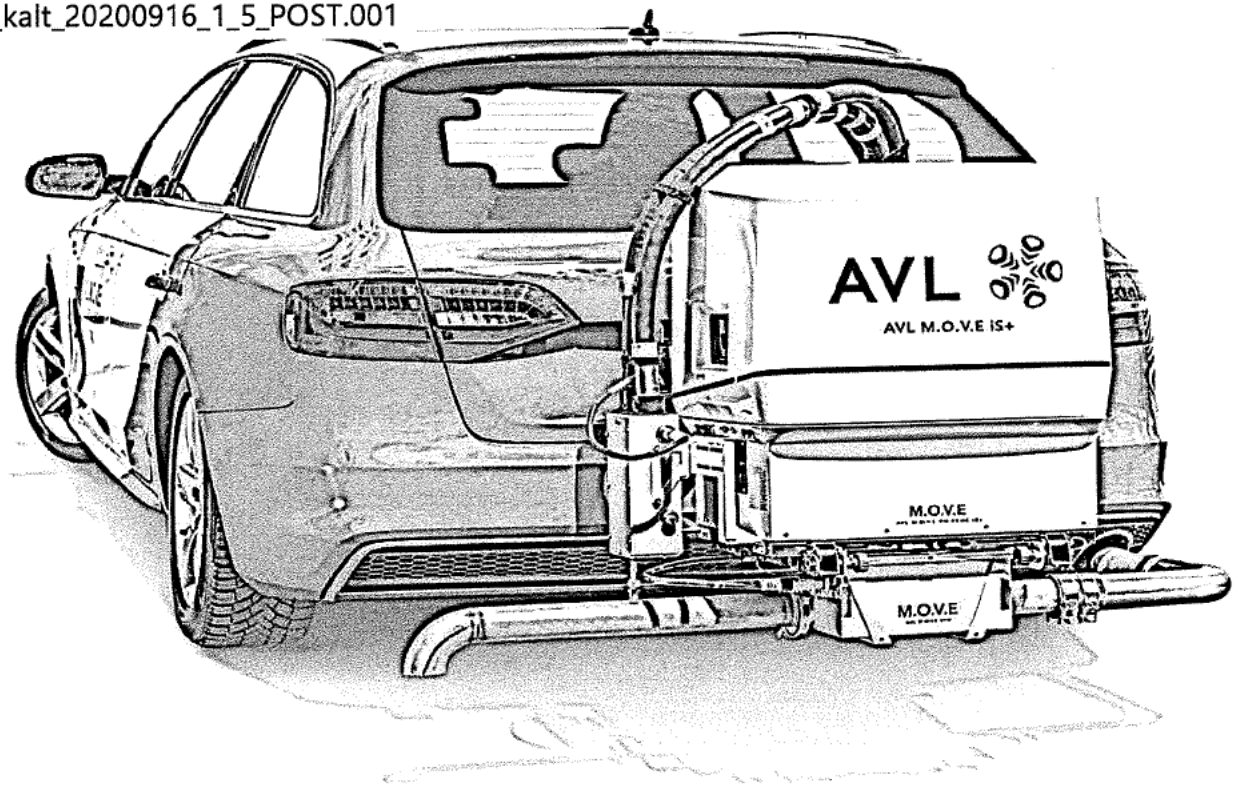
Page fail
Test 9 fails

* Negative final results shall be set to zero

COMMISSION REGULATION (EU) 2018/1832

Measurement Files:

FAKT_P03_MB_E350_5463_RDE3_kalt_20200916_1_3_PRE.001
FAKT_P03_MB_E350_5463_RDE3_kalt_20200916_1_4_MAIN.002
FAKT_P03_MB_E350_5463_RDE3_kalt_20200916_1_5_POST.001



Concerto Version: 503 B82, MOVE DT 1R3.2 B319 Concerto Serial Number: 9-721D44C0 MOVE Version: V2.6_204 Windows Version: Microsoft Windows 10 Pro	Test Id: [redacted] / Mercedes-Benz E350 Engine: -/2987ccm/195kW fuel: Diesel EU B7 Engine at test start: Cold Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI	ECU velocity factor: 1.002 extended cond.: 0% (0% cold start) Propulsion Type: ICE Date/Time: 2020-09-16/08:24:21	Page n/a Test 11 fails

Summary

AVL

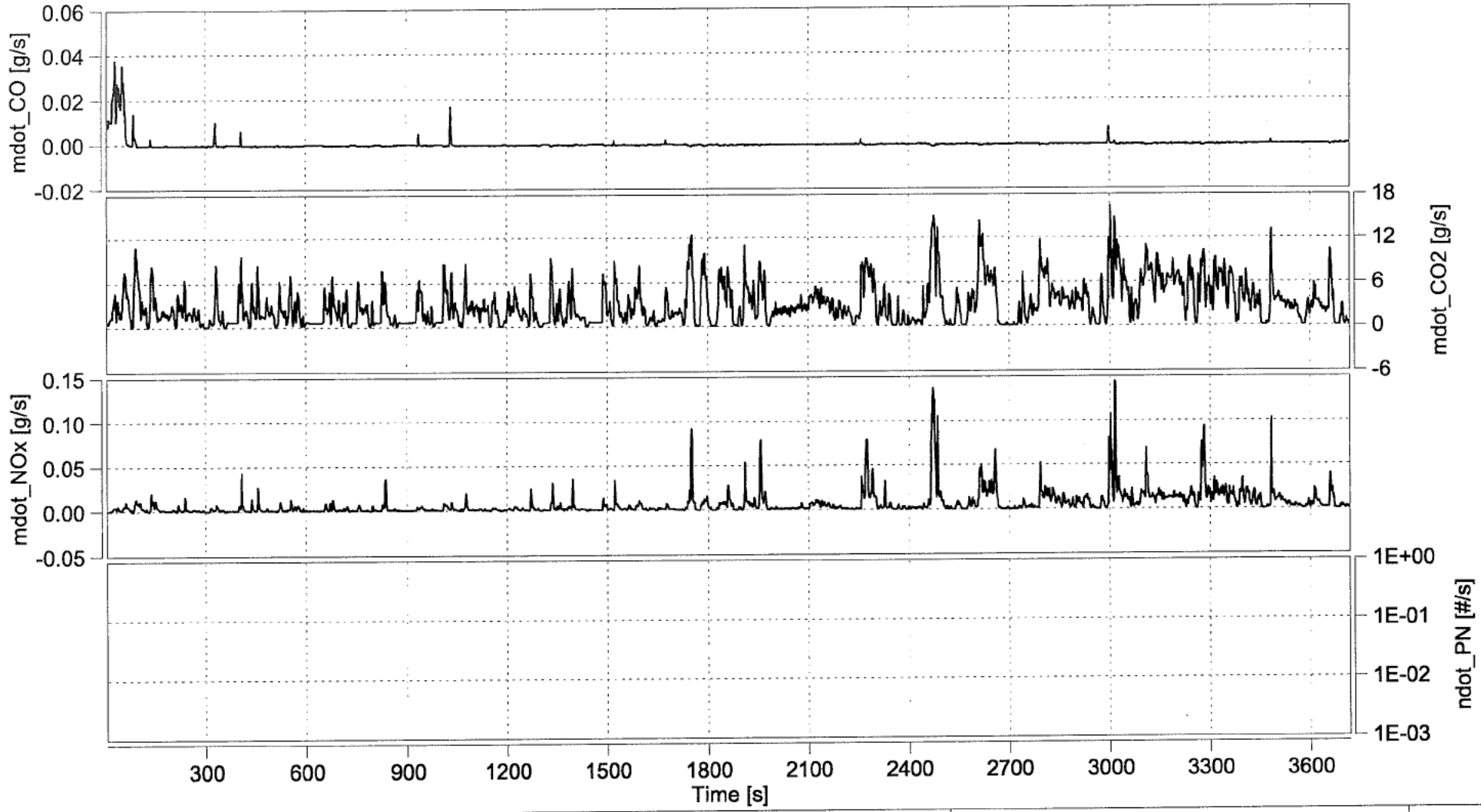
	urban	rural	motorway	trip	
Duration	2212	938	560	3710	s
Distance	21.01	19.22	15.98	56.21	km
Avg. Velocity	34.19	73.77	102.73	54.54	km/h
Fuel	1.48	1.02	0.92	3.42	kg
Exhaust Mass	48.11	30.15	24.22	102.48	kg

	total					distance specific					
	urban	rural	motorway	trip		urban	rural	motorway	trip	avg.	
CO [g]	0.78	-0.34	-0.28	0.16	**CO [mg/km]**	37.12	-17.78	-17.40	2.85	5.51	ppm
CO2 [g]	4678.37	3267.14	2985.50	10931.00	**CO2 [g/km]**	222.66	169.98	186.83	194.47	6.65	%
N2O [g]					**N2O [mg/km]**						ppm
NO [g]	6.70	7.96	7.07	21.73	**NO [mg/km]**	318.86	414.29	442.27	386.57	97.95	ppm
NO2 [g]	0.82	1.43	1.45	3.69	**NO2 [mg/km]**	38.79	74.41	90.62	65.71	17.58	ppm
NOx [g]	7.5145	9.3929	8.5154	25.423	**NOx [mg/km]**	357.65	488.70	532.90	452.28	115.53	ppm
PN [#]	0.000e+00	0.000e+00	0.000e+00	0.000e+00	**PN [#/km]**	0.000e+00	0.000e+00	0.000e+00	0.000e+00	0	#/cm³

wet gas and particle number

Emissions

AVL

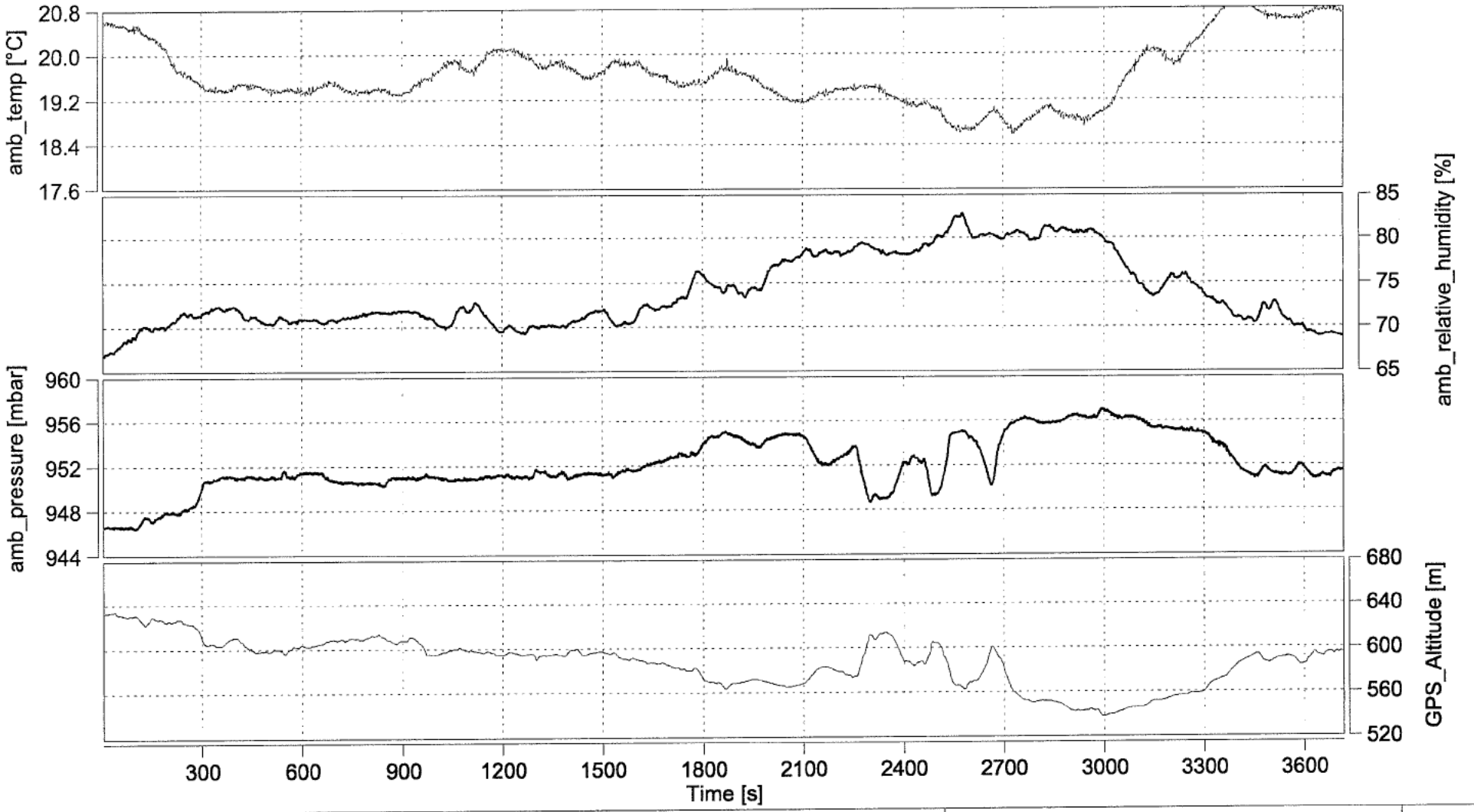


Concerto Version: 503 B82, MOVE DT 1R3.2 B319 Concerto Serial Number: 9-721D44C0 MOVE Version: V2.6_204 Windows Version: Microsoft Windows 10 Pro	Test Id: [redacted] / Mercedes-Benz E350 Engine: -/2987ccm/195kW fuel: Diesel EU B7 Engine at test start: Cold Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI	ECU velocity factor: 1.002 extended cond.: 0% (0% cold start) Propulsion Type: ICE Date/Time: 2020-09-16/08:24:21	Page n/a Test 11 fails

ambient conditions
and GPS altitude

Ambient

AVL

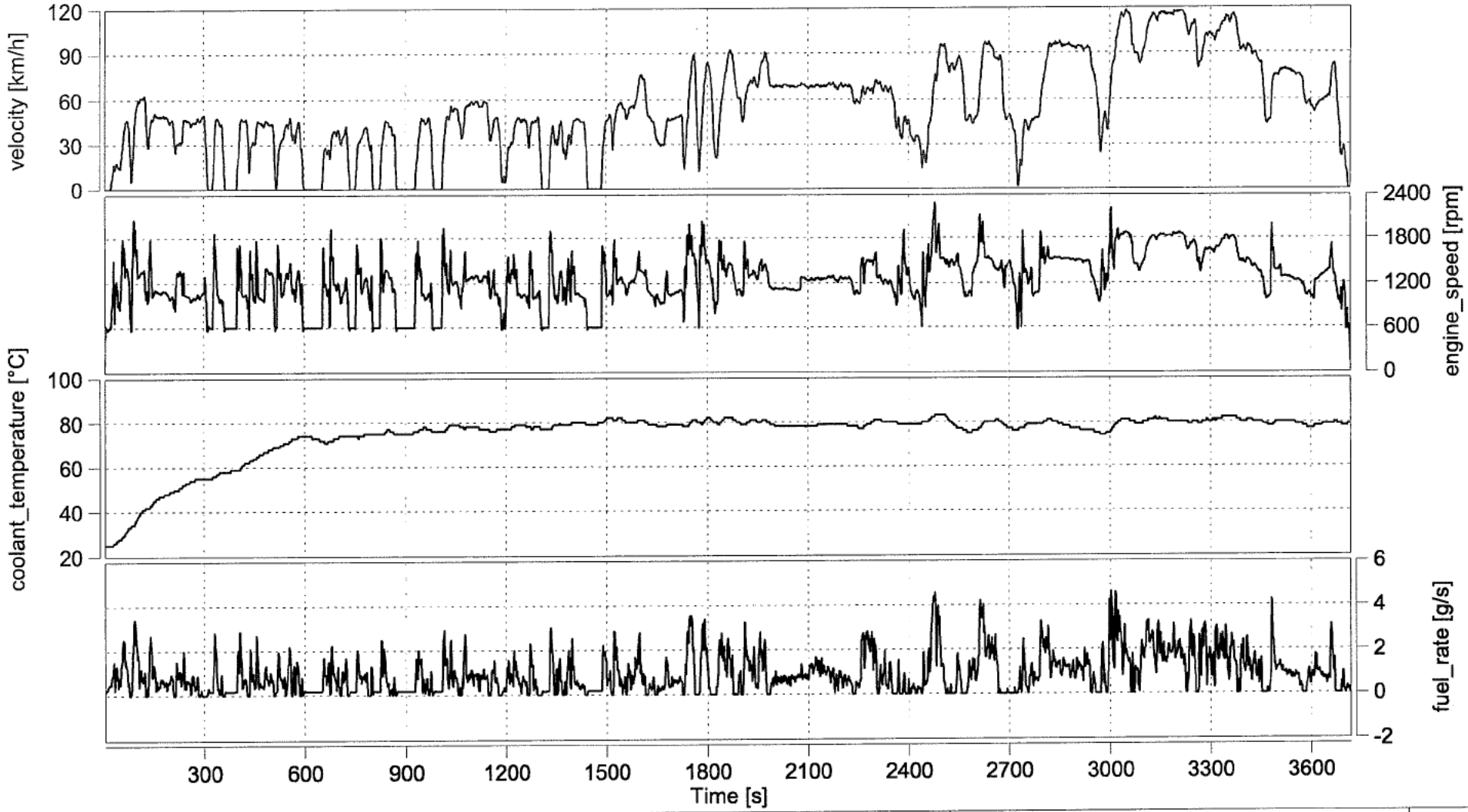


Concerto Version: 503 B82, MOVE DT 1R3.2 B319 Concerto Serial Number: 9-721D44C0 MOVE Version: V2.6_204 Windows Version: Microsoft Windows 10 Pro	Test Id: [redacted] / Mercedes-Benz E350 Engine: -/2987ccm/195kW fuel: Diesel EU B7 Engine at test start: Cold Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI	ECU velocity factor: 1.002 extended cond.: 0% (0% cold start) Propulsion Type: ICE Date/Time: 2020-09-16/08:24:21	Page n/a Test 11 fails

Vehicle ECU Channels

Vehicle

AVL



Concerto Version: 503 B82, MOVE DT 1R3.2 B319 Concerto Serial Number: 9-721D44C0 MOVE Version: V2.6_204 Windows Version: Microsoft Windows 10 Pro	Test Id: [redacted] / Mercedes-Benz E350 Engine: -/2987ccm/195kW fuel: Diesel EU B7 Engine at test start: Cold Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI	ECU velocity factor: 1.002 extended cond.: 0% (0% cold start) Propulsion Type: ICE Date/Time: 2020-09-16/08:24:21	Page n/a Test 11 fails

Zero/Span

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA App1 6.1	Permissible analyser abs zero response drift CO2	abs zero response drift <= 2000 ppm	**0.0**	**ppm**	pass
	Permissible analyser abs span response drift CO2	abs span response drift <= 3588 ppm	**100.0**	**ppm**	pass
	Permissible analyser abs zero response drift CO	abs zero response drift <= 75 ppm	**4.7**	**ppm**	pass
	Permissible analyser abs span response drift CO	abs span response drift <= 199.62 ppm	**14.4**	**ppm**	pass
	Permissible analyser abs zero response drift NOx	abs zero response drift <= 5 ppm	**1.5**	**ppm**	pass
	Permissible analyser abs span response drift NOx	abs span response drift <= 32.02 ppm	**1.0**	**ppm**	pass
ANNEX IIIA App1 4.6	pre test, zero check PN: ..the final concentration shall not exceed 5 000 particles per cubic-centimetre	PN pre zero check <= 5000 #/cm3	**n/a**	**#/cm3**	n/a
	post test, zero check PN: ..the final concentration shall not exceed 5 000 particles per cubic-centimetre	PN post zero check <= 5000 #/cm3	**n/a**	**#/cm3**	n/a

Validity of calibration gas

Span Gases

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA App1 6.3	Span gas shall cover at least 90% of the conc. values from 99% of the valid parts of the emissions test. - CO2	span gas CO2 > 10 %	**17.9**	**%**	pass
	It is permissible that 1 % of the total number of measurements exceeds the used span gas by up to a factor of two. - CO2	(perc. measurement points > (2 * span gas)) <= 1%	**0.0**	**%**	pass
	Span gas shall cover at least 90% of the conc. values from 99% of the valid parts of the emissions test. - CO	span gas CO > 852 ppm	**9981.0**	**ppm**	pass
	It is permissible that 1 % of the total number of measurements exceeds the used span gas by up to a factor of two. - CO	(perc. measurement points > (2 * span gas)) <= 1%	**0.0**	**%**	pass
	Span gas shall cover at least 90% of the conc. values from 99% of the valid parts of the emissions test. - NOx	span gas NOx > 568 ppm	**1601.0**	**ppm**	pass
	It is permissible that 1 % of the total number of measurements exceeds the used span gas by up to a factor of two. - NOx	(perc. measurement points > (2 * span gas)) <= 1%	**0.0**	**%**	pass

ANNEXIIIa 5.3
Vehicle conditioning for cold engine-start testing

PRECON and SOAK

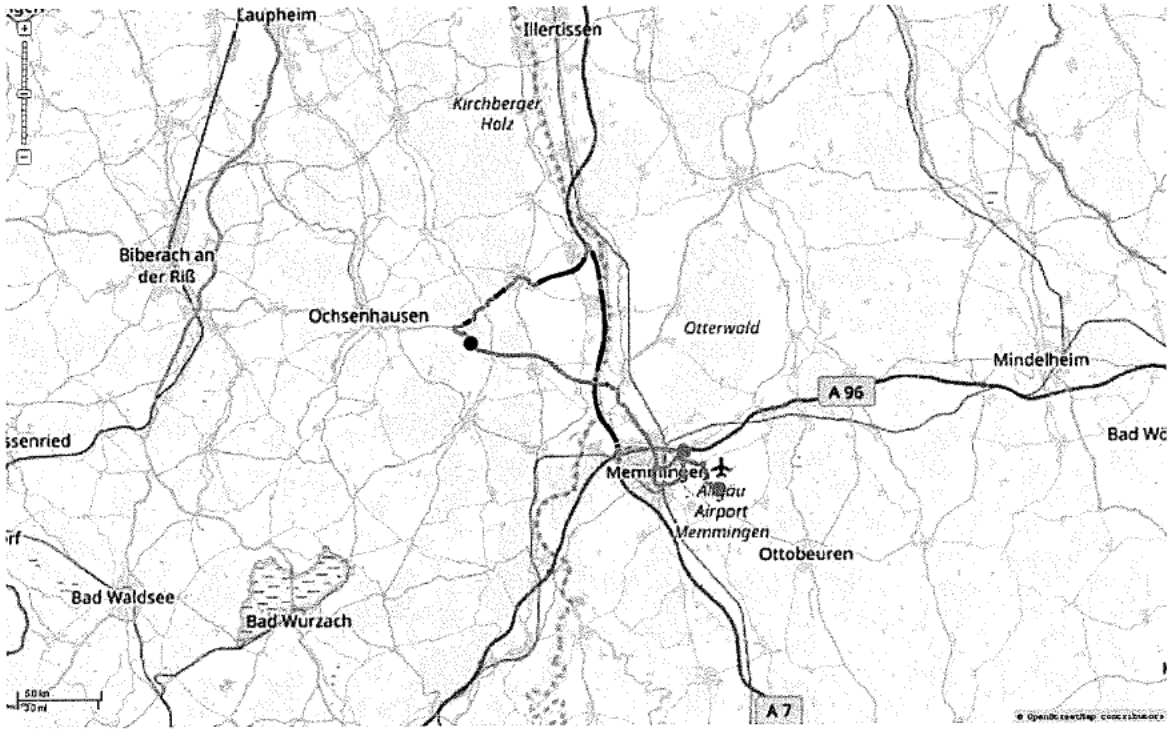
AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA 5.3	Before RDE testing, the vehicle shall be preconditioned in the following way: Driven for at least 30 min	time (vehicle velocity > 1 km/h) >= 30 min	**00:00**	**mm:ss**	fail
	..parked with doors and bonnet closed and kept in engine-off status between 6 and 56 hours	6h <= time soak phase <= 56h	**00:00**	**hh:mm**	fail
	vehicle conditioning for cold engine start shall be within moderate or extended temperatures conditions	-7°C <= ambient temperature during soak phase <=35°C	**n/a** **n/a**	**°C**	n/a
ANNEX IIIA 9.6	If the vehicle was conditioned for the last three hours prior to the test at an average temperature that falls within the extended range, cold start emissions are divided by 1.6	if during last 3 hours of the soak phase, avg. amb. temperature has been in extended conditions [-7/0] or [30/35] °C, then a correction of 1.6 is applied to cold start	**n/a**	**°C**	not applied

ANNEXIIIa Appendix 1 5.1
Vehicle with internal combustion engine
criterium test start: ignition on/engine up, criterium test end: ignition off/engine off

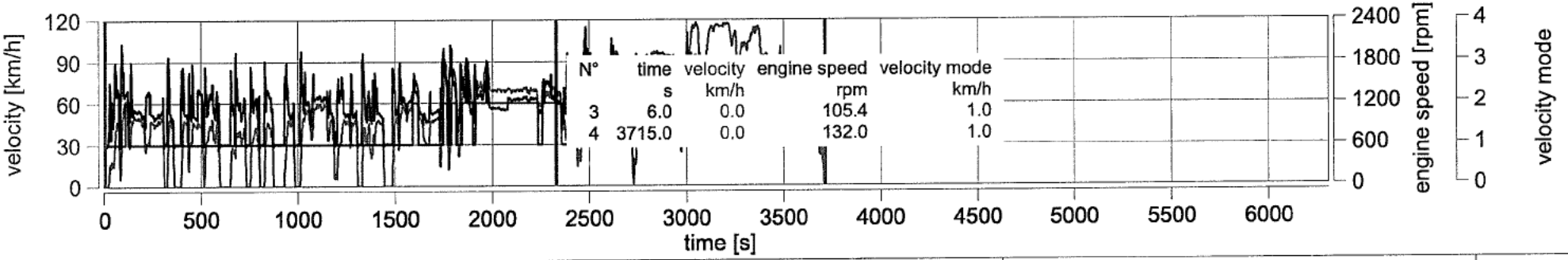
Test Start/End

AVL



TEST START
s
6

TEST END
s
3715



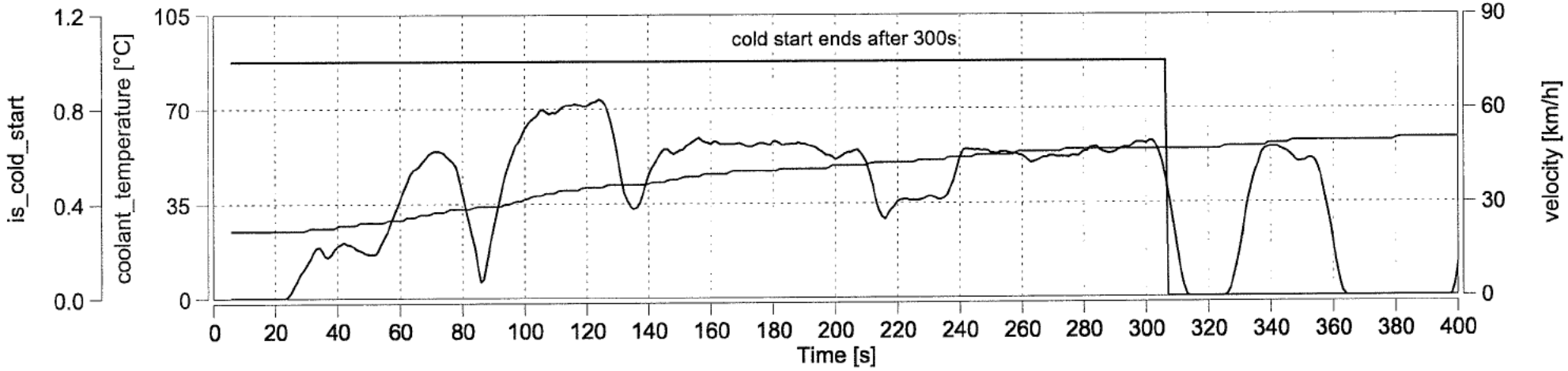
N°	time s	velocity km/h	engine speed rpm	velocity mode km/h
3	6.0	0.0	105.4	1.0
4	3715.0	0.0	132.0	1.0

ANNEXIIIa
cold or hot start

Cold Start

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA 6.13	The average speed (including stops) during cold start period shall be between 15 and 40 km/h.	15 km/h <= velocity during cold start <= 40 km/h	**37.89**	**km/h**	pass
	The maximum speed during the cold start period shall not exceed 60 km/h.	max velocity during cold start <= 60 km/h	**62.98**	**km/h**	fail
ANNEX IIIA 7.6	At the test start the vehicle shall move within 15 seconds.	vehicle stop @test start <= 15s	**19**	**s**	fail
	The vehicle stop during the entire cold start period shall be kept to the minimum possible and it shall not exceed in total 90s.	sum of vehicle stop times during cold start <= 90 seconds	**19**	**s**	pass



Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Cold
Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-16/08:24:21

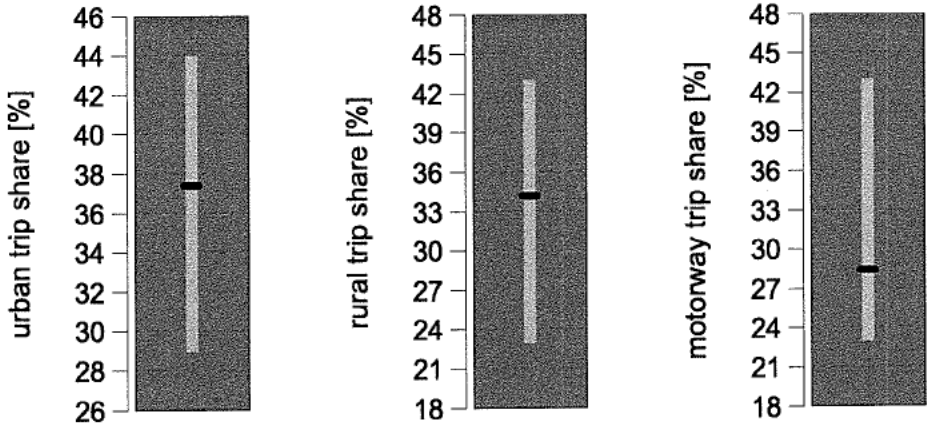
Page fail
Test 11 fails

ANNEXIIIA
trip shares urban/rural/motorway

Trip Shares

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA 6.2	The trip shall always start with urban driving followed by rural and motorway driving (avg. velocity of first 16km max. 40 km/h)	6.2 urban first	**YES**		pass
ANNEX IIIA 6.12	The minimum distance of the urban operation shall be 16 km.	distance urban min 16km	**21**	**km**	pass
	The minimum distance of the rural operation shall be 16 km.	distance rural min 16km	**19**	**km**	pass
	The minimum distance of the motorway operation shall be 16 km.	distance motorway min 16km	**16**	**km**	fail
ANNEX IIIA 6.6	The trip shall consist of approximately 34 ±10% urban. The urban driving shall however never be less than 29%.	share distance urban	**37.4**	**%**	pass
	The trip shall consist of approximately 33 ±10% rural.	share distance rural	**34.2**	**%**	pass
	The trip shall consist of approximately 33 ±10% motorway.	share distance motorway	**28.4**	**%**	pass



Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Cold
Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-16/08:24:21

Page fail
Test 11 fails

Trip Requirements

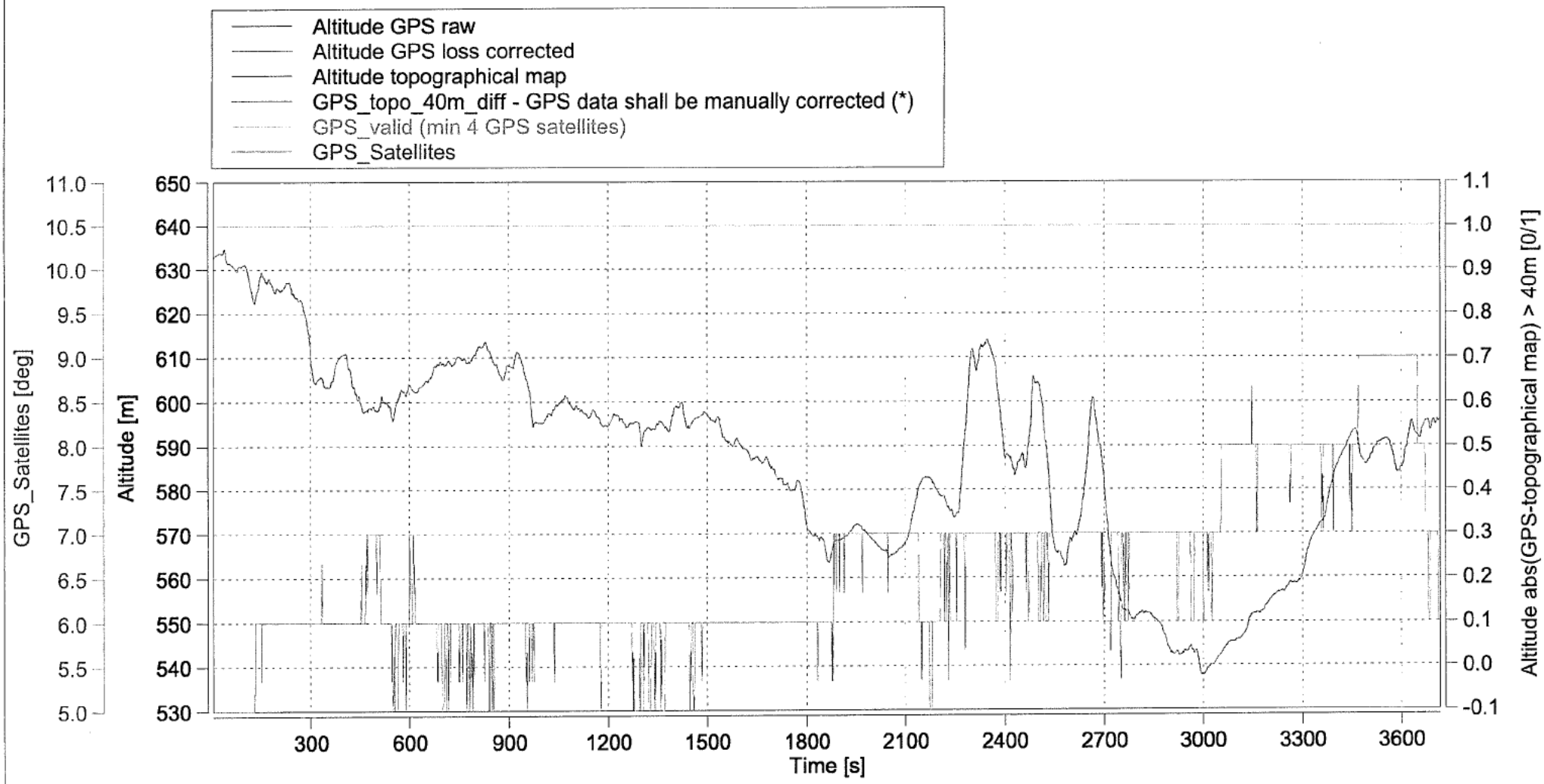
AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA 6.7	The vehicle velocity shall not exceed 160 km/h.	max(v) <= 160 km/h	**117.7**	**km/h**	pass
	The maximum speed (145 km/h) may be exceeded by a tolerance of 15 km/h for not more than 3 %.	motorway time share vehicle velocity more than 145 km/h <= 3%	**0.0**	**%**	pass
ANNEX IIIA 6.8	The average speed (including stops) of the urban driving part of the trip should be between 15 and 40 km/h.	urban driving average speed 15 -40 km/h	**34.2**	**km/h**	pass
	Stop periods, defined by vehicle speed of less than 1 km/h, shall account for 6-30 % of the time duration of urban operation.	urban time share vehicle stop 6-30%	**14.0**	**%**	pass
	Individual stop periods shall not exceed 300 consecutive seconds.	vehicle stop max time 300s	**56**	**s**	pass
ANNEX IIIA 6.9	The speed range of the motorway driving shall properly cover a range between 90 and at least 110 km/h.	motorway driving time >= 90 km/h	**09:20**	**mm:ss**	pass
	The vehicle's velocity shall be above 100 km/h for at least 5 minutes	motorway driving time >= 100 km/h	**04:44**	**mm:ss**	fail
ANNEX IIIA 6.10	The trip duration shall be between 90 and 120 minutes.	trip duration 90 - 120 minutes	**62**	**min**	fail
ANNEX IIIA 6.11	The start and the end point shall not differ in their elevation above sea level by more than 100 m.	trip start/end altitude diff max 100m	**37**	**m**	pass
	The proportional cumulative positive altitude gain over the entire trip shall be less than 1200 m/100 km.	cumulative pos elevation gain trip max 1200m	**368**	**m**	pass
	The proportional cumulative positive altitude gain over the urban part of the trip shall be less than 1200 m/100 km.	cumulative pos elevation gain urban part max 1200m	**210**	**m**	pass
ANNEX IIIA 5.2.1	If a part of the test or the entire test is performed outside of normal or extended conditions, the test shall be invalid.	test performed outside extended conditions in terms of ambient temperature and altitude	**NO**		pass

GPS Altitude

Consistency check of Vehicle Altitude

AVL



(*) according to EU 2017/1151 - ANNEX IIIA App. 4 (6)

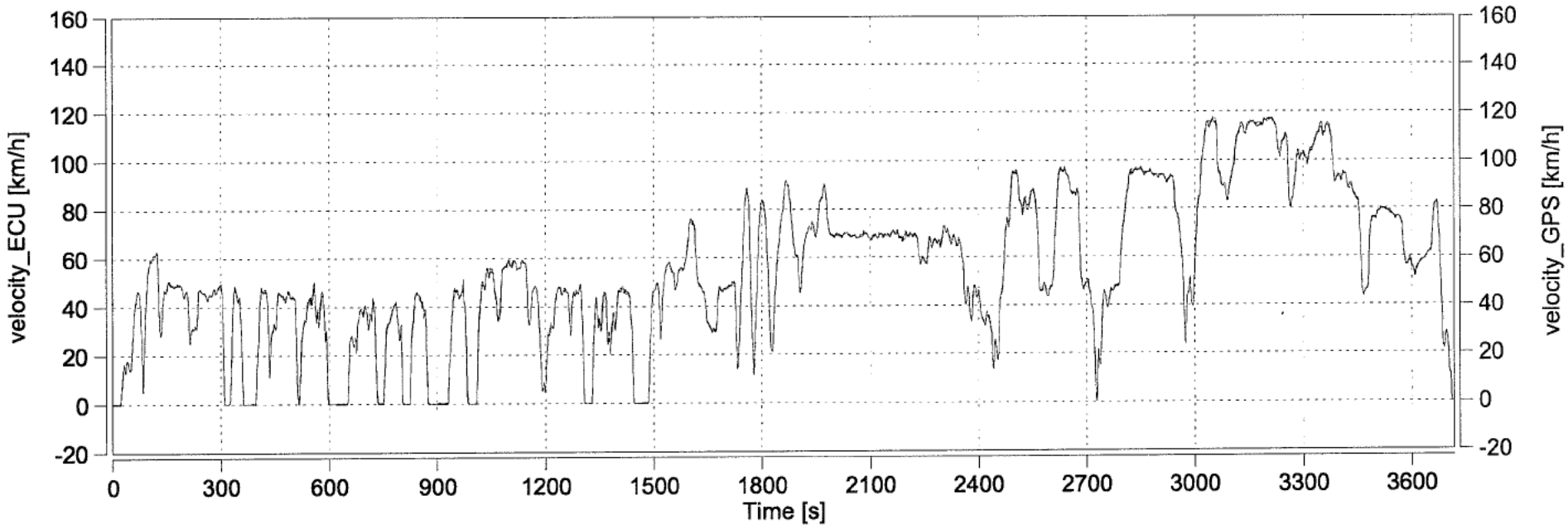
Concerto Version: 503 B82, MOVE DT 1R3.2 B319 Concerto Serial Number: 9-721D44C0 MOVE Version: V2.6_204 Windows Version: Microsoft Windows 10 Pro	Test Id: [redacted] / Mercedes-Benz E350 Engine: -/2987ccm/195kW fuel: Diesel EU B7 Engine at test start: Cold Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI	ECU velocity factor: 1.002 extended cond.: 0% (0% cold start) Propulsion Type: ICE Date/Time: 2020-09-16/08:24:21	Page Test	n/a 11 fails

Consistency check of GPS Vehicle Speed

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA App4 7	The total trip distance as calculated from the corrected GPS data shall deviate by no more than 4 % from the reference.	difference GPS distance (56.47 km) vs. ECU distance (56.211 km) <= 4%	**0.5**	**%**	pass
	The corrected GPS data shall not exceed an uninterrupted time period of 120 s.	GPS loss max time <= 120s	**0**	**s**	pass
	The corrected GPS data shall not exceed a total of 300 s	GPS loss toal time <= 300 s	**0**	**s**	pass

velocity used: ECU



Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Cold
Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-16/08:24:21

Page pass
Test 11 fails

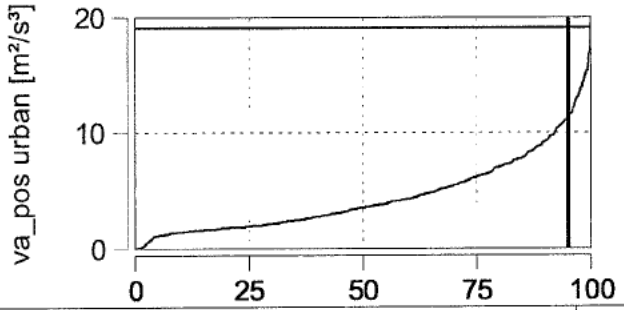
ANNEXIIIa Appendix 7a

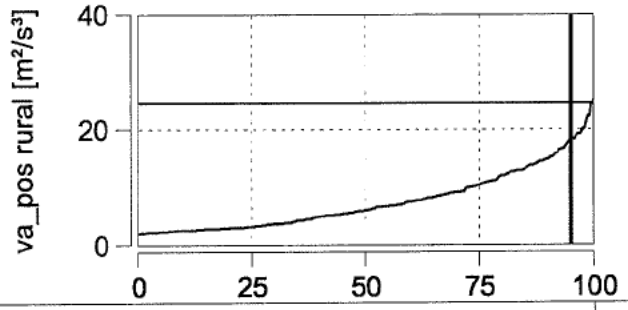
Trip Dynamics

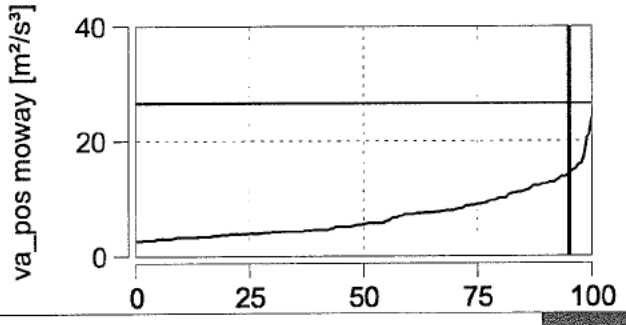
AVL

Verification of trip dynamics based on vehicle velocity and acceleration

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA App7a 3.1.	The number of datasets with acceleration values ai>0.1m/s2 shall be bigger or equal to 100 in the urban speed bin.	npoints(a_pos) >= 100	**742**		pass
	The number of datasets with acceleration values ai>0.1m/s2 shall be bigger or equal to 100 in the rural speed bin.	npoints(a_pos) >= 100	**294**		pass
	The number of datasets with acceleration values ai>0.1m/s2 shall be bigger or equal to 100 in the motorway speed bin.	npoints(a_pos) >= 100	**165**		pass
ANNEX IIIA App7a 4.1.	Verification of va_pos95 per speed bin.	va_pos_urban <= 19.091 [m^2/s^3]	**11.401**	**m^2/s^3**	pass
	Verification of va_pos95 per speed bin.	va_pos_rural <= 24.472 [m^2/s^3]	**18.143**	**m^2/s^3**	pass
	Verification of va_pos95 per speed bin.	va_pos_moway <= 26.588 [m^2/s^3]	**14.286**	**m^2/s^3**	pass
ANNEX IIIA App7a 4.1.	Verification of RPA per speed bin.	RPA_urban >= 0.121 [m/s^2]	**0.159**	**m/s^2**	pass
	Verification of RPA per speed bin.	RPA_rural >= 0.057 [m/s^2]	**0.115**	**m/s^2**	pass
	Verification of RPA per speed bin.	RPA_moway >= 0.025 [m/s^2]	**0.072**	**m/s^2**	pass







Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Cold
Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-16/08:24:21

Page pass

Test 11 fails

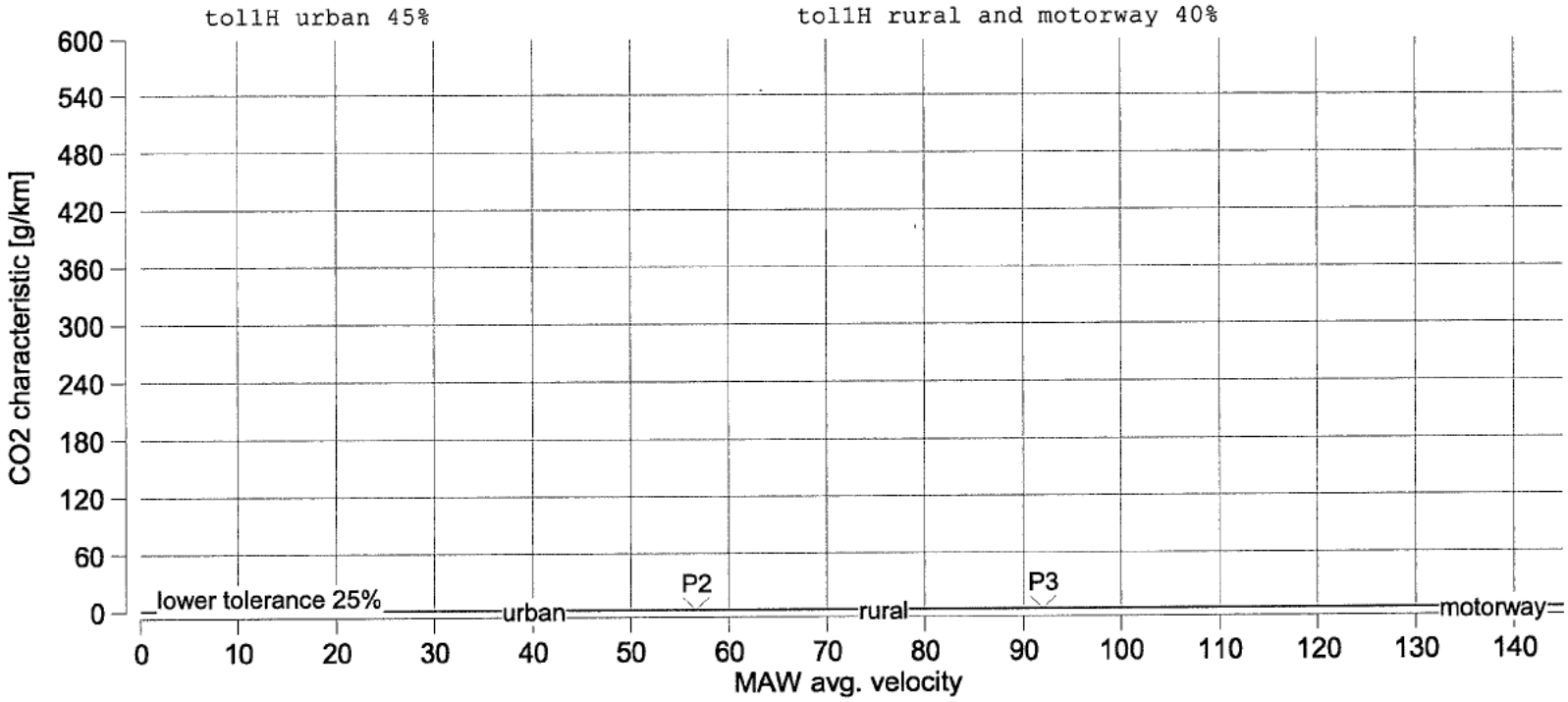
ANNEXIIIa Appendix 5

Test Validity

AVL

Verification of overall trip dynamics using the moving averaging window method

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA App5 4.5	The test is valid when at least 50% of the urban windows are within the tolerances defined for the CO2 characteristic.	50% valid urban windows	**0.0**	**%**	fail
	The test is valid when at least 50% of the rural windows are within the tolerances defined for the CO2 characteristic.	50% valid rural windows	**0.0**	**%**	fail
	The test is valid when at least 50% of the motorway windows are within the tolerances defined for the CO2 characteristic.	50% valid motorway windows	**0.0**	**%**	fail



Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Cold
Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-16/08:24:21

Page fail

Test 11 fails

ANNEXIIIa Appendix 6
Final RDE emissions results

Conformity of Emissions

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA 2.1.1	CF max = 1 + margin NOx with margin NOx = 1.1	conformity factor NOx urban <= 2.1	**1.99**		pass
	CF max = 1 + margin NOx with margin NOx = 1.1	conformity factor NOx trip <= 2.1	**2.51**		fail
	CF max = 1 + margin PN with margin PN = 0.5	conformity factor PN urban <= 1.5	**0.00**		n/a
	CF max = 1 + margin PN with margin PN = 0.5	conformity factor PN trip <= 1.5	**0.00**		n/a

urban		CO2	CO	NOx	PN
correction	factor	g/km	mg/km	mg/km	#/km
none		222.66	37.12	357.65	0.000e+00
EXTC	1.60		37.12	357.65	0.000e+00
RF	1.00		37.12	357.65	0.000e+00
ki			37.12	357.65	
final result *			37.12	357.65	0.000e+00
WLTP limit			**500.00**	**180.00**	**0.000e+00**
conformity factor				**1.99**	**0.00**

trip		CO2	CO	NOx	PN
correction	factor	g/km	mg/km	mg/km	#/km
none		194.47	2.85	452.28	0.000e+00
EXTC	1.60		2.85	452.28	0.000e+00
RF	1.00		2.85	452.28	0.000e+00
ki			2.85	452.28	
final result *			2.85	452.28	0.000e+00
WLTP limit			**500.00**	**180.00**	**0.000e+00**
conformity factor				**2.51**	**0.00**

Ki Offset		CO2 [g/km]		CO [mg/km]		NOx [mg/km]	
Ki factor		CO2		CO		NOx	

Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Cold
Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-16/08:24:21

Page fail
Test 11 fails

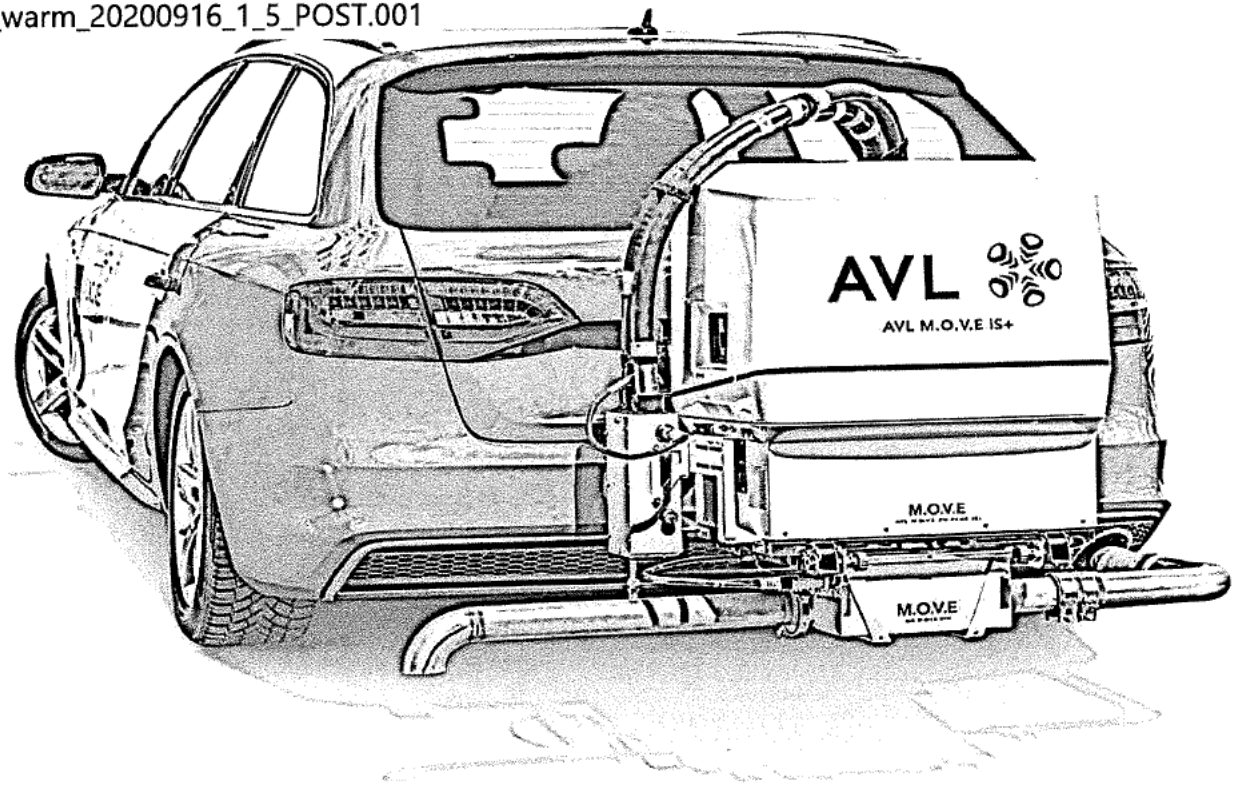
* Negative final results shall be set to zero

COMMISSION REGULATION (EU) 2018/1832

AVL

Measurement Files:

FAKT_P03_MB_E350_5463_RDE4_warm_20200916_1_3_PRE.001
FAKT_P03_MB_E350_5463_RDE4_warm_20200916_1_4_MAIN.001
FAKT_P03_MB_E350_5463_RDE4_warm_20200916_1_5_POST.001



Concerto Version: 503 B82, MOVE DT 1R3.2 B319 Concerto Serial Number: 9-721D44C0 MOVE Version: V2.6_204 Windows Version: Microsoft Windows 10 Pro	Test Id: [redacted] / Mercedes-Benz E350 Engine: -/2987ccm/195kW fuel: Diesel EU B7 Engine at test start: Hot Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI	ECU velocity factor: 1.002 extended cond.: 0% (0% cold start) Propulsion Type: ICE Date/Time: 2020-09-16/10:22:16	Page n/a Test 9 fails

Summary

AVL

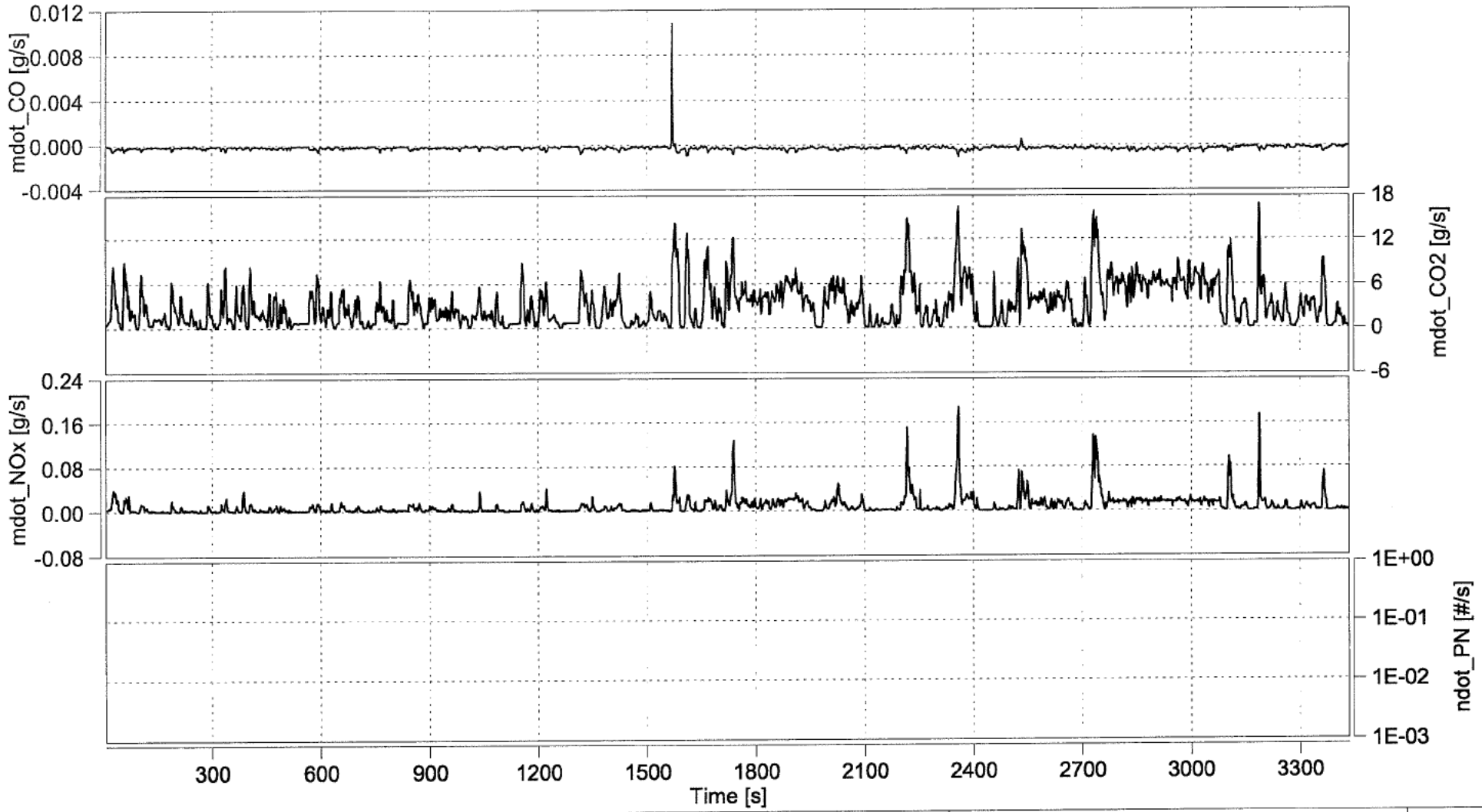
	urban	rural	motorway	trip	
Duration	2016	608	803	3427	s
Distance	20.57	12.52	23.00	56.10	km
Avg. Velocity	36.74	74.13	103.13	58.93	km/h
Fuel	1.30	0.69	1.26	3.24	kg
Exhaust Mass	46.65	22.36	33.35	102.36	kg

	total					distance specific				avg.	
	urban	**rural**	**motorway**	**trip**		**urban**	**rural**	**motorway**	**trip**		
CO [g]	-0.39	-0.18	-0.29	-0.86	**CO [mg/km]**	-18.94	-14.42	-12.40	-15.25	-9.11	ppm
CO2 [g]	4248.52	2179.71	4025.14	10453.36	**CO2 [g/km]**	206.51	174.10	174.97	186.34	6.20	%
N2O [g]					**N2O [mg/km]**						ppm
NO [g]	9.92	8.15	10.58	28.65	**NO [mg/km]**	482.14	651.11	459.77	510.68	132.84	ppm
NO2 [g]	1.19	1.28	2.18	4.64	**NO2 [mg/km]**	57.61	102.32	94.55	82.74	22.98	ppm
NOx [g]	11.104	9.4329	12.752	33.289	**NOx [mg/km]**	539.75	753.43	554.31	593.41	155.82	ppm
PN [#]	0.000e+00	0.000e+00	0.000e+00	0.000e+00	**PN [#/km]**	0.000e+00	0.000e+00	0.000e+00	0.000e+00	0	#/cm³

wet gas and particle number

Emissions

AVL

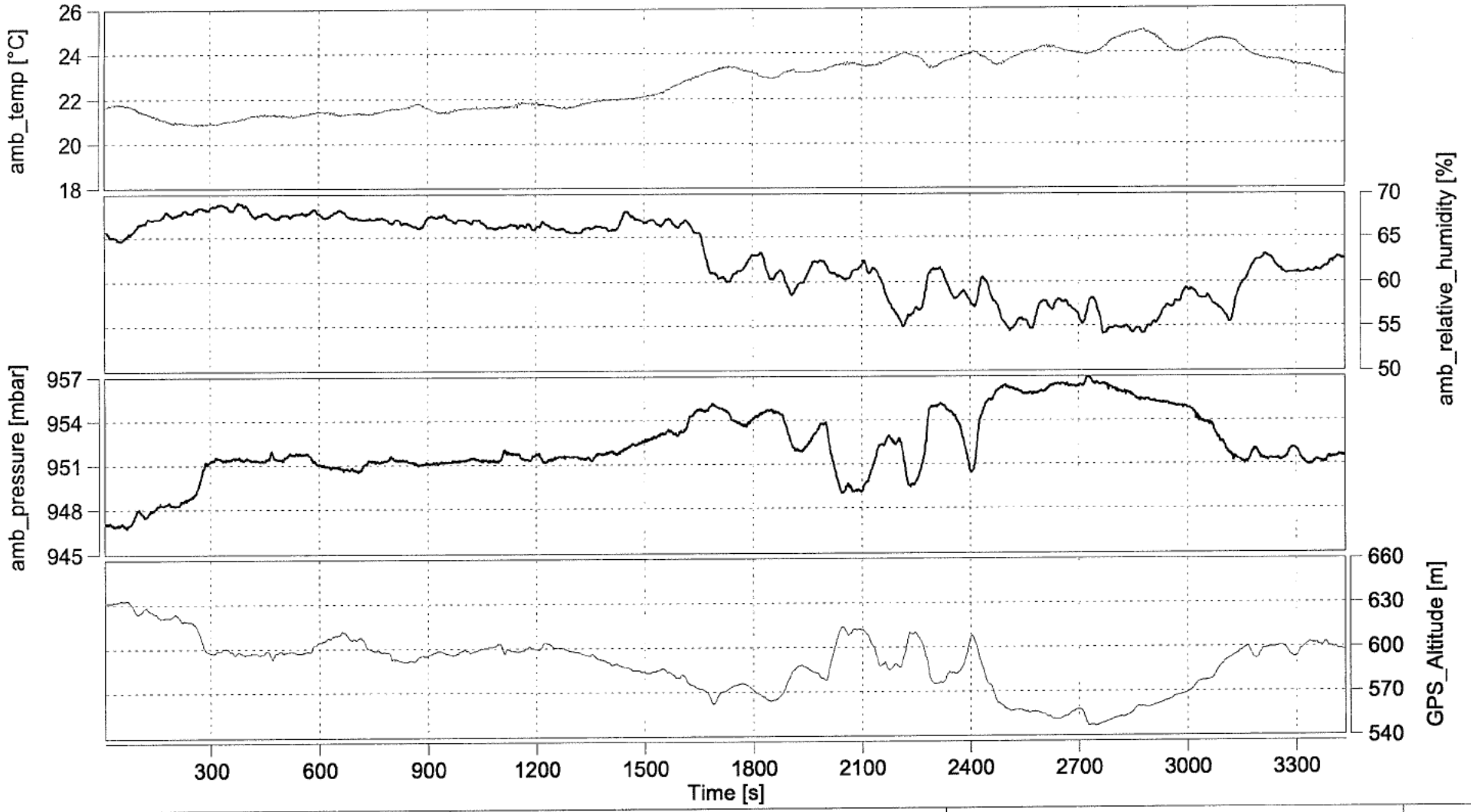


Concerto Version: 503 B82, MOVE DT 1R3.2 B319 Concerto Serial Number: 9-721D44C0 MOVE Version: V2.6_204 Windows Version: Microsoft Windows 10 Pro	Test Id: [redacted] / Mercedes-Benz E350 Engine: -/2987ccm/195kW fuel: Diesel EU B7 Engine at test start: Hot Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI	ECU velocity factor: 1.002 extended cond.: 0% (0% cold start) Propulsion Type: ICE Date/Time: 2020-09-16/10:22:16	Page n/a Test 9 fails

ambient conditions
and GPS altitude

Ambient

AVL

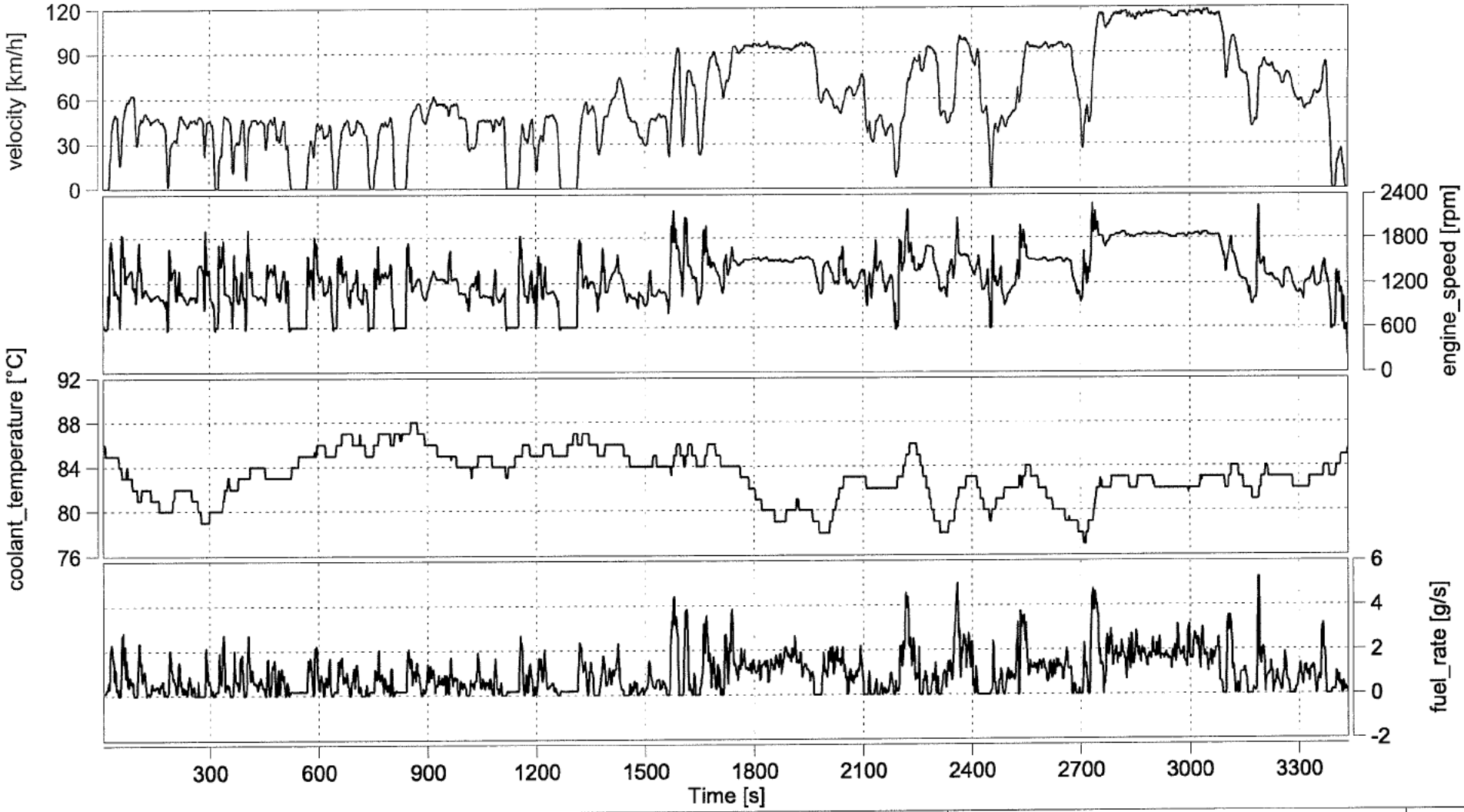


Concerto Version: 503 B82, MOVE DT 1R3.2 B319 Concerto Serial Number: 9-721D44C0 MOVE Version: V2.6_204 Windows Version: Microsoft Windows 10 Pro	Test Id: [redacted] / Mercedes-Benz E350 Engine: -/2987ccm/195kW fuel: Diesel EU B7 Engine at test start: Hot Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI	ECU velocity factor: 1.002 extended cond.: 0% (0% cold start) Propulsion Type: ICE Date/Time: 2020-09-16/10:22:16	Page n/a Test 9 fails

Vehicle ECU Channels

Vehicle

AVL



Concerto Version: 503 B82, MOVE DT 1R3.2 B319 Concerto Serial Number: 9-721D44C0 MOVE Version: V2.6_204 Windows Version: Microsoft Windows 10 Pro	Test Id: [redacted] / Mercedes-Benz E350 Engine: -/2987ccm/195kW fuel: Diesel EU B7 Engine at test start: Hot Euro6d-TEMP/AG;BG;CG;DG/M;N1classl/Cl	ECU velocity factor: 1.002 extended cond.: 0% (0% cold start) Propulsion Type: ICE Date/Time: 2020-09-16/10:22:16	Page n/a Test 9 fails

Zero/Span

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA App1 6.1	Permissible analyser abs zero response drift CO2	abs zero response drift <= 2000 ppm	**0.0**	**ppm**	pass
	Permissible analyser abs span response drift CO2	abs span response drift <= 3588 ppm	**100.0**	**ppm**	pass
	Permissible analyser abs zero response drift CO	abs zero response drift <= 75 ppm	**7.0**	**ppm**	pass
	Permissible analyser abs span response drift CO	abs span response drift <= 199.62 ppm	**5.5**	**ppm**	pass
	Permissible analyser abs zero response drift NOx	abs zero response drift <= 5 ppm	**1.4**	**ppm**	pass
	Permissible analyser abs span response drift NOx	abs span response drift <= 32.02 ppm	**5.5**	**ppm**	pass
ANNEX IIIA App1 4.6	pre test, zero check PN: ..the final concentration shall not exceed 5 000 particles per cubic-centimetre	PN pre zero check <= 5000 #/cm3	**n/a**	**#/cm3**	n/a
	post test, zero check PN: ..the final concentration shall not exceed 5 000 particles per cubic-centimetre	PN post zero check <= 5000 #/cm3	**n/a**	**#/cm3**	n/a

Validity of calibration gas

Span Gases

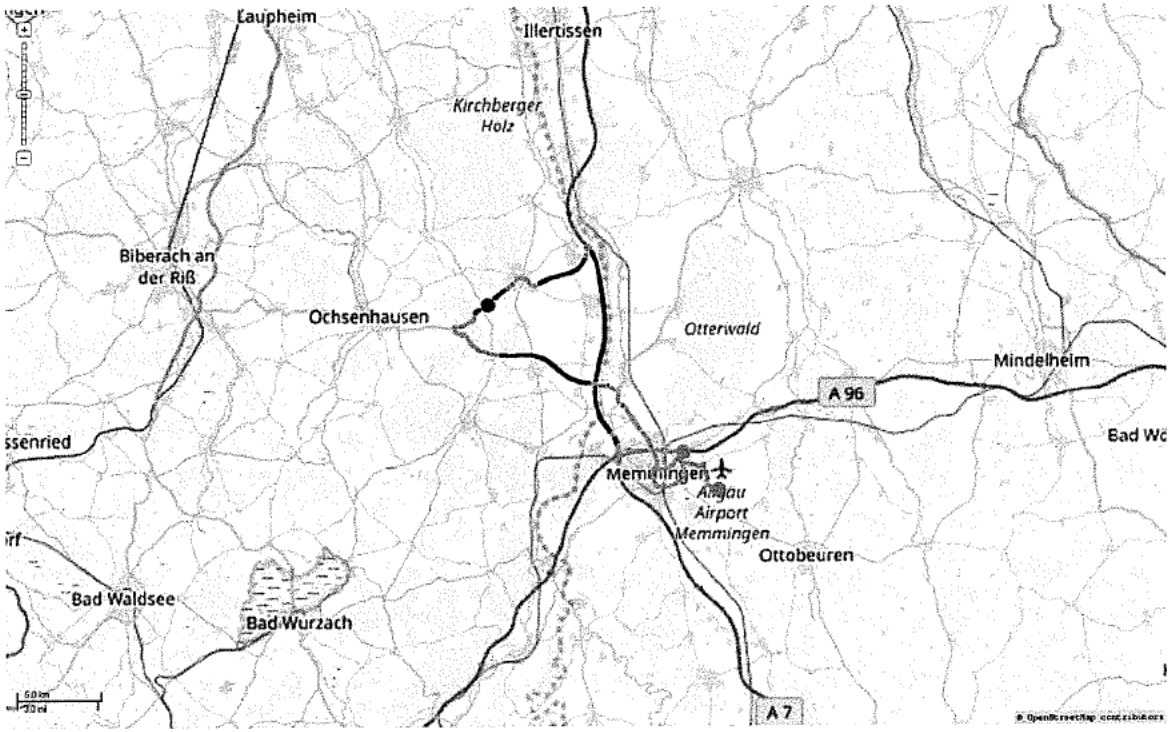
AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA App1 6.3	Span gas shall cover at least 90% of the conc. values from 99% of the valid parts of the emissions test. - CO2	span gas CO2 > 10 %	**17.9**	**%**	pass
	It is permissible that 1 % of the total number of measurements exceeds the used span gas by up to a factor of two. - CO2	(perc. measurement points > (2 * span gas)) <= 1%	**0.0**	**%**	pass
	Span gas shall cover at least 90% of the conc. values from 99% of the valid parts of the emissions test. - CO	span gas CO > -2 ppm	**9981.0**	**ppm**	pass
	It is permissible that 1 % of the total number of measurements exceeds the used span gas by up to a factor of two. - CO	(perc. measurement points > (2 * span gas)) <= 1%	**0.0**	**%**	pass
	Span gas shall cover at least 90% of the conc. values from 99% of the valid parts of the emissions test. - NOx	span gas NOx > 627 ppm	**1601.0**	**ppm**	pass
	It is permissible that 1 % of the total number of measurements exceeds the used span gas by up to a factor of two. - NOx	(perc. measurement points > (2 * span gas)) <= 1%	**0.0**	**%**	pass

ANNEXIIIa Appendix 1 5.1
Vehicle with internal combustion engine
criterium test start: ignition on/engine up, criterium test end: ignition off/engine off

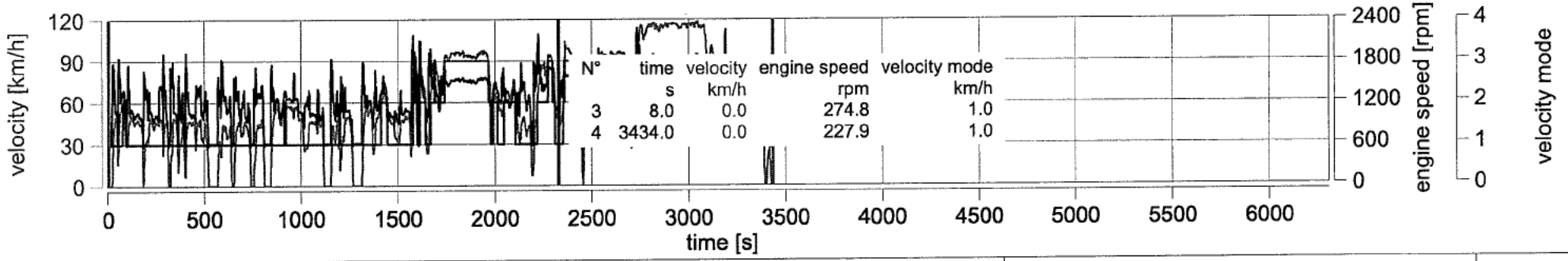
Test Start/End

AVL



TEST START
s
8

TEST END
s
3434



N°	time s	velocity km/h	engine speed rpm	velocity mode km/h
3	8.0	0.0	274.8	1.0
4	3434.0	0.0	227.9	1.0

Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Hot
Euro6d-TEMP/AG;BG;CG;DG/M;N1classl/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-16/10:22:16

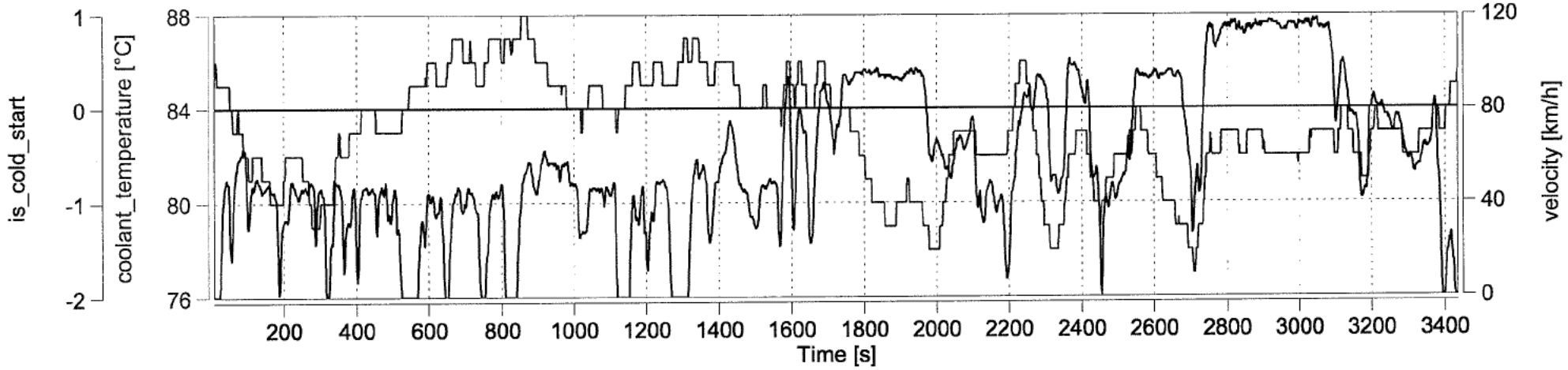
Page n/a
Test 9 fails

ANNEXIIIa
cold or hot start

Hot Start

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA 4.5	..shall be tested with a warm engine with engine coolant temperature and/or engine oil temperature above 70 °C	coolant temperature @test start >= 70 °C	**85.0**	**°C**	pass
ANNEX IIIA 7.6	At the test start the vehicle shall move within 15 seconds.	vehicle stop @test start <= 15s	**17**	**s**	fail



Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Hot
Euro6d-TEMP/AG;BG;CG;DG/M;N1classl/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-16/10:22:16

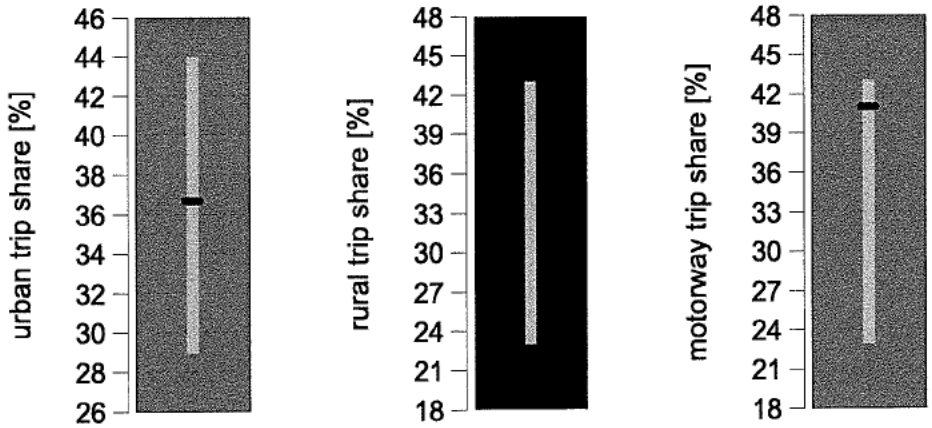
Page fail
Test 9 fails

ANNEXIIIA
trip shares urban/rural/motorway

Trip Shares

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA 6.2	The trip shall always start with urban driving followed by rural and motorway driving (avg. velocity of first 16km max. 40 km/h)	6.2 urban first	**YES**		pass
ANNEX IIIA 6.12	The minimum distance of the urban operation shall be 16 km.	distance urban min 16km	**21**	**km**	pass
	The minimum distance of the rural operation shall be 16 km.	distance rural min 16km	**13**	**km**	fail
	The minimum distance of the motorway operation shall be 16 km.	distance motorway min 16km	**23**	**km**	pass
ANNEX IIIA 6.6	The trip shall consist of approximately 34 ±10% urban. The urban driving shall however never be less than 29%.	share distance urban	**36.7**	**%**	pass
	The trip shall consist of approximately 33 ±10% rural.	share distance rural	**22.3**	**%**	fail
	The trip shall consist of approximately 33 ±10% motorway.	share distance motorway	**41.0**	**%**	pass



Trip Requirements

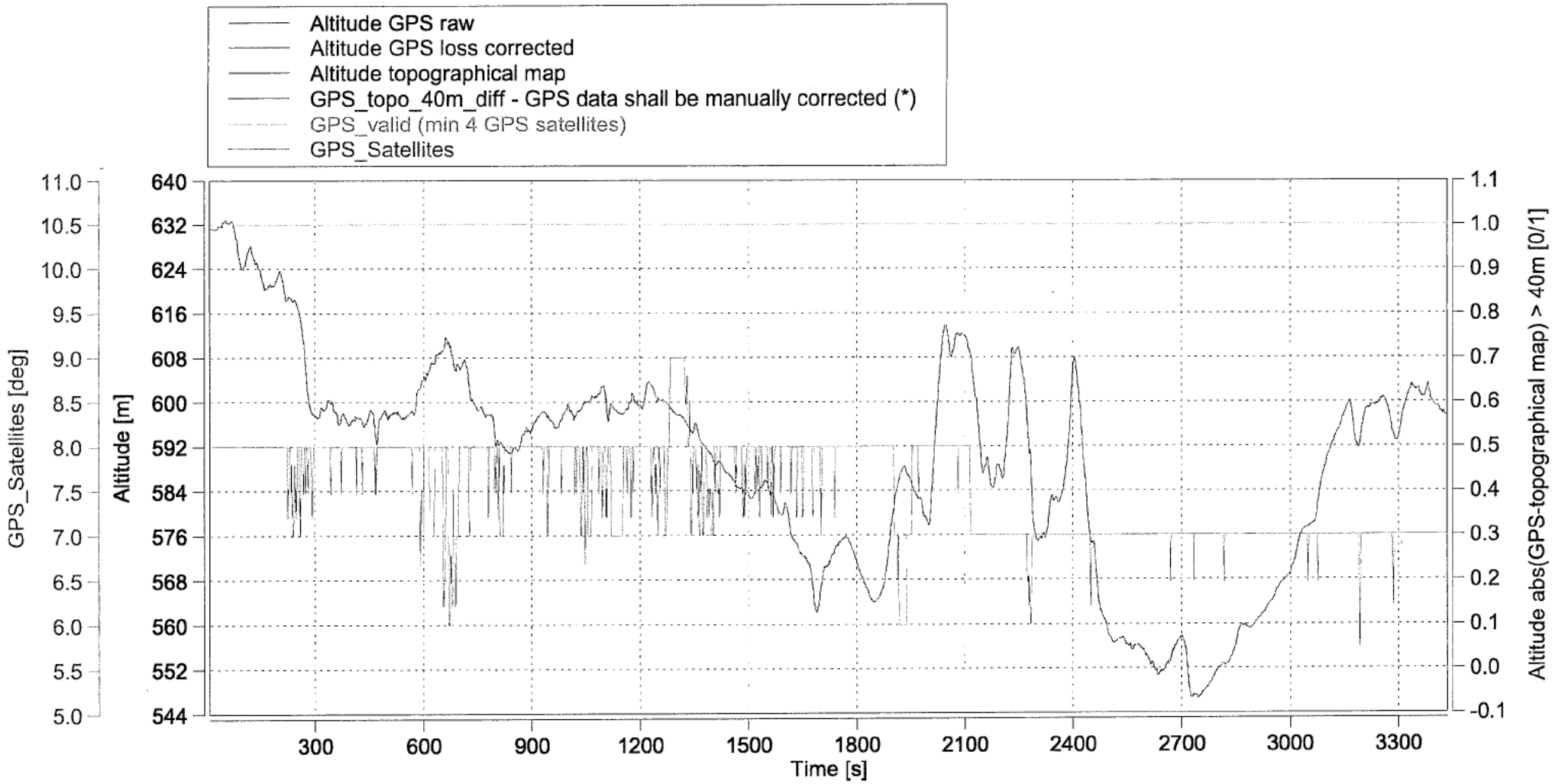
AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA 6.7	The vehicle velocity shall not exceed 160 km/h.	max(v) <= 160 km/h	**118.2**	**km/h**	pass
	The maximum speed (145 km/h) may be exceeded by a tolerance of 15 km/h for not more than 3 %.	motorway time share vehicle velocity more than 145 km/h <= 3%	**0.0**	**%**	pass
ANNEX IIIA 6.8	The average speed (including stops) of the urban driving part of the trip should be between 15 and 40 km/h.	urban driving average speed 15 -40 km/h	**36.7**	**km/h**	pass
	Stop periods, defined by vehicle speed of less than 1 km/h, shall account for 6-30 % of the time duration of urban operation.	urban time share vehicle stop 6-30%	**10.6**	**%**	pass
	Individual stop periods shall not exceed 300 consecutive seconds.	vehicle stop max time 300s	**45**	**s**	pass
ANNEX IIIA 6.9	The speed range of the motorway driving shall properly cover a range between 90 and at least 110 km/h.	motorway driving time >= 90 km/h	**13:23**	**mm:ss**	pass
	The vehicle's velocity shall be above 100 km/h for at least 5 minutes	motorway driving time >= 100 km/h	**05:54**	**mm:ss**	pass
ANNEX IIIA 6.10	The trip duration shall be between 90 and 120 minutes.	trip duration 90 - 120 minutes	**57**	**min**	fail
ANNEX IIIA 6.11	The start and the end point shall not differ in their elevation above sea level by more than 100 m.	trip start/end altitude diff max 100m	**34**	**m**	pass
	The proportional cumulative positive altitude gain over the entire trip shall be less than 1200 m/100 km.	cumulative pos elevation gain trip max 1200m	**388**	**m**	pass
	The proportional cumulative positive altitude gain over the urban part of the trip shall be less than 1200 m/100 km.	cumulative pos elevation gain urban part max 1200m	**348**	**m**	pass
ANNEX IIIA 5.2.1	If a part of the test or the entire test is performed outside of normal or extended conditions, the test shall be invalid.	test performed outside extended conditions in terms of ambient temperature and altitude	**NO**		pass

GPS Altitude

Consistency check of Vehicle Altitude

AVL



(*) according to EU 2017/1151 - ANNEX IIIA App. 4 (6)

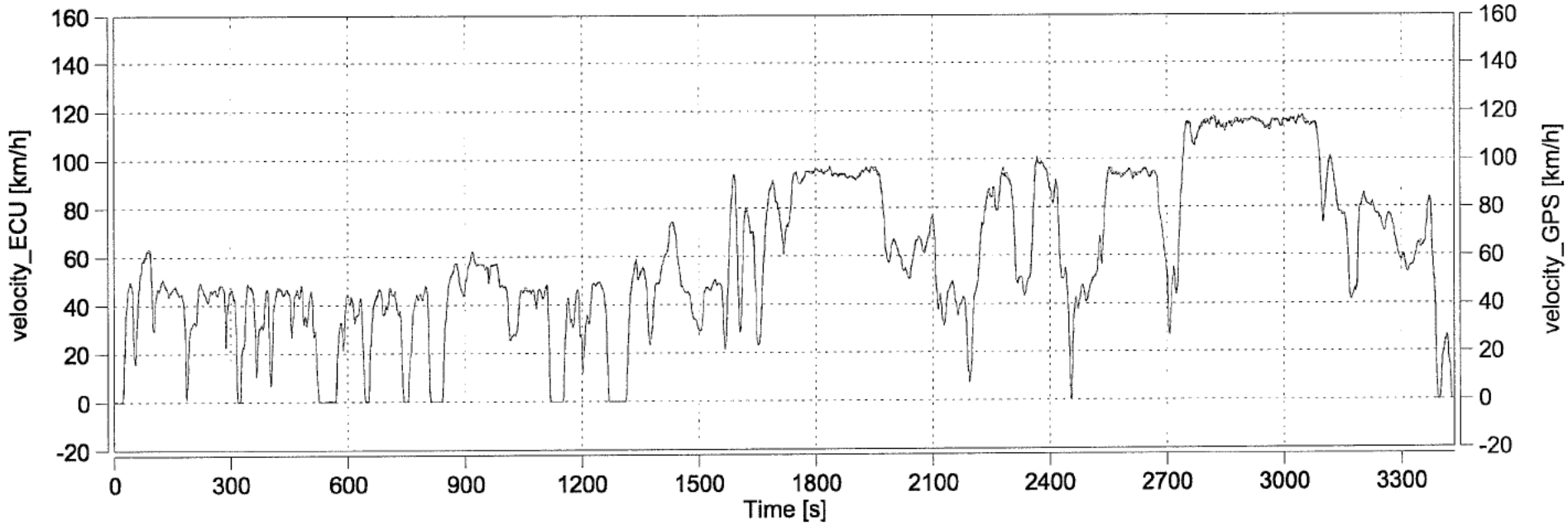
Concerto Version: 503 B82, MOVE DT 1R3.2 B319 Concerto Serial Number: 9-721D44C0 MOVE Version: V2.6_204 Windows Version: Microsoft Windows 10 Pro	Test Id: [redacted] / Mercedes-Benz E350 Engine: -/2987ccm/195kW fuel: Diesel EU B7 Engine at test start: Hot Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI	ECU velocity factor: 1.002 extended cond.: 0% (0% cold start) Propulsion Type: ICE Date/Time: 2020-09-16/10:22:16	Page n/a Test 9 fails

Consistency check of GPS Vehicle Speed

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA App4 7	The total trip distance as calculated from the corrected GPS data shall deviate by no more than 4 % from the reference.	difference GPS distance (56.287 km) vs. ECU distance (56.097 km) <= 4%	**0.3**	**%**	pass
	The corrected GPS data shall not exceed an uninterrupted time period of 120 s.	GPS loss max time <= 120s	**0**	**s**	pass
	The corrected GPS data shall not exceed a total of 300 s	GPS loss toal time <= 300 s	**0**	**s**	pass

velocity used: ECU



Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Hot
Euro6d-TEMP/AG;BG;CG;DG/M;N1classl/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-16/10:22:16

Page pass
Test 9 fails

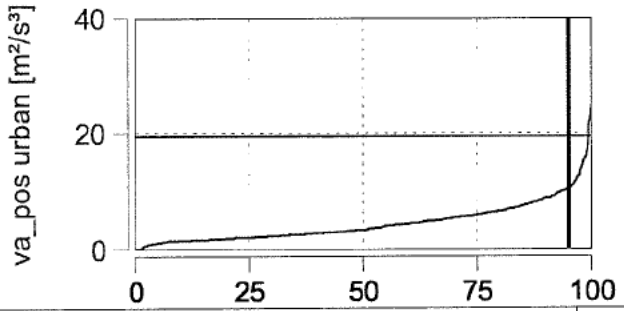
ANNEXIIIa Appendix 7a

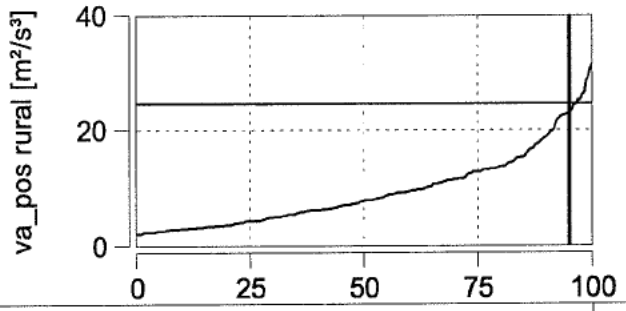
Trip Dynamics

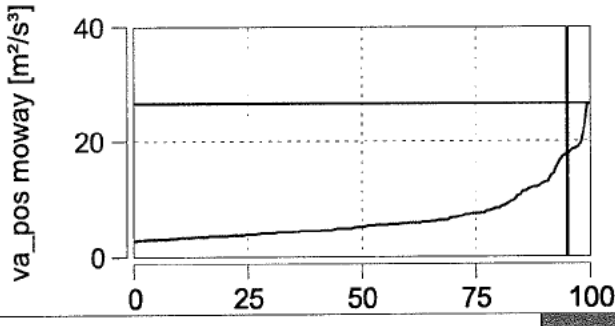
AVL

Verification of trip dynamics based on vehicle velocity and acceleration

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA App7a 3.1.	The number of datasets with acceleration values ai>0.1m/s2 shall be bigger or equal to 100 in the urban speed bin.	npoints(a_pos) >= 100	**734**		pass
	The number of datasets with acceleration values ai>0.1m/s2 shall be bigger or equal to 100 in the rural speed bin.	npoints(a_pos) >= 100	**231**		pass
	The number of datasets with acceleration values ai>0.1m/s2 shall be bigger or equal to 100 in the motorway speed bin.	npoints(a_pos) >= 100	**151**		pass
ANNEX IIIA App7a 4.1.	Verification of va_pos95 per speed bin.	va_pos_urban <= 19.436 [m^2/s^3]	**10.463**	**m^2/s^3**	pass
	Verification of va_pos95 per speed bin.	va_pos_rural <= 24.522 [m^2/s^3]	**22.905**	**m^2/s^3**	pass
	Verification of va_pos95 per speed bin.	va_pos_moway <= 26.618 [m^2/s^3]	**17.724**	**m^2/s^3**	pass
ANNEX IIIA App7a 4.1.	Verification of RPA per speed bin.	RPA_urban >= 0.117 [m/s^2]	**0.159**	**m/s^2**	pass
	Verification of RPA per speed bin.	RPA_rural >= 0.057 [m/s^2]	**0.173**	**m/s^2**	pass
	Verification of RPA per speed bin.	RPA_moway >= 0.025 [m/s^2]	**0.045**	**m/s^2**	pass







Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Hot
Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-16/10:22:16

Page pass

Test 9 fails

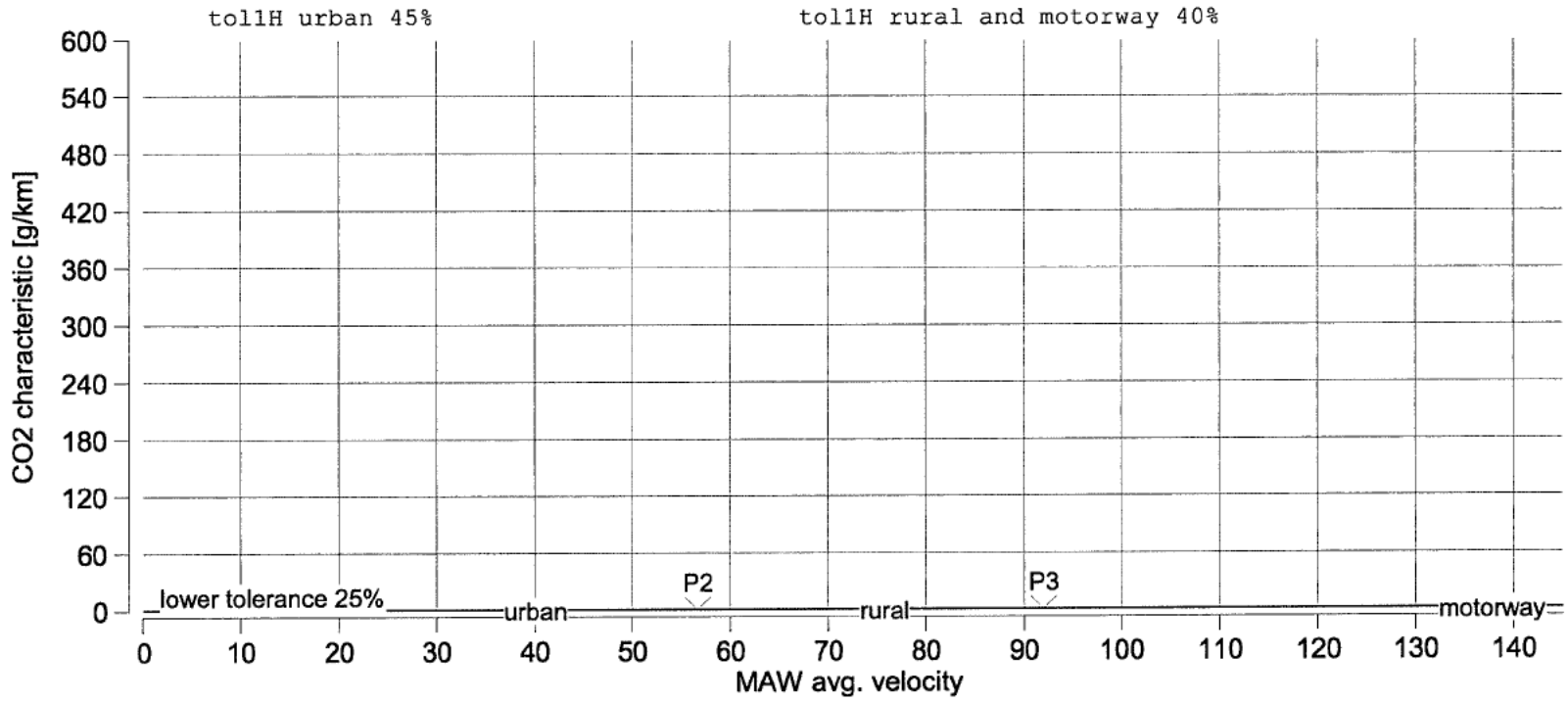
ANNEXIIIa Appendix 5

Test Validity

AVL

Verification of overall trip dynamics using the moving averaging window method

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA App5 4.5	The test is valid when at least 50% of the urban windows are within the tolerances defined for the CO2 characteristic.	50% valid urban windows	**0.0**	**%**	fail
	The test is valid when at least 50% of the rural windows are within the tolerances defined for the CO2 characteristic.	50% valid rural windows	**0.0**	**%**	fail
	The test is valid when at least 50% of the motorway windows are within the tolerances defined for the CO2 characteristic.	50% valid motorway windows	**0.0**	**%**	fail



Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id: [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Hot
Euro6d-TEMP/AG;BG;CG;DG/M;N1classl/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-16/10:22:16

Page fail
Test 9 fails

ANNEXIIIa Appendix 6
Final RDE emissions results

Conformity of Emissions

AVL

§	criterium	condition	value	unit	pass/fail
ANNEX IIIA 2.1.1	CF max = 1 + margin NOx with margin NOx = 1.1	conformity factor NOx urban <= 2.1	**3.00**		fail
	CF max = 1 + margin NOx with margin NOx = 1.1	conformity factor NOx trip <= 2.1	**3.30**		fail
	CF max = 1 + margin PN with margin PN = 0.5	conformity factor PN urban <= 1.5	**0.00**		n/a
	CF max = 1 + margin PN with margin PN = 0.5	conformity factor PN trip <= 1.5	**0.00**		n/a

urban		CO2	CO	NOx	PN
correction	factor	g/km	mg/km	mg/km	#/km
none		206.51	-18.94	539.75	0.000e+00
EXTC	1.60		-18.94	539.75	0.000e+00
RF	1.00		-18.94	539.75	0.000e+00
ki			-18.94	539.75	
final result *			0.00	539.75	0.000e+00
WLTP limit			**500.00**	**180.00**	**0.000e+00**
conformity factor				**3.00**	**0.00**

trip		CO2	CO	NOx	PN
correction	factor	g/km	mg/km	mg/km	#/km
none		186.34	-15.25	593.41	0.000e+00
EXTC	1.60		-15.25	593.41	0.000e+00
RF	1.00		-15.25	593.41	0.000e+00
ki			-15.25	593.41	
final result *			0.00	593.41	0.000e+00
WLTP limit			**500.00**	**180.00**	**0.000e+00**
conformity factor				**3.30**	**0.00**

Ki Offset	CO2 [g/km]		CO [mg/km]		NOx [mg/km]	
Ki factor	CO2		CO		NOx	

Concerto Version: 503 B82, MOVE DT 1R3.2 B319
Concerto Serial Number: 9-721D44C0
MOVE Version: V2.6_204
Windows Version: Microsoft Windows 10 Pro

Test Id [redacted] / Mercedes-Benz E350
Engine: -/2987ccm/195kW fuel: Diesel EU B7
Engine at test start: Hot
Euro6d-TEMP/AG;BG;CG;DG/M;N1classI/CI

ECU velocity factor: 1.002
extended cond.: 0% (0% cold start)
Propulsion Type: ICE
Date/Time: 2020-09-16/10:22:16

Page fail
Test 9 fails

* Negative final results shall be set to zero

[illegible] Reifen + Autoservice

[illegible] Reifenhandel GmbH

Esslinger Str. [illegible]

73779 Deizisau

Telefonnummer: [redacted]
Faxnummer:

Kunde:		Datum:	[redacted]
[illegible]	[illegible]	Fgst.-Nr.:	
[illegible]	[illegible]	Techniker:	Becker
Kilometerstand:	[illegible]	Auftrags-Nr.:	[illegible]

FAHRZEUGVERMESSUNGS-PROTOKOLL

[illegible]

Primäre Winkel

			Vorher	Fahrzeugdaten Min.	Fahrzeugdaten Max.	Nachher
	Nachlauf	Links		[illegible]	[illegible]	
		Rechts		[illegible]	[illegible]	
[illegible]	Sturz	Links		[illegible]	[illegible]	
		Rechts		[illegible]	[illegible]	
	Spur	Links		[illegible]	[illegible]	
		Rechts		[illegible]	[illegible]	
		Gesamt		[illegible]	[illegible]	
	Sturz	Links		[illegible]	[illegible]	
		Rechts		[illegible]	[illegible]	
[illegible]	Spur	Links		[illegible]	[illegible]	
		Rechts		[illegible]	[illegible]	
		Gesamt		[illegible]	[illegible]	
	Fahrachswinkel			[illegible]		

Sekundäre Winkel

		Vorher	Fahrzeugdaten Min.	Fahrzeugdaten Max.	Nachher
Spreizung	Links	[illegible]	----	----	14°06'
	Rechts	[illegible]	----	----	14°08'
Eingeschlossener Winkel	Links	[illegible]	----	----	[illegible]
	Rechts	[illegible]	----	----	15°29'
Spurdifferenzwinkel	Links	----	1°18'	2°18'	----
	Rechts	----	1°18'	2°18'	----
Max. Lenkeinschlag innen	Links	----	----	----	----
	Rechts	----	----	----	----
Vorspurkurven-Änderung	Links	----	----	----	----
	Rechts	----	----	----	----
Radversatz	Vorne	-4mm	----	----	-4mm
	Hinten	-7mm	----	----	-7mm
Spurweitendifferenz		-3mm			-3mm
Radstandsdifferenz		6mm			6mm
Fahrzeugniveau vorne	Links		5mm	25mm	
	Rechts		5mm	25mm	
Fahrzeugniveau hinten	Links	[illegible]	-7mm	13mm	[illegible]
	Rechts	[illegible]	-7mm	13mm	[illegible]
Längsneigung					0°00'