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1 Table of Changes

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| | | | | |

2 Correspondence and Communications**2.1 Authorized Persons****2.1.1 Persons situated in the United States and authorized to communicate with EPA and CARB:**

| Name | First Name | Area of responsibility | Phone Number | E-Mail |
|-------------|-------------------|---|---------------------|-------------------------------|
| Cozzarini | Christian | Vice President Research and Development USA | +1-201-893-1102 | Christian.Cozzarini@bmwna.com |
| Bayer | Carlheinz | Manager Emission Homologation | +1-201-571-5193 | Carlheinz.Bayer@bmwna.com |
| Miller | Timothy | Sr. OBD & Compliance Engineer | +1-201-571-5369 | Timothy.Miller@bmwna.com |
| Uwague | Peace | OBD & Compliance Engineer | +1-201-571-5426 | Peace.Uwague@bmwna.com |
| Dendler | Zachary | Sr. Engineer Emission Homologation | +1-201-571-0541 | Zachary.Dendler@bmwna.com |
| Schank | Jason | Specialist Emission Homologation | +1-201-664-3181 | Jason.Schank@bmwna.com |
| Michel | Edith | Engineer Emission Homologation | +1-551-236-9174 | Edith.Michel@bmwna.com |
| Dohle | Robert | Engineer Emission Homologation | +1-201-686-6207 | Robert.Dohle@bmwna.com |
| Schweizer | Michael | Engineer Emission Homologation | +1-201-307-3700 | Michael.S.Schweizer@bmwna.com |

The preceding representatives can be reached at:

BMW of North America, LLC
200 BMW Dr, Bldg. 150
Woodcliff Lake, NJ, 07677
Fax-No.: 201 / 571 – 5193

2.1.2 Persons situated in the manufacturer's home office and authorized to communicate with EPA and CARB

| Name | First Name | Area of responsibility | Phone Number | E-Mail |
|--------------|------------|---|---------------------------|-----------------------------|
| Post | Joachim | Member of Board of Management, Development | +49 - (0)89 / 382 - 31700 | Joachim.Post@bmw.de |
| Boettger | Daniel | Senior Vice President Development Whole Vehicle | +49 - (0)89 / 382 - 21460 | Daniel.Boettger@bmw.de |
| Uzunovic | Haris | Vice President Homologation, Conformity of Production, Technical Regulation, Development abroad | +49 - (0)89 / 382 - 22319 | Haris.Uzunovic@bmw.de |
| Ofner | Bernd | HoD Homologation Environmental Regulations | +49 - (0)89 / 382 - 30907 | Bernd.Ofner@bmw.de |
| King | Thomas | Manager Emission Certification USA | +49 - (0)89 / 382 - 32423 | Thomas.King@bmw.de |
| Kargar | Ali | Engineer Emission Certification USA | +49 - (0)89 / 382 - 76893 | Ali.Kargar@bmw.de |
| Heinle | Ludwig | Engineer Emission Certification USA | +49 - (0)89 / 382 - 56210 | Ludwig.Heinle@bmw.de |
| Bodenmueller | Florian | Engineer Emission Certification USA | +49 - (0)89 / 382 - 49100 | Florian.Bodenmueller@bmw.de |
| Meister | Emanuel | Engineer Emission Certification USA | +49 - (0)89 / 382 - 42567 | Emanuel.Meister@bmw.de |
| Peter | Simon | Engineer Emission Certification USA | +49 - (0)89 / 382 - 36390 | Simon.Peter@bmw.de |
| Edenhofer | Robert | Engineer OBD Certification USA | +49 - (0)89 / 382 - 38651 | Robert.Edenhofer@bmw.de |
| Hartmann | Elk | Engineer OBD Certification USA | +49 - (0)89 / 382 - 48983 | Elk.Hartmann@bmw.de |

The preceding representatives can be reached at:

Bayerische Motoren Werke AG
Dept. EG-831
80788 Munich
Germany
Fax-No.: +49 - 89 / 382 - 32594

2.2 Certificate Information**2.2.1 Corporate Name and Address that should appear on the Certificate of Conformity and on the Executive Order**

**Bayerische Motoren Werke AG
80788 Munich
Germany**

2.2.2 Name and Address of the person to whom the Certificate and the Executive Order should be mailed

**Mr. Carlheinz Bayer
Manager Emission Homologation
BMW of North America LLC
200 BMW Dr, Bldg. 150
Woodcliff Lake, NJ, 07677**

2.3 Primary Certification Contact

Refer to Section 1, Item 1.3 of the Application for Certification of respective Test Group.

3 Description Test Group, Durability Group, EVAP Family

3.1 MY2027 grouping overview

| Testgroup | Durability Group | EVAP Family | Model Name | Vehicles Class | FTP Standard | SFTP Standard [g/m] | EVAP FEL | EVAP Standard | Introduction into commerce | Engine Displacement | Number of cylinders | Arrangement of cylinders [in-line, vshaped] | Fuel Used | Basis Fuel Metering System | HEV / PHEV / BEV | GS vehicle | GS Min | GS Max | GPF / cGPF / none | Type of refueling emission control system (integrated / non-integrated) | Working capacity - grams adsorption [g] | Fuel tank material | HC Flare No./No |
|--------------|------------------|--------------|---------------------------|----------------|----------------------|---------------------|----------|---------------|----------------------------|---------------------|---------------------|---|-----------|----------------------------|------------------|------------|--------|--------|-------------------|---|---|--------------------|-----------------|
| VBMXV02.0B4P | V1P | VBMXR0150G60 | 430i Coupe | LDV | Interim Tier 4 Bin20 | -- / 0.040 | 300 | 300 | 04/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | HEV | 9,8 | 8,2 | 10,9 | cGPF | I | 150 | hdpe | no |
| VBMXV02.0B4P | V1P | VBMXR0150G60 | 430i xDrive Coupe | LDV | Interim Tier 4 Bin20 | -- / 0.040 | 300 | 300 | 04/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | HEV | 9,8 | 8,2 | 10,9 | cGPF | I | 150 | hdpe | no |
| VBMXV02.0B4P | V1P | VBMXR0150G60 | 430i Convertible | LDV | Interim Tier 4 Bin20 | -- / 0.040 | 300 | 300 | 04/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | HEV | 9,8 | 8,2 | 10,9 | cGPF | I | 150 | hdpe | no |
| VBMXV02.0B4P | V1P | VBMXR0150G60 | 430i xDrive Convertible | LDV | Interim Tier 4 Bin20 | -- / 0.040 | 300 | 300 | 04/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | HEV | 9,8 | 8,2 | 10,9 | cGPF | I | 150 | hdpe | no |
| VBMXV02.0B4P | V1P | VBMXR0150G60 | 430i Gran Coupe | LDV | Interim Tier 4 Bin20 | -- / 0.040 | 300 | 300 | 08/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | HEV | 9,8 | 8,2 | 10,9 | cGPF | I | 150 | hdpe | no |
| VBMXV02.0B4P | V1P | VBMXR0150G60 | 430i xDrive Gran Coupe | LDV | Interim Tier 4 Bin20 | -- / 0.040 | 300 | 300 | 08/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | HEV | 9,8 | 8,2 | 10,9 | cGPF | I | 150 | hdpe | no |
| VBMXJ02.0B4T | V3T | VBMXR0150G45 | 330 Sedan | LDV | Tier 4 Bin20 | -- / -- | 300 | 300 | 12/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | HEV | 7,2 | 6,2 | 8,2 | cGPF | I | 150 | hdpe | no |
| VBMXJ02.0B4T | V3T | VBMXR0150G45 | 330 Drive Sedan | LDV | Tier 4 Bin20 | -- / -- | 300 | 300 | 12/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | HEV | 7,2 | 6,2 | 8,2 | cGPF | I | 150 | hdpe | no |
| VBMXJ02.0B4T | V3T | VBMXR0150G45 | X3 xDrive30 | LDT2 | Tier 4 Bin20 | -- / -- | 300 | 400 | 12/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | HEV | 7,2 | 6,2 | 8,2 | cGPF | I | 150 | hdpe | no |
| VBMXJ02.0M4P | V3P | VBMXR0120U11 | Cooper C 4 Door | LDV | Interim Tier 4 Bin20 | -- / 0.040 | 300 | 300 | 08/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | --- | 8,1 | 7,1 | 9,4 | GPF | I | 120 | hdpe | no |
| VBMXJ02.0M4P | V3P | VBMXR0120U11 | Cooper S 4 Door | LDV | Interim Tier 4 Bin20 | -- / 0.040 | 300 | 300 | 08/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | --- | 8,1 | 7,1 | 9,4 | GPF | I | 120 | hdpe | no |
| VBMXJ02.0M4P | V3P | VBMXR0120U11 | Cooper C 2 Door | LDV | Interim Tier 4 Bin20 | -- / 0.040 | 300 | 300 | 08/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | --- | 8,1 | 7,1 | 9,4 | GPF | I | 120 | hdpe | no |
| VBMXJ02.0M4P | V3P | VBMXR0120U11 | Cooper S 2 Door | LDV | Interim Tier 4 Bin20 | -- / 0.040 | 300 | 300 | 08/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | --- | 8,1 | 7,1 | 9,4 | GPF | I | 120 | hdpe | no |
| VBMXJ02.0M4P | V3P | VBMXR0120U11 | Cooper C Convertible | LDV | Interim Tier 4 Bin20 | -- / 0.040 | 300 | 300 | 08/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | --- | 8,1 | 7,1 | 9,4 | GPF | I | 120 | hdpe | no |
| VBMXJ02.0M4P | V3P | VBMXR0120U11 | Cooper S Convertible | LDV | Interim Tier 4 Bin20 | -- / 0.040 | 300 | 300 | 08/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | --- | 8,1 | 7,1 | 9,4 | GPF | I | 120 | hdpe | no |
| VBMXJ02.0M4P | V3P | VBMXR0120U11 | 228 Gran Coupe | LDV | Interim Tier 4 Bin20 | -- / 0.040 | 300 | 300 | 08/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | --- | 8,1 | 7,1 | 9,4 | GPF | I | 120 | hdpe | no |
| VBMXJ02.0M4P | V3P | VBMXR0120U11 | JCW 2 Door | LDV | Interim Tier 4 Bin20 | -- / 0.040 | 300 | 300 | 08/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | --- | 8,1 | 7,1 | 9,4 | GPF | I | 120 | hdpe | no |
| VBMXJ02.0M4P | V3P | VBMXR0120U11 | JCW Convertible | LDV | Interim Tier 4 Bin20 | -- / 0.040 | 300 | 300 | 08/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | --- | 8,1 | 7,1 | 9,4 | GPF | I | 120 | hdpe | no |
| VBMXJ02.0M4P | V3P | VBMXR0120U11 | 228 xDrive Gran Coupe | LDV | Interim Tier 4 Bin20 | -- / 0.040 | 300 | 300 | 08/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | --- | 8,1 | 7,1 | 9,4 | GPF | I | 120 | hdpe | no |
| VBMXJ02.0M4P | V3P | VBMXR0120U11 | X2 xDrive28i | LDT2 | Interim Tier 4 Bin20 | -- / 0.040 | 300 | 400 | 08/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | --- | 8,1 | 7,1 | 9,4 | GPF | I | 120 | hdpe | no |
| VBMXJ02.0M4P | V3P | VBMXR0120U11 | X1 xDrive28i | LDT2 | Interim Tier 4 Bin20 | -- / 0.040 | 300 | 400 | 08/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | --- | 8,1 | 7,1 | 9,4 | GPF | I | 120 | hdpe | no |
| VBMXJ02.0M4P | V3P | VBMXR0120U11 | Countryman S ALL4 Untamed | LDT2 | Interim Tier 4 Bin20 | -- / 0.040 | 300 | 400 | 04/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | --- | 8,1 | 7,1 | 9,4 | GPF | I | 120 | hdpe | no |
| VBMXJ02.0M4P | V3P | VBMXR0120U11 | Countryman S ALL4 | LDT2 | Interim Tier 4 Bin20 | -- / 0.040 | 300 | 400 | 04/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | --- | 8,1 | 7,1 | 9,4 | GPF | I | 120 | hdpe | no |
| VBMXJ02.0T4P | V4P | VBMXR0120U11 | M235 xDrive Gran Coupe | LDV | Interim Tier 4 Bin50 | -- / 0.070 | 300 | 300 | 08/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | --- | 8,3 | 7,2 | 9,6 | GPF | I | 120 | hdpe | no |
| VBMXJ02.0T4P | V4P | VBMXR0120U11 | X2 M35i | LDT2 | Interim Tier 4 Bin50 | -- / 0.070 | 300 | 400 | 08/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | --- | 8,3 | 7,2 | 9,6 | GPF | I | 120 | hdpe | no |
| VBMXJ02.0T4P | V4P | VBMXR0120U11 | X1 M35i | LDT2 | Interim Tier 4 Bin50 | -- / 0.070 | 300 | 400 | 08/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | --- | 8,3 | 7,2 | 9,6 | GPF | I | 120 | hdpe | no |
| VBMXJ02.0T4P | V4P | VBMXR0120U11 | JCW Countryman ALL4 | LDT2 | Interim Tier 4 Bin50 | -- / 0.070 | 300 | 400 | 04/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | --- | 8,3 | 7,2 | 9,6 | GPF | I | 120 | hdpe | no |
| VBMXT03.0B58 | V4I | VBMXR0180G0X | X6 xDrive40i | LDT3 | Interim Tier 4 Bin30 | -- / 0.050 | 500 | 500 | 04/26 | 2998 | 6 | in-line | gasoline | DFI, MFI | HEV | 8,6 | 8,2 | 10,9 | none | I | 180 | hdpe | no |
| VBMXT03.0B58 | V4I | VBMXR0180G0X | X7 xDrive40i | LDT4 | Interim Tier 4 Bin30 | -- / 0.050 | 500 | 500 | 04/26 | 2998 | 6 | in-line | gasoline | DFI, MFI | HEV | 8,6 | 8,2 | 10,9 | none | I | 180 | hdpe | no |
| VBMXV03.0B5P | V2P | VBMXR0150G6F | M440i Coupe | LDV | Interim Tier 4 Bin30 | -- / 0.050 | 350 | 300 | 04/26 | 2998 | 6 | in-line | gasoline | DFI, MFI | HEV | 6,3 | 4,7 | 6,3 | cGPF | I | 150 | hdpe | no |
| VBMXV03.0B5P | V2P | VBMXR0150G6F | M440i xDrive Coupe | LDV | Interim Tier 4 Bin30 | -- / 0.050 | 350 | 300 | 04/26 | 2998 | 6 | in-line | gasoline | DFI, MFI | HEV | 6,3 | 4,7 | 6,3 | cGPF | I | 150 | hdpe | no |
| VBMXV03.0B5P | V2P | VBMXR0150G6F | M440i Convertible | LDV | Interim Tier 4 Bin30 | -- / 0.050 | 350 | 300 | 04/26 | 2998 | 6 | in-line | gasoline | DFI, MFI | HEV | 6,3 | 4,7 | 6,3 | cGPF | I | 150 | hdpe | no |
| VBMXV03.0B5P | V2P | VBMXR0150G6F | M440i xDrive Convertible | LDV | Interim Tier 4 Bin30 | -- / 0.050 | 350 | 300 | 04/26 | 2998 | 6 | in-line | gasoline | DFI, MFI | HEV | 6,3 | 4,7 | 6,3 | cGPF | I | 150 | hdpe | no |
| VBMXV03.0B5P | V2P | VBMXR0150G6F | 540i xDrive Sedan | LDV | Interim Tier 4 Bin30 | -- / 0.050 | 350 | 300 | 04/26 | 2998 | 6 | in-line | gasoline | DFI, MFI | HEV | 6,3 | 4,7 | 6,3 | cGPF | I | 150 | hdpe | no |
| VBMXV03.0B5P | V2P | VBMXR0150G6F | M440i Gran Coupe | LDV | Interim Tier 4 Bin30 | -- / 0.050 | 350 | 300 | 08/26 | 2998 | 6 | in-line | gasoline | DFI, MFI | HEV | 6,3 | 4,7 | 6,3 | cGPF | I | 150 | hdpe | no |
| VBMXV03.0B5P | V2P | VBMXR0150G6F | M440i xDrive Gran Coupe | LDV | Interim Tier 4 Bin30 | -- / 0.050 | 350 | 300 | 08/26 | 2998 | 6 | in-line | gasoline | DFI, MFI | HEV | 6,3 | 4,7 | 6,3 | cGPF | I | 150 | hdpe | no |
| VBMXV03.0B5P | V2P | VBMXR0150G6F | M240i | LDV | Interim Tier 4 Bin30 | -- / 0.050 | 350 | 300 | 08/26 | 2998 | 6 | in-line | gasoline | DFI, MFI | HEV | 6,3 | 4,7 | 6,3 | cGPF | I | 150 | hdpe | no |
| VBMXV03.0B5P | V2P | VBMXR0150G6F | M240i xDrive | LDV | Interim Tier 4 Bin30 | -- / 0.050 | 350 | 300 | 08/26 | 2998 | 6 | in-line | gasoline | DFI, MFI | HEV | 6,3 | 4,7 | 6,3 | cGPF | I | 150 | hdpe | no |

New Testgroup / Durability group

New model

New Testing FEDV / EDV

| Testgroup | Durability Group | EVAP Family | Model Name | Vehicles Class | FTP Standard | SFTP Standard [g/mi] | EVAP FEL | EVAP Standard | Introduction into commerce | Engine Displacement | Number of cylinders | Arrangement of cylinders [in-line, vshaped] | Fuel Used | Basis Fuel Metering System | HEV / PHEV / BEV | GS vehicle | GS Min | GS Max | GPF / cGPF / none | Type of refueling emission control system (integrated / non-integrated) | Working capacity - grams adsorption [g] | Fuel tank material | HC Fleese No./no |
|--------------|------------------|--------------|---------------------|----------------|----------------------|----------------------|----------|---------------|----------------------------|---------------------|---------------------|---|-----------|----------------------------|------------------|------------|--------|--------|-------------------|---|---|--------------------|------------------|
| VBMXJ03.0B5T | V2T | VBMXR0150G4F | X3 M50 | LDT2 | Tier 4 Bin30 | -/- | 350 | 400 | 12/26 | 2998 | 6 | in-line | gasoline | DFI, MFI | HEV | 6,3 | 6,3 | 8,4 | cGPF | I | 150 | hdpe | no |
| VBMXJ03.0B5T | V2T | VBMXR0200G6X | X5 40 | LDT3 | Tier 4 Bin30 | -/- | 500 | 500 | 12/26 | 2998 | 6 | in-line | gasoline | DFI, MFI | HEV | 6,3 | 6,3 | 8,4 | cGPF | I | 200 | hdpe | no |
| VBMXJ03.0B5T | V2T | VBMXR0150G4F | M350 xDrive | LDV | Tier 4 Bin30 | -/- | 350 | 300 | 12/26 | 2998 | 6 | in-line | gasoline | DFI, MFI | HEV | 6,3 | 6,3 | 8,4 | cGPF | I | 150 | hdpe | no |
| VBMXJ03.0B5T | V2T | VBMXR0200G6X | X5 40 xDrive | LDT3 | Tier 4 Bin30 | -/- | 500 | 500 | 08/26 | 2998 | 6 | in-line | gasoline | DFI, MFI | HEV | 6,3 | 6,3 | 8,4 | cGPF | I | 200 | hdpe | no |
| VBMXJ03.0B5T | V2T | VBMXR0200G6X | 740 Sedan | LDV | Tier 4 Bin30 | -/- | 500 | 300 | 08/26 | 2998 | 6 | in-line | gasoline | DFI, MFI | HEV | 6,3 | 6,3 | 8,4 | cGPF | I | 200 | hdpe | no |
| VBMXJ03.0B5T | V2T | VBMXR0200G6X | 740 xDrive Sedan | LDV | Tier 4 Bin30 | -/- | 500 | 300 | 08/26 | 2998 | 6 | in-line | gasoline | DFI, MFI | HEV | 6,3 | 6,3 | 8,4 | cGPF | I | 200 | hdpe | no |
| VBMTX03.0H65 | V2T | VBMXR0170G6H | X5 50e xDrive | LDT4 | Tier 4 Bin30 | -/- | 500 | 500 | 12/26 | 2998 | 6 | in-line | gasoline | DFI, MFI | PHEV | 6,3 | 6,3 | 8,4 | cGPF | NIRCO | 170 | hdpe | no |
| VBMTX03.0H70 | V2T | VBMXR0180GXH | 750e xDrive Sedan | LDV | Tier 4 Bin30 | -/- | 500 | 300 | 12/26 | 2998 | 6 | in-line | gasoline | DFI, MFI | PHEV | 6,3 | 6,3 | 8,4 | cGPF | NIRCO | 180 | steel | no |
| VBMTX04.4S68 | V36 | VBMXR0180G05 | X6 M60i xDrive | LDT4 | Interim Tier 4 Bin70 | -/0.070 | 500 | 500 | 04/26 | 4395 | 8 | vshaped | gasoline | DFI | HEV | 5,2 | 4,7 | 6,3 | none | I | 180 | hdpe | no |
| VBMTX04.4S68 | V36 | VBMXR0180G05 | X7 M60i xDrive | LDT4 | Interim Tier 4 Bin70 | -/0.070 | 500 | 500 | 04/26 | 4395 | 8 | vshaped | gasoline | DFI | HEV | 5,2 | 4,7 | 6,3 | none | I | 180 | hdpe | no |
| VBMTX00.0I2A | -- | -- | iX xDrive45 | LDT4 | Tier 4 Bin0 | -/- | -- | -- | 12/26 | -- | -- | -- | electric | -- | BEV | -- | -- | -- | -- | -- | -- | -- | -- |
| VBMTX00.0I2B | -- | -- | iX xDrive60 | LDT4 | Tier 4 Bin0 | -/- | -- | -- | 12/26 | -- | -- | -- | electric | -- | BEV | -- | -- | -- | -- | -- | -- | -- | -- |
| VBMTX00.0I2C | -- | -- | iX M70 | LDT4 | Tier 4 Bin0 | -/- | -- | -- | 12/26 | -- | -- | -- | electric | -- | BEV | -- | -- | -- | -- | -- | -- | -- | -- |
| VBMTX04.4H09 | V5P | VBMXR0170H09 | XM Label | LDT4 | Interim Tier 4 Bin30 | -/0.050 | 500 | 500 | 08/26 | 4395 | 8 | vshaped | gasoline | DFI | PHEV | 7,3 | 6,2 | 8,2 | GPF | -- | 170 | steel | no |
| VBMTX04.4S6M | V39 | VBMXR0180G05 | X6 M Competition | LDT4 | Interim Tier 4 Bin70 | -/0.070 | 500 | 500 | 04/26 | 4395 | 8 | vshaped | gasoline | DFI | HEV | 8,2 | 6,2 | 8,2 | none | -- | 180 | hdpe | no |
| VBMTX00.0G6A | -- | -- | i5 eDrive40 Sedan | LDV | Tier 4 Bin0 | -/- | -- | -- | 04/26 | -- | -- | -- | electric | -- | BEV | -- | -- | -- | -- | -- | -- | -- | -- |
| VBMTX00.0G7A | -- | -- | i7 xDrive50 Sedan | LDV | Tier 4 Bin0 | -/- | -- | -- | 08/26 | -- | -- | -- | electric | -- | BEV | -- | -- | -- | -- | -- | -- | -- | -- |
| VBMTX00.0G7A | -- | -- | i7 xDrive60 Sedan | LDV | Tier 4 Bin0 | -/- | -- | -- | 08/26 | -- | -- | -- | electric | -- | BEV | -- | -- | -- | -- | -- | -- | -- | -- |
| VBMTX00.0G6C | -- | -- | i5 M60 xDrive Sedan | LDV | Tier 4 Bin0 | -/- | -- | -- | 08/26 | -- | -- | -- | electric | -- | BEV | -- | -- | -- | -- | -- | -- | -- | -- |
| VBMTX00.0G6B | -- | -- | i5 xDrive40 Sedan | LDV | Tier 4 Bin0 | -/- | -- | -- | 04/26 | -- | -- | -- | electric | -- | BEV | -- | -- | -- | -- | -- | -- | -- | -- |
| VBMTX00.0G65 | -- | -- | iX5 60 xDrive | LDT4 | Tier 4 Bin0 | -/- | -- | -- | 12/26 | -- | -- | -- | electric | -- | BEV | -- | -- | -- | -- | -- | -- | -- | -- |
| VBMTX00.0U2A | -- | -- | Countryman SE ALL4 | LDV | Tier 4 Bin0 | -/- | -- | -- | 04/26 | -- | -- | -- | electric | -- | BEV | -- | -- | -- | -- | -- | -- | -- | -- |
| VBMTX00.0N0A | -- | -- | i3 40 xDrive | LDV | Tier 4 Bin0 | -/- | -- | -- | 12/26 | -- | -- | -- | electric | -- | BEV | -- | -- | -- | -- | -- | -- | -- | -- |
| VBMTX00.0N0A | -- | -- | iX3 40 xDrive | LDV | Tier 4 Bin0 | -/- | -- | -- | 12/26 | -- | -- | -- | electric | -- | BEV | -- | -- | -- | -- | -- | -- | -- | -- |
| VBMTX00.0N5A | -- | -- | iX3 40 | LDV | Tier 4 Bin0 | -/- | -- | -- | 12/26 | -- | -- | -- | electric | -- | BEV | -- | -- | -- | -- | -- | -- | -- | -- |
| VBMTX00.0N5C | -- | -- | i3 50 xDrive | LDV | Tier 4 Bin0 | -/- | -- | -- | 12/26 | -- | -- | -- | electric | -- | BEV | -- | -- | -- | -- | -- | -- | -- | -- |
| VBMTX00.0N5C | -- | -- | iX3 50 xDrive | LDV | Tier 4 Bin0 | -/- | -- | -- | 04/26 | -- | -- | -- | electric | -- | BEV | -- | -- | -- | -- | -- | -- | -- | -- |
| VBMTX00.0N5C | -- | -- | iX4 50 xDrive | LDV | Tier 4 Bin0 | -/- | -- | -- | 12/26 | -- | -- | -- | electric | -- | BEV | -- | -- | -- | -- | -- | -- | -- | -- |
| VBMTX02.0B4D | V41 | VBMXR0150G60 | 530i Sedan | LDV | Interim Tier 4 Bin30 | -/0.050 | 300 | 300 | 04/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | HEV | 10,6 | 8,2 | 10,9 | none | I | 150 | hdpe | no |
| VBMTX02.0B4D | V41 | VBMXR0150G60 | 530i xDrive Sedan | LDV | Interim Tier 4 Bin30 | -/0.050 | 300 | 300 | 04/26 | 1998 | 4 | in-line | gasoline | DFI, MFI | HEV | 10,6 | 8,2 | 10,9 | none | I | 150 | hdpe | no |
| VBMTX03.0H5P | V2P | VBMXR0170G0H | 550e xDrive Sedan | LDV | Interim Tier 4 Bin50 | -/0.070 | 500 | 300 | 04/26 | 2998 | 6 | in-line | gasoline | DFI, MFI | PHEV | 6,3 | 4,7 | 6,3 | cGPF | NIRCO | 180 | steel | no |

New Testgroup / Durability group

New model

New Testing FEDV / EDV

| Testgroup | Durability Group | EVAP Family | Model Name | Vehicles Class | FTP Standard | SFTP Standard [g/m] | EVAP FEL | EVAP Standard | Introduction into commerce | Engine Displacement | Number of cylinders | Arrangement of cylinders [in-line, vshaped] | Fuel Used | Basis Fuel Metering System | HEV / PHEV / BEV | GS vehicle | GS Min | GS Max | GPF / eGPF / none | Type of refueling emission control system (integrated / non-integrated) | Working capacity - grams adsorption [g] | Fuel tank material | H/C/Fleece No./no |
|--------------|------------------|--------------|-------------------------------------|----------------|----------------------|---------------------|----------|---------------|----------------------------|---------------------|---------------------|---|-----------|----------------------------|------------------|------------|--------|--------|-------------------|---|---|--------------------|-------------------|
| VBMXV03.0SM3 | V35 | VBMXR0150G3F | M4 Competition Coupe | LDV | Interim Tier 4 Bin70 | - / 0.070 | 450 | 300 | 04/26 | 4395 | 6 | vshaped | gasoline | DFI | -- | 9,5 | 7,4 | 9,8 | none | I | 150 | hdpe | no |
| VBMXV03.0SM3 | V35 | VBMXR0150G3F | M4 Competition M xDrive Coupe | LDV | Interim Tier 4 Bin70 | - / 0.070 | 450 | 300 | 04/26 | 4395 | 6 | vshaped | gasoline | DFI | -- | 9,5 | 7,4 | 9,8 | none | I | 150 | hdpe | no |
| VBMXV03.0SM3 | V35 | VBMXR0150G3F | M4 Coupe | LDV | Interim Tier 4 Bin70 | - / 0.070 | 450 | 300 | 04/26 | 4395 | 6 | vshaped | gasoline | DFI | -- | 9,5 | 7,4 | 9,8 | none | I | 150 | hdpe | no |
| VBMXV03.0SM3 | V35 | VBMXR0150G3F | M4 Competition M xDrive Convertible | LDV | Interim Tier 4 Bin70 | - / 0.070 | 450 | 300 | 04/26 | 4395 | 6 | vshaped | gasoline | DFI | -- | 9,5 | 7,4 | 9,8 | none | I | 150 | hdpe | no |
| VBMXV03.0SM3 | V35 | VBMXR0150G3F | M3 Competition M xDrive Sedan | LDV | Interim Tier 4 Bin70 | - / 0.070 | 450 | 300 | 04/26 | 4395 | 6 | vshaped | gasoline | DFI | -- | 9,5 | 7,4 | 9,8 | none | I | 150 | hdpe | no |
| VBMXV03.0SM3 | V35 | VBMXR0150G3F | M3 Competition Sedan | LDV | Interim Tier 4 Bin70 | - / 0.070 | 450 | 300 | 04/26 | 4395 | 6 | vshaped | gasoline | DFI | -- | 9,5 | 7,4 | 9,8 | none | I | 150 | hdpe | no |
| VBMXV03.0SM3 | V35 | VBMXR0150G3F | M3 Sedan | LDV | Interim Tier 4 Bin70 | - / 0.070 | 450 | 300 | 04/26 | 4395 | 6 | vshaped | gasoline | DFI | -- | 9,5 | 7,4 | 9,8 | none | I | 150 | hdpe | no |
| VBMXV03.0SM3 | V35 | VBMXR0150G3F | M3 CS Sedan | LDV | Interim Tier 4 Bin70 | - / 0.070 | 450 | 300 | 08/26 | 4395 | 6 | vshaped | gasoline | DFI | -- | 9,5 | 7,4 | 9,8 | none | I | 150 | hdpe | no |
| VBMXV03.0SM3 | V35 | VBMXR0150G3F | M2 M xDrive Coupe | LDV | Interim Tier 4 Bin70 | - / 0.070 | 450 | 300 | 08/26 | 4395 | 6 | vshaped | gasoline | DFI | -- | 9,5 | 7,4 | 9,8 | none | I | 150 | hdpe | no |
| VBMXV03.0SM3 | V35 | VBMXR0150G3F | M2 Coupe | LDV | Interim Tier 4 Bin70 | - / 0.070 | 450 | 300 | 08/26 | 4395 | 6 | vshaped | gasoline | DFI | -- | 9,5 | 7,4 | 9,8 | none | I | 150 | hdpe | no |
| VBMXV04.4H9X | V39 | VBMXR0170H09 | M5 Sedan | LDV | Interim Tier 4 Bin70 | - / 0.070 | 500 | 300 | 04/26 | 4395 | 6 | vshaped | gasoline | DFI | PHEV | 8,2 | 6,2 | 8,2 | none | NIRCO | 180 | steel | no |
| VBMXV04.4H9X | V39 | VBMXR0170H09 | M5 Touring | LDV | Interim Tier 4 Bin70 | - / 0.070 | 500 | 300 | 04/26 | 4395 | 6 | vshaped | gasoline | DFI | PHEV | 8,2 | 6,2 | 8,2 | none | NIRCO | 180 | steel | no |
| VRRGV00.0R2B | -- | -- | Black Badge Spectre | LDV | Tier 4 Bin0 | -- / -- | -- | -- | 08/26 | -- | -- | -- | electric | -- | BEV | -- | -- | -- | -- | -- | -- | -- | -- |
| VRRGV00.0R2B | -- | -- | Spectre | LDV | Tier 4 Bin0 | -- / -- | -- | -- | 08/26 | -- | -- | -- | electric | -- | BEV | -- | -- | -- | -- | -- | -- | -- | -- |
| VRRGV06.7N74 | V1T | VRRGR0170RR1 | Phantom | LDV | Tier 4 Bin70 | -- / -- | 500 | 300 | 04/26 | 6749 | 12 | vshaped | gasoline | DFI | -- | 9,9 | 8,6 | 11,4 | GPF | I | 170 | hdpe | no |
| VRRGV06.7N74 | V1T | VRRGR0170RR1 | Phantom Extended | LDV | Tier 4 Bin70 | -- / -- | 500 | 300 | 04/26 | 6749 | 12 | vshaped | gasoline | DFI | -- | 9,9 | 8,6 | 11,4 | GPF | I | 170 | hdpe | no |
| VRRGV06.7N74 | V1T | VRRGR0170RR1 | Black Badge Ghost | LDV | Tier 4 Bin70 | -- / -- | 500 | 300 | 04/26 | 6749 | 12 | vshaped | gasoline | DFI | -- | 9,9 | 8,6 | 11,4 | GPF | I | 170 | hdpe | no |
| VRRGV06.7N74 | V1T | VRRGR0170RR1 | Ghost | LDV | Tier 4 Bin70 | -- / -- | 500 | 300 | 04/26 | 6749 | 12 | vshaped | gasoline | DFI | -- | 9,9 | 8,6 | 11,4 | GPF | I | 170 | hdpe | no |
| VRRGV06.7N74 | V1T | VRRGR0170RR1 | Ghost Extended | LDV | Tier 4 Bin70 | -- / -- | 500 | 300 | 04/26 | 6749 | 12 | vshaped | gasoline | DFI | -- | 9,9 | 8,6 | 11,4 | GPF | I | 170 | hdpe | no |
| VRRGV06.7N74 | V1T | VRRGR0170RR1 | Black Badge Cullinan | LDV | Tier 4 Bin70 | -- / -- | 500 | 300 | 04/26 | 6749 | 12 | vshaped | gasoline | DFI | -- | 9,9 | 8,6 | 11,4 | GPF | I | 170 | hdpe | no |
| VRRGV06.7N74 | V1T | VRRGR0170RR1 | Cullinan | LDV | Tier 4 Bin70 | -- / -- | 500 | 300 | 04/26 | 6749 | 12 | vshaped | gasoline | DFI | -- | 9,9 | 8,6 | 11,4 | GPF | I | 170 | hdpe | no |

3.2 xEV grouping overview

| Grouping BEV MY 2027 | | | | | | | | | | | | | | |
|----------------------|--------------|-----------------|---------------------------------|--------------|---------------------------------|--------------------|----------------------------|--------------------------|--------------------------|--------------------------|-------------------|-------------------------|--------------|--------------------------------|
| Model | Test Group | Electric Engine | | | | Battery | | | | | | | | |
| | | front | | rear | | capacity pack [Ah] | energy capacity pack [kWh] | nominal voltage pack [V] | minimum voltage pack [V] | minimum voltage cell [V] | number of modules | number of battery cells | type of cell | chemistry identifier SAE J2984 |
| | | construction | peak power max torque [kW / Nm] | construction | peak power max torque [kW / Nm] | | | | | | | | | |
| iX xDrive45 | VBMXT00.0I2A | synchron. | 190kW / 365Nm | synchron. | 200kW / 400Nm | 303,0 | 100,35 | 332,1 | 252,0 | 2,80 | 10 | 450 | prismatic | Li MM(NCA) - C.F |
| iX xDrive60 | VBMXT00.0I2B | synchron. | 190kW / 365Nm | synchron. | 230kW / 400Nm | 303,0 | 111,50 | 369,0 | 280,0 | 2,80 | 11 | 500 | prismatic | Li MM(NCA) - C.F |
| iX M70 | VBMXT00.0I2C | synchron. | 190kW / 365Nm | synchron. | 360kW / 650Nm | 303,0 | 111,50 | 369,0 | 280,0 | 2,80 | 11 | 500 | prismatic | Li MM(NCA) - C.F |
| i5 eDrive40 Sedan | VBMXV00.0G6A | --- | --- | synchron. | 250kW / 400Nm | 210,6 | 83,90 | 398,5 | 302,4 | 2,80 | 7 | 324 | prismatic | Li MM(NCA) - C.F |
| i5 xDrive40 Sedan | VBMXV00.0G6B | synchron. | 190kW / 365Nm | synchron. | 230kW / 400Nm | 210,6 | 83,90 | 398,5 | 302,4 | 2,80 | 7 | 324 | prismatic | Li MM(NCA) - C.F |
| i5 M60 xDrive Sedan | VBMXV00.0G6C | synchron. | 192kW / 365Nm | synchron. | 250kW / 430Nm | 210,6 | 83,90 | 398,5 | 302,4 | 2,80 | 7 | 324 | prismatic | Li MM(NCA) - C.F |
| i7 xDrive50 Sedan | VBMXV00.0G7A | synchron. | 190kW / 365Nm | synchron. | 230kW / 400Nm | 324,5 | 118,10 | 364,0 | 250,0 | 2,50 | 5 | 1000 | cylindrical | Li MM(NRMC) - CSi.F |
| i7 xDrive60 Sedan | VBMXV00.0G7A | synchron. | 190kW / 365Nm | synchron. | 230kW / 400Nm | 324,5 | 118,10 | 364,0 | 250,0 | 2,50 | 5 | 1000 | cylindrical | Li MM(NRMC) - CSi.F |
| iX5 60 xDrive | VBMXT00.0G65 | asynchron. | 184kW / 305Nm | synchron. | 240kW / 500Nm | 210,0 | 147,80 | 704,6 | 480,0 | 2,50 | -- | 960 | cylindrical | Li MM (NRMC)-C.F |
| Countryman SE ALL4 | VBMXV00.0U2A | synchron. | 140kW / 247Nm | synchron. | 140kW / 247Nm | 232,0 | 66,45 | 286,3 | 218,4 | 2,80 | -- | 156 | prismatic | Li MM(NMC) - C.F |
| i3 40 xDrive | VBMXV00.0N0A | asynchron. | 123kW / 255Nm | synchron. | 195kW / 345Nm | 129,40 | 86,90 | 671,6 | 460,0 | 2,50 | -- | 736 | cylindrical | Li MM (NRMC)-C.F |
| iX3 40 xDrive | | asynchron. | 123kW / 255Nm | synchron. | 195kW / 345Nm | 129,40 | 86,90 | 671,6 | 460,0 | 2,50 | -- | 736 | cylindrical | Li MM (NRMC)-C.F |
| iX4 40 xDrive | | asynchron. | 123kW / 255Nm | synchron. | 195kW / 345Nm | 129,40 | 86,90 | 671,6 | 460,0 | 2,50 | -- | 736 | cylindrical | Li MM (NRMC)-C.F |
| i3 50 xDrive | VBMXV00.0N5C | asynchron. | 123kW / 255Nm | synchron. | 240kW / 435Nm | 162,30 | 113,38 | 698,9 | 480,0 | 2,50 | -- | 960 | cylindrical | Li MM(NRMC) - CSi.F |
| iX3 50 xDrive | | asynchron. | 123kW / 255Nm | synchron. | 240kW / 435Nm | 162,30 | 113,38 | 698,9 | 480,0 | 2,50 | -- | 960 | cylindrical | Li MM(NRMC) - CSi.F |
| iX4 50 xDrive | | asynchron. | 123kW / 255Nm | synchron. | 240kW / 435Nm | 162,30 | 113,38 | 698,9 | 480,0 | 2,50 | -- | 960 | cylindrical | Li MM(NRMC) - CSi.F |
| iX3 40 | VBMXV00.0N5A | --- | --- | synchron. | 240kW / 435Nm | 129,40 | 86,90 | 671,6 | 460,0 | 2,50 | -- | 736 | cylindrical | Li MM (NRMC)-C.F |
| Black Badge Spectre | VRRGV00.0R2B | synchron. | 190kW / 365Nm | synchron. | 360kW / 650Nm | 324,5 | 118,10 | 364,0 | 250,0 | 2,50 | 5 | 1000 | cylindrical | Li MM(NRMC)-CSi.F |
| Spectre | | synchron. | 190kW / 365Nm | synchron. | 360kW / 650Nm | 324,5 | 118,10 | 364,0 | 250,0 | 2,50 | 5 | 1000 | cylindrical | Li MM(NRMC)-CSi.F |

| Grouping PHEV MY 2027 (part electric drivetrain) | | | | | | | | | | | | | | |
|--|---|-----------------|---------------------------------|--------------|---------------------------------|--------------------|----------------------------|--------------------------|--------------------------|--------------------------|-------------------|-------------------------|--------------|--------------------------------|
| Model | Test Group = Battery Durability Family = Battery Monitor Family | Electric Engine | | | | Battery | | | | | | | | |
| | | front | | rear | | capacity pack [Ah] | energy capacity pack [kWh] | nominal voltage pack [V] | minimum voltage pack [V] | minimum voltage cell [V] | number of modules | number of battery cells | type of cell | chemistry identifier SAE J2984 |
| | | construction | peak power max torque [kW / Nm] | construction | peak power max torque [kW / Nm] | | | | | | | | | |
| X5 xDrive 50e | VBMXT03.0H65 | -- | -- | synchron. | 145kW / 280Nm | 93,0 | 29,48 | 316,8 | 237,6 | 2,70 | 6 | 88 | prismatic | Li MM(NMC) - C.F |
| 750e xDrive Sedan | VBMXV03.0H70 | -- | -- | synchron. | 145kW / 280Nm | 63,5 | 22,08 | 347,5 | 268,8 | 2,80 | 3 | 96 | prismatic | Li MM(NMC) - C.F |
| X1 Label | VBMXT04.4H09 | -- | -- | synchron. | 145kW / 280Nm | 93,0 | 29,48 | 316,8 | 237,6 | 2,70 | 6 | 88 | prismatic | Li MM(NMC) - C.F |
| 550e xDrive Sedan | VBMXV03.0H5P | -- | -- | synchron. | 145kW / 280Nm | 63,5 | 22,08 | 347,5 | 268,8 | 2,80 | 3 | 96 | prismatic | Li MM(NMC) - C.F |
| M5 Sedan | VBMXV04.4H9X | -- | -- | synchron. | 145kW / 280Nm | 63,5 | 22,08 | 347,5 | 268,8 | 2,80 | 3 | 96 | prismatic | Li MM(NMC) - C.F |
| M5 Touring | | -- | -- | synchron. | 145kW / 280Nm | 63,5 | 22,08 | 347,5 | 268,8 | 2,80 | 3 | 96 | prismatic | Li MM(NMC) - C.F |

4 Description of vehicles covered by certificate and test parameters



4.1 Vehicle parameters

Please refer to Section 12 of the respective vehicle's application for certification.

4.1.1 Models with Engine Start-Stop (ESS)

| Test Group | Traction | Default to "ESS active" |
|--------------|-----------|-------------------------|
| VBMXJ02.0M4P | ICE | yes |
| VBMXJ02.0T4P | ICE | yes |
| VBMXV03.0SM3 | ICE | yes |
| VRRGV06.7N74 | ICE | yes |
| VBMXJ02.0B4T | HEV (48V) | yes |
| VBMXJ03.0B5T | HEV (48V) | yes |
| VBMXT03.0B58 | HEV (48V) | yes |
| VBMXT04.4S6M | HEV (48V) | yes |
| VBMXV02.0B4P | HEV (48V) | yes |
| VBMXV03.0B5P | HEV (48V) | yes |
| VBMXT04.4S68 | HEV (48V) | yes |
| VBMXV02.0B4D | HEV (48V) | yes |
| VBMXT03.0H65 | PHEV | yes |
| VBMXT04.4H09 | PHEV | yes |
| VBMXV03.0H70 | PHEV | yes |
| VBMXV03.0H5P | PHEV | yes |
| VBMXV04.4H9X | PHEV | yes |

4.1.2 Models available with variable ride height system

| Test Group | Models available with variable ride height system | Mode, in which LDT requirements are fulfilled |
|--------------|---|---|
| VBMXT03.0B58 | X6 xDrive40i |  |
| | X7 xDrive40i | |
| VBMXT04.4S68 | X6 M60i xDrive | |
| | X7 M60i xDrive | |
| VBMXT00.0I2A | iX xDrive45 |  |
| VBMXT00.0I2B | iX xDrive60 | |
| VBMXT00.0I2C | iX M70 | |
| VBMXT00.0G65 | iX5 60 xDrive | Highest available setting |
| VBMXT03.0H65 | X5 xDrive50e | |
| VBMXJ03.0B5T | X5 40 | |
| | X5 40 xDrive | |

4.2 Test parameters

4.2.1 Engine starting procedures

For vehicles with ignition lock, insert the key all the way into lock. Press the start/stop button while disengaging the brake pedal or clutch (only for manual transmission).

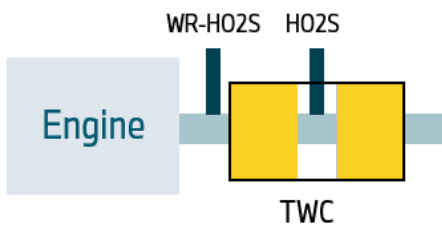
For vehicles without ignition lock, place the key inside the vehicle. Press the start/stop button while pressing the brake pedal. Do not press the accelerator pedal.

Ignition on: Press the start/stop button without engaging the brake pedal.

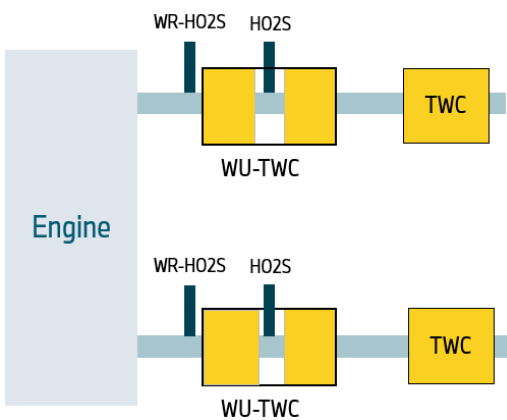
4.2.2 Shift schedules

All models with manual transmission were tested using the standard shift points (15/25/40/45/50 mph) according to OMS Advisory Circular 72A, February 10, 1984.

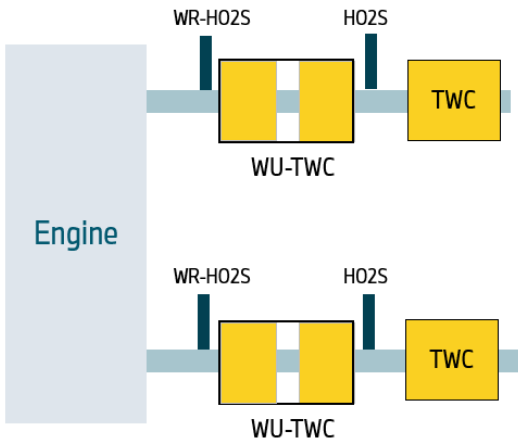
4.3 Exhaust system specification



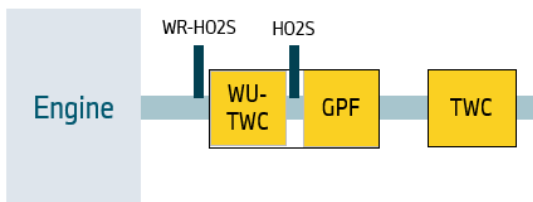
| Test Group | Engine | VECI Label |
|--------------|----------|---------------------------------------|
| VBMXV02.0B4D | B48B2002 | TWC, WR-HO2S, H02S, DFI, MFI, TC, CAC |
| VBMXT03.0B58 | B58B30M2 | |



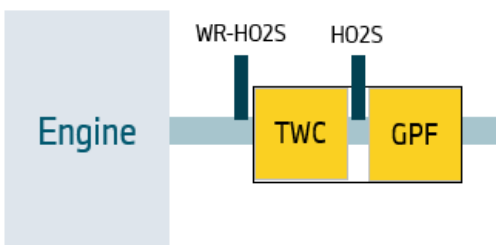
| Test Group | Engine | VECI Label |
|--------------|----------------------|---|
| VBMXV03.0SM3 | S58B3000 S58B30T0 | 2WU-TWC, 2TWC, 2WR-HO2S, 2H02S, DFI, 2TC, CAC |



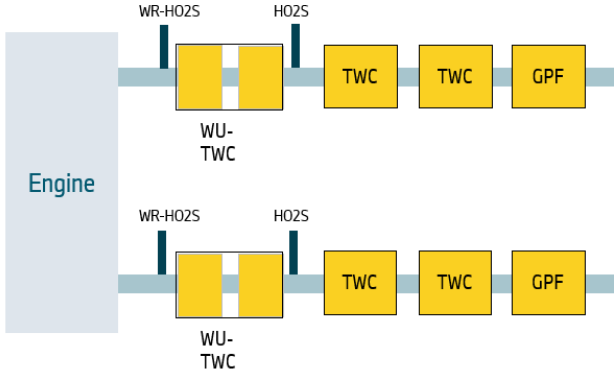
| Test Group | Engine | VECI Label |
|--------------|--------------------|---|
| VBMXT04.4S68 | S68B44T0 ULEV70 | 2WU-TWC, 2TWC, 2WR-HO2S, 2HO2S, DFI, 2TC, 2CAC |
| VBMXT04.4S6M | | |
| VBMXV04.4H9X | | |



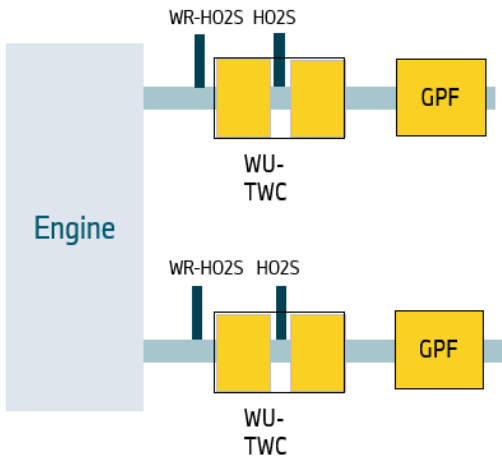
| Test Group | Engine | VECI Label |
|--------------|----------|--|
| VBMXJ02.0M4P | B48A20M2 | WU-TWC+GPF, TWC, WR-HO2S, HO2S, DFI, MFI, TC, CAC |
| VBMXJ02.0M4P | B48A20O2 | WU-TWC+GPF, TWC, WR-HO2S, HO2S, DFI, MFI, TC, CAC |
| VBMXJ02.0T4P | B48A20T2 | WU-TWC+GPF, TWC, WR-HO2S, HO2S, DFI, MFI, TC, CAC |



| Test Group | Engine | VECI Label |
|--------------|----------|--|
| VBMXV02.0B4P | B48B20O2 | TWC+GPF, WR-HO2S, HO2S, DFI, MFI, TC, CAC |
| VBMXV03.0B5P | B58B30M2 | |
| VBMXJ02.0B4T | B48B20O3 | |
| VBMXV03.0H5P | B58B30U2 | |
| VBMXJ03.0B5T | B58B30M3 | |
| VBMXT03.0H65 | | |
| VBMXV03.0H70 | | |



| Test Group | Engine | VECI Label |
|--------------|----------------------|--|
| VBMXT04.4H09 | S68B44T0 SULEV 30 | 2WU-TWC, 2TWC(2), 2GPF, 2WR-HO2S, 2HO2S, DFI, 2TC, 2CAC |



| Test Group | Engine | VECI Label |
|--------------|----------|---|
| VRRGV06.7N74 | N74B68M2 | 2WU-TWC, 2GPF, 2WR-HO2S, 2HO2S, DFI, 2TC, 2CAC |

5 Other Information

5.1 Results of OBD PVE testing

The OBD PVE J1, J2 and J3 data submitted to CARB require an electronic format that is not suitable for this application. Upon request, BMW will provide these reports in their original format alongside any information necessary to understand their content.

5.2 Service manuals, service bulletins

As an alternative to providing copies of the service information, BMW grants EPA access to the BMW website which is used to provide this information to BMW dealers.

5.3 Dyno mode functionality

5.3.1 Motivation

Various safety and driver assistance systems, which are active during real world driving, can potentially cause safety issues when operating a vehicle on a dynamometer. To avoid these issues, vehicles must manually be set to dyno mode prior to dyno operation.

5.3.2 Initiation of dyno mode (example)

Verify that vehicle is in Position "P".

- i. Without pressing the brake, press the Start/Stop button to turn ignition on (Figure 1).
- ii. Wait until all Control Message disappear (red box in Figure 1).
- iii. Press and hold trip button (red circle in Figure 1) on right hand side of the instrument cluster until special menu appears (Figure 2).
- iv. Press button twice to scroll to '03 Start Roller' (Figure 3).
- v. Press and hold trip button for a few seconds until 'mode (ESC OFF)?' is displayed (Figure 4).
- vi. Press trip button once more to activate dynamometer mode. Message 'Test mode end: switch off ignition' confirms that dyno mode is active (Figure 5).
- vii. Perform drive cycle



Figure 1: ignition ON

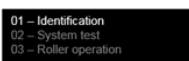


Figure 2: special menu

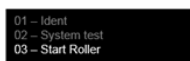


Figure 3: 03 - Start Roller

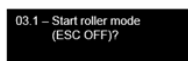


Figure 4: 03.1 - Start Roller Mode



Figure 5: dyno mode activated

Active dyno mode is indicated in the instrument cluster: "Test mode end: switch off ignition."

A vehicle specific description will be provided with each confirmatory test vehicle's handout.

5.3.3 Relevant driver assistance systems

The following sections describe the relevant assistance systems and corresponding control modules, and, how they are impacted by an active dyno mode.

5.3.3.1 DSC (dynamic stability control system) and IB (integrated braking system)

Many safety-related functionalities are controlled by the DSC control unit (in former models) or the IB control unit (newer models) which process vehicle

state information based on various sensor inputs such as acceleration and wheel speed sensors. A dynamometer generates a combination of signals that are either not plausible or indicative of an emergency. The DSC/IB is the control module mainly impacted by an active dyno mode. It informs all other control modules about the intended dyno operation and transmits a substitute vehicle speed signal (the wheel speed qualifiers are being set so that the wheel speed monitoring does not detect an error). The substitute vehicle speed signal is generated from the wheel speed signals of the main driven axle(s). In dyno mode, the DSC/IB itself deactivates stability control interventions and autonomous brake interventions to prevent dangerous situations on the dyno (e.g., autonomous emergency brake 0.6g may be activated because of obstacles in front of the vehicle with a high differential speed). Any brake activation not initiated by the driver can damage either the vehicle, the dyno or can ultimately force the vehicle out of its fixed position on the dyno.

Additionally, the DSC/IB continuously monitors certain parameters which can automatically disable dyno mode if

- the steering angle change is larger than +/- 3°
- the yaw angle change is larger than 0.1 rad
- the longitudinal acceleration is larger than 5 m/s².

These disabling criteria ensure that dyno mode is deactivated before a vehicle is operated under real-world conditions.

The DSC/IB control unit is responsible for the functionality generally known as enhanced stability control (ESC), which is federally required per FMVSS 126. DTC (Dynamic Traction Control) is an additional functionality of the DSC/IB module to increase traction on slippery surfaces by modifying wheel torque through brake activation and engine torque limitation. Both functionalities are disabled during active dyno mode to prevent safety-critical situations on the dyno.

5.3.3.2 DxE (engine control unit)

With the substitute vehicle speed signal from the DSC/IB, the engine start/stop system functionality on the dyno is identical to real-world operation.

5.3.3.3 LMV (longitudinal torque distribution module)

In 4WD vehicles, the LMV closes the clutch in case of a single-axle-dyno operation. The cardan shaft to the front/rear axle needs to be removed in advance to prevent any damage to the transfer gear box.

The LMV cannot detect single-axle-dyno operation. It is triggered by the dyno mode to maintain lubrication and prevent any damage to the transfer gear box.

5.3.3.4 EHC (height control system)

If a vehicle is equipped with an automatic ride height control system, the height variation is deactivated during active dyno mode to prevent the car from becoming loose from its fixation and avoid safety critical situations on the dyno.

5.3.3.5 Gearbox control module (automatic transmission)

The gearbox control module uses the dyno mode information to keep the shifting maps identical to real-world behavior and to maintain normal mode of operation of the gearbox.

Depending on the dyno configuration (single-axle-dyno or double-axle dyno), the gearbox needs to compensate e.g., for a changed behavior of the DSC/IB or e.g., for the fact that the effective vehicle braking torque needs to be provided by only one axle (this leads to a higher overall braking torque signal, which does not correlate to the vehicle deceleration of the vehicle on the dyno).

5.3.3.6 Driver assistance systems

All sensors of the driver assistance systems (e.g., radar, cameras, night vision) flag their transmitted signals as invalid when they receive the dyno mode information. They let all receivers know not to take any action based upon this information to prevent safety critical situations (e.g., an autonomous brake could be initiated if the camera detects an obstacle on the dyno in front of the vehicle with a high differential speed).

5.3.3.7 Recuperation modes (BEV)

BMW BEV models offer an optional selection of different recuperation modes. The Dyno Mode activates a recuperation mode in the middle of the selectable range. The recuperation modes allow customers to vary the deceleration feedback of the gas pedal (“one-pedal feeling”).

During every deceleration event, independent of the selection of the recuperation mode, recuperation is used up to its maximum. Any additional deceleration demand requires the brake pedal to be pushed. The different recuperation modes are not affecting the overall recuperated energy.

5.3.4 Important general information:

Operating vehicles on a dyno without activating the dyno mode will not result in real-world representative test results, even though e.g., wheel speed signals are replicated. Implausible sensor signals, caused by the dyno operation, will result in implausible output signals from various control modules.

Additionally, it is explicitly not recommended to operate vehicles on a dyno without active dyno mode because:

- Autonomous emergency brake (0.6g braking) can be activated.
- Vehicle control interventions (wheel individual braking interventions) can lead to unpredictable situations.
- Engine start/stop functionality can be reduced due to implausible correlation between vehicle speed and wheel speed signals (engine control module runs plausibility check routines)

If any dyno test is conducted without the activation of dyno mode, BMW cannot be held responsible for any incident potentially causing damage to the vehicle, dyno or personnel.

6 Confidential Information