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| **Test operator information** |
| **Company** |  |
| **Test operatorName/E-mail** |  |
| **OBU identifier** |  |
| **Test date/timeStart and end** |  |
| **Log file name/format** |  |

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| **InterCor Interoperability Test Case** |
| **Test Identifier** | Scenario3\_TC1 |
| **Test Objective** | To test the effect if messages for a tunnel are relevant for one tunnel section (right) with a parallel tunnel (left tunnel).To test the effect of loss of GPS inside a tunnel with messages transmitted upstream outside of the tunnel.To test IVS with all dynamic traffic signs as used on VMS systems in the Netherlands (dynamic speed limit of 90, 70, 50, 80 km/h, dynamic lane management with merge left/right, blocked lane, and end-of-restrictions). |
| **Test Scenario used** | **Scenario 3 Tunnel – Test Vehicle in tunnel with RWW/IVS active**. The use case is of type known (i.e. planned in scope of tests) and of type virtual (i.e. received info on VMS signs are not visible on physical VMS on gantries and trailer for RWW is not present). |
| **Pre-test Conditions** | * Test configuration as specified in<http://intercor-project.eu/wp-content/uploads/sites/15/2017/06/Plan-of-Action-Testfest-ITS-G5_v-1.0-Participants.pdf> is implemented.
* Participants have been able to test their test vehicle (OBU) with DENM/IVI messages of scenario 6 (Site) and/or with PCAP files.
* Test scenario is activated between A16R 33,1 and A16R 34,1.
	+ RSUs (e.g. at relative position A16R 32,933) are active and send IVI and DENM messages for this scenario. IVI messages of 9 gantries are sent by the RSU and 1 DENM for RWW trailer.
	+ DENM/IVI messages for scenario 3 (tunnel with known-virtual-IVS) can be identified by OBU as virtual, and can be separated from messages from scenario unknown-real-IVS messages.
* Test vehicle is outside the radio transmission range of active RSU for this scenario, i.e. has not received/stored messages for this scenario.
* Test vehicle drives from North to South and passes the relevance area for this scenario in the right hand tunnel.
 |
| **Test Sequence** | **Step** | **Type** | **Action: Description****Check: Expected behaviour** | **Observation** |
| 1 | action | Test Vehicle (TV) enters test area for this scenario (between A16R km 33,1 and 34,1) and drives through the right hand tunnel.TV receives messages from: 1 DENM with RWW, and 9 IVI of VMS of 9 individual gantries.Information of individual (relevant) gantries is displayed to the driver between km 33,1 and 34,1. | Information of individual gantries is displayed to the driver between km 33,1 and 34,1. The HMI should show a) VMS signs with dynamic speed limits per lane (90, 70), dynamic lane management (merge left, blocked lane) and end-of-restrictions and b) Presence of RWW trailer on right lane.The location accuracy of the relevance zone for IVI must be accurate enough to identify the VMS for right or left tunnel. Information is still shown when GPS signal in tunnel is lost. |
| 2 | check | HMI display at km 33,1 (gantry at 33,135) |  |
| 3 | check | HMI display at km 33,4 (gantry at 33,430) |  |
| 4 | check | HMI display at km 33,6 (gantry at 33,609) |  |
| 5 | check | HMI display at km 33,7 (gantry at 33,778) |  |
| 6 | check | HMI display at km 33,8 (gantry at 33,848) |  |
| 7 | check | HMI display at km 33,9 (trailer at 33,900) |  |
| 8 | check | HMI display at km 34,0 (gantry at 33,958) |  |
| 9 | check | HMI display at km 34,1 (gantry at 34,068) |  |
| 10 | check | HMI display at km 34,4 (gantry at 34,440) |  |
| 11 | action  | TV leaves test area. |  |
| 12 | check | No information is shown when the TV has left last relevance zone. |  |

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| **Test operator information** |
| **Company** |  |
| **Test operatorName/E-mail** |  |
| **OBU identifier** |  |
| **Test date/timeStart and end** |  |
| **Log file name/format** |  |

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| **InterCor Interoperability Test Case** |
| **Test Identifier** | Scenario3\_TC2 |
| **Test Objective** | To test the effect if messages for a tunnel are relevant for one tunnel section (right) with a parallel tunnel (left tunnel).To test the effect of loss of GPS inside a tunnel with messages transmitted upstream outside of the tunnel.To test IVS with all dynamic traffic signs as used on VMS systems in the Netherlands (dynamic speed limit of 90, 70, 50, 80 km/h, dynamic lane management with merge left/right, blocked lane, and end-of-restrictions). |
| **Test Scenario used** | **Scenario 3 Tunnel – Test Vehicle in tunnel on parallel highway** - The use case is of type known (i.e. planned in scope of tests) and of type virtual (i.e. received info on VMS signs are not visible on physical VMS on gantries and trailer for RWW is not present). |
| **Pre-test Conditions** | * Test configuration as specified in<http://intercor-project.eu/wp-content/uploads/sites/15/2017/06/Plan-of-Action-Testfest-ITS-G5_v-1.0-Participants.pdf> is implemented.
* Participants have been able to test their test vehicle (OBU) with DENM/IVI messages of scenario 6 (Site) and/or with PCAP files.
* Test scenario is activated between A16R 33,1 and A16R 34,1.
	+ RSUs (e.g. at relative position A16R 32,933) are active and send IVI and DENM messages for this scenario. IVI messages of 9 gantries are sent by the RSU and 1 DENM for RWW trailer.
	+ DENM/IVI messages for scenario 3 (tunnel with known-virtual-IVS) can be identified by OBU as virtual, and can be separated from messages from scenario unknown-real-IVS messages.
* Test vehicle is outside the radio transmission range of active RSU for this scenario, i.e. has not received/stored messages for this scenario.
* Test vehicle drives from North to South and passes the relevance area for this scenario in the left hand tunnel.
 |
| **Test Sequence** | **Step** | **Type** | **Action: Description****Check: Expected behaviour** | **Observation** |
| 1 | action | Test Vehicle (TV) enters test area for this scenario (between A16R km 33,1 and 34,1) and drives through the left hand tunnel.TV receives messages from: 1 DENM with RWW, and 9 IVI of VMS of 9 individual gantries.Information of individual (relevant) gantries is displayed to the driver between km 33,1 and 34,1. | Information of individual gantries is displayed to the driver between km 33,1 and 34,1. The HMI should show VMS signs with dynamic speed limits per lane (90) and end-of-restrictions.The location accuracy of the relevance zone for IVI must be accurate enough to identify the VMS for right or left tunnel. Information is still shown when GPS signal in tunnel is lost. |
| 2 | check | HMI display at km 33,1 (gantry at 33,135) |  |
| 3 | check | HMI display at km 34,4 (gantry at 34,440) |  |
| 4 | action  | TV leaves test area. |  |
| 5 | check | No information is shown when the TV has left last relevance zone. |  |

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| **Test operator information** |
| **Company** |  |
| **Test operatorName/E-mail** |  |
| **OBU identifier** |  |
| **Test date/timeStart and end** |  |
| **Log file name/format** |  |

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| **InterCor Interoperability Test Case** |
| **Test Identifier** | Scenario3\_TC3 |
| **Test Objective** | To test that the information related to scenario 3 is not shown when passing the test area in the opposite direction of the motorway. |
| **Test Scenario used** | **Scenario 3 Tunnel – TV in tunnel in opposite direction**. The use case is of type known (i.e. planned in scope of tests) and of type virtual (i.e. received info on VMS signs are not visible on physical VMS on gantries and trailer for RWW is not present). |
| **Pre-test Conditions** | * Test configuration as specified in<http://intercor-project.eu/wp-content/uploads/sites/15/2017/06/Plan-of-Action-Testfest-ITS-G5_v-1.0-Participants.pdf> is implemented.
* Participants have been able to test their test vehicle (OBU) with DENM/IVI messages of scenario 6 (Site) and/or with PCAP files.
* Test scenario is activated between A16R 33,1 and A16R 34,1.
	+ RSUs (e.g. at relative position A16R 32,933) are active and send IVI and DENM messages for this scenario. IVI messages of 9 gantries are send by the RSU and 1 DENM for RWW trailer.
	+ DENM/IVI messages for scenario 3 (tunnel with known-virtual-IVS) can be identified by OBU as virtual, and can be separated from messages from scenario unknown-real-IVS messages.
* Test vehicle is outside the radio transmission range of active RSU for this scenario, i.e. has not received/stored messages for this scenario.
* Test vehicle drives from South to North and passes by the relevance area for this scenario on the opposite side of the motorway.
 |
| **Test Sequence** | **Step** | **Type** | **Action: Description****Check: Expected behaviour** | **Observation** |
| 1 | action | Test Vehicle (TV) drives in opposite direction (A16L, 34,4km and 32,4 km) i.e. from South to North.TV receives messages from RSU(s): 1 DENM with RWW, and 9 IVI of VMS of 9 individual gantries of A16R. |  |
| 2 | check | No information related to scenario 3 is shown. |  |
| 3 | action  | TV leaves test area. |  |
| 4 | check | No information is shown when the TV has left last relevance zone. |  |