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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** | Scenario4\_TC1 |
| **Test Objective** | To test RWW and IVS in a complex traffic situation where all lanes are blocked and traffic is diverted over the hard shoulder. |
| **Test Scenario used** | **Scenario 4 Hard Shoulder- Test Vehicle via hard shoulder with RWW/IVS active** The use case is of type known (i.e. planned in scope of tests) and of type virtual IVS (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 A16L 32,4 and A16L 29,3.
	+ RSUs (e.g. at relative position A16L 32,843) are active and send IVI and DENM messages for this scenario. IVI messages of 7 gantries are send by the RSU and 4 DENM messages for RWW content
	+ DENM/IVI messages for scenario 4 (hard shoulder 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 the relevance area for this scenario.
 |
| **Test Sequence** | **Step** | **Type** | **Action: Description****Check: Expected behaviour** | **Observation** |
| 1 | action | Test Vehicle (TV) enters test area for this scenario (between A16L km 32,4 and 29,3).TV receives messages from RSUs: 4 DENM with RWW, and 7 IVI of VMS of 7 individual gantries.Information of individual gantries is displayed to the driver between km 32,4 and 29,3. | Information of individual gantries is displayed to the driver between km 32,4 and 29,3. 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 4 RWW trailers on correct lane.The location accuracy of the absolute position (traces, event history) must be accurate enough to identify the position of the trailers on the 4 lanes. |
| 2 | check | HMI display at km 32,8 (gantry at 32,843) |  |
| 3 | check | HMI display at km 32,4 (gantry at 32,396) |  |
| 4 | check | HMI display at km 31,8 (gantry at 31,805)  |  |
| 5 | check | HMI display at km 31,7 (trailer on lane) |  |
| 6 | check | HMI display at km 31,4 (gantry at 31,425) |  |
| 7 | check | HMI display at km 31,3 (trailer on lane) |  |
| 8 | check | HMI display at km 30,7 (gantry at 30,700) |  |
| 9 | check | HMI display at km 30,6 (trailer on lane) |  |
| 10 | check | HMI display at km 30,2 (gantry at 30,200) |  |
| 11 | check | HMI display at km 30,1 (trailer on lane 1) |  |
| 12 | check | HMI display at km 29,3 (gantry at 29,370) |  |
| 13 | action  | TV leaves test area. |  |
| 14 | check | No information is shown when the TV has left last relevance zone. |  |

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| **OBU identifier** |  |
| **Test date/timeStart and end** |  |
| **Log file name/format** |  |

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| **InterCor Interoperability Test Case** |
| **Test Identifier** | Scenario4\_TC2 |
| **Test Objective** | To test that the information related to scenario 4 stops to be displayed when leaving the motorway and re-starts to be displayed when re-entering the motorway. |
| **Test Scenario used** | **Scenario 4 Hard Shoulder - Test Vehicle exits highway via parking area.** The use case is of type known (i.e. planned in scope of tests) and of type virtual IVS (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 A16L 32,4 and A16L 29,3.
	+ RSUs (e.g. at relative position A16L 32,843) are active and send IVI and DENM messages for this scenario. IVI messages of 7 gantries are send by the RSU and 4 DENM messages for RWW content
	+ DENM/IVI messages for scenario 4 (hard shoulder 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 the relevance area for this scenario.
 |
| **Test Sequence** | **Step** | **Type** | **Action: Description****Check: Expected behaviour** | **Observation** |
| 1 | action | Test Vehicle (TV) enters test area for this scenario (between A16L km 32,4 and 29,3).TV receives messages from RSUs: 4 DENM with RWW, and 7 IVI of VMS of 7 individual gantries.Information of individual gantries is displayed to the driver between km 32,4 and 29,3. |  |
| 2 | check | HMI display at km 32,8 (gantry at 32,843) |  |
| 3 | check | HMI display at km 32,4 (gantry at 32,396) |  |
| 4 | check | HMI display at km 31,8 (gantry at 31,805)  |  |
| 5 | check | HMI display at km 31,7 (trailer on lane) |  |
| 6 | check | HMI display at km 31,4 (gantry at 31,425) |  |
| 7 | check | HMI display at km 31,3 (trailer on lane) |  |
| 8 | action | TV drives into the relevance area, but takes exit 23 via parking area. |  |
| 9 | check | No information on HMI is shown if the vehicle positioning system is accurate enough to determine it is driving on the parking area. |  |
| 10 | Action | TV re-enters highway in direction North-South via parking area. |  |
| 11 | check | Information of gantry at A16L km 29,370 is shown. |  |
| 12 | action  | TV leaves test area. |  |
| 13 | check | No information is shown when the TV has left last relevance zone. |  |

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| **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** | Scenario4\_TC3 |
| **Test Objective** | To test that the information related to scenario 4 is not shown when passing the test area in the opposite direction of the motorway. |
| **Test Scenario used** | **Scenario 4 Hard Shoulder- Test Vehicle drives in opposite direction** The use case is of type known (i.e. planned in scope of tests) and of type virtual IVS (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 A16L 32,4 and A16L 29,3.
	+ RSUs (e.g. at relative position A16L 32,843) are active and send IVI and DENM messages for this scenario. IVI messages of 7 gantries are send by the RSU and 4 DENM messages for RWW content
	+ DENM/IVI messages for scenario 4 (hard shoulder 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 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 (North to South) of test area for this scenario between A16R km 28,4 and 32,9).TV receives messages from RSUs: 4 DENM with RWW, and 7 IVI of VMS of 7 individual gantries |  |
| 2 | check | No information related to scenario 4 is shown. |  |
| 3 | action  | TV leaves test area. |  |
| 4 | check | No information is shown when the TV has left last relevance zone. |  |