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Customer Contract Number C030588	Customer Contract Start/Finish Dates 21-Jan-2009 to 31-Dec-2011		

Acceptance Test Report

C030588 CVII Task 5

Task 5 builds on the base CVII infrastructure developed in Tasks 2, 3, and 4 providing a vehicle alert application for vehicle status data exchanged via vehicle-to-vehicle (V2V) communication.

Responsible	Tom Richter
Established Date	13-May-2011
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Document Number 6980-02941-01-15	Issue Number 1.0	Date 18-Nov-2011	Page 2 (11)
Author Company SwRI	Author Department, Name Purser Sturgeon, 1.10.60.20		Author Phone +1 (210) 522-3924
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Contents

1	General Information	3
1.1	Document Contacts	3
1.2	Revision History	3
1.3	Reference Documents	3
1.4	Abbreviations	4
1.5	Acceptance Criteria Identification	4
2	Acceptance Criteria Results.....	5
2.1	General.....	5
2.2	Vehicle Alert Application	5
	Appendix A Pre-Test Data	7
	A.1 Test Hardware Configuration	7
	A.1.1 CVII Test Network Architecture	7
	A.1.2 Hardware Identification	7
	Appendix B Test Execution Data	8
	B.1 Executed Test Events	8
	B.2 Test Details	8
	B.2.1 Test 1 – CV passes MV – Deactivated before pass	8
	B.2.2 Test 2 – CV passes MV – Deactivated after pass	9
	B.2.3 Test 3 – CV passes MV – No deactivation	9
	B.2.4 Test 4 – Opposite heading – Only same headings valid	9
	B.2.5 Test 5 – Opposite heading – All headings valid	10
	B.2.6 Test 6 – CV passes parked MV.....	10
	B.2.7 Test 7 – MV passes parked CV.....	10

Document Number 6980-02941-01-15	Issue Number 1.0	Date 18-Nov-2011	Page 3 (11)
Author Company SwRI	Author Department, Name Purser Sturgeon, 1.10.60.20		Author Phone +1 (210) 522-3924
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Document Title C030588 CVII Task 5 [21-Jan-2009 to 31-Dec-2011]		Type of Document Acceptance Test Report	

1 General Information

This document provides the acceptance test results for Task 5 of the NYSDOT CVII Project.

1.1 Document Contacts

Company	Name	Phone	Email
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1.2 Revision History

Issue	Date	Author	Changes
1.0	18 Nov 2011	Purser Sturgeon	Initial

1.3 Reference Documents

- [1] Contract #C030588 – PIN: CC95.07.121
Commercial Vehicle Infrastructure Integration
New York State – Department of Transportation
- [2] 6980-02821-01-02 C030588 CVII Program Plan
Volvo Technology – Tom Richter
Issue 2.1 – 15 Sep 2009
- [3] 6980-02941-01-10 C030588 CVII Task 5 Concept of Operations
SwRI – Mike Brown
Issue 1.0 – 16 Nov 2010

VOLVO

Document Number 6980-02941-01-15	Issue Number 1.0	Date 18-Nov-2011	Page 4 (11)
Author Company SwRI	Author Department, Name Purser Sturgeon, 1.10.60.20	Author Phone +1 (210) 522-3924	
Customer Company New York State DOT	Customer Name Rick McDonough	Customer Phone +1 (518) 457-5871	
Document Title C030588 CVII Task 5 [21-Jan-2009 to 31-Dec-2011]	Type of Document Acceptance Test Report		

[4] 6980-02941-01-06 C030588 CVII Task 5 Acceptance Test Plan
SwRI – Mike Brown
Issue 1.0 – 14 Apr 2011

1.4 Abbreviations

ATP	Acceptance Test Procedure
CV	Commercial Vehicle
CVII	Commercial Vehicle to Infrastructure Integration
DOT	Department of Transportation
DMCU	5.9 GHz DSRC Mobile Communications Unit
DSRC	Dedicated Short-Range Communications
EVA	Emergency Vehicle Alert
MCU	Mobile Communications Unit
MV	Maintenance Vehicle
N/A	Not Applicable
NYS	New York State
NYSDOT	New York State Department of Transportation
SwRI	Southwest Research Institute
TGW	Telematics Gateway
V2V	Vehicle-to-Vehicle
VII	Vehicle to Infrastructure Integration
VTEC	Volvo Technology

1.5 Acceptance Criteria Identification

All acceptance criteria referenced in this specification shall utilize the following notation:

Criteria TASK5-nnn/i.i: <Criteria Title>
<Criteria Specification>

Where:

‘nnn’ Serial number: 000-999
‘i.i’ Issue of the ATP in which the criteria was added or modified

Document Number 6980-02941-01-15	Issue Number 1.0	Date 18-Nov-2011	Page 5 (11)
Author Company SwRI	Author Department, Name Purser Sturgeon, 1.10.60.20		Author Phone +1 (210) 522-3924
Customer Company New York State DOT	Customer Name Rick McDonough		Customer Phone +1 (518) 457-5871
Document Title C030588 CVII Task 5 [21-Jan-2009 to 31-Dec-2011]		Type of Document Acceptance Test Report	

2 Acceptance Criteria Results

The acceptance test for Task 5 was executed on Wednesday, 27 May 2011. All of the criteria defined in the ATP were fully met. Details of the results can be found in the following subparagraphs.

The hardware configuration used in the acceptance test can be found in Appendix A.

2.1 General

Criteria TASK5-001/1.0: DSRC Range Statistics

The usable DSRC range area for the successful transmission of DSRC data shall be a minimum distance of 300 meters between the two DMCUs.

Measured: 800 meters

Status: Passed

Criteria TASK5-002/1.0: DMCU to DMCU Packet Loss Statistics

The DMCU to DMCU packet loss within the DSRC range shall be a maximum of 10% in relation to the total DSRC packet transmission.

Measured: 0%

Status: Passed

Criteria TASK5-003/1.0: Received Signal Strength

The DSRC received signal strength shall be a minimum of 10 dBm at 300 meters.

Measured: 20 dBm at 300 meters

Status: Passed

2.2 Vehicle Alert Application

Criteria TASK5-004/1.0: Manual Activation / Deactivation

The TGW and DMCU logs for the MV shall be analyzed for each test to ensure that the manual EVA activation / deactivation were successfully executed when performed.

Measured: The EVA message broadcast was correctly activated and deactivated each time the request was sent from the controller on the MV.

Status: Passed

VOLVO

Document Number 6980-02941-01-15	Issue Number 1.0	Date 18-Nov-2011	Page 6 (11)
Author Company SwRI	Author Department, Name Purser Sturgeon, 1.10.60.20		Author Phone +1 (210) 522-3924
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Document Title C030588 CVII Task 5 [21-Jan-2009 to 31-Dec-2011]		Type of Document Acceptance Test Report	

Criteria TASK5-005/1.0: EVA Display

The logged display information shall be analyzed for each test to ensure that the EVA was correctly displayed and removed at the appropriate times and that the display was updating correctly. The information shall also be analyzed for each test to ensure that the EVA was not displayed if appropriate.

Measured: The EVA message was displayed at appropriate times and updated in real-time. The EVA message was correctly not displayed for the case where the vehicle heading was not applicable.

Status: Passed

Criteria TASK5-006/1.0: EVA Content

The logged emergency vehicle alert content from each test shall be analyzed to ensure that it is consistent and accurate.

Measured: All of the received EVA content (event type, heading, position) was consistent with the ATP

Status: Passed

Document Number 6980-02941-01-15	Issue Number 1.0	Date 18-Nov-2011	Page 7 (11)
Author Company SwRI	Author Department, Name Purser Sturgeon, 1.10.60.20		Author Phone +1 (210) 522-3924
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Document Title C030588 CVII Task 5 [21-Jan-2009 to 31-Dec-2011]		Type of Document Acceptance Test Report	

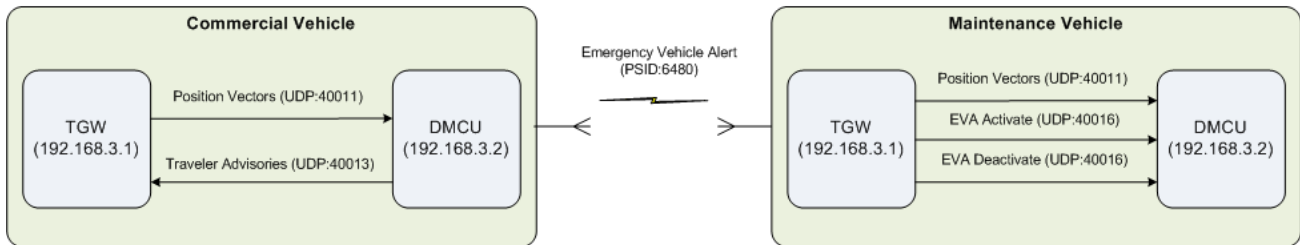
Appendix A Pre-Test Data

A.1 Test Hardware Configuration

A.1.1 CVII Test Network Architecture

The following figure defines the test network at the time of the acceptance test.

**CVII Task 5
Hardware Configuration – 4/27/2011**



A.1.2 Hardware Identification

The following table provides the 5.9 MHz DSRC hardware identification information at the time of the acceptance test.

Hardware Description	Model Number
Mobile Communications Unit (MCU) – Commercial Vehicle	MCU-01
Mobile Communications Unit (MCU) – Maintenance Vehicle	MCU-01

Document Number 6980-02941-01-15	Issue Number 1.0	Date 18-Nov-2011	Page 8 (11)
Author Company SwRI	Author Department, Name Purser Sturgeon, 1.10.60.20		Author Phone +1 (210) 522-3924
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Document Title C030588 CVII Task 5 [21-Jan-2009 to 31-Dec-2011]		Type of Document Acceptance Test Report	

Appendix B Test Execution Data

B.1 Executed Test Events

The following table contains the execution times for each test event. The execution details for each test event are recorded in Appendix B.2.

Test Event	
ID	Time
1	16:00:35
2	18:40:00
3	16:07:12
4	22:24:08
5	18:18:39
6	16:18:43
7	16:21:41

B.2 Test Details

B.2.1 Test 1 – CV passes MV – Deactivated before pass

Test start time: 16:00:35

Time EVA activated in MV: 16:00:41

Time CV received EVA: 16:00:43

Does the display update (y/n): yes

Time EVA deactivated in MV: 16:01:03

Time message was removed from display in CV: 16:01:05

Document Number 6980-02941-01-15	Issue Number 1.0	Date 18-Nov-2011	Page 9 (11)
Author Company SwRI	Author Department, Name Purser Sturgeon, 1.10.60.20		Author Phone +1 (210) 522-3924
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Document Title C030588 CVII Task 5 [21-Jan-2009 to 31-Dec-2011]		Type of Document Acceptance Test Report	

B.2.2 Test 2 – CV passes MV – Deactivated after pass

Test start time: 18:40:00
Time EVA activated in MV: 18:40:00
Time CV received EVA: 18:40:01
Does the display update (y/n): yes
Time CV passes MV: 18:41:22
Does the display update (y/n): yes
Time EVA deactivated in MV: 18:41:39
Time message was removed from display in CV: 18:41:41

B.2.3 Test 3 – CV passes MV – No deactivation

Test start time: 16:07:12
Time EVA activated in MV: 16:07:15
Time CV received EVA: 16:09:34
Does the display update (y/n): yes
Time EVA was no longer received by CV: 16:10:02
Time message was removed from display in CV: 16:10:04

B.2.4 Test 4 – Opposite heading – Only same headings valid

Test start time: 22:24:08
Time EVA activated in MV: 22:24:08
Time CV received EVA: 22:24:11
Is the message displayed (y/n): no
Time EVA was no longer received by CV: 22:26:12
Message was never displayed in CV (y/n): yes

Document Number 6980-02941-01-15	Issue Number 1.0	Date 18-Nov-2011	Page 10 (11)
Author Company SwRI	Author Department, Name Purser Sturgeon, 1.10.60.20		Author Phone +1 (210) 522-3924
Customer Company New York State DOT	Customer Name Rick McDonough		Customer Phone +1 (518) 457-5871
Document Title C030588 CVII Task 5 [21-Jan-2009 to 31-Dec-2011]		Type of Document Acceptance Test Report	

B.2.5 Test 5 – Opposite heading – All headings valid

Test start time: 18:18:39
Time EVA activated in MV: 18:18:39
Time CV received EVA: 18:19:03
Does the display update (y/n): yes
Time CV passes MV: 18:19:23
Does the display update (y/n): yes
Time EVA was no longer received by CV: 18:19:35
Time message was removed from display in CV: 18:19:35

B.2.6 Test 6 – CV passes parked MV

Test start time: 16:18:43
Time EVA activated in MV: 16:18:43
Time CV received EVA: 16:18:43
Does the display update (y/n): yes
Time CV passes MV: 16:20:05
Does the display update (y/n): yes
Time EVA was no longer received by CV: 16:20:20
Time message was removed from display in CV: 16:20:22

B.2.7 Test 7 – MV passes parked CV

Test start time: 16:21:41
Time EVA activated in MV: 16:21:41
Time CV received EVA: 16:21:41
Does the display update (y/n): yes
Time MV passes CV: 16:22:13
Does the display update (y/n): yes
Time EVA was no longer received by CV: 16:23:10
Time message was removed from display in CV: 16:23:10

VOLVO

Document Number 6980-02941-01-15	Issue Number 1.0	Date 18-Nov-2011	Page 11 (11)
Author Company SwRI	Author Department, Name Purser Sturgeon, 1.10.60.20		Author Phone +1 (210) 522-3924
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Document Title C030588 CVII Task 5 [21-Jan-2009 to 31-Dec-2011]		Type of Document Acceptance Test Report	

Table of Criteria Results

Criteria TASK5-001/1.0: DSRC Range Statistics.....	5
Criteria TASK5-002/1.0: DMCU to DMCU Packet Loss Statistics.....	5
Criteria TASK5-003/1.0: Received Signal Strength	5
Criteria TASK5-004/1.0: Manual Activation / Deactivation	5
Criteria TASK5-005/1.0: EVA Display	6
Criteria TASK5-006/1.0: EVA Content.....	6