Car Connectivity Consortium
MirrorLink®

Location Data Service Test Specification

Version 1.1.3
(CCC-TS-023)

Copyright © 2011-2014 Car Connectivity Consortium LLC

1 VERSION HISTORY
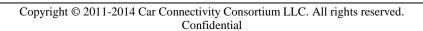
Version	Date	Comment
1.1	31 March 2012	Approved Version
1.1.1	24 September 2012	Approved Errata Version
1.1.2	05 March 2013	Approved Errata Version
1.1.3	17 June 2014	Approved Errata Version

2

3 LIST OF CONTRIBUTORS

4	Brakensiek, Jörg (Editor)	Microsoft Corporation
5	Park, Keun-Young	Nokia Corporation
6	Hrabak, Robert	General Motors
7	Nishimura, Kenji	Panasonic

1 LEGAL NOTICE

The copyright in this Specification is owned by the Car Connectivity Consortium LLC ("CCC LLC"). Use of this Specification and any related intellectual property (collectively, the "Specification"), is governed by these license terms and the CCC LLC Limited Liability Company Agreement (the "Agreement").

Use of the Specification by anyone who is not a member of CCC LLC (each such person or party, a "Member") is prohibited. The legal rights and obligations of each Member are governed by the Agreement and their applicable Membership Agreement, including without limitation those contained in Article 10 of the LLC Agreement.

CCC LLC hereby grants each Member a right to use and to make verbatim copies of the Specification for the purposes of implementing the technologies specified in the Specification to their products ("Implementing Products") under the terms of the Agreement (the "Purpose"). Members are not permitted to make available or distribute this Specification or any copies thereof to non-Members other than to their Affiliates (as defined in the Agreement) and subcontractors but only to the extent that such Affiliates and subcontractors have a need to know for carrying out the Purpose and provided that such Affiliates and subcontractors accept confidentiality obligations similar to those contained in the Agreement. Each Member shall be responsible for the observance and proper performance by such of its Affiliates and subcontractors of the terms and conditions of this Legal Notice and the Agreement. No other license, express or implied, by estoppel or otherwise, to any intellectual property rights are granted herein.

Any use of the Specification not in compliance with the terms of this Legal Notice, the Agreement and Membership Agreement is prohibited and any such prohibited use may result in termination of the applicable Membership Agreement and other liability permitted by the applicable Agreement or by applicable law to CCC LLC or any of its members for patent, copyright and/or trademark infringement.

THE SPECIFICATION IS PROVIDED "AS IS" WITH NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT OF ANY THIRD PARTY INTELLECTUAL PROPERTY RIGHTS, AND COMPLIANCE WITH APPLICABLE LAWS.

Each Member hereby acknowledges that its Implementing Products may be subject to various regulatory controls under the laws and regulations of various jurisdictions worldwide. Such laws and regulatory controls may govern, among other things, the combination, operation, use, implementation and distribution of Implementing Products. Examples of such laws and regulatory controls include, but are not limited to, road safety regulations, telecommunications regulations, technology transfer controls and health and safety regulations. Each Member is solely responsible for the compliance by their Implementing Products with any such laws and regulations and for obtaining any and all required authorizations, permits, or licenses for their Implementing Products related to such regulations within the applicable jurisdictions.

Each Member acknowledges that nothing in the Specification provides any information or assistance in connection with securing such compliance, authorizations or licenses.

NOTHING IN THE SPECIFICATION CREATES ANY WARRANTIES, EITHER EXPRESS OR IMPLIED, REGARDING SUCH LAWS OR REGULATIONS. ALL LIABILITY, INCLUDING LIABILITY FOR INFRINGEMENT OF ANY INTELLECTUAL PROPERTYRIGHTS OR FOR NONCOMPLIANCE WITH LAWS, RELATING TO USE OF THE SPECIFICATION IS EXPRESSLY DISCLAIMED. BY USE OF THE SPECIFICATION, EACH MEMBER EXPRESSLY WAIVES ANY CLAIM AGAINST CCC LLC AND ITS MEMBERS RELATED TO USE OF THE SPECIFICATION.

CCC LLC reserve the right to adopt any changes or alterations to the Specification as it deems necessary or appropriate.

Copyright © 2011-2014. CCC LLC.

1 TABLE OF CONTENTS

13

1 TERMS AND ABBREVIATIONS

2   GPS   Global Positioning System

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17   MirrorLink is a trademark of the Car Connectivity Consortium LLC.

18   UPnP is a registered trademark of UPnP Forum.

19   Other names or abbreviations used in this document may be trademarks of their respective owners.

1 ABOUT

This document specifies test specification for MirrorLink Location Data Service [1].

The specification lists a series of requirements, either explicitly or within the text, which are mandatory elements for a compliant solutions. Recommendations are given, to ensure optimal usage and to provide suitable performance. All recommendations are optional.

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are following the notation as described in RFC 2119 [2].

1. MUST: This word, or the terms "REQUIRED" or "SHALL", mean that the definition is an absolute requirement of the specification.

2. MUST NOT: This phrase, or the phrase "SHALL NOT", mean that the definition is an absolute prohibition of the specification.

3. SHOULD: This word, or the adjective "RECOMMENDED", mean that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.

4. SHOULD NOT: This phrase, or the phrase "NOT RECOMMENDED" mean that there may exist valid reasons in particular circumstances when the particular behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.

5.   MAY: This word, or the adjective "OPTIONAL", means that an item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because the vendor feels that it enhances the product while another vendor may omit the same item. An implementation which does not include a particular option MUST be prepared to interoperate with another implementation which does include the option, though perhaps with reduced functionality. In the same vein an implementation which does include a particular option MUST be prepared to interoperate with another implementation which does not include the option (except, of course, for the feature the option provides.)

2 GENERAL TEST REQUIREMENTS

For the server tested, there SHOULD be a mechanism to emulate positioning method to provide valid data to client. There also SHOULD be a mechanism to emulate temporarily unavailable positioning.

For the client testing, there SHOULD be a mechanism like UI to allow triggering each test case.

2.1 Execution of Test Cases

Every test case is uniquely identified by an identifier.

- A MirrorLink Server MUST pass all test cases, starting with SC, if it implements a Location Source endpoint.
- A MirrorLink Server MUST pass all test cases, starting with SK, if it implements a Location Sink endpoint
- A MirrorLink Client MUST pass all test cases, starting with SC, if it implements a Location Source endpoint,
- A MirrorLink Client MUST pass all test cases, starting with SK, if it implements a Location Sink endpoint

Every test case description includes an entry, whether the test cases is considered mandatory or not.

- Test cases marked as MANDATORY, MUST be executed.
- Test cases marked as CONDITIONAL, MUST be executed if the given condition is met.
- Test cases marked as CONDITIONAL, MUST NOT be executed if the given condition is not met.
- Test cases marked as NONE, MUST NOT be executed

2.2 Test Case Dependencies

A MirrorLink Server and Client, implementing Locate Data Service functionality MUST execute all Common Data Bus and Simple Service Protocol test cases, related to the implemented Data Service functionality, as given below:

- A MirrorLink Server MUST pass all Server related CDB test cases
- A MirrorLink Client MUST pass all Cliente related CDB test cases
- A MirrorLink Server and Client MUST pass all CDB and SBP Source test cases, if it implements a Data Service Source endpoint
- A MirrorLink Server and Client MUST pass all CDB and SBP Sink test cases, if it implements a Data Service Sink endpoint

3 SINK TEST CASES

3.1 SK/LOCATION/INIT

Requirement: MANDATORY

Condition: None

3.1.1 Preparation Steps

Step	Name	Description	Expected result
1	Send CDB Service Request	Query available services supported by SBP Source that are available for communication/subscription.	*The test passes if* • *CDB Sink Endpoint sends correct service request from CDB Source Endpoint* • *CDB Source Endpoint returns a list of supported services including LOCATION service*

3.1.2 Objective Steps

Step	Name	Description	Expected result
2	Start location Service Command	SBP Sink triggers a service that was declared as supported by the SBP Source.	*The test passes if* • SBP Source receives a StartService request for a supported service • *SBP Source responds OK*

3.1.3 Post Steps

None

3.2 SK/LOCATION/GET_GEOLOCATION

Requirement: MANDATORY

Condition: None

3.2.1 Preparation Steps

CL/LOCATION/INIT succeeded.

3.2.2 Objective Steps

Step	Name	Description	Expected result
3	GET GeoLocation	SBP Sink sends Get command for GeoLocation object	*The test passes if* • SBP Source receives a valid command

			• *SBP Source responds OK with valid GeoLocation object*

3.2.3 Post Steps

None

3.3 SK/LOCATION/SUBSCRIBE_GEOLOCATION

Requirement: MANDATORY

Condition: None

3.3.1 Preparation Steps

CL/LOCATION/INIT succeeded.

3.3.2 Objective Steps

Step	Name	Description	Expected result
3	*Subscribe Geo-Location*	SBP Sink sends Subscribe command for *GeoLocation* object	*The test passes if* • SBP Source receives a valid command • *SBP Source responds OK*
4	*GeoLocation data notification*	SBP Source sends notification for subscription	*The test passes if* • SBP Source sends valid GeoLocation data • SBP Sink maintains subscription without problem

3.3.3 Post Steps

None

3.4 SK/LOCATION/CANCEL_GEOLOCATION

Requirement: CONDITIONAL

Condition: SBP Sink unsubscribes

3.4.1 Preparation Steps

CL/LOCATION/ SUBSCRIBE_GEOLOCATION succeeded.

3.4.2 Objective Steps

Step	Name	Description	Expected result
5	*Cancel Sub-scription of Ge-oLocation*	SBP Sink sends Cancel Subscribe command for GeoLocation object	*The test passes if* • SBP Source receives a valid command

			• *SBP Source responds success-fully*

3.4.3 Post Steps

None

3.5 SK/LOCATION/SUBSCRIBE_GEOLOCATION_UNAVAILABLE

Requirement: CONDITIONAL

Condition: Sink automatically re-subscribes

3.5.1 Preparation Steps

CL/LOCATION/INIT succeeded.

3.5.2 Objective Steps

Step	Name	Description	Expected result
3	*Subscribe Geo-Location*	SBP Sink sends Subscribe command for *GeoLocation* object SBP Source responds with "not available"	*The test passes if* • SBP Source receives a valid command • SBP Sink attempts to re-subscribe

3.5.3 Post Steps

None

3.6 SK/LOCATION/GEOLOCATION_TEMP_UNAVAILABLE

Requirement: MANDATORY

Condition: None

3.6.1 Preparation Steps

CL/LOCATION/INIT succeeded.

3.6.2 Objective Steps

Step	Name	Description	Expected result
3	*Subscribe Geo-Location*	SBP Sink sends Subscribe command for *GeoLocation* object SBP Source responds with OK	*The test passes if* • SBP Source receives a valid command
4	*GeoLocation data not-available*	SBP Source sends "not available" notification Skip step, if timeout is set to 0 (zero)	The test passes if • SBP Sink does not unsubscribes
5	*GeoLocation data available*	Wait less for less time than given in PIXIT (at least 5 min if set to indefinite)	The test passes if • No Error response

		SBP Source sends GeoLocation update again Skip step, if timeout is set to 0 (zero)	
6	*GeoLocation not available*	SBP Source sends "not available" notification Wait for more time than given in PIXIT Skip step, if timeout is set to unlimited	The test passes if • SBP Sink unsubscribes
7	*Geoloaction available*	SBP Sink sends Subscribe command for *GeoLocation* object SBP Source responds with OK Skip step, if timeout is set to unlimited *or automatic re-subscribe not supported*	*The test passes if* • SBP Source receives a valid command • SBP Sink attempts to re-subscribe

1 ### *3.6.3* Post Steps

2 *None*

3

4 SOURCE TEST CASES

4.1 SC/LOCATION/INIT

Requirement: MANDATORY

Condition: None

4.1.1 Preparation Steps

Step	Name	Description	Expected result
1	*Respond to CDB Services Request*	Respond with available services supported by SBP Source that are available for communication/subscription.	*The test pass if* • *SBP Source responds with all available services including LOCATION service*

4.1.2 Objective Step

Step	Name	Description	Expected result
2	*Start LOCATION Service*	*SBP Source successfully responds to a valid Service Start command*	*The test passes if* • *The service requested is started* • *The SBP Source responds OK to the StartService command*

4.1.3 Post Steps

None

4.2 SC/LOCATION/GET_GEOLOCATION

Requirement: MANDATORY

Condition: None

4.2.1 Preparation Steps

SR/LOCATION/INIT succeeded.

4.2.2 Objective Steps

Step	Name	Description	Expected result
3	*GET GeoLocation*	SBP Sink sends Get command for *GeoLocation* object	*The test passes if* • *SBP Source receives a valid command* • *SBP Source responds OK with valid GeoLocation object*

4.2.3 Post Steps

None

1

2

4.3 SC/LOCATION/SUBSCRIBE_GEOLOCATION

4   Requirement: MANDATORY

5   Condition: None

6

4.3.1 Preparation Steps

8   SR/LOCATION/INIT succeeded,

4.3.2 Objective Steps

Step	Name	Description	Expected result
3	*Subscribe Geo-Location*	SBP Sink sends Subscribe command for *GeoLocation* object Check for all three subscription types. Set intervals to 2s and 10s	*The test passes if* • SBP Source receives a valid command • *SBP Source responds OK*
4	*GeoLocation data notification*	SBP Source sends notification for subscription	*The test passes if* • SBP Source sends valid *GeoLocation* data • Each notification is composed of the same combination of member variables, that is, no new member variable is added or removed. • SBP Source sends data timely (subscription type Interval only; *; for interval subscription, allow for an extension of +10% (at least 100 ms))*

4.3.3 Post Steps

11   *None*

12

4.4 SC/LOCATION/CANCEL_GEOLOCATION

14   Requirement: MANDATORY

15   Condition: None

16

4.4.1 Preparation Steps

18   SR/LOCATION/ SUBSCRIBE_GEOLOCATION succeeded.

4.4.2 Objective Steps

Step	Name	Description	Expected result

5	*Cancel Sub-scription of Ge-oLocation*	SBP Sink sends Cancel Subscribe command for *GeoLocation* object	*The test passes if* • SBP Source receives a valid command • *SBP Source responds successfully with valid error code* • *SBP Source stops sending Response*

1 *4.4.3* Post Steps

2 *None*

4.5 SC/LOCATION/SUBSCRIBE_GEOLOCATION_UNAVAILABLE

4 Requirement: CONDITIONAL

5 Condition: GeoLocation data can become unavailable

6

7 *4.5.1* Preparation Steps

8 SR/LOCATION/INIT succeeded,

9 *4.5.2* Objective Steps

Step	Name	Description	Expected result
3	*Subscribe Geo-Location*	Test Engineer executes steps to make GeoLocatoin data unavailable. SBP Sink sends Subscribe command for *GeoLocation* object	*The test passes if* • SBP Source receives a valid command • *SBP Source responds with "not available"*

10 *4.5.3* Post Steps

11 *None*

4.6 SC/LOCATION/GEOLOCATION_TEMP_UNAVAILABLE

13 Requirement: CONDITIONAL

14 Condition: GeoLocation data can become unavailable

15

16 *4.6.1* Preparation Steps

17 SR/LOCATION/INIT succeeded,

18 *4.6.2* Objective Steps

Step	Name	Description	Expected result
3	*Subscribe Geo-Location*	SBP Sink sends Subscribe command for GeoLocation object	The test passes if • SBP Source receives a valid command • SBP Source responds OK

			• SBP Source sends valid Geo-Location data
4	*GeoLocation data not-available*	Test Engineer executes steps to make GeoLocatoin data unavailable.	The test passes if • SBP Source sends "not-available notification" • No further data send.
5	*GeoLocation data available*	Test Engineer executes steps to make GeoLocatoin data available.	The test passes if • SBP Source sends valid Geo-Location data

1 *4.6.3* Post Steps

2 *None*

3

5 REFERENCES

[1] Car Connectivity Consortium, "MirrorLink 1.1 – Location Data Service", Version 1.1; CCC-TS-022

[2] IETF, RFB 2119, Keys words for use in RFCs to Indicate Requirement Levels, March 1997. http://www.ietf.org/rfc/rfc2119.txt