Elektrobit

HondaDiagnostics_5.1

Implementation Matrix

Revision 1.0, Status: released

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1. Implementation Matrix

Id:	HondaDiagnostics-1_1
Status:	rejected
Version:	5.1
Description:	EN: HDC_CAN (Honda Diagnostic Communication on CAN) CAN (500kbps) HDC_CAN ISO15765-2 / -3 / -4, ISO 14229-1 HDC_CAN (Honda Diagnostic Communication on CAN) is a communication protocol developed in order to realize diagnostic communication with offboard tester using High speed CAN (500kbps). HDC_CAN is based on ISO15765-2 / -3 / -4, ISO 14229-1. Fig. 1-1 ECU CAN 16 Pin DLC (SAE J1962/ISO 15031-3) 16 Pin DLC CAN HDC_-CAN ECU Fig. 1-1 is an example of automotive ECU network. High speed CAN is connected with 16pin DLC (Diagnostic connector in compliance with SAE J1962/ISO 15031-3). Offboard tester is connected to CAN through the 16pin DLC, and communication between ECUs equipped with HDC_CAN. CAN ECU HDC_CAN CAN ECU CAN In general, CAN is used for communication between ECUs. HDC_CAN communicate with offboard tester, utilizing vacant time of the communication between ECUs. CAN 16 Pin DLC Engine, T/M, , EPS 4 HDC_-CAN ECU (ECU CAN K-Line) HDC_CAN ECU CAN In the example below, 16pin DLC and 4 ECUs with HDC CAN, that is, Engine, T/M, Meter, EPS are on the CAN bus (Other ECUs communicate with offboard tester through K-line even though they are connected with the CAN bus). Besides, connected with multiple CAN networks through gateway. Vehicle side 16 Pin DLC (SAE J1962 / ISO 15031-3) CAN bus (ISO 11898 / 500 kbps) Engine 6 CAN-H 14 CAN-L K-Line bus (ISO 9141 / ISO 14230) 7 K-LINE T/M EPS Meter SRS Air-Bag ABS/ VSA Fig. 1-1 - ECU Automotive ECU network HDC_CAN ISO11898-1 CAN 1 1 4095 ( ) CAN HDC_CAN protocol operates on the CAN in compliance with ISO11898-1, creating a master-slave type one-to-one link, offboard tester be-ing a master. The link can exchange information (diagnostic message) of 4,095 bytes maximum. In so doing, a packet of information may be divided to fit in the CAN frames at transmission, and combined at reception. Fig. 1-2 HDC_CAN HDC_CAN CAN ECU Fig. 1-2 is an overview of software and hardware relat-ed to HDC_CAN diagnostic communication. HDC_CAN receives CAN frames from offboard tester, combines and interprets them, and generates requests to and from application software. HDC_CAN 2 Normally it is incorporated into two parts. Each of them contains the followings. > Communication Service CAN CAN 1 1 CAN CAN CAN ID During reception, this picks up diagnostic frames from frames that CAN hardware interface receives, and the single or multiple frames are combined as a diagnostic message and sent to Diagnostic Service. During transmission, it divides diagnostic messages from Diagnostic Service in-

	to single or multiple CAN frames, and requests messages CAN hardware interface to send them to the bus. In other words, it includes CAN ID filtering, processing to divide and combine messages, master-slave control and so on. > Diagnostic Service This interprets diagnostic messages from Communication Service, and requests application software for appropriate handlings. It also generates diagnostic messages according to information given from application software, and requests Communication Service for their transmission. ECU Application software Diagnostic information generation and system control requested by Diagnostic Service Diagnostic Service ( ) Interpretation of received diagnostic message _CAN and generation of response message (Application layer) Communication software for HDC CAN Communication Service (,) Network control for message exchange (Network layer, Transport layer) ISO11898-1/-2 CAN CAN (,) CAN Hardware CAN frame communication in accordance with ISO 11898-1/2 (Physical layer , Data link layer) CAN CAN bus Fig. 1-2 HDC_-CAN Overview of software and hardware related to HDC_CAN diagnostic communication
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-1_2
Status:	rejected
Version:	5.1
Description:	EN: This document defines the interpretation of the received diagnostic message, contents of processing of corresponding diagnostic service and diagnostic service performs generation of a response massage. / CAN 1.1 The process to convert from a CAN frame to a diagnostic message and vice versa, such as addressing of diagnostic messages, division and combination of diagnostic message, division and combination of diagnostic messages, synchronized control of request / response messages. In other words, Communication Service described in 1.1. is discussed. Diagnostic Service is discussed in separate document.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-1_3
Status:	rejected
Version:	5.1
Description:	EN: Purpose of each selection which constructs this document is explained in this section. 1. 1. Definition of the document Purpose and scope of this docu-

	ment. 2. ~ 3. 2. Message format ~ 3. general requirement for response message creation Basic structure of request and response message, and how to create response to request from physical address, and function address. 4. Service $10 (DiagnosticSessionControl service) ~ 21. Service 4. Service $10 (DiagnosticSessionControl service) ~ 21. Not supported service HDC_CAN Explanation on HDC supported services about each diagnosis service detail, request, response message structure and message check procedure. 22. 22. Reprogramming HDC_CAN ECU Request on Reprogramming ECU with HDC_CAN protocol Appendix A Negative response code (NRC) list 4. ~ 21. (NRC) Negative response code (NRC) from section 4. to 21. Appendix B Supplementary explanation of reprograming ECU ECU Additional explanation other than diagnosis service for reprogramming ECU. Appendix C The example of implementation of the request message inspection for every Service. Service The example of implementation of the request message inspection routine of each Service is shown.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-1_4
Status:	proposed
Version:	5.1
Description:	EN: HDC_CAN Below are reference documents related to HDC_CAN. Unless defined, the latest version of those shall be referenced.
Rationale:	EB bootloader implements only ISO 14229-1:2006. Other documents should be covered by the communication stack.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-1_4_1
Status:	rejected
Version:	5.1
Description:	EN: ISO 11898-1:2003 Road vehicles Controller area network (CAN) Part 1: Data link layer and physical signaling ISO 11898-2:2003 Road vehicles Controller area network (CAN) Part 2: High-speed medium access unit ISO 15765-2:2003 Road vehicles Diagnostics on Controller Area Networks (CAN) Part 2: Network layer services ISO 15765-3:2004 Road vehicles -- Diagnostics on controller area network (CAN) -- Part 3: Implementation of unified diagnostic services (UDS on CAN) ISO 14229-1:2006 Road vehicles -- Unified diagnostics services (UDS) -- Specification and requirements
Rationale:	EB bootloader implements only ISO 14229-1:2006. Other documents should be covered by the communication stack.

Needs coverage of:	SwAD

Id:	HondaDiagnostics-1_4_2
Status:	rejected
Version:	5.1
Description:	EN: TS-DCC01 Honda Diagnostic Communication on CAN / ECU / Honda Diagnostic Communication on CAN / Requirements for Communication of ECU / Communication Service
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-1_5
Status:	rejected
Version:	5.1
Description:	EN: The term used for below in this book is explained. Offboard tester SAE J1978 Scan Tool, HDS, LET, SAE J2534 Generic name used to refer to external diagnostic device that supports part of, or all of communication protocol defined in this document, such as SAE J1978 Scan Tool, HDS, LET, and SAE J2534 pass-through device. message, request message, response message ECU ( ) ECU ECU The information packet exchanged with off-board tester between ECUs is shown. A message is constituted by user data and address information (information showing the addressee and transmitting origin of a message). The message by which the message sent from an off-board tester to ECU is sent to an off-board tester from a request message and ECU is a response message. User data The information packet handled in diagnostic service is shown. Within this document, the message is used in the same meaning as user data. positive response message, negative response message 2 As response message, two kinds, positive response message and negative response message, are defined. Positive response message is returned when the request by request message is received and processed. At the time, negative response message is returned, when it cannot process. No response processing The meaning of "no response processing" should not perform a positive response or negative response to a request message, either. Response pending NRC Because the meaning of "response pending" is executing required processing, when you cannot reply a positive response or negative response of NRC except $78, extend the return term of a response message. The abbreviation used for below in this book is explained. SID (Service Identifier) Data Byte #1 SID = $19 (Service $19) "DTC " The function of a message is expressed with the information currently assigned to Data Byte #1 of the message. if SID is $19 (Service $19), it means DTC and the related information read-out request. Cvt (Convention)

	It is specified whether when each parameter contained in a data byte constitutes a message, it is mandatory, or it is optional. Cvt "M" "C" "U" 3 Three levels, "M", "C", and "U", are defined as Cvt, and they are the following definitions, respectively. M (Mandatory) M (Mandatory) Mandatory C (Conditional) C (Conditional) It is based on conditions. The condition is specified for every parameter of a message. U (User Option) U (User Option) The sending end of each message is determined. PosRsp (Positive Response Message) Positive Response Message NegRsp (Negative Response Message) Negative Response Message NoRsp (No Response) No Response NRC (Negative Response Code) Negative Response Code $ + (16) $+ (hexadecimal number) 16 "$ + (16)" (16) + "hex" "$10" "10 hex" 10 With this document, "$+ (hexadecimal number)" or (hexadecimal number) +"hex" uses for the notation of a hexadecimal number. For example, "$10", "10hex". When there is no specification in particular, a decimal number is shown except this.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-2
Status:	rejected
Version:	5.1
Description:	EN: OBD This section explains message format for communication except OBD regulation. The explanation is general and for each system should be specified separately. application should be defined by each Diagnostic service.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-2_1
Status:	proposed
Version:	5.1
Description:	EN: SID sub-function Request message has two types one with sub-function and one without sub-function. Each has different message format.
Rationale:	Shall be configured by Customer The following services are not supported by the EB Bootloader (should be managed by the customer): 14 ClearDiagnosticInformation service 19 ReadDTCInformation service 23 ReadMemoryByAddress service 28 CommunicationControl service 2F InputOutputControlByIdentifier service 35 RequestUpload service 85 ControlDTCSetting service
Needs coverage of:	SwAD

Id:	HondaDiagnostics-2_1_1

Status:	proposed
Version:	5.1
Description:	EN: SID sub-function Table 2.1 Table 2.1 shows if each SID has sub-function or not. Table 2.1 Service sub-function Existence of the sub-function for every diagnostic service SID Diagnostic service name sub-function (Hex) 10 DiagnosticSessionControl service 11 ECUReset service 14 ClearDiagnosticInformation service 19 ReadDTCInformation service 22 ReadDataByIdentifier service 23 ReadMemoryByAddress service 27 SecurityAccess service 28 CommunicationControl service 2E WriteDataByIdentifier service 2F InputOutputControlByIdentifier service 31 RoutineControl service 34 RequestDownload service 35 RequestUpload service 36 TransferData service 37 RequestTransferExit service 3E TesterPresent service 85 ControlDTCSetting service = sub-function SID SID with sub-function = sub-function SID SID without sub-function
Rationale:	Shall be configured by Customer The following services are not supported by the EB Bootloader (should be managed by the customer): 14 ClearDiagnosticInformation service 19 ReadDTCInformation service 23 ReadMemoryByAddress service 28 CommunicationControl service 2F InputOutputControlByIdentifier service 35 RequestUpload service 85 ControlDTCSetting service
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-2_1_2
Status:	approved
Version:	5.1
Description:	EN: Table 2.2 sub-function Table 2.2 shows request message format with sub-function. (m) 4093 Maximum data parameter (m) is 4093 bytes. Table 2.2 sub-function Request message format with sub-function Hex Data Byte Parameter Cvt Hex Mnemonic value #1 SID Request SID M xx SIDRQ #2 sub-function M 1) xx LEV_ #3 SID #1 U xx DP_#1 Data parameter #1 defined by SID #4 SID #2 U xx DP_#2 Data parameter #2 defined by SID : : : : : #n-2 SID #m-2 U xx DP_-#m-2 Data parameter #m-2 defined by SID #n-1 SID #m-1 U xx DP_#m-1 Data parameter #m-1 defined by SID #n SID #m U xx DP_#m Data parameter #m defined by SID 1) ISO 14229-1 S( ) M ISO 14229-1 specifies "S" but this Spec uses "M". Table 2.3 sub-function Table 2.3 shows structure of sub-function. sub-function 1 bit suppressPosRspMsgIndicationBit 7 bit sub-function parameter value sub-function consists of 1 bit of suppressPosRspMsgIndicationBit and 7 bit of sub-function parameter value Table 2.3 sub-function structure of sub-function bit Contents suppressPosRspMsgIndicationBit / This bit indicates if a positive response message shall be suppressed by the server. 7 0 (FALSE) server shall send a positive or negative response message. 1 (TRUE) server shall NOT send a positive response message. sub-function parameter value 0-6 sub-func-

	tion parameter bit 0 6 7 bit ($00 $7F) sub-function parameter value is defined by 7bits from bit 0 to bit6 ($00 to $7F)
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-2_1_3
Status:	approved
Version:	5.1
Description:	EN: Table 2.4 sub-function Table 2.4 shows request message format without sub-function. (m) 4094 Maximum data byte (m) is 4094 bytes. Table 2.4 sub-function request message format without sub-function Hex Data Byte Parameter Cvt Hex Mnemonic value #1 SID Request SID M xx SIDRQ #2 SID #1 U xx DP_#1 Data parameter #1 defined by SID #3 SID #2 U xx DP_#2 Data parameter #2 defined by SID #4 SID #3 U xx DP_#3 Data parameter #3 defined by SID : : : : : #n-2 SID #m-2 U xx DP_#m-2 Data parameter #m-2 defined by SID #n-1 SID #m-1 U xx DP_#m-1 Data parameter #m-1 defined by SID #n SID #m U xx DP_#m Data parameter #m defined by SID
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-2_2
Status:	approved
Version:	5.1
Description:	EN: (PosRsp) (NegRsp) Response message have two types. Positive response message (PosRsp) in case request message is accepted. Negative response message (NegRsp) in case request is not accepted. Table 22.4 Negative response code used in the service is shown in Table 22.4.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-2_2_1
Status:	approved
Version:	5.1
Description:	EN: Table 2.5 Table 2.5 shows positive response message format. Table 2.5 positive response message format Hex Data Byte Parameter Cvt Hex Mnemonic value #1 SID Positive response SID M 1) xx SIDPR #2 SID #1 U xx DP_#1 Data parameter #1 defined by SID #3 SID #2 U xx DP_#2 Data parameter #2 defined by SID #4 SID #3 U xx DP_#3 Data parameter #3 defined by SID : : : : :

	#n-2 SID #m-2 U xx DP_#m-2 Data parameter #m-2 defined by SID #n-1 SID #m-1 U xx DP_#m-1 Data parameter #m-1 defined by SID #n SID #m U xx DP_-#m Data parameter #m defined by SID 1) ISO 14229-1 S( ) M ISO 14229-1 specifies "S" but this Spec uses "M".
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-2_2_2
Status:	approved
Version:	5.1
Description:	EN: Table 2.6 Table 2.6 shows negative response message format. Table 2.6 negative response message format Hex Data Byte Parameter Cvt Hex Mnemonic value #1 SID Negative response SID M 7F SIDNR #2 SID Request message SID M xx SIDRQ #3 Response code M xx NRC_
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-3
Status:	rejected
Version:	5.1
Description:	EN: message preparation ECU SID sub-function It is defined by the information on request messages, such as a CAN address, SID, and sub-function, whether ECU replies which that response of positive response, negative response, and no response. ECU This section defines general procedure of message analyze and response message creation, when ECU receives request message. Real application should be defined by the system.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-3_1
Status:	proposed
Version:	5.1
Description:	EN: with sub-function sub-function ECU The general request message inspection routine of ECU which received the request message with sub-function is shown. (1) Check if requested diagnosis service is supported or not. a. ECU NRC $11 (serviceNotSupported (SNS)) When the request is not supported, ECU should do no response or negative response with NRC $11 (serviceNotSupported (SNS)). (2) sub-function parameter value Check if sub function parameter

	value is supported or not. a. sub-function parameter value ECU NRC $12 (subFunctionNotSupported (SFNS)) When the requested sub-function parameter is not supported, ECU should do no response or return negative response message with NRC $12 (subFunctionNotSupported (SFNS)). (3) Request message length check a. ECU NRC $13 (incorrectMessageLengthOrInvalidFormat (IMLOIF)) When request message length is not as specified, ECU should send negative response message with NRC $13 (incorrectMessageLengthOrInvalidFormat (IMLOIF))/ (4) Other checks a. NRC Check all conditions specified by the diagnosis service, when request message is accepted then no response or positive response. When request message is not accepted, no response or negative response message with appropriate NRC.
Rationale:	no NRC priority is defined in ISO 14229 2006
Needs coverage of:	SwAD

Id:	HondaDiagnostics-3_1_1
Status:	proposed
Version:	0.0
Description:	EN: Request message with physical address Table 3.1 sub-function Table 3.1 shows response message when physical address request message with sub-function is received. Table 3.1 sub-function Response requirement on request message of Physical address with sub-function Offboard tester ECU No suppressPosR SID sub-function Note Address spMsgIndicatio Sub-function Data parameter Response nBit SID support support support
Rationale:	no NRC priority is defined in ISO 14229 2006
Needs coverage of:	

Id:	HondaDiagnostics-3_1_2
Status:	proposed
Version:	0.0
Description:	EN: Table 3.2 shows response message when function address request message with sub-function is received When response pending is done, response should be a according to the situation. (1) ECU SID sub-function ECU supports requested SID and sub-function and ready to accept the request. then positive response should be sent. (2) ECU SID sub-function (SID) NRC ECU supports requested SID and sub-function but not possible to accept the request. e.g. request message length is not correct or not possible to execute because of wrong condition. Then Negative response with appropriate NRC should be sent. ECU supports requested SID and sub-function but requested parameter is not supported. Then no response. NRC = $31 (requestOutOfRange (ROOR))

	NRC = $31 (requestOutOfRange (ROOR)) When function address request message is used, NRC = $31 (requestOutOfRange (ROOR)) should not be replied. But when response pending is used, NRC = $31 (requestOutOfRange (ROOR)) should be replied in the end. ECU doesn't support requested SID. Then no response. NRC = $11 (serviceNotSupported (SNS)) NRC = $11 (serviceNotSupported (SNS)) When function address request message is used, NRC = $11 (serviceNotSupported (SNS)) should not be replied. But when response pending is used, NRC = $11 (serviceNotSupported (SNS)) should be replied in the end. (5) ECU SID sub-function ECU supports requested SID but not sub-function. Then no response. NRC = $12 (subFunctionNotSupported (SFNS)) NRC = $12 (subFunctionNotSupported (SFNS)) When function address request message is used, NRC = $12 (subFunctionNotSupported (SFNS)) should not be replied. But when response pending is used, NRC = $12 (subFunctionNotSupported (SFNS)) should be replied in the end. (6) ECU SID sub-function (suppressPosRspMsgIndicationBit = TRUE) ECU supports requested SID and sub-function and ready to accept the request. But request message doesn't require positive response suppressPosRspMsgIndicationBit = TRUE). Then no response. In case of response pending, positive response message should be sent in the end. ECU supports requested SID and sub-function but not possible to accept the request. e.g. request message length is not correct or not possible to execute because of wrong condition. Then Negative response with appropriate NRC should be sent. (8) ECU SID sub-function ECU supports requested SID and sub-function but requested parameter is not supported. Then no response. NRC = $31 (requestOutOfRange (ROOR)) NRC = $31 (requestOutOfRange (ROOR)) When function address request message is used, NRC = $31 (requestOutOfRange (ROOR)) should not be replied. But when response pending is used, NRC = $31 (requestOutOfRange (ROOR)) should be replied in the end. (9) ECU SID ECU doesn't support requested SID. Then no response. NRC = $11 (serviceNotSupported (SNS)) NRC = $11 (serviceNotSupported (SNS)) When function address request message is used, NRC = $11 (serviceNotSupported (SNS)) should not be replied. But when response pending is used, NRC = $11 (serviceNotSupported (SNS)) should be replied in the end. (10) ECU SID sub-function ECU supports requested SID but not sub-function. Then no response. NRC = $12 (subFunctionNotSupported (SFNS)) NRC = $12 (subFunctionNotSupported (SFNS)) When function address request message is used, NRC = $12 (subFunctionNotSupported (SFNS)) should not be replied. But when response pending is used, NRC = $12 (subFunctionNotSupported (SFNS)) should be replied in the end.
Rationale:	The customer should configure the request in TresosStudio
Needs coverage of:	req_Config

Id:	HondaDiagnostics-3_2

Status:	proposed
Version:	5.1
Description:	EN: message without sub-function sub-function ECU The general request message inspection routine of ECU which received the request message without sub-function is shown. (1) Check if requested diagnosis service is supported or not. a. SID ECU NRC $11 (serviceNotSupported (SNS)) When the request is not supported, ECU should do no response or negative response with NRC $11 (serviceNotSupported (SNS)). (2) Check if data parameter value is supported or not. a. ECU NRC $31 (requestOutOfRange (ROOR)) When the requested data parameter is not supported or data parameter is out of range, ECU should do no response or return negative response message with NRC $31 (requestOutOfRange (ROOR)). (3) Request message length check a. ECU NRC $13 (incorrectMessageLengthOrInvalidFormat (IMLOIF)) When request message length is not as specified, ECU should send negative response message with NRC $13 (incorrectMessageLengthOrInvalidFormat (IMLOIF)). (4) Other checks a. NRC Check all conditions specified by the diagnosis service, when request message is accepted then no response or positive response. When request message is not accepted, no response or negative response message with appropriate NRC.
Rationale:	no NRC priority is defined in ISO 14229 2006
Needs coverage of:	SwAD

Id:	HondaDiagnostics-3_2_1
Status:	approved
Version:	5.1
Description:	EN: Table 3.3 sub-function Table 3.3 shows response message when physical address request message without sub-function is received. Table 3.3 sub-function Return regulation at the time of request message received of a physical address without sub-function Offboard tester ECU No SID Note Address SID support Data parameter Response support 1 at least 1 PosRsp positive Response 2 YES at least 1 NRC = $xx 3 Physical address NONE NegRsp NRC = $31 (ROOR) 4 NO NRC = $11 (SNS) at least 1 = ECU 1 Data parameter of the request message is supported at least one. NONE = ECU 1 Data parameter of the request message is not at all support (1) ECU SID ECU supports requested SID and sub-function and ready to accept the request. then positive response should be sent. (2) ECU SID (SID) NRC ECU supports requested SID and sub-function but not possible to accept the request. e.g. request message length is not correct or not possible to execute because of wrong condition. Then Negative response with appropriate NRC should be sent. (3) ECU SID NRC $31 (requestOutOfRange (ROOR)) ECU supports requested SID but non of parame-

	ters are not supported. then Negative response message with NRC =$31 (requestOutOfRange (ROOR)) should be replied. (4) ECU SID NRC $11 (serviceNotSupported (SNS)) ECU doesn't support requested SID. Then negative response with NRC $11 (serviceNotSupported (SNS)) should be sent.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-3_2_2
Status:	approved
Version:	5.1
Description:	EN: Table 3.4 sub-function Table 3.4 shows response message when function address request message without sub-function is received. Table 3.4 sub-function Return regulation at the time of request message received of a functional address without sub-function Offboard tester ECU No SID Note Address SID support Data parameter Response support 1 at least 1 PosRsp positive response 2 YES at least 1 NegRsp NRC = $xx 3 Function address NONE 1) 4 NO NoRsp No response 1) at least 1 = ECU 1 Data parameter of the request message is supported at least one. NONE = ECU 1 Data parameter of the request message is not at all support 1) = When response pending is done, response should be a according to the situation. (1) ECU SID ECU supports requested SID and sub-function and ready to accept the request. then positive response should be sent. (2) ECU SID (SID) NRC ECU supports requested SID and sub-function but not possible to accept the request. e.g. request message length is not correct or not possible to execute because of wrong condition. Then Negative response with appropriate NRC should be sent. (3) ECU SID ECU supports requested SID and sub-function but requested parameter is not supported. Then no response. NRC = $31 (requestOutOfRange (ROOR)) NRC = $31 (requestOutOfRange (ROOR)) When function address request message is used, NRC = $31 (requestOutOfRange (ROOR)) should not be replied. But when response pending is used, NRC = $31 (requestOutOfRange (ROOR)) should be replied in the end. (4) ECU SID ECU doesn't support requested SID. Then no response. NRC = $11 (serviceNotSupported (SNS)) NRC = $11 (serviceNotSupported (SNS)) When function address request message is used, NRC = $11 (serviceNotSupported (SNS)) should not be replied. But when response pending is used, NRC = $11 (serviceNotSupported (SNS)) should be replied in the end.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-4_1
Status:	proposed

Version:	5.1
Description:	EN: Service $10 (DiagnosticSessionControl service) ECU DiagnosticSession Service $10 (DiagnosticSessionControl service) is used to change ECU DiagnosticSession. DiagnosticSession ECU (CAN) DiagnosticSession ECU DiagnosticSession DiagnosticSession presents Specific diagnostic service and function group availability in the ECU. Some diagnostic functions for example security access, stop of CAN communication for system control, require change of DiagnosticSession to be available. Thus, ECU needs to change the diagnostic service which an offboard tester can use, whenever the change of DiagnosticSession is performed. ECU defaultSession 1 DiagnosticSession defaultSession (/ DTC) (CAN) defaultSession DiagnosticSession In general ECU supports one or more Diagnostic session in addition to defaultSession. Default session has basic diagnostic functions. For example current and stored data reading, DTC reading, etc. Higher level diagnostic function, for example security access or CAN communication stop for vehicle control system, is only available at another DiagnosticSession switched from defaultSession. DiagnosticSession Available diagnostic function at each DiagnosticSession is defined by the system. diagnosticSessionType Service $10 ECU DiagnosticSession ECU diagnosticSessionType DiagnosticSession The offboard tester requires ECU to transfer to DiagnosticSession by Service $10 request message, which has diagnosticSessionType. Then ECU replies with response either transfer to requested DiagnosticSession or not. ECU 1 DiagnosticSession ON ECU defaultSession ( ) ECU is working always under one DiagnosticSession and when IG is on, ECU works at defaultSession. HDC_CAN DiagnosticSession HDC_CAN defines below DiagnosticSession. defaultSession ( ) extendedDiagnosticSession programmingSession engineeringSession DiagnosticSession However, additional DiagnosticSession may be defined by the system. DiagnosticSession However, additional DiagnosticSession may be defined by the system. Service $10 DiagnosticSession Supported DiagnosticSession by Service $10 is defined by the system. defaultSession extendedDiagnosticSession 1 defaultSession and extendedDiagnosticSession 1) must be supported by all system. programmingSession engineeringSession ECU programmingSession engineeringSession Transfer to programmingSession and engineeringSession is protected by the security. ECU should not transfer to programmingSession and engineeringSession unless security is released. DiagnosticSession Service $10 (S3Server) DiagnosticSession Transfer between DiagnosticSessions is done by Service $10 request message or Session timer (S3Server) timeout. The transfer rule between DiagnosticSessions is as follows. DiagnosticSession (DiagnosticSession) Service $10 (DiagnosticSessionControl service) In general transfer between DiagnosticSessions including transfer to the same diagnosticSession is done by Service $10 request message. There are some exceptions 1) defaultSession programmingSession engineeringSession ( ) From defaultSes-

sion to programmingSession and engineeringSession is not allowed. (needs security release) 2) Service $10 programmingSession defaultSession engineeringSession extendedDiagnosticSession By Service $10 request from programmingSession to defaultSession, extendedDiagnosticSession and to engineeringSession is not allowed. 3) defaultSession (S3server) defaultSession If there is Sessiontimer (S3server) timeout, transfer to defaultSession except at defaultSession. (S3Server) ( ) ECU defaultSession TS-DCC01 Sessiontimer timeout means one timer in the ECU to monitor time length when no request message from the offboard tester is coming shows timeout. For details, it is referring to TS-DCC01 . Fig. 4-1 DiagnosticSession DiagnosticSession DiagnosticSession As example, Fig. 4-1 shows transfer among DiagnosticSessions. The definition should be done by the system. All the systems are requested to support Service $28 and Servic $85. The reason why extendedDiagnosis is needed. (6) ON S3 IG sw ON S3 time out (5) programming SID $10 Session (7) (2) SID $10 SID $10 (1) defaultSession extendedDiagnostic (4) (11) SID $10 SID $10 (Session SID $10 (3) engineering (9) SID $10 (8) Session SID $10 S3 SID $10 S3 time out (10) SID $10 S3 S3 time out Fig. 4-1 DiagnosticSession example of diagnosticSession transfer (1) defaultSession diagnosticSessionType = defaultSession Service $10 ECU defaultSession When ECU is in defaultSession and received Service $10 diagnosticSessionType = defaultSession, ECU keeps defaultSession. (2) defaultSession diagnosticSessionType = extendedDiagnosticSession Service $10 ECU extendedDiagnosticSession When ECU is in defaultSession and received Service $10 diagnosticSessionType = extendedDiagnosticSession, then ECU transfers to extendedDiagnosticSession. (3) extendedDiagnosticSession diagnosticSessionType = defaultSession Service $10 (S3Server) ECU defaultSession When ECU is in extendedDiagnosticSession and received Service $10 diagnosticSessionType = defaultSession or Session timer shows time-out, ECU transfers to defaultSession. (4) extendedDiagnosticSession diagnosticSessionType = extendedDiagnosticSession Service $10 ECU extendedDiagnosticSession When ECU is in extendedDiagnosticSession and received Service $10 diagnosticSessionType = extendedDiagnosticSession, then ECU keeps extendedDiagnosticSession. (5) extendedDiagnosticSession diagnosticSessionType = programmingSession Service $10 ECU programmingSession When ECU is in extendedDiagnosticSession and received Service $10 diagnosticSessionType = programmingSession, then ECU transfers to programmingSession. In this case security needs to be released. (6) programmingSession (S3Server) ECU defaultSession programmingSession defaultSession (S3 Server) When ECU is in programmingSession and Session Timer (S3 timer) has time out, then ECU should transfer to defaultSession. From programmingSession to defaultSession is done only by the timeout of Session timer (S3 Server). (7) programmingSession diagnosticSessionType = programmingSession Service $10 ECU programmingSession When ECU is in programmingSes-

	sion and received Service $10 diagnosticSessionType = programmingSession, then ECU keeps programmingSession. (8) extendedDiagnosticSession diagnosticSessionType = engineeringSession Service $10 ECU engineeringSession When ECU is in extendedDiagnosticSession and received Service $10 diagnosticSessionType = engineeringSession, then ECU transfers to engineeringSession. In this case security needs to be released. engineeringSession diagnosticSessionType = extendedDiagnosticSession Service $10 ECU extendedDiagnosticSession When ECU is in engineeringSession and received Service $10 diagnosticSessionType = extendedDiagnosticSession, then ECU transfers to extendedDiagnosticSession. (9) engineeringSession diagnosticSessionType = engineeringSession Service $10 ECU engineeringSession When ECU is in engineeringSession and received Service $10 diagnosticSessionType = engineeringSession, then ECU keeps engineeringSession. (10) engineeringSession diagnosticSessionType = defaultSession Service $10 (S3Server) ECU defaultSession When ECU is in engineeringSession and received Service $10 diagnosticSessionType = defaultSession or Session timer shows time-out, ECU transfers to defaultSession. (11) engineeringSession diagnosticSessionType = programmingSession Service $10 ECU programmingSession When ECU is in engineeringSession and received Service $10 diagnosticSessionType = programmingSession, then ECU transfers to programmingSession. - defaultSession defaultSession DiagnosticSession defaultSession Caution - When ECU transfers from other than defaultSession to defaultSession, functions, which are not allowed in the defaultSession must in general not work.) Service $27 example: Released security by Service $27 should be back to protected. Available service should be defined by each diagnosticSession. Table 4.1 DiagnosticSession Table 4.1 is guideline for available service at each diagnosticSession. Detail should be defined by the system. Table 4.1 DiagnosticSession Services allowed during each diagnostic sessions SID Diagnostic service name Default extended-Diag programming engineeringSe (Hex) Session nosticSession Session ssion 2E WriteDataByIdentifier service 2F InputOutputControlByIdentifier service / 3) 3E TesterPresent service Diagnostic Service not supported. (sub-function, dataIdentifier, etc.) Diagnostic Service and all functions (sub-function, dataIdentifier, etc.) are supported. Diagnostic Service is supported but some functions are not supported. 1) / Supported or not supported should be defined by the system. 2) dataIdentifier dataIdentifier dataIdentifiers, which are protected by the security should not be accessed. 3) engineeringSession Functions only available at engineeringSession can not be accessed.
Rationale:	The customer shall configure the accepted sessions. The customer shall configure the protection of ProgrammingSession and EngineeringSession by SecurityAccess. The following services are not supported by the EB Bootloader (should be managed by the customer): 14 ClearDiagnosticInformation service 19 ReadDTCInformation service 23 ReadMemoryByAddress service 28 Communication-

	Control service 2F InputOutputControlByIdentifier service 35 RequestUpload service 85 ControlDTCSetting service
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-4_2_1
Status:	approved
Version:	5.1
Description:	EN: Table 4.2 Service $10 Service $10 1 SID 1 sub-function (1 suppressPosRspMsgIndicationBit 7 diagnosticSessionType) sub-function bit 7 suppressPosRspMsgIndicationBit bit 0-6 diagnosticSessionType suppressPosRspMsgIndicationBit 2.1.2 Table 4.2 shows Service $10 request message format. which consists of SID and sub-function. Sub-function has 1 bit of suppressPosRspMsgIndicationBit and 7bits of diagnosticSessionType. Detail of suppressPosRspMsgIndicationBit should refer to section 2.1.2 Table 4.2 Service $10 Service $10 Request message definition Hex Data Byte Parameter Cvt Hex value #1 Service $10 SID M 10 Service $10 Request SID #2 sub-function = [suppressPosRspMsgIndicationBit + M 00-FF diagnosticSessionType]
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-4_2_2
Status:	proposed
Version:	5.1
Description:	EN: Table 4.3 Service $10 Service $10 1 SID 1 diagnosticSessionType diagnosticSessionType diagnosticSessionType Table 4.3 shows Service $10 positive response message format. diagnosticSessionType in reply should be DiagnosticSessionType in request message. ECU (diagnosticSessionType DiagnosticSession) ECU after receiving the message should perform request (transfer to requested diagnosticSession) and then send the positive response. Table 4.3 Service $10 Service $10 Positive response message definition Hex Data Byte Parameter Cvt Hex value #1 Service $10 SID M 50 Service $10 Positive response SID #2 diagnosticSessionType M 00-7F
Rationale:	The customer should configure the response size in TresosStudio
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-4_2_3
Status:	approved
Version:	5.1

Description:	EN: 2.2.2 Negative response message should follow section 2.2.2
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-4_3
Status:	rejected
Version:	5.1
Description:	EN: Service $10 The section defines parameter for Service $10 message.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-4_3_1
Status:	proposed
Version:	5.1
Description:	EN: diagnosticSessionType (sub-function bit 0-6) Service $10 7 ECU DiagnosticSession diagnosticSessionType (bit 0-6 of sub-function) is 7 bits information in Service $10 request message. It shows DiagnosticSession in which ECU changes. diagnosticSessionType Positive response message includes the same value as received diagnosticSessionType value. Table 4.4 diagnosticSessionType Table 4-4 shows definition of diagnosticSessionType. programmingSession engineeringSession SecurityType Since programmingSession and engineeringSession are protected by security, Security type to release security is shown also on Table 4.4. DiagnosticSessionType DiagnosticSessionType to support is defined by system. DiagnosticSessionType DiagnosticSessionType And additional DiagnosticSessionType may be supported by system. Follow the request for every system about added DiagnosticSessionType. Table 4.4 Service $10 diagnosticSessionType Diagnostic DiagnosticSession SessionType Description Protection (HEX) by security 00 (ISO 14229-1) not used (reserved by ISO 14229-1) defaultSession DiagnosticSession ECU 01 defaultSession defaultSession no Only for basic diagnostic function. When ECU is turned on ECU starts from defaultSession. Available functions are defined by the system. programmingSession DiagnosticSession (Service $34 / $36 / $37) programmingSession 02 ECU diagnosticSessionType Type I For reprogramming purpose. Special diagnosis such as service $34/$36/$37 are only available at this session. Reprogrammable ECU must support this diagnostic session. extendedDiagnosticSession 03 DiagnosticSession extendedDiagnosticSession defaultSession Special diagnosis to analysis and inspection at the dealer shop is available. no At extendedDiagnosticSession diagnostic functions at defaultSession are also available. 04 (ISO 14229-1) not used (reserved by ISO 14229-1) 05-3F

	(ISO 14229-1) not used (reserved by ISO 14229-1) ( ) 40-4E not used (This range of values is reserved for vehicle manufacture-specific use) engineeringSession DiagnosticSession engineeringSession 4F defaultSession extendedDiagnosticSession Type IV Special diagnostic functions, which are for development, field analysis, and End of line at OEM, and not for the dealer shop. Functions at engineeringSession should include functions at defaultSession and extendedDiagnosticSession. ( ) 50-5F not used (This range of values is reserved for vehicle manufacture-specific use) 60-7E (1)) not used (This range of values is reserved for system-supplier1)-specific use) 7F (ISO 14229-1) not used (reserved by ISO 14229-1) 1) HGT System-supplier area must be agreed by HGT.
Rationale:	The customer shall configure the protection of ProgrammingSession and EngineeringSession by SecurityAccess. The customer shall configure the sessions needed.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-4_3_2
Status:	proposed
Version:	5.1
Description:	EN: Table 4.5 Service $10 NRC 4.4 Table 4.5 shows Service $10 NRC. When to reply with negative response message should refer to section 4.4. Table 4.-5 Service $10 Service $10 Negative response code definition NRC (Hex) Description subFunctionNotSupported (SFNS) 12 sub-function Requested sub-function is not supported.. incorrectMessageLengthOrInvalidFormat (IMLOIF) 13 Received message length or message structure doesn't suit Spec. . securityAccessDenied (SAD) 33 programmingSession engineeringSession Correct security type is not released to transfer to programmingSession or engineeringSession. requestCorrectlyReceived-ResponsePending (RCRRP) (NRC) 78 Due to execution of requested task it is not possible to respond positive response or negative response with appropriate NRC. Extension of time to reply for response message is requested. TS-DCC01 Detail should refer to TS-DCC01 . diagnosticSessionType = programmingSession This negative response code is available only at diagnosticSessionType = programmingSession subFunctionNotSupportedInActiveSession (SFNSIAS) 7E DiagnosticSession sub-function Current diagnosticSession doesn't support requested sub-function. - NRC = $78 (RCRRP) diagnosticSessionType = programmingSession Caution - NRC = $78 (RCRRP) is available only at diagnosticSessionType = programmingSession.
Rationale:	The customer shall configure the accepted sessions.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-4_4

Status:	rejected
Version:	5.1
Description:	EN: Service $10 ECU Reply from ECU should follow this description. Table 4.-4 DiagnosticSession If the system definition is different from Table 4.4, ECU should follow the system requirement.
Rationale:	The EB bootloader doesn't cover the system requirement.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-4_4_1
Status:	proposed
Version:	5.1
Description:	EN: (1) (2) Check length of request message (check longer than minimum length 2)) a. 2 ECU NRC = $13 (IMLOIF) 4.4.3 When received request message is shorter than 2bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 4.4.3. (2) diagnosticSessionType diagnosticSessionType analysis a. diagnosticSessionType ECU NRC = $12 (SFNS) 4.4.3 When diagnosticSessionType in received request message is not supported, ECU should prepare negative response message with NRC = $12 (SFNS) and execute reply response message specified at section 4.4.3. (3) Check length of request message a. 2 ECU NRC = $13 (IMLOIF) 4.4.3 When received request message is NOT 2bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 4.4.3. (4) (1) (3) diagnosticSessionType When message doesn't match the above (1) to (3), request message check, which is specified in below subsection , should be done.
Rationale:	The customer shall configure the protection of ProgrammingSession and EngineeringSession by SecurityAccess. No NRC priority is defined is ISO 14229 2006
Needs coverage of:	SwAD

Id:	HondaDiagnostics-4_4_1_1
Status:	proposed
Version:	5.1
Description:	EN: (5) DiagnosticSession DiagnosticSession analysis a. DiagnosticSession programmingSession ECU NRC = $7E (SFNSIAS) 4.4.3 When diagnosticSession is programmingSession, ECU should prepare negative response message with NRC = $7E (SFNSIAS) and execute reply response message specified at section 4.4.3. Prior to diagnosticSessioType, check if enough length of request

	message is received or not. (6) (5) ECU DiagnosticSessionControl service ECU 4.4.2 4.4.3 If (5) is not true, ECU should judge requested DiagnosticSession-Control service is possible to execute. ECU should execute task specified in 4.-4.2, then prepare positive response message, and execute reply response mes-sage specified at section 4.4.3.
Rationale:	The customer shall configure the sessions needed.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-4_4_1_2
Status:	proposed
Version:	5.1
Description:	EN: (7) DiagnosticSession DiagnosticSession analysis a. ECU DiagnosticSes-sion defaultSession ECU NRC = $7E (SFNSIAS) 4.4.3 When diagnosticSession is defaultSession, ECU should prepare negative response message with NRC = $7E (SFNSIAS) and execute reply response message specified at section 4.-4.3. b. ECU DiagnosticSession programmingSession ECU 4.4.3 When diagnos-ticSession is programmingSession, ECU should prepare positive message and execute reply response message specified at section 4.4.3. (8) Security check a. Type I ( ) ECU NRC = $33 (SAD) 4.4.3 When type I security is not released or failed to released, ECU should prepare negative response message with NRC = $33 (SAD) and execute reply response message specified at section 4.4.3. 6 "Service $27 (SecurityAccess service)" Detail of security access is described in section 6 "Service $27 (SecurityAccess service)". (9) (7) (8) ECU Diagnos-ticSessionControl service ECU 4.4.2 4.4.3 If (7) or (8) is not true, ECU should judge requested DiagnosticSessionControl service is possible to execute. ECU should execute task specified in 4.4.2, then prepare positive response message, and execute reply response message specified at section 4.4.3.
Rationale:	The customer shall configure the protection of ProgrammingSession and Engi-neeringSession by SecurityAccess. The customer shall configure the sessions needed.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-4_4_1_3
Status:	proposed
Version:	5.1
Description:	EN: (10) DiagnosticSession DiagnosticSession analysis a. ECU DiagnosticSes-sion programmingSession ECU NRC = $7E (SFNSIAS) 4.4.3 When diagnos-ticSession is programmingSession, ECU should prepare negative response message with NRC = $7E (SFNSIAS) and execute reply response message

	specified at section 4.4.3. (11) (10) ECU DiagnosticSessionControl service ECU 4.4.2 4.4.3 If (10) is not true, ECU should judge requested DiagnosticSession-Control service is possible to execute. ECU should execute task specified in 4.-4.2, then prepare positive response message, and execute reply response message specified at section 4.4.3.
Rationale:	The customer shall configure the sessions needed.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-4_4_1_4
Status:	proposed
Version:	5.1
Description:	EN: (12) DiagnosticSession DiagnosticSession analysis a. ECU DiagnosticSession defaultSession programmingSession ECU NRC = $7E (SFNSIAS) 4.4.3 When diagnosticSession is programmingSession, ECU should prepare negative response message with NRC = $7E (SFNSIAS) and execute reply response message specified at section 4.4.3. (13) Security check a. Type IV ( ) ECU NRC = $33 (SAD) 4.4.3 When type IV security is not released or failed to released, ECU should prepare negative response message with NRC = $33 (SAD) and execute reply response message specified at section 4.4.3. 6 "Service $27 (SecurityAccess service)" Detail of security access is described in section 6 "Service $27 (SecurityAccess service)". (14) (12) (13) ECU DiagnosticSessionControl service ECU 4.4.2 4.4.3 If (12) or (13) are not true, ECU should judge requested DiagnosticSessionControl service is possible to execute. ECU should execute task specified in 4.4.2, then prepare positive response message, and execute reply response message specified at section 4.4.3.
Rationale:	The customer shall configure the sessions needed.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-4_4_2
Status:	rejected
Version:	5.1
Description:	EN: diagnosticSessionType When ECU judges DiagnosticSessionControl service is possible based on 4.4.1 criteria, ECU should execute task written after.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-4_4_2_1
Status:	approved

Version:	5.1
Description:	EN: ECU DiagnosticSession defaultSession ECU diagnosticSession should transfer to defaultSession.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-4_4_2_2
Status:	proposed
Version:	5.1
Description:	EN: ECU DiagnosticSession programmingSession ECU diagnosticSession should transfer to programmingSession. ECU DiagnosticSession programmingSession When ECU is in programmingSession and it is judged to have limitation on system function from safety point of view, some limit should be defined by the system. ON Reprogramming is done without engine running, ECU should not spend unnecessary energy.
Rationale:	The customer shall configure the protection of ProgrammingSession and EngineeringSession by SecurityAccess. The EB will not check the preconditons.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-4_4_2_3
Status:	proposed
Version:	5.1
Description:	EN: ECU DiagnosticSession extendedDiagnosticSession ECU diagnosticSession should transfer to extendedDiagnosticSession.
Rationale:	The customer shall configure the sessions needed.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-4_4_2_4
Status:	proposed
Version:	5.1
Description:	EN: ECU DiagnosticSession engineeringSession ECU diagnosticSession should transfer to engineeringSession.
Rationale:	The customer shall configure the sessions needed.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-4_4_3

Status:	proposed
Version:	5.1
Description:	EN: Reply response message 3 (or) suppressPosRspMsgIndicationBit As described in section 3, not only by request message analysis results but also addressing type (physical or function address), or suppressPosRspMsgIndicationBit have influence on response message. Table 4.6 4.4.1 Table 4.6 shows response message definition. diagnosticSessionType = programmingSession ($02) 4.4.2 (P2CAN) NRC = $78 (RCRRP) diagnosticSessionType = programmingSession ($02) request message can request extension of positive response message by sending negative response message with NRC = $78 (RCRRP) if positive response message can't be sent within specified time of P2CAN due to on going task specified in 4.4.2. P2CAN NRC = $78 (RCRRP) TS-DCC01 Detail of negative response message of P2CAN, negative response message with NRC = $78 (RCRRP) should refer to TS-DCC01 . - diagnosticSessionType programmingSession (defaultSession extendedDiagnosticSession engineeringSession) NRC = $78 (RCRRP) 4.4.1 (6) (11) (14) DiagnosticSession ECU P2CAN DiagnosticSession Caution - Negative response message with NRC = $78 is allowed only at programmingSession. Meaning ECU, which judges to perform transfer specified in 4.4.1 (6), (11) or (14), should send mode transfer and positive response message reply within time P2CAN. Table 4.6 Service $10 Service $10 Reply to request message Request message check result suppressPosRspMsgIndication Response message No 1) Description addressing Bit type (1)a Physical 0 (False) (NRC $13) (3)a Wrong message length 1 (True) Negative response Function diagnosticSessionType 0 (False) (NRC $12) (2)a Physical 1 (True) Negative response Requested diagnosticSessionType 0 (False) is not supported Function 1 (True) No response DiagnosticSession (5)a diagnosticSessionType (7)a Physical 0 (False) (NRC $7E) (10)a Current Diagnostic Session doesn't 1 (True) Negative response (12) a support requested Function diagnosticSessionType. (8)a Physical 0 (False) (NRC $33) (13)a Security not released 1 (True) Negative response Function (6) DiagnosticSessionControl service 0 (False) Positive response (7)b Physical (9) Requested (11) DiagnosticSessionControl service Function 1 (True) No response (14) executable 1) 4.-4.1 No. No. is corresponding to No. in section 4.4.1.
Rationale:	The customer shall configure the sessions needed. This NRC78 is related to DSC02 only for the securityAccess wich can take more than P2. The client should configure the SA for the programming session.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-4_5
Status:	rejected

Version:	5.1
Description:	EN: diagnosticSessionType = programmingSession ($02) Service $10 ECU With this section, ECU which received Service $10 in which diagnosticSession-Type = programmingSession ($02) was included specifies the processing to perform.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-4_5_1
Status:	proposed
Version:	5.1
Description:	EN: diagnosticSessionType = programmingSession ($02) Service $10 ECU programmingSession The offboard tester requests ECU to transfer to programmingSession by service $10 request message with diagnosticSessionType = programmingSession ($02) programmingSession The communication process of executing the changes to programmingSession is as follows. (1) diagnosticSessionType = programmingSession ($02) Service $10 Process 1 : The offboard tester sends Service $10 request message with diagnosticSessionType = programmingSession ($02) (2) ECU diagnosticSessionType = programmingSession ($02) Service $10 Type I 22.4 NRC = $78 (RCRRP) Process 2: When ECU receives service $10 request message with diagnosticSessionType = programmingSession ($02), ECU should prove "TYPE I security" is released. If security is released, then ECU should send negative response message with NRC = $78 (RCRRP) and start activating reprogramming module. (3) ECU Process 3: When reprogramming module is started, ECU should send positive response message. ECU diagnosticSessionType = programmingSession ($02) Service $10 22.7 Tc2 ECU should start reprogramming mode software within Tc2 from the completion of transmitting of the Service $10 request message from an offboard tester, and should complete the reply of a positive response message. - ECU diagnosticSessionType = programmingSession ($02) Service $10 Caution - ECU should not start reprogramming module besides receiving service $10 request message with diagnosticSessionType = programmingSession ($02). Fig. 4-2 programmingSession Fig. 4-2 shows the procedure. Process (1) (1) (TesterPresent might come Request (TesterPresent (2) (3) Offboard tester Process (2) Process (3) ECU programmingSession NegRsp (NRC $78 PosRsp Tc2 P2CAN Fig. 4-2 programmingSession Communication process of programmingSession transfer
Rationale:	The customer shall configure the protection of ProgrammingSession and EngineeringSession by SecurityAccess. The customer shall configure the sessions needed. Tc2 timing is also HW dependent and cannot be garanteed.

Needs coverage of:	SwAD

Id:	HondaDiagnostics-4_5_2
Status:	approved
Version:	5.1
Description:	EN: ECU 22.7 Tc2 NRC=$78 (RCRRP) When ECU requires extension of positive response time following section 4.4.3 by sending negative response message with NRC = $78 (RCRRP), ECU should send within Tc2 positive response message or negative response message other than NRC = $78 (RCRRP).
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-4_5_3
Status:	proposed
Version:	5.1
Description:	EN: defaultSession 22.4 " " ECU at programmingSession should return to "unjudged mode" specified in section 4.4.2, when below (1) to (4) conditions are met. (1) (S3Server) Session Timer (S3Server) time out (2) OFF IG sw off. (3) Battery cut. (4) Service $11 " OFF" " " ECU Execution of the ECU reset by Service $11 request. programmingSession ECU (ECU DTC) ( ) 3 When ECU is returned from programmingSession, DTC should be initialized (erased). Other data like learned values should be defined by the system. 3) 3 Self-learned values, which can be used after reprogramming, should not be initialized but this depends on the system. That's why data other than DTC should be defined by the system.
Rationale:	The EB Bootloader will leave the ProgrammingSession on S3 timeout and on Reset (Service $11) request. All other conditions are not checked and should be implemented by the integrator if needed. DTC and learned values initialization shall be managed by customer Reprogramming status shall be fully managed in integration code.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-5_1
Status:	proposed
Version:	5.1
Description:	EN: Service $11(ECUReset service) ECU Service $11 (ECUReset service) is used to reset ECU. resetType Service $11 ECU ECU resetType The offboard tester requests ECU reset by Service request $11 with resetType. ECU should

	reply response with execute or not to the RESET request defined by resetType. Service $11 defaultSession ( ) Service $11 Diagnostic functions must not be performed at defaultSession. And it is possible to reject due to safety reasons such as engine run. Service $11 DiagnosticSession DiagnosticSession, which allows Service $11 and vehicle condition should be defined by every system.
Rationale:	The customer should configure the request in TresosStudio
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-5_2_1
Status:	approved
Version:	5.1
Description:	EN: Table 5.1 Service $11 Service $11 1 SID 1 sub-function (1 suppressPosRspMsgIndicationBit 7 resetType) sub-function bit 7 suppressPosRspMsgIndicationBit bit 0-6 resetType suppressPosRspMsgIndicationBit 2.1.2 Table 5.1 shows Service $11 request message format, which consists of SID and sub-function. Sub-function has 1 bit (bit 7) of suppressPosRspMsgIndicationBit and 7 bit (bit 0-6) of resetType. Detail of suppressPosRspMsgIndicationBit should refer to section 2.1.2. Table 5.1 Service $11 Service $11 Request message format Hex Data Byte Parameter Cvt Hex value #1 Service $11 SID M 11 Service $11 Request SID #2 sub-function = [suppressPosRspMsgIndicationBit + M 00-FF resetType]
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-5_2_2
Status:	proposed
Version:	5.1
Description:	EN: Table 5.2 Service $11 Service $11 1 SID 1 resetType resetType resetType Table 5.2 shows Service $11 positive response message format. The message contains 1 byte of positive response message SID and 1 bytes resetType. Positive response message includes the same value as received resetType value. ECU (resetType) ECU after receiving the message should send positive message and execute request process (ECU reset defined by resetType). Table 5.2 Service $11 Service $11 Positive response message format Hex Data Byte Parameter Cvt Hex value #1 Service $11 SID M 51 Service $11 Positive response SID #2 resetType M 00-7F
Rationale:	A callback shall be implemented by the customer to preform the reset
Needs coverage of:	SwAD

Id:	HondaDiagnostics-5_2_3
Status:	approved
Version:	5.1
Description:	EN: 2.2.2 Negative response message should follow section 2.2.2.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-5_3
Status:	rejected
Version:	5.1
Description:	EN: Service $11 The section defines parameter for Service $11 message.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-5_3_1
Status:	proposed
Version:	5.1
Description:	EN: resetType (sub-function bit 0-6) Service $11 7 ECU resetType (bit 0-6 of sub-function) is 7 bits information in Service $11 request message. resetType Positive response message includes the same value as received resetType value. Table 5.3 resetType Table 5.3 shows definition of resetType. Table 5.3 Service $11 resetType Service $11 resetType definition resetType resetType resetType name and explanation (Hex) 00 (ISO 14229-1) not used (reserved by ISO 14229-1) hardReset 01 (RAM) The same as battery cut. e.g. back up RAM will be erased. 02-05 (ISO 14229-1) not used (reserved by ISO 14229-1) 06-3F (ISO 14229-1) not used (reserved by ISO 14229-1) 40-5F ( ) not used (This range of values is reserved for vehicle-manufacturer-specific use.) 60-7E (1)) not used (This range of values is reserved for system-supplier-specific use. 1)) 7F (ISO 14229-1) not used (reserved by ISO 14229-1) 1) HGT System-supplier area must be agreed by HGT.
Rationale:	EB tresos Bootloader calls a callback to request the storage of the reset cause. The customer is responsible to implement this callback and the callack allowing to get the reset cause.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-5_3_2
Status:	approved

Version:	5.1
Description:	EN: Table 5.4 Service $11 NRC 5.4 Table 5.4 shows Service $11 NRC definition. Negative response should be refer to 5.4. Table 5.4 Service $11 Service $11 Negative response code definition NRC (Hex) Description subFunctionNotSupported (SFNS) 12 sub-function Requested sub-function is not supported.. incorrectMessageLengthOrInvalidFormat (IMLOIF) 13 Received message length or message structure doesn't suit Spec. . conditionsNotCorrect (CNC) 22 Vehicle condition doesn't allow reset. securityAccessDenied (SAD) 33 Security is not released. serviceNotSupportedInActiveSession (SNSIAS) 7F DiagnosticSession Service $11 Current diagnostic Session doesn't support Service $11. - Service $11 NRC = $78 (RCRRP) Caution NRC=$78 (RCRRP) is not allowed in Service 11..
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-5_4
Status:	rejected
Version:	5.1
Description:	EN: Service $11 ECU Reply from ECU should follow this description.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-5_4_1
Status:	proposed
Version:	5.1
Description:	EN: (1) DiagnosticSession (Service $11 DiagnosticSession ECU) DiagnosticSession analysis (valid for ECU, which has a certain diagnosticSession without supported Service $11.) a. DiagnosticSession Service $11 ECU NRC = $7F (SNSIAS) 5.4.3 When current diagnosticSession doesn't support service $11, ECU should prepare negative response with NRC = $7F (SNSIAS) and execute reply response message specified at section 5.4.3. (2) (4) Check length of request message (check longer than minimum length 4)) a. 2 ECU NRC = $13 (IMLOIF) 5.4.3 When received request message is shorter than 2bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 5.4.3. (3) resetType resetType analysis a. resetType ECU NRC = $12 (SFNS) 5.4.3 When resetType in received request message is not supported, ECU should prepare negative response message with NRC = $12 (SFNS) and execute reply response message

	specified at section 5.4.3. (4) (1) (3) resetType When message doesn't match the above (1) to (3), request message check, which is specified in below sub-section, should be done.
Rationale:	The integrator should configure the UDS - sub service (reset type) - supporter session - length .
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-5_4_1_1
Status:	proposed
Version:	5.1
Description:	EN: (5) Check length of request message a. 2 ECU NRC = $13 (IMLOIF) 5.4.-3 When received request message is NOT 2bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 5.4.3. (6) Security check a. Type I ( ) ECU NRC = $33 (SAD) 5.4.3 When type I security is not released or failed to released, ECU should prepare negative response message with NRC = $33 (SAD) and execute reply response message specified at section 5.4.3. ECU ECU DiagnosticSession programmingSession (programmingSession Type I) In addition, in ECU which implements a reprogramming function, when DiagnosticSession of ECU is programmingSession, this check is unnecessary. (Because it cannot change to programmingSession unless it releases Type I security). (7) (hardReset ECU) Vehicle condition check (ECU which has limitation for hardReset) a. hardReset ( ) ECU NRC = $22 (CNC) 5.4.3 When vehicle condition doesn't allow hardReset of the system. e.g. engine-run, ECU should prepare negative response message with NRC = $22 (CNC) and execute reply response message specified at section 5.4.3. Vehicle condition should be defined by the every system. (8) (5) (7) ECU ECUReset service ECU 5.4.3 5.4.2 If (5) , (6) or (7) are not true, ECU should judge ECUReset service is possible to execute. ECU should prepare positive message execute task specified in 5.4.2, then prepare positive response message and execute reply response message specified at section 5.4.3. Then execute task specified in 5.4.2.
Rationale:	The integrator shall configure the UDS requests messages lenghts. The customer shall configure the SecurityAccess protection for each service/routine. Vehicle conditions check is not supported.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-5_4_2
Status:	rejected
Version:	5.1

Description:	EN: When ECU judges ECUReset service is possible based on 5.4.1 criteria, ECU should execute task written after. - Service $11 5.4.3 Caution - task requested by Service $11 should be done after response message transmission.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-5_4_2_1
Status:	rejected
Version:	5.1
Description:	EN: Reset as the same as battery cut. Detail e.g. reset of back up RAM should be defined by the system.
Rationale:	System requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-5_4_3
Status:	proposed
Version:	5.1
Description:	EN: Reply response message 3 (or) suppressPosRspMsgIndicationBit As described in section 3, not only by request message analysis results but also addressing type (physical or function address), or suppressPosRspMsgIndicationBit have influence on response message. Table 5.5 5.4.1 Table 5.5 shows response message definition. Table 5.5 Service $11 Service $11 Reply to request message Request message check result suppressPosRs pMsgIndication Response message No 1) Description addressing Bit type (2)a Physical 0 (False) (NRC $13) (5)a Wrong message length 1 (True) Negative response Function resetType 0 (False) (NRC $12) (3)a Physical 1 (True) Negative response Requested resetType is not 0 (False) supported Function 1 (True) No response DiagnosticSession (1)a Service $11 Physical 0 (False) (NRC $7F) Current Diagnostic Session doesn't 1 (True) Negative response support Service $11. Function (6)a Physical 0 (False) (NRC $33) Security not released 1 (True) Negative response Function (7)a Physical 0 (False) (NRC $22) Vehicle condition doesn't allow 1 (True) Negative response requested service to execute Function ECUReset service 0 (False) Positive response (8) Physical Requested ECUReset service 1 (True) executable Function No response 1) 5.4.1 No. No. is corresponding to No. in section 5.4.1.
Rationale:	The integrator shall configure the UDS requests messages lenghts. The customer shall configure the SecurityAccess protection for each service/routine. Vehicle conditions check is not supported.

Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-5_5
Status:	proposed
Version:	5.1
Description:	EN: ECU resetType = hardReset ($01) Service $11 5 Reprogrammable ECU should support Service $11 with resetType = hardReset ($01).5) ECU DiagnosticSession programmingSession resetType = hardReset ($01) Service $11 ECU 22.7 Tc8 ECU DiagnosticSession defaultSession When ECU is in programmingSession and receives Service $11 request message with resetType = hardReset ($01), and judges it is possible to do ECU reset, ECU should do reset, transfer to defaultSession, and ready to communicate with offboard tester within Tc8 after completing positive response transmission.
Rationale:	The integrator shall configure the UDS requests messages lenghts. The customer shall configure the SecurityAccess protection for each service/routine. Vehicle conditions check is not supported. Board initialization time depend on the integration. Customer shall verify that Tc8 is respected.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-6_1
Status:	proposed
Version:	5.1
Description:	EN: Service $27 (SecurityAccess service) ECU Service $27 (SecurityAccess service) is to release the security of ECU. ECU ( ) Service $27 ECU Due to security or system protection, or safety reason, some diagnostic function such as reprogramming function has restriction. Service $27 offers access method to such restricted diagnostic functions. ECU releases security only when security access control is normal finished with the offboard tester and allows to access to protected diagnostic function. Processes are shown below. (1) requestSeed Service $27 ECU securitySeed securityKey Process 1: The offboard tester sends Service $27 request message to request securitySeed. (2) requestSeed Service $27 ECU ON DTIGON requestSeed Service $27 securitySeed securitySeed securityKey Process 2: When ECU receives service $27 request message and time after IG-ON is longer than DTIGON, ECU should send securitySeed using Service $27 positive response message to the offboard tester, calculate securityKey from securitySeed and store it to internal temporary memory. (3) (2) ECU securitySeed securityKey sendKey Service $27 ECU Process 3: The offboard tester calculates securityKey using securitySeed received in the Process 2 and sends ECU securityKey with Service $27 request message. (4) sendKey Service $27 ECU securityKey (2) securityKey sendKey Service

$27 Process 4: ECU compares securityKey of stored value at process 2 to received value from offboard tester. When they match, ECU should release security and send the offboard tester Service $27 positive response message on sendKey. Fig. 6-1 Fig. 6-1 shows the procedure. Service $27 ECU DiagnosticSession extendedDiagnosticSession engineeringSession DiagnosticSession DiagnosticSession 4. Service $10 (DiagnosticSessionControl service) Service $27 is available only at extendedDiagnosticSession or engineeringSession. Before security access control, DiagnosticSession must be changed. The service is shown in 4. Service $10 (DiagnosticSessionControl service). HDC_CAN Several security types define by HDC_CAN. The diagnostic functions protected by security differ for every security type. HDC-CAN (ISO14229) And, by HDC-CAN, the security condition of each security type is managed independently as a general rule. (Different operation from regulation of ISO 14229.) / / Thus, even if security condition (un-released / released / unauthorized access) changes by a certain security type, other security type security condition does not change.) (1 2) (Example 1: Even if unauthorized access occurs by a certain security type, other security type security condition does not change. Example 2: even if lock release occurs by a certain security type, other security type security condition does not change.) However, when there are special directions by the definition for every security type, follow the directions. Which security type should be released for each diagnostic Service should be defined by the system. HDC_-CAN SAE J2186 HDC_CAN uses security access control based on SAE J2186. Seed / Key (securitySeed / securityKey) ECU 1 securityAccessType securityAccessType securitySeed / securityKey (securitySeed securityKey) ECU has one or more securityAccessTypes. The data length of securitySeed /securityKey and the security function (formula which calculates securitySeed to securityKey) is defined for each securityAccessType. NFAA (Number of False Access Attempt:) NFAA 1 ECU 1 OFF/ON securitySeed (Seed) 6 NFAA is defined as one. Meaning if one failure results in unauthorized access and before next IG OFF/On, next securitySeed request message should not be accepted. 6 Failure trial is defined as unauthorized access in the text. DT (Delay Time) DT 2 Following two are defined as Delay Time. DTFAA ; DTFAA ; delay time after failed attempt DTIGON; ON DTIGON; delay time after IG-ON DTFAA DTIGON securityAccessType DTFAA is infinite DTIGON is different by securityAccessType. In SAE J2186, it is supposed that a Seed demand request is not received until DT passes, after NFAA reaches a rated value. HDC_CAN DTFAA = By defining DTFAA as infinite by HDC_CAN, if NFAA exceeds a rated value, a Seed demand request will not be received. The flow of processing ECU The flow of processing by off-board tester by ECU ON extendedDiagnosticSession DTIGON changes procedure It is a security access extendedDiagnosticSession DTIGON receptionist delay timer DTIGON start by the ignition switch ON. Service $27 (requestSeed) DTIGON progress DTIGON Request message Service $27 (re-

	questSeed) securitySeed is generated. Response message securitySeed securityKey is Seed securityKey is generated from generated from generated securitySeed. securitySeed which Seed securitySeed received. Seed f Service $27 (sendKey) securityKey securitySeed f Request message Generated securityKey is compared securityKey key with securityKey which received. key key securityKey key securityKey Service $27 (sendKey) Response message The propriety of security release is returned. Fig. 6-1 The outline of the communication process of security access control
Rationale:	Seed and key calculation shall be implemented by customer in callbacks provided by the bootloader. delay time after IG-ON is not managed by the EB bootloader. Should be managed by the customer during integration.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-6_2_1
Status:	proposed
Version:	5.1
Description:	EN: securityAccessType (sub-function bit 0-6) requestSeed (ECU securitySeed) sendKey (securityKey ECU) 7 securityAccessType value "ODD" means requestSeed. (The reply of securitySeed is required from ECU.) "EVEN" means sendKey. (securityKey is sent and security release is required of ECU.) 7 securityAccessType Offboard tester uses securityAccessType value to specify security type. securityAccessType securitySeed / securityKey (securitySeed securityKey) Data length of securitySeed / securityKey and calculation formula should be different by securityAccessType. 7 $01 - $42 ($00, $43 - $7F) Table 6.5 $01 - $42 is valid. ($00, $43 - $7F are reserved) Refert to Table 6.5
Rationale:	Seed and key calculation shall be implemented by customer in callbacks provided by the bootloader.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-6_2_1_1
Status:	approved
Version:	5.1
Description:	EN: Table 6.1 requestSeed Service $27 requestSeed Service $27 1 SID 1 sub-function (1 suppressPosRspMsgIndicationBit suppressPosRspMsgIndicationBit bit 0-6 securityAccessType (requestSeed) suppressPosRspMsgIndicationBit 2.1.2 Table 6.1 shows requestSeed Service $27 request message format, which consists of SID and sub-function. Sub-function has 1 bit of suppressPosRspMsgIndicationBit and 7 bit of securityAccessType (requestSeed). Detail of suppressPosRspMsgIndicationBit should refer to section 2.1.2. Table

	6.1 requestSeed Service $27 Service $27 Request message definition of requestSeed Hex Data Byte Parameter Cvt Hex value #1 Service $27 SID M 27 Service $27 Request SID #2 sub-function = [suppressPosRspMsgIndicationBit + M 00-FF 1) securityAccessType = requestSeed] 1) Data Byte #2 Data Byte #2 is odd number.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-6_2_1_2
Status:	approved
Version:	5.1
Description:	EN: Table 6.2 sendKey Service $27 sendKey Service $27 1 SID 1 sub-function (1 suppressPosRspMsgIndicationBit 7 securityAccessType (sendKey)) securityKey (securityAccessType) sub-function bit 7 suppressPosRspMsgIndicationBit bit 0-6 securityAccessType (sendKey) suppressPosRspMsgIndicationBit 2.1.2 Table 6.2 shows sendKey Service $27 request message format, which consists of SID and sub-function. Sub-function has 1 bit of suppressPosRspMsgIndicationBit , 7 bit of securityAccessType (sendKey) and securityKey. Detail of suppressPosRspMsgIndicationBit should refer to section 2.1.2 Table 6.2 sendKey Service $27 Service $27 Request message definition of sendKey Hex Data Byte Parameter Cvt Hex value #1 Service $27 SID M 27 Service $27 Request SID #2 sub-function = [suppressPosRspMsgIndicationBit + M 00-FF 1) securityAccessType = sendKey] #3 securityKey [ ] = [key #1 (high byte) M 00-FF : : : : #m+2 key #m (low byte)] C 00-FF C: securityAccessType securityKey securityKey length based on securityAccessType. 1) Data Byte #2 Data Byte #2 is even number.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-6_2_2_1
Status:	proposed
Version:	5.1
Description:	EN: format of requestSeed Table 6.3 requestSeed Service $27 requestSeed Service $27 1 SID 1 securityAccessType securitySeed (securityAccessType) securityAccessType securityAccessType Table 6.3 shows requestSeed Service $27 positive response message format. Positive message should have 1 byte of SID and 1 byte of securityAccessType and securitySeed. The same value as securityAccessType which received by the request message is included in securityAccessType of response message. ECU securityAccessType securi-

	tySeed securitySeed securityKey ECU after receiving the message should create securitySeed and send positive message with it and calculate securityKey then store it to memory. Table 6.3 requestSeed Service $27 Service $27 Positive response message definition of requestSeed Hex Data Byte Parameter Cvt Hex value #1 Service $27 SID M 67 Service $27 Positive response SID #2 securityAccessType M 00-7F 1) #3 securitySeed [ ] = [seed #1 (high byte) M 00-FF : : : : #m+2 seed #m (low byte)] C 00-FF C: securityAccessType securityKey securityKey length based on securityAccessType. 1) Data Byte #2 Data Byte #2 is odd number.
Rationale:	Seed and key calculation shall be implemented by customer in callbacks provided by the bootloader.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-6_2_2_2
Status:	proposed
Version:	5.1
Description:	EN: sendKey Table 6.4 sendKey Service $27 sendKey Service $27 1 SID 1 securityAccessType securityAccessType securityAccessType Table 6.4 shows sendKey Service $27 positive response message format. Positive message should have 1 byte of SID and 1 byte of securityAccessType. The same value as securityAccessType which received by the request message is included in securityAccessType of response message. ECU securityAccessType ECU after receiving the message should released security and send positive message. Table 6.4 sendKey Service $27 Service $27 Positive response message definition of sendKey Hex Data Byte Parameter Cvt Hex value #1 Service $27 SID M 67 Service $27 Positive response SID #2 securityAccessType M 00-7F 1) 1) Data Byte #2 Data Byte #2 is even number.
Rationale:	Seed and key calculation shall be implemented by customer in callbacks provided by the bootloader.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-6_2_3
Status:	approved
Version:	5.1
Description:	EN: 2.2.2 Negative response message should follow section 2.2.2
Rationale:	Seed and key calculation shall be implemented by customer in callbacks provided by the bootloader.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-6_3
Status:	rejected
Version:	5.1
Description:	EN: Service $27 The section defines parameter for Service $27 message.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-6_3_1
Status:	proposed
Version:	5.1
Description:	EN: securityAccessType (sub-function bit 0-6) Service $27 7 securityAccessType is 7bits of information in request message. Seed (requestSeed) (sendKey) request message indicates either Seed request (requestSeed) or security release request (sendKey). Followings are for security type 1) The diagnostic function by which security protection is carried out with this securityType. 2) The sub-function used by this securityType, and its security function 3) securitySeed securityKey data length of securitySeed and securityKey 4) DTIGON DTIGON value securityAccessType The same value as securityAccessType which received by the request message is included in securityAccessType of positive response message. Table 6.5 Table 6.5 shows definition of securityAccessType. Security type and diagnostic function should be defined by the system. securitySeed / securityKey DTIGON Security type function, data length of securitySeed / sendKey, and DTIGON will be defined separately. Table 6.5 Service $27 securityAccessType Service $27 securityAccessType definition Security Description AccessType (HEX) 00 (ISO 14229-1) not used (reserved by ISO 14229-1) 01,03,05 requestSeed ( ) 07 - 41 requestSeed (This range of values is reserved for vehicle-manufacturer-specific use.) 02,04,06 sendKey ( ) 08 - 42 sendKey (This range of values is reserved for vehicle-manufacturer-specific use.) 43 - 5E (ISO 14229-1) not used (reserved by ISO 14229-1) 5F - 60 (ISO 14229-1) not used (reserved by ISO 14229-1) (1)) 61 - 7E not used (This range of values is reserved for system-supplier-specific use. 1)) 7F (ISO 14229-1) not used (reserved by ISO 14229-1) 1) HGT System-supplier area must be agreed by HGT.
Rationale:	The integrator should configure the UDS request's: - sub service (reset type) - supporter session - length .
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-6_3_2

Status:	proposed
Version:	5.1
Description:	EN: securitySeed securityAccessType = requestSeed Service $27 securitySeed is information in Service $27 positive response message of securityAccessType = requestSeed. That is defined by SecurityType securityAccessType securitySeed (0) If the same SecurityType has been released, securitySeed should be all zero.
Rationale:	Seed and key calculation shall be implemented by customer in callbacks provided by the bootloader.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-6_3_3
Status:	proposed
Version:	5.1
Description:	EN: securityKey securityAccessType = sendKey Service $27 securityKey is information in Service $27 request message of securityAccessType = sendKey and value is defined by SecurityType.
Rationale:	Seed and key calculation shall be implemented by customer in callbacks provided by the bootloader.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-6_3_4
Status:	approved
Version:	5.1
Description:	EN: Table 6.6 Service $27 NRC 6.4 Table 6.6 shows Service $27 NRC. When to reply with negative response message should refer to section 6.4. Table 6.-6 Service $27 Service $27 Negative response code definition NRC (Hex) Description subFunctionNotSupported (SFNS) 12 sub-function Requested sub-function is not supported.. incorrectMessageLengthOrInvalidFormat (IMLOIF) 13 Received message length or message structure doesn't suit Spec. . requestSequenceError (RSE) 24 (1) requestSeed sendKey Without requestSeed is calculated, sendKey request message is received. (2) sendKey SendKey received through security has been released. invalidKey (IK) 35 securityKey ECU securityKey Received security Key doesn't match with ECU calculated security Key. exceedNumberOfAttempts (ENOA) 36 ON 1 requiredTimeDelayNotExpired (RTDNE) 37 ON DTIGON requestSeed This response code indicates that requestSeed message received before time DTIGON had elapsed. serviceNotSupportedInActiveSession (SNSIAS) 7F DiagnosticSession Service $27

	Current diagnostic Session doesn't support Service $27. - Service $27 NRC = $78 (RCRRP) Caution NRC=$78 (RCRRP) is not allowed in Service 27.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-6_4
Status:	rejected
Version:	5.1
Description:	EN: Service $27 ECU Reply from ECU should follow this description.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-6_4_1
Status:	proposed
Version:	5.1
Description:	EN: (1) DiagnosticSession DiagnosticSession check a. ECU DiagnosticSession defaultSession programmingSession ECU NRC = $7F (SNSIAS) 6.4.3 When diagnosticSession is defaultSession or programmingSession, ECU should prepare negative response message with NRC = $7F (SNSIAS) and execute reply response message specified at section 6.4.3. (2) (8) Check length of request message (check longer than minimum length 8)) a. 2 ECU NRC = $13 (IMLOIF) 6.4.3 When received request message is shorter than 2bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 6.4.3. (3) securityAccessType securityAccessType check a. securityAccessType ECU NRC = $12 (SFNS) 6.4.3 When securityAccessType in received request message is not supported, ECU should prepare negative response message with NRC = $12 (SFNS) and execute reply response message specified at section 6.4.3. (4) (1) (3) securityAccessType When message doesn't match the above (1) to (3), request message check, which is specified in below subsection, should be done.
Rationale:	The integrator shall configure the UDS requests messages lenghts.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-6_4_1_1
Status:	proposed
Version:	5.1

Description:	EN: (5) Check length of request message a. 2 ECU NRC = $13 (IMLOIF) 6.4.-3 securitySeed When received request message is NOT 2bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 6.4.3. (6) Check of an unauthorized access history a. ON 1 securityAccessType ECU NRC = $36 (ENOA) 6.4.3 securitySeed After IG_ON if unauthorized access was observed for the same securityAccessType, ECU should prepare negative response message with NRC = $36 (ENOA) and execute reply response message specified at section 6.4.3. No preparation of securitySeed. - securityAccessType Caution - Unauthorized access for different securityAccessType is not considered. (7) Security release check a. securityAccessType ECU securitySeed $00 6.4.3 securityAccessType If requested securityAccessType has been released, ECU should set securitySeed with all $00 and execute reply response message specified at section 6.4.3. Security release condition should be kept. (8) DTIGON DTIGON progress check a. ON 9 securityAccessType DTIGON ECU NRC = $37 (RTDNE) 6.4.-3 securitySeed After IG ON, DTIGON defined by securityAccessType is not passed, ECU should prepare negative response message with NRC = $37 (RTDNE) and reply based on section 6.4.3. (9) (5) (8) ECU securityAccessType requestSeed SecurityAccess service ECU 6.4.2 6.4.3 When message doesn't match the above (5) to (8), ECU should judge it is possible to execute SecurityAccess service. ECU should execute task defined in 6.4.2 and prepare positive message and reply as defined in 6.4.3.
Rationale:	The integrater should configure Antiscanning for SecurityAccess. EB tresos Bootloader calls the callback to notify the result of unlocking. The customer shall implement the callback and shall reject further SecurityAccess requests, by implementing it's own UDS callback for sercurityAccess. The DIGON time is not managed by the EB bootloader.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-6_4_1_2
Status:	proposed
Version:	5.1
Description:	EN: (10) Check length of request message a. securityAccessType ECU NRC = $13 (IMLOIF) 6.4.3 When received request message is NOT 2bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 6.4.3. (11) Check of an unauthorized access history a. ON 1 securityAccessType ECU NRC = $36 (ENOA) 6.4.3 After IG_ON if unauthorized access was observed for the same securityAccessType, ECU should prepare negative response message with NRC = $36 (ENOA) and execute reply response message specified at section 6.4.3. - securityAccessType Caution - Unauthorized access for different securityAccessType

	is not considered. (12) Seed The execution check of requestSeed a. securityAccessType 6.4.2.1 requestSeed ECU NRC = $24 (RSE) 6.4.3 If requestSeed task defined in 6.4.2.1 was not finished, ECU should prepare negative response message with NRC =$24 (RSE) and reply it according to6.4.3. (13) Security release check a. securityAccessType ECU NRC = $24 (RSE) 6.4.3 securityAccessType If requested securityAccessType has been released, ECU should prepare negative response message with NRC =$24 (RSE) and reply it according to6.4.3. Security release condition should be kept. (14) (10) (13) ECU securityAccessType sendKey SecurityAccess service ECU 6.4.2 When message doesn't match the above (10) to (13), ECU should judge SecurityType sendKey SecurityAccess service defined by securityAccessType. Then ECU should first perform task defined by 6.4.2 and following tasks should be done. a. ECU NRC = $35 (IK) 6.4.3 If unauthorized access is judged, ECU should prepare negative response message with NRC =$35 (IK) and reply it according to 6.4.3. b. ECU 6.4.3 When security is released, ECU should prepare positive response message, and then reply response message as specified in 6.4.3.
Rationale:	The integrator shall configure the UDS requests messages lenghts. The IG_ON event is not managed by the EB bootloader. The customer is in charge of the configuration of the security level for each service/routine. The unlock of a security level doesn't imply the unlock of lower levels.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-6_4_2
Status:	rejected
Version:	5.1
Description:	EN: securityAccessType When ECU judges SecurityAccess service is possible based on 6.4.1 criteria, ECU should execute task written after.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-6_4_2_1
Status:	proposed
Version:	5.1
Description:	EN: securityAccessType securitySeed securitySeed SecuritySeed requested by securityAccessType should be prepared. Detail should be defined separately. securitySeed securityKey Using separately defined security function, securityKey should be calculated and stored in temporary memory.
Rationale:	Seed and key calculation shall be implemented by customer in callbacks provided by the bootloader.

Needs coverage of:	SwAD

Id:	HondaDiagnostics-6_4_2_2
Status:	proposed
Version:	5.1
Description:	EN: 6.4.1.2 (14) securityKey 6.4.2.1 securitySeed securityKey Received securityKey and self securityKey calculated should be compared and do following process depending on comparison results. a. ECU securityAccessType Not match: ECU should judge unauthorized access has performed. b. ECU securityAccessType Matched: ECU should release requested SecurityType.
Rationale:	Seed and key calculation shall be implemented by customer in callbacks provided by the bootloader.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-6_4_3
Status:	proposed
Version:	5.1
Description:	EN: 6.4.3 Reply response message 3 (or) suppressPosRspMsgIndicationBit As described in section 3, not only by request message check results but also addressing type (physical or function address), or suppressPosRspMsgIndicationBit have influence on response message. Table 6.7 6.4.1 Table 6.7 shows response message definition. Table 6.7 Service $27 Service $27 Reply to request message Request message check result suppressPosRs pMsgIndication Response message No 1) Description addressing Bit type (2)a Physical 0 (False) (NRC $13) (5)a Wrong message length 1 (True) Negative response (10)a Function securityAccessType 0 (False) (NRC $12) (3)a Physical 1 (True) Negative response Requested SecurityType is not 0 (False) supported. Function 1 (True) No response DiagnosticSession (1)a Service $27 Physical 0 (False) (NRC $7F) Current Diagnostic Session doesn't 1 (True) Negative response support Service $27. Function (6)a Physical 0 (False) (NRC $36) (11)a Unauthorized history exists. 1 (True) Negative response Function 0 (False) Positive response (7)a requestSeed Physical requestSeed received when security has been released. Function 1 (True) No response (8)a DTIGON Physical 0 (False) (NRC $37) DTIGON has not yet passed. 1 (True) Negative response Function securityAccessType (12)a requestSeed Physical 0 (False) (NRC $24) SecuritySeed for requested 1 (True) Negative response SecurityAccess type not done yet. Function securityAccessType (13)a Physical 0 (False) (NRC $24) Requested securityAccessType has 1 (True) Negative response been released. Function (14) securityKey Physical 0 (False) (NRC $35) Received securityKey incorrect.

	1 (True) Negative response Function SecurityAccess service 0 (False) securitySeed Positive response (9) Physical (14) Requested SecurityAccess service execution. SecuritySeed preparation Function 1 (True) or security release. No response 1) 6.4.1 No. No. is corresponding to No. in section 6.4.1.
Rationale:	Seed and key calculation shall be implemented by customer in callbacks provided by the bootloader.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-6_5
Status:	proposed
Version:	5.1
Description:	EN: securityKey ECU securitySeed securityKey Unauthorized access is defined as the case where the value of securityKey from offboard tester differs from the value of securityKey which ECU calculated from securitySeed. ECU (DTIGON) When ECU judges unauthorized access, ECU rejects SecurityAccess release request until unauthorized history is erased. Other abnormal condition such as communication procedure error, short DTIGON) should not be considered as unauthorized access. Below are the conditions to erase history of unauthorized access. (1) OFF IG OFF. (2) battery cut. (3) Service $11 " OFF" " " ECU ECU reset by Service $11. ECU In addition to these conditions, reprogrammable ECU erases history of unauthorized access also on condition of the following. (1) programmingSession defaultSession DefaultSession transfer from programmingSession. programmingSession defaultSession 4.1" " Refer to section 4.1 for the details about the changes to defaultSession from programmingSession.
Rationale:	EB tresos Bootloader implements unauthorized access with AntiScanning mechanism as defined in ISO14229: after a fail attempt, a new request will be accepted only after the end of the Anti scanning timeout. EB tresos Bootloader calls the callback to notify the result of unlocking. The customer shall implement the callback and shall reject further SecurityAccess requests, by implementing it's own UDS callback for sercurityAccess. IG OFF/ battery cut/ ECU reset have no impact on the AntiScanning behaviour
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-6_6
Status:	proposed
Version:	5.1
Description:	EN: ( ) Security released condition should be ended when it becomes one of the following conditions. (1) ECU DiagnosticSession defaultSession In case, Di-

	agnosticSession transfers to defaultSession. a. Service $10 defaultSession By Service $10 request. b. (S3Server) defaultSession Session timer (S3Server) time out. (2) OFF IG OFF. (3) battery cut. (4) Service $11 " OFF" " " ECU ECU reset by Service $11.
Rationale:	The "IG_OFF" and "battery cut" are not managed by the bootloader EB. Security level is reset at Bootloader startup.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-6_7
Status:	proposed
Version:	5.1
Description:	EN: Executed Condition requestSeed (requestSeed) requestSeed request processing executed condition is ended when one of the following conditions is satisfied. (It returns to the condition of not executing requestSeed.) (1) ECU DiagnosticSession defaultSession In case, DiagnosticSession transfers to defaultSession. a. Service $10 defaultSession By Service $10 request. b. (S3Server) defaultSession Session timer (S3Server) time out. (2) OFF IG OFF. (3) battery cut. (4) Service $11 " OFF" " " ECU ECU reset by Service $11.
Rationale:	The "IG_OFF" and "battery cut" are not managed by the bootloader EB. Security level is reset at Bootloader startup.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-6_8
Status:	rejected
Version:	5.1
Description:	EN: DTIGON DTIGON is initialized when it becomes one of the following conditions. (1) OFF IG OFF (2) battery cut (3) Service$ 11 " OFF" " " ECU ECU reset by Service $11 request. ECU DTIGON In addition to these conditions, reprogrammable ECU initializes DTIGON also on condition of the following. (1) (S3Server) programmingSession defaultSession DefaultSession transfer from programmingSession by Session timer (S3server) time out.
Rationale:	DTIGON is not managed by the EB bootloader
Needs coverage of:	SwAD

Id:	HondaDiagnostics-6_9
Status:	proposed
Version:	5.1

Description:	EN: securitySeed securityKey Security function is a formula to calculate securityKey from Seed. Each security type has different formula. Sometimes one security type has more than one formula. The security function should be defined by every system.
Rationale:	Seed and key calculation shall be implemented by customer in callbacks provided by the bootloader.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-7_1
Status:	rejected
Version:	5.1
Description:	EN: Service $28 (CommunicationControl service) HDC_CAN CAN Service $28 (CommunicationControl service) is used to control CAN send/receive for HDC_-CAN communication. controlType communicationType Service $28 ECU CAN ECU controlType communicationType CAN The offboard tester requests ECU to perform CAN send/receive control by Service $28 request message with integrated controlType and communicationType. Or ECU returns the message that ECU will not follow request. ECU CAN CAN In case there are multiple CAN line for one ECU, ECU should control only on requested line. CAN About the other CAN-Line it should be defined by every system. - HDC_CAN ECU Service $28 Caution - ECU which supported HDC-CAN, must support Service $28.
Rationale:	The 0x28 CommunicationControl service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-7_2_1
Status:	rejected
Version:	5.1
Description:	EN: Table 7.1 Service $28 Service $28 1 SID 1 sub-function (1 suppressPosRspMsgIndicationBit 7 controlType) 1 communicationType sub-function bit 7 suppressPosRspMsgIndicationBit bit 0-6 controlType suppressPosRspMsgIndicationBit 2.1.2 Table 7.1 shows Service $28 request message format, which consists of SID and sub-function. Sub-function has 1 bit of suppressPosRspMsgIndicationBit and resetType. Detail of suppressPosRspMsgIndicationBit should refer to section 2.1.2. Table 7.1 Service $28 Service $28 Request message definition Hex Data Byte Parameter Cvt Hex value #1 Service $28 SID M 28 Service $28 Request SID #2 sub-function = [suppressPosRspMsgIndicationBit + M 00-FF controlType #3 communicationType M 00-FF

Rationale:	The 0x28 CommunicationControl service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-7_2_2
Status:	rejected
Version:	5.1
Description:	EN: Table 7.2 Service $28 Service $28 1 SID 1 controlType controlType controlType Table 7.2 shows Service $28 positive response message format, which consists of SID and controlType. controlType in reply should be same value controlType in request message. ECU CAN After task execution, positive message should be sent. Table 7.2 Service $28 Service $28 Positive response message definition Hex Data Byte Parameter Cvt Hex value #1 Service $28 SID M 68 Service $28 Positive response SID #2 controlType M 00-7F
Rationale:	The 0x28 CommunicationControl service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-7_2_3
Status:	rejected
Version:	5.1
Description:	EN: 2.2.2 Negative response message should follow section 2.2.2.
Rationale:	The 0x28 CommunicationControl service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-7_3
Status:	rejected
Version:	5.1
Description:	EN: Service $28 The section defines parameter for Service $28 message.
Rationale:	The 0x28 CommunicationControl service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-7_3_1
Status:	rejected

Version:	5.1
Description:	EN: controlType (sub-function bit 0-6) Service $28 7 ECU CAN ( ) controlType (bit 0-6 of sub-function) is 7 bits information in Service $28 request message to ECU to send/receive control of CAN bus. controlType Positive response message includes the same value as received controlType value. Table 7.3 controlType Table 7.3 shows definition of controlType. Table 7.3 Service $28 controlType Service $28 definition of controlType controlType Description (Hex) 00-02 (ISO 14229-1) not used (reserved by ISO 14229-1) disableRxAndTx (DRXTX) 03 CAN This value indicates that the reception and transmission of messages shall be disabled for the specified communicationType. 04-3F (ISO 14229-1) not used (reserved by ISO 14229-1) 40-5F ( ) not used (This range of values is reserved for vehicle-manufacturer-specific use.) 60-7E (1)) not used (This range of values is reserved for system-supplier-specific use. 1)) 7F (ISO 14229-1) not used (reserved by ISO 14229-1) 1) HGT System-supplier area must be agreed by HGT.
Rationale:	The 0x28 CommunicationControl service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-7_3_2
Status:	rejected
Version:	5.1
Description:	EN: communicationType Service $28 1 ECU CAN communicationType is one byte information in Service $28 request message to ECU to send/receive control of CAN bus. Table 7.4 communicationType Table 7.4 shows definition of communicationType. Table 7.4 Service $28 communicationType Service $28 definition of communicationType communicationType (Hex) Description bit Hex bit position Hex value 0 (ISO 14229-1) not used (reserved by ISO 14229-1) 1 (ISO 14229-1) not used (reserved by ISO 14229-1) 0-1 2 (ISO 14229-1) not used (reserved by ISO 14229-1) NormalCommunicationMessages and 3 networkManagementCommunicationMessages (NWMCM and NCM) CAN CAN All CAN message except diagnostic CAN message. 2-3 0-3 (ISO 14229-1 1)) not used (reserved by ISO 14229-1 1)) 4-7 0-F (ISO 14229-1 1)) not used (reserved by ISO 14229-1 1)) 1) HDC_CAN 0 "0" in case of HDC_CAN.
Rationale:	The 0x28 CommunicationControl service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-7_3_3

Status:	rejected
Version:	5.1
Description:	EN: Table 7.5 Service $28 NRC 7.4 Table 7.5 shows Service $10 NRC. When to reply with negative response message should refer to section 7.4. Table 7.5 Service $28 Service $28 Negative response code definition NRC (Hex) Description subFunctionNotSupported (SFNS) 12 sub-function Requested sub-function is not supported.. incorrectMessageLengthOrInvalidFormat (IMLOIF) 13 Received message length or message structure doesn't suit Spec. . requestOutOfRange (ROOR) 31 communicationType Requested communicationType is not supported. serviceNotSupportedInActiveSession (SNSIAS) 7F DiagnosticSession Service $28 Current diagnostic Session doesn't support Service $28. - Service $28 NRC = $78 (RCRRP) Caution NRC=$78 (RCRRP) is not allowed in Service 28.
Rationale:	The 0x28 CommunicationControl service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-7_4
Status:	rejected
Version:	5.1
Description:	EN: Service $28 ECU Reply from ECU should follow this description.
Rationale:	The 0x28 CommunicationControl service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-7_4_1
Status:	rejected
Version:	5.1
Description:	EN: (1) DiagnosticSession DiagnosticSession check a. ECU DiagnosticSession defaultSession programmingSession ECU NRC = $7F (SNSIAS) 7.4.3 When diagnosticSession is defaultSession or programmingSession, ECU should prepare negative response message with NRC = $7F (SNSIAS) and execute reply response message specified at section 7.4.3. (2) (10) Check length of request message (check longer than minimum length 10)) a. 2 ECU NRC = $13 (IMLOIF) 7.4.3 When received request message is shorter than 2bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 7.4.3. (3) controlType controlType analysis check a. controlType ECU NRC = $12 (SFNS) 7.4.3 When

	controlType in received request message is not supported, ECU should prepare negative response message with NRC = $12 (SFNS) and execute reply response message specified at section 7.4.3. (4) Check length of request message a. 3 ECU NRC = $13 (IMLOIF) 7.4.3 When received request message is NOT 3bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 7.4.3. (5) (1) (4) controlType When message doesn't match the above (1) to (4), request message check, which is specified in below subsection, should be done.
Rationale:	The 0x28 CommunicationControl service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-7_4_1_1
Status:	rejected
Version:	5.1
Description:	EN: (6) communicationType communicationType check a. communicationType NormalCommunicationMessages and networkManagementCommunicationMessages ($03) ECU NRC = $31 (ROOR) 7.4.3 When communicationType in received request message is not NormalCommunicationMessages and networkManagementCommunicationMessages ($03), ECU should prepare negative response message with NRC = $31 (ROOR) and execute reply response message specified at section 7.4.3. (7) (6) ECU CommunicationControl service ECU 7.4.2 7.4.3 If (6) is not true, ECU should judge requested CommunicationControl service is possible to execute. ECU should execute task specified in 7.4.2, then prepare positive response message, and execute reply response message specified at section 7.4.3.
Rationale:	The 0x28 CommunicationControl service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-7_4_2_1
Status:	rejected
Version:	5.1
Description:	EN: HDC_CAN CAN CAN CAN used for HDC-CAN should stop CAN send/receive except diagnostic communication. CAN 12 If the above situation is not recommended when vehicle drives. In this case, operating mode should be defined by the system. 12 Generally speaking failsafe action should be possible but this document doesn't specify. ECU CAN CAN (CAN CAN) 13 And, when ECU equips several CAN lines, it determines for handling of communication of

	the CAN line which is not connected with an off-board tester for every model of vehicles, and system.13 7.4.3 Reply response message 3 (or) suppressPosRspMsgIndicationBit As described in section 3, not only by request message check results but also addressing type (physical or function address), or suppressPosRspMsgIndicationBit have influence on response message. CAN DTC By reprograming which uses this message, it is Service $85 (ControlDTCSettingservice) before this message transmission. It performs. The DTC set by the transceiver stop of the CAN line connected with an off-board tester by it is prevented. CAN CAN ECU Service $85 CAN However, ECU which has connected the CAN line which is not connected with offboard tester cannot receive a Service $85 request message. Therefore, those ECUs may detect communication failure of a CAN line, when transmission and reception of the communication line are stopped. CAN Generally it makes sense not to stop communication on CAN bus , which is not used for HDC-CAN. This will be specified by the system. Table 7.6 7.4.1 Table 7.6 shows response message definition. Table 7.6 Service $28 Service $28 Reply to request message Request message check result suppressPosRs pMsgIndication Response message No 1) Description addressing Bit type (2)a Physical 0 (False) (NRC $13) (4)a Wrong message length 1 (True) Negative response Function controlType 0 (False) (NRC $12) (3)a Physical 1 (True) Negative response Requested controlType is not 0 (False) supported Function 1 (True) No response DiagnosticSession (1)a Service $28 Physical 0 (False) (NRC $7F) Current Diagnostic Session doesn't 1 (True) Negative response support Service $28. Function communicationType 0 (False) (NRC $31) (6)a Physical 1 (True) Negative response Requested communicationType is 0 (False) not supported Function 1 (True) No response CommunicationControl 0 (False) Positive response (7) service Physical Requested CommunicationControl 1 (True) service executable Function No response 1) 7.4.1 No. No. is corresponding to No. in section 7.4.1.
Rationale:	The 0x28 CommunicationControl service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-7_4_3
Status:	rejected
Version:	5.1
Description:	EN: CAN CAN ECU, which stops CAN communication by 7.4.2.1 should return to normal when one of following conditions is met. (1) ECU DiagnosticSession defaultSession DiagnosticSession transfers to defaultSession a. Service $10 defaultSession By Service $10 request message b. (S3Server) defaultSession Session timer(S3Server) time out (2) OFF IG OFF. (3) battery cut. (4) Service $11 " OFF" " " ECU ECU reset by Service $11 request. - programmingSession

	CAN Caution - By transferring to programmingSession CAN communication should not return to normal.
Rationale:	The 0x28 CommunicationControl service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-8_1
Status:	approved
Version:	5.1
Description:	EN: Service $3E (TesterPresent service) ECU ECU Service $3E (TesterPresent service) is used to inform ECU that the offboard tester is connected. All ECU needs to do is to send positive message. Service $3E 1 The following is one of the examples of use of a Service $3E request. ECU defaultSession ( ) DiagnosticSession ECU defaultSession ECU defaultSession DiagnosticSession zeroSubFunction Service $3E ECU If ECU is diagnostic mode other than defaultSession and no message reception from the tester, ECU transfers to defaultSession automatically. This message is to keep ECU in current diagnosticSession. Then the offboard tester sends ECU service request message with zeroSubFunction. The offboard tester requests ECU to perform CAN send/receive control by Service $3E request. - HDC_CAN ECU Service $3E Caution - ECU which supported HDC-CAN, must support Service $3E.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-8_2_1
Status:	approved
Version:	5.1
Description:	EN: Table 8.1 Service $3E Service $3E 1 SID 1 sub-function (1 suppressPosRspMsgIndicationBit 7 zeroSubFunction) sub-function bit 7 suppressPosRspMsgIndicationBit bit 0-6 zeroSubFunction suppressPosRspMsgIndicationBit 2.-1.2 Table 8.1 shows Service $3E request message format, which consists of SID and sub-function. Sub-function has 1 bit of suppressPosRspMsgIndicationBit and 7 bit of zero SubFunction. Detail of suppressPosRspMsgIndicationBit should refer to section 2.1.2. sub-function bit 0-6 zeroSubFunction ($00) sub-function bits 0 -6 are set with zero ($00) as zeroSubFunction. Table 8.1 Service $3E Service $3E Request message definition Hex Data Byte Parameter Cvt Hex value #1 Service $3E SID M 3E Service $3E Request SID #2 sub-function = [suppressPosRspMsgIndicationBit + M 00 or 80 zeroSubFunction]

Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-8_2_2
Status:	approved
Version:	5.1
Description:	EN: Table 8.2 Service $3E Service $3E 1 SID 1 zeroSubFunction zeroSubFunction zeroSubFunction Table 8.2 shows Service $3E positive response message format. Service $3E positive response message contains 1 byte of SID + 1 byte zeroSubFunction. zeroSubFunction is received in requested message. Table 8.-2 Service $3E Service $3E Positive response message definition Hex Data Byte Parameter Cvt Hex value #1 Service $3E SID M 7E Service $3E Positive response SID #2 zeroSubFunction M 00
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-8_2_3
Status:	approved
Version:	5.1
Description:	EN: 2.2.2 Negative response message should follow section 2.2.2.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-8_3
Status:	rejected
Version:	5.1
Description:	EN: Service $3E The section defines parameter for Service $3E message.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-8_3_1
Status:	approved
Version:	5.1
Description:	EN: zeroSubFunction (sub-function bit 0-6) Service $3E 7 zeroSubFunction = $00 zeroSubFunction (bit 0-6 of sub-function) is 7 bits information in Service

	$3E request message and it is always zeroSubFunction = $00. zeroSubFunction Positive response message includes the same zeroSubFunction value as received value. Table 8.3 zeroSubFunction Table 8.3 shows definition of zeroSubFunction. Table 8.3 Service $3E zeroSubFunction Service $3E zeroSubFunction definition zeroSubFunction Description Hex zeroSubFunction 00 sub-function suppressPosRspMsgIndicationBit This parameter value is used to indicate that no sub-function value beside the suppressPosRspMsgIndicationBit is supported by this service. 01-7F (ISO 14229-1) not used (reserved by ISO 14229-1)
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-8_3_2
Status:	approved
Version:	5.1
Description:	EN: Table 8.4 Service $3E NRC 8.4 Table 8.4 shows Service $3E NRC. When to reply with negative response message should refer to section 8.4. Table 8.-4 Service $3E Service $3E Negative response code definition NRC (Hex) Description subFunctionNotSupported (SFNS) 12 sub-function Requested sub-function is not supported.. incorrectMessageLengthOrInvalidFormat (IMLOIF) 13 Received message length or message structure doesn't suit Spec. . - Service $3E NRC = $78 (RCRRP) Caution NRC=$78 (RCRRP) is not allowed in Service $3E.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-8_4
Status:	rejected
Version:	5.1
Description:	EN: Service $3E ECU This section defines reply processing of the response message which ECU which received the Service $3E request message executes. Reply from ECU should follow this description.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-8_4_1
Status:	approved
Version:	5.1

Description:	EN: (1) (14) Check length of request message (check less than minimum length 14)) a. 2 ECU NRC = $13 (IMLOIF) 8.4.3 When received request message is shorter than 2bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 8.-4.3. (2) zeroSubFunction check of zeroSubFunction a. zeroSubFunction (sub-function bit 0-6) $00 ECU NRC = $12 (SFNS) 8.4.3 When zeroSubFunction in received request message is not $00, ECU should prepare negative response message with NRC = $12 (SFNS) and execute reply response message specified at section 8.4.3. Prior to check of zero sub-function, check if enough length of request message is received or not. (3) Check length of request message a. 2 ECU NRC = $13 (IMLOIF) 8.4.3 When received request message is NOT 2bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 8.4.3. (4) (1) (3) ECU TesterPresent service ECU 8.4.2 8.4.3 When message doesn't match the above (1) to (3), ECU should judge it is possible to execute TesterPresent service. ECU should execute task defined in 8.4.2 and prepare positive message and reply as defined in 8.4.3.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-8_4_2
Status:	approved
Version:	5.1
Description:	EN: Service $3E Service $3E doesn't request task except positive response message.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-8_4_3
Status:	approved
Version:	5.1
Description:	EN: Reply response message 3 (or) suppressPosRspMsgIndicationBit As described in section 3, not only by request message analysis results but also addressing type (physical or function address), or suppressPosRspMsgIndication-Bit have influence on response message. Table 8.5 8.4.1 Table 8.5 shows response message definition. Table 8.5 Service $3E Service $3E Reply to request message Request message check result suppressPosR spMsgIndicatio Response message No 1) Description addressing nBit type (1)a Physical 0 (False)

	(NRC $13) (3)a Wrong message length 1 (True) Negative response Function zeroSubFunction 0 (False) (NRC $12) (2)a (sub-function bit 0-6) $00 Physical 1 (True) Negative response zeroSubFunction is not $00 0 (False) Function 1 (True) No response TesterPresent service 0 (False) Positive response (4) Physical Requested TesterPresent service 1 (True) executable Function No response 1) 8.4.1 No. No. is corresponding to No. in section 8.4.1.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-9_1
Status:	rejected
Version:	5.1
Description:	EN: Service $85 (ControlDTCSetting service) ECU DTC ( ) Service $85 (ControlDTCSetting service) is used to control ECU DTC setting. DTCSettingType Service $85 ECU DTC ECU DTCSettingType DTC The offboard tester requests ECU to perform ECU DTC setting control by Service $85 request message with integrated DTC settingType. Or ECU returns the message that ECU will not follow request. - HDC_CAN ECU Service $85 Caution - ECU which supported HDC-CAN, must support Service $85.
Rationale:	The 85 ControlDTCSetting service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-9_2_1
Status:	rejected
Version:	5.1
Description:	EN: Table 9.1 Service $85 Service $85 1 SID 1 sub-function (1 suppressPosRspMsgIndicationBit 7 DTCSettingType) sub-function bit 7 suppressPosRspMsgIndicationBit bit 0-6 DTCSettingType suppressPosRspMsgIndicationBit 2.-1.2 Table 9.1 shows Service $85 request message format, which consists of SID and sub-function. Sub-function has 1 bit of suppressPosRspMsgIndicationBit and resetType. Detail of suppressPosRspMsgIndicationBit should refer to section 2.1.2. Table 9.1 Service $85 Service $85 Request message definition Hex Data Byte Parameter Cvt Hex value #1 Service $85 SID M 85 Service $85 Request SID #2 sub-function = suppressPosRspMsgIndicationBit + M 00-FF DTCSettingType
Rationale:	The 85 ControlDTCSetting service is not supported by the EB Bootloader (should be managed by the customer).

Needs coverage of:	SwAD

Id:	HondaDiagnostics-9_2_2
Status:	rejected
Version:	5.1
Description:	EN: Table 9.2 Service $85 Service $85 1 SID 1 DTCSettingType DTCSetting-Type DTCSettingType Table 9.2 shows Service $85 positive response message format. which consists of SID and 1 bytes of DTCSettingType. DTCSettingType in reply should be DTCSettingType in request message. ECU DTC ECU after receiving the message should perform DTC setting control and then send the positive response. Table 9.2 Service $85 Service $85 Positive response mes-sage definition Hex Data Byte Parameter Cvt Hex value #1 Service $85 SID M C5 Service $85 Positive response SID #2 DTCSettingType M 00-7F
Rationale:	The 85 ControlDTCSetting service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-9_2_3
Status:	rejected
Version:	5.1
Description:	EN: 2.2.2 Negative response message should follow section 2.2.2.
Rationale:	The 85 ControlDTCSetting service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-9_3
Status:	rejected
Version:	5.1
Description:	EN: Service $85 The section defines parameter for Service $85 message.
Rationale:	The 85 ControlDTCSetting service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-9_3_1
Status:	rejected

Version:	5.1
Description:	EN: DTCSettingType (sub-function bit 0-6) Service $85 7 DTC DTCSetting-Type (bit 0-6 of sub-function) is 7 bits information in Service $85 request message to ECU to store DTC or not. DTCSettingType Positive response message should includes received DTCSettingType value. Table 9.3 Table 9.3 shows definition of DTCSettingType Table 9.3 Service $85 DTCSettingType Service $85 DTCSetting definition DTCSettingType Description (Hex) 00 (ISO 14229-1) not used (reserved by ISO 14229-1) 01 (ISO 14229-1) not used (reserved by ISO 14229-1) off 02 DTC Request DTC to stop storing 03-3F (ISO 14229-1) not used (reserved by ISO 14229-1) ( ) 40-5F not used (This range of values is reserved for vehicle-manufacturer-specific use.) 60-7E (1)) system-supplier-specific use. 1)) not used (This range of values is reserved for 7F (ISO 14229-1) not used (reserved by ISO 14229-1) 1) HGT System-supplier area must be agreed by HGT.
Rationale:	The 85 ControlDTCSetting service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-9_3_2
Status:	rejected
Version:	5.1
Description:	EN: Table 9.4 Service $85 NRC 9.4 Table 9.4 shows Service $85 NRC definition. Negative response should be refer to 9.4. Table 9.4 Service $85 Service $85 Negative response code definition NRC (Hex) Description subFunctionNotSupported (SFNS) 12 sub-function Requested sub-function is not supported.. incorrectMessageLengthOrInvalidFormat (IMLOIF) 13 Received message length or message structure doesn't suit Spec. . serviceNotSupportedInActiveSession (SNSIAS) 7F DiagnosticSession Service $85 Current diagnostic Session doesn't support Service $85. - Service 85 NRC = $78 (RCRRP) Caution NRC=$78 (RCRRP) is not allowed in Service 85.
Rationale:	The 85 ControlDTCSetting service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-9_4
Status:	rejected
Version:	5.1
Description:	EN: Service $85 ECU Reply from ECU should follow this description.

Rationale:	The 85 ControlDTCSetting service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-9_4_1
Status:	rejected
Version:	5.1
Description:	EN: (1) DiagnosticSession DiagnosticSession analysis a. ECU DiagnosticSession defaultSession programmingSession ECU NRC = $7F (SNSIAS) 9.4.-3 When diagnosticSession is defaultSession or programmingSession, ECU should prepare negative response message with NRC = $7F (SNSIAS) and execute reply response message specified at section 9.4.3. (2) (15) Check length of request message (check longer than minimum length 15)) a. 2 ECU NRC = $13 (IMLOIF) 9.4.3 When received request message is shorter than 2bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 9.4.3. (3) DTCSettingType DTCSettingType analysis a. DTCSettingType ECU NRC = $12 (SFNS) 9.4.3 When DTCSettingType in received request message is not supported, ECU should prepare negative response message with NRC = $12 (SFNS) and execute reply response message specified at section 9.4.3. (4) Check length of request message a. 2 ECU NRC = $13 (IMLOIF) 9.4.3 When received request message is NOT 2bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 9.4.3. (5) (1) (4) ECU ControlDTCSetting service ECU 9.4.2 9.4.3 When message doesn't match the above (1) to (4), ECU should judge it is possible to execute ControlDTCSetting service. ECU should execute task defined in 9.4.2 and prepare positive message and reply as defined in 9.4.3.
Rationale:	The 85 ControlDTCSetting service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-9_4_2
Status:	rejected
Version:	5.1
Description:	EN: DTCSettingType When ECU judges ControlDTCSetting service is possible based on 9.4.1 criteria, ECU should execute task written after.
Rationale:	The 85 ControlDTCSetting service is not supported by the EB Bootloader (should be managed by the customer).

Needs coverage of:	SwAD

Id:	HondaDiagnostics-9_4_2_1
Status:	rejected
Version:	5.1
Description:	EN: DTC ( ) ECU could stop storing DTC. Prior to DTCSettingType, check if enough length of request message is received or not. DTC ECU 16 If the above situation is not recommended when vehicle drives. In this case, operating mode should be defined by the system. 16 9.4.3 Reply response message 3 (or) suppressPosRspMsgIndicationBit As described in section 3, not only by request message analysis results but also addressing type (physical or function address), or suppressPosRspMsgIndicationBit have influence on response message. Table 9.5 9.4.1 Table 9.5 shows response message definition. Table 9.-5 Service $85 Service $85 Reply to request message Request message check result suppressPosRs pMsgIndication Response message No 1) Description addressing Bit type (2)a Physical 0 (False) (NRC $13) (4)a Wrong message length 1 (True) Negative response Function DTCSettingType 0 (False) (NRC $12) (3)a Physical 1 (True) Negative response Requested DTCSettingType is not 0 (False) supported Function 1 (True) No response DiagnosticSession (1)a Service $85 Physical 0 (False) (NRC $7F) Current Diagnostic Session doesn't 1 (True) Negative response support Service $85. Function ControlDTCSetting 0 (False) Positive response (5) service Physical Requested ControlDTCSetting 1 (True) service executable Function No response 1) 9.4.1 No. No. is corresponding to No. in section 9.4.1. Generally it makes sense not to stop self diagnosis though DTC is not stored. When failure is detected, failsafe action should be taken but this should be defined by the system.
Rationale:	The 85 ControlDTCSetting service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-9_4_3
Status:	rejected
Version:	5.1
Description:	EN: DTC ECU, which stops DTC storing by 9.4.2.1 should return to normal when one of following conditions is met. (1) ECU DiagnosticSession defaultSession DiagnosticSession transfers to defaultSession a. Service $10 defaultSession By Service $10 request message b. (S3Server) defaultSession Session timer(S3Server) time out (2) OFF IG OFF (3) battery cut (4) Service $11 " OFF" " " ECU ECU reset by Service $11 request. - programmingSession DTC Caution - Don't return the set stop of DTC by the changes to programmingSession.

Rationale:	The 85 ControlDTCSetting service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-10_1
Status:	rejected
Version:	5.1
Description:	EN: Service $22 (ReadDataByIdentifier service) dataRecord Service $22 (ReadDataByIdentifier service) is used to read out dataRecord. dataRecord ( ) dataRecord 2 dataIdentifier DataRecord is defined as information packet for diagnostic parameter such as input/output signal and internal data and for each dataRecord two bytes of dataIdentifier is specified. dataIdentifier Service $22 ECU dataIdentifier dataRecord ECU dataIdentifier dataRecord The offboard tester requests ECU using Service $22 request message, which has more than 1 dataIdentifier to reply dataRecord parameter requested by data identifier. Then ECU should reply dataRecord parameter or response message that dataRecord parameter will not be sent. Service $22 dataIdentifier dataRecord Serve $22 dataIdentifier and dataRecord should be defined by the system.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-10_2_1
Status:	approved
Version:	5.1
Description:	EN: Table 10.1 Service $22 Service $22 1 SID 1 dataIdentifier 1 dataIdentifier 2 dataIdentifier 10.3.1 Table 10.1 shows Service $22 request message format, which consists of 1 byte of SID and one or more dataIdentifier. Request message length is variable. 1 dataIdentifier has 2 bytes. Detail for dataIdentifier should refer to 10.3.1. Table 10.1 Service $22 Service $22 Request message definition Hex Data Byte Parameter Cvt Hex value #1 Service $22 SID M 22 Service $22 Request SID #2 dataIdentifier[ ] #1 = [byte 1 (MSB) M 00-FF #3 byte 2] M 00-FF : : : : #n-1 dataIdentifier[ ] #m = [byte 1 (MSB) U 00-FF #n byte 2] U 00-FF
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-10_2_2
Status:	proposed

Version:	5.1
Description:	EN: Table 10.2 Service $22 Service $22 1 SID dataIdentifier dataRecord dataIdentifier dataIdentifier dataRecord dataIdentifier dataRecord 10.3.2 Table 10.-2 shows Service $22 positive response message format. The message contains 1 byte of positive response message SID , dataIdentifier, and dataRecord. dataRecord is shown in 10.3.2. ECU dataIdentifier dataRecord dataIdentifier dataIdentifier dataRecord dataIdentifier dataRecord ECU which received the request message returns the positive response message included in order of requested dataIdentifier and dataRecord defined to the dataIdentifier. When returning the information corresponding to several dataIdentifiers, it carries out as follows. It includes in positive response message in order of specified dataIdentifier and dataRecord defined by the dataIdentifier. Next, it includes after previous positive response message in order of specified dataIdentifier and dataRecord defined by the dataIdentifier. If the information for dataIdentifier specified by the request message is included, positive response message will be replied. dataIdentifier dataIdentifier dataRecord When more dataIdentifiers are requested, order of dataRecord is up to ECU. (no need to follow order of dataIdentifier) Table 10.2 Service $22 Service $22 Positive response message definition Hex Data Byte Parameter Cvt Hex value #1 Service $22 SID M 62 Service $22 Positive response SID #2 dataIdentifier[ ] #1 = [byte 1 (MSB) M 00-FF #3 byte 2] M 00-FF #4 dataRecord[ ] #1 = [data #1 M 00-FF : : : : #(k-1)+4 data #k] U 00-FF : : : : #n-(o-1)-2 dataIdentifier[ ] #m = [byte 1 (MSB) U 00-FF #n-(o-1)-1 byte 2] U 00-FF #n-(o-1) dataRecord[ ] #m = [data #1 U 00-FF : : : : #n data #o] U 00-FF
Rationale:	ReadDataByIdentifier callbacks shall be implemented by customer to provide the DID values. For CommunicationControl service, no action is performed by EB Bootloader, it only provides a positive response.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-10_2_3
Status:	proposed
Version:	5.1
Description:	EN: 2.2.2 Negative response message should follow section 2.2.2.
Rationale:	ReadDataByIdentifier callbacks shall be implemented by customer to provide the DID values. For CommunicationControl service, no action is performed by EB Bootloader, it only provides a positive response.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-10_3

Status:	rejected
Version:	5.1
Description:	EN: Service $22 The section defines parameter for Service $22 message.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-10_3_1
Status:	proposed
Version:	5.1
Description:	EN: dataIdentifier Service $22 2 ECU dataRecord ( ) dataIdentifier dataRecord (dataRecord) dataIdentifier is two bytes information included in service $22 request message to indicate dataRecord read out from ECU. ECU dataIdentifier The offboard tester requests parameter packet to be read out. Then in the response message the same identifier should be integrated. dataIdentifier dataIdentifier ECU Some dataIdentifier is protected by security. When such dataIdentifier is received, ECU should check security status. dataIdentifier dataIdentifier Maximum number of dataIdentifier should be defined by the system. : Engine dataIdentifier 5 Information. PGM_FI system uses 5 as max. dataIdentifier (dataRecord dataIdentifier) dataIdentifier and dataRecord should be defined by the system.
Rationale:	ReadDataByIdentifier callbacks shall be implemented by customer to provide the DID values. For CommunicationControl service, no action is performed by EB Bootloader, it only provides a positive response.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-10_3_2
Status:	proposed
Version:	5.1
Description:	EN: dataRecord Service $22 dataIdentifier ( ) dataRecord is information included in Service $22 positive response message. dataRecord 1 dataRecord PDR (Position in DataRecord) dataRecord dataRecord (Table 10.2 data #1) PDR $00 PDR $01 $02... dataRecord can be one or more data. To show position at dataRecord PDR (Position in DataRecord) is added to each byte of dataRecord. e.g. head of dataRecord is PDR $00 (data #1 in table 10-2), then PDR $01, PDR $02.... dataRecord dataIdentifier 17 Length of dataRecord must be fixed but it can be different length by dataIdentifier. 17) dataRecord dataRecord should be defined by the system.

Rationale:	ReadDataByIdentifier callbacks shall be implemented by customer to provide the DID values. For CommunicationControl service, no action is performed by EB Bootloader, it only provides a positive response.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-10_3_3
Status:	proposed
Version:	5.1
Description:	EN: Table 10.3 Service $22 NRC 10.4 Table 10.3 shows Service $22 NRC definition. Negative response should be refer to 10.4. dataIdentifier dataRecord Offboard tester gets the data length of dataRecord from the value of dataIdentifier. When several dataIdentifier(s) are required,offboard tester recognizes boundary of dataIdentifier and dataRecord in a positive response message using those value. Table 10.3 Service $22 Service $22 Negative response code definition NRC (Hex) Description generalReject (GR) 10 (NRC) Although required processing cannot be performed, the negative response code suitable in ISO14229 is not defined. incorrectMessageLengthOrInvalidFormat (IMLOIF) 13 Received message length or message structure doesn't suit Spec. . conditionsNotCorrect (CNC) 22 Vehicle condition is out of Spec. for the service. requestOutOfRange (ROOR) (1) dataIdentifier dataIdentifier 31 Number of requested dataIdentifier is more than allowed. (2) dataIdentifier No all of dataIdentifiers are supported. (3) dataIdentifier DiagnosticSession Requested dataIdentifier is not supported at this diagnosticSession. securityAccessDenied (SAD) 33 dataIdentifier More than 1 dataIdentifier have security issues. (not released) requestCorrectlyReceived-ResponsePending (RCRRP) (NRC 78) Due to execution of requested task it is not possible to respond positive response or negative response with appropriate NRC. Extension of time to reply for response message is requested. TS-DCC01 Detail should refer to TS-DCC01 .
Rationale:	ReadDataByIdentifier callbacks shall be implemented by customer to provide the DID values and requests responses. For CommunicationControl service, no action is performed by EB Bootloader, it only provides a positive response.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-10_4
Status:	rejected
Version:	5.1
Description:	EN: Service $22 ECU Reply from ECU should follow this description.
Rationale:	

Needs coverage of:	SwAD

Id:	HondaDiagnostics-10_4_1
Status:	proposed
Version:	5.1
Description:	EN: (1) 18 Check length of request message 18 a. 3 19 ECU NRC = $13 (IMLOIF) 10.4.3 When received request message is shorter than 3bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 10.4.3. b. ECU NRC = $13 (IMLOIF) 10.4.3 When received request message is even bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 10.4.3. c. 20 ( ) ECU NRC = $31 (ROOR) 10.4.3 When received request message is longer than possible value, ECU should prepare NRC = $31 (ROOR), and reply as specified in 10.4.3. (2) dataIdentifier Gathering dataIdentifier a. dataIdentifier dataIdentifier(s) are gathered and collected from the request message which received. (3) dataIdentifier The check for every dataIdentifier a. dataIdentifier (4) dataIdentifier (9) Processing shown about each of gathered dataIdentifier(s) after (4) is performed. If all the dataIdentifier(s) included in the request message are processed, processing shown in (9) will be performed. (4) dataIdentifier The support check of dataIdentifier a. dataIdentifier (3) dataIdentifier When not supporting dataIdentifier for processing, it returns to (3) and the remaining dataIdentifier is inspected. 18 3.2 dataIdentifier Service $22 dataIdentifier In the inspection routine of the general request message indicated in section 3.2, dataIdentifier will be inspected before message length. However, in the case of Service $22, because several dataIdentifier(s) are included in a single request message, message length is inspected previously. 19 (1 dataIdentifier) Check of minimum request message length. (Minimum request message length = 3 bytes) 20 (dataIdentifier) 2+1 Engine 11 (5 2+ 1) possible reception bytes = dataIdentifier *2 +1 . In case of PGM-Fi it is 11 (5*2 +1). (5) DiagnosticSession (DiagnosticSession dataIdentifier) DiagnosticSession analysis (needed if supported dataIdentifier depend on diagnosticSession) a. dataIdentifier DiagnosticSession (DiagnosticSession) (3) dataIdentifier When not supporting dataIdentifier for processing by the current DiagnosticSession (It supports in other DiagnosticSession(s)), it returns to (3) and the remaining dataIdentifier is inspected. - dataIdentifier = $xxxx extendedDiagnosticSession defaultSession defaultSession dataIdentifier ECU NRC = $31 (ROOR) Caution - For example, although dataIdentifier = $xxxx is supported by extendedDiagnosticSession, when it is not supported by defaultSession, when only this dataIdentifier is required by defaultSession, ECU returns the negative response of NRC = $31 (ROOR). dataIdentifier DiagnosticSession dataIdentifier 1 DiagnosticSession dataIdentifier dataRecord However, dataIdentifier

supported by the current DiagnosticSession to dataIdentifier included in the request message which received, when it is also one, the positive response message included [dataIdentifier supported by the current DiagnosticSession and corresponding dataRecord] is replied. (6) (dataIdentifier) Security check (if there is dataIdentifier, which is protected by security) a. dataIdentifier ( ) ECU NRC = $33 (SAD) 10.4.3 When the security of the security type which dataIdentifier for processing is protected by security, and corresponds is not released (or unauthorized security access), ECU should prepare negative response message with NRC = $33 (SAD) and execute reply response message specified at section 10.4.3. 6 "Service $27 (SecurityAccess service)" Detail of security access is described in section 6 "Service $27 (SecurityAccess service)". dataIdentifier Security protected dataIdentifier should be defined by the system. - dataIdentifier dataIdentifier Caution - Same processing is performed even if dataIdentifier (dataIdentifier currently supported and dataIdentifier of which security was released) which can be normally replied in the request message which received is contained. (7) ( ) The check of vehicles operating condition It implements, when there are conditions which cannot perform an information output. a. dataIdentifier ECU NRC = $22 (CNC) 10.4.3 When the information output which dataIdentifier included in the request message which received in the current condition of ECU defines cannot be performed, ECU should prepare negative response message with NRC = $22(CNC) and execute reply response message specified at section 10.4.3. dataIdentifier NRC=$22 (CNC) In addition, which dataIdentifier uses NRC=$22 by the ability not to perform an information output on what kind of conditions directs for every system. (It does not define by this document.) b. dataIdentifier ECU ECU NRC = $10 (GR) 10.4.3 When dataIdentifier for processing has refusal conditions of an information output and ECU is in the condition currently, ECU should prepare negative response message with NRC = $10 (GR) and execute reply response message specified at section 10.4.3. dataIdentifier NRC=$10 (GR) In addition, which dataIdentifier uses NRC=$10 by the ability not to perform an information output on what kind of conditions directs for every system. (It does not define by this document.) (8) Preparation of the information to reply a. dataIdentifier (3) dataIdentifier The information corresponding to dataIdentifier for processing is prepared, it returns to (3), and the remaining dataIdentifier is inspected. (9) a. dataIdentifier DiagnosticSession 1 ECU NRC = $31 (ROOR) 10.4.3 When dataIdentifier in request message is not at all supported (by the current DiagnosticSession), ECU should prepare NRC = $31(ROOR) and execute reply response message specified at section 10.4.3. - dataIdentifier dataIdentifier 1 Caution - at least one dataIdentifier is supported, ECU should send positive message. (10) (1) (9) ECU ReadDataByIdentifier service ECU 10.4.2 10.4.3 When message doesn't match the above (1) to (9), ECU should judge it is possible to execute ReadDataByIden-

	tifier service. ECU should execute task defined in 10.4.2 and prepare positive message and reply as defined in 10.4.3.
Rationale:	ReadDataByIdentifier callbacks shall be implemented by customer to provide the DID values. For CommunicationControl service, no action is performed by EB Bootloader, it only provides a positive response.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-10_4_2
Status:	proposed
Version:	5.1
Description:	EN: Service $22 Service $22 doesn't request task except positive response message. When positive response message is sent, below items should be considered. dataIdentifier 1 ( ) dataIdentifier dataRecord Table 10.2 dataRecord #n dataIdentifier #n (n = 1 m) dataIdentifier dataIdentifier If at least one of the dataIdentifier(s) included in the request message is supported except for the case where a negative response message is returned, a positive response message will be returned. In this case, the positive response message included [dataRecord corresponding to dataIdentifier to support] is returned. The diagnostic parameter corresponding to dataIdentifier #n is included in dataRecord #n in Table 10.2. (n = from 1 to m.) In addition, an order of dataIdentifier returned by a response message may not be the same as an order of dataIdentifier specified by a request message. - ECU dataIdentifier Caution -ECU should prepare enough transmitting buffer to be able to respond, when several dataIdentifiers are required.
Rationale:	ReadDataByIdentifier callbacks shall be implemented by customer to provide the DID values. For CommunicationControl service, no action is performed by EB Bootloader, it only provides a positive response.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-10_4_3
Status:	proposed
Version:	5.1
Description:	EN: Reply response message 3 (or) As described in section 3, not only by request message analysis results but also addressing type (physical or function address) have influence on response message. Table 10.4 10.4.1 Table 10.-4shows response message definition. (P2CAN) NRC = $78 (RCRRP) When more time is needed to prepare information and it is not possible to respond positive response message within P2CAN, ECU can request extension of positive response message by sending negative response message with NRC =

	$78 (RCRRP). P2CAN NRC = $78 (RCRRP) TS-DCC01 Detail of negative response message of P2CAN, negative response message with NRC = $78 (RCRRP) should refer to TS-DCC01 . Table 10.4 Service $22 Service $22 Reply to request message Request message check result No 1) addressing Response message Description type (1)a Physical (NRC $13) (1)b Wrong message length Negative response Function dataIdentifier (NRC $31) (1)c Physical Negative response The required dataIdentifier number exceeded the acceptable value. Function No response dataIdentifier (NRC $31) DiagnosticSession Physical Negative response (9)a No required dataIdentifier(s) are supported (by the current Function No response DiagnosticSession). dataIdentifier (6)a Physical (NRC $33) Required dataIdentifier has security Negative response one or more unreleased things. Function dataIdentifier (7)a The current vehicles operating Physical (NRC $22) condition has been the information Negative response output refusal conditions which Function dataIdentifier defined ECU dataIdentifier (7)b The current condition of ECU has Physical (NRC $10) been the information output refusal Negative response conditions which dataIdentifier Function defines. ReadDataByIdentifier (10) service Physical Requested ReadDataByIdentifier Positive response service executable Function 1) 10.4.1 No. No. is corresponding to No. in section 10.4.1.
Rationale:	ReadDataByIdentifier callbacks shall be implemented by customer to provide the DID values. For CommunicationControl service, no action is performed by EB Bootloader, it only provides a positive response.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-10_5_1
Status:	rejected
Version:	5.1
Description:	EN: dataIdentifier is specified dataIdentifier = $ F190 Read-out of dataIdentifier = $ F190. dataIdentifier = $ F190 dataRecord ( ) 1 VIN 20 VIN dataIdentifier = $ F190, 1 byte of VIN active length and 20 bytes of VIN information are defined as dataRecord. Table 10.5 1 : Service $22 example 1 : Service $22 Request Message Data byte Description Hex Hex value #1 Service $22 SID 22 Service $22 Request SID #2 dataIdentifier [byte 1] (MSB) F1 #3 dataIdentifier [byte 2] 90 Table 10.6 1 : Service $22 example 1 : Service $22 Positive Response Message Data byte Description Hex Hex value #1 Service $22 SID 62 Service $22 Positive repose SID #2 dataIdentifier [byte 1] (MSB) F1 #3 dataIdentifier [byte 2] 90 #4 dataRecord [data #1] = VIN = 17 PDR $00 11 Length of VIN = 17 bytes #5 dataRecord [data #2] = VIN = "W" PDR $01 57 #6 dataRecord [data #3] = VIN = "0" PDR $02 30 #7 dataRecord [data #4] = VIN = "L" PDR $03 4C #8 dataRecord [data #5] = VIN = "0" PDR $04 30 #9 dataRecord [data #6] = VIN = "0" PDR $05 30 #10 dataRecord [data #7] = VIN = "0" PDR $06 30

	#11 dataRecord [data #8] = VIN = "0" PDR $07 30 #12 dataRecord [data #9] = VIN = "4" PDR $08 34 #13 dataRecord [data #10] = VIN = "3" PDR $09 33 #14 dataRecord [data #11] = VIN = "M" PDR $0A 4D #15 dataRecord [data #12] = VIN = "B" PDR $0B 42 #16 dataRecord [data #13] = VIN = "5" PDR $0C 35 #17 dataRecord [data #14] = VIN = "4" PDR $0D 34 #18 dataRecord [data #15] = VIN = "1" PDR $0E 31 #19 dataRecord [data #16] = VIN = "3" PDR $0F 33 #20 dataRecord [data #17] = VIN = "2" PDR $10 32 #21 dataRecord [data #18] = VIN = "6" PDR $11 36 #22 dataRecord [data #19] = VIN = "" (NULL) PDR $12 00 (NULL Character) #23 dataRecord [data #20] = VIN = "" (NULL) PDR $13 00 (NULL Character) #24 dataRecord [data #21] = VIN = "" (NULL) PDR $14 00 (NULL Character)
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-10_5_2
Status:	rejected
Version:	5.1
Description:	EN: several dataIdentifiers are specified dataIdentifier = $ 010A dataIdentifier = $ 0110 Read-out of dataIdentifier = $ 010A and $0110. dataIdentifier = $ 010A dataRecord ( ) 1 ECT 1 TP 2 RPM 1 MAP 1 MAF 1 VSS 1 BARO 1 LOAD 1 IAC 1 APP dataIdentifier = $ 010A , 1 byte of ECT, 1 byte of TP, 2 bytes of RPM, 1 byte of MAP, 1 byte of MAF, 1 byte of VSS, 1 byte of BARO, 1 byte of LOAD, 1 byte of IAC, and 1 byte of APP are defined as dataRecord. dataIdentifier = $ 0110 dataRecord ( ) 1 +B dataIdentifier = $ 0110, 1 byte +B is defined as dataRecord. Table 10.7 2 : Service $22 example 2 : Service $22 Request Message Data byte Description Hex Hex value #1 Service $22 SID 22 Service $22 Request SID #2 dataIdentifier [byte 1] (MSB) 01 #3 dataIdentifier [byte 2] 0A #4 dataIdentifier [byte 1] (MSB) 01 #5 dataIdentifier [byte 2] 10 Table 10.8 2 : Service $22 example 2 : Service 22 Positive Response Message Data byte Description Hex Hex value #1 Service $22 SID 62 Service $22 Positive repose SID #2 dataIdentifier [byte 1] (MSB) 01 #3 dataIdentifier [byte 2] 0A #4 dataRecord [data #1] = ECT PDR $00 A6 #5 dataRecord [data #2] = TP PDR $01 66 #6 dataRecord [data #3] = RPM PDR $02 07 #7 dataRecord [data #4] = RPM PDR $03 50 #8 dataRecord [data #5] = MAP PDR $04 20 #9 dataRecord [data #6] = MAF PDR $05 1A #10 dataRecord [data #7] = VSS PDR $06 00 #11 dataRecord [data #8] = BARO PDR $07 63 #12 dataRecord [data #9] = LOAD PDR $08 4A #13 dataRecord [data #10] = IAC PDR $09 82 #14 dataRecord [data #11] = APP PDR $0A 7E #15 dataIdentifier [byte 1] (MSB) 01 #16 dataIdentifier [byte 2] 10 #17 dataRecord [data #1] = +B PDR $00 8C
Rationale:	Not a requirement

Needs coverage of:	SwAD

Id:	HondaDiagnostics-10_5_3
Status:	rejected
Version:	5.1
Description:	EN: Example 3 : (dataIdentifier which is not supported is included) Read out in case several dataIdentifiers are specified dataIdentifier = $ F190 dataIdentifier = $ 0110 ECU dataIdentifier = $ 0110 dataIdentifier = $ F190 Read out of dataIdentifier = $F190 and $0110. However, although dataIdentifier = $0110 support ECU, dataIdentifier = $F190 do not support. dataIdentifier = $ F190 dataRecord ( ) 1 VIN 20 VIN dataIdentifier = $ F190, 1 byte of VIN active length and 20 bytes of VIN information are defined as dataRecord. dataIdentifier = $ 0110 dataRecord ( ) 1 +B dataIdentifier = $ 0110, 1 byte +B is defined as dataRecord. Table 10.9 3 : Service $22 example 3 : Service $22 Request Message Data byte Description Hex Hex value #1 Service $22 SID 22 Service $22 Request SID #2 dataIdentifier [byte 1] (MSB) F1 #3 dataIdentifier [byte 2] 90 #4 dataIdentifier [byte 1] (MSB) 01 #5 dataIdentifier [byte 2] 10 Table 10.10 3 : Service $22 example 3 : Service $22 Positive Response Message Data byte Description Hex Hex value #1 Service $22 SID 62 Service $22 Positive repose SID #2 dataIdentifier [byte 1] (MSB) 01 #3 dataIdentifier [byte 2] 10 #4 dataRecord [data #1] = +B PDR $00 8C
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-10_6
Status:	rejected
Version:	5.1
Description:	EN: ECU Service $22 This section defines parameter for reprogrammable ECU. " B.3 (3) " Service $22 Appendix B3 reprogramming communication procedure 3) vehicle condition reading parameter should be defined by the system.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-10_6_1
Status:	proposed
Version:	5.1
Description:	EN: Table 10.11 dataIdentifier Table 10.11 shows dataIdentifier for reprogramming. Table 10.11 Service $22 dataIdentifier The definition of Service $22 dataI-

	dentifier used by reprogramming DiagnosticSession dataIdentifier Support by DiagnosticSession (Hex Requested information default extendedDiag engineering programming Securit Session nosticSession Session Session y E600 battery voltage None F100 Reprogramming history None F181 ID Program ID None Support No Support Table 10.11 dataIdentifier Service $22 NRC = $78 (RCRRP) Caution - NRC=$78 (RCRRP) must not use dataIdentifier specified to Table 10.11 by the reply of Service $22.
Rationale:	EB Bootloader call a callback to get the values associated to these DIDs. The storage of the DIDs value, their configuration and the implementation of the callbacks shall be ensured by customer.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-10_6_2
Status:	proposed
Version:	5.1
Description:	EN: 10.6.2.1 (dataIdentifier = $ E600) battery voltage Table 10.12 dataIdentifier = $ E600 dataRecord dataRecord 2 Table 10.12 shows dataRecord definition of dataIdentifier = $E600. dataRecord is two bytes battery voltage. dataIdentifier = $ E600 Service $22 ECU dataRecord ECU which received the Service $22 request message of dataIdentifier = $ E600 includes battery voltage in dataRecord. (10v) Off-board tester judges from battery voltage if reprogramming is done or not. Table 10.12 dataIdentifier = $ E600 dataRecord dataIdentifier PDR Min Max (Hex) Information Bytes Minimum Maximum resolution $00 (MSB) battery voltage (MSB) 2 0V 65.535 V 0.001 V/bit E600 $01 2 Bytes battery voltage ECU 0.001V/bit 2 PDR $00 $01 ECU converts to unsigned two bytes by resolution 0.001 V/bit for PDR $00 and $01. Table 10.13 12.5V Table 10.13 shows message example when battery voltage is 12.5V. Table 10.-13 dataIdentifier = $ E600 dataIdentifier = $ E600 positive response message example Data byte Description Hex Hex value #1 Service $22 SID 62 Service $22 Positive repose SID #2 dataIdentifier [byte 1] (MSB) E6 #3 dataIdentifier [byte 2] 00 #4 dataRecord [data #1] = (MSB) PDR $00 30 battery voltage (MSB) #5 dataRecord [data #2] = PDR $01 D4 battery voltage 10.6.2.2 (dataIdentifier = $ F100) reprogramming history Table 10.14 dataIdentifier = $ F100 dataRecord dataRecord 4 Table 10.14 shows dataRecord definition of dataIdentifier = $F100. dataRecord is four bytes of reprogramming history. dataIdentifier = $ F100 Service $22 ECU dataRecord ECU which received the Service $22 request message of dataIdentifier = $ F100 includes reprogramming history in dataRecord. In addition, off-board tester does not use this information for reprogramming. Table 10.14 dataIdentifier = $ F100 dataRecord dataIdentifier = $ F100 positive response message example dataIdentifier PDR Description (Hex) Information Bytes $00 1 1 reprogramming history 1 1 byte Non offi-

	cial tester used history $01 2 1 reprogramming history 2 1 byte current tester history F100 $02 3 1 reprogramming history 3 1 byte number of reprogramming event $03 4 1 reprogramming history 4 1 byte Number of software erase. ECU 15.5.2.7 1 PDR $00 2 PDR $01 3 PDR $02 4 PDR $03 Table 10.15 1 = $FF 2 = $00 3 = $10 Table 10.15 dataIdentifier = $ F100 dataIdentifier = $ F100 positive response message example Data byte Description Hex Hex value #1 Service $22 SID 62 Service $22 Positive repose SID #2 dataIdentifier [byte 1] (MSB) F1 #3 dataIdentifier [byte 2] 00 #4 dataRecord [data #1] = 1 PDR $00 FF reprogramming history 1 #5 dataRecord [data #2] = 2 PDR $01 00 reprogramming history 2 #6 dataRecord [data #3] = 3 PDR $02 10 reprogramming history 3 #7 dataRecord [data #4] = 4 PDR $03 17 reprogramming history 4
Rationale:	EB Bootloader call a callback to get the values associated to these DIDs. The storage of the DIDs value, their configuration and the implementation of the callbacks shall be ensured by customer.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-10_6_2_3
Status:	proposed
Version:	5.1
Description:	EN: Table 10.16 dataIdentifier = $ F181 dataRecord dataRecord 16 ID dataIdentifier = $ F181 Service $22 ECU ID dataRecord PDR $00 Table 10.16 shows dataRecord of dataIdentifier = $F181. dataRecord is 16 bytes program ID. Program ID should start from PDR $00. ECU 22.4 " " ECU ID When ECU is in "application mode", program ID can be changed by reprogramming. ECU 22.-4 "BOOT " ECU ID But if ECU is in "BOOT mode", program ID must not be changed by reprogramming. 22.4 " " ID 22.4 "BOOT " (FLASH ROM EEPROM) ID Meaning when ECU is in "application mode", program ID should be one from flash area and if ECU is in "BOOT mode", ECU should reply program ID, which is stored in non flash area. The off board tester uses those information to decide program version and normal complete judgment. Table 10.16 dataIdentifier = $ F181 dataRecord dataIdentifier = $ F181 dataRecord definition dataIdentifier PDR Description (Hex) Bytes Resolution $00-$0F ID 16 ASCII Program ID 16 bytes ASCII ECU 16 ASCII ID PDR $00 F181 ID 14 (No.) 2 (PDR $0E $0F) $00 ECU should read 16 bytes ASCII code program ID from 1st byte and assign to PDR $00. Program ID should be 14 bigger numbers from SW part number on the Honda drawing and $00 for remaining 2 bytes. Table 10.17 "12345-ABC -6789-XZ" Table 10.17 shows example with SW number "12345-ABC-6789-XZ". Table 10.17 dataIdentifier = $ F181 dataIdentifier = $ F181 positive response message example. Data byte Description Hex Hex value #1 Service $22 SID 62 Service $22 Positive repose SID #2 dataIdentifier [byte 1] (MSB) F1 #3 dataIdentifier [byte 2] 81 #4 dataRecord [data #1] = ID = "1" PDR $00 31 Program

	ID #5 dataRecord [data #2] = ID = "2" PDR $01 32 Program ID #6 dataRecord [data #3] = ID = "3" PDR $02 33 Program ID #7 dataRecord [data #4] = ID = "4" PDR $03 34 Program ID #8 dataRecord [data #5] = ID = "5" PDR $04 35 Program ID #9 dataRecord [data #6] = ID = "-" PDR $05 2D Program ID #10 dataRecord [data #7] = ID = "A" PDR $06 41 Program ID #11 dataRecord [data #8] = ID = "B" PDR $07 42 Program ID #12 dataRecord [data #9] = ID = "C" PDR $08 43 Program ID #13 dataRecord [data #10] = ID = "-" PDR $09 2D Program ID #14 dataRecord [data #11] = ID = "6" PDR $0A 36 Program ID #15 dataRecord [data #12] = ID = "7" PDR $0B 37 Program ID #16 dataRecord [data #13] = ID = "8" PDR $0C 38 Program ID #17 dataRecord [data #14] = ID = "9" PDR $0D 39 Program ID #18 dataRecord [data #15] = = "" PDR $0E 00 #19 dataRecord [data #16] = = "" PDR $0F 00
Rationale:	EB Bootloader call a callback to get the values associated to these DIDs. The storage of the DIDs value, their configuration and the implementation of the callbacks shall be ensured by customer.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-11_1
Status:	rejected
Version:	5.1
Description:	EN: Service $2E (WriteDataByIdentifier service) ECU Service $2E (WriteDataByIdentifier service) is used to write information to ECU or EEPROM initialization. ECU dataIdentifier dataRecord Service $2E ECU ECU dataIdentifier dataRecord ( ) ( ) The offboard tester requests ECU using Service $2E request message, which has dataIdentifier, which defines memory area and with dataRecord, which are data to be written. Then ECU should write (or initialize) received dataRecord Parameter into area shown by dataIdentifier and then reply results that were executed or negative response message in response message. Service $2E ( ) In addition, you may protect with security the diagnostic function defined by Service $2E if needed. And, it is under a specific condition (for example, during an engine run) at safety or the reason for a design, you may refuse execution of the specified processing. Service $2E dataIdentifier dataIdentifier ( ) Service $2E dataIdentifier and security protection dataIdentifier and condition to enable writing (initialization) should be defined by the system.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-11_2_1
Status:	proposed

Version:	5.1
Description:	EN: Table 11.1 Service $2E Service $2E 1 SID 2 dataIdentifier dataRecord Table 11.1 shows Service $2E request message format. Which consists of 1 byte of SID and 2 bytes dataIdentifier and dataRecord. Data length is variable. Table 11.1 Service $2E Service $2E Request message definition Hex Data Byte Parameter Cvt Hex value #1 Service$2E SID M 2E Service $2E Request SID #2 dataIdentifier[ ] = [byte #1 (MSB) M 00-FF #3 byte #2] M 00-FF #4 dataRecord[ ] = [data#1 M 00-FF : : : : #m+3 data#m] U 00-FF
Rationale:	WriteDataByIdentifier callbacks shall be implemented by customer to provide the DID writting. No action is performed by EB Bootloader, it only provides a positive response.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-11_2_2
Status:	proposed
Version:	5.1
Description:	EN: Table 11.2 Service $2E Service $2E 1 SID 2 dataIdentifier dataIdentifier dataIdentifier Table 11.2 shows Service $2E positive response message format. The message contains 1 byte of positive response message SID and 2 bytes dataIdentifier. dataIdentifier should use received dataIdentifier. ECU ( ) After task execution, positive message should be sent. Table 11.2 Service $2E Service $2E Positive response message definition Hex Data Byte Parameter Cvt Hex value #1 Service$2E SID M 6E Service $2E Positive response SID #2 dataIdentifier[ ] = [byte #1 (MSB) M 00-FF #3 byte #2] M 00-FF
Rationale:	WriteDataByIdentifier callbacks shall be implemented by customer to provide the DID writting. No action is performed by EB Bootloader, it only provides a positive response.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-11_2_3
Status:	proposed
Version:	5.1
Description:	EN: 2.2.2 Negative response message should follow section 2.2.2.
Rationale:	WriteDataByIdentifier callbacks shall be implemented by customer to provide the DID writting. No action is performed by EB Bootloader, it only provides a positive response.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-11_3
Status:	proposed
Version:	5.1
Description:	EN: Service $2E The section defines parameter included in Service $2E message.
Rationale:	WriteDataByIdentifier callbacks shall be implemented by customer to provide the DID writting. No action is performed by EB Bootloader, it only provides a positive response.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-11_3_1
Status:	proposed
Version:	5.1
Description:	EN: dataIdentifier Service $2E 2 dataRecord ECU dataIdentifier is two bytes information included in service $2E request message, and it indicates memory area to write dataRecord in ECU. dataIdentifier In positive message, ECU should use same value as dataIdentifer value which is received message. Service $2E dataIdentifier Service $22 dataIdentifier Service $22 Service $2E The dataIdentifier which included in Service $2E is assigned same as Service $22 dataIdentifier and that Service $22 use same value as Service $2E. In that case, it is same meaning. (Engine dataIdentifier = $F190 VIN: Vehicle Identification Number dataIdentifier Service $2E Service $22) (e.g. $F190 means VIN, and the dataIdentifer is used writing Service $2E and reading Service $22.) dataIdentifier (dataRecord dataIdentifier) detail of dataIdentifier (definition and security protection) will be defined by the system.
Rationale:	WriteDataByIdentifier callbacks shall be implemented by customer to provide the DID writting. No action is performed by EB Bootloader, it only provides a positive response.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-11_3_2
Status:	proposed
Version:	5.1
Description:	EN: dataRecord dataIdentifier dataRecord is information included in Service $2E request message and it specifies data to be written where dataIdentifier indicates. dataRecord dataIdentifier dataRecord length is defined fixing length by each dataIdentifier. dataRecord 1 dataRecord 1 PDR (Position in DataRecord) dataRecord dataRecord (Table 11.1 data #1) PDR $00 PDR $01

	$02... dataRecord is constituted by one or more data. To show position inside of dataRecord, 1 byte PDR (Position in DataRecord) is added to each byte of dataRecord. e.g. head of dataRecord is PDR $00 (data #1 in Table 11.1), then PDR $01, PDR $02.... ECU dataIdentifier dataRecord ECU writes the value required as dataRecord in the memory area which dataIdentifier indicates. dataRecord detail for dataRecord is defined by the system.
Rationale:	WriteDataByIdentifier callbacks shall be implemented by customer to provide the DID writting. No action is performed by EB Bootloader, it only provides a positive response.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-11_3_3
Status:	proposed
Version:	5.1
Description:	EN: Table 11.3 Service $2E NRC 11.4 Table 11.3 shows Service $2E NRC definition. Negative response should be refer to 11.4. Table 11.3 Service $2E Service $2E Negative response code definition NRC (Hex) Description incorrectMessageLengthOrInvalidFormat (IMLOIF) 13 Received message length or message structure doesn't suit Spec. . conditionsNotCorrect (CNC) 22 ( ) Vehicle condition doesn't allow writing. (or initialization.) requestOutOfRange (ROOR) (1) dataIdentifier dataIdentifier which requested is not supported. 31 (2) dataRecord dataRecord which requested is out of Spec. (3) dataIdentifier DiagnosticSession dataIdentifier which requested is not supported in current diagnosticSession. securityAccessDenied (SAD) 33 dataIdentifier Security which requested dataIdentifer is not released. generalProgrammingFailure (GPF) 72 Due to memory error it is not possible to write. requestCorrectlyReceived-ResponsePending (RCRRP) (NRC 78) Due to execution of requested task it is not possible to respond positive response or negative response with appropriate NRC. Extension of time to reply for response message is requested. TS-DCC01 Detail should refer to TS-DCC01 .
Rationale:	WriteDataByIdentifier callbacks shall be implemented by customer to provide the DID writting. No action is performed by EB Bootloader, it only provides a positive response.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-11_4
Status:	proposed
Version:	5.1
Description:	EN: Service $2E ECU Reply from ECU should follow this description.

Rationale:	WriteDataByIdentifier callbacks shall be implemented by customer to provide the DID writting. No action is performed by EB Bootloader, it only provides a positive response.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-11_4_1
Status:	proposed
Version:	5.1
Description:	EN: (1) (21) Check length of request message (check longer than minimum length 21)) a. 3 ECU NRC = $13 (IMLOIF) 11.4.3 When received request message is shorter than 3bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 11.4.3. (2) dataIdentifier Check dataIdentifier a. dataIdentifier ECU NRC = $31 (ROOR) 11.4.3 When dataIdentifier in received request message is not supported, ECU should prepare negative response message with NRC = $31(ROOR) and execute reply response message specified at section 11.4.3. (3) Check length of request message a. dataIdentifier ECU NRC = $13 (IMLOIF) 11.4.3 When received request message length doesn't match to the length defined by dataIdentifier, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 11.4.3. (4) DiagnosticSession (DiagnosticSession dataIdentifier) DiagnosticSession analysis (needed if supported dataIdentifier depend on diagnosticSession) a. dataIdentifier DiagnosticSession ECU NRC = $31 (ROOR) 11.4.3 When dataIdentifiers in request message is not supported at current diagnosticSession (but supported at other diagnosticSession), ECU should prepare negative response message with NRC = $31(ROOR) and execute reply response message specified at section 11.4.3. (5) (dataIdentifier) Security check (if there is dataIdentifier, which is protected by security) a. dataIdentifier ( ) ECU NRC = $33 (SAD) 11.4.3 When dataIdentifiers in request message has security protection and that security of security type is not released (or fail to release), ECU should prepare negative response message with NRC = $33 (SAD) and execute reply response message specified at section 11.4.3. 6 "Service $27 (SecurityAccess service)" Detail of security access is described in section 6 "Service $27 (SecurityAccess service)". dataIdentifier Security protected dataIdentifier should be defined by the system. Prior to dataIdentifier, check if enough length of request message is received or not. (6) (dataIdentifier) Vehicle driving condition check (if there is dataIdentifier , which requires special vehicle condition.) a. dataIdentifier ECU NRC = $22 (CNC) 11.4.3 When received dataIdentifier as limitation on vehicle condition and current vehicle condition is out of possible area, ECU should prepare negative response message with NRC = $22 (CNC) and execute reply response message specified at section 11.4.3. Vehi-

	cle condition should be defined by the system. (7) dataRecord ( ) dataRecord check (It implements if needed) a. dataRecord dataIdentifier ECU NRC = $31 (ROOR) 11.4.3 When dataRecord is out of Spec, ECU should prepare NRC = $31(ROOR) and execute reply response message specified at section 11.4.3. dataRecord Detail should be defined by the system. (8) ( ) Store area memory check (It implements if needed) a. dataIdentifier ECU NRC = $72 (GPF) 11.4.3 When store area memory indicates abnormality, ECU should prepare NRC = $72(GPF) and execute reply response message specified at section 11.4.3. dataIdentifier Detail should be defined by the system. (9) (1) (8) ECU WriteDataByIdentifier service ECU 11.4.2 When message doesn't match the above (1) to (8), ECU should judge it is possible to execute WriteDataByIdentifier service. ECU should execute task defined in 11.4.2 and, prepare positive/negative response message and execute reply response message specified in 11.4.3. a. WriteDataByIdentifier service ECU NRC = $72 (GPF) 11.4.3 When writing which is WriteDataByIdentifierService couldn't finish normal due to memory problem, ECU should prepare NRC = $72(GPF) and execute reply response message specified at section 11.4.3. b. WriteDataByIdentifier service ECU 11.4.3 When writing which is WriteDataByIdentifierService finished normal, ECU should reply positive message.
Rationale:	WriteDataByIdentifier callbacks shall be implemented by customer to provide the DID writting. No action is performed by EB Bootloader, it only provides a positive response.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-11_4_2
Status:	proposed
Version:	5.1
Description:	EN: dataIdentifier dataRecord ( ) When ECU judges to perform the requested task which is WriteDataByIdentifierService, ECU should write dataRecord into memory specified by dataIdentifier. (or, initialize specified area of memory by dataIdentifer.) 11.4.3 Reply response message 3 (or) As described in section 3, not only by request message analysis results but also addressing type (physical or function address) have influence on response message. Table 11.4 11.4.1 Table 11.4 shows response message definition. 11.4.2 (P2CAN) NRC = $78 (RCRRP) When more time is needed to prepare information and it is not possible to respond positive response message within P2CAN, ECU can request extension of positive response message by sending negative response message with NRC = $78 (RCRRP). P2CAN NRC = $78 (RCRRP) TS-DCC01 Detail of negative response message of P2CAN, negative response message with NRC = $78 (RCRRP) should refer to TS-DCC01 . Table 11.4 Service $2E Service $2E Reply to response message Request message check result No 1) ad-

	dressing Response message Description type (1)a Physical (NRC $13) (3)a Wrong message length Negative response Function dataIdentifier (NRC $31) (2)a Physical Negative response requested dataIdentifier not supported. Function No response DiagnosticSession (NRC $31) dataIdentifier Physical Negative response (4)a requested dataIdentifier not supported in current Function No response diagnosticSession. dataIdentifier (5)a Physical (NRC $33) Security of dataIdentifier is not Negative response released. Function (6)a Physical (NRC $22) Vehicle condition doesn't allow Negative response requested service to execute Function (NRC $31) (7)a dataRecord Physical Negative response Incorrect dataRecord value. Function No response (8)a Physical (NRC $72) (9)a Memory error Negative response Function WriteDataByIdentifier (9)b service Physical Requested WriteDataByIdentifier Positive response service executable Function 1) 11.4.1 No. No. is corresponding to No. in section 11.4.1.
Rationale:	WriteDataByIdentifier callbacks shall be implemented by customer to provide the DID writting. No action is performed by EB Bootloader, it only provides a positive response.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-11_5
Status:	proposed
Version:	5.1
Description:	EN: ECU Service $2E This section defines the parameter included in the Service $2E message of ECU which implements a reprogramming function.
Rationale:	WriteDataByIdentifier callbacks shall be implemented by customer to provide the DID writting. No action is performed by EB Bootloader, it only provides a positive response.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-11_5_1
Status:	proposed
Version:	5.1
Description:	EN: Table 11.5 dataIdentifier Table 11.5 shows dataIdentifier for reprogramming. Table 11.5 Service $2E dataIdentifier DiagnosticSession dataIdentifier Support by DiagnosticSession (Hex Information default extendedDiag engineering programmin Securit Session nosticSession Session gSession y F100 Reprogramming history none F101 Program information none Support No Support - Table 11.5 dataIdentifier Service $2E NRC = $78 (RCRRP) Caution dataIdentifier in Table 11.5 should not be used Service $2E with NRC = $78 (RCRRP).

Rationale:	EB Bootloader call a callback to set the values associated to these DIDs. The storage of the DIDs value, their configuration and the implementation of the callbacks shall be ensured by customer.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-11_5_2
Status:	proposed
Version:	5.1
Description:	EN: 11.5.2.1 (dataIdentifier = $ F100) reprogramming history Table 11.6 dataIdentifier = $ F100 dataRecord dataRecord 2 Table 11.6 shows dataRecord for dataIdentifier = $F100. dataRecord have two bytes offboard tester information. dataIdentifier = $ F100 Service $2E ECU When ECU judges possible to execute, ECU should do followings. (1) 1 (PDR $00) Offboard tester information (PDR $00) check a. 1 (PDR $00) $01 ECU $FF When offboard tester information 1 is not $01, ECU should store $FF as reprogramming tester info. Service $31 15.5.2.7 The information to EEPROM should be done after service $31 program memory erase. Detail should refer to 15.5.2.7. b. 1 (PDR $00) $01 ECU 2 (PDR $01) When offboard tester information 1 is $01, ECU should store offboard tester information 2 (PDR $01) as reprogramming tester info. Service $31 15.5.2.7 The information to EEPROM should be done after service $31 program memory erase. Detail should refer to 15.5.2.7. Table 11.6 dataIdentifier = $ F100 dataRecord dataRecord definition dataIdentifier = $F100 dataIdentifier PDR Description Hex (Hex) Hex value $00 1 00-FF F100 Off-board tester information 1 $01 2 00-FF Off-board tester information 2 - dataRecord Service $22 Service $2E Caution dataRecord contents are different between Service $22 and Service $2E. 11.5.2.2 (dataIdentifier = $ F101) Program information (dataIdentifier = $F101) Table 11.7 dataIdentifier = $ F101 dataRecord dataRecord 3 Table 11.7 shows dataRecord for dataIdentifier = $F101. 3 bytes of programming information is defined as dataRecord. dataIdentifier = $ F101 Service $2E ECU PDR $00 $02 1 3 When ECU judges possible to execute, and receive Service $2E request message in dataIdentifier=$F101, ECU should store PDR $00 to PDR $02 as information 1 to 3. ECU 22.5 " " ECU 22.5 " " ECU 22.5 " " ECU When ECU reprogramming status is like "waiting for programming information" specified in 22.5, after getting this information, ECU should transfer to "wait for download request". When ECU is not in "waiting for programming information", no change should be done. (1 3) Service $36 Program information 1 to 3 should be used to decrypt program code sent with Service $36. Decrypt function should be defined separately. Table 11.7 dataIdentifier = $ F101 dataRecord dataRecord definition dataIdentifier = $F101 dataIdentifier PDR Description Hex (Hex) Hex value $00 1 00-FF Decrypt code 1 F101 $01 2 00-FF Decrypt code 2 $02 3 00-FF Decrypt code 3

Rationale:	EB Bootloader call a callback to set the values associated to these DIDs. The storage of the DIDs value, their configuration and the implementation of the callbacks shall be ensured by customer. Reprogramming status shall be fully managed in integration code.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-12_1
Status:	rejected
Version:	5.1
Description:	EN: Service $14 (ClearDiagnosticInformation service) ECU Service $14 (ClearDiagnosticInformation service) is used to initialize diagnostic information stored in ECU. groupOfDtc Service $14 ECU ECU groupOfDtc Off-board tester requires initialization of the diagnostic related information stored in ECU by the Service $14 request message included groupOfDtc. ECU returns whether initialization of diagnostic related information was performed. groupOfDtc groupOfDtc DTC groupOfDtc defines data which should be initialized. groupOfDtc should take one of "specific unit group" and "specific system DTC". ( ) ON It is possible to reject under special condition such engine running. When IG-ON but motor is not running, this command must be executed. Service $14 Initialized items by Service $14 should be defined by the system.
Rationale:	The 0x14 ClearDiagnosticInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-12_2_1
Status:	rejected
Version:	5.1
Description:	EN: Table 12.1 Service $14 Service $14 1 SID 3 groupOfDtc Table 12.1 shows Service $14 request message format, which consists of SID and 3 bytes of groupOfDtc. Table 12.1 Service $14 Service $14 Request message definition Hex Data Byte Parameter Cvt Hex value #1 Service $14 SID M 14 Service $14 Request SID #2 #3 groupOfDtc [ ] M FFFFFF #4
Rationale:	The 0x14 ClearDiagnosticInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-12_2_2

Status:	rejected
Version:	5.1
Description:	EN: Table 12.2 Service $14 Service $14 1 SID ECU Table 12.2 shows Service $14 positive response message format, which consists of 1 byte of SID only. After task execution, positive message should be sent. Table 12.2 Service $14 Service $14 Positive response message definition Hex Data Byte Parameter Cvt Hex value #1 Service $14 SID M 54 Service $14 Positive response SID
Rationale:	The 0x14 ClearDiagnosticInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-12_2_3
Status:	rejected
Version:	5.1
Description:	EN: 2.2.2 Negative response message should follow section 2.2.2.
Rationale:	The 0x14 ClearDiagnosticInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-12_3
Status:	rejected
Version:	5.1
Description:	EN: Service $14 The section defines parameter for Service $14 message.
Rationale:	The 0x14 ClearDiagnosticInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-12_3_1
Status:	rejected
Version:	5.1
Description:	EN: groupOfDtc Service $14 3 ECU groupOfDtc is 3 bytes information in Service $14 request message to ECU to define initialized area in diagnostic Information. ECU groupOfDtc All Groups(all DTCs) Detail should be specified by the system. However, All Groups (all DTCs) must be supported by all the systems. Table 12.3 groupOfDtc Table 12.3 shows definition of groupOfDtc. Table 12.3

	Service $14 groupOfDtc Service $14 Definition of groupOfDtc groupOfDtc Description (Hex) Emissions-related systems 000000 (ISO 14229-1) Not used (reserved by ISO 14229-1) 000001 (HDC_CAN) -FFFFFE Not used (reserved by HDC-CAN) All Groups (all DTCs) FFFFFF Initialize all diagnostic related information.
Rationale:	The 0x14 ClearDiagnosticInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-12_3_2
Status:	rejected
Version:	5.1
Description:	EN: Table 12.4 Service $14 NRC 12.4 Table 12.4 shows Service $11 NRC definition. Negative response should be refer to 12.4. Table 12.4 Service $14 Service $14 Negative response code definition NRC (Hex) Description incorrectMessageLengthOrInvalidFormat (IMLOIF) 13 Received message length or message structure doesn't suit Spec. . conditionsNotCorrect (CNC) 22 It is not in the vehicles condition that initialization of the required diagnostic information can be executed.. requestOutOfRange (ROOR) 31 groupOfDtc Requested groupOfDtc not supported. requestCorrectlyReceived-ResponsePending (RCRRP) (NRC 78) Due to execution of requested task it is not possible to respond positive response or negative response with appropriate NRC. Extension of time to reply for response message is requested. TS-DCC01 Detail should refer to TS-DCC01 . serviceNotSupportedInActiveSession (SNSIAS) 7F DiagnosticSession Service $14 Current diagnostic Session doesn't support Service $14
Rationale:	The 0x14 ClearDiagnosticInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-12_4
Status:	rejected
Version:	5.1
Description:	EN: Service $14 ECU This section prescribes return processing of the response message which ECU which received the Service $14 request message performs. Reply from ECU should follow this description.
Rationale:	The 0x14 ClearDiagnosticInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-12_4_1
Status:	rejected
Version:	5.1
Description:	EN: (1) DiagnosticSession DiagnosticSession analysis a. ECU DiagnosticSession programmingSession ECU NRC = $7F (SNSIAS) 12.4.3 When diagnosticSession is programmingSession, ECU should prepare negative response message with NRC = $7 (SNSIAS) and execute reply response message specified at section 12.4.3. (2) (22) Check length of request message (check longer than minimum length 22)) a. 4 ECU NRC = $13 (IMLOIF) 12.4.3 When received request message is shorter than 4bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 12.4.3. (3) groupOfDtc groupOfDtc analysis a. groupOfDtc ECU NRC = $31 (ROOR) 12.4.3 When groupOfDtc in received request message is not supported, ECU should prepare negative response message with NRC = $31(ROOR) and execute reply response message specified at section 12.4.3. (4) Check length of request message a. 4 ECU NRC = $13 (IMLOIF) 12.4.3 When received request message is NOT 4bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 12.4.3. (5) (ClearDiagnosticInformation service) Vehicle condition check (In case of executing service should be limited by condition, ECU should equip this checking logic.) a. ClearDiagnosticInformation service ECU NRC =$22 (CNC) 12.4.3 When ClearDiagnosticInformation service as limitation on vehicle condition and current vehicle condition is out of Spec, ECU should prepare negative response message with NRC = $22 (CNC) and execute reply response message specified at section 12.4.3. Vehicle condition will be defined by the system. (6) (1) (5) ECU ClearDiagnosticInformation service ECU 12.4.2 12.4.3 When message doesn't match the above (1) to (5), ECU should judge it is possible to execute ClearDiagnosticInformation service. ECU should execute task defined in12.4.2 and prepare positive message and reply as defined in 12.4.3.
Rationale:	The 0x14 ClearDiagnosticInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-12_4_2
Status:	rejected
Version:	5.1
Description:	EN: When ECU judges to perform the requested task, ECU should initialization of diagnosis related information. Prior to clearOption, check if enough length of request message is received or not. 12.4.3 Reply response message 3 (or) As

	described in section 3, not only by request message analysis results but also addressing type (physical or function address) have influence on response message. Table 12.5 12.4.1 Table 12.5 shows response message definition. 12.4.2 (P2CAN) NRC = $78 (RCRRP) When more time is needed to required processing and it is not possible to respond positive response message within P2CAN, ECU can request extension of positive response message by sending negative response message with NRC = $78 (RCRRP). P2CAN NRC = $78 (RCRRP) TS-DCC01 Detail of negative response message of P2CAN, negative response message with NRC = $78 (RCRRP) should refer to TS-DCC01 . Table 12.5 Service $14 Service $14 Reply to request message Request message check result No 1) addressing Response message Description type (2)a Physical (NRC $13) (4)a Wrong message length Negative response Function groupOfDtc (NRC $31) (3)a Physical Negative response Requested groupOfDtc not supported. Function No response DiagnosticSession (1)a Service $14 Physical (NRC $7F) Current Diagnostic Session doesn't Negative response support Service $14. Function (5)a Physical (NRC $22) Vehicle condition doesn't allow Negative response requested service to execute Function ClearDiagnosticInformation service (6) Physical Requested Positive response ClearDiagnosticInformation service Function executable 1) 12.4.1 No. No. is corresponding to No. in section 12.4.1.
Rationale:	The 0x14 ClearDiagnosticInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_1
Status:	rejected
Version:	5.1
Description:	EN: Service $19 (ReadDTCInformation service) ECU DTC Service $19 (ReadDTCInformation service) is used to read out DTC and related information. Service $19 sub-function ECU Service $19 has different diagnostic Function by sub-function. And, the formats of a request message and a positive response message also different for every sub-function. HDC_CAN sub-function (Table 13.7) HDC_CAN specifies the following sub-function (detail on Table 13.7) sub-function = $01 (reportNumberOfDTCByStatusMask) DTC Report number of DTC by StatusMask sub-function = $02 (reportDTCByStatusMask) DTC Report DTC by StatusMask. sub-function = $0A (reportSupportedDTC) DTC Report supported DTC and diagnostic status. Service $19 "DTC Status" DTC Status DTC 1 The concept of "DTC Status" is applied in Service $19. DTC Status shows the execution situation of the diagnosis on board corresponding to DTC, the performed result, etc. It is defined as communication data of 1 byte of bit map information. HDC_CAN DTC Status (Table 13.8) HDC_CAN defines be-

	low DTC status (detail on Table 13.8) testFailedThisMonitoringCycle = DTC testFailedThisMonitoringCycle = self diagnosis results at this IG cycle for the requested DTC. pendingDTC = DTC pendingDTC = the last diagnosis results for the requested DTC. confirmedDTC = DTC confirmedDTC = the confirmed diagnosis results for the requested DTC.. testNotCompletedThisMonitoringCycle = DTC testNotCompletedThisMonitoringCycle = not performed diagnosis at this IG cycle for the requested DTC. warningIndicatorRequested (DTC) warningIndicatorRequested = warning lamp status for requested DTC. Service $19 DTC DTC Status DTC Status DTC Status DTC "DTC Status Mask" ECU DTC "Status Of DTC" At Service $19 by DTC and DTC status, diagnostic status and results are read. DTC is called "Status Mask" when the off board tester requests and "Status of DTC" when ECU sends DTC. Service $19 sub-function DTC Status Service $19 sub- function and DTC status are defined by the system.
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_2
Status:	rejected
Version:	5.1
Description:	EN: DTC Status Mask DTC ECU confirmedDTC pendingDTC ECU This function requires of ECU to report number of DTC which matched DTC Status Mask specified by offboard tester. For example, offboard tester uses this function, in order to check whether confirmedDTC or pendingDTC is stored in ECU.
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_2_1_1
Status:	rejected
Version:	5.1
Description:	EN: Table 13.1 DTC Service $19 DTC Service $19 1 SID 1 sub-function (1 suppressPosRspMsgIndicationBit 7 reportNumberOfDTCByStatusMask) 1 DTCStatusMask sub-function bit 7 suppressPosRspMsgIndicationBit bit 0-6 reportNumberOfDTCByStatusMask Table 13.1 shows Service $19 request message format to request number of DTC. which consists of 1 byte of SID and byte of DTCStatusMask. Bit 7 of sub-function is suppressPosRspMsgIndicationBit and bit 0 - 6 is reportNumberOfDTCByStatusMask. suppressPosRspMsgIndication-

	Bit 2.1.2 Detail of suppressPosRspMsgIndicationBit should refer to section 2.-1.2 ECU DTCStatusMask DTC ECU The offboard tester requests ECU to send number of DTC indicated by DTCStatusMask. Table 13.1 Service $19 (DTC) Service $19 Request message definition (number of DTC) Hex Data Byte Parameter Cvt Hex value #1 Service $19 SID M 19 Service $19 Request SID #2 sub-function = suppressPosRspMsgIndicationBit + M 01 or 81 reportNumberOfDTCByStatusMask] #3 DTCStatusMask M 00-FF
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_2_1_2
Status:	rejected
Version:	5.1
Description:	EN: Table 13.2 DTC Service $19 DTC Service $19 1 SID 1 reportType 1 DTCStatusAvailabilityMask 1 DTCFormatIdentifier 2 DTCCount reportType reportNumberOfDTCByStatusMask Table 13.2 shows Service $19 positive response message format to request number of DTC. The message contains 1 byte of positive response message SID, 1 byte of reportType, 1 byte of DTCStatusAvailabilityMask, 1 byte of DTCFormatIdentifier, 2 bytes of DTCCount. reportType should be put received reportNumberOfDTCByStatusMask. ECU reportType ECU DTC Status (DTCStatusAvailabilityMask) DTC (DTCFormatIdentifier) DTCStatusMask ECU DTC ECU which received the request message counts DTC in the state of DTCStatusMask required by the request message. ECU should reply the positive response included reportType, DTC Status which ECU supports (DTCStatusAvailabilityMask), DTCFormatIdentifier and number of DTC counted previously. Table 13.2 Service $19 (DTC) Service $19 Positive response message definition (number of DTC) Hex Data Byte Parameter Cvt Hex value #1 Service $19 SID M 59 Service $19 Positive response SID #2 reportType = [reportNumberOfDTCByStatusMask] M 01 #3 DTCStatusAvailabilityMask M 00-FF #4 DTCFormatIdentifier = [ISO15031-6DTCFormat] M 00 #5 DTCCount[] = [DTCCountHighByte M 00-FF #6 DTCCountLowByte] M 00-FF
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_3
Status:	rejected
Version:	5.1

Description:	EN: DTC Status Mask DTC ECU ECU DTC (confirmedDTC pendingDTC) DTC DTC This function requires of ECU a DTC of reports which match DTC Status Mask specified by offboard tester. For example, an off-board tester uses for the report of DTC (confirmedDTC or pendingDTC) currently stored in ECU. And, it is used for the report of DTC by which diagnosis on board is not performed, or DTC which is making the warning light turn on etc.
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_3_1_1
Status:	rejected
Version:	5.1
Description:	EN: Table 13.3 DTC Service $19 DTC Service $19 1 SID 1 sub-function (1 suppressPosRspMsgIndicationBit suppressPosRspMsgIndicationBit bit 0-6 reportDTCByStatusMask Table 13.3 shows Service $19 request message format to request DTC. which consists of 1 byte of SID and 1 byte of sub-function, 1 byte of DTCStatusMask. Bit 7 of sub-function is suppressPosRspMsgIndicationBit and bit 0-6 is reportDTCByStatusMask. suppressPosRspMsgIndicationBit 2.1.-2 Detail of suppressPosRspMsgIndicationBit should refer to section 2.1.2 ECU DTCStatusMask DTC ECU The offboard tester requests ECU to send DTC indicated by DTCStatusMask. Table 13.3 Service $19 (DTC) Service $19 Request message definition (reply DTC) Hex Data Byte Parameter Cvt Hex value #1 Service $19 SID M 19 Service $19 Request SID #2 sub-function = suppressPosRspMsgIndicationBit + M 02 or 82 reportDTCByStatusMask] #3 DTCStatusMask M 00-FF
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_3_1_2
Status:	rejected
Version:	5.1
Description:	EN: Table 13.4 DTC Service $19 DTC Service $19 1 SID 1 reportType 1 DTCStatusAvailabilityMask DTCAndStatusRecord reportType reportDTCByStatusMask Table 13.4 shows Service $19 positive response message format to request DTC. The message contains 1 byte of positive response message SID, 1 byte of reportType, 1 byte of DTCStatusAvailabilityMask, several byte of DTCAndStatusRecord. reportType should be put received reportDTCByStatus-

	Mask. ECU reportType ECU DTC Status (DTCStatusAvailabilityMask) DTCStatusMask ECU DTC DTC Status DTCAndStatusRecord When a request message is received, ECU checks condition and result diagnostic, and includes in DTCAndStatusRecord all the DTC(s) and DTC Status which are stored in ECU in the condition of according in DTCStatusMask required by the request message. ECU replies reportType, DTC Status which ECU is supporting (DTCStatusAvailabilityMask), and previous DTCAndStatusRecord by a positive response message. Table 13.4 Service $19 (DTC) Service $19 Positive response message definition (reply DTC) Hex Data Byte Parameter Cvt Hex value #1 Service $19 SID M 59 Service $19 Positive response SID #2 reportType = [reportDTCByStatusMask] M 02 #3 DTCStatusAvailabilityMask M 00-FF #4 DTCAndStatusRecord[ ] = [DTCHighByte#1 C1 00-FF #5 DTCMiddleByte#1 C1 00-FF #6 DTCLowByte#1 C1 00-FF #7 statusOfDTC#1 C1 00-FF #8 DTCHighByte#2 C2 00-FF #9 DTCMiddleByte#2 C2 00-FF #10 DTCLowByte#2 C2 00-FF #11 statusOfDTC#2 C2 00-FF : : : : #n-3 DTCHighByte#m C2 00-FF #n-2 DTCMiddleByte#m C2 00-FF #n-1 DTCLowByte#m C2 00-FF #n statusOfDTC#m] C2 00-FF C1: ECU DTCStatusMask DTC When ECU detected set of DTC information fit for the conditions specified by DTCStatusMask, ECU should send. C2: ECU DTCStatusMask DTC 2 When ECU detected more than one set of DTC information fit for the conditions specified by DTCStatusMask, ECU should send.
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_4
Status:	rejected
Version:	5.1
Description:	EN: ECU DTC DTC Status ECU This function requires of ECU the output of DTC of all the on-board diagnosis .
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_4_1_1
Status:	rejected
Version:	5.1
Description:	EN: Table 13.5 DTC Service $19 DTC Service $19 1 SID 1 sub-function (1 suppressPosRspMsgIndicationBit 7 reportSupportedDTC) sub-function bit 7 sup-

	pressPosRspMsgIndicationBit bit 0-6 reportSupportedDTC Table 13.5 shows Service $19 request message format to request all supported DTC. which consists of 1 byte of SID and 1 byte of sub-function. Bit 7 of sub-function is suppressPosRspMsgIndicationBit and bit 0 - 6 is reportSupportedDTC. suppressPosRspMsgIndicationBit 2.1.2 Detail of suppressPosRspMsgIndicationBit should refer to section 2.1.2 ECU DTC DTC Status ECU The off board tester requests ECU to send all supported DTC and DTC Status. Table 13.5 Service $19 (DTC) Service $19 Request message definition (supported DTC) Hex Data Byte Parameter Cvt Hex value #1 Service $19 SID M 19 Service $19 Request SID #2 sub-function = suppressPosRspMsgIndicationBit + M 0A or 8A reportSupportedDTC]
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_4_1_2
Status:	rejected
Version:	5.1
Description:	EN: Table 13.6 DTC Service $19 DTC Service $19 1 SID 1 reportType 1 DTCStatusAvailabilityMask DTCAndStatusRecord reportType reportSupportedDTC Table 13.6 shows Service $19 positive response message format to request all supported DTC. The message contains 1 byte of positive response message SID , 1 byte of reportType, 1 byte of DTCStatusAvailabilityMask, plural bytes of DTCAndStatusRecord. reportType should be put received reportSupportedDTC. ECU reportType ECU DTC Status (DTCStatusAvailabilityMask) ECU DTC DTC Status DTCAndStatusRecord ECU should check self diagnosis results and response message with reportType, DTCStatus, all supported DTC and DTCStatus into DTCAndStatusRecord. Table 13.6 Service $19 (DTC) Service $19 Positive response message definition (supported DTC) Hex Data Byte Parameter Cvt Hex value #1 Service $19 SID M 59 Service $19 Positive response SID #2 reportType = [reportSupportedDTC] M 0A #3 DTCStatusAvailabilityMask M 00-FF #4 DTCAndStatusRecord[ ] = [DTCHighByte#1 M 00-FF #5 DTCMiddleByte#1 M 00-FF #6 DTCLowByte#1 M 00-FF #7 statusOfDTC#1 M 00-FF #8 DTCHighByte#2 C 00-FF #9 DTCMiddleByte#2 C 00-FF #10 DTCLowByte#2 C 00-FF #11 statusOfDTC#2 C 00-FF : : : : #n-3 DTCHighByte#m C 00-FF #n-2 DTCMiddleByte#m C 00-FF #n-1 DTCLowByte#m C 00-FF #n statusOfDTC#m] C 00-FF C: ECU C: The length of a response message changes depending on the diagnostic function on board which ECU supports.
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).

Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_4_2
Status:	rejected
Version:	5.1
Description:	EN: Service$ 19 2.2.2 Negative response message should follow section 2.2.2.
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_5
Status:	rejected
Version:	5.1
Description:	EN: Service $19 The section defines parameter for Service $19 message.
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_5_1
Status:	rejected
Version:	5.1
Description:	EN: sub-function bit 0-6 Service $19 7 ECU sub-function bit 7 suppressPosRspMsgIndicationBit sub-function bit 0-6 reportType sub-function 0 - 6 bits are 7 bits information integrated in Service $19 request message. It shows types of failure information. bit 7 of sub-function is suppressPosRspMsgIndicationBit. Into positive response message the received sub-function bit 0- 6 should be put. ECU sub-function bit 0-6 Sub-function is defined by the system. Table 13.7 sub-function bit 0-6 (reportType) Table 13.7 shows sub-function bit 0-6 (reportType). Table 13.7 Service $19 sub-function bit 0-6 (reportType) Definition of Service $19 reportType sub-function Description bit 0-6 (Hex) 00 (ISO 14229-1) not used (reserved by ISO 14229-1) reportNumberOfDTCByStatusMask 01 DTCStatusMask DTC Request number of DTC, which fits to DTCStatusMask. reportDTCByStatusMask 02 DTCStatusMask DTC DTC Status Request DTC and DTCStatus, which fits to DTCStatusMask. 03 - 09 (ISO 14229-1) not used (reserved by ISO 14229-1) reportSupportedDTC 0A ECU DTC DTC Status Request all DTC and DTCStatus, supported by ECU. 0B - 15 (ISO 14229-1) not used (reserved by ISO 14229-1) 16 - 7F (ISO 14229-1) not used (reserved by ISO 14229-1)

Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_5_2
Status:	rejected
Version:	5.1
Description:	EN: DTC Status Service $19 1 DTC Service $19 DTCStatusMask DTCStatusAvailabilityMask statusOfDTC DTC Status is 1 byte of information included in Service $19 request message and positive response message, and shows the diagnostic situation and execution result corresponding to DTC. DTC Status is used as DTCStatusMask for request message and as DTCStatusAvailabilityMask, statusOfDTC for positive response message. In addition, name changes with differences in the meaning of the parameter. ECU DTC Status (DTCStatusMask, DTCStatusAvailabilityMask, statusOfDTC) DTCStatusMask, DTCStatusAvailabilityMask, and statusOfDTC are defined by the system. Table 13.-8 DTC Status Table 13.8 shows DTCStatus definition. Table 13.8 DTC Status Definition of DTCStatus Bit Pos. Description testFailed bit 0 ( ) (Not used) testFailedThisMonitoringCycle "1" "1" 1) 2) "0" (bit 1 "1") Into this driving cycle, when malfunctions are detected by on-board diagnostic, "1" is set. Once this information is set to "1", it will not be set to "0" until the following driving cycle is started or initialization of diagnostic information is performed. (Thus, even if a normal judging is performed after detecting malfunctions in the same driving cycle, this value is held with "1".) pendingDTC "1" "1" 3) "0" bit 2 ( ) "1" is outputted when malfunction is detected by on board diagnostic. Once this information is set to "1", it becomes normal by on board-diagnostic, or it will not be set to "0" until initialization of diagnostic information is performed. (Thus, the diagnostic result executed last is outputted after initialization of diagnostic information.) confirmedDTC "1" "1" 3) (40) "0" (1 bit 3 "1") "1" is set when malfunctions are decided by on-board diagnostic. Once this information is set to "1", don't make it "0" to initialization condition formation of the diagnostic information which initialization of diagnostic information is performed or is specified by each system. (Thus, if malfunctions are detected even once, this value will be held with "1" until initialization of diagnostic information is performed or the initialization conditions of the diagnostic information specified by each system are satisfied) . testNotCompletedSinceLastClear bit 4 ( ) (Not used) testFailedSinceLastClear bit 5 ( ) (Not used) testNotCompletedThisMonitoringCycle "1" bit 6 ( ) "0" 1) 2) "1" When self diagnostic is not yet completed for this DTC,"1" is set. Once self diagnostic is completed,"0" is set. And this should be kept until next IG-on 1) or DTC clear 2). warningIndicatorRequested bit 7 DTC "1" When corresponding DTC requests warning lamp on,"1" should be set. Warning lamp notifies the malfunction

	of the system to a user. Table 13.8 DTC Status Definition of DTCStatus Bit Pos. Description 1) Service $11 " OFF" " " ECU The recovery from cut off of battery power supply or the ECU reset by a Service $11 request message are included. 2) Service $14 Service $14 DTC clear. 3) Service $14 Service $14 DTC clear. Service $11 " " ECU How to cope with battery cut, Service $11 request should be defined by the system. - DTC Status ON ( ) OBD II Caution - Driving cycle defined by DTCStatus is time when IG is on. This is different from OBD II definition. - OFF Table 13.8 HDC_CAN OFF OFF DTC 'testFailedThisMonitoringCycle' "0 (False)" 'testNotCompletedThisMonitoringCycle' "1 (True)" Caution - On-board Diagnosis at IG-OFF should follow table 13-8, but HDC_CAN doesn't allow CAN communication during IG-OFF. As a result, testFailedThisMonitoringCycle is "0" and testNotCompletedThisMonitoringCycle is "1" (true).
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_5_2_1
Status:	rejected
Version:	5.1
Description:	EN: DTCStatusMask Service $19 sub-function = $01 (reportNumberOfDTCByStatusMask) sub-function = $02 (reportDTCByStatusMask) 1 ECU DTC DTC Status ECU DTCStatusMask DTC (DTC DTC DTC Status) DTCStatusMask DTC Status (Table 13.8) DTCStatusMask is 1 byte of information included in the request message of sub-function = $01(reportNumberOfDTCByStatusMask) of Service $19, and sub-function = $02 (reportDTCByStatusMask). ECU extracts DTC which is the situation of on board diagnostic specified by DTCStatusMask, and returns the required information (DTC number or DTC and DTC Status). DTCStatusMask definition is the same as DTCStatus shown in Table 13.8. DTCStatusMask bit2 (pendingDTC) '1' sub-function = $01 (reportNumberOfDTCByStatusMask) Service $19 ECU pendingDTC For example, the Service $19 request message of sub-function = $01(reportNumberOfDTCByStatusMask) which specified '1' as bit2 (pendingDTC) of DTCStatusMask requires the pendingDTC number stored in ECU.
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_5_2_2
Status:	rejected

Version:	5.1
Description:	EN: DTCStatusAvailabilityMask Service $19 sub-function = $01 (reportNumberOfDTCByStatusMask) sub-function = $02 (reportDTCByStatusMask) sub-function = $0A (reportSupportedDTC) 1 ECU DTC Status DTCStatusAvailabilityMask DTC Status (Table 13.8) DTCStatusAvailabilityMask is 1 byte of information included in the positive response message of sub-function = $01(reportNumberOfDTCByStatusMask) of Service $19, sub-function = $02(reportDTCByStatusMask) of Service $19 and sub-function = $0A. of Service $19(reportSupportedDTC) DTCStatusAvailabilityMask shows DTC Status which ECU supports. The definition of DTCStatusAvailabilityMask is the same as DTC Status. (Table 13.8 reference.)
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_5_3
Status:	rejected
Version:	5.1
Description:	EN: DTCAndStatusRecord Service $19 sub-function = $02 (reportDTCByStatusMask) sub-function = $0A (reportSupportedDTC) DTC DTC DTC Status DTCAndStatusRecord is the information included in the positive response message of sub-function = $02(reportDTCByStatusMask) of Service $19, and sub-function = $0A (reportSupportedDTC). DTC (DTCRecord 13.5.3.1) DTC DTC Status (statusOfDTC 13.5.3.2) 1 DTCAndStatusRecord is constituted considering DTC and DTC Status corresponding to it as 1 set. Refer to 13.5.3.1 for DTC (DTCRecord). Refer to 13.5.3.2 for DTC Status (statusOfDTC) corresponding to DTC.
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_5_3_1
Status:	rejected
Version:	5.1
Description:	EN: DTCRecord 3 DTC DTCRecord shows DTC with 3 bytes of information. DTCRecord 3 DTC The information structure of 3 byte DTC included in DTCRecord is as follows. DTCHighByte / DTCMiddleByte .....- ISO15031-6 / SAE J2012 2 base DTC .....- 2 bytes of baseDTC defined by ISO15031-6 / SAE J2012 standard DT-

	CLowByte .....ISO15031-6 / SAE J2012 1 Failure Type Byte(FTB) .....1 byte of Failure Type Byte (FTB) defined by ISO15031-6 / SAE J2012 standard DTCRecord DTCHigh-Byte / DTCMiddleByte / DTCLowByte System defines DTCHighByte /DTCMid-dleByte/DTCLowByte of DTCRecord. Fig. 13-1 Engine ( ) P0143-00 DTCRecord The example of DTCRecord in case Engine system (gasoline engine) replies P0143-00 to Fig.13.1 is shown. DTCHighByte DTCMiddleByte DTCLowByte MSB LSB MSB LSB MSB LSB
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_5_3_2
Status:	rejected
Version:	5.1
Description:	EN: statusOfDTC ECU DTCRecord DTC Status statusOfDTC DTC Status (Table 13.8) statusOfDTC is DTCStatus replying to DTCRecord. (Table 13.8) ECU statusOfDTC "0" Not supported statusOfDTC bits must be always "0". Service $19 sub-function = $02 (reportDTCByStatusMask) sub-function = $0A (reportSupportedDTC) statusOfDTC Service $19 positive response message statusOfDTC is as follows: DTCRecord DTC statusOfDTC bit 1 `1' When DTCRecord DTC detects failure during current IG cycle, statusOfDTC bit 1 must be set to "1". DTCRecord DTC pendingDTC statusOfDTC bit 2 `1' When DTCRecord DTC is kept as pendingDTC, statusOfDTC bit 2 must be set to "1". DTCRecord DTC confirmedDTC statusOfDTC bit 3 '1' When DTCRecord DTC is kept as confirmedDTC, statusOfDTC bit 3 must be set to "1". DTCRecord DTC statusOfDTC bit 6 `1' When DTCRecord DTC check is NOT finished during current IG cycle, statusOfDTC bit 6 must be set to "1". DTCRecord DTC statusOfDTC bit 7 `1' When DTCRecord DTC turns on warning lamp, statusOfDTC bit 7 must be set to "1".
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_5_4
Status:	rejected
Version:	5.1
Description:	EN: DTCFormatIdentifier Service $19 sub-function = $01 (reportNumberOfDTCByStatusMask) 1 ECU DTC DTCFormatIdentifier is 1 byte message

	in positive response message for sub function $01 (reportNumberOfDTCByStatusMask). It is 1 byte information showing the format of DTC which ECU is supporting. HDC_CAN ISO15031-6 DTC $00 In HDC_CAN, $00 which shows the DTC format of ISO15031-6 standard is used.
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_5_5
Status:	rejected
Version:	5.1
Description:	EN: DTCCount Service $19 sub-function = $01 (reportNumberOfDTCByStatusMask) 2 DTCStatusMask DTC DTCCount is 2 bytes message in positive response message for sub function $01 (reportNumberOfDTCByStatusMask). DTCCount provides a count of the number of DTCs that match the DTCStatusMask defined in the off board tester's request.
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_5_6
Status:	rejected
Version:	5.1
Description:	EN: Table 13.9 Service $19 NRC 13.6 Table 13.9 shows Service $19 NRC definition. Negative response should be refer to 13.6. Table 13.9 Service $19 Service $19 Negative response code definition NRC (Hex) Description subFunctionNotSupported (SFNS) 12 sub-function Requested sub-function is not supported.. incorrectMessageLengthOrInvalidFormat (IMLOIF) 13 Received message length or message structure doesn't suit Spec. . requestCorrectlyReceived-ResponsePending (RCRRP) (NRC 78) Due to execution of requested task it is not possible to respond positive response or negative response with appropriate NRC. Extension of time to reply for response message is requested. TS-DCC01 Detail should refer to TS-DCC01 . serviceNotSupportedInActiveSession (SNSIAS) 7F DiagnosticSession Service $19 Current diagnostic Session doesn't support Service $19.
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_6
Status:	rejected
Version:	5.1
Description:	EN: Service $19 ECU Reply from ECU should follow this description.
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_6_1
Status:	rejected
Version:	5.1
Description:	EN: (1) DiagnosticSession DiagnosticSession analysis a. ECU DiagnosticSession programmingSession ECU NRC = $7F (SNSIAS) 13.6.3 When diagnosticSession is programmingSession, ECU should prepare negative response message with NRC = $7F (SNSIAS) and execute reply response message specified at section 13.6.3. (2) (23) Check length of request message (check longer than minimum length 23)) a. 2 ECU NRC = $13 (IMLOIF) 13.6.3 When received request message is shorter than 2bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 13.6.3. Prior to sub-function, check if enough length of request message is received or not. (3) sub-function (bit 0-6) sub-function (bit 0-6) analysis a. sub-function (bit 0-6) ECU NRC = $12 (SFNS) 13.6.3 When sub-function (bit 0-6) in received request message is not supported, ECU should prepare negative response message with NRC = $12 (SFNS) and execute reply response message specified at section 13.6.3. (4) Check length of request message a. sub-function (bit 0-6) ECU NRC = $13 (IMLOIF) 13.6.3 When length of requested message doesn't match with calculated length from sub-function (bit 0 - 6), ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 13.6.3. (5) (1) (4) ReadDTCInformation service ECU 13.6.2 sub-function (bit 0-6) 13.6.3 When check result doesn't match the above 1) to 4), ECU should judge requested Service is executable, ECU should perform task specified in 13.6.2., ECU should prepare positive message and execute reply response message defined in 13.-6.3.
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_6_1_1

Status:	rejected
Version:	5.1
Description:	EN: ECU reportType reportNumberOfDTCByStatusMask DTCAvailabilityMask ECU DTC Status DTCFormatIdentifier $00 DTCCount DTCStatusMask DTC Status DTC ECU should prepare positive message with reportType = report-NumberOfDTCByStatusMask, DTCAvailabilityMask is DTC Status supported by ECU, DTCFormatIdentifier is $00, DTCCount is taken as the number of DTC in the DTCStatus specified by DTCStatusMask. DTCStatusMask 1 DTC DTCSta-tusMask ECU DTC Status `1' ECU ("DTCStatusMask" AND "DTCAvailability-Mask" AND "statusOfDTC") 0 DTC DTCCount When DTCMask specifies more than 1 bit, if at least one bit fits to stored DTC, this should be included in DTC-Count. Even if '1' is set to DTCStatus which ECU does not support to DTCSta-tusMask at this time, ECU ignores it. The number of DTC(s) whose ("DTCSta-tusMask" AND "DTCAvailabilityMask" AND "statusOfDTC") is not 0 is counted and it is included as DTCCount.
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_6_1_2
Status:	rejected
Version:	5.1
Description:	EN: ECU reportType reportDTCByStatusMask DTCAvailabilityMask ECU DTC Status DTCAndStatusRecord DTCStatusMask DTC Status DTC DTC statusOfDTC ECU should prepare positive message with reportType = re-portOfDTCByStatusMask, DTCAvailabilityMask is DTC Status supported by ECU, and DTCAndStatusRecord = DTC match with DTCStatus specified by DTCStatusMask and its statusOfDTC of DTC. DTCStatusMask DTC Status DTC Data Byte #1 #3 (DTCAndStatusRecord) When there is no DTC match with DTCStatus specified by DTCStatusMask, ECU should prepare positive re-sponse message constituted from Data Byte #1 to #3. (ECU should prepare positive response message without DTCAndStatusRecord.)
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_6_1_3
Status:	rejected
Version:	5.1

Description:	EN: ECU reportType reportSupportedDTC DTCAvailabilityMask ECU DTC Status DTCAndStatusRecord DTC DTC statusOfDTC ECU should prepare positive message with reportType = reportSupportedDTC, DTCAvailabilityMask is DTC Status supported by ECU, and DTCAndStatusRecord = all of supportedDTC and its statusOfDTC of DTC. - Service $19 sub-function = $0A DTC DTC ECU DTC Caution - Service $19 sub-function ($0A) should not include DTC, which is not supported by the vehicle. This means message has to be reconstructed depending on vehicle application.
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_6_2
Status:	rejected
Version:	5.1
Description:	EN: Service $19 Service $19 doesn't request task except positive response message. 13.6.3 Reply response message 3 (or) suppressPosRspMsgIndicationBit As described in section 3, not only by request message analysis results but also addressing type (physical or function address), or suppressPosRspMsgIndicationBit have influence on response message. Table 13.10 13.6.1 Table 13.10 shows response message definition. (P2CAN) NRC = $78 (RCRRP) When more time is needed to prepare information and it is not possible to respond positive response message within P2CAN, ECU can request extension of positive response message by sending negative response message with NRC = $78 (RCRRP). P2CAN NRC = $78 (RCRRP) TS-DCC01 Detail of negative response message of P2CAN, negative response message with NRC = $78 (RCRRP) should refer to TS-DCC01 . Table 13.10 Service $19 Service $19 Reply to request message Request message check result suppressPosRspMsgIndication Response message No 1) Description addressing Bit type (2)a Physical 0 (False) (NRC $13) (4)a Wrong message length 1 (True) Negative response Function sub-function (bit 0-6) 0 (False) (NRC $12) (3)a Physical 1 (True) Negative response Requested sub-function (bit 0-6) is 0 (False) not supported Function 1 (True) No response DiagnosticSession (1)a Service $19 Physical 0 (False) (NRC $7F) Current Diagnostic Session doesn't 1 (True) Negative response support Service $19. Function ReadDTCInformation 0 (False) Positive response (5) service Physical Requested ReadDTCInformation 1 (True) service executable Function No response 1) 13.6.1 No. No. is corresponding to No. in section 13.6.1.
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).

Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_7
Status:	rejected
Version:	5.1
Description:	EN: Service$19 DTC The example of read-out of "DTC and its related information" which uses Service$19 in order to assist an understanding of a regulation matter with this section is shown.
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_7_1
Status:	rejected
Version:	5.1
Description:	EN: -PendingDTC(s) pendingDTC confirmedDTC (DTCStatusAvailabilityMask = $0C = 0000 1100 B) Engine ( ) ECU (DTC) Table 13.11 Assumption Engine (gasoline engine) ECU supports pendingDTC and confirmedDTC (DTCStatusAvailabilityMask = $0C = 0000 1100 B). The on-board diagnostic item (DTC) which the ECU supports to Table 13.11 is shown, and the diagnostic situation is also shown. Table 13.11 1 : ECU DTC Example 1:The diagnostic condition of ECU DTC statusOfDTC Description P0253-00 $00 (0000 0000 B) DTC No DTC is set P0301-00 $08 (0000 1000 B) confirmedDTC confirmedDTC is set. P0420-00 $04 (0000 0100 B) pendingDTC pendingDTC is set. P0532-00 $0C (0000 1100 B) pendingDTC confirmedDTC pendingDTC and confirmedDTC are set. Table 13.12 DTCStatusMask = $04 Service$19 pendingDTC DTC Off-board tester reads the DTC number of pendingDTC(s) using the Service$19 request message of DTCStatusMask = $04 shown in Table 13.12. Table 13.12 1 : pendingDTC Example 1:The read-out request of the number of pendingDTC(s) Data Byte Parameter Hex Hex value #1 Service $19 SID 19 Service $19 Request SID #2 sub-function = suppressPosRspMsgIndicationBit + 01 reportNumberOfDTCByStatusMask] #3 DTCStatusMask 04 ECU Table 13.13 reportType = reportNumberOfDTCByStatusMask DTCStatusAvailabilityMask = $0C DTCFormatIdentifier = $00 DTCCount pendingDTC ECU replies positive response message that included reportType=reportNumberOfDTCByStatusMask, DTCStatusAvailabilityMask=$0C, DTCFormatIdentifier=$00, and the number of all the pendingDTC(s) currently held to DTCCount. ECU pendingDTC 2 (P0420-00 P0532-00) DTCCount = 2 DTCCount=2 is returned because ECU holds two pendingDTCs (P0420-00 and P0532-00) in the case of this example. Table 13.-13 1 : pendingDTC Example 1:Return of the number of pendingDTC(s) Data

	Byte Parameter Hex Hex value #1 Service $19 SID 59 Service $19 Positive response SID #2 reportType = reportNumberOfDTCByStatusMask 01 #3 DTCStatusAvailabilityMask 0C #4 DTCFormatIdentifier = ISO15031-6DTCFormat 00 #5 DTCCount[DTCCountHighByte] 00 #6 DTCCount[DTCCountLowByte] 02
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_7_2
Status:	rejected
Version:	5.1
Description:	EN: DTC Number of -PendingDTC(s) and confirmedDTC(s) pendingDTC confirmedDTC (DTCStatusAvailabilityMask = $0C = 0000 1100 B) Engine ( ) ECU (DTC) Table 13.14 Assumption Engine (gasoline engine) ECU supports pendingDTC and confirmedDTC (DTCStatusAvailabilityMask = $0C = 0000 1100 B). The on-board diagnostic item (DTC) which the ECU supports to Table 13.-14 is shown, and the diagnostic situation is also shown. Table 13.14 2 : ECU DTC Example 2:The diagnostic condition of ECU DTC statusOfDTC Description P0253-00 $00 (0000 0000 B) DTC No DTC is set P0301-00 $08 (0000 1000 B) confirmedDTC confirmedDTC is set. P0420-00 $04 (0000 0100 B) pendingDTC pendingDTC is set. P0532-00 $0C (0000 1100 B) pendingDTC confirmedDTC pendingDTC and confirmedDTC are set. Table 13.15 DTCStatusMask = $0C Service $19 pendingDTC confirmedDTC DTC Off-board tester reads the number of DTC of pendingDTC(s) and confirmedDTC(s) using the Service$19 request message of DTCStatusMask = $04 shown in Table 13.-15. Table 13.15 2 : pendingDTC confirmedDTC Example 2:The read-out request of the number of pendingDTC(s) and confirmedDTC(s) Data Byte Parameter Hex Hex value #1 Service $19 SID 19 Service $19 Request SID #2 subfunction = suppressPosRspMsgIndicationBit + 01 reportNumberOfDTCByStatusMask] #3 DTCStatusMask 0C ECU Table 13.16 reportType = reportNumberOfDTCByStatusMask DTCStatusAvailabilityMask = $0C DTCFormatIdentifier = $00 DTCCount pendingDTC confirmedDTC ECU replies positive response message that included reportType=reportNumberOfDTCByStatusMask, DTCStatusAvailabilityMask=$0C, DTCFormatIdentifier=$00, and the number of all the pendingDTC(s) or confirmedDTC currently held to DTCCount. ECU pendingDTC confirmedDTC DTC 3 (P0301 P0420 P0532) DTCCount = 3 Because three DTC(s) (P0301 P0420 P0532) whose ECUs are pendingDTC or confirmedDTC in the case of this example are held, DTCCount = 3 are replied. - P0532 pendingDTC confirmedDTC DTC DTCCount '1' Caution - P0532 holds pendingDTC and confirmedDTC, however this DTCCount of DTC is '1'. Table 13.16 2 : pendingDTC confirmedDTC Example 2:Return of the number of

	pendingDTC(s) and confirmedDTC(s) Data Byte Parameter Hex Hex value #1 Service $19 SID 59 Service $19 Positive response SID #2 reportType = reportNumberOfDTCByStatusMask 01 #3 DTCStatusAvailabilityMask 0C #4 DTCFormatIdentifier = ISO15031-6DTCFormat 00 #5 DTCCount[DTCCountHighByte] 00 #6 DTCCount[DTCCountLowByte] 03
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_7_3
Status:	rejected
Version:	5.1
Description:	EN: pendingDTC confirmedDTC (DTCStatusAvailabilityMask = $0C = 0000 1100 B) Engine ( ) ECU (DTC) Table 13.17 Assumption Engine (gasoline engine) ECU supports pendingDTC and confirmedDTC (DTCStatusAvailabilityMask = $0C = 0000 1100 B). The on-board diagnostic item (DTC) which the ECU supports to Table 13.17 is shown, and the diagnostic situation is also shown. Table 13.17 3 : ECU DTC Example 3:The diagnostic condition of ECU DTC statusOfDTC Description P0253-00 $00 (0000 0000 B) DTC No DTC is set P0301-00 $08 (0000 1000 B) confirmedDTC confirmedDTC is set. P0420-00 $04 (0000 0100 B) pendingDTC pendingDTC is set. P0532-00 $0C (0000 1100 B) pendingDTC confirmedDTC pendingDTC and confirmedDTC are set. Table 13.18 DTCStatusMask = $08 Service $19 confirmedDTC Off-board tester reads confirmedDTC using the Service $19 request message of DTCStatusMask=$08 shown in Table 13.18. Table 13.18 3 : confirmedDTC Example 3: The read-out request of confirmedDTC(s) Data Byte Parameter Hex Hex value #1 Service $19 SID 19 Service $19 Request SID #2 sub-function = suppressPosRspMsgIndicationBit + 02 reportDTCByStatusMask] #3 DTCStatusMask 08 ECU Table 13.19 reportType = reportDTCByStatusMask DTCStatusAvailabilityMask = $0C DTCAndStatusRecord confirmedDTC statusOfDTC ECU replies the positive response message included reportType = reportDTCByStatusMask, DTCStatusAvailabilityMask = $0C, and all the confirmedDTC(s) currently held to DTCAndStatusRecord and statusOfDTC of those, as shown in Table 13.19. ECU P0301-00 P0532-00 In the case of this example, ECU returns P0301-00 and P0532-00. Table 13.19 3 : confirmedDTC Example 3: Return of confirmedDTC Data Byte Parameter Hex Hex value #1 Service $19 SID 59 Service $19 Positive response SID #2 reportType = reportDTCByStatusMask 02 #3 DTCStatusAvailabilityMask 0C #4 DTCAndStatusRecord#1 [DTCHighByte] 05 #5 DTCAndStatusRecord#1 [DTCMiddleByte] 32 #6 DTCAndStatusRecord#1 [DTCLowByte] 00 #7 DTCAndStatusRecord#1 [statusOfDTC] 0C #8 DTCAndStatusRecord#2 [DTCHighByte] 03 #9 DTCAndStatusRecord#2 [DTCMiddle-

	Byte] 01 #10 DTCAndStatusRecord#2 [DTCLowByte] 00 #11 DTCAndStatus-Record#2 [statusOfDTC] 08
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_7_4
Status:	rejected
Version:	5.1
Description:	EN: and confirmedDTC pendingDTC confirmedDTC (DTCStatusAvailability-Mask = $0C = 0000 1100 B) Engine ( ) ECU (DTC) Table 13.20 Assumption En-gine (gasoline engine) ECU supports pendingDTC and confirmedDTC (DTCSta-tusAvailabilityMask = $0C = 0000 1100 B). The on-board diagnostic item (DTC) which the ECU supports to Table 13.20 is shown, and the diagnostic situation is also shown. Table 13.20 4 : ECU DTC Example 4:The diagnostic condition of ECU DTC statusOfDTC Description P0253-00 $00 (0000 0000 B) DTC No DTC is set P0301-00 $08 (0000 1000 B) confirmedDTC confirmedDTC is set. P0420-00 $04 (0000 0100 B) pendingDTC pendingDTC is set. P0532-00 $0C (0000 1100 B) pendingDTC confirmedDTC pendingDTC and confirmedDTC are set. Table 13.21 DTCStatusMask = $FF Service $19 DTC Off-board tester reads all the DTC(s) using the Service $19 request message of DTCStatus-Mask=$FF shown in Table 13.21. Table 13.21 4 : pendingDTC confirmedDTC Example 4: The read-out request of pendingDTC and confirmedDTC Hex Da-ta Byte Parameter Hex value #1 Service $19 SID 19 Service $19 Request SID #2 sub-function = suppressPosRspMsgIndicationBit + 02 reportDTCByStatus-Mask] #3 DTCStatusMask FF DTCStatusMask = $FF (1111 1111 B) ECU DTC status (DTCStatusAvailabilityMask) $0C = 0000 1100 B Table 13.22 reportType = reportDTCByStatusMask DTCStatusAvailabilityMask = $0C DTCAndStatus-Record DTC (pendingDTC confirmedDTC) statusOfDTC Although it is required DTCStatusMask=$FF (1111 1111 B), DTCStatus (DTCStatusAvailabilityMask) which ECU supports is $0C=0000 1100 B. Therefore, as shown in Table 13.-22,the positive response message included reportType = reportDTCByStatus-Mask, DTCStatusAvailabilityMask = $0C and "all the DTC(s) (pendingDTC and confirmedDTC) currently held to DTCAndStatusRecord and statusOfDTC of those" is returned. ECU P0301-00 P0420-00 P0532-00 In the case of this ex-ample, ECU returns P0301-00, P0420-00, and P0532-00. Table 13.22 4 : pend-ingDTC confirmedDTC Example 4: Return of pendingDTC and confirmedDTC Data Byte Parameter Hex Hex value #1 Service $19 SID 59 Service $19 Pos-itive response SID #2 reportType = reportDTCByStatusMask 02 #3 DTCSta-tusAvailabilityMask 0C #4 DTCAndStatusRecord#1 [DTCHighByte] 04 #5 DT-CAndStatusRecord#1 [DTCMiddleByte] 20 #6 DTCAndStatusRecord#1 [DT-

	CLowByte] 00 #7 DTCAndStatusRecord#1 [statusOfDTC] 04 #8 DTCAndStatusRecord#2 [DTCHighByte] 05 #9 DTCAndStatusRecord#2 [DTCMiddleByte] 32 #10 DTCAndStatusRecord#2 [DTCLowByte] 00 #11 DTCAndStatusRecord#2 [statusOfDTC] 0C #12 DTCAndStatusRecord#3 [DTCHighByte] 03 #13 DTCAndStatusRecord#3 [DTCMiddleByte] 01 #14 DTCAndStatusRecord#3 [DTCLowByte] 00 #15 DTCAndStatusRecord#3 [statusOfDTC] 08
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_7_5
Status:	rejected
Version:	5.1
Description:	EN: Example 5: DTC read-out of un-completing the failure diagnosis on board in this driving cycle testFailedThisMonitoringCycle pendingDTC confirmedDTC testNotCompletedThisMonitoringCycle (DTCStatusAvailabilityMask = $4E = 0100 1110 B) Engine ( ) ECU (DTC) Table 13.23 Assumption Engine (gasoline engine) ECU supports testFailedThisMonitoringCycle, pendingDTC, confirmedDTC and testNotCompletedThisMonitoringCycle (DTCStatusAvailabilityMask = $4E = 0100 1110 B). The on-board diagnostic item (DTC) which the ECU supports to Table 13.23 is shown, and the diagnostic situation is also shown. Table 13.23 5 : ECU DTC Example 5:The diagnostic condition of ECU DTC statusOfDTC Description P0253-00 $40 (0100 0000 B) The failure diagnosis in a driving cycle is un-completing now. DTC pendingDTC and confirmedDTC are not set. Complete the failure diagnosis in this driving cycle, and P0301-00 $08 (0000 1000 B) result is normal. confirmedDTC confirmedDTC is set. P0420-00 $44 (0100 0100 B) The failure diagnosis in a driving cycle is un-completing now. pendingDTC pendingDTC is set. Completing the failure diagnosis in this driving cycle, and P0532-00 $0E (0000 1110 B) result detects failure. pendingDTC confirmedDTC pendingDTC and confirmedDTC are set. Table 13.24 DTCStatusMask = $40 Service $19 DTC Off-board tester reads DTC of on board diagnostic that is un-completing in this driving cycle using the Service $19 request message of DTCStatusMask=$40 shown in Table 13.24. Table 13.24 5: DTC Example 5: The read-out request of DTC of on board diagnostic that is un-completing in this driving cycle Hex Data Byte Parameter Hex value #1 Service $19 SID 19 Service $19 Request SID #2 sub-function = suppressPosRspMsgIndicationBit + 02 reportDTCByStatusMask] #3 DTCStatusMask 40 ECU Table 13.25 reportType = reportDTCByStatusMask DTCStatusAvailabilityMask = $4E DTCAndStatusRecord DTC statusOfDTC ECU replies the positive response message which included reportType=reportDTCByStatusMask, DTCStatusAvailabilityMask=$4E, and DTCAndStatusRecord included DTC which diagnostic in

	this driving cycle has not completed and statusOfDTC as shown in Table 13.25. ECU P0253-00 P0420-00 In the case of this example, ECU replies P0253-00 and P0420-00. Table 13.25 5: DTC Example 5: Return of DTC of on board diagnostic that is un-completing in this driving cycle Data Byte Parameter Hex Hex value #1 Service $19 SID 59 Service $19 Positive response SID #2 reportType = reportDTCByStatusMask 02 #3 DTCStatusAvailabilityMask 4E #4 DTCAndStatusRecord#1 [DTCHighByte] 02 #5 DTCAndStatusRecord#1 [DTCMiddleByte] 53 #6 DTCAndStatusRecord#1 [DTCLowByte] 00 #7 DTCAndStatusRecord#1 [statusOfDTC] 40 #8 DTCAndStatusRecord#3 [DTCHighByte] 04 #9 DTCAndStatusRecord#3 [DTCMiddleByte] 20 #10 DTCAndStatusRecord#3 [DTCLowByte] 00 #11 DTCAndStatusRecord#3 [statusOfDTC] 44
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_7_6
Status:	rejected
Version:	5.1
Description:	EN: DTC(s) and diagnostic conditions pendingDTC confirmedDTC (DTCStatusAvailabilityMask = $0C = 0000 1100 B) Engine ( ) ECU (DTC) Table 13.26 Assumption Engine (gasoline engine) ECU supports pendingDTC and confirmedDTC (DTCStatusAvailabilityMask = $0C = 0000 1100 B). The on-board diagnostic item (DTC) which the ECU supports to Table 13.26 is shown, and the diagnostic situation is also shown. Table 13.26 6 : ECU DTC Example 6:The diagnostic condition of ECU DTC statusOfDTC Description P0253 $00 (0000 0000 B) DTC No DTC is set P0301 $08 (0000 1000 B) confirmedDTC confirmedDTC is set. P0420 $04 (0000 0100 B) pendingDTC pendingDTC is set. P0532 $0C (0000 1100 B) pendingDTC confirmedDTC pendingDTC and confirmedDTC are set. Table 13.27 Service $19 DTC Off-board tester performs read-out of all supported DTC(s) and the diagnostic condition of those using the Service $19 request message shown in Table 13.27. Table 13.27 6: DTC Example 6: the read-out request of all supported DTC(s) and diagnostic conditions Hex Data Byte Parameter Hex value #1 Service $19 SID 19 Service $19 Request SID #2 sub-function = suppressPosRspMsgIndicationBit + 0A reportSupportedDTC] ECU Table 13.28 reportType = reportSupportedDTC DTCStatusAvailabilityMask = $0C DTCAndStatusRecord DTC statusOfDTC ECU replies positive response message included reportType = reportSupportedDTC, DTCStatusAvailabilityMask = $0C, and all the DTC(s) supported to DTCAndStatusRecord and statusOfDTC of those, as shown in Table 13.28. ECU P0253-00 P0301-00 P0420-00 P0532-00 In the case of this example, ECU returns P0253-00, P0301-00, P0420-00, and P0532-00. Table 13.28 6:

	DTC Example 6: Return of all supported DTC(s) and diagnostic conditions Data Byte Parameter Hex Hex value #1 Service $19 SID 59 Service $19 Positive response SID #2 reportType = reportSupportedDTC 0A #3 DTCStatusAvailabilityMask 0C #4 DTCAndStatusRecord#1 [DTCHighByte] 04 #5 DTCAndStatusRecord#1 [DTCMiddleByte] 20 #6 DTCAndStatusRecord#1 [DTCLowByte] 00 #7 DTCAndStatusRecord#1 [statusOfDTC] 04 #8 DTCAndStatusRecord#2 [DTCHighByte] 05 #9 DTCAndStatusRecord#2 [DTCMiddleByte] 32 #10 DTCAndStatusRecord#2 [DTCLowByte] 00 #11 DTCAndStatusRecord#2 [statusOfDTC] 0C #12 DTCAndStatusRecord#3 [DTCHighByte] 03 #13 DTCAndStatusRecord#3 [DTCMiddleByte] 01 #14 DTCAndStatusRecord#3 [DTCLowByte] 00 #15 DTCAndStatusRecord#3 [statusOfDTC] 08 #16 DTCAndStatusRecord#4 [DTCHighByte] 02 #17 DTCAndStatusRecord#4 [DTCMiddleByte] 53 #18 DTCAndStatusRecord#4 [DTCLowByte] 00 #19 DTCAndStatusRecord#4 [statusOfDTC] 00
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-13_7_7
Status:	rejected
Version:	5.1
Description:	EN: DTCStatusMask which ECU does not support pendingDTC confirmedDTC (DTCStatusAvailabilityMask = $0C = 0000 1100 B) Engine ( ) ECU (DTC) Table 13.29 Assumption Engine (gasoline engine) ECU supports pendingDTC and confirmedDTC (DTCStatusAvailabilityMask = $0C = 0000 1100 B). The onboard diagnostic item (DTC) which the ECU supports to Table 13.29 is shown, and the diagnostic situation is also shown. Table 13.29 7 : ECU DTC Example 7:The diagnostic condition of ECU DTC statusOfDTC Description P0253-00 $00 (0000 0000 B) DTC No DTC is set P0301-00 $08 (0000 1000 B) confirmedDTC confirmedDTC is set. P0420-00 $04 (0000 0100 B) pendingDTC pendingDTC is set. P0532-00 $0C (0000 1100 B) pendingDTC confirmedDTC pendingDTC and confirmedDTC are set. Table 13.30 DTCStatusMask = $80 Service $19 DTC Off-board tester reads the number of DTC of DTCStatusMask = $80 using the Service$19 request message of DTCStatusMask = $04 shown in Table 13.30. Table 13.30 7 : ECU DTCStatusMask DTC Example 7: the readout request of the number of DTC(s) by DTCStatusMask which ECU does not support Data Byte Parameter Hex Hex value #1 Service $19 SID 19 Service $19 Request SID #2 sub-function = suppressPosRspMsgIndicationBit + 01 reportNumberOfDTCByStatusMask] #3 DTCStatusMask 80 DTCStatusMask = $80 (1000 0000 B) ECU DTC status (DTCStatusAvailabilityMask) $0C = 0000 1100 B Table 13.31 reportType = reportNumberOfDTCByStatusMask DTCSta-

	tusAvailabilityMask = $0C DTCCount = 0 Although it is DTCStatusMask=$80 (1000 0000B) required, DTCStatus (DTCStatusAvailabilityMask) which ECU supports is $0C = 0000 1100B. Therefore, as shown in Table 13.31, the positive response message included reportType=reportNumberOfDTCByStatusMask, DTCStatusAvailabilityMask=$0C and DTCCount=0 is replied. - DTCStatusMask ECU DTCCount = 0 Caution - When ECU does not support all the required DTCStatusMask(s), the positive response message included DTCCount=0 is replied. Table 13.31 7 : ECU DTCStatusMask DTC Example 7: return of the number of DTC(s) to DTCStatusMask which ECU does not support Data Byte Parameter Hex Hex value #1 Service $19 SID 59 Service $19 Positive response SID #2 reportType = reportNumberOfDTCByStatusMask 01 #3 DTCStatusAvailabilityMask 0C #4 DTCFormatIdentifier = ISO15031-6DTCFormat 00 #5 DTCCount[DTCCountHighByte] 00 #6 DTCCount[DTCCountLowByte] 00 Table 13.32 DTCStatusOfMask = $80 Service $19 DTC Similarly, Off-board tester reads DTC using the Service $19 request message of DTCStatusOfMask=$80 shown in Table 13.32. Table 13.32 7 : ECU DTCStatusMask DTC Example 7: the read-out request of DTC by DTCStatusMask which ECU does not support Data Byte Parameter Hex Hex value #1 Service $19 SID 19 Service $19 Request SID #2 sub-function = suppressPosRspMsgIndicationBit + 02 reportDTCByStatusMask] #3 DTCStatusMask 80 DTCStatusMask = $80 (1000 0000 B) ECU DTC status (DTCStatusAvailabilityMask) $0C = 0000 1100 B Table 13.33 reportType = reportDTCByStatusMask DTCStatusAvailabilityMask = $0C (DTCAndStatusRecord) Although it is DTCStatusMask=$80 (1000 0000B) required, DTCStatus (DTCStatusAvailabilityMask) which ECU supports is $0C = 0000 1100B. Therefore, As shown in Table 13.33, the positive response message included reportType=reportDTCByStatusMask and DTCStatusAvailabilityMask=$0C is replied. - DTCStatusMask ECU DTCAndStatusRecord Caution - When ECU does not support all the required DTCStatusMask(s), a response message without DTCAndStatusRecord is replied. Table 13.33 7 : ECU DTCStatusMask DTC Example 7: Return of DTC to DTCStatusMask which ECU does not support Data Byte Parameter Hex Hex value #1 Service $19 SID 59 Service $19 Positive response SID Table 13.33 7 : ECU DTCStatusMask DTC Example 7: Return of DTC to DTCStatusMask which ECU does not support Data Byte Parameter Hex Hex value #2 reportType = reportDTCByStatusMask 02 #3 DTCStatusAvailabilityMask 0C
Rationale:	The 0x19 ReadDTCInformation service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-14_1
Status:	rejected

Version:	5.1
Description:	EN:
Rationale:	The 0x2F InputOutputControlByIdentifier service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-14_2_1
Status:	rejected
Version:	5.1
Description:	EN: Table 14.1 Service $2F Service $2F 1 SID 2 dataIdentifier 1 inputOutput-ControlParameter controlState controlEnableMask Table 14.1 shows Service $2F request message format. Which consists of 1 byte of SID and 2 bytes dataI-dentifier and 1 byte of inputOutputControlParameter and several byte of con-trolState and several byte of controlEnableMask. Message length is variable. controlState inputOutputControlParameter = shortTermAdjustment ($03) In ad-dition, controlState is supported only inputOutputControlParameter = short-TermAdjustment ($03). controlEnableMask inputOutputControlParameter = shortTermAdjustment ($03) controlEnableMask dataIdentifier In dataIdenti-fier to which controlEnableMask is assigned, controlEnableMask is support-ed only at the time of inputOutputControlParameter = shortTermAdjustment ($03). Table 14.1 Service $2F Service $2F Request message definition Hex Data Byte Parameter Cvt Hex value #1 Service $2F SID M 2F Service $2F Request SID #2 dataIdentifier [ ] = [byte 1 (MSB) M 00-FF #3 byte 2] M 00-FF #4 controlOptionRecord [inputOutputControlParameter] M 00-FF #5 con-trolOptionRecord [controlState#1] C1 00-FF #(4+n) [controlState#n] C1 00-FF #(5+n) controlEnableMaskRecord [controlEnableMask#1] C2 00-FF #(5+n+m) [controlEnableMask#m] C2 00-FF C1: inputOutputControlParameter = short-TermAdjustment ($03) C1 is supported only at the time of inputOutputControl-Parameter = shortTermAdjustment ($03). C2: inputOutputControlParameter = shortTermAdjustment ($03) controlEnableMask dataIdentifier In dataIdentifier to which controlEnableMask is assigned, C2 is supported only at the time of in-putOutputControlParameter = shortTermAdjustment ($03).
Rationale:	The 0x2F InputOutputControlByIdentifier service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-14_2_2
Status:	rejected

Version:	5.1
Description:	EN: Table 14.2 Service $2F Service $2F 1 SID 2 dataIdentifier 1 inputOutput-ControlParameter dataIdentifier dataIdentifier Table 14.2 shows Service $2F response message format. Which consists of 1 byte of SID and 2 bytes dataIdentifier and 1 byte of inputOutputControlParameter. dataIdentifier which received by the request message is included in dataIdentifier of response message. ECU ECU which received the request message returns a positive response message after execution of the processing, when required forced operation processing can be executed. Table 14.2 Service $2F Service $2F Positive response message definition Hex Data Byte Parameter Cvt Hex value #1 Service $2F SID M 6F Service $2F Positive response SID #2 dataIdentifier [ ] = [byte 1 (MSB) M 00-FF #3 byte 2] M 00-FF #4 controlOptionRecord [inputOutputControlParameter] M 00-FF
Rationale:	The 0x2F InputOutputControlByIdentifier service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-14_2_3
Status:	rejected
Version:	5.1
Description:	EN: 2.2.2 Negative response message should follow section 2.2.2.
Rationale:	The 0x2F InputOutputControlByIdentifier service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-14_3_1
Status:	rejected
Version:	5.1
Description:	EN: dataIdentifier Service $2F 2 dataIdentifier is 2 bytes of information included in a Service $2F request message, and shows the device and the forced operation mode which forced operation is required. dataIdentifier And, in a positive response message, dataIdentifier and this value which were received by the request message are included. dataIdentifier (DiagnosticSession) dataIdentifier (value, forced operation to require, DiagnosticSession which permits execution, and vehicles operating condition) is defined by system.
Rationale:	The 0x2F InputOutputControlByIdentifier service is not supported by the EB Bootloader (should be managed by the customer).

Needs coverage of:	SwAD

Id:	HondaDiagnostics-14_3_2
Status:	rejected
Version:	5.1
Description:	EN: inputOutputControlParameter Service $2F 1 inputOutputControlParameter is 1 byte of information included in a Service $2F request message, and shows a request and stop of forced operation. inputOutputControlParameter And, in a positive response message, the same value of inputOutputControlPatameter which were received by the request message are set. Table 14.3 The definition is shown in Table 14.3. Service $2F dataIdentifier inputOutputControlParameter returnControlToECU($00) shortTermAdjustment($03) In addition, returnControlToECU ($00) and shortTermAdjustment ($03) of inputOutputControlParameter are certainly supported by all the dataIdentifiers used by Service $2F. Table 14.3 Service $2F inputOutputControlParameter The definition of Service $2F inputOutputControlParameter inputOutput ControlParameter Description (HEX) returnControlToECU : Request message When off-board tester requires the stop of forced operation, this value is included in request message. 00 : Positive response message ECU returnControlToECU Not executing forced operation as which ECU was required is shown. This value is included and returned to a positive response message when returnControlToECU is required from off-board tester. 01 - 02 (ISO 14229-1) not used (reserved by ISO 14229-1) shortTermAdjustment : Request message When off-board tester requires execution of forced operation, this value is included in request message. 03 : Positive response message ECU It is shown that ECU executes required forced operation. This value is included and returned to a positive response message when forced operation required by the off-board tester is executed. 04-FF (ISO 14229-1) not used (reserved by ISO 14229-1)
Rationale:	The 0x2F InputOutputControlByIdentifier service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-14_3_3
Status:	rejected
Version:	5.1
Description:	EN: controlState Service $2F (DUTY ON/OFF) controlState dataIdentifier controlState is the information included in a Service $2F request message, and specifies the volume of operation of the forced operation to require. The unit and scaling of controlState are defined for every dataIdentifier. controlState inputOutputControlParameter = shortTermAdjustment ($03) In addition, controlState is

	supported only the request message of inputOutputControlParameter = shortTermAdjustment ($03). controlState ( ) Detail for controlState is defined by the system.
Rationale:	The 0x2F InputOutputControlByIdentifier service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-14_3_4
Status:	rejected
Version:	5.1
Description:	EN: controlEnableMask Service $2F ControlEnableMask dataIdentifier controlEnableMask is the information included in a Service $2F request message, and is a parameter currently prepared for future expansion. The contents of ControlEnableMask are defined for every dataIdentifier. controlEnableMask inputOutputControlParameter = shortTermAdjustment ($03) In addition, controlEnableMask is supported only the request message of inputOutputControlParameter = shortTermAdjustment ($03). controlEnableMask Detail for controlEnableMask is defined by the system.
Rationale:	The 0x2F InputOutputControlByIdentifier service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-14_3_5
Status:	rejected
Version:	5.1
Description:	EN: Table 14.4 Service $2F NRC 14.4 Table 14.4 shows Service $2F NRC definition. Negative response should be refer to 14.4. Table 14.4 Service $2F Service $2F Negative response code definition NRC (Hex) Description incorrectMessageLengthOrInvalidFormat (IMLOIF) 13 Received message length or message structure doesn't suit Spec. . conditionsNotCorrect (CNC) 22 Vehicle condition doesn't allow execution. requestOutOfRange (ROOR) (1) dataIdentifier dataIdentifier is not supported. 31 (2) inputOutputControlParameter inputOutputControlParameter is out of Spec. (3) controlState controlState is out of Spec. (4) DiagnosticSession dataIdentifier dataIdentifier is not supported in current diagnosticSession. securityAccessDenied (SAD) 33 dataIdentifier Security is not released. serviceNotSupportedInActiveSession (SNSIAS) 7F DiagnosticSession Service $2F Current diagnostic Session doesn't support Service $2F. - Service 2F NRC = $78 (RCRRP) Caution NRC=$78 (RCRRP) is not allowed in Service 2F.

Rationale:	The 0x2F InputOutputControlByIdentifier service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-14_4
Status:	rejected
Version:	5.1
Description:	EN: Service $2F ECU Reply from ECU should follow this description.
Rationale:	The 0x2F InputOutputControlByIdentifier service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-14_4_1
Status:	rejected
Version:	5.1
Description:	EN: (1) DiagnosticSession DiagnosticSession analysis a. ECU DiagnosticSession defaultSession programmingSession ECU NRC = $7F (SNSIAS) 14.4.-3 When diagnosticSession is defaultSession or programmingSession, ECU should prepare negative response message with NRC = $7 (SNSIAS) and execute reply response message specified at section 14.4.3. (2) (24) Check length of request message (check longer than minimum length 24)) a. 4 ECU NRC = $13 (IMLOIF) 14.4.3 When received request message is shorter than 4bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 14.4.3. (3) dataIdentifier Check dataIdentifier a. dataIdentifier ECU NRC = $31 (ROOR) 14.4.3 When dataIdentifier in received request message is not supported, ECU should prepare negative response message with NRC = $31(ROOR) and execute reply response message specified at section 14.4.3. (4) inputOutputControlParameter 25 Check inputOutputControlParameter35 a. inputOutputControlParameter $00 $03 ECU NRC = $31 (ROOR) 14.4.3 Prior to dataIdentifier and inputOutputControlParameter, check if enough length of request message is received or not. 25 3.2 inputOutputControlParameter Service $2F inputOutputControlParameter inputOutputControlParameter In the inspection routine of the general request message indicated in section 3.2, message length is inspected before the check of inputOutputControlParameter value. However, because message length is different with an inputOutputControlParameter value in the case of Service $2F, an inputOutputControlParameter value is inspected before. (5) Check length of request message a. inputOutputControlParameter $00 (returnControlToECU) 4 ECU NRC = $13 (IMLOIF) 14.4.3 When inputOutputControl-

	Parameter included in the request message is $00(returnControlToECU) and length of request message is NOT 4bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 14.4.3. b. inputOutputControlParameter $03 (shortTermAdjustment) dataIdentifier ECU NRC = $13 (IMLOIF) 14.4.3 When inputOutputControlParameter included in the request message is $03 (shortTermAdjustment) and length of request message is different from the length assigned as dataIdentifier, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 14.4.3. (6) (1) (5) dataIdentifier When message doesn't match the above (1) to (5), the following request messages are inspected for every dataIdentifier. (7) dataIdentifier DiagnosticSession (DiagnosticSession dataIdentifier) check of current DiagnosticSession by dataIdentifier (It implements if needed) a. dataIdentifier DiagnosticSession ECU NRC = $31 (ROOR) 14.4.3 When dataIdentifier included in the request message which received does not support by the current DiagnosticSession, ECU should prepare negative response message with NRC = $31 (ROOR) and execute reply response message specified at section 14.4.3. (8) (dataIdentifier) The check of security release (It implements if needed) a. dataIdentifier ( ) ECU NRC = $33 (SAD) 14.4.3 It inspects, only when dataIdentifier included in the request message which received is protected by security. When the security of the security type assigned as this dataIdentifier is not released, ECU should prepare negative response message with NRC = $33 (SAD) and execute reply response message specified at section14.4.3. 6 "Service $27 (SecurityAccess service)" In addition, refer to "Service $27 (SecurityAccess service)" of a section 6 for the details of security access. routineIdentifier routineIdentifier protected with security is defined by system. (9) (dataIdentifier) Vehicle condition check (It implements if needed) a. inputOutputControlParameter shortTermAdjustment ($03) ECU NRC=$22 (CNC) 14.4.3 ECU When inputOutputControlParameter receives the request message of shortTermAdjustment ($03) and required forced operation cannot execute according to vehicles condition, ECU should prepare negative response message with NRC = $22 (CNC) and execute reply response message specified at section 14.4.3. At this time, ECU does not execute required forced operation. In addition, vehicles operating condition is defined by system. (10) controlState ( ) check of controlState value (It implements if needed) a. controlState dataIdentifier ECU NRC = $31 (ROOR) 14.4.3 When controlState value of request message is not allowable value defined by dataIdentifier, ECU should prepare negative response message with NRC = $31 (ROOR) and execute reply response message specified at section 14.4.3. controlState In addition, range of controlState value is defined by system. (11) controlEnableMask ( ) check of controlEnableMask value (It implements if needed) a. controlEnableMask dataIdentifier ECU NRC = $31 (ROOR) 14.4.3 When controlEnableMask of request message is not allowable value de-

	fined by dataIdentifier, ECU should prepare negative response message with NRC = $31 (ROOR) and execute reply response message specified at section 14.4.3. controlEnableMask In addition, checking controlEnableMask is defined by system. (12) (7) (11) ECU InputOutputControlByIdentifier service ECU 14.-4.2 When message doesn't match the above (7) to (11), ECU should judge it is possible to execute InputOutputControlByIdentifier service. ECU should execute task defined in 14.4.2. After that, return of the following response messages is executed. a. inputOutputControlParameter = returnControlToECU ($00) ECU inputOutputControlParameter returnControlToECU ($00) 14.4.3 In the case of inputOutputControlParameter = returnControlToECU ($00),ECU makes transmitting preparations of the positive response message which included returnControlToECU ($00) in inputOutputControlParameter, and executes return processing of the response message specified to 14.4.3. b. inputOutputControlParameter = shortTermAdjustment ($03) ECU inputOutputControlParameter shortTermAdjustment ($03) 14.4.3 In the case of inputOutputControlParameter = shortTermAdjustment ($03),ECU makes transmitting preparations of the positive response message which included shortTermAdjustment ($03) in inputOutputControlParameter, and executes return processing of the response message specified to 14.4.3. When inputOutputControlParameter included in the request message is except $00 or $03, ECU should prepare negative response message with NRC = $31 (ROOR) and execute reply response message specified at section 14.4.3.
Rationale:	The 0x2F InputOutputControlByIdentifier service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-14_4_2
Status:	rejected
Version:	5.1
Description:	EN: inputOutputControlParameter When ECU judges InputOutputControlByIdentifier service is possible based on 14.4.1 criteria, ECU should execute task written after.
Rationale:	The 0x2F InputOutputControlByIdentifier service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-14_4_2_1
Status:	rejected
Version:	5.1

Description:	EN: dataIdentifier When forced operation specified by dataIdentifier is executing, the forced operation is stopped and it returns to normal operation.
Rationale:	The 0x2F InputOutputControlByIdentifier service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-14_4_2_2
Status:	rejected
Version:	5.1
Description:	EN: dataIdentifier controlState Forced operation processing specified by dataIdentifier and controlState is executed. 14.4.3 Reply response message 3 (or) As described in section 3, not only by request message analysis results but also addressing type (physical or function address) have influence on response message. Table 14.5 14.4.1 Table 14.5 shows response message definition. Table 14.5 Service $2F Service $2F Reply to request message Request message check result No 1) addressing Response message Description type (2)a Physical (NRC $13) (5)a Wrong message length Negative response (5)b Function dataIdentifier (NRC $31) (3)a Physical Negative response Requested dataIdentifier is not supported Function No response InputOutputControlParameter (NRC $31) (4)a Physical Negative response Incorrect InputOutputControlParameter value. Function No response DiagnosticSession (1)a Service $2F Physical (NRC $7F) Current Diagnostic Session doesn't Negative response support Service $2F. Function DiagnosticSession (NRC $31) dataIdentifier Physical Negative response (7)a Requested dataIdentifier is not supported in current diagnostic Function No response session (8)a Physical (NRC $33) Security not released Negative response Function (9)a Physical (NRC $22) Vehicle condition doesn't allow Negative response requested service to execute Function (NRC $31) (10)a controlState Physical Negative response Incorrect controlState value. Function No response (NRC $31) (11)a controlEnableMask Physical Negative response Incorrect controlEnableMask value. Function No response InputOutputControlByIdentifier (12)a service Physical (12)b Requested Positive response InputOutputControlByIdentifier Function service executable 1) 14.4.1 No. No. is corresponding to No. in section 14.4.1.
Rationale:	The 0x2F InputOutputControlByIdentifier service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-14_5
Status:	rejected

Version:	5.1
Description:	EN: 14.4.2.2 ECU 1 ECU which performed forced control according to section 14.4.2.2should return to normal operation, when one of the following conditions is satisfied. Thus, forced control is continued when all the following conditions are abortive. (1) dataIdentifier inputOutputControlParameter = returnControlToECU Service $2F When the Service $2F request message of inputOutputControlParameter = returnControlToECU to dataIdentifier of the forced control under execution is received. (2) When it becomes impossible for the operating condition of vehicles to keep the execution condition of the forced control under execution. (3) Service$10 DiagnosticSession When it changes by a Service$10 request message to diagnosticSession which cannot perform forced control under execution. (4) ECU DiagnosticSession defaultSession DiagnosticSession transfers to defaultSession. a. Service $10 defaultSession By Service $10 request. b. (S3Server) defaultSession Session timer (S3Server) time out. (5) OFF ECU IG off. (6) battery cut. (7) Service $11 " OFF" " " ECU ECU reset by Service $11. When adding conditions other than the above to release of forced operation, it defines by a system.
Rationale:	The 0x2F InputOutputControlByIdentifier service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-15_1
Status:	rejected
Version:	5.1
Description:	EN: Service $31 (RoutineControl service) ECU Service $31 (RoutineControl service) is used to request to ECU to start, stop tasks, and report. routineControlType routineIdentifier routineControlOption Service $31 ECU routineControlType routineIdentifier routineControlOption The offboard tester requests ECU using Service $31 request message, which has routineControlType, routineIdentifier, and routineControlOption. Then ECU should perform tasks. ECU should replay positive or negative response message in response message. Service $31 ( ) This Service can be used with security or under limited vehicle condition. Service $31 DiagnosticSession Service $31 available diagnosticSession and vehicle condition to enable this function should be defined by the system.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-15_2_1
Status:	approved

Version:	5.1
Description:	EN: Table 15.1 Service $31 Service $31 1 SID sub-function (1 suppressPosRspMsgIndicationBit 7 routineControlType) 2 routineIdentifier routineControlOptionRecord sub-function bit 7 suppressPosRspMsgIndicationBit bit 0-6 routineControlType Table 15.1 shows Service $31 request message format. which consists of SID and sub-function. Sub-function has 1 bit of suppressPosRspMsgIndicationBit and 7bits of routineControlType, 2bytes of routineIdentifier, and routineControlOptionRecord. Meaning variable length. suppressPosRspMsgIndicationBit 2.1.2 Detail of suppressPosRspMsgIndicationBit should refer to section 2.1.2 Table 15.1 Service $31 Service $31 Request message definition Hex Data Byte Parameter Cvt Hex value #1 Service $31 SID M 31 Service $31 Request SID #2 sub-function = suppressPosRspMsgIndicationBit + M 00-FF routineControlType #3 routineIdentifier [ ] = byte#1(MSB) M 00-FF #4 byte#2 M 00-FF #5 routineControlOptionRecord [ ] = routineControlOption #1 C 00-FF : : : : # (4+n) routineControlOption #n C 00-FF C: routineIdentifier routineControlType It is dependent on the value of routineIdentifier and routineControlType.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-15_2_2
Status:	approved
Version:	5.1
Description:	EN: Table 15.2 Service $31 Service $31 1 SID 1 routineControlType 2 routineIdentifier routineControlOptionRecord routineControlType routineIdentifier routineControlType routineIdentifier Table 15.2 shows Service $31 positive response message format. The message contains 1 byte of positive response message SID and 1 byte of routineControlType, 2bytes of routineIdentifier, and routineControlOption. routineControlType and routineIdentifier should be used received values. ECU After task execution, positive message should be sent. Table 15.2 Service $31 Service $31 Positive response message definition Hex Data Byte Parameter Cvt Hex value #1 Service $31 SID M 71 Service $31 Positive response SID #2 routineControlType M 00-7F #3 routineIdentifier [ ] = byte#1(MSB) M 00-FF #4 byte#2 M 00-FF #5 routineStatusRecord [ ] = routineStatus #1 C 00-FF : : : : # (4+n) routineStatus #n C 00-FF C: routineIdentifier routineIdentifier depending.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-15_2_3

Status:	approved
Version:	5.1
Description:	EN: 2.2.2 Negative response message should follow section 2.2.2.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-15_3
Status:	rejected
Version:	5.1
Description:	EN: Service $31 The section defines parameter for Service $31 message.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-15_3_1
Status:	approved
Version:	5.1
Description:	EN: routineControlType (sub-function bit 0-6) Service $31 7 routineControlType (0 - 6 bits of sub-function) is 7 bits information included in service $31 request message to request to start, stop task or report results. routineControlType In positive message, ECU should use value from received message. Table 15.3 routineControlType Table 15.3 shows routineControlType/ routineControlType routineIdentifier Table 15.3 Service $31 routineControlType Service $31 routineControlType definition routineControlType Description (Hex) 00 (ISO 14229-1) not used (reserved by ISO 14229-1) startRoutine 01 routineIdentifier Execute task defined by routineIdentifier. stopRoutine 02 routineIdentifier Stop task defined by routineIdentifier. requestRoutineResults 03 routineIdentifier ( ) Request results of task, which defined by routineIdentifier. 04-7F (ISO 14229-1) not used (reserved by ISO 14229-1)
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-15_3_2
Status:	proposed
Version:	5.1
Description:	EN: routineIdentifier Service $31 2 ECU routineIdentifier is 2 bytes information included in Service $31 request message to indicate request to ECU. routineIdentifier Each routineIdentifier defines: ECU Tasks to ECU routineControlType

	supported routineControlType routineControlOptionRecord ( ) routineControlOptionRecord exists or not and contents (data length, contents) routineStatusRecord ( ) routineControlOptionRecord should be included in positive response message DiagnosticSession DiagnosticSession which is allowed to perform. Security protected or not. Which type of security. Vehicle condition to allow operation. routineIdentifier In the positive response message received value as routineIdentifier should be used. routineIdentifier routineIdentifier detail should be defined by the system.
Rationale:	The customer has to configure the routines under Tresos Studio.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-15_3_3
Status:	proposed
Version:	5.1
Description:	EN: routineControlOptionRecord Service $31 routineIdentifier routineControlOptionRecord routineIdentifier routineControlOptionRecord is information included in Service $31 request message and defines parameter, which is defined by routineIdentifier. Honda routineControlOptionRecord startRoutine By Honda specification, routineControlOptionRecord can assign only at the time of startRoutine. routineControlOptionRecord routineControlOptionRecord should be defined by the system.
Rationale:	The customer has to configure the routines under Tresos Studio.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-15_3_4
Status:	proposed
Version:	5.1
Description:	EN: routineStatusRecord Service $31 Service $31 routineStatusRecord is information included in Service $31 request message and informs the offboard tester status information like current task execution status. routineStatusRecord routineStatusRecord should be defined by the system.
Rationale:	The customer has to configure the routines under Tresos Studio.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-15_3_5
Status:	proposed
Version:	5.1

Description:	EN: Table 15.4 Service $31 NRC 15.4 Table 15.4 shows Service $31 NRC definition. Negative response should be refer to 15.4. Table 15.4 Service $31 Service $31 Negative response code definition NRC (Hex) Description generalReject (GR) ECU 10 (eraseMemory) In ECU which has temperature restrictions in reprogramming, erasing of a program code (eraseMemory) under the temperature which reprogramming is impossible is used only if it is required. subFunctionNotSupported (SFNS) 12 sub-function Requested sub-function is not supported.. incorrectMessageLengthOrInvalidFormat (IMLOIF) 13 Received message length or message structure doesn't suit Spec. . conditionsNotCorrect (CNC) 22 Vehicle condition doesn't allow execution. requestSequenceError (RSE) (1) startRoutine stopRoutine 24 stopRoutine was required while not executing by startRoutine. (2) Routine requestRoutineResults requestRoutineResults was required when the result of required Routine was not able to be outputted. requestOutOfRange (ROOR) (1) routineIdentifier 31 routineIdentifier is not supported. (2) DiagnosticSession routineIdentifier routineIdentifier is not supported in current diagnosticSession. (3) routineControlOptionRecord routineControlOptionRecord is out of Spec. securityAccessDenied (SAD) 33 routineIdentifier Security is not released. generalProgrammingFailure (GPF) 72 Processing cannot be executed because ECU detected an error when writing or erasing memories. requestCorrectlyReceived-ResponsePending (RCRRP) (NRC 78) Due to execution of requested task it is not possible to respond positive response or negative response with appropriate NRC. Extension of time to reply for response message is requested. TS-DCC01 Detail should refer to TS-DCC01 . - NRC = $10 (GR) ECU ECU 15.5 caution -Only ECU which implements reprogramming function and has temperature restrictions in reprogramming uses NRC= $10(GR). For details, refer to 15.5.
Rationale:	EB bootloader doesn't manage the NRC10. Should be managed by the customer.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-15_4
Status:	rejected
Version:	5.1
Description:	EN: Service $31 ECU Reply from ECU should follow this description.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-15_4_1
Status:	proposed

Version:	5.1
Description:	EN: (1) (26) Check length of request message (check longer than minimum length 26)) a. 4 ECU NRC = $13 (IMLOIF) 15.4.3 (routineControlType, routineIdentifier) When received request message is shorter than 4bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 15.4.3. (2) routineIdentifier 27 Check routineIdentifier 27 a. routineIdentifier ECU NRC = $31 (ROOR) 15.4.3 When routineIdentifier of request message is not supported, ECU should prepare negative response message with NRC = $31 (ROOR) and execute reply response message specified at section 15.4.3. (3) (1) (2) routineIdentifier (4) routineControlType Check routineControlType a. routineControlType routineIdentifier routineControlType ECU NRC = $12 (SFNS) Prior to routineIdentifier and routineControlType, check if enough length of request message is received or not. 27 3.1 routineControlType Service $31 routineIdentifier routineControlType routineIdentifier In the inspection routine of the general request message indicated to 3.1, routineControlType will be inspected before routineIdentifier. However, in the case of Service $31, because routineControlType to support changes with routineIdentifier values, a routineIdentifier value is inspected before. (6) DiagnosticSession (DiagnosticSession routineIdentifier) The check of DiagnosticSession (It implements if needed) a. routineIdentifier DiagnosticSession ECU NRC = $31 (ROOR) 15.4.3 When routineIdentifier included in the request message which received does not support in the current DiagnosticSession, ECU should prepare negative response message with NRC = $31 (ROOR) and execute reply response message specified at section 15.4.3. routineIdentifier DiagnosticSession DiagnosticSession which routineIdentifier supports is defined by system. routineIdentifier DiagnosticSession routineControlType And, DiagnosticSession which routineIdentifier supports is directed for every routineControlType. (7) (routineIdentifier) The check of security release (It implements if needed) a. routineIdentifier ( ) ECU NRC = $33 (SAD) 15.4.3 It inspects, only when routineIdentifier included in the request message which received is protected by security. When the security of the security type assigned as this routineIdentifier is not released, ECU should prepare negative response message with NRC = $33 (SAD) and execute reply response message specified at section 15.4.3. 6 "Service $27 (SecurityAccess service)" In addition, refer to "Service $27 (SecurityAccess service)" of a section 6 for the details of security access. routineIdentifier routineIdentifier protected with security is defined by system. routineIdentifier routineControlType And, routineIdentifier protected with security is directed for every routineControlType. (8) routineControlType (routineControlType) The check of the execution sequence of routineControlType (It implements if needed) a. routineControlType stopRoutine routine startRoutine ECU NRC = $24 (RSE) 15.4.3 When routineControlType included in the request message which received is stopRoutine and routine corresponding to it

is not executed by startRoutine, ECU should prepare negative response message with NRC = $24 (RSE) and execute reply response message specified at section 15.4.3. routineControlType stopRoutine routineIdentifier In addition, when routineControlType is stopRoutine, it inspects by all the routineIdentifiers. routineControlType requestRoutineResults routine ECU NRC = $24 (RSE) 15.-4.3 And when routineControlType included in the request message which received is requestRoutineResults and the execution result of routine corresponding to it cannot be outputted, ECU should prepare negative response message with NRC = $24 (RSE) and execute reply response message specified at section 15.4.3. routineControlType requestRoutineResults routineIdentifier In addition, a system determines for every routineIdentifier whether to inspect, when routineControlType is requestRoutineResults. (9) (routineIdentifier) The check of a vehicles operating condition (It implements if needed) a. routineIdentifier ECU NRC = $22 (CNC) 15.4.3 This check is executed only when the vehicles operating condition which cannot execute processing specified by routineIdentifier included in the request message is assigned. When the processing specified by routineIdentifier cannot execute according to a vehicles operating condition, ECU should prepare negative response message with NRC = $22 (CNC) and execute reply response message specified at section 15.4.3. In addition, the inspection standard of vehicles operating condition is defined by system. routineControlType And, vehicles operating condition is directed for every routineControlType. (10) routineControlOptionRecord ( ) The check of routineControlOptionRecord (It implements if needed) a. routineControlOptionRecord routineIdentifier ECU NRC = $31 (ROOR) 15.4.3 When the value of routineControlOptionRecord included in the request message is out of the range specified for every routineIdentifier, ECU should prepare negative response message with NRC = $31 (ROOR) and execute reply response message specified at section 15.4.3. (11) ( ) The check of the memory which writes in information (It implements if needed) a. routineIdentifier routineControlType ( ) ECU NRC = $72 (GPF) 15.4.3 This check is executed only when the processing specified by routineIdentifier and routineControlType of request message writes information in memory. When the memory which writes in the specified information is failure, ECU should prepare negative response message with NRC = $72 (GPF) and execute reply response message specified at section 15.4.3. (12) (4) (11) ECU RoutineControl service ECU 15.4.2 When message doesn't match the above (4) to (11), ECU should judge it is possible to execute RoutineControl service. ECU should execute task defined in 15.4.2 and, prepare positive/negative response message and execute reply response message specified in 15.4.3. a. RoutineControl service ECU NRC = $72 (GPF) 15.4.3 When writing couldn't finish normal due to memory problem, ECU should prepare NRC = $72(GPF) and execute reply response message specified at section 15.4.3. b. RoutineControl service ECU 15.4.3 When executing finished normal, ECU should reply posi-

	tive message. (routineStatusRecord) routineIdentifier In addition, the contents of the positive response message (existence and its contents of routineStatusRecord) are specified for every routineIdentifier and system. 15.4.3 When the value of routineControlType of the request message is not routineControlType which can be used by routineIdentifier, ECU should prepare negative response message with NRC = $12 (SFNS) and execute reply response message specified at section 15.4.3. (5) Check length of request message a. routineIdentifier routineControlType ECU NRC = $13 (IMLOIF) 15.4.3 When received request message length doesn't match to the length defined by routineIdentifier and routineControlType, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 15.4.3.
Rationale:	The customer has to configure the routines under Tresos Studio. If special requirements, in the Tresos Studio configuration the customer can call his callback. EB bootloader supports ISO14229:2006, and there is no NRC hierarchy defined in this version.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-15_4_2_1
Status:	proposed
Version:	5.1
Description:	EN: routineIdentifier routineControlOptionRecord Processing specified by routineIdentifier and routineControlOptionRecord is executed.
Rationale:	The customer has to configure the routines under Tresos Studio. If special requirements, in the Tresos Studio configuration the customer can call his callback.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-15_4_2_2
Status:	proposed
Version:	5.1
Description:	EN: routineIdentifier routineControlOptionRecord When the processing specified by routineIdentifier and routineControlOptionRecord is executing, the processing is suspended and it returns to normal operation.
Rationale:	The customer has to configure the routines under Tresos Studio. If special requirements, in the Tresos Studio configuration the customer can call his callback.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-15_4_2_3

Status:	proposed
Version:	5.1
Description:	EN: routineIdentifier routineControlOptionRecord ( ) The execution result of the processing specified by routineIdentifier and routineControlOptionRecord is replied.
Rationale:	The customer has to configure the routines under Tresos Studio. If special requirements, in the Tresos Studio configuration the customer can call his callback.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-15_4_3
Status:	proposed
Version:	5.1
Description:	EN: Reply response message 3 (or) suppressPosRspMsgIndicationBit As described in section 3, not only by request message analysis results but also addressing type (physical or function address), or suppressPosRspMsgIndicationBit have influence on response message. Table 15.5 15.4.1 Table 15.5 shows response message definition. 15.4.2 (P2CAN) NRC = $78 (RCRRP) In addition, because processing required by 15.4.2 is executed, when a response message cannot be replied within P2CAN, ECU can request extension of positive response message by sending negative response message with NRC = $78 (RCRRP). P2CAN NRC = $78 (RCRRP) TS-DCC01 Detail of negative response message of P2CAN, negative response message with NRC = $78 (RCRRP) should refer to TS-DCC01 . Table 15.5 Service $31 Service $31 Reply to request message Request message check result suppressPosRs pMsgIndication Response message No 1) Description addressing Bit type (1)a Physical 0 (False) (NRC $13) (5)a Wrong message length 1 (True) Negative response Function 0 (False) (NRC $31) routineIdentifier Physical 1 (True) Negative response (2)a requested routineIdentifier not 0 (False) supported. Function 1 (True) No response routineControlType 0 (False) (NRC $12) (4)a Physical 1 (True) Negative response Requested routineControlType is 0 (False) not supported Function 1 (True) No response 0 (False) (NRC $31) DiagnosticSession Physical 1 (True) Negative response routineIdentifier (6)a requested routineIdentifier not 0 (False) supported in current Function 1 (True) No response diagnosticSession. (7)a Physical 0 (False) (NRC $33) Security not released 1 (True) Negative response Function routineControlType (8)a Physical 0 (False) (NRC $24) routineControlType was required in 1 (True) Negative response the wrong order. Function (9)a Physical 0 (False) (NRC $22) Vehicle condition doesn't allow 1 (True) Negative response requested service to execute Function routineControlOptionRecord 0 (False) (NRC $31) (10)a Physical 1 (True) Nega-

	tive response Incorrect 0 (False) routineControlOptionRecord value. Function 1 (True) No response (11)a Physical 0 (False) (NRC $72) (12)a Memory error 1 (True) Negative response Function 2) The ECU environment is in Physical 0 (False) (NRC $10) reprogramming impossible 1 (True) Negative response temperature. Function Table 15.5 Service $31 Service $31 Reply to request message Request message check result suppressPosRs pMsgIndication Response message No 1) Description addressing Bit type RoutineControl service 0 (False) Positive response (12)b Physical Requested RoutineControl service 1 (True) executable Function No response 1) 15.4.1 No. No. is corresponding to No. in section 15.4.1. 2) ECU 15.5 Only ECU which implements a reprogramming function uses it. For details, refer to 15.5.
Rationale:	The customer has to configure the routines under Tresos Studio. If special requirements, in the Tresos Studio configuration the customer can call his callback.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-15_5
Status:	rejected
Version:	5.1
Description:	EN: ECU Service $31 This section defines the parameter included in the request message of Service $31 about ECU which implements a reprogramming function. And, reply of a response message is also defined.
Rationale:	not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-15_5_1
Status:	proposed
Version:	5.1
Description:	EN: Table 15.6 routineIdentifier Table 15.6 shows routineIdentifier for reprogramming. Table 15.6 Service $31 routineIdentifier Service $31 routineIdentifier for reprogramming routineIdentifier Description (Hex) eraseMemory FF00 Memory erase request. checkProgrammingDependencies FF01 Failure detection of program code.
Rationale:	The customer has to configure the routines under Tresos Studio.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-15_5_2_1
Status:	proposed

Version:	5.1
Description:	EN: ECU EEPROM The flash EEPROM is generally used for the program memory of ECU which implements a reprogramming function. EEPROM 2 When Reprogramming, at first memory area for reprogramming needs to be erased. 15.-5.2.7 When memory erase is done, repro event history, specified in 15.5.2.7, should be stored. Memory erase procedure shown as below. (1) routineIdentifier = eraseMemory ($FF00) routineControlType = startRoutine ($01) Service $31 ECU Process 1: The offboard tester requests memory erase by Service $31 request message. routineIdentifier = eraseMemory ($FF00), routineControlType = startRoutine ($01) (2) (1) ECU ECU NRC = $78 (RCRRP) Process 2: When message is received, ECU should check program memory erase condition. When that is true, ECU should send negative response message with NRC = $78(RCRRP) to keep time for erase and start erasing. NRC = $78 (RCRRP) P2*CAN NRC = $78 (RCRRP) In addition, after replying the negative response message of NRC = $78, even if P2*CAN pass, when not completing erasing processing, the negative response message of NRC = $78 (RCRRP) is again transmitted to offboard Tester, and erasing processing is continued. (3) ECU Process 3: When erasing is completed, ECU should check results and send response. 22.7 Tc4 NRC = $78 (RCRRP) ( ) The offboard tester confirms error if ECU sends still NRC = $78 (RCRRP) after Tc4. Fig. 15-1 Fig. 15-1 shows communication at memory erase process. TesterPresent check may come In during erasing processing execution of program memory, Process (1) TesterPresent P2*CAN is re-extended using NegRsp (NRC = $78). (1) NegRsp Request (NRC = $78) P2*CAN Off-board tester Process (2) Process (3) (2) (3) NegRsp NegRsp NegRsp PosRsp NRC 78 NRC 78 NRC 78 The erasing Erasing processing of a program memory processing P2*CAN execution judging of a program memory P2CAN Tc4 Fig. 15-1 Program memory clear communication process routineIdentifier = eraseMemory ($FF00) Service $31 2 routineIdentifier = eraseMemory ($FF00) has two type of request messages. (1) reprogramming in the field ECU (B.2) All reprogramming area should be erased. except program area for power shut down recovery. Detail should refer to B.2. (2) reprogramming for the development Only area specified by the offboard tester is erasable. The program code of the memory area which is not erased by "reprogramming in the field" in "reprogramming for the development" be also erasable. Support this function or not should be defined by the system. - Caution - Reprogramming for the development should support only at the time of development, and should not support at the time of mass production. Table 15.7 routineIdentifier = eraseMemory ($FF00) Table 15.7 shows definition of routineIdentifier = eraseMemory ($FF00) Table 15.7 routineIdentifier = eraseMemory ($FF00) Definition RoutineIdentifier = eraseMemory $FF00 DiagnosticSession routineControlType Support in DiagnosticSession Support for routineC routineSt routineControlType ontrolOp atusRec Description tionReco ord Protectio default-

	Ses extendedD engineerin programmi $01 1) $02 2) $03 3) rd n by sion iagnos-ticS gSession ngSession security ession reprogramming None None None in the field reprogramming 8 for the 8 bytes None None development Support No Support 1) startRoutine 2) stopRoutine 3) requestRoutineResults
Rationale:	The customer has to configure the routines under Tresos Studio. The tester re-lated requirements are not managed by the EB bootloader.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-15_5_2_2
Status:	proposed
Version:	5.1
Description:	EN: routineControlType routineControlType startRoutine ($01) routineCon-trolType supports only startRoutine ($01).
Rationale:	The customer has to configure the routines under Tresos Studio.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-15_5_2_3
Status:	proposed
Version:	5.1
Description:	EN: routineControlOptionRecord routineControlOptionRecord routineControlOp-tionRecord is different by field reprogramming or development reprogramming.
Rationale:	The customer has to configure the routines under Tresos Studio. The tester re-lated requirements are not managed by the EB bootloader. If special require-ments, in the Tresos Studio configuration the customer can call his callback.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-15_5_2_3_1
Status:	proposed
Version:	5.1
Description:	EN: routineControlOptionRecord At field reprogramming, routineControlOption-Record should not be used.
Rationale:	The customer has to configure the routines under Tresos Studio.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-15_5_2_3_2
Status:	proposed
Version:	5.1

Description:	EN: 8 routineControlOptionRecord At development reprogramming, 8 bytes routineControlOptionRecord is specified. routineControlOptionRecord 4 (routineControlOption #1 #4) routineControlOption #1 MSB Higher 4 bytes of routineControlOptionRecord (#1 - #4) show start address of erased memory. routineControlOptionRecord (#1) is MSB. routineControlOptionRecord 4 (routineControlOption #5 #8) routineControlOption #5 MSB Lower 4 bytes of routineControlOptionRecord (#5 - #8) show number of erased bytes. routineControlOptionRecord (#5) is MSB. routineControlOption #1 #4 $00004000 routineControlOption #5 #8 $00008000 ECU $00004000 $0000BFFF example routineControlOptionRecord (#1 - #4) is $00004000 and (#5 - #8) = $00008000 erased address = $00004000 to $00008FFFF.
Rationale:	The customer has to configure the routines under Tresos Studio.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-15_5_2_4
Status:	proposed
Version:	5.1
Description:	EN: routineStatusRecord This routine has no routineStatusRecord. routineIdentifier = eraseMemory ($FF00) Service $31 1 SID 1 routineControlType 2 routineIdentifier Service $31 routineIdentifier = eraseMemory ($FF00) positive response message contains 1 byte positive message SID + 1 byte routineControlType + 2 bytes routineIdentifier.
Rationale:	The customer has to configure the routines under Tresos Studio.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-15_5_2_5
Status:	proposed
Version:	5.1
Description:	EN: 15.4.1 (2) After checking 15.4.1 (2) following check should be done. (1) routineControlType routineControlType analysis a. routineControlType $01 (startRoutine) ECU NRC = $12 (SFNS) 15.4.3 When routineControlType value is NOT $01 (startRoutine) by routineIdentifier, ECU should prepare negative response message with NRC = $12 (SFNS) and reply response message specified at 15.4.3. (2) Check length of request message a. 4 12 ECU NRC = $13 (IMLOIF) 15.4.3 When received request message is NOT 4 or 12bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 15.4.3. b. ECU 4 ECU NRC = $13 (IMLOIF) 15.4.3 When received request message in mass product is NOT 4bytes, ECU should prepare negative response message with NRC =

	$13 (IMLOIF) and execute reply response message specified at section 15.4.-3. (3) DiagnosticSession DiagnosticSession analysis a. ECU DiagnosticSession programmingSession ECU NRC = $31 (ROOR) 15.4.3 When diagnosticSession is not programmingSession, ECU should prepare message with NRC = 31(ROOR) and reply response message specified at section 15.4.3. (4) (ECU) Reprogramming temperature check (when ECU has temperature limitation) a. ECU ECU NRC = $10 (GR) 15.4.3 When ECU judges out of temperature range for reprogramming, ECU should prepare message with NRC = $10(GR) and reply response message specified at section 15.4.3. (5) routineControlOptionRecord (12) a. routineControlOptionRecord (routineControlOption #1 #8) ECU NRC = $31 (ROOR) 15.4.3 When memory area defined by routineControlOptionRecord (routineControlOption #1 - #8 are all or partly out of erasable area, ECU should prepare negative response message with NRC = $31(ROOR) and reply response message specified at section 15.4.3. The address range of erasable program memory area is determined by system. b. routineControlOptionRecord (routineControlOption #1 #8) BLOCK 28 ECU NRC = $31 (ROOR) 15.4.3 Erased area defined by routineControlOptionRecord (routineControlOption #1 - #8) doesn't match with erasable block 28, ECU should prepare negative response message with NRC = $31(ROOR) and reply response message specified at section 15.4.3. BLOCK Erasable block should be defined by the system. kbyte) EEPROM $0000 $2800 ECU NRC = $31 (ROOR) Generally, erasing of a flash EEPROM is performed not per 1-byte unit but per BLOCK. For example, erasing BLOCK of a flash EEPROM receives 4 K bytes ($1000) of ECU. When memory erase which specified $0000 to $2800 as address range is required, ECU replies the negative response message of NRC =$31 (ROOR), and does not execute erasing. (6) (1) (5) ECU ECU 15.5.2.6 When message doesn't match the above (1) to (5), ECU should judge program area erase is possible, ECU should execute task defined by 15.5.2.6 and following message should be sent. a. 15.5.2.6 a (ECU) ECU NRC = $10 (GR) 15.4.3 At 15.5.2.-6 a task case (ECU judges out of temperature Spec during memory erase, results checking), ECU should prepare message with NRC = $10(GR) and reply response message specified at section 15.4.3. b. 15.5.2.6 b ( ) ECU NRC = $72 (GPF) 15.4.3 At 15.5.2.6 b task case (erase results shows abnormal) ECU should prepare message with NRC = $72(GPF) and reply response message specified at section 15.4.3. c. 15.5.2.6 c ( ) ECU routineControlType = startRoutine ($01) 15.4.3 At 15.5.2.6 c task case (erase task normal completed), ECU should prepare positive response message with routineControlType = startRoutine ($01) and reply response message specified at section 15.4.3.
Rationale:	The customer has to configure the routines under Tresos Studio.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-15_5_2_6

Status:	proposed
Version:	5.1
Description:	EN: 15.5.2.5 ECU 15.5.2.7 ECU According to regulation of 15.5.2.5, ECU recognized that execution of erasing processing of program memory is possible performs reprogramming history storing processing specified to 15.5.2.7. After that, erasing processing of the program memory of the specified area and check processing of erasing result are executed, and the reprogramming status of ECU is made to change according to the following by processing result. a. ECU ECU ECU 22.5 " " ECU to which reprogramming is restricted at temperature performs the following processing. When the temperature of ECU comes out of the reprogramming permissive temperature range during erasing of program memory, or the check of erasing result, ECU stops erasing of program memory, or erasing check processing. After that, the reprogramming condition of ECU is changed into the "Over-temperature is detected" of being specified 22.5. b. ECU ECU 22.5 " " When malfunctions are detected by check processing of erasing result, ECU makes reprogramming status of ECU the "memory error detected" to which it is specified 22.5. c. ECU ECU 22.5 " " When erasing of the required program memory is completed normally, ECU is changed into "waiting for program information" to which the reprogramming status of ECU is specified 22.5. Program code memory area should follow next section.
Rationale:	The EB will not check the preconditons(over-temperature) for the erase rootine. Reprogramming status shall be fully managed in integration code
Needs coverage of:	SwAD

Id:	HondaDiagnostics-15_5_2_6_1
Status:	approved
Version:	5.1
Description:	EN: (B.2) ECU (B.2) All reprogramming area should be erased. Except program area for power shut down recovery. Detail should refer to B.2. After erase, those area should be checked if correctly erased.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-15_5_2_6_2
Status:	approved
Version:	5.1
Description:	EN: routineControlOptionRecord Memory area defined by routineControlOptionRecord should be erased and checked.

Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-15_5_2_7
Status:	proposed
Version:	5.1
Description:	EN: ECU recognized that execution of the processing required according to regulation of 15.5.2.5 is possible stores a reprogramming history in nonvolatile memory before the erasing processing start of a program memory. 11.5.2.1 The reprogramming history is generated based on the reprogramming history memorized by 11.5.2.1. Service $22 In addition, this information can be read by Service $22. ECU ECU And, even if the ECU software does not operate, read this information. (It can answer, when the report of the reprogramming history of ECU returned from the market is asked.) The reprogramming history stored in nonvolatile memory is shown below. And, the initial value is written in nonvolatile memory at the time of shipment. 1 Reprogramming history 1 Non official tester used history 11.5.2.1 $80 11.5.2.1 (dataIdentifier = $F100 ( ) Service $2E) 1 "$FF" "$00" 29 If Offboard tester value is received at least once greater equal $80 or dataIdentifier = $F100 of Service $2E was not received (wrong process), $FF should be stored. 29 "$00" default = $00. 2 Reprogramming history 2 current tester history 11.5.2.1 The value received by dataIdentifier = $F100 of Service $2E should be stored. 11.5.2.1 dataIdentifier = $F100 ( ) Service $2E "$FF" If dataIdentifier = $F100 of Service $2E was not received this time, $FF should be stored. "$00" default = $00. 3 Reprogramming history 3 number of reprogramming event programmingSession programmingSession 1 30 "$FF" After transferring to programmingSession and before first memory erase task add one to stored counter. 30 Max number is $FF. "$00" default = $00. 4 Reprogramming history 4 Number of executed memory erase task 1 "$FF" Before memory erase task, add one to stored counter. Max number is $FF. "$00" default = $00. Fig. 15-2 Fig. 15-3 Change of the reprogramming history when executing diagnostic service which has relation in Fig.15.2 and Fig.15.3 is shown. 29 "$FF" "$FF" If EEPROM stored value is $FF then keep $FF. "$00" (11.5.2.1 $80 11.5.2.1) "$FF" "$00" When at one programmingSession more than 1 erase action is done, it is counted 1 memory erase. Non-programming Non-programming Non-programming Session Session Session programming programming programming programming programming programming programming DiagnosticSession Session Session Session Session Session Diagnostic Diagnostic Diagnostic Session Session Session Service$2E $01-$01 $01-$80 $01-$00 (dataIdentifier = $F100) Service$31 (routineIdentifier = $FF00) Tester Information Unfixed $01 Unfixed $80 Unfixed $00 1 $00 $00 $00 $FF *1 $FF *2 2 $00 $01 $01 $80 $00 3 $00 $01 $02 $03 4 $00 $01 $02 $03 $04 *1 $80 When tester informa-

	tion is more than $80, it is considered as un-official tester. *2 1 $FF Once un-official tester is used, the reprogramming history 1 will be set to $FF. Fig. 15-2 1 Example of changes of reprogramming history Non-programming Non-programming Non-programming Session Session Session programming programming programming programming programming programming DiagnosticSession Session Session Session Session Session Session Diagnostic Diagnostic Diagnostic Session Session Session Service$2E $01-$01 $02-$00 (dataIdentifier = $F100) Service$31 (routineIdentifier = $FF00) Tester Information Unfixed $01 Unfixed Unfixed $FF *2 1 $00 $00 $00 $FF *1 $FF Reprogramming history 1 2 $00 $01 Reprogramming history 2 $01 $FF *1 $FF 3 $00 $01 $02 $03 Reprogramming history 3 4 Reprogramming history 4 $00 $01 $02 $03 $04 *1 2 $FF When memory erase is performed in the condition of not recording Tester information, it is considered as un-official tester. In that case, $FF is stored in the reprogramming history 2. *2 Service $2E dataIdentifier $F100 PDR $00 $01 $FF When PDR $00 of Service $2E dataIdentifier $F100 is except $01, it is considered as an un-official tester. In that case, $FF is stored in tester information. Fig. 15-3 2 Example 2 of changes of reprogramming history
Rationale:	ReadDataByIdentifier and WriteDataByIdentifier (Fingerprint/History) shall be implemented by Bootloader customer.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-15_5_2_8
Status:	rejected
Version:	5.1
Description:	EN: ECU 22.7 Tc4 NRC = $78 (RCRRP) Following 15.4.3 and ECU requests time extension to send positive response message by NRC = $78 (RCRRP), ECU should send withinTc4 positive or negative (except NRC = $78) message.
Rationale:	Tc4 is HW and integration dependent (memory size, CPU speed, memory tehnology...) so can not be garanteed by the EB bootloader alone.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-15_5_3_1
Status:	proposed
Version:	5.1
Description:	EN: ECU After writing all program codes, program code failure detection should be done. If error is detected, the offboard tester will request memory erase and rewriting. ECU (4.5.3 programmingSession) When program is correctly written, ECU will start the same initialization as battery reset, though battery is not dis-

	connected. (EEPROM) If other actions are needed, those should be done here. e.g. protection function to avoid easy read out of EEPROM contents. Below is procedure for program code failure detection. (1) routineIdentifier = checkProgrammingDependencies ($FF01) routineControlType = startRoutine ($01) Service $31 ECU Process 1: The offboard tester requests memory erase by Service $31 request message. routineIdentifier = checkProgrammingDependencies ($FF01), routineControlType = startRoutine ($01). (2) (1) ECU ECU NRC = $78 (RCRRP) Process 2: When message is received, ECU should check program memory check detection condition. When that is true, ECU should send negative response message with NRC = $78(RCRRP) to keep time for checking and start checking. NRC = $78 (RCRRP) P2*CAN NRC = $78 (RCRRP) In addition, after replying the negative response message of NRC = $78, even if P2*CAN pass, when not completing checking memory processing, the negative response message of NRC = $78 (RCRRP) is again transmitted to offboard Tester, and checking memory processing is continued. (3) ECU 22.7 Tc6 NRC = $78 (RCRRP) ( ) Process 3: When error detection is completed, ECU should check results and send response. The offboard tester confirms error if ECU sends still NRC = $78 (RCRRP) after Tc6. Fig. 15-4 Fig. 15-4 shows communication at programming dependencies check process. TesterPresent When dependance check is on going, NegRsp (NRC = $78) check may come should be sent to extend P2*CAN again. Process 1 TesterPresent NegRsp (NRC = $78) P2*CAN (1) Next request Request Process 2 Process 3 Offboard tester (2) (3) NegRsp NegRsp NegRsp PosRsp NRC 78 NRC 78 NRC 78 Programming programming dependencies check process. dependencies P2*CAN check execution judgement P2CAN Tc6 Fig. 15-4 communication at checkProgrammingDependencies procedure Table 15.8 routineIdentifier = $ FF01 (checkProgrammingDependencies) Table 15.8 shows definition of routineIdentifier = $ FF01 (checkProgrammingDependencies) Table 15.8 routineIdentifier = checkProgrammingDependencies ($FF01) Definition RoutineIdentifier = checkProgrammingDependencies ($FF01) DiagnosticSession routineControlType Support in DiagnosticSession Support for Routine Routine routineControlType Control Status Protection Option Record by Default Extended engineerin programmi $01 1) $02 2) $03 3) Record security Session Diagnostic gSession ngSession Session Support No Support 1) startRoutine 2) stopRoutine 3) requestRoutineResults
Rationale:	The customer is responsible to implement the "compatibility/consistency" check. The customer should configure the routine in Tresos Studio.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-15_5_3_2
Status:	proposed
Version:	5.1

Description:	EN: routineControlType startRoutine ($01) routineControlType supports only startRoutine ($01).
Rationale:	The customer is responsible to implement the "compatibility/consistency" check. The customer should configure the routine in Tresos Studio.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-15_5_3_3
Status:	proposed
Version:	5.1
Description:	EN: routineControlOptionRecord This routine has no routineControlOption-Record.
Rationale:	The customer is responsible to implement the "compatibility/consistency" check. The customer should configure the routine in Tresos Studio.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-15_5_3_4
Status:	proposed
Version:	5.1
Description:	EN: routineStatusRecord This routine has no routineStatusRecord. routineIdentifier = checkProgrammingDependencies ($FF01) Service $31 Service $31 routineIdentifier = checkProgrammingDependencies ($FF01) positive response message contains 1 byte positive message SID + 1 byte routineControlType + 2 bytes routineIdentifier.
Rationale:	The customer is responsible to implement the "compatibility/consistency" check. The customer should configure the routine in Tresos Studio.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-15_5_3_5
Status:	proposed
Version:	5.1
Description:	EN: 15.4.1 (2) After checking 15.4.1 (2) following check should be done. (1) routineControlType routineControlType analysis a. routineControlType $01 (startRoutine) ECU NRC = $12 (SFNS) 15.4.3 When routineControlType value is NOT $01 (startRoutine) by routineIdentifier, ECU should prepare negative response message with NRC = $12 (SFNS) and reply response message specified at 15.4.3. (2) Check length of request message a. 4 ECU NRC = $13 (IMLOIF) 15.4.3 When received request message is NOT 4bytes, ECU should pre-

	pare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 15.4.3. (3) DiagnosticSession DiagnosticSession analysis a. ECU DiagnosticSession programmingSession ECU NRC = $31 (ROOR) 15.4.3 When diagnosticSession is not programmingSession, ECU should prepare message with NRC = $31(ROOR) and reply response message specified at section 15.4.3. (4) The check of reprogramming status a. ECU 22.5 " " " " ECU NRC = $22 (CNC) 15.4.3 The reprogramming status of ECU is specified to 22.5. When reprogramming status is not which of " Waiting for checkProgrammingDependencies " or " reprogramming normal complete ", either, ECU should prepare negative response message with NRC = $22 (CNC) and execute reply response message specified at section 15.4.3. b. ECU 22.5 " " ECU routineControlType = startRoutine ($01) 15.4.3 ECU In the case in the "reprogramming normal complete" that the reprogramming condition of ECU is specified to 22.5, ECU should prepare positive response message included routineControlType = startRoutine ($01) and execute reply response message specified at section 15.4.3. (5) (1) (4) ECU ECU 15.5.3.6 When message doesn't match the above (1) to (4), ECU should judge reprogram failure detection is executable, ECU should execute task defined by 15.5.3.6 and following message should be sent. a. 15.5.3.6 a ( ) ECU routineControlType = startRoutine ($01) 15.4.3 When processing of "15.5.3.6 a" is executed (When supporting reprogramming for development), ECU should prepare positive response message included routineControlType = startRoutine ($01) and execute reply response message specified at section 15.4.3. b. 15.5.3.6 b ( ) ECU NRC = $72 (GPF) 15.4.3 When processing of 15.5.3.6 b is executed (Error was detected by checkProgrammingDependencies), ECU should prepare negative response message with NRC = $72 (GPF) and execute reply response message specified at section 15.4.3. c. 15.5.3.6 c ( ) ECU routineControlType = startRoutine ($01) 15.4.3 When processing of 15.5.3.6 c is executed (Error was not detected by checkProgrammingDependencies), ECU should prepare positive response message included routineControlType = startRoutine ($01) and execute reply response message specified at section 15.4.3.
Rationale:	The customer is responsible to implement the "compatibility/consistency" check. The customer should configure the routine in Tresos Studio. Reprogramming status shall be fully managed in integration code
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-15_5_3_6
Status:	proposed
Version:	5.1
Description:	EN: ECU According to regulation of 15.5.3.5, ECU recognized that execution of "checkProgrammingDependencies" is possible, Error detection processing

	of a program code is executed and the reprogramming state of ECU is made to change according to the following by a processing result. a. ECU ECU 22.-5 " " (4.5.3 programmingSession) ECU which supports reprogramming for development is changed into the " reprogramming normal complete" of specifying the reprogramming condition of ECU to 22.5, and executes processing required for next starting (see 4.5.3 Return from programmingSession). ( ) In addition, processing required at the time of next starting is defined for every system. (For example, initialization of diagnostic information etc.) b. ECU ECU ECU 22.-5 " " When malfunctions are detected by "checkProgrammingDependencies" as for ECU which does not support reprogramming for development, ECU is made to change to the "memory error detected" to which the reprogramming status of ECU is specified 22.5. c. ECU ECU ECU 22.5 " " (4.5.3 programmingSession) When malfunctions are not detected by checkProgrammingDependencies as for ECU which does not support reprogramming for development, ECU is changed into the "reprogramming normal complete" that the reprogramming state of ECU is specified 22.5. And diagnostic information is initialized at the time of next starting. ( ) 31 In addition, processing other than initialization of diagnostic information required (for example, initialization of a learning value etc.) at the time of next starting are defined by system. ECU Generally, ECU is performing error detection of the program code at the time of normal operation. checkProgrammingDependencies is required during reprogramming processing so that error detection of program code may not detect malfunctions by the normal operation after termination of reprogramming. checkProgrammingDependencies within reprogramming processing should have error detection processing of the program code at the time of normal operation, and an error detection function more than equivalent.
Rationale:	The customer is responsible to implement the "compatibility/consistency" check. The customer should configure the routine in Tresos Studio. Reprogramming status shall be fully managed in integration code
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-15_5_3_7
Status:	proposed
Version:	5.1
Description:	EN: ECU 22.7 Tc6 NRC = $78 (RCRRP) Following 15.4.3 and ECU requests time extension to send positive response message by NRC = $78 (RCRRP), ECU should send withinTc6 positive or negative (except NRC = $78) message. 31 As for the learning value which can use after reprogramming, not initializing is advisable. However, because situations are different for every system, this document does not prescribe.

Rationale:	The customer is responsible to implement the "compatibility/consistency" check. The customer should configure the routine in Tresos Studio. Reprogramming status shall be fully managed in integration code
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-16_1
Status:	rejected
Version:	5.1
Description:	EN: Service $34 (RequestDownload service) Service $36 ( ) ECU Service $34 (RequestDownload service) is used to give information to ECU on start address and number of bytes before sending program code by Service $36. dataFormatIdentifier addressAndLengthFormatIdentifier memoryAddress memorySize Service $36 ECU ( ) ECU ECU memoryAddress memorySize The offboard tester informs ECU using Service $34 request message of dataFormatIdentifier, addressAndLengthFormatIdentifier, memoryAddress, and memorySize. Then ECU should respond positive or negative response. memoryAddress memorySize ECU 1 Service $36 When ECU can receive requested program code, ECU should reply receivable data size by one Service $36 in positive response.
Rationale:	not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-16_2_1
Status:	approved
Version:	5.1
Description:	EN: Table 16.1 Service $34 Service $34 1 SID 1 dataFormatIdentifier 1 addressAndLengthFormatIdentifier 4 memoryAddress 4 memorySize Table 16.1 shows Service $34 request message format, which consists of SID ,1 bytes of dataFormatIdentifier, 1 bytes of addressAndLengthFormatIdentifier, 4 bytes of memoryAddress and 4 bytes of memorySize. Table 16.1 Service $34 Service $34 Request message definition Hex Data Byte Parameter Cvt Hex value #1 Service $34 SID M 34 Service $34 Request SID #2 dataFormatIdentifier M 00 #3 addressAndLengthFormatIdentifier M 44 #4 memoryAddress[] = [byte#1 (MSB) M 00-FF #5 byte#2 M 00-FF #6 byte#3 M 00-FF #7 byte#4] M 00-FF #8 memorySize[] = [byte#1 (MSB) M 00-FF #9 byte#2 M 00-FF #10 byte#3 M 00-FF #11 byte#4] M 00-FF
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-16_2_2

Status:	approved
Version:	5.1
Description:	EN: Table 16.2 Service $34 Service $34 1 SID 1 lengthFormatIdentifier 2 maxNumberOfBlockLength Table 16.2 shows Service $34 positive response message format, which consists of SID and lengthFormatIdentifier and maxNumberOfBlockLength. ECU After task execution, positive message should be sent. Table 16.2 Service $34 Service $34 Positive response message definition Hex Data Byte Parameter Cvt Hex value #1 Service $34 SID M 74 Service $34 Positive response SID #2 lengthFormatIdentifier M 20 #3 maxNumberOfBlockLength[] = [byte#1 (MSB) M 00-0F #4 byte#2] M 00-FF
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-16_2_3
Status:	approved
Version:	5.1
Description:	EN: 2.2.2 Negative response message should follow section 2.2.2.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-16_3
Status:	rejected
Version:	5.1
Description:	EN: Service $34 The section defines parameter for Service $34 message.
Rationale:	not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-16_3_1
Status:	approved
Version:	5.1
Description:	EN: dataFormatIdentifier Service $34 1 4 bit 4 bit dataFormatIdentifier is 1 byte information included in service $34 request message. 4bits from MSB show compression method and the rest 4 bits show encrypt method. HDC_CAN dataFormatIdentifier = $00 HDC_CAN uses dataFormatIdentifier = $00.
Rationale:	

Needs coverage of:	SwAD

Id:	HondaDiagnostics-16_3_2
Status:	approved
Version:	5.1
Description:	EN: addressAndLengthFormatIdentifier Service $34 1 4 bit memorySize 4 bit memoryAddress addressAndLengthFormatIdentifier is 1 byte information included in Service $34 request message. 4bits from MSB show number of bytes of memorySize and the rest 4 bits show number of bytes of memoryAddress. HDC_CAN addressAndLengthFormatIdentifier = $44 HDC_CAN uses addressAndLengthFormatIdentifier = $44.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-16_3_3
Status:	approved
Version:	5.1
Description:	EN: memoryAddress Service $34 4 Service $36 memoryAddress is 4 byte information included in service $34 request message. This indicates start address of program code. Table 16.1 memoryAddress byte#1 MSB byte#4 LSB In byte#1 of memoryAddress of Table 16.1 shows MSB and byte#4 shows LSB.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-16_3_4
Status:	approved
Version:	5.1
Description:	EN: memorySize Service $34 4 Service $36 memorySize is 4 byte information included in service $34 request message. This indicates number of bytes of program code Table 16.1 memorySize byte#1 MSB byte#4 LSB In byte#1 of memorySize of Table 16.1 shows MSB and byte#4 shows LSB.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-16_3_5
Status:	approved
Version:	5.1

Description:	EN: lengthFormatIdentifier Service $34 1 4 bit maxNumberOfBlockLength 4 bit "ISO " 0 LengthFormatIdentifier is included in service $34 positive response message. 4bits from MSB show number of bytes of maxNumberOfBlockLength and the rest 4 bits are "0". HDC_CAN lengthFormatIdentifier = $20 HDC_CAN uses LengthFormatIdentifier = $20.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-16_3_6
Status:	approved
Version:	5.1
Description:	EN: maxNumberOfBlockLength Service $34 2 1 Service $36 ECU maxNumberOfBlockLength is 2 bytes information included in service $34 positive response message to show receivable data size by one Service $36. ECU Service $36 1 SID 1 blockSequenceCounter (18.2.4.1) transferRequestParameterRecord ( ) maxNumberOfBlockLength 1 Service $36 ECU 2 Service $36 request message contains 1 byte request message SID and 1 byte blockSequenceCounter(18.2.4.1) and transferRequestParameterRecord (program code). maxNumberOfBlockLength should be program code + 2 bytes. 1 Service $36 512 ECU maxNumberOfBlockLength = $202 For example, when the number of program codes received by 1 time of a Service $36 request message is 512 bytes, ECU returns the positive response message included maxNumberOfBlockLength = $202. maxNumberOfBlockLength ECU 22.7 Tc5 (18.-2.7) maxNumberOfBlockLength is better if it is bigger to make programming time short but it depends on buffer area in the ECU and Tc5 defined in 18.2.7. maxNumberOfBlockLength $0FFF(10 4095) In addition, notice the maximum of maxNumberOfBlockLength about it being $0FFF (Decimal number: 4095).
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-16_3_7
Status:	proposed
Version:	5.1
Description:	EN: Table 16.3 Service $34 NRC 16.4 Table 16.3 shows Service $34 NRC definition. Negative response should be refer to 16.4 Table 16.3 Service $34 Service $34 Negative response code definition NRC (Hex) Description incorrectMessageLengthOrInvalidFormat (IMLOIF) 13 Received message length or message structure doesn't suit Spec. . conditionsNotCorrect (CNC) 22 ECU 22.5 " " " " " " ECU reprogramming status is either "during program code received" or "pro-

	gramming code reception finish" or "Over-temperature is detected". requestOutOfRange (ROOR) (1) dataFormatIdentifier dataFormatIdentifier out of Spec. 31 (2) addressAndLengthFormatIdentifier addressAndLengthFormatIdentifier out of Spec. (3) memoryAddress memorySize Area defined by memoryAddress and memorySize is not correct. uploadDownloadNotAccepted (UDNA) ECU 22.5 " " " 70 " " " " " " " ECU current status is "waiting for eraseMemory", "waiting for program information", "Waiting for checkProgrammingDependencies", "reprogramming normal complete" or "memory error detected". serviceNotSupportedInActiveSession (SNSIAS) 7F DiagnosticSession Service $34 Current diagnostic Session doesn't support Service $34. - Service $34 NRC = $78 (RCRRP) Caution NRC=$78 (RCRRP) is not allowed in Service 34.
Rationale:	Reprogramming status shall be fully managed in integration code
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-16_4
Status:	rejected
Version:	5.1
Description:	EN: Service $34 ECU Reply from ECU should follow this description.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-16_4_1
Status:	proposed
Version:	5.1
Description:	EN: (1) DiagnosticSession DiagnosticSession analysis a. ECU DiagnosticSession programmingSession ECU NRC = $7F (SNSIAS) 16.4.3 When diagnosticSession is not programmingSession, ECU should prepare negative response message with NRC =$7F (SNSIAS) and execute reply response message specified at section 16.4.3. (2) Check length of request message a. 11 ECU NRC = $13 (IMLOIF) 16.4.3 When received request message is NOT 11bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 16.4.3. (3) dataFormatIdentifier dataFormatIdentifier analysis a. dataFormatIdentifier $00 ECU NRC = $31 (ROOR) 16.4.3 When dataFormatIdentifier is NOT $00, ECU should prepare NRC = $31(ROOR) and execute reply response message specified at section 16.4.3. (4) addressAndLengthFormatIdentifier addressAndLengthFormatIdentifier analysis a. addressAndLengthFormatIdentifier $44 ECU NRC = $31 (ROOR) 16.4.3 When addressAndLengthFormatIdentifier is NOT $44, ECU should prepare NRC = $31(ROOR) and execute reply response message specified at sec-

	tion 16.4.3. (5) The check of reprogramming status a. ECU 22.5 " " " " " " " " " " ECU NRC = $70 (UDNA) 16.4.3 The reprogramming status of ECU is specified to 22.5. When reprogramming status is "waiting for eraseMemory" , "waiting for program information" , "Waiting for checkProgrammingDependencies" , "reprogramming normal complete" or "memory error detected", ECU should prepare negative response message with NRC = $70 (UDNA) and execute reply response message specified at section 16.4.3. b. ECU 22.5 " " " " " " ECU NRC = $22 (CNC) 16.4.3 When reprogramming status is "during program code received" , "finish of program code received" or "Over-temperature is detected", ECU should prepare negative response message with NRC = $22 (CNC) and execute reply response message specified at section 16.4.3. (6) memoryAddress memorySize memoryAddress and memorySize check a. memoryAddress memorySize ECU NRC = $31 (ROOR) 16.4.3 When memoryAddress and memorySize is not appropriate values, ECU should prepare NRC = $31(ROOR) and execute reply response message specified at section 16.4.3. memoryAddress memorySize 16.5 Appropriate value is specified in 16.5. (7) (1) (6) ECU RequestDownload service ECU 16.4.2 16.4.3 When message doesn't match the above (1) to (6), ECU should judge it is possible to execute RequestDownload service. ECU should execute task defined in 16.4.2 and prepare positive message and reply as defined in 16.4.3.
Rationale:	EB bootloader doesn't manage the NRC70 and NRC22. The dataFormatIdentifier(DFI) is passed to the custumer integration code using a callback. The DFI should be managed by the customer. The EB tresos Bootloader checks only that the coherency between the addressAndLengthFormatIdentifier and the request length. Reprogramming status shall be fully managed in integration code.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-16_4_2
Status:	proposed
Version:	5.1
Description:	EN: Service $36 ECU (maxNumberOfBlockLength) ECU 22.5 " " According to regulation of 16.4.1, ECU recognized that execution of required RequestDownload service is possible performs the next processing. The request message length (maxNumberOfBlockLength) who can receive ECU by 1 time of a Service $36 request message is prepared. The "waiting for program code received" to which the reprogramming status of ECU is specified 22.5 is made to change.
Rationale:	EB bootloader doesn't manage the NRC70 and NRC22. Reprogramming status shall be fully managed in integration code
Needs coverage of:	SwAD

Id:	HondaDiagnostics-16_4_3
Status:	proposed
Version:	5.1
Description:	EN: Reply response message 3 (or) As described in section 3, not only by request message analysis results but also addressing type (physical or function address) have influence on response message. Table 16.4 16.4.1 Table 16.4 shows response message definition. Table 16.4 Service $34 Service $34 Reply to request message Request message check result No 1) addressing Response message Description type (2)a Physical (NRC $13) Wrong message length Negative response Function DiagnosticSession (1)a Service $34 Physical (NRC $7F) Current Diagnostic Session doesn't Negative response support Service $34. Function dataFormatIdentifier (NRC $31) (3)a Physical Negative response dataFormatIdentifier out of Spec. Function No response addressAndLengthFormatIdentifier (NRC $31) (4)a Physical Negative response addressAndLengthFormatIdentifier out of Spec. Function No response ECU 22.5 " " " " " " " " (5)a " Physical (NRC $70) ECU reprogramming status is either Negative response "waiting for eraseMemory" or "waiting Function for program information" or "Waiting for checkProgrammingDependencies" or " " or "memory error detected". ECU 22.5 " " " " " " Physical (NRC $22) (5)b Negative response ECU reprogramming status is either Function "during program code received" or " " or "Over-temperature is detected". memoryAddress memorySize (NRC $31) (6)a Physical Negative response Area defined by memoryAddress and memorySize is not correct. Function No response RequestDownload (7) service Physical Requested RequestDownload Positive response service executable Function 1) 16.4.1 No. No. is corresponding to No. in section 16.4.1.
Rationale:	EB bootloader doesn't manage the NRC70 and NRC22. Reprogramming status shall be fully managed in integration code
Needs coverage of:	SwAD

Id:	HondaDiagnostics-16_5
Status:	rejected
Version:	5.1
Description:	EN: memorySize value memoryAddress memorySize 15.5.2 ( ) Value judgment of memoryAddress and memorySize is different in the address the program memory area erased by 15.5.2 was continuous of the address, or a discontinuous address. HDC_CAN 15.5.2 Service $36 In HDC_CAN, all the program codes of the memory area erased by 15.5.2 are transmitted using Service $36. EEPROM $FF $FF HDC_CAN Generally, when a flash EEPROM erases, data will be set to $FF. Using this, the newly written-in program code is $FF, and when the area is unused, a program code cannot be transmitted, either. Howev-

	er, this technique is not used in HDC_CAN. (Service $36) (It transmits by Service $36 also about the program code of an unused area)
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-16_5_1
Status:	proposed
Version:	5.1
Description:	EN: 1 Service $34 When it is the address the erased program memory area was continuous of the address, the address and transmission capacity of all the program codes of the erased program memory area are notified by 1 time of a Service $34 request message. (1) (2) memoryAddress memorySize When satisfying all the following conditions of (1) to (2), memoryAddress and memorySize judge it as suitable value. (1) memoryAddress "memoryAddress" is the same value as "the head address of the erased memory area." (2) memoryAddress + memorySize - 1 "memoryAddress+memorySize-1" is the same value as "the final address of the erased memory area." memorySize memoryAddress + memorySize - 1 memorySize is transmission capacity. For this reason, the erased final address becomes "memoryAddress+memorySize-1." $10000 $4FFFF Service $34 memoryAddress memorySize For example, if memoryAddress(es) and memorySize(s) which were included in the Service$34 request message are the following values when the program code of the area of address $10000 - $4FFFF is erased, it will be judged as a suitable value. memoryAddress = $00010000 memorySize = $00040000
Rationale:	The customer has to configure the memory usage under Tresos Studio. This way the checks for the RequestDownload requests can be done safe.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-16_5_2
Status:	proposed
Version:	5.1
Description:	EN: Service $34 When the erased program memory area is a discontinuous address, the address and transmission capacity of all the program codes of the erased program memory area are notified by two or more times of Service $34 request messages. ( ) Service $34 Service $34 The off-board tester notifies by Service $34 from the small address of an erasing block (continuous area in the erased area). In addition, off-board tester divides the continuous address and does not notify by Service $34. (1) (2) memoryAddress memorySize When satisfying all the following conditions of (1) to (2), memoryAddress and memorySize

	judge it as a suitable value. (1) memoryAddress Service $34 "memoryAddress" is the same value as "the head address of an erasing block" of the number of times of received of Service $34. (2) memoryAddress + memorySize -1 Service $34 "memoryAddress+memorySize-1" is the same value as "the final address of an erasing block" of the number of times of received of Service $34. memorySize memoryAddress + memorySize - 1 memorySize is transmission capacity. For this reason, the erased final address becomes "memoryAddress+memorySize-1." Service $34 1 ECU 22.5 " " 1 The number of times of received of Service $34 is initialized at the time of erasing of a program memory (the 1st time), and is added one time for every changes execution in the " finish of download" that the reprogramming processing state of ECU is specified to 22.5. $10000 $4FFFF (1) $80000 $FFFFF (2) Service $34 memoryAddress memorySize For example, when the program code of the area of address $10000 - $4FFFF (the 1st erasing block), and $80000 - $FFFFF (the 2nd erasing block) is erased, If memoryAddress(es) and memorySize(s) which were included in the Service $34 request message are the following values, it will be judged as a suitable value. memoryAddress = $00010000 memorySize = $00040000
Rationale:	The customer has to configure the memory usage under Tresos Studio. This way the checks for the RequestDownload requests can be done safe. Reprogramming status shall be fully managed in integration code
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-17_1
Status:	rejected
Version:	5.1
Description:	EN: Service $35 (RequestUpload service) Service $36 ( ) ECU Service $35 (RequestUpload service) is used to give information to ECU on start address and number of bytes before sending program code from ECU by Service $36. dataFormatIdentifier addressAndLengthFormatIdentifier memoryAddress memorySize Service $35 Service $36 ECU ( ) ECU ECU memoryAddress memorySize The offboard tester informs ECU using Service $35 request message of dataFormatIdentifier, addressAndLengthFormatIdentifier, memoryAddress, memorySize. Then ECU should respond positive or negative response. memoryAddress memorySize ECU 1 Service $36 When ECU can send requested program code, ECU should reply receivable data size by one Service $36 in positive response. Service $35 Service $35 is supported or not is defined by the system. - Service $35 Caution - Service $35 is only for development
Rationale:	The 0x35 RequestUpload service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-17_2_1
Status:	rejected
Version:	5.1
Description:	EN: Table 17.1 Service $35 Service $35 1 SID 1 dataFormatIdentifier 1 addressAndLengthFormatIdentifier 4 memoryAddress 4 memorySize Table 17.1 shows Service $35 request message format, which consists of SID ,1 bytes of dataFormatIdentifier, 1 bytes of addressAndLengthFormatIdentifier, 4 bytes of memoryAddress and 4 bytes of memorySize. Table 17.1 Service $35 Service $35 Request message definition Hex Data Byte Parameter Cvt Hex value #1 Service $35 SID M 35 Service $35 Request SID #2 dataFormatIdentifier M 00 #3 addressAndLengthFormatIdentifier M 44 #4 memoryAddress[] = [byte#1 (MSB) M 00-FF #5 byte#2 M 00-FF #6 byte#3 M 00-FF #7 byte#4] M 00-FF #8 memorySize[] = [byte#1 (MSB) M 00-FF #9 byte#2 M 00-FF #10 byte#3 M 00-FF #11 byte#4] M 00-FF
Rationale:	The 0x35 RequestUpload service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-17_2_2
Status:	rejected
Version:	5.1
Description:	EN: Table 17.2 Service $35 Service $35 1 SID 1 lengthFormatIdentifier 2 maxNumberOfBlockLength Table 17.2 shows Service $35 positive response message format, which consists of SID and lengthFormatIdentifier and maxNumberOfBlockLength. ECU After task execution, positive message should be sent. Table 17.2 Service $35 Service $35 Positive response message definition Hex Data Byte Parameter Cvt Hex value #1 Service $35 SID M 75 Service $35 Positive response SID #2 lengthFormatIdentifier M 20 #3 maxNumberOfBlockLength[] = [byte#1 (MSB) M 01 #4 byte#2] M 02
Rationale:	The 0x35 RequestUpload service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-17_2_3
Status:	rejected
Version:	5.1
Description:	EN: 2.2.2 Negative response message should follow section 2.2.2.

Rationale:	The 0x35 RequestUpload service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-17_3
Status:	rejected
Version:	5.1
Description:	EN: Service $35 The section defines parameter for Service $35 message.
Rationale:	The 0x35 RequestUpload service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-17_3_1
Status:	rejected
Version:	5.1
Description:	EN: dataFormatIdentifier Service $35 1 4 bit 4 bit dataFormatIdentifier is 1 byte information included in service $35 request message. 4bits from MSB show compression method and the rest 4 bits show encrypt method. HDC_CAN dataFormatIdentifier = $00 HDC_CAN uses dataFormatIdentifier = $00.
Rationale:	The 0x35 RequestUpload service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-17_3_2
Status:	rejected
Version:	5.1
Description:	EN: addressAndLengthFormatIdentifier Service $35 1 4 bit memorySize 4 bit memoryAddress addressAndLengthFormatIdentifier is 1 byte information included in Service $35 request message. 4bits from MSB show number of bytes of memorySize and the rest 4 bits show number of bytes of memoryAddress. HDC_CAN addressAndLengthFormatIdentifier = $44 HDC_CAN uses addressAndLengthFormatIdentifier = $44.
Rationale:	The 0x35 RequestUpload service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-17_3_3

Status:	rejected
Version:	5.1
Description:	EN: memoryAddress Service $35 4 Service $36 ECU memoryAddress is 4 byte information included in service $35 request message. This indicates start address of program code. Table 17.1 memoryAddress byte #1 MSB byte #4 LSB In byte#1 of memoryAddress of Table 17.1 shows MSB and byte#4 shows LSB.
Rationale:	The 0x35 RequestUpload service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-17_3_4
Status:	rejected
Version:	5.1
Description:	EN: memorySize Service $35 4 Service $36 ECU memorySize is 4 byte information included in service $35 request message. This indicates number of bytes of program code Table 17.1 memorySize byte #1 MSB byte #4 LSB In byte#1 of memorySize of Table 17.1 shows MSB and byte#4 shows LSB.
Rationale:	The 0x35 RequestUpload service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-17_3_5
Status:	rejected
Version:	5.1
Description:	EN: lengthFormatIdentifier Service $35 1 4 bit maxNumberOfBlockLength 4 bit "ISO " 0 lengthFormatIdentifier is included in service $35 positive response message. 4bits from MSB show number of bytes of maxNumberOfBlockLength and the rest 4 bits are "0". HDC_CAN lengthFormatIdentifier = $20 HDC_CAN uses lengthFormatIdentifier = $20.
Rationale:	The 0x35 RequestUpload service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-17_3_6
Status:	rejected
Version:	5.1

Description:	EN: maxNumberOfBlockLength Service $35 2 1 Service $36 ECU maxNumberOfBlockLength is 2 bytes information included in service $35 positive response message to show receivable data size by one Service $36. ECU Service $36 1 SID 1 blockSequenceCounter (18.3.4.1) transferResponseParameterRecord ( ) maxNumberOfBlockLength 1 Service $36 ECU 2 Service $36 request message contains 1 byte request message SID and 1 byte blockSequenceCounter (18.3.4.1) and transferRequestParameterRecord (program code). maxNumberOfBlockLength should be program code + 2 bytes. HDC_CAN maxNumberOfBlockLength = $0102 ECU Service $36 256 HDC_CAN uses maxNumberOfBlockLength = $0102.
Rationale:	The 0x35 RequestUpload service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-17_3_7
Status:	rejected
Version:	5.1
Description:	EN: Table 17.3 Service $35 NRC 17.4 Table 17.3 shows Service $35 NRC definition. Negative response should be refer to 17.4. Table 17.3 Service $35 Service $35 Negative response code definition NRC (Hex) Description incorrectMessageLengthOrInvalidFormat (IMLOIF) 13 Received message length or message structure doesn't suit Spec. . requestOutOfRange (ROOR) (1) dataFormatIdentifier dataFormatIdentifier out of Spec. (2) addressAndLengthFormatIdentifier 31 addressAndLengthFormatIdentifier out of Spec, (3) memorySize memorySize is out of Spec. (4) memoryAddress memorySize Area defined by memoryAddress and memorySize is not correct. serviceNotSupportedInActiveSession (SNSIAS) 7F DiagnosticSession Service $35 Current diagnostic Session doesn't support Service $35. - Service $35 NRC = $78 (RCRRP) Caution NRC=$78 (RCRRP) is not allowed in Service 35.
Rationale:	The 0x35 RequestUpload service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-17_4
Status:	rejected
Version:	5.1
Description:	EN: Service $35 ECU Reply from ECU should follow this description.
Rationale:	The 0x35 RequestUpload service is not supported by the EB Bootloader (should be managed by the customer).

Needs coverage of:	SwAD

Id:	HondaDiagnostics-17_4_1
Status:	rejected
Version:	5.1
Description:	EN: (1) DiagnosticSession DiagnosticSession analysis a. ECU DiagnosticSession programmingSession ECU NRC = $7F (SNSIAS) 17.4.3 When diagnosticSession is not programmingSession, ECU should prepare negative response message with NRC = $7F (SNSIAS) and execute reply response message specified at section 17.4.3. (2) Check length of request message a. 11 ECU NRC = $13 (IMLOIF) 17.4.3 When received request message is NOT 11bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 17.4.3. (3) dataFormatIdentifier dataFormatIdentifier check a. dataFormatIdentifier $00 ECU NRC = $31 (ROOR) 17.4.3 When dataFormatIdentifier is NOT $00, ECU should prepare NRC = $31(ROOR) and execute reply response message specified at section 17.4.3. (4) addressAndLengthFormatIdentifier addressAndLengthFormatIdentifier check a. addressAndLengthFormatIdentifier $44 ECU NRC = $31 (ROOR) 17.4.3 When addressAndLengthFormatIdentifier is NOT $44, ECU should prepare NRC = $31(ROOR) and execute reply response message specified at section 17.4.3. (5) memorySize memorySize check a. memorySize $100 (memorySize $100 0) ECU NRC = $31 (ROOR) 17.4.3 When memorySize in request message can not be divided by $100, ECU should prepare negative response message with NRC = $31 (ROOR) and reply response message specified at section 17.4.3. (6) memoryAddress memorySize memoryAddress and memorySize check a. memoryAddress memorySize ECU NRC = $31 (ROOR) 17.4.3 When memoryAddress and memorySize is not appropriate values, ECU should prepare NRC = $31(ROOR) and execute reply response message specified at section 17.4.3. memoryAddress memorySize 17.5 Appropriate value is specified in 17.5. (7) (1) (6) ECU RequestUpload service ECU 17.4.2 17.4.3 When message doesn't match the above (1) to (6), ECU should judge it is possible to execute RequestUpload service. ECU should execute task defined in 17.-4.2 and prepare positive message and reply as defined in 17.4.3.
Rationale:	The 0x35 RequestUpload service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-17_4_2
Status:	rejected
Version:	5.1

Description:	EN: 17.4.1 RequestUpload service ECU 18.3 Service $36 Upload (FLASH ROM) When ECU judges it is possible to execute RequestUpload service on 18.3, ECU should release Service $36 Upload service. 17.4.3 Reply response message 3 (or) As described in section 3, not only by request message analysis results but also addressing type (physical or function address) have influence on response message. Table 17.4 17.4.1 Table 17.4 shows response message definition. Table 17.4 Service $35 Service $35 Reply to request message Request message check result No 1) addressing Response message Description type (2)a Physical (NRC $13) Wrong message length Negative response Function DiagnosticSession (1)a Service $35 Physical (NRC $7F) Current Diagnostic Session doesn't Negative response support Service $35. Function dataFormatIdentifier (NRC $31) (3)a Physical Negative response dataFormatIdentifier out of Spec. Function No response addressAndLengthFormatIdentifier (NRC $31) (4)a Physical Negative response addressAndLengthFormatIdentifier out of Spec. Function No response (NRC $31) (5)a memorySize Physical Negative response memorySize out of Spec. Function No response memoryAddress memorySize (NRC $31) (6)a Physical Negative response Area defined by memoryAddress and memorySize is not correct. Function No response RequestUpload service (7) Physical Requested RequestUpload service Positive response executable Function 1) 17.4.1 No. No. is corresponding to No. in section 17.4.1.
Rationale:	The 0x35 RequestUpload service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-17_5
Status:	rejected
Version:	5.1
Description:	EN: memorySize Service $35 (RequestUpload service) ( ) ( ) Service $35 (RequestUpload) is to read out program memory Service $35 memoryAddress memorySize Reprogrammable area should be defined by the system. Service $35 memoryAddress memorySize Service $36 ECU The off-board tester uses memoryAddress and memorySize of Service $35 request message, The "start address" and "the amount of data transmitted from the address" of the program code which ECU transmits by Service $36 are specified. memoryAddress = $00008000 memorySize = $00010000 Service $35 ECU Service $36 Upload (FLASH ROM) $00008000 $00017FFF 64kbyte (65,536 = 216) Example memoryAddress = $00008000, memorySize = $00010000 Address $00008000 - $017FFF is defined.
Rationale:	The 0x35 RequestUpload service is not supported by the EB Bootloader (should be managed by the customer).

Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_1
Status:	rejected
Version:	5.1
Description:	EN: Service $36 (TransferData service) Service $34 ( ) ECU Service $35 ( ) ECU Service $36 (TransferData service) is used to send program code to ECU when Service $34 us used to give address information or to get program code from ECU when Service $35 is used to give address information. Service $36 ECU (TransferData service) Service $34 (RequestDownload service) Service $35 (RequestUpload service) ECU response to Service $36 is defined by receiving Service $34 (RequestDownload service) first or Service $35 (requestUploadService) first. Service $34 Service $36 18.2 Service $35 Service $36 18.3 Details at the time of receiving Service $36, after receiving Service $34. It is shown in 18.2. Details at the time of receiving Service $36, after receiving Service $35. It is shown in or 18.3. Service $34 Service $35 Service $36 18.2 Also 18.2 if none of Service $34 and $35 is received.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_2
Status:	rejected
Version:	5.1
Description:	EN: Service $36 Download (FLASH ROM) Service $34 memoryAddress memorySize ( ) ECU Download service (FLASH ROM data writing) of Service $36 is used in order that an off-board tester may transmit to ECU the program code (including data) specified by memoryAddress and memorySize of the Service $34 request message. blockSequenceCounter transferRequestParameterRecord Service $36 ECU ECU Off-board tester sends the number of times of program code transmission, and program code to ECU by the Service $36 request message included blockSequenceCounter and transferRequestParameterRecord. ECU replies by response message whether the program code which received is accepted.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_2_1
Status:	approved

Version:	5.1
Description:	EN: Table 18.1 Service $36 Service $36 1 SID 1 blockSequenceCounter 1 transferRequestParameterRecord Table 18.1 shows Service $36 request message format. Which consists of 1 byte of SID and 1 byte blockSequenceCounter, minimum 1 byte transferRequestParameterRecord. The message is variable length. Service $34 memoryAddress memorySize Service $34 ECU maxNumberOfBlockLength-2 transferRequestParameterRecord The offboard tester divides program code by (maxNumberOfBlockLength - 2) and then send program code. memorySize maxNumberOfBlockLength-2 Service $34 memorySize Service $36 maxNumberOfBlockLength 18.2.6 If memorySize is not deliverable by (maxNumberOfBlockLength - 2), then the last transmission from the offboard tester message length become other than maxNumberOfBlockLength. Refer to 18.2.6 for more detail. Table 18.1 Service $36 Service $36 Request message definition Hex Data Byte Parameter Cvt Hex value #1 Service $36 SID Service $xx Request SID M 36 #2 blockSequenceCounter M 00-FF #3 transferRequestParameterRecord[] = [transferRequestParameter#1 M 00-FF : : : : #n transferRequestParameter#m] M 00-FF
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_2_2
Status:	approved
Version:	5.1
Description:	EN: Table 18.2 Service $36 Service $36 1 SID 1 blockSequenceCounter blockSequenceCounter blockSequenceCounter Table 18.2 shows Service $36 positive response message format, which consists of 1 byte of SID and 1 byte of blockSequenceCounter. blockSequenceCounter of a positive response message is made into the value received by the request message. ECU After task execution, positive message should be sent. Table 18.2 Service $36 Service $36 Positive response message definition Hex Data Byte Parameter Cvt Hex value #1 Service $36 SID M 76 Service $36 Positive response SID #2 blockSequenceCounter M 00-FF
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_2_3
Status:	approved
Version:	5.1
Description:	EN: 2.2.2 Negative response message should follow section 2.2.2.

Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_2_4
Status:	rejected
Version:	5.1
Description:	EN: Service $36 The section defines parameter for Service $36 message.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_2_4_1
Status:	approved
Version:	5.1
Description:	EN: blockSequenceCounter Service $36 1 Service $36 blockSequenceCounter is 1 byte information included in service $36 request message. This indicates number of transmission of program code by Service $36. blockSequence-Counter Positive message should include number received. Service $36 Service $34 memoryAddress memorySize ECU Service $36 is used in order to transmit to ECU the program code specified by memoryAddress and memorySize of the Service $34 request message from off-board tester. Service $34 memoryAddress memorySize Service $36 By Service $36, size of program code, which is possible to send at one transmission is max 4093 bytes but program size defined by Service $34 is bigger. That's why the tester sends program code by repeating Service $36. blockSequenceCounter Service $36 ECU Service $36 1 blockSequenceCounter = $FF Service $36 blockSequenceCounter $00 block-SequenceCounter is to inform ECU of number of transmission. When block-SequenceCounter reaches $FF, next blockSequenceCounter is $00. blockSequenceCounter (Service $34 Service $36 blockSequenceCounter) $01 The initial value of blockSequenceCounter is $01. (blockSequenceCounter of the Service $36 request message of the beginning after Service $34 is $01.)
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_2_4_2
Status:	proposed
Version:	5.1
Description:	EN: transferRequestParameterRecord Service $36 ECU transferRequestParameterRecord is variable length information included in Service $36 request mes-

	sage. transferRequestParameterRecord Service $34 memoryAddress transferRequestParameter#1 #2.... Program code in transferRequestParameterRecord is starting from address defined by memoryAddress in Service $34 such as transferRequestParameterRecord #1, #2,,, 11.5.2.2 ECU Program code will be encrypted by decrypt information at 11.5.2.2 and decrypt function.
Rationale:	EB bootloader will call a callback for the decryption of the data.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-18_2_4_3
Status:	proposed
Version:	5.1
Description:	EN: Table 18.3 Service $36 NRC 18.2.5 Table 18.3 shows Service $36 NRC definition. Negative response should be refer to 18.2.5. Table 18.3 Service $36 (Download (FLASH ROM)) Service $36 (Download) Negative response code definition NRC (Hex) Description generalReject (GR) (1) ECU 22.5 " 10 " The reprogramming state of ECU was " Over-temperature is detected" specified to 22.5. (2) ECU ECU temperature is out of reprogrammable temperature. incorrectMessageLengthOrInvalidFormat (IMLOIF) 13 Received message length or message structure doesn't suit Spec. . requestSequenceError (RSE) (1) ECU 22.5 " " " " " " " " " " " The reprogramming state of ECU was " waiting for program information", "waiting for checkProgrammingDependencies", "finish of download", or "reprogramming normal complete" specified to 22.5. (2) ECU 22.5 " " blockSequenceCounter Service $36 The reprogramming state of ECU is in the "finish of program code received" specified to 22.5, Service $36 of different blockSequenceCounter from blockSequenceCounter which received last time was received. transferDataSuspended (TDS) ECU 22.5 " " At the time of the "memory error detected"(The malfunctions in a memory are detected in writing) as which the reprogramming state of ECU was specified to 22.5, Service $36 was received again. generalProgrammingFailure (GPF) 72 Writing didn't end successful. wrongBlockSequenceCounter (WBSC) blockSequenceCounter out of Spec requestCorrectlyReceived-ResponsePending (RCRRP) (NRC 78) Due to execution of requested task it is not possible to respond positive response or negative response with appropriate NRC. Extension of time to reply for response message is requested. TS-DCC01 Detail should refer to TS-DCC01 . serviceNotSupportedInActiveSession (SNSIAS) 7F DiagnosticSession Service $36 Current diagnostic Session doesn't support Service $36.
Rationale:	NRC_10 should be managed by the customer as not part of the ISO14229. The EB will not check the preconditons(over-temperature, over-voltage...) Reprogramming status shall be fully managed in integration code
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-18_2_5
Status:	rejected
Version:	5.1
Description:	EN: Service $36 ECU Reply from ECU should follow this description.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_2_5_1
Status:	proposed
Version:	5.1
Description:	EN: (1) DiagnosticSession DiagnosticSession analysis a. ECU DiagnosticSession programmingSession ECU NRC = $7F (SNSIAS) 18.2.5.3 When diagnosticSession is not programmingSession, ECU should prepare negative response message with NRC = $7F (SNSIAS) and execute reply response message specified at section 18.2.5.3. (2) Check length of request message a. memorySize (maxNumberOfBlockLength - 2) When memorySize can divide among (maxNumberOfBlockLength-2) i. Service $34 maxNumberOfBlockLength ECU NRC = $13 (IMLOIF) 18.2.5.3 In the cases of other than the maxNumberOfBlockLength value which the length of the request message which received specified by the Service $34 positive response message, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 18.2.5.3. b. memorySize (maxNumberOfBlockLength - 2) When memorySize cannot divide among (maxNumberOfBlockLength-2) i. Service $34 maxNumberOfBlockLength 18.2.6 Last_Length ECU NRC = $13 (IMLOIF) 18.2.5.3 When the length of the request message which received corresponds to neither the maxNumberOfBlockLength value specified by the Service $34 positive response message, nor the Last_Length value calculated by 18.2.6, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 18.2.5.3. ii. 18.2.6 Last_Length ECU 22.5 " " Service $34 ECU NRC = $13 (IMLOIF) 18.2.5.3 When the reprogramming processing state of ECU is not in the "finish of program code received" specified to 22.5, or when it is not in the condition of receiving the program code of the last of the program code specified by Service $34. When the length of the request message which received is equal to the Last_Length value calculated by 18.2.6 in this condition, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 18.2.5.3. iii. Service $34 maxNumberOfBlockLength ECU 22.5 " " ECU NRC = $13 (IMLOIF) 18.2.5.3 In the case in the "finish of program code received" that the reprogramming processing state of ECU is specified to 22.5. When the length of the request message which re-

ceived is equal to the maxNumberOfBlockLength value specified by the Service $34 positive response message in this condition, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 18.2.5.3. iv. Service $34 maxNumberOfBlockLength Service $34 blockSequenceCounter (6) ECU NRC = $13 (IMLOIF) 18.2.5.3 At the time of the condition of receiving the program code of the last of the program code specified by Service $34. When the length of the request message which received is equal to the maxNumberOfBlockLength value specified by the positive response message of Service $34. In the cases of other than the value which the blockSequenceCounter value included in the request message which received in this condition received in the last process (6), ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 18.2.5.3. (3) The check of reprogramming status a. ECU 22.5 " " " " " " " " " " " " ECU NRC = $24 (RSE) 18.2.5.3 In the case of one of " waiting for program information", "waiting for eraseMemory", "waiting for download request", "finish of download", "Waiting for checkProgrammingDependencies", or "reprogramming normal complete" as which the reprogramming state of ECU is specified to22.5, ECU should prepare negative response message with NRC = $24 (RSE) and execute reply response message specified at section 18.2.5.3. b. ECU 22.5 " " blockSequenceCounter (6) ECU NRC = $24 (RSE) 18.2.5.3 At the time of the "finish of program code received" that the reprogramming processing state of ECU is specified to 22.5. In the cases of other than the value which the blockSequenceCounter value included in the request message which received at this time received in the last process (6), ECU should prepare negative response message with NRC = $24 (RSE) and execute reply response message specified at section 18.2.5.3. c. ECU 22.5 " " ECU NRC = $71 (TDS) 18.2.5.3 When the reprogramming processing state of ECU corresponds to the "memory error detected" specified to 22.5, ECU should prepare negative response message with NRC = $71 (TDS) and execute reply response message specified at section 18.2.5.3. d. ECU ECU 22.5 " " ECU NRC = $10 (GR) 18.2.5.3 Only the ECU which has temperature restrictions in reprogramming is inspected. When the reprogramming state of ECU is in " Over-temperature is detected " specified to 22.5, ECU should prepare negative response message with NRC = $10 (GR) and execute reply response message specified at section 18.2.5.3. (4) blockSequenceCounter 32 The check of blockSequenceCounter a. memorySize (maxNumberOfBlockLength - 2) When memorySize can divide among (maxNumberOfBlockLength-2) i. Service $34 Service $36 blockSequenceCounter $01 ECU NRC = $73 (WBSC) 18.2.5.3 When the blockSequenceCounter value included in the request message which received by the Service $36 request message of the beginning after Service $34 positive response message return is except $01, ECU should prepare negative response message with NRC = $73 (WBSC) and execute reply response

message specified at section 18.2.5.3. ii. blockSequenceCounter (6) (6) blockSequenceCounter 1 ECU NRC = $73 (WBSC) 18.2.5.3 In the case of in case the blockSequenceCounter value included in the request message which received is not which of a value that was the same as that of the value received in the last process (6), or added 1 to it, either, ECU should prepare negative response message with NRC = $73 (WBSC) and execute reply response message specified at section 18.2.5.3. iii. blockSequenceCounter (6) ECU 18.2.5.3 When the blockSequenceCounter value included in the request message which received is the same as the value received in the last process (6), ECU should prepare positive response message and execute reply response message specified at section 18.2.5.3. In addition, the program code which received cancels and writing does not execute. (blockSequenceCounter = $FF blockSequenceCounter $00) The check of blockSequenceCounter checks that a receiving blockSequenceCounter value is a value added to blockSequenceCounter which received last time one time. (Notice the next blockSequenceCounter of blockSequenceCounter = $FF about it being $00) blockSequenceCounter blockSequenceCounter However, when the request message of blockSequenceCounter of the same value as blockSequenceCounter which received last time is received, positive response message is returned. b. memorySize (maxNumberOfBlockLength - 2) When memorySize cannot divide among (maxNumberOfBlockLength-2) i. Service $34 Service $36 blockSequenceCounter $01 ECU NRC = $73 (WBSC) 18.2.5.3 When the blockSequenceCounter value included in the request message which received by the Service $36 request message of the beginning after Service $34 positive response message return is except $01, ECU should prepare negative response message with NRC = $73 (WBSC) and execute reply response message specified at section 18.2.5.3. ii. blockSequenceCounter (6) (6) blockSequenceCounter 1 ECU NRC = $73 (WBSC) 18.2.5.3 In the case of in case the blockSequenceCounter value included in the request message which received is not which of a value that was the same as that of the value received in the last process (6), or added 1 to it, either, ECU should prepare negative response message with NRC = $73 (WBSC) and execute reply response message specified at section 18.2.5.3. iii. Service $34 18.2.6 Last_Length blockSequenceCounter (6) blockSequenceCounter 1 ECU NRC = $73 (WBSC) 18.2.5.3 At the time of the condition of receiving the program code of the last of the program code specified by Service $34. When the length of the request message which received is equal to the Last_Length value calculated by 18.2.6. In the cases of other than the value which added 1 to the blockSequenceCounter value which the blockSequenceCounter value included in the request message which received in this condition received in the last process (6), ECU should prepare negative response message with NRC = $73 (WBSC) and execute reply response message specified at section 18.2.5.3. iv. blockSequenceCounter (6) ECU 18.2.5.3 When the blockSequenceCounter

	value included in the request message which received is the same as the value received in the last process (6), ECU should prepare positive response message and execute reply response message specified at section 18.2.5.3. In addition, the program code which received cancels and writing does not execute. (5) ( ) The check of the temperature at the time of reprogramming (It implements if needed) a. ECU ECU NRC = $10 (GR) 18.2.5.3 ECU 22.5 " " Only the ECU which has temperature restrictions in reprogramming is inspected. When the temperature of ECU is out of the reprogramming permissive temperature range, ECU should prepare negative response message with NRC = $10 (GR) and execute reply response message specified at section 18.2.5.3. And the reprogramming processing state of ECU is changed into the "Over-temperature is detected" of being specified 22.5. (6) (1) (5) ECU Download (FLASH ROM) ECU 18.2.5.2 When check result doesn't match the above (1) to (5), ECU should judge requested Service is executable, ECU should perform task specified in 18.2.5.2, ECU prepare positive message and execute reply response message defined below. a. 18.2.5.2 a (ECU) ECU NRC = $10 (GR) 18.2.5.3 At 18.2.5.2 a task case (ECU judges out of temperature Spec during memory writing or results checking), ECU should prepare message with NRC = $10(GR) and reply response message specified at section 18.2.5.3. b. 18.2.5.2 b ( ) ECU NRC = $72 (GPF) 18.2.5.3 At 18.2.5.2 b task case (writing results shows abnormal) ECU should prepare message with NRC = $72(GPF) and reply response message specified at section 18.2.5.3. c. 18.2.5.2 c (Service $36) ECU 18.2.5.3 At 18.2.5.2 c task case (normal complete other than the last Service $36 request message), ECU should prepare positive response message a reply specified at section 18.2.5.3. d. 18.2.5.2 d (Service $36) ECU 18.2.5.3 At 18.2.5.2 d task case, (the last Service $36 request message to writing complete), ECU should prepare positive response message a reply specified at section 18.2.5.3.
Rationale:	The EB will not check the preconditons(over-temperature, over-voltage...) Reprogramming status shall be fully managed in integration code
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_2_5_2
Status:	proposed
Version:	5.1
Description:	EN: (transferRequestParameterRecord) ECU When ECU judges it is possible to perform Download on 18.2.5.1, ECU should perform decrypt of program code, write to memory and check written memory. Depending on the results, ECU should transfer by below conditions. a. ECU ECU ECU 22.5 " " When ECU detects temperature out of Spec during writing and checking, ECU should immediately stop task and transfer to "Over-temperature is detected" defined by 22.5 b. ECU ECU 22.5 " " When abnormal is detected by results checking,

	ECU should transfer to "memory error detected" defined by 22.5. c. Service $34 ECU ECU 22.5 " " When writing process is correctly finished besides the last program code, ECU should transfer to "during program code received" defined by 22.5. d. Service $34 ECU ECU 22.5 " " When writing process is correctly finished by the last program code, ECU should transfer to "finish of program code received" defined by 22.5. transferResponseParameterRecord Address to write down "transferRequestParameterRecord" is shown below. (1) Service $34 Service $36 ECU Service $34 memoryAddress transferResponseParameterRecord transferRequestParameter#1 transferRequestParameter#m At the first service $36 request message reception after Service $34 positive response message, ECU should write to memory address defined by Service 34 memoryAddress from transferRequestParameterRecord #1 to #m. (2) (1) ECU transferResponseParameterRecord transferRequestParameter#1 transferRequestParameter#m After (1) write transferRequestParameterRecord #1 to #m from next address of the last final address.
Rationale:	The EB will not check the preconditons(over-temperature, over-voltage...) Reprogramming status shall be fully managed in integration code
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_2_5_3
Status:	proposed
Version:	5.1
Description:	EN: Reply response message 3 (or) As described in section 3, not only by request message analysis results but also addressing type (physical or function address) have influence on response message. Table 18.4 18.2.5.1 Table 18.-4 shows response message definition. 18.2.5.2 (P2CAN) NRC = $78 (RCRRP) 18.2.7 When more time is needed to execution of the processing for 18.2.5.2 and it is not possible to respond positive response message within P2CAN, ECU can request extension of positive response message by sending negative response message with NRC = $78 (RCRRP). However, follow regulation of 18.-2.7. P2CAN NRC = $78 (RCRRP) TS-DCC01 Detail of negative response message of P2CAN, negative response message with NRC = $78 (RCRRP) should refer to TS-DCC01 . Table 18.4 Service $36 Service $36 Reply to request message Request message check result No 1) addressing Response message Description type (2)a i (2)b i Physical (NRC $13) (2)b ii Wrong message length Negative response (2)b iii Function (2)b iv DiagnosticSession (1)a Service $36 Physical (NRC $7F) Current Diagnostic Session doesn't Negative response support Service $36 Function ECU (3)a Physical (NRC $24) (3)b ECU reprogramming status doesn't Negative response accept writing. Function ECU " " Service $36 (3)c Physical (NRC $71) When the reprogramming status of Negative response ECU was a " memory error Function detected", Service $36 was

	received again. ECU ECU (3)d " (5)a " Physical (NRC $10) (6)a The temperature of ECU is not Negative response reprogrammable. Or the Function reprogramming status of ECU is in "Over-temperature is detected". Table 18.4 Service $36 Service $36 Reply to request message Request message check result No 1) addressing Response message Description type (4)a i (4)a ii blockSequenceCounter Physical (NRC $73) (4)b i blockSequenceCounter out of Spec. Negative response (4)b ii Function (4)b iii (4)a iii Physical (4)b iv Same program code as the last Positive response time. Function (6)b Physical (NRC $72) Writing was not successful. Negative response Function Download (FLASH ROM (6)c) Physical (6)d Requested Download (FLASH ROM Positive response) executable Function 1) 18.2.5.1 No. No. is corresponding to No. in section 18.2.5.-1.
Rationale:	The EB will not check the preconditons(over-temperature, over-voltage...) Reprogramming status shall be fully managed in integration code
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_2_6
Status:	approved
Version:	5.1
Description:	EN: Message Length(Last_Length) Service $34 memoryAddress memorySize ECU (maxNumberOfBlockLength - 2) Service $36 transferRequestParameterRecord An off-board tester divides the program code specified by memoryAddress and memorySize of Service $34 for every number (maxNumberOfBlockLength - 2) of the specification program codes from ECU, and sends. In addition, the divided program code is included and sent to transferRequestParameterRecord of Service $36. Service $34 memoryAddress memorySize Service $36 transferRequestParameterRecord However, the program code sent by Service $36 which sends the last program code of the program code specified by Service $34 is only an untransmitted program code. memorySize (maxNumberOfBlockLength - 2) Service $36 maxNumberOfBlockLength Therefore, when (memorySize mod (maxNumberOfBlockLength - 2)) is not set to zero, the length of the Service $36 request message which transmits the last program code is different from maxNumberOfBlockLength. memorySize (maxNumberOfBlockLength - 2) Service $36 Last_Length When (memorySize mod (maxNumberOfBlockLength - 2)) is not set to 0, the Last_Length value calculated in the following formulas is used for check of the Service $36 request message length who transmits the last program code. Last_Length = memorySize mod (maxNumberOfBlockLength - 2) + 2 Example computation is shown below. Last_Length Last_Length example computation memorySize=$1000 (= 4096) (transmission capacity = 4096 byte) maxNumberOfBlockLength=$182 (386) In the case of maxNumberOfBlockLength=$182 (386) Last_Length = $1000 mod ($182 -

	2) + 2 = $102 Service $34 Service $36 $182 (386) Service $36 $102 (258) The length of the Service $36 request message which transmits the program code specified by Service $34 except for the last program code in the case of this example is $182 (386). However, the length of the Service $36 request message which transmits the last program code is set to $102 (258).
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_2_7
Status:	proposed
Version:	5.1
Description:	EN: ECU 22.7 Tc5 NRC = $78 (RCRRP) When ECU requests extension of positive response message by sending negative response message with NRC = $78 (RCRRP), ECU should send within Tc5 positive message or NRC other than $78.
Rationale:	Timming is HW and integration dependent (memory size, CPU speed, memory tehnology...) so can not be garanteed by the EB bootloader alone.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_3
Status:	rejected
Version:	5.1
Description:	EN: Service $36 Upload (FLASH ROM) Service $35 memoryAddress memorySize ( ) ECU Service $36 (FLASH ROM data read out) is used to read out ECU program code. blockSequenceCounter Service $36 ECU ECU Off-board tester sends the number of read out program code to ECU by the Service $36 request message included blockSequenceCounter. ECU replies by response message whether sends program code. Service This service is supported or not should be decided by the system. Service The service is limited to development.
Rationale:	EB bootloader doen't support Data Read out from flash (0x35 RequestUpload service).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_3_1
Status:	rejected
Version:	5.1
Description:	EN: Table 18.5 Service $36 Service $36 1 SID 1 blockSequenceCounter Table 18.5 shows Service $36 request message format. which consists of 1 byte of

	SID and 1 byte blockSequenceCounter. Table 18.5 Service $36 Service $36 Request message definition Hex Data Byte Parameter Cvt Hex value #1 Service $36 SID M 36 Service $36 Request SID #2 blockSequenceCounter M 00-FF
Rationale:	EB bootloader doen't support Data Read out from flash (0x35 RequestUpload service).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_3_2
Status:	rejected
Version:	5.1
Description:	EN: Table 18.6 Service $36 Service $36 1 SID 1 blockSequenceCounter 256 transferResponseParameterRecord Table 18.6 shows Service $36 positive response message format, which consists of 1 byte of SID and 1 byte of blockSequenceCounter , 256 bytes of transferResponseParameterRecord. ECU After task execution, positive message should be sent. Table 18.6 Service $36 Hex Data Byte Parameter Cvt Hex value #1 Service $36 SID M 76 Service $36 Positive response SID #2 blockSequenceCounter M 00-FF #3 transferResponseParameterRecord [] =[transferResponseParameter#1 M 00-FF : : : : # 258 transferResponseParameter #256] M 00-FF
Rationale:	EB bootloader doen't support Data Read out from flash (0x35 RequestUpload service).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_3_3
Status:	rejected
Version:	5.1
Description:	EN: 2.2.2 Negative response message should follow section 2.2.2. 18.3.4 Service $36 The section defines parameter for Service $36 message.
Rationale:	EB bootloader doen't support Data Read out from flash (0x35 RequestUpload service).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_3_4_1
Status:	rejected
Version:	5.1
Description:	EN: blockSequenceCounter Service $36 1 blockSequenceCounter is 1 byte information included in service $36 request message. This indicates number of read out program code. blockSequenceCounter Positive message should in-

	clude number received. Service $36 Service $35 memoryAddress memorySize ECU $35 Service $35 memoryAddress memorySize Service $36 By Service $36, size of program code, which is possible to send at one transmission is max 4093 bytes but program size defined by Service $35 is bigger. That's why the tester sends program code by repeating Service $36. blockSequenceCounter Service $36 ECU Service $36 1 blockSequenceCounter = $FF Service $36 blockSequenceCounter $00 blockSequenceCounter is to inform ECU of number of transmission. When blockSequenceCounter reaches $FF, next blockSequenceCounter is $00. blockSequenceCounter (Service $35 Service $36 blockSequenceCounter) $01 Default value is $01.
Rationale:	EB bootloader doen't support Data Read out from flash (0x35 RequestUpload service).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_3_4_2
Status:	rejected
Version:	5.1
Description:	EN: transferResponseParameterRecord Service $36 256 ECU transferRequestParameterRecord is 256 bytes information included in Service $36 request message and meaning is ECU program code. transferResponseParameterRecord Service $35 memoryAddress transferResponseParameter #1 #2.... Program code in transferRequestParameterRecord is starting from address defined by memoryAddress in Service $35 such as transferRequestParameterRecord #1, #2... Service $36 transferResponseParameterRecord ECU Program code will NOT be decrypted.
Rationale:	EB bootloader doen't support Data Read out from flash (0x35 RequestUpload service).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_3_4_3
Status:	rejected
Version:	5.1
Description:	EN: Table 18.7 Service $36 NRC 18.3.5 Table 18.7 shows Service $36 NRC definition. Negative response should be refer to 18.3.5. Table 18.7 Service $36 (Upload (FLASH ROM)) Service $36 Negative response code definition NRC (Hex) Description incorrectMessageLengthOrInvalidFormat (IMLOIF) 13 Received message length or message structure doesn't suit Spec. . requestSequenceError (RSE) 24 Service $35 Upload (FLASH ROM) Service $37 Upload (FLASH ROM) Upload is not yet released by Service $35. Or Service $37

	finished the task. wrongBlockSequenceCounter (WBSC) 73 blockSequence-Counter blockSequenceCounter out of Spec. serviceNotSupportedInActiveSes-sion (SNSIAS) 7F DiagnosticSession Service $36 Current diagnostic Session doesn't support Service $36. - Service 36 (Upload (FLASH ROM)) NRC = $78 (RCRRP) Caution NRC=$78 (RCRRP) is not allowed. in Service 36(Upload).
Rationale:	EB bootloader doen't support Data Read out from flash (0x35 RequestUpload service).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_3_5
Status:	rejected
Version:	5.1
Description:	EN: Service $36 ECU Reply from ECU should follow this description.
Rationale:	EB bootloader doen't support Data Read out from flash (0x35 RequestUpload service).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_3_5_1
Status:	rejected
Version:	5.1
Description:	EN: (1) DiagnosticSession DiagnosticSession analysis a. ECU DiagnosticSes-sion programmingSession ECU NRC = $7F (SNSIAS) 18.3.5.3 When diag-nosticSession is not programmingSession, ECU should prepare negative re-sponse message with NRC = $7F (SNSIAS) and execute reply response mes-sage specified at section 18.3.5.3. (2) Check length of request message a. 2 ECU NRC = $13 (IMLOIF) 18.3.5.3 When received request message is NOT 2bytes, ECU should prepare negative response message with NRC = $13 (IM-LOIF) and execute reply response message specified at section 18.3.5.3. (3) ECU The check of program code transmission status of ECU a. 17.4.2 Upload (FLASH ROM) ECU NRC = $24 (RSE) 18.3.5.3 When permission of the Upload (FLASH ROM data read-out) processing specified to 17.4.2 is not being execut-ed, ECU should prepare negative response message with NRC = $24 (RSE) and reply response message specified at section 18.3.5.3. b. 19.4.2.2 Upload (FLASH ROM) ECU NRC = $24 (RSE) 18.3.5.3 When finishing of the Upload (FLASH ROM data read-out) processing specified to 19.4.2.2 is executed, ECU should prepare negative response message with NRC = $24 (RSE) and reply response message specified at section 18.3.5.3. (4) blockSequenceCounter blockSequenceCounter check a. blockSequenceCounter (5) blockSequence-Counter ECU Service $36 18.3.5.2 18.3.5.3 When blockSequenceCounter value

	in received request message is the same as the one before, ECU should perform the same task defined in 18.3.5.2, prepare positive message and reply response message specified at section 18.3.5.3. b. blockSequenceCounter (5) blockSequenceCounter 1 ECU NRC = $73 (WBSC) 18.3.5.3 When blockSequenceCounter value in received request message is NOT +1 from the one before, ECU should prepare negative response message with NRC = $73 (WBSC) and reply response message specified at section 18.3.5.3. (5) (1) (4) ECU Upload (FLASH ROM) ECU 18.3.5.2 18.3.5.3 When check result doesn't match the above (1) to (4), ECU should judge it is possible to execute Upload (FLASH ROM data read-out). ECU should perform task specified in 18.3.5.2, and prepare positive message and reply as defined in 18.3.5.3.
Rationale:	EB bootloader doen't support Data Read out from flash (0x35 RequestUpload service).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-18_3_5_2
Status:	rejected
Version:	5.1
Description:	EN: Service 36 (FLASH ROM) Service $36(FLASH ROM data read out) doesn't request task except positive response message. transferResponseParameterRecord In addition, the program code included in transferResponseParameterRecord of a positive response message follows below. (1) 18.3.5.1 (4)a ECU transferResponseParameterRecord In case of 18.3.5.1 (4)a ECU should send program code the same as the last positive response message into transferRequestParameterRecord. (2) Service $35 Service $36 ECU Service $35 memoryAddress 256 transferResponseParameterRecord At first Service $36 request message reception ECU should send 256 bytes of program code into transferRequestParameterRecord. (3) (1) (2) ECU 256 transferResponseParameterRecord When check result doesn't match the above (1) to (2), ECU should send 256 bytes program code from the next address of the last transmission into transferRequestParameterRecord. 18.3.5.3 Reply response message 3 (or) As described in section 3, not only by request message analysis results but also addressing type (physical or function address) have influence on response message. Table 18.8 18.3.5.1 Table 18.8 shows response message definition. Table 18.8 Service $36 Service $36 Reply to request message Request message check result No 1) addressing Response message Description type (2)a Physical (NRC $13) Wrong message length Negative response Function DiagnosticSession (1)a Service $36 Physical (NRC $7F) Current diagnostic Session doesn't Negative response support Service $36. Function (3)a Upload (FLASH ROM Physical (NRC $24) (3)b) Negative response Failure in upload procedure Function (4)b blockSequenceCounter Physical (NRC $73) blockSequence-

	Counter out of Spec. Negative response Function (4)a Upload (FLASH ROM Physical (5)) Positive response Requested Service is executable. Function 1) 18.3.5.1 No No. is corresponding to No. in section 18.3.5.1.
Rationale:	EB bootloader doen't support Data Read out from flash (0x35 RequestUpload service).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-19_1
Status:	rejected
Version:	5.1
Description:	EN: Service $37 (RequestTransferExit service) TransferData service (Service $34 Service $36 ECU ( ) Service $35 Service $36 ECU ( )) ECU Service $37 (RequestTransferExit service) is used to inform ECU of end of program code transmission or end of program code reading. SID Service $37 ECU Transfer-Data service ECU TransferData service Offboard tester requires the complete of ECU TransferData service.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-19_2_1
Status:	approved
Version:	5.1
Description:	EN: Table 19.1 Service $37 Service $37 1 SID Table 19.1 shows Service $37 request message format. which consists of 1 byte of SID only. Table 19.1 Service $37 Service $37 Request message definition Hex Data Byte Parameter Cvt Hex value #1 Service $37 SID M 37 Service $37 Request SID
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-19_2_2
Status:	approved
Version:	5.1
Description:	EN: Table 19.2 Service $37 Service $37 1 SID Table 19.2 shows Service $37 positive response message format, which consists of 1 byte of SID only. ECU After task execution, positive message should be sent. Table 19.2 Service $37 Service $37 Positive response message definition Hex Data Byte Parameter Cvt Hex value #1 Service $37 SID M 77 Service $37 Positive response SID

Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-19_2_3
Status:	approved
Version:	5.1
Description:	EN: 2.2.2 Negative response message should follow section 2.2.2.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-19_3
Status:	approved
Version:	5.1
Description:	EN: Service $37 Request message and Positive Response message of Service $37 has no parameter.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-19_3_1
Status:	approved
Version:	5.1
Description:	EN: Table 19.3 Service $37 NRC 19.4 Table 19.3 shows Service $37 NRC definition. Negative response should be refer to 19.4. Table 19.3 Service $37 Service $37 Negative response code definition NRC (Hex) Description incorrectMessageLengthOrInvalidFormat (IMLOIF) 13 Received message length or message structure doesn't suit Spec. . requestSequenceError (RSE) 24 Service $34 (RequestDownload service) Service $35 (RequestUpload service) Download (FLASH ROM) Upload (FLASH ROM) Service $34 or Service $35 was not performed yet. Or Download or Upload can't be finished. serviceNotSupportedInActiveSession (SNSIAS) 7F DiagnosticSession Service $37 Current diagnostic Session doesn't support Service $37. - Service 37 NRC = $78 (RCRRP) Caution NRC=$78 (RCRRP) is not allowed. in Service 37.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-19_4
Status:	rejected

Version:	5.1
Description:	EN: Service $37 ECU Service $34 Service $36 Download (FLASH ROM) Service $35 Service $36 Upload (FLASH ROM) ECU operation after receiving Service $37 is different. Service $34 Service $36 Download (FLASH ROM) Service $37 19.4.1 Service $35 Service $36 Upload (FLASH ROM) Service $37 19.4.2 Download in case Service $34 and Upload if Service $35 and Service $36. Download service is shown in 19.4.1 and Upload service is shown in 19.4.-2. Service $34 Service $35 Service $37 19.4.1 In addition, when Service $37 is received without Service $34 and Service $35 both receiving, should follow regulation of 19.4.1.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-19_4_1
Status:	rejected
Version:	5.1
Description:	EN: Service $34 Service $36 Download (FLASH ROM) Service $37 ECU This section specifies reply processing of the response message which ECU which received the Service $37 request message executes after Download (FLASH ROM data writing) by Service $34 and Service $36. In addition, perform reply processing in order of this document.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-19_4_1_1
Status:	proposed
Version:	5.1
Description:	EN: (1) DiagnosticSession DiagnosticSession analysis a. ECU DiagnosticSession programmingSession ECU NRC = $7F (SNSIAS) 19.4.1.3 When diagnosticSession is not programmingSession, ECU should prepare negative response message with NRC = $7F (SNSIAS) and execute reply response message specified at section 19.4.1.3. (2) Check length of request message a. 1 ECU NRC = $13 (IMLOIF) 19.4.1.3 When received request message is NOT 1bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 19.4.1.3. (3) Reprogramming status check a. ECU 22.5 " " " " " " " " " " " " " " " " ECU NRC= $24 (RSE) 19.4.1.3 When ECU programming status is "waiting for eraseMemory" or "waiting for program information", "memory error detected", "waiting for download request", "waiting for program code received" , "during program code

	received", "reprogramming normal complete"," Over-temperature is detected " ECU should prepare negative response message with NRC = $24 (RSE) and reply response message specified at section 19.4.1.3. (4) (1) (3) ECU Request-TransferExit service ECU 19.4.1.2 19.4.1.3 When check result doesn't match the above (1) to (3), ECU should judge it is possible to execute RequestTrans-ferExit service. ECU should perform task specified in 19.4.1.2, and prepare posi-tive message and reply as defined in 19.4.1.3.
Rationale:	The EB will not check the preconditons(over-temperature, over-voltage...) Pro-gramming status should be managed in integration code.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-19_4_1_2
Status:	proposed
Version:	5.1
Description:	EN: Download (FLASH ROM) ECU When ECU judges it is possible to execute RequestTransferExit service on 19.4.1.1, ECU should finish Download and ECU should transfer by below conditions. (1) ECU 22.5 " " When Current reprogram-ming status is "waiting for program code failure detection", ECU should keep current reprogramming status. (2) ECU 22.5 " " " " ECU 22.5 " " When current reprogramming status is " finish of program code received" or " finish of down-load ", ECU should transfer to "finish of download" 15.5.2 ECU 22.5 " " And if program code writing to all erased memory area, ECU should transfer to "wait-ing for program code failure detection" 19.4.1.3 Reply response message 3 (or) As described in section 3, not only by request message analysis results but also addressing type (physical or function address) have influence on re-sponse message. Table 19.4 19.4.1.1 Table 19.4 shows response message de-finition. Table 19.4 Service $37 Service $37 Reply to request message Request message check result No 1) addressing Response message Description type (2)a Physical (NRC $13) Wrong message length Negative response Function DiagnosticSession (1)a Service $37 Physical (NRC $7F) Current Diagnostic Session doesn't Negative response support Service $37. Function Download (FLASH ROM) Service $34 Download (3)a (FLASH ROM) Physical (NRC $24) Negative response Mistake in Download finish Function procedure or Download task by service $34 not released. RequestTransferExit (4) service Physical Re-quested RequestTransferExit Positive response service executable Function 1) 19.4.1.1 No. No. is corresponding to No. in section 19.4.1.1.
Rationale:	Programming status should be managed in integration code.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-19_4_1_3

Status:	approved
Version:	5.1
Description:	EN: Reply response message 3 (or) As described in section 3, not only by request message analysis results but also addressing type (physical or function address) have influence on response message. Table 19.4 19.4.1.1 Table 19.-4 shows response message definition. Table 19.4 Service $37 Service $37 Reply to request message Request message check result No 1) addressing Response message Description type (2)a Physical (NRC $13) Wrong message length Negative response Function DiagnosticSession (1)a Service $37 Physical (NRC $7F) Current Diagnostic Session doesn't Negative response support Service $37. Function Download (FLASH ROM) Service $34 Download (3)a (FLASH ROM) Physical (NRC $24) Negative response Mistake in Download finish Function procedure or Download task by service $34 not released. RequestTransferExit (4) service Physical Requested RequestTransferExit Positive response service executable Function 1) 19.4.1.1 No. No. is corresponding to No. in section 19.4.1.1.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-19_4_2
Status:	rejected
Version:	5.1
Description:	EN: Service $35 Service $36 Upload (FLASH ROM) Service $37 ECU This section specifies reply processing of the response message which ECU which received the Service $37 request message executes after Upload (FLASH ROM data read-out) by Service $35 and Service $36. In addition, perform reply processing in order of this document. Service This service is supported or not should be decided by the system. The service is limited to development. - Service Caution - the service is only for development.
Rationale:	Upload service not supported
Needs coverage of:	SwAD

Id:	HondaDiagnostics-19_4_2_1
Status:	approved
Version:	5.1
Description:	EN: (1) DiagnosticSession DiagnosticSession analysis a. ECU DiagnosticSession programmingSession ECU NRC = $7F (SNSIAS) 19.4.2.3 When diagnosticSession is not programmingSession, ECU should prepare negative re-

	sponse message with NRC = $7F (SNSIAS) and execute reply response message specified at section 19.4.2.3. (2) Check length of request message a. 1 ECU NRC = $13 (IMLOIF) 19.4.2.3 When received request message is NOT 1bytes, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 19.4.2.3. (3) ECU Upload (FLASH ROM) ECU program upload status check a. 17.4.2 Upload (FLASH ROM) ECU NRC = $24 (RSE) 19.4.2.3 When Upload task defined by 17.4.2 is not released, ECU should prepare negative response message with NRC = $24 (RSE) and reply response message specified at section 19.4.2.3. b. Service $35 ECU NRC = $24 (RSE) 19.4.2.3 When Upload task defined by Service $35 is on going, ECU should prepare negative response message with NRC = $24 (RSE) and reply response message specified at section 19.4.2.3. (4) (1) (3) ECU RequestTransferExit service ECU 19.4.2.2 19.4.2.3 When check result doesn't match the above (1) to (3), ECU should judge it is possible to execute RequestTransferExit service. ECU should perform task specified in 19.4.2.-2, and prepare positive message and reply as defined in 19.4.2.3.
Rationale:	Upload service not supported
Needs coverage of:	SwAD

Id:	HondaDiagnostics-19_4_2_2
Status:	rejected
Version:	5.1
Description:	EN: Upload (FLASH ROM) When ECU judges it is possible to perform Upload on 19.4.2.1, ECU should finish Upload task.
Rationale:	Upload service not supported
Needs coverage of:	SwAD

Id:	HondaDiagnostics-19_4_2_3
Status:	rejected
Version:	5.1
Description:	EN: Reply response message 3 (or) As described in section 3, not only by request message analysis results but also addressing type (physical or function address) have influence on response message. Table 19.5 19.4.2.1 Table 19.-5 shows response message definition. Table 19.5 Service $37 Request message check result No 1) addressing Response message Description type (2)a Physical (NRC $13) Wrong message length Negative response Function DiagnosticSession (1)a Service $37 Physical (NRC $7F) Current Diagnostic Session doesn't Negative response support Service $37. Function Upload (FLASH ROM Physical (NRC $24) (3)a) Negative response Mistake in Upload procedure.

	Function Service $35 Upload (FLASH (3)b ROM) Physical (NRC $24) Negative response Upload not released by Service $35. Function RequestTransferExit Physical (4) service Positive response Requested Service is executable. Function 1) 19.4.2.1 No No. is corresponding to No. in section 19.4.2.1.
Rationale:	Upload service not supported
Needs coverage of:	SwAD

Id:	HondaDiagnostics-20_1
Status:	rejected
Version:	5.1
Description:	EN: Service $23 (ReadMemoryByAddress service) RAM EEPROM (Service $23) Service $23 (ReadMemoryByAddress service) is used to read out requested RAM or EEPROM. (not for program code read out). addressAndLengthFormatIdentifier memoryAddress memorySize ECU memoryAddress memorySize RAM EEPROM The off-board tester requires read-out of the value currently written in RAM or EEPROM specified as ECU by memoryAddress and memorySize by the request message included addressAndLengthFormatIdentifier, memoryAddress, and memorySize. ECU memoryAddress memorySize RAM EEPROM ECU includes and returns the value currently written in RAM or EEPROM corresponding to memoryAddress and memorySize which were specified to a response message. Or ECU includes and returns the information which indicates not returning the information corresponding to a request message to a response message. Service Tool Type IV This Service is for development and field. When it is used for the field, it must be protected by Security (Type IV). 6 "Service $27 (SecurityAccess service)" Service $23 If Service $23 is supported or not should be defined by the system.
Rationale:	The 0x23 ReadMemoryByAddress service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-20_2_1
Status:	rejected
Version:	5.1
Description:	EN: Table 20.1 Service $23 Service $23 1 SID 1 addressAndLengthFormatIdentifier 1 memoryAddress 1 memorySize Table 20.1 shows Service $23 request message format, which consists of SID, 1 bytes of addressAndLengthFormatIdentifier, 1 or more bytes of memoryAddress and 1 or more bytes of memorySize. Table 20.1 Service $23 Service $23 Request message definition Hex Data Byte Parameter Cvt Hex value #1 Service$23 SID M 23 Service $23 Re-

	quest SID #2 addressAndLengthFormatIdentifier M 00-FF #3 memoryAddress[ ] = [byte #1 (MSB) M 00-FF : : : : #m+2 byte #m (LSB)] U1 00-FF #n-(k-1) memorySize [ ] = [byte #1 (MSB) M 00-FF : : : : #n byte #k (LSB)] U2 00-FF U1: memoryAddress Depending on memoryAddress bytes defined by the system. U2: memorySize Depending on memorySize bytes defined by the system.
Rationale:	The 0x23 ReadMemoryByAddress service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-20_2_2
Status:	rejected
Version:	5.1
Description:	EN: Table 20.2 Service $23 Service $23 1 SID 1 dataRecord Table 20.2 shows Service $23 positive response message format. The message contains 1 byte of positive response message SID, minimum 1 byte of dataRecord. ECU memoryAddress memorySize RAM EEPROM dataRecord ECU which received the request message includes and returns the value currently written in RAM or EEPROM specified by memoryAddress and memorySize to dataRecord. Table 20.2 Service $23 Service $23 Positive response message definition Hex Data Byte Parameter Cvt Hex value #1 Service$23 SID M 63 Service $23 Positive response SID #2 dataRecord[ ] = [data #1 M 00-FF : : : : #n data #m] U 00-FF U: memorySize depending on memorySize.
Rationale:	The 0x23 ReadMemoryByAddress service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-20_2_3
Status:	rejected
Version:	5.1
Description:	EN: 2.2.2 Negative response message should follow section 2.2.2.
Rationale:	The 0x23 ReadMemoryByAddress service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-20_3
Status:	rejected
Version:	5.1
Description:	EN: Service $23 The section defines parameter for Service $23 message.

Rationale:	The 0x23 ReadMemoryByAddress service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-20_3_1
Status:	rejected
Version:	5.1
Description:	EN: addressAndLengthFormatIdentifier Service $23 1 4 bit memorySize 4 bit memoryAddress addressAndLengthFormatIdentifier is 1 byte information. higher 4 bits indicates byte of memorySize and lower 4 bits byte of memoryAddress. addressAndLengthFormatIdentifier Tool addressAndLengthFormatIdentifier should be defined by the system. Engine ECU addressAndLengthFormatIdentifier = $14 (memorySize = 1 memoryAddress = 4) example of Engine: addressAndLengthFormatIdentifier = $14 (memorySize 1 byte, memoryAddress 4 bytes)
Rationale:	The 0x23 ReadMemoryByAddress service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-20_3_2
Status:	rejected
Version:	5.1
Description:	EN: memoryAddress Service $23 1 ECU RAM EEPROM memoryAddress is minimum 1byte information showing start address of RAM or EEPROM to be read out. memoryAddress byte #1 (MSB) byte #m (LSB) Byte #1 is indicating highest byte (MSB).
Rationale:	The 0x23 ReadMemoryByAddress service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-20_3_3
Status:	rejected
Version:	5.1
Description:	EN: memorySize Service $23 1 ECU RAM EEPROM memorySize byte #1 (MSB) byte #k (LSB) memorySize is minimum 1byte information showing number of bytes of RAM or EEPROM to be read out. Byte #1 is indicating highest byte (MSB) memorySize Tool Max number of memorySize should be defined by the system. Engine ECU memorySize 4

Rationale:	The 0x23 ReadMemoryByAddress service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-20_3_4
Status:	rejected
Version:	5.1
Description:	EN: dataRecord Service $23 1 memoryAddress memorySize RAM EEPROM dataRecord data #1 memoryAddress data #m memoryAddress memorySize dataRecord is minimum 1 byte information included in Service $23 positive response message. This is requested RAM or EEPROM data.
Rationale:	The 0x23 ReadMemoryByAddress service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-20_3_5
Status:	rejected
Version:	5.1
Description:	EN: Table 20.3 Service $23 NRC 20.4 Table 20.3 shows Service $23 NRC definition. Negative response should be refer to 20.4. Table 20.3 Service $23 Service $23 Negative response code definition NRC (Hex) Description incorrectMessageLengthOrInvalidFormat (IMLOIF) 13 Received message length or message structure doesn't suit Spec. . requestOutOfRange (ROOR) (1) AddressAndLengthFormatIdentifier AddressAndLengthFormatIdentifier out of Spec. 31 (2) memorySize memorySize out of Spec. (3) memoryAddress memorySize memoryAddress and memorySize not appropriate. securityAccessDenied (SAD) 33 Type IV Security is not released. requestCorrectlyReceived-ResponsePending (RCRRP) (NRC 78) Due to execution of requested task it is not possible to respond positive response or negative response with appropriate NRC. Extension of time to reply for response message is requested. TS-DCC01 Detail should refer to TS-DCC01 . serviceNotSupportedInActiveSession (SNSIAS) 7F DiagnosticSession Service $23 Current diagnostic Session doesn't support Service $23.
Rationale:	The 0x23 ReadMemoryByAddress service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-20_4
Status:	rejected

Version:	5.1
Description:	EN: Service $23 ECU Reply from ECU should follow this description.
Rationale:	The 0x23 ReadMemoryByAddress service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-20_4_1
Status:	rejected
Version:	5.1
Description:	EN: (1) DiagnosticSession (Service $23 DiagnosticSession) DiagnosticSession analysis (valid for ECU, which has a certain diagnosticSession with no Service $23) a. DiagnosticSession Service $23 ECU NRC = $7F (SNSIAS) 20.4.3 When current diagnosticSession doesn't support service $23, ECU should prepare negative response with NRC = $7F (SNSIAS) and execute reply response message specified at section 20.4.3. (2) Check length of request message a. (Engine ECU 7) ECU NRC = $13 (IMLOIF) 20.4.3 When received request message is different from specified value by system, ECU should prepare negative response message with NRC = $13 (IMLOIF) and execute reply response message specified at section 20.4.3. Request message length should be defined by the system. (3) ( ) Security check (must for mass product) a. ECU Type IV ( ) ECU NRC = $33 (SAD) 20.4.3 When ECU is in mass product state and Type IV security is not released (or fail to release), ECU should prepare negative response message with NRC = $33 (SAD) and execute reply response message specified at 20.4.3. 6 "Service $27 (SecurityAccess service)" Detail of security access is described in section 6 "Service $27 (SecurityAccess service)". - (Type IV) Caution - This inspecting is unnecessary during development. (During development, even if the security of Type IV is not released, execution of this service is possible.) (4) AddressAndLengthFormatIdentifier AddressAndLengthFormatIdentifier check a. AddressAndLengthFormatIdentifier (Engine ECU $14) ECU NRC = $31 (ROOR) 20.4.3 When addressAndLengthFormatIdentifier is not within specified value, ECU should prepare negative response message with NRC = $31(ROOR) and execute reply response message specified at section 20.4.3. AddressAndLengthFormatIdentifier addressAndLengthFormatIdentifier should be defined by the system. (5) memorySize memorySize check a. memorySize (Engine ECU $01 $04) ECU NRC = $31 (ROOR) 20.4.3 When memorySize is not within specified value, ECU should prepare negative response message with NRC = $31(ROOR) and execute reply response message specified at section 20.4.3. memorySize memorySize should be defined by the system. (6) memoryAddress memorySize memoryAddress and memorySize check a. memoryAddress memorySize RAM EEPROM

	ECU NRC = $31 (ROOR) 20.4.3 When part or all of address, which is specified by memoryAddress and memorySize are not readable RAM or EEPROM address, ECU should prepare NRC = $31 (ROOR), and reply as specified in 20.4.3. RAM EEPROM Readable RAM and EEPROM address should be specified by the system. (7) (1) (6) ECU ReadMemoryByAddress service ECU 20.4.2 20.4.3 When message doesn't match the above (1) to (6), ECU should judge it is possible to execute ReadMemoryByAddress service. ECU should execute task defined in 20.4.2 and prepare positive message and reply as defined in20.4.3. 20.4.2 Service $23 doesn't request task except positive response message. 20.4.3 Reply response message 3 (or) As described in section 3, not only by request message analysis results but also addressing type (physical or function address) have influence on response message. Table 20.4 20.4.1 Table 20.4 shows response message definition. (P2CAN) (EEPROM) NRC = $78 (RCRRP) When more time is needed to prepare memory data and it is not possible to respond positive response message within P2CAN, ECU can request extension of positive response message by sending negative response message with NRC = $78 (RCRRP). P2CAN NRC = $78 (RCRRP) TS-DCC01 Detail of negative response message of P2CAN, negative response message with NRC = $78 (RCRRP) should refer to TS-DCC01 . Table 20.4 Service $23 Service $23 Reply to request message Request message check result No 1) addressing Response message Description type DiagnosticSession (1)a Service $23 Physical (NRC $) Current Diagnostic Session doesn't Negative response support Service $23 Function (2)a Physical (NRC $13) Wrong message length Negative response Function (3)a Physical (NRC $33) Security not released Negative response Function (NRC $31) AddressAndLengthFormatIdentifier Physical Negative response (4)a AddressAndLengthFormatIdentifier ( ) out of Spec. (NRC $31) Function No Response(Recommendation) or Negative response (NRC $31) (5)a memorySize Physical Negative response memorySize out of Spec. ( ) Function (NRC $31) memoryAddress memorySize (NRC $31) Physical Negative response (6)a The address range specified by ( ) memoryAddress and memorySize is (NRC $31) out of the rated value range. Function No Response(Recommendation) or Negative response ReadMemoryByAddress (7) service Physical Requested ReadMemoryByAddress Positive response service executable Function 1) 20.4.1 No. No. is corresponding to No. in section 20.4.1.
Rationale:	The 0x23 ReadMemoryByAddress service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-20_5
Status:	rejected
Version:	5.1

Description:	EN: Service $23 Example to read out by Service $23. ECU $FFFF0000 $FFFF7FFF (32kbyte) RAM $FFFF8000 $FFFF80FF (256byte) EEPROM ECU Table 20.5 Address $FFFF0000 to $FFFF7FFF (32Kbytes) are area for RAM and address $FFFF8000 to $FFFF80FF (256 bytes) are EEPROM and data shown in Table 20.5 are stored. Table 20.5 ECU ECU memory map Memory Address Hex (Hex) Hex value Note : FFFF7FFA 23 RAM FFFF7FFB 81 FFFF7FFC F4 FFFF7FFD A1 FFFF7FFE B8 FFFF7FFF 9C FFFF8000 11 EEPROM FFFF8001 DD FFFF8002 EE FFFF8003 77 FFFF8004 80 : $FFFF7FFF 2byte ECU $FFFF7FFF RAM $FFFF8000 EEPROM dataRecord ECU returns the positive response message which included the value of RAM of address $FFFF7FFF, and EEPROM of $FFFF8000 in dataRecord. Table 20.6 $FFFF7FFF 2byte example: 2bytes from $FFFF7FFF Hex Data Byte Parameter Hex value #1 Service$23 SID 23 Service $23 Request SID #2 addressAndLengthFormatIdentifier 14 #3 memoryAddress[ ] = [byte #1 (MSB) FF #4 byte #2 FF #5 byte #3 7F #6 byte #4 (LSB)] FF #7 memorySize[ ] = [byte#1] 02 Table 20.7 $FFFF7FFF 2byte example: 2bytes from $FFFF7FFF Hex Data Byte Parameter Hex value #1 Service$23 SID 63 Service $23 Positive repose SID #2 dataRecord[ ] = [data #1 9C #3 data #2] 11
Rationale:	The 0x23 ReadMemoryByAddress service is not supported by the EB Bootloader (should be managed by the customer).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-21
Status:	rejected
Version:	5.1
Description:	EN: ECU Service This section prescribes return of Service which ECU does not support.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-21_1_1
Status:	approved
Version:	5.1
Description:	EN: Table 21.1 Service NRC 21.2 Table 21.1 shows definition of NRC of not supported Service. About negative Response message should refer to 21.2. Table 21.1 Service Negative response code definition for Not supported Service NRC (Hex) Description serviceNotSupported (SNS) 11 Service Requested service is not supported.
Rationale:	

Needs coverage of:	SwAD

Id:	HondaDiagnostics-21_2
Status:	approved
Version:	5.1
Description:	EN: Service ECU Reply from ECU should follow this description.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-21_2_1
Status:	approved
Version:	5.1
Description:	EN: (1) Service ECU NRC = $11 (SNS) 21.2.2 When not supported Service is received, ECU should prepare NRC = $11 (SNS), and reply as specified in 21.-2.2. 21.2.2 Reply response message 3 (or) As described in section 3, not only by request message analysis results but also addressing type (physical or function address) have influence on response message. Table 21.2 21.2.1 Table 21.-2 shows response message definition. Table 21.2 Service Response message for Not supported Service Request message check result No 1) addressing Response message Description type (NRC $11) (1) Service Physical Negative response Requested Service is not supported Function No response 1) 21.2.1 No. No. is corresponding to No. in section 21.2.1.
Rationale:	
Needs coverage of:	SwAD

Id:	HondaDiagnostics-22
Status:	rejected
Version:	5.1
Description:	EN: HDC_CAN ECU The section describes ECU requirement, which has reprogramming function with HDC_CAN protocol.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-22_1
Status:	rejected
Version:	5.1

Description:	EN: ECU (SAE J1962) ( ) ECU The communication line for diagnosis of ECU which implements a reprogramming function is connected with external reprogramming equipment (off-board tester) through the connector for diagnosis (based on SAE J1962). Reprogramming of ECU software is executed using this communication line. Diagnosis communication line CAN Communication interface is CAN. ECU OFF ( ) 33 ECU is requested not to communicate with the offboard tester when IG is off. 33 Fig. 22-1 ECU Fig. 22-1 shows HW interface with vehicle for reprogramming ECU. Fig. 22-1 The example of signal wire connection with vehicles 33 OFF/ON OFF ECU At reprogramming process, at the end of the session IG-OFF/ON operation is executed. At that stage the offboard tester judges IG-OFF by no reply from the ECU.
Rationale:	This is not a requirement for the bootloader (hardware requirement).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-22_2
Status:	rejected
Version:	5.1
Description:	EN: ECU ECU ( ) ECU reprogramming should work under at ECU operating environment. e.g. voltage , temperature
Rationale:	This is not a requirement for the bootloader.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-22_3
Status:	rejected
Version:	5.1
Description:	EN: Maximum number of reprogramming 100 100 times (min) must be possible.
Rationale:	This is not a requirement for the bootloader (hardware related requirement).
Needs coverage of:	SwAD

Id:	HondaDiagnostics-22_4
Status:	rejected
Version:	5.1
Description:	EN: reprogramming ECU ECU (OFF) ECU As for ECU, application software will be destroyed if an ECU power supply is shut off while reprogramming. The correspondence which does not need to exchange ECUs even if application software will be destroyed is called "correspondence to the power down during reprogramming." ECU which implements a reprogramming function must

	be able to perform "correspondence to the power down during reprogramming." ECU ECU (ECU) "Correspondence to the power down during reprogramming" makes reprogramming possible again by ECU starting, also after application software is destroyed. ECU BOOT The software of ECU which generally implements reprogramming function consists of " Software which judges starting of BOOT or application", "BOOT software ", and "Reprogramming software" other than " Application software " which execute the usual system control. The following processing are implemented in each software. Software which judges starting of BOOT or application ECU Software which operates at the time of ECU starting. Processing which judges whether the last reprogramming was completed normally is implemented. Application software ECU DiagnosticSession programmingSession Software which operates when the last reprogramming is completed normally. In addition to the usual system control, reprogramming related processing which DiagnosticSession of ECU uses except programmingSession is implemented. BOOT BOOT software ECU DiagnosticSession programmingSession Software which operates when the last reprogramming is not completed normally. System control processing which a system defines as changing vehicles into safe condition, and reprogramming related processing which DiagnosticSession of ECU uses except programmingSession are implemented. Reprogramming software ECU DiagnosticSession programmingSession (ECU) Software for which the DiagnosticSession of ECU operates by programmingSession. Reprogramming related processing (almost all processing for reprogramming ECU software, such as erasing, writing, etc. of a program code) is implemented.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-22_4_1
Status:	proposed
Version:	5.1
Description:	EN: reprogramming ECU Operation of ECU which can correspond to the power down during reprogramming is shown below. (1) ECU Process (1) At the time of ECU starting, Software which judges starting of BOOT or application is started and it is inspected whether the last reprogramming was completed normally. (2) (1) ECU Process (2) The operating state of self-ECU is made to change to the following according to the test result of a process (1). - When reprogramming is judged to be a normal end " " Start Application software, it is made to change to "application mode", and the usual system control is performed. - When it is judged that the normal end of the reprogramming has not been done BOOT "BOOT " Start BOOT software and it is made to change to "BOOT mode", and system control is performed so that the safety of vehicles can be maintained. (3)

	Service $10 diagnosticSessionType = programmingSession ($02) " " "BOOT " " " Process (3) Reprogramming software is started by diagnosticSessionType = programmingSession ($02) of Service $10 from off-board tester. Start reprogramming software and it is made to change from "application mode" or "BOOT mode" to a "reprogramming mode", and system control and reprogramming are performed so that vehicles may be changed into safe condition. It is made by this to change from "application mode" or "BOOT mode" to "reprogramming mode", and system control which changes vehicles into safe condition is performed, and reprogramming is performed. In addition, the judgment of whether the last reprogramming was completed normally is judged on condition of the following. " " " " Success When the last reprogramming processing is completed by "before memory clear" or " normal by error detection processing of the program code". " " " " Failure When the last reprogramming processing is stops between " eraseMemory " and "success of "normal by error detection processing of the program code". Table 22.1 ECU The operating state definition of ECU is shown in Table 22.1. ECU (ON) ECU " " When ECU is turned on (it contains also when an ignition switch is turned on), regardless of the current ECU condition, it changes in "un-judged mode". Table 22.1 ECU Operating state definition of ECU Name of operating state Definition of operating state ECU (ON) " " defaultSession 1) un-judged mode From power supply ON of ECU, or changes to defaultSession from a "reprogramming mode", Until the good-or-bad judging of the last reprogramming by software finishes. " " After the judgment by becomes application mode "the last reprogramming success" until it shifts to "reprogramming mode". ECU ECU of this condition performs the usual system control by application software. " " After the judgment by becomes BOOT "the last reprogramming failure" until it shifts to "reprogramming mode". Boot mode ECU BOOT ECU of this condition performs system control by BOOT software. The system control at this time defines vehicles as being in safe condition by a system. " " ECU (OFF) defaultSession 1) " " After ECU changes to "reprogramming mode" until it change to "unjudged mode", by cut reprogramming mode off of battery power supply, ignition OFF, or changes to defaultSession. ECU ECU of this condition performs system control by reprogramming software. The system control at this time defines vehicles as being in safe condition by a system. 1) (S3Server) Service $11 " OFF" " " ECU defaultSession Changes to defaultSession by timeout of session timer (S3Server), or the ECU reset execution by Service $11 request message.
Rationale:	EB Bootloader calls a callback to check if the application is valid. The callback and the check shall be implemented by customer. ECU operating states shall be part of the integration
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-22_4_2

Status:	proposed
Version:	5.1
Description:	EN: Service $10 diagnosticSessionType = programmingSession ($02) 4.5 " ECU " Starting of reprogramming control software is performed by diagnosticSessionType = programmingSession ($02) of Service $10. For details, refer to the section 4.5 "Requirement for reprogrammable ECU". CPU programmingSession Because the CPU resources which can use reprogramming control software are restricted, they can execute no required control. Therefore, this problem is avoided by defining the vehicles operating condition to which the changes to programmingSession are permitted, and implementing only required minimum system control under those conditions. ECU Service $10 diagnosticSessionType = programmingSession ($02) Service $22 ECU Previous, an off-board tester reads vehicles condition from ECU using Service $22, and checks whether the changes to programmingSession are possible. After that, an off-board tester requires the request message of diagnosticSessionType = programmingSession ($02) of Service $10 of ECU. Vehicles operating condition to which reprogramming is permitted should be defined by the system. ECU (1) (4) (1) (4) ECU which started reprogramming software should continue operation by reprogramming software until following either of (1) to (4) occurs. In addition, Software which judges starting of BOOT or application is started when following either of (1) to (4) occurs. (1) (S3Server) Session Timer (S3Server) time out (2) OFF IG sw off. (3) Battery cut. (4) Service $11 " OFF" " " ECU Execution of the ECU reset by Service $11 request. Fig. 22-2 Fig. 22-2 shows about the manner of a software change. ON Ignition switch ON un-judged mode) Application software Software which judges starting of has broken. BOOT or application Application software is written in normally. BOOT BOOT mode application mode BOOT)) (BOOT software) (Application software) ECU Reset or S3 time out ECU S3 programmingSession programmingSession The changes request to The changes request to programmingSession programmingSession reprogramming mode) (Reprogramming software) Ignition switch OFF OFF Fig. 22-2 ECU ECU operating state diagram
Rationale:	EB Bootloader call a callback to request the pre-condition check. Bootloader customer is responsible to implement the condition checks. EB Bootloader calls a callback to check if the application is valid. The callback and the check shall be implemented by customer ECU operating states shall be part of the integration
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-22_5
Status:	proposed

Version:	5.1
Description:	EN: At reprogramming, in order to protect against unauthorized reprogramming and guarantee right program codes, security access control and status at each reprogramming step to limit transaction at each status and mode transfer. Table 22.2 Fig. 22-3 ECU Table 22.2 shows definition of each status and Fig. 22-3 shows state diagram to describe overview of ECU reprogramming. Table 22.-2 Status definition at reprogramming handling Status Definition defaultSession ECU DiagnosticSession defaultSession DiagnosticSession of ECU is default-Session. ECU DiagnosticSession extendedDiagnosticSession Type I Security lock state After DiagnosticSession of ECU turns into extendedDiagnosticSession until it judges the security of Type I release or not. Type I ECU DiagnosticSession defaultSession After detecting unauthorized access with Security Type I, until DiagnosticSession of ECU Security access refusal changes to defaultSession. state Type I 6.5 " " In addition, the details about cancellation of the unauthorized access history of the security Type I are refer to section 6.5 " unauthorized access." Type I ECU DiagnosticSession defaultSession programmingSession programmingSession After releasing the security of Type I, until DiagnosticSession of ECU changes to defaultSession or programmingSession. Type I 6.6" " In addition, the details about the end of release of security Type I are refer to section 6.6 "End of security release". ECU DiagnosticSession programmingSession Service $31 (routineIdentifier = eraseMemory) waiting for eraseMemory After DiagnosticSession of ECU turns into programmingSession until erasing processing of a program memory is completed by Service $31 (routineIdentifier = eraseMemory). Service $2E (dataIdentifier = $ F101 (waiting for program)) information After erasing processing of a program memory carries out a normal end, until it receives Service $2E (dataIdentifier = $ F101 (program information)). Service $2E (dataIdentifier = $ F101 ( )) Service $34 waiting for download After receiving Service $2E (dataIdentifier = $ F101 (program information)), until it request receives Service $34. waiting for program code Service $34 Service $36 received Until it receives Service $36 for Service $34 after received. Service $36 Service $34 during program code Until it judges that received and the writing of all the program codes which were specified received by Service $34 were completed after the received start of Service $36. Table 22.2 Status definition at reprogramming handling Status Definition Service $34 finish of program code Service $37 received After judging that received and the writing of all the program codes which were specified by Service $34 were completed, until it receives Service $37. Service $37 Service $31 (routineIdentifier = eraseMemory) finish of download After receiving Service $37, until it judges that received and the writing of all the program codes of the program memory area erased by Service $ 31 (routineIdentifier = eraseMemory) carried out the normal end. Service $31 (routineIdentifier = eraseMemory) Service $31 (routineIdentifier = checkProgrammingDependencies) Waiting for After judging that re-

ceived and the writing of all the program codes of the program checkProgrammingDepe memory area erased by Service $31 (routineIdentifier = eraseMemory) carried out the ndencies normal end, Until error detection processing of the program code by Service $ 31 (routineIdentifier = checkProgrammingDependencies) is completed. Service $31 (routineIdentifier = checkProgrammingDependencies) OFF reprogramming normal defaultSession 1) complete After judging that it is normal by error detection processing of the program code by Service $31 (routineIdentifier = checkProgrammingDependencies), it is a period to cut off of battery power supply, ignition OFF, or the changes to defaultSession1). Service $31 (routineIdentifier = eraseMemory) memory error detected OFF defaultSession 1) After failure memory erasing, program memory writing or error detection processing of a program code, it is before program memory erase by Service $31, cut off of battery power supply, ignition OFF, or the changes to defaultSession1). OFF defaultSession 1) After it is judged as the outside of the reprogramming permissive temperature range by program memory erase processing or program memory writing processing, it is before cut off of battery power supply, ignition OFF, or the changes to defaultSession1). Over-temperature is detected ECU Service $31 (routineIdentifier = eraseMemory) In addition, ECU of this state does not perform program memory erase processing by Service $31 (routineIdentifier = eraseMemory). 1) (S3Server) Service $11 " OFF" " " ECU defaultSession Changes to defaultSession by timeout of session timer (S3Server), or the ECU reset execution by Service $11 request message. IGSW OFF S3 ECU defaultSession ECU defaultSession extendedDiagnosticSession IGSW OFF ECU programmingSession programmingSession programmingSession IGSW OFF S3 ECU A *1 A *1; Fig. 22-3 In this figure, IGSW OFF, S3 timeout, and the defaultSession changes by execution of ECU reset processing are not indicated. And this figure is prepared in order to help an understanding about control of ECU, and it does not express all the requests. defaultSession extendedDiagnosticSession Security lock state Unauthorized When unauthorized access is access detected, this history is held to Security release. execution of IGSW OFF or Waiting for ECU reset processing. programmingSession change changes to programmingSession It became the programmingSession temperature environment in which reprogramming is Memory erase impossible. There are no change success states other than IGSW OFF, S3 timeout, and ECU Memory erase failure reset processing. Waiting for programming information Program information received A Memory erase success Download request received Waiting for Memory write failure programming code Program code received Memory write failure Download request The completion of program received *1 code received A notification of termination of download is received. All the area write in ends The result of The result of checkProgramming checkProgramming Dependencies is failure. Dependencies is successful. *1; When the area to write in is divided into several, a download request is performed again.

	Fig. 22.3 example of a state transition diagram of software reprogram processing
Rationale:	EB bootloader is proposing callback for the programming secquence configuration.
Needs coverage of:	SwAD req_IntegrationCode

Id:	HondaDiagnostics-22_6
Status:	rejected
Version:	5.1
Description:	EN: ECU ECU When ECU was shut down during reprogramming and is turned on, ECU can't do normal system control since software loading was not completed. This section specifies requirement at "BOOT status" "BOOT " ECU This section specifies requirement at "BOOT mode"
Rationale:	Not a requirement.
Needs coverage of:	SwAD

Id:	HondaDiagnostics-22_6_1
Status:	rejected
Version:	5.1
Description:	EN: System is controlled by the default control, which is defined by the system.
Rationale:	EB bootloader doesn't assure the system control
Needs coverage of:	SwAD

Id:	HondaDiagnostics-22_6_2
Status:	rejected
Version:	5.1
Description:	EN: ECU Following request message should be supported to enable reprogramming and unnecessary replacement.
Rationale:	Not a requirement
Needs coverage of:	SwAD

Id:	HondaDiagnostics-22_6_2_1
Status:	proposed
Version:	5.1
Description:	EN: (1) (7) Support the following request message of (1) to (7). (1) Service $10 diagnosticSessionType = extendedDiagnosticSession ($03) diagnosticSession-

	Type = programmingSession ($02) Service $10 diagnosticSessionType = extendedDiagnosticSession ($03) diagnosticSessionType = programmingSession ($02) (2) Service $27 Type I Service $27 Type I security. (3) Service $28 controlType = disableRxAndTx ($03) communicationType = NWMCM and NCM 34 ($03) Service $28 controlType = disableRxAndTx ($03) communicationType = NWMCM and NCM 34 $03) (4) Service $3E zeroSubFunction ($00) Service $3E zeroSubFunction ($00) (5) Service $85 DTCSettingType = off ($02) Service $85 DTCSettingType = off ($02) (6) Service $22 10.6 dataIdentifier " B.-3 (3) " dataIdentifier ECU.ID ("BOOT " ECU) Service $22 dataIdentifier defined at section 10.6 , dataIdentifier , which is used to read out system condition , and ECU ID only for ECU which is used besides "BOOT mode" ID (dataIdentifier = $F181) ECU ID "BOOT " ECU.ID dataIdentifier "BOOT " ID ECU.-ID Program ID (dataIdentifier = $F181 and ECU ID should reply with the value indicating "BOOT mode". dataIdentifier for ECU ID and Program ID and ECU ID at "BOOT mode" should be defined by the system and not by this Spec. (7) Service $19 sub-function = reportNumberOfDTCByStatusMask ($01) sub-function = reportDTCByStatusMask ($02) Service $19 sub-function = reportNumberOfDTCByStatusMask ($01) sub-function = reportDTCByStatusMask ($02) DTC 1 DTC "BOOT " "U3000-51($F00051)" The number of DTC is one. DTC is set to "U3000-51 ($F00051)" which indicates "BOOT mode". "BOOT " Service $19 DTCStatusAvailabilityMask "ConfirmedDTC" sub-function = reportDTCByStatusMask ($02) DTCAndStatusRecord statusOfDTC "ConfirmedDTC" Support of only "ConfirmedDTC" may be sufficient as DTCStatusAvailabilityMask at Service $19 in "BOOT mode". When ECU output DTCAndStatusRecord by sub-function = reportDTCByStatusMask ($02), set only "ConfirmedDTC" as statusOfDTC. ("BOOT " " " DTCStatusAvailabilityMask sub-function = reportDTCByStatusMask ($02) DTCAndStatusRecord statusOfDTC DTCStatusAvailability-Mask) (ECU may use the same DTCStatusAvailabilityMask as "application mode" also "BOOT mode". However, make into suitable value statusOfDTC outputted by DTCAndStatusRecord of sub-function=reportDTCByStatusMask($02) according to DTCStatusAvailabilityMask.)
Rationale:	Shall be configured by Customer The following services are not supported by the EB Bootloader (should be managed by the customer during integration): 14 ClearDiagnosticInformation service 19 ReadDTCInformation service 23 ReadMemoryByAddress service 28 CommunicationControl service 2F InputOutputControlByIdentifier service 35 RequestUpload service 85 ControlDTCSetting service DID reading shall be implemented by customer.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-22_6_2_2
Status:	proposed

Version:	5.1
Description:	EN: (1) (10) (1) Service $10 diagnosticSessionType = programmingSession ($02) Service $10 diagnosticSessionType = programmingSession ($02) (2) Service $11 resetType = hardReset ($01) Service $11 resetType = hardReset ($01) (3) Service $3E zeroSubFunction ($00) Service $3E zeroSubFunction ($00) (4) ECU Service $22 (For ECU with temperature limitation) Service $22 related to temperature (5) Service $2E dataIdentifier = $F100 ( ) dataIdentifier = $F101 ( ) Service $2E dataIdentifier = $F100 (reprogramming history) dataIdentifier = $F101 (program information) (6) Service $31 routineIdentifier = $ FF00 (eraseMemory) routineIdentifier = $ FF01 (checkProgrammingDependencies) Service $31 routineIdentifier = $FF00 (eraseMemory) routineIdentifier = $FF01 (checkProgrammingDependencies) (7) Service $34 (8) Service $35 Service $35. Support or not must be defined by the system. (9) Service $36 (10) Service $37
Rationale:	The 0x35 RequestUpload service is not supported by the EB Bootloader (should be managed by the customer during integration). The EB bootloader doesn't manage the ECU temperature. The writing of DIDs F100 and F101 shall be managed by the customer.
Needs coverage of:	SwAD req_Config

Id:	HondaDiagnostics-22_7
Status:	proposed
Version:	5.1
Description:	EN: This section defines timing at reprogramming. Table 22.3 ECU Table 22.-3 defines. ECU should meet the requirement. Service $10 Request change to programmingSession programmingSession Off-board tester NegRsp PosRsp ECU (NRC $78) Tc2 Fig. 22-4 programmingSession Communication timing of change to programmingSession Service $31 Request eraseMemory Off-board tester NegRsp (NRC $78) PosRsp ECU Tc4 Fig. 22-5 Communication timing of Memory erase Service $36 Request TransferData Off-board tester NegRsp (NRC $78) PosRsp ECU Tc5 Fig. 22-6 Communication timing of TransferData and write memory Service $31 Request checkProgrammingDependencies Off-board Tester NegRsp (NRC $78) PosRsp ECU Tc6 Fig. 22-7 Communication timing of checkProgrammingDependencies Service $11 Next request ECU Request ECU Reset request Off-board Tester PosRsp ECU Tc8 Fig. 22-8 ECU Communication timing of ECU reset Table 22.3 Reprogramming control timing and value Calibration value Description ECU Parameter Regulation of operation to ECU Minimu Maximu m m diagnosticSessionType = programmingSession Service $10 ECU programmingSession (Fig. Tc2 22-4) (4.5) --- 5sec Time from the completion of Service $10 Change to programmingSession request message transmitting of within this time and complete return of diagnosticSession-

	Type = a response message. (see 4.5.) programmingSession to the completion of response message return of ECU. (Fig. 22-4) routineIdentifier = $ FF00 Service $31( ) ECU (Fig. 22-5) (15.5.2) Tc4 Time from the completion of Service $31 Perform erasing of a program 120sec (erasing request of program memory) memory within this time, and request message transmitting of complete return of the response routineIdentifier = $ FF00 to the completion message included that result. (see of response message return of ECU. (Fig. 15.5.2.) 22-5) Service $36 ECU Tc5 (Fig. 22-6) (18) 5sec Time from the completion of transmitting of Perform the writing of a program code a Service $36 request message to the within this time, and complete return completion of response message return of of the response message included ECU. (Fig. 22-6) that result . (see18.) routineIdentifier = $ FF01 Service $31 ( ) ECU (Fig. Tc6 22-7) (15.5.3) 5sec Time from the completion of transmitting of Perform error detection processing of the Service $31 (error detection request of a program code within this time, and program code) request message of complete return of the response routineIdentifier = $ FF01 to the completion message included that result. (see of response message return of ECU. (Fig. 15.5.3.) 22-7) Service $11 (resetType = hardReset) ECU ECU (Fig. (5.5) Tc8 22-8) Complete ECU reset processing 5sec Time from the completion of an ECU within this time, and be possible of positive response message reply to a received of the following request Service $11 (resetType = hardReset) message. (see 5.5.) request message to the following request message transmitting start. (Fig. 22-8)
Rationale:	Timming is HW and integration dependent (memory size, CPU speed, memory tehnology...) so can not be garanteed by the EB bootloader alone.
Needs coverage of:	SwAD