

DIN 70122 & CharIN TCs for DIN 70121 Impl. Guide

CCS Conformance Test Package Update – DIN 70122 & CharIN TCs for DIN 70121 Impl. Guide V4.1.0

Release Version:	V4.1.0
Release Date:	12/15/2023
Operating System:	Windows 10/11 (64Bit)
System Requirements:	<ul style="list-style-type: none"> • Administrator rights for software installation • x86-based 64-Bit CPU with min. 4 cores (e.g. Intel Core i, AMD Ryzen-Serie, No mobile CPU series is recommended) • Min. 8GB RAM (16 GB recommended) • 250 GB HDD (SSD recommended)
Hardware:	<ul style="list-style-type: none"> • SL1040A Scienlab Charging Discovery System – Portable Series • SL1040A Scienlab Charging Discovery System – EMC Series • SL1047A Scienlab Charging Discovery System – High-Power Series • SL1550A EV - EVSE Charging Communication Interface Tester
License:	Node-locked perpetual license
Product Reference:	SL1438A, SL1449A, SL1447A, SL1448A, SL1458A, SL1459A, SL1462A, SL1463A

Enhancements

DIN 70122 & CharIN TCs for DIN 70121 Impl. Guide (Test Cases)

Changes for SUT (SECC)

- Unexpected CP State E/F detection handling has been updated
 - o CP State E/F measurement values can be ignored until valid duty cycle detection. This handling can be enabled by the parameter 'PICS_CMN_IgnoreCPStateEFAfterPlugin'
- Improved logging for plugin detection has been updated for all hardware types
 - o Extended logging will be supported by CDS & Com Tester

Codecs and Adapters

- CDS-specific: Configuration feature for preconfigured AutoBC port 40000 has been added

- CDS-specific: CDS reset handling has been improved
- CDS-specific: AutoBC channel has been updated to 10
- CDS-specific: Hysteresis functionality for AutobroadcastReq3 message has been added
- CDS-specific: Deprecated SLEP parameters 614 and 615 have been replaced with SLEP parameter 619

Resolved Issues

DIN 70122 (Test Cases)

Changes for SUT (SECC)

- Timeout handling has been changed for SLAC instance 1 and SLAC instance 2-5 (refers to TC_SECC_VTB_PLCLinkStatus_003)
 - o SLAC instance 1 shall wait for par_TT_EV_atten_results before proceeding with CM_SLAC_MATCH message sequence.

Codecs and Adapters

- V2GTP handling for zero payload has been changed

Special Notes

- Some items are only relevant for a subset of the referenced product numbers.
- Due to the initial migration to the Keysight product portfolio, the release notes history has a different format depending on the release version.

Previous Release Notes

Release 4.0.0

New Features

Codecs and Adapters

- Support for Keysight Software Manager (KSM) license mechanism

Enhancements

DIN 70122 & CharIN TCs for DIN 70121 Impl. Guide (Test Cases)

Changes for SUT (SECC)

- The logging for plugin detection has been improved
 - o Positive voltage value after CP State B initialization (f_SECC_setState) will be checked
- A customized duty cycle range has been added
 - o This duty cycle range will be ignored until start of the SLAC process

Codecs and Adapters

- IPv6 check for configured network interfaces has been updated
- Sanity checks for CDS profiles and CDS FW version has been added
- Fallback functionality for CDS communication has been added

Resolved Issues

DIN 70122 & CharIN TCs for DIN 70121 Impl. Guide (Test Cases)

Changes for SUT (SECC & EVCC)

- Power unit initialization has been changed
 - o The initialization function was executed multiple times (refers to test cases with reference to multiple charging sessions)

Changes for SUT (SECC)

- BCB toggle signalization process has been changed
 - o Wrong timing for B-toggle was used if multiple BCB toggles have been initiated

DIN 70122 (Test Cases)

Changes for SUT (SECC)

- VsHstAction message (link detected/terminated) processing has been added to f_SECC_TB_VTB_CmSetKey_001
 - o Enables correct message processing if the data link is received earlier than the Acknowledgement of setKey instruction
- Unit type for RemainingTimeToFullSoC and RemainingTimeToBulkSoC has been changed to 's'
 - o The wrong unit type was used before ('h' instead of 's')
- Timer value has been reduced by the processing time if line lock (power flow-specific) is used (refers to TC_SECC_VTB_ChargeParameterDiscovery_006)

Changes for SUT (EVCC)

- Parallel timeout handling has been added if the expected CP State must be internally updated to CP State B (f_EVCC_changeValidStateCondition)
 - o A processing delay of incoming request messages can be avoided

CharIN TCs for DIN 70121 Impl. Guide (Test Cases)

Changes for SUT (SECC)

- Timer value has been reduced by the processing time if line lock (power flow-specific) is used (refers to CharIN_TC_SECC_VTB_ChargeParameterDiscovery_013)

Changes for SUT (EVCC)

- CharIN_TC_EVCC_VTB_IOP_SDP_008 & CharIN_TC_EVCC_VTB_IOP_SDP_009 have been categorized from test campaign CharIN_EVCC_Goodcase_Group_IOP_DinAndIso to CharIN_EVCC_Errorcase_Group_IOP_DinAndIso
- The cable check voltage has been reset to 0V if power flow is used
 - o Stop condition was not reached before (cable check voltage > 0V)
- Issue solved: Verdict handling has been changed if the SUT stops the charging process earlier than defined in the test objective (refers to CharIN_TC_EVCC_VTB_Reliability_001 - CharIN_TC_EVCC_VTB_Reliability_003 & VERISCO_TC_EVCC_VTB_Reliability_004)

Codecs and Adapters

- The disconnect function in the Test Automation Robot implementation has been changed
- Processing for SLAC messages which are received in the wrong order has been changed for SUT (EVCC)
- Processing for SDP messages with transport 0xFF has been changed

Release 3.2.1

Codecs and Adapters

Bug fixes

- Fixes CDS disconnect in combination with AC DC emulator (SL480)

Release 3.2.0

DIN 70122 (Test Cases)

Abstract Test Suite

Changes for SUT (SECC & EVCC)

- Script handling for automated SUT configuration (PIXIT) added (requires user-specific script)

Bug fixes

Changes for SUT (SECC & EVCC)

- Process amplitude map exchange (triggered by the SUT) if the test system has not yet detected the data link (Different link detection mechanism used in EV & EVSE)

Changes for SUT (EVCC)

- Post-Condition handling changed if power flow is used
- Stop condition added for pre-charge process in case of any error

CharIN TCs for DIN 70121 Impl. Guide (Test Cases)

Abstract Test Suite

Changes for SUT (SECC & EVCC)

- Script handling for automated SUT configuration (PIXIT) added (requires user-specific script)

Bug fixes

Changes for SUT (SECC & EVCC)

- Process amplitude map exchange (triggered by the SUT) if the test system has not yet detected the data link (Different link detection mechanism used in EV & EVSE)

Changes for SUT (EVCC)

- Stop condition added for pre-charge process in case of any error

Changes for SUT (SECC)

- Test case update according to CharIN Test Cases for DIN SPEC 70121:2014 Implementation Guide V1.1.3

Codecs and Adapters

New features

- Keysight rebranding
- Adds Support for CDS FW 1.15.0

Enhancements

- Adds IPv6 checks for configured network interfaces
- Increases SLEP TCP timeout to two hours
- Removes SLEP parameter 1005 control
- Improves error handling for CDS init

Bug fixes

- Fixes issue with SLEP debug parameter configuration when CDS is resetted

Release 3.1.2

DIN 70122 (Test Cases)

Bug fixes

Changes for SUT (SECC & EVCC)

- Allow amplitude map exchange (triggered by the SUT) if the test system also initiates this process after link detection

Changes for SUT (EVCC)

- New module parameter 'par_EVCC_StopCharging_Timeout' added to define a maximum reaction time of the SUT if the Test System has triggered a shutdown during charging

- Stop current check after EVSE shutdown if condition was successful (power flow-specific)

CharIN TCs for DIN 70121 Impl. Guide (Test Cases)

Bug fixes

Changes for SUT (SECC & EVCC)

- Allow amplitude map exchange (triggered by the SUT) if the test system also initiates this process after link detection

Changes for SUT (EVCC)

- New module parameter 'par_EVCC_StopCharging_Timeout' added to define a maximum reaction time of the SUT if the Test System has triggered a shutdown during charging
- Internal performance time check deleted during charging
- Stop current check after EVSE shutdown if condition was successful (power flow-specific)

Release 3.1.1

DIN 70122 (Test Cases)

Bug fixes

Changes for SUT (EVCC)

- EVStatus (EVReady) check deleted for WeldingDetectionReq messages (warning only)
- Timer value reduced by the processing time if power flow is used (refers to TC_EVCC_VTB_CurrentDemandOrPowerDelivery_005)

CharIN TCs for DIN 70121 Impl. Guide (Test Cases)

Bug fixes

Changes for SUT (EVCC)

- EVStatus (EVReady) check deleted for WeldingDetectionReq messages (warning only)
- Timer value reduced by the processing time if power flow is used (refers to CharIN_TC_EVCC_VTB_CurrentDemandOrPowerDelivery_005)

Codecs and Adapters

Bug fixes

- Fixes UDP source port 15118 in SDP response message
- Fixes Proximity Pilot Open handling for SUT EV and SUT EVSE

Release 3.1.0

DIN 70122 (Test Cases)

Abstract Test Suite

Changes for SUT (SECC & EVCC)

- Threshold for CP voltage, duty cycle, frequency and proximity implemented (VERISCO HW only)

Changes for SUT (EVCC)

- PICS_EVCC_ForceMinimumLimits renamed to PICS_EVCC_ForceLowerMaximumLimits
- New module parameter 'par_CurrentCableCheckVoltage' added for configuration of the current used for establishment of an output voltage during cable check

Bug fixes

Changes for SUT (SECC & EVCC)

- Consideration of (3*tc_TT_match_response) as message timing for asynchronous CM_AMP_MAP_REQ burst (refers to TC_SECC_VTB_CmAmpMap_006 & TC_EVCC_VTB_CmAmpMap_006)

Changes for SUT (SECC)

- Consideration of a delay between battery voltage signalization and DC output activation (power flow-specific)
- In some cases, wrong initial CP state is used if the HAL listener is restarted
- Handling for delayed SDP response messages during waiting time for 'V2G_SECC_CommunicationSetup_Timeout' added (refers to TC_SECC_VTB_SupportedAppProtocol_004)
- Verdict handling changed to inconclusive in case of issue during SLAC process because it should be interpreted as pre-condition (refers to TC_SECC_VTB_AttenuationCharacterization_019)
- New test campaign name 'SECC_Goodcase_Group_IOP_DinAndIso_NoTLS' created for TC_SECC_VTB_IOP_SDP_002 and TC_SECC_VTB_IOP_SDP_004 (PIXIT_CMN_IOP_TLS := none_ must be considered)
- Invalid handling for 0 division in battery simulation if SoC is configured to 100%. An EVTargetCurrent of 0A will be used instead

Changes for SUT (EVCC)

- Wrong handling for delayed CM_SLAC_MATCH_REQ messages during data link establishment (VsLnkStatus only)
- Wrong handling for unexpected SDP request messages during data link establishment (VsLnkStatus only)
- The function 'f_checkValidMaxPowerEntries' does not consider the start point of the SAScheduleList in ChargeParameterDiscoveryRes message (see The value of the start element shall be defined in seconds from NOW)
- Power contactor & power flow output deactivation order changed (power flow-specific)
- Check if received EVTargetCurrent does not exceed the maximum power limits (power flow-specific)
- V2G_SECC_CommunicationSetup_Timer was not started and the test execution may be blocked if no SDP is received (refers to TC_EVCC_VTB_IOP_SDP_003 & TC_EVCC_VTB_IOP_SDP_004)

CharIN TCs for DIN 70121 Impl. Guide (Test Cases)

Abstract Test Suite

Changes for SUT (SECC & EVCC)

- Test case update according to CharIN Test Cases for DIN SPEC 70121:2014 Implementation Guide V1.1.2
- Threshold for CP voltage, duty cycle, frequency and proximity implemented (VERISCO HW only)

Changes for SUT (EVCC)

- PICS_EVCC_ForceMinimumLimits renamed to PICS_EVCC_ForceLowerMaximumLimits
- New module parameter 'par_CurrentCableCheckVoltage' added for configuration of the current used for establishment of an output voltage during cable check

Bug fixes

Changes for SUT (SECC & EVCC)

- Consideration of (3*tc_TT_match_response) as message timing for asynchronous CM_AMP_MAP_REQ burst (refers to CharIN_TC_SECC_VTB_CmAmpMap_006 & CharIN_TC_EVCC_VTB_CmAmpMap_006)

Changes for SUT (SECC)

- Consideration of a delay between battery voltage signalization and DC output activation (power flow-specific)
- In some cases, wrong initial CP state is used if the HAL listener is restarted
- Verdict handling changed to inconclusive in case of issue during SLAC process because it should be interpreted as pre-condition (refers to CharIN_TC_SECC_VTB_AttenuationCharacterization_019)
- New test campaign name 'CharIN_SECC_Goodcase_Group_IOP_DinAndIso_NoTLS' created for CharIN_TC_SECC_VTB_IOP_SDP_002 (PIXIT_CMN_IOP_TLS := none_ must be considered)
- Invalid handling for 0 division in battery simulation if SoC is configured to 100%. An EVTargetCurrent of 0A will be used instead

Changes for SUT (EVCC)

- Wrong parameter was used (EVSEPresentCurrent instead of EVSEPresentVoltage) for current deviation (refers to CharIN_TC_EVCC_VTB_CurrentDemandOrPowerDelivery_019)
- Wrong maximum number of SDP repetitions was used for 'CharIN_TC_EVCC_VTB_IOP_SDP_006' and 'CharIN_TC_EVCC_VTB_IOP_SDP_007' (5 instead of 50)
- Power contactor & power flow output deactivation order changed (power flow-specific)
- Check if received EVTargetCurrent does not exceed the maximum power limits (power flow-specific)

Codecs and Adapters

New features

- Adds Support for CDS FW 1.14.0
- Adds SLEP debug handling

Enhancements

- Improves error logging
- Improves init process and error handling with VERISCO hardware

- Prints VERISCO Hal Library version in graphical logging view
- Updates reset handling IFF QCA node is unavailable

Bug fixes

- Fixes SLAC crosstalk handling

Release 3.0.3

Codecs and Adapters

Bug fixes

- Fixes parallel SLAC processing

Release 3.0.2

DIN 70122 (Test Cases)

Bug fixes

Changes for SUT (EVCC)

- Enable processing for new SLAC process (refers to TC_EVCC_VTB_PLCLinkStatus_004)
- Wait for maximum number of CM_ATTEN_PROFILE_IND and CM_MNBC_SOUND_IND messages to avoid counting issue in case of wrong message receipt order

Changes for SUT (SECC)

- Use EVCC timing of the wrong message than of the expected message for 'FAILED_Sequence_Error' test cases

CharIN TCs for DIN 70121 Impl. Guide (Test Cases)

Abstract Test Suite

Changes for SUT (SECC)

- Test case update according to CharIN Test Cases for DIN SPEC 70121:2014 Implementation Guide V1.1.1 (CCTS Update)

Bug fixes

Changes for SUT (EVCC)

- Wait for maximum number of CM_ATTEN_PROFILE_IND and CM_MNBC_SOUND_IND messages to avoid counting issue in case of wrong message receipt order

Codecs and Adapters

Bug fixes

- Fixes initialization for parameter I_DC_min for SUT EVSE

Release 3.0.1

DIN 70122 (Test Cases)

Abstract Test Suite

Changes for SUT (SECC & EVCC)

- New module parameter `par_C_EV_match_retry`, `par_C_EV_match_MNBC`, `par_TP_EV_vald_toggle_min`, `par_TP_EV_vald_toggle_max`, `par_EVCC_numberOfStartAtten`, `par_EVCC_numberOfSoundings`, `par_maxRepetitionSDPDinOnly`, `par_maxRepetitionSDPDinAndIso` and `par_EVCC_FreeService` added to Advanced configuration group
- Configuration support for the module parameter `par_slac_node2_mac`, `par_slac_node3_mac`, `par_slac_node4_mac`, `par_slac_node5_mac`, `par_ValidDeviationPerCent`, `par_SECC_attenuationDeviation`, `par_InvalidDutyCycle` and `par_EVCC_InsertionLossCorrection` by Configuration Wizard in Advanced configuration group

Changes for SUT (EVCC)

- '`par_EVCC_waitForPlugin`' added for parametrization of the maximal time between +12V signalization and plugin detection (CP State B)

Bug fixes

Changes for SUT (EVCC)

- Graceful handling added if the EV does not use `EVTargetCurrent <= 2A` in pre charge process

Changes for SUT (SECC)

- Check link loss directly after plug-out (refers to `TC_SECC_VTB_PLCLinkStatus_002`)

CharIN TCs for DIN 70121 Impl. Guide (Test Cases)

Abstract Test Suite

Changes for SUT (SECC & EVCC)

- Test case update according to CharIN Test Cases for DIN SPEC 70121:2014 Implementation Guide V1.1.1
- New module parameter `par_C_EV_match_retry`, `par_C_EV_match_MNBC`, `par_TP_EV_vald_toggle_min`, `par_TP_EV_vald_toggle_max`, `par_EVCC_numberOfStartAtten`, `par_EVCC_numberOfSoundings`, `par_maxRepetitionSDPDinOnly`, `par_maxRepetitionSDPDinAndIso` and `par_EVCC_FreeService` added to Advanced configuration group
- Configuration support for the module parameter `par_slac_node2_mac`, `par_slac_node3_mac`, `par_slac_node4_mac`, `par_slac_node5_mac`, `par_ValidDeviationPerCent`, `par_SECC_attenuationDeviation`, `par_InvalidDutyCycle` and `par_EVCC_InsertionLossCorrection` by Configuration Wizard in Advanced configuration group

Changes for SUT (EVCC)

- '`par_EVCC_waitForPlugin`' added for parametrization of the maximal time between +12V signalization and plugin detection (CP State B)

Bug fixes

Changes for SUT (EVCC)

- Graceful handling added if the EV does not use EVTargetCurrent $\leq 2A$ in pre charge process

Codecs and Adapters

Enhancements

- Adds Support for CDS FW 1.13.3 by fixing PP connect handling for SUT EVSE

Bug fixes

- Fixes data type conversion in Test Automation Robot implementation
- Fixes watchfunction logging for temperature sensors
- Fixes CP State E handling for SUT EV

Release 3.0.0

DIN 70122 (Test Cases)

Abstract Test Suite

Changes for SUT (SECC & EVCC)

- API for duty cycle and frequency changed from integer to float -> supports higher resolution
- TTCN-3 enumeration representation for IEC 61851 states and PMW mode instructions changed
- Proximity set function for open circuit added
- Hysteresis for CP voltage, duty cycle, frequency and proximity implemented (VERISCO HW only)
- HostActionReq (Qualcomm-specific) message for link loss implemented
- Error log handler added

Bug fixes

Changes for SUT (SECC & EVCC)

- Line lock and power contactor functions migrated to external function API for power flow
- Line lock shall function only triggered if power flow is enabled
- Proximity set function API changed (value in Ohm)
- PLC node reset added (Reset of 10 dB attenuation)
- Order of power flow output and power contactor activation changed
- Matching of amlen field in Amplitude Map Exchange updated

Changes for SUT (EVCC)

- Sequence timeout handling for ContractAuthorization sequence added if no additional ContractAuthorizationReq is received
- TC_EVCC_VTB_PreChargeOrPowerDelivery_016 deleted -> was not published in DIN 70122
- Typo in test objective for TC_EVCC_VTB_CmValidate_005 (invalid 'toggleNum' instead of 'signalType')

- Typo (no par_EVCC_StateB_Shutdown_Timeout defined) in test objective for CharIN_TC_EVCC_VTB_CurrentDemand_008 -> add "within 'par_EVCC_StateB_Shutdown_Timeout'

Changes for SUT (SECC)

- V2G_EVCC_Msg_Timeout_CableCheckReq timer not restarted within ongoing loop
- Create Message Box PTC only once (refers to test cases with reset and PICS_CMN_IgnoreLineLock = true)
- Charging simulation updated if maximum power limit is reached, but battery voltage is increased to EVTargetVoltage (power flow support)
- Initial duty cycle handling for 100% changed in case of multiprotocol stack support
- Typo in test objective for 'TC_SECC_VTB_WeldingDetection_005' -> 'receipt of a valid PowerDeliveryReq message' was changed to 'receipt of a valid PowerDeliveryRes message'
- CP State A signalization directly triggered in case of CP State C -> CP State A transition (Errorcase-specific)
- Consider processing time for 19s delay (refers to TC_SECC_VTB_IOP_CmSlacParm_001 - TC_SECC_VTB_IOP_CmSlacParm_006)
- Wrong matching condition was used for repeated Step 1 CM_VALIDATE_CNF message (refers to TC_SECC_VTB_CmValidate_002)
- fx_setLineLock instruction is used after authorization instead of plug-in

CharIN TCs for DIN 70121 Impl. Guide (Test Cases)

Abstract Test Suite

Changes for SUT (SECC & EVCC)

- API for duty cycle and frequency changed from integer to float -> supports higher resolution
- TTCN-3 enumeration representation for IEC 61851 states and PMW mode instructions changed
- Proximity set function for open circuit added
- Hysteresis for CP voltage, duty cycle, frequency and proximity implemented (VERISCO HW only)
- CharIN_TC_SECC_VTB_PSDMeasurement_001 and CharIN_TC_EVCC_VTB_PSDMeasurement_001 added -> .csv reader only (PSD measurement should be executed manually with external equipment)
- HostActionReq (Qualcomm-specific) message for link loss implemented
- Error log handler added

Bug fixes

Changes for SUT (SECC & EVCC)

- Line lock and power contactor functions migrated to external function API for power flow
- Line lock shall function only triggered if power flow is enabled
- Proximity set function API changed (value in Ohm)
- PLC node reset added (Reset of 10 dB attenuation)
- Order of power flow output and power contactor activation changed

Changes for SUT (EVCC)

- Sequence timeout handling for ContractAuthentication sequence added if no additional ContractAuthenticationReq is received
- Typo (no par_EVCC_StateB_Shutdown_Timeout defined) in test objective for CharIN_TC_EVCC_VTB_CurrentDemand_008 -> add "within 'par_EVCC_StateB_Shutdown_Timeout'

Changes for SUT (SECC)

- V2G_EVCC_Msg_Timeout_CableCheckReq timer not restarted within ongoing loop
- Create Message Box PTC only once (refers to test cases with reset and PICS_CMN_IgnoreLineLock = true)
- No matching of EVSE_StatusCode in ChargeParameterDiscoveryRes (refers to CharIN_TC_SECC_VTB_ChargeParameterDiscovery_010 - CharIN_TC_SECC_VTB_ChargeParameterDiscovery_018)
- No matching of EVSE_StatusCode in WeldingDetectionRes (refers to CharIN_TC_SECC_VTB_WeldingDetection_008)
- After re-plug-in, the timing for 5% detection should be higher than 9s if only 100ms are used between plugout and re-plug-in. The normal SECC reset time (par_SECC_waitForNextTC) of 20s is used as maximum timeout (refers to CharIN_TC_SECC_VTB_CmSlacParm_006)
- Receipt of at least one CableCheckRes message with with responseCode 'oK', EVSEProcessing 'Ongoing', "EVSEStatusCode 'EVSE_Ready', "EVSEIsolationStatus 'Invalid' and EVSENotification 'None' should be mandatory (refers to CharIN_TC_SECC_VTB_CableCheck_006)
- Charging simulation updated if maximum power limit is reached, but battery voltage is increased to EVTargetVoltage (power flow support)
- PICS_LoopCounter < 100 can be used
- Consider processing time for 19s delay (refers to CharIN_TC_SECC_VTB_IOP_CmSlacParm_001 - CharIN_TC_SECC_VTB_IOP_CmSlacParm_006)
- Wrong matching condition was used for repeated Step 1 CM_VALIDATE_CNF message (refers to TC_SECC_VTB_CmValidate_002)
- Consideration of 250ms timeout after SDP response was received (refers vto CharIN_TC_SECC_VTB_SDP_006)
- fx_setLineLock instruction is used after authorization instead of plug-in

Codecs and Adapters

New features

- Migration to JavaSE 14.0.1
- Migration to TTworkbench V30
- Adds Support for CDS FW 1.12.3

Enhancements

- Integrates JAXB RI 2.3.1 ThirdParty plugin for XML handling due to migration to JavaSE 14.0.1
- Improves init process and error handling with VERISCO hardware

- Adds firmware check to ensure compatibility between adapter and VERISCO hardware
- Resets errors on startup
- Checks if QCA node is ready at test case start
- Prints additional information in graphical logging such as OperationMode, ChargingMode, VERISCO HW version, VERISCO HW SW version, VERISCO HW Bootloader version, QCA node mac address and QCA node FW version
- Adds automated VERISCO hardware OperationMode switch
- Adds pcap attachments to generated tlz files
- Adds additional TCP exception handling for SUT SECC tests
- Changes V2G PortControl decoding
- Adds par_sut_mac TA parameter to handle SLAC crosstalk
- Adds PE bridge connection check
- Improves stability in CDS init and disconnect phase
 - Adds plausibility checks for SLEP message request-response handling
 - Adds additional status and error checks during init phase
 - Adds reset mechanism for several configured parameters in disconnect phase
 - Increases QCA node discovery counter to guarantee plc modem is ready after activation

Release 2.1.4

DIN 70122 (Test Cases)

Bug fixes

Changes for SUT (EVCC)

- BF: Usage of 'par_CurrentPreCharge' for voltage ramp up phase during pre-charge instead of EVTargetCurrent if power flow equipment is used

CharIN TCs for DIN 70121 Impl. Guide (Test Cases)

Bug fixes

Changes for SUT (EVCC)

- BF: Usage of 'par_CurrentPreCharge' for voltage ramp up phase during pre-charge instead of EVTargetCurrent if power flow equipment is used

Codecs and Adapters

Bug fixes

- Fixes rounding functionality in external functions

Release 2.1.3

Codecs and Adapters

Bug fixes

- Fixes handling of unknown response codes for pwm messages

- Fixes cleanup handling for PSB9000

Release 2.1.2

DIN 70122 (Test Cases)

Abstract Test Suite

Changes for SUT (EVCC)

- par_CMN_SAScheduleTuple added -> Configuration for SAScheduleTupleId in ChargeParameterDiscoveryRes message

CharIN TCs for DIN 70121 Impl. Guide (Test Cases)

Abstract Test Suite

Changes for SUT (EVCC)

- par_CMN_SAScheduleTuple added -> Configuration for SAScheduleTupleId in ChargeParameterDiscoveryRes message

Bug fixes

Changes for SUT (SECC)

- No repetition of welding detection process is implemented (refers to CharIN_TC_SECC_VTB_SessionStop_014)

Release 2.1.1

DIN 70122 (Test Cases)

Abstract Test Suite

Changes for SUT (SECC)

- TA robot action for reset of the EVSE charging configuration after plug-out added (refers to PIXIT_SECC_TARobotEVSEReset)

CharIN TCs for DIN 70121 Impl. Guide (Test Cases)

Abstract Test Suite

Changes for SUT (SECC)

- TA robot action for reset of the EVSE charging configuration after plug-out added (refers to PIXIT_SECC_TARobotEVSEReset)

Codecs and Adapters

Bug fixes

- Bugfix in PLC traffic generation
- Bugfix in TCP handling for SUT SECC in combination with IPv6 metric
- Bugfixes in Test Automation Robot implementation
- Fixes getMeasProximity handling for SUT EVCC and SUT SECC

Release 2.1.0

DIN 70122 (Test Cases)

Abstract Test Suite

Changes for SUT (EVCC)

- PICS_EVCC_LowEVSEMaximumLimitsCPD added -> Indication for a enabling/disabling a low EVSEMaximumCurrentLimit (5A) or EVSEMaximumPowerLimit (1kW) in ChargeParameterDiscoveryRes message, but in CurrentDemandRes message the pre-configured values 'par_EVSEMaximumCurrentLimit' and 'par_EVSEMaximumPowerLimit' are used (Check if SUT follows absolute limits in ChargeParameterDiscoveryRes message)

Changes for SUT (SECC & EVCC)

- Test campaign (.clf) reference added to test case overview (Excel) documents
- Test Automation Robot concept for interactions with the charging station (e.g. button actions, RFID authorization) added
- Test campaign (.clf) folder structure (Errorcase) changed

Bug fixes

Changes for SUT (SECC)

- Support for PICS_CMN_LoopCounter < 100 (uninitialized value)
- Line lock measurement check is mandatory for SECC tests (Check can be disabled by using PICS_CMN_IgnoreLineLock)
- Graceful handling added if no EVSEMaximumPowerLimit is used (refers to TC_SECC_VTB_ChargeParameterDiscovery_001)
- SLAC processing time improved after receipt of CM_SLAC_PARM.CNF message

Changes for SUT (EVCC)

- Stop condition added (delay between PowerDeliveryReq and PowerDeliveryRes message)
- Wrong pre-condition was referenced for TC_EVCC_VTB_CableCheck_005 -> par_V2G_EVCC_Msg_Timeout_CableCheckReq timeout after cable check simulation and not directly after ChargeParameterDiscoveryRes message
- Proximity range updated on IEC 61851 listener if PICS_CMN_PPObservation is used (for invalid proximity)
- Invalid BCB toggle handling (refers to TC_EVCC_VTB_CmValidate_009 - TC_EVCC_VTB_CmValidate_012)
- Multiplier of PhysicalValueType (EVMaximumCurrentLimit) is not considered for EVSEMinimumCurrentLimit calculation (refers to TC_EVCC_VTB_ChargeParameterDiscovery_009)
- V2G_SECC_CPState_Detection_Timeout should be started after receiving the next request message and after PowerDeliveryRes message (see [V2G-DC-556])
- Data link detection consider as successful if first SDP request message is received (refers to different data link detection mechanisms on EV & EVSE side)

Changes for SUT (SECC & EVCC)

- Wrong encoding/decoding of EVSEID (see [V2G-DC-621])
- TP_match_leave renamed to T_match_leave
- Wrong timeout handling for PLC link detection (only if VsPlLnkStatus message is used)

CharIN TCs for DIN 70121 Impl. Guide (Test Cases)

- Initial Release

Codecs and Adapters

New features

- Added support for CDS HW 1.11.4
- Added QCA node discovery integration for local and remote node
- Added Test Automation Robot integration
- Added SLEP 1000+ parameters for generic control of power devices

Enhancements

- Improved graphical logging mechanism
- Added AC max current grid connection limitation check for EA power devices
- Improved error handling to increase stability in CDS handling for SUT EVCC and SUT SECC
- Improved CDS init and disconnect mechanism
- Added debug logging mechanism for send and receive SLEP messages in graphical logging view

Bug fixes

- Bugfix SDP reception handling for SUT EVCC
- Bugfix while test execution without PWM 61851
- Bugfix in encoding/decoding EVSEID
- Bugfix in fetching IPv6 address
- Bugfix in UdcMax handling for SUT EVCC
- Bugfix in UerrMax limitation for SUT SECC
- Bugfix in power configuration via SLEP EVChargingModel and EVBatteryVoltage parameters for SUT SECC
- Bugfix in getMeasLineLock handling for SUT EVCC and SUT SECC
- Bugfix in CDS reset in combination with SL480 AC DC emulator
- Bugfix enabled MeasureCableCheckVoltage parameter

Release 2.0.0

DIN 70122 (Test Cases)

Abstract Test Suite

Changes for SUT (EVCC)

- PICS_EVCC_ForceMinimumLimits added -> overwrites the received target voltage/current with $\text{MIN}(\text{EVSEMaximumLimit}, \text{EVMaximumLimit})$ if SUT not considers maximum limits
- PICS_EVCC_ReduceEVSEMaximumLimits added -> Indication for reducing (halving) the EVSEMaximumLimits after PICS_CMN_LoopCounter/2 message sequences
- PICS_EVCC_DummyAttenuationValueEVSEFound, PICS_EVCC_DummyAttenuationValueEVSEPotentiallyFound and PICS_EVCC_DummyAttenuationValueEVSENotFound added -> Indication for the used dummy values (valid for all 58 entries) within attenuation list for the different SLAC matching decisions
- Performance optimization of the attenuation calculation process (approx. 70% faster)
- PowerDeliveryRes message (Stop) processing delayed (0.5s) -> Correct SUT CP State Handling can be validated

Changes for SUT (SECC & EVCC)

- PICS_CMN_Prioritization added -> Indication for the prioritization of specific test cases according to the pre-configured excel sheet
- par_CMN_NumberOfTCRuns added -> Indication for the number of test case executions per test campaign
- New port 'V2G_TCP_Port_Control' added for V2G_TCP_Port_Control_Internal_MessageReq and V2G_TCP_Port_Control_Internal_MessageRes messages

Bug fixes

Changes for SUT (SECC)

- 0 Division for PICS_CMN_LoopCounter = 10 fixed (PICS_CMN_PowerFlow := true)
- V2G_SECC_Sequence_Timeout should be started before TCP Handshake (refers to TC_SECC_VTB_SupportedAppProtocol_003)
- Typo (double text) in test objective (refers to TC_SECC_VTB_IOP_CmSlacParm_001 - TC_SECC_VTB_IOP_CmSlacParm_006)
- Priority protocol selection for default protocol in SupportedAppProtocolReq message changed to 1
- Wait for CP State B detection before CP State A is triggered (refers to TC_SECC_VTB_SessionStop_010)

Changes for SUT (EVCC)

- V2G Communication Session termination handling (SessionStopReq) added (refers to f_EVCC_TB_VTB_CurrentDemandOrPowerDelivery_003, f_EVCC_TB_VTB_CurrentDemandOrPowerDelivery_006 and f_EVCC_TB_VTB_WeldingDetection_006)
- EV sends no charging profile within PowerDeliveyReq (Start) message
- CM_SLAC_PARM_REQ message handling changed -> EV starts a new SLAC process after failed SLAC session (Timing between failed and new SLAC process is not clearly defined)
- Stop charging if measured current is still greater than 'par_maximalCurrentLimitStopCharging'

- Wrong Test Behavior implemented (refers to TC_EVCC_VTB_IOP_CmValidate_001, TC_EVCC_VTB_CmValidate_007 and TC_EVCC_VTB_CmValidate_008) -> TT_match_sequence timeout is expected for both instances
- Duplicated start of tc_EVCC_StateB_Shutdown_Timer timer (refers to TC_EVCC_VTB_PreCharge_008, TC_EVCC_VTB_PreChargeOrPowerDelivery_010, TC_EVCC_VTB_CurrentDemand_008 and TC_EVCC_VTB_CurrentDemandOrPowerDelivery_007) -
> Wrong logging was used if SUT immediatly signals CP State B
- New clf groups added if the protocol stack supports din only
- Wrong timer name (timeout handling) was referenced for TCP connection termination after SessionStopRes message
- Wrong expected behavior for 'TC_EVCC_VTB_CmValidate_017' (TT_match_sequence timeout should be interpreted as pass)

Changes for SUT (SECC & EVCC)

- Default voltage limits (CP states) changed to correct values
- Logging for V2G decoding error changed

Codecs and Adapters

New features

- Major adapter updates due to migration from TTworkbench25 to TTworkbench27
- Added new battery simulation for DC Mock component
- Adapter changes due CDS FW update 1.10.0 (-> Disablement of PLC nodes)
- Added handling for SUT EV Tests with high power source device
- Added extended log mechanism of received SLEP messages

Enhancements

- Added user notification (error dialog) for several errors e.g. such as
 - o Invalid mac addresses were detected
 - o Connection to hardware could not be established
 - o TCP or TLS error occurs during test execution for SUT SECC and SUT EVCC (SSLExceptions or IOExceptions)
- TCP Port extensions: Generation of multiple ServerSockets for TCP and/or TLS communication
- Added parallel HAL message handling
- Added separated V2G and V2GPortControl codecs to handle v2g communication and tcp port status messages separately for SUT EVCC and SUT SECC
- Increased External functions performance improvements in ATS for average attenuation calculation process by 70%
- Added specific ExternalFunction_PowerSource handling if TwoQuadrantMode selected for DC Mock component
- Added parallel method access (getMeasuredVoltageCurrentPower) in PSB9000 for SUT SECC and SUT SECC

- Updated setChargeParameter in PSB9000/PowerLoad and ELR9000:
 - o Setting max limits of PowerLoad using nominal values * 1.02 (upper limits factor)
 - o Additionally, setCurrent to nominal current in power device (-> unlimited current -> EVSE has to control current flow)
 - o Additionally, setPower to nominal power in power device (-> use maximum power value of power device at beginning)
- Enable TCP keep-alive within setRemoteControl(true) in PSB9000/PSI9000/ELR9000
- Extended generic DCSourceService and DCLoadService API functions by using specific TechnicalException and BusinessException
- Added user notification (error dialog) for specific power device errors in PSB9000, PSI9000 and ELR9000 e.g. such as
 - o TCP connection to power device could not be established
 - o Init function of power device fails
- Added specific ExternalFunction_PowerSource handling if TwoQuadrantMode selected for SLEP DC Source component
- Added user notification (error dialog) for SLEP PowerFlow errors e.g. such as
 - o TCP connection to CDS SLEP server could not be established
 - o Emergency button was pressed
- Increased PLC ready timer to
 - o 20s for SUT EVCC due to use of old QCA FW version (1.1.0 -> no fast reboot)
 - o 15s for SUT SECC due to use of old QCA FW version (1.1.0 -> no fast reboot)
- Added State F detection for handling in test system
- Adapted overprotection values of SLEP DC Load component

Bug fixes

- Bugfixes in cleanUp of PWM 61851 and TCP port plugin for SUT EVCC and SUT SECC
- Bugfixes in TCP Port handling by increasing socket timeout to 90s for SUT EVCC and SUT SECC
- Bugfix for parallel hal 61851 listener handling added
- Bugfix by increasing SLEP TCP timeout to 1 hour for SUT EVCC
- Bugfix for SUT SECC to prevent short circuit on init process
- Bugfix for SUT EVCC in handling of setMaxCurrent
- Bugfixes in frequency and positive voltage watchfunction handling added and improvements in stability of watchfunction handling for SUT EVCC and SUT SECC

Release 1.1.0

DIN 70122 (Test Cases)

Abstract Test Suite

Changes for SUT (EVCC)

- HAL 61851 API expanded -> Disturb frequency & duty cycle (for defined PWM cycle)

- Oscillator Shutdown added to post-condition before plug-out is triggered

Changes for SUT (SECC & EVCC)

- Loggings for EV/EVSE maximum charging limits added
- Logging for invalid SLAC test cases optimized (message is not repeated vs. message is repeated but the number of retries has not matched)

Bug fixes

Changes for SUT (SECC)

- Inconclusive handling added for TC_SECC_VTB_PowerDelivery_007 if test case cannot be supported (pMax value cannot be increased due to datatype restriction -> 32767)
- Correct TX power reduction added using CM_AMP_MAP message sequence (refers to TC_SECC_VTB_AttenuationCharacterization_019)
- Wrong timer reference (TT_EVSE_match_session instead of TT_match_sequence) used in test objective -> Typo (refers to TC_SECC_VTB_CmSlacMatch_006, TC_SECC_VTB_CmSlacMatch_008, TC_SECC_VTB_CmSlacMatch_010, TC_SECC_VTB_CmSlacMatch_012, TC_SECC_VTB_CmSlacMatch_014, TC_SECC_VTB_CmSlacMatch_016, TC_SECC_VTB_CmSlacMatch_018, TC_SECC_VTB_CmSlacMatch_020, TC_SECC_VTB_CmSlacMatch_022)
- Wrong Test Objective defined for TC_SECC_VTB_ChargeParameterDiscovery_008 -> Schedule List is not optional

Changes for SUT (EVCC)

- Wrong Test Behavior defined for TCs with consideration of [V2G-DC-653] and [V2G-DC-654] -> Oscillator should be activated

Codecs and Adapters

New features

- SUT specific separation of plugins

Enhancements

- Extended SLEP adapter implementation for SUT SECC

Release 1.0.0

DIN 70122 (Test Cases)

Abstract Test Suite

Changes for SUT (SECC)

- EIM robot API added

Changes for SUT (EVCC)

- Logging for calculated mean attenuation value added
- Simulation for pre-charge ramp-up phase added
- Simulation for authentication (ongoing loop) added

Changes for SUT (SECC & EVCC)

- Logging for graceful handling extended
- Module parameter for pos. voltage, duty cycle and frequency range added

Bug fixes

Changes for SUT (SECC)

- Uninitialized value detected (refers to TC_SECC_VTB_CmAmpMap_002)

Changes for SUT (EVCC)

- Start of V2G_SECC_ReadyToCharge_Timer is missing for multiprotocol stack support (refers to TC_EVCC_VTB_ContractAuthentication_007)
- Invalid starting point of V2G_SECC_CableCheck_Timer (refers to TC_EVCC_VTB_CableCheck_006)
- Test case only valid for PIXIT_CMN_IOP_ProtocolSupport == din (refers to TC_EVCC_VTB_CmValidate_008)
- DC_EVPowerDeliveryParameter is not optional if PICS_CMN_GracefulHandling == true
- Wrong pre-condition used (refers to TC_EVCC_VTB_CurrentDemandOrPowerDelivery_006)
- Parallel BCB Toggle handling added (refers to TC_EVCC_VTB_CmValidate_009 - TC_EVCC_VTB_CmValidate_012)
- Verdict check is missing (refers to TC_EVCC_VTB_PreChargeOrPowerDelivery_010)
- Target current check is missing (EVTARGETCURRENT=0A) (refers to TC_EVCC_VTB_PreChargeOrPowerDelivery_013)

Codecs and Adapters

New features

- SLEP adapter implemented (Support for CDS HW (Keysight Technologies))
- Microbot adapter implemented (Push button, RFID slider)