
CHARGE STATION TEST REPORT FOR GREENFLUX SMART CHARGING

30/04/2021

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1 TEST DETAILS

Instructions: fill out below fields

Testing period:	30/04/2021
OEM:	eNovates
Hardware model:	MRA4m.9007.H.F.M4.I2
Firmware:	1.8.6.1.RC6@110.1.17 256d3110
Charge point ID:	PP00SCTEST1
ConnectorID:	1 & 2
Tester:	Bob Elders

Charger specific configuration parameters

Charger Max Current:	chargepoint.max.amp.per.phase.soft (float)
Socket Max Current:	chargepoint.max.amp.per.phase.connector.1 (float)
	chargepoint.max.amp.per.phase.connector.2 (float)
Nr of input phases:	Phase-Connected (string)
Current measurable per phase:	Yes
OCPP version used:	ocpp (string)
ChargingScheduleMaxPeriods:	40

Instructions: press Ctrl+A >> right click "update field" >> "update entire table"

Result:	Test 1: Pass
	Test 2: Pass
	Test 3: Pass
	Test 4: Pass
	Test 5: Pass

2 TEST SETUP

2.1 BASIC SETUP

Communication:	OCPP 1.6 JSON SIM
MeterValueSampleInterval:	30
MeterValuesSampledData:	Energy.Active.Import.Register,Current.Offered, Current.Import.L1,Current.Import.L2,Current.Import.L3

2.2 CHARGING PROFILES USED IN THE TESTS

Note: MessageIDs and timestamps in the profile descriptions do not necessarily represent the IDs/dates that were observed during the tests. IDs and timestamps do match in terms of formatting to the actual values that were sent during the tests. From OCPP:

7.9. ChargingProfileKindType

Enumeration

Value	Description
Absolute	Schedule periods are relative to a fixed point in time defined in the schedule.
Recurring	The schedule restarts periodically at the first schedule period.
Relative	Schedule periods are relative to a situation-specific start point (such as the start of a session) that is determined by the charge point.

2.2.1 RECURRING PROFILE

```
[
  2,
  "PP00SCTEST1@637014767786985519",
  "SetChargingProfile",
  {
    "connectorId":Error! Reference source not found.,
    "csChargingProfiles":{
      "chargingProfileId":251645,
      "stackLevel":0,
      "chargingProfilePurpose":"TxDefaultProfile",
      "chargingProfileKind":"Recurring",
      "recurrencyKind":"Daily",
      "chargingSchedule":{
        "duration":86400,
        "startSchedule":"Enter start time",
        "chargingRateUnit":"A",
        "chargingSchedulePeriod":[
          {
            "startPeriod":0,
            "limit":7.0,
            "numberPhases":3
          },
          {
            "startPeriod":180,
            "limit":13.0,
            "numberPhases":3
          }
        ]
      }
    ]
  }
]
```

2.2.2 RELATIVE PROFILE

```
[
  2,
  "PP00SCTEST1@637014767799306368",
  "SetChargingProfile",
  {
    "connectorId":Error! Reference source not found.,
    "csChargingProfiles":{
      "chargingProfileId":486369,

      "stackLevel":1,
      "chargingProfilePurpose":"TxDefaultProfile",
      "chargingProfileKind":"Relative",
      "chargingSchedule":{
        "duration":120,
        "chargingRateUnit":"A",
        "chargingSchedulePeriod":[
          {
            "startPeriod":0,
            "limit":14.0,
            "numberPhases":3
          }
        ]
      }
    }
  }
]
```

2.2.3 SPIKE PROFILE

```
[
  2,
  "PP00SCTEST1@637014767897941597",
  "SetChargingProfile",
  {
    "connectorId":Error! Reference source not found.,
    "csChargingProfiles":{
      "chargingProfileId":599515,
      "stackLevel":1,
      "transactionId":369476,
      "chargingProfilePurpose":"TxProfile",
      "chargingProfileKind":"Absolute",
      "chargingSchedule":{
        "duration":120,
        "startSchedule":"Enter start time",
        "chargingRateUnit":"A",
        "chargingSchedulePeriod":[
          {
            "startPeriod":0,
            "limit":15.0,
            "numberPhases":3
          }
        ]
      }
    }
  }
]
```

2.2.4 CLEAR_CHARGING_0 PROFILE

```
[
  2,
  "PP00SCTEST1@637014767899354992",
  "SetChargingProfile",
  {
    "connectorId":Error! Reference source not found.,
    "csChargingProfiles":{
      "chargingProfileId":75998,
      "stackLevel":0,
      "chargingProfilePurpose":"TxDefaultProfile",
      "chargingProfileKind":"Absolute",
      "chargingSchedule":{
        "duration":30,
        "startSchedule":"Enter start time",
        "chargingRateUnit":"A",
        "chargingSchedulePeriod":[
          {
            "startPeriod":0,
            "limit":7.0,
            "numberPhases":3
          }
        ]
      }
    }
  ]
}
```

2.2.5 CLEAR_CHARGING_1 PROFILE

```
[
  2,
  "PP00SCTEST1@637014767911241976",
  "SetChargingProfile",
  {
    "connectorId":Error! Reference source not found.,
    "csChargingProfiles":{
      "chargingProfileId":268401,
      "stackLevel":1,
      "chargingProfilePurpose":"TxDefaultProfile",
      "chargingProfileKind":"Absolute",
      "chargingSchedule":{
        "duration":30,
        "startSchedule":"Enter start time",
        "chargingRateUnit":"A",
        "chargingSchedulePeriod":[
          {
            "startPeriod":0,
            "limit":7.0,
            "numberPhases":3
          }
        ]
      }
    }
  ]
}
```

3 TEST RUNS

3.1 TEST 1

Step	Action	Timestamp	Expected result	Observed result
1	Send TriggerMessage	30/04/2021 14:17:18	1. Receive StatusNotification with status: Available	1. StatusNotification received
2	Send recurring profile	30/04/2021 14:19:21	1. Charger accepts profile	1. Profile accepted
3	Send relative profile	30/04/2021 14:19:59	1. Charger accepts profile	1. Profile accepted
4	Start transaction	30/04/2021 14:21:47	1. Charger starts at 14A due to relative profile 2. After 120 seconds, the charger will fall back on the recurring profile, which limits charging to 7A or 13A, depending on absolute UTC time	1. Limit 14 A for 2 min 2. Limit 13 A after 2 min
5	Send TriggerMessage	30/04/2021 14:25:09	1. Receive StatusNotification with status: Occupied	1. StatusNotification received
6	Send spike profile	30/04/2021 14:25:51	1. Charger accepts profile 2. Charging will be limited to 15A, which will last for 2 minutes 3. After 2 minutes, the charger will fall back to the recurring profile	1. Profile accepted 2. Limit 15 A for 2 min 3. Limit 13 A after 2 min

3.2 TEST 2

Step	Action	Timestamp	Expected result	Observed result
7	Stop transaction	30/04/2021 14:30:37	1. Session ends	1. Session ended
8	Start transaction	30/04/2021 14:31:40	1. New session starts with relative profile active in the first 120 seconds at 14A 2. After 120 seconds, the charger will fall back on the recurring profile	1. Limit 14 A for 2 min 2. Limit 13 A after 2 min

3.3 TEST 3

Step	Action	Timestamp	Expected result	Observed result
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9	Stop transaction	30/04/2021 14:34:59	1. Session ends	1. Session ended
10	Send clear_charging_0 profile	30/04/2021 14:35:00	1. Charger accepts profile	1. Profile accepted
11	Send clear_charging_1 profile	30/04/2021 14:35:00	1. Charger accepts profile	1. Profile accepted
12	Start transaction	30/04/2021 14:36:39	1. Charger charges at nominal limit	1. Charger at nominal limit (25 A)

3.4 TEST 4

Step	Action	Timestamp	Expected result	Observed result
13	Start transaction on connector 2	30/04/2021 14:40:28	1. Session started	1. Session started
14	Send charging profiles (6 total)	30/04/2021 14:51:09	1. Charger accepts profiles 2. Limit at connector 1 is 0 A for 2 min 3. Limit at connector 2 is 25A for 2 min 4. After 2 min, limit is 12.5 A on both connectors	1. All profiles accepted 2. Limit at connector 1 is 0A for 2 min 3. Limit on connector 2 is 25 A for 2 min 4. After 2 min limit is 12.5 A on both connectors
15	Stop both transactions	30/04/2021 14:57:03	1. Sessions stopped	1. Both sessions stopped

3.5 TEST 5

Step	Action	Timestamp	Expected result	Observed result
13	Start transactions on both connectors	30/04/2021 14:58:07	1. Sessions started 2. Limit on connector 1 16 A for 2 min 3. Limit on connector 2 0 A for 2 min 4. After 2 min limit 12.5 A on both connectors	1. Sessions started 2. Limit on connector 1 is 16 A 3. Limit on connector 2 is 0 A 4. After 2 min limit is 12.5 on both connectors

4 CONCLUSION

Smart charging behavior was as expected.

5 CHARGINGPROFILES SENT FOR TEST 4 & 5

5.1.1 RECURRING TXDEFAULTPROFILE CONNECTOR 1

```
{
  "connectorId": 1,
  "csChargingProfiles": {
    "chargingProfileId": 367801,
    "chargingProfileKind": "Recurring",
    "recurrencyKind": "Daily",
    "chargingProfilePurpose": "TxDefaultProfile",
    "stackLevel": 0,
    "chargingSchedule": {
      "startSchedule": "2021-04-30T12:51:00Z",
      "chargingRateUnit": "A",
      "duration": 86400,
      "chargingSchedulePeriod": [
        {
          "limit": 7,
          "startPeriod": 0,
          "numberPhases": 3
        },
        {
          "limit": 12.5,
          "startPeriod": 180,
          "numberPhases": 3
        }
      ]
    }
  }
}
```

5.1.2 RECURRING TXDEFAULTPROFILE CONNECTOR 2

```
{
  "connectorId": 2,
  "csChargingProfiles": {
    "chargingProfileId": 757558,
    "chargingProfileKind": "Recurring",
    "recurrencyKind": "Daily",
    "chargingProfilePurpose": "TxDefaultProfile",
    "stackLevel": 0,
    "chargingSchedule": {
      "startSchedule": "2021-04-30T12:51:00Z",
      "chargingRateUnit": "A",
      "duration": 86400,
      "chargingSchedulePeriod": [
        {
          "limit": 7,
          "startPeriod": 0,
          "numberPhases": 3
        },
        {
          "limit": 12.5,
          "startPeriod": 180,
          "numberPhases": 3
        }
      ]
    }
  }
}
```

```
]
}
}
}
```

5.1.3 RELATIVE TxDEFAULTPROFILE CONNECTOR 1

```
{
  "connectorId": 1,
  "csChargingProfiles": {
    "chargingProfileId": 234728,
    "chargingProfileKind": "Relative",
    "chargingProfilePurpose": "TxDefaultProfile",
    "stackLevel": 1,
    "chargingSchedule": {
      "chargingRateUnit": "A",
      "duration": 120,
      "chargingSchedulePeriod": [
        {
          "limit": 16,
          "startPeriod": 0,
          "numberPhases": 3
        }
      ]
    }
  }
}
```

5.1.4 RELATIVE TxDEFAULTPROFILE CONNECTOR 2

```
{
  "connectorId": 2,
  "csChargingProfiles": {
    "chargingProfileId": 240114,
    "chargingProfileKind": "Relative",
    "chargingProfilePurpose": "TxDefaultProfile",
    "stackLevel": 1,
    "chargingSchedule": {
      "chargingRateUnit": "A",
      "duration": 120,
      "chargingSchedulePeriod": [
        {
          "limit": 0,
          "startPeriod": 0,
          "numberPhases": 3
        }
      ]
    }
  }
}
```

5.1.5 ABSOLUTE TxPROFILE CONNECTOR 1

```
{
  "connectorId": 1,
  "csChargingProfiles": {
    "chargingProfileId": 765757,
    "chargingProfileKind": "Absolute",
    "chargingProfilePurpose": "TxProfile",
    "stackLevel": 1,
    "transactionId": "15613356",
    "chargingSchedule": {
```

```

    "startSchedule": "2021-04-30T12:51:09Z",
    "chargingRateUnit": "A",
    "duration": 120,
    "chargingSchedulePeriod": [
      {
        "limit": 0,
        "startPeriod": 0,
        "numberPhases": 3
      }
    ]
  }
}

```

5.1.6 ABSOLUTE TxPROFILE CONNECTOR 2

```

{
  "connectorId": 2,
  "csChargingProfiles": {
    "chargingProfileId": 258741,
    "chargingProfileKind": "Absolute",
    "chargingProfilePurpose": "TxProfile",
    "stackLevel": 1,
    "transactionId": "15613503",
    "chargingSchedule": {
      "startSchedule": "2021-04-30T12:51:09Z",
      "chargingRateUnit": "A",
      "duration": 120,
      "chargingSchedulePeriod": [
        {
          "limit": 25,
          "startPeriod": 0,
          "numberPhases": 3
        }
      ]
    }
  }
}

```