United Nations ECE/TRANS/WP.29/GRE/2013/3/Corr.1

# Economic and Social Council

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## Economic Commission for Europe

Inland Transport Committee

### World Forum for Harmonization of Vehicle Regulations

**Working Party on Lighting and Light-Signalling**
**Sixty-ninth session**
Geneva, 8–11 April 2013
Item 10 of the provisional agenda
**Regulation No. 10 (Electromagnetic compatibility)**

# Proposal for the 05 series of amendments to Regulation No. 10 (Electromagnetic compatibility)

## Note by the Secretariat*

The text reproduced below was prepared by the Secretary to GRE, based on the document ECE/TRANS/WP.29/GRE/2013/3. It is proposing some corrections, mainly to the figures, to the original text. The modifications are marked in bold for new or strikethrough for deleted characters. In order to simply the work of the experts, some annexes and appendixes have been completely reproduced.

* In accordance with the programme of work of the Inland Transport Committee for 2010–2014 (ECE/TRANS/208, para. 106, ECE/TRANS/2010/8, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

# I. Proposal

*Paragraph 6.10.5.*, correct to read:

"6.10.5. Emission of transient conducted disturbances generated by ESAs on 12/24 V supply lines

ESAs that are not switched, contain no switches or do not include inductive ~~loead~~ **load** need not be tested for transient conducted emission and shall be deemed to comply with paragraph ~~6.9.~~ 6.7."

*Paragraph 13.5.*, correct to read:

"13.3.1. As from 28 October 2014 **(**36 months after the official date of entry into force of this Regulation, as amended by the 04 series of amendments~~,~~**),** Contracting Parties applying this Regulation shall grant approvals only if the vehicle type, component or separate technical unit, to be approved meets the requirements of this Regulation as amended by the 04 series of amendments."

*Annex 4, Appendix,* correct to read:

"**Annex 4 – Appendix**

Figure 1

Clear horizontal surface free of electromagnetic reflection delimitation of the surface defined by an ellipse

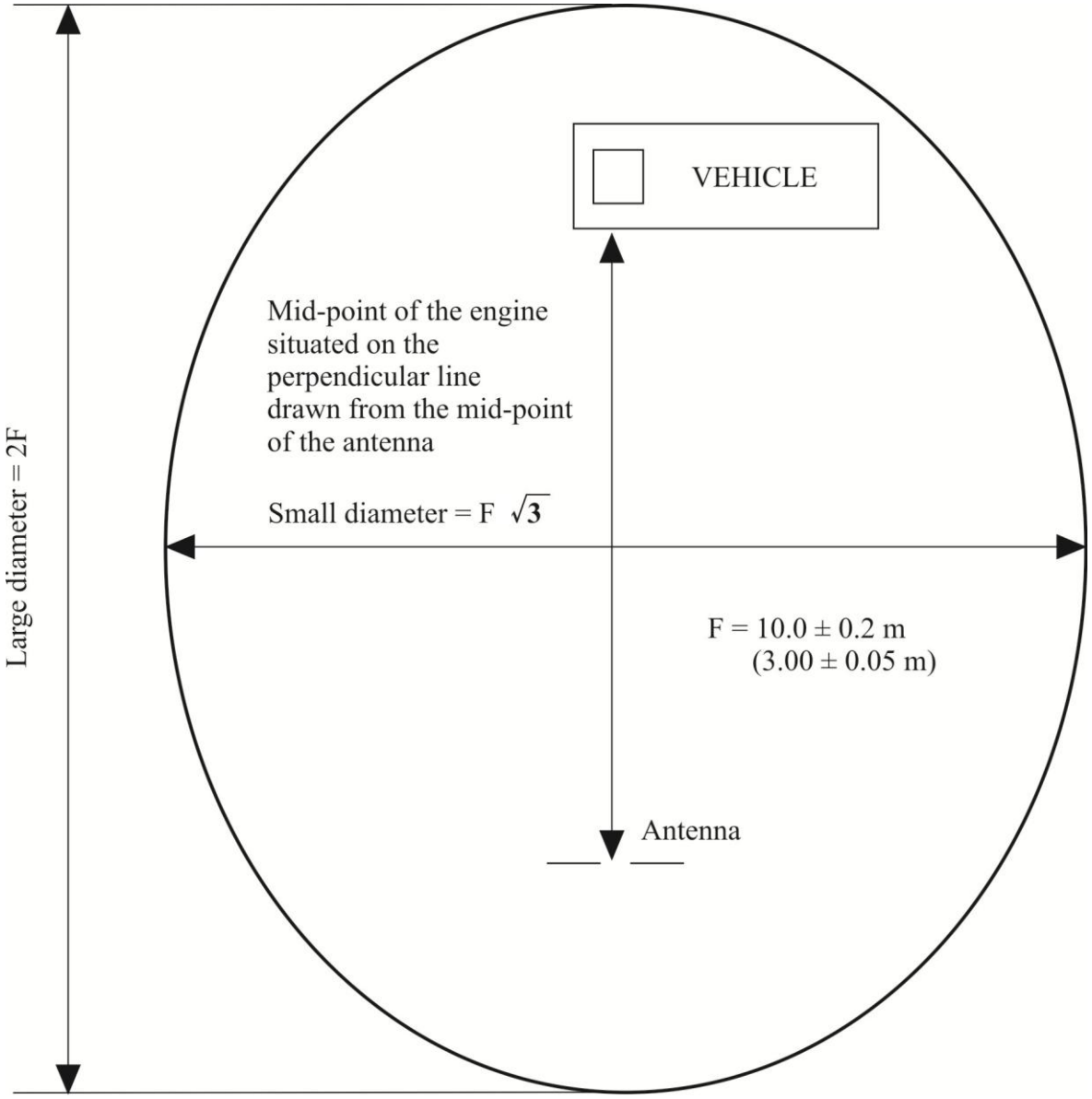


Figure 2

Position of antenna in relation to the vehicle

**Figure 2a**

**Dipole antenna in position to measure the vertical radiation components**

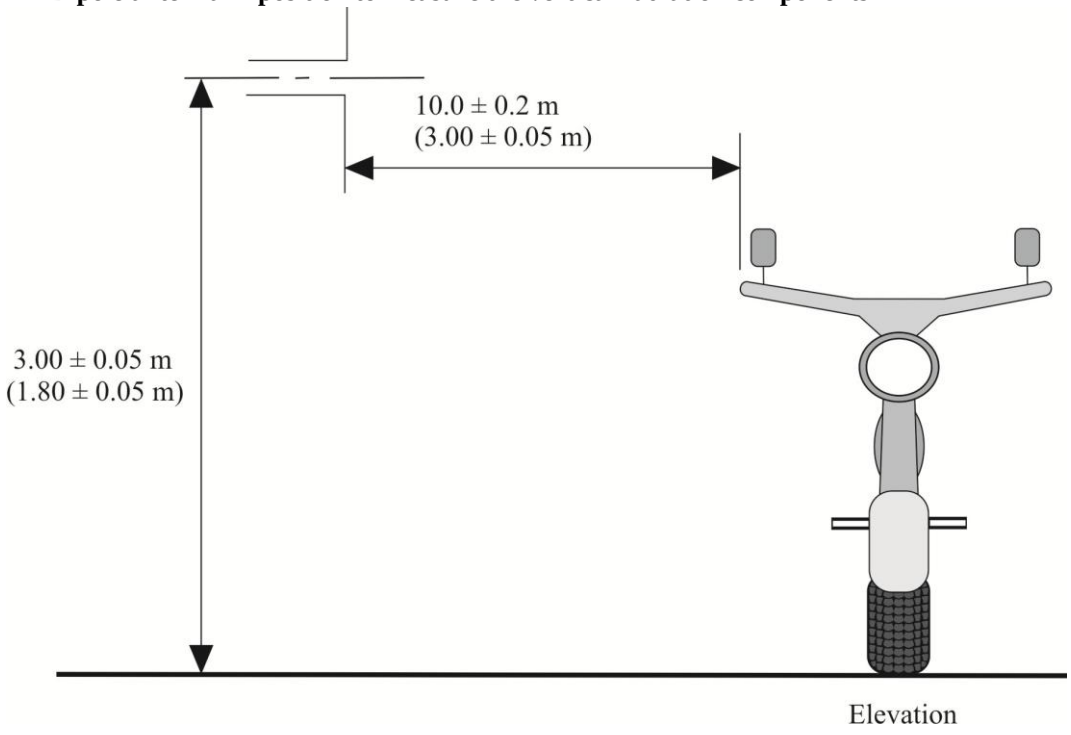



**Figure 2b**

**Dipole antenna in position to measure the horizontal radiation components**

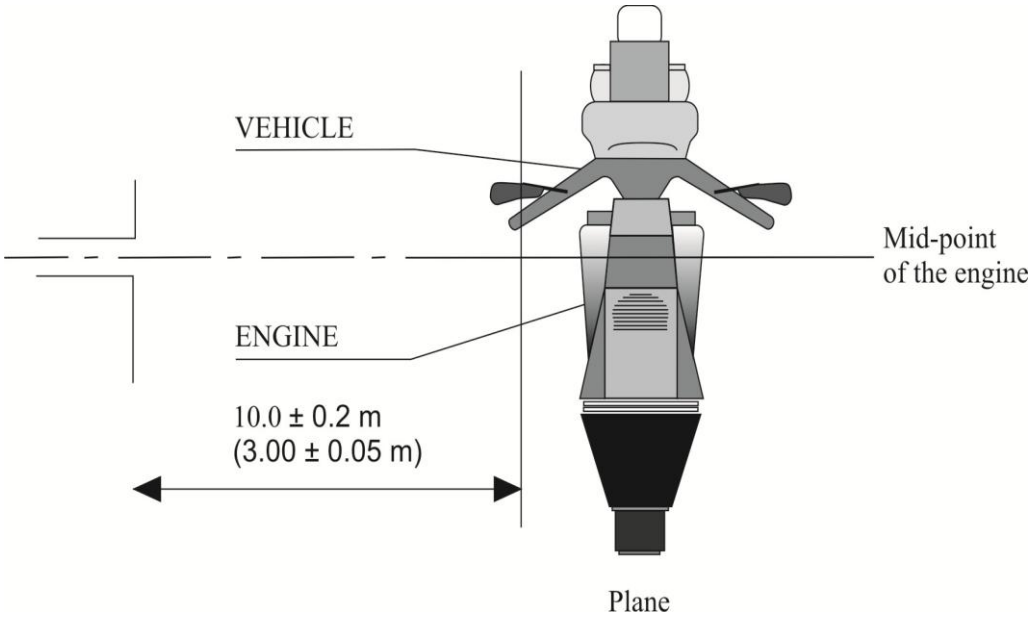


Figure 3
Vehicle in configuration "REESS charging mode" coupled to the power grid

**Example of test set-up for vehicle with plug located on vehicle side (AC powered without communication)**

**Figure 3a**
~~Elevation~~

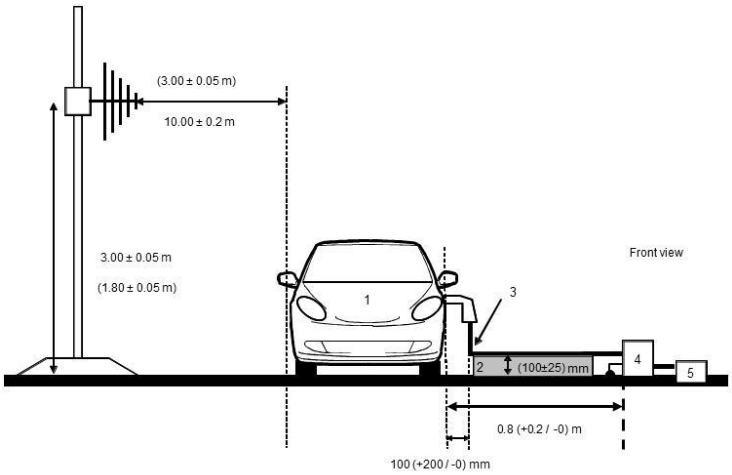
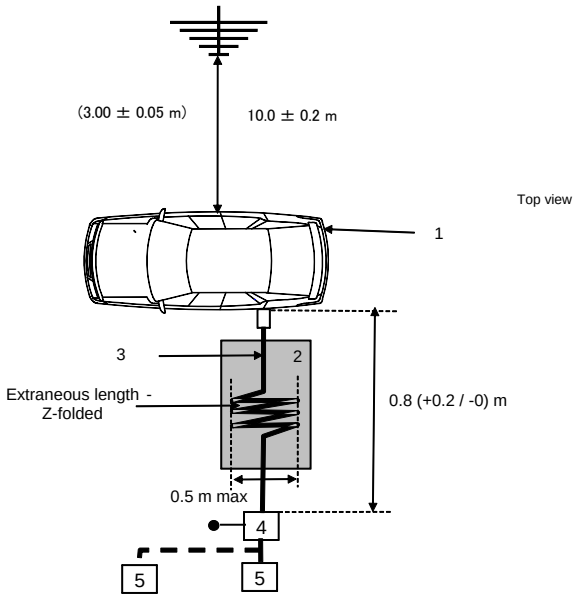



**Figure 3b**

~~Plane~~




**Legend**

**1 Vehicle under test**
**2 Insulating support**
**3 Charging cable**
**4 Artificial Network(s) grounded**
**5 Power mains socket**

Vehicle in configuration "**REESS** charging mode" coupled to the power grid

**Example of test setup for vehicle with plug located front/rear of vehicle (AC powered without communication)**

**Figure 3c**

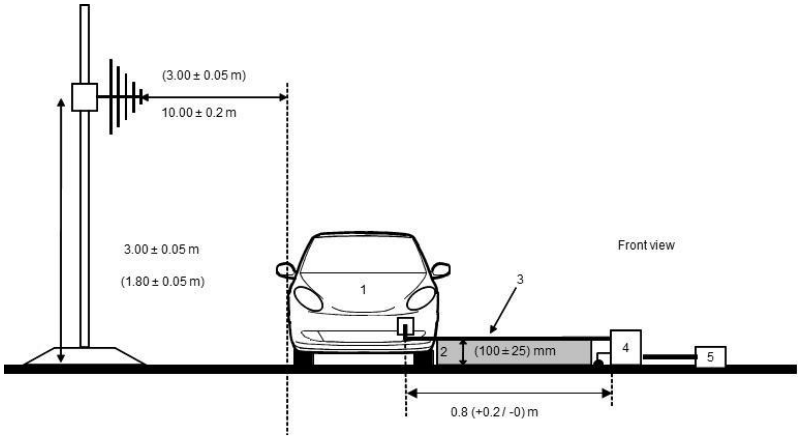
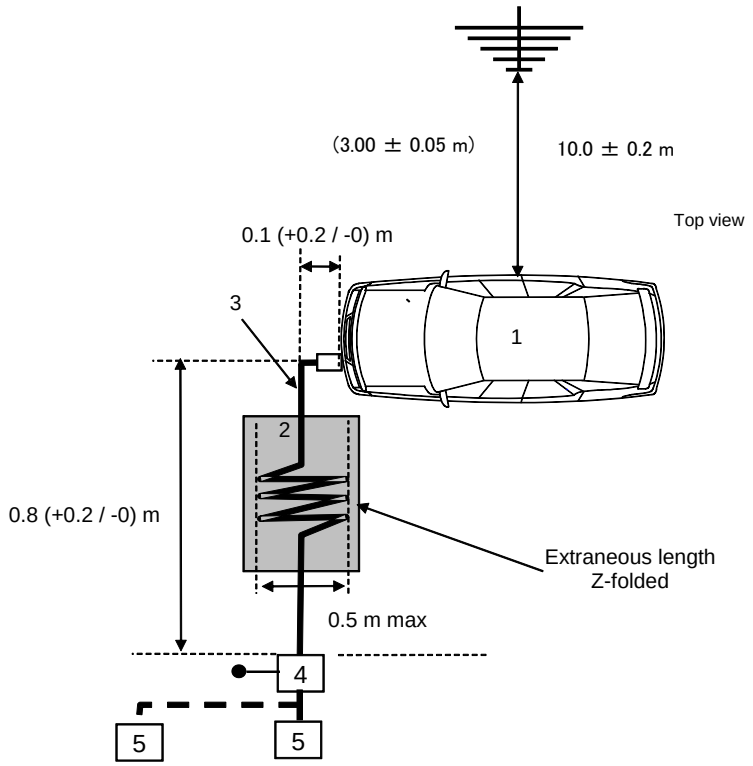



**Figure 3d**




**Legend**

**1 Vehicle under test**
**2 Insulating support**
**3 Charging cable**
**4 Artificial Network(s) grounded**
**5 Power mains socket**

Vehicle in configuration "**REESS** charging mode" coupled to the power grid

**Example of test set-up for vehicle with plug located on vehicle side (AC or DC powered with communication)**

**Figure 3e**

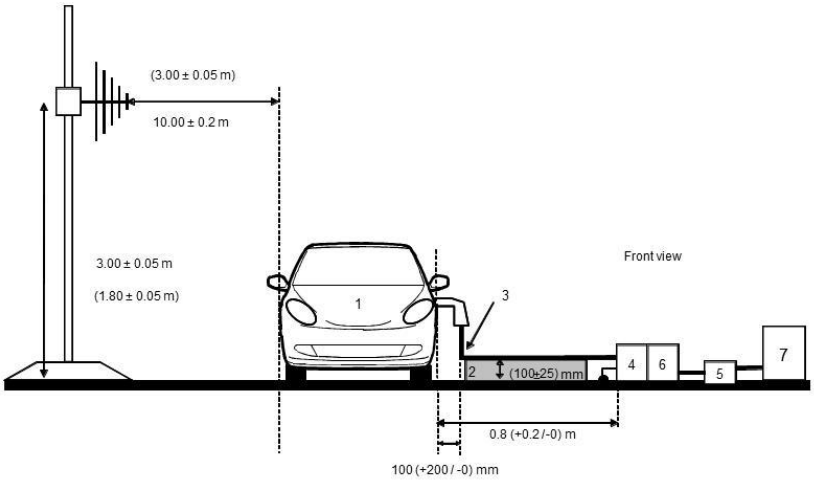
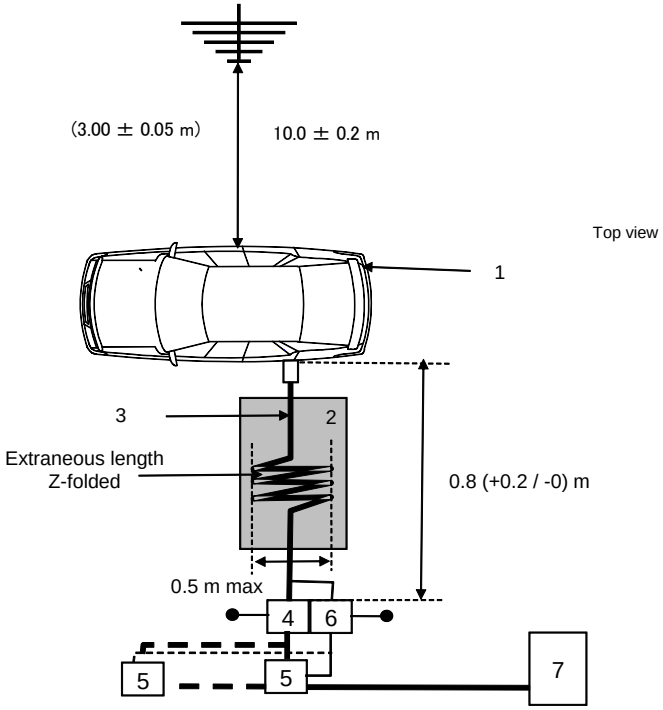



**Figure 3f**




**Legend**

**1 Vehicle under test**
**2 Insulating support**
**3 Charging / communication cable**
**4 AC or DC Artificial Network(s) grounded**
**5 Power mains socket**
**6 Impedance Stabilization(s) grounded**
**7 Charging Station**

Vehicle in configuration "**REESS** charging mode" coupled to the power grid

**Example of test setup for vehicle with plug located front/rear of the vehicle (AC or DC powered with communication)**

**Figure 3g**

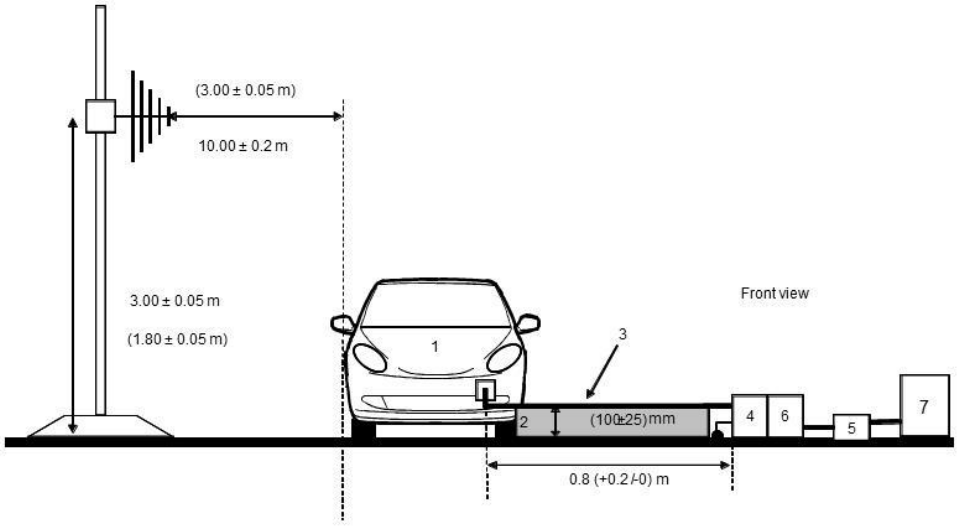
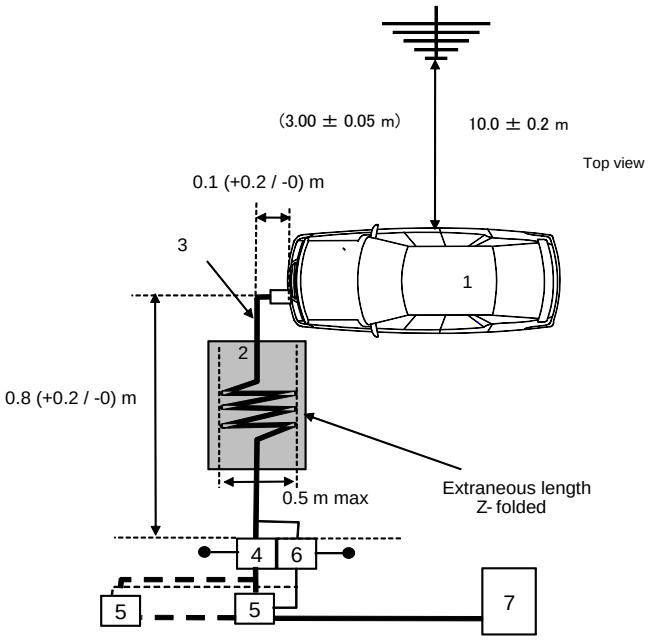



**Figure 3h**




**Legend**

**1 Vehicle under test**
**2 Insulating support**
**3 Charging / communication cable**
**4 AC or DC Artificial Network(s) grounded**
**5 Power mains socket**
**6 Impedance Stabilisation(s) grounded**
**7 Charging Station**

*Annex 6, Appendix 1*, correct to read:

# "Annex 6 – Appendix 1

Figure 1

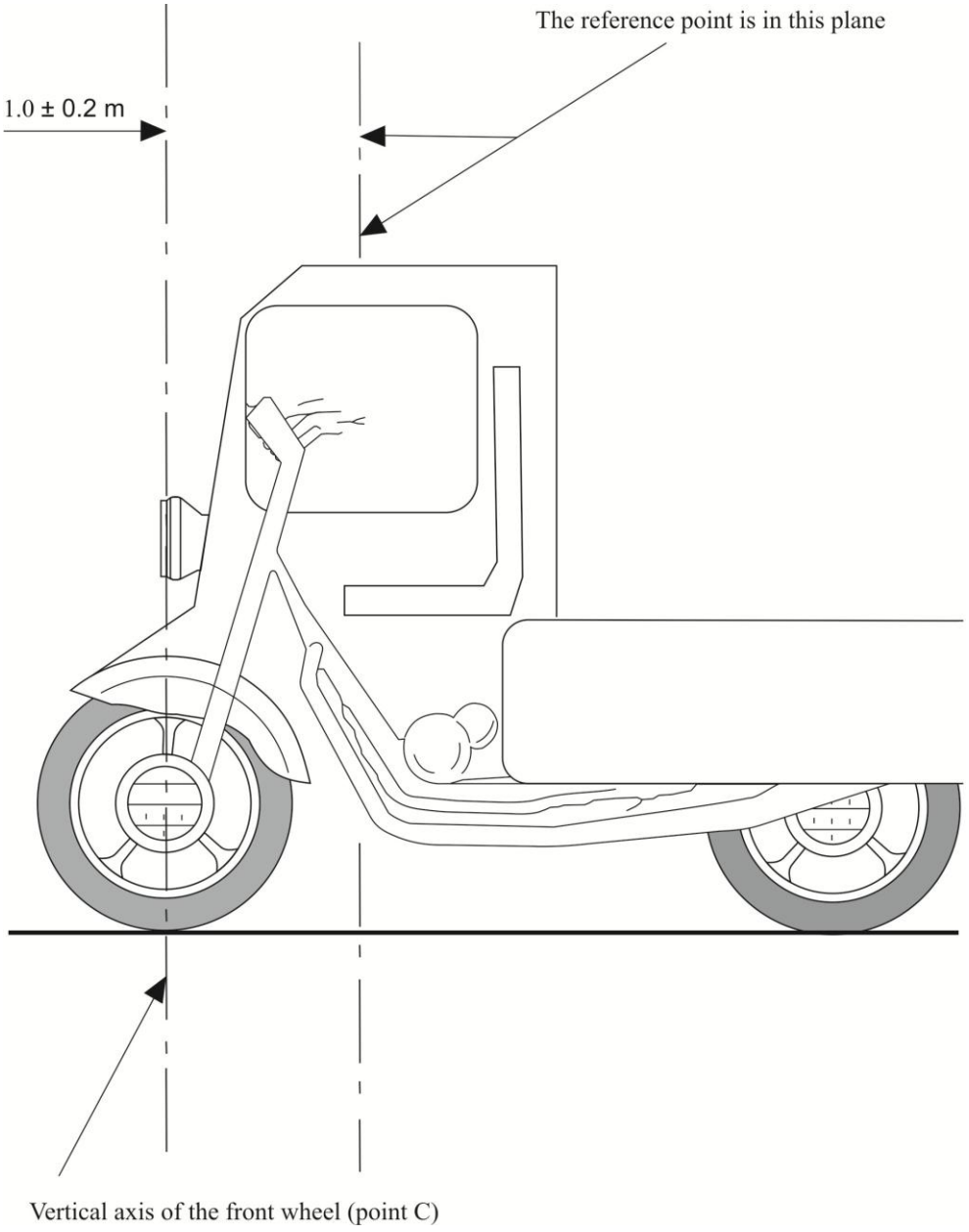


Figure 2

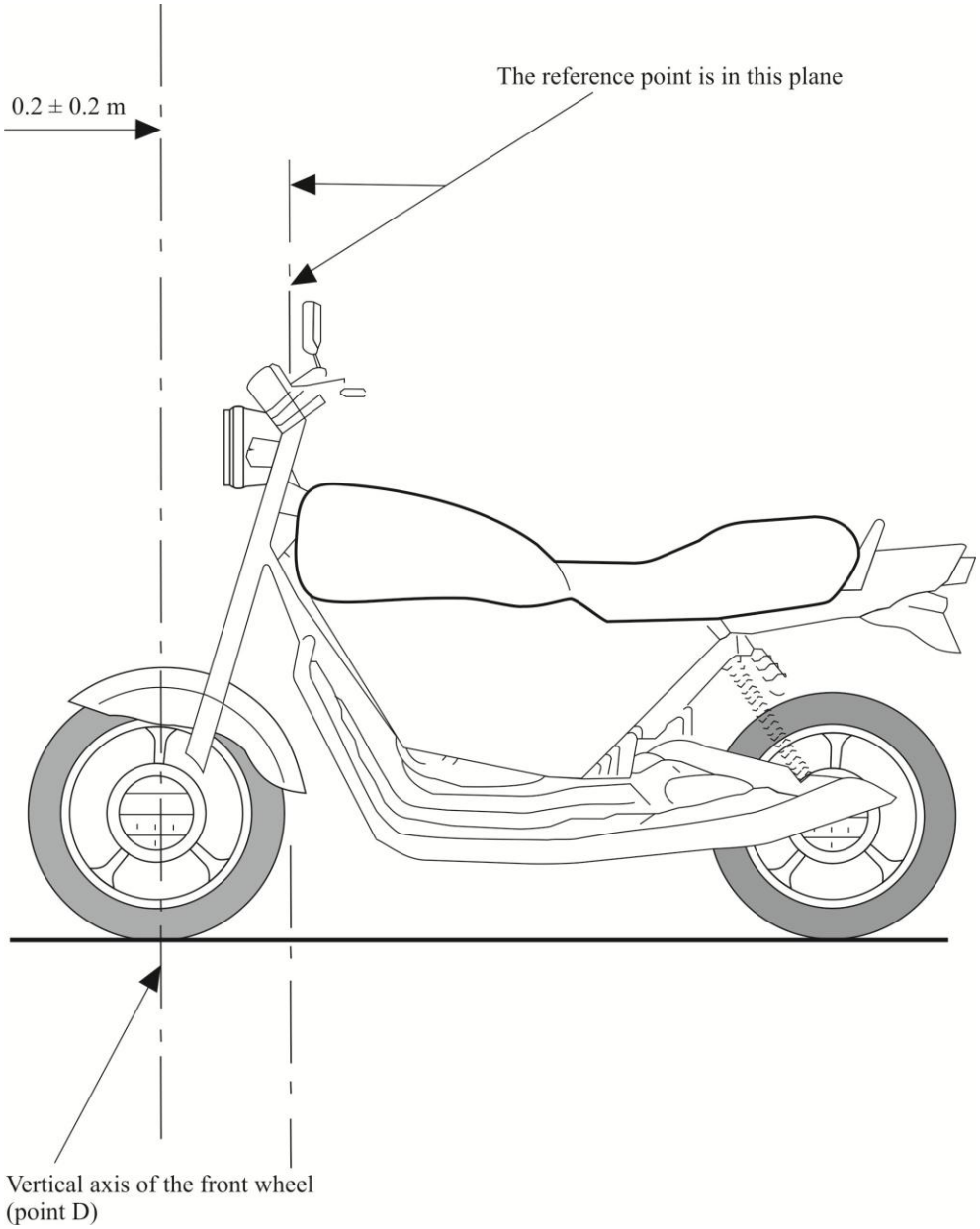

0.2 ± 0.2 m
The reference point is in this plane
Vertical axis of the front wheel
(point D)

Figure 3

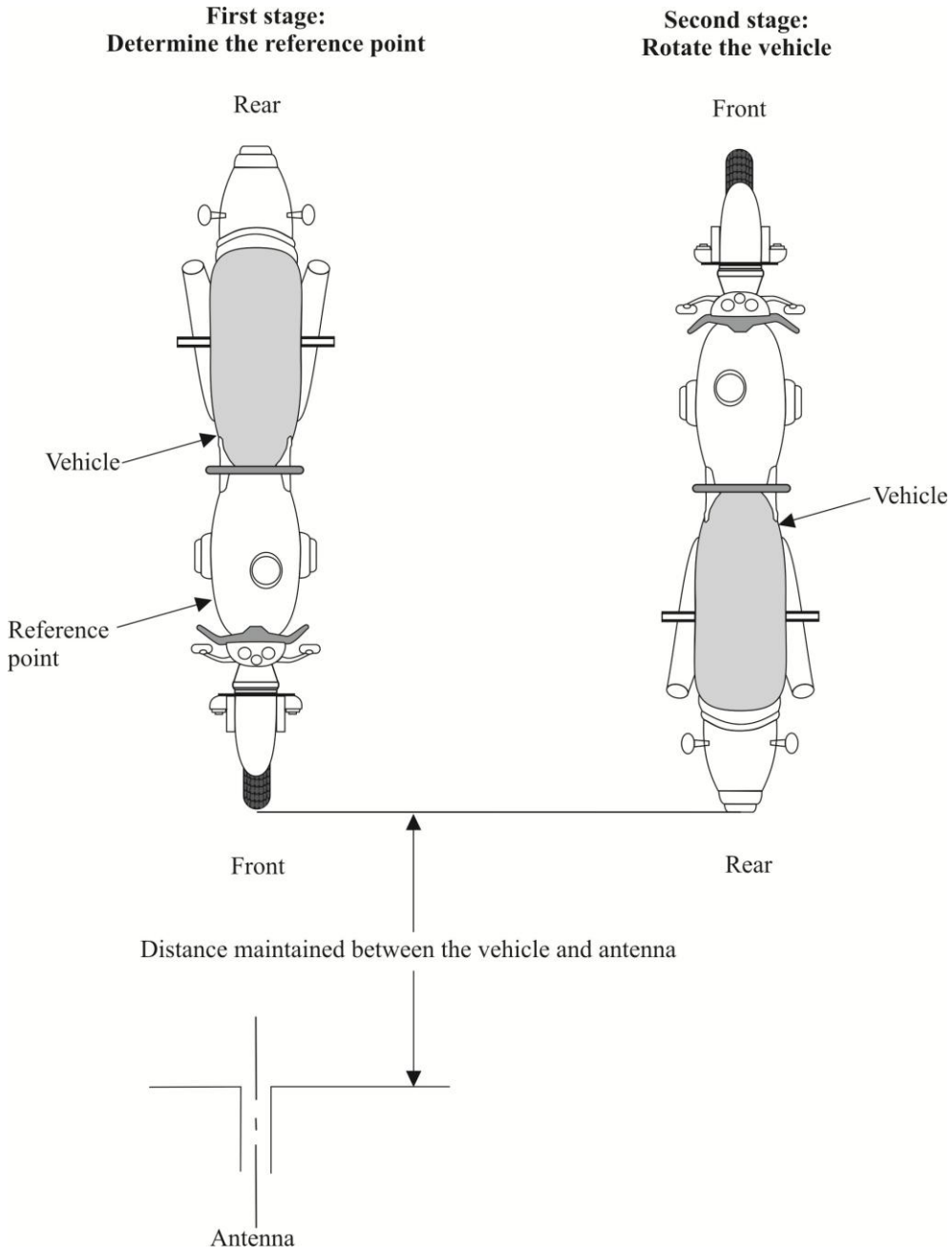

First stage:
Determine the reference point
Second stage:
Rotate the vehicle
Rear
Front
Vehicle
Reference point
Vehicle
Front
Rear
Distance maintained between the vehicle and antenna
Antenna

Figure 4
Vehicle in configuration "**REESS ~~in~~** charging mode coupled to the power grid"

**Example of test set-up for vehicle with plug located on the vehicle side (AC power charging without communication)**

**Figure 4a**

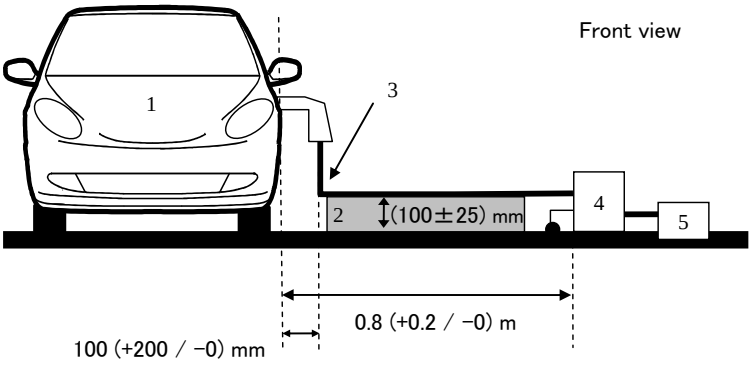
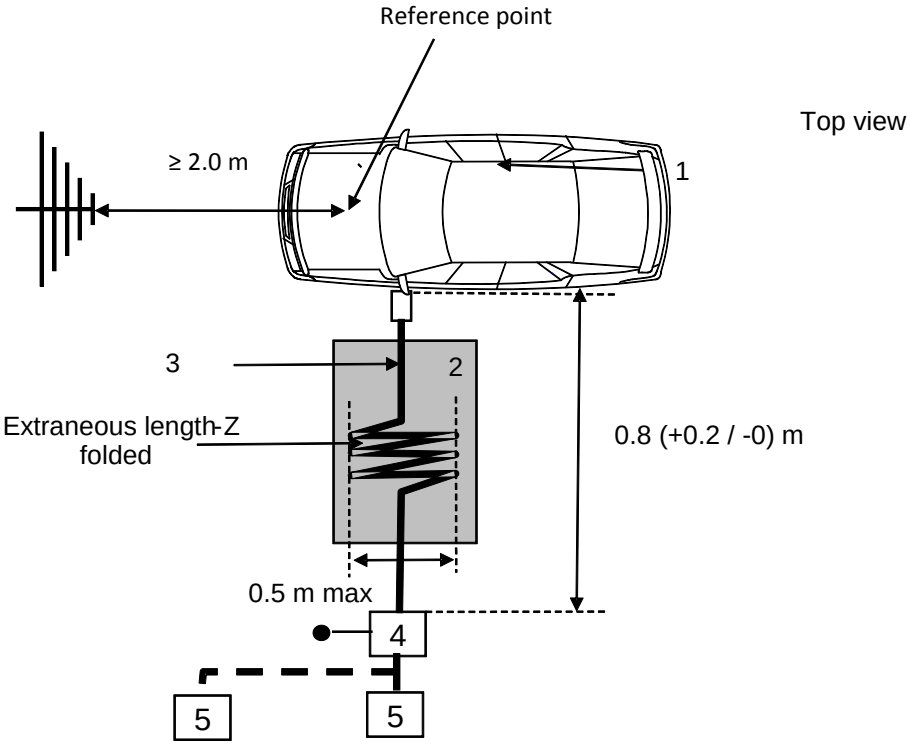



**Figure 4b**




Legend
1 Vehicle under test
2 Insulating support
3 Charging cable
4 Artificial Network(s) grounded
5 Power mains socket

**Example of test set-up for vehicle with plug located front / rear of vehicle (AC power charging without communication)**

**Figure 4c**

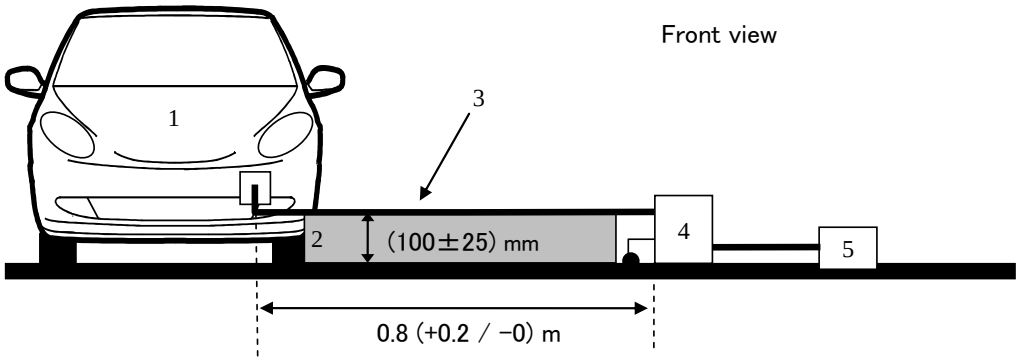
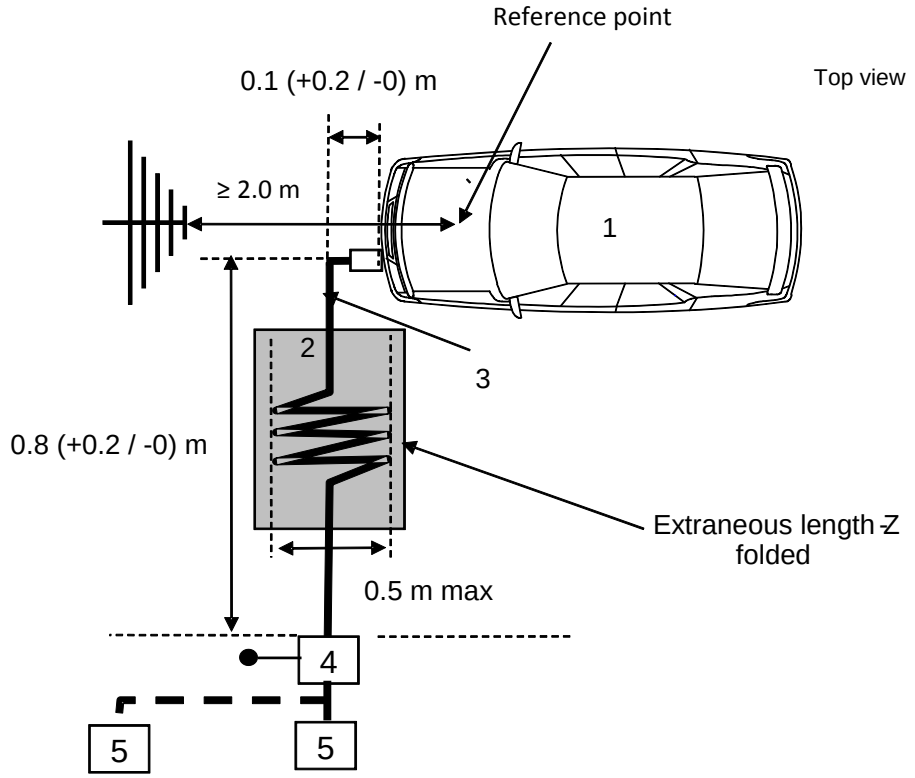



**Figure 4d**




Legend
1 Vehicle under test
2 Insulating support
3 Charging cable
4 Artificial Network(s) grounded
5 Power mains socket

**Example of test set-up for vehicle with plug located on vehicle side (AC or DC power charging with communication)**

**Figure 4e**

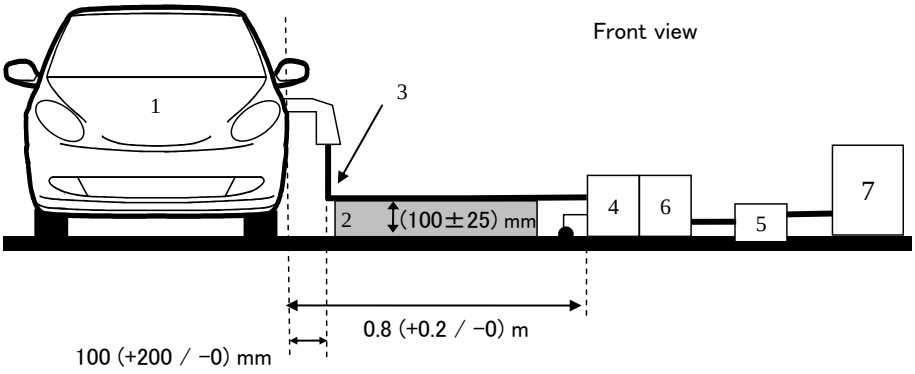
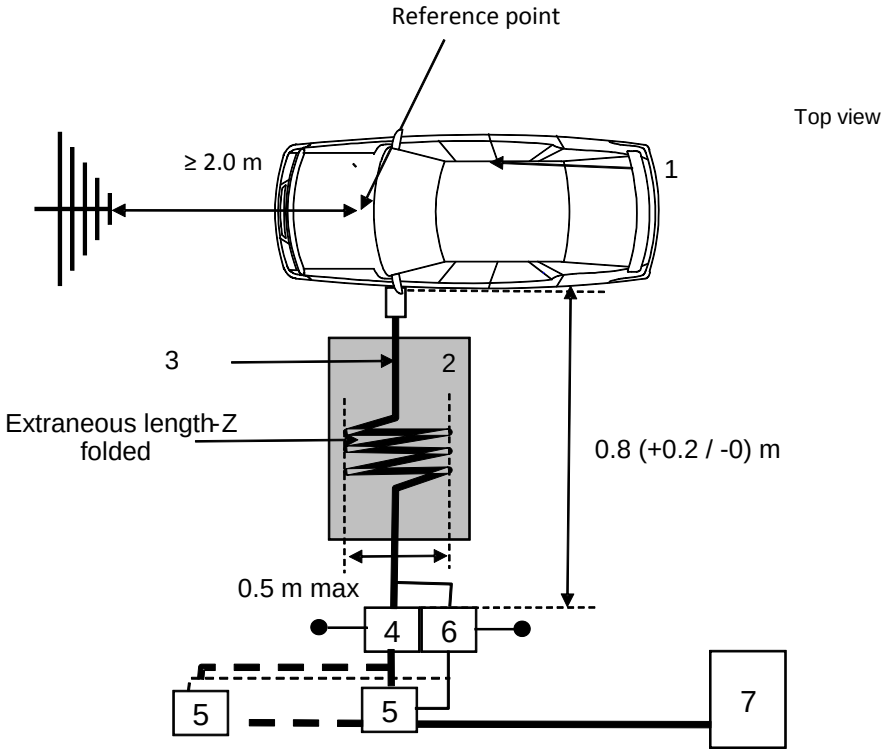



**Figure 4f**




Legend
1 Vehicle under test
2 Insulating support
3 Charging / communication cable
4 AC or DC Artificial Network(s) grounded
5 Power mains socket
6 Impedance Stabilisation(s) grounded
7 Charging Station

**Example of test set-up for vehicle with plug located front / rear of the vehicle (AC or DC power charging with communication)**

**Figure 4g**

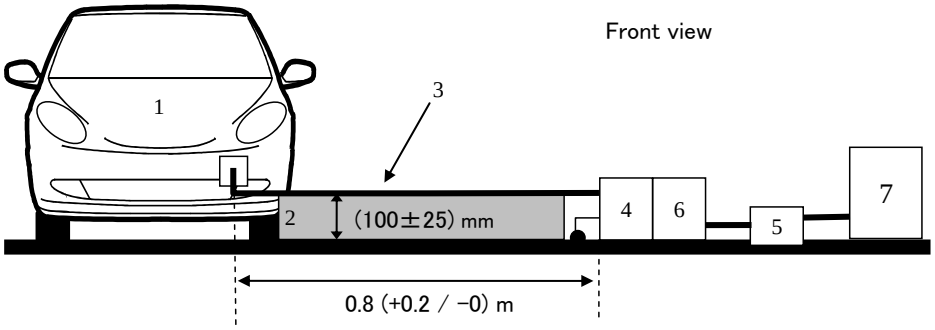
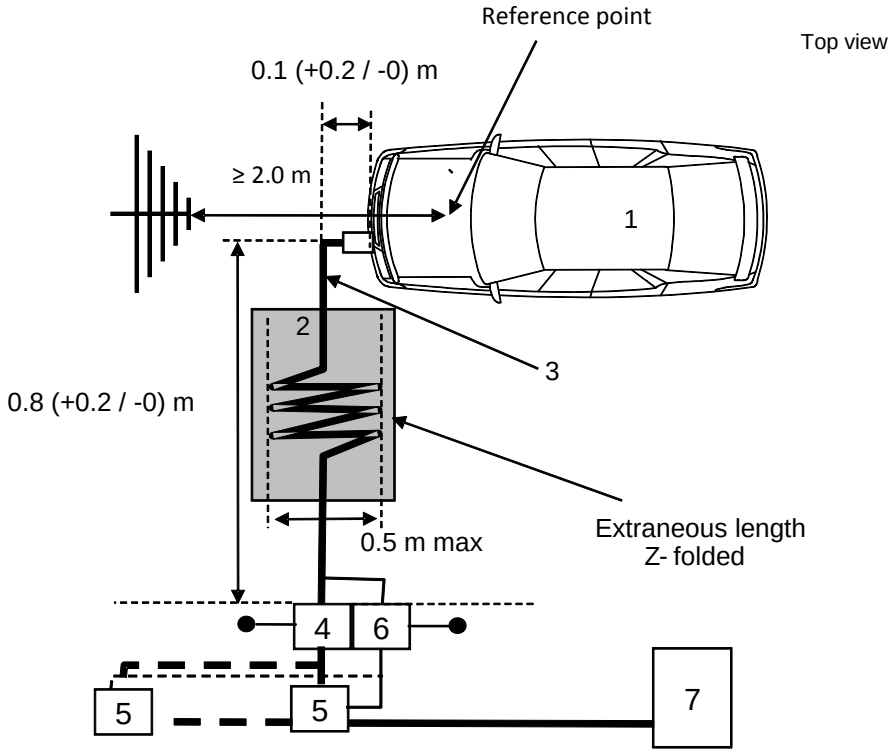



**Figure 4h**



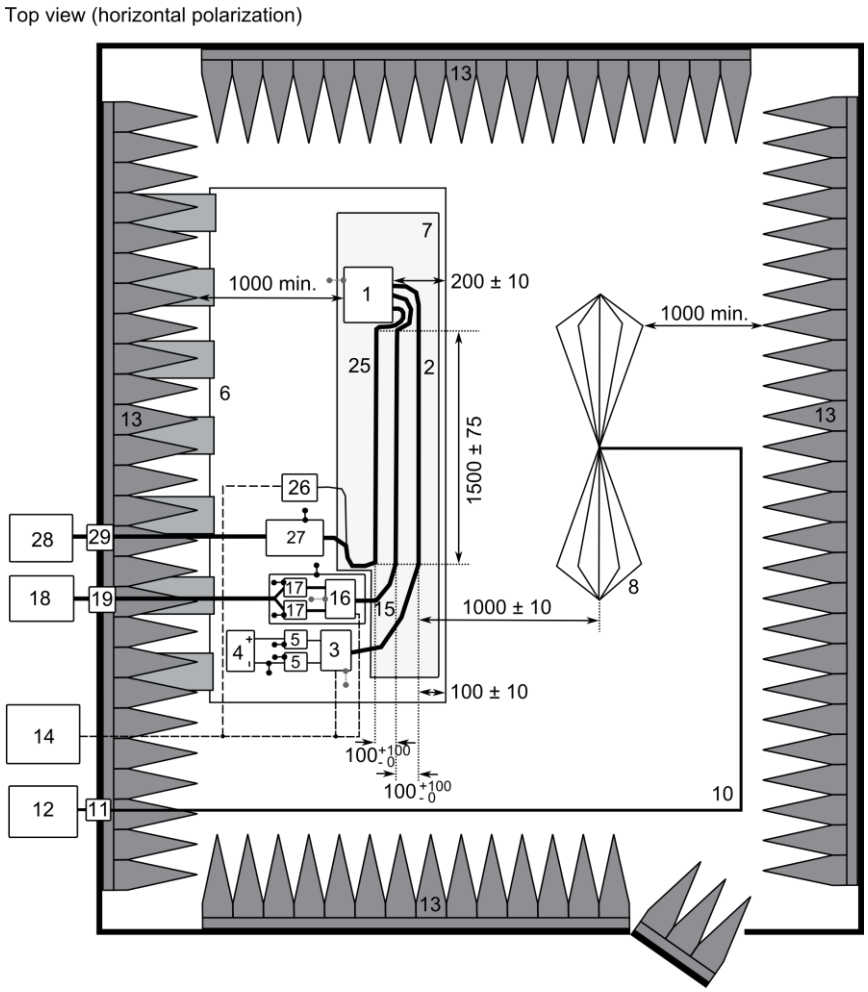

Legend
1 Vehicle under test
2 Insulating support
3 Charging / communication cable
4 AC or DC Artificial Network(s) grounded
5 Power mains socket
6 Impedance Stabilisation(s) grounded
7 Charging Station

"

*Annex 7, Appendix, new Figure 2,* correct to read

**"Figure 2**

**Test configuration for ESAs involved in "REESS charging mode coupled to the power grid" (example for biconical antenna)**




Legend:

1 ESA (grounded locally if required in test plan)

2 LV Test harness

3 LV Load simulator (placement and ground connection

according to CISPR 25 paragraph 6.4.2.5)

4 Power supply (location optional)

5 LV Artificial network (AN)

6 Ground plane (bonded to shielded enclosure)

7 Low relative permittivity support ($\varepsilon r \leq 1.4$)

8 Biconical antenna

10 High-quality coaxial cable e.g. double-shielded (50 Ω)

11 Bulkhead connector

12 Measuring instrument

13 RF absorber material

14 Stimulation and monitoring system

15 HV harness

16 HV load simulator

17 HV AN

18 HV power supply

19 HV feed-through

25 AC/DC charger harness

26 AC/DC load simulator (e.g. PLC)

27 50µH LISN (AC) or HVAN (DC)

28 AC/DC power supply

29 AC/DC feed-through

"

*Annex 11, Appendix 1*, correct to read:

"**Annex 11 – Appendix 1**

Figure 1

Vehicle in configuration "REESS charging mode coupled to the power grid" – Single phase charger test set-up

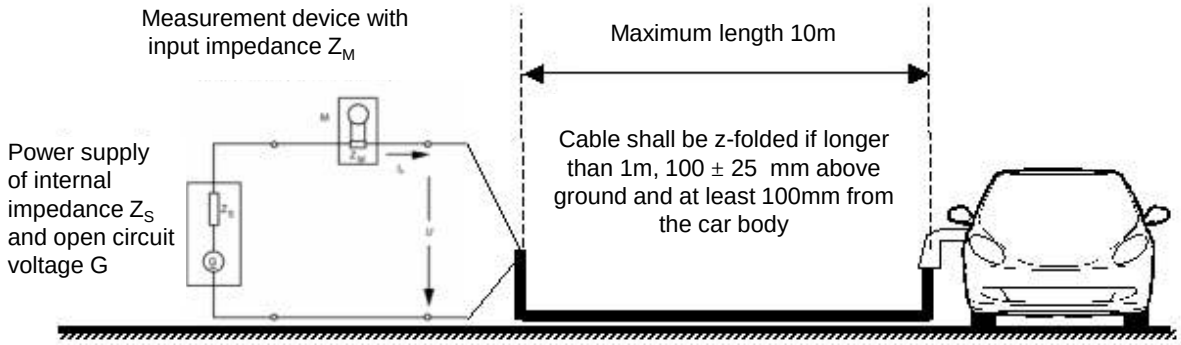
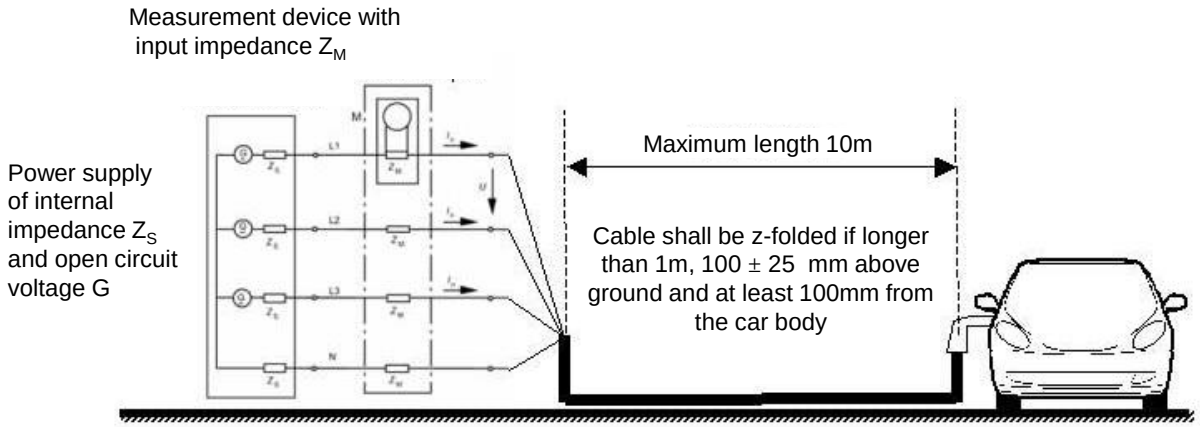



Figure 2

Vehicle in configuration "REESS charging mode coupled to the power grid" – Three-phase charger test set-up




"

*Annex 12, Appendix 1*, correct to read:

"**Annex 12 – Appendix 1**

**Figure 1a**

Vehicle in configuration "REESS charging mode coupled to the power grid" – Single phase test set-up

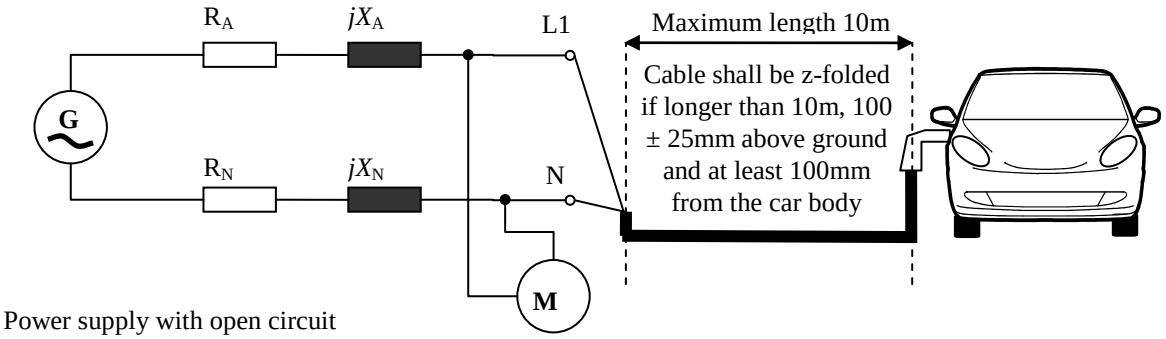
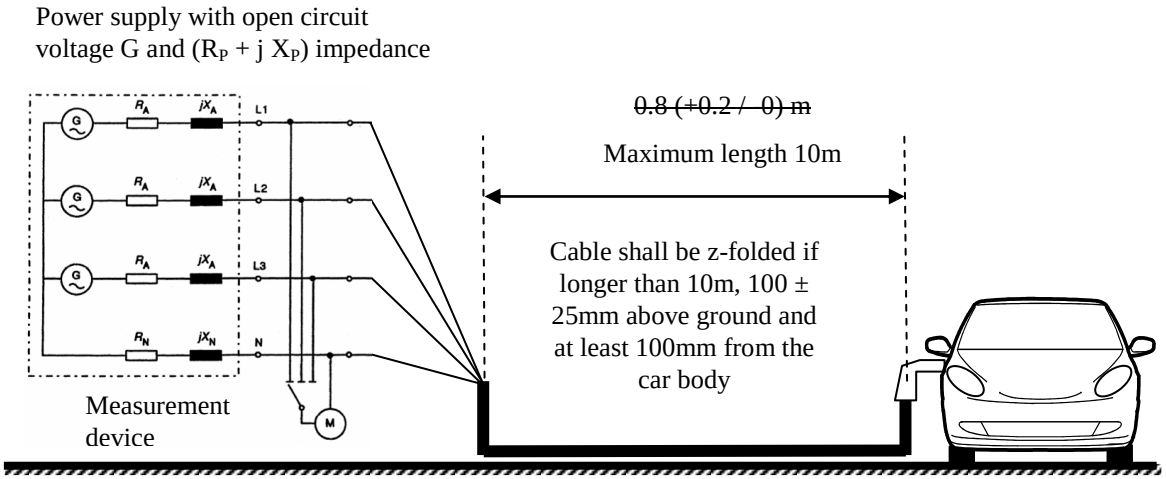



Figure 1**b**

Vehicle in configuration "REESS charging mode coupled to the power grid" – Three phase test set-up




"

*Annex 13, Appendix 1*, correct to read:

# "Annex 13 – Appendix 1

Figure 1
Vehicle in configuration "**REESS** charging mode coupled to the power grid"

**Example of test setup for vehicle with plug located on vehicle side (AC powered without communication)**

**Figure 1a**

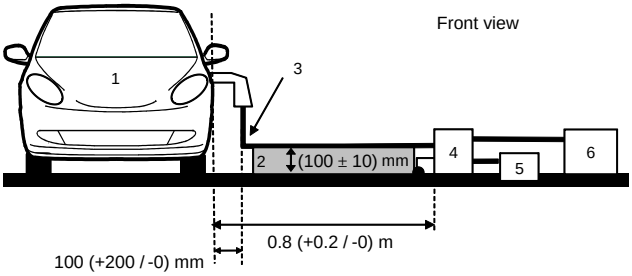
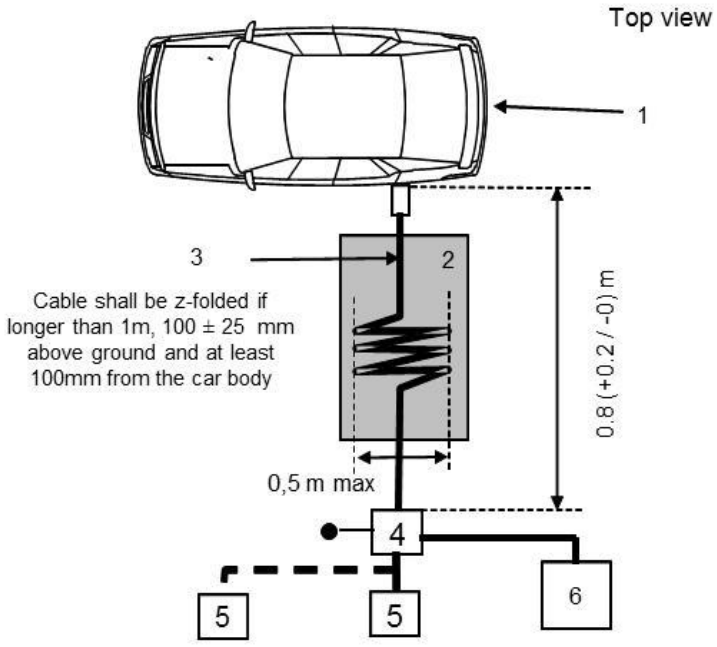



**Figure1b**




**Legend**

**1 Vehicle under test**
**2 Insulating support**
**3 Charging cable**
**4 Artificial Network(s) grounded (for AC or DC power lines)**
**5 Power mains socket**
**6 Measuring receiver**

Vehicle in configuration "REESS charging mode coupled to the power grid"

**Example of test setup for vehicle with plug located front / rear of vehicle (AC powered without communication)**

**Figure 1c**

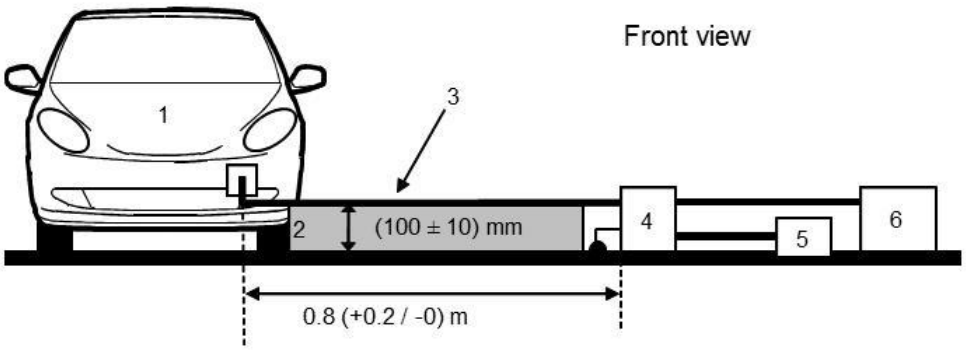
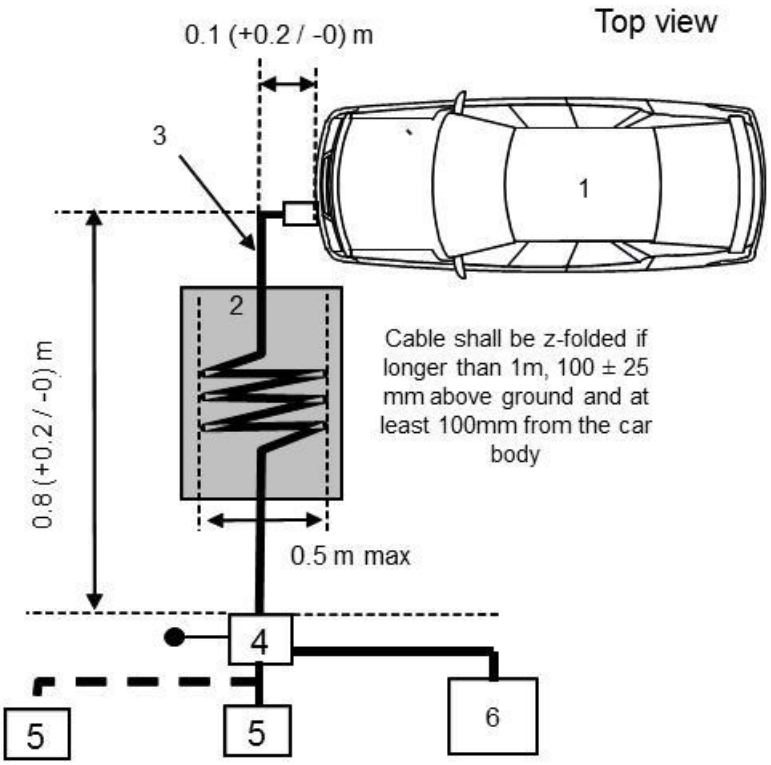



**Figure 1d**




**Legend**

**1 Vehicle under test**
**2 Insulating support**
**3 Charging cable**
**4 Artificial Network(s) grounded (for AC or DC power lines)**
**5 Power mains socket**
**6 Measuring receiver**

"

*Annex 14, Appendix 1*, correct to read:

# "Annex 14 – Appendix 1

Figure 1

Vehicle in configuration "**REESS** charging mode coupled to the power grid"

**Example of test setup for vehicle with plug located on vehicle side (AC or DC powered with communication)**

**Figure 1a**

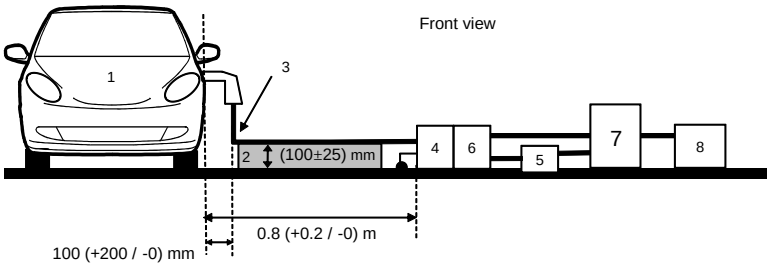
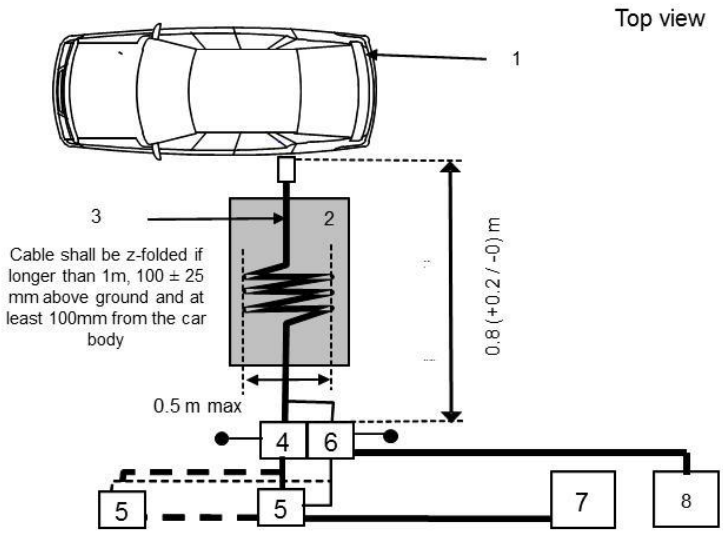



**Figure 1b**




Legend

| | | | |
|---|---|---|---|
| 1 | Vehicle under test | 5 | Power mains socket |
| 2 | Insulating support | 6 | Impedance Stabilization(s) grounded (for communication lines) |
| 3 | Charging / communication cable | 7 | Charging Station |
| 4 | AC or DC Artificial Network(s) grounded (for AC or DC power lines) | 8 | Measuring receiver |

Vehicle in configuration "**REESS** charging mode coupled to the power grid"

**Example of test set-up for vehicle with plug located front/rear of vehicle (AC or DC powered with communication)**

**Figure 1c**

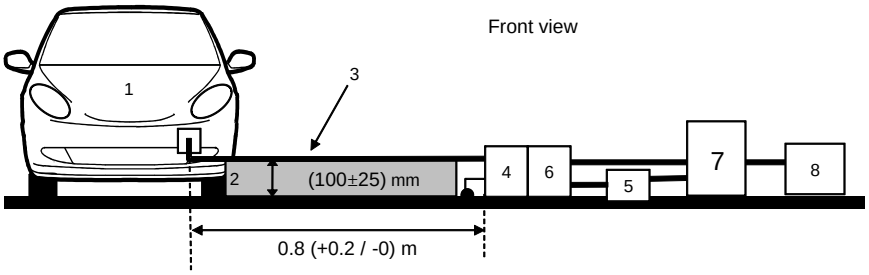
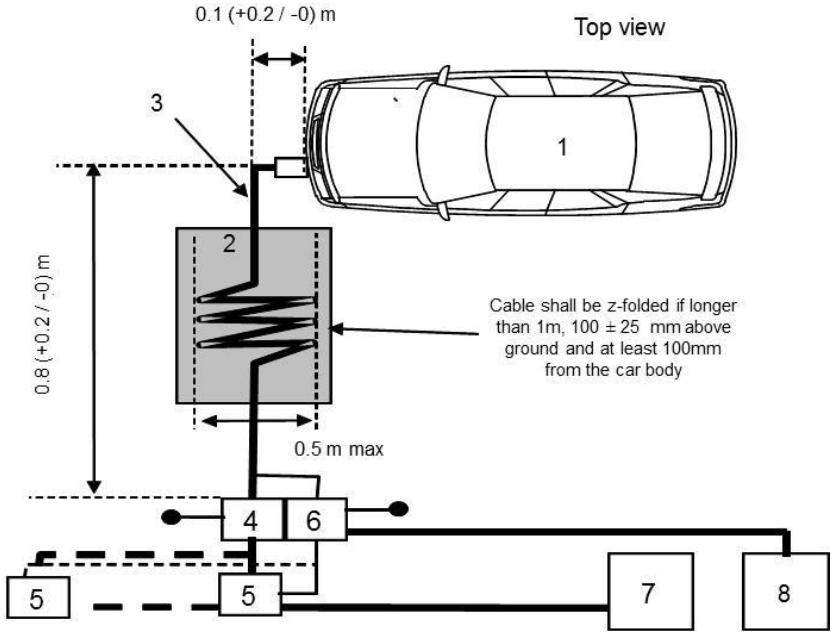



**Figure 1d**




Legend

| | | | |
|---|---|---|---|
| 1 | Vehicle under test | 5 | Power mains socket |
| 2 | Insulating support | 6 | Impedance Stabilisation(s) grounded (for communication lines) |
| 3 | Charging / communication cable | 7 | Charging Station |
| 4 | AC or DC Artificial Network(s) grounded (for AC or DC power lines) | 8 | Measuring receiver |

**Figure 2**

**Alternative measurement for vehicle in configuration "REESS charging mode coupled in the power grid"**

**Example of test setup for vehicle with plug located on vehicle side (AC or DC powered with communication)**

**Figure 2a**

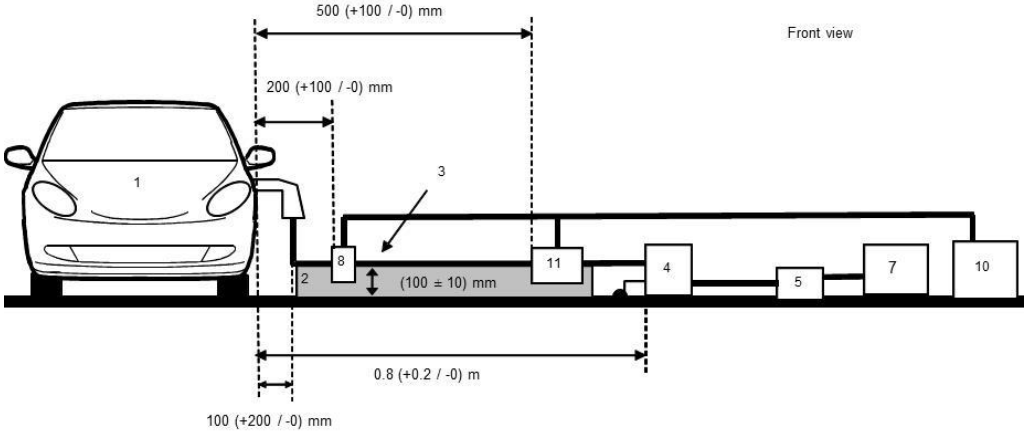
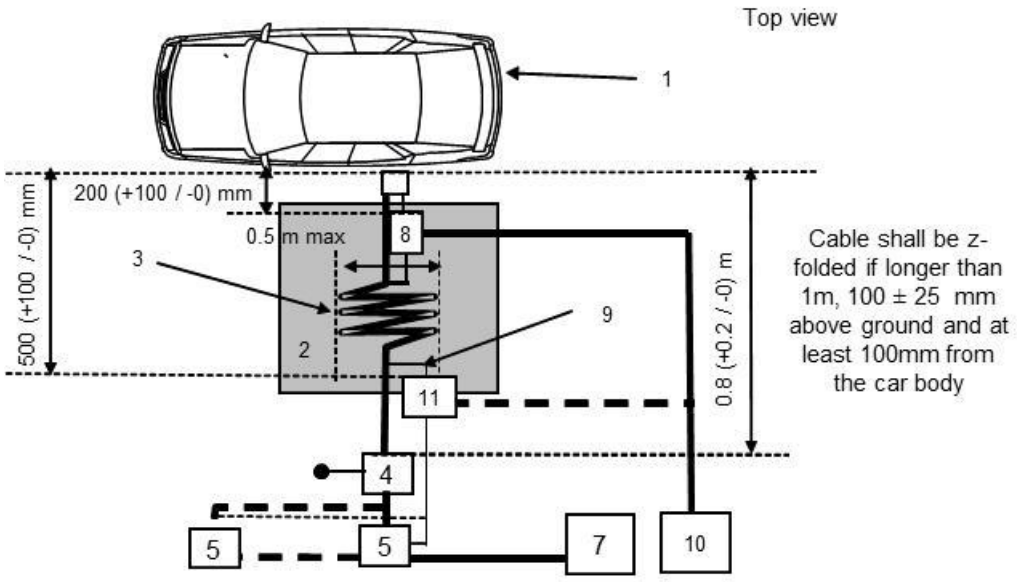



**Figure 2b**




Legend

| | |
|---|---|
| 1 | Vehicle under test |
| 2 | Insulating support |
| 3 | Charging / communication cable |
| 4 | AC or DC Artificial Network(s) grounded (for AC or DC power lines) |
| 5 | Power mains socket |
| 7 | Charging Station |
| 8 | Current probe |
| 9 | Communication lines |
| 10 | Measuring receiver |
| 11 | Capacitive voltage probe |

**Alternative measurement for vehicle in configuration "REESS charging mode coupled in the power grid"**

**Example of test setup for vehicle with plug located front / rear of vehicle (AC or DC powered with communication)**

**Figure 2c**

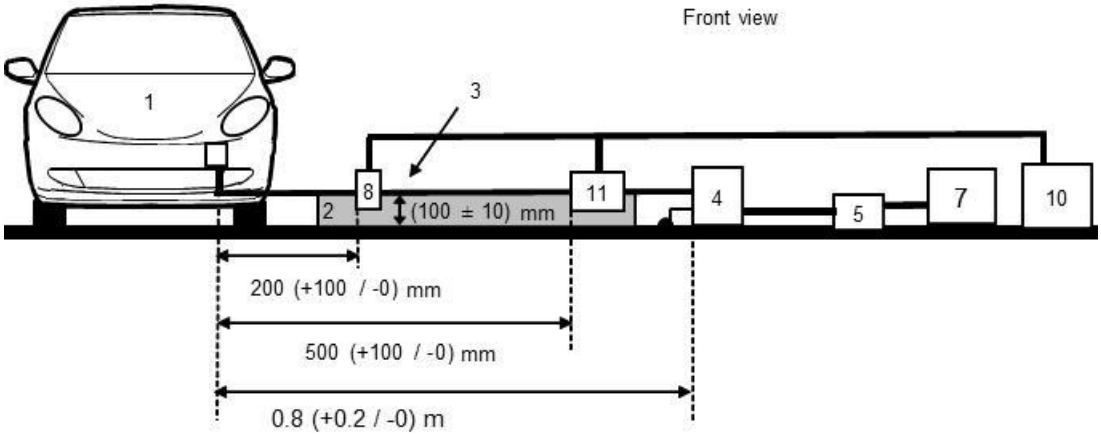
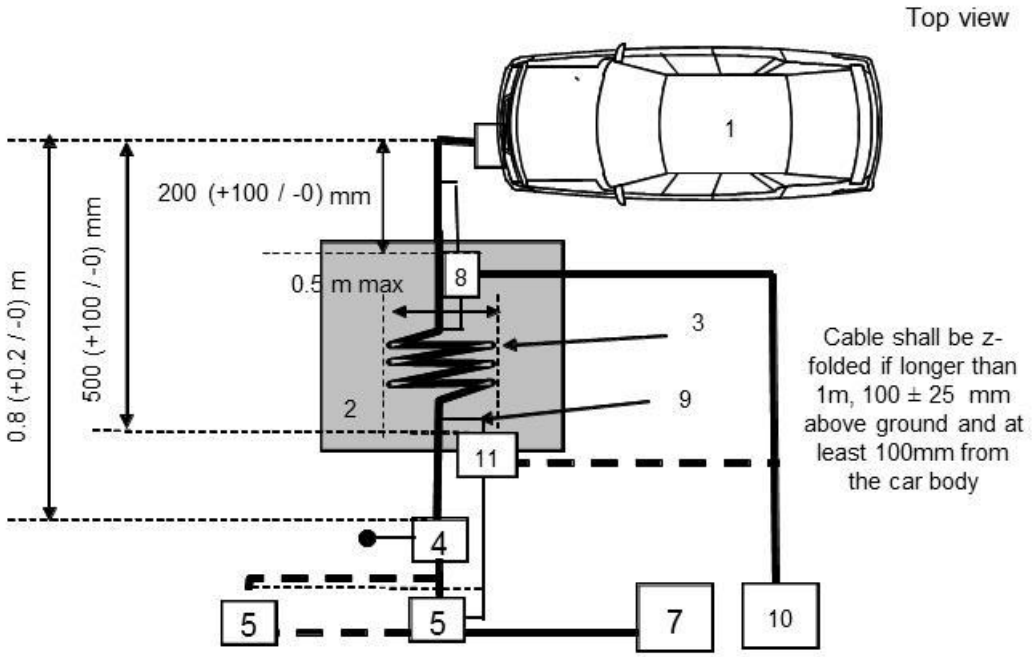



**Figure 2d**



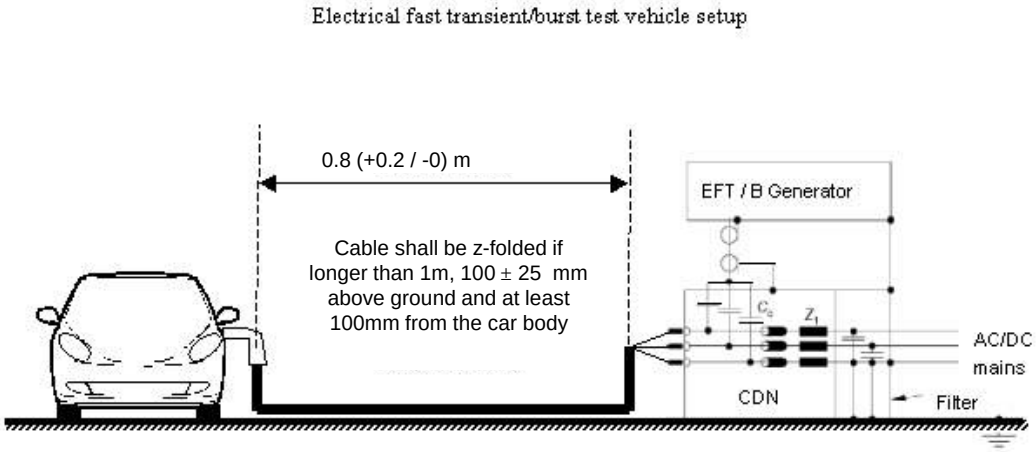

| Legend | | | |
|---|---|---|---|
| 1 | Vehicle under test | 5 | Power mains socket |
| 2 | Insulating support | 7 | Charging Station |
| 3 | Charging / communication cable | 8 | Current probe (or capacitive voltage probe) |
| 4 | AC or DC Artificial Network(s) grounded (for AC or DC power lines) | 9 | Communication lines |
| | | 10 | Measuring receiver |
| | | 11 | Capacitive voltage probe |

*Annex 15, Appendix 1*, correct to read:

# "Annex 15 – Appendix 1

Figure 1

Vehicle in configuration "REESS charging mode" coupled to the power grid coupling on AC/DC power lines




"

*Annex 16, Appendix 1*, correct to read:

# "Annex 16 – Appendix 1

Vehicle in configuration "REESS charging mode coupled to the power grid

Figure 1

Vehicle in configuration "REESS charging mode coupled to the power grid" – Coupling between lines for DC or AC (single phase) power lines

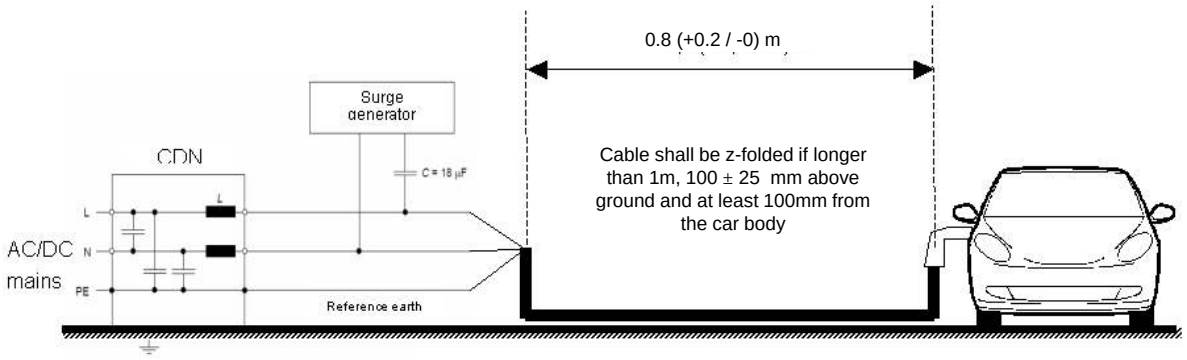



Figure 2

Vehicle in configuration "REESS charging mode coupled to the power grid" – Coupling between each line and earth for DC or AC (single phase) power lines

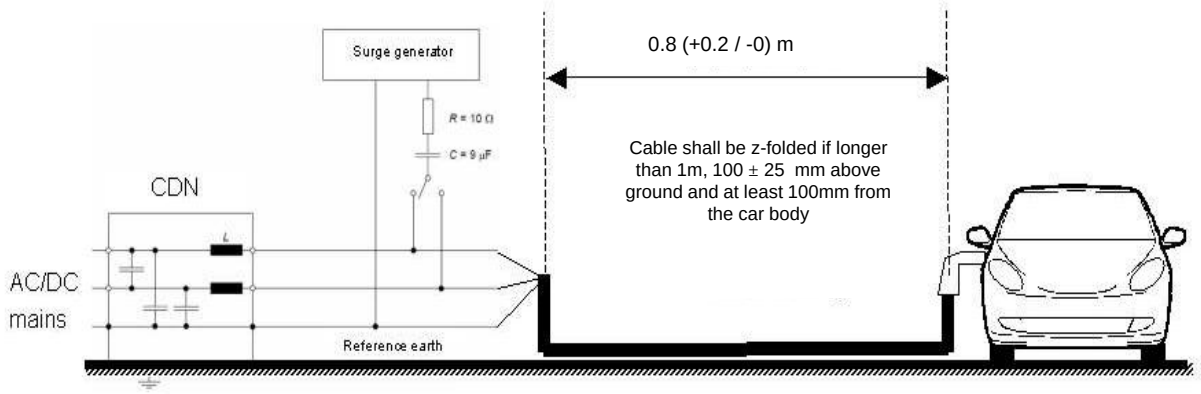


Figure 3

Vehicle in configuration "REESS charging mode coupled to the power grid" – Coupling between lines for AC (three phases) power lines

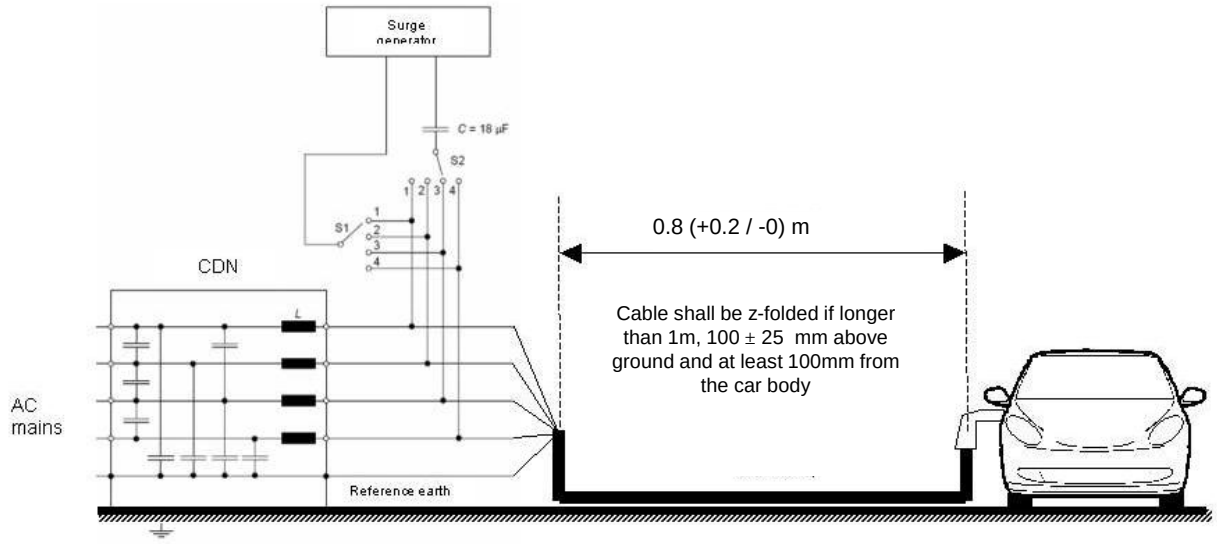
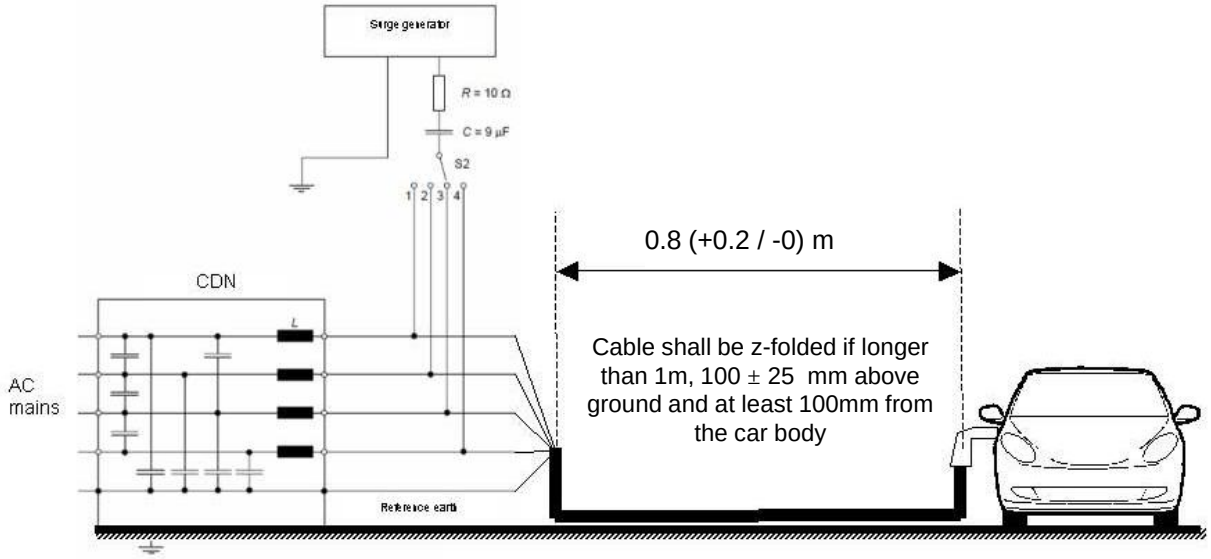



Figure 4

Vehicle in configuration "REESS charging mode coupled to the power grid" – Coupling between each line and earth for AC (three phases) power lines




"

*Annex 17, Appendix 1*, correct to read:

# "Annex 17 – Appendix 1

**Figure 1**

**ESA in configuration "REESS charging mode coupled to the power grid" – Single phase test set-up**

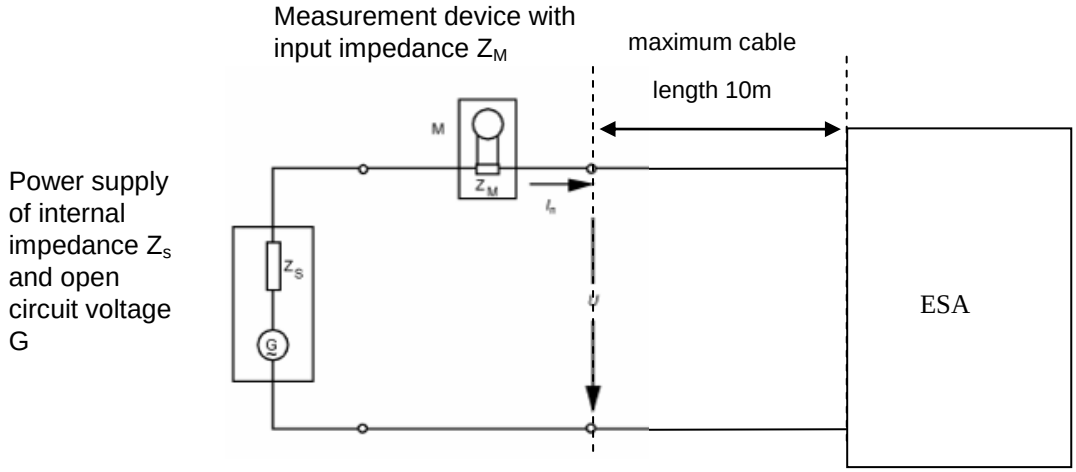
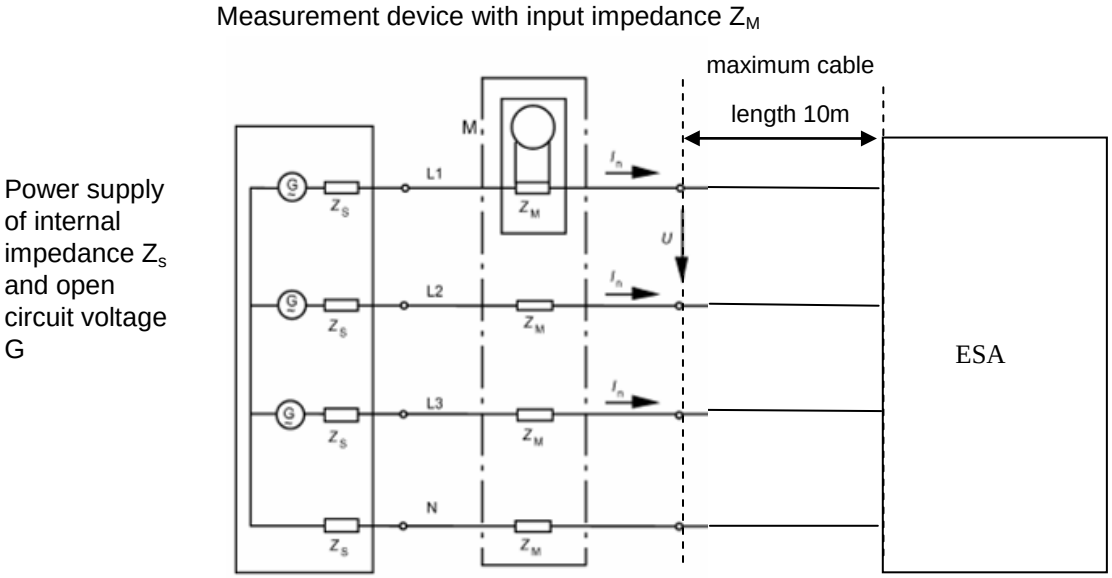



**Figure 2**

**ESA in configuration "REESS charging mode coupled to the power grid" –Three-phase-test set-up**




"

*Annex 18, Appendix 1*, correct to read:

# "Annex 18 – Appendix 1

**Figure 1a**

**ESA in configuration "REESS charging mode coupled to the power grid"- Single phase test set-up**

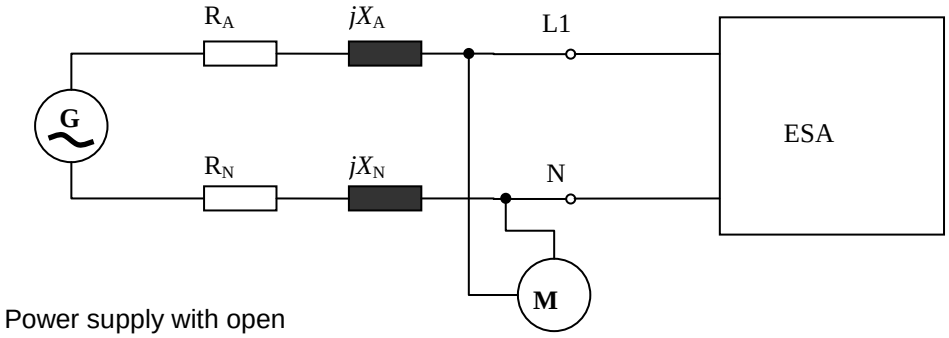
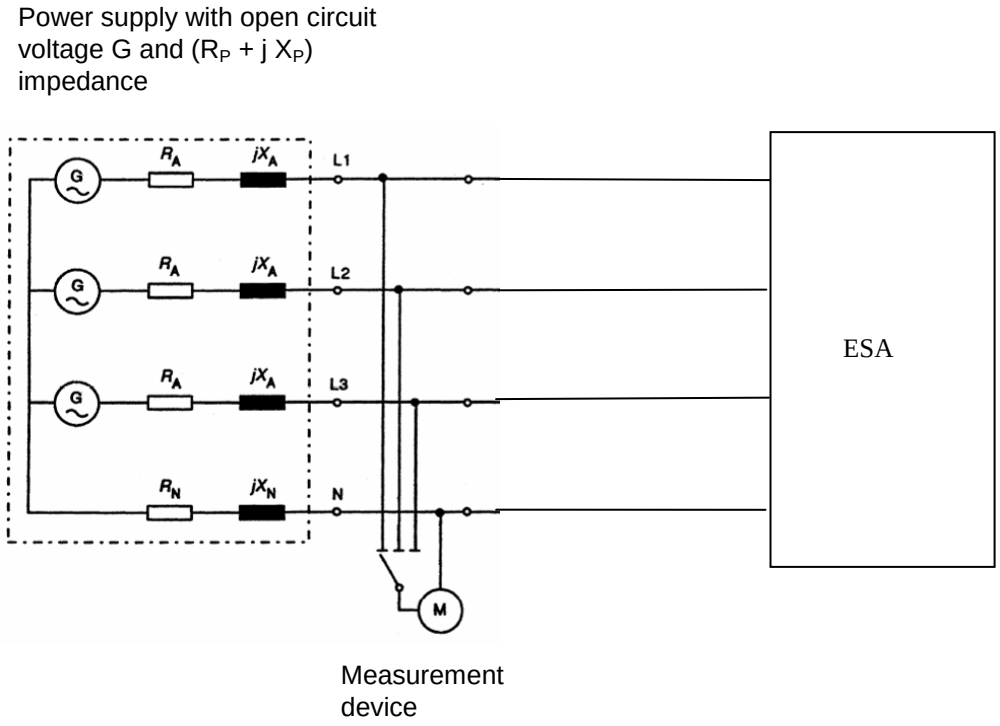



**Figure 1b**

**ESA in configuration "REESS charging mode coupled to the power grid" - Three-phase test set-up**

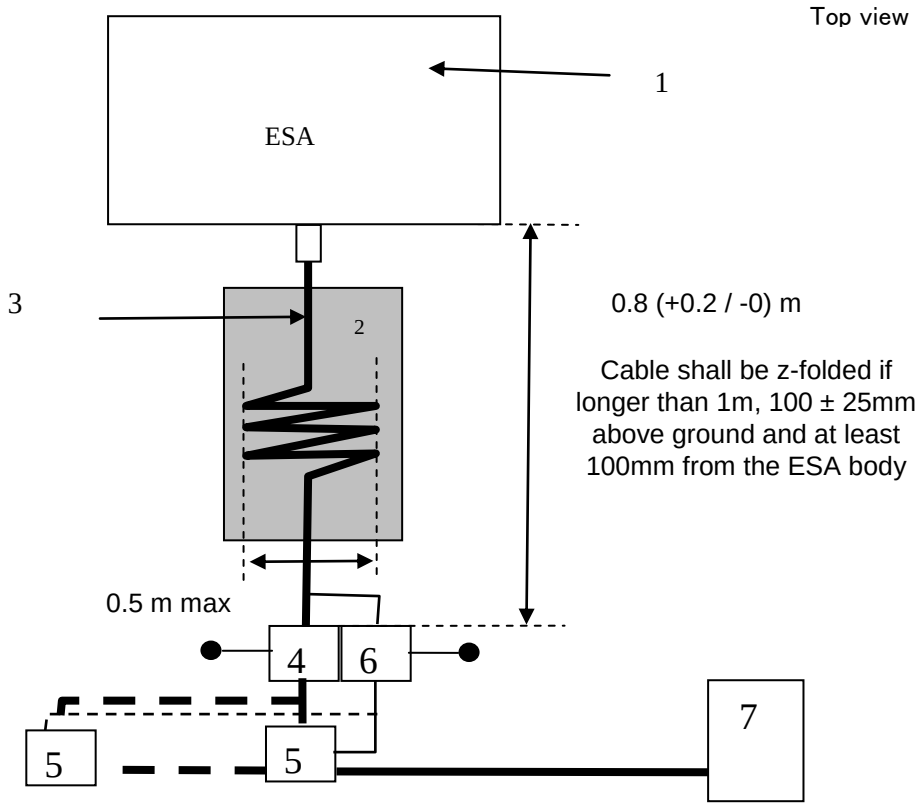



"

*Annex 20, Appendix 1*, correct to read:

# "Annex 20 – Appendix 1

**Figure 1**
**ESA in configuration "REESS charging mode coupled to the power grid"**



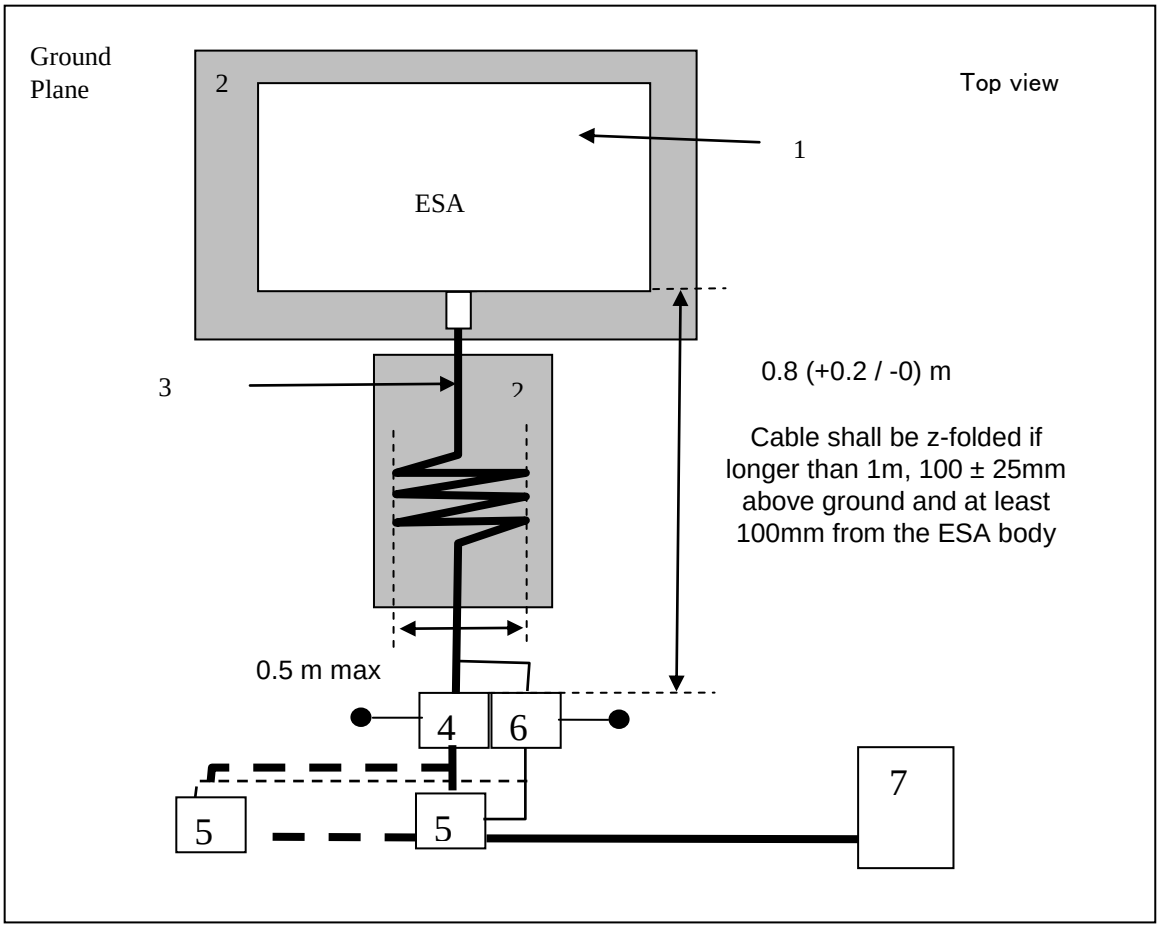

Legend
1 ESA under test
2 Insulating support
3 Charging / communication cable
4 AC or DC Artificial Network(s) grounded
5 Power mains socket
6 Impedance Stabilization(s) grounded
7 Charging Station

"

*Annex 21, Appendix 1*, correct to read:

# "Annex 21 – Appendix 1

**Figure 1**
**ESA in configuration "REESS charging mode coupled to the power grid**




"

# II. Justification

1. Some corrections are proposed by the secretariat and OICA to clarify the proposal.