ISO 11451-5:2023-05 (E)

Road vehicles - Vehicle test methods for electrical disturbances from narrowband radiated electromagnetic energy - Part 5: Reverbe ration chamber

Contents

Page

Foreword v

1 Scope 1

2 Normative references 1

3 Termsanddefinitions 1

4 Test conditions 6

5 Test location 6
5.1 Reverberation chamber description 6
5.2 Working volume 7

6 Test instrumentation 7
6.1 General 7
6.2 Field generating device 8
6.3 Field probes 8
6.4 Stimulation and monitoring of the device under test (DUT) 8
6.5 Optional: receiving antenna(s) and spectrum analyser 8
6.6 Optional: vector network analyser 9

7 Test set-up 9
7.1 Vehicle placement 10
7.2 Field generating device location - Antenna constraints 10
7.3 Vehicle test configurations 10
7.3.1 Vehicle not connected to the power grid 10
7.3.2 Vehicle in charging mode 1 or mode 2 (AC powered, without communication) 10
7.3.3 Vehicle in charging mode 3 or mode 4 (AC or DC powered, with communication) 13
7.3.4 Vehicle in charging mode through wireless power transmission (WPT) 17

8 Test procedure 19
8.1 General 19
8.2 Stirring configurations 20
8.3 Test plan 20
8.4 Test methods 20
8.5 Reverb method with substitution method power control 23
8.5.1 Reverb reference points 23
8.5.2 Substitution method with empty chamber calibration 25
8.5.3 Substitution method with calibration including the vehicle 29
8.6 Test report 31

Annex A (informative)Functionperformancestatusclassification 32

Annex B (normative)Testleveldefinition 33

Annex C (normative) Reverberation chamber characteristics 36

Annex D (informative) Tuned mode and stirred mode 44

Annex E (informative) TLS method 48

Annex F (informative) Cavity mode method 55

Annex G (informative) Reverb method with closed-loop power control 59

Annex H (informative) Chamber time constant method 61

Annex I (informative) VNA method 67

Annex J (informative)Measurementoftotalantennaefficiency 74

Annex K (informative)Measurementofdiffusefieldcorrectionfactor Fdf 77

Annex L (informative) Measurement of , Q, and ACS 80

Annex M (normative) Additional AAN(s) 85

Bibliography 86