ISO/TS 37444:2023-06 (E)

Electronic fee collection - Charging performance framework

Contents

Page

Foreword ..... **v**

Introduction ..... **vi**

1 Scope **1**

2 Normative references **2**

3 Terms and definitions **2**

4 Symbols and abbreviated terms **6**

5 Examination framework **7**

5.1 General 7

5.2 Method for defining a specific examination framework 7

5.2.1 General 7

5.2.2 Selection of metrics to be evaluated 8

5.2.3 Definition of environmental conditions and performance requirements 9

5.2.4 Determination of required sample sizes 9

5.2.5 Selection of methods for generating charging input and reference data 9

5.2.6 Determination of test routes and trips 9

5.2.7 Definition of measurement time period 10

5.2.8 Documentation of the specific examination framework 10

5.3 Sources of data 10

5.4 Methods of generating charging input 13

5.4.1 General 13

5.4.2 Predefined routes (identifier: “PVP”) 14

5.4.3 Reference system (used in combination with identifiers: “PVR” and “UVR”) 15

5.4.4 Simulated OBE/FE (identifier: “SO”) 16

5.4.5 Dedicated OBE testing (identifier: “DO”) 16

6 Charging performance metrics **17**

6.1 General 17

6.2 Metric identification 20

6.3 Charge report metrics 21

6.3.1 General 21

6.3.2 Metrics relevant for all schemes 21

6.3.3 Metrics only applicable to discrete schemes 22

6.3.4 Metrics applicable to continuous schemes 23

6.4 Toll declaration metrics 24

6.4.1 General 24

6.4.2 Metrics relevant for all schemes 24

6.4.3 Metrics only applicable to discrete schemes 25

6.4.4 Metrics applicable to continuous schemes 26

6.5 Billing details metrics 27

6.6 Payment claim metrics 29

6.7 Exception list metrics 30

6.8 User account metrics 31

6.9 End-to-end metrics 32

6.10 Applicability of metrics scheme types 32

6.11 Charging metric selection tables 37

6.11.1 General 37

6.11.2 Discrete 37

6.11.3 Autonomous discrete 39

6.11.4 Autonomous continuous 41

7 Examination tests **43**
7.1 General 43
7.2 Technology-independent tests 43
7.2.1 General 43
7.2.2 ET-CM-E2E-1 E2E — Correct charging rate 43
7.2.3 ET-CM-E2E-2 E2E — Overcharging rate 44
7.2.4 ET-CM-E2E-3 E2E — Undercharging rate 45
7.2.5 ET-CM-E2E-4 E2E — Late charging rate 46
7.2.6 ET-CM-UA-1 UA — Correct charging rate 46
7.2.7 ET-CM-UA-2 UA — Overcharging rate 47
7.2.8 ET-CM-UA-3 UA — Undercharging rate 48
7.2.9 ET-CM-UA-4 UA — Accurate application of payments and refunds 49
7.2.10 ET-CM-UA-5 UA — Accurate personalization of OBEs 49
7.2.11 ET-CM-EL-1 EL — Correct exception list generation rate 50
7.2.12 ET-CM-EL-2 EL — Incorrect exception list generation rate 50
7.2.13 ET-CM-PC-1 PC — Correct charging rate 51
7.2.14 ET-CM-PC-2 PC — Overcharging Rate 52
7.2.15 ET-CM-PC-3 PC — Undercharging rate 53
7.2.16 ET-CM-PC-4 PC — Latency — TC 53
7.2.17 ET-CM-PC-5 PC — Late payment claims rate 54
7.2.18 ET-CM-PC-6 PC — Rejected payment claim rate 55
7.2.19 ET-CM-BD-1 BD — Correct charging rate 55
7.2.20 ET-CM-BD-2 BD — Overcharging rate 56
7.2.21 ET-CM-BD-3 BD — Undercharging rate 57
7.2.22 ET-CM-BD-4 BD — Incorrect charging rate 57
7.2.23 ET-CM-BD-5 BD — Latency — TC 58
7.2.24 ET-CM-BD-6 BD — Late billing details rate 59
7.2.25 ET-CM-BD-7 BD — Rejected billing details rate 59
7.2.26 ET-CM-BD-8 BD — Incorrectly rejected billing details rate 60
7.2.27 ET-CM-BD-9 BD — Inferred billing details rate 60
7.2.28 ET-CM-CR-1 CR— Usage evidence availability 61
7.2.29 ET-CM-CR-2 CR— Usage evidence integrity 61
7.2.30 ET-CM-CR-3 CR- Usage evidence time-to-first-fix 62
7.3 Technology-dependent tests 63
7.3.1 Autonomous discrete specific examination tests 63
7.3.2 Discrete — Optional toll declaration metrics 73
7.3.3 Autonomous continuous specific examination tests 76

Annex A (informative) **Examination test documentation template** **86**

Annex B (informative) **Examination framework considerations** **87**

Annex C (informative) **Statistical considerations** **90**

Annex D (informative) **Methods for reducing sample sizes during the evaluation phase** **95**

Annex E (informative) **Examples of specific examination frameworks** **99**

Annex F (informative) **Defining performance requirements** **110**

Bibliography **118**