

# ISO/TS 37444:2023-06 (E)

## Electronic fee collection - Charging performance framework

---

<b>Contents</b>		<b>Page</b>
<b>Foreword</b>		<b>v</b>
<b>Introduction</b>		<b>vi</b>
<b>1</b>	<b>Scope</b>	<b>1</b>
<b>2</b>	<b>Normative references</b>	<b>2</b>
<b>3</b>	<b>Terms and definitions</b>	<b>2</b>
<b>4</b>	<b>Symbols and abbreviated terms</b>	<b>6</b>
<b>5</b>	<b>Examination framework</b>	<b>7</b>
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
<b>6</b>	<b>Charging performance metrics</b>	<b>17</b>
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

<b>7</b>	<b>Examination tests</b>	<b>43</b>
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
	<b>Annex A (informative) Examination test documentation template</b>	<b>86</b>
	<b>Annex B (informative) Examination framework considerations</b>	<b>87</b>
	<b>Annex C (informative) Statistical considerations</b>	<b>90</b>
	<b>Annex D (informative) Methods for reducing sample sizes during the evaluation phase</b>	<b>95</b>
	<b>Annex E (informative) Examples of specific examination frameworks</b>	<b>99</b>
	<b>Annex F (informative) Defining performance requirements</b>	<b>110</b>
	<b>Bibliography</b>	<b>118</b>