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Measurement method for the output of electroshock weapons

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CONTENTS

FOREWORD 3
INTRODUCTION 5
1 Scope 6
2 Normative references 6
3 Terms and definitions 6
4 *ESW* measurement system 15
4.1 General 15
4.1.1 Overview 15
4.1.2 Environmental conditions 16
4.2 Instrumentation requirements 16
4.2.1 General 16
4.2.2 Minimum performance requirements 17
4.2.3 Measurement system traceability 18
4.2.4 System calibration 19
4.2.5 Timebase calibration 22
4.2.6 Resistors 22
4.3 Electrostatic discharge (ESD) and high voltage protection 22
4.4 Current waveform measurements 23
4.4.1 General 23
4.4.2 Measurement set-up 23
4.4.3 Current probe requirements 24
4.4.4 Waveform acquisition 24
4.5 Voltage waveform measurements 25
4.5.1 General 25
4.5.2 Measurement set-up 25
4.5.3 Voltage probe requirements 25
4.5.4 Waveform acquisition 26
4.6 High voltage arcing charge delivery distance 26
4.6.1 General 26
4.6.2 Instruments 26
4.6.3 Preparation 28
4.6.4 Measurement 28
5 Waveform parameters 30
5.1 General 30
5.2 Waveform parsing 31
5.3 Initial and final instants 31
5.4 Average level 32
5.5 Average absolute level 32
5.6 Charge, net 32
5.7 Charge, total 33
5.8 Current, aggregate 33
5.9 Energy, pulse 33
5.10 Impulse amplitude 34
5.11 Peak, maximum (minimum) 35
5.12 Peak-to-peak value 35
5.13 Pulse duration 35

5.14 Pulse rate 35
5.15 Pulse separation 35
5.16 Offset 36
5.17 Transition duration 36
5.18 Transition settling duration 36
5.19 Transition settling error 36
5.20 Waveform period 36
Annex A (informative) Impedance matching network 37
Bibliography 41

Figure 1 –*Long-range wired* ESW showing components 7
Figure 2 – Diagram of the ESW measurement system with voltage and current probes in place 15
Figure 3 –Set up for calibrating the vertical channel of the ESW measurement system 20
Figure 4 –Set up for calibration of the magnitude frequency response of the ESW measurement system 21
Figure 5 – Set up for calibration of impulse response or step response of ESW measurement system 22
Figure 6 – Instrument arrangement for arcing charge-delivery-distance test method, shown with jumpers (represented by double dashed lines) placed to measure arcing distance for the top air gap 26
Figure 7 – Diagram of air-gap test fixture 27
Figure 8 – Air-gap test fixture set to measure arcing distance for both ESW darts 28
Figure 9 – Typical arc 29
Figure 10 – Example arc waveforms for two arcing distances, 5 mm and 20 mm 30
Figure A.1 – Impedance matching network (IMN) 37
Figure A.2 – Input impedance 38

Table 1 –Waveform recorder minimum performance specifications 17
Table 2 – Initial instants and final instants for the *waveform* sub-*epochs* 31
Table A.1 – Resistance values 40

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Measurement method for the output of electroshock weapons

FOREWORD

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IEC 62792 has been prepared by IEC technical committee 85: Measuring equipment for electrical and electromagnetic quantities. It is an International Standard.

This second edition cancels and replaces the first edition published in 2015. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) addition of a new clause describing a method for measuring the high voltage arcing charge delivery distance; and
b) an annex describing an impedance matching network that is necessary to calibrate the measurement system.

The text of this International Standard is based on the following documents:

Draft	Report on voting
85/988/FDIS	85/995/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

Words in *italics* in the text are defined in Clause 3.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

– reconfirmed,
– withdrawn, or
– revised.

INTRODUCTION

Manufacturers, medical researchers, policy makers, users, and other interested parties involved with different aspects of *electroshock weapons* (*ESW*s) use a variety of different measurement methods, different terminologies, and different *parameters* to measure and describe the performance of an *ESW*. These differences generate confusion and misunderstanding within this stakeholder community, and this impacts the ability to perform accurate, reliable, and reproducible measurement comparisons. By developing a generally-accepted terminology, set of performance *parameters*, and test methods, this document will facilitate accurate and precise communication for the *parameters* that describe the electrical outputs, current and *high voltage*, of *ESW*s. This improved communication will aid this stakeholder community in collectively developing uniform methods for describing the *ESW* output and its effect on human physiology consistently and accurately, thereby enabling the development of safe use performance standards or regulations by the appropriate standardization body.

1 Scope

This document specifies a method for measuring the electrical outputs, current and *high voltage*, from *electroshock weapons* (*ESW*s) that deliver an electrical stimulus to humans. This document is applicable to any and all *ESW*s. This document describes *ESW* measurement systems to help guide the user of this document in developing their own *ESW* measurement system. It includes methods for measuring or computing a variety of *parameters* that can be used to characterize the electrical output of the *ESW*. The user of this document will select those *parameters* that are appropriate for their applications and stakeholders.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60469:2013, *Transitions, pulses and related waveforms - Terms, definitions and algorithms*

ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

BIPM, *The International System of Units (SI)*, 9th Edition, 2019

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

– IEC Electropedia: available at https://www.electropedia.org/

– ISO Online browsing platform: available at https://www.iso.org/obp

NOTE The *parameters* included here and suggested for use in describing the performance of an *ESW* are those typically used to describe the *waveforms* of pulse-like *signals* that are produced by pulse generators, such as an *ESW*, and the step-response or impulse-response of *waveform recorders* that are used to measure these pulse-like *signals*.

3.1
aggregate current
flow of charge per second delivered by the *ESW pulse train*

3.2
impulse amplitude
difference between the specified *level* corresponding to the *maximum peak* (*minimum peak*) of the positive (negative) *impulse-like waveform and the level of the state preceding the first transition of that impulse-like waveform*

[SOURCE: IEC 60469:2013, 3.2.3.1]