UNITED NATIONS
United Nations Interim
Administration Mission
in Kosovo

UNMIK

NATIONS UNIES
Mission d'Administration
Intérimaire des Nations Unies
au Kosovo

PROVISIONAL INSTITUTIONS OF SELF GOVERNMENT

KUVENDI I KOSOVËS
СКУПШТИНА КОСОВА
ASSEMBLY OF KOSOVO

Law No.2004 / 11

ON MEASUREMENT UNITS

The Assembly of Kosovo,

Pursuant to Regulation No. 2001/9 on a the Legal Framework for Provisional Self-Government in Kosova, in particular articles 5.1 (d), 9.1.1, 9.3.3, 11.2,

Approves:

General Provisions
Article 1

This law defines establishment of measuring units in Kosovo, designation and their symbols, the scope and areas of mandatory application of such units, and the their manner of application in Kosova pursuant to the International Document of the International Committee of Legal Metrology: CIML 1975 D.I.No.1/.

.

Article 2

Application of measuring units shall be obligatory in the following areas:

a. In the economic domain (production, construction, electrical power supply, industry, commerce), health and sanitary services, and environment protection.

b. In laws, by-laws, school textbooks, contracts, announcements, inscriptions, and in all other official acts and documents

Article 3

The definition, appraisal and manner of usage of measuring units shall be determined by rules and by-laws, and recognized standards drafted by the Legal Metrologic Institute of Kosova and are approved by the Ministry of Trade and Industry.

Measuring Units
Article 4

Legal Measuring Units in Kosova are the following:

4.1 International System Units (thereafter: SI Units) are:

i. SI Base Units (Table 1)

ii. SI Derived Units with specific names and symbols (Table 2)

iii. SI Derived Units, whose names and symbols include SI derived units with specific names and symbols (Table 3

4.2 A limited number of permitted units, out of the SI international system:

i. Units out of the SI permitted for a wider use (table 4);

ii. Units out of the SI permitted for use, values of which are determined experimentally (table 5);

iii. Units out of the SI permitted for use in special occasions (table 6).

4.3 Other units out of SI forbidden for use:

i. Derived units of the CGS system, with special names forbidden for use, (table 7)

ii. Units out of SI forbidden for use (table 8).

4.4 Prefixes:

i. Prefixes in SI, (table 9);

ii. Prefixes for binary multiple, (table 10);

iii. Comparisons with prefixes SI, (table 11).

4.5 Names and symbols of the size and units of the SI system and out of the SI system, presented in paragraphs 1, 2, 3 and 4 of this article, are given in the annex no.1, which is a part of this law.

Article 5

Besides legal measurement units set out in Article 4 of this Law, other measuring units may also be used in Kosova, provided that:

a. the usage of such measurement units is recognized by international agreements

b. such measuring units are used abroad for a commodity, a service or data, or by Kosova where these units are used.

Article 6

If during the process, when an imported commodity, a service, or information is placed into circulation, or in cases when data expressed in measuring units are inconsistent with the provisions of this Law, they must also be expressed in measuring units approved by this Law.

Article 7

For transfer or processing of the data, measuring units may be expressed in symbols, which are specifically regulated by a limited set of symbols, in accordance with international norms.

Article 8

Supervising the regularity of the measuring units, is carried out by the market inspection, whereas the expertise on measuring units is done by the Legal Metrology Institute of Kosova on the request of the market inspection, Court, Customs, and other physical and juridical parties.

Punitive Provisions
Article 9

9.1. A penalty of 1000 € to 5000 € shall be imposed for a legal person, if in the circulation of goods or while performing services, they do not use measuring units established by this Law (Article 4, 5 and 6).

9.2. If in violation of Paragraph 1 of this Article, a fine of 50 € to 500 € shall be imposed on the responsible person of a firm or any other legal person.

Article 10.

10.1. A penalty of 500 € to 2500 € shall be imposed for a legal person, if during his or her business uses measuring units that are inconsistent with provisions of this Law (Article 4).

10.2. If in violation of Paragraph 1 of this Article, a fine of 50 € to 500 € shall be imposed on the responsible person of a firm or any other legal person.

Article 11.

11.1. A penalty of 150 € to 500 € shall also be imposed on an entrepreneur if he/she does not use measuring units with the names and symbols established by this Law (Articles 4 and 5).

11.2. For violations of provisions under Paragraph 1of this Article, a penalty of 50 € to 250 € shall be imposed on the responsible person of a firm or any other legal person.

Article 12.

12.1. A penalty of 150 € to 500 € shall be imposed on a physical person, who carries out an economic activity by his own work, if he/she commits any of the actions provided for under Articles 9, 10 and 11 of this Law.

Article 13

The incomes that are generated from the application of provisions of this law are deposited to the Kosovo Consolidated Budget.

Final Provisions
Article 14

This law shall supersede all other previous laws and by-laws that govern measuring units.

Article 15

This law shall enter into force after its approval by the Assembly of Kosova and after the promulgation by the SRSG.

Law No.2004 / 11
29 April 2004

APPENDIX NO. 1

International System SI Base Units used for measuring physical magnitudes and phenomena are the following:

Table 1: SI Base Units

Base Quantity		***Base Unit***	
Name	***Symbol***	***Name***	***Symbol***
Length	*l*	meter	M
Mass	*m*	kilogram	Kg
Time	*t*	seconds	S
Electric current	*I*	Ampere	A
Thermodynamic temperature	*T*	Kelvin	K
Amount of substance	*n*	Mole	Mol
Luminous intensity	I_v	Candela	Cd

Table 2: SI derived units, whose names and symbols include SI derived units with specific names and symbols				
Derived quantity	***Derived Unit SI***			
	Name	***Symbol***	***Expressed in other SI Units***	***Expressed by SI Base Units***
Plane angle	radian [a]	rad	-	$m \cdot m^{-1} = 1$ [b]
Solid angle	steradian [a]	sr [c]	-	$m^2 \cdot m^{-2} = 1$ [b]
Frequency	hertz	Hz	-	s^{-1}
Force	newton	N	-	$m \cdot kg \cdot s^{-2}$
Pressure, stress	pascal	Pa	N/m^2	$m^{-1} \cdot kg \cdot s^{-2}$
Energy, work, quantity of Heat	joule	J	$N \cdot m$	$m^2 \cdot kg \cdot s^{-2}$
Power, radiant flux	watt	W	J/s	$m^2 \cdot kg \cdot s^{-3}$
Electric charge, quantity of electricity	coulomb	C	-	$s \cdot A$
Electric potential difference, electromotive force	volt	V	W/A	$m^2 \cdot kg \cdot s^{-3} \cdot A^{-1}$
Capacitance	farad	F	C/V	$m^{-2} \cdot kg^{-1} \cdot s^4 \cdot A^2$
Electric resistance	ohm	Ω	V/A	$m^2 \cdot kg \cdot s^{-3} \cdot A^{-2}$
Electric conductance	siemens	S	A/V	$m^{-2} \cdot kg^{-1} \cdot s^3 \cdot A^2$
Magnetic flux	weber	Wb	$V \cdot s$	$m^2 \cdot kg \cdot s^{-2} \cdot A^{-1}$
Magnetic flux density	tesla	T	Wb/m^2	$kg \cdot s^{-2} \cdot A^{-1}$
Inductance	henry	H	Wb/A	$m^2 \cdot kg \cdot s^{-2} \cdot A^{-2}$
Celsius temperature	degree Celsius	°C	-	K
Luminous flux	lumen	lm	$Cd \cdot sr$ [c]	$m^2 \cdot m^{-2} \cdot cd = cd$
Luminance	lux	lx	Lm/m^2	$m^2 \cdot m^{-4} \cdot cd = m^{-2} \cdot cd$
Activity (of a radionuclide)	becquerel	Bq	-	s^{-1}
Absorbed dose, specific energy (imparted), kerma	gray	Gy	J/kg	$m^2 \cdot s^{-2}$
Dose equivalent [d]	sievert	Sv	J/kg	$m^2 \cdot s^{-2}$
Catalytic activity	katal	kat		$s^{-1} \cdot mol$

Table 3: SI derived units, whose names and symbols include SI derived units with specific names and symbols		
Derived Quantities	***Derived Unit SI***	
	Name	***Symbol***
Dynamic viscosity	pascal second	Pa·s
Moment of force	newton meter	N·m
Surface tension	newton per meter	N/m
Angular velocity	radian per second	rad/s
Angular acceleration	radian per second squared	rad/s^2
Heat flux density, irradiance	watt per square meter	W/m^2
Heat capacity, entropy	joule per Kelvin	J/K
Specific heat capacity, specific entropy	joule per kilogram Kelvin	J/(kg·K)
Specific energy	joule per kilogram	J/kg
Thermal conductivity	watt per meter Kelvin	W/(m·K)
Energy density	joule per cubic meter	J/m^3
Electric field strength	volt per meter	V/m
Electric charge density	coulomb per cubic meter	C/m^3
Electric flux density	coulomb per square meter	C/m^2
Permittivity	farad per meter	F/m
Permeability	henry per meter	H/m
Molar energy	joule per mole	J/mol
Molar entropy, molar heat capacity	joule per mole Kelvin	J/(mol·K)
Exposure (x and γ rays)	coulomb per kilogram	C/kg
Absorbed dose rate	gray per second	Gy/s
Radiant intensity	watt per steradian	W/sr
Radiance	watt per square meter steradian	$W/(m^2 \cdot sr)$
Catalytic (activity) concentration	katal per cubic meter	kat/m^3

Table 4: Units out of SI generally accepted and used

Quantity		***Unit***		
Name	***Symbol***	***Name***	***Symbol***	***Value in SI Units***
Time	*t*	Minute hour Day	min h d	1 min = 60 s 1 h = 60 min 1 d = 24 h
Plane Angle	□	Degree Minutes Seconds	° ’ ”	/180)□1 ° = (rad 1’ = (1/60)’ 1” = (1/60)”
Volume	*V*	Liter	L	1 L = 1 dm^3
Mass	*m*	Metric tone	t	1 t = 10^3 kg
log		Neper	Np	1 Np = 1
ln		Bel	B	1 B = (1/2)ln 10 Np

Clarification:

It is allowed the use of some units that entered deeper use such as:

- Traditional math units for measuring the angles: arch scale, arch minute and arch.
- Traditional units for measuring of civil time (minute, hour, day and year).
- Two measuring unties that are often used in the daily life: liter for volume and ton for large mass.

Two logarithmic units: neper and bel.

Table 5: Units out of SI permitted for use values of which are determined experimentally				
Quantity		**Unit**		
Name	***Symbol***	***Name***	***Symbol***	***Value in SI Units***
Energy	E	Electron volt	eV	1 eV = 1,602 18*10^{-19} J (approximately)
Mass	m	Unified atomic mass unit	u	1 u = 1,660 54*10^{-27} kg (approximately)
Length	*l*	astronomic unit	ua	1 ua = 1,495 98*10^{11} m (approximately)

Clarification:

It is allowed the use of some scientific units out of SI which present important constants in science such as: astronomic unit for length, atomic unit for mass or Dalton for quantity and electron and Volt for energy which are given in table 5.

Table 6: Units out of SI accepted for use in specific areas

Quantity	*Unit*	*Symbol*	*Value in SI Units*
Length	Nautical mile		1 Nautical mile = 1852 m
speed	knot		1 Nautical mile per hour = (1852/3600) m/s
Linear densitety	texs		1 texs=10^{-6}kg/m=1mg/m
Pressure of liquids of human body	millimeter Colon with mercury	mmHg	1 mmHg=133322Pa
surface	are	a	1 a = 1 dam^2 = 10^2 m^2
	hectare	ha	1 ha = 1 hm^2 = 10^4 m^2
Pressure	bar	bar	1 bar = 0.1 MPa = 100 kPa = 1000 hPa = 10^5 Pa
Length	Ångström	Å	1 Å = 0.1 nm = 10^{-10} m
Section	barn	b	1 b = 100 fm^2 = 10^{-28} m^2

Clarification:

It is allowed the use of some metric and non-metric units which are in traditional use in different scientific fields. The use of these units should be understood in the way that in the case of any use the correlation of them with respective international units- SI should be given. These are:

- Nautical mile as a unit of speed and **knot** as unit of speed which is traditionally used in marine and meteorology.
- Acre and hectare units often used for surface (in Albania it s also used a lot the very old unit with Turkish origin – dulum that is 10 acres).
- Bar as a unit of pressure with all its manifolds and submultiples build according to the respective prefixes such as milibar in meteorology and kilobar in technique.
- angstrom (**ångström**) as a unit of length in physics and barn as a unit of efficient section in nuclear physics.

Table 7: Derived units of the CGS system with special names

Quantity	Name	Symbol	*Value in SI Units*
Work energy	erg	erg	1 erg = 10^{-7} J
force	din (dyn)	dyn	1 dyn = 10^{-5} N
Viscose	puaz (poise)	P	1 P = 1 dyn s/cm^2 = 0.1 Pa s
	stoks (stokes)	St	1 St = 1 cm^2/s = 10^{-4} m^2/s
Magnetic induction	gaus	G	1 G $\triangleq 10^{-4}$ T
The intensity of the magnetic filed	oersted	Oe	1 Oe $\triangleq (1000/4\pi)$ A/m
Magnetic flux	maksuell	Mx	1 Mx $\triangleq 10^{-8}$ Wb
Brightness	stilb	sb	1 sb = 1 cd/cm^2 = 10^4 cd/m^2
Illumination	fot (phot)	ph	1 ph = 10^4 lx
acceleration	gal	Gal	1 Gal = 1 cm/s^2 = 10^{-2} m/s^2

Clarification:

In table 7 are given units that can be found in literature and it is preferable that readers avoid them. With the help of this table they are transformed into the SI units and after the values are allowed for use.

Table 8: Units out of SI forbidden for use

Quantity	*Name*	*Symbol*	*Value in SI Units*
The activity of radionuclide	Curie	Ci	1 Ci = 3.7*10^{10} Bq
Exposure of X or gama rays	Roentgen	R	1 R = 2.58*10^{-4} C/kg
Absorption dosage of ionization	Rad	rad	1 rad = 1 cGy = 10^{-2} Gy
Equivalent dosage	Rem	rem	1 rem = 1 cSv = 10^{-2} Sv
length	unit X		1 unit X =1,002*10^{-4} nm
Submultiples of unit Tesla	gama	γ	1 γ= 1 nT = 10^{-9} T
	jansky	Jy	1 Jy = 10^{-26} W · m^{-2} · Hz^{-1}
length	fermi		1 fermi = 1 fm = 10^{-15} m
mass	Metric carat		1 karat metrik = 200 mg = 2*10^{-4} kg
pressure	torr	Torr	1 Torr = (101 325/760) Pa
	Normal atmosphere	atm	1 atm = 101 325 Pa
heat	calorie	cal	1 cal = 4,1868 J
Length	mikron	μ	1 μ = 1 μm = 10^{-6} m

Clarification:

In table 8 are given the units out of SI and it is preferable that readers avoid them. If they are found in literature, they should first of all be transformed in SI units according to this table and after the achieved values are usable in SI.

Table 9 : Prefixes SI

Factor	Name	Symbol
10^{24}	Jota	Y
10^{21}	Zeta	Z
10^{18}	Ekza	E
10^{15}	Peta	P
10^{12}	Tera	T
10^{9}	Giga	G
10^{6}	mega	M
10^{3}	kilo	K
10^{2}	hekto	H
10^{1}	deka	da

Factor	Name	Symbol
10^{-1}	deci	d
10^{-2}	centi	c
10^{-3}	mili	m
10^{-6}	mikro	μ
10^{-9}	nano	n
10^{-12}	piko	p
10^{-15}	femto	f
10^{-18}	ato	a
10^{-21}	zepto	z
10^{-24}	jokto	y

Clarification:

SI prefixes are used to create decimal units. Decimal units are created from:

- all basic units of SI, except the unit of kilogram-kg (tab.2).
- all derived units SI especially named, except unit of degree celzius-^{0}C (tab. 3).
- These units out of SI allowed to be used in special occasions and named especially: liter (L), tex (tex), bar (bar), elektronvolt (eV), and varn (var).

Table 10 : Prefixes for multiple binary

Name	Symbol	Factor
kibi	Ki	$2^{10} = 1024$
mebi	Mi	$2^{20} = 1\ 048\ 576$
gibi	Gi	$2^{30} = 1\ 073\ 741\ 824$
tebi	Ti	$2^{40} = 1\ 099\ 511\ 627\ 776$
pebi	Pi	$2^{50} = 1\ 125\ 899\ 906\ 842\ 624$
eksbi	Ei	$2^{60} = 1\ 152\ 921\ 504\ 606\ 846\ 975$
zebi	Zi	$2^{70} = 1\ 180\ 591\ 620\ 717\ 411\ 303\ 424$
jobi	Yi	$2^{80} = 1\ 208\ 925\ 819\ 614\ 629\ 174\ 706\ 176$

Clarification:

In December 1998 **IEC** (**International Electrotechnical Commission**), has approved standard names and symbols of prefixes for multiple binary. These prefixes are given in table 7. The names are formed from two first letters of the international prefix for multiples (***ki, me, gi, ti, pi, ex, ze, yo***), from letters bi that means ***binary*** and that can be applied in unit bit or byte. The symbols of binary multiples are formed from the symbol of international multiples– SI (K, M, G, T, P, E, Z, Y) and the letter ***i*** (Ki, Mi, Gi, Ti, Pi, Ei, Zi, Yi). In this case the multiple kilo got the symbol K and it can also be k.

Table 11: Comparisons with prefixes SI

a kibibit	1 Kibit = 2^{10} bit = **1 024 bit**
a kilobit	1 kbit = 10^3 bit = **1 000 bit**
a mebibajt	1 MiB = 2^{20} B = **1 048 576 B**
a megabajt	1 MB = 10^6 B = **1 000 000 B**
a gibibajt	1 GiB = 2^{30} B = **1 073 741 824 B**
a gigabajt	1 GB = 10^9 B = **1 000 000 000 B**

Clarification:

In table 11 are some examples of comparisons of binary units with international units.