


EUROMET ELECTRICITY AND MAGNETISM
Classification with standardised definitions of quantities for Excel CMC files, column A
Based on Classification of Electricity and Magnetism Calibration and Measurement Capabilities

(Version 7.2, revised 15 March 2002 taking into account comments received from the CCEM delegates)

Quantity Standard description for col. A given on the right	Typical Instrument or Artifact for table Column B e.g. solid state voltage standard	Standardised description for column A of the Excel CMC file symbol " / " shows different alternative possibilities: comments are given between square brackets [.....] version 1.2
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1 DC Voltage (up to 1100 V, for higher voltages see 8.1)

1.1 DC voltage sources		
1.1.1 single values	standard cell, solid state voltage standard	DC voltage sources: single values
1.1.2 low values (≤ 10 V)	DC voltage source, multifunction calibrator	DC voltage sources: low values
1.1.3 intermediate values (> 10 V to 1100 V)	DC voltage source, multifunction calibrator	DC voltage sources: intermediate values
1.1.4 noise voltages (for noise currents see 3.1.5, for RF noise see 11.4)	DC voltage source, DC amplifier	DC voltage sources: noise voltages
1.2 DC voltage meters		
1.2.1 very low values (≤ 1 mV)	nanovoltmeter, microvoltmeter	DC voltage meters: very low values
1.2.2 intermediate values (> 1 mV to 1100 V)	DC voltmeter, multimeter, multifunction transfer standard	DC voltage meters: intermediate values
1.3 DC voltage ratios (for input voltages up to 1100 V)		
1.3.1 up to 1100 V	resistive divider, ratio meter	DC voltage ratios: up to 1100 V
1.3.2 attenuation	attenuators	DC voltage ratio: attenuation

2 DC resistance

2.1 DC resistance standards and sources		
2.1.1 low values (≤ 1 Ω)	fixed resistor, resistance box	DC resistance standards and sources: low values
2.1.2 intermediate values (> 1 Ω to 1 M Ω)	fixed resistor, resistance box	DC resistance standards and sources: intermediate values
2.1.3 high values (> 1 M Ω)	fixed resistor, three terminal resistor, resistance box	DC resistance standards and sources: high values
2.1.4 standards for high current	DC shunt	DC resistance standards and sources: standards for high current
2.1.5 multiple ranges	multifunction calibrator	DC resistance standards and sources: multiple ranges
2.1.6 temperature, power and pressure coefficients	fixed resistor	DC resistance standards and sources: temperature coefficient/power coefficient/pressure coefficient

2.2 DC resistance meters		
2.2.1 low values ($\leq 1 \Omega$)	microohmmeter, multimeter, multifunction transfer standard, resistance bridge	DC resistance meters: low values
2.2.2 intermediate values ($> 1 \Omega$ to $1 \text{ G}\Omega$)	ohmmeter, multimeter, multifunction transfer standard, resistance bridge	DC resistance meters: intermediate values
2.2.3 high values ($> 1 \text{ G}\Omega$)	multimeter, multifunction transfer standard, teraohmmeter, resistance bridge	DC resistance meters: high values

3 DC current (up to 100 A, for higher currents see 8.7)

3.1 DC current sources		
3.1.1 low values ($\leq 0,1 \text{ mA}$)	current generator, multifunction calibrator	DC current sources: low values
3.1.2 intermediate values ($> 0,1 \text{ mA}$ to 20 A)	current generator, multifunction calibrator	DC current sources: intermediate values
3.1.3 high values ($> 20 \text{ A}$ to 100 A)	current generator	DC current sources: high values
3.1.4 transconductance ratio		DC current sources: transconductance ratio
3.1.5 noise currents (for noise voltages see 1.1.4, for DC current source, DC amplifier RF noise see 11.4)		DC current sources: noise currents

3.2 DC current meters		
3.2.1 low values ($\leq 0,1 \text{ mA}$)	picoammeter, nanoammeter, multimeter, multifunction transfer standard	DC current meters: low values
3.2.2 intermediate values ($> 0,1 \text{ mA}$ to 20 A)	current comparator	DC current meters: intermediate values
3.2.3 high values ($> 20 \text{ A}$ to 100 A)	current transducer, dedicated equipment for heavy current	DC current meters: high values

3.3 DC current ratios		
3.3.1 ratios up to 100 A	resistive dividers, DC current comparators, current transducers	DC current ratios

4 Impedance (up to the MHz range)

4.1 AC resistance		
4.1.1 real component (or modulus) and imaginary component (or argument or time constant)	fixed resistor	AC resistance: real component AC resistance: imaginary component AC resistance: time constant AC resistance: modulus AC resistance: argument

4.1.2 ac-dc difference	fixed resistor	AC resistance: AC-DC difference
4.1.3 resistors for high current	ac current shunt	AC resistance: resistors for high current
4.1.4 meters	LCR meter	AC resistance: meters

4.2 capacitance

4.2.1 capacitance and dissipation factor for low loss capacitors	standard capacitor (sealed, dry-nitrogen or fused silica dielectric)	Capacitance: low loss capacitors Capacitance: dissipation factor for low loss capacitors
4.2.2 capacitance and dissipation factor for dielectric capacitors	fixed capacitor, switched capacitor, capacitance box	Capacitance: dielectric capacitors Capacitance: dissipation factor for dielectric capacitors
4.2.3 capacitance and dissipation factor for transformed capacitors	fixed capacitor, switched capacitor	Capacitance: transformed capacitors Capacitance: dissipation factor for transformed capacitors
4.2.4 meters	capacitance bridge, LCR meter	Capacitance: meters

4.3 inductance

4.3.1 self inductance and equivalent series resistance, low values (< 1 mH)	fixed inductor, variable inductor, inductance box	Inductance: self inductance, low values
4.3.2 self inductance and equivalent series resistance, intermediate values (>= 1 mH to 1 H)	fixed inductor, variable inductor, inductance box	Inductance: self inductance, intermediate values
4.3.3 self inductance and equivalent series resistance, high values (> 1 H)	fixed inductor, variable inductor, inductance box	Inductance: self inductance, high values
4.3.4 mutual inductance	fixed mutual inductor	Inductance: mutual inductance
4.3.5 meters	LCR meter	Inductance: meters
4.3.6 quality factor	Q-standards	Inductance: quality factor

5 AC voltage (up to the MHz range)**5.1 AC-DC voltage transfer (for frequencies higher than 1 MHz see 11.7.1)**

5.1.1 AC-DC transfer difference at low voltages (typically <= 0,5 V)	thermal converter with amplifier, micropotentiometer, AC-DC transfer standard	AC voltage: AC-DC transfer difference at low voltages
5.1.2 AC-DC transfer difference at medium voltages (typically 0,5 V to 5 V)	thermal converter (directly connected), AC-DC transfer standard	AC voltage: AC-DC transfer difference at medium voltages
5.1.3 AC-DC transfer difference at higher voltages (typically > 5 V)	thermal converter with range extender, AC-DC transfer standard	AC voltage: AC-DC transfer difference at higher voltages

5.2 AC voltage up to 1000 V (for high voltage see 8.3)

5.2.1 sources	multifunction calibrator	AC voltage up to 1000 V: sources
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5.2.2 meters	AC voltmeter, multimeter, multifunction transfer standard	AC voltage up to 1000 V: meters
5.3 AC voltage ratio, attenuation and gain (for high voltage see 8.3)		
5.3.1 real component (or modulus) and imaginary component (or argument)	inductive voltage divider, voltage transformer, ac bridge standard, attenuator box, syncro-resolver	AC voltage ratio: real component AC voltage ratio: imaginary component AC voltage ratio: modulus AC voltage ratio: argument
5.3.2 attenuation and gain	passive device, attenuator box, inductive voltage divider	AC voltage ratio: attenuation/gain

6 AC current

6.1 AC-DC current transfer		
6.1.1 AC-DC transfer difference	thermal converter plus shunt, AC-DC transfer standard plus shunt	AC current: AC-DC transfer difference
6.2 AC current up to 100A (for high current see 8.6)		
6.2.1 sources	multifunction calibrator, transconductance amplifier	AC current up to 100 A: sources
6.2.2 meters	ac ammeter, multimeter, multifunction transfer standard,	AC current up to 100 A: meters
6.3 AC current ratio up to 100 A (for high current see 8.6)		
6.3.1 real component (or modulus) and imaginary component (or argument)	compensated current transformer, uncompensated current transformer, current transformer bridge	AC current ratio up to 100 A: real component AC current ratio up to 100 A: imaginary component AC current ratio up to 100 A: modulus AC current ratio up to 100 A: argument

7 AC power

7.1 AC power and energy		
7.1.1 single phase ($f \leq 400$ Hz)	power meter, energy meter, power converter, wattmeter	AC power and energy: single phase ($f \leq 400$ Hz), active/apparent/reactive power/energy
7.1.2 single phase ($f > 400$ Hz)	power meter, energy meter, power converter, wattmeter	AC power and energy: single phase ($f > 400$ Hz), active/apparent/reactive power/energy
7.1.3 three phase	power meters, energy meters	AC power and energy: three phase active/apparent/reactive power/energy

8 High voltage and current

8.1 high DC voltage (for voltages < 1100 V see 1)		
8.1.1 high voltage sources	DC kilovolt source	High DC voltage: sources
8.1.2 high voltage meters	DC kilovoltmeter, dedicated set-up for high voltage	High DC voltage: meters
8.1.3 ratios	high voltage resistive divider, DC high voltage probe	High DC voltage: ratios
8.2 high voltage impedance (for low voltages see 4)		
8.2.1 capacitance and dissipation factor	compressed gas capacitor, capacitor for high voltage	High voltage impedance: capacitance High voltage impedance: dissipation factor for capacitance
8.2.2 inductance and loss angle	high voltage reactor	High voltage impedance: inductance High voltage impedance: loss angle for inductance

8.2.3 burden: real and imaginary component	instrument transformer burden	High voltage impedance: burden: modulus High voltage impedance: burden: argument High voltage impedance: burden: real component High voltage impedance: burden: imaginary component
8.2.4 resistance	fixed high voltage resistor	High voltage impedance: resistance
8.3 AC high voltage (for voltages <1100 V see 5.2 and 5.3)		
8.3.1 sources	high voltage AC source	AC high voltage: sources
8.3.2 meters	AC high voltage meter, dedicated set-up for high voltage measurements (resistive and capacitive dividers)	AC high voltage: meters
8.3.3 peak values	AC high voltage meter, dedicated set-up for high voltage measurements (resistive and capacitive dividers)	AC high voltage: peak values
8.3.4 ratio error and phase displacement	high voltage transformer, voltage transformer bridge	AC high voltage: ratio error AC high voltage: ratio: phase displacement

8.4 pulsed high voltage and current		
8.4.1 lightning impulse voltage parameters	lightning impulse voltage measurement set-up, impulse calibrator, digital recorder	Pulsed high voltage and current: lightning impulse voltage parameters [other specifications in column B]
8.4.2 lightning impulse time parameters	lightning impulse voltage measurement set-up, impulse calibrator, digital recorder	Pulsed high voltage and current: lightning impulse time parameters [other specifications in column B]
8.4.3 switching impulse voltage parameters	switching impulse voltage measurement set-up, impulse calibrator, digital recorder	Pulsed high voltage and current: switching impulse voltage parameters [other specifications in column B]
8.4.4 switching impulse time parameters	switching impulse voltage measurement set-up, impulse calibrator, digital recorder	Pulsed high voltage and current: switching impulse time parameters [other specifications in column B]
8.4.5 impulse current parameters	dedicated measurement set-up, impulse divider	Pulsed high voltage and current: impulse current parameters [other specifications in column B]
8.4.6 impulse current time parameters	dedicated measurement set-up, impulse divider	Pulsed high voltage and current: impulse current time parameters [other specifications in column B]
8.4.7 impulse energy	impulse calibrator, shunt, transducer	Pulsed high voltage and current: impulse energy [other specifications in column B]
8.4.8 response parameters: response time, overshoot, settling time	impulse divider, shunt, transducer	Pulsed high voltage and current: response parameters: response time/overshoot/settling time

8.5 electric discharge		
8.5.1 apparent charge	partial discharge calibrator, partial discharge measuring instrument	Electric discharge: apparent charge
8.5.2 response	electrostatic discharge target	Electric discharge: response

8.6 high AC current (for currents ≤ 100 A see 6.2 and 6.3)		
8.6.1 sources	high current AC source	High AC current: sources
8.6.2 meters	dedicated measurement set-up, current transducer	High AC current: meters
8.6.3 ratio error and phase displacement	current transformer, current transformer bridge	High AC current: ratio error High AC current: ratio: phase displacement
8.6.4 pulsating current	pulsating current measurement set-up	High AC current: pulsating current [specifications in column B]

8.7 high DC current (for currents ≤ 100 A see 3, for shunts see 2.1.4)		
8.7.1 sources		High DC current: sources
8.7.2 meters	measurement set-up	High DC current: meters
8.7.3 ratios		High DC current: ratios

9 Other DC and low frequency measurements

9.1 electric charge		
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9.1.1 sources	q-source	Electric charge: sources
9.1.2 meters	q-meter	Electric charge: meters
9.2 phase angle		
9.2.1 sources	phase source	Phase angle: sources
9.2.2 meters	phase meter	Phase angle: meters
9.2.3 phase shift	phase shifters, phase shift measuring devices	Phase angle: phase shift
9.3 current and voltage waveform		
9.3.1 mains frequency current harmonics	mains frequency harmonics analyser, flicker meter	Current and voltage waveform: mains frequency current harmonics
9.3.2 voltage harmonic distortion	signal generator, distortion meter, level meter	Current and voltage waveform: voltage harmonic distortion

10 Electric and magnetic fields

10.1 electric fields below 50 kHz		
10.1.1 electrostatic field strength	electrostatic field meter, electrostatic generator	Electric fields below 50 kHz: electrostatic field strength
10.1.2 electric field strength	field strength probe, electric field meter	Electric fields below 50 kHz: electric field strength
10.2 magnetic fields below 50 kHz		
10.2.1 magnetic flux	flux meter, flux etalon	Magnetic fields below 50 kHz: DC magnetic flux Magnetic fields below 50 kHz: AC magnetic flux Magnetic fields below 50 kHz: AC magnetic flux, voltage-time integral
10.2.2 DC magnetic flux density and applied magnetic field strength	magnetic flux density meter, magnetic field strength meter	Magnetic fields below 50 kHz: DC magnetic flux density Magnetic fields below 50 kHz: DC magnetic flux density, field profile along the axis Magnetic fields below 50 kHz: DC magnetic field strength
10.2.3 AC magnetic flux density and applied magnetic field strength	magnetic flux density meter, magnetic field strength meter	Magnetic fields below 50 kHz: AC magnetic flux density Magnetic fields below 50 kHz: AC magnetic field strength
10.2.4 DC shielding factor (ratio of DC magnetic flux density)		Magnetic fields below 50 kHz: DC shielding factor
10.2.5 AC shielding factor (ratio of AC magnetic flux density)		Magnetic fields below 50 kHz: AC shielding factor
10.2.6 turn area (ratio of magnetic flux and magnetic flux density)	pick up coil	Magnetic fields below 50 kHz: turn area
10.2.7 magnetic flux density or magnetic field strength per unit current	field coils	Magnetic fields below 50 kHz: DC magnetic flux density per unit current Magnetic fields below 50 kHz: AC magnetic flux density per unit current Magnetic fields below 50 kHz: AC magnetic field strength per unit current
10.2.8 magnetic field gradient	gradiometers	Magnetic fields below 50 kHz: field gradient
10.3 electromagnetic fields above 50 kHz		
10.3.1 electric field strength	field probe	Electromagnetic fields above 50 kHz: electric field strength
10.3.2 magnetic field strength	field probe	Electromagnetic fields above 50 kHz: magnetic field strength
10.3.3 power flux density	field probe	Electromagnetic fields above 50 kHz: power flux density
10.3.4 magnetic flux density		Electromagnetic fields above 50 kHz: magnetic flux density
10.3.5 magnetic field strength per unit current		Electromagnetic fields above 50 kHz: magnetic field strength per unit current

10.3.6 turn area (ratio of magnetic flux and magnetic flux density)	Electromagnetic fields above 50 kHz: turn area
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11 Radio frequency measurements

11.1 RF power		
11.1.1 absolute power on coaxials	power meter, power source	RF power: absolute power on coaxials
11.1.2 absolute power on waveguides	power meter, power source	RF power: absolute power on waveguides
11.1.3 calibration factor and effective efficiency on coaxials	thermistor, barretter and power sensor	RF power: calibration factor on coaxials RF power: effective efficiency on coaxials
11.1.4 calibration factor and effective efficiency on waveguides	thermistor, barretter and power sensor	RF power: calibration factor on waveguides RF power: effective efficiency on waveguides
11.1.5 non-CW power (absolute or relative)	peak power sensor, sensors with time resolution	RF power: non-CW power
11.1.6 power measurements in balanced lines	power meter (e.g. in 150 ohm)	RF power: power in balanced lines

11.2 Scalar RF reflection coefficient and attenuation (Note: not using a VNA or similar device) (magnitude)		
11.2.1 reflection coefficient on coaxials (values in linear terms)	passive device	Scalar RF reflection coefficient: on coaxials
11.2.2 reflection coefficient on waveguides (values in linear terms)	passive device	Scalar RF reflection coefficient: on waveguides
11.2.3 attenuation on coaxials (values in dB)	passive device	Scalar RF attenuation: on coaxials Scalar RF attenuation: on coaxials, magnitude Scalar RF attenuation and gain: on coaxials
11.2.4 attenuation on waveguides (values in dB)	passive device	Scalar RF attenuation: on waveguides Scalar RF attenuation: on waveguides, magnitude Scalar RF attenuation and gain: on waveguides
11.2.5 directivity, effective source match	multiports, splitter	Scalar RF reflection and attenuation: directivity Scalar RF reflection and attenuation: effective source match
11.2.6 reflection and attenuation measurements in balanced lines		Scalar RF reflection coefficient: in balanced lines Scalar RF attenuation: in balanced lines

11.3 scattering parameters (vectors) (linear terms are to be preferred)		
11.3.1 reflection coefficient (S_{ii}) on coaxials (values in linear terms: real and imaginary or magnitude)	passive device, generator	Scattering parameters: reflection coefficient (S_{ii}) on coaxials, real and imaginary Scattering parameters: reflection coefficient (S_{ii}) on coaxials, real component Scattering parameters: reflection coefficient (S_{ii}) on coaxials, imaginary component Scattering parameters: reflection coefficient (S_{ii}) on coaxials, magnitude Scattering parameters: reflection coefficient (S_{ii}) on coaxials, phase

11.3.2 reflection coefficient (S_{ii}) on waveguides (values in linear terms: real and imaginary or magnitude)	passive device, generator	Scattering parameters: reflection coefficient (S_{ii}) on waveguides, real and imaginary Scattering parameters: reflection coefficient (S_{ii}) on waveguides, real component Scattering parameters: reflection coefficient (S_{ii}) on waveguides, imaginary component Scattering parameters: reflection coefficient (S_{ii}) on waveguides, magnitude Scattering parameters: reflection coefficient (S_{ii}) on waveguides, phase
(Note: for class 11.3.3. and 11.3.4 information on a presentation in dB may be given in column U of the CMCs)		
11.3.3 transmission coefficient (S_{ij}) on coaxials (values in linear terms: real and imaginary)	passive devices	Scattering parameters: transmission coefficient (S_{ij}) on coaxials, real and imaginary Scattering parameters: transmission coefficient (S_{ij}) on coaxials, real component Scattering parameters: transmission coefficient (S_{ij}) on coaxials, imaginary component Scattering parameters: transmission coefficient (S_{ij}) on coaxials, magnitude Scattering parameters: transmission coefficient (S_{ij}) on coaxials, phase
11.3.4 transmission coefficient (S_{ij}) on waveguides (values in linear terms: real and imaginary)	passive devices	Scattering parameters: transmission coefficient (S_{ij}) on waveguides, real and imaginary Scattering parameters: transmission coefficient (S_{ij}) on waveguides, real component Scattering parameters: transmission coefficient (S_{ij}) on waveguides, imaginary component Scattering parameters: transmission coefficient (S_{ij}) on waveguides, magnitude Scattering parameters: transmission coefficient (S_{ij}) on waveguides, phase
11.3.5 directivity, effective source match	multiports, splitter	Scattering parameters: directivity Scattering parameters: effective source match

11.4 noise (for LF noise voltages and currents see 1.1.4 and 3.1.5)

11.4.1 noise temperature or excess noise ratio in coaxials	noise source	RF noise: noise temperature in coaxials RF noise: excess noise ratio in coaxials
11.4.2 noise temperature or excess noise ratio in waveguides	noise source	RF noise: noise temperature in waveguides RF noise: excess noise ratio in waveguides
11.4.3 amplitude noise parameters	2 port amplifier, mixers	RF noise: amplitude noise parameters RF noise: amplifier noise parameters: forward receiver noise wave RF noise: amplifier noise parameters: reverse receiver noise wave RF noise: amplifier noise parameters: magnitude of complex correlation term RF noise: amplifier noise parameters: phase of complex correlation term
11.4.4 phase noise	oscillator, 2 port device	RF noise: phase noise
11.4.5 radio brightness temperature, spectral radiance wide aperture noise radiometer in free space		RF noise: radio brightness temperature RF noise: spectral radiance in free space

11.5 antenna properties

11.5.1 antenna factor	antenna dipole, loop antenna, log antenna	Antenna properties: antenna factor
11.5.2 antenna gain	antenna dipole, horn antenna, log periodic	Antenna properties: antenna gain
11.5.3 other properties (pattern, beam width, ...)	antenna dipole, horn antenna, log periodic	Antenna properties: pattern / beam width / etc. [specify property]

11.6 signal and pulse characteristics (phase noise s. 11.4.4)

11.6.1 pulse amplitude	oscilloscope, pulse & function generator	Signal and pulse characteristics: pulse amplitude Signal and pulse characteristics: pulse amplitude aberrations (e.g. preshoot, overshoot)
11.6.2 pulse time parameters	oscilloscope, pulse & function generator	Signal and pulse characteristics: pulse time parameters Signal and pulse characteristics: pulse time parameters: risetime Signal and pulse characteristics: pulse time parameters: time interval Signal and pulse characteristics: pulse time parameters : rise time, fall time, pulse width and phase
11.6.3 modulation, AM and FM	signal generator, spectrum analyser, modulation meter, jitter meter	Signal and pulse characteristics: amplitude modulation Signal and pulse characteristics: frequency modulation
11.6.4 distortion and harmonic content	signal generator, spectrum analyser, distortion meter	Signal and pulse characteristics: distortion Signal and pulse characteristics: harmonic content Signal and pulse characteristics: distortion and harmonic content

11.7 RF voltage and current (for frequencies lower than 1 MHz see 5 and 6)

11.7.1 RF-DC difference	thermal voltage converter, ac-dc current standard	RF voltage / current: RF-DC transfer difference
11.7.2 RF voltage sources	RF generator	RF voltage sources
11.7.3 RF voltage meters	RF voltmeter	RF voltage meters
11.7.4 RF current	RF current generator	RF current

11.8 lumped impedance/admittance (using RF techniques)

11.8.1 resistance/conductance (R , G)		RF Lumped impedance / admittance: resistance / conductance
11.8.2 inductance (L)		RF Lumped impedance / admittance: inductance
11.8.3 capacitance (C)		RF Lumped impedance / admittance: capacitance
11.8.4 quality factor (Q)	Q-standard, Q-meter	RF Lumped impedance: quality factor

11.9 characteristic impedance

11.9.1 mechanical dimensions	coaxial airline, waveguide	RF characteristic impedance: mechanical cross dimensions RF characteristic impedance: mechanical dimensions, length
11.9.2 electrical parameters	coaxial airline	RF characteristic impedance: electrical parameters [specify]

12 Measurements on materials

12.1 electrical conductivity

12.1.1 metallic materials	metallic bar, sheet, reference material	Electrical conductivity: metallic materials
12.1.2 liquids (see also subject field "Amount of Substance")	liquid, reference material, electrolytic cell	Electrical conductivity: liquids
12.1.3 semiconducting and similar materials	reference wafers	Electrical conductivity: semiconducting materials

12.2 dielectric properties

12.2.1 relative permittivity: real and/or imaginary part	solid materials, liquid materials	Dielectric properties: relative permittivity: real component Dielectric properties: relative permittivity: imaginary component
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12.2.2 dielectric loss tangent: $\tan \delta$	solid materials, liquid materials	Dielectric properties: loss tangent
12.3 soft magnetic sheet and powder materials		
12.3.1 specific total power loss	Epstein, ring and single sheet sample	Soft magnetic sheet and powder materials: specific total power loss
12.3.2 peak value of DC magnetic polarisation	Epstein, ring and single sheet sample	Soft magnetic sheet and powder materials: peak value of DC magnetic polarisation
12.3.3 peak value of AC magnetic polarisation	Epstein, ring and single sheet sample	Soft magnetic sheet and powder materials: peak value of AC magnetic polarisation
12.3.4 peak value of magnetic field strength	Epstein, ring and single sheet sample	Soft magnetic sheet and powder materials: peak value of magnetic field strength
12.3.5 RMS value of magnetic field strength	Epstein, ring and single sheet sample	Soft magnetic sheet and powder materials: RMS value of magnetic field strength
12.3.6 specific apparent power	Epstein, ring and single sheet sample	Soft magnetic sheet and powder materials: specific apparent power
12.3.7 peak permeability	Epstein, ring and single sheet sample	Soft magnetic sheet and powder materials: peak permeability
12.3.8 complex relative permeability		Soft magnetic sheet and powder materials: complex relative permeability
12.3.9 density	Epstein, ring and single sheet sample	Soft magnetic sheet and powder materials: density
12.3.10 resistivity	Epstein, ring and single sheet sample	Soft magnetic sheet and powder materials: resistivity
12.4 soft Magnetic bulk material		
12.4.1 magnetic polarisation	rod, cylinder	Soft magnetic bulk materials: magnetic polarisation Soft magnetic bulk materials: magnetic polarisation (quasi-static field)
12.4.2 magnetic field strength	rod, cylinder	Soft magnetic bulk materials: magnetic field strength Soft magnetic bulk materials: magnetic field strength (quasi-static field)
12.4.3 remanent magnetic flux density	rod, cylinder	Soft magnetic bulk materials: remanent magnetic flux density Soft magnetic bulk materials: remanent magnetic flux density (quasi-static field)
12.4.4 coercive magnetic field strength	rod, cylinder	Soft magnetic bulk materials: coercive field strength (quasi-static field) Soft magnetic bulk materials: coercive field strength (static field)
12.4.5 magnetic saturation polarisation	rod, cylinder	Soft magnetic bulk materials: magnetic saturation polarization (quasi-static field)
12.4.6 permeability	rod, cylinder	Soft magnetic bulk materials: permeability
12.5 feebly magnetic, paramagnetic and diamagnetic material		
12.5.1 DC magnetic susceptibility or relative magnetic permeability	rod, cylinder	Feebly magnetic, paramagnetic and diamagnetic materials: DC magnetic susceptibility Feebly magnetic, paramagnetic and diamagnetic materials: DC relative magnetic permeability
12.6 hard magnetic material		
12.6.1 remanent magnetic flux density	cylinder, rectangular parallelepiped	Hard magnetic materials: remanent magnetic flux density
12.6.2 coercive field strength (H_{CB} , H_{CJ})	cylinder, rectangular parallelepiped	Hard magnetic materials: coercive field strength (H_{CB} , H_{CJ}) Hard magnetic material: coercive field strength H_{CB} Hard magnetic material: coercive field strength H_{CJ}
12.6.3 maximum energy product $(B \cdot H)_{max}$	cylinder, rectangular parallelepiped	Hard magnetic material: maximum energy product $(B \cdot H)_{max}$
12.6.4 magnetic moment	cylinder, rectangular parallelepiped	Hard magnetic materials: magnetic moment
12.6.5 magnetic flux density	cylinder, rectangular parallelepiped	Hard magnetic materials: magnetic flux density

12.6.6 magnetic polarisation	cylinder, rectangular parallelepiped	Hard magnetic materials: magnetic polarisation
12.6.7 recoil permeability		Hard magnetic materials: recoil permeability

12.7 magnetic data storage media		
12.7.1 signal amplitude of magnetic stripes	magnetic stripes	Magnetic data storage media: signal amplitude of magnetic stripes
12.7.2 surface profile of magnetic stripes	magnetic stripes	Magnetic data storage media: surface profile of magnetic stripes
12.7.3 reference field of diskettes	diskettes	Magnetic data storage media: reference field of diskettes
12.7.4 signal amplitude of diskettes	diskettes	Magnetic data storage media: signal amplitude of diskettes, outer diameter Magnetic data storage media: signal amplitude of diskettes, inner diameter
12.7.5 resolution of diskettes	diskettes	Magnetic data storage media: resolution of diskettes
12.7.6 peak shift of diskettes	diskettes	Magnetic data storage media: peak shift of diskettes
12.7.7 overwrite of diskettes	diskettes	Magnetic data storage media: overwrite of diskettes Magnetic data storage media: overwrite of stripes
12.7.8 video and audio tapes		Magnetic data storage media: video and audio tapes [specify]

NOTE on presentation rules

AC and DC divider ratios (cat 1.3.1, 5.3.1 and 8.1.3):

presented as output / input

AC high voltage and current transformers (cat. 8.3.4, 8.6.3):

presented as ratio error and phase displacement (ratio values given as parameters)

LF and RF AC-DC difference (cat. 5.1.1, 5.1.2, 5.1.3, 6.1.1, 11.7.1):

voltage or current values given in range columns