AKKREDITOITU TESTAUSLABORATORIO

ACCREDITED TESTING LABORATORY

FINAS
Finnish Accreditation Service
T290 (EN ISO/IEC 17025)

GRANT4COM OY

Tunnus ***Code***	**Laboratorio** ***Laboratory***	**Osoite** ***Address***	**www** ***www***
T290	**Grant4Com Oy**	**Yrttipellontie 6** **90230 OULU** ***Yrttipellontie 6*** ***FI-90230 OULU*** ***FINLAND***	**www.grant4com.fi** ***www.grant4com.fi***

Testausalat ***Fields of testing***
EMC/RF ***EMC/RF testing***
Sähkölaitteet ja tarvikkeet ***Electrical equipment and accessories***

PÄTEVYYSALUE ***SCOPE OF ACCREDITATION***		
Testattava materiaali / tuote ***Material / product tested***	**Testityyppi, mittausalue** ***Type of test, measured range***	**Testausmenetelmä** ***Test method***
EMC/RF, EMC ***EMC/RF-testing, EMC***		
Sähköiset ja elektroniset laitteet *Electrical and electronic equipment* Radiolaitteet *Radio equipment* Sähköiset testaus-, mittaus- ja laboratoriolaitteet *Electrical equipment for measurement, control and laboratory use*	Sähkömagneettinen yhteensopivuus (EMC) *ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements*	*EN 301 489-1*
	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz	*EN 301 489-3*
	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems	*EN 301 489-17*
	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 19: Specific conditions for Receive Only Mobile Earth Stations (ROMES) operating in the 1,5 GHz band providing data communications and GNSS receivers operating in the RNSS band (ROGNSS) providing positioning, navigation, and timing data	*EN 301 489-19*
	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 20: Specific conditions for Mobile Earth Stations (MES) used in the Mobile Satellite Services (MSS)	*EN 301 489-20*

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	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 34: Specific conditions for External Power Supply (EPS) for mobile phones	*EN 301 489-34*
	Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 52: Specific conditions for Cellular Communication Mobile and portable (UE) radio and ancillary equipment	*EN 301 489-52*
	Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for harmonic current emissions (equipment input current ≤16 A per phase)	*IEC/EN 61000-3-2*
	Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection	*IEC/EN 61000-3-3*
	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	*IEC/EN 61000-4-2*
	Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	*IEC/EN 61000-4-3*
	Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	*IEC/EN 61000-4-4*

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	Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test	*IEC/EN 61000-4-5*
	Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	*IEC/EN 61000-4-6*
	Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test	*IEC/EN 61000-4-8*
	Electromagnetic compatibility (EMC) - Part 4-9: Testing and measurement techniques - Impulse magnetic field immunity test	*IEC/EN 61000-4-9*
	Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests	*IEC/EN 61000-4-11*
	Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light-industrial environments	*IEC/EN 61000-6-1*
	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments	*IEC/EN 61000-6-2*
	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments	*IEC/EN 61000-6-3*
	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments	*IEC/EN 61000-6-4*

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	Industrial, scientific and medical (ISM) radio-frequency equipment – Electromagnetic disturbance characteristics – Limits and methods of measurement.	*CISPR 11 / EN 55011*
	Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement	*CISPR 22 / EN 55022*
	Information technology equipment - Immunity characteristics - Limits and methods of measurement	*CISPR 24 / EN 55024*
	Electromagnetic compatibility of multimedia equipment - Emission Requirements	*CISPR 32 / EN 55032* *Exclusions: TVs, set top boxes*
	Electromagnetic Compatibility of multimedia equipment – Immunity Requirements	*CISPR35 / EN 55035* *Exclusions: broadcast receivers, CPEs containing xDSL ports*
	Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements	*IEC/EN 61326-1* *IEC/EN 61326-2-1* *IEC/EN 61326-2-2* *IEC/EN 61326-2-3* *IEC/EN 61326-2-4* *IEC/EN 61326-2-5*
	Conformance testing of GSM Terminals (Methods and tests) GSM Frequency bands included: GSM850, GSM900, GSM1800 and GSM1900	*3GPP TS 51.010-1* *subclauses 12.1 and 12.2*
	Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW	*EN 300 220* *(EN 300 220-2, 4.2.2 Unwanted emissions in the spurious domain* *(EN 300 220-1, 5.9 Unwanted emissions in the spurious domain)*
	Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM	*EN 300 328* *4.3.1.10 Transmitter unwanted emissions in the spurious*

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	band and using wide band modulation techniques	*domain* *4.3.1.11 Receiver spurious emission*
	Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz	*EN 300 330* *4.3.8 Transmitter radiated spurious domain emission limits < 30 MHz* *4.3.9 Transmitter radiated spurious domain emission limits > 30 MHz* *4. 4.2 Receiver spurious emissions*
	Short Range Devices (SRD); Radio equipment to be used in the 1 GHz to 40 GHz frequency range	*EN 300 440* *4.3.5 Spurious radiations*
	Satellite Earth Stations and Systems (SES); Global Navigation Satellite System (GNSS) receivers; Radio equipment operating in the 1 164 MHz to 1 300 MHz and 1 559 MHz to 1 610 MHz frequency bands	*EN 303 413* *5.5 Receiver spurious emissions test*
	Global System for Mobile communications (GSM); Mobile Stations (MS) equipment	*ETSI EN 301 511* *clauses 5.2.16 and 5.2.17*
	Broadband Radio Access Networks (BRAN); 5 GHz high performance RLAN	*ETSI EN 301 893* *Radiated Tx and Rx spurious only* *Restriction: measurement frequency up to 18 GHz*
	IMT cellular networks	*ETSI EN 301 908-1* *Radiated Emissions UE (Devices falling under -2 and -13).*
Sähkölaitteet ja tarvikkeet, Elektroniikka ***Electrical equipment and accessories, Electronic Equipments (TRON, OFF)***		
Laboratorio- ja mittauslaitteet *Laboratory and measuring equipment*	Turvallisuustestaus *Safety*	*IEC/EN/UL/CSA/AS 61010-1:* *4.4 testing in single fault conditions* *5.1.3 measurement of input power*

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		5.3 durability of markings *6.2 accessibility* *6.3 measurement of leakage current* *6.5.2 bonding impedance* *6.6.4 terminals for stranded conductors* *6.7 measurement of clearance, creepage distance and distance through insulation* *6.8 voltage test* *6.10.2 cord entry and cord anchorage test* *6.10.3 capacitor discharge* *7.3.4 Limitation of force and pressure* *7.3.5 Gap limitations between moving parts* *7.4 stability tests* *7.5 strength of handles* *7.6 wall mounting* *8.2 enclosure rigidity tests* *8.3 drop test* *9.3.2 Constructional requirements* *9.4 limited energy circuit* *10.4.1 temperature test* *10.5.2 thermoplastic material test* *10.5.3 Ball pressure apparatus* *11.1-11.5 protection against hazards from fluids* *13.2.2 batteries and battery charging*
Audio- ja videolaitteet sekä tieto- ja tietoliikennetekniikan laitteet *Audio/video, information and*	Turvallisuustestaus *Safety*	*IEC/EN/UL/CSA/AS 62368-1:* *4.8 Coin/button cell batteries*

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communication technology equipment		*5: Classification of electrical energy sources* *5.3.2 accessibility* *5.4.1.10 Ball pressure test* *5.4.2-5.4.4 measurement of clearance, creepage distance and distance through insulation* *5.4.8 humidity conditioning* *5.4.9 electrical strength test* *5.4.10 safeguards against transient voltages from external circuits* *5.4.11 Separation between external circuit and earth* *5.5.2.2 capacitor discharge* *5.6.4.1 bonding impedance* *5.7 touch current* *6: Classification of power sources* *8: Classification of mechanical energy source* *8.6 stability tests* *8.7 wall mounting* *8.8 strength of handles* *8.9 wheels and castors* *8.10 carts and stands* *8.11 rack mounted equipment* *8.12 telescoping or rod antennas* *9:Classifications of thermal energy sources* *9.2.5 temperature tests* *9.6 requirements for wireless power transmitters* *B.2.5 Input test* *B.2.6 Operating temperature measurement conditions*

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		B.3 Simulated abnormal operating conditions *B.4 Simulated single fault conditions* *Annex E: Audio amplifiers* *F.3 Durability of markings* *G.7 Cord anchorage and strain relief test for non-detachable power supply cords* *M.3 Protection circuits for batteries provided within the equipment* *M.4 Additional safequards for equipment containing a secondary lithium battery* *M.5 Risks of burn due to short-circuit* *M.6 Prevention of short-circuits and protection from other effects of electric current* *M.9 Preventing electrolyte spillage* *P.2 Safeguards against entry of solid foreign objects* *Q.1 Limited Power Source; a), b) and c)* *T.2 Steady force test 10 N* *T.3 Steady force test 30 N* *T.4 Steady force test 100 N* *T.5 Steady force test 250 N* *T.6 Enclosure impact test* *T.7 Drop test* *T.8 Stress relief test* *T.9 Impact test* *T.10 Glass fragmentation test*
Audio- ja videolaitteet sekä tieto- ja tietoliikennetekniikan laitteet *Audio/video, information and*	Turvallisuustestaus *Safety*	*IEC/EN 62368-3* *5.3.2 DC power transfer interconnection to other*

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communication technology equipment		*equipment (current measurement)* *5.4.1 Requirement for the PSE (voltage measurement)* *5.4.2 Requirement for the PD (voltage measurement)*
Sähkö- ja elektroniikkalaitteet *Electrical and electronics equipment*	Turvallisuustestaus *Safety*	*IEC/EN 60529* Sähkölaitteiden kotelointiluokat (IP-koodi) *Degrees of protection provided by enclosures (IP Code)* *Tests for protection of persons against access to hazardous parts and protection of equipment against solid foreign objects indicated by the first characteristic numeral (IP1X-6X)* *Tests for protection against water indicated by the second characteristic numeral (IPX1-4, IPX5, IPX7, IPX8)*

Kun standardista ei ole mainittu vuosilukua, niin akkreditointi koskee standardin viimeisintä versiota. Tarkka lista standardeista on saatavilla laboratoriosta.

When the approval year of the standard is not specified accreditation covers the latest version of the method. Detailed list of standards is available from the laboratory.