



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

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ELECTRICAL

Valid to: June 30, 2019

Certificate Number: 0839.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory at the location listed above, *as well as the satellite laboratory location listed below*, to perform the following electromagnetic compatibility, radio, telecom, and product safety tests:

<u>Test Technology:</u>	<u>Test Method(s) ^{2, 4}:</u>
Radio Tests (excluding SAR where applicable)	
Radio frequency device	CFR 47 Part 15 Subparts C/D/E/F/G/H (using ANSI C63.10:2013 and ANSI C63.17:2013); CFR 47 Parts 20, 22, 24, 25, 27, 30, 74, 95, 96, 97, 101(using TIA/EIA 603-E:10 and ANSI C63.26:2015)
Private land mobile radio services	CFR 47 Part 90 (using, TIA/EIA 603-E:04; TIA/EIA 603-E:10
Low power license-exempt radio communication devices (all frequency bands)	RSS-210; RSS Gen
Land mobile and fixed radio transmitters and receivers, 27.41 MHz to 960.0 MHz	RSS-119
Canada Radio Standards Specification	RSS-102 (RF Exposure Evaluation); RSS-111; RSS-119; RSS-123; RSS-125; RSS-129; RSS-131; RSS-132; RSS-133; RSS-134; RSS-137; RSS-139; RSS-142; RSS-191; RSS-192; RSS-194; RSS-195; RSS-196; RSS-197; RSS-199; RSS-213; RSS-216; RSS-222; RSS-243; RSS-247; RSS-251; RSS-310
Radio equipment and systems - Short range devices	AS/NZS 4268
Analogue speech (angle modulated) equipment operating in land mobile and fixed services bands in the frequency range 29.7 MHz to 1 GHz	AS/NZS 4295
Data transmission equipment operating in the 900 MHz, 2.4 GHz and 5.8 GHz bands and using spread spectrum modulation techniques	AS/NZS 4771
Digital radio equipment operating in land mobile and fixed services bands in the frequency range 29.7 MHz to 1 GHz, Part 1	AS/NZS 4768.1; AS/NZS 4768.2

Test Technology:	Test Method(s) ^{2,4}:
Radio Tests (Cont'd) (excluding SAR where applicable)	
Radio equipment to be used in the 25 MHz to 1,000 MHz frequency range with power levels ranging up to 500 mW	EN 300 220-1; EN 300 220-2; EN 300 220-3-1; EN 300 220-3-2; EN 300 220-4
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
Radio equipment to be used in the 1 GHz to 40 GHz frequency range	EN 300 440
Social Alarms Equipment operating in the frequency range 25 MHz to 1 000 MHz	EN 303 406
Land mobile service; Radio equipment with an internal or external RF connector intended primarily for analogue speech	EN 300 086
Land mobile service; Radio equipment intended for the transmission of data (and/or speech) using constant or non-constant envelope modulation and having an antenna connector	EN 300 113
Electromagnetic compatibility and radio spectrum matters (ERM); Land mobile service; Radio equipment intended for the transmission of data (and speech) and using an integral antenna	EN 300 390
WB transmission systems; Data transmission equipment operating in the 2.4 GHz ISM band and using spread spectrum modulation techniques	EN 300 328
Fixed radio systems; Point-to-point equipment	EN 301 126-1
Fixed radio systems; Conformance testing	EN 301 126-2-1
Point-to-Multipoint equipment - FDMA equipment	EN 301 126-2-2
Point-to-Multipoint equipment - Test procedures for TDMA equipment	EN 301 126-2-3
Point-to-Multipoint equipment - Test procedures for FH-CDMA equipment	EN 301 126-2-4
Point-to-Multipoint equipment - Test procedures for DS-CDMA equipment	EN 301 126-2-5
Point-to-Multipoint equipment - Test procedures for MC-TDMA equipment	EN 301 126-2-6
Fixed radio systems; Point-to-Multipoint systems; Spurious emissions and receiver immunity limits at equipment/antenna port of digital fixed radio systems	EN 301 390
Point-to-multipoint equipment and antennas	EN 302 326-2
Fixed radio systems; Characteristics and requirements for point to point equipment/antennas	EN 302 217-2-2 EN 302 217-3
Broadband radio access networks (BRAN); 5 GHz high performance RLAN	EN 301 893
Global system for mobile communications (GSM); Harmonized EN for mobile stations in the GSM 900 and GSM 1800	EN 301 511 (Spurious Emissions)

Test Technology:	Test Method(s) ^{2,4}:
Radio Tests (Cont'd) (excluding SAR where applicable)	
IMT cellular networks; Part 13: Evolved Universal Terrestrial Radio Access (E-UTRA) User Equipment (UE)	EN 301 908-13 (Spurious Emissions)
IMT cellular networks; Part 2: CDMA Direct Spread (UTRA FDD) User Equipment (UE)	EN 301 908-2 V6.2.1 (Spurious Emissions)
IMT cellular networks; Part 1: Introduction and common requirements	EN 301 908-1
IMT cellular networks; Part 14: Evolved Universal Terrestrial Radio Access (E-UTRA) Base Stations (BS)	EN 301 908-14
IMT cellular networks; Part 18: E-UTRA, UTRA and GSM/EDGE Multi-Standard Radio (MSR) Base Station (BS)	EN 301 908-18
Broadband radio access networks (BRAN); 5.8 GHz fixed broadband data transmitting systems	EN 302 502
Radio Frequency Identification Equipment operating in the band 865 MHz to 868 MHz with power levels up to 2 W and in the band 915 MHz to 921 MHz with power levels up to 4 W	EN 302 208
Ultra-low power active medical implants (ULP-AMI) and peripherals (ULP-AMI-P) operating in the frequency range 402 MHz to 405 MHz	EN 301 839
Radio equipment in the frequency range 9 kHz to 315 kHz for Ultra Low Power Active Medical Implants (ULP-AMI) and accessories	EN 302 195
Ultra-low power medical data service systems operating in the frequency range 401 MHz to 402 MHz and 405 MHz to 406 MHz;	EN 302 537
Global System for Mobile communications (GSM); GSM Repeaters; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU	EN 303 609
Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 11: CDMA Direct Spread (UTRA FDD) Repeaters	EN 301 908-11
IMT cellular networks; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU; Part 15: Evolved Universal Terrestrial Radio Access (E-UTRA FDD) Repeaters	EN 301 908-15
Product standard to demonstrate the compliances of radio base stations and fixed terminal stations for wireless telecommunication systems with the basic restrictions or the reference levels related to human exposure to radio frequency electromagnetic fields (110 MHz to 40 GHz) – General Public	EN 50385
Measurement methods for electromagnetic fields of household appliances and similar apparatus with regard to human exposure	EN 62233

Test Technology:	Test Method(s) ^{2,4}:
Radio Tests (Cont'd) (excluding SAR where applicable)	
Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz-300 GHz)	EN 62311; IEC 62311
Broadband data transmission systems operating in the 2,500 MHz to 2,690 MHz frequency band	EN 302 544-1; EN 302 544-2
Broadband Radio Access Networks (BRAN); 60 GHz Multiple-Gigabit WAS/RLAN Systems	EN 302 567
Broadband Wireless Access Systems (BWA) in the 3 400 MHz to 3 800 MHz frequency band; Base Stations	EN 302 774
Emissions	
Radiated and Conducted Emissions	EN 55011; CISPR 11; AS/NZS CISPR 11; CFR 47 Part 18 (using MP-5:1986); ICES-001; EN 55014-1; CISPR 14-1; AS/NZS CISPR 14.1; EN 55015; CISPR 15; AS/NZS CISPR 15; EN 55022; EN 55032:12, EN 55032; CISPR 22; CISPR 32:12, CISPR 32; AS/NZS CISPR 22; AS/NZS CISPR 32:13; AS/NZS CISPR 32; ICES-003; CAN/CSA-CISPR 22; CFR 47 Part 15, Subpart B (using ANSI C63.4:2014); VCCI V-3 (up to 6 GHz); VCCI-CISPR 32:2016; SI 961 Part 11, 14.1, 15, 32
Power supply interface at the input of telecommunication equipment	EN 300 132-1; EN 300 132-2; EN 300 132-3
Disturbances power	EN 55014-1; CISPR 14-1; AS/NZS CISPR 14.1; SI 961 Part 14.1
Harmonic current emissions	EN 61000-3-2; IEC 61000-3-2; EN 61000-3-12; IEC 61000-3-12
Voltage changes, voltage fluctuations and flicker	EN 61000-3-3; IEC 61000-3-3; EN 61000-3-11; IEC 61000-3-11

Test Technology:	Test Method(s) ^{2,4}:
Emissions (Cont'd)	
Electromagnetic compatibility of multimedia equipment - Emission requirements	EN 55032:12; EN 55032; CISPR 32:12; CISPR 32; KN32; AS/NZS CISPR 32:13; AS/NZS CISPR 32; VCCI-CISPR 32; SI 961 Part 32
Immunity	
Electrostatic Discharge	EN 61000-4-2; IEC 61000-4-2; IEEE Std. C62.38; IEEE Std. C37.90.3
Radiated, radio-frequency, electromagnetic field	EN 61000-4-3; IEC 61000-4-3; IEEE Std. C37.90.2
Electrical fast transient/burst immunity test	EN 61000-4-4; IEC 61000-4-4
Surge immunity test	EN 61000-4-5; IEC 61000-4-5; IEEE Std. C62.41; IEEE Std. C62.41.1; IEEE Std. C62.41.2; IEEE Std. C37.90.1-02; IEEE Std. C37.90.1
Immunity to conducted disturbances, induced by radio-frequency fields	EN 61000-4-6; IEC 61000-4-6
Power frequency magnetic field immunity test	EN 61000-4-8; IEC 61000-4-8
Pulse magnetic field immunity test	EN 61000-4-9; IEC 61000-4-9
Voltage dips, short interruptions and voltage variations immunity tests	EN 61000-4-11; IEC 61000-4-11
Oscillatory waves immunity test	EN 61000-4-12; IEC 61000-4-12; IEEE Std. 1613; IEEE 1613.1; EN/IEC 61850-3
Immunity to conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz	EN 61000-4-16; IEC 61000-4-16
Voltage sag immunity	SEMI F42-0999; SEMI F47-0200; SEMI F47-0706
Power supply interface	EN 300 132-1; EN 300 132-2; EN 300 132-3; EN 300 132-3-0; EN 300 132-3-1
Immunity requirements for components of fire, intruder and social alarm systems	EN 50130-4:95+A1:98+A2:03; EN 50130-4
Alarm systems - Intrusion and hold-up systems - Part 1: System requirements	EN 50131-1

Test Technology:	Test Method(s) ^{2,4}:
Immunity (Cont'd)	
Alarm systems - Intrusion systems – Part 2-2: Requirements for passive infrared detectors	EN 50131-2-2
Alarm systems - Intrusion systems – Part 2-4: Requirements for combined passive infrared and microwave detectors	EN 50131-2-4
Alarm systems - Intrusion systems – Part 2-6: Requirements for opening contacts (magnetic)	EN 50131-2-6; CLC/TS 50131-2-6
Alarm systems - Intrusion systems – Part 5-3: Requirements for interconnections equipment using radio frequency technique	EN 50131-5-3:05+A1:08; EN 50131-5-3
Alarm systems - Intrusion systems - Part 6: Power supplies	EN 50131-6
Resistibility of telecommunication equipment	ITU-T Rec. K.20; ITU-T Rec. K.21; ITU-T Rec. K.41; ITU-T Rec. K.44; ITU-T Rec. K.45
Radio disturbance and immunity	CISPR 16-2-1; CISPR 16-2-2; CISPR 16-2-3
Generic and Product Specific EMC Standards	
Industrial environments	EN 50081-2; EN 61000-6-4; IEC 61000-6-4; EN 50082-2; EN 61000-6-2; IEC 61000-6-2; IS 961 Part 6.1; IS 961 Part 6.2; KN 61000-6-2 :11; KN 61000-6-4 :16
Residential, commercial and light-industrial environments	EN 50082-1; EN 61000-6-1; IEC 61000-6-1; EN 50081-1; EN 61000-6-3; IEC 61000-6-3
Information technology equipment	EN 55022; CISPR 22; AS/NZS CISPR 22:06; AS/NZS CISPR 22; ICES-003; CAN/CSA-CISPR 22; CFR 47 Part 15, Subpart B (using ANSI C63.4:2014); VCCI V-3 (up to 6 GHz); IS 961 Part 6.1; IS 961 Part 6.2; EN 55024; CISPR 24; AS/NZS CISPR 24:02; AS/NZS CISPR 24; SI 961 Part 14.1, 14.2, 24

Test Technology:	Test Method(s) ^{2,4}:
Generic and Product Specific EMC Standards (Cont'd)	
Household appliances, electric tools and similar apparatus	EN 55014-1; CISPR 14-1; AS/NZS CISPR 14.1; EN 55014-2; CISPR 14-2; AS/NZS CISPR 14-2; SI 961 Part 14.1, 14.2, 24
Industrial, scientific and medical equipment	EN 55011; CISPR 11; AS/NZS CISPR 11; CFR 47 Part 18 (using MP-5:1986); ICES-001; SI 961 Part 11
Electrical lighting and similar equipment	EN 55015; CISPR 15; AS/NZS CISPR 15:02; AS/NZS CISPR 15; EN 61547; SI 961 Part 15
Electromagnetic compatibility of multimedia equipment - Emission requirements	EN 55032:12; EN 55032; CISPR 32:12; CISPR 32; KN32; AS/NZS CISPR 32:13; AS/NZS CISPR 32; VCCI-CISPR 32; SI 961 Part 32
Electromagnetic compatibility of multimedia equipment – Immunity requirements	EN 55035; CISPR 35; KN 35
Equipment for measurement control and laboratory use	EN 61326-1; IEC 61326-1; EN 61326-2-6; IEC 61326-2-6
Adjustable speed electrical power drive systems	EN 61800-3; IEC 61800-3
Railway applications - Electromagnetic compatibility - Rolling stock - Apparatus	EN 50121-3-2
Railway applications - Electronic equipment used on rolling stock	EN 50155
Railway applications - Signaling and telecommunications apparatus	EN 50121-1
Railway applications - Electromagnetic compatibility - Part 4: Emissions and immunity of the telecommunications apparatus	EN 50121-4
Specification for semiconductor manufacturing facility electromagnetic compatibility	SEMI E33-94; SEMI E33-1012
Medical electrical equipment	EN 60601-1-2:01+A1:06; EN 60601-1-2:07; EN 60601-1-2; IEC 60601-1-2:01+A1:04; IEC 60601-1-2:07; IEC 60601-1-2; ANSI/AAMI/IEC 60601-1-2; CAN/CSA C22.2 NO. 60601-1-2-08; CAN/CSA-C22.2 NO. 60601-1-2-08 (R2014); CAN/CSA-C22.2 NO. 60601-1-2; SI 60601 Part 1.2

Test Technology:	Test Method(s) ^{2,4}:
<i>Generic and Product Specific EMC Standards (Cont'd)</i>	
Cable networks for television signals, sound signals and interactive services - Part 2: Electromagnetic compatibility for equipment	EN 50083-2
Low voltage power supplies, D.C. output - Part 3: Electromagnetic compatibility (EMC)	EN 61204-3
Electrically powered wheelchairs, scooters and their chargers — Requirements and test methods	EN 12184
Telecommunication equipment	EN 300 386; 1TR9; GR-1089-CORE:06; GR-1089-CORE Iss. 5:09; GR-1089-CORE Iss. 6:11; ES 201 468
Uninterruptible power supply	EN 50091-2
Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen	EN 50270
Maritime navigation and radio communication equipment and systems – General requirements – Methods of testing and required test results	EN 60945; IEC 60945
Communication networks and systems in substations Part 3: General requirements	IEC 61850-3; EN 61850-3
IEEE Standard Environmental and Testing Requirements for Communications Networking Devices Installed in Electric Power Substations	IEEE Std. 1613; IEEE 1613.1
Radio equipment and services	EN 301 489-1
Short-range devices (SRD) operating on frequencies between 9 kHz and 40 GHz	EN 301 489-3
Fixed radio links and ancillary equipment and services	EN 301 489-4
Private land mobile radio (PMR) and ancillary equipment (speech and non-speech)	EN 301 489-5
Digital enhanced cordless telecommunications (DECT) equipment	EN 301 489-6
Mobile and portable radio and ancillary equipment of digital cellular radio telecommunications systems (GSM and DCS)	EN 301 489-7
GSM base stations	EN 301 489-8
Analogue cellular radio communications equipment, mobile and portable	EN 301 489-16
2.4 GHz wideband transmission systems and 5 GHz high performance RLAN equipment	EN 301 489-17
Terrestrial trunked radio (TETRA) equipment	EN 301 489-18
IMT-2000 CDMA, Direct Spread (UTRA and E-UTRA) Base Station (BS) radio, repeater and ancillary equipment	EN 301 489-23
IMT-2000 CDMA Direct Spread (UTRA and E-UTRA) for Mobile and portable (UE) radio and ancillary equipment	EN 301 489-24

Test Technology:	Test Method(s) ^{2,4}:
Equipment in the 9 kHz to 315 kHz band for Ultra Low Power Active Medical Implants (ULP-AMI) and related peripheral devices (ULP-AMI-P)	EN 301 489-31 V1.1.1:05; EN 301 489-31
Specific conditions for Ultra-WideBand (UWB) devices	EN 301 489-33
Specific conditions for External Power Supply (EPS) for mobile phones	EN 301 489-34
Specific requirements for Low Power Active Medical Implants (LP-AMI) operating in the 2 483,5 MHz to 2 500 MHz bands	EN 301 489-35
Specific conditions for Cellular Communication Base Station (BS), repeater and ancillary equipment	EN 301 489-50
EMC Tests - Automotive/Vehicle	
Limits and methods of measurement of radio disturbance characteristics for the protection of receivers used on board vehicle	EN 55025; CISPR 25; AS/NZS CISPR 25
Aftermarket electronic equipment in vehicle	EN 50498
Road vehicles	ISO 7637-1:02+A1:08; ISO 7637-1; ISO 7637-2:11; ISO 7637-2:04+A1:08; ISO 7637-3:95; ISO 7637-3:07; ISO 7637-3; ISO 11452-1:05; ISO 11452-1; ISO 11452-2:04; ISO 11452-4; ISO 11452-4:11; GMW3100:01; GMW3097:06; GMW3097:15
Vehicles, boats (up to 15 m), and machines (except aircraft), vehicle components, receivers used on board vehicles	SAE J1113-1:06; SAE J1113-1:12; SAE J1113-1:13; SAE J1113-2:04; SAE J1113-2:10; SAE J1113-4:04; SAE J1113-4:14; SAE J1113-11:07; SAE J1113-11:12; SAE J1113-12:06; SAE J1113-13:11; SAE J1113-13:15; SAE J1113-21:05; SAE J1113-21:13; SAE J1113-22:03; SAE J1113-22:10; SAE J1113-41:00; SAE J1113-42:06; SAE J1113-42:10
Other EMC Tests	
Military and airborne equipment	MIL-STD-461 A/B/C: RE01, RE02, CE01, CE03, CE06, CE07, RS01, RS02, RS03, RS06, CS01, CS02, CS03, CS04, CS05, CS06, CS07, CS09, CS10, CS11, CS12, CS13; MIL-STD-461 D/E/F/G: RE101, RE102, RE103, CE101, CE102, CE106, CS101, CS103, CS104, CS105, CS106, CS109, CS114, CS115, CS116, CS 118, RS101, RS103; MIL-STD-462; MIL-STD-462D; MIL-STD-464C: bonding, ESD; MIL-STD-704 A/B/C/D/E/F; MIL-STD-1275 A/B/C/D/E; MIL-STD-285;

<u>Test Technology:</u>	<u>Test Method(s) ^{2,4:}</u>
Military and airborne equipment (Cont'd)	RTCA/DO-160D:97+change 1:00+change2:01+change 3:02; RTCA/DO-160E:04; RTCA/DO-160F:07; RTCA DO-160G:10; STANAG 4236:07; Defence Standard 59-41 Part 2:2002; Defence Standard 59-41 Part 3:2003; Defence Standard 59-41 Part 4:1996; Defence Standard 59-41 Part 5:2003; Defence Standard 59-41 Part 6:1994; Defence Standard 59-411 Part 3:2008; Defence Standard 59-411 Part 3:2014; MIL-STD-1399-300B
<i>Telecommunication Tests</i>	
Specification of terminal equipment interconnected to the analog public telephone network requirements for type approval	Israeli MoC Spec. 23/96
Analogue interworking and non-interference requirements for customer equipment for connection to the public switched telephone network	AS/CA S002-2011 (Amendment 2012 No 1)
Specification PTC 200 requirements for analogue telecommunications equipment	PTC 200:2006
Requirement for private voice networks connected to the PSTN/ISDN (New Zealand)	PTC 220:2008
Access and terminals (AT); Harmonized basic attachment requirements for terminals for connection to analogue interfaces of the telephone networks; Update of the technical contents of TBR 021, EN 301 437, TBR 015, TBR 017; Part 1: General aspects Part 2: Basic transmission and protection of the network from harm Part 3: Basic interworking with the public telephone networks	ETSI ES 203 021-1:05; ETSI ES 203 021-2:06; ETSI ES 203 021-3:06
Speech and multimedia transmission quality (STQ); Requirements and tests methods for terminal equipment incorporating a handset when connected to the analogue interface of the PSTN	ETSI ES 203 038 V1.2.1 (2013-05)
Terminal equipment (TE); Attachment requirements for Pan-European approval for connection to the analogue public switched telephone networks (PSTNs) of TE (<i>excluding TE supporting the voice telephony service</i>) in which network addressing, if provided, is by means of dual tone multi frequency (DTMF) signaling	TBR21:98 (History)
A guide to the application of TBR 21	ETSI EG 201 121 V 1.1.3:00
Technical specification for terminal equipment connected to the public switched telephone network (PSTN) (Singapore)	IDA TS PSTN Issue 1, Rev 2, May 2011

<u>Test Technology:</u>	<u>Test Method(s) ^{2,4:}</u>
<i>Telecommunication Tests (Cont'd)</i>	
Network connection specification for connection of customer premises equipment (CPE) to direct exchange lines (DEL) of the public switched telephone network (PSTN) in Hong Kong	HKCA 2011:09; HKCA 2011:10
Technical specifications for terminal equipment for connection to public switched telephone network in Taiwan	PSTN01:09
Standards specification for telecommunication-line terminal equipment for connection to the public switched telecommunication network (South Africa)	DPT-TE-001, Issue 5 (November 2006)
Connection of Terminal Equipment to the Telephone Network	47 CFR Part 68:12
Hearing aid compatibility: Magnetic field intensity criteria for telephone compatibility with hearing aids: technical requirements.	FCC 68.316 HAC
Hearing aid compatibility volume control: technical standards	FCC 68.317 HAC volume control
Registered terminal equipment with automatic dialing capability	FCC 68.318 automatic dialing
Telecommunications telephone terminal equipment technical requirements for connection of terminal equipment to the telephone network	ANSI/TIA-968-B:09; ANSI/TIA-968-B1:12; ANSI/TIA-968-B2:15; ANSI/TIA-968-B3:16
Requirements for terminal equipment (TE) and related access arrangements intended for direct connection to analogue wireline facilities	CS-03 Part I, Issue 9, Amendment 5:2016
Requirements for terminal equipment intended for connection to 1.544 Mbps (DS-1) digital facilities	CS-03 Part II, Issue 9, A1 Sept. 2012
Requirements and test methods for magnetic output from handset telephones for hearing aid coupling and for receive volume control	CS-03 Part V, Issue 9, Amendment 2, Jan. 2017
Requirements for ISDN terminal equipment	CS-03, Part VI, Issue 9, Amendment 1, Sept. 2012
Requirements and tests methods for digital subscriber line (xDSL) terminal equipment	CS-03, Part VIII, Issue 9, Amendment 5, May 2016
Requirements for customer access equipment for connection to telecommunications network - Part 1: General Part 2: Analogue and TDM based technologies Part 3: Packet and cell based technology	AS/CA S003.1:10; AS/CA S003.2:10; AS/CA S003.3:10
Voice frequency performance requirements for customer equipment	AS/ACIF S004:13
General requirements for customer equipment connected to hierarchical digital interfaces	AS/ACIF S016:01
Requirements for ISDN Primary Rate Access Interface. Australian Standard	AS/ACIF S038:2001
Requirements for customer equipment for use with the standard telephone service — Features for special needs of persons with disabilities	AS/ACIF S040:01

<u>Test Technology:</u>	<u>Test Method(s) ^{2,4:}</u>
<i>Telecommunication Tests (Cont'd)</i>	
Requirements for DSL customer equipment for connection to the public switched telephone network, Part 1: General	AS/ACIF S041.1:15
Requirements for DSL customer equipment for connection to the public switched telephone network, Part 2: Modems for use in connection with all DSL services	AS/ACIF S041.2:15
Requirements for customer equipment for connection to a metallic local loop interface of a telecommunications network, Part 1: General	AS/ACIF S043.1:15
Requirements for customer equipment for connection to a metallic local loop interface of a telecommunications network – Broadband	AS/ACIF S043.2:16
Terminal equipment (TE); Attachment requirements for Pan-European approval for connection to the analogue public switched telephone networks (PSTNs) of TE supporting the voice telephony service in which network addressing, if provided, is by means of dual tone multi frequency (DTMF) signaling	ETSI EN 301 437 V1.1.1:99
Integrated services digital network (ISDN); Attachment requirements for terminal equipment to connect to an ISDN using ISDN primary rate access	TBR 004 edition 1:95+A1:97
Digital enhanced cordless telecommunication (DECT); General terminal attachment requirements; Telephony applications	TBR 10:1999
Business telecommunications (BT); Open network provision (ONP) technical requirements; 2048 kbit/s digital unstructured leased line (D2048U); Attachment requirements for terminal equipment interface	TBR 012 edition 1:93+A1:96
Business telecommunications (BTC); 2048 kbit/s digital structured leased lines (D2048S); Attachment requirements for terminal equipment interface	TBR 013 edition 1:96
Business telecommunications (BTC); Ordinary and special quality voice bandwidth 2-wire analogue leased lines (A2O and A2S); Attachment requirements for terminal equipment interface	TBR 15:97
Business telecommunications (BTC); Ordinary and special quality voice bandwidth 4-wire analogue leased lines (A4O and A4S); Attachment requirements for terminal equipment interface	TBR 17:97
Public switched telephone network (PSTN); Attachment requirements for a terminal equipment incorporating an analogue handset function capable of supporting the justified case service when connected to the analogue interface of the PSTN in Europe	TBR 38 edition 1:98, Historical

<u>Test Technology:</u>	<u>Test Method(s) ^{2,4:}</u>
<i>Telecommunication Tests (Cont'd)</i>	
Transmission and multiplexing (TM); Access transmission systems on metallic access cables; Very high speed digital subscriber line (VDSL); Part 1: Functional requirements	ETSI TS 101 270-1 V1.4.1:05
Telecommunications and internet protocol harmonization over networks (TIPHON) technology compliance specification; Draft IETF SIP RFC 3261; Part 2: Abstract test suite (ATS) and partial protocol implementation extra information for testing (PIXIT) performance specification	ETSI TS 102 027 V2.1.1:03
Transmission and multiplexing (TM); Access transmission system on metallic access cables; Asymmetric digital subscriber line (ADSL) - European specific requirements	ETSI TS 101 388 V1.4.1:07
Access and terminals (AT); Short message service (SMS) for PSTN/ISDN; Short message communication between a fixed network short message terminal equipment and a short message service centre	ETSI ES 201 912:02
Access and Terminals (AT); Public Switched Telephone Network (PSTN); Harmonized specification of physical and electrical characteristics at a 2-wire analogue presented Network Termination Point (NTP)	ETSI ES 201 970 V1.1.1:02
Technical specification for asymmetric digital subscriber line modems	IDA TS ADSL Issue 2, Oct. 2013
Blue Book and Green Book (Analog and Digital)	JATE
Network connection specification for connection of customer premises equipment (CPE) to the public telecommunications networks (PTN) in Hong Kong over digital trunk at 1544 kbit/s at using DTMF signaling	HKCA 2017:10
Access and Terminals (AT); POTS requirements applicable to ADSL modems when connected to an analogue presented PSTN line.	ETSI ES 202 913 V1.2.2 (2006-01)
Access and terminal (AT); Analogue access to the public switched telephone network (PSTN); Subscriber line protocol over the local loop for display (and related) services; Part 1: On-hook data transmission	ETSI EN 300 659-1 V1.3.1 (2001-01) (CID)
Asymmetric digital subscriber line terminal equipment and POTS splitter technical specifications (Taiwan)	ADSL01 (Sept. 24, 2004)
Interface to public networks for terminal equipment (Mexico)	IFT-004-2014

<u>Test Technology:</u>	<u>Test Method(s) ^{2,4:}</u>
<i>Telecommunication Tests (Cont'd)</i>	
AGREEMENT that the Full Federal Institute of Telecommunications issued the Technical Arrangement IFT-005-2014: digital public networks (digital interface at 2048 kbit /s) interface (Mexico)	IFT-005-2014
Telecommunication industry standard of PRC (China)	YDT 514-1:98
The specifications of automatic telephone set (China)	GB/T 15279-2002
Digital terminal equipment - General Physical/electrical characteristics of hierarchical digital interfaces	ITU-T G.703:16
Digital networks - The control of jitter and wander within digital networks which are based on the 2048 kbit/s hierarchy	ITU-T G.823:00
Transmission characteristics for cordless and mobile digital terminals	ITU-T P 313:99
Transmission characteristics and speech quality parameters of hands-free terminals	ITU-T P 340:00
Telecommunications telephone terminal equipment transmission requirements for narrowband voice-over IP and voice-over PCM digital wireline telephones	ANSI/TIA/EIA-810-A:2000
Telecommunications telephone terminal equipment transmission requirements for narrowband digital telephones	ANSI/TIA-810-B:06
Telecommunications telephone terminal equipment handset acoustic performance requirements for analog telephones	ANSI/TIA-470.110-C:07
Telecommunications telephone terminal equipment hands-free acoustic performance requirements working meeting document	ANSI/TIA-470.120-C (11.2004)
Telecommunications telephone terminal equipment transmission requirements for wideband digital wireline telephones	ANSI/TIA-920-A:02
Telephone Terminal Equipment Receive Volume Control Requirements for Digital and Analog Wireline Handset Terminals Approved: October 19, 2012	ANSI/TIA-4965 (Receive VC 2012)
Series G: Transmission systems and media, digital systems and networks	ITU-T G.991.2 (09/2005); ITU-T G.992.1 (03/2003); ITU-T G.992.3 (10/2012); ITU-T G.992.5 (01/2009); ITU-T G.993.1 (06-2004); ITU-T G.993.2 (11-2016)
Technical requirements for telephone terminal equipment	CNC-St2-44.01 V02.1.1:2003
Minimum requirements for certification of terminal equipment with analog interfacing form the public telephone network	NET 001/92 (Analog TE, Brazil, Dir. 322)

<u>Test Technology:</u>	<u>Test Method(s) ^{2,4:}</u>
<i>Telecommunication Tests (Cont'd)</i>	
User interface-network, and public switched telephone service terminal regulation	Attachment to Resolution No. 392, Feb. 17, 2005
Electro-acoustic recommended minimum performance specification for cdma2000 mobile stations	3GPP2 C.S0056-0 v1.0:05
Digital cellular telecommunications system (Phase 2+): Transmission planning aspects of the speech service in the GSM public land mobile network (PLMN) system (GSM 03.50, version 8.1.1, release 1999)	ETSI EN 300 903 V8.1.1:00
Universal mobile telecommunications system (UMTS); LTE; Terminal acoustic characteristics for telephony; Requirements (3GPP TS 26.131, version 9.3.0, release 9)	ETSI TS 126 131 V9.3.0 (2010-04)
Digital cellular telecommunications system (Phase 2+); Mobile station (MS) conformance specification; Part 1: Conformance specification (3GPP TS 51.010-1, version 8.1.0, release 8)	ETSI TS 151 010-1 V8.1.0 (2009-05) (Section 30 only, <i>excluding 30.19</i>)
Electro-acoustic recommended minimum performance specification for cdma2000 mobile station	TIA-1042:05
Series P: Telephone transmission quality, Telephone installation, Local line networks. Transmission characteristics for telephone band (300-3,400 Hz) digital loudspeaking and hands-free telephony terminals	ITU-T P.340:00
Series T: Terminals for telematic services; Procedures for document facsimile transmission in the general switched telephone network Facsimile - Group 3 protocols procedures for real-time Group 3 facsimile communication over IP networks	ITU-T T.30 (09/2005) ITU-T T.38 (04/2007)
Telephony for hearing impaired people; Inductive coupling of telephone earphones to hearing aids.	ETSI ETS 300 381 (1994-12)
Series P: Coupling hearing aids to telephone sets	ITU-T P.370 (08/1996)
Series P: Telephone transmission quality, Telephone installations, Local line networks; Methods for objective and subjective assessment of quality perceptual evaluation of speech quality (PESQ): An objective method for end-to-end speech quality assessment of narrow-band telephone networks and speech codecs mapping function for transforming P.862 raw result scores to MOS-LQO	ITU-T P.862 (02/2001), P.862.1 (11/2003)
SERIES P: TERMINALS AND SUBJECTIVE AND OBJECTIVE ASSESSMENT METHODS Methods for objective and subjective assessment of speech quality	ITU-T P.863 (01/2011) (POLQA-NB and POLQA-WB)

<u>Test Technology:</u>	<u>Test Method(s) ^{2,4:}</u>
<i>Telecommunication Tests (Cont'd)</i>	
Series Q: Switching and Signaling; Transmission characteristics at 2-wire analogue interfaces of digital exchanges	ITU-T Q.552 (2001, 2-wire analog interface of digital exchange)
Technical Requirements for Telecommunication Terminal Equipment. (Korea)	MIC Notification No. 2004-15
NTC Philippines Type Approval Specification For Corded Telephone, Corded Phone with Caller ID and Corded Phone with Short Message Service (SMS) For Connection to Public Switched Telephone Network. (Philippines)	NTC TES 1:2004
NTC Philippines Type Approval Specification For Facsimile and Answering Machines For Connection to Public Switched Telephone Network. (Philippines)	NTC TES 4:2004
Technical specification for terminal equipment connecting to the public switched telephone network (pstn). (Malaysia)	SKMM FTS PSTN, Rev. 1.01:2007
Group 3 Fax Machine/Card Interface Requirements No. IR/FAX-01/04.SEP.2002. (India)	IR/FAX-01/04:2002
Regulation For Interface User – Network And Terminals Of Switched Fixed Telephone Service. (Brazil)	Resolution No.473:2007
Telecom ISDN User network interface Layer 3. (New Zealand)	TNA 134:1997
Functional Requirements for Facsimile Transmitters and Receivers Intended for Connection to the Telephone Network. (South Africa)	TE-006:1996
ISDN Terminal Equipment Technical Specifications. (Taiwan)	IS6100:2007
Requirements of subscriber's end equipment (SEE) connected to 2-wire cable plant. (India)	S/INT-2 W/02: May 2001
Indonesian National Standard (SNI) of analog telephone.	SNI 04-7042-2004
Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access Control (MAC) protocol specification	3GPP TS 36.521-1 (Chapter 6, 7, 8, 9)
Telecommunications Telephone Terminal Equipment Handset Magnetic Measurement Procedure and Performance Requirements	ANSI/TIA-1083-A (HAC, 2010)

Test Technology:	Test Method(s) ^{2,4}:
Product Safety Tests	
Information technology equipment (Excluding hot flaming oil test, abrasion resistance test, cathode ray tube test, and ionizing radiation test methods)	EN 60950:00; IEC 60950:99; UL 60950 3 rd edition; CAN/CSA-C22.2, No. 60950-03; AS/NZS 60950:00+A1:03; IS 1121:98; EN 60950-1:01+A11:04; IEC 60950-1:01; EN 60950-1:06+A11:09+A1:10+A12:11+A2:13; IEC 60950-1:05+A1:09+A2:13; UL 60950-1 2 nd edition; CAN/CSA-C22.2 No. 60950-1-07 (R2016); AS/NZS 60950.1:03+A1:06+A2:08+A3:08; AS/NZS 60950.1:11+A1:12; AS/NZS 60950.1:15; SI 60950 Part 1:03; SI 60950 Part 1; SI 60950 Part 21; SI 60950 Part 22; EN 60950-21:03; IEC 60950-21:02; UL 60950-21 1 st edition; EN 60950-22:06+A11:08; EN 60950-22:17; IEC 60950-22:05; IEC 60950-22:16; UL 60950-22 1 st and 2 nd edition; CAN/CSA C22.2 No. 60950-22-07 (R2016); CAN/CSA-C22.2 No. 60950-22:17; UL 50 12 th edition
Audio, video, and similar electronic apparatus (excluding hot flaming oil test, and ionizing radiation)	EN 60065:02+A1:06+A11:08+A2:10+A12:11; IEC 60065:01+A1:05+A2:10; SI 60065:12; UL 60065 7 th edition; AS/NZS 60065:12
Audio/video, information and communication technology equipment	EN 62368-1:14+A11:17; IEC 62368-1:14; UL 62368-1 2 nd edition; AS/NZS 62368.1:18
Household and similar electrical appliances (excluding software evaluation, and oxygen bomb test)	EN 60335-1:02+A1:04+A11:04+A12:06+ A2:06+A13:08+A14:10+A15:11; IEC 60335-1: 01+A1:04+A2:06; AS/NZS 60335.1:02+A1:04+A2:07+A3:07; UL 60335-1 4 th edition; UL 60335-1: 5 th edition; CAN/CSA-C22.2 No. 60335-1-11
Household and similar electrical appliances (Cont'd)	EN 60335-1:12+A11:14; IEC 60335-1:10; AS/NZS 60335.1:11+A1:12+A2:14+A3:15; EN 50106:08; IEC 62301:05; SI 900, Part 1:05; SI 900 Part 2.2, 2.6, 2.8, 2.14, 2.17, 2.23, 2.25; EN 60335-2-2:2003+A1:04+A2:06; IEC 60335-2-2:2002+A1:04+A2:06; EN 60335-2-6:2003+A1:05+A2:08; IEC 60335-2-6:2002+A1:04+A2:08; EN 60335-2-14:2006+A1:08; IEC 60335-2-14:2006+A1:08+A2:12; EN 60335-2-17:2002+A1:06; IEC 60335-2-17:2002+A1:06;

Test Technology:	Test Method(s) ^{2,4}:
Household and similar electrical appliances <i>(Cont'd)</i>	EN 60335-2-23:2003+A1:08+A11:10; IEC 60335-2-23:2003+A1:08+A2:12; CAN/CSA-E60335-2-23-05; EN 60335-2-24:2002+A11:04+A1:05+A2:07; IEC 60335-2-24:2002+A1:05+A2:07; EN 60335-2-25:2012+A1:15+A2:16; IEC 60335-2-25:2010+A1:14+A2:15; EN 60335-2-36:2002+A1:04+A2:08; IEC 60335-2-36:2002+A1:04+A2:08; EN 60335-2-41:2003+A1:04+A2:10; IEC 60335-2-41:2002+A1:04+A2:09; AS/NZS 60335.2.41:2004+A1:10; EN 60335-2-60:2003+A1:05; IEC 60335-2-60:2002+A1:04; EN 60335-2-75:04+A1:05+A11:06+A2:08+A12:10; IEC 60335-2-75:02+A1:04+A2:08; EN 60335-2-96:2002+A1:04; IEC 60335-2-96:2002+A1:03; EN 60335-2-109:2010; IEC 60335-2-109:2010
Electrical equipment for measurement, control, and laboratory use <i>(Excluding hot flaming oil test, and ionizing radiation test methods)</i>	EN 61010-1:01; IEC 61010-1:01+Corr1:02+Corr2:03; UL 61010-1 2 nd edition; UL 61010-1 3 rd edition; EN 61010-1:10; IEC 61010-1:10; UL 61010A-1 1 st edition; UL 61010B-1 1 st edition; UL 61010C-1; CAN/CSA-C22.2 No. 61010-1-04; CAN/CSA-C22.2 No. 61010-1-12; AS 61010.1:03; SI 61010-Part 1:02; SI 61010 Part 1; UL 61010-031: 1 st edition; UL 61010A-2-041 1 st edition; EN 61010-2-010:03; IEC 61010-2-010:03; EN 61010-2-030:10; IEC 61010-2-030:10
In-Vitro diagnostic (IVD) medical equipment	EN 61010-2-040:05; IEC 61010-2-040:05; EN 61010-2-101:02; EN 61010-2-101:17; IEC 61010-2-101:02; IEC 61010-2-101:15
Automatic electrical controls for household and similar use	EN 60730-1:00+A1:04+A12:03+A13:04+A14:05+A15:07; UL 60730-1A:02; EN 60730-2-8:95+A1:97+A2:97; EN 60730-2-9+A1:96+A11:97+A2:97

<u>Test Technology:</u>	<u>Test Method(s) ^{2,4}:</u>
Laser products	EN 60825-1:94+A1:02+A2:01; IEC 60825-1:93+A1:97+A2:01; EN 60825-1:07; EN 60825-1:14; IEC 60825-1:07; IEC 60825-1:14; EN 60825-2:04+A1:07+A2:10; IEC 60825-2:04+A1:06+A2:10; 21 CFR 1040
Sealing, wrapping, and marking equipment power units	UL 963 2 nd edition
Swimming pool pumps, filters, and chlorinators	UL 1081 6 th edition (<i>excluding clauses 38 and 44</i>)
Power units other than Class 2	UL 1012 7 th edition
Burglar-alarm systems, household burglar-alarm system units	UL 365 4 th edition; UL 603 5 th edition; UL 609 11 th edition; UL 1023 6 th edition; UL 1076 5 th edition; UL 1610 3 rd edition; UL 1637 4 th edition
Alarm units and systems	UL 636 10 th edition; UL 985 5 th edition; UL 1635 3 rd edition
Intrusion-detection units	UL 639 8 th edition
Antitheft alarms and devices	UL 1037 5 th edition
Luminaires	SI 20 Part 1; SI 20 Part 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.10, 2.11, 2.18, 2.20, 2.22; EN 60598-1:04+A1:06; EN 60598-1:08; EN 60598-1; IEC 60598-1:03+A1:06; IEC 60598-1:08; IEC 60598-1; EN 60598-2-1:89; IEC 60598-2-1:79+A1:87; EN 60598-2-2:12; IEC 60598-2-2:11; EN 60598-2-3:03+A1:11; IEC 60598-2-3:03+A1:11; EN 60598-2-4:97; IEC 60598-2-4:97; EN 60598-2-5:15; IEC 60598-2-5:15; EN 60598-2-6:94+A1:97; IEC 60598-2-6:94+A1:96; EN 60598-2-7:89+A2:96; IEC 60598-2-7:82+A1:87+A2:94; EN 60598-2-8:13; IEC 60598-2-8:13; EN 60598-2-10:03; IEC 60598-2-10:03; EN 60598-2-11:13; IEC 60598-2-11:13; EN 60598-2-18:94+A1:12; IEC 60598-2-18:93+A1:11; EN 60598-2-20:15; IEC 60598-2-20:14; EN 60598-2-22: 98+A1:03+A2:08; IEC 60598-2-22:1997+A1:02+A2:08
Application of risk management to medical devices	EN 14971:12
Needle-based injection systems for medical use	ISO 11608-1:2012; ISO 11608-4:2006
Medical electrical equipment	EN 60601-1:90+A1:93+A11:93+A12:93+A2:95+A13:96;

Test Technology:	Test Method(s) ^{2,4}:
<p><i>(Excluding cathode ray tubes, pressure vessels, natural latex rubber aging, material group classification, spark ignition, ignition of flammable anaesthetic mixtures, flexibility, adherence, X-radiation, sterilization, bio-compatibility testing)</i></p>	<p>IEC 60601-1:88+A1:91+A2:95; UL 60601-1 1st edition; CAN/CSA C22.2 No. 601.1-M90; EN 60601-1:06+A11:11+A1:13; IEC 60601-1:05+A1:12; ANSI/AAMI ES60601-1:05+C1:09+A2:10; ANSI/AAMI ES60601-1:05+A1:12+C1:09+A2:10;</p>
<p>Medical electrical equipment <i>(Cont'd)</i> <i>(Excluding cathode ray tubes, pressure vessels, natural latex rubber aging, material group classification, spark ignition, ignition of flammable anaesthetic mixtures, flexibility, adherence, X-radiation, sterilization, bio-compatibility testing)</i></p>	<p>CAN/CSA C22.2 No. 60601-1-08; SI 1011, SI 60601 Part 1, SI 60601 Part 2.2, 2.3, 2.5; EN 60601-1-1:01; IEC 60601-1-1:00; EN 60601-1-3:94; EN 60601-1-3:08+A1:13; IEC 60601-1-3:94; IEC 60601-1-3:08+A1:13; EN 60601-1-4:96+A1:99; IEC 60601-1-4:96+A1:99; EN 60601-1-6:10+A1:13; IEC 60601-1-6:10+A1:13; EN 60601-1-8:07+A1:13; IEC 60601-1-8:06+A1:12; EN 60601-1-11:10; EN 60601-1-11:15; IEC 60601-1-11:10; IEC 60601-1-11:15; EN 60601-1-12:15; IEC 60601-1-12:14 EN 60601-2-2:07; EN 60601-2-2:09+A11:11; IEC 60601-2-2:06; IEC 60601-2-2:09; EN 60601-2-2:18; IEC 60601-2-2:17; EN 60601-2-3:15; IEC 60601-2-3:12; EN 60601-2-5:00; EN 60601-2-5:15; IEC 60601-2-5:00; IEC 60601-2-5:09; EN 60601-2-10:00+A1:01; EN 60601-2-10:15; IEC 60601-2-10:87+A1:01; IEC 60601-2-10:12; EN 60601-2-12:06; IEC 60601-2-12:01; EN 60601-2-18:96+A1:00; IEC 60601-2-18:96+A1:00; EN 60601-2-19:96+A1:96; IEC 60601-2-19:90+A1:96; EN 60601-2-22:13; EN 60601-2-22:96; IEC 60601-2-22:07+A1:12; IEC 60601-2-22:95; EN 60601-2-23:00; IEC 60601-2-23:99; EN 60601-2-24:98; EN 60601-2-24:15; IEC 60601-2-24:98; IEC 60601-2-24:12; EN 60601-2-25:95+A1:99; IEC 60601-2-25:93+A1:99; IEC 60601-2-25:11; EN 60601-2-26:15; IEC 60601-2-26:12; EN 60601-2-27:94; EN 60601-2-27:06;</p>

Test Technology:	Test Method(s) ^{2,4}:
<p>Medical electrical equipment (<i>Cont'd</i>) <i>(Excluding cathode ray tubes, pressure vessels, natural latex rubber aging, material group classification, spark ignition, ignition of flammable anaesthetic mixtures, flexibility, adherence, X-radiation, sterilization, bio-compatibility testing)</i></p>	<p>IEC 60601-2-27:94; IEC 60601-2-27:05; EN 60601-2-30:00; IEC 60601-2-30:99; EN 60601-2-32:94; IEC 60601-2-32:94; EN 60601-2-34:00; EN 60601-2-34:14; IEC 60601-2-34:00; IEC 60601-2-34:11; EN 60601-2-35:96; IEC 60601-2-35:96</p>
<p>Medical electrical equipment (<i>Cont'd</i>)</p>	<p>EN 60601-2-37:01+A1:05+A2:05 (evaluation of the customer protocols); EN 60601-2-37:08+A1:15; (evaluation of the customer protocols); IEC 60601-2-37:07+A1:15; (evaluation of the customer protocols); EN 60601-2-38:96+A1:00; IEC 60601-2-38:96+A1:99; EN 60601-2-40:98; IEC 60601-2-40:98; IEC 60601-2-49:11; EN 60601-2-57:11; IEC 60601-2-57:11; EN 60601-2-62:15; IEC 60601-2-62:13; EN 62366:08+A1:15; IEC 62366:07+A1:14 ISO 80601-2-61:11</p>
<p>Lung ventilators, pulse oximeters</p>	<p>EN 794-1:97+A2:09; EN 865:97; ISO 10651-1:93; ISO 10651-2:04; ISO 10651-3:97; IEC 60601-2-12:01; EN 60601-2-12:06; EN/ISO 9919:05; EN/ISO 9919:09; ASTM F1415:00</p>
<p>Electrical apparatus for potentially explosive atmospheres</p>	<p>EN 60079-0:04; EN 50020:02</p>
<p>Safety of machinery</p>	<p>EN 60204-1:98; EN 60204-1:06+A1:09; IEC 60204-1:05+A1:08; SI 60204; EN ISO 12100-1:03+A1:09; EN ISO 12100-2:03+A1:09; EN ISO 12100:10; EN 1037:95+A1:08; EN 1088:95+A1:07; EN 1837:99; EN ISO 13857:08; EN ISO 7731:08; EN 547-1:96; EN 547-2:96; EN 547-3:96; EN 563:94+A1:99; EN 61310-1:95; EN 61310-2:95; EN 61310-3:99; EN 614-1:06+A1:09; EN 614-2:00; EN 842:96; EN 894-1:97; EN 894-2:97; EN 983:96+A1:08; EN 4414:10; EN 999:98; EN ISO 7250:98; EN 953:97; EN 981:96; EN 982:96+A1:08; EN 4413:10</p>

<u>Test Technology:</u>	<u>Test Method(s) ^{2,4}:</u>
Electronic equipment for use in power installations	EN 50178:97
Semiconductor manufacturing equipment	SEMI S2-0200E; SEMI S2-0706; SEMI S8-0701; SEMI S9-1101; SEMI S14; SEMI S10; SEMI S22; SEMI S23-0705
<i>Alarm System Performance Testing</i>	
Alarm systems - Intrusion and hold-up systems - Part 1: System requirements	EN 50131-1:06+A1:09+A2:17
Alarm systems - Intrusion systems - Part 2-2: Requirements for passive infrared detectors	EN 50131-2-2; EN 50131-2-2:08; CLC/TS 50131-2-2:08
Alarm systems - Intrusion systems - Part 2-3: Requirements for microwave detectors	EN 50131-2-3:08; CLC/TS 50131-2-3:04
Alarm systems - Intrusion systems - Part 2-4: Requirements for combined passive infrared and microwave detectors	EN 50131-2-4:08; CLC/TS 50131-2-4:04
Alarm systems - Intrusion systems - Part 2-5: Requirements for combined passive infrared and ultrasonic detectors	EN 50131-2-5:08; CLC/TS 50131-2-5:04
Alarm systems - Intrusion systems - Part 2-6: Requirements for opening contacts (magnetic)	EN 50131-2-6:08; CLC/TS 50131-2-6:04
Alarm systems - Intrusion and hold-up systems - Part 2-8: Intrusion detectors - Shock detectors; Section 6.3	CLC/TS 50131-2-8:12; EN 50131-2-8:16
Alarm systems - Intrusion systems - Part 3: Control and indicating equipment	EN 50131-3:09; CLC/TS 50131-3:2003
Alarm systems - Intrusion systems - Part 4: Warning devices	EN 50131-4:09; CLC/TS 50131-4:06
Alarm systems - Intrusion systems - Part 5-3: Requirements for interconnections equipment using radio frequency techniques	EN 50131-5-3:05+A1:08; EN 50131-5-3:17
Alarm systems - Intrusion systems - Part 6: Power supplies	EN 50131-6; EN 50131-6:98; EN 50131-6:08+A1:14
Intrusion and hold-up systems - Part 10: Application specific requirements for Supervised Premises Transceiver (SPT)	EN 50131-10:14
Alarm systems - Intrusion systems - Part 7: Application guidelines	CLC/TS 50131-7:03; CLC/TS 50131-7:08

Test Technology:	Test Method(s) ^{2,4}:
Alarm System Performance Testing (Cont'd)	
Alarm systems - Alarm transmission systems and equipment	EN 50136-1-1:98+A1:01+A2:08; EN 50136-1-2:98; EN 50136-1-3:98; EN 50136-1-5:08; EN 50136-2-1:98+A1:01; EN 50136-2-2:98 EN 50136-2-3:98; EN 50136-2-4:98; EN 50136-1:12+A1:18; EN 50136-2:13; EN 50136-3:13
Alarm systems - Social alarm systems - Part 2: Trigger devices	EN 50134-2:99
Alarm systems - Social alarm systems - Part 3: Local unit and controller	EN 50134-3:01

Test Technology:	Test Method:
On-Site testing ³ (Customer Facility)	IEEE Std. 299; IEEE Std. 299.1; MIL-STD.-285; ANSI/IEEE C95.1-1991; IEEE Std. C95.1-2005; SEMI E33-94; SEMI E33-1012; EN 60601-1-2:01+A1:06; EN 60601-1-2:07; EN 60601-1-2; IEC 60601-1-2:01+A1:04; IEC 60601-1-2:07; IEC 60601-1-2; ANSI/AAMI/IEC 60601-1-2; CAN/CSA C22.2 NO. 60601-1-2-08; CAN/CSA-C22.2 NO. 60601-1-2-08 (R2014); CAN/CSA-C22.2 NO. 60601-1-2; EN 61326-1; IEC 61326-1; EN 55011; CISPR 11; EN 55022; CISPR 22; AS/NZS CISPR 22; VCCI- 32-1-5; EN 55024; CISPR 24; AS/NZS CISPR 24; EN 61000-6-1; IEC 61000-6-1; EN 61000-6-3; IEC 61000-6-3; EN 61000-6-4; IEC 61000-6-4; EN 61000-6-2; IEC 61000-6-2; SS 436 14 90; ENV 50166-1;

On-Site testing ³ (Customer Facility) (<i>Cont.</i>)	ENV 50166-2; EN 50364:01; EN 50364; EN 50371:02; EN 50131-2-2; EN 50131-2-4:08, para. 6.4; EN 50131-2-5:08, para. 6.4; SEMI S2-0200E; SEMI S8-0701; SEMI S9-1101; SEMI S10; SEMI S14; SEMI S22; IEC/EN/UL 60950-1 (<i>except clauses 2.9.2, 4.6.5</i>); IEC/EN/UL 60335-1 (<i>except clause 15.3</i>); IEC/EN/UL 60601-1 2 nd ed (<i>except clause 44.5</i>); IEC/EN/UL 60601-1 3 rd ed (<i>except clause 5.7</i>); IEC/EN/UL 61010-1 (<i>except clause 6.8.2</i>); IEC/EN 60204 (<i>except clause 4.4.4</i>); IEC/EN 60601-2-5
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¹This accreditation covers testing performed at the main laboratory listed above, and the satellite laboratory listed below:

HERMON LABORATORIES
 10 Hafes Haim Street
 Tel-Aviv, 6744124, ISRAEL
 Mr. George Shleimovich Phone: 972 4 6288 001
 Email: mail@hermonlabs.com

<u>Test Technology:</u>	<u>Test Method(s)⁴:</u>
<i>EMC Tests</i>	
<i>Emissions</i> Radiated and Conducted Emissions (Above 1 GHz only)	EN 55011; CISPR 11; AS/NZS CISPR 11; ICES-001; EN 55014-1; CISPR 14-1; AS/NZS CISPR 14.1; EN 55022; EN 55032:12; EN 55032; CISPR 22; CISPR 32:12; CISPR 32; KN32; AS/NZS CISPR 22; AS/NZS CISPR 32:13; AS/NZS CISPR 32; ICES-003; CAN/CSA-CISPR 22; VCCI V-3 (up to 6 GHz); VCCI-CISPR 32:2016
Harmonic current emissions	EN 61000-3-2; IEC 61000-3-2; EN 61000-3-12; IEC 61000-3-12
Voltage changes, voltage fluctuations and flicker	EN 61000-3-3; IEC 61000-3-3; EN 61000-3-11; IEC 61000-3-11
<i>Immunity</i>	
Electrostatic discharge	EN 61000-4-2; IEC 61000-4-2; IEEE Std. C62.38; IEEE Std. C37.90.3
Radiated, radio-frequency, electromagnetic field	EN 61000-4-3; IEC 61000-4-3; IEEE Std. C37.90.2
Electrical fast transient/burst immunity test	EN 61000-4-4; IEC 61000-4-4
Surge immunity test	EN 61000-4-5; IEC 61000-4-5; IEEE Std. C62.41; IEEE Std. C62.41.1; IEEE Std. C62.41.2; IEEE Std. C37.90.1-02; IEEE Std. C37.90.1



<u>Test Technology:</u>	<u>Test Method(s)⁴:</u>
<i>Immunity (Cont'd)</i>	
Immunity to conducted disturbances, induced by radio-frequency fields	EN 61000-4-6; IEC 61000-4-6
Power frequency magnetic field immunity test	EN 61000-4-8; IEC 61000-4-8
Voltage dips, short interruptions and voltage variations immunity tests	EN 61000-4-11; IEC 61000-4-11
Immunity requirements for components of fire, intruder and social alarm systems	EN 50130-4:95+A1:98+A2:03; EN 50130-4
Radio equipment and services	EN 301 489-1
Short-range devices (SRD) operating on frequencies between 9 kHz and 40 GHz	EN 301 489-3
Fixed radio links and ancillary equipment and services	EN 301 489-4
Digital enhanced cordless telecommunications (DECT) equipment	EN 301 489-6
Mobile and portable radio and ancillary equipment of digital cellular radio telecommunications systems (GSM and DCS)	EN 301 489-7
2.4 GHz wideband transmission systems and 5 GHz high performance RLAN equipment	EN 301 489-17
Equipment for measurement control and laboratory use	EN 61326-1; IEC 61326-1; EN 61326-2-6; IEC 61326-2-6
Medical electrical equipment	EN 60601-1-2:01+A1:06; EN 60601-1-2:07; EN 60601-1-2; IEC 60601-1-2:01+A1:04; IEC 60601-1-2:07; IEC 60601-1-2; ANSI/AAMI/IEC 60601-1-2; CAN/CSA-C22.2 NO. 60601-1-2-08; CAN/CSA-C22.2 NO. 60601-1-2-08 (R2014); CAN/CSA-C22.2 NO. 60601-1-2
Telecommunication equipment	EN 300 386; 1TR9:08; GR-1089-CORE:06; GR-1089-CORE Iss. 5:09; GR-1089-CORE Iss. 6:11; ES 201 468

<u>Test Technology:</u>	<u>Test Method(s)⁴:</u>
<i>Immunity (Cont'd)</i>	
Industrial environments	EN 61000-6-4; IEC 61000-6-4; EN 61000-6-2; IEC 61000-6-2; IS 961 Part 6.1; IS 961 Part 6.2; KN 61000-6-2:11; KN 61000-6-4:16
Residential, commercial, and light-industrial environments	EN 61000-6-1; IEC 61000-6-1; EN 61000-6-3; IEC 61000-6-3
Alarm systems - Intrusion systems – Part 5-3: Requirements for interconnections equipment using radio frequency technique	EN 50131-5-3:05+A1:08; EN 50131-5-3
Radio disturbance and immunity	CISPR 16-2-1; CISPR 16-2-2; CISPR 16-2-3
<i>Radio Tests (excluding SAR where applicable)</i>	
Radio equipment and systems - Short range devices	AS/NZS 4268
Radio equipment to be used in the 25 MHz to 1,000 MHz frequency range with power levels ranging up to 500 mW	EN 300 220-1; EN 300 220-2; EN 300 220-3-1; EN 300 220-3-2; EN 300 220-4
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
Radio equipment to be used in the 1 GHz to 40 GHz frequency range	EN 300 440
WB transmission systems; Data transmission equipment operating in the 2.4 GHz ISM band and using spread spectrum modulation techniques	EN 300 328
Social Alarms Equipment operating in the frequency range 25 MHz to 1 000 MHz	EN 303 406
Global system for mobile communications (GSM); Harmonized EN for mobile stations in the GSM 900 and GSM 1800	EN 301 511 (Spurious Emissions)
IMT cellular networks; Part 13: Evolved Universal Terrestrial Radio Access (E-UTRA) User Equipment (UE)	EN 301 908-13 (Spurious Emissions)
IMT cellular networks; Part 2: CDMA Direct Spread (UTRA FDD) User Equipment (UE)	EN 301 908-2 V6.2.1 (Spurious Emissions)

²This laboratory meets A2LA R104 – *General Requirements: Accreditation of Field Testing and Field Calibration Laboratories* for these tests.

³ This laboratory is only accredited for testing activities outlined within the test methods listed above. Reference to any other activity within these standards, such as risk management or risk assessment, does not fall within the laboratory's accredited capabilities.

⁴ When the date, revision or edition of a test method standard is not identified on the scope of accreditation, the laboratory is expected to be using the current version within one year of the date of publication, per part C., Section 1 of A2LA R101 - General Requirements-Accreditation of ISO/IEC 17025 Laboratories.

Testing Activities Performed in Support of FCC Declaration of Conformity and Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A.1⁵:

Rule Subpart/Technology	Test Method	Maximum Frequency
<u>Unintentional Radiators</u> Part 15B	ANSI C63.4:2014	40000 MHz
<u>Industrial, Scientific, and Medical Equipment</u> Part 18	FCC MP-5 (February 1986)	40000 MHz
<u>Intentional Radiators</u> Part 15C	ANSI C63.10:2013	220000 MHz
<u>Unlicensed Personal Communication Systems Devices</u> Part 15D	ANSI C63.17:2013	20000 MHz
<u>U-NII without DFS Intentional Radiators</u> Part 15E	ANSI C63.10:2013	40000 MHz
<u>UWB Intentional Radiators</u> Part 15F	ANSI C63.10:2013	40000 MHz
<u>BPL Intentional Radiators</u> Part 15G	ANSI C63.10:2013	1000 MHz
<u>White Space Device Intentional Radiators</u> Part 15H	ANSI C63.10:2013	40000 MHz
<u>Commercial Mobile Services (FCC Licensed Radio Service Equipment)</u> Parts 22 (cellular), 24, 25 (non-microwave), and 27	ANSI/TIA-603-E; TIA-102.CAAA-E	40000 MHz
<u>General Mobile Radio Services (FCC Licensed Radio Service Equipment)</u> Parts 22 (non-cellular), 90 (below 3 GHz), 95, 97 (below 3 GHz), and 101 (below 3 GHz)	ANSI/TIA-603-E; TIA-102.CAAA-E	40000 MHz
<u>Citizens Broadband Radio Services (FCC Licensed Radio Service Equipment)</u> Part 96	ANSI/TIA-603-E; TIA-102.CAAA-E	40000 MHz
<u>Microwave and Millimeter Bands Radio Services</u> Parts 25, 30, 74, 90 (M, DSRC, Y, Z), 95 (M and L), and 101	ANSI/TIA-603-E; TIA-102.CAAA-E	222000 MHz

Testing Activities Performed in Support of FCC Declaration of Conformity and Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A.1⁵:

Rule Subpart/Technology	Test Method	Maximum Frequency
Signal Boosters Part 20 (Wideband Consumer Signal Boosters, Provider-specific signal boosters, and Industrial Signal Boosters)	ANSI C63.26:2015	40000 MHz

⁵ Accreditation does not imply acceptance to the FCC equipment authorization program. Please see the FCC website (<https://apps.fcc.gov/oetcf/eas/>) for a listing of FCC approved laboratories.



Accredited Laboratory

A2LA has accredited

HERMON LABORATORIES

Binyamina, Israel

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



Presented this 10th day of October 2017.

A handwritten signature in blue ink, positioned above a horizontal line.

Senior Director, Accreditation Services
For the Accreditation Council
Certificate Number 0839.01
Valid to June 30, 2019
Revised May 1, 2019

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.