



THE AMERICAN ASSOCIATION FOR
LABORATORY ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

MICOM LABS
Pleasanton, CA

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 18 June 2005*).



Presented this 26th day of February 2008.

A handwritten signature in cursive script, appearing to read "Peter Abney".

President
For the Accreditation Council
Certificate Number 2381.01
Valid to November 30, 2009

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

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

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ELECTRICAL (EMC)

Valid to: November 30, 2009

Certificate Number: 2381.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following Emissions and FCC Related Testing, Immunity and Related Testing, Telecommunications and Wireless tests:

<u>Test</u>	<u>Test Method</u>	<u>Type of Equipment, Service, or Amplifying Comments</u>
<i>Reference & Basic Standards</i>	EN 55011 CISPR 11 ICES-001	Information technology equipment
<i>Emissions</i>	47CFR Part 18 KN 11	
<i>Conducted Emissions</i> <i>10 kHz to 30 MHz</i>	EN 55022 :2006 CISPR 22 (Ed. 5.0) ICES-003 Issue 4 KN 22	Information technology equipment
<i>Radiated Emissions</i> <i>Electric Field 30 MHz - 18 GHz</i>	47CFR Part 15B 47CFR Part 15C ANSI C63.4-2003	Unintentional radiators Intentional radiators Measurements - 9 kHz - 18 GHz
<i>Electrostatic Discharge</i> <i>up to 15 kV</i>	EN 61000-4-2 IEC 61000-4-2 KN 61000-4-2	Electrostatic discharge immunity test
<i>Radiated RF Immunity</i> <i>10 V/m, 80 - 2000 MHz</i>	EN 61000-4-3 IEC 61000-4-3 KN 61000-4-3	Radiated, radio-frequency, electromagnetic field immunity test

<u>Test</u>	<u>Test Method</u>	<u>Type of Equipment, Service, or Amplifying Comments</u>
Immunity to Fast Transients/ Bursts <i>up to 4.5 kV</i>	EN 61000-4-4 IEC 61000-4-4 KN 61000-4-4	Electrical fast transient/burst immunity test
Immunity to Mains Surge <i>up to 6 kV</i>	EN 61000-4-5 IEC 61000-4-5 KN 61000-4-5	Surge immunity test
Conducted RF Immunity <i>150 kHz - 230 MHz up to 10 Vrms</i>	EN 61000-4-6 IEC 61000-4-6 KN 61000-4-6	Immunity to conducted disturbances, induced by radio-frequency fields
<i>These generic and product specific standards are included but limited to those</i> Reference & Basic Standards <i>that are explicitly listed earlier</i>	EN 61000-6-1 IEC 61000-6-1 EN 61000-6-2 IEC 61000-6-2 EN 61000-6-3 IEC 61000-6-3 AS/NZS 4251.1 EN 61000-6-4 IEC 61000-6-4 AS/NZS 4251.2 EN 55024 CISPR 24 KN 24 EN 300 386 EN 60601-1-2 IEC 60601-1-2 EN 60601-2-35 EN 301 489-1	Immunity for residential, commercial and light-industrial environments (<i>except IEC 61000-4-8 and IEC 61000-4-11</i>) Immunity for industrial environments (<i>except IEC 61000-4-8 and IEC 61000-4-11</i>) Emission standard for residential, commercial and light-industrial environments Emission standard for industrial environments Information technology equipment - immunity characteristics (<i>except IEC 61000-4-8 and IEC 61000-4-11</i>) Telecom network equipment Medical electrical equipment safety EMC for radio equipment

<u>Test</u>	<u>Test Method</u>	<u>Type of Equipment, Service, or Amplifying Comments</u>
<p><i>These generic and product specific standards are included but limited to those Reference & Basic Standards that are explicitly listed earlier (Cont.)</i></p>	EN 301 489-2	Radio paging equipment
	EN 301 489-3	SRD from 9 kHz and 40 GHz
	EN 301 489-4	Fixed radio links
	EN 301 489-5	Private land mobile radio (PMR)
	EN 301 489-6	DECT equipment
	EN 301 489-7	GSM and DCS
	EN 301 489-8	GSM base stations
	EN 301 489-9	Wireless microphones and RF audio links
	EN 301 489-10	CT1, CT1+ and CT2 equipment
	EN 301 489-12	VSAT at 4 GHz and 30 GHz
	EN 301 489-13	CB radio
	EN 301 489-15	Amateur radio
	EN 301 489-16	Analog cellular radio
	EN 301 489-17	RLAN equipment
	EN 301 489-18	TETRA equipment
	EN 301 489-19	ROMES at 1.5 GHz band
	EN 301 489-20	MES in the Mobile Satellite Services
EN 301 489-22	VHF aeronautical mobile and fixed radio	

<u>Test</u>	<u>Test Method</u>	<u>Type of Equipment, Service, or Amplifying Comments</u>
<p>Fixed Radio Systems Point-to Point</p> <p><i>Microwave Radio Transmitter and Receiver Testing</i></p> <ul style="list-style-type: none"> • <i>Output power up - 10 W</i> • <i>Frequency Error 9 kHz - 110 GHz</i> • <i>RF Spectrum Mask 9 kHz - 40 GHz</i> • <i>Equipment Background BER</i> • <i>Co-Channel Interference</i> • <i>CW Spurious Interference 10 kHz - 110 GHz</i> 	<p>EN 301 126-1 V1.1.2 EN 301 390 V1.2.1</p> <p>EN 301 751</p> <p>EN 302 217-1 EN 302 217-2-1 EN 302 217-2-2 EN 302 217-3</p> <p>47CFR Part 101*</p> <p>SRSP-314.5 Issue 2*</p> <p>SRSP-317.8 Issue 1*</p> <p>SRSP-321.8 Issue 1* RSS-191 Issue 2*</p>	<p>Conformance testing</p> <p>Spurious emissions and immunity limits EMC for fixed radio links</p> <p>Harmonized standards</p> <p>Characteristics and requirements</p> <p>932 MHz - 95 GHz</p> <p>13, 15 and 18 GHz</p> <p>18 GHz</p> <p>21.8 GHz 23, 38 GHz</p>
<p>Fixed Radio Systems Point-to-Multipoint</p> <p><i>Microwave Radio Transmitter and Receiver Testing</i></p> <ul style="list-style-type: none"> • <i>Output power up - 10 W</i> • <i>Frequency Error 9 kHz - 110 GHz</i> • <i>RF Spectrum Mask 9 kHz - 40 GHz</i> • <i>Spectral Lines at the Symbol Rate 9 kHz - 40 GHz</i> 	<p>47CFR Part 2J EN 301 126-2-1 EN 301 126-2-2 EN 301 126-2-3 EN 301 126-2-4 EN 301 126-2-5 EN 301 126-2-6</p> <p>EN 301 753 EN 302 326-1 EN 302 326-2</p> <p>EN 301 744 RSS-129 RSS-192 RSS-132 RSS-133 SRSP-310.5 *</p>	<p>Conformance testing</p> <p>FDMA TDMA FH-CDMA DS-CDMA MC-TDMA</p> <p>Harmonized standards</p> <p>Systems requirements</p> <p>3-11 GHz DS-CD/TDMA packet data 3.5 GHz 800 MHz CDMA Cellular Cellular PCS 10.5 GHz</p>

<u>Test</u>	<u>Test Method</u>	<u>Type of Equipment, Service, or Amplifying Comments</u>
<p>Fixed Radio Systems Point-to-Multipoint (Cont.)</p> <ul style="list-style-type: none"> • <i>Equipment Background</i> • <i>BER</i> • <i>Co-Channel Interference</i> • <i>Front-end non-linearity</i> • <i>Distortion Sensitivity</i> 	<p>EN 302 063 * EN 301 997-1 * EN 301 997-2 *</p> <p>47CFR Part 21* 47CFR Part 22* 47CFR Part 24* 47CFR Part 27* 47CFR Part 101*</p>	<p>32 GHz 40.5- 43.5 GHz</p> <p>Domestic Public Fixed Radio Public Mobile Services PCS WCS Fixed Microwave Service</p>
<p>Short Range Devices</p> <p><i>Transmitter and Receiver Testing</i></p> <ul style="list-style-type: none"> • <i>Effective Isotropic Radiated Power (EIRP) and Effected Radiated Power</i> • <i>Peak Transmit and Peak Power Density</i> • <i>Frequency Error and Range</i> • <i>Transmitter Spectrum Mask</i> • <i>Transmitter Spurious Emissions 30 MHz - 40 GHz</i> • <i>Receiver Threshold</i> • <i>Adjacent Channel Selectivity and Blocking</i> • <i>Receiver Spurious Emissions 30 MHz - 40 GHz</i> • <i>Dynamic Frequency Selection</i> • <i>Emissions Bandwidths and Peak Excursions (UNII Devices)</i> 	<p>EN 300 330-1 EN 300 330-2</p> <p>EN 300 220-1 EN 300 220-2 EN 300 220-3</p> <p>EN 300 440-1 EN 300 440-2</p> <p>EN 300 328 EN 301 893* (Includes on-site DFS) EN 302 502* (Includes on-site DFS) ES 202 131</p> <p>EN 300 674-1 EN 300 674-2-1 EN 300 674-2-2</p> <p>EN 301 091-1 EN 301 091-2</p> <p>EN 302 208-1 V1.1.1 EN 302 208-2 V1.1.1</p> <p>EN 302 291-1 V1.1.1 EN 302 291-2 V1.1.1</p> <p>47CFR Part 15C 47CFR Part 15D 47CFR Part 15E (Includes on-site DFS)</p>	<p>SRD – Generic EMC 9 kHz - 25 MHz</p> <p>25 MHz - 1000 MHz</p> <p>1 GHz - 40 GHz</p> <p>RLAN - EMC 2.4 GHz 5.8 GHz 5 GHz</p> <p>RTTT, 5.8 GHz, road side and on-board units</p> <p>76 - 77 GHz, radar equipment</p> <p>RFID 865 - 868 MHz</p> <p>NFC 13.56 MHz;</p> <p>Intentional radiators Unlicensed PCS Devices UNII Devices Ultra-Wideband Operation</p>

<u>Test</u>	<u>Test Method</u>	<u>Type of Equipment, Service, or Amplifying Comments</u>
<i>Short Range Devices (Cont.)</i>	47CFR Part 15F 47CFR Part 15G 47CFR Part 18 RSS-123 RSS-137 RSS-187 RSS-210 RSS-213 RSS-243 RSS-310 AS/NZS 4268 AS/NZS 4771	Access BPL ISM radio-frequency equipment Low Power Licensed Location and Monitoring Service Emergency Beacons/Locators Low Power License-Exempt License-exempt PCS Active Medical Implants Low Power License Exempt Type 2 SRD - Technical elements 900 MHz, 2.4 and 5.8 GHz
<i>Land Mobile Service</i>	EN 300 113-1 EN 300 113-2 EN 301 166-1 EN 301 166-2 EN 300 390-1 EN 300 390-2 EN 300 471-1 EN 300 471-2 RSS-125 RSS-119 RSS-136 47CFR Part 90 47CFR Part 95 47CFR Part 97	PMR w/ antenna connector Narrowband channels w/ antenna connector w/ integral antenna Channel sharing w/ EN 300 113 1.7 - 28 MHz 27.41 - 960 MHz 26.96 - 27.41 MHz Private Land Mobile Service Personal Radio Service Amateur Radio Service

<u>Country</u>	<u>Test Method</u>	<u>Type of Equipment, Service, or Amplifying Comments</u>
<i>Hong Kong</i>	HKTA 1039 Issue 2 HKTA 1042 Issue 2 HKTA 1049 Issue 1	2.4 + 5 GHz Band 5 GHz for Wireless Access RFID
<i>Japan</i>	MIC Article 2-1 Item (8) MIC Article 2-1 Item (13) MIC Article 2-1 Item (19) MIC Article 2-1 Item (19)-2 MIC Article 2-1 Item (19)-3 MIC Article 2-1 Item (19)-4 MIC Article 2-1 Item (19)-5 MIC Article 2-1 Item (19)-6 MIC Article 2-1 Item (19)-7 MIC Article 2-1 Item (19)-8 MIC Article 2-1 Item (19)-9 MIC Article 2-1 Item (19)-10 MIC Article 2-1 Item (19)-11 MIC Article 2-1 Item (25)-4 MIC Article 2-1 Item (25)-5 MIC Article 2-1 Item (25)-6 MIC Article 2-1 Item (32) MIC Article 2-1 Item (33) MIC Article 2-1 Item (33)-2	Specified low-power radio Low-power security radio 2.4 GHz WLAN 2.4 GHz WLAN 5 GHz WLAN 24 GHz WLAN 4.9 GHz WLAN 4.9 GHz WLAN 4.9 GHz WLAN 4.9 GHz WLAN 4.9 GHz WLAN 4.9 GHz WLAN 4.9 GHz WLAN 4.9 GHz WLAN Narrow-band digital radio Narrow-band digital radio Narrow-band digital radio DSRCS DSRCS DSRCS
<i>Korea</i>	RRL Notice No. 2007-80 RRL Notice No. 2007-69 RRL Notice No. 2007-70 RRL Notice No. 2004-66 RRL Notice No. 2004-15	Technical Requirements for Radio Technical Requirements for EMI Technical Requirements for EMS Technical Requirements for EMF Technical Requirements for TTE
<i>Singapore</i>	IDA TS WBA IDA TS SRD IDA TS LMR	Wireless Broadband Access Short Range Devices Land Mobile Equipment

<u>Country</u>	<u>Test Method</u>	<u>Type of Equipment, Service, or Amplifying Comments</u>
Taiwan	DGT C-IS2031-0 DGT C-IS2034-0 DGT LP0002 CNS 13438	PTP Microwave Radio PMP Microwave Radio Low Power RF Devices Information technology equipment

* On-site test services are available for the standards listed under Fixed Radio Services, Point-to-Point and Point-to-Multipoint and DFS

Note 1: For standards or methods listed on the scope of accreditation without a revision date, laboratories are expected to be competent in the use of the current version within one year of the date of publication of the standard test method or upon the date specified by the standard test method originator when the originator has implementation authority. When a superseded standard or method is required for an accredited test, the scope will include the superseded date/version. For those that support the TCB/CB status of the organization acting as a certifier on behalf of the FCC or IC the expectation is currency within 30 days of Federal Register publication of changes for FCC and 30 days after IC website update.