

SGS WIRELESS TELECOMMUNICATIONS
TESTING & CERTIFICATION WORLDWIDE



WIRELESS TESTING **AT ITS BEST**

SGS



HISTORY – A PROOF OF COMPETENCE

■ GLOBAL LEADER AND INNOVATOR

Recognized as a benchmark for quality and integrity, SGS Wireless is a leading global supplier of complete solutions for wireless testing and certification services.

With competence centres in key countries in Europe, North America and Asia, SGS operates a highly-experienced and knowledgeable network committed to innovation and improvement.

Our capabilities are expanding constantly to give our clients the competitive edge they need in an increasingly regulated world.

■ SGS WIRELESS TEAM & LABORATORIES

SGS started building its network of GSM/UMTS competence centres for wireless telecommunication in Asia with four wireless test laboratories in Taiwan, China, Japan and Korea.

SGS became the North American leader in CDMA testing by acquiring Wireless Test Systems Inc. and reinforced its market position in Europe by purchasing the former 7 Layers UK.

The expansion by SGS of the Cambridge, UK-based test laboratory added Application Enablers, used in many of the media rich terminals of today, along with testing services for Generic Access Network (GAN) and Assisted-Global Positioning System (A-GPS) specific Application Enablers.

Accredited by the United Kingdom Accreditation Service (UKAS) to ISO 17025, SGS Wireless is the only European facility to offer all these testing services under one roof. The lab is accredited for GCF and PTCRB testing, and the testing is performed on multiple platforms for both 2G and 3G technologies, which enables devices to meet the requirements laid out in 3GPP, OMA and IMTC specifications. The combination of services offered by the established Durham laboratory and the European offering in 2008 with Safety, EMC and Notified Body for the R&TTE EU Directive are now included within the services portfolio. Technology roadmaps for 2009 will ensure that wireless laboratories can supply their customer base with the latest testing technology for wireless terminals and devices.

To enable the Wireless group laboratories to operate efficiently, SGS invested in the introduction of LabSURE®, a project and laboratory management software program. It has been developed to allow laboratories worldwide to run customer projects across multiple laboratories and ensure the precise management of hardware and software of the validated test systems.

www.sgs.com/wireless



SGS WIRELESS LEADERS

■ CHRIS KIRK, CEO OF SGS

“Our capabilities have expanded at an incredible rate during these past years. SGS Wireless is now a virtual global laboratory, able to service a wide range of customer needs, seamlessly around the world.

We are confident that SGS’s global positioning will help our customers in the mobile communications industry gain considerable advantages in terms of time and cost.

Our strong team of engineers take an active role in global technology and sit on standards boards as well as being members of various industry groups. Our highly experienced international teams are located in different time zones and are available 24 hours per day. Basically, SGS Wireless never sleeps!”

■ SGS – THE HISTORY BEHIND THE COMPANY

Established in 1878, SGS started by offering agricultural inspection services to grain traders in Europe. From those early beginnings, we grew in size and scope as our agricultural inspection services spread around the world. During the mid 20th century, we began to diversify and started offering inspection, testing and

verification services across a variety of sectors, including industrial, minerals and oil, gas and chemicals among others. In 1981, the company went public. The current structure of SGS, consisting of 10 business segments operating across 10 geographical regions, was formed in 2001.

From our beginnings in 1878 as a grain inspection house, we have steadily grown into our role as the industry leader. We have done this through continual improvement and innovation and through supporting our customers’ operations by reducing risk and improving productivity.

■ GET IN CONTACT

ASIA

China
ee.shanghai@sgs.com
t +86 216 115 22 92

Korea
ee.korea@sgs.com
t +82 314 28 57 00

Taiwan
ee.taiwan@sgs.com
t +886 222 993 279 ext 1520

EUROPE

UK
gb.wireless@sgs.com
t +44 176 326 25 24

Germany
ee.germany@sgs.com
t +49 89 787 47 51 30

NORTHAMERICA

ee.northamerica@sgs.com
t +1 858 592 71 00



A GLOBAL PARTNER...

■ THE GLOBAL CERTIFICATION FORUM (GCF)

Launched by the GSM Association in April, 2000, GCF is an independent program that operates in partnership with global manufacturers to verify and monitor a global voluntary certification process for testing GSM handsets and terminal devices. Today the GCF continues to work verifying devices against the Forum's technical requirements. These requirements have expanded by over 250%

since 2000, with global recognition and acceptance of results, avoidance of multiple testing and added cost efficiencies. The program includes at a minimum, the GSM frequency bands and multi-mode devices as well as several selected application enablers (e.g. OMA MMS and 3GPP CS Video Telephony). It is complementary to all regulatory regimes with participation on a voluntary basis.



■ SGS WIRELESS – YOUR GCF TESTING PARTNER

As an active observer member of GCF, SGS Wireless is involved in the technical representation of GSM, UMTS and LTE standards, as well as the validation of test platforms and test cases. For the manufacturer SGS can offer full guidance from introduction to membership, and fulfilment of test requirements within GCF's global network of accredited wireless laboratories.

TESTING SERVICES INCLUDE:

- GSM, GPRS, EDGE
- UMTS (3G) HSPA
- Application Enablers
- Field Trials
- OTA-Antenna Performance Measurement
- Test Platform Validation

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...FOR GSM/UMTS CERTIFICATION

■ THE PTCRB CERTIFICATION FORUM

PTCRB (PCS Type Certification Review Board) is the North American equivalent of the GCF, verifying standards compliance for frequency bands in North America.

Formed in 1997 to represent global carriers using 850/1900 MHz GERAN and FDD II and V UTRA bands, PTCRB certification ensures devices will work efficiently on their networks.



■ GLEN SCALES, PTCRB CHAIRMAN

“PTCRB was formed in March 1997 by GSM carriers to create a certification program for mobile/ user equipment utilizing third-party testing. Since 2004, there has been a 214% increase in the number of certifications by the PTCRB. This certification ensures the certified devices meet a minimum set of requirements giving confidence to member operators and their roaming partners that these devices will work efficiently on their networks.

Qualified independent laboratories are authorized by the PTCRB to conduct this testing on their behalf. SGS Wireless laboratories have demonstrated that they meet the specific set of requirements by having the knowledge and test platforms to test devices to PTCRB test requirements.”

Further information may be obtained from the PTCRB website www.ptcrb.com

■ SGS WIRELESS – YOUR PTCRB TESTING PARTNER

SGS Wireless laboratories offer a global service to manufacturers requiring certification for PTCRB. Specialists in terminal and modular certification, SGS experts have been conducting this type of certification for over 10 years.

OUR ISO/IEC 17025 LABORATORIES ARE AUTHORIZED BY THE PTCRB TO CONDUCT TESTING FOR:

- GSM, GPRS, EDGE
- UMTS (3G) HSPA
- OTA Performance
- Converged Devices
- Application Enablers



GSM/UMTS – WIRELESS TESTING...

■ OUR COMPLETE RANGE OF WIRELESS SERVICES

Consistent with the complexity of wireless communication products we offer our clients:

- RF & Protocol Conformance Testing
- GSM
- GPRS
- EDGE
- UMTS
- HSPA
- LTE (Introduction planned & platform validation)
- Application Enables
- OTA
- Radio Handset Performance Testing
- Field Trials
- RF & Protocol Debug Consultancy
- LBS (Location Based Services) Testing
- BLUETOOTH®
- Wi-Fi
- WiMAX (RCT/PCT Validation laboratory)
- CTIA Battery Certification
- Environmental Reliability Testing
- Consultancy Services
- International Regulatory Testing & Type Approval
- EU (R&TTE) Test Services
- EMC
- SAFETY & SAR
- Notified Body Service
- FCC Testing Services
- TCB (Technical Competent Body) Service

■ TERMINAL MANUFACTURERS CERTIFICATION PROGRAMMES

SGS can currently offer a complete first run through of your test plan for a fixed price. This service is ideal for customers who want to run through every applicable test case once, as quickly as possible to identify which tests - if any - require remedial work.

These test services are fully accredited to ISO 17025, GCF and PTCRB certification requirements. Dedicated project management is included.

We used validated test platforms from all the following vendors: Rohde & Schwarz, Anite, Aeroflex, Comprion, Mint, Anristu, Setcom, Agilent, WTS, Spirent.

For further information please contact gb.wireless@sgs.com



...FOR WORLDWIDE MARKETS

■ MODULE MANUFACTURERS AND INTEGRATORS PROGRAMME

SGS Wireless has formed key relationships with a large number of the module manufacturers who produce modules supporting many technology features for use in global markets within M2M and automotive applications, modem and notebooks and many other device applications.

Our knowledge of the certification schemes supporting modular certifications enable both manufacturers and the integrators to utilise these services, saving costs and reducing time-market for their products.

For further information please contact gb.wireless@sgs.com

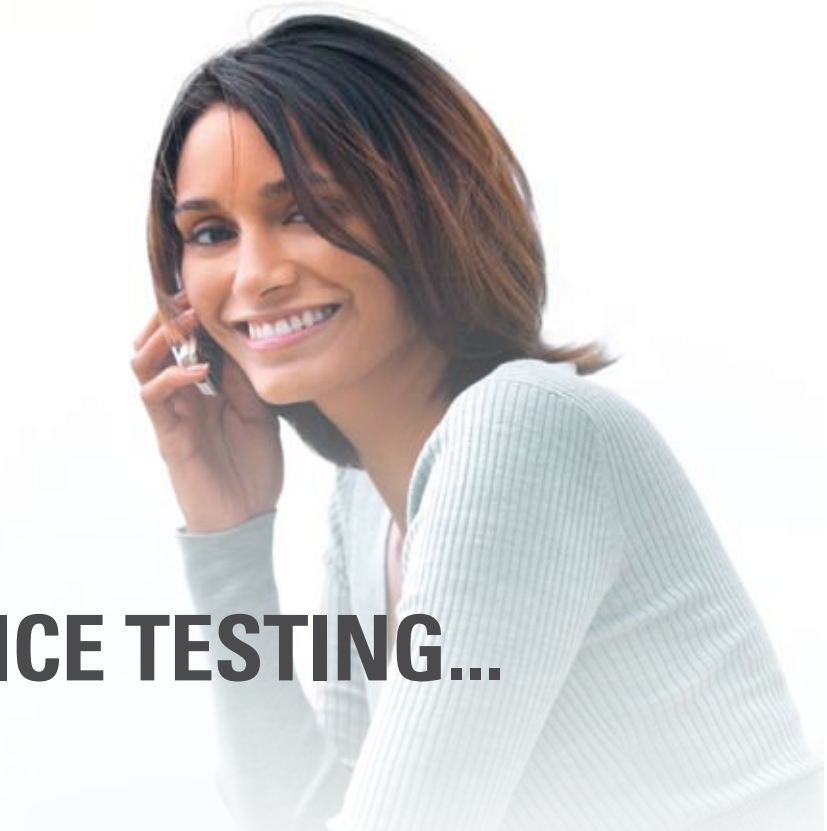
■ CHIPSET MANUFACTURERS PROGRAMME

Today the leading chipset manufacturers for wireless technologies such as Qualcomm, Texas Instruments, ST-NXP EMP, Infineon, Icera, Freescale, Broadcom and NXP pre-test extensively to the certification requirements of both PTCRB and GCF certification schemes to ensure their customers benefit from faster project completion and a shortened time to market.

SGS offers within their Chipset Manufacturers Programme the benefit of ease of access to the latest validated test platforms, and assistance in automated testing and download and retesting for both attended and non-attended testing.

The experience of our engineers with multiple chipset platforms is passed on to other customers specifically the operation of specific chipsets and the preferred test platform routes to certification.

For further information please contact gb.wireless@sgs.com



CDMA DEVICE TESTING...

■ CDMA

Code Division Multiple Access is a general type of digital wireless technology, commonly used to refer to one specific family of technologies (IS-95 and EVDO - CDMA2000) that competes with technologies such as GSM. It is an innovative form of multiplexing for second-generation (2G) and third generation (3G) wireless communications. Designed by Qualcomm in the United States, CDMA is a proprietary standard and it is currently the dominant network standard for North America and parts of Asia.

As a “spread spectrum” technology, spreading the information contained in a particular signal of interest over a much greater bandwidth than the original signal, CDMA is taking the world into a future with lightning fast access to information, high-performance video at the user’s fingertips, and a virtual office that can travel anywhere. Replacing the already outdated Wi-Fi technologies, emerging CDMA technologies are truly a driving force in the globalization of today’s society, bringing a new excitement to wireless technology.

The first devices launched have been data cards, making it very convenient for business travellers requiring fast access to work, anywhere, anytime. The second wave of devices (EVDO Rev A) introduced the features which excited the tech-savvy consumer, including faster data cards, smartphones and PDA’s.

■ CDMA CERTIFICATION FORUM

CDMA Certification Forum (CCF) is an international non-profit partnership between CDMA operators and CDMA device vendors to establish and maintain a core global device certification process.

This process helps improve quality through consistent network interoperability, product conformance and essential performance testing dictated by international standards bodies across the globe.

CCF offers the core device certification specifications that other existing certification programs can build upon to satisfy market, operator and device specific processes. It can benefit service providers, device manufacturers, test equipment vendors & infrastructure manufacturers.

■ SGS - YOUR CDMA TESTING PARTNER

Playing a big factor in the bright future of CDMA is 1xEVDO (Evolution Data Optimized) Revision A.

This emerging technology boasts a download speed of 3.1 Mbps and an upload speed of 1.8 Mbps which is about 30%

faster (network to mobile) and 400% faster (mobile to network) than the current 1xEVDO Rev. 0 technology.



...SGS WIRELESS US

■ CERTIFICATION TESTING

SGS Wireless US offers the full range of CDMA Certification testing services for a large number of CDMA Carriers worldwide. SGS is accredited to provide testing programs for CTIA, CCF, and Sprint Certifications plus Verizon Safe for Network.

Test support includes:
C.S0011, C.S0033A, C.S0038A,
C.S0043, C.S0036, C.S0037,
C.S0031, C.S0060, C.S0061,
C.S0062, C.S0073, and C.S0059.

With over 10 years in CDMA testing experience, SGS has expertise in handsets, modems, modules and an understanding of industry/carrier test requirements.

■ APPLICATIONS TESTING

WITH A TEAM OF ENGINEERS, SGS OFFERS ALL AREAS OF DEVICE APPLICATIONS TESTING.

Included in our line up are: AMS, Content, Picture Mail, Java, Messaging (MMS, SMS, EMS), TTY, Browser, IOTA/OTADM, LBS, Data throughput, UTS DLL, and Field (FIT) testing.

SGS can test to a vendor's specific internal test plan, and has upgraded our lab security to ensure the highest level of device integrity.

■ ANTENNA, ACOUSTICS, AND ADDITIONAL TESTING

- SGS offers support for antenna testing (TRP/TIS/Intermediate Channels) for both CDMA and GSM; we are an approved lab for Sprint and CTIA. Our Antenna testing is performed utilizing a Satimo SG-64 measurement system, with the capability for real human testing. SGS can also support A-GPS testing. Our antenna team runs a three-shift operation ensuring the fastest turn-around times and the most accurate results in the industry.

- A recent addition to SGS's testing services is acoustics. SGS is approved by Sprint, CTIA, and CCF. The B&K chamber with head and torso set up can run tests for both CDMA and GSM.

- BT IOT testing has been added for SGS's 2009 line up of testing services.

For further information please contact: gb.wireless@sgs.com

SGS WIRELESS

LABORATORY LOCATIONS & SERVICE PORTFOLIO

| | CHINA | UK | GER | KOREA | TAIWAN | USA |
|--|-------|----|-----|-------|--------|-----|
| GCF TESTING SERVICES | ● | ● | | ● | ● | |
| PTCRB CERTIFICATION TESTING | ● | ● | | ● | ● | |
| FIELD TRIALS & NETWORK CERTIFICATION SERVICES | ● | | | | | |
| OTA TESTING SERVICES | ● | | | ● | ● | ● |
| BLUETOOTH® SIG APPROVAL TESTING SERVICES | | ● | | ● | ● | |
| BLUETOOTH® IOT TESTING (INTRODUCTION IN 2009) | | | | | | ● |
| WIMAX RCT/PCT VALIDATION | | ● | | | | |
| EMC TESTING | ● | ● | ● | ● | ● | |
| FCC TESTING SERVICES | ● | ● | | ● | ● | |
| SAFETY/SAR | ● | ● | ● | ● | ● | |
| NOTIFIED BODY SERVICES | ● | | ● | | | |
| TECHNICAL COMPETENT BODY SERVICES FOR FCC | ● | | | | | |
| CERTIFICATION CONSULTANCY SERVICES | ● | | ● | ● | | |
| INTERNATIONAL TYPE APPROVAL SERVICES | ● | ● | ● | ● | ● | |
| WI-FI APPROVAL TESTING | | | | ● | ● | |
| USB-IF APPROVAL TESTING | | | | ● | ● | |
| AUTOMOTIVE EMC | ● | | ● | ● | ● | |
| MACHINERY | ● | | | ● | | |
| CCF CERTIFICATION TESTING SERVICES | | | | | | ● |
| CTIA CERTIFICATION | | | | | | ● |
| SPRINT CERTIFICATION | | | | | | ● |
| VERIZON SAFE FOR NETWORK SERVICES | | | | | | ● |
| NEBS TESTING IN EUROPE | | | ● | | | |
| VERIZON ITL NEBS PROGRAM | | | ● | | | |
| RADIO BASE STATION PRE & TYPE APPROVAL TESTING | | | ● | | | |
| DEVELOPMENT OF TESTING TOOLS | | | ● | | | |
| SIGNALLING PROTOCOL CONFORMITY VERIFICATION | | | ● | | | |
| RELIABILITY ASSESSMENT | | | ● | | | |

SGS WIRELESS CHINA

Shanghai
t +86 216 140 26 66

SGS WIRELESS UK

Cambridge
t +44 176 326 25 24

SGS WIRELESS GERMANY

Munich
t +49 89 787475 130

SGS WIRELESS KOREA

Gunpo
t +82 314 28 58 51

SGS WIRELESS TAIWAN

Taipei
t +88 822 299 32 79

SGS WIRELESS USA

Lenexa, KS
t +1 913 338 29 60
San Diego, CA
t +1 858 592 71 00

www.sgs.com/wireless



WORLDWIDE MARKET ACCESS

AFRICA

SOUTH AFRICA
ICAS

AMERICAS

CANADA
Industry Canada

MEXICO
COFETEL

USA
FCC/PTCRB/CTIA/CDMA

ARGENTINA
SRL/IRAM

BRAZIL
ANATEL

CHILE
SubTEL

COLUMBIA
CRT

PERU
MTC

VENEZUELA
CONATEL

ASIA/PACIFIC

AUSTRALIA
A-Tick

CHINA
SRRC

HONG KONG
no regulations

INDIA
no regulations

INDONESIA
DGPT

JAPAN
Telec

KOREA
MIC

MALAYSIA
SIRIM

NEW ZEALAND
A-Tick

PHILIPPINES
N.T.C.

SAUDIA ARABIA
no agency (take CE)

SINGAPORE
IDA

TAIWAN
DGT/BSMI

THAILAND
no regulations

UNITED ARAB EMIRATES
no agency (take CE)

EUROPE

EEA
CE Notification & GCF

The countries in the European Economic Area (EEA) consist of:

(i) EU member states: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom

(ii) EFTA member states: Iceland, Liechtenstein, Norway and Switzerland

CZECH REPUBLIC
no agency

HUNGARY
no agency

ISRAEL
I.S.

POLAND
no agency

RUSSIA
GOST

www.sgs.com/wireless

WHEN YOU NEED TO BE SURE

SGS