

# 藍芽 / WLAN 無線產品之各國法規要求及 測試解決方案

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WHEN YOU NEED TO BE SURE

The logo for SGS, consisting of the letters 'SGS' in a bold, sans-serif font. A vertical line is positioned to the right of the 'S', and a horizontal line is positioned below the 'S', forming a partial crosshair.

# SGS Brief Intro

- Establish in 1878, clear global leader in
  - Verification
  - Testing
  - Certification
- In Numbers:
  - 31,000 Employees, 845 Offices, 340 Laboratories
  - Operating in over 140 countries
  - 2002 Revenue CHF 2,332 M.(equal to 500億台幣)
- SGS Taiwan
  - Establish since 1952
  - 4 branch offices, 12 laboratories, over 800 staff
  - 2002 Revenue over 1,200 M.NTD

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# Lab Center - categorized by scope

- **EPA** (TPE, KAO)
  - Apply: Wastewater, Drinking water, Solid waste, Noise & vibration, Ambient air and stack air
  - Services: EIA monitor - mobile lab, Organic analysis, Heavy metal, Stack, General test
- **Chemical** (TPE, TCH, KAO)
  - Toy, Gift, Ceramic, Cookware, Cosmetics, Metal Analysis, Ecology(歐洲電子電機廢棄物法案 , WEEE), Petro-Chemical, Drug Abuse, Ultra Trace
- **M&E** (TPE, TCH, KAO)
  - Hardware: Furniture, Nursery products, Fitness equipment, Flammability
  - Material: Ferrous Materials & Metallurgy, Non-Ferrous Materials & Metallurgy, Polymer Products
- **Food** (TPE, TCH, KAO)
  - Physical, Chemical, Biological testing, Private Label Audit, HACCP
- **E&E**
  - \_ EMC, EMI, EMS
  - \_ Bluetooth/WLAN regulatory (CE-R&TTE, FCC ID,SAR), ITA (Telecom International Type Approval)
  - \_ Safety , CB, GS, CCC, FI

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# What is Bluetooth

Parameter	Value
Modulation	G-FSK, $h \leq 0.35$
Peak data rate	1 Mbit/s
RF bandwidth	1 MHz (-20 dB)
RF band	2.4 GHz, ISMband
RF carriers	23/79
Number of hops	1600/s
Carrier spacing	1 MHz
Peak TX power	$\leq 20$ dBm

- 10 m range, using 0 dBm standard TX power
- -30 .. +20 dBm optional range
- Power control required above 0 dBm
- Data and voice transmission capabilities
- SCO links (Synchronous Connection Oriented)
- ACL links (Asynchronous Connection-Less)



## Worldwide Technology



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Bluetooth  
Product

Qualification  
Process

Certification  
Process

Bluetooth logo  
License grant

+

License to sell

**Voluntary**

**Mandatory**

Global  
market

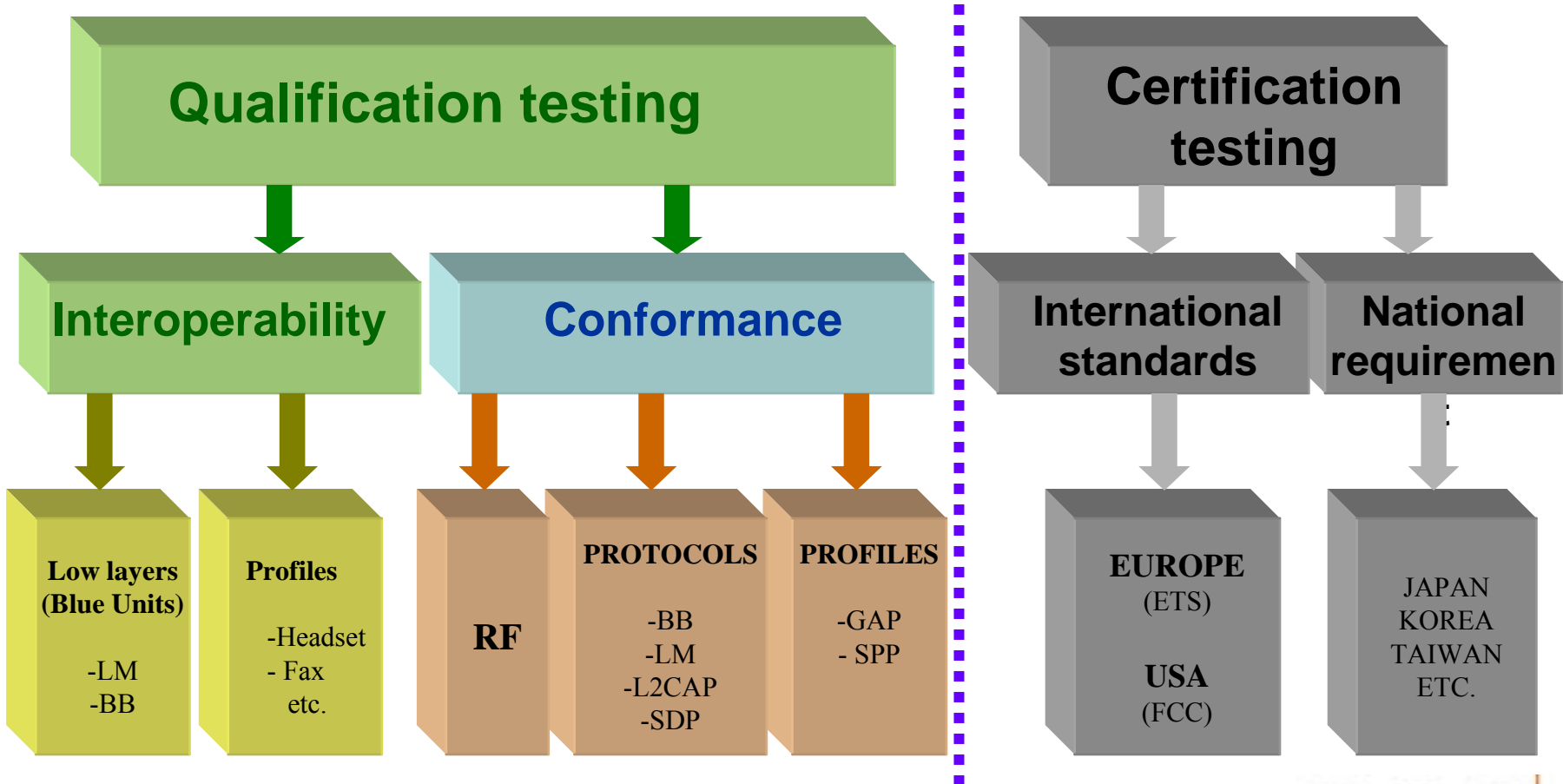


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# Bluetooth Testing



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# WLAN Product

Wi-Fi  
Interoperability

Certification  
Process

Wi-Fi certified logo

+

License to sell

**Voluntary**

**Mandatory**

Global  
market



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# Worldwide Approvals - examples

Countries Requirements	USA	Mexico	Argentina	Brazil	Spain	Germany	South Africa	Japan	Australia
<b>Frequency band allocated</b>	2,4-2,4835 GHz	2,45-2.4835 GHz	2,4-2,4835 GHz	2,4-2,4835 GHz	2,4-2,4835 GHz (not published)	2,4-2,4835 GHz	2,4-2,4835 GHz	2,4-2,4835 GHz (not published)	2,4-2,4835 GHz
<b>National standard</b>	47CFR Part 15.247	NOM-121-SCT1-1994	CNC-Q2-63.01	Res 209 (14/1/2000)	ETS 300 328	ETS 300 328	ETS 300 328	ARIB STD-66	ETS accepted
<b>In-country testing required</b>	FCC Contract Test Site	NO	YES	NO	NO	NO	NO	YES	NO
<b>Compatibility with FCC/ETS</b>	YES	Some deviations	FCC	FCC	YES	YES	YES	Some deviations	YES
<b>EMC requirements</b>	YES	NO	NO	NO	ETS 300 826	ETS 300 826	NO	In preparation	ETS accepted

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Certification process

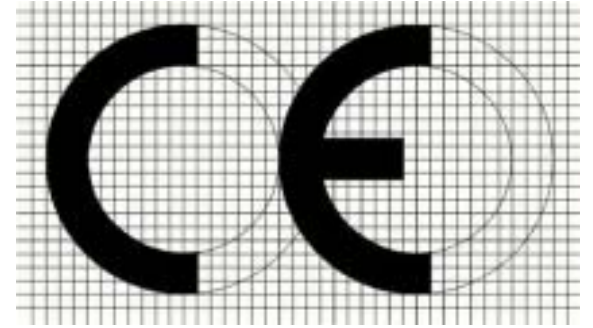
# Europe

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# What is CE

- Conformance Europeene  
符合歐洲標準



- 15 EU Member States

奧地利	愛爾蘭	英國
比利時	義大利	
丹麥	盧森堡	
芬蘭	荷蘭	
法國	葡萄牙	
德國	西班牙	
希臘	瑞典	

- 3 EFTA members

挪威  
冰島  
列支敦斯登

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- Electromagnetic Compatibility (EMC) Directive (89/336/EEC)
- Low Voltage Directive (73/23/EEC)
- Machinery Directive (89/392/EEC)
- Medical Device Directive (93/42/EEC)
- Safety of Toys Directive (88/378/EEC)
- The Radio Equipment and Telecommunications Terminal Equipment (R&TTE) Directive (1999/5/EC)

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# Overview of Routes

## Bluetooth/WLAN

### Type of Equipment

### Compliance Routes

Type of Equipment	Annex II - Internal Production Control	Annex III - Internal Production Control + Radio Testing	Annex IV - Technical Construction File	Annex V - Full Quality Assurance
Wired Terminal Telecommunications Equipment	★		★	★
Receivers parts of Radio Equipment	★		★	★
Radio equipment for which harmonised standards are applicable		★	★	★
Radio equipment for which harmonised standards are NOT applicable or apply (in part)			★	★

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# Overview of Procedures

## Annex III

## Annex IV

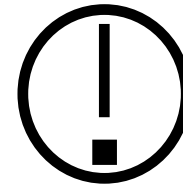
NB <b>can be</b> involved	NB <b>involved</b>
Declaration of Conformity	Declaration of Conformity
Technical Documentation	<b>Technical Construction File submitted to a NB</b>
Radio Test Suite	Radio Test Suite & <b>DoC according to RF</b>
CE Marking	CE Marking

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# Overview of Labelling

C E (N° NB)



The number of the NB is optional (ONLY if Annex IV is applied)

The alert symbol applies when the equipment is subject to any restrictions in any of the EU countries (i.e.: France, Ireland...)

Radio Notification to each EU Radio Spectrum Management Authority is required

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U.S.A.

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# FCC ID database

**FC** Federal Communications Commission

[FCC Home](#) | [Search](#) | [Updates](#) | [E-Filing](#) | [Initiatives](#) | [For Consumers](#) | [Find People](#)

Office of Engineering and Technology

[OET Home Page](#) | [FCC > FCC E-filing > EAS > Generic Search](#) | [FCC Site Map](#)

## Equipment Authorization System Generic Search

**Filing Options**

- [Grantee Registration Form 731](#)
- [Complete Unfinished Form 731](#)
- [Add Attachments](#)
- [Submit Correspondence](#)
- [Register New Test Firm](#)
- [Renew Test Firm/Add Exhibits](#)
- [Test Firm Accrediting Body Login](#)
- [Return to 159 Form](#)

**Reports**

- [Pending Application Status](#)
- [Generic Search](#)
- [Grantee Search](#)
- [Test Firms](#)

**Application Information**

[Grantee Code:](#)

[Product Code:](#)

[Applicant Name:](#)

[Grant Date Range \(mm/dd/yyyy\):](#)  to

[Grant Comments:](#)

[Application Purpose:](#)

[Software Defined Radios:](#)

[FCC Approved Applications Only:](#)

[TCB Approved Applications Only:](#)

[Composite Applications Only:](#)

[Grant Note:](#)  &  &  [View Grant Note Descriptions](#)

**Equipment Information**

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1. FRN number of client , 10 digits
2. 2. Grantee code of client , 3 digits,
3. info of company address, contact person, telephone, email address
4. FCC label sample , label location
5. Operational description. (description of circuit function or how the device operates)
6. Block diagram, schematics , part list.
7. English user manual( with warning statement)
8. Cover letter (if client need confidentiality), authorization letter
9. External / internal photos , test-setup photos, test report (prepared by Test lab)

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Certification process

# Latin American

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# General overview for BT/WLAN in Latin America (I)

- Full band generally available with some exceptions in:
  - ✓ **Peru**, where frequency hopping is not allowed
  - ✓ **Mexico**, where approval in the full band is only possible if the equipment is considered as a SRD. Full band is not open for Spread Spectrum devices (only 2450-2485.5 MHz band)

- Local holder needed in Mexico, Argentina, Brazil & Peru

## General overview for BT/WLAN in Latin America (II)

- In-country testing required only in Arg and Brazil. Rest of countries accept FCC 15.247. EU test report could be accepted

- National labelling applies in Mex, Brz, Arg & Ecu(厄瓜多爾).

Rest of countries recommend:

FCC ID+brand name+model name

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# Asia Pacific

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# General overview for BT/WLAN in Asia Pacific

	Japan	Singapur	HK	China	Malaysia	Korea
Local holder required	No	Yes	No	No	Yes	Yes
Bth qualification needed	Yes	Yes	No	No	No	No
FCC or EU test reports and approval accepted (from accredited lab)	No	Yes	Yes	No	Highly recommend	No
In-country testing required	Yes	No	No	Yes	Yes	Yes
Health requirements	No	Yes	No	No	No	No
Language	Japanese	English	English	English	English	Korean
Approval Body	TELEC	IDA	OFTA	SRMC	SIRIM	RRL

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## HONG KONG

- **Although HK belongs to China, it has its own approval regime**
- **Although approval is not mandatory, this is possible and recommended**



## TAIWAN

- **There are two mandatory approval routes**

**DGT (RF) + BSMI (EMC)**

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## CHINA

- **Since July, 2003, the 2.4G band is allowed up to 100 mW of EIRP (Ant Gain < 10dbi)**
- **National testing is required, it is highly recommended to submit EU and/or FCC approval and test reports. 3 samples must be submitted to the local test lab.**
- **CCIB (EMC) and CCEC (Safety) have merged to CCC mark. Generally CCC mark does not apply to Bluetooth**

Appendix:

# SAR measurement

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SAR 的英文全名為 Specific Absorption Rate，即單位時間內，單位質量所吸收的電磁波能量，單位為 W/Kg，或寫成 mW/g

通常可由人體模型的量測、動物組織或數學理論的推算來了解 SAR 的分佈，下列兩種量測方式可用來計算 SAR：

1. 電場量測 - 因為SAR 是與人體組織內的電場強度，導電性以及質量密度有關，因此可以用小型的電場探棒來量測。

E：在人體組織內部的電場強度

：導電係數(conductivity)(S/m)

：人體組織的密度(kg/m<sup>3</sup>)

$$SAR = \frac{|E|^2 \cdot \sigma}{\rho}$$

2. 溫度量測 - 組織內的溫度升高與SAR 有關，因此可以用溫度探棒量測組織內的溫度來推算該區域的電磁波強度

$$SAR = C \frac{\delta T}{\delta t}$$

C: 比熱

$\delta T$ : 升高的溫度

$\delta t$ : 經過的時間

# 美國

- ANSI/IEEE C95.1 , C95.3
- ANSI/IEEE P1528 (draft)
- FCC OET Bulletin 65 supplement C  
( Office of Engineering and Technology)
- 47 CFR §2.1091 (for mobile device), § 2.1093(for portable device)

## Mobile device

若受測物於正常操作模式下，其發射機距離人體20公分以上者，**可**測試最大暴露允許值 (Maximum Permissible Exposure, MPE)以證明其符電波暴露量之要求。

## Portable device

若受測物於正常操作模式下，其發射機距離人體20公分以內者，**須**測試指定之比吸收率 (Specific Absorption Rate, SAR)以證明其符電波暴露量之要求

根據 2.1093

對操作頻率介於100KHz~6GHz 之間的可攜帶式裝置的  
吸收率(SAR)暴露極限為

全身平均*平 均比吸收率	部份軀體**之 平均比吸收率	四肢尖端***之 平均比吸收率
(一)職業性/受控環境		
0.4W/Kg	8.0W/Kg	20.0W/Kg
(二)一般民眾/非受控環境		
0.08W/Kg	1.6W/Kg	4.0W/Kg

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## 歐洲

法規：Cenelec EN50360 /50361

Limit: 根據 國際非離子輻射保護委員會 ( ICNIRP )  
的規定為 2W/Kg (10g average)

## 日本

法規：同歐洲

## 中國大陸

法規：之前採用歐規，目前法規  
訂為 1W/kg

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## SGS 聯絡資訊

台灣檢驗科技股份有限公司，電子暨通訊實驗室

地址：台北縣五股工業區五工路134號

聯絡人：張正昌 主任，陳文中 主任

電話: (02)22993279 ext. 1580, 1160

Email: [robert\\_chang@sgs.com](mailto:robert_chang@sgs.com), [andrew\\_chen@sgs.com](mailto:andrew_chen@sgs.com)

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