



GCF[™]
Global Certification Forum

Mobile Device Trends

An analysis of GCF device certifications in 2011

By combining conformance and interoperability tests undertaken in laboratories with field trials on multiple live commercial networks, GCF Certification verifies the interoperability of a mobile phone or wireless device across different network elements and infrastructure equipment from different suppliers.

GCF certifies hundreds of different devices each year. An analysis of GCF's certification listings provides insights into current trends within the mobile device market.

February 2012

Introduction to GCF

Founded in 1999, the Global Certification Forum (GCF) has established and continues to develop a certification scheme for mobile phones and wireless devices based on 3GPP standards.

Defined collectively by operators, manufacturers, the test industry and other interested parties, GCF Certification comprises interoperability and conformance testing complimented by field trials on live networks.

GCF operator members represent all the key markets worldwide. Around 50 companies participate in GCF as manufacturer members.

Common, rigorous and trusted certification criteria provide a platform for the harmonization of operator acceptance testing: by minimising unnecessary duplication, GCF Certification has prevented acceptance testing overheads from running out-of-control and contributes to improved economies of scale for device manufacturers. A certified, multimode, multiband device is recognised as being relevant to a wide pool of operators across diverse national markets. The scheme also effectively underpins international roaming.

Originally developed for GSM, GCF Certification has been extended to 3G (WCDMA/UMTS), its successive HSPA enhancements and, in the past 12 months, to LTE.

Key GCF milestones

Date	Event
1999	GCF Founded
May 2000	Certification of first device – GSM
Oct 2003	First device incorporating a US band
Feb 2006	First 3G device
Jun 2008	First HSDPA device
Aug 2008	First HSUPA device
March 2011	First LTE FDD device
September 2011	First LTE TDD device

GCF Device Certifications

Certified devices are listed on the GCF website at

<http://www.globalcertificationforum.org/Application/onlinecertification/terminallist/>

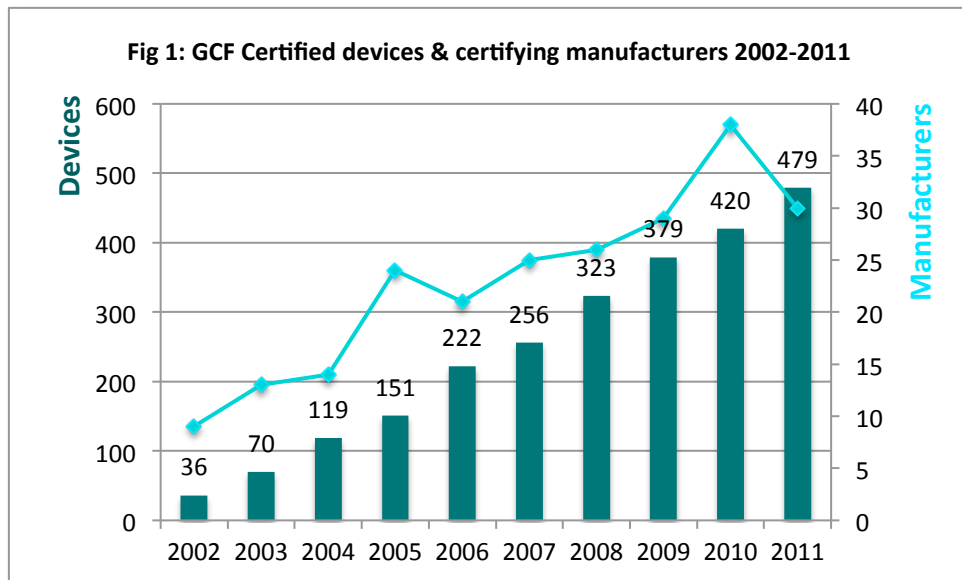
(Detailed information on the tests undertaken on each certified device is available to GCF's operator members.)

Analysis of GCF certifications provides insights into current trends in the global market for mobile phones and connected devices.

GCF Certifications by year

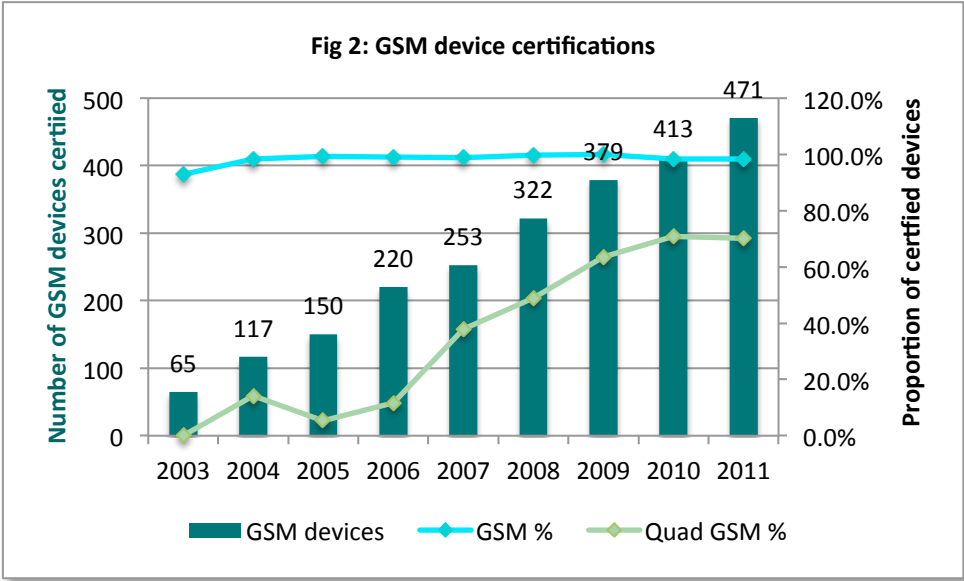
In 2011, a record 479 unique mobile phone and wireless device models from 30 manufacturers were certified. (Fig 1)

Total certifications were 14 percent up on 2010 and have more than doubled since 2006.

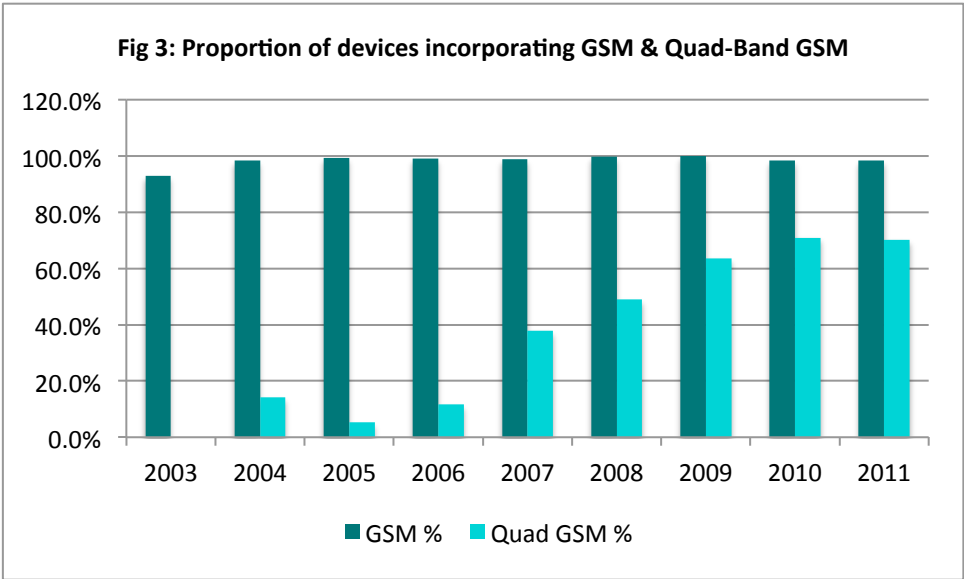


Ubiquitous GSM

As GCF was established to support the commercialisation of GSM, the 2G technology continues to be a feature of the overwhelming majority of certified devices. 471 certified devices incorporated GSM in 2011 representing 98 per cent of all certifications. (Fig 2)



The technological maturity and global economies-of-scale enjoyed by GSM are reflected in the fact that 70 per cent of certified devices were quad-band. (Fig. 3)

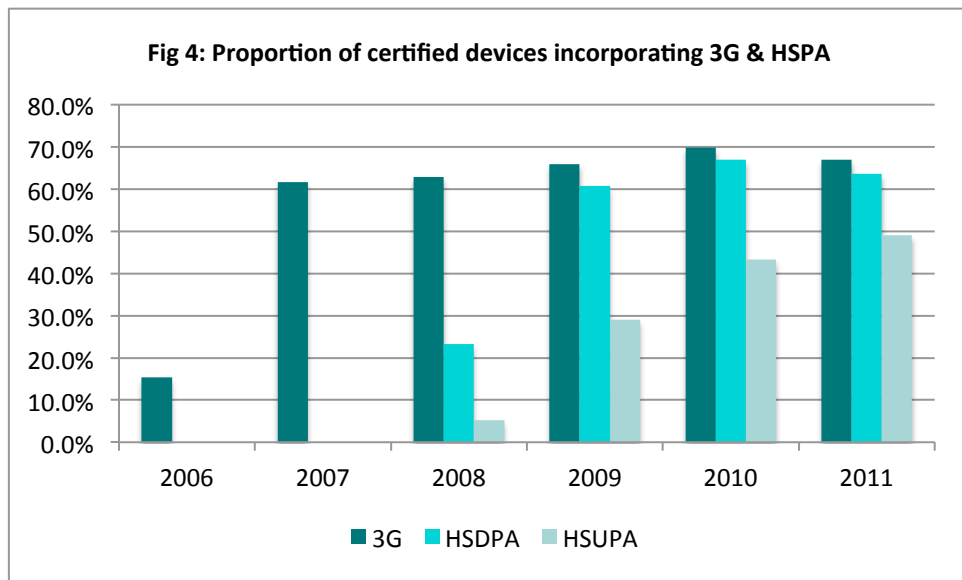


3G mobile broadband is mainstream

321 devices - more than two-thirds of all the devices certified in 2011 - incorporated 3G. (Fig. 4)

The growing market demand for higher data rates is illustrated by the growth over the last four years in the proportion of devices incorporating HSDPA and HSUPA.

In 2011, 64 per cent of devices incorporated HSDPA and nearly half (49 per cent) supported enhanced-uplink (HSUPA).



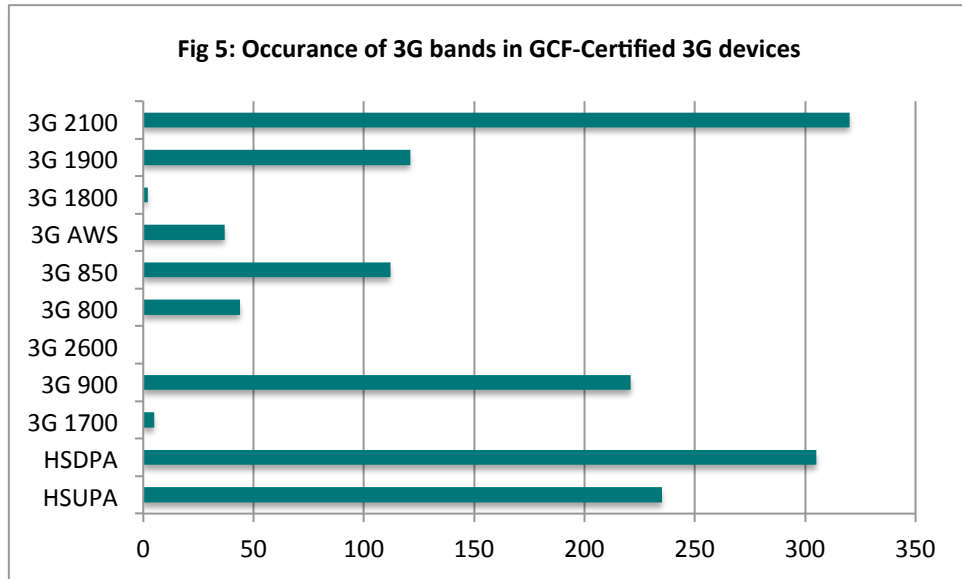
Device certifications by 3G band

The 2100 MHz band has been the core 3G band in most regions of the world. The unique spectrum regime of the US has seen the technology deployed at 1900 MHz, 850 MHz and the 'Advanced Wireless Services' bands.

More recently the 3G specifications have been adapted to five additional bands including two specific to Japan and the two core GSM bands of 900 MHz and 1800 MHz.

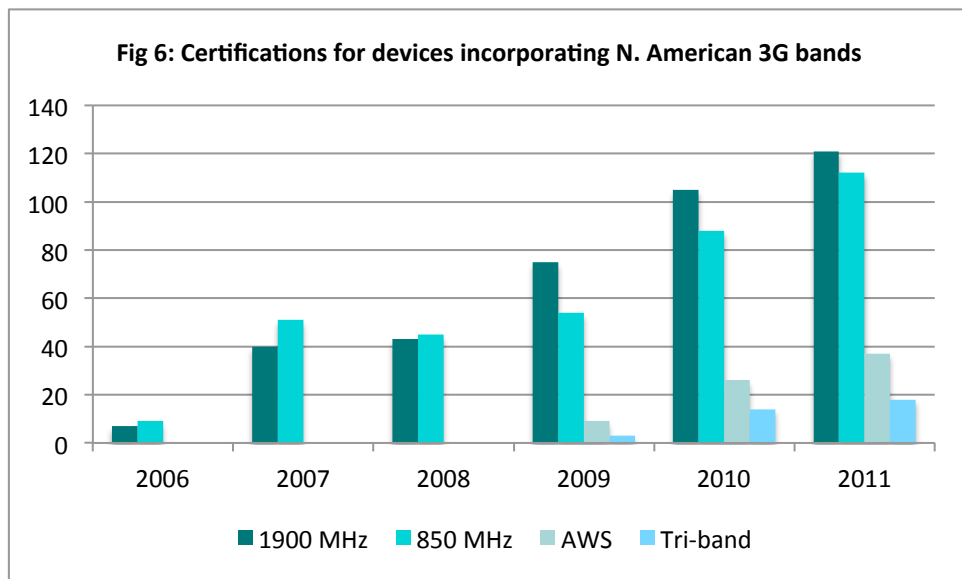
A total of 320 certified devices incorporated 3G in the 2100 MHz band in 2011 - 99.7 per cent of all 3G-capable certified devices.

During the year, devices were certified for eight of the nine 3G bands currently included within the GCF scheme. (Fig 5)



3G devices incorporating North American bands

In recent years there has been steady growth in the number of certifications of 3G devices incorporating bands that are specific to North America. (Fig 6)

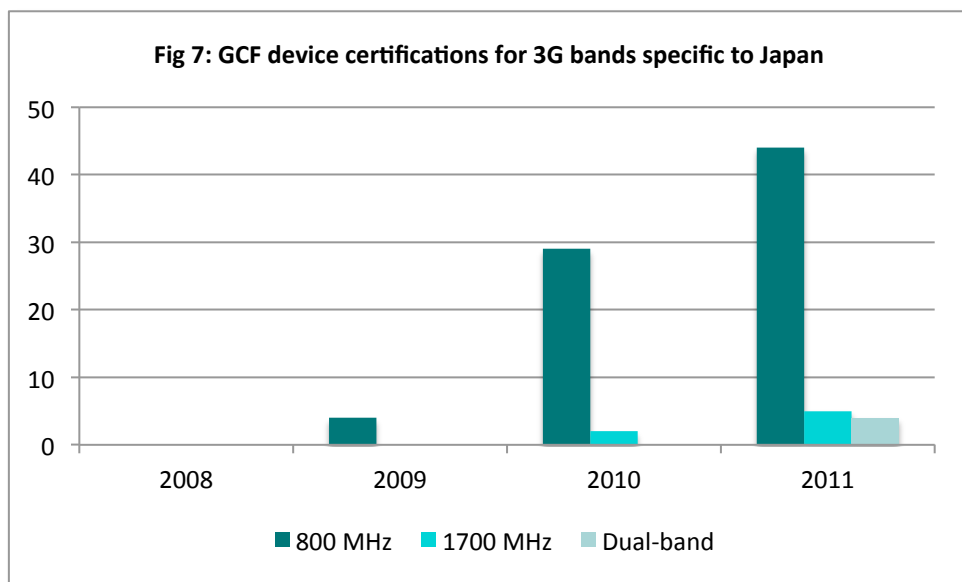


Devices incorporating Japanese-specific 3G Bands

In addition to the core 3G band at 2100 MHz band, which has been widely deployed across much of Africa, Asia, Australasia and Europe, Japan has also specified additional 3G bands at 800 MHz and 1700 MHz.

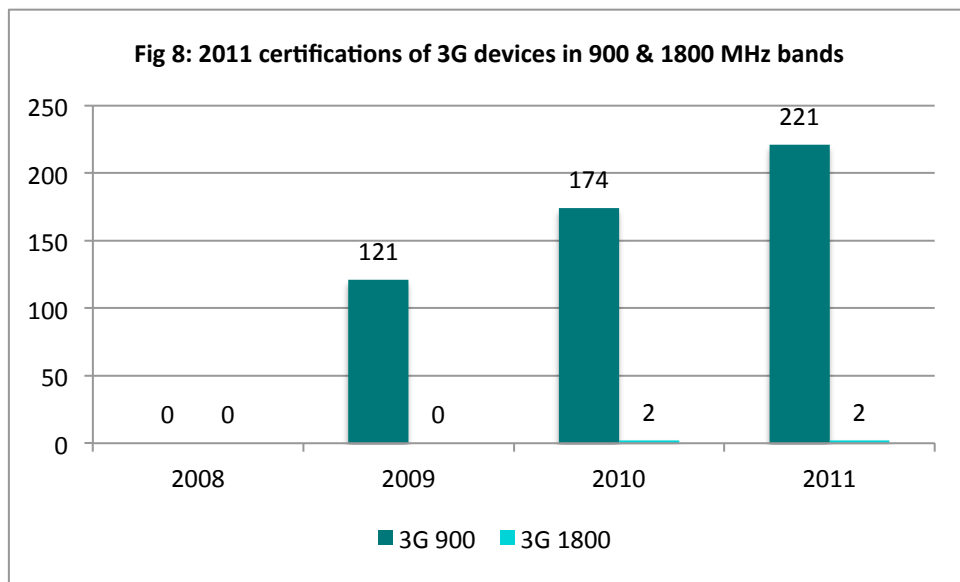
Certifications in these Japan-specific bands have been growing steadily since being brought within the GCF scheme in recent years. (Fig 7)

The first multi-band 3G devices specifically designed for the Japanese market were also certified in 2011.



3G in the 900 & 1800 MHz bands

The growing interest in 3G devices that will be capable of using 're-farmed' GSM spectrum is reflected in the increase in certifications for 3G 900 devices.



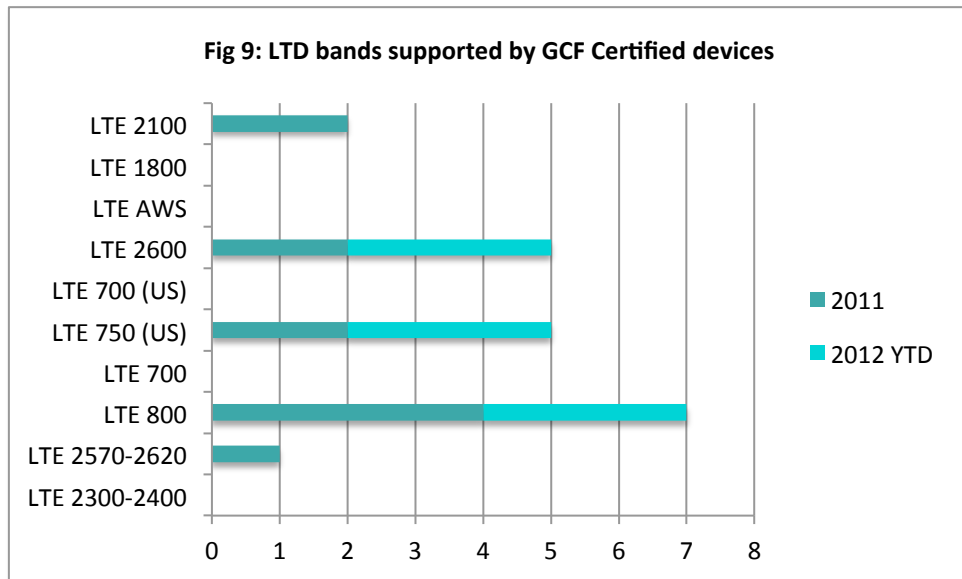
The last two years have seen certifications of 3G 1800 devices but the small numbers may reflect how the band is being considered in the context of LTE migration strategies. (Fig 8)

Certification for LTE

GCF introduced certification for LTE devices in December 2010. By the end of 2011 GCF's LTE Certification scheme had been extended to five active LTE FDD and two active LTE TDD frequency bands. (Two further LTE FDD bands – 1800 MHz and 1700/2100 MHz (US AWS) – were brought within GCF Certification in early February 2012.)

The first LTE device was certified in March 2011 and nine devices had been certified by the end of the year. Two of these devices supported dual-band LTE in the 800 MHz and 2600 MHz bands.

The rate of certifications continues to build in early 2012. (Fig 9)



NB: 2012 figures relate to certifications made up to 16 February 2012. A total of five devices support dual-band LTE in the 800 & 2600 MHz bands

LTE devices are increasingly multi-mode. Six of the devices certified in 2011 combined LTE with 3G and five also incorporated multi-band GSM. All LTE devices certified so far in 2012 incorporate multi-band 3G and GSM.

The LTE FDD bands currently included within the scheme are being commercially deployed in Europe, Japan, South Korea and North America. Of the LTE TDD bands, one is currently the subject of large-scale trials across China.

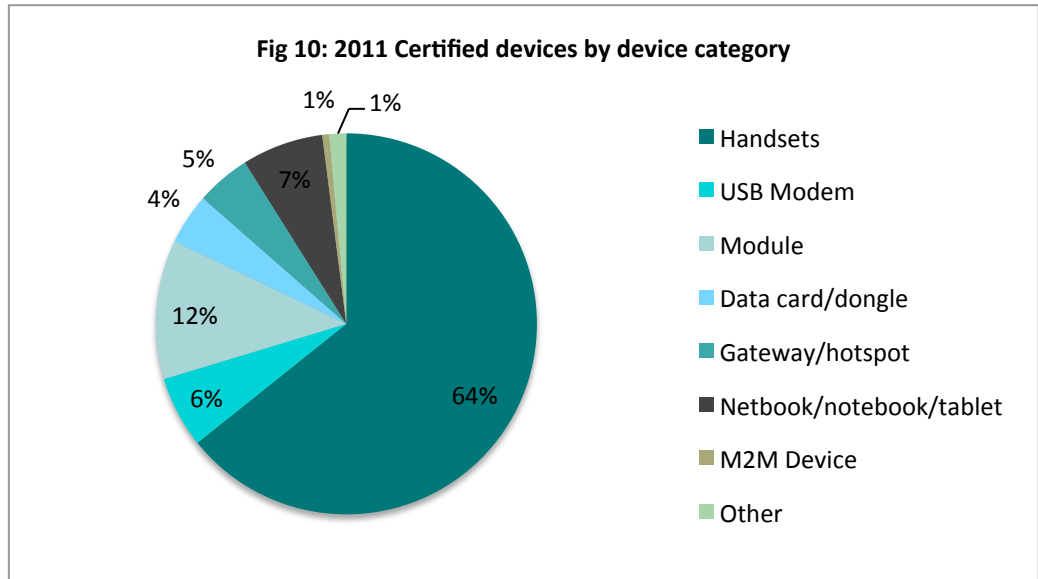
2011 certified devices by type

Mobile connectivity is being incorporated within an ever-wider range of products. Many new device categories are deriving their mobile connectivity from embedded wireless modules that are physically and functionally self-contained.

GCF has recognised that if the certification of a device is explicitly linked to the certification of its embedded module, it is possible to reduce the number and scope of tests that need to be applied to the device. In an optimized process introduced in late 2010, testing can be focused on functionalities that are specifically provided by the connected device rather than its embedded module: antenna, SIM contacts and user-interface, for example.

At the time that the optimized process was introduced, GCF also introduced a new system to categorise certified products by type. 2011 was the first full year during which certifying manufacturers have had the opportunity to declare device category.

Handsets accounted for 64% of devices where a category was declared. (Fig 10.)



Device categories for the certified LTE devices included USB modems, LTE-connected Wi-Fi gateways, tablets and smartphones. The first LTE embedded module was certified in February 2012.

MORE INFORMATION

For more information, visit the GCF website at www.globalcertificationforum.org
 White papers and Guidelines for the Certification of connected devices can be found on the News, Events & Downloads page.

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