Mobile Device Trends

An analysis of GCF device certifications in 2013

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.

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

September 2014

Introduction to GCF

Founded in 1999, the Global Certification Forum (GCF) has established and continuously refines and enhances a certification scheme for mobile phones and wireless devices.

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 serve billions of customers in markets all over the world. Around 70 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 underpins international roaming.

Originally developed for GSM, GCF Certification has been extended to 3G (WCDMA/UMTS), its successive HSPA enhancements and, since December 2010, to LTE.

Key GCF milestones

Date	Event
1999	GCF Founded
May 2000	Certification of first device – GSM
Feb 2006	First 3G device certified
Jun 2008	First HSDPA device certified
Aug 2008	First HSUPA device certified
March 2011	First LTE FDD device certified
September 2011	First LTE TDD device certified
October 2012	First dual-mode FDD/TDD LTE device certified
October 2013	Certification of client applications introduced
2014	Scope of GCF extended to include CDMA2000

GCF Device Certifications

Certified devices are listed on the GCF website at
http://www.globalcertificationforum.org/Application/onlinecertification/terminallist/

Note: data used in this report is based on <u>published</u> certifications during the relevant calendar year. Where certification testing is completed in advance of the planned launch date for the device, GCF procedures allow the manufacturer to defer publication by up to 90 days. As a result, some devices that were certified in one calendar year may be counted in the subsequent year.

Executive Summary

The 2013 annual Mobile Device Trends is based on an analysis of Global Certification Forum device certifications published during 2013. The analysis provides insights into the mobile devices being requested by operators and end-users across markets worldwide.

Overall device certifications in 2013 (436) were broadly in line with 2012 (430).

By the end of 2013, LTE devices could be certified in 15 FDD LTE bands and four TDD LTE bands. The proportion of GCF-Certified devices incorporating LTE rose from ~15 per cent in 2012 to nearly 40 per cent in 2013.

Across all 3GPP mobile technologies there was a continuing trend towards more highly integrated multi-mode, multi-band devices. LTE devices also followed this trend: 82 per cent of the 160 FDD LTE devices incorporated two or more LTE bands. The "average" FDD LTE device incorporated 3.1 bands in 2013, up from 1.9 in 2012. Some 36 per cent of FDD LTE devices incorporated four or more LTE bands.

3G was a feature of 364 GCF-Certified devices, or 83 per cent of the total.

While the penetration of HSDPA remained in line with the prior year at 81 per cent, the penetration of HSUPA rose from 65 per cent in 2012 to nearly 76 per cent in 2013.

Dual-Carrier HSDPA is starting to take off: 17 per cent of all certified devices incorporated this functionality in 2013 compared with three per cent in 2012.

GSM maintained its near ubiquity in nearly 97 per cent of devices certified in 2013. While EDGE data capability had increased from 35 per cent of devices in 2011 to 82 per cent in 2012, it fell back by one point to 81 per cent in 2013.

GCF Certifications by year

436 mobile phone and wireless device models from 40 manufacturers were certified in 2013. (Fig 1)

Fig 1: GCF Certified devices & certifying manufacturers 2002-2013
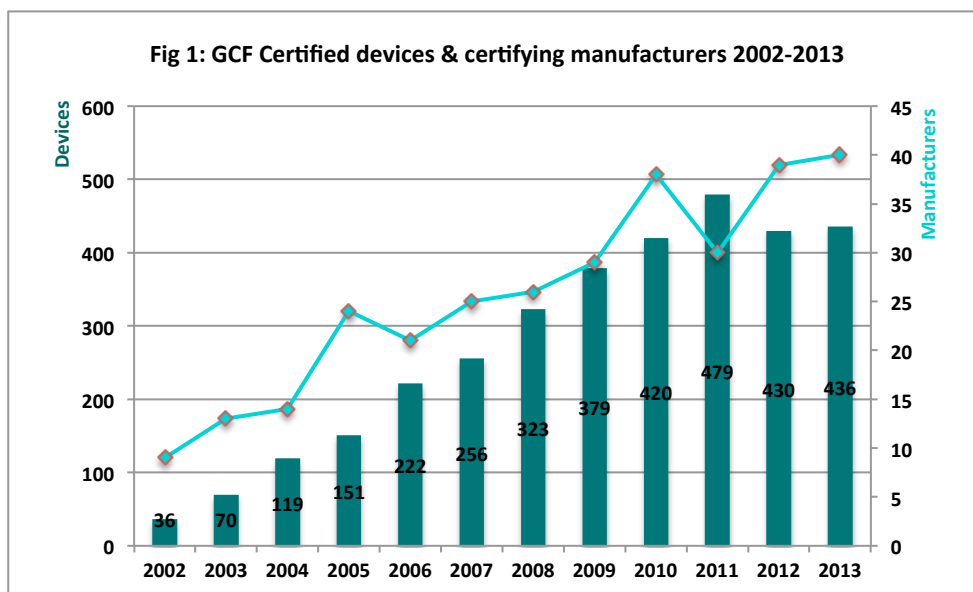
Total certifications in 2013 were in line with 2012.

Comparing the "Worldwide Manufacturer Sales to End Users of Mobile Terminal Devices", reported each year by Gartner with the total volume of certifications suggests a relationship between the choice of devices in the global market and overall market size (Fig 2).

Fig 2: Comparison of device sales against device certifications
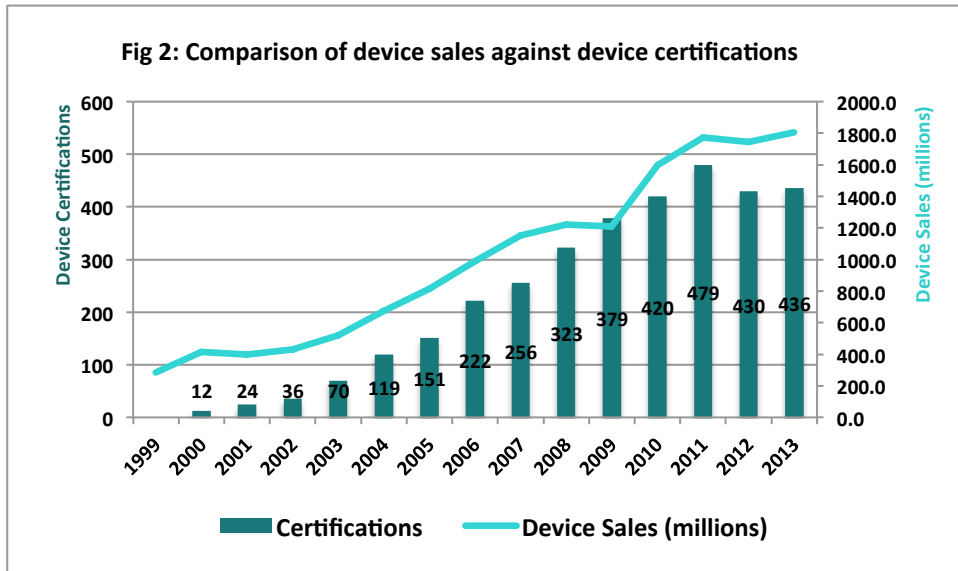
† Device sales source: "Gartner Worldwide Manufacturer Sales to End Users of Mobile Terminal Devices"

[Gartner put the pause in the growth of sales in 2008/09 to the collapse in consumer confidence in many developed economies in the wake of the 2008 financial crisis.]
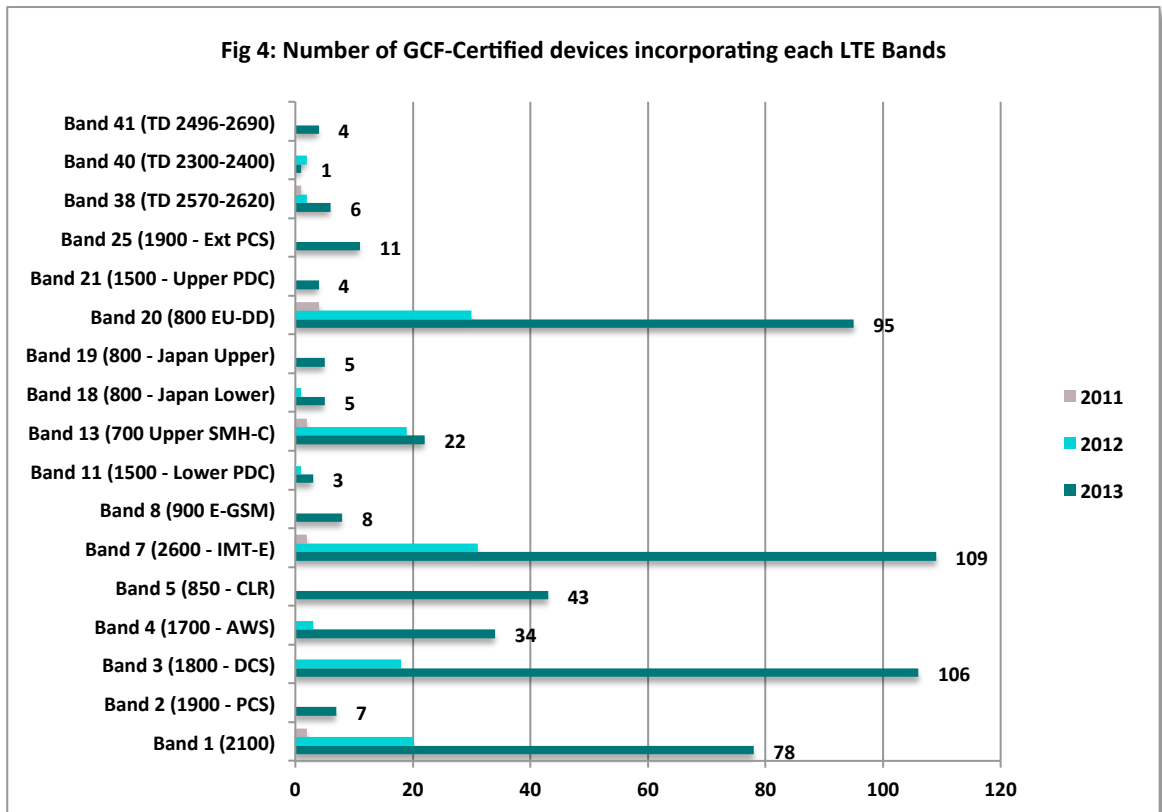
LTE continues to build momentum

171 LTE devices were certified in 2013, up 160 per cent from the 66 in 2012 (Fig 3).

The proportion of GCF-Certified devices incorporating LTE rose from just under 15 per cent in 2012 to nearly 40 per cent in 2013.

Fig 3: LTE Certifications
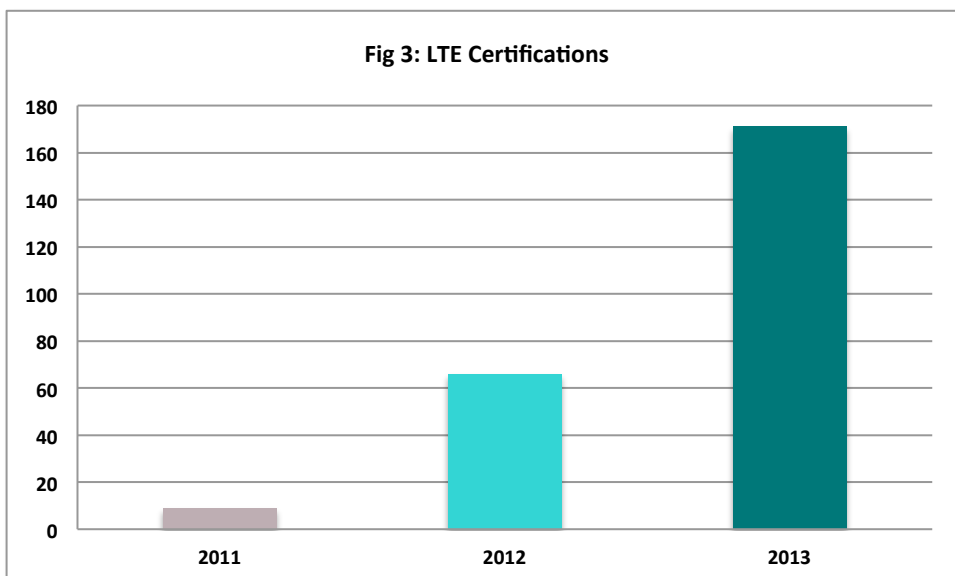
Certification of LTE devices was first activated, in two bands, in December 2010. The first LTE device was certified at the end of March 2011. By the end of 2011, five FDD bands and two TDD bands had been activated within the GCF scheme and a total of nine LTE devices had been certified. By the end of 2013, GCF Certification had expanded to encompass a total of 15 FDD and four TDD bands.

In 2013, devices were certified in 13 FDD bands and three TDD bands (Fig 4).

Fig 4: Number of GCF-Certified devices incorporating each LTE Bands

Band	2013 value
Band 41 (TD 2496-2690)	4
Band 40 (TD 2300-2400)	1
Band 38 (TD 2570-2620)	6
Band 25 (1900 - Ext PCS)	11
Band 21 (1500 - Upper PDC)	4
Band 20 (800 EU-DD)	95
Band 19 (800 - Japan Upper)	5
Band 18 (800 - Japan Lower)	5
Band 13 (700 Upper SMH-C)	22
Band 11 (1500 - Lower PDC)	3
Band 8 (900 E-GSM)	8
Band 7 (2600 - IMT-E)	109
Band 5 (850 - CLR)	43
Band 4 (1700 - AWS)	34
Band 3 (1800 - DCS)	106
Band 2 (1900 - PCS)	7
Band 1 (2100)	78

Legend: ■ 2011 ■ 2012 ■ 2013

LTE becomes increasingly multi-band

Alongside the extension of LTE to new bands, multi-band LTE devices have continued to become more commonplace during 2013. Of the 169 device incorporating FDD LTE, 140 (83 per cent) incorporated two or more LTE bands (Fig 5). 20 devices incorporated five LTE bands, six incorporated six bands and one device seven bands. Two devices incorporated 11 FDD LTE bands while 19 devices supported simultaneous FDD and TDD operation.

Fig 5: Growth in multi-band LTE devices
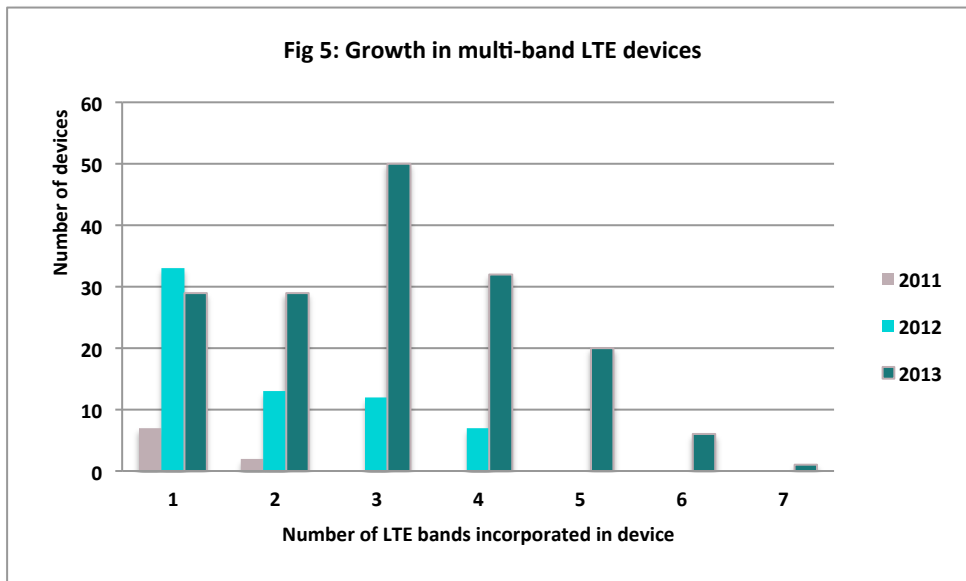
149 of the 169 FDD LTE devices also incorporated HSPA and EDGE.
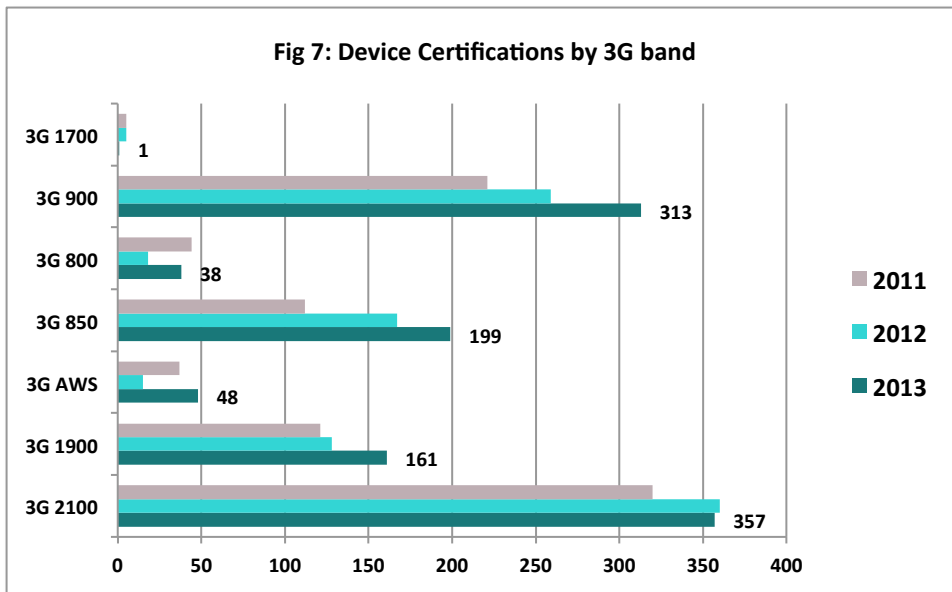
Penetration of HSPA increases

The penetration of 3G (83 per cent) and HSDPA (81 per cent) in 2013 were broadly in line with 2012. Implementation of HSUPA increased from 65 per cent to nearly 76 per cent (Fig 6).

In 2013, the number of devices incorporating Dual Carrier HSPA reached 75 (or 17 % of all certified devices) up from 14 (3 per cent) in 2012.

Fig 6: Proportion of certified devices incorporating 3G, HSDPA, HSUPA & Dual Carrier HSDPA
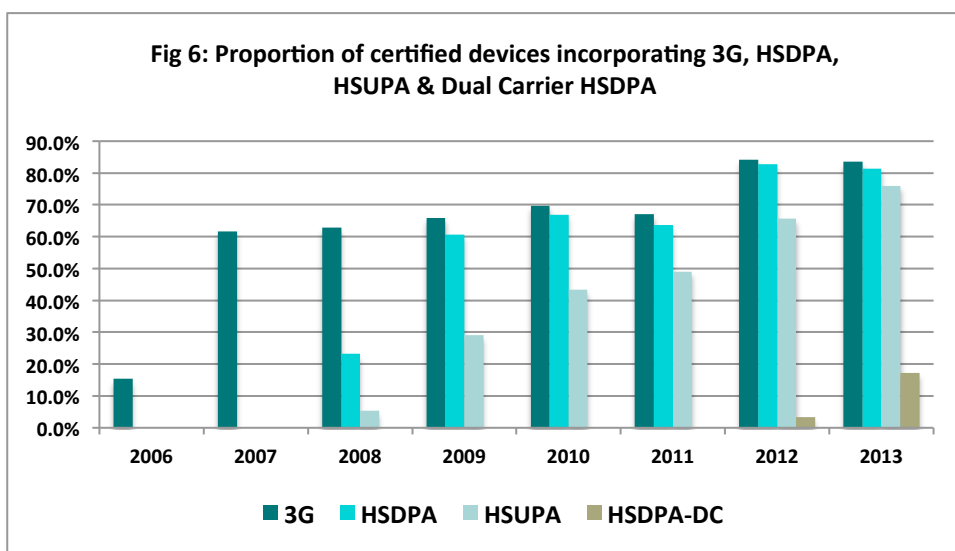
357 of the 436 certified devices (nearly 82 per cent or more than 98 per cent of 3G-capable devices) incorporated the 2100 MHz band (Fig 7).

Fig 7: Device Certifications by 3G band

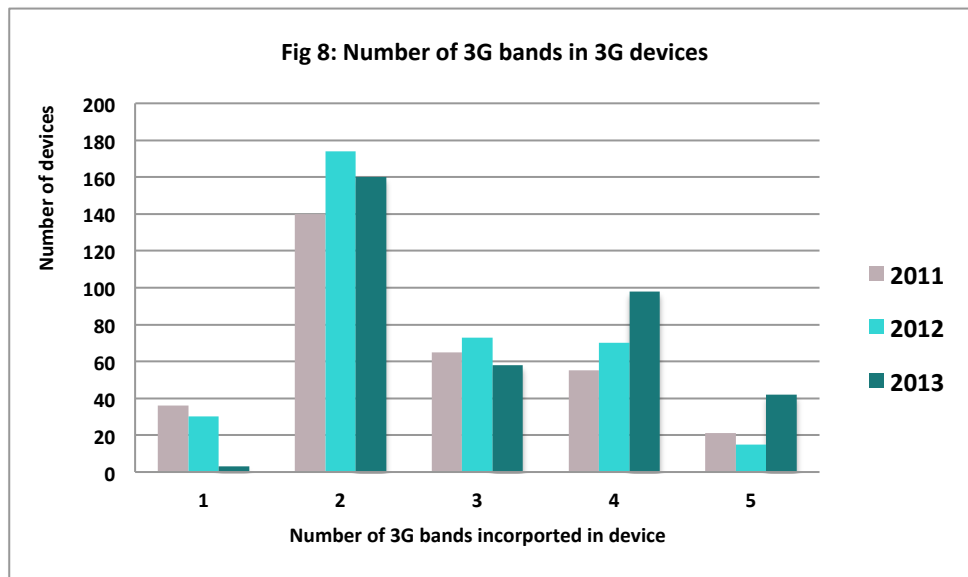| Band	2011	2012	2013
3G 1700			1
3G 900			313
3G 800			38
3G 850			199
3G AWS			48
3G 1900			161
3G 2100			357

The US 850 MHz band was incorporated in 199 devices (more than 45 per cent of all devices).

The 900 MHz was implemented in 313 devices (nearly 72 per cent of all devices) (Fig 8).

Multi-band 3G is the norm

Nearly 98 per cent of 3G devices (or 82 per cent of all certifications) incorporated two or more 3G bands (Fig 8).

Fig 8: Number of 3G bands in 3G devices

| Number of 3G bands incorported in device	2011	2012	2013
1	37	30	4
2	140	174	160
3	65	73	58
4	56	70	98
5	22	15	43

310 devices (71 per cent of all certifications or 85 per cent of 3G devices) combined 3G in the 2100 MHz and 900 MHz bands.

At least one US 3G band featured in 215 devices (49 per cent of all certifications, 59 per cent of 3G)

GSM remains ubiquitous

GSM remained a feature of nearly 96 per cent of devices certified in 2013 (Fig 9). Devices that didn't incorporate GSM were predominantly data devices such as USB modems and portable Wi-Fi routers.

Fig 9: GSM device certifications
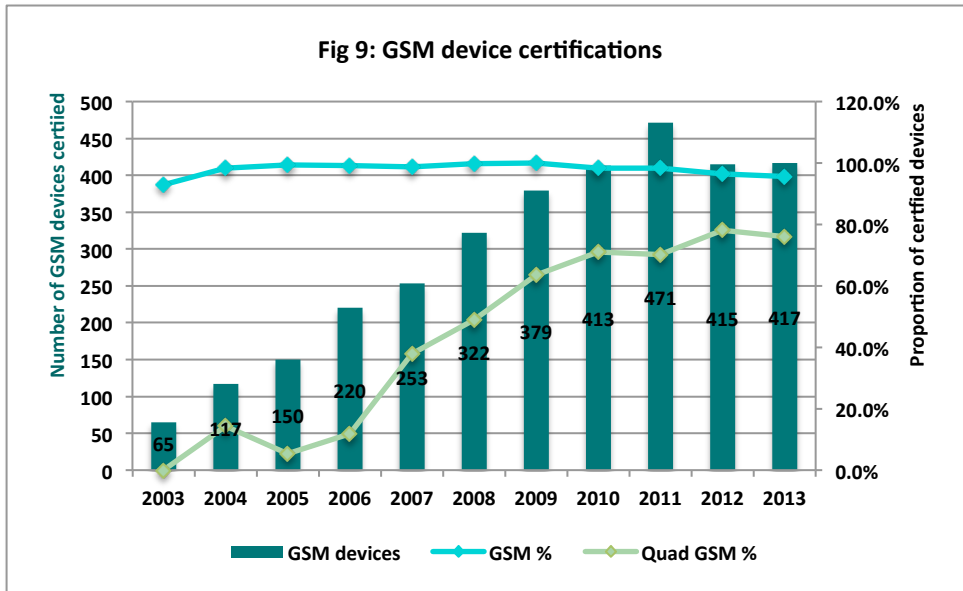
The incidence of quad-band GSM remained stable at 76 per cent in 2013. 81 per cent of all devices (355 devices) incorporated EDGE.

2013 certified devices by type

As mobile connectivity is incorporated into an ever-wider range of products, handsets accounted for less than 60 per cent of certified devices in 2013 (Fig 10).

Fig 10: 2013 Certified devices by type
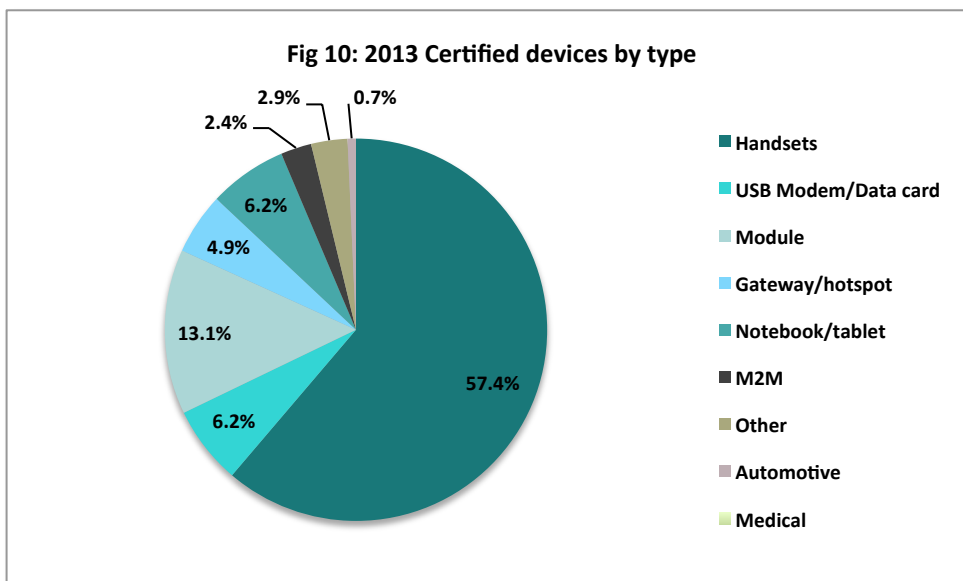
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