

5G Stand Alone

Global Market Status:

Executive Summary

November 2021



5G Standalone (SA): Global Status Update

As of end of October 2021

Operators are increasingly experimenting with and deploying 5G standalone (SA) networks. With a totally new, cloud-based, virtualised, microservices-based core infrastructure, some of the anticipated benefits of introducing 5G SA technologies include faster connection times (lower latency), support for massive numbers of devices, programmable systems enabling faster and more agile creation of services and network slices, with improved support for SLA management within those slices, and the advent of voice-over new radio (VoNR). Introduction of 5G SA is expected to facilitate

simplification of architectures, improve security and reduce costs. 5G SA is expected to enable customisation and open up new service and revenue opportunities tailored to enterprise, industrial and government customers.

GSA is tracking the emergence of the 5G SA system, including the availability of chipsets and devices for customers, plus the testing and then deployment of 5G SA networks by public mobile network operators as well as private network operators. This paper is the latest in an ongoing series of papers

summarising market trends, drawing on the data collected in GSA's various databases covering chipsets, devices, spectrum and networks.



Investment in 5G SA by public and private network operators

5G SA networks can be deployed in a variety of scenarios: as an overlay for a public 5G non-SA (NSA) network, as a greenfield 5G deployment for a public network operator without a separate LTE network, or as a private network deployment for an enterprise, utility, education, government or any other organisation requiring its own private campus network.

GSA has identified 94 operators in 48 countries/territories worldwide that have been investing in public 5G SA networks (in the form of trials, planned or actual deployments). This equates to just over 20% of the 469 operators known to be investing in 5G licences, trials or deployments of any type.

At least 19 operators in 15 countries/territories are now understood to have launched public 5G SA networks. A further four have deployed 5G SA technology but not yet launched services, or have only soft-launched them. In addition to these, at least 25 have been catalogued as deploying or piloting 5G standalone, 28 as planning to deploy the technology and 18 as being involved in evaluations/tests/trials.

A recent survey of European and North American mobile operators by Heavy Reading and EXFO (published October 2021) revealed that 49% of them plan to deploy 5G SA within a year and that a further 39% plan to deploy 5G SA within one or two years. Meanwhile, vendors are reporting the deployment of 5G core SA networks that are not announced publicly. So the active deployments and launches catalogued by GSA so far will be the first of many.

Figure 1: Number of operators investing in 5G SA for public networks versus number investing in any 3GPP 5G network

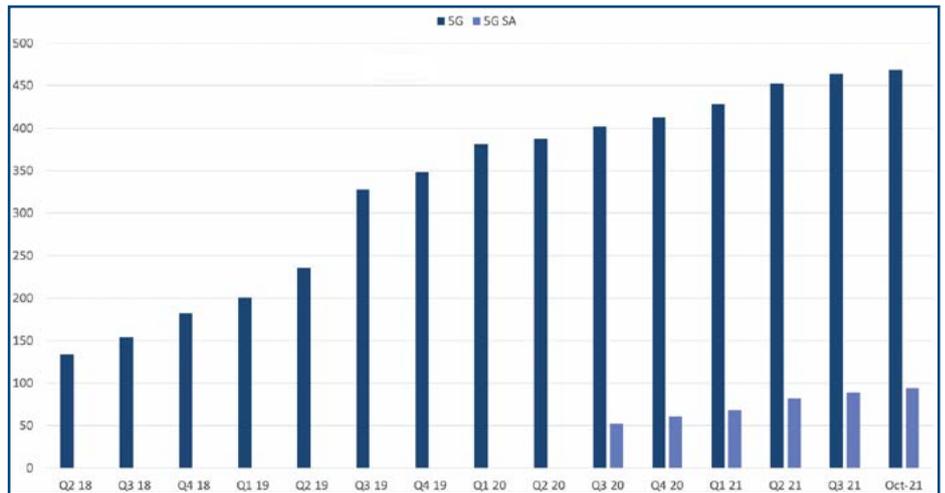


Figure 2: Countries/territories with operators identified as investing in public 5G SA networks



In addition to the investment in 5G SA for public mobile networks mentioned above, a number of organisations are testing, piloting or deploying 5G SA technologies for private networks. GSA has developed a new database tracking private mobile network licences, trials and deployments. It has collated information about 626 organisations known to be deploying LTE or 5G private mobile networks, or known to have been granted a licence suitable for the

deployment of a private LTE or 5G network so far. Of those, 151 are known to be using 5G networks (excluding those labelled as 5G-ready) for private mobile network pilots or deployments. Of those, 27 (nearly 18% of them) are known to be working with 5G SA already, including manufacturers, academic organisations, commercial research institutes, construction, communications/IT services, rail and aviation organisations.

The private mobile networks database is available to GSA Members and Associates.

5G Devices

GSA tracks the availability of 5G devices for end-users in its GAMBoD database. With 5G SA networks just beginning to be launched, it is already aware of 595 announced devices with claimed support for 5G SA, up from just over 400 at the end of March 2021. Of those, 413 devices are already commercially available, up from just over 200.

The number of 5G SA devices as a percentage of all 5G devices announced has been steadily climbing. They accounted for 28% of 5G devices in Mar 2019, 41% in Mar 2020 and nearly 56% in Mar 2021 (and remained at nearly 56% in October 2021). If we look at the devices that are commercially available, just over 58% of them state 5G SA support.

Software upgrades are often needed to enable 5G SA capability for existing 5G devices.

There is a range of form factors to cater for different users, from modules for OEMs and equipment vendors, CPE/routers/gateways for enterprise or industrial customers or their systems integrators, CPE for home and business broadband, phones, to battery-operated hotspots for portable services. Phones make up just over half (50.3%) of the announced 5G devices with stated 5G SA support (299 phones), followed by FWA CPE (indoor or outdoor) (122) and modules (103).

Looking solely at those devices that are now commercially available, phones account for an even larger proportion at 63.2% (261 phones), again followed by FWA CPE (68 devices) and modules (54 devices). Those 210 commercially available 5G SA-capable phones represent slightly more than 87% of all announced 5G SA-capable phones.

Seventy-six vendors have commercial 5G devices for SA networks and another 28 have announced devices.

Figure 3: Announced and commercially available 5G devices with stated 5G SA support

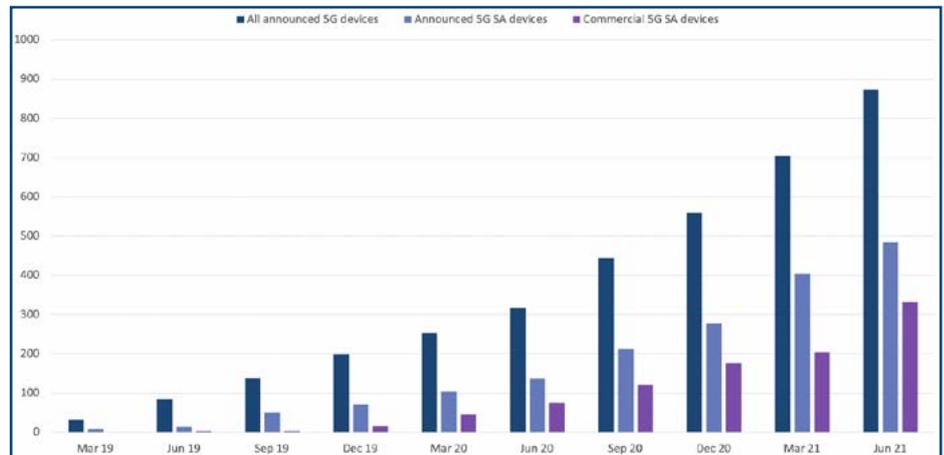
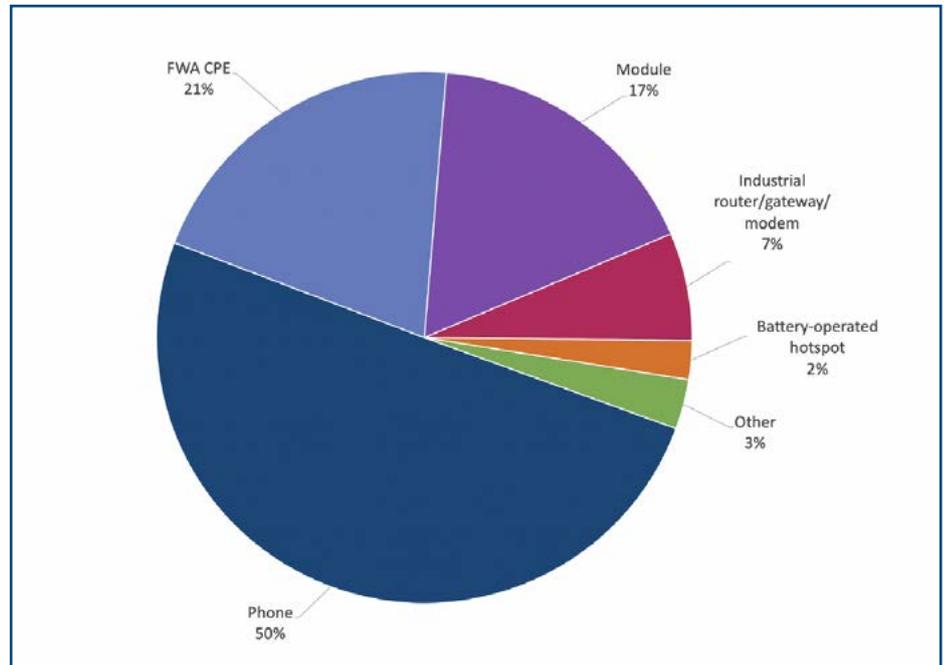


Figure 4: Announced 5G devices with stated 5G SA support, by form factor



Chipset and device vendors

The device ecosystem is supported by 55 announced modems or mobile processors/platforms chipsets stated to support 5G SA, from five vendors. Forty-nine of those are understood to be commercially available, including:

- thirteen discrete modems
- thirty-six mobile processors/platforms.

(Note: GSA only counts chipsets available for purchase by third parties and does not count inhouse developed chipsets not offered for external sale.)

GSA has identified 23 chipsets announced as supporting 5G carrier aggregation of some sort and 41 chipsets announced as supporting voice-over new radio (VoNR). These features will be important in encouraging widespread adoption of 5G SA services.

Spectrum support in devices

Selected sub-6 GHz frequencies are increasingly well supported in 5G SA devices. The pattern of most-supported bands in sub-6 GHz 5G SA devices largely matches the pattern for most-supported bands across all 5G devices, with C-Band, 2.6 GHz, 2 GHz, 1.8 GHz and 700 MHz known to be catered for by most devices.

Support for mmWave is not yet common. Chipsets are being developed to support this capability – GSA has currently only catalogued one chipset specifically supporting 5G SA in mmWave spectrum. We can expect support for spectrum bands above 6 GHz to increase in the future, as mmWave is being promoted as an option for deployment of private 5G networks by regulators in various countries.

Summary

The market is seeing the emergence of a strong 5G SA ecosystem with chipsets, devices of many types, public network users and private network users. We can expect to see the market go from strength to strength. As it does, GSA will continue to track its evolution and we will be looking out for important new trends as they emerge. Things likely to become more important in the coming year in this context include 5G carrier aggregation in SA networks, URLLC capabilities to support machine-to-machine communications in 5G SA systems, increasing mmWave support, network slicing in 5G networks and the introduction of voice-over new radio (VoNR) in 5G SA networks.

Figure 5: Commercially available 5G devices with stated 5G SA support, by form factor

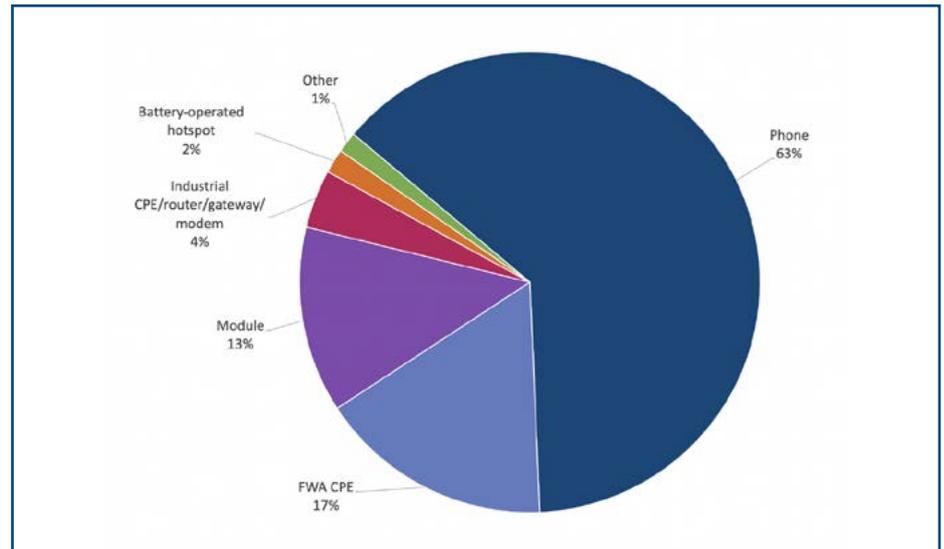
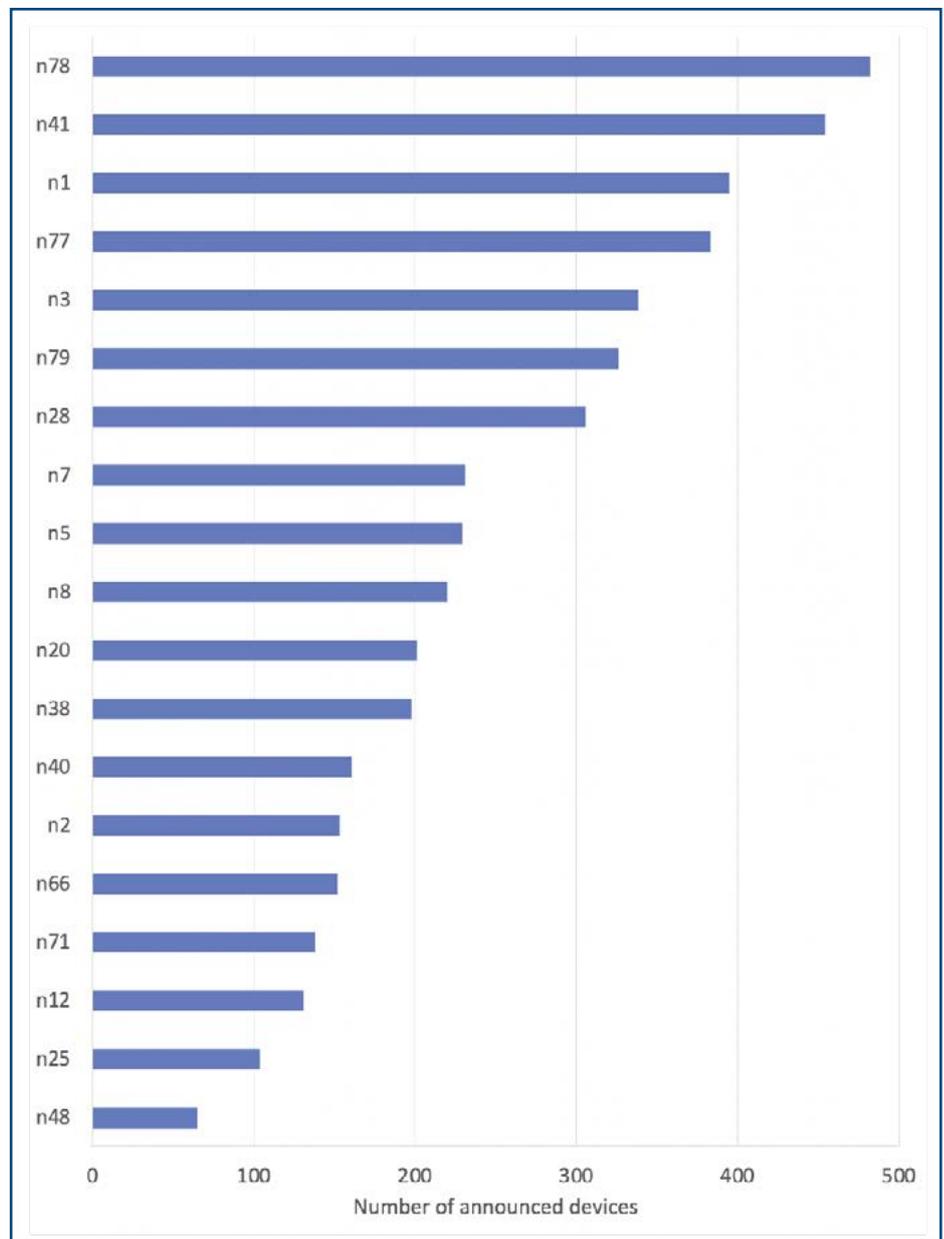


Figure 6: Sub-6 GHz support by band, announced 5G SA devices



ABOUT GSA

GSA is the voice of the global mobile ecosystem and has been representing mobile suppliers since 1998.

GSA GAMBoD Database

Reports are based on data contained in the GSA GAMBoD databases which is a resource available to GSA Members and Associates. Companies and policy makers can subscribe as a GSA Associate to the database to gain insights into the source data behind reports for their own research purposes.

Discounted annual subscription are available to regulators, government agencies and mobile operators.

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