



5G BROADCAST TECHNOLOGY, APPLICATIONS AND PRODUCTS

WHAT IS 5G BROADCAST

5G Broadcast/Multicast uses UHF spectrum to broadcast television to 5G smartphones. 5G Broadcast is targeted primarily at mobile devices (smartphones, tablets, cars). Mobile devices are equipped with advanced reception capabilities. These devices can be used to receive video signals in VHF and UHF channels.



5G Broadcast brings broadcast TV into the 5G era.

The ubiquity of 4G and the rapid deployment of 5G networks have made these technologies a global standard for wireless communication. 5G Broadcast technology allows for extending the 4G/5G network capabilities to include TV signal transmission.

The 5G Broadcast protocol is defined in 3GPP Release 17. This standard has features that support high-power, high-tower broadcasting. These include Receive-Only-Mode (no SIM card required) and a cyclic prefix of up to 200 microseconds, allowing larger distances between sites in a single frequency network (SFN).

In addition to the broadcast/multicast business model, 5G Terrestrial Broadcast can share the UHF spectrum to provide services other than television. For example, it is possible to use 3 MHz of spectrum within the licensed broadcast channel to deliver media from using the 5G chipset already present in smartphones. The remaining 3 MHz can be used for television.

PUBLIC BROADCAST

5G Broadcast is a broadcast platform for robust and economic delivery of media and data to mobile devices. It is a technology designed specifically to target traditional broadcasters with a broadcast network infrastructure and UHF broadcast spectrum assets.

Ordinary cellphone users might not notice the difference between a wireless internet stream and a broadcast, but wireless-network operators benefit from 5G Broadcast because videos and streaming content are data intensive applications that can occupy a high percentage of a wireless network capacity.

Major events can often tax the cellular infrastructure. A 5G TV broadcast, by contrast, requires just one feed for all viewers, meaning phone companies would need to handle much less traffic during big events such as concerts, games and other events. 5G Broadcast provides capacity offload for media content delivery.

5G AND PRIVATE LTE

Private LTE is an ideal platform for multicast video, unicast video, voice and data. All the advantages of 5G Public Broadcast can apply to Private LTE networks.



5G BROADCAST COMBINED WITH UNICAST



Due to its 3GPP compatibility, 5G Broadcast is focused on smartphones. However, it does not require the network to support unicast nor the device to have a SIM card or a cellular subscription for free-to-air broadcast reception.

While unicast is not required, 5G Broadcast can be combined with unicast to deliver a fully hybrid, integrated user experience leveraging the best aspects of unicast and broadcast technologies.

5G Broadcast can bring new network efficiency when it comes to delivering zero-rated media content to the mass public, for example from a live sports event. When this content is watched simultaneously by a large number of viewers over unicast cellular connections, it creates a huge burden on the network, reducing quality of service for network operators.

With 5G Broadcast, live content can be delivered to thousands or even millions of users without the same data being sent individually to each user using unicast. In this scenario, content delivered over broadcast network would be classified as zero-rated and it would not count towards the consumer's monthly data cap.

New business models can be enabled when the broadcast network and mobile network operators work together to address customers' needs in certain scenarios such as using 5G Broadcast infrastructure instead of unicast when there is broadcast signal and using unicast infrastructure when users move out of broadcast network coverage, with seamless switching between the two modes.



OTHER BENEFITS OF 5G BROADCAST

- 1** Robust emergency notification for public safety (earthquakes, hurricanes and other emergencies).
- 2** Enhanced venue casting at sporting events or concerts. 5G Broadcast can ensure that all users in the area receive a high-definition video stream from the event without overloading cellular towers nearby.
- 3** Emergency Alerts are delivered directly, reliably and without dependence on cellular networks or the internet, which could be damaged during fires, earthquakes, storms or other emergencies.
- 4** Disaster Management audio content is delivered directly and authentically in a targeted manner.
- 5** A terrestrial fallback is available for broadcast of public content of strategic/national importance in the event of catastrophic satellite failures.

COMPONENTS OF A 5G BROADCAST SIGNAL

The major components of the 5G Broadcast signal are:

CAS

(cell acquisition sub-frame) which contains the PBCH (physical broadcast channel).



PDCCH

(physical downlink control channel)



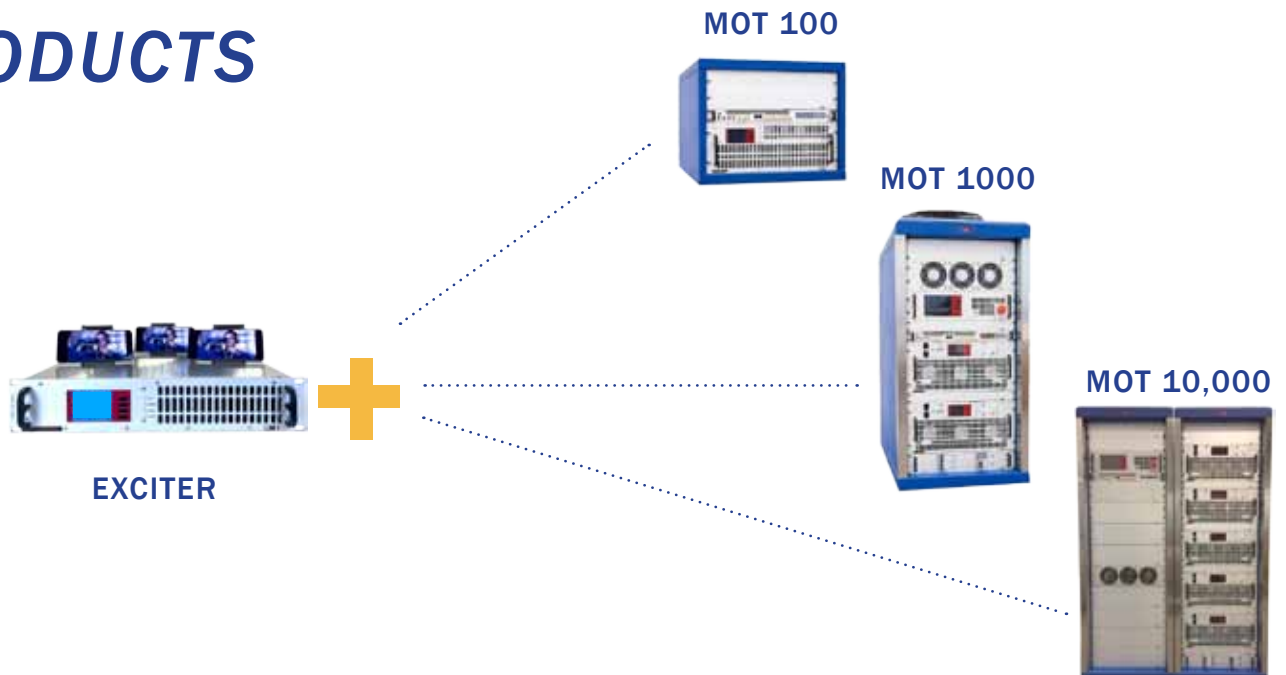
PDSCH

(physical downlink shared channel) necessary to decode the PMCH (physical multicast channel).

In order to receive a 5G Broadcast signal, the receiver decodes the PBCH, the PDCCH, the PDSCH, and the PMCH.

5G Broadcasting is continuing to evolve. 3GPP Releases 18 and 19 should make it easier for high-power, high-tower broadcasters to begin 5G Broadcast, either by itself or time shared with ATSC 3.0 when (and if) 5G Broadcast reception becomes available in mobile devices.

PRODUCTS





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