5G Broadcast on air: A new era in QoE

The future of media delivery

ROHDE&SCHWARZ

Excellent quality of experience

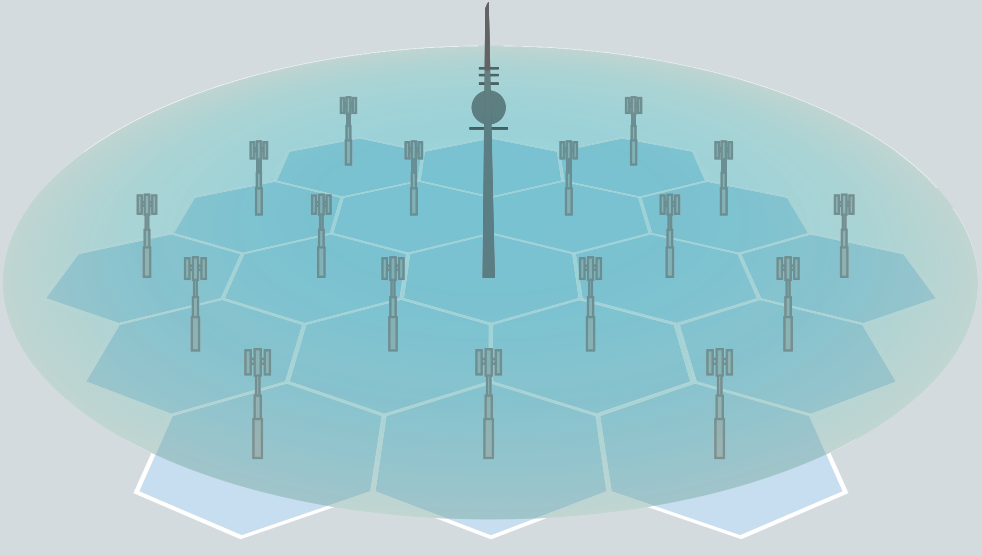
The consumption of mobile video content is rapidly increasing, globally. But there are limitations to covering this demand and fulfilling mobile subscribers' expectations regarding quality of experience (QoE) via the current mobile network structure. To address this and enable new business models, 3GPP has defined major standard enhancements with FeMBMS in release 14. For the first time, a 3GPP standard allows high-power high-tower (HPHT) applications in downlink only mode while utilizing the full signal bandwidth for multicast applications. This standard evolvement makes it possible to enhance today's cellular network topologies by deploying an HPHT overlay network with more than 60 km cell radius in order to achieve better and wider coverage for media delivery. That enables an exceptionally cost-efficient network topology for both urban and rural areas. But there is more – mobile consumers of premium content such as live sports events will benefit from outstanding video quality that goes beyond HDTV, low latency and ensured availability of live streaming services.

5G Broadcast represents a solution for future media delivery, which network operators and millions of consumers will strongly benefit from.

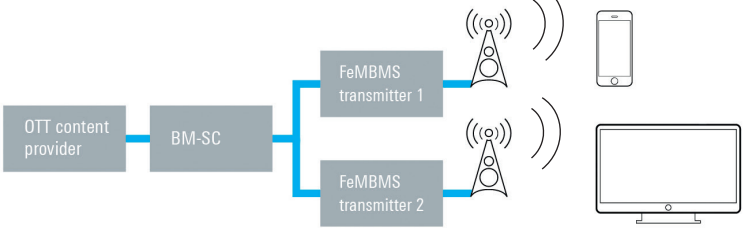
5G Broadcast advantages at a glance

- Better and wider coverage (more than 60 km per cell)
- Lower latency and ultra-reliable media delivery
- Improved quality of service (QoS) and enhanced quality of experience (QoE)
- New business opportunities for premium live content

Efficient distribution of media
by an overlay network



Integration of FeMBMS into LTE



A new dimension of efficiency

Further evolved Multimedia Broadcast Multicast Service (FeMBMS) is a further development of the LTE broadcast mode eMBMS in 3GPP release 14, which allows the efficient distribution of high-quality live streaming services, media libraries and social networks to millions of connected devices.

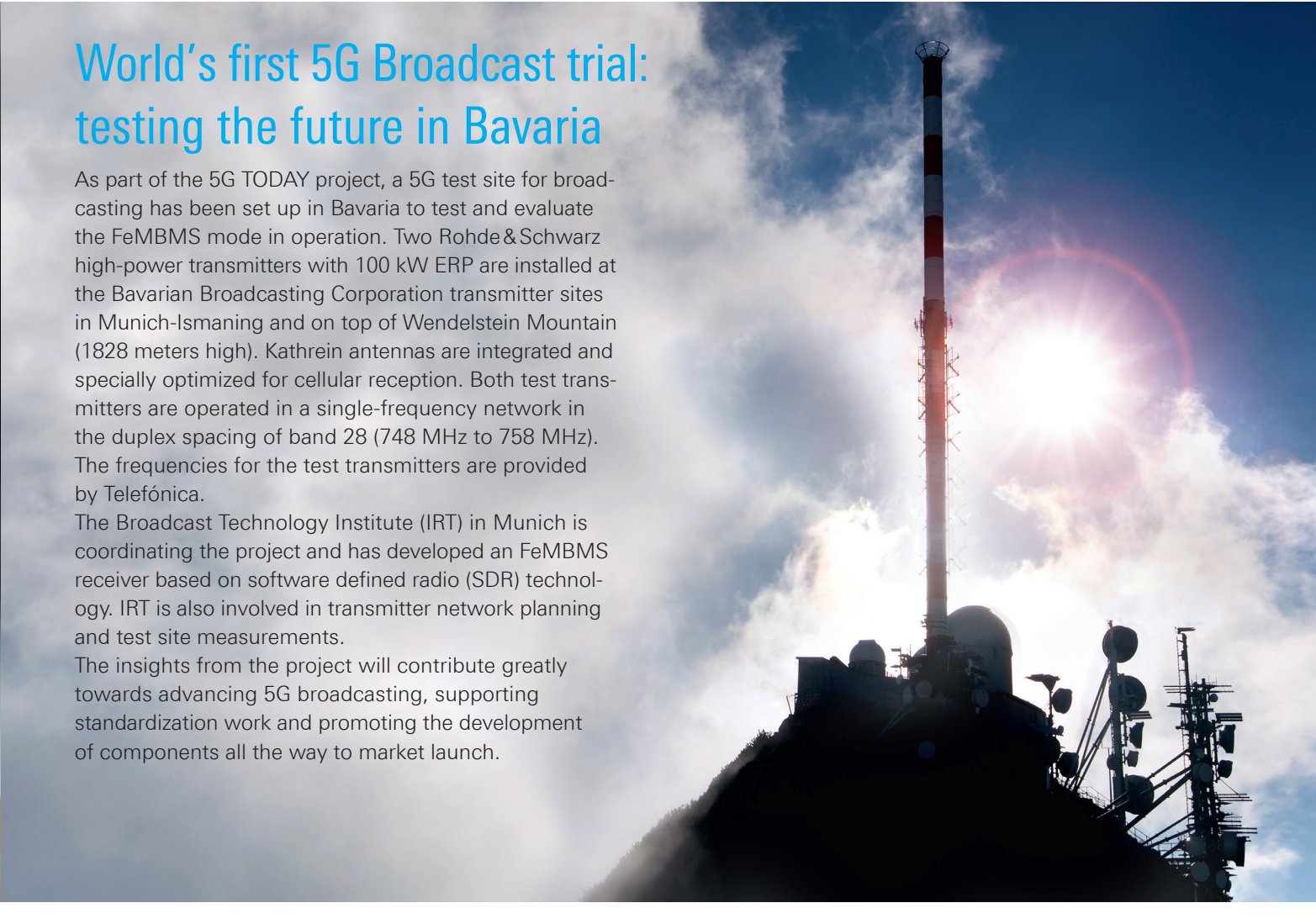
By deploying a HPHT network topology as an overlay to cellular networks, the distribution of media and entertainment content will be more efficient and cost effective compared to current mobile network structures. This concept enables a new dimension of efficiency because Multicast content consumes network capacity only once while delivering content to hundreds or even thousands of subscribers at the same time sent by a single FeMBMS HPHT transmitter.

World's first 5G Broadcast trial: testing the future in Bavaria

As part of the 5G TODAY project, a 5G test site for broadcasting has been set up in Bavaria to test and evaluate the FeMBMS mode in operation. Two Rohde&Schwarz high-power transmitters with 100 kW ERP are installed at the Bavarian Broadcasting Corporation transmitter sites in Munich-Ismaning and on top of Wendelstein Mountain (1828 meters high). Kathrein antennas are integrated and specially optimized for cellular reception. Both test transmitters are operated in a single-frequency network in the duplex spacing of band 28 (748 MHz to 758 MHz). The frequencies for the test transmitters are provided by Telefónica.

The Broadcast Technology Institute (IRT) in Munich is coordinating the project and has developed an FeMBMS receiver based on software defined radio (SDR) technology. IRT is also involved in transmitter network planning and test site measurements.

The insights from the project will contribute greatly towards advancing 5G broadcasting, supporting standardization work and promoting the development of components all the way to market launch.



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