

Mission Critical Communications (MCX)

Protocol conformance solution

Compliance of Chipset and Devices to 3GPP MCX Standards

MCX (Mission Critical Communications) is a new standard in 3GPP covering MCPTT (Mission Critical Push To Talk ie Voice), MC Data (Mission Critical Data) and MC Video (Mission Critical Video). MCX offers a reliable, efficient, and feature-rich communication solution for mission-critical situations, making it an important tool for various sectors like public safety, security, transportation, and utilities. MCX has grown in importance as it provides the following:

- **Reliable and instant communication:** MCX prioritizes communication over other data traffic ensuring that messages get through quickly and reliably even in congested networks. This is crucial for situations where fast and clear communication is essential, such as for first responders during an emergency.
- **Improved situational awareness:** MCX covers voice as well as data and video. This allows users to share data like images, videos, and location information, providing a more comprehensive understanding of the situation at hand. Technologies like 5G opens new possibilities for mission critical communications with faster data speeds and network capacity as MCX will support richer multimedia capabilities enabling sharing of critical information like high-resolution images and live video streaming. This will improve the situational awareness further and enable informed decision-making in real time.
- **Enhanced interoperability:** The growing complexity of emergencies and critical situations demands seamless coordination among diverse teams. MCX is based on open standards, enabling real-time communication across various teams even those utilizing devices and networks from different vendors.
- **Leveraging existing infrastructure:** MCX utilizes existing LTE and 5G networks, eliminating the need for investment in dedicated infrastructure, making it a cost-effective solution. MCX offers security advantages compared to traditional push-to-talk apps, as it leverages the security protocols of 5G/LTE networks and can be further enhanced with additional encryption layers. This secure communication is essential to ensure sensitive information during critical situations is safe.

MCX can be used on a variety of devices. Dedicated MCX devices (aka rugged devices) are specifically designed for mission critical communication used by professionals in public safety to withstand demanding environments, for example, water, extreme temperatures, and noise. Smartphones and tablets have MCX Apps used for mission critical communication. This offers a familiar interface for the users.

As with other features, to ensure that Mission Critical Services (MCS) meets the expectations of service providers and users, test specifications are needed as well as certification programs which can prove compliance of MCX devices. GCF and PTCRB have developed MCX certification schemes based on 3GPP LTE standards (Release 14 and Release 15) to meet the requirements of mission critical network operators and users to ensure high reliability, performance and interworking mandated by mission critical communications.

MCPTT (Mission Critical Push To Talk) was introduced in 3GPP release 12 and formally standardized in release 13. In release 14 the scope of MCPTT was expanded to include MC Data and MC Video extending mission critical communication beyond voice to include data sharing and video. Release 15 refined existing MCPTT features in 3GPP. In release 16 the concept of MCX (Mission Critical Communications) was introduced, unifying MCPTT, MCDData, and MCVideo under a single umbrella. This release also focused on improving interoperability and security aspects of MCX. Release 17 represents the latest set of features covering 5G and LTE. It includes enhancements of overall capabilities and performance of MCX.

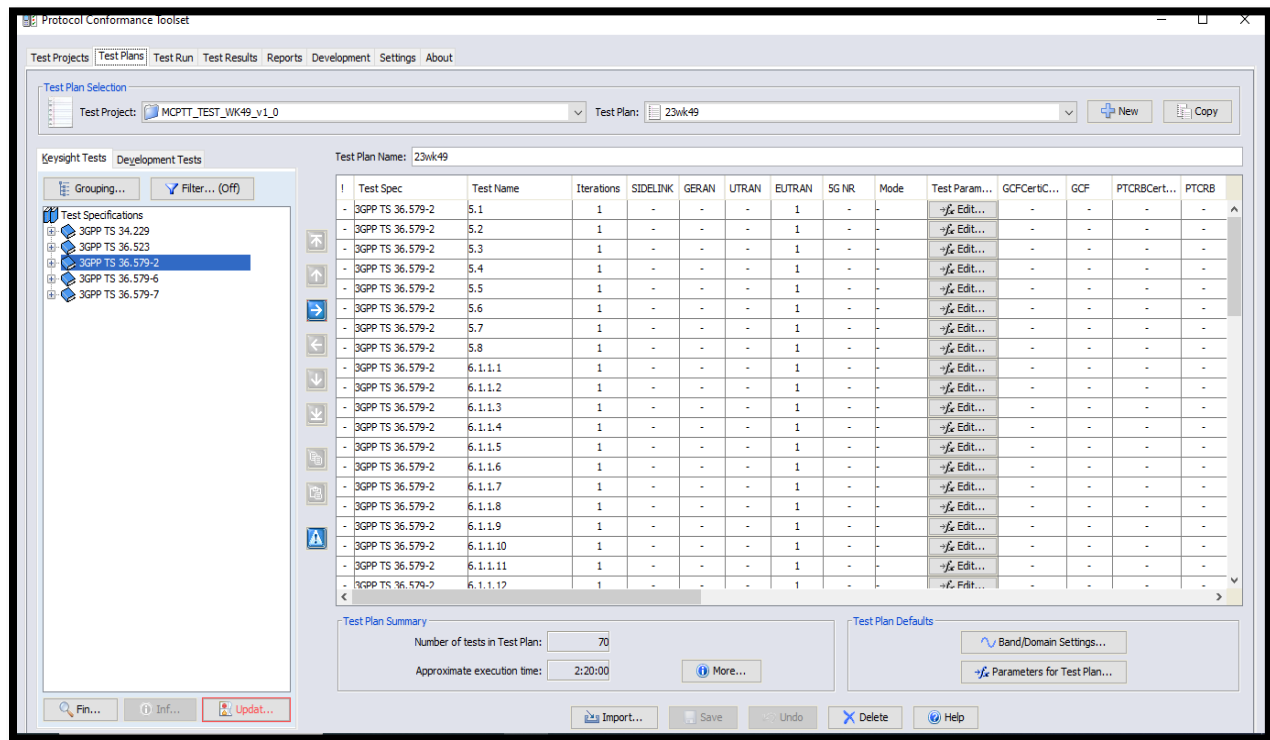
Beyond release 17 work is ongoing to include further enhancements of MCX services such as integration with 5G features like network slicing and URLLC (Ultra Reliable Low-Level Communication) and investigation of MCX applications beyond public safety such as healthcare, transportation, and utilities.

Keysight's test system for MCX



Keysight's UXM 5G is required to test the MCX test cases. The same hardware is required for all device acceptance test cases including conformance and carrier acceptance.

Keysight and MCX tests



Keysight's S8704A Protocol Conformance Toolset supports MCX protocol conformance requirements.

- 3GPP TS 36.579-2: MCPTT
- 3GPP TS 36.579-6: MC Video
- 3GPP TS 36.579-7: MC Data

The toolset is the same as for other release 15, release 16 and release 17 protocol conformance test cases ensuring a familiar interface for configuring the device, preparing test plans, executing tests, checking results, and generating reports.

For more information

- [Keysight Device Test Solutions](#)
- [Keysight UXM 5G Wireless Test Platform](#)
- [Keysight S8704A Protocol Conformance Toolset](#)



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