**3GPP TSG-SA1 Meeting #95e *S1-213105r1***

**Electronic Meeting, 23 August –2 September 2021** *(revision of S1-21xxxx)*

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| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **22.280** | **CR** | **0148** | **rev** | **-** | **Current version:** |  |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **X** |

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|  |
| ***Title:***  |  |
|  |  |
| ***Source to WG:*** | FirstNet, Samsung, Ericsson, Kontron Transportation France, UIC |
| ***Source to TSG:*** | S1 |
|  |  |
| ***Work item code:*** | AHGC |  | ***Date:*** | 2021-08-23 |
|  |  |  |  |  |
| ***Category:*** |  |  | ***Release:*** | Rel-18 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | Clause 6.6.4.1.1 specifies the need for ad-hoc group communication and also Ad hoc group call is a feature found in commercial PTT systems such as those based on OMA-PoC, including some mission critical systems. During the development of mission critical (MC) requirements in Rel-13 and Rel-14 it was decided that this feature is not applicable to public safey systems, so it was not included.  Since then, interest has grown in this feature. This feature is not standardized by 3GPP. This could lead to non-interworking implementations. Some public safety organisations have expressed interest in having a standards-based version of this feature to enable interoperability between vendors.  Since the operation of this feature is well-known, there is no need to perform a study of use cases to develop requirements. |
|  |  |
| ***Summary of change:*** | A new section containing ad hoc group call requirements is added, plus some changes are made to requirements in existing sections. |
|  |  |
| ***Consequences if not approved:*** | A standards-based version of this feature will not exist and interoperability will be affected. |
|  |  |
| ***Clauses affected:*** | 3.1, 6.8.8.X (new), 6.15.1, 6.15.4, 6.15.5 (new), 6.15.5.1 (new), 6.15.5.2 (new), 6.15.5.3 (new), 6.15.5.4 (new), 7.X (new) |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\* \* \* First change \* \* \*

# 3 Definitions and abbreviations

## 3.1 Definitions

For the purposes of th geographic e present document, the terms and definitions given in 3GPP TR 21.905 [4] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [4].

**Affiliated MCX Service Group Member:** An MCX Service Group Member who has indicated an interest in participating in communications of the group, has been accepted by the MCX Service, and is prepared to receive and/or transmit Group Communications from/to the particular MCX Group.

**Air ground air Communication:** A communication (point-to-point or group) between at least one MCX User located on the ground and one or more MCX Users in helicopter(s) or aircraft while not on the ground, but in flight (in the air).

**Broadcast Group Communication:** A group communication where the initiating MCX User expects no response from the other MCX Users, so that when the user’s transmission is complete, so is the communication.

**Group Communication:** A one-to-many or many-to-many communication using an MCX Service.

**In-progress Emergency:** An emergency condition that has been accepted by the MCX Service, but has not yet been cancelled.

**Late Entry:** An Affiliated MCX Service Group Member joins in an in progress MCX Service Group Communication.

**Location:** The currentposition and if available information about the instantaneous velocity and direction of the MCX UE.

**MCX Service Ad hoc Group Communication**: The combining of a multiplicity of MCX Users and/or MCX groups into a group for the duration of a communication and when the communication is terminated the group no longer exists.

**MCX Service Administrator:** An individual authorized to control MCX parameters for an organization including, for example, user and group definitions, user/group aliases, user priorities, group membership/priorities/hierarchies, security and privacy controls.

**MCX Service Emergency Alert:** A notification from the MCX UE to the MCX Service that the MCX User has an emergency condition.

**MCX Service Emergency State:** A heightened condition of alarm for an MCX User indicating a need for immediate assistance due to a personal life-threatening situation.

**MCX Service Emergency Group Communication:** An urgent MCX Service group communication initiated by a MCX user when there is the potential of immediate death or serious injury.

**MCX Service Group:** A defined set of MCX Users with associated communication dispositions (e.g. media restrictions, default priority and commencement directions).

**MCX Service Group Communication**: A group communication for a particular MCX Service.

**MCX Service Group Member:** An MCX User authorized, upon successful affiliation, to participate in Group Communications of a particular MCX Group.

**MCX Service Imminent Peril Group Communication**: An urgent MCX Service Group Communication initiated by an MCX user when there is a potential of death or serious injury, but is less critical than an MCX Service Emergency Group Communication.

**MCX Service User Profile:** The set of information associated to an MCX User that allows that user to employ the MCX Service in a given role and/or from a given MCX UE.

**MCX UE:** A UE that can be used to participate in MCX Services.

**MCX User:** A user of MCX Service, who can use an MCX UE to participate in MCX Services.

**Mission Critical:** Quality or characteristic of a communication activity, application, service or device, that requires low setup and transfer latency, high availability and reliability, ability to handle large numbers of users and devices, strong security and priority and pre-emption handling.

**Mission Critical Applications:** Generic communication applications with mission critical characteristics, traditionally encompassing push-to-talk voice (MCPTT), real-time video (MCVideo) and real-time data (MCData).

NOTE 1: The short name, **MCX,** is used instead, with X standing for PTT, Video or Data

**Mission Critical Organization:** An end-user organization that includes MCX Users and/or MCX UEs, and can include MCX Service Administrators, and can be organized hierarchically with administrative control delegated within the organization or to an outside entity.

**Mission Critical Service:** Communication service providing enabling capabilities for Mission Critical Applications that are provided to end users from Mission Critical Organizations or other businesses and organizations (e.g., utilities, railways).

NOTE 2: The short name, MCX Service, can be used instead.

**Participant**: An MCX User who is currently receiving and/or transmitting in a Group Communication or a Private Communication.

**Participant type**: Functional category of the Participant (e.g., first responder, second responder, dispatch, dispatch supervisor), typically defined by the MCX Service Administrators.

**Private Communication:** A one-to-one communication between a pair of users using an MCX Service.

**Selected MCX Service Group:** An MCX Service Group that a particular Affiliated MCX Service Group Member uses for transmission.

**Transmitting MCX Service Group Member:** An Affiliated MCX Service Group Member who is currently transmitting in a Group Communication to a Selected MCX Service Group.

\* \* \* End of first change \* \* \*

\* \* \* Second change \* \* \*

### 6.8.8 Communication types based on priorities

#### 6.8.8.5 Ad hoc Group Communication requirements

[R-8.8.8.5-001] The In-progress Emergency condition for a MCX Service Ad hoc Group Communication shall be cancelled when the communication is terminated.

\* \* \* End of second change \* \* \*

\* \* \* Third change \* \* \*

## 6.15 Additional services for MCX Service communications

### 6.15.1 Discreet listening capabilities

[R-6.15.1-001a] The MCX Service shall provide discreet listening capabilities without noticeable impact on or knowledge of the target MCX User, or the members of the target MCX Service Group including Ad hoc groups, and all other unauthorized MCX Users.

 [R-6.15.1-001] The MCX Service shall provide a mechanism for an authorized MCX User to receive MCX Service Private Communication transmissions to and from a specific target MCX User that is within the authority of the authorized MCX User.

[R-6.15.1-002] The MCX Service shall provide a mechanism for an authorized MCX User to receive MCX Service Group Communication transmissions to and from a specific target MCX User that is within the authority of the authorized MCX User.

[R-6.15.1-002a] The MCX Service shall provide a mechanism for an authorized MCX User to receive MCX Service Ad hoc Group Communication transmissions to and from a specific target MCX User that is within the authority of the authorized MCX User.

[R-6.15.1-003] Subject to regulatory constraints and operator security policies, the MCX Service shall allow to be configured not to provide transmissions from MCX Users who are communicating with the discreet listening target MCX User, and who are not themselves targets of discreet listening.

[R-6.15.1-004] The MCX Service shall provide a mechanism for an authorized MCX User to receive MCX Service Group transmissions from a specific MCX Service Group that is within the authority of the authorized MCX User.

NOTE: Permission to activate discreet listening can include multiple levels of authorization, but this is outside the scope of 3GPP.

### 6.15.4 Recording and audit requirements

[R-6.15.4-001] The MCX Service shall provide a mechanism for a Mission Critical Organization to log the metadata of the MCX Service Group Communications and MCX Service Private Communications under the organization's authority.

[R-6.15.4-002] Metadata shall be logged for both the transmitting Participant and the receiving Participant(s).

[R-6.15.4-003] The MCX Service shall provide a mechanism for a Mission Critical Organization to record the transmissions of the Group Communications and Private Communications under the organization's authority.

[R-6.15.4-004] The MCX Service shall provide a mechanism for a Mission Critical Organization to log at least the following metadata per communication: depending on service this may include; start time, date, MCX User ID, functional alias(es), MCX Group ID, Location information of the transmitting Participant, end time or duration, end reason, type of communication (e.g., MCX Service Emergency, regroup, private) and success/failure indication.

[R-6.15.4-005] If an MCX Service Group Communication or MCX Service Private Communication uses end-to-end confidentiality, the MCX Service shall provide a mechanism for a Mission Critical Organization to maintain the end-to-end confidentiality when the MCX Service Group Communication or MCX Service Private Communication is logged.

[R-6.15.4-006] The MCX Service shall provide a mechanism for a Mission Critical Organization to log the metadata of non-communication related user activities under the agency's authority.

[R-6.15.4-007] The MCX Service shall provide a mechanism for a Mission Critical Organization to log at least the following non-communication activity types: MCX Service Emergency Alert, MCX Service Emergency Alert cancellation, In-progress Emergency cancellation, registration state change, overridden event, user remote logout, changing another user's affiliations, affiliation change, change of Selected MCX Service Group, (de)activation of functional alias(es) and User and Group Regroup operations.

[R-6.15.4-008] The MCX Service shall provide a mechanism for a Mission Critical Organization to log at least the following metadata per non-communication activity: time, date, MCX Service User identity, activity type and pertinent information about the activity (e.g. MCX User/Group ID(s) included in the temporary group created by the User/Group Regroup operation). The following metadata should be logged if applicable to the activity type: MCX Service Group ID, Location information of the MCX User, affiliation list, target MCX Service User ID and success/failure indication.

[R-6.15.4-009] The MCX Service shall provide a mechanism for a Mission Critical Organization to log metadata for all failed authorization attempts (e.g., invalid login password) by an MCX User.

[R-6.15.4-010] The MCX Service shall provide a mechanism to collect metadata for network access events (e.g., pre-emption of the 3GPP system bearer services, loss of signal, failed registration attempts).

[R-6.15.4-011] The MCX Service shall provide recording and audit functions for all types of MCX Service group communication (e.g., normal group, regroup group, Ad hoc group).

\* \* \* End of third change \* \* \*

\* \* \* Fourth change \* \* \*

### 6.15.5 MCX Service Ad hoc Group Communication

#### 6.15.5.1 Overview

Due to an incident in an area, or a special operation, it can be necessary to coordinate MCX Users and/or MCX groups using Group Communication where these users do not normally work together and do not share any groups in common. MCX Service Ad hoc Group Communication enables authorized users to combine a random set of MCX Users and/or MCX groups into a group communication. The main characteristics of this ad hoc group communication are:

1. The ad hoc group does not exist until it is spontaneously created during the group communication.
2. The ad hoc group may cease to exist when the communication terminates.
3. The ad hoc group does not support ‘persistent state’ communication, e.g. emergency state.

A single communication consists of one or more media transmissions until explicitly terminated by various means. MCX Users and/or MCX groups that are being combined in an ad hoc group communication may be served by the same or different MCX systems and may normally use MCX Service Groups with different security and priority levels, different floor control methods, and other different operational characteristics. The MCX Service Ad hoc Group Communication will use a common security level, priority level, floor control method, and set of operational characteristics for the participants during a communication. As with any group communication, the priority level can change dynamically.

The ad hoc group can be used only for a single communication and it may not persist when the communication is terminated. Authorized users can recreate or re-use the ad hoc group for subsequent communications, or request creation of a permanent MCX Service Group from the participants in the ad hoc group communication.

#### 6.15.5.2 General aspects

[R-6.15.5.2-001] The MCX Service shall provide a mechanism for an authorized MCX User to combine an ad hoc multiplicity of MCX Users and/or MCX groups into a MCX Service Ad hoc Group Communication.

NOTE: Selection of the list of MCX Users and/or MCX groups can be manual, or automatic based on certain criteria. This is left for implementation.

[R-6.15.5.2-002] An MCX Service Ad hoc Group Communication is a type of MCX Service Group communication and shall support MCX Service Group Communication mechanisms for call processing (e.g., transmit request queuing, hang time, broadcast mode).

[R-6.15.5.2-003] MCX Service Ad hoc Group Communications shall be terminated using the same mechanisms as MCX Service Group communications (e.g., initiator release, server release, hang time expiration).

[R-6.15.5.2-004] The MCX Service shall provide a mechanism for an MCX Service Administrator to configure additional conditions under which MCX Service Ad hoc Group Communication shall be terminated (e.g., last Participant leaving, second last Participant leaving, initiator leaving).

[R-6.15.5.2-005] When an MCX Service Ad hoc Group Communication is terminated the group may not persist based on the initiating MCX user's indication or based on Administrator configuration.

[R-6.15.5.2-006] The MCX Service shall provide a mechanism for the initiator of a MCX Service Ad hoc Group Communication to indicate which MCX Users or which MCX group's members have to mandatorily acknowledge the setup request before the media transmission proceeds.

[R-6.15.5.2-007] The MCX Service shall provide a mechanism for an authorized initiator of a MCX Service Ad hoc Group Communication to define the communication parameters for the Ad hoc Group Communication (e.g. priority, hang time, broadcast/non-broadcast)

[R-6.15.5.2-008] MCX Service Ad hoc Group Communications shall be able to support the same urgency as MCX Service Group communication (e.g., general group, emergency, imminent peril).

[R-6.15.5.2-009] MCX Service Ad hoc Group Communications shall support the applicable security requirements as identified in sub-clause 5.12.

[R-6.15.5.2-010] The MCX Service shall provide a mechanism for the initiator of an MCX Service Ad hoc Group Communication to request that the list of participants is suppressed.

[R-6.15.5.2-011] The MCX Service shall provide a mechanism for authorized MCX Users to create a permanent MCX Service Group from the members of the MCX Service Ad hoc Group communication.

[R-6.15.5.2-012] The MCX Service shall provide a mechanism for the initiator to add or remove participants during an in progress MCX Service Ad hoc Group communication.

[R-6.15.5.2-013] The MCX Service shall provide a mechanism for a participant to join an in progress MCX Service Ad hoc Group communication.

#### 6.15.5.3 Administrative

[R-6.15.5.3-001] The MCX Service shall provide a mechanism for an MCX Service Administrator to configure which MCX Users, within their authority, are authorized to initiate a MCX Service Ad hoc Group Communication.

[R-6.15.5.3-002] The MCX Service shall provide a mechanism for an MCX Service Administrator to configure the maximum number of MCX Users who can participate in a MCX Service Ad hoc Group Communication.

[R-6.15.5.3-003] The MCX Service shall provide a mechanism for an MCX Service Administrator to configure which MCX Users are authorized to participate in a MCX Service Ad hoc Group Communication. [TS 22.280 R-6.7.2-003]

[R-6.15.5.3-004] The MCX Service shall provide a mechanism for an MCX Service Administrator to define the default parameters for MCX Service Ad hoc Group communication (e.g., priority, hang time, broadcast mode).

[R-6.15.5.3-005] The MCX Service shall provide a mechanism for an MCX Service Administrator to configure whether MCX Service Ad hoc Group Communication is allowed on the MCX system regardless of individual MCX User authorizations.

[R-6.15.5.3-006] The MCX Service shall provide a mechanism for an MCX Service Administrator to configure the maximum number of MCX groups which can participate in a MCX Service Ad hoc Group Communication.

[R-6.15.5.3-007] The MCX Service shall provide a mechanism for an MCX Service Administrator to configure the MCX Service Ad hoc Group can persist after the termination of MCX Service Ad hoc Group Communication.

#### 6.15.5.4 Notification and acknowledgement for MCX Service Ad hoc Group Communications

[R-6.15.5.4-001] The MCX Service shall provide mechanisms for notification and acknowledgement of MCX Service Ad hoc Group Communications as defined in section 6.2.1.

NOTE: For MCX Service Ad hoc Group Communications a participant is considered an affiliated member of the group during communication setup.

\* \* \* End of fourth change \* \* \*

\* \* \* Fifth change \* \* \*

## 7.16 Off-network Ad hoc Group Communication

[R-7.16-001] The off-network MCX Service shall provide a mechanism to combine an ad hoc multiplicity of MCX Users and/or MCX groups within communication range into a group communication.

\* \* \* End of fifth change \* \* \*

\* \* \* Sixth change \* \* \*

Annex A (normative):
MCCoRe Requirements for MCPTT

Table A.1 provides an exhaustive list of those requirements in 3GPP TS 22.280 that are applicable to MCPTT.

Table A.1

|  |
| --- |
| **5 MCX Service Requirements common for on the network and off the network** |
| NA |  |  |  |  |  |
| **5.1 General Group Communications Requirements**  |
| NA |  |  |  |  |  |
| **5.1.1 General aspects** |
| R-5.1.1-001 | R-5.1.1-002 | R-5.1.1-003 | R-5.1.1-004 | R-5.1.1-005 |   |
| **5.1.2 Group/status information** |
| R-5.1.2-001 | R-5.1.2-002 |   |   |   |   |
| **5.1.3 Group configuration** |
| R-5.1.3-001 | R5.1.3-002 |   |   |   |   |
| **5.1.4 Identification** |
| R-5.1.4-001 |   |   |   |   |   |
| **5.1.5 Membership/affiliation** |
| R-5.1.5-001 | R-5.1.5-002 | R-5.1.5-003 | R-5.1.5-004 | R-5.1.5-005 | R-5.1.5-006 |
| R-5.1.5-007 | R-5.1.5-008 |   |   |   |   |
| **5.1.6 Group Communication administration** |
| R-5.1.6-001 |   |   |   |   |   |
| **5.1.7 Prioritization** |
| R-5.1.7-001 | R-5.1.7-002 |   |   |   |   |
| **5.1.8 Charging requirements for MCX Service** |
| R-5.1.8-001 | R-5.1.8-003 | R-5.1.8-004 | R-5.1.8-005 | R-5.1.8-006 | R-5.1.8-007 |
| R-5.1.8-008 | R-5.1.8-009 | R-5.1.8-010 | R-5.1.8-011 |  |   |
| **5.1.9 MCX Service Emergency Alert triggered by location** |
| NA |  |  |  |  |  |
| **5.2 Broadcast Group** |
| NA |  |  |  |  |  |
| **5.2.1 General Broadcast Group Communication** |
| R-5.2.1-001 | R-5.2.1-002 |   |   |   |   |
| **5.2.2 Group-Broadcast Group (e.g., announcement group)** |
| R-5.2.2-001 | R-5.2.2-002 | R-5.2.2-003 | R-5.2.2-004 |   |   |
| **5.2.3 User-Broadcast Group (e.g., System Communication)** |
| R-5.2.3-001 | R-5.2.3-002 |   |   |   |   |
| **5.3 Late communication entry** |
| R-5.3-001 | R-5.3-002 | R-5.3-003 | R-5.3-004 | R-5.3-005 |   |
| **5.4 Receiving from multiple MCX Service communications** |
| **5.4.1 Overview** |
| NA |   |   |   |   |   |
| **5.4.2 Requirements** |
| R-5.4.2-001 | R-5.4.2-002 | R-5.4.2-003 | R-5.4.2-004 | R-5.4.2-004A  | R-5.4.2-004B  |
| R-5.4.2-005 |  R-5.4.2-006 | R-5.4.2-007 | R-5.4.2-007a | R-5.4.2-008  | R-5.4.2-009  |
| **5.5 Private Communication** |
| NA |   |   |   |   |   |
| **5.5.1 Private Communication general requirements** |
| NA |   |   |   |   |   |
| **5.5.2 Charging requirement for MCX Service** |
| R-5.5.2-001 |  |  |  |  |  |
| **5.6 MCX Service priority requirements** |
| NA |   |   |   |   |   |
| **5.6.1 Overview** |
| NA |   |   |   |   |   |
| **5.6.2 Communication types based on priorities** |
| NA |   |   |   |   |   |
| **5.6.2.1 MCX Service Emergency and Imminent Peril general requirements** |
| NA |  |  |  |  |  |
| **5.6.2.1.1 Overview** |
| NA |  |  |  |  |  |
| **5.6.2.1.2 Requirements** |
| R-5.6.2.1.2-001 | R-5.6.2.1.2-002 | R-5.6.2.1.2-003 | R-5.6.2.1.2-004 | R-5.6.2.1.2-005 |   |
| **5.6.2.2 MCX Service Emergency Group Communication** |
| NA |   |   |   |   |   |
| **5.6.2.2.1 MCX Service Emergency Group Communication requirements** |
| R-5.6.2.2.1-001 | R-5.6.2.2.1-002 | R-5.6.2.2.1-003 | R-5.6.2.2.1-004 | R-5.6.2.2.1-005 | R-5.6.2.2.1-006 |
| R-5.6.2.2.1-007 | R-5.6.2.2.1-008 | R-5.6.2.2.1-009 | R-5.6.2.2.1-010 | R-5.6.2.2.1-011 | R-5.6.2.2.1-012 |
| R-5.6.2.2.1-013 | R-5.6.2.2.1-014 |  |  |  |  |
| **5.6.2.2.2 MCX Service Emergency Group Communication cancellation requirements** |
| R-5.6.2.2.2-001 | R-5.6.2.2.2-002 | R-5.6.2.2.2-003 | R-5.6.2.2.2-004 | R-5.6.2.2.2-005 |   |
| **5.6.2.3 MCX Service Imminent Peril Group** |
| NA |   |   |   |   |   |
| **5.6.2.3.1 MCX Service Imminent Peril Group Communication requirements** |
| R-5.6.2.3.1-001 | R-5.6.2.3.1-002 | R-5.6.2.3.1-003 | R-5.6.2.3.1-004 | R-5.6.2.3.1-005 | R-5.6.2.3.1-006 |
| R-5.6.2.3.1-007 | R-5.6.2.3.1-008 | R-5.6.2.3.1-009 |   |   |   |
| **5.6.2.3.2 MCX Service Imminent Peril Group Communications cancellation requirements** |
| R-5.6.2.3.2-001 | R-5.6.2.3.2-002 | R-5.6.2.3.2-003 | R-5.6.2.3.2-004 |   |   |
| **5.6.2.4 MCX Service Emergency Alert** |
| NA |   |   |   |   |   |
| **5.6.2.4.1 MCX Service Emergency Alert requirements** |
| R-5.6.2.4.1-001 | R-5.6.2.4.1-002 | R-5.6.2.4.1-003 | R-5.6.2.4.1-004 | R-5.6.2.4.1-004a | R-5.6.2.4.1-005 |
| R-5.6.2.4.1-006 | R-5.6.2.4.1-007 | R-5.6.2.4.1-008 | R-5.6.2.4.1-009 | R-5.6.2.4.1-010 | R-5.6.2.4.1-011 |
| R-5.6.2.4.1-012 | R-5.6.2.4.1-013 |  |  |  |  |
| **5.6.2.4.2 MCX Service Emergency Alert cancellation requirements** |
| R-5.6.2.4.2-001 | R-5.6.2.4.2-002 | R-5.6.2.4.2-003 |   |   |   |
| **5.7 MCX Service User ID** |
| R-5.7-001 | R-5.7-002 | R-5.7-003 |   |   |   |
| **5.8 MCX UE Management** |
| R-5.8-001 | R-5.8-002 |   |   |   |   |
| **5.9 MCX Service User Profile** |
| R-5.9-001 | R-5.9-002 |   |   |   |   |
| **5.9A Functional alias** |
| R-5.9a-001 | R-5.9a-001a | R-5.9a-001b  |  R-5.9a-001c | R-5.9a-002 | R-5.9a-002a |
| R-5.9a-003 | R-5.9a-004 | R-5.9a-005 | R-5.9a-006 |  |  |
| R-5.9a-007 | R-5.9a-008 | R-5.9a-009 | R-5.9a-010 | R-5.9a-011 | R-5.9a-012 |
| R-5.9a-013 | R-5.9a-014 | R-5.9a-015 | R-5.9a-016 | R-5.9a-017 | R-5.9a-018 |
| R-5.9a-019 | R-5.9a-020 | R-5.9a-021 | R-5.9a-022 | R-5.9a-023 | [R-5.9a-024 |
| R-5.9a-025 | R-5.9a-026 | R-5.9a-027 | R-5.9a-028 | R-5.9a-029 | R-5.9a-030 |
| R-5.9a-031 |  |  |  |  |  |
| **5.10 Support for multiple devices** |
| R-5.10-001 | R-5.10-001a  | R-5.10-002 |   |   |   |
| **5.11 Location**  |
| R-5.11-001 | R-5.11-002 | R-5.11-002a | R-5.11-003 | R-5.11-004 | R-5.11-005 |
|  R-5.11-006 | R-5.11-007 | R-5.11-008 | R-5.11-009 | R-5.11-010 | R-5.11-011 |
| R-5.11-013 | R-5.11-014 | R-5.11-015 | R-5.11-015 |   |   |
| **5.12 Security** |
| R-5.12-001 | R-5.12-002 | R-5.12-003 | R-5.12-004 | R-5.12-005 | R-5.12-006 |
| R-5.12-007 | R-5.12-008 | R-5.12-009 | R-5.12-010 | R-5.12-011 | R-5.12-012 |
| R-5.12-013 |  R5-12-014 |   |   |   |   |
| **5.13 Media quality** |
| R-5.13-001 |   |   |   |   |   |
| **5.14 Relay requirements** |
| R-5.14-001 | R-5.14-002 | R-5.14-003 |  R-5.14-004 |   |   |
| **5.15 Gateway requirements** |
| R-5.15-001 |  R-5.15-002 |  R-5.15-003 |   |   |   |
| **5.16 Control and management by Mission Critical Organizations** |
| NA |   |   |   |   |   |
| **5.16.1 Overview** |
| NA |   |   |   |   |   |
| **5.16.2 General requirements** |
| R-5.16.2-001 | R-5.16.2-002 | R-5.16.2-003 | R-5.16.2-004 | R-5.16.2-005 |   |
| **5.16.3 Operational visibility for Mission Critical Organizations** |
| R-5.16.3-001 |   |   |   |   |   |
| **5.17 General administrative – groups and users** |
| R-5.17-001 | R-5.17-002 | R-5.17-003 | R-5.17-004 | R-5.17-005 | R-5.17-006 |
| R-5.17-007 | R-5.17-008 |   |   |   |   |
| **5.18 Open interfaces for MCX services** |
| NA |  |  |  |  |  |
| **5.18.1 Overview** |
| NA |  |  |  |  |  |
| **5.18.2 Requirements** |
| NA |  |  |  |  |  |
| **5.19 Media forwarding** |
| NA |  |  |  |  |  |
| **5.19.1 Service description** |
| NA |  |  |  |  |  |
| **5.19.2 Requirements** |
| NA |  |  |  |  |  |
| **5.20 Receipt notification** |
| NA |  |  |  |  |  |
| **5.20.1 Service description** |
| NA |  |  |  |  |  |
| **5.20.2 Requirements** |
| NA |  |  |  |  |  |
| **5.21 Additional services for MCX Service communications** |
| NA |  |  |  |  |  |
| **5.21.1 Remotely initiated MCX Service communication** |
| NA |  |  |  |  |  |
| **5.21.1.1 Overview** |
| NA |  |  |  |  |  |
| **5.21.1.2 Requirements** |
| NA |  |  |  |  |  |
| **5.21.2 Remotely terminated MCX Service communication** |
| NA |  |  |  |  |  |
| **5.21.2.1 Requirements** |
| R-5.21.2.1-001 |  |  |  |  |  |
| **6 MCX Service requirements specific to on-network use** |
| NA |   |   |   |   |   |
| **6.1 General administrative – groups and users** |
| R-6.1-001 | R-6.1-002 | R-6.1-003 | R-6.1-004 | R-6.1-005 |   |
| **6.2 MCX Service communications** |
| NA |   |   |   |   |   |
| **6.2.1 Notification and acknowledgement for MCX Service Group Communications** |
| NA  |  |  |  |  |   |
| **6.2.2 Queuing** |
| R-6.2.2-001 | R-6.2.2-002 | R-6.2.2-003 | R-6.2.2-004 | R-6.2.2-005 | R-6.2.2-006 |
| **6.3 General requirements** |
| R-6.3-001 | R-6.3-002 | R-6.3-003 | R-6.3-004 |   |   |
| **6.4 General group communication** |
| NA |   |   |   |   |   |
| **6.4.1 General aspects** |
| R-6.4.1-001 |   |   |   |   |   |
| **6.4.2 Group status/information** |
| R-6.4.2-005 | R-6.4.2-001 | R-6.4.2-002 | R-6.4.2-003 | R-6.4.2-004 | R-6.4.2-006 |
| R-6.4.2-007 |   |   |   |   |   |
| **6.4.3 Identification** |
| R-6.4.3-001 | R-6.4.3-002 |   |   |   |   |
| **6.4.4 Membership/affiliation** |
| R-6.4.4-001 | R-6.4.4-002 | R-6.4.4-003 | R-6.4.4-004 |   |   |
| **6.4.5 Membership/affiliation list** |
| R-6.4.5-001 | R-6.4.5-002 | R-6.4.5-003 | R-6.4.5-003a | R-6.4.5-004 | R-6.4.5-005 |
| R-6.4.5-006 | R-6.4.5-007 |  R-6.4.5-008 |   |   |   |
| **6.4.6 Authorized user remotely changes another MCX User’s affiliated and/or Selected MCX Service Group(s)** |
| NA |   |   |   |   |   |
| **6.4.6.1 Mandatory change** |
| R-6.4.6.1-001 | R-6.4.6.1-002 | R-6.4.6.1-003 | R-6.4.6.1-004 |   |   |
| **6.4.6.2 Negotiated change** |
| R-6.4.6.2-001 | R-6.4.6.2-002 | R-6.4.6.2-003 | R-6.4.6.2-004 | R-6.4.6.2-005 | R-6.4.6.2-006 |
| **6.4.7 Prioritization** |
| R-6.4.7-001 | R-6.4.7-002 | R-6.4.7-003 | R-6.4.7-004 |   |   |
| **6.4.8 Relay requirements** |
| R-6.4.8-001 |   |   |   |   |   |
| **6.4.9 Administrative** |
| R-6.4.9-001 | R-6.4.9-002 | R-6.4.9-003 | R-6.4.9-004 | R-6.4.9-005 | R-6.4.9-006 |
| **6.5 Broadcast Group** |
| NA |   |   |   |   |   |
| **6.5.1 General Broadcast Group Communication** |
| R-6.5.1-001 | R-6.5.1-002 |   |   |   |   |
| **6.5.2 Group-Broadcast Group (e.g., announcement group)** |
| R-6.5.2-001 |   |   |   |   |   |
| **6.5.3 User-Broadcast Group (e.g., system communication)** |
| R-6.5.3-001 |   |   |   |   |   |
| **6.6 Dynamic group management (i.e., dynamic reporting)** |
| NA |   |   |   |   |   |
| **6.6.1 General dynamic regrouping** |
| R-6.6.1-001 | R-6.6.1-002 | R-6.6.1-003 | R-6.6.1-004 | R-6.6.1-005 | R-6.6.1-006 |
| **6.6.2 Group regrouping** |
| NA |   |   |   |   |   |
| **6.6.2.1 Service description** |
| NA |   |   |   |   |   |
| **6.6.2.2 Requirements** |
| R-6.6.2.2-001 | R-6.6.2.2-002 | R-6.6.2.2-003 | R-6.6.2.2-004 | R-6.6.2.2-005 | R-6.6.2.2-006 |
| R-6.6.2.2-007 |  R-6.6.2.2-008 |  R-6.6.2.2-009 |  R-6.6.2.2-010 |  R-6.6.2.2-011 |  R-6.6.2.2-012 |
| R-6.6.2.2-013 |  |  |  |  |  |
| **6.6.3 Temporary Broadcast Groups** |
| R-6.6.3-001 |  R-6.6.3-001a | R-6.6.3-001b | R-6.6.3-002 |   |   |
| **6.6.4 User regrouping** |
| NA |   |   |   |   |   |
| **6.6.4.1 Service description** |
| NA |   |   |   |   |   |
| **6.6.4.2 Requirements** |
| R-6.6.4.2-001 | R-6.6.4.2-002 | R-6.6.4.2-002a | R-6.6.4.2-002b | R-6.6.4.2-003 | R-6.6.4.2-004 |
| R-6.6.4.2-005 |  |  |  |  |   |
| **6.6.5 Dynamic Group Participation** |
| NA |   |   |   |   |   |
| **6.6.5.1 Service description** |
| NA |   |   |   |   |   |
| **6.6.5.2 Requirements** |
| R-6.6.5.2-001 | R-6.6.5.2-002 | R-6.6.5.2-003 | R-6.6.5.2-004 | R-6.6.5.2-005 | R-6.654.2-006 |
| R-6.6.5.2-007 |  |  |  |  |   |
| **6.7 Private Communication** |
| NA |   |   |   |   |   |
| **6.7.1 Overview** |
| NA |   |   |   |   |   |
| **6.7.2 General requirements** |
| R-6.7.2-001 | R-6.7.2-002 | R-6.7.2-003 | R-6.7.2-004 | R-6.7.2-005 |   |
| **6.7.3 Administrative** |
| R-6.7.3-001 | R-6.7.3-002 | R-6.7.3-003 | R-6.7.3-004 | R-6.7.3-005 | R-6.7.3-006 |
| R-6.7.3-007 | R-6.7.3-007a  | R-6.7.3-008 |  |  |  |
| **6.7.4 Prioritization** |
| R-6.7.4-001 | R-6.7.4-002 | R-6.7.4-003 | R-6.7.4-004 | R-6.7.4-005 | R-6.7.4-006 |
| R-6.7.4-007 |  |  |  |  |  |
| **6.7.5 Private Communication (without Floor control) commencement requirements** |
| R-6.7.5-001 | R-6.7.5-002 | R-6.7.5-003 |   |   |   |
| **6.7.6 Private Communication (without Floor control) termination** |
| R-6.7.6-001 | R-6.7.6-002 |   |   |   |   |
| **6.8 MCX Service priority requirements** |
| NA |   |   |   |   |   |
| **6.8.1 General** |
| R-6.8.1-001 | R-6.8.1-002 | R-6.8.1-003 | R-6.8.1-004 | R-6.8.1-005 | R-6.8.1-006 |
| R-6.8.1-007 | R-6.8.1-008 | R-6.8.1-009 | R-6.8.1-010 | R-6.8.1-011 | R-6.8.1-012 |
| R-6.8.1-013 | R-6.8.1-014 | R-6.8.1-015 | R-6.8.1-016 |   |   |
| **6.8.2 3GPP system access controls** |
| R-6.8.2-001 |   |   |   |   |   |
| **6.8.3 3GPP system admission controls** |
| R-6.8.3-001 |   |   |   |   |   |
| **6.8.4 3GPP system scheduling controls** |
| R-6.8.4-001 |   |   |   |   |   |
| **6.8.5 UE access controls** |
| R-6.8.5-001 |   |   |   |   |   |
| **6.8.6 Mobility and load management** |
| NA |   |   |   |   |   |
| **6.8.6.1 Mission Critical mobility management according to priority** |
| R-6.8.6.1-001 | R-6.8.6.1-002 |   |   |   |   |
| **6.8.6.2 Load management** |
| R-6.8.6.2-001 | R-6.8.6.2-002 | R-6.8.6.2-003 | R-6.8.6.2-004 |  R-6.8.6.2-005 |   |
| **6.8.7 Application layer priorities** |
| NA |   |   |   |   |   |
| **6.8.7.1 Overview** |
| NA |   |   |   |   |   |
| **6.8.7.2 Requirements** |
| R-6.8.7.2-001 | R-6.8.7.2-002 | R-6.8.7.2-003 | R-6.8.7.2-004 | R-6.8.7.2-005 | R-6.8.7.2-006  |
| R-6.8.7.2-007 | R-6.8.7.2-008 | R-6.8.7.2-009 | R-6.8.7.2-010 |  |  |
| **6.8.8 Communication types based on priorities** |
| NA |   |   |   |   |   |
| **6.8.8.1 MCX Service Emergency Group Communication requirements** |
| R-6.8.8.1-001 | R-6.8.8.1-002 | R-6.8.8.1-003 | R-6.8.8.1-004  |   |   |
| **6.8.8.2 MCX Service Emergency Private Communication requirements** |
| NA |   |   |   |   |   |
| **6.8.8.3 Imminent Peril Group Communication requirements** |
| R-6.8.8.3-001 | R-6.8.8.3-002 | R-6.8.8.3-003 |   |   |   |
| **6.8.8.4 MCX Service Emergency Alert** |
| NA |   |   |   |   |   |
| **6.8.8.4.1 Requirements** |
| R-6.8.8.4.1-001 | R-6.8.8.4.1-002 | R-6.8.8.4.1-003 | R-6.8.8.4.1-004 | R-6.8.8.4.1-005 | R-6.8.8.4.1-006 |
| **6.8.8.4.2 MCX Service Emergency Alert cancellation requirements** |
| R-6.8.8.4.2-001 | R-6.8.8.4.2-002 |   |   |   |   |
| **6.8.8.5 Ad hoc Group Communication requirements** |
| R-6.8.8.5-001 |  |  |  |  |  |
| **6.9 IDs and aliases** |
| R-6.9-001 | R-6.9-002 | R-6.9-003 | R-6.9-004 |   |   |
| **6.10 User Profile management** |
| R-6.10-001 | R-6.10-002 | R-6.10-003 | R-6.10-004 |   |   |
| **6.11 Support for multiple devices** |
| R-6.11-001 | R-6.11-002 | R-6.11-003 |   |   |   |
| **6.12 Location** |
| R-6.12-001 | R-6.12-002 | R-6.12-003 | R-6.12-004 | R-6.12-005 | R-6.12-006 |
| R-6.12-007 |   |   |   |   |   |
| **6.13 Security**  |
| NA |   |   |   |   |   |
| **6.13.1 Overview** |
| NA |   |   |   |   |   |
| **6.13.2 Cryptographic protocols** |
| R-6.13.2-001 | R-6.13.2-002 | R-6.13.2-003 |   |   |   |
| **6.13.3 Authentication** |
| R-6.13.3-001 |   |   |   |   |   |
| **6.13.4 Access control** |
| R-6.13.4-001 | R-6.13.4-002 | R-6.13.4-003 | R-6.13.4-004 | R-6.13.4-005 | R-6.13.4-006 |
| R-6.13.4-007 | R-6.13.4-008 | R-6.13.4-009 | R-6.13.4-010 |   |   |
| **6.13.5 Regulatory issues** |
| R-6.13.5-001 |   |   |   |   |   |
| **6.13.6 Storage control** |
| NA |  |  |  |  |  |
| **6.14 Interactions for MCX Service Group Communications and MCX Service Private Communications** |
| R-6.14-001 |  R-6.14-002 |   |   |   |   |
| **6.15 Additional services for MCX Service communications** |
| NA |   |   |   |   |   |
| **6.15.1 Discreet listening capabilities** |
| R-6.15.1-001a |   R-6.15.1-001 |   R-6.15.1-002 |   R-6.15.1-003 |   R-6.15.1-004 |   |
| **6.15.2 Ambient listening** |
| NA |   |   |   |   |   |
| **6.15.2.1 Overview of ambient listening** |
| NA |   |   |   |   |   |
| **6.15.2.2 Ambient listening requirements** |
| NA |   |   |   |   |   |
| **6.15.2.2.1 General ambient listening requirements** |
| R-6.15.2.2.1-001 | R-6.15.2.2.1-002 | R-6.15.2.2.1-003 |   |   |   |
| **6.15.2.2.2 Remotely initiated ambient listening requirements** |
| R-6.15.2.2.2-001 | R-6.15.2.2.2-002 |   |   |   |   |
| **6.15.2.2.3 Locally initiated ambient listening requirements** |
| R-6.15.2.2.3-001 | R-6.15.2.2.3-002 |   |   |   |   |
| **6.15.3 Remotely initiated MCX Service Communication** |
| NA |   |   |   |   |   |
| **6.15.3.1 Overview** |
| NA |   |   |   |   |   |
| **6.15.3.2 Requirements** |
| R-6.15.3.2-001 | R-6.15.3.2-002 |  R-6.15.3.2-003 |  R-6.15.3.2-004 |   |   |
| **6.15.4 Recording and audit requirements** |
| R-6.15.4-001 | R-6.15.4-002 | R-6.15.4-003 | R-6.15.4-004 | R-6.15.4-005 | R-6.15.4-006 |
| R-6.15.4-007 | R-6.15.4-008 | R-6.15.4-009 | R-6.15.4-010 | R-6.15.4-011 |   |
| **6.15.5 MCX Service Ad hoc Group Communication** |
| NA |  |  |  |  |  |
| **6.15.5.1 Overview** |
| NA |  |  |  |  |  |
| **6.15.5.2 General Aspects** |
| R-6.15.5.2-001 | R-6.15.5.2-002 | R-6.15.5.2-003 | R-6.15.5.2-004 | R-6.15.5.2-005 | R-6.15.5.2-006 |
| R-6.15.5.2-007 | R-6.15.5.2-008 | R-6.15.5.2-009 | R-6.15.5.2-010 | R-6.15.5.2-011 | R-6.15.5.2-012 |
| R-6.15.5.2-013 |  |  |  |  |  |
| **6.15.5.3 Administrative** |
| R-6.15.5.3-001 | R-6.15.5.3-002 | R-6.15.5.3-003 | R-6.15.5.3-004 | R-6.15.5.3-005 | R-6.15.5.3-006 |
| R-6.15.5.3-007 |  |  |  |  |  |
| **6.15.5.4 Notification and acknowledgement for MCX Service Ad hoc Group Communications** |
| R-6.15.5.4-001 |  |  |  |  |  |
| **6.16 Interaction with telephony services** |
| R-6.16-001 |  R-6.16-002 |   |   |   |   |
| **6.17 Interworking** |
| NA |   |   |   |   |   |
| **6.17.1 Non-3GPP access** |
| R-6.17.1-001 |   |   |   |   |   |
| **6.17.2 Interworking between MCX Service systems** |
| R-6.17.2-001 | R-6.17.2-002 | R-6.17.2-003 | R-6.17.2-004 | R-6.17.2-005 | R-6.17.2-006 |
| R-6.17.2-007 |   |   |   |   |   |
| **6.17.3**  **Interworking with non-MCX Service systems** |
| NA |   |   |   |   |   |
| **6.17.3.1 GSM-R** |
| R-6.17.3.1-001 | R-6.17.3.1-002  | R-6.17.3.1-003 |  R-6.17.3.1-004 |  R-6.17.3.1-005 |   |
| **6.17.3.2 External systems** |
| R.6.17.3.2-001 | R.6.17.3.2-002 |  |  |  |  |
| **6.18 MCX Service coverage extension using ProSe UE-to-Network Relays** |
| R-6.18-001 | R-6.18-002 | R-6.18-003 | R-6.18-004 | R-6.18-005 | R-6.18-006 |
| **6.19 Additional MCX Service requirements** |
| NA |  |  |  |  |  |
| **6.19.1 Communication rejection and queuing** |
| NA |  |  |  |  |  |
| **6.19.1.1 Requirements** |
| R-6.19.1.1-001 | R-6.19.1.1-002 | R-6.19.1.1-003 | R-6.19.1.1-004 | R-6.19.1.1-005 | R-6.19.1.1-006 |
| R-6.19.1.1-007 |  |  |  |  |  |
| **7 MCX Service requirements specific to off-network use** |
| NA |   |   |   |   |   |
| **7.1 Off-network communications overview** |
| NA |   |   |   |   |   |
| **7.2 General off-network MCX Service requirements** |
| R-7.2-001 | R-7.2-002 | R-7.2-003 | R-7.2-004 | R-7.2-005 |   |
| **7.3 Admission control** |
| NA |   |   |   |   |   |
| **7.3.1 General aspects** |
| R-7.3.1-001 |  R-7.3.1-002 |  R-7.3.1-003 |   |   |   |
| **7.3.2 Communication initiation** |
| R-7.3.2-001 |  R-7.3.2-002 |  R-7.3.2-003 |  R-7.3.2-004 |  R-7.3.2-005 |   |
| **7.4 Communication termination** |
| R-7.4-001 | R-7.4-002 | R-7.4-003 | R-7.4-004 |   |   |
| **7.5 Broadcast Group** |
| R-7.5-001 | R-7.5-002 |   |   |   |   |
| **7.6 MCX Service priority requirements** |
| R-7.6-001 | R-7.6-002 | R-7.6-003  | R-7.6-004 | R-7.6-005  | R-7.6-006  |
| R-7.6-007 | R-7.6-008 | R-7.6-009 |  |  |  |
| **7.7 Communication types based on priorities** |
| NA |   |   |   |   |   |
| **7.7.1 MCX Service Emergency Group Communication requirements** |
| R-7.7.1-001 | R-7.7.1-002 | R-7.7.1-003 |   |   |   |
| **7.7.2 MCX Service Emergency Group Communication cancellation requirements** |
| R-7.7.2-001 |   |   |   |   |   |
| **7.7.3 Imminent Peril Communication** |
| NA |   |   |   |   |   |
| **7.7.3.1 Imminent Peril Group Communication requirements** |
| R-7.7.3.1-001 | R-7.7.3.1-002 | R-7.7.3.1-003 | R-7.7.3.1-004 | R-7.7.3.1-005 |   |
| **7.7.3.2 Imminent Peril Group Communication cancellation requirements** |
| R-7.7.3.2-001 | R-7.7.3.2-002 |   |   |   |   |
| **7.8 Location**  |
| R-7.8-001 |  R-7.8-002 |  R-7.8-003 |   |   |   |
| **7.9 Security**  |
| R-7.9-001 | R-7.9-002 |   |   |   |   |
| **7.10 Off-network MCX Service operations** |
| R-7.10-001 | R-7.10-002 | R-7.10-003 |   |   |   |
| **7.11 Off-network UE functionality** |
| R-7.11-001 | R-7.11-002 | R-7.11-003 |   |   |   |
| **7.12 Streaming for ProSe UE-to-UE Relay and UE-to-Network Relay** |
| NA |   |   |   |   |   |
| **7.12.1 UE-to-Network Relay for all data types** |
| R-7.12.1-001 | R-7.12.1-002 | R-7.12.1-003 | R-7.12.1-004 |   |   |
| **7.12.2 UE-to-UE Relay streaming** |
| R-7.12.2-001 | R-7.12.2-002 | R-7.12.2-003 |   |   |   |
| **7.12.3 Off-Network streaming** |
| R-7.12.3-001 | R-7.12.3-002 | R-7.12.3-003 |   |   |   |
| **7.13 Switching to off-network MCX Service** |
| R-7.13-001 | R-7.13-002 | R-7.13-003 | R-7.13-004 | R-7.13-005 |   |
| **7.14 Off-network recording and audit requirements** |
| R-7.14-001 |  R-7.14-001a | R-7.14-002 | R-7.14-002a |   |   |
| **7.15 Off-network UE-to-UE relay** |
| NA |   |   |   |   |   |
| **7.15.1 Private Communications** |
| R-7.15.1-001 |  R-7.15.1-002 |  R-7.15.1-003 |   |   |   |
| **7.15.2 Group Communications** |
| R-7.15.2-001 | R-7.15.2-002 |   |   |   |   |
| **7.X Off-network Ad hoc Group Communication** |
| R-7.X-001 |  |  |  |  |  |
| **8 Inter-MCX Service interworking** |
| NA |   |   |   |   |   |
| **8.1 Inter-MCX Service interworking overview** |
| NA |   |   |   |   |   |
| **8.2 Concurrent operation of different MCX Services** |
| NA |   |   |   |   |   |
| **8.2.1 Overview** |
| NA |   |   |   |   |   |
| **8.2.2 Requirements** |
| R-8.2.2-001 | R-8.2.2-002 | R-8.2.2-003 | R-8.2.2-004 | R-8.2.2-005 |  R-8.2.2-006 |
| R-8.2.2-007 |  |  |  |  |  |
| **8.3 Use of unsharable resources within a UE** |
| R-8.3-001 | R-8.3-002 | R-8.3-003 | R-8.3-004 | R-8.3-005 |  R-8.3-006 |
| **8.4 Single group with multiple MCX Services** |
| NA |   |   |   |   |   |
| **8.4.1 Overview** |
| NA |   |   |   |   |   |
| **8.4.2 Requirements** |
| R-8.4.2-001 | R-8.4.2-002 | R-8.4.2-003 |  R-8.4.2-004 |  R-8.4.2-005 |   |
| **8.4.3 Compatibility of UE** |
| NA |   |   |   |   |   |
| **8.4.3.1 Advertising service capabilities required** |
| R-8.4.3.1-001 | R-8.4.3.1-002 | R-8.4.3.1-003 | R-8.4.3.1-004 |   |   |
| **8.4.3.2 Conversion between capabilities** |
| R-8.4.3.2-001 |   |   |   |   |   |
| **8.4.4 Individual permissions for service access** |
| R-8.4.4-001 |   |   |   |   |   |
| **8.4.5 Common alias and user identities or mappable** |
| R-8.4.5-001 |   |   |   |   |   |
| **8.4.6 Single location message** |
| R-8.4.6-001 | R-8.4.6-002 | R-8.4.6-003 |   |   |   |
| **8.5 Priority between services** |
| NA |   |   |   |   |   |
| **8.5.1 Overview** |
| NA |   |   |   |   |   |
| **8.5.2 Requirements** |
| R-8.5.2-001 | R-8.5.2-002 | R-8.5.2-003 | R-8.5.2-004 | R-8.5.2-005 |   |
| **9 Air Ground Air Communications** |
| NA |   |   |   |   |   |
| **9.1 Service description** |
| NA |   |   |   |   |   |
| **9.2 Requirements** |
| R-9.2-001 |   |   |   |   |   |
| **10 MCX Service in IOPS mode** |
| R-10-001 |   |   |   |   |   |

Annex B (normative):
MCCoRe Requirements for MCVideo

Table B.1 provides an exhaustive list of those requirements in 3GPP TS 22.280 that are applicable to MCVideo.

Table B.1

|  |
| --- |
| **5 MCX Service Requirements common for on the network and off the network** |
| NA |  |  |  |  |  |
| **5.1 General Group Communications requirements**  |
| NA |  |  |  |  |  |
| **5.1.1 General aspects** |
| R-5.1.1-001 | R-5.1.1-002 | R-5.1.1-003 | R-5.1.1-004 | R-5.1.1-005 |  R-5.1.1-006 |
| **5.1.2 Group/status information** |
| R-5.1.2-001 | R-5.1.2-002 |   |   |   |   |
| **5.1.3 Group configuration** |
| R-5.1.3-001 | R5.1.3-002 |   |   |   |   |
| **5.1.4 Identification** |
| R-5.1.4-001 |   |   |   |   |   |
| **5.1.5 Membership/affiliation** |
| R-5.1.5-001 | R-5.1.5-002 | R-5.1.5-003 | R-5.1.5-004 | R-5.1.5-005 | R-5.1.5-006 |
| R-5.1.5-007 | R-5.1.5-008 |   |   |   |   |
| **5.1.6 Group Communication administration** |
| R-5.1.6-001 |   |   |   |   |   |
| **5.1.7 Prioritization** |
| R-5.1.7-001 | R-5.1.7-002 |   |   |   |   |
| **5.1.8 Charging requirements for MCX Service** |
| R-5.1.8-001 | R-5.1.8-003 | R-5.1.8-004 | R-5.1.8-005 | R-5.1.8-006 | R-5.1.8-007 |
| R-5.1.8-008 | R-5.1.8-009 | R-5.1.8-010 | R-5.1.8-011 |  |   |
| **5.1.9 MCX Service Emergency Alert triggered by location** |
| R-5.1.9-001 | R-5.1.9-002 |  |  |  |  |
| **5.2 Broadcast Group** |
| NA |  |  |  |  |  |
| **5.2.1 General Broadcast Group Communication** |
| R-5.2.1-001 | R-5.2.1-002 |   |   |   |   |
| **5.2.2 Group-Broadcast Group (e.g., announcement group)** |
| R-5.2.2-001 | R-5.2.2-002 | R-5.2.2-003 | R-5.2.2-004 |   |   |
| **5.2.3 User-Broadcast Group (e.g., System Communication)** |
| R-5.2.3-001 | R-5.2.3-002 |   |   |   |   |
| **5.3 Late communication entry** |
| R-5.3-001 | R-5.3-002 | R-5.3-003 | R-5.3-004 | R-5.3-005 |   |
| **5.4 Receiving from multiple MCX Service communications** |
| **5.4.1 Overview** |
| NA |   |   |   |   |   |
| **5.4.2 Requirements** |
| R-5.4.2-001 | R-5.4.2-002 | R-5.4.2-003 | R-5.4.2-004 | R-5.4.2-004A  | R-5.4.2-004B  |
| R-5.4.2-005 |  R-5.4.2-006 | R-5.4.2-007 | R-5.4.2-007a | R-5.4.2-008  | R-5.4.2-009  |
| **5.5 Private Communication** |
| NA |   |   |   |   |   |
| **5.5.1 Private Communication general requirements** |
| R-5.5.1-001 |   |   |   |   |   |
| **5.5.2 Charging requirement for MCX Service** |
| R-5.5.2-001 |  |  |  |  |  |
| **5.6 MCX Service priority requirements** |
| NA |   |   |   |   |   |
| **5.6.1 Overview** |
| NA |   |   |   |   |   |
| **5.6.2 Communication types based on priorities** |
| NA |   |   |   |   |   |
| **5.6.2.1 MCX Service Emergency and Imminent Peril general requirements** |
| NA |  |  |  |  |  |
| **5.6.2.1.1 Overview** |
| NA |  |  |  |  |  |
| **5.6.2.1.2 Requirements** |
| R-5.6.2.1.2-001 | R-5.6.2.1.2-002 | R-5.6.2.1.2-003 | R-5.6.2.1.2-004 | R-5.6.2.1.2-005 |   |
| **5.6.2.2 MCX Service Emergency Group Communication** |
| NA |   |   |   |   |   |
| **5.6.2.2.1 MCX Service Emergency Group Communication requirements** |
| R-5.6.2.2.1-001 | R-5.6.2.2.1-002 | R-5.6.2.2.1-003 | R-5.6.2.2.1-004 | R-5.6.2.2.1-005 | R-5.6.2.2.1-006 |
| R-5.6.2.2.1-007 | R-5.6.2.2.1-008 | R-5.6.2.2.1-009 | R-5.6.2.2.1-010 | R-5.6.2.2.1-011 | R-5.6.2.2.1-012 |
| R-5.6.2.2.1-013 | R-5.6.2.2.1-014 |  |  |  |  |
| **5.6.2.2.2 MCX Service Emergency Group Communication cancellation requirements** |
| R-5.6.2.2.2-001 | R-5.6.2.2.2-002 | R-5.6.2.2.2-003 | R-5.6.2.2.2-004 | R-5.6.2.2.2-005 |   |
| **5.6.2.3 MCX Service Imminent Peril Group** |
| NA |   |   |   |   |   |
| **5.6.2.3.1 MCX Service Imminent Peril Group Communication requirements** |
| R-5.6.2.3.1-001 | R-5.6.2.3.1-002 | R-5.6.2.3.1-003 | R-5.6.2.3.1-004 | R-5.6.2.3.1-005 | R-5.6.2.3.1-006 |
| R-5.6.2.3.1-007 | R-5.6.2.3.1-008 | R-5.6.2.3.1-009 |   |   |   |
| **5.6.2.3.2 MCX Service Imminent Peril Group Communications cancellation requirements** |
| R-5.6.2.3.2-001 | R-5.6.2.3.2-002 | R-5.6.2.3.2-003 | R-5.6.2.3.2-004 |   |   |
| **5.6.2.4 MCX Service Emergency Alert** |
| NA |   |   |   |   |   |
| **5.6.2.4.1 MCX Service Emergency Alert requirements** |
| R-5.6.2.4.1-001 | R-5.6.2.4.1-002 | R-5.6.2.4.1-003 | R-5.6.2.4.1-004 | R-5.6.2.4.1-004a | R-5.6.2.4.1-005 |
| R-5.6.2.4.1-006 | R-5.6.2.4.1-007 | R-5.6.2.4.1-008 | R-5.6.2.4.1-009 | R-5.6.2.4.1-010 | R-5.6.2.4.1-011 |
| R-5.6.2.4.1-012 | R-5.6.2.4.1-013 |  |  |  |  |
| **5.6.2.4.2 MCX Service Emergency Alert cancellation requirements** |
| R-5.6.2.4.2-001 | R-5.6.2.4.2-002 | R-5.6.2.4.2-003 |   |   |   |
| **5.7 MCX Service User ID** |
| R-5.7-001 | R-5.7-002 | R-5.7-003 |   |   |   |
| **5.8 MCX UE Management** |
| R-5.8-001 | R-5.8-002 |   |   |   |   |
| **5.9 MCX Service User Profile** |
| R-5.9-001 | R-5.9-002 |   |   |   |   |
| **5.9A Functional alias** |
| R-5.9a-001 | R-5.9a-001a  | R-5.9a-001b  |  R-5.9a-001c | R-5.9a-002 | R-5.9a-002a |
| R-5.9a-003 | R-5.9a-004 | R-5.9a-005 | R-5.9a-006 |  |  |
| R-5.9a-007 | R-5.9a-008 | R-5.9a-009 | R-5.9a-010 | R-5.9a-011 | R-5.9a-012 |
| R-5.9a-013 | R-5.9a-014 | R-5.9a-015 | R-5.9a-016 | R-5.9a-017 | R-5.9a-018 |
| R-5.9a-019 | R-5.9a-020 | R-5.9a-021 | R-5.9a-022 | R-5.9a-023 | R-5.9a-024 |
| R-5.9a-025 | R-5.9a-026 | R-5.9a-027 | R-5.9a-028 | R-5.9a-029 | R-5.9a-030 |
| R-5.9a-031 |  |  |  |  |  |
| **5.10 Support for multiple devices** |
| R-5.10-001 |  R-5.10-001a |  R-5.10-002 |   |   |   |
| **5.11 Location**  |
| R-5.11-001 | R-5.11-002 |  R-5.11-002a | R-5.11-003 | R-5.11-004 | R-5.11-005 |
|  R-5.11-006 | R-5.11-007 | R-5.11-008 | R-5.11-009 | R-5.11-010 | R-5.11-011 |
|  R-5.11-012 | R-5.11-013 | R-5.11-014 | R-5.11-015 |   |   |
| **5.12 Security** |
| R-5.12-001 | R-5.12-002 | R-5.12-003 | R-5.12-004 | R-5.12-005 | R-5.12-006 |
| R-5.12-007 | R-5.12-008 | R-5.12-009 | R-5.12-010 | R-5.12-011 | R-5.12-012 |
| R-5.12-013 | R-5.12-014  |   |   |   |   |
| **5.13 Media quality** |
| R-5.13-001 |   |   |   |   |   |
| **5.14 Relay requirements** |
| R-5.14-001 | R-5.14-002 | R-5.14-003 |  R-5.14-004 |   |   |
| **5.15 Gateway requirements** |
| R-5.15-001 |  R-5.15-002 |  R-5.15-003 |   |   |   |
| **5.16 Control and management by Mission Critical Organizations** |
| NA |   |   |   |   |   |
| **5.16.1 Overview** |
| NA |   |   |   |   |   |
| **5.16.2 General requirements** |
| R-5.16.2-001 | R-5.16.2-002 | R-5.16.2-003 | R-5.16.2-004 | R-5.16.2-005 |   |
| **5.16.3 Operational visibility for Mission Critical Organizations** |
| R-5.16.3-001 |   |   |   |   |   |
| **5.17 General administrative – groups and users** |
| R-5.17-001 | R-5.17-002 | R-5.17-003 | R-5.17-004 | R-5.17-005 | R-5.17-006 |
| R-5.17-007 | R-5.17-008 |   |   |   |   |
| **5.18 Open interfaces for MCX services** |
| NA |  |  |  |  |  |
| **5.18.1 Overview** |
| NA |  |  |  |  |  |
| **5.18.2 Requirements** |
| R-5.18.2-001 | R-5.18.2-002 | R-5.18.2-003 | R-5.18.2-004 |  |  |
| **5.19 Media forwarding** |
| NA |  |  |  |  |  |
| **5.19.1 Service description** |
| NA |  |  |  |  |  |
| **5.19.2 Requirements** |
| R-5.19.2-001 | R-5.19.2-002 | R-5.19.2-003 |  |  |  |
| **5.20 Receipt notification** |
| NA |  |  |  |  |  |
| **5.20.1 Service description** |
| NA |  |  |  |  |  |
| **5.20.2 Requirements** |
| R-5.20.2-001 |  |  |  |  |  |
| **5.21 Additional services for MCX Service communications** |
| NA |  |  |  |  |  |
| **5.21.1 Remotely initiated MCX Service communication** |
| NA |  |  |  |  |  |
| **5.21.1.1 Overview** |
| NA |  |  |  |  |  |
| **5.21.1.2 Requirements** |
| R-5.21.1.2-001 | R-5.21.1.2-002 | R-5.21.1.2-003 | R-5.21.1.2-004 |  |  |
| **5.21.2 Remotely terminated MCX Service communication** |
| NA |  |  |  |  |  |
| **5.21.2.1 Requirements** |
| R-5.21.2.1-001 |  |  |  |  |  |
| **6 MCX Service requirements specific to on-network use** |
| NA |   |   |   |   |   |
| **6.1 General administrative – groups and users** |
| R-6.1-001 | R-6.1-002 | R-6.1-003 | R-6.1-004 | R-6.1-005 |   |
| **6.2 MCX Service communications** |
| NA |   |   |   |   |   |
| **6.2.1 Notification and acknowledgement for MCX Service Group Communications** |
| R-6.2.1-001 | R-6.2.1-002 | R-6.2.1-003 | R-6.2.1-004 | R-6.2.1-005 |   |
| **6.2.2 Queuing** |
| R-6.2.2-001 | R-6.2.2-002 | R-6.2.2-003 | R-6.2.2-004 | R-6.2.2-005 | R-6.2.2-006 |
| **6.3 General requirements** |
| R-6.3-001 | R-6.3-002 | R-6.3-003 | R-6.3-004 |   |   |
| **6.4 General group communication** |
| NA |   |   |   |   |   |
| **6.4.1 General aspects** |
| R-6.4.1-001 |   |   |   |   |   |
| **6.4.2 Group status/information** |
| R-6.4.2-005 | R-6.4.2-001 | R-6.4.2-002 | R-6.4.2-003 | R-6.4.2-004 | R-6.4.2-006 |
| R-6.4.2-007 |   |   |   |   |   |
| **6.4.3 Identification** |
| R-6.4.3-001 | R-6.4.3-002 |   |   |   |   |
| **6.4.4 Membership/affiliation** |
| R-6.4.4-001 | R-6.4.4-002 | R-6.4.4-003 | R-6.4.4-004 |   |   |
| **6.4.5 Membership/affiliation list** |
| R-6.4.5-001 | R-6.4.5-002 | R-6.4.5-003 | R-6.4.5-003a | R-6.4.5-004 | R-6.4.5-005 |
| R-6.4.5-006 | R-6.4.5-007 | R-6.4.5-008  |   |   |   |
| **6.4.6 Authorized user remotely changes another MCX User’s affiliated and/or Selected MCX Service Group(s)** |
| NA |   |   |   |   |   |
| **6.4.6.1 Mandatory change** |
| R-6.4.6.1-001 | R-6.4.6.1-002 | R-6.4.6.1-003 | R-6.4.6.1-004 |   |   |
| **6.4.6.2 Negotiated change** |
| R-6.4.6.2-001 | R-6.4.6.2-002 | R-6.4.6.2-003 | R-6.4.6.2-004 | R-6.4.6.2-005 | R-6.4.6.2-006 |
| **6.4.7 Prioritization** |
| R-6.4.7-001 | R-6.4.7-002 | R-6.4.7-003 | R-6.4.7-004 |   |   |
| **6.4.8 Relay requirements** |
| R-6.4.8-001 |   |   |   |   |   |
| **6.4.9 Administrative** |
| R-6.4.9-001 | R-6.4.9-002 | R-6.4.9-003 | R-6.4.9-004 | R-6.4.9-005 | R-6.4.9-006 |
| **6.5 Broadcast Group** |
| NA |   |   |   |   |   |
| **6.5.1 General Broadcast Group Communication** |
| R-6.5.1-001 | R-6.5.1-002 |   |   |   |   |
| **6.5.2 Group-Broadcast Group (e.g., announcement group)** |
| R-6.5.2-001 |   |   |   |   |   |
| **6.5.3 User-Broadcast Group (e.g., system communication)** |
| R-6.5.3-001 |   |   |   |   |   |
| **6.6 Dynamic group management (i.e., dynamic reporting)** |
| NA |   |   |   |   |   |
| **6.6.1 General dynamic regrouping** |
| R-6.6.1-001 | R-6.6.1-002 | R-6.6.1-003 | R-6.6.1-004 | R-6.6.1-005 | R-6.6.1-006 |
| **6.6.2 Group regrouping** |
| NA |   |   |   |   |   |
| **6.6.2.1 Service description** |
| NA |   |   |   |   |   |
| **6.6.2.2 Requirements** |
| R-6.6.2.2-001 | R-6.6.2.2-002 | R-6.6.2.2-003 | R-6.6.2.2-004 | R-6.6.2.2-005 | R-6.6.2.2-006 |
| R-6.6.2.2-007 |  R-6.6.2.2-008 |  R-6.6.2.2-009 |  R-6.6.2.2-011 |  R-6.6.2.2-012 |  R-6.6.2.2-013 |
| **6.6.3 Temporary Broadcast Groups**  |
| R-6.6.3-001 | R-6.6.3-001a | R-6.6.3-001b | R-6.6.3-002 |   |   |
| **6.6.4 User regrouping** |
| NA |   |   |   |   |   |
| **6.6.4.1 Service description** |
| NA |   |   |   |   |   |
| **6.6.4.2 Requirements** |
| R-6.6.4.2-001 | R-6.6.4.2-002 | R-6.6.4.2-002a | R-6.6.4.2-002b | R-6.6.4.2-003 | R-6.6.4.2-004 |
| R-6.6.4.2-005 |  |  |  |  |   |
| **6.6.5 Dynamic Group Participation** |
| NA |   |   |   |   |   |
| **6.6.5.1 Service description** |
| NA |   |   |   |   |   |
| **6.6.5.2 Requirements** |
| R-6.6.5.2-001 | R-6.6.5.2-002 | R-6.6.5.2-003 | R-6.6.5.2-004 | R-6.6.5.2-005 | R-6.6.5.2-006 |
| R-6.6.5.2-007 |  |  |  |  |   |
| **6.7 Private Communication** |
| NA |   |   |   |   |   |
| **6.7.1 Overview** |
| NA |   |   |   |   |   |
| **6.7.2 General requirements** |
| R-6.7.2-001 | R-6.7.2-002 | R-6.7.2-003 | R-6.7.2-004 | R-6.7.2-005 |   |
| **6.7.3 Administrative** |
| R-6.7.3-001 | R-6.7.3-002 | R-6.7.3-003 | R-6.7.3-004 | R-6.7.3-005 | R-6.7.3-006 |
| R-6.7.3-007 | R-6.7.3-007a  | R-6.7.3-008 |  |  |  |
| **6.7.4 Prioritization** |
| R-6.7.4-001 | R-6.7.4-002 | R-6.7.4-003 | R-6.7.4-004 | R-6.7.4-005 | R-6.7.4-006 |
| R-6.7.4-007 |  |  |  |  |  |
| **6.7.5 Private Communication (without Floor control) commencement requirements** |
| R-6.7.5-001 |  R-6.7.5-002 |  R-6.7.5-003 |   |   |   |
| **6.7.6 Private Communication (without Floor control) termination** |
| R-6.7.6-001 |  R-6.7.6-002 |   |   |   |   |
| **6.8 MCX Service priority requirements** |
| NA |   |   |   |   |   |
| **6.8.1 General** |
| R-6.8.1-001 | R-6.8.1-002 | R-6.8.1-003 | R-6.8.1-004 | R-6.8.1-005 | R-6.8.1-006 |
| R-6.8.1-007 | R-6.8.1-008 | R-6.8.1-009 | R-6.8.1-010 | R-6.8.1-011 | R-6.8.1-012 |
| R-6.8.1-013 | R-6.8.1-014 | R-6.8.1-015 | R-6.8.1-016 |   |   |
| **6.8.2 3GPP system access controls** |
| R-6.8.2-001 |   |   |   |   |   |
| **6.8.3 3GPP system admission controls** |
| R-6.8.3-001 |   |   |   |   |   |
| **6.8.4 3GPP system scheduling controls** |
| R-6.8.4-001 |   |   |   |   |   |
| **6.8.5 UE access controls** |
| R-6.8.5-001 |   |   |   |   |   |
| **6.8.6 Mobility and load management** |
| NA |   |   |   |   |   |
| **6.8.6.1 Mission Critical mobility management according to priority** |
| R-6.8.6.1-001 | R-6.8.6.1-002 |   |   |   |   |
| **6.8.6.2 Load management** |
| R-6.8.6.2-001 | R-6.8.6.2-002 | R-6.8.6.2-003 | R-6.8.6.2-004 | R-6.8.6.2-005 |   |
| **6.8.7 Application layer priorities** |
| NA |   |   |   |   |   |
| **6.8.7.1 Overview** |
| NA |   |   |   |   |   |
| **6.8.7.2 Requirements** |
| R-6.8.7.2-001 | R-6.8.7.2-002 | R-6.8.7.2-003 | R-6.8.7.2-004 | R-6.8.7.2-005 |  R-6.8.7.2-006 |
| R-6.8.7.2-007 | R-6.8.7.2-008 | R-6.8.7.2-009 | R-6.8.7.2-010 |  |  |
| **6.8.8 Communication types based on priorities** |
| NA |   |   |   |   |   |
| **6.8.8.1 MCX Service Emergency Group Communication requirements** |
| R-6.8.8.1-001 | R-6.8.8.1-002 | R-6.8.8.1-003 | R-6.8.8.1-004 |   |   |
| **6.8.8.2 MCX Service Emergency Private Communication requirements** |
| R-6.8.8.2-001 | R-6.8.8.2-002 | R-6.8.8.2-003 | R-6.8.8.2-004 |   |   |
| **6.8.8.3 Imminent Peril Group Communication requirements** |
| R-6.8.8.3-001 | R-6.8.8.3-002 | R-6.8.8.3-003 |   |   |   |
| **6.8.8.4 MCX Service Emergency Alert** |
| NA |   |   |   |   |   |
| **6.8.8.4.1 Requirements** |
| R-6.8.8.4.1-001 | R-6.8.8.4.1-002 | R-6.8.8.4.1-003 | R-6.8.8.4.1-004 | R-6.8.8.4.1-005 | R-6.8.8.4.1-006 |
| **6.8.8.4.2 MCX Service Emergency Alert cancellation requirements** |
| R-6.8.8.4.2-001 | R-6.8.8.4.2-002 |   |   |   |   |
| **6.8.8.X Ad hoc Group Communication requirements** |
| R-6.8.8.X-001 |  |  |  |  |  |
| **6.9 IDs and aliases** |
| R-6.9-001 | R-6.9-002 | R-6.9-003 | R-6.9-004 |   |   |
| **6.10 User Profile management** |
| R-6.10-001 | R-6.10-002 | R-6.10-003 | R-6.10-004 |   |   |
| **6.11 Support for multiple devices** |
| R-6.11-001 | R-6.11-002 | R-6.11-003 |   |   |   |
| **6.12 Location** |
| R-6.12-001 | R-6.12-002 | R-6.12-003 | R-6.12-004 | R-6.12-005 | R-6.12-006 |
| R-6.12-007 |   |   |   |   |   |
| **6.13 Security**  |
| NA |   |   |   |   |   |
| **6.13.1 Overview** |
| NA |   |   |   |   |   |
| **6.13.2 Cryptographic protocols** |
| R-6.13.2-001 | R-6.13.2-002 | R-6.13.2-003 |   |   |   |
| **6.13.3 Authentication** |
| R-6.13.3-001 |   |   |   |   |   |
| **6.13.4 Access control** |
| R-6.13.4-001 | R-6.13.4-002 | R-6.13.4-003 | R-6.13.4-004 | R-6.13.4-005 | R-6.13.4-006 |
| R-6.13.4-007 | R-6.13.4-008 | R-6.13.4-009 | R-6.13.4-010 |   |   |
| **6.13.5 Regulatory issues** |
| R-6.13.5-001 |   |   |   |   |   |
| **6.13.6 Storage control** |
| R-6.13.6-001 |  |  |  |  |  |
| **6.14 Interactions for MCX Service Group Communications and MCX Service Private Communications** |
| R-6.14-001 |  R-6.14-002 |   |   |   |   |
| **6.15 Additional services for MCX Service communications** |
| NA |   |   |   |   |   |
| **6.15.1 Discreet listening capabilities** |
| R-6.15.1-001a |  R-6.15.1-001 |  R-6.15.1-002 |  R-6.15.1-003 |  R-6.15.1-004 |   |
| **6.15.2 Ambient listening** |
| NA |   |   |   |   |   |
| **6.15.2.1 Overview of ambient listening** |
| NA |   |   |   |   |   |
| **6.15.2.2 Ambient listening requirements** |
| NA |   |   |   |   |   |
| **6.15.2.2.1 General ambient listening requirements** |
| R-6.15.2.2.1-001 | R-6.15.2.2.1-002 | R-6.15.2.2.1-003  |   |   |   |
| **6.15.2.2.2 Remotely initiated ambient listening requirements** |
| R-6.15.2.2.2-001 | R-6.15.2.2.2-002 |   |   |   |   |
| **6.15.2.2.3 Locally initiated ambient listening requirements** |
| R-6.15.2.2.3-001 | R-6.15.2.2.3-002 |   |   |   |   |
| **6.15.3 Remotely initiated MCX Service Communication** |
| NA |   |   |   |   |   |
| **6.15.3.1 Overview** |
| NA |   |   |   |   |   |
| **6.15.3.2 Requirements** |
| R-6.15.3.2-001 | R-6.15.3.2-002 | R-6.15.3.2-003 | R-6.15.3.2-004 |   |   |
| **6.15.4 Recording and audit requirements** |
| R-6.15.4-001 | R-6.15.4-002 | R-6.15.4-003 | R-6.15.4-004 | R-6.15.4-005 | R-6.15.4-006 |
| R-6.15.4-007 | R-6.15.4-008 | R-6.15.4-009 | R-6.15.4-010 | R-6.15.4-011 |   |
| **6.15.5 MCX Service Ad hoc Group Communication** |
| NA |  |  |  |  |  |
| **6.15.5.1 Overview** |
| NA |  |  |  |  |  |
| **6.15.5.2 General Aspects** |
| R-6.15.5.2-001 | R-6.15.5.2-002 | R-6.15.5.2-003 | R-6.15.5.2-004 | R-6.15.5.2-005 | R-6.15.5.2-006 |
| R-6.15.5.2-007 | R-6.15.5.2-008 | R-6.15.5.2-009 | R-6.15.5.2-010 | R-6.15.5.2-011 | R-6.15.5.2-012 |
| R-6.15.5.2-013 |  |  |  |  |  |
| **6.15.5.3 Administrative** |
| R-6.15.5.3-001 | R-6.15.5.3-002 | R-6.15.5.3-003 | R-6.15.5.3-004 | R-6.15.5.3-005 | R-6.15.5.3-006 |
| R-6.15.5.3-007 |  |  |  |  |  |
| **6.15.5.4 Notification and acknowledgement for MCX Service Ad hoc Group Communications** |
| R-6.15.5.4-001 |  |  |  |  |  |
| **6.16 Interaction with telephony services** |
| R-6.16-001 |  R-6.16-002 |   |   |   |   |
| **6.17 Interworking** |
| NA |   |   |   |   |   |
| **6.17.1 Non-3GPP access** |
| R-6.17.1-001 |   |   |   |   |   |
| **6.17.2 Interworking between MCX Service systems** |
| R-6.17.2-001 | R-6.17.2-002 | R-6.17.2-003 | R-6.17.2-004 | R-6.17.2-005 | R-6.17.2-006 |
| R-6.17.2-007 |   |   |   |   |   |
| **6.17.3**  **Interworking with non-MCX Service systems** |
| NA |   |   |   |   |   |
| **6.17.3.1 GSM-R** |
| R-6.17.3.1-001 | R-6.17.3.1-002 | R-6.17.3.1-003 |  R-6.17.3.1-004 | R-6.17.3.1-005  |   |
| **6.17.3.2 External systems** |
| R.6.17.3.2-001 | R.6.17.3.2-002 |  |  |  |  |
| **6.18 MCX Service coverage extension using ProSe UE-to-Network Relays** |
| R-6.18-001 | R-6.18-002 | R-6.18-003 | R-6.18-004 | R-6.18-005 | R-6.18-006 |
| **6.19 Additional MCX Service requirements** |
| NA |  |  |  |  |  |
| **6.19.1 Communication rejection and queuing** |
| NA |  |  |  |  |  |
| **6.19.1.1 Requirements** |
| R-6.19.1.1-001 | R-6.19.1.1-002 | R-6.19.1.1-003 | R-6.19.1.1-004 | R-6.19.1.1-005 | R-6.19.1.1-006 |
| R-6.19.1.1-007 |  |  |  |  |  |
| **7 MCX Service requirements specific to off-network use** |
| NA |   |   |   |   |   |
| **7.1 Off-network communications overview** |
| NA |   |   |   |   |   |
| **7.2 General off-network MCX Service requirements** |
| R-7.2-001 | R-7.2-002 | R-7.2-003 | R-7.2-004 | R-7.2-005 |   |
| **7.3 Admission control** |
| NA |   |   |   |   |   |
| **7.3.1 General aspects** |
| R-7.3.1-001 |  R-7.3.1-002 |  R-7.3.1-003 |   |   |   |
| **7.3.2 Communication initiation** |
| R-7.3.2-001 | R-7.3.2-002 |  R-7.3.2-003 |  R-7.3.2-004 |  R-7.3.2-005 |   |
| **7.4 Communication termination** |
| R-7.4-001 | R-7.4-002 | R-7.4-003 | R-7.4-004 |   |   |
| **7.5 Broadcast Group** |
| R-7.5-001 | R-7.5-002 |   |   |   |   |
| **7.6 MCX Service priority requirements** |
| R-7.6-001 | R-7.6-002 | R-7.6-003  | R-7.6-004 | R-7.6-005  | R-7.6-006  |
| R-7.6-007 | R-7.6-008 | R-7.6-009 |  |  |  |
| **7.7 Communication types based on priorities** |
| NA |   |   |   |   |   |
| **7.7.1 MCX Service Emergency Group Communication requirements** |
| R-7.7.1-001 | R-7.7.1-002 | R-7.7.1-003 |   |   |   |
| **7.7.2 MCX Service Emergency Group Communication cancellation requirements** |
| R-7.7.2-001 |   |   |   |   |   |
| **7.7.3 Imminent Peril Communication** |
| NA |   |   |   |   |   |
| **7.7.3.1 Imminent Peril Group Communication requirements** |
| R-7.7.3.1-001 | R-7.7.3.1-002 | R-7.7.3.1-003 | R-7.7.3.1-004 | R-7.7.3.1-005 |   |
| **7.7.3.2 Imminent Peril Group Communication cancellation requirements** |
| R-7.7.3.2-001 | R-7.7.3.2-002 |   |   |   |   |
| **7.8 Location**  |
| R-7.8-001 |   R-7.8-002 |  R-7.8-003 |   |   |   |
| **7.9 Security**  |
| R-7.9-001 | R-7.9-002 |   |   |   |   |
| **7.10 Off-network MCX Service operations** |
| R-7.10-001 | R-7.10-002 | R-7.10-003 |   |   |   |
| **7.11 Off-network UE functionality** |
| R-7.11-001 | R-7.11-002 | R-7.11-003 |   |   |   |
| **7.12 Streaming for ProSe UE-to-UE Relay and UE-to-Network Relay** |
| NA |   |   |   |   |   |
| **7.12.1 UE-to-Network Relay for all data types** |
| R-7.12.1-001 | R-7.12.1-002 | R-7.12.1-003 | R-7.12.1-004 |   |   |
| **7.12.2 UE-to-UE Relay streaming** |
| R-7.12.2-001 | R-7.12.2-002 | R-7.12.2-003 |   |   |   |
| **7.12.3 Off-Network streaming** |
| R-7.12.3-001 | R-7.12.3-002 | R-7.12.3-003 |   |   |   |
| **7.13 Switching to off-network MCX Service** |
| R-7.13-001 | R-7.13-002 | R-7.13-003 | R-7.13-004 | R-7.13-005 |   |
| **7.14 Off-network recording and audit requirements** |
| R-7.14-001 |  R-7.14-001a | R-7.14-002 | R-7.14-002a |   |   |
| **7.15 Off-network UE-to-UE relay** |
| NA |   |   |   |   |   |
| **7.15.1 Private Communications** |
| R-7.15.1-001 |  R-7.15.1-002 |  R-7.15.1-003 |   |   |   |
| **7.15.2 Group Communications** |
| R-7.15.2-001 | R-7.15.2-002 |   |   |   |   |
| **7.X Off-network Ad hoc Group Communication** |
| R-7.X-001 |  |  |  |  |  |
| **8 Inter-MCX Service interworking** |
| NA |   |   |   |   |   |
| **8.1 Inter-MCX Service interworking overview** |
| NA |   |   |   |   |   |
| **8.2 Concurrent Operation of Different MCX Services** |
| NA |   |   |   |   |   |
| **8.2.1 Overview** |
| NA |   |   |   |   |   |
| **8.2.2 Requirements** |
| R-8.2.2-001 | R-8.2.2-002 | R-8.2.2-003 | R-8.2.2-004 | R-8.2.2-005 |  R-8.2.2-006 |
| R-8.2.2-007 |  |  |  |  |  |
| **8.3 Use of unsharable resources within a UE** |
| R-8.3-001 | R-8.3-002 | R-8.3-003 | R-8.3-004 | R-8.3-005 |  R-8.3-006 |
| **8.4 Single Group with multiple MCX Services** |
| NA |   |   |   |   |   |
| **8.4.1 Overview** |
| NA |   |   |   |   |   |
| **8.4.2 Requirements** |
| R-8.4.2-001 | R-8.4.2-002 | R-8.4.2-003 |  R-8.4.2-004 |  R-8.4.2-005 |   |
| **8.4.3 Compatibility of UE** |
| NA |   |   |   |   |   |
| **8.4.3.1 Advertising service capabilities required** |
| R-8.4.3.1-001 | R-8.4.3.1-002 | R-8.4.3.1-003 | R-8.4.3.1-004 |   |   |
| **8.4.3.2 Conversion between capabilities** |
| R-8.4.3.2-001 |   |   |   |   |   |
| **8.4.4 Individual permissions for service access** |
| R-8.4.4-001 |   |   |   |   |   |
| **8.4.5 Common alias and user identities or mappable** |
| R-8.4.5-001 |   |   |   |   |   |
| **8.4.6 Single location message** |
| R-8.4.6-001 | R-8.4.6-002 | R-8.4.6-003 |   |   |   |
| **8.5 Priority between services** |
| NA |   |   |   |   |   |
| **8.5.1 Overview** |
| NA |   |   |   |   |   |
| **8.5.2 Requirements** |
| R-8.5.2-001 | R-8.5.2-002 | R-8.5.2-003 | R-8.5.2-004 | R-8.5.2-005 |   |
| **9 Air Ground Air Communications** |
| NA |   |   |   |   |   |
| **9.1 Service description** |
| NA |   |   |   |   |   |
| **9.2 Requirements** |
| R-9.2-001 |   |   |   |   |   |
| **10 MCX Service in IOPS mode** |
| R-10-001 |   |   |   |   |   |

Annex C (normative):
MCCoRe Requirements for MCData

Table C.1 provides an exhaustive list of those requirements in 3GPP TS 22.280 that are applicable to MCData.

Table C.1

|  |
| --- |
| **5 MCX Service requirements common for on the network and off the network** |
| NA |  |  |  |  |  |
| **5.1 General Group Communications requirements**  |
| NA |  |  |  |  |  |
| **5.1.1 General aspects** |
| R-5.1.1-001 | R-5.1.1-002 | R-5.1.1-003 |  R-5.1.1-006 |   |   |
| **5.1.2 Group/status information** |
| NA |   |   |   |   |   |
| **5.1.3 Group configuration** |
| R-5.1.3-001 | R5.1.3-002 |   |   |   |   |
| **5.1.4 Identification** |
| R-5.1.4-001 |   |   |   |   |   |
| **5.1.5 Membership/affiliation** |
| R-5.1.5-001 | R-5.1.5-002 | R-5.1.5-003 | R-5.1.5-005 | R-5.1.5-007 | R-5.1.5-008 |
| **5.1.6 Group Communication administration** |
| NA |   |   |   |   |   |
| **5.1.7 Prioritization** |
| R-5.1.7-001 | R-5.1.7-002 |   |   |   |   |
| **5.1.8 Charging requirements for MCX Service** |
| R-5.1.8-001 | R-5.1.8-003 | R-5.1.8-004 | R-5.1.8-005 | R-5.1.8-006 | R-5.1.8-007 |
| R-5.1.8-008 | R-5.1.8-009 | R-5.1.8-010 | R-5.1.8-011 |  |   |
| **5.1.9 MCX Service Emergency Alert triggered by location** |
| R-5.1.9-001 | R-5.1.9-002 |  |  |  |  |
| **5.2 Broadcast Group** |
| NA |  |  |  |  |  |
| **5.2.1 General Broadcast Group Communication** |
| R-5.2.1-002 |   |   |   |   |   |
| **5.2.2 Group-Broadcast Group (e.g., announcement group)** |
| R-5.2.2-001 | R-5.2.2-002 | R-5.2.2-003 | R-5.2.2-004 |   |   |
| **5.2.3 User-Broadcast Group (e.g., System Communication)** |
| R-5.2.3-001 | R-5.2.3-002 |   |   |   |   |
| **5.3 Late communication entry** |
| NA |   |   |   |   |   |
| **5.4 Receiving from multiple MCX Service communications** |
| **5.4.1 Overview** |
| NA |   |   |   |   |   |
| **5.4.2 Requirements** |
| R-5.4.2-001 | R-5.4.2-004 | R-5.4.2-004A  | R-5.4.2-004B  | R-5.4.2-005 | R-5.4.2-006 |
| R-5.4.2-007 |  R-5.4.2-007a | R-5.4.2-008 | R-5.4.2-009 |  |  |
| **5.5 Private Communication** |
| NA |   |   |   |   |   |
| **5.5.1 Private Communication general requirements** |
| R-5.5.1-001 |   |   |   |   |   |
| **5.5.2 Charging requirement for MCX Service** |
| R-5.5.2-001 |  |  |  |  |  |
| **5.6 MCX Service priority requirements** |
| NA |   |   |   |   |   |
| **5.6.1 Overview** |
| NA |   |   |   |   |   |
| **5.6.2 Communication types based on priorities** |
| NA |   |   |   |   |   |
| **5.6.2.1 MCX Service Emergency and Imminent Peril general requirements** |
| NA |  |  |  |  |  |
| **5.6.2.1.1 Overview** |
| NA |  |  |  |  |  |
| **5.6.2.1.2 Requirements** |
| R-5.6.2.1.2-001 | R-5.6.2.1.2-002 | R-5.6.2.1.2-003 | R-5.6.2.1.2-004 | R-5.6.2.1.2-005 |   |
| **5.6.2.2 MCX Service Emergency Group Communication** |
| NA |   |   |   |   |   |
| **5.6.2.2.1 MCX Service Emergency Group Communication requirements** |
| R-5.6.2.2.1-001 | R-5.6.2.2.1-002 | R-5.6.2.2.1-003 | R-5.6.2.2.1-004 | R-5.6.2.2.1-005 | R-5.6.2.2.1-006 |
| R-5.6.2.2.1-007 | R-5.6.2.2.1-008 | R-5.6.2.2.1-009 | R-5.6.2.2.1-010 | R-5.6.2.2.1-011 | R-5.6.2.2.1-012 |
| R-5.6.2.2.1-013 | R-5.6.2.2.1-014 |  |  |  |  |
| **5.6.2.2.2 MCX Service Emergency Group Communication cancellation requirements** |
| R-5.6.2.2.2-001 | R-5.6.2.2.2-002 | R-5.6.2.2.2-003 | R-5.6.2.2.2-004 | R-5.6.2.2.2-005 |   |
| **5.6.2.3 MCX Service Imminent Peril Group** |
| NA |   |   |   |   |   |
| **5.6.2.3.1 MCX Service Imminent Peril Group Communication requirements** |
| R-5.6.2.3.1-001 | R-5.6.2.3.1-002 | R-5.6.2.3.1-003 | R-5.6.2.3.1-004 | R-5.6.2.3.1-005 | R-5.6.2.3.1-006 |
| R-5.6.2.3.1-007 | R-5.6.2.3.1-008 | R-5.6.2.3.1-009 |   |   |   |
| **5.6.2.3.2 MCX Service Imminent Peril Group Communications cancellation requirements** |
| R-5.6.2.3.2-001 | R-5.6.2.3.2-002 | R-5.6.2.3.2-003 | R-5.6.2.3.2-004 |   |   |
| **5.6.2.4 MCX Service Emergency Alert** |
| NA |   |   |   |   |   |
| **5.6.2.4.1 MCX Service Emergency Alert requirements** |
| R-5.6.2.4.1-001 | R-5.6.2.4.1-002 | R-5.6.2.4.1-003 | R-5.6.2.4.1-004 | R-5.6.2.4.1-004a | R-5.6.2.4.1-005 |
| R-5.6.2.4.1-006 | R-5.6.2.4.1-007 | R-5.6.2.4.1-008 | R-5.6.2.4.1-009 | R-5.6.2.4.1-010 | R-5.6.2.4.1-011 |
| R-5.6.2.4.1-012 | R-5.6.2.4.1-013 |  |  |  |  |
| **5.6.2.4.2 MCX Service Emergency Alert cancellation requirements** |
| R-5.6.2.4.2-001 | R-5.6.2.4.2-002 | R-5.6.2.4.2-003 |   |   |   |
| **5.7 MCX Service User ID** |
| R-5.7-001 | R-5.7-002 | R-5.7-003 |   |   |   |
| **5.8 MCX UE Management** |
| R-5.8-001 | R-5.8-002 |   |   |   |   |
| **5.9 MCX Service User Profile** |
| R-5.9-001 | R-5.9-002 |   |   |   |   |
| **5.9A Functional alias** |
| R-5.9a-001 | R-5.9a-001a  | R-5.9a-001b  | R-5.9a-001c  | R-5.9a-002 | R-5.9a-002a |
| R-5.9a-003 | R-5.9a-004 | R-5.9a-005 | R-5.9a-006 |  |  |
| R-5.9a-007 | R-5.9a-008 | R-5.9a-009 | R-5.9a-010 | R-5.9a-011 | R-5.9a-012 |
| R-5.9a-013 | R-5.9a-014 | R-5.9a-015 | R-5.9a-016 | R-5.9a-017 | R-5.9a-018 |
| R-5.9a-019 | R-5.9a-020 | R-5.9a-021 | R-5.9a-022 | R-5.9a-023 | R-5.9a-024 |
| R-5.9a-025 | R-5.9a-026 | R-5.9a-027 | R-5.9a-028 | R-5.9a-029 | R-5.9a-030 |
| R-5.9a-031 |  |  |  |  |  |
| **5.10 Support for multiple devices** |
| R-5.10-001 |  R-5.10-001a |  R-5.10-002 |   |   |   |
| **5.11 Location**  |
| R-5.11-001 | R-5.11-002 |  R-5.11-002a | R-5.11-003 | R-5.11-004 | R-5.11-005 |
|  R-5.11-006 | R-5.11-007 | R-5.11-008 | R-5.11-009 | R-5.11-010 | R-5.11-011 |
|  R-5.11-012 | R-5.11-013 | R-5.11-014 | R-5.11-015 |   |   |
| **5.12 Security** |
| R-5.12-001 | R-5.12-002 | R-5.12-003 | R-5.12-004 | R-5.12-005 | R-5.12-006 |
| R-5.12-007 | R-5.12-008 | R-5.12-009 | R-5.12-010 | R-5.12-011 | R-5.12-012 |
| R-5.12-013 | R-5.12-014  |   |   |   |   |
| **5.13 Media quality** |
| NA |   |   |   |   |   |
| **5.14 Relay requirements** |
| R-5.14-001 | R-5.14-002 | R-5.14-003 |  R-5.14-004 |   |   |
| **5.15 Gateway requirements** |
| R-5.15-001 |  R-5.15-002 |  R-5.15-003 |   |   |   |
| **5.16 Control and management by Mission Critical Organizations** |
| NA |   |   |   |   |   |
| **5.16.1 Overview** |
| NA |   |   |   |   |   |
| **5.16.2 General requirements** |
| R-5.16.2-001 | R-5.16.2-002 | R-5.16.2-003 | R-5.16.2-004 | R-5.16.2-005 |   |
| **5.16.3 Operational visibility for Mission Critical Organizations** |
| R-5.16.3-001 |   |   |   |   |   |
| **5.17 General administrative – groups and users** |
| R-5.17-001 | R-5.17-002 | R-5.17-003 | R-5.17-004 | R-5.17-005 | R-5.17-006 |
| R-5.17-007 | R-5.17-008 |   |   |   |   |
| **5.18 Open interfaces for MCX services** |
| NA |  |  |  |  |  |
| **5.18.1 Overview** |
| NA |  |  |  |  |  |
| **5.18.2 Requirements** |
| R-5.18.2-001 | R-5.18.2-002 | R-5.18.2-003 | R-5.18.2-004 |  |  |
| **5.19 Media forwarding** |
| NA |  |  |  |  |  |
| **5.19.1 Service description** |
| NA |  |  |  |  |  |
| **5.19.2 Requirements** |
| R-5.19.2-001 | R-5.19.2-002 | R-5.19.2-003 |  |  |  |
| **5.20 Receipt notification** |
| NA |  |  |  |  |  |
| **5.20.1 Service description** |
| NA |  |  |  |  |  |
| **5.20.2 Requirements** |
| R-5.20.2-001 |  |  |  |  |  |
| **5.21 Additional services for MCX Service communications** |
| NA |  |  |  |  |  |
| **5.21.1 Remotely initiated MCX Service communication** |
| NA |  |  |  |  |  |
| **5.21.1.1 Overview** |
| NA |  |  |  |  |  |
| **5.21.1.2 Requirements** |
| R-5.21.1.2-001 | R-5.21.1.2-002 | R-5.21.1.2-003 | R-5.21.1.2-004 |  |  |
| **5.21.2 Remotely terminated MCX Service communication** |
| NA |  |  |  |  |  |
| **5.21.2.1 Requirements** |
| R-5.21.2.1-001 |  |  |  |  |  |
| **6 MCX Service requirements specific to on-network use** |
| NA |   |   |   |   |   |
| **6.1 General administrative – groups and users** |
| R-6.1-001 | R-6.1-002 | R-6.1-003 | R-6.1-004 | R-6.1-005 |   |
| **6.2 MCX Service communications** |
| NA |   |   |   |   |   |
| **6.2.1 Notification and acknowledgement for MCX Service Group Communications** |
| R-6.2.1-001 | R-6.2.1-002 |  R-6.2.1-003 |  R-6.2.1-004 |  R-6.2.1-005 |   |
| **6.2.2 Queuing** |
| NA |   |   |   |   |   |
| **6.3 General requirements** |
| R-6.3-001 | R-6.3-002 | R-6.3-003 | R-6.3-004 |   |   |
| **6.4 General group communication** |
| NA |   |   |   |   |   |
| **6.4.1 General aspects** |
| R-6.4.1-001 |   |   |   |   |   |
| **6.4.2 Group status/information** |
| R-6.4.2-005 | R-6.4.2-001 | R-6.4.2-002 | R-6.4.2-003 | R-6.4.2-004 | R-6.4.2-006 |
| R-6.4.2-007 |   |   |   |   |   |
| **6.4.3 Identification** |
| R-6.4.3-001 | R-6.4.3-002 |   |   |   |   |
| **6.4.4 Membership/affiliation** |
| R-6.4.4-001 |  R-6.4.4-002 | R-6.4.4-003 | R-6.4.4-004 |   |   |
| **6.4.5 Membership/affiliation list** |
| R-6.4.5-001 | R-6.4.5-002 | R-6.4.5-003 | R-6.4.5-003a | R-6.4.5-004 | R-6.4.5-005 |
| R-6.4.5-006 | R-6.4.5-007 | R-6.4.5-008  |   |   |   |
| **6.4.6 Authorized user remotely changes another MCX User’s affiliated and/or Selected MCX Service Group(s)** |
| NA |   |   |   |   |   |
| **6.4.6.1 Mandatory change** |
| R-6.4.6.1-001 | R-6.4.6.1-002 | R-6.4.6.1-003 | R-6.4.6.1-004 |   |   |
| **6.4.6.2 Negotiated change** |
| R-6.4.6.2-001 | R-6.4.6.2-002 | R-6.4.6.2-003 | R-6.4.6.2-004 | R-6.4.6.2-005 | R-6.4.6.2-006 |
| **6.4.7 Prioritization** |
| R-6.4.7-001 | R-6.4.7-002 | R-6.4.7-003 | R-6.4.7-004 |   |   |
| **6.4.8 Relay requirements** |
| R-6.4.8-001 |   |   |   |   |   |
| **6.4.9 Administrative** |
| R-6.4.9-001 | R-6.4.9-004 |  R-6.4.9-006 |   |   |   |
| **6.5 Broadcast Group** |
| NA |   |   |   |   |   |
| **6.5.1 General Broadcast Group Communication** |
| NA |   |   |   |   |   |
| **6.5.2 Group-Broadcast Group (e.g., announcement group)** |
| NA |   |   |   |   |   |
| **6.5.3 User-Broadcast Group (e.g., system communication)** |
| NA |   |   |   |   |   |
| **6.6 Dynamic group management (i.e., dynamic reporting)** |
| NA |   |   |   |   |   |
| **6.6.1 General dynamic regrouping** |
| R-6.6.1-001 | R-6.6.1-002 | R-6.6.1-003 | R-6.6.1-004 | R-6.6.1-005 | R-6.6.1-006 |
| **6.6.2 Group regrouping** |
| NA |   |   |   |   |   |
| **6.6.2.1 Service description** |
| NA |   |   |   |   |   |
| **6.6.2.2 Requirements** |
| R-6.6.2.2-001 | R-6.6.2.2-002 | R-6.6.2.2-003 | R-6.6.2.2-004 | R-6.6.2.2-005 | R-6.6.2.2-006 |
| R-6.6.2.2-007 |  R-6.6.2.2-008 |  R-6.6.2.2-009 |  R-6.6.2.2-011 |  R-6.6.2.2-012 |  R-6.6.2.2-013 |
| **6.6.3 Temporary Broadcast Groups** |
| R-6.6.3-001 |  R-6.6.3-001a  | R-6.6.3-001b | R-6.6.3-002 |   |   |
| **6.6.4 User regrouping** |
| NA |   |   |   |   |   |
| **6.6.4.1 Service description** |
| NA |   |   |   |   |   |
| **6.6.4.2 Requirements** |
| R-6.6.4.2-001 | R-6.6.4.2-002 | R-6.6.4.2-002a | R-6.6.4.2-002b | R-6.6.4.2-003 | R-6.6.4.2-004 |
| R-6.6.4.2-005 |  |  |  |  |   |
| **6.6.5 Dynamic Group Participation** |
| NA |   |   |   |   |   |
| **6.6.5.1 Service description** |
| NA |   |   |   |   |   |
| **6.6.5.2 Requirements** |
| R-6.6.5.2-001 | R-6.6.5.2-002 | R-6.6.5.2-003 | R-6.6.5.2-004 | R-6.6.5.2-005 | R-6.6.5.2-006 |
| R-6.6.5.2-007 |  |  |  |  |   |
| **6.7 Private Communication** |
| NA |   |   |   |   |   |
| **6.7.1 Overview** |
| NA |   |   |   |   |   |
| **6.7.2 General requirements** |
| R-6.7.2-001 | R-6.7.2-002 | R-6.7.2-003 | R-6.7.2-004 | R-6.7.2-005 |   |
| **6.7.3 Administrative** |
| R-6.7.3-001 | R-6.7.3-002 | R-6.7.3-003 | R-6.7.3-004 | R-6.7.3-005 | R-6.7.3-006 |
| R-6.7.3-007 | R-6.7.3-007a  | R-6.7.3-008 |  |  |  |
| **6.7.4 Prioritization** |
| R-6.7.4-001 | R-6.7.4-002 | R-6.7.4-003 | R-6.7.4-004 | R-6.7.4-005 | R-6.7.4-006 |
| R-6.7.4-007 |  |  |  |  |  |
| **6.7.5 Private Communication (without Floor control) commencement requirements** |
| R-6.7.5-001 | R-6.7.5-002 | R-6.7.5-003 |   |   |   |
| **6.7.6 Private Communication (without Floor control) termination** |
| R-6.7.6-001 | R-6.7.6-002  |   |   |   |   |
| **6.8 MCX Service priority Requirements** |
| NA |   |   |   |   |   |
| **6.8.1 General** |
| R-6.8.1-001 | R-6.8.1-002 | R-6.8.1-003 | R-6.8.1-004 | R-6.8.1-005 | R-6.8.1-006 |
| R-6.8.1-007 | R-6.8.1-008 | R-6.8.1-009 | R-6.8.1-010 | R-6.8.1-011 | R-6.8.1-012 |
| R-6.8.1-013 | R-6.8.1-014 | R-6.8.1-015 | R-6.8.1-016 |   |   |
| **6.8.2 3GPP system access controls** |
| R-6.8.2-001 |   |   |   |   |   |
| **6.8.3 3GPP system admission controls** |
| R-6.8.3-001 |   |   |   |   |   |
| **6.8.4 3GPP system scheduling controls** |
| R-6.8.4-001 |   |   |   |   |   |
| **6.8.5 UE access controls** |
| R-6.8.5-001 |   |   |   |   |   |
| **6.8.6 Mobility and load Management** |
| NA |   |   |   |   |   |
| **6.8.6.1 Mission Critical mobility management according to priority** |
| R-6.8.6.1-001 | R-6.8.6.1-002 |   |   |   |   |
| **6.8.6.2 Load management** |
| R-6.8.6.2-001 | R-6.8.6.2-002 | R-6.8.6.2-003 | R-6.8.6.2-004 | R-6.8.6.2-005  |   |
| **6.8.7 Application layer priorities** |
| NA |   |   |   |   |   |
| **6.8.7.1 Overview** |
| NA |   |   |   |   |   |
| **6.8.7.2 Requirements** |
| R-6.8.7.2-001 | R-6.8.7.2-002 | R-6.8.7.2-003 | R-6.8.7.2-004 | R-6.8.7.2-005 |  R-6.8.7.2-006 |
| R-6.8.7.2-007 | R-6.8.7.2-008 | R-6.8.7.2-009 | R-6.8.7.2-010 |  |  |
| **6.8.8 Communication types based on priorities** |
| NA |   |   |   |   |   |
| **6.8.8.1 MCX Service Emergency Group Communication requirements** |
| R-6.8.8.1-001 |  R-6.8.8.1-002 |  R-6.8.8.1-003 |  R-6.8.8.1-004 |   |   |
| **6.8.8.2 MCX Service Emergency Private Communication requirements** |
| R-6.8.8.2-001 |  R-6.8.8.2-002 |  R-6.8.8.2-003 |  R-6.8.8.2-004 |   |   |
| **6.8.8.3 Imminent Peril Group Communication requirements** |
| R-6.8.8.3-001 |  R-6.8.8.3-002 |  R-6.8.8.3-003 |   |   |   |
| **6.8.8.4 MCX Service Emergency Alert** |
| NA |   |   |   |   |   |
| **6.8.8.4.1 Requirements** |
| R-6.8.8.4.1-001 | R-6.8.8.4.1-002 | R-6.8.8.4.1-003 | R-6.8.8.4.1-004 | R-6.8.8.4.1-005 | R-6.8.8.4.1-006 |
| **6.8.8.4.2 MCX Service Emergency Alert cancellation requirements** |
| R-6.8.8.4.2-001 | R-6.8.8.4.2-002 |   |   |   |   |
| **6.8.8.X Ad hoc Group Communication requirements** |
| R-6.8.8.X-001 |  |  |  |  |  |
| **6.9 IDs and aliases** |
| R-6.9-001 | R-6.9-002 | R-6.9-003 | R-6.9-004 |   |   |
| **6.10 User Profile management** |
| R-6.10-001 | R-6.10-002 | R-6.10-003 | R-6.10-004 |   |   |
| **6.11 Support for multiple devices** |
| R-6.11-001 | R-6.11-002 | R-6.11-003 |   |   |   |
| **6.12 Location** |
| R-6.12-001 | R-6.12-002 | R-6.12-003 | R-6.12-004 | R-6.12-005 | R-6.12-006 |
| R-6.12-007 |   |   |   |   |   |
| **6.13 Security**  |
| NA |   |   |   |   |   |
| **6.13.1 Overview** |
| NA |   |   |   |   |   |
| **6.13.2 Cryptographic protocols** |
| R-6.13.2-001 | R-6.13.2-002 | R-6.13.2-003 |   |   |   |
| **6.13.3 Authentication** |
| R-6.13.3-001 |   |   |   |   |   |
| **6.13.4 Access control** |
| R-6.13.4-001 | R-6.13.4-002 | R-6.13.4-003 | R-6.13.4-004 | R-6.13.4-005 | R-6.13.4-006 |
| R-6.13.4-007 | R-6.13.4-008 | R-6.13.4-009 | R-6.13.4-010 |   |   |
| **6.13.5 Regulatory issues** |
| R-6.13.5-001 |   |   |   |   |   |
| **6.13.6 Storage control** |
| R-6.13.6-001 |  |  |  |  |  |
| **6.14 Interactions for MCX Service Group Communications and MCX Service Private Communications** |
| R-6.14-001 |  R-6.14.002 |   |   |   |   |
| **6.15 Additional services for MCX Service communications** |
| NA |   |   |   |   |   |
| **6.15.1 Discreet listening capabilities** |
| R-6.15.1-001a |   R-6.15.1-001 |   R-6.15.1-002 |   R-6.15.1-003 |   R-6.15.1-004 |   |
| **6.15.2 Ambient listening** |
| NA |   |   |   |   |   |
| **6.15.2.1 Overview of ambient listening** |
| NA |   |   |   |   |   |
| **6.15.2.2 Ambient listening requirements** |
| NA |   |   |   |   |   |
| **6.15.2.2.1 General ambient listening requirements** |
| R-6.15.2.2.1-001 | R-6.15.2.2.1-002 | R-6.15.2.2.1-003 |   |   |   |
| **6.15.2.2.2 Remotely initiated ambient listening requirements** |
| R-6.15.2.2.2-001 | R-6.15.2.2.2-002 |   |   |   |   |
| **6.15.2.2.3 Locally initiated ambient listening requirements** |
| R-6.15.2.2.3-001 | R-6.15.2.2.3-002 |   |   |   |   |
| **6.15.3 Remotely initiated MCX Service communication** |
| NA |   |   |   |   |   |
| **6.15.3.1 Overview** |
| NA |   |   |   |   |   |
| **6.15.3.2 Requirements** |
| R-6.15.3.2-002 | R-6.15.3.2-001 |   |   |   |   |
| **6.15.4 Recording and audit requirements** |
| R-6.15.4-001 | R-6.15.4-002 | R-6.15.4-003 | R-6.15.4-004 | R-6.15.4-005 | R-6.15.4-006 |
| R-6.15.4-007 | R-6.15.4-008 | R-6.15.4-009 | R-6.15.4-010 | R-6.15.4-011 |   |
| **6.15.5 MCX Service Ad hoc Group Communication** |
| NA |  |  |  |  |  |
| **6.15.5.1 Overview** |
| NA |  |  |  |  |  |
| **6.15.5.2 General Aspects** |
| R-6.15.5.2-001 | R-6.15.5.2-002 | R-6.15.5.2-003 | R-6.15.5.2-004 | R-6.15.5.2-005 | R-6.15.5.2-006 |
| R-6.15.5.2-007 | R-6.15.5.2-008 | R-6.15.5.2-009 | R-6.15.5.2-010 | R-6.15.5.2-011 | R-6.15.5.2-012 |
| R-6.15.5.2-013 |  |  |  |  |  |
| **6.15.5.3 Administrative** |
| R-6.15.5.3-001 | R-6.15.5.3-002 | R-6.15.5.3-003 | R-6.15.5.3-004 | R-6.15.5.3-005 | R-6.15.5.3-006 |
| R-6.15.5.3-007 |  |  |  |  |  |
| **6.15.5.4 Notification and acknowledgement for MCX Service Ad hoc Group Communications** |
| R-6.15.5.4-001 |  |  |  |  |  |
| **6.16 Interaction with telephony services** |
| R-6.16-001 |  R-6.16-002 |   |   |   |   |
| **6.17 Interworking** |
| NA |   |   |   |   |   |
| **6.17.1 Non-3GPP access** |
| R-6.17.1-001 |   |   |   |   |   |
| **6.17.2 Interworking between MCX Service systems** |
| R-6.17.2-001 | R-6.17.2-002 | R-6.17.2-003 | R-6.17.2-004 | R-6.17.2-005 | R-6.17.2-006 |
| R-6.17.2-007 |   |   |   |   |   |
| **6.17.3**  **Interworking with non-MCX Service systems** |
| NA |   |   |   |   |   |
| **6.17.3.1 GSM-R** |
| R-6.17.3.1-001 |   |   |   |   |   |
| 6.17.3.2 External systems |
| R.6.17.3.2-001 | R.6.17.3.2-002 |  |  |  |  |
| **6.18 MCX Service coverage extension using ProSe UE-to-Network Relays** |
| R-6.18-001 | R-6.18-002 | R-6.18-003 | R-6.18-004 | R-6.18-005 | R-6.18-006 |
| **6.19 Additional MCX Service requirements** |
| NA |  |  |  |  |  |
| **6.19.1 Communication rejection and queuing** |
| NA |  |  |  |  |  |
| **6.19.1.1 Requirements** |
| R-6.19.1.1-001 | R-6.19.1.1-002 | R-6.19.1.1-003 | R-6.19.1.1-004 | R-6.19.1.1-005 | R-6.19.1.1-006 |
| R-6.19.1.1-007 |  |  |  |  |  |
| **7 MCX Service requirements specific to off-network use** |
| NA |   |   |   |   |   |
| **7.1 Off-network communications overview** |
| NA |   |   |   |   |   |
| **7.2 General off-network MCX Service requirements** |
| R-7.2-001 | R-7.2-002 | R-7.2-003 | R-7.2-004 | R-7.2-005 |   |
| **7.3 Admission control** |
| NA |   |   |   |   |   |
| **7.3.1 General aspects** |
| R-7.3.1-001 |  R-7.3.1-002 |  R-7.3.1-003 |   |   |   |
| **7.3.2 Communication initiation** |
| R-7.3.2-001 |  R-7.3.2-002 |  R-7.3.2-003 |  R-7.3.2-004 |  R-7.3.2-005 |   |
| **7.4 Communication termination** |
|  R-7.4-001 |  R-7.4-002 |  R-7.4-003 |  R-7.4-004 |   |   |
| **7.5 Broadcast Group** |
| NA |   |   |   |   |   |
| **7.6 MCX Service priority requirements** |
| R-7.6-001 | R-7.6-002 | R-7.6-003  | R-7.6-004 | R-7.6-005  | R-7.6-006  |
| R-7.6-007 | R-7.6-008 | R-7.6-009 |  |  |  |
| **7.7 Communication types based on priorities** |
| NA |   |   |   |   |   |
| **7.7.1 MCX Service Emergency Group Communication requirements** |
| NA |   |   |   |   |   |
| **7.7.2 MCX Service Emergency Group Communication cancellation requirements** |
| NA |   |   |   |   |   |
| **7.7.3 Imminent Peril Communication** |
| NA |   |   |   |   |   |
| **7.7.3.1 Imminent Peril Group Communication requirements** |
| NA |   |   |   |   |   |
| **7.7.3.2 Imminent Peril Group Communication cancellation requirements** |
| NA |   |   |   |   |   |
| **7.8 Location**  |
| R-7.8-001 |   R-7.8-002 |  R-7.8-003 |   |   |   |
| **7.9 Security**  |
| R-7.9-001 | R-7.9-002 |   |   |   |   |
| **7.10 Off-network MCX Service operations** |
| R-7.10-001 | R-7.10-002 | R-7.10-003 |   |   |   |
| **7.11 Off-network UE functionality** |
| R-7.11-001 | R-7.11-002 | R-7.11-003 |   |   |   |
| **7.12 Streaming for ProSe UE-to-UE Relay and UE-to-Network Relay** |
| NA |   |   |   |   |   |
| **7.12.1 UE-to-Network Relay for all data types** |
| R-7.12.1-001 | R-7.12.1-002 | R-7.12.1-003 | R-7.12.1-004 |   |   |
| **7.12.2 UE-to-UE Relay streaming** |
| R-7.12.2-001 | R-7.12.2-002 | R-7.12.2-003 |   |   |   |
| **7.12.3 Off-Network streaming** |
| R-7.12.3-001 | R-7.12.3-002 | R-7.12.3-003 |   |   |   |
| **7.13 Switching to off-network MCX Service** |
| R-7.13-001 | R-7.13-002 | R-7.13-003 | R-7.13-004 | R-7.13-005 |   |
| **7.14 Off-network recording and audit requirements** |
| R-7.14-001 |  R-7.14-001a |  R-7.14-002 | R-7.14-002a |   |   |
| **7.15 Off-network UE-to-UE relay** |
| NA |   |   |   |   |   |
| **7.15.1 Private Communications** |
| R-7.15.1-001 |  R-7.15.1-002 |  R-7.15.1-003 |   |   |   |
| **7.15.2 Group Communications** |
| R-7.15.2-001 | R-7.15.2-002 |   |   |   |   |
| **7.X Off-network Ad hoc Group Communication** |
| R-7.X-001 |  |  |  |  |  |
| **8 Inter-MCX Service interworking** |
| NA |   |   |   |   |   |
| **8.1 Inter-MCX Service interworking overview** |
| NA |   |   |   |   |   |
| **8.2 Concurrent operation of different MCX Services** |
| NA |   |   |   |   |   |
| **8.2.1 Overview** |
| NA |   |   |   |   |   |
| **8.2.2 Requirements** |
| R-8.2.2-001 | R-8.2.2-002 | R-8.2.2-003 | R-8.2.2-004 | R-8.2.2-005 |  R-8.2.2-006 |
| R-8.2.2-007 |  |  |  |  |  |
| **8.3 Use of unsharable resources within a UE** |
| R-8.3-001 | R-8.3-002 | R-8.3-003 | R-8.3-004 | R-8.3-005 |  R-8.3-006 |
| **8.4 Single Group with multiple MCX Services** |
| NA |   |   |   |   |   |
| **8.4.1 Overview** |
| NA |   |   |   |   |   |
| **8.4.2 Requirements** |
| R-8.4.2-001 | R-8.4.2-002 | R-8.4.2-003 |  R-8.4.2-004 |  R-8.4.2-005 |   |
| **8.4.3 Compatibility of UE** |
| NA |   |   |   |   |   |
| **8.4.3.1 Advertising service capabilities required** |
| R-8.4.3.1-001 | R-8.4.3.1-002 | R-8.4.3.1-003 | R-8.4.3.1-004 |   |   |
| **8.4.3.2 Conversion between capabilities** |
| R-8.4.3.2-001 |   |   |   |   |   |
| **8.4.4 Individual permissions for service access** |
| R-8.4.4-001 |   |   |   |   |   |
| **8.4.5 Common alias and user identities or mappable** |
| R-8.4.5-001 |   |   |   |   |   |
| **8.4.6 Single location message** |
| R-8.4.6-001 | R-8.4.6-002 | R-8.4.6-003 |   |   |   |
| **8.5 Priority between services** |
| NA |   |   |   |   |   |
| **8.5.1 Overview** |
| NA |   |   |   |   |   |
| **8.5.2 Requirements** |
| R-8.5.2-001 | R-8.5.2-002 | R-8.5.2-003 | R-8.5.2-004 | R-8.5.2-005 |   |
| **9 Air Ground Air Communications** |
| NA |   |   |   |   |   |
| **9.1 Service description** |
| NA |   |   |   |   |   |
| **9.2 Requirements** |
| R-9.2-001 |   |   |   |   |   |
| **10 MCX Service in IOPS mode** |
| R-10-001 |   |   |   |   |   |

\* \* \* End of sixth change \* \* \*

\* \* \* End of changes \* \* \*