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Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

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 - 1 presented to TSG for information;
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- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

1 Scope

The present document defines the stage 3 aspects of the architecture enhancements for broadcast TV service (see 3GPP TS 23.246 [2]).

The present document specifies:

- the requirements on the device in Receive only mode;
- the procedure for selecting a network to receive broadcast TV service; and
- the usage of the information configured in the TV service configuration.

The clause 4 applies to a device in Receive only mode only. The remaining clauses are applicable to:

- a 3GPP UE wishing to receive broadcast TV service; and
- a device in Receive only mode.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 23.246: "Multimedia Broadcast/Multicast Service (MBMS); Architecture and functional description".
- [3] 3GPP TS 24.117: "TV service configuration Management Object (MO)".
- [4] 3GPP TS 23.122: "Non-Access-Stratum (NAS) functions related to Mobile Station (MS) in idle mode".
- [5] 3GPP TS 36.304: "E-UTRAN UE procedures in idle mode".
- [6] 3GPP TS 25.304: "UE procedures in idle mode and cell reselection procedures in connected mode".
- [7] 3GPP TS 26.346: "Multimedia Broadcast/Multicast Service (MBMS); Protocols and codecs".
- [8] 3GPP TS 31.102: "Characteristics of the Universal Subscriber Identity Module (USIM) application".
- [9] 3GPP TS 23.003: "Numbering, addressing and identification".
- [10] 3GPP TS 24.008: "Mobile radio interface Layer 3 specification; Core network protocols; Stage 3".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] 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 [1].

UE in receive only mode: device capable only of receiving eMBMS broadcast on a pre-determined range of TMGIs and not capable of establishing unicast connectivity with the network. This mode operation does not require UICC or USIM.

UE in receive only mode with independent unicast: device capable of operating both as UE in receive only mode for eMBMS broadcast and as a normal UE for unicast connectivity with the network. This mode of operation requires USIM.

For the purposes of the present document, the following terms and definitions given in TS 23.246 [2] apply:

Receive Only mode

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

MO	Management object
TV	Television

4 Receive only mode

Device in Receive only mode shall:

- be able to receive MBMS broadcast as described in 3GPP TS 23.246 [2]; and
- select the network using the procedure in clause 5.

Device in Receive only mode shall not:

- initiate any signalling procedures with the network; or
- follow the PLMN selection procedures in 3GPP TS 23.122 [4], except for device in Receive only mode with independent unicast, which may perform PLMN selection procedures in 3GPP TS 23.122 [4] for the unicast connection.

NOTE 1: Because of the above requirements, device in Receive only mode does camp on a network as defined in 3GPP TS 36.304 [5] and in 3GPP TS 25.304 [6].

Device in Receive only mode may have:

- USIM with TV service configuration.

NOTE 2: The USIM does not imply the ability to follow the PLMN selection procedures in 3GPP TS 23.122 [4].

The Receive only mode is enabled in the device using implementation-specific means (e.g. factory configuration, user interface).

The requirements for support of MBMS User Service Discovery/Announcement service for Receive only mode are specified in 3GPP TS 26.346 [7].

5 Network selection procedure for broadcast TV service

In order to select a network to receive broadcast TV service, device performs the following steps:

- a) PLMN search, during which the device may use the information in the RAN information in the TV service configuration;
- b) Eliminate all PLMNs discovered in step a) that do not offer MBMS service on any of the TMGIs from the reserved TMGI range for Receive only mode. The determination of whether a PLMN offers MBMS service on TMGIs from the reserved range is based on:
 - Information configured in the TMGI List node of the TV service configuration; and
 - TMGI broadcast by the PLMN; and
- c) If there are more than one PLMN surviving the elimination in step b), select one PLMN based on implementation-specific criteria as PLMN selected for broadcast TV service.

The reserved TMGI range for Receive only mode is defined in subclause 6.3.

6 Service-related aspects

6.1 General

Broadcast TV service can be available in a PLMN. In order to receive the service, the device performs the network selection for broadcast TV service as described in clause 5 and selects the PLMN for broadcast TV service. Stage 2 requirements on this service are specified in 3GPP TS 23.246 [2] and 3GPP TS 26.346 [7].

To facilitate the discovery of the broadcast TV service, the device may support being provisioned with the TV service configuration in one or more of the following ways:

- Implementation-specific way (e.g. factory configuration);
- USIM (see EF_{TVCONFIG} file in 3GPP TS 31.102 [8]); or
- TV service configuration MO (see 3GPP TS 24.117 [3]).

NOTE: TV service configuration MO can be provisioned using e.g. Bluetooth, WLAN etc. or using unicast 3GPP connectivity for the device in Receive only mode with independent unicast (see 3GPP TS 23.246 [2]).

There is no defined prioritization among the above provisioning methods in this release of the specification.

6.2 Information provided in the TV service configuration

TV service configuration contains a list of PLMN. For each entry of the list, the following information is configured:

- PLMN ID of the PLMN for which the configuration applies;
- RAN information with EARFCN on which the broadcast TV service is available, to assist in PLMN search;
- List of TMGI on which the broadcast TV service is available, along with the associated User Service Description information for the MBMS User Service. If TMGI and User Service Description information for the MBMS User Service is configured in the TV service configuration for the selected PLMN, the UE uses the information configured therein to acquire the broadcast TV service; and
- List of TMGI on which the Service Announcement for broadcast TV service is available along with the associated User Service Description information for the MBMS User Service Announcement service. If TMGI and User Service Description information for MBMS User Service Announcement is configured in the TV

service configuration for the selected PLMN, use the information configured therein to acquire the Service Announcement for broadcast TV service.

6.3 Reserved TMGI for services for Receive only mode

6.3.1 General

Services for Receive only mode are assigned a TMGI from the range specified in this subclause.

NOTE: The structure of TMGI is specified in 3GPP TS 23.003 [9]. The encoding of the TMGI information element is specified in 3GPP TS 24.008 [10].

6.3.2 MCC/MNC

TMGI assigned to a service for Receive only mode shall have the values of MCC = 901 and MNC = 56.

6.3.3 MBMS Service ID

The four most significant bits of the MBMS Service ID assigned to a service for Receive only mode shall designate the type of service. For broadcast TV service for Receive only mode, the type of service is set to 0000. In this version of the specification, only the broadcast TV type of service is supported. The TMGI values for Receive only mode with the type of service other than 0000 are spare values.

For each type of service, 16 smallest values of the MBMS Service ID shall be used only for TMGIs associated with the Service Announcement User Service for Receive only mode.

EXAMPLE: MBMS Service ID assigned to the Service Announcement User Service for broadcast TV service is in the range between 000000H and 00000FH.

Annex A (informative): Change history

Change history							
Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
2016-11	CT1#101					Skeleton (C1-165398)	0.0.0
2016-11	CT1#101					Inclusion of C1-165399	0.1.0
2017-02	CT1#102					Inclusion of C1-171238	0.1.0
2017-02	CT-75	CP-170158				Version 1.0.0 created for presentation for information at CT plenary	1.0.0
2017-04	CT1#103					Inclusion of C1-171682	1.1.0
2017-05	CT1#104					Inclusion of C1-172440	1.2.0
2017-06	CT-76	CP-171106				Version 2.0.0 created for presentation for information at CT plenary	2.0.0
2017-06	CT-76					Version 14.0.0 created after approval at CT 76	14.0.0
2018-06	SA-80	-	-	-	-	Update to Rel-15 version (MCC)	15.0.0
2020-07	SA-88e	-	-	-	-	Update to Rel-16 version (MCC)	16.0.0
2022-03	SA-95e	-	-	-	-	Update to Rel-17 version (MCC)	17.0.0

History

Document history		
V17.0.0	April 2022	Publication