**3GPP TSG-SA1 Meeting #95e *S1-213079r3-samsung***

**Electronic Meeting, 23 August - 02 September 2021 (revision of S1-211107)**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **22.261** | **CR** | **0519** | **rev** | **2** | **Current version:** | **18.3.0** |  |
|  | | | | | | | | |
| *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 |  | Radio Access Network | **X** | Core Network | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | Update to KPIs to 5G system with satellite access for support control and/or video surveillance | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Xiaomi | | | | | | | | | |
| ***Source to TSG:*** | SA1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | SCVS | | | | |  | ***Date:*** | | | 2021-08-17 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***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 can be 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:*** | | KPIs for 5G system with satellite access for support video surveillance and control of video surveillance is missing. To support support control and/or video surveillance, we propose to add KPIs for the scenario. | | | | | | | | |
|  | |  | | | | | | | | |
| Summary of change: | | Update to KPIs for 5G system with satellite access for support video surveillance and control of video surveillance. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The services provided by 5G system with satellite access for support video surveillance and control of video surveillance cannot be supported. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4,1, 7.4.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

\* \* \* \* Begin of Changes \* \* \* \*

## 7.4 KPIs for a 5G system with satellite access

### 7.4.1 Description

Satellite access networks are based on infrastructures integrated on a minimum of satellites that can be placed in either GEO, MEO or LEO.

The propagation delay via satellite associated with these orbit ranges can be summarized in Table 7.4.1-1:

Table 7.4.1-1: Propagation delay via satellite

|  |  |  |  |
| --- | --- | --- | --- |
|  | UE to serving satellite propagation delay [ms] [NOTE 1] | | UE to ground max propagation delay [ms] [NOTE 2] |
|  | Min | Max |
| LEO | 3 | 15 | 30 |
| MEO | 27 | 43 | 90 |
| GEO | 120 | 140 | 280 |
| NOTE1: The serving satellite provides the satellite radio link to the UE  NOTE2: delay between UE and ground station via satellite link; Inter satellite links are not considered | | | |

### 7.4.2 Requirements

A 5G system providing service with satellite access shall be able to support GEO based satellite access with up to 285 ms end-to-end latency.

NOTE 1: 5 ms network latency is assumed and added to satellite one-way delay.

A 5G system providing service with satellite access shall be able to support MEO based satellite access with up to 95 ms end-to-end latency.

NOTE 2: 5 ms network latency is assumed and added to satellite one-way delay.

A 5G system providing service with satellite access shall be able to support LEO based satellite access with up to 35 ms end-to-end latency.

NOTE 3: 5 ms network latency is assumed and added to satellite one-way delay.

A 5G system shall support negotiation on quality of service taking into account latency penalty to optimise the QoE for UE.

The 5G system with satellite access shall support high uplink data rates for 5G satellite UEs.

The 5G system with satellite access shall support high downlink data rates for 5G satellite UEs.

The 5G system with satellite access shall support communication service availabilities of at least 99,99%.

Table 7.4.2-1: Performance requirements for satellite access

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Scenario | Experienced data rate (DL) | Experienced data rate (UL) | Area traffic capacity  (DL)  (note 1) | Area traffic capacity  (UL)  (note 1) | Overall user density | Activity factor | UE speed | UE type |
| Pedestrian  (note 2) | [1] Mbit/s | [100] kbit/s | 1,5 Mbit/s/km2 | 150 kbit/s/km2 | [100]/km2 | [1,5] % | Pedestrian | Handheld |
| Public safety | [3,5] Mbit/ss | [3,5] Mbit/s | TBD | TBD | TBD | N/A | 100 km/h | Handheld |
| Vehicular connectivity  (note 3) | 50 Mbit/s | 25 Mbit/s | TBD | TBD | TBD | 50 % | Up to 250 km/h | Vehicle mounted |
| Airplanes connectivity  (note 4) | 360 Mbit/s/ plane | 180 Mbit/s/ plane | TBD | TBD | TBD | N/A | Up to 1000 km/h | Airplane mounted |
| Stationary | 50 Mbit/s | 25 Mbit/s | TBD | TBD | TBD | N/A | Stationary | Building mounted |
| Video surveillance and/or monitoring  (note 4b) | [0,5] Mbit/s | [3] Mbit/s | TBD | TBD | TBD | N/A | Up to 120km/h or  stationary  (note 4a) | Vehicle mounted or fixed installation |
| Narrowband IoT connectivity | [2] kbit/s | [10] kbit/s | 8 kbit/s/km2 | 40 kbit/s/km2 | [400]/km2 | [1] % | [Up to 100 km/h] | IoT |
| Note 1: Area capacity is averaged over a satellite beam.  Note 2: Data rates based on Extreme long-range coverage target values in clause 6.17.2. User density based on rural area in Table 7.1-1.  Note 3: Based on Table 7.1-1  Note 4: Based on an assumption of 120 users per plane 15/7.5 Mbit/s data rate and 20 % activity factor per user  Note 4a: Up to 120km/h applies to Vehicle mouted while Stationary applies to fixed installation.  Note 4b: Refer to video surveillance data transmitted (in UL) from a UE (e.g. picture or video from a camera or monitoring device on the ground) using satellite NG-RAN to connect to 5GC, and video surveillance-related configuration or control data sent (in DL) to the UE/device. May apply also to scenarios involving remote monitoring and control of IoT devices, requiring relatively higher UL data rate for reporting monitored data.  Note 5: All the values in this table are targeted values and not strict requirements.  Note 6: Performance requirements for all the values in this table should be analyzed independently for each scenario. | | | | | | | | |

\* \* \* \* End of Changes \* \* \* \*