3GPP TSG RAN Meeting #93e
Electronic Meeting, Sept 13- Sept 17, 2021

RP-212395

ZTE
Tomorrow never waits

Source: ZTE, Sanechips
Agenda: 9.0.2

Support of UAV for 5G Advanced

Motivation on NR-UAV

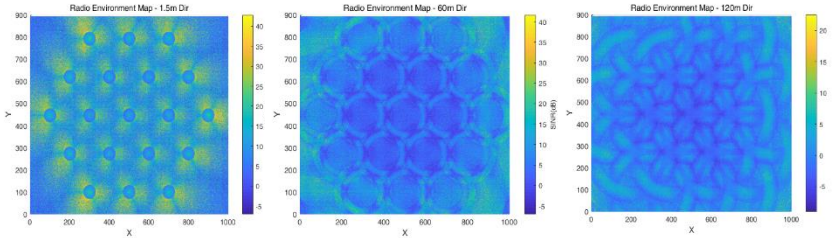
- Cellular enabled UAV(drone) is beneficial for various application, e.g.,:
  - Personal entertainment for flight experience
  - Surveillance/Cargo delivery,
  - Drone-based gNB/Relay for on-demand communication
  - Platoon communication

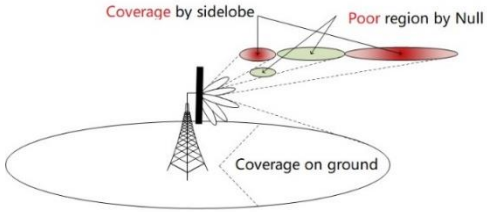
which is already specified for LTE and more tighter requirement including SA's needs should be considered to enabling the vertical usage in NR:

Application	**Coverage type**	**Throughputs requirements**		**Latency**		**Positioning**	**Region**
		DL	UL	Control	Data		
logistics	seamless coverage with altitude below 100 m	300Kpbs	25Mbps	<20ms	<200ms	<0.5m	Urban/Suburban/Rural
Agriculture	fixed region with altitude below 200 m	300Kbps	30~120 Mbps	<20ms	<200ms	<0.1m	Rural
Monitoring /Surveillance	fixed region or predefined route with altitude below 100 m	600Kbps	30~120 Mbps	<20ms	<200ms	<0.5 m	Rural/Urban

Identified issues for NR-UAV

- For achieving the target, followings issues should be addressed in NR:
  - UAV identification and control, e.g.,
    - Lawful interception
    - Flight path control
    - Access restriction for network
    - UE-ID broadcast via sidelink
  - DL enhancement to ensure continuous service, e.g.,
    - Enhancement on the mobility including measurement and reporting
    - Optimization on the beam management, especially with consideration on the high mobility over vertical domain
    - Interference management for platoon communication





Objectives for NR-UAV for 5G Advanced

- Specify the following enhancement with taking LTE-based solution as baseline
  - Enhancement on report for mobility [RAN2]
    - Report mechanisms, e.g., new event to reduce the report overhead.
    - Reporting of UE's heights, location information and flight path plan.
  - Signalling to support subscription-based aerial UE identification [RAN2/RAN3/SA2]
- Specify the following enhancement for security purpose:
  - Enhancements on access control, e.g., regulation indication [RAN2, SA2]
  - UE identification over PC5 [RAN2,SA2]
- Study and specify if needed [RAN1]
  - Beam management enhancement
  - Interference evaluation for platoon communication, e.g., sidelink vs Uu

Thanks

Tomorrow never waits