3GPP TSG RAN R19 Workshop
Taipei, Taiwan – June 15th-16th, 2023

RWS-230110
Agenda Item 5

[RAN-led] Study on complementary reuse of terrestrial spectrum in satellite deployments

[SI]

MediaTek Inc., Gatehouse Satcom, Novamint, Rakuten Mobile, Telstra

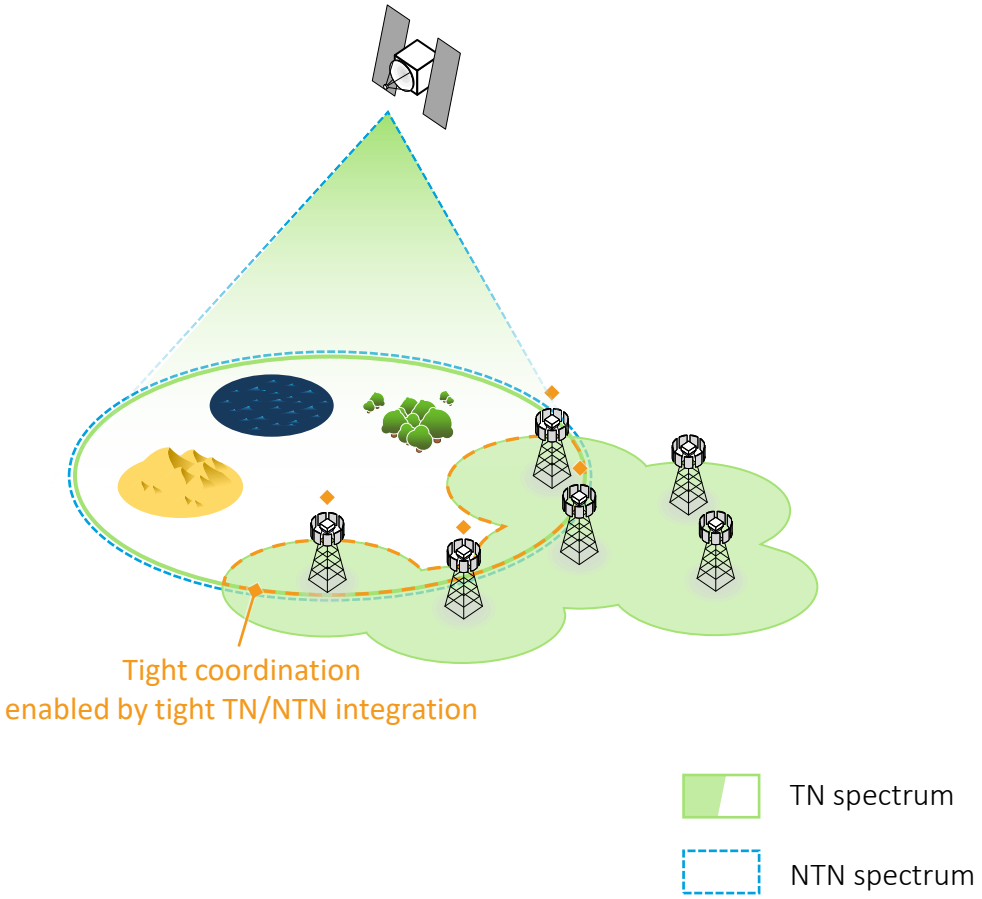
Motivation
Problem Statement

[1/2]

- With the convergence of terrestrial and satellite technologies under a common platform, industry stakeholders have become open to the possibility to allow spectrum allocated for *terrestrial use* to be used in a supplementary manner by satellite deployments in the same country (see [1]).
- With LTE/NR catering for both terrestrial and satellite access, and with technical expertise across both deployment domains, 3GPP is in a unique position to identify:
  - How *terrestrial* spectrum could be reused in a complementary manner for satellite deployments
  - The potential opportunities and challenges to enable this type of spectrally converged operation, and possible techniques to overcome any challenges and enhance the converged connectivity experience.
- Therefore, we propose a RAN Plenary-led Study Item to take a first step in *transparently* investigating and documenting the above.

Motivation

- Reuse of TN spectrum in NTN deployments allows
  - **Growth of the NTN ecosystem** through increasing the spectrum capacity available for NTN users
  - **Adding value to TN and NTN stakeholders** as well as to **end users** e.g. consumers, verticals, etc. by
    - Allowing **TN operators to *fully* exploit their spectrum** assets in areas where traditional TN deployment is otherwise not cost-effective
    - **Augmenting the service availability and QoE over NTN** via higher capacity (i.e. NTN spectrum and TN spectrum)



Proposal

We propose a RAN-led study of the possibility to reuse *terrestrial* spectrum in Satellite deployments in a complementary manner, *in geographical areas where terrestrial connectivity for this spectrum is not available,* with initial focus on FR1 spectrum, covering the following aspects [RAN]:

1) Outline the current regulatory status & ongoing activities [RAN]
2) Identify the relevant operating scenarios, technical benefits and challenges [RAN]
3) Highlight any potential techniques that may assist such operation [RAN]

The output of the study is to be documented in a TSG-RAN level Technical Report, with any more detailed technical work being addressed in a further WG study item.

Expected TU

	2024												2025 [Calendar TBC at the time of writing]												2026		
	Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4			Q1		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
RAN			**103**			**104**			**105**			**106**			**107**			**108**			**109**			**110**			**111**
R1	115b	116		116b	117			118		118b	119		119b	120		120b	121			122		122b	123		123b	124	
R2	124b	125		125b	126			127		127b	128		128b	129		129b	130			131		131b	132				
R3	122b	123		123b	124			125		125b	126		126b	127		127b	128			129		129b	130				
R4	109b	110		110b	111			112		112b	113		113b	114		114b	115			116		116b	117		117b	118	
R1		N/A		N/A	N/A			N/A		N/A	N/A			N/A		N/A	N/A										
R2				N/A	N/A			N/A		N/A	N/A			N/A		N/A	N/A			N/A							
R3				N/A	N/A			N/A		N/A	N/A			N/A		N/A	N/A			N/A							
R4 RD				N/A	N/A			N/A		N/A	N/A			N/A		N/A	N/A			N/A							
R4 RF				N/A	N/A			N/A		N/A	N/A			N/A		N/A	N/A			N/A							

RAN4 Core

RAN4 Perf

Study TU

Feature TU

References

[1] FCC 23-22: NOTICE OF PROPOSED RULEMAKING, FCC, March 17, 2023 (Link)