27 January 2026

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Subject: National Radio Frequency Plan Public Hearings

Viasat wishes to commend the Authority on the successful conduct of the public hearings on the National Radio Frequency Plan held on 15 January 2025. Viasat would also like to express its appreciation for the Authority's constructive engagement on key national spectrum management matters, in particular ensuring interference protection of L-band Mobile Satellite Services (MSS) operating above 1518 MHz. We value the Authority's considered approach in seeking to fully understand the technical complexities, operational constraints, and safety-of-life considerations associated with this critical spectrum allocation.

During the hearings, the Authority posed several focused questions to Viasat to enhance its understanding of the coexistence challenges of International Mobile Telecommunications (IMT) systems with MSS operations. In particular, the Authority requested clarification on:

1. the ITU Reports and Recommendations applicable to IMT/MSS coexistence arrangements;
2. the technical evidence underpinning the proposal to limit IMT deployment to frequencies up to1492 MHz
3. Viasat's views on the implementation of exclusion zones around airports and seaports; and
4. Viasat's willingness to support IMT/MSS coexistence studies.

We are pleased to respond to the first three questions in Annexure A. Regarding question four on collaborative coexistence studies, Viasat confirms its willingness to support such initiatives actively. We believe that rigorous, evidence-based technical studies conducted in collaboration with the Authority would provide valuable insights for sound spectrum management decisions. Viasat stands ready to contribute our technical expertise to any such studies the Authority may wish to undertake.

Viasat remains committed to working collaboratively with the Authority to support effective coexistence between terrestrial and non-terrestrial networks, while ensuring interference-free operation MSS services, including incumbent safety-of-life and mission-critical applications

We look forward to continued and constructive engagement on this matter.

Yours Sincerely,

NRNaidoo

Dr. Nigel Naidoo

Senior Director: Regulatory and Market Access, Africa

Annexure A

1. ITU Reports and Recommendations applicable to IMT/MSS coexistence arrangements

The following documents were developed in response to **Resolution 223 (Rev.WRC-19),** which invited the ITU-R to conduct compatibility studies following the identification of the 1427-1518 MHz band for IMT use:

- ITU-R Report M.2529-0 (September 2023): "Adjacent band compatibility studies of IMT systems in the mobile service in the band 1492-1518 MHz with respect to systems in the mobile-satellite service in the frequency band 1518-1525 MHz."
- ITU-R Recommendation M.2159-0 (December 2023): "Technical and regulatory measures to provide compatibility between international mobile telecommunications and mobile-satellite services with respect to mobile-satellite services operations in the frequency band 1518-1525 MHz."

Viasat wishes to highlight that that ITU-R Recommendation M.2159-0 provides several alternative measures for mitigating IMT interference to MSS, including significant guard bands within IMT spectrum bands to address MES receiver blocking, IMT base station EIRP reduction, and IMT base station power flux density limits. The selection of any specific mitigation approach should be informed by national IMT/MSS coexistence and compatibility studies.

2. The technical evidence underpinning the proposal to limit IMT deployment to frequencies below 1492 MHz;

Viasat's proposal to implement IMT only up to 1492 MHz is based on the outcome of tests conducted on current MSS terminals in the laboratory. Table A4-2 of ITU-R Report M.2529, to which Viasat contributed, documents the blocking (overload) performance of currently deployed land-portable Mobile Earth Stations (MESs) operating above 1 518 MHz, based on measured performance data from equipment in operational use.

The blocking values represent the maximum interference signal levels (dBm/5 MHz) that MES receivers can tolerate from an IMT base station operating below 1 518 MHz, as a function of the frequency offset (guard band) between the two services. As shown in Table A4-2, MES blocking tolerance improves with increasing offset due to receiver filtering characteristics, reaching approximately -41 dBm/5 MHz at a 16 MHz offset. These values reflect the real-world

blocking resilience of both existing land MES terminals deployed in the field and 3GPP based terminals that are under development.

Under the current CEPT compatibility framework, the assumed blocking interference from an IMT base station into an MES receiver is -30 dBm/5 MHz, which does not account for large numbers of deployed MES that cannot achieve this blocking performance with minimal frequency separation. A comparison with the measured data presented in Table A4-2 demonstrates that a 16 MHz guard band is insufficient, as existing MESs cannot tolerate a –30 dBm blocking signal at this offset. As illustrated in Figure 1, there is an approximately linear relationship between blocking tolerance and frequency offset. Extrapolation of this relationship indicates that a frequency separation of approximately 26 MHz would be required for MESs to tolerate a –30 dBm blocking signal. This finding demonstrates that IMT deployment must be limited to frequencies below 1492 MHz to ensure adequate protection of both existing land MESs and 3GPP-based terminals under development from blocking interference.

Table A4-2: Current land portable MES blocking performance at different frequency offsets

Frequency offset	0 MHz Offset	1 MHz Offset	3 MHz Offset	6 MHz Offset	8 MHz Offset	11 MHz Offset	16 MHz Offset
Blocking (dBm/5 MHz)	−63	−63	−60	−56	−53	−49	−41

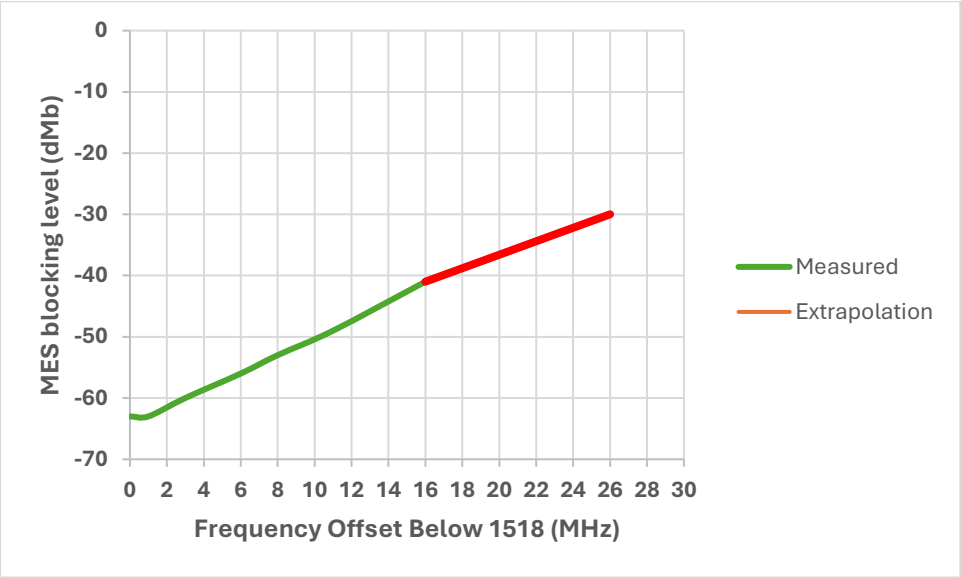

Figure 1: MES Blocking Performance vs Guard band

3. Viasat's views on the implementation of exclusion zones around airports and seaports

Viasat maintains that coexistence between MSS land, maritime, and aeronautical terminals and adjacent-band IMT systems is best achieved through the implementation of an adequate guard band, and not by exclusion zones. Among other things, existing MSS terminals are already used outside the vicinity of airports and seaports, and this will be the case even more so with new 3GPP-based MSS terminals that will be deployed even more widely. Moreover, any considerations regarding exclusion zones around airports and seaports should be guided by the Option A, Phase 1 parameters in Annex 3 of ITU-R Recommendation M.2159-0, which specifies additional technical requirements for IMT base stations to ensure compatibility with ship and aircraft earth stations.

Viasat stresses the critical importance of protecting MSS terminals that support safety-of-life services, whilst enabling the envisaged ubiquitous deployment advanced MSS services. As noted above, existing MSS terminals are already used outside the vicinity of airports and seaports, and this will be the case even more so with new 3GPP-based MSS terminals that will be deployed even more widely. For this reason, any exclusion zones around seaports and airports do not appear to be a feasible solution.

Should the Authority consider a transition to Phase 2 in the future, Viasat would encourage the Authority to take into account the guidance provided in Annex 2 of the Recommendation, which states:

> *"Administrations may wish to plan for the transition from Phase 1 to Phase 2 limits for land, maritime, and aeronautical MES terminals, considering different equipment replacement cycles for those categories. Administrations may consult with international and national aeronautical and maritime agencies, the airlines, the mobile industry, and other relevant organisations to establish conditions and time schedules as appropriate."*

This text underscores that any transition to Phase 2 must be approached cautiously, as 3GPP based terminals under development will face the same level of blocking interference as existing MES terminals.