

# Air Force Test Center

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## Air Force Ranges Spectrum Issues and Action Plans

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*Integrity ★ Service ★ Excellence*



- **Current realities:**
    - **Spectrum congestion**
    - **Commercial encroachment**
    - **Fiscal incentives**
  - **Air Force Test Ranges have challenges but we are working hard to address them**
  - **Efficient use of spectrum is key to the future**
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# Realities

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- **50 Billion things connected to the internet by 2020**
  - **Domestic and international Threats. Lots of \$ involved**
  - **Increasing amounts of data collected onboard system and analyzed post-test**
  - **We have already lost 35% of dedicated TM spectrum – and our demand has increased**
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# AF Test Ranges Challenges

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- **AWS-3 (1755-1780 MHz) transition – manpower and schedule challenges**
- **Fielding new spectral efficient and flexible technologies at AF T&E Ranges concurrently with Army and Navy T&E Ranges.**
- **Missions not scheduled , “almost” scheduled, or scheduled and not flown**
  - **Standby / modified /**
  - **Missions Link issues / Interference**



# AF Test Ranges Challenges, con't

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- **Domestic Issues**

- Future Auctions,
- Threats to 5091/5150MHz, and to 2360-2390MHz,
- Opening shared C-Band to AMT\_(4400-4940, 5925-6700)

- **International Issues**

- Already re-allocated AMT's Lower L-Band (1435-1525MHz) to IMT (Int'l Mobile Telecommunications ) everywhere except US
- IMT use by Canada and Mexico of concern to AFTC, but will be addressed in bi-lateral negotiations with AMT having priority per ITU Radio Regulation.

- **Other Range Challenges**

- Wind turbines encroachments
  - Cybersecurity and Range Operations
  - Sustaining Technical Expertise
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# AF Test Ranges plans/actions

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- **Aggressively vacating AWS-3 spectrum**
- **Have been working toward efficiency for over 20 years**
  - **Develop improvements to telemetry systems (Multi-band, Modulation, Coding)**
  - **Share spectrum / Dynamically allocate frequencies**
  - **Networked telemetry (iNET, etc....)**
  - **Use of non-traditional portions of the EMS spectrum (e.g. C-band, Ka/Ku-Band) and Free Space Optics to augment RF systems**



# Other worries

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- **Interoperability among all Ranges as we all switch to new systems**
  - **Increased Weapon System Complexity and Reductions in Available RF Spectrum Limit the Amount and Types of T&E Missions a Range Can Support**
  - **Networked systems, swarming and autonomous weapons big players of the future**
  - **Effects of solar farms, UAVs proliferation, new policies...**
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# Conclusions

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- **The Air Force Test and Evaluation communities have persistent spectrum issues**
- **These issues increase every year**
- **An awesome AF team is working to meet these issues head on to achieve:**
  - **Efficiency**
  - **Agility**
  - **Interoperability**



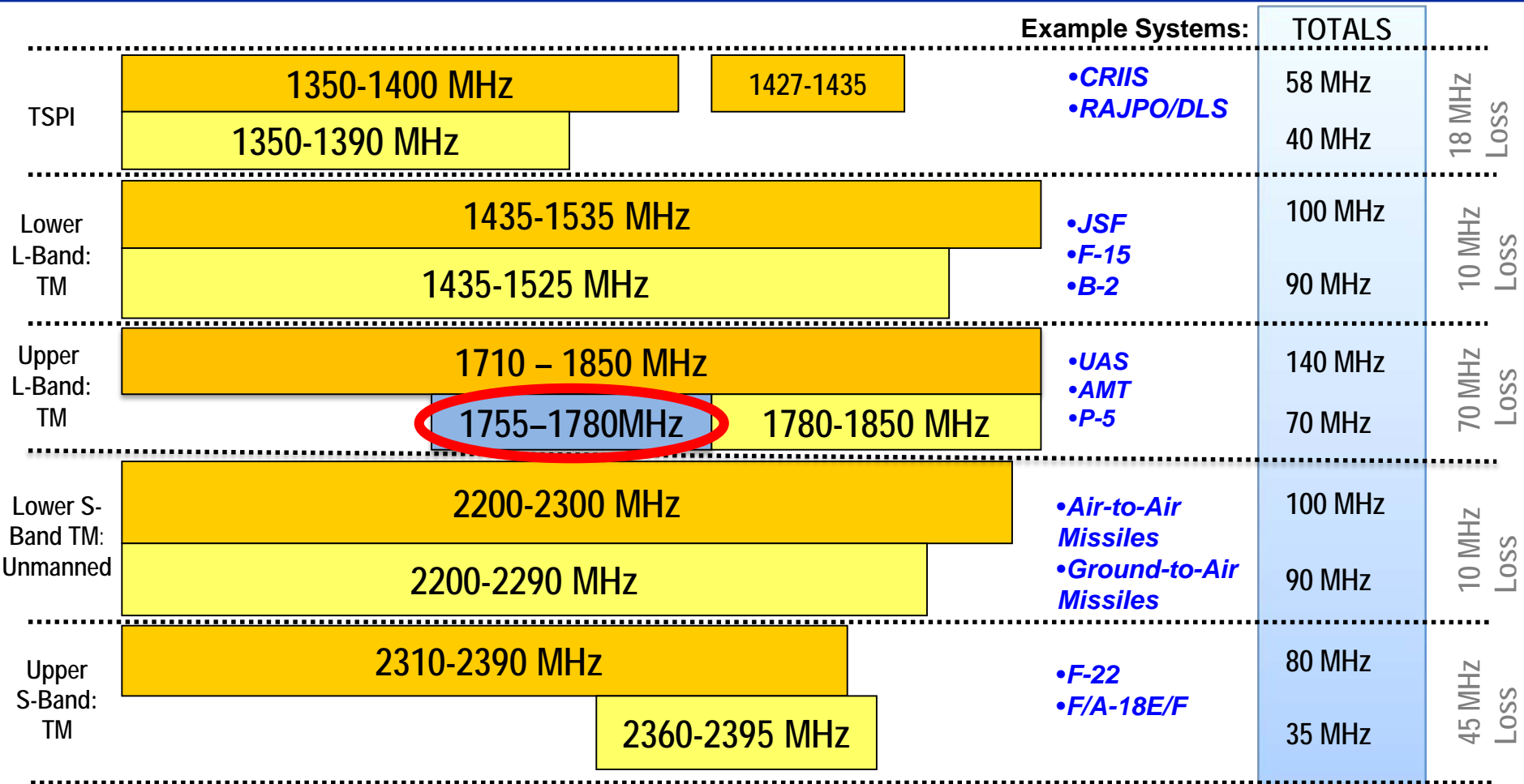
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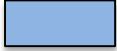
# BACKUPS



# AWS-3 Spectrum Auction (1750-1780 MHz)

## T&E RF Spectrum Allocations – TSPI, L-Band, S-Band



 Historic RF Spectrum Allocations  
 Current RF Spectrum Allocations  
 AWS-3 Spectrum Loss 2014; To Be Vacated NLT 2Q FY26

TSPI: Time, Space, Position Information  
 TM: Telemetry

325 MHz Available

153 MHz Lost (32% Reduction)