Monitoring GNSS RF Interference

NM User Forum, Monitoring CNS Infrastructure Performance

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GNSS RFI as detected by Airbus Aircraft

- Post-OPS Monitoring from participating aircraft operators
- 1 JAN 2021 to 31 DEC 2021
- RFI continues despite reduced pilot reports
- Provided by Airbus through Skywise

- Can affect around 38% of European Network Traffic
- Affects major Europe to Middle-East and Asia Routes
- Measurably increases ATC and pilot workload
- Decreases aviation safety
- Requires retention of terrestrial systems

This picture matches EVAIR Pilot Reports and has been “stable” since 2018!
Observations from a Recent RFI Case

• End March 2021, 40W Anti-Paparazzi Drone Jammer on a Private Yacht
  • Jammer accidentally turned on by maintenance personnel, Southwest NL
  • Impacting air traffic in Netherlands, Belgium, France and MUAC for a few hours

• Core European airspace with climbing and descending traffic from some major airports
  • Info on affected flights could be quite critical, while large majority of flights sees no impact

ADS-B Gaps: 93 aircraft impacted, Multiple aircraft per sector
Status and Plans

• GNSS RFI is unfortunately the most relevant operational problem today
  • Pilot reporting through EVAIR
    • A number of safety issues are being followed up and discussed with EASA and aircraft manufacturers
    • Aircraft manufacturers issuing detailed guidance to operator on GNSS RFI Impact
  • Post-OPS analysis using additional sources (e.g. ADS-B, Airbus) to confirm RFI
    • Ground-based monitoring can help but has very limited visibility of aircraft impact
  • GNSS RFI normally at the level of “operational nuisance”
    • Want to implement near real-time monitoring to detect if and when it becomes safety relevant
    • Part of mitigation is detection and geolocation of RFI Source

• Best place to detect GNSS RFI is at the aircraft GNSS receiver
  • Can be done today using ADS-B but requires interpretation
  • Normally not an issue for aircraft or ATC unless combined with some other CNS issue

• Developing Future Capabilities
  • Near Real Time “GNSS Weather” Monitor for ANSP System Monitoring and Control (SMC) and aircraft operators using NM B2B interface?