GPS Innovation Alliance

EU Radio Equipment Directive (RED) Regulation of Receiver Performance, In Our View, -- Is *NOT* a PTA Model for Anti-jam/spoof Resilience for The United States

GPSIA Presentation

To

PNT AB Meeting

In

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Problem: *If unaddressed by National GNSS Operators And Stakeholders*

RED implementation can be read as imposing a regulatory framework for terrestrial broadband (that potentially overrides international spectrum allocations) in RED equipment standards where European regulators decide receiver performance possibly worldwide. This could cause harmful interference, if interference levels are imposed in commercial receiver design that allow the noise floor to rise for all GNSS Stakeholders.

- ***The RED GNSS Receiver Standard (EN 303 413, OJEU 12/2017) is based on international protection criteria of 1 dB C/No and protects GNSS users, but EC seeks revision to use another criteria or ETSI must justify non-applicability***

Problem results from the following combined effect:

1) **EU Radio Equipment Directive (RED)** – Typically, a radio directive includes minimum market entry requirements for placing radio equipment on the EU market; RED removes "allocated spectrum" from essential requirement for harmful interference (Art. 3.2) in former Directive (R&TTE) & adds "efficient use" (sharing)
2) **EC Mandate 536** – Mandates standards bodies (ETSI) to write RED harmonized standards; can be read as atypically *introducing spectrum use policy for the European terrestrial broadband regulatory framework* in a minimum market entry requirement, by *modifying RED Art. 3.2 on harmful interference,* to regulate incumbent receiver performance. Creates mandate for "interference mitigation and sharing techniques" as means to RED's "efficient use of spectrum"
3) **ETSI Guide 203 336** – A *voluntary* guide for writing RED harmonized standards (under EC M/536) lists only "classical" terrestrial, channelized radiocommunication receiver parameters that the EC RED assessors *require* in harmonized standards to regulate receiver performance. CEPT ECC reports can impose incumbent receiver interference levels in RED harmonized standards from new entrant operations in adjacent or in-band (sharing).
4) **ECC Coexistence Studies *under M/536***, e.g., Reports 263/299 – Demonstrates incompatibility of new IMT service with incumbent MSS service; ECC Report 263 imposes an OOBE emission limit of -30 dBm/MHz in MSS band (1525-1559 MHz) for future MES without compatibility analysis of the adjacent RNSS band (1559-1610 MHz).

ETSI Guide 203 336 Is Under Revision
Lists Only "Classical" Receiver Parameters; Now Adds "Non-Classical" For UWB Only

ETSI rationale for revision is "[T]o provide guidance for technologies in EG 203 336 for which [original] EG 203 336 might not be sufficient"

- ***Because EC RED assessors of ETSI RED harmonized standards prescriptively use only "classical" terrestrial commercial radiocommunication receiver parameters***

In practice, regulating receivers using one size fits all parameters to "level the playing field" achieves the opposite result (i.e., creates advantage for new entrant at incumbent's disadvantage)

- One Administration**,** sponsor of EG 203 336 – opposes revision and objects to consideration of GNSS as "non-classical" commenting:
  - "[C]learly the intention is to try to build in a kind of 'get out clause' for GNSS in the guide."
  - "The bottom line is if something is required, it's required by everyone. We need to have a level playing field."
  - Also sponsored in parallel, *ETSI Technical Specification (TS) 103-567, "Baseline Parameters for non-classical receivers"* for Short Range Devices (SRDs) using Ultra-wideband (UWB); includes 2 parameters:
    - Receiver baseline sensitivity (RBS); receiver baseline resilience (RBR)
      - RBS and RBR could effectively impose in-band interference levels (potentially regulating incumbent receiver sensitivity)
  - A European company, co-sponsor**,** seeks to include ETSI TS 103-567, in ETSI Guide 203 336 as an informative reference

Problem: Mandated Standards, Set By Regulators, Could Potentially Slow Innovation

"Mandated standards, if set by FCC or NTIA, could potentially slow innovation"

United States Government Accounting Office (GAO) Report to Congressional Committees, February 2013, "Spectrum Management: Further Consideration of Options To Improve Receiver Performance"

Regulation of receiver performance in RED Harmonized Standards under EC Mandate/536 and use of "classical" receiver parameters from ETSI Guide 203 336 can result in a burden on innovation as reflected in the following paraphrased general observations in ETSI:

- The EC goal appears to seek bullet proof harmonized standards to avoid future cases in the European Court of Justice.
- Previously harmonized standards allowed market access under the EU policy of removing unnecessary burden to industry. And the past use of ETSI generic standards encouraged innovation. In creating a burden for industries to access the EU market, the RED is achieving the opposite.
- ETSI Technical Committees are having difficulty in understanding the RED assessment process. For example, the EC is rejecting Harmonised Standards that were identified as compliant (from EC Consultants review) before submission.

Urgent Action

- Recommend USG GPS/GNSS Stakeholder engage with EU, EU Member States, EC at decision level to ensure continued availability of the worldwide GPS/GNSS spectrum environment to support your mission(s):

  - *Space Council (USAF Space; DOD Space):* if unaddressed, Europe would effectively assert unilateral regulation over GPS/GNSS spectrum environment in a manner that could undermine the global harmonized spectrum allocation and interoperability

  - *DoT/FAA:* if unaddressed, current RED implementation to regulate commercial and consumer receivers in RED harmonized standards developed under M/536, Could raise the noise floor, including in restricted RNSS bands, for all stakeholders (e.g. aviation and marine safety of life).

  - *Commerce/USTR/State:* if unaddressed, current approach to RED implementation would effectively unilaterally regulate GPS/GNSS receiver performance and design—not to support user-driven GPS/GNSS innovation—

- Recommend to seek timely EU, EU Member States EC support for EC assessor to
  - Retain EN 303 413 version 1.1.1 (cited OJEU 12/2017) or
  - Cite the current WG SES SCN revision of EN 303 413 (ETSI REN SES 00445) with Annex F in the OJEU

- Recommend European Commission revision of “Commission Implementing Decision 2018/661” that implements -30 dBm/MHz OOBE in the MSS L-band (1525 MHz-1610 MHz) to introduce protection of GNSS use in the RNSS L-band (1559-1610 MHz)