

***International Committee on GNSS (ICG)
Working Group - Systems, Signals and Services
Compatibility and Spectrum Sub-Group Report***

Bangalore, India

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*Takahiro MITOME (Japan), Dominic HAYES (EC)
Co-Chairs of Compatibility and Spectrum Sub-Group*

Objectives of Compatibility and Spectrum Sub-Group

- Compatibility issues and information sharing regarding the protection of GNSS spectrum from interference from other radio services, as well as IDM issues;
- Document agreed results in the form of findings, reports, or whatever form may be appropriate for the case;
- Provide proposals to WG-S on compatibility issues, for discussion and decision.

ICG-10 Recommendation #1: Campaign on Protection of RNSS Operations

- The Fourth RNSS spectrum protection seminar was held during UN GNSS Workshop in June 2019 in Fiji.
- This seminar audience had diverse backgrounds, different from those from the past seminars held in December 2015 in Austria, December 2016 in Nepal, and March 2018 in Argentina. As such the importance of RNSS spectrum protection was more broadly disseminated.
- Thus, ICG's outreach that aims to inform decision makers about the importance of GNSS spectrum protection is being successfully conducted.
- The sub-group agreed to continue this activity and also discussed preparation of a summary report of the seminars for wider distribution.

ICG-10 Recommendation #1: Campaign on Protection of RNSS Operations

- Material from the June 2019 GNSS Workshop can be found here:
 - *http://www.unoosa.org/oosa/en/ourwork/psa/schedule/2019/2019-workshop-IDM_-presentations.html*
- The Spectrum Seminar topics include;
 - Fundamentals of GNSS
 - Interference Threats
 - Interference and Spectrum Management
 - Current Interference Challenges; Jammers, Adjacent Band Compatibility
- **The Expert Team is considering capturing the presentation material in a booklet**

GNSS Interference Detection

Devise-Based GNSS Interference Detection - Crowded Source

- The sub-group discussed the use of raw data from GNSS chipsets which is now accessible on Android devices (still unclear on Apple devices)
- The sub-group was also informed about the EU's work to promote this capability - GNSS raw measurement task force.
- The sub-group discussed other possible raw data outputs that would improve capabilities and ways to encourage manufacturers to make them available
- In response to Rec. 12S-2, the sub-group also discussed ways such raw GNSS data might be used to benefit national interference detection systems

RFI Downlink – ADS-B

- The sub-group discussed the Eurocontrol's trial for RFI downlink using ADS-B to report the RFI incidence.
- The sub-group recognized Eurocontrol is welcoming possible cooperation with other entities, expecting synergies between aviation and non-aviation efforts.

Testing Approval Public Notification

- The sub-group received a presentation titled “GPS Interference Test Approval Process”.
- The sub-group agreed to consider the proposed draft ICG Recommendation “Testing Approval Public Notification”
- To review this proposed ICG Recommendation, each provider should provide how this proposed process will work in their countries, in particular regarding interagency discussion framework, treatment of testing activities and involvement of telecommunication administration.
- The sub-group also discussed that non ICG members (countries which do not have GNSS providers) may be difficult to implement this proposed process. Thus, the details of the draft ICG Recommendation should be reviewed further.

8th IDM Workshop Topics

- 8th IDM Workshop was held on 14 May 2019 in Baska, Croatia and discussed the following presentations;
 - Development and Operation of a GPS Jammer Localization System at Incheon International Airport
 - Measurement Test of Purchased Radio Equipment - Short Range Device –
 - Interference from Amateur Services to GNSS within the 1260-1300 MHz band
 - Project Introductions: GNSS Interference Detection and Localization in the City
 - Systematization of Information on Various Types of GNSS Receivers and Various Types of Interference
 - GNSS RFI Status Downlink
 - Actual Question of Monitoring in the Navigation Situation

Ongoing WG-S Action

Protection RNSS Spectrum from non-RNSS Sources

Background:

There are many studies to protect/quantify the interference into RNSS spectrum from other RF sources.

Thus, it would be worthwhile to summarize these available information comprehensively.

WG-S Action - to continue work on summarizing the available information on the following issues:

- Acceptable levels of protection from interference and measurement methods
- Monitoring of interference environment
- Identification of interference sources
- Recommendations on the elimination/minimization of interference impact.

Regarding the following two presentations at 8th IDM workshop, the subgroup agreed to invite ICG members to make comments on them prior to the ICG-14 meeting in December 2019:

- “Systematization of Information on Various Types of GNSS Receivers and Various Types of Interference ” Dmitry Aronov, Egor Zheltonogov, Geyser-Telecom, Ltd., Russian Federation
- “Actual Question of Monitoring in the Navigation Situation“ Sergey Silin, NAVIS Inc., Russian Federation

Ongoing WG-S Action

Protection RNSS Spectrum from non-RNSS Sources (2)

- Under the auspices of the Compatibility & Spectrum subgroup, the IDM Task Force and spectrum compatibility experts will jointly consider the relationship between the EU STRIKE3 report and the on-going work by Russian Experts for “Practical assessment of electromagnetic and interference environment at the measurement point in GNSS frequency bands” on characterizing and measuring the RNSS spectrum environment.
- Recognizing Report ITU-R SM.2454 “Spectrum monitoring techniques in the radionavigation-satellite service frequency bands”, which is almost identical to the above Russian work, the IDM Task Force and the subgroup will also be invited to consider the content of this ITU-R Report together with the comments from RNSS experts in ITU-R WP 4C.

Proposed WG-S Action from Intersession Meeting in September 2019

1) to alert RNSS/GNSS providers about the potential impacts (including impact from unwanted emission) on possible WRC-23 agenda items, which will be discussed at WRC-19. The followings are currently identified for action;

- to recognize the European Common Proposal to WRC-19 regarding WRC-23 agenda item, “to review the amateur service secondary allocation in the 1 240-1 300 MHz frequency band to determine if additional measures are required to ensure the protection of the RNSS in the same band”
- to encourage RNSS/GNSS providers to analyze the potential impact on the operation of RNSS/GNSS below 1300 MHz by the impact from potential mobile service allocations in the frequency band 1300-1350 MHz, in particular.

2) based on the above, to encourage RNSS/GNSS providers to contact their national telecommunication administration for their national preparation process for WRC-19, as appropriate.

(WRC-19 Schedule: 28 October-22 November 2019).