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| Summary: | | |
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| Proposal: | | |
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Editor's Note: The following pages are intended to be compiled in one CEPT Brief on AI 9

DRAFT CEPT BRIEF ON AGENDA ITEM 9.1 - ISSUE 9.1.8 – Nano- and Picosatellites

# issue

Resolution 757 (WRC-12) – Regulatory aspects on nano- and pico satellites – invites ITU-R “to examine the procedures for notifying space networks and consider possible modifications to enable the deployment and operation of nano- and picosatellites, taking into account the short development time, short mission time and unique orbital characteristics” and instructs the Director of the Radiocommunication Bureau “to report to WRC 15 on the results of these studies”.

# PRELIMINARY CEPT POSITION on issue 9.1.8

CEPT supports the ITU-R studies on the issue.

# Background

Following proposals from 12 CEPT members, WRC-12 decided to put on the WRC-18 preliminary agenda the issue of nano- and picosatellites: “2.2 the appropriate regulatory procedures for notifying satellite networks needed to facilitate the deployment and operation of nano- and picosatellites, in accordance with Resolution 757 (WRC‑12);”. Resolution 757 (WRC-12) invites ITU-R to undertake the relevant studies and furthermore instructs the Director of the Radiocommunication Bureau to report to WRC-15 on the results of these studies.

Based on Resolution 757 (WRC-12), Question ITU-R 254/7 ¨Characteristics and spectrum requirements of satellite systems using nano and pico satellites¨ was assigned to ITU Working Party 7B.

Administrations participating in Working Party 7B agree that the focus of the studies should be to identify difficulties in the application of Articles 9 and 11 of the Radio Regulations, and that the goal should not be to propose changes to Article 5 (table of frequency allocations).

Working party 7B produced four corresponding output documents: a work plan (see [Annex 11](http://www.itu.int/md/dologin_md.asp?lang=en&id=R12-WP7B-C-0154!N11!MSW-E) to Doc. 7B/154) which was based on the workplan developed at the CPG PT-A 2 meeting, a working document towards a preliminary draft new Report ITU-R SA.[NANO/PICOSAT CURRENT PRACTICE] (see [Annex 6](http://www.itu.int/md/dologin_md.asp?lang=en&id=R12-WP7B-C-0154!N13!MSW-E) to Doc. 7B/226), a working document towards a preliminary draft new Report ITU‑R SA.[NANO/PICOSAT CHARACTERISTICS] (see [Annex 5](http://www.itu.int/md/dologin_md.asp?lang=en&id=R12-WP7B-C-0154!N12!MSW-E) to Doc. 7B/226), and draft CPM text (see [Annex](http://www.itu.int/md/dologin_md.asp?lang=en&id=R12-WP7B-C-0154!N10!MSW-E) 4 to Doc. 7B/226).

Special Committee, December 2013, said the following concerning agenda item 9.1.8 WRC-15 on nanosatellites and picosatellites:

“WP-SC cautions Working Party 7B that establishing special provisions for the notification of nanosatellites and picosatellites in the Radio Regulations may add unnecessary complications to the Radio Regulations. The Working Party of the Special Committee is of the view that these types of satellites do not need to be rigidly regulated as they could continue to be regulated under the current approach which has not caused any problem for any Administration. Placing nanosatellites and picosatellites under a highly regulated regime would compromise the very purpose of these satellites which are primarily of a research nature.“

Editor’s Note: it is proposed to submit a contribution to WP7B to the WDPDNR [CURRENT PRACTICE] which contains the text between square brackets below

[In addition to the service links, satellite operations require telecommand, telemetry and control (TT&C) in order to track and control the satellite constellation. It recently appeared that nano/pico satellite operators envisage using MSS and EESS uplink bands below 1 GHz for telecommand operations (Earth-to-Space), and that the corresponding output powers envisaged for this kind operation are much higher than the moderate/low powers traditionally used for service links in those bands. Recent static and dynamic accurate calculations on concrete cases have shown that telecommand links could cause a total blindness - during significant amounts of time - of the existing receivers when interfered by telecommand links in the same frequency band. It is of the utmost importance that the nano/sat satellites deployed within EESS and MSS systems for telecommand purposes in the corresponding frequency bands should not cause harmful interference or an interruption of the operation of the existing and future EESS and MSS systems below 1 GHz which usually implement moderate/low powers for their uplinks.]

Some administrations are of the view that articles 9 and 11 should not contain any specific regulation regarding nanosatellites and picosatellites. However, in order for serious technical problems not to occur, it is essential to avoid any uncontrolled deployment of nanosatellites and picosatellites. Therefore, guidelines and/or limits within the Radio Regulations will need to be established, and the corresponding detailed studies can be undertaken under the future WRC-2018 agenda item.

Therefore, a discussion should take place in order to identify what can be proposed as a result of agenda item 9.1.8 WRC-15 and what needs to be done for WRC-18.

As a general statement, the deployment and operation of nanosatellites and picosatellites should not cause any interference or interruption of the operation being conducted with existing satellite systems.

# List of relevant documents

ITU-Documentation (Recommendations, Reports, other)

ITU WP7B doc 7B/226 Report on the September 2013 meeting of Working Party 7B with a view to its next meeting (May 2014)

ITU WP7B Annex 4 to doc 7B/226 Draft CPM text on Agenda item 9.1.8

ITU WP7B Annex 11 to doc 7B/154 Work plan for Agenda item 9.1.8

ITU WP7B Annex 5 to doc 7B/226 ITU R SA.[NANO/PICOSAT CHARACTERISTICS]

ITU WP7B Annex 6 to doc 7B/226 ITU-R SA.[NANO/PICOSAT CURRENT PRACTICE]

CEPT and/or ECC Documentation (Decisions, Recommendations, Reports)

EU Documentation (Directives, Decisions, Recommendations, other), if applicable

# Actions to be taken

* Define nano- and picosatellites and their application area

Based on the definition, the following actions should be taken:

* Study the characteristics and spectrum requirements of nano- and picosatellites based on relevant information on technical and operational parameters. In particular, it would be useful to get a better knowledge of the order of magnitude of the powers envisaged for uplink telecommand purposes.
* Examine current practice as used during filing of nano- and picosatellites
* Study whether the existing procedures under article 9 and 11 are suitable for nano- and picosatellites.
* Define what can be possibly proposed under agenda item 9.1.8 WRC-15, and what would be the technical contents of the future agenda item for WRC-18.
* If necessary, propose possible modifications to current regulations to facilitate the deployment and operation of nano- and picosatellites, taking into account their specific characteristics

# Relevant information from outside CEPT (examples of these are below)

## European Union (date of proposal)

## Regional telecommunication organisations:

APT (5 July 2013)

APT Members support the study to examine the necessary procedures for notifying nano- and picosatellites taking into account their unique characteristics while ensuring the protection of existing allocated services and existing and future radio stations operated in accordance with the RR and avoiding inconsistencies with other provisions of the RR. APT members are encouraged to monitor the study progress in ITU-R, carry out necessary studies and submit their contributions for further considerations in the next meetings.

ATU (date of proposal)

Arab Group (date of proposal)

CITEL (December 2013)

Preliminary Views

Canada/United States/Mexico

* Support completing the studies to characterize nanosatellites and picosatellites;
* Support considering whether modifications to the regulatory procedures for notifying satellite networks are needed to facilitate the deployment and operation of nanosatellites and picosatellites;
* The studies should include exploration of whether the current regulations and procedures adequately ensure the compatibility of nanosatellites and picosatellites with other frequency assignments;
* WRC-15 should take into account the results of the studies when considering appropriateness and necessity of the related preliminary WRC-18 agenda item.

RCC (1 November 2013)

The RCC Administrations consider that necessity to develop special regulatory aspects for coordination and notification of nano- and picosatellites can be defined after gathering and summarizing of technical and operational parameters of nano- and picosatellites, including information on possibility of their usage in the interest of particular radiocommunication services, and also based on analysis of current practical notification of nano- and picosatellites and also considering that any changes to the notification procedures of satellite networks operating nano-and picosatellites should not lead to complications in the use of other satellite networks.

## International organisations

IATA (date of proposal)

ICAO (date of proposal)

IMO (date of proposal)

NATO (date of proposal)

SFCG (July 2013)

SFCG supports contributions to studies under Question ITU-R 254/7.

SFCG favours the study of this issue, since it recognizes that a growing number of picosatellites/nanosatellites are under development in the world. Many of these satellites are launched for scientific purposes, but there is a growing interest for commercial non-scientific applications. An investigation on how this growing number of satellites can be supported is needed.

Given the complexity in obtaining a common definition of which types of satellites should be classified under the category nanosatellites and picosatellites and because these definitions tend to relate to elements that are not relevant from a frequency management perspective (size, mass, cost), SFCG supports the concept of creating an ITU category of satellites that, given some RF and operational characteristics (e.g. very limited mission duration, low pfd on Earth surface, relaxed protection criteria) could be considered for a modified filing and coordination procedure. Thresholds for all these parameters will have to be defined to allow identification of the satellites falling within this category. This will not imply any change in the RR definition of services. Any changes to satellite filing procedures should be carefully developed to ensure they apply exclusively to this new category of satellites. SFCG is of the opinion that any satellites, including nanosatellites and picosatellites, will have to be filed and registered with the ITU and must adhere to the ITU-R Radio Regulations.

WMO (date of proposal)

IARU (May 2013)

Because of the possible implications of these studies for the amateur and amateur-satellite services, the IARU is following the progress of these studies attentively. Nanosatellites and picosatellites that are properly licensed in the amateur-satellite service and are operated consistent with the purposes of the amateur and amateur-satellite services as defined in Nos. 1.56 and 1.57 may utilize the provisions of Resolution 642.

## OTHER INTERNATIONAL AND REGIONAL ORGANISATIONS

ESA (date of proposal)

EUMETNET (date of proposal)

Eurocontrol (date of proposal)