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Comments in Response to Canada Gazette, Part I, November 2020, Notice No. SMSE-014-20:

Consultation on the Technical and Policy Framework for Licence-Exempt Use in the 6 GHz Band

Submitted by
Department of National Defence
Frequency Spectrum Management

18 January 2021

Canada

National Defence Défense nationale

Introduction

Department of National Defence Frequency Spectrum Management (DND FSM) is grateful to Innovation Science and Economic Development Canada (ISED) for the opportunity to participate in the "Consultation on the Technical and Policy Framework for Licence-Exempt Use in the 6 GHz Band". This submission from DND FSM takes into consideration only DND's locations and services that could be potentially impacted by the proposed changes. Not all questions are addressed in this document, because DND FSM does not have the required expertise, nor, is it appropriate to comment on areas not concerning DND. In general, DND FSM is concerned about effectiveness of Automatic Frequency Coordination (AFC) systems, and enforcement of parameters in Radio Local Area Network Access Points (RLAN AP) such as: Equivalent Isotropic Radiated Power (EIRP), Power Spectral Density (PSD) and antenna elevation.

Responses to Questions

Q2
ISED is seeking comments on its proposals to allow licence-exempt RLAN use in the 5925-7125 MHz band.

There are currently systems that operate in this band that provide National Security and critical Public Safety communications. These systems are engineered for high reliability and availability through radio frequency compatibility analysis and protected by ISED licensing. DND's concerns are:

1. Potential harmful interference to these systems resulting from unlicensed RLAN operating without stringent interference mitigation mechanisms.
2. Challenges in enforcing stringent interference mitigation mechanisms.
3. Challenges in designing an effective and secure AFC system(s) that respects non-disclosure of non-publically available links.
4. Potential disclosure of DND's frequency assignments and locations to AFC system (s).

DND appeals to ISED to consider the above concerns in their decisions regarding AFC system(s). A possible solution would be to not disclose DND's frequency assignments and locations and block DND's frequencies over certain areas in AFC system(s).

Q4
ISED is seeking comments on the proposed rules for standard-power RLANs:

a. *indoor and outdoor operation would be permitted*
b. *RLAN access points would only be permitted to operate under the control of an AFC system in the 5925-6875 MHz frequency range*
c. *maximum permitted e.i.r.p. would be 36 dBm*
d. *maximum permitted power spectral density would be limited to 23 dBm/MHz*
e. *use of a vertical elevation mask, with a maximum e.i.r.p. of 125 mW at elevation angles above 30 degrees over the horizon, would be required*

DND believes that RLAN Access Points should only operate under the control of an effective, secure and relevant AFC system while ensuring limits on EIRP and elevation angle are enforced. In reality, there is no guarantee that technical limitations will be always enforced, hence it appears there is a potential to cause harmful interference to the FSS/ spacecraft receivers.

A significant portion of DND's FSS are carried through satellite(s) that have elevation angle of about 19.3 degrees from locations such as Yellowknife. The low elevation angle would render the proposed RLAN 30 degree vertical mask ineffective. In high artic locations, the elevation angle is even lower almost 1 degree.

DND fully supports CSSIF & Telesat's recommendations which includes tighter E.I.R.P limits than what is currently proposed and elevation angles no greater than 15 degrees above the horizon.

Q10
ISED is seeking comments on its proposal to permit the approval of multiple, third party AFC systems, taking into account the potential for the development of a sustainable market for AFC systems in Canada.

DND's concerns with multiple third party AFC systems operating in parallel are:
1. Synchronization of databases among the different AFC systems.
2. Security of information (frequency assignments and locations) across various AFC systems.

A potential solution is to eliminate DND frequency assignments and geographical locations considered sensitive from all third party AFC systems. DND appeals to ISED to consider these concerns in its decisions regarding multiple AFC systems.

Q13
ISED is seeking comments on the implementation considerations for the operation of an AFC system, specifically:
- *a. information required from licensed users*
- *b. interference protection criteria for computation of exclusion zones*
- *c. information required from standard-power Aps*
- *d. frequency of AFC update of licensee information*
- *e. security and privacy requirements*

DND is concerned with the security of information regarding its transmitters and receivers. DND requests ISED to give high priority to security and privacy requirements in the implementation of AFC system(s). Almost all DND's RF systems operating in the concerned band are vital to National Security or Public Safety. It is critical to prevent any information regarding DND systems from getting into the public domain. DND requests ISED to take all possible measures while designing AFC systems to ensure the privacy and security of DND RF systems remains intact. A possible solution is to block the assignment of DND's frequencies over certain geographical areas in the proposed AFC system(s).

Q14
ISED is seeking comments on any additional considerations, limits or general concerns that should be taken into account in setting detailed standards and procedures for AFC operation.

In providing comments, respondents are requested to include supporting arguments and rationale and take the Canadian context into consideration in their response.

Due to the sensitive nature of its operations, DND will oppose the release (into the public domain) of any parameters related to its transmitters / receivers. DND considers the proposed AFC systems as part of the public domain. A possible solution is to blackout / block DND's frequencies over certain geographical areas in the proposed AFC system(s).

Q15
ISED is seeking comments on its proposal to require AFC systems to protect the following types of licensed stations from standard-power APs:

a. fixed microwave stations
b. fixed point-to-point television auxiliary stations
c. radio astronomy stations

In providing comments, respondents are requested to include supporting arguments and rationale.

Existing licensed systems must be protected from RLAN APs. The proposal to use AFCs to provide exclusion zones to protect fixed microwave services and radio astronomy sites appears reasonable. However, the proposed vertical elevation mask limit to protect satellite receivers might not be sufficient due to the low elevation angles at locations in the artic regions. DND supports the recommendation from CSSIF & Telesat on limiting the elevation angle to 15 degrees.

All of the above respectfully submitted on behalf of DND FSM.

/s/_____

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