Workflow and business benefits of spectrum sharing using ASA/LSA

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Introduction

- Growing mobile telecommunication traffic will lead to growing spectrum demand for mobile communication networks.
- There are bands allocated to the mobile service that currently encompass other primary usage and thus cannot be used by the mobile communication networks.
  - Authorised Shared Access (ASA) is an industry driven approach aiming at taking these bands into actual use for the cellular networks.
- ASA concept is a complementary approach to traditional exclusive licensing and license-exempt approaches allowing a spectrum band to be shared between an incumbent spectrum user (i.e., incumbent) and another system (i.e., ASA licensee) with pre-determined rules and conditions and licensing agreements.
- This study aims at understand the ASA concept and its work flow, and related business benefits for key stakeholders.
Overview of ASA

- The ASA concept aims at allowing dynamic use of spectrum whenever and wherever it is unused by the incumbent spectrum user.
  - Spectrum sharing can be realized across multiple dimensions, most notably frequency, time, and geographical dimensions possibly using cognitive radio system (CRS) capabilities.

- A key benefit of the ASA concept is to ensure controlled predictable quality of service (QoS) levels for both incumbent spectrum users and the ASA licensees by considering a limited number of entities involved in the sharing arrangement.

- The ASA concept can provide a cost-efficient and harmonized way to utilize existing spectrum allocations and to achieve economies of scale by making IMT bands available worldwide with existing user equipment and minimum modifications to the infrastructure.

- The first application area for the ASA concept currently under study in regulation and standardization in Europe is the 2.3-2.4 GHz band under the licensed shared access (LSA) regime.
Key stakeholders and phases in ASA concept

Key stakeholders in ASA:

- Incumbent spectrum user (Incumbent)
- Regulator
- Mobile network operator (MNO) (ASA licensee)

Key phases in ASA:

- Preparation
- Licensing
- Deployment
- Release
ASA framework

1. Conditions for ASA
2. Sharing framework
3. Commercial agreement
4. ASA license
5. Policy data
6. Sharing conditions and rules
7. Permitted ASA bands and conditions
8. Selected spectrum
Summary and conclusions

- ASA/LSA concept is now being defined in regulation and standardization
  - It has to benefit all involved stakeholders to become successful.
- Workflow of ASA was developed:
  - ASA preparation, licensing, deployment, and release.
- Business benefits were identified for key stakeholders:
  - Incumbent spectrum user: maximise the value of spectrum
  - ASA licensee:
    - Dominating MNO: maintain dominant position
    - Challenger MNO: get access to new spectrum
  - Regulator: maximise the value of spectrum through sharing while retaining control
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