1. Scope

The scope of this document is to define an open, global standard for building and inter-operating elements of a distributed radio signal detection and characterisation system. It establishes a high-level architecture, defines functional entities and their interfaces, specifies command & control messages and the parameters they would pass, and defines metadata describing the nature and configuration of the sensing system and the data it gathers. It also describes operating characteristics and behaviours of the components of the SCOS system, with reference implementations for common use cases. Further, it defines measurement parameters in such a way that they are of an equivalency with other related standards so that data gathered by an 802.22.3 compliant system can be consistently and meaningfully interpreted by users.

The intent of this standard is to allow interoperability between different 802.22.3 SCOS systems, or to allow elements of an 802.22.3-compliant SCOS system that are operated by different system owners to be interconnected. It would also allow proprietary and other sensing systems to be interconnected with the 802.22.3 system through proxy mechanisms.

The management, analysis, and visualization of sensed data are not within the scope of this standard.

2. Purpose

The purpose of this standard is to define specifications for a Spectrum Characterization and Occupancy Sensing (SCOS) System consisting of a management node connecting to one or many distributed sensing nodes. It supports a diverse and evolving range of sensor technologies, data types, use cases, and installations by abstracting system design from specific hardware technology or implementation method.

Its interface definitions are independent of the transport mechanism to allow for commonly used network and messaging protocols to achieve the control and management of the system, as well as for conveying sensing information and related metadata to end points, for use in spectrum sharing and planning database services, research programmes or operational support systems for radio networks.

The system design is structured in a way to promote a range of operating models for various implementers of the standard, where various bodies may operate some or all of the main elements. It also allows for flexible operating models for users of the SCOS system, such as for-profit or not-for-profit activities in spectrum forensics specialists, regulatory authorities, network operators, law enforcement authorities and researchers).

The ultimate purpose of the 802.22.3 SCOS standard is to allow for better characterisation and identification of spectrum occupancy to support more flexible and efficient use of spectrum through dynamic spectrum allocation technology, and to help identify and reduce interference in radio networks.