**IEEE 802 Applauds the US Move Toward Next Generation Spectrum Strategy**

*Global Spectrum Organization Offers Support to Develop Sustainable National Policy*

IEEE 802, a global standards organization ……

is applauding a recent United States government initiative to develop a national strategy for utilizing next generation radiofrequency spectrum.

The United States Presidential Memorandum directs executive departments and agencies to identify anticipated spectrum requirements for government and non-government users, and develop a plan for improving spectrum utilization to meet those needs. Specific requirements of the national plan include: expanding spectrum access for all stakeholders; developing appropriate standards, incentives and management schemes to ensure efficiency and effectiveness of spectrum utilization; and research and testing to support ongoing technical innovation and leadership.

Quote ….

New technologies to identify, monitor and control spectrum continue to evolve to support more efficient spectrum sharing. Current methodologies such as cognitive and software defined radios, spectrum sensing and beaconing techniques, and spectrum databases and management systems can dramatically expand access to communications services while ensuring users are protected from interference. Efficient sharing of spectrum allows a variety of commercial and government users to flexibly coexist within frequency bands, and enables all users to take advantage of emerging technical advances.

The IEEE 802 supports the position that intelligent spectrum allocation and management is needed for both licensed and license-exempt technologies to meet the explosive growth in wireless data demand. As both consumer and business wireless data consumption increases, increased access to spectrum with commercially viable rules becomes vital to support data growth. The IEEE 802, through its participants, is a major contributor to the standardization of leading wireless technologies. IEEE 802 participants develop wireless standards such as the IEEE 802.111 Wireless LAN (WLAN) family of standards (inclusive of technologies known as Wi-Fi and WiGig) and IEEE Standard 802.15.4 Low Rate Wireless Networks (LRWN) (inclusive of ISA100, WiSUN, and Zigbee), which primarily use license-exempt spectrum. The number of IEEE 802.11 WLAN enabled devices shipped exceeds 15 billion and by 2019 the number of IEEE 802.15.4 LRWN enabled devices are expected to reach 2.1 billion. This high uptake of IEEE 802 standards family of enabled wireless devices is a strong indicator of the importance of license-exempt spectrum as a driver for innovation and economic growth. The IEEE 802 recognizes the need for more efficient use of existing and to be allocated spectrum through various spectrum sharing mechanisms. Spectrum sharing can make thousands of megahertz available more quickly and cost effectively than would occur by relocating incumbent users. Sharing can occur in bands that are currently licensed but occupied by temporally or spatially sporadic users, such as in the 3.5 GHz band in the United States, and TV white space in Colombia, Singapore, South Africa, United Kingdom, and the United States. Notably, the IEEE P802.15.4m project, IEEE 802.11af amendment, and IEEE 802.22 Wireless Regional Area Network standard are designed to access TV white space with use cases ranging from low-rate personal-area networks to high-capacity wireless regional-area networks for broadband provisioning. Sharing can also occur in license-exempt bands among devices which utilize either common air interfaces or between devices with disparate air interface technologies.

Examples of intelligent spectrum sharing techniques involve cognitive radio technologies such as Listen Before Talk utilized in IEEE 802.11 WLAN based Wi-Fi and 3rd Generation Partnership Project (3GPP) Long Term Evolution (LTE) based Licensed Assisted Access (LAA) systems, the policy- based framework used by the IEEE Dynamic Spectrum Access Networks standards 1900.X or spectrum sharing with primary users based on sensing, spectrum database access, and dynamic spectrum access rules used in the IEEE 802.22 TV White Space standard. Cognitive radio technologies and other spectrum sharing techniques should continue to be developed and standardized to establish fair and transparent spectrum sharing among devices that avoids harmful interference. The IEEE 802, given its history of being a neutral and collaborative standards development organization, can facilitate the development of fora where these common rules and technologies can be standardized.

In addition to intelligent spectrum utilization, the increasing demands for wireless spectrum should also be met by introducing flexibility into the use of lightly used spectrum. This includes spectrum that is being used sparsely on a geographic basis (i.e., only used in certain specific locations) or temporally. In particular, the intelligent management brought about by cognitive radio and other related technologies can assure co-existence with devices and services which currently use these spectrum bands, albeit on a sporadic basis. An example of this is in the United States where in April 2015 the Federal Communications Commission (FCC) issued a Report and Order detailing a new Citizens Broadband Radio Service (CBRS) in the 3550-3700 MHz spectrum band, which reallocated the band so that it can be shared with incumbent radar systems and fixed satellite services using rules specified by the FCC.14

Wireless technology will continue to benefit humanity profoundly. For example, the use of wirelessly connected medical devices is expected to increase significantly in the near future.As a result, medical resources can be more rapidly dispatched to where they are needed, and this will positively impact lives.

The IEEE 802 has an important role to play in the development of intelligent spectrum allocation and management based upon transparent, standardized rules that also account for incumbent users.