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APWPT's Comments on the RSPG Report on

"Cognitive Technologies" 09-299

APWPT, the Association of the Professional Wireless Production Technology e.V. (www.apwpt.org) is pleased to provide the following comments in the above-mentioned proceeding.

APWPT headquartered in Germany, directly and indirectly represents far over 25,000 members of the Programme Making & Special Event ("PMSE") community in Europe and beyond. APWPT hereby respectfully submits its comments in the above-mentioned consultation. As described in more detail in the Annex, the PMSE community safeguards thousands of jobs in the sectors of TV, radio and theatre production, etc in Europe. Live events, such as political and business conventions, conferences, operation of places of worship, concert tours, musicals, movie production, life shows in the EU would be unthinkable without wireless production devices. The implementation of Cognitive Devices ("CD") in the PMSE used frequency bands needs to be done with cautious. Cognitive Technology is still in development; many technological aspects are not discussed nor tested. We take the opportunity to highlight the immense impact onto the cultural and social life of every citizen of the European Union, if unproven CD technology / CD devices are given access to the frequency spectrum. In particular, we encourage the RSPG to pursue its active role in this area and to work with the APWPT and its members to find solutions that ensure that CD technology will not cause harmful interference or evict PMSE from spectrum bands.

Prior to commenting on specific issues in the PMSE Report, the APWPT wants to ensure that the RSPG is fully aware of PMSE being a crucial industry branch in Europe. Any changes in the usable spectrum will have a tremendous impact on the daily lives of all EU citizens. Moreover PMSE equipment is an essential factor in creating and enabling social and cultural life – and furthers social cohesion within European Union.

To illustrate this, there are more than 6 million of these devices in use in Western Europe (PAMA Study 2008). During the past ten years the number of wireless production tools increased by more than 10% every year. This trend is going to continue.

The reasons for this increase in the use of wireless production tools are:

- The increase of cultural and social events in European Union where wireless equipment is used;

- The reliability of the audio quality requirements and easy handling the PMSE users demand;

- The flexibility in the use, allowing changes in the arrangement of a conference or a presentation until the very start of the event that cable-based solutions cannot warrant, and

- The effect of rationalisation: there is no time required to lay out cables for a production as no one is willing to pay for this.

The APWPT members strongly believe that any decision on the EU level that will restrict or set up new obstacles for the use of PMSE equipment will have an immense impact on the cultural and social life of every citizen of the European Union.

Specific Comments on the "Radio Spectrum Policy Group Report on Cognitive Technologies"

The APWPT comments on the RSPG Report as follows:

→The RSPG should proactively seek "primary user" status for PMSE in the EU and worldwide

As illustrated above, PMSE equipment is providing an essential service within the EU. It undoubtedly needs a protected environment to secure the operation and to fulfil the growing demands of producers, artists, news crews, etc. Planning certainty and frequency stability for PMSE user / applications can only be established by giving PMSE a higher status compared to the currently 'secondary user' PMSE must cope with. Therefore, the APWPT encourages the RSPG to work with other EU bodies so that PMSE will obtain "primary user" status in certain spectrum bands as early as possible. (highest priority: 470 – 790 MHz)

→Sensing is not an appropriate spectrum access method

The RSPG should avoid granting CD access to spectrum that PMSE is using prematurely. Careful testing and evaluating all technical options are both crucial to avoid harmful interferences. In the United States, in FCC laboratory tests throughout 2008, the cognitive radios submitted with UHF detection capability from 512-698 MHz proved ineffective at identifying wireless microphone signals even in highly controlled laboratory environments where interfering signals were restricted far below the strength of ambient signals routinely found in urban, suburban and rural real-world environments. The tests were attended, in particular, by representatives of Microsoft, Philips, Motorola, the wireless microphone industry and the media. In the presence of moderate or strong RF signals on adjacent channels, the cognitive radios devices tested by the FCC (models submitted by Microsoft, Phips, I2R) were generally incapable of detecting even very robust microphone signals. When taken out of the laboratory for field tests in and around the Washington and New York City metropolitan areas (such as the FedEx Field in Washington DC and the Majestic Theatre on Broadway, NYC), the performance of these cognitive radio devices deteriorated to the point where they stopped generating test data that could be evaluated. This poor performance ultimately led the FCC to conclude in its November 2008 "White Spaces" Order that the cognitive radio devices under test "*were not able to sense with a high degree of accuracy both TV and wireless microphone performance in different real world environments where signals are subject to different levels and forms of fading, multipath, and other degradations ….. In view of these results, we believe that much more development work needs to be accomplished before the spectrum sensing technique can be implemented as the principal means of identifying unoccupied channels in the TV bands, even in the case of fixed devices that use outdoor antennas.*

Thus, we are not convinced that spectrum sensing as currently presented could adequately serve as the only means to protect TV services and other fixed protected contour services from interference by unlicensed TVBDs [TV band devices] operating at the power levels proposed in the Notice. Coupled with this concern, we also observe that the significant distances at which interference could occur from an unlicensed TVBD operating at greater than 100 mW would make it very difficult to identify the TVBD as the source of the interference. "

> Source: Unlicensed Operation in the TV Broadcast Bands, ET Docket No. 04-186, *Second Report and Order and Memorandum Opinion and Order*, FCC 08-260 at p. 34 (rel. Nov. 14, 2008): http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-08-260A1.pdf at 84.

Given these test results, sensing is not an appropriate UHF spectrum access method - at least for the foreseeable future. Geolocation database seems to be the only method that can be established in a timely manner, i.e. in the next few years. However there are many unresolved technical issues. In particular, sharing methods for the UHF band need to be developed together with all stakeholders that have a vested interest in the matter. The FCC released a Public Notice on November 25, 2009, seeking proposals from companies on the managers for the geolocation database.

> Source: Office of Engineering and Technology Invites Proposals from Entities Seeking to be Designated TV Band Device Database Managers: ET Docket No. 04-186: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-09-2479A1.pdf

In addition to these unresolved interference issues, APWPT agrees with the RSPG in its report that "standardisation by ETSI plays a major role in complementing the regulatory initiatives within Europe; therefore the current ETSI initiatives should be supported." The APWPT is already actively involved in the ETSI initiatives.

→Unlicensed devices also need regulation.

Given the unresolved interference issues, the APWPT believes that it is too early to decide whether CD need to be licensed or not. In any event, an EU-wide legal framework needs to be set up for CD even if the national regulators will not issue individual licenses for the CD. In particular, there is an obvious need of inter-CD rules giving equitable access for every CD. These rules right from the beginning will avoid the situation that we currently observe in 2.4 GHz band. In this band, users have been complaining about a lack of access and inferior quality of service that was believed to be caused by congestion. As it has turned out after a lot of time any money has been spent, the problems were actually caused by harmful interference between the devices using the 2.4 GHz ISM band that require detailed rules to mitigate the problems: As recent study by Mass Cons. Ltd commissioned by OFCOM UK, April 2009, therefore comes to the result: "The problems of interference between different types of radio device in the 2.4 GHz band lead us to conclude that a certification scheme is highly desirable."

> Source:
> http://www.mass.co.uk/technology/Estimating%20the%20Utilisation%20of%20Key%20LE%20Spectrum%20Bands.pdf

The same proactive approach is needed for the bands CD will be using.

To sum up, while the APWPT applauds the RSPG on the report, it is essential that APWPT be involved in all aspects of spectrum access methods at all stages - especially to avoid harmful interference and to ensure that PMSE will continue to perform its important tasks for the citizens in the EU. To achieve this goal, the APWPT will be pleased to continue to participate in this dialogue in a constructive manner.

Respectfully,

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Annex: Additional information on the APWPT

Additional information on the APWPT

Who we are?

APWPT is an international non-profit organisation, which is representing the needs of all user of the PMSE sector. Members of APWPT include PMSE organisations, users and manufacturers.

What do we do?

The PMSE sector is critical to the production of content for live entertainment of all genres. This sector extensively utilises wireless equipment such as Wireless Microphones, Wireless In-Ear Monitor Systems, Wireless Talk Back Systems and Wireless Instrument Systems.
For over fifty years wireless products have been used in the entertainment industry. In the past thirty years there have been vast improvements in production value and safety levels as a result of advances in wireless technology.

How do we do it?

The PMSE sector currently relies on the spectrum interleaved between existing TV broadcasts, to enable the use of Radio Microphones, In-Ear- Devices and other short-range wireless devices. This equipment is an essential component of the European Entertainment Industry. Due to their efficient use of spectrum, radio microphones (they do not cause harmful interference and engineers create very defined frequency plans) are hardly noticed.

Who benefits from our activities?

On a daily basis this sector is responsible for the production of content that has received world-wide acclaim and continues to attract a global audience. A vast array of organisations are reliant on radio spectrum for the production of content for **Performing Arts, Broadcasting, News Gathering, Independent Film and TV Production, Corporate Events, Concerts, Night Venues, Sports Events, Churches…** In addition, other sectors that utilise the current UHF spectrum include the Health Service, Education, Local Government, Political Programming and Conferencing.

In addition these technologies play a vital role in helping to improve security and safety levels within the Entertainment Industry and other sectors. Their benefits include improving the management of electrical safety, the reduction of noise levels, the development of safety in communications and reducing trip hazards as well as providing an essential tool for the security orientated services.
Its wireless equipment and the spectrum it operates on are crucial to the European Entertainment Industry.