**IEEE P802.24**

**Vertical Applications TAG**

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| Project | IEEE P802.24 Vertical Applications Technical Advisory Group | |
| Title | Smart Grid Task Group – Sub 1 GHz White Paper Outline | |
| Date Submitted | 15 July 2015 | |
| Source | Tim Godfrey | Voice: 913.706.37777 E-mail: |
| Re: | White Paper Development | |
| Abstract | Outline for the TG’s Sub 1 GHz White Paper | |
| Purpose | Provide a framework for developing the Sub 1 GHz White Paper | |
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Introduction: (criteria for inclusion, and evaluation)

Why Sub 1 GHz is of interest for Smart Grid

Existing incumbents and uses in the band

**Standards for regional sub-GHz channel plans**

Including targeted applications spaces and use cases

802.15.4g (SUN) (Steve Pope)

802.15.4g standard for SUN operation

History, overview, bands internationally.

40-200 Available channels in many cases

Support for licensed and unlicensed spectrums

Review of channels structure within bands

Benefits of FH and channel plan

Benefits of mesh architecture

802.11ah (S1G) (Yongho Seok)

(1 page summaries)

Standards for TV White Space

802.15.4m (TVWS) (Kunal and Ben)

802.11af (TVHT)

802.22 (Apurva Mody)

802.19.1 (Steve Shellhammer)

Other types of systems

**Applications (Jeritt Kent)**

List of applications (Elec, Gas, Water meters, DA (PV/DER), street lights, “smart cities”, heat use sensors, DR, EV Charging)

Application for backhaul from (GW/Concentrator/Router/Collector)

IoT Applications

Duty Cycle Requirements, Power Limitations, and their impact on usable applications

Specific limitations of applications to portions of bands.

Summary of characteristics and key comparisons

Reference PAP 2 table for facts about the standards

Explanation and Interpretations of the data

**Coexistence between similar standards in each group (Tim to find owner)**

915 MHz ISM Band (and similar bands in other regulatory domains)

Behavior of 802.11ah in the presence of 802.15.4g and vice versa.

Based on CSMA/CA access mechanism

General interference resilience mechanisms

**TVWS**

Database and geolocation operation to avoid interference with other users and broadcasters

**Global regulatory environment (Kunal / Phil for 15.4g )**

FCC, CEPT, ARIB, CENELEC, ETSI, ITU,

Related ETSI groups– TG28, ETSI TS303, TC294

Areas that adopt other domain’s rules

(Map of world with regulatory agencies highlighted)

Coexistence in global bands

Regulations call for fair and open access in unregulated spectrum.

Investigation in Europe shows that the slower technology loses in comparison to the faster technology. (Comparison to SigFox and similar)

ETSI TG28: What about spectrum that has become available since 802.15.4g was published? What is the applicability of these standards in those bands?

Description of how 802 standards can take advantage of new spectrum allocations (and vice versa).

Conclusions