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e - Radio™

December 18, 2008

Via Email and Federal Express
California Energy Commission
Dockets Office, MS-4
Re: Docket No. 08-DR-01
1516 Ninth Street
Sacramento, CA 95814-5512

Re: Docket Number 08-DR-01
Load Management Standards: Proposed Standards Comments

Dear Commissioners:

We are writing in support of the originally proposed standards LMS-3 Statewide Time-Differentiated Rate Broadcast and LMS-6 Enabling Technology Adoption Program as contained in the Proposed Load Management Standards Draft Committee Report released on November 25, 2008.

After attending the Efficiency Committee Load Management Standards Workshop on Draft Proposed Standards on December 10, 2008, it became apparent that there continues to be some confusion and misunderstandings on the capabilities of RDS as a technology to support a statewide communications system that need to be addressed. The intent of this letter is to provide details on the benefits and capabilities of using RDS for a statewide communications system as described in proposed LMS-3 and the use of RDS receivers in the PCD reference design as proposed in LMS-6.

1. **Security**

The RDS communications system infrastructure has the same physical security and engineered reliability as the FCC licensed FM radio station transmitter (fenced, gated, locked). Broadcast data will use the encrypted messaging standards that are being selected in the development of, and as part of the proposed draft PCD reference design. RDS technology can support secure simultaneous messaging using multiple encryption keys as applications require it. The design of RDS communications modules for PCDs contains the capability to conditionally decrypt secure messages according to the consumer's specific utility service provider.

RDS transmits at a very high power defined in thousands of watts of licensed FM bandwidth covering approximately the same geographic area as the authorized Federal Communications Commission (FCC) coverage area for FM radio stations. By contrast, HAN communications systems are only allowed to operate at low power and are intended for short distances around a premise. The potential for a low power rogue drive-by transmitter to alter a FCC licensed RDS signal is low, and any unlicensed high power transmitter can be shut down legally through regular enforcement actions of the FCC. In comparison, a low power HAN/Zigbee jamming device in the 2.4 Ghz band does not have a licensed enforcement agency prosecution system and jamming devices are available on an inexpensive basis.

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Security features contained in RDS receiver modules identify known radio stations and compliant messages to ensure the receipt of intended messages. The RDS receiver scans and "cross-checks" multiple FM licensed frequencies. An unknown transmitter signal will be ignored by the RDS receiver.

Low power HAN protocol hackers may potentially have millions of endpoints through which to gain access to the system, similar to current levels of unsecured consumer Wi-Fi nodes. As a result, the AMI network's data performance can possibly be marginalized by the security protocols to maintain security through the large numbers of endpoints. Further, it may be much harder to detect who is hacking the system and the location.

2. Statewide RDS Network Costs

A statewide communications network using RDS as proposed in LMS-3 represents the lowest capital cost system amongst the available options. e-Radio USA estimates a one-time total cost to complete the build-out of a California statewide RDS-enabled radio station network at less than $1 million. The end result will be the completion of a commercial-grade communications network at a very low cost. Seamless end-to-end messaging can be provided from the utility company or government agency for transmission by a FM radio station for reception on any consumer's PCD device. The system will also contain transmission data audit and reporting capabilities. Final radio station network build-out costs will be related to the actual number of radio stations used in the statewide network, their existing broadcast infrastructure configuration and equipment, and other network technical issues.

e-Radio USA estimates annual recurring operating costs to support a statewide RDS communications network infrastructure for the population and geography of California at pennies per user per year. This cost estimate assumes millions of endpoints are using the statewide RDS network. A more definitive cost for the operating infrastructure to support a statewide RDS network is dependent on the number of endpoints and the radio station network configuration, data links and system compatibility to utility companies, CAISO and government agencies.

3. Statewide RDS Network Deployment Time

e-Radio USA estimates a six to nine month period to test and complete the build-out of a statewide RDS radio station network to reach approximately 99 percent of California residents. The statewide network is estimated to consist of approximately 30-35 FM radio stations and includes multiple radio station signals in larger population centers and certain other geographic areas to ensure complete topographic coverage and mitigate reception issues. In California, e-Radio USA currently provides RDS signaling capabilities for load management testing and pilot programs in the Los Angeles, San Francisco/San Jose and Sacramento population centers.

If the proposed Load Management Standards are approved in early 2009, a California statewide RDS network could be ready for energy price and reliability signaling as contemplated under LMS-3 to large volumes of PCDs in late 2009 or early 2010.

4. Privacy Issues

A one-way signaling system such as a RDS network has inherent consumer privacy properties. Messages are sent directly to the endpoint device such as a PCD as opposed to being routed through network links such as an AMI meter gateway. The consumer has the choice to allow a RDS-enabled PCD to react automatically, ignore the message or override a command to the device. Through the statewide RDS network the PCD will regularly receive the pricing and reliability data it needs to optimize its own operations as directed by the device owner. Any of these actions are independent of the design and operation of a two-way AMI system and the monitoring and reporting of consumer data, choices or actions by the utility.

HAN devices intending to communicate with an AMI meter gateway are also typically designed with the capability to be programmed by consumers to block AMI meter connectivity to allow privacy from the utility. A HAN device that is configured to block AMI confirmation messages becomes a one-way device. A HAN device or AMI gateway accessible by the consumer could be either hacked or improperly configured as many Wi-Fi routers and devices are today. The result could be duplicate messages and/or message delivery to the wrong HAN device as well as potential messages delivered from a neighboring device through wall penetration. These problems could be very hard to trace and correct by the utility and could require access to customer premises and HAN devices.

The ability to monitor the effectiveness of a one-way RDS system works on a macro basis through existing load monitoring of feeder networks operated by utility companies throughout their service areas. In addition, message audit trail capabilities are built into the RDS network system that remotely monitors the transmission and receipt of messages throughout the network and utility service area.

5. Open Global Standards

RDS is an open global broadcast communication standard first adopted in Europe in the 1980s, and in the last 10 years has been adapted for North American deployment. RDS is a wireless medium that enables the transmission of digital information from a FM radio station transmitter to compatible radio receivers. Message information is typically presented on the device's character display. The RDS transmission protocol utilizes the licensed 57 kHz FM sideband and can deliver a host of messaging, notification and command functions to RDS enabled receivers tuned to a FM radio station. Some companies have built certain competitive and proprietary "value-added" technology solutions around the open RDS standard to enable even more robust technology solutions.

Since 2000, RDS sub-carrier technology has been used for the control of peak power in Australia. North American FM radio stations commonly use RDS technology to broadcast frequency and call letter identification information along with song titles, artist name and radio station promotional messages. More advanced uses of RDS are for sending up-to-date commuter traffic information to navigation control display systems on certain automobile models or portable navigation systems. The service notifies subscribers of traffic incidents on their route so they can change course and possibly avoid delays. This service is offered in approximately 80 major US and Canadian population centers. The North American traffic services are modeled after similar service offerings that have been used in Europe and Japan for many years.

6. Consumer Device Installation

When combined, the intent of LMS-3 and LMS-6 is to allow the potential for consumers to purchase a variety of PCDs via a retail channel and install the devices themselves to receive pricing and reliability signals from a statewide network. The consumer acceptance of devices on a RDS or AMI communications network will depend on the simplicity and ease of installation.

In the case of RDS-enabled devices, the consumer device will have basic functions "out of the box". Operation can be as automatic and autonomous as the consumer chooses. Enhanced operations will require the registration of the device via a telephone or internet process to allow for location, unit addressability and software upgrade features. This will allow the RDS network to support consumer device control and accessibility through the internet, individual utility pricing and efficiency programs, location-based messaging and commands and the ability to upgrade RDS receiver firmware directly through the RDS network.

7. Consistent Technology Standards

Portability of consumer owned PCD's and appliances between utility service areas is a key attribute to consumer adoption and acceptance. Portability requires a consistent standard communications infrastructure. The RDS global standard has historically been stable and has not been subject to evolving changes. As contemplated by the proposed Load Management Standards a statewide RDS network can be operated by several parties that will use the RDS communications standard combined with a RDS receiver compliant with the capabilities and protocols of the proposed draft California PCD reference design for receivers. As such, the stability of the global RDS standards platform has benefits when compared to Zigbee and other communications protocols that may have compatibility issues between different vendor devices and AMI systems. In other words, a RDS-enabled device is designed to work in any location offering a RDS network as contemplated under LMS-3 allowing for the movement of consumers across utility service areas without the need to purchase new equipment to be compatible with each utility.

Our work with appliance manufacturers has clarified that these manufacturers are evaluating an RDS development program to avoid having to sell products that are not compatible with the wide variety of utility AMI communications protocols currently in the market.

8. Device Availability

Several manufacturers are currently planning to make RDS-enabled devices available for both the utility company and retail markets as early as 2009. These devices would include a Programmable Communicating Thermostat (PCT), an In-Home Display (IHD) and smart appliances with RDS receivers integrated into the units. These devices will be offered at multiple price points with corresponding differentiating features. Similar efforts are underway for devices enabled with Zigbee and other communications protocols to be compliant with AMI systems. In addition, RDS receiver chipsets are currently manufactured and supplied by multiple vendors in readily available quantities. RDS receiver chipsets are currently offered by Silicon Labs and NXP (formerly Philips) for a variety of consumer electronic devices.

9. Other Messaging Capabilities

There are numerous other uses of RDS as a communications method to reach large amounts of population very quickly. Such capabilities include targeted messaging between utility companies and their customers. In addition, local or statewide government agencies could send messages such as emergency notification for fires, severe weather, natural disasters, homeland security and amber alerts. Several companies are offering emergency messaging capabilities via RDS in the US. A natural application of a statewide RDS communications network contemplated under LMS-3 would be the California "Flex Your Power" statewide energy efficiency and marketing outreach campaign messages delivered directly to a PCD.

RDS also has the ability to carry and deliver audio alerts and flashing lights combined with messages in real time. An audio alert (beep) or flashing light combined with a utility message means customers don't have to be looking at the device to know they should be alerted to an event.

10. AMI Compatibility

As currently contemplated, the proposed statewide RDS communications system under LMS-3 is an instant one-way messaging system that sends messages directly to RDS-enabled PCDs or smart grid devices. This system does not require a communicating meter or AMI system but can compliment AMI systems as a separate and autonomous communications channel. Customer responses can be measured in aggregate at the substation, feeder or by individual communicating meters as part of the utility company network monitoring infrastructure without the requirement for a confirmation message from the PCD back to the utility via an AMI network.

The current proposed draft reference design of the PCD would contain a non-removable RDS receiver coupled with an expansion port. The expansion port design encourages interoperability with future AMI systems that will allow utilities and other service providers to add communications modules and establish links to other devices. Thermostat manufacturers are currently developing PCT devices based on the previously published draft California PCT reference design, which includes functionality for both one-way and two-way communications systems to support various pricing and load control programs.

11. Benefits Summary

RDS communications technology offers several other substantial benefits which we summarize as follows:

a. **Blackout Communications**. Because radio stations typically operate on backup power during power interruptions, RDS-enabled devices with a battery backup can be functional through blackouts. This capability can enable utility customer service communications during a blackout, and allows for the proper messaging and commands to help resume grid operations in a more controlled and stable manner.

b. **Instant Delivery**. The proposed statewide RDS network would operate with minimal message latency. Messages can be delivered to millions of endpoints in seconds across utility service area, geographic and other boundaries. This is particularly useful in fast occurring events like blackouts or other emergencies.

c. **Signal Penetration**. RDS communications through licensed FM radio signals provide wide, deep and remote area market coverage. Additionally, FM radio signals provide excellent building penetration including basements without the use of repeater nodes to extend mesh networks.

d. **Longevity.** A statewide RDS network would leverage existing, proven stable and ubiquitous FM radio station communications infrastructure. Radio stations are a very reliable communications method and the FCC licensees operating radio stations have invested millions of dollars to create a reliable infrastructure to communicate with their listeners which won't be abandoned.

e. **Scalability**. A statewide RDS network would offer excellent scalability to operate millions of simultaneous endpoints without the need for additional data center server upgrades to deliver the same level of service as devices are purchased and added to the network. In comparison, other communications systems may require the continued addition of data center servers to support scalability.

f. **Portability**. The stable global RDS standard will enable "plug and play" portability of consumer devices such as PCD's and appliances across utility and geographic boundaries.

g. **Retrofit of Legacy Systems.** RDS is increasingly looked upon as a technology to be used for the retrofit of potentially stranded demand response assets using aging paging technology. California utility companies utilizing paging-based demand response and load control devices could retrofit these devices with RDS technology to upgrade potentially stranded assets and quickly add millions of endpoints operated under existing utility programs as AMI systems are being installed and developed.

Our company applauds the vision of the California Energy Commission in adopting innovative Load Management Standards and urges the adoption of LMS-3 and LMS-6 as originally proposed.

Please contact me if you have any questions or require additional clarification on the contents of this letter.

Sincerely,

Rick Boland
President and CEO

1062 Ray Avenue Los Altos, California 94022 (t)650.949.1032 · (f)650.887.2164 · www.e-radiousa.com