

Subcommittee Recommendations on User Requirements Based on IEEE 1451.5 Surveys

The following are recommendations based upon two user requirements surveys conducted by the IEEE P1451.5 working group. The goal of these surveys is to collect information of what possible user requirements that the IEEE P1451.5 Working Group should consider when making a wireless sensor standard.

The two surveys that were conducted were a survey in conjunction with the IEEE P1451.5 Working Group web site from September to October 2002, and a survey conducted at a face to face meeting at Sensors Expo in Boston on September 23, 2002.

The subcommittee who formed these recommendations consisted of Dave Perrussel (Naval Surface Warfare Center – Dahlgren Div.), Steve Smith (Oak Ridge National Laboratory) and Ken Cornett (Motorola).

1. Application/Message Rate/Resolution

Recommendations:

Message Rate – The recommendation is not to specify a minimum message rate .

Resolution – The recommendation is for a minimum of 4 bits of resolution, but to have the standard accommodate for at least 32-bits of resolution.

2. Minimum Acceptable Transmission Range:

Recommendations:

The recommendation calls for no minimum distance but to allow for a maximum distance of 1000 meters. However, this would be application dependant.

3. Minimum Acceptable Number of Sensors per Access Point:

Recommendations:

The recommendation is to allow for up to 64 sensors per access point.

4. Maximum Acceptable Latency: (in ms)

Recommendations:

The recommendation is to allow for 10 ms or greater latencies.

5. Minimum Acceptable Battery Life: (in months)

Recommendations:

The recommendation is not to specify a minimum battery life.

6. Minimum Acceptable Battery Capacity :**Recommendations:**

The recommendation is not to specify battery capacity.

7. Desired battery size:**Recommendations:**

The recommendation is no to specify a battery size.

8. Is intrinsic safety required?**Recommendations:**

The recommendation is not to specify that intrinsic safety is required but the standard should allow for it.

9. Antenna Style**Recommendations:**

The recommendation is not to specify an antenna style.

10. Is Data Security required?**Recommendations:**

The recommendation is not to specify that data security is required, but to allow for it in the standard.

11. Prioritize Requirements: In the following table, please prioritize each of these requirements with a “priority order” of importance to you. Rank each of the following on a scale from 1 to 5 where:

1 = not important, 5 = very important

The results that were sent to the working group from the Web Site Survey had 21 responses, with 8 categories, ranging from 1 to 8, with 1 being most important and 8 least important. Web site averages come from adding up all responses and dividing by the number of responses.

Remember, the LOWER the number means more important!

Recommendations:

The recommendation is not to specify these in the standard, but allow for them and to have sensor manufacturers consider these results when making wireless sensors.

Listing from most important to least important:

(based from Web Site survey)

1. Data Reliability – 3.09
2. Battery Life – 3.8
3. Cost – 3.85
4. Transmission Range – 3.9
5. Data Rate – 4.0
6. Data Latency – 4.24
7. Physical Size – 4.8
8. Data Security – 5.5