Preface:

As an industry trade group we are interested in developing a performance-based standard for the measurement of sound from Builders Hardware Manufacturer's certified products in operation. The intent of this is to provide BHMA customers with an objective means of comparing different products with a rating or grading system. BHMA seeks your assistance and expert advice towards developing relevant laboratory testing protocols that take into account the real world use of the product (contribution to environmental background noises in healthcare and education settings that may impact healing and learning).

Please structure your response to this request for a proposal to include details on the following topics as outlined below:

1. How the recommendation fits within our short and longer term goals:
   a. As a group we chose to limit the focus to products covered by ANSI/BHMA A156.2 bored locks and A156.3 exit hardware, then will scale the approach to other products at a later point in time.
   b. The information you provide will be used by BHMA to develop a standard that, "establishes methods for defining levels of acoustic performance for various types of architectural hardware whose non-acoustic performance aspects are described in other applicable BHMA product Standards. This Standard considers all sound generated by the product during operation including, but not limited to, mechanical and electrical".
   c. Typically in the development of testing protocols and standards BHMA takes into consideration that, "Tests described in this Standard are performed under laboratory conditions. In actual usage, results vary because of installation, door and frame construction, maintenance, and other environmental conditions." Conditions for field testing for performance verification are not in the scope of the project.

2. Options for fixturing the product:

   There are many criteria taken into account when designing a test fixture that is adaptable to a range of products, but does not contribute variability to the data being gathered. For the purpose of constructing a test environment, consider the benefit of using different fixtures as detailed below:

   a. Test Lab Universal Fixture
      i. Example: T-slotted aluminum framing system test fixtures
   b. Real World Materials (opening)
      i. Example: Use of a standard production door (hollow metal, wood/composite) & frame system.

3. Considerations that influence process repeatability:

   Recognizing that the duration of time is an important factor when making sound measurements, consider the test event, to start when the device is actuated and ends when device re-latches. During this period, consider the following:

   a. Means of actuating the hardware to release the latches.
   b. Speed of rotation of the door or simulated door opening and closing.

4. Test equipment:

   Making precise measurements of sound requires the right equipment for a given application. Recommend, the set up relative to the following:

   a. Sound Gathering :
      i. Type and Quantity of microphones - single or multiple (array)
      ii. Possible placement scenarios
   b. Test Environment Examples:
      i. Acoustic chamber – example: Hemi Anechoic Chamber
      ii. "Quiet Room" – An area that has a low background sound level, which may be close to an In-Situ application.

5. Interpreting the Results & Applying Performance Metrics
   a. Sound Metric Recommendation
   b. How does the recommended unit of measure relate to the test procedure, method, and lab environmental requirements?
   c. How does this lend to a comparison of different products and is it currently used in another industry?

We recognize that for this initiative to succeed, both BHMA and your firm need to ask the right questions at the right time. Let us know what additional information is required for you to understand the problem and how solving it will provide value to our customers, so that your recommended solution is appropriate to the application of our products.