



Fermilab
ES&H Section

INDUSTRIAL HYGIENE INSTRUMENT CALIBRATION
QUEST SOUND LEVEL METER AND AUDIODOSIMETER

10/ 19/92

Objective

To assure proper calibration of the Quest Sound Level Meter and Audiodosimeters.

Quest 215 Sound Level Meter

Equipment

- Quest 215 Sound Level Meter
- Quest CA-12 Audio Calibrator
- IH Sampling Notes Form
- Sound Level Meter Checklist (attached)

Procedure

1. Install and check the batteries of the calibrator and the sound level meter. If the level is below the heavy green line marked BATTERY CHECK, replace the batteries.
2. Insert the sound level meter microphone into the calibrator.
3. Set the sound level meter on SLOW response, A weighting, and 100 dB range.
4. Turn on the calibrator and the sound level meter.
5. The sound level meter should read 110 dB.

If the sound level meter does not calibrate properly, insert a small screwdriver in the small hole on the bottom of the meter and slowly adjust the CAL adjust until the meter reads correctly. Do not use the instrument if you are unable to calibrate it. Notify the ES&H Section.

6. Repeat calibration after sampling has been completed. Note if the unit does not post calibrate. This will invalidate the readings.
7. Record calibration results on IH Sampling Notes form.

Procedure for the Octave Band Analyzer

1. Check operation of the sound level meter as outlined above.
2. Connect the OB-215 to the sound level meter and lock them together with the thumb screw.
3. Set the 215 meter to the 100dB range position and the OB-45 frequency band to 1000 Hz (1K).
4. Using the CA-12 calibrator, insert the microphone into the calibrator and turn both units ON. With the meter set at A, B, C, or LIN position, a full scale deflection of +10 should be obtained.
5. Move the WEIGHTING selector to EXT to engage the OB-45. The meter reading still be almost +10 but may be as much as 0.5 dB lower than full scale.
6. Next, move the FREQUENCY selector to 2KHz and then to 500 Hz. In both positions the meter reading should drop 18 to 19 dB (92-91dB) .

Procedure for P-35 Peak Hold Module/Meter

1. Calibrate the sound level meter. Use the weighting and speed which will be used for field measurements. This is usually the A scale and SLOW speed.
2. Attach the PH-35 to the sound level meter. Set the dB range to 100 dB and the ON/OFF switch to on.
3. Set mode switch on PH-35 to either FAST or IEC. Depress and hold the RESET button. Turn on the calibrator and insert the microphone. The reading on the PH-35 should be full scale (110 dB).
4. If there is some variation, insert a small screwdriver in the hole on the right side of the PH-35 module below the +10dB button, and slowly adjust the slotted pot until the PH-35 reading is the same as the sound level meter reading.

SOUND LEVEL METER CALIBRATION CHECKLIST

- ____ 1. Install and check the batteries of the calibrator and the sound level meter.
- ____ 2. Place the calibrator over the sound level meter microphone.
- ____ 3. Set the sound level meter on SLOW response, A weighting, and 110 dB range.
- ____ 4. Turn on the calibrator and the sound level meter.
- ____ 5. The sound level meter should read 110 dB (+/- 0.2dB).
- ____ 6. Record calibration results on IH Sampling Notes form.

Quest Audiometer

Equipment

- Quest Micro-15 Noise Dosimeter
- Quest CA-12 Audio Calibrator and Adapter
- IH Sampling Notes Form
- Audiometer calibration checklist

Procedure

1. Check the batteries of the calibrator and the audiometer. To check the audiometer's battery, press SOUND LEVEL and check the display for a single decimal point. If additional colons and decimal points appear, the battery is low and requires replacement. To replace the battery, remove the back panel.
2. Place the adapter into the calibrator. Insert the dosimeter's microphone into the calibrator.
3. Turn on the calibrator on and hold down the SOUND LEVEL key on the dosimeter.
4. The dosimeter should read between 109.8 and 110.2 dB. If the reading is slightly off, insert a small screwdriver in the hole marked CAL and slowly turn the adjustment screw while pressing the SOUND LEVEL key until the display is in this range.
5. Repeat calibration procedure after sampling has been completed. If the unit does not post calibrate, the data is invalid.
6. Record calibration results on IH Sampling Notes Form.

Audiosimeter Calibration Checklist

- ___ 1. Check the batteries of the calibrator and the audiosimeter.
- ___ 2. Place the adapter into the calibrator. Insert the dosimeter's microphone into the calibrator.
- ___ 3. Turn on the calibrator on and hold down the SOUND LEVEL key on the dosimeter.
- ___ 4. The dosimeter should read 110 dB.
- ___ 5. Repeat calibration procedure after sampling has been completed
- ___ 6. Record calibration results on IH Sampling Notes Form.