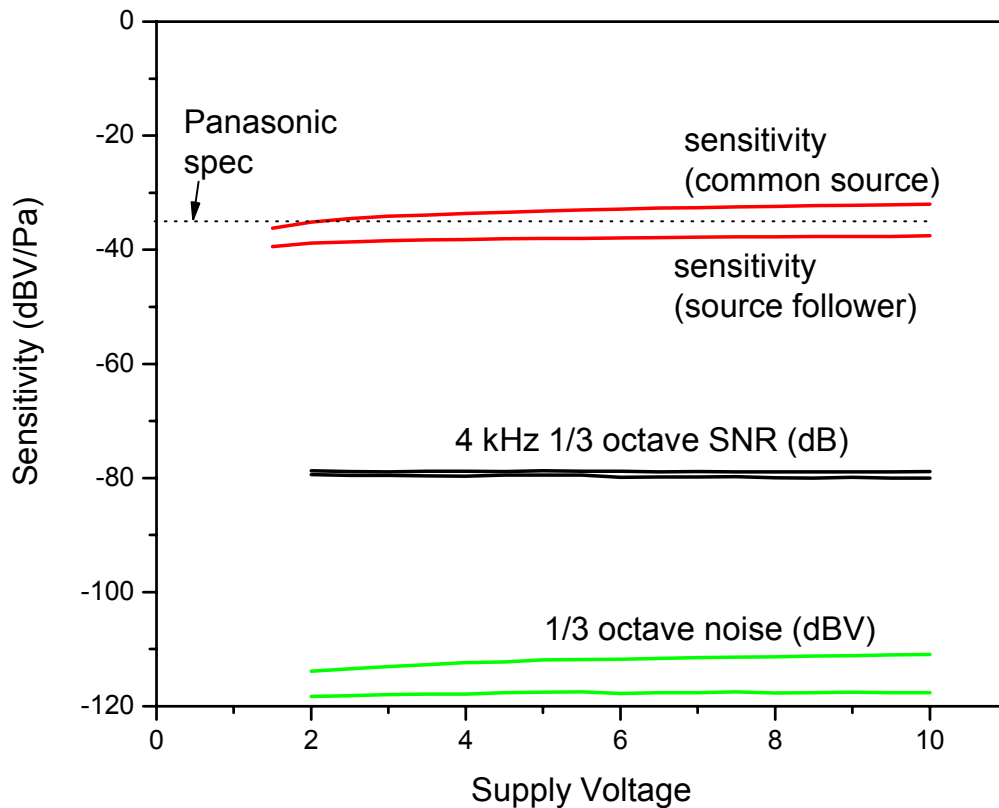


# Test Report on Panasonic WM-61 Omnidirectional Microphone Capsule

## Sensitivity:

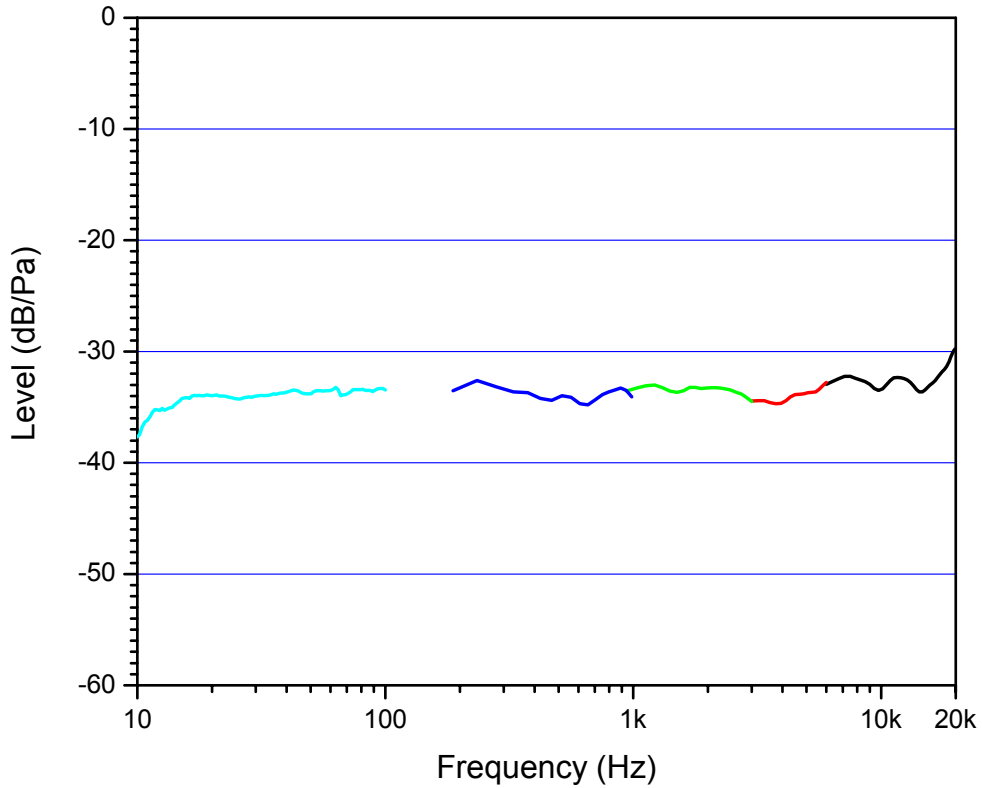
Measured by placing the test capsule into the entrance of a B&K 4321 microphone calibrator.



The sensitivity is shown here for both the unmodified common source configuration, and also for the capsule as modified into a source follower configuration. The sensitivity of the source follower configuration is about 5 dB less than the common source configuration and it increases less rapidly with the increase in supply voltage. The 4 kHz 1/3 octave noise is also shown in this figure. The noise increases with the increase in the gain of the capsule, but note that they don't quite track. The source follower configuration has noise performance about 1 dB better than the common source configuration.

### Frequency Response:

Measured using a quasi-anechoic technique with impulse responses derived from a chirp. The reference microphone is a B&K 4134.



This measurement was supplemented by the addition of a near-field measurement to obtain the low-frequency portion of the response. The measurements shows a response that is quite flat from 15 Hz up to about 16 kHz, and then rises slightly up to 20 kHz. The 45 and 90-degree off-axis curves (not shown here) show slight attenuation in the top octave, such that the 90-degree curve has negligible rise at 20 kHz.

## Noise:

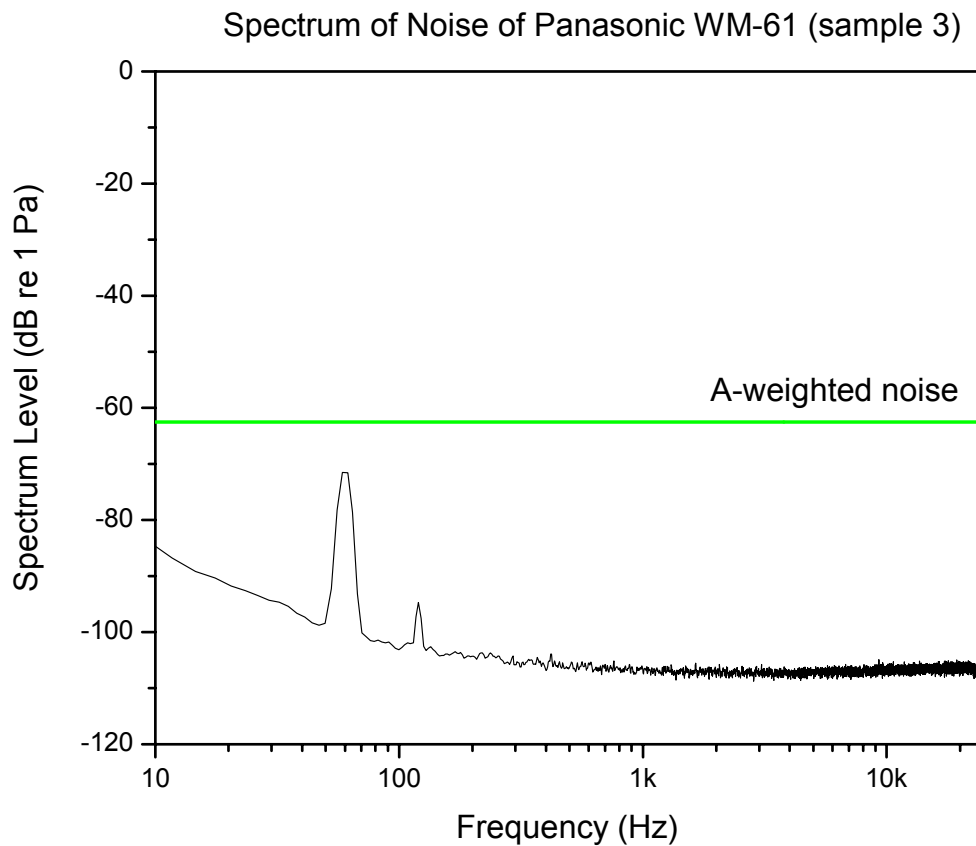
The noise floor is measured after first calibrating the sensitivity of the capsule using a B&K 4321 microphone calibrator. The microphone is then placed in a quiet room or an isolation device and the output is recorded again, but with no incident sound. The ratio of the two is the signal-to-noise ratio. The calculation is repeated after applying an A-weighting filter to the portion of the signal which contains the noise of the microphone.

The noise measurement may be considered to be the upper limit of the noise floor of the microphone capsule. The A-weighted noise is:

-62.53 dB/Pa

about 0.5 dB better than the Panasonic specification.

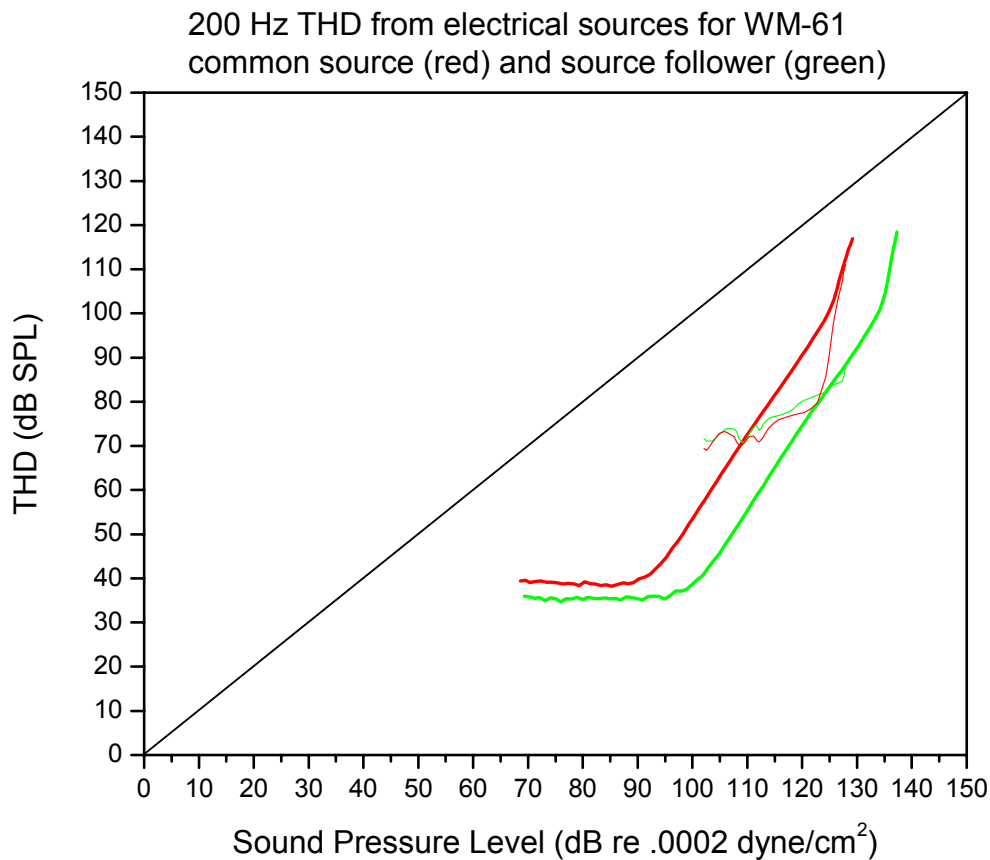
The noise spectrum is computed by averaging consecutive 16k FFTs over the length of the measurement interval.



## Distortion and Overload:

Distortion was measured by placing the capsule in the nearfield of a loudspeaker (Event BAS20-20). The position of the microphone capsule was varied to cause the acoustic level to vary, but the loudspeaker drive was constant. The test frequency was 333 Hz and the third harmonic was measured. Both the original (common source) and modified (source follower) configuration were tested. The power supply voltage was 10 Volts and the source or drain resistor was 2k2 Ohms  $\pm 1\%$ .

The second set of measurements was made by driving the case of the capsule electrically while the microphone was suspended in an insulation chamber. These measurements show the electrical distortion of the microphone capsule only.



The measurements show relatively similar distortion up to the point where common source configuration overloaded. The differences in distortion between the common source and source follower configurations are probably not meaningful, but the measurements are reproduced here for interest. It was not possible to create a high enough acoustic level with the present setup to cause the source follower version to overload.