

NATIONAL PHYSICAL LABORATORY

Teddington Middlesex UK TW11 0LW Switchboard 020 8977 3222



Test Report

'MOSQUITO' SOUND SOURCE
1050

FOR	Compound Security Systems Limited Unit 7 Glynmil Close Bradley Gardens Merthyr Tydfil Mid Glamorgan CF47 0GE
FOR THE ATTENTION OF	Mr H Stapleton
DESCRIPTION	Compound Security Systems Mosquito sound source
IDENTIFICATION	serial no. 1050
DATE OF TEST	07 December 2005

Reference: S 5341

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Date of issue: 08 December 2005

Signed: S.P. Dowson (Authorised Signatory)

Checked by: RGB

Name: Mrs S P Dowson for Managing Director

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RESULTS

Key result

The A-weighted sound pressure level at a distance of 3 m from the test device was determined to be 76.0 dBA. Further details of the derivation of this result can be found below.

Supporting results

Figure 1 shows the variation in r.m.s. amplitude of the sound pressure during one modulation cycle, measured at a distance of 1 m. The corresponding average sound pressure level (SPL) was found to be 92.4 dB. The determination of the average sound pressure level was repeated a further four times and found to be with 0.1 dB of this result. These measurements were made with a drive voltage of 11.91 V applied to the sound source.

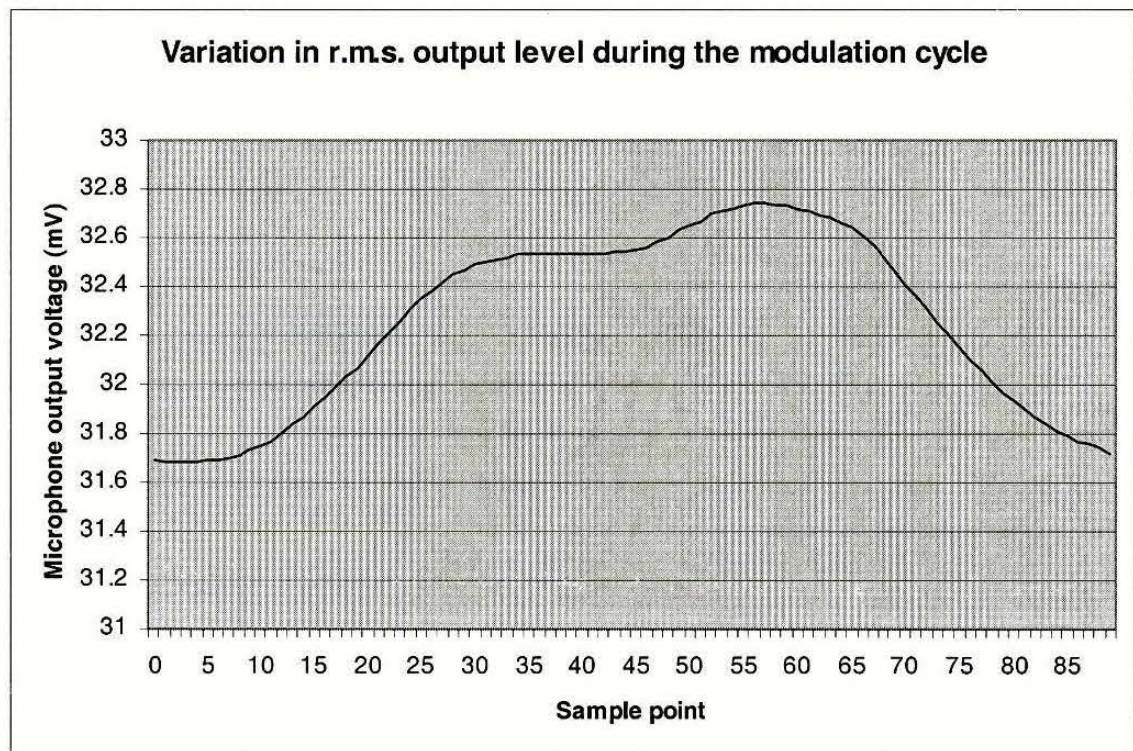


Figure 1. Output variation during modulation cycle

The average sound pressure level was measured at a distance of 2 m and the reduction in sound pressure level found to be 5.8 dB. This is close to the ideal 6 dB expected for a point source radiating spherically into a free field. However the test device is known to produce a directional sound field which may account for the difference. From this data it is possible to estimate the variation in sound pressure with distance from the source in a free-field environment. This is shown in Figure 2. However it should be noted that the

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variation in sound pressure level with distance, in other acoustic environments will depend on local conditions.

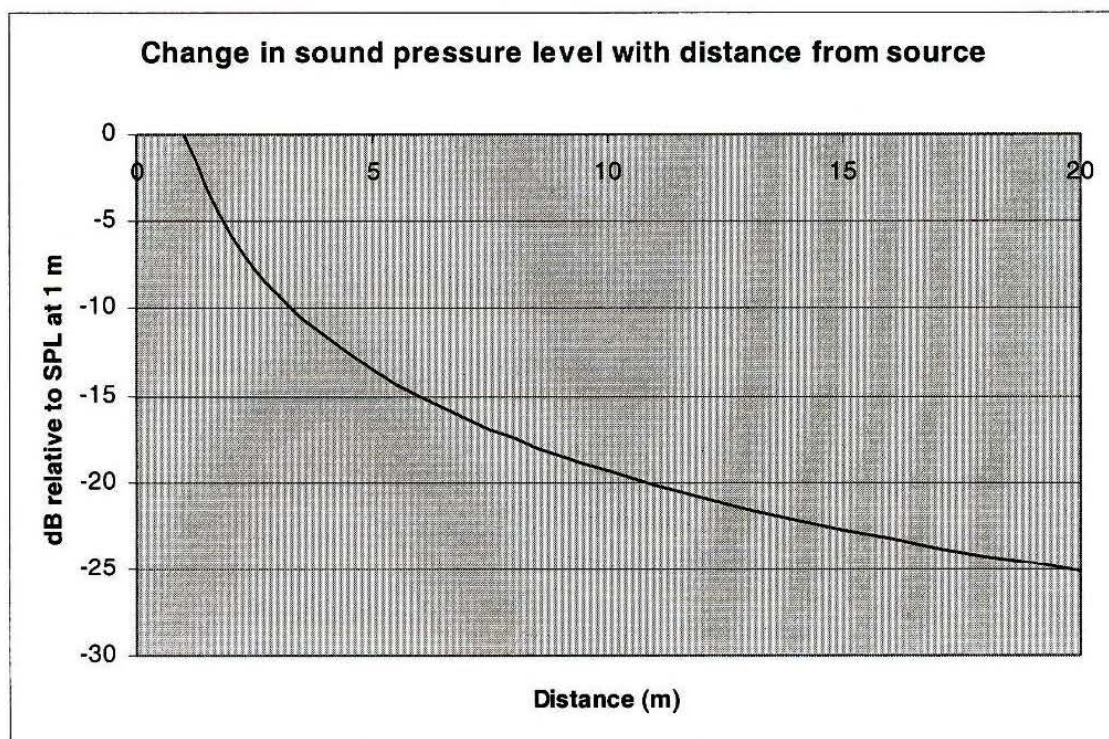


Figure 2. Variation of sound pressure level with distance from source

The fundamental frequency of the acoustic output was determined ten times and found to have a mean of 16.8 kHz (range 16.0 kHz to 17.2 kHz). At this mean frequency the A-weighting factor is -7.2 dB.

The A-weighted sound pressure level at 3 m is therefore estimated to be 76.0 dBA based on the data presented above.

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Table 1 shows the variation in the modulated acoustic output as a function of the voltage used to drive the sound source. The measurements were made at a distance of 1 m.

Drive voltage (V)	Max SPL during modulation cycle (dB)	Min SPL during modulation cycle (dB)
12.0	92.3	91.8
12.5	93.6	93.2
13.0	94.1	93.9
13.5	94.9	94.4
14.0	94.9	94.4
17.0	99.4	96.8

Table 1. Maximum and minimum SPL during the modulation cycle as a function of drive voltage.

The maximum frequency the device was able to output (via internal adjustment) was also determined and found to be 18.6 kHz.

During the measurements the room temperature was in the range 22 °C to 23 °C and the static pressure was in the range 101.4 kPa to 101.5 kPa.

The estimated uncertainty in all sound pressure levels quoted in this report is 0.5 dB. This is based on a standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95%.