



Test Report

Sound Attenuation of Hearing Protectors (Ear Plug)

Model: Silentear

Manufacturer: HearTech Limited

Date of Tests: 11-5-2005 to 12-11-2005

Signed:

Prof. J. Attias
Institute Director



Introduction:

The report summarizes the results of “real ear test attenuation” of the above-mentioned earplugs according to BS EN 24869-1: ISO 4869-1.

Test stimuli, site and equipment:

The tests were carried out in the institute for audiology in the school of communication disorders, Haifa University. The audiometric tests were performed by certified audiologists, using standard attenuation rooms (S1.11-1971-R1976) and calibrated audiometers (S3.6-1969). Test signals included narrow-bands in $\frac{1}{2}$ -1 octaves.

Test Subjects:

All the 15 subjects were normal hearing subjects, tested prior the test of the attenuation of the earplugs. The ages of the subjects ranged between 18-25 years.

Fitting the ear-plugs

Guidance regarding the fitting was provided and practiced by the audiologists. In addition the manufacturer’s instructions were given to the subjects as well.

Test Procedure

Each subjects was tested after he fitted both ears with the earplugs. Auditory thresholds stimulus was obtained with and without the earplugs.



Results:

Table 1, details the attenuation provided by the earplugs for each NB stimuli as well as the average data.

Subject	0.125 KHz	0.25 kHz	0.5 kHz	1 kHz	2 kHz	3 kHz	4 kHz	Av- 3&4 KHz	6 kHz	8 kHz	Av 6 & 8 kHz
1	30	30	30	40	45	50	55	52.5	45	50	47.5
2	30	30	30	35	45	45	55	50	45	50	47.5
3	30	35	35	35	40	45	55	50	50	50	50
4	30	35	40	35	40	45	50	47.5	45	45	45
5	40	40	35	40	40	50	45	47.5	45	55	50
6	30	35	40	40	40	45	45	45	45	50	47.5
7	30	40	40	40	45	45	50	47.5	45	50	47.5
8	30	40	45	45	45	50	50	50	40	50	45
9	30	35	30	45	40	45	45	45	45	50	47.5
10	35	40	45	45	40	60	60	60	45	65	55
11	35	35	35	40	40	45	50	47.5	50	55	52.5
12	40	35	45	45	45	55	60	57.5	50	60	55
13	40	35	40	45	45	60	60	60	50	65	57.5
14	35	35	45	45	50	55	55	55	50	50	50
15	40	35	45	45	40	50	55	52.5	50	55	52.5
Average	33.7	35.6	38.7	41.3	42.7	49.7	52.7	51.2	46.7	53.3	50
SD	4.41	3.2	5.8	3.99	3.12	5.4	5.3	5	3	5.8	3.77
Estimated protected A-weighted sound levels	59.1	62.2	69.8	66.7	65			59.8			56.3

NRR= 108dBC -73.2 dBA (log sum of 7 octave band levels in the row)-3dB (The 3 dB spectral uncertainty factor is to protect against overestimates of the ear plug's noise reduction that could arise from potential differences between the assumed spectrum and that of the user's actual response)= **31.8 dB**

NRR for low frequencies 0.15-1 kHz=28 dB
 NRR for High frequencies 2-8 kHz= 47.5 dB



The Noise Reduction Ratio (NRR) represents the attenuation that will be obtained by 98% of the users in typical industrial noise environments, assuming they wear the device in the same manner as the subjects, and adhere to manufacturers instructions.

When a typical industrial noise of 108 dB (c) is assumed then the NRR is expected to be 31.8 dB

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