

Probabilistische Erdbeben-Gefährdungs-Analyse für KKW-StandOrte in  
der Schweiz (PEGASOS)

# **Probabilistic Seismic Hazard Analysis for Swiss Nuclear Power Plant Sites (PEGASOS Project)**

## **Final Report Volume 2 Results**

prepared for the  
Unterausschuss Kernenergie (UAK) der Ueberlandwerke (UeW)

by the  
Nationale Genossenschaft für die Lagerung radioaktiver Abfälle (Nagra)

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# 1 INTRODUCTION

Volume 2 of the PEGASOS project report contains the full suite of hazard results as specified by UAK (see PMT-AN-0235 or section 7.2 of Vol.1) in the form of figures and numerical values (tables). The figures consist of hazard curves, hazard spectra and deaggregation plots. Each set of hazard curves and uniform hazard spectra exists as a numerical table with the file naming corresponding to the figure numbering in the report. These numerical tables are provided as electronically stored ASCII-files on a CD-ROM (attached to the inside of the back cover). Note that only in these tables can one find the 100 fractile curves required for the soil hazard results (cf. paragraph 6 of the result specifications).

The structure of the attached CD-ROM archive closely follows the outline of Volume 2. There is one file per figure and the file name directly refers to the figure number (e.g. Fig. 2-10.07.asc). Each file contains a header describing the content of the figure, followed by a first section with matrices of the X- and Y-data, and a second section listing X- and Y-vector pairs for each curve of the figure. This should allow great flexibility in loading the data into data processing and visualization software.

Figures and tables of uniform hazard spectra (UHS) were only produced if the mean hazard existed at all frequencies for the given level of annual probability of exceedence. Any requirement for extrapolation of the data to cover a missing value for a particular level of exceedence probability led to the exclusion of the associated figure. Similarly, in the case of the retained figures, the fractiles were not extrapolated towards the UHS level of probability of exceedence. This means that in a few cases, a few spectra of lower fractiles and of the median do not cover the full frequency range (see e.g. Fig. 2-1.14).

Since the deaggregation figures show percentile contributions to the total hazard in magnitude - distance - epsilon bins, it was considered that the numerical values of these data would be of little interest. Therefore, no associated tables were generated for these figures.

## 2 BEZNAU

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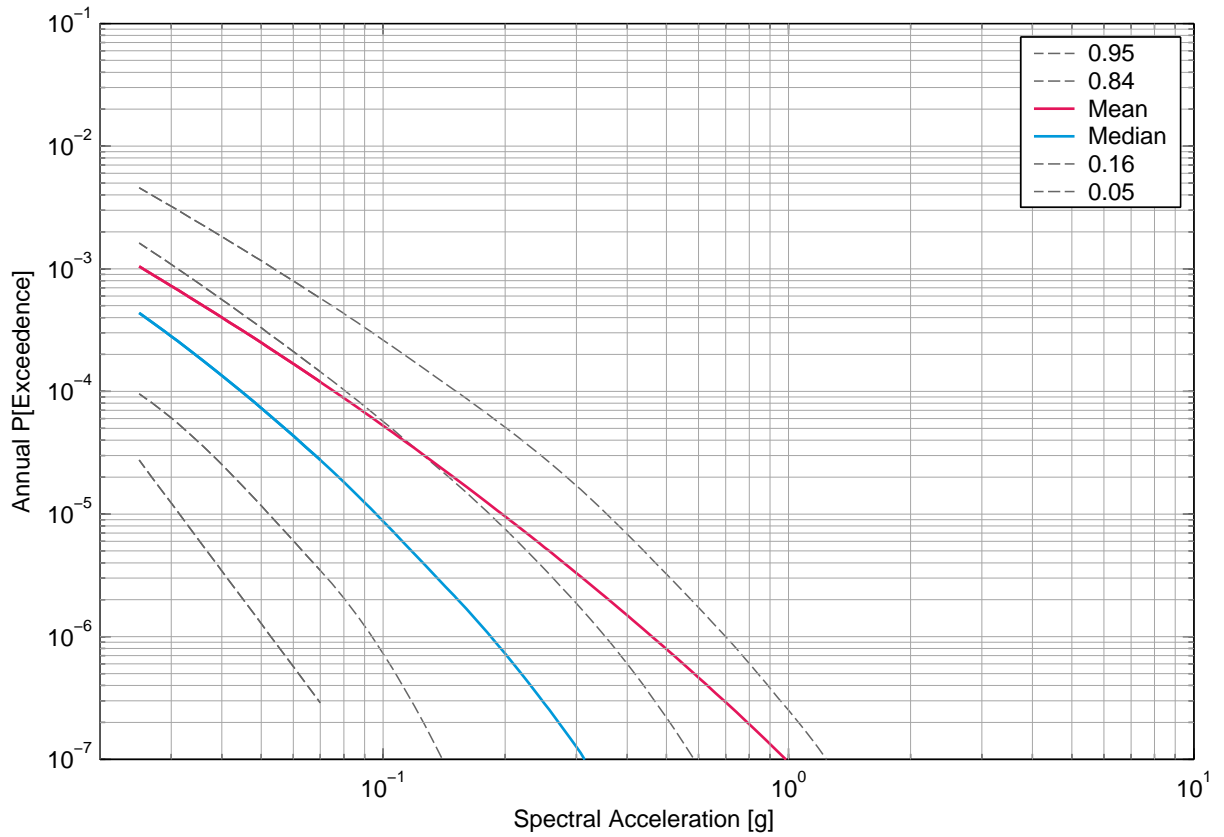


Fig. 2-1.1: Beznau, horizontal component, rock, surface, mean hazard and fractiles, 0.5 Hz.

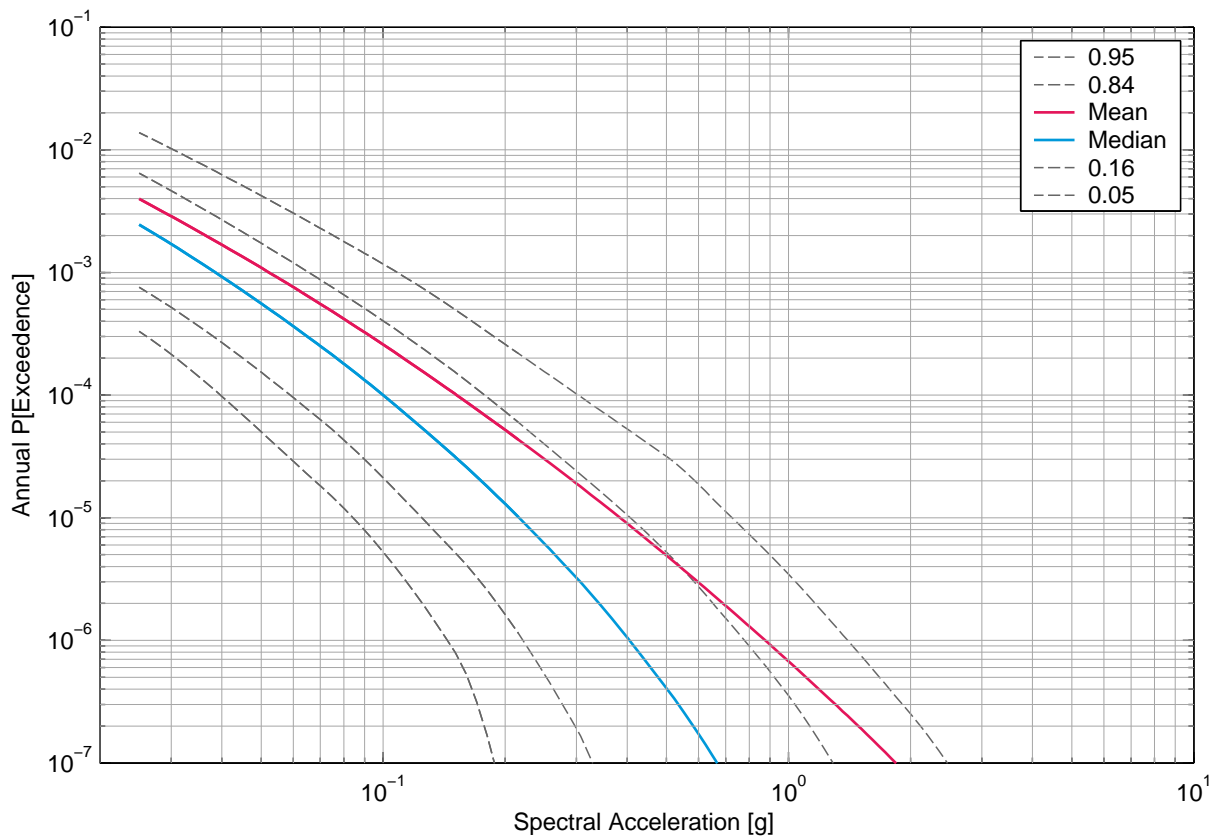


Fig. 2-1.2: Beznau, horizontal component, rock, surface, mean hazard and fractiles, 1 Hz.

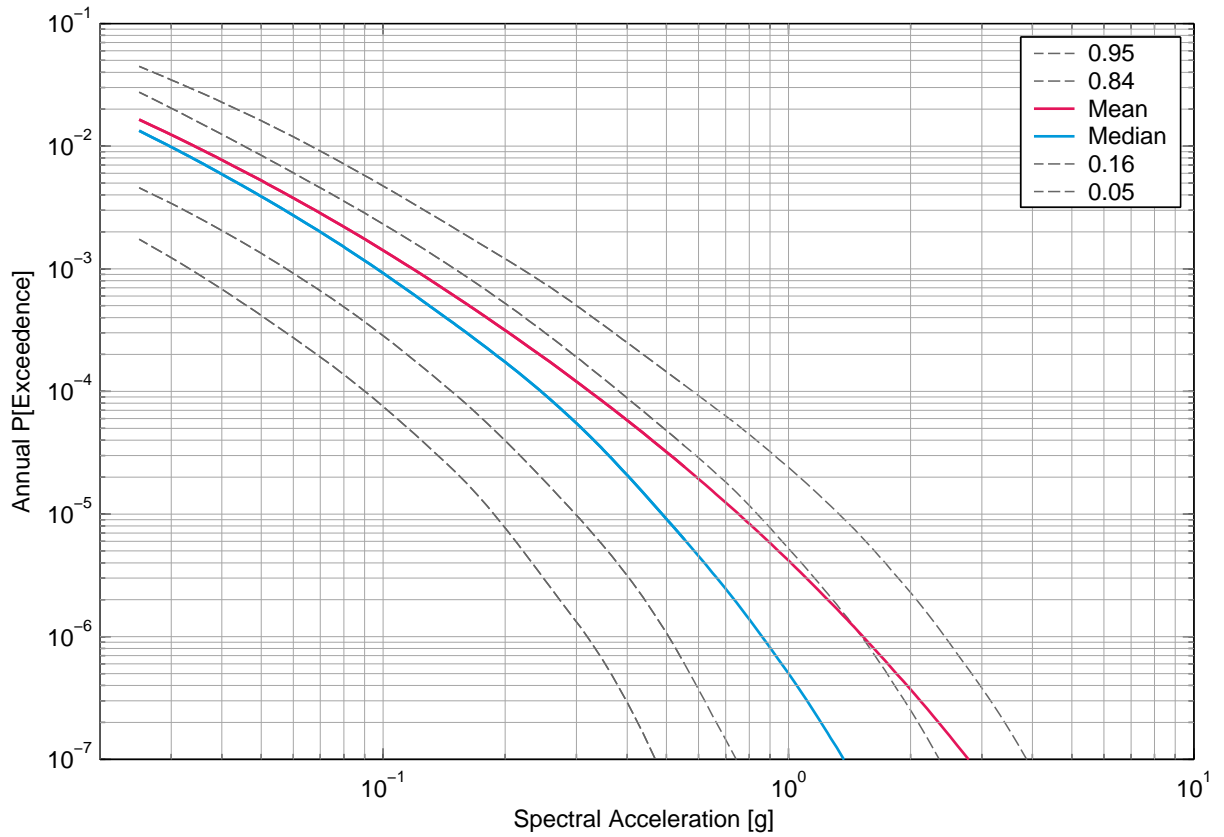


Fig. 2-1.3: Beznau, horizontal component, rock, surface, mean hazard and fractiles, 2.5 Hz.

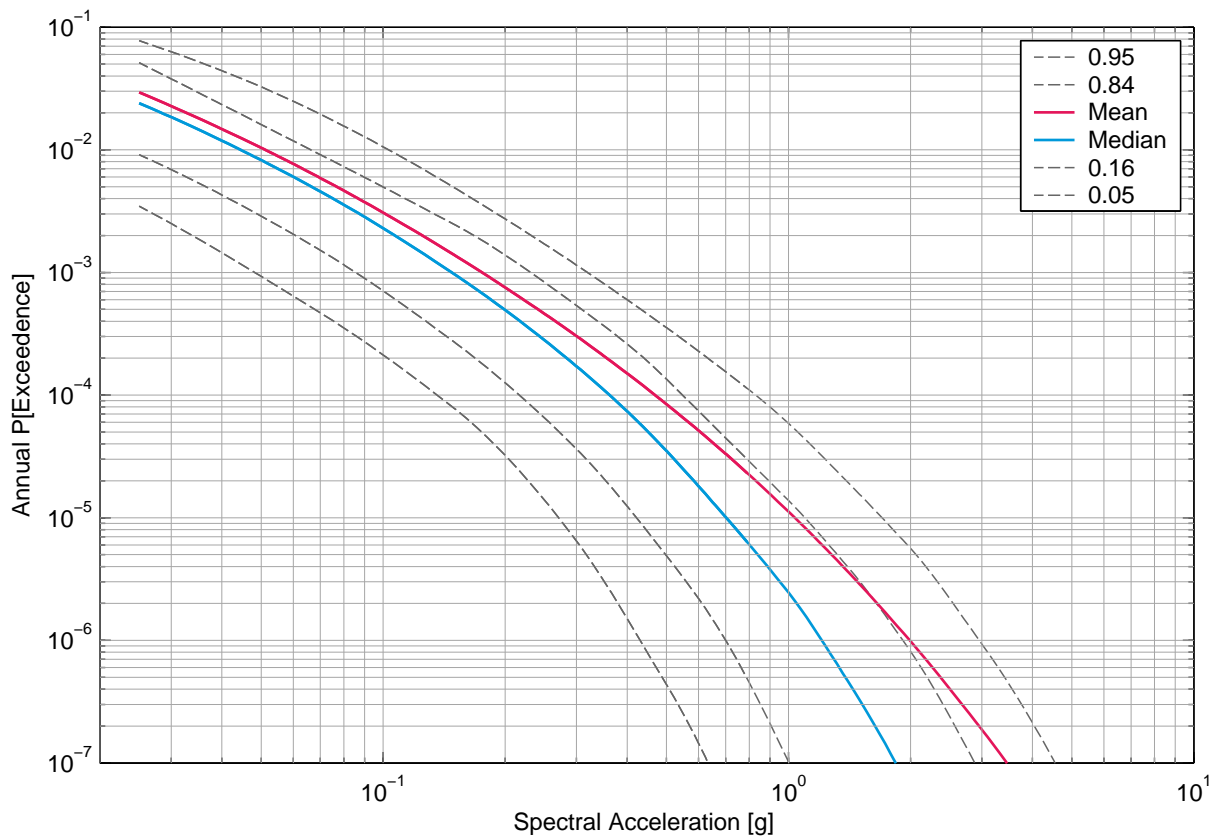


Fig. 2-1.4: Beznau, horizontal component, rock, surface, mean hazard and fractiles, 5 Hz.



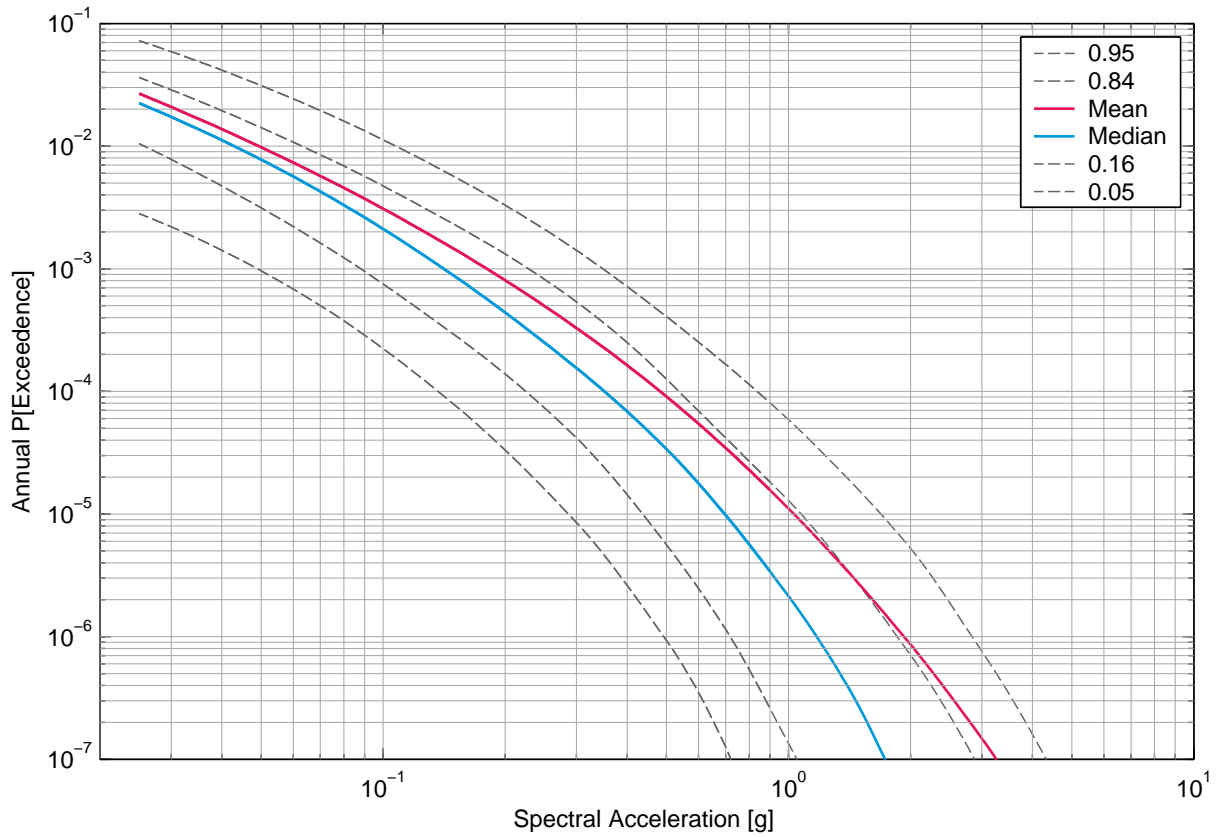


Fig. 2-1.5: Beznau, horizontal component, rock, surface, mean hazard and fractiles, 10 Hz.

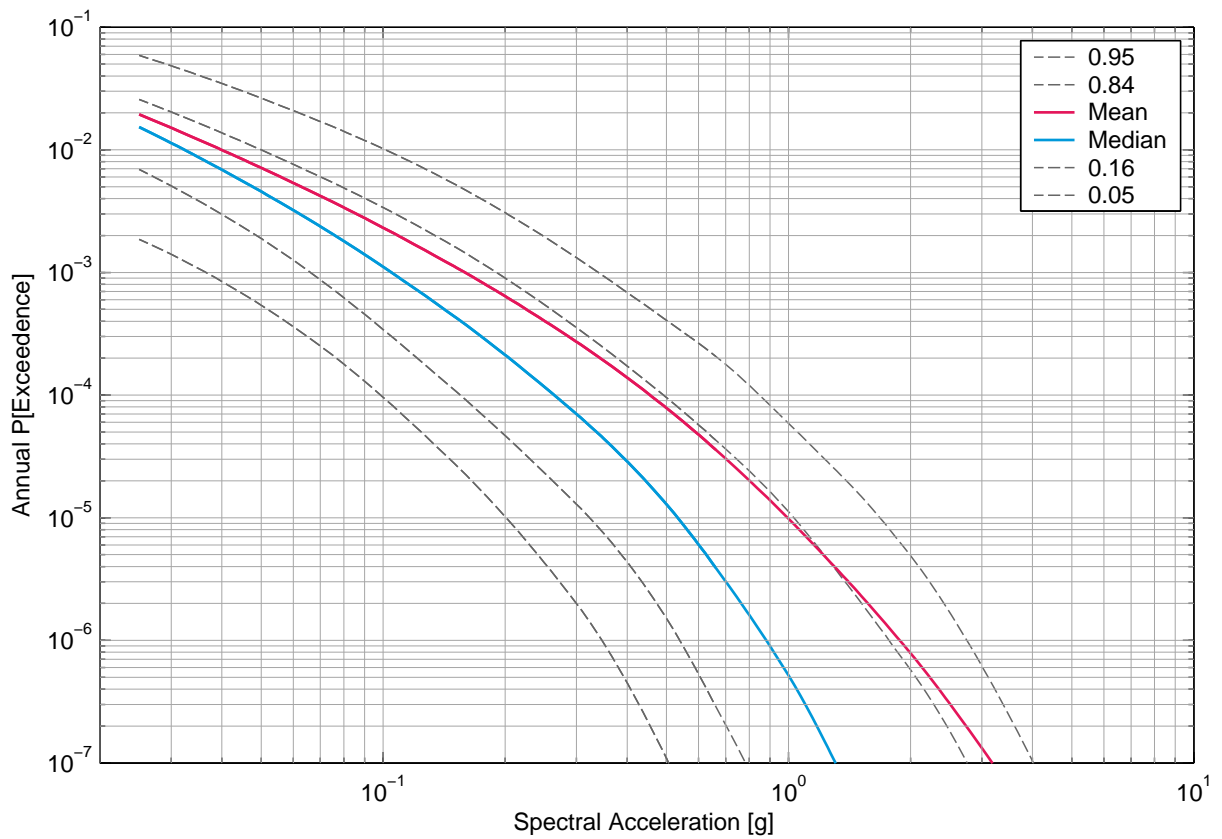


Fig. 2-1.6: Beznau, horizontal component, rock, surface, mean hazard and fractiles, 20 Hz.

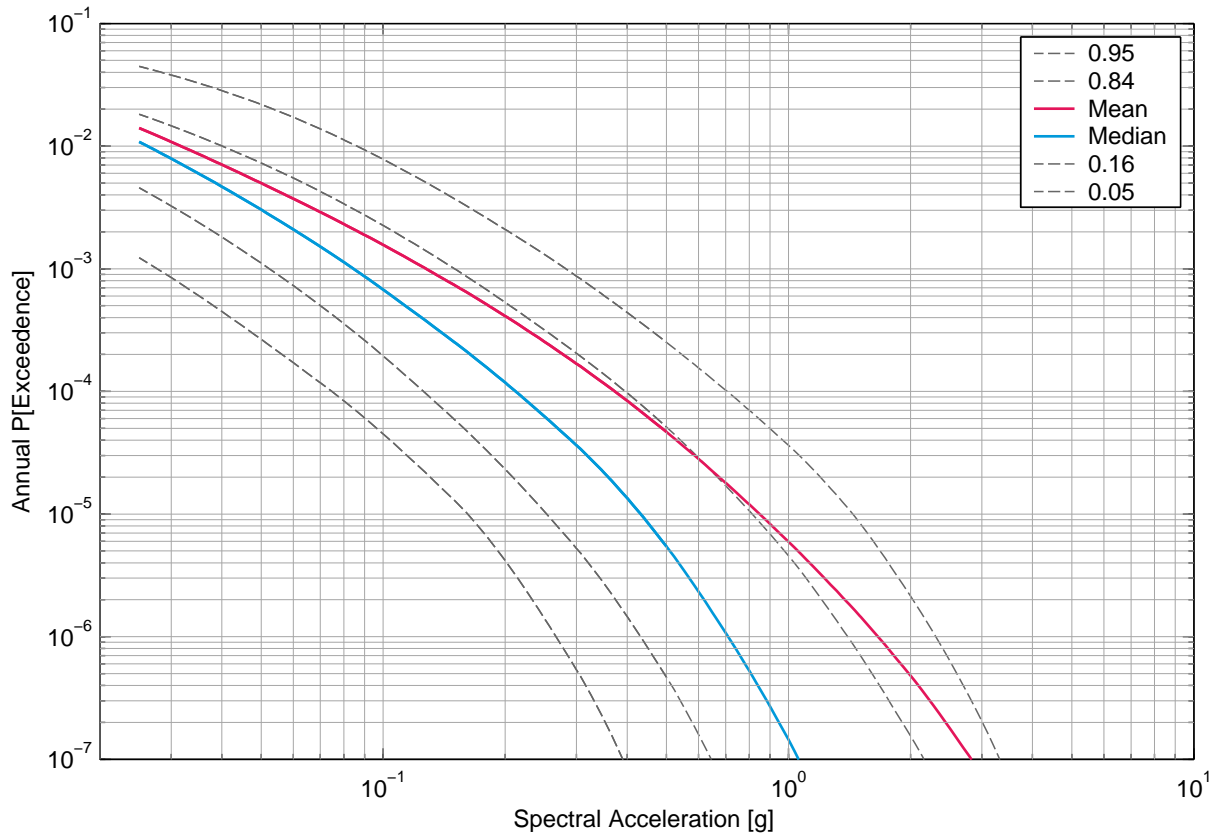


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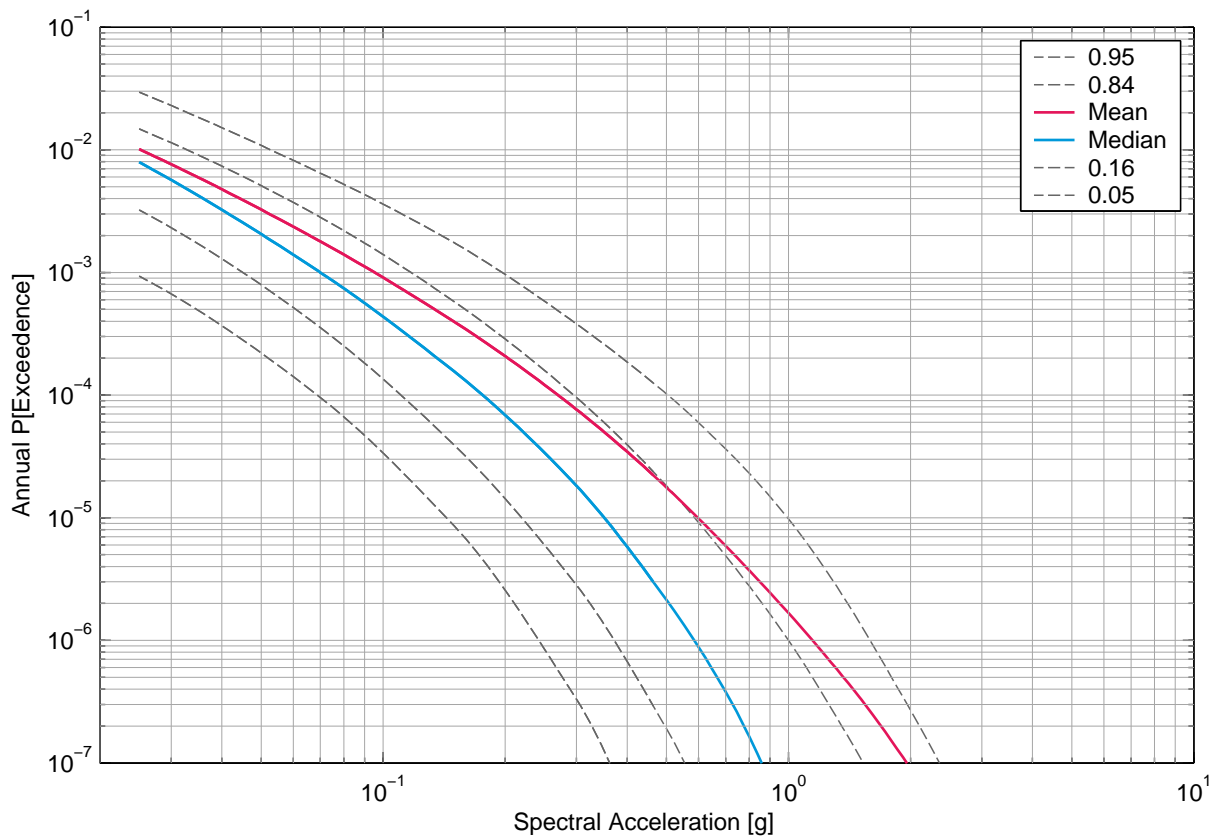


Fig. 2-1.8: Beznau, horizontal component, rock, surface, mean hazard and fractiles, 50 Hz.

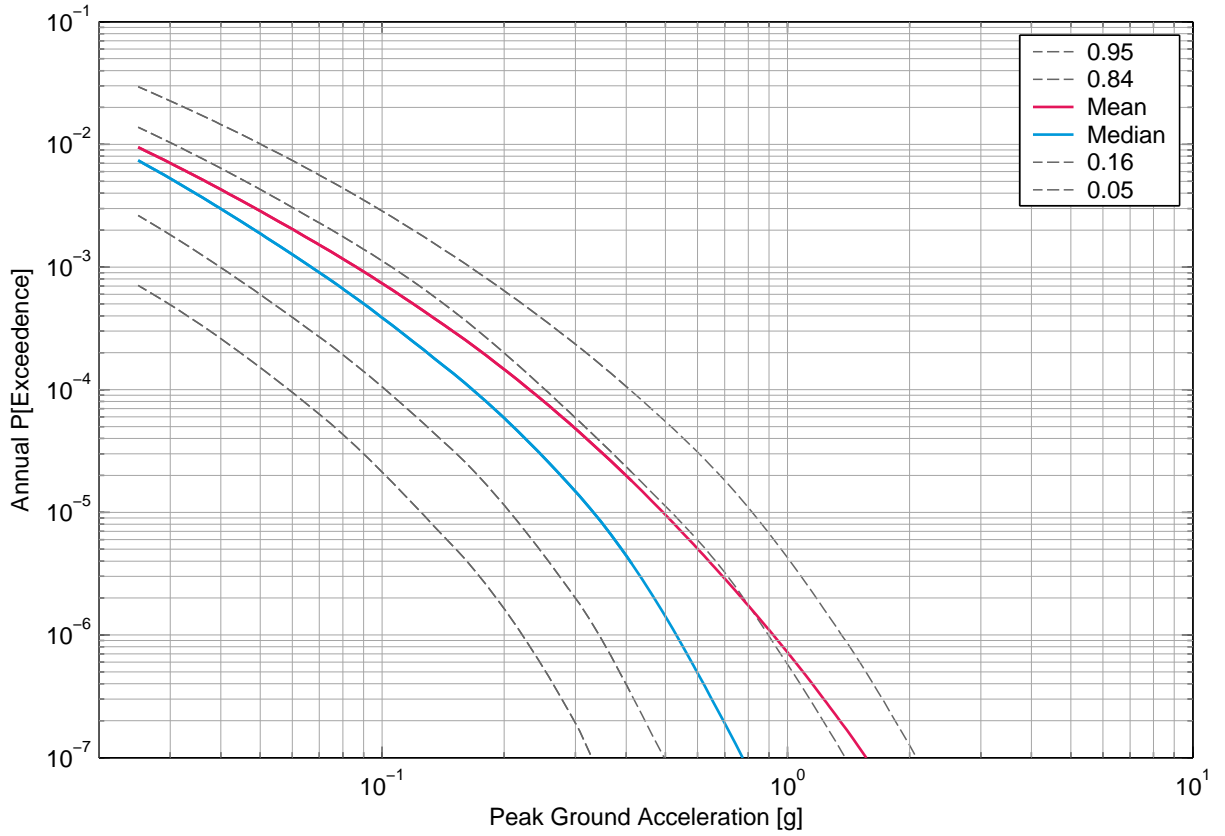


Fig. 2-1.9: Beznau, horizontal component, rock, surface, mean hazard and fractiles, PGA.

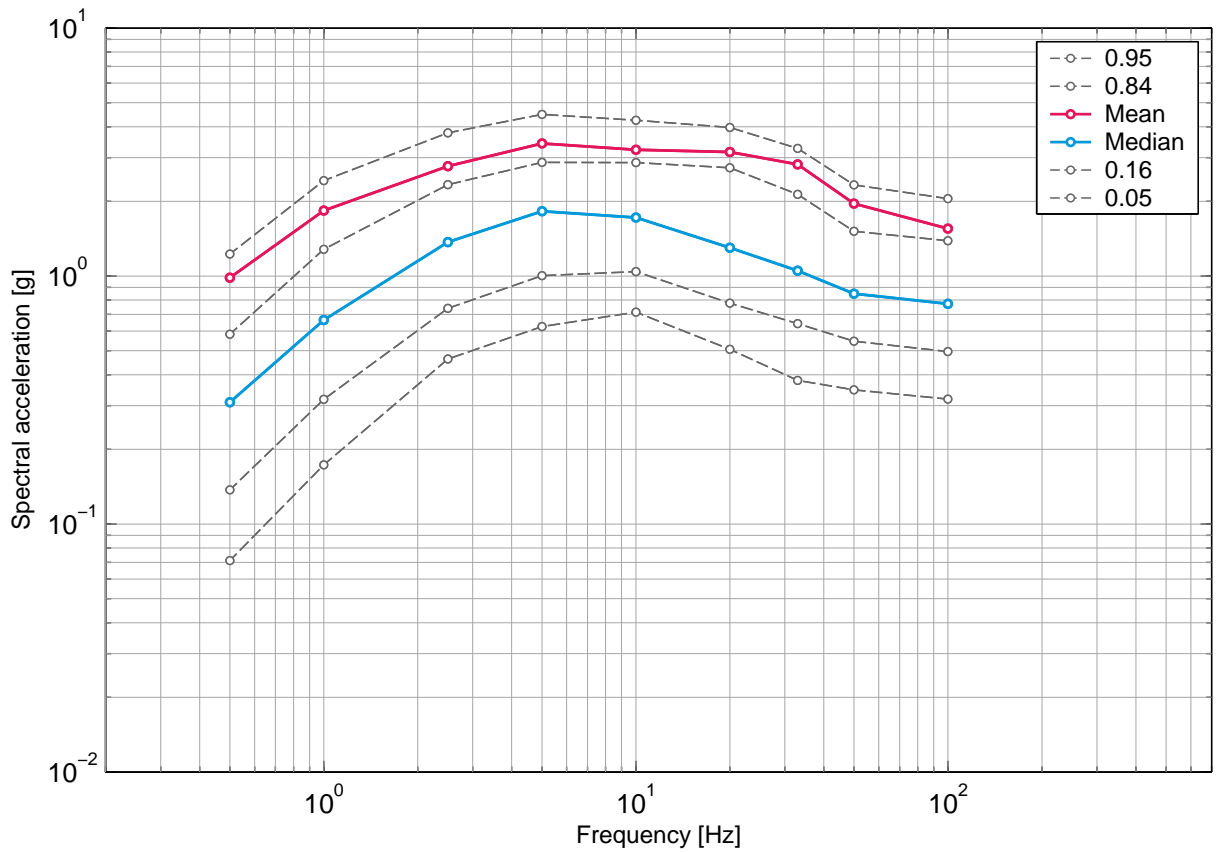


Fig. 2-1.10: Beznau, horizontal component, rock, surface, uniform hazard spectra for an annual probability of exceedence of 1E-07 and 5% damping.

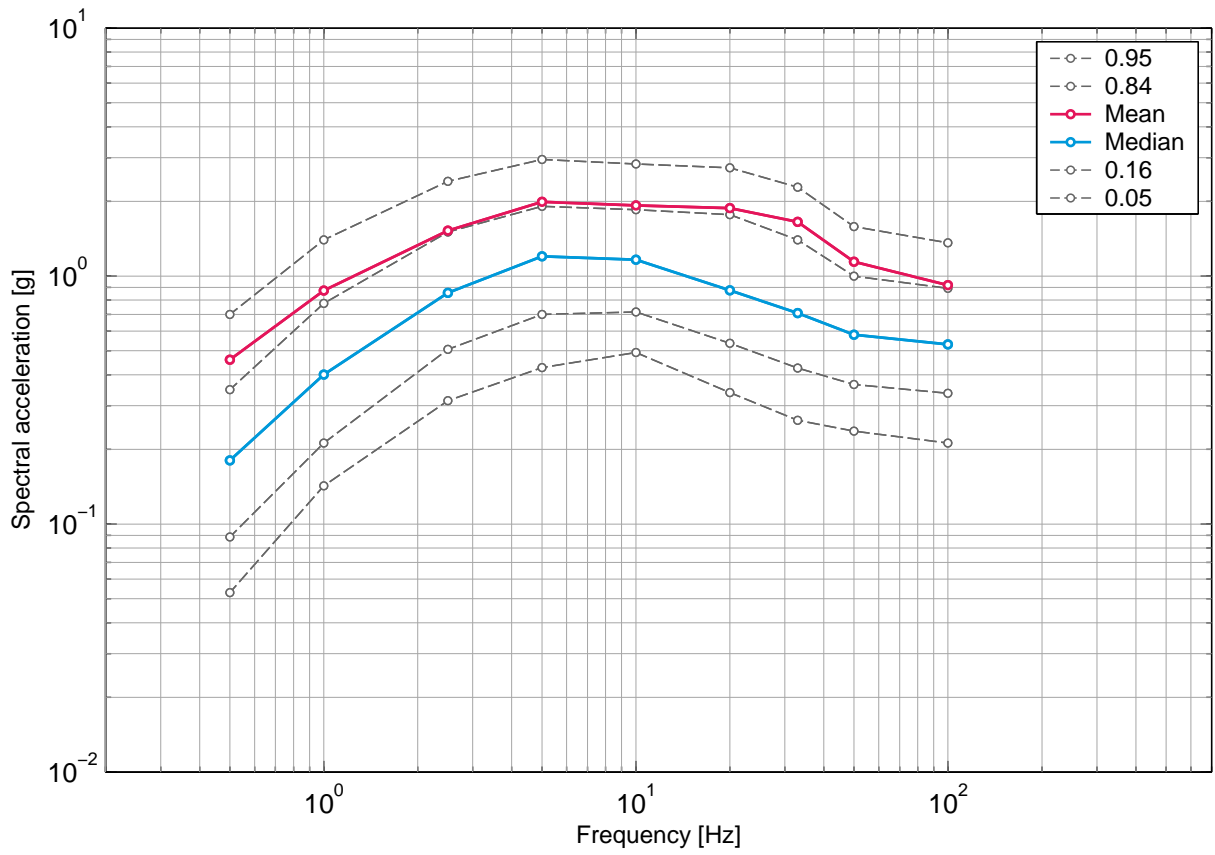


Fig. 2-1.11: Beznau, horizontal component, rock, surface, uniform hazard spectra for an annual probability of exceedence of 1E-06 and 5% damping.

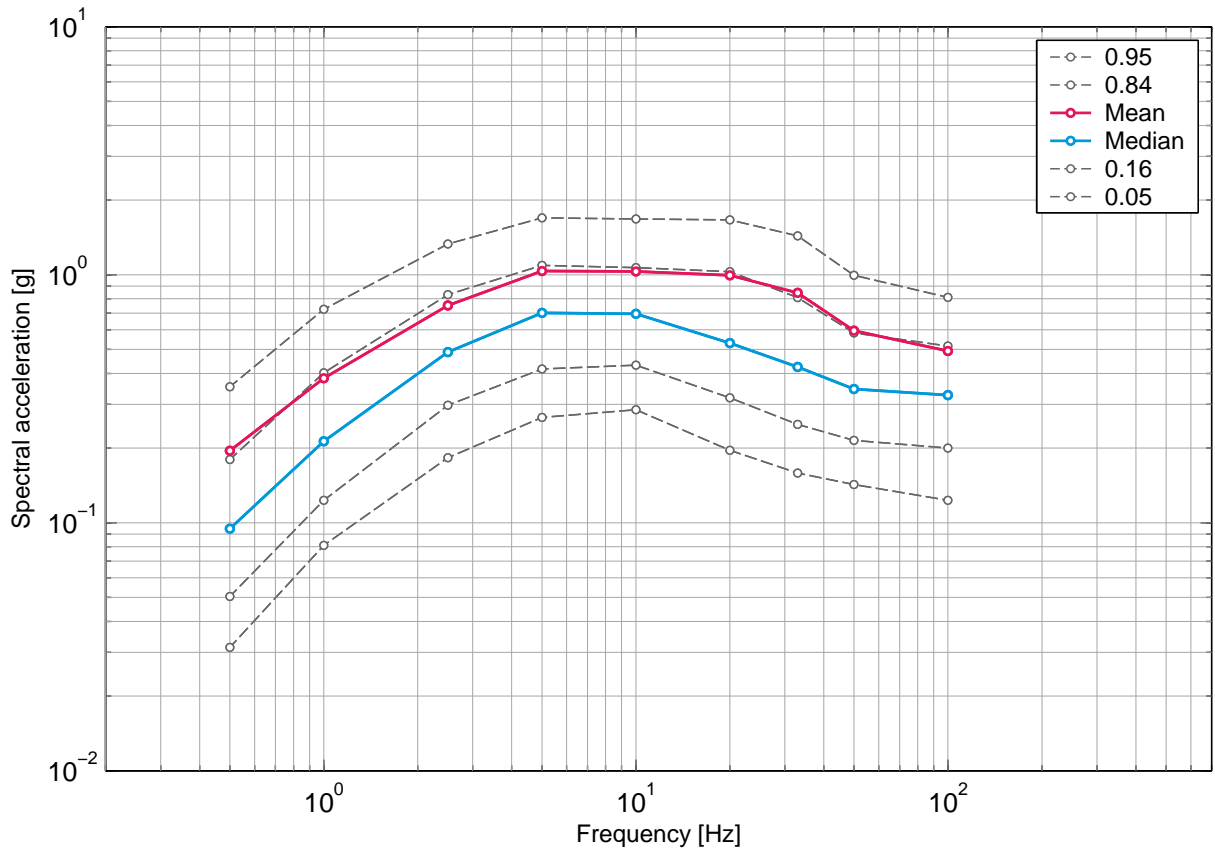


Fig. 2-1.12: Beznau, horizontal component, rock, surface, uniform hazard spectra for an annual probability of exceedence of 1E-05 and 5% damping.

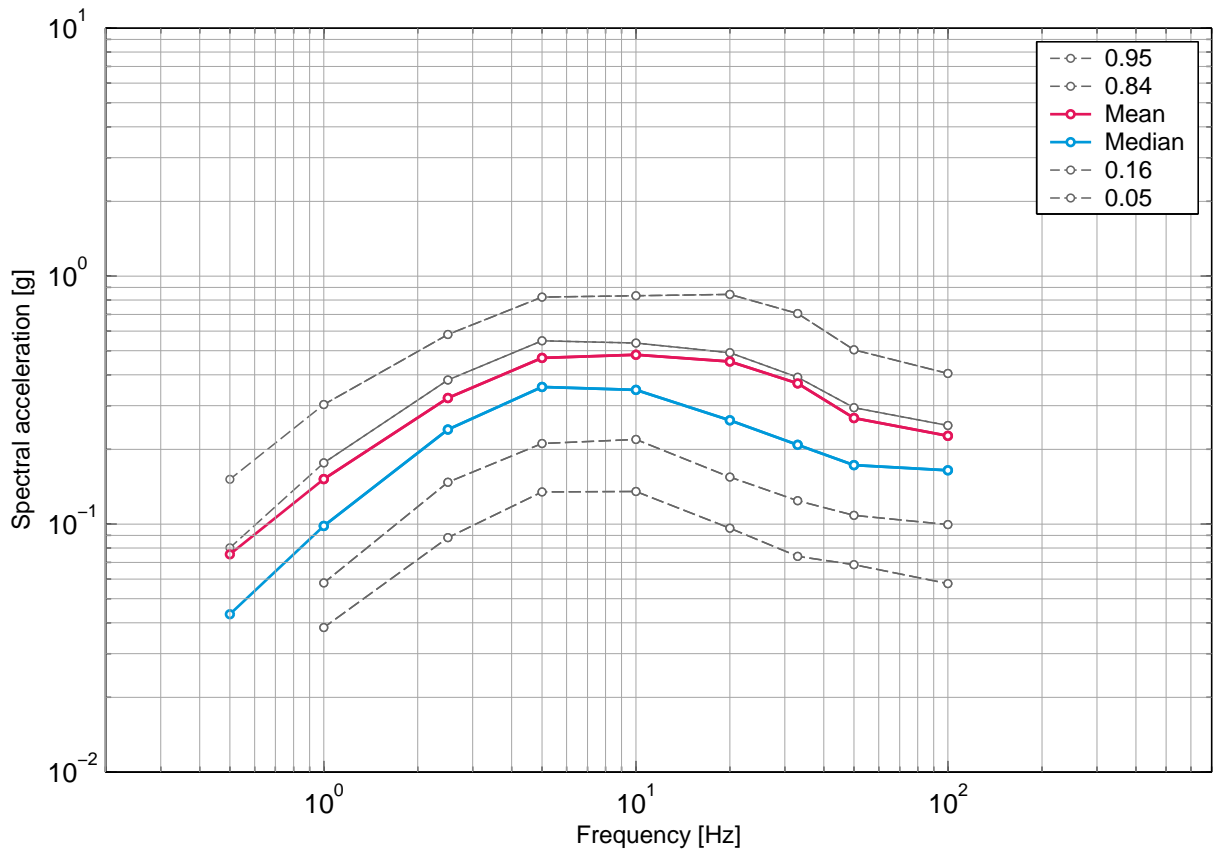


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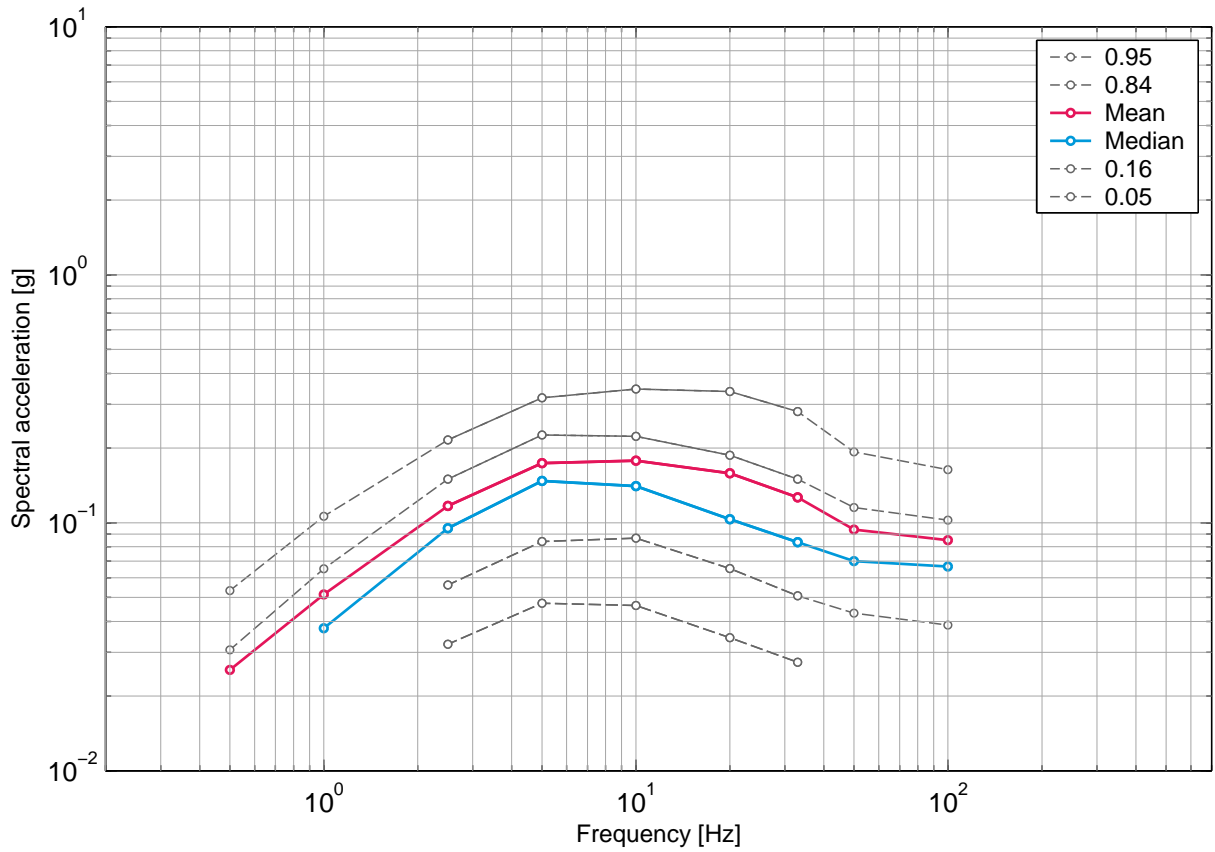


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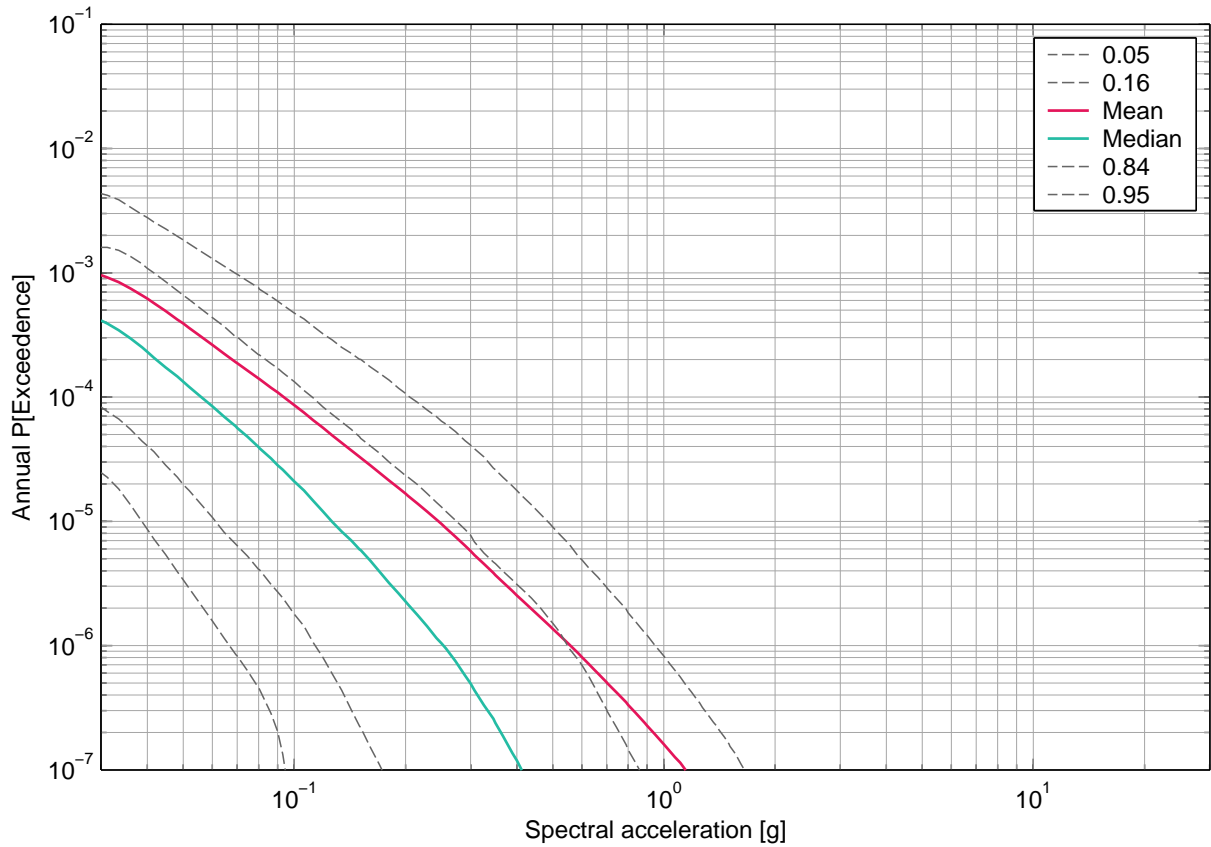


Fig. 2-2.1: Beznau, horizontal component, soil, surface, mean hazard and fractiles, 0.5 Hz.

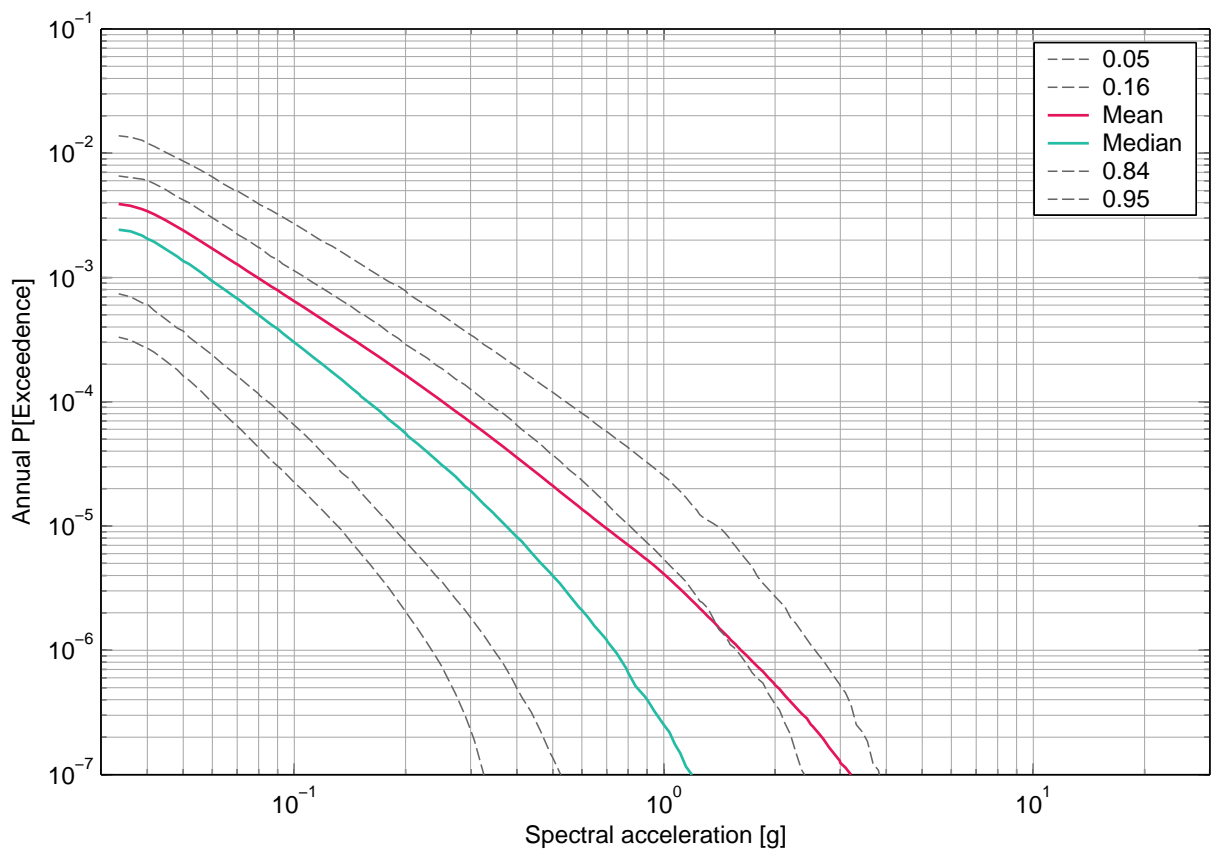


Fig. 2-2.2: Beznau, horizontal component, soil, surface, mean hazard and fractiles, 1 Hz.

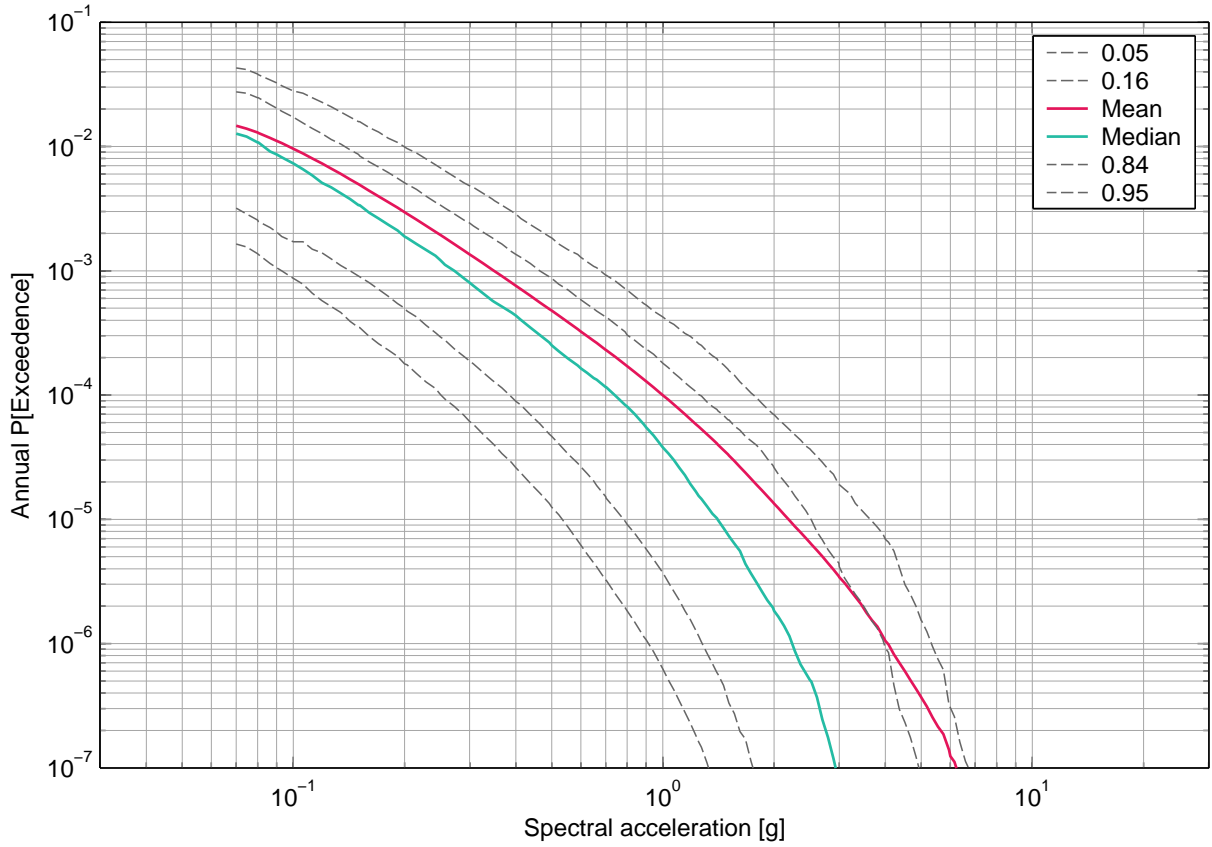


Fig. 2-2.3: Beznau, horizontal component, soil, surface, mean hazard and fractiles, 2.5 Hz.

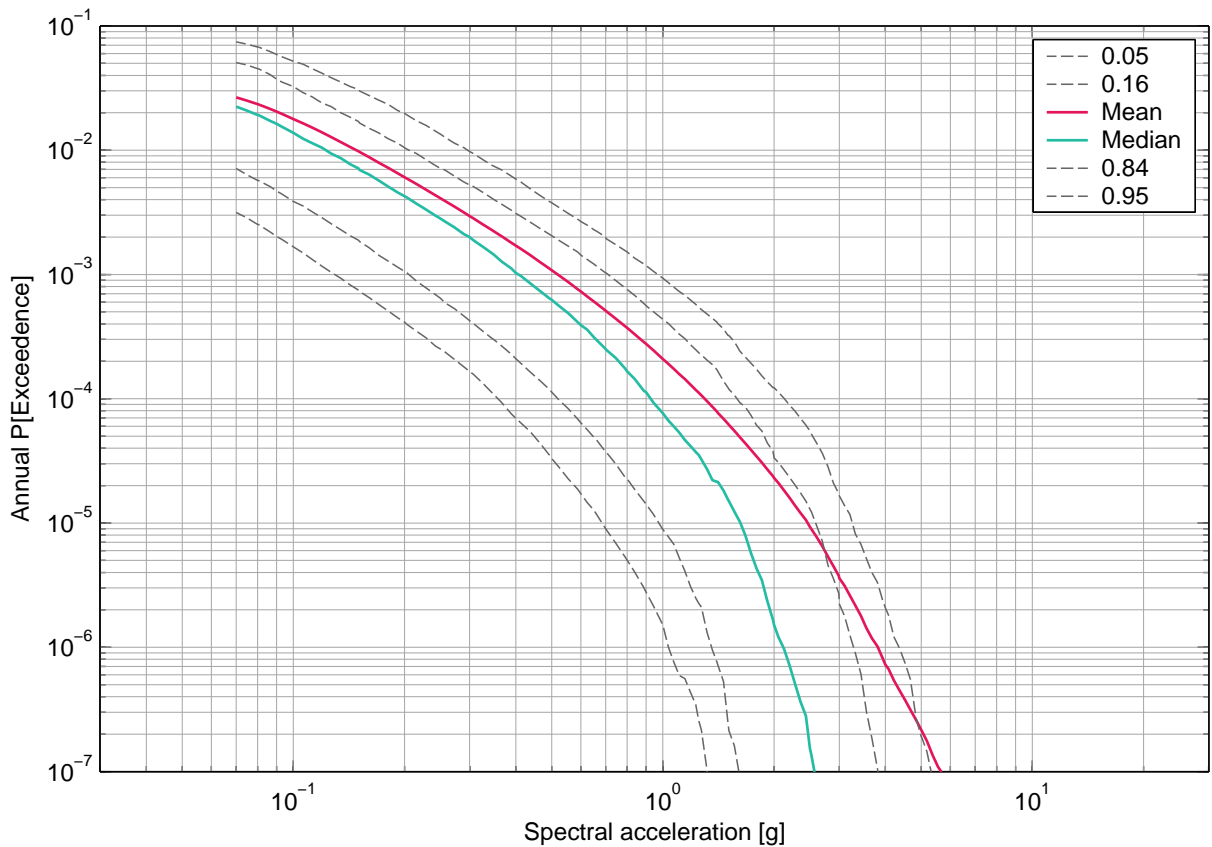


Fig. 2-2.4: Beznau, horizontal component, soil, surface, mean hazard and fractiles, 5 Hz.



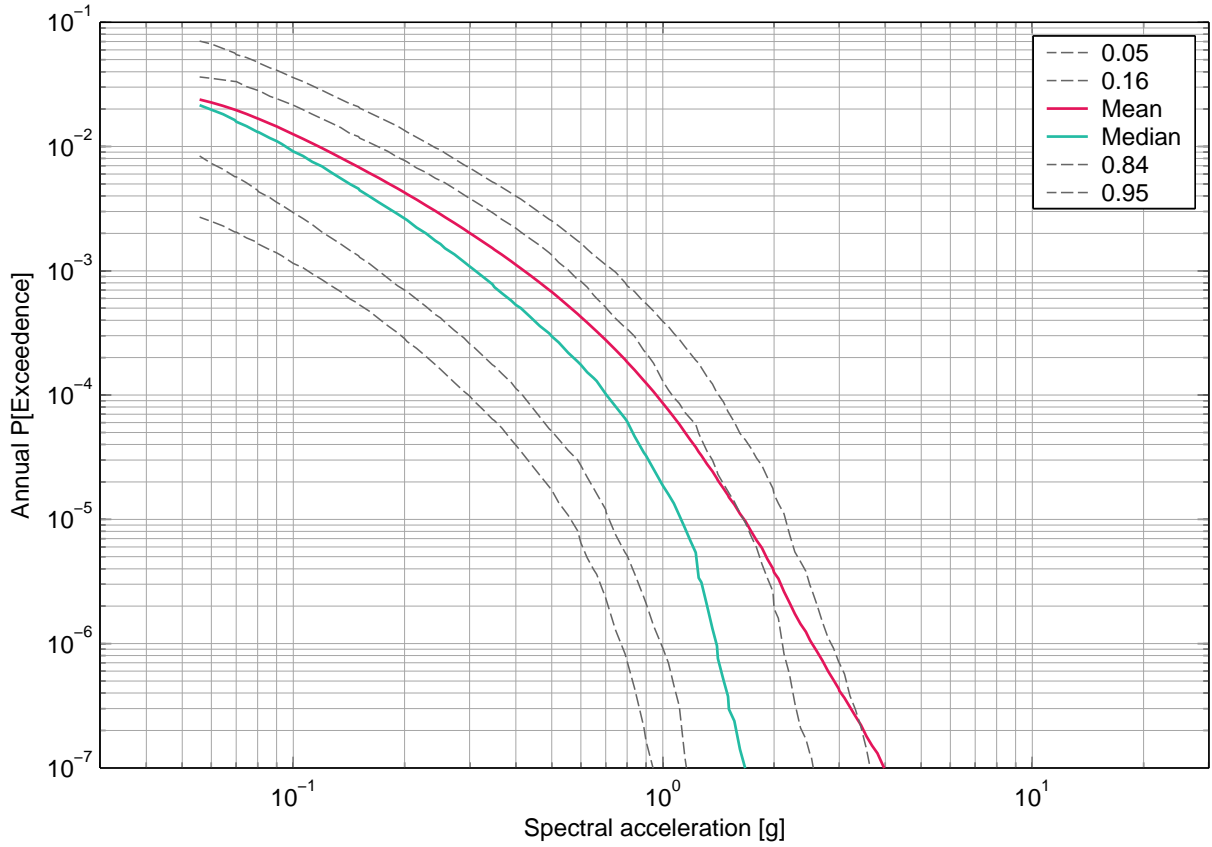


Fig. 2-2.5: Beznau, horizontal component, soil, surface, mean hazard and fractiles, 10 Hz.

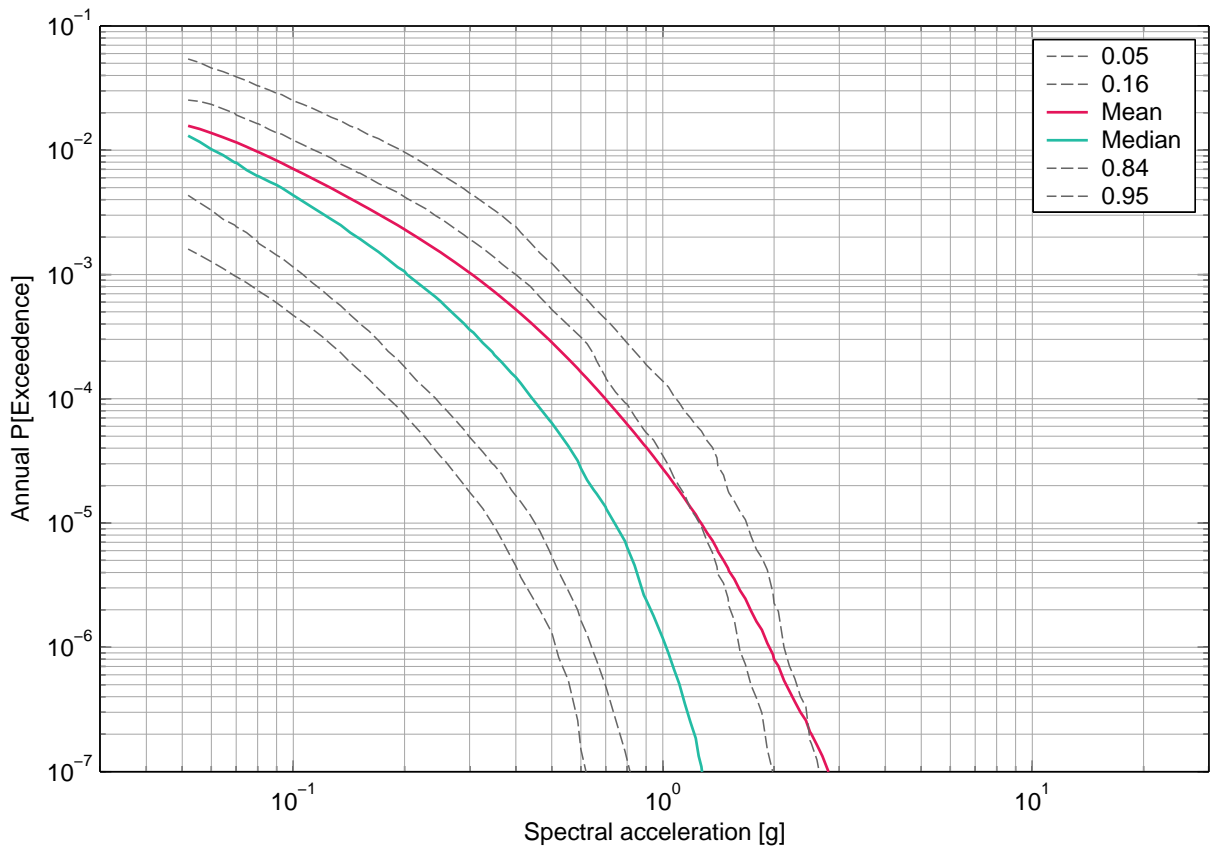


Fig. 2-2.6: Beznau, horizontal component, soil, surface, mean hazard and fractiles, 20 Hz.

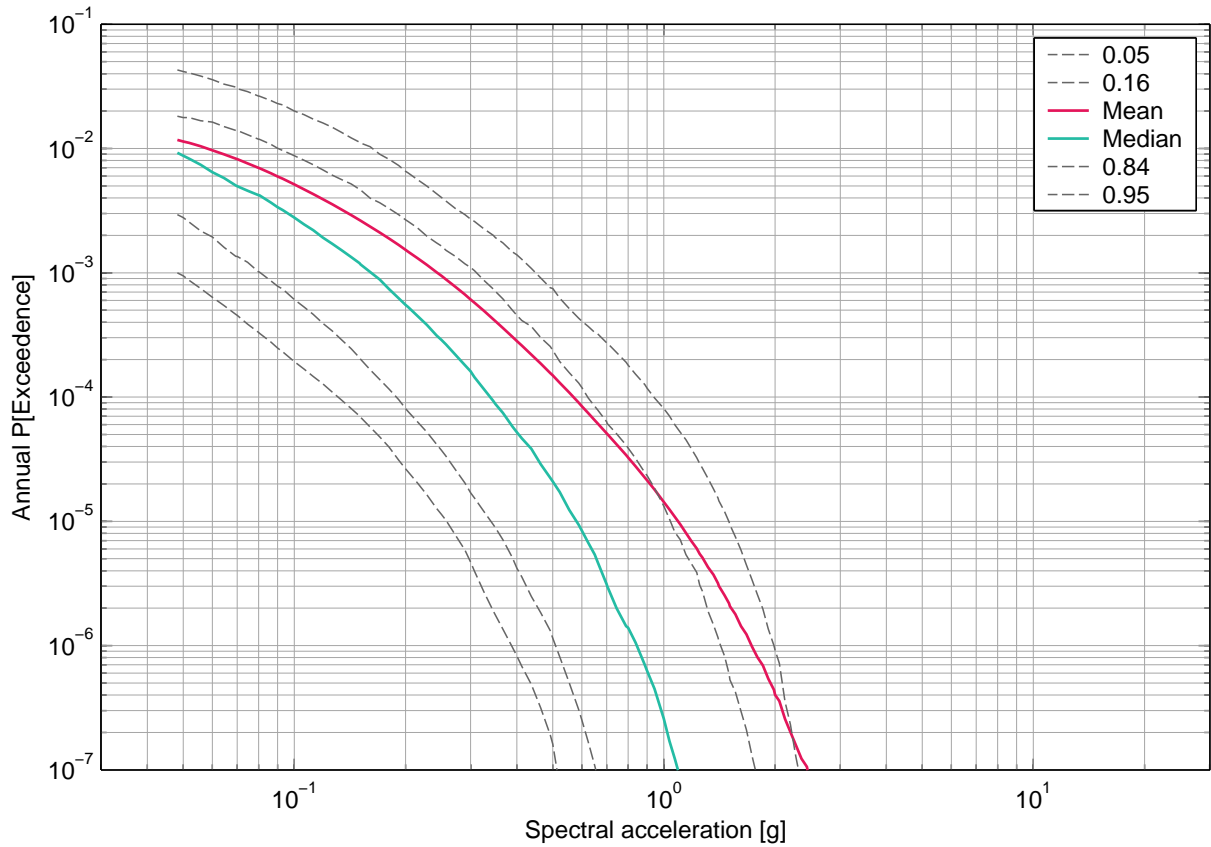


Fig. 2-2.7: Beznau, horizontal component, soil, surface, mean hazard and fractiles, 33 Hz.

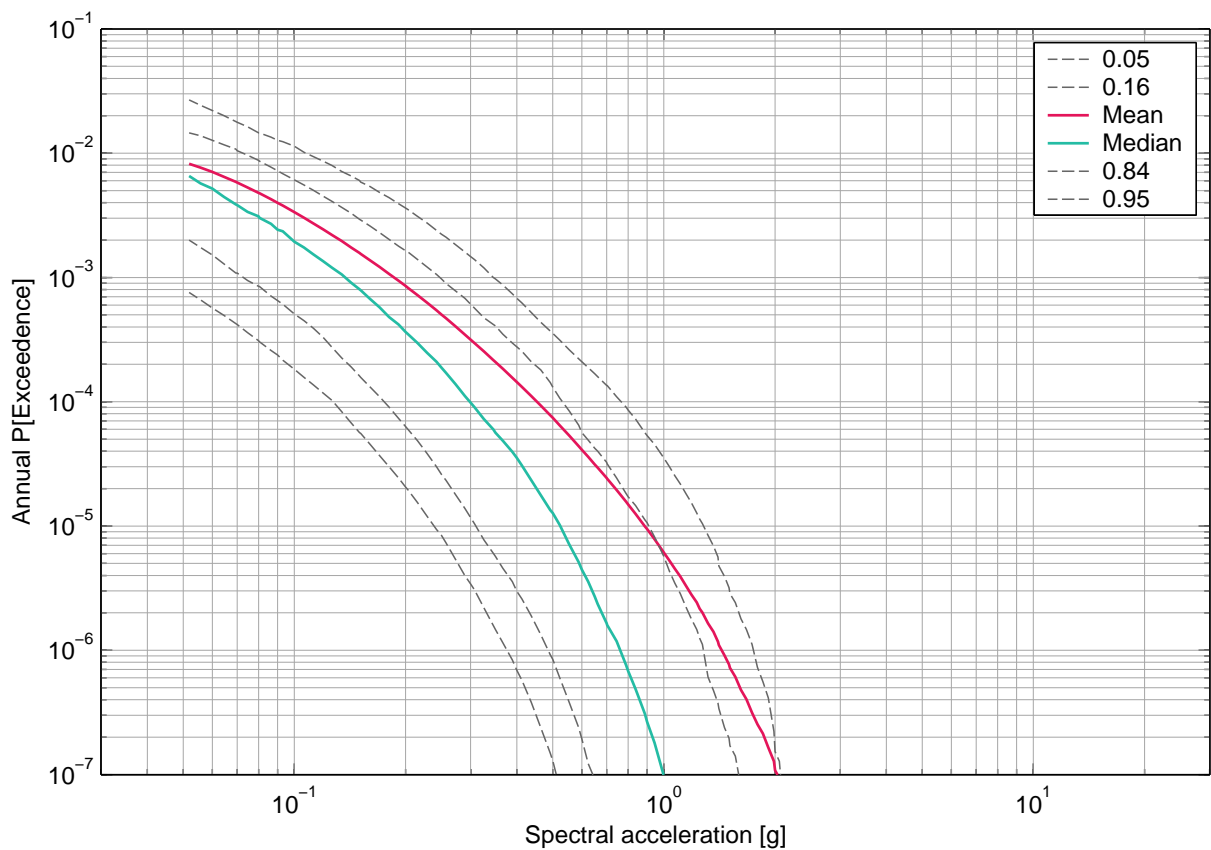


Fig. 2-2.8: Beznau, horizontal component, soil, surface, mean hazard and fractiles, 50 Hz.

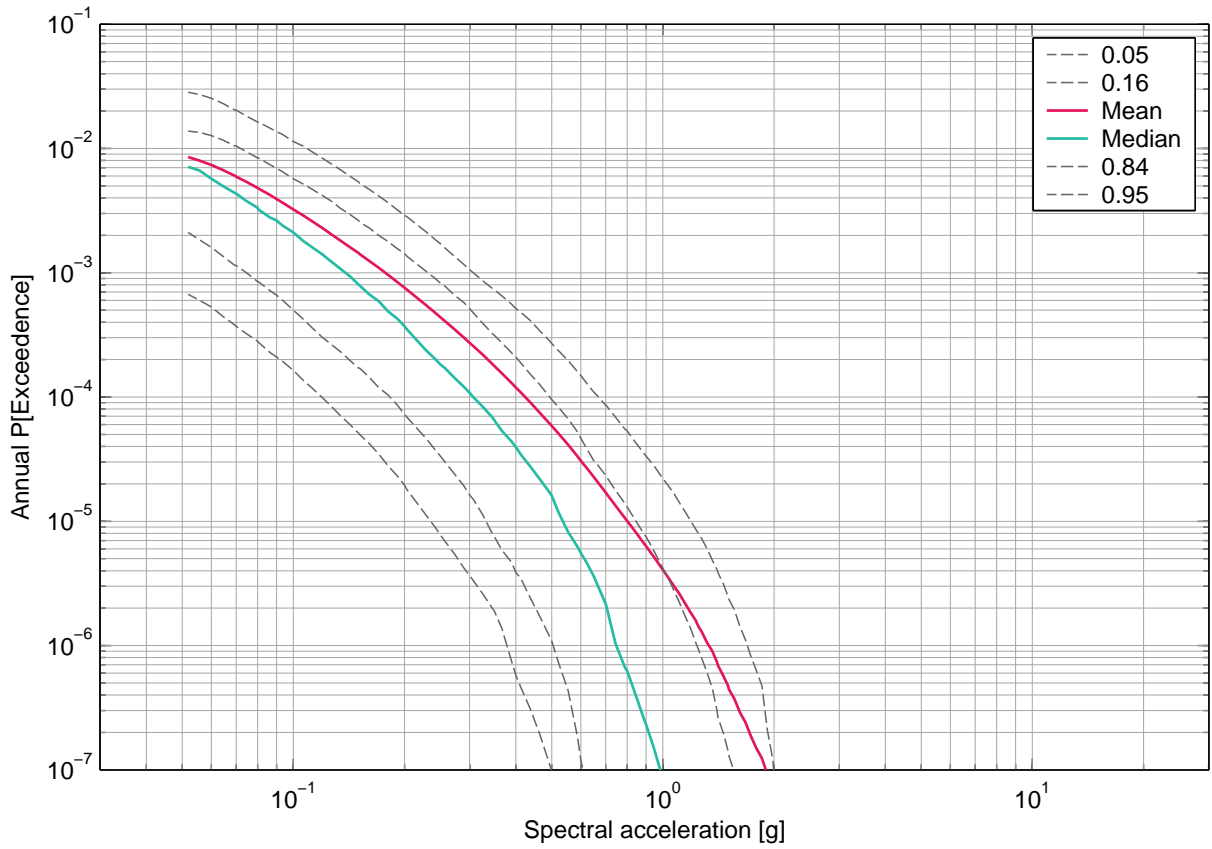


Fig. 2-2.9: Beznau, horizontal component, soil, surface, mean hazard and fractiles, PGA.

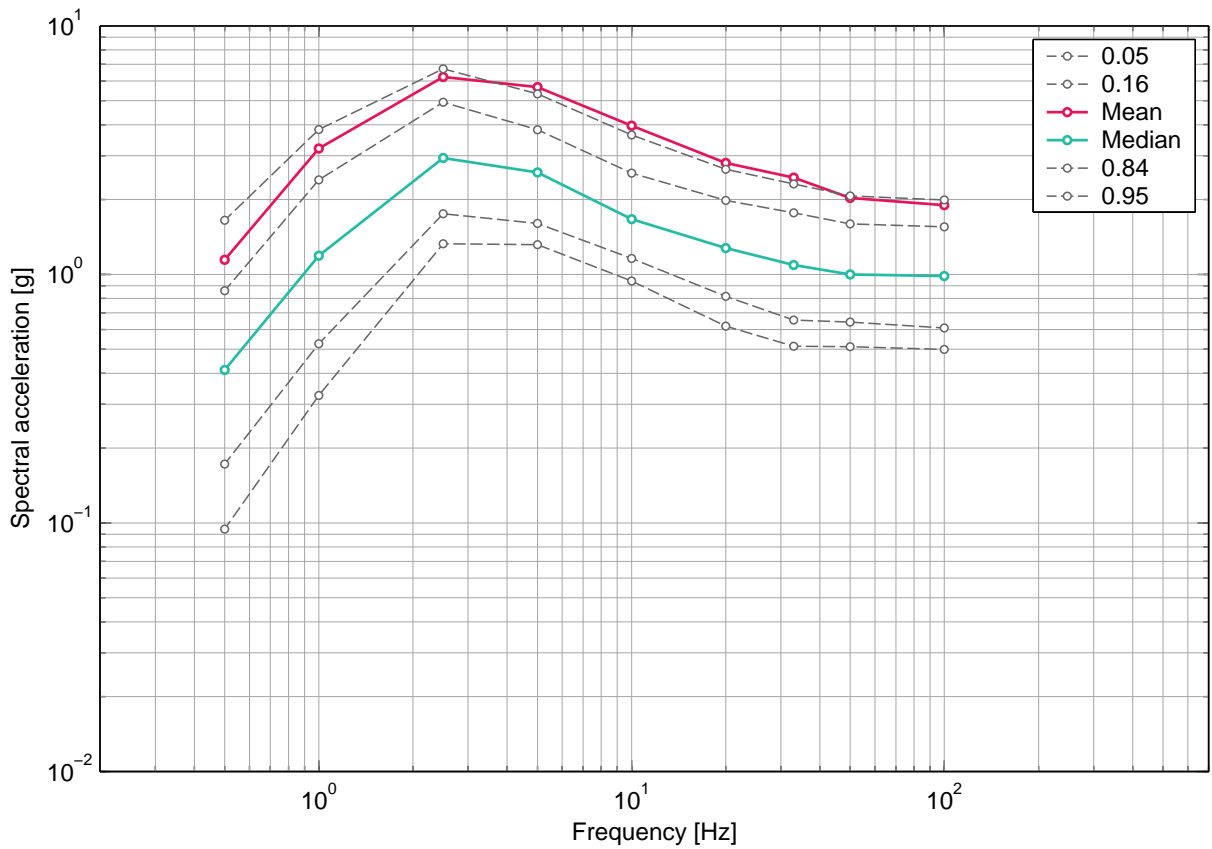


Fig. 2-2.10: Beznau, horizontal component, soil, surface, uniform hazard spectra for an annual probability of exceedence of 1E-07 and 5% damping.

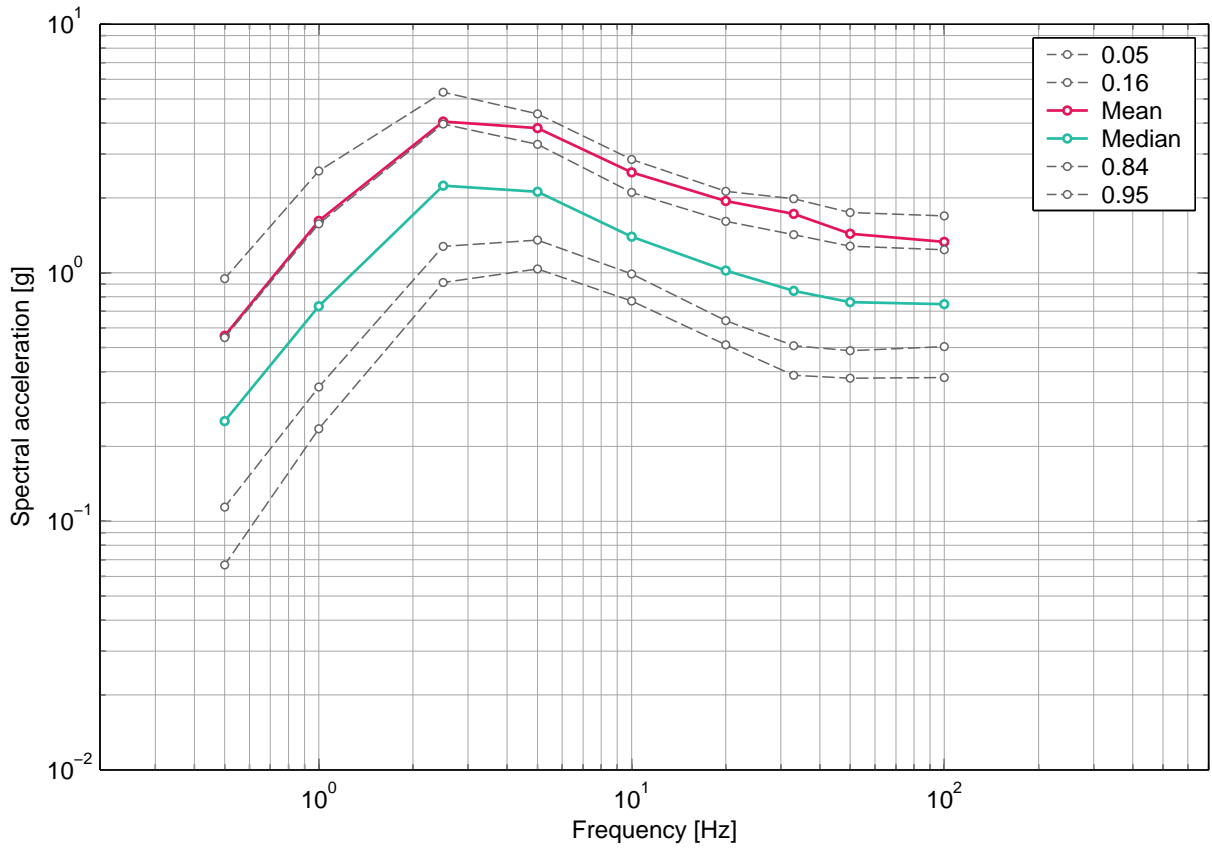


Fig. 2-2.11: Beznau, horizontal component, soil, surface, uniform hazard spectra for an annual probability of exceedence of 1E-06 and 5% damping.

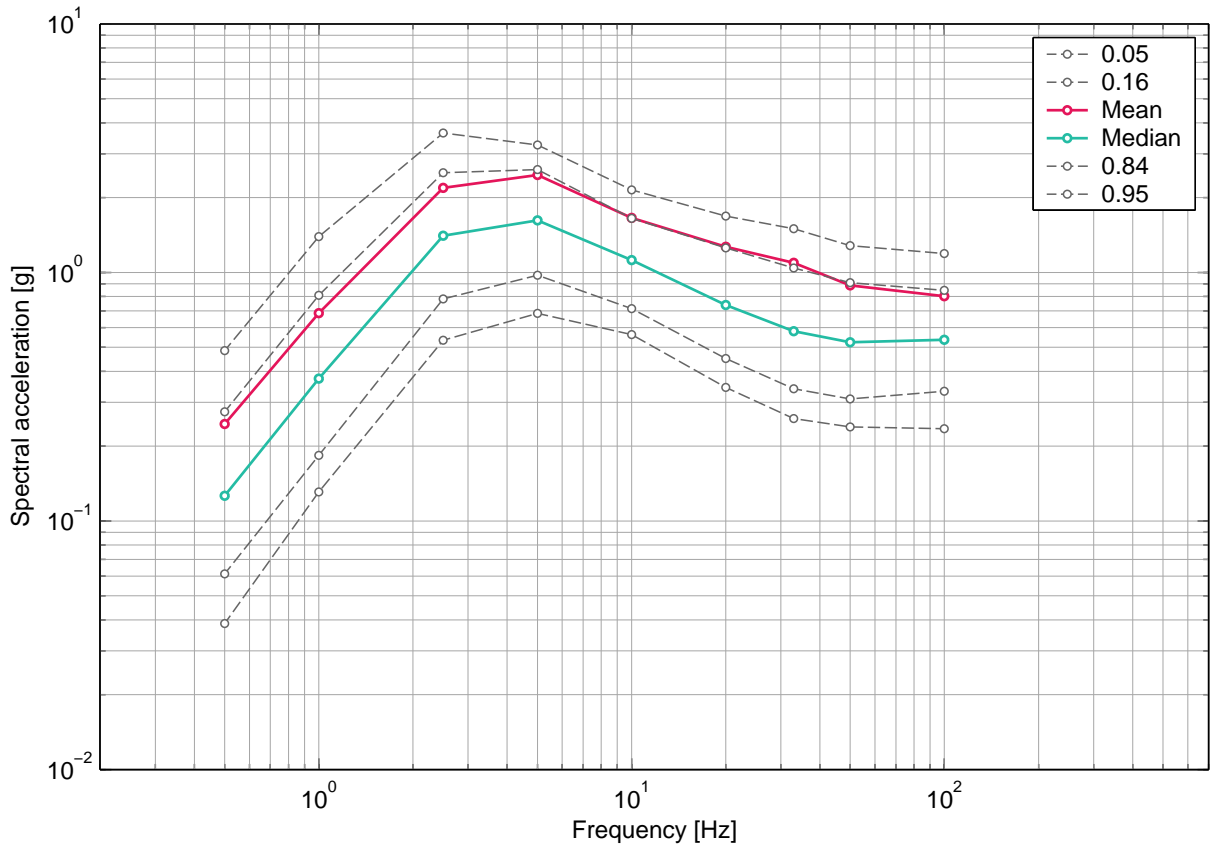


Fig. 2-2.12: Beznau, horizontal component, soil, surface, uniform hazard spectra for an annual probability of exceedence of 1E-05 and 5% damping.

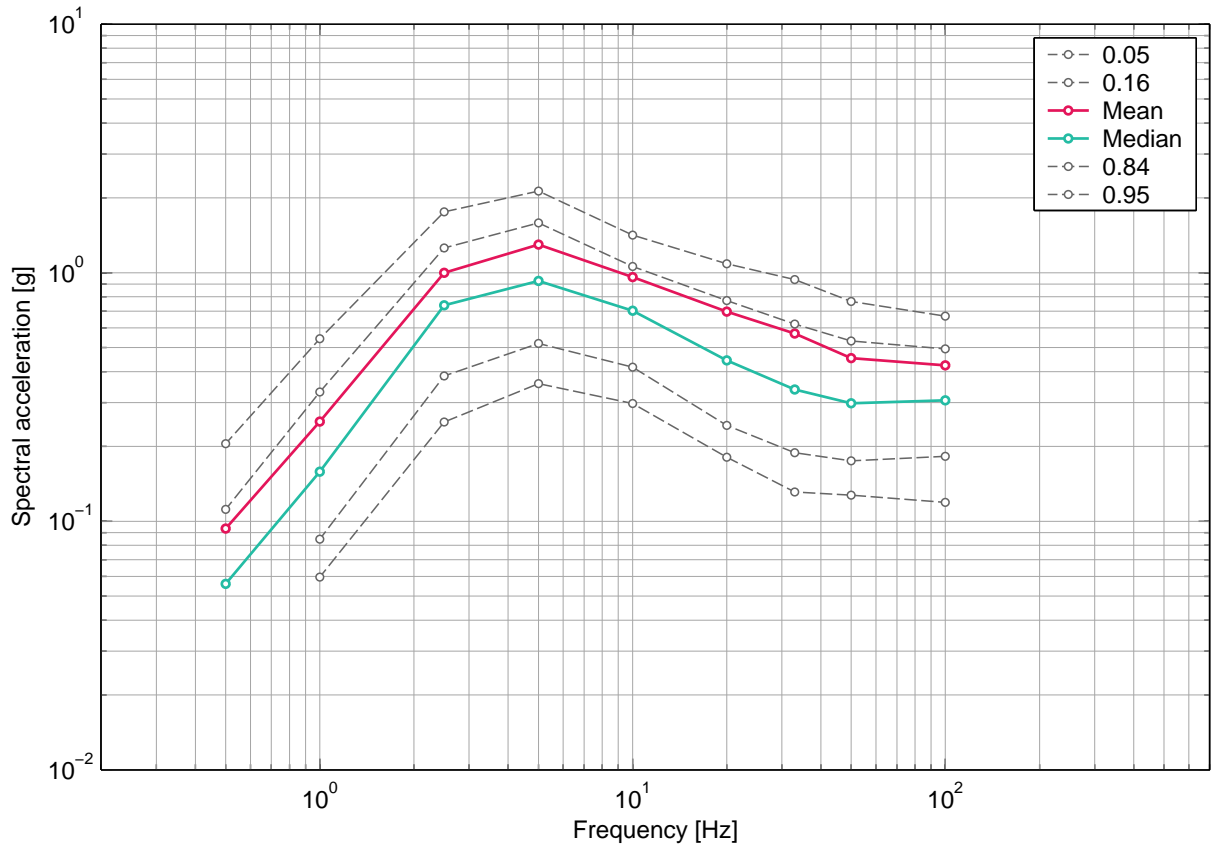


Fig. 2-2.13: Beznau, horizontal component, soil, surface, uniform hazard spectra for an annual probability of exceedence of 1E-04 and 5% damping.

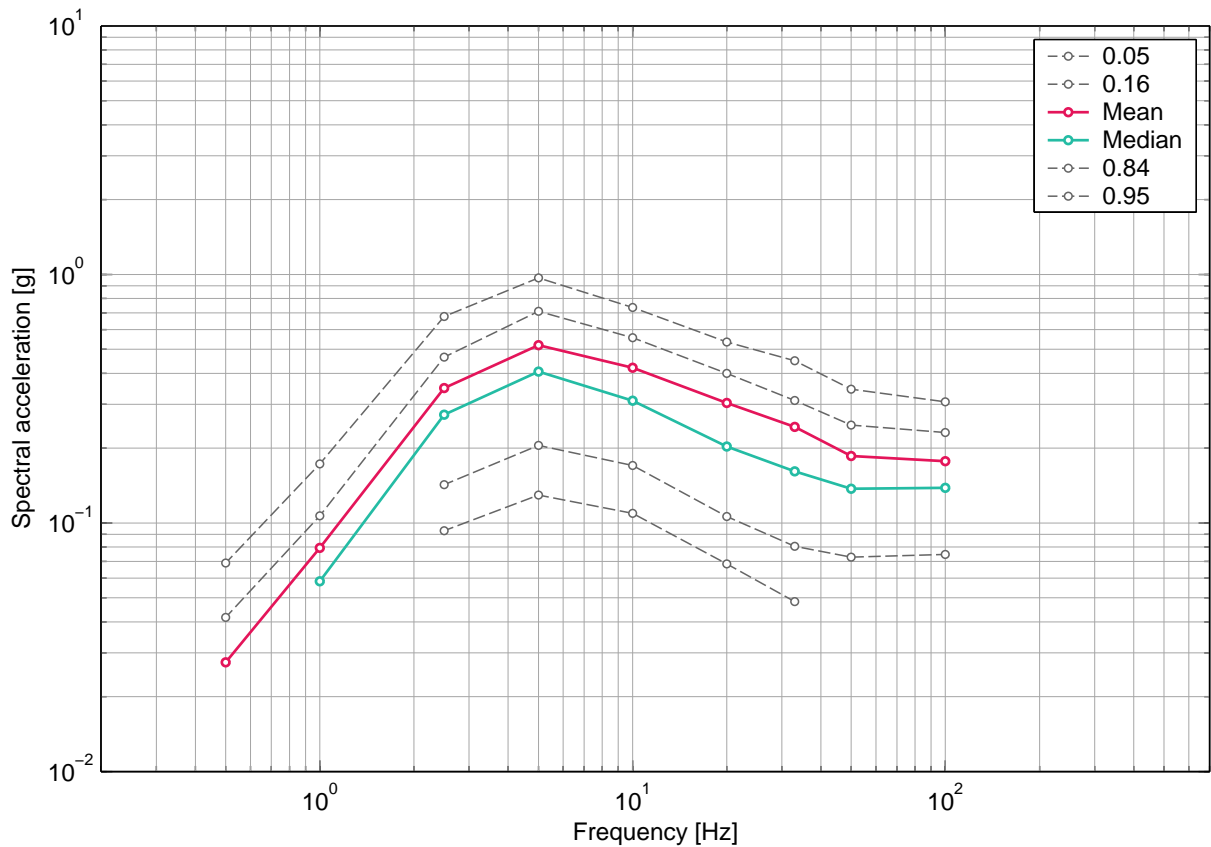


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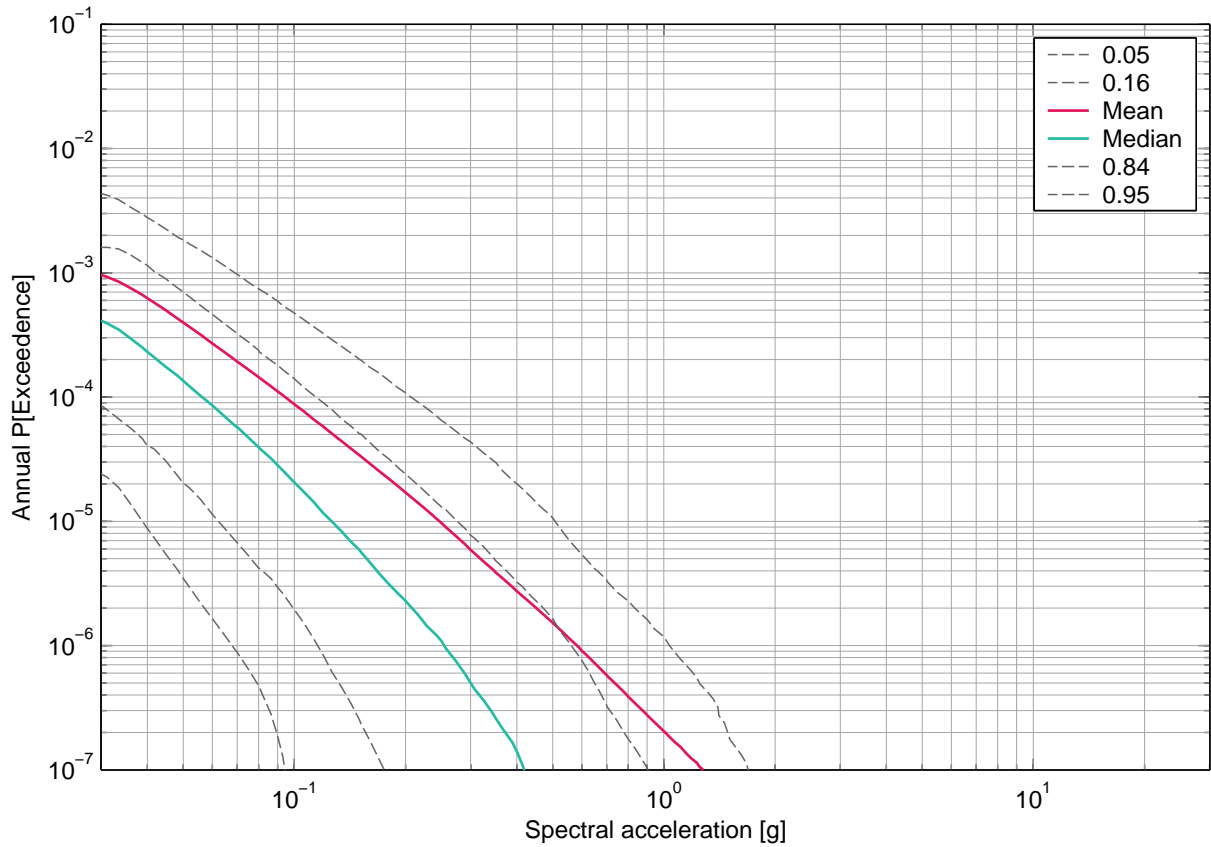


Fig. 2-3.1: Beznau, horizontal component, soil, -6 m, mean hazard and fractiles, 0.5 Hz.

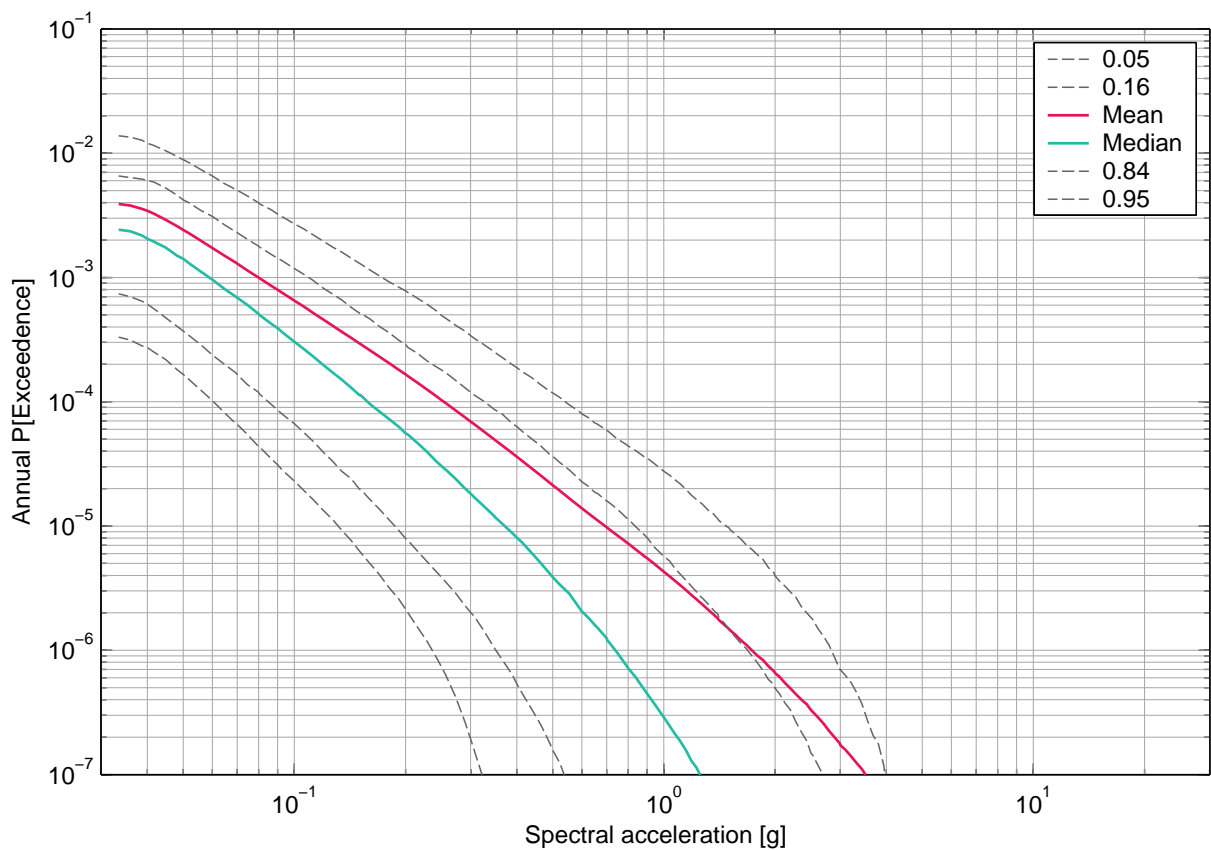


Fig. 2-3.2: Beznau, horizontal component, soil, -6 m, mean hazard and fractiles, 1 Hz.

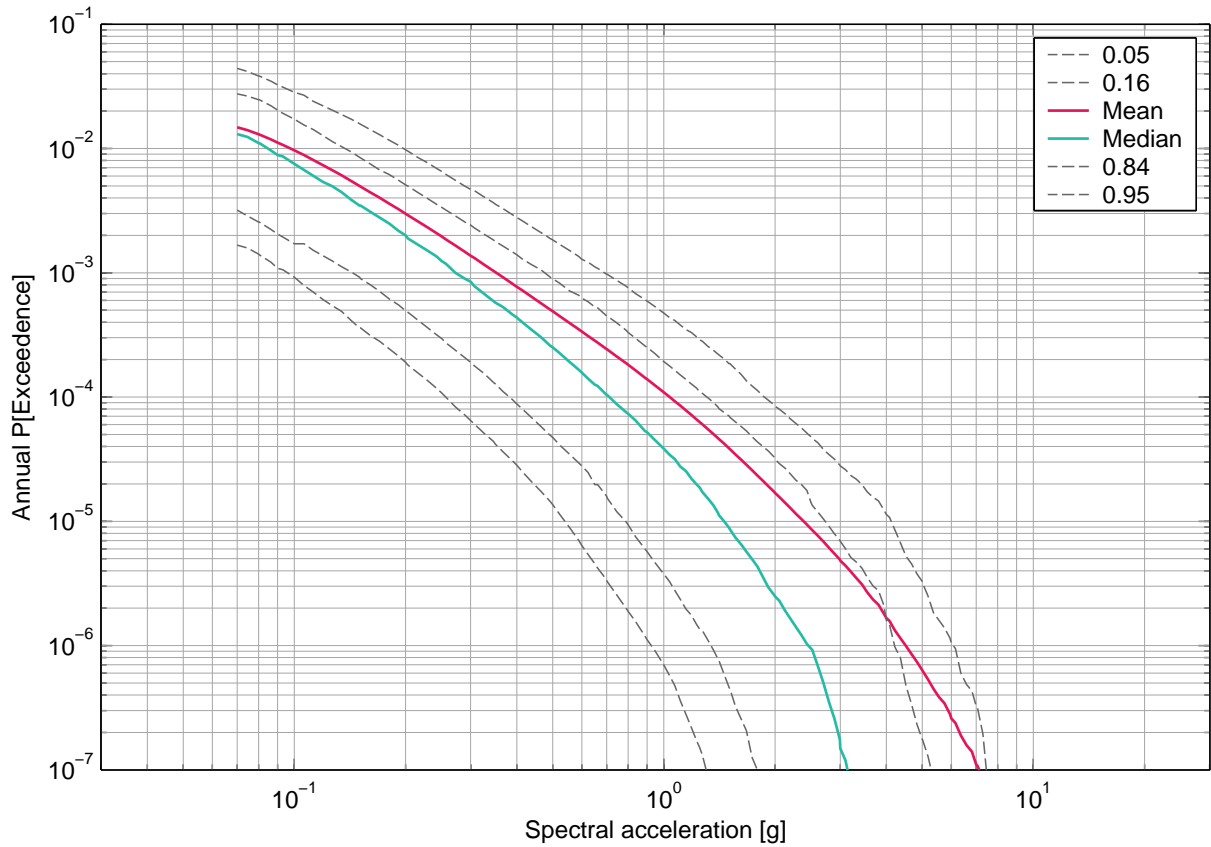


Fig. 2-3.3: Beznau, horizontal component, soil, -6 m, mean hazard and fractiles, 2.5 Hz.

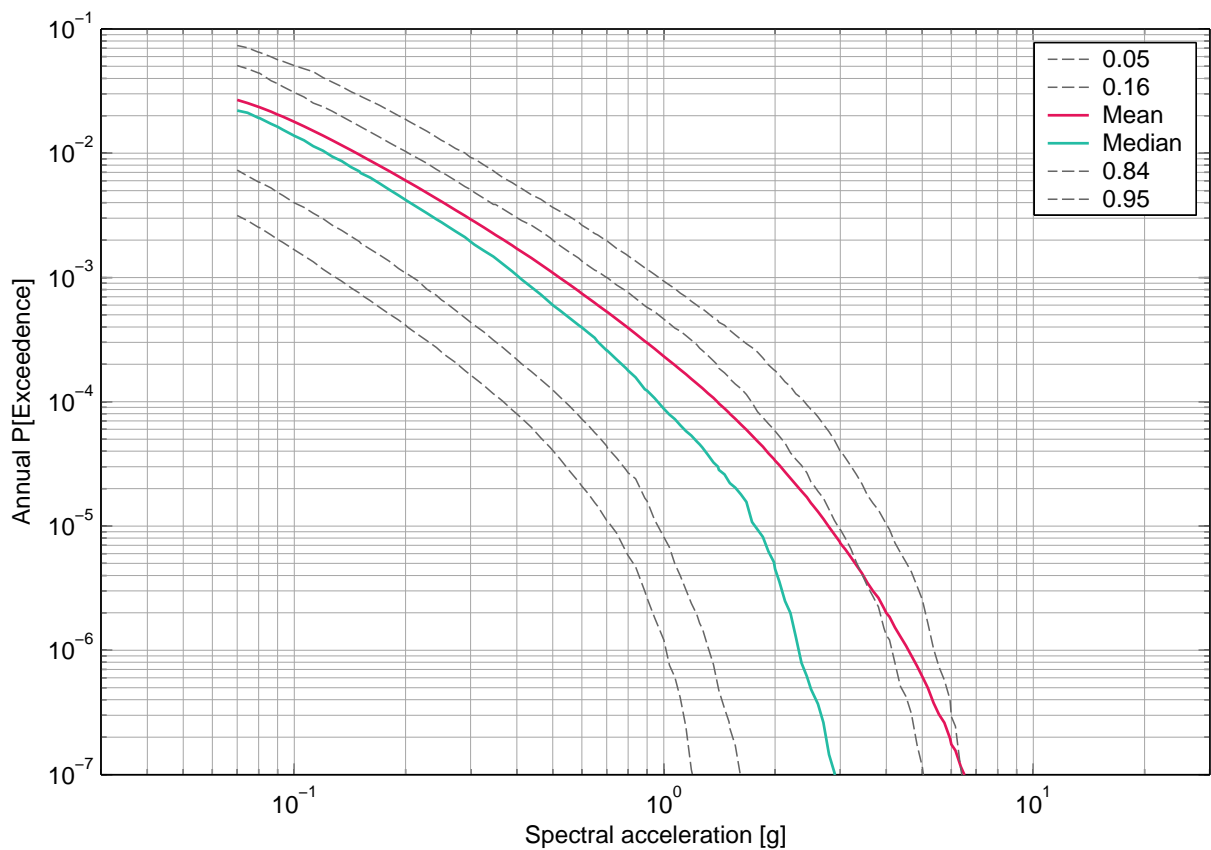


Fig. 2-3.4: Beznau, horizontal component, soil, -6 m, mean hazard and fractiles, 5 Hz.



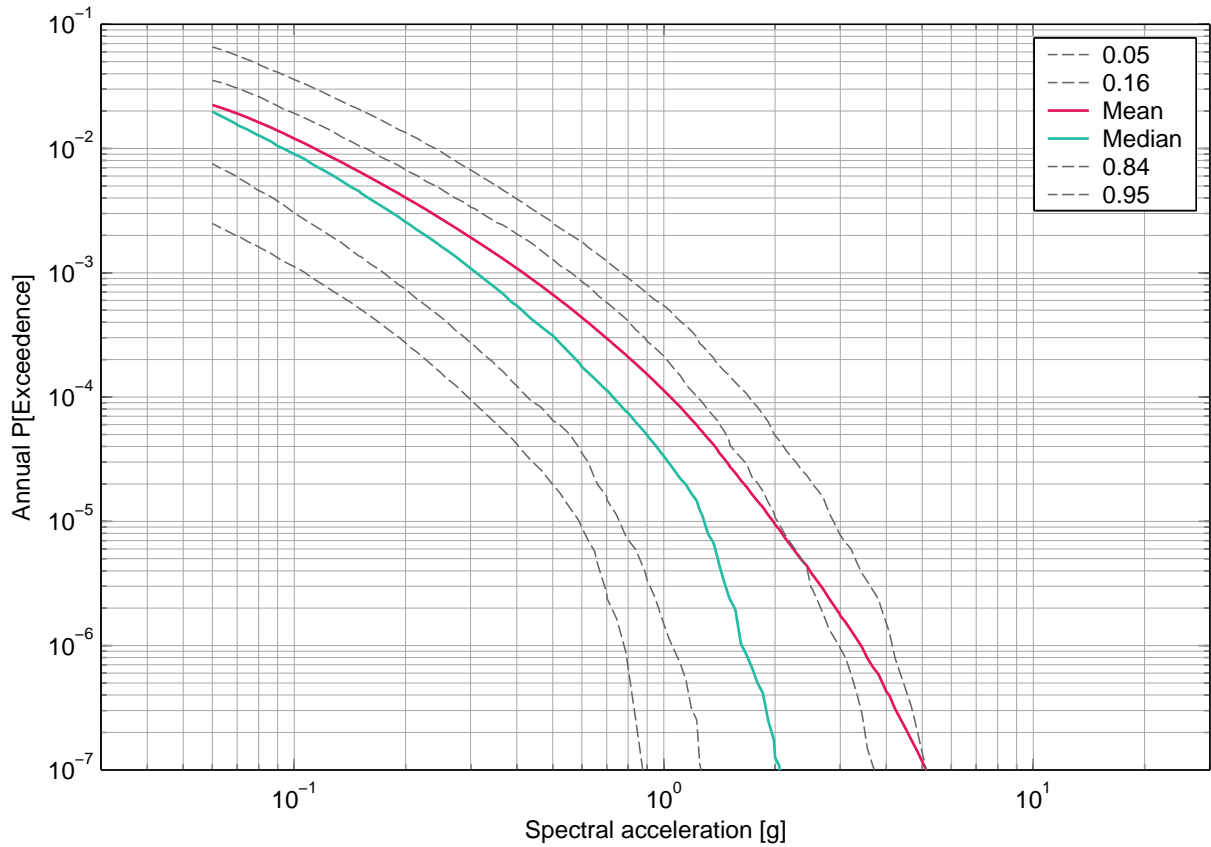


Fig. 2-3.5: Beznau, horizontal component, soil, -6 m, mean hazard and fractiles, 10 Hz.

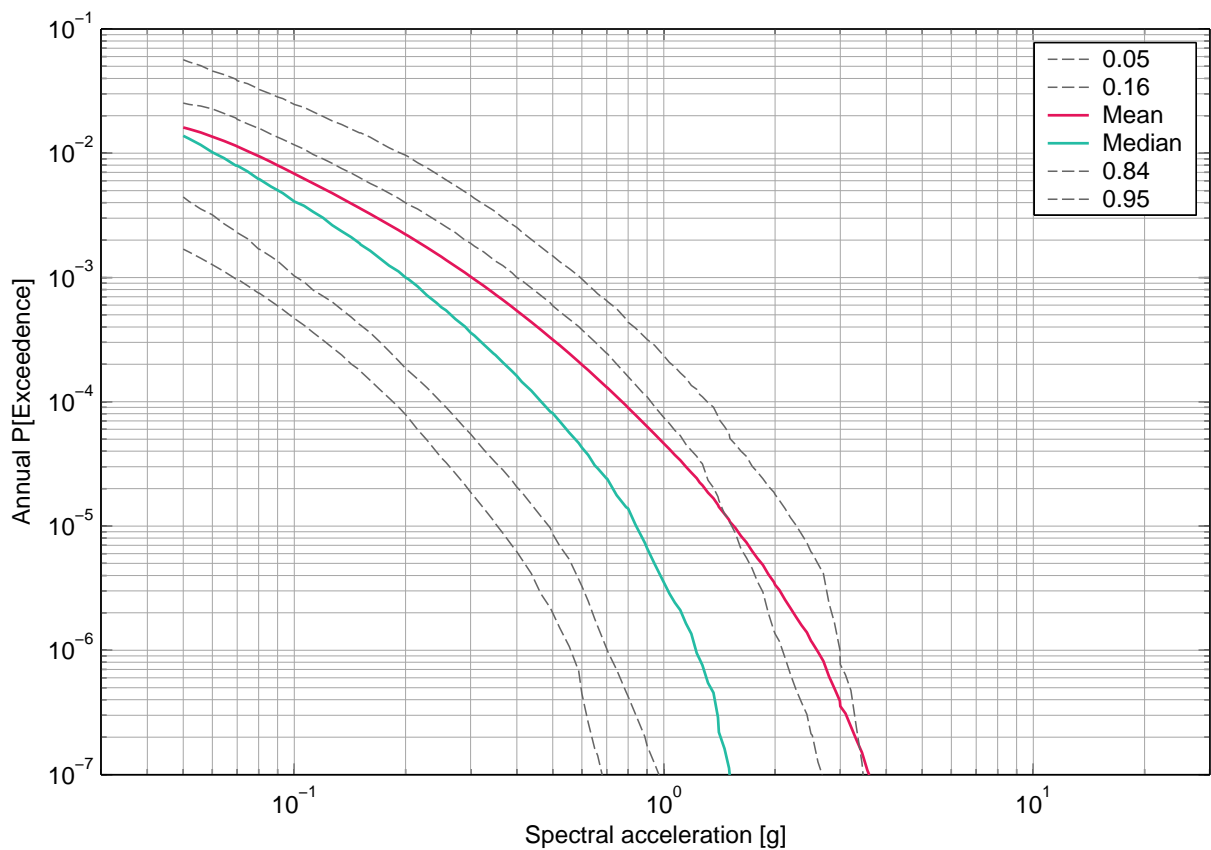


Fig. 2-3.6: Beznau, horizontal component, soil, -6 m, mean hazard and fractiles, 20 Hz.

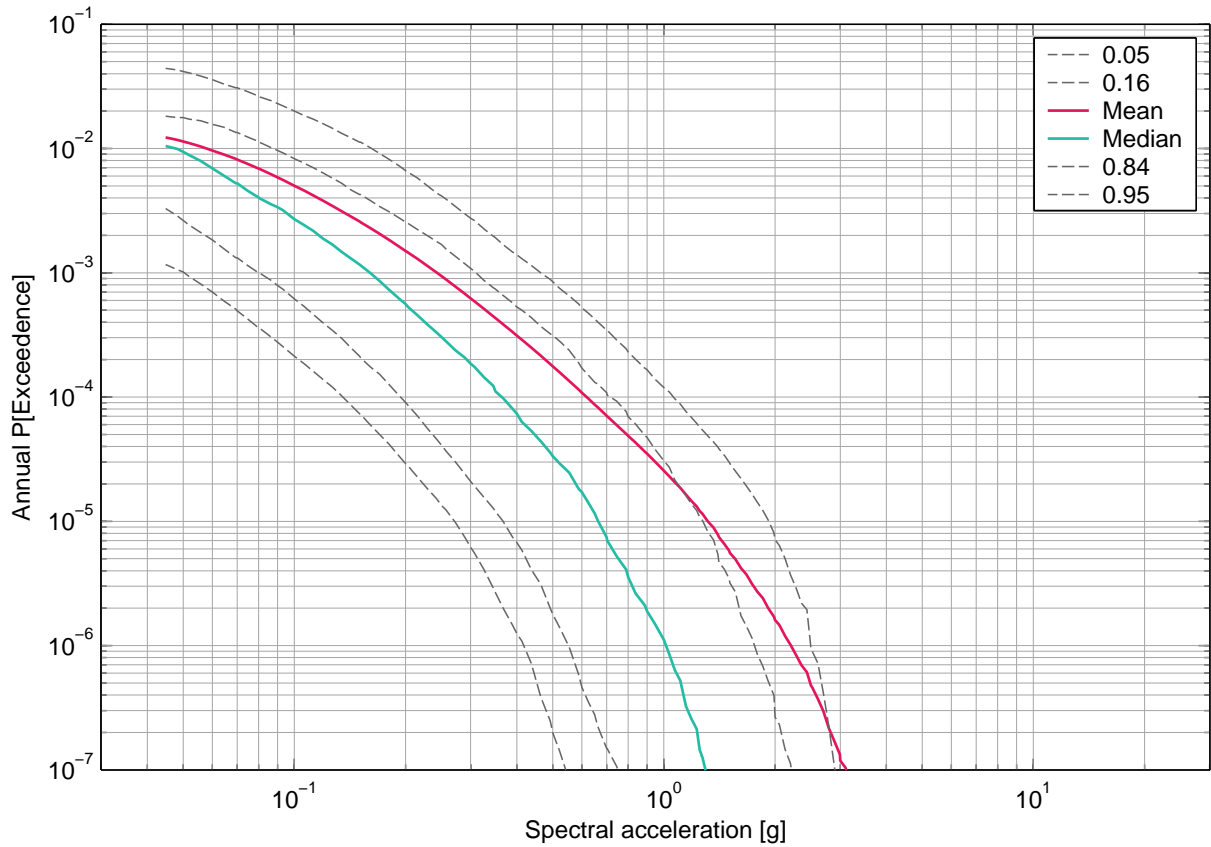


Fig. 2-3.7: Beznau, horizontal component, soil, -6 m, mean hazard and fractiles, 33 Hz.

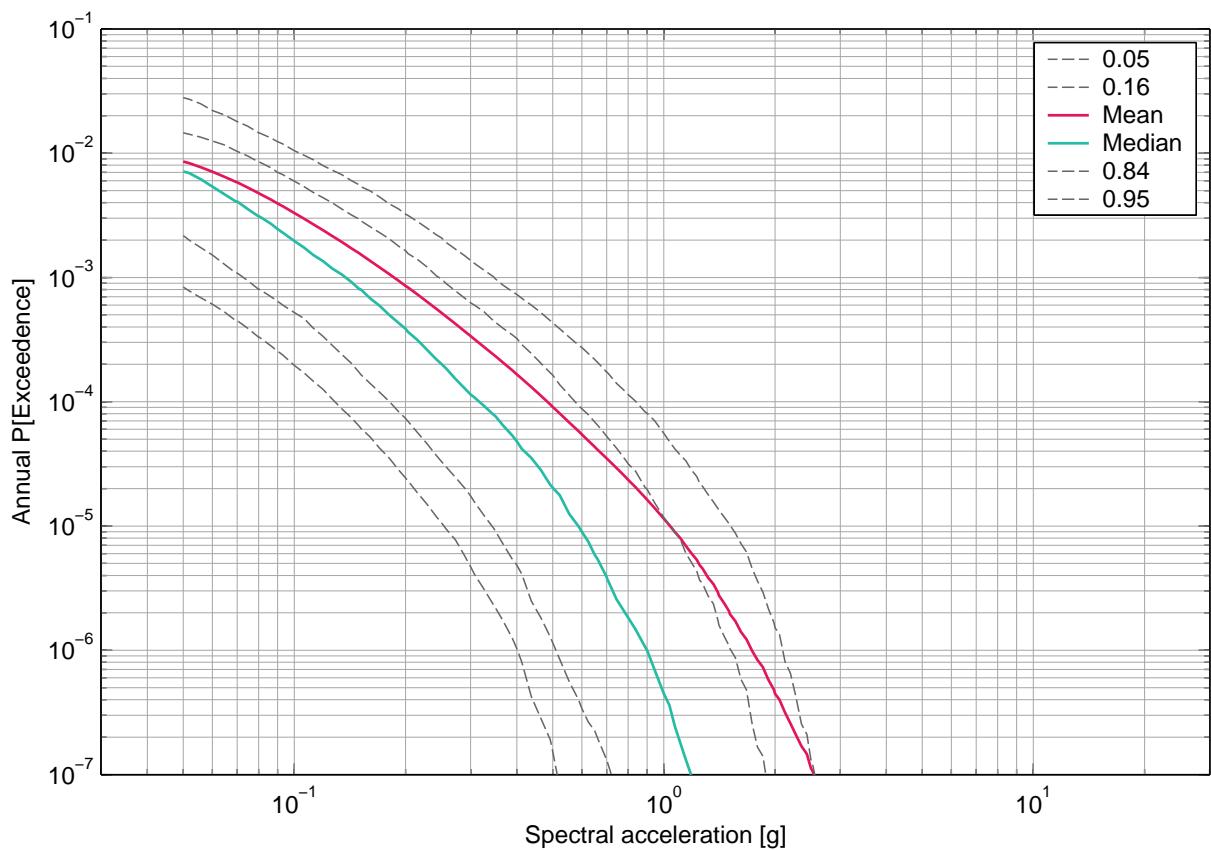


Fig. 2-3.8: Beznau, horizontal component, soil, -6 m, mean hazard and fractiles, 50 Hz.

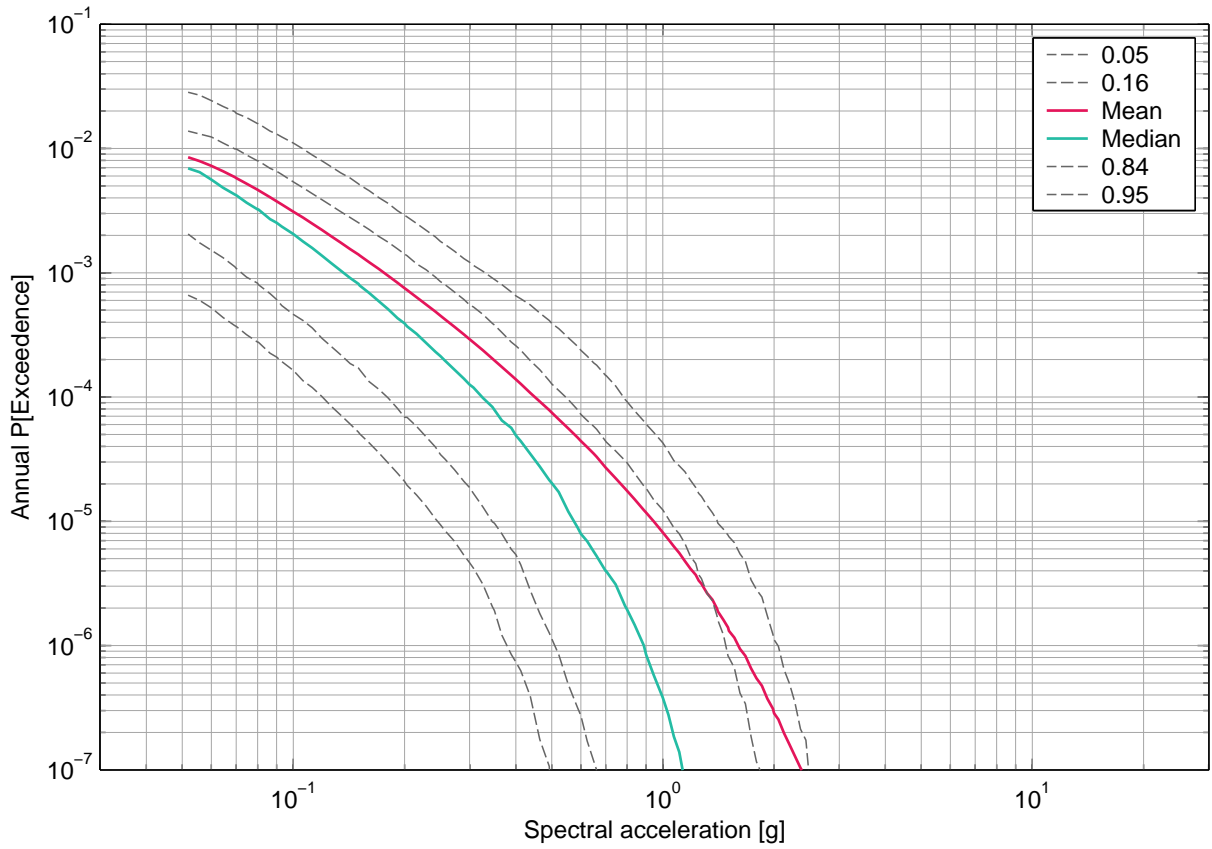


Fig. 2-3.9: Beznau, horizontal component, soil, -6 m, mean hazard and fractiles, PGA.

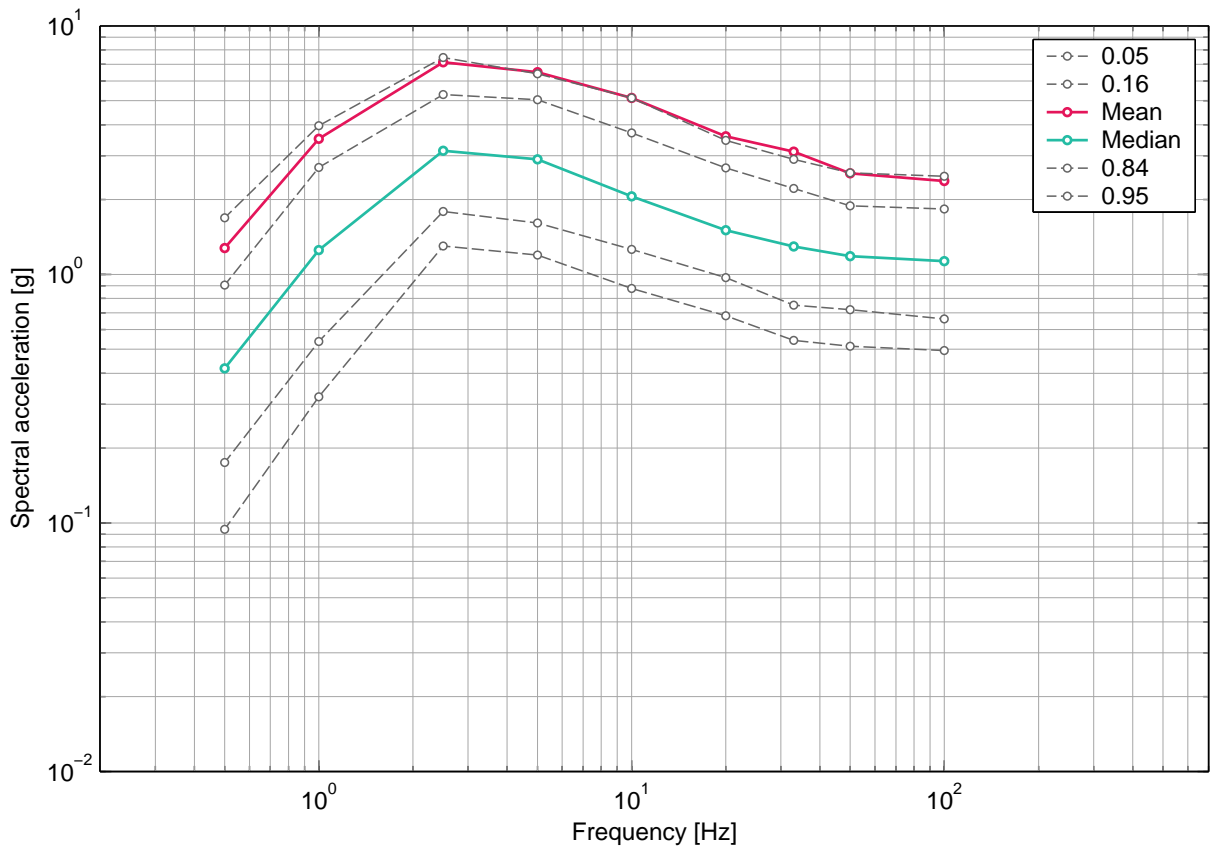


Fig. 2-3.10: Beznau, horizontal component, soil, -6 m, uniform hazard spectra for an annual probability of exceedence of 1E-07 and 5% damping.

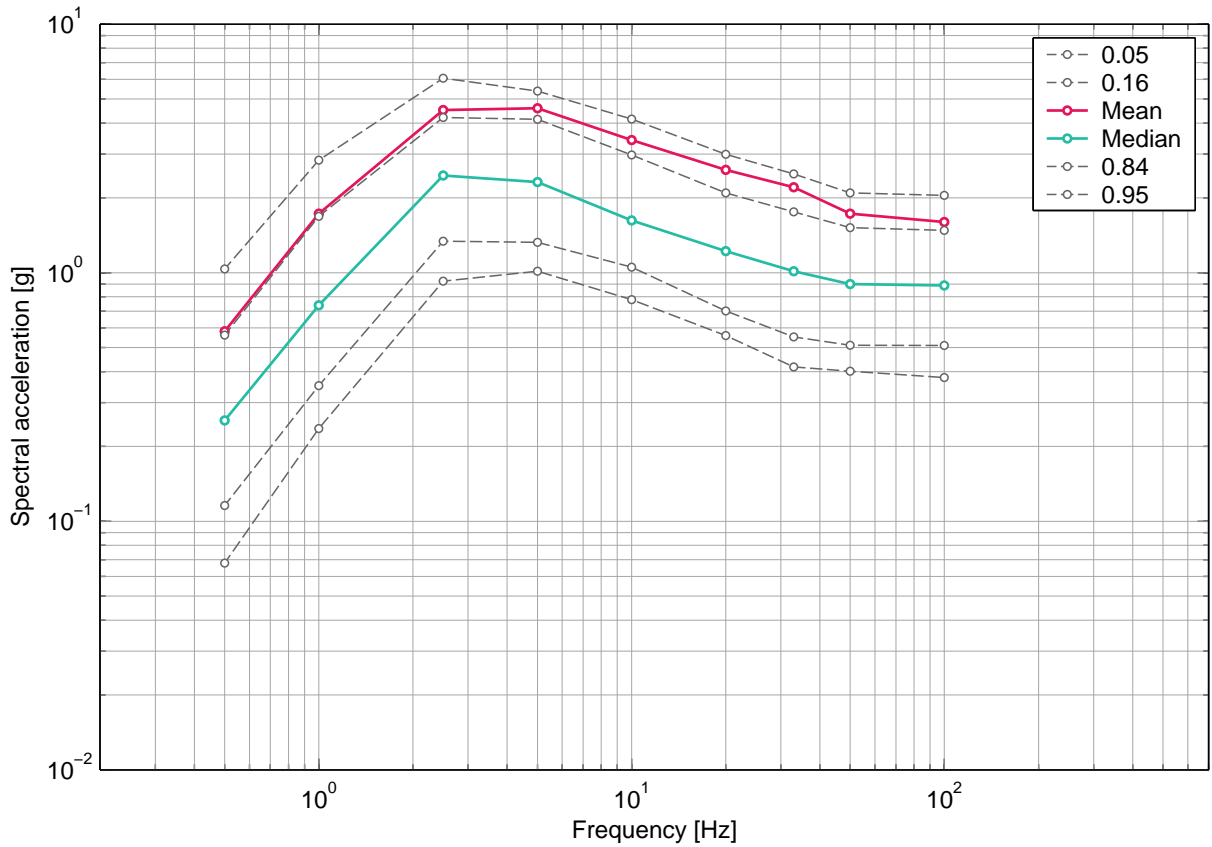


Fig. 2-3.11: Beznau, horizontal component, soil, -6 m, uniform hazard spectra for an annual probability of exceedence of  $1E-06$  and 5% damping.

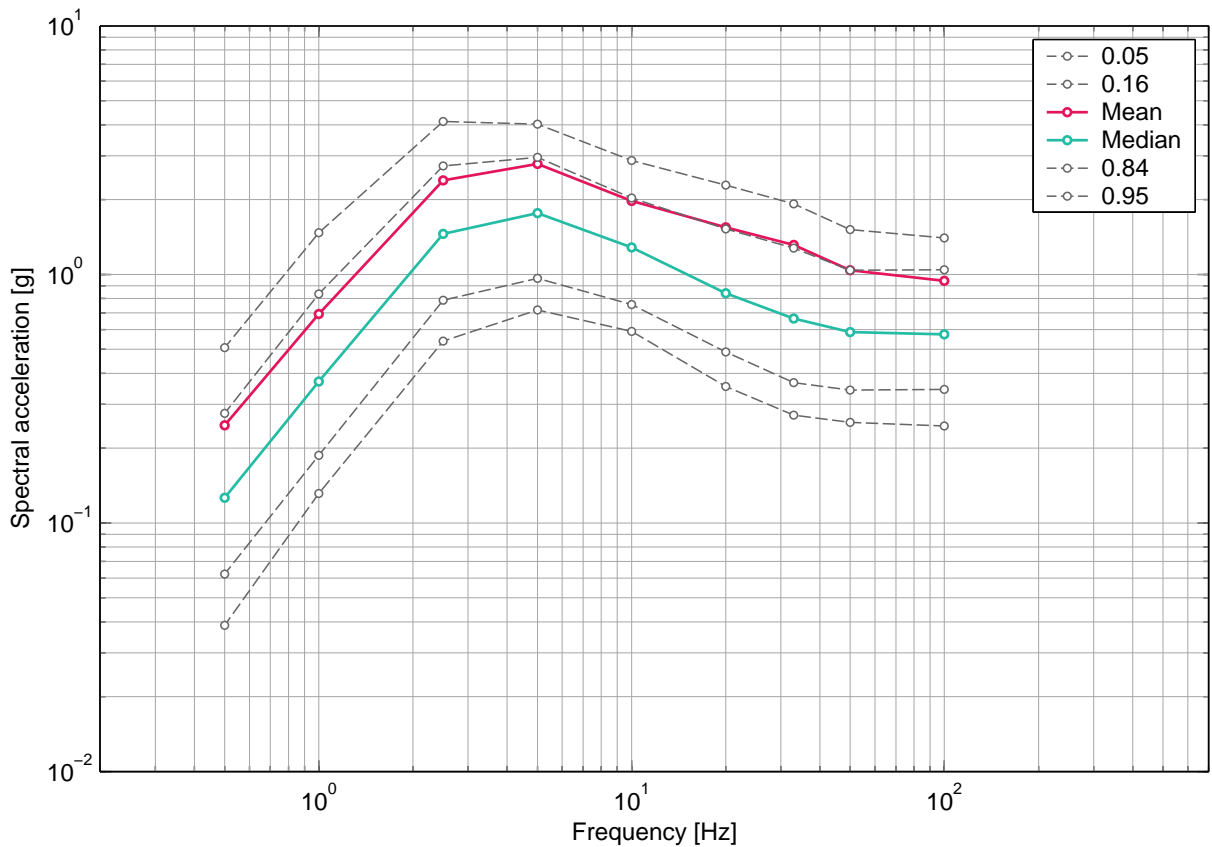


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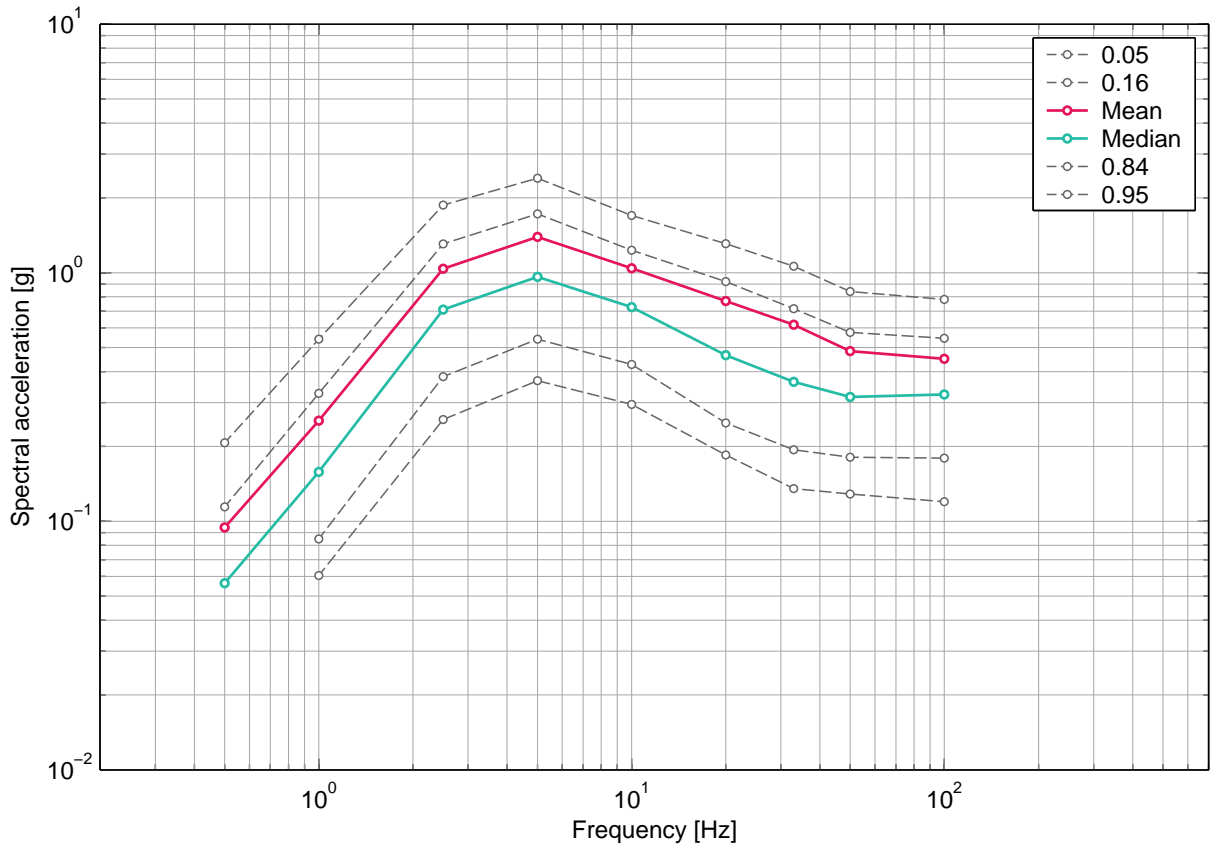


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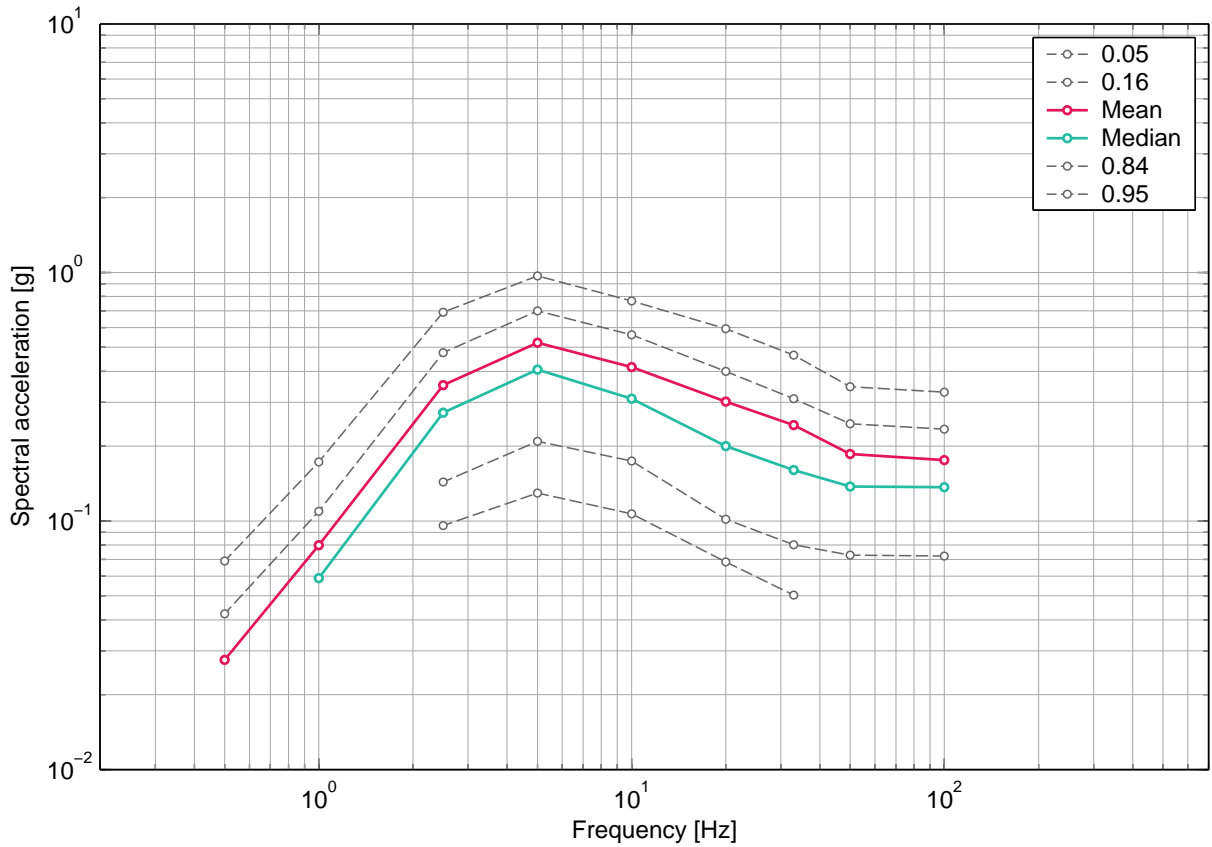


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## 2.4 Beznau, Soil Hazard, Horizontal Component, -15 m

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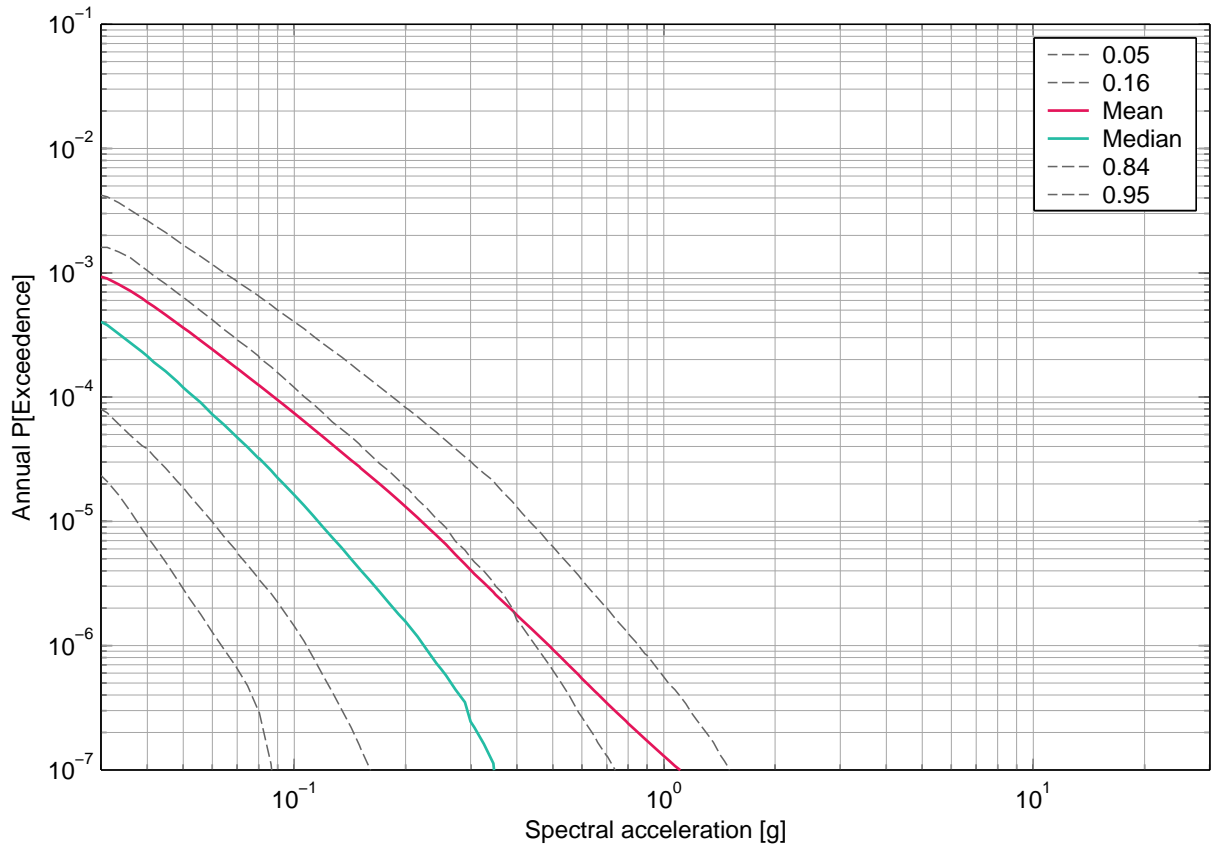


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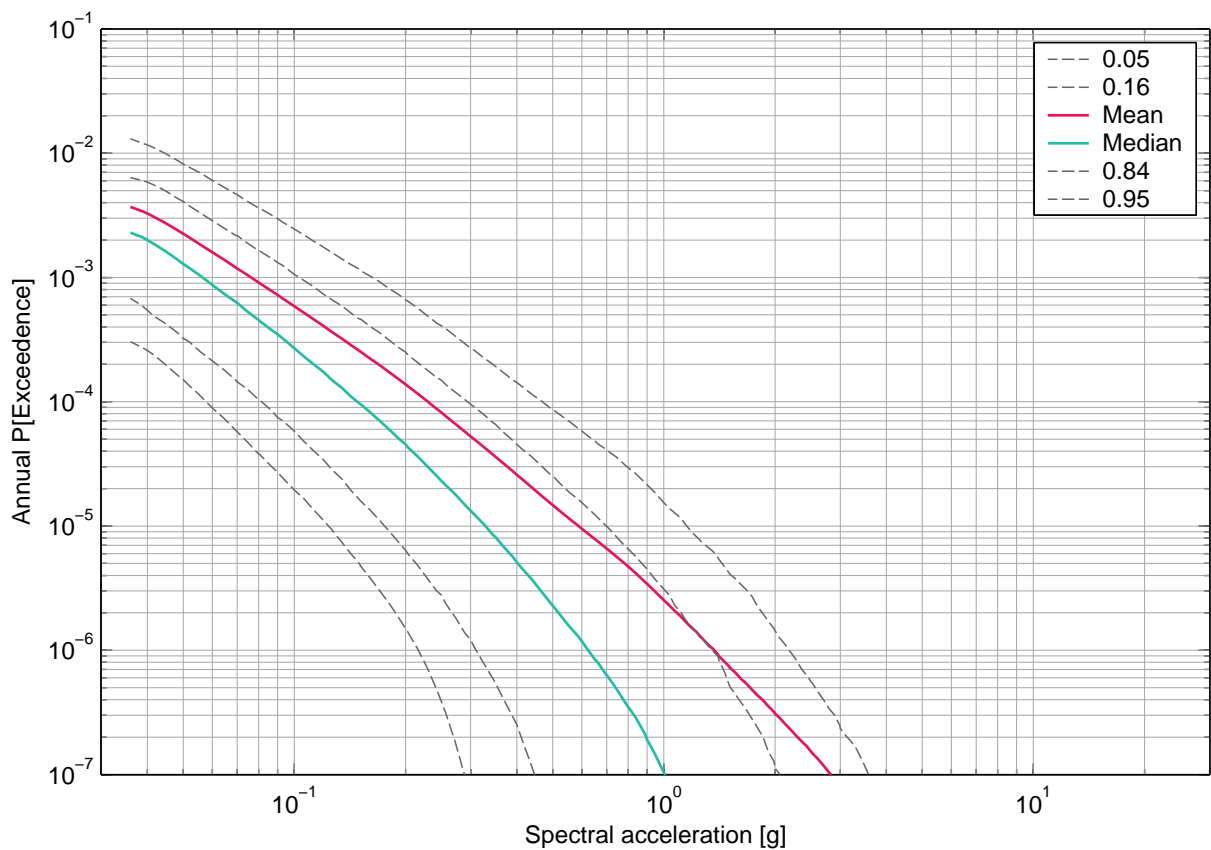


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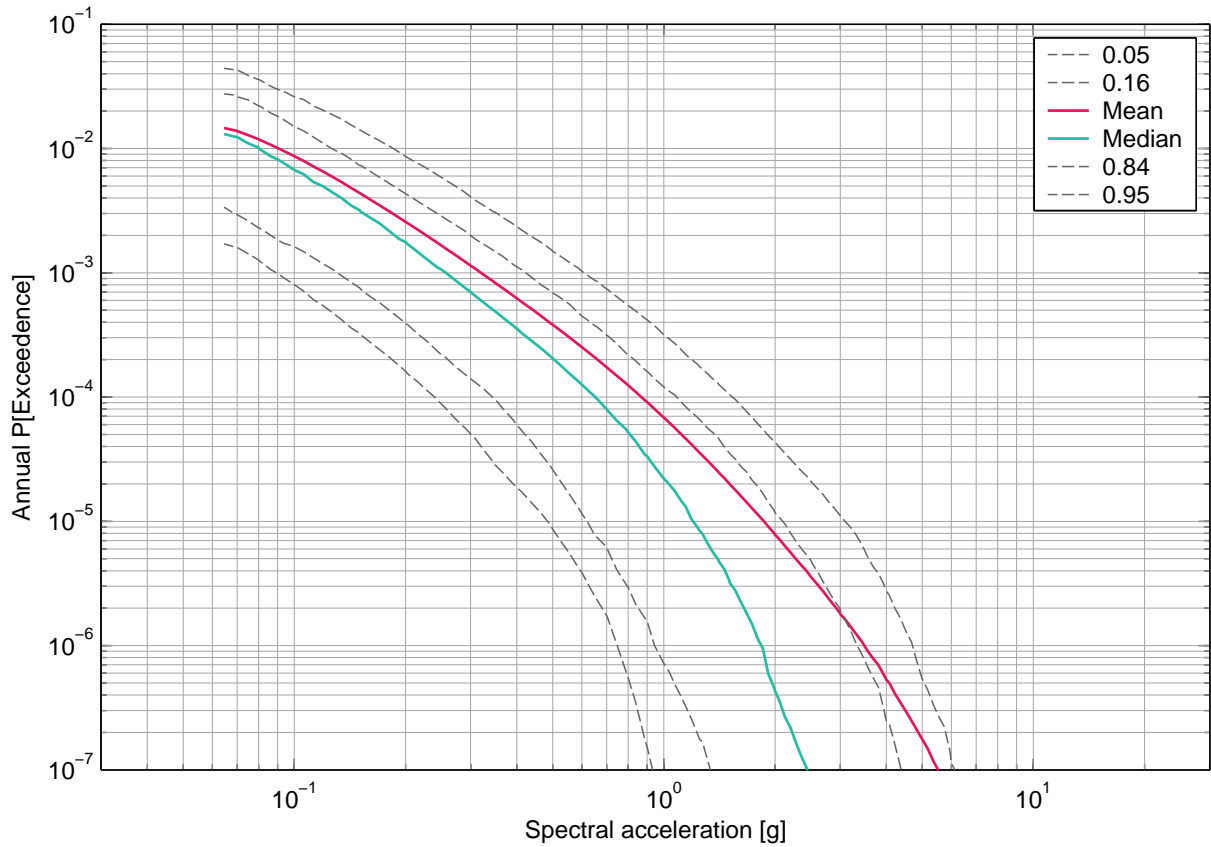


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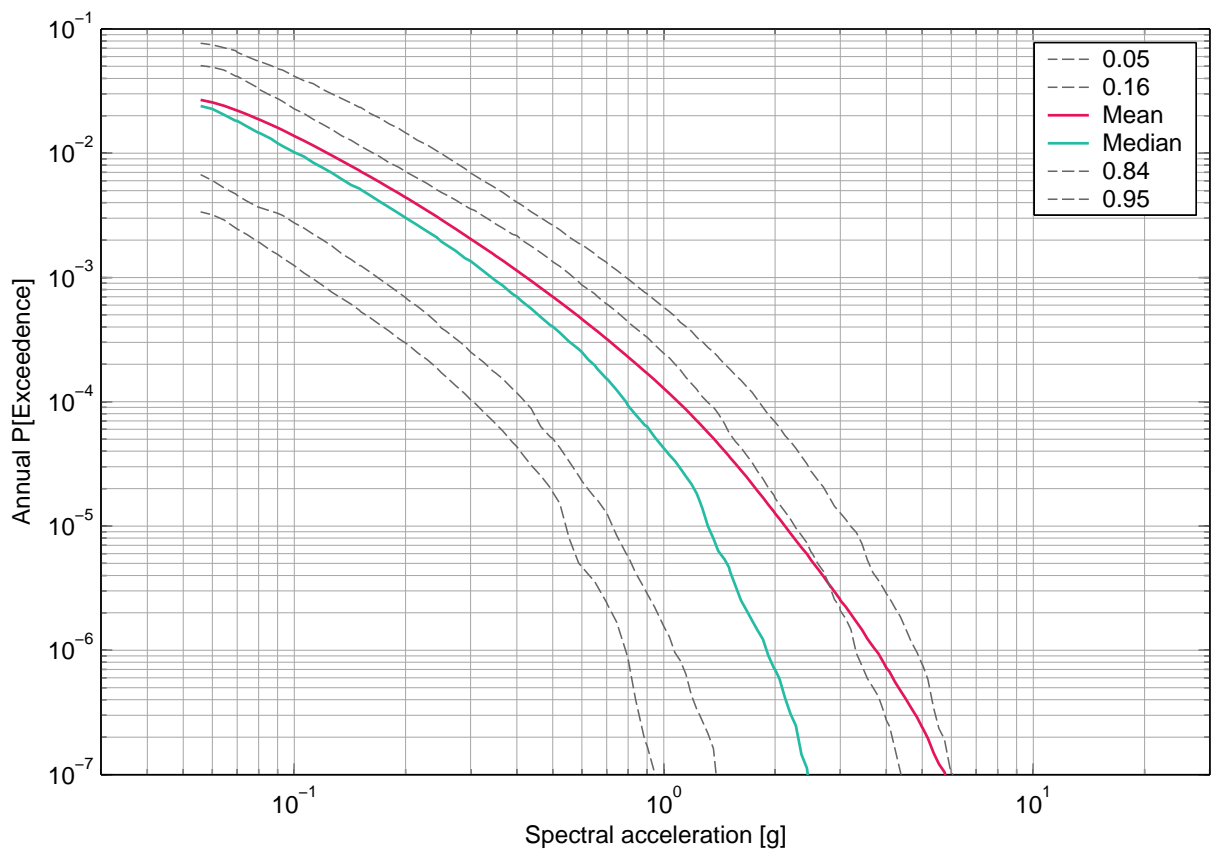


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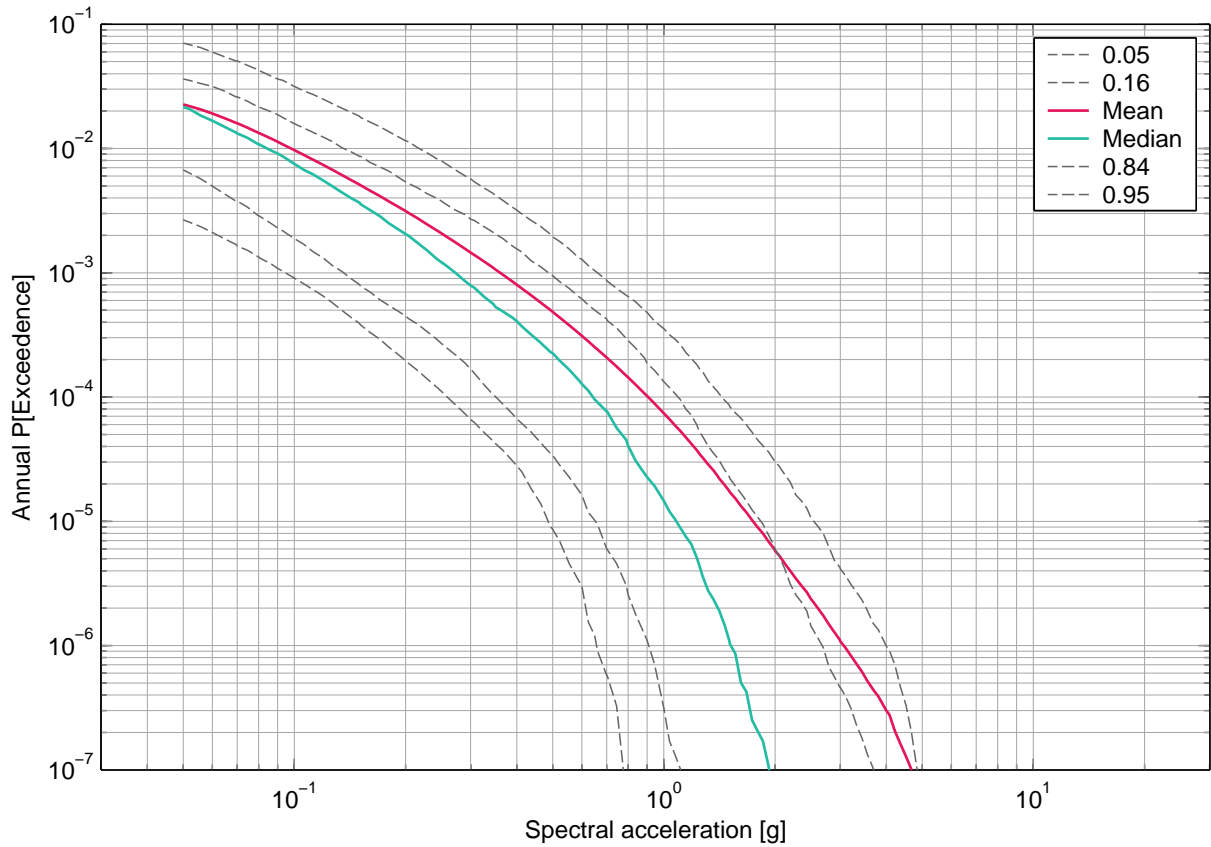


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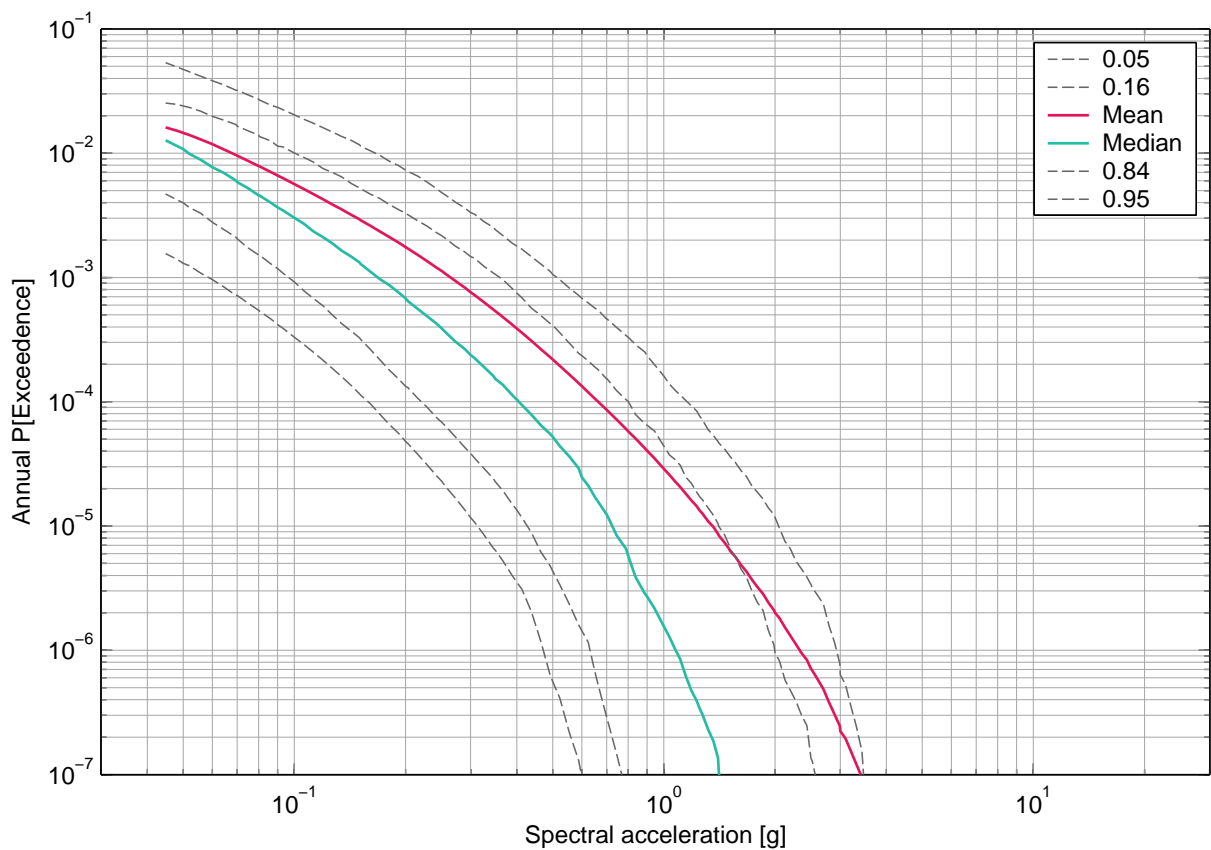


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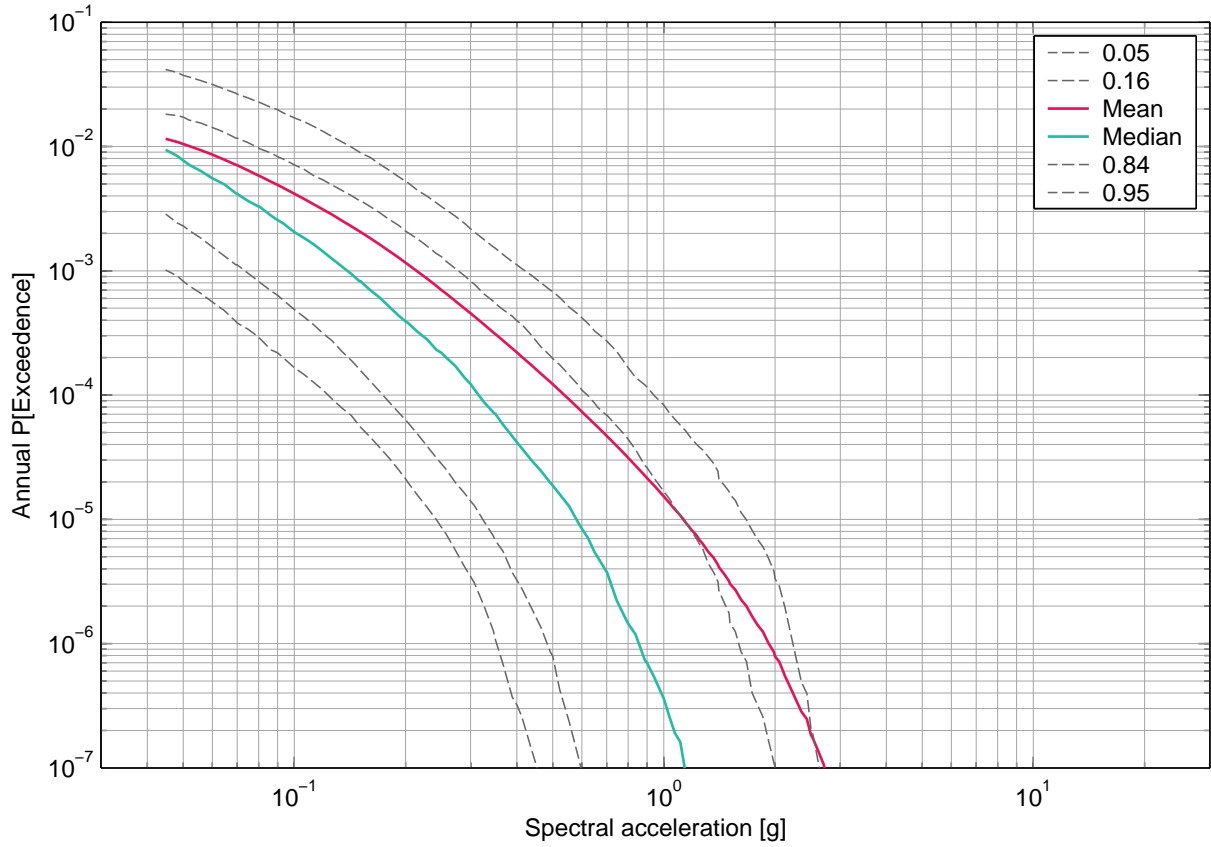


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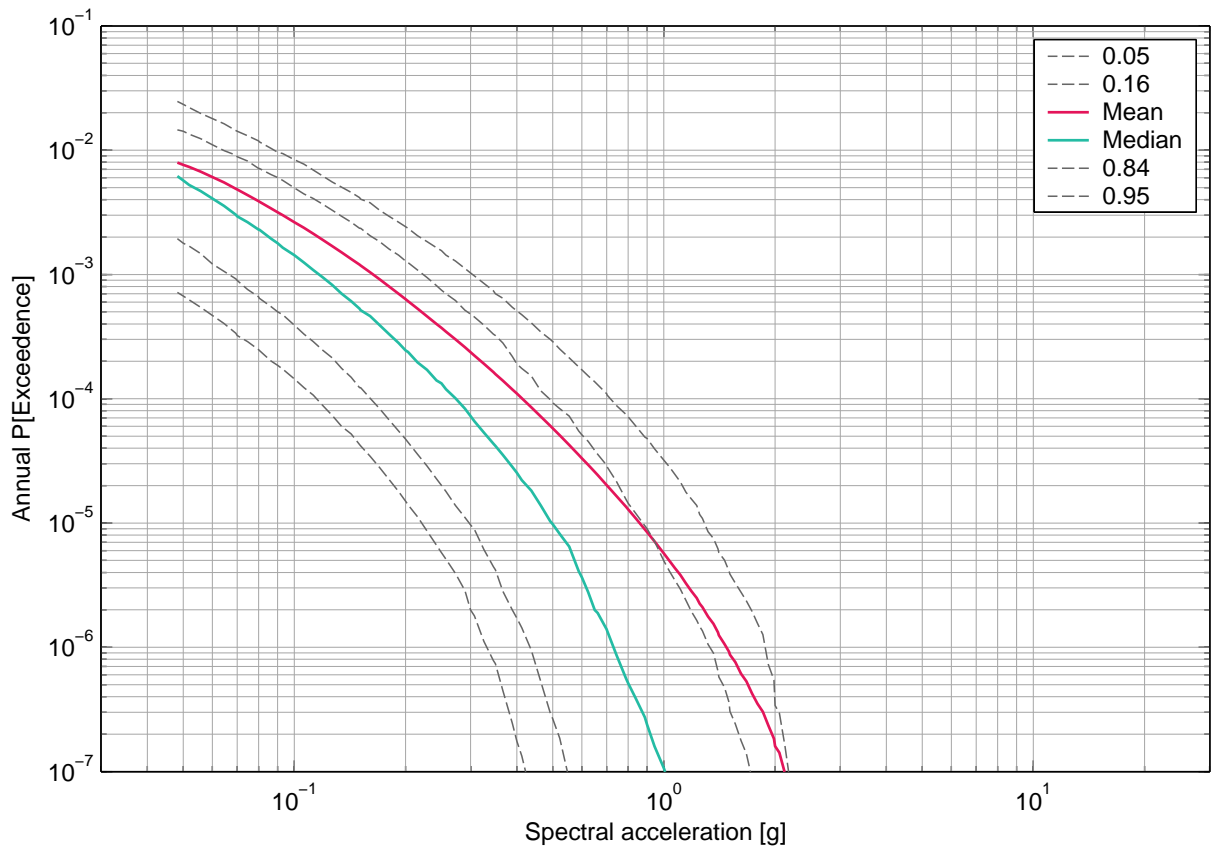


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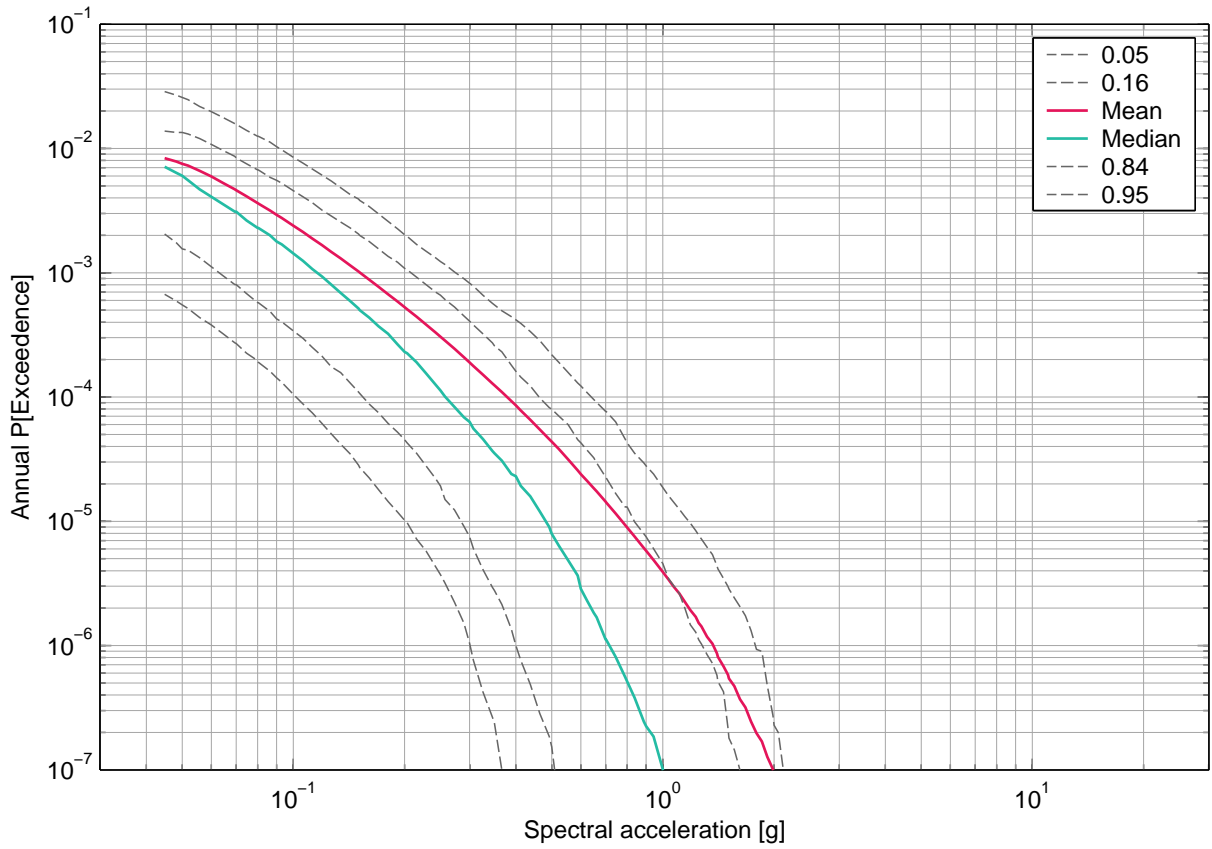


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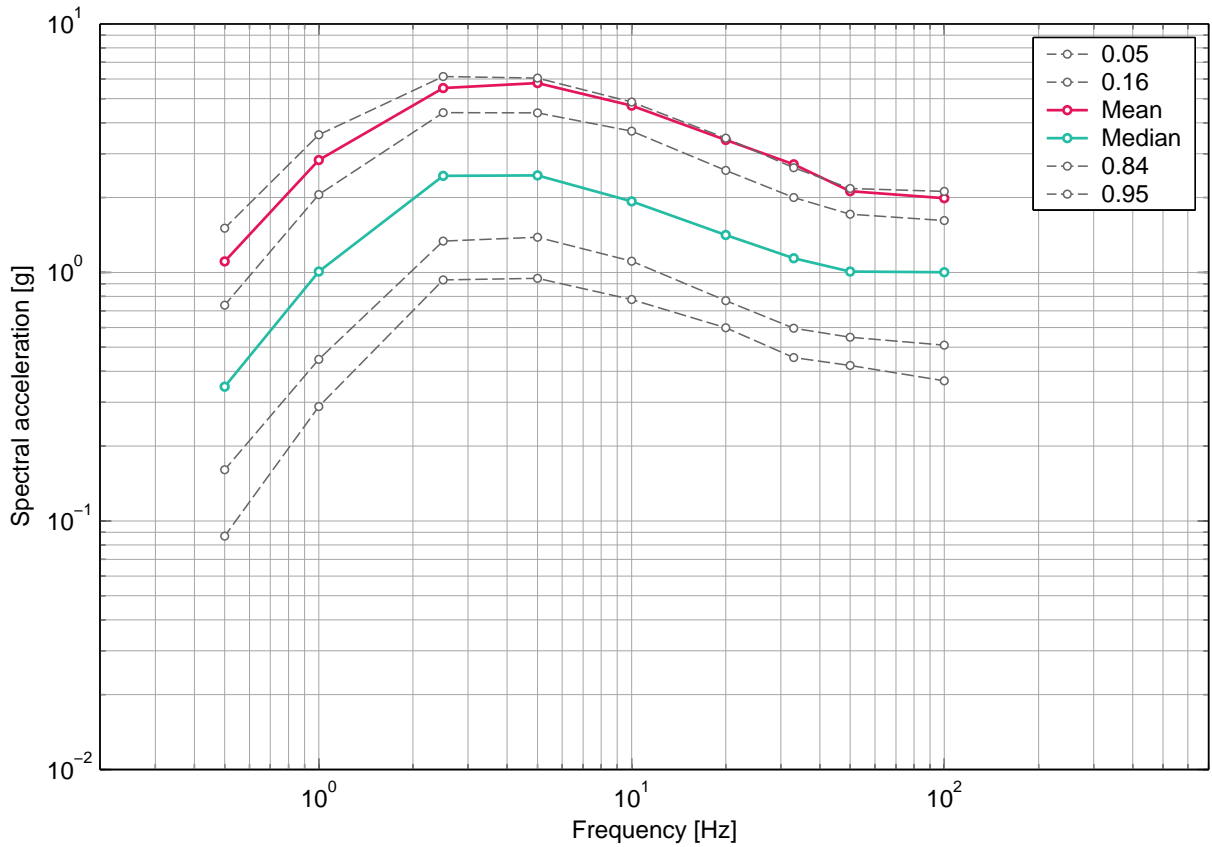


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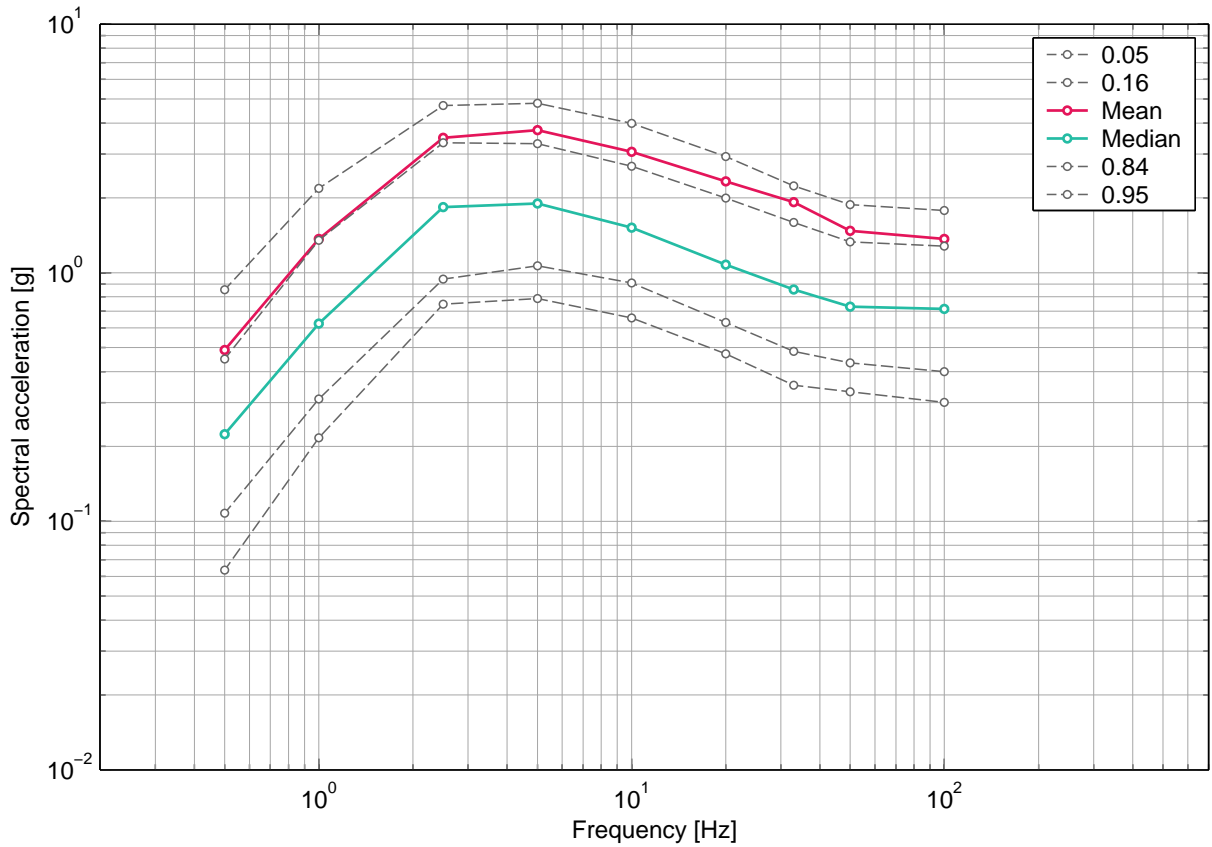


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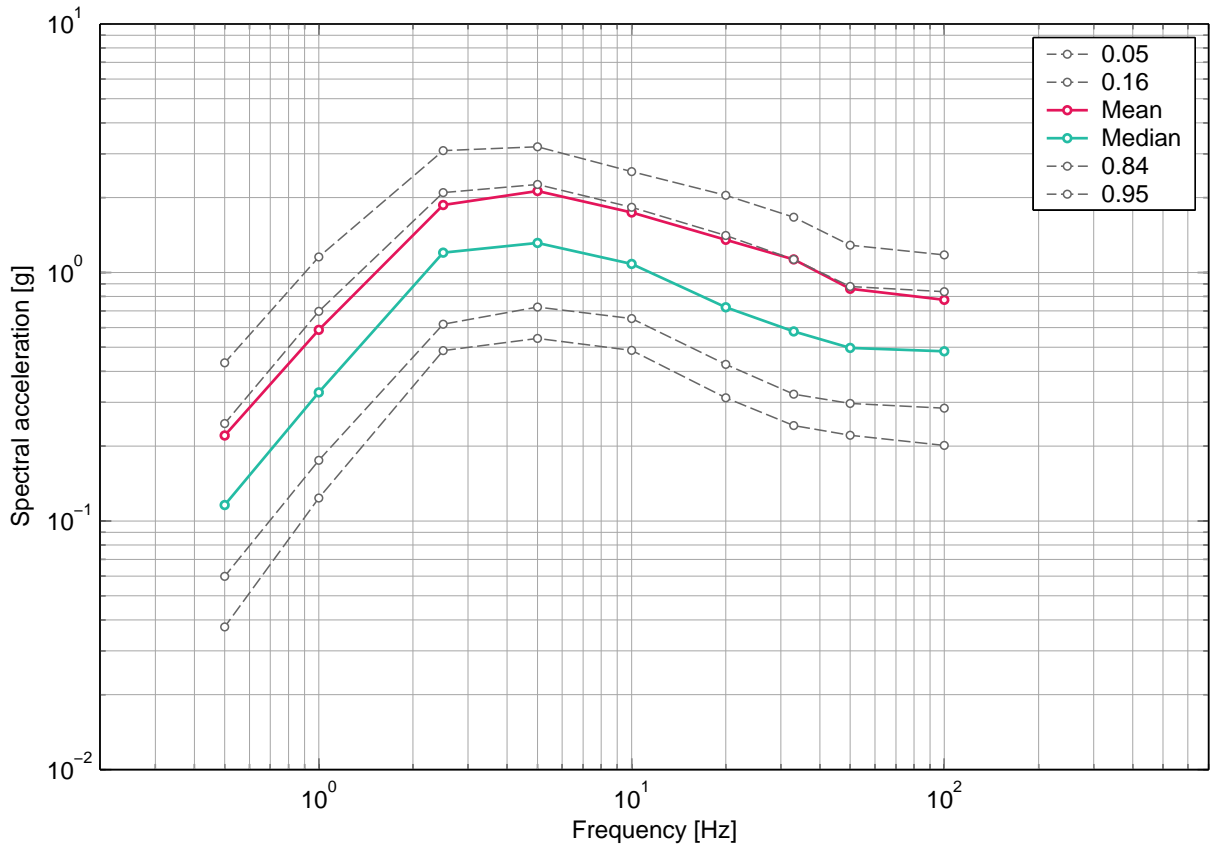


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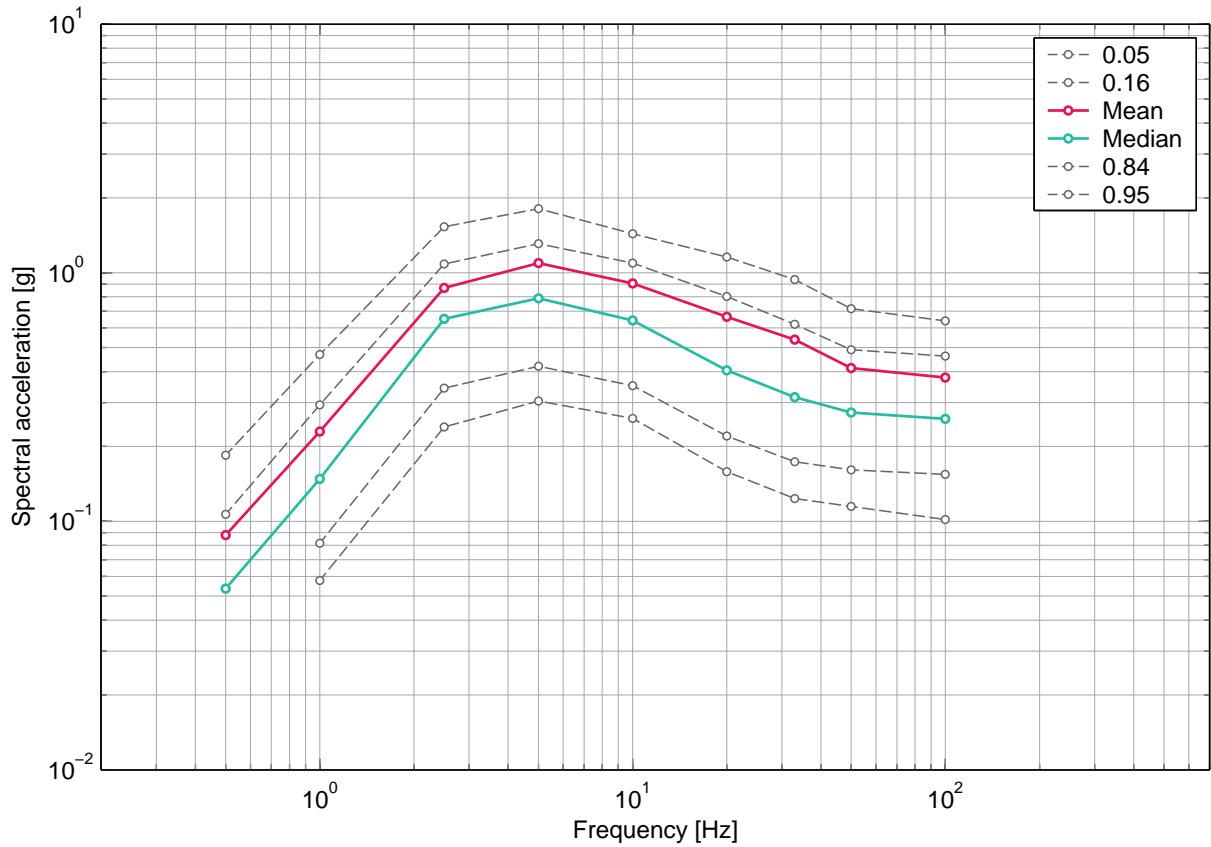


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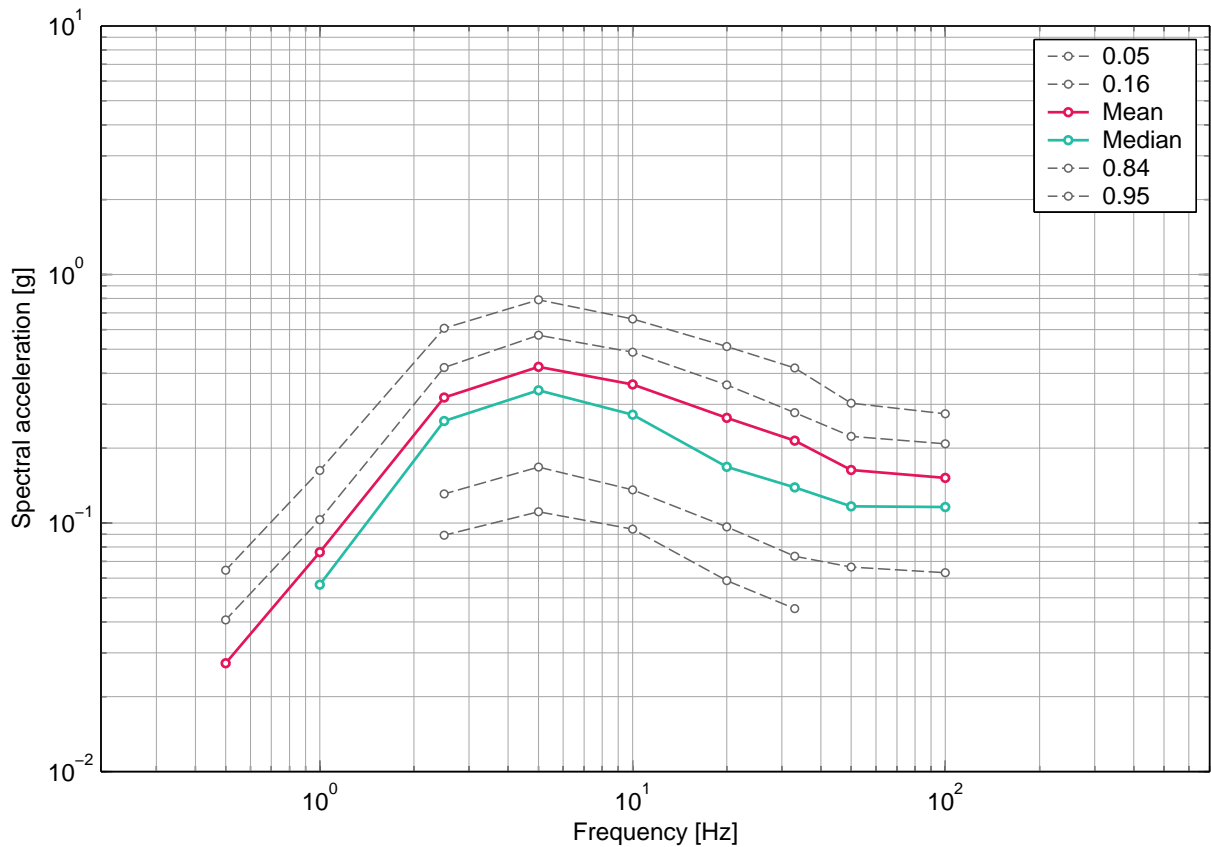


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## 2.5 Beznau, Rock Hazard Deaggregation, Horizontal Component, Surface

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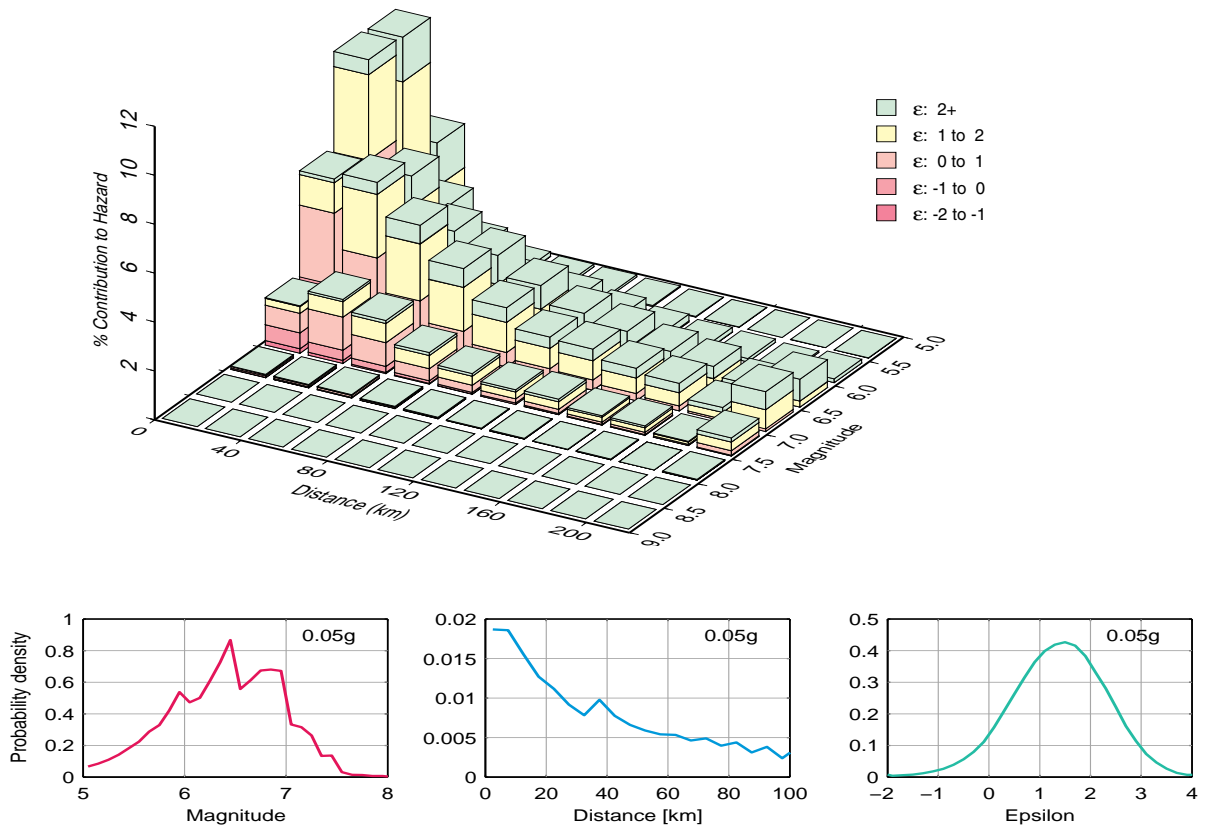


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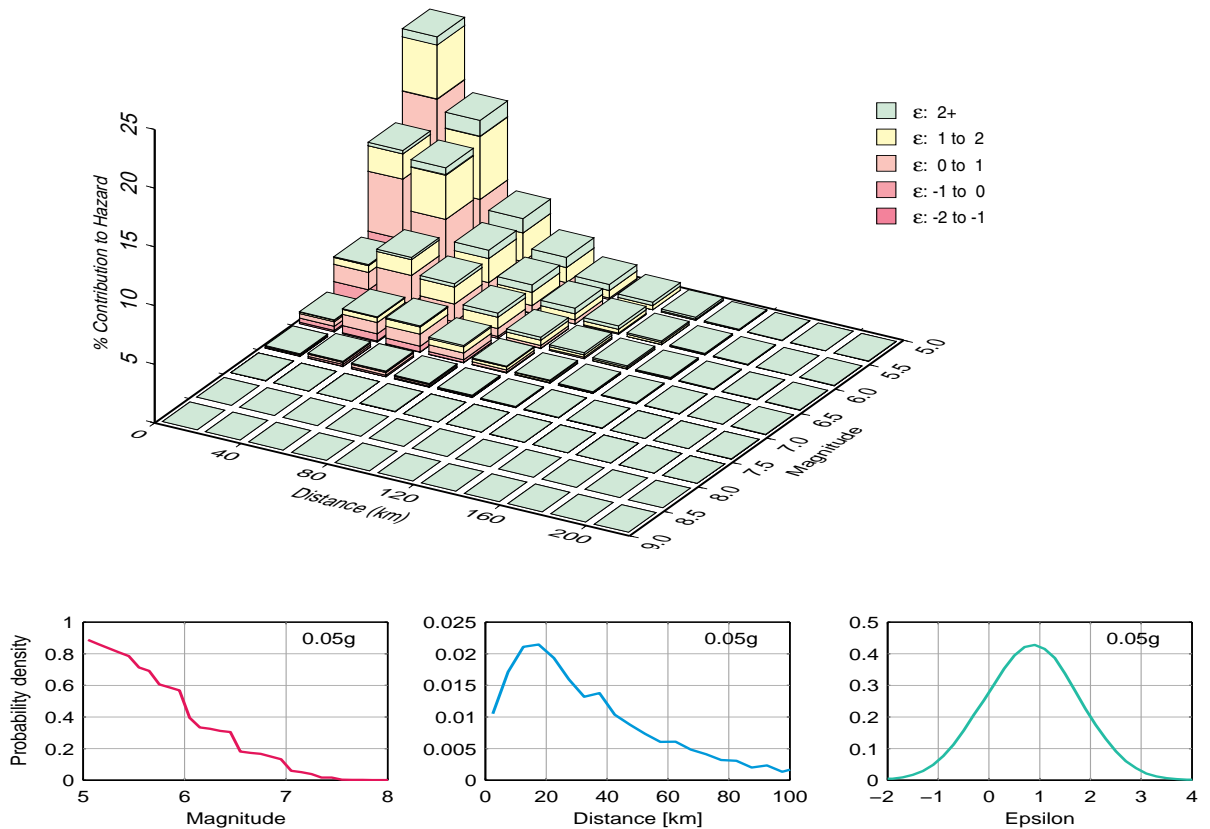


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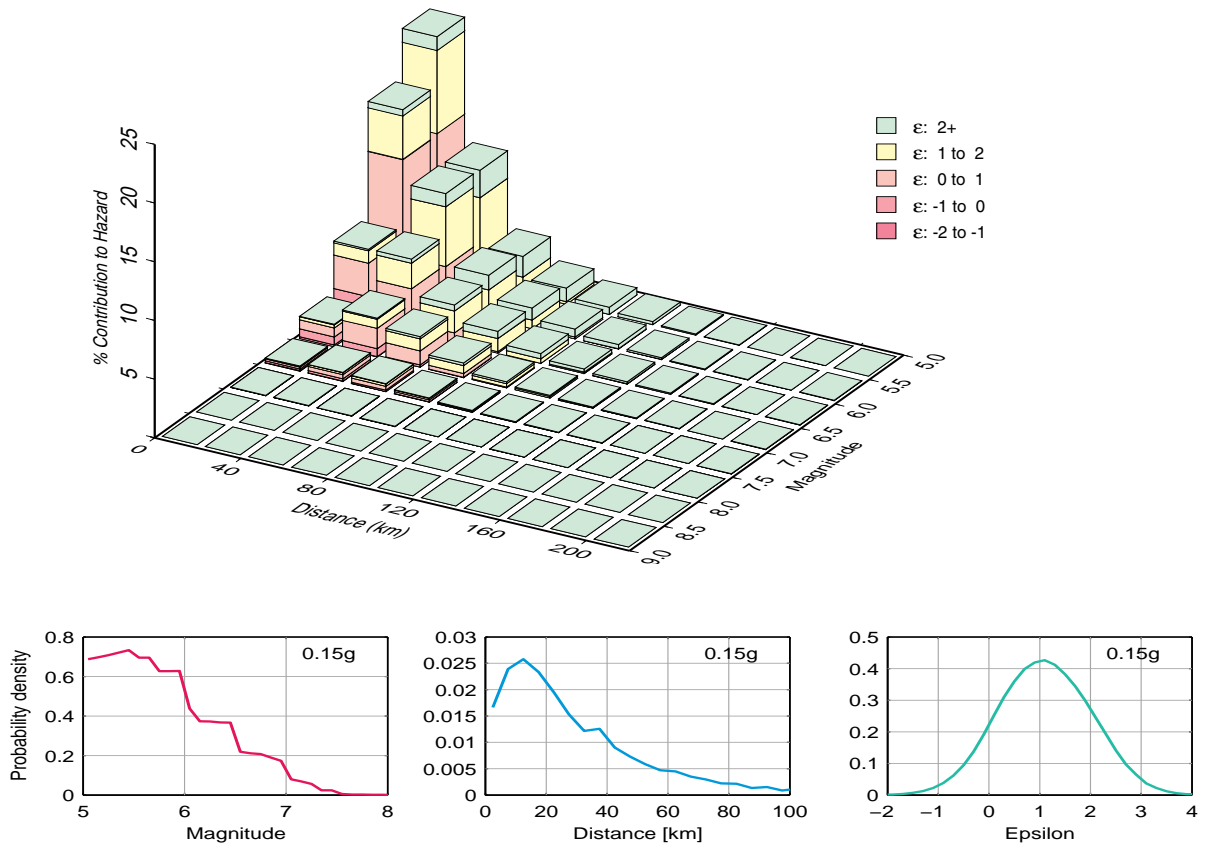


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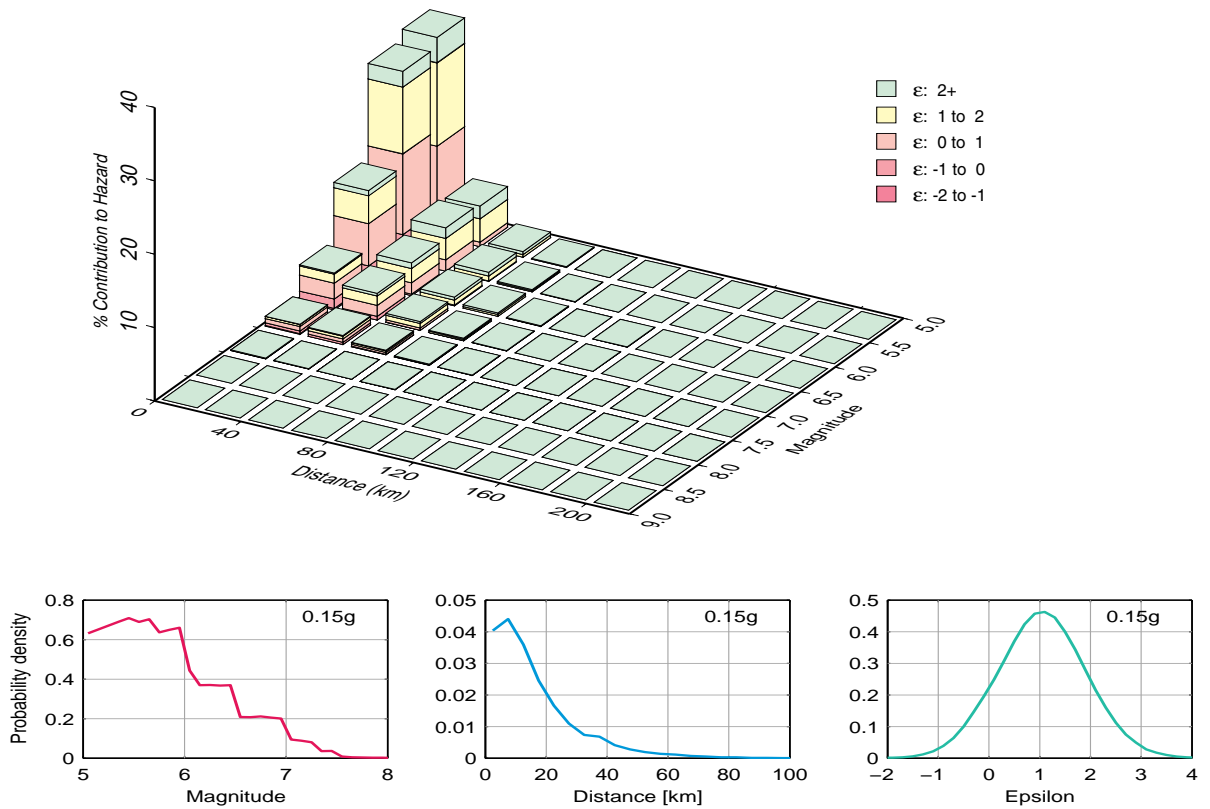


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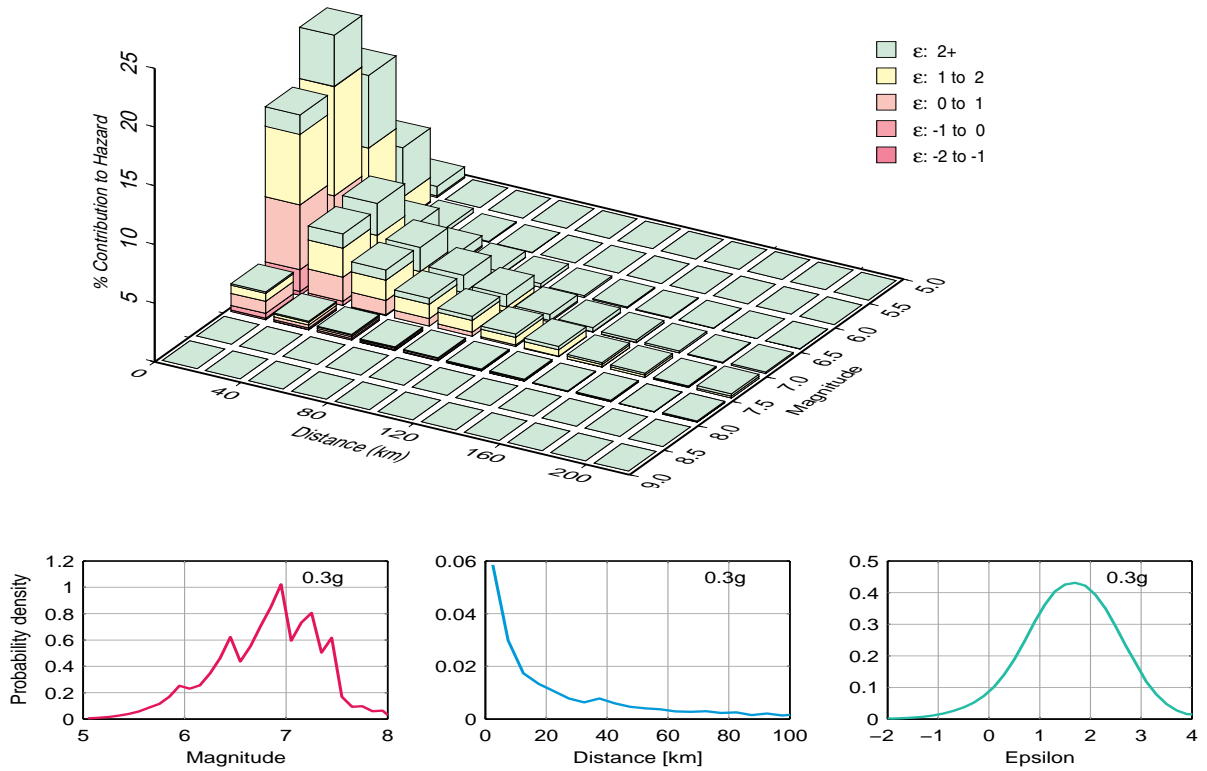


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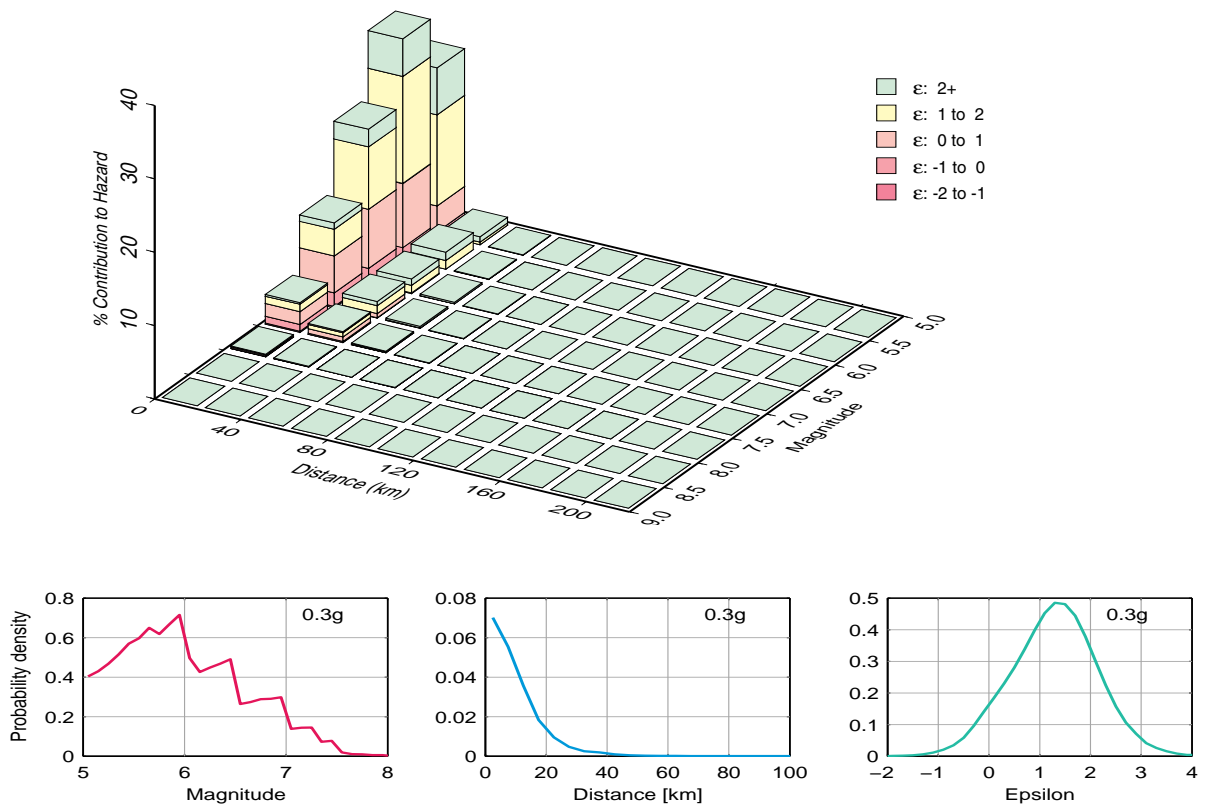


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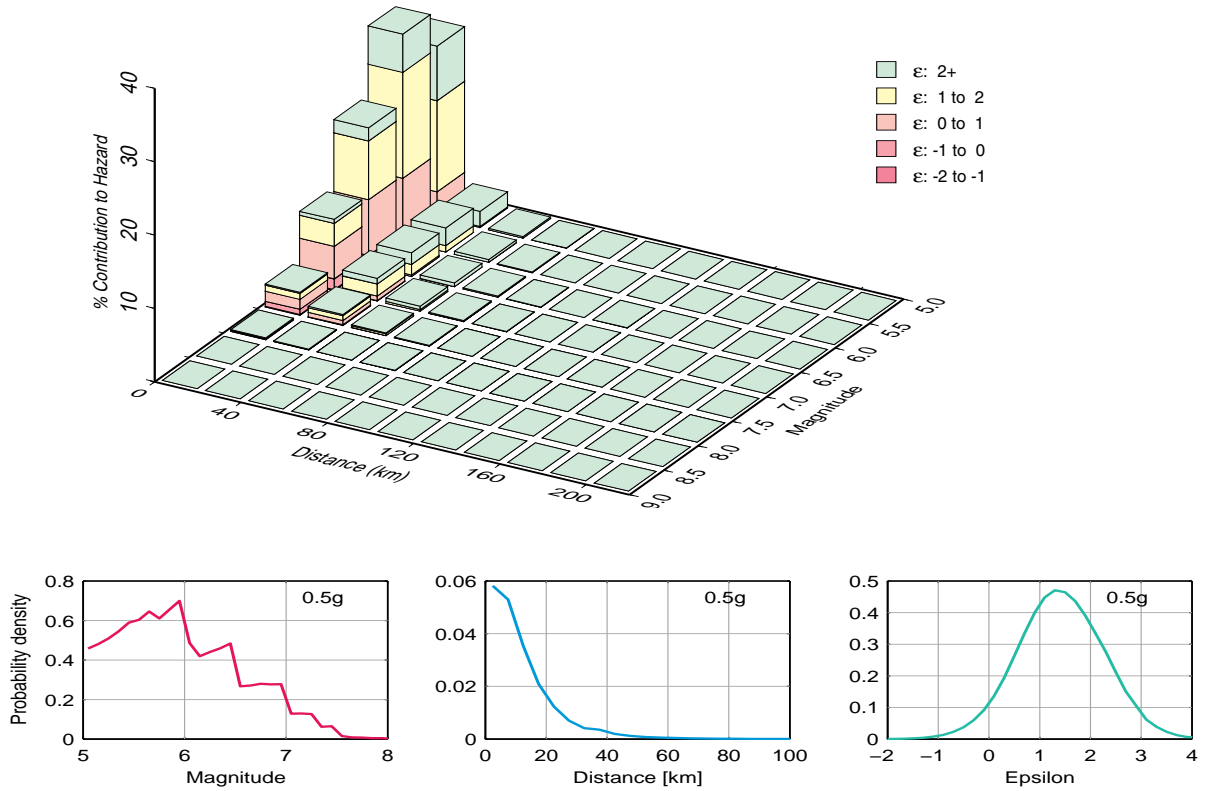


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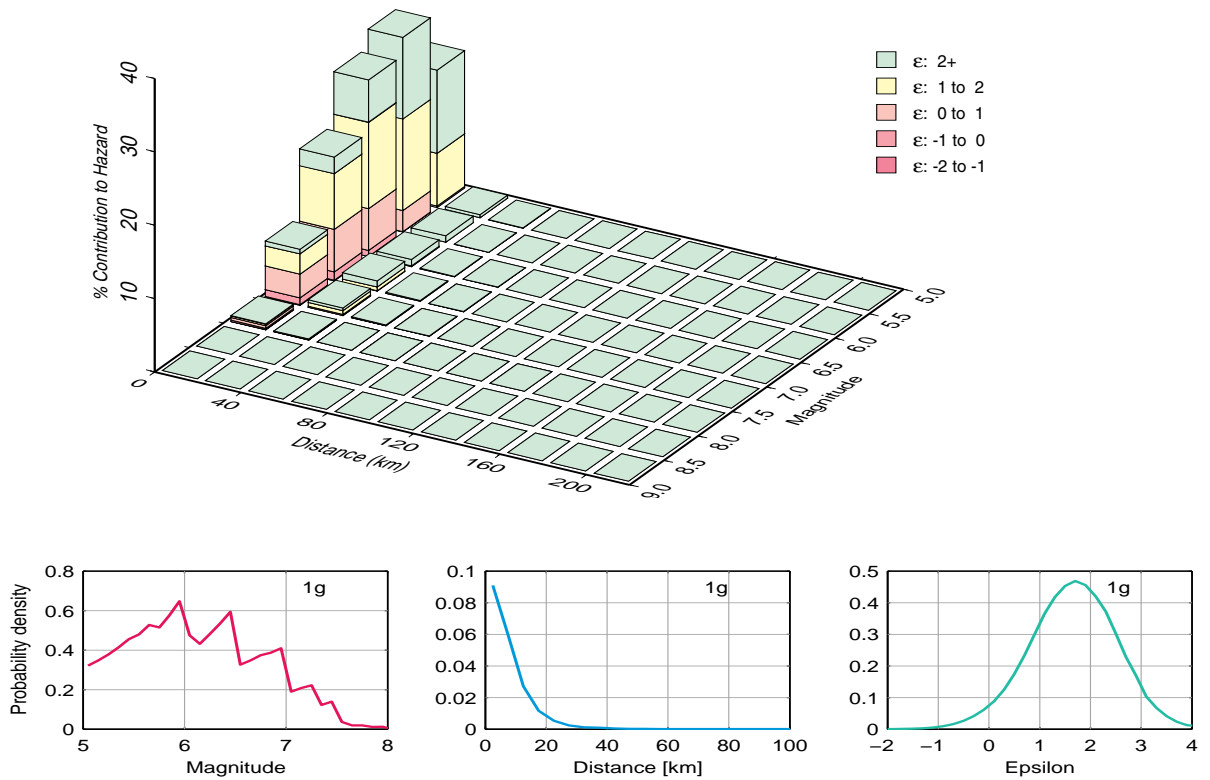


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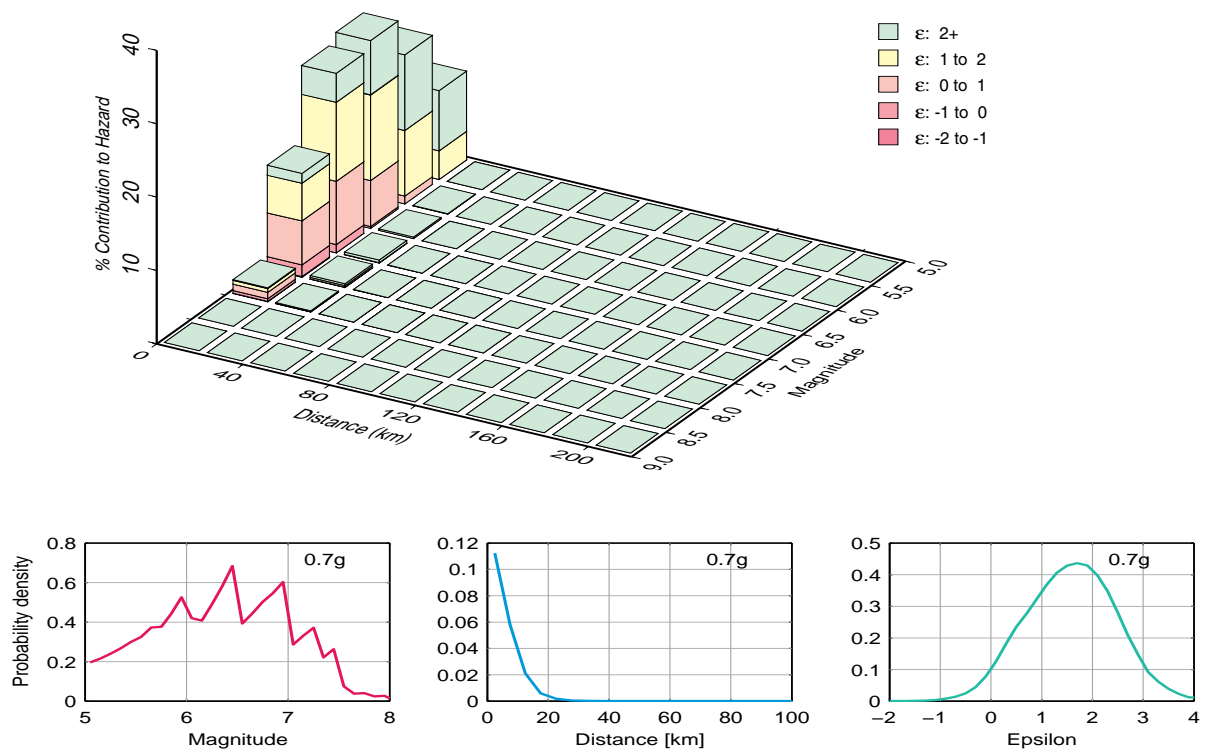


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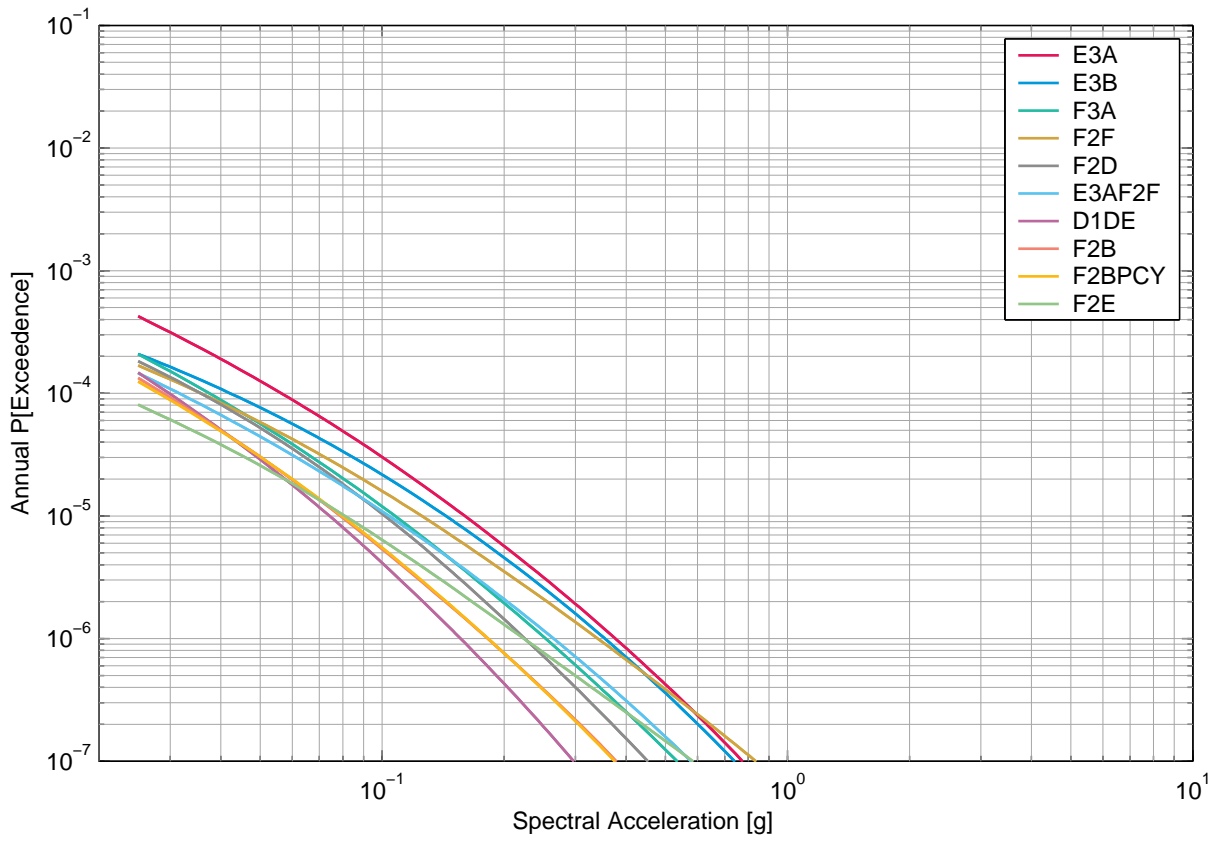


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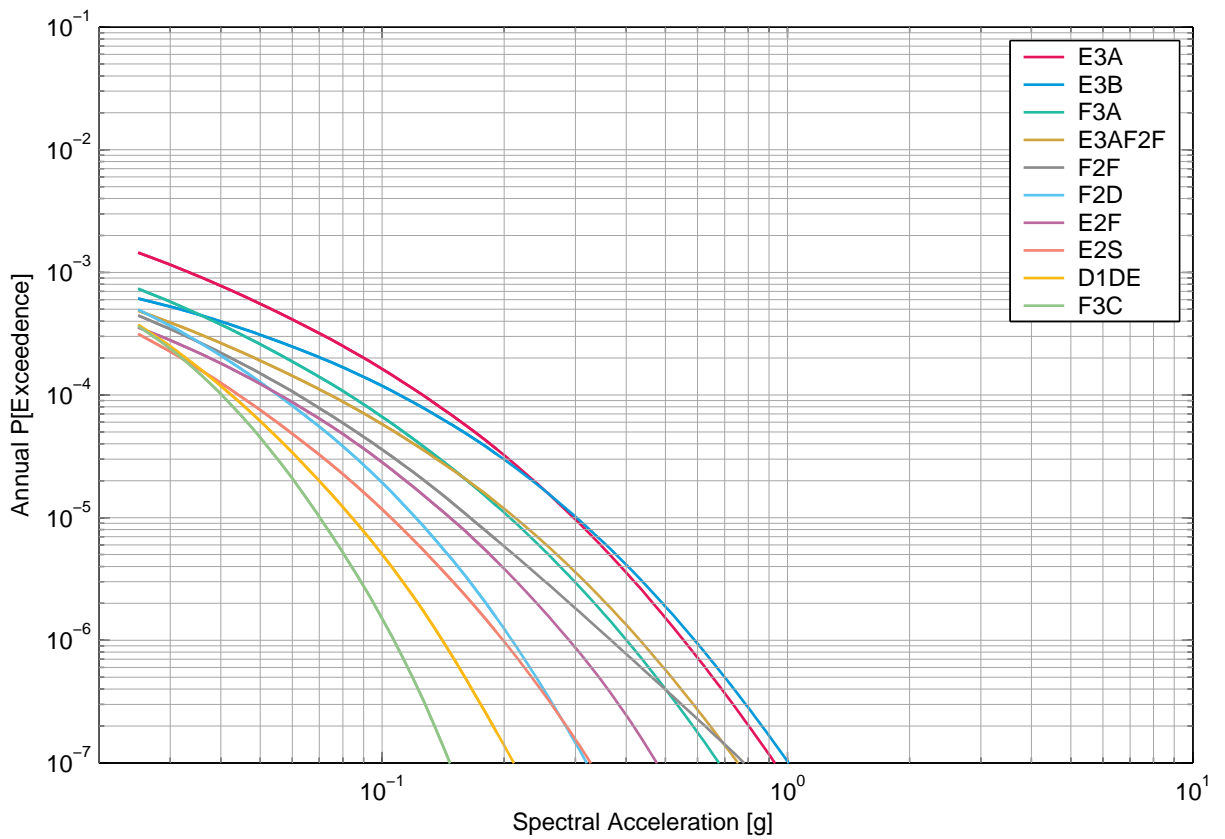


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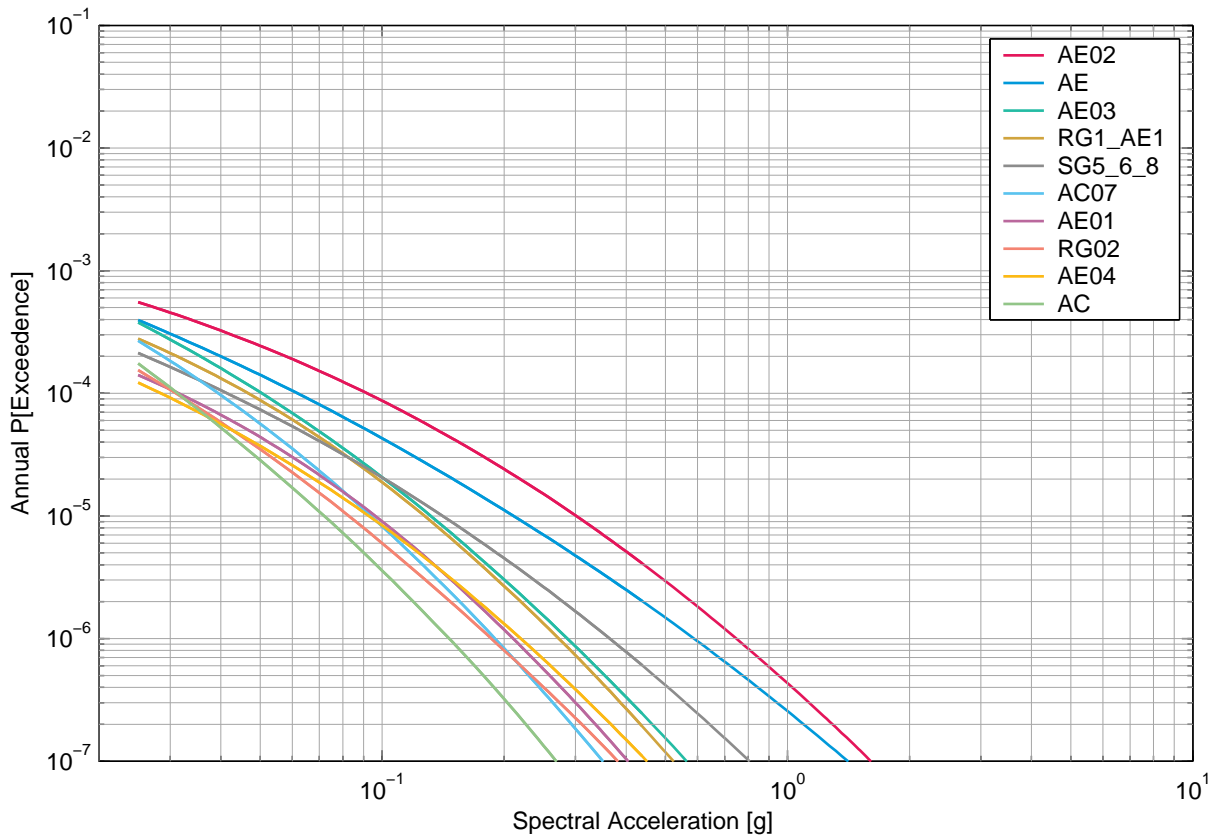


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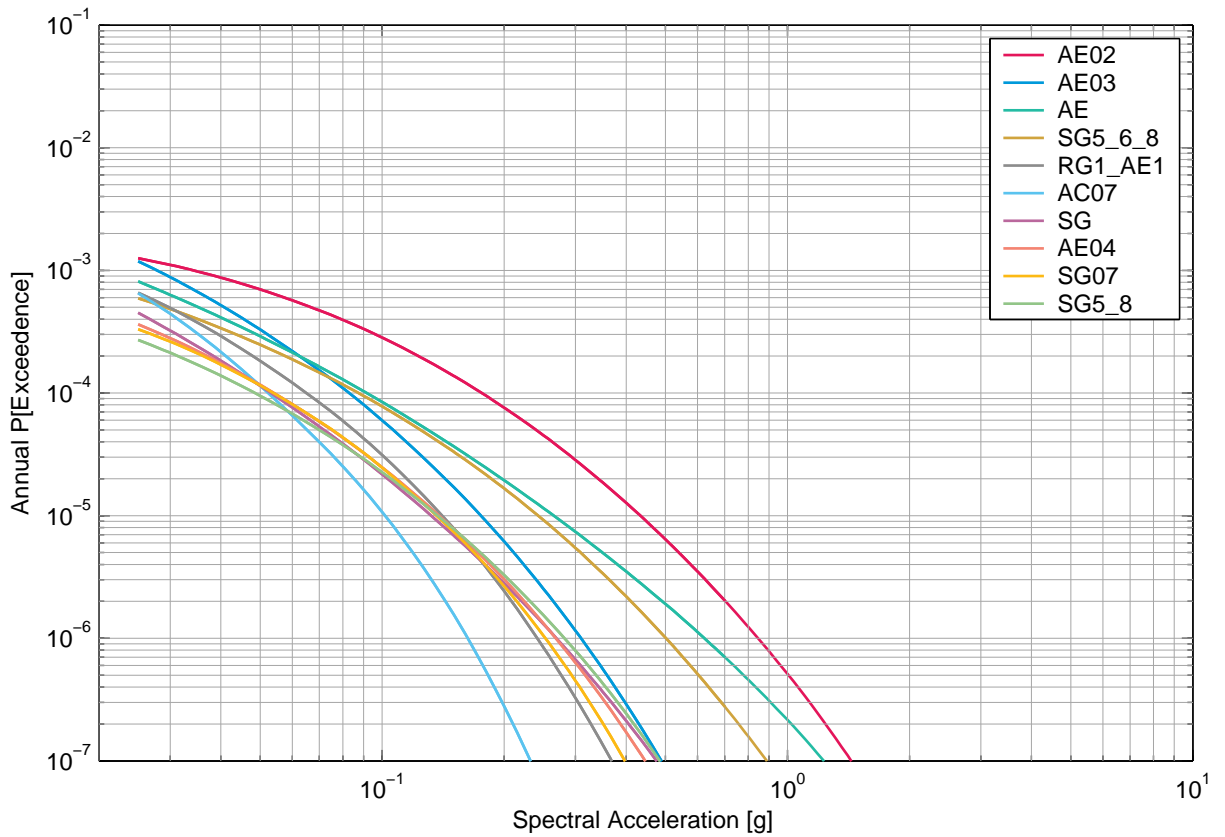


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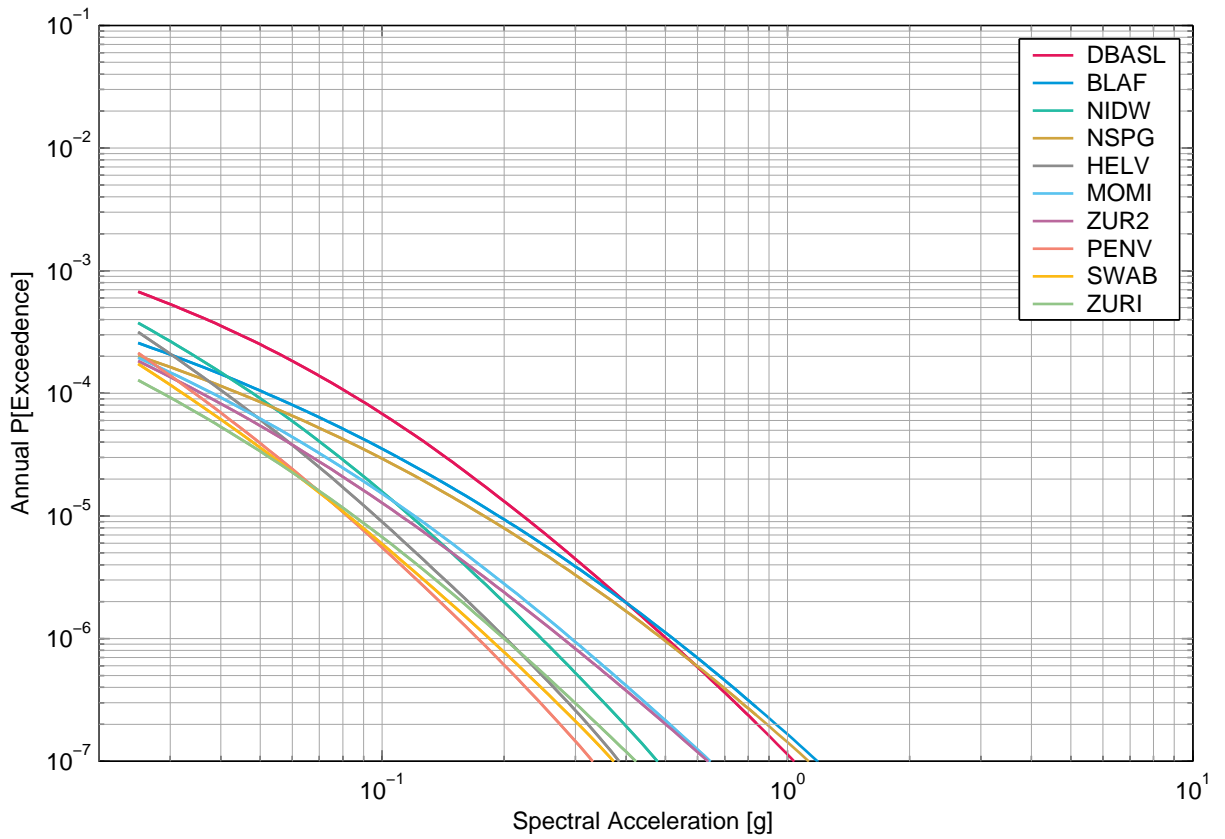


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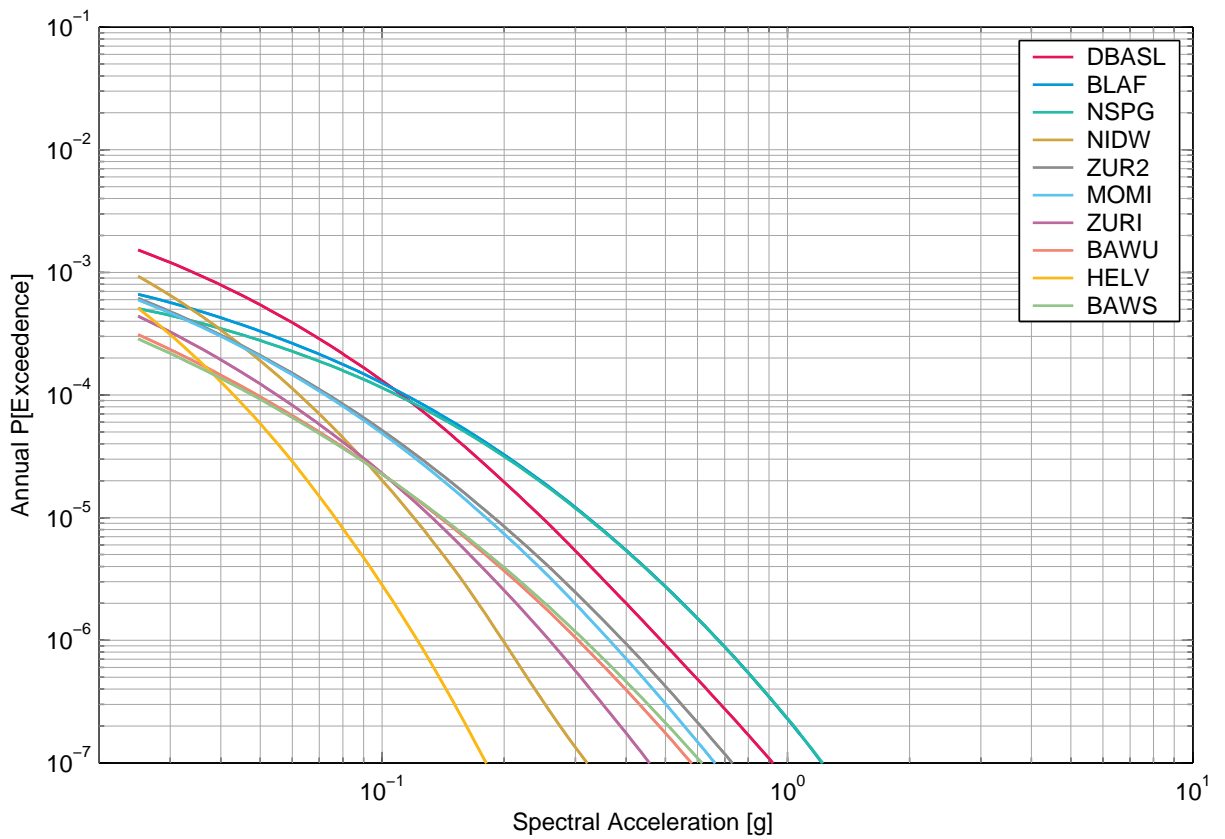


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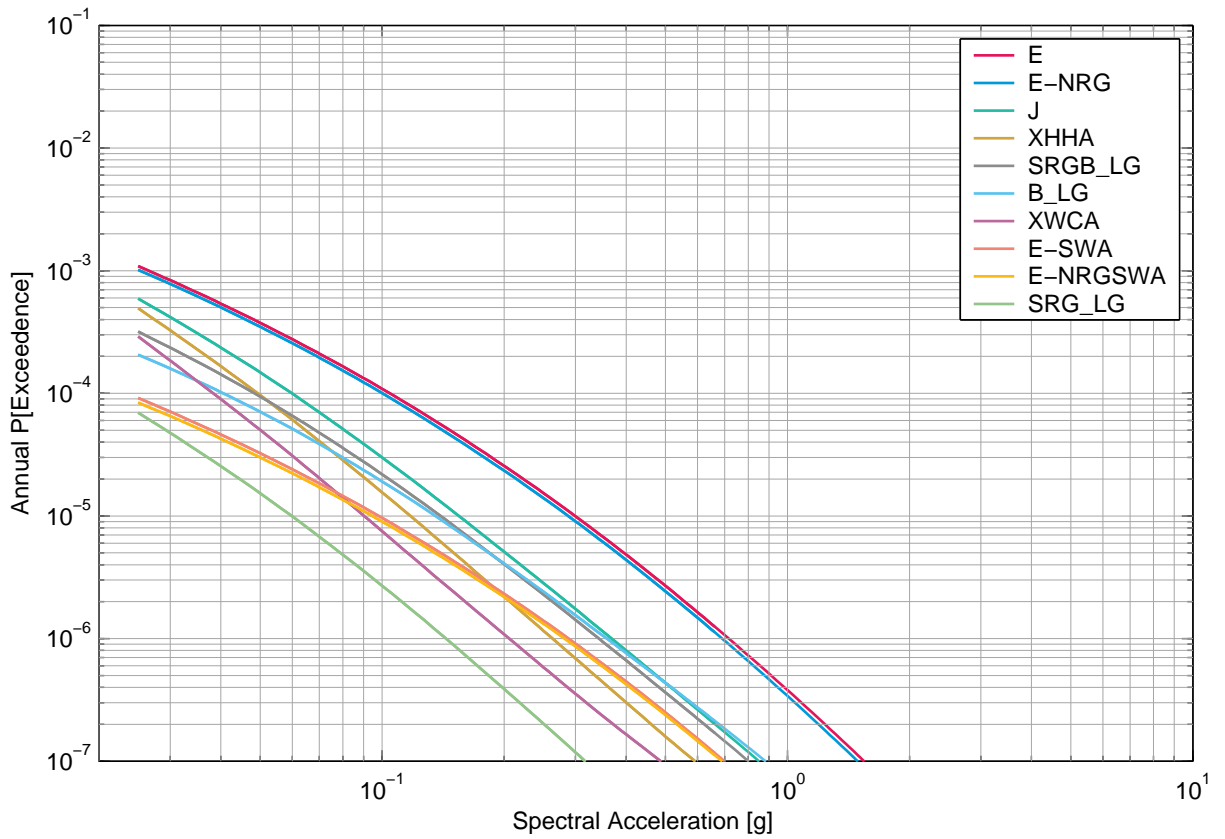


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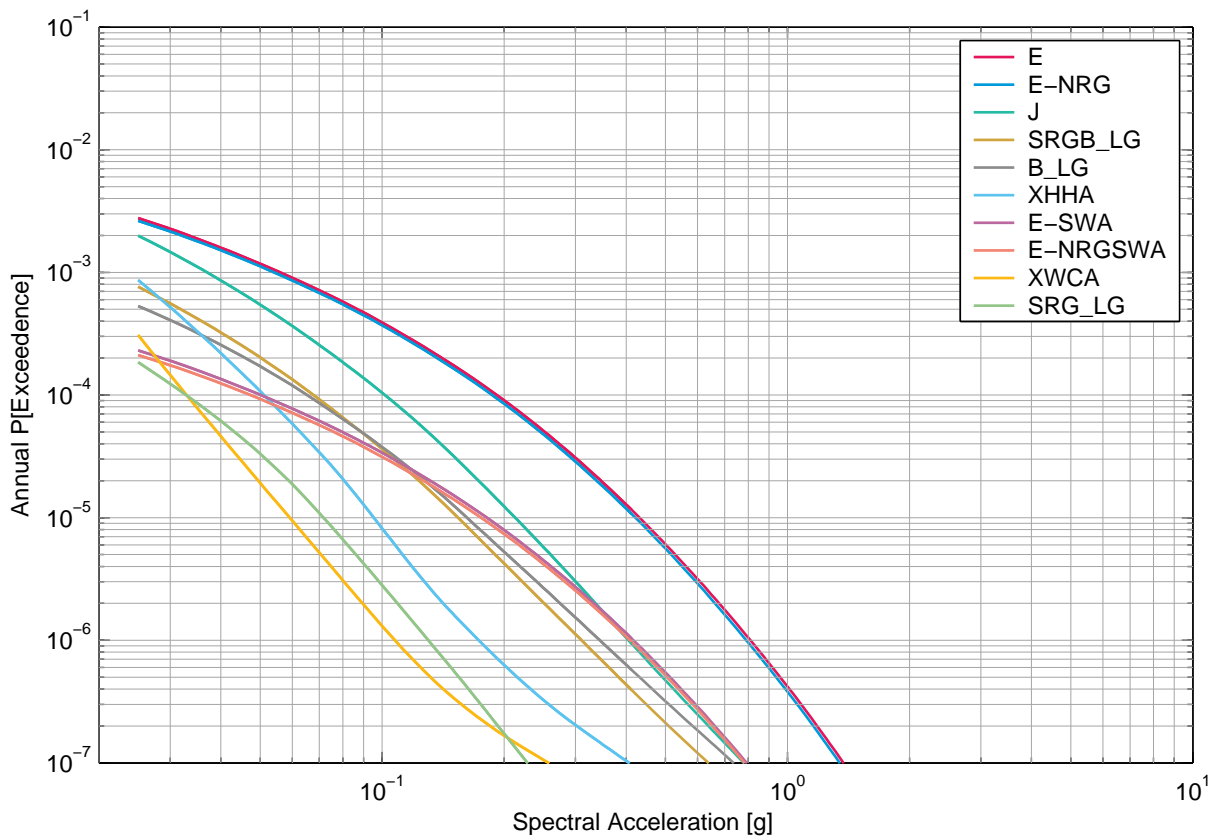


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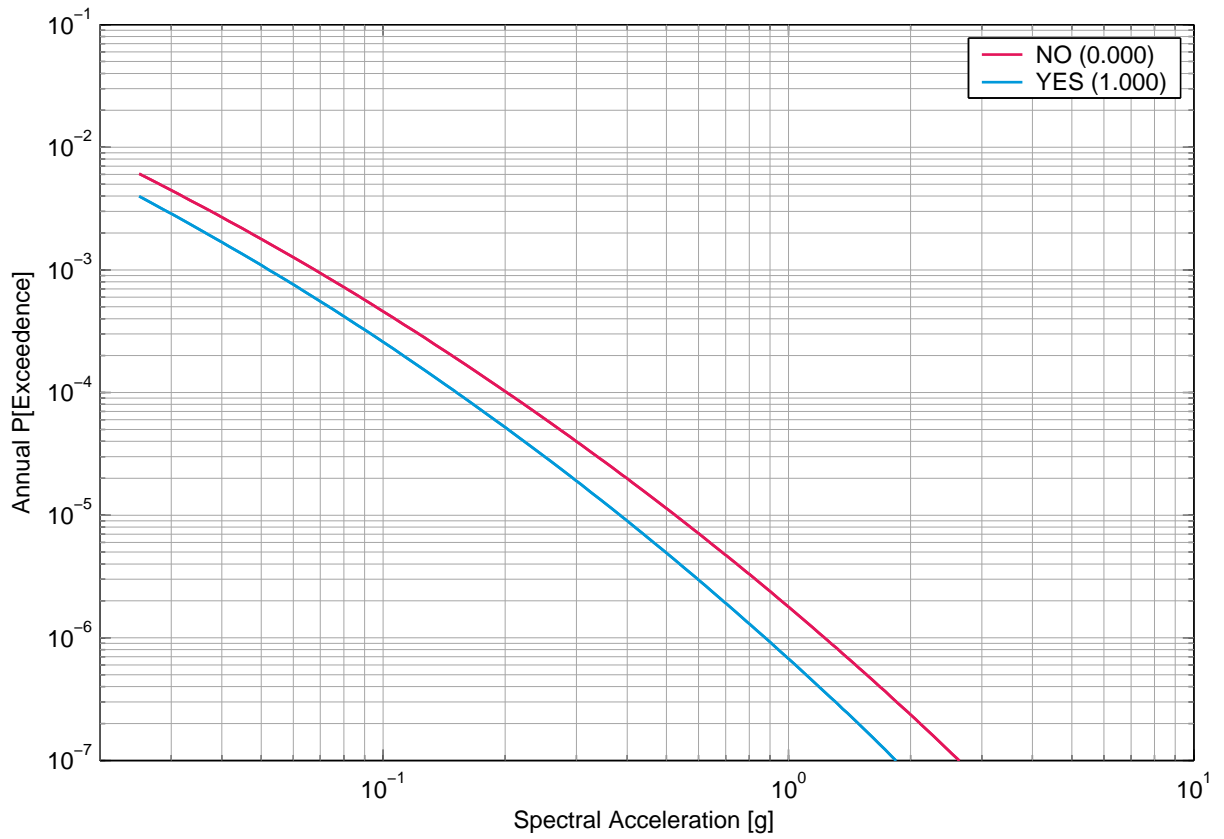


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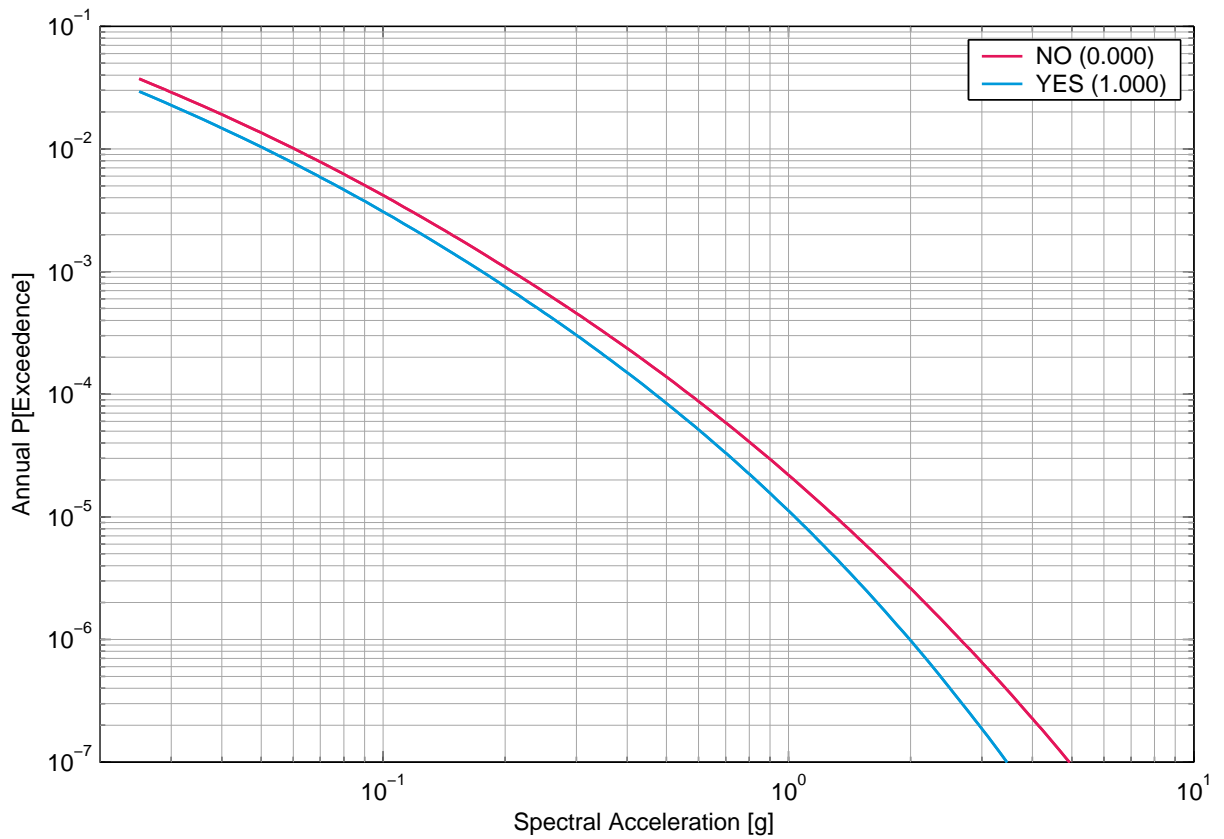


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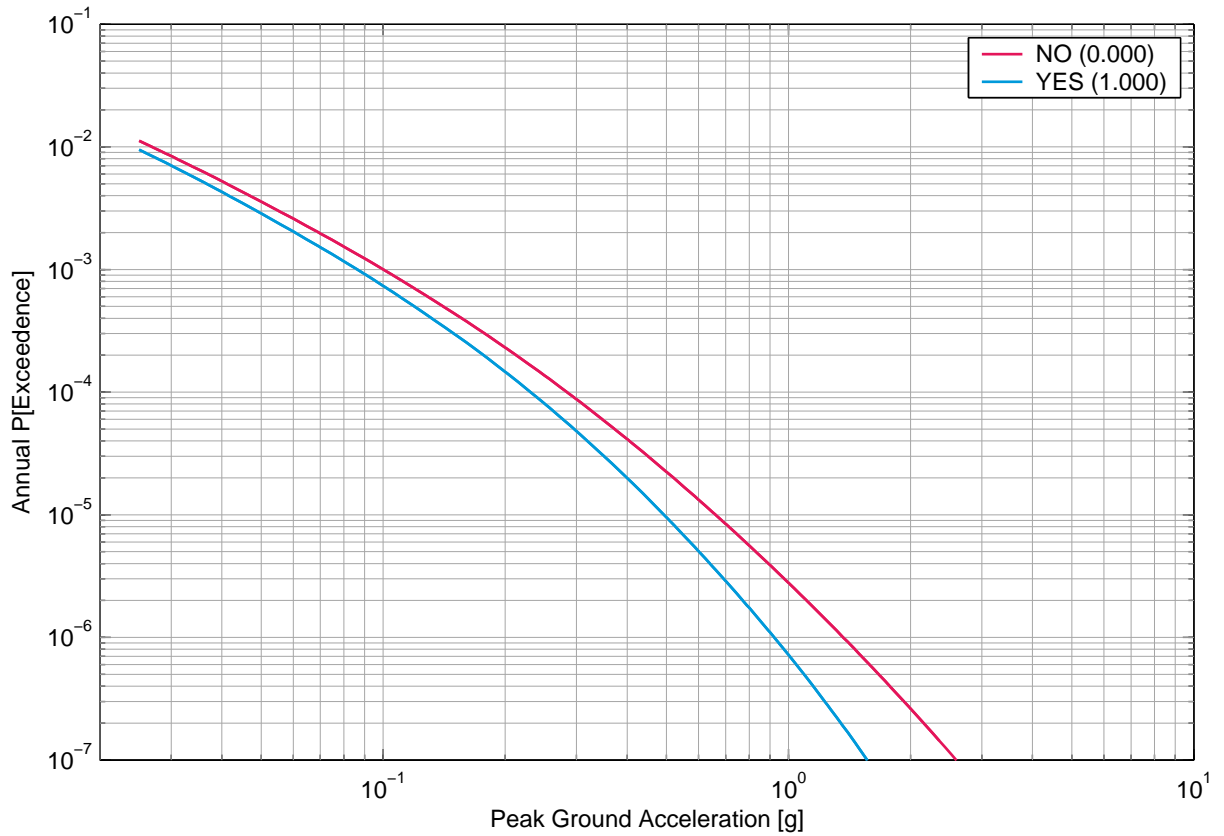


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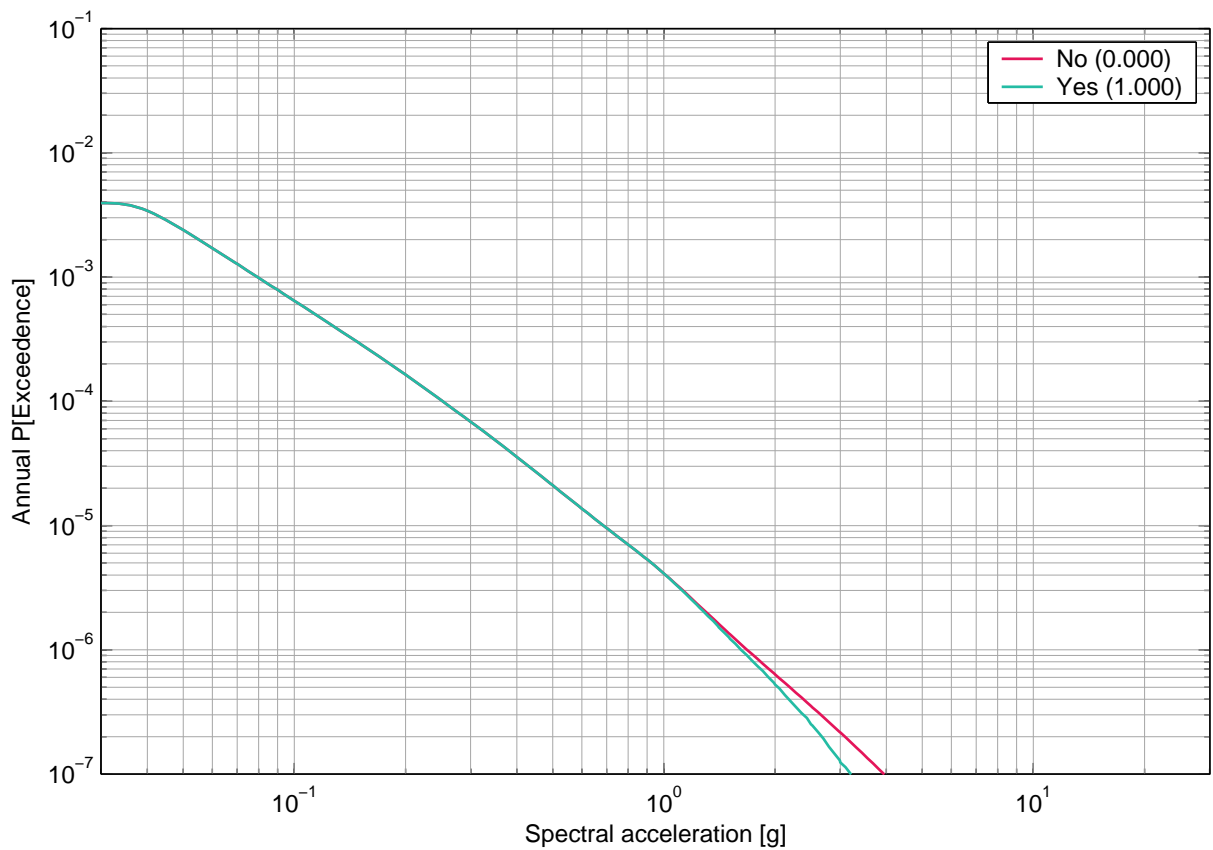


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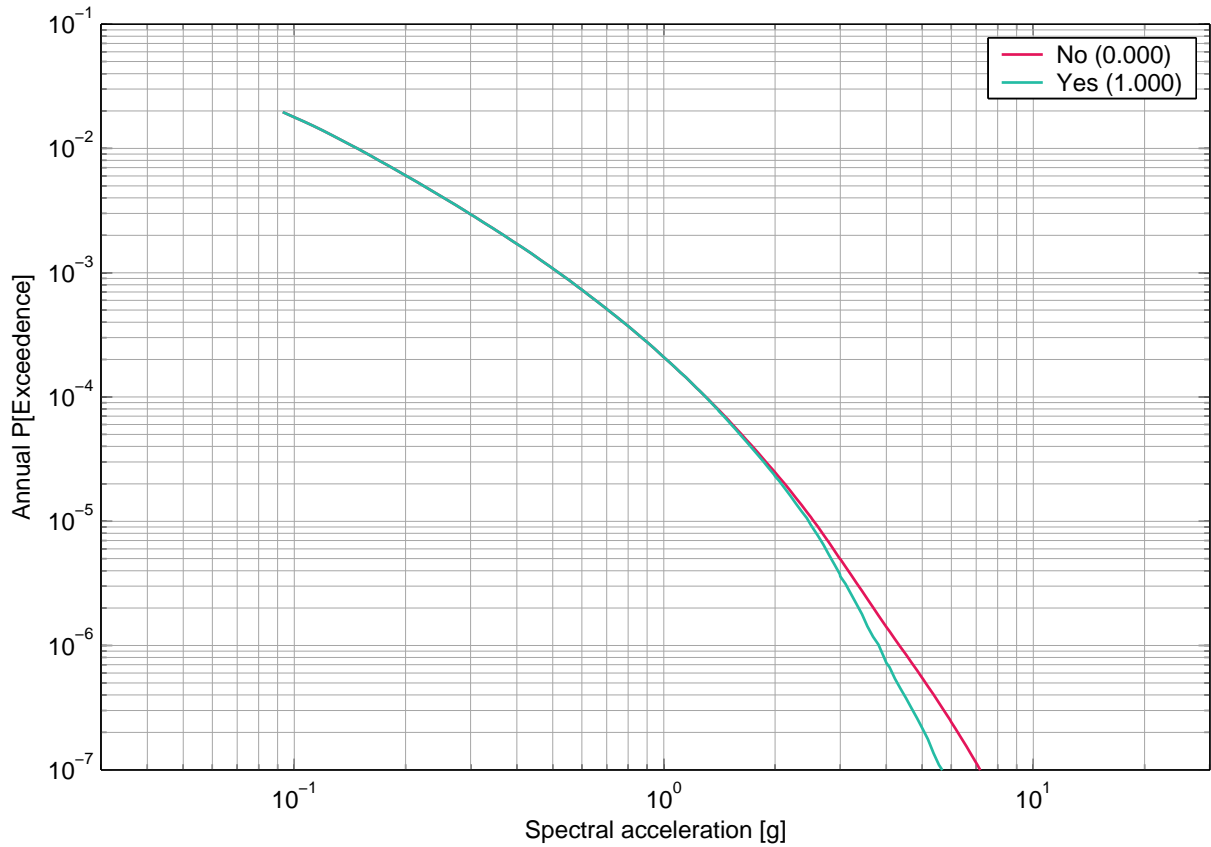


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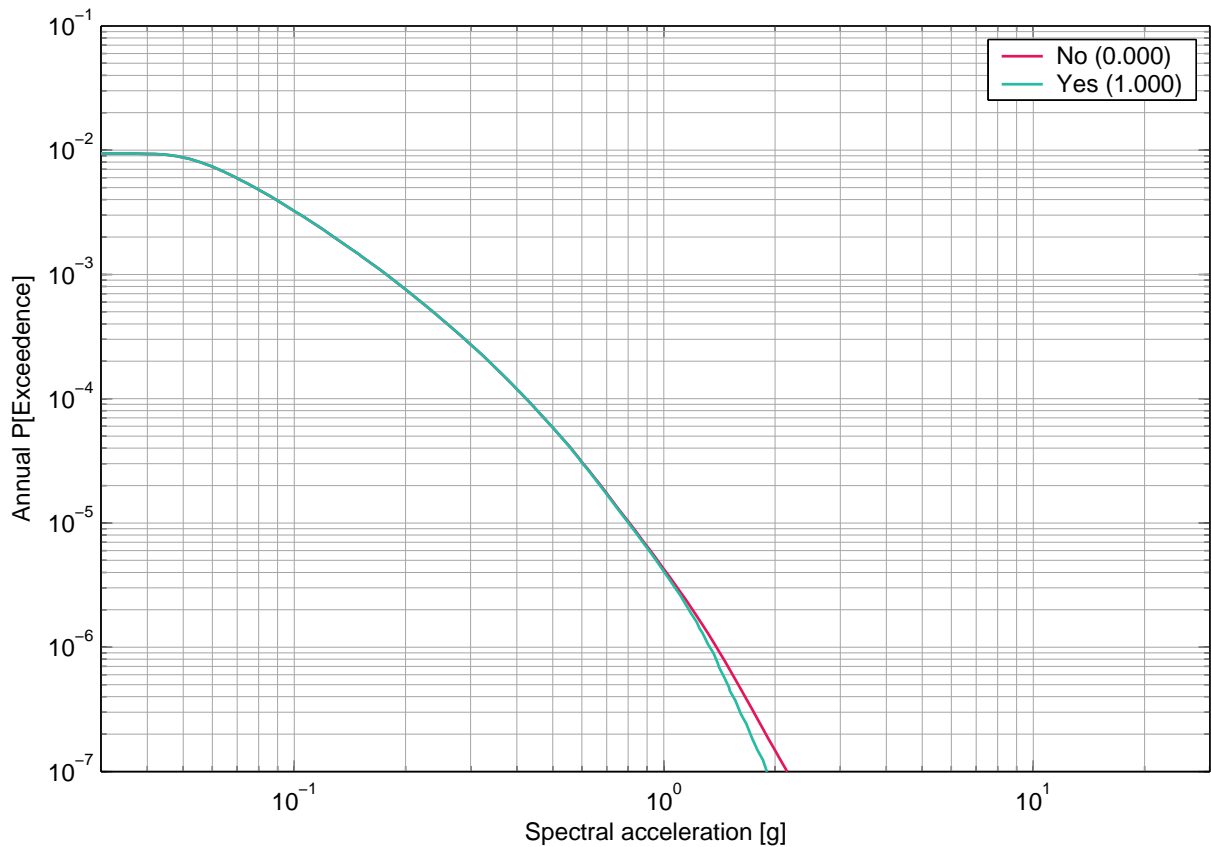


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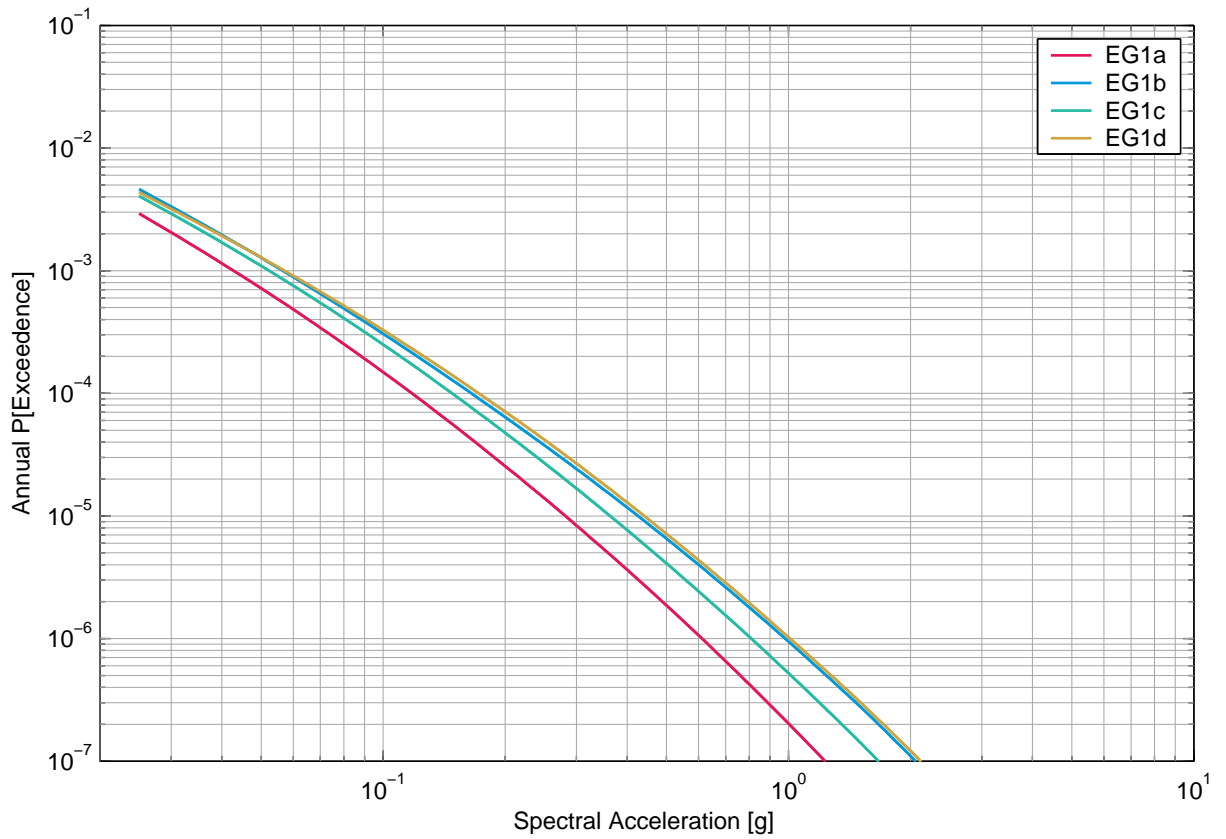


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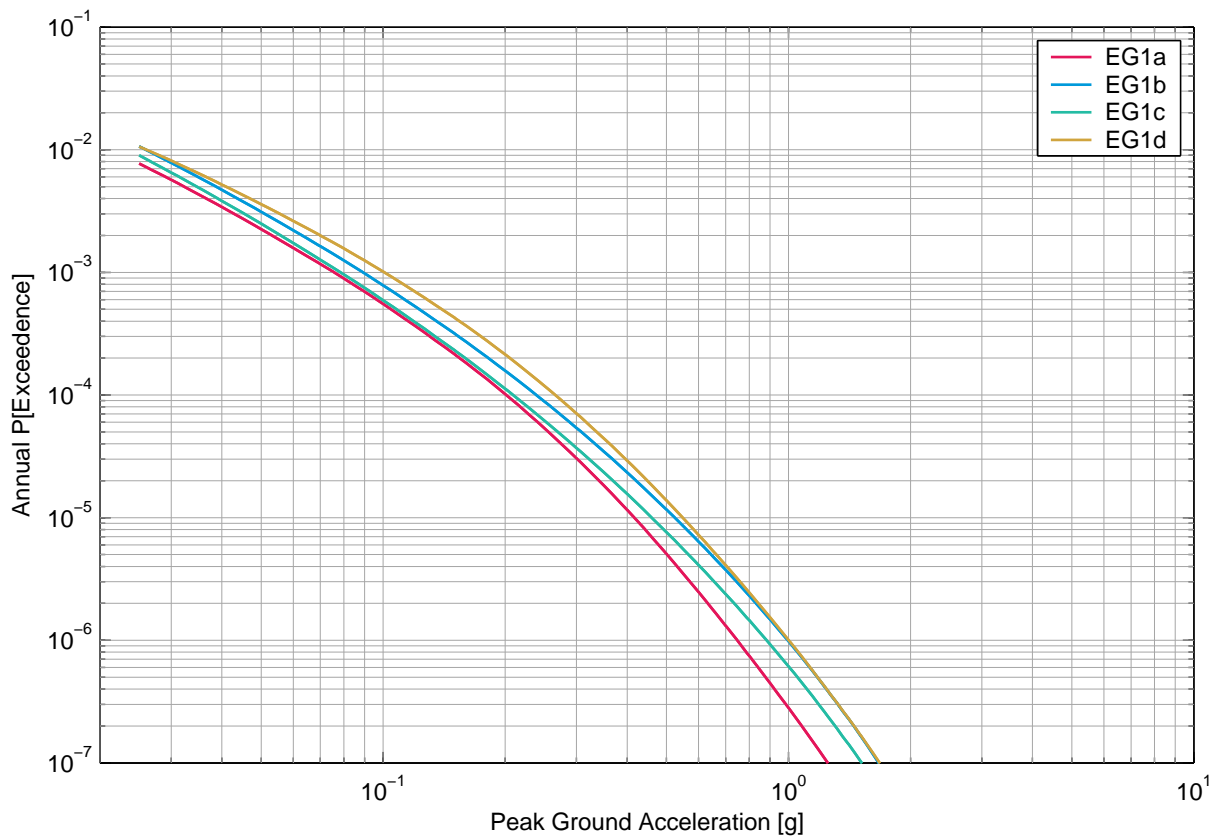


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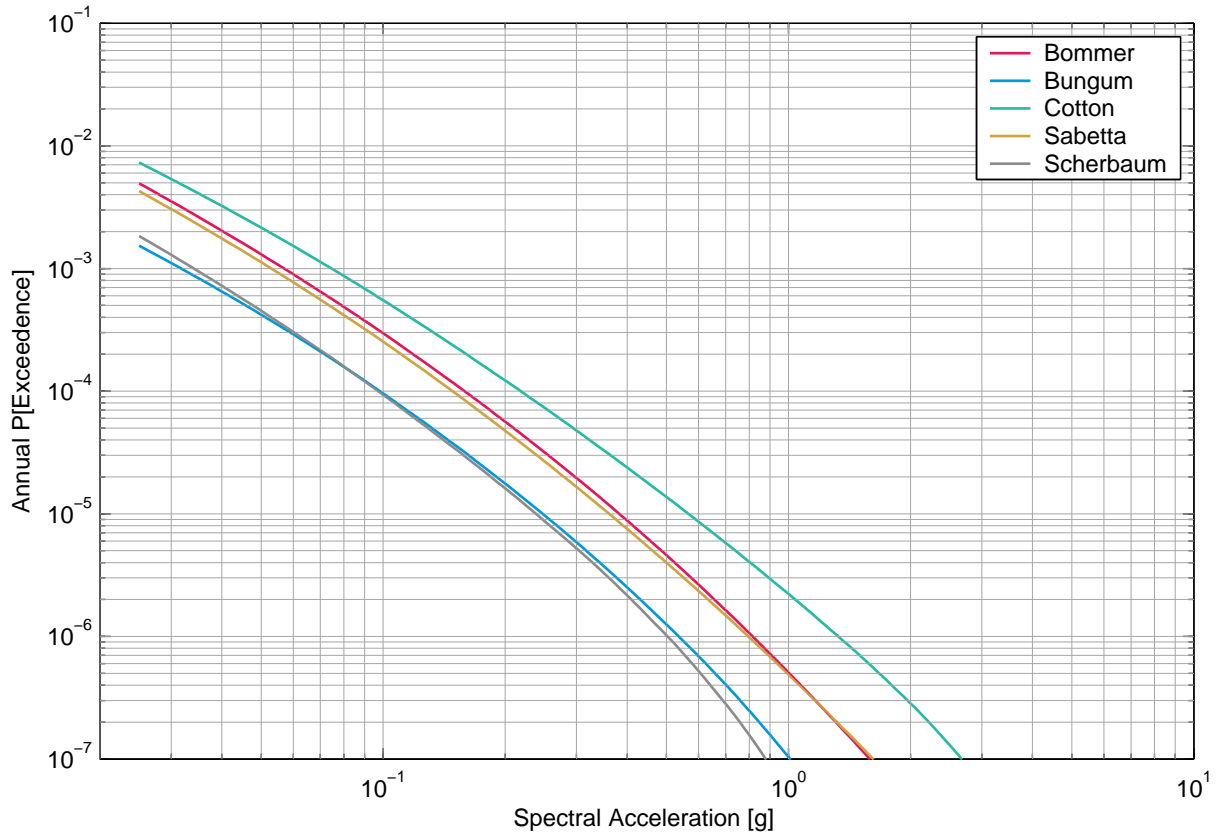


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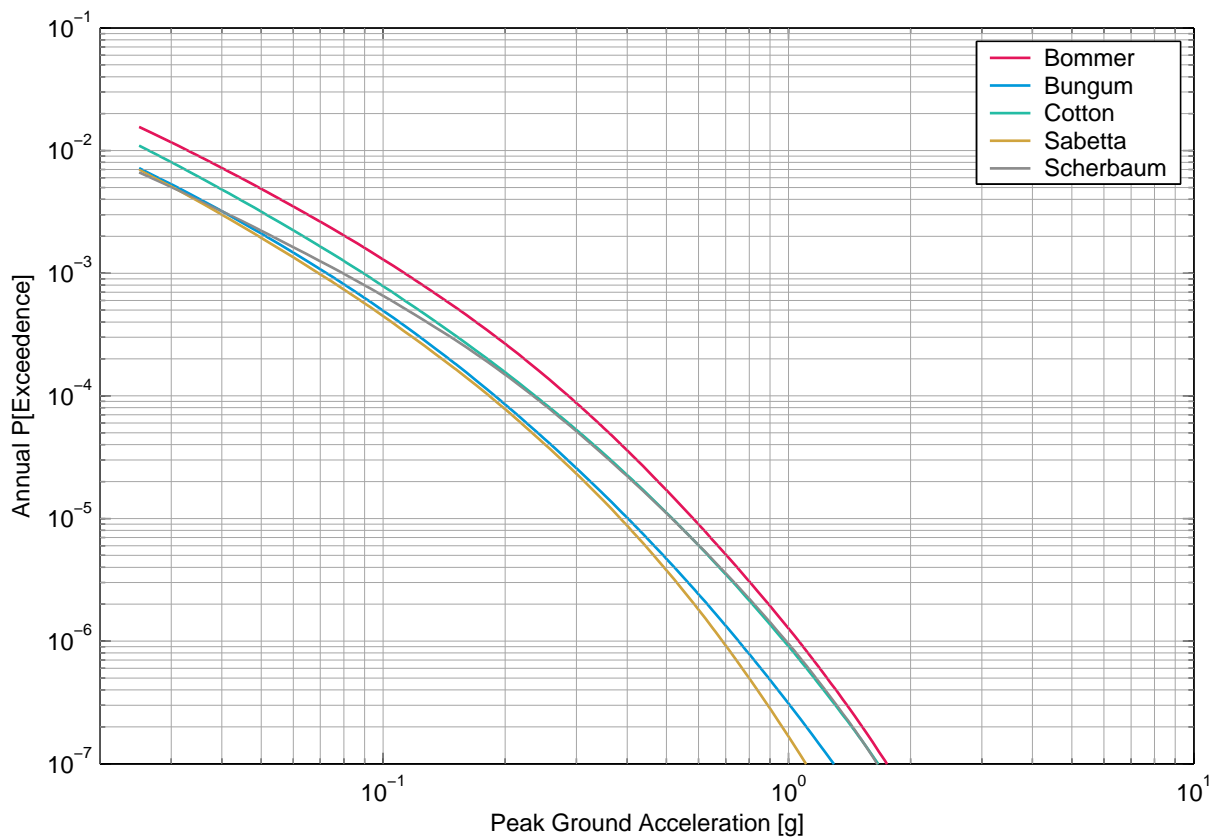


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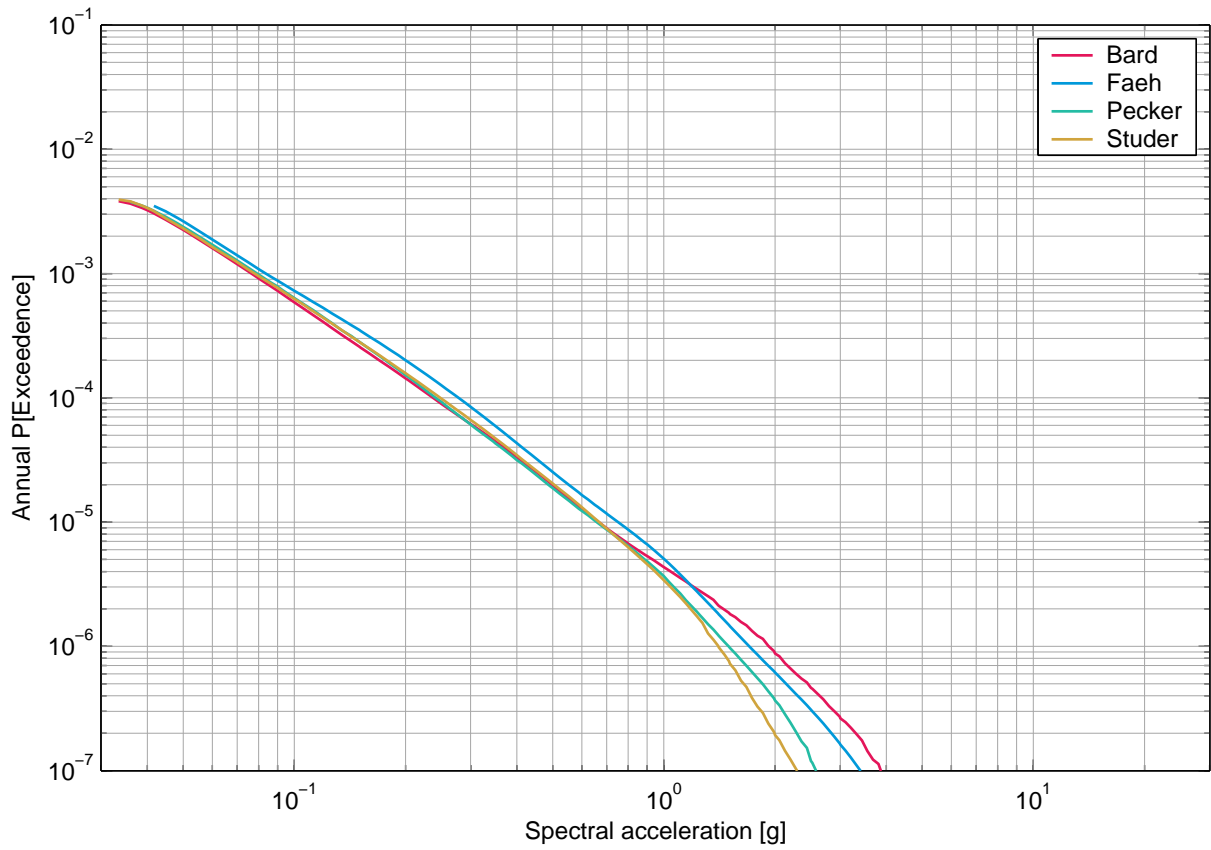


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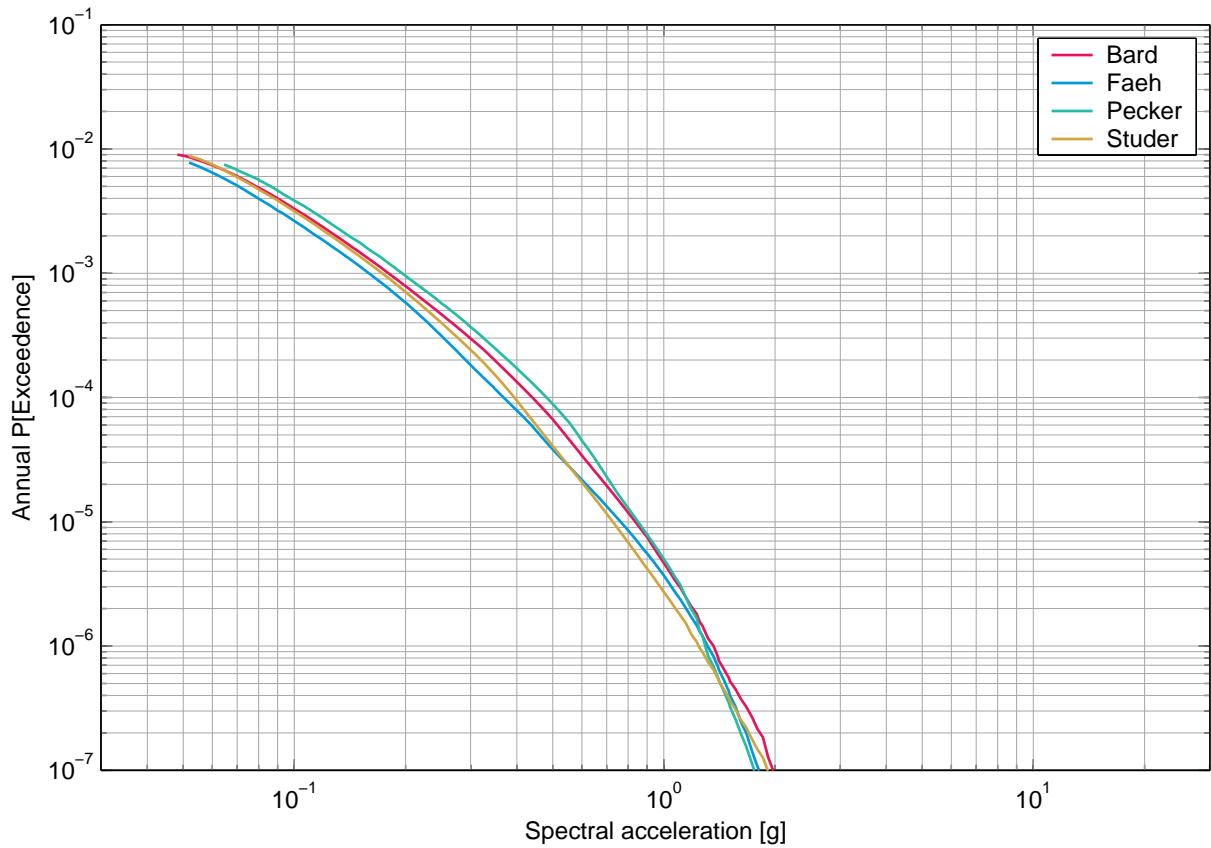


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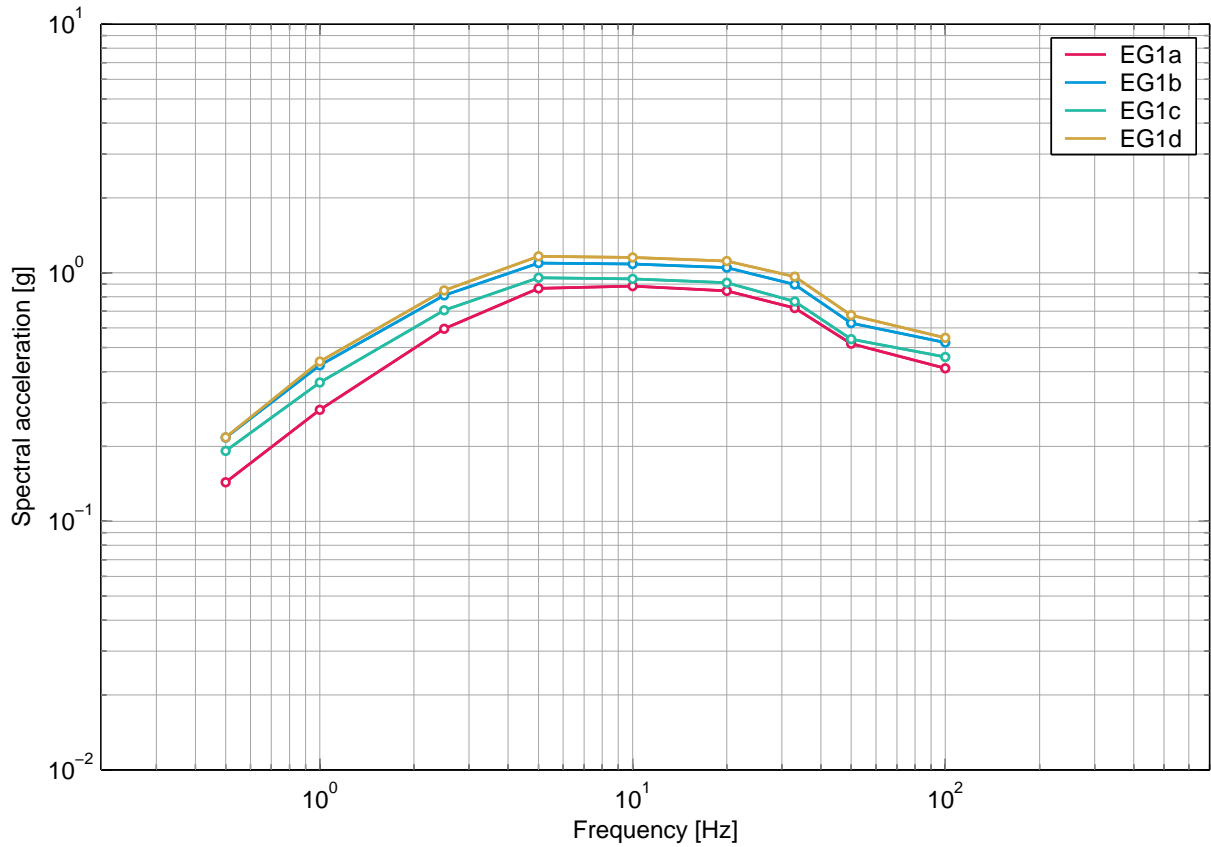


Fig. 2-8.7: Beznau, horizontal component, rock, surface, uniform hazard spectra (mean) of the four SP1 teams for an annual prob. of exceedence of 1E-05 and 5% damping.

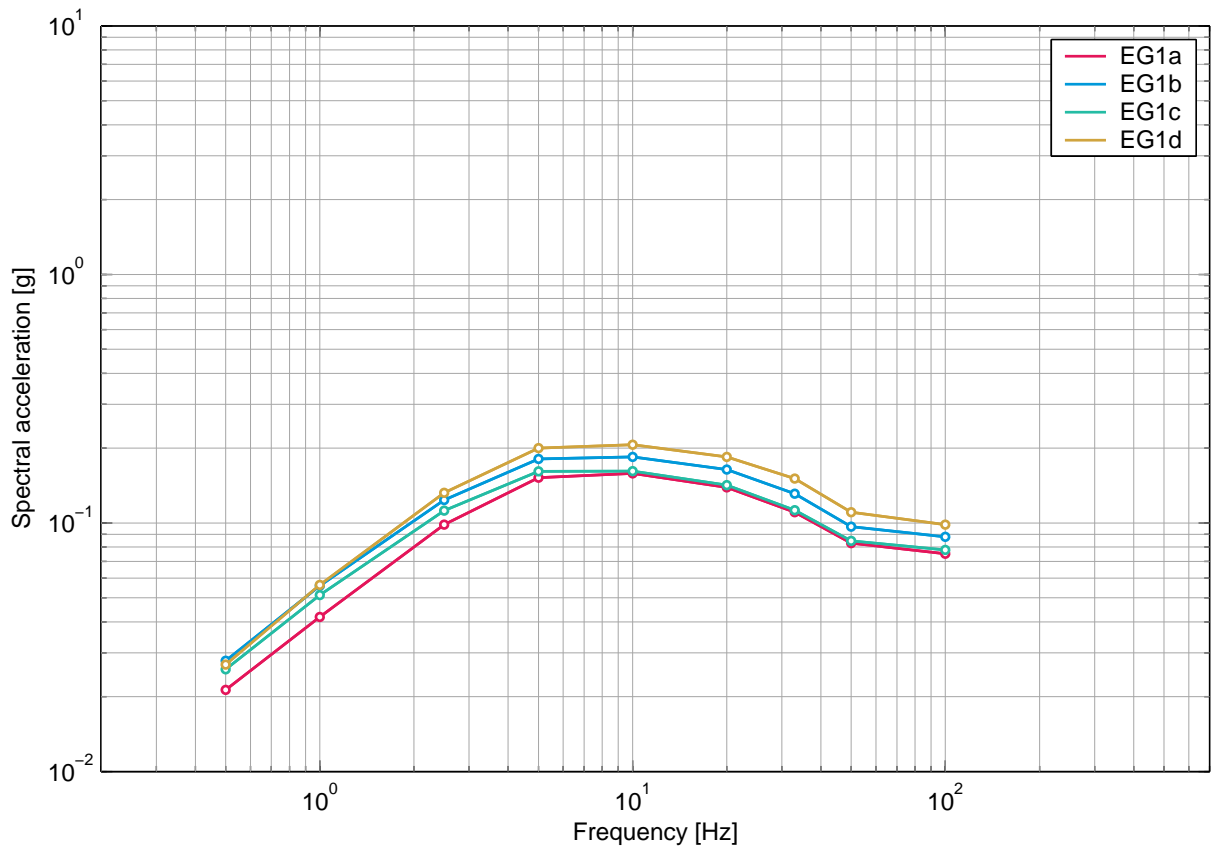


Fig. 2-8.8: Beznau, horizontal component, rock, surface, uniform hazard spectra (mean) of the four SP1 teams for an annual prob. of exceedence of 1E-03 and 5% damping.

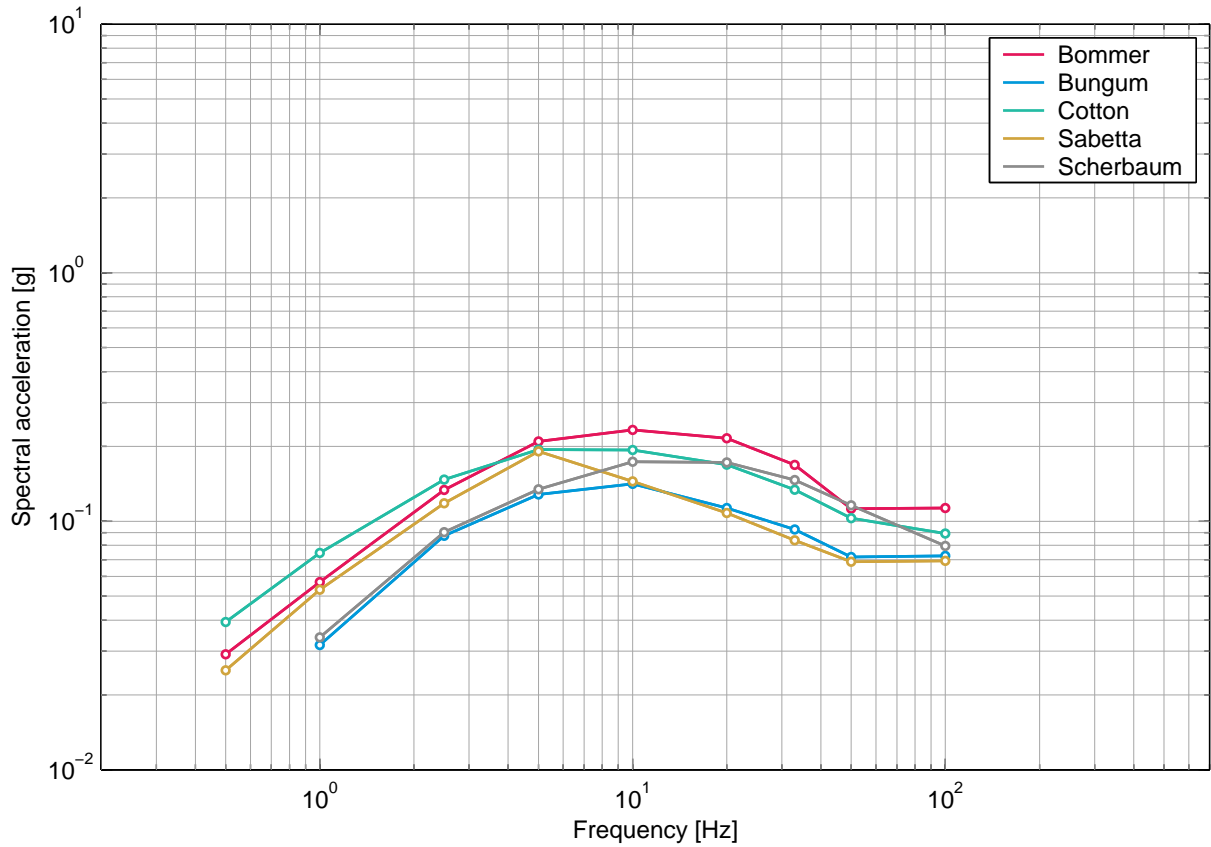


Fig. 2-8.9: Beznau, horizontal component, rock, surface, uniform hazard spectra (mean) of the five SP2 experts for an annual prob. of exceedence of 1E-05 and 5% damping.

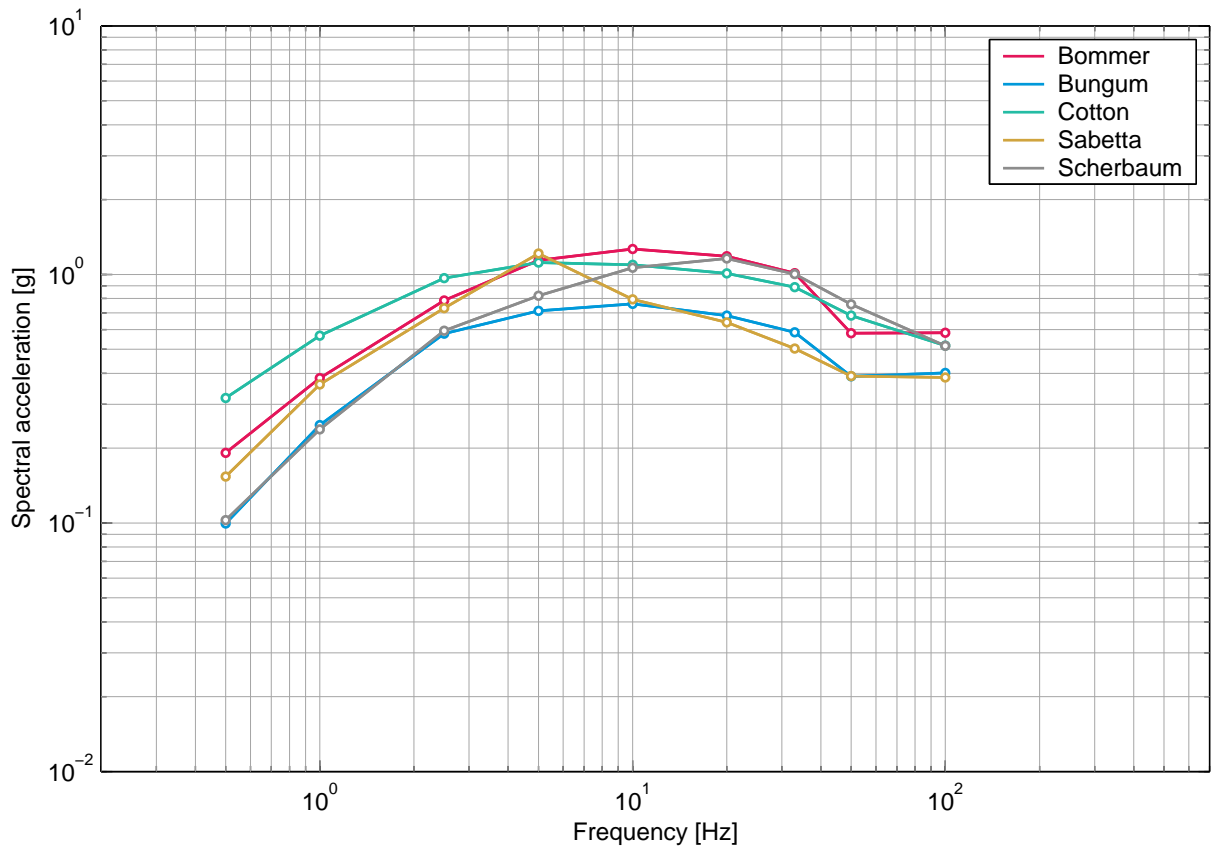


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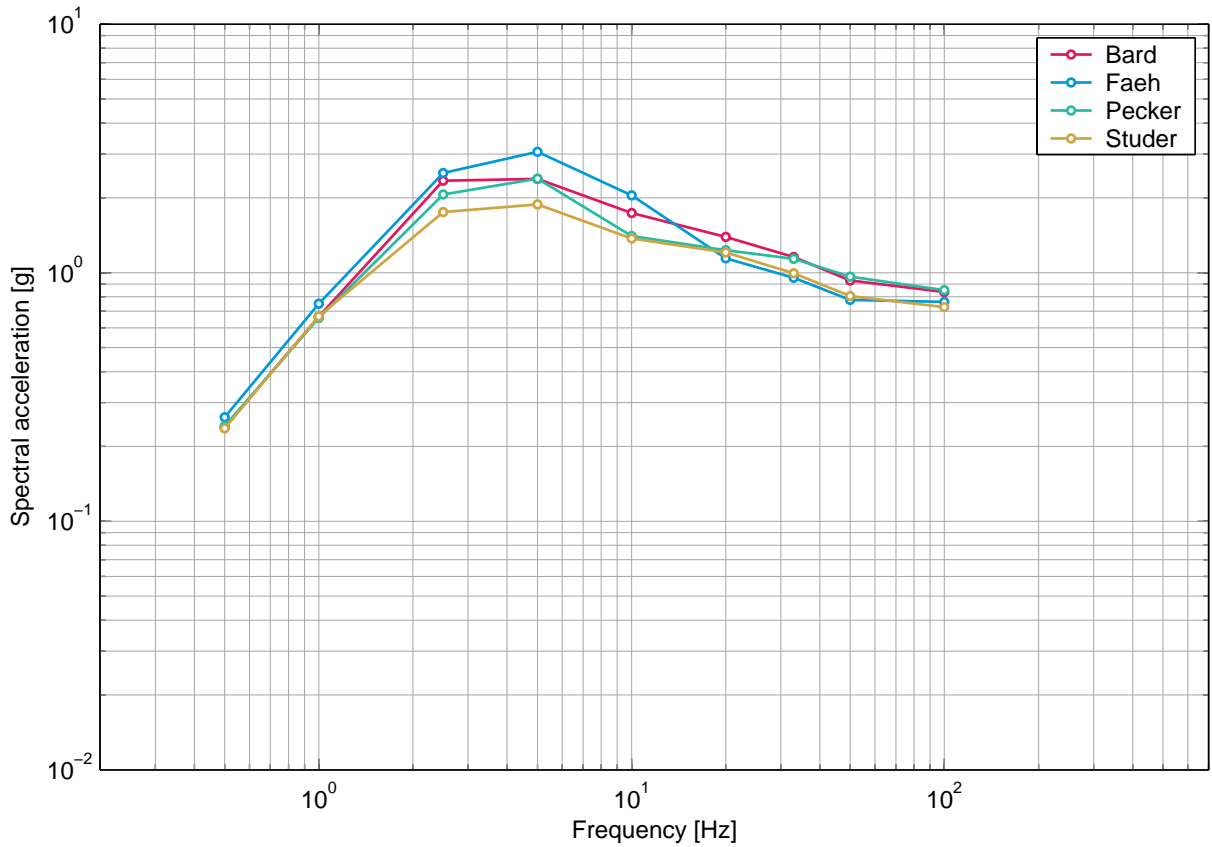


Fig. 2-8.11: Beznau, horizontal component, soil, surface, uniform hazard spectra (mean) for the SP3 experts for an annual prob. of exceedence of 1E-05 and 5% damping.

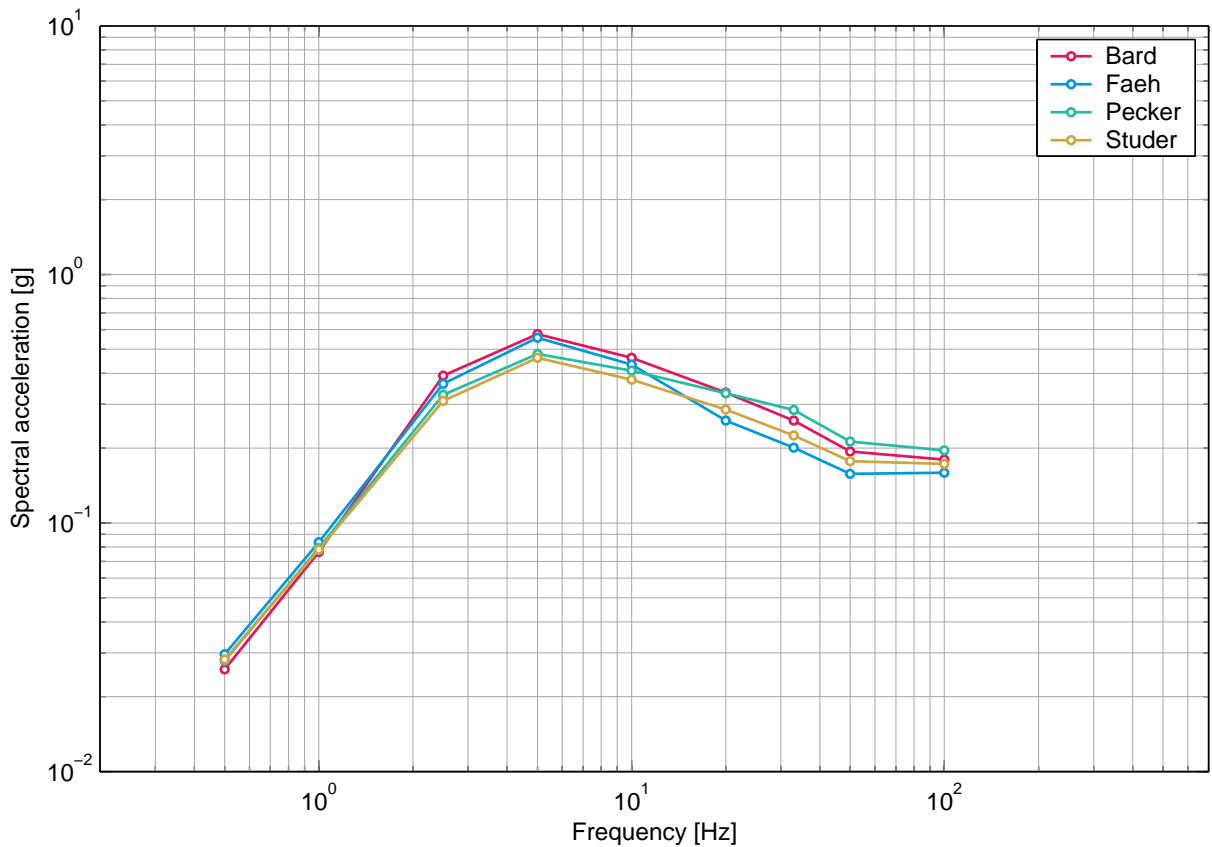


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## 2.9 Beznau, Sensitivity to Depth Levels, Horizontal Component

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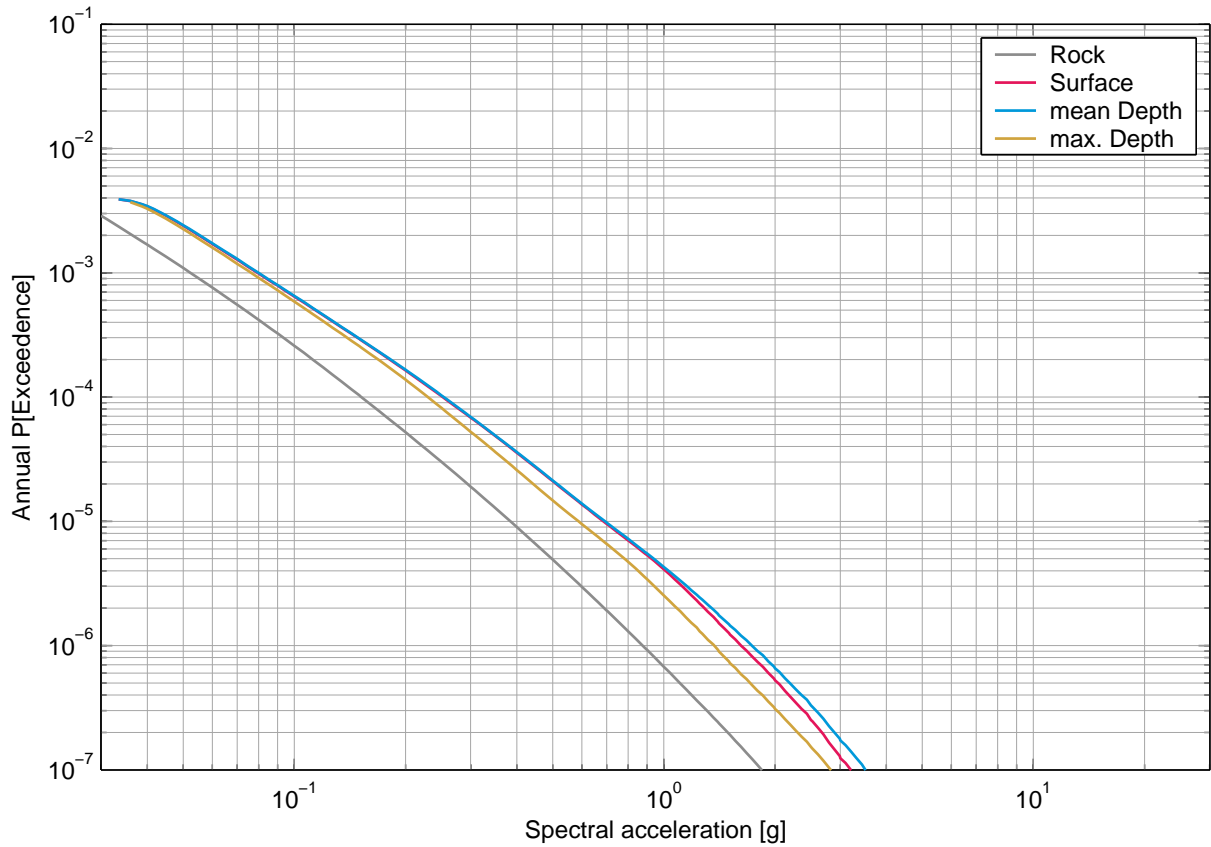


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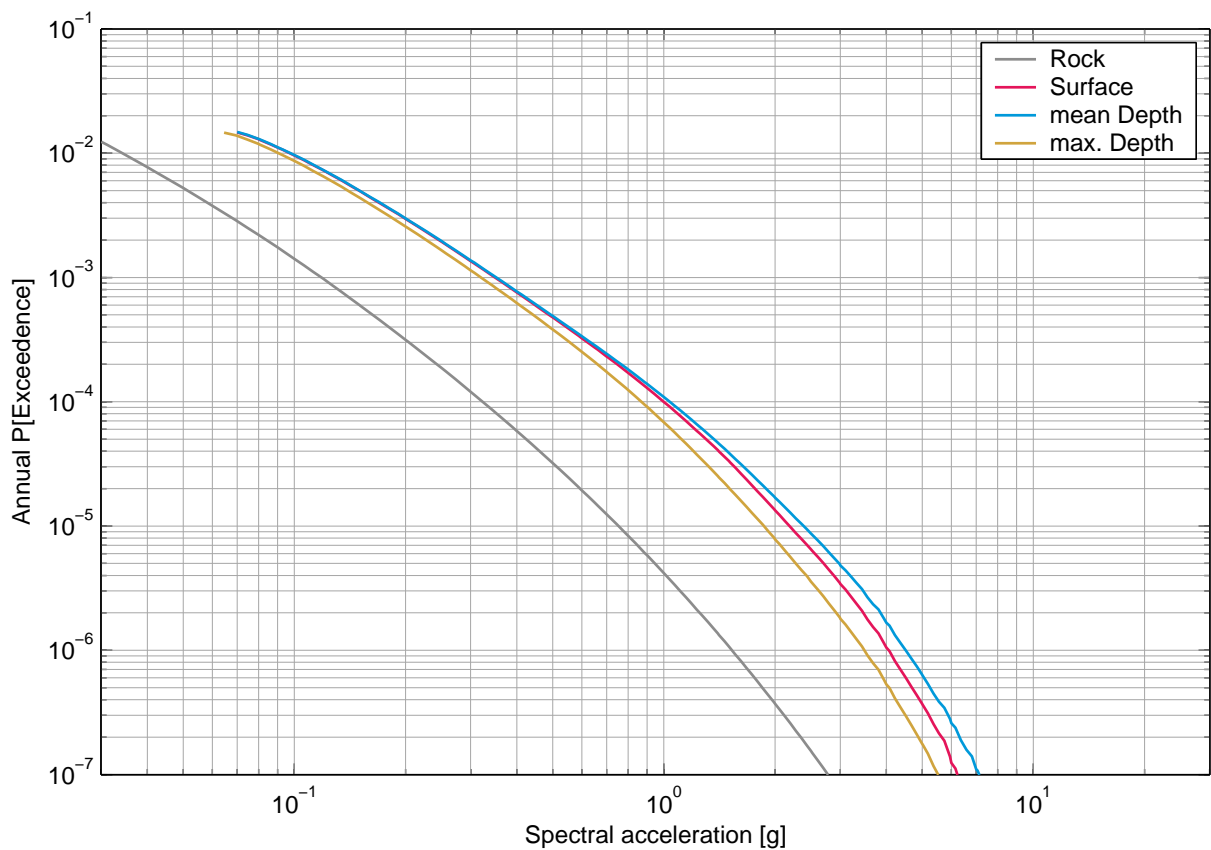


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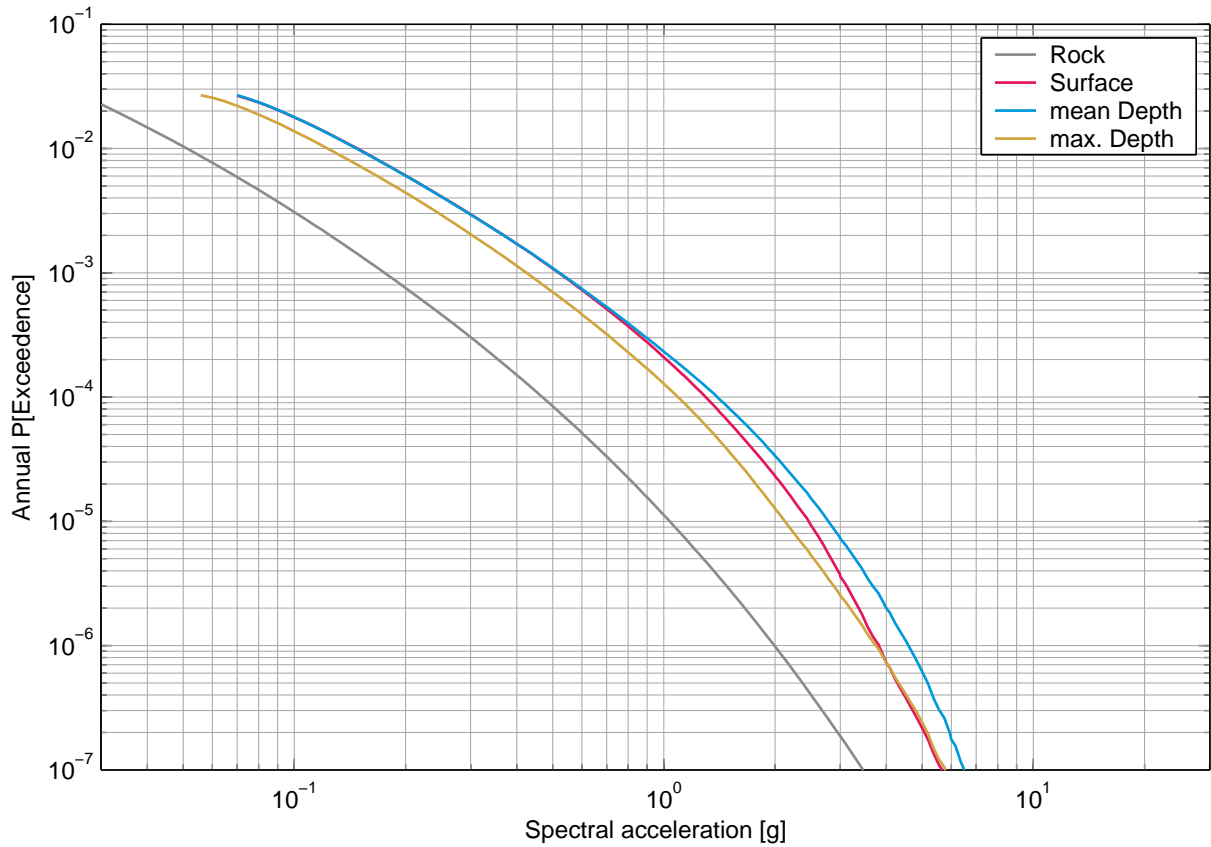


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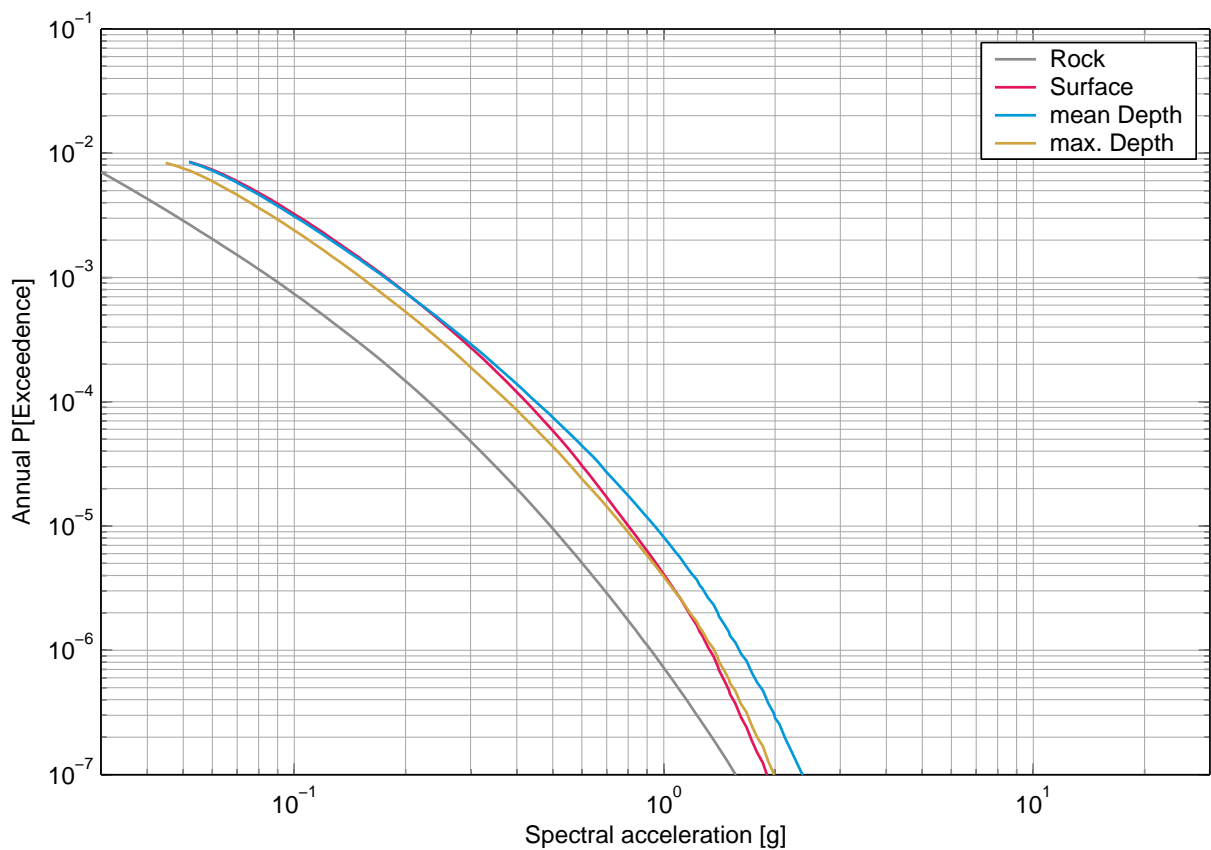


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## 2.10 Beznau, Rock Hazard, Vertical Component, Surface

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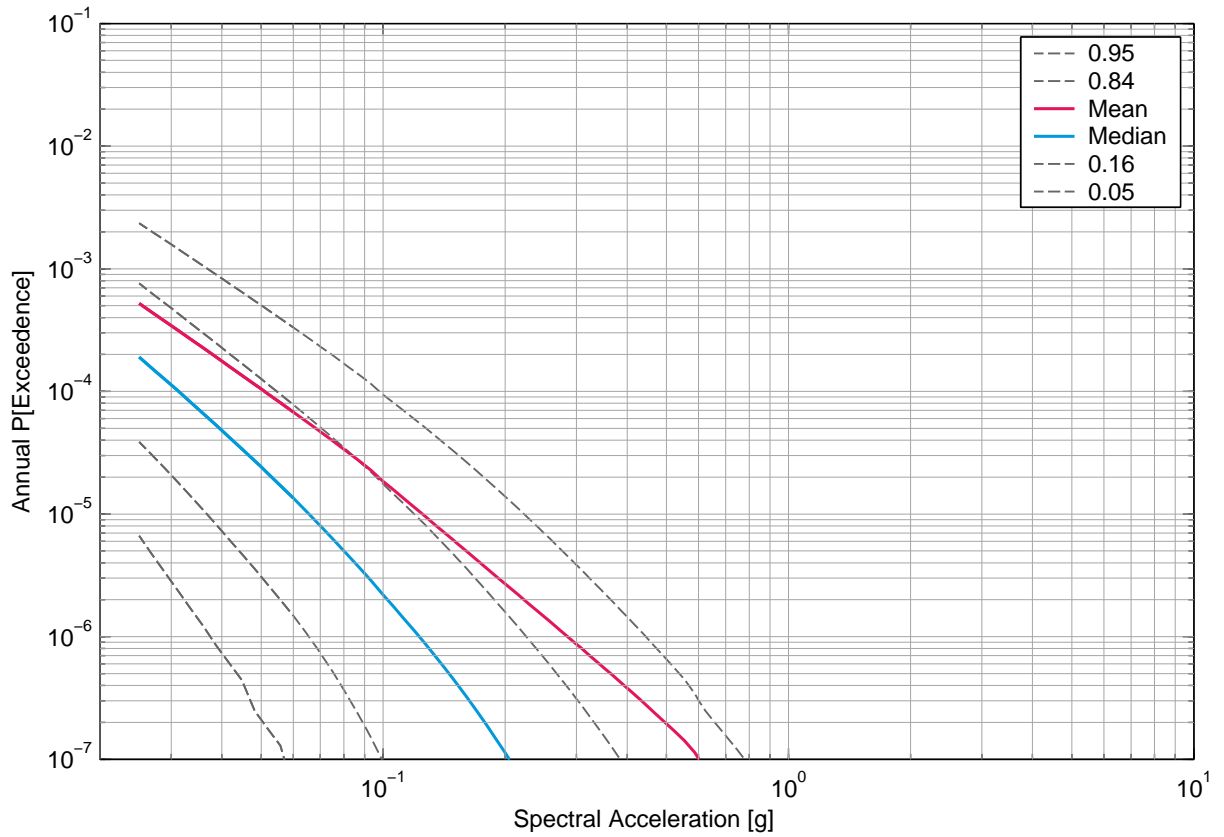


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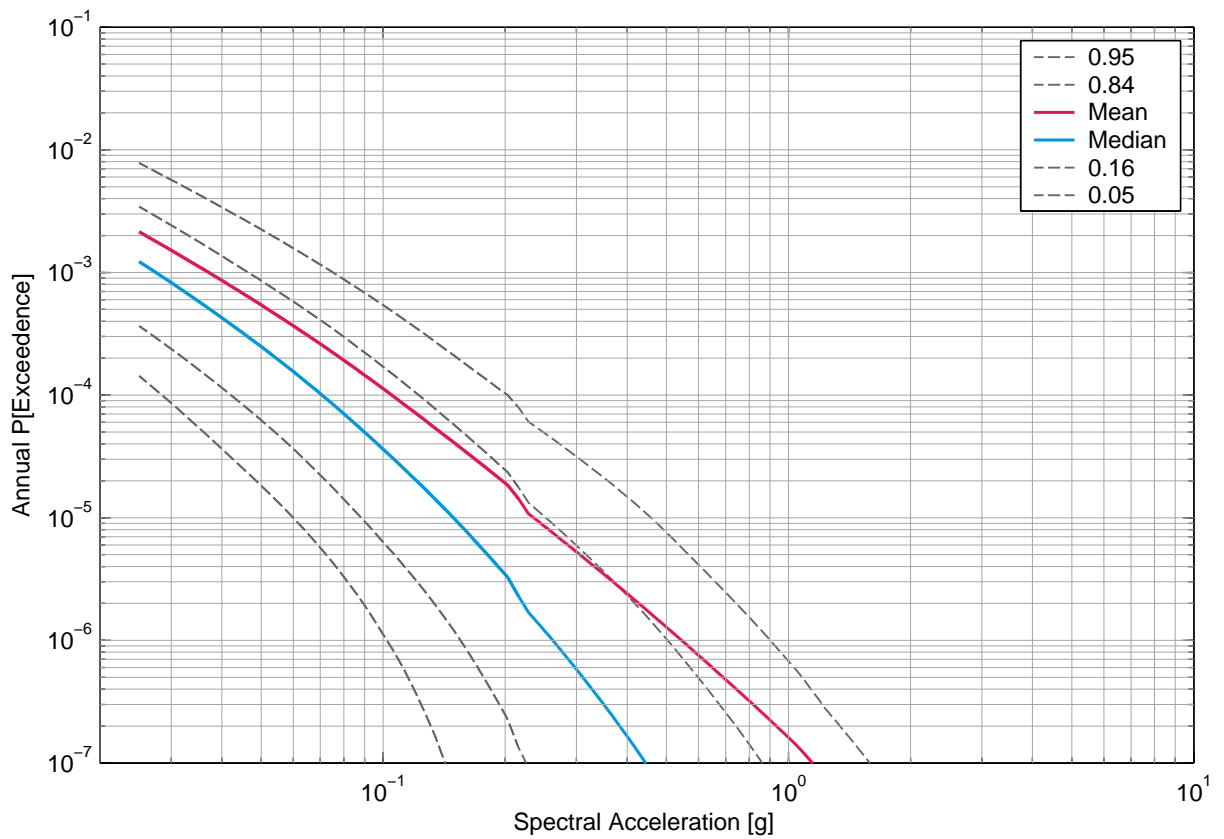


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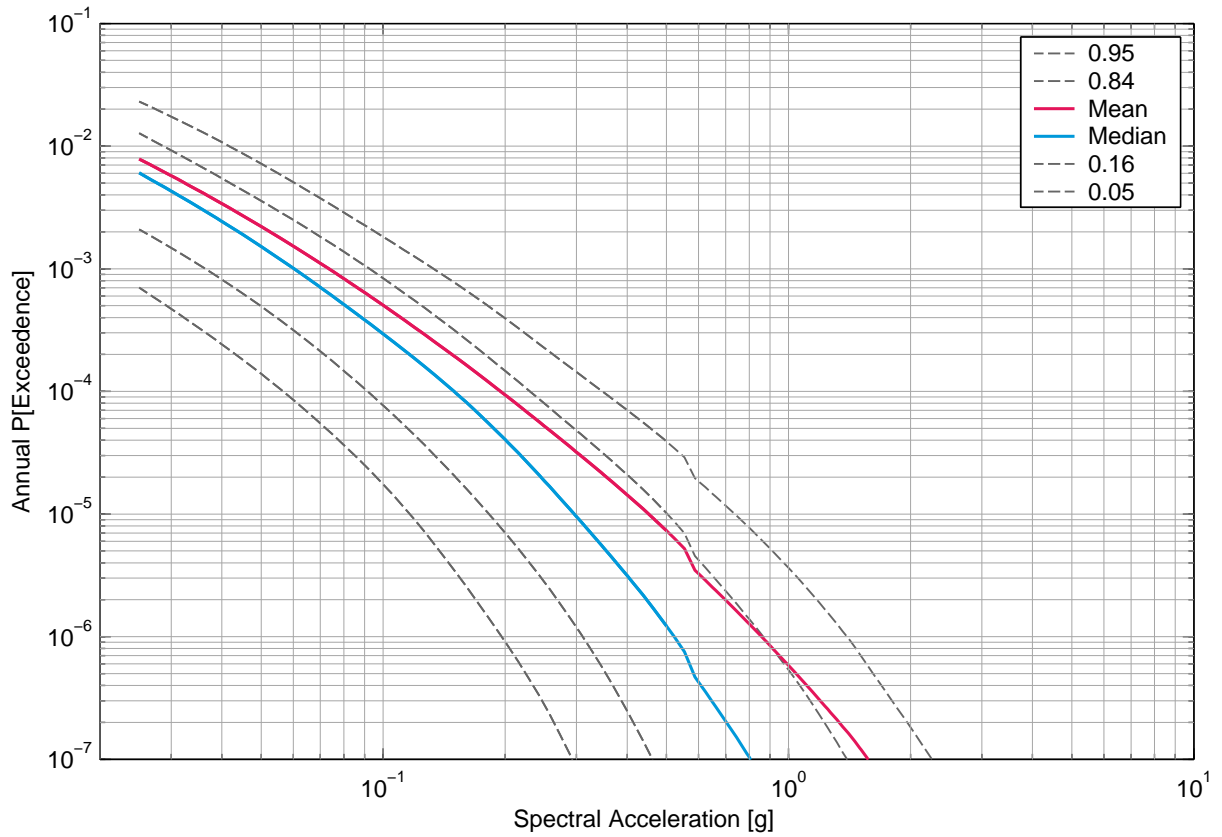


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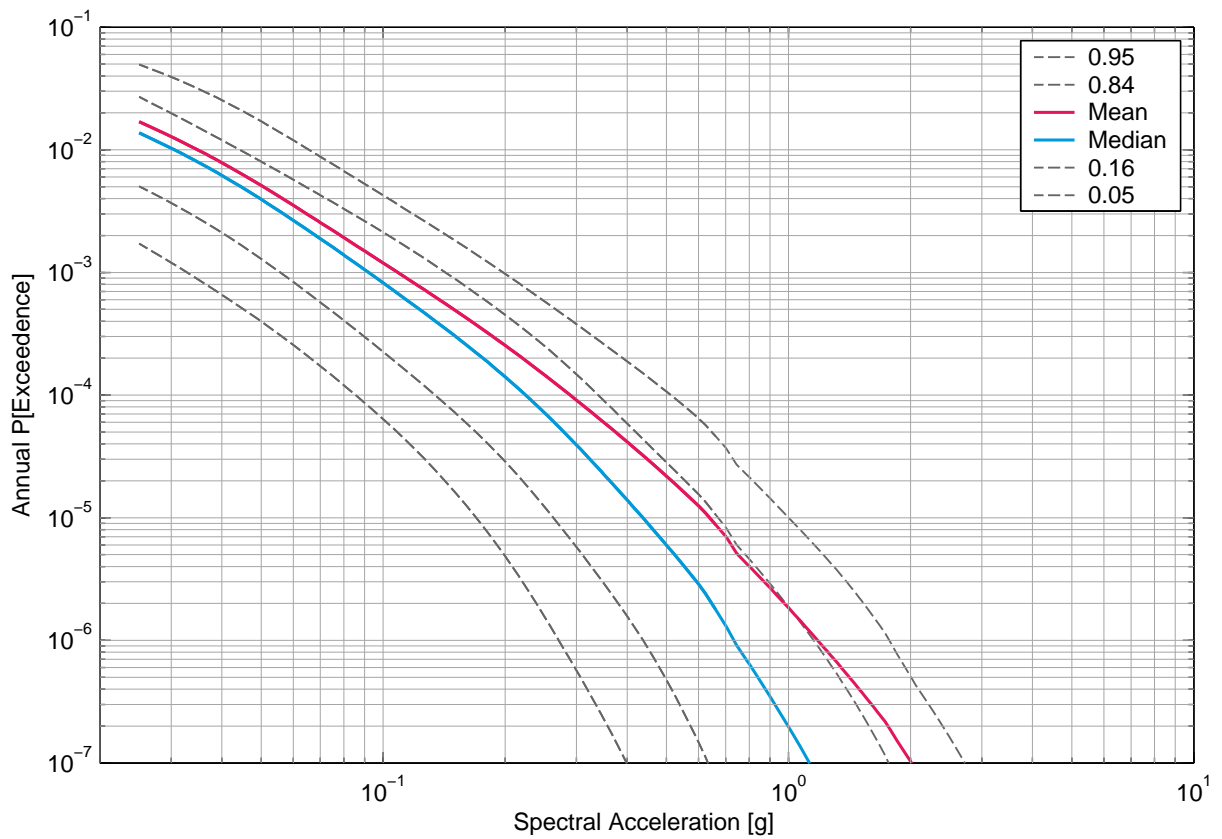


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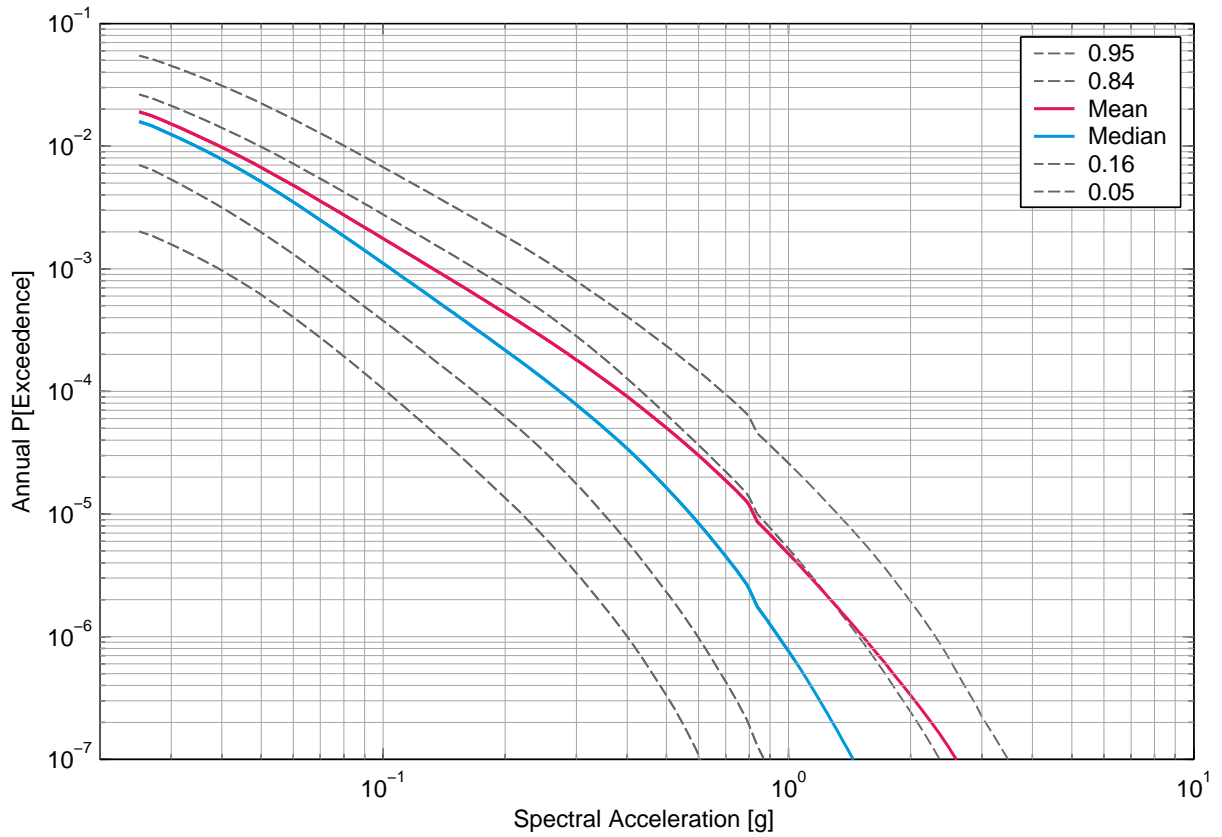


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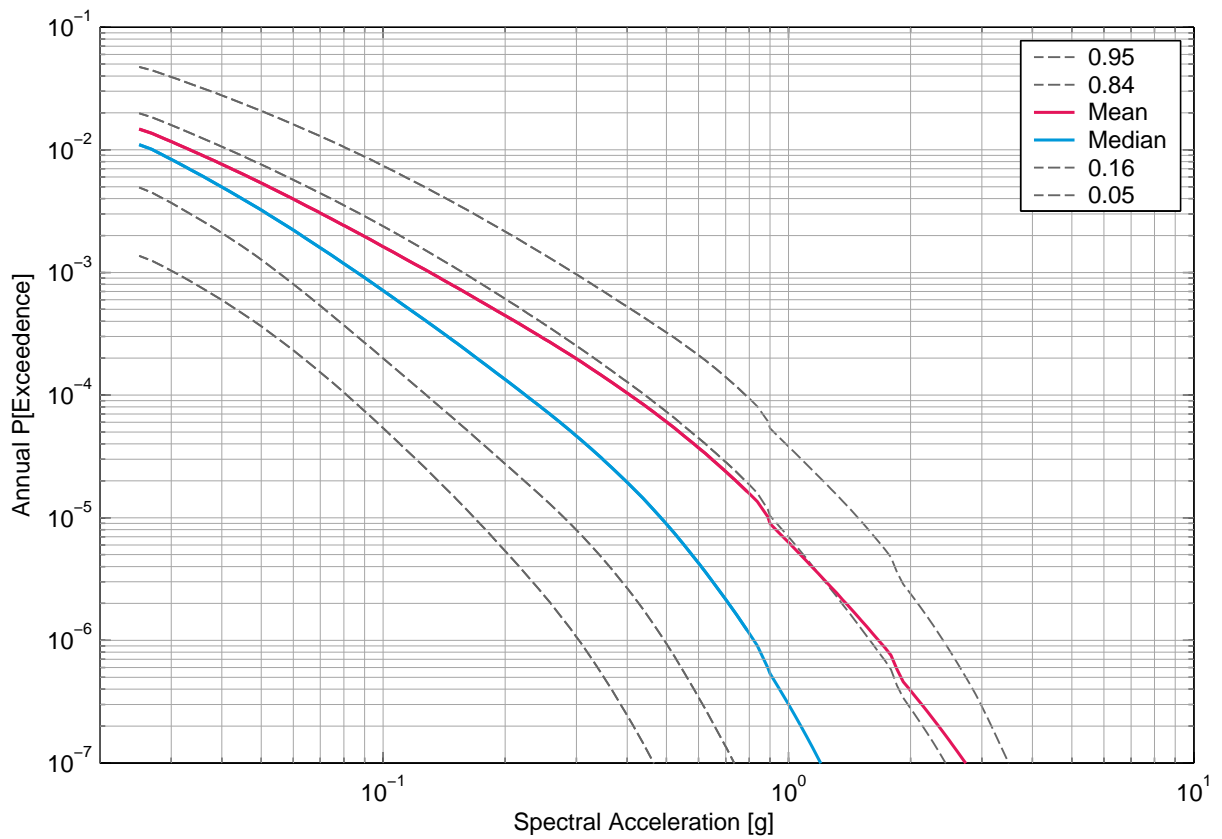


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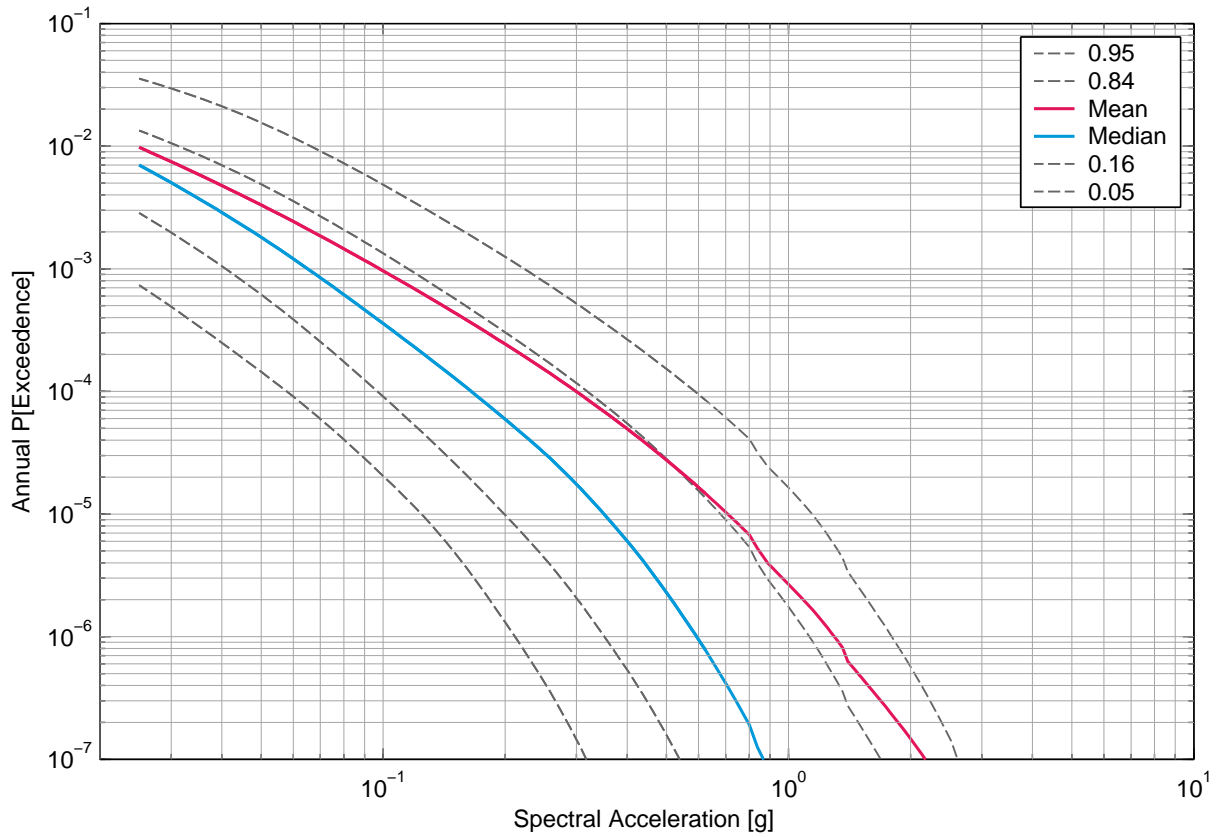


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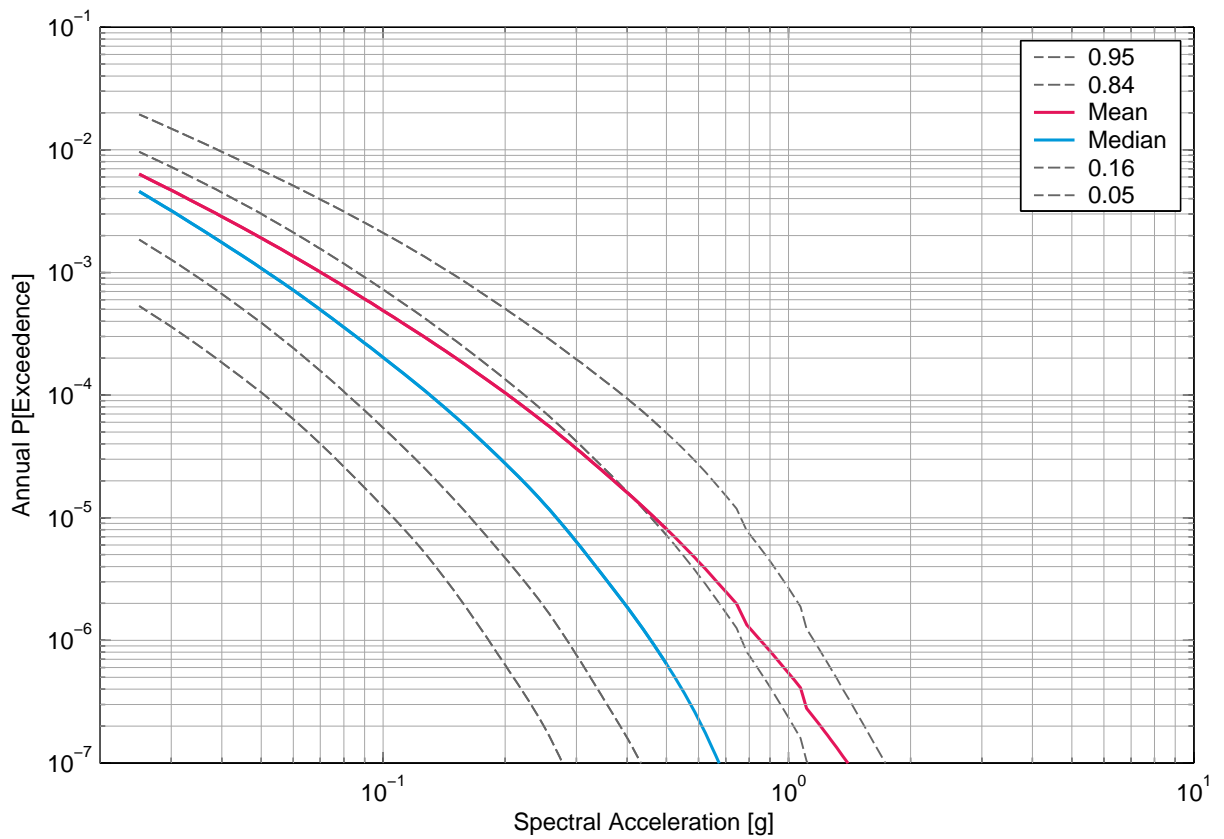


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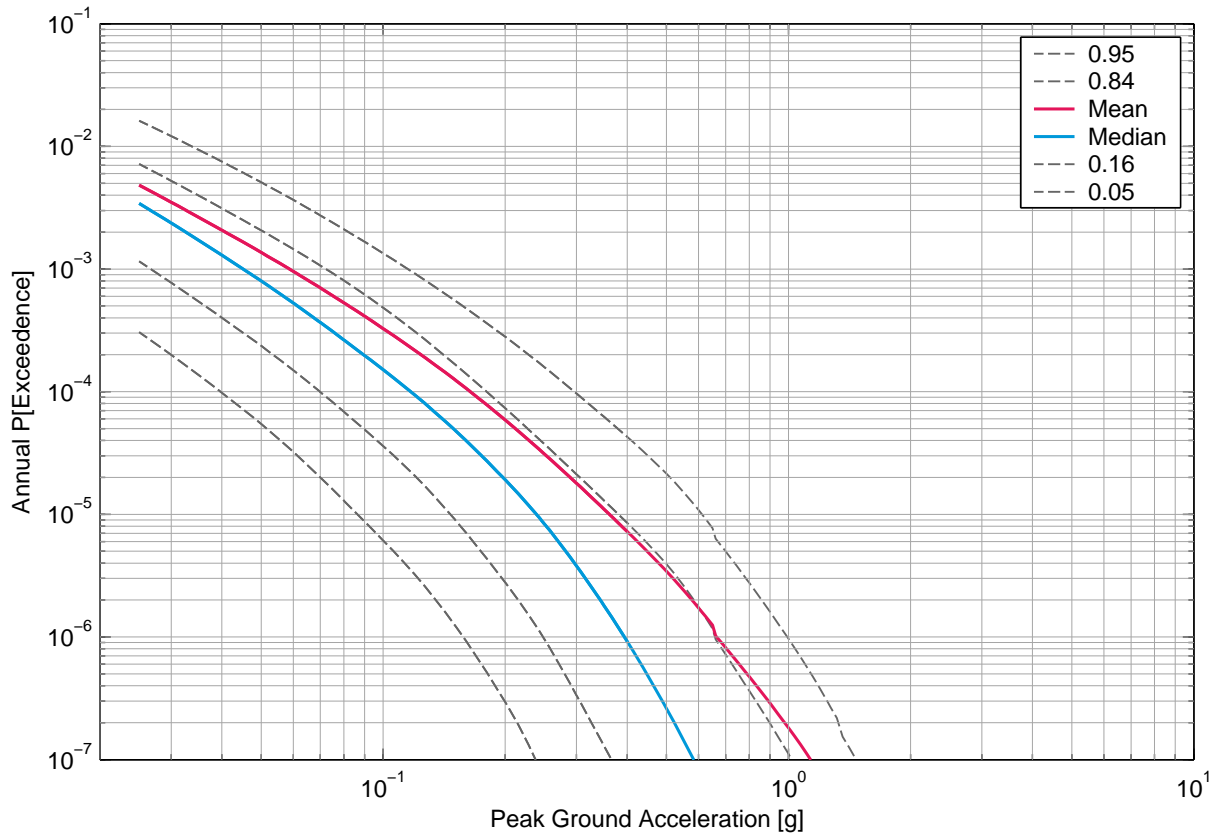


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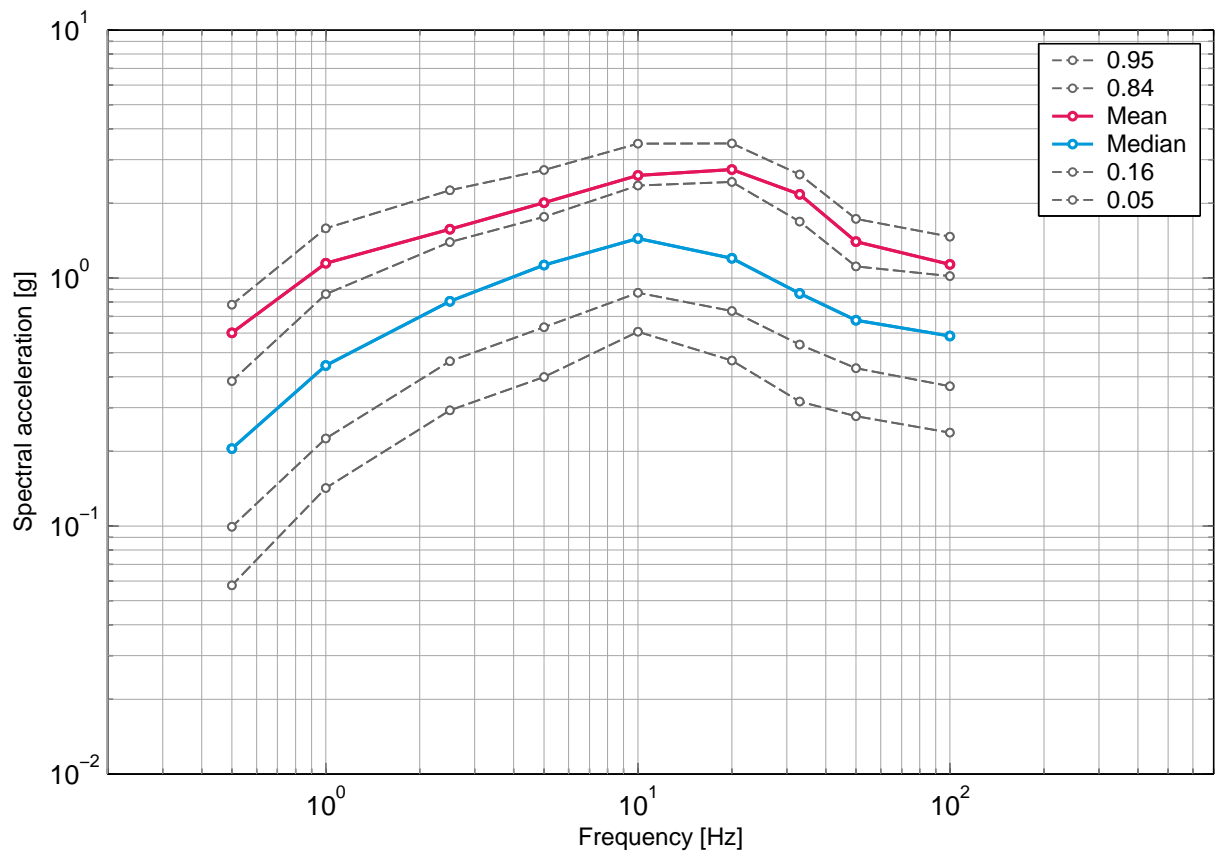


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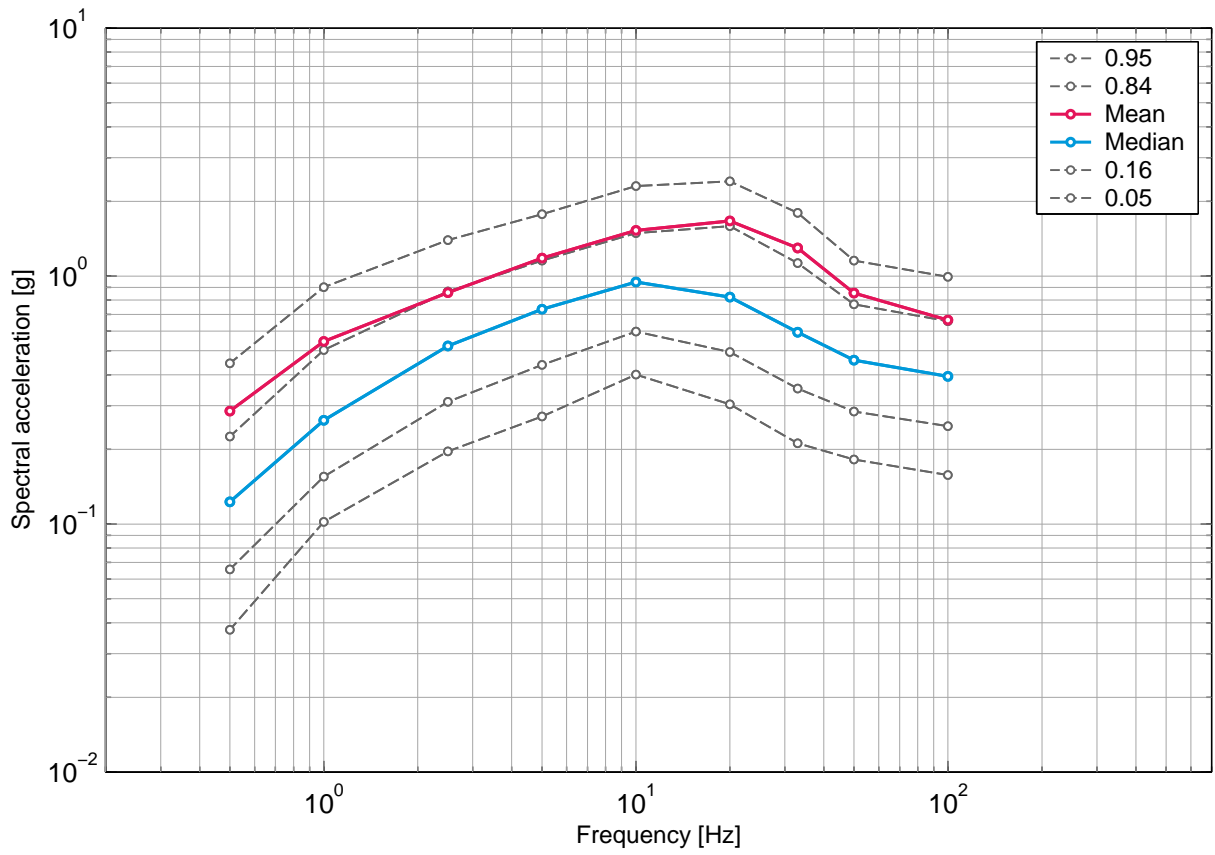


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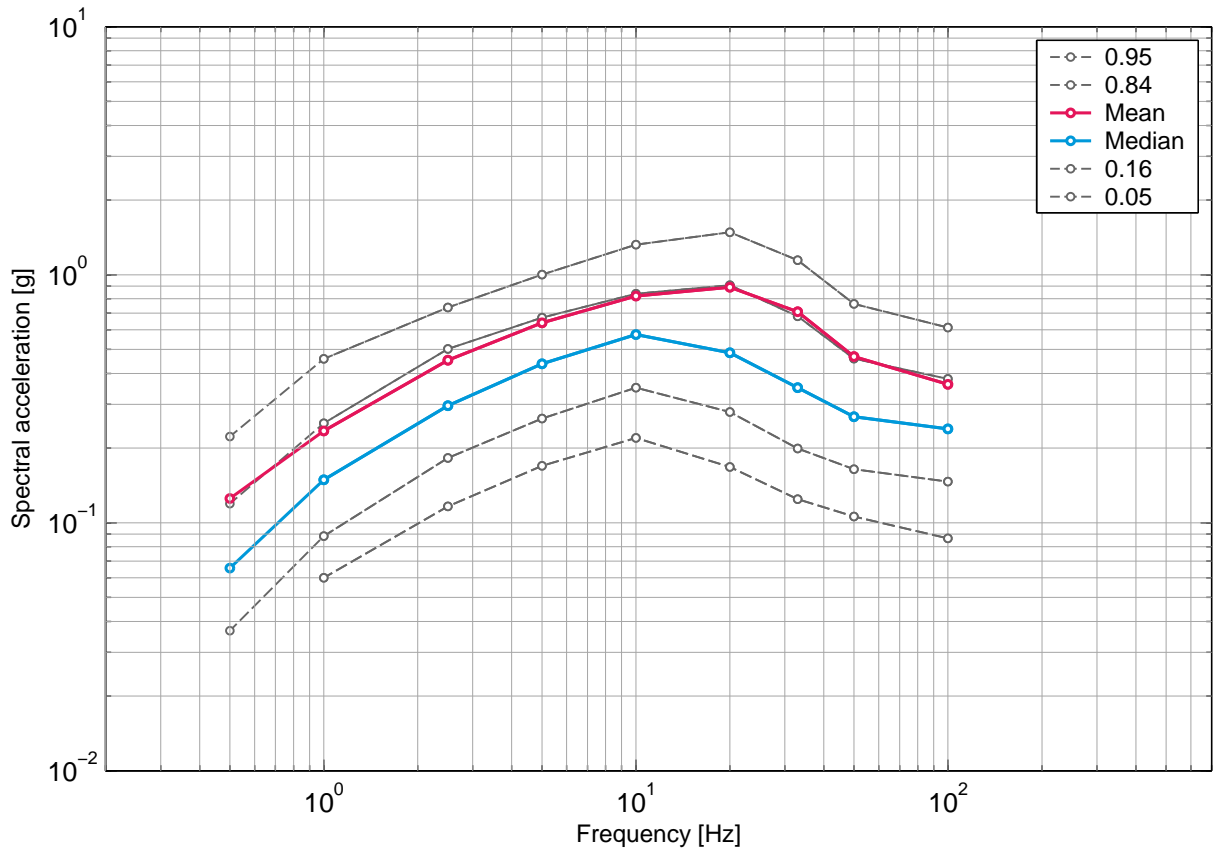


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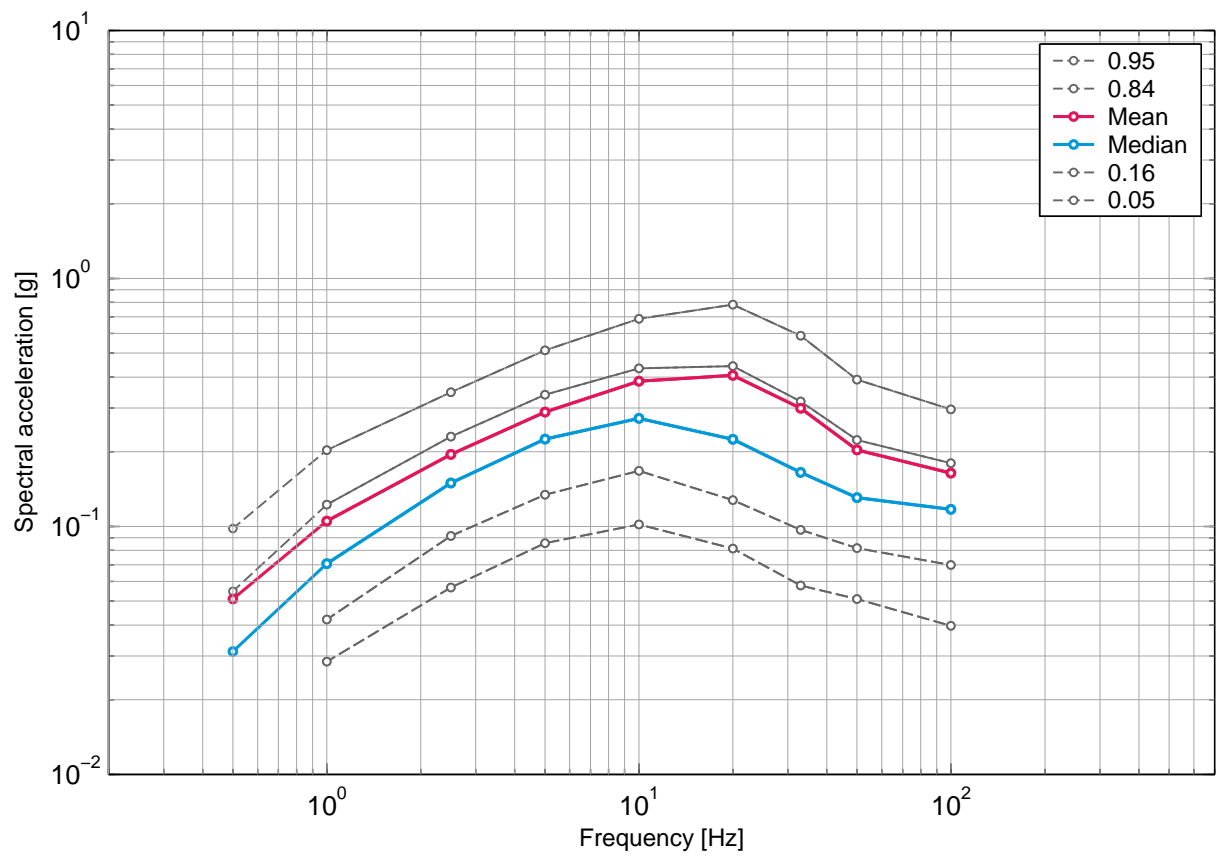


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## 2.11 Beznau, Soil Hazard, Vertical Component, Surface

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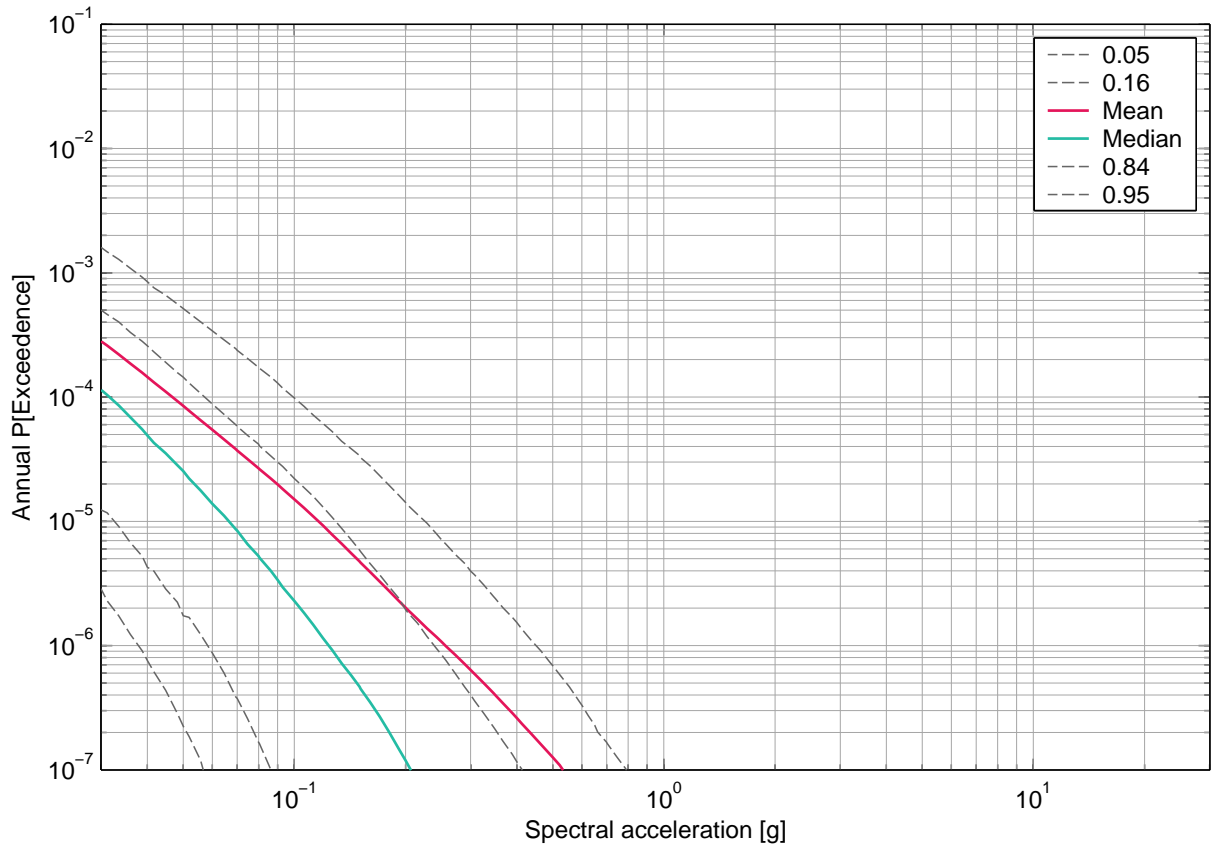


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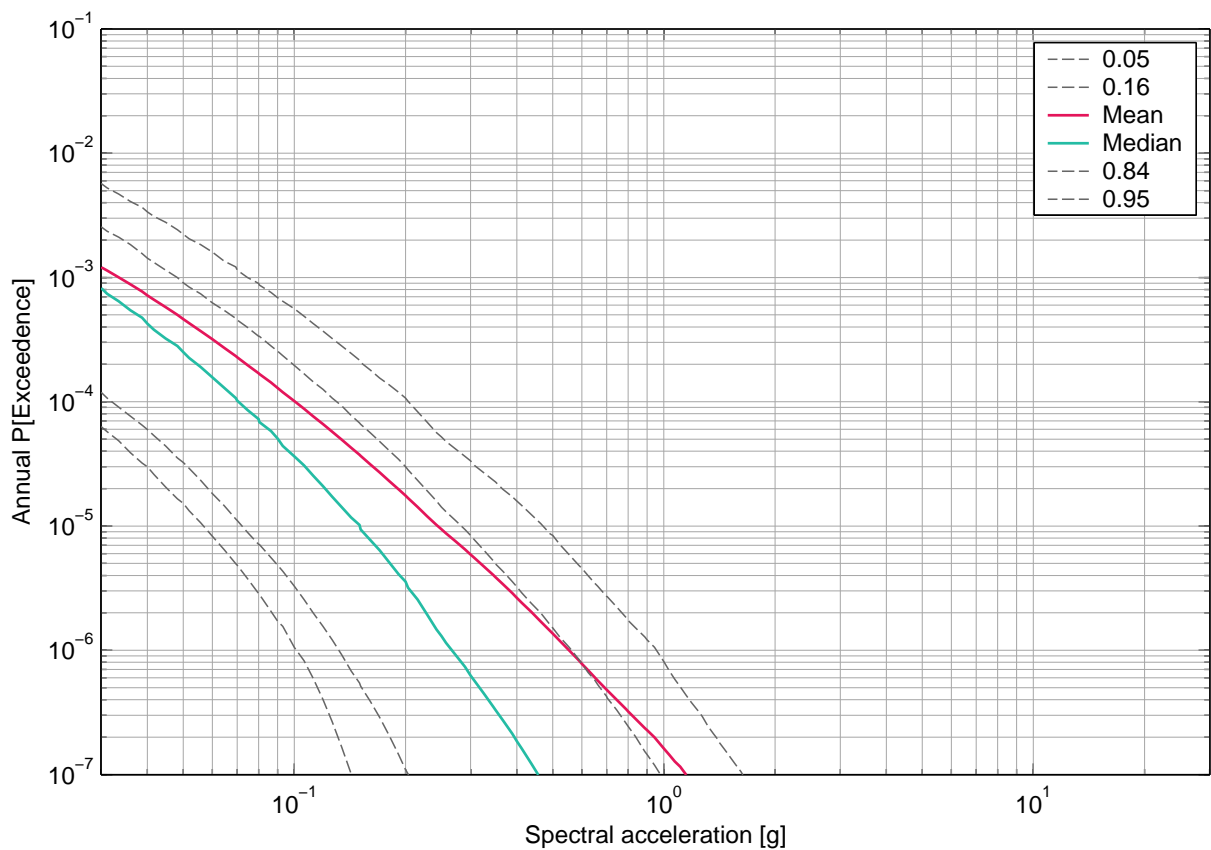


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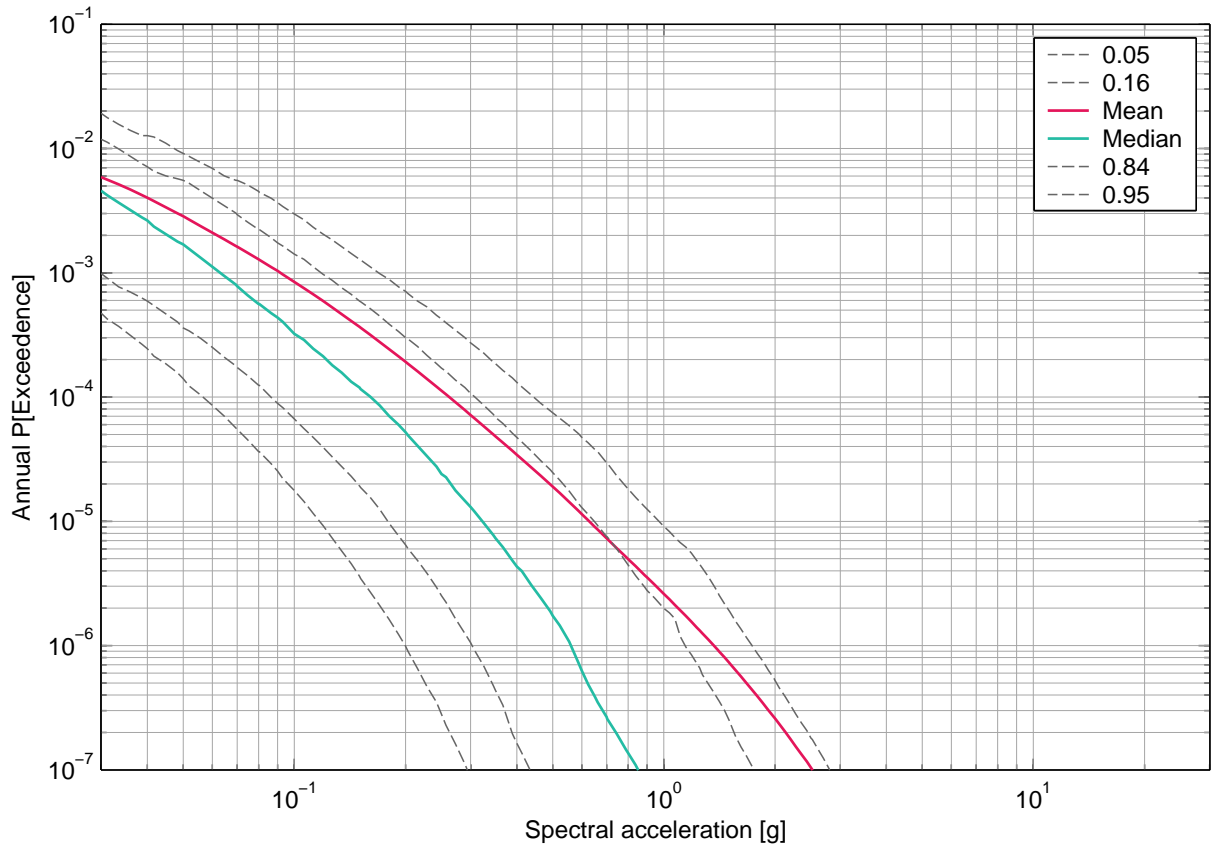


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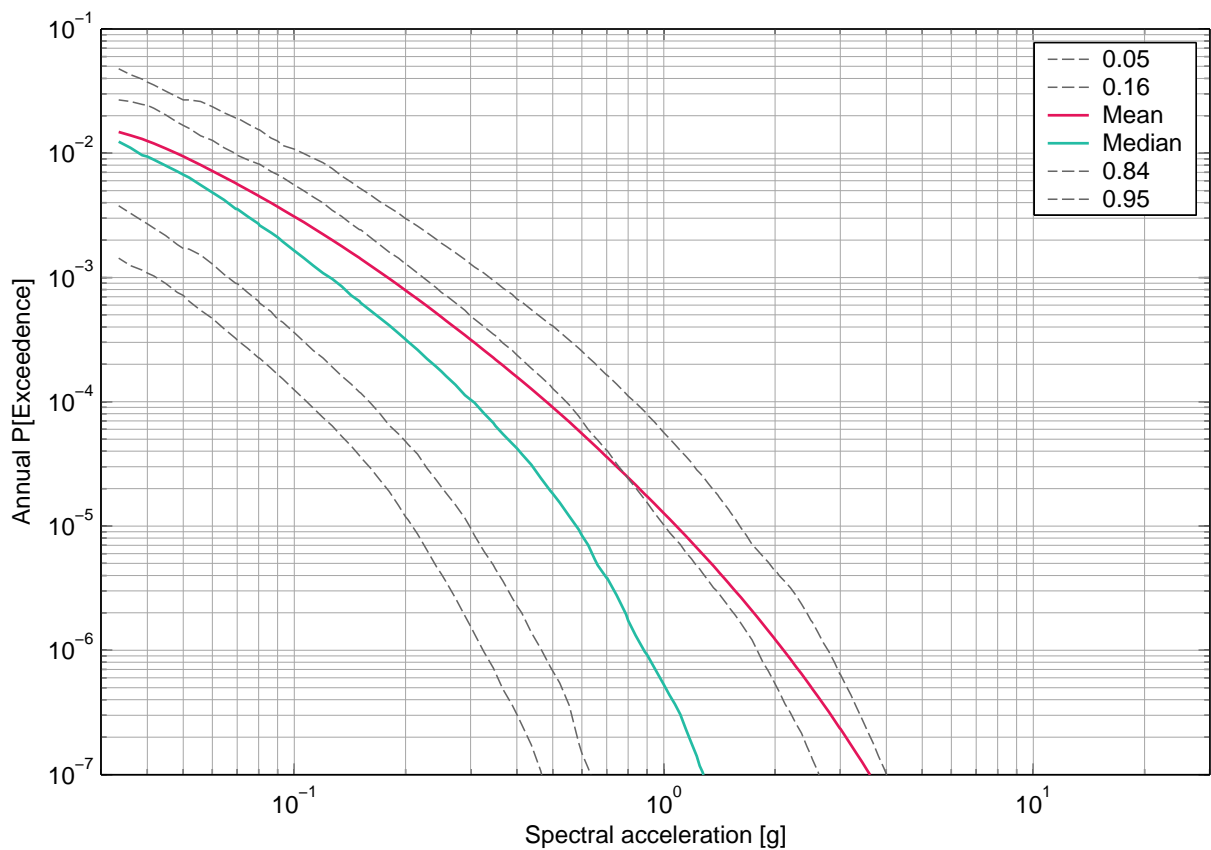


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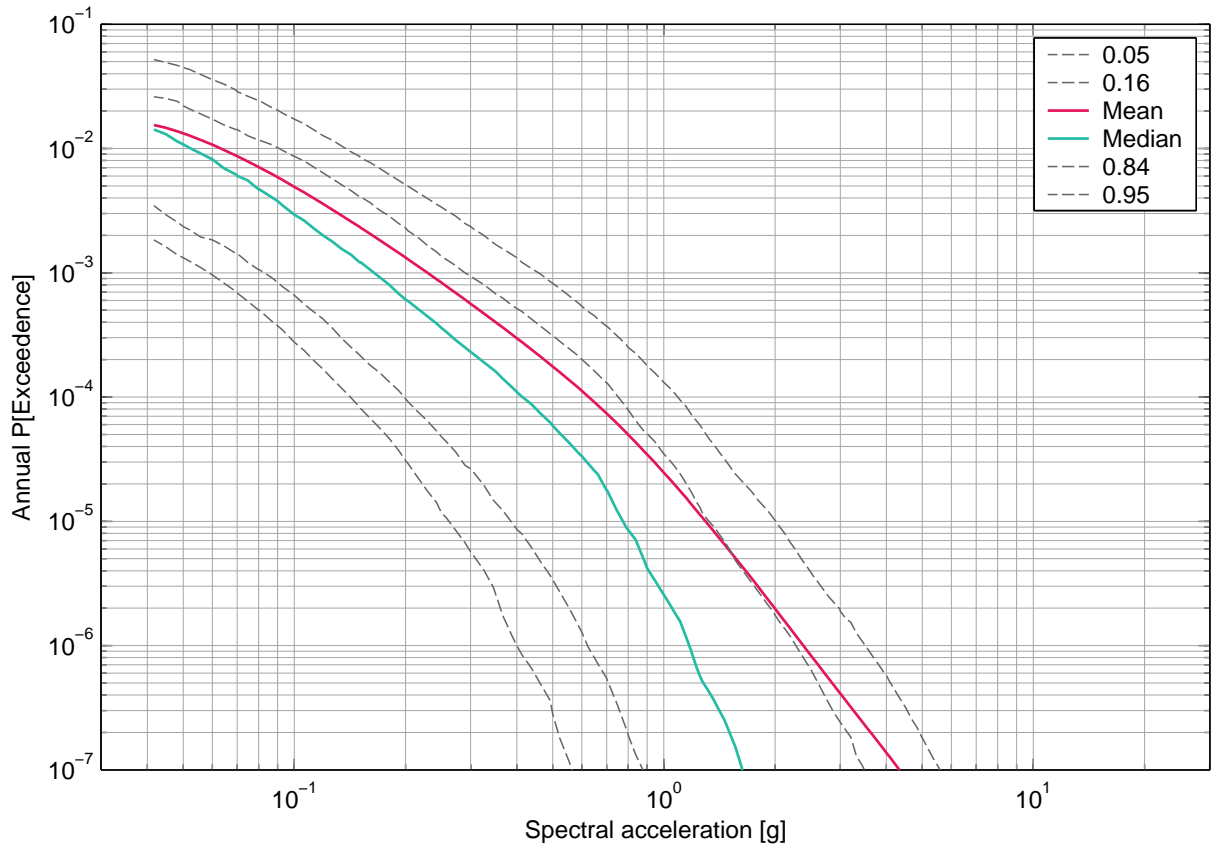


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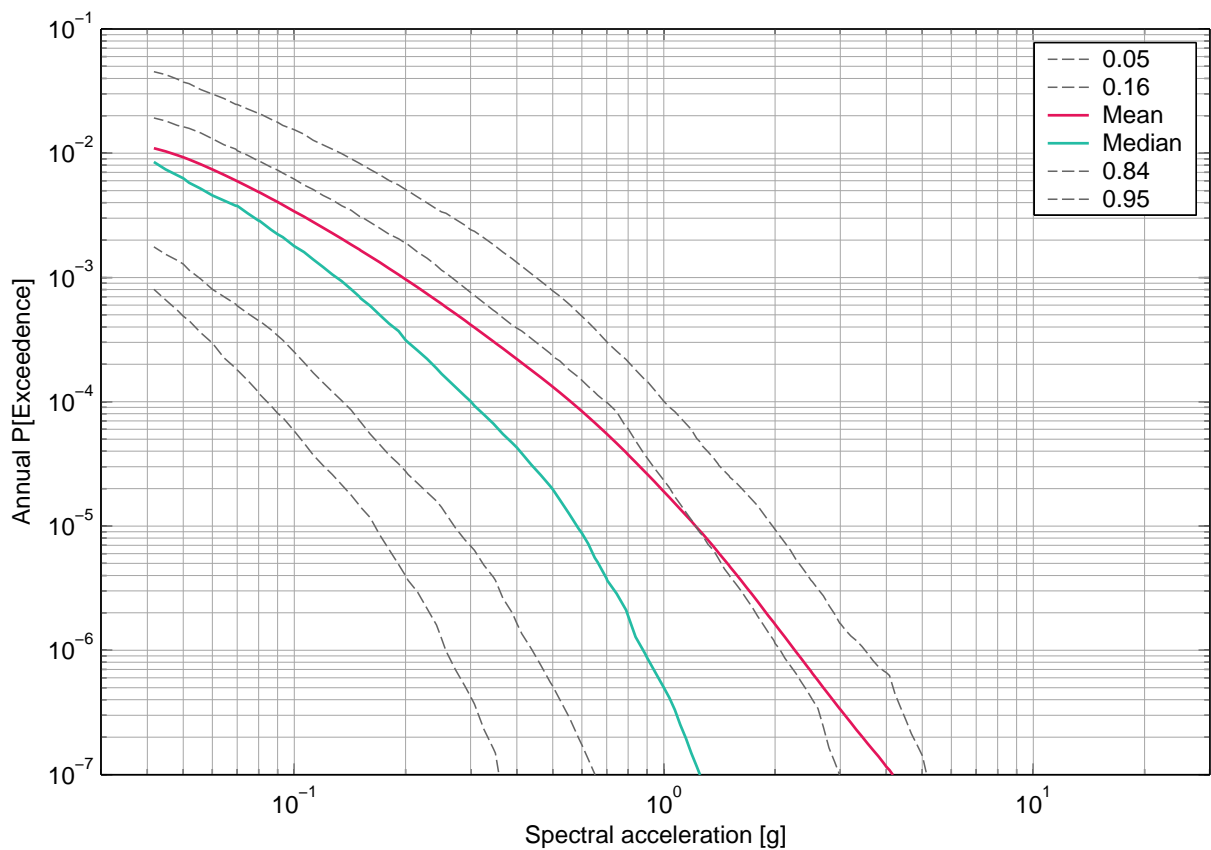


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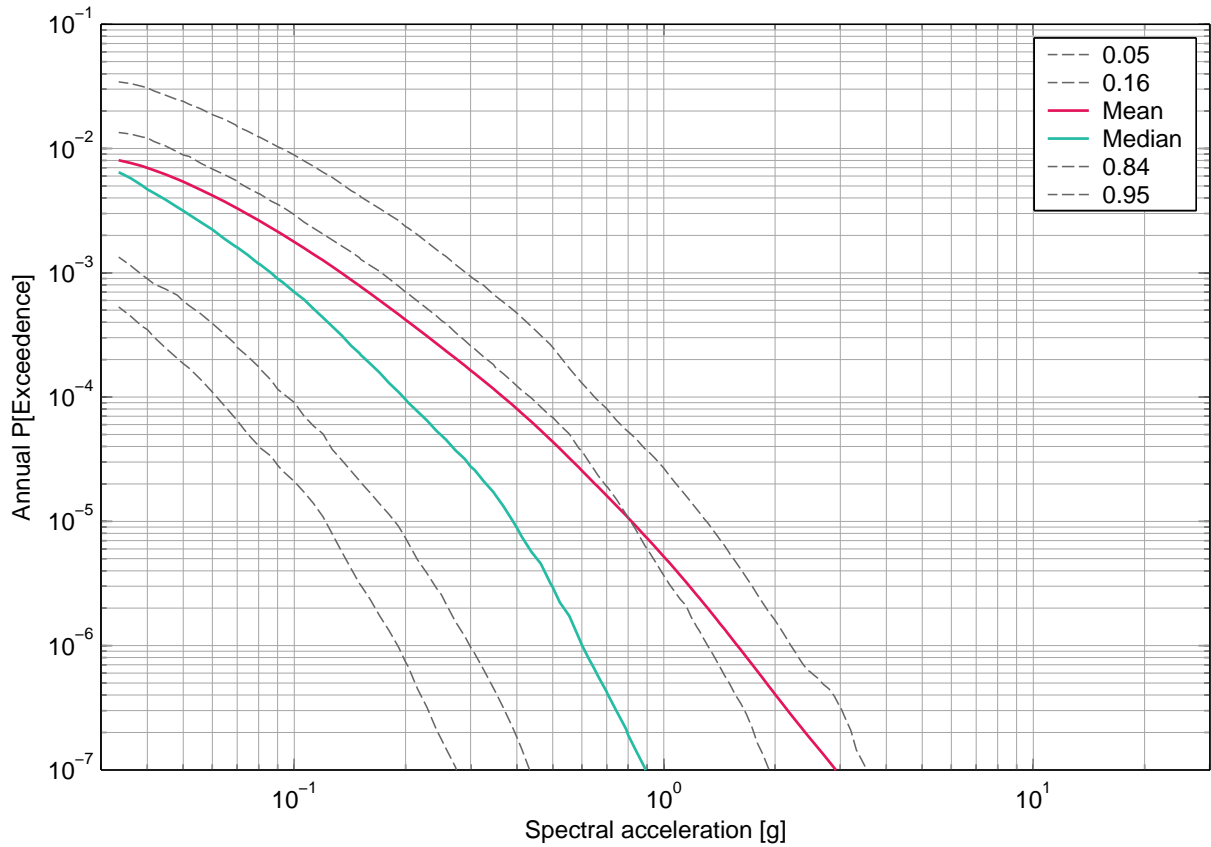


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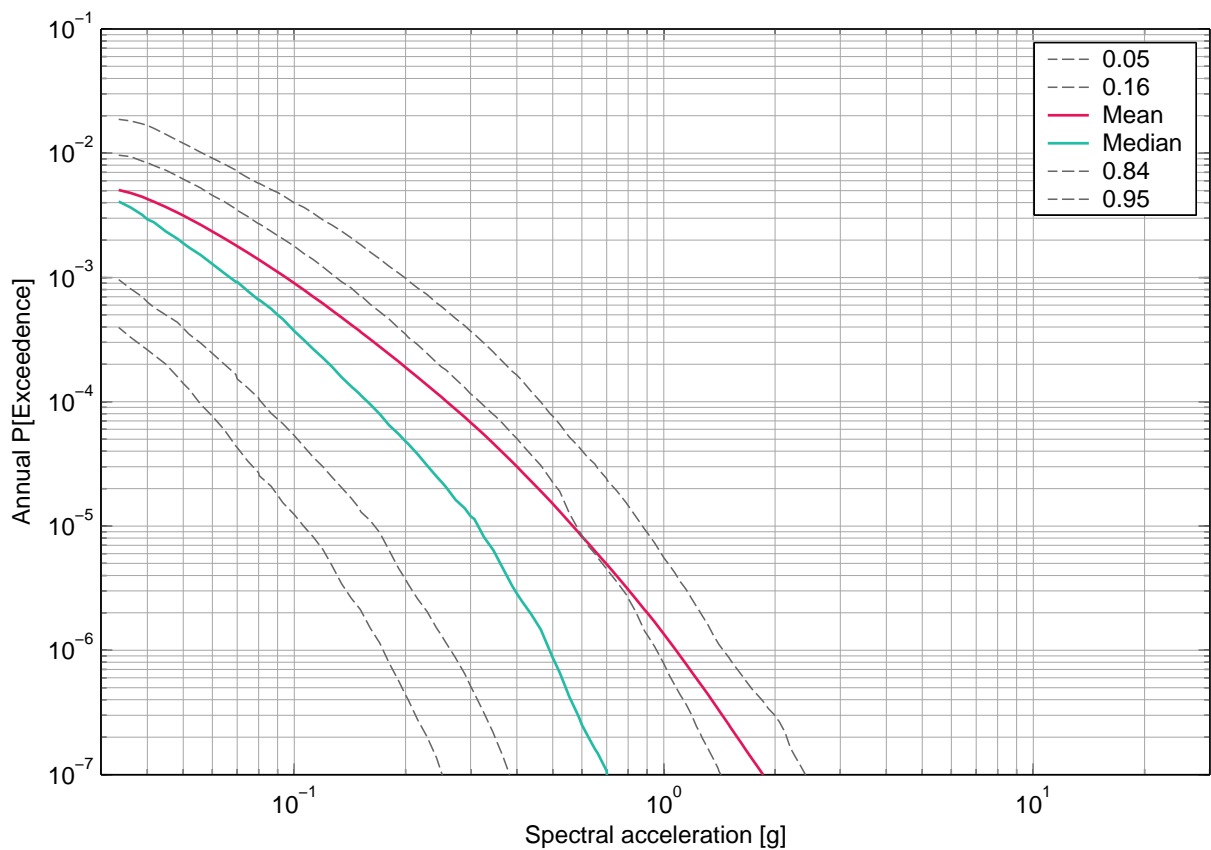


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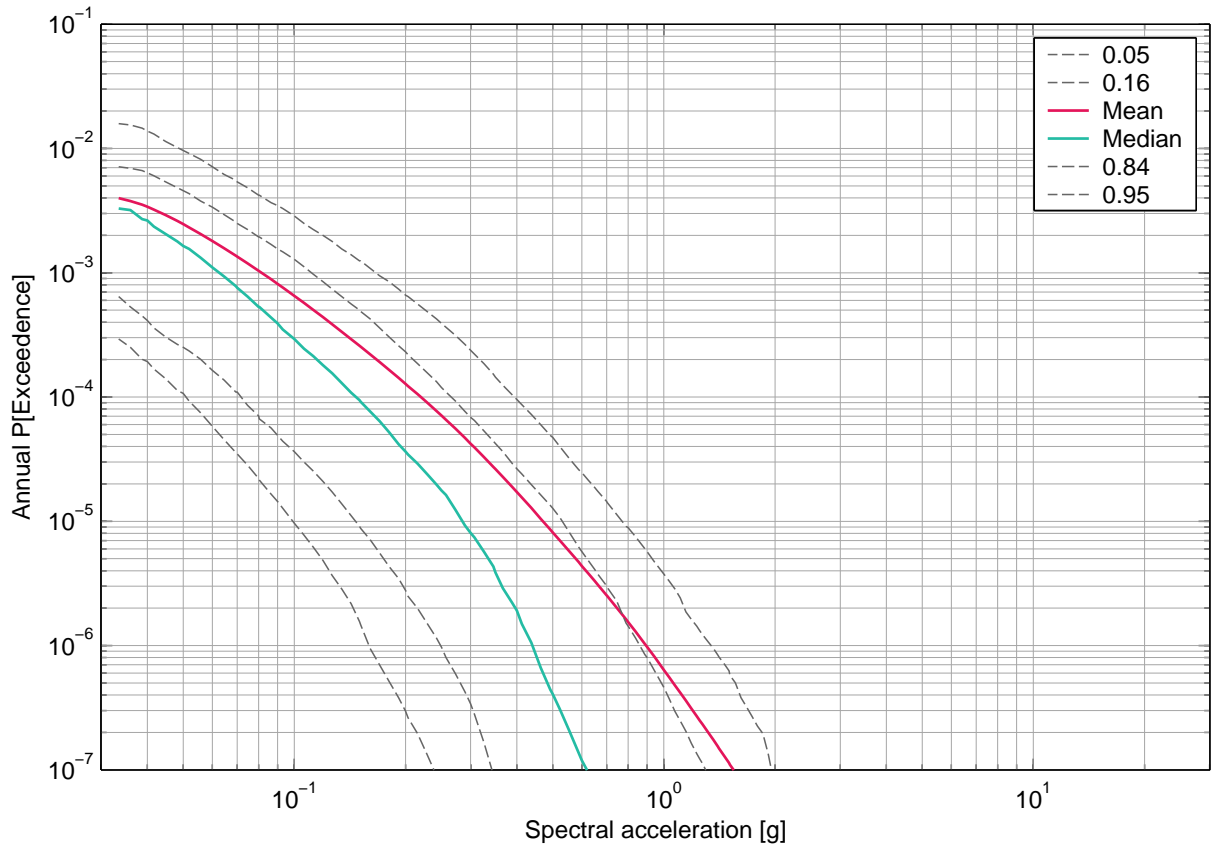


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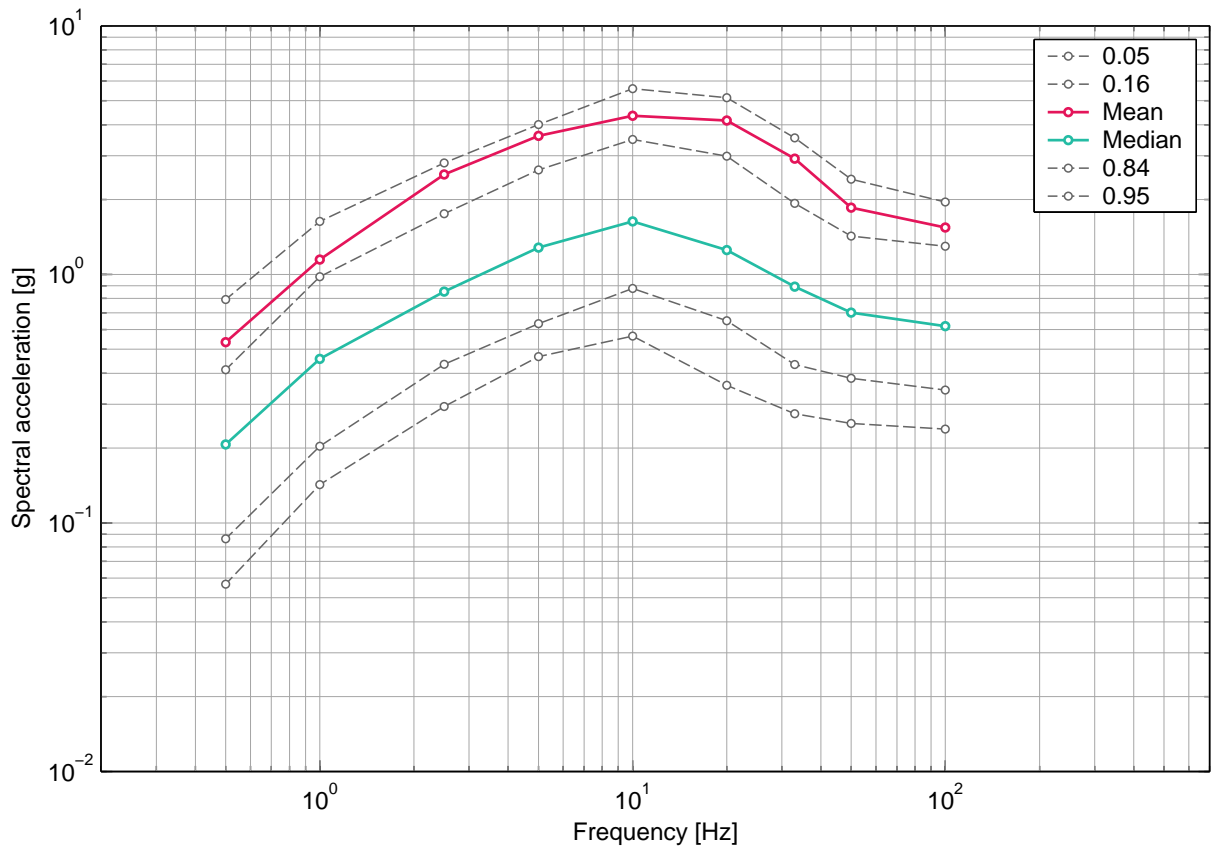


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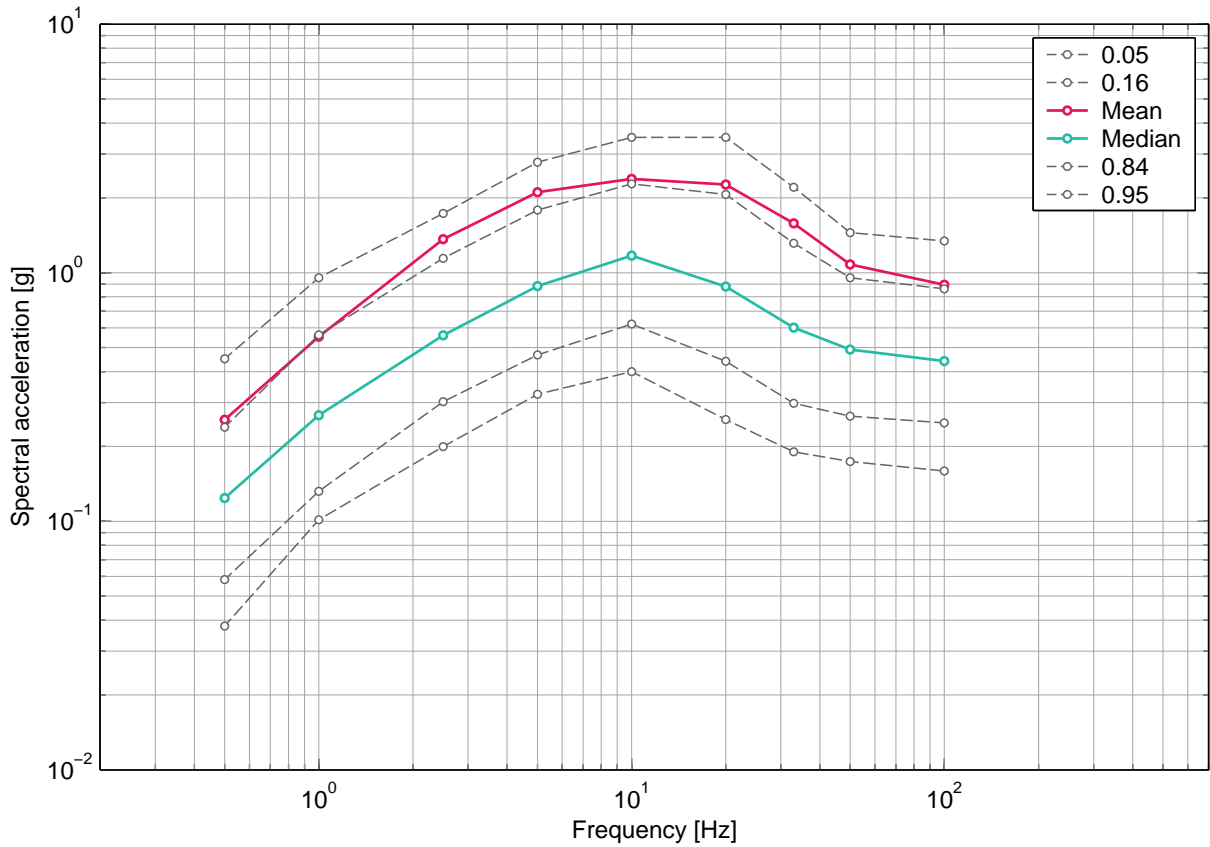


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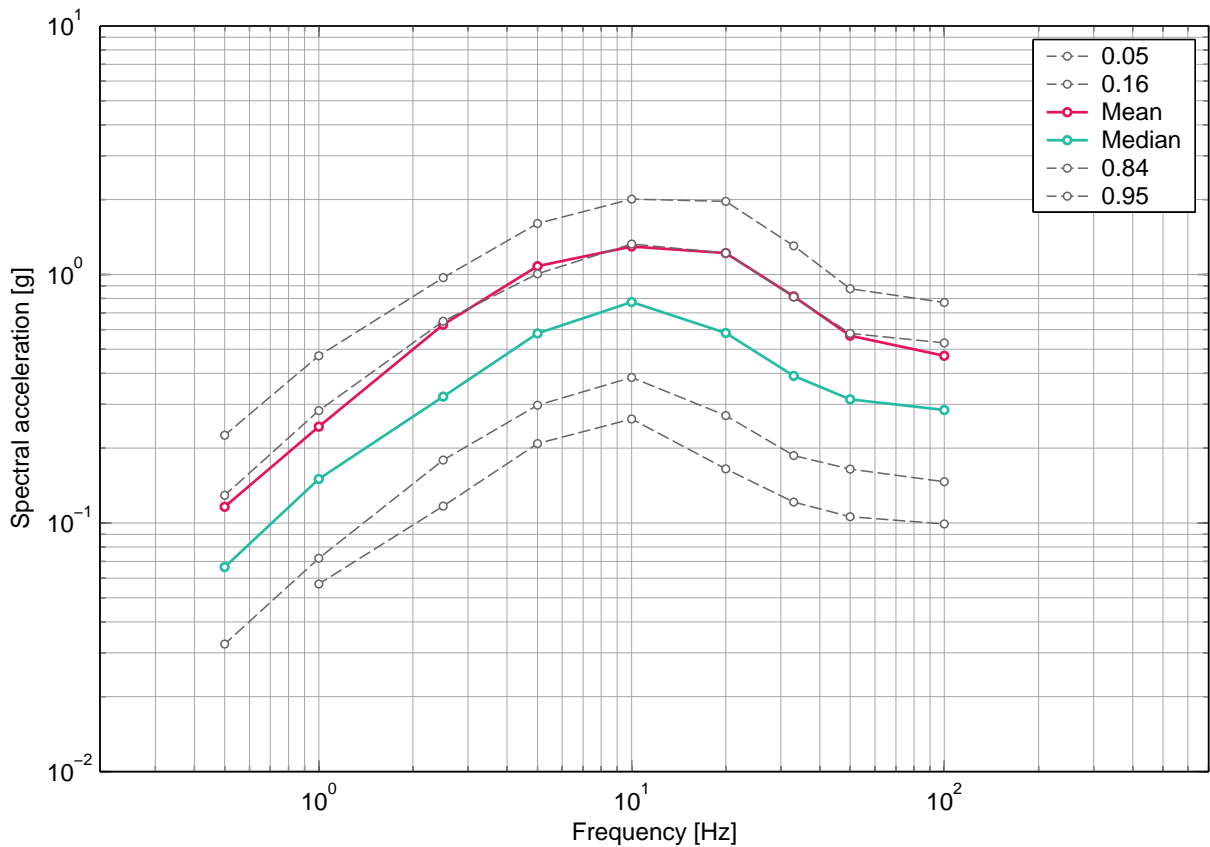


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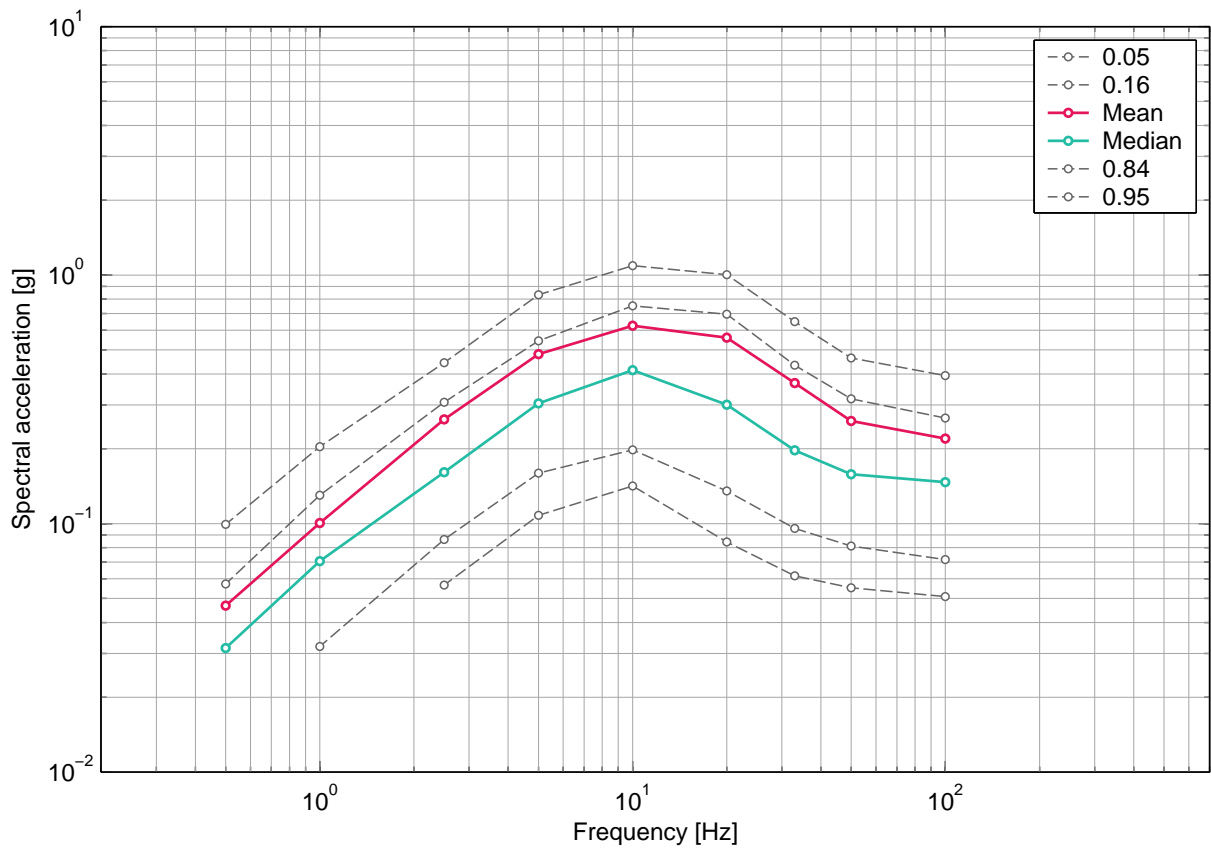


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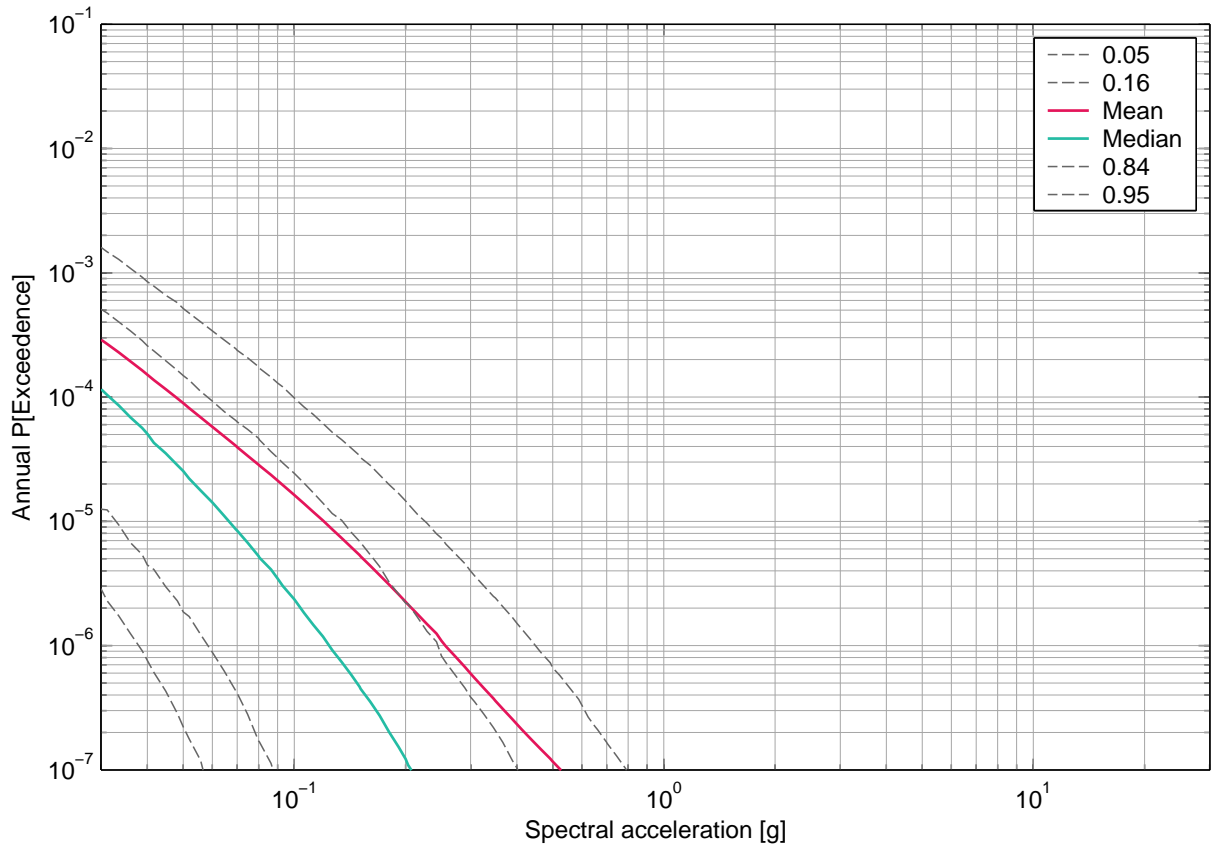


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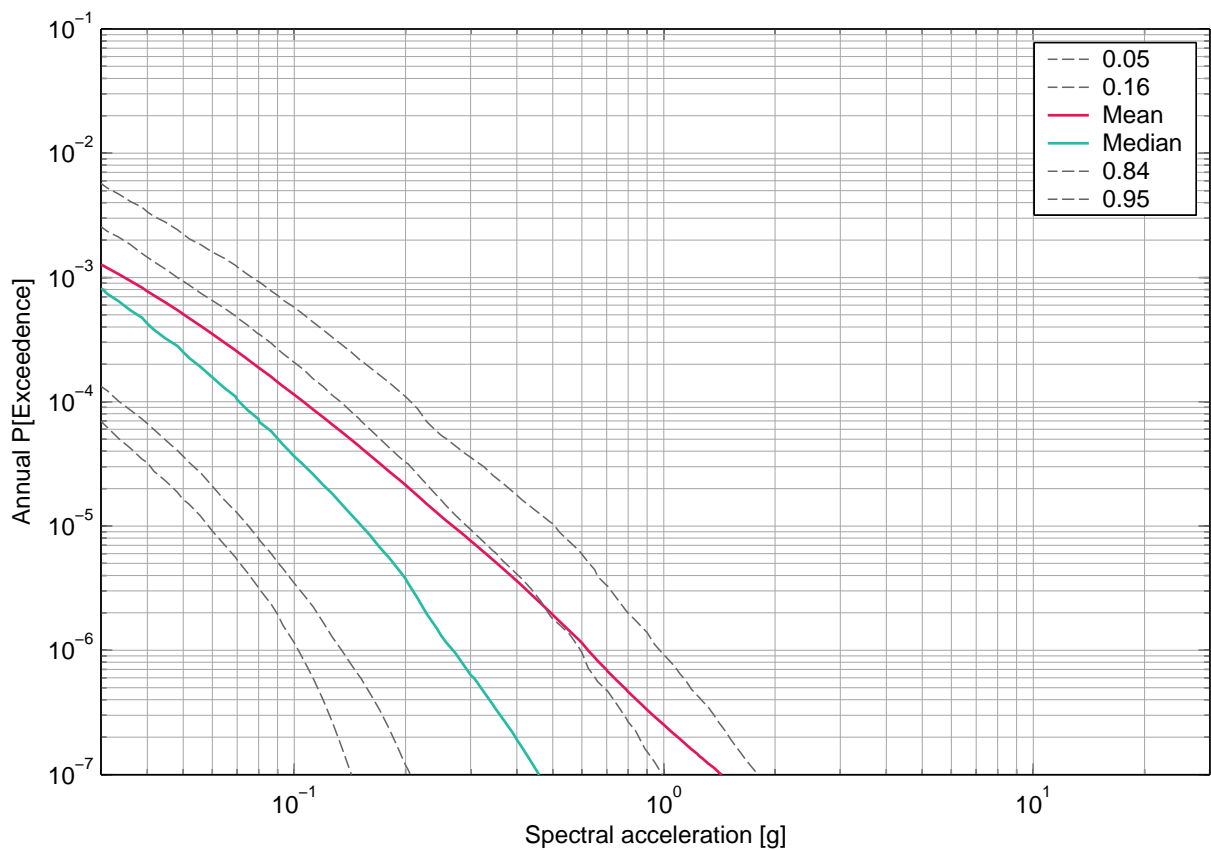


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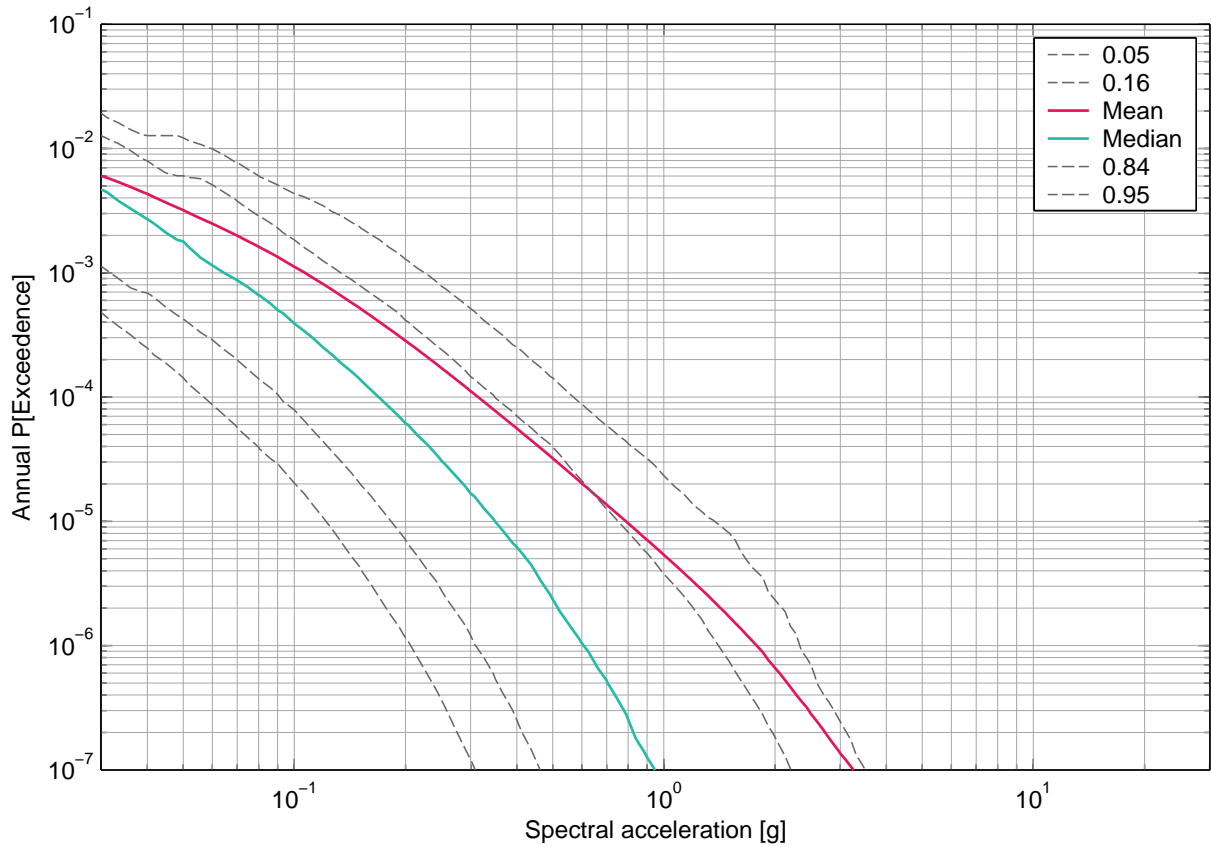


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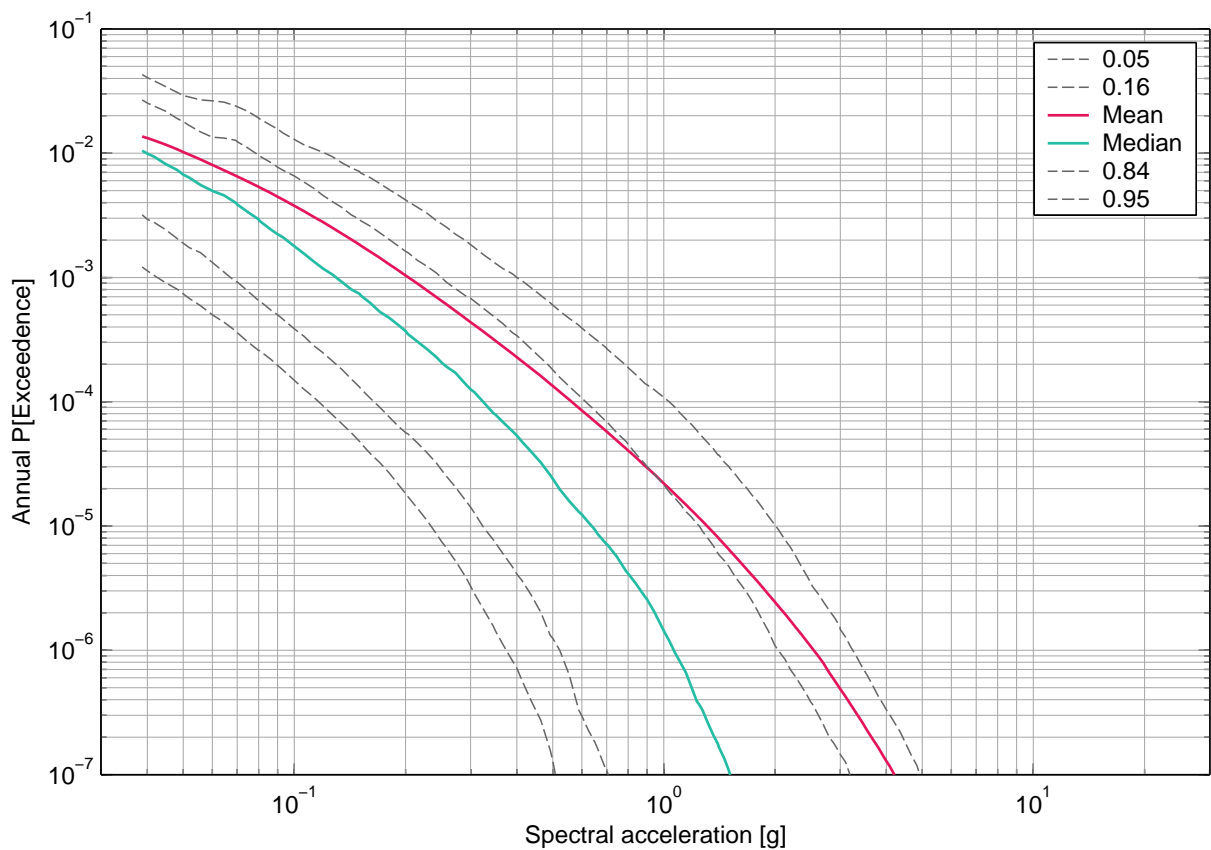


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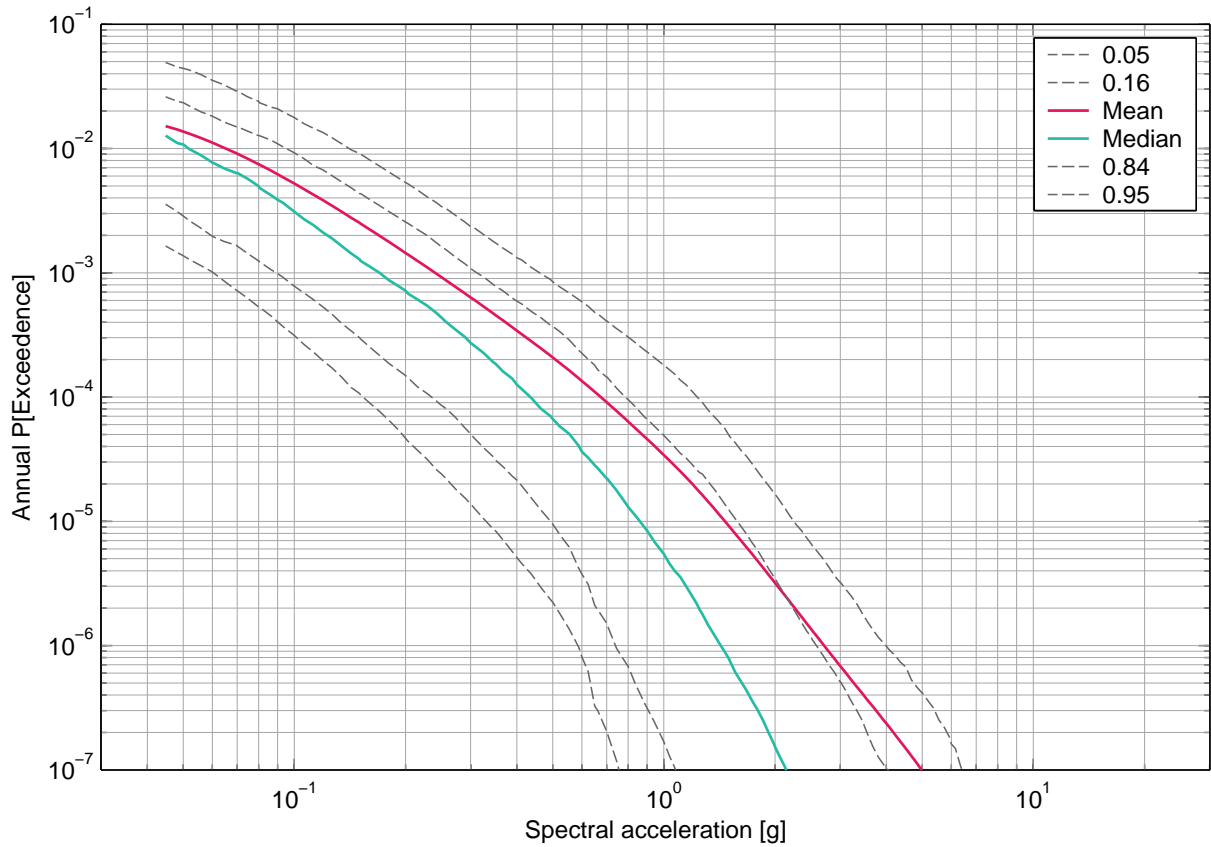


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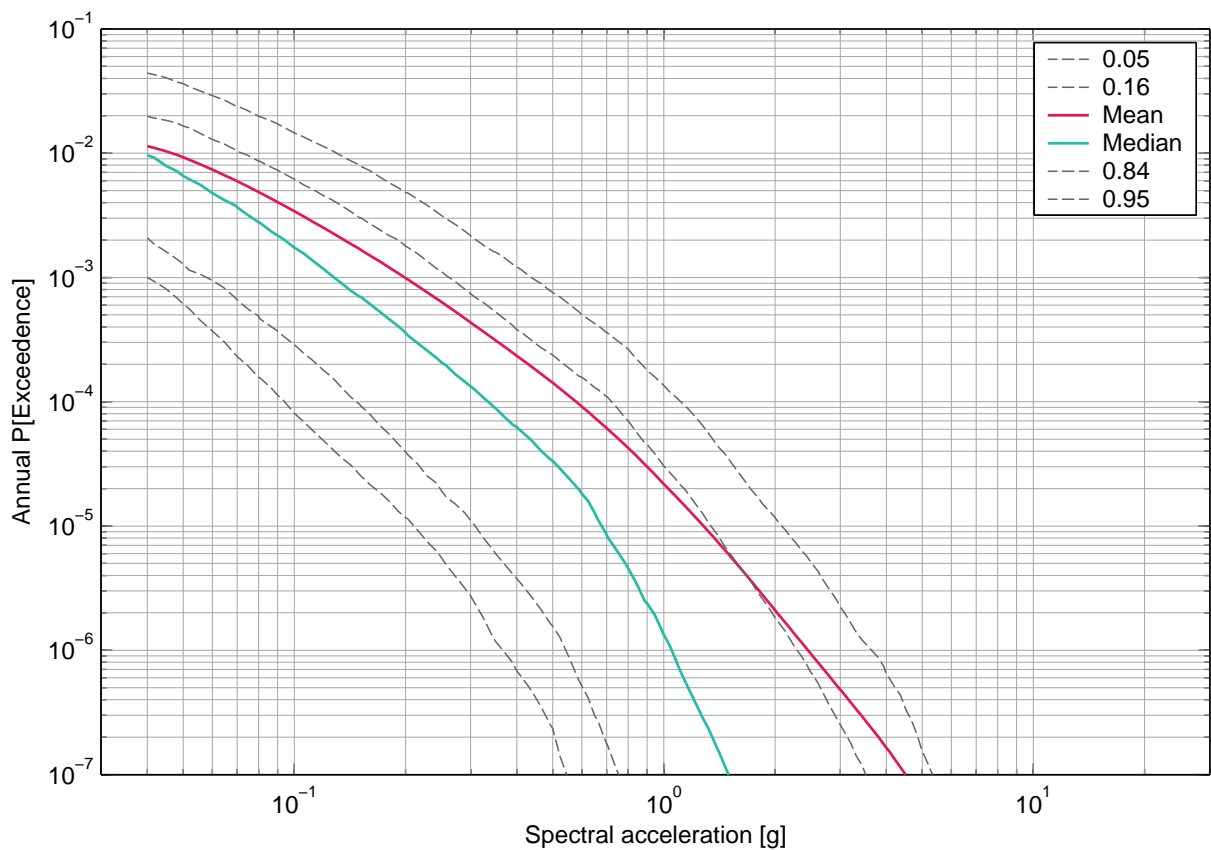


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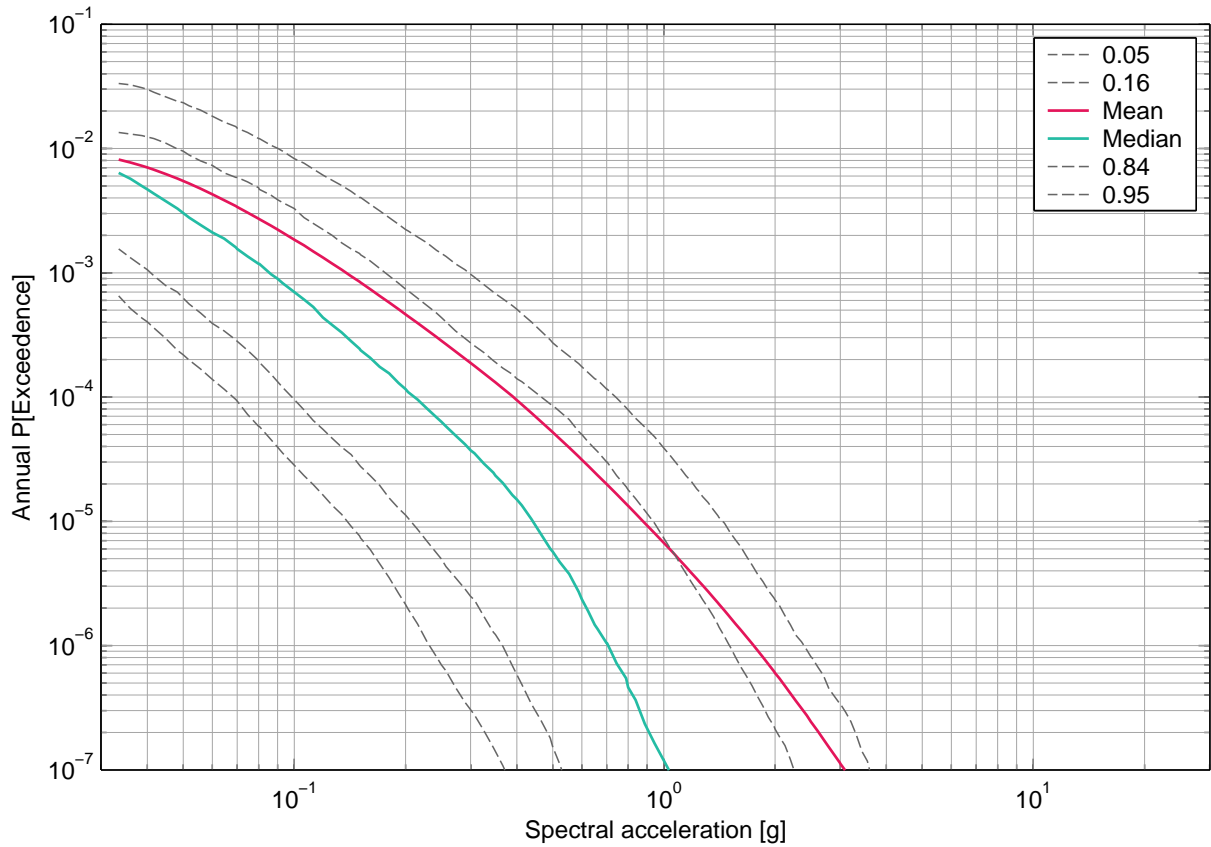


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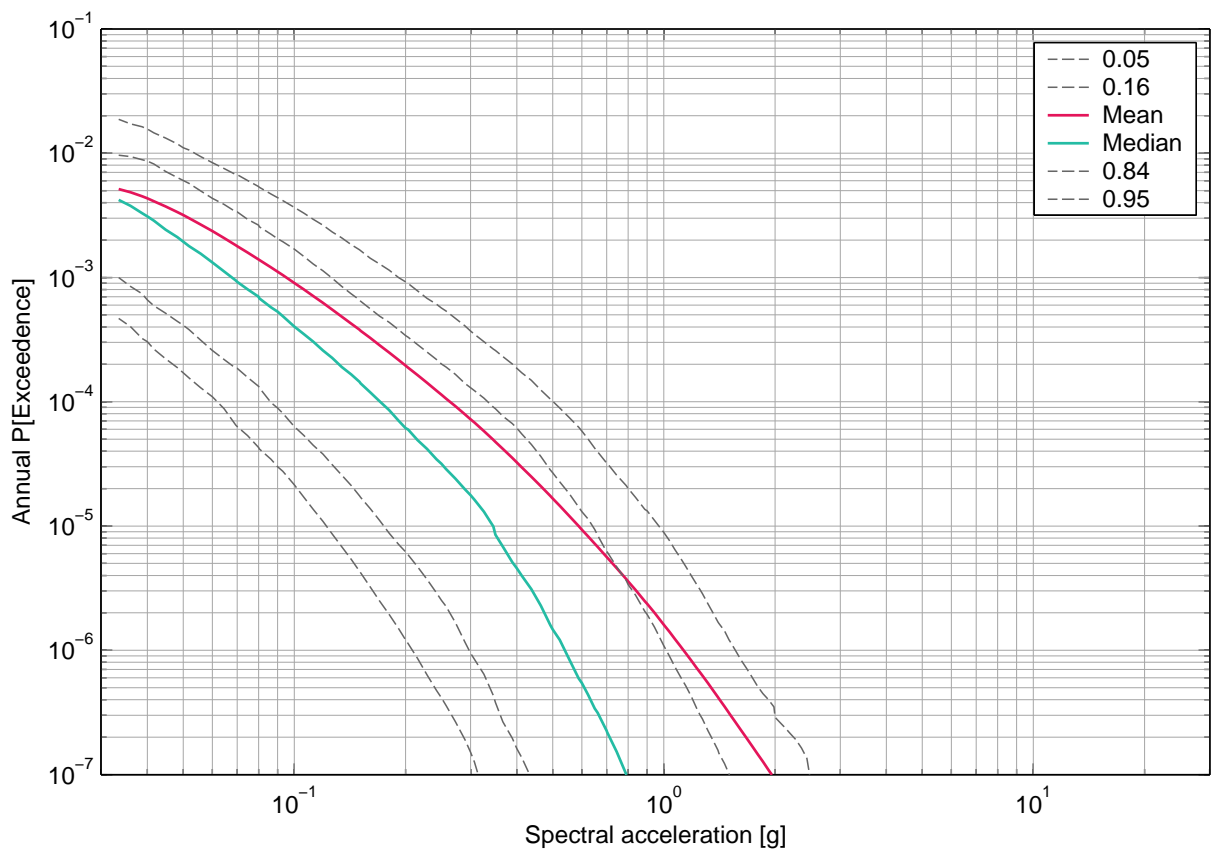


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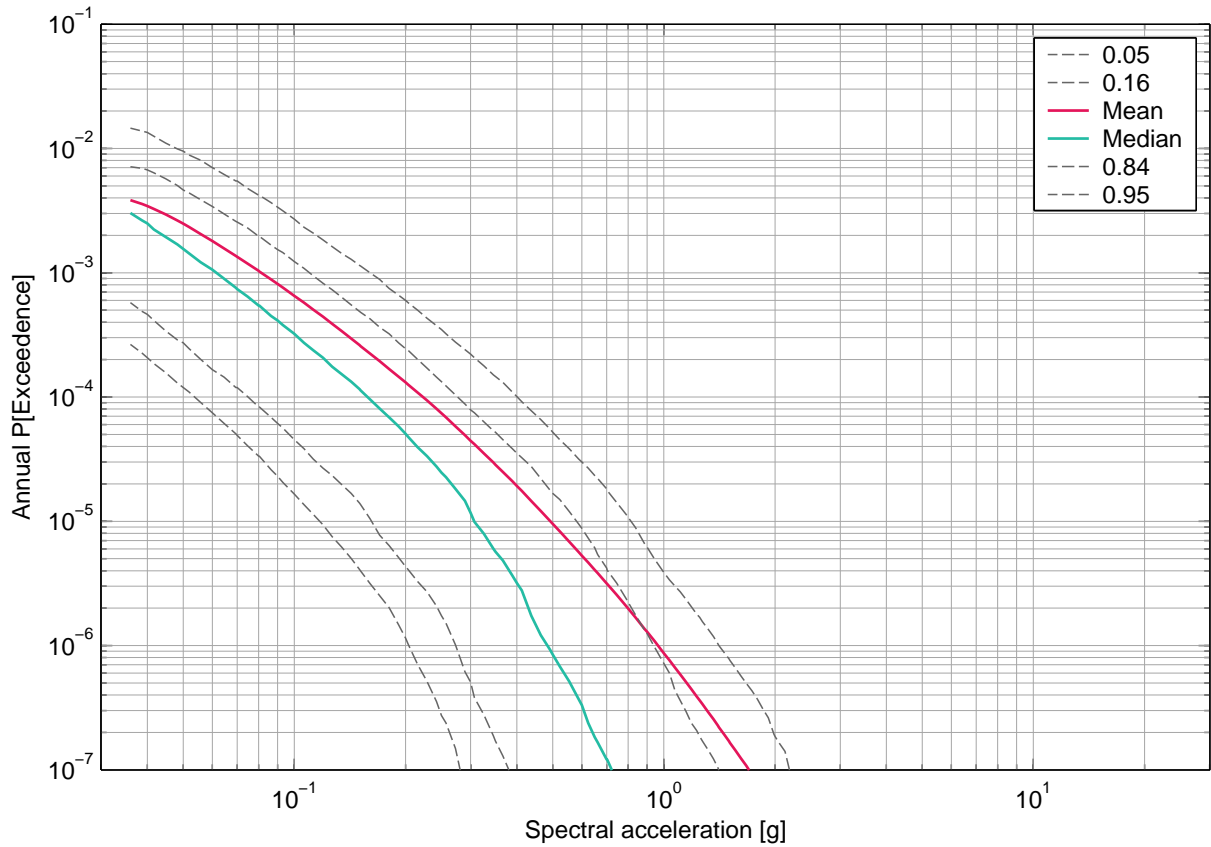


Fig. 2-12.9: Beznau, vertical component, soil, -6 m, mean hazard and fractiles, PGA.

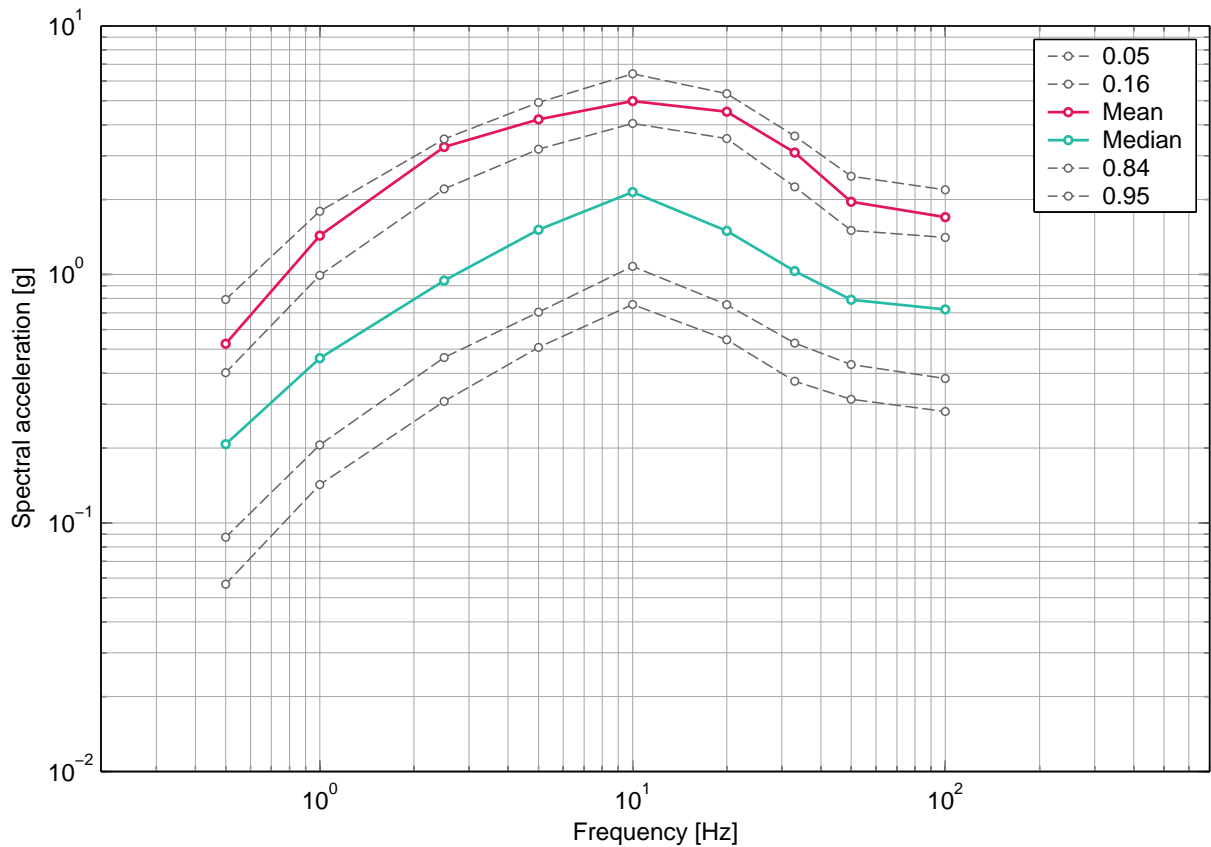


Fig. 2-12.10: Beznau, vertical component, soil, -6 m, uniform hazard spectra for an annual probability of exceedence of  $1E-07$  and 5% damping.

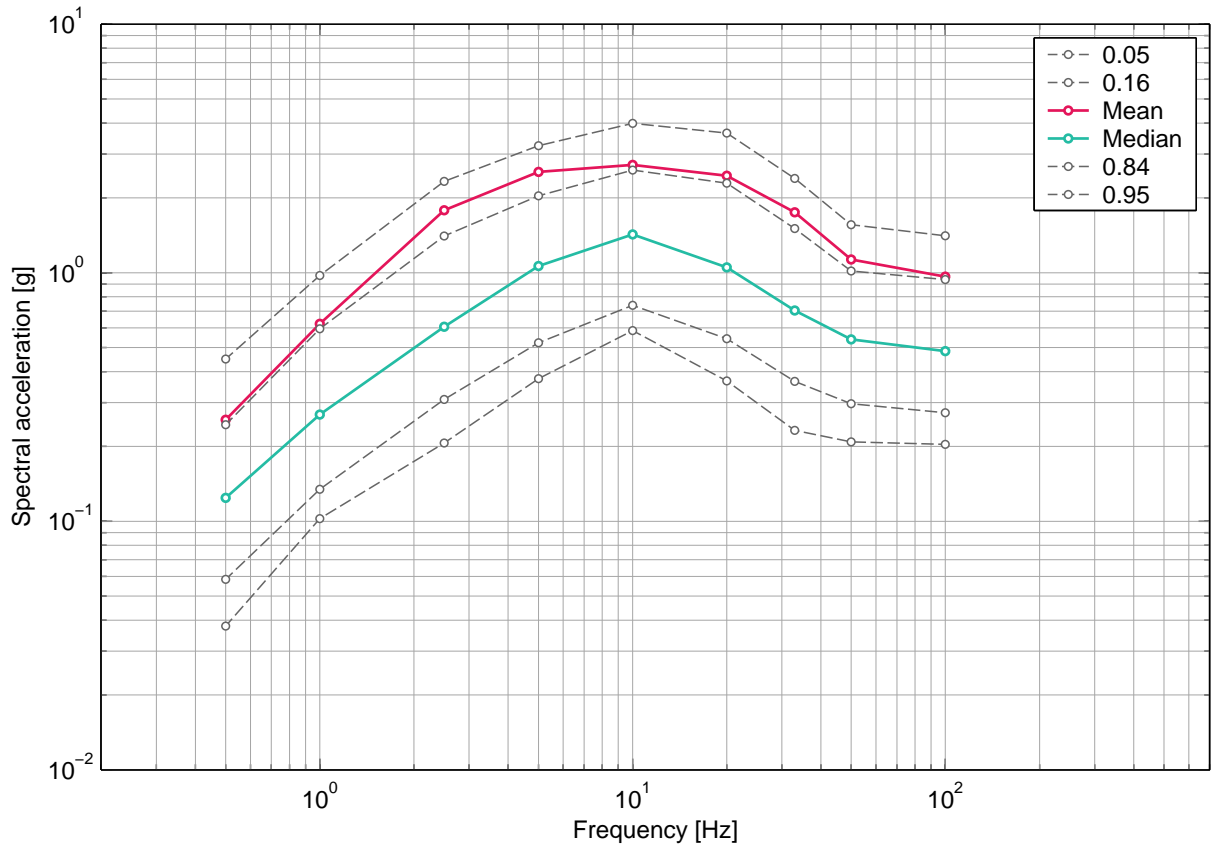


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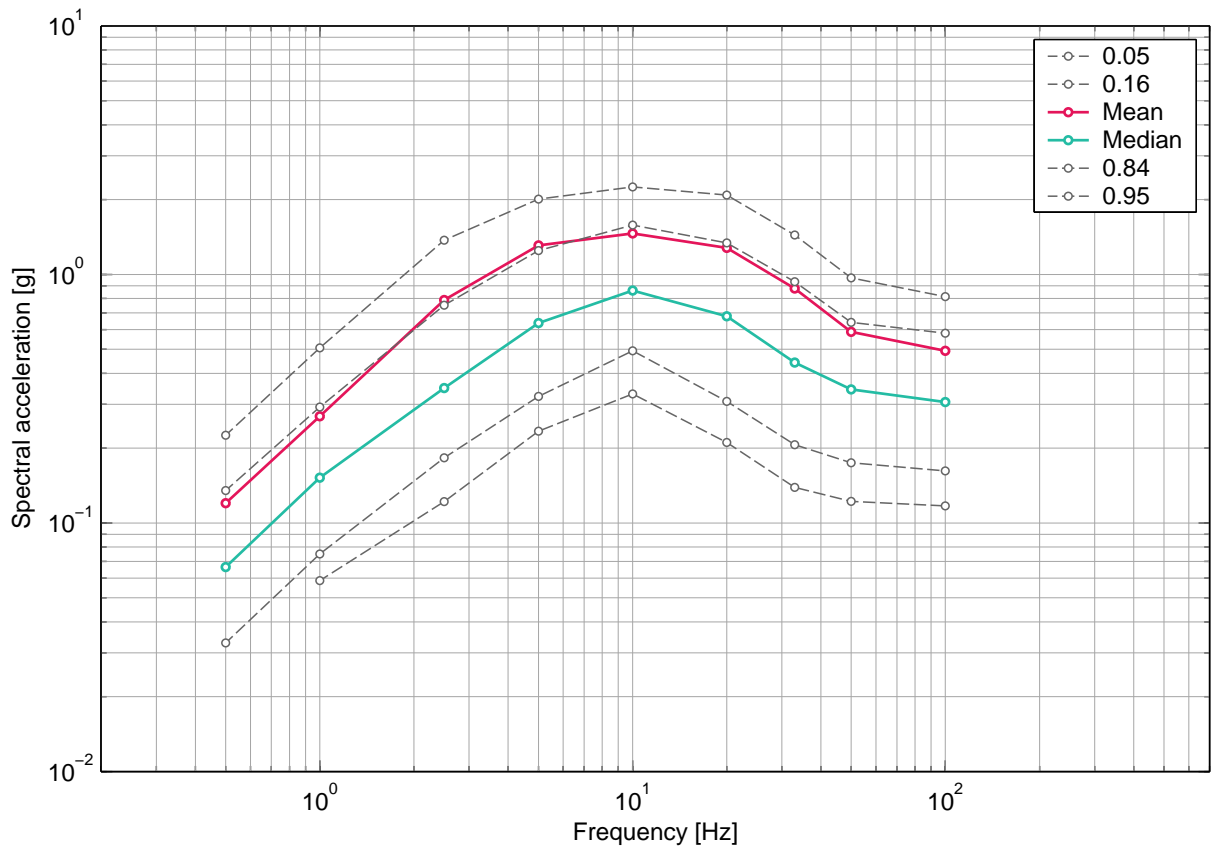


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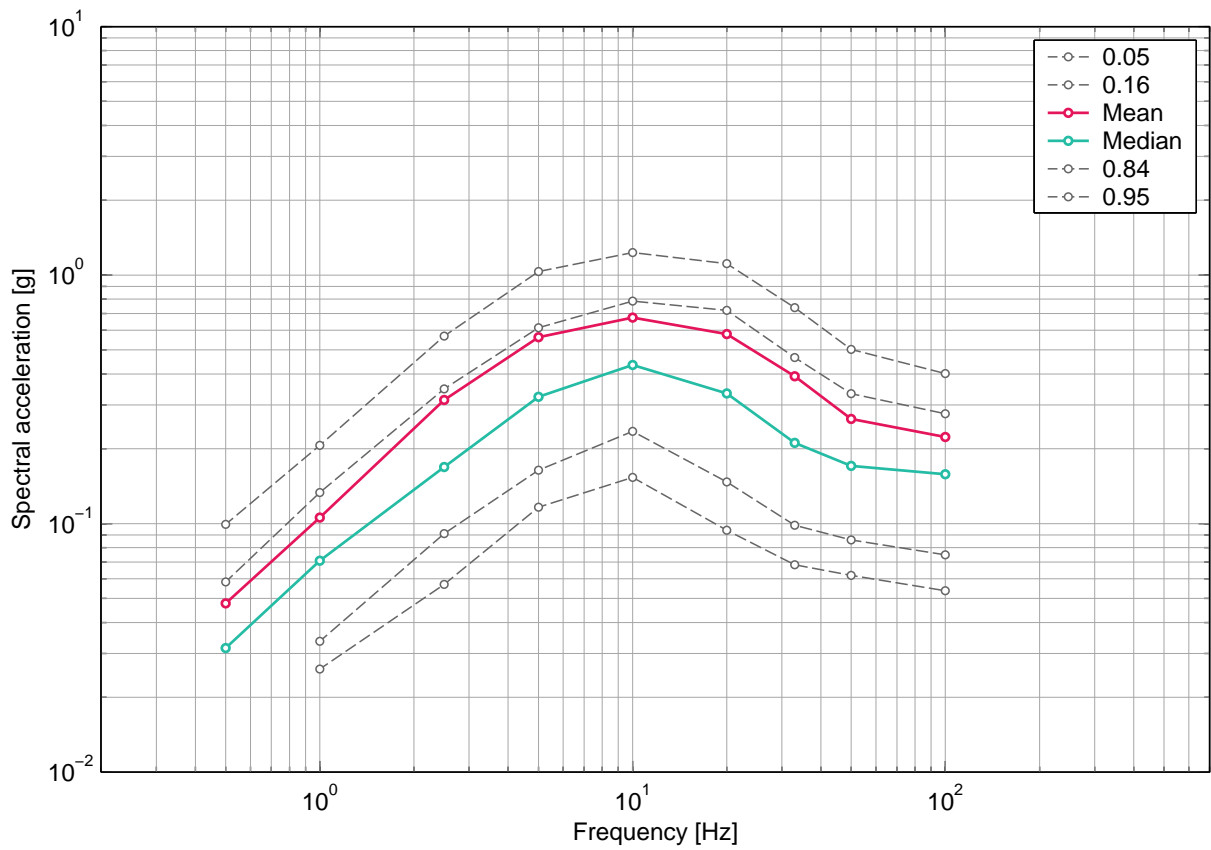


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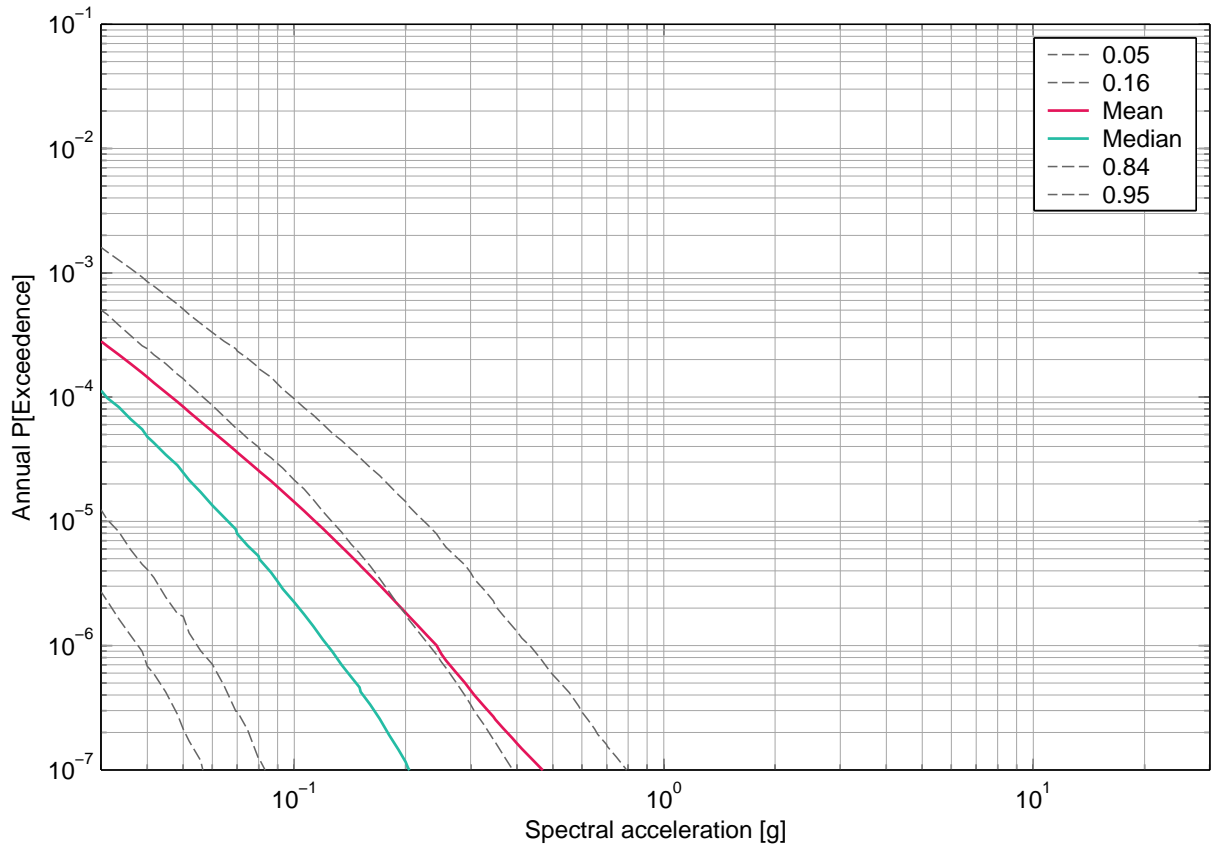


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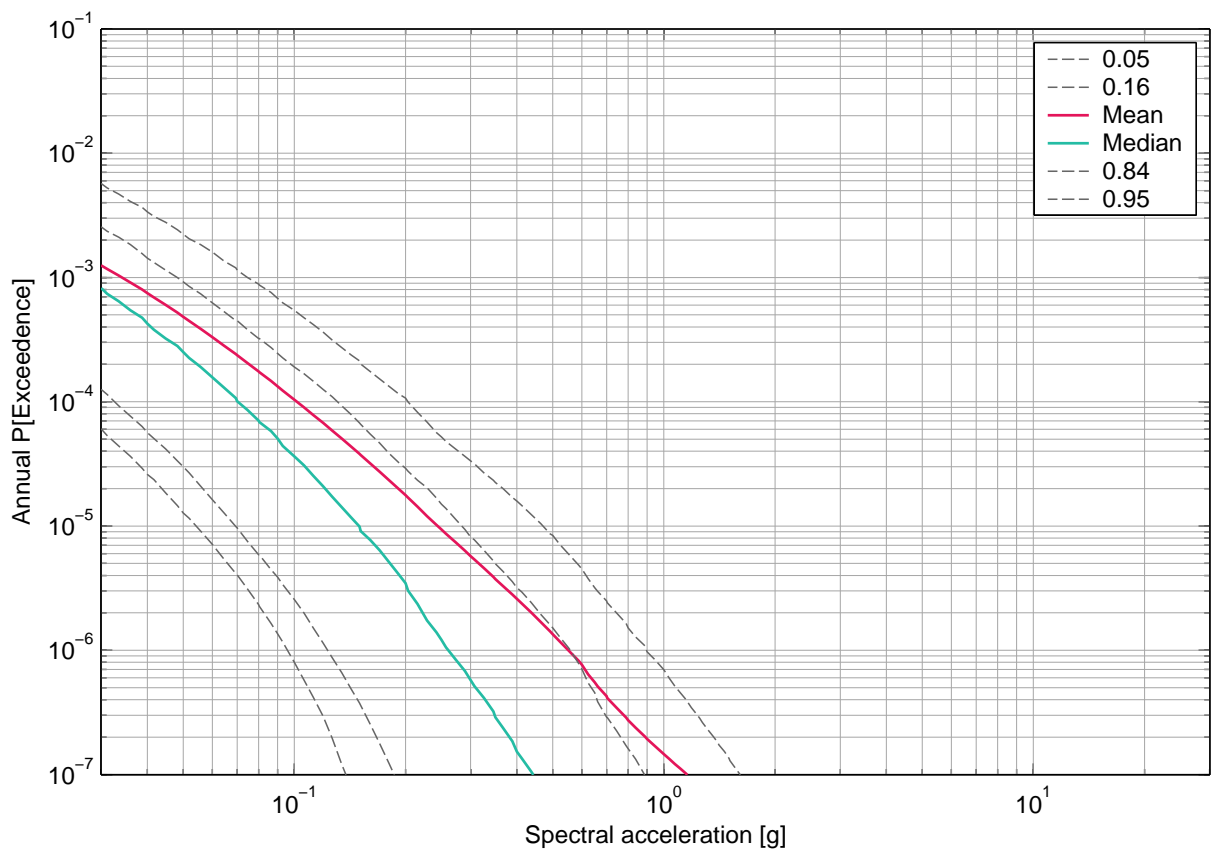


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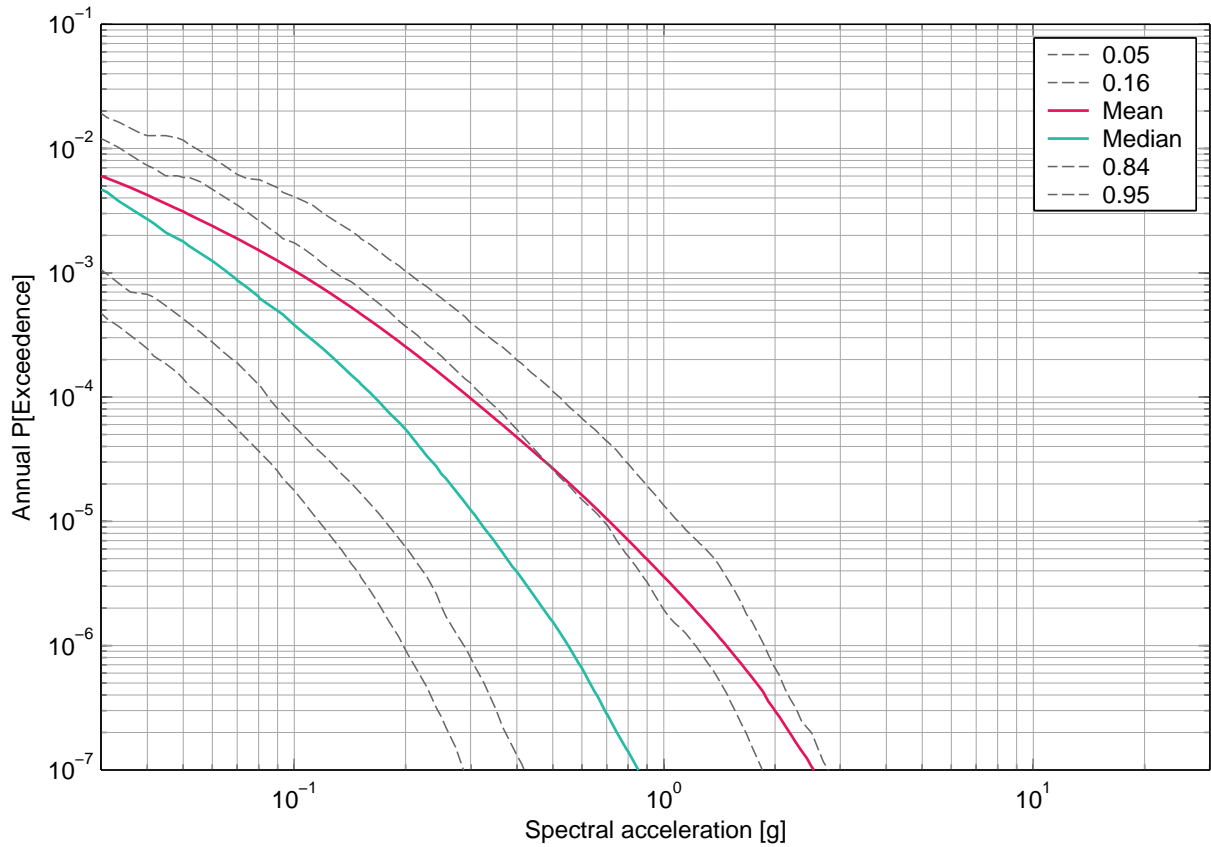


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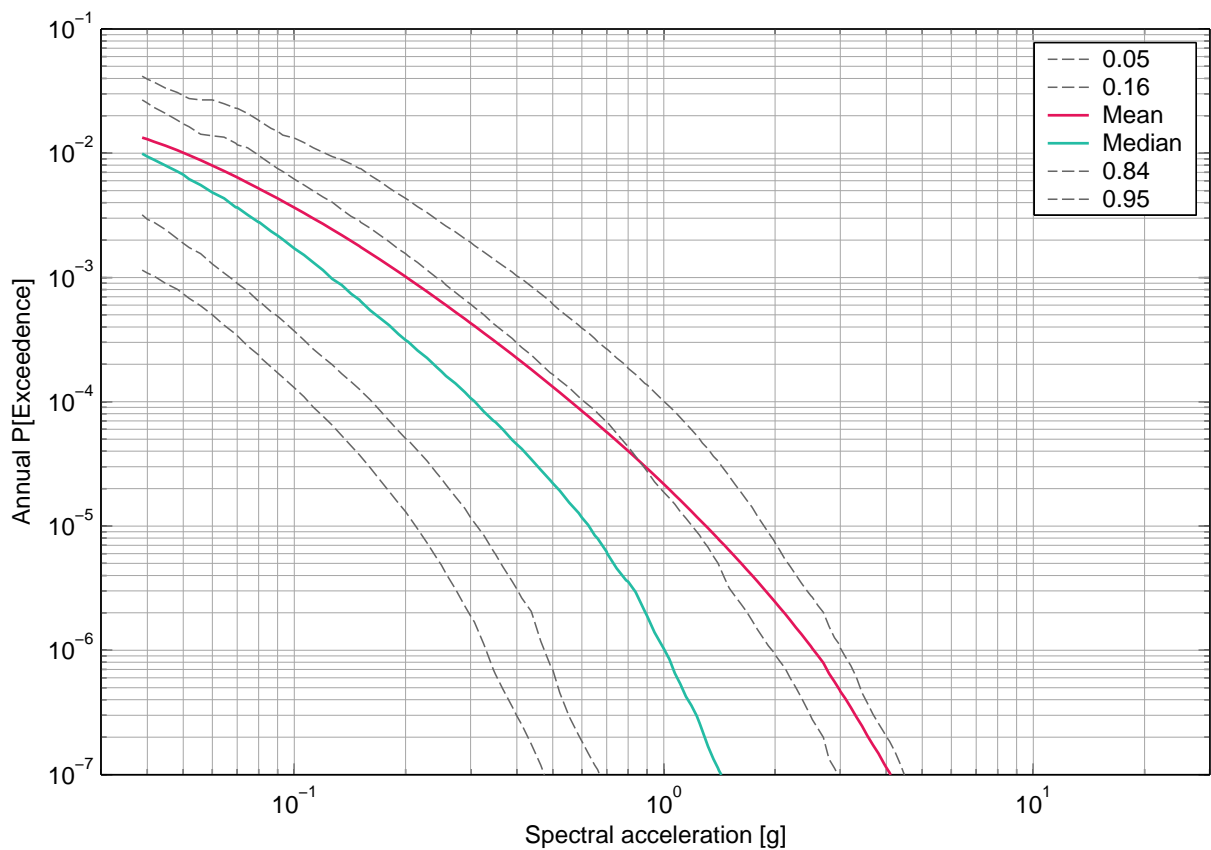


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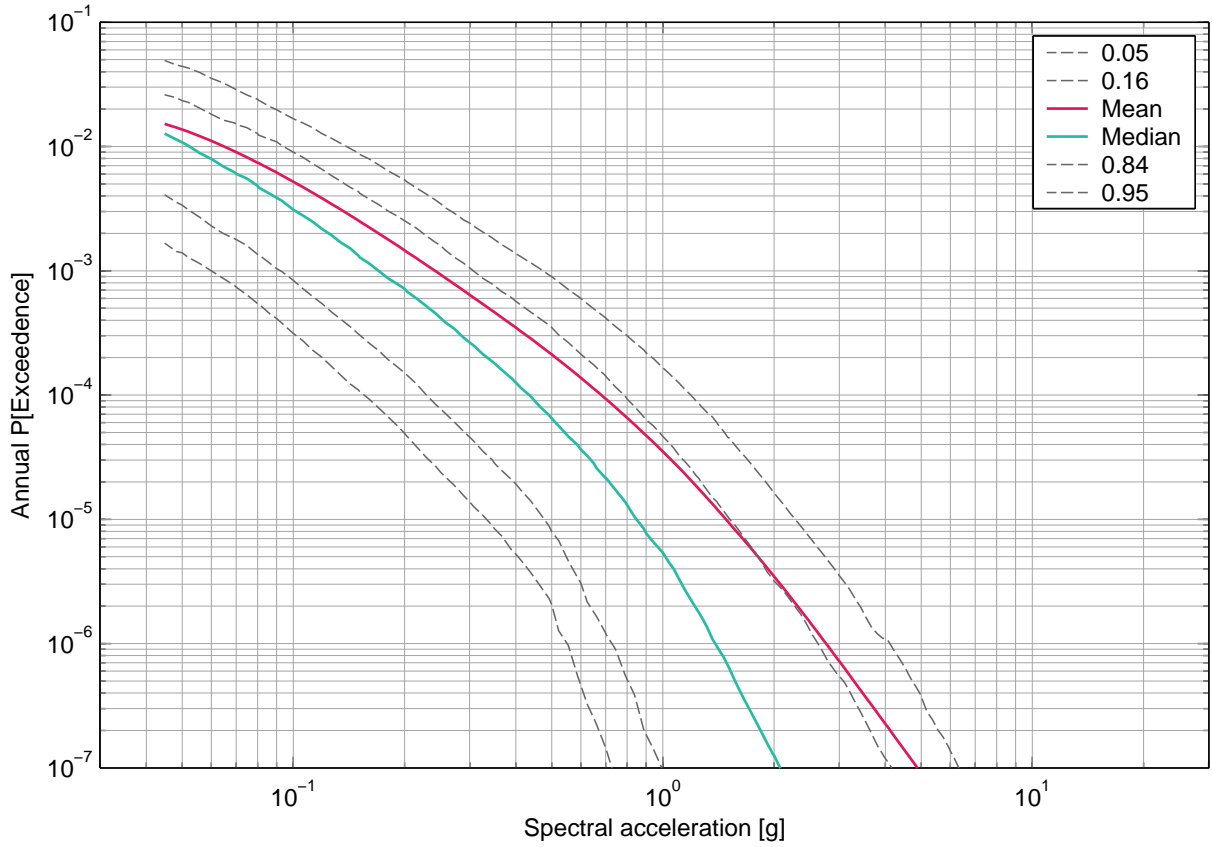


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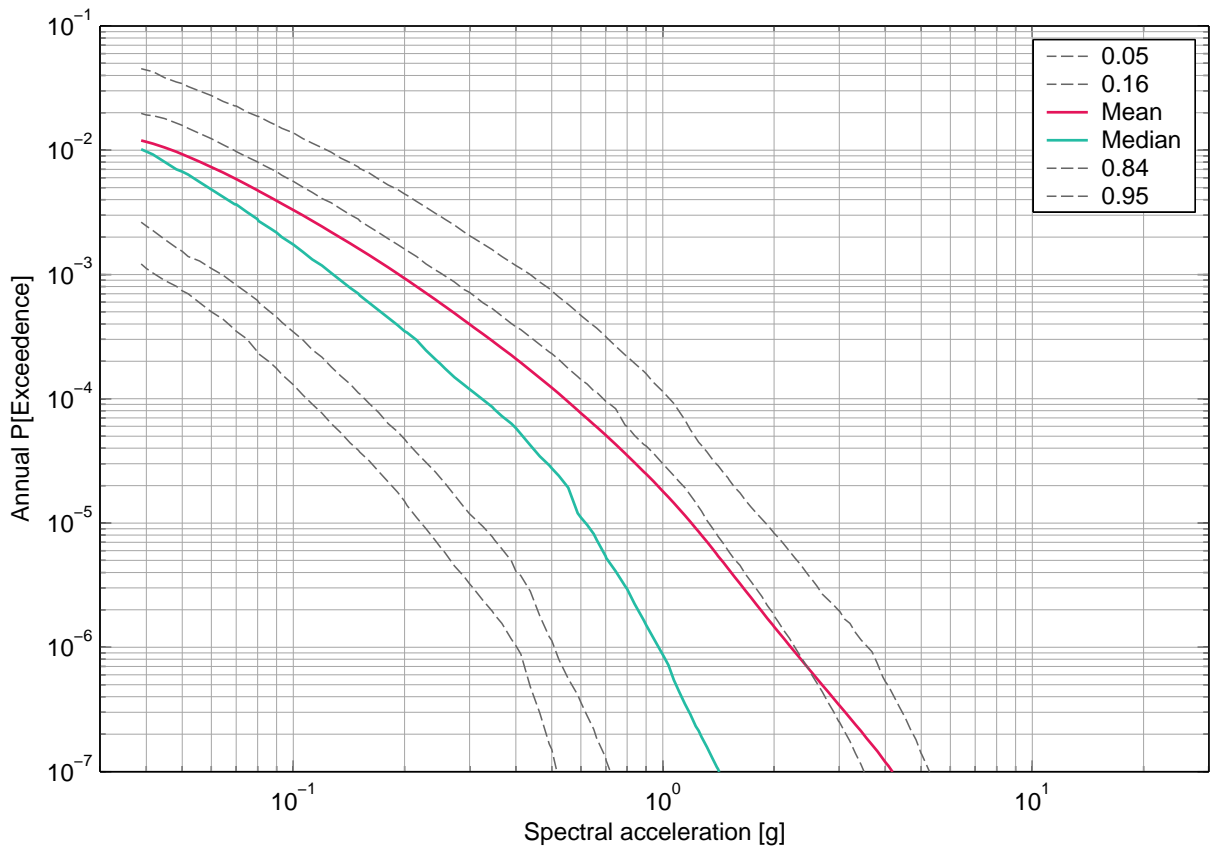


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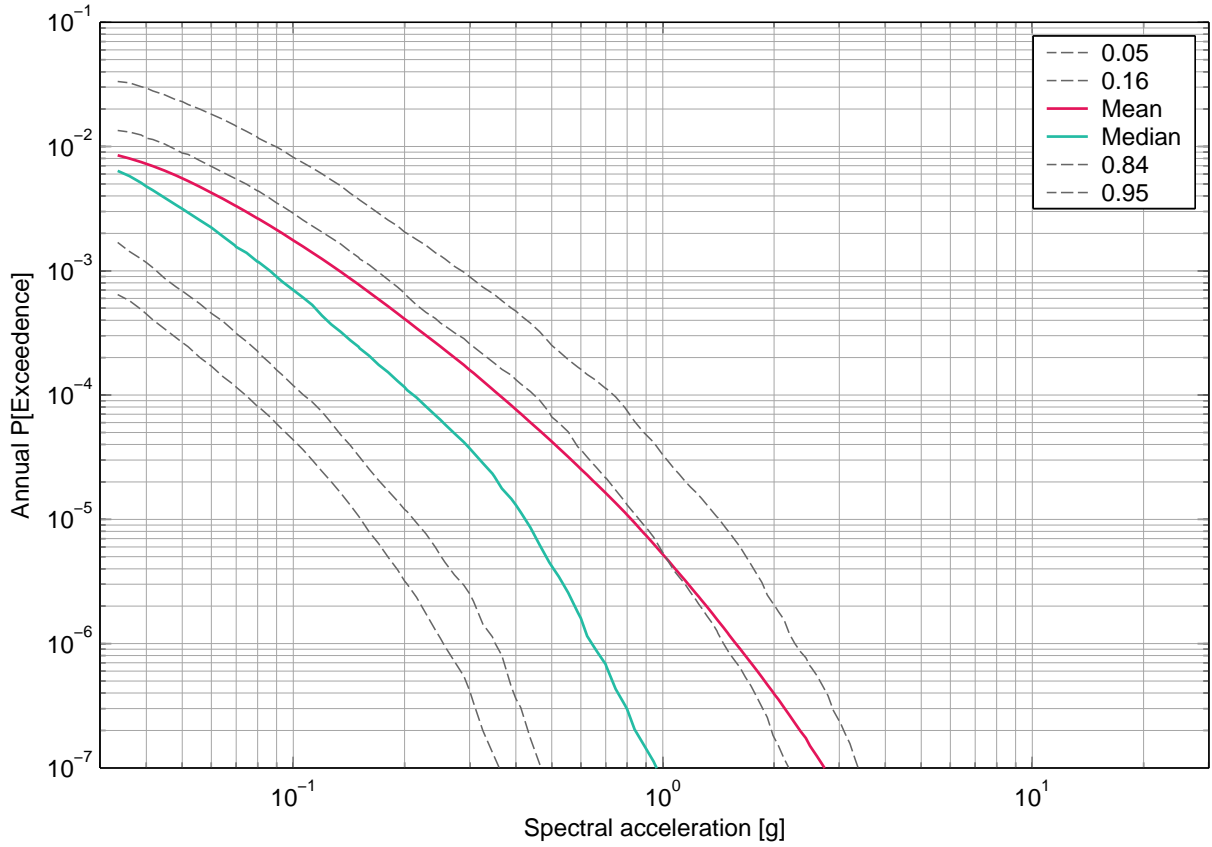


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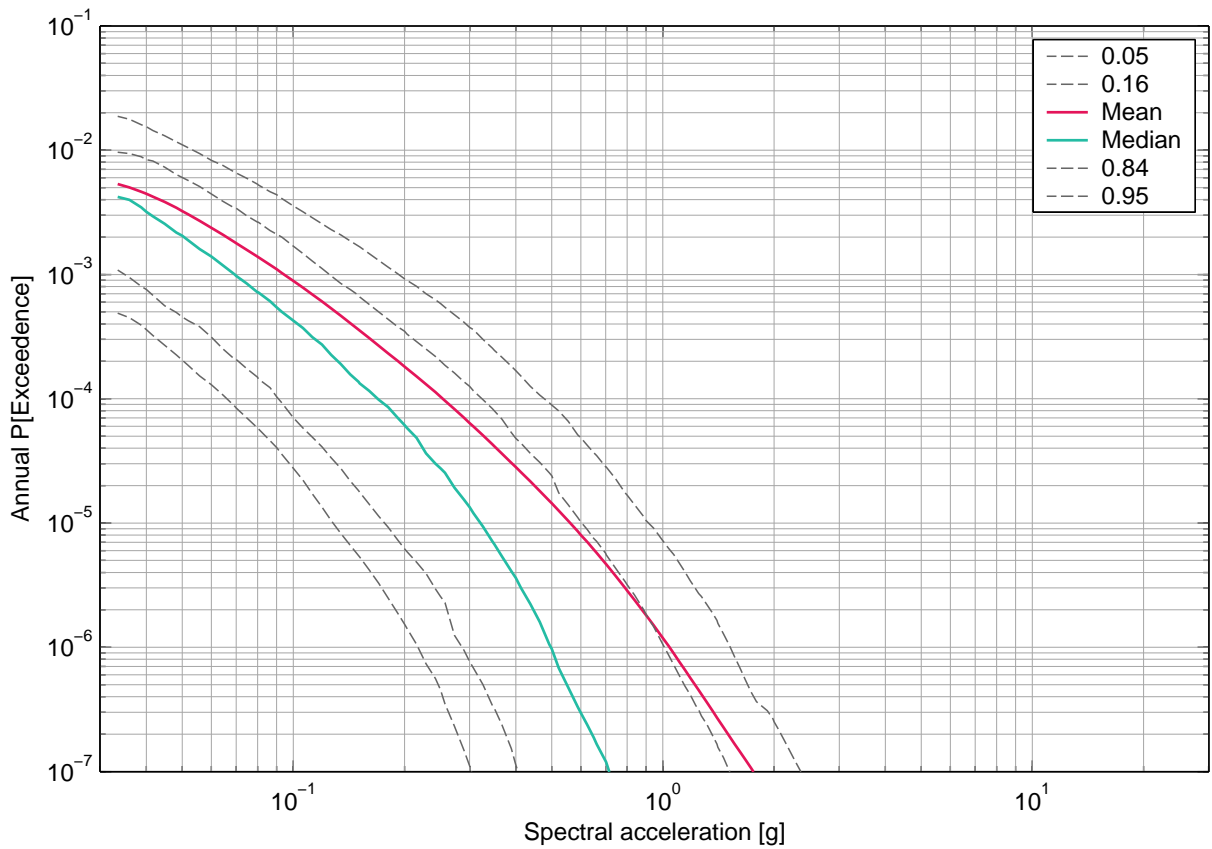


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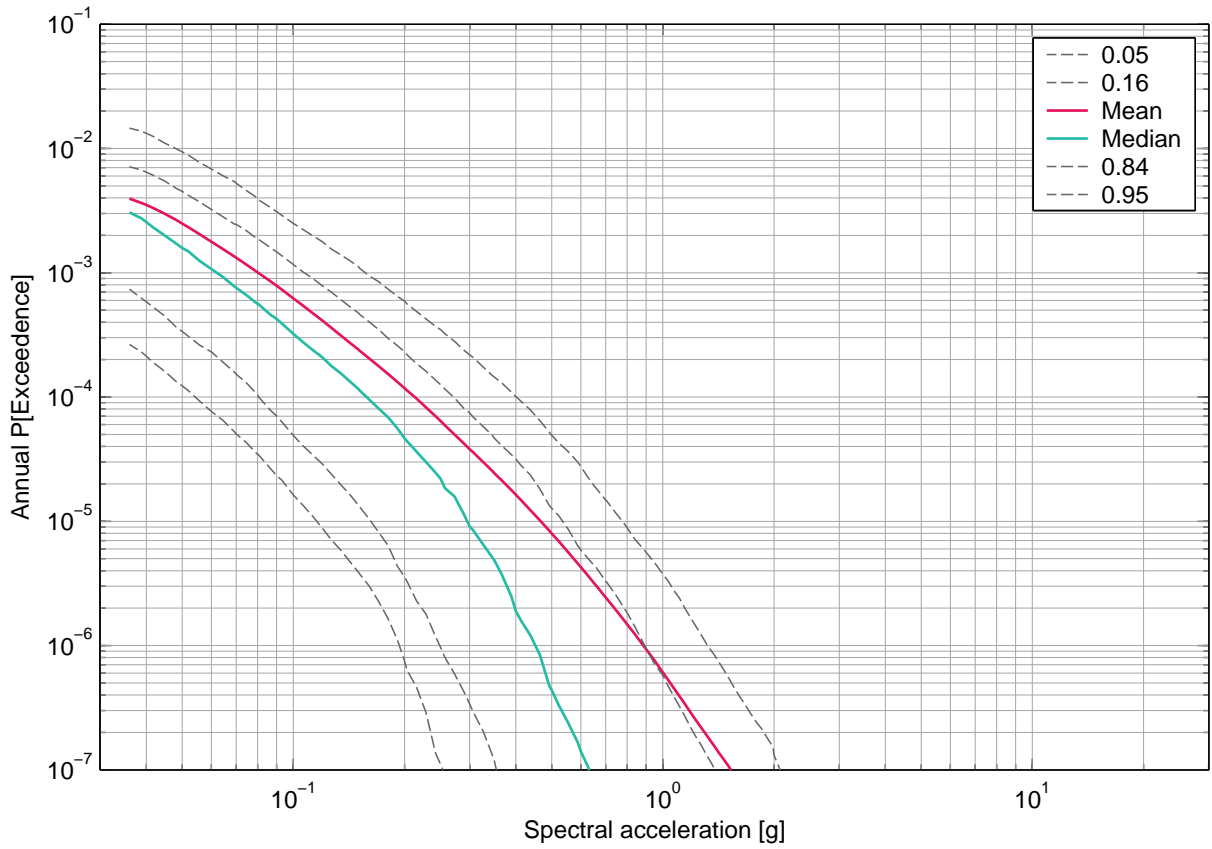


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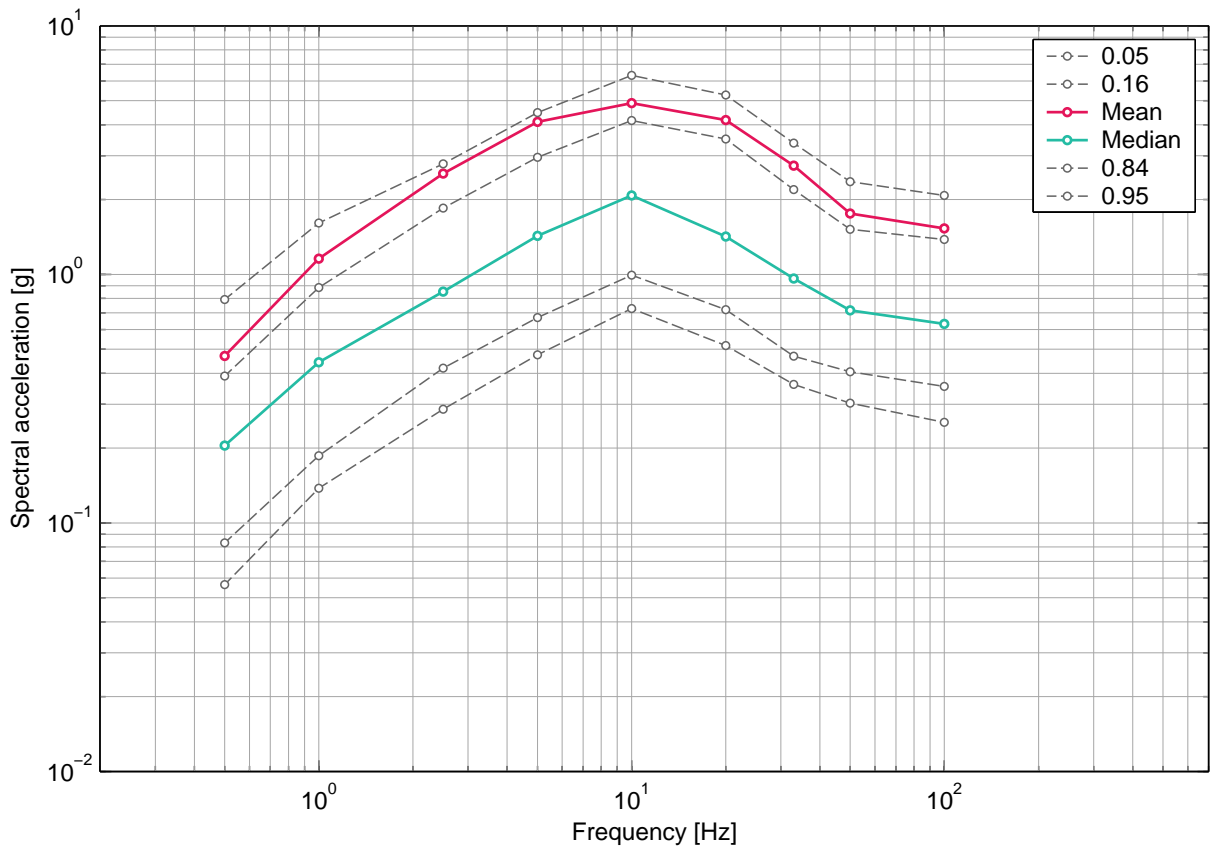


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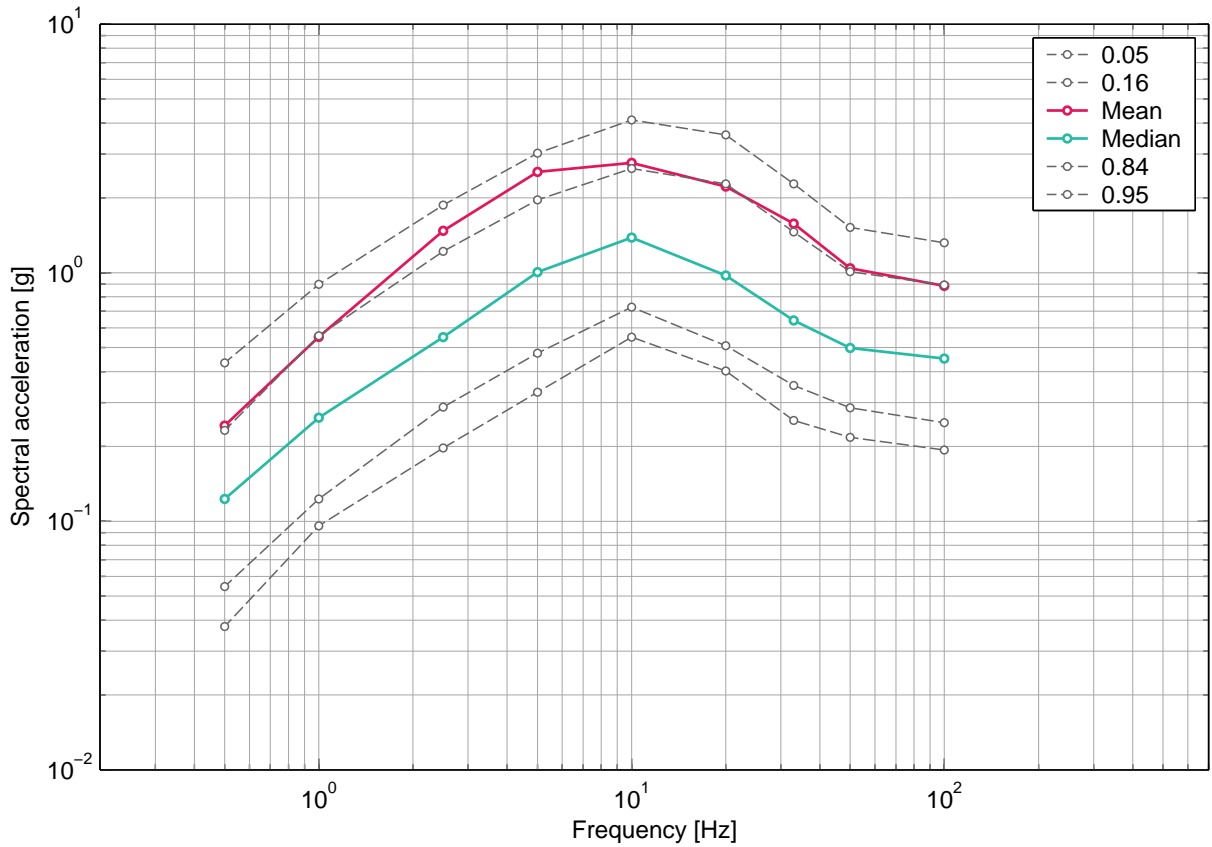


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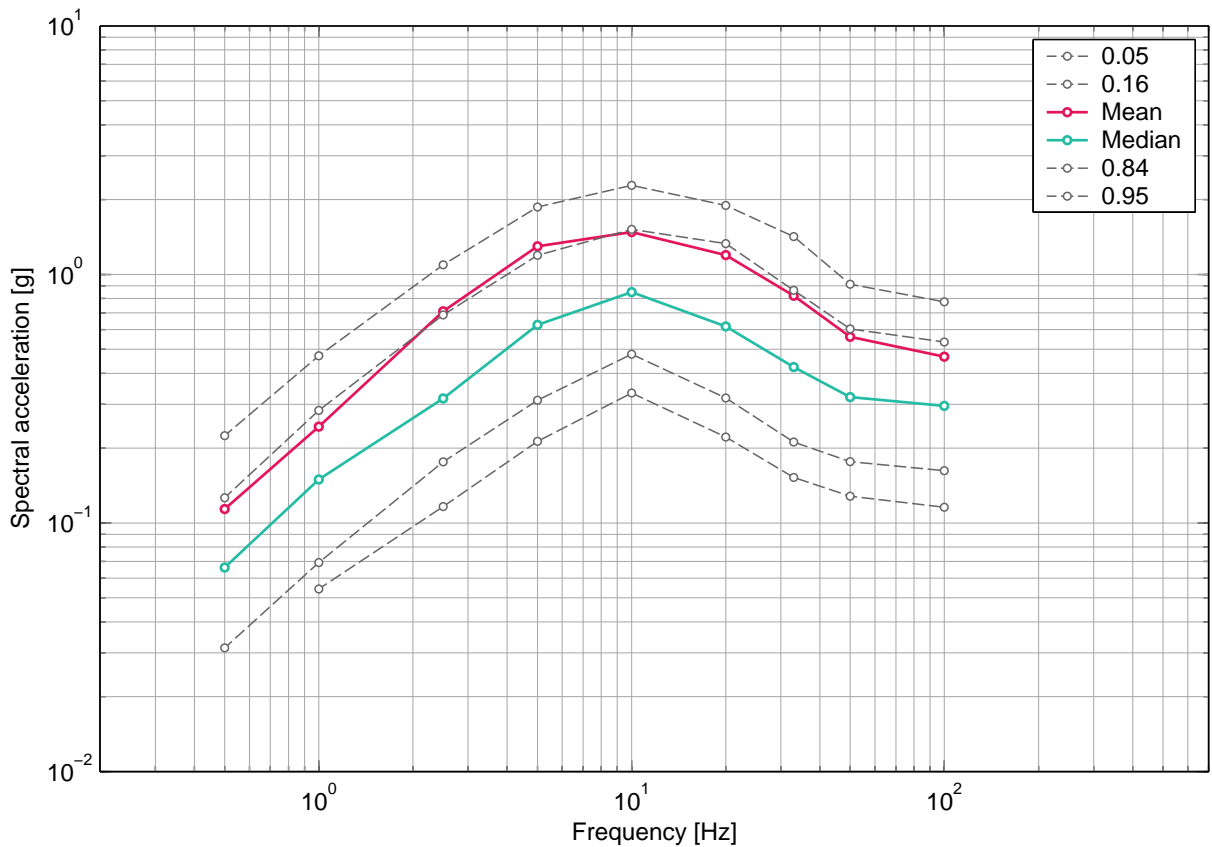


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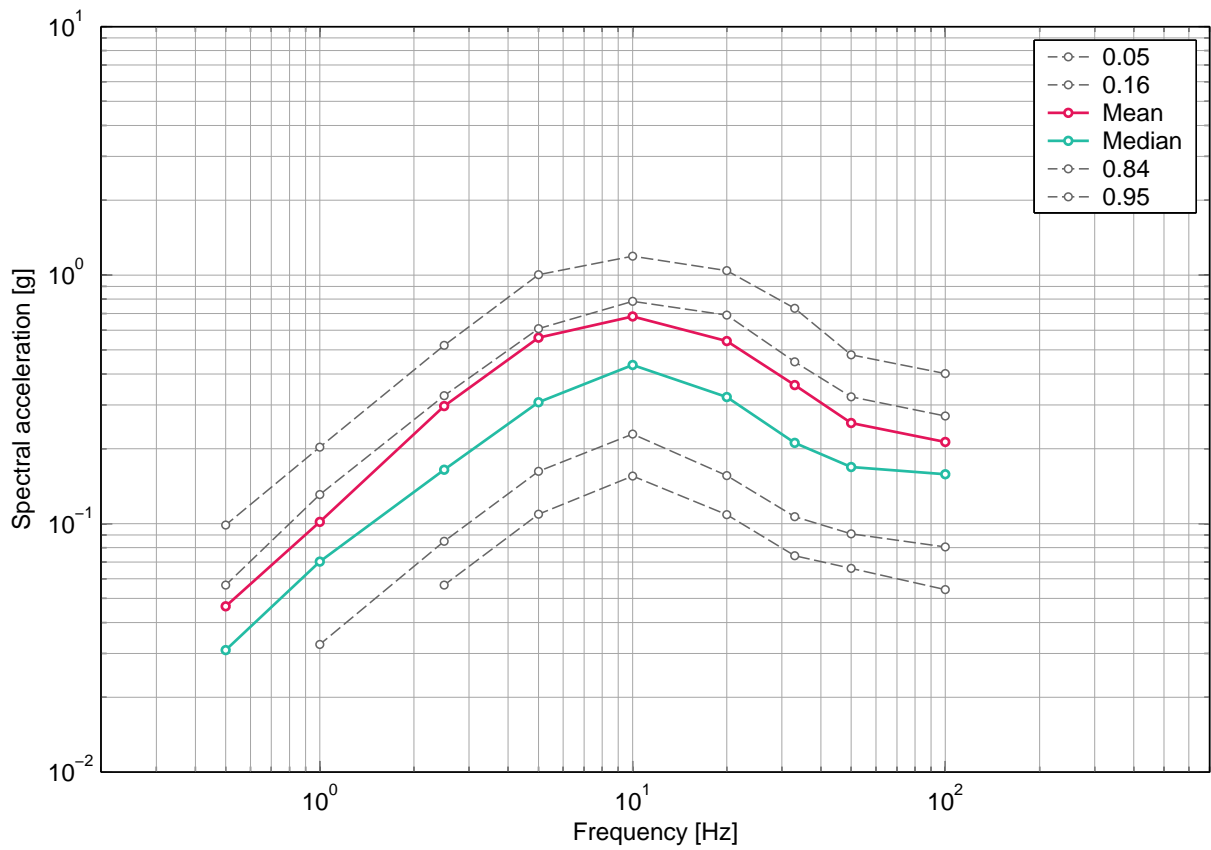


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### 3 GÖSGEN

#### 3.1 Gösgen, Rock Hazard, Horizontal Component, Surface

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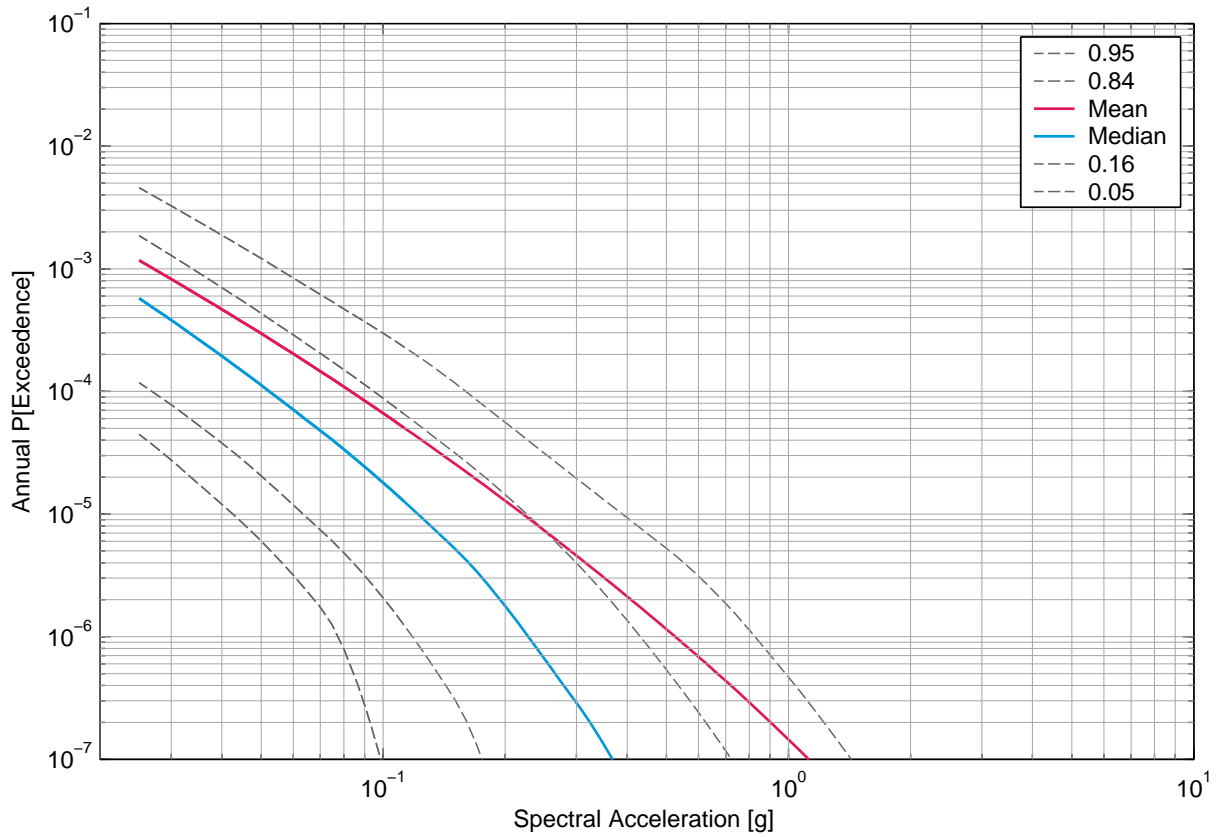


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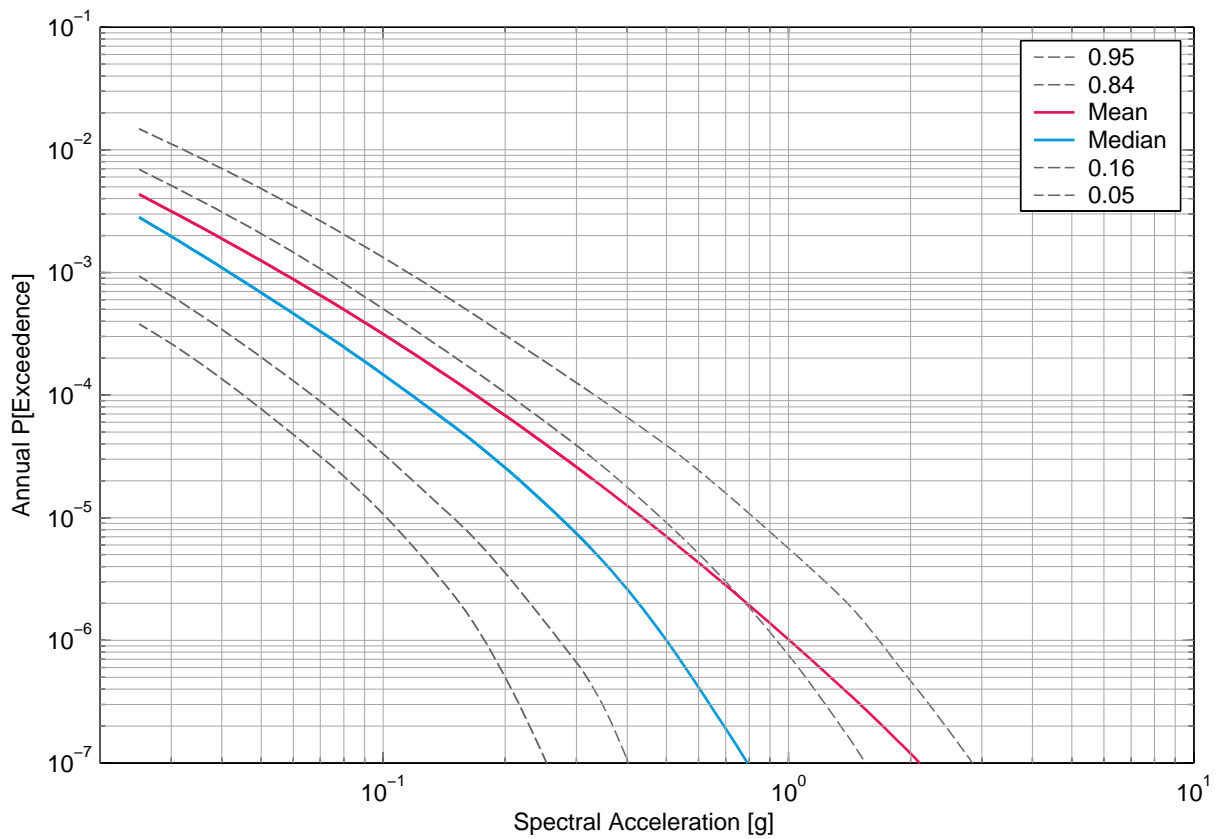


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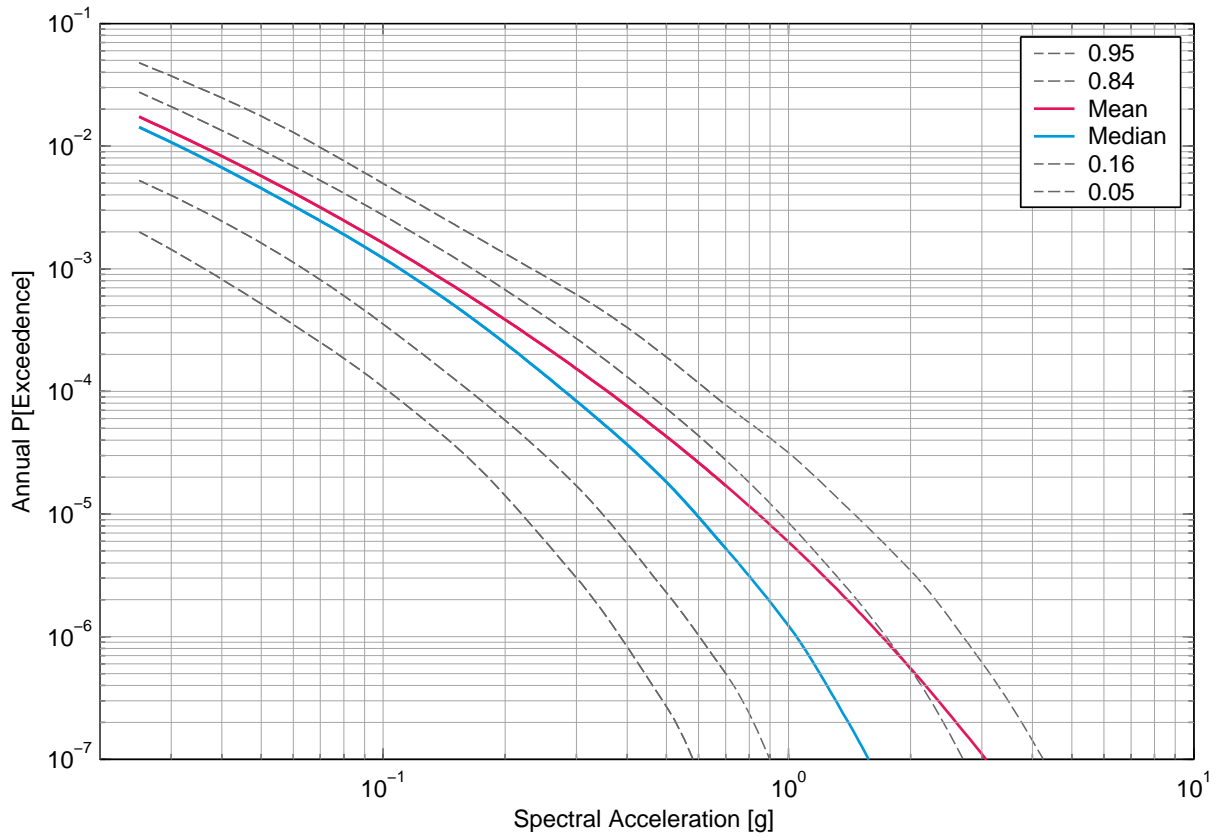


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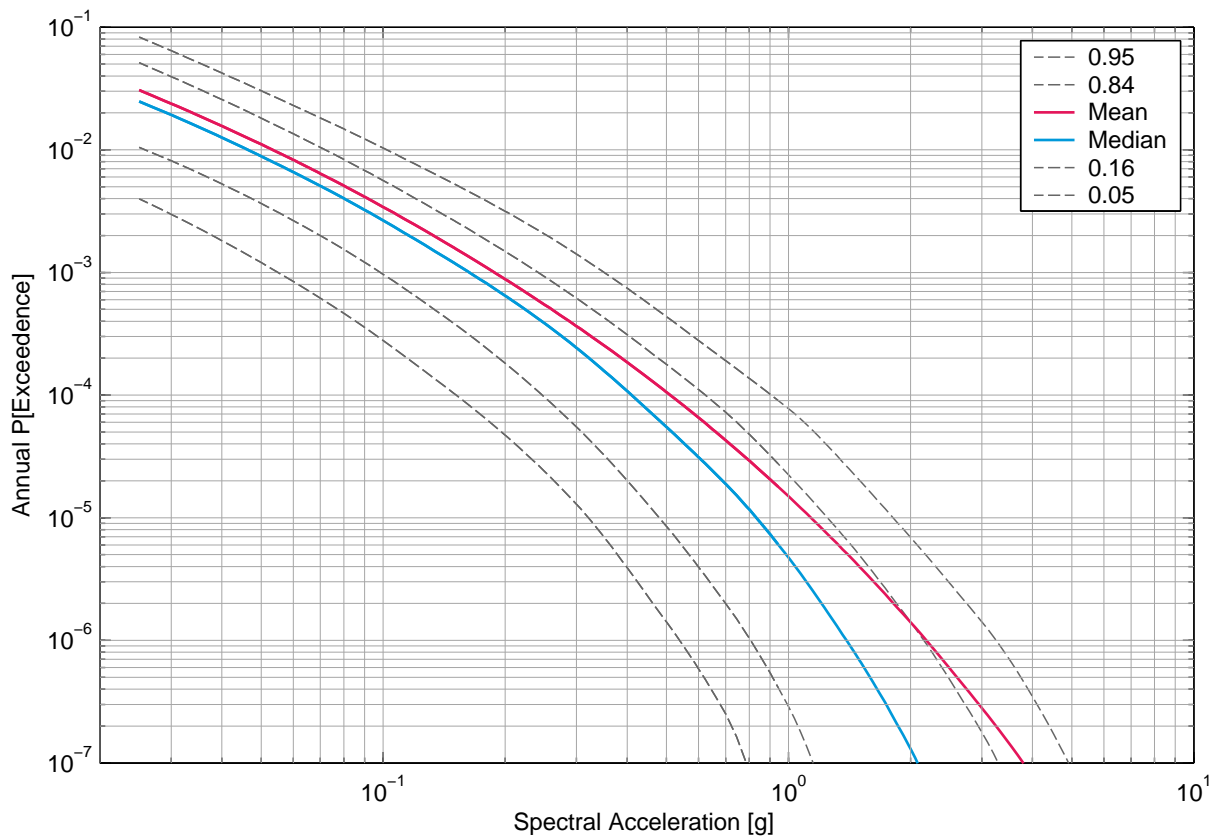


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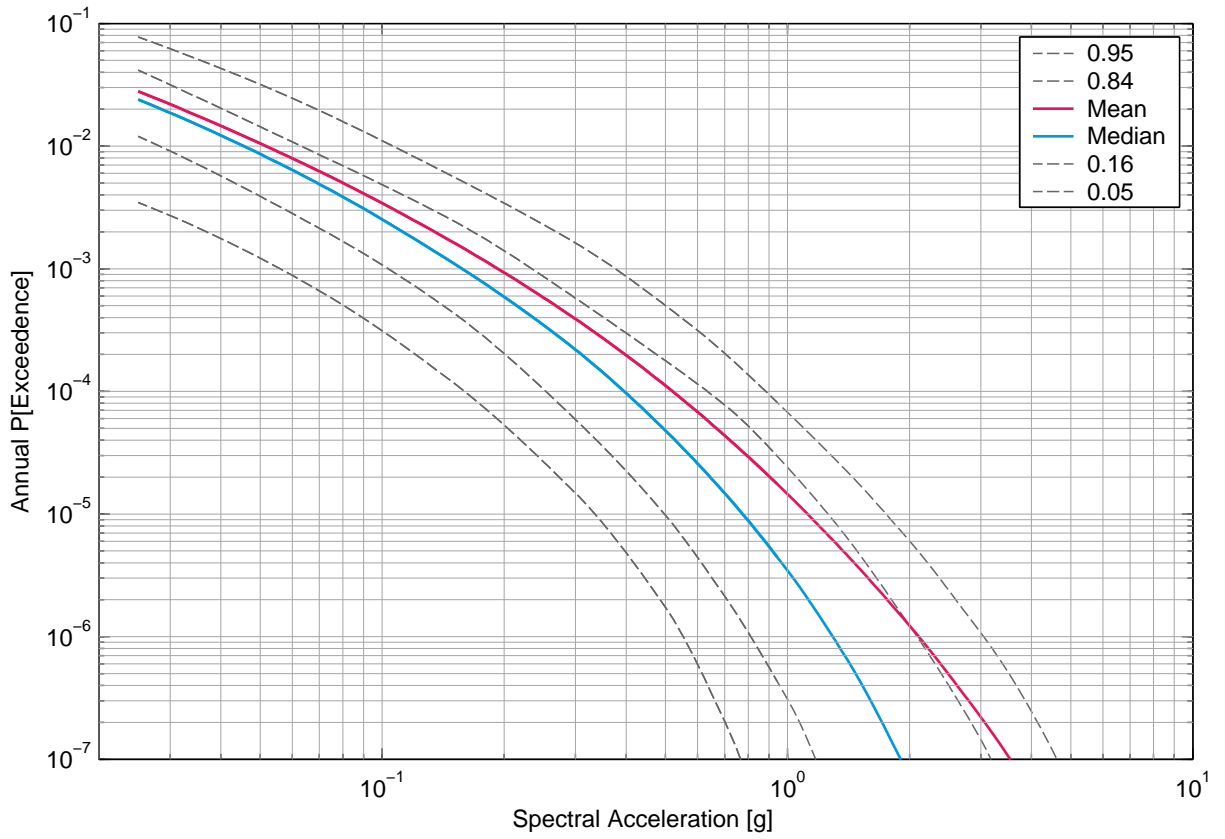


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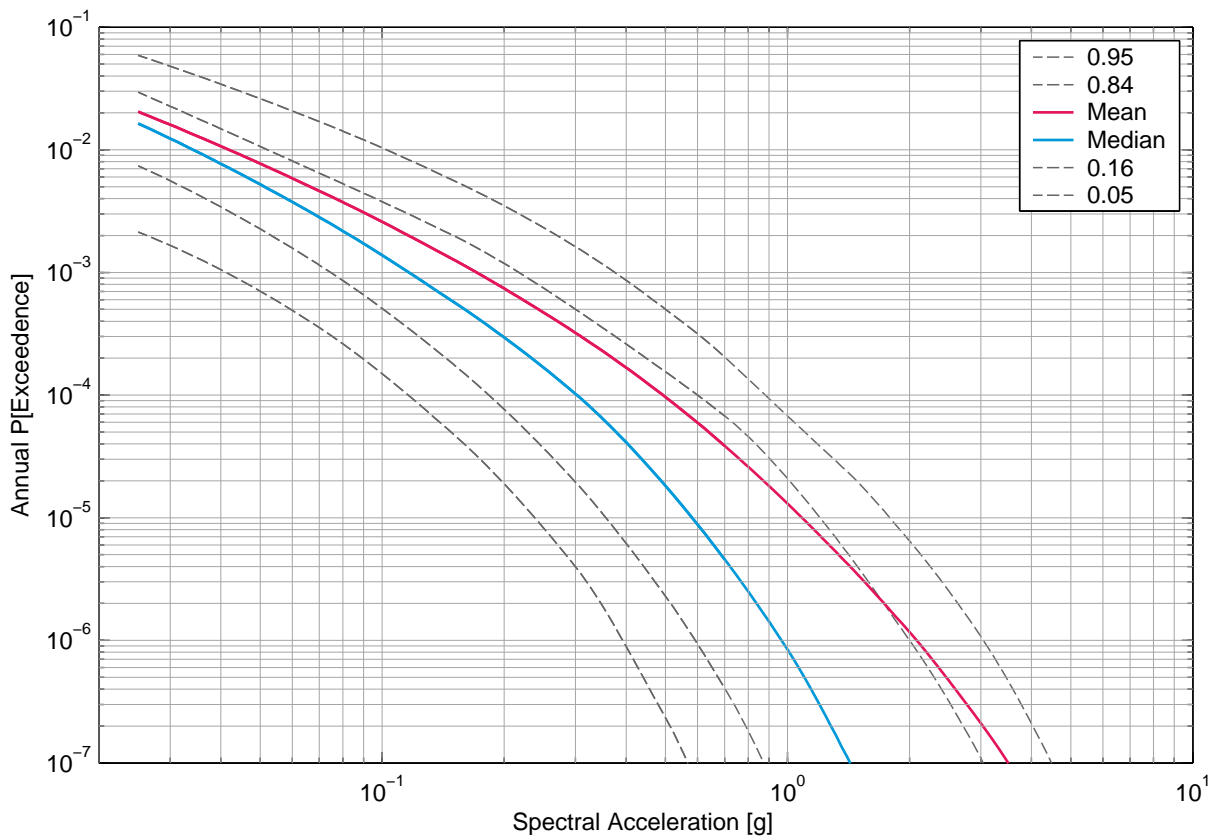


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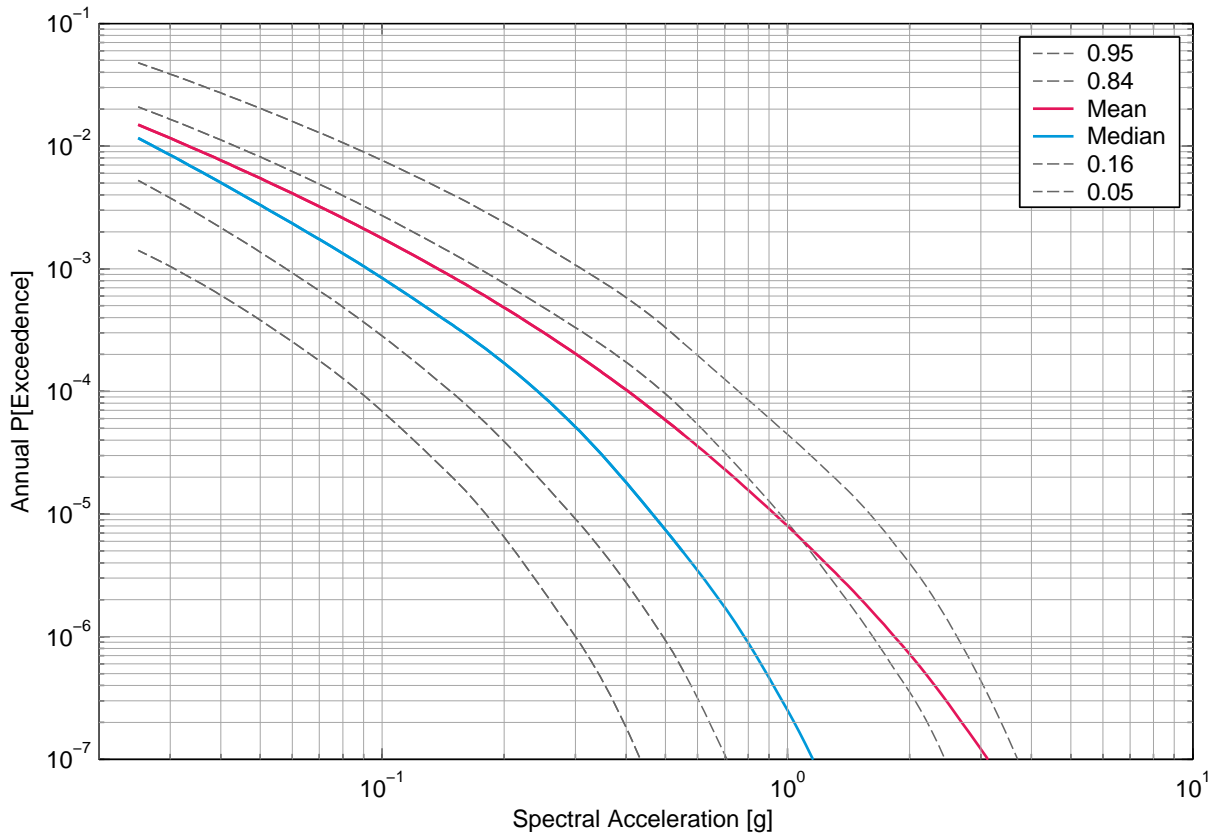


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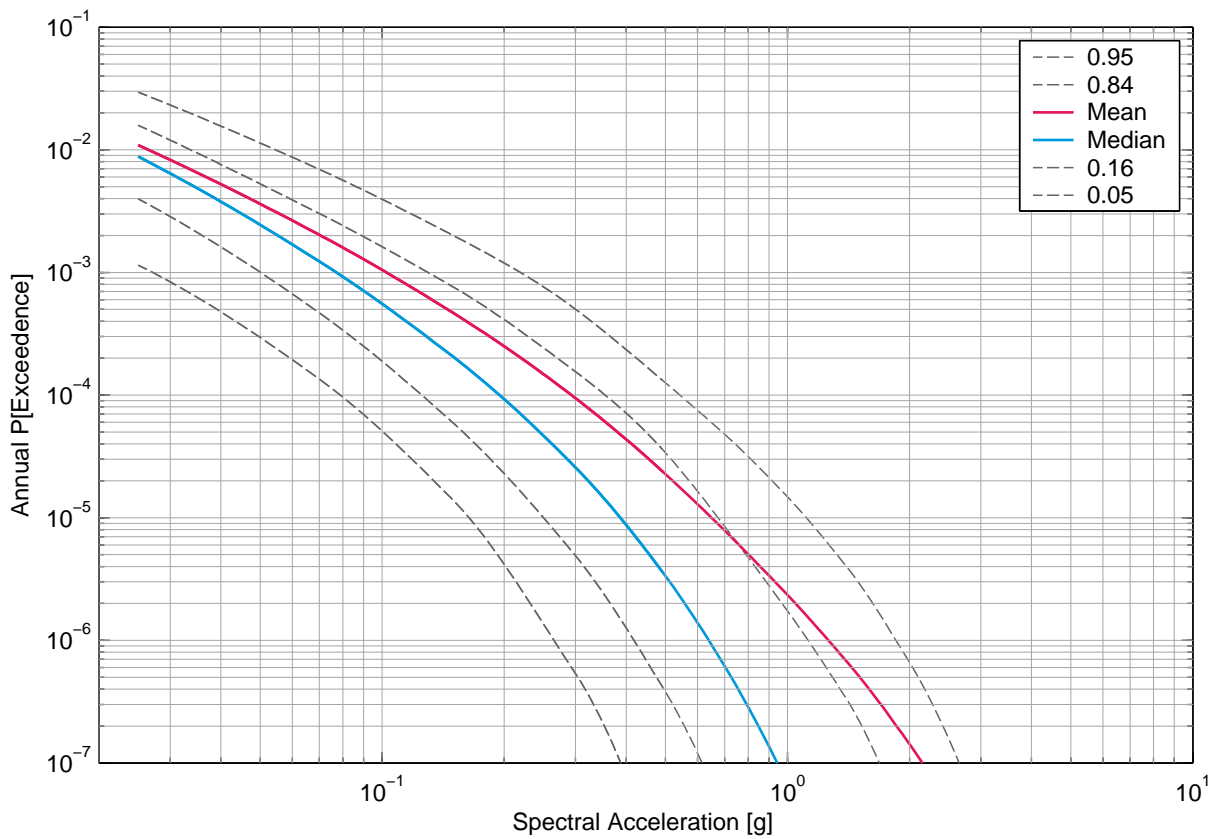


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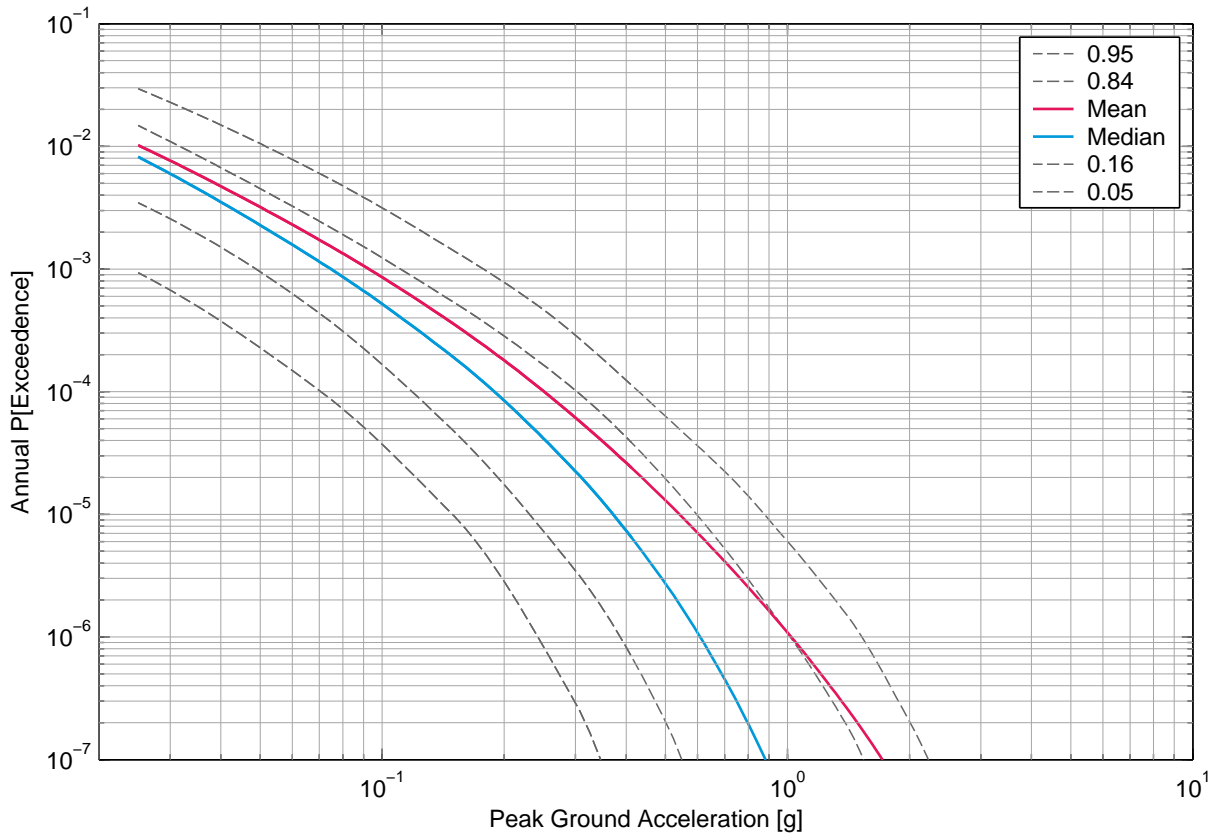


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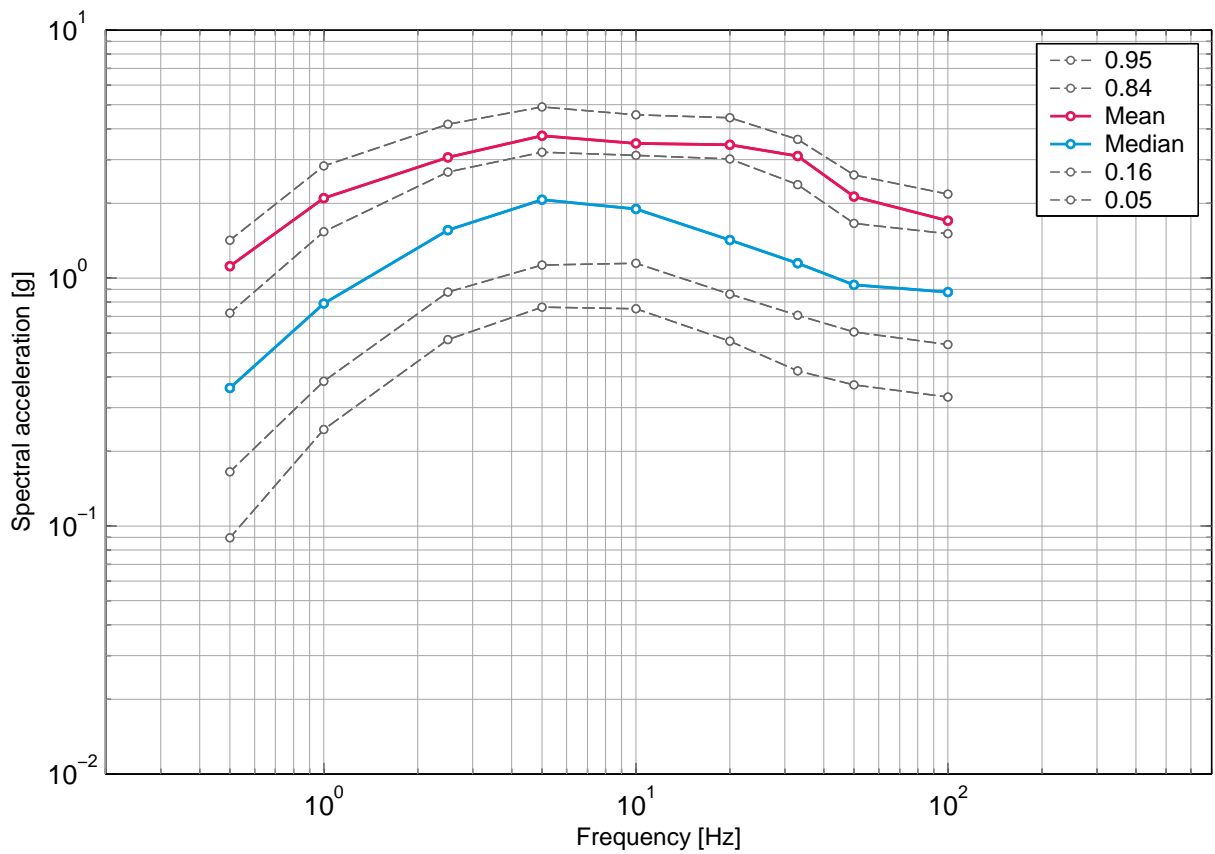


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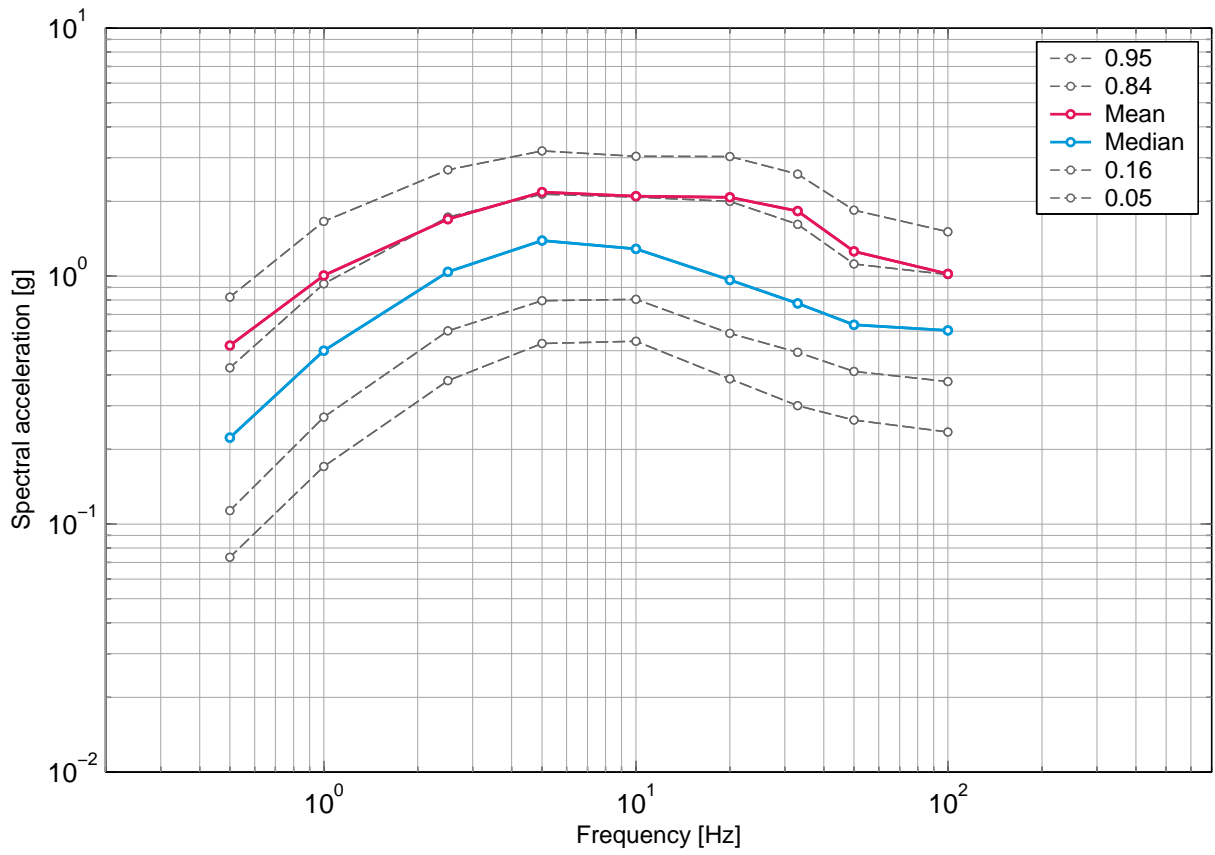


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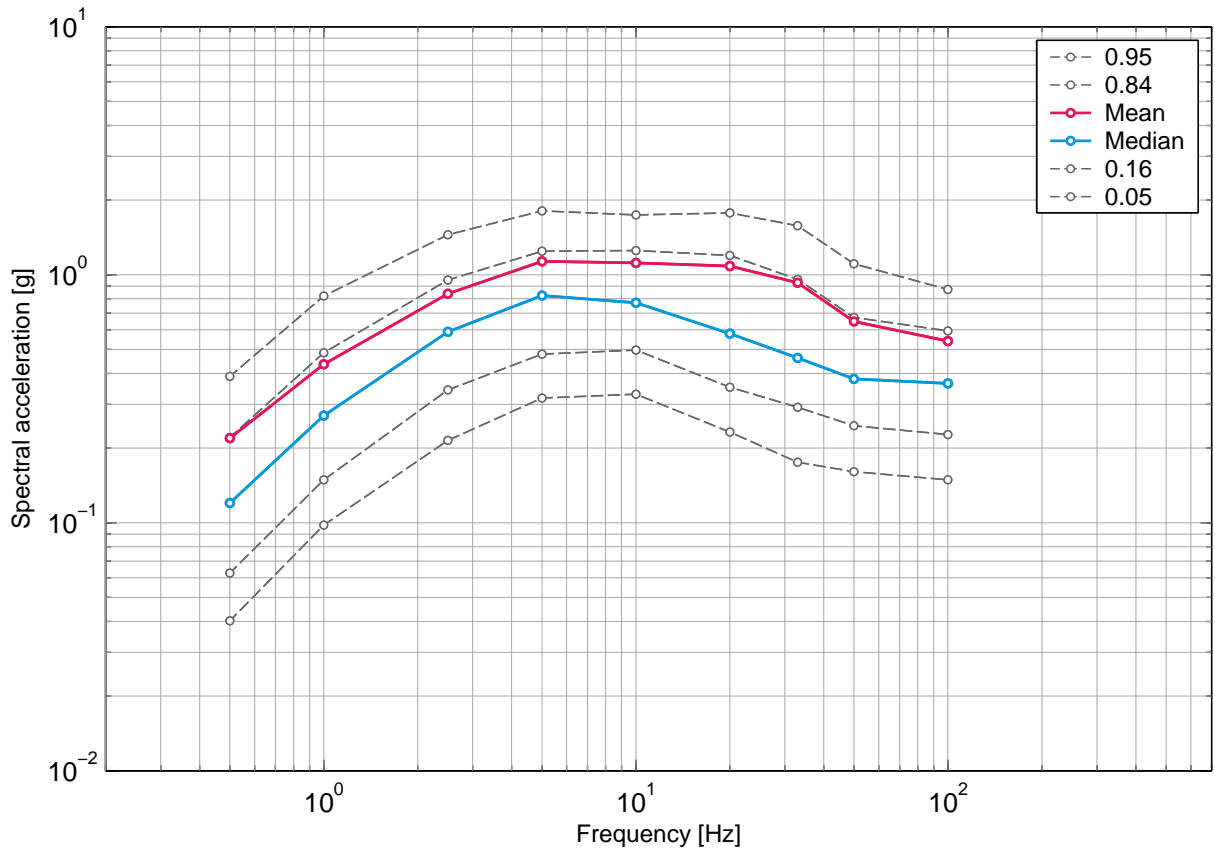


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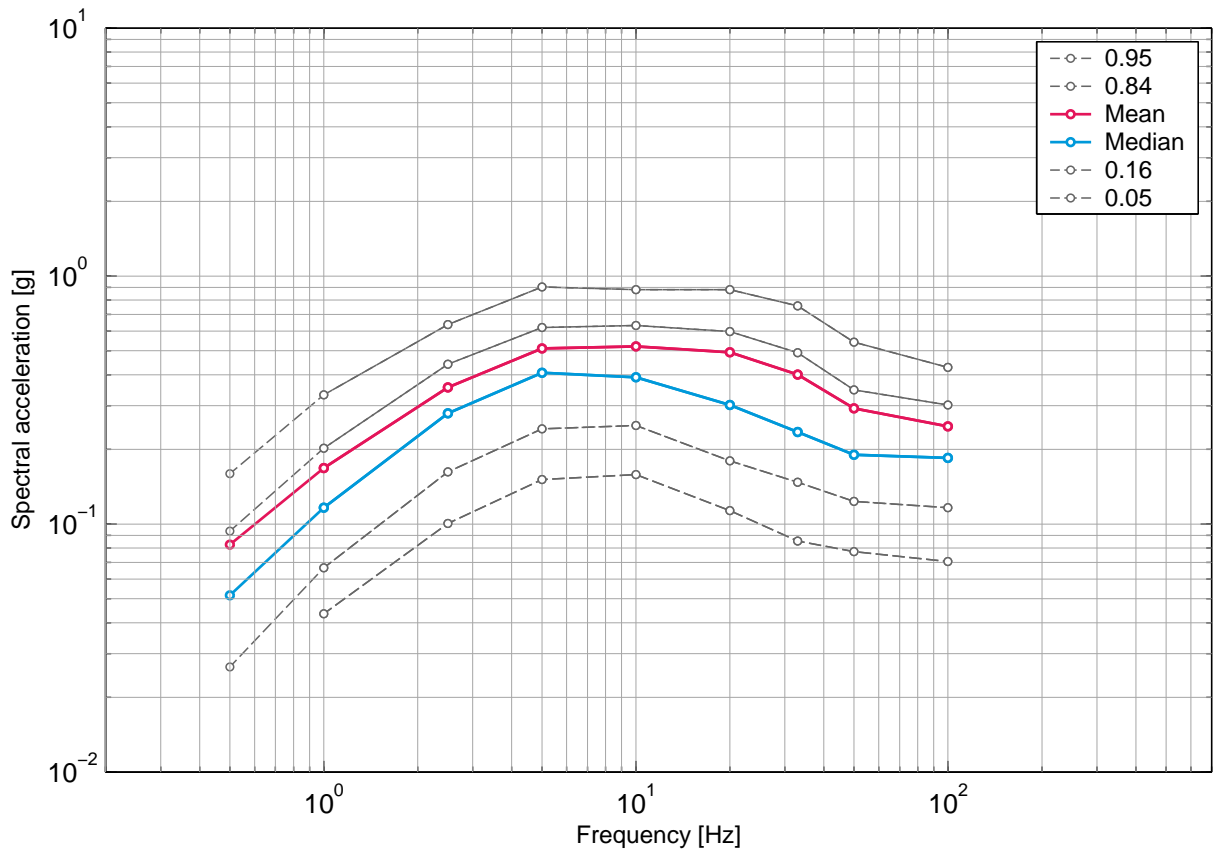


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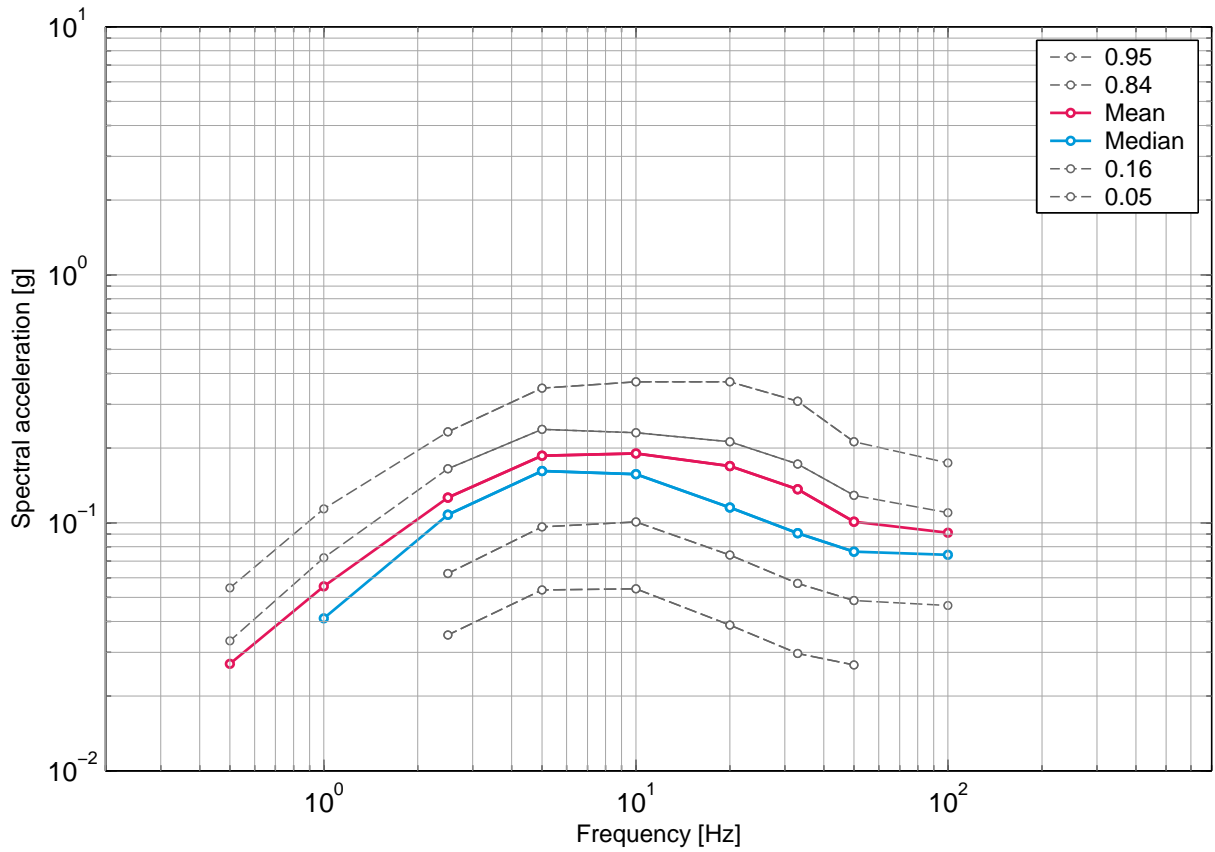


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### 3.2 Gösgen, Soil Hazard, Horizontal Component, Surface

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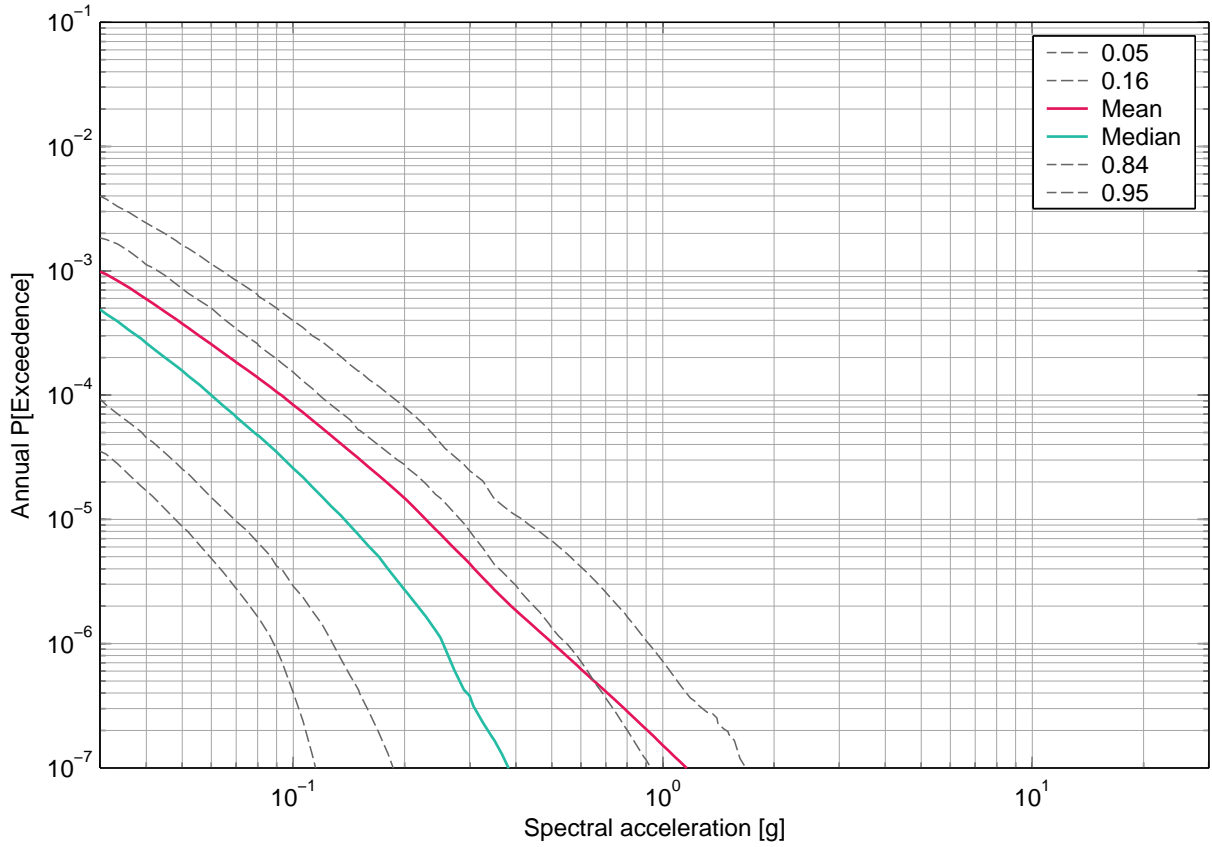


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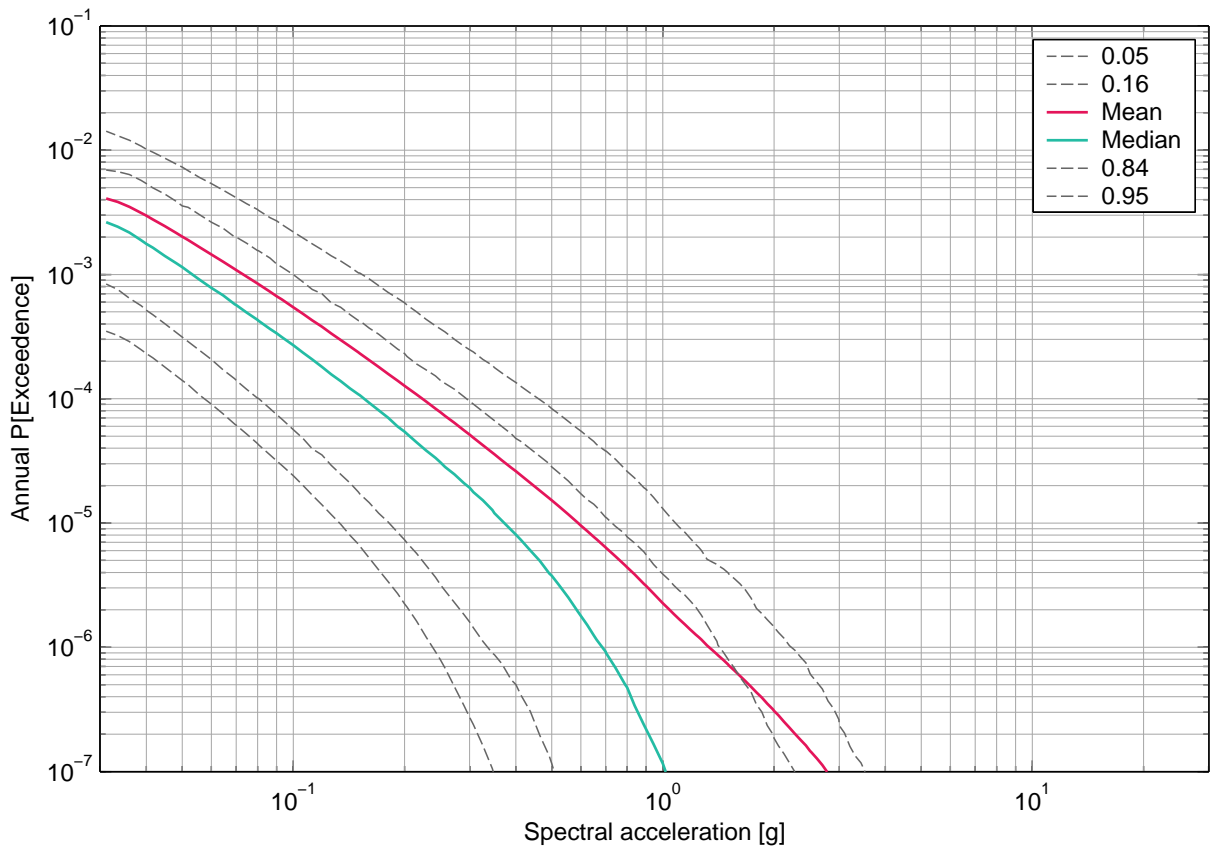


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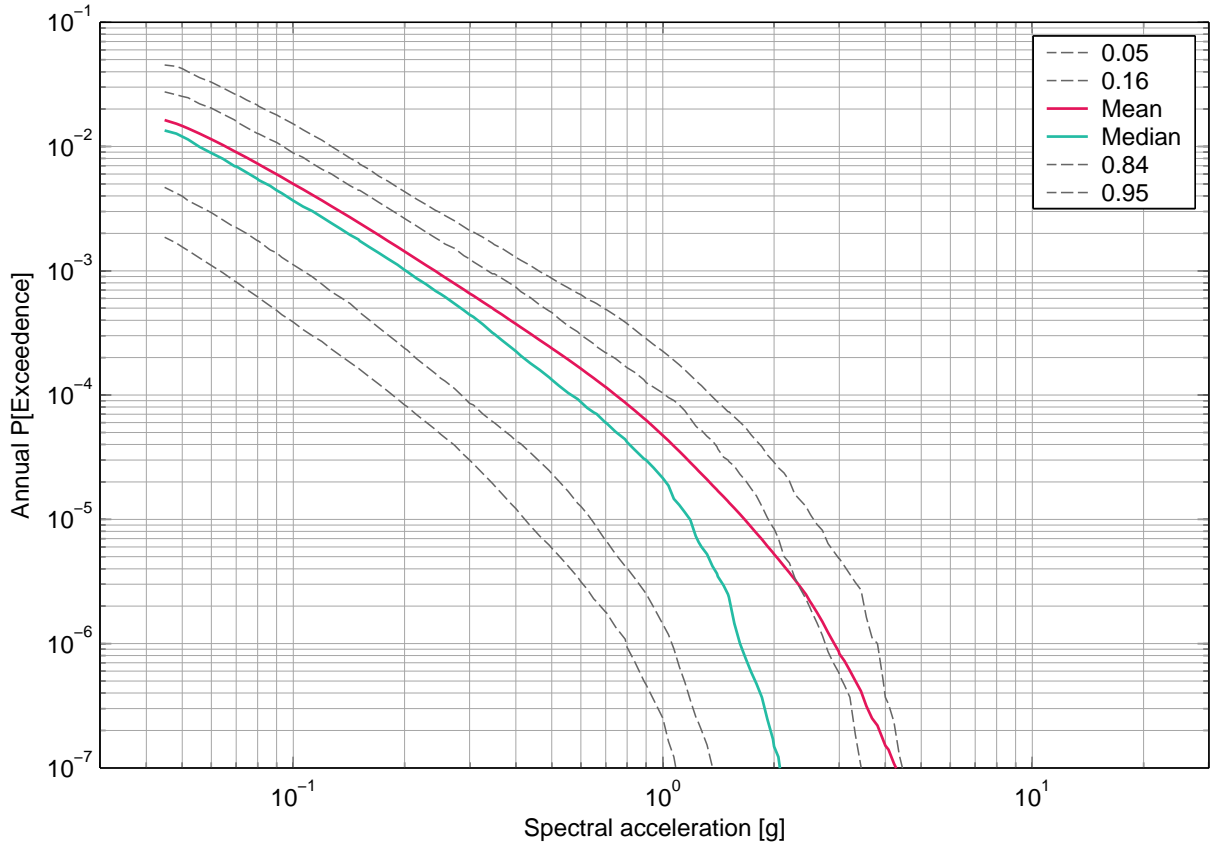


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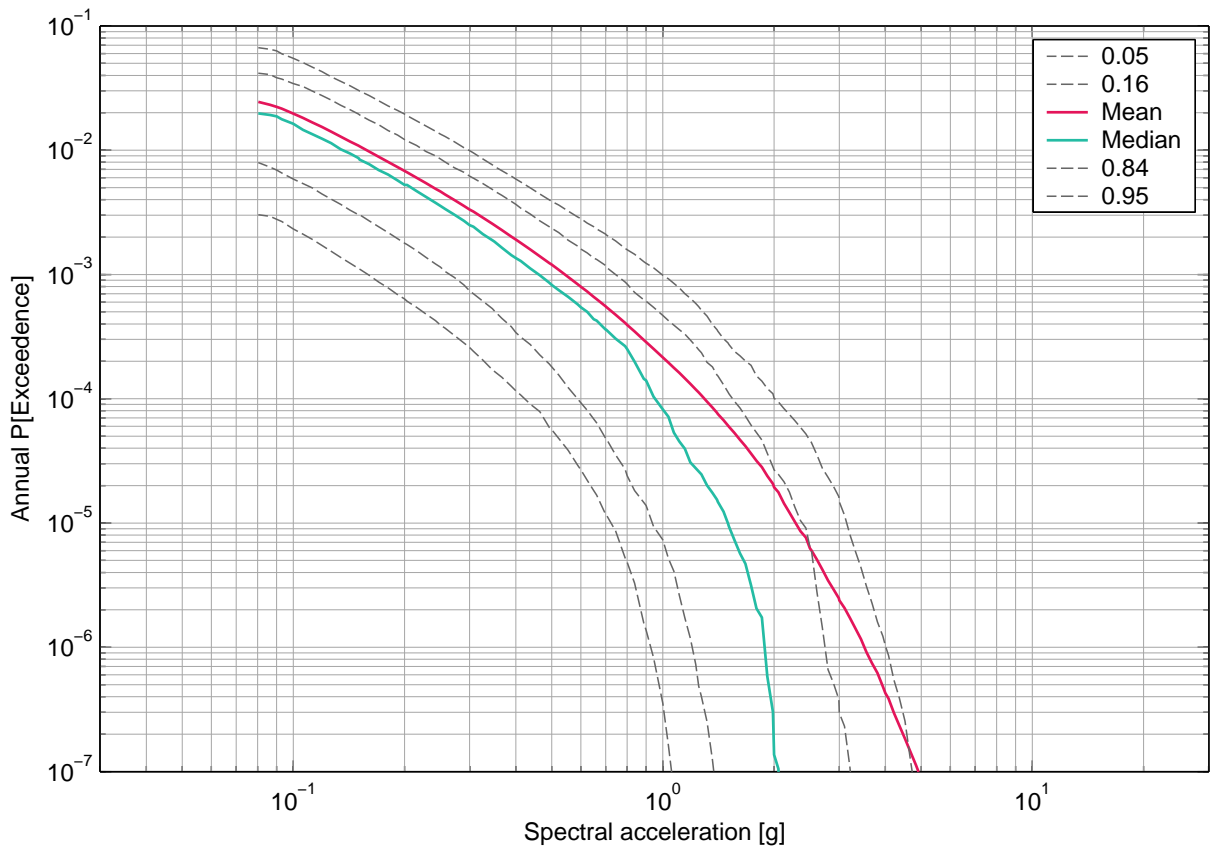


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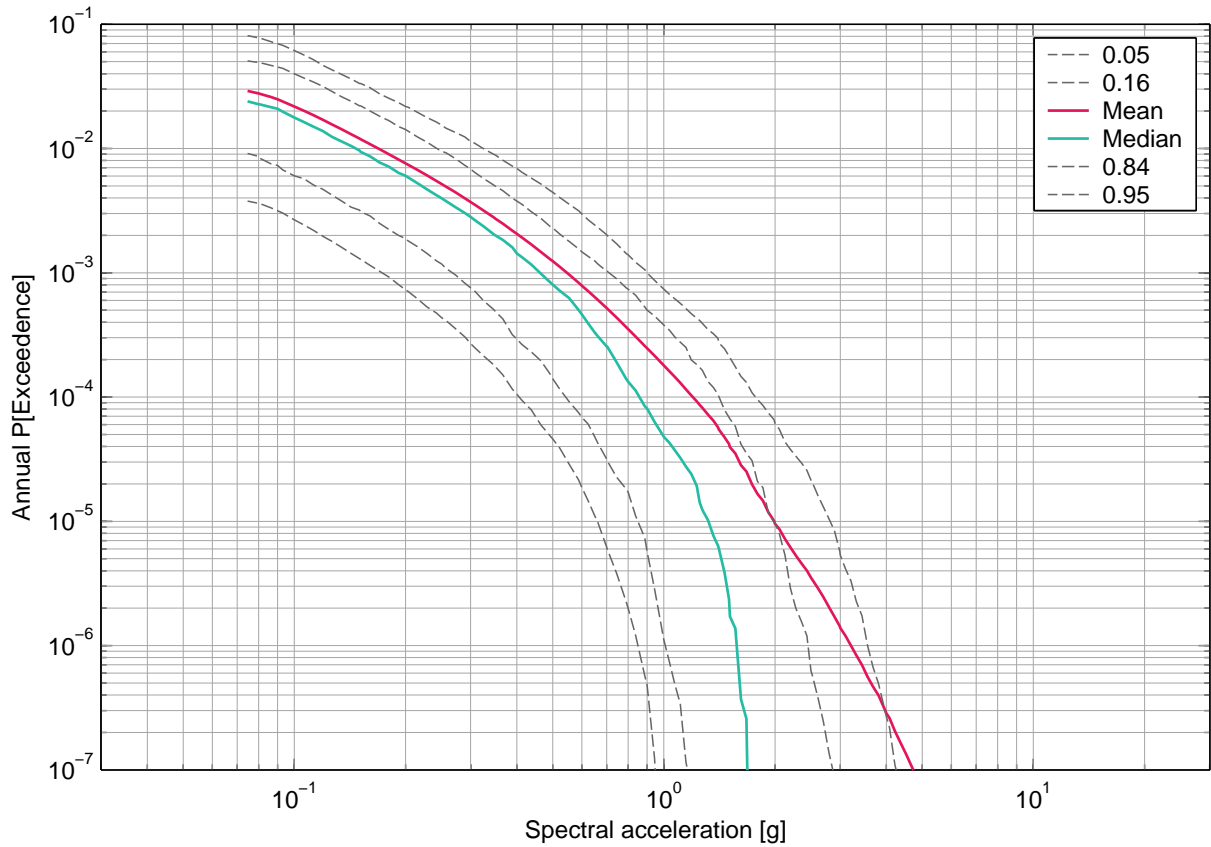


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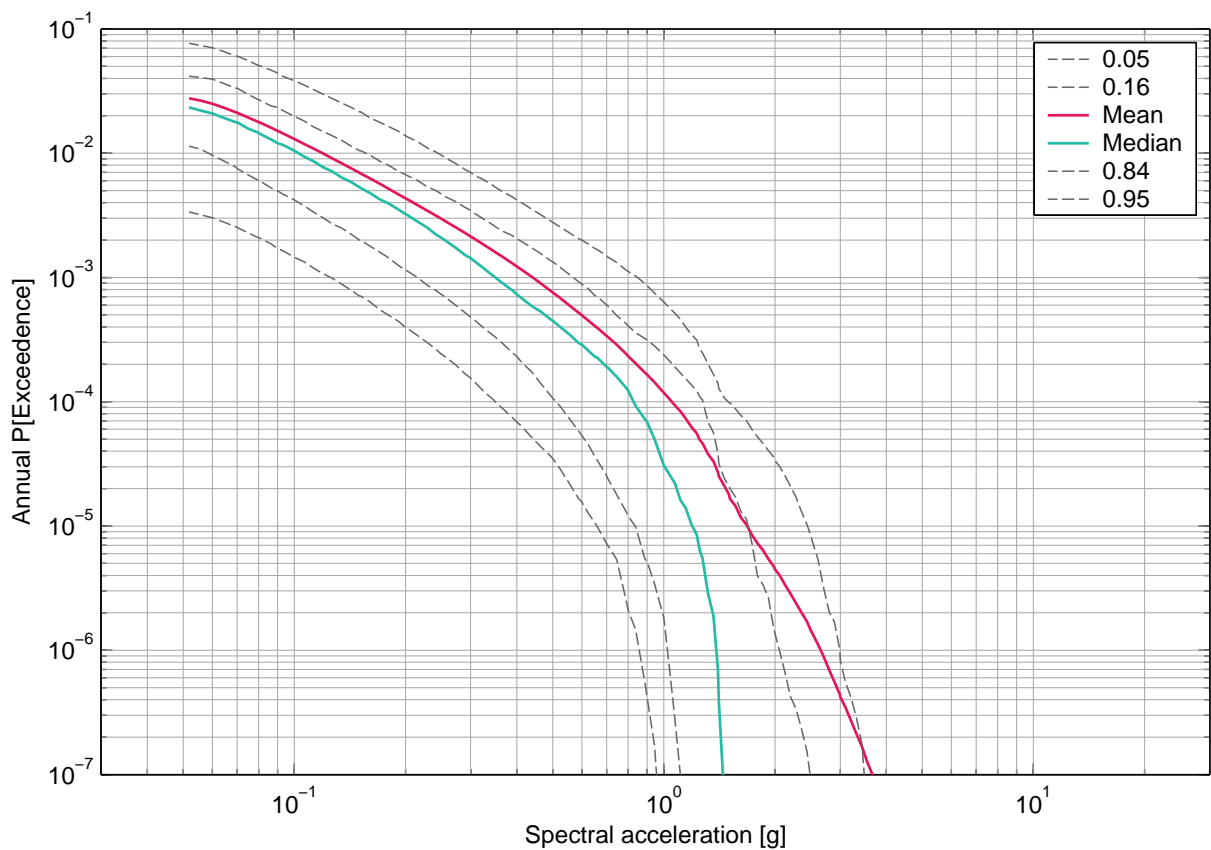


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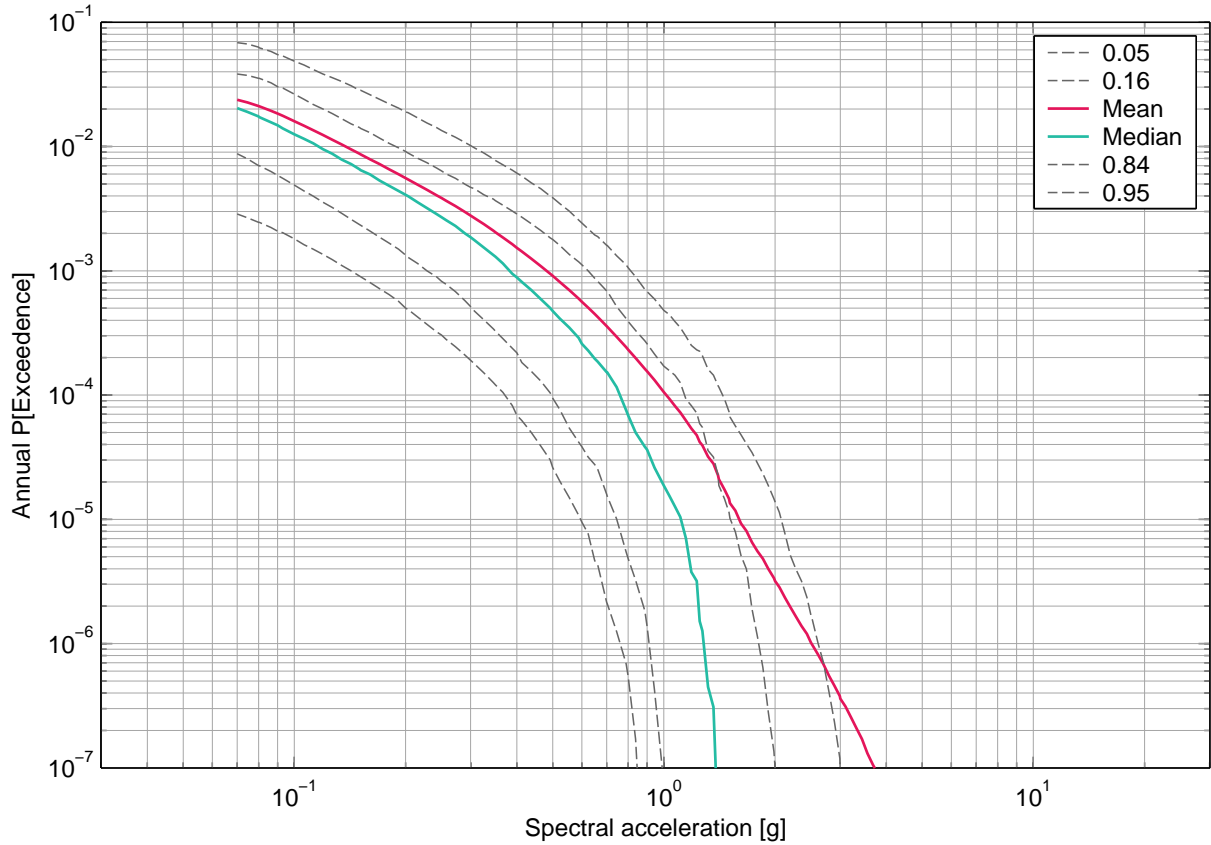


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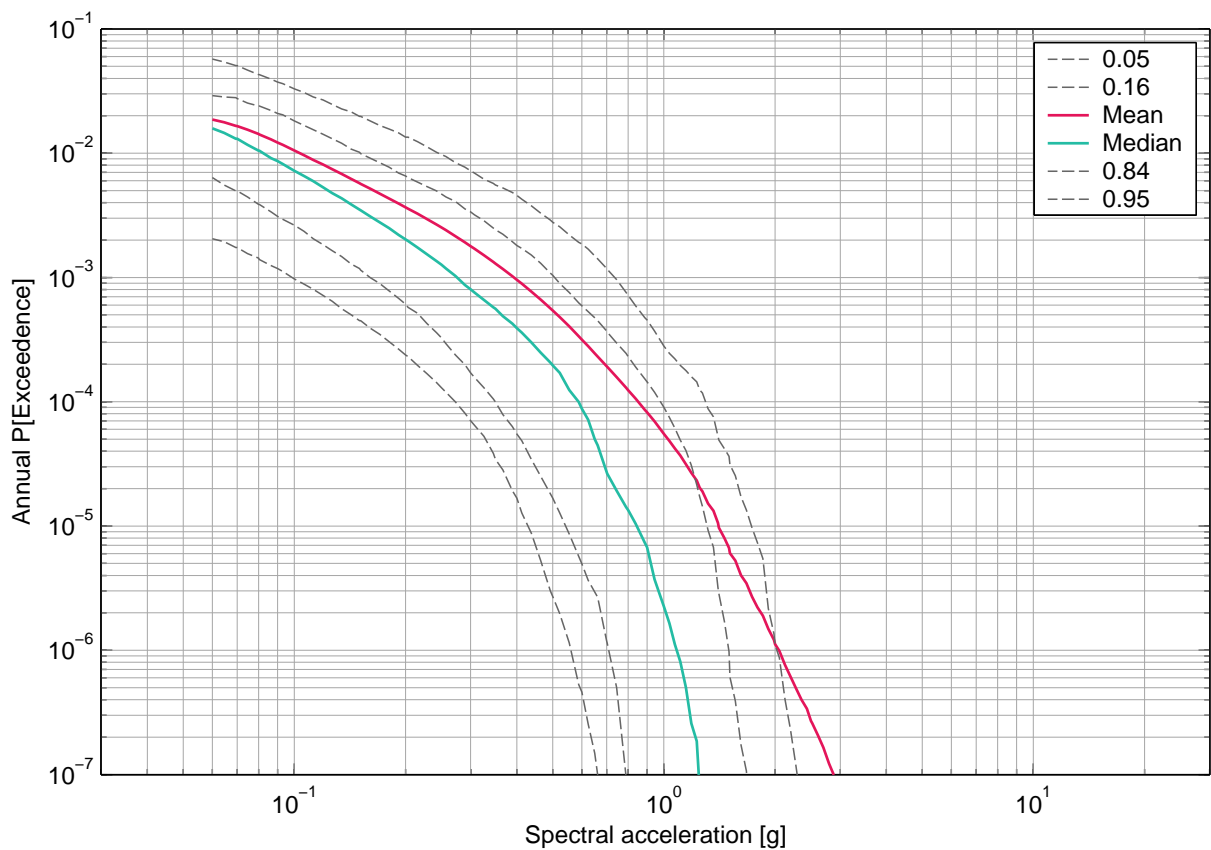


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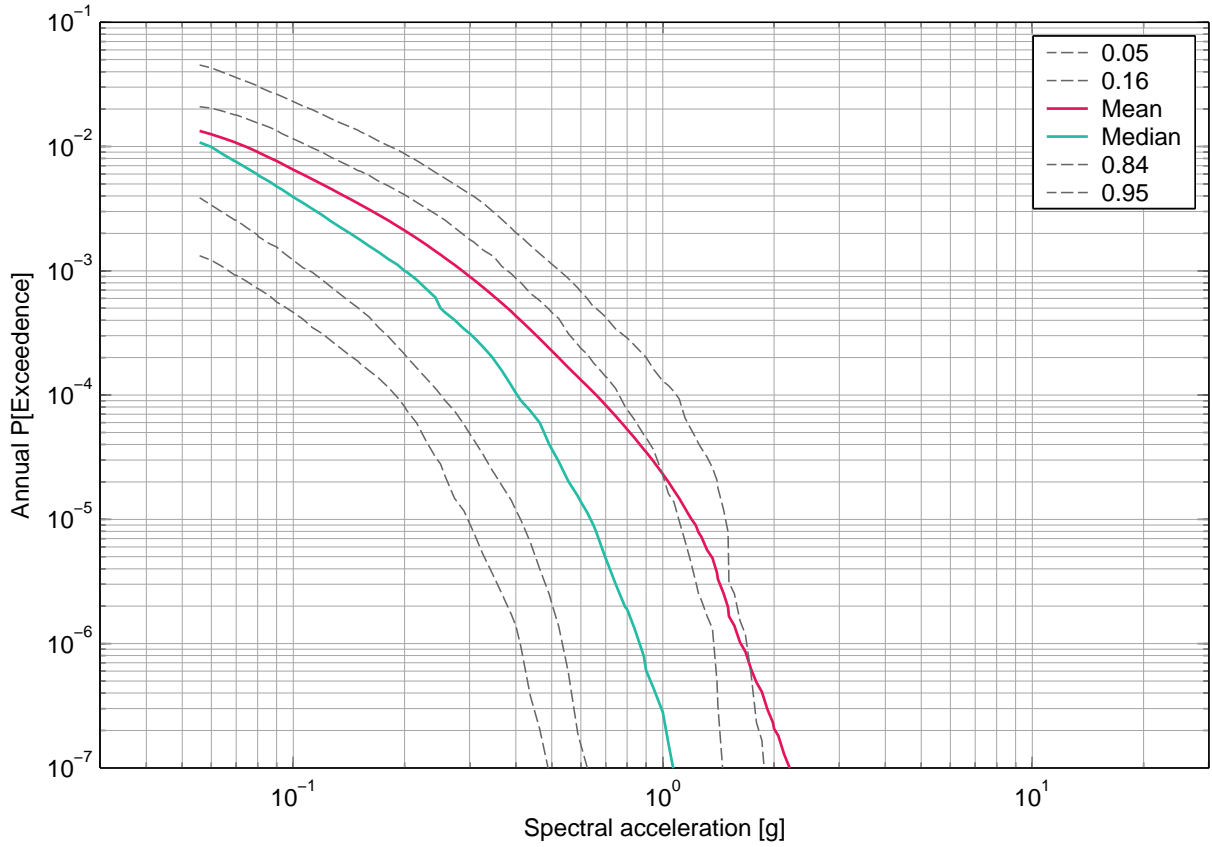


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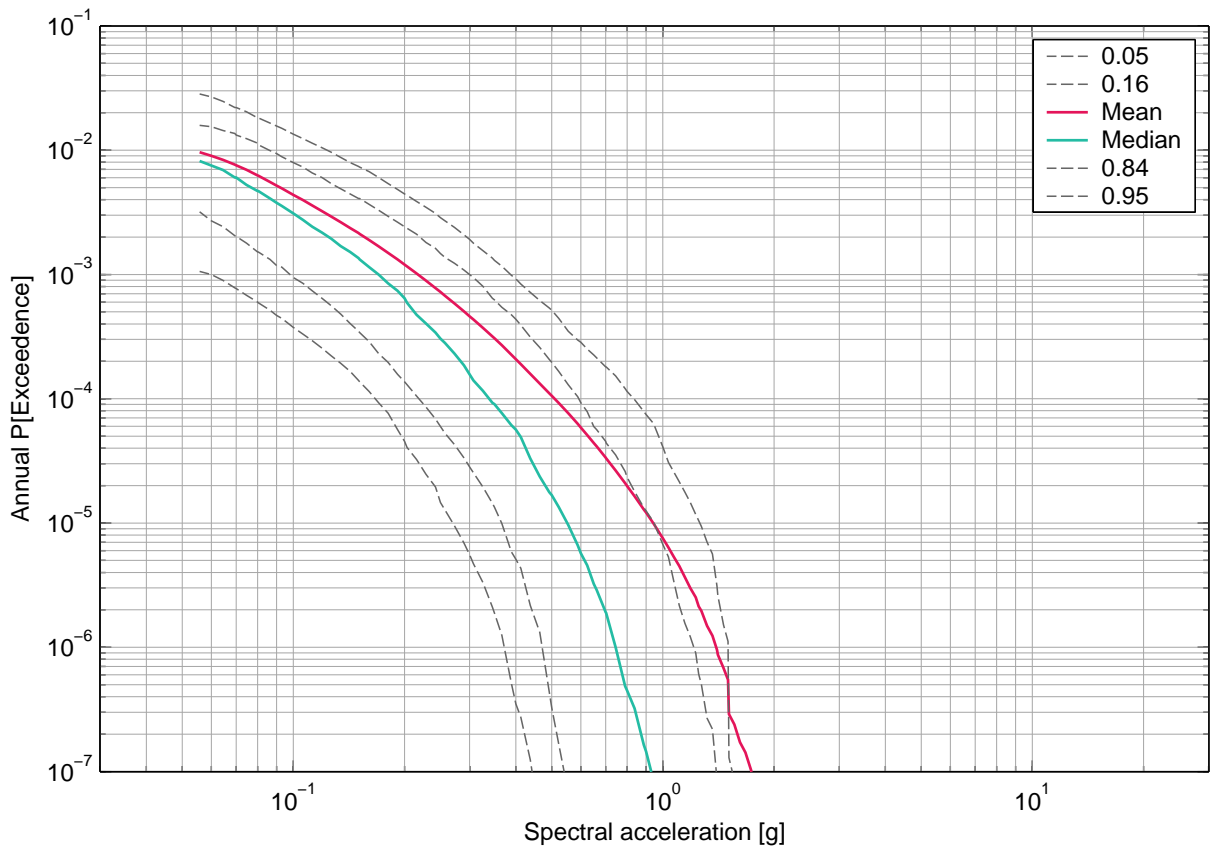


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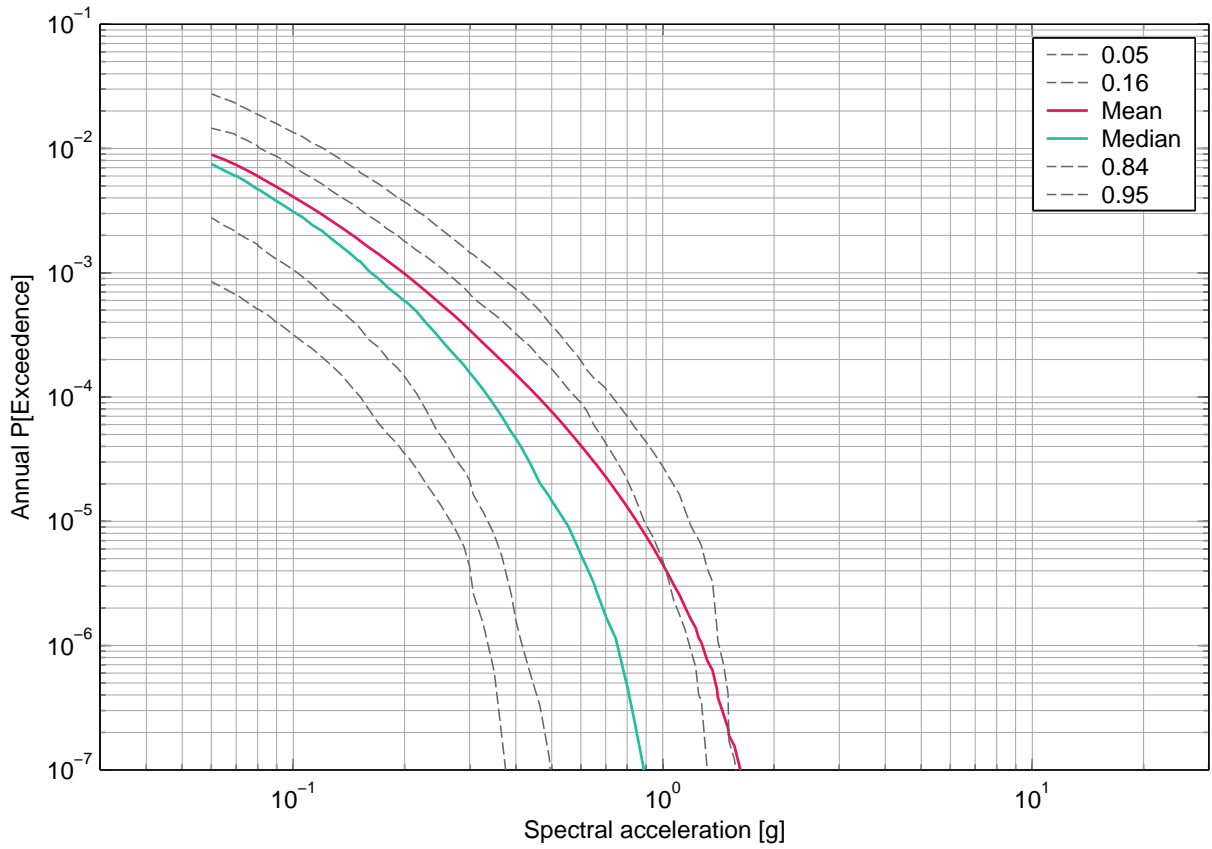


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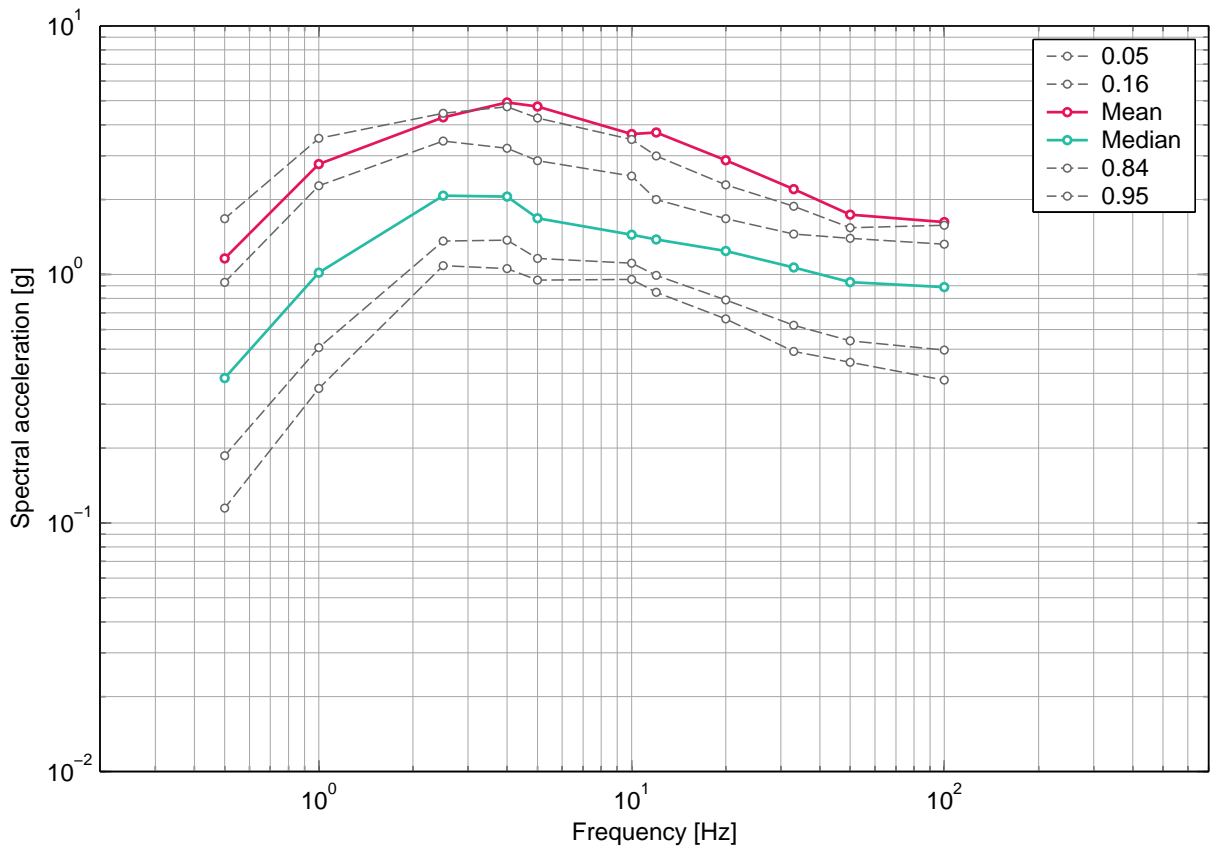


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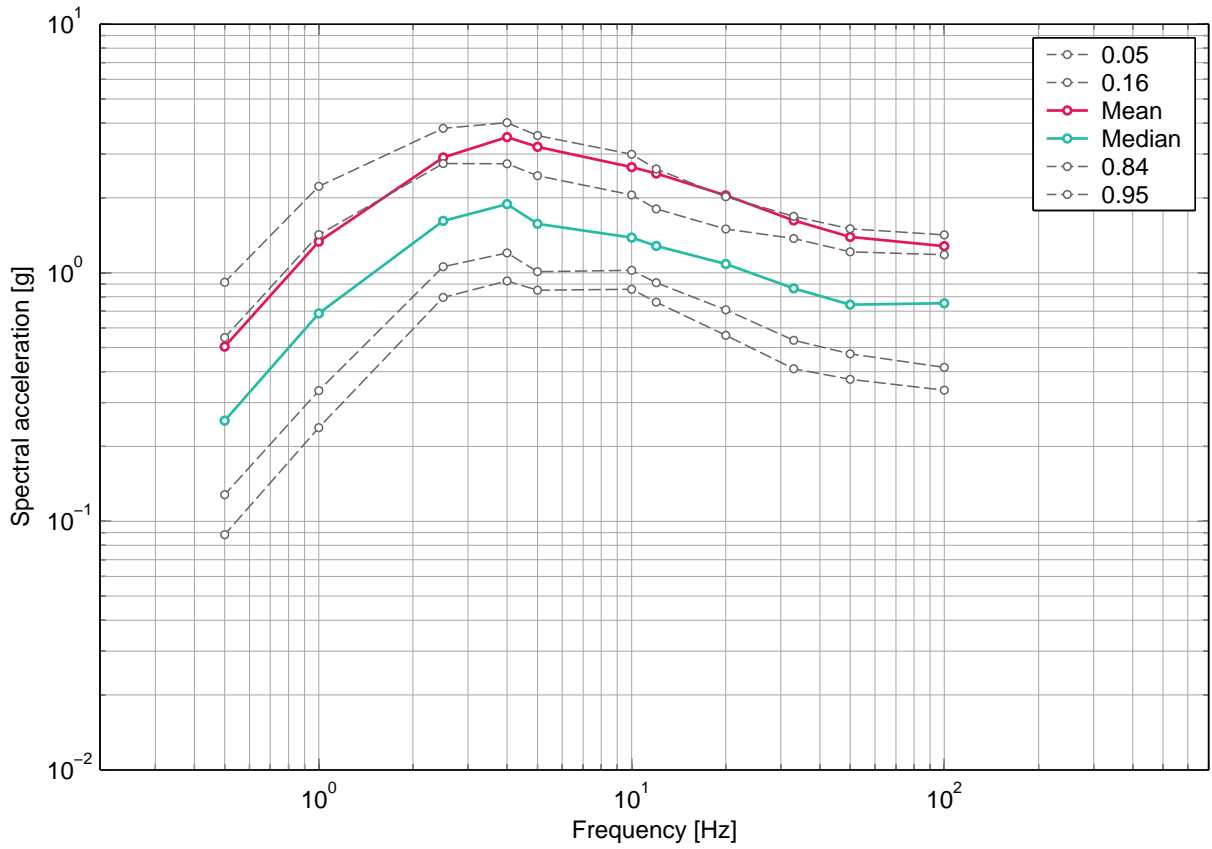


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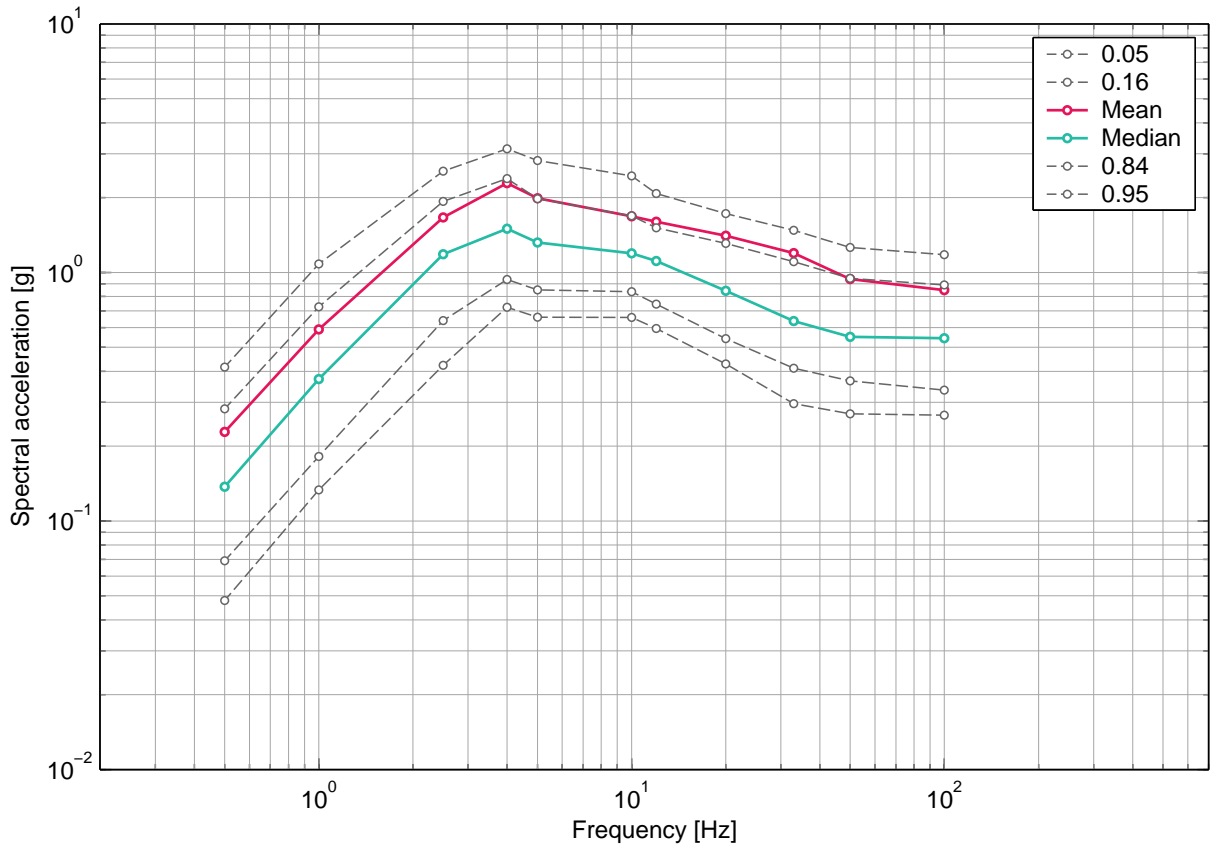


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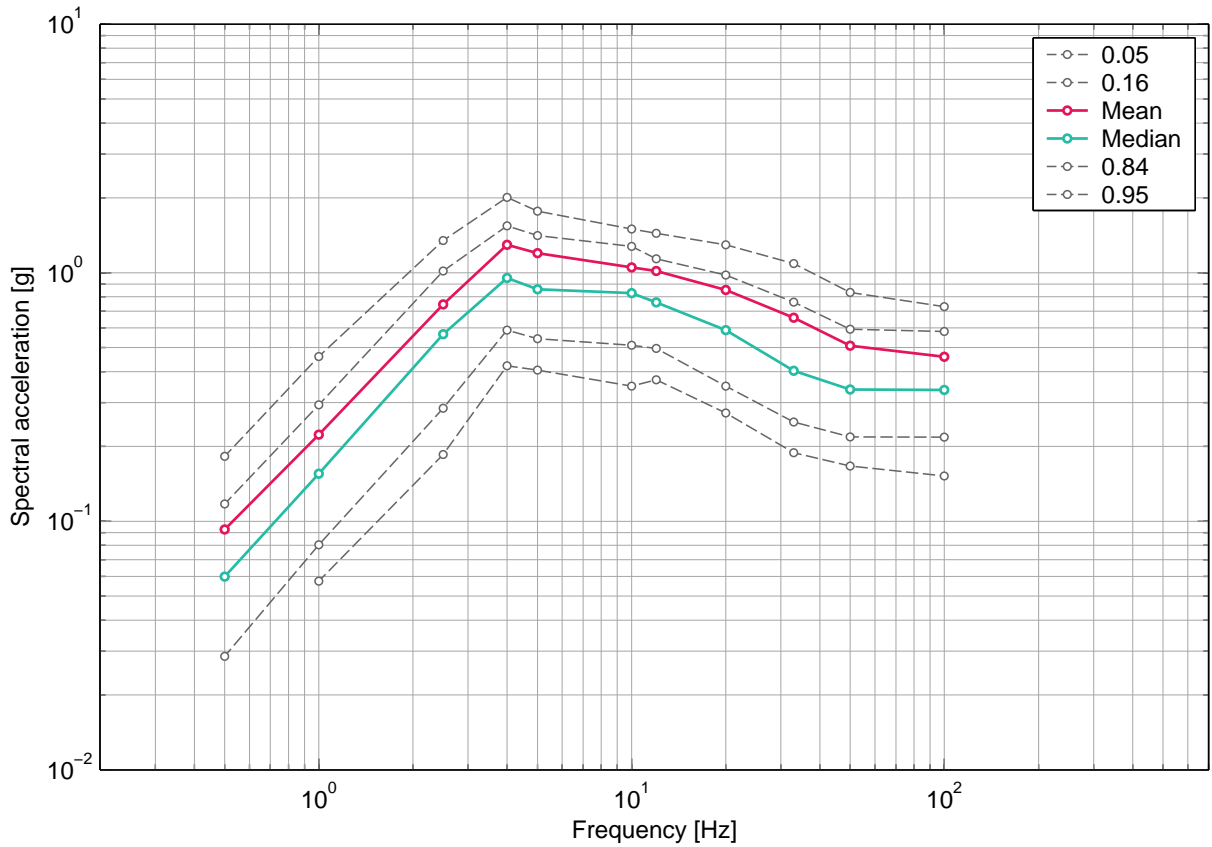


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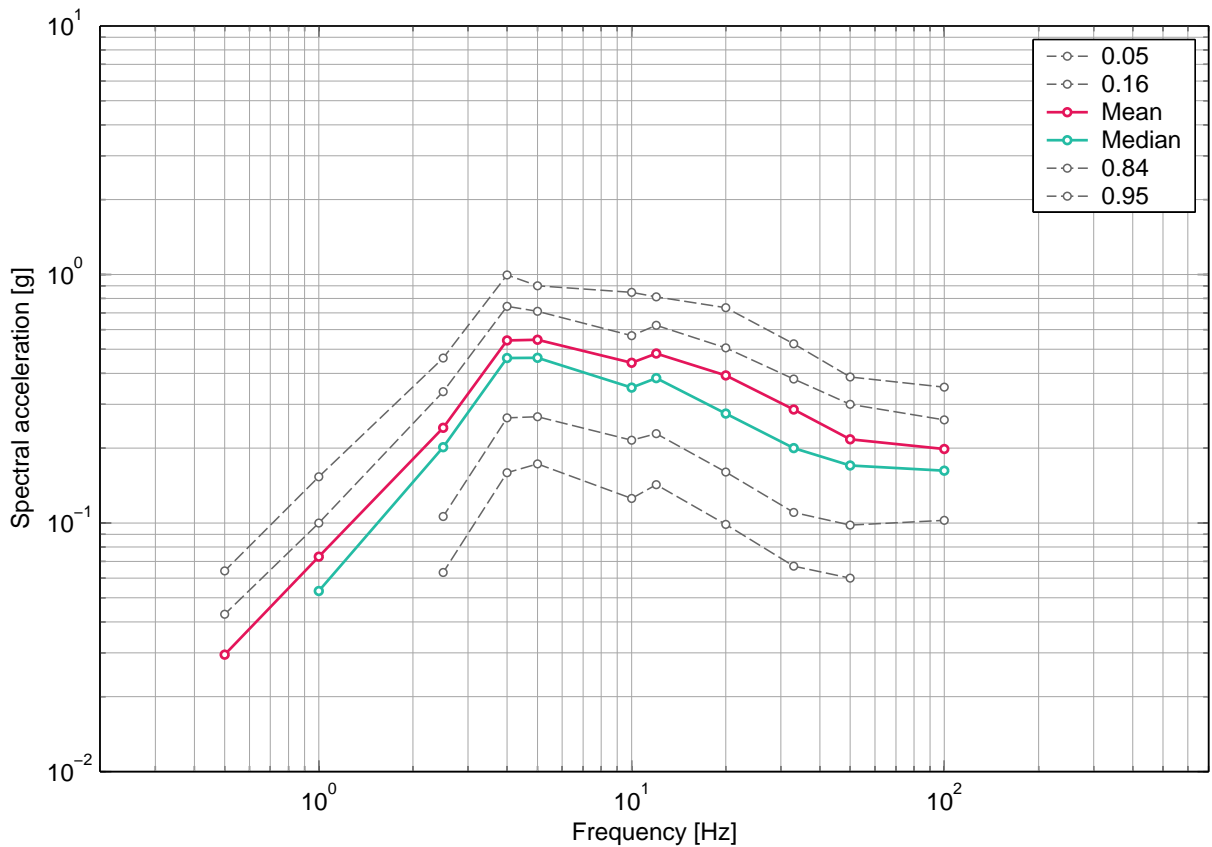


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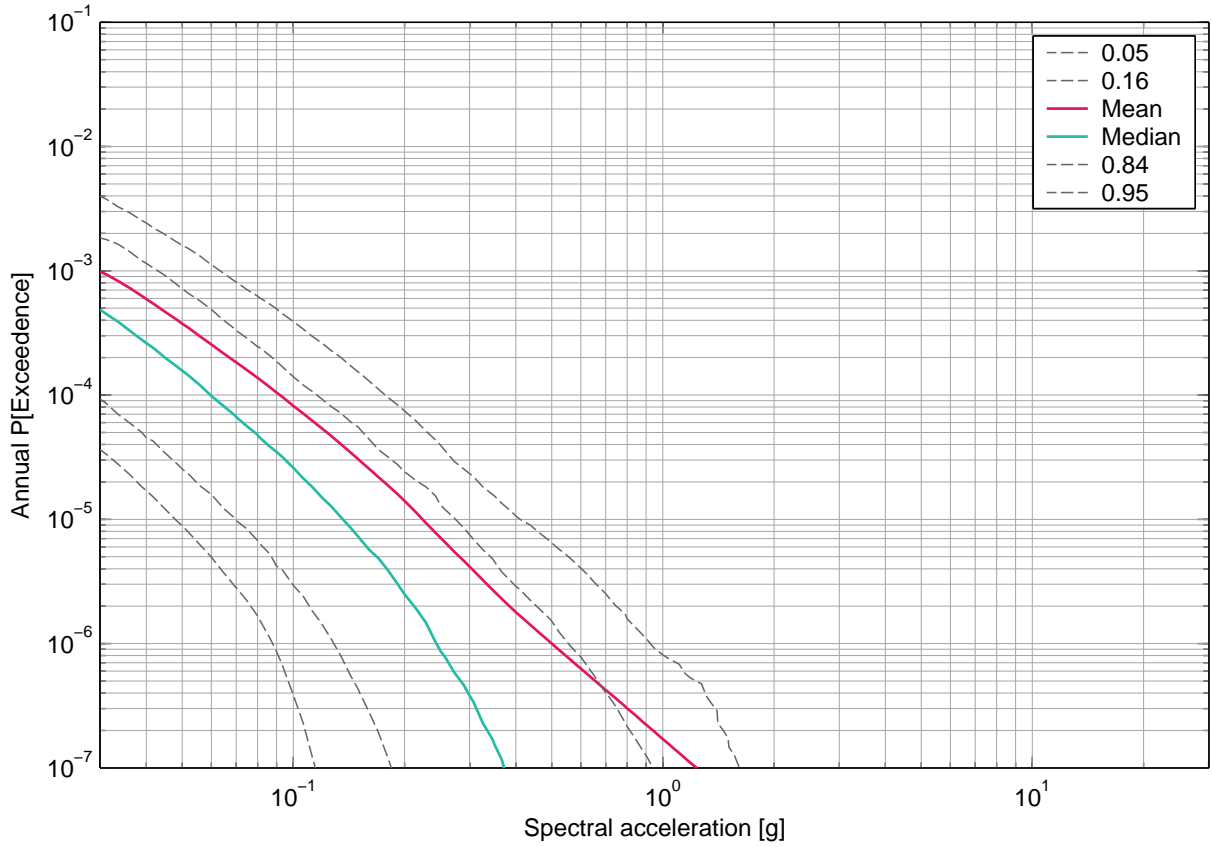


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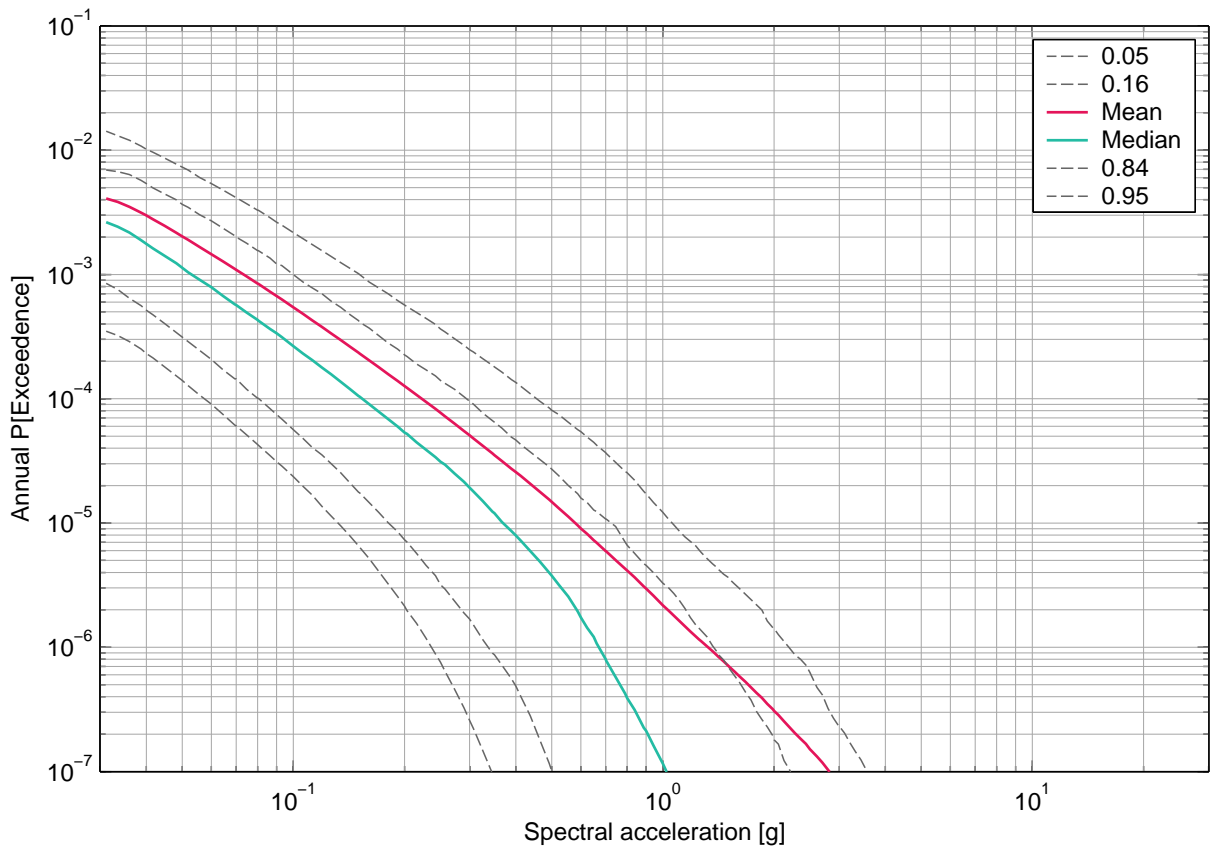


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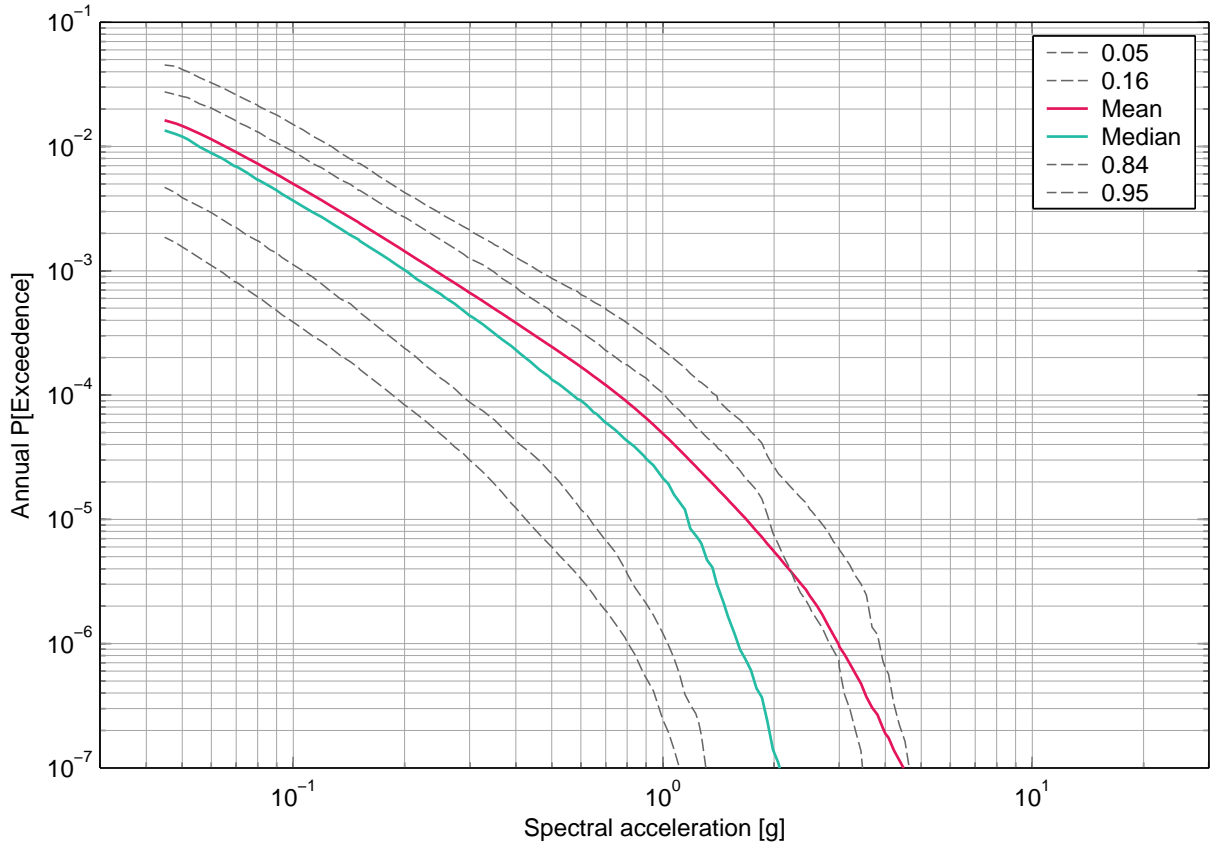


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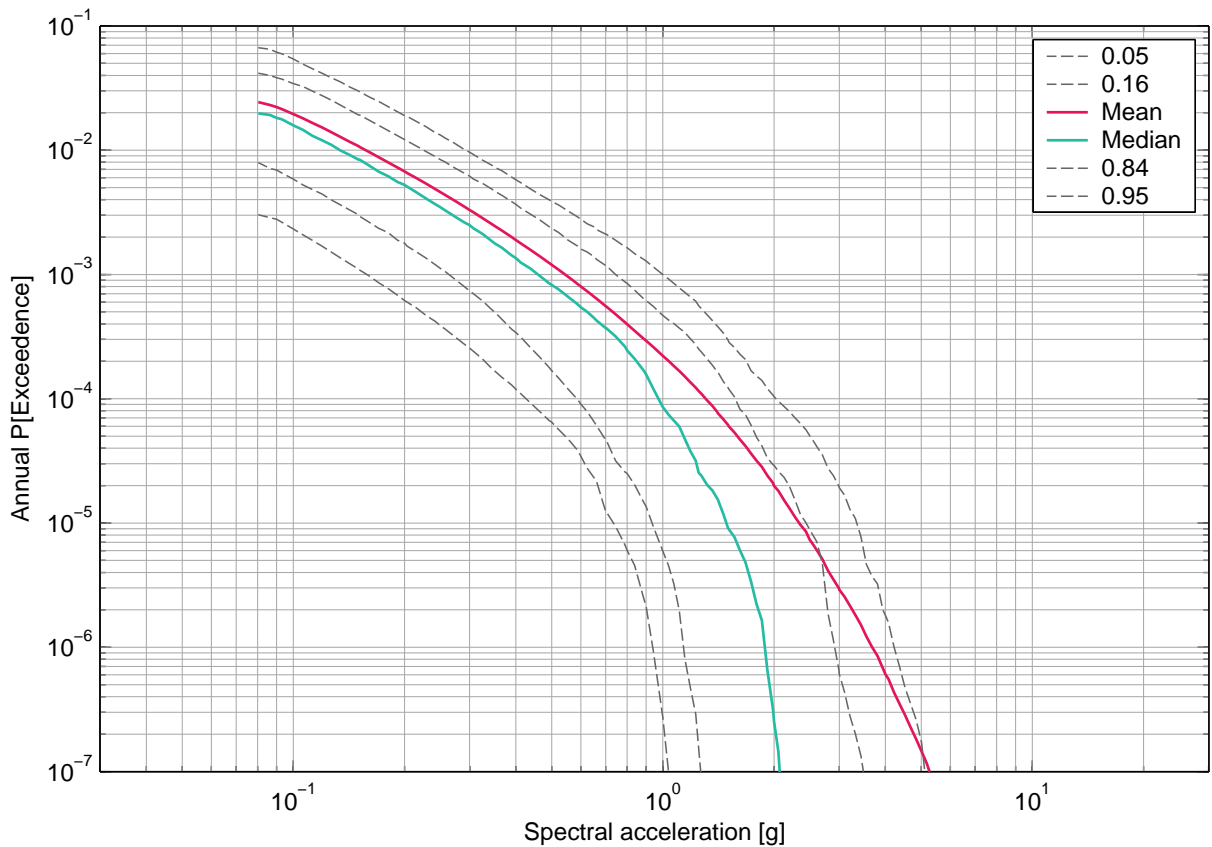


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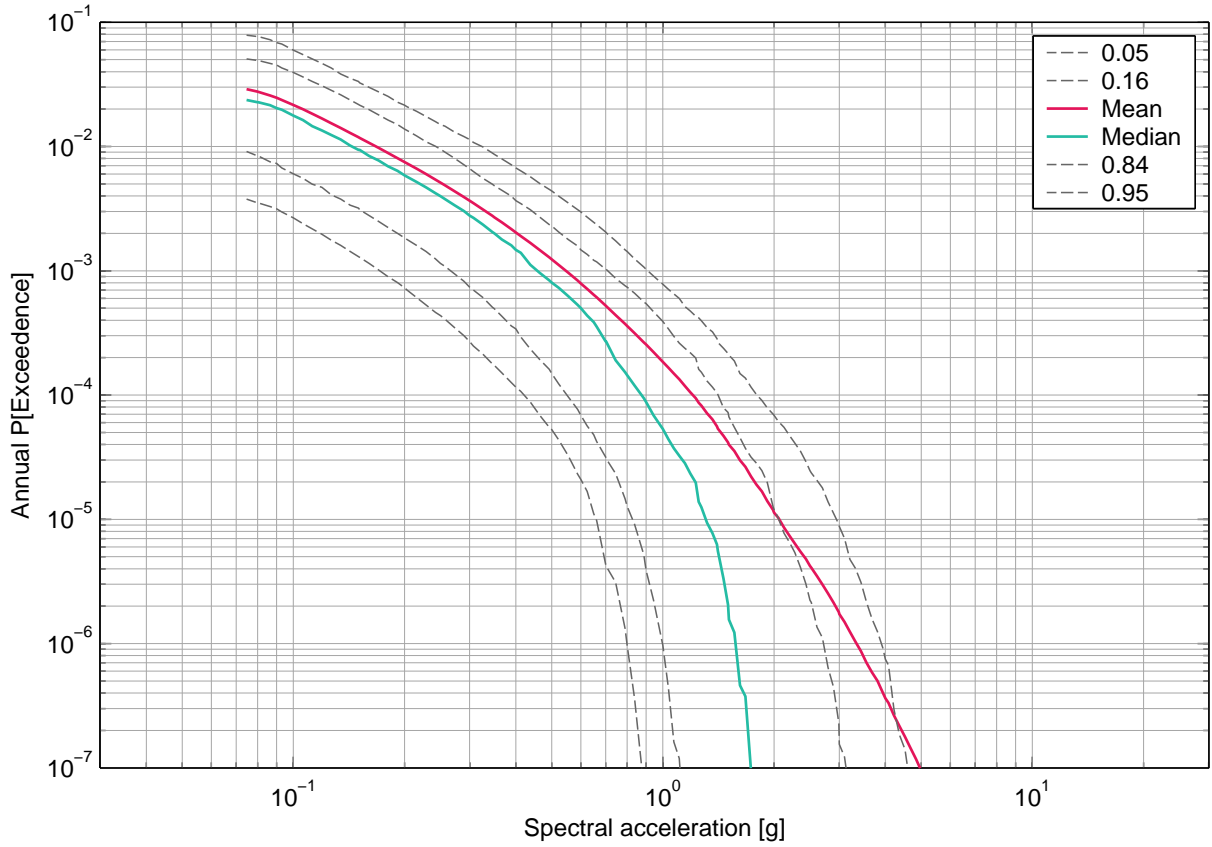


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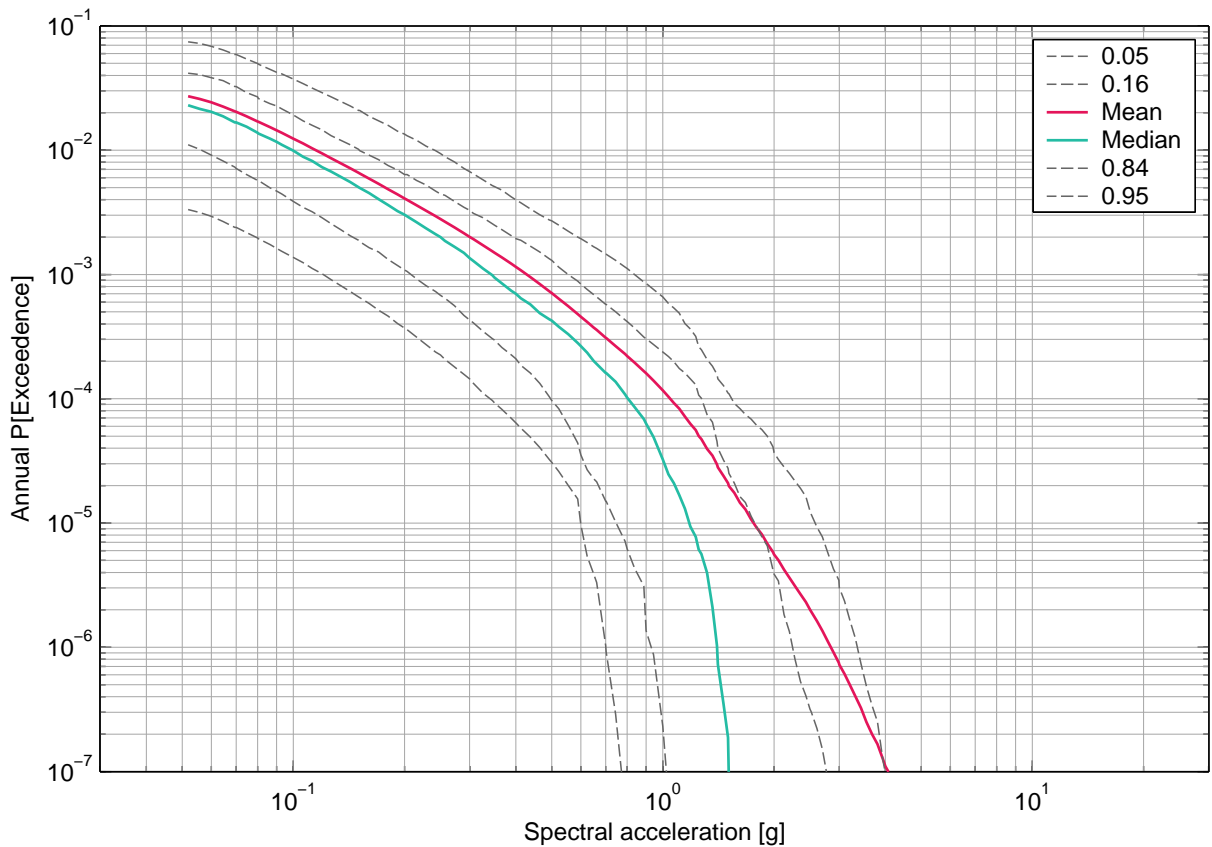


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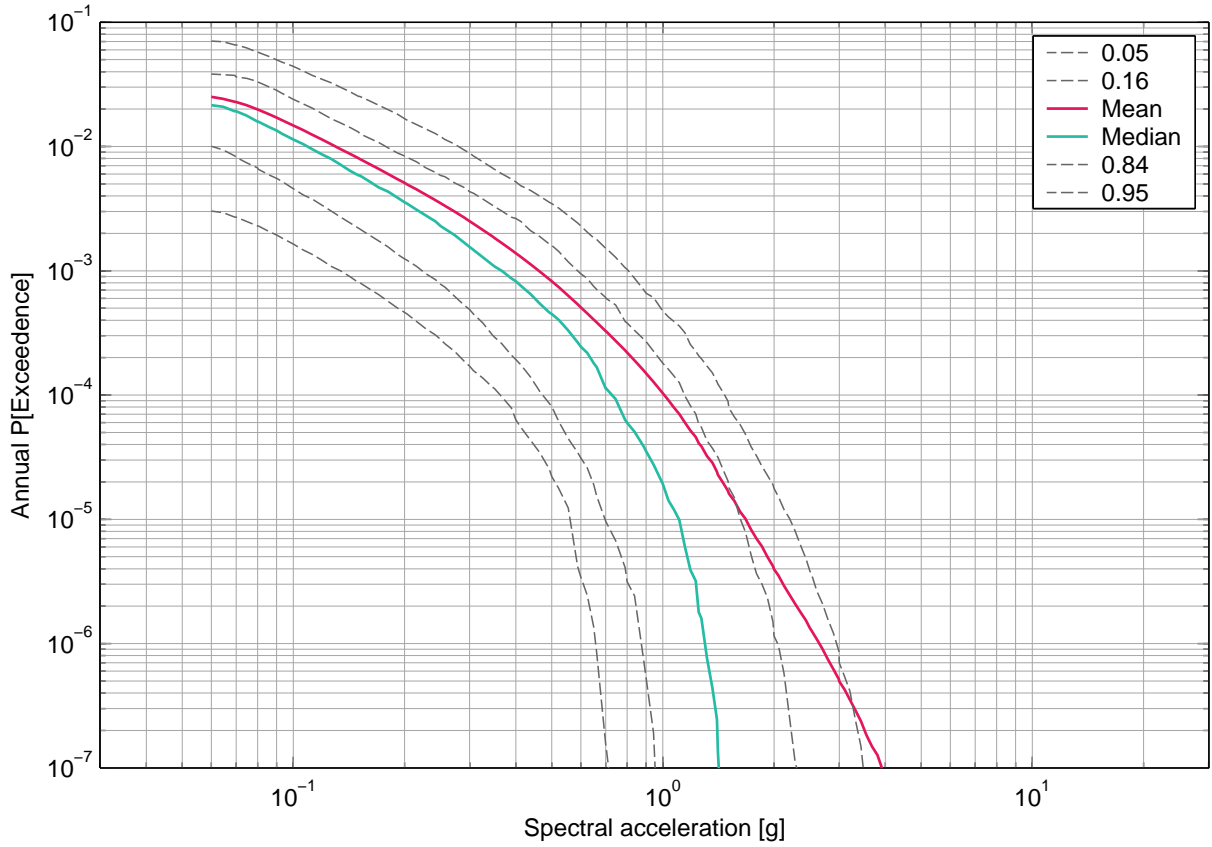


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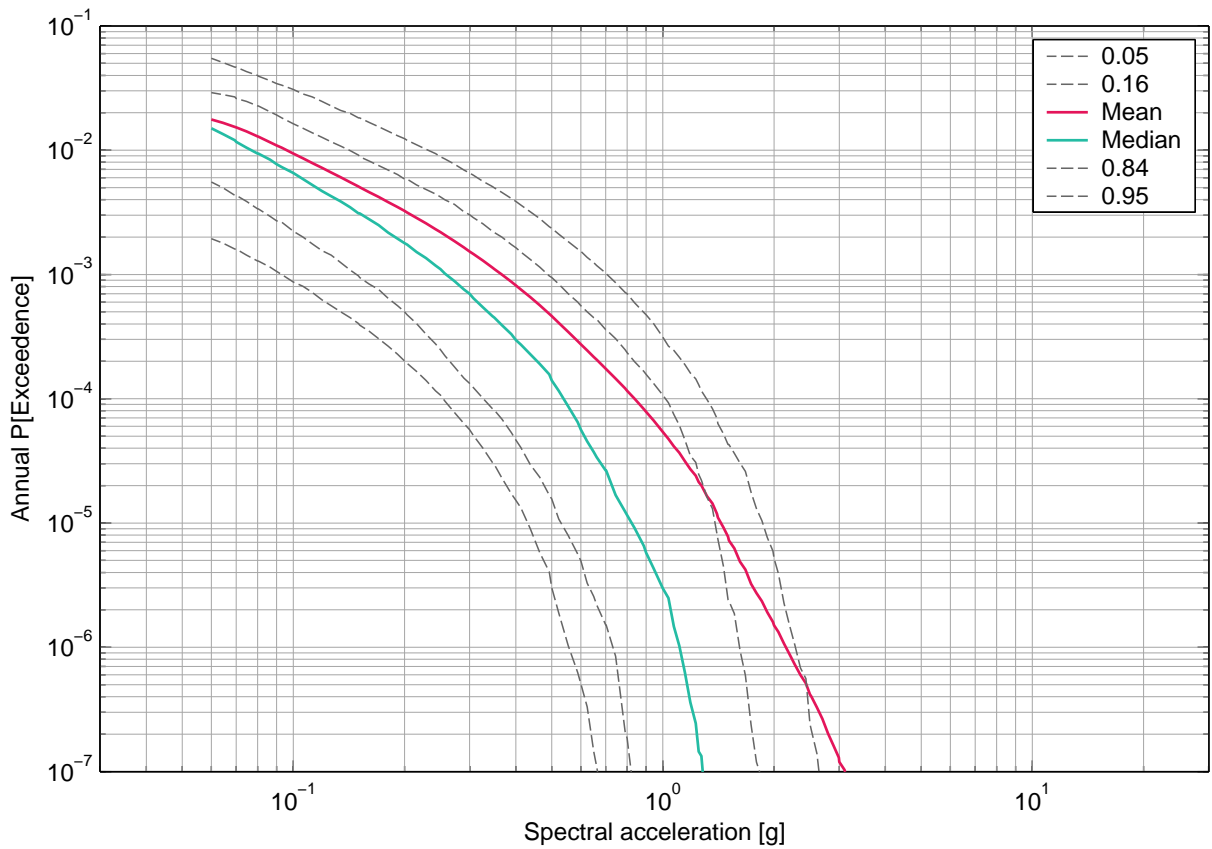


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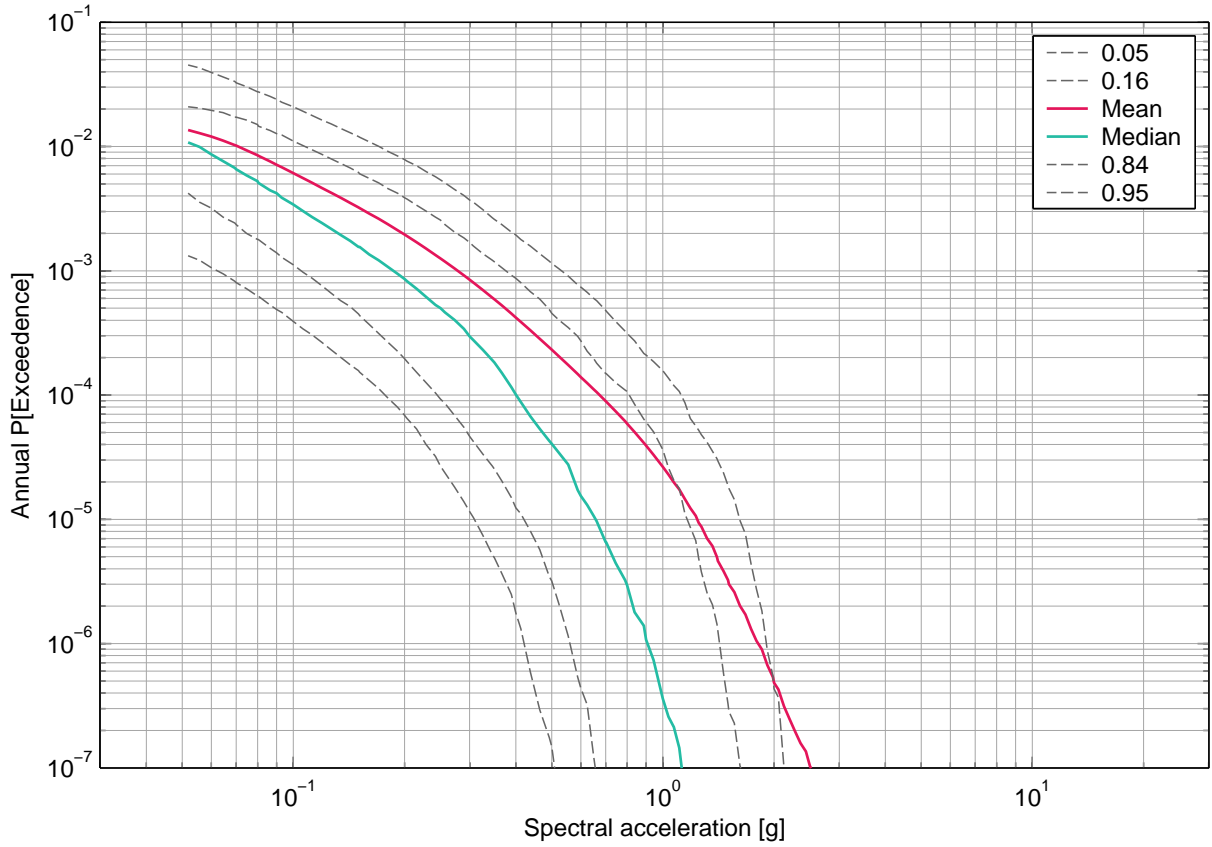


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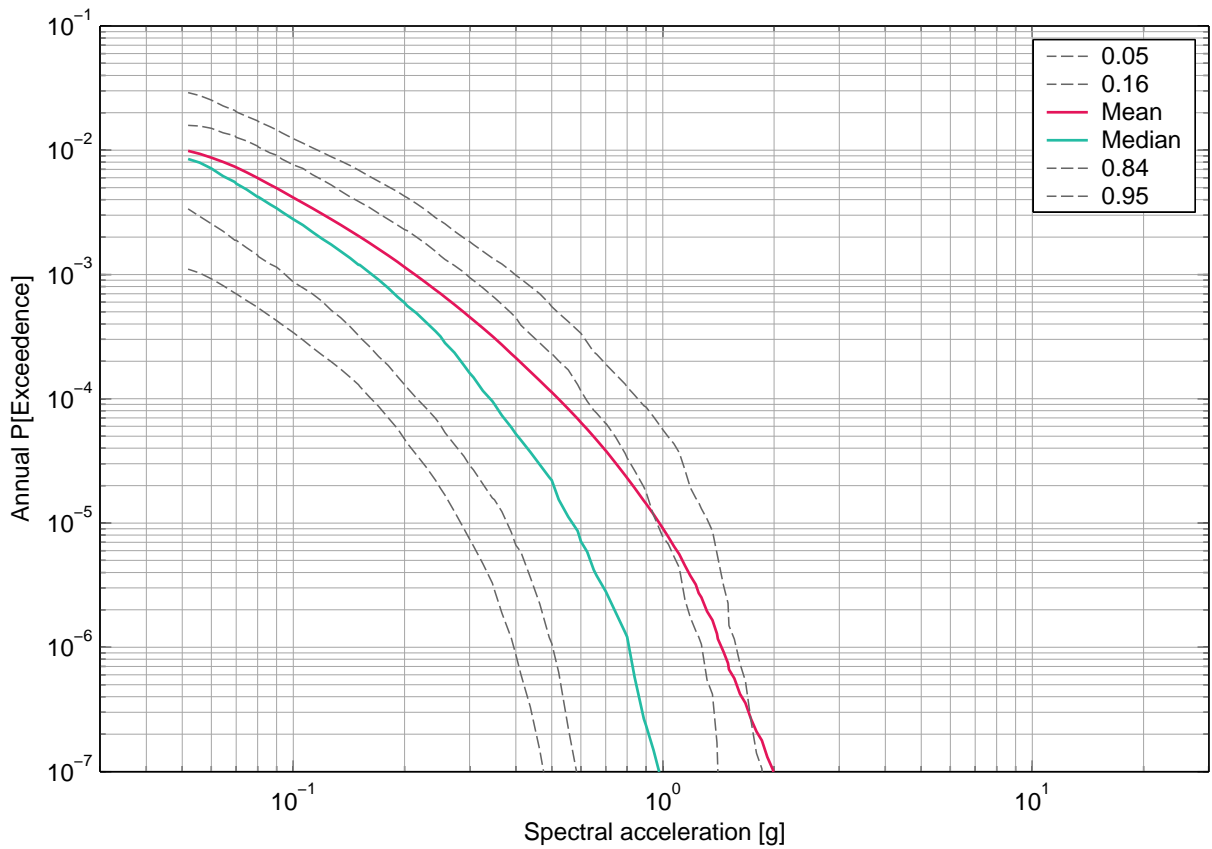


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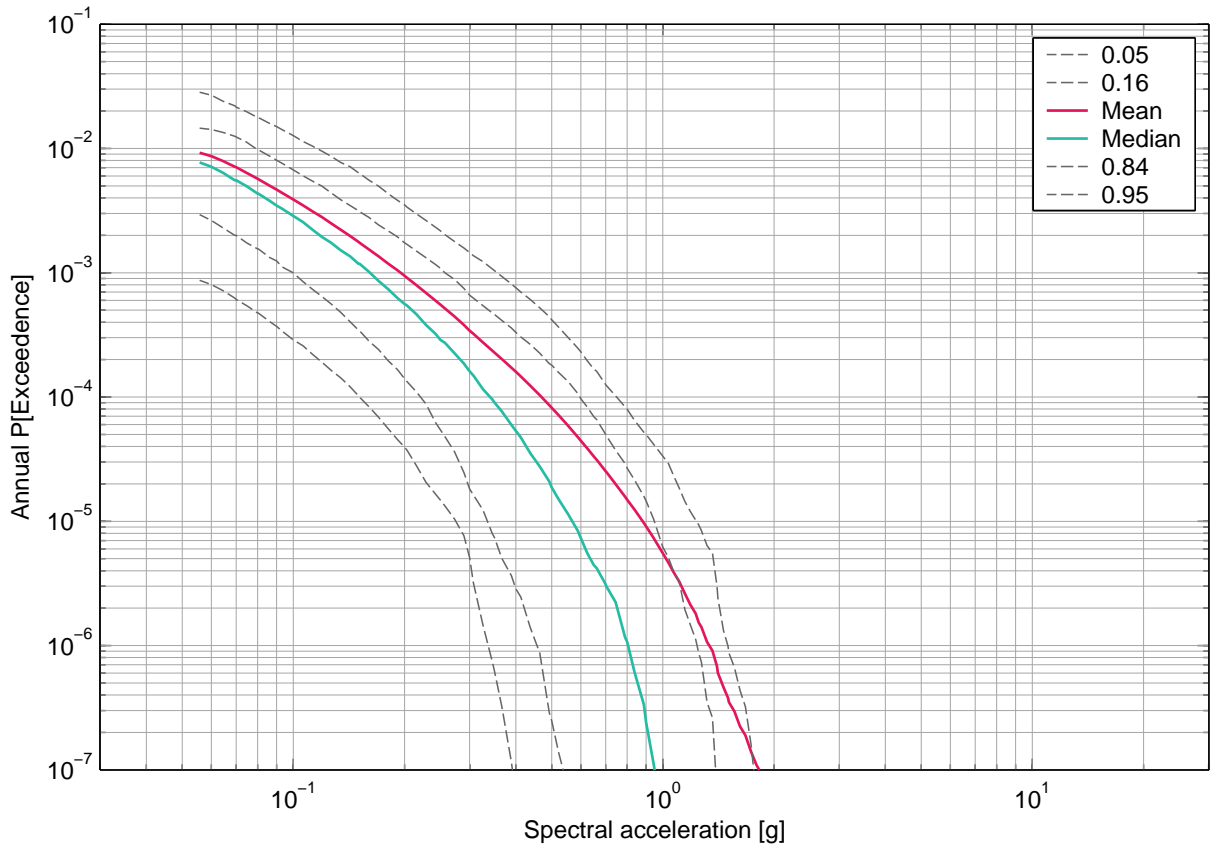


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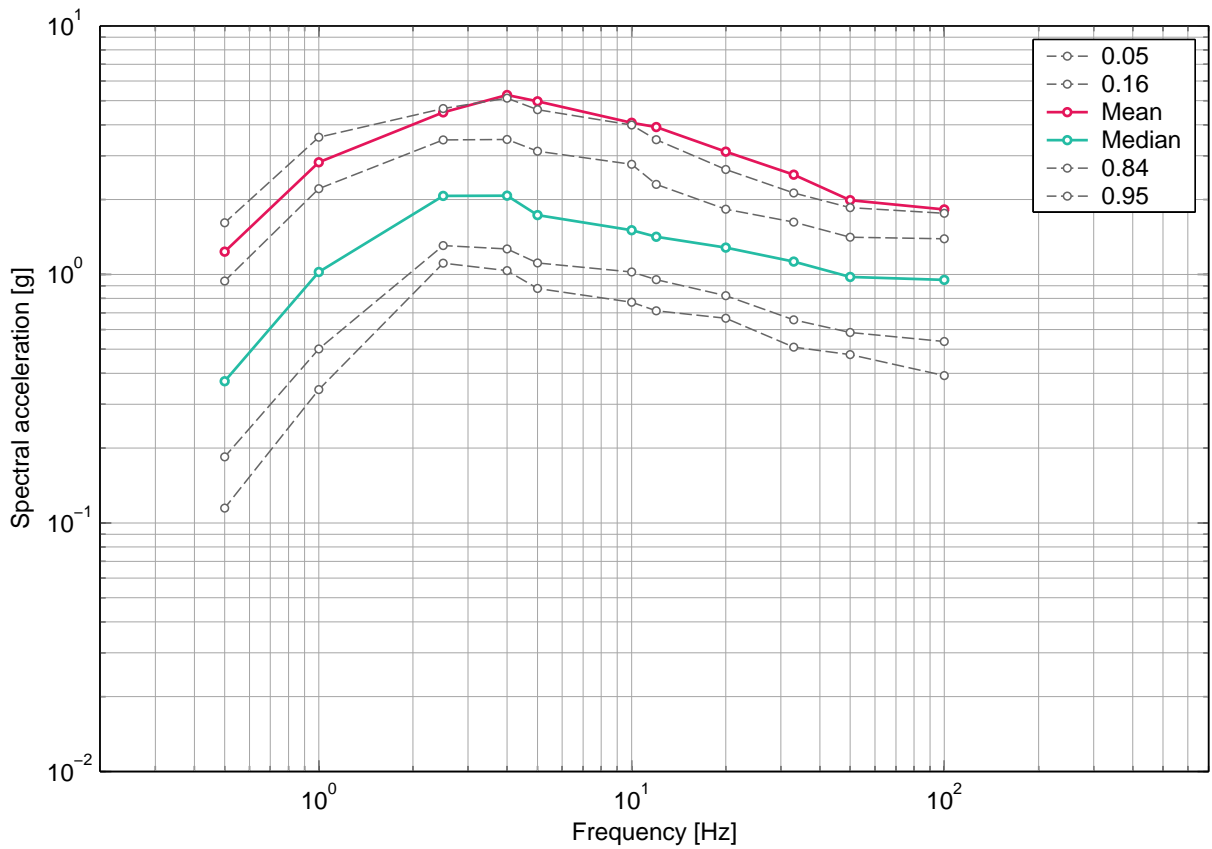


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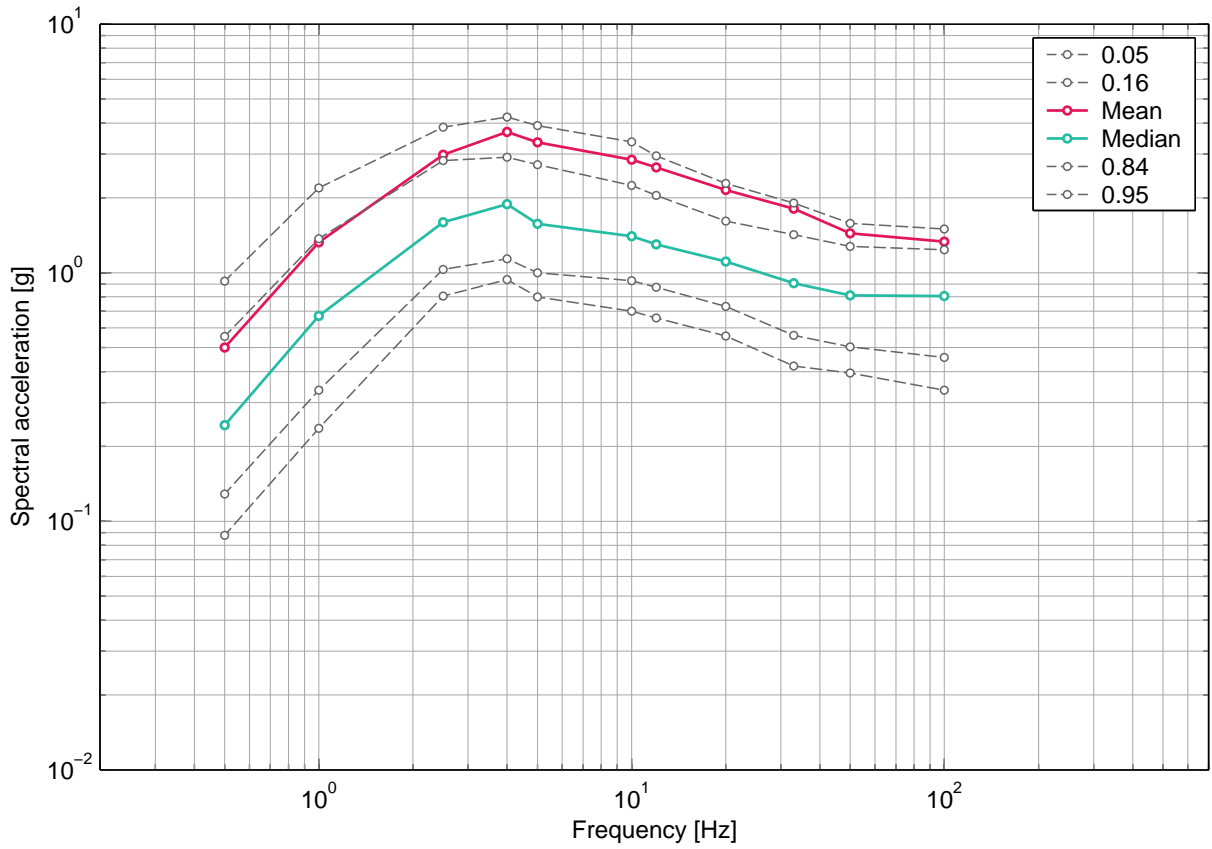


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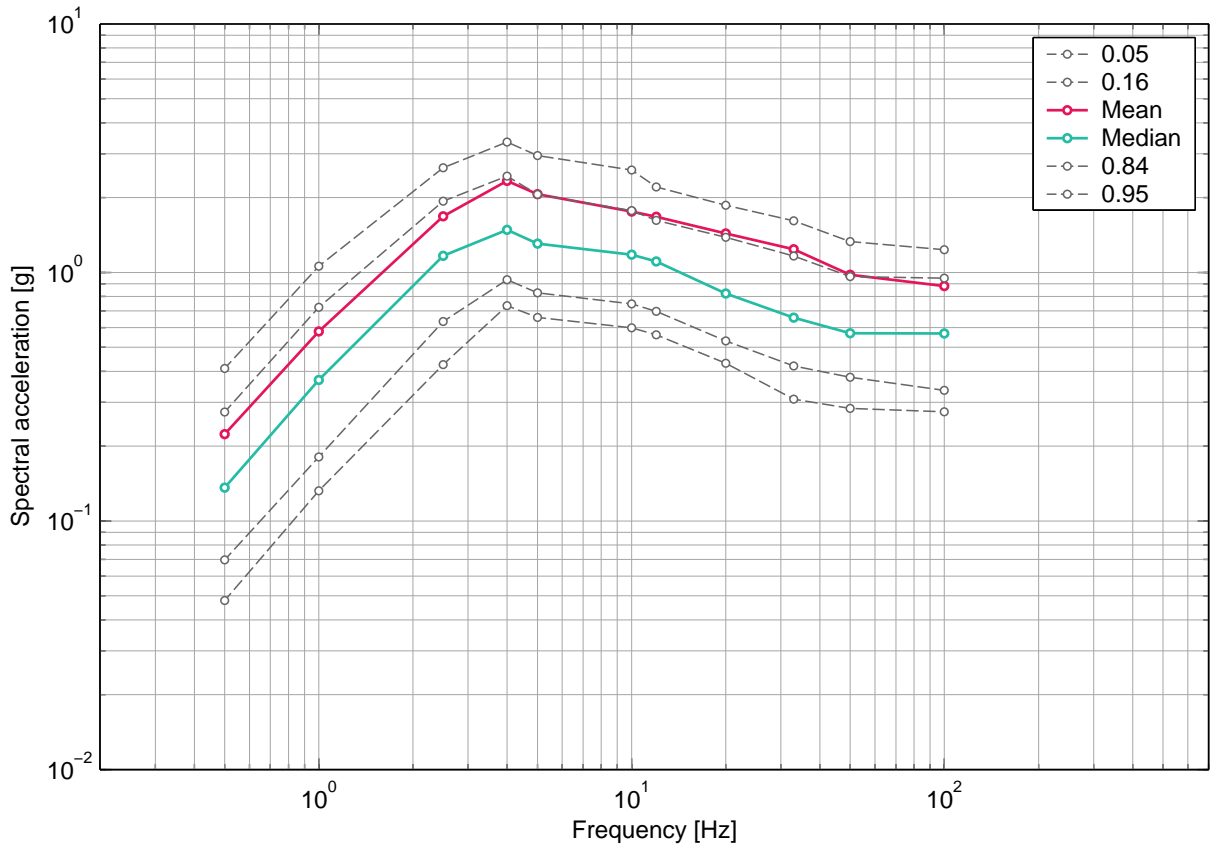


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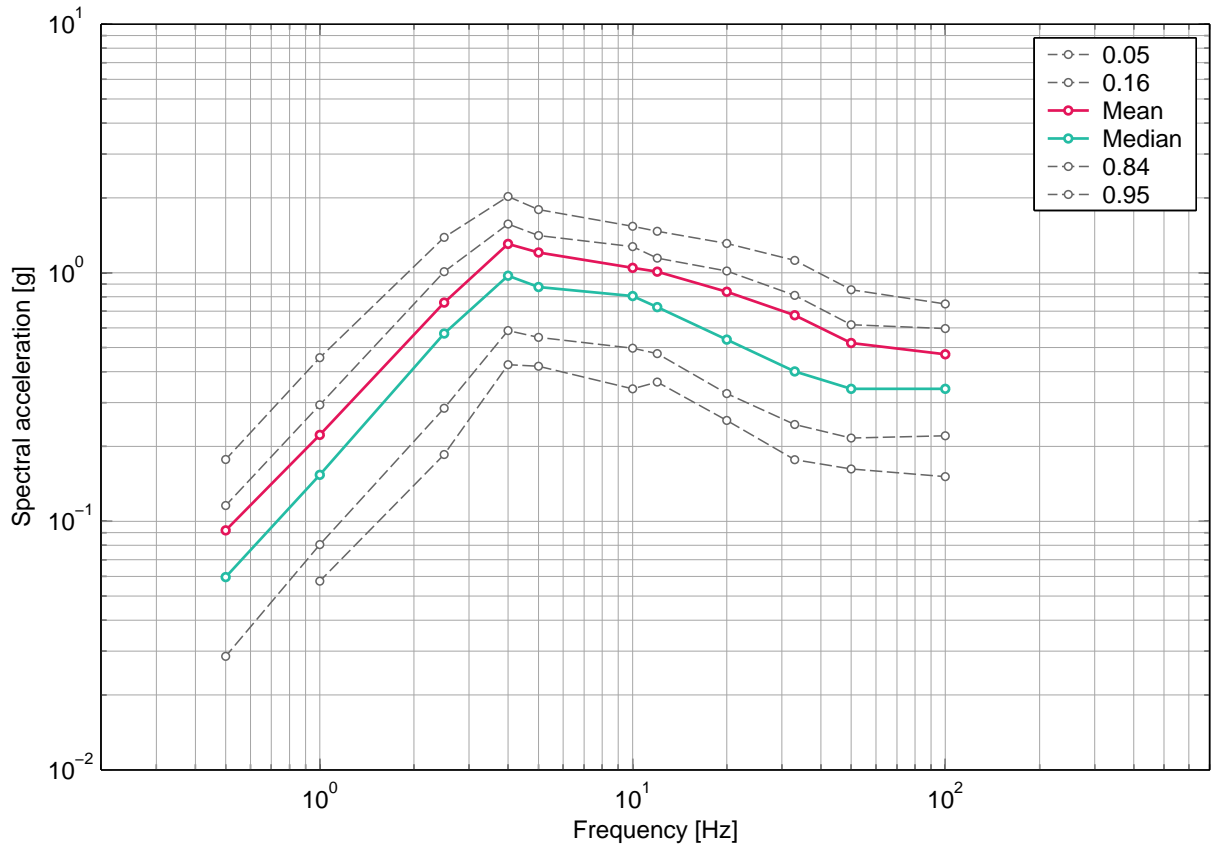


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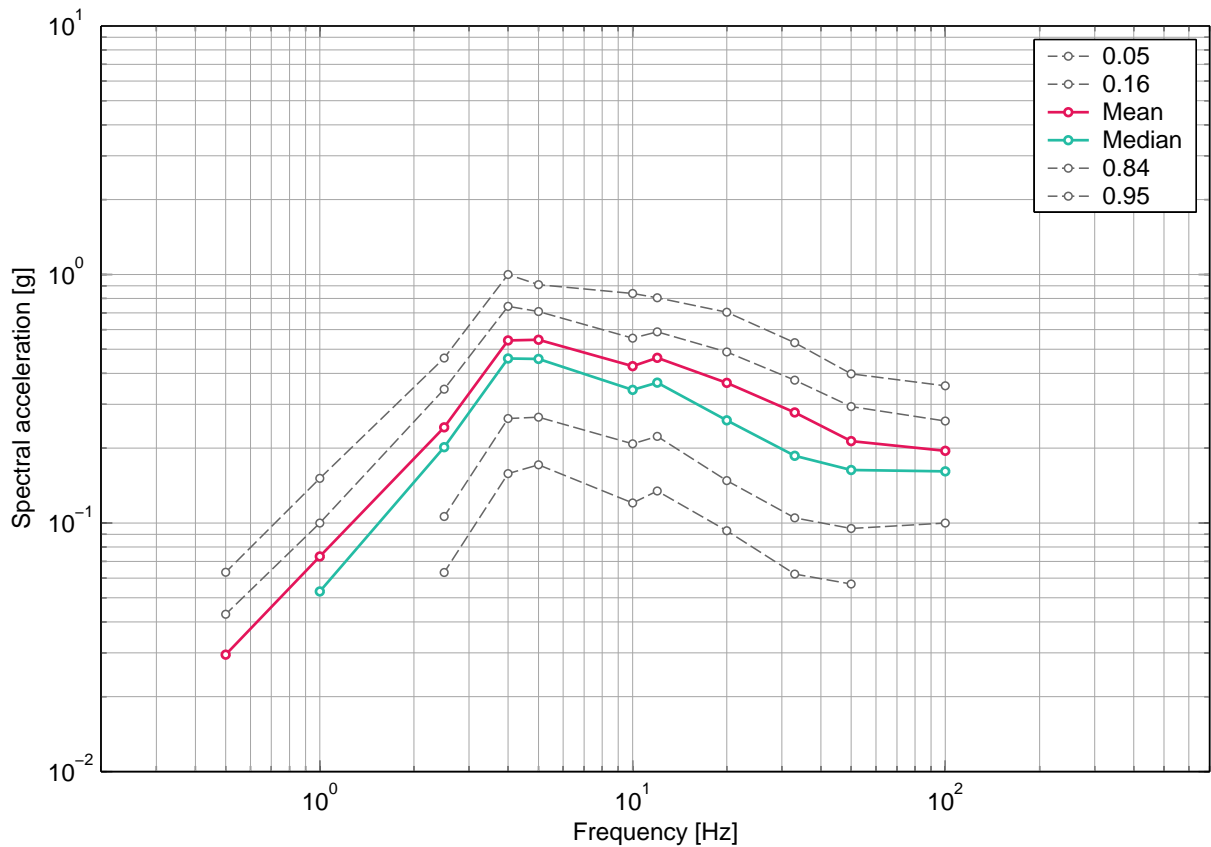


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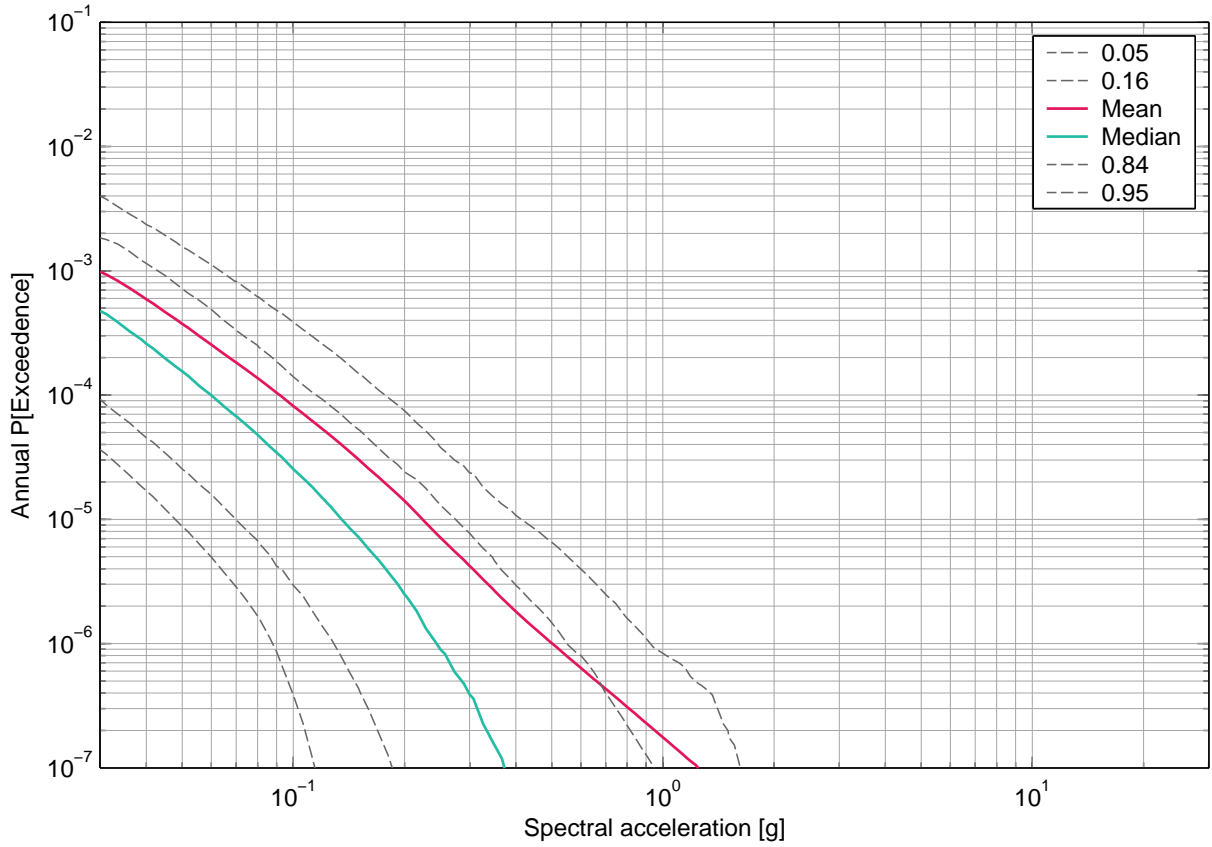


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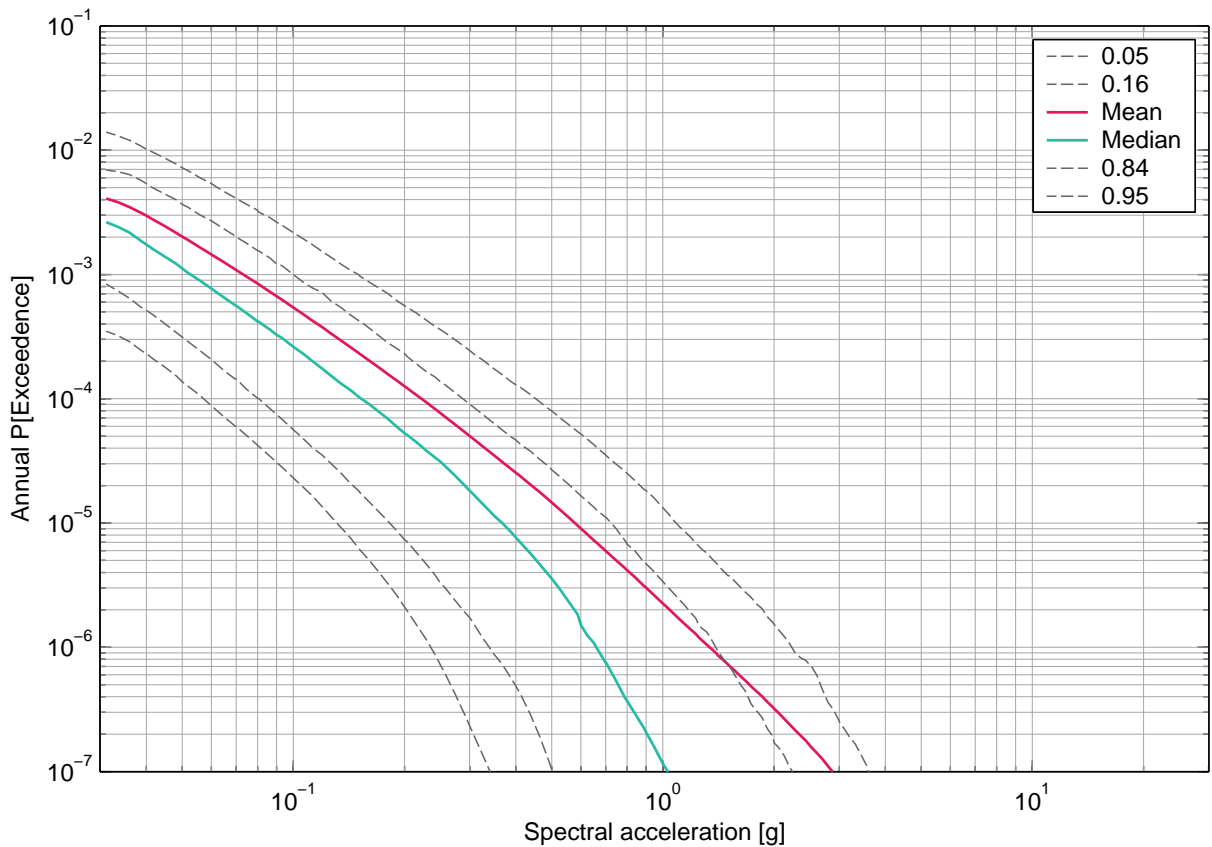


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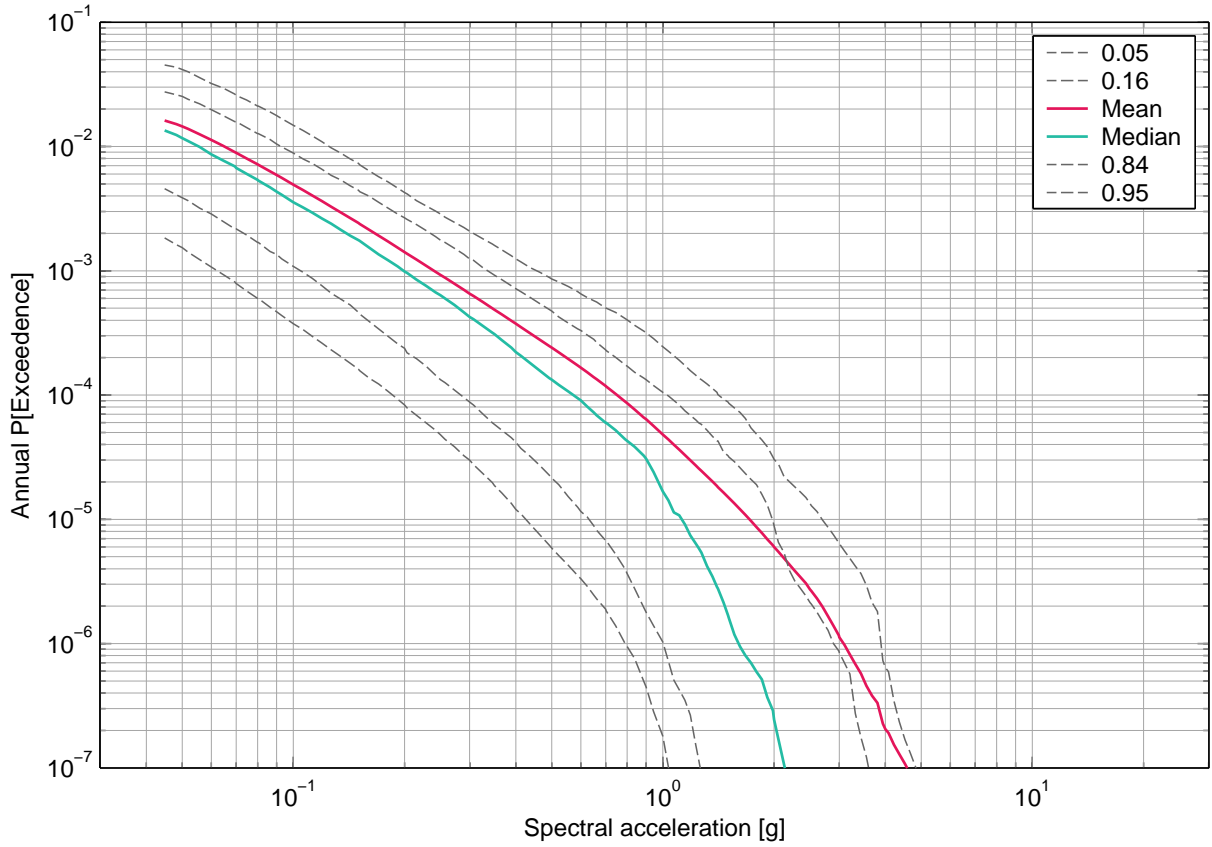


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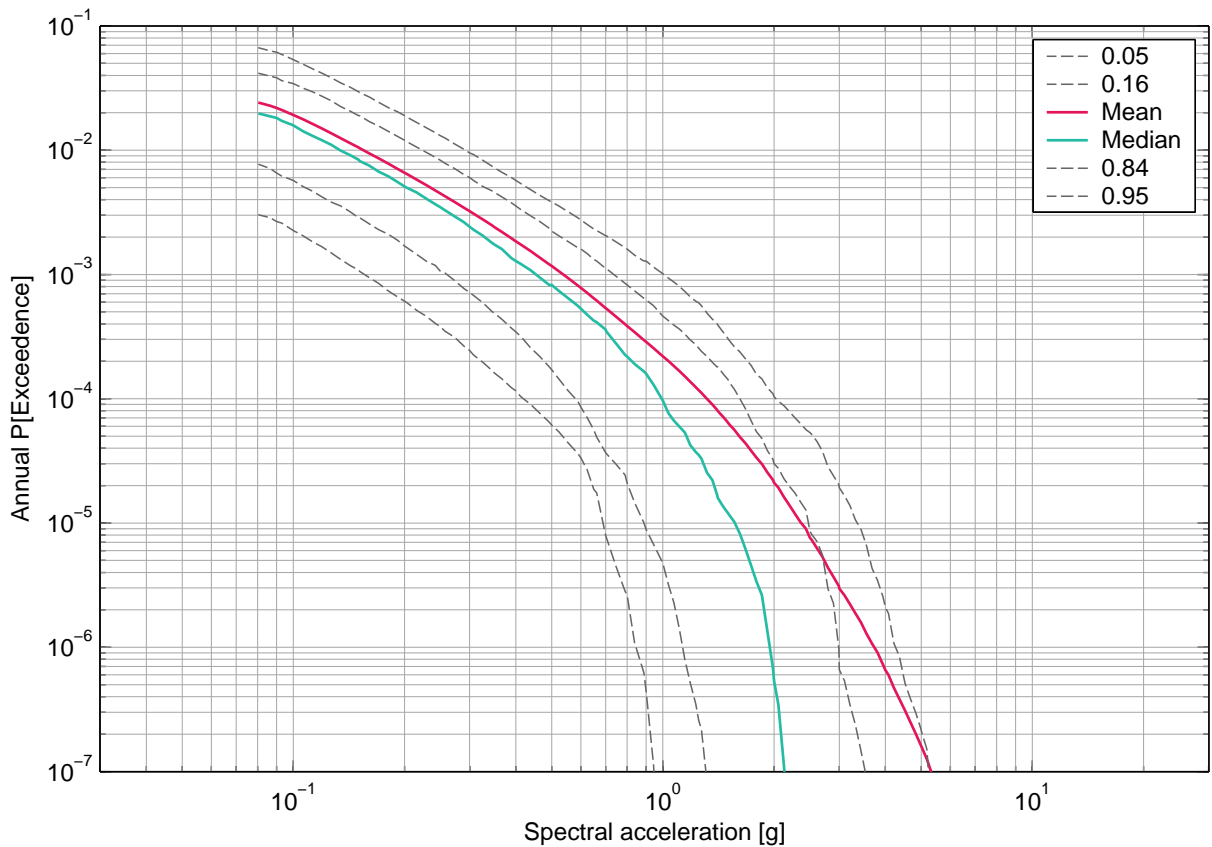


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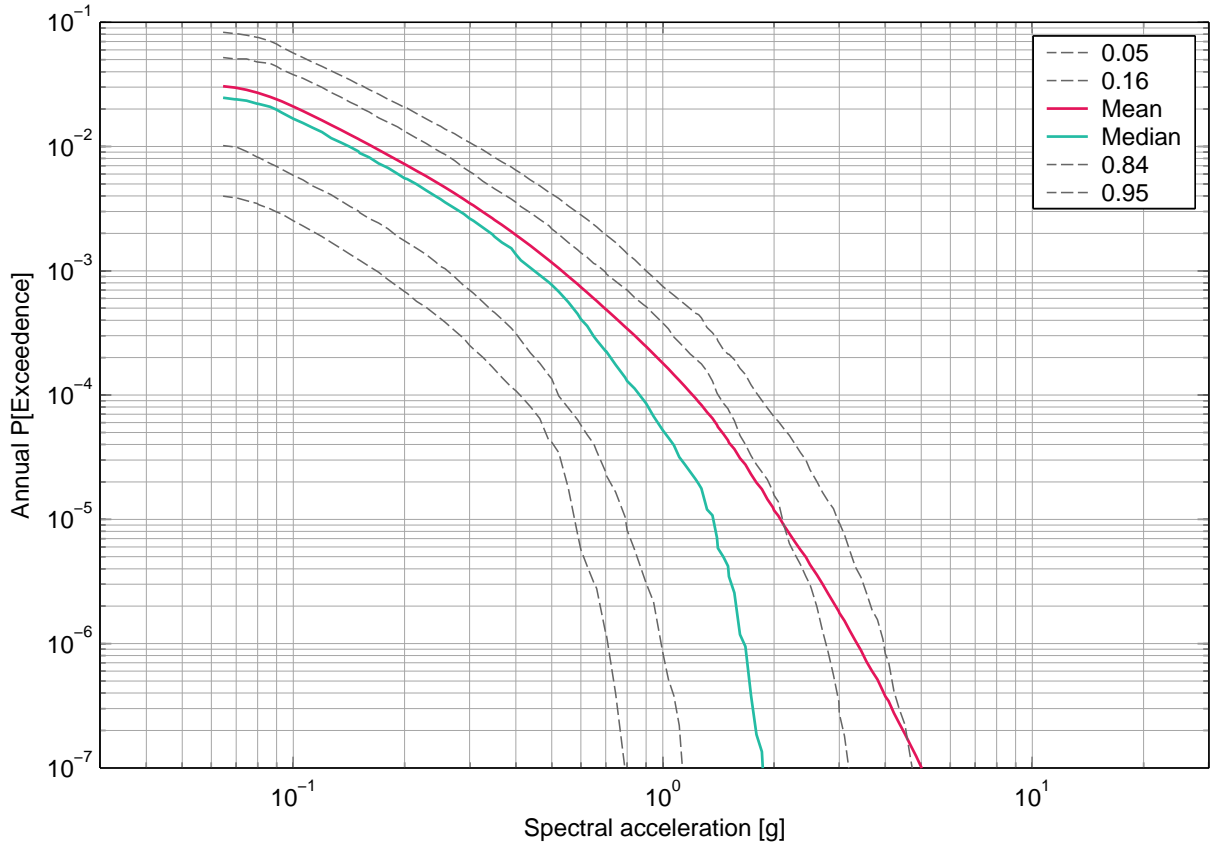


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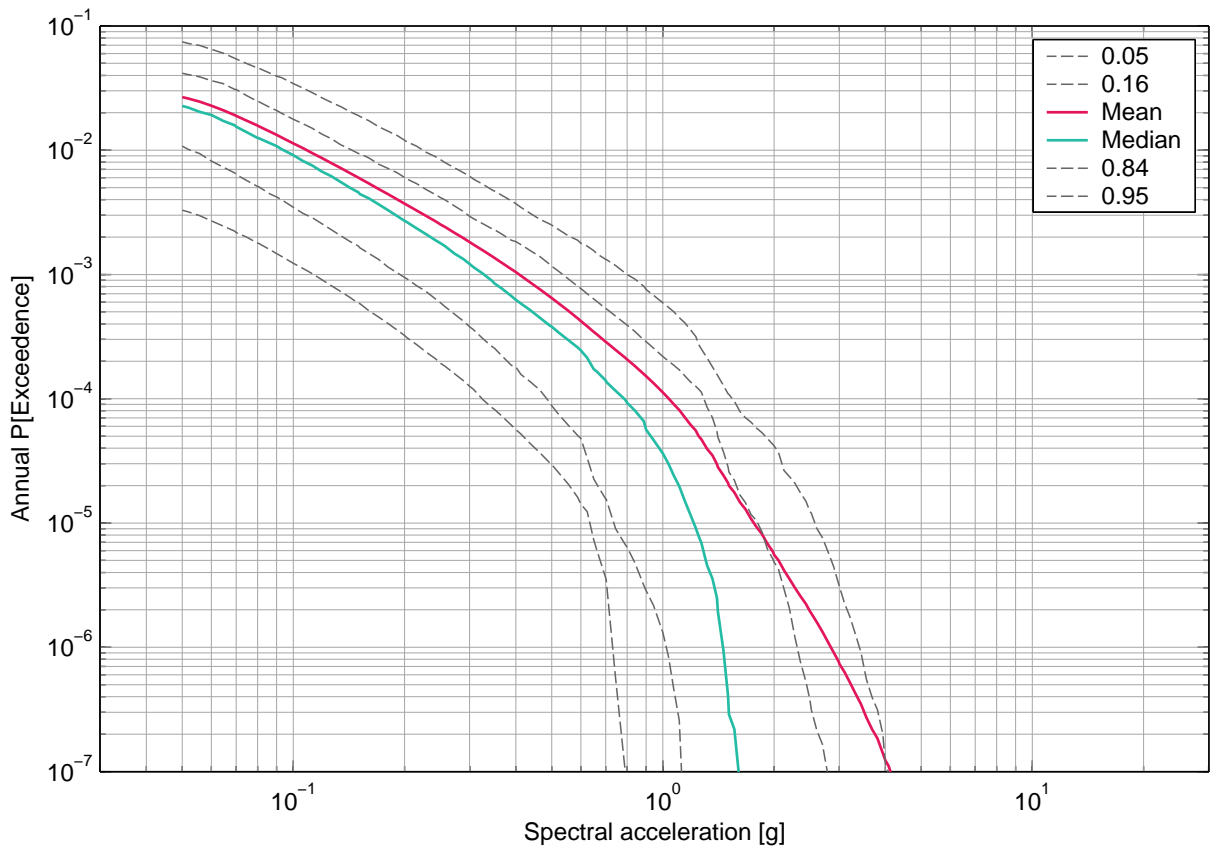


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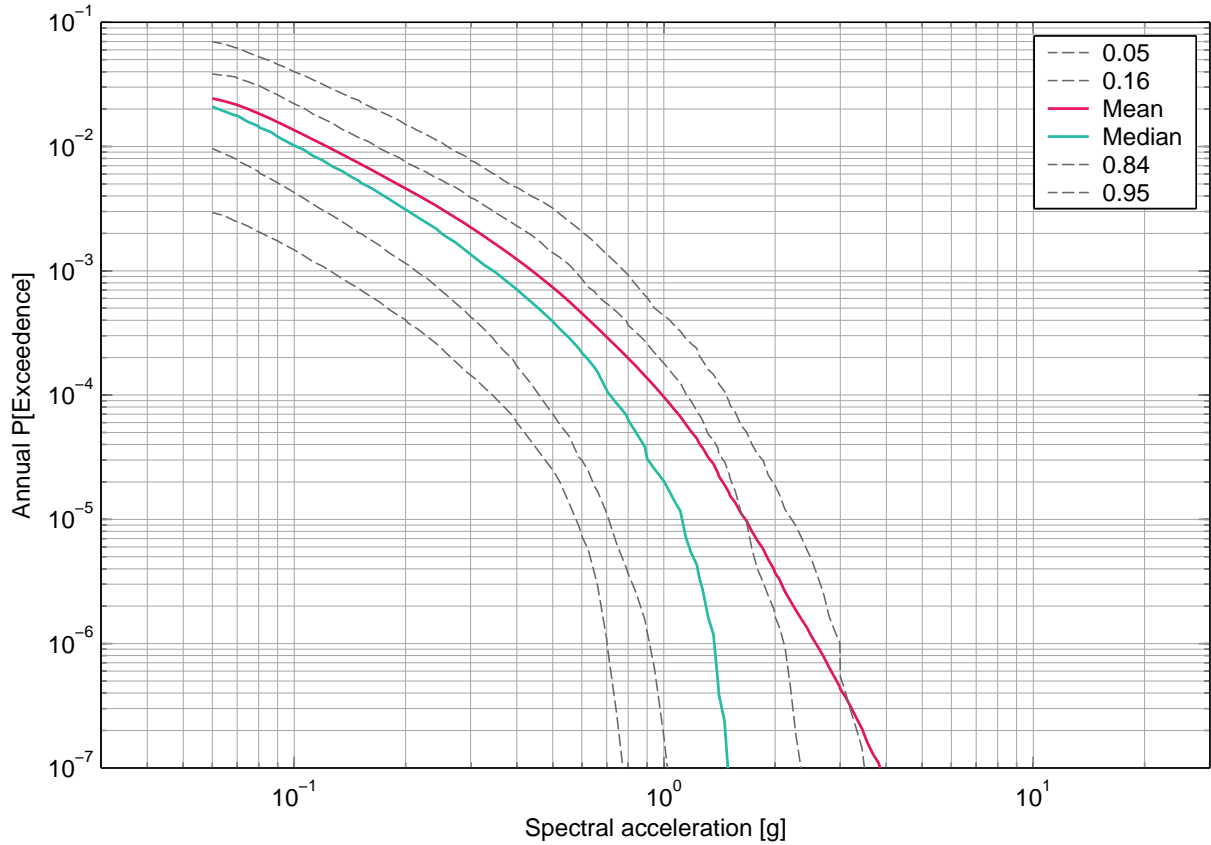


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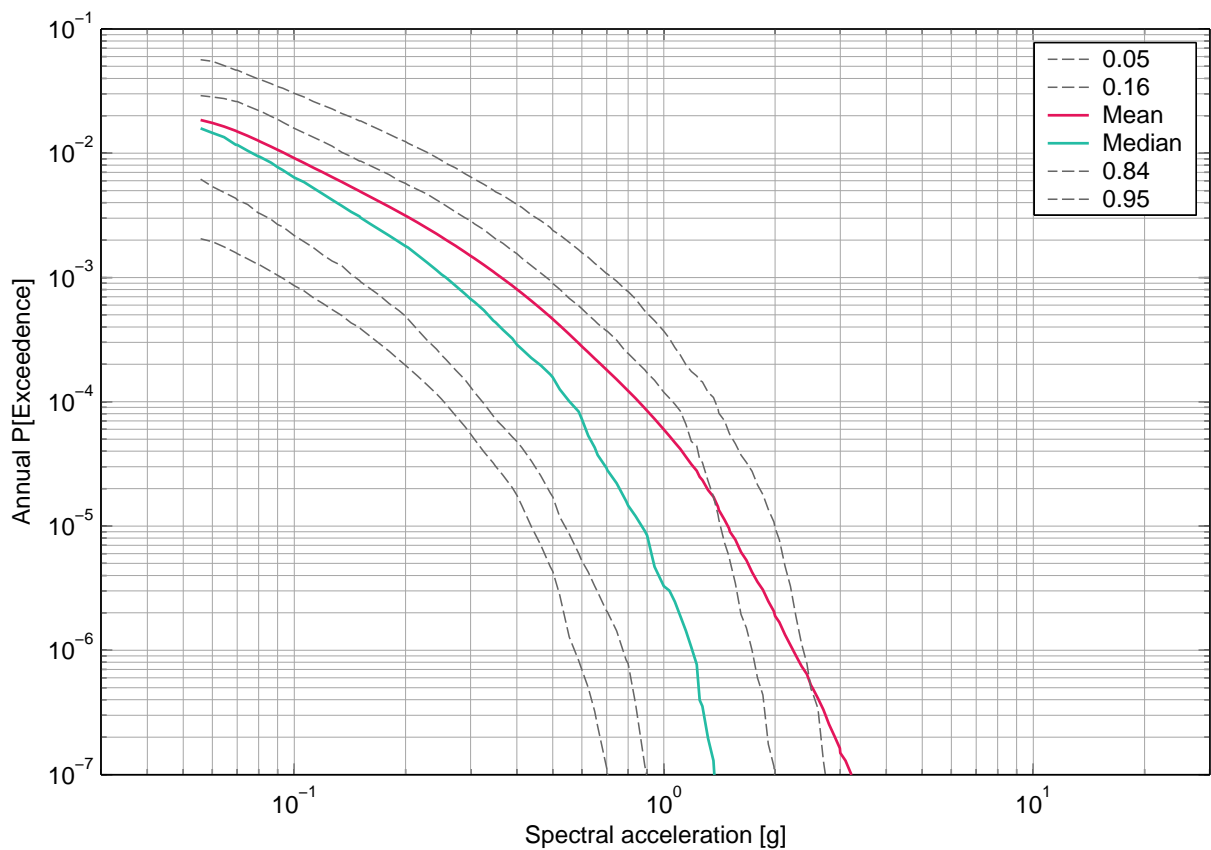


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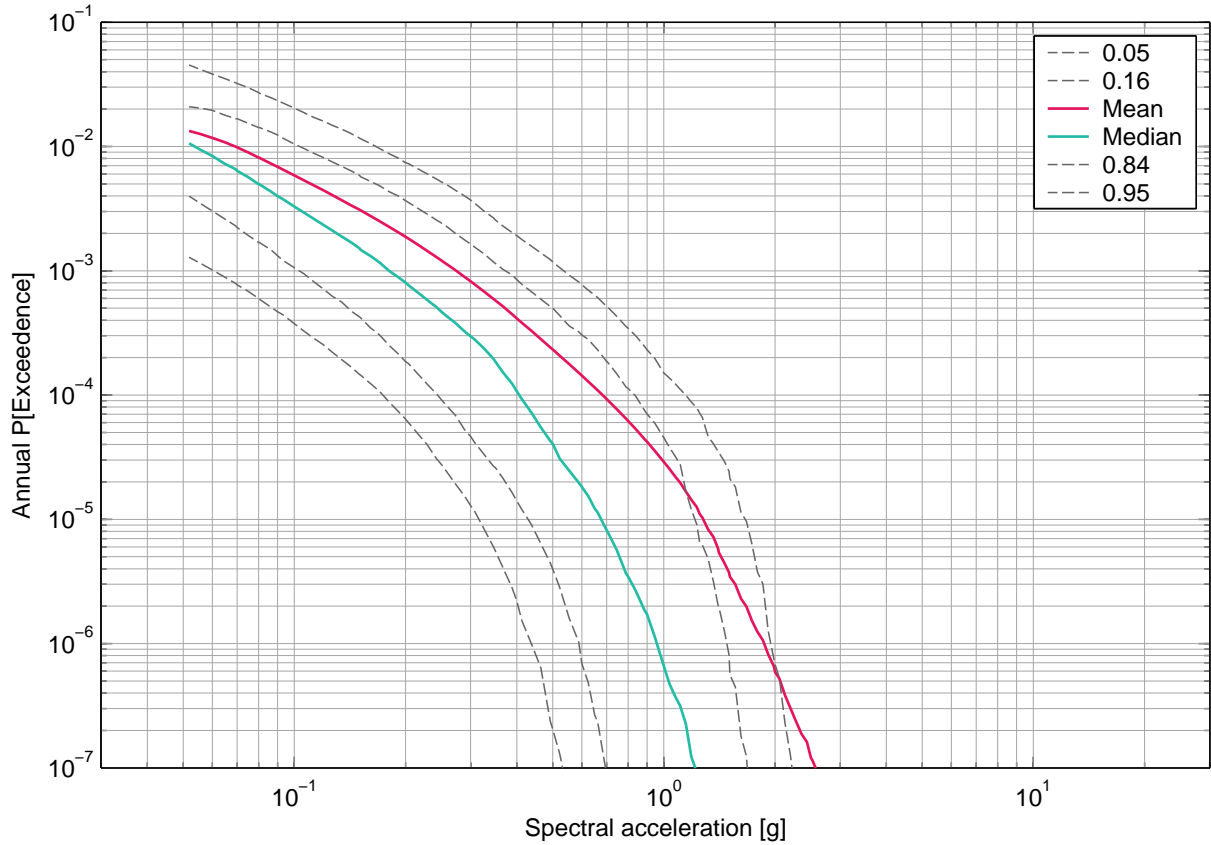


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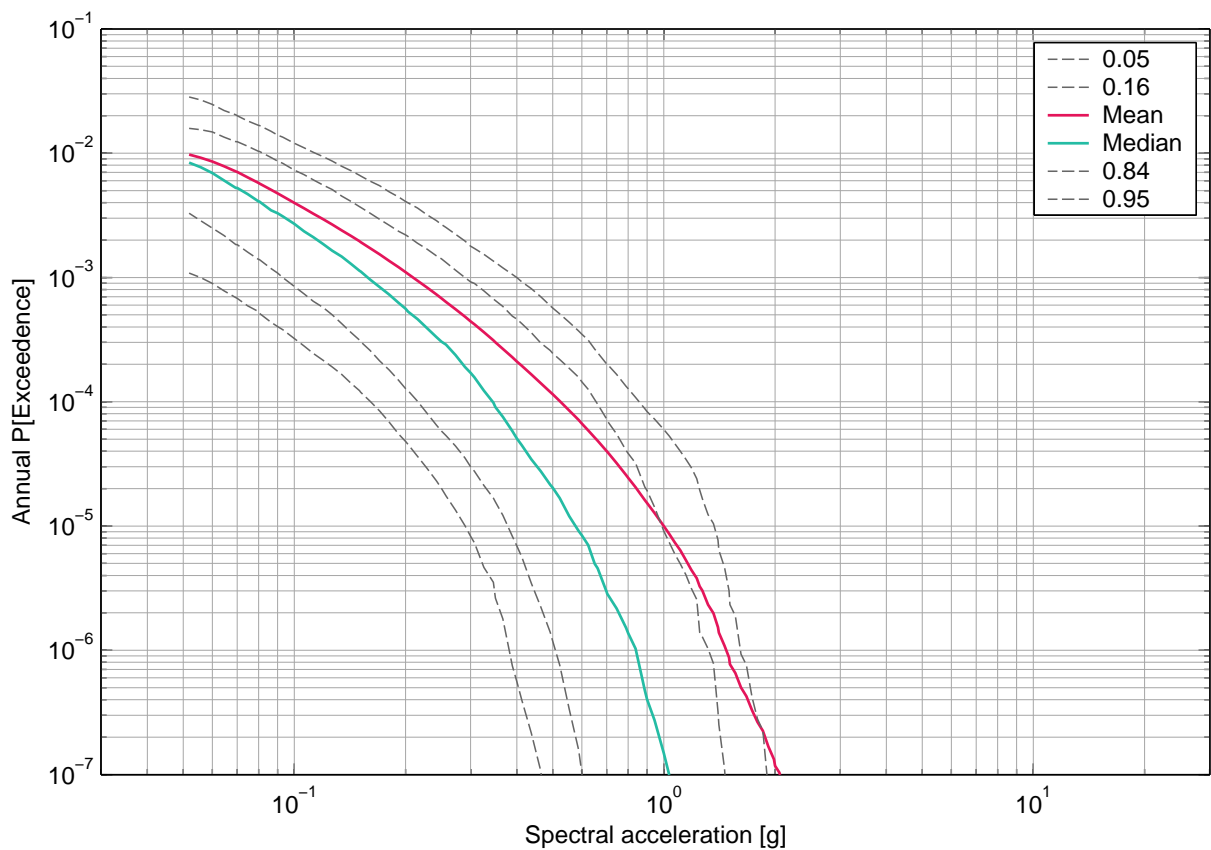


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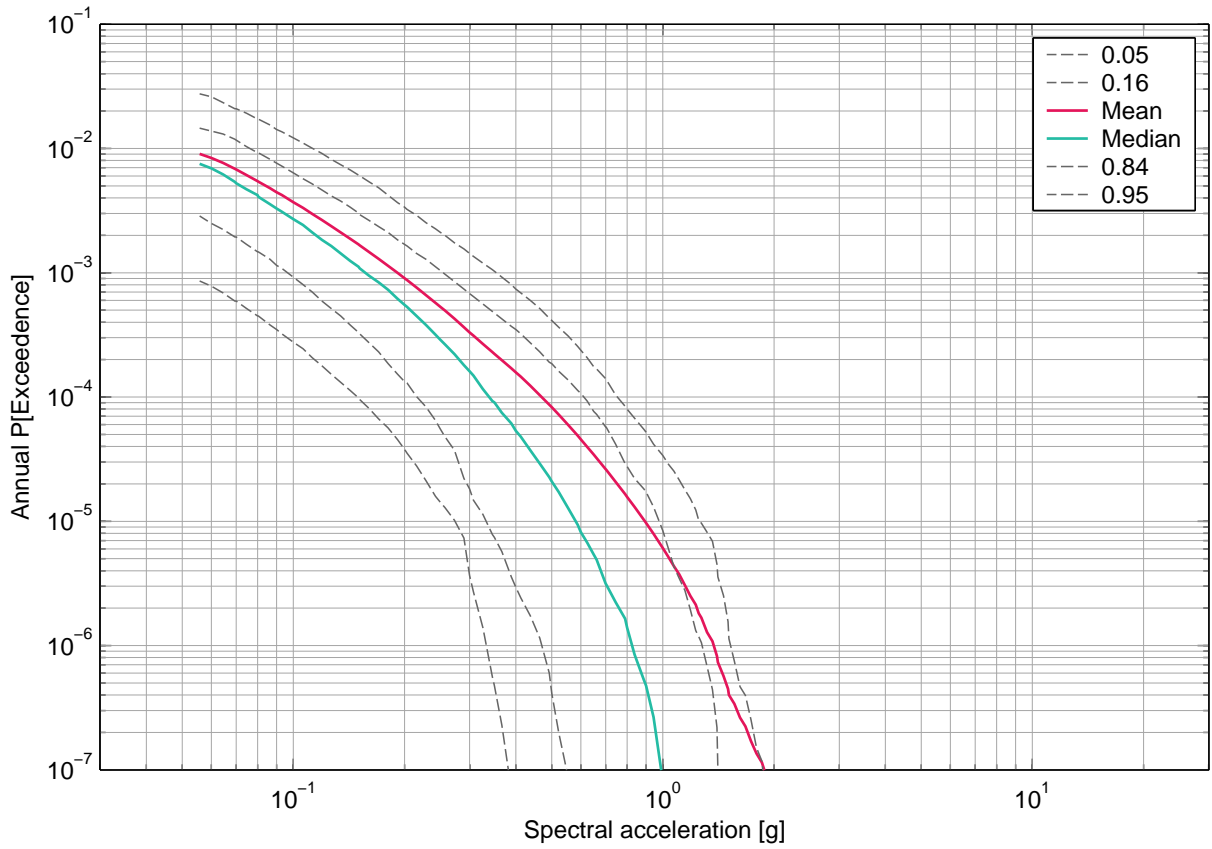


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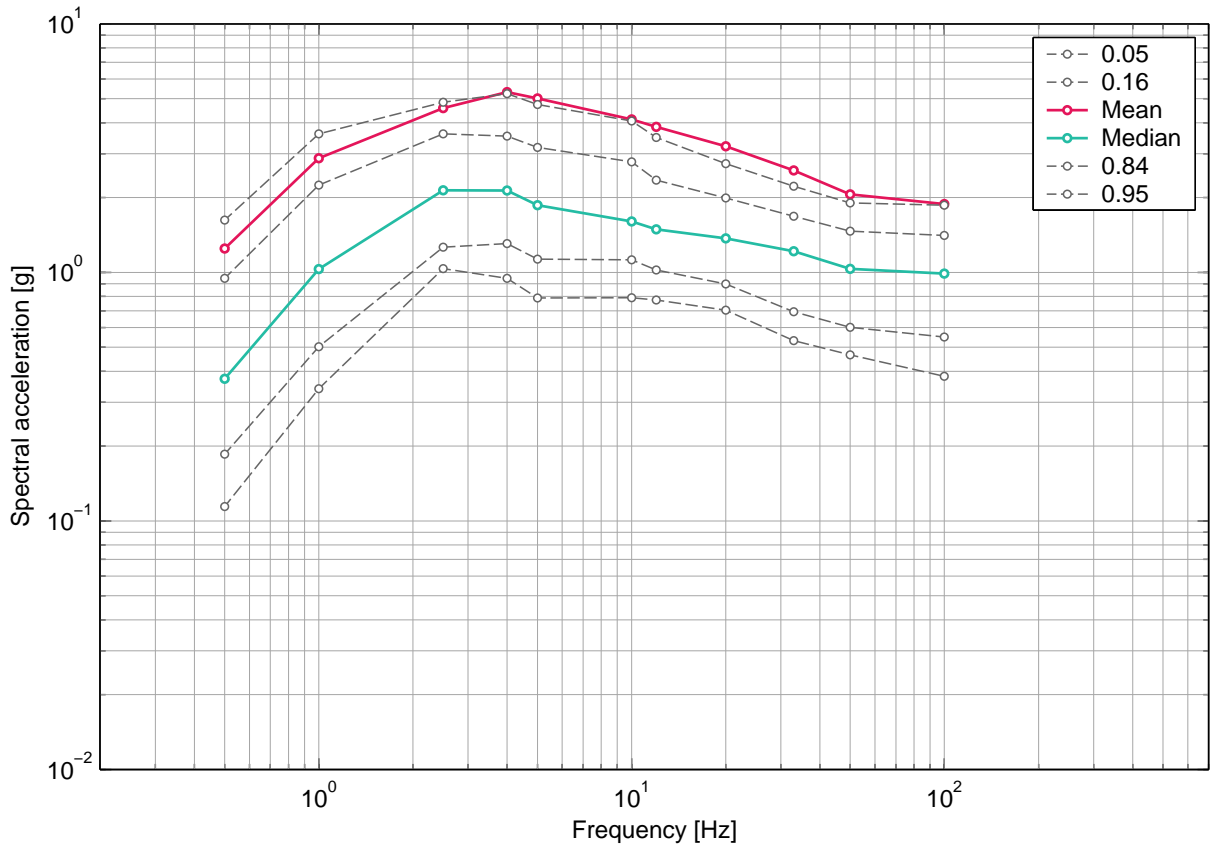


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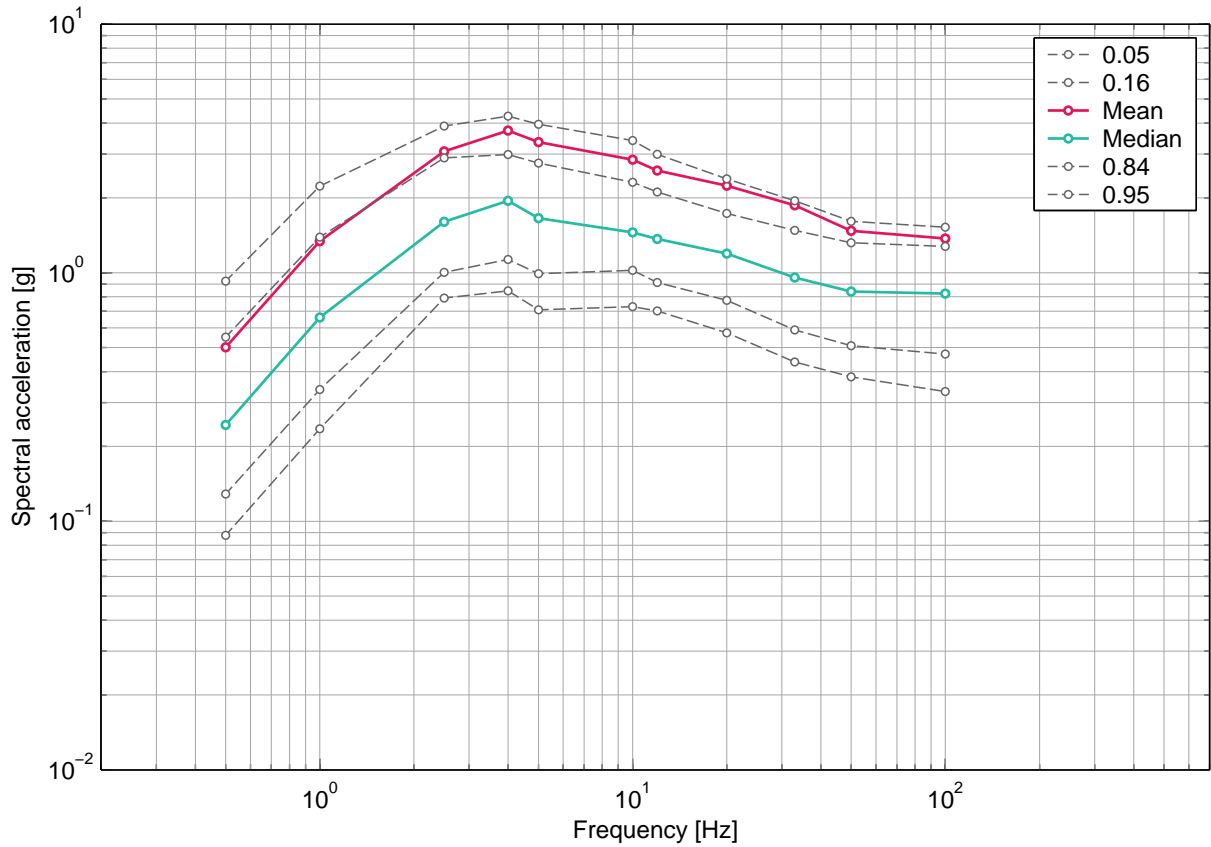


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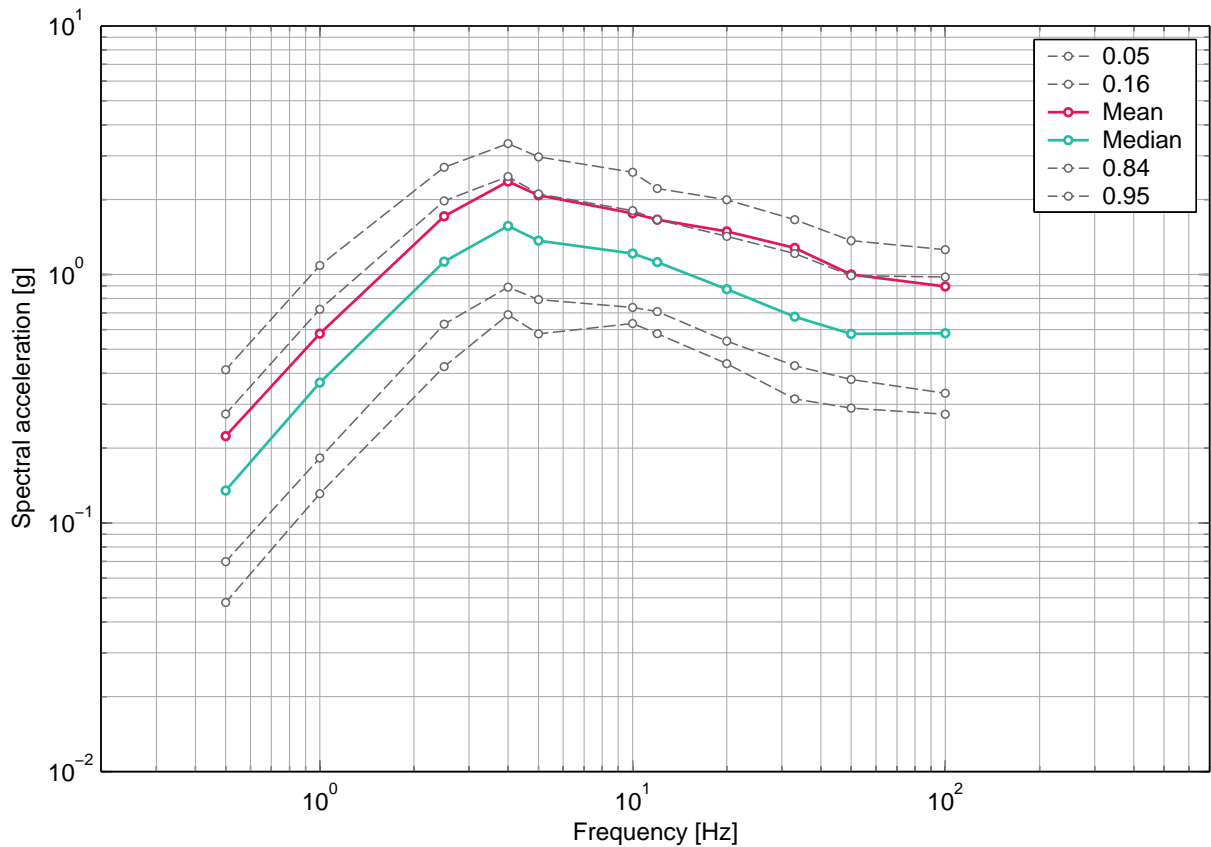


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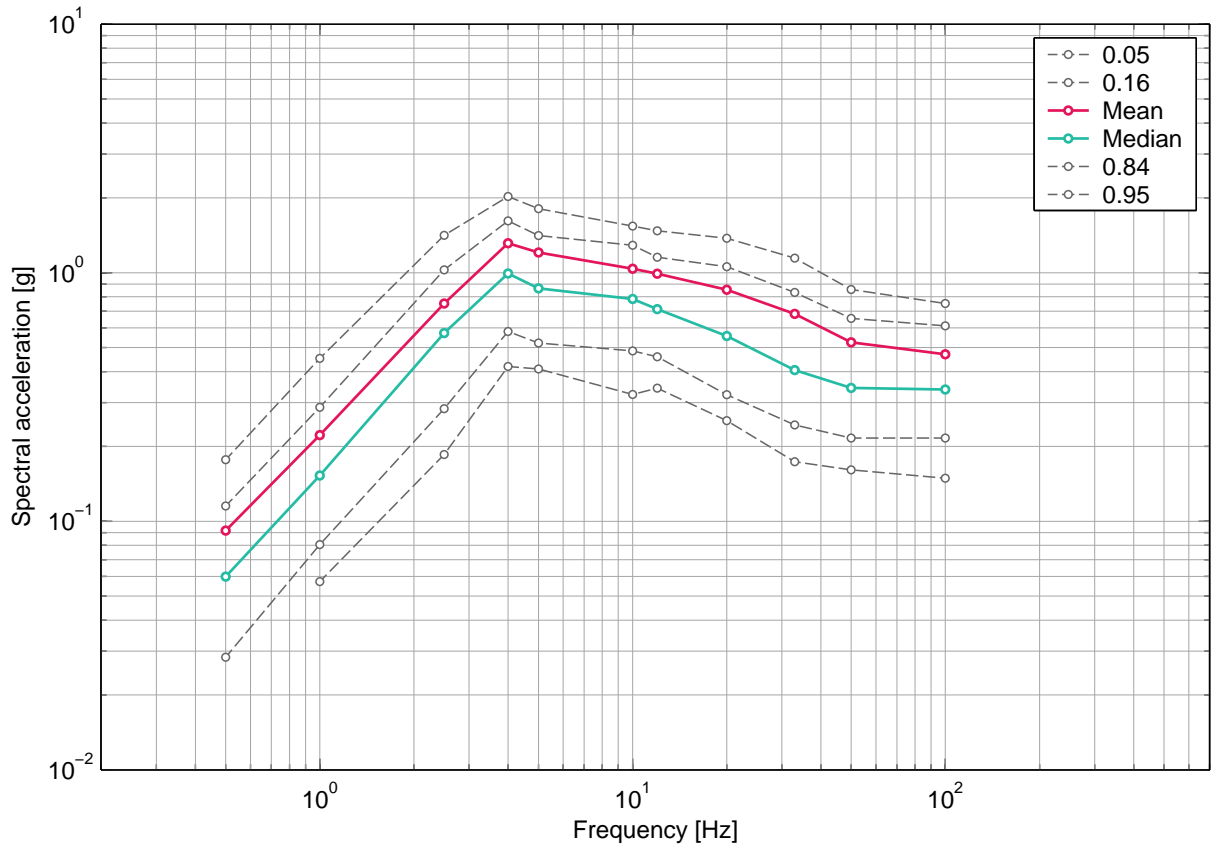


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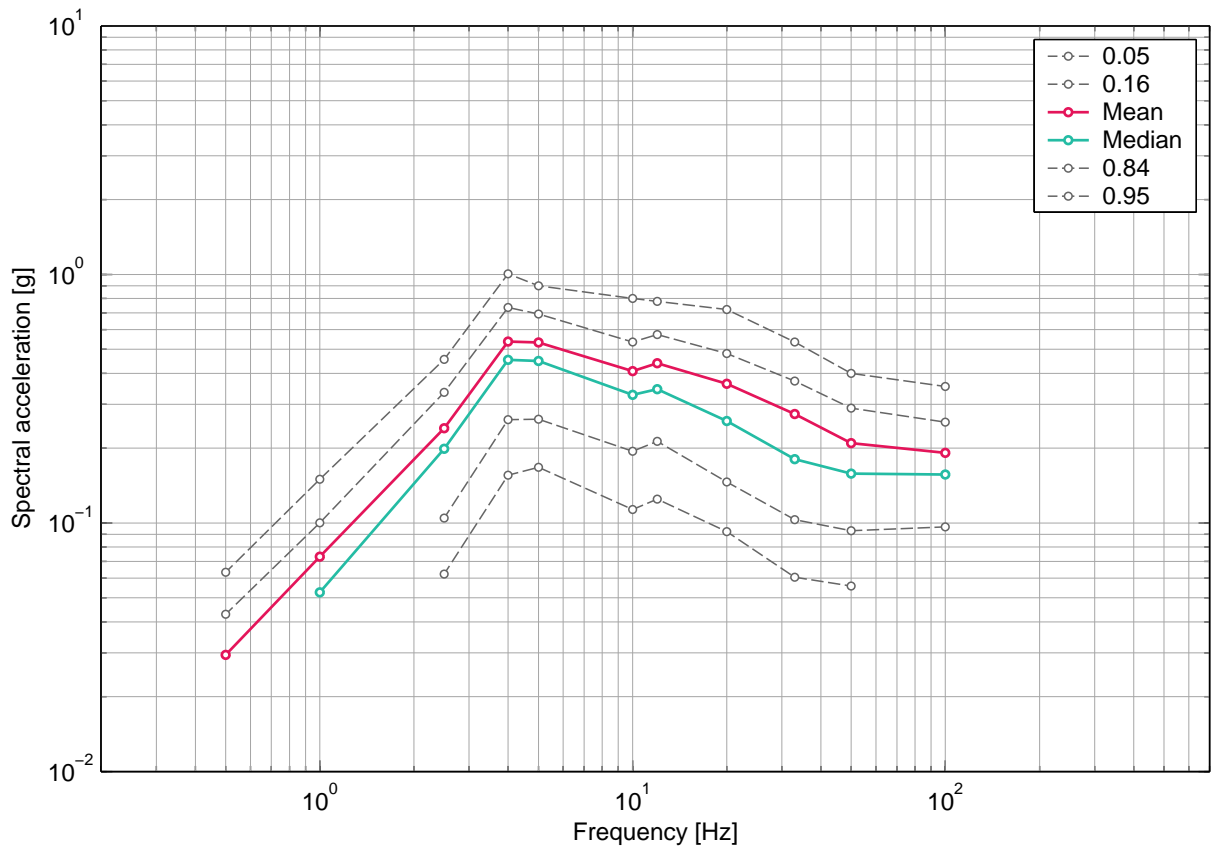


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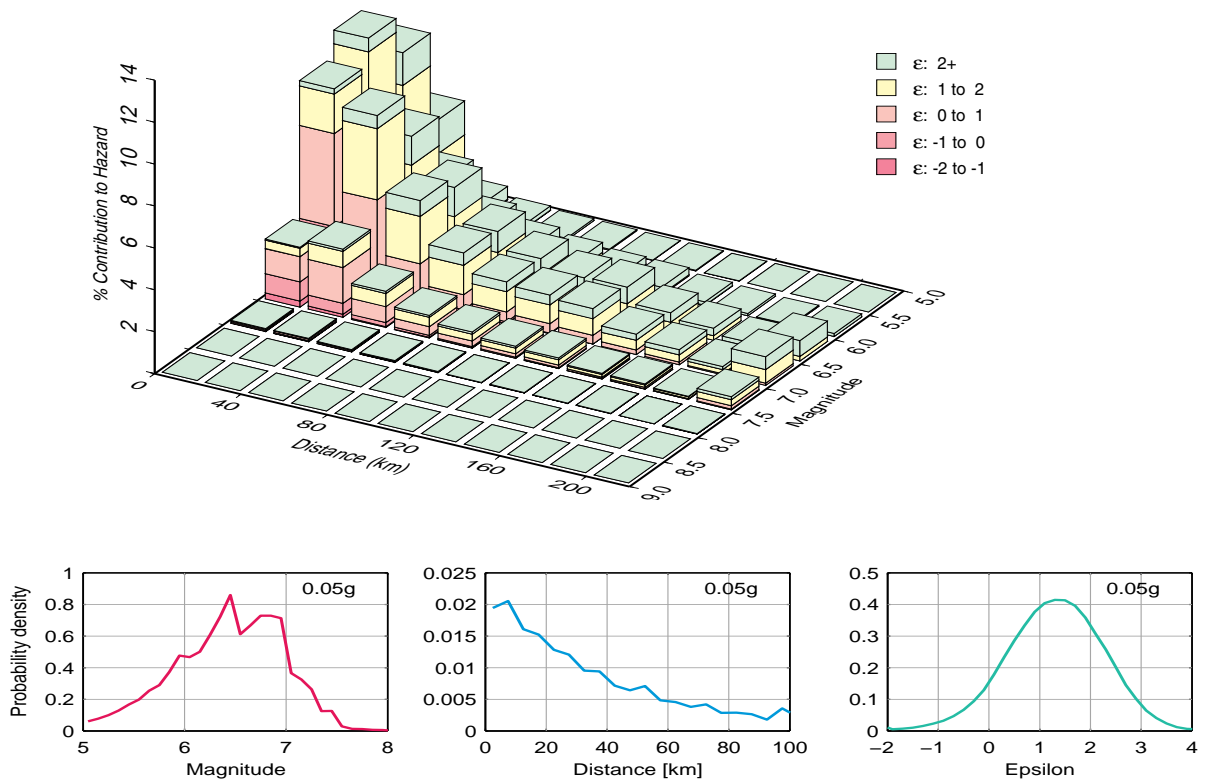


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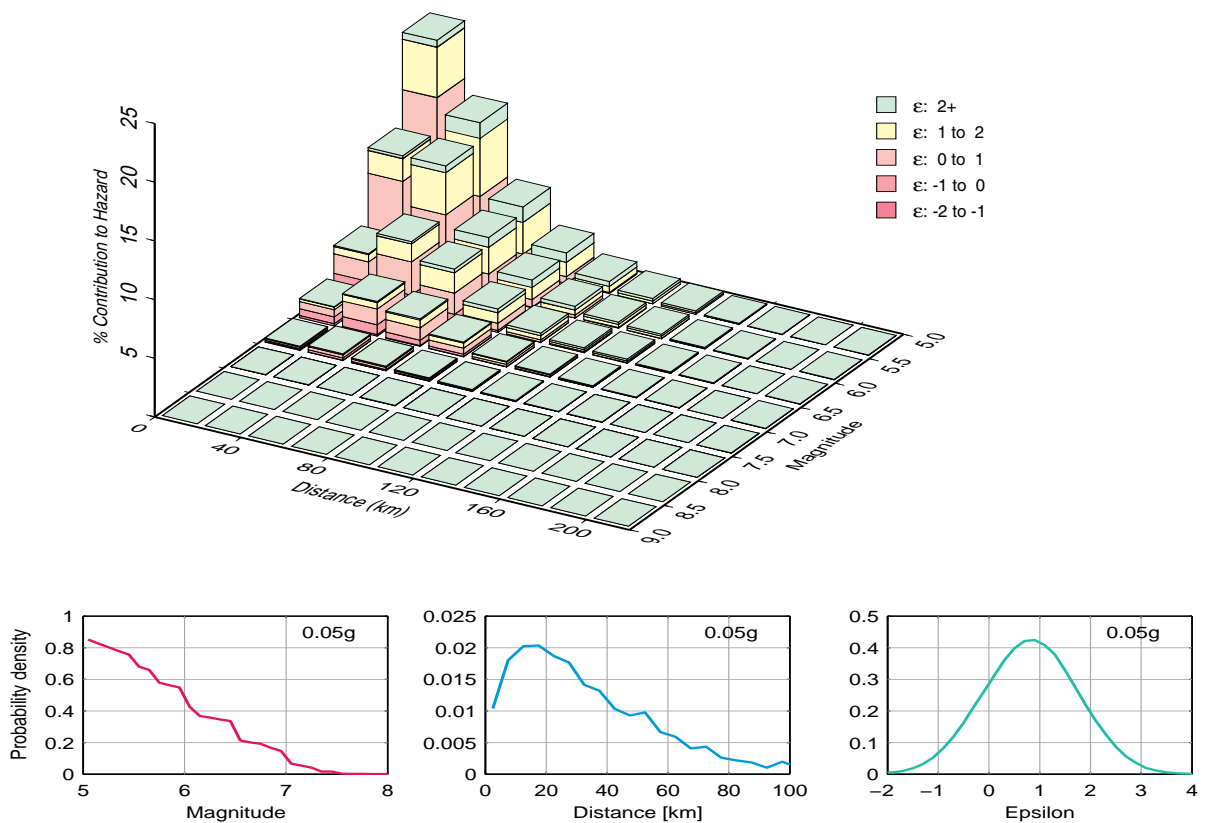


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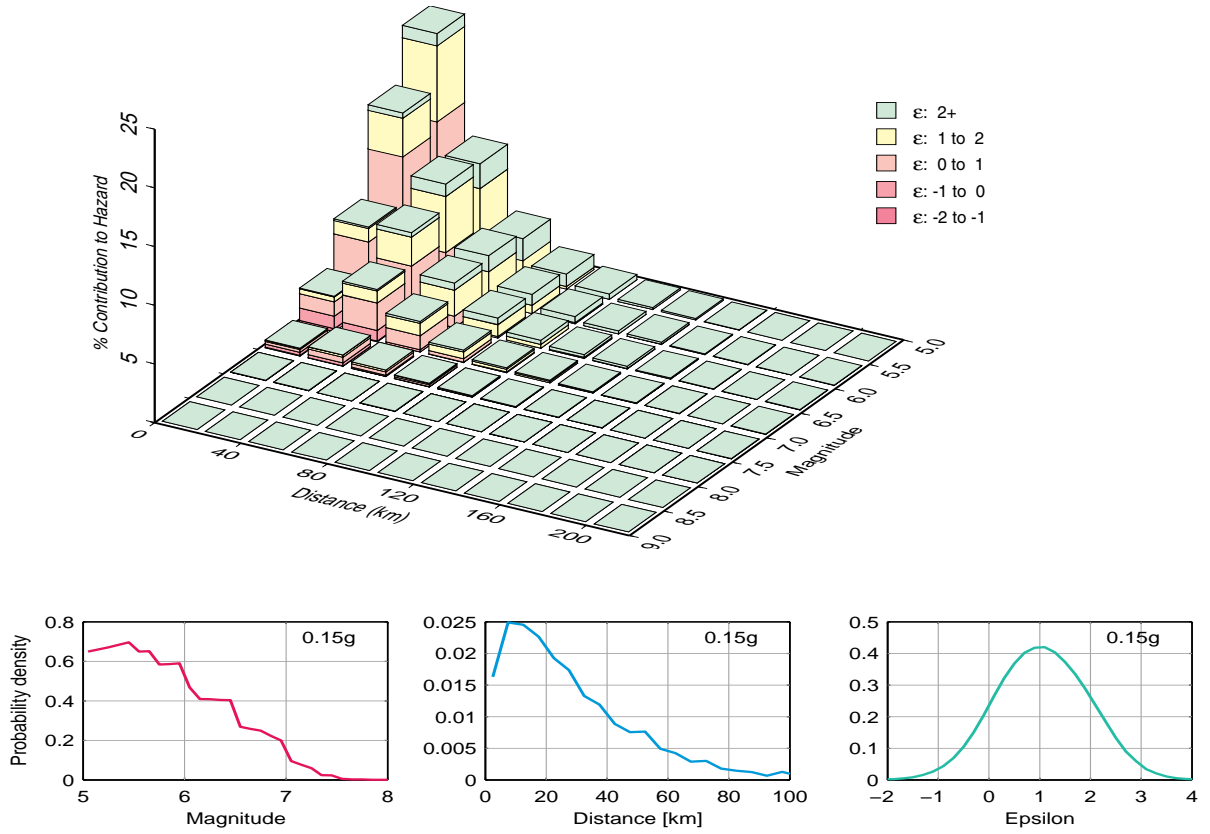


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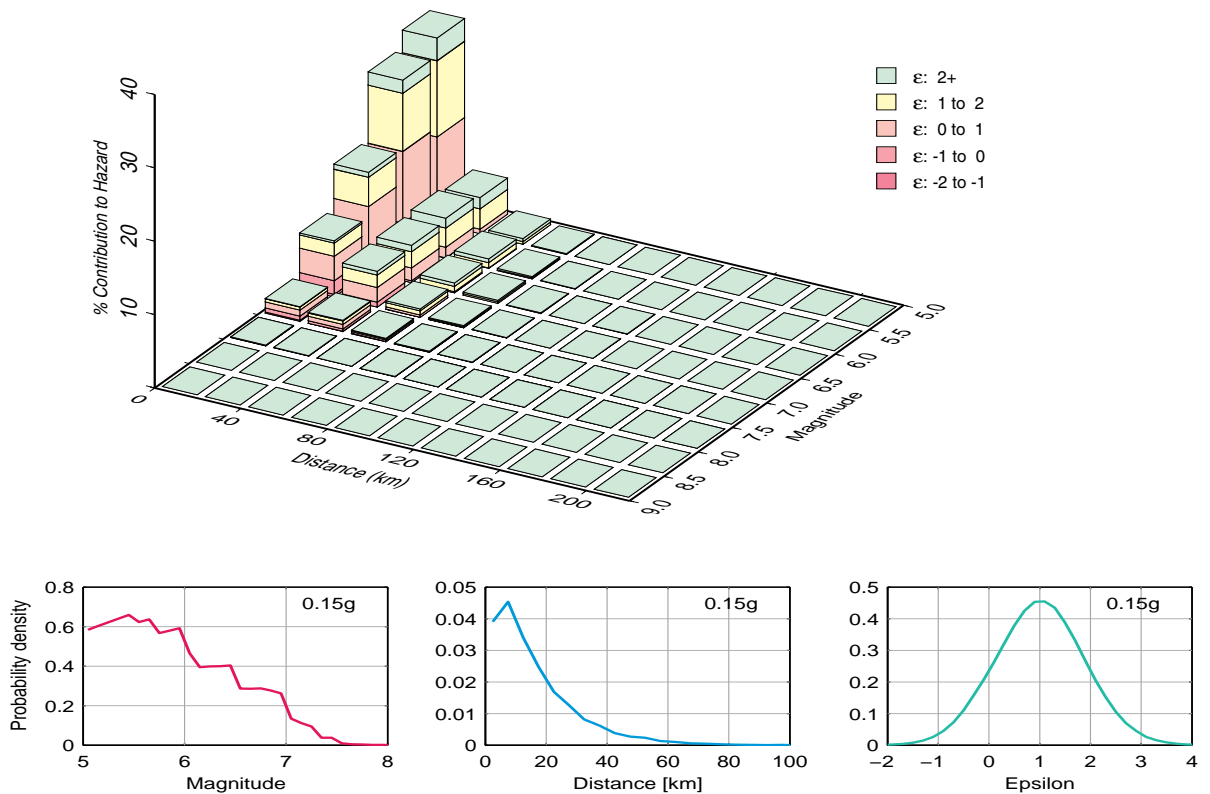


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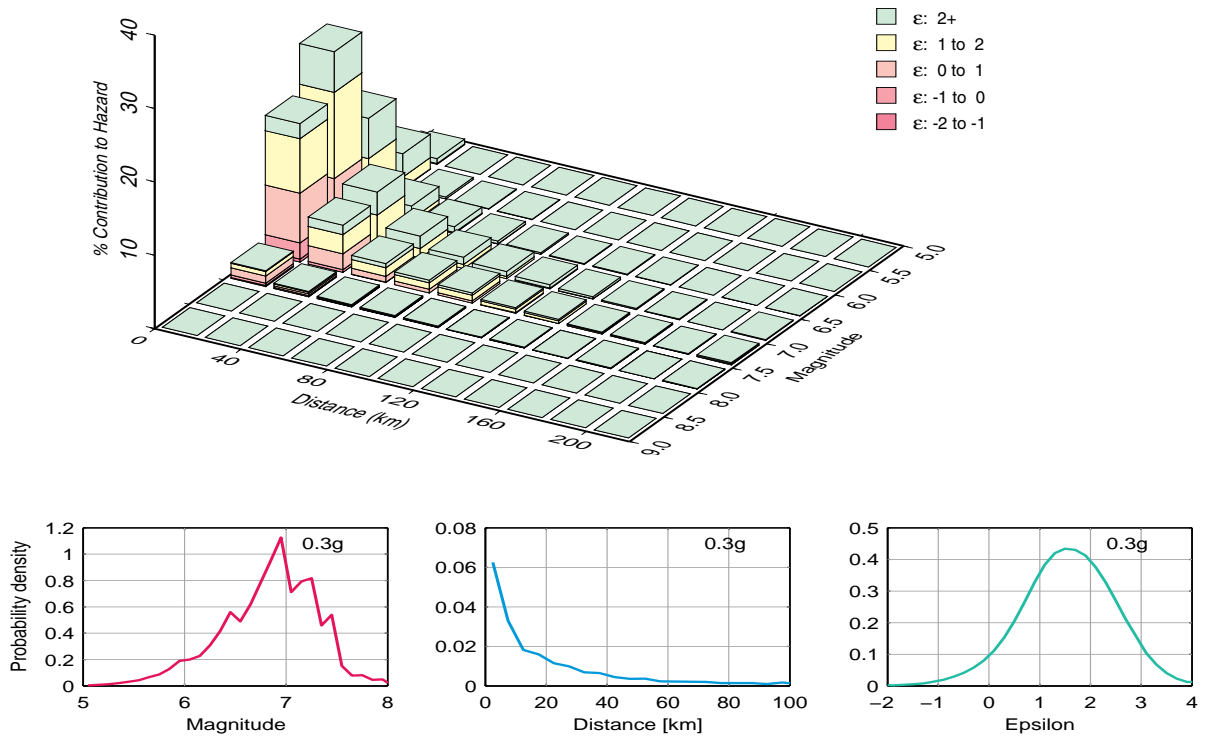


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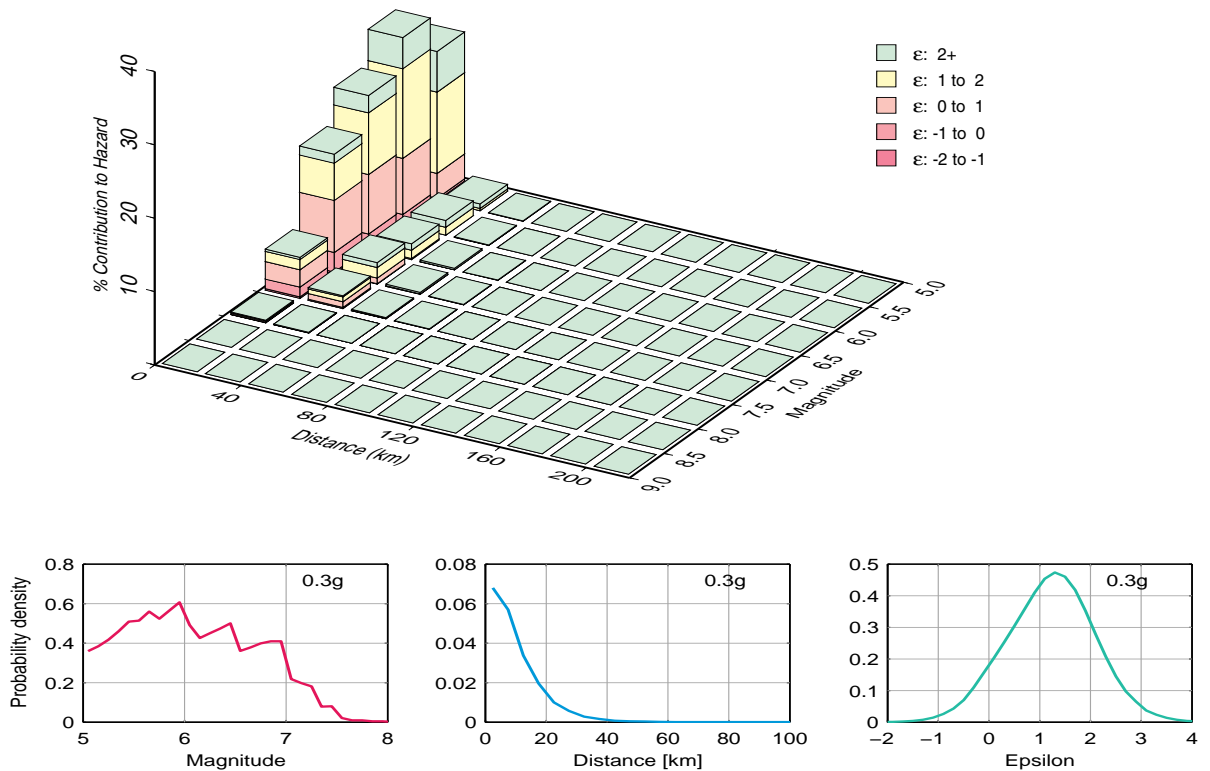


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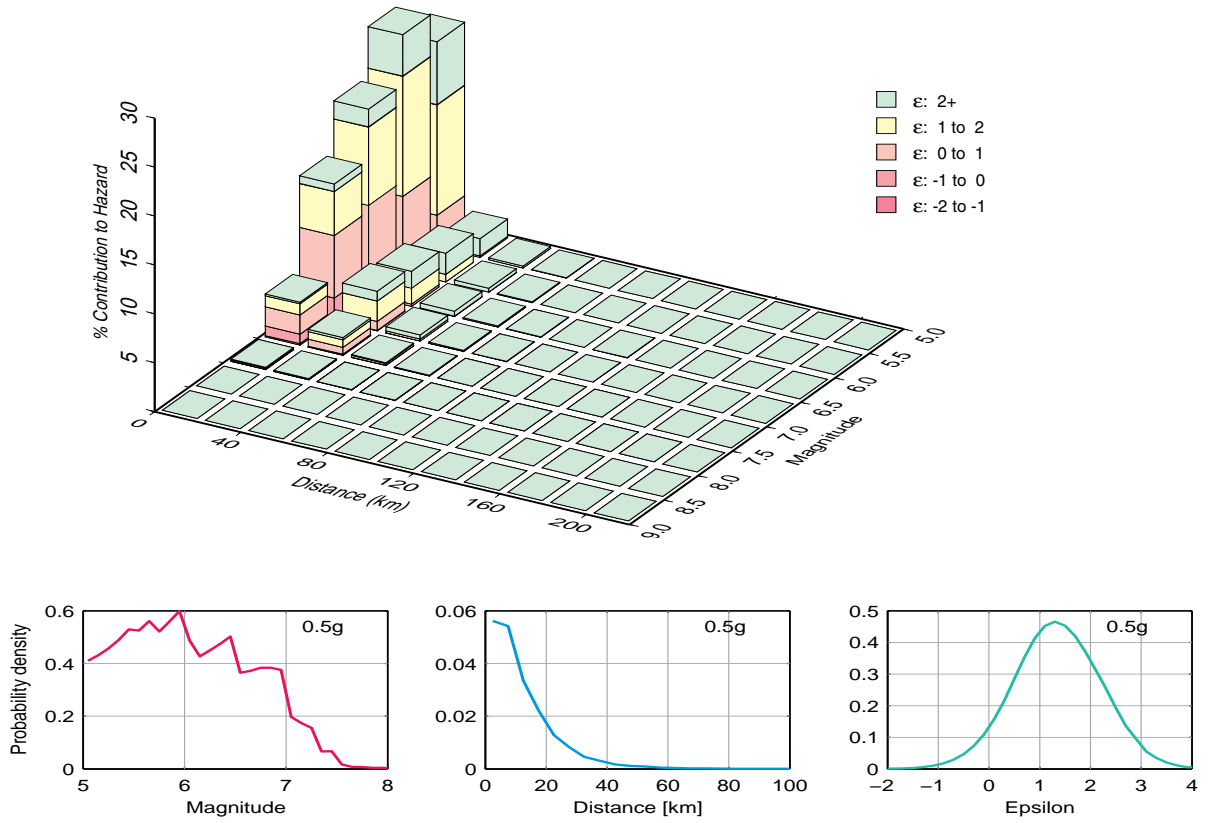


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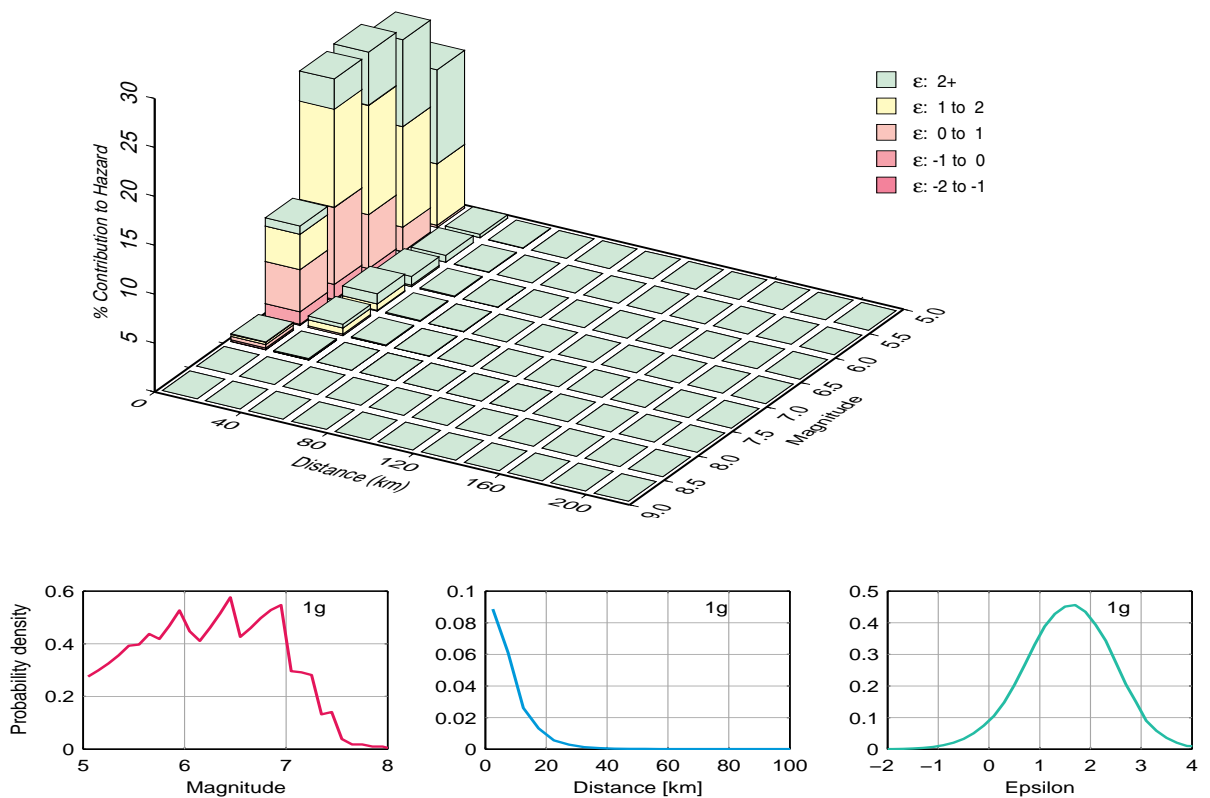


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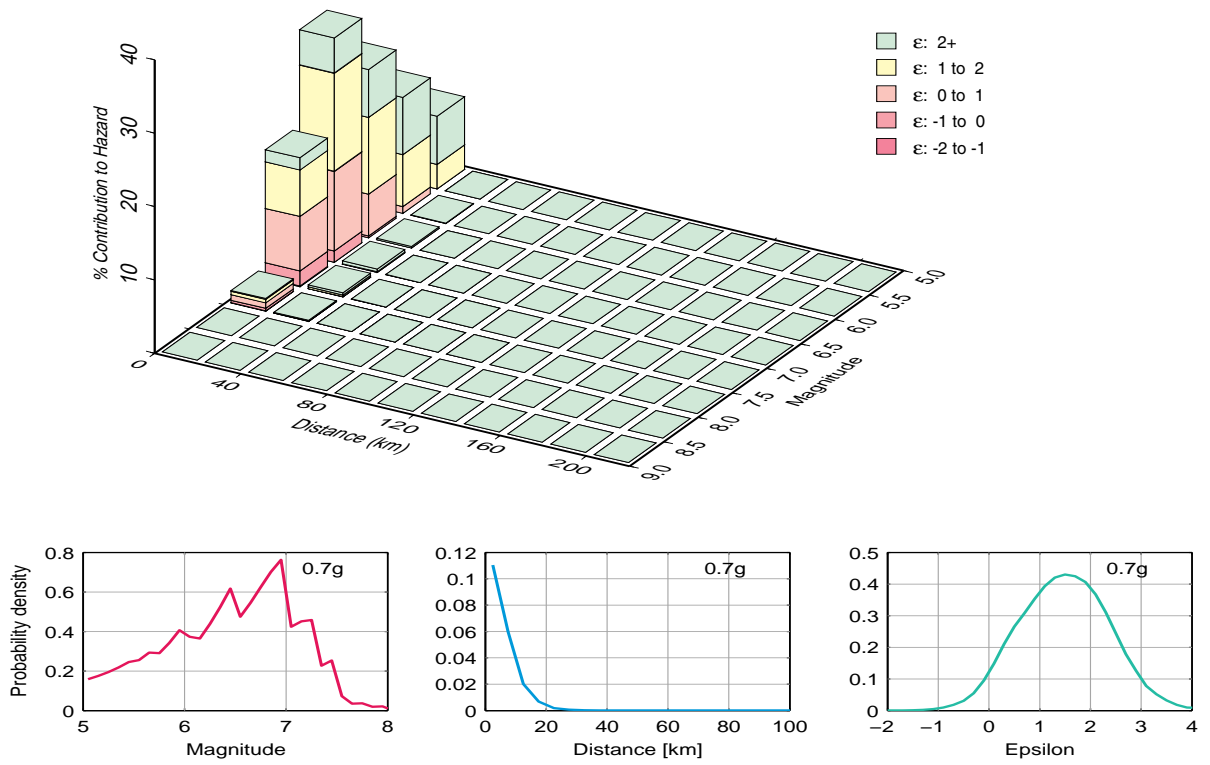


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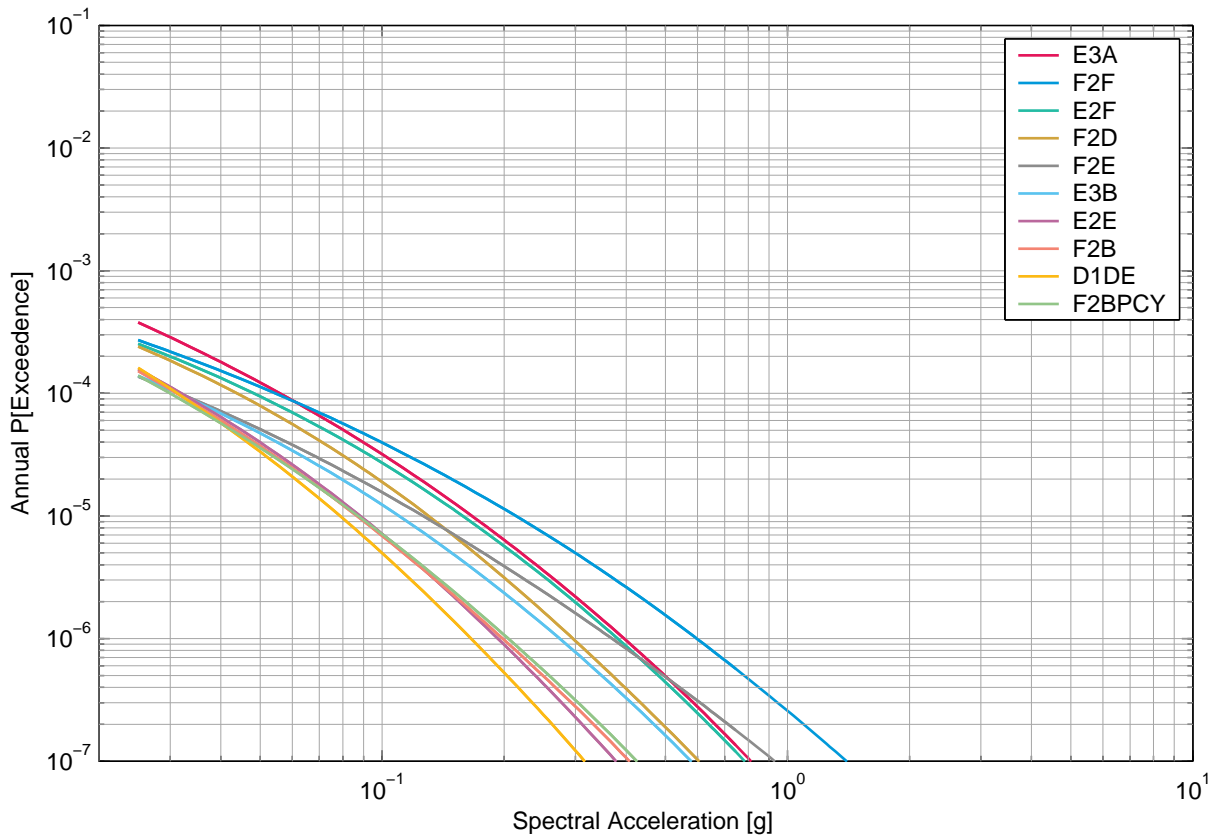


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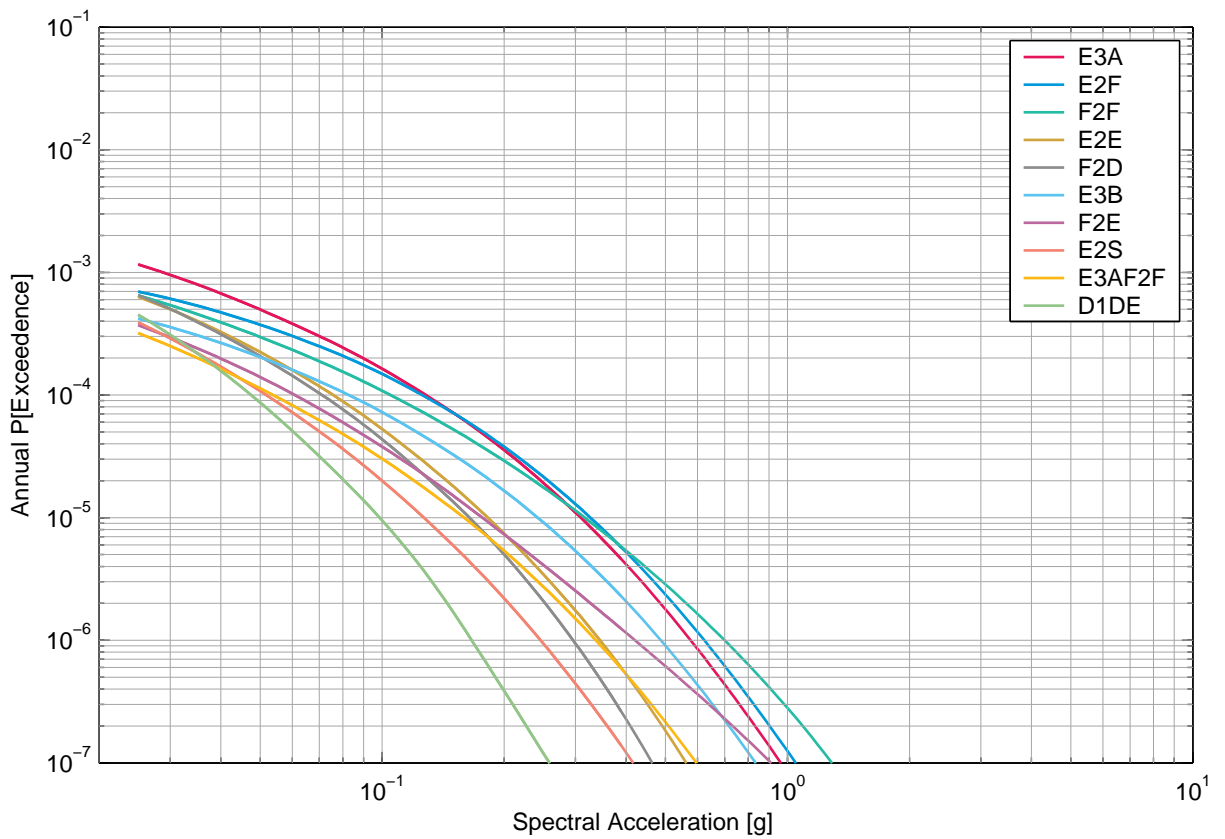


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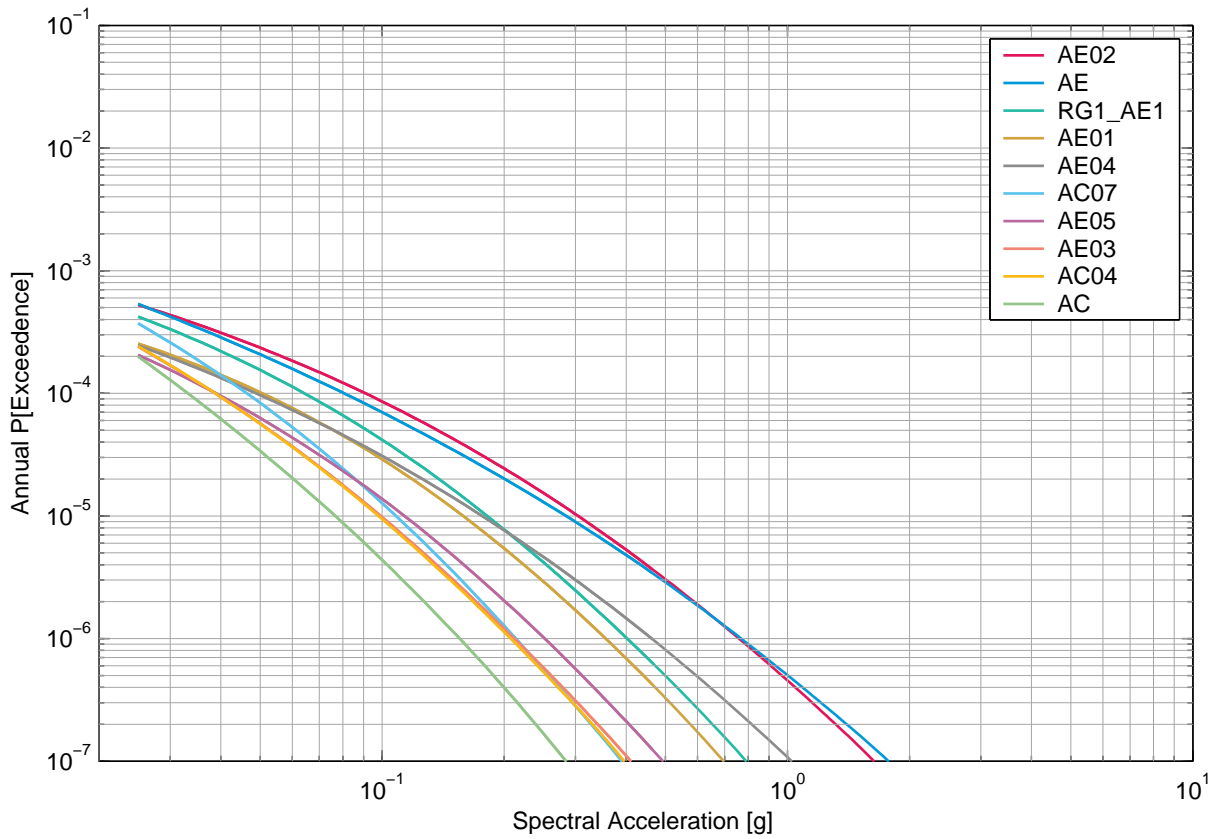


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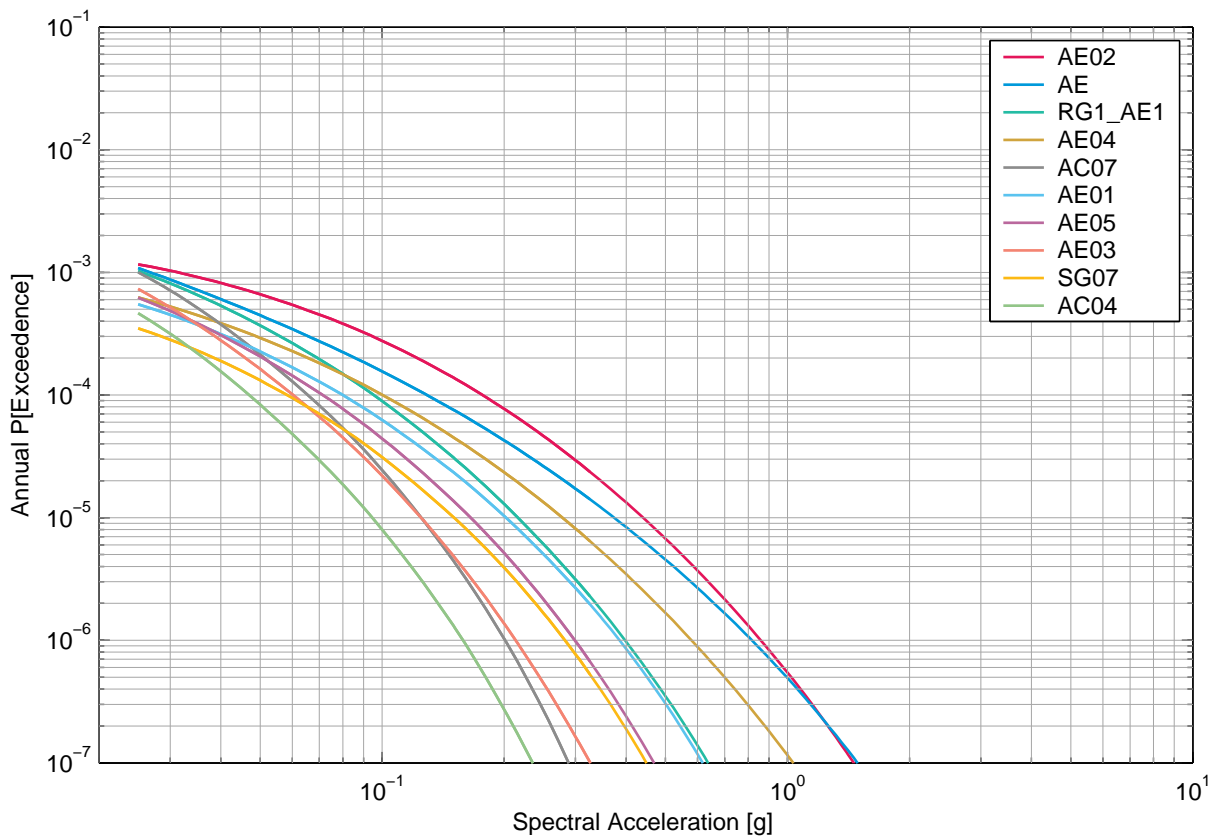


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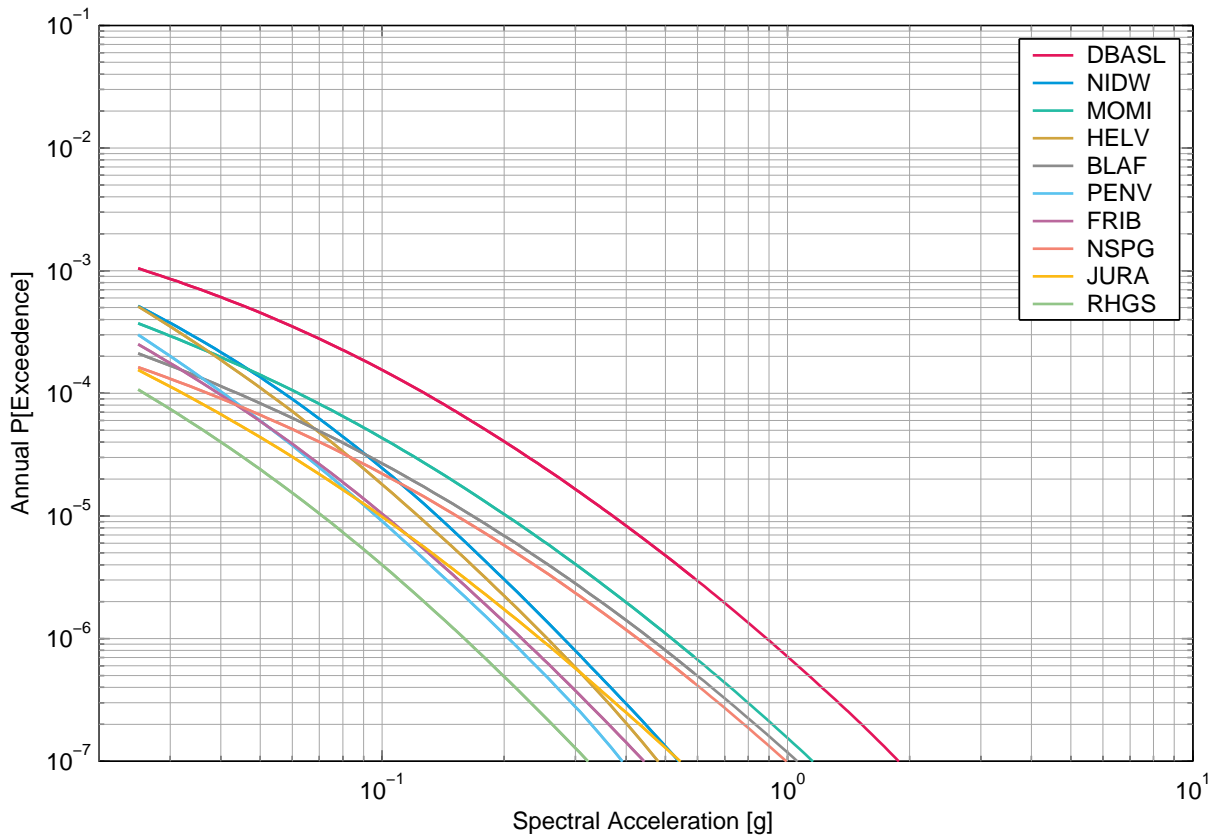


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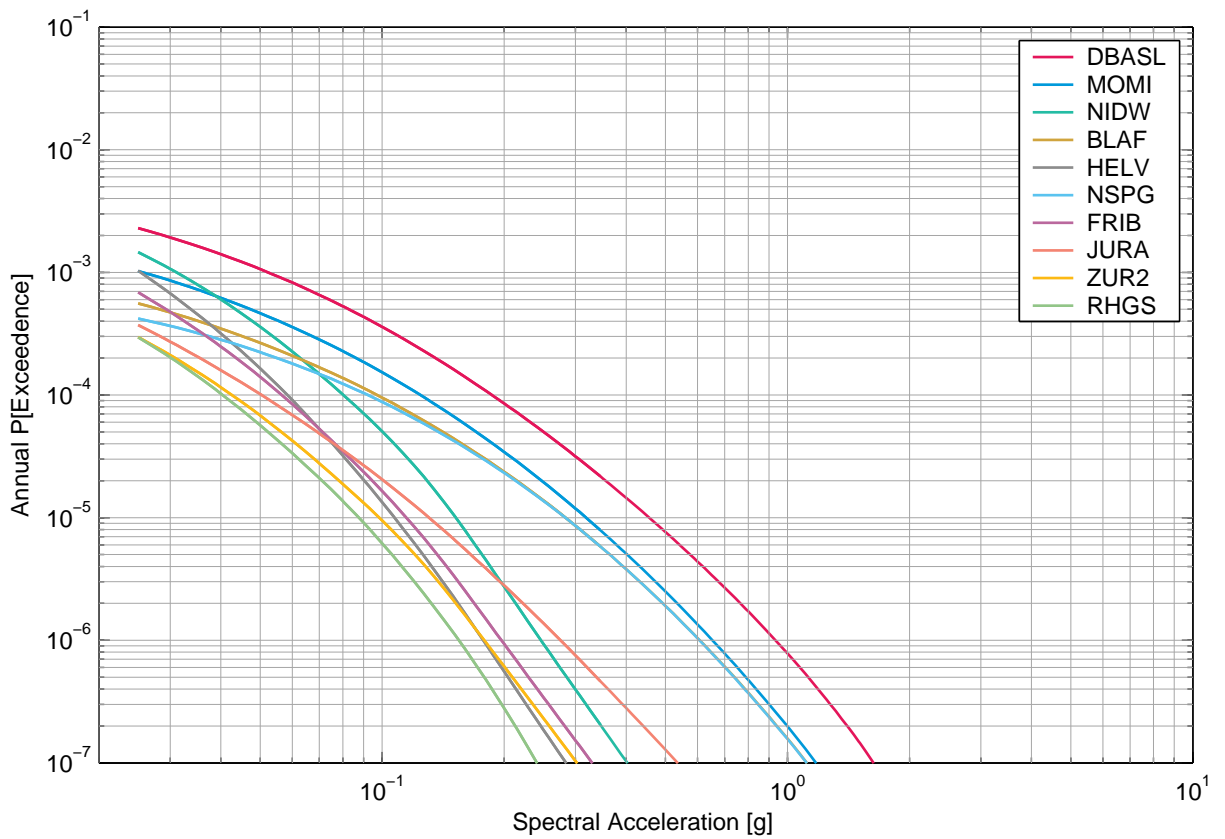


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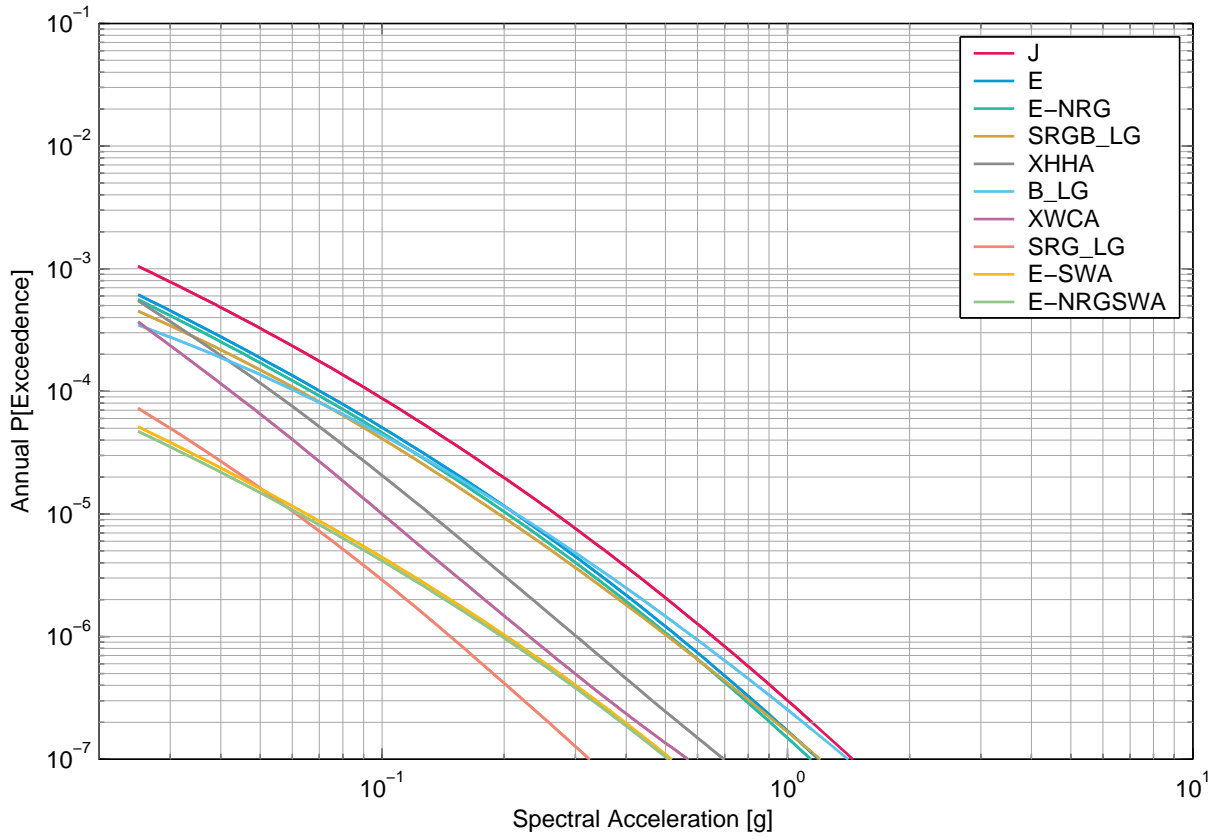


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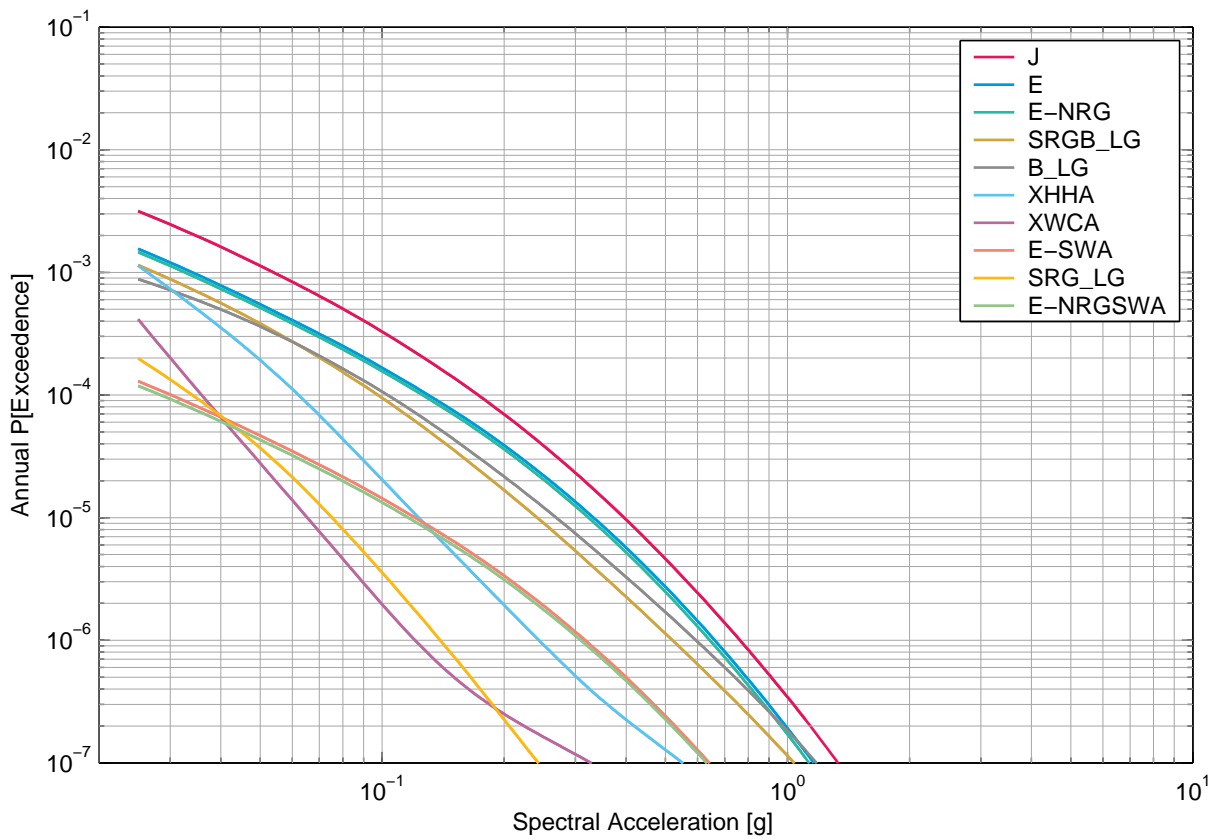


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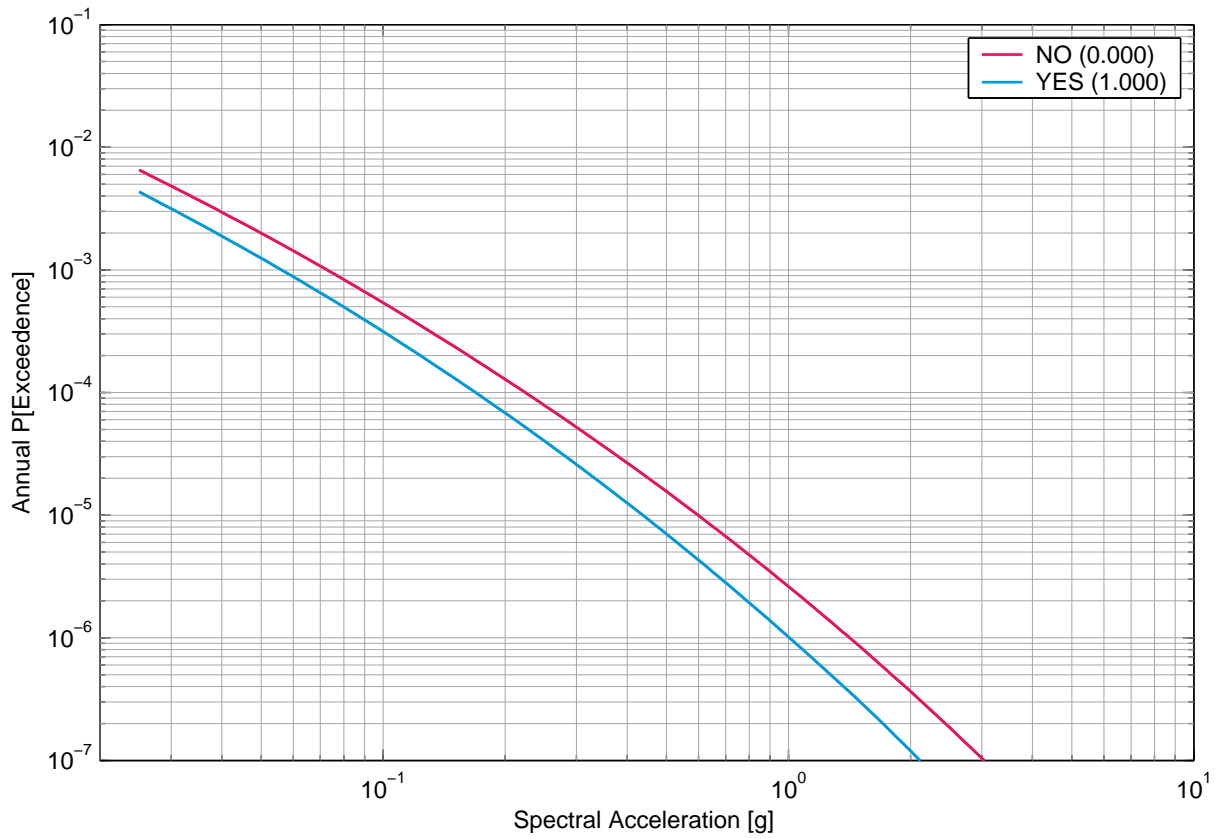


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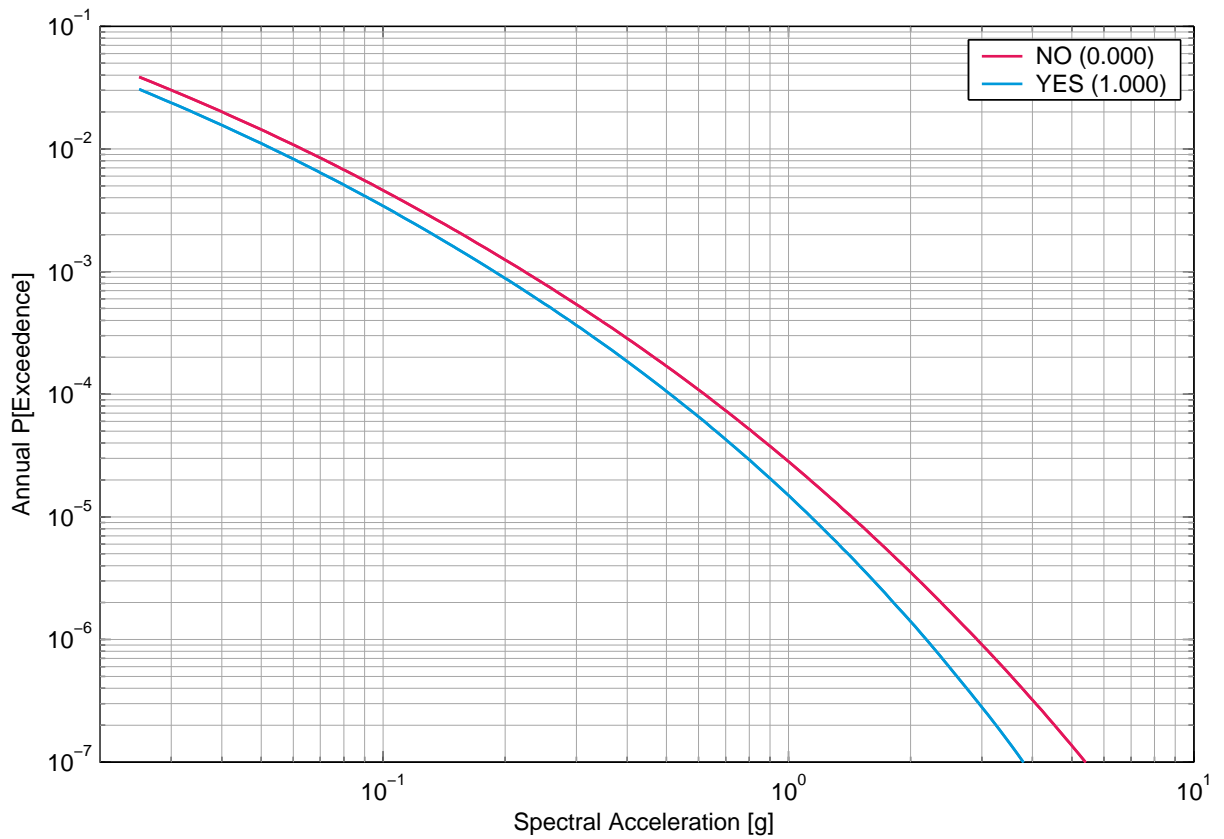


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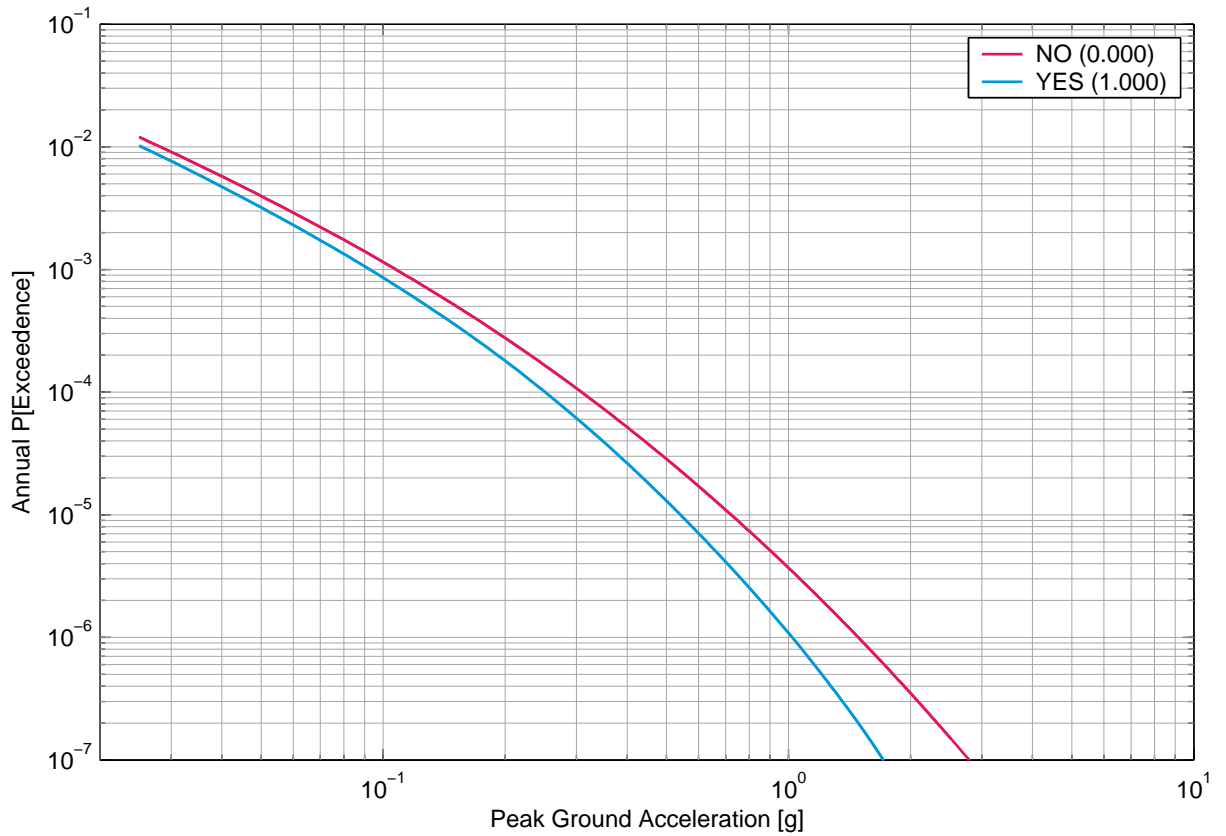


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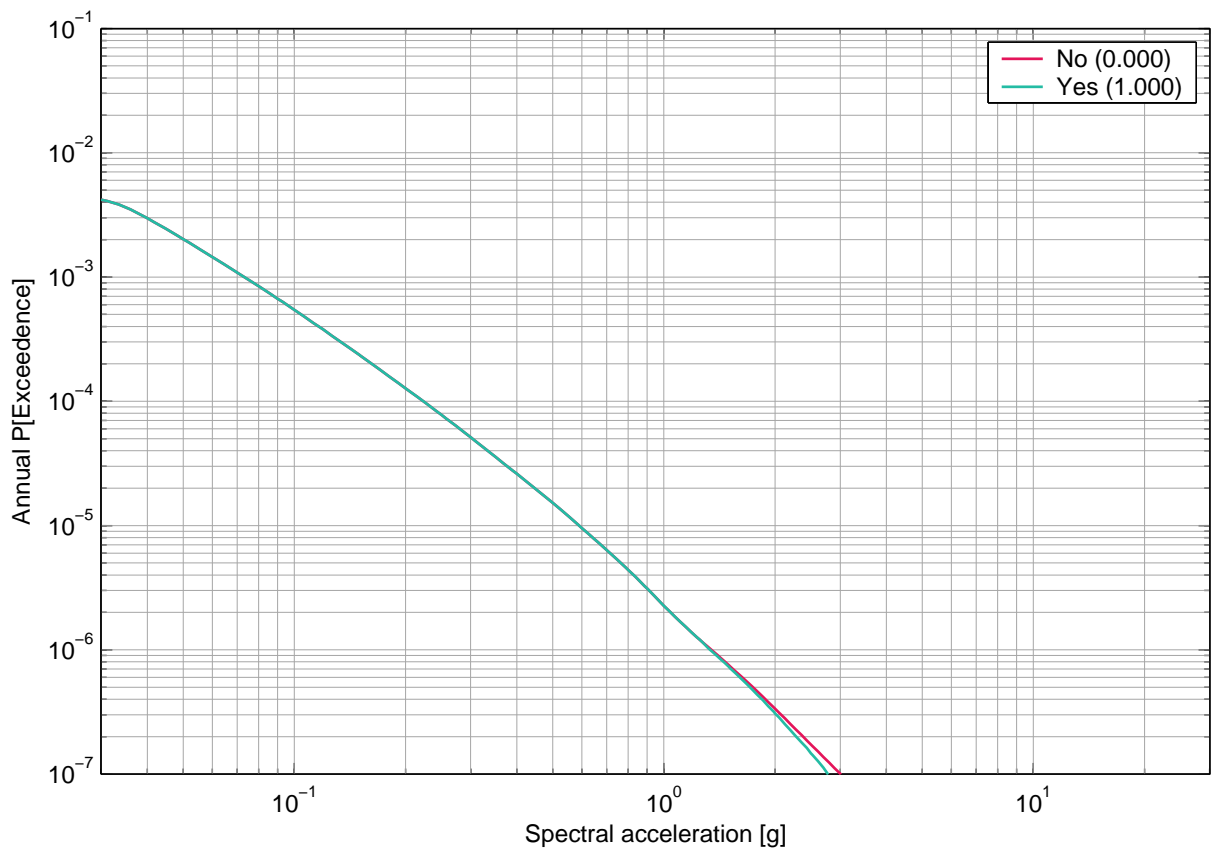


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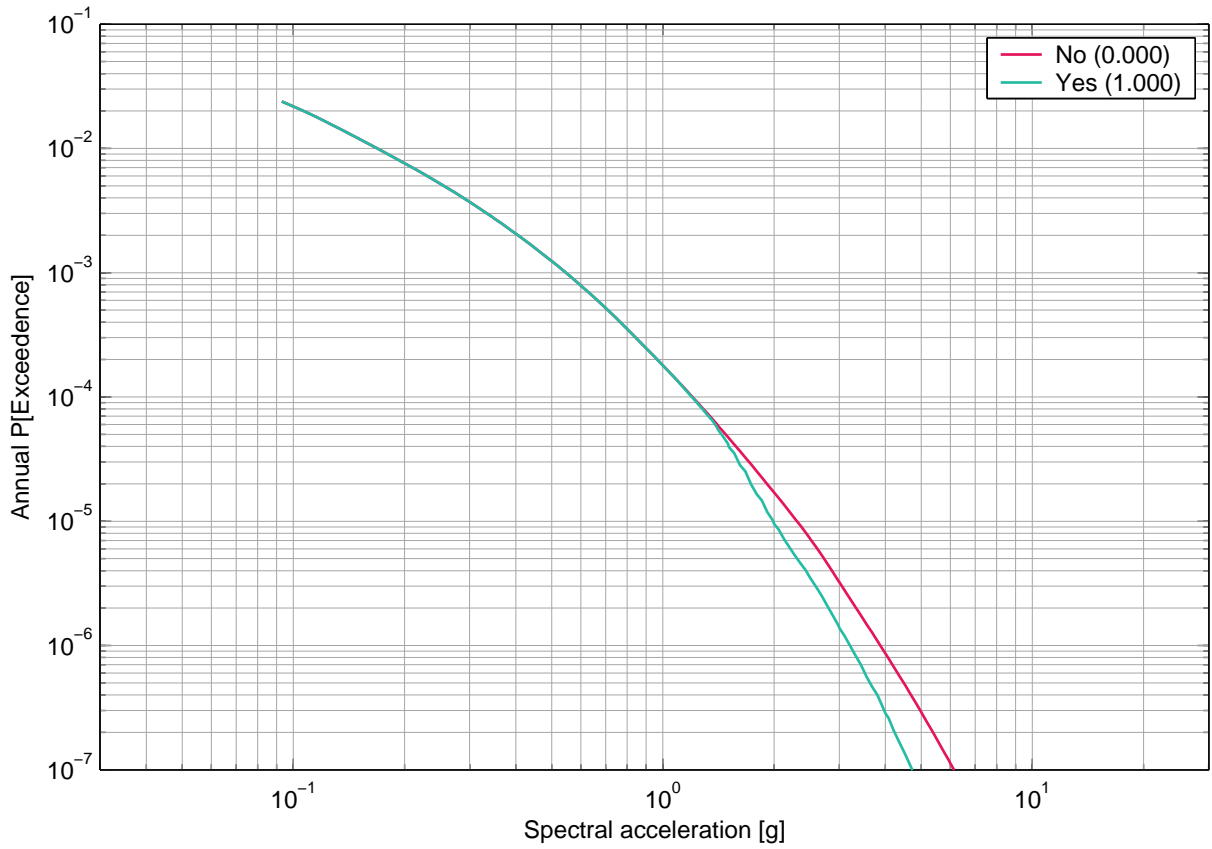


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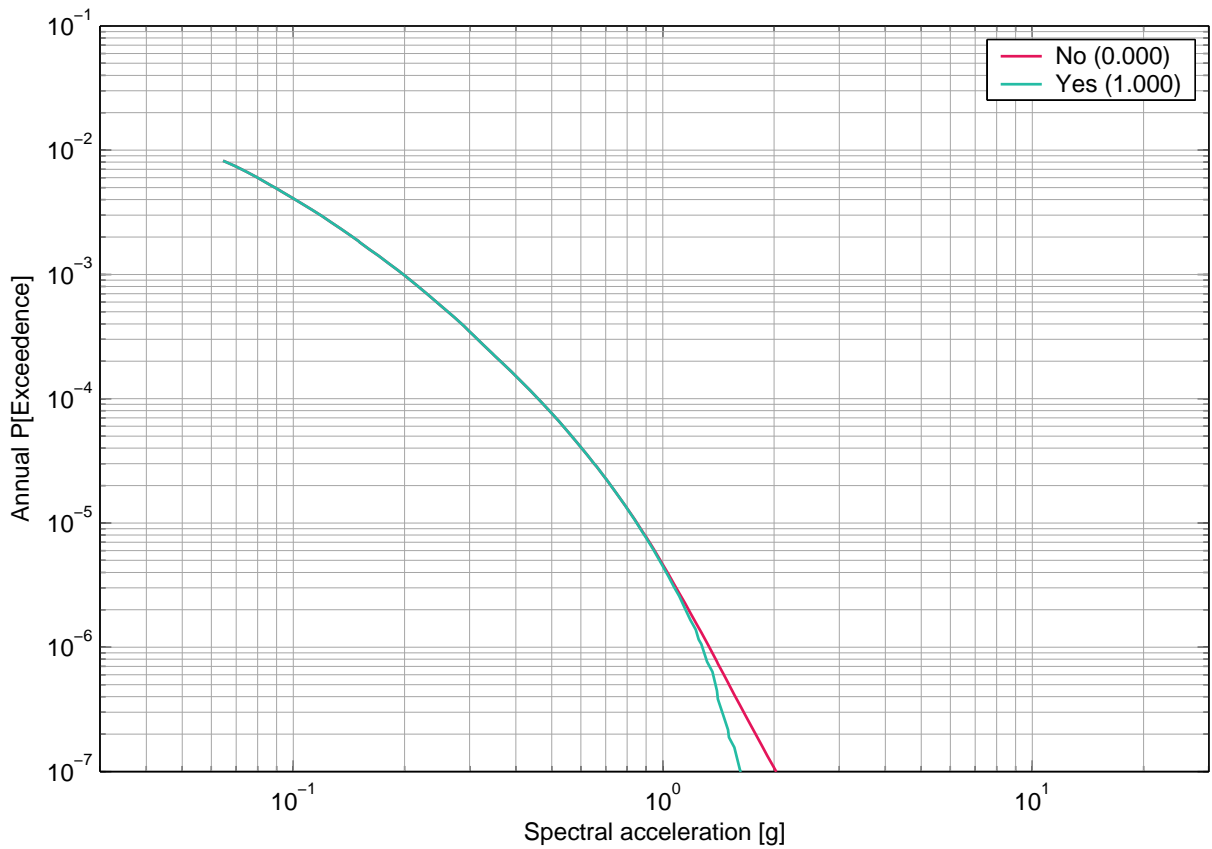


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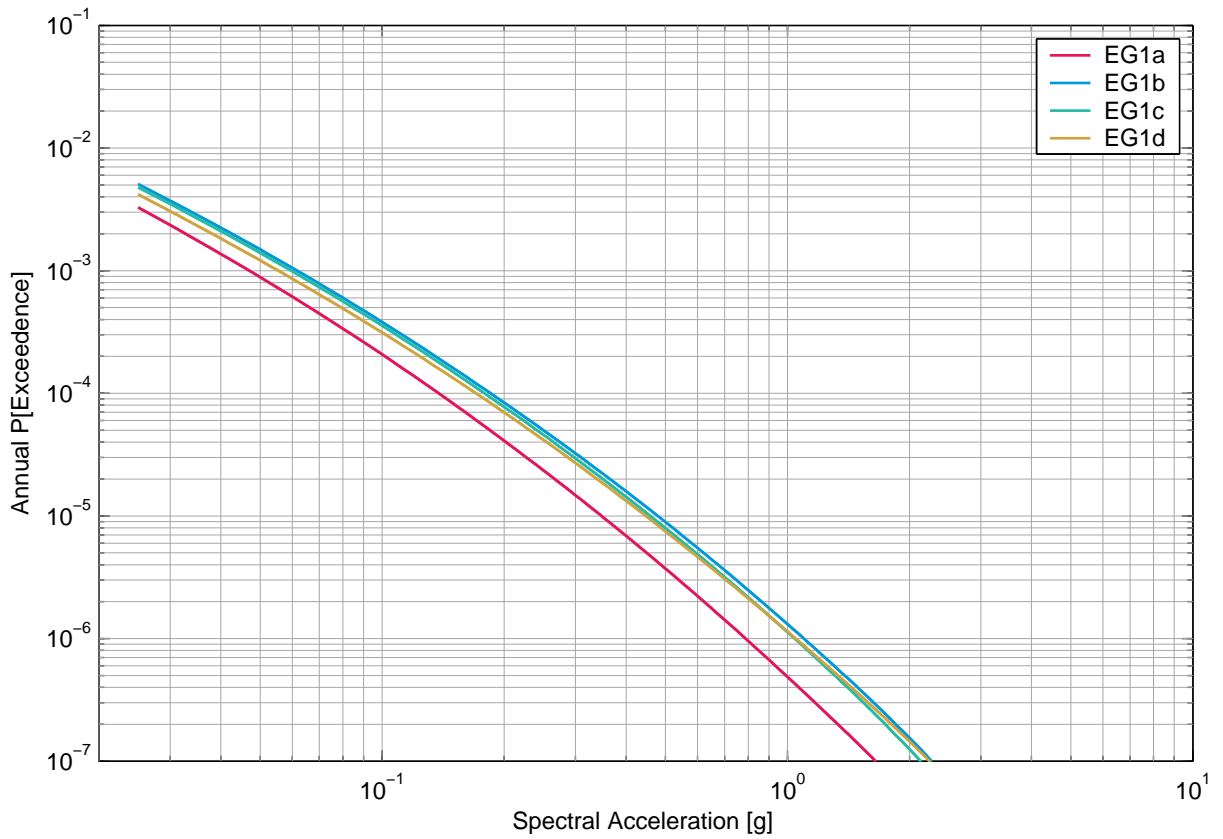


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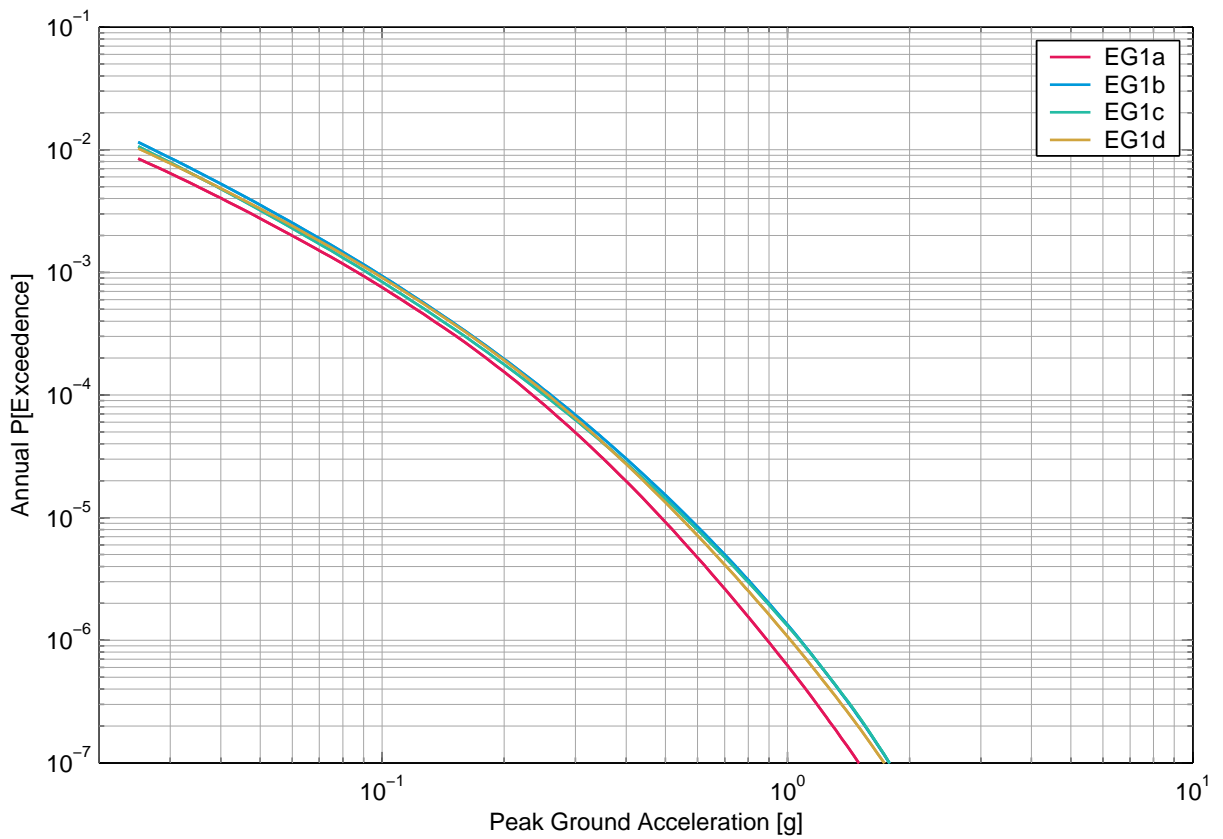


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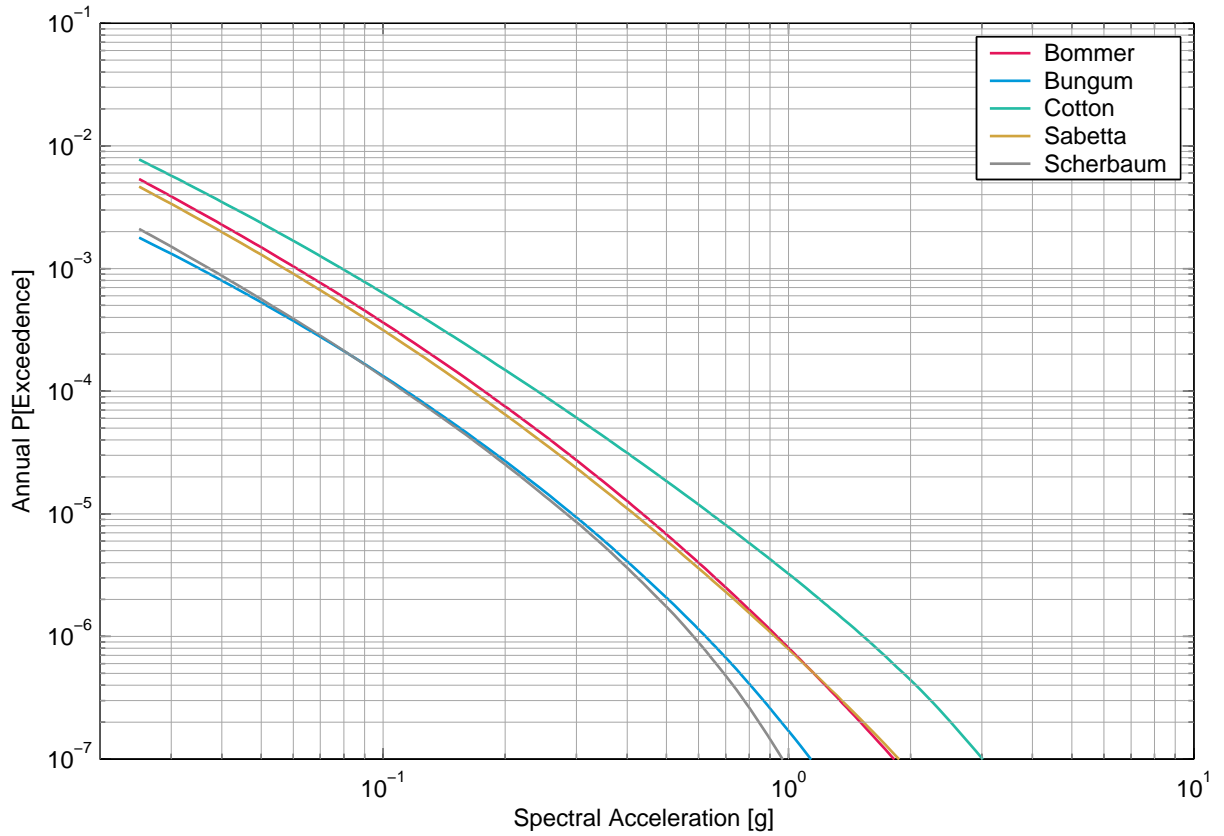


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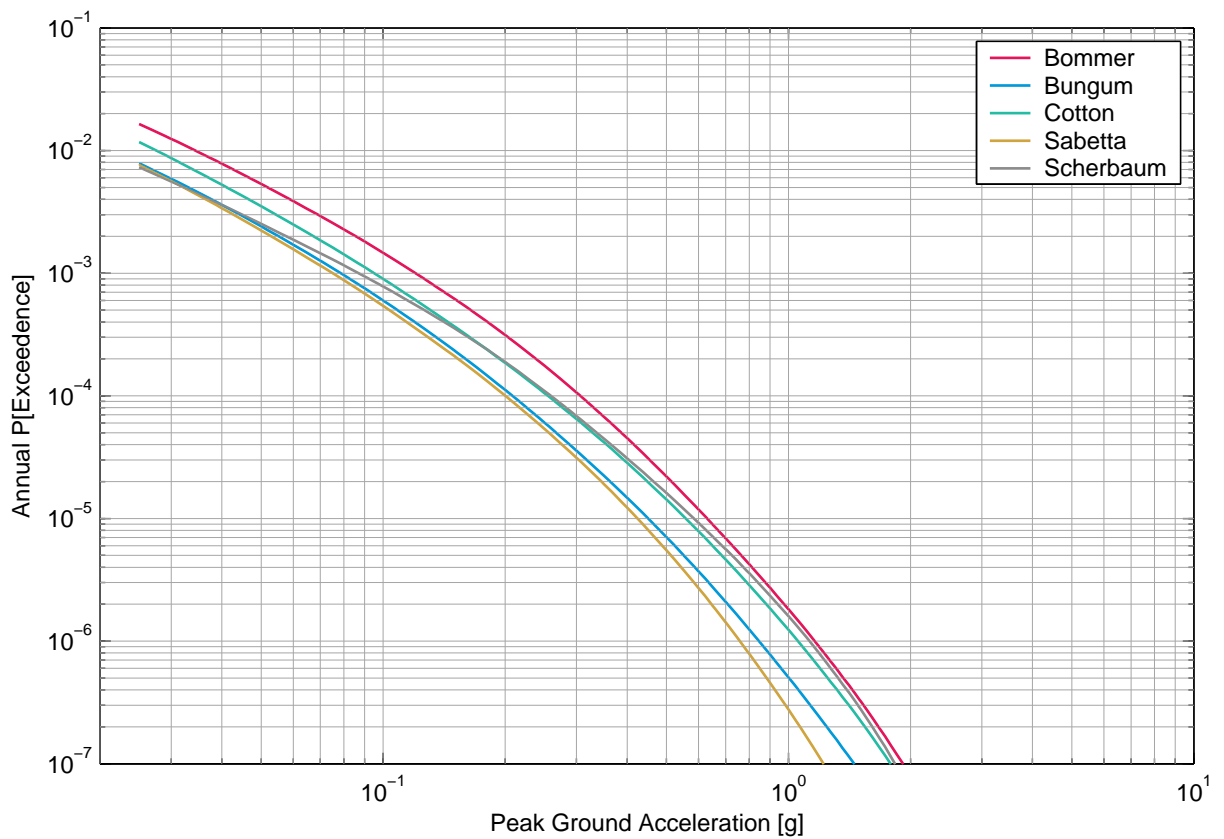


Fig. 3-8.4: Gösgen, horizontal component, rock, surface, mean hazard of the five SP2 experts, PGA.

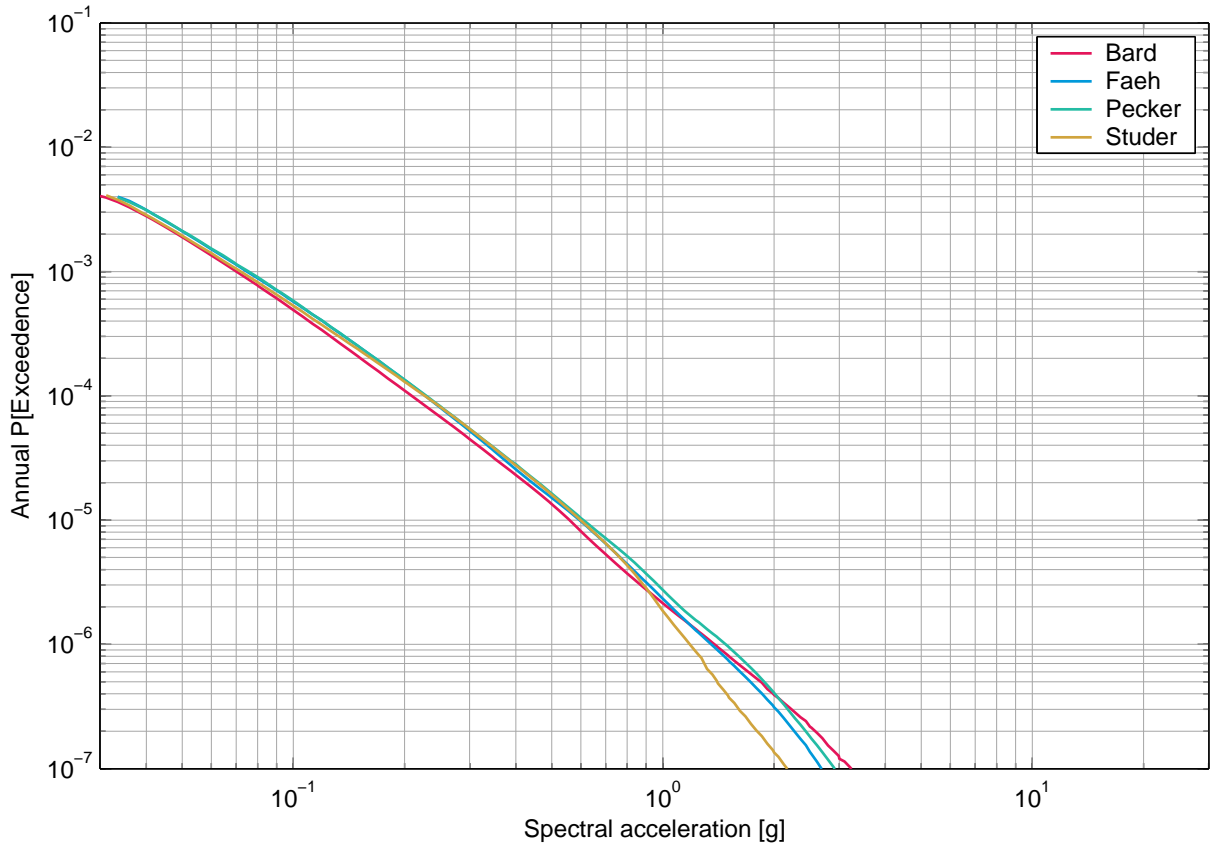


Fig. 3-8.5: Gösgen, horizontal component, soil, surface, mean hazard of the four SP3 experts, 1 Hz.

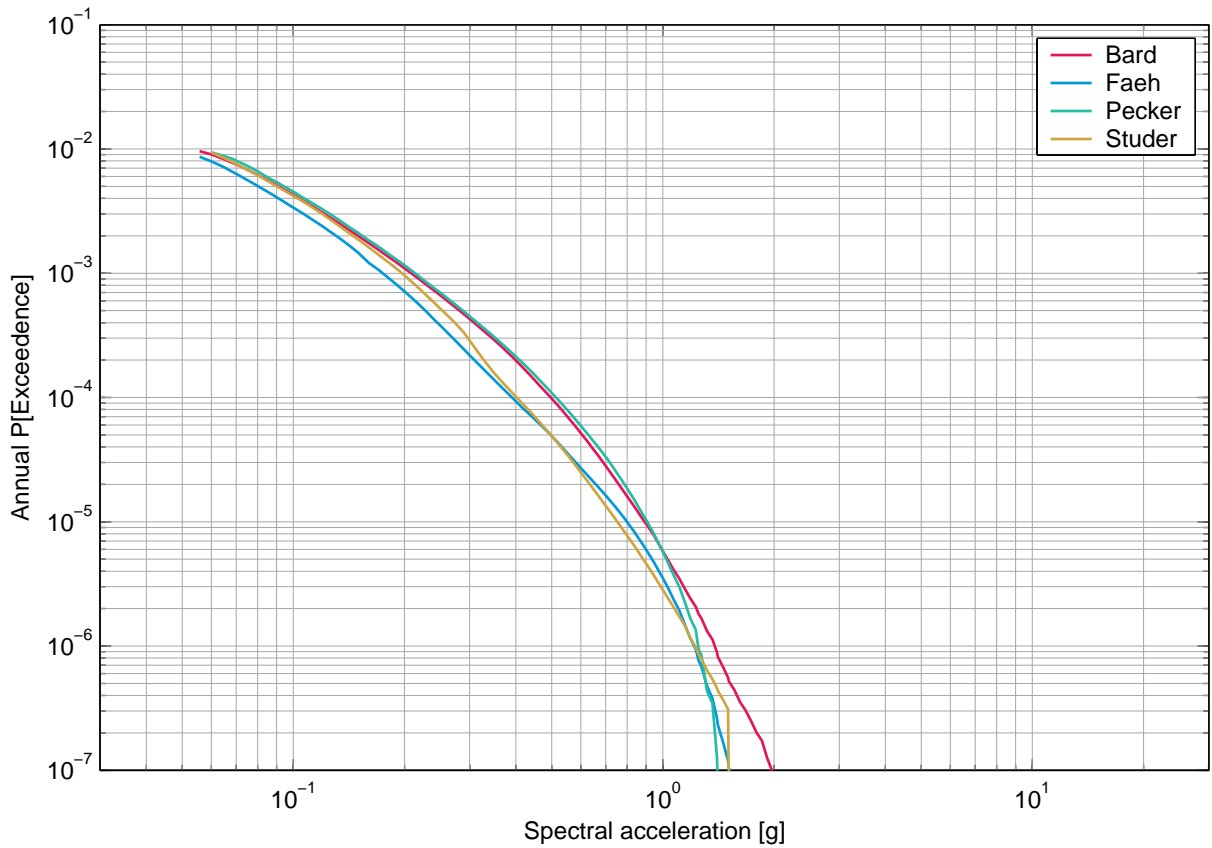


Fig. 3-8.6: Gösgen, horizontal component, soil, surface, mean hazard of the four SP3 experts, PGA.

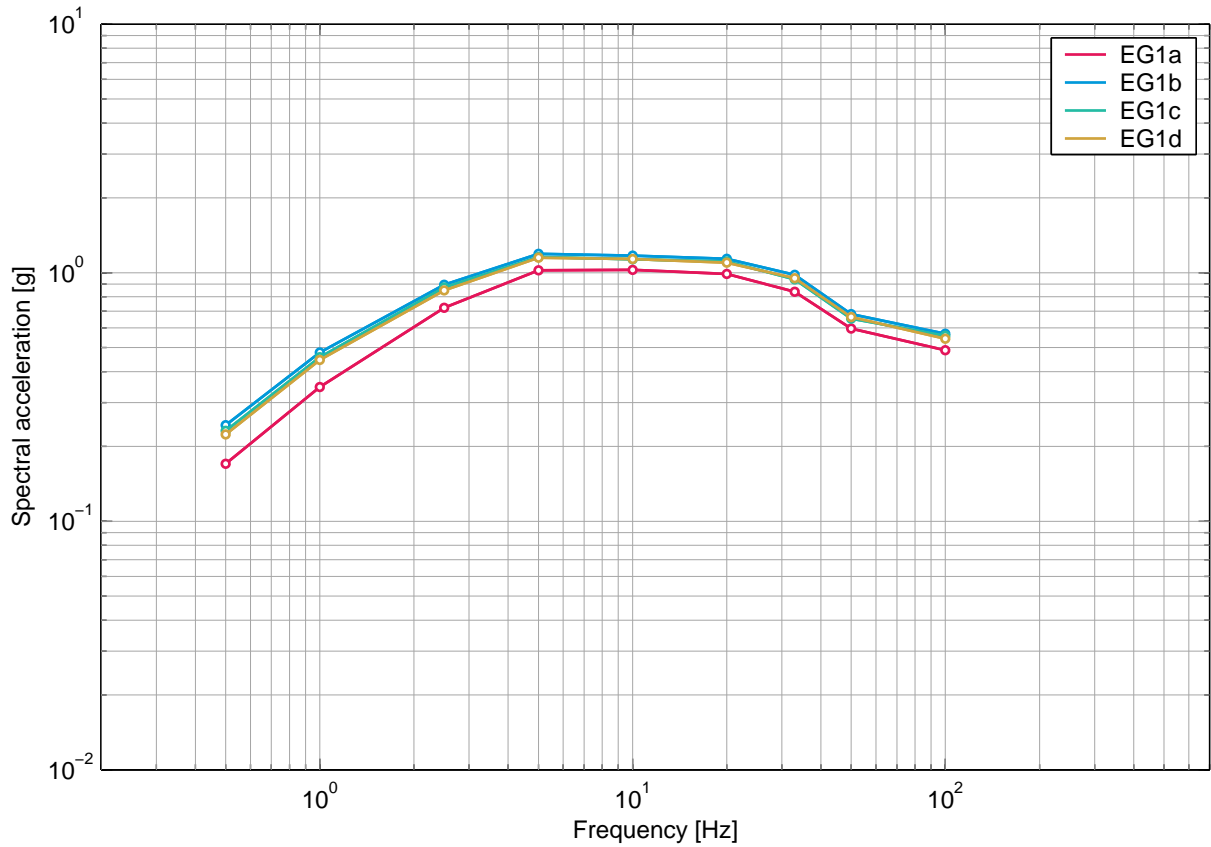


Fig. 3-8.7: Gösgen, horizontal component, rock, surface, uniform hazard spectra (mean) of the four SP1 teams for an annual prob. of exceedence of 1E-05 and 5% damping.

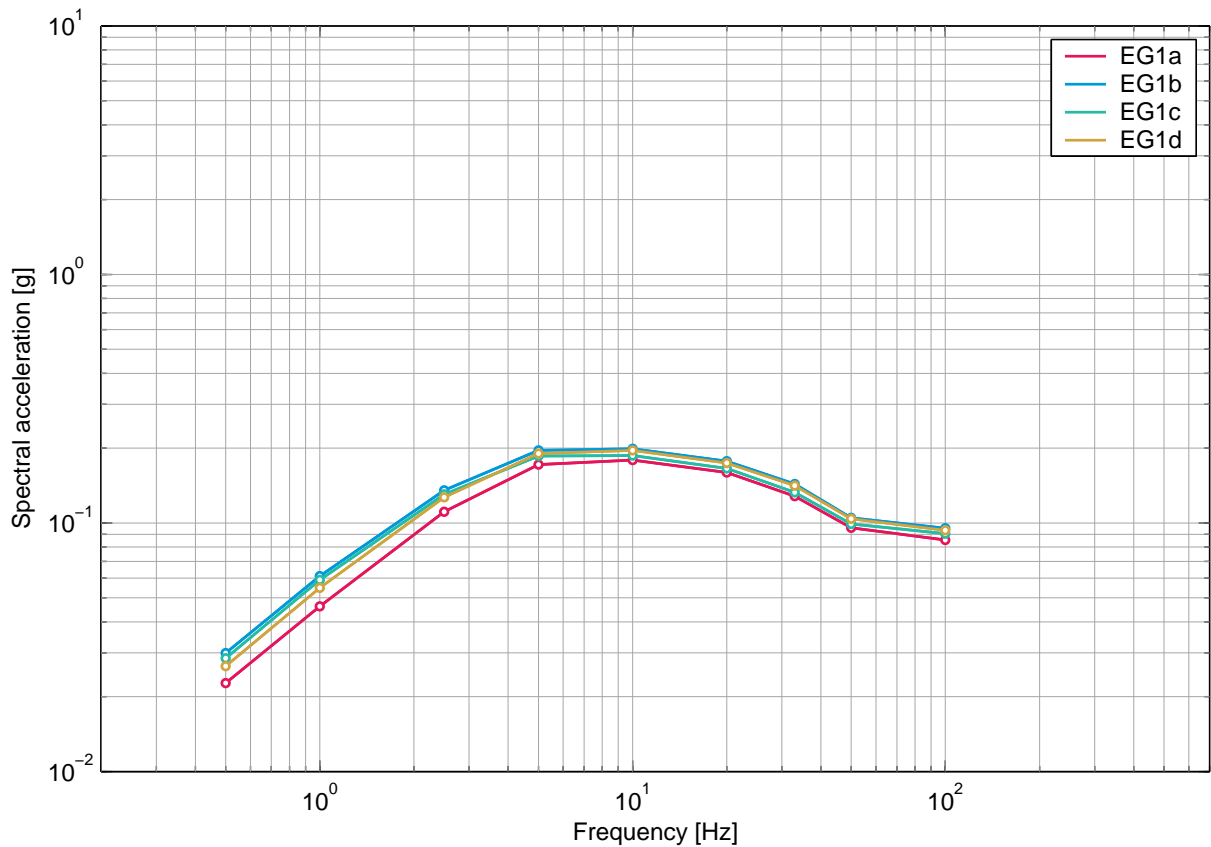


Fig. 3-8.8: Gösgen, horizontal component, rock, surface, uniform hazard spectra (mean) of the four SP1 teams for an annual prob. of exceedence of 1E-03 and 5% damping.

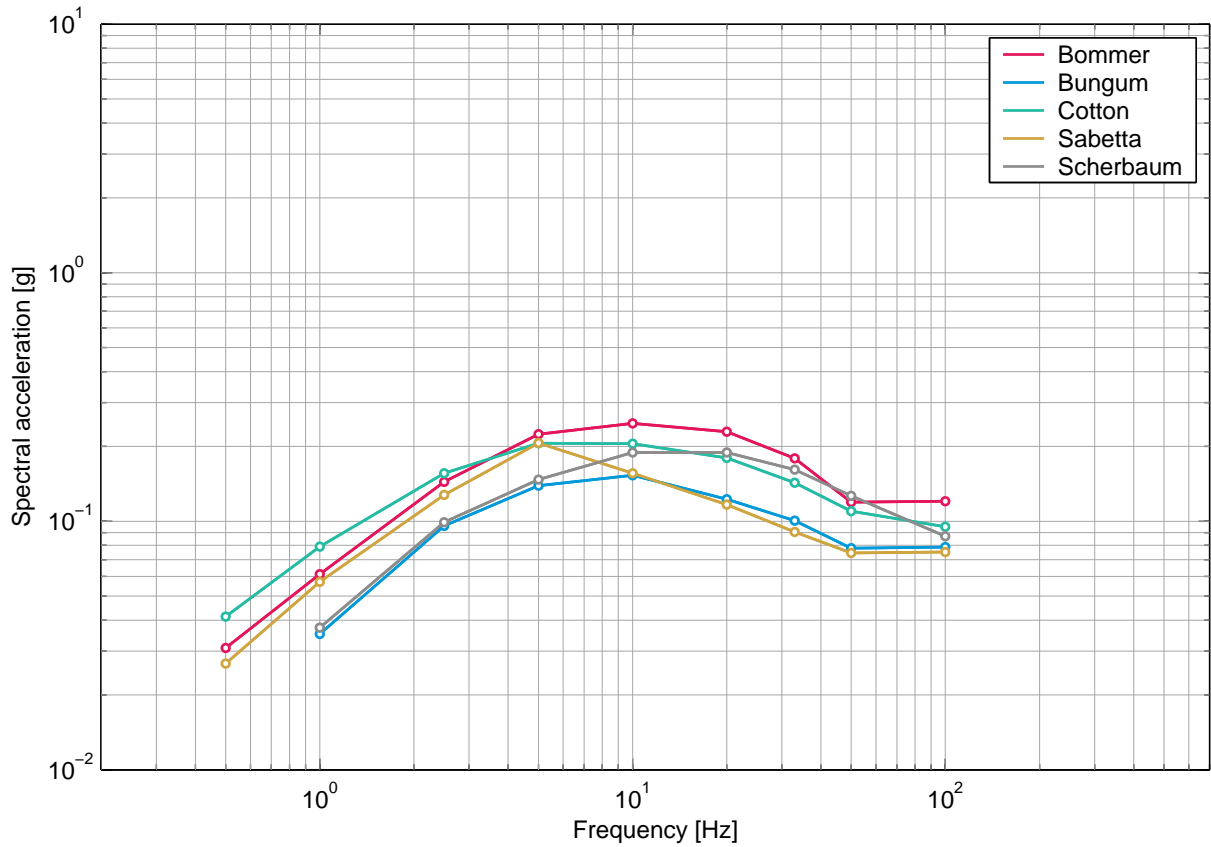


Fig. 3-8.9: Gösgen, horizontal component, rock, surface, uniform hazard spectra (mean) of the five SP2 experts for an annual prob. of exceedence of  $1E-05$  and 5% damping.

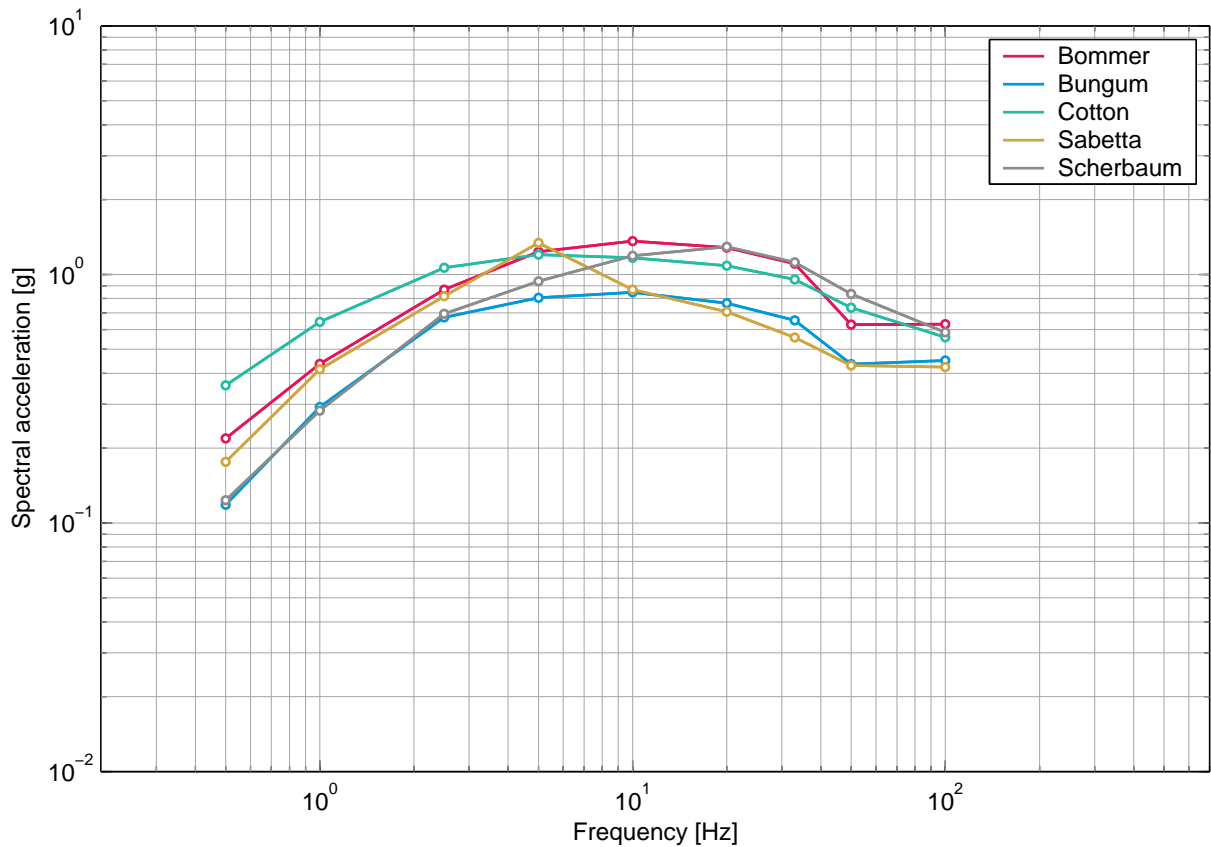


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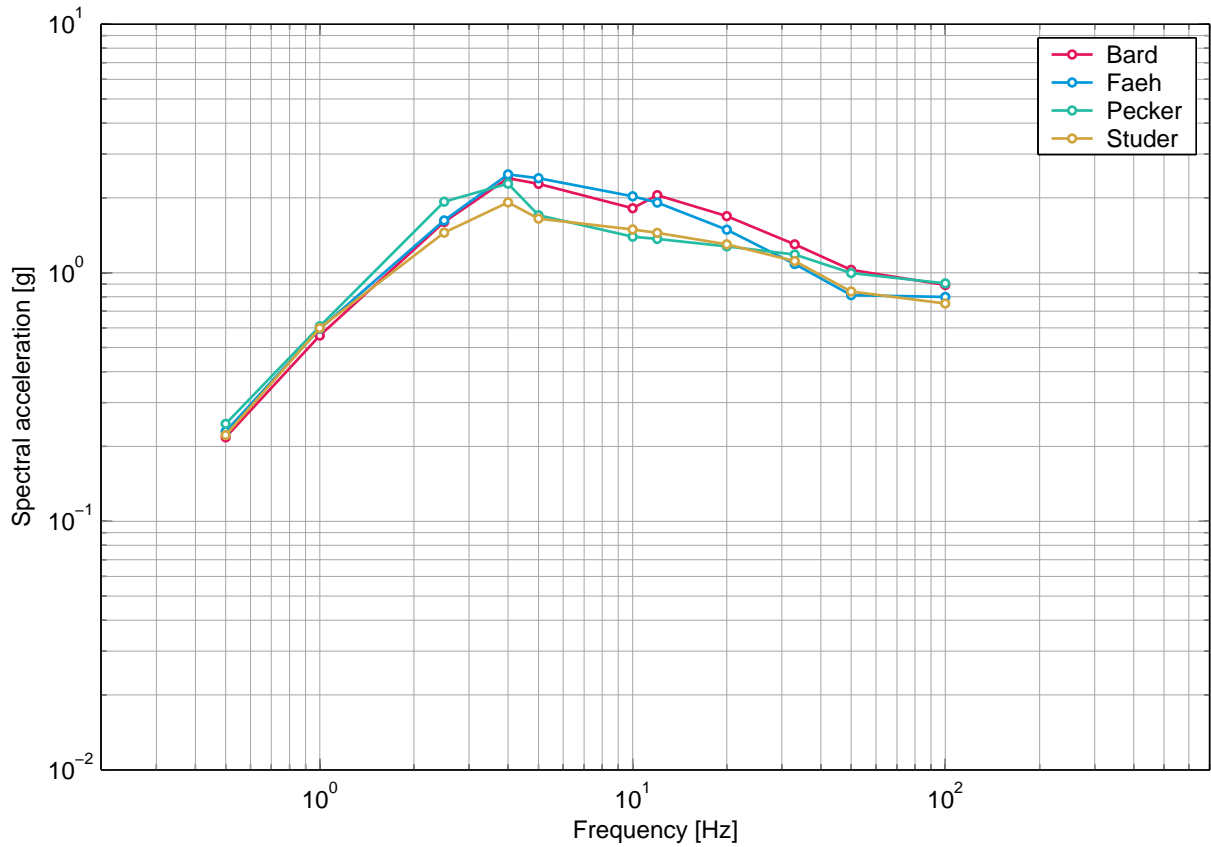


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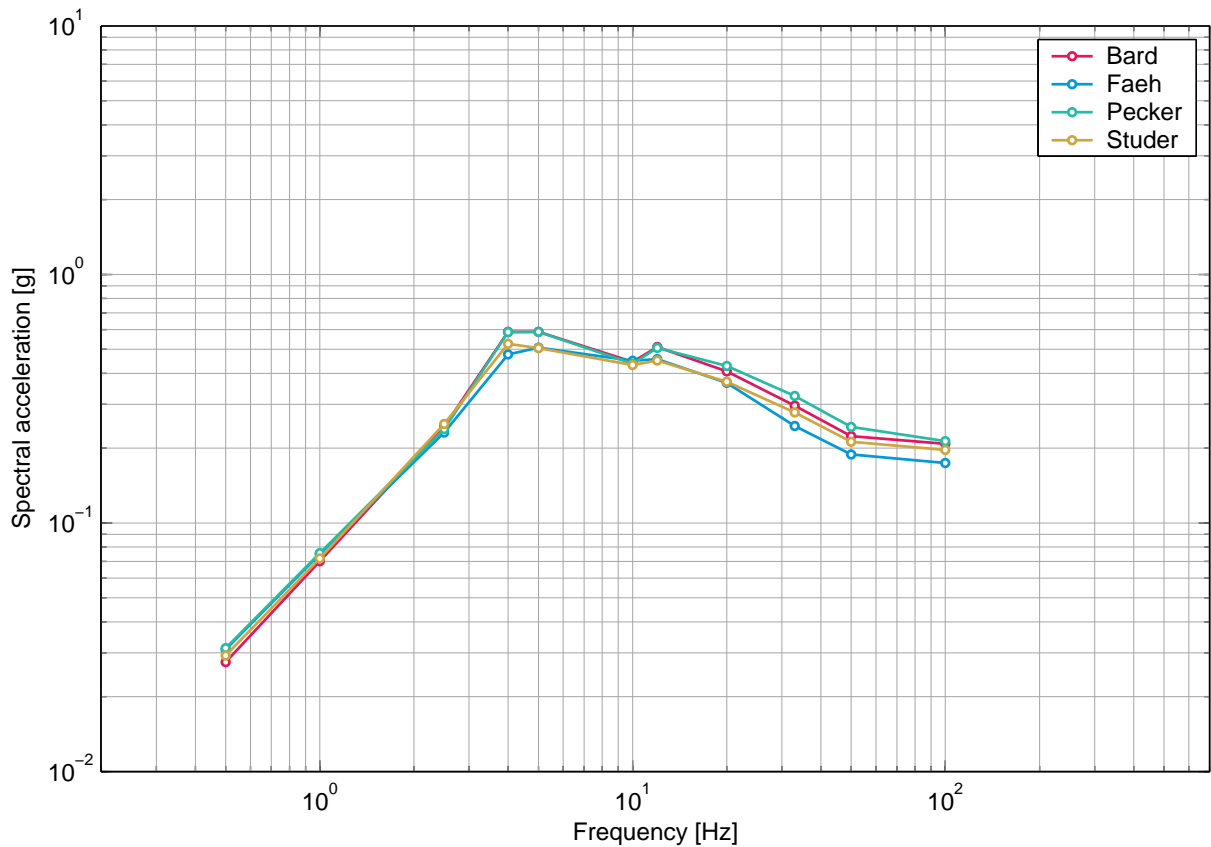


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### 3.9 Gösgen, Sensitivity to Depth Levels, Horizontal Component

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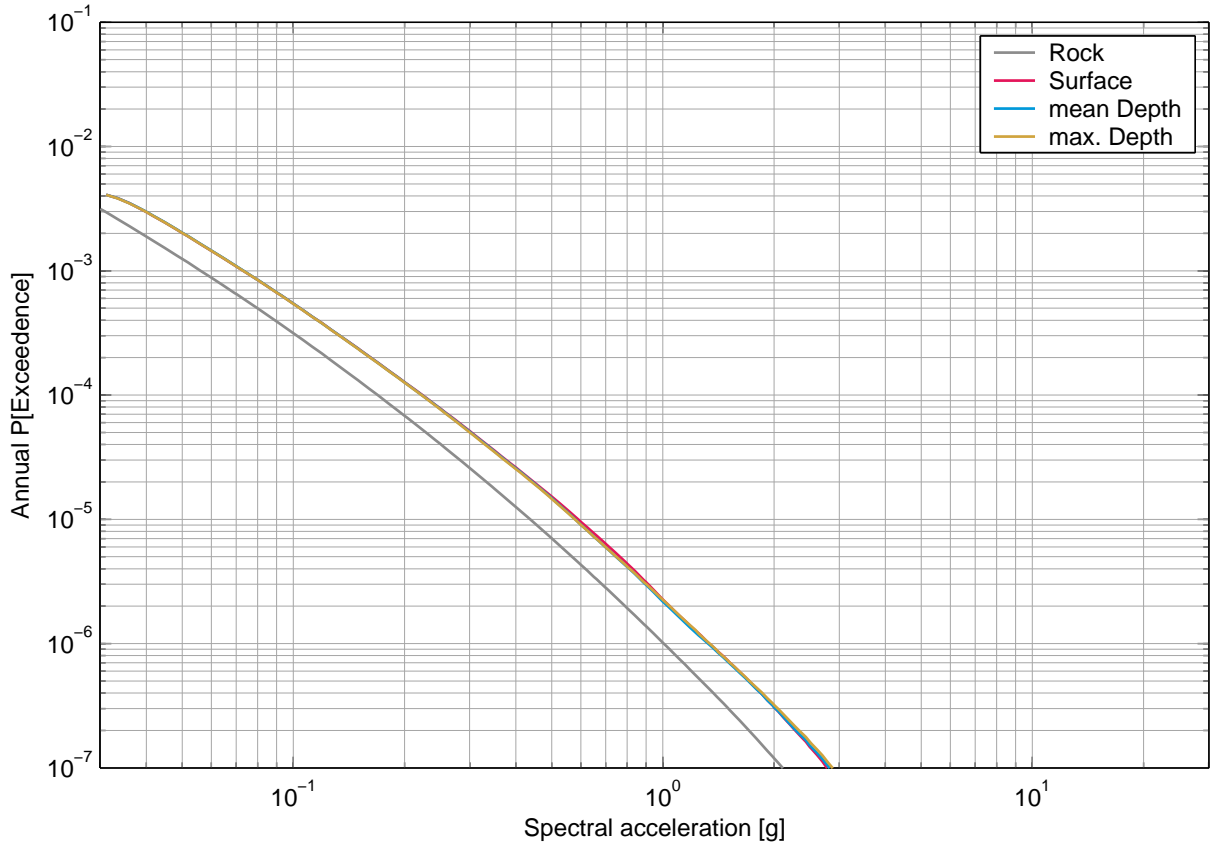


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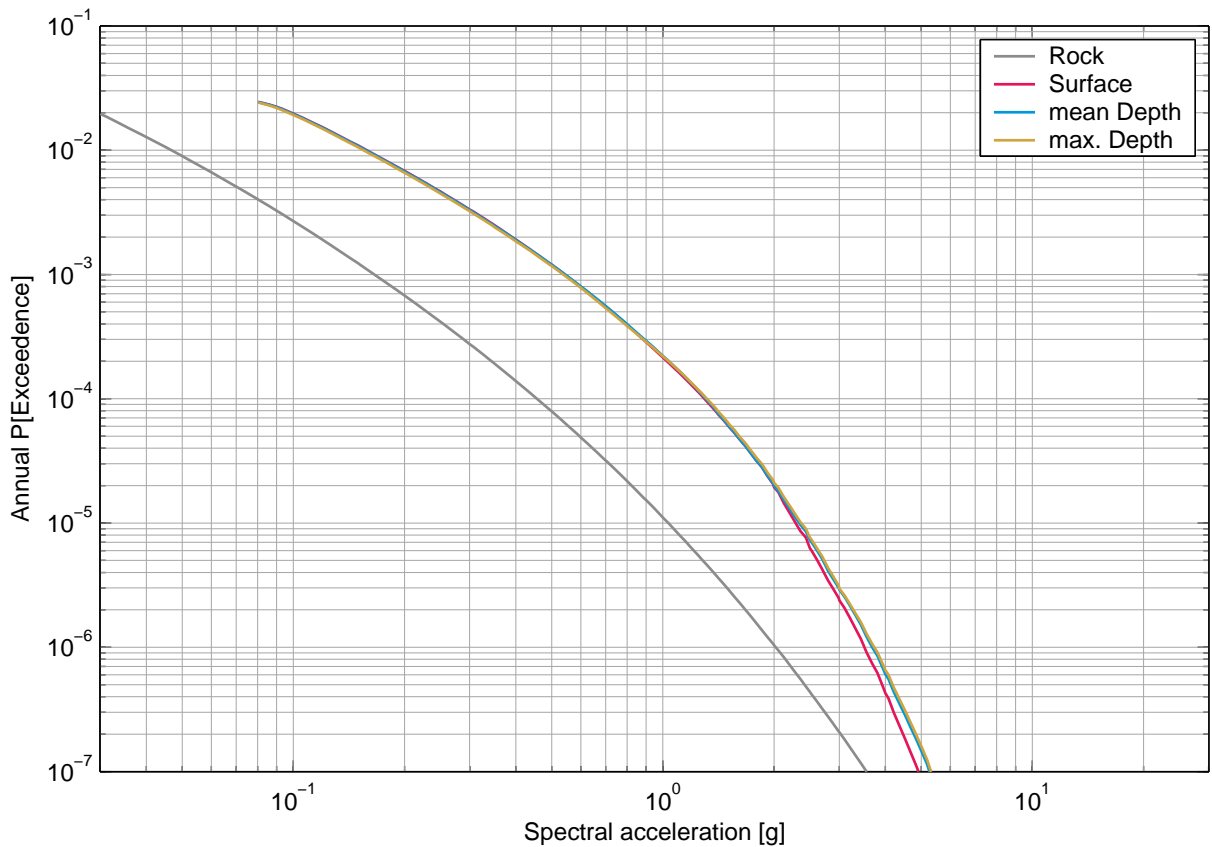


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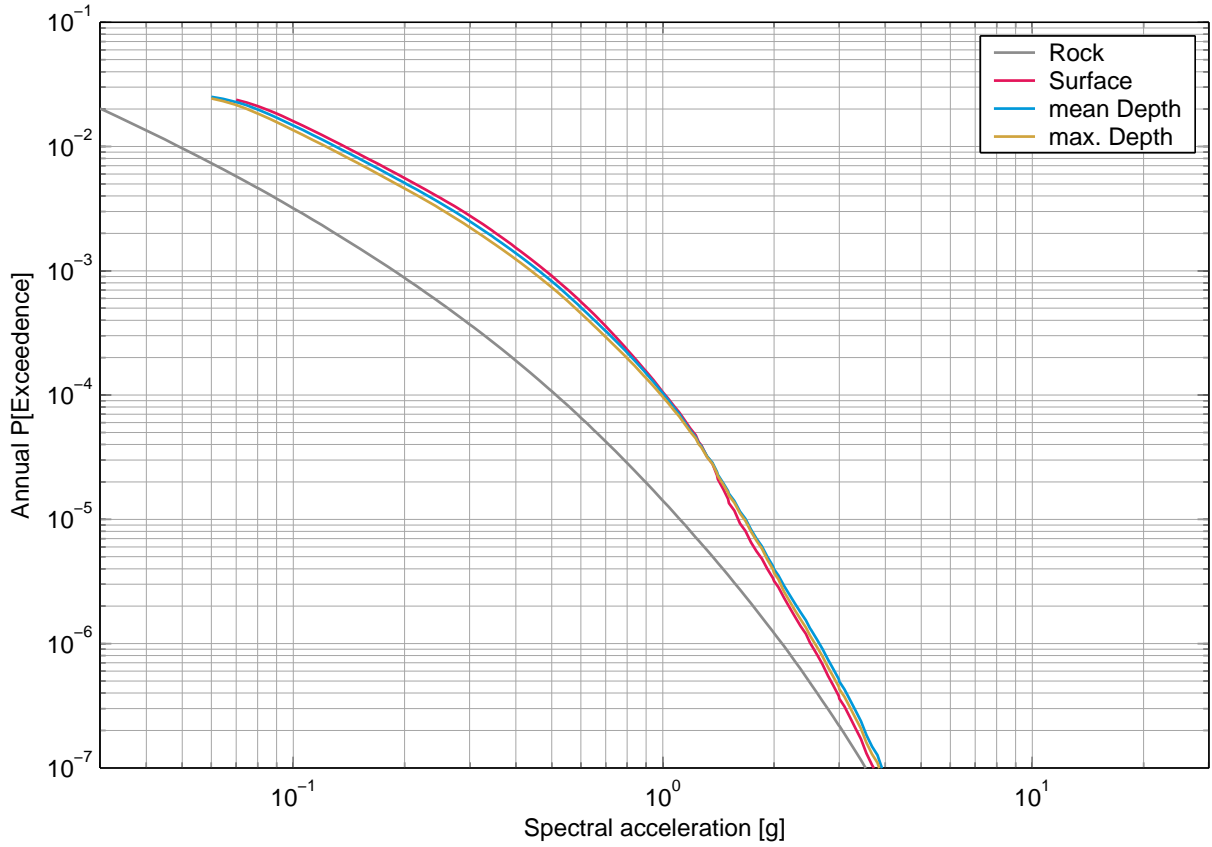


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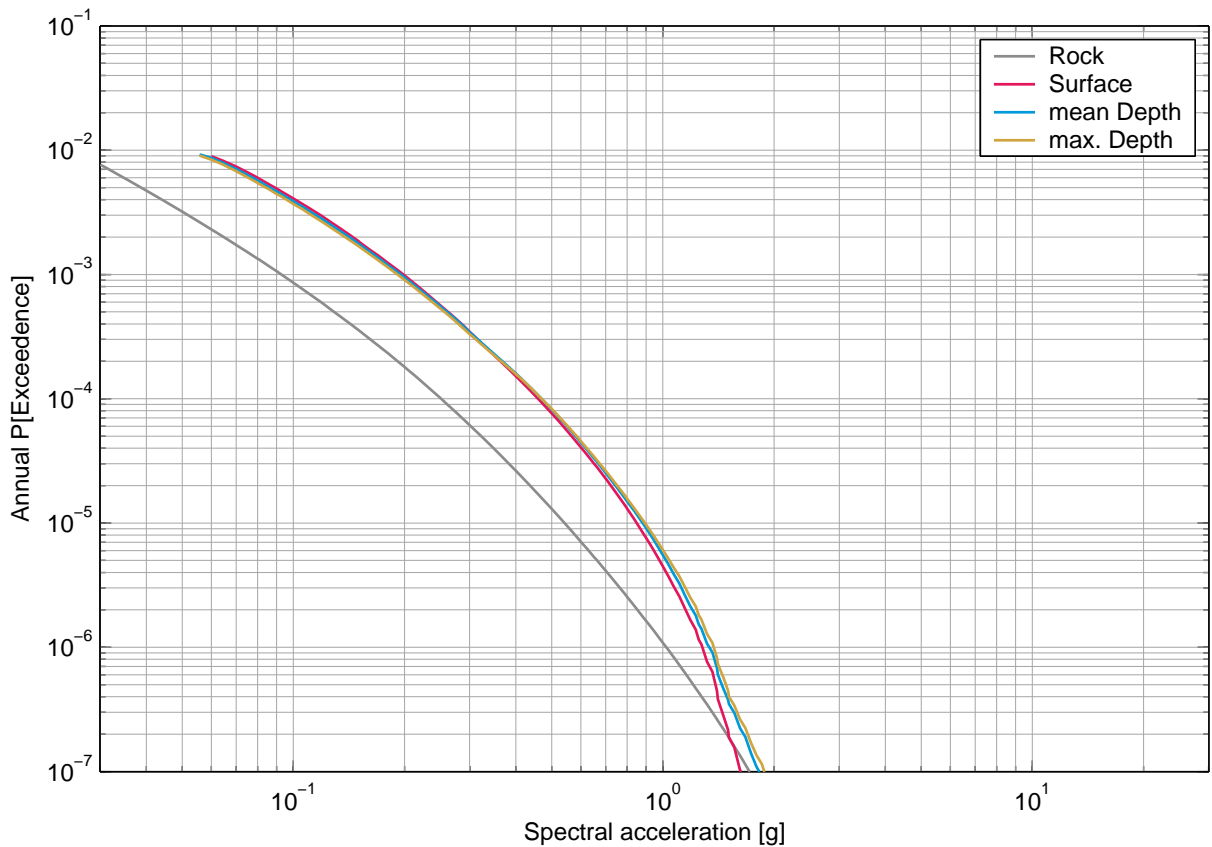


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### 3.10 Gösgen, Rock Hazard, Vertical Component, Surface

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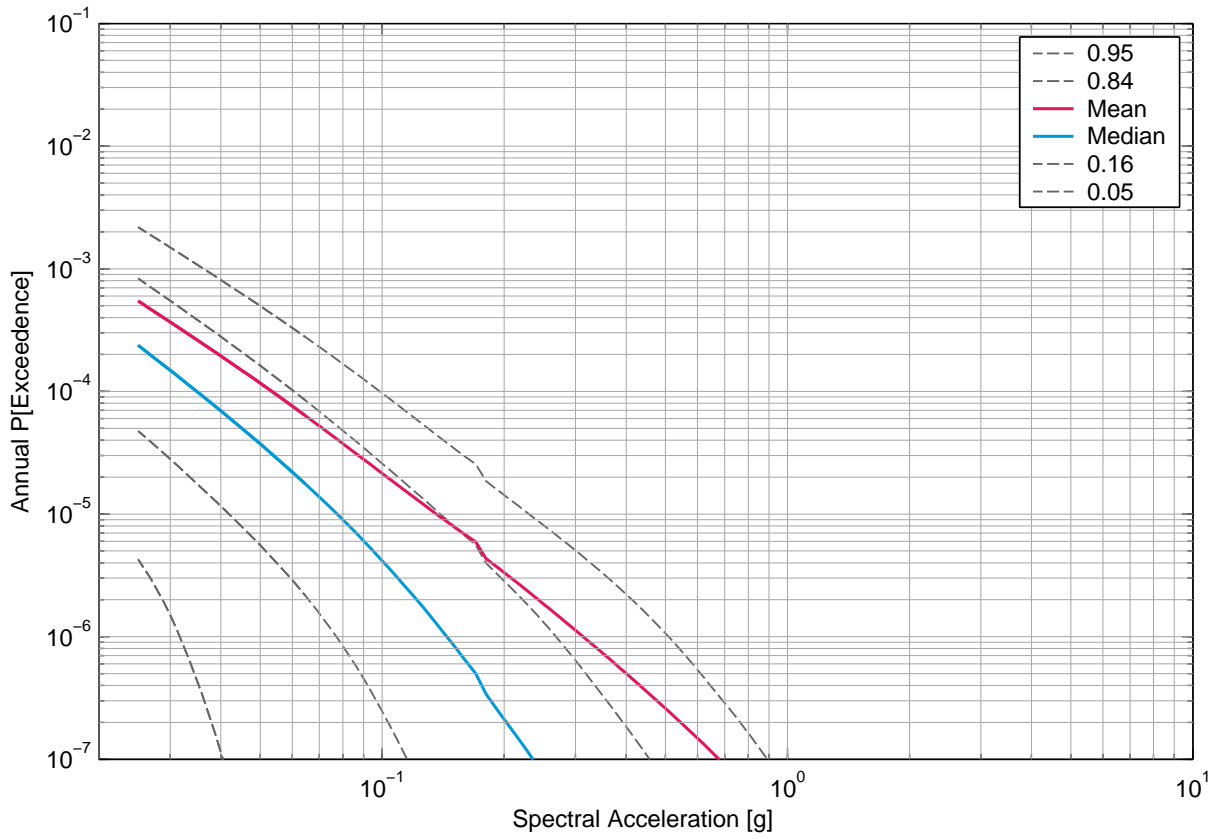


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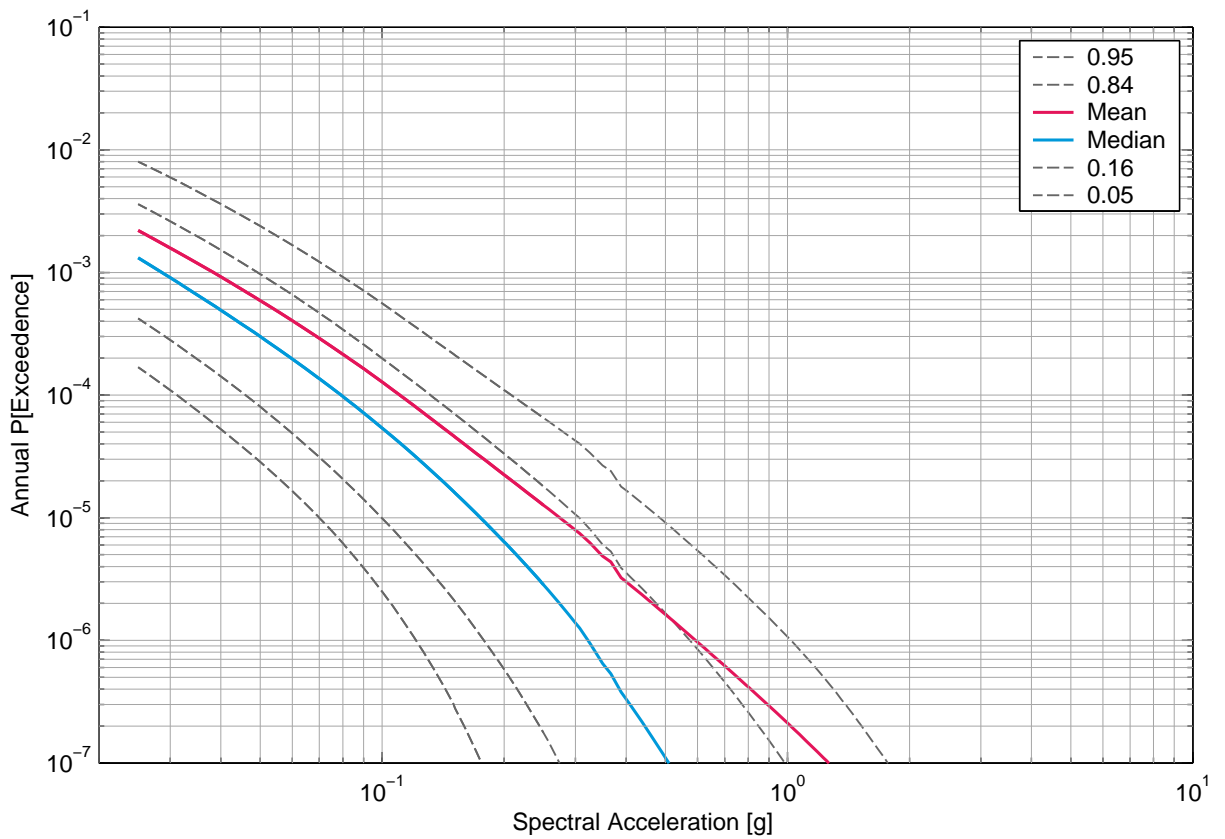


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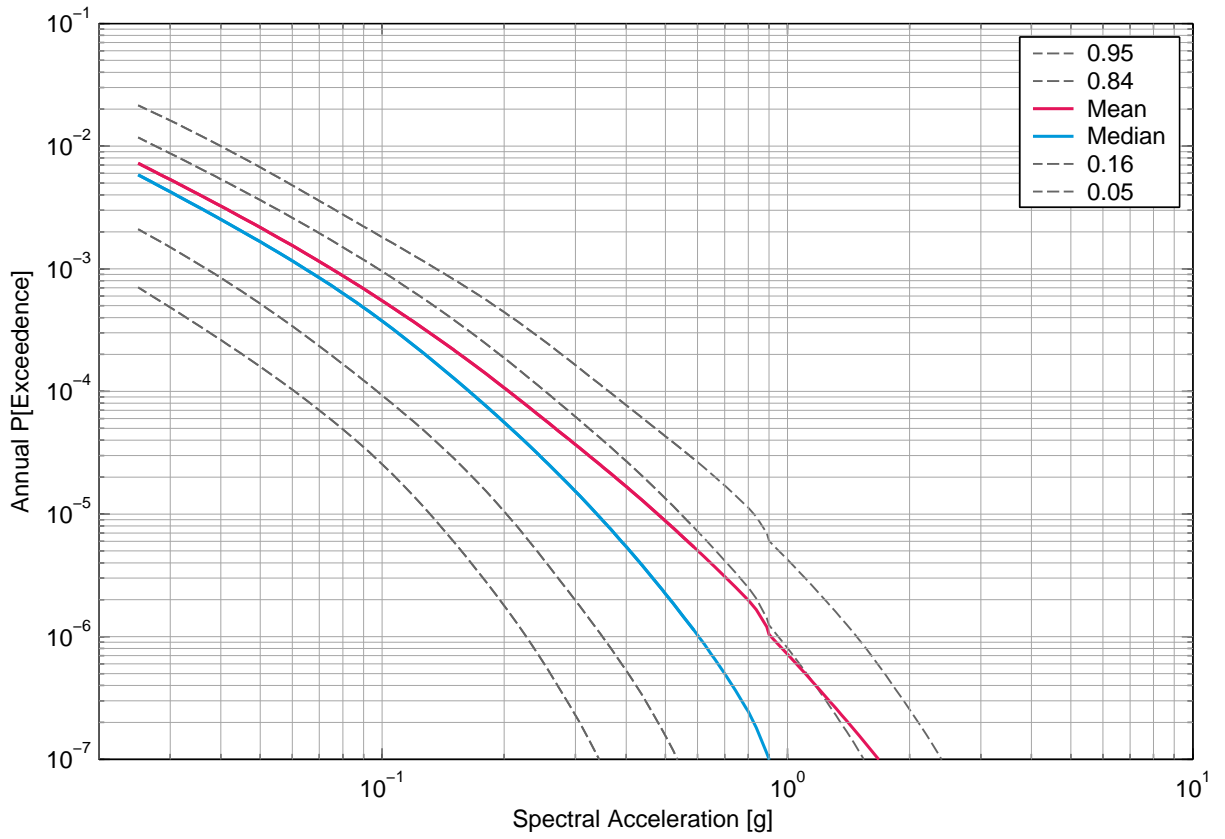


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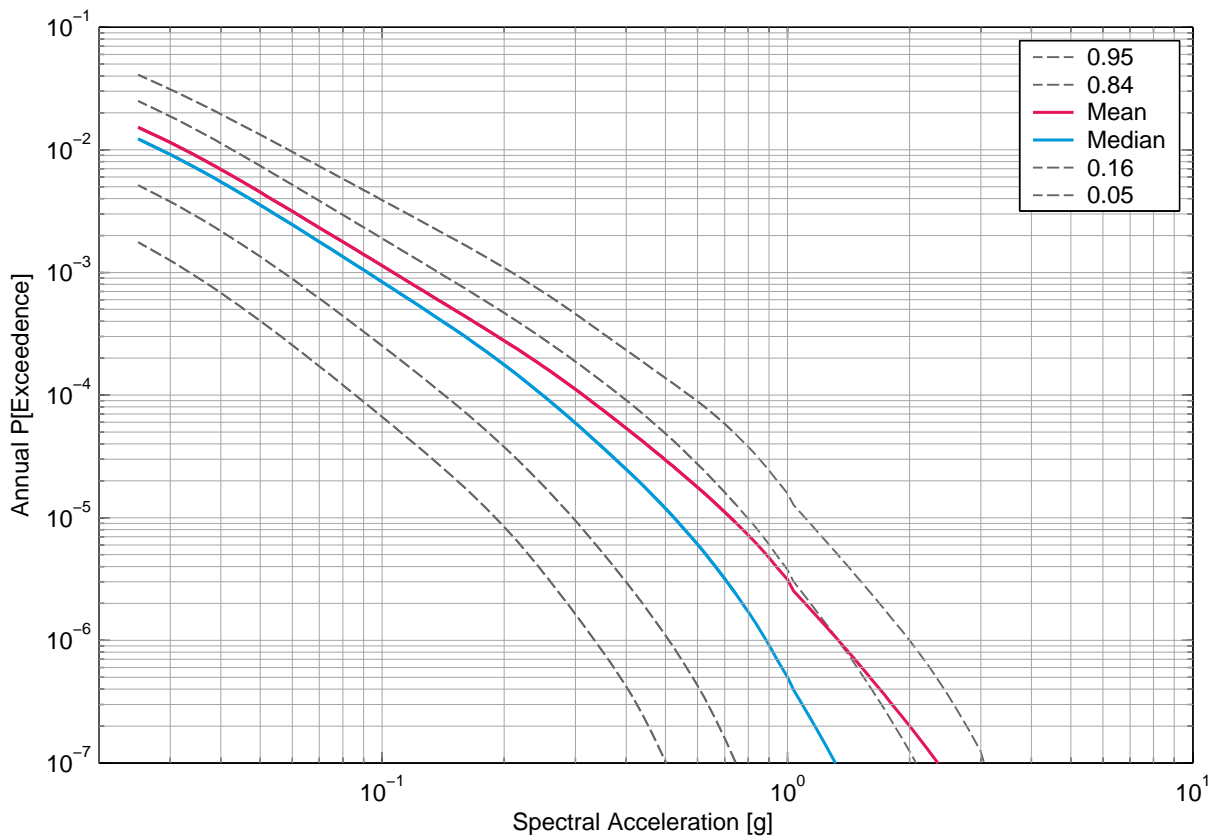


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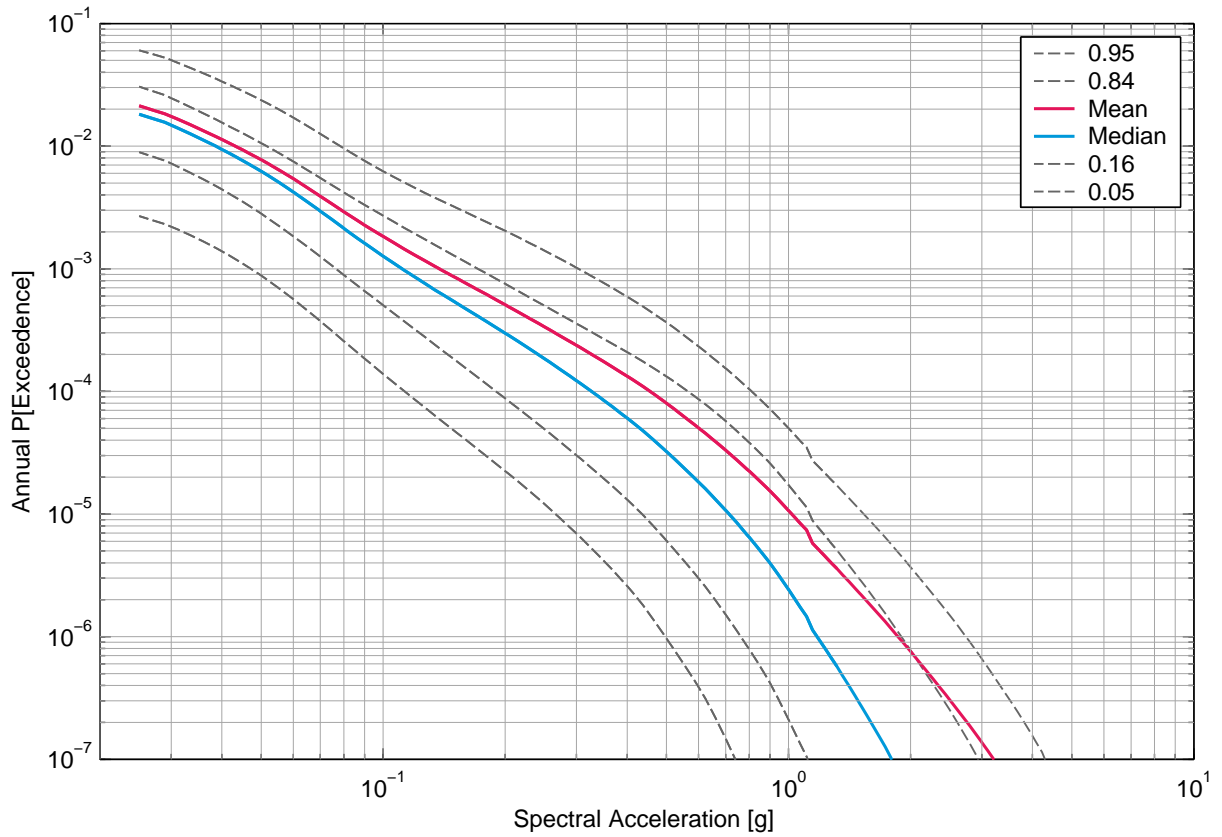


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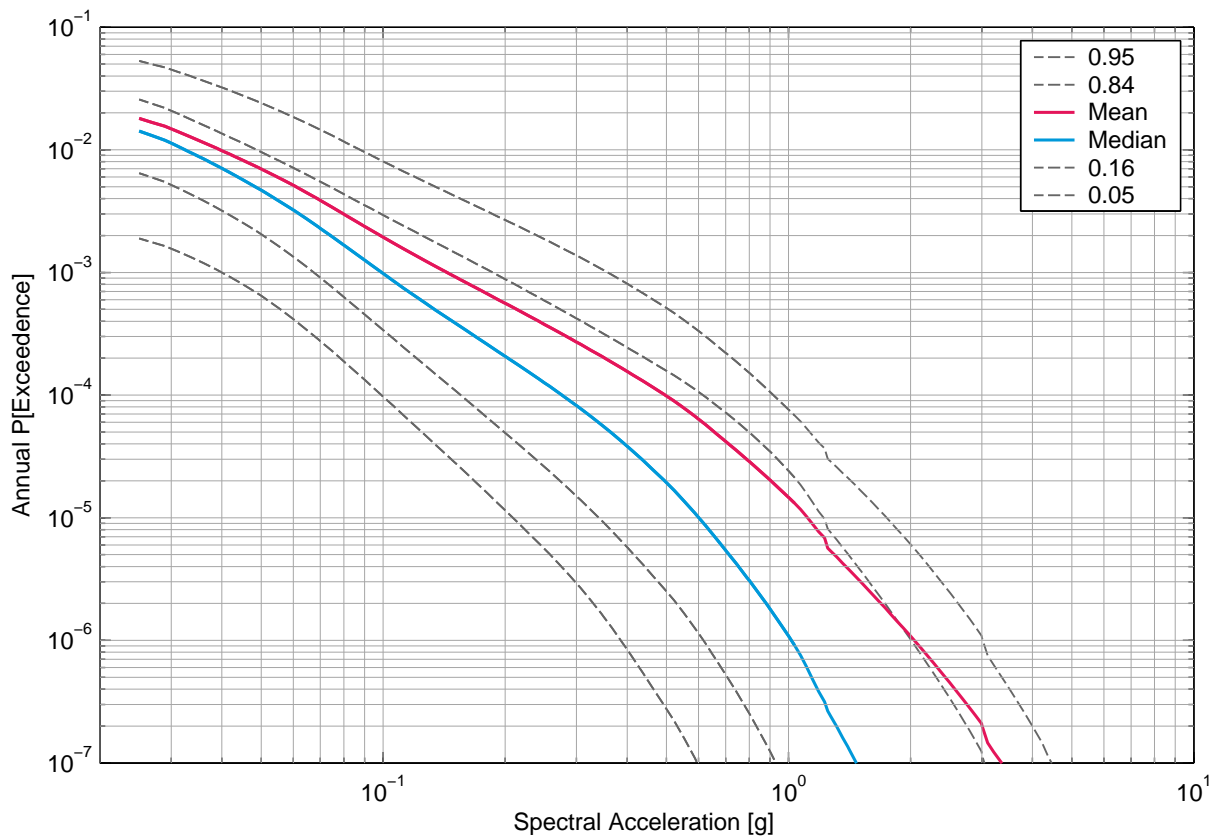


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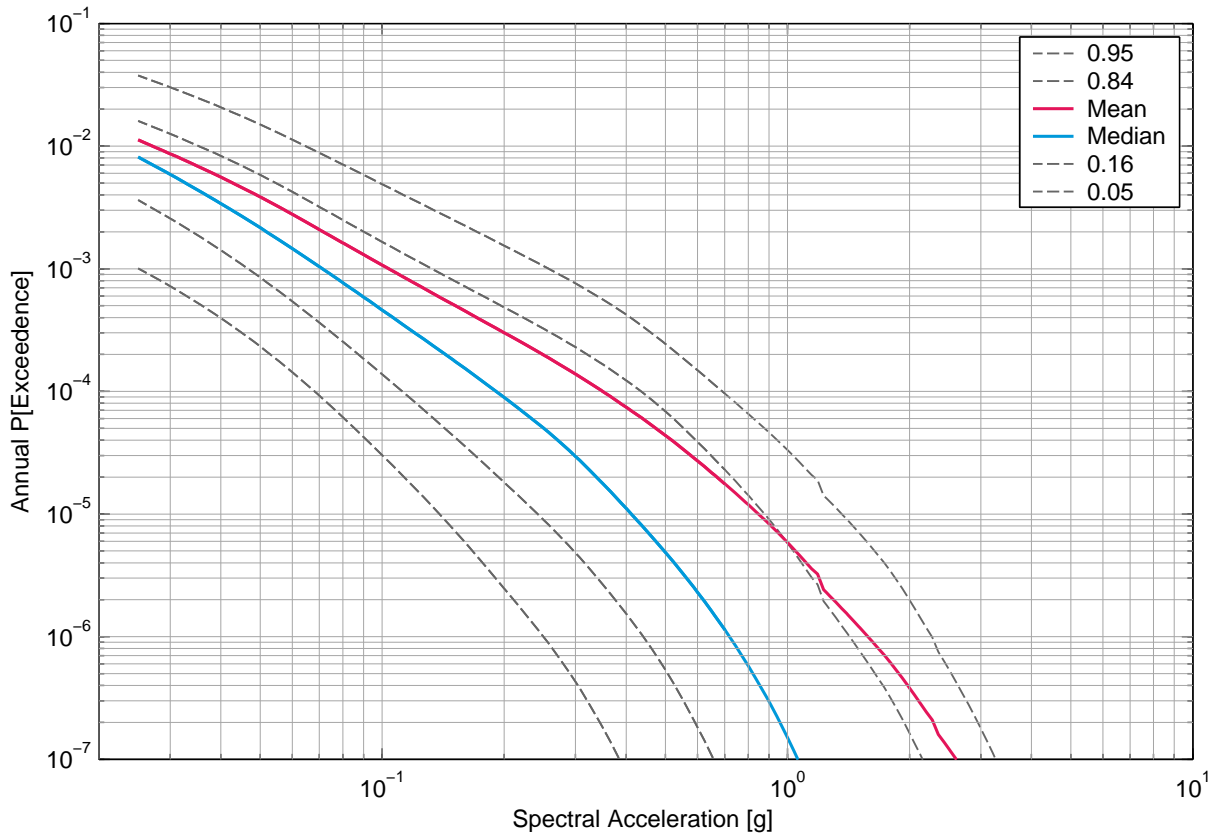


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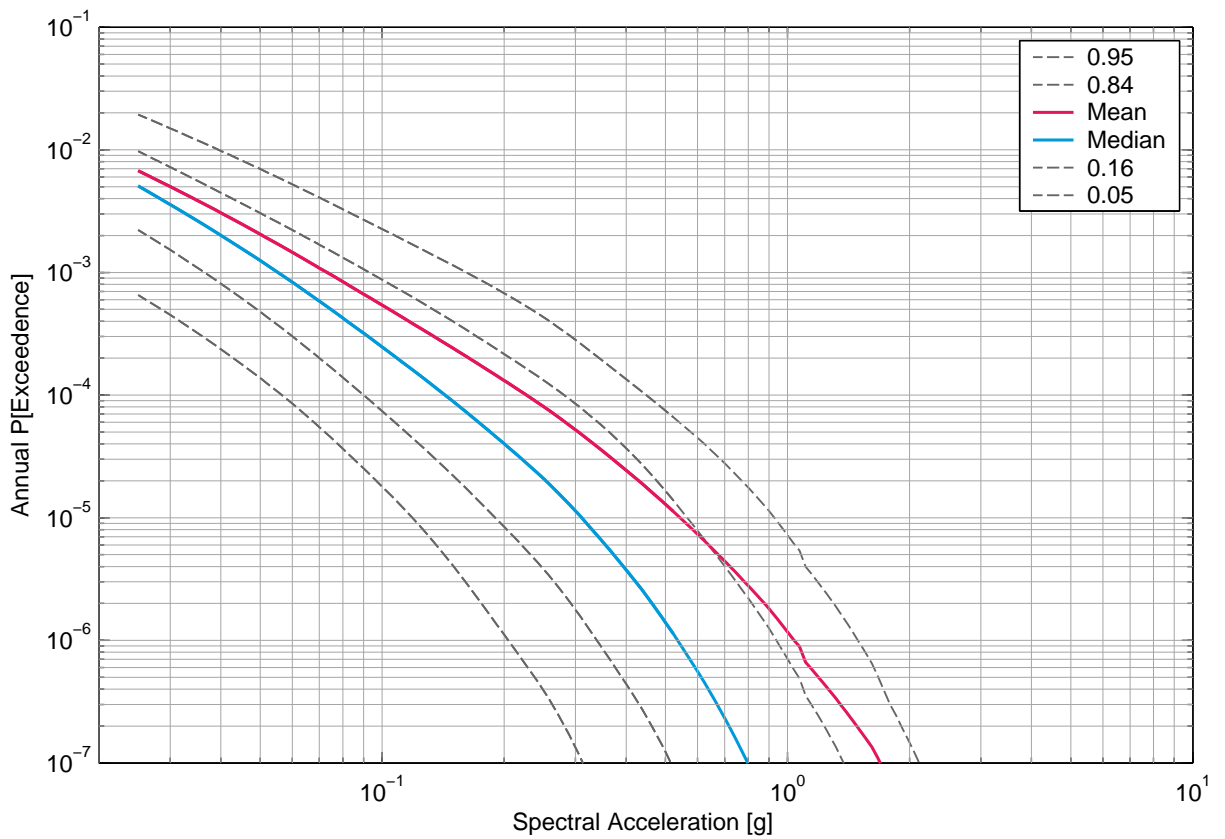


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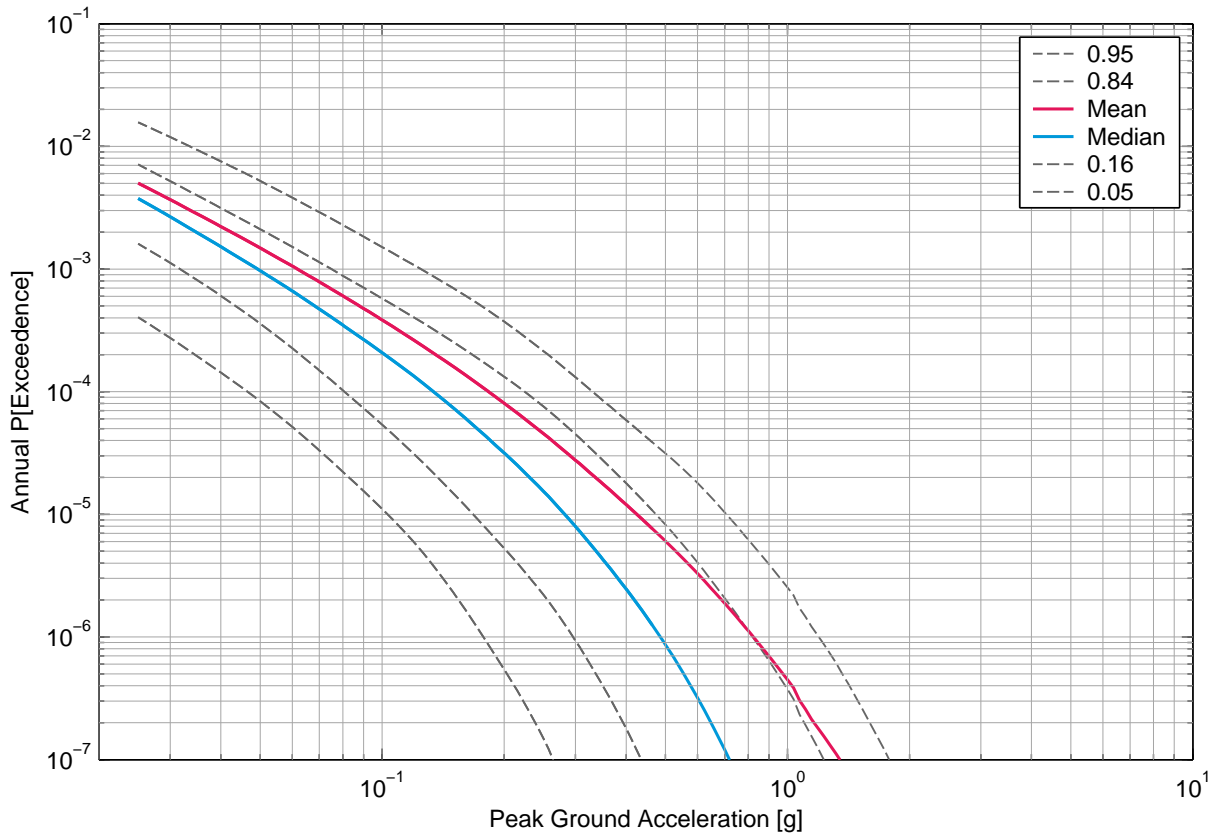


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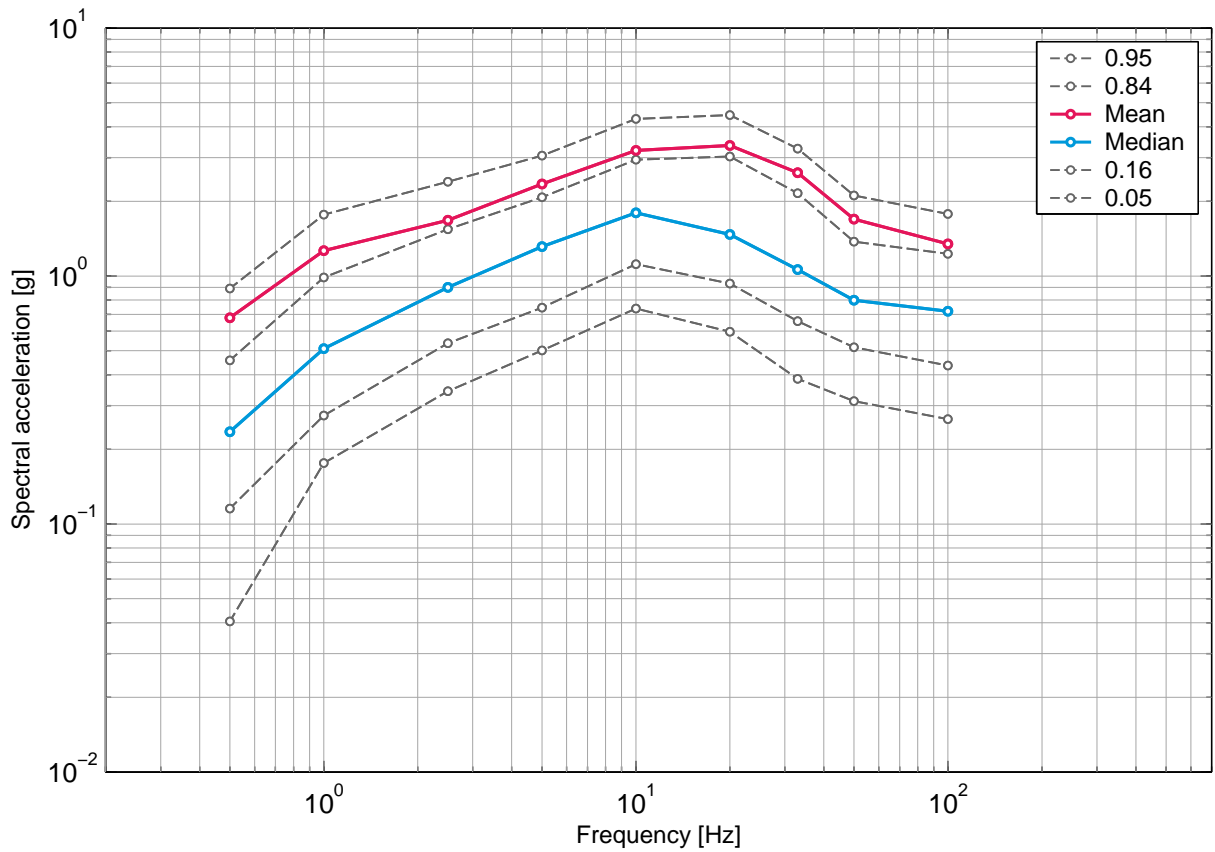


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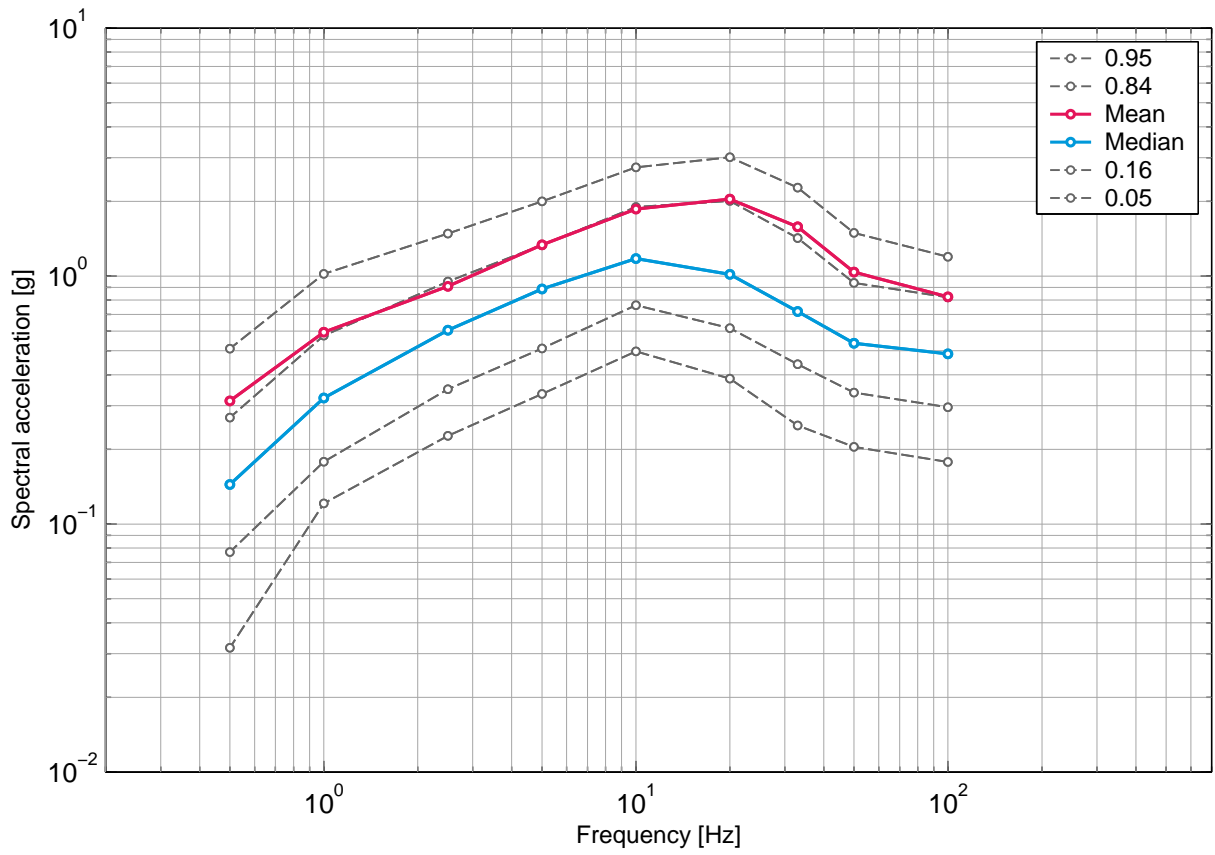


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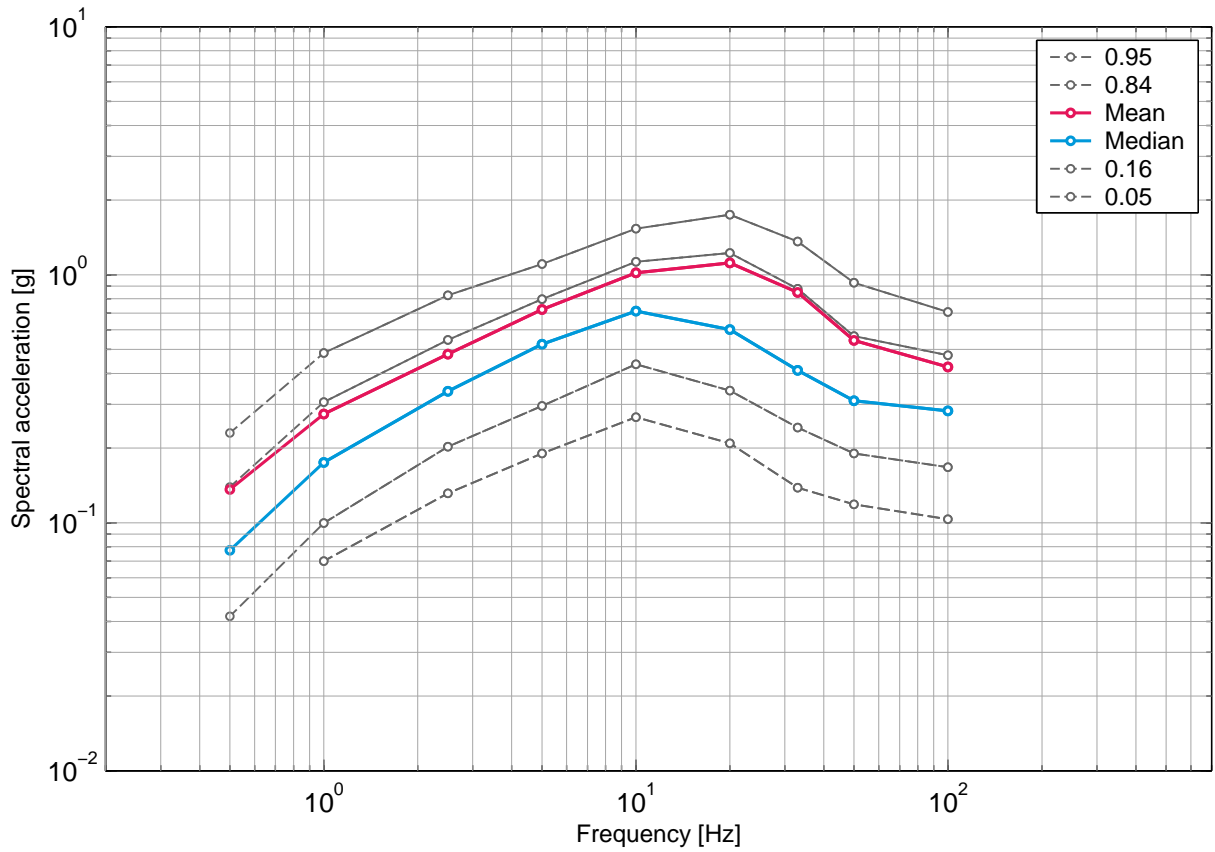


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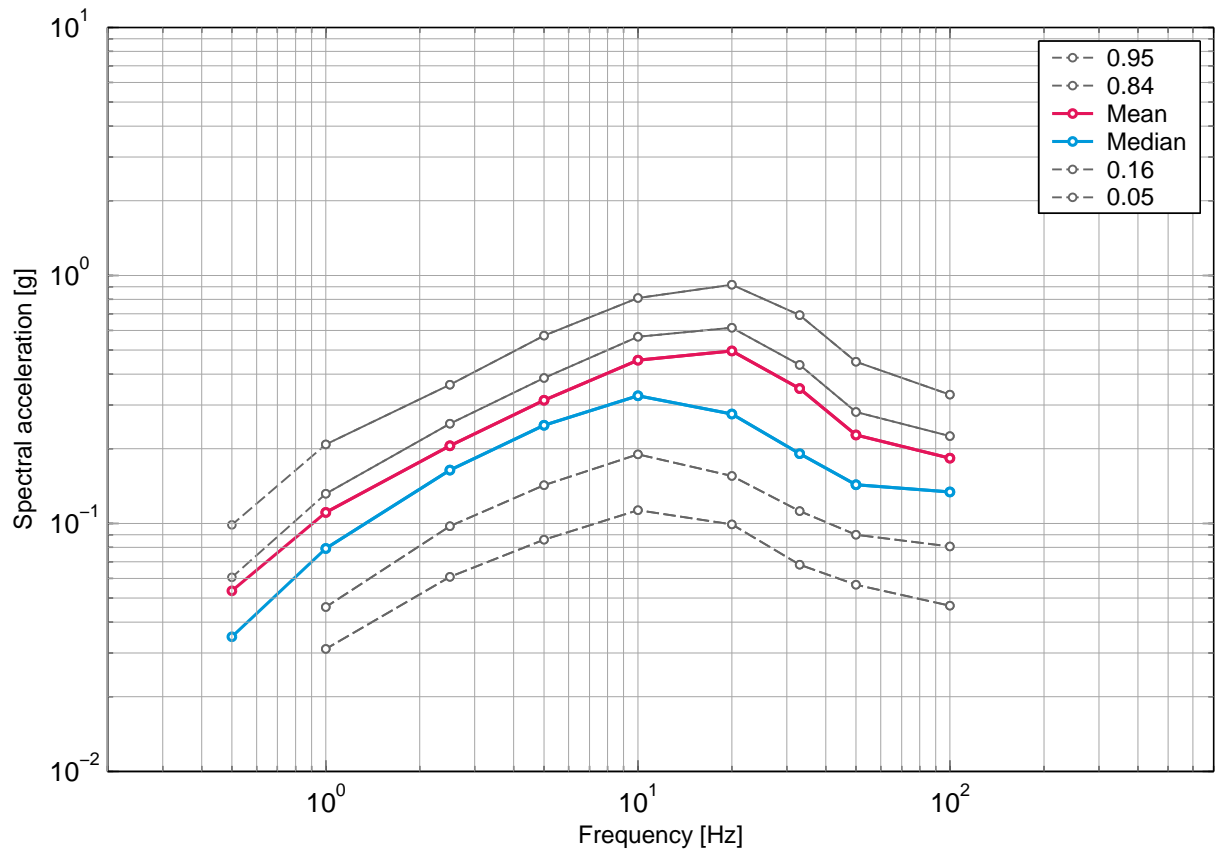


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### 3.11 Gösgen, Soil Hazard, Vertical Component, Surface

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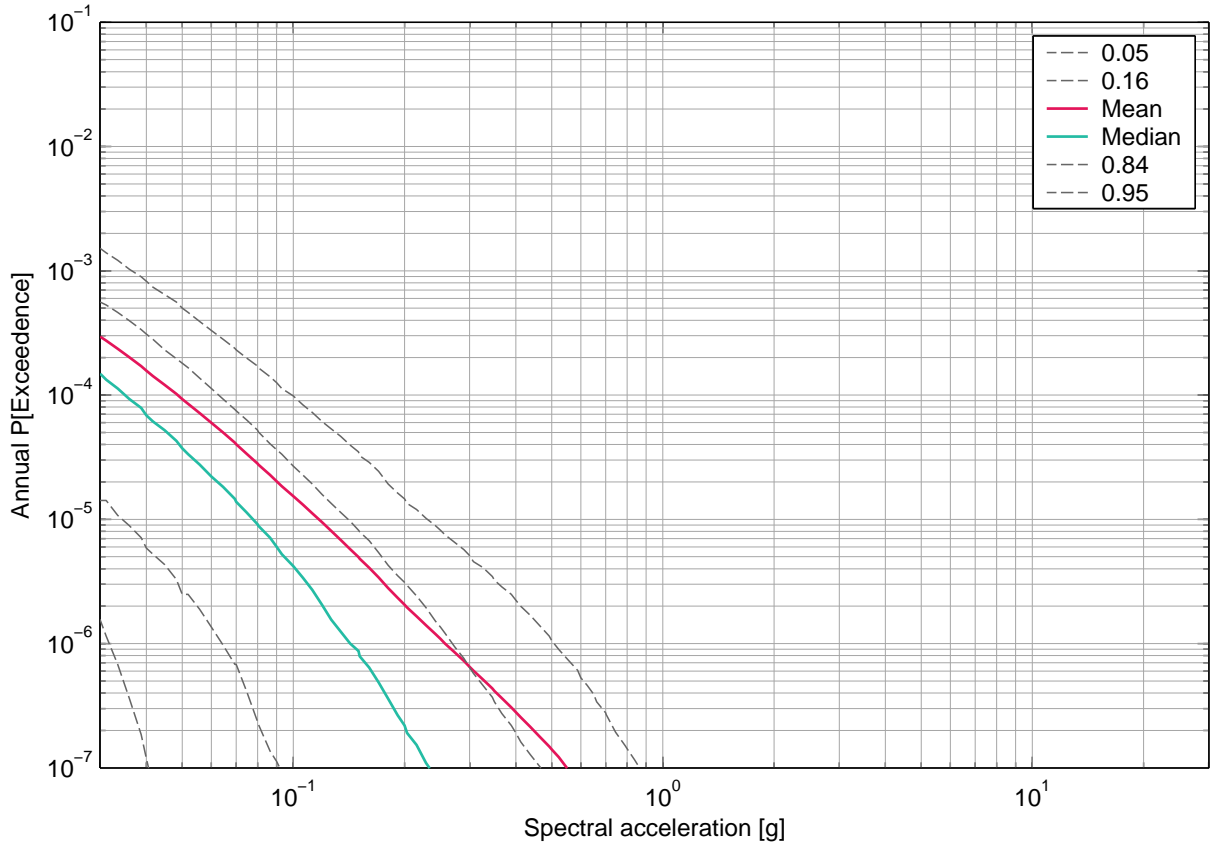


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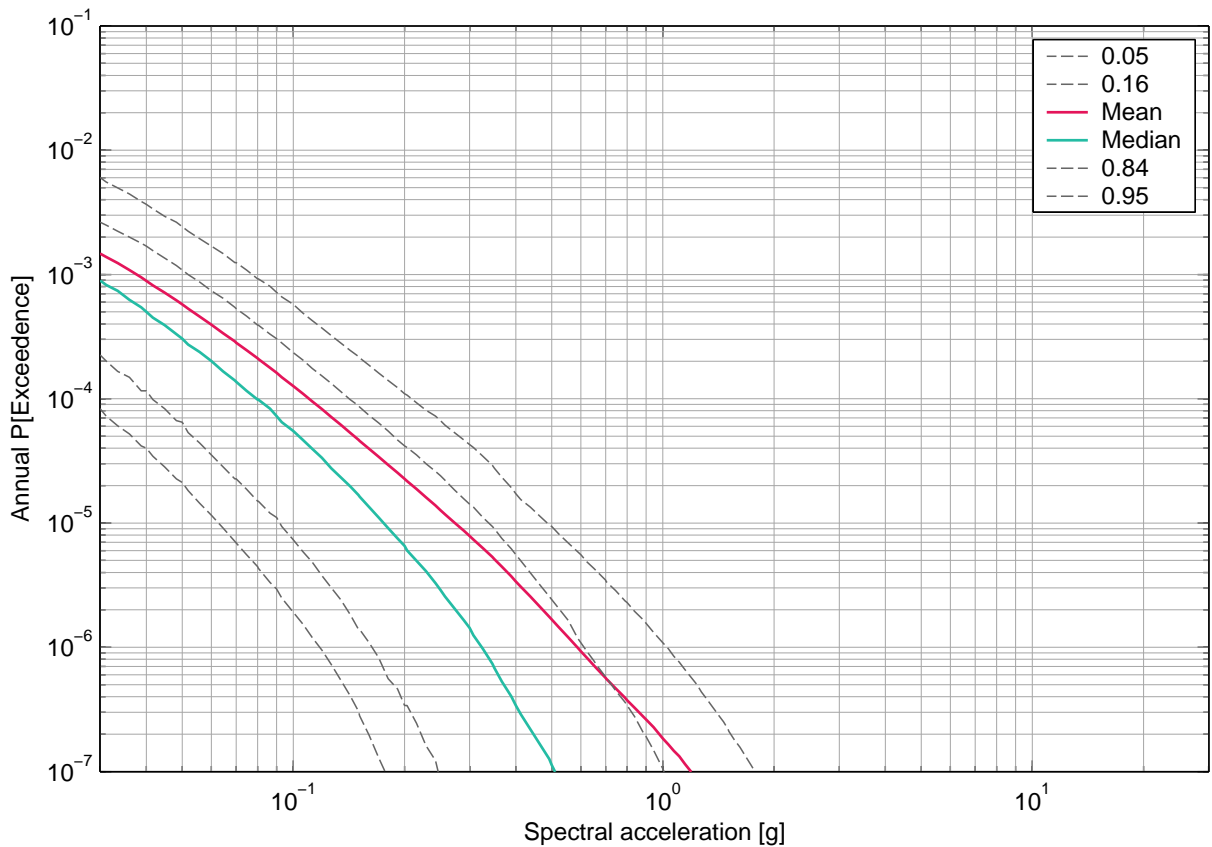


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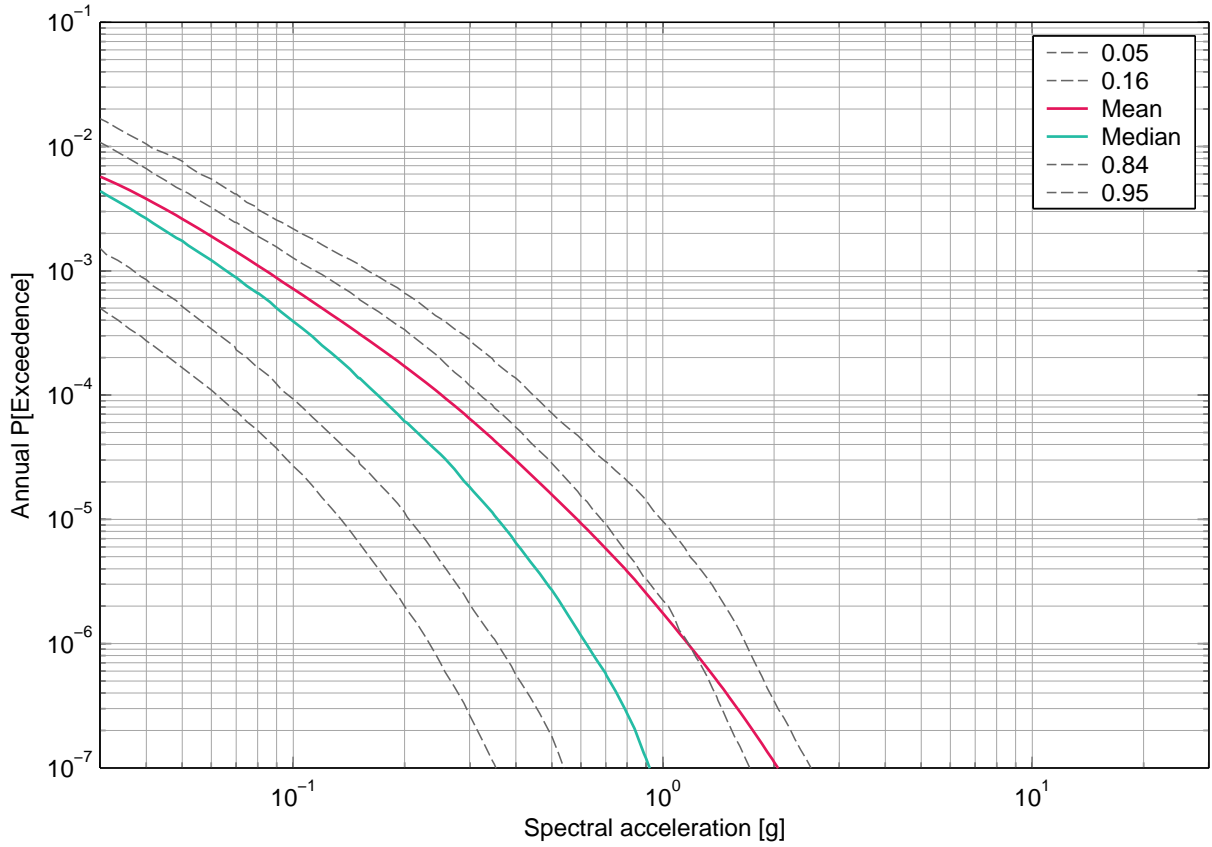


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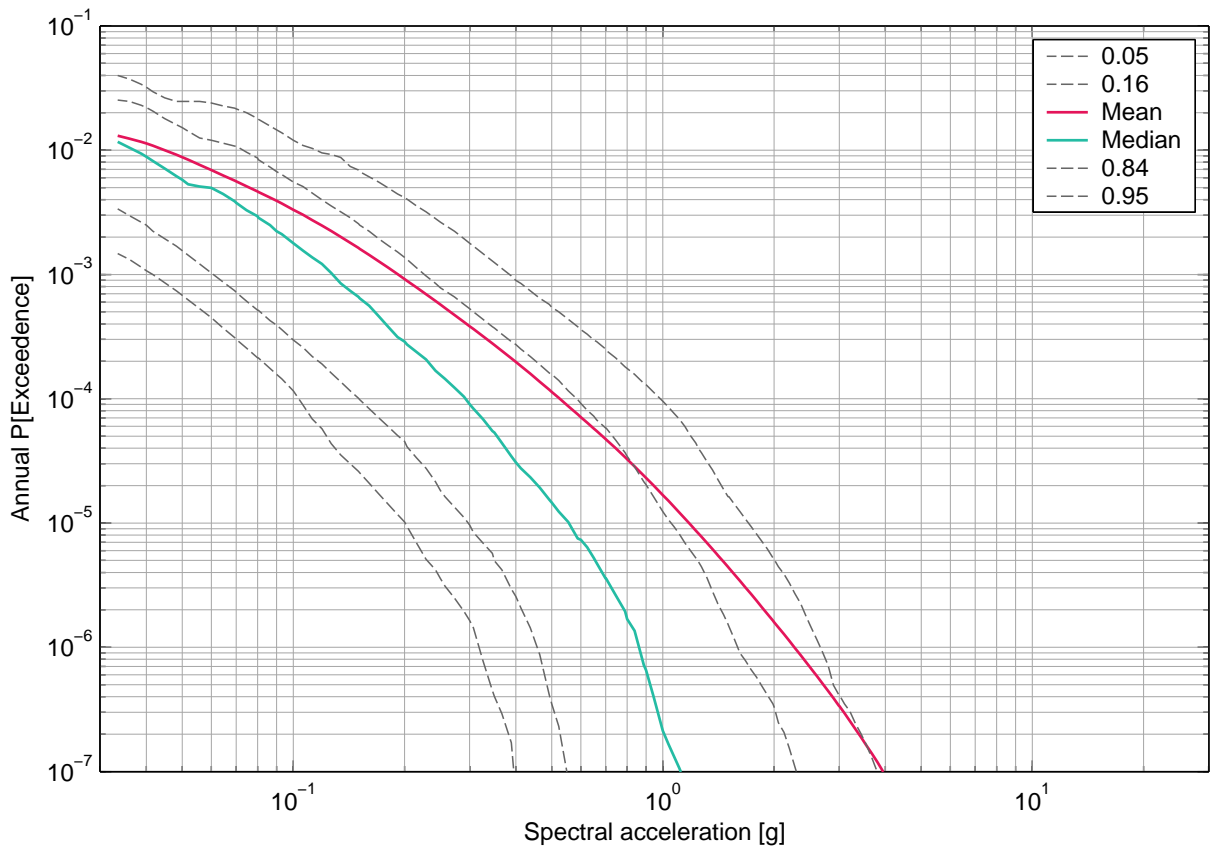


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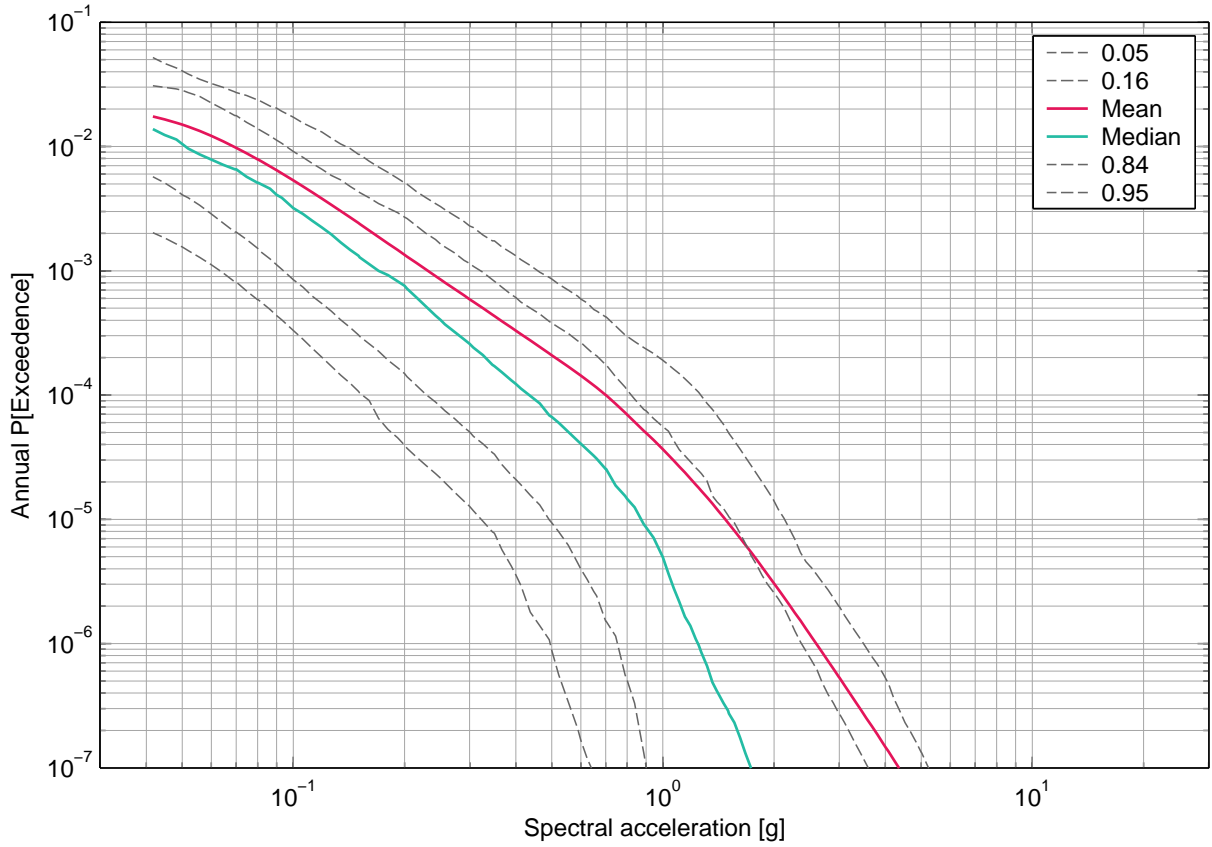


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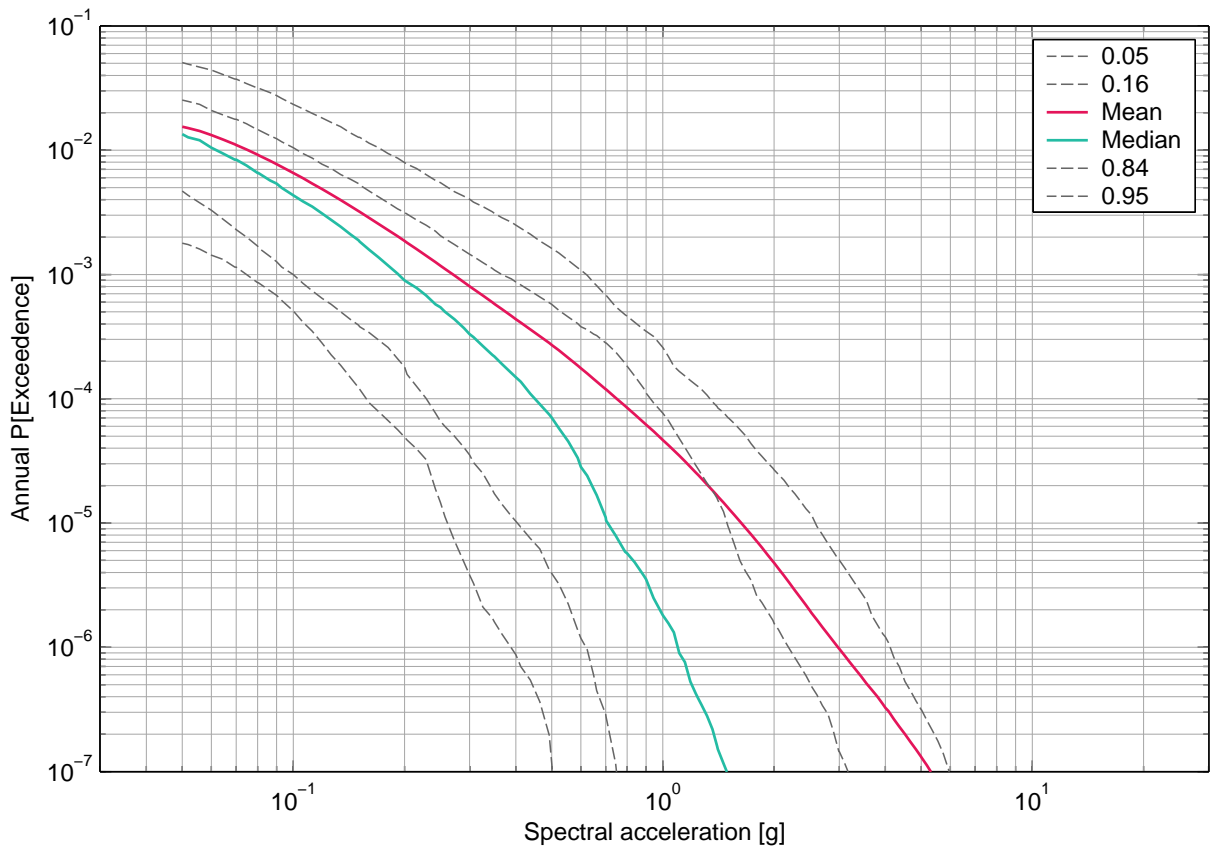


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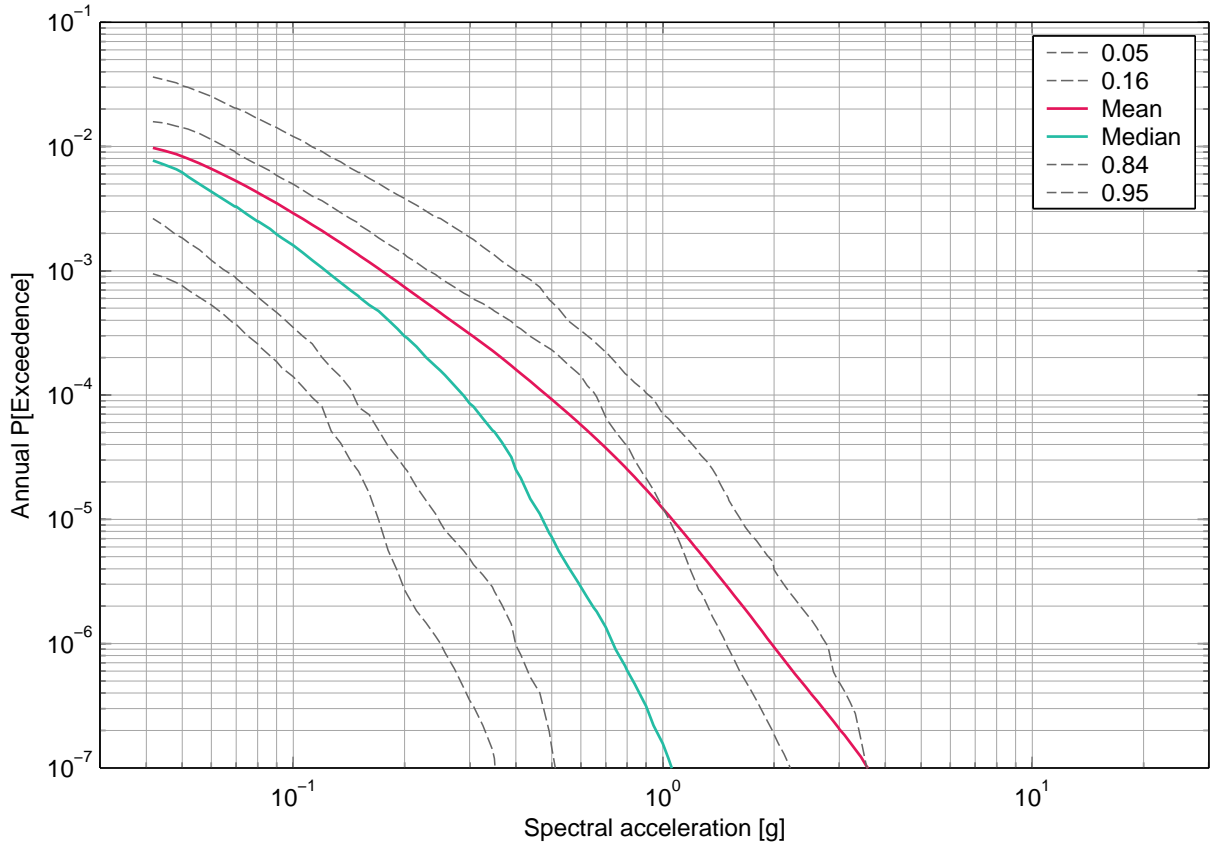


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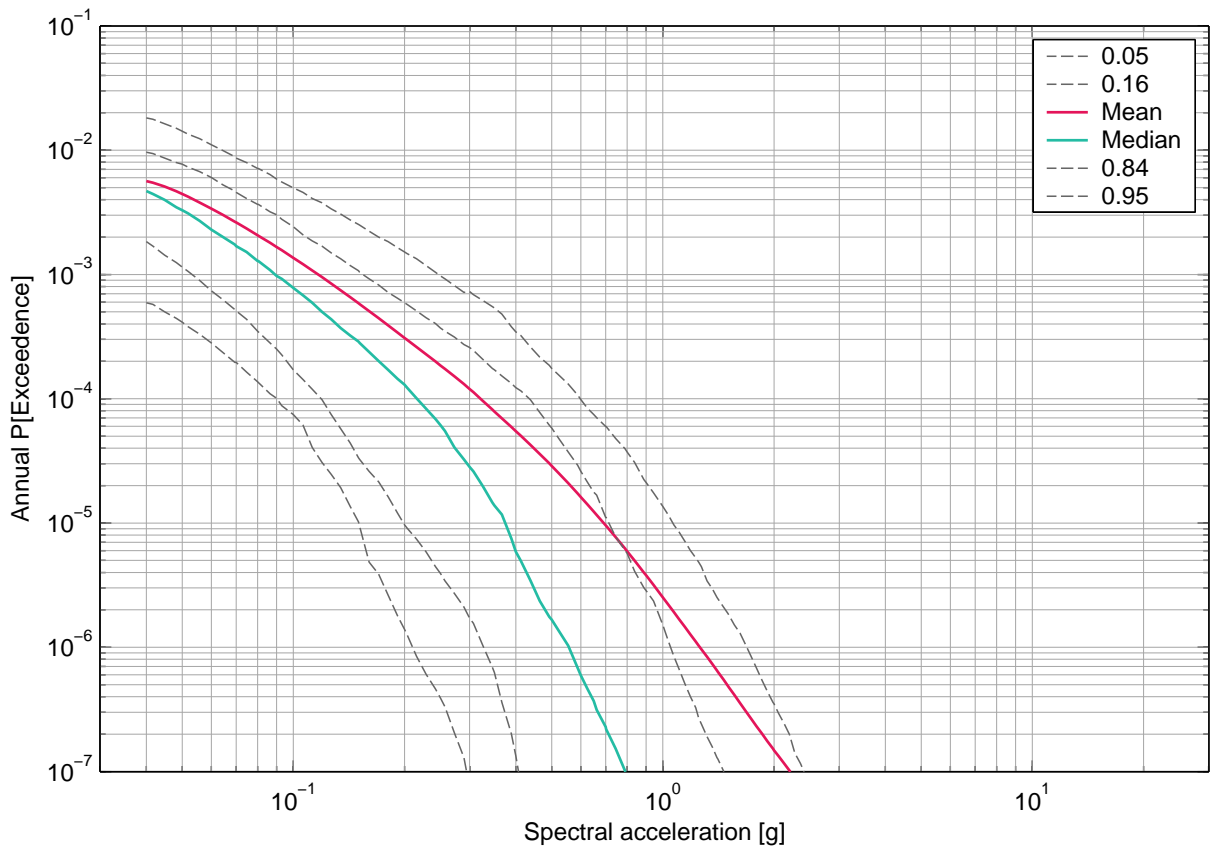


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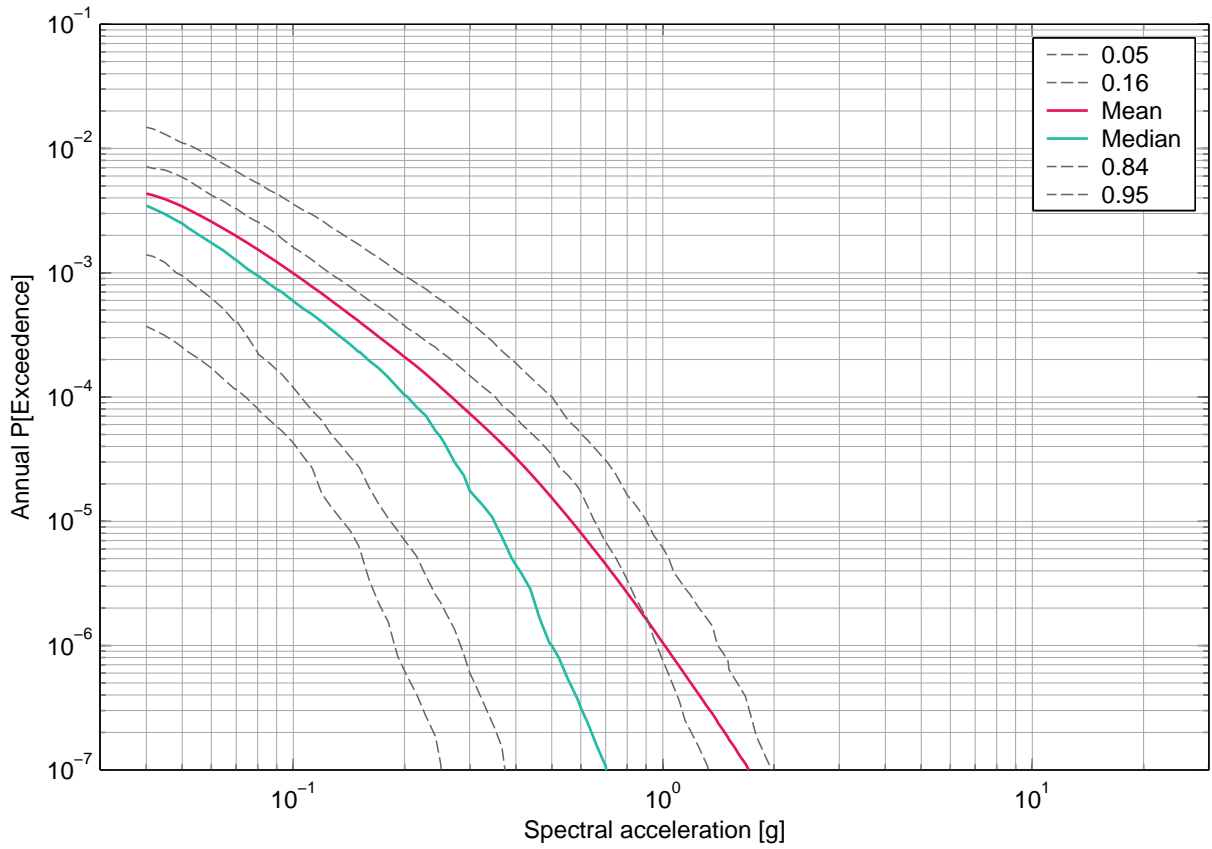


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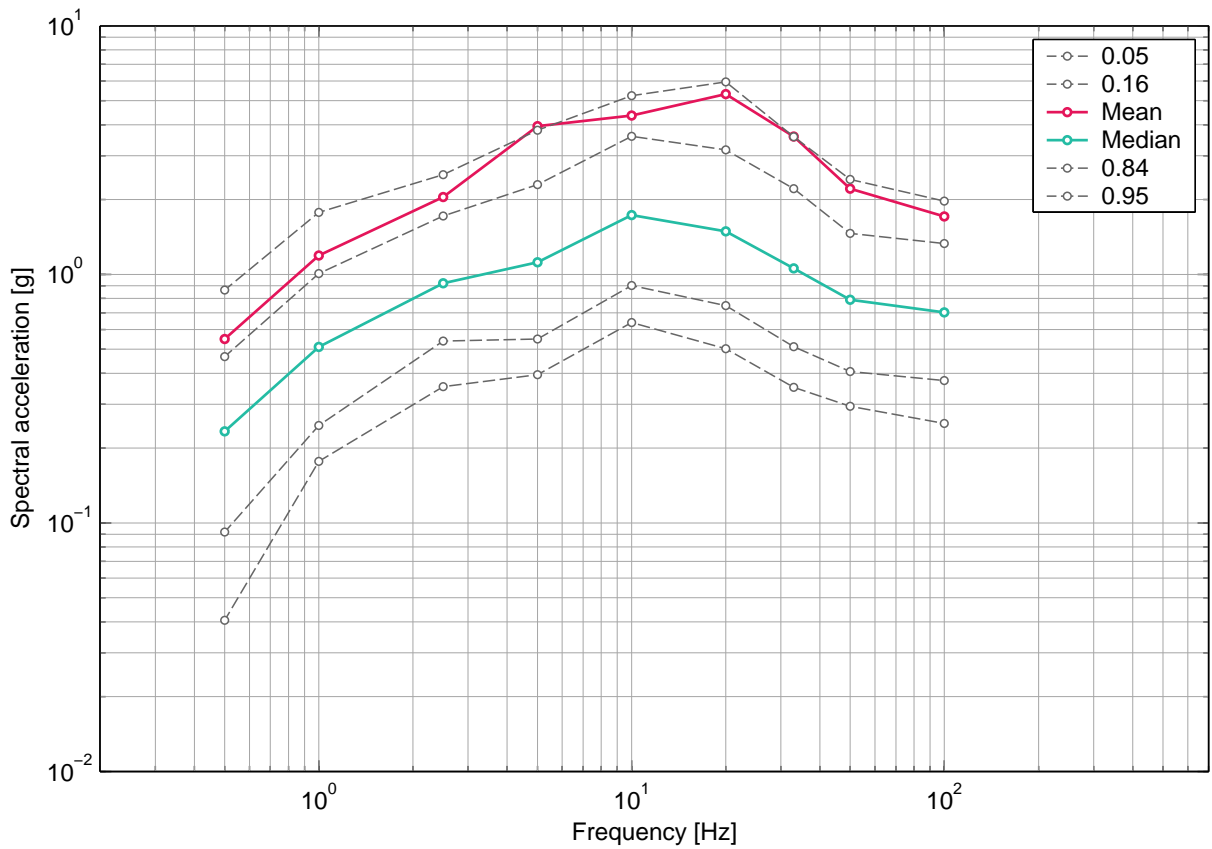


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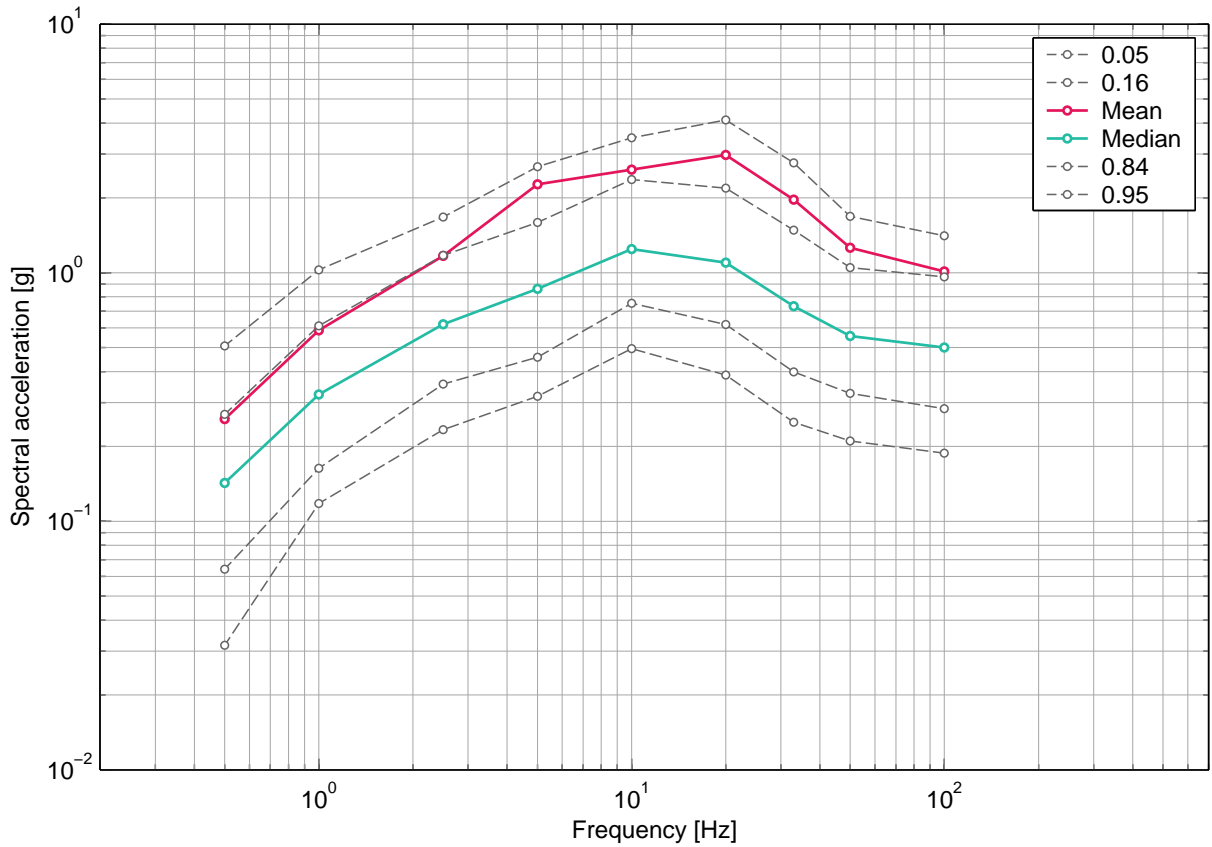


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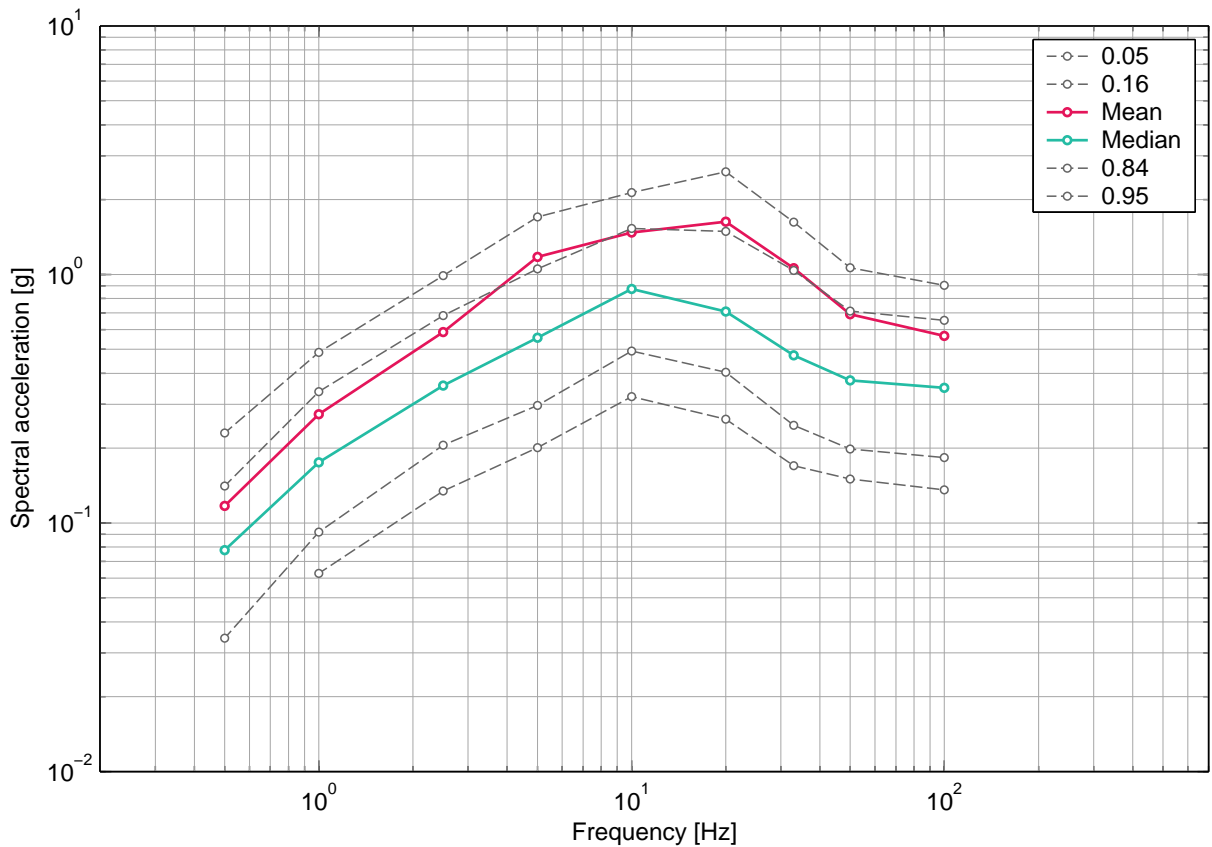


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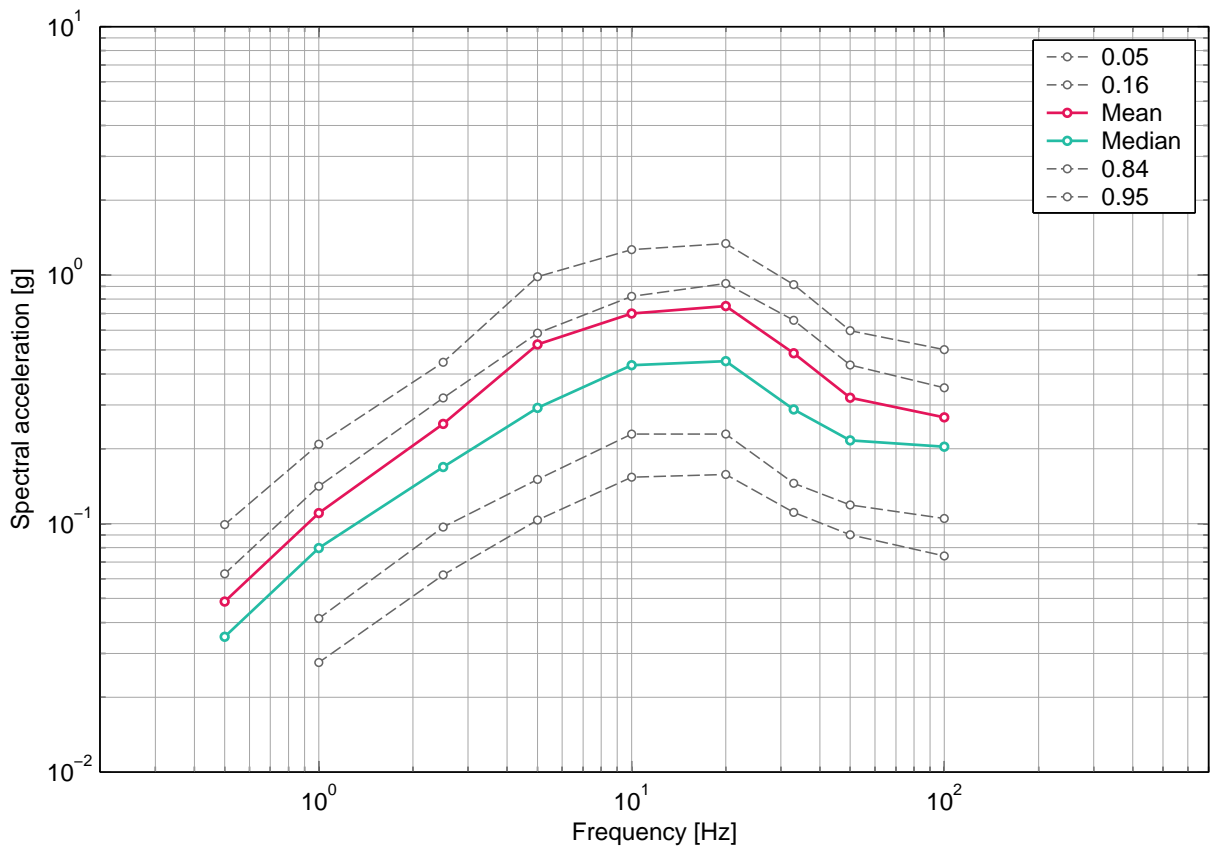


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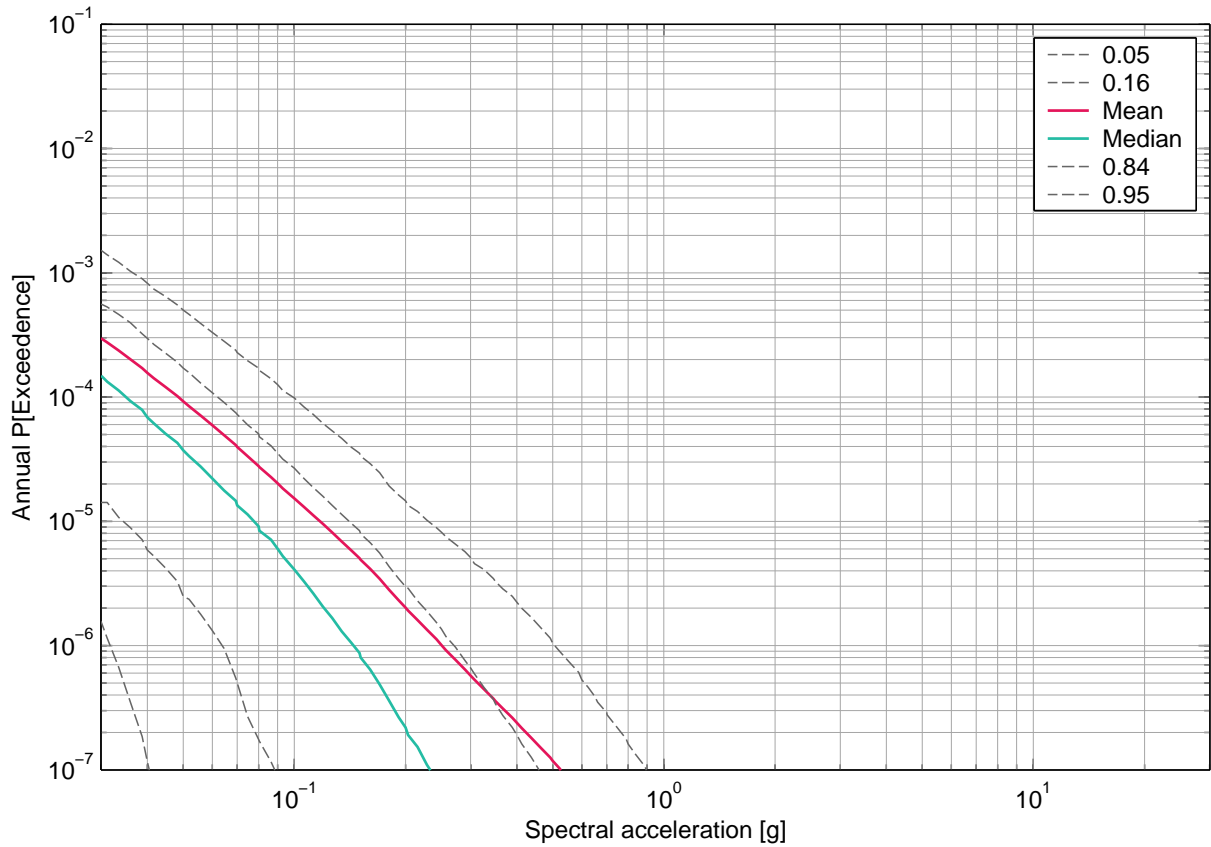


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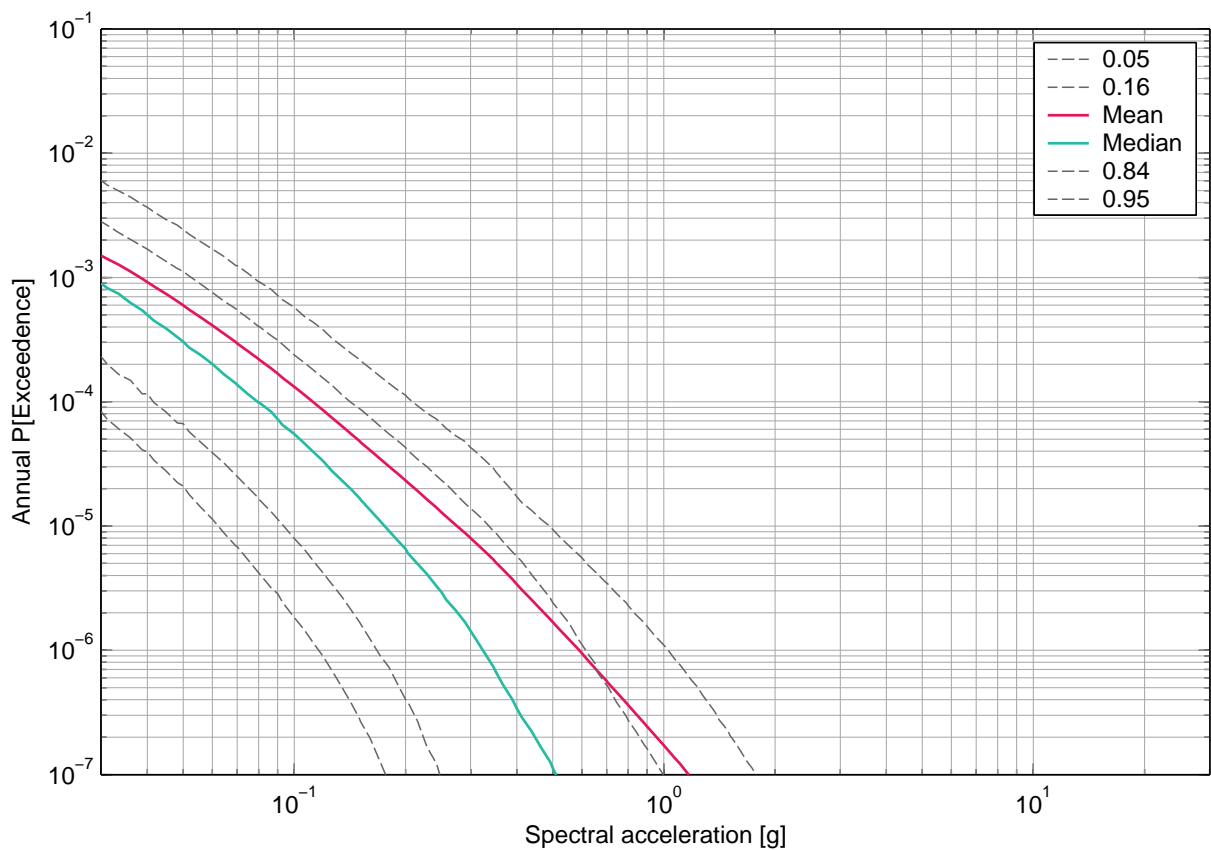


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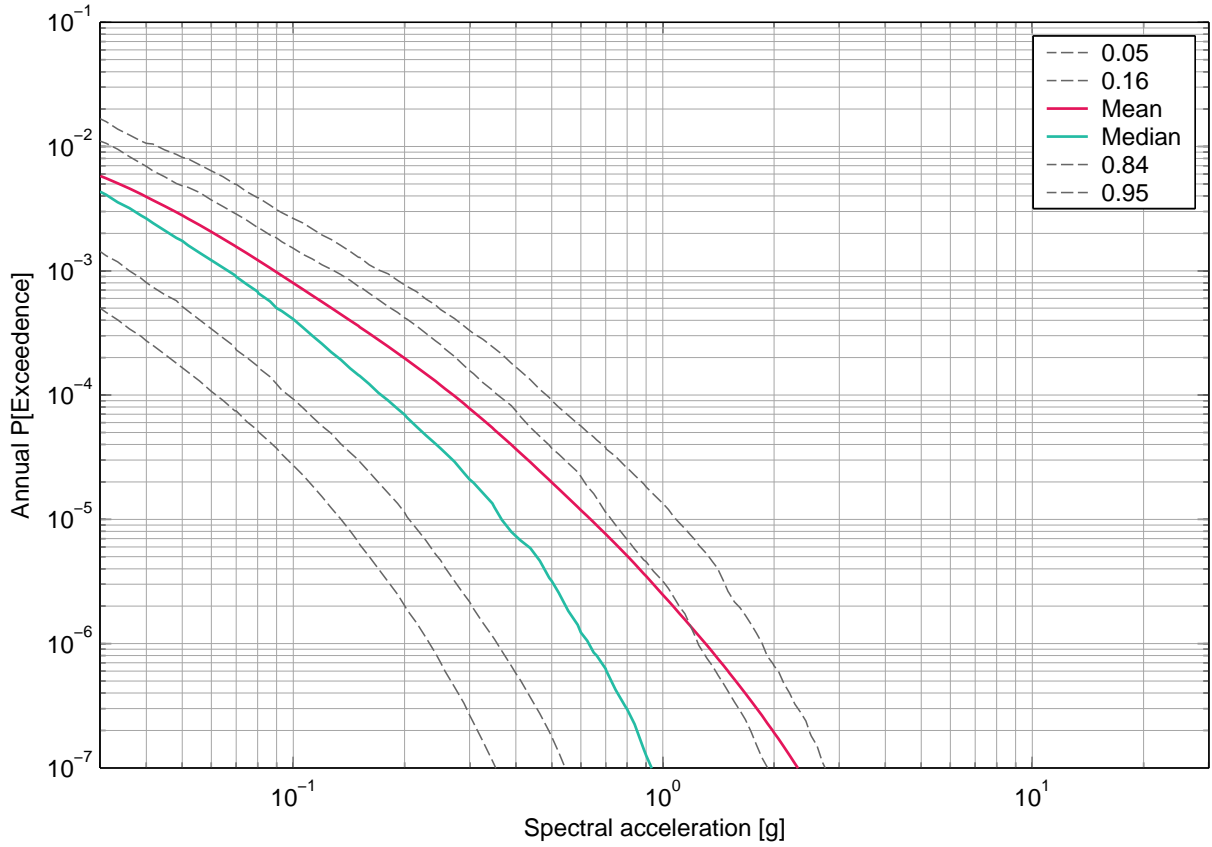


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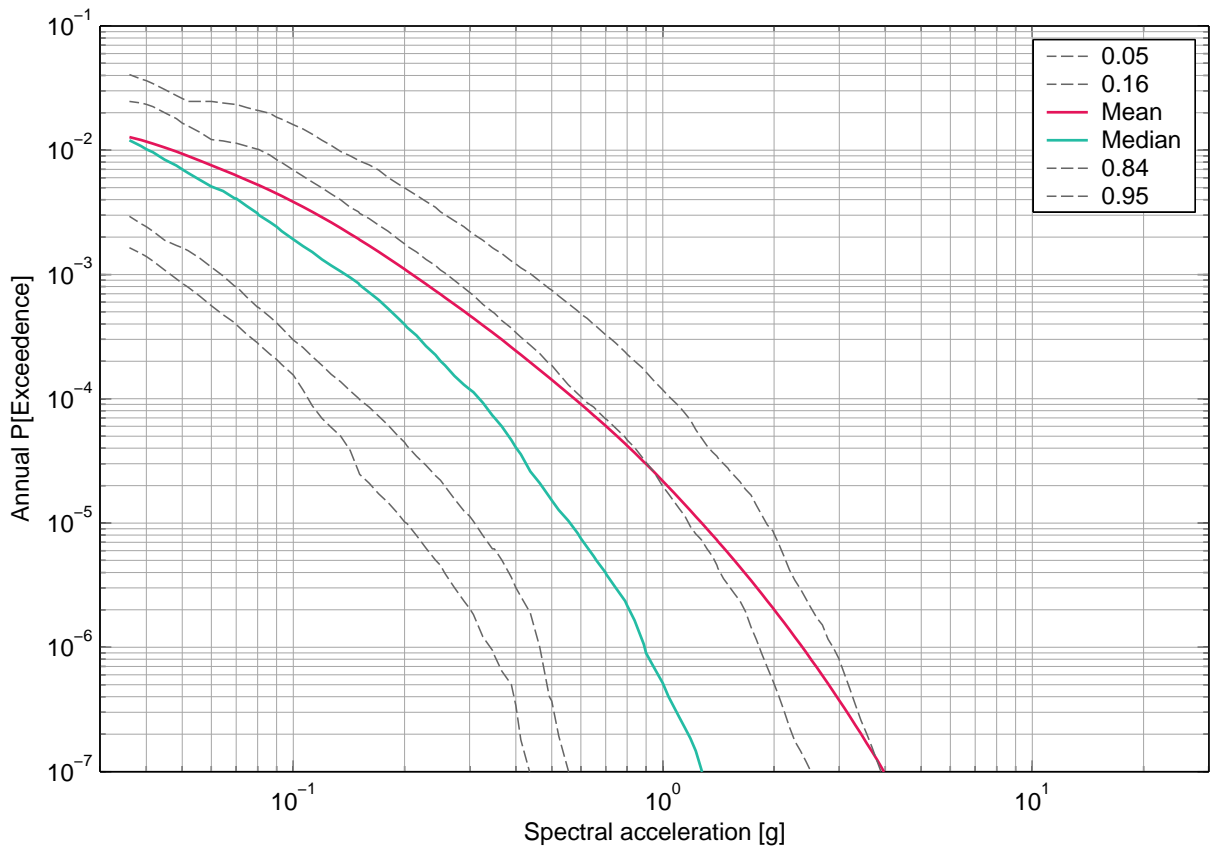


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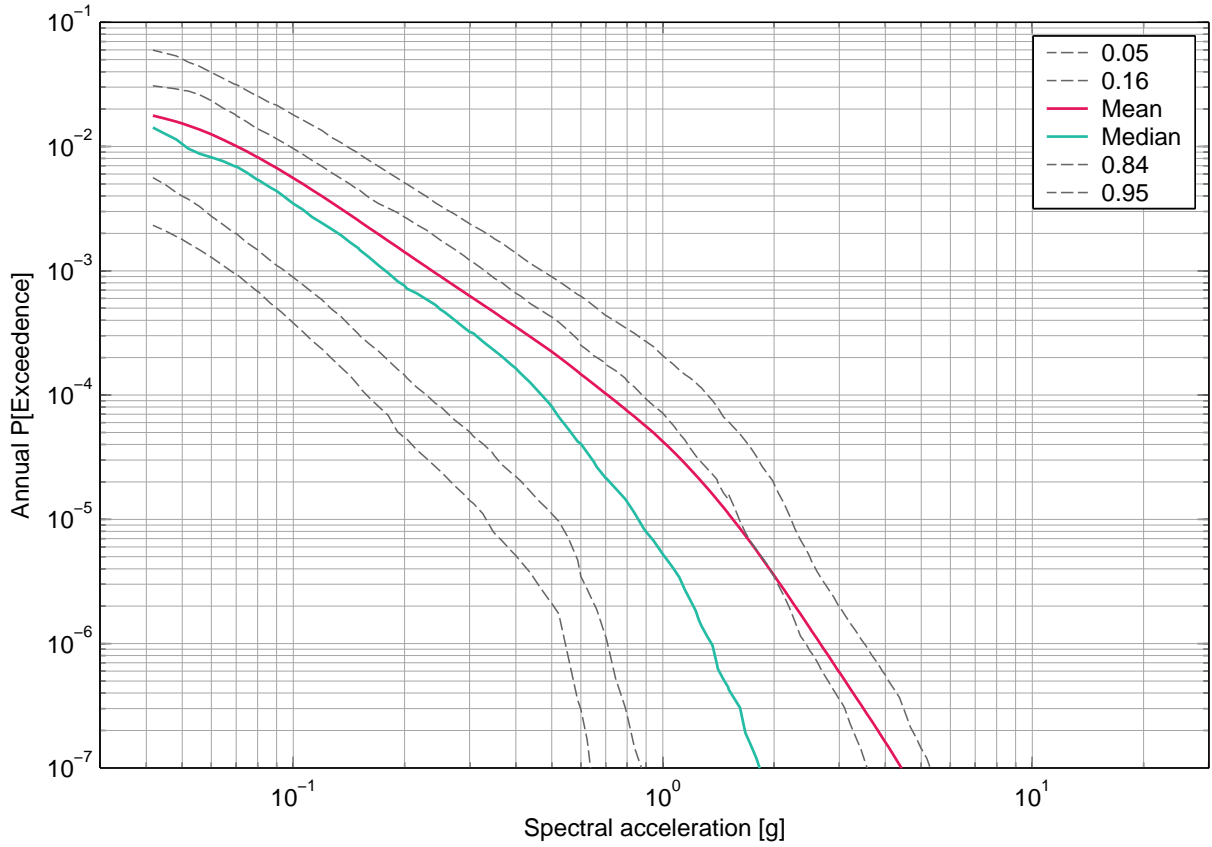


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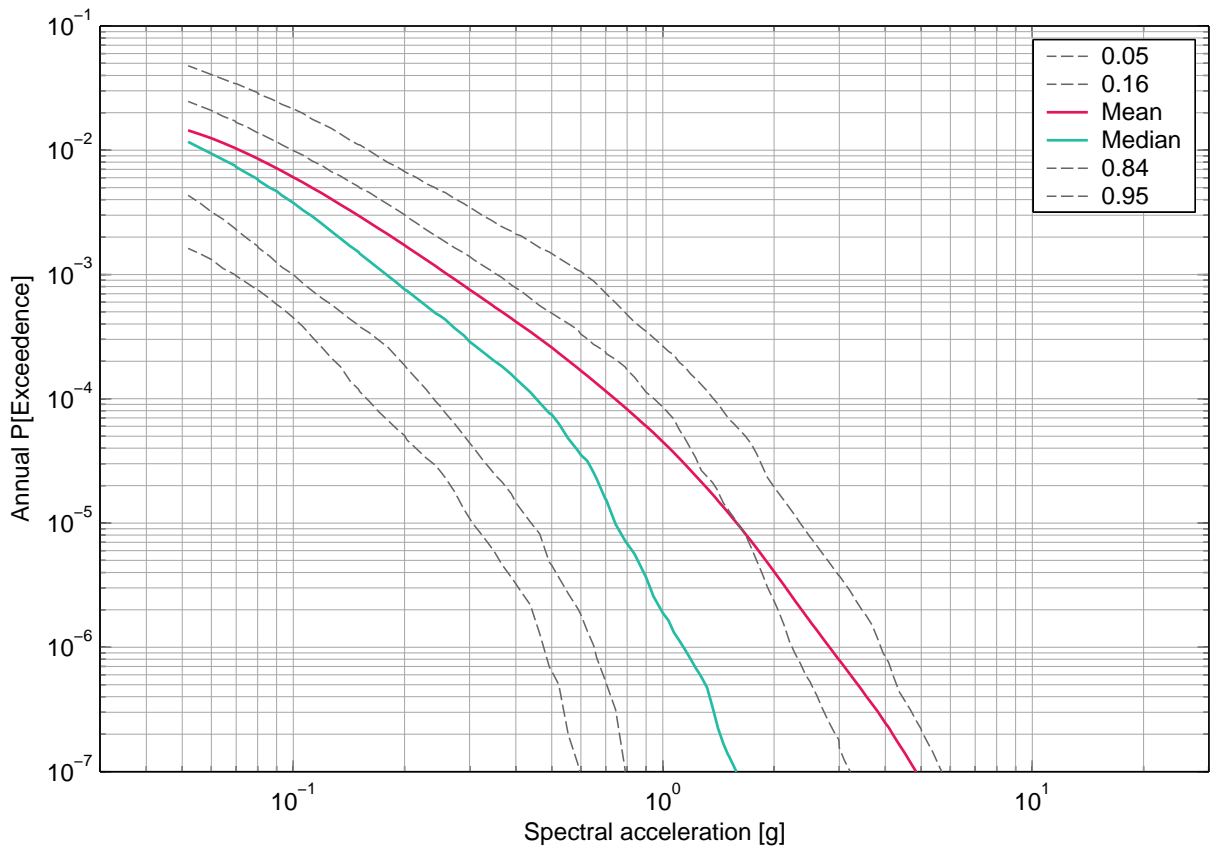


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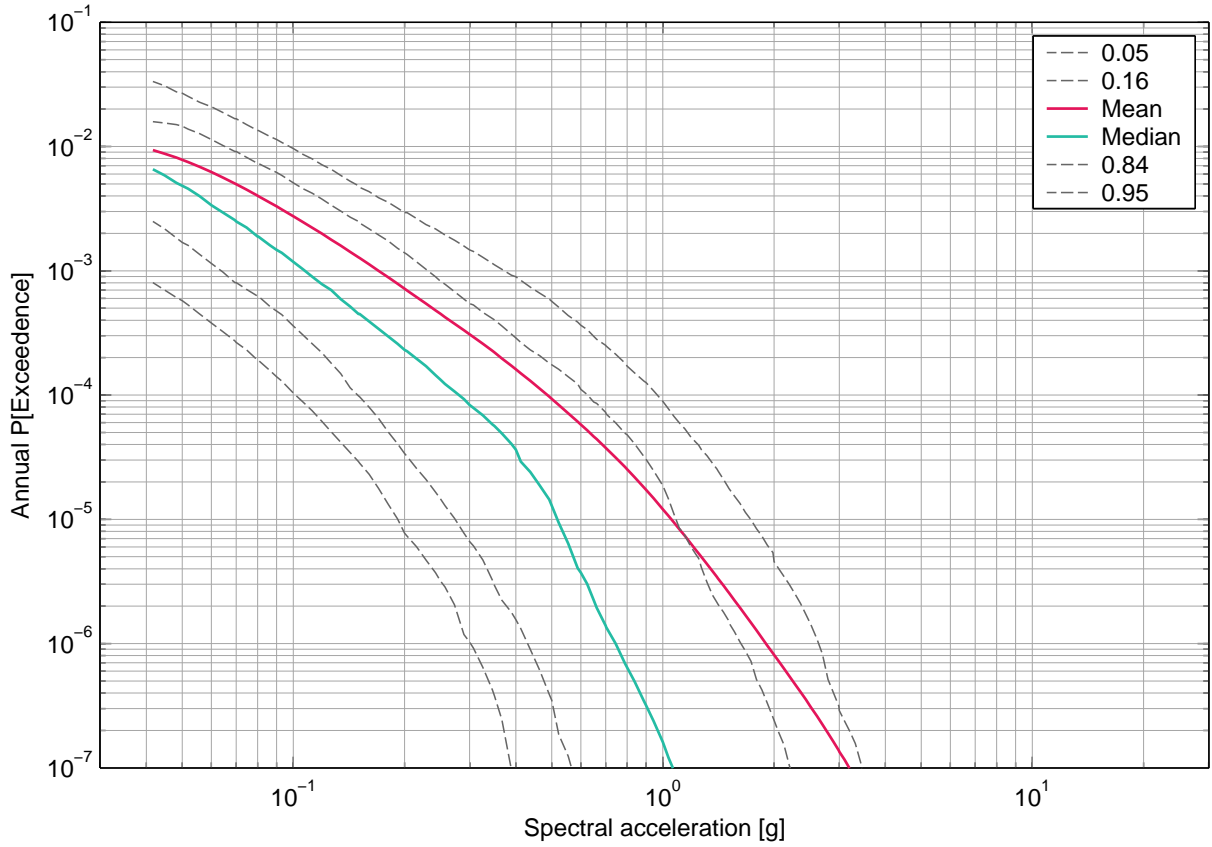


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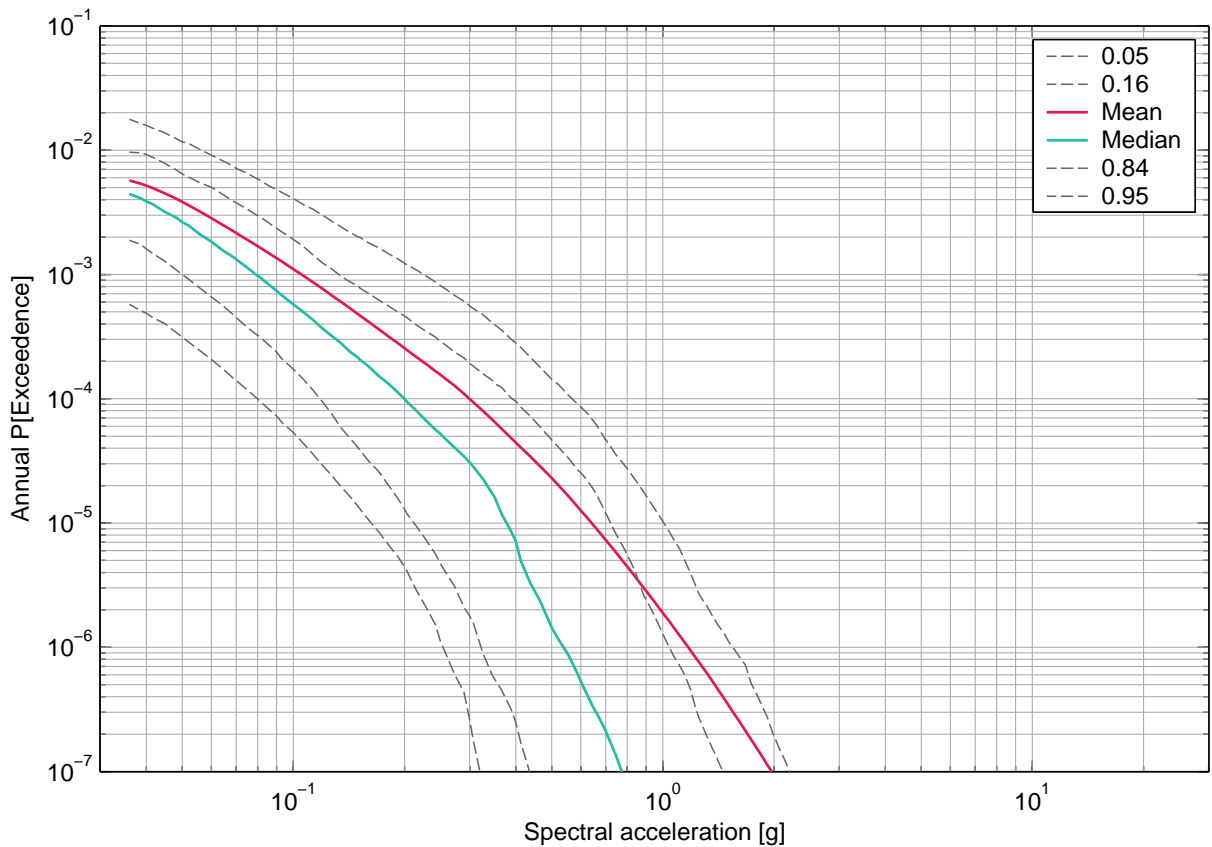


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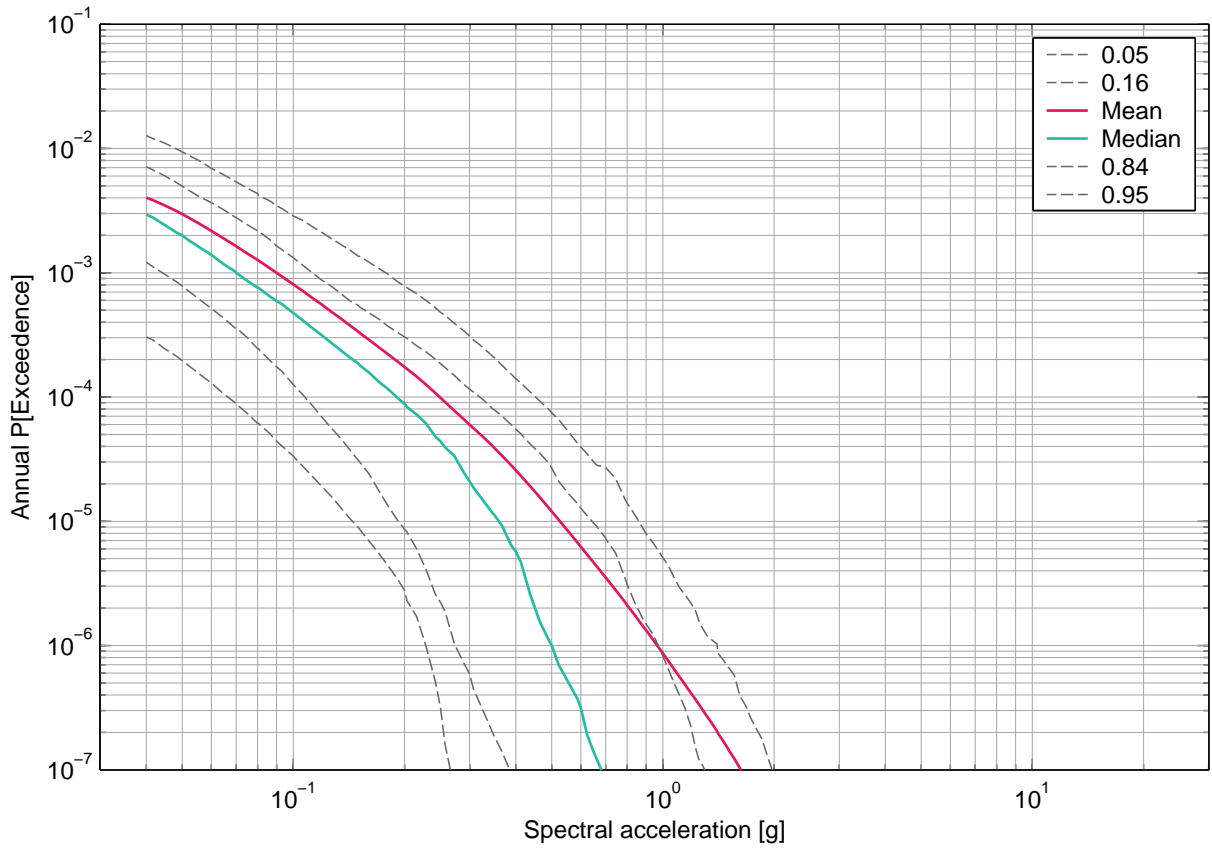


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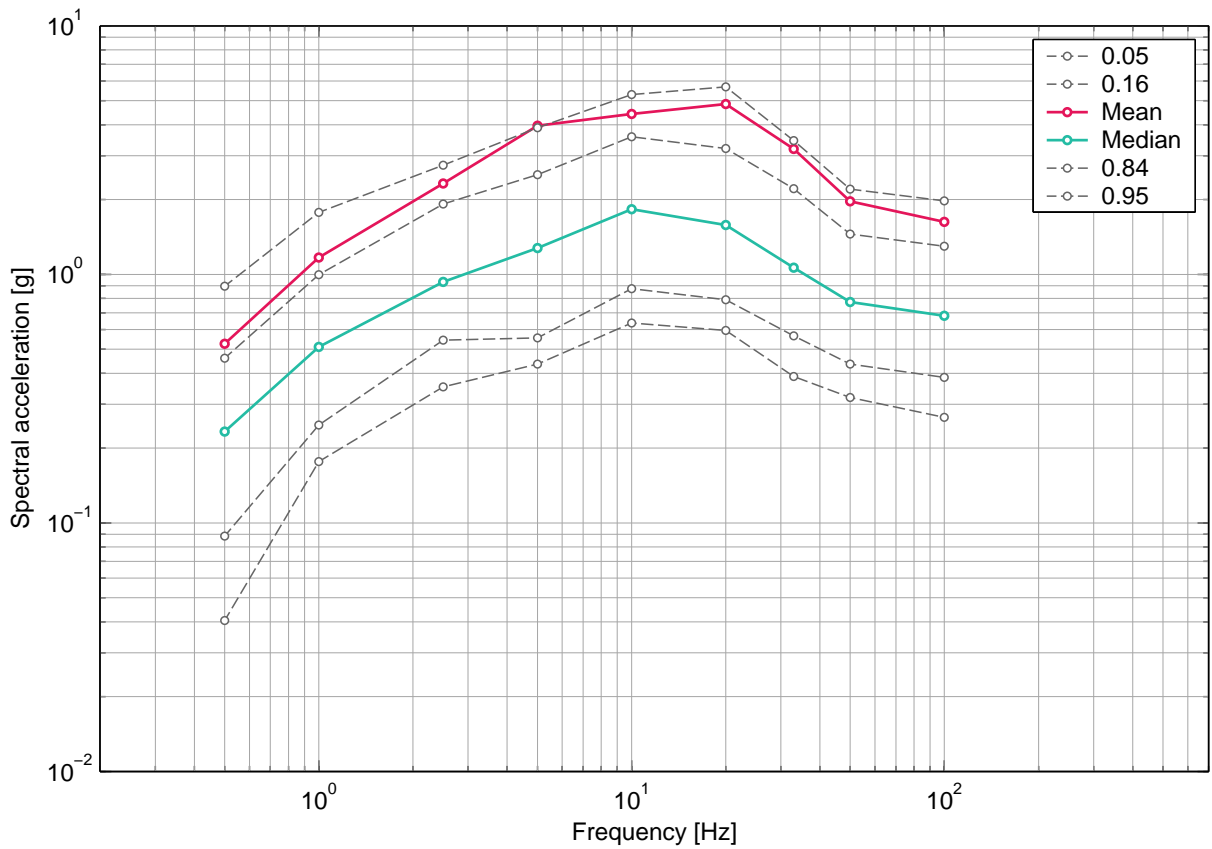


Fig. 3-12.10: Gösgen, vertical component, soil, -5 m, uniform hazard spectra for an annual probability of exceedence of 1E-07 and 5% damping.



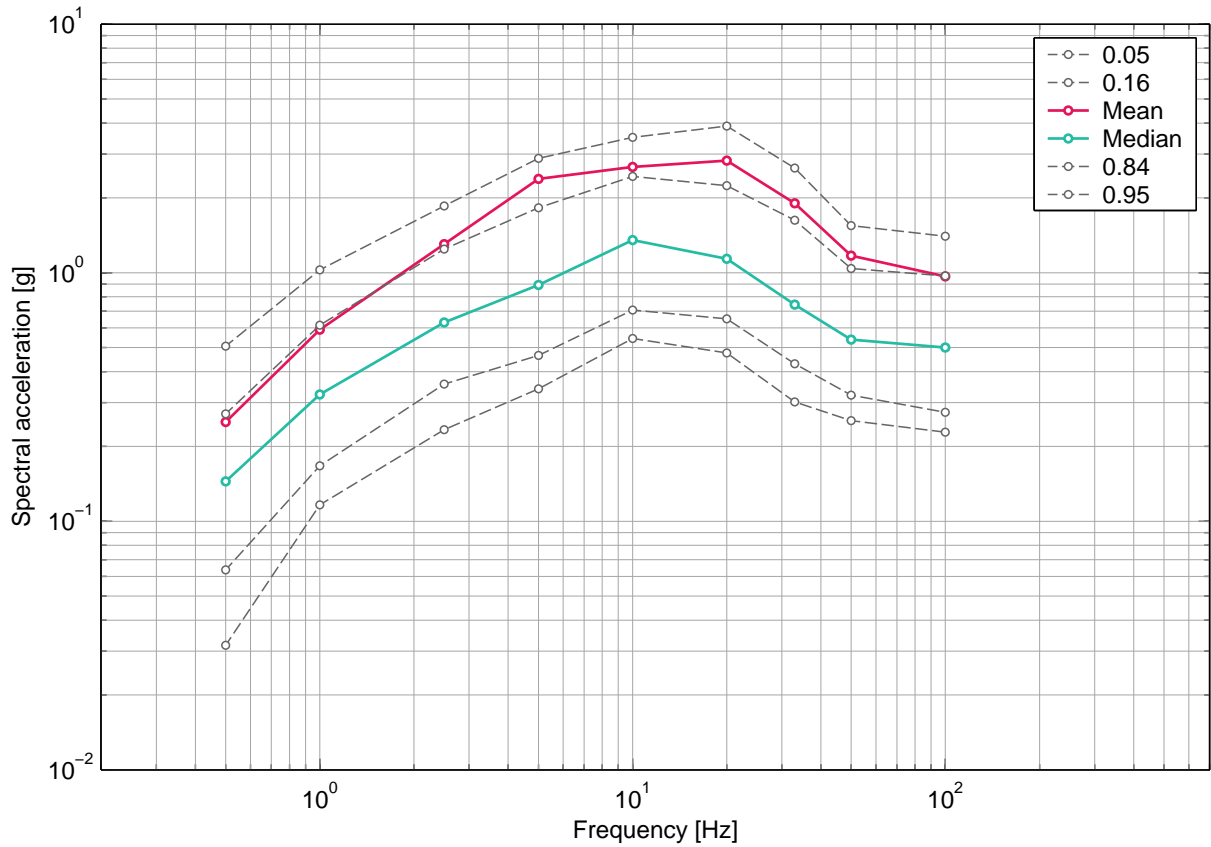


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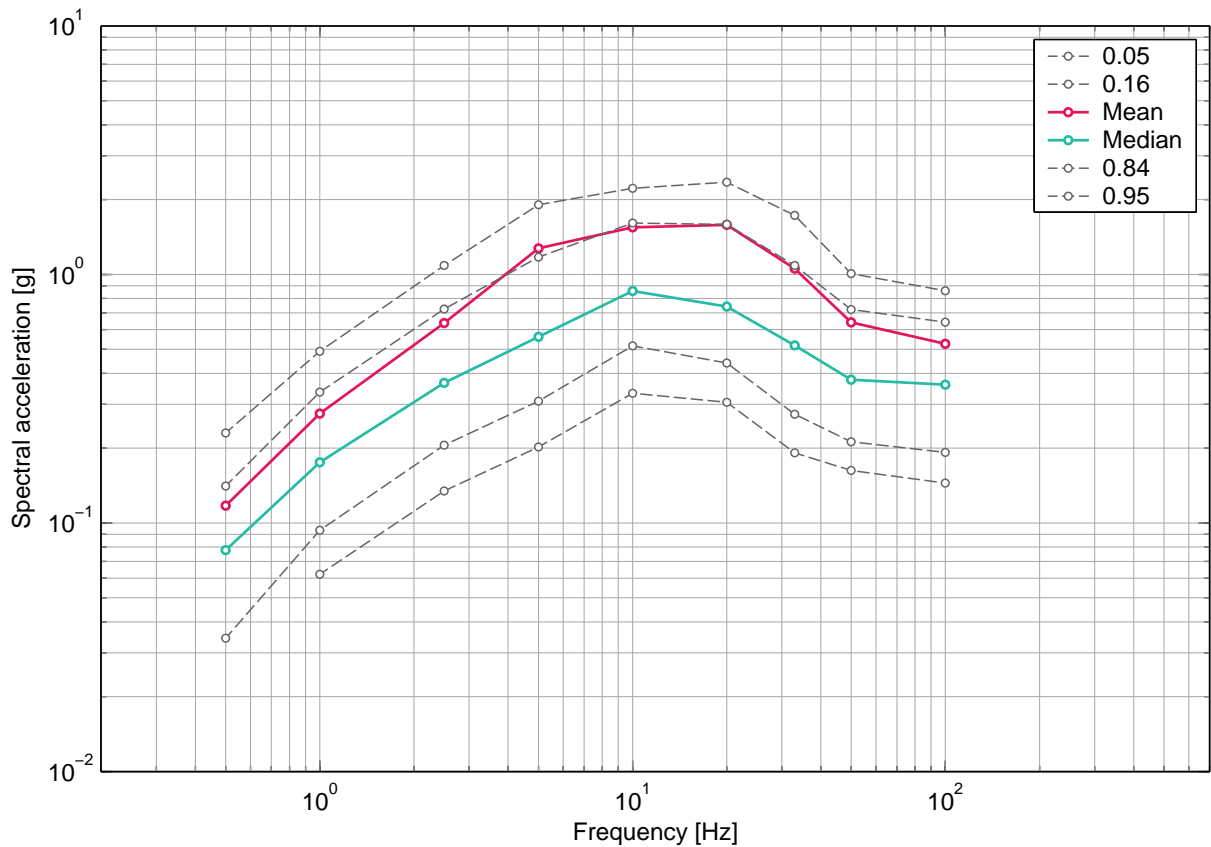


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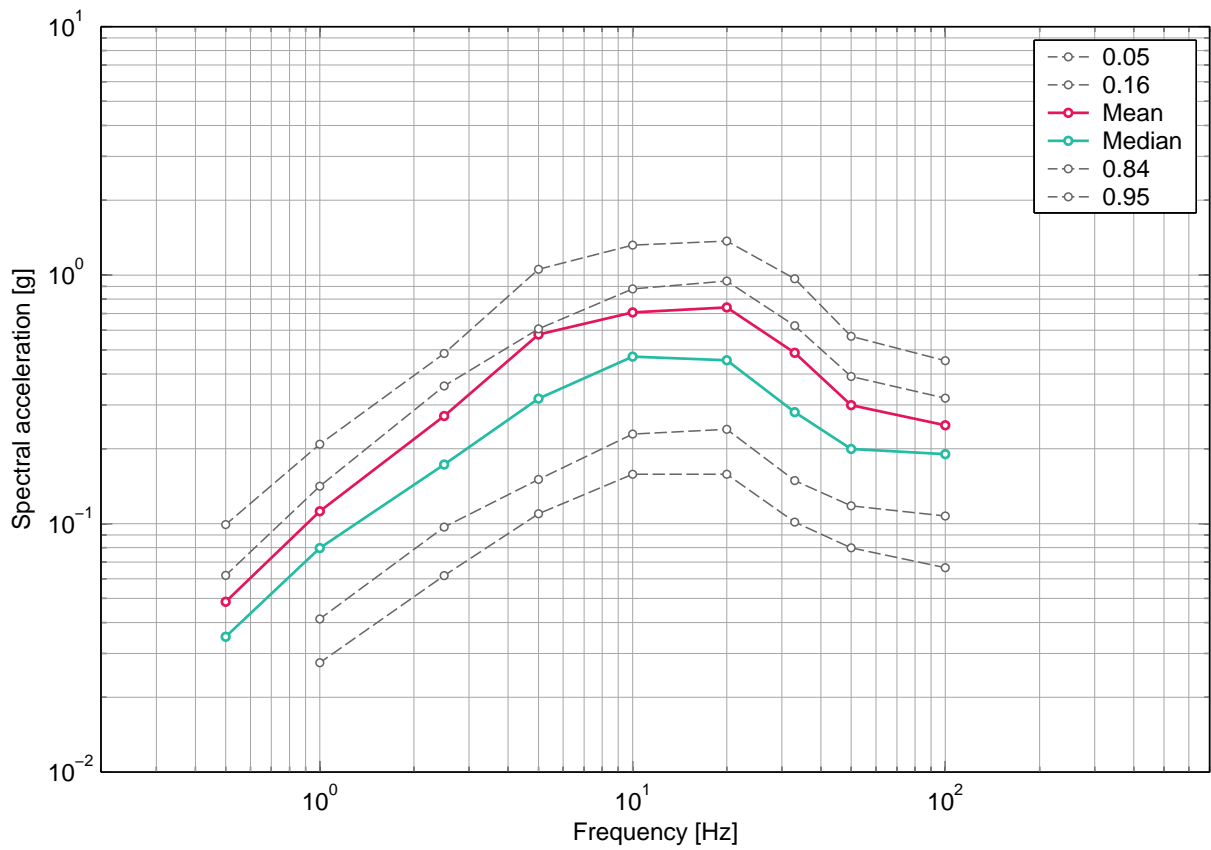


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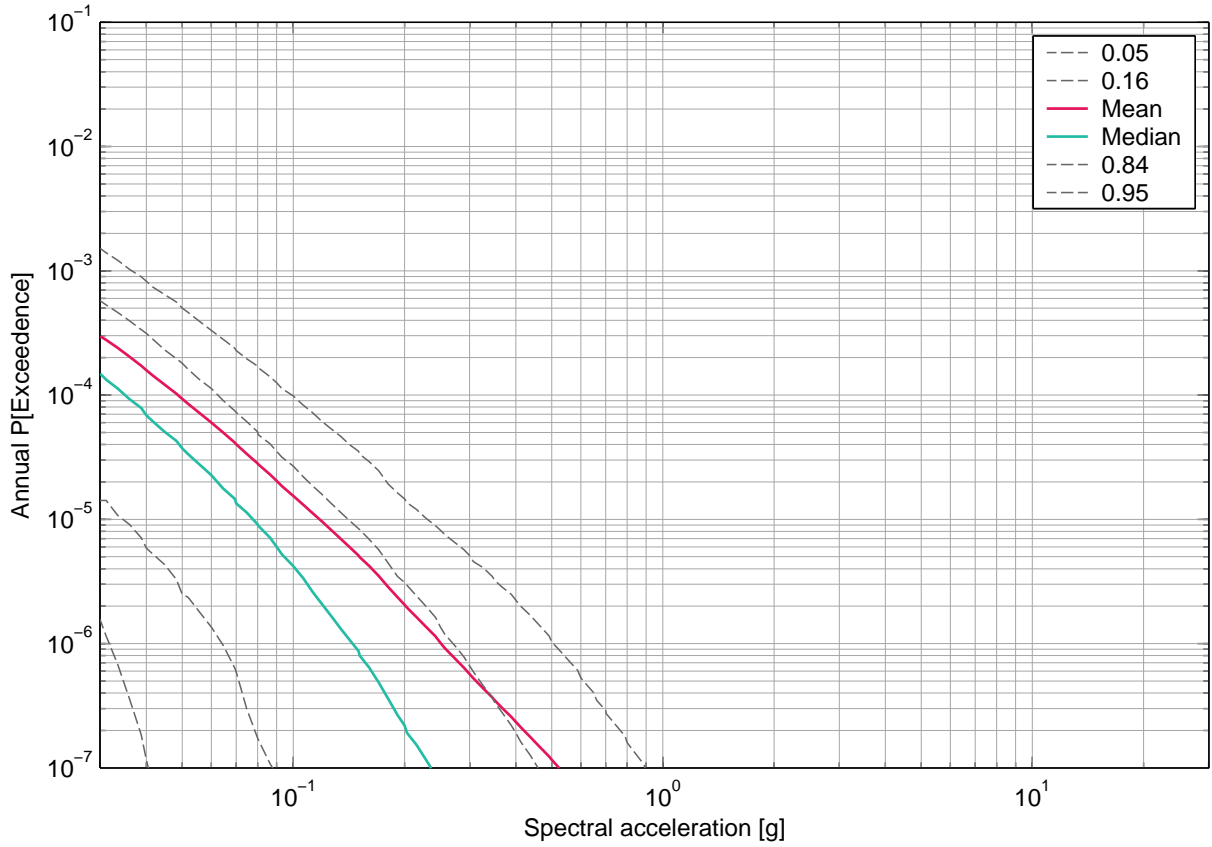


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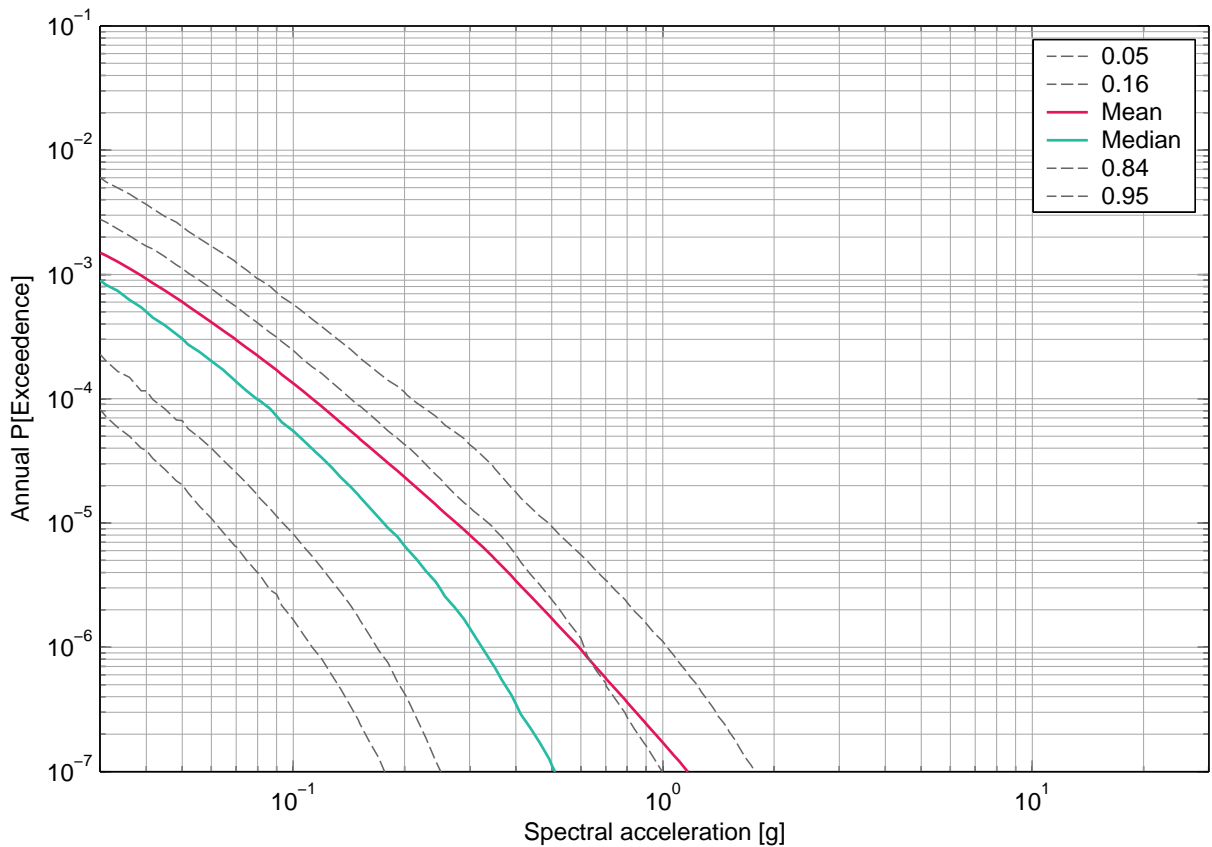


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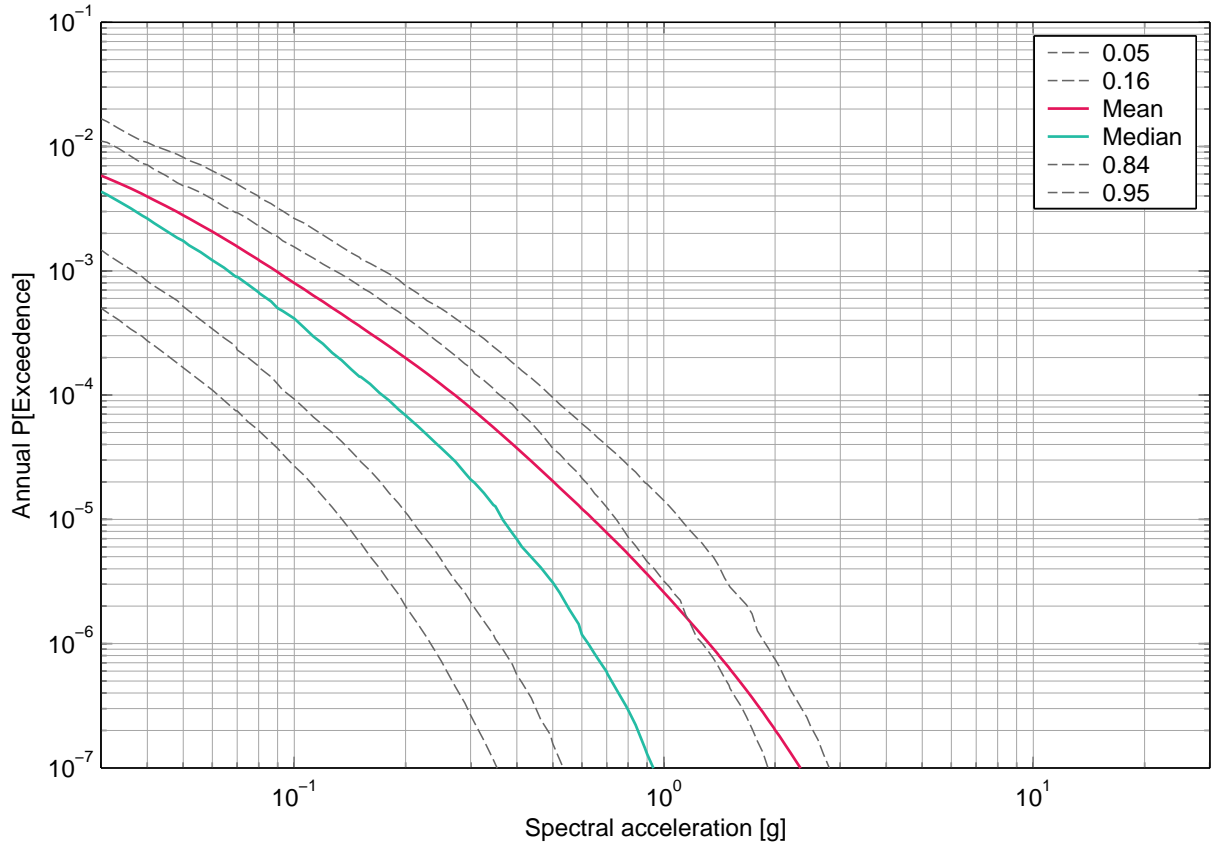


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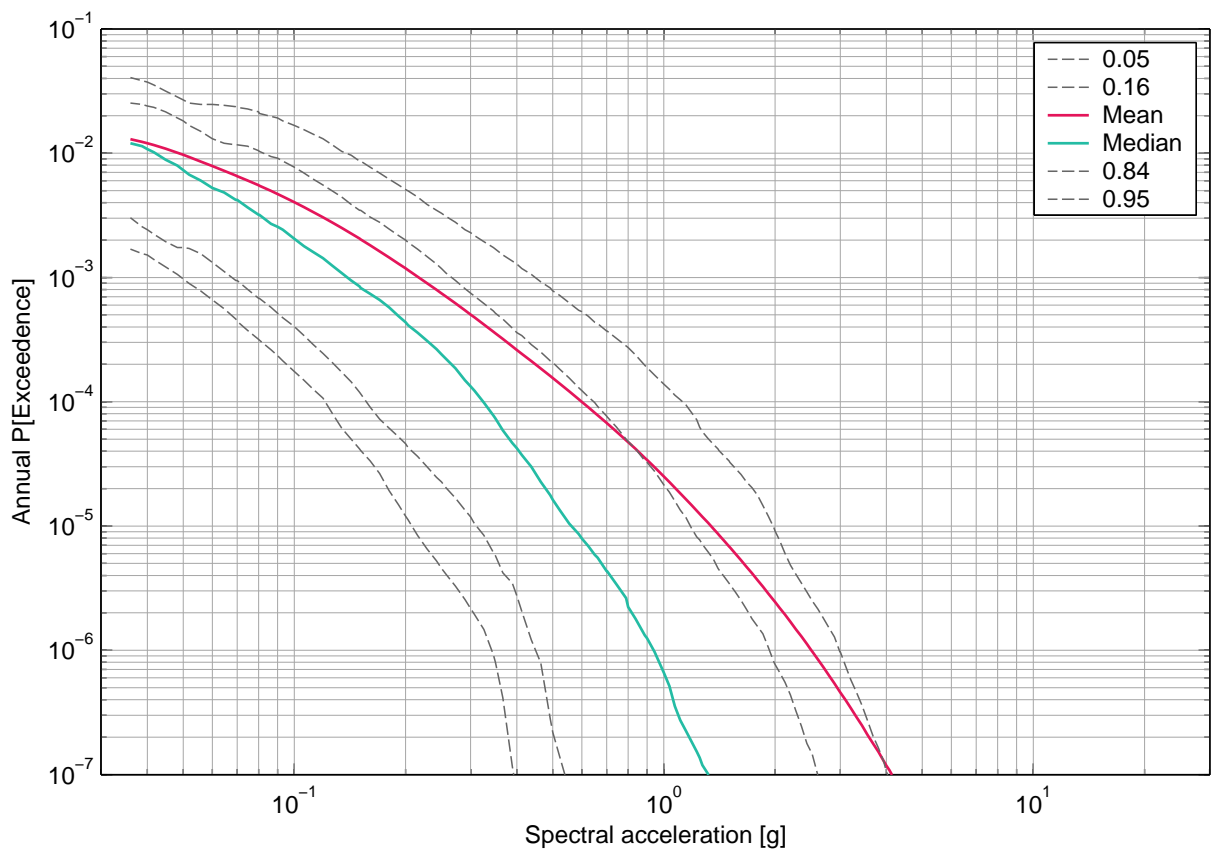


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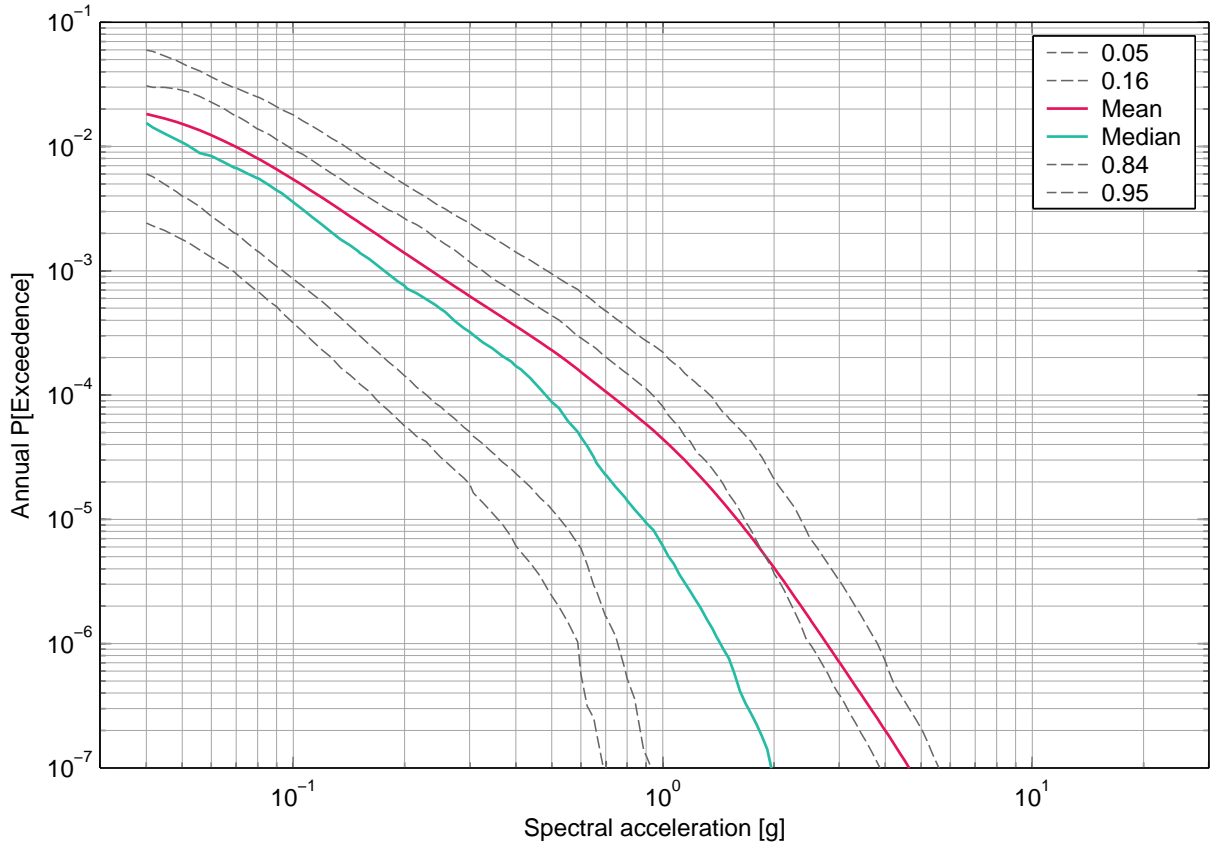


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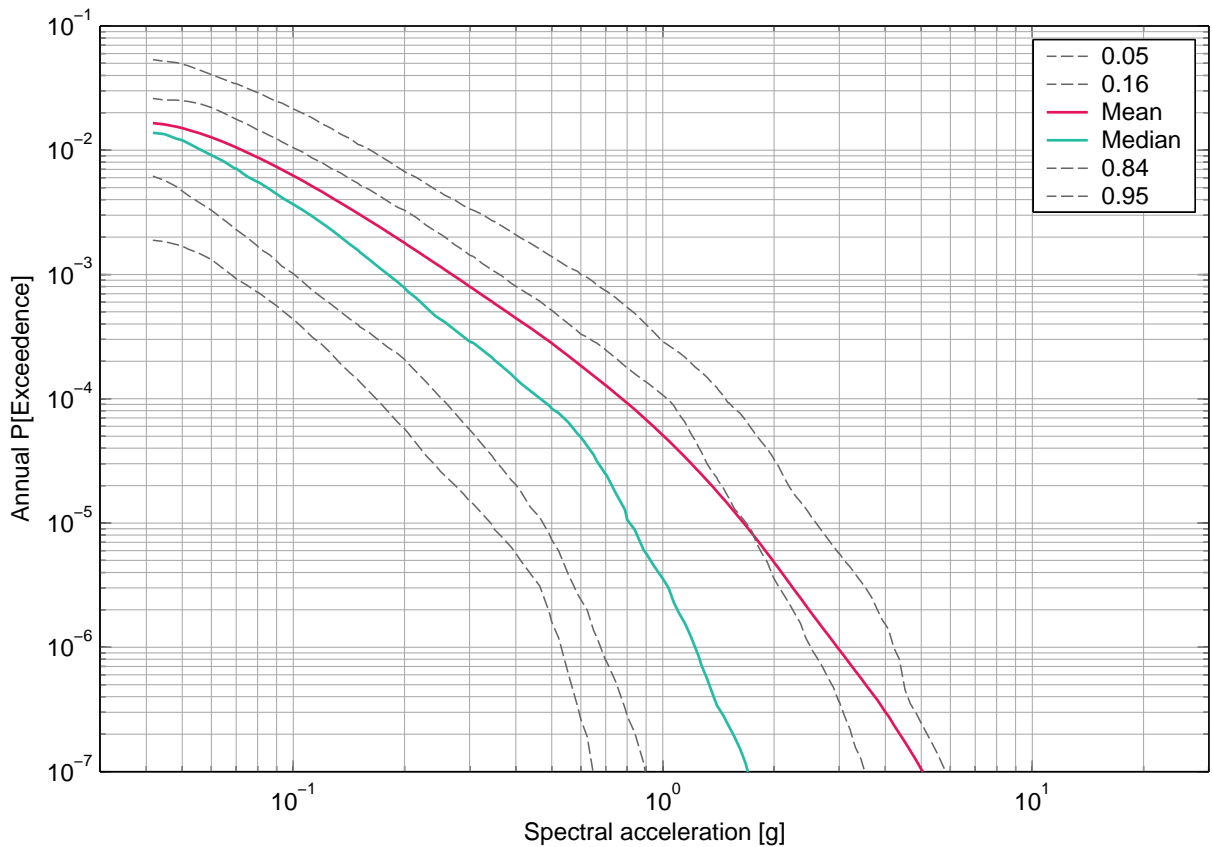


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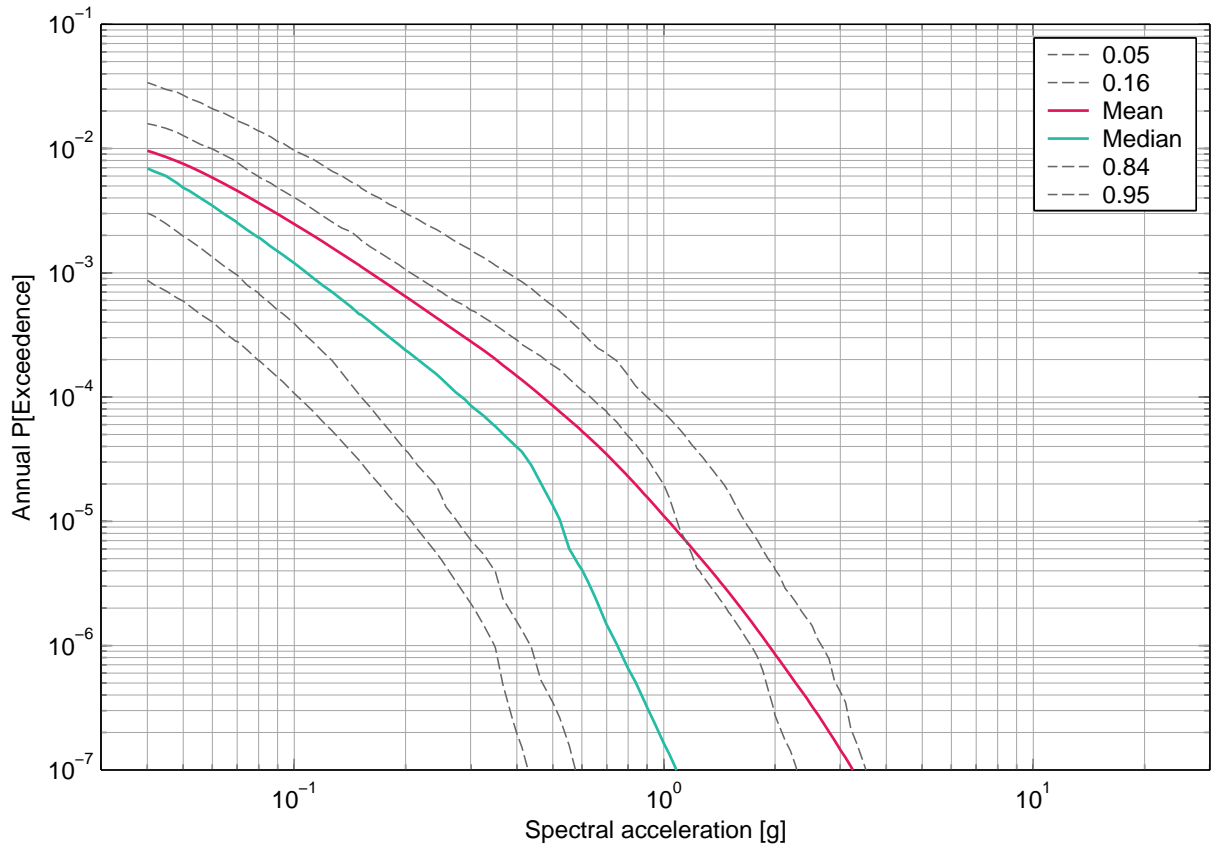


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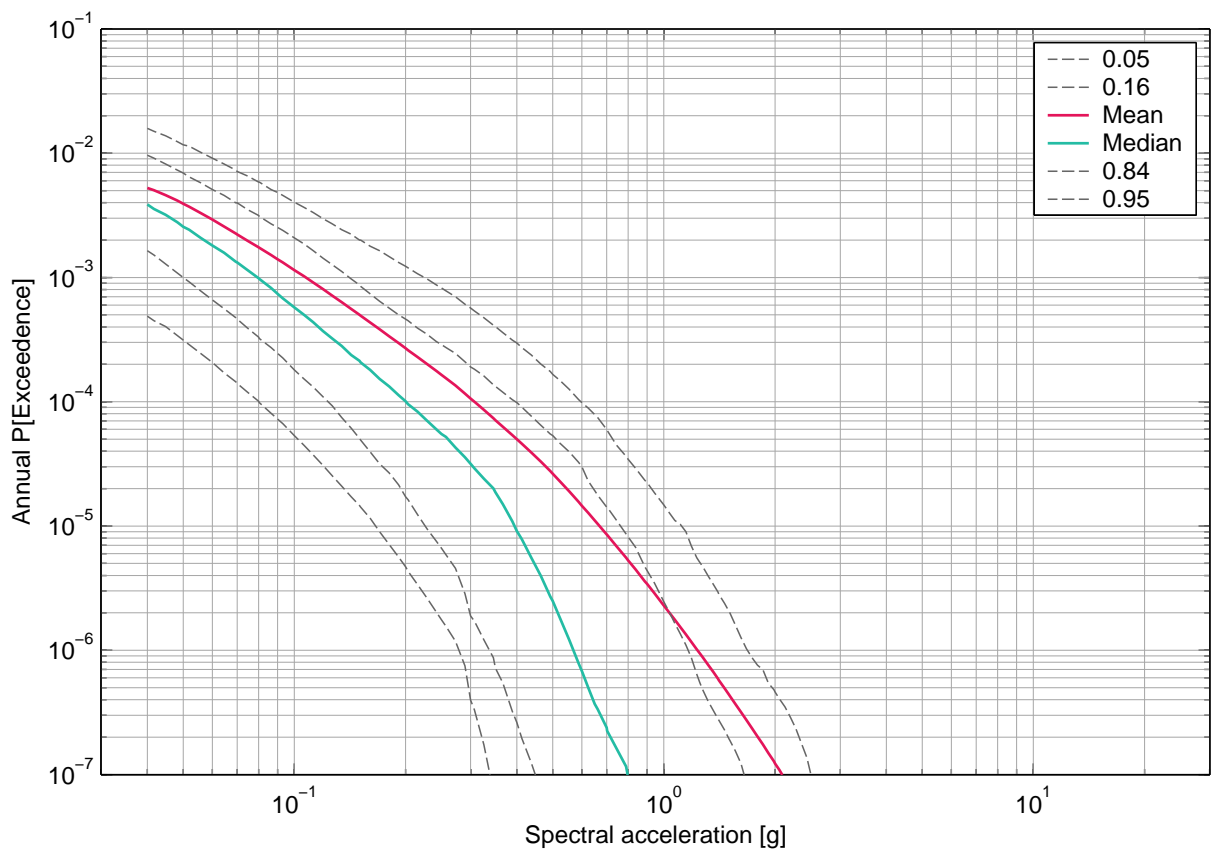


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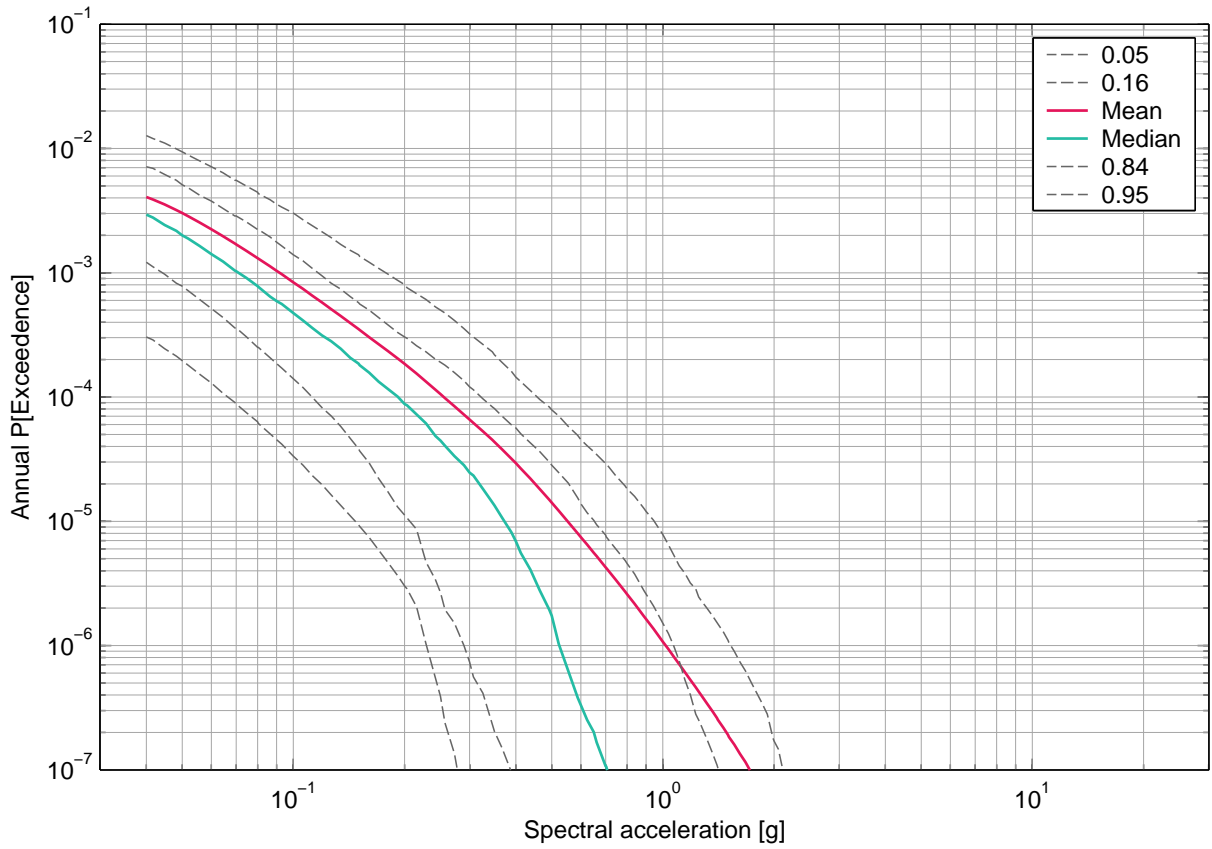


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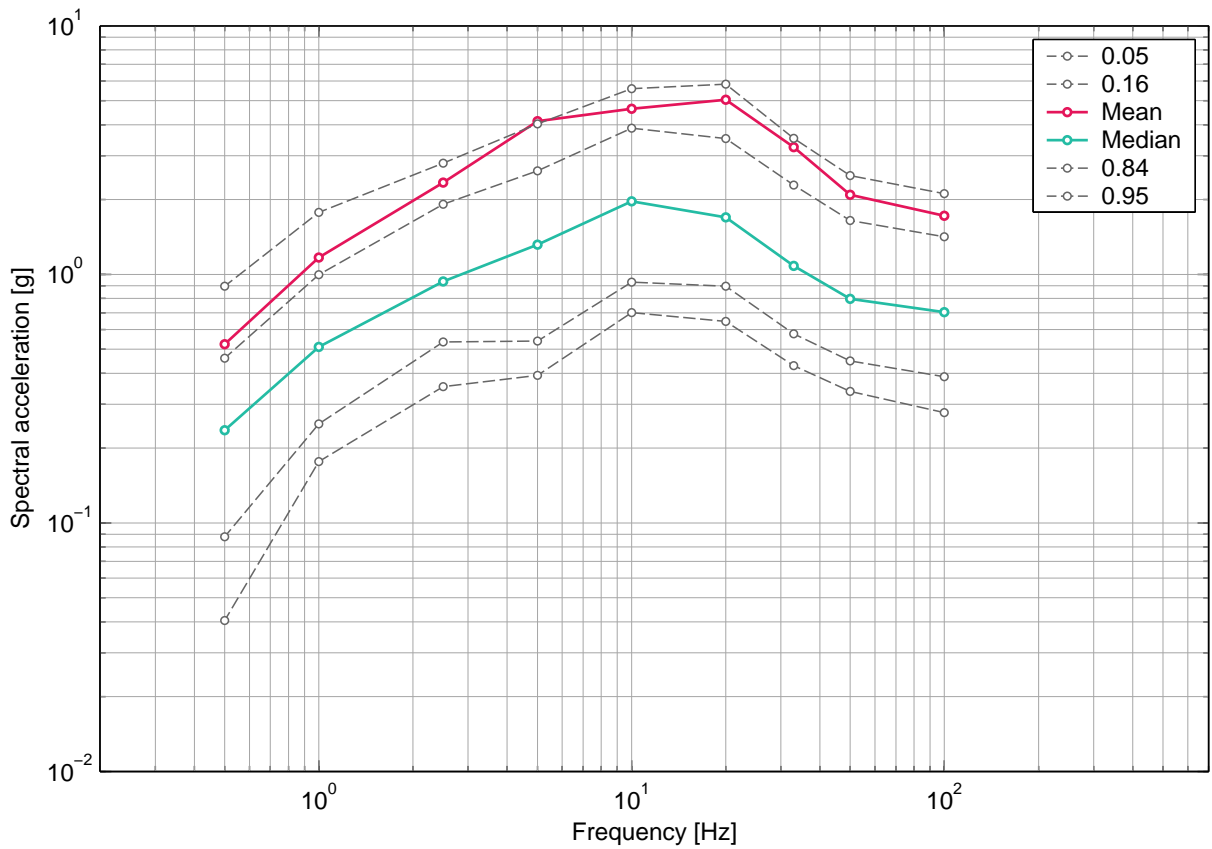


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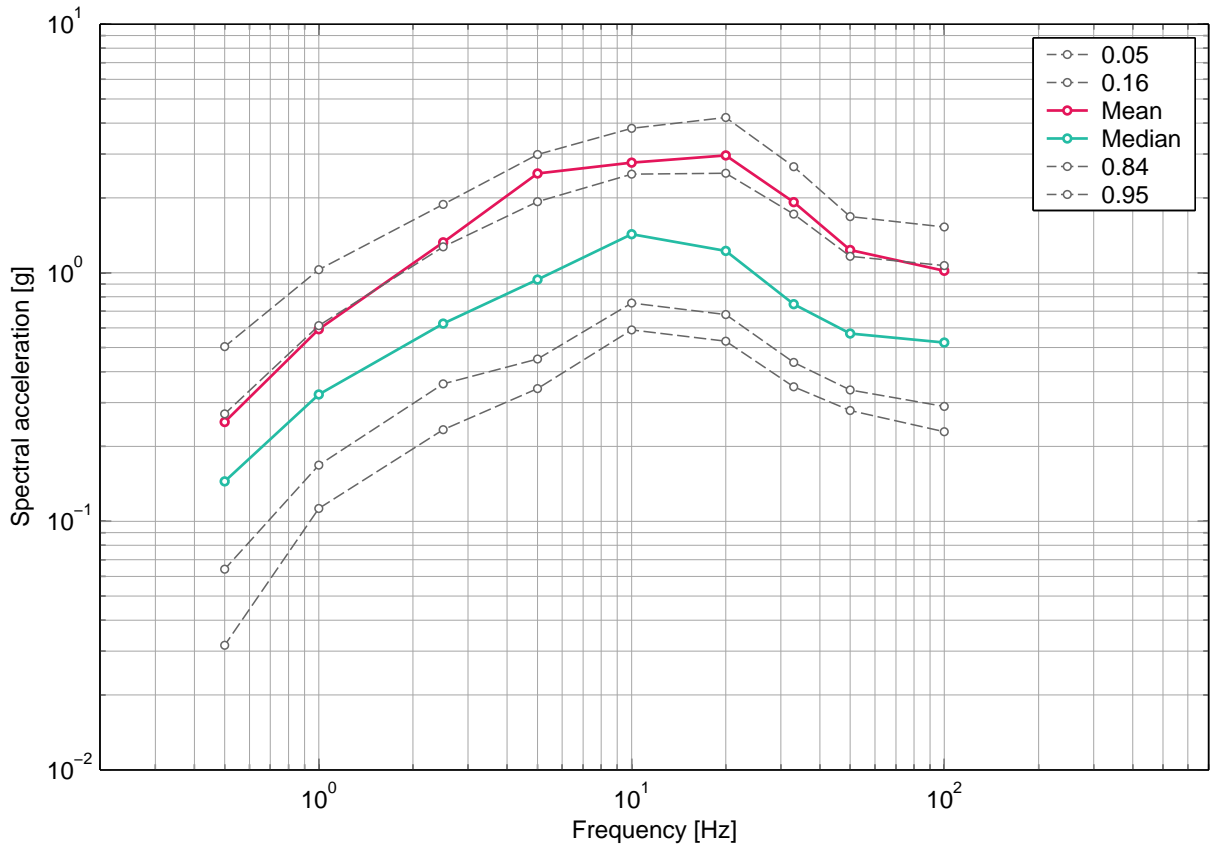


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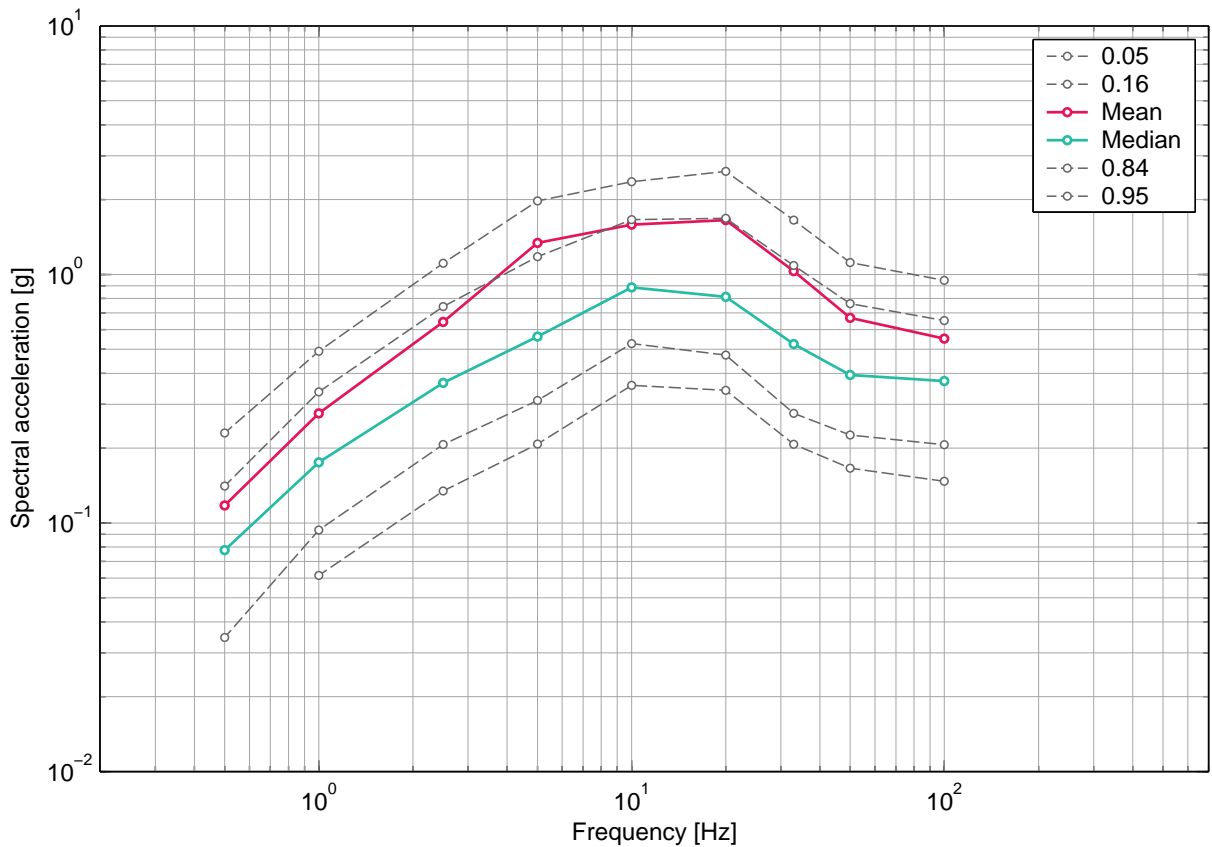


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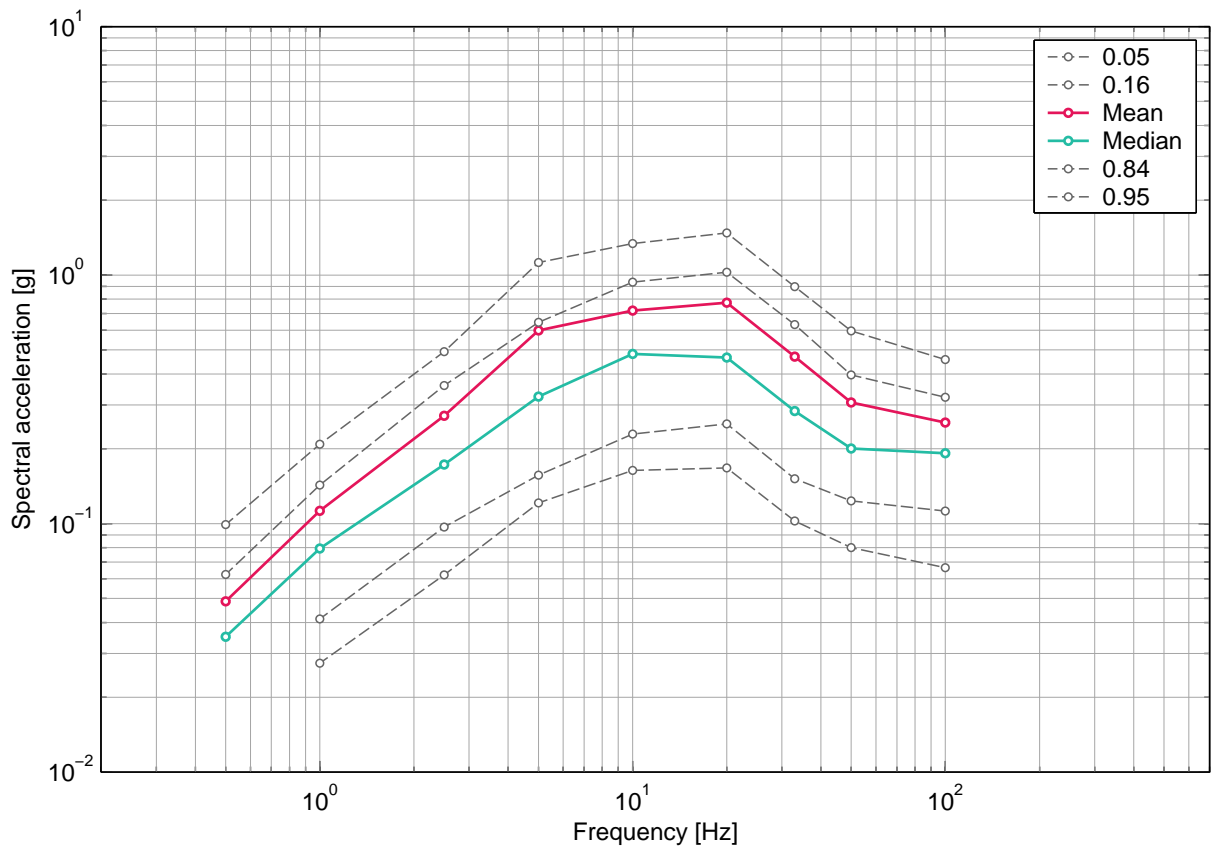


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## 4 LEIBSTADT

### 4.1 Leibstadt, Rock Hazard, Horizontal Component, Surface

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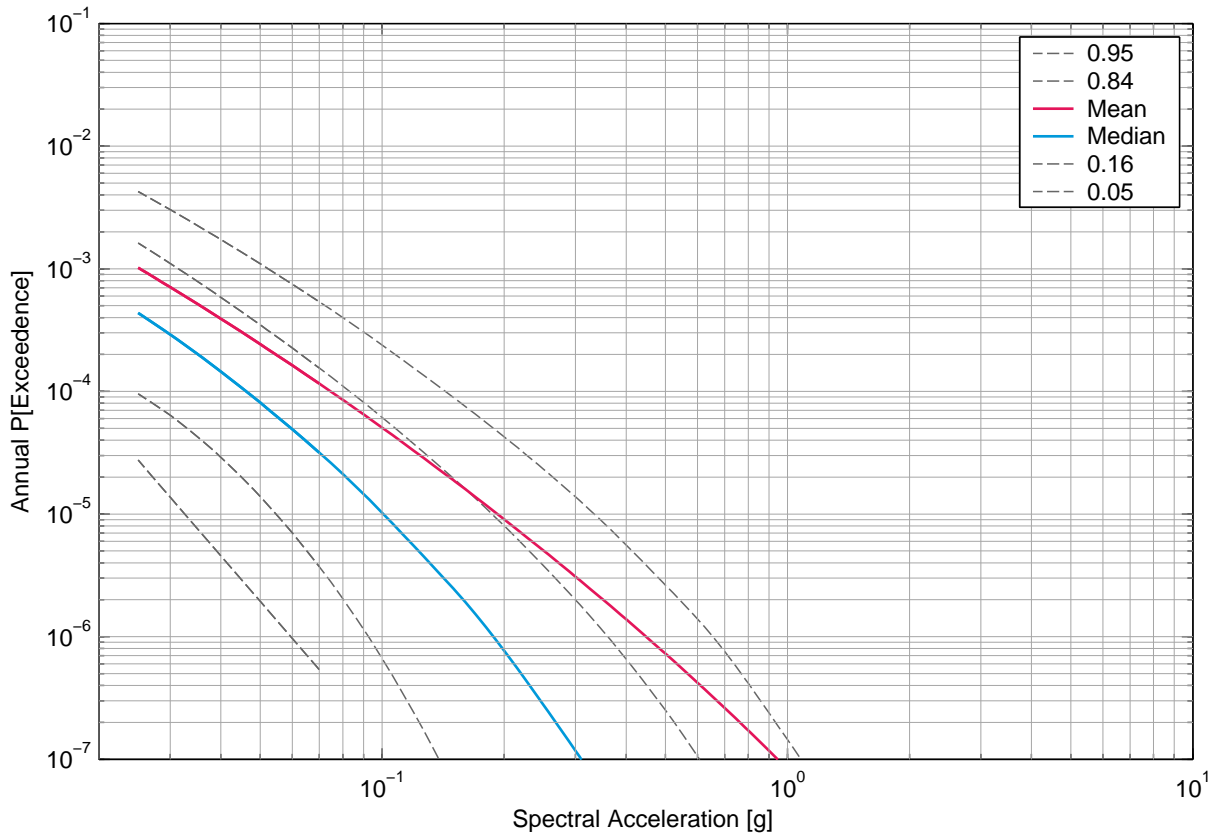


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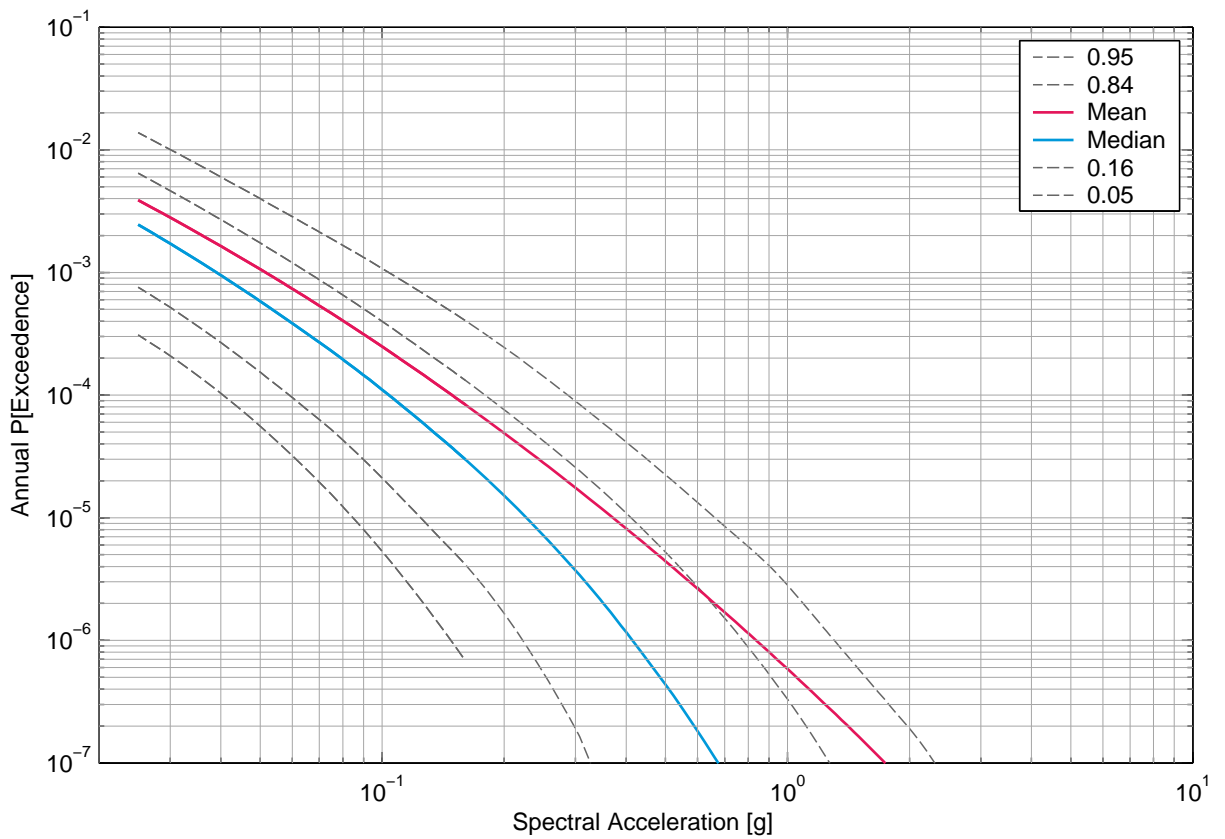


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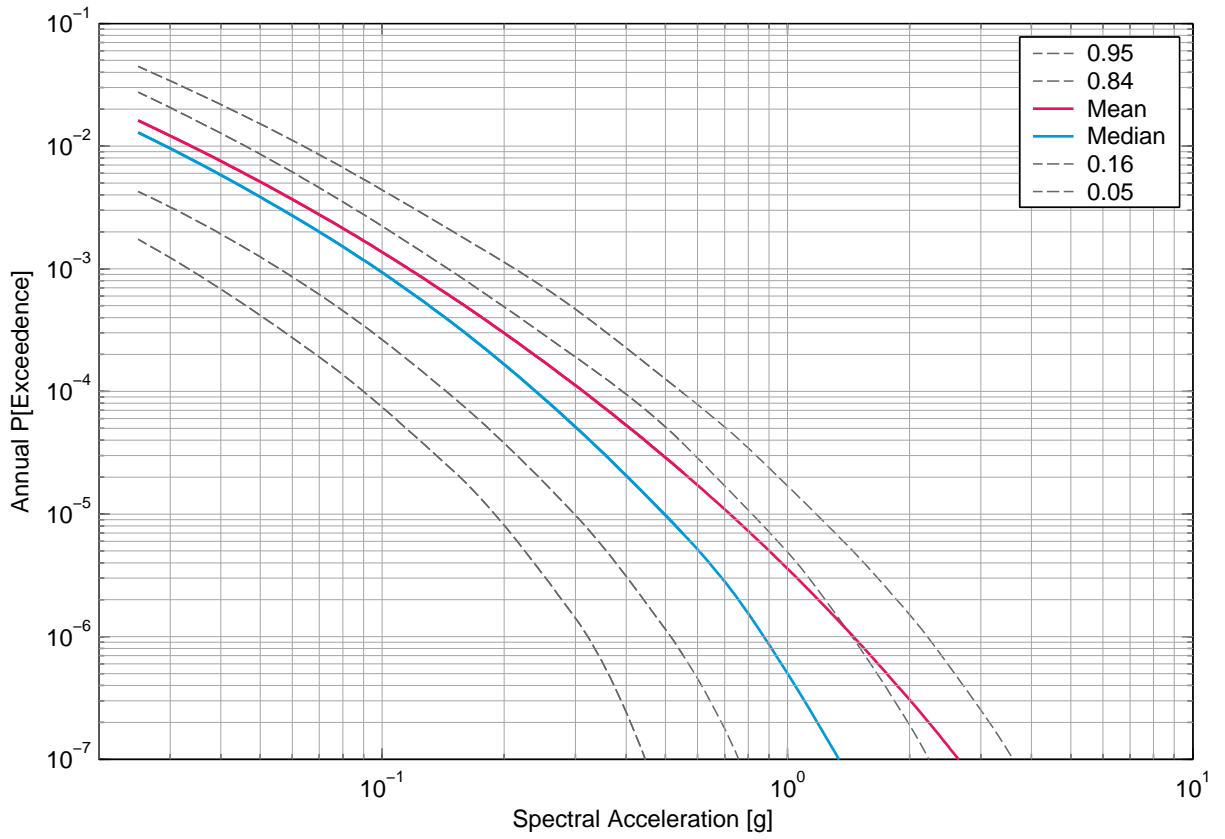


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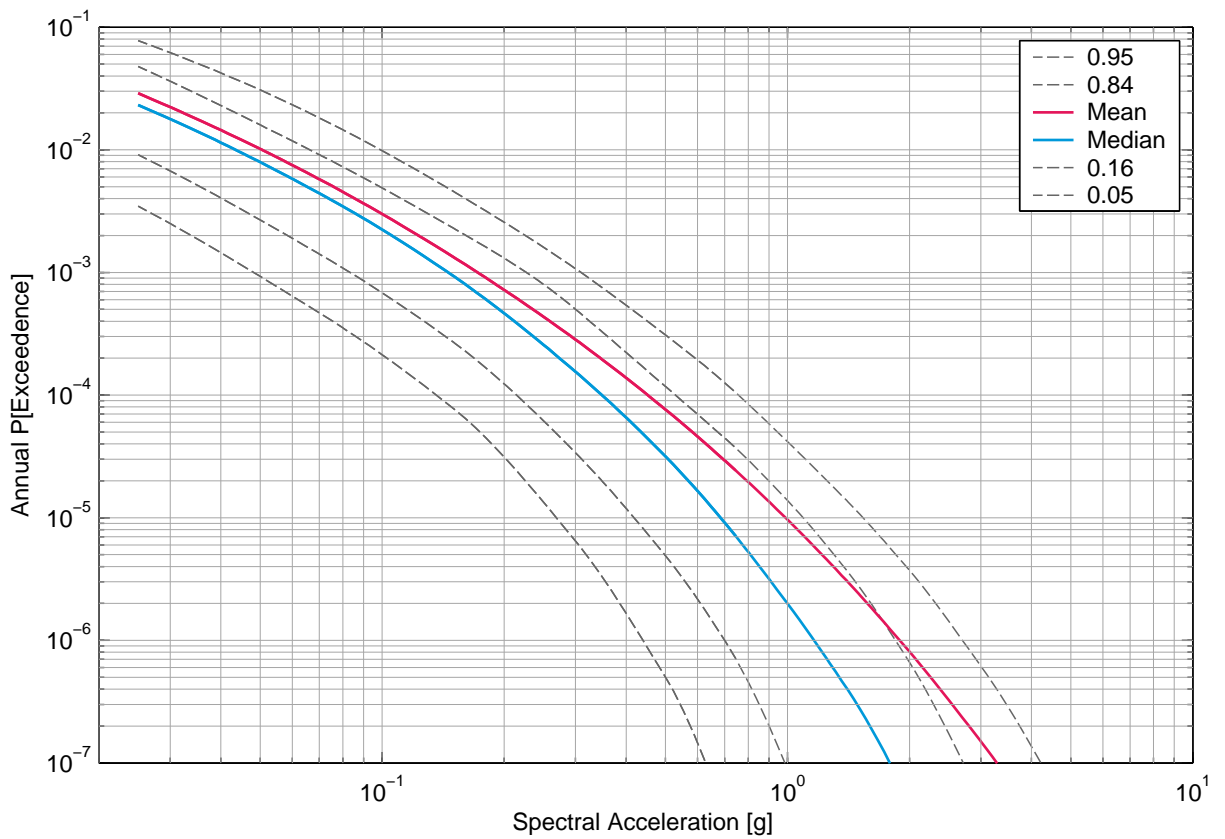


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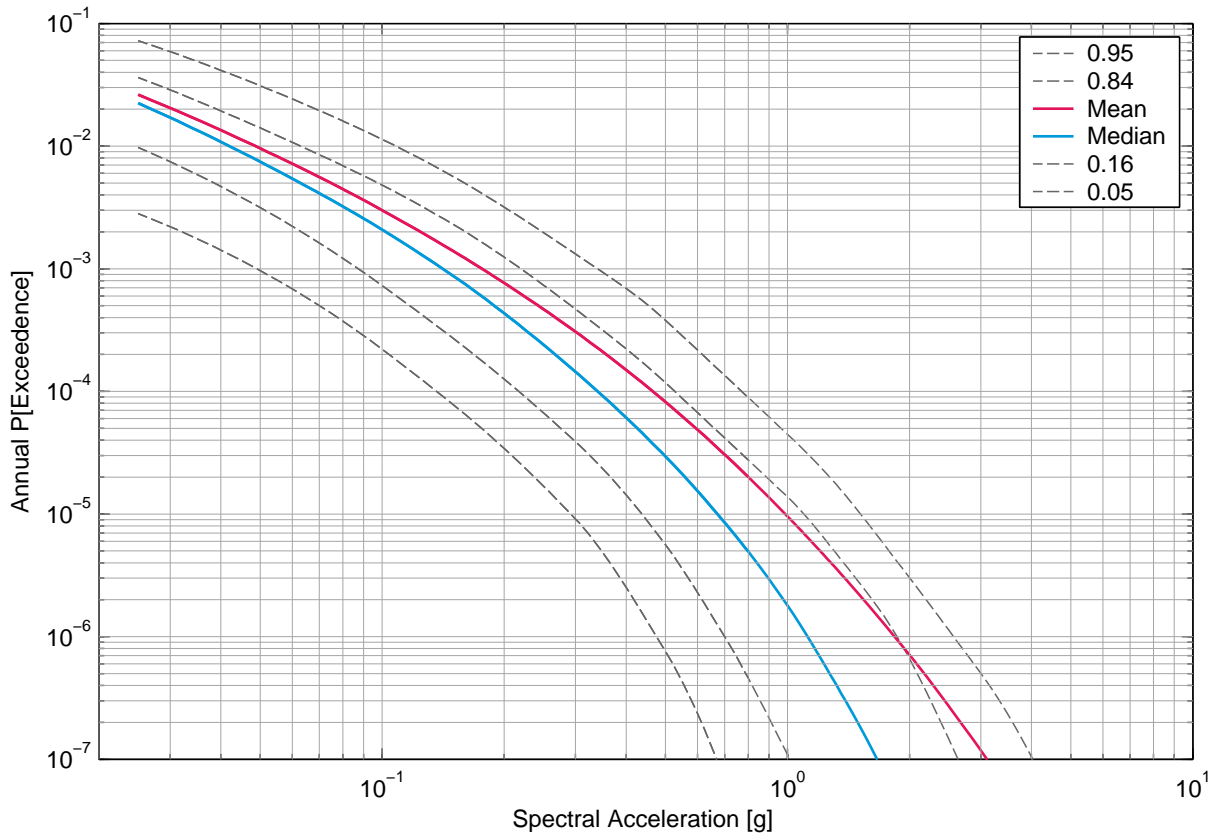


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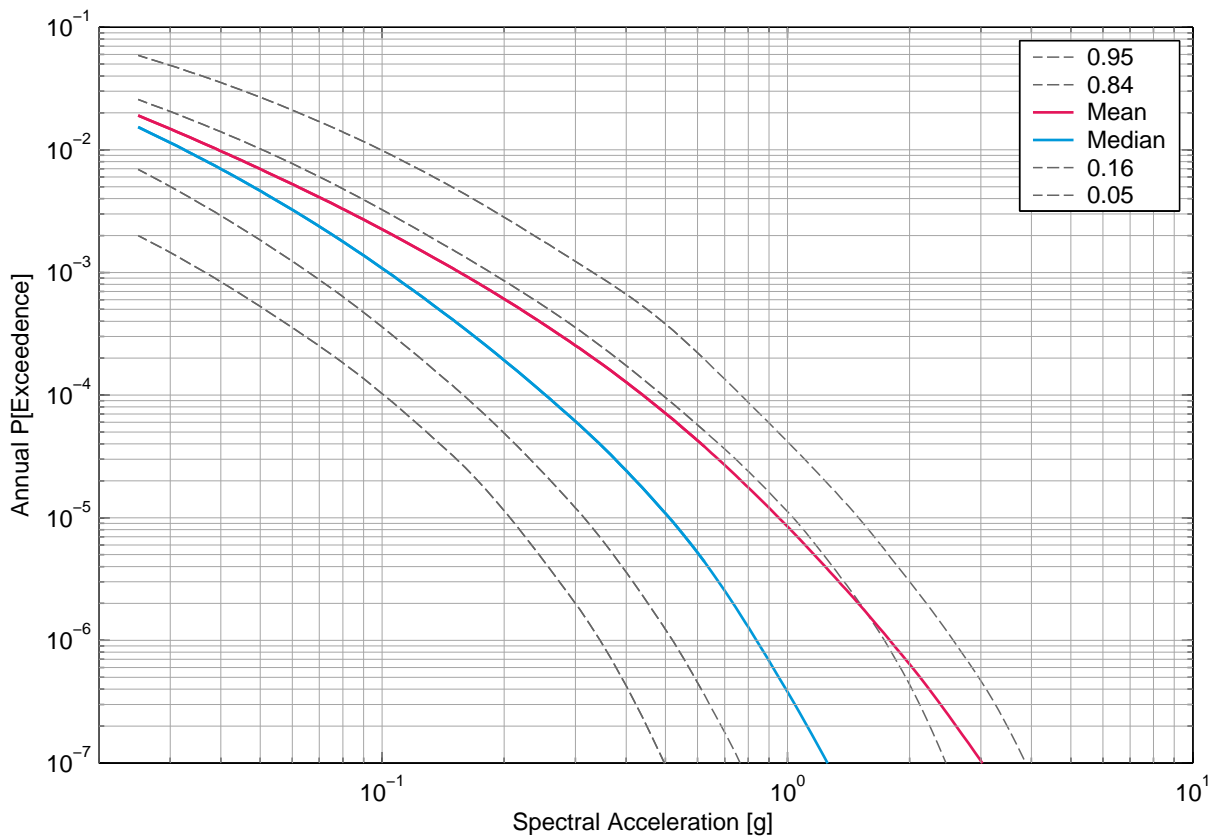


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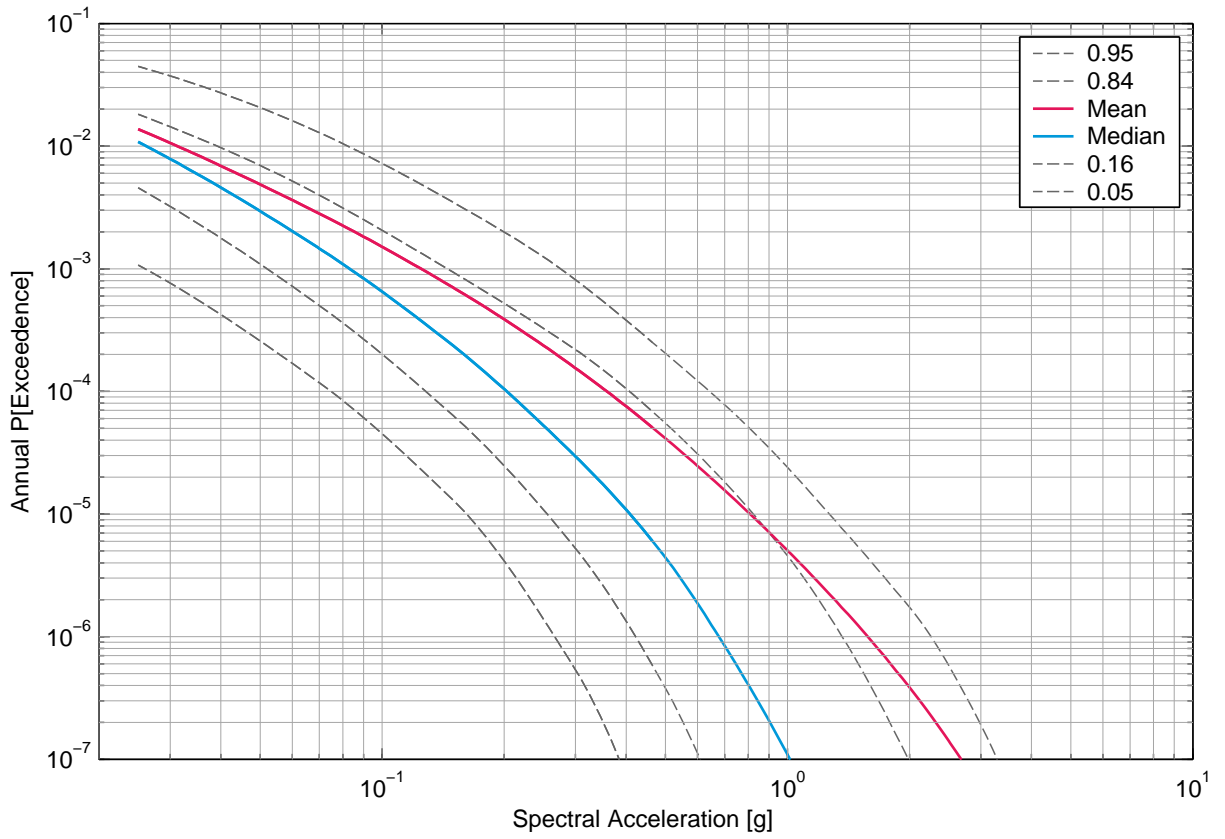


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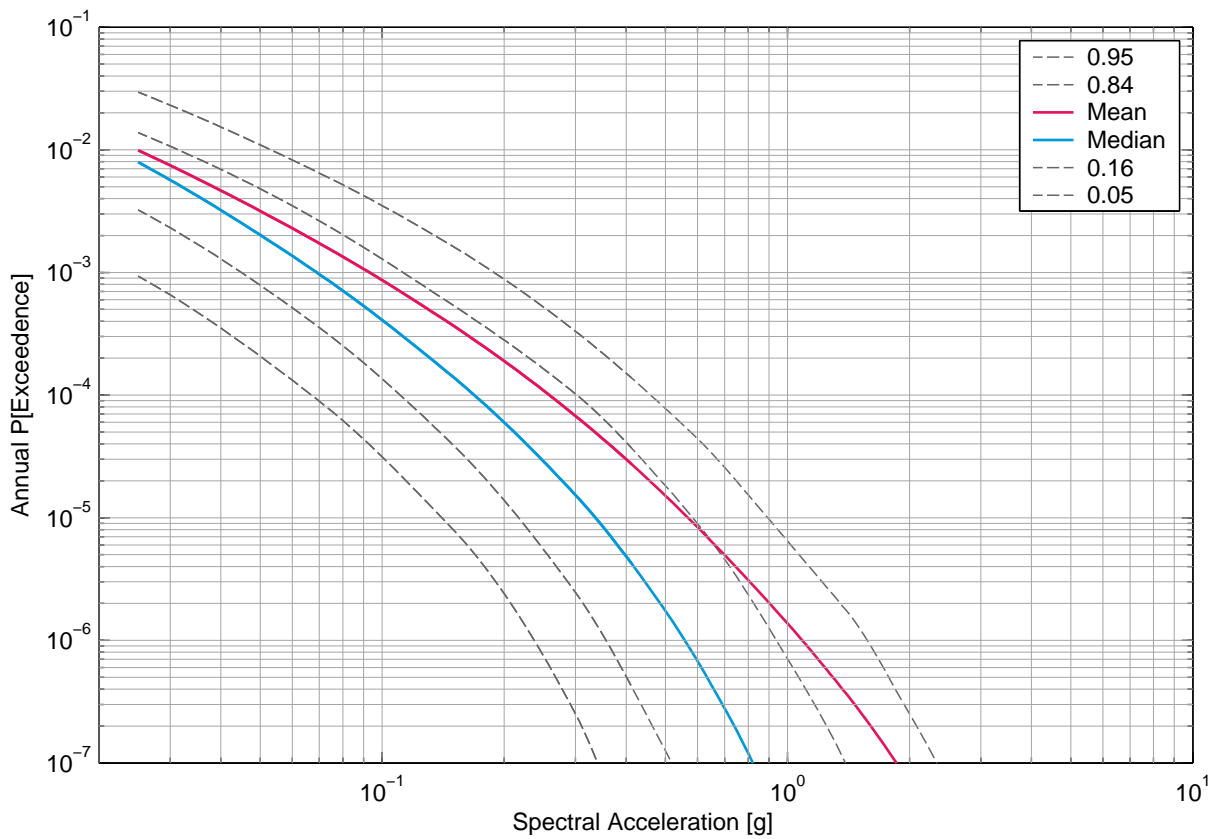


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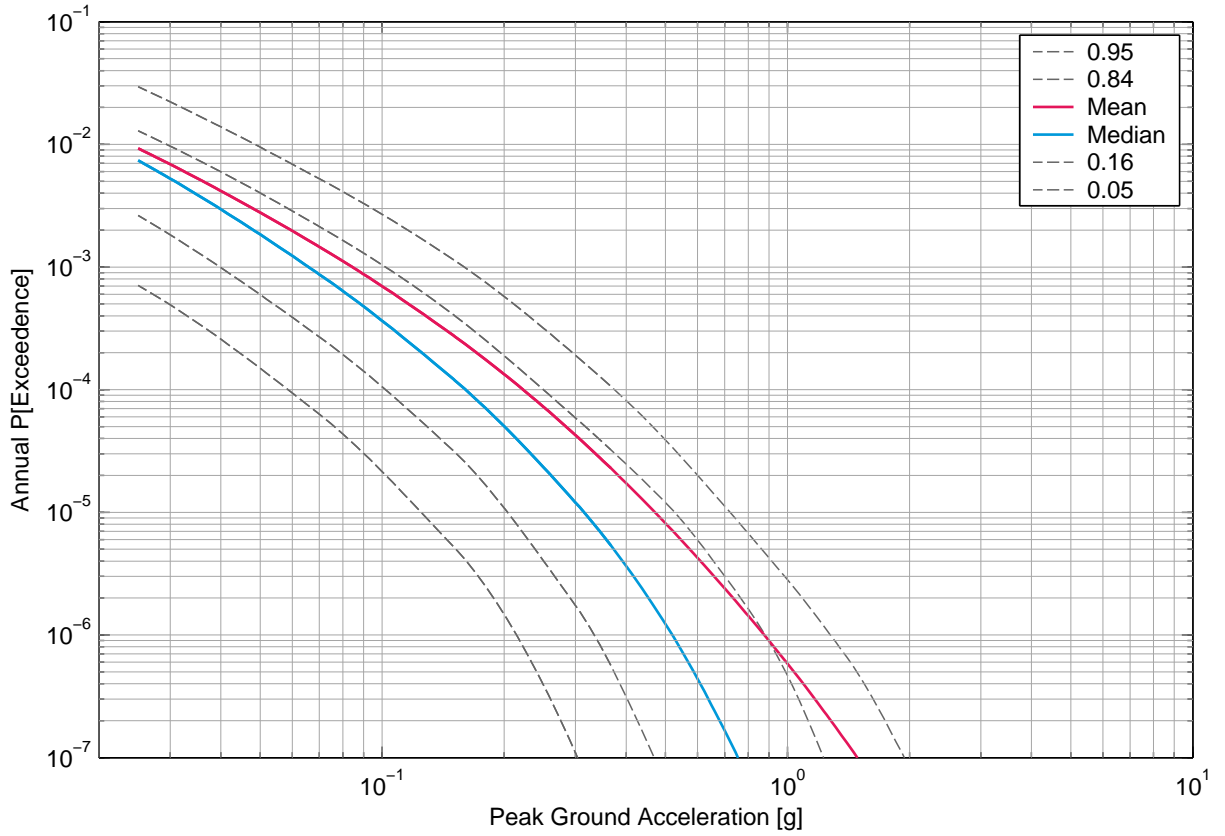


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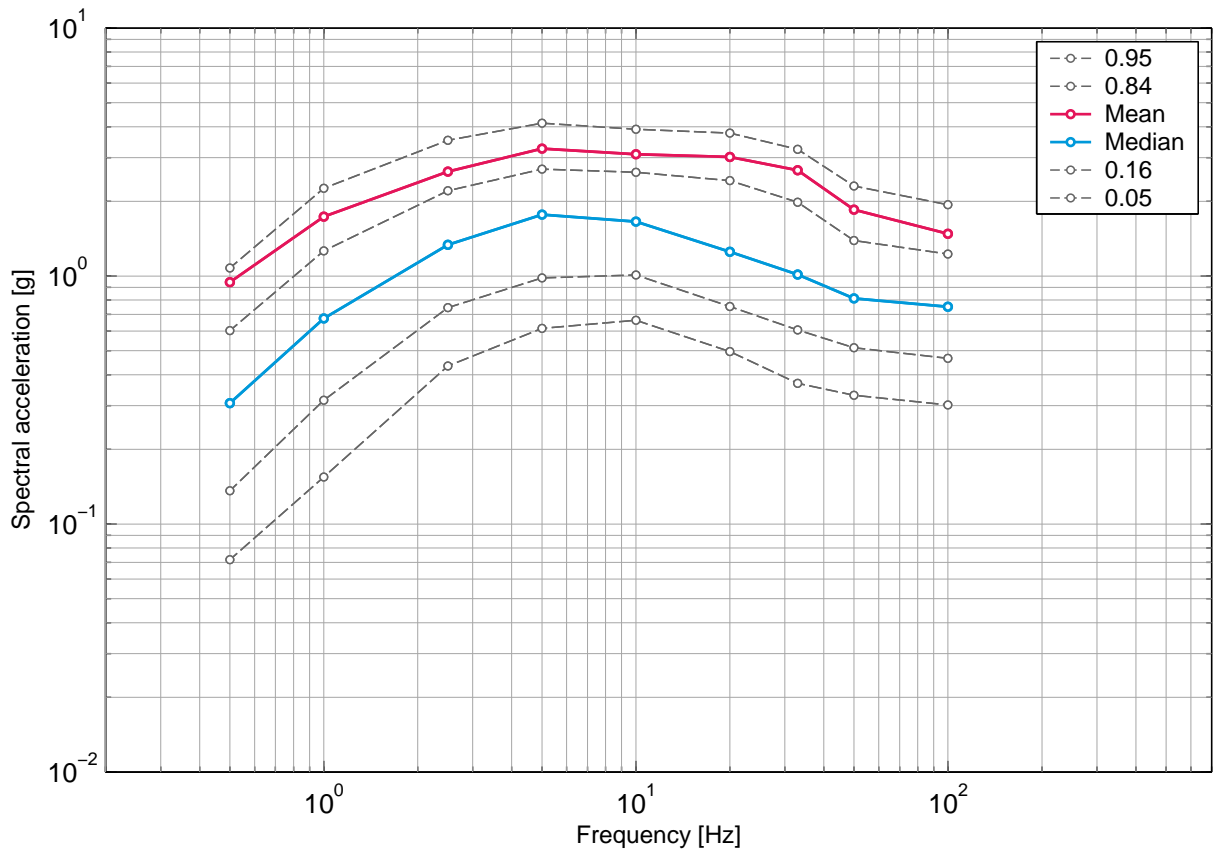


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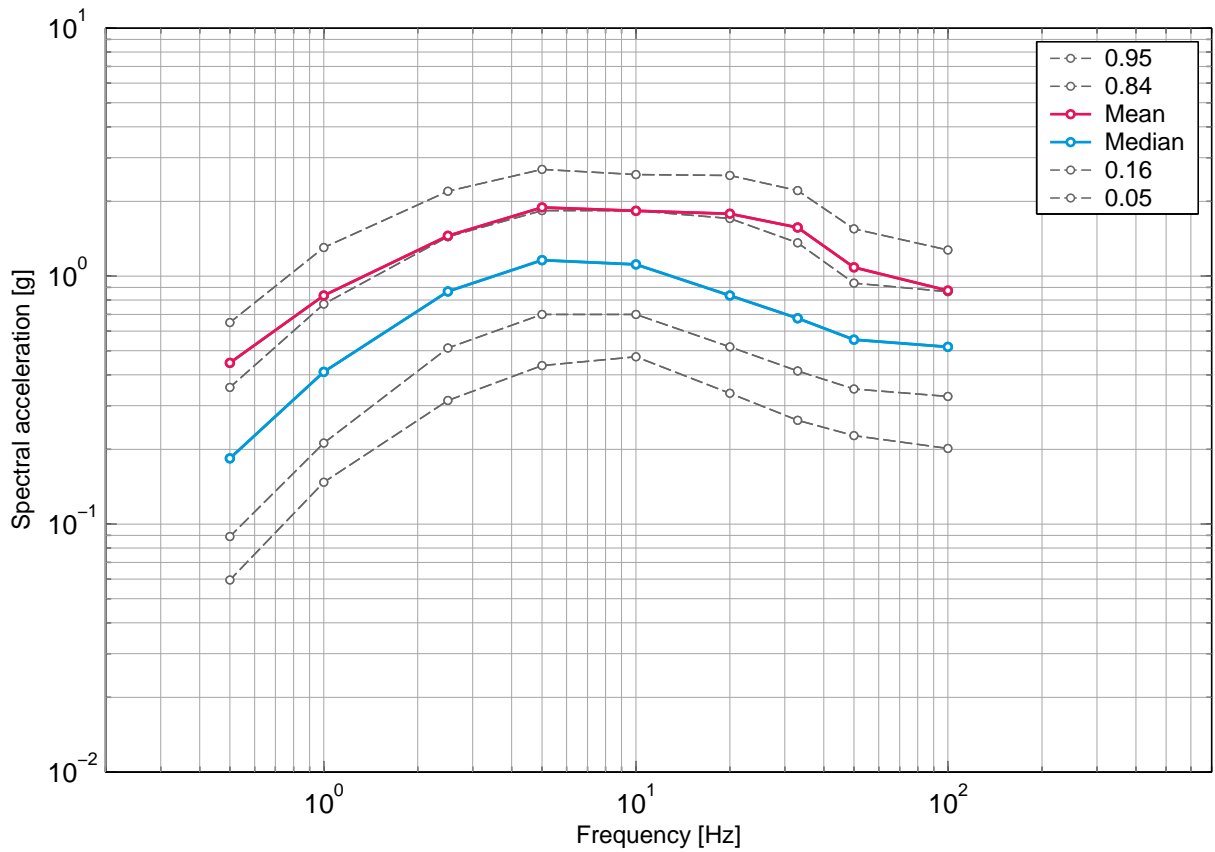


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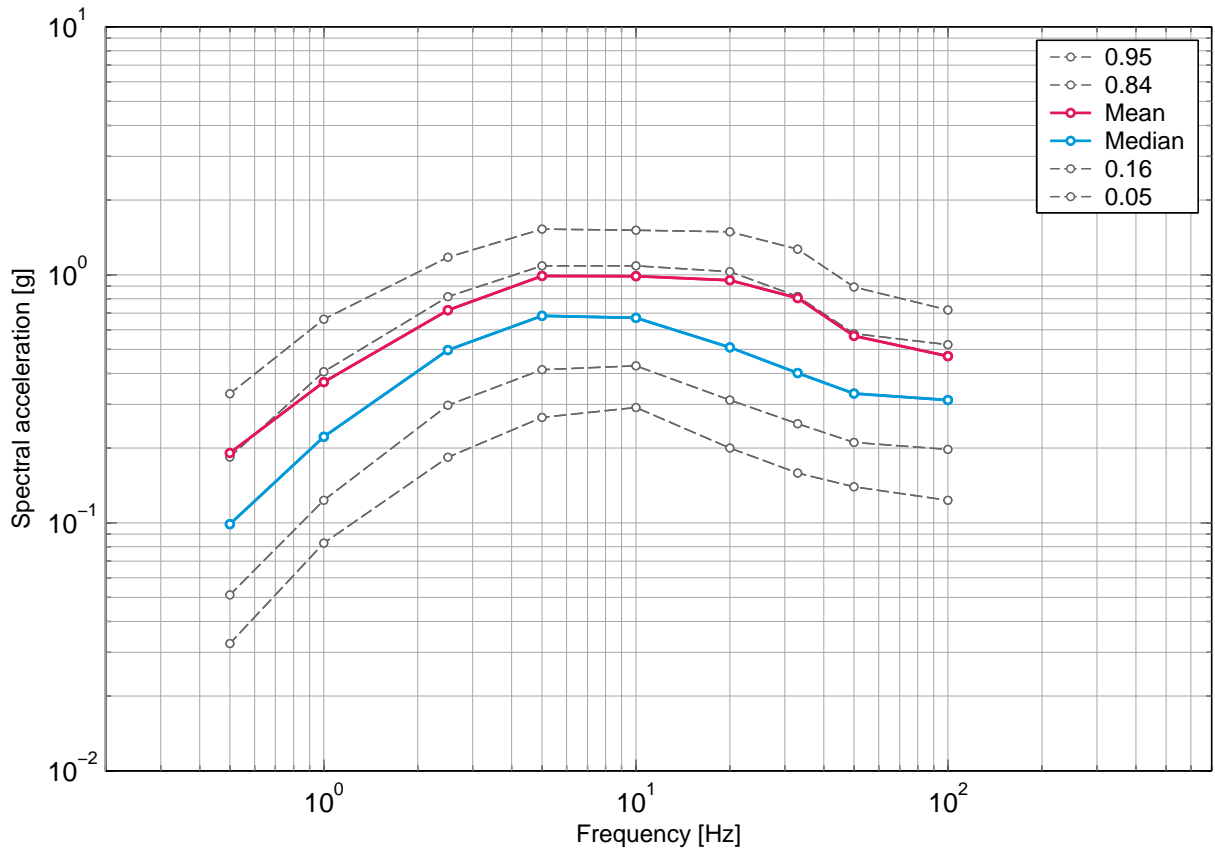


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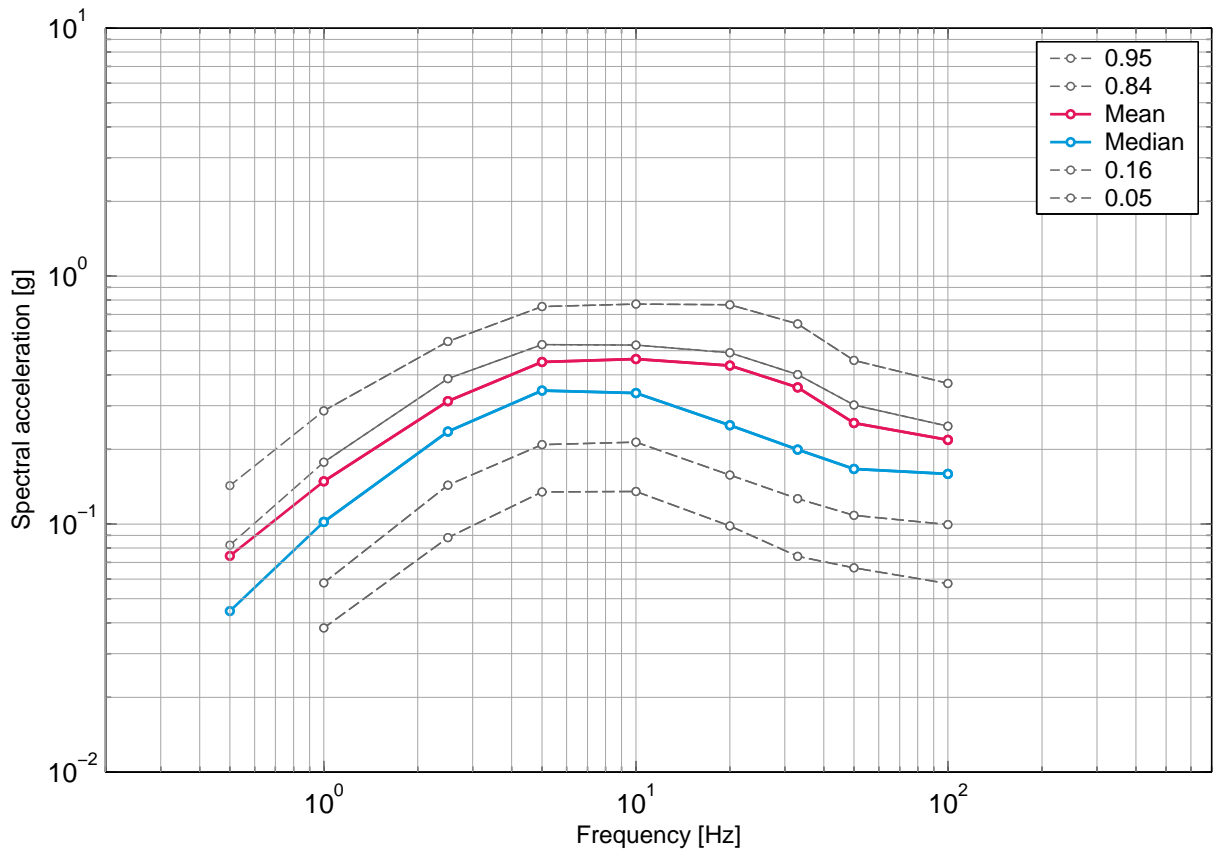


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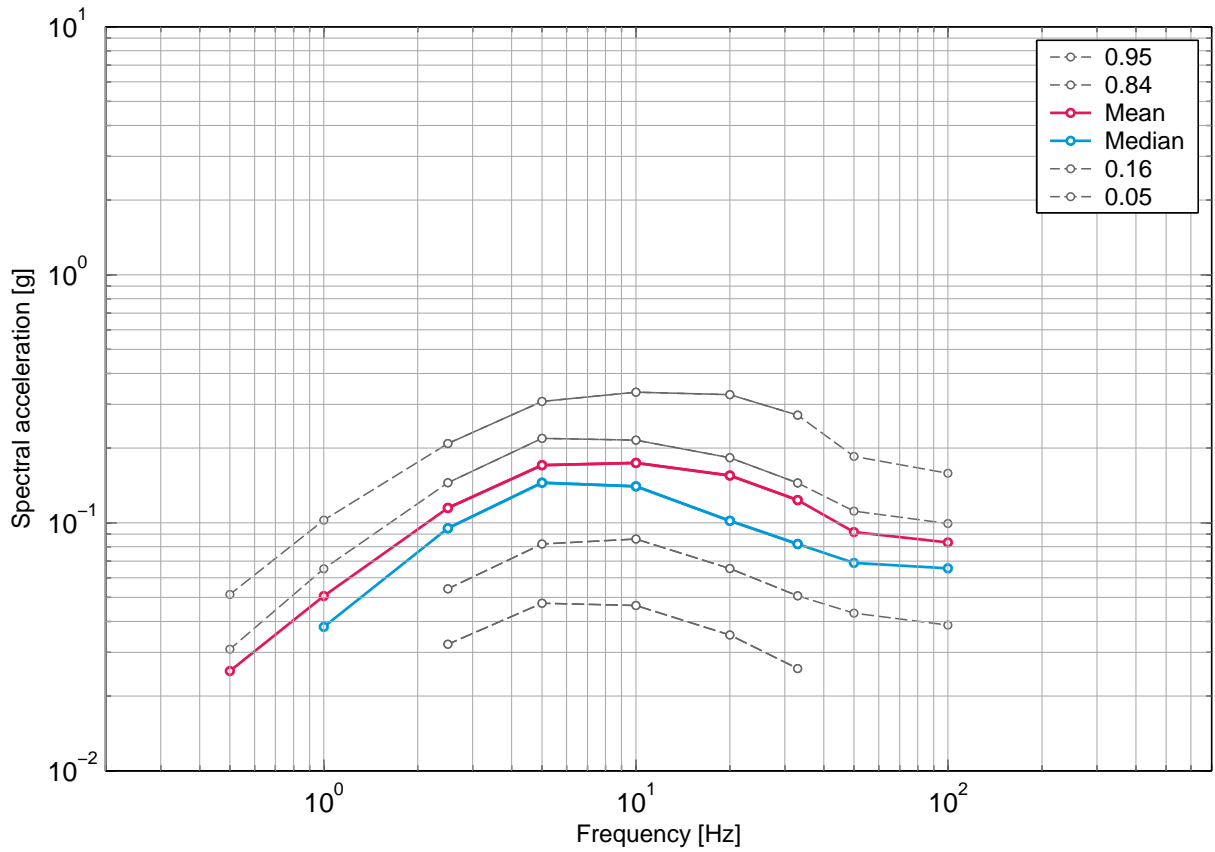


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## 4.2 Leibstadt, Soil Hazard, Horizontal Component, Surface

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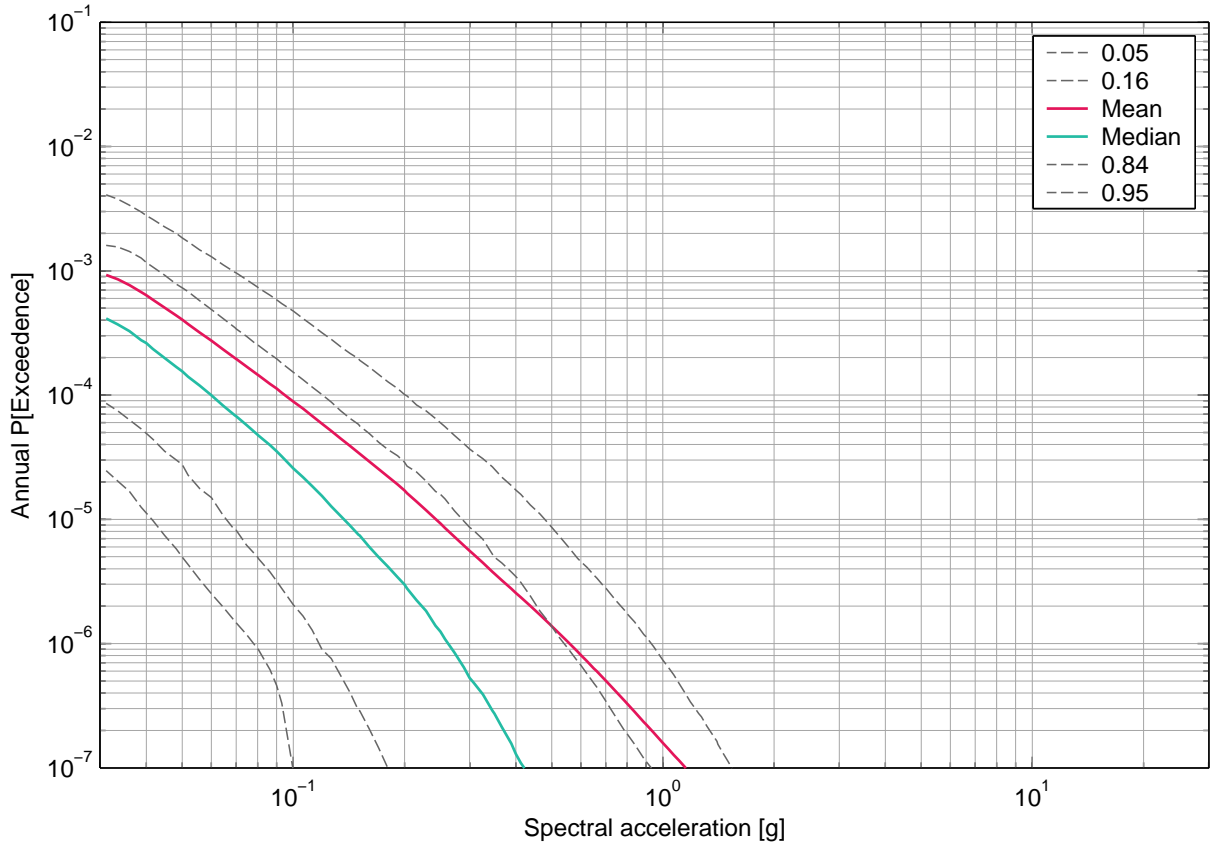


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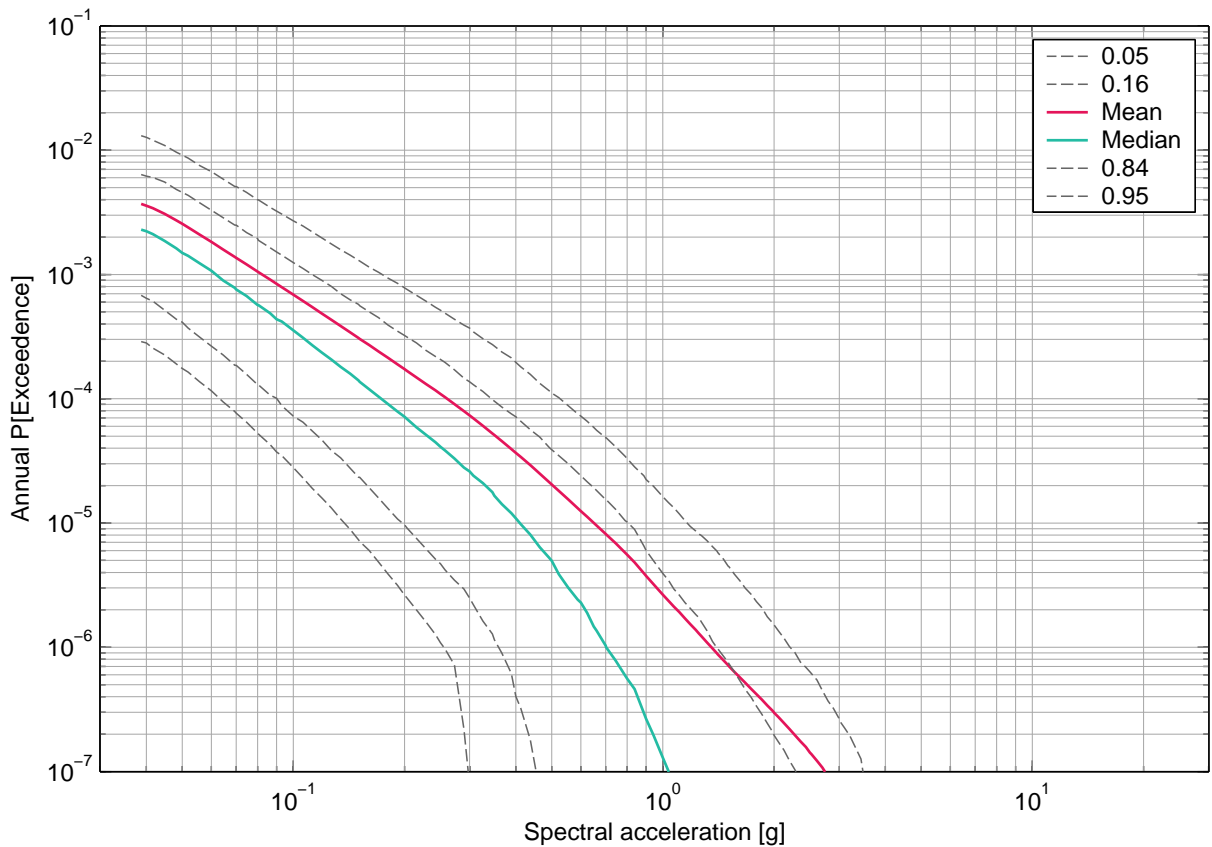


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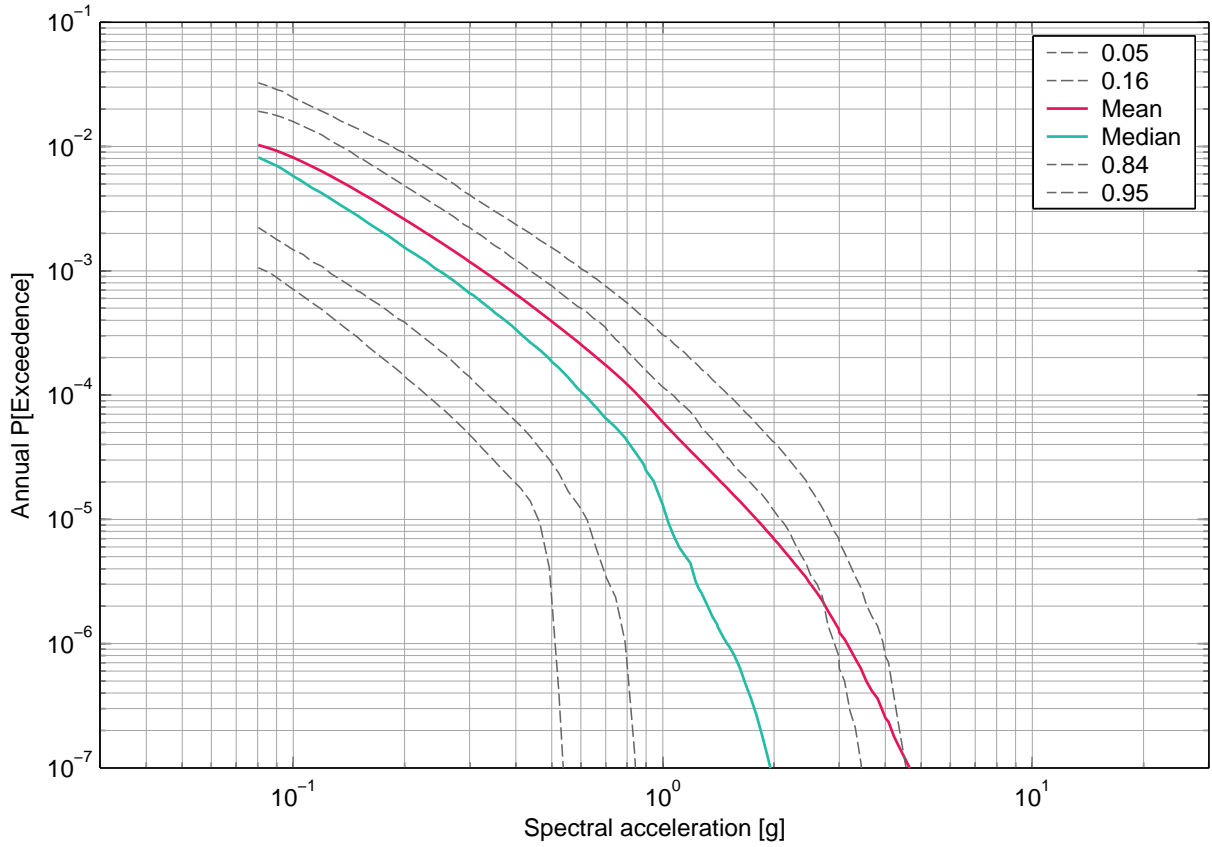


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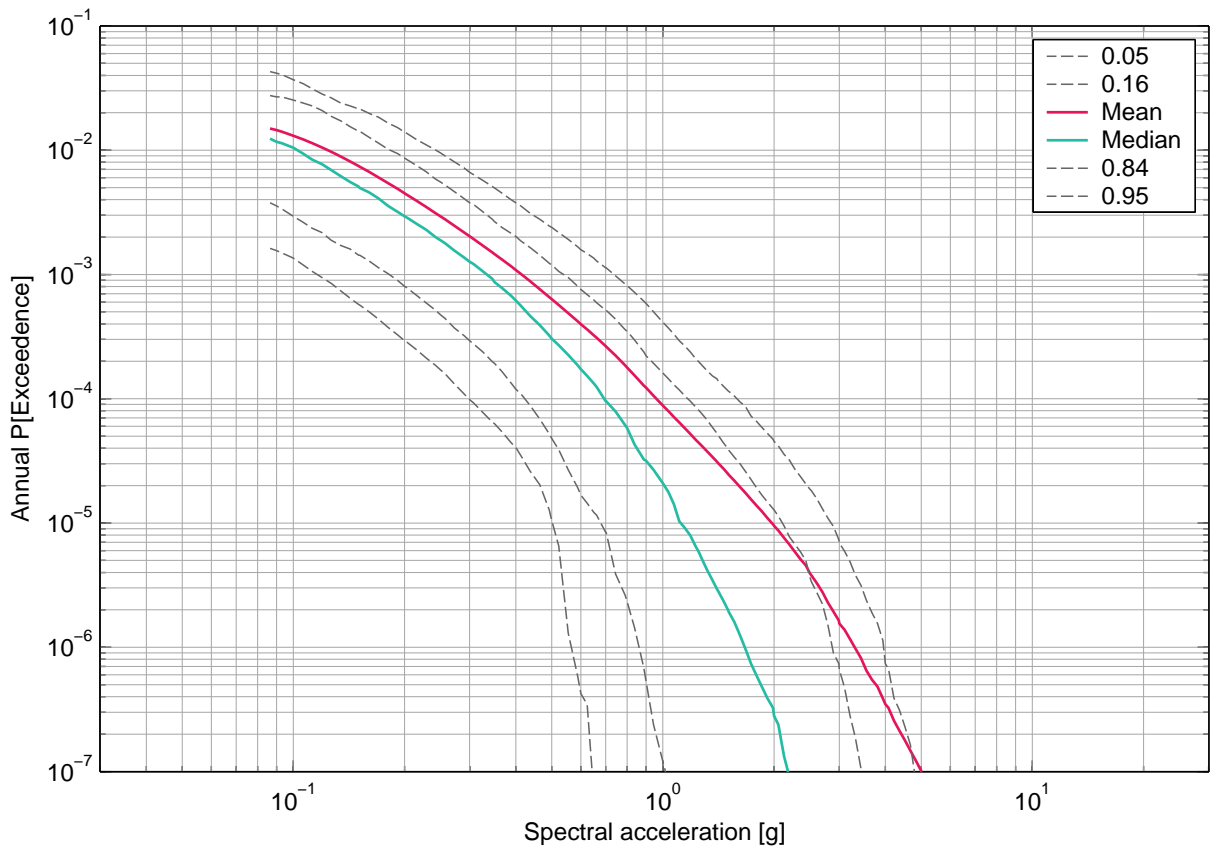


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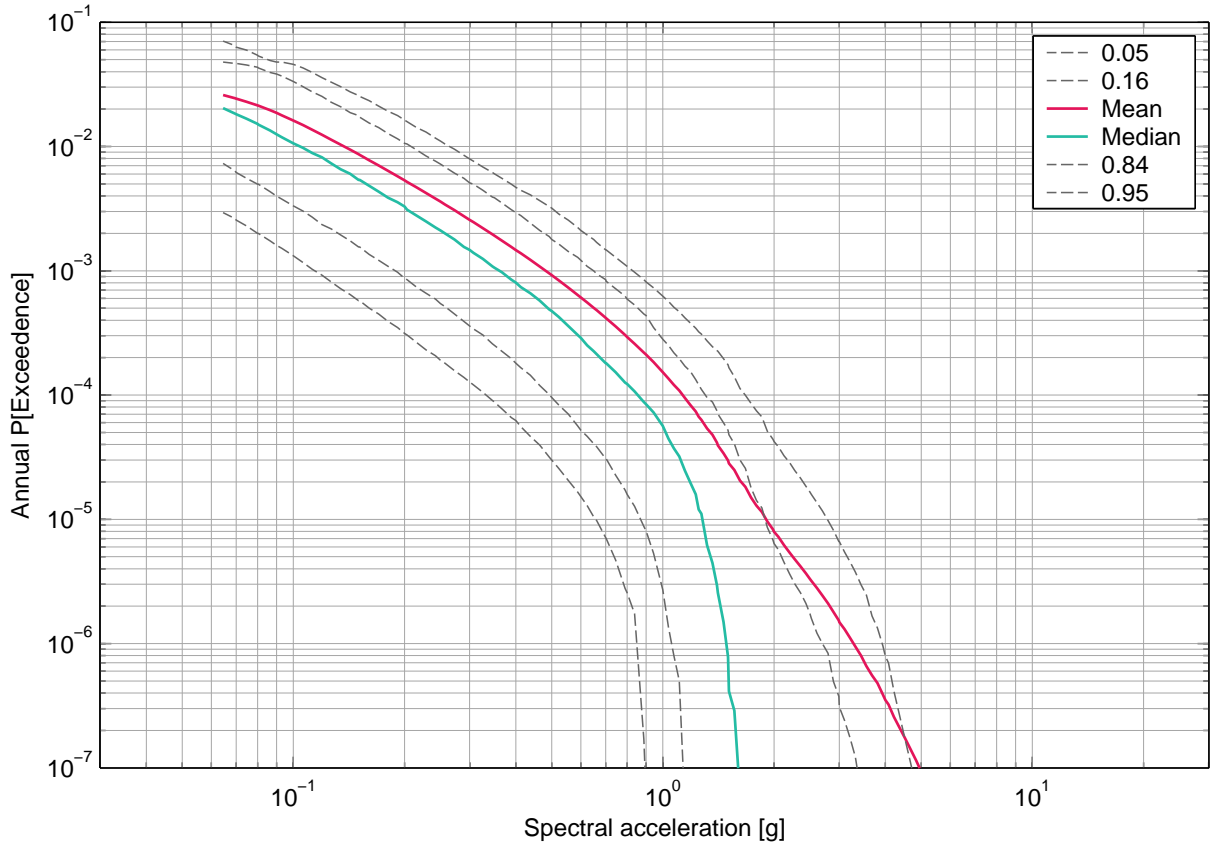


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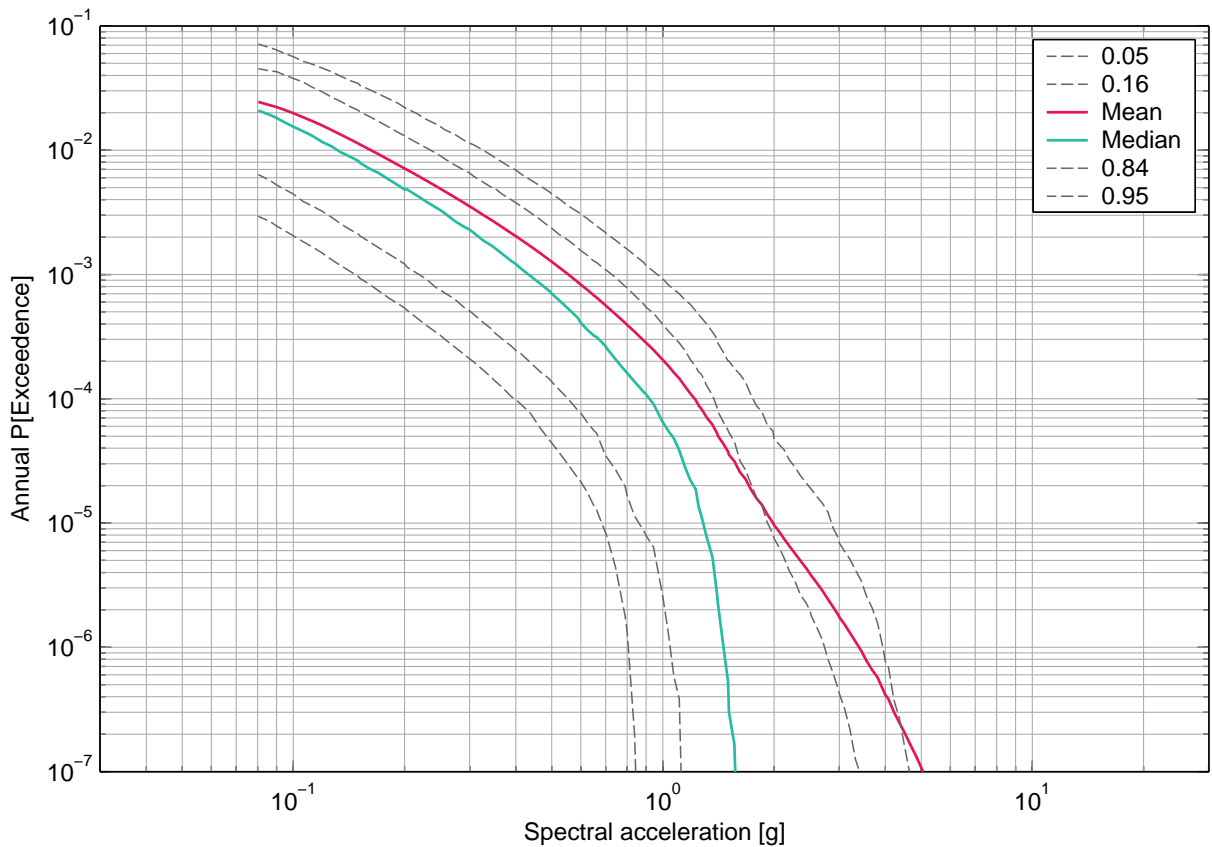


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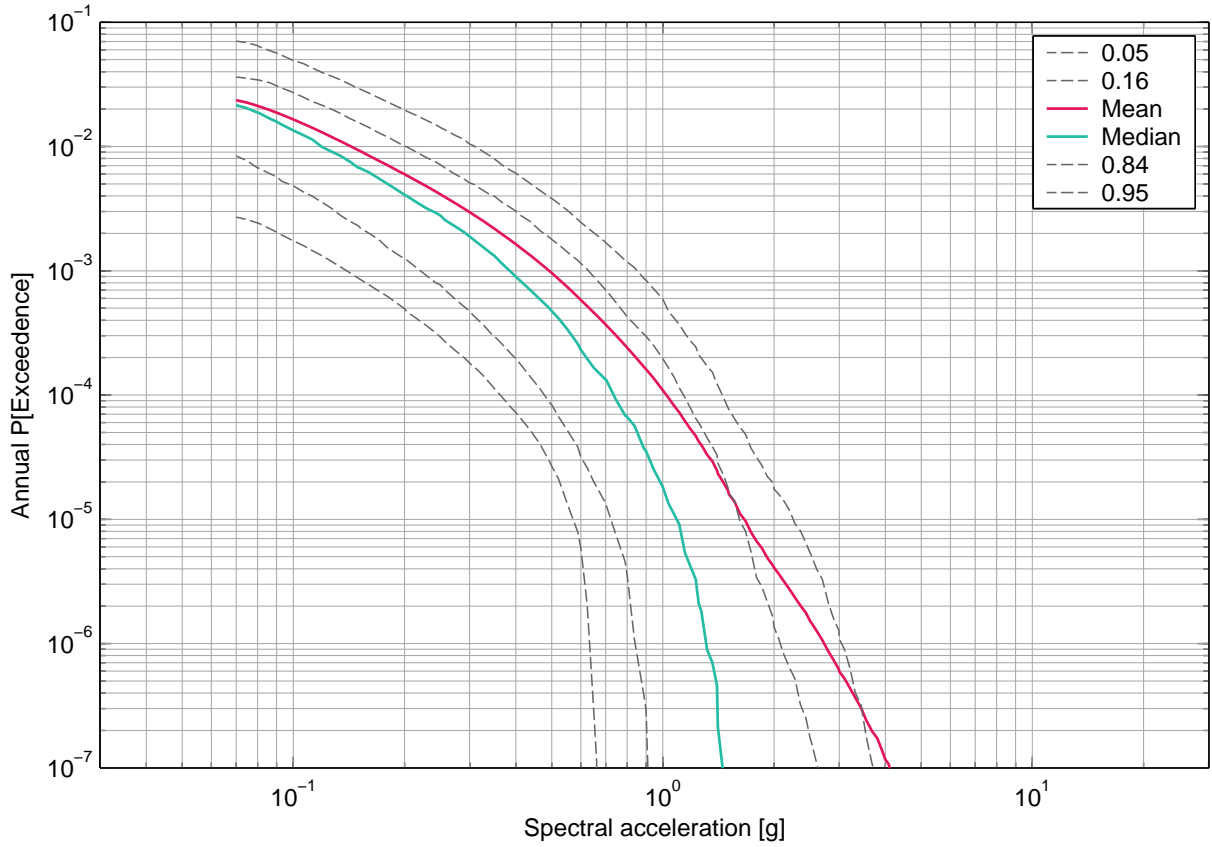


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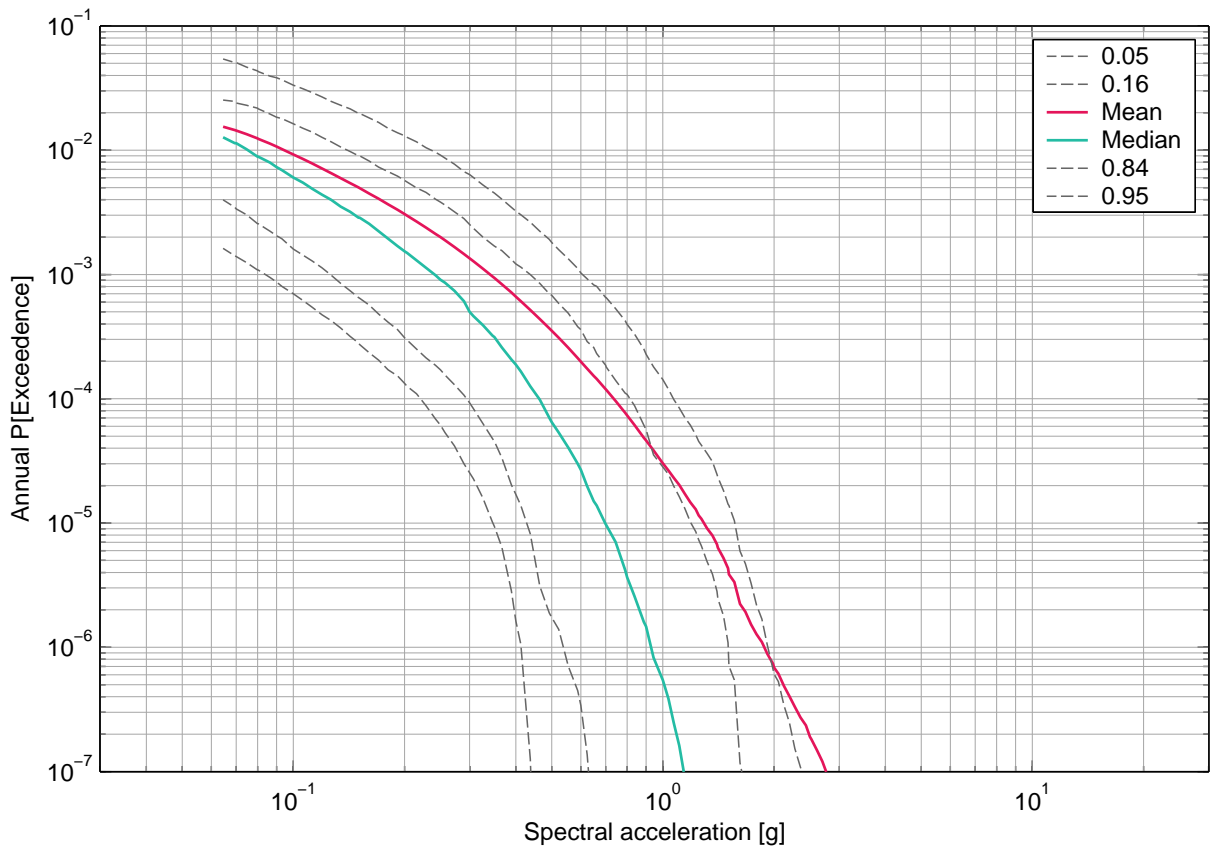


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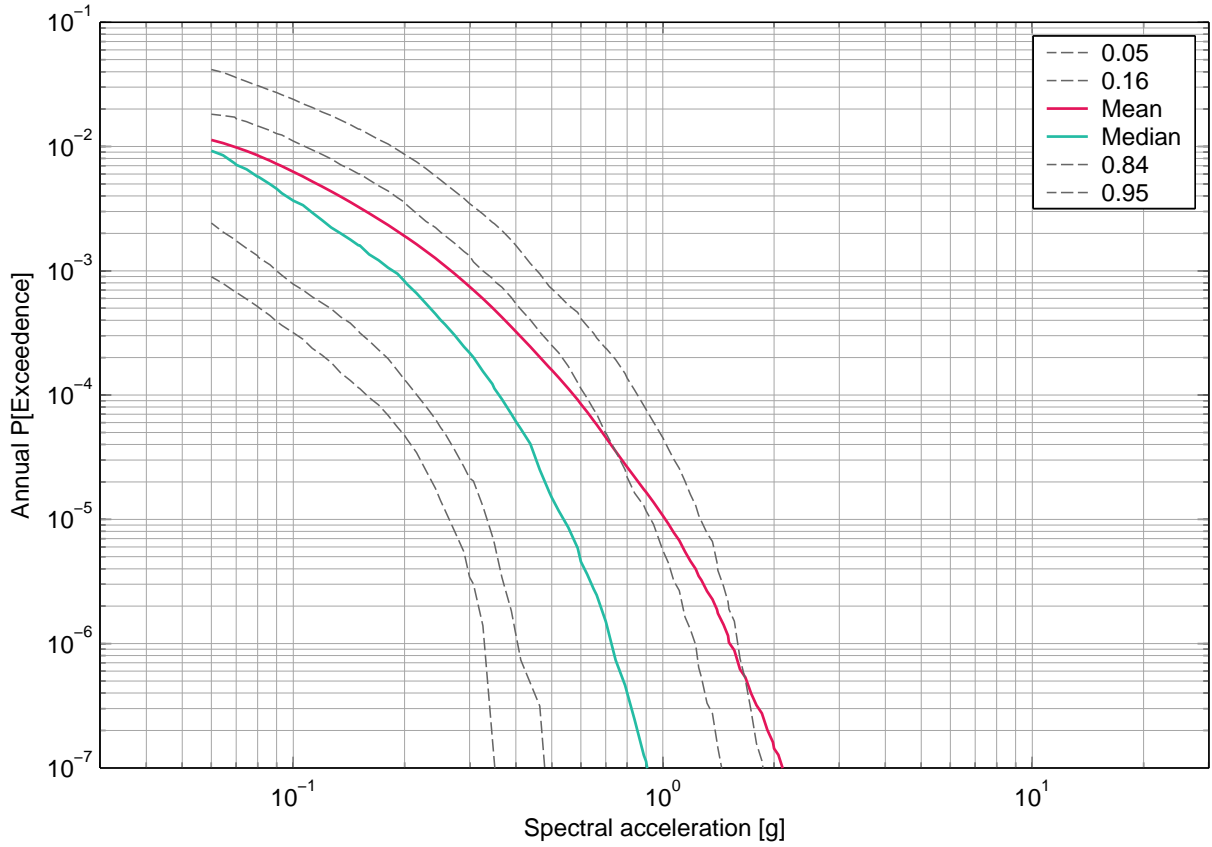


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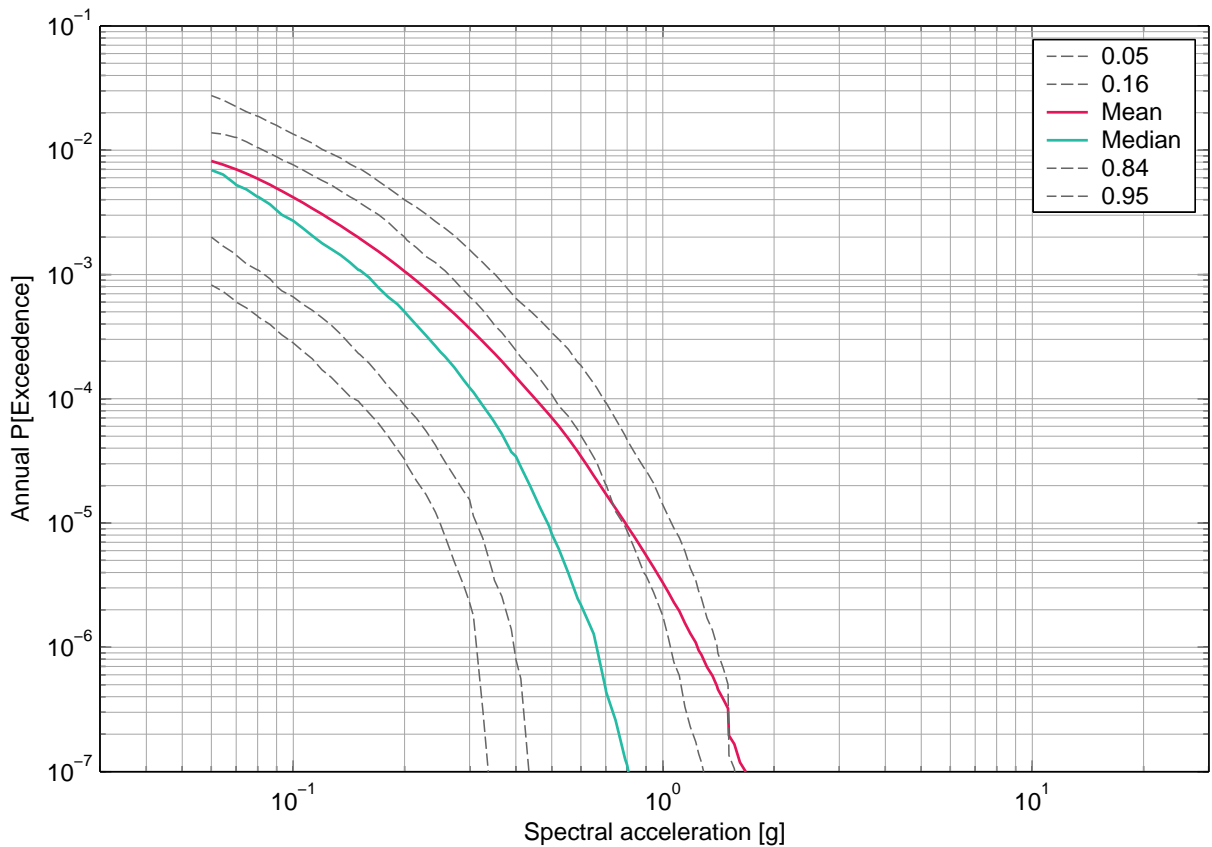


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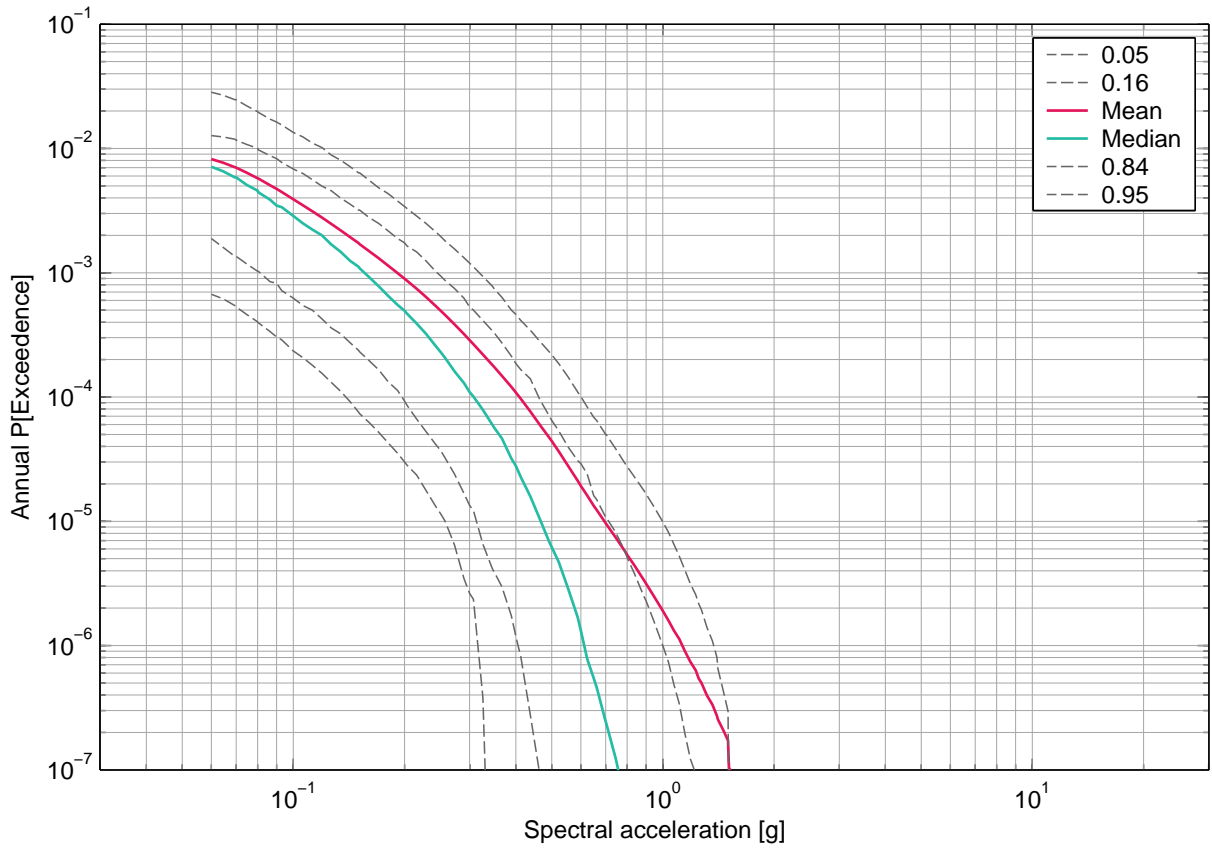


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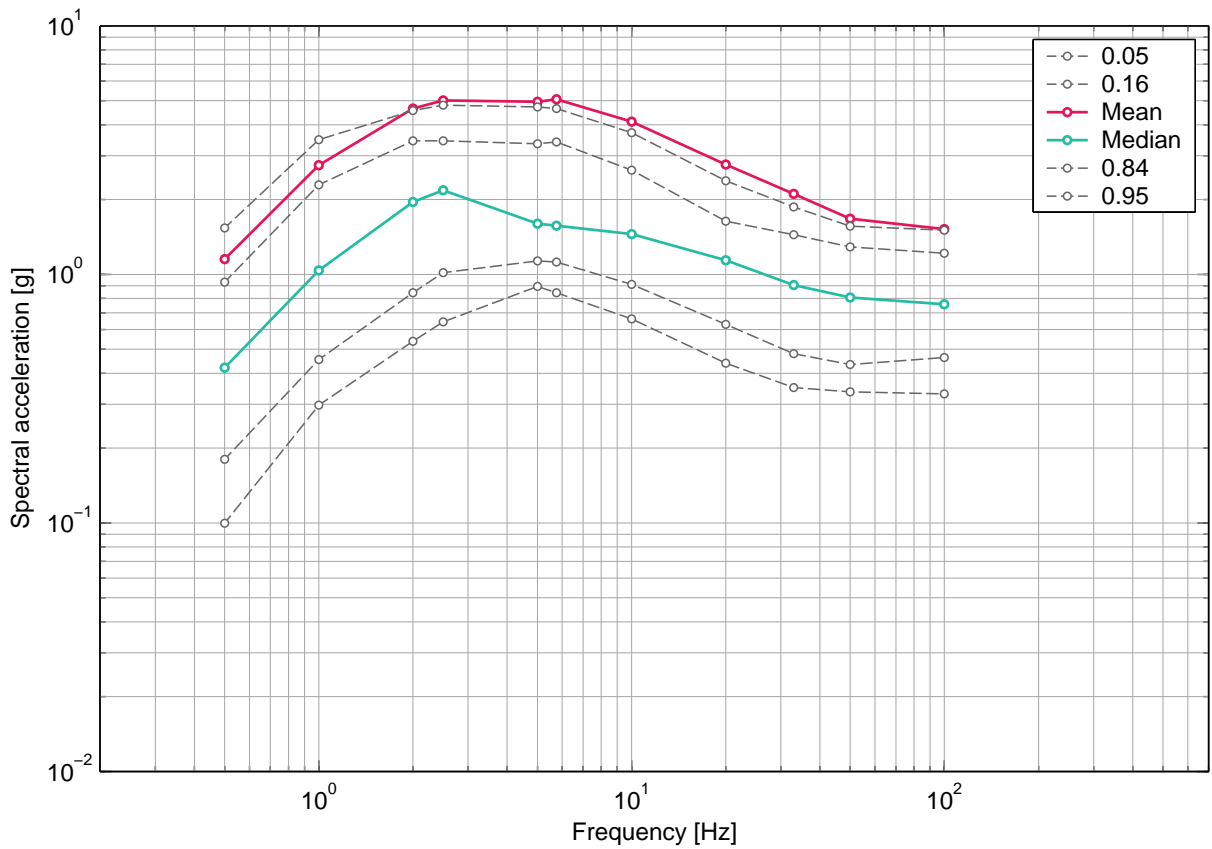


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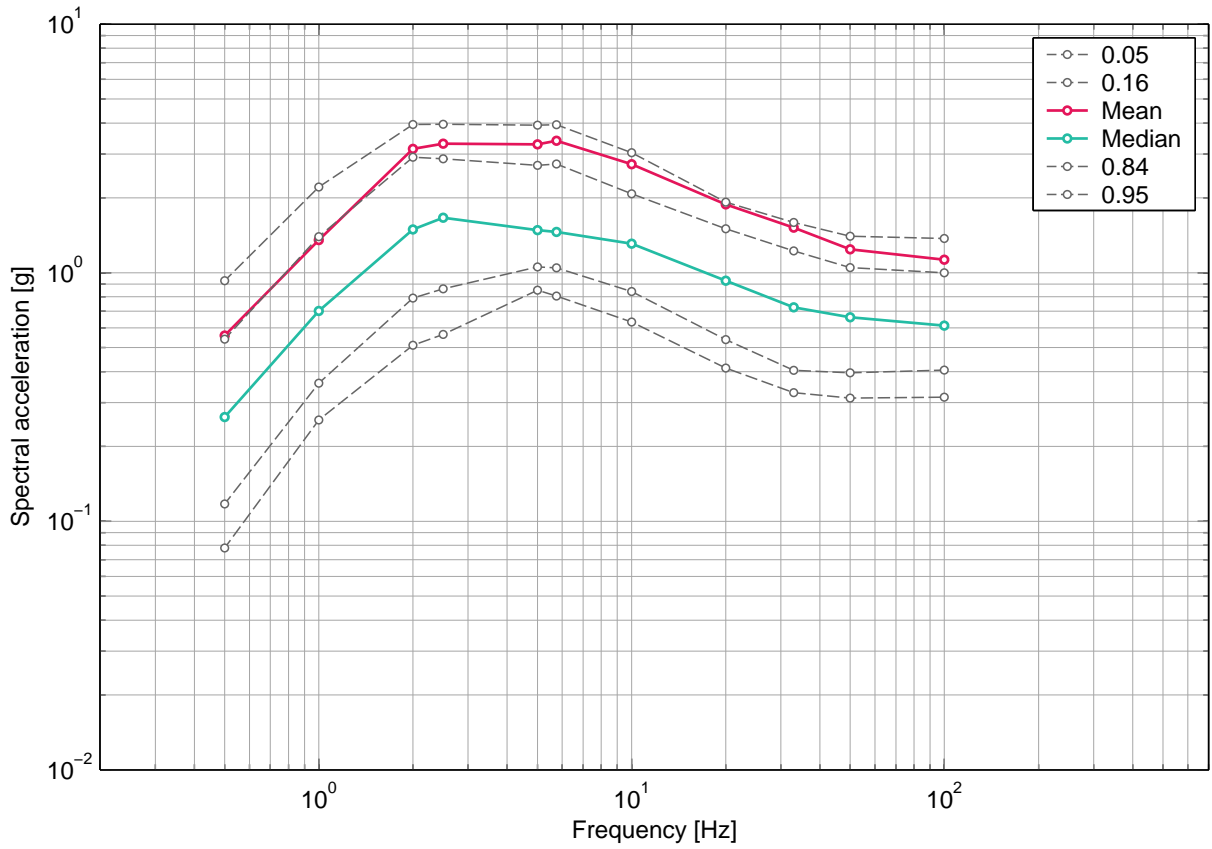


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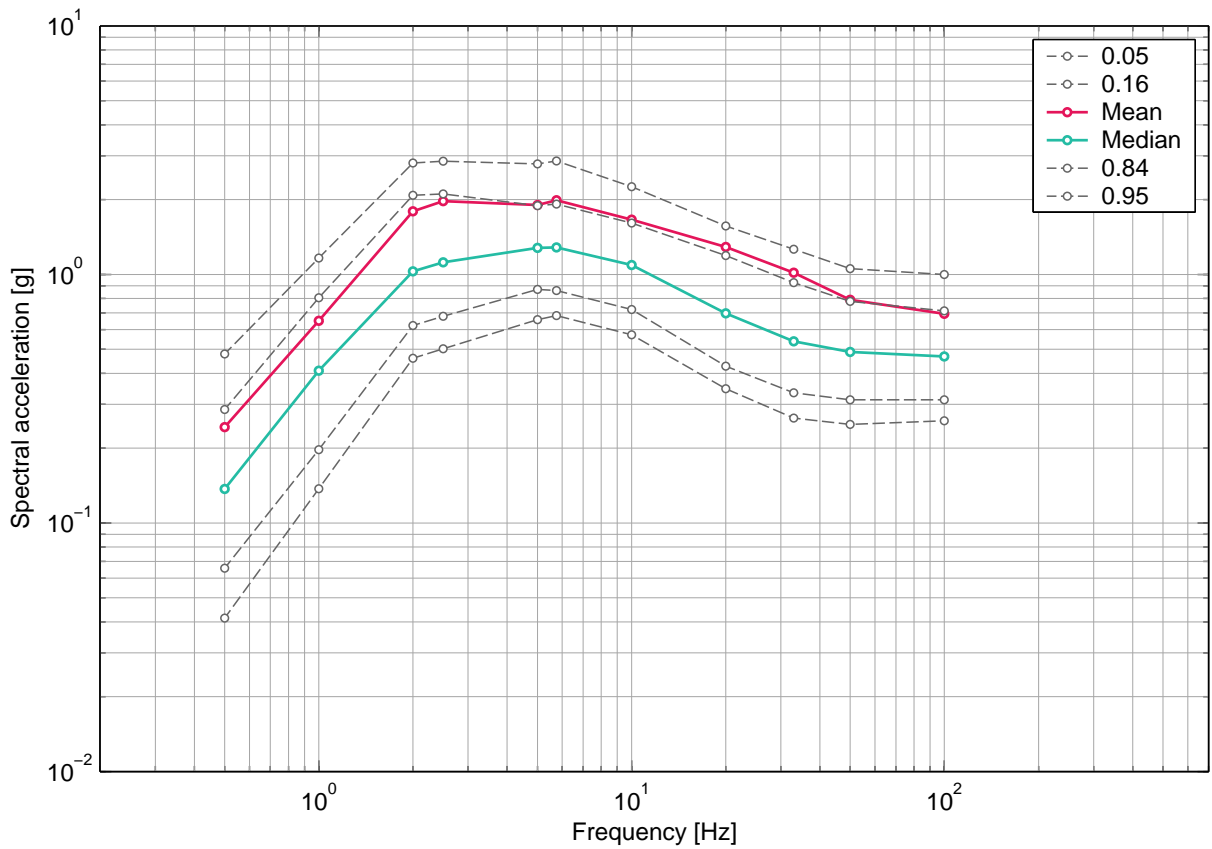


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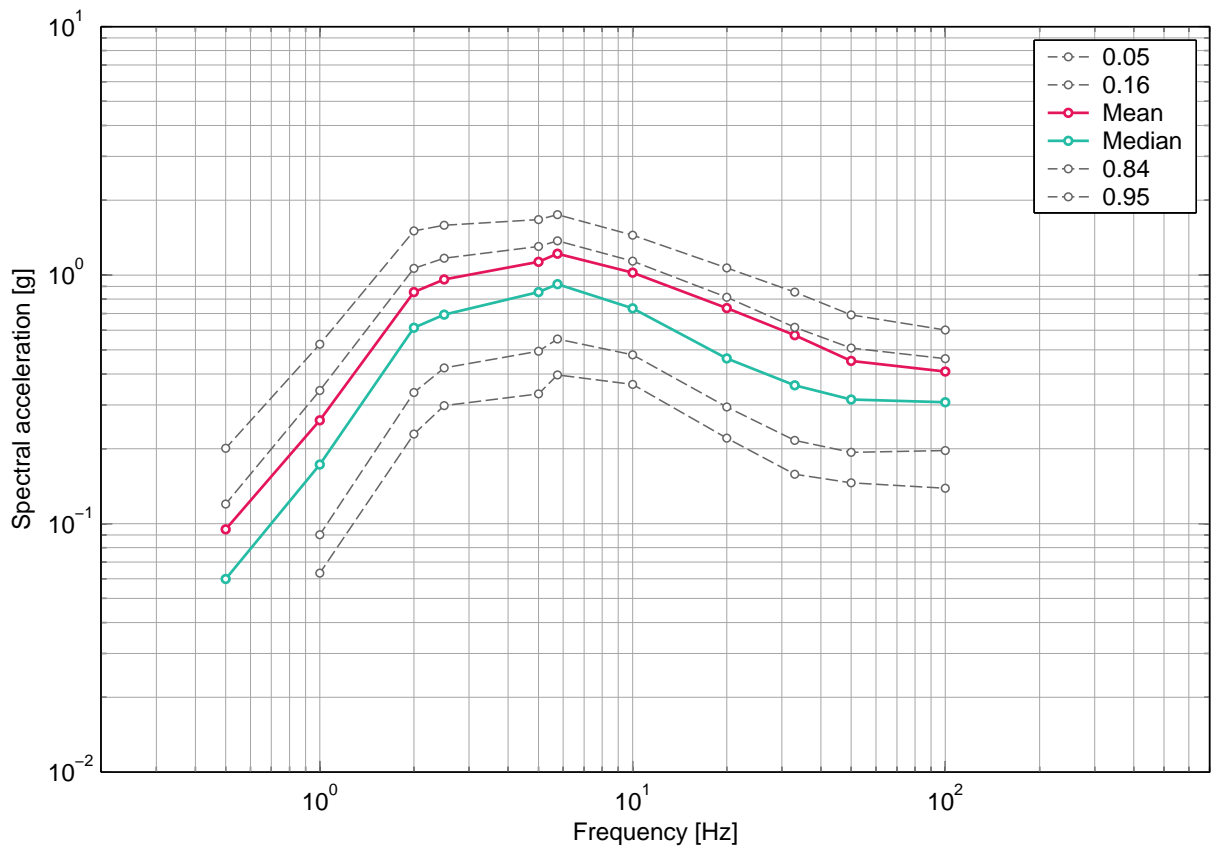


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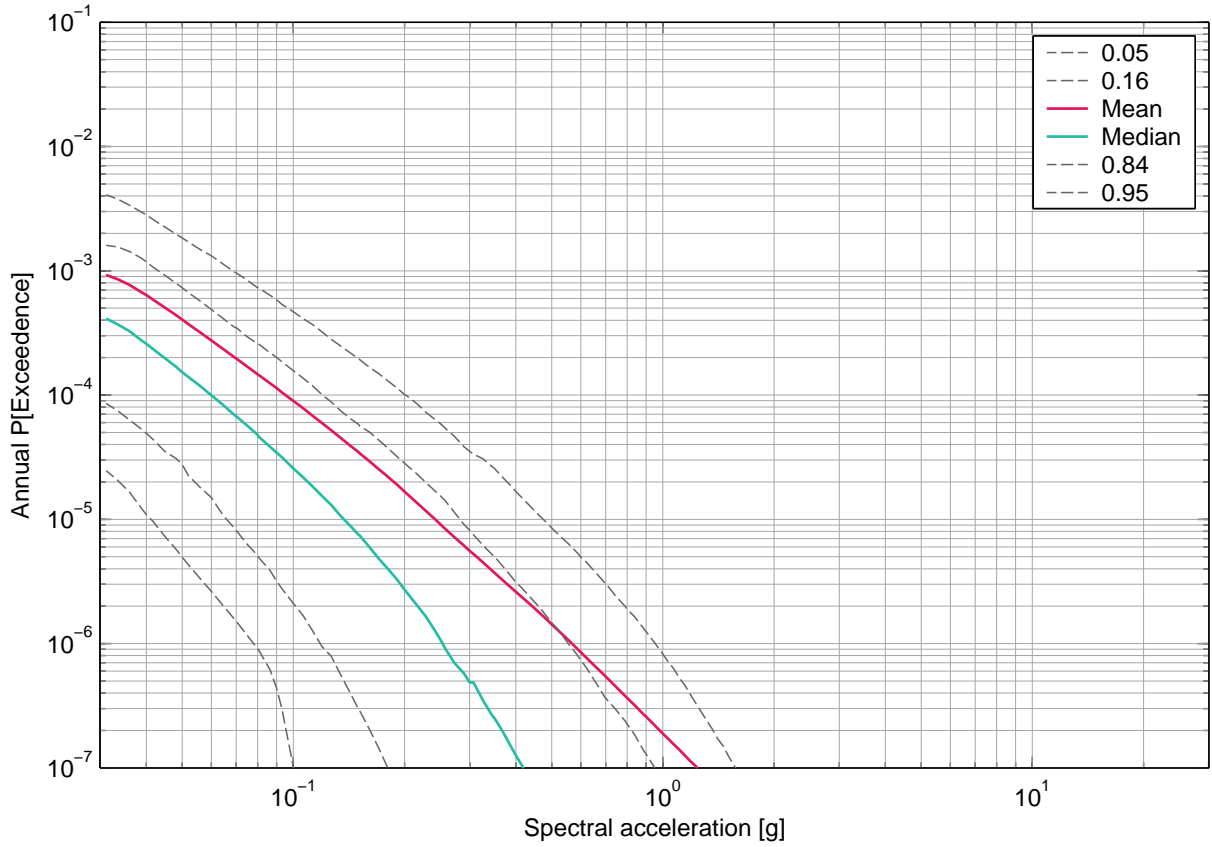


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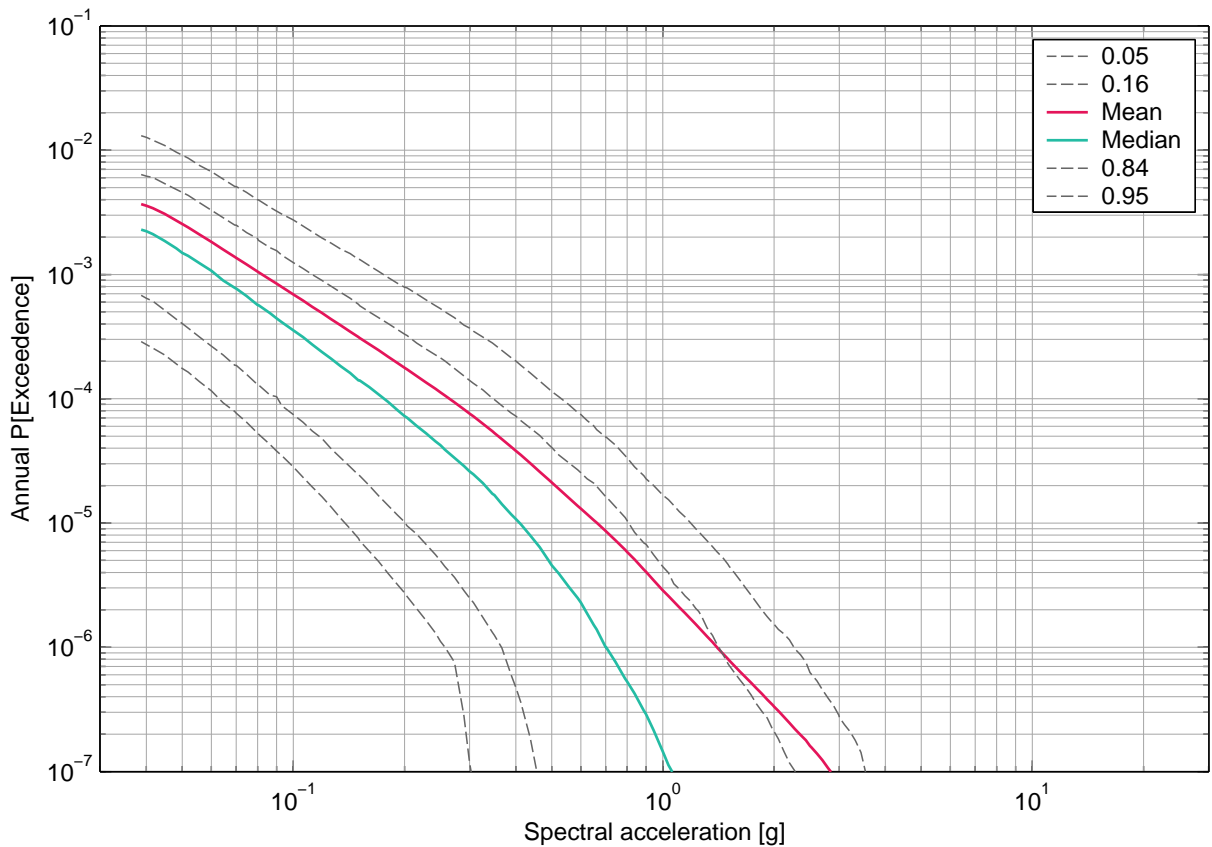


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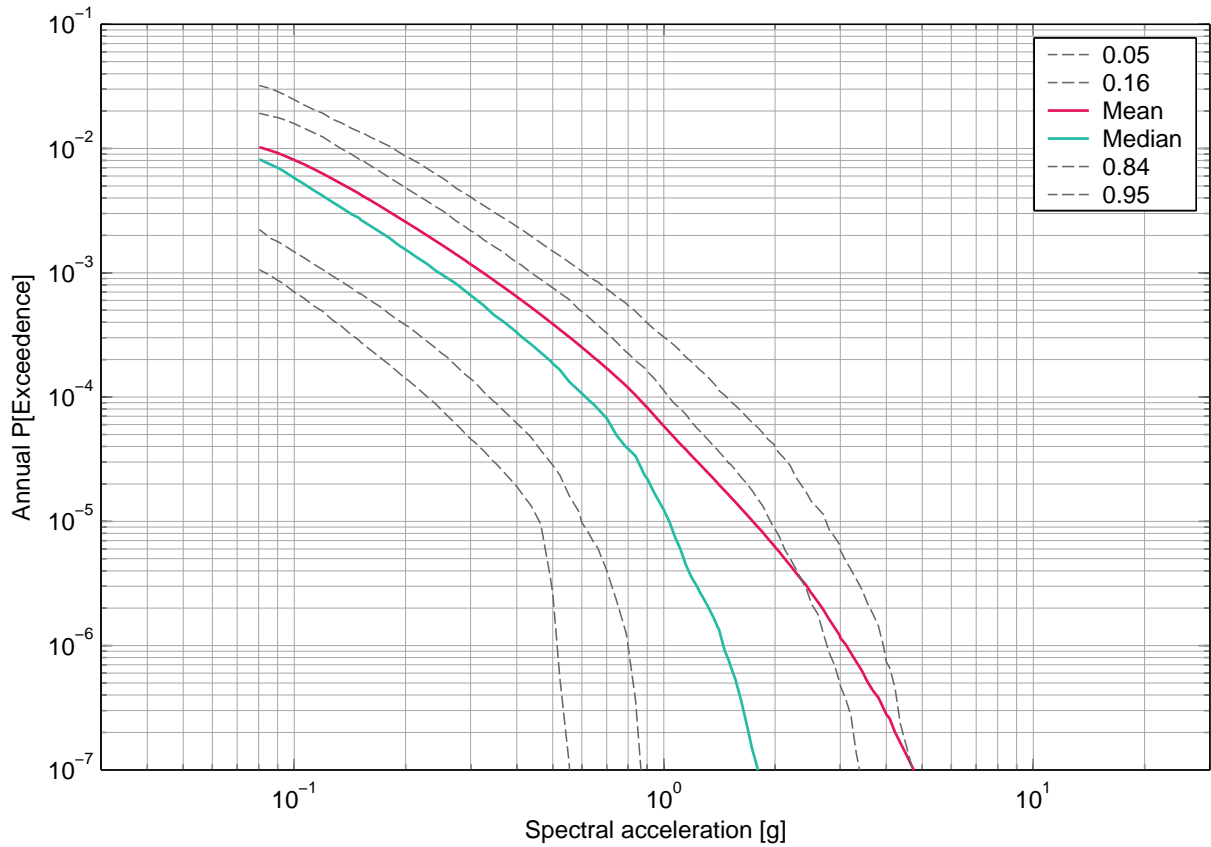


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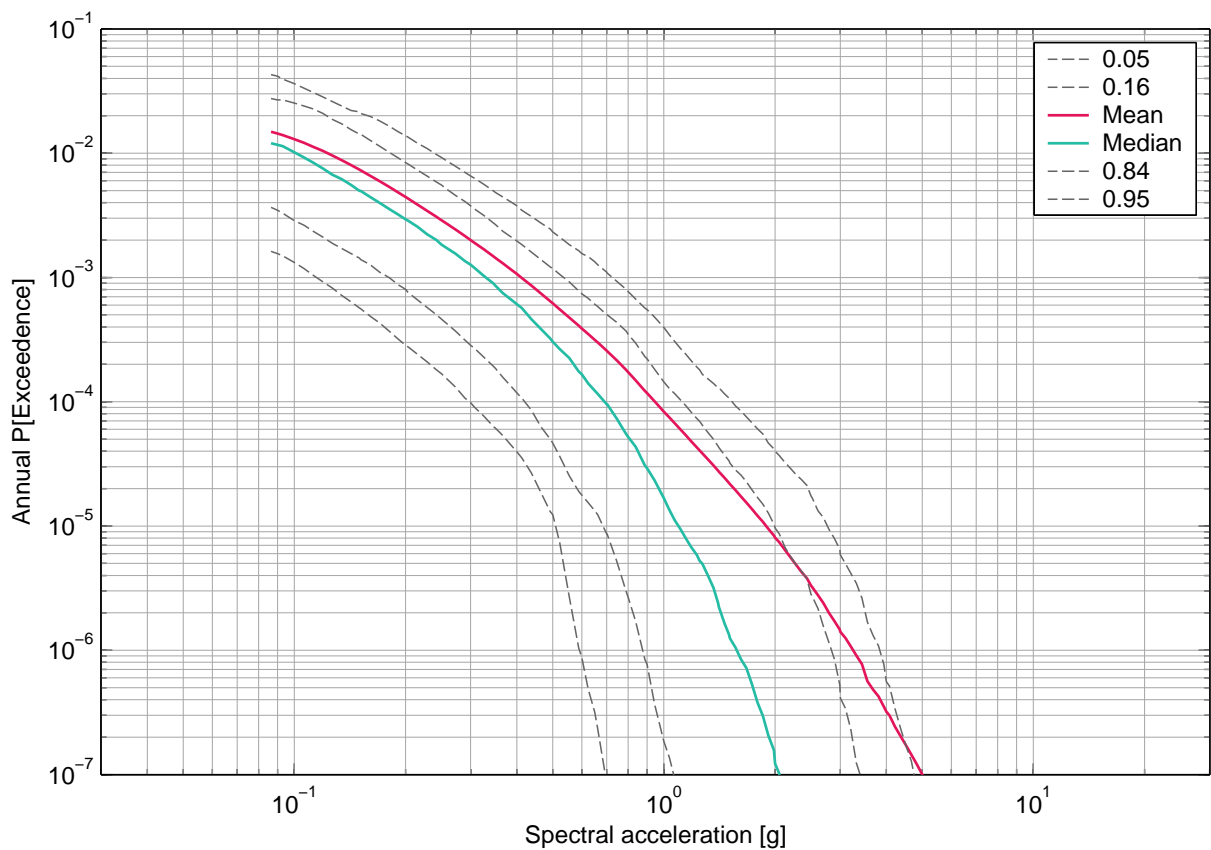


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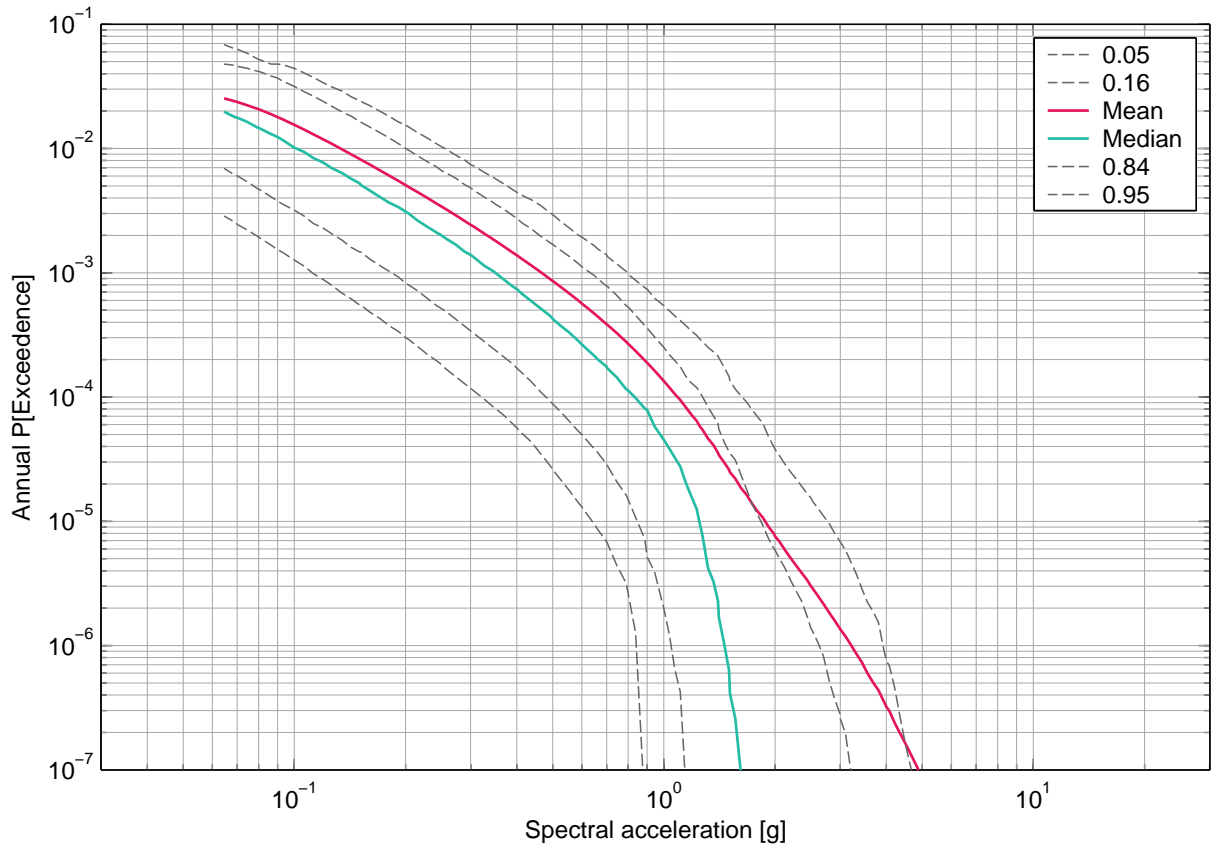


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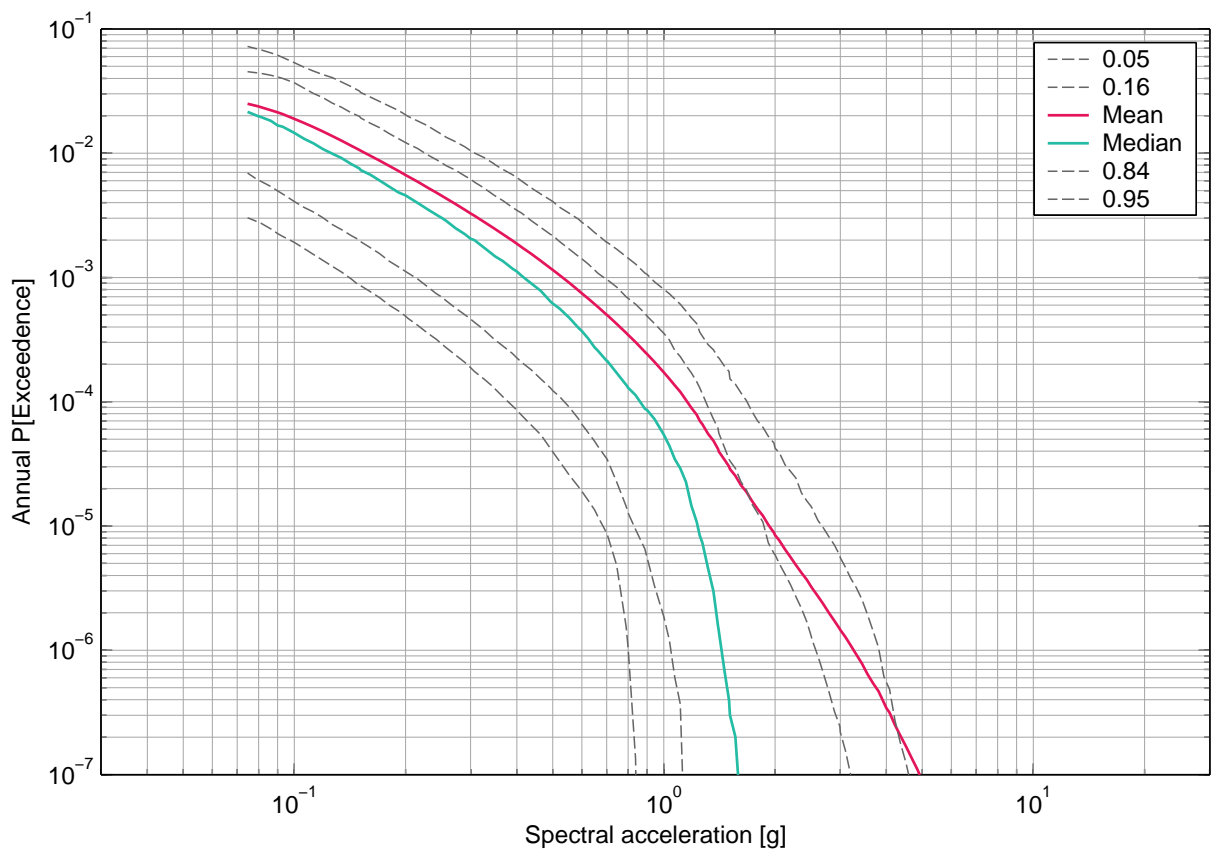


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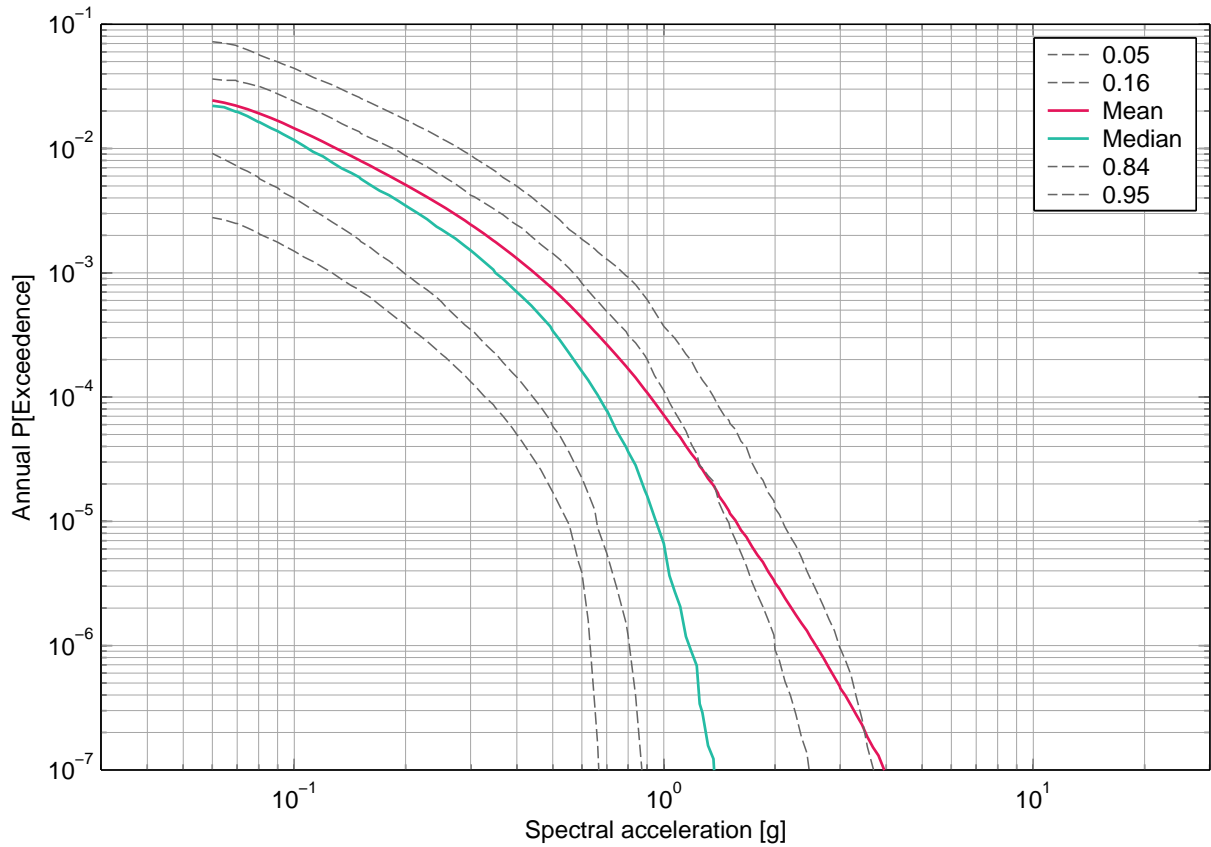


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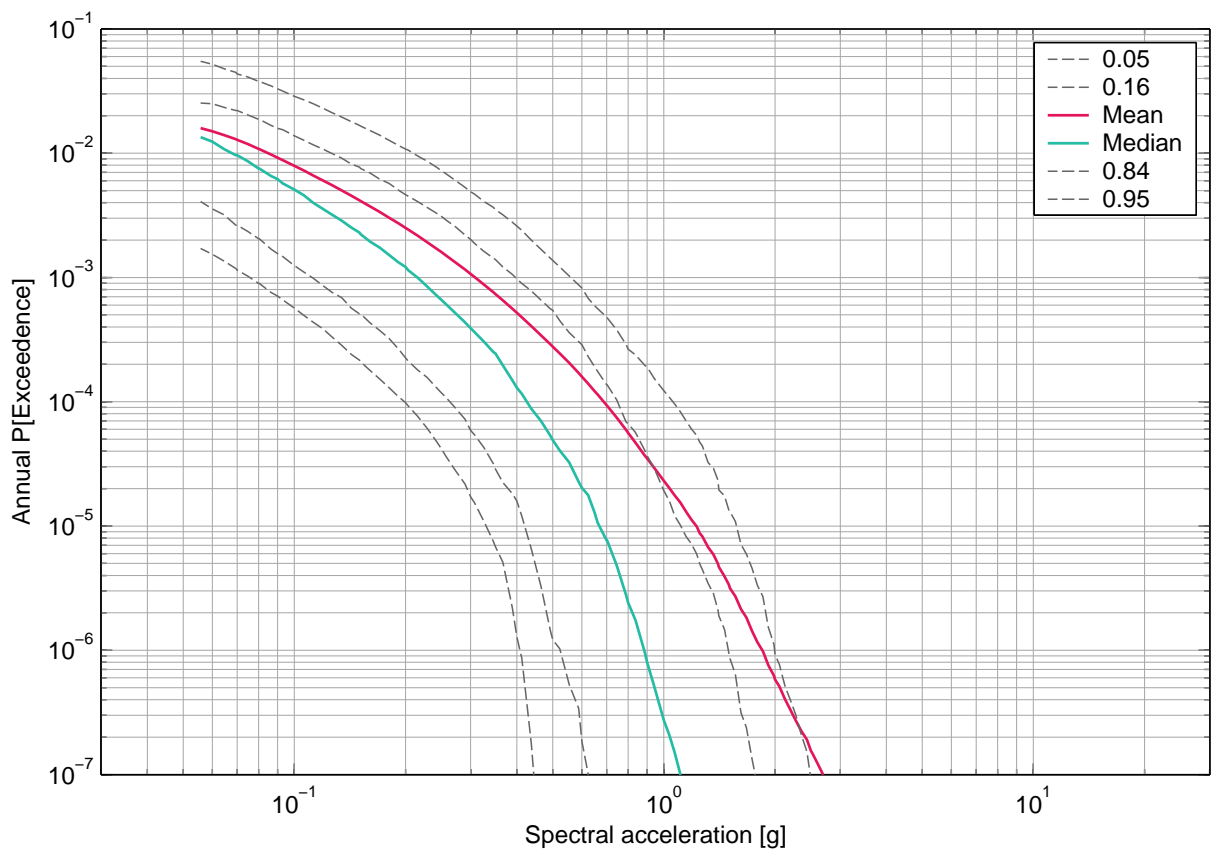


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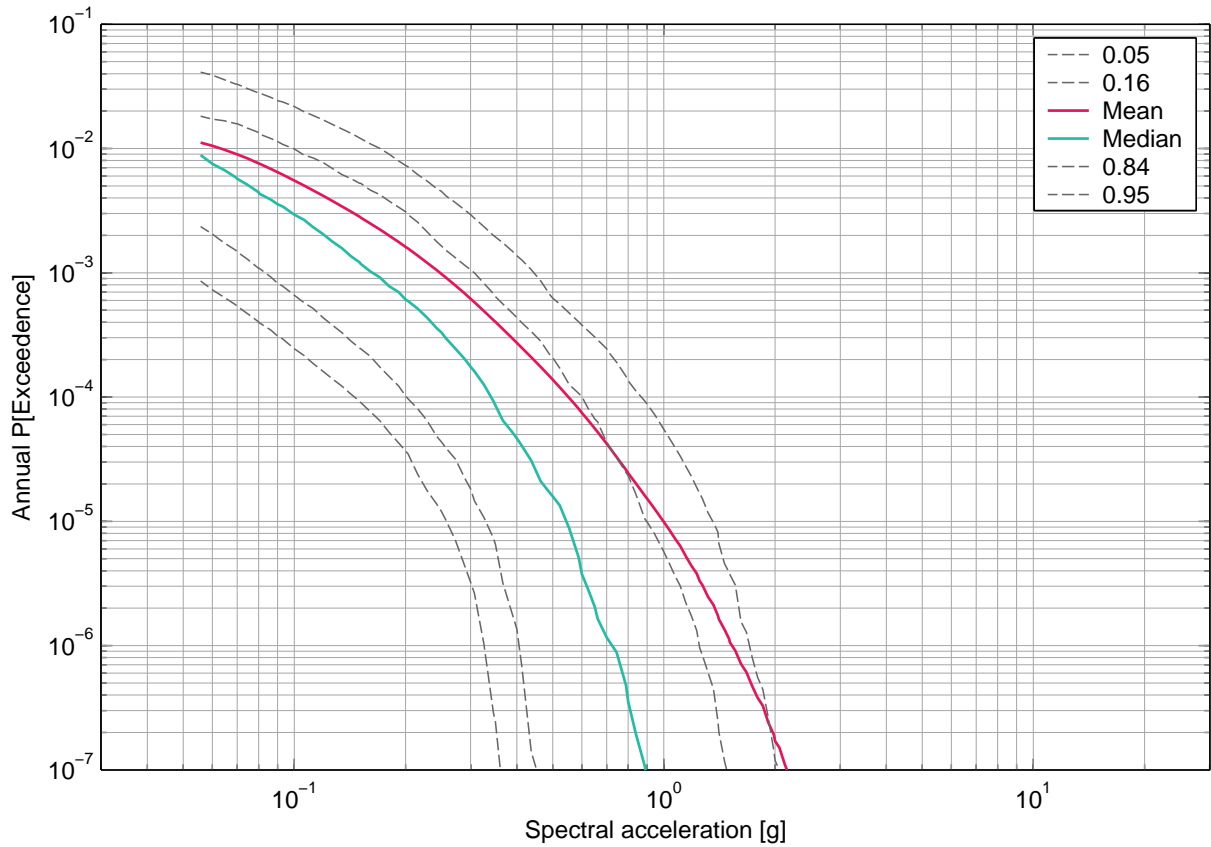


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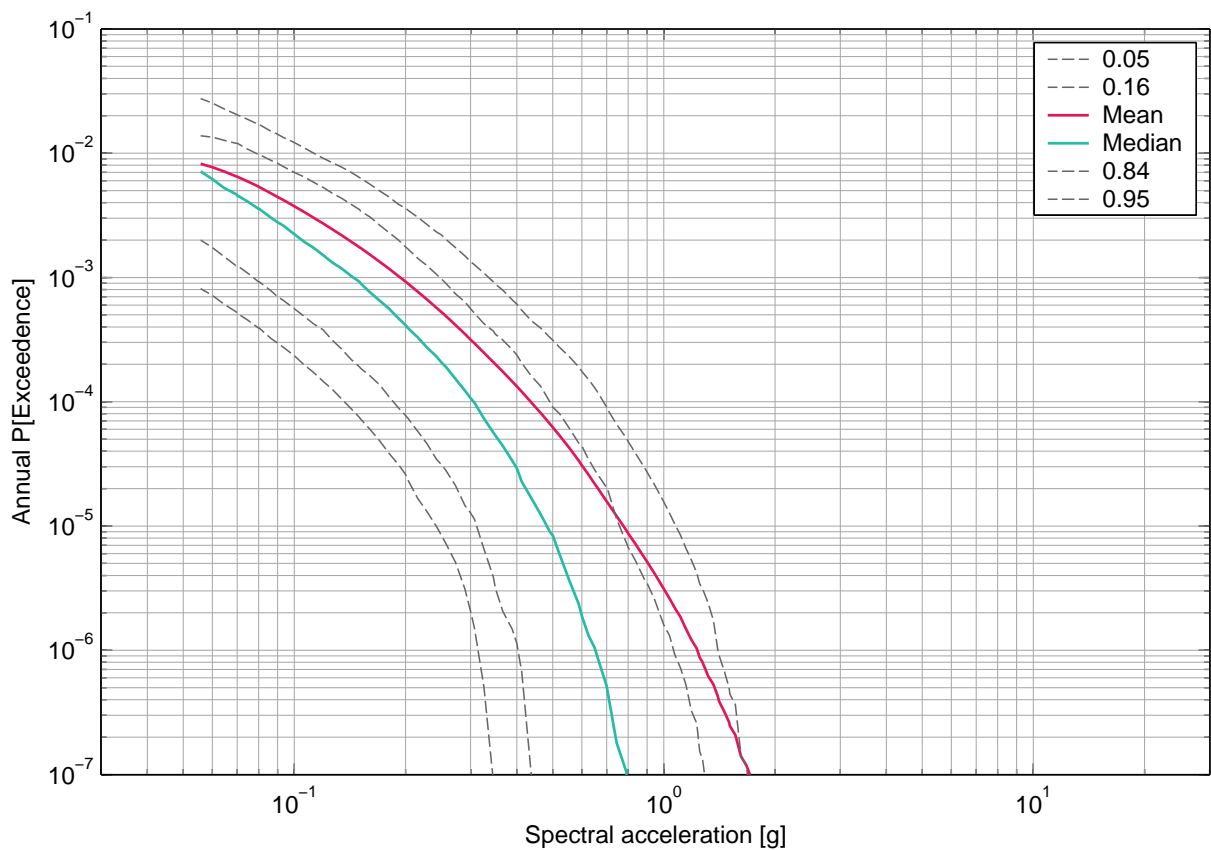


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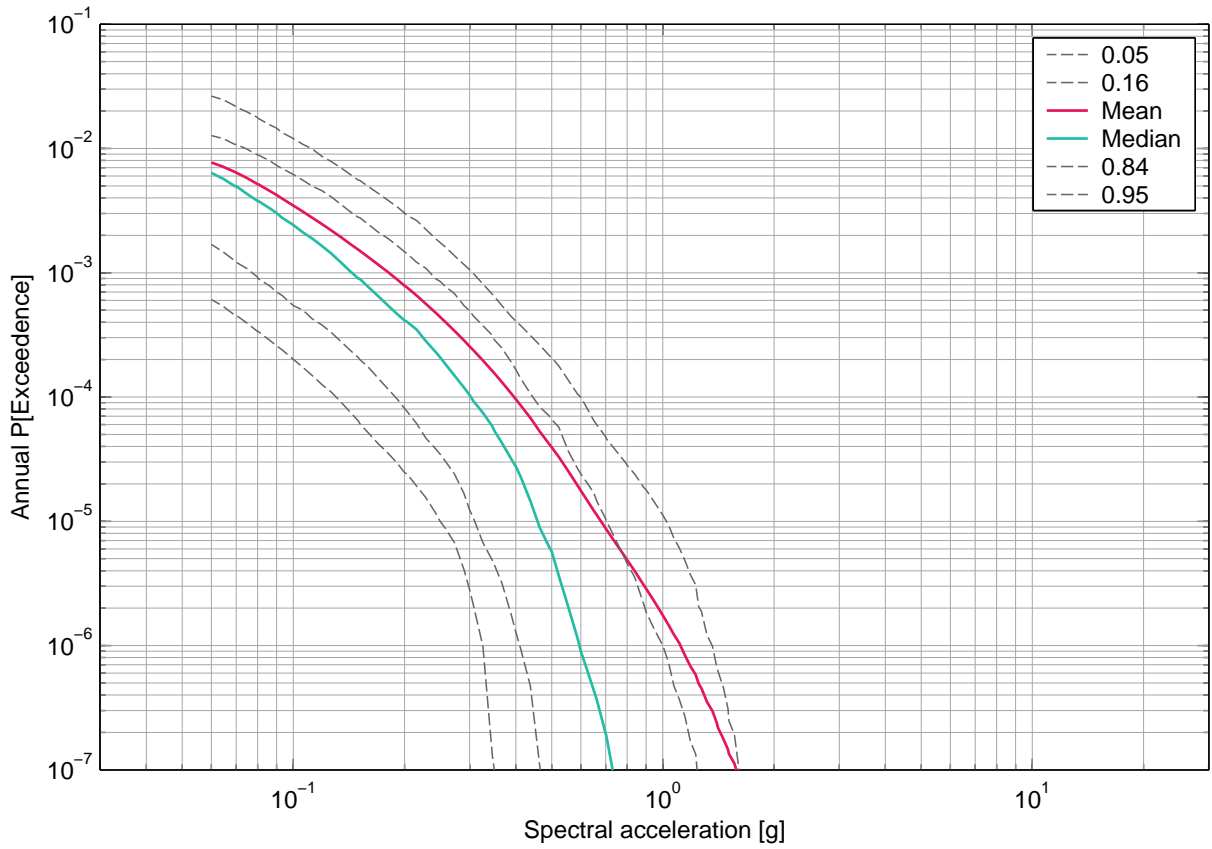


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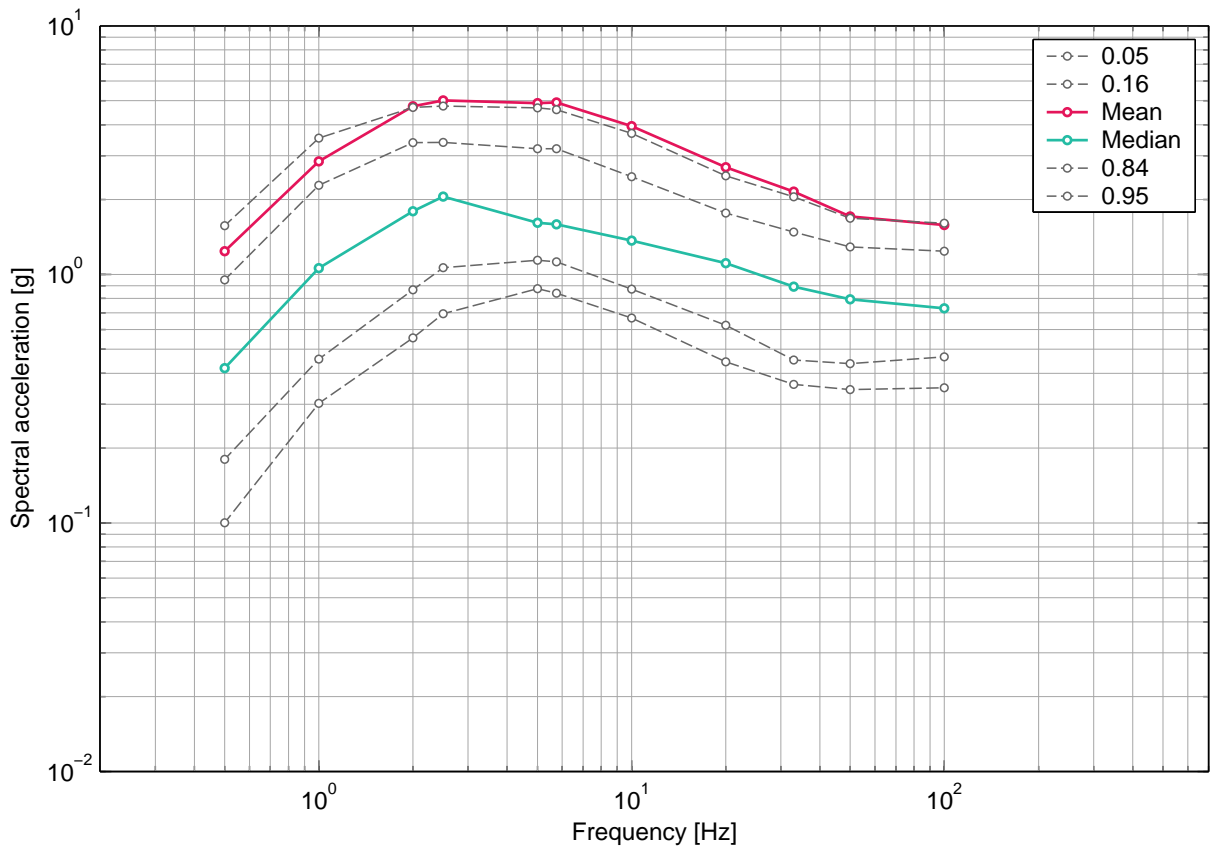


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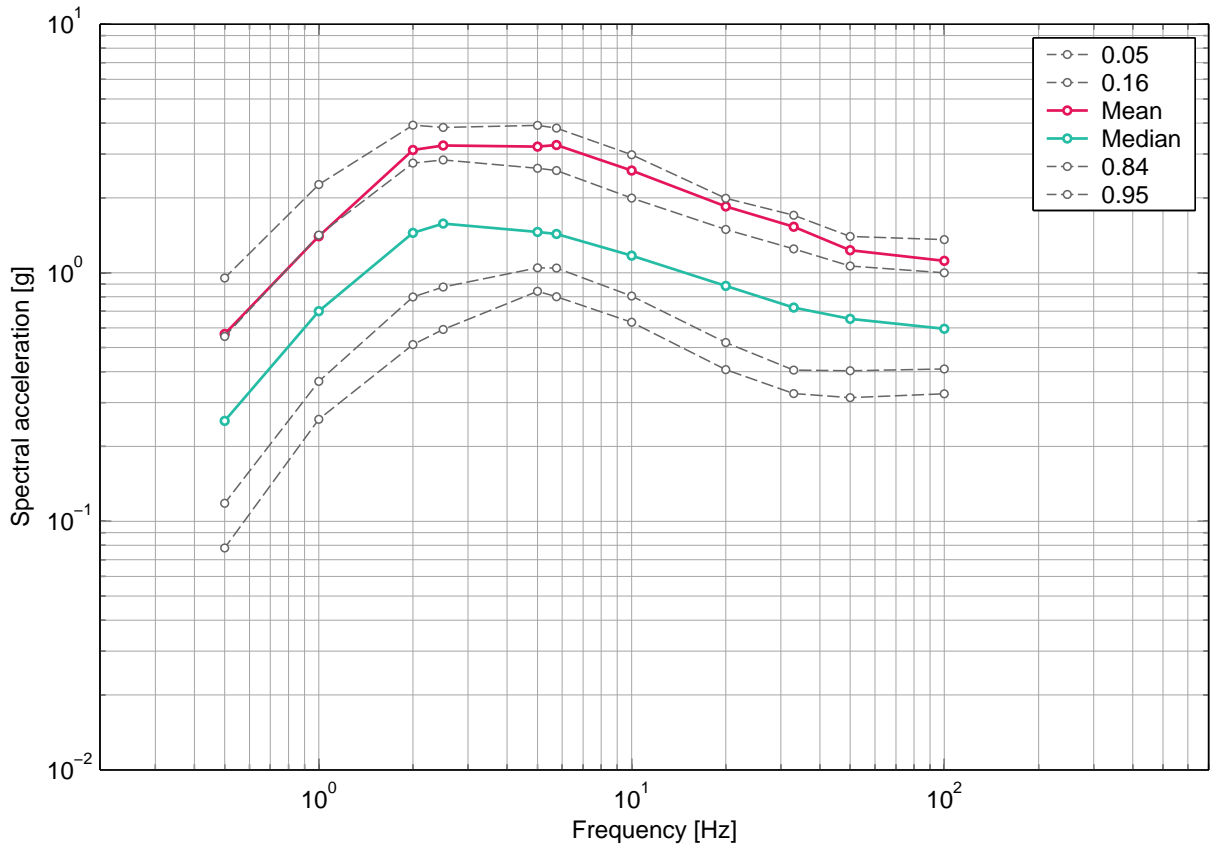


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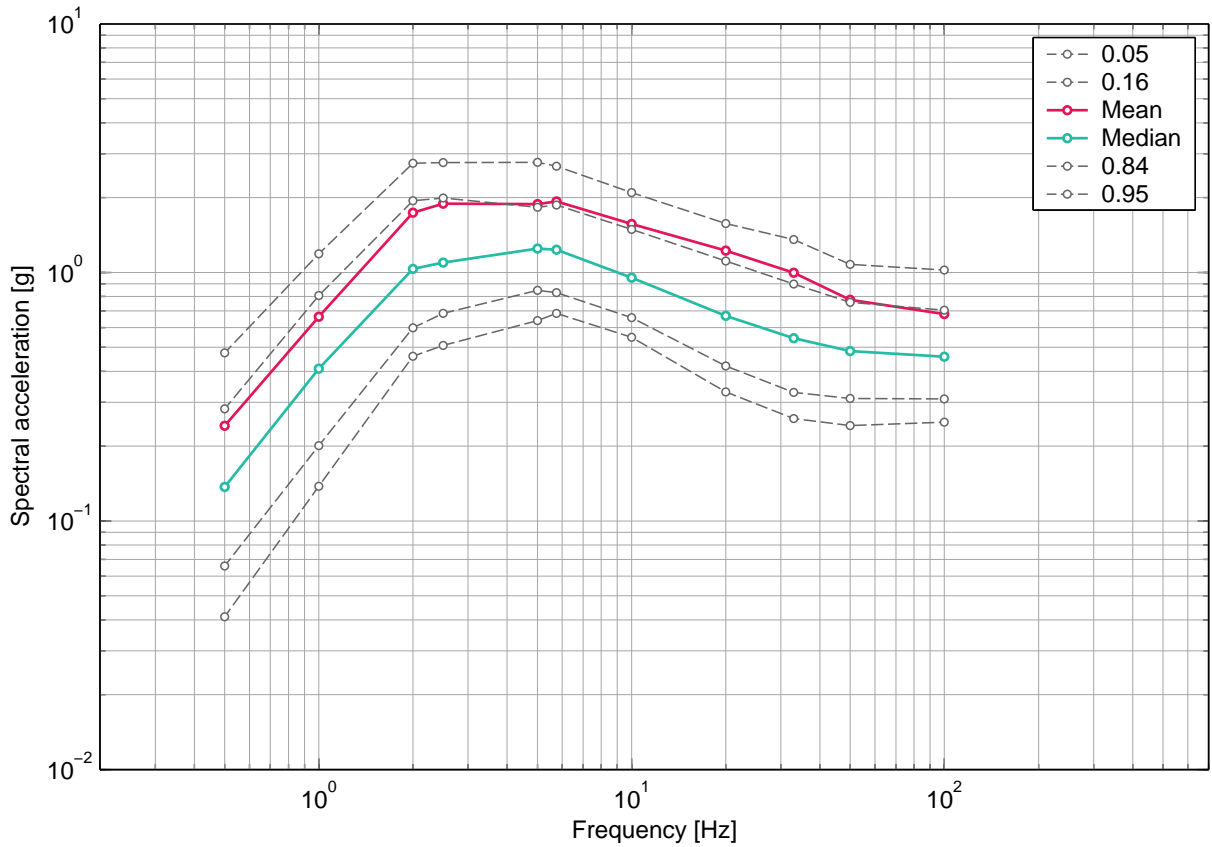


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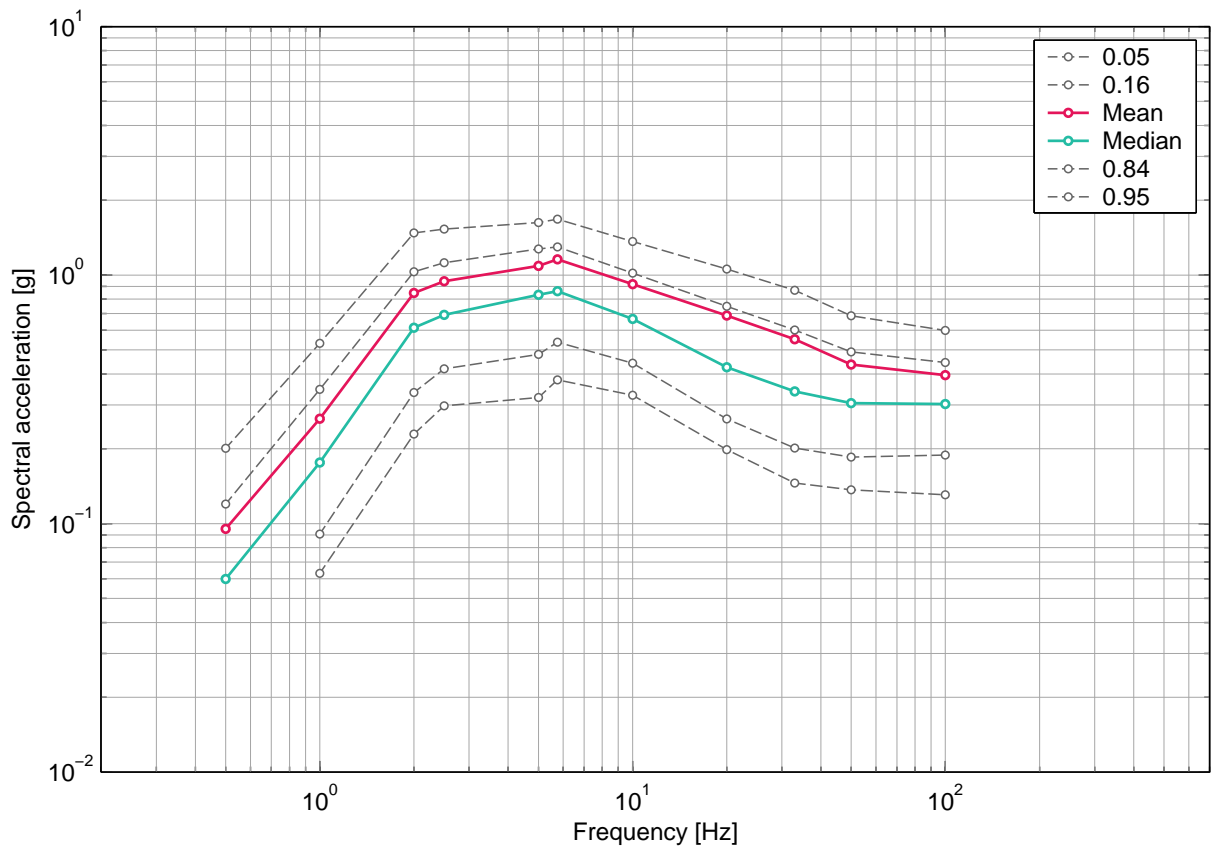


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#### 4.4 Leibstadt, Soil Hazard, Horizontal Component, -10 m

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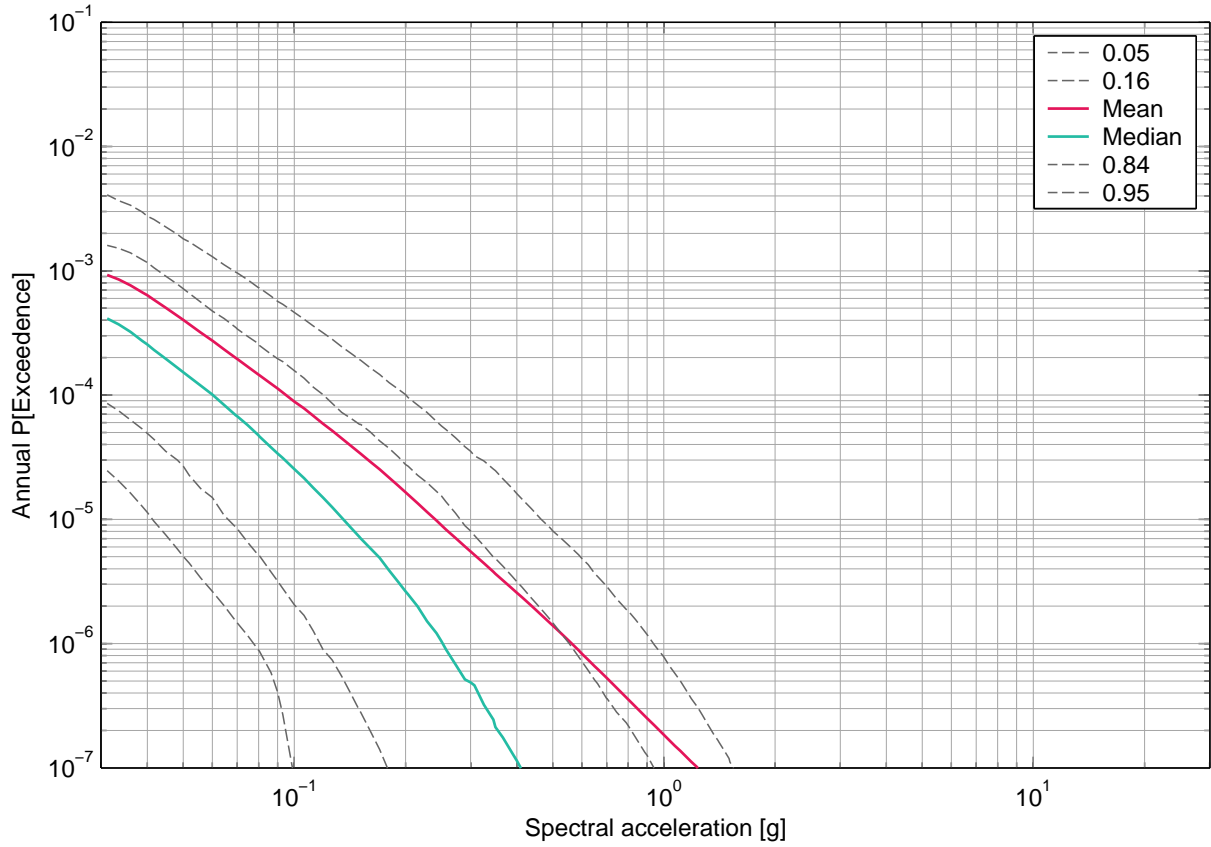


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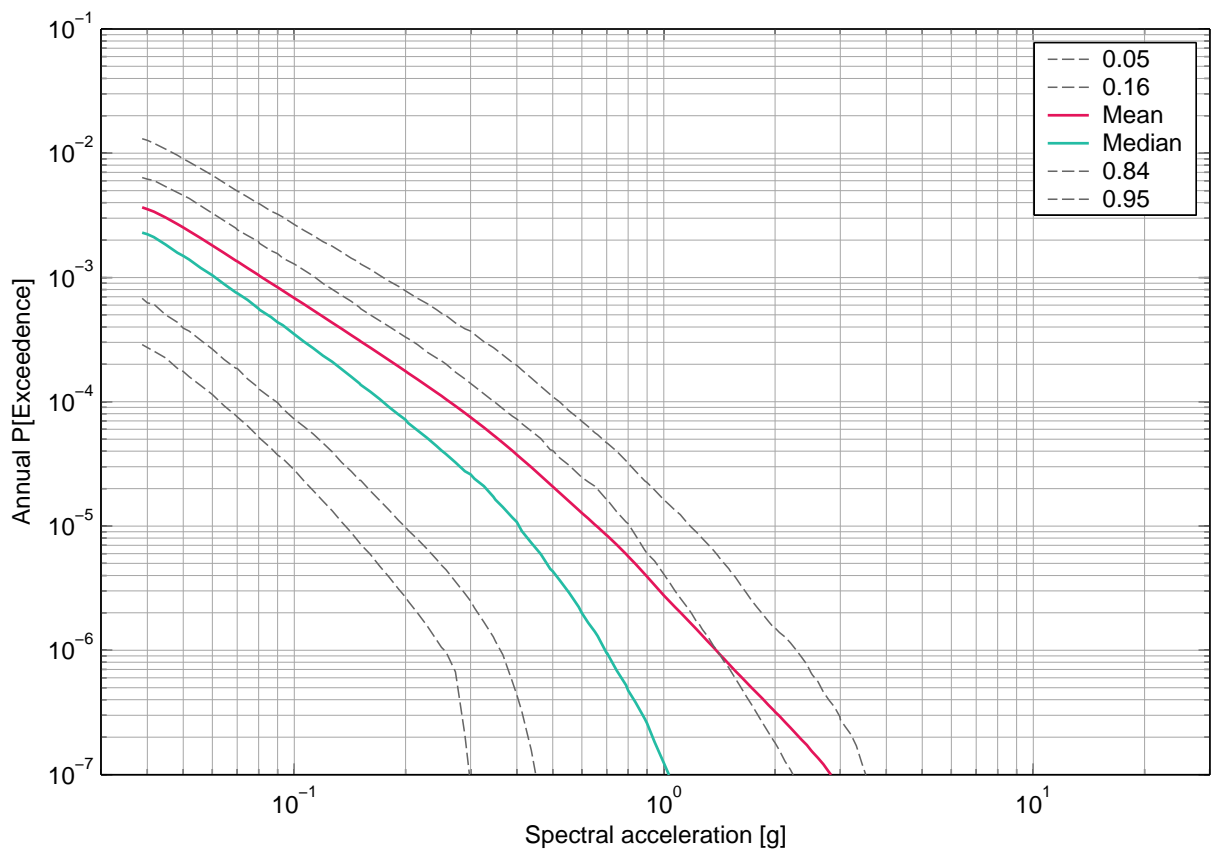


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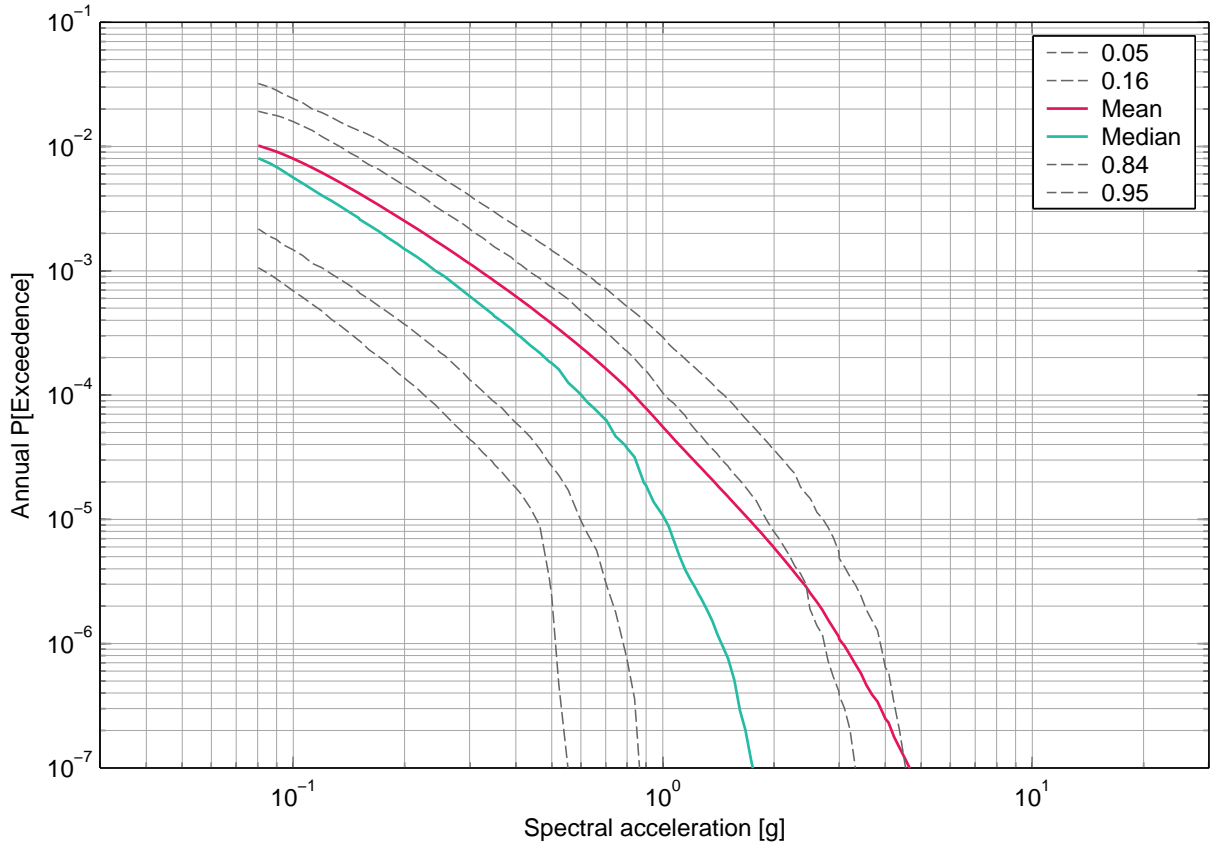


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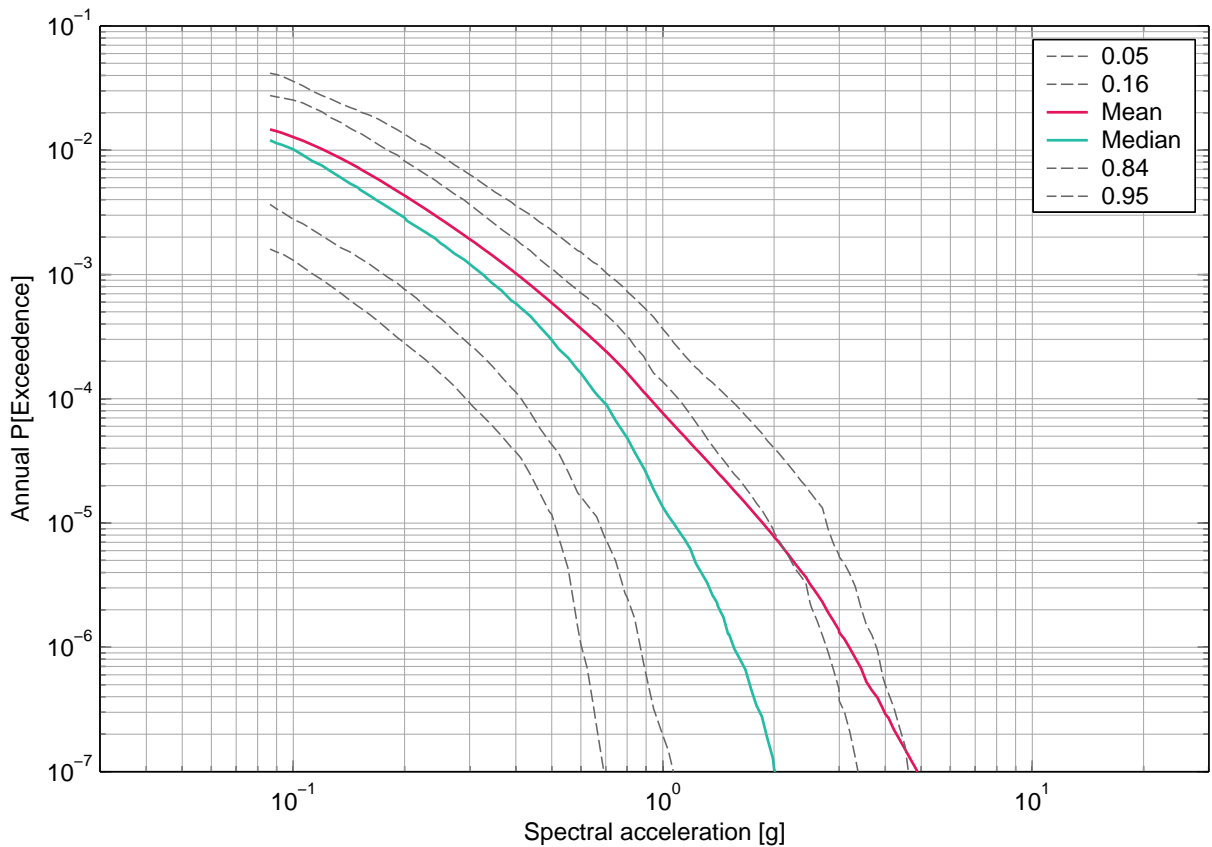


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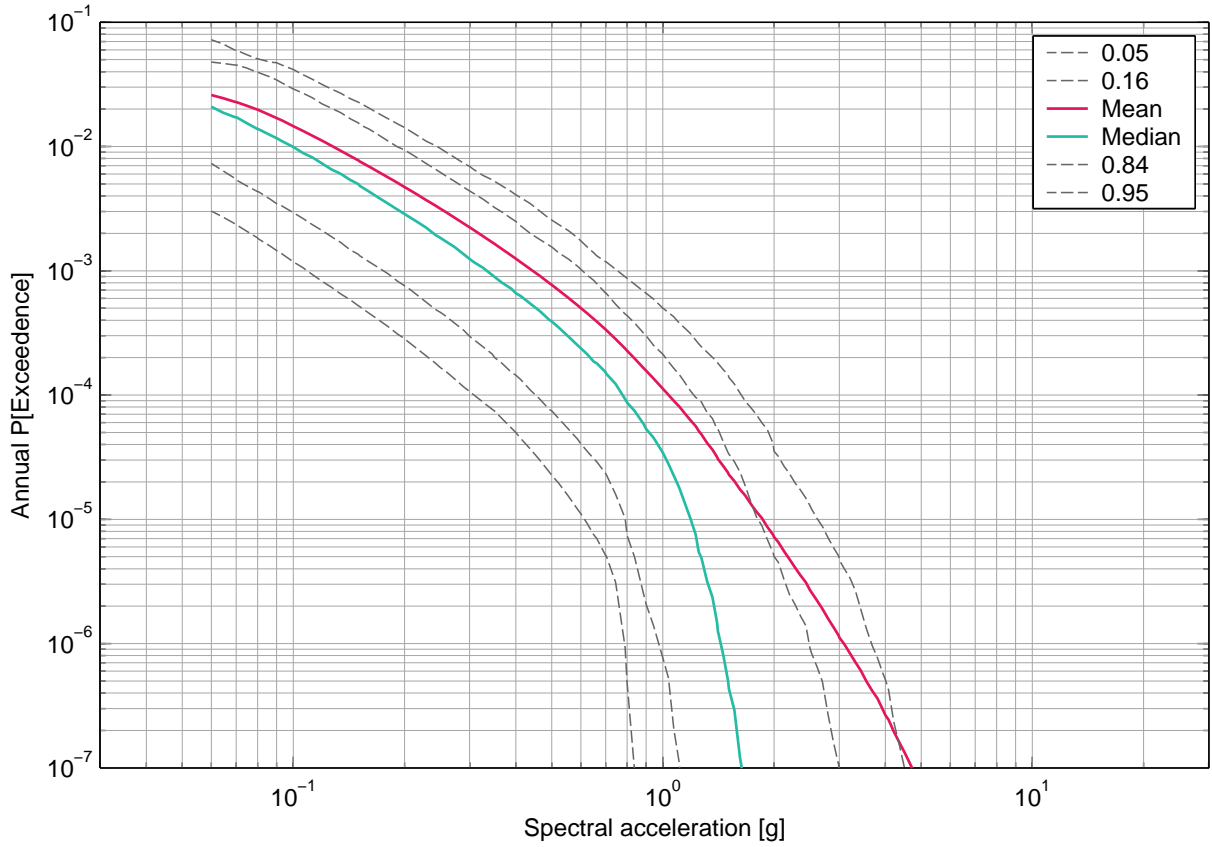


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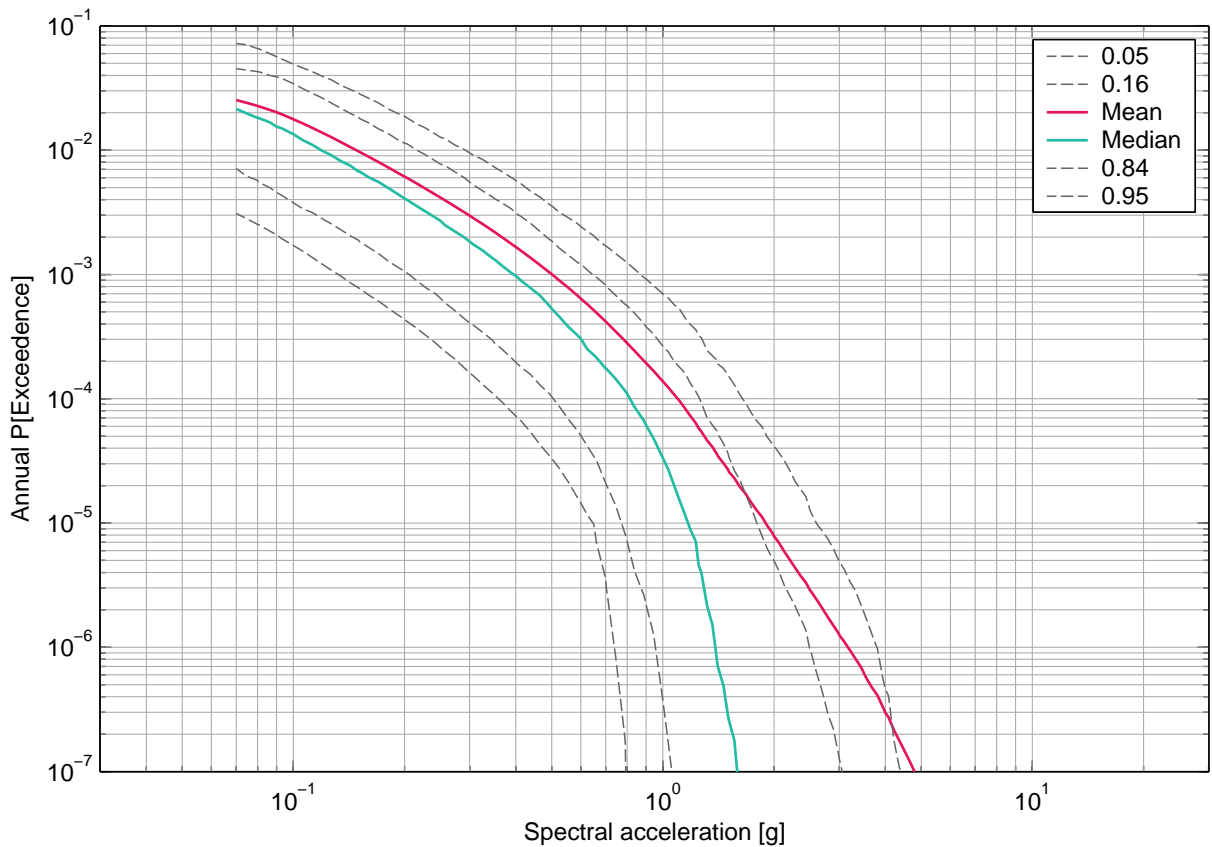


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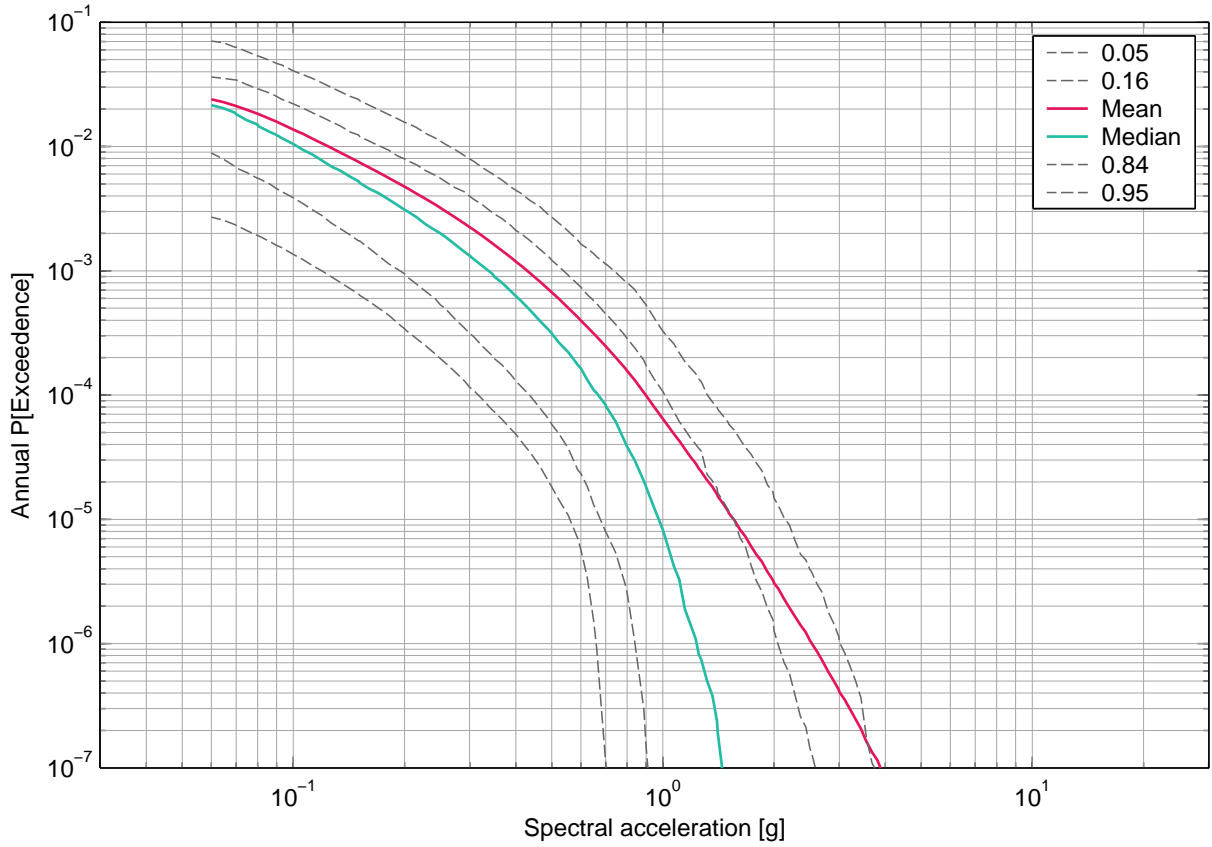


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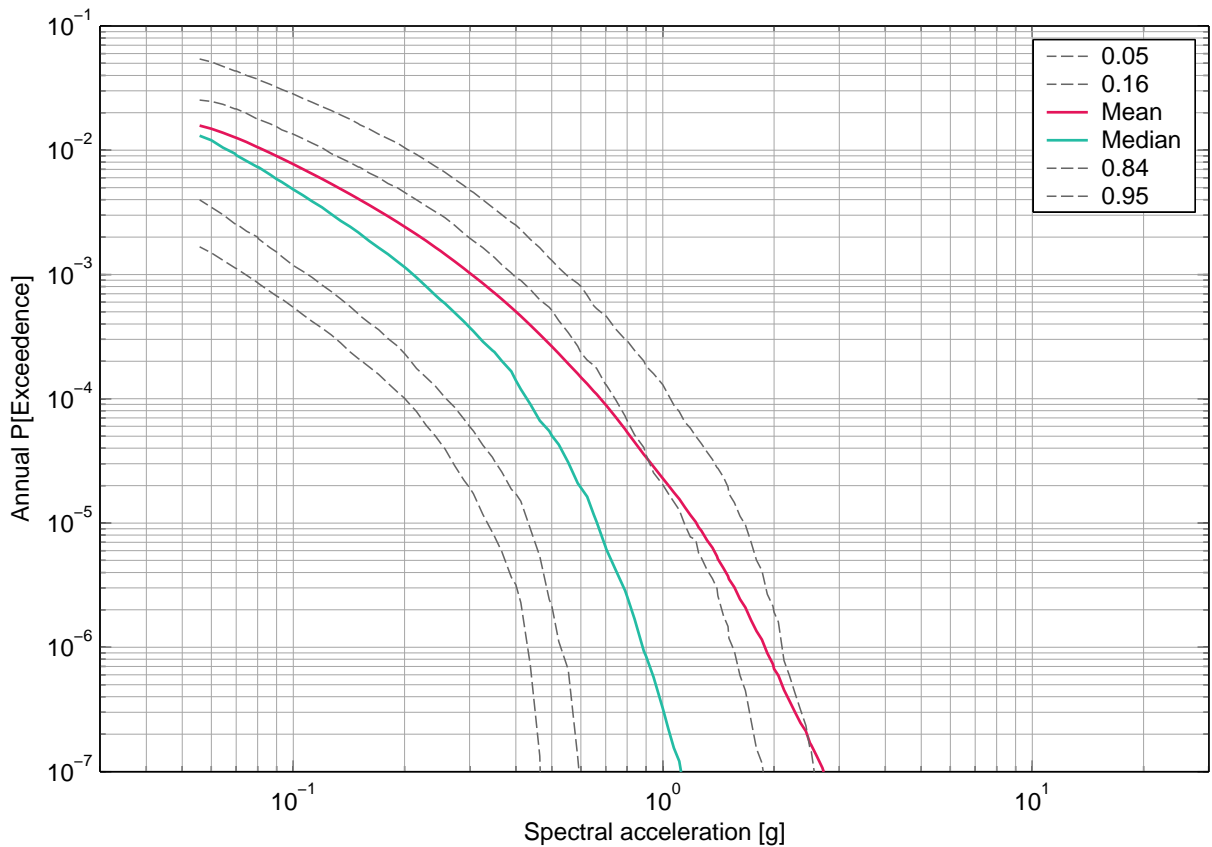


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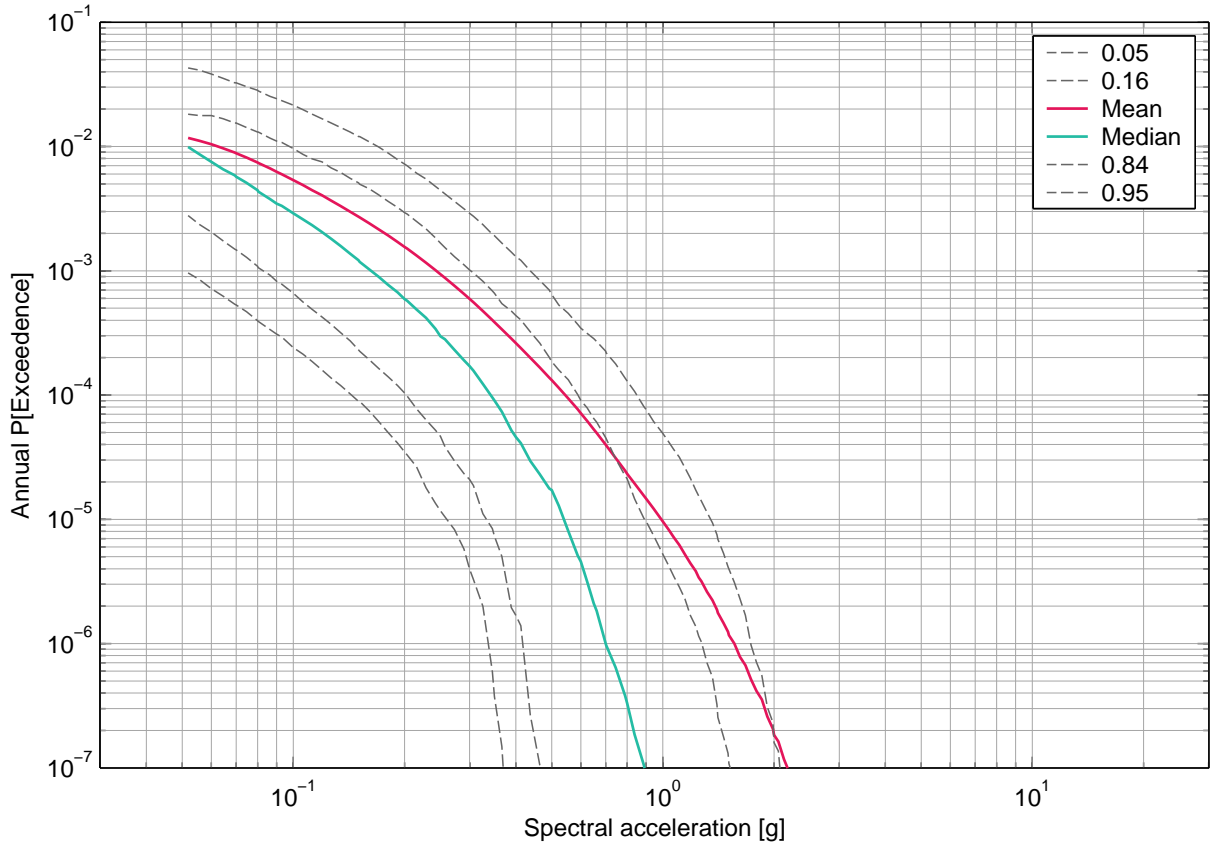


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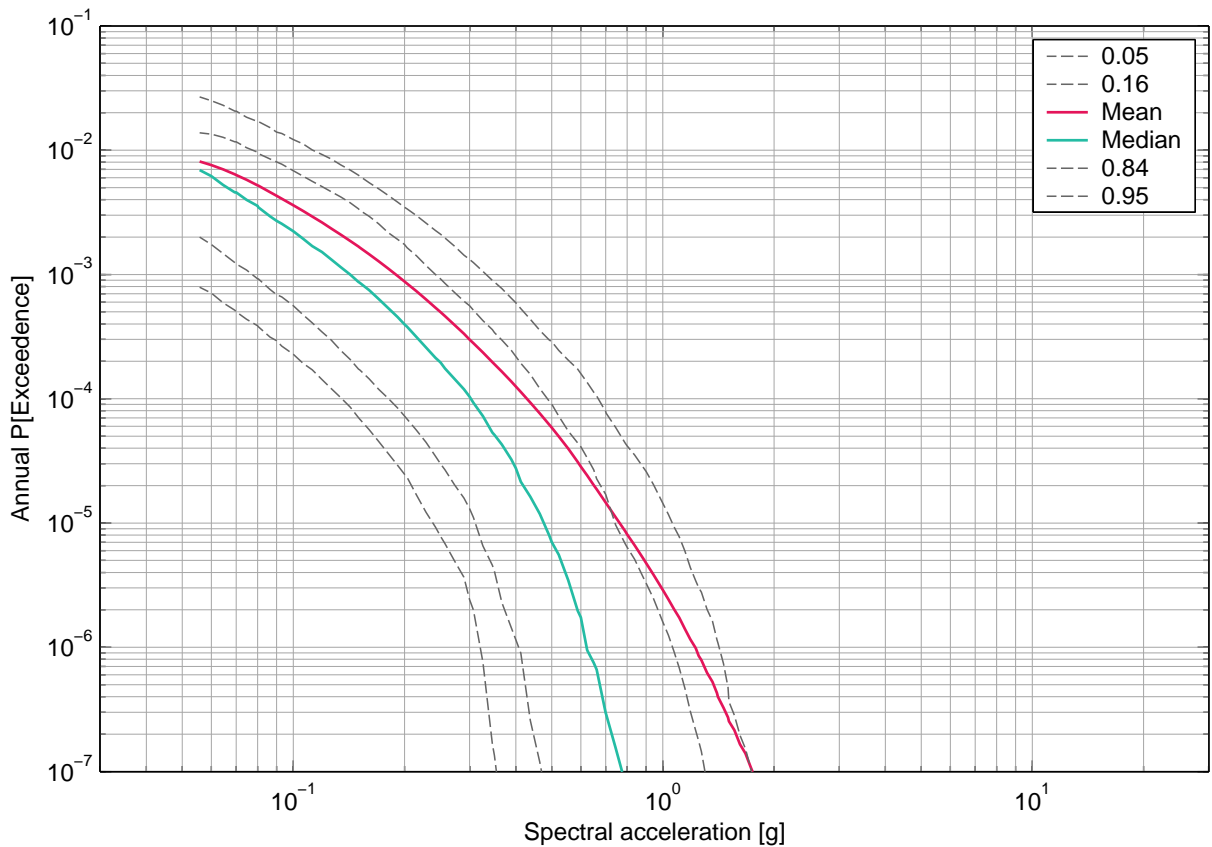


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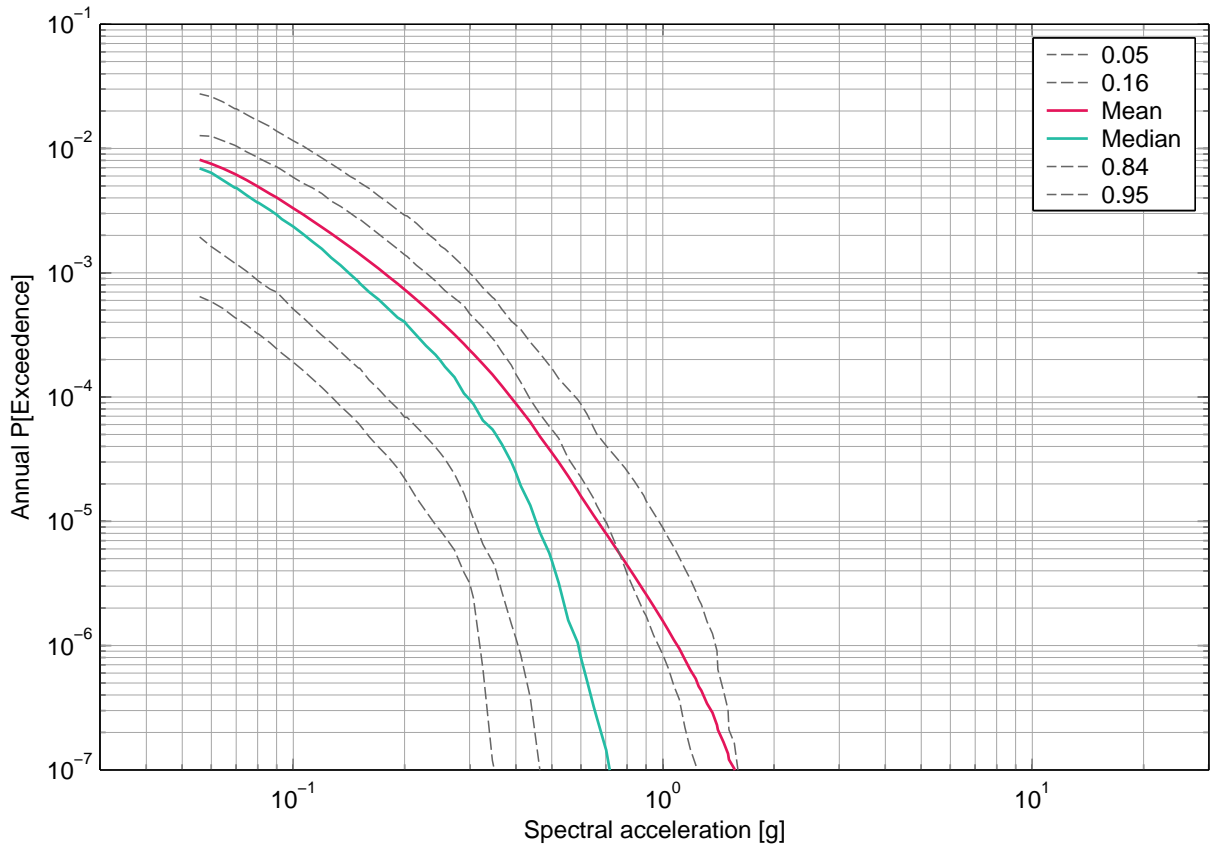


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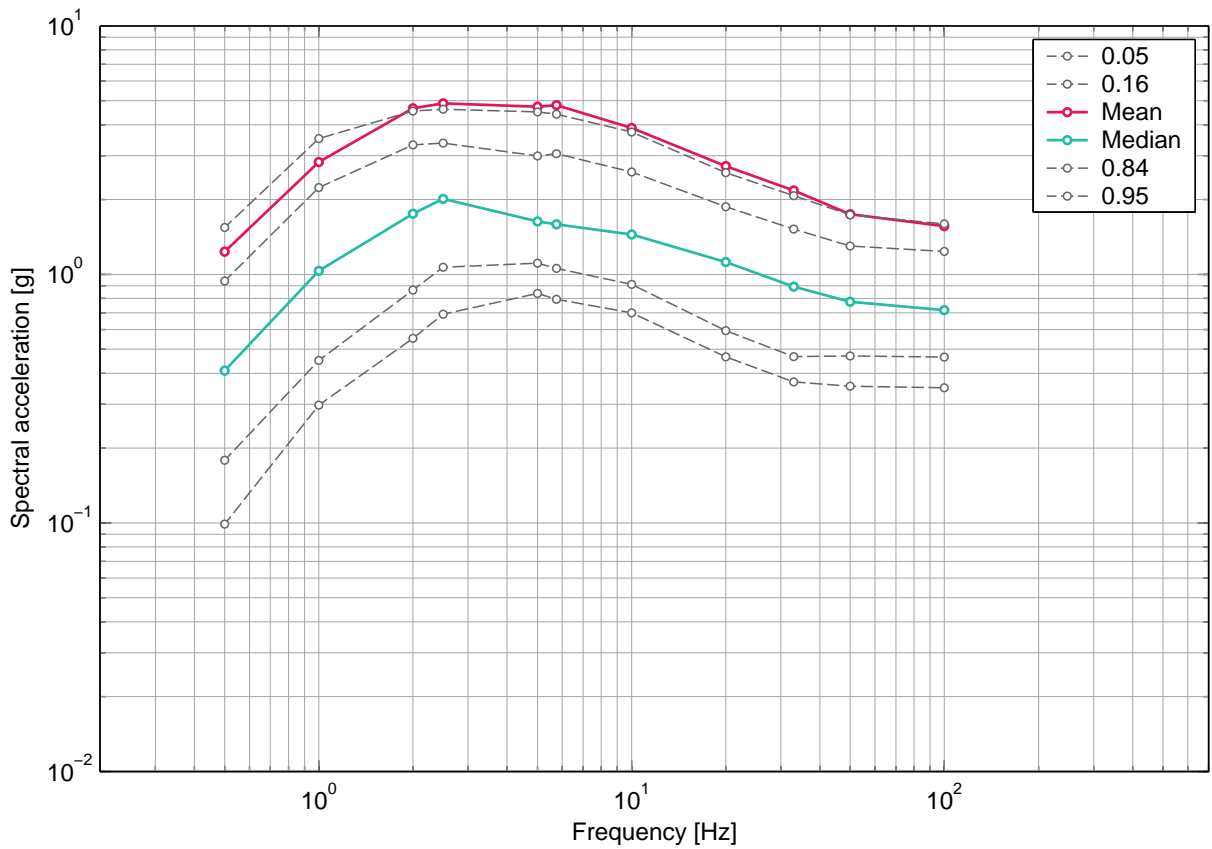


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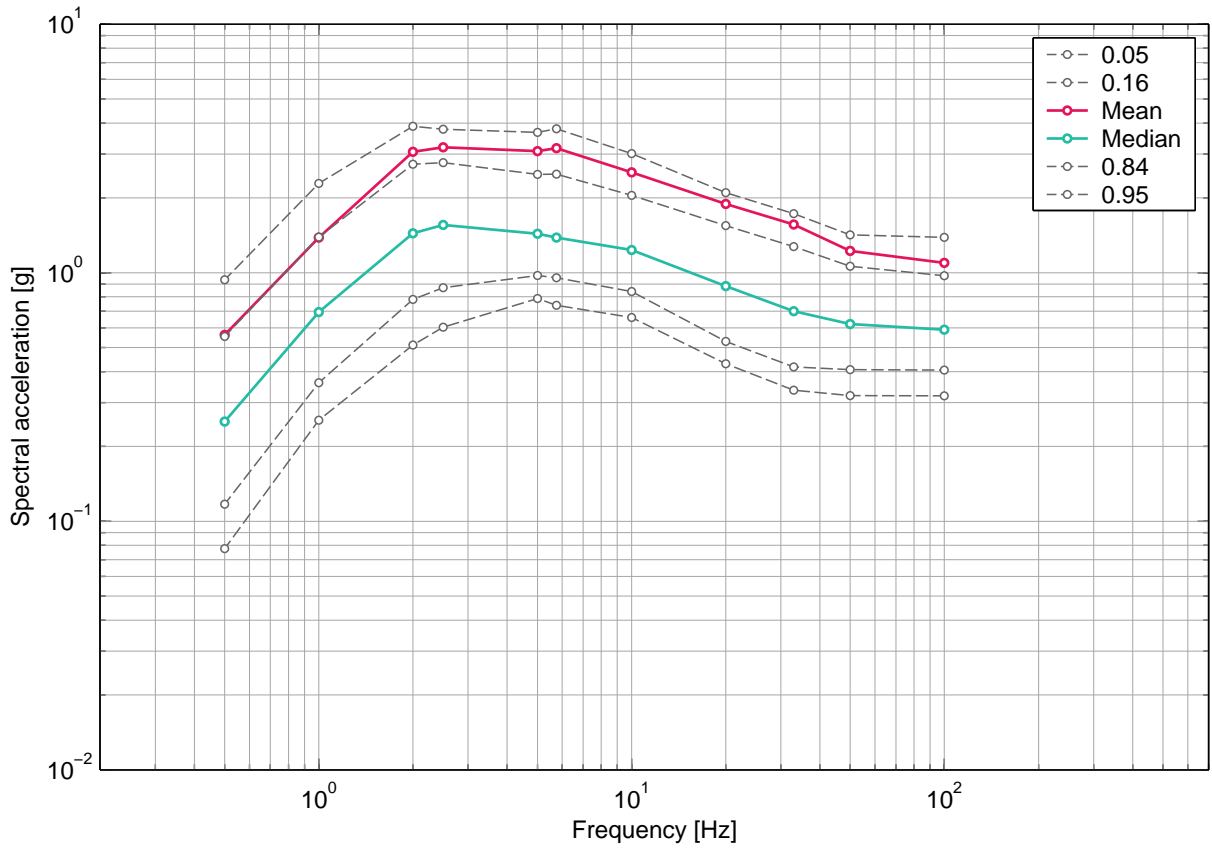


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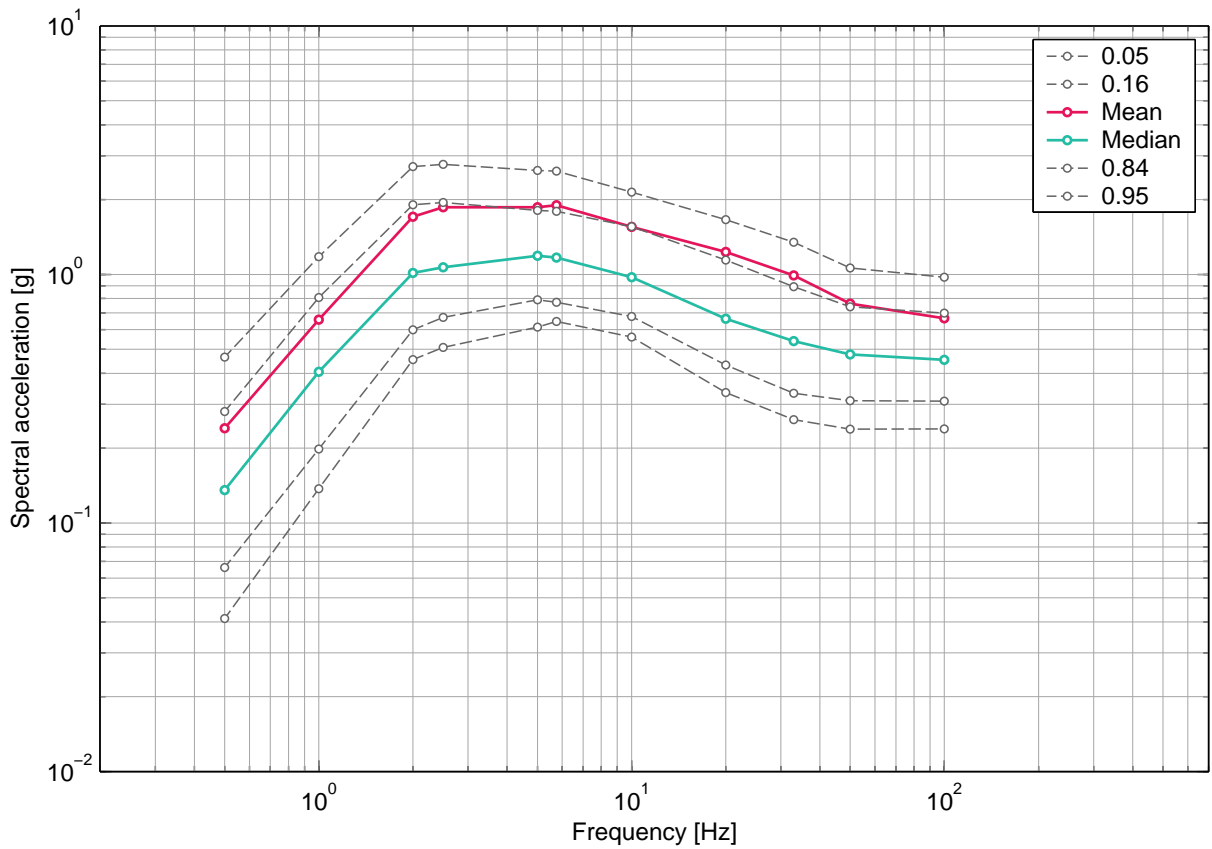


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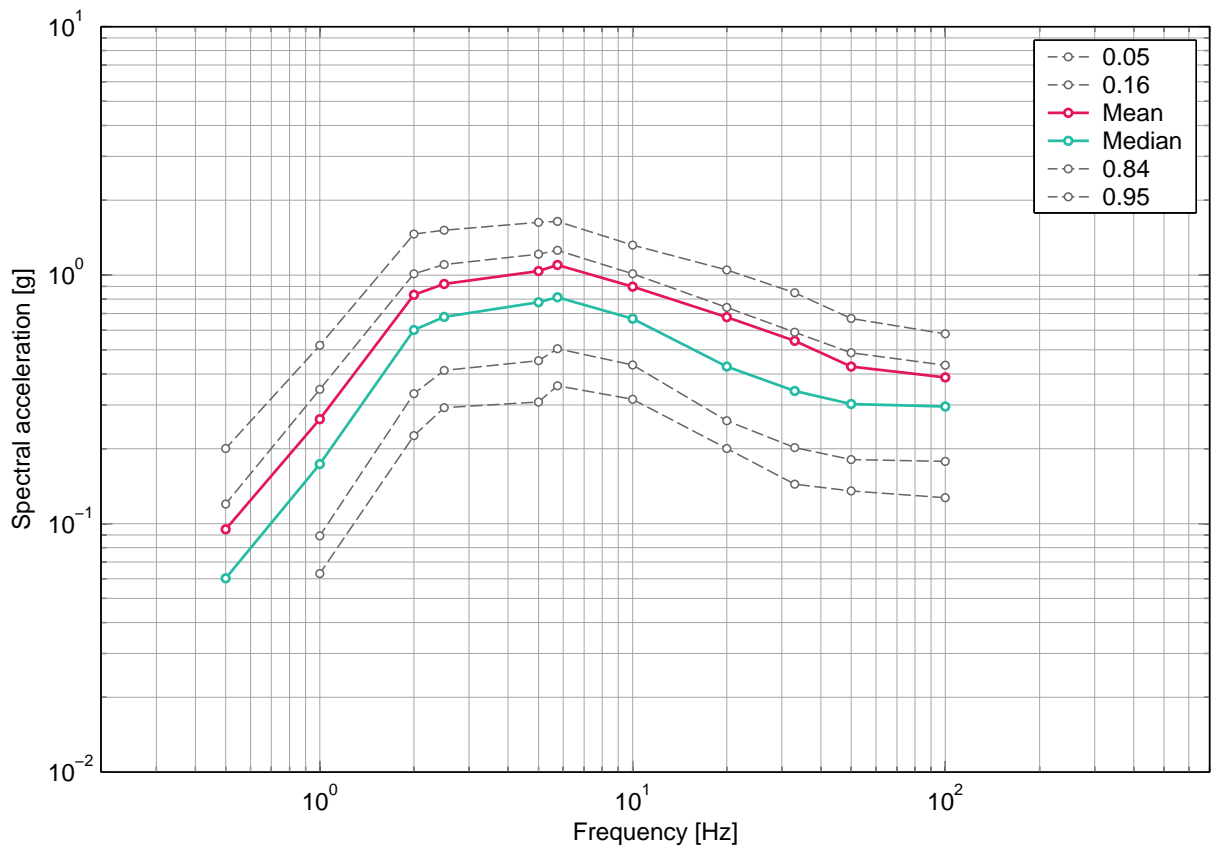


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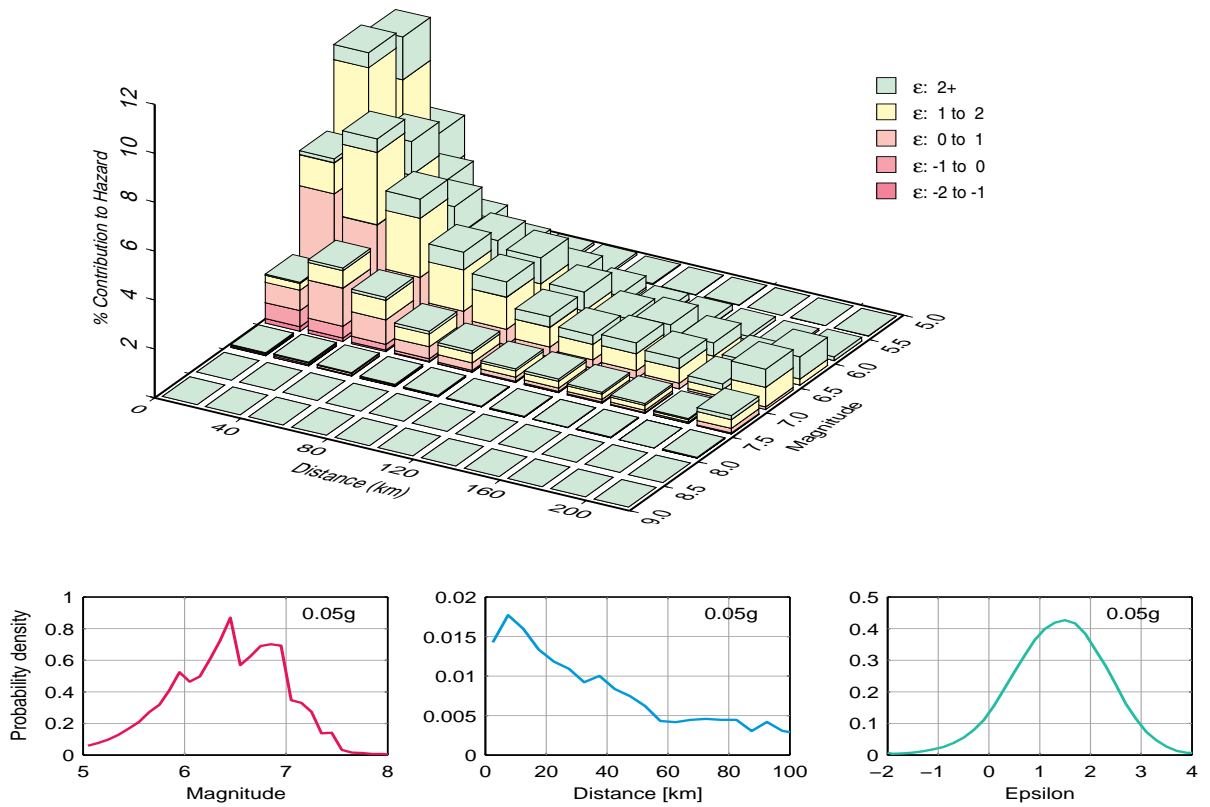


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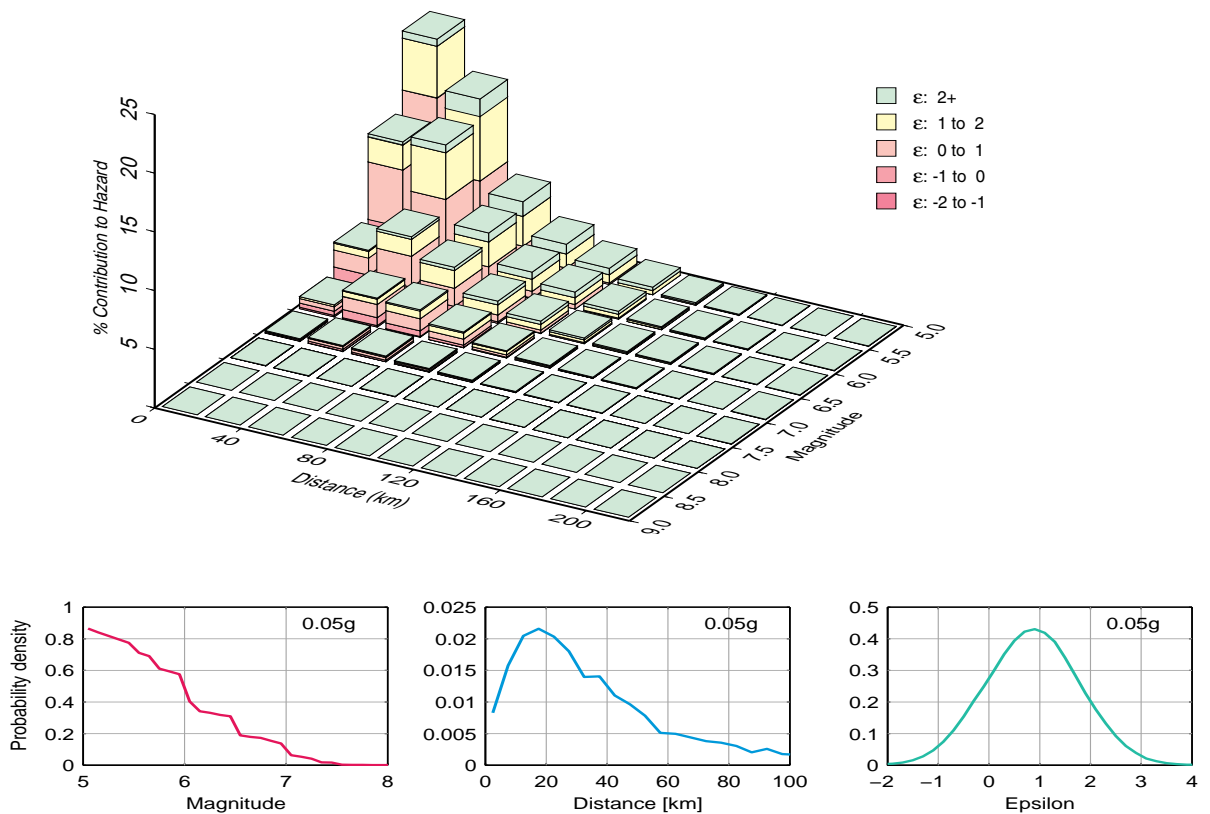


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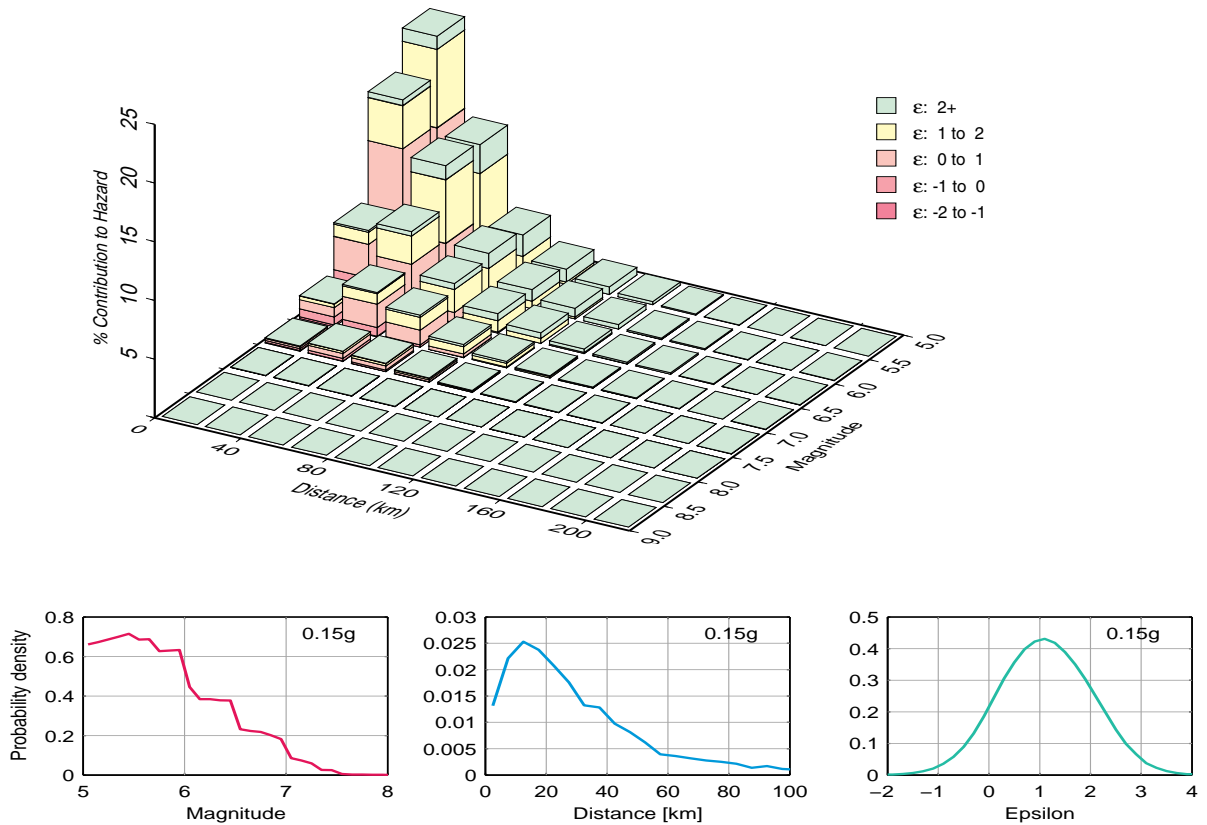


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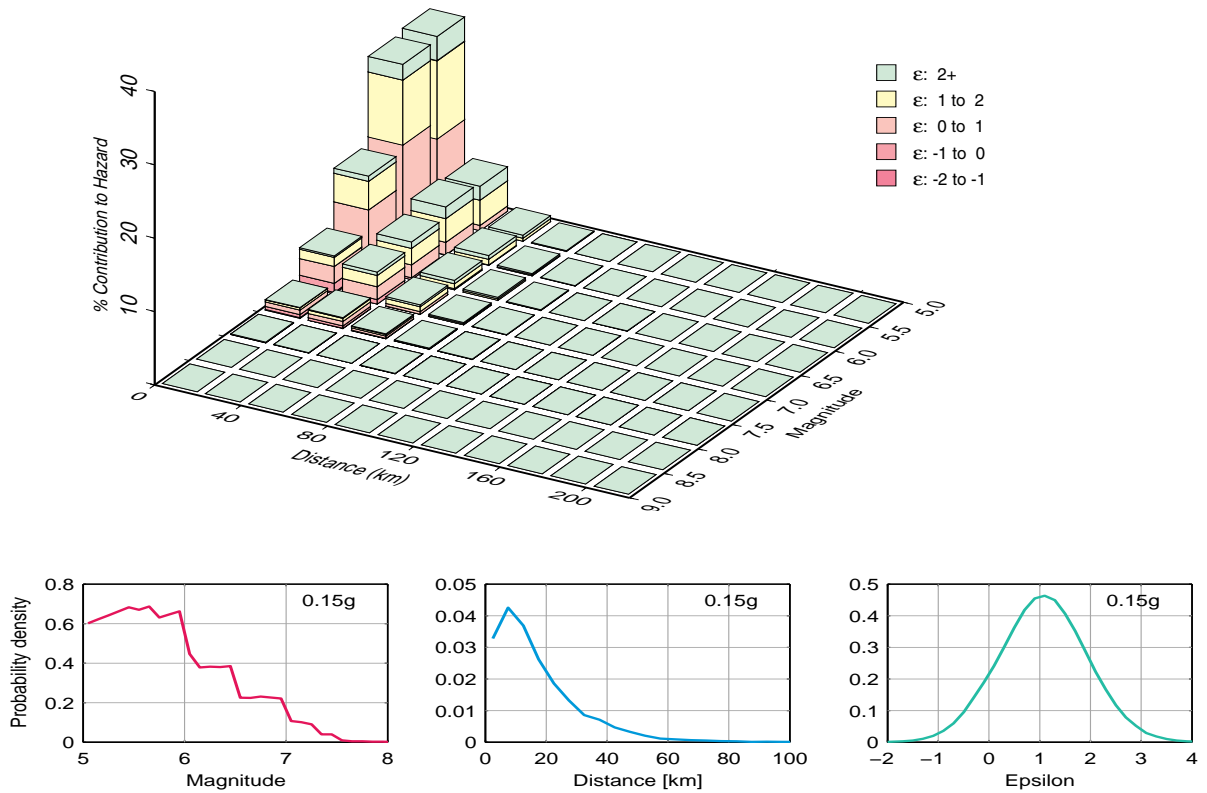


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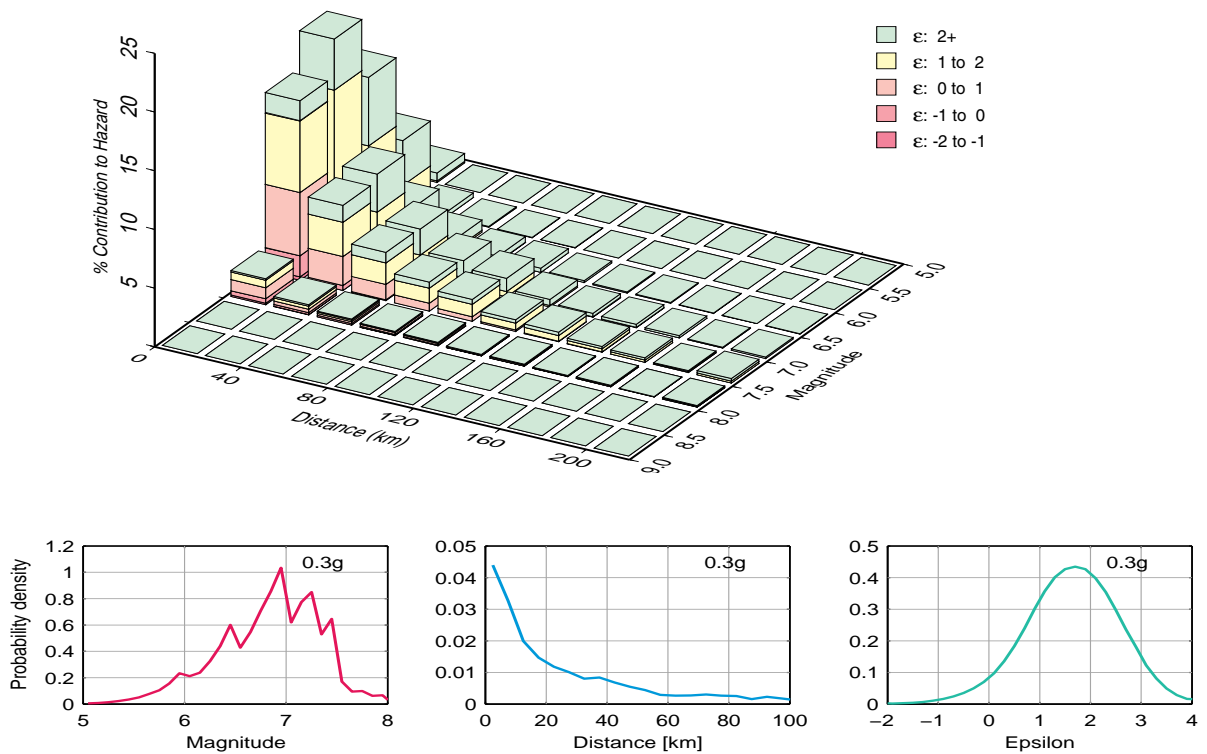


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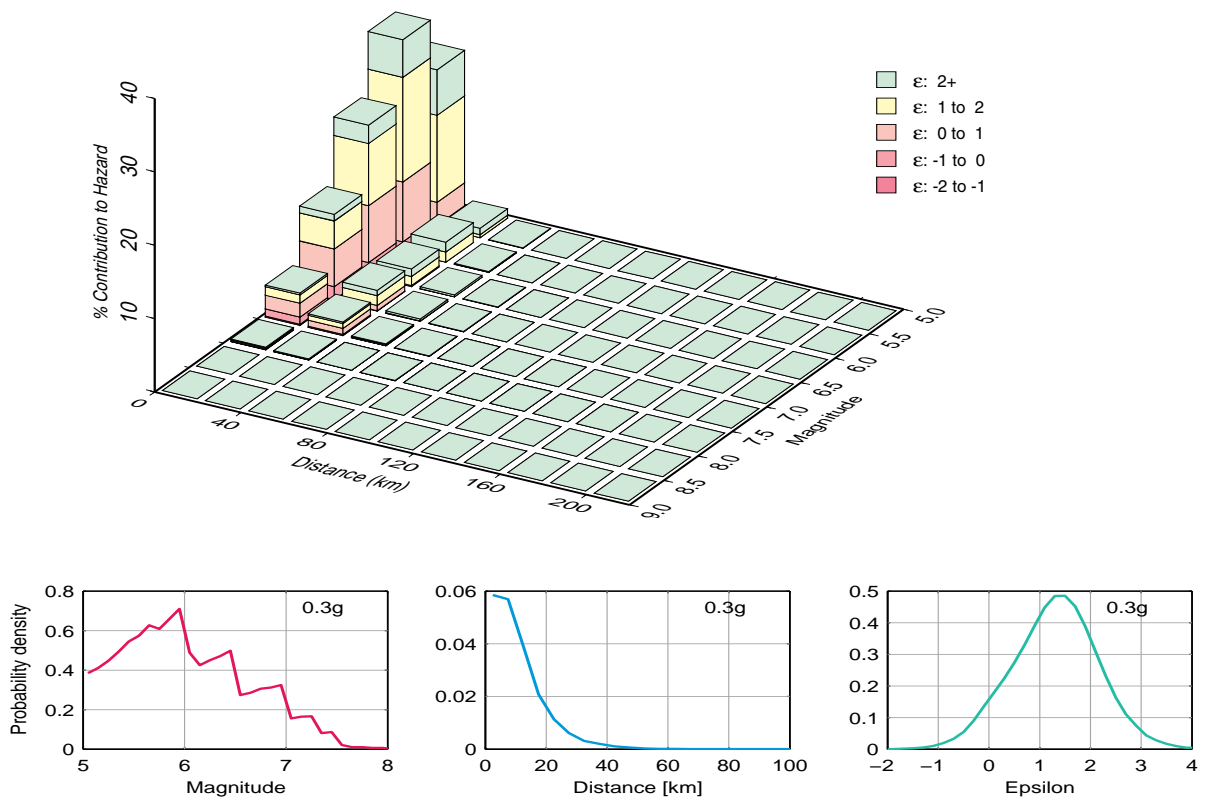


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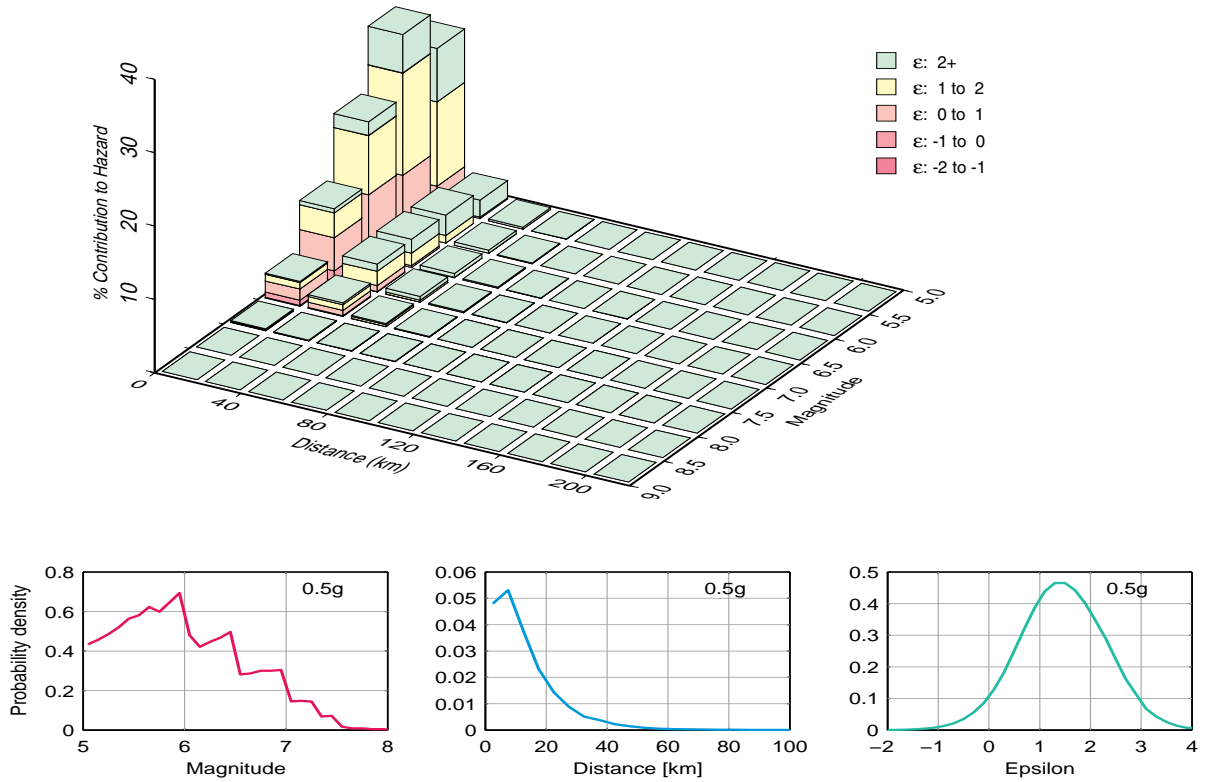


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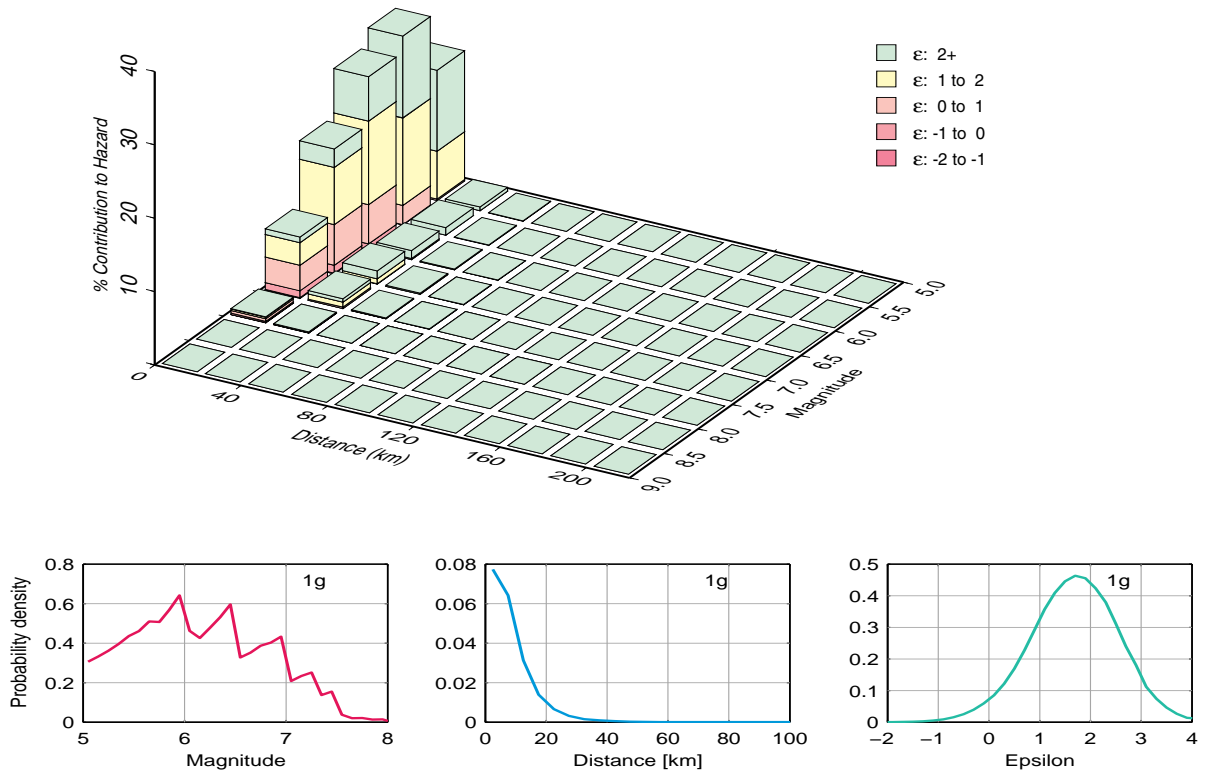


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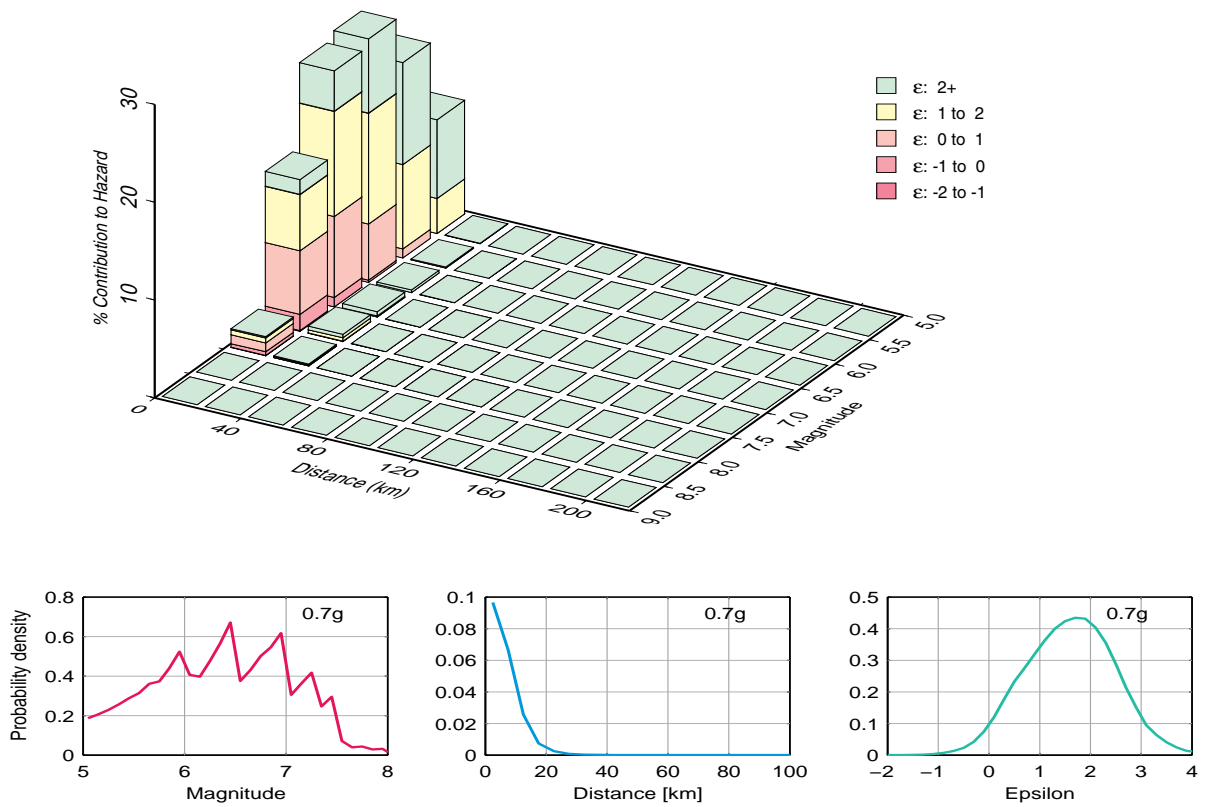


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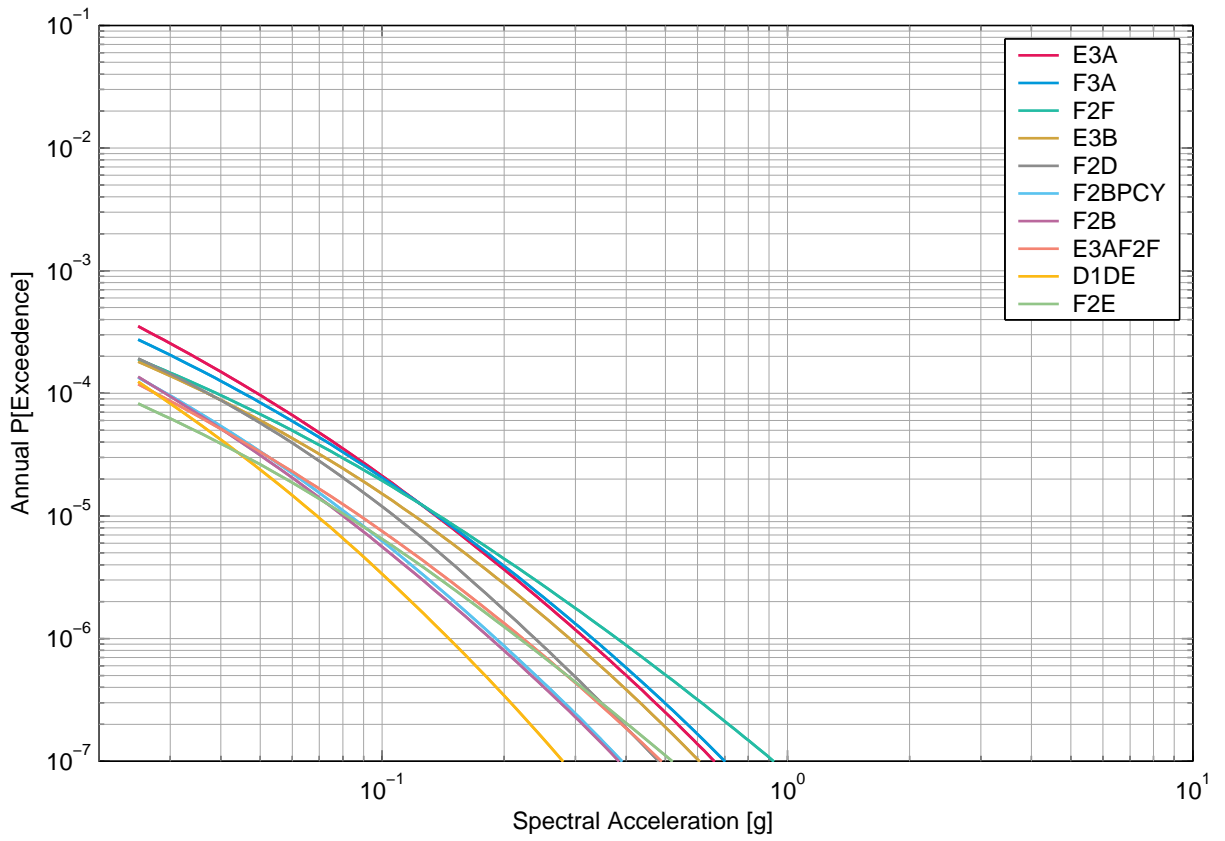


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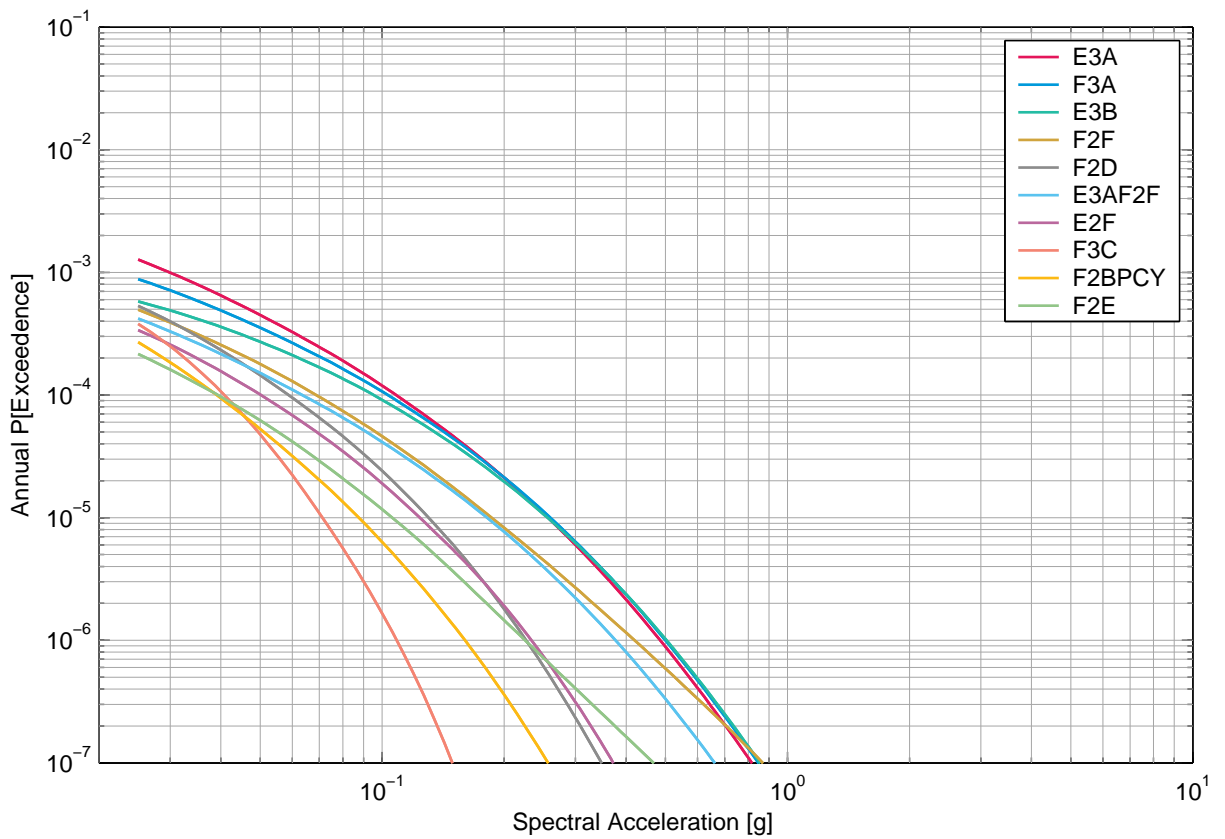


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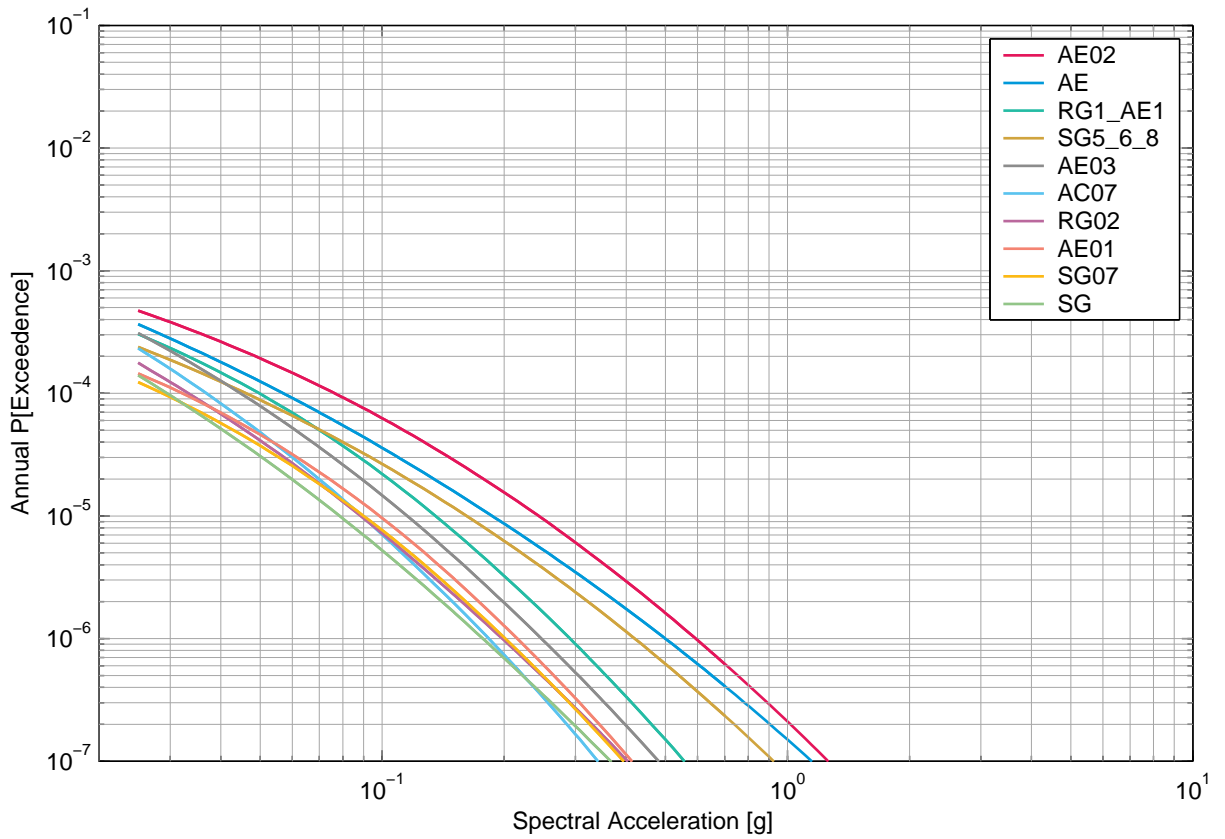


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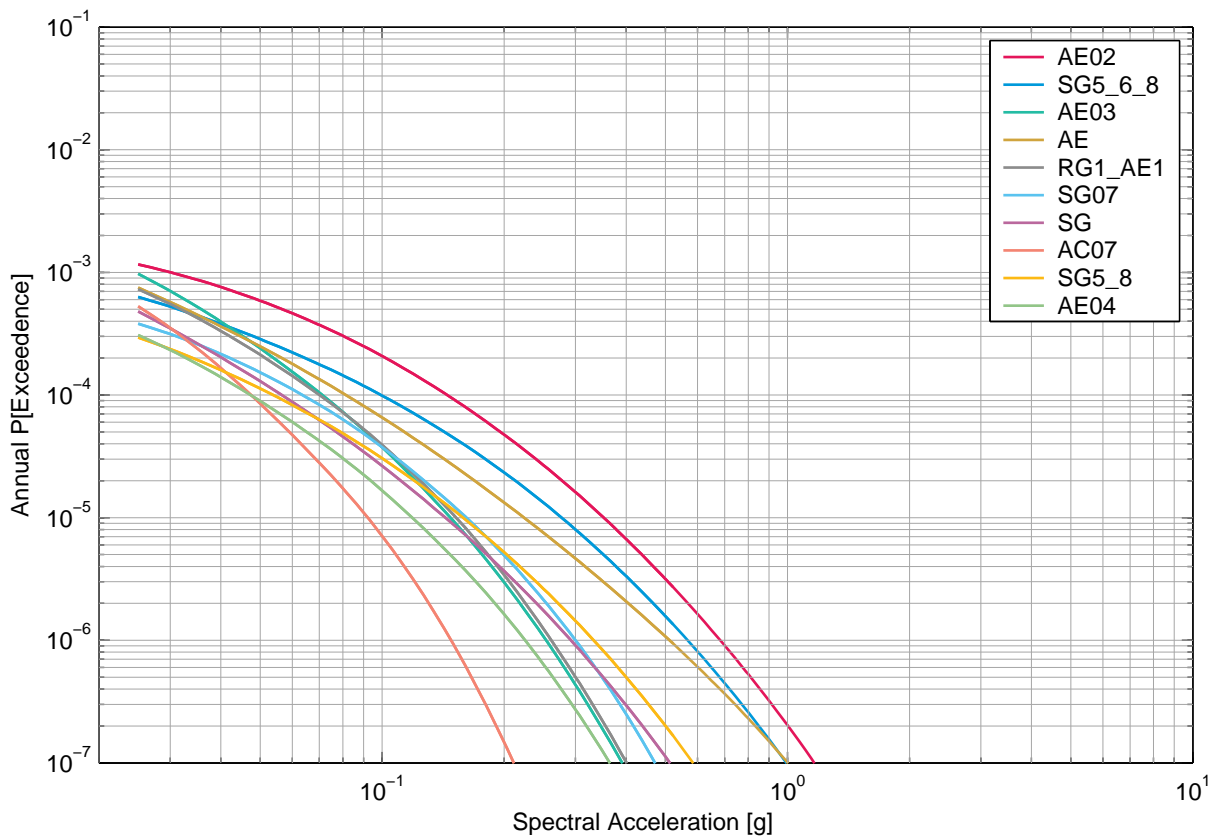


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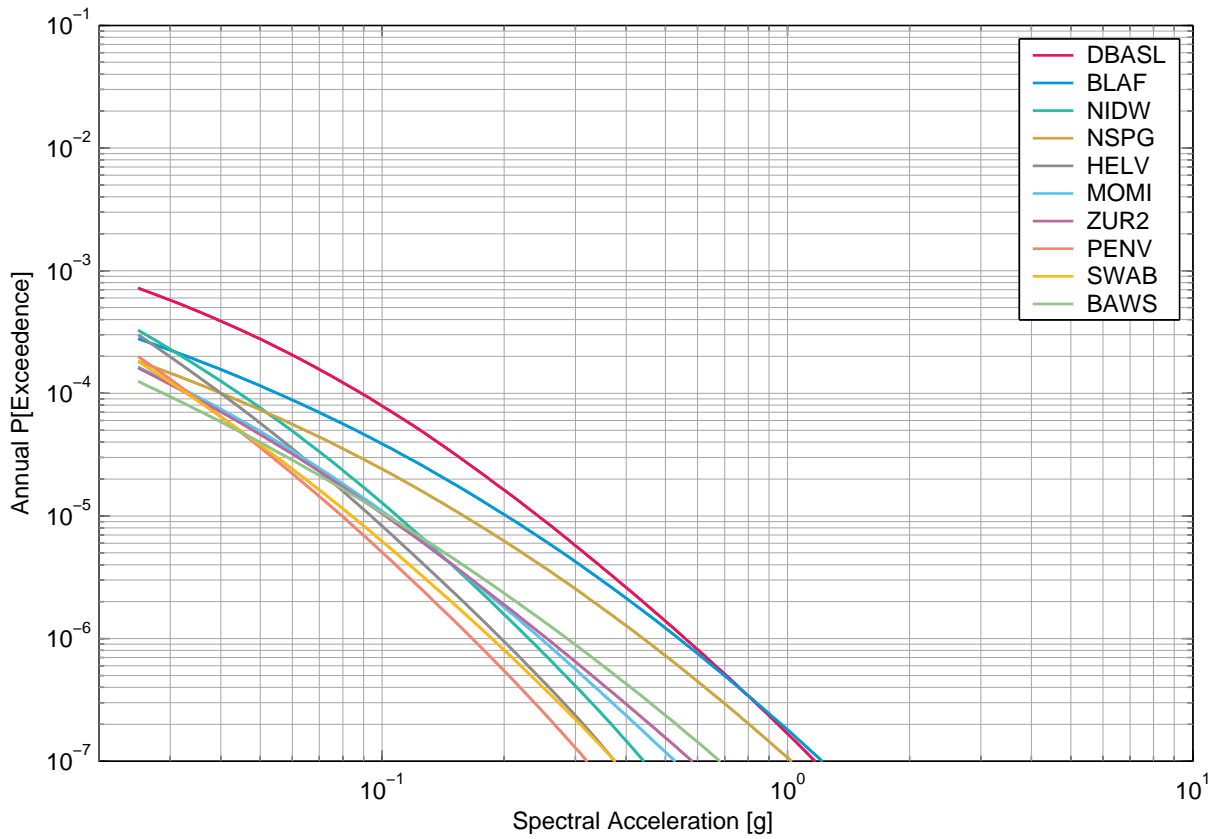


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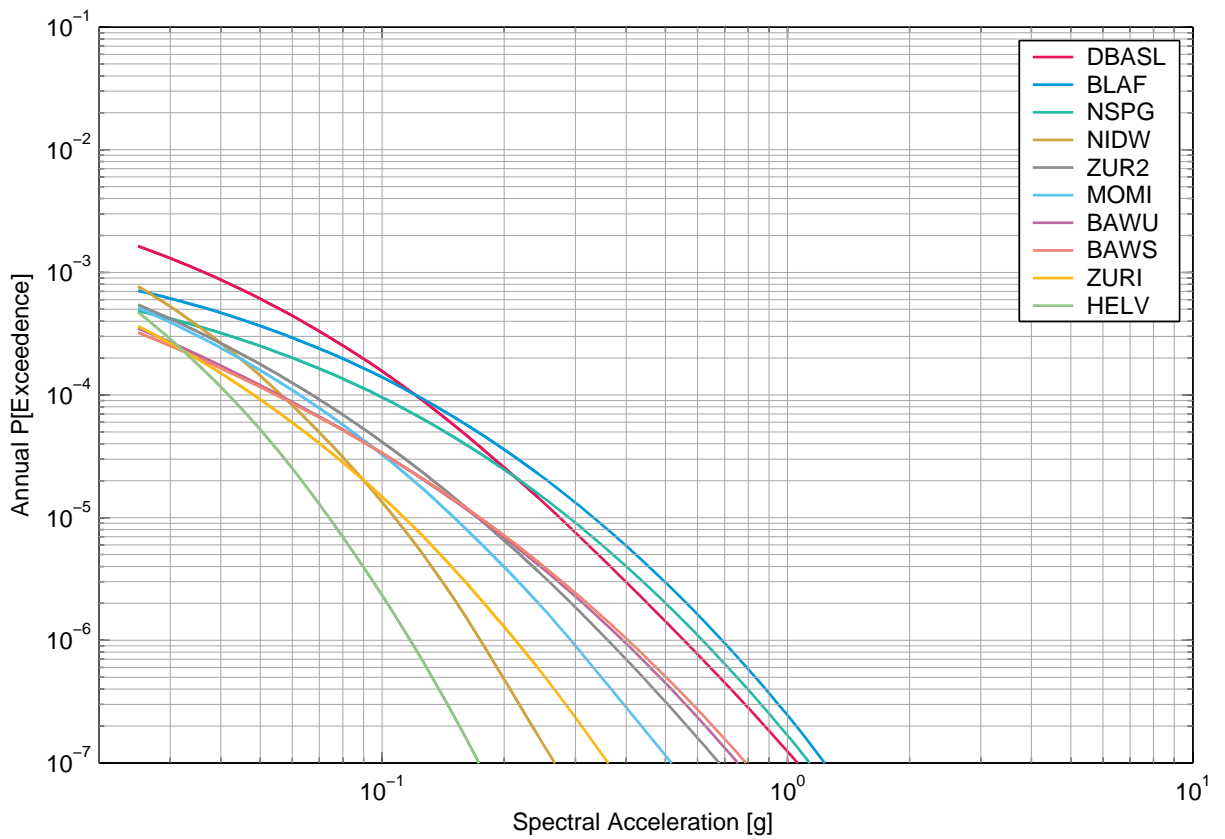


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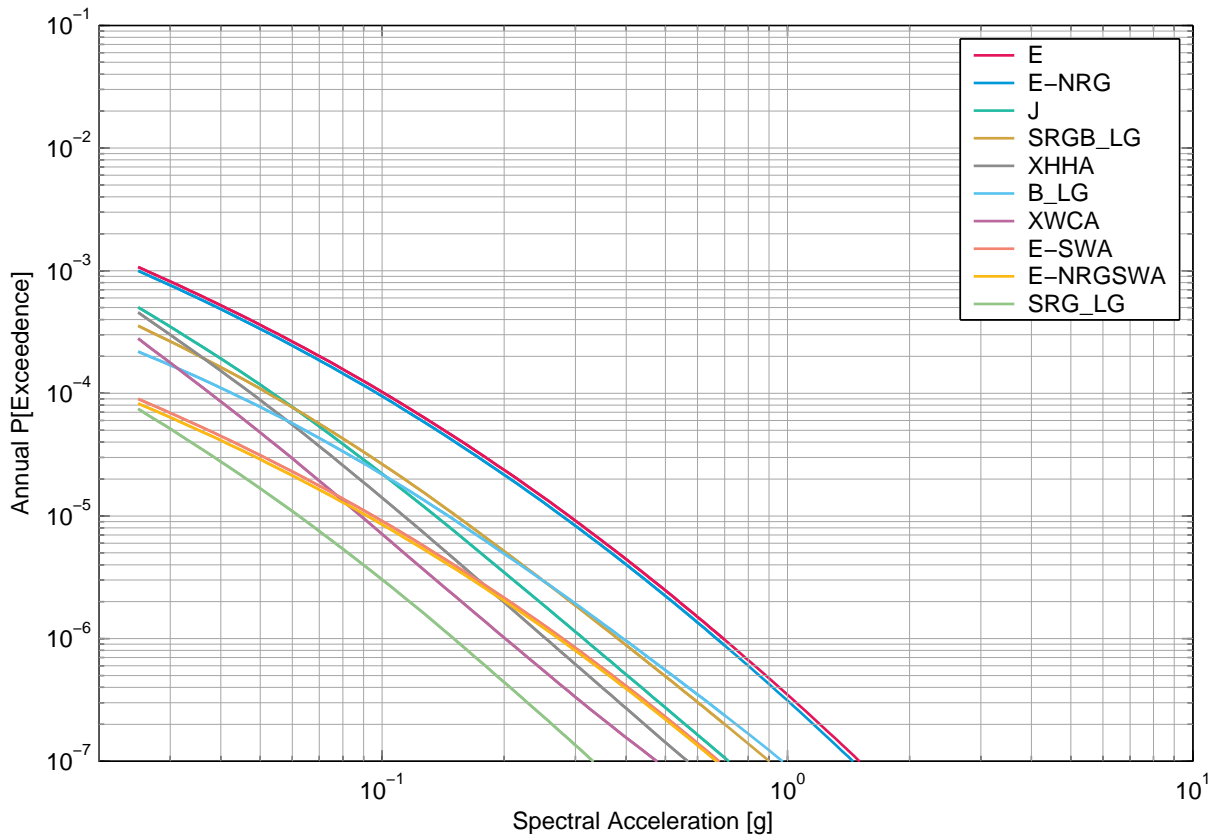


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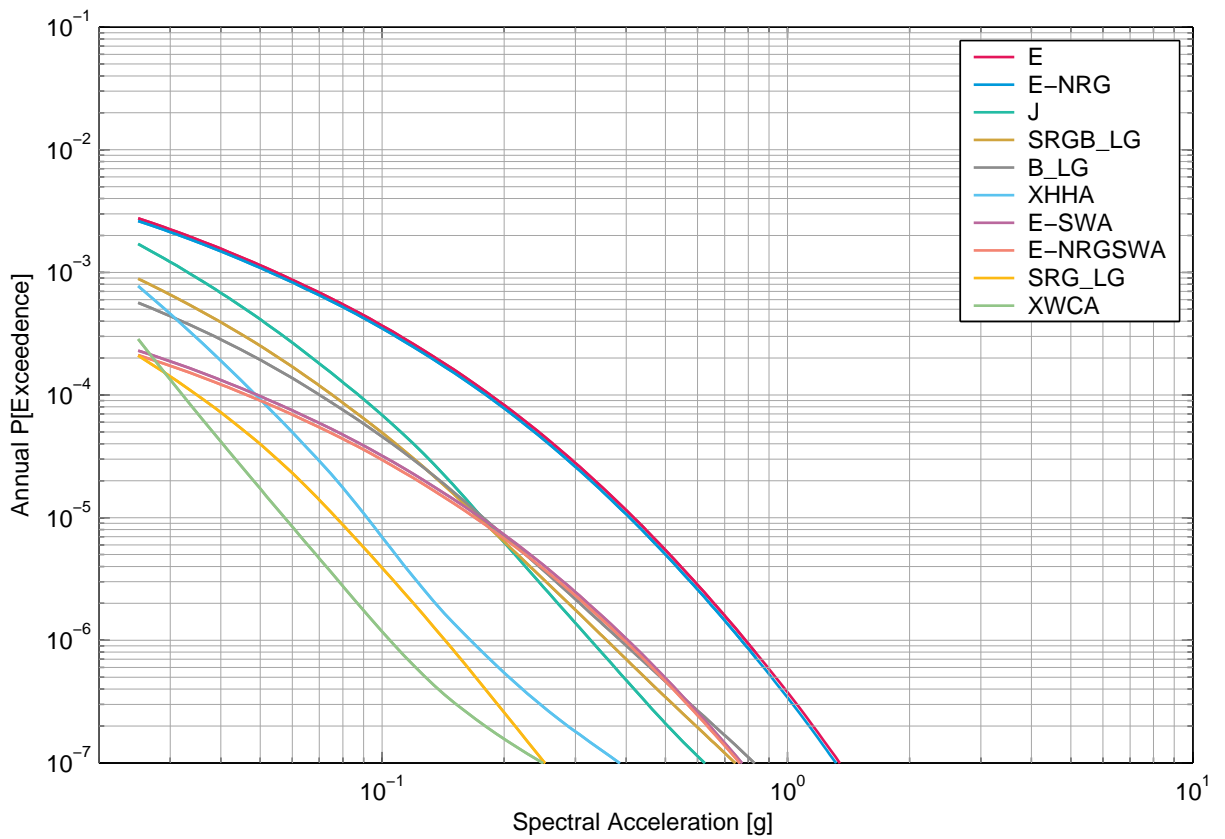


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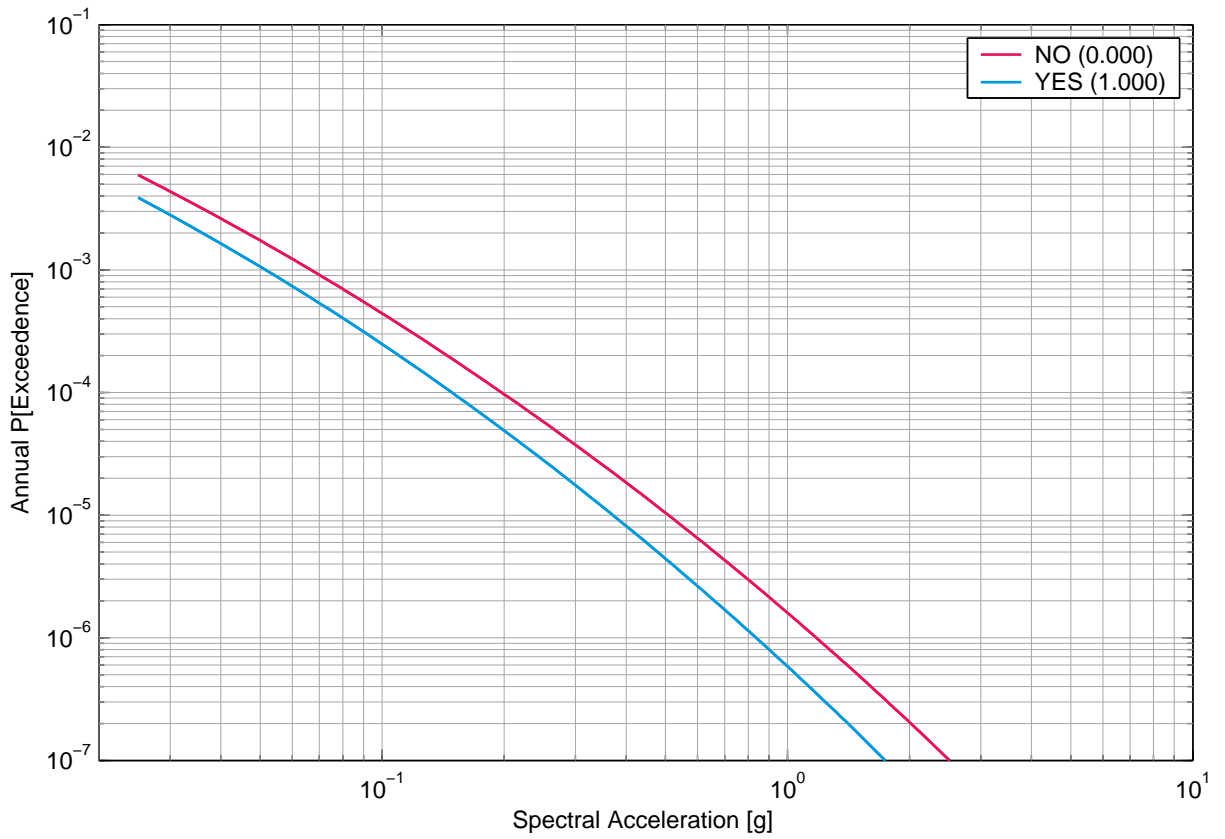


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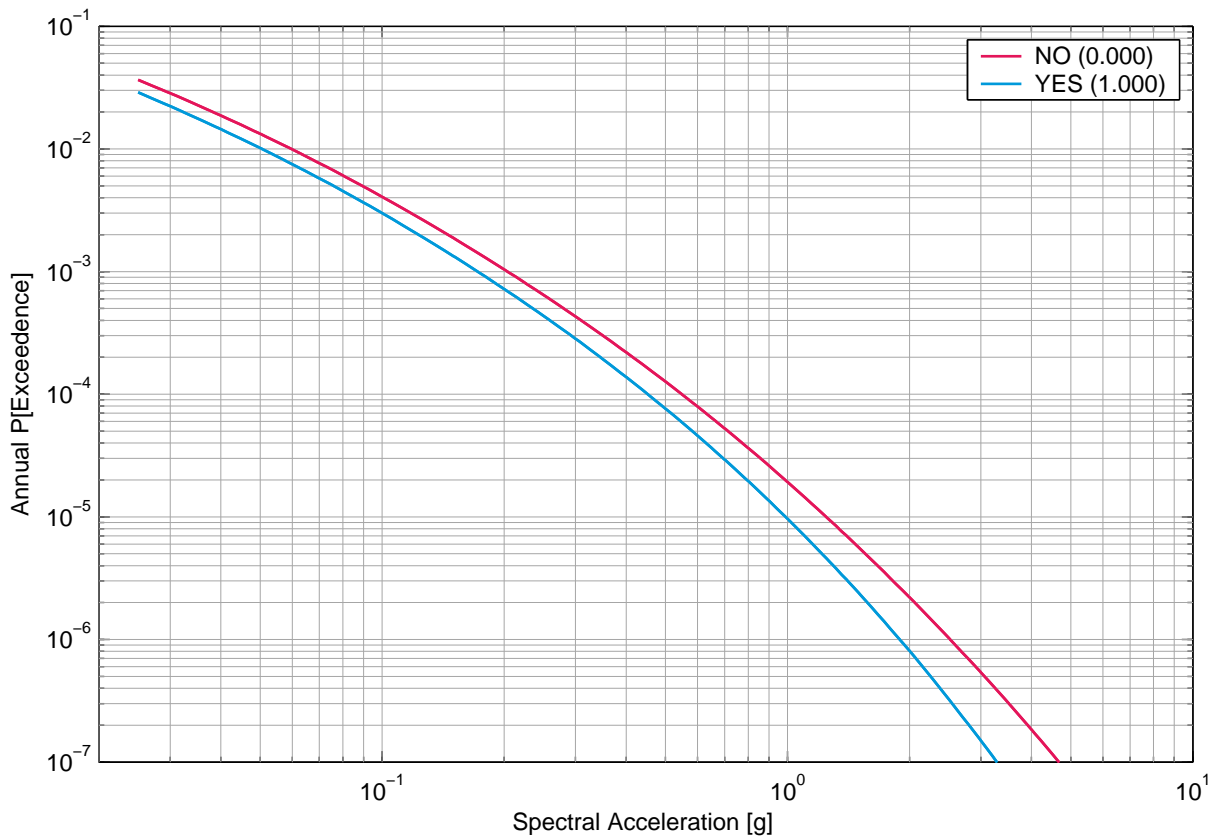


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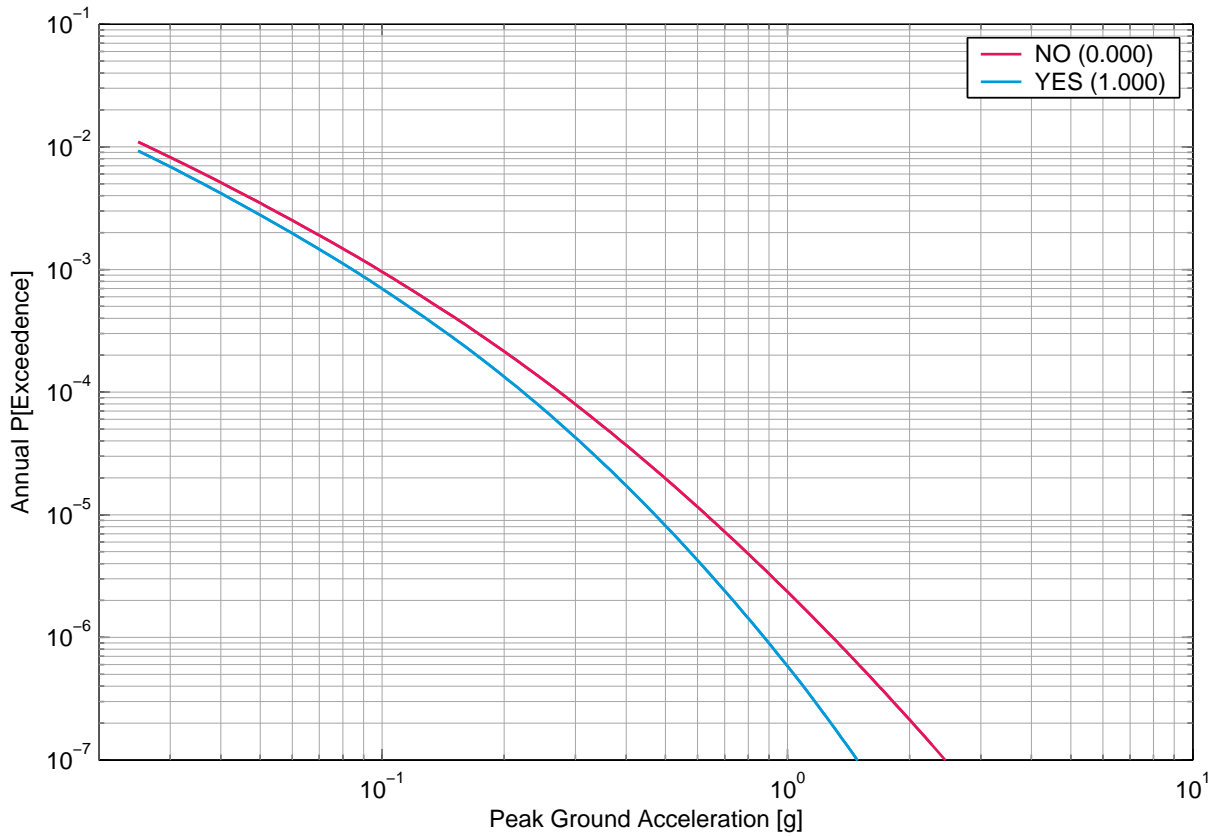


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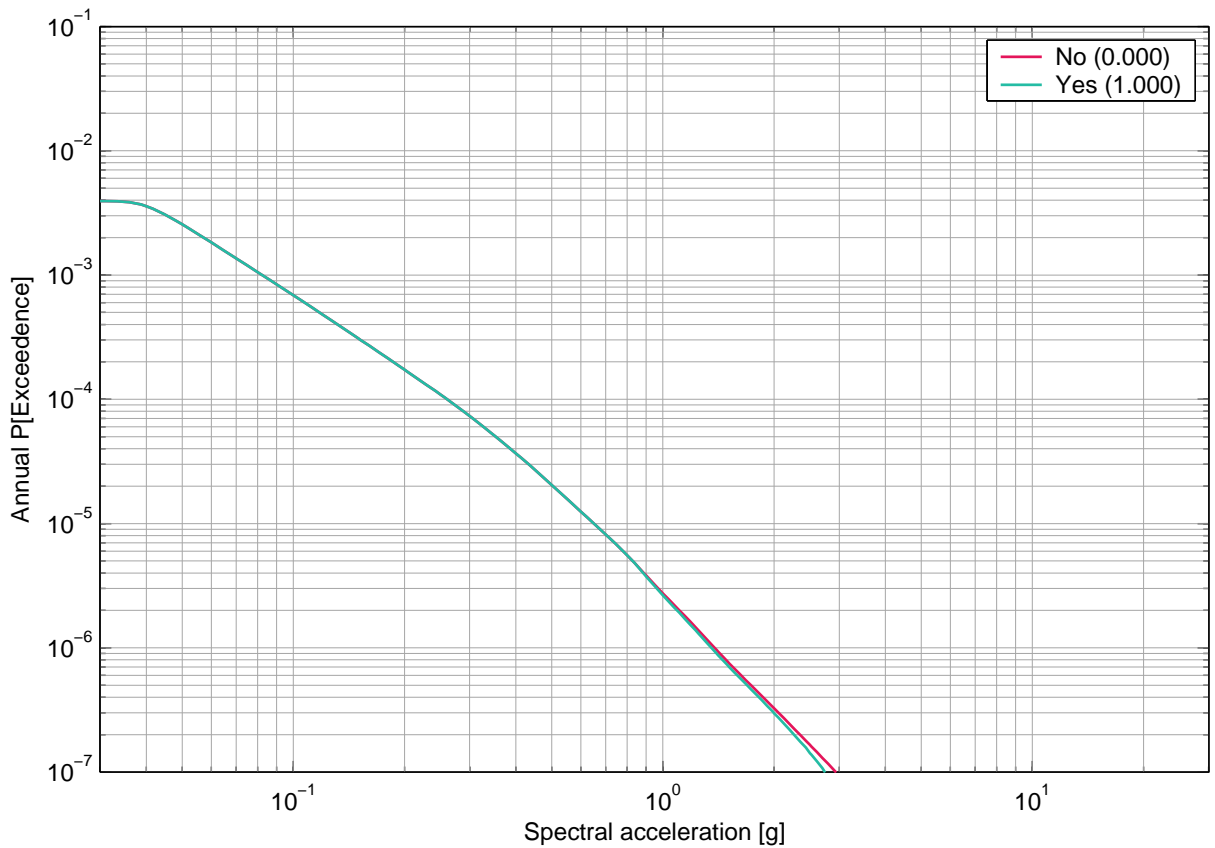


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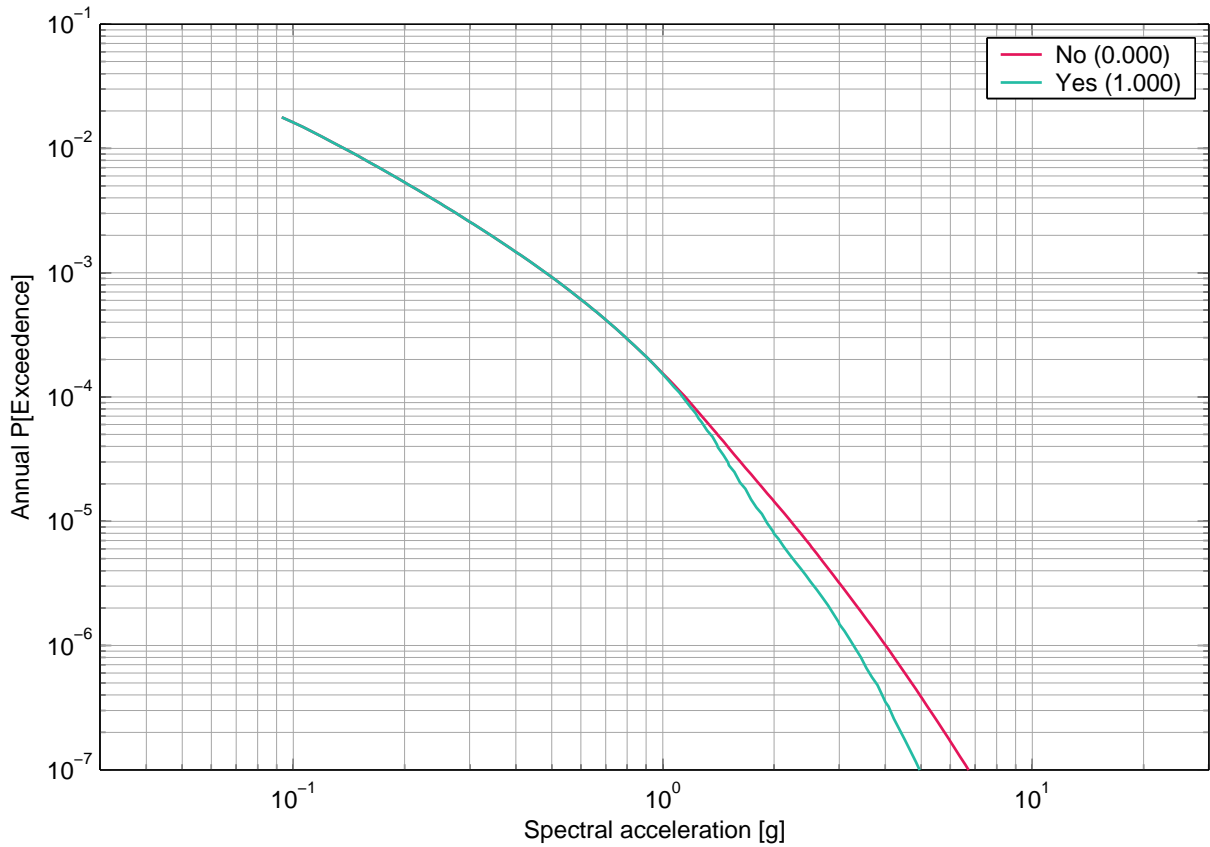


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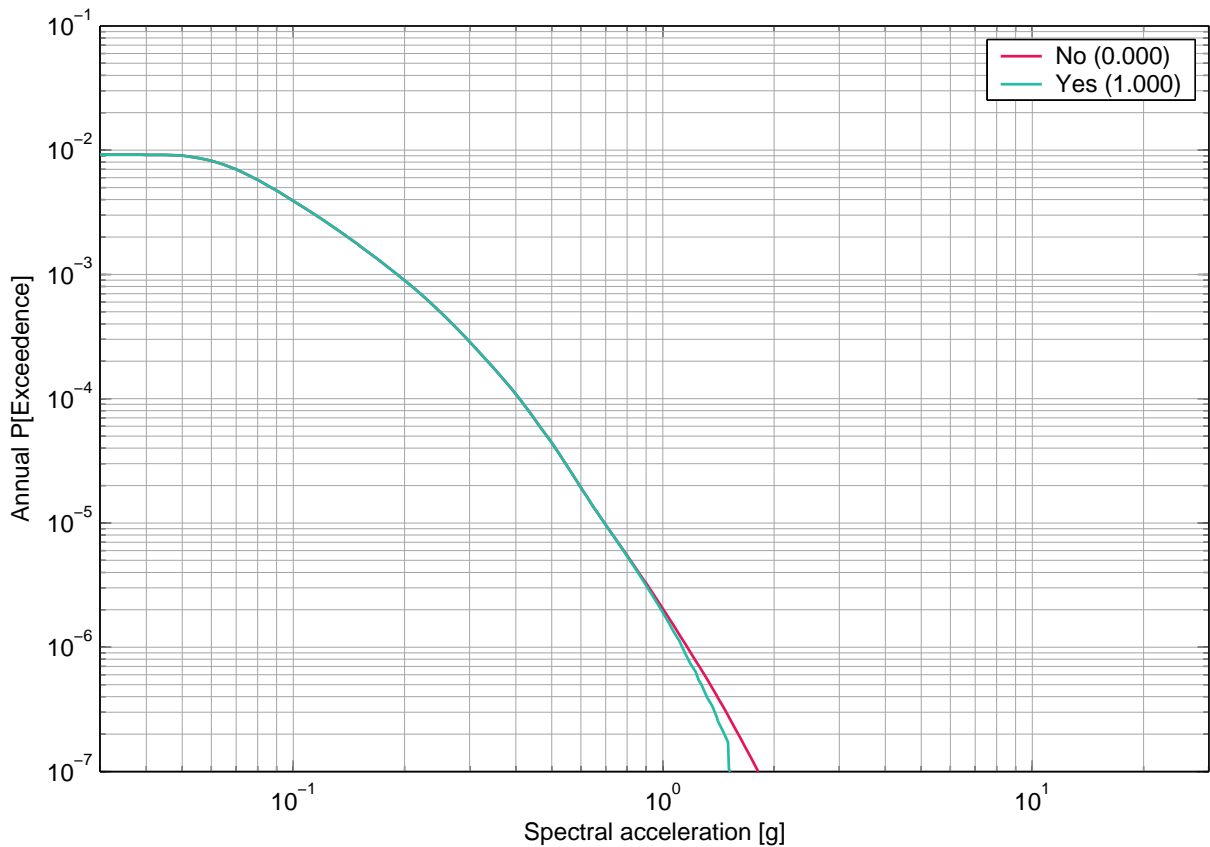


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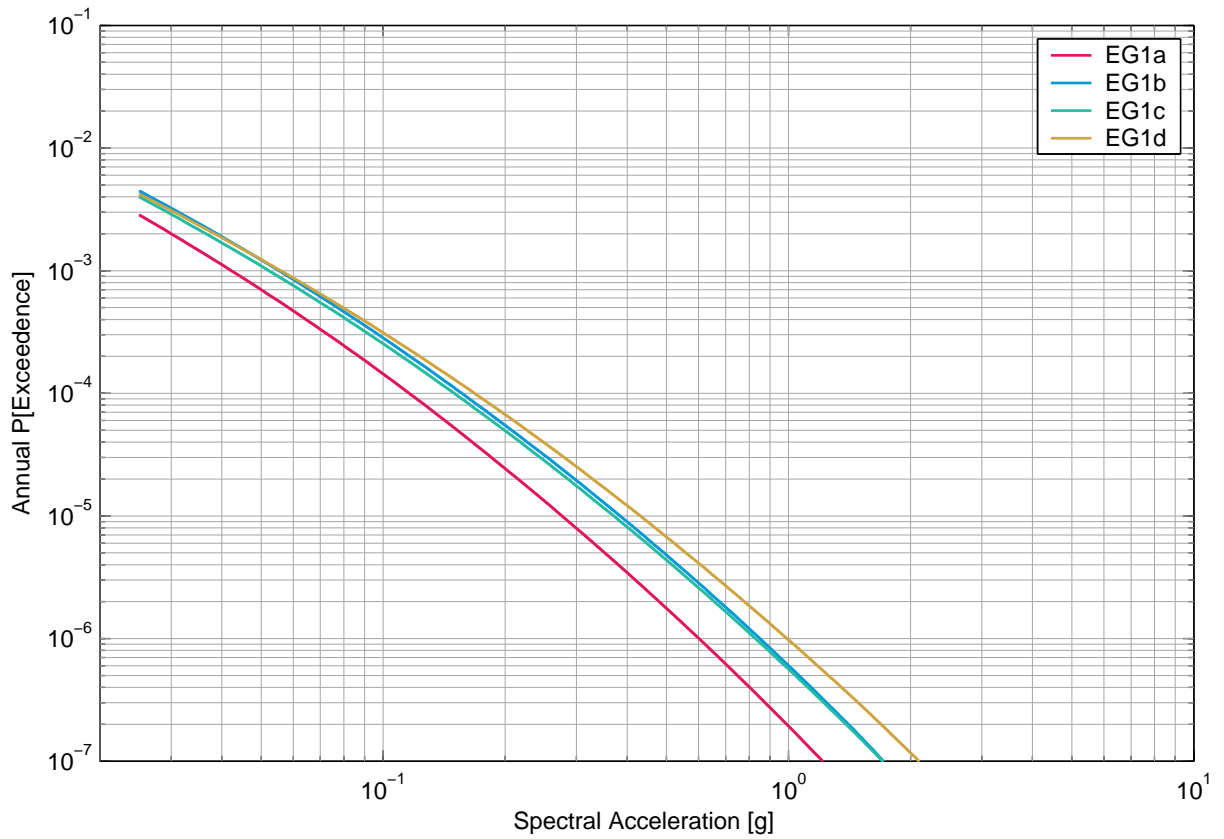


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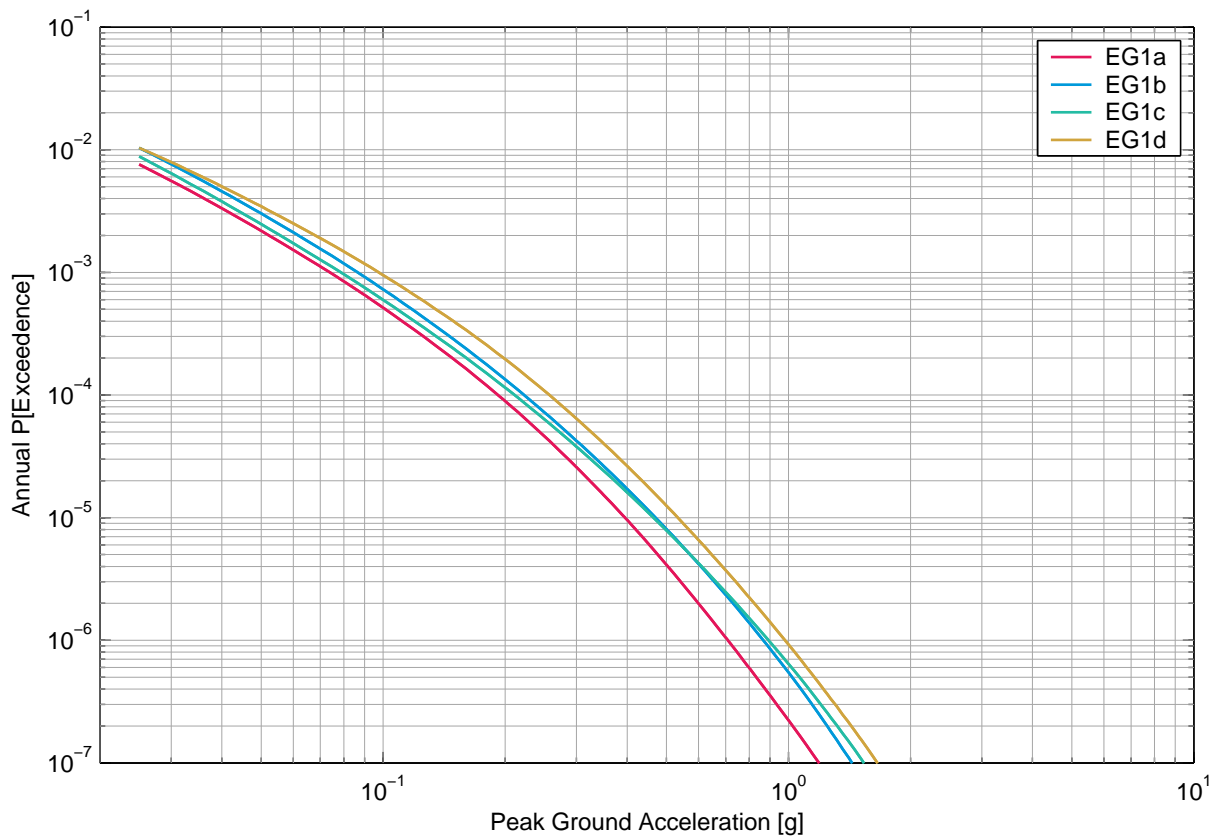


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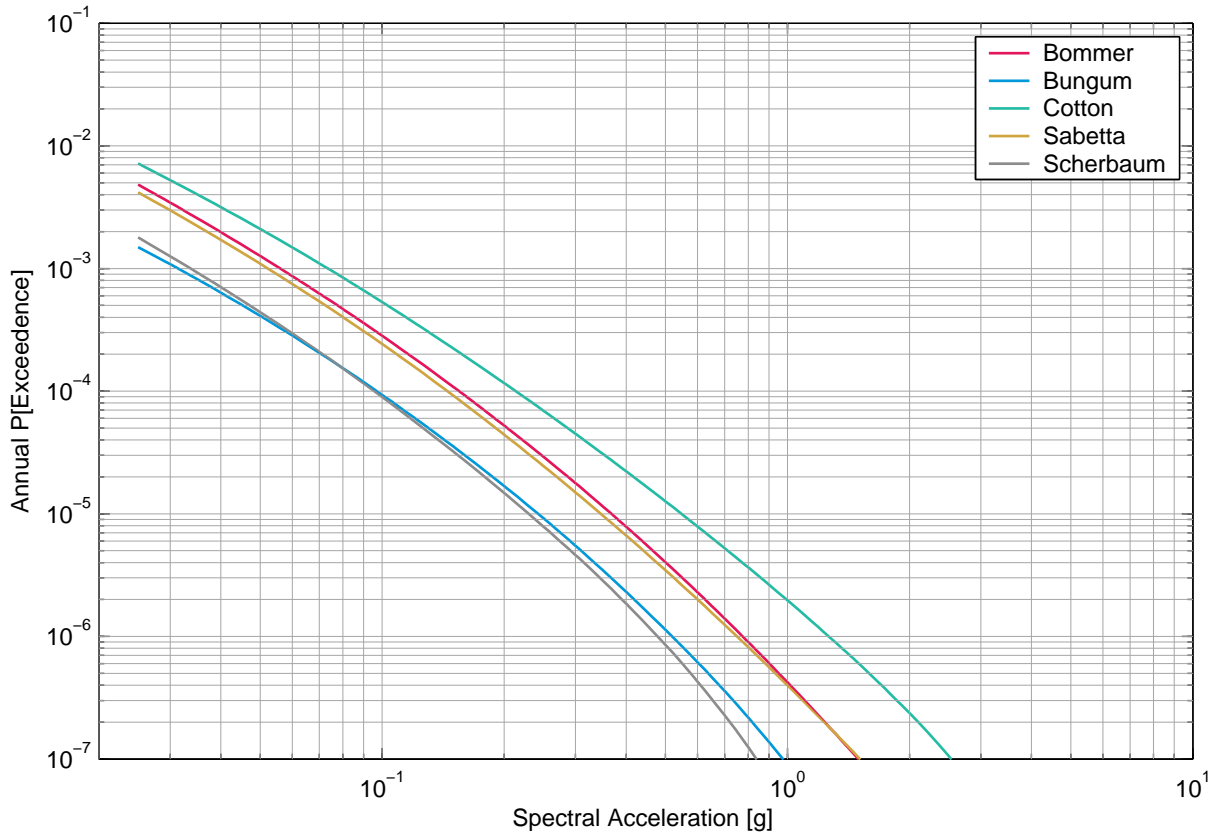


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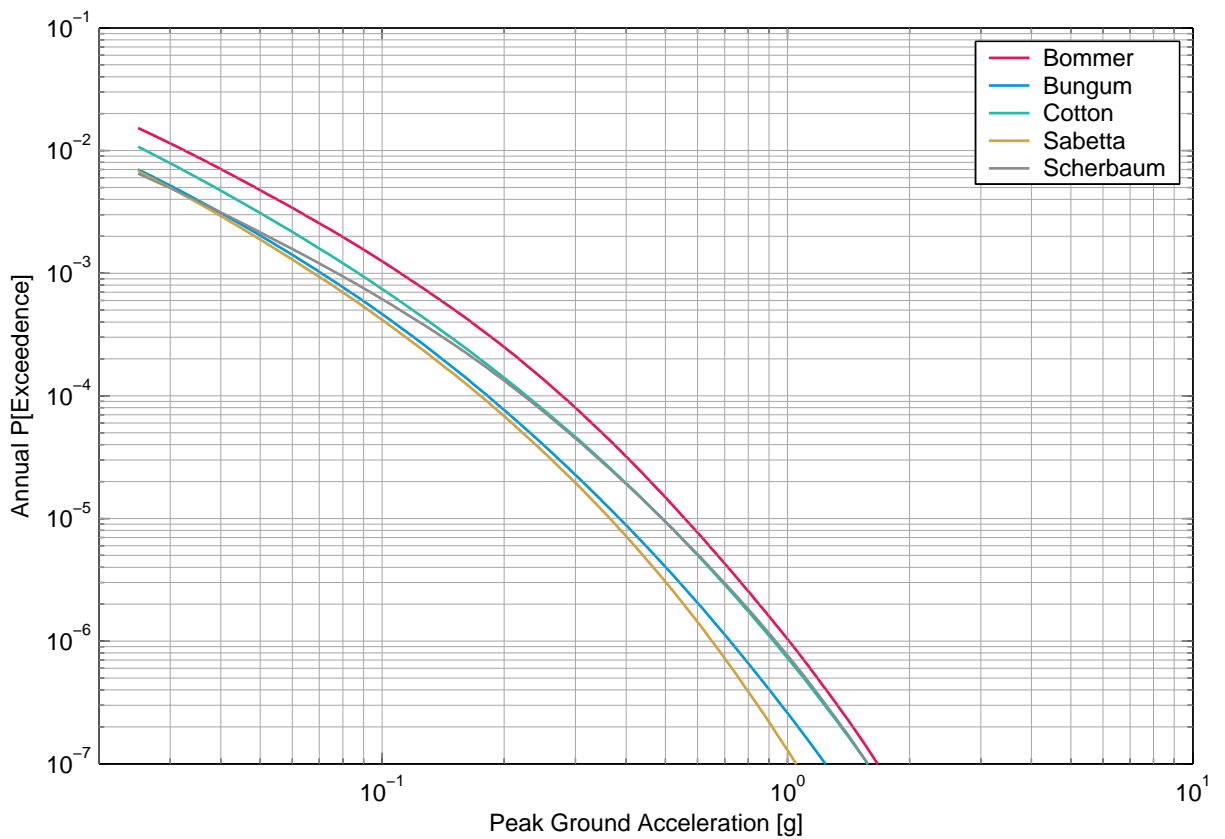


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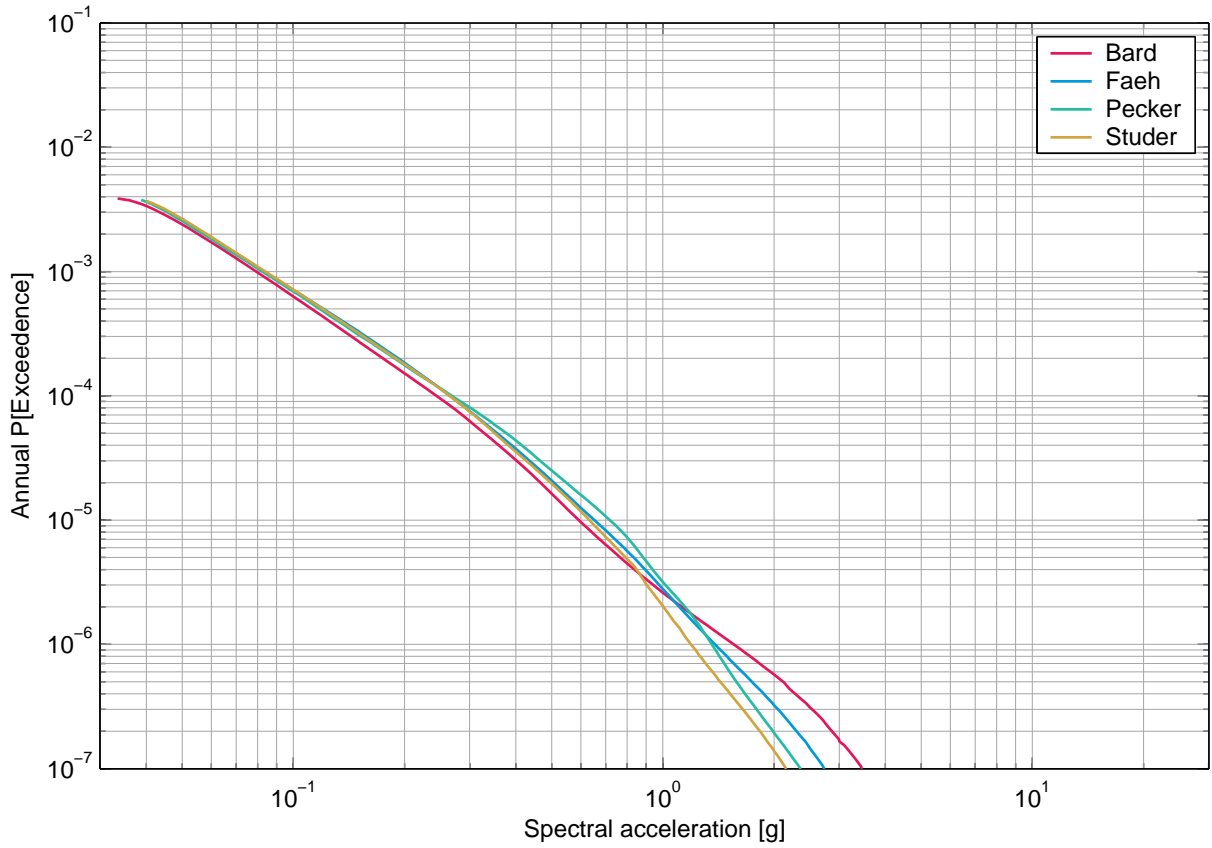


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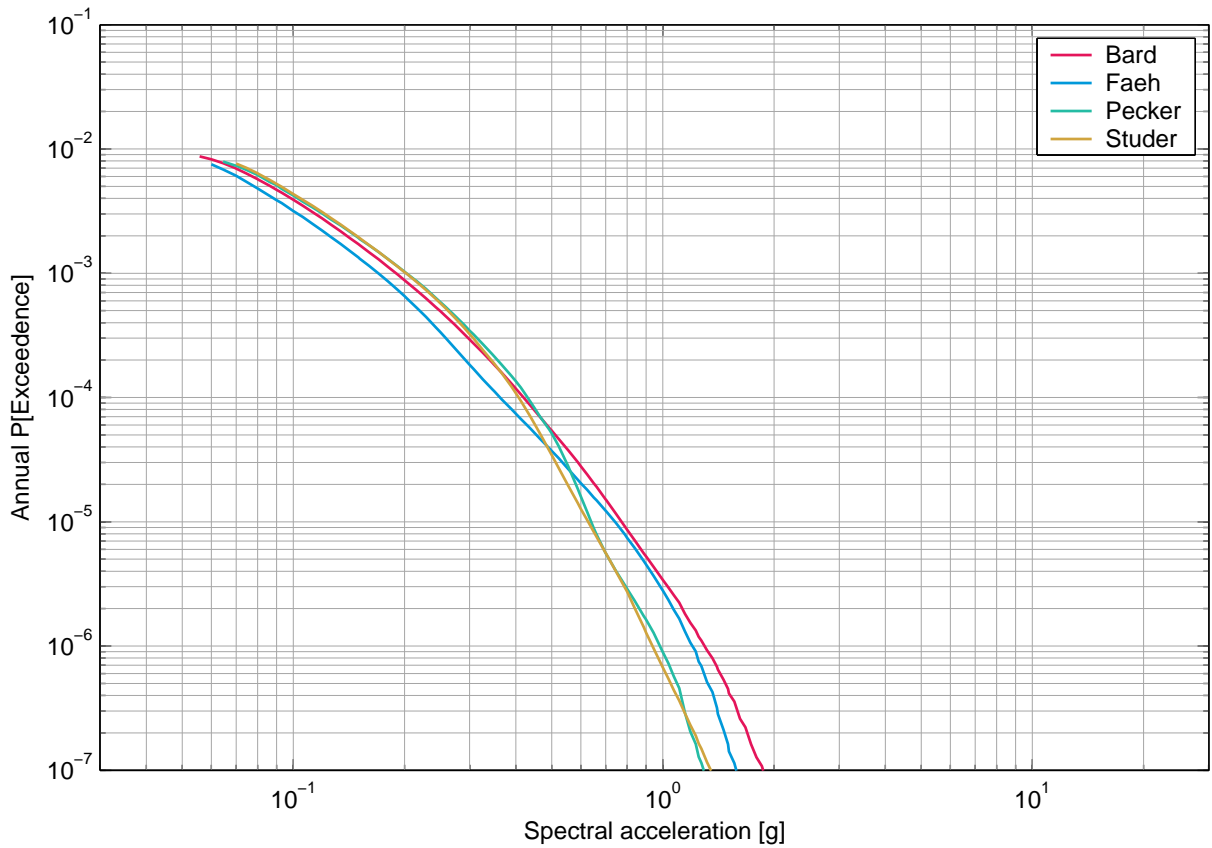


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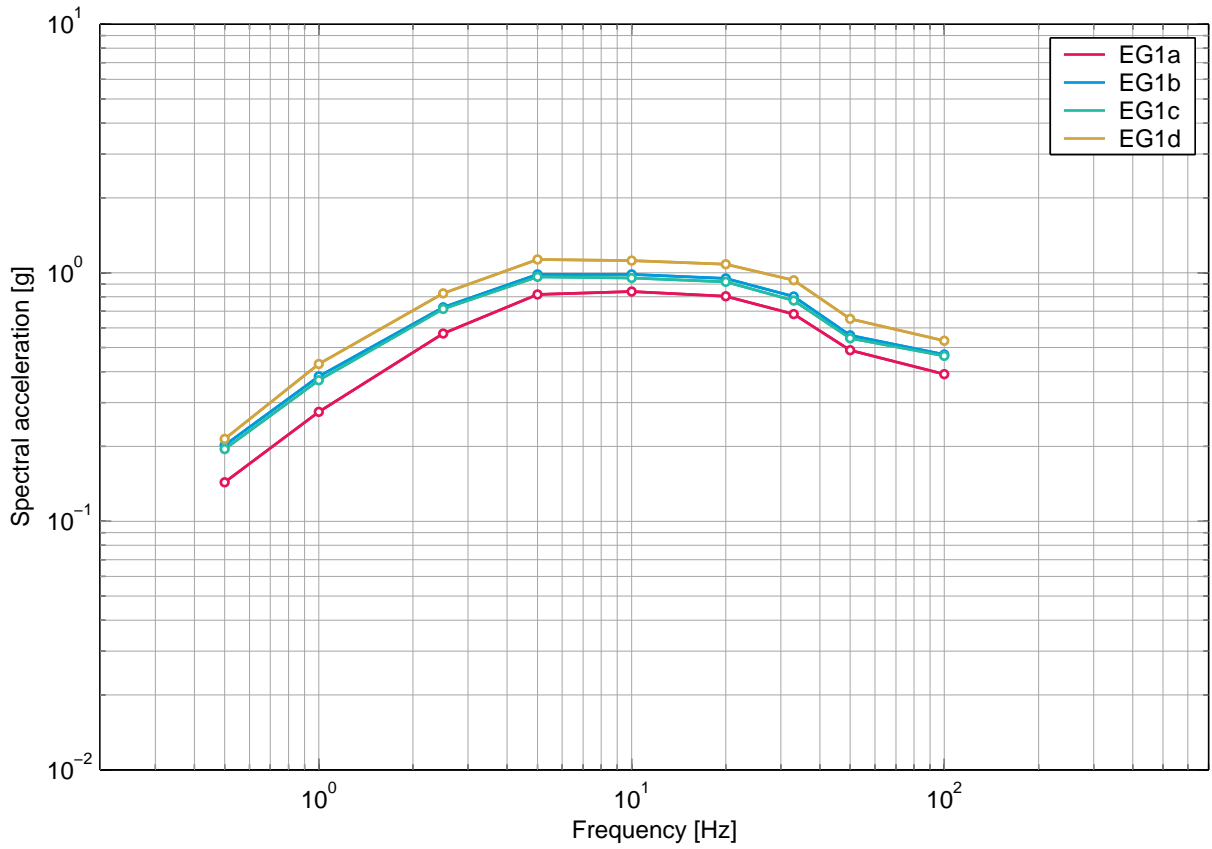


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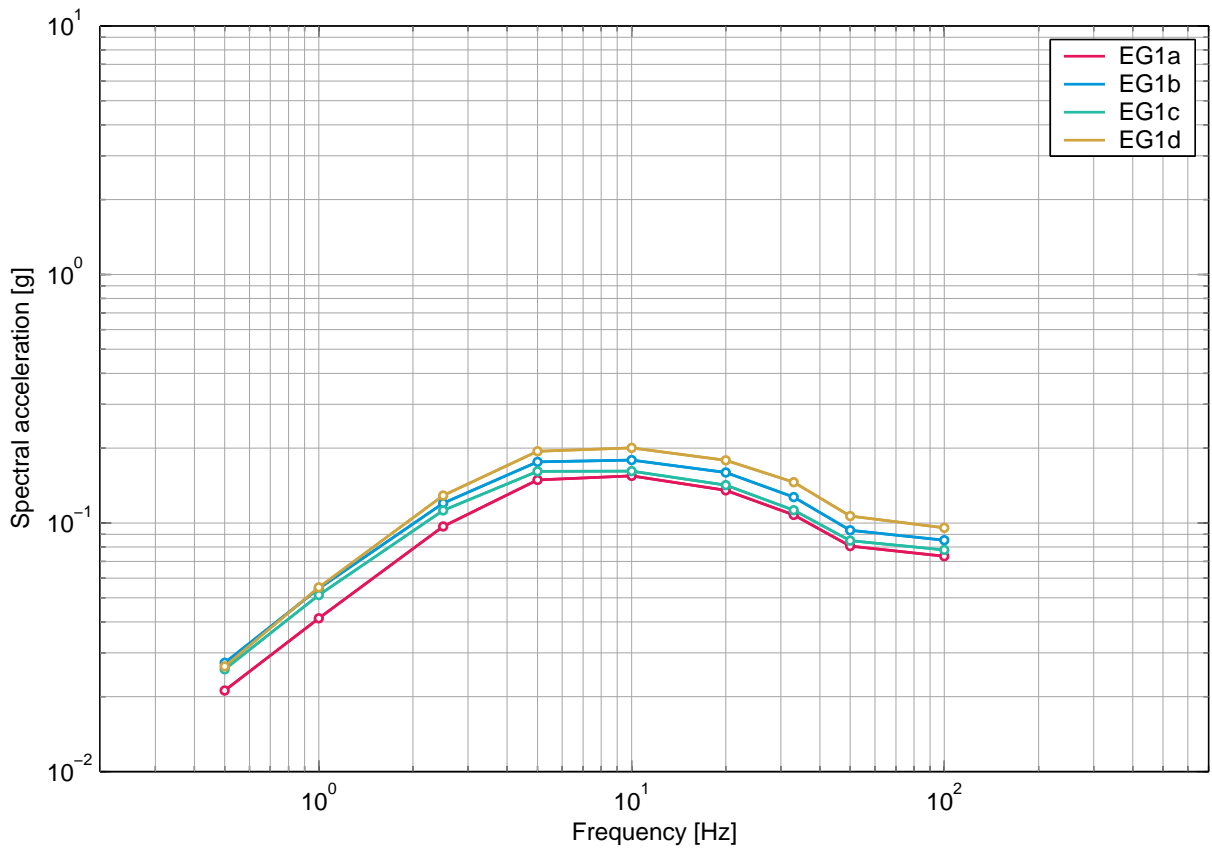


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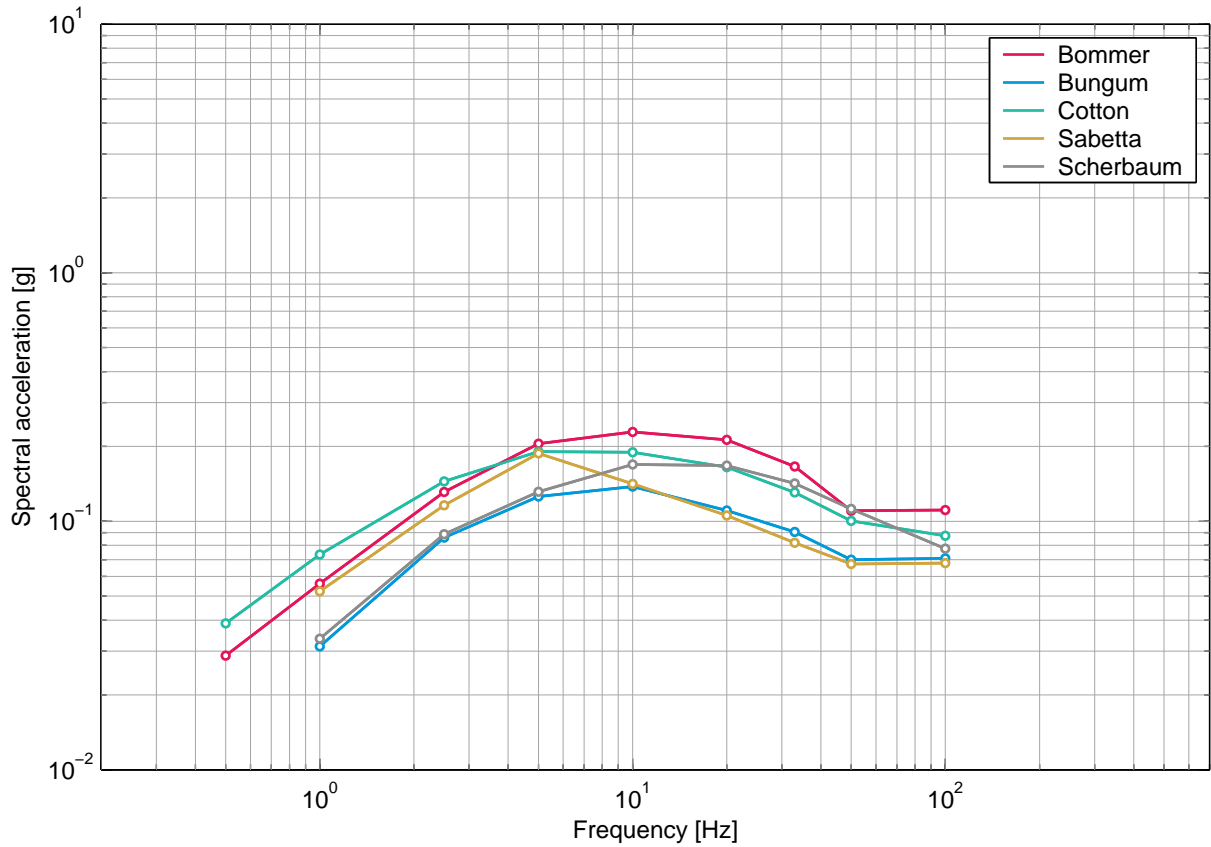


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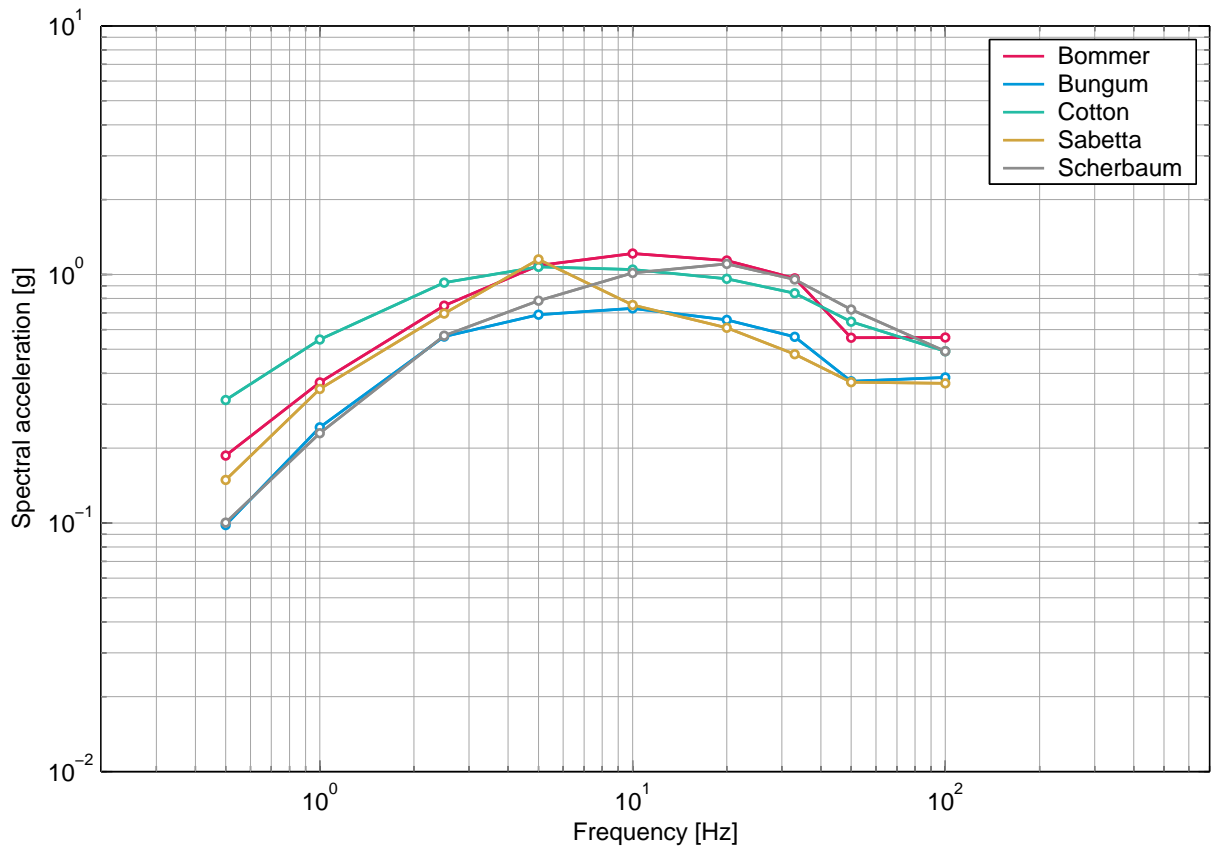


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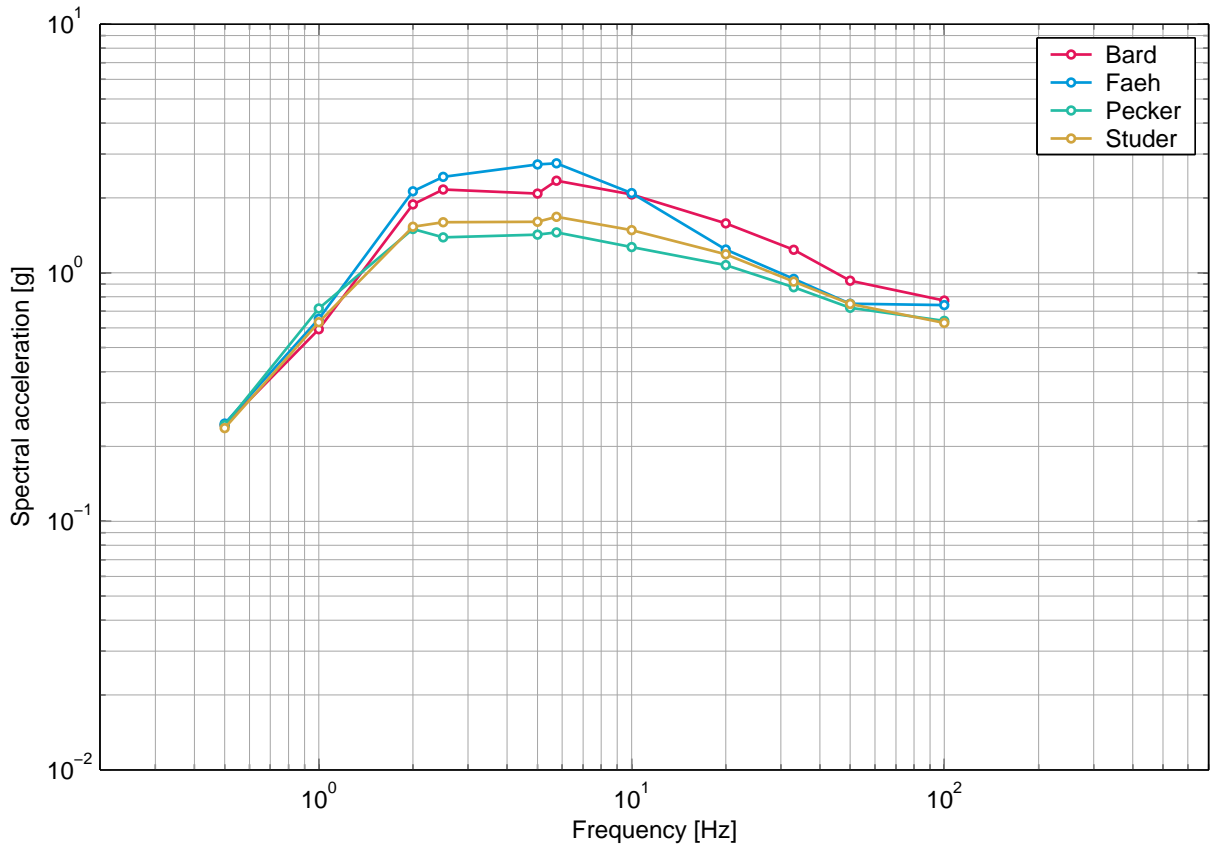


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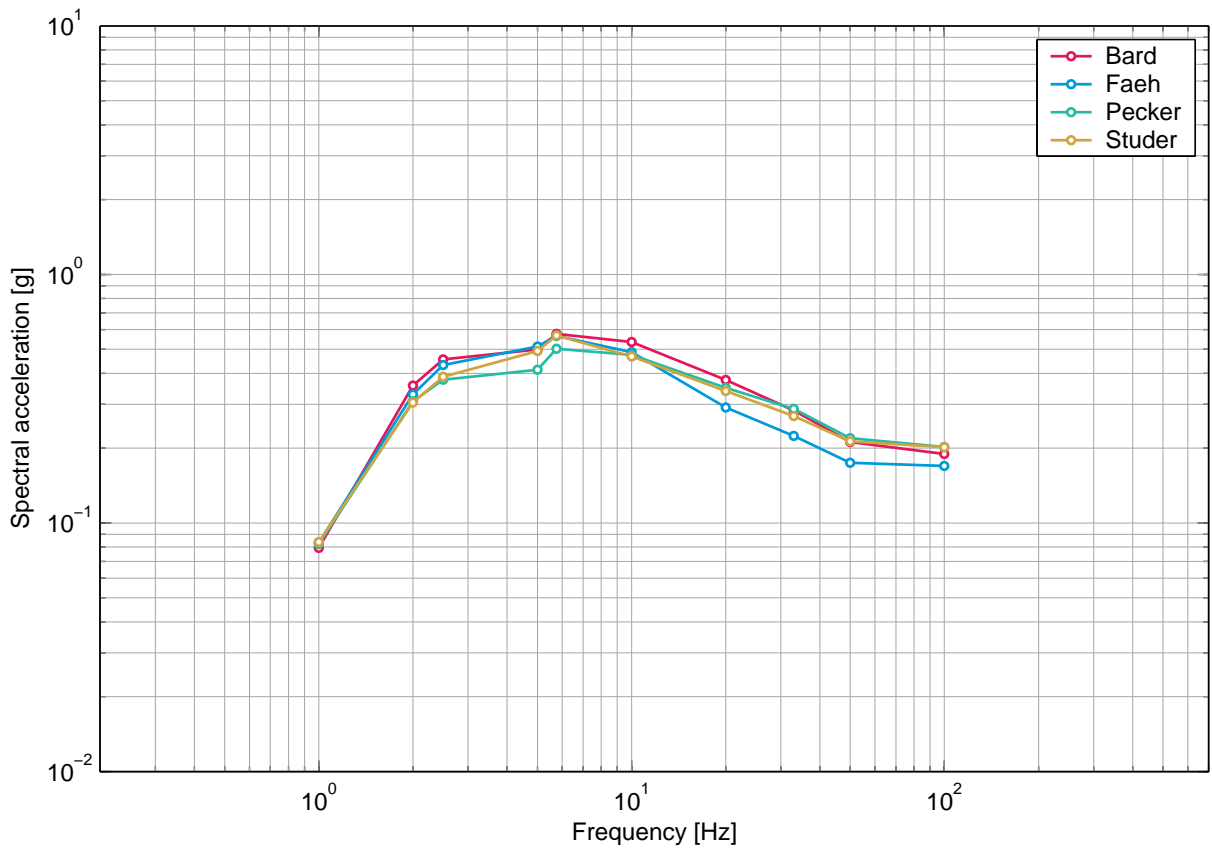


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## 4.9 Leibstadt, Sensitivity to Depth Levels, Horizontal Component

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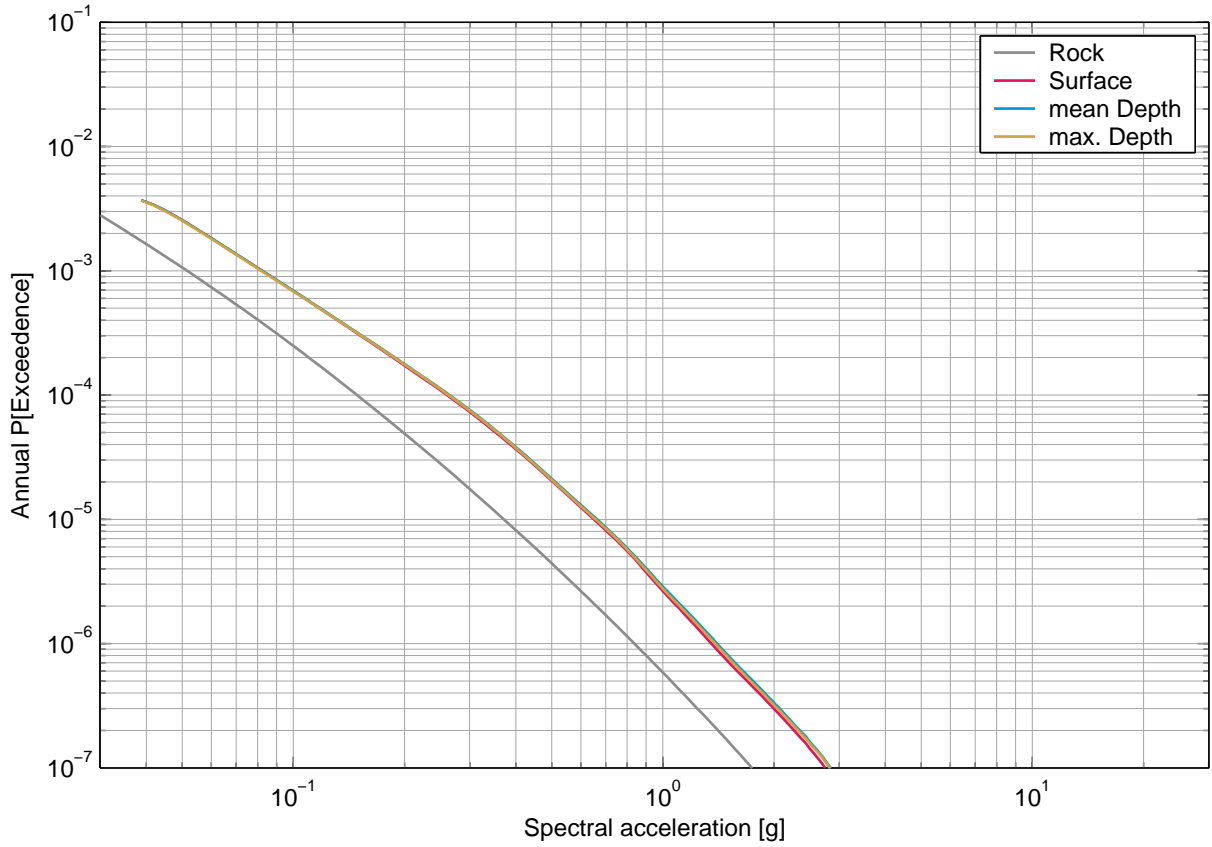


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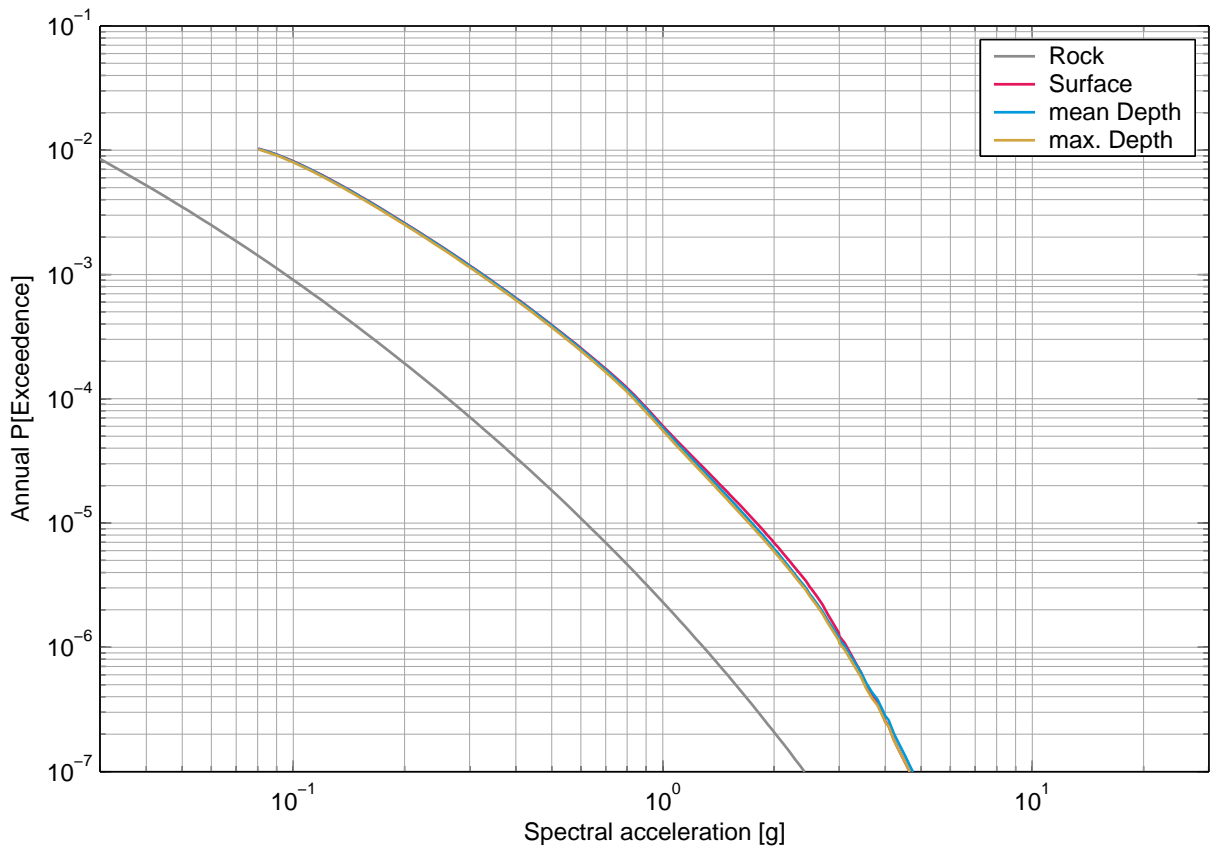


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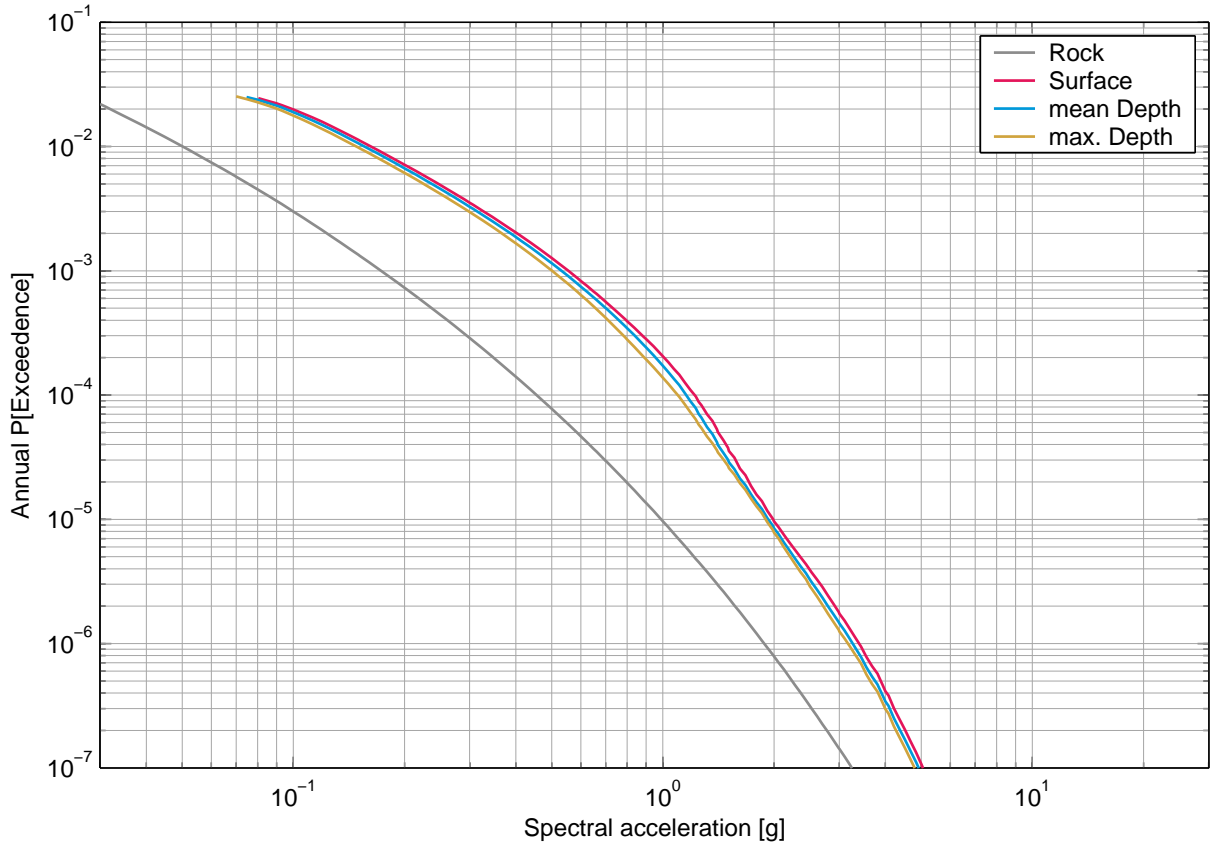


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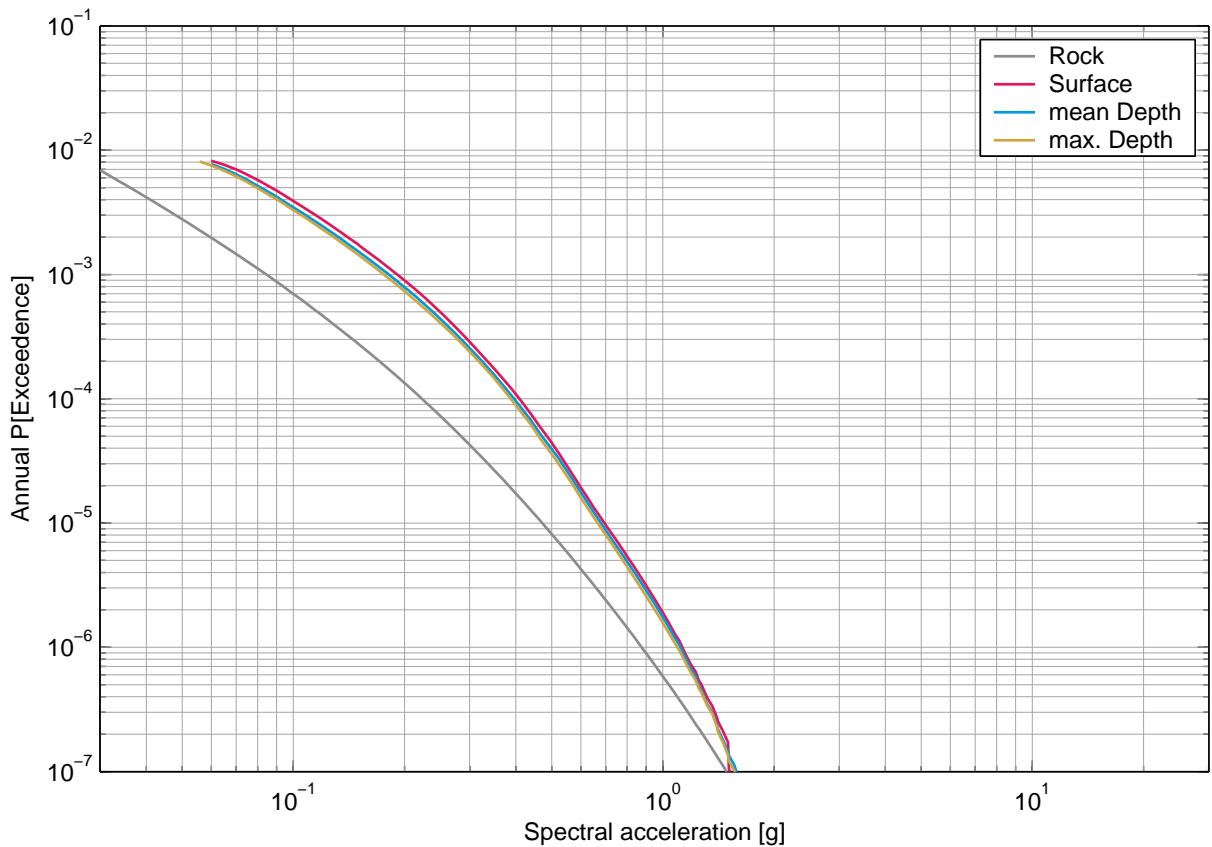


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## 4.10 Leibstadt, Rock Hazard, Vertical Component, Surface

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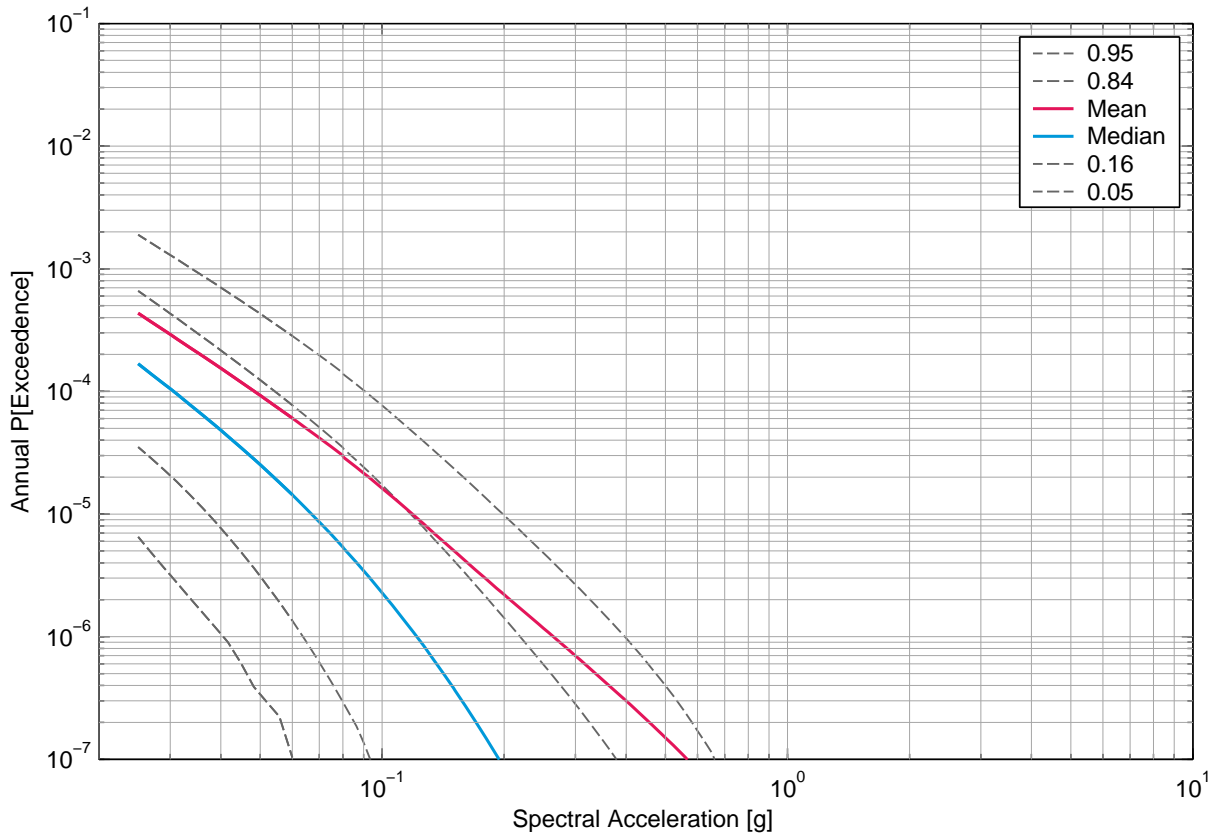


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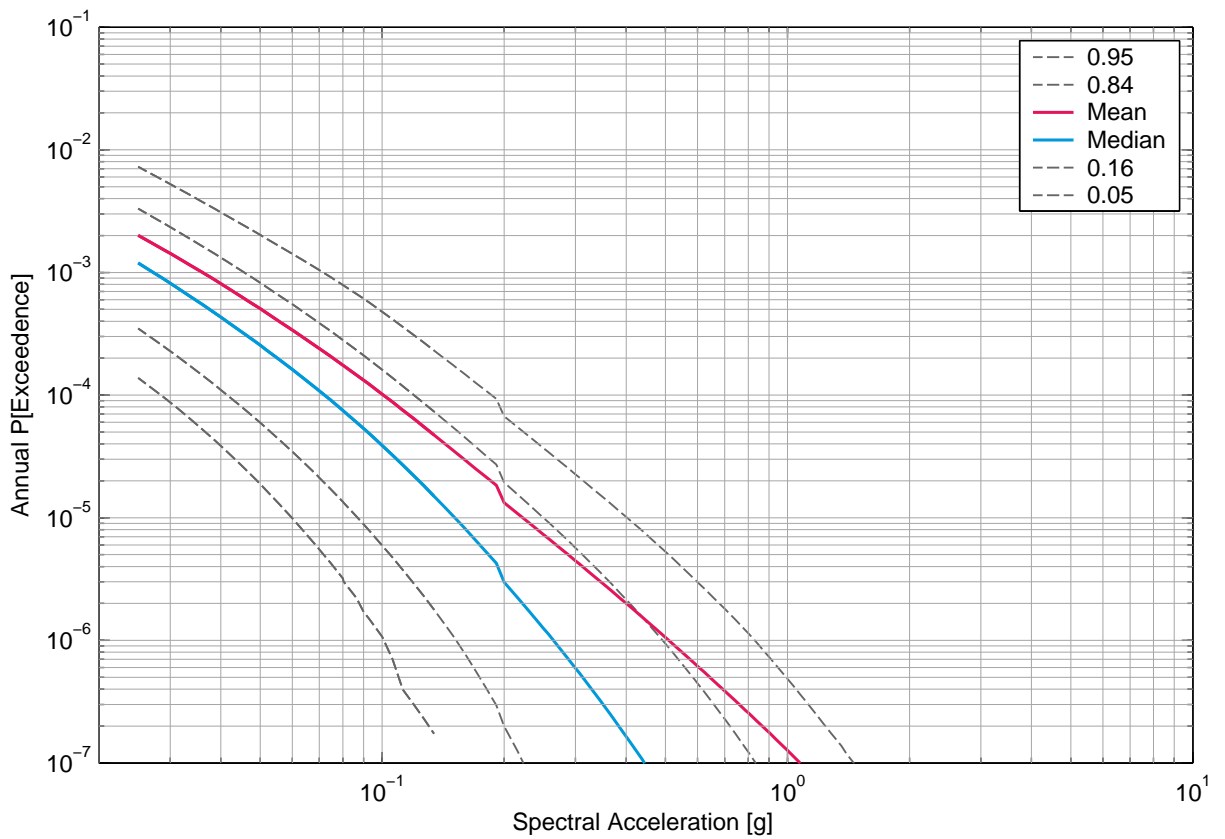


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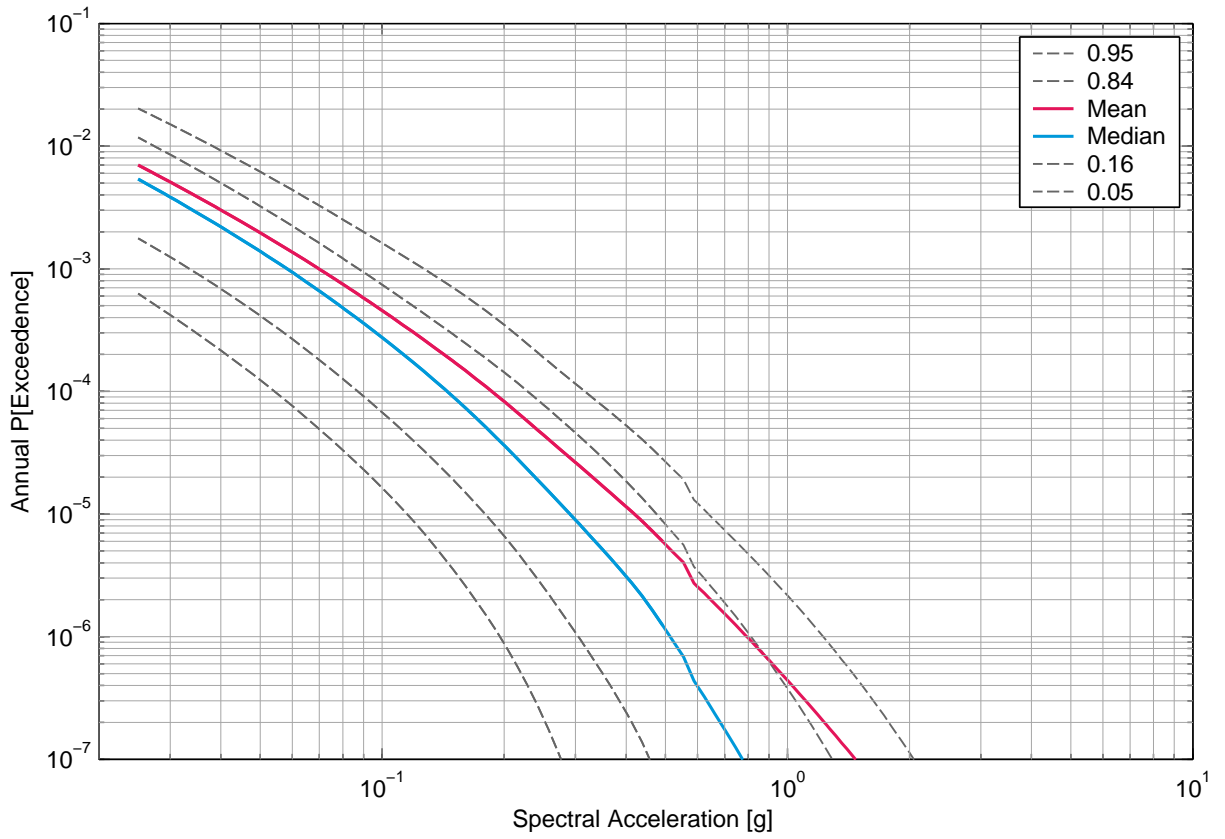


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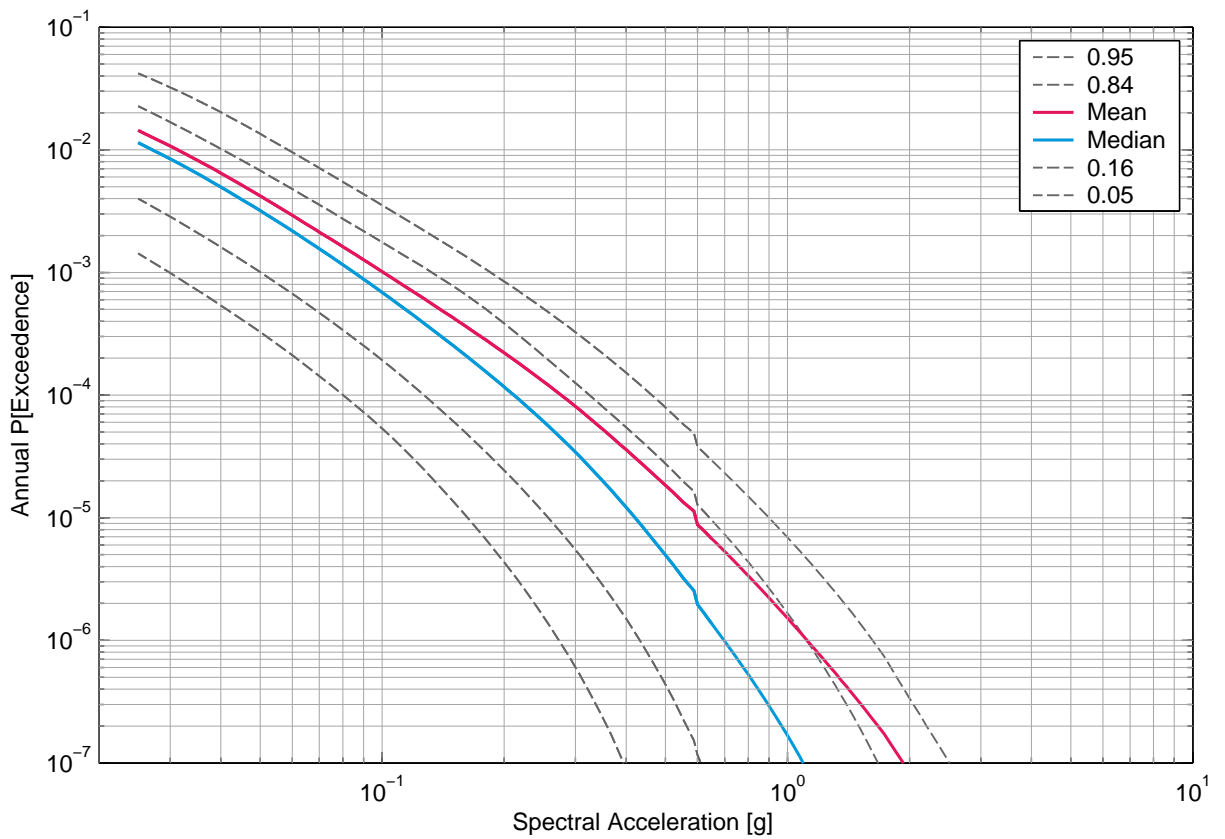


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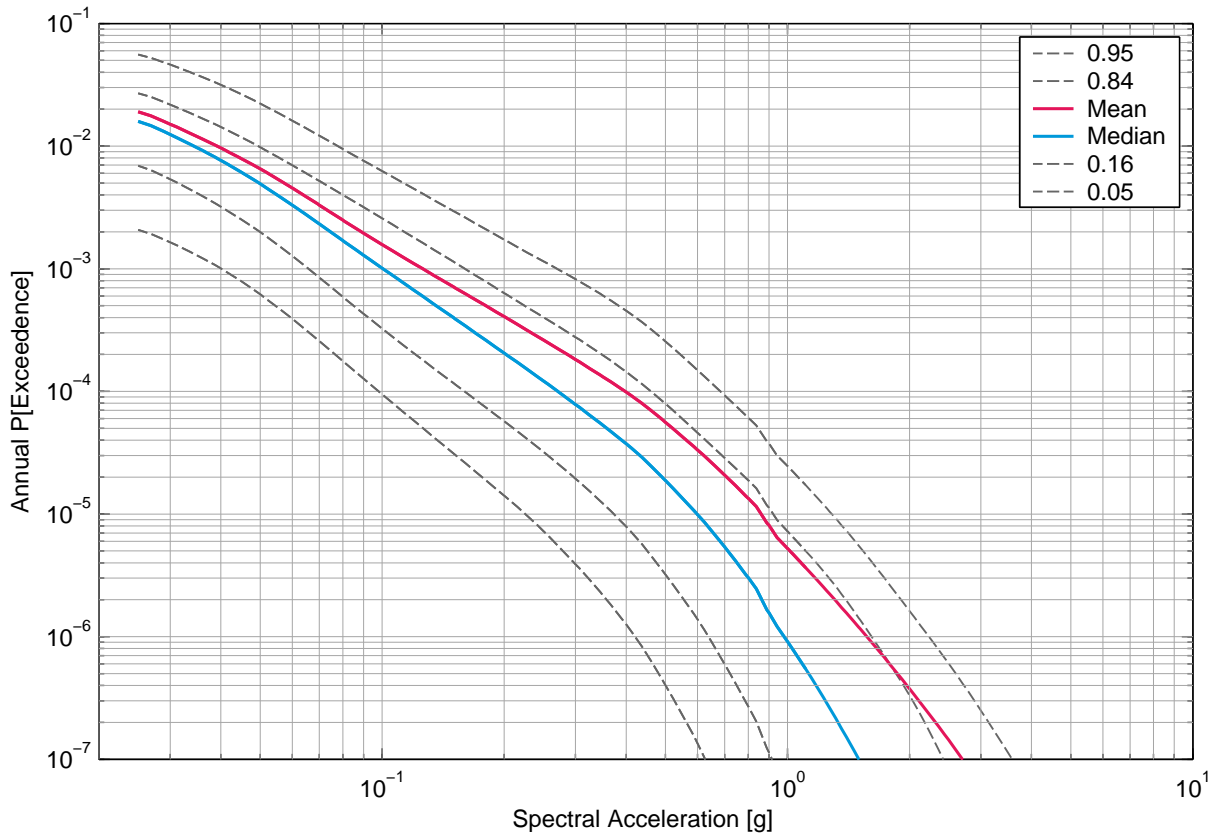


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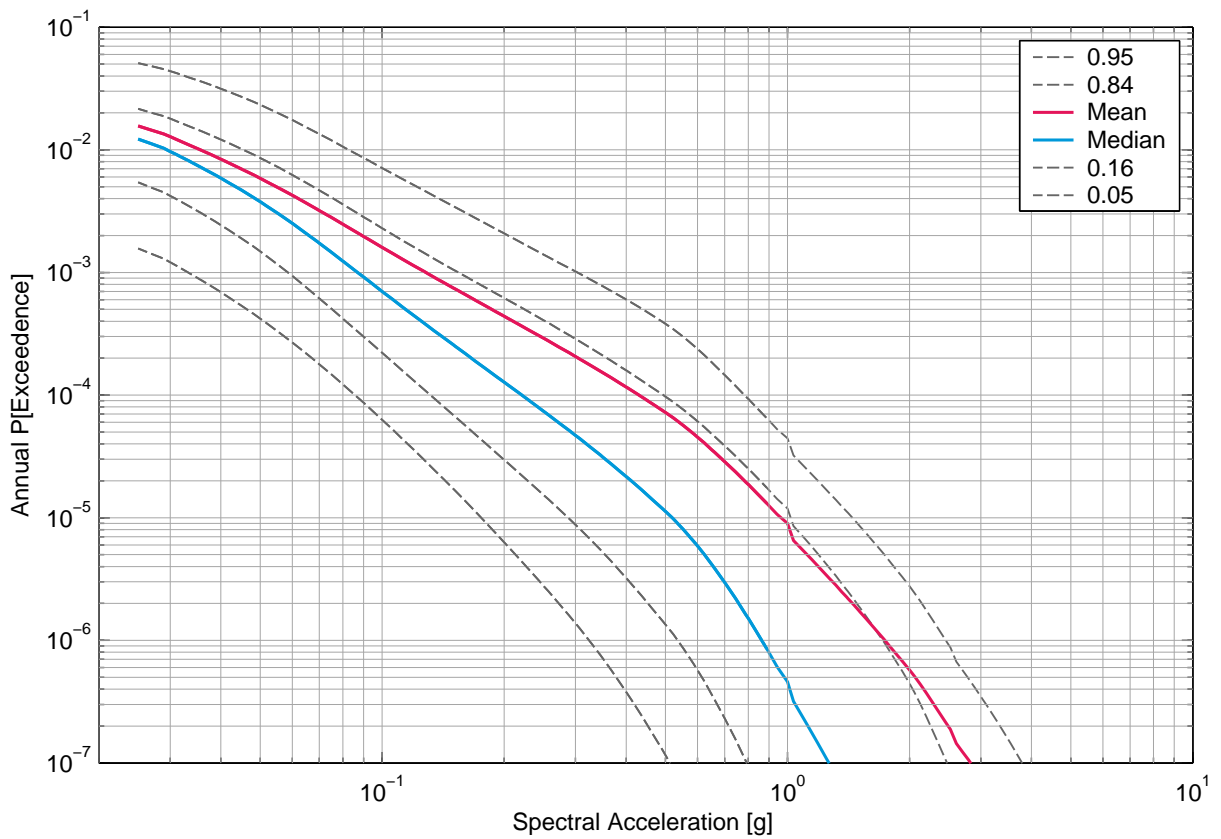


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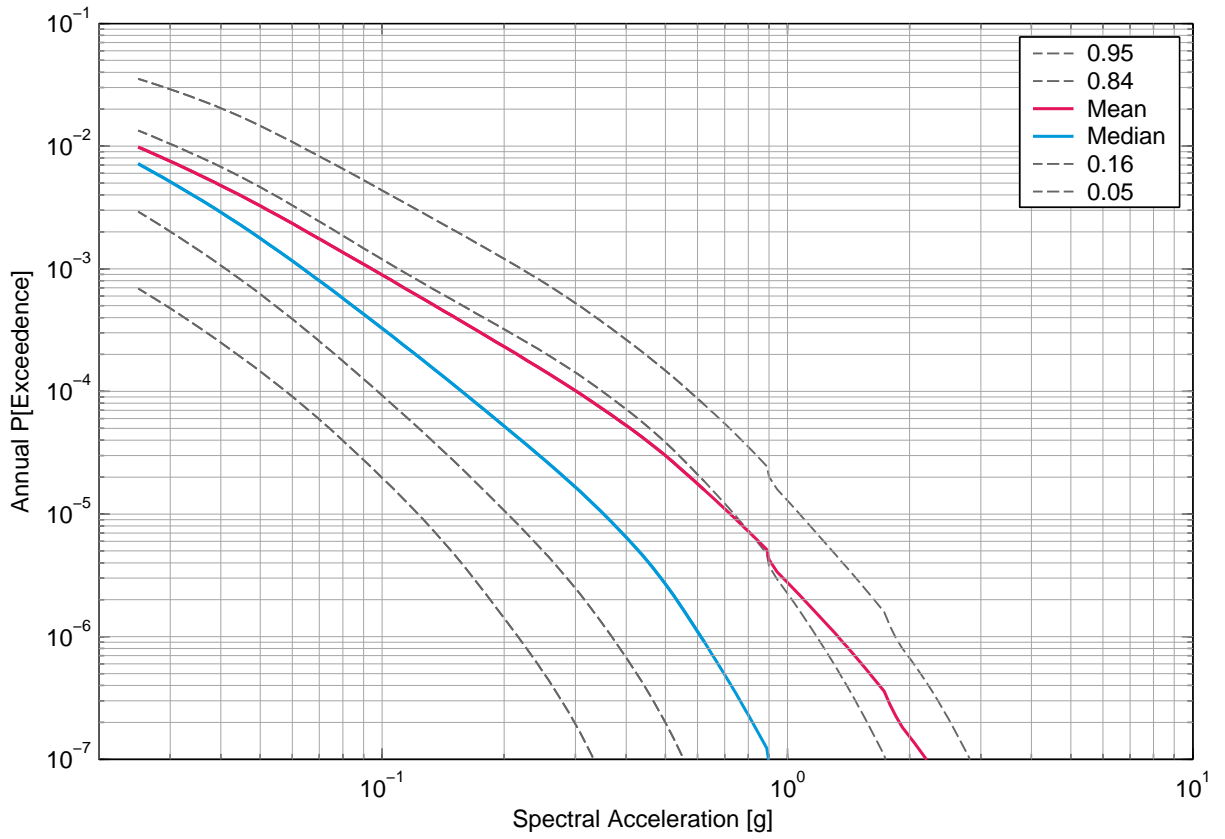


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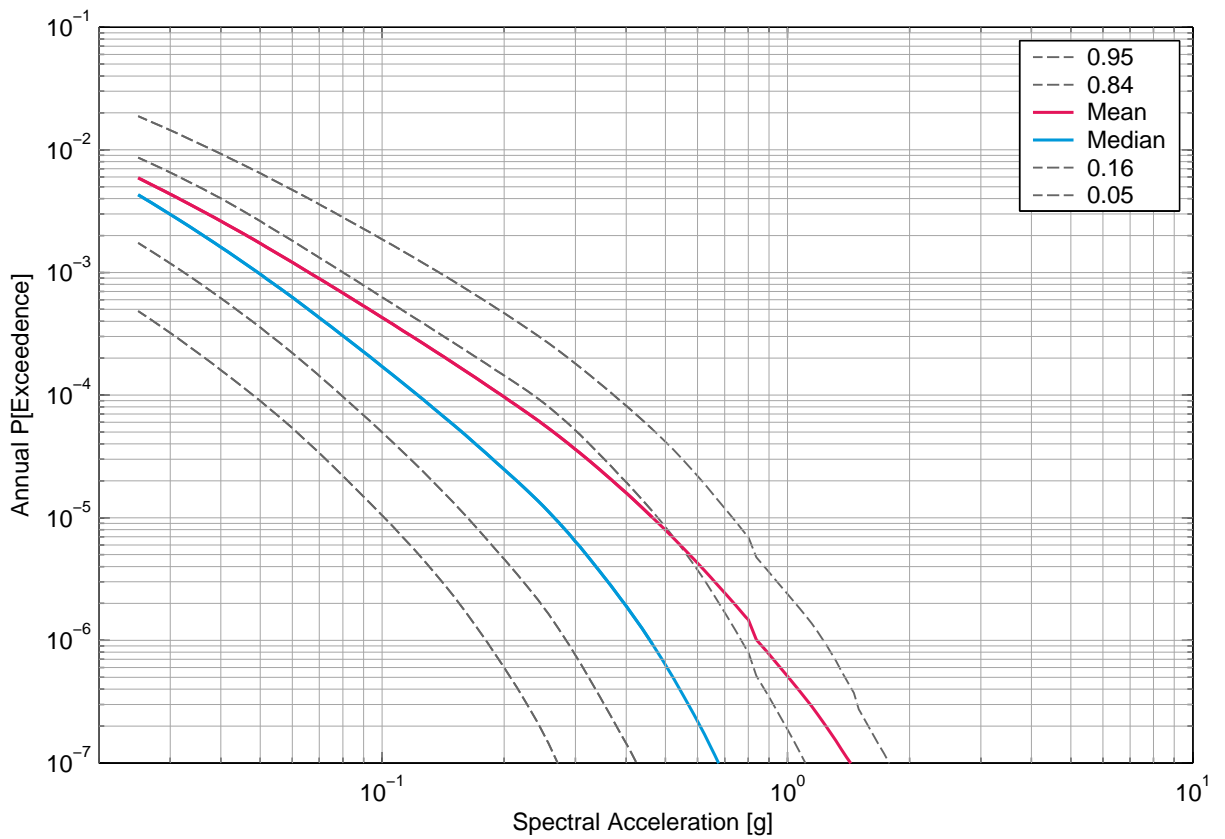


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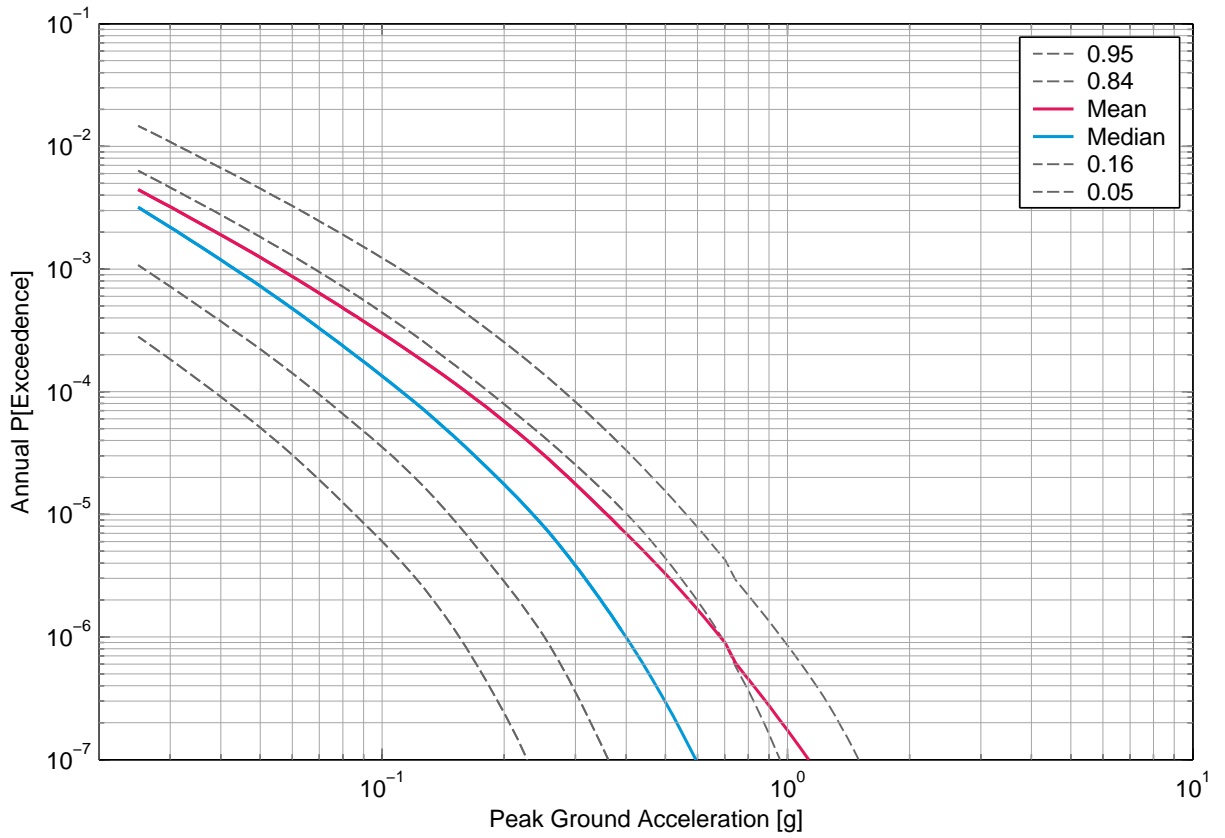


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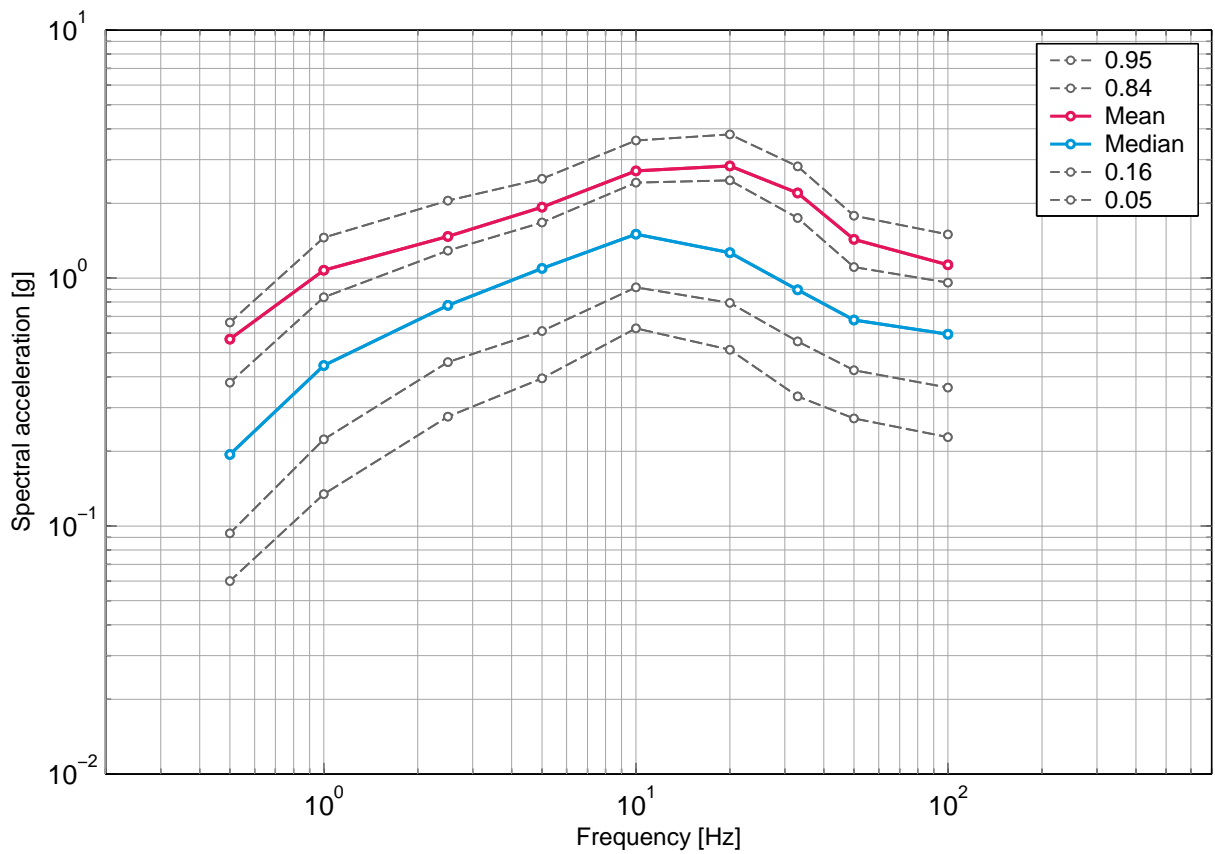


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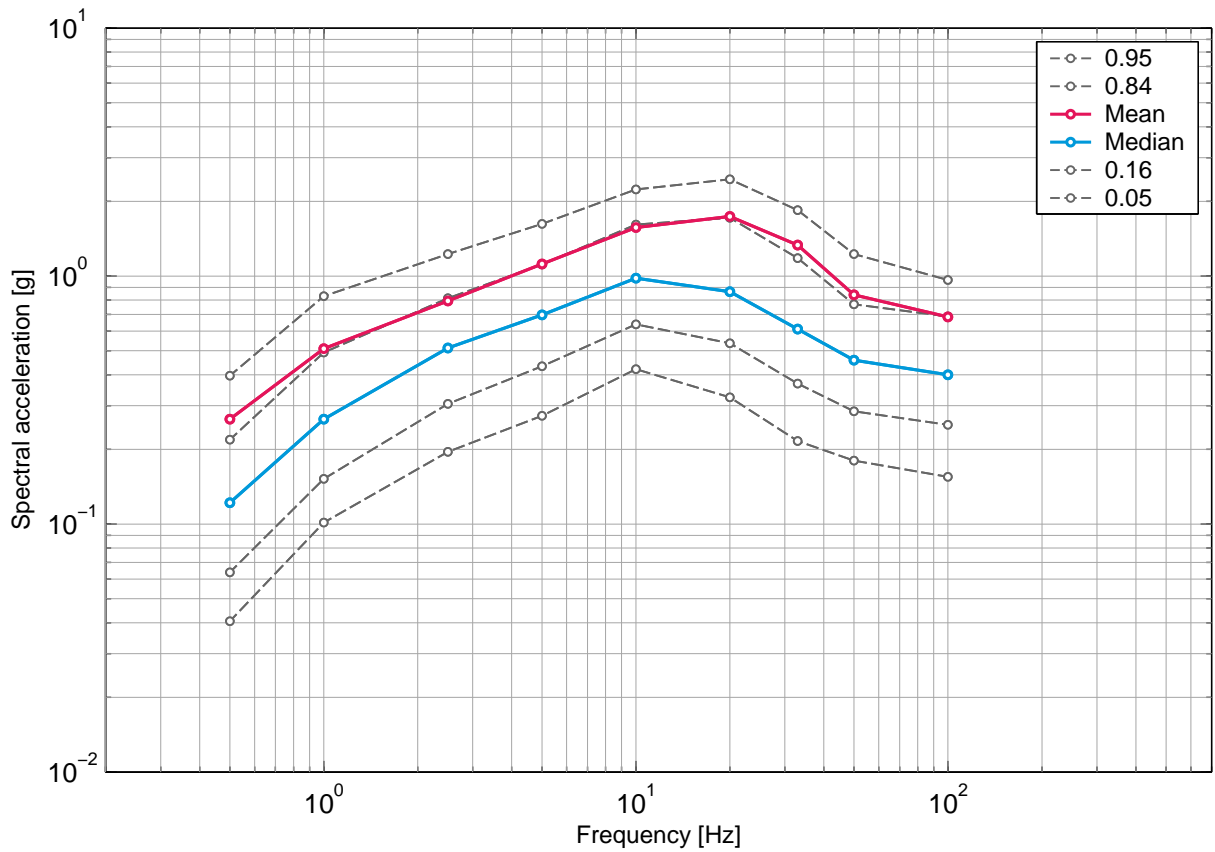


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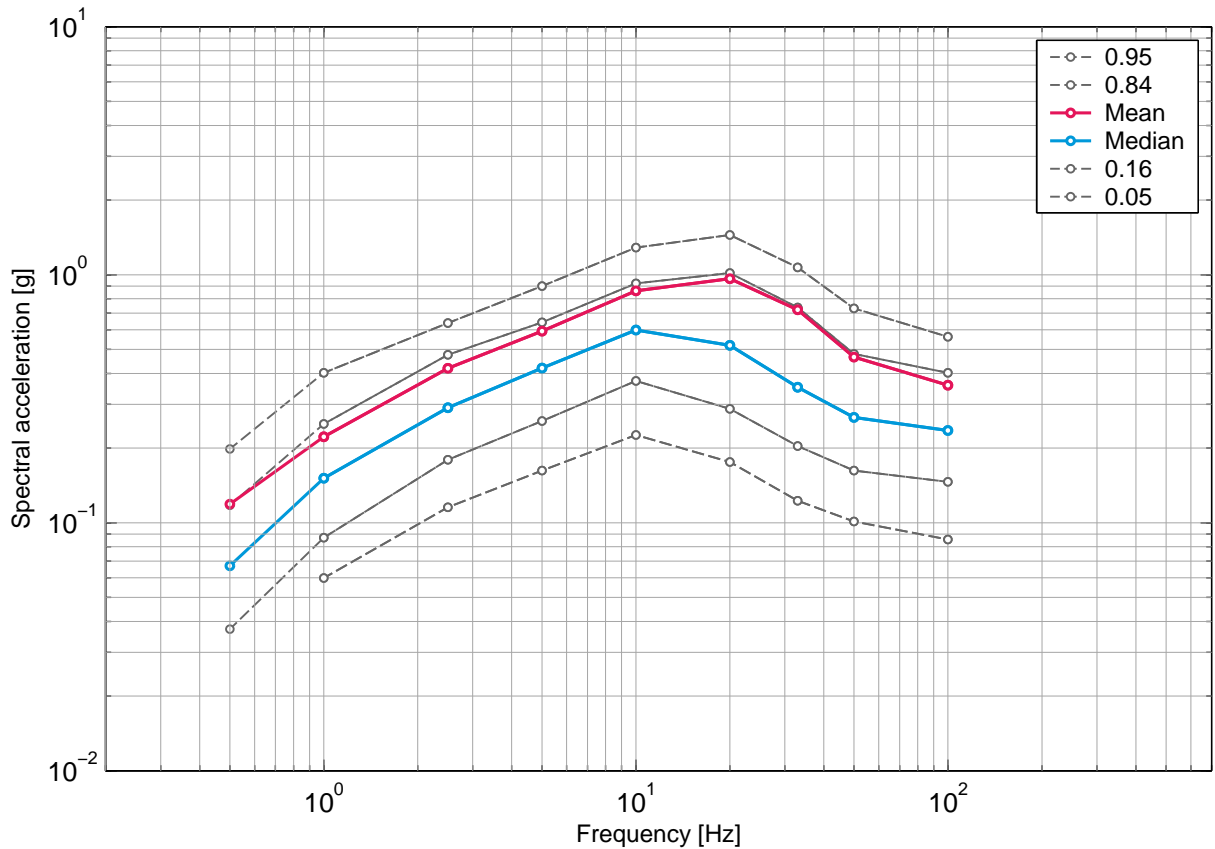


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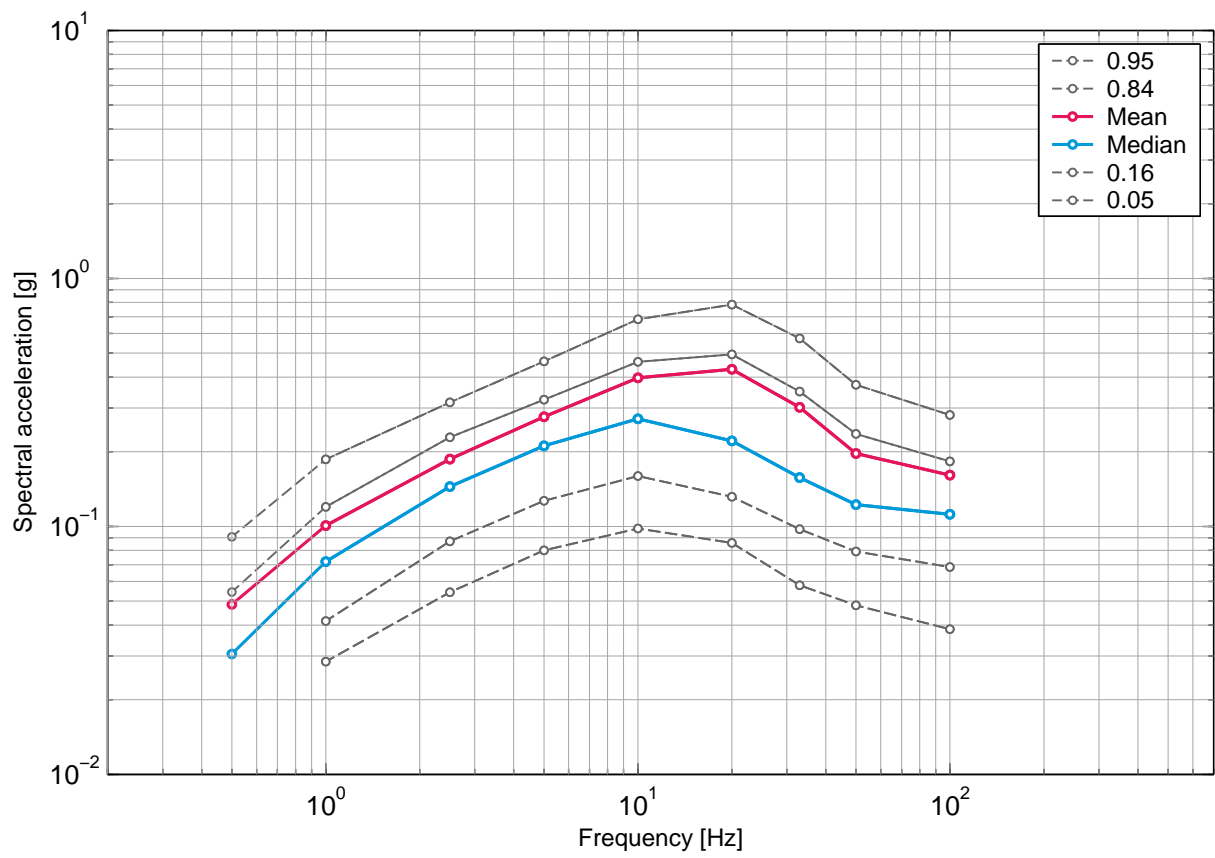


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## 4.11 Leibstadt, Soil Hazard, Vertical Component, Surface

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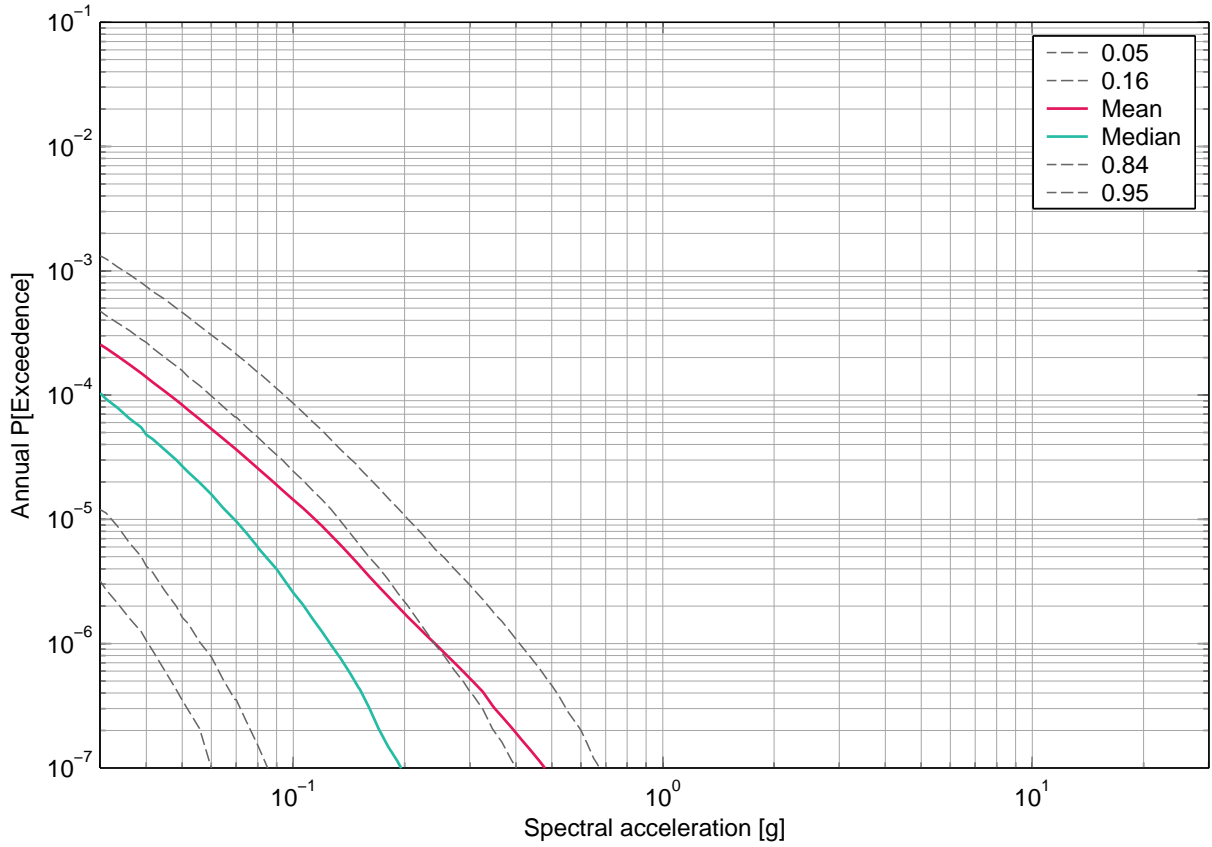


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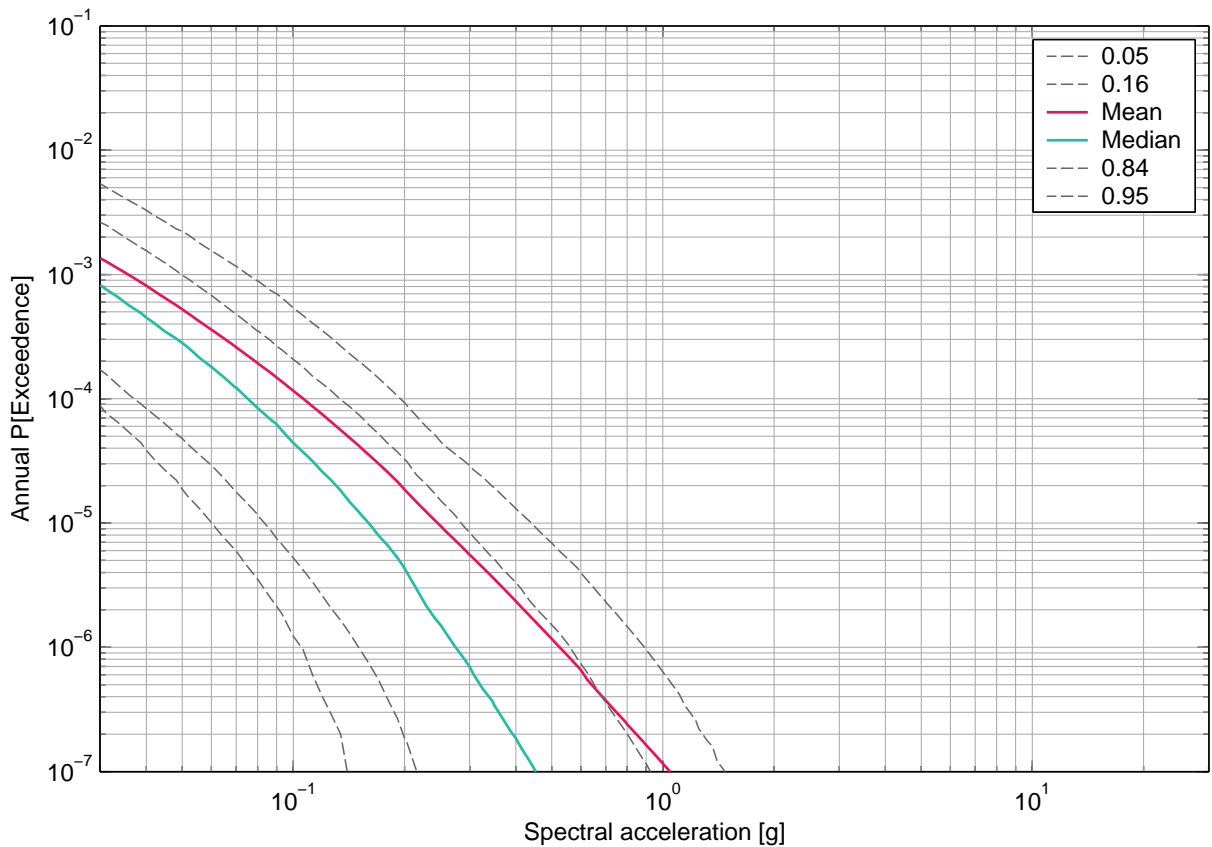


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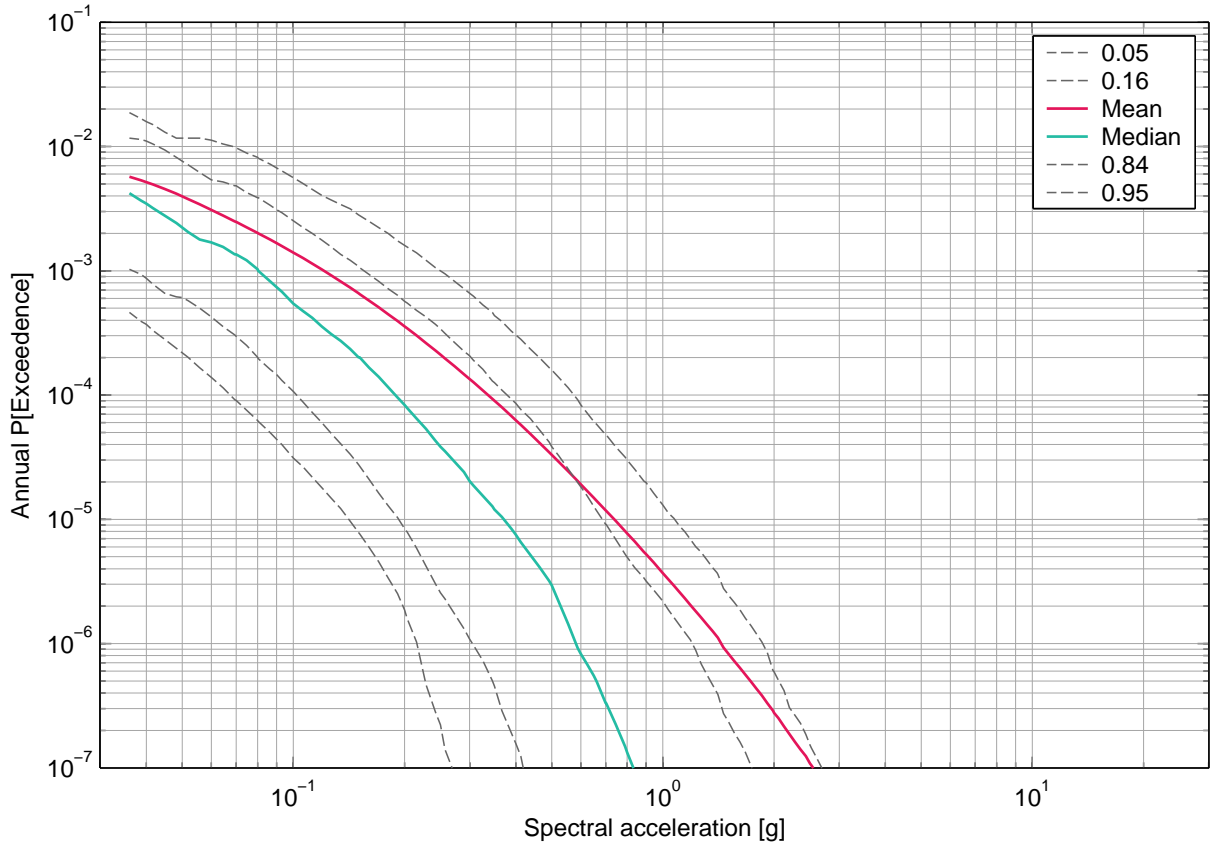


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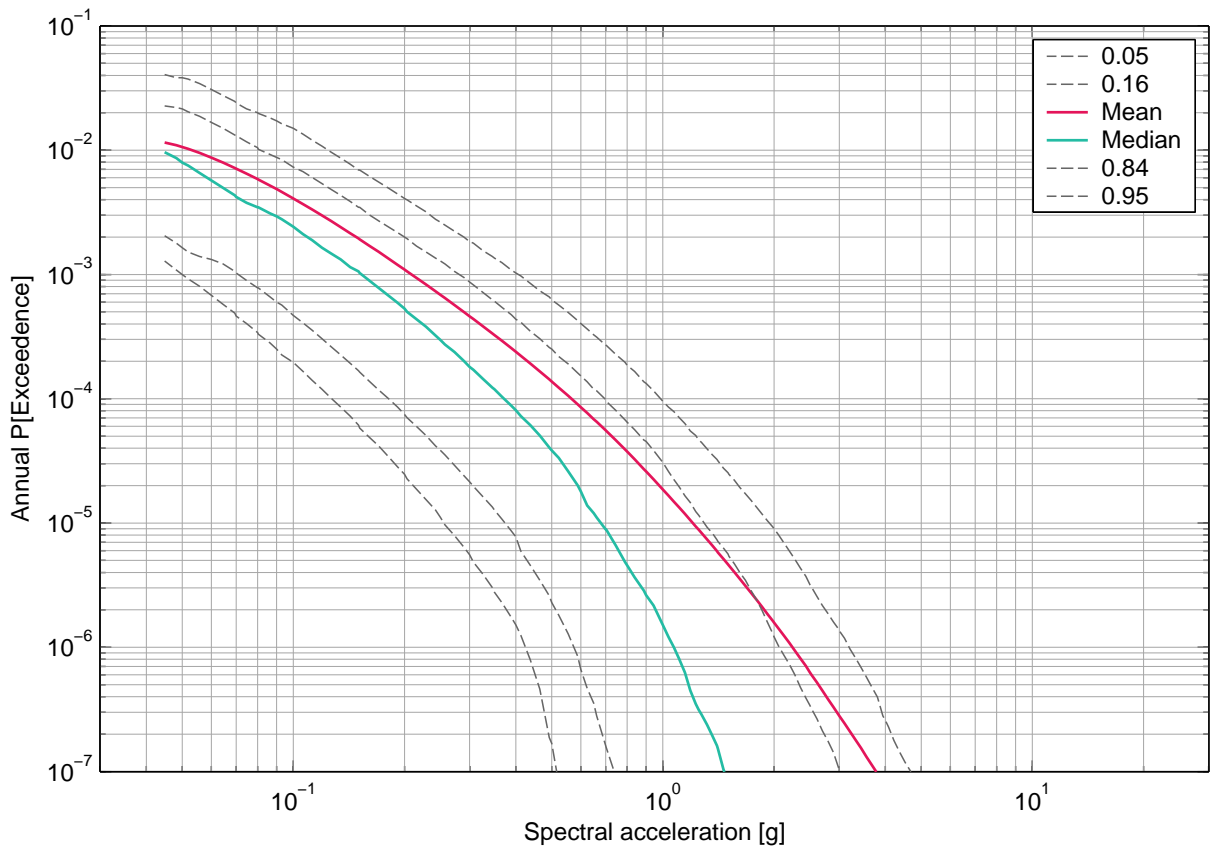


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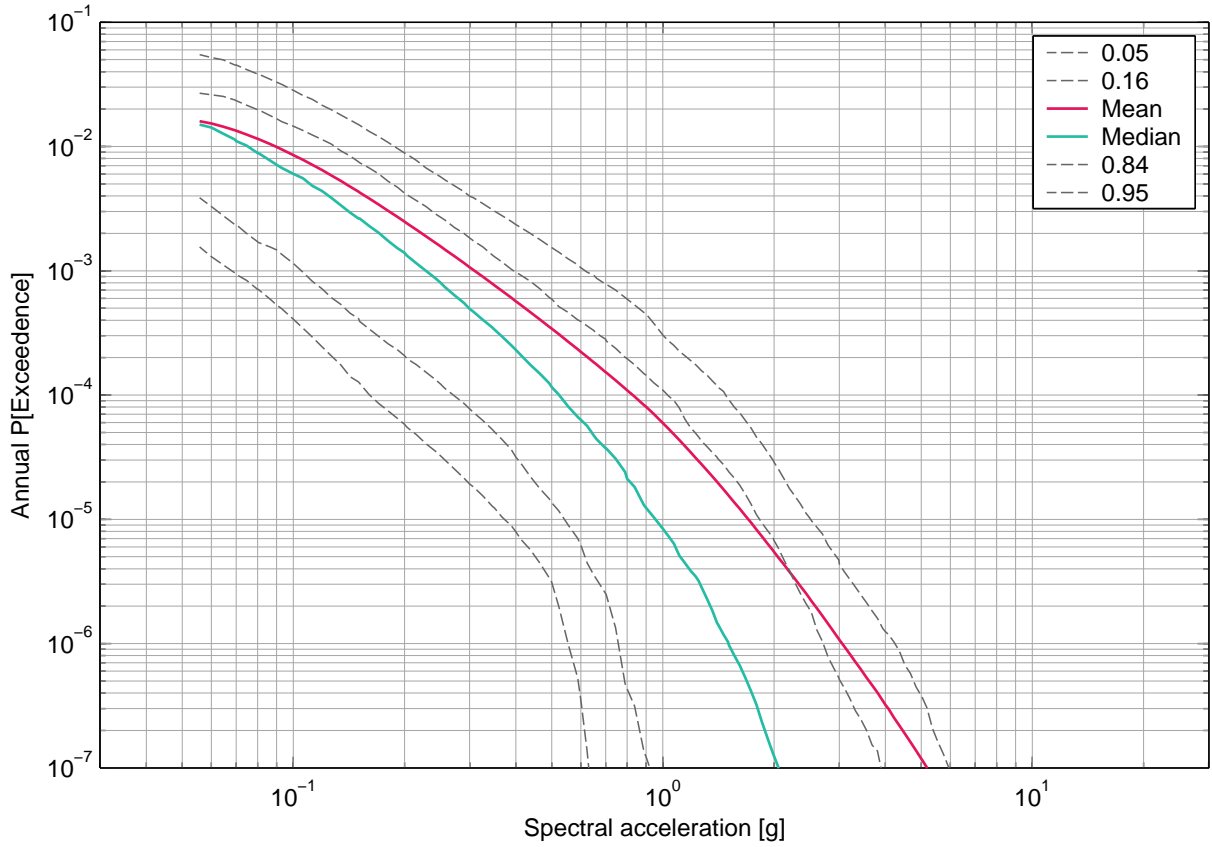


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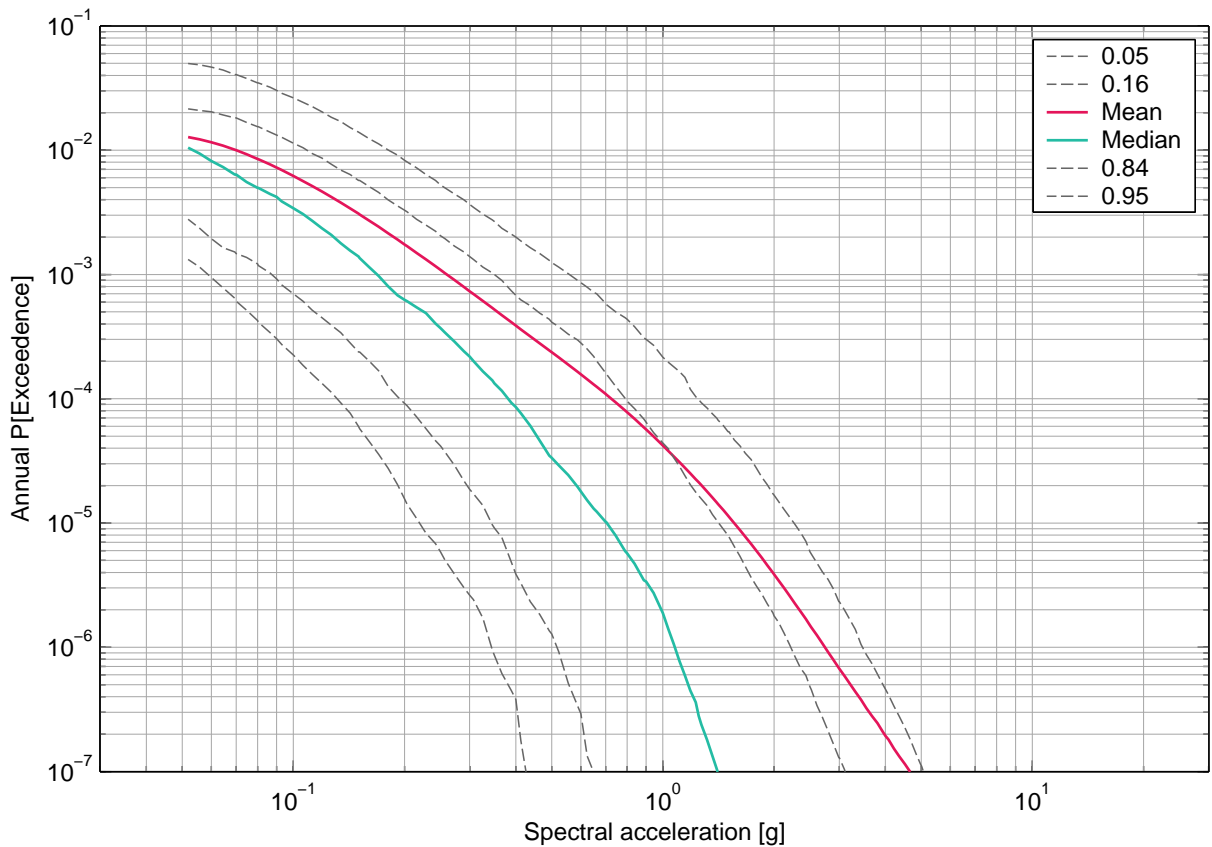


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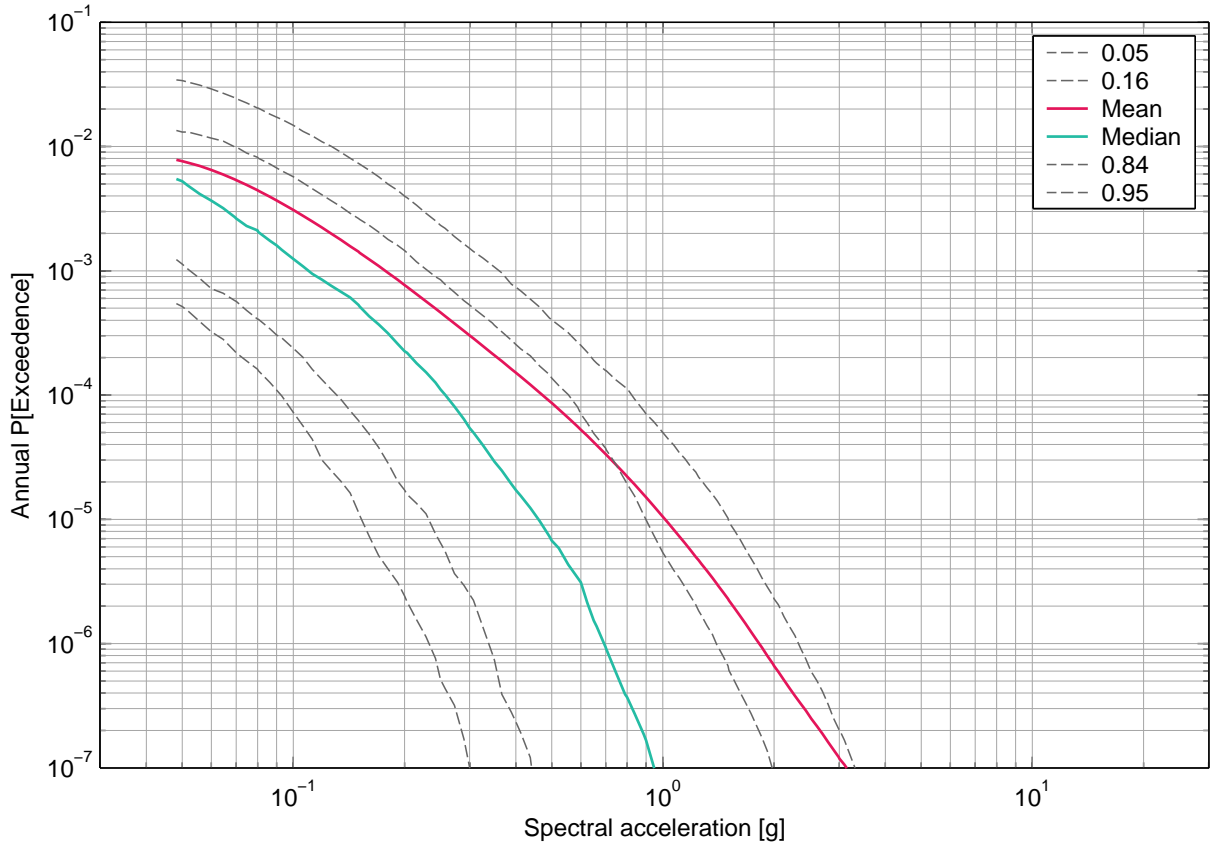


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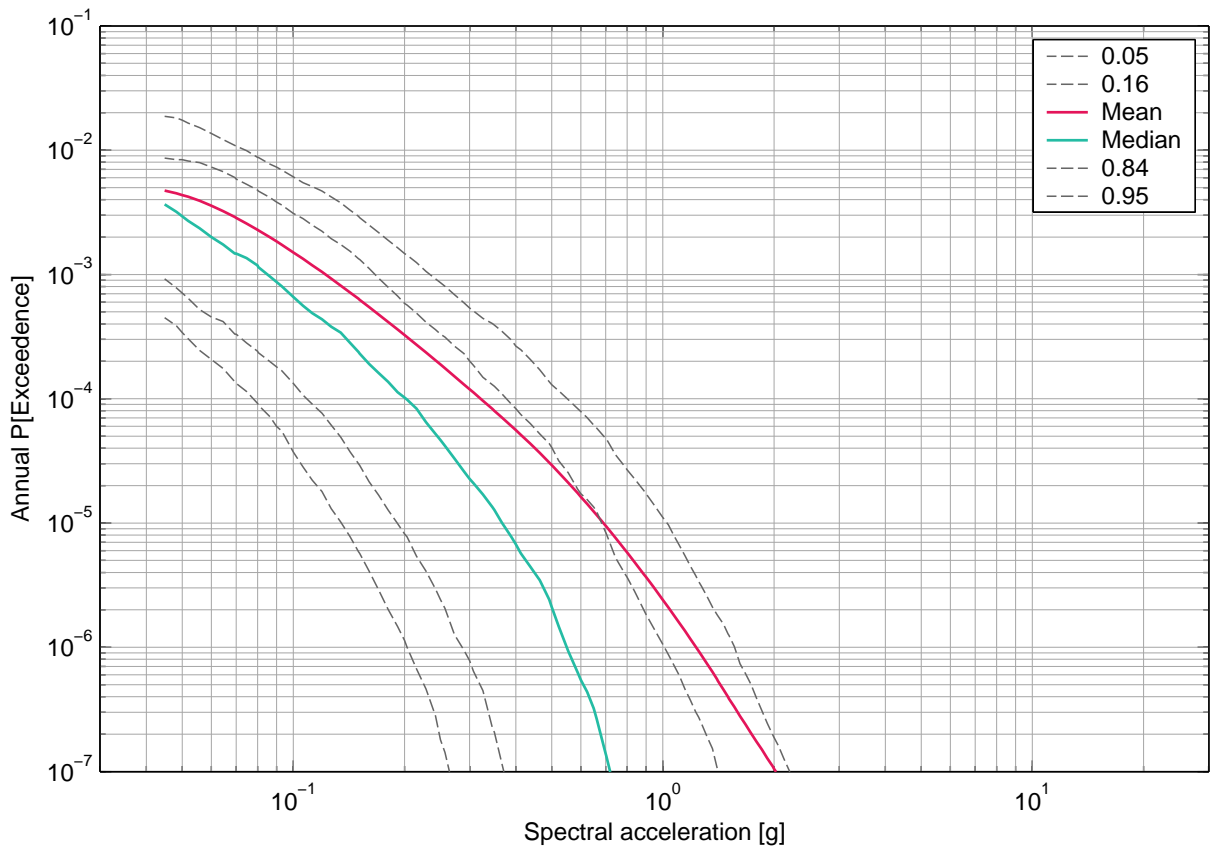


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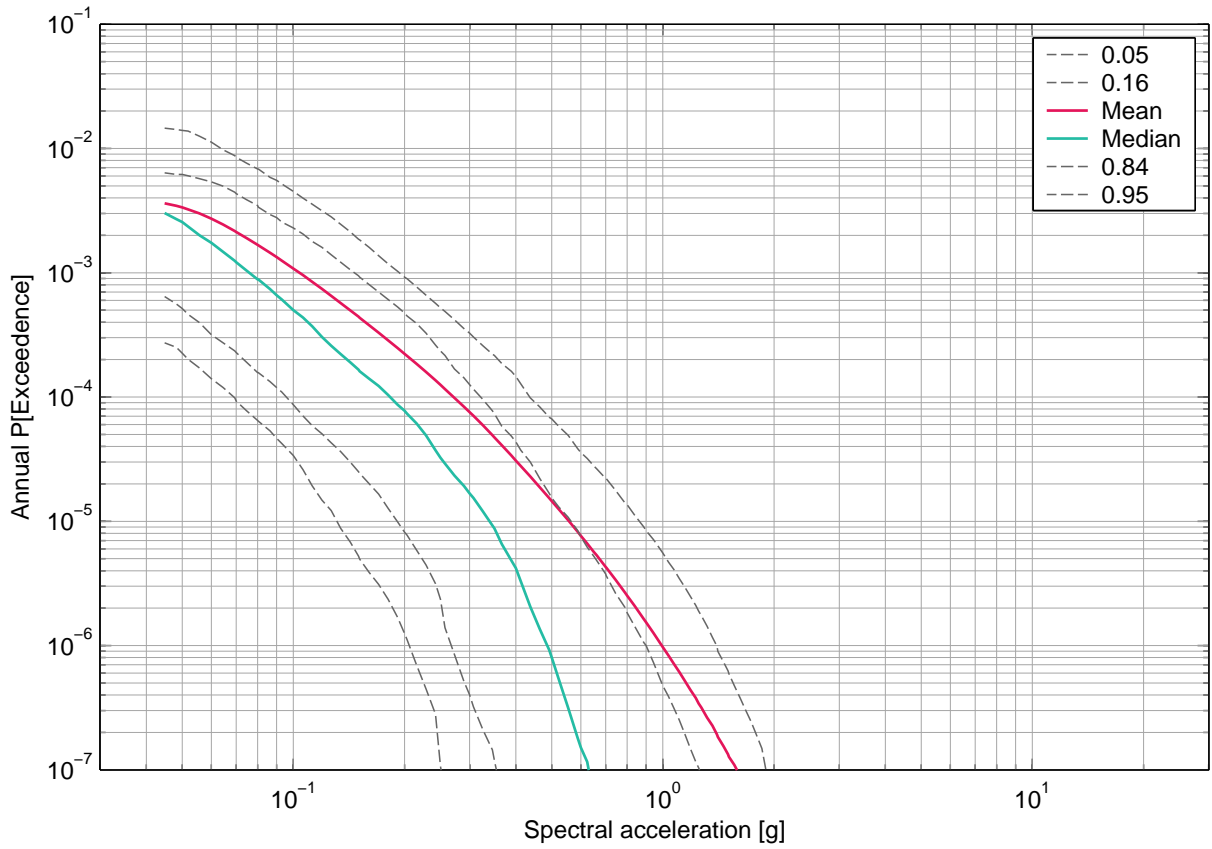


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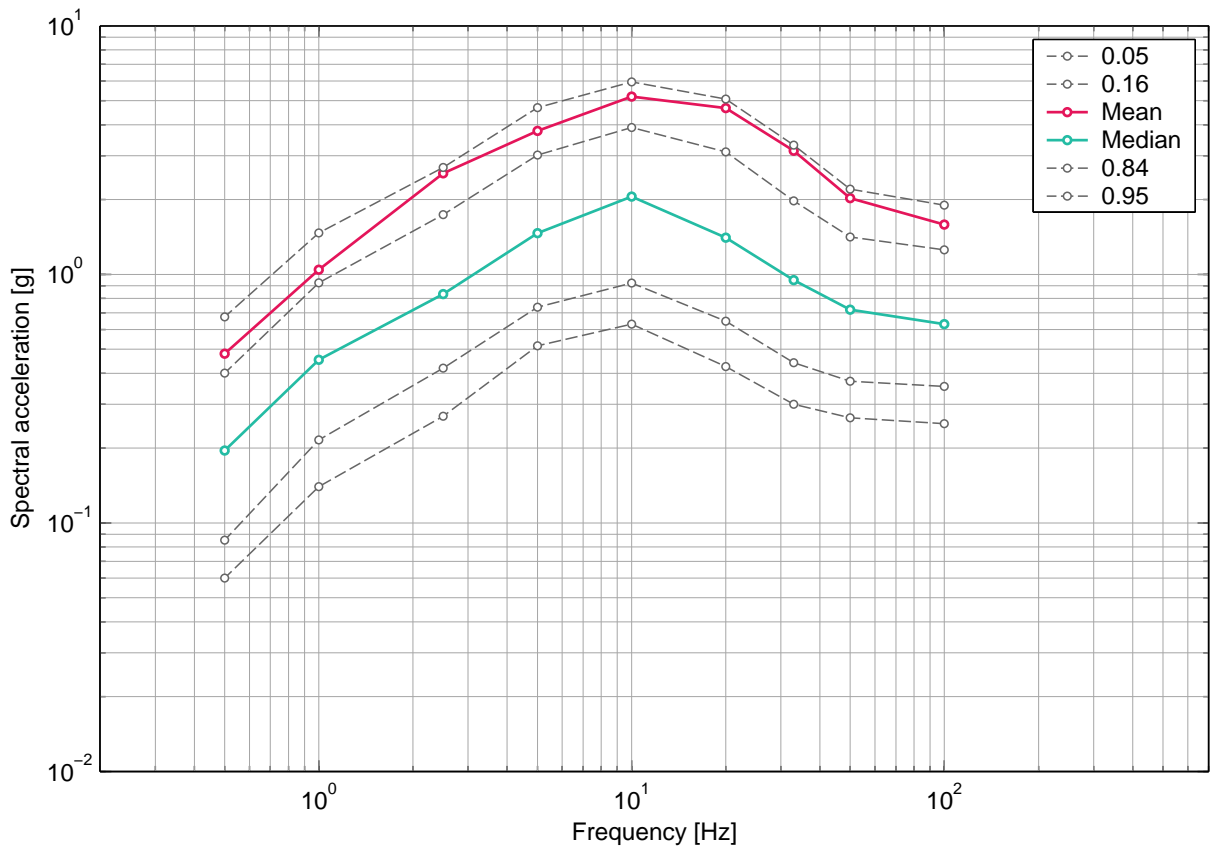


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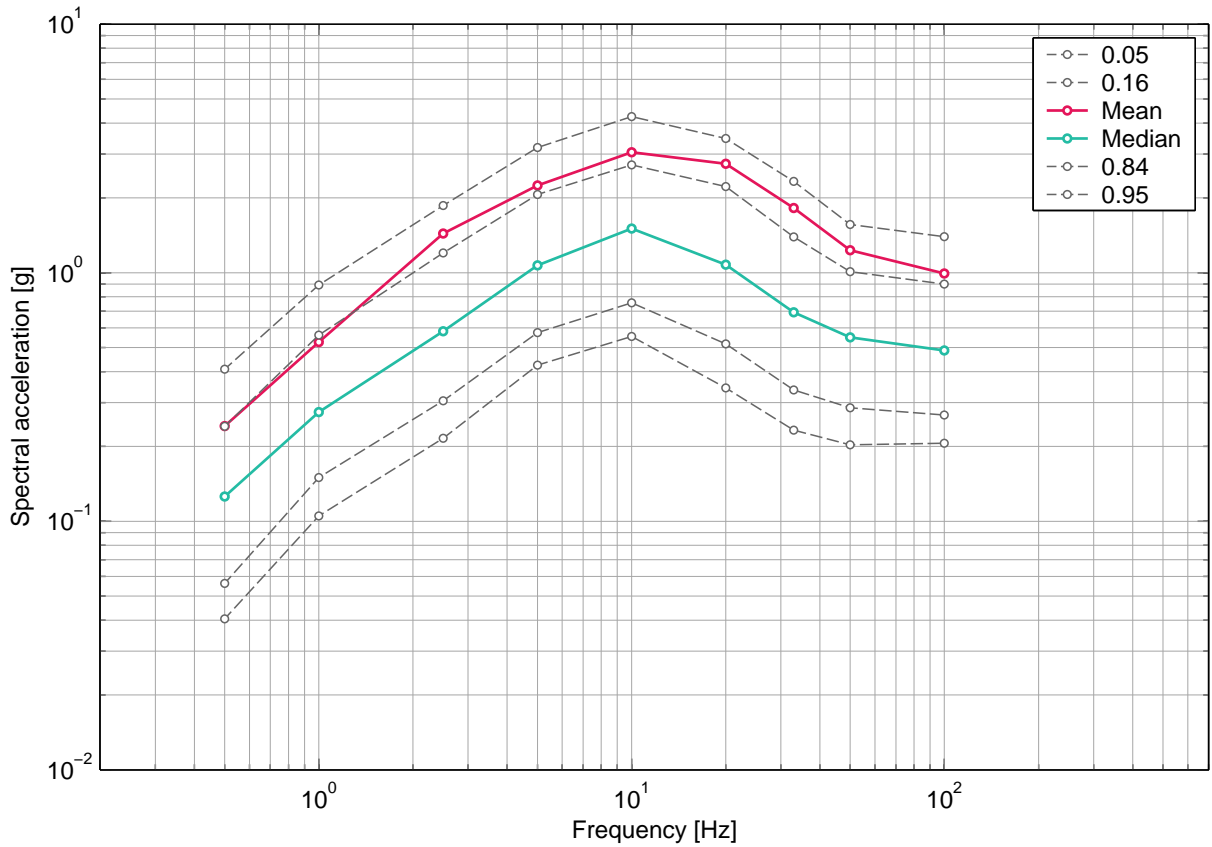


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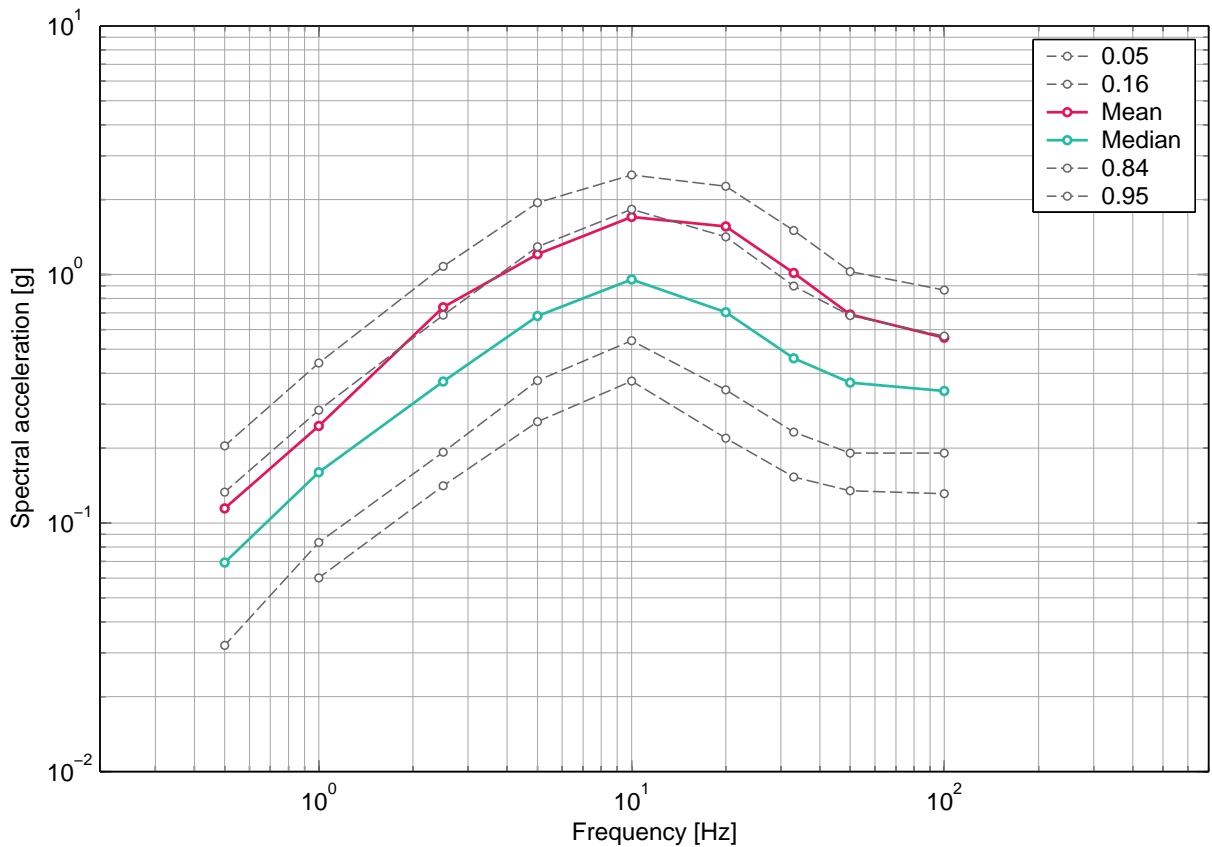


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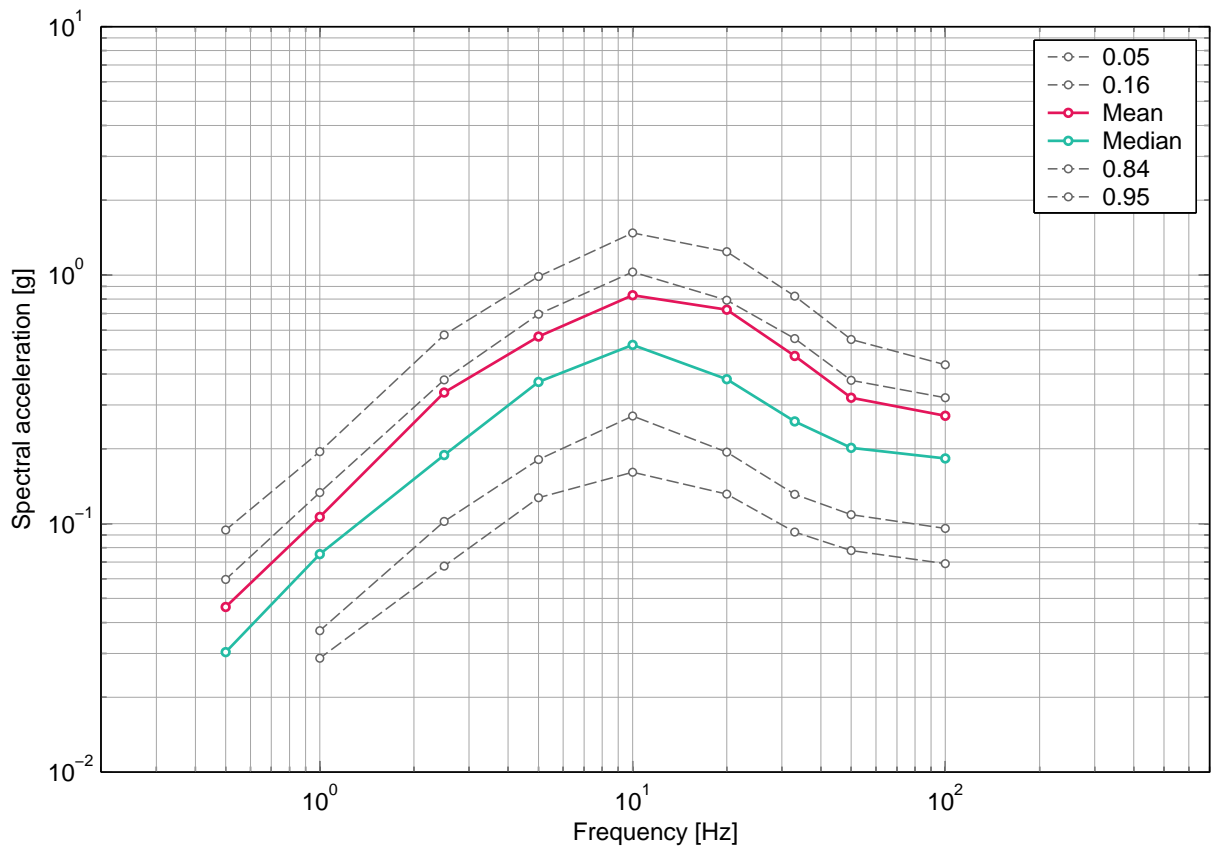


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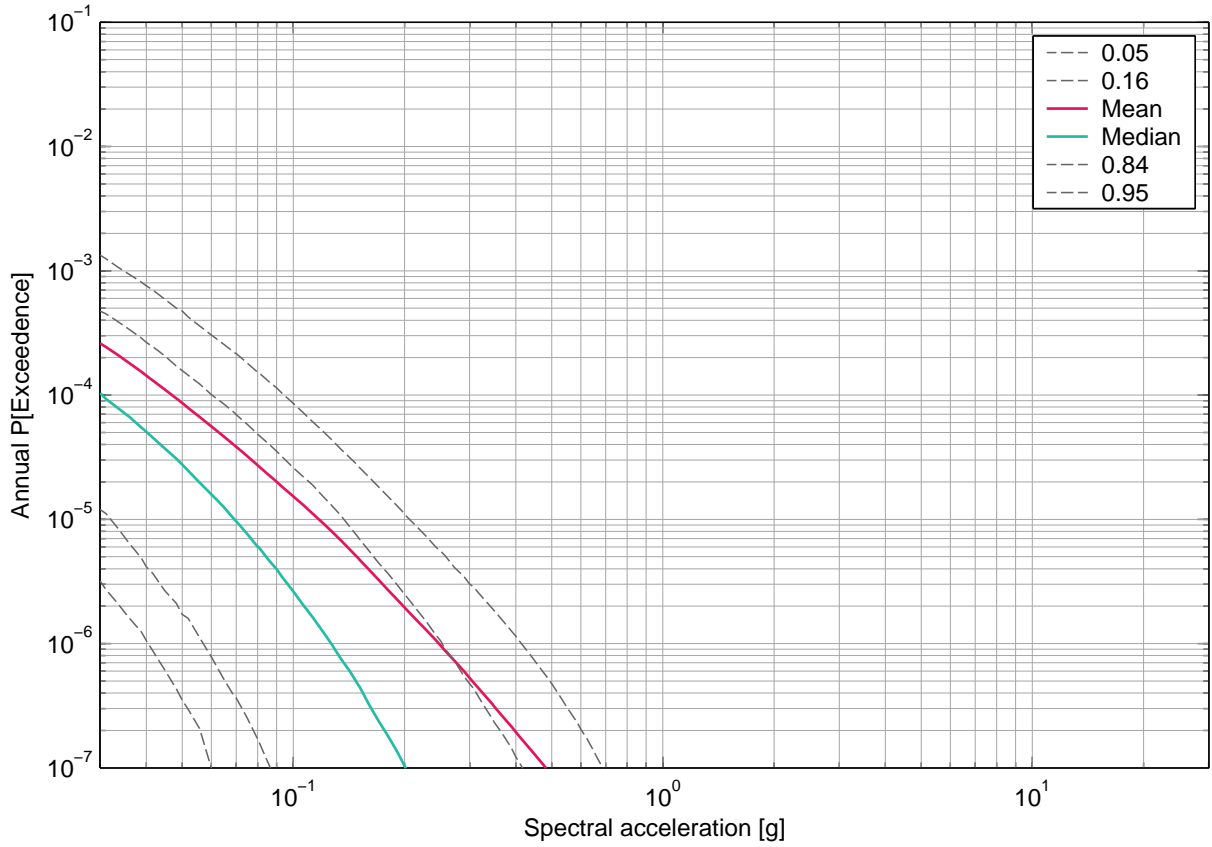


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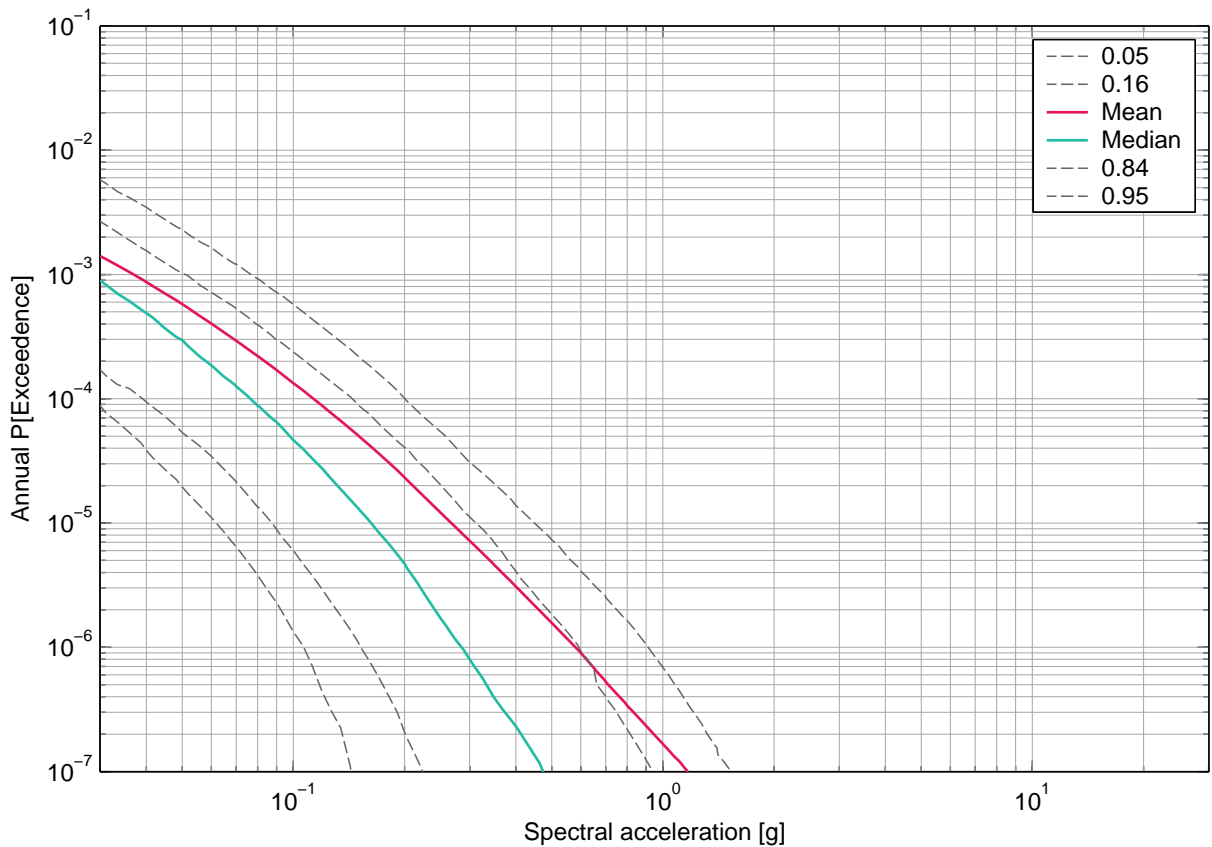


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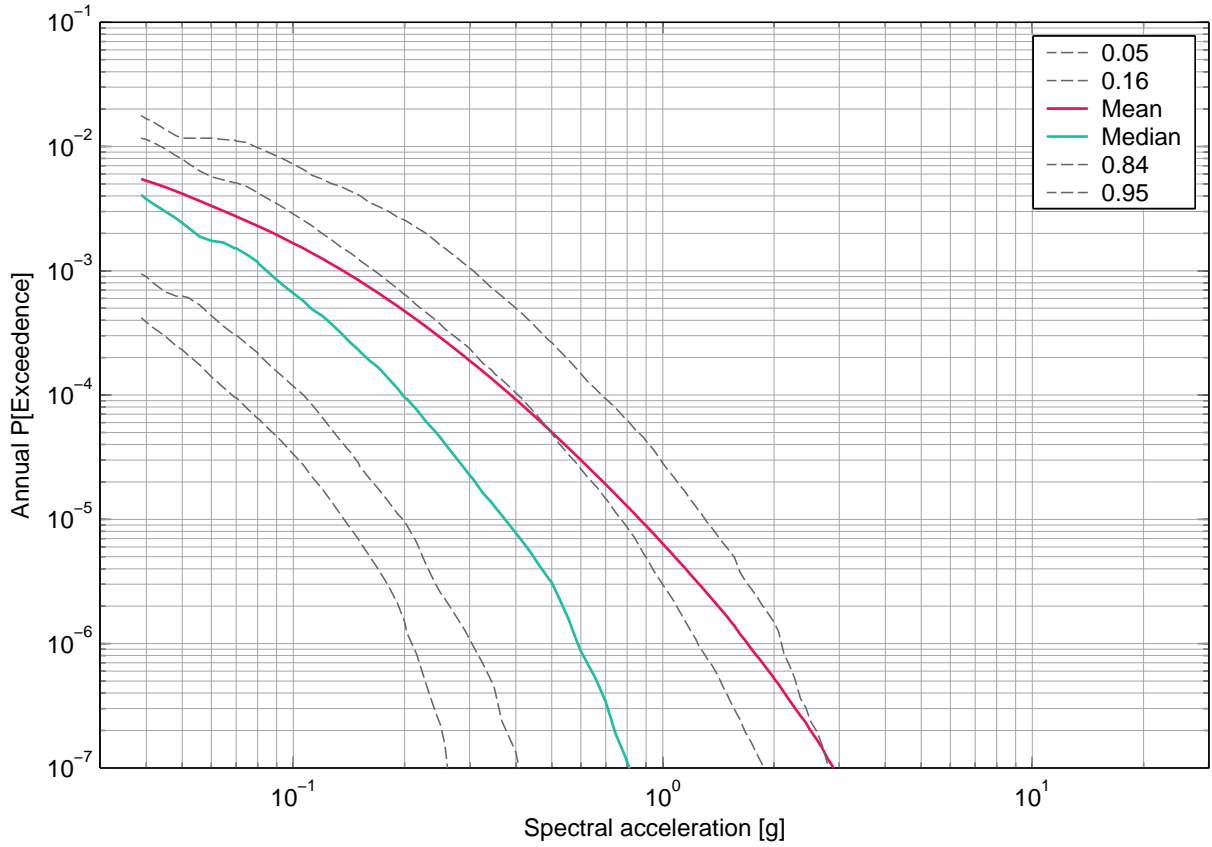


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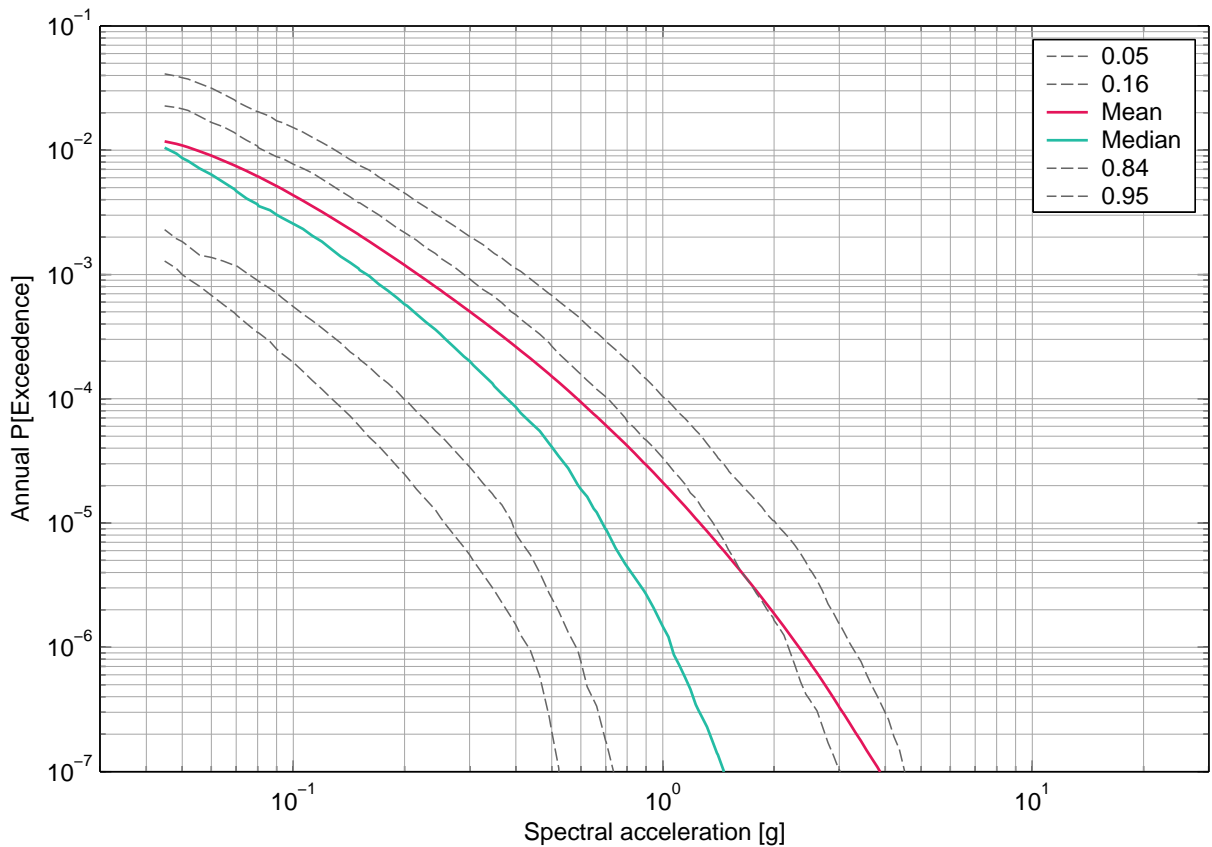


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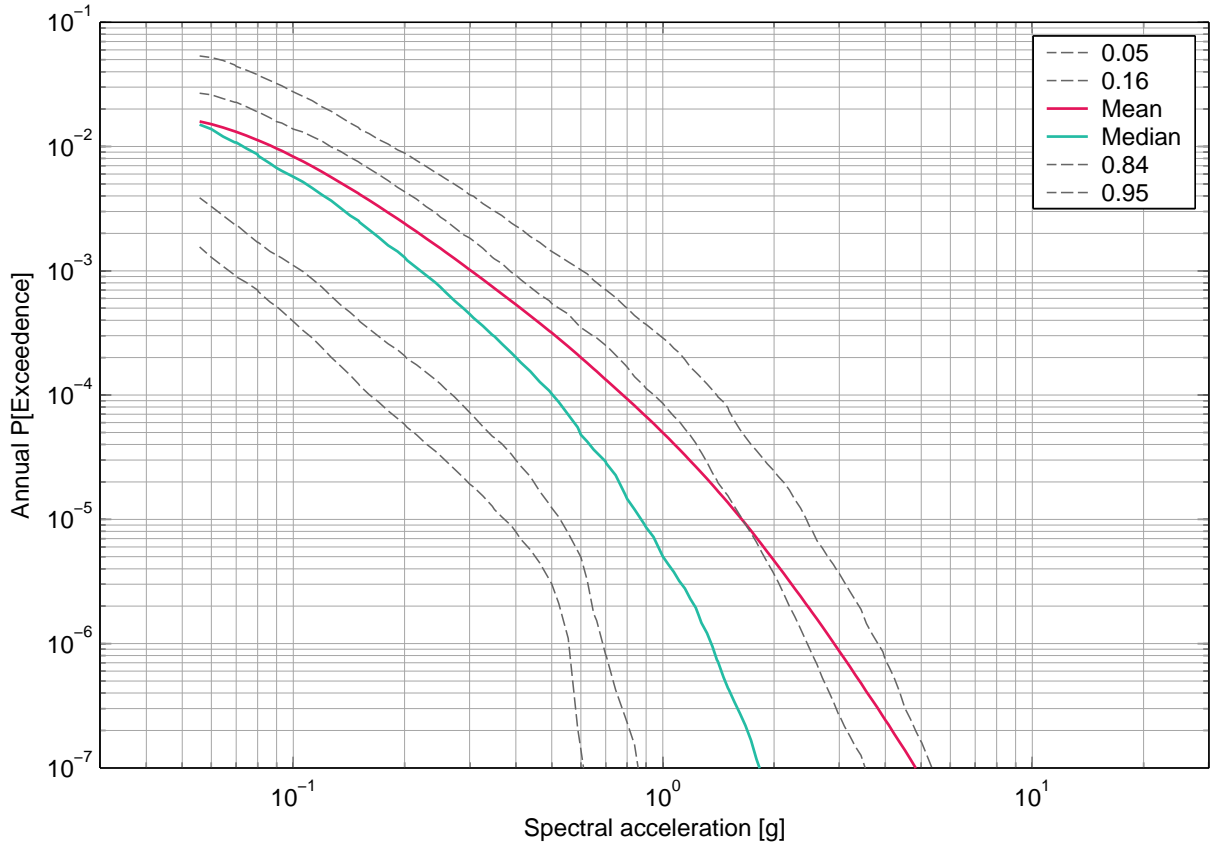


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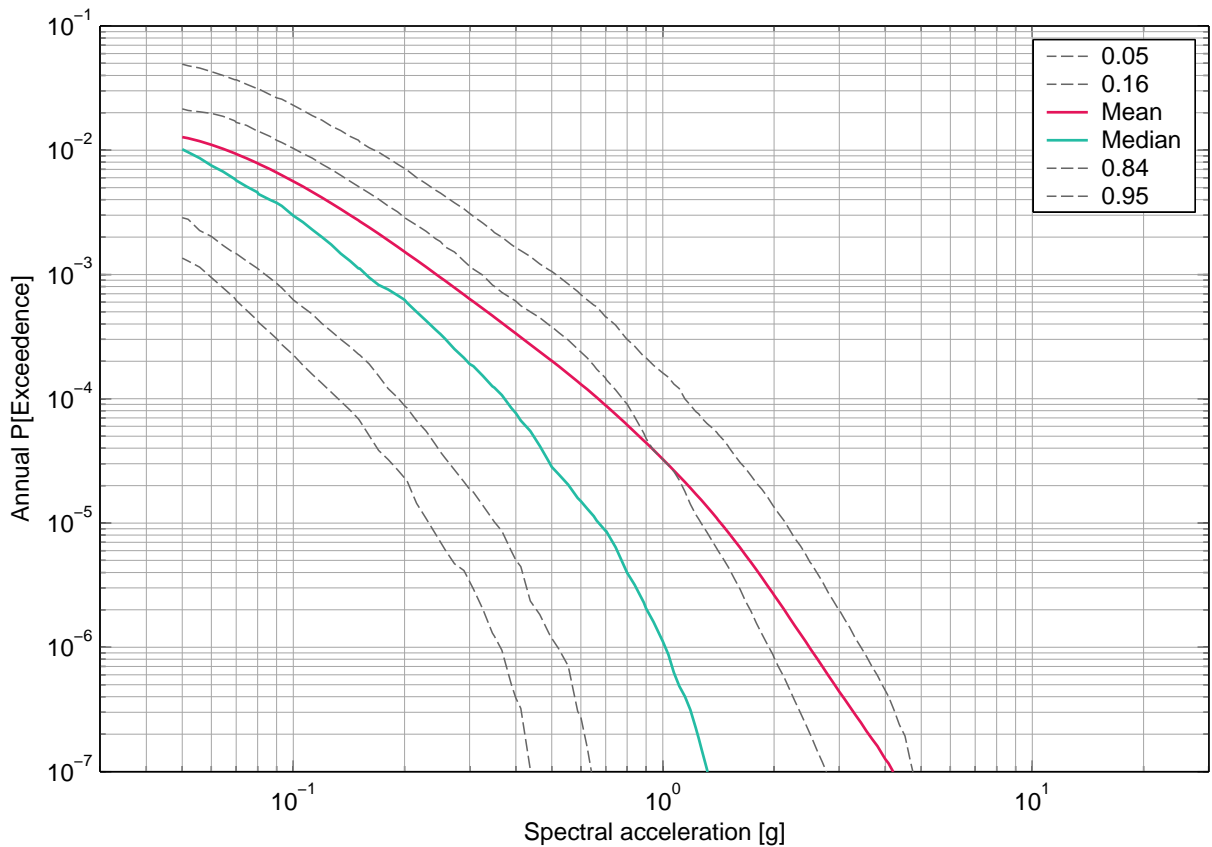


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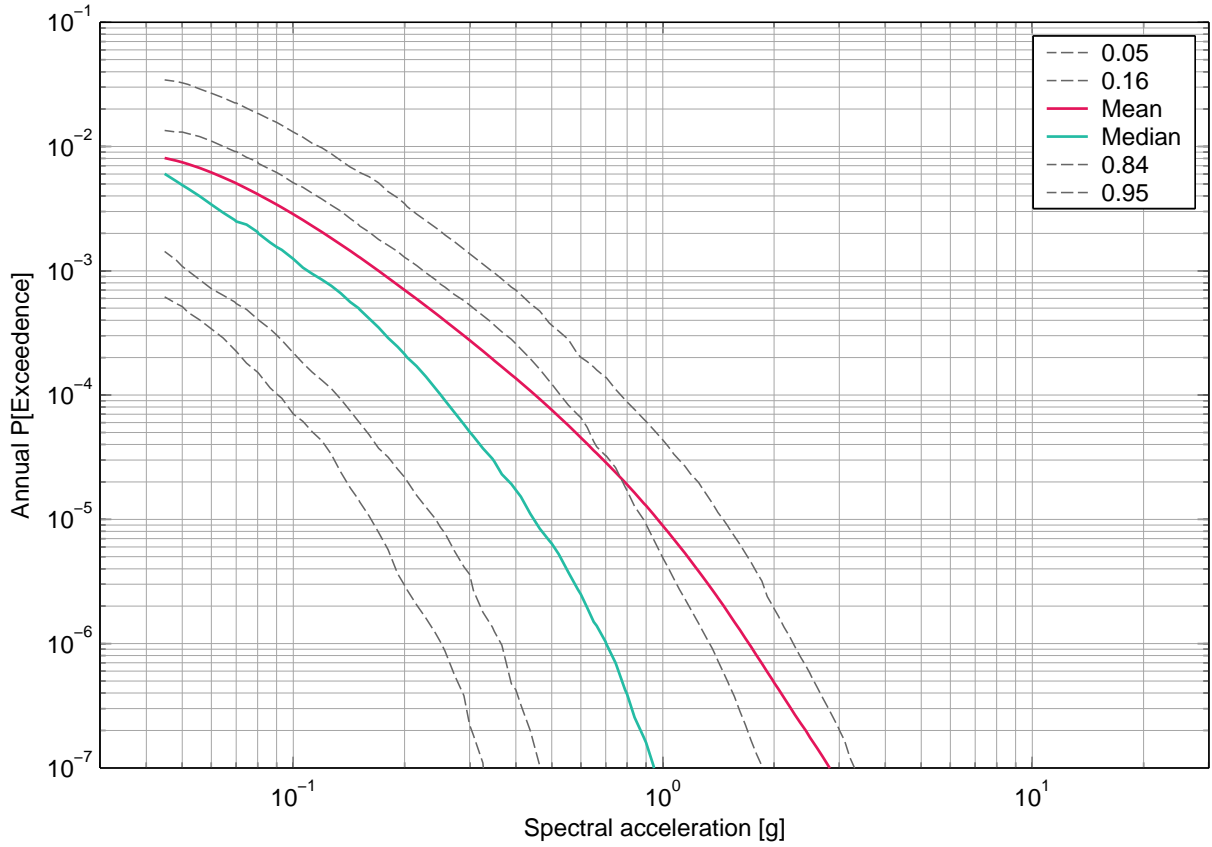


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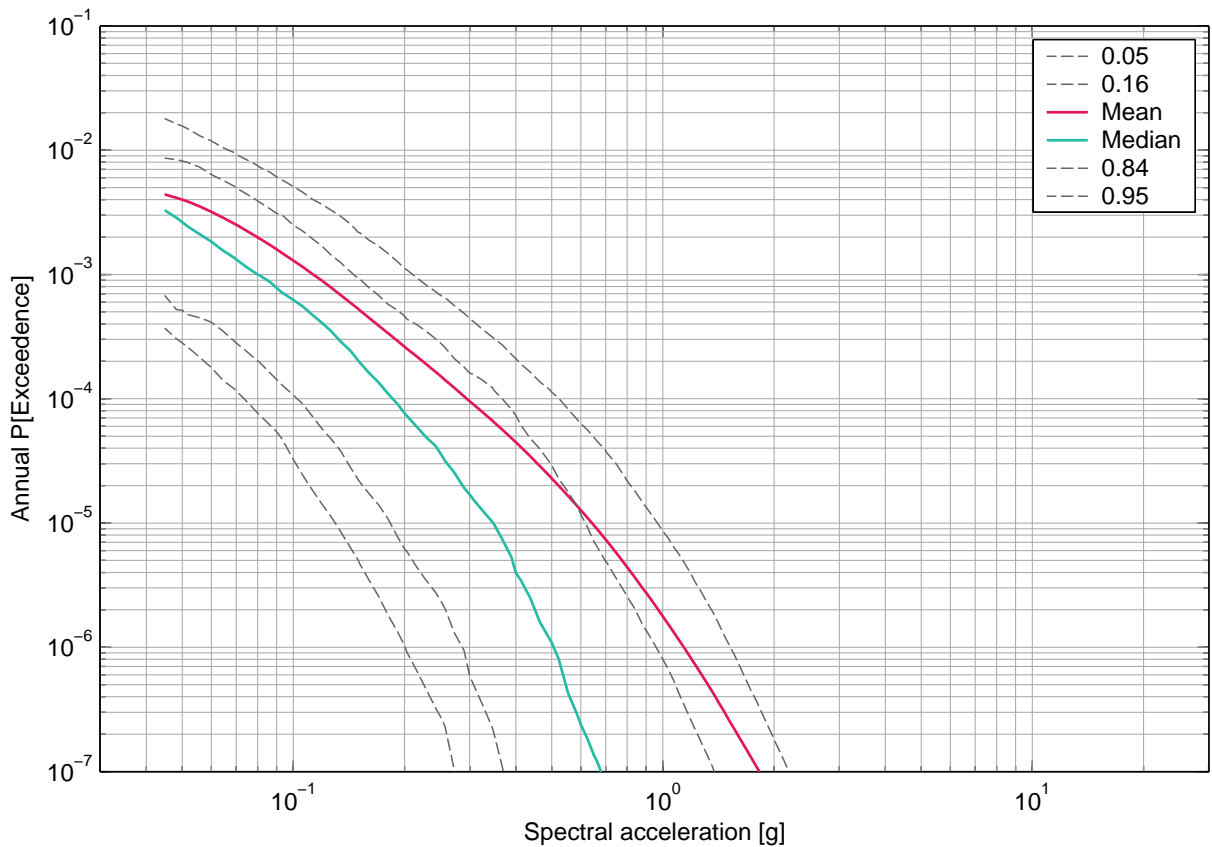


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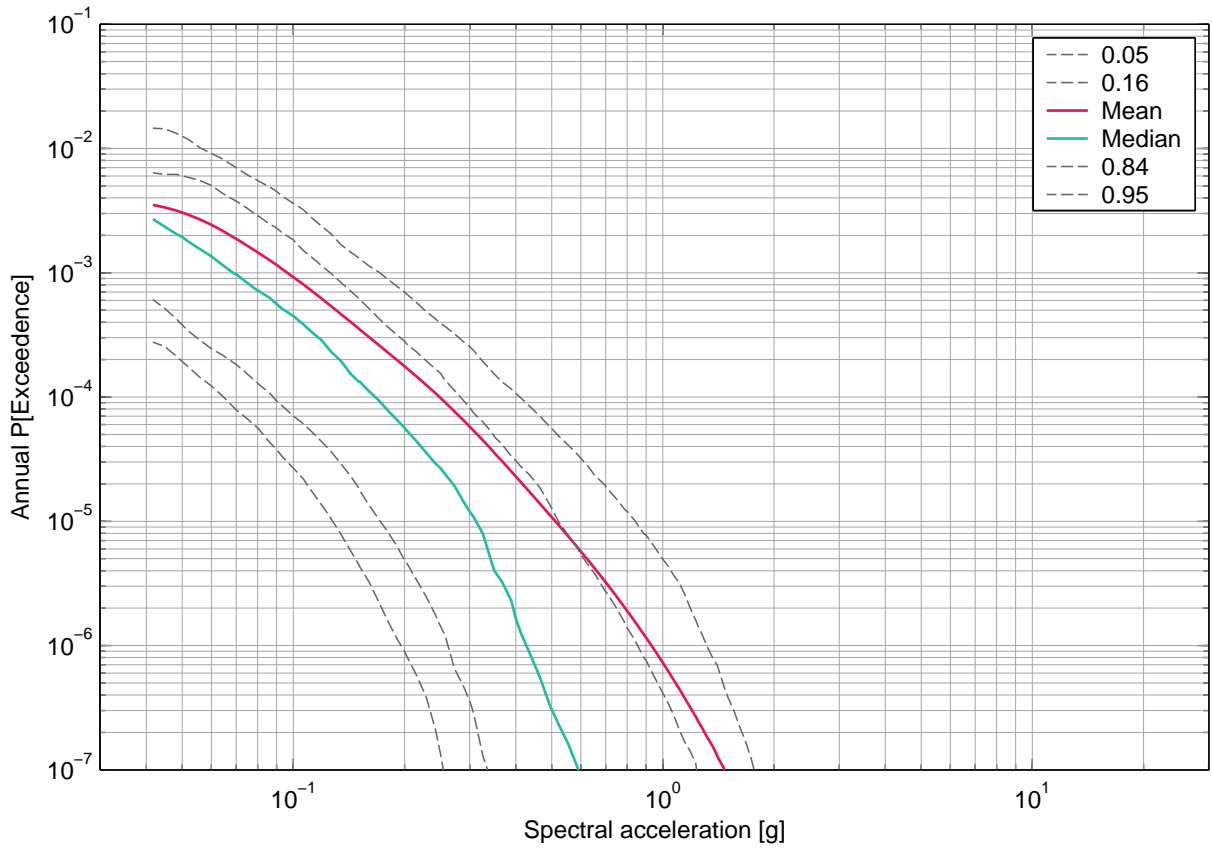


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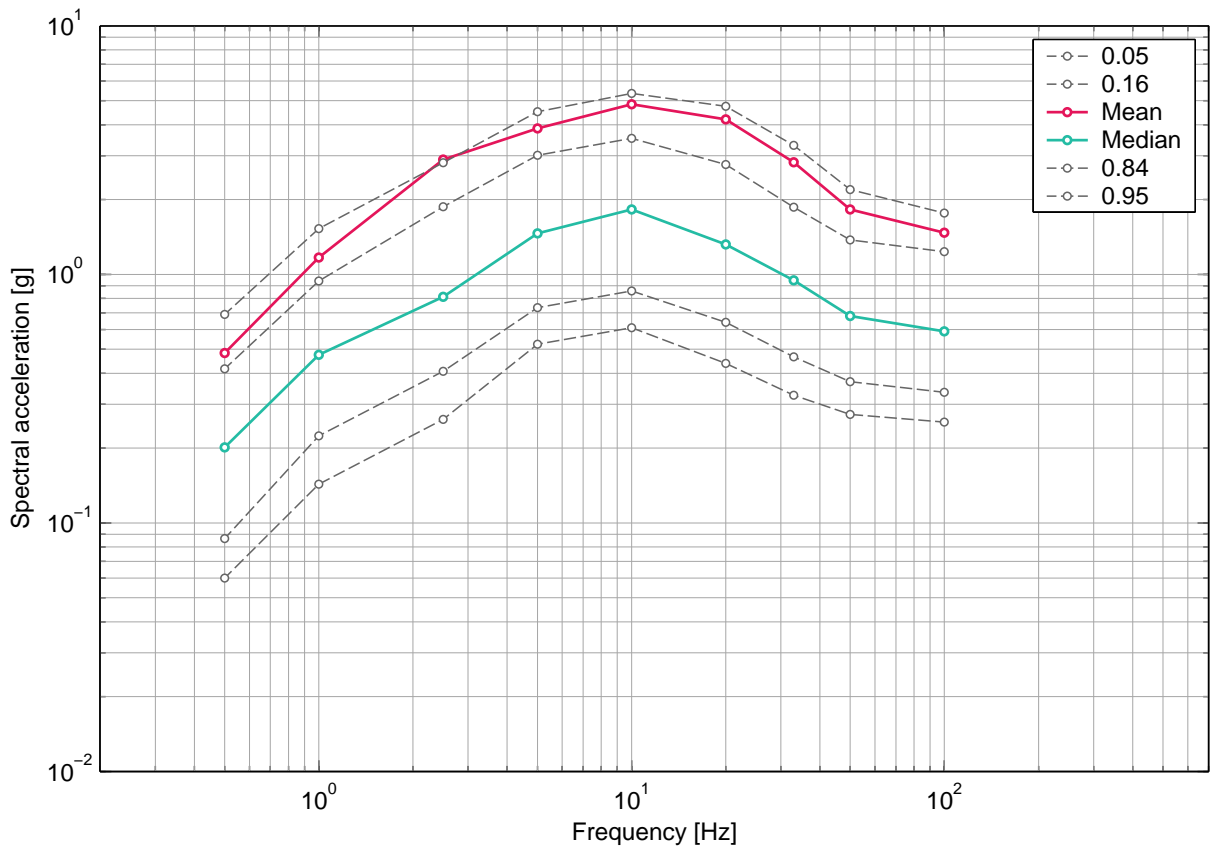


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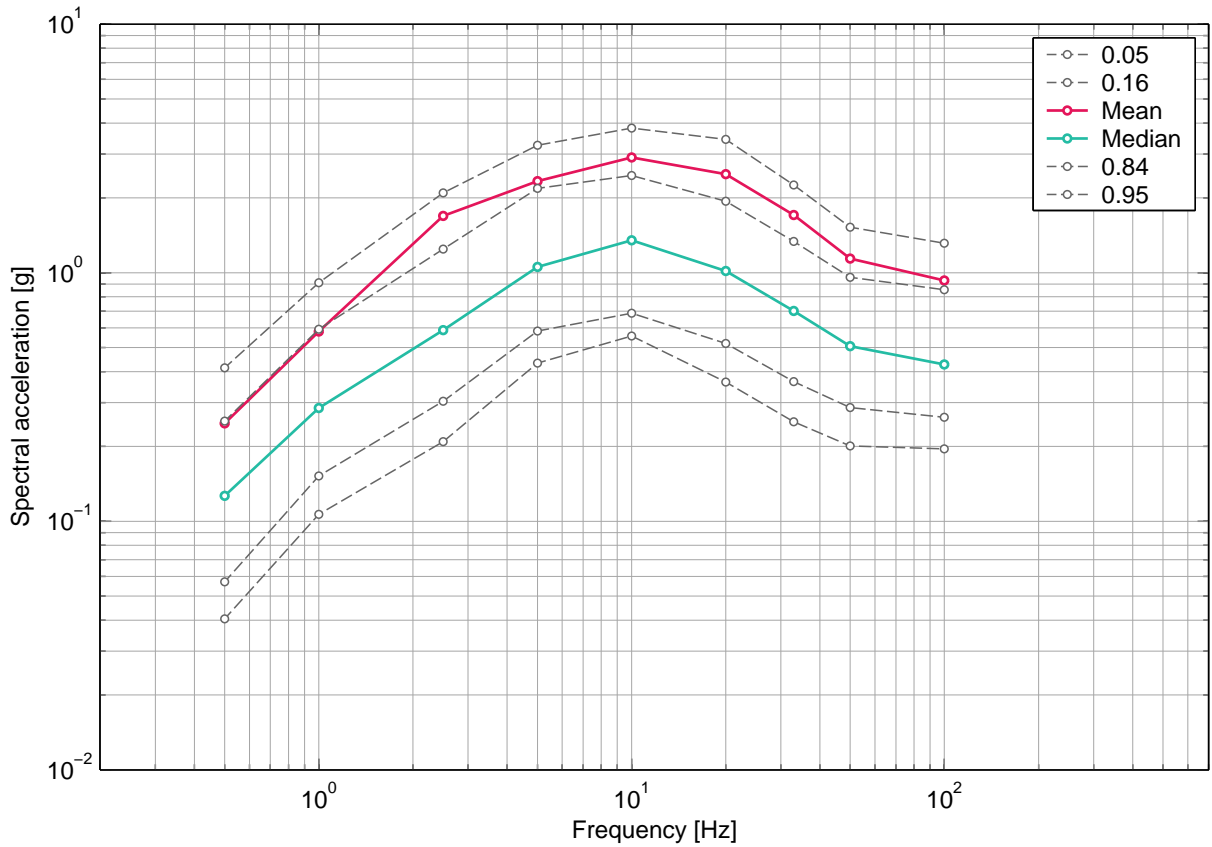


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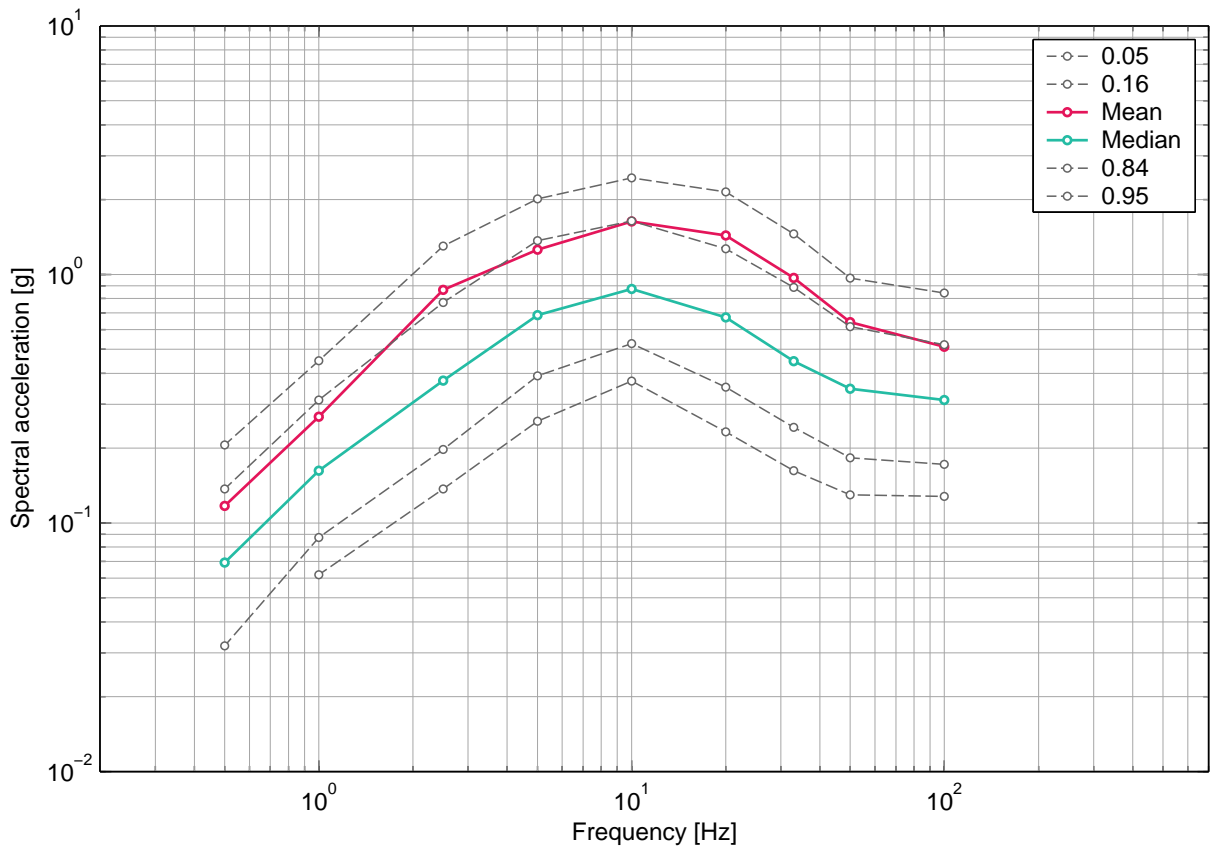


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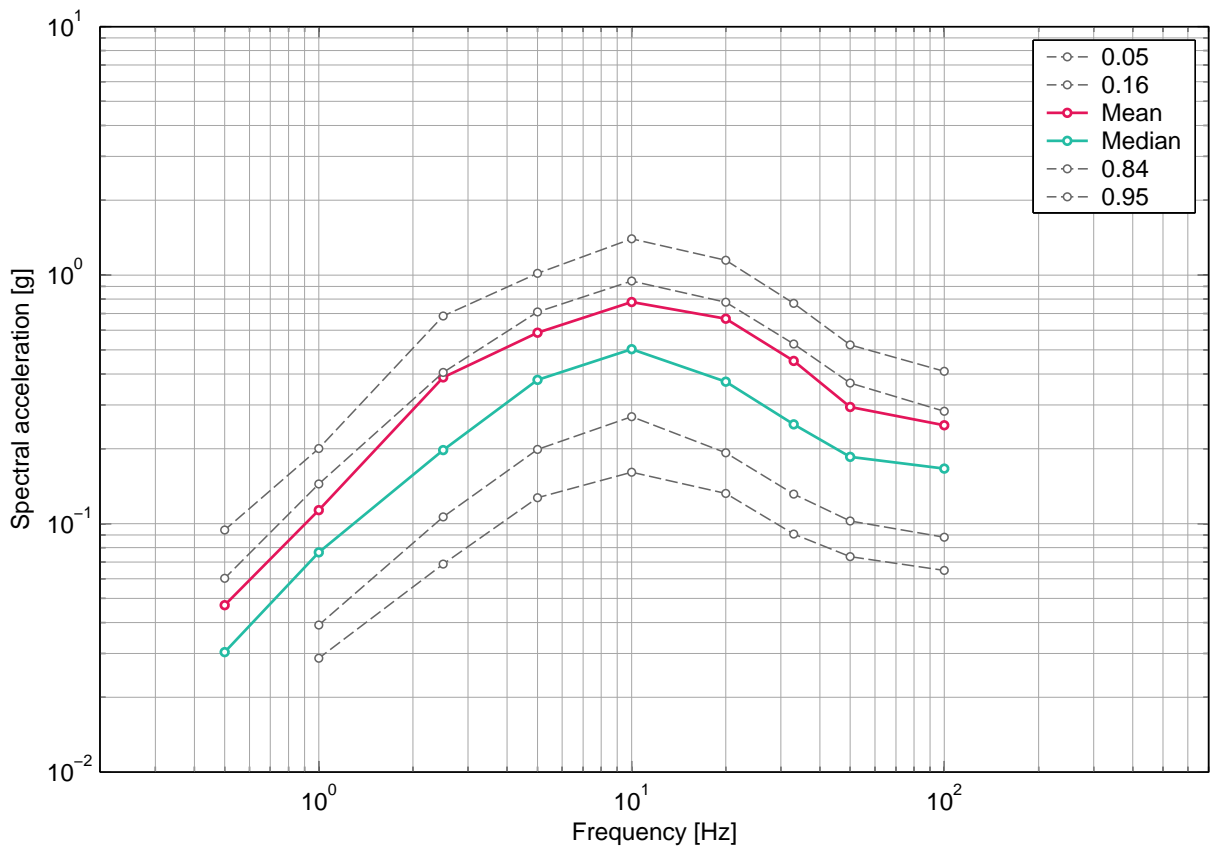


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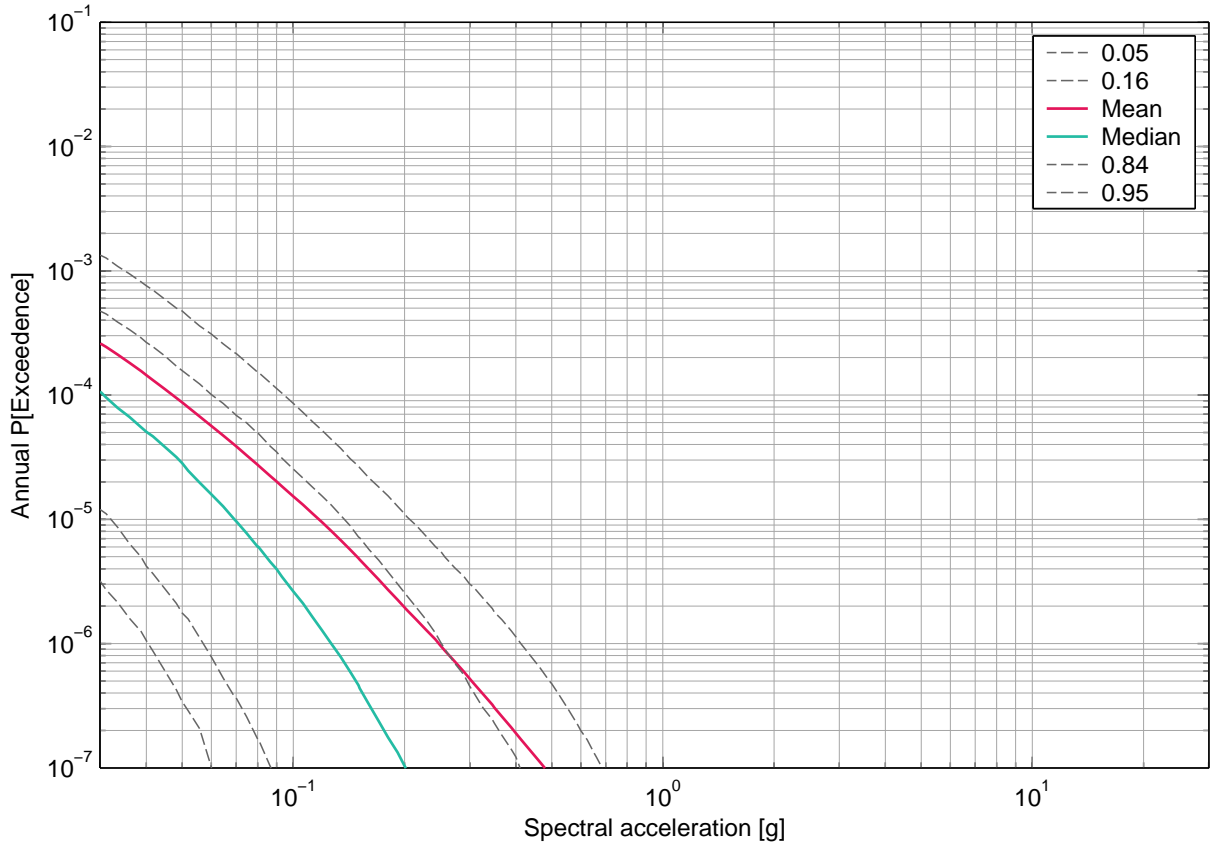


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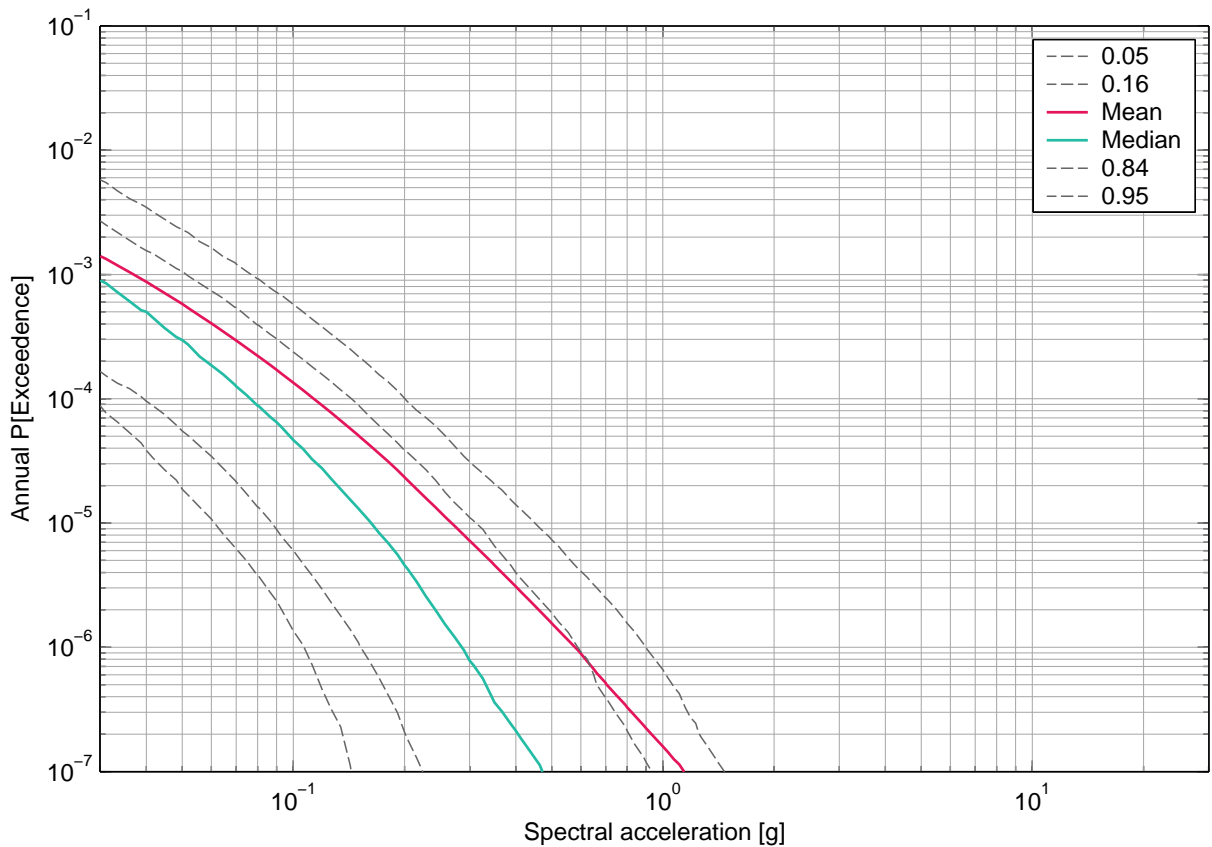


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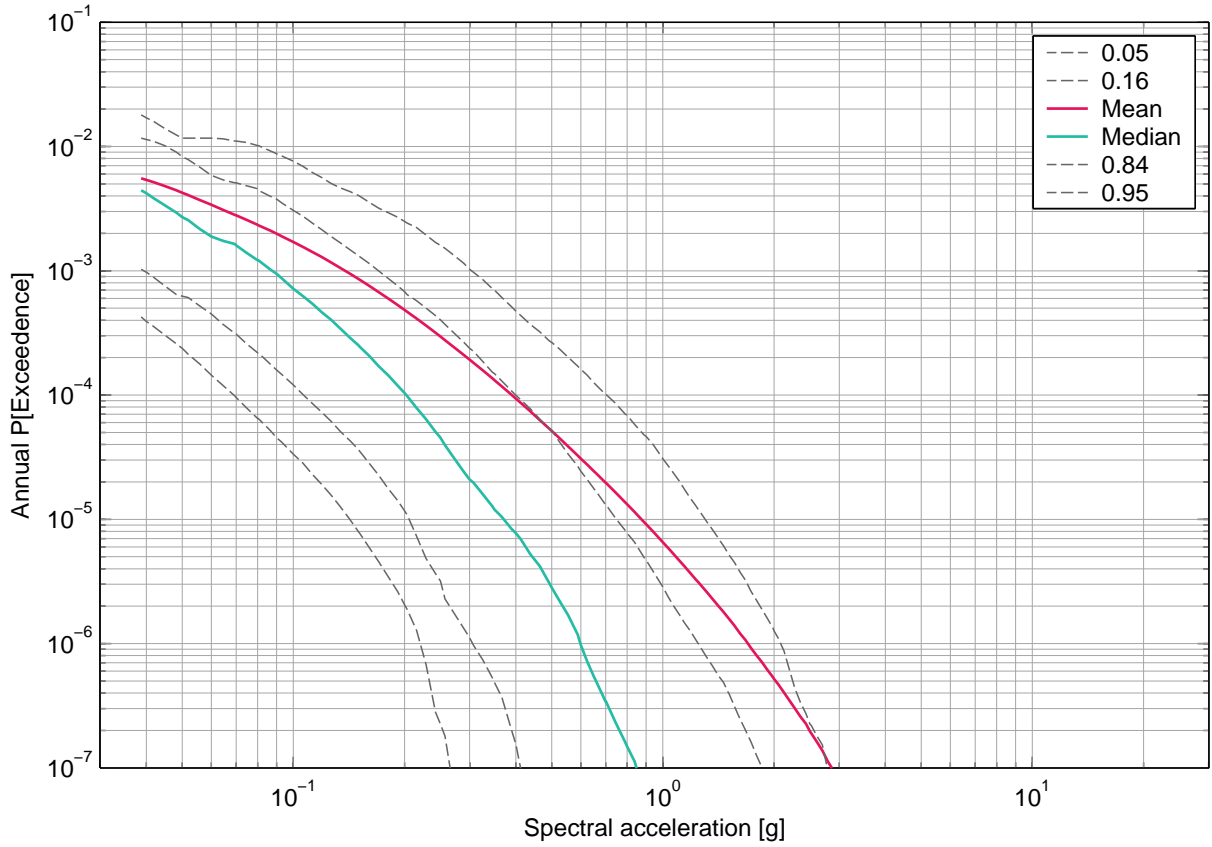


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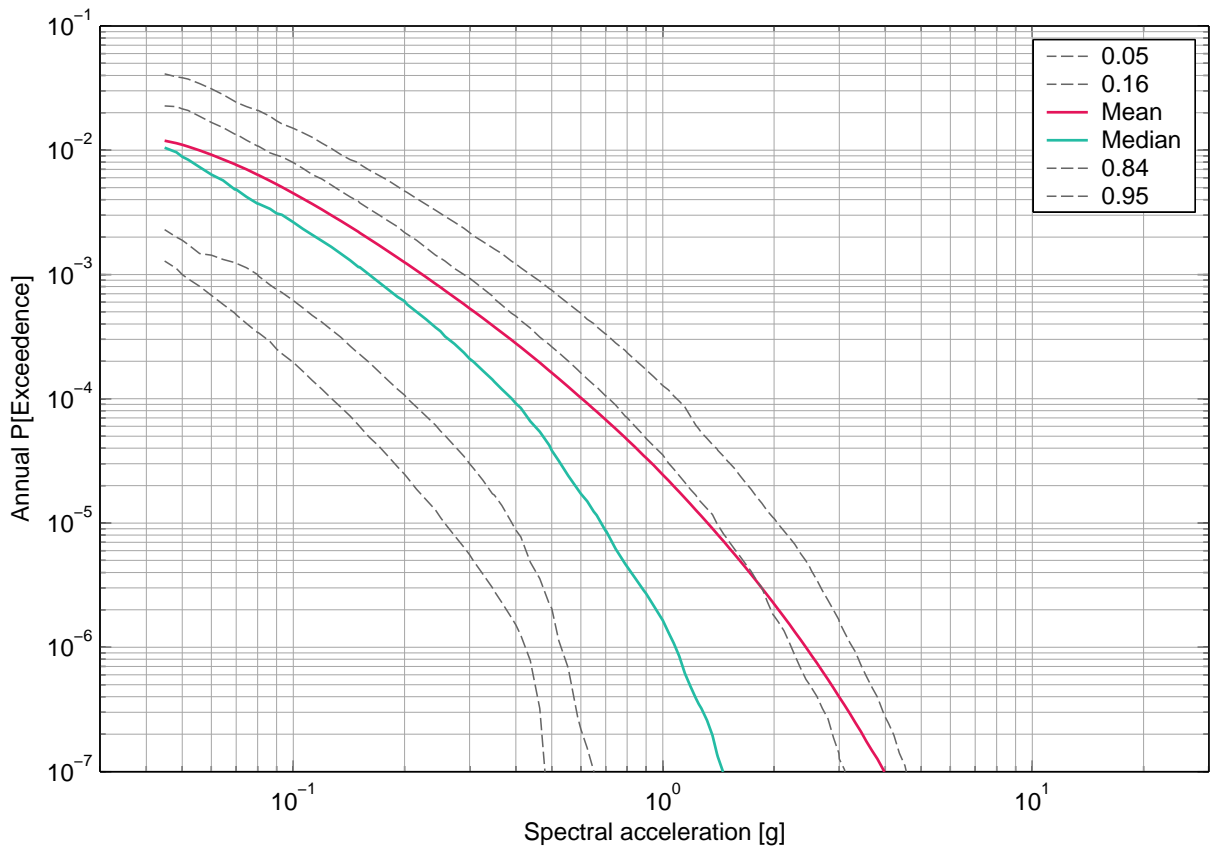


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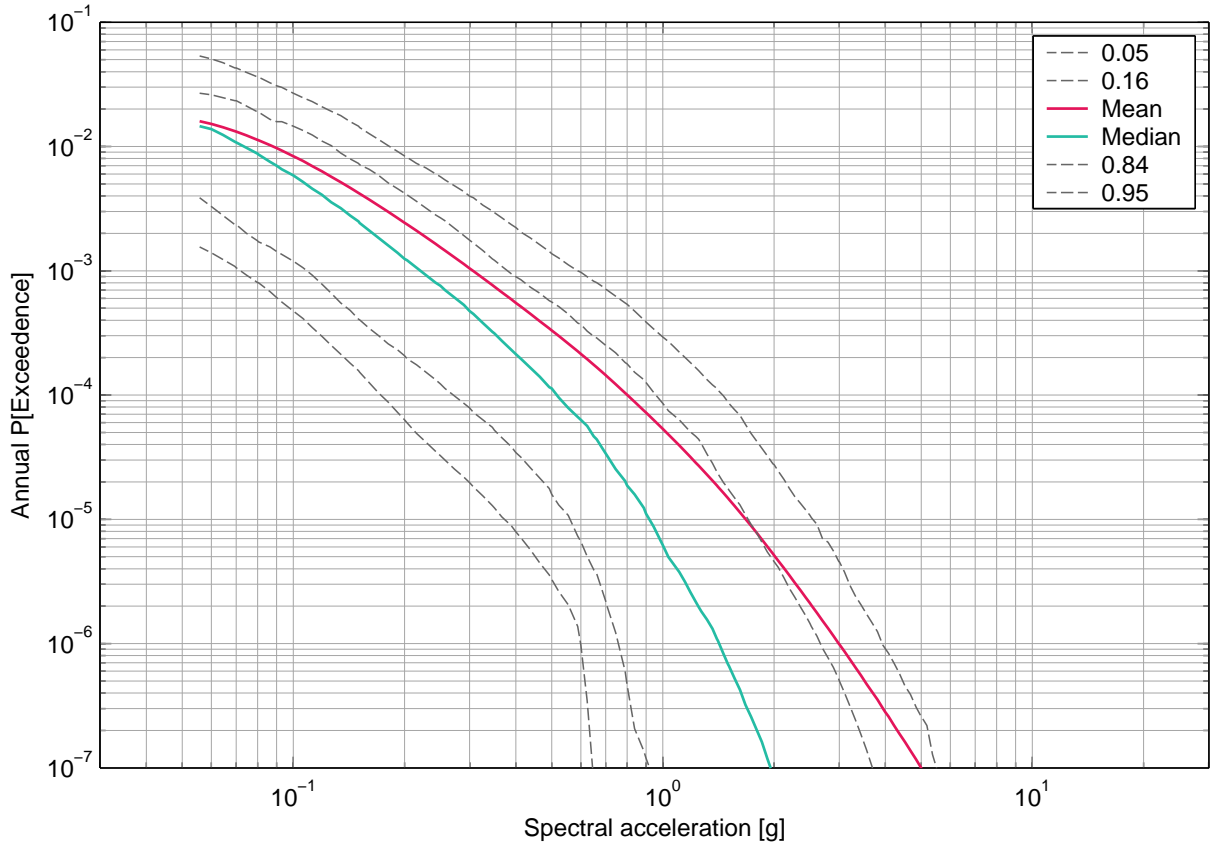


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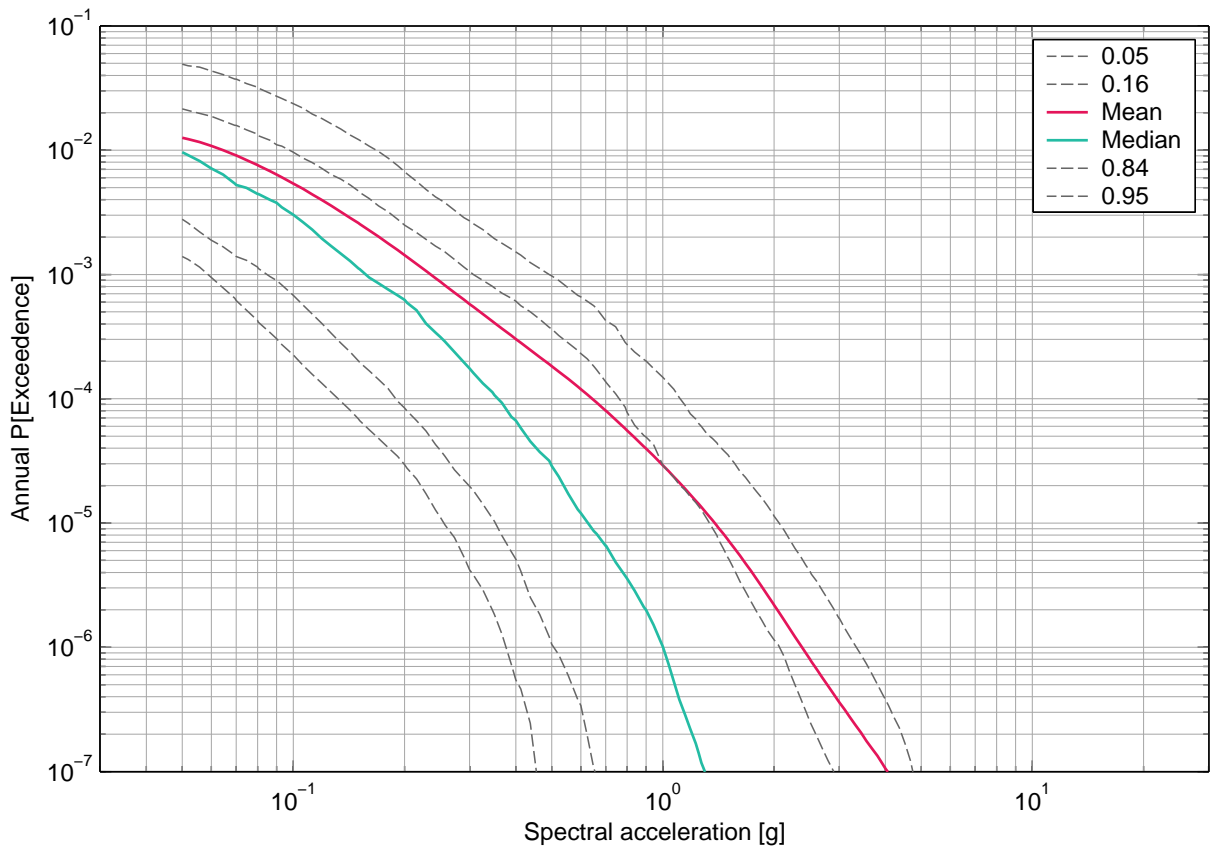


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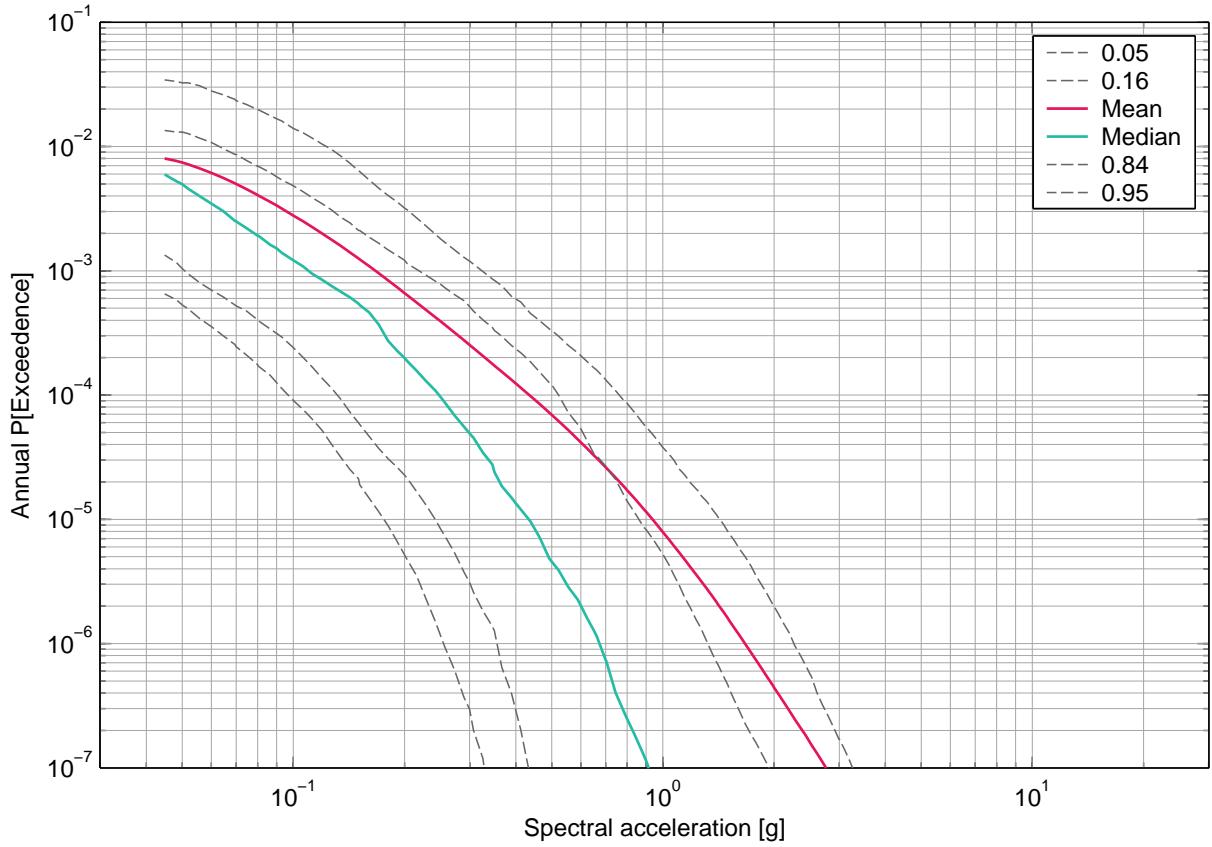


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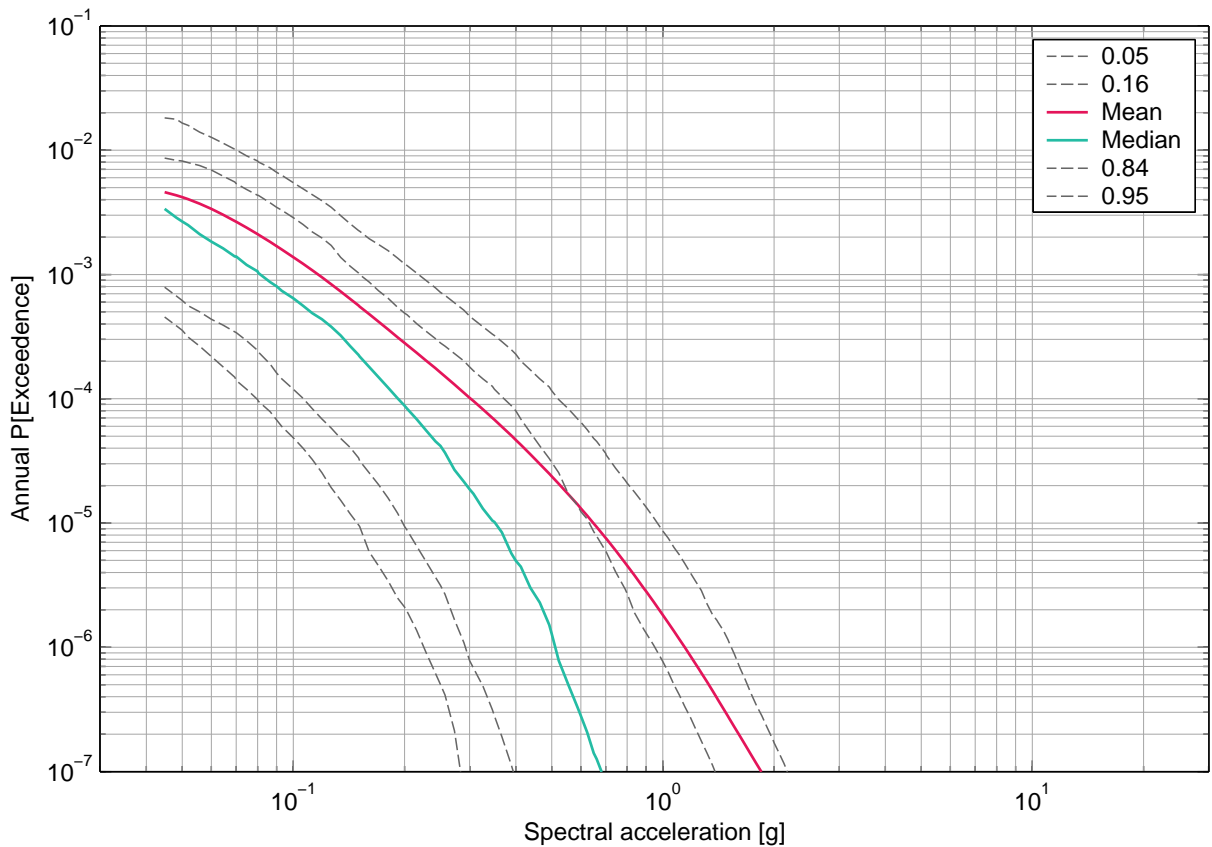


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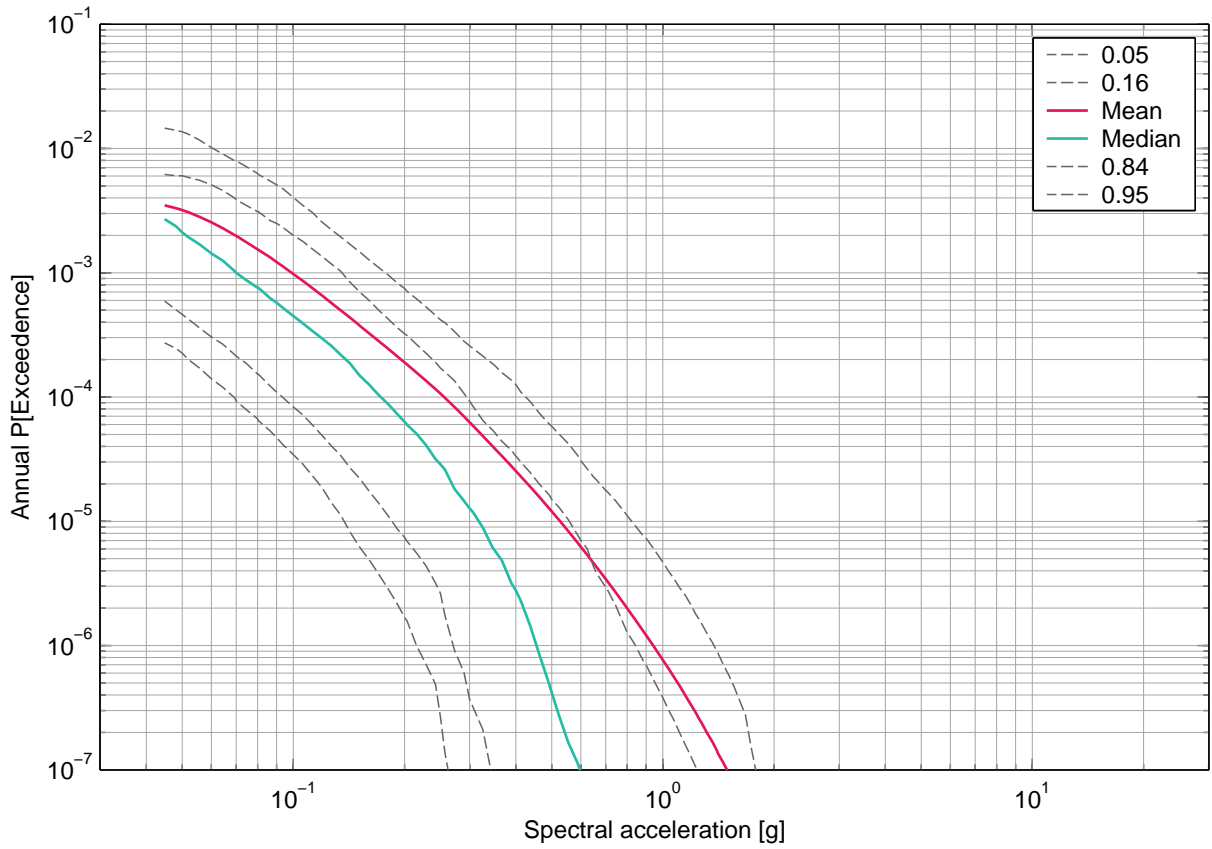


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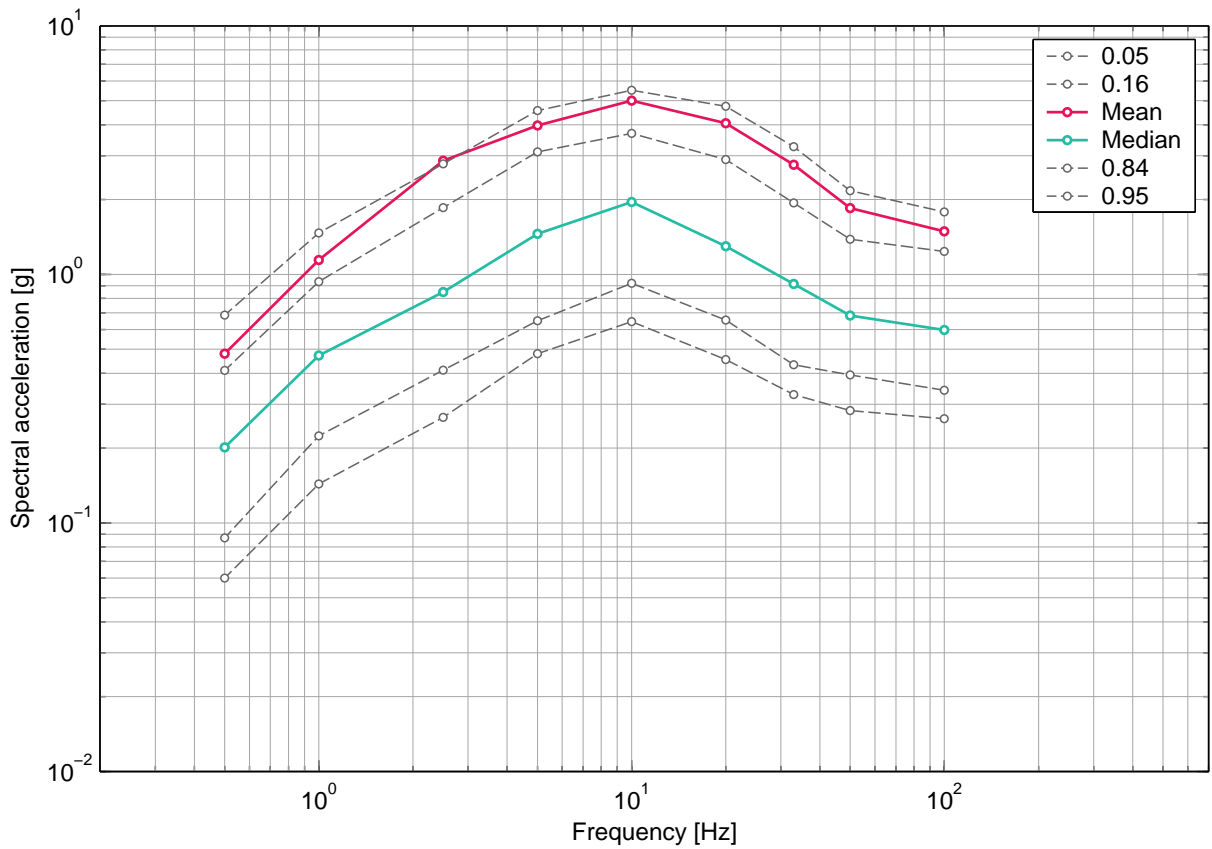


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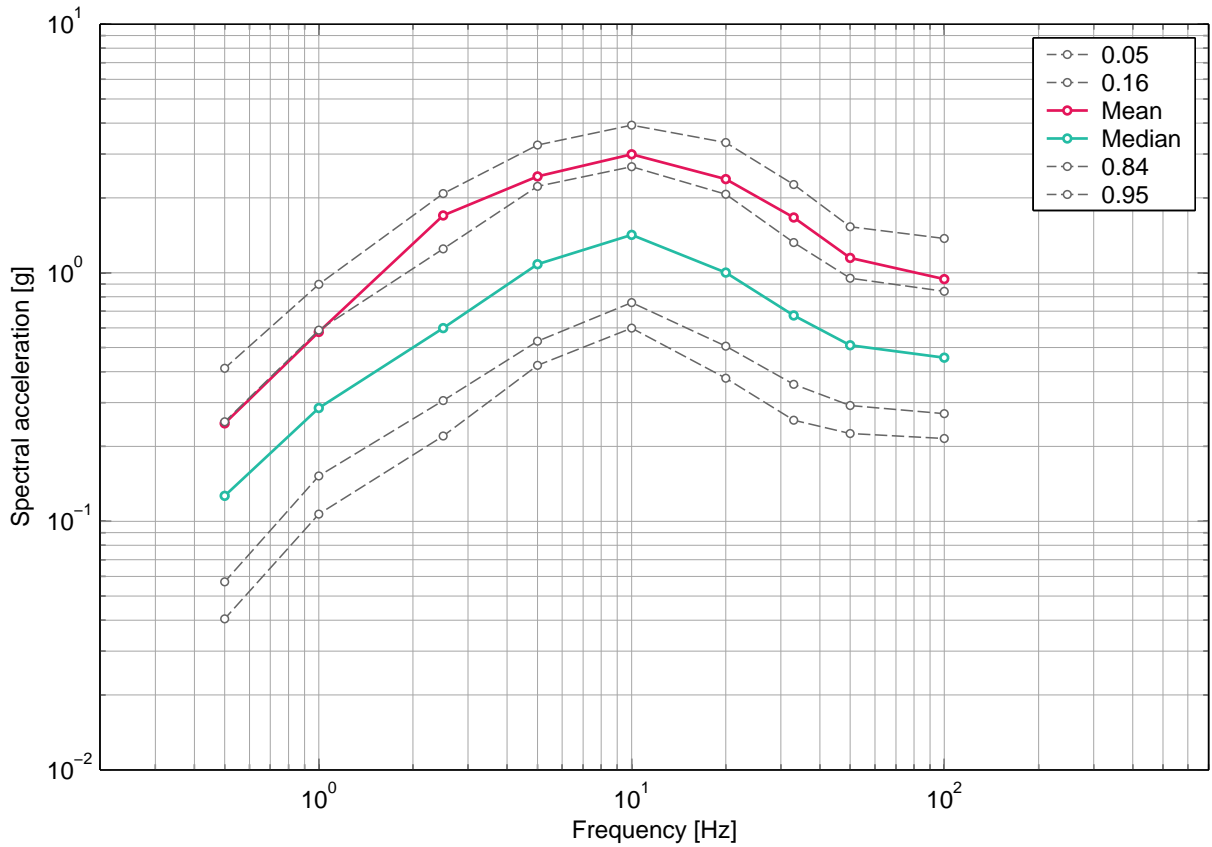


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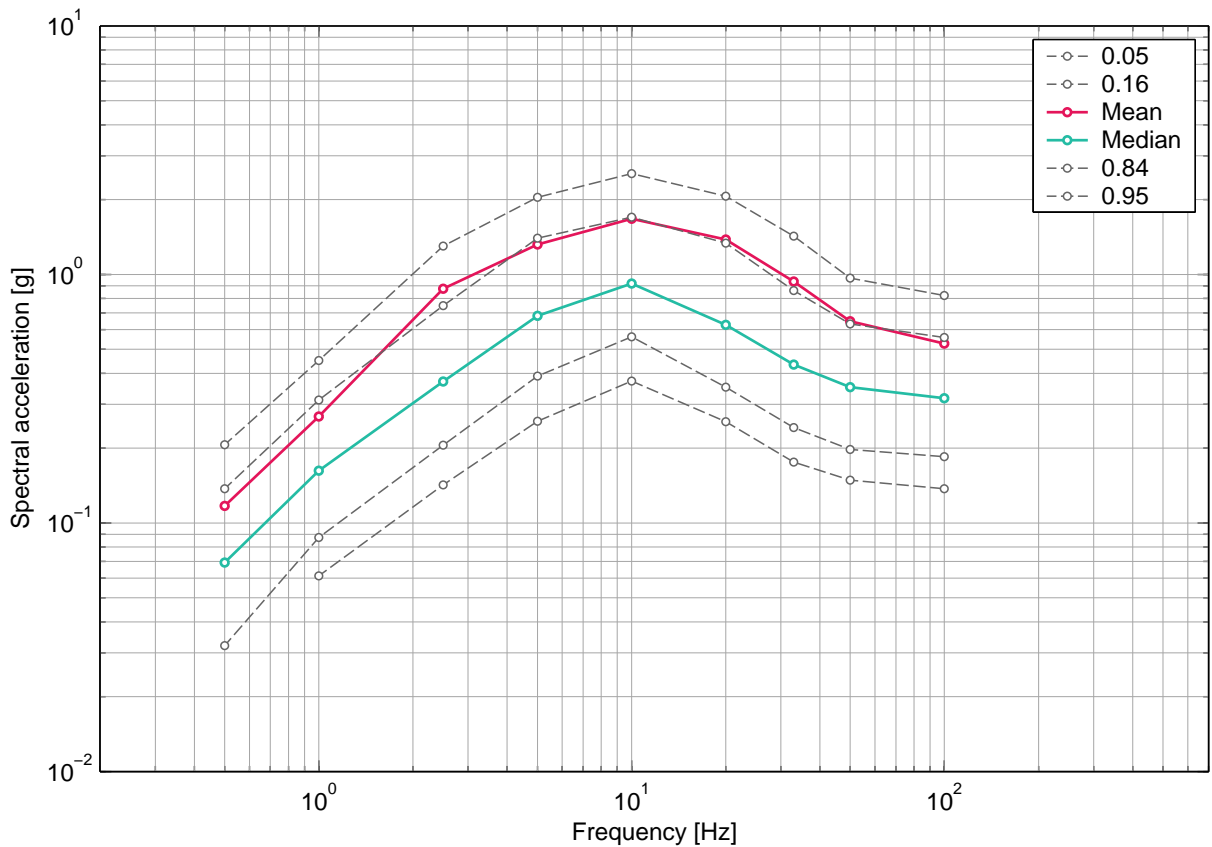


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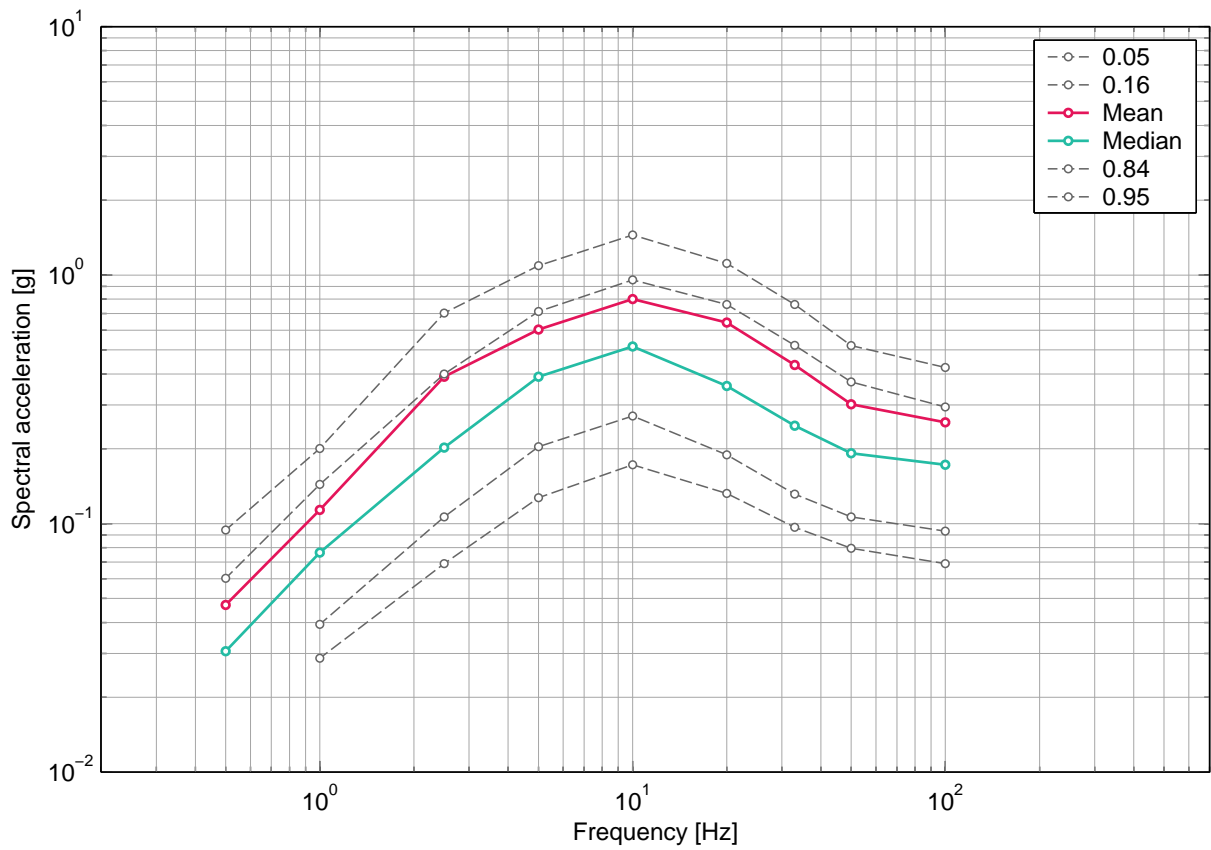


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## 5 MÜHLEBERG

### 5.1 Mühleberg, Rock Hazard, Horizontal Component, Surface

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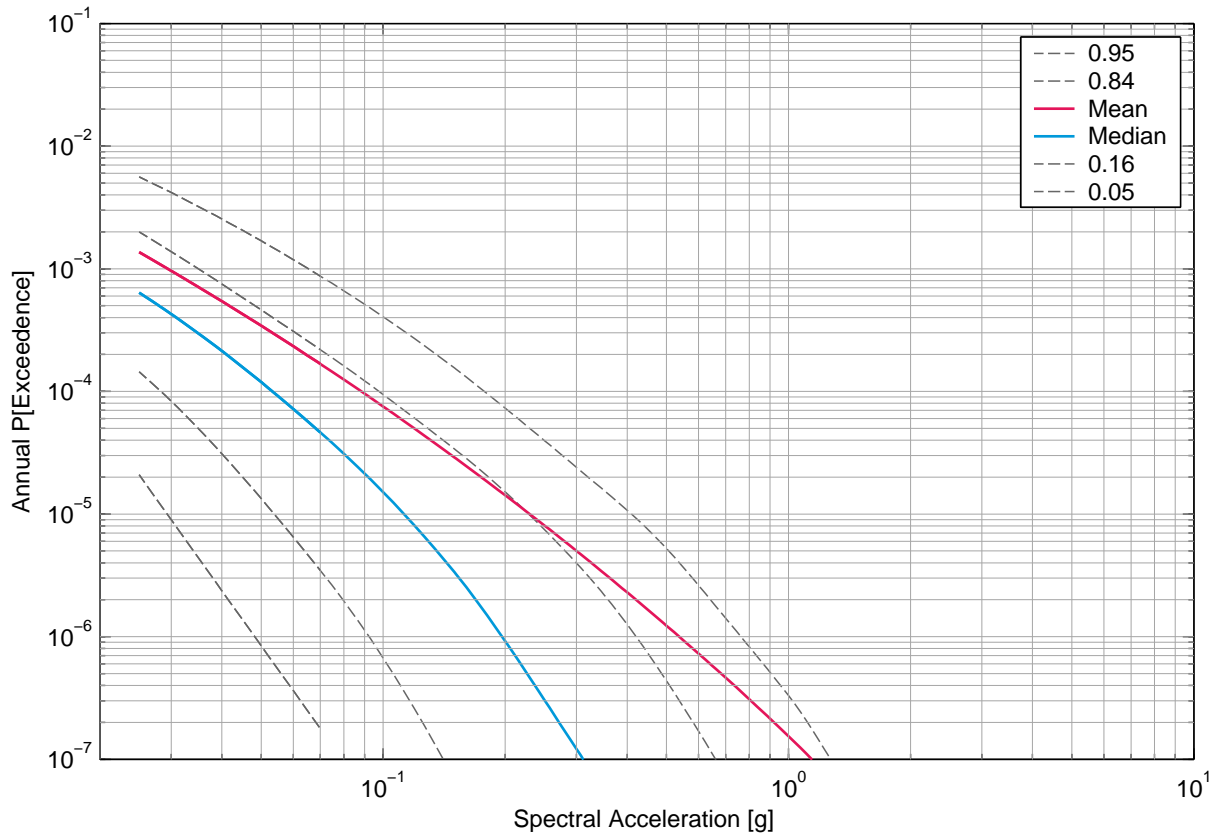


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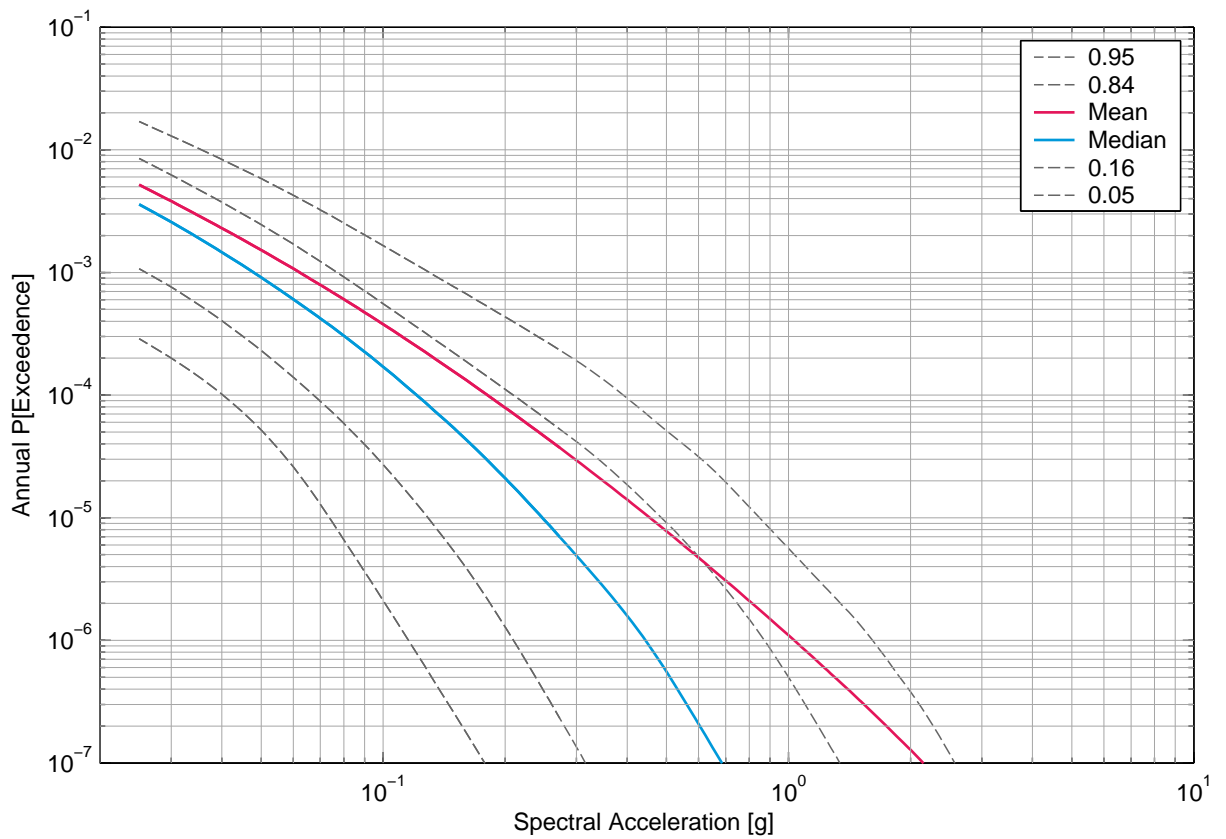


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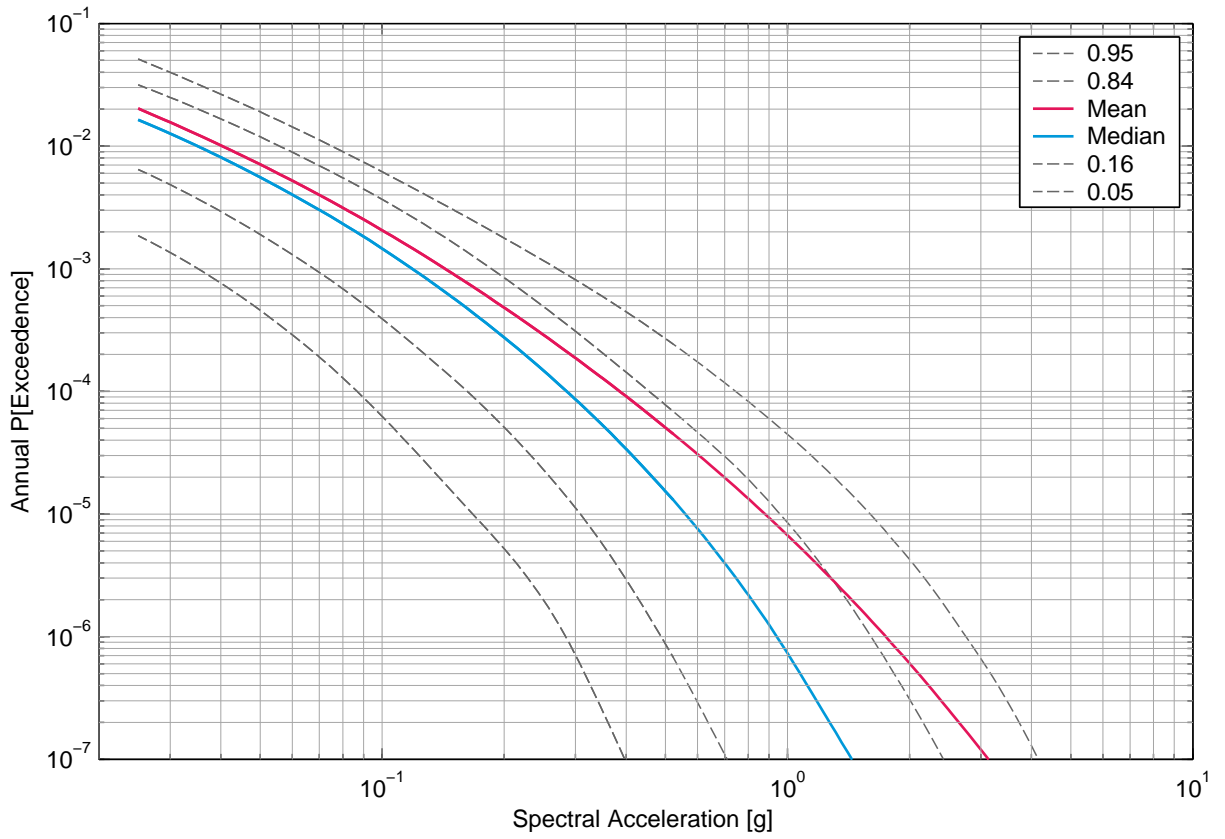


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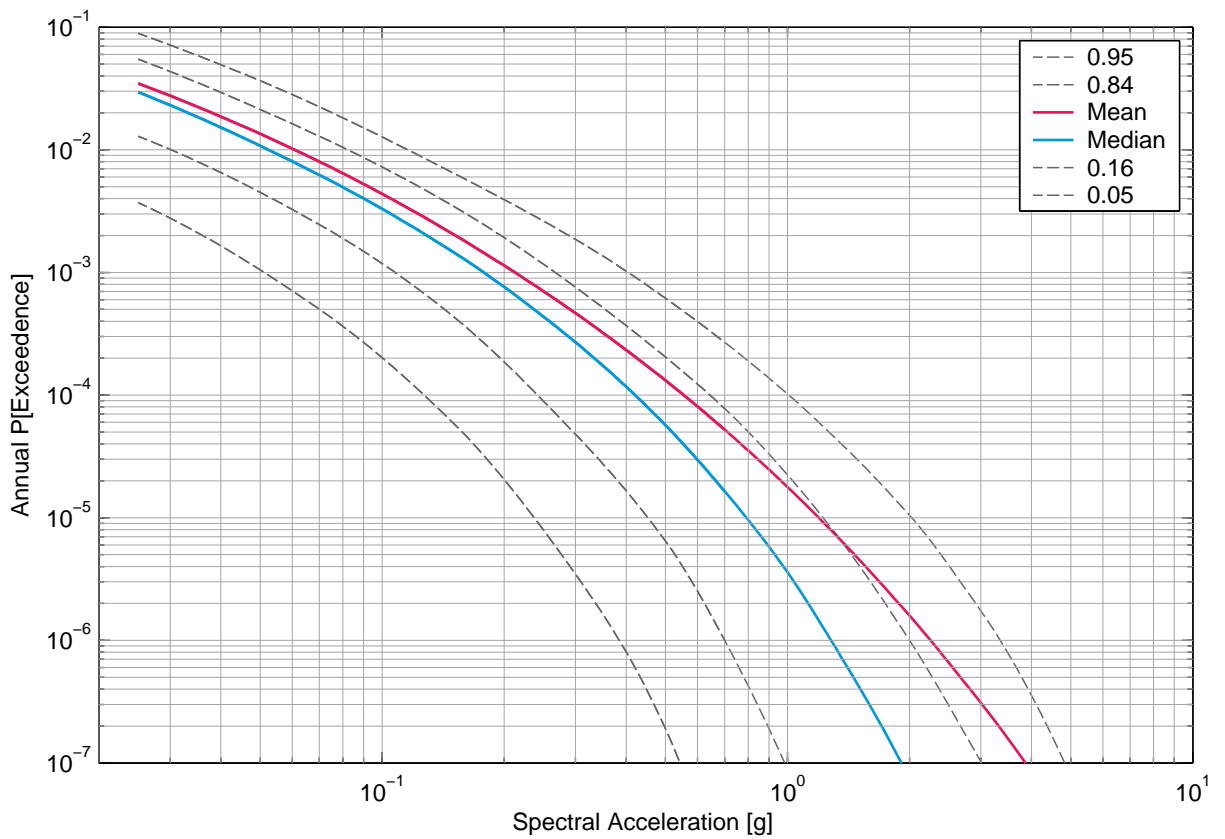


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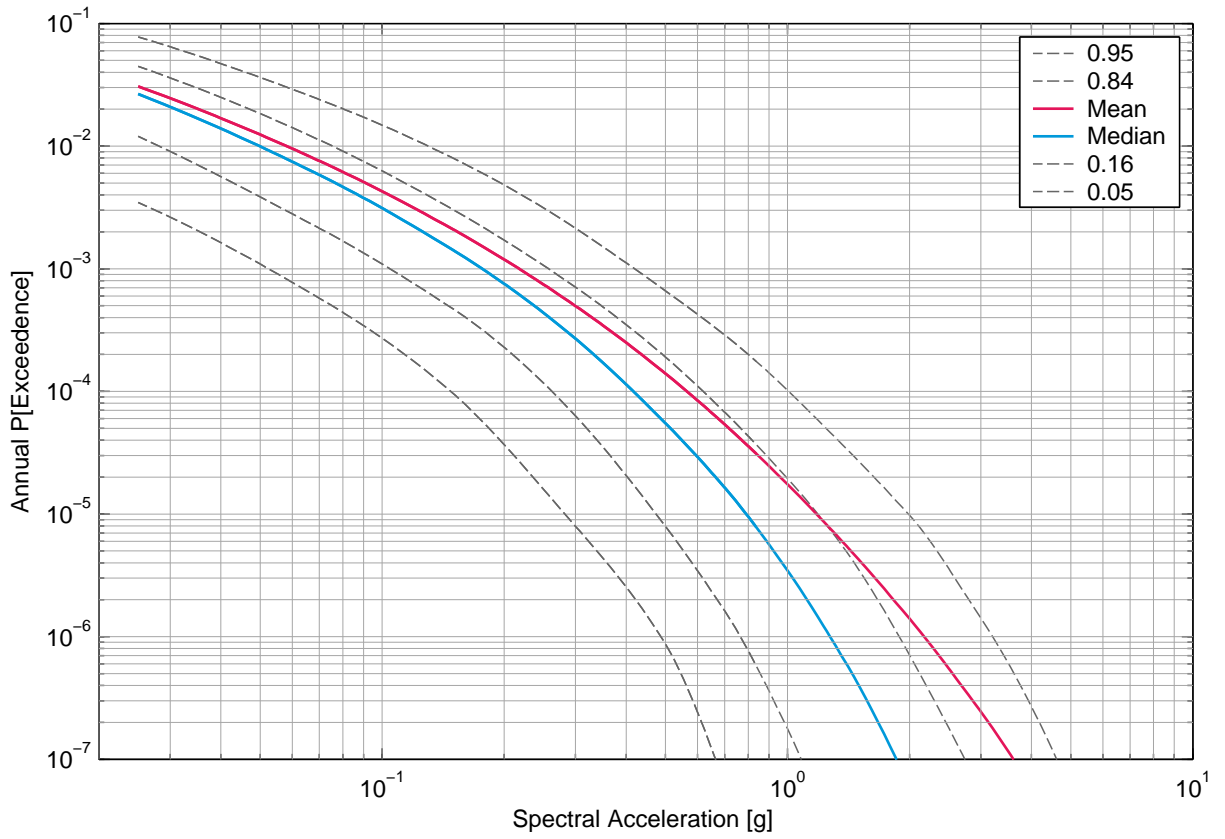


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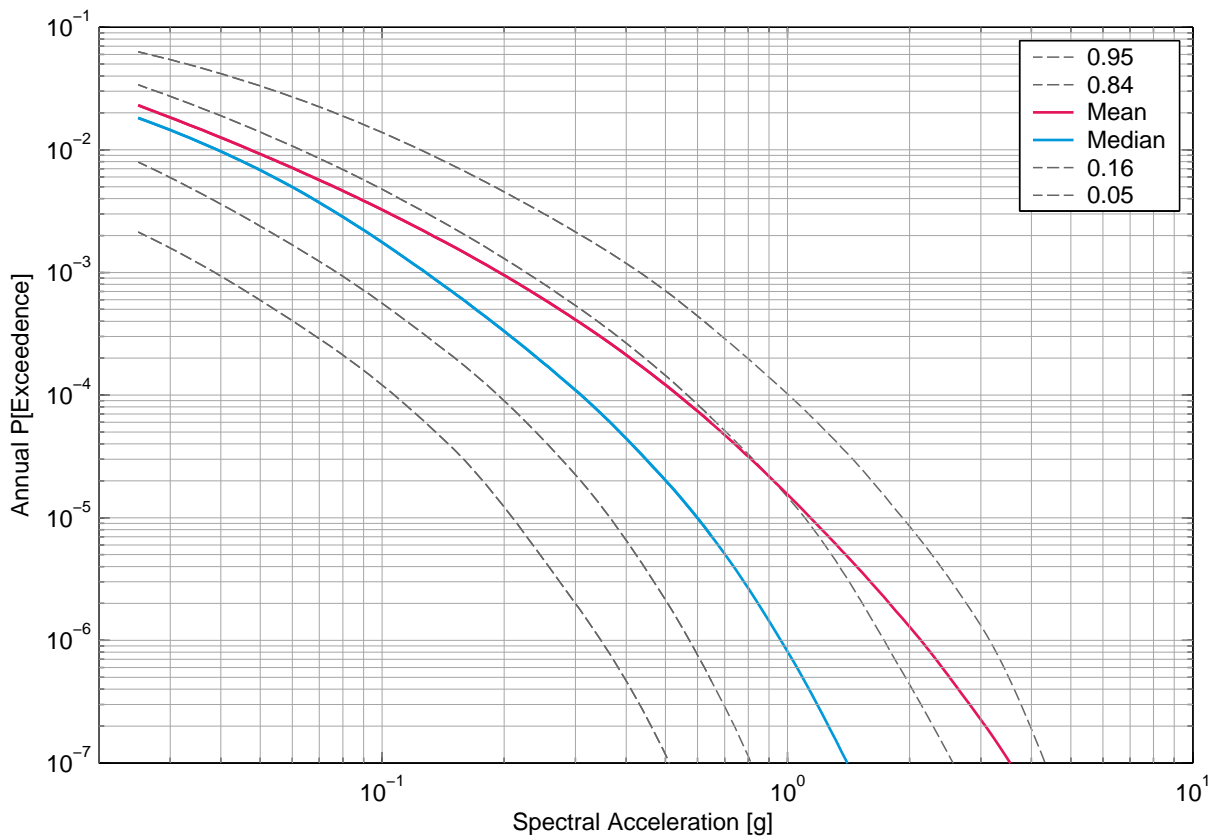


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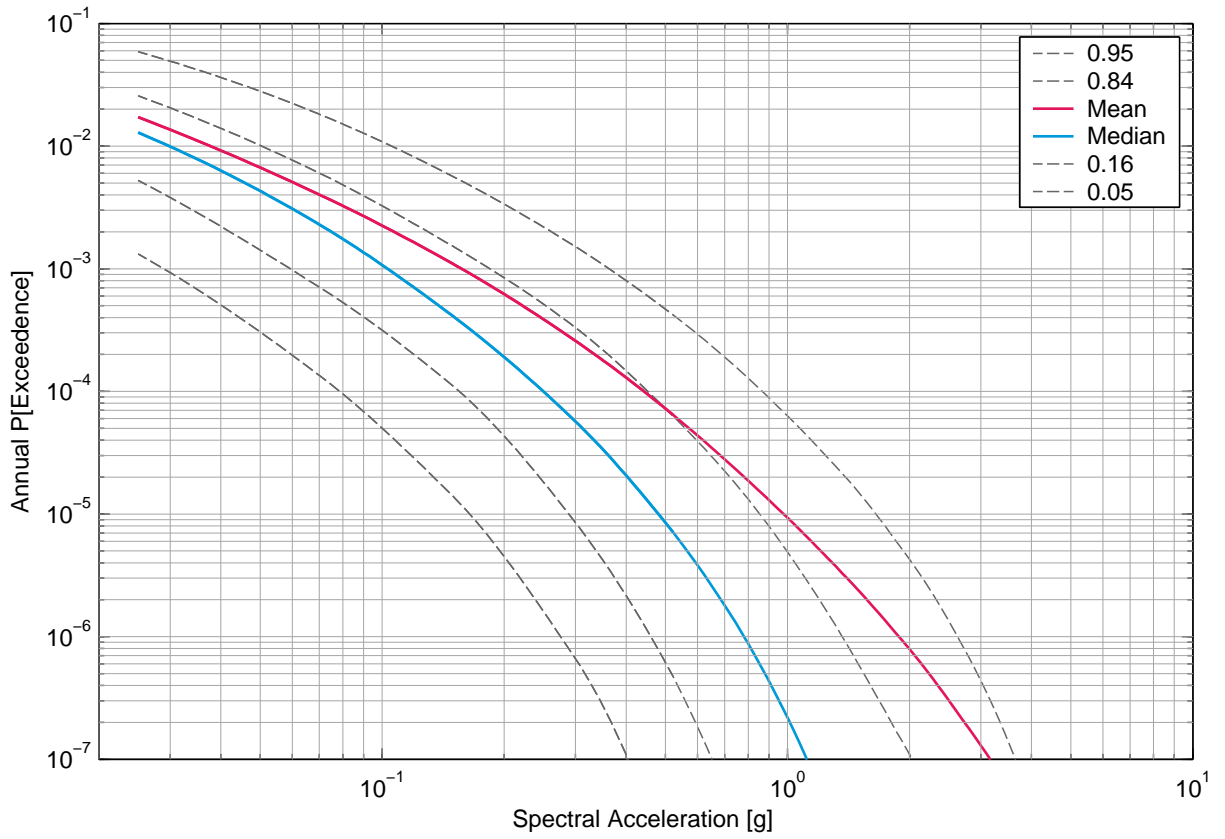


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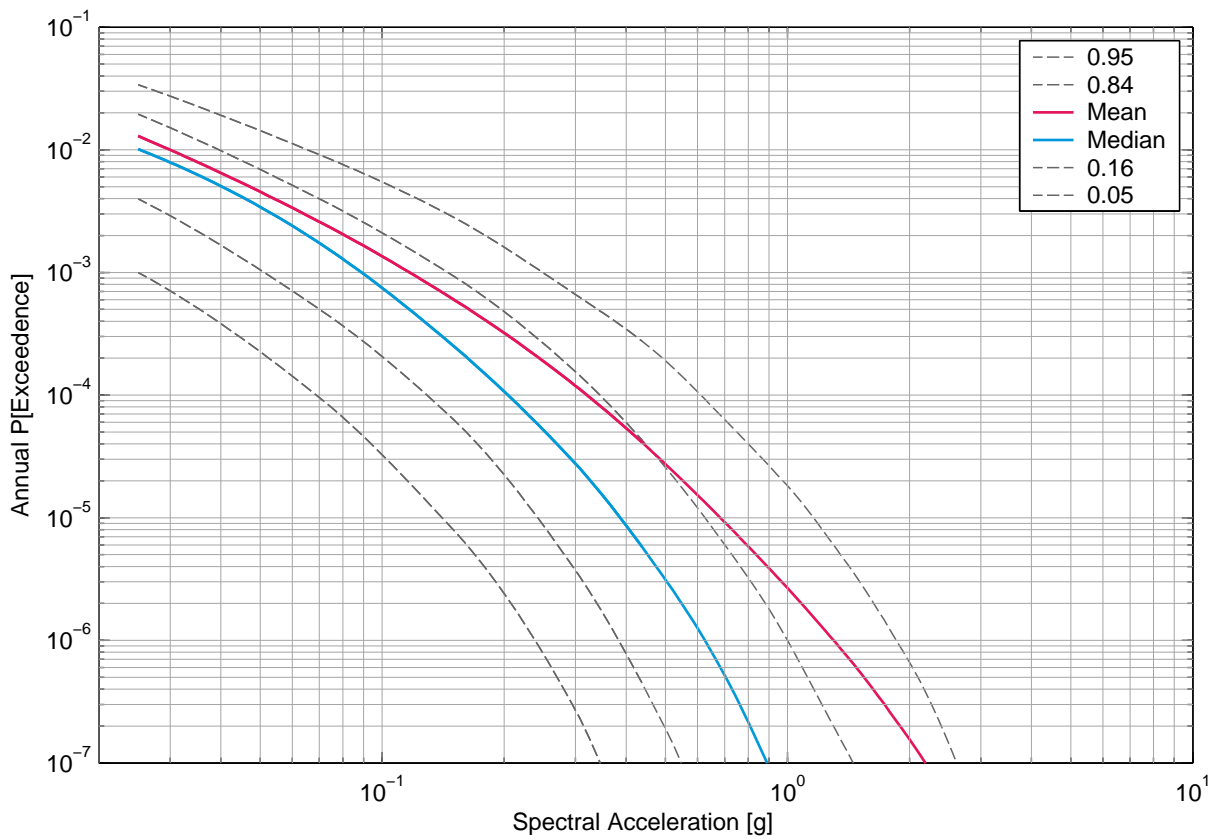


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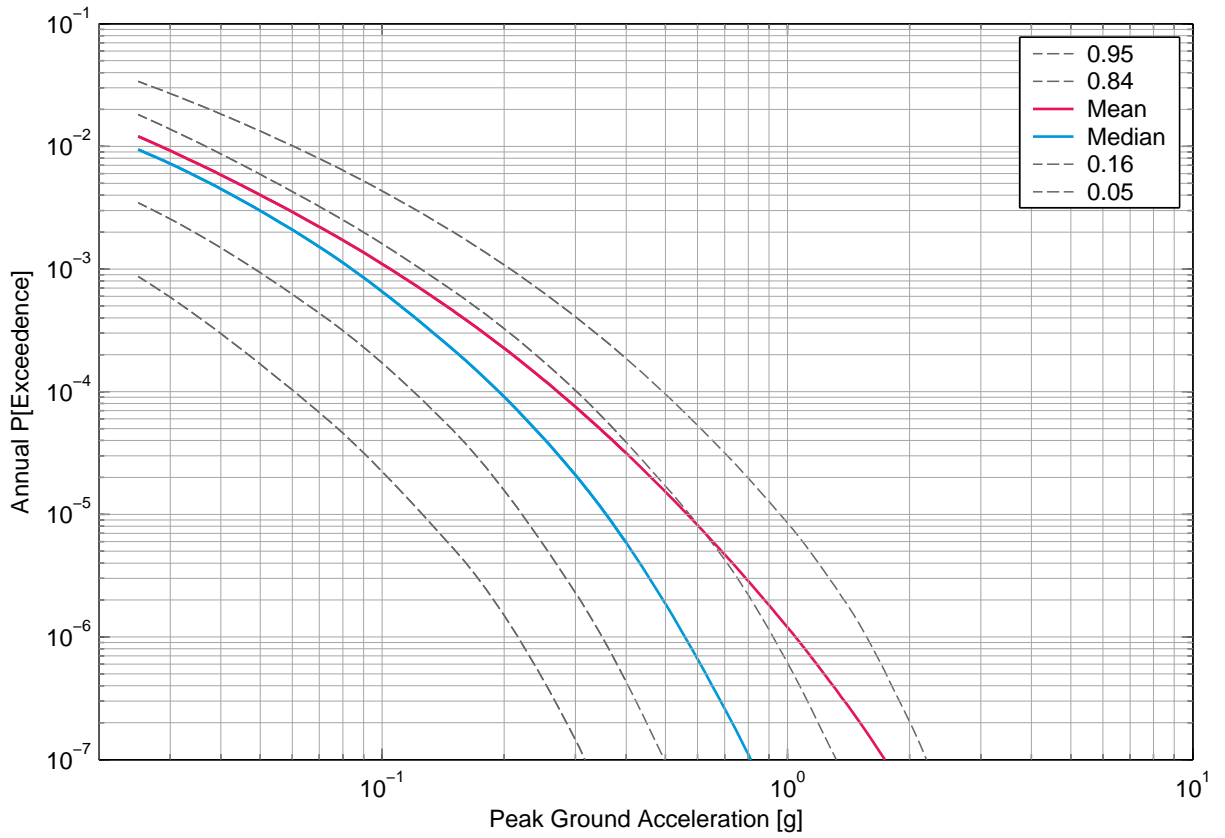


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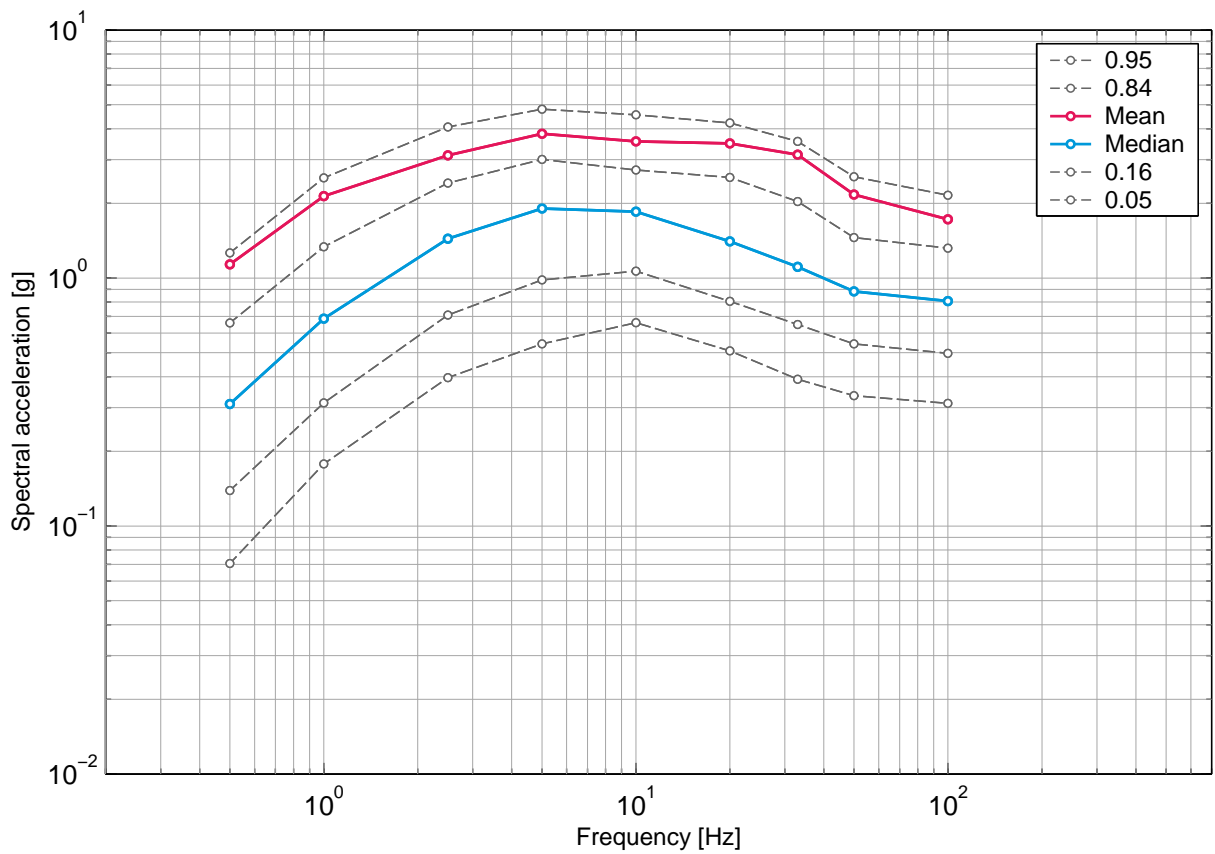


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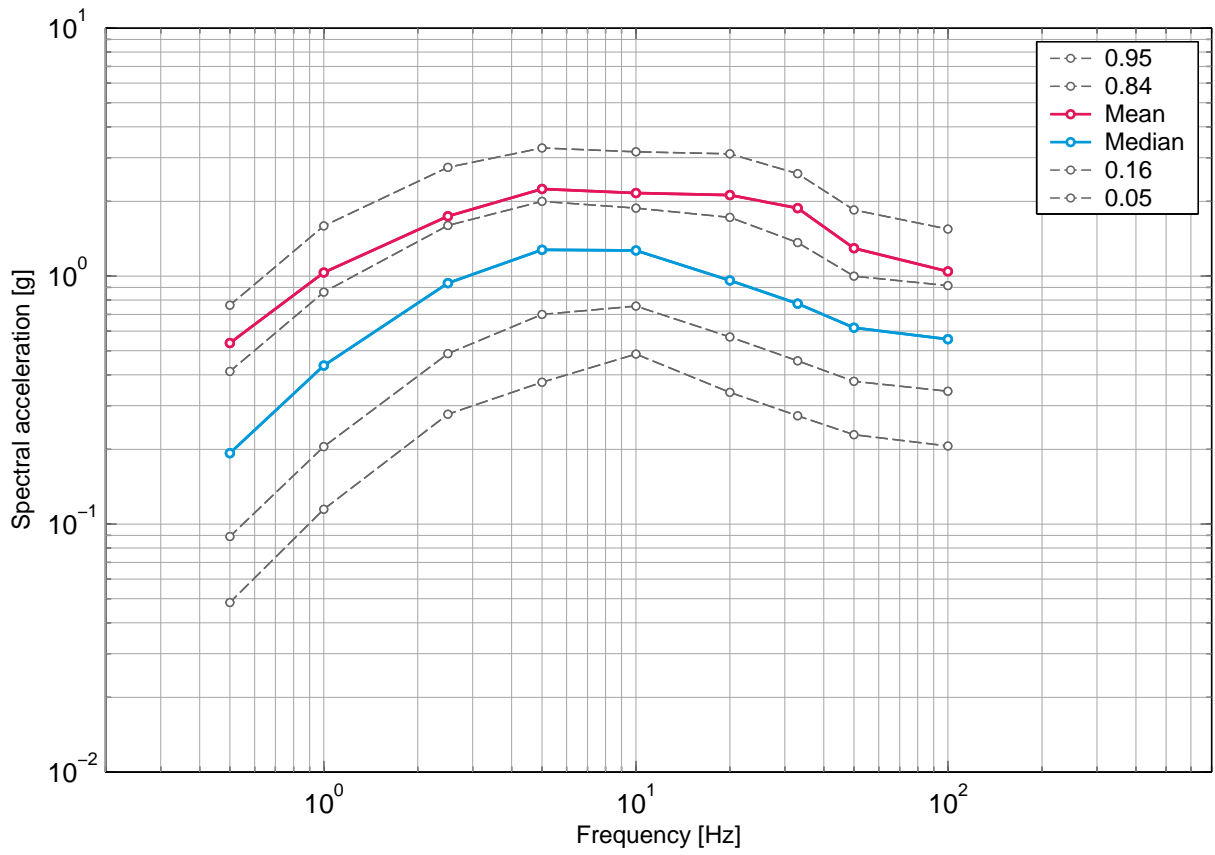


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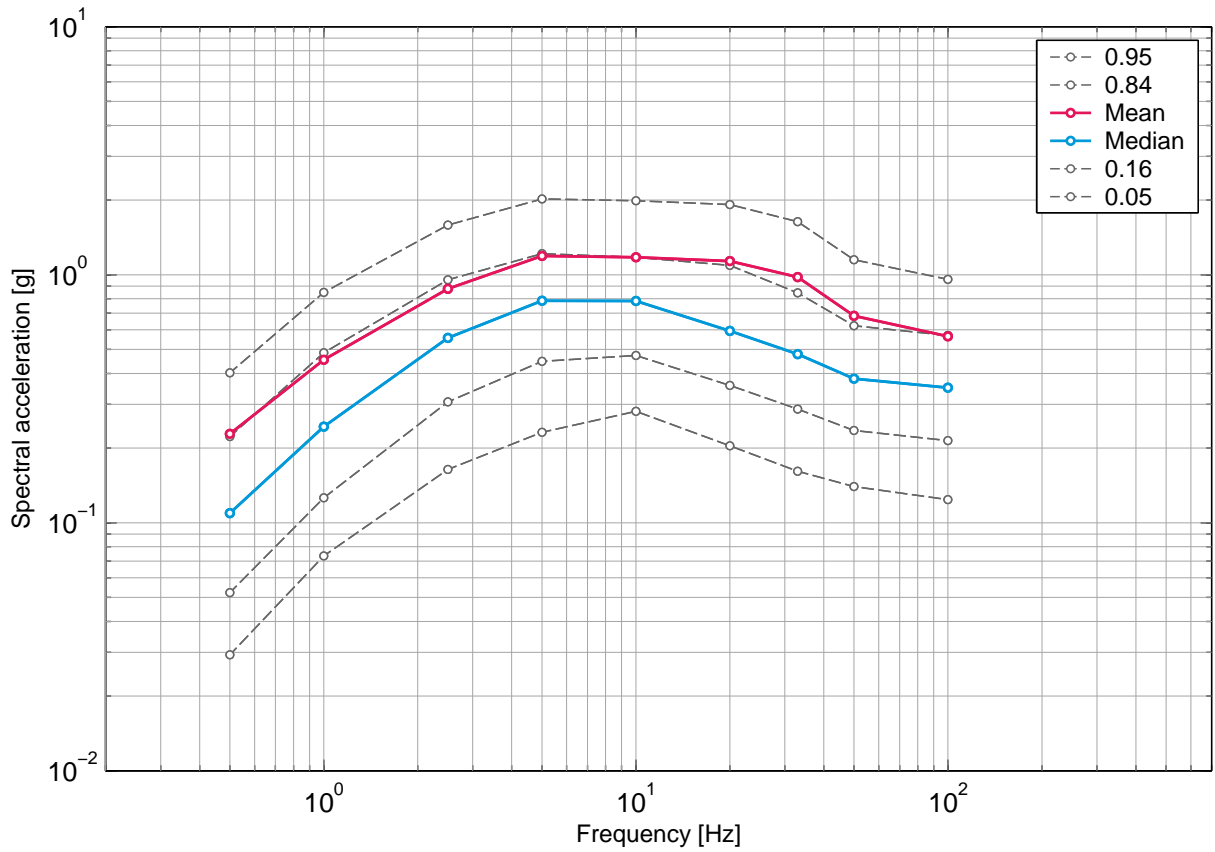


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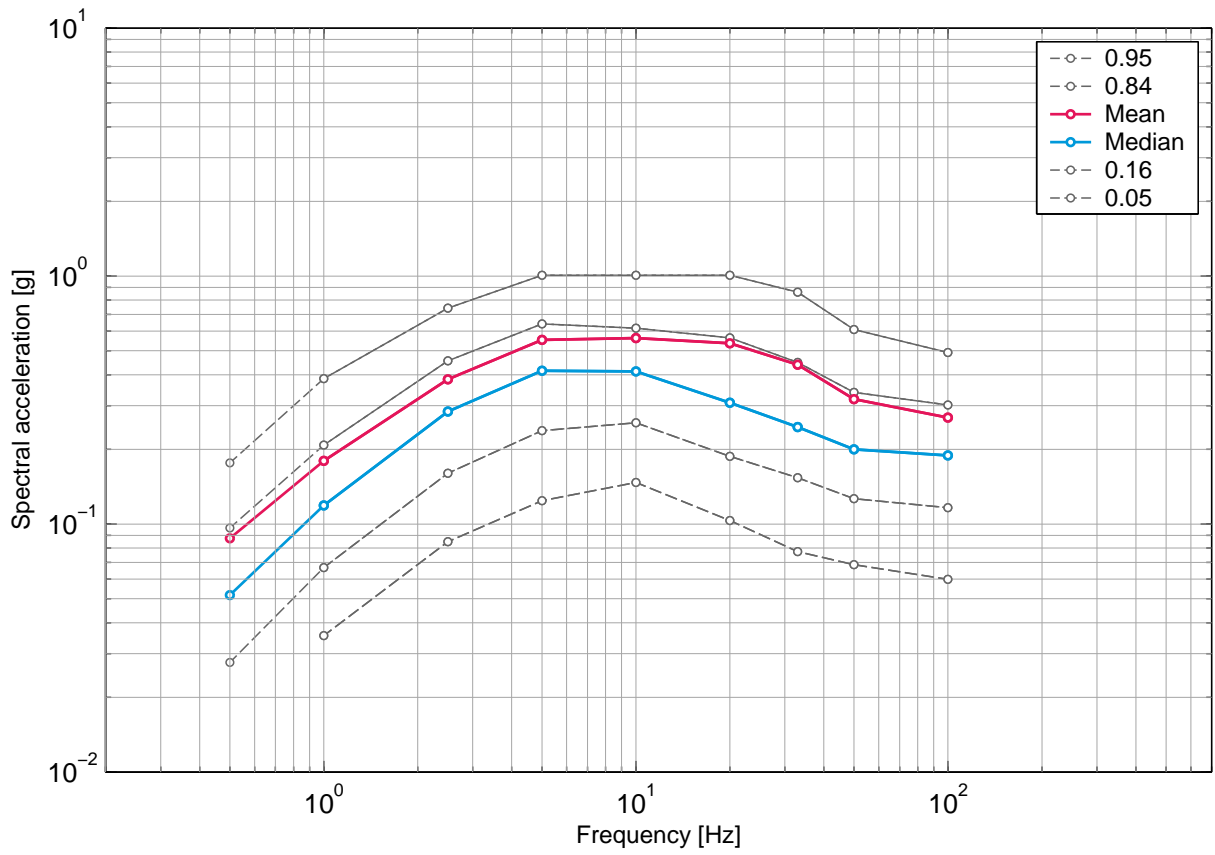


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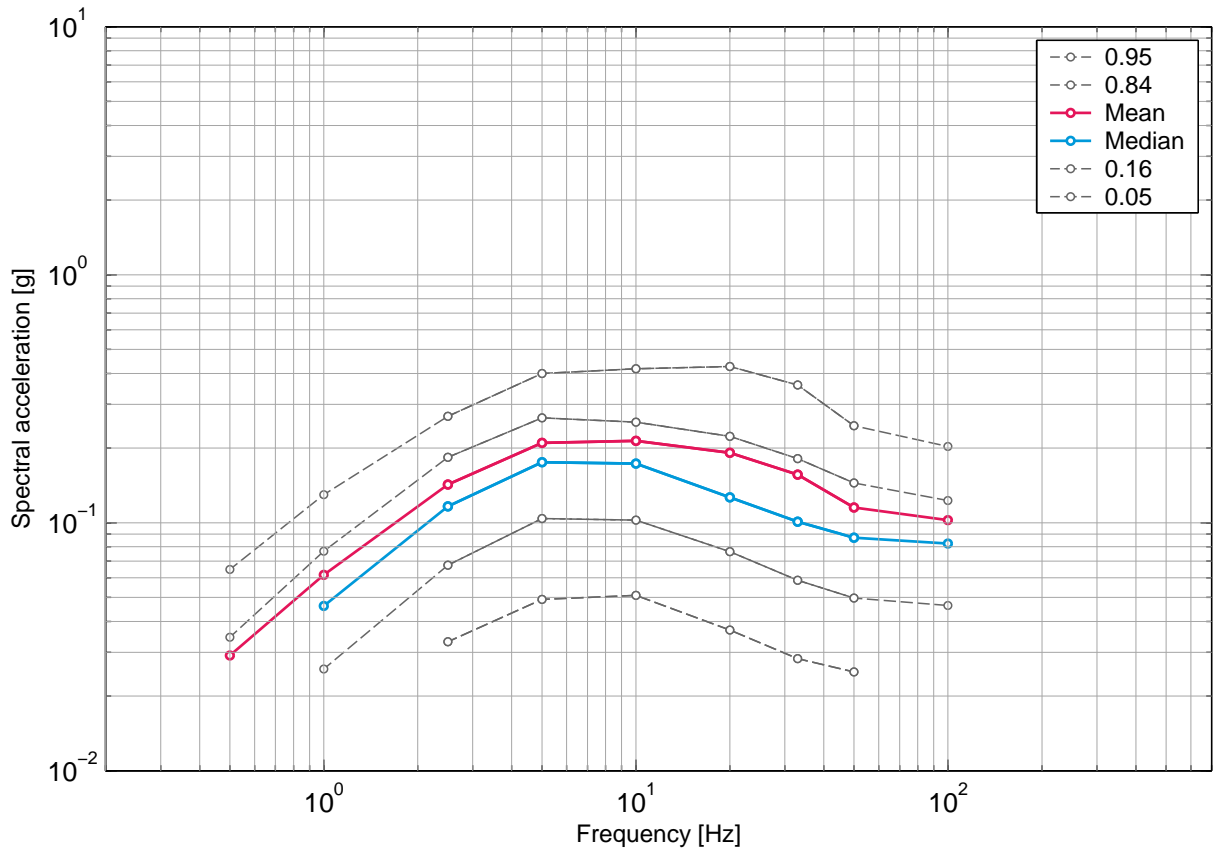


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## 5.2 Mühleberg, Soil Hazard, Horizontal Component, Surface

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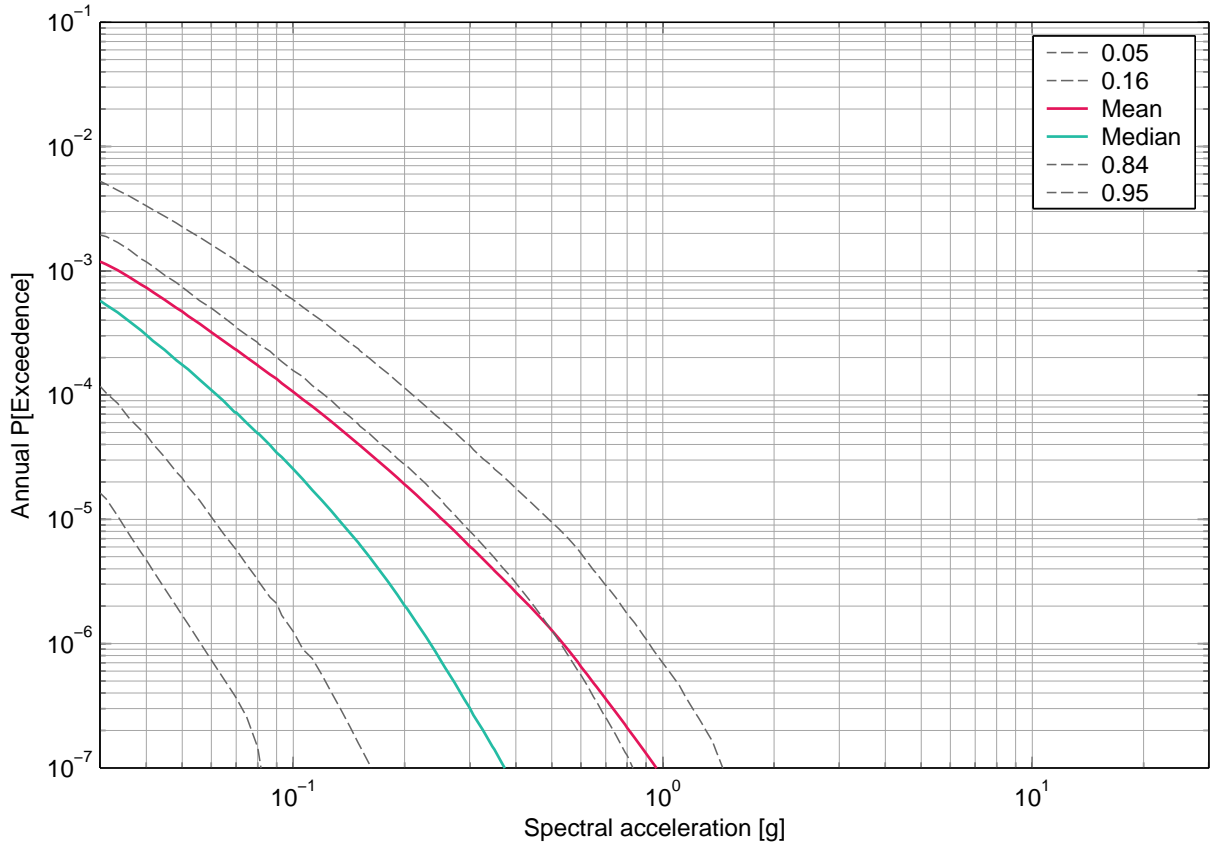


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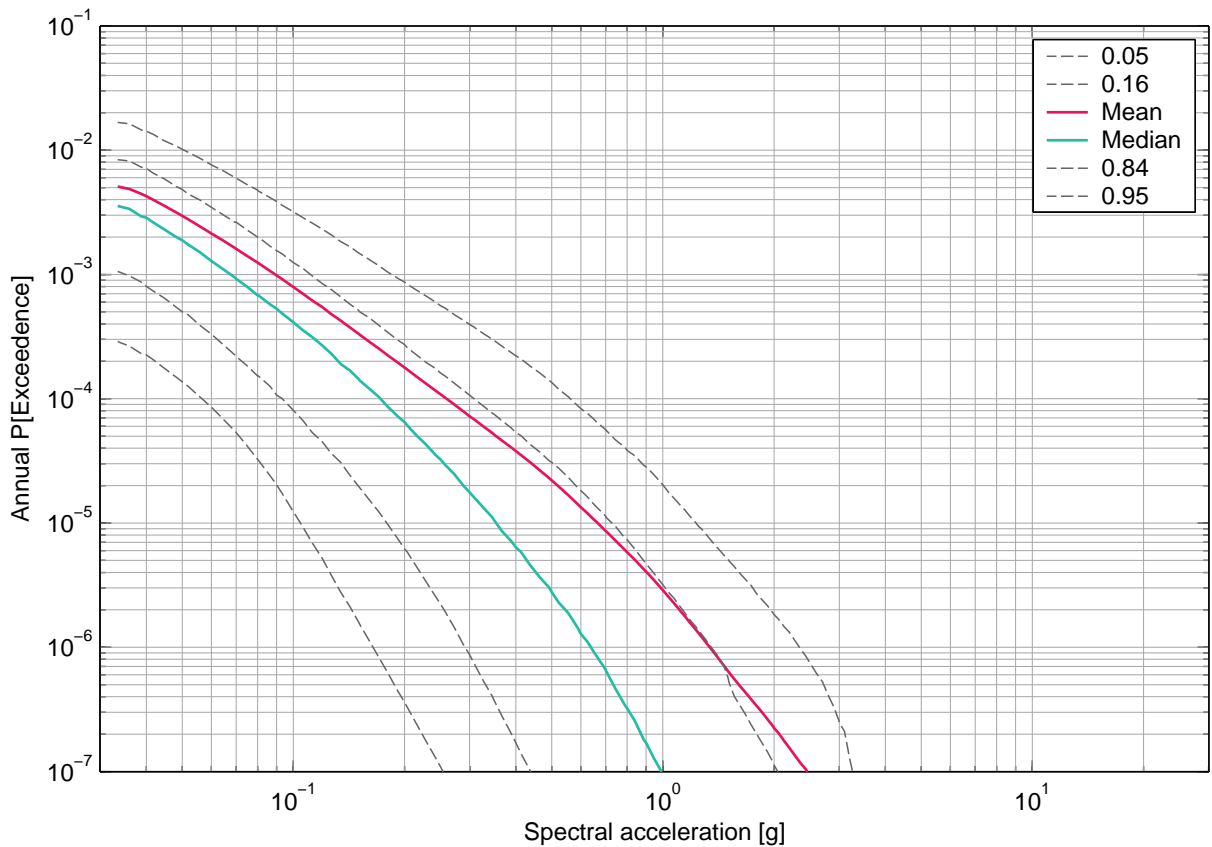


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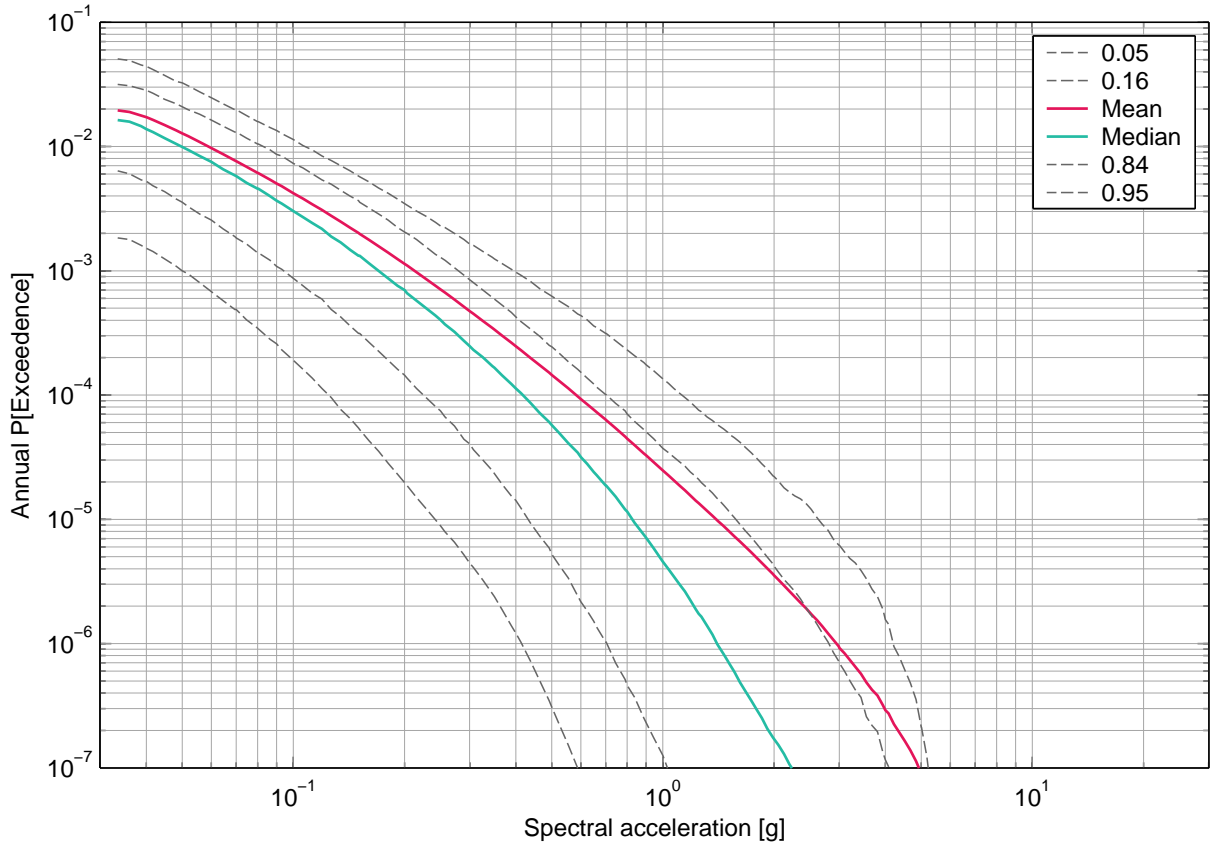


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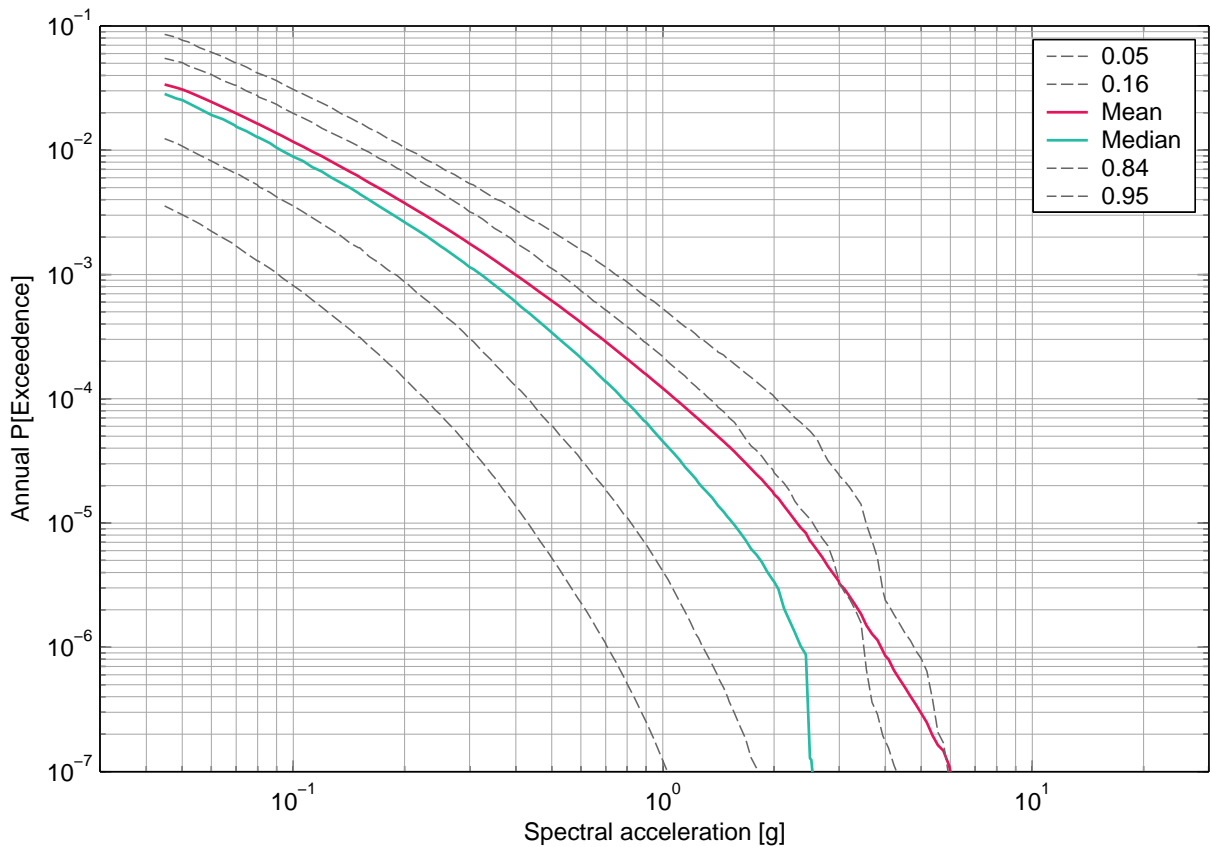


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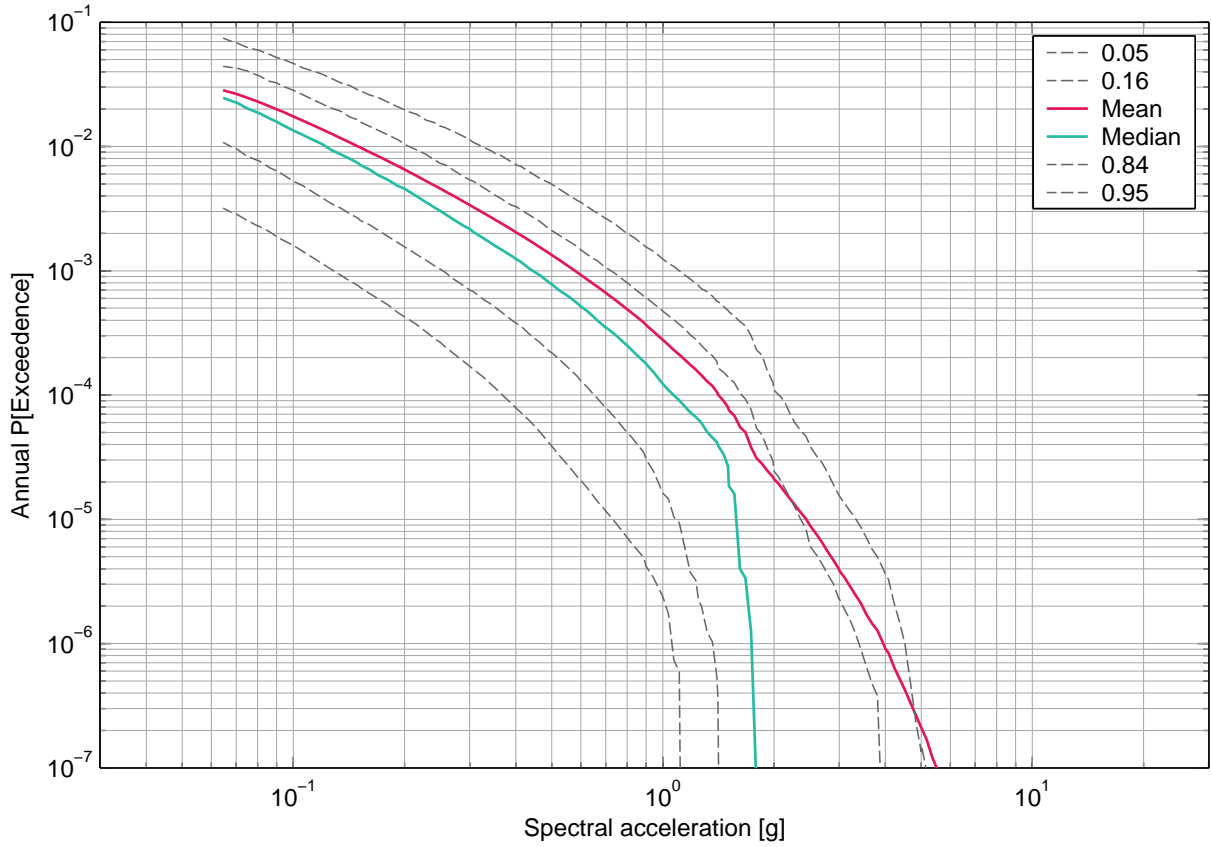


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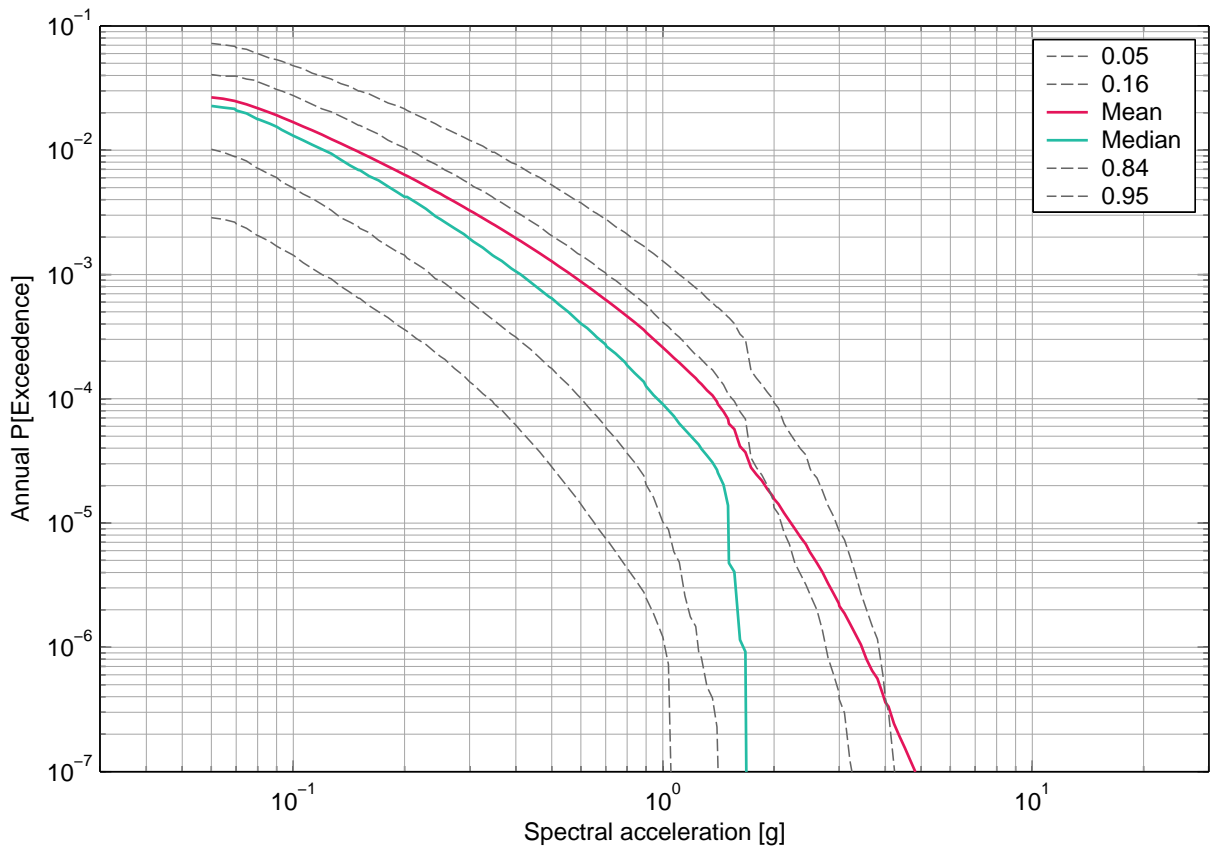


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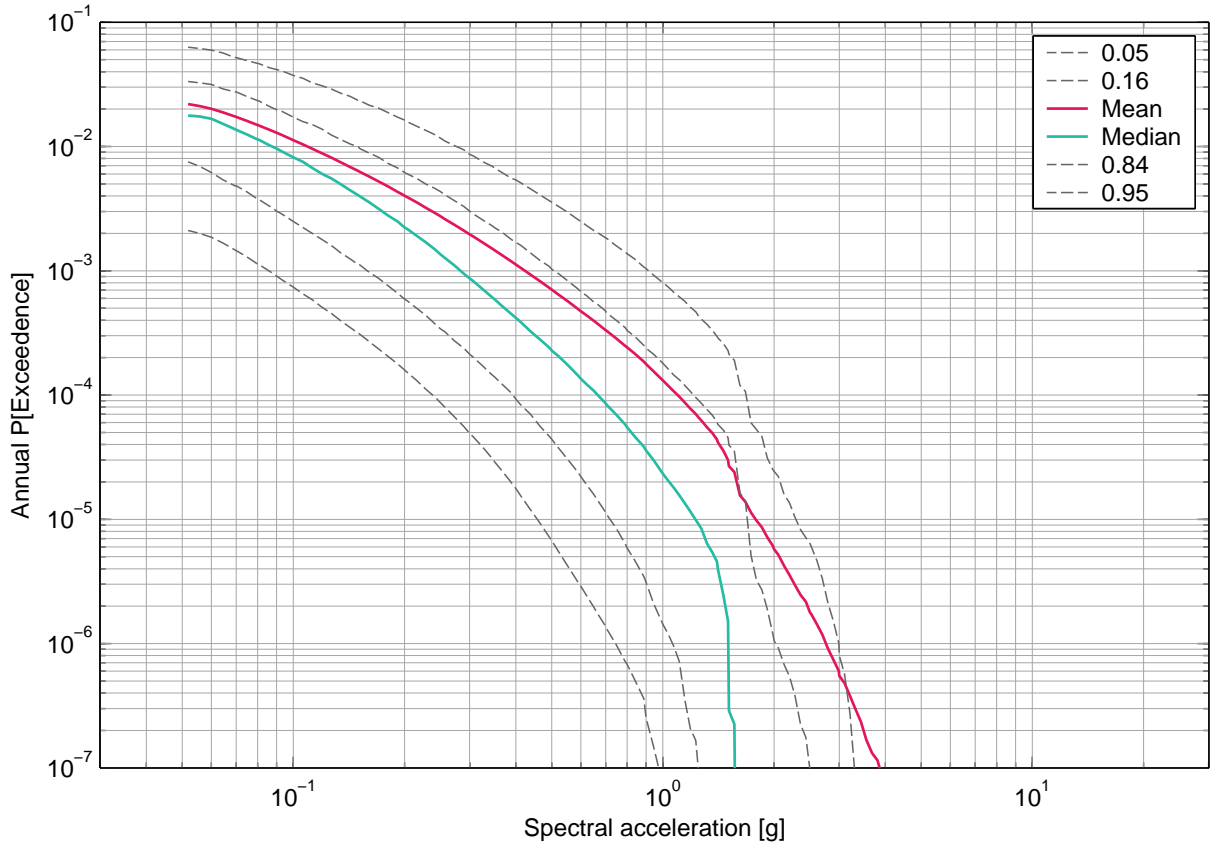


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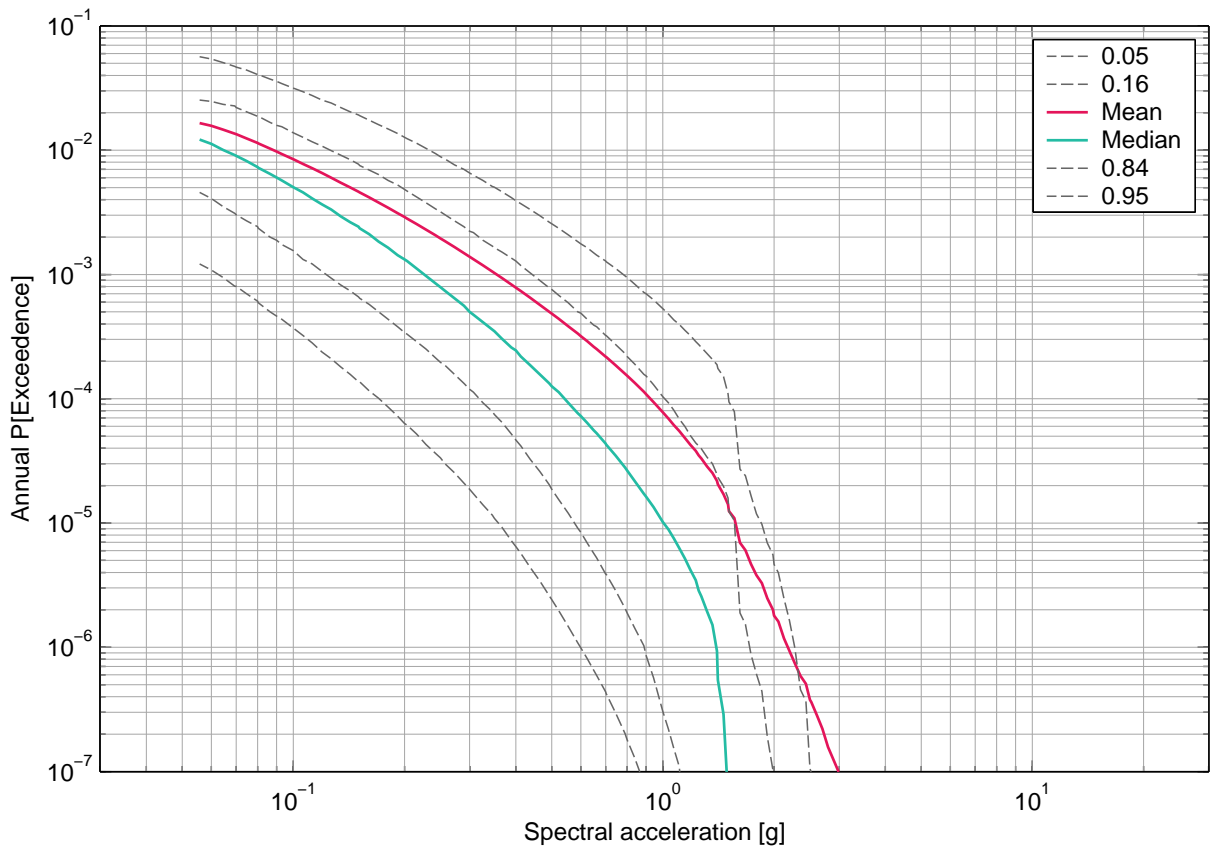


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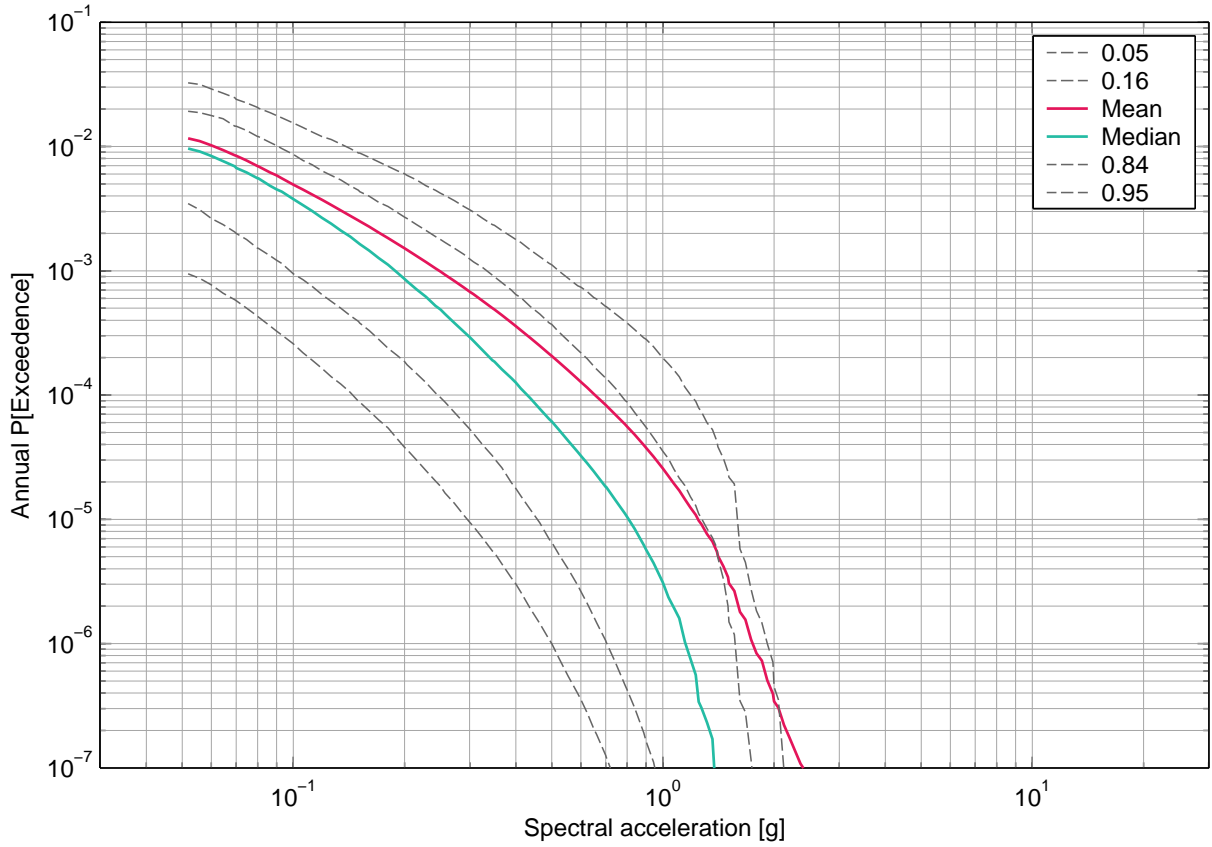


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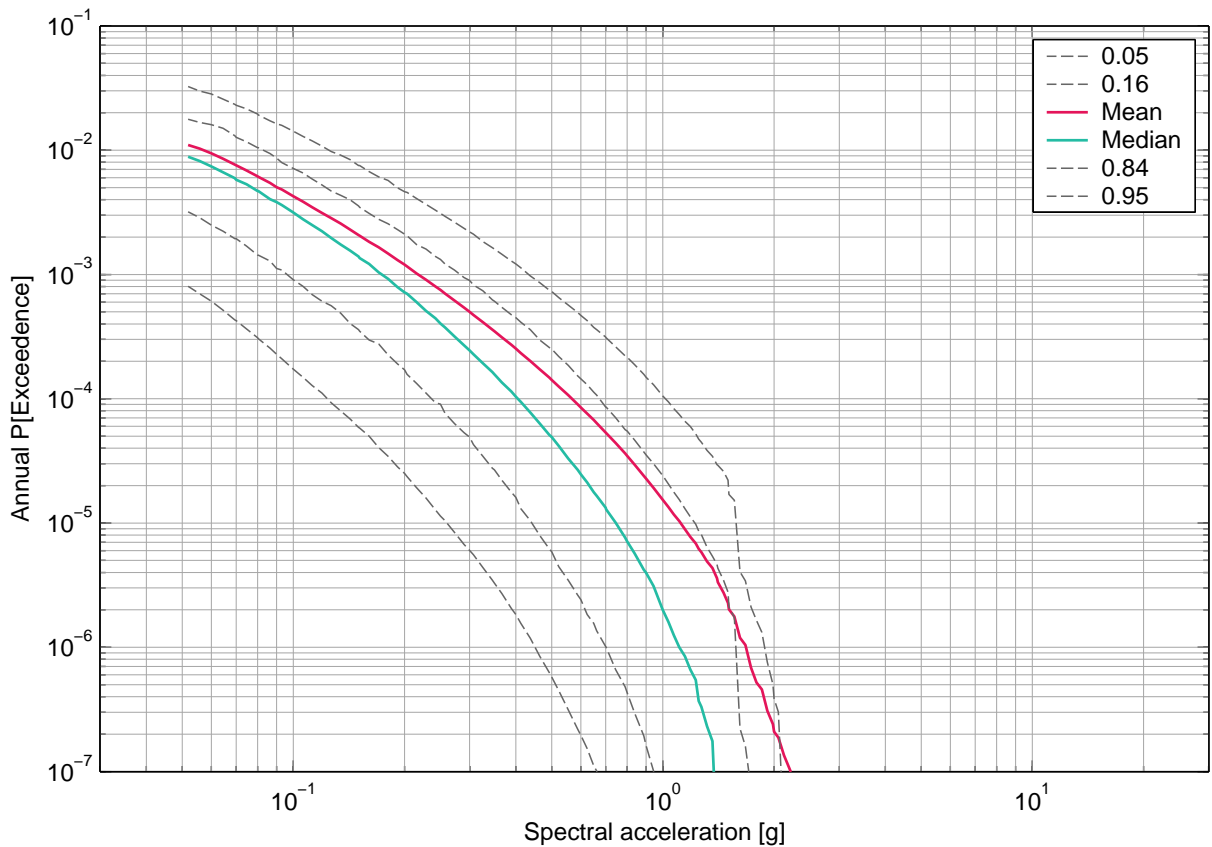


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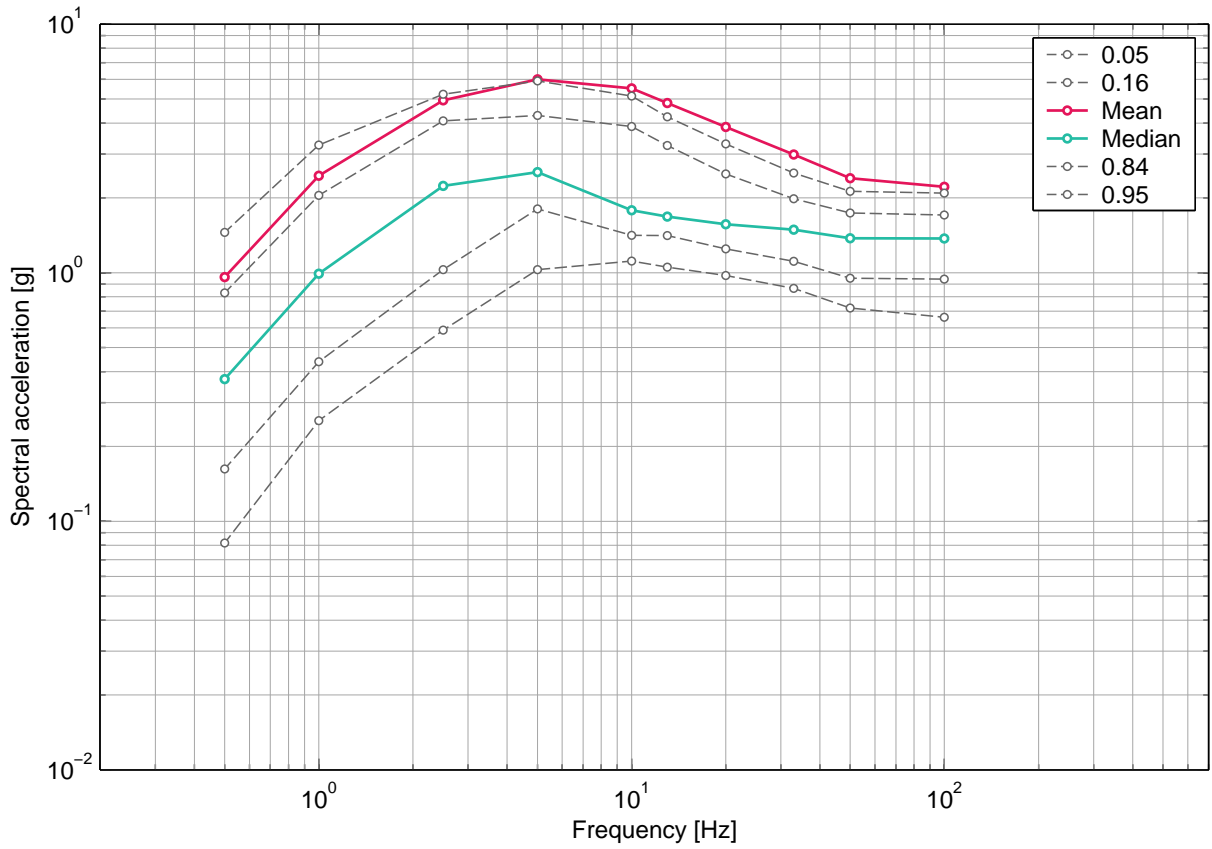


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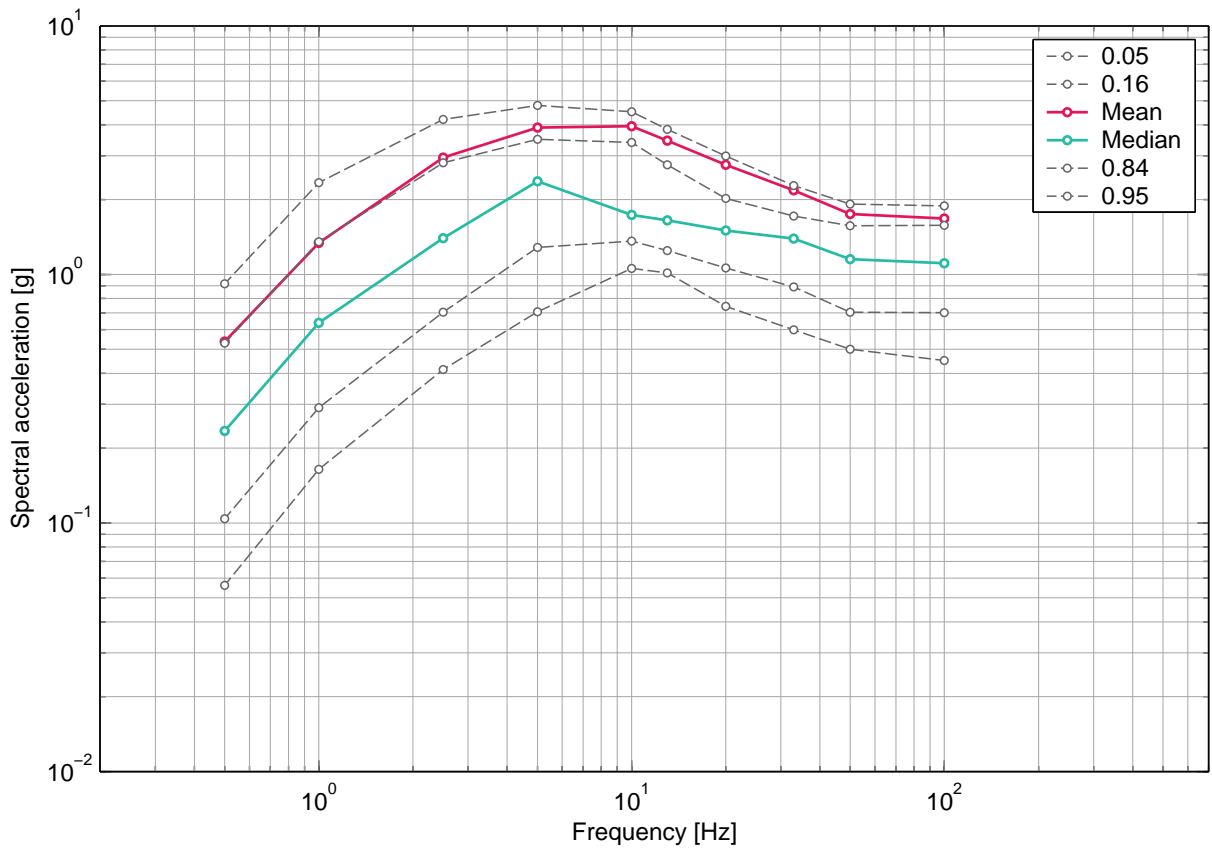


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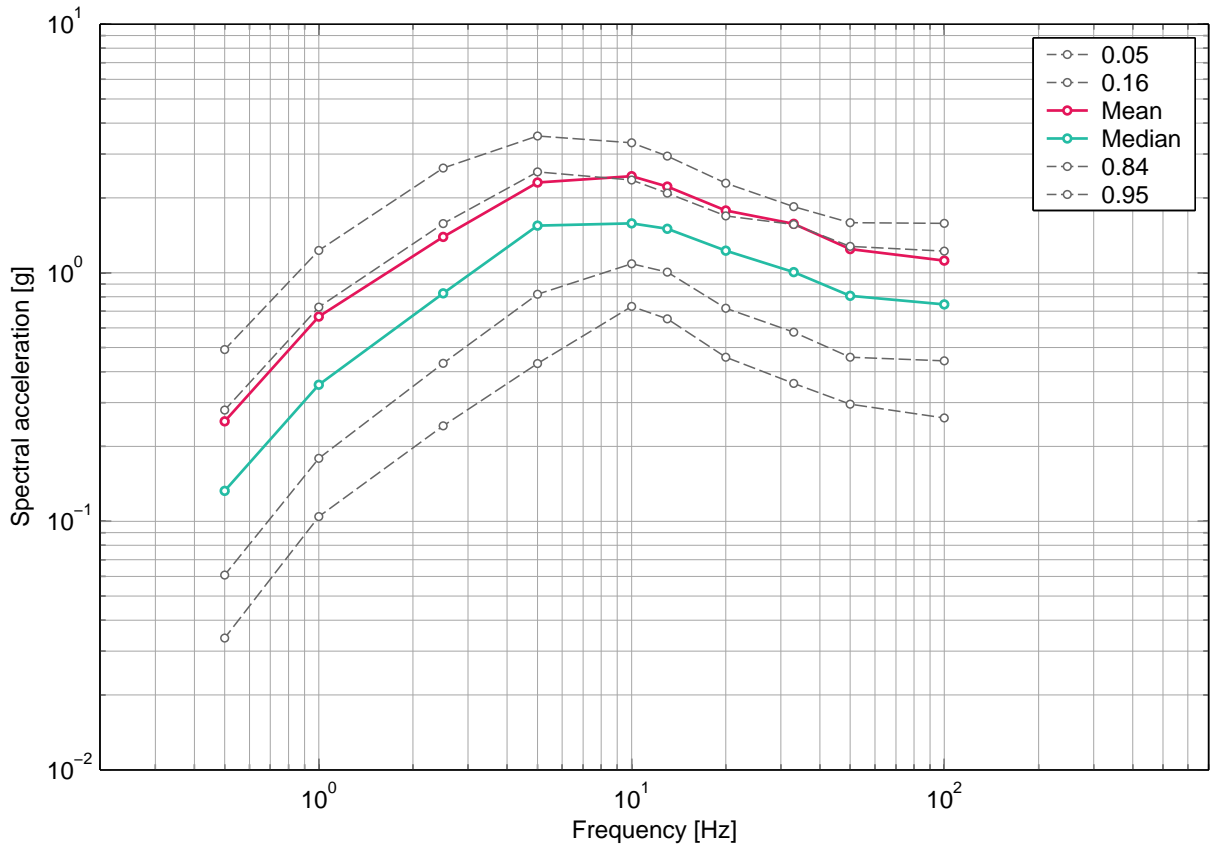


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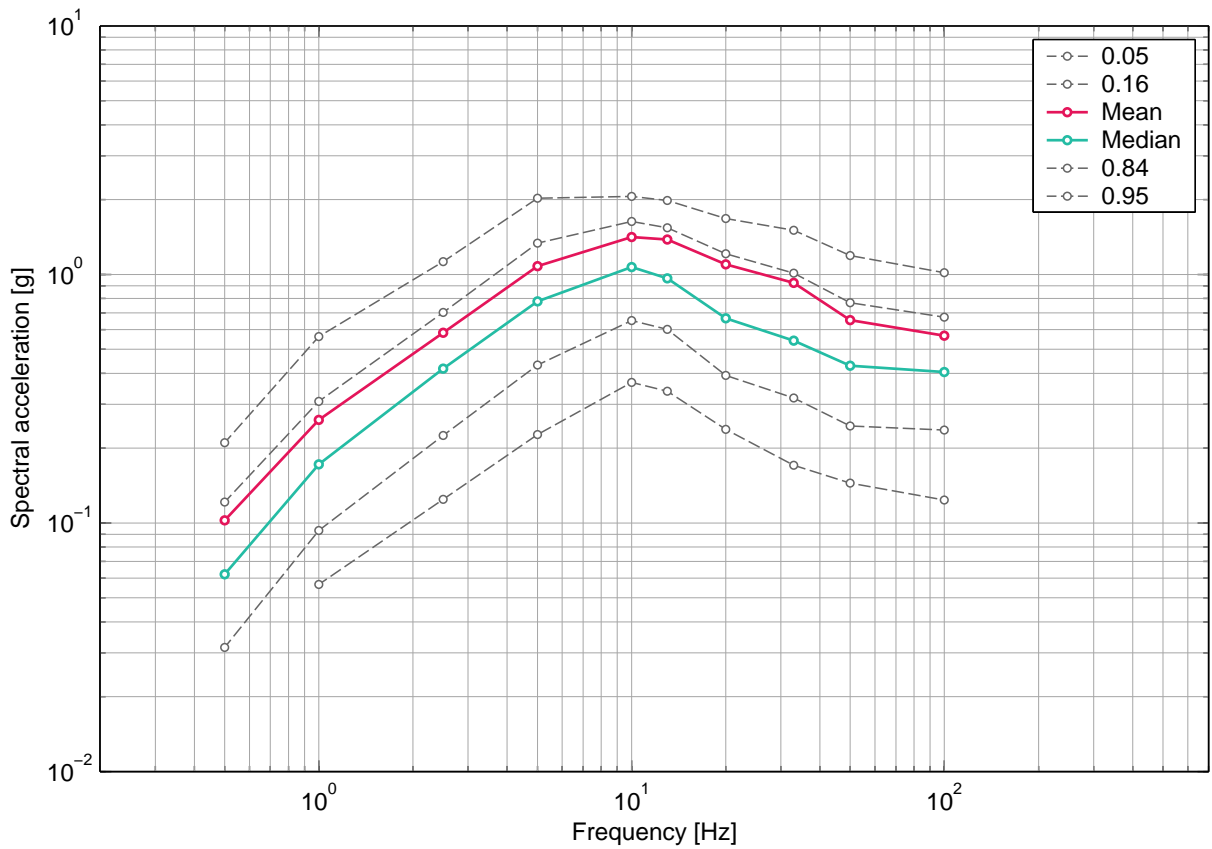


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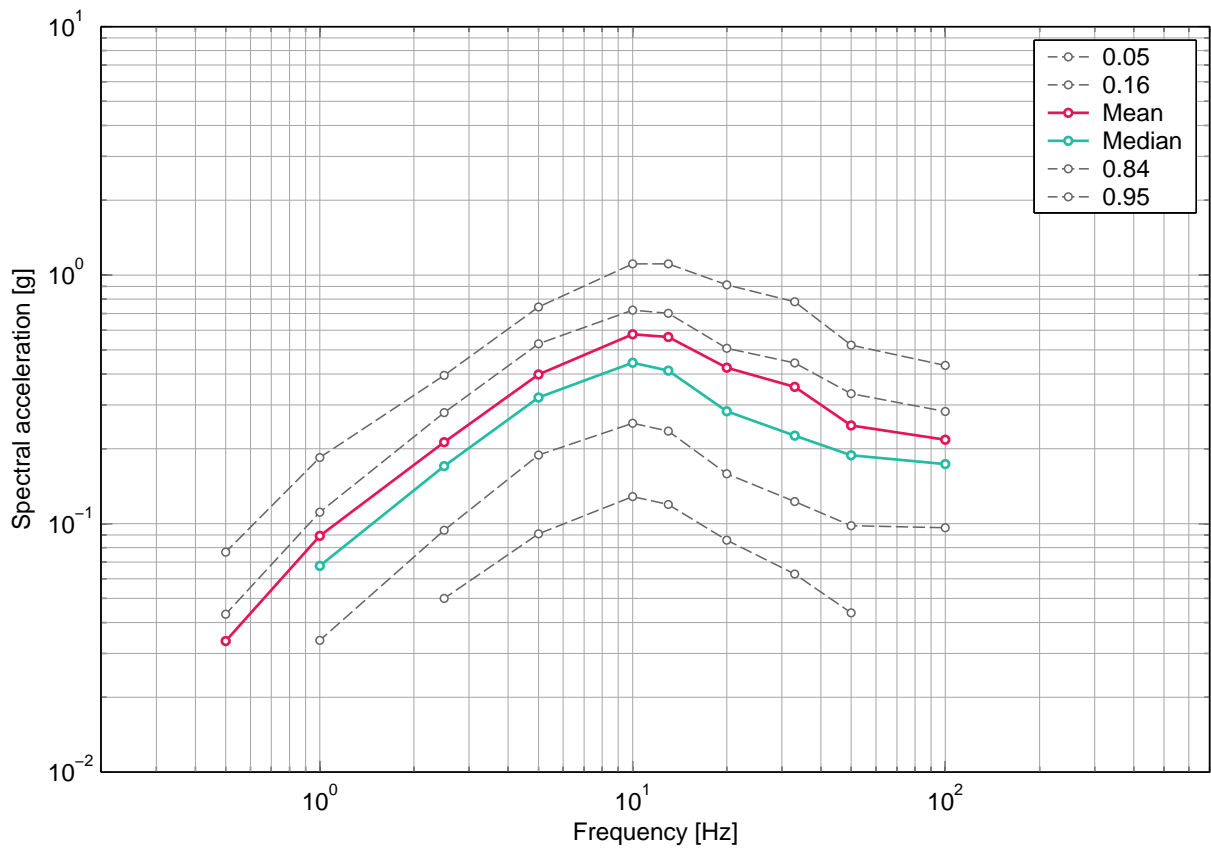


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### 5.3 Mühleberg, Soil Hazard, Horizontal Component, -7 m

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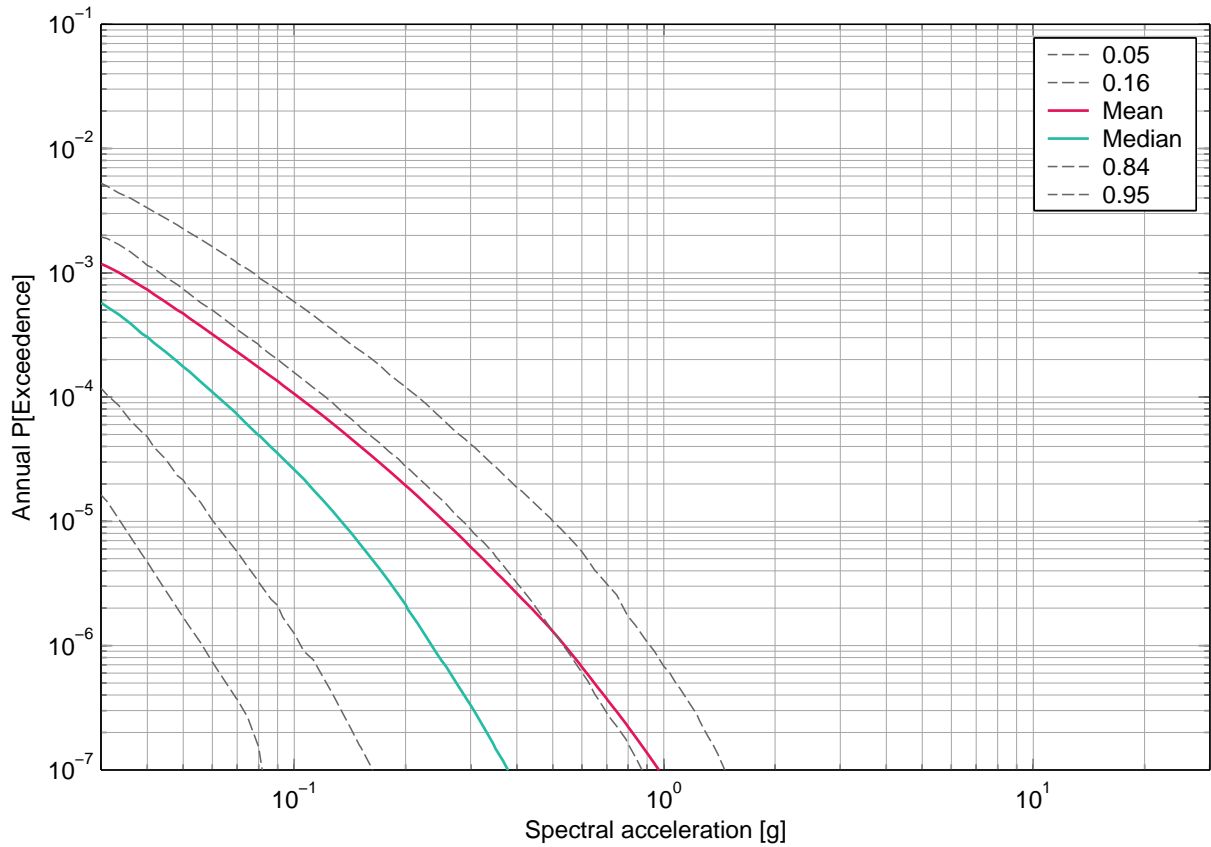


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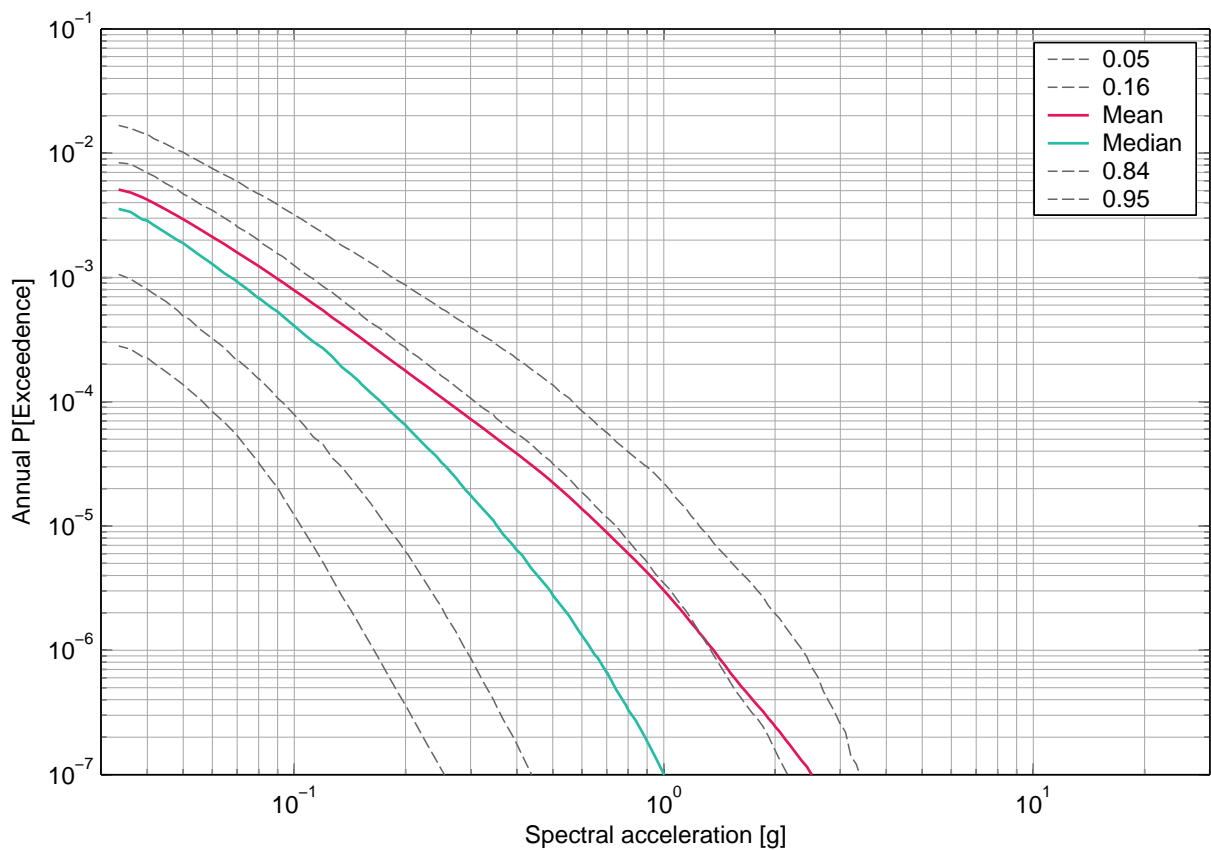


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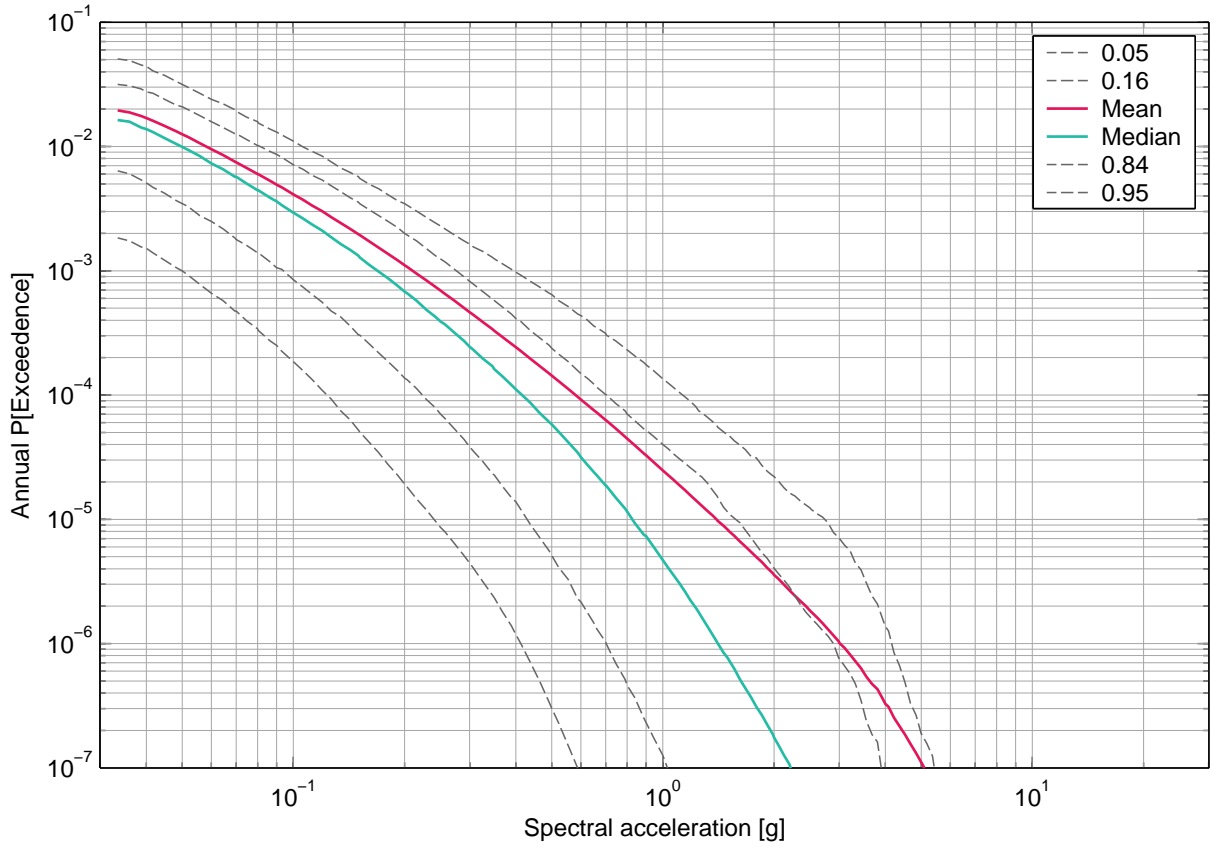


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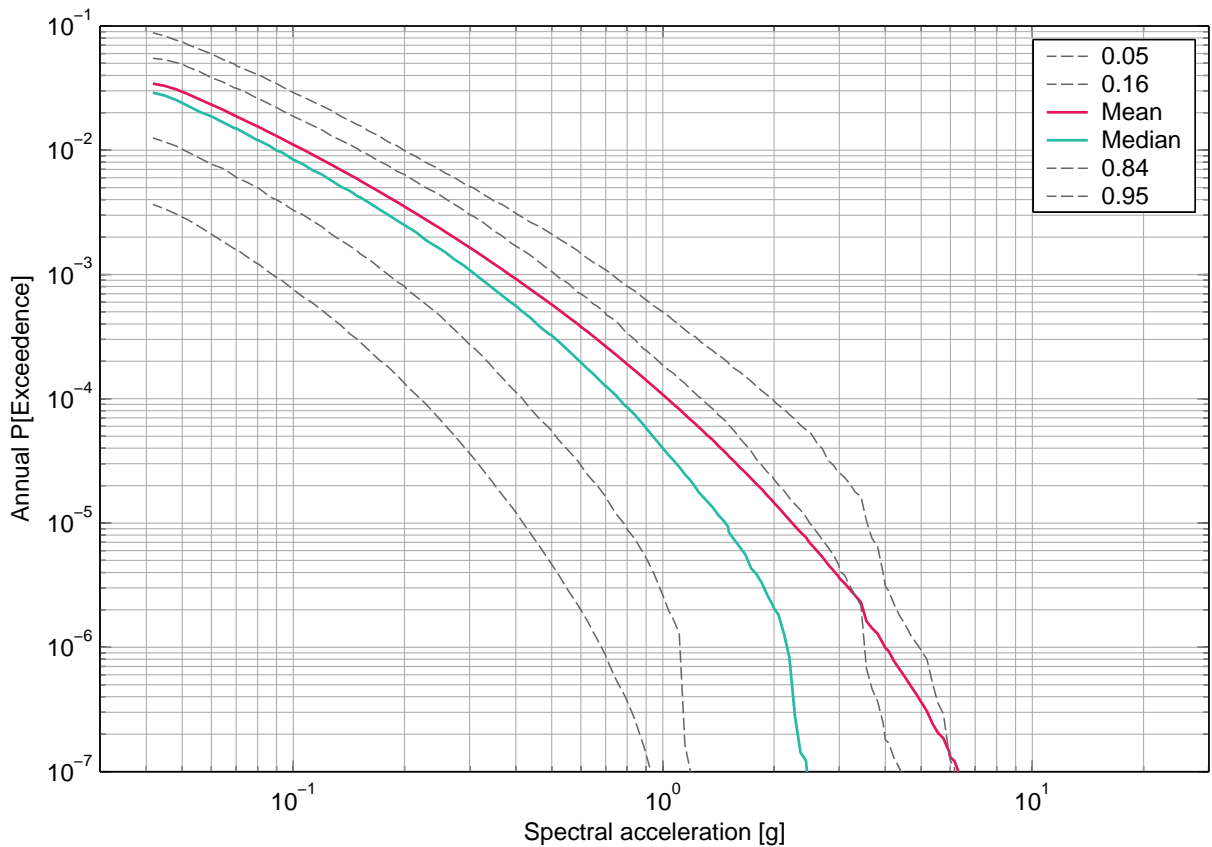


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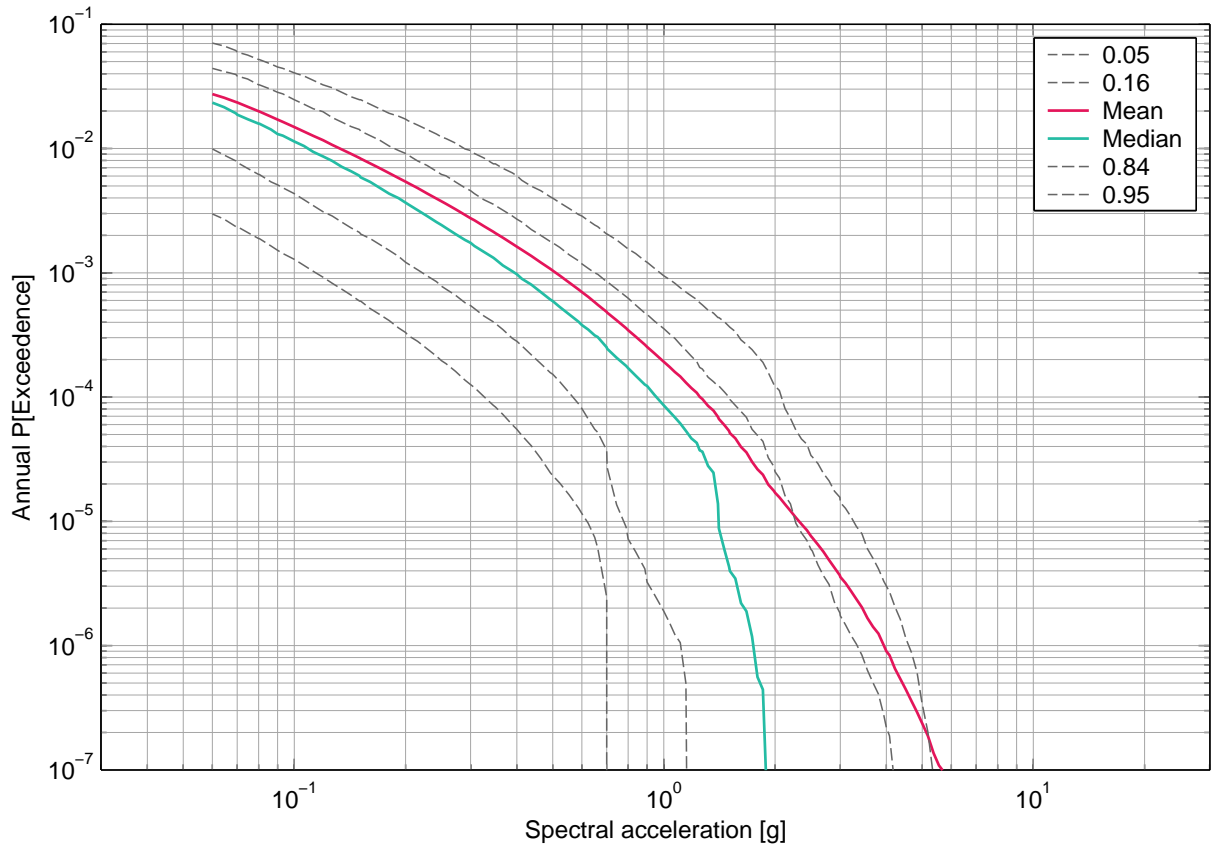


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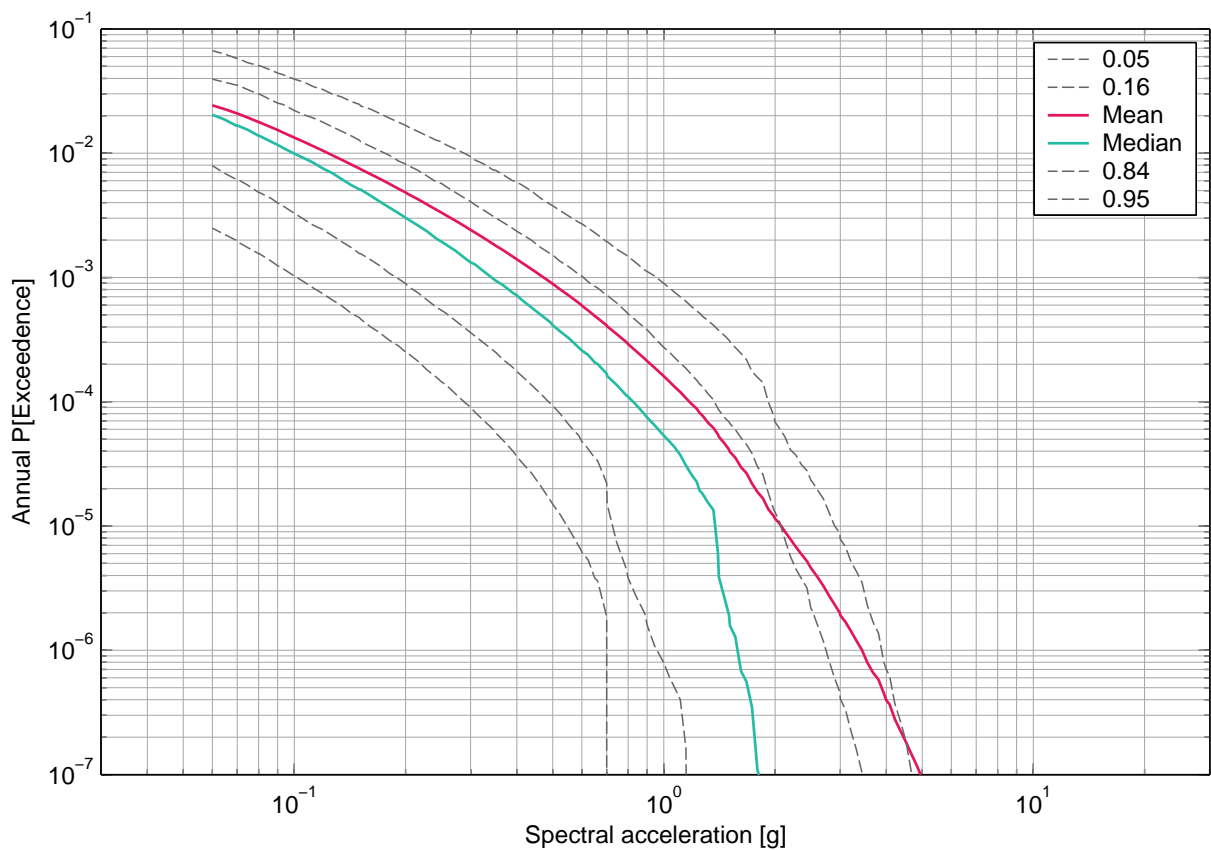


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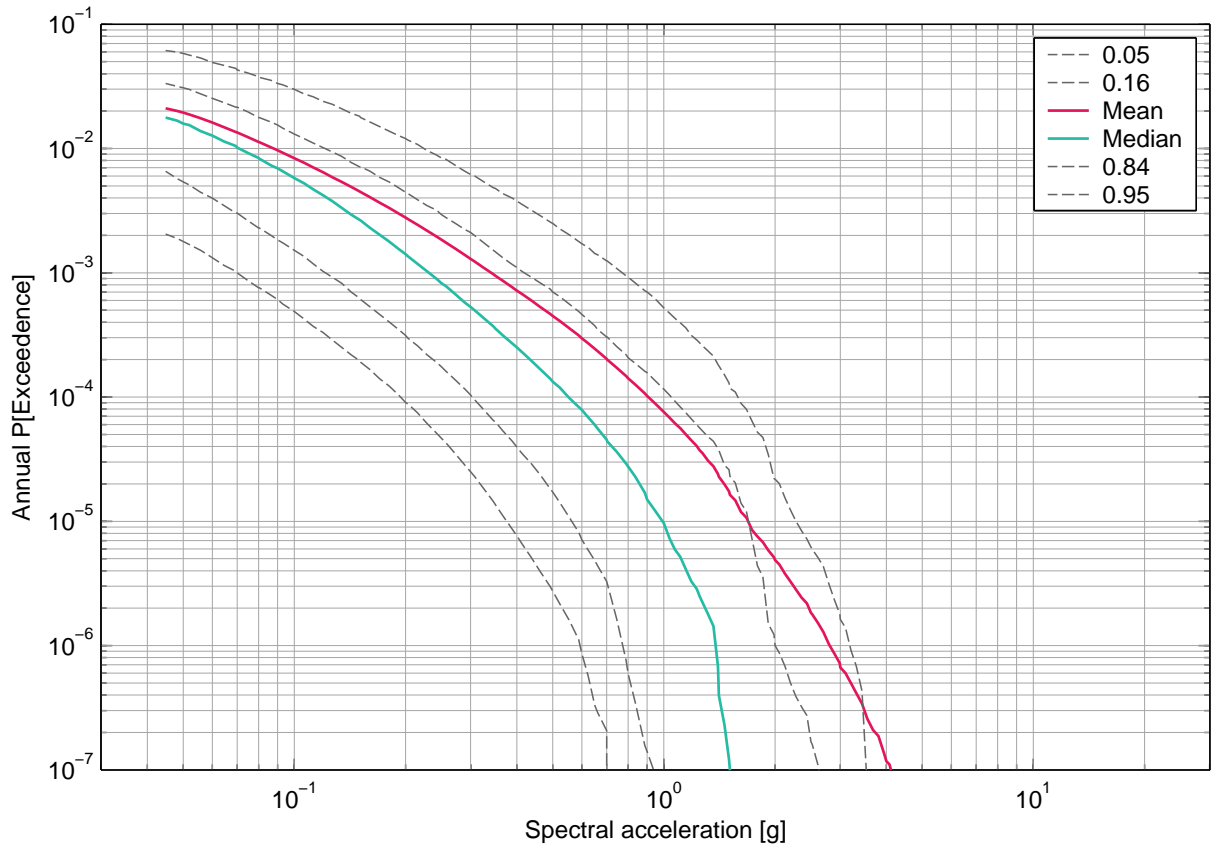


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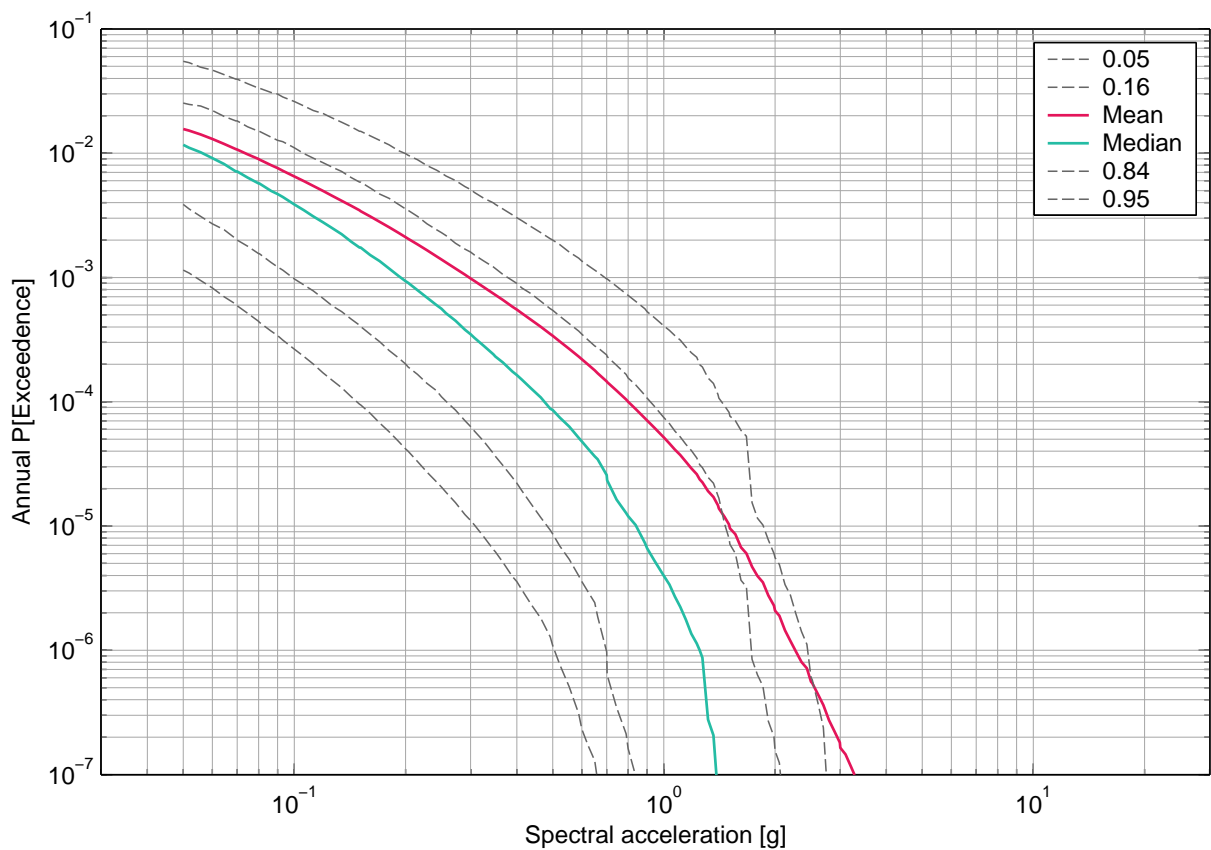


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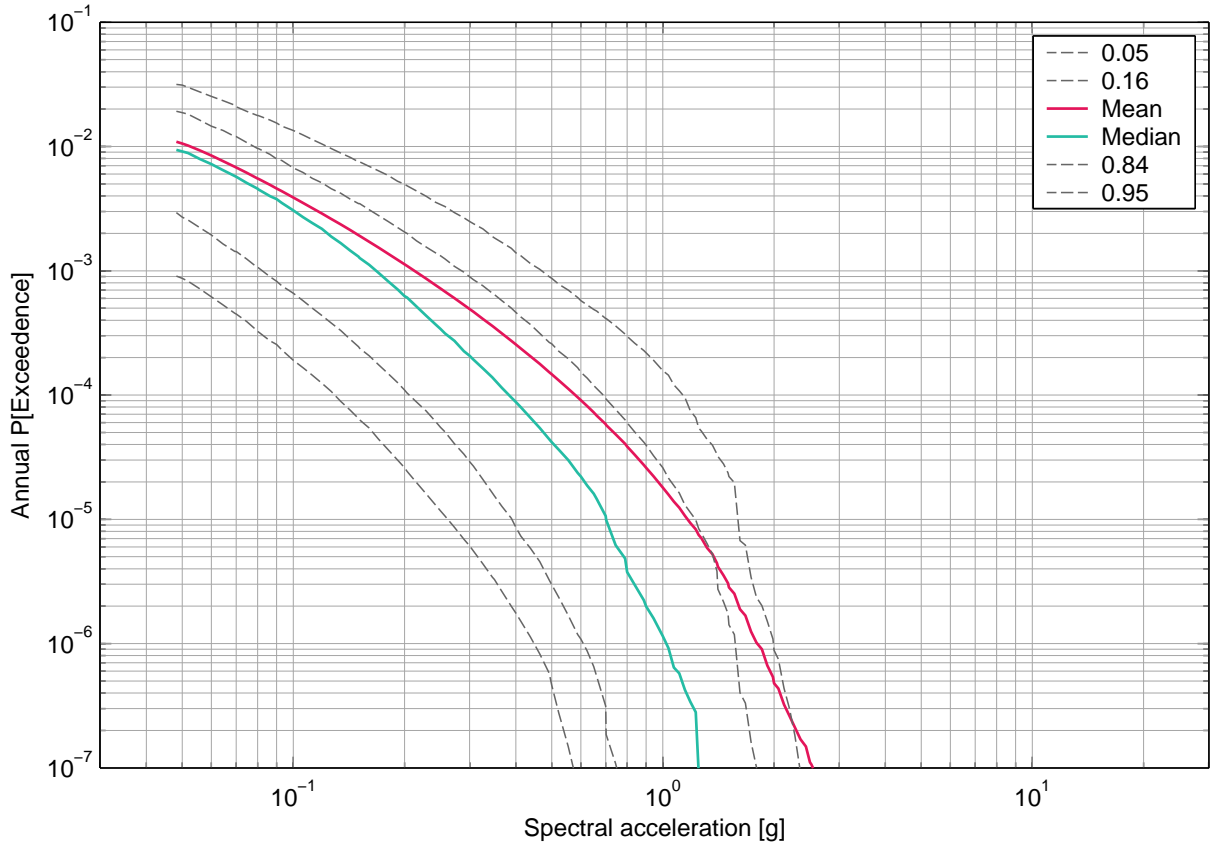


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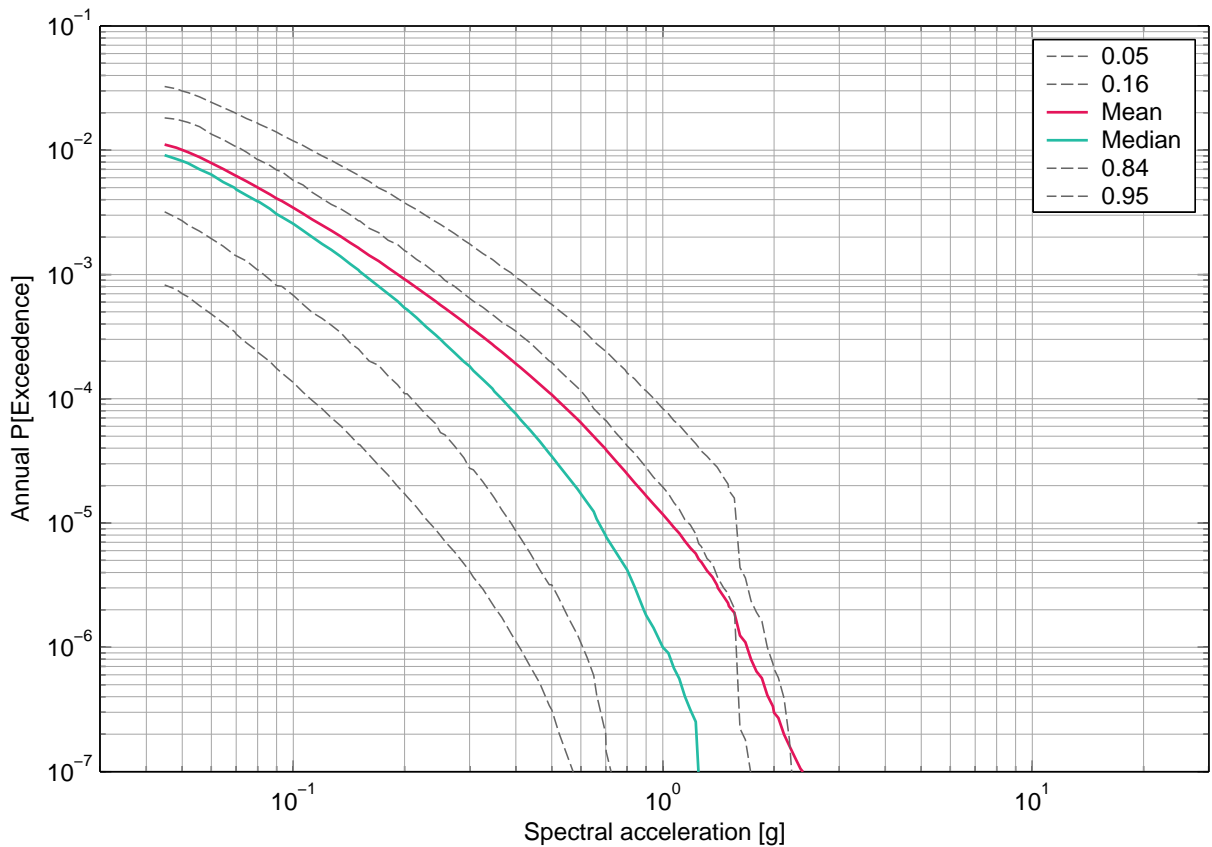


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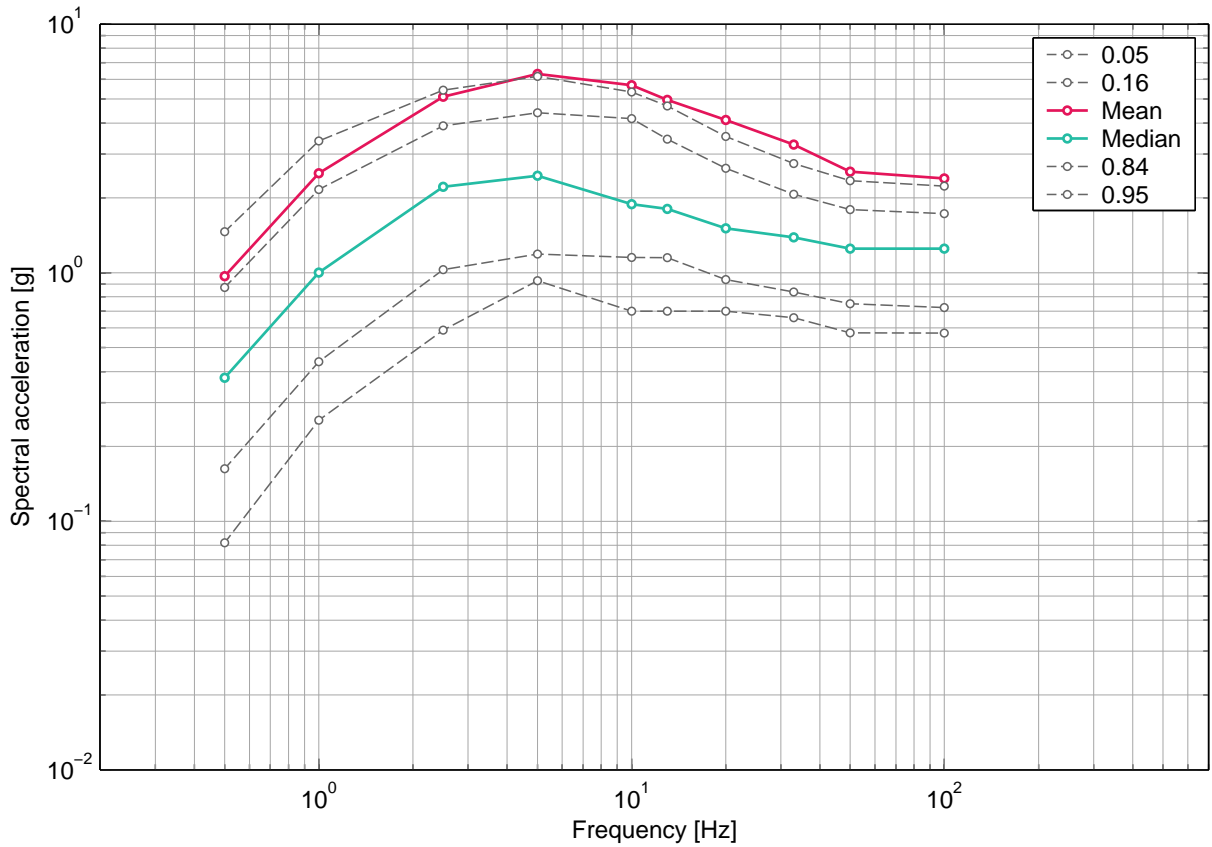


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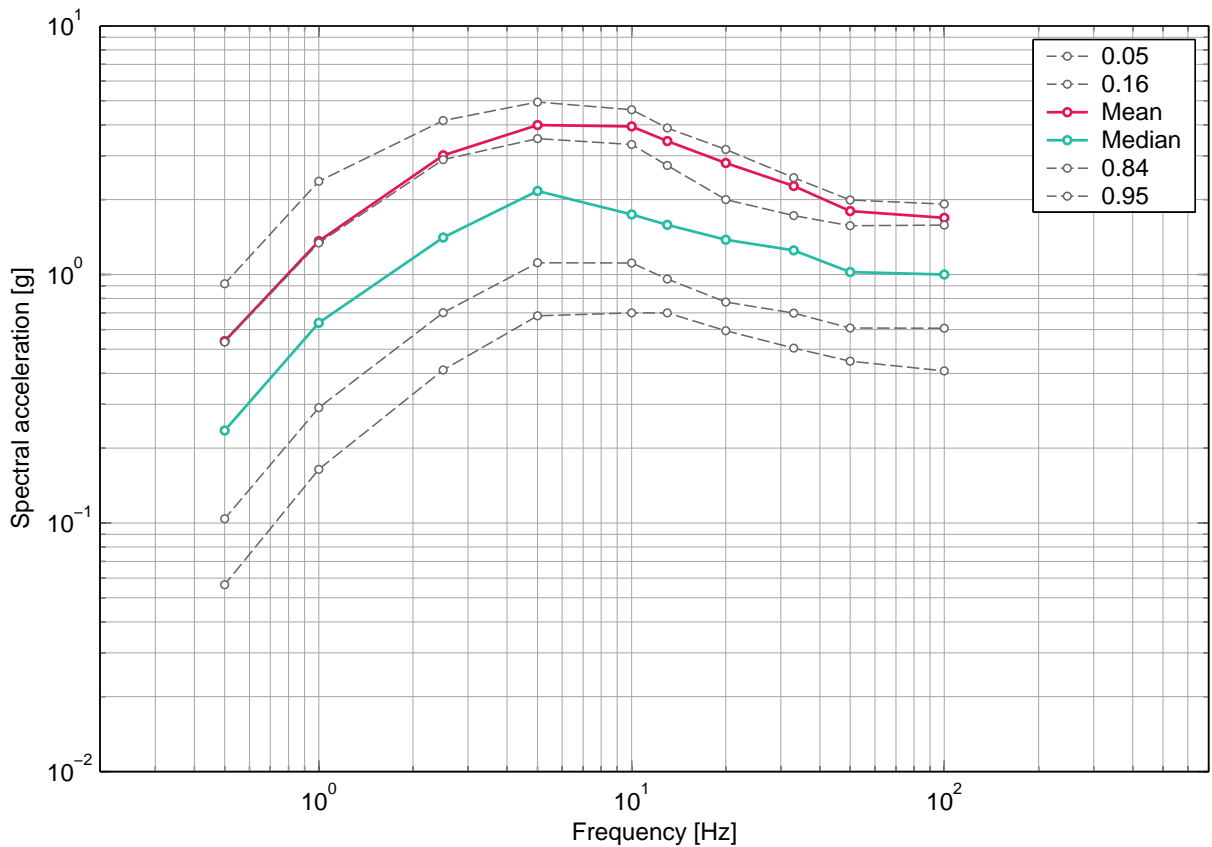


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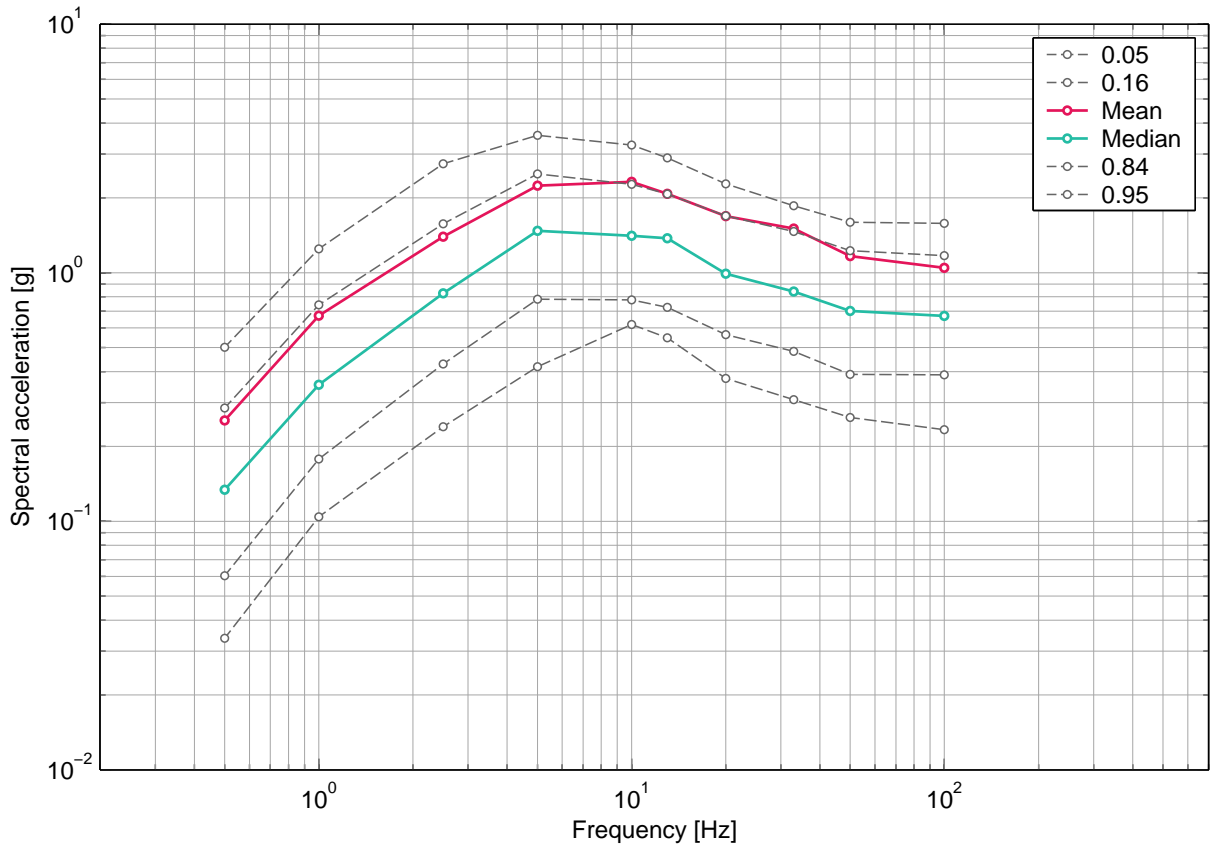


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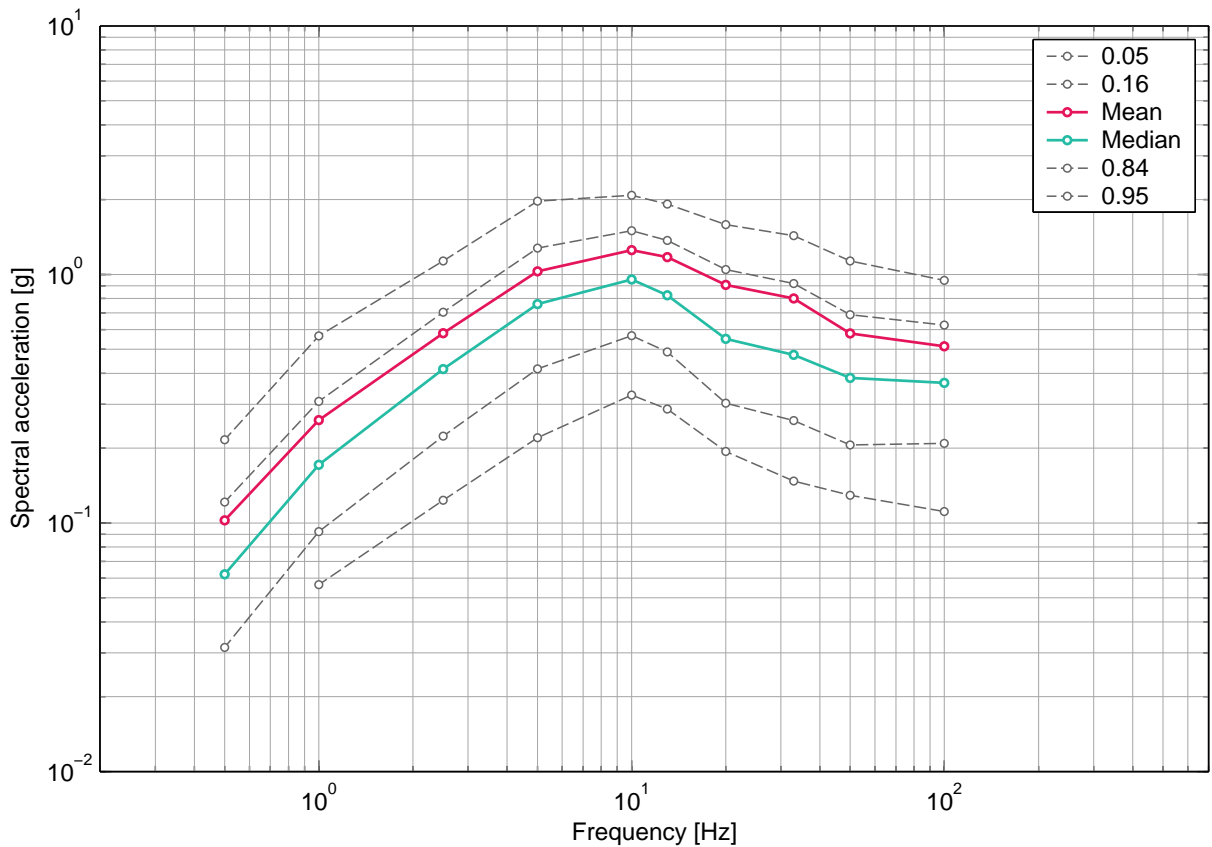


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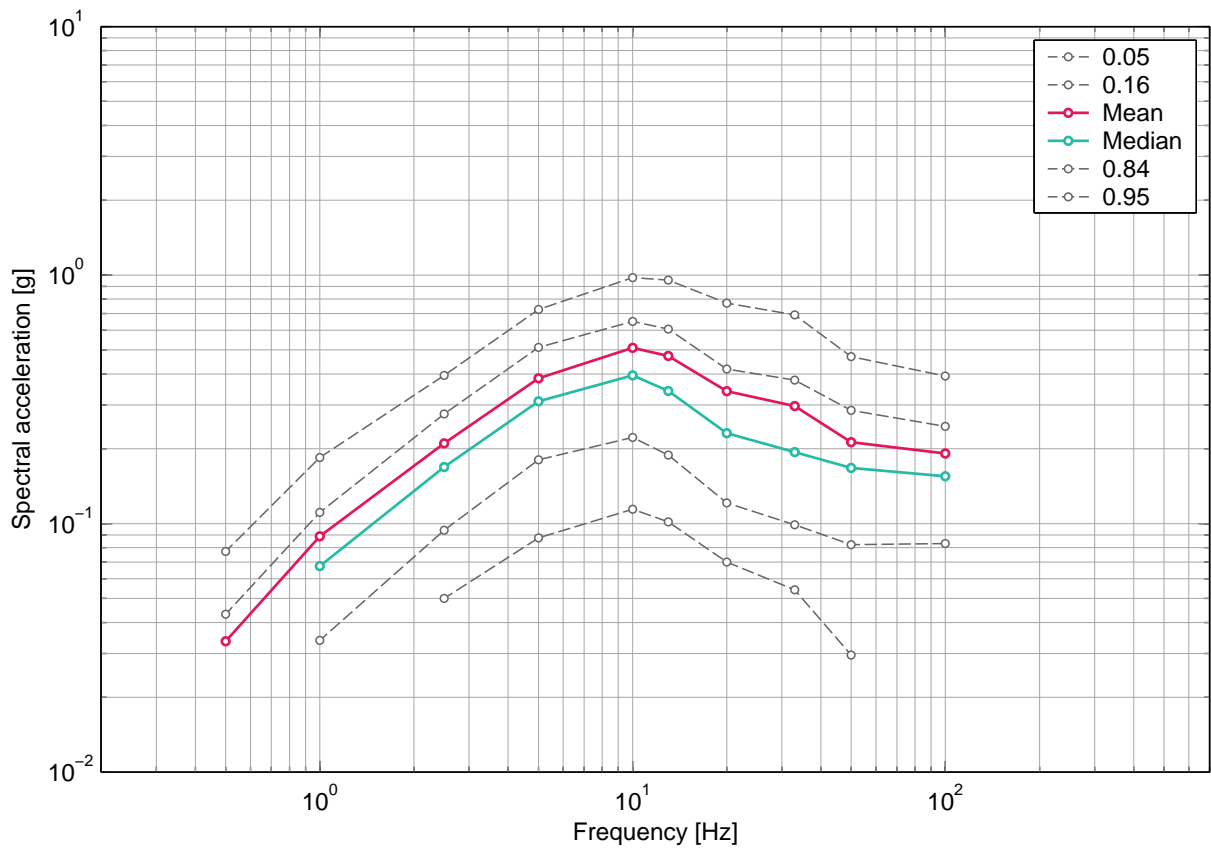


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## 5.4 Mühleberg, Soil Hazard, Horizontal Component, -14 m

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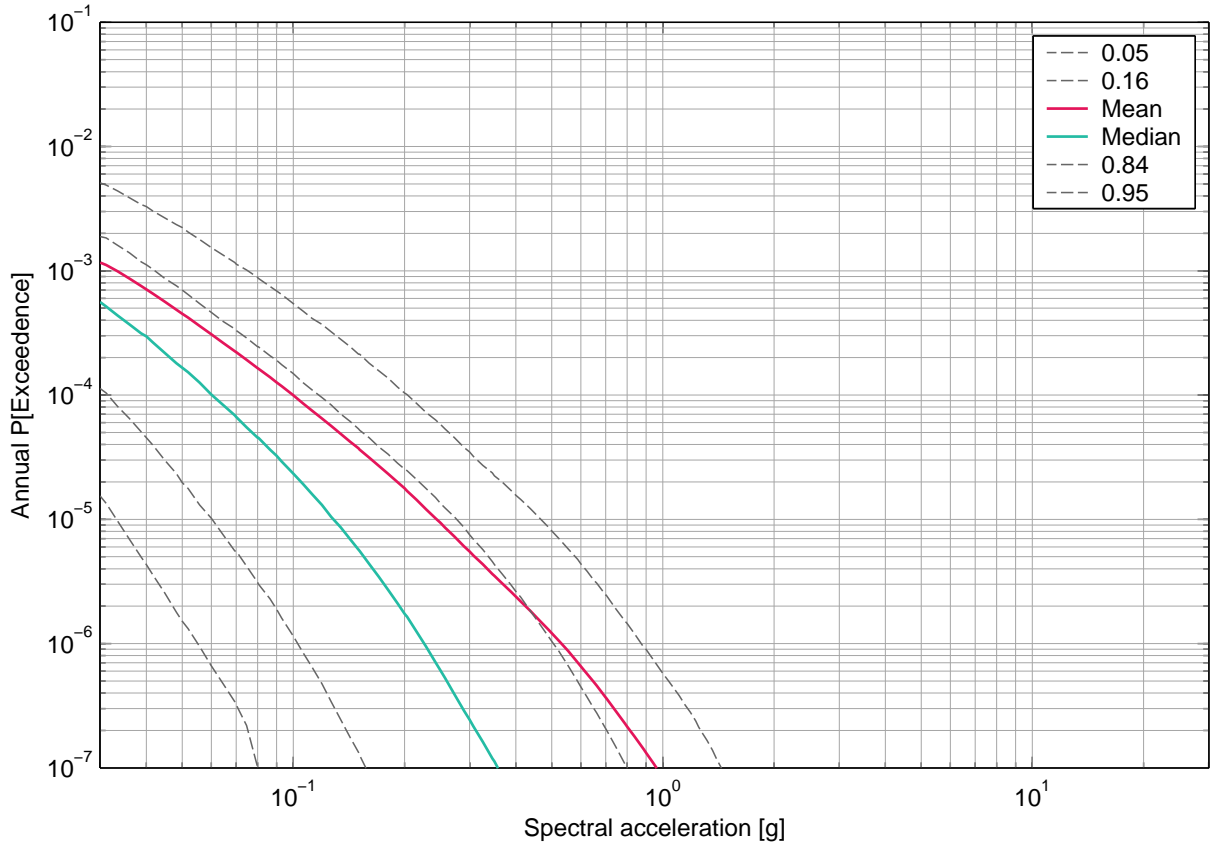


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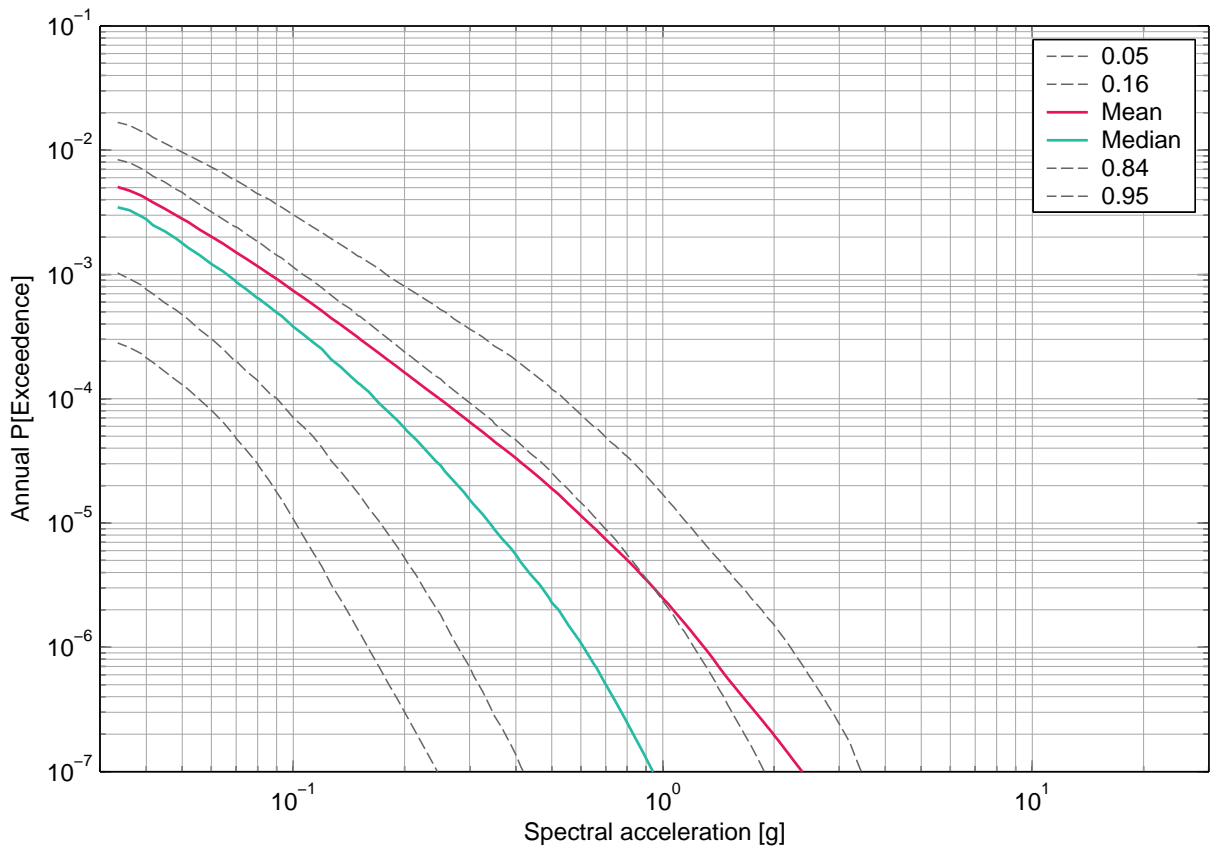


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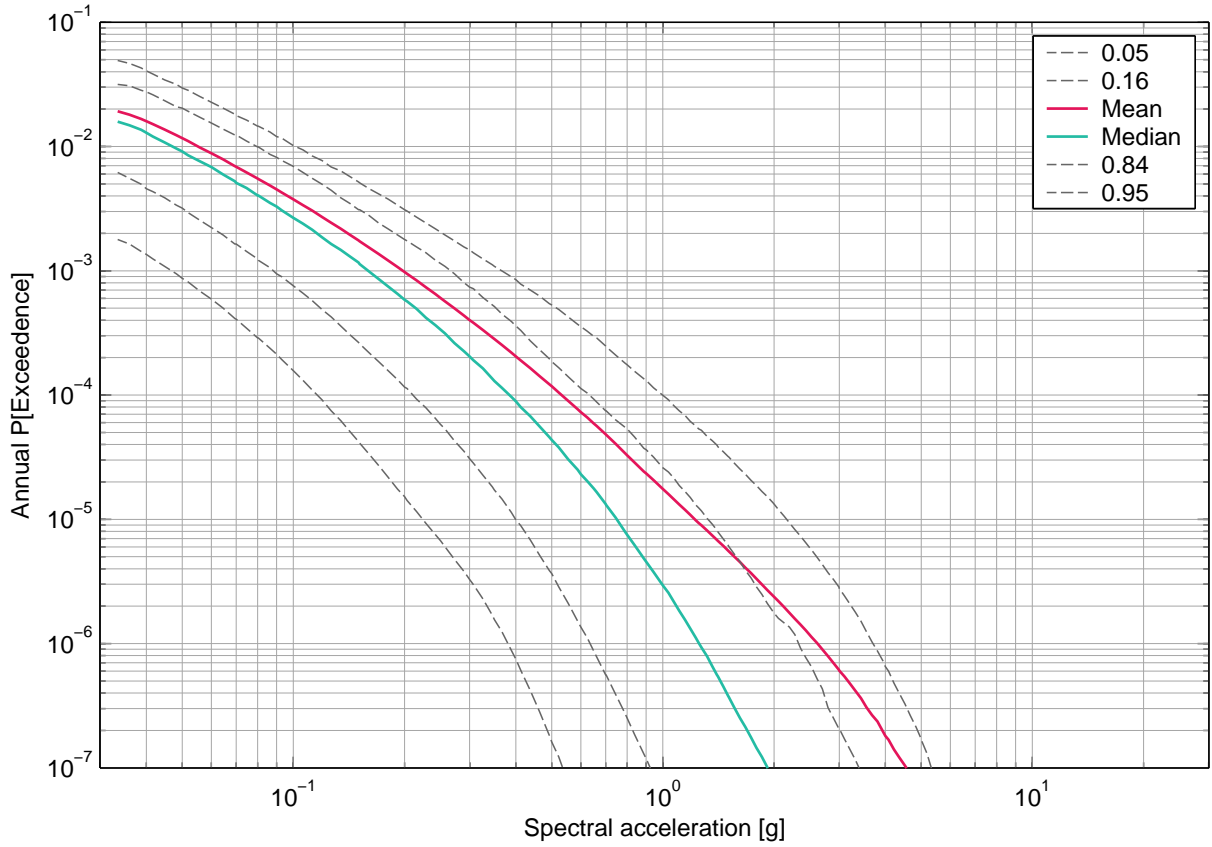


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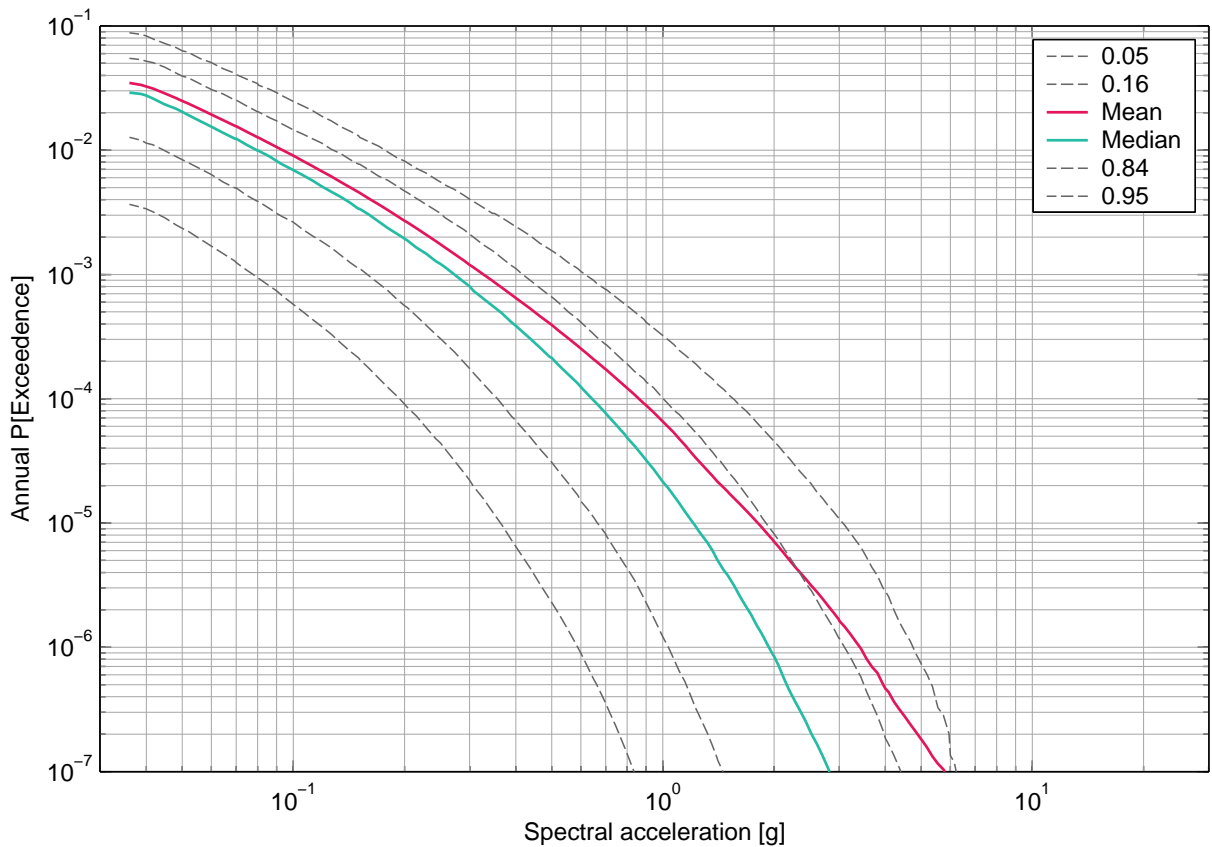


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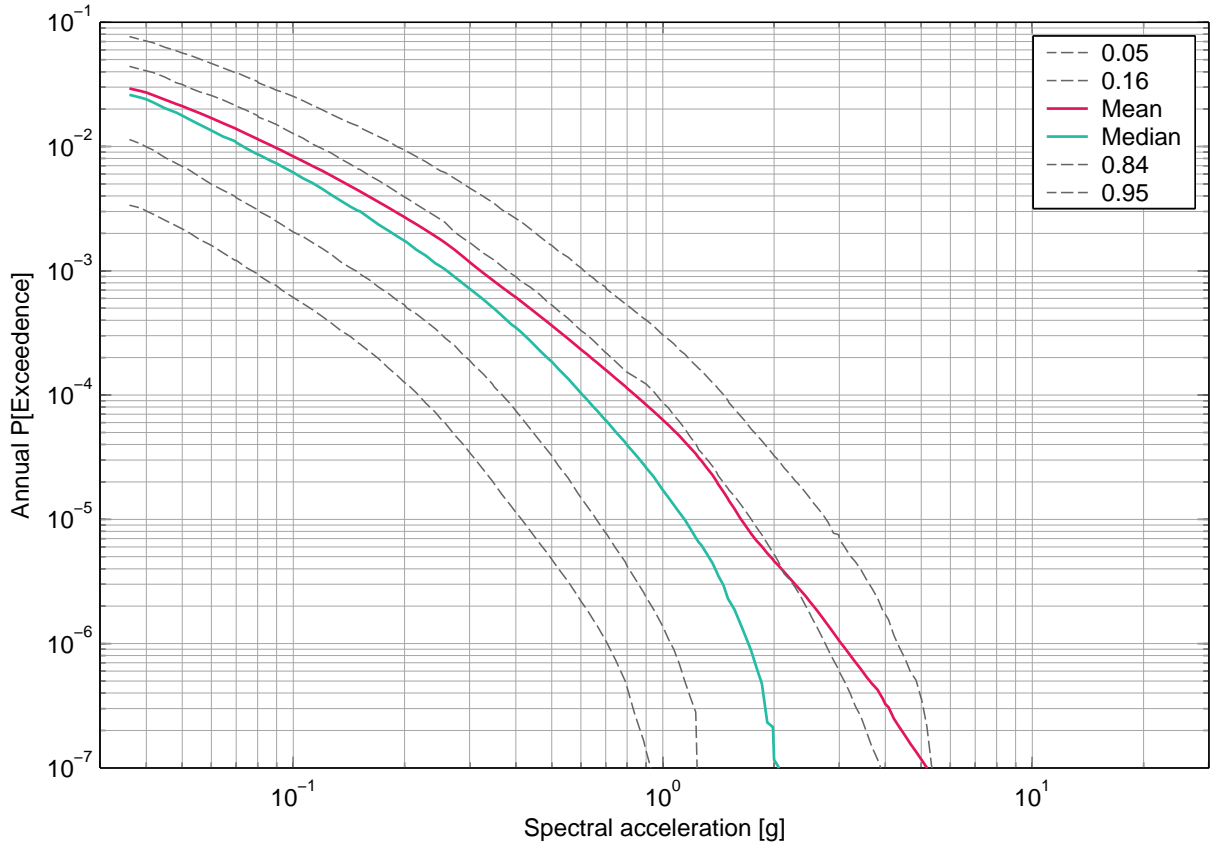


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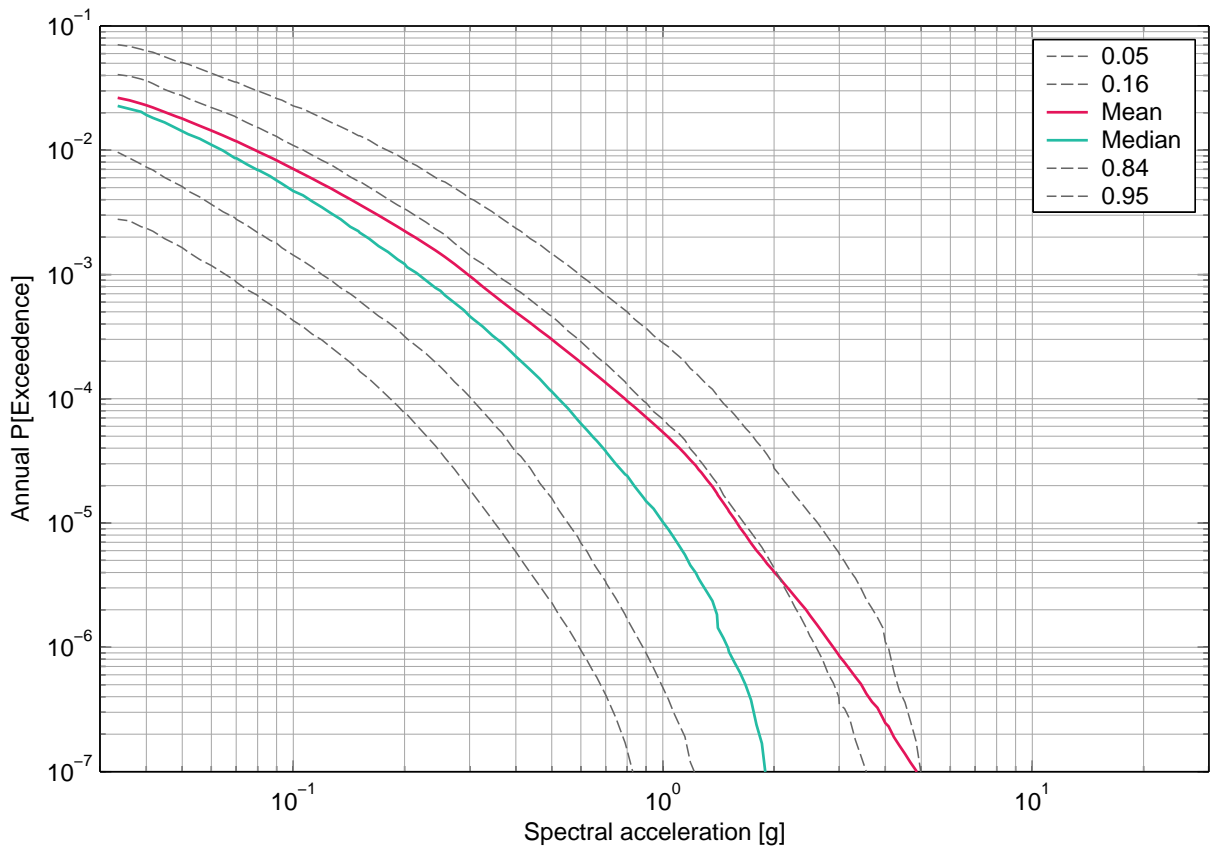


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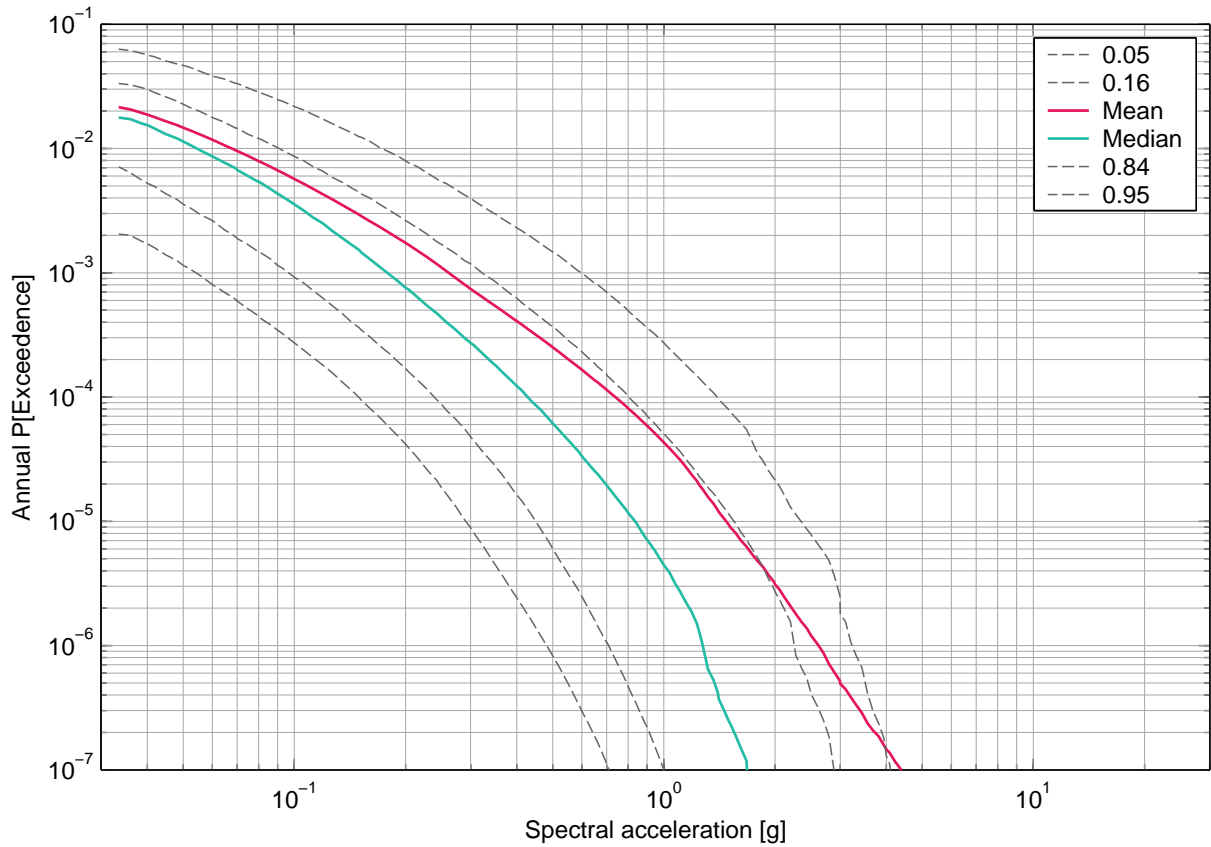


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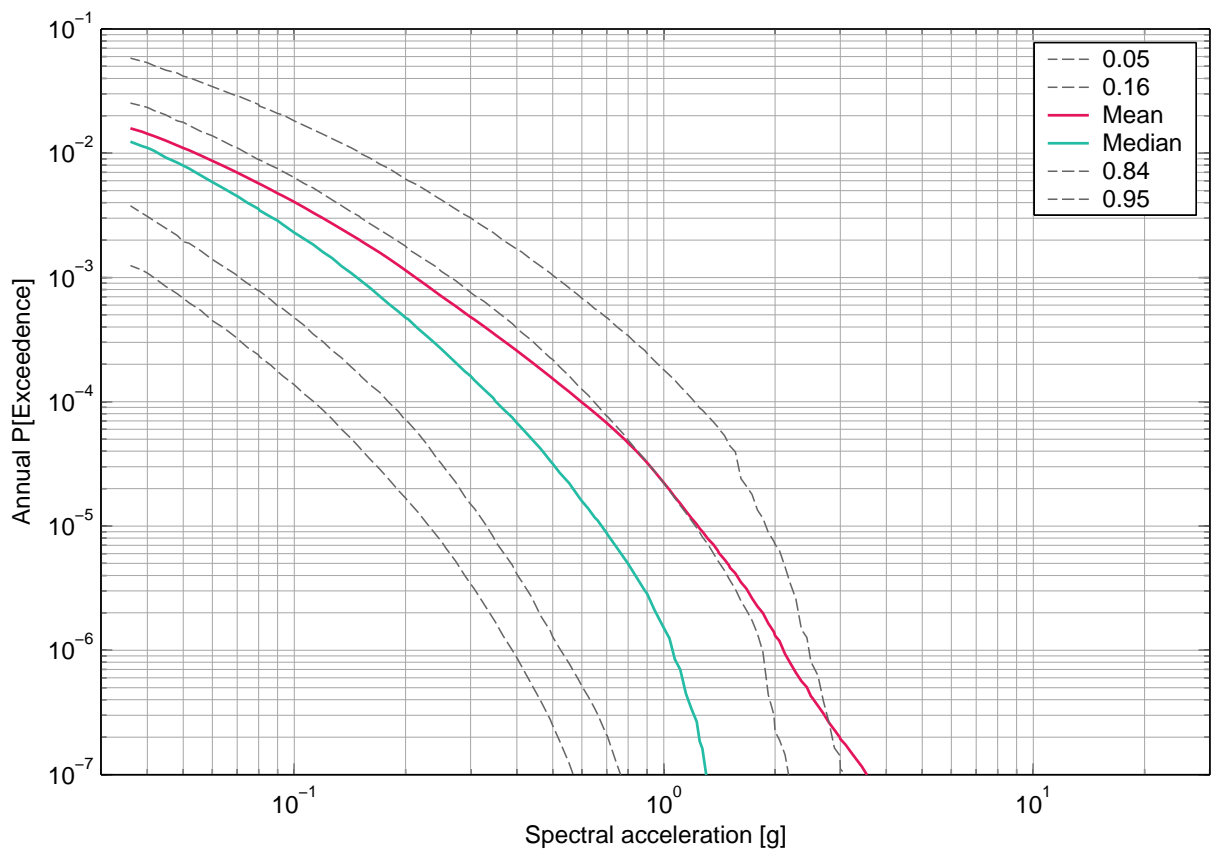


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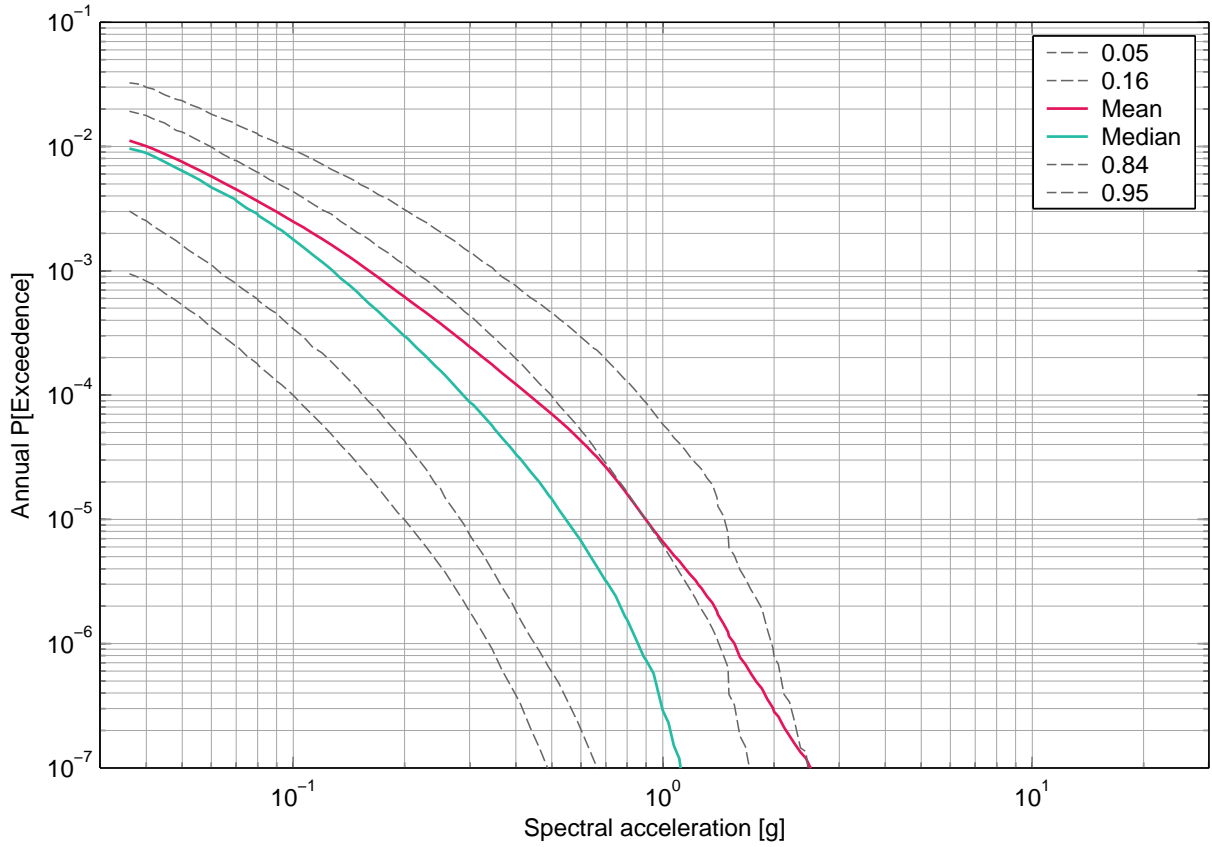


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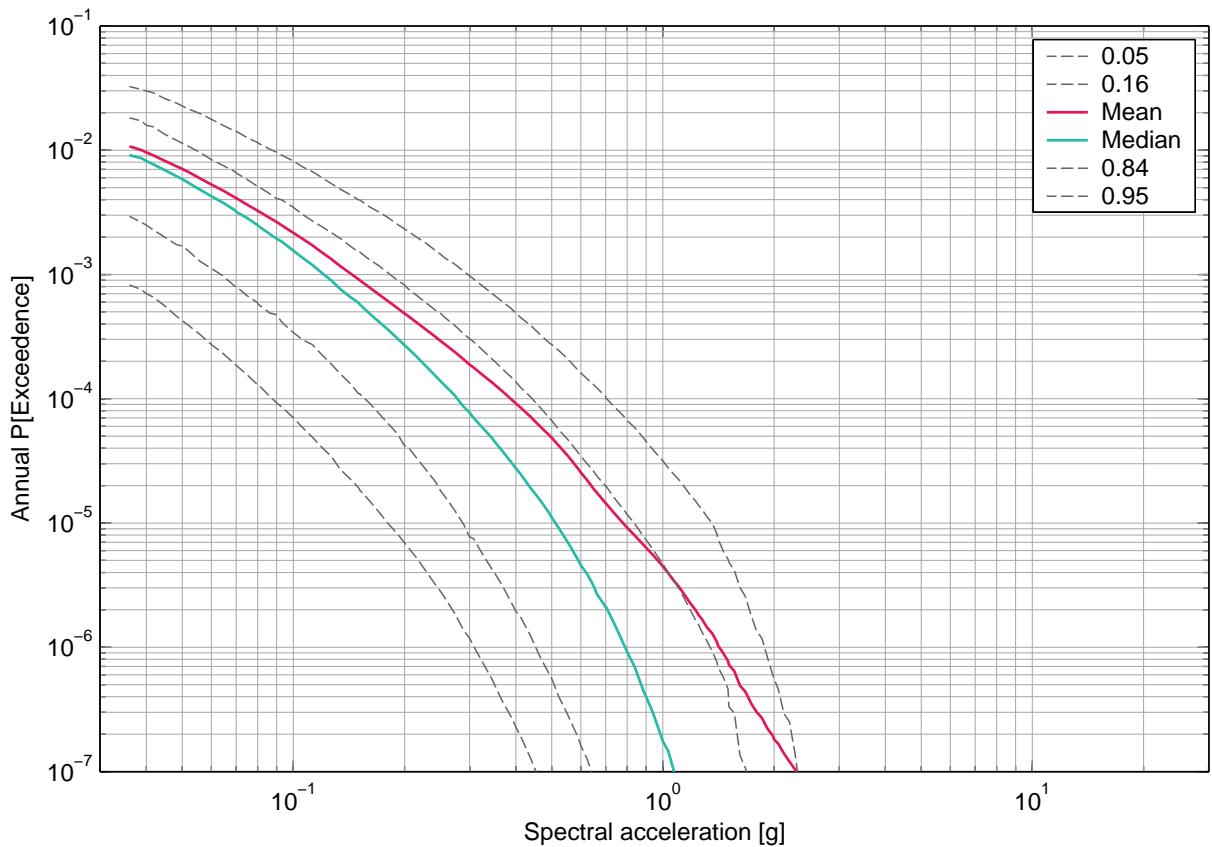


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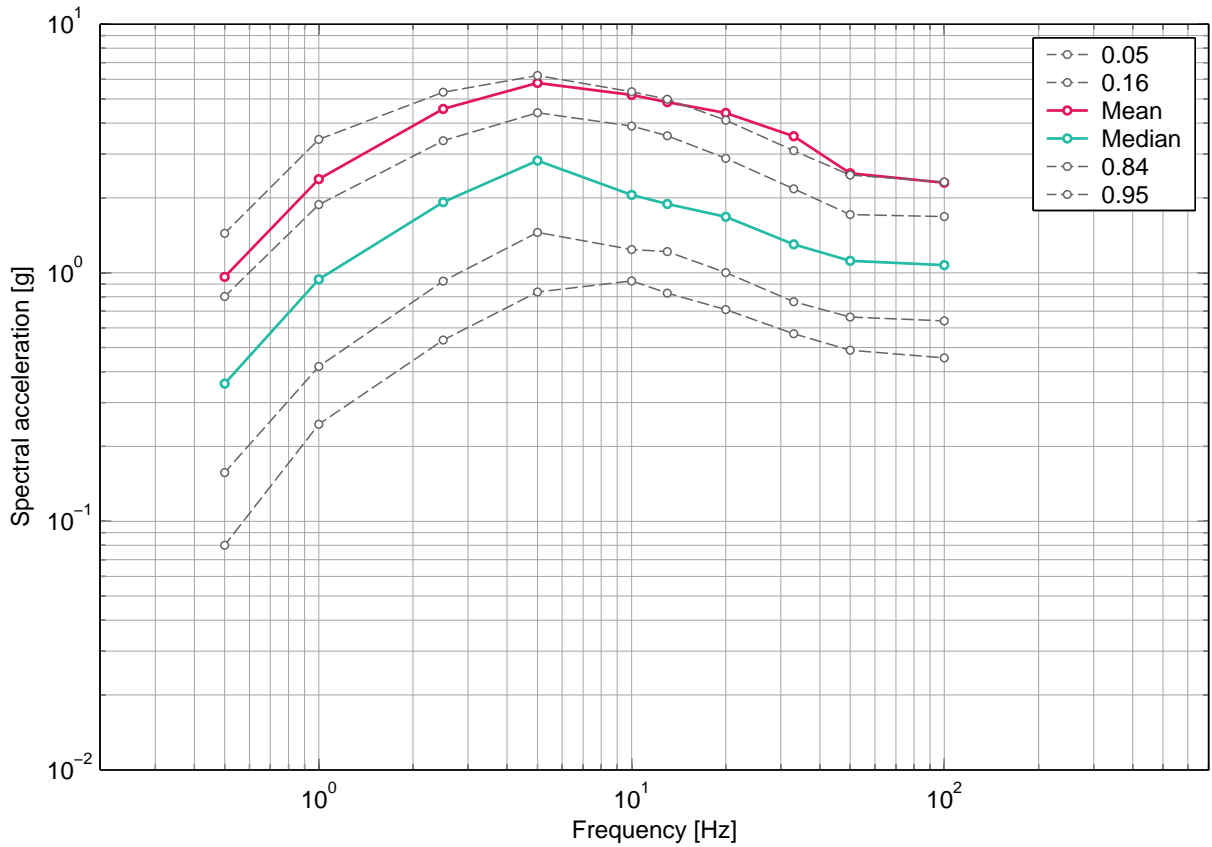


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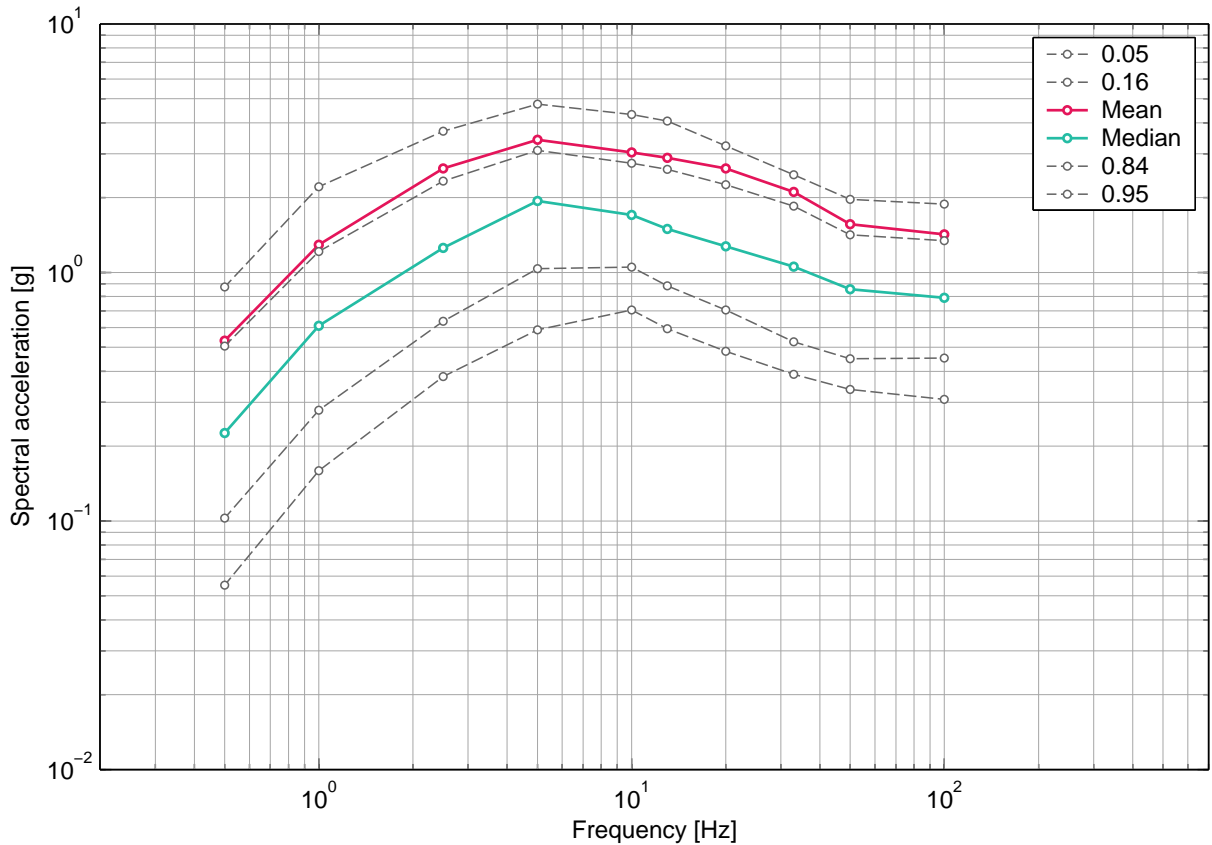


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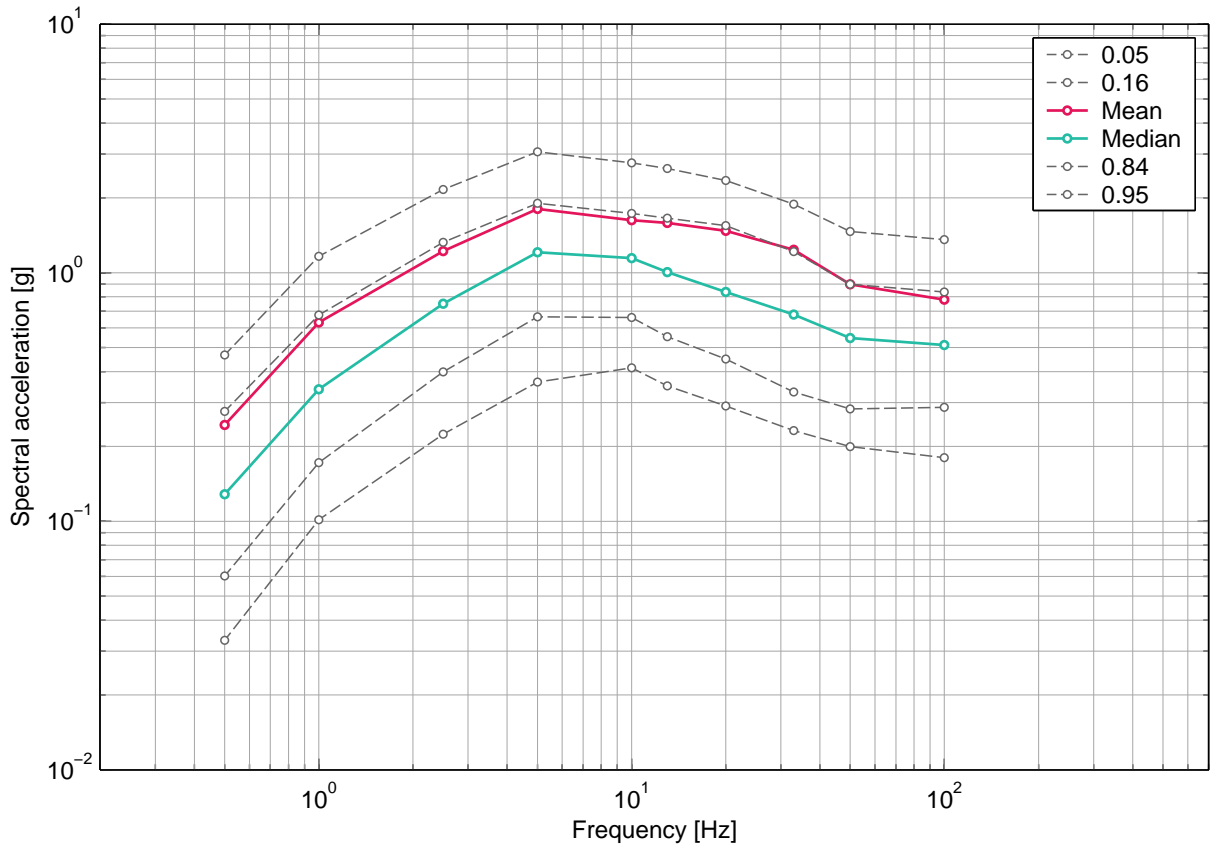


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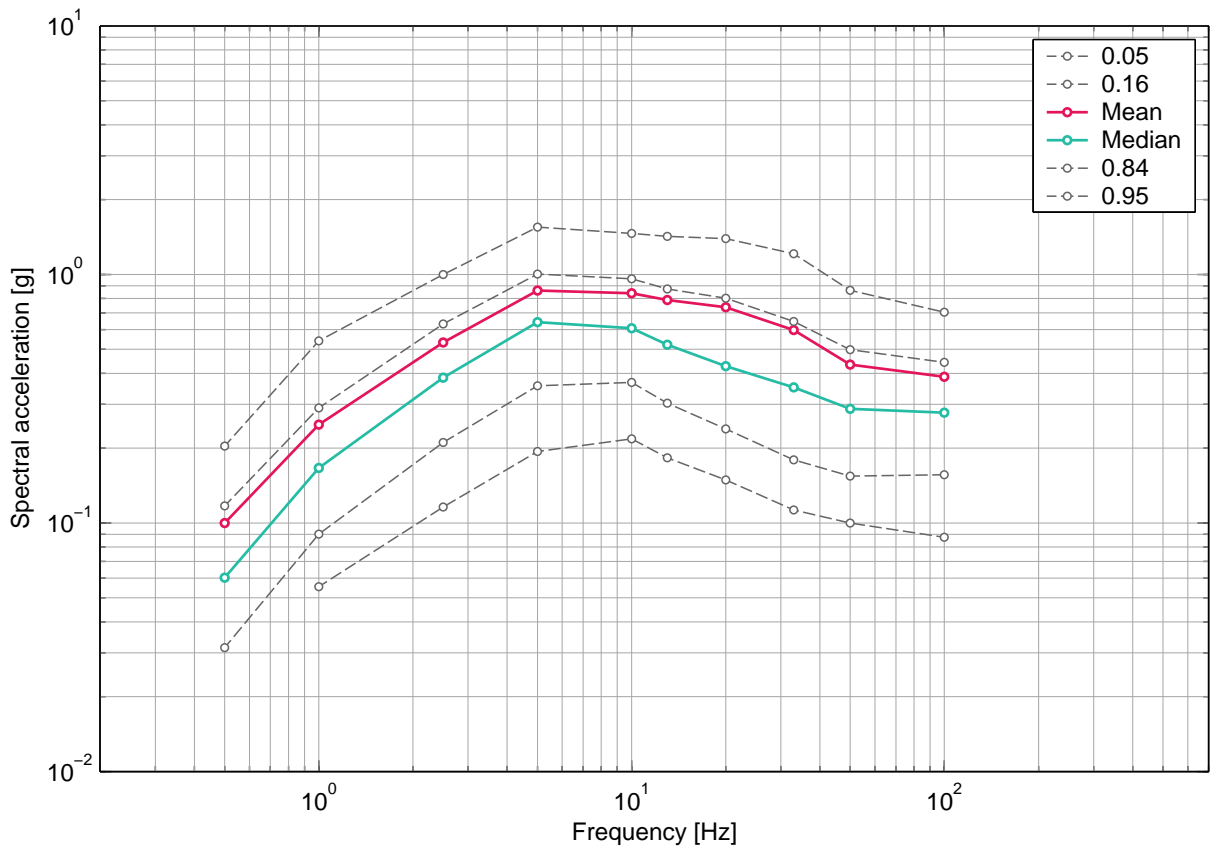


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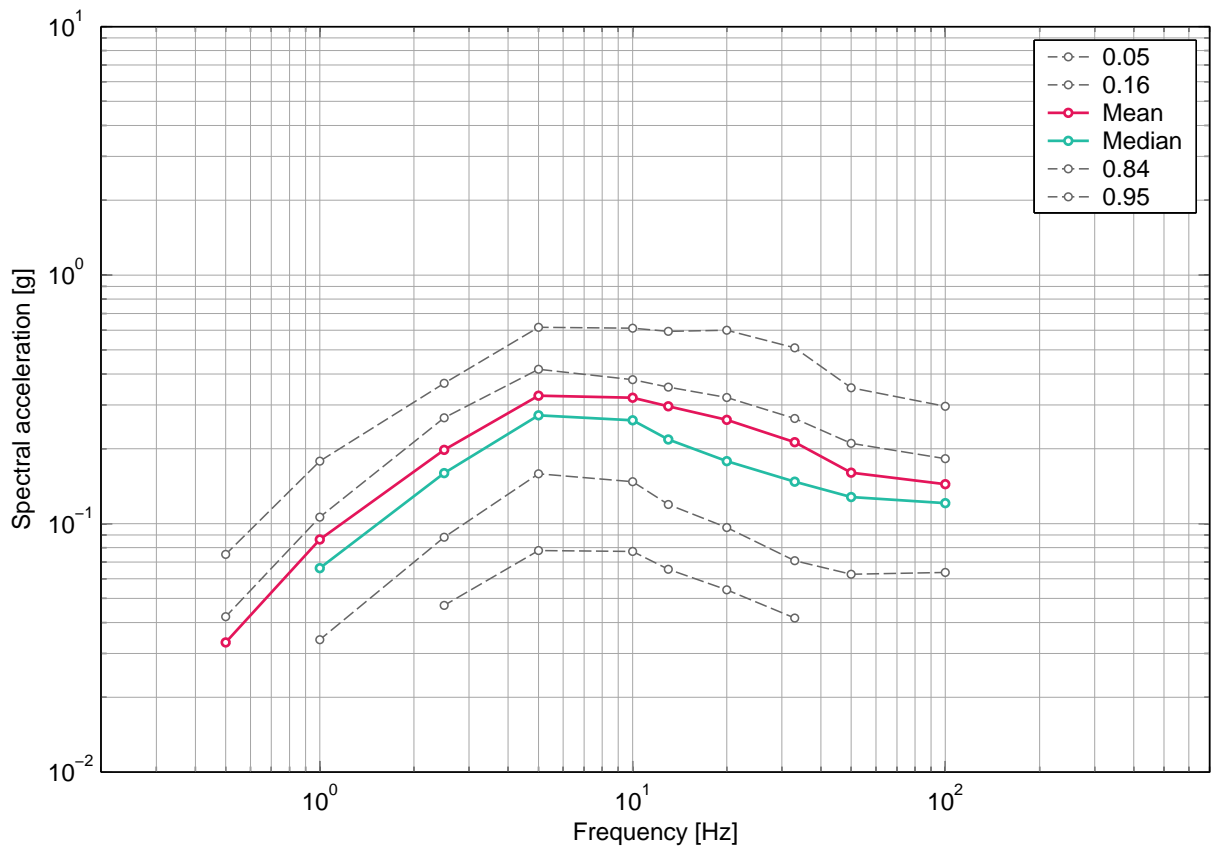


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## 5.5 Mühleberg, Rock Hazard Deaggregation, Horizontal Component, Surface

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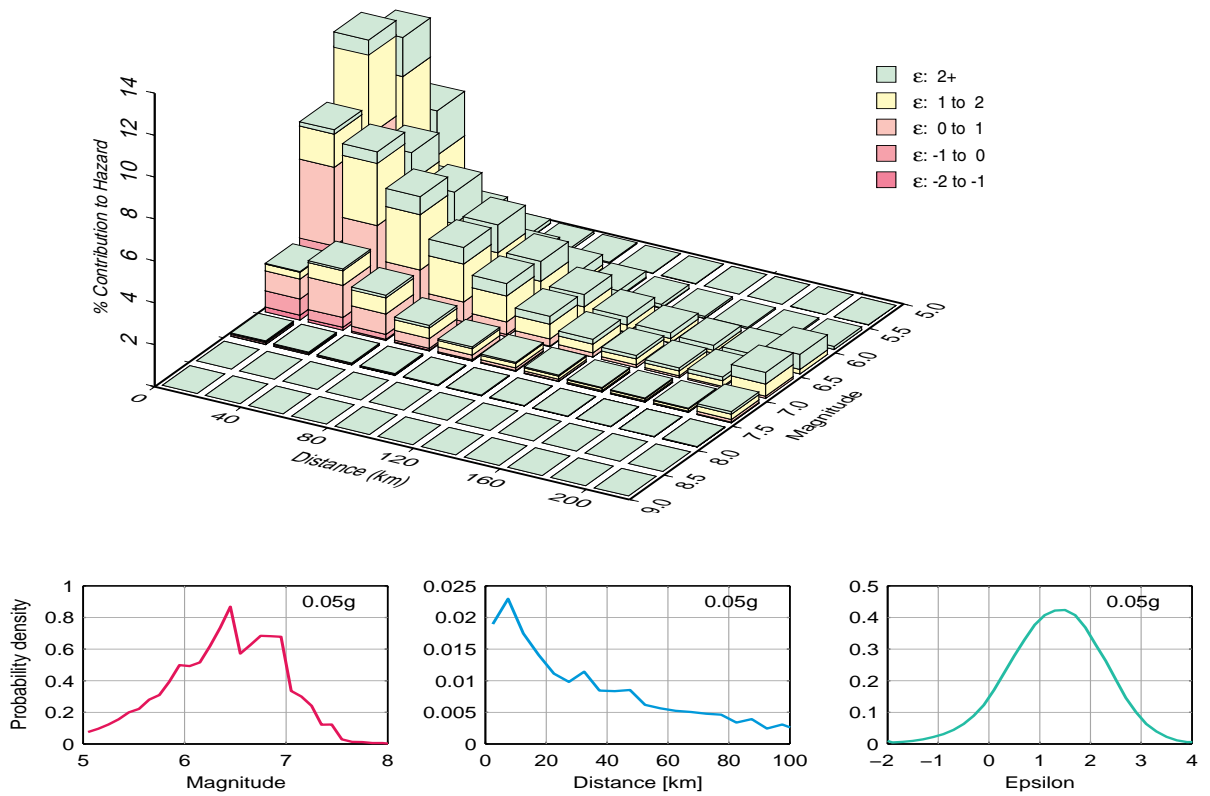


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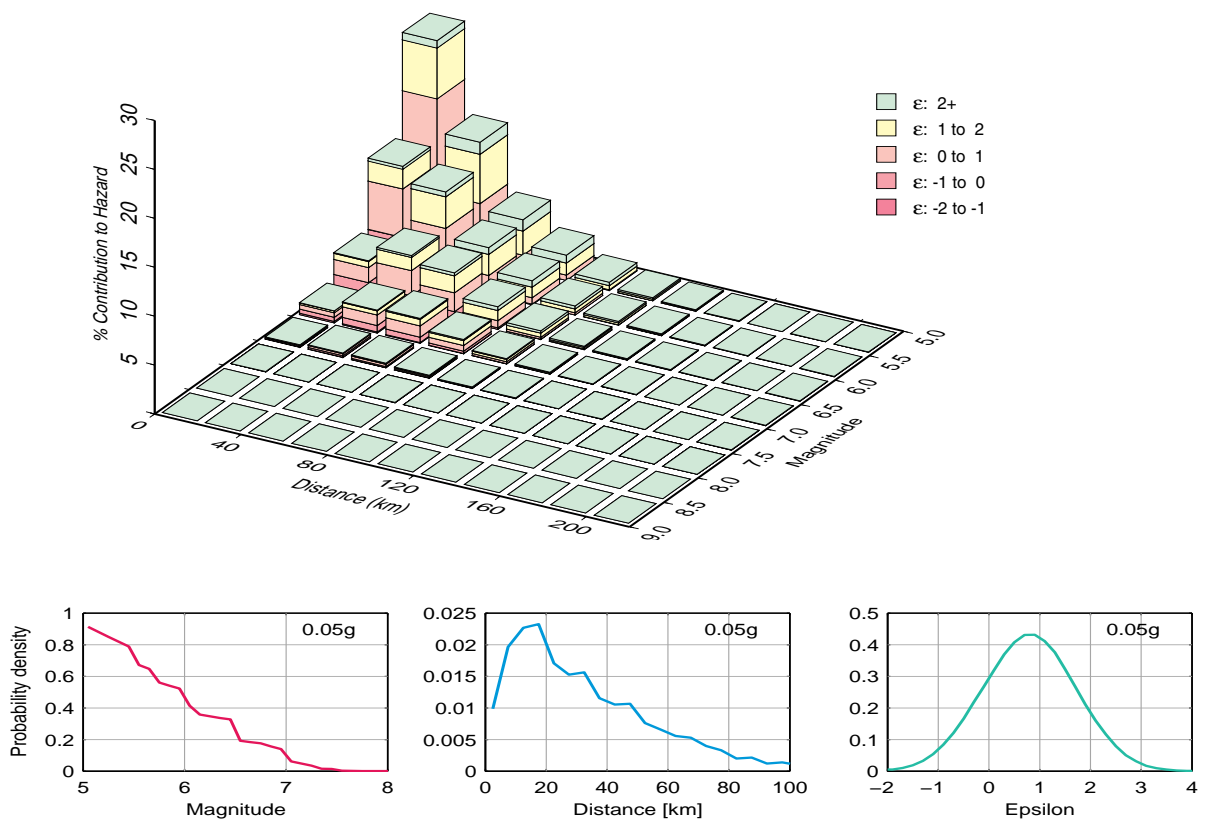


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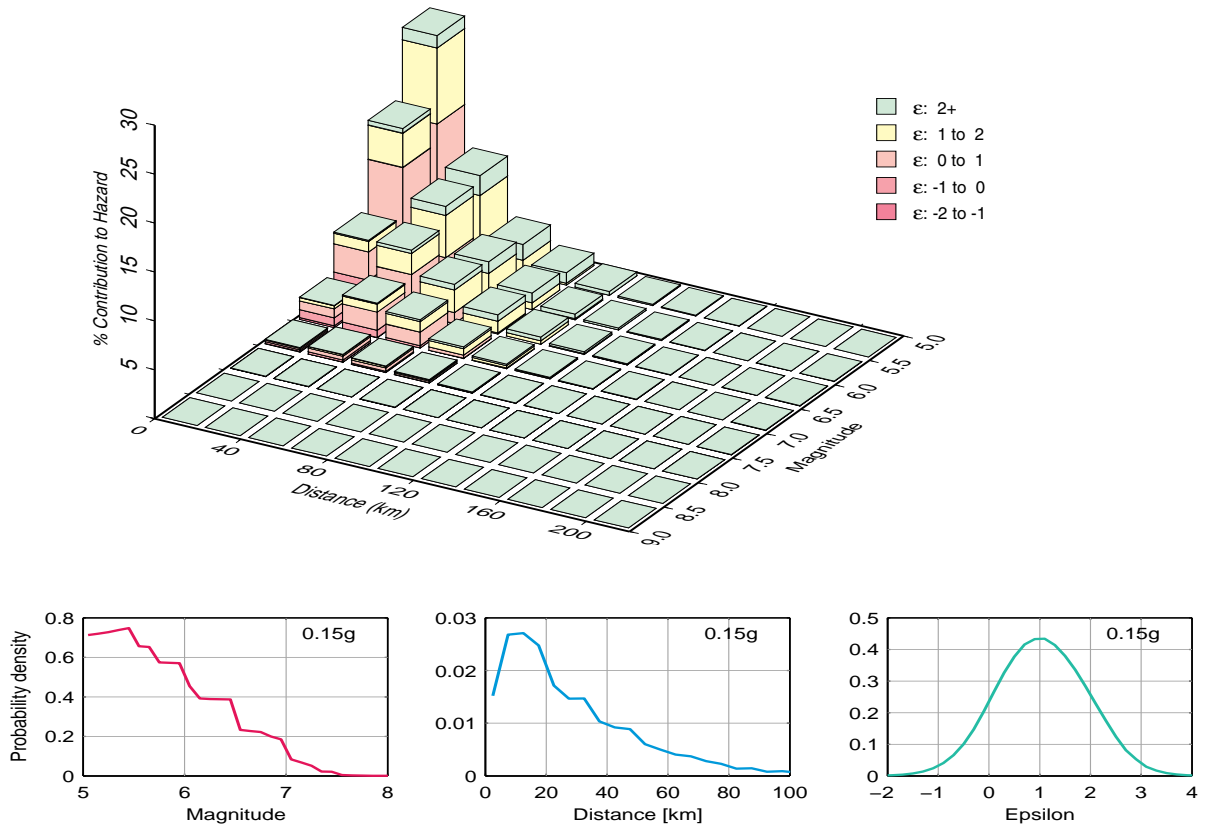


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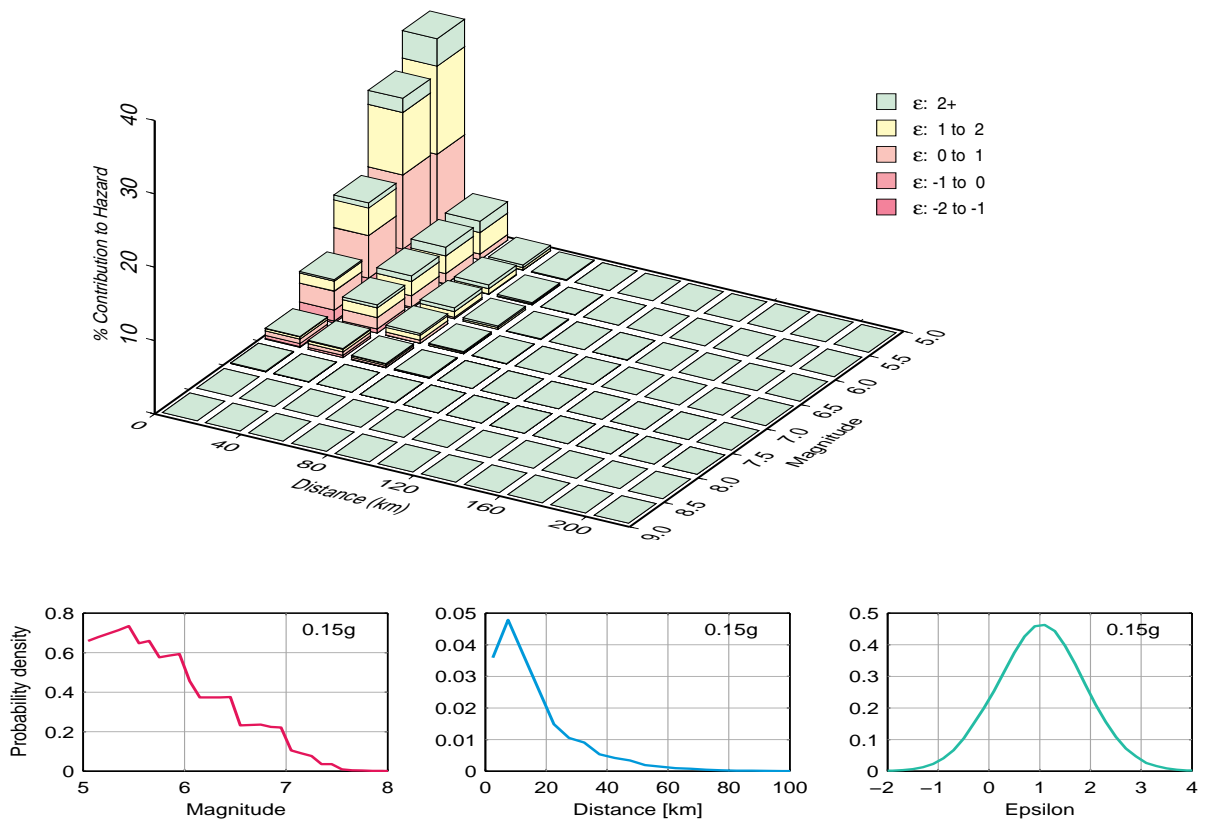


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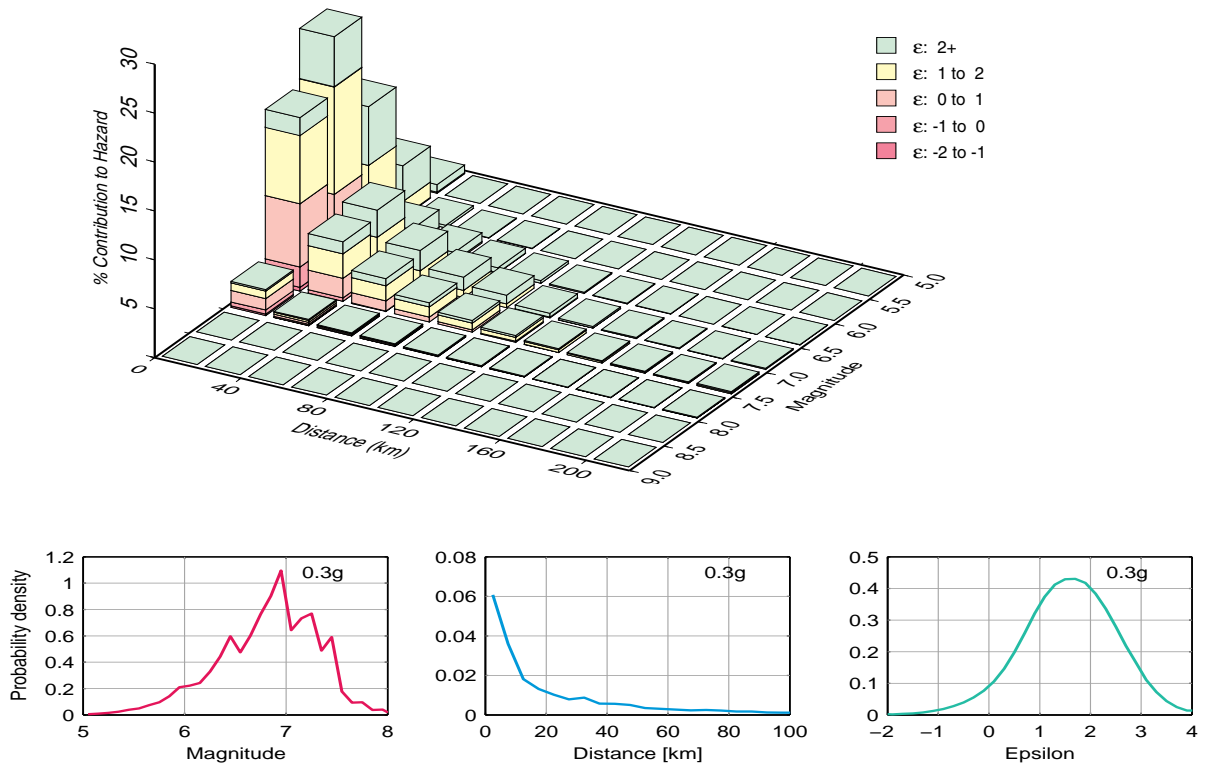


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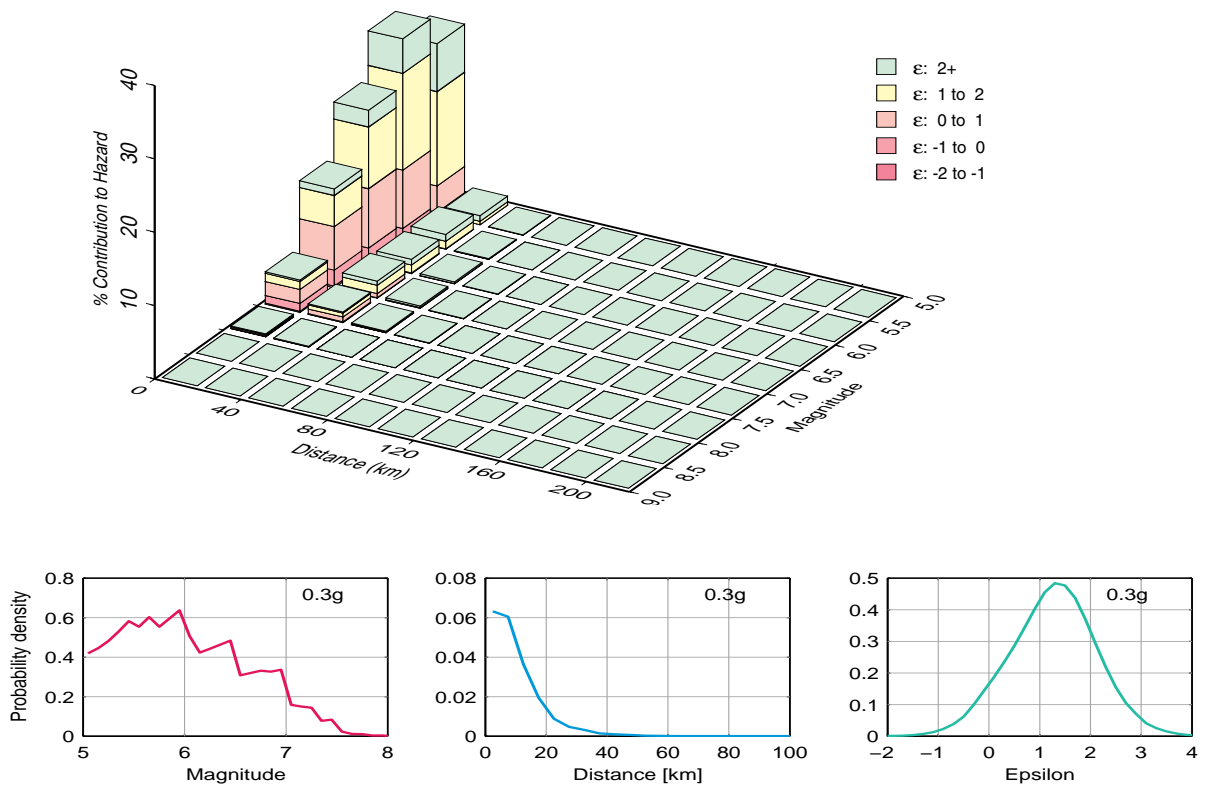


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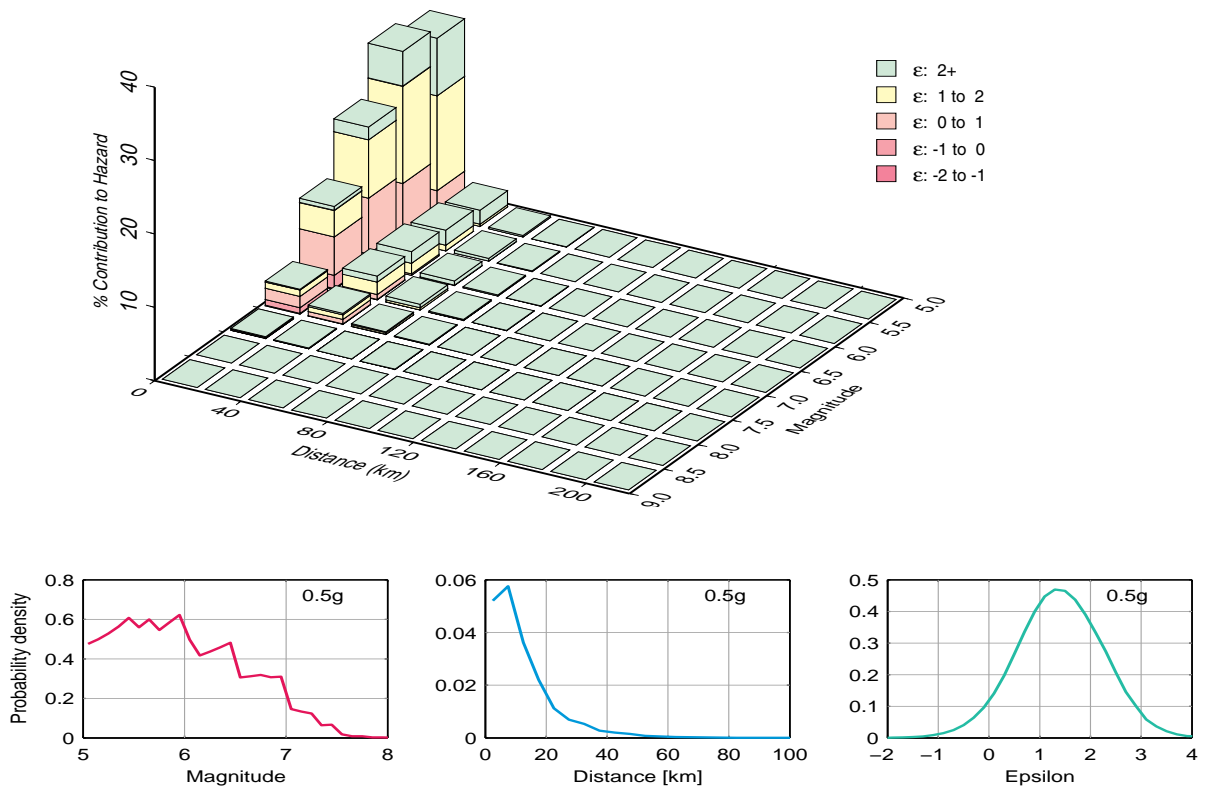


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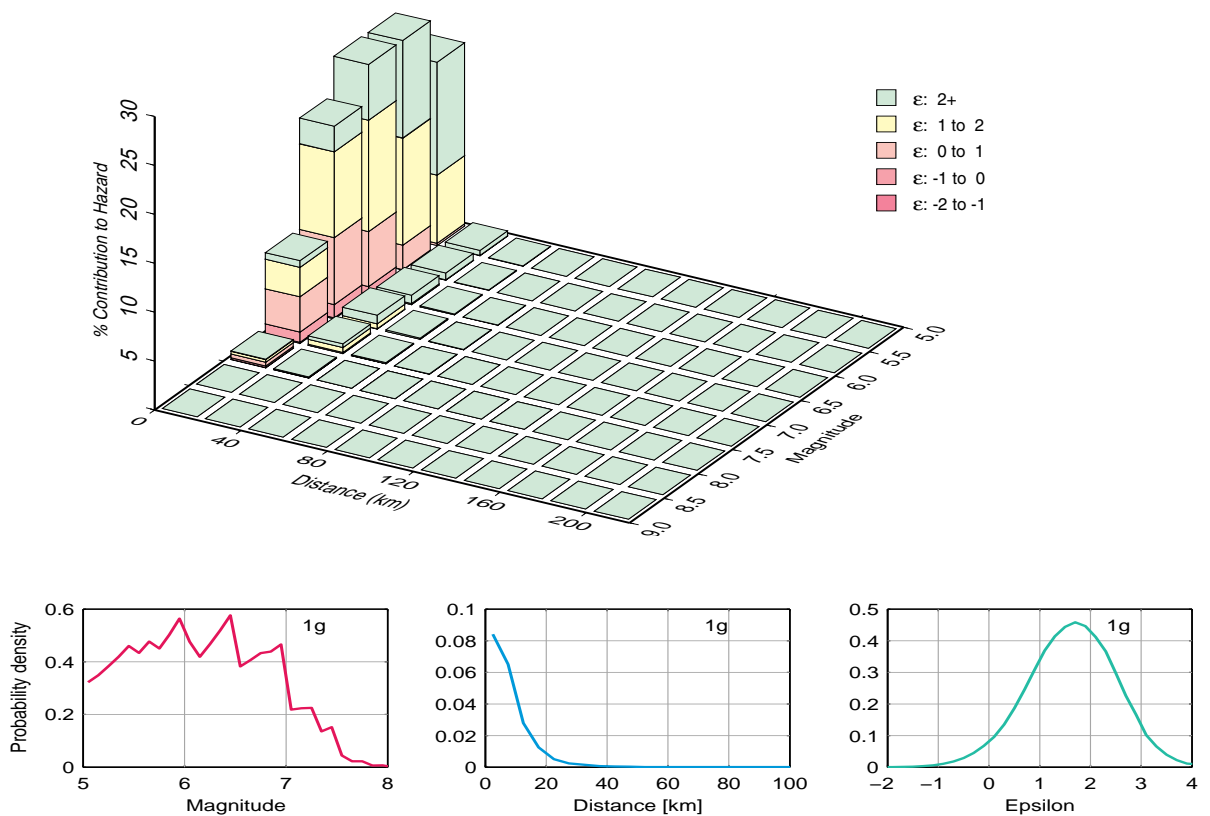


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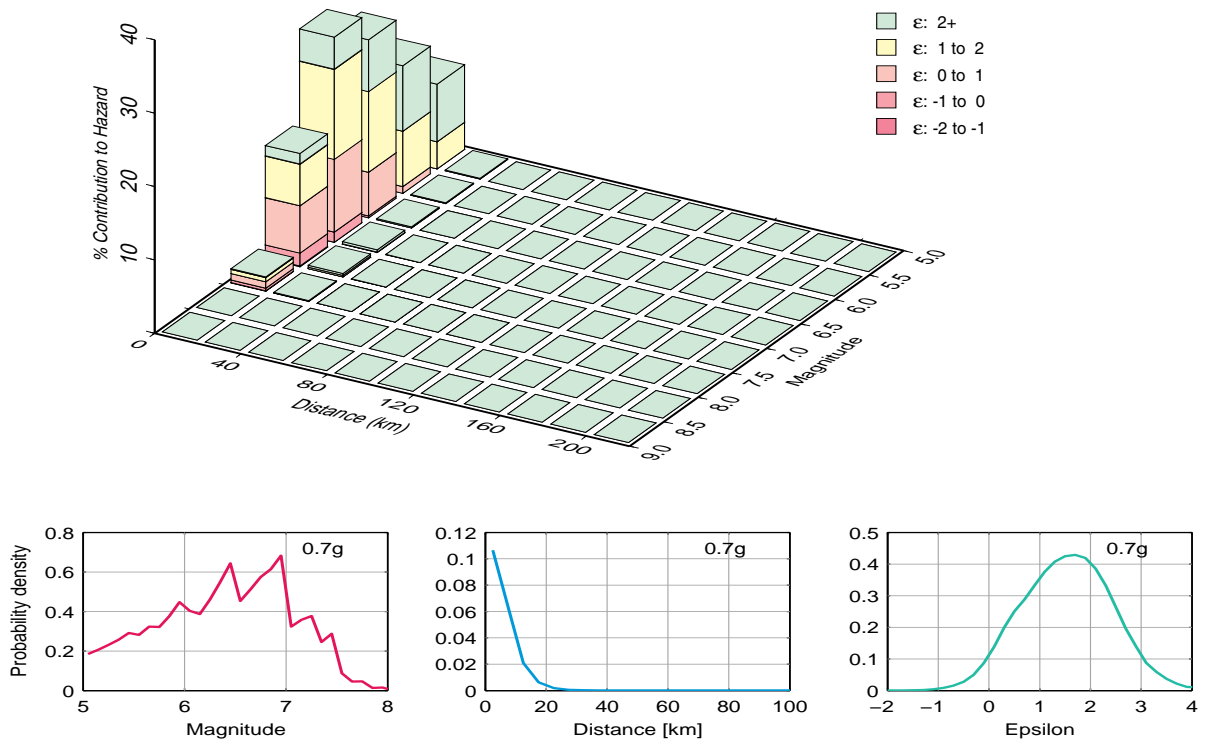


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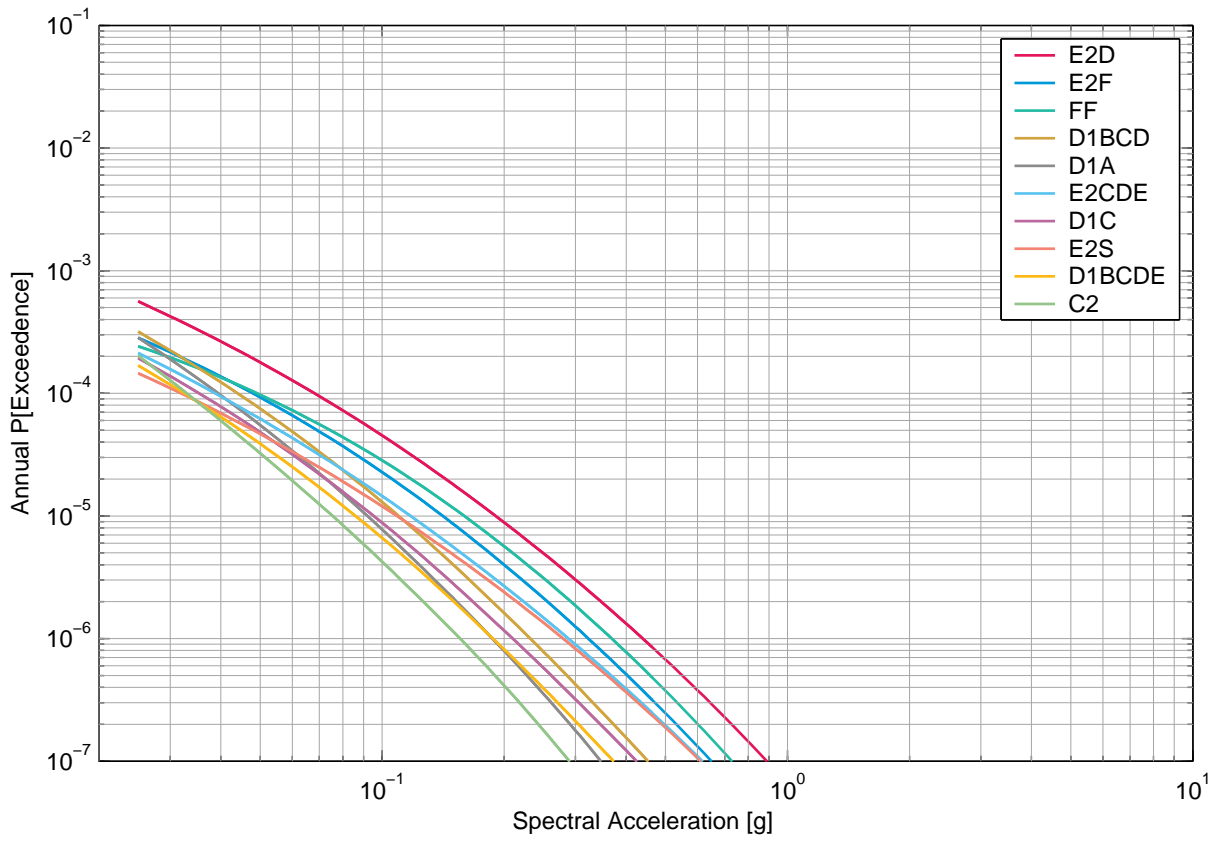


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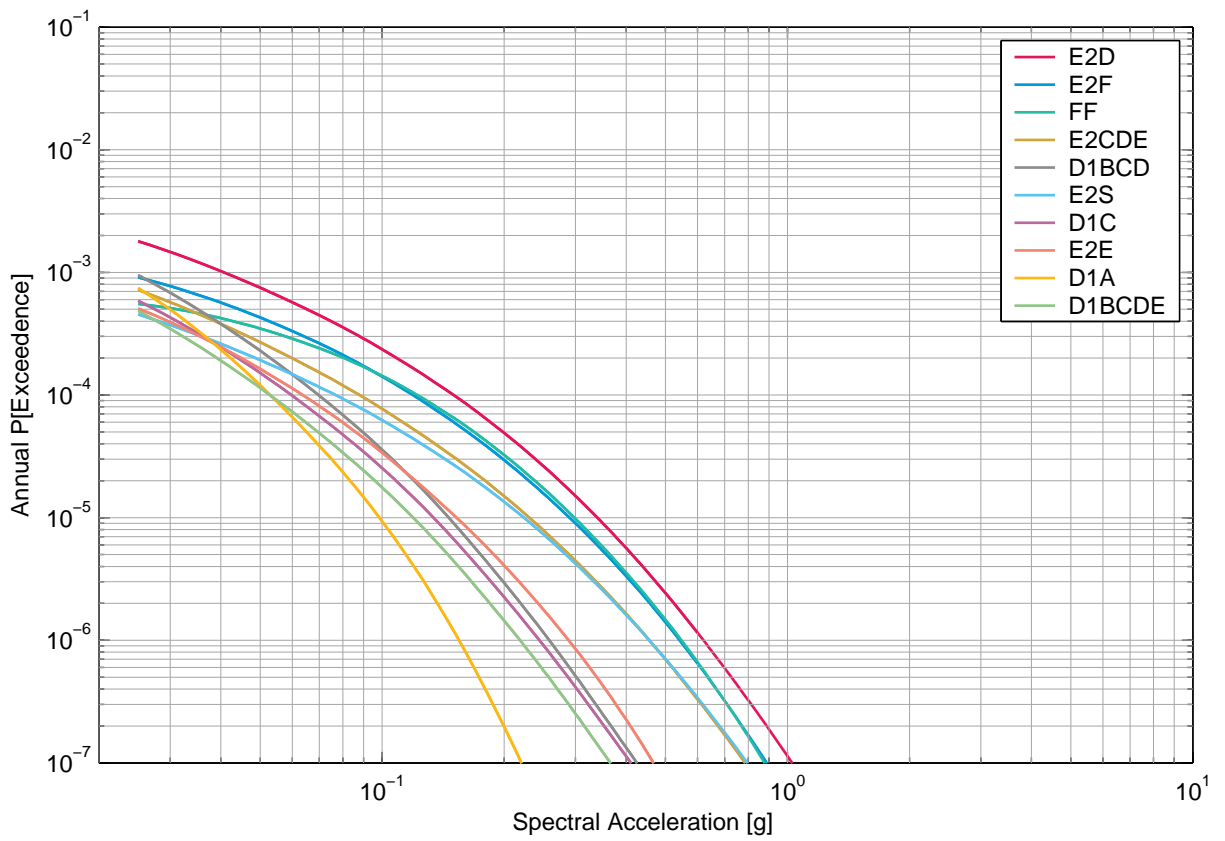


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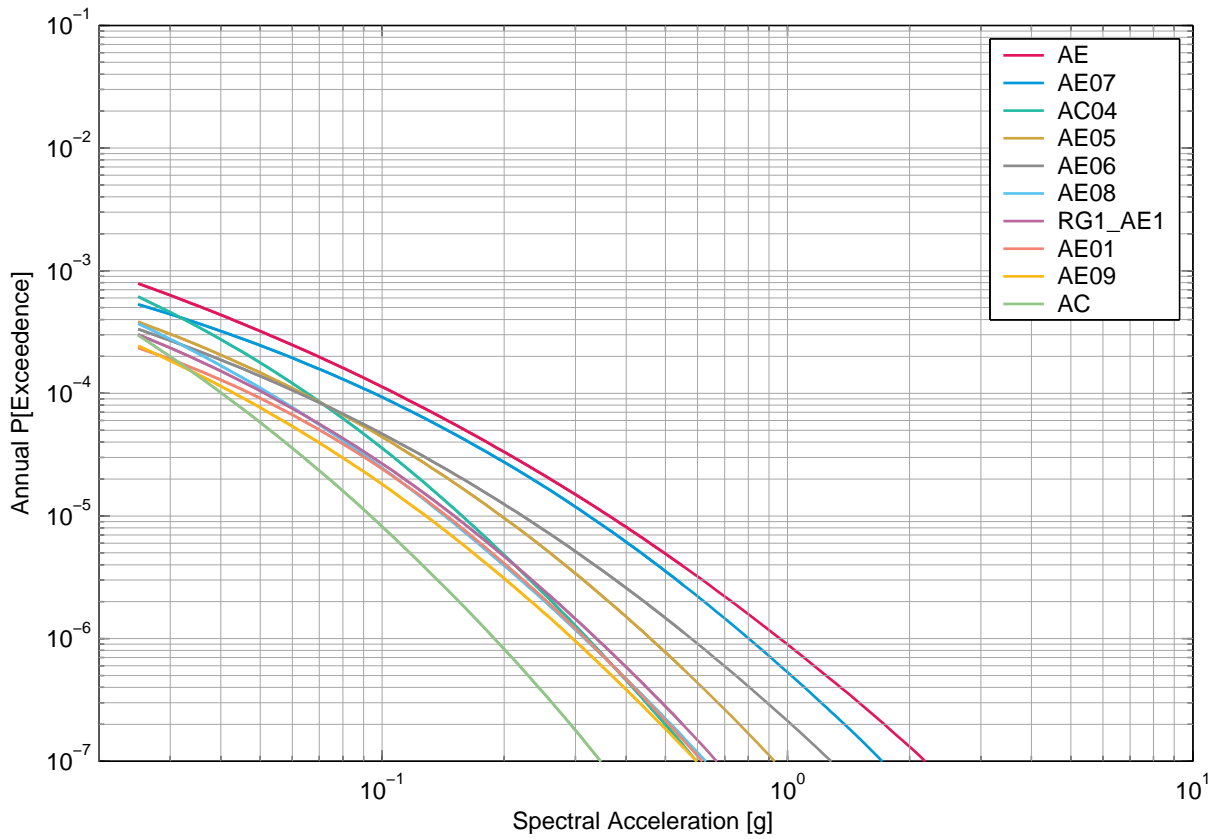


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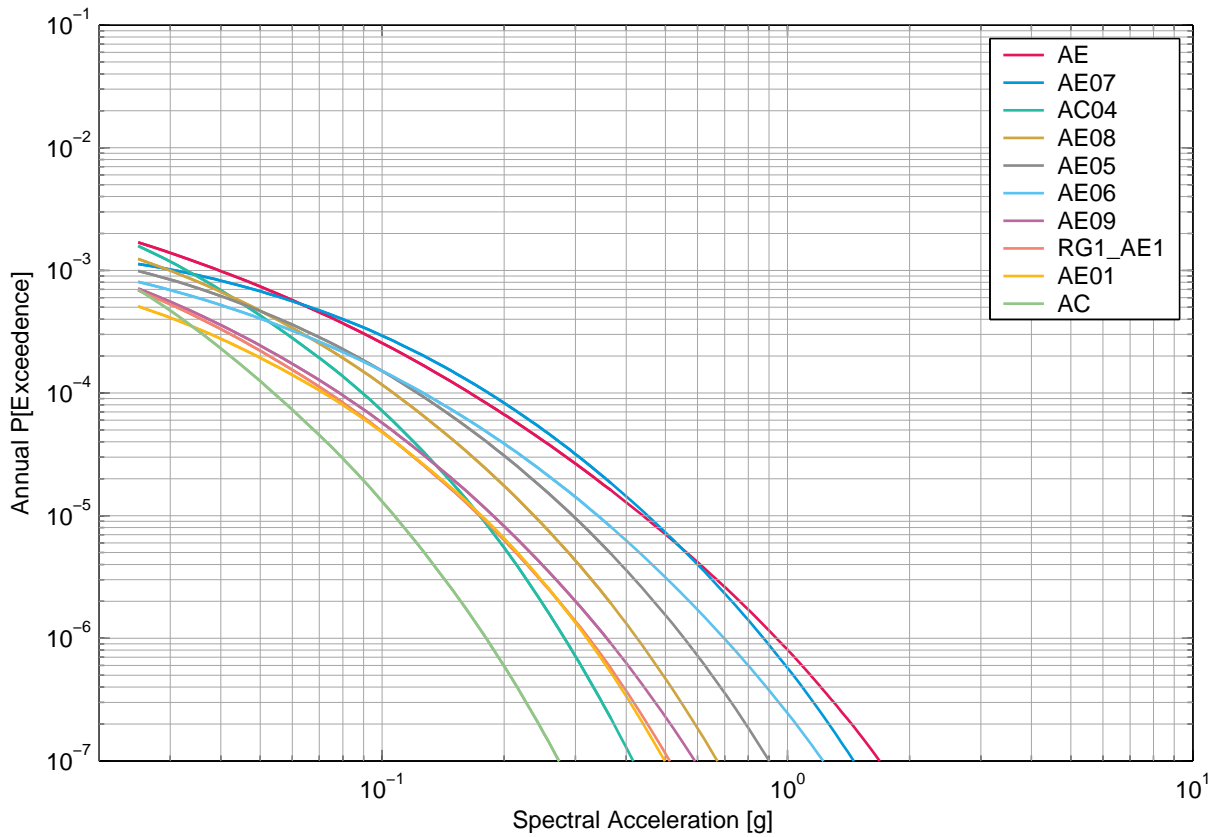


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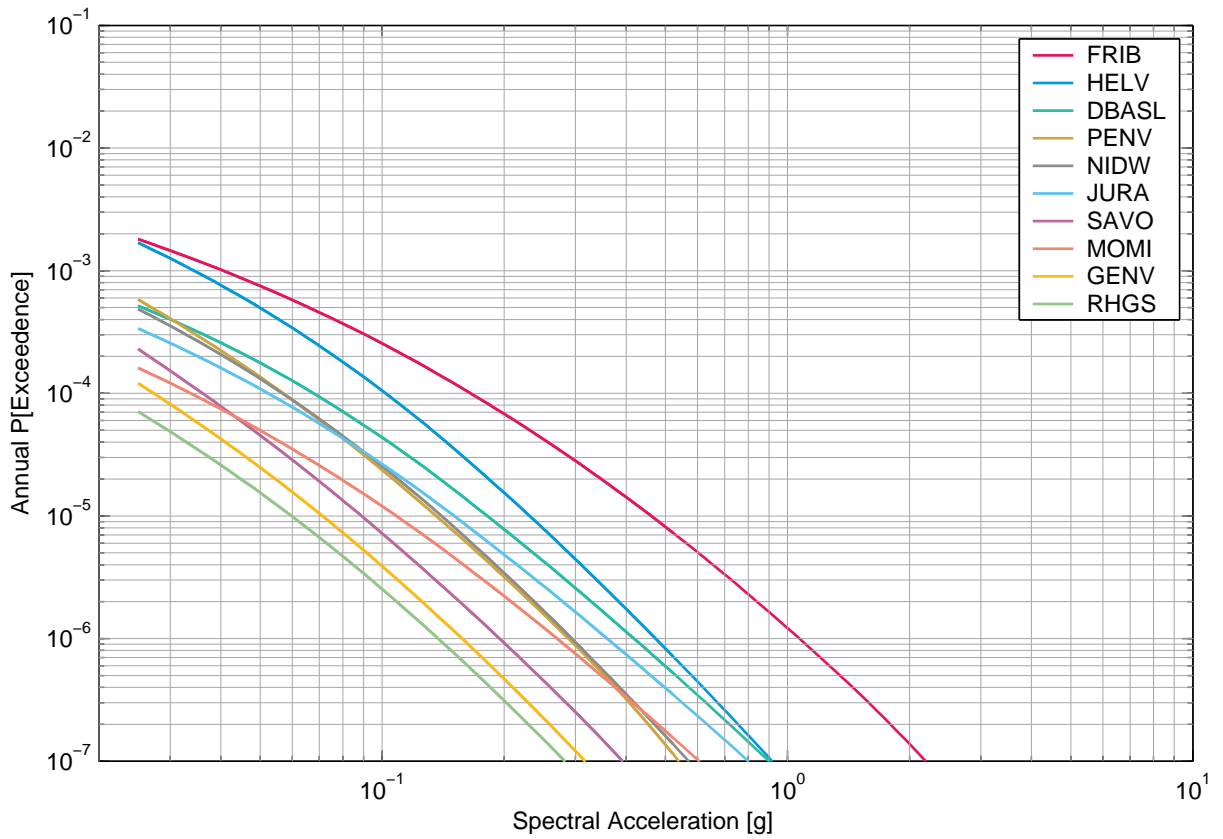


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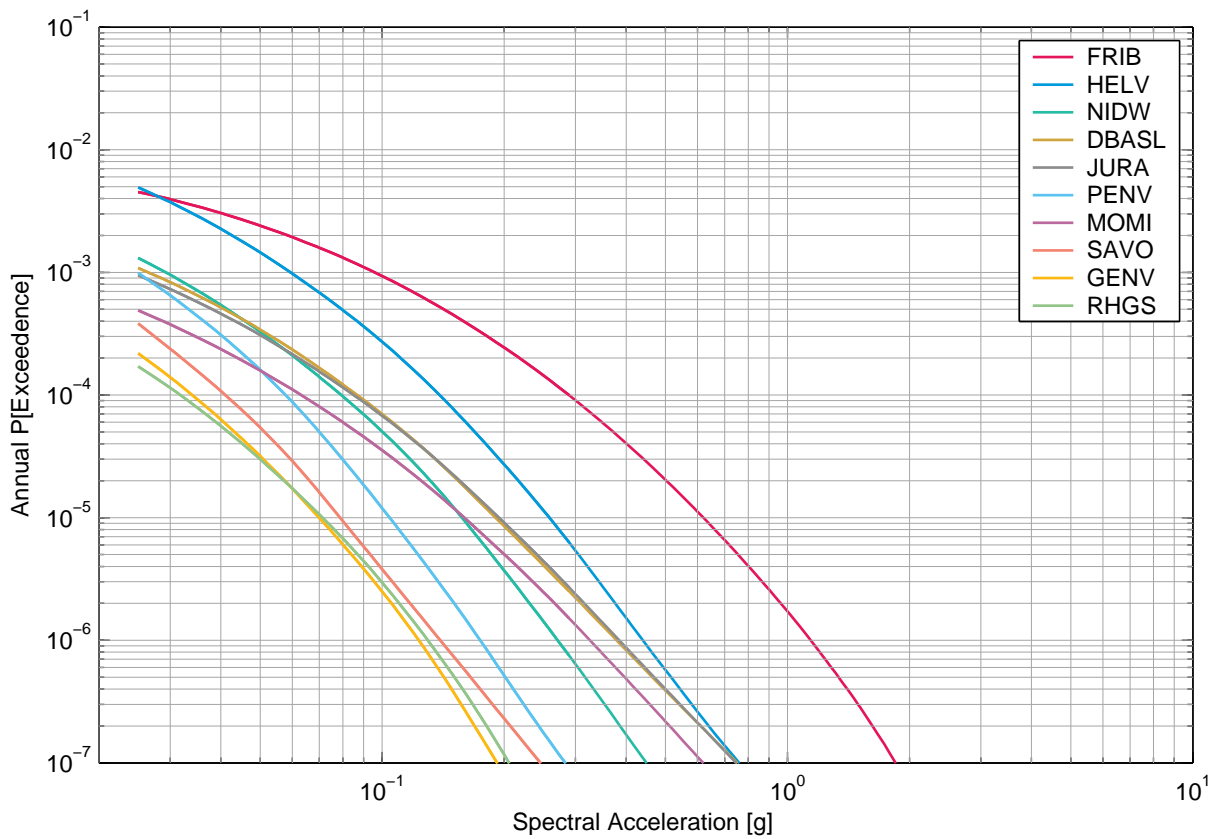


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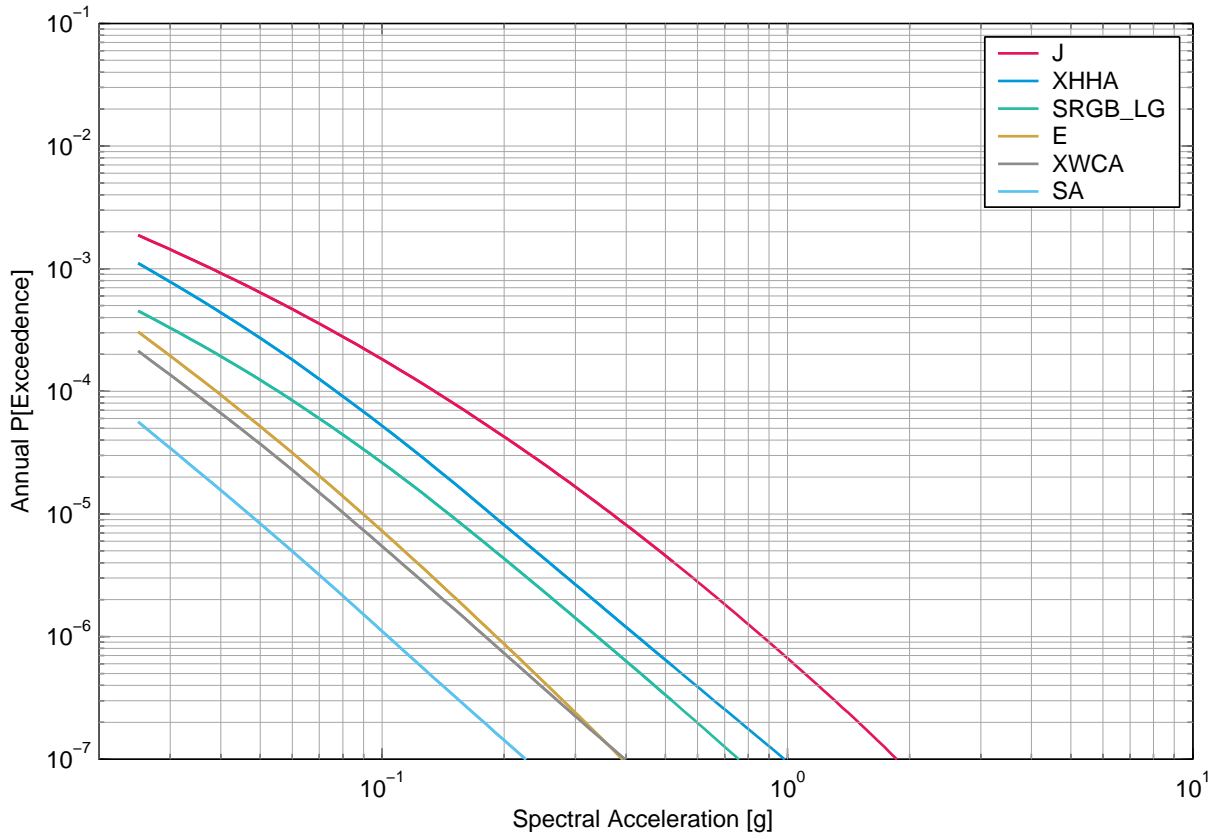


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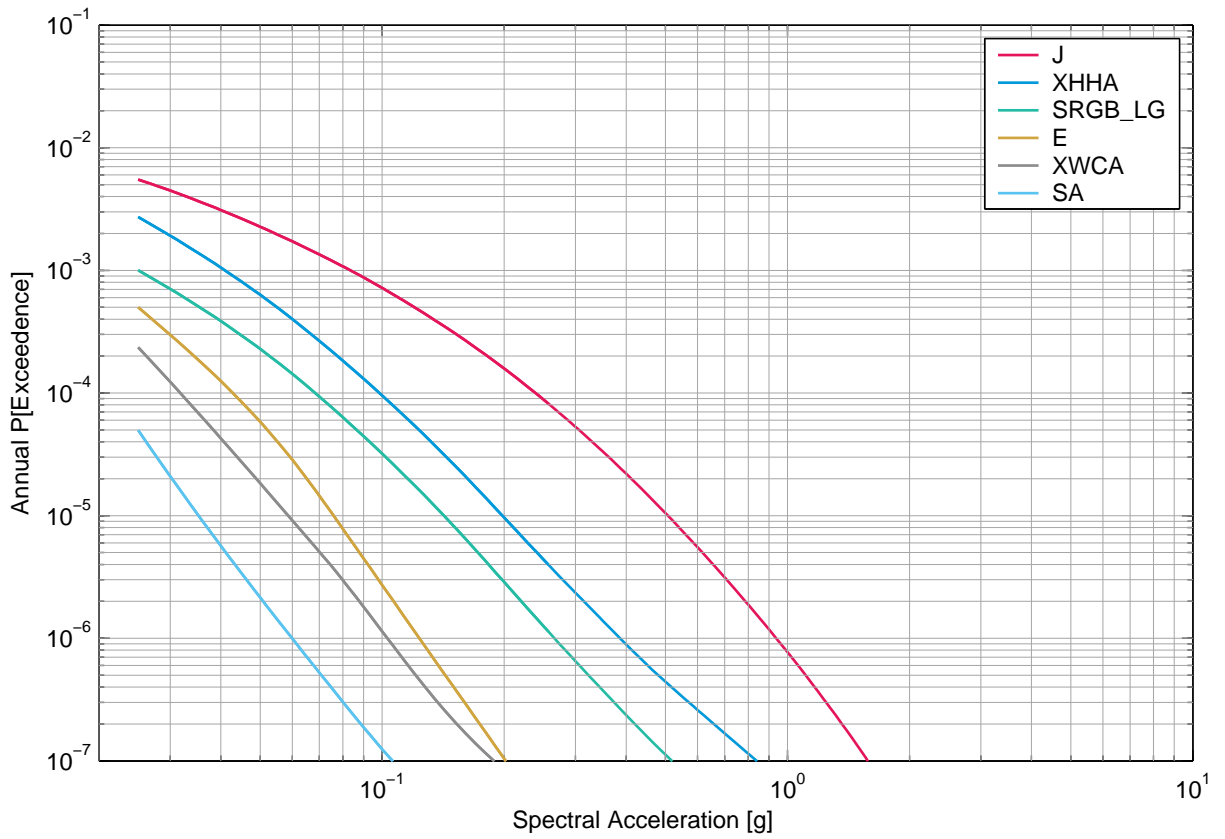


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## 5.7 Mühleberg, Sensitivity to Upper Limit GM Estimates, Horizontal Component, Surface

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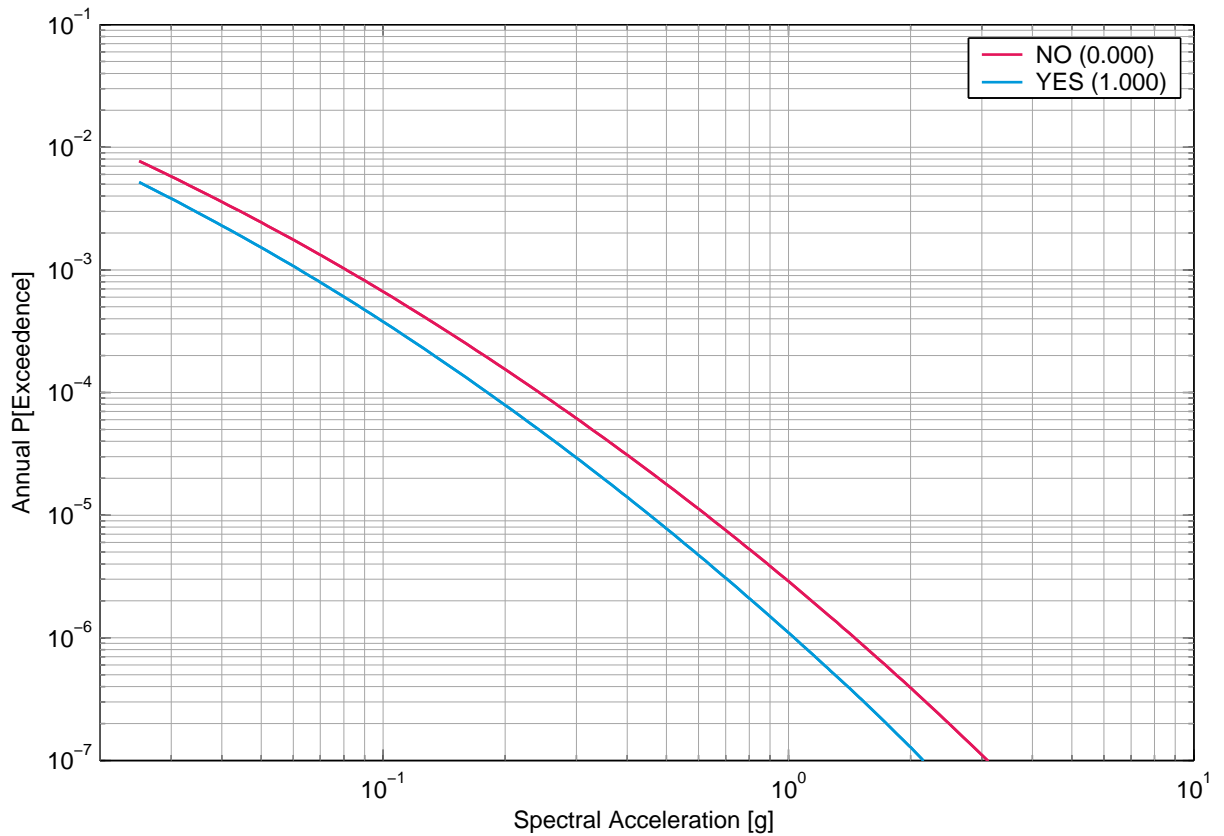


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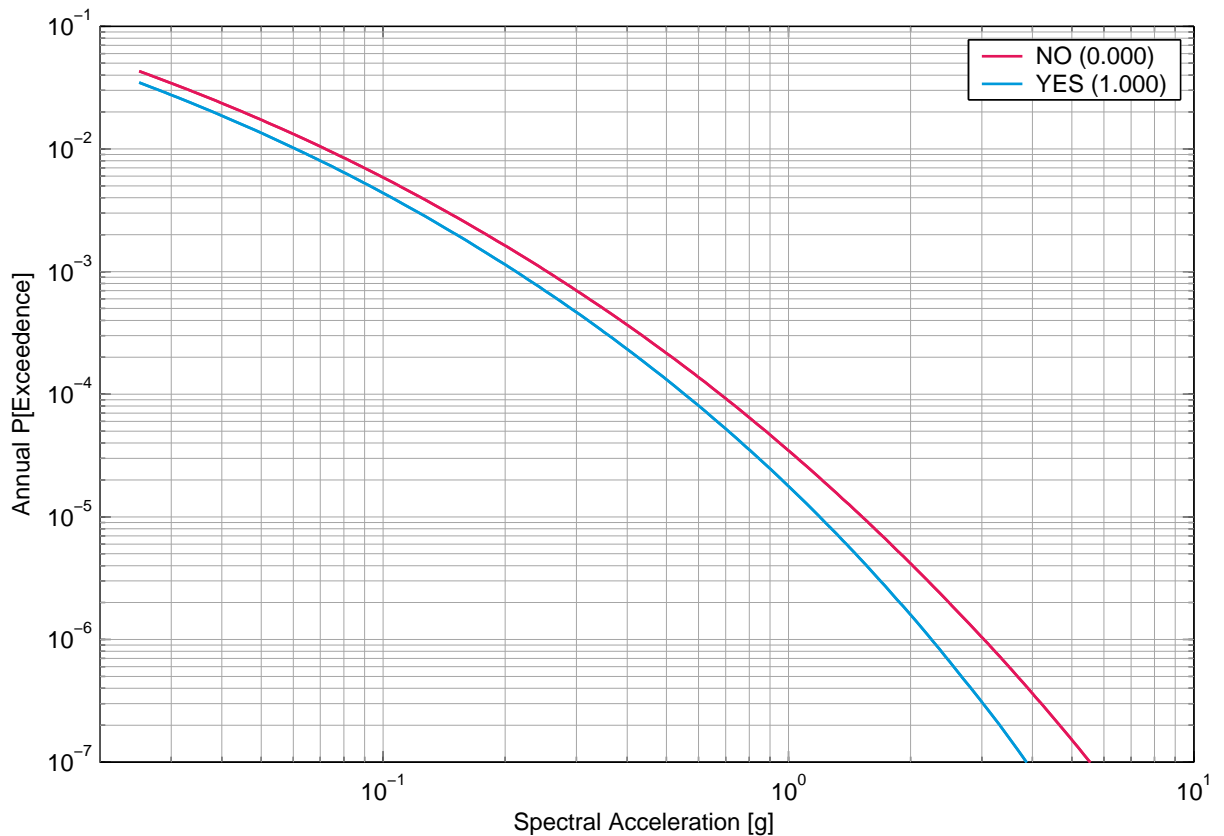


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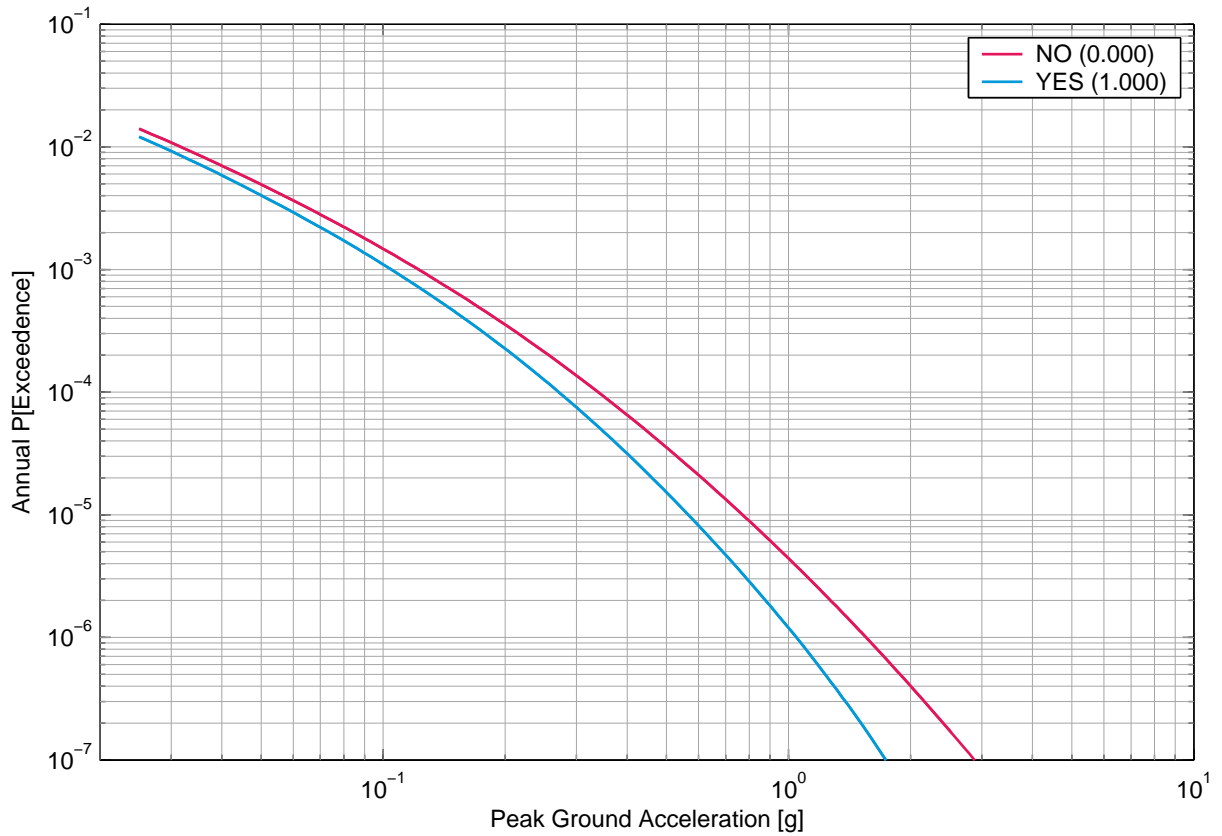


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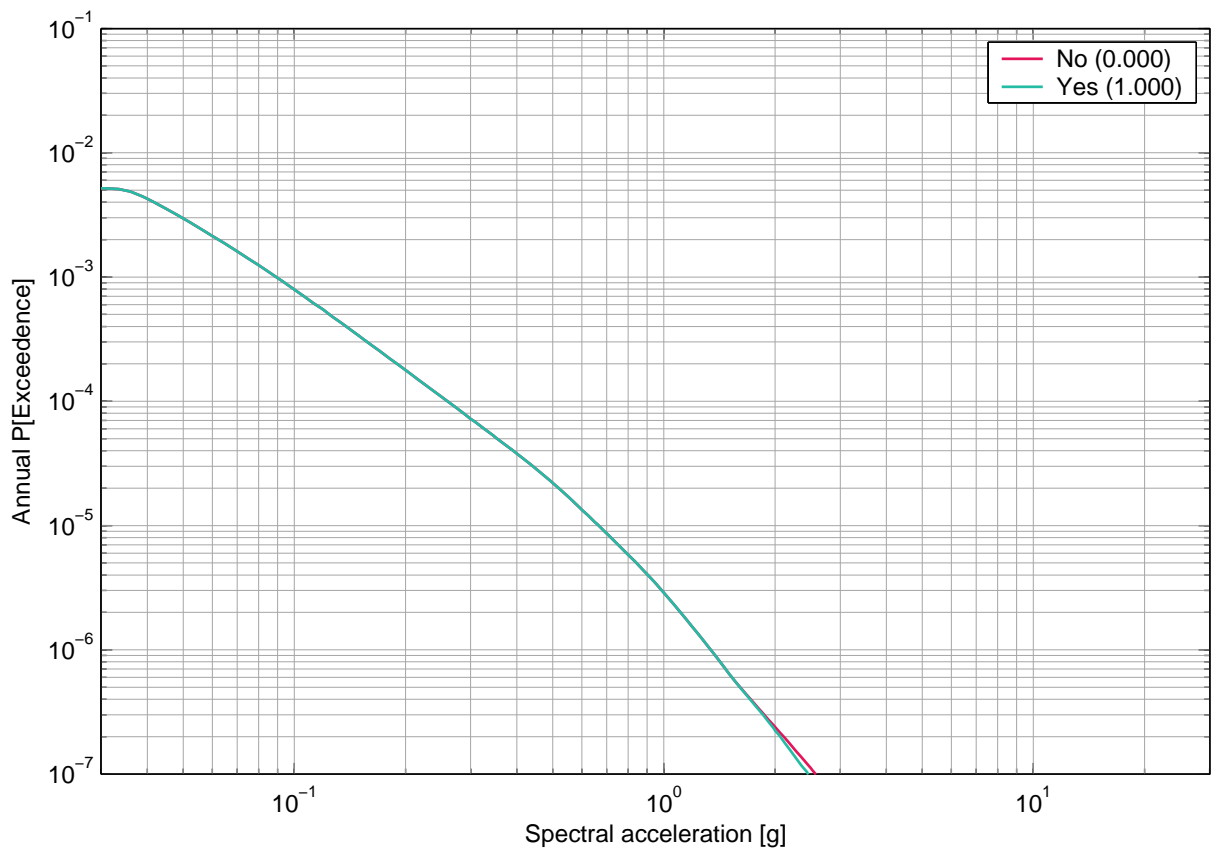


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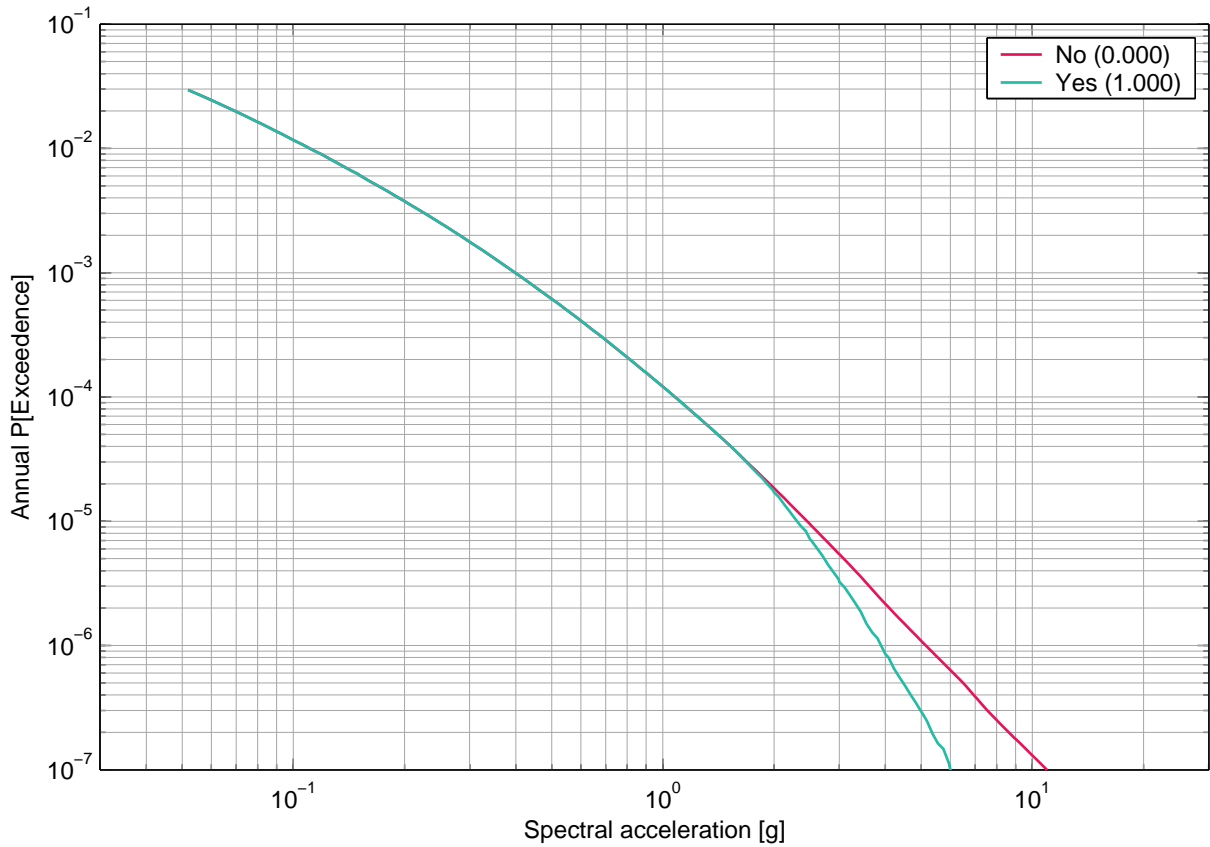


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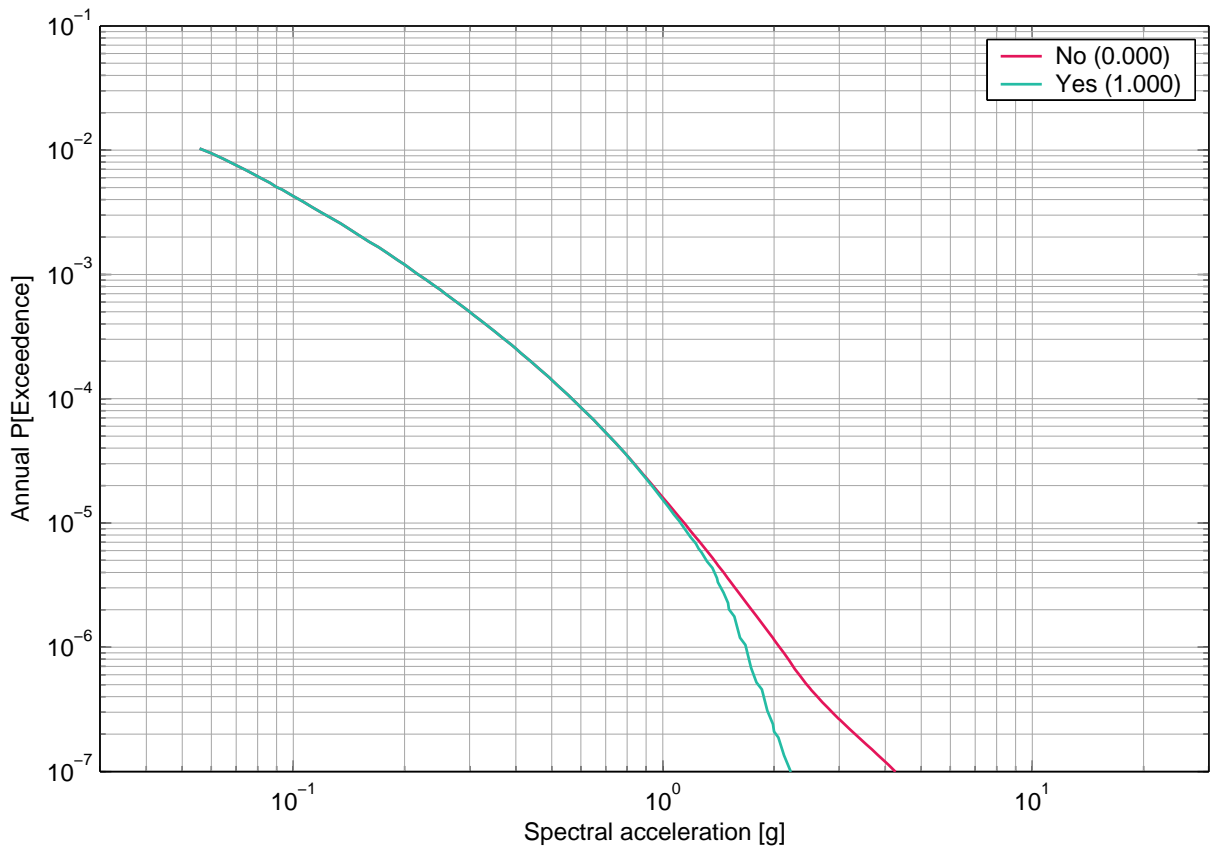


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## 5.8 Mühleberg, Sensitivity to Expert / Expert Group, Horizontal Component, Surface

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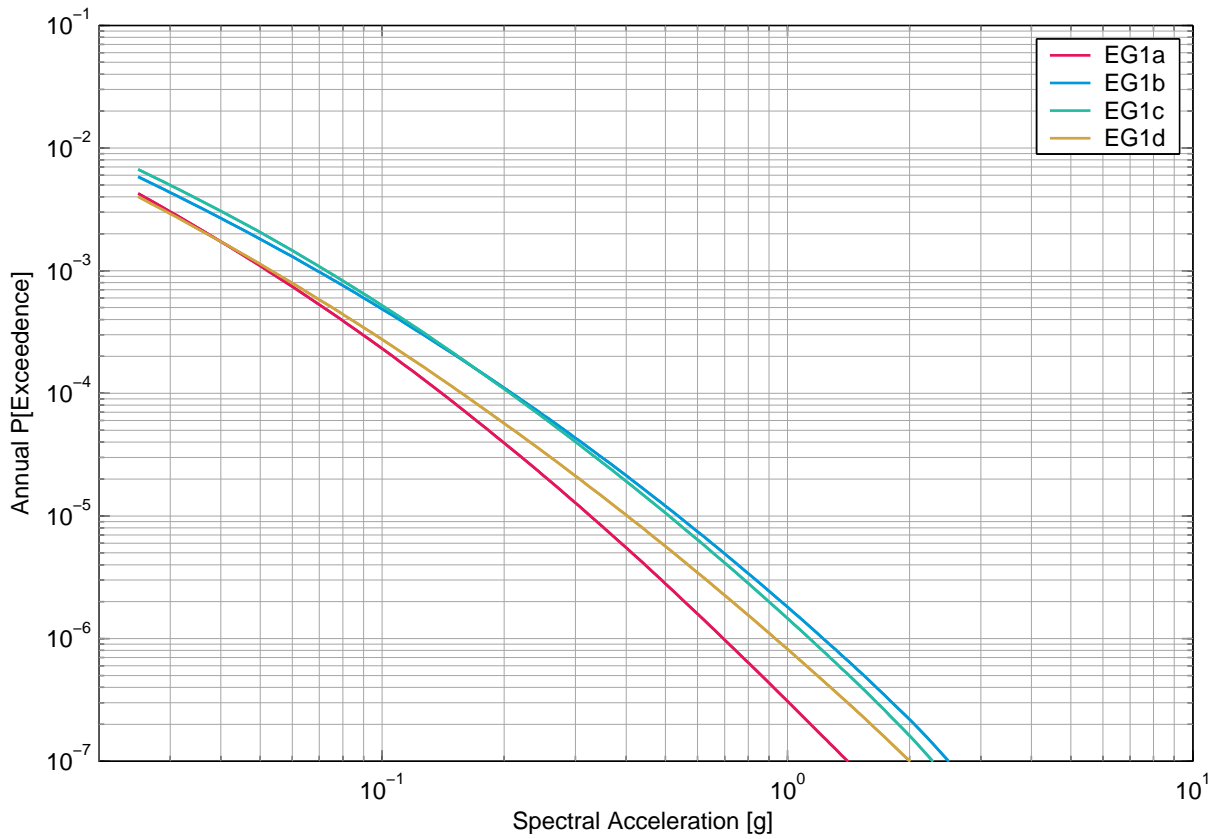


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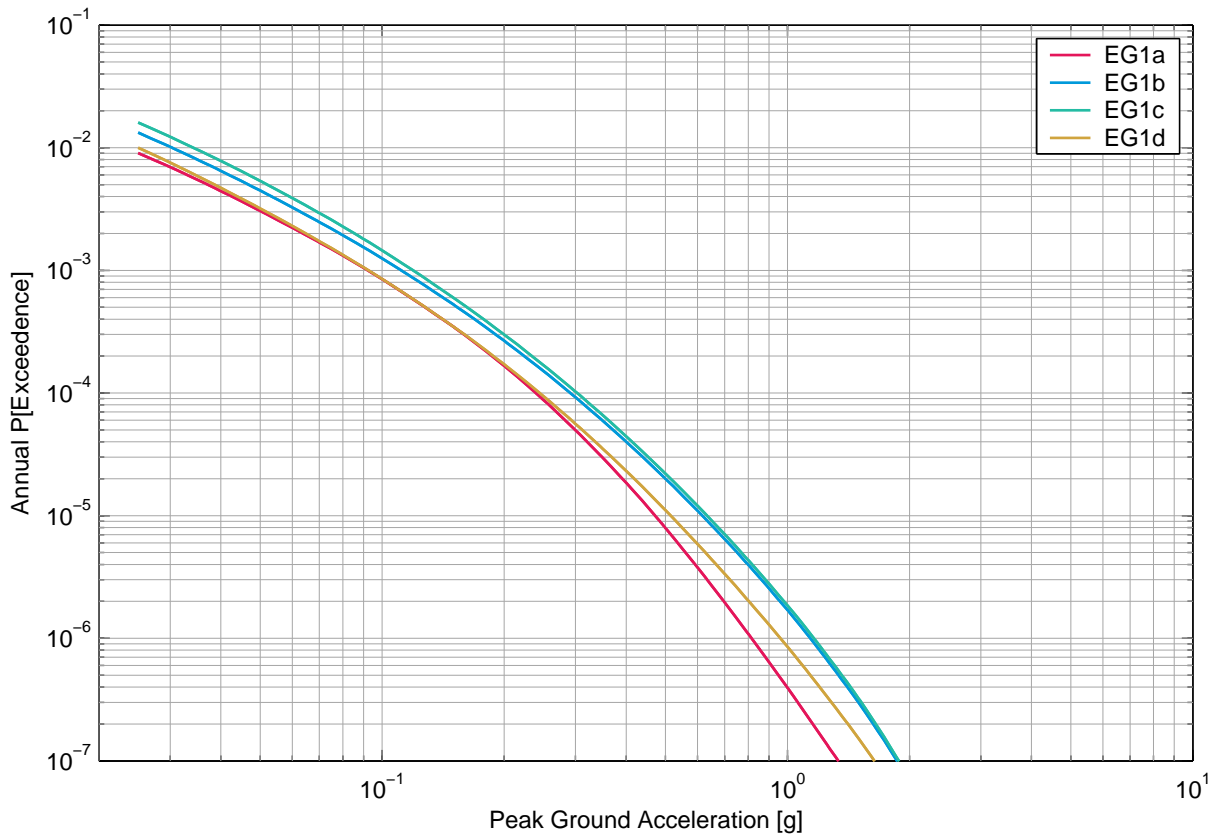


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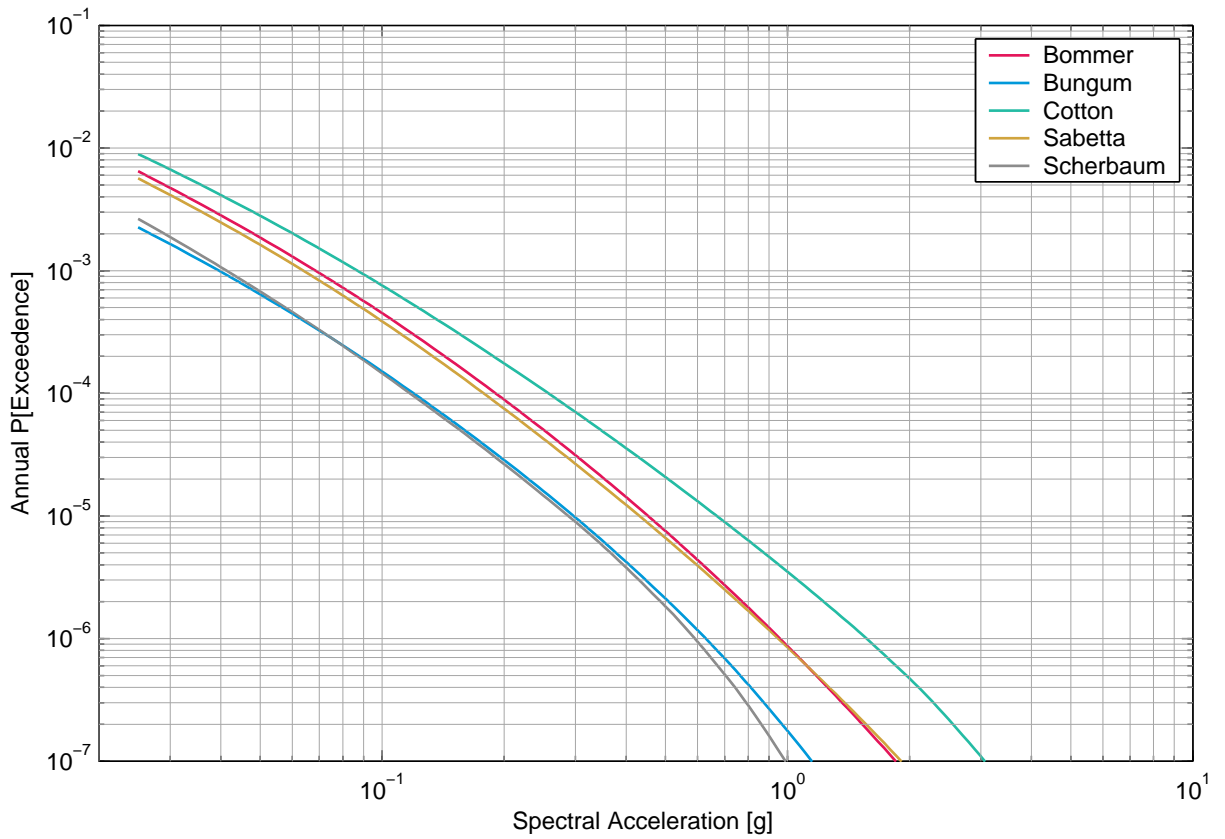


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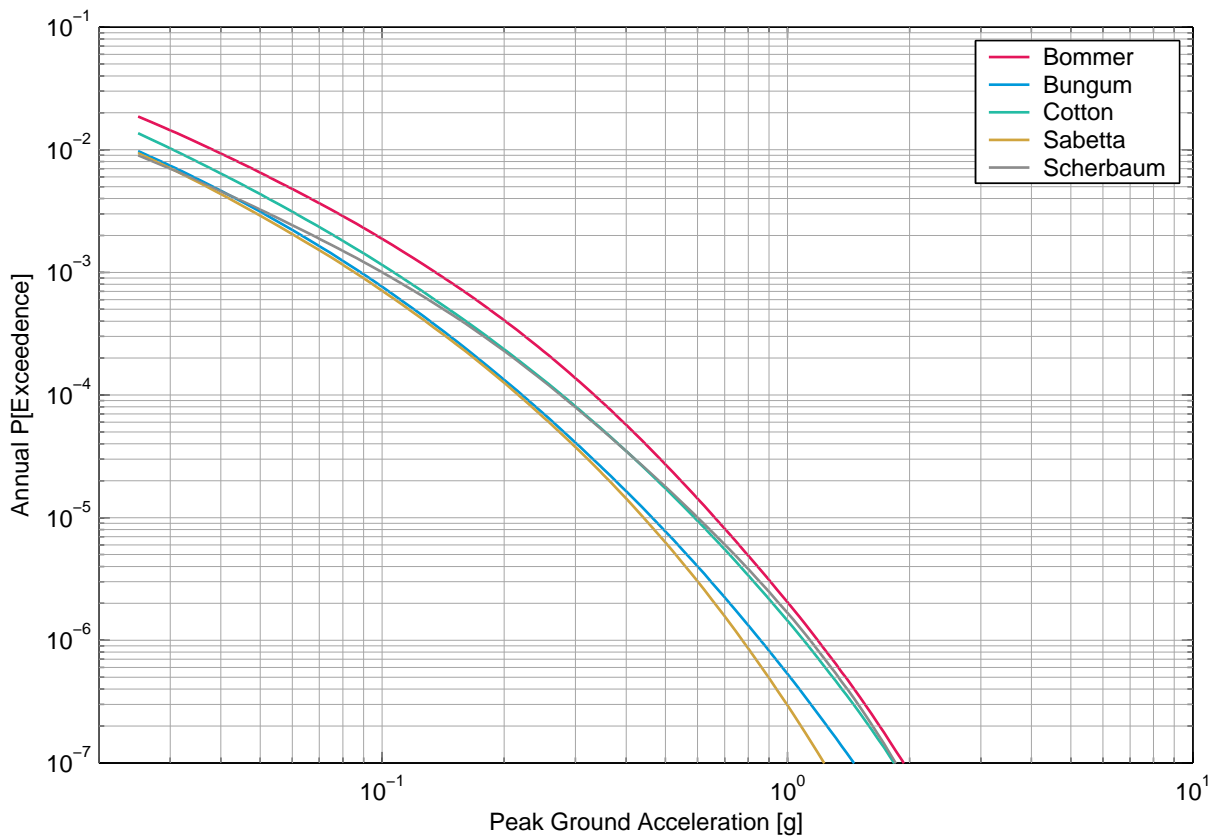


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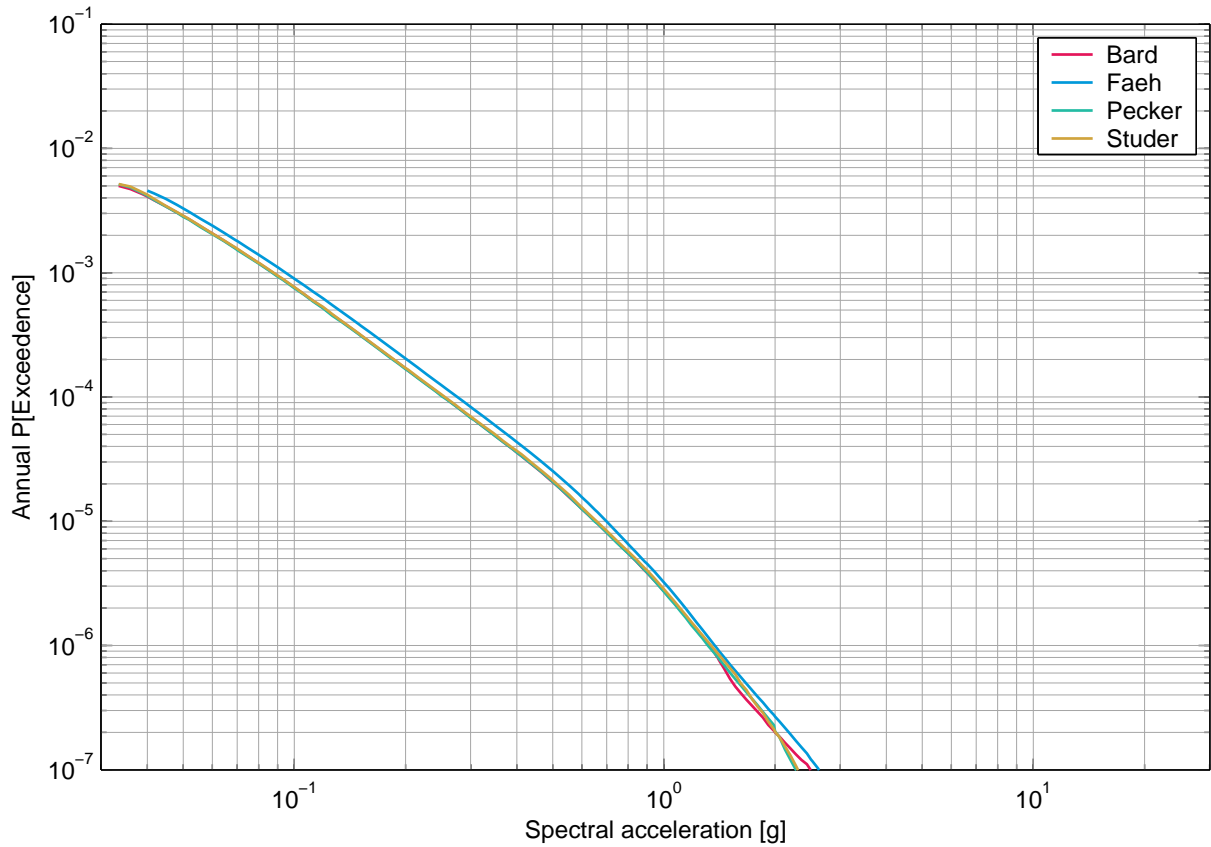


Fig. 5-8.5: Mühleberg, horizontal component, soil, surface, mean hazard of the four SP3 experts, 1 Hz.

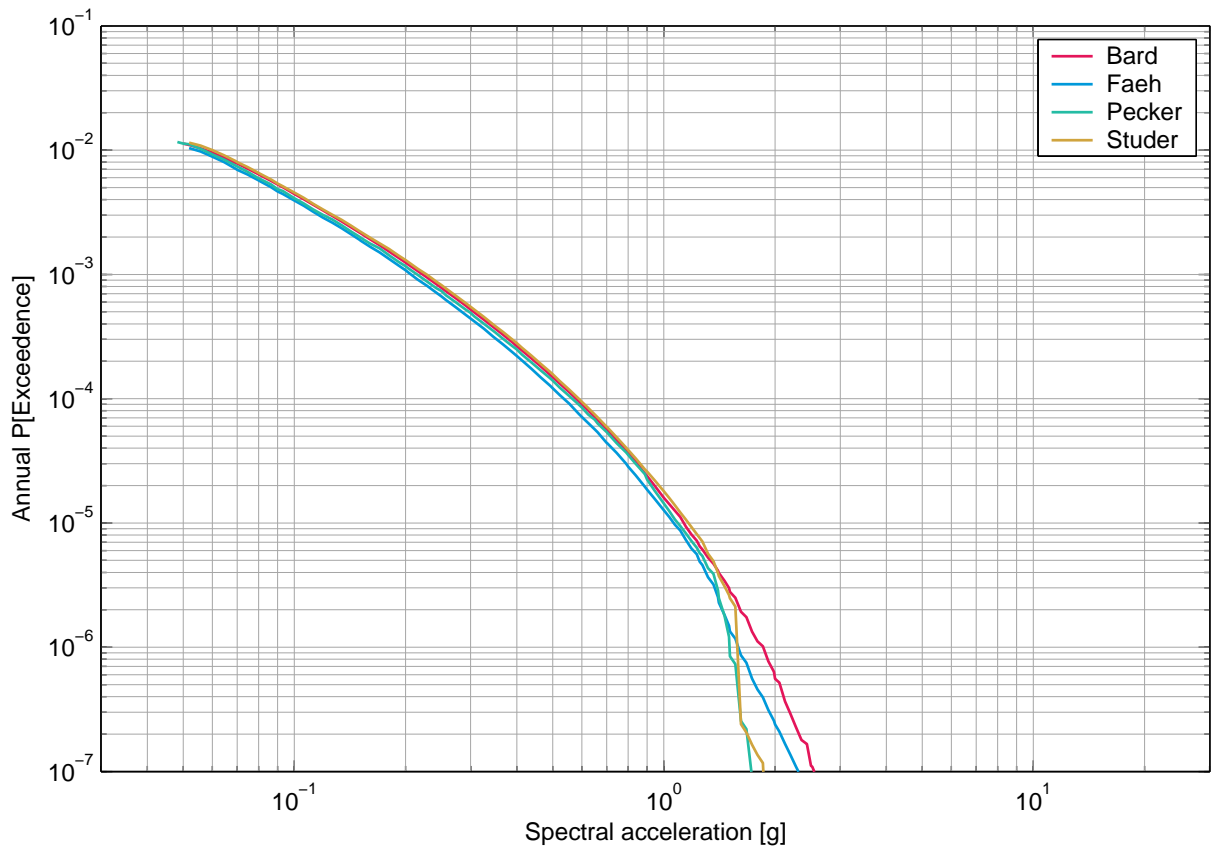


Fig. 5-8.6: Mühleberg, horizontal component, soil, surface, mean hazard of the four SP3 experts, PGA.

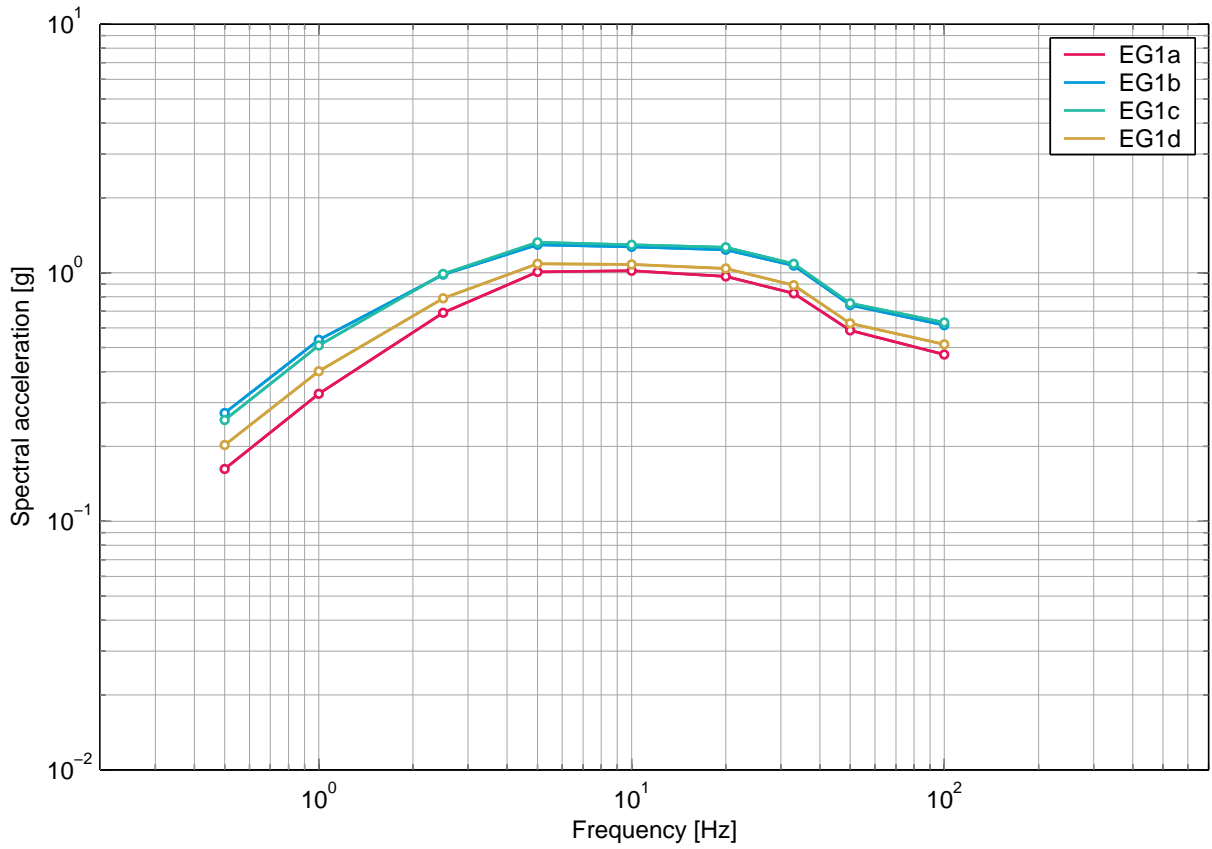


Fig. 5-8.7: Mühleberg, horizontal component, rock, surface, uniform hazard spectra (mean) of the four SP1 teams for an annual prob. of exceedence of 1E-05 and 5% damping.

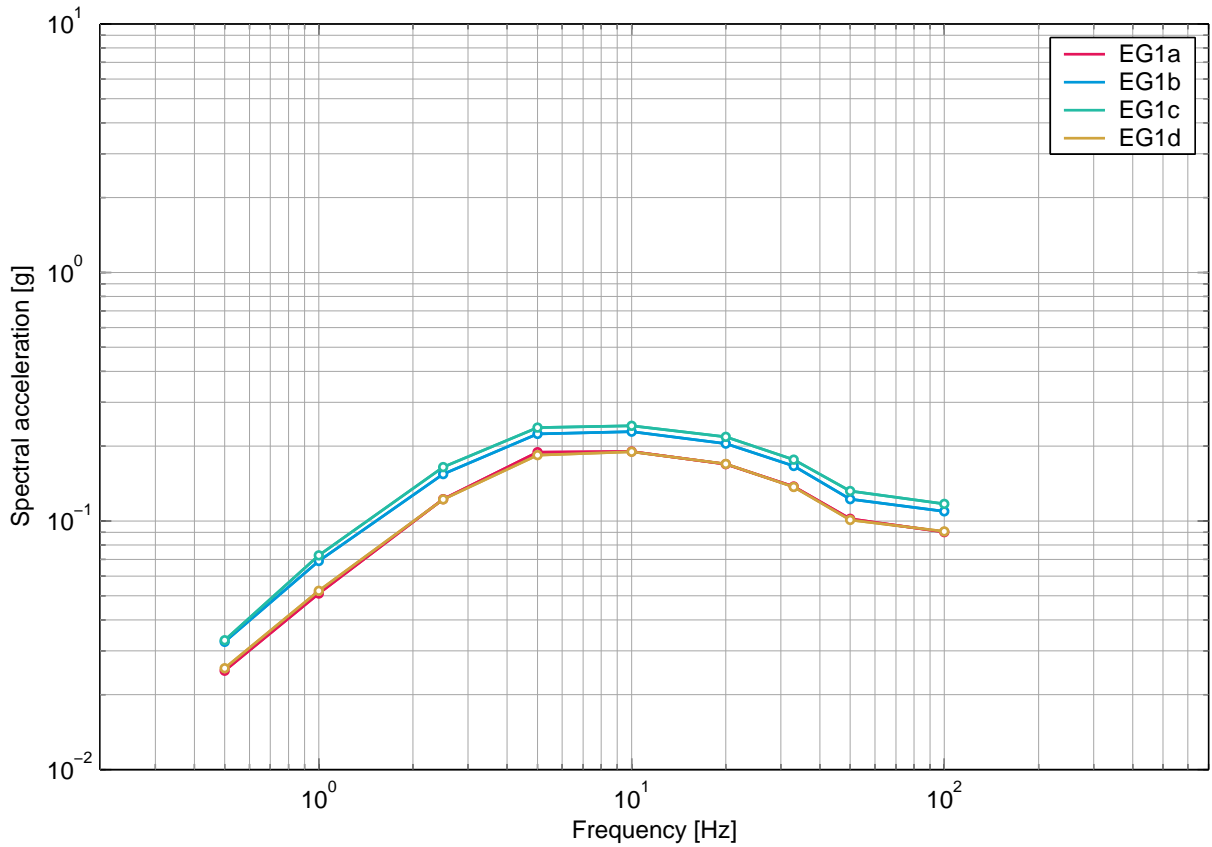


Fig. 5-8.8: Mühleberg, horizontal component, rock, surface, uniform hazard spectra (mean) of the four SP1 teams for an annual prob. of exceedence of 1E-03 and 5% damping.

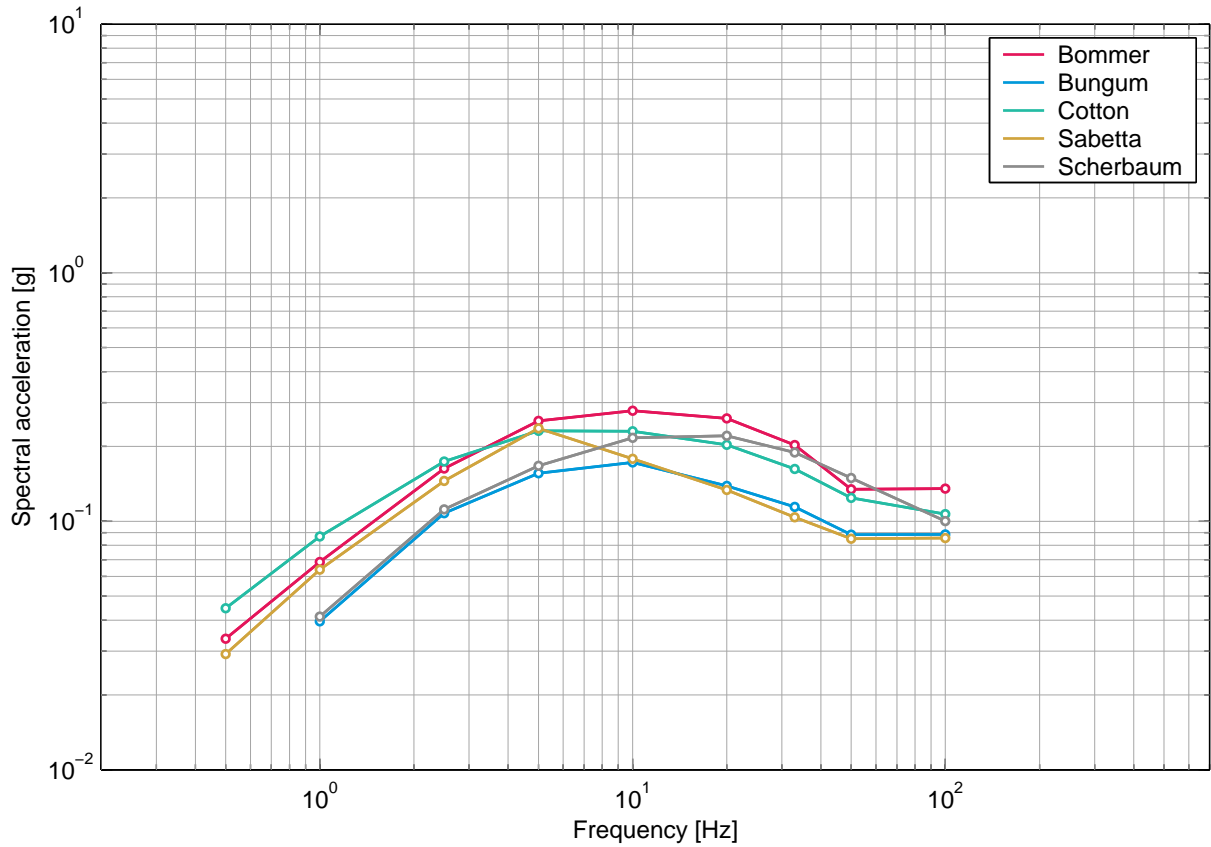


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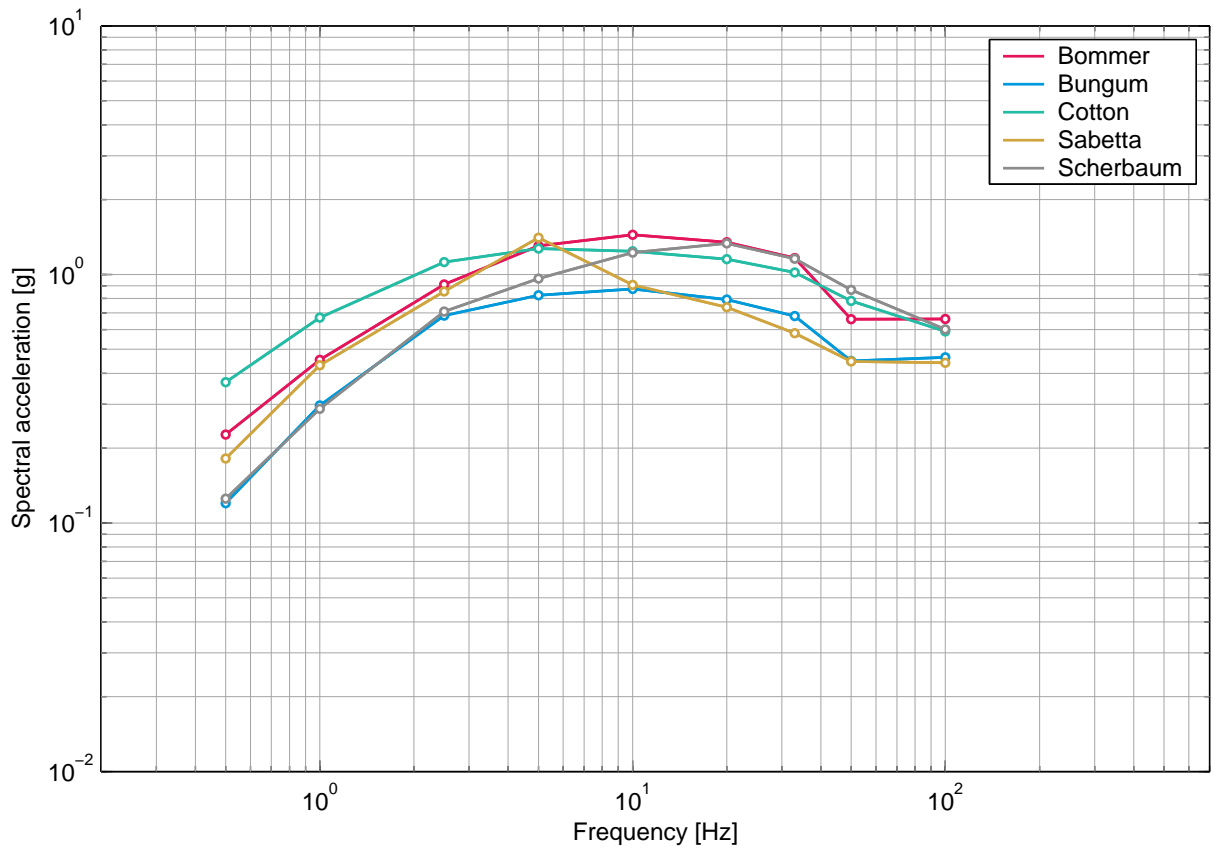


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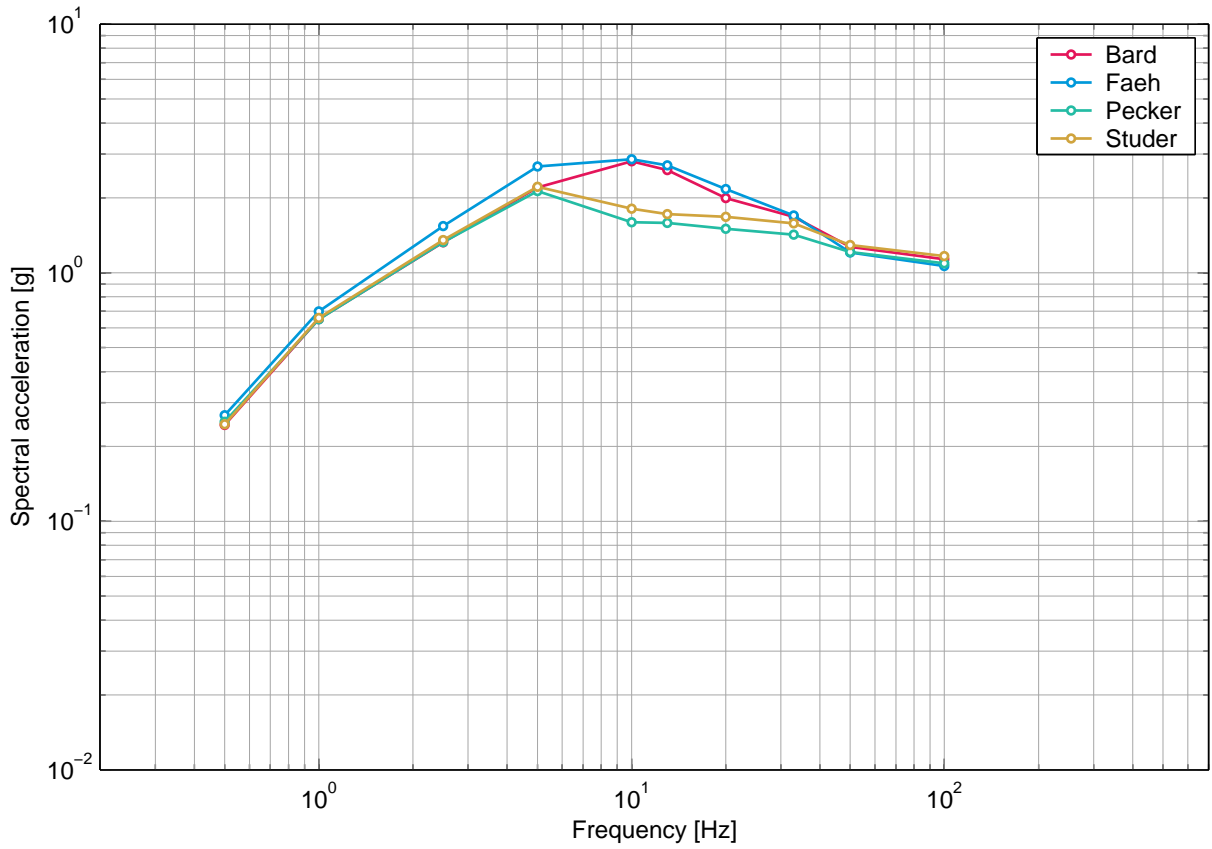


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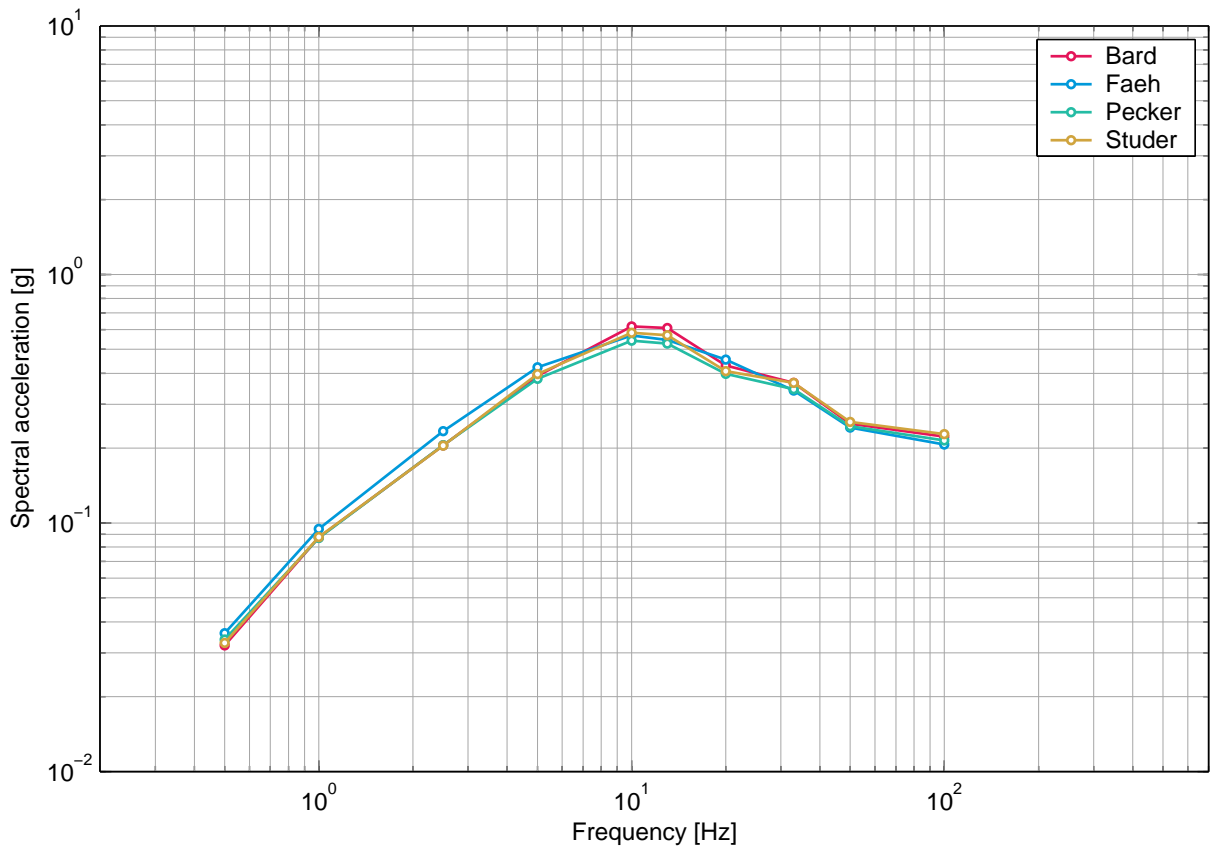


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## 5.9 Mühleberg, Sensitivity to Depth Levels, Horizontal Component

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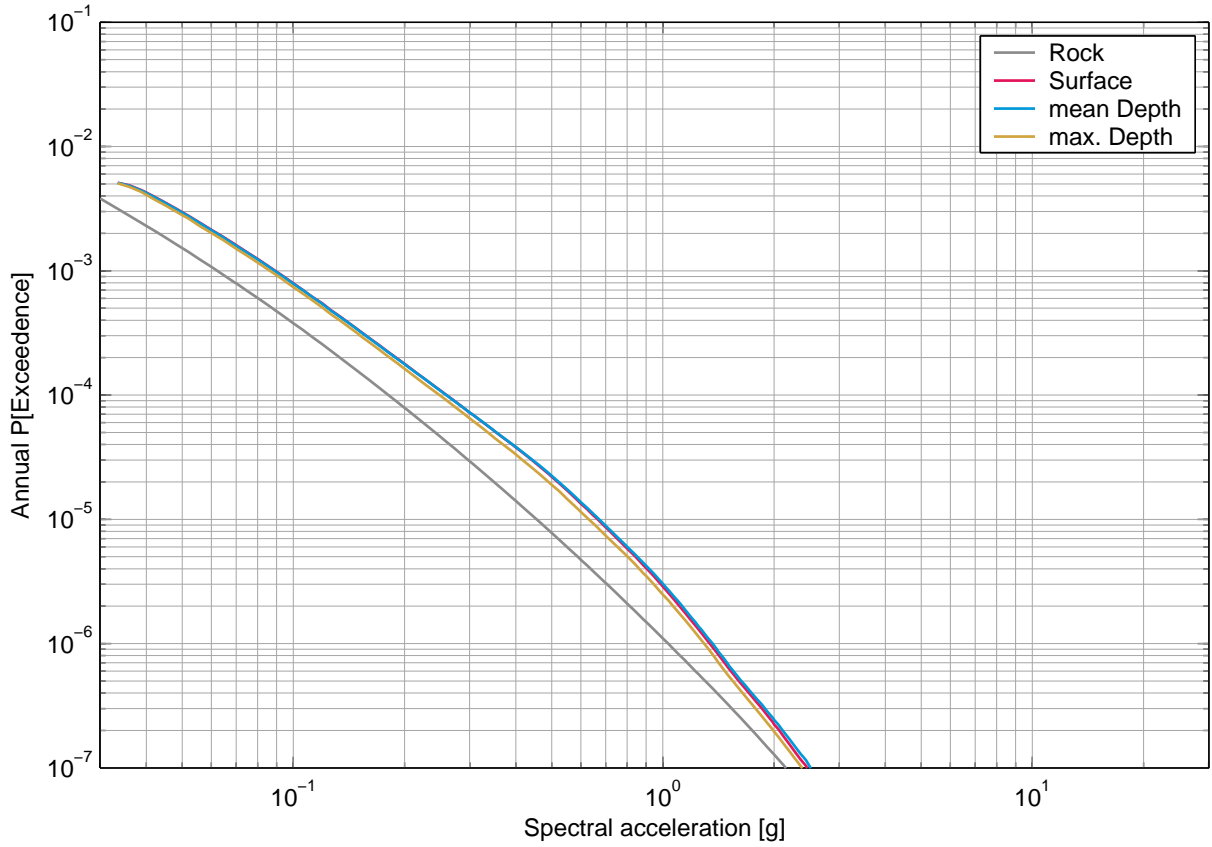


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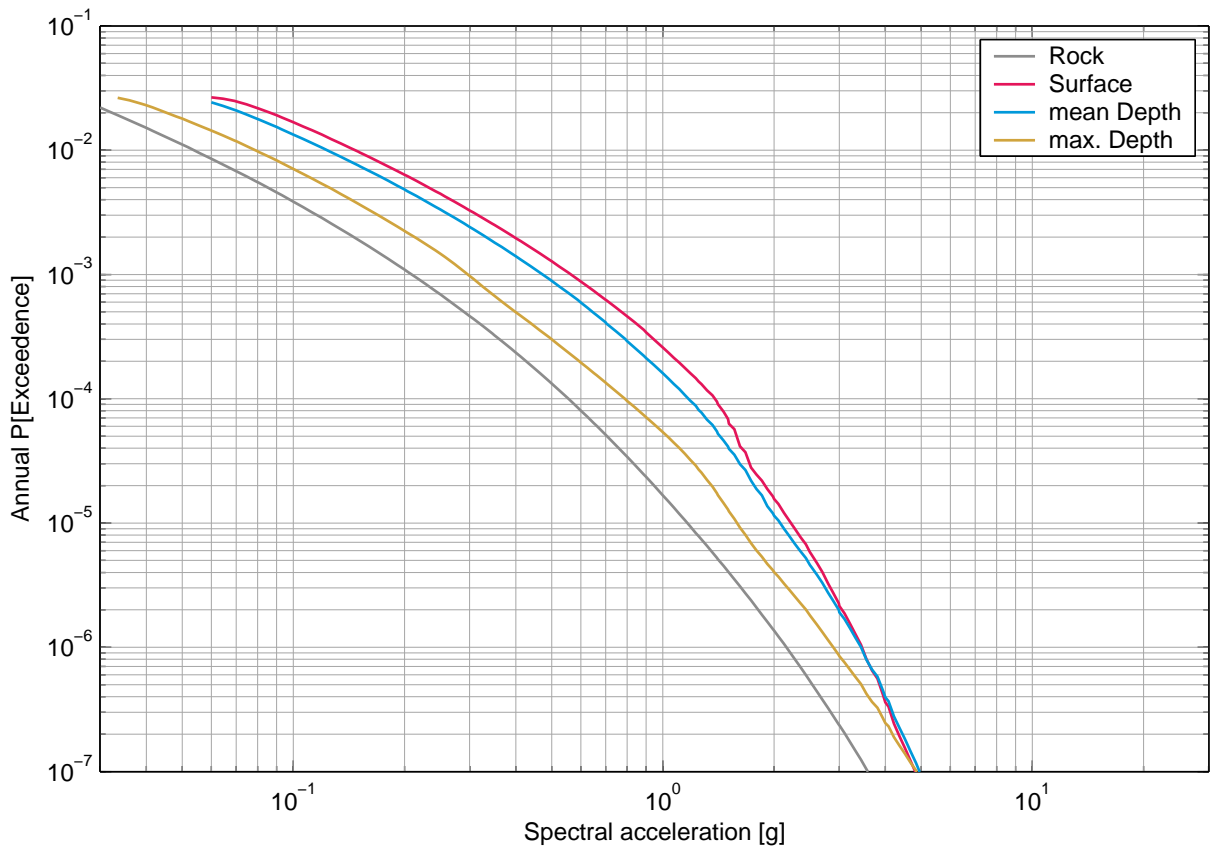


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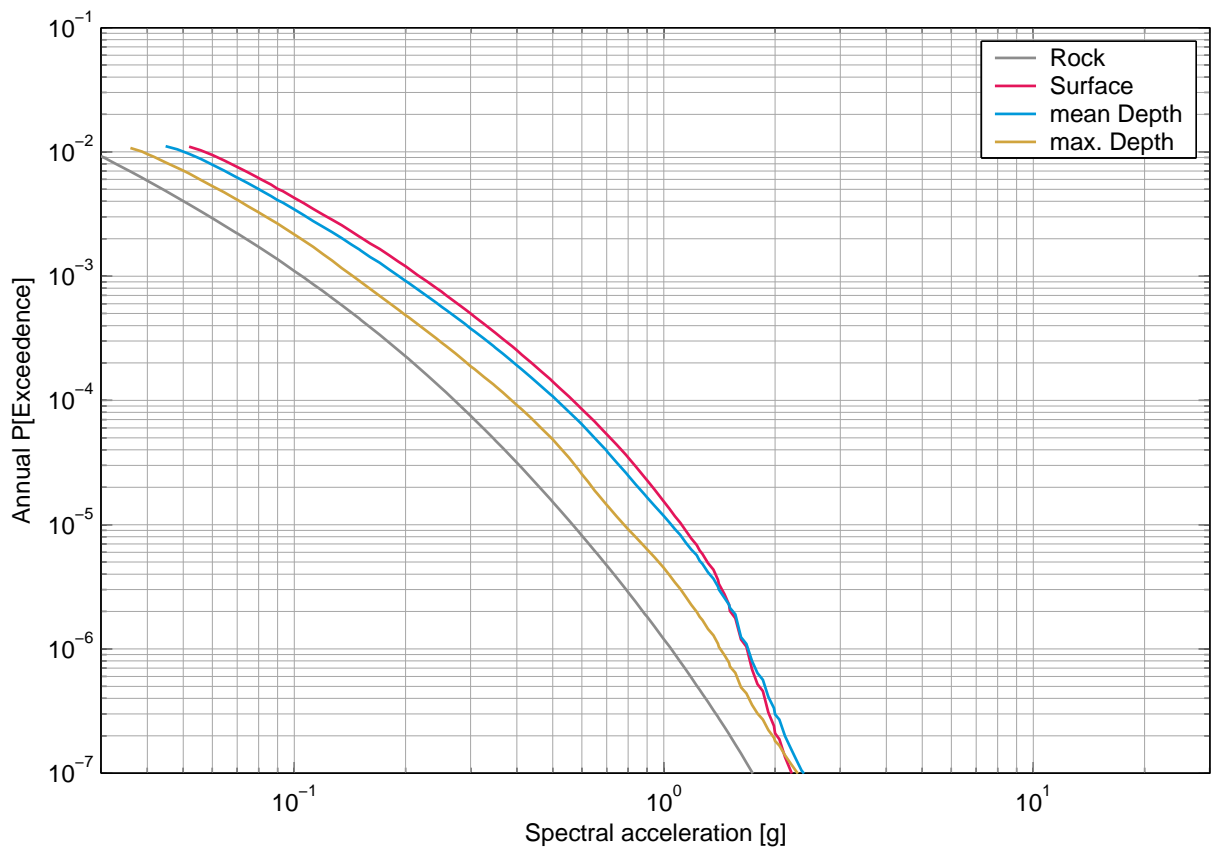


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## 5.10 Mühleberg, Rock Hazard, Vertical Component, Surface

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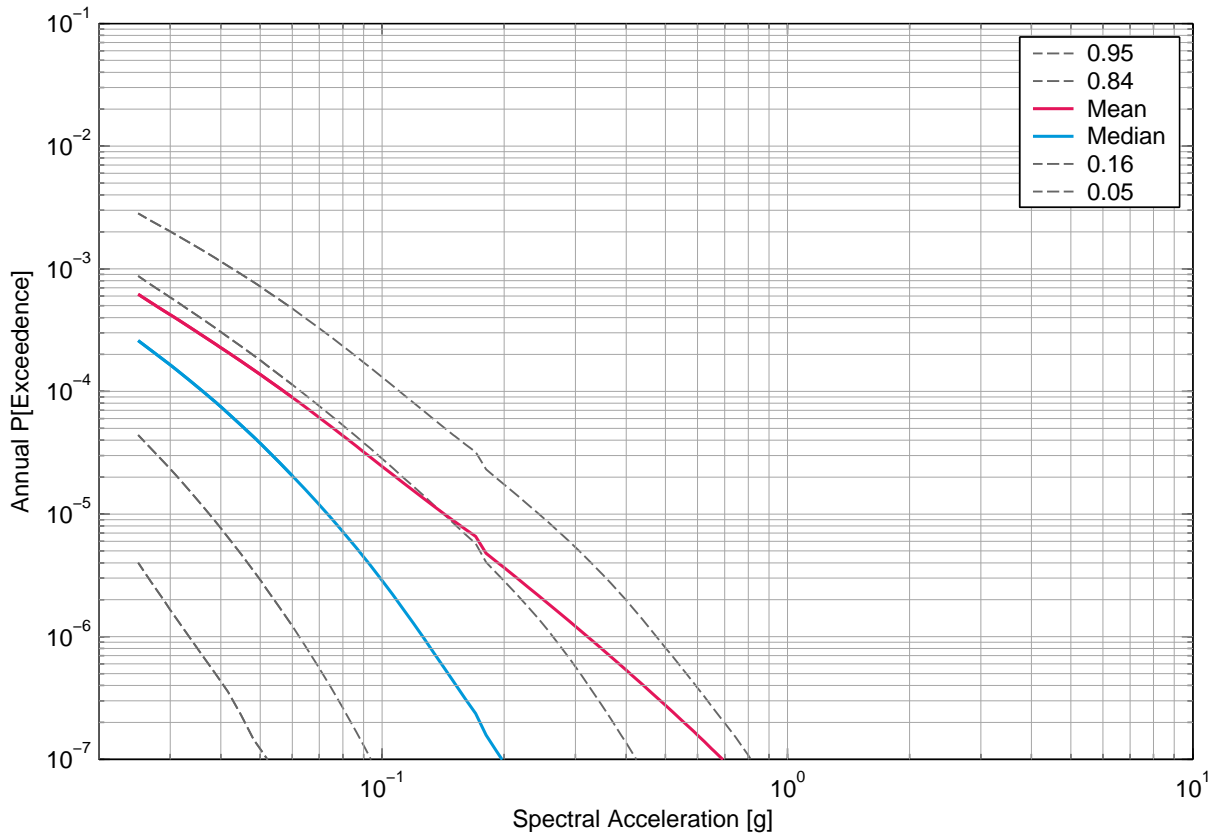


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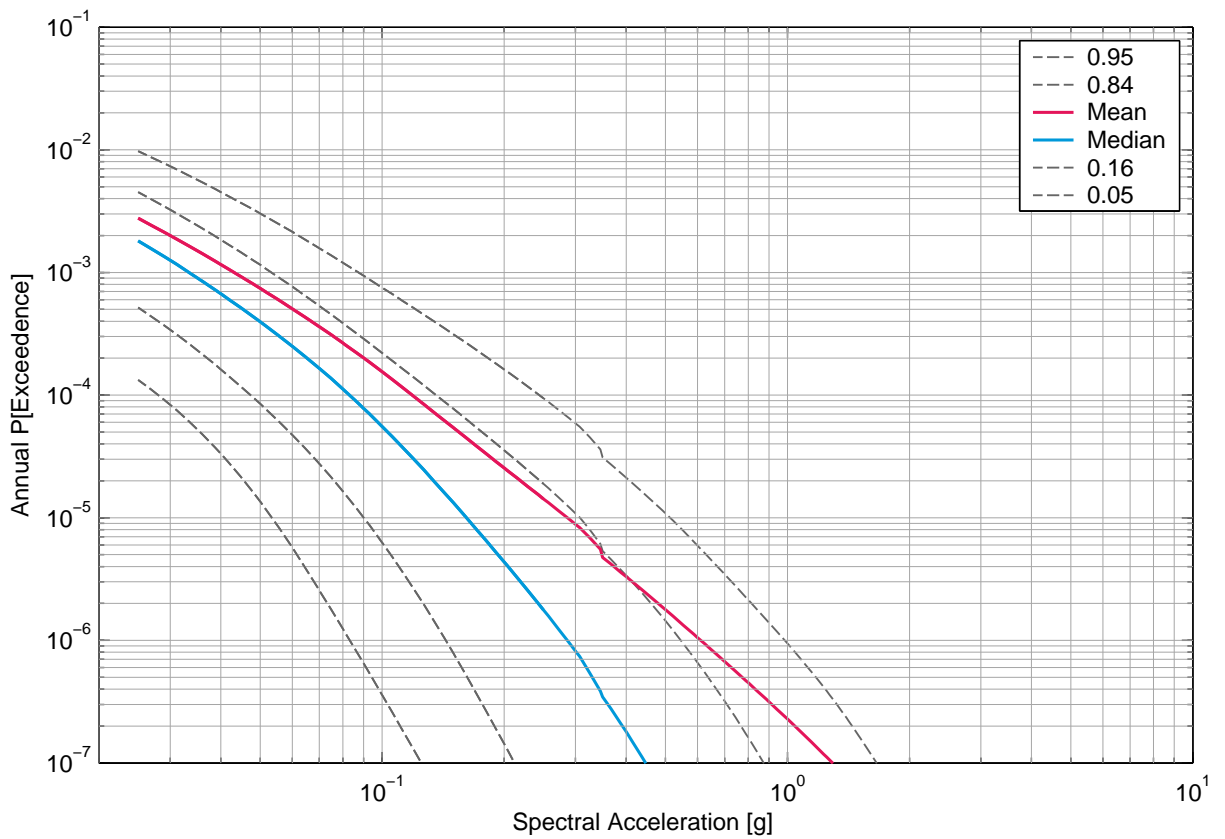


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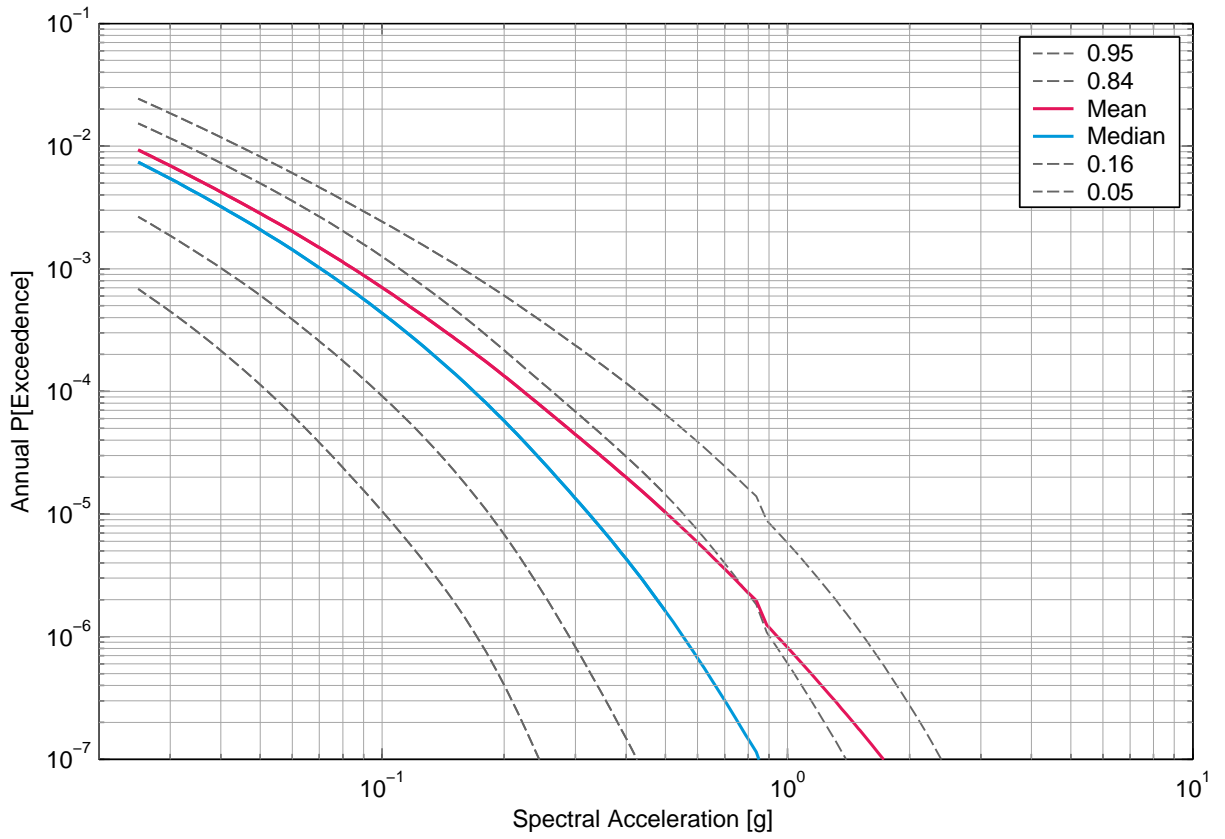


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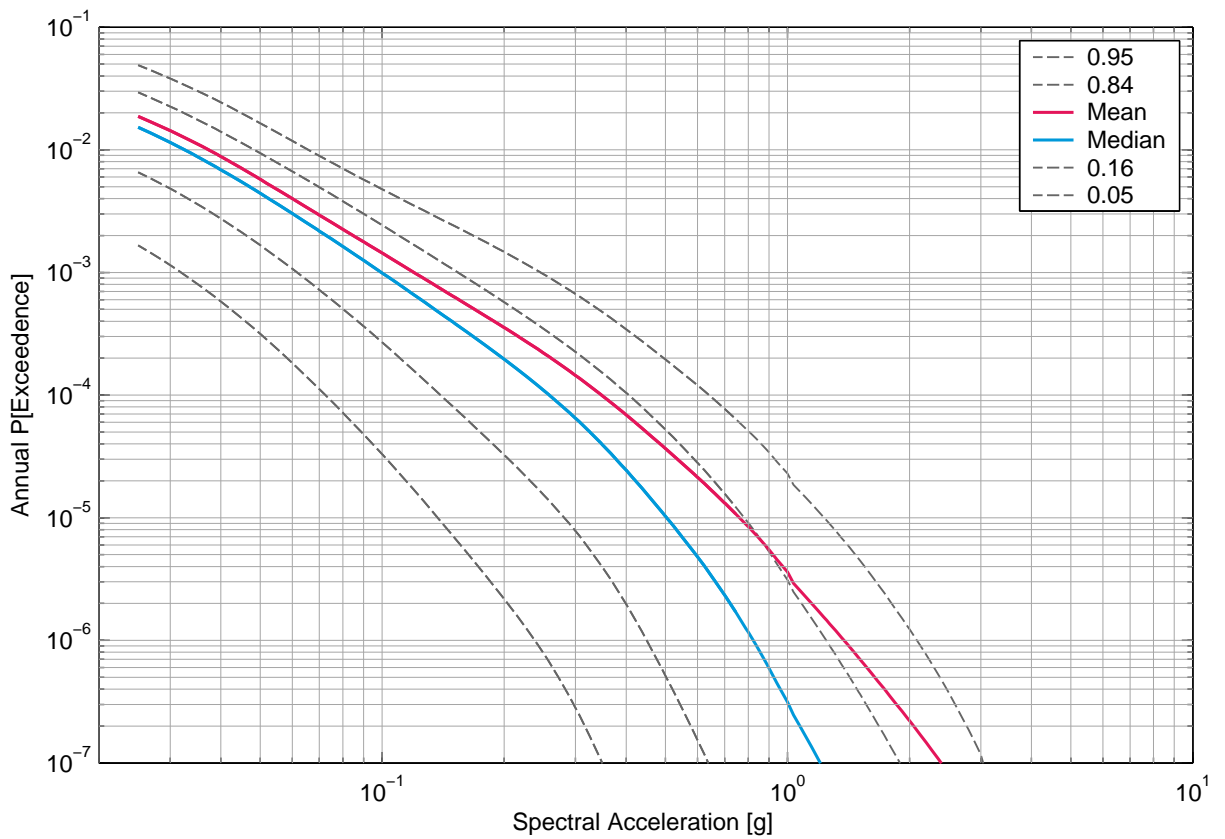


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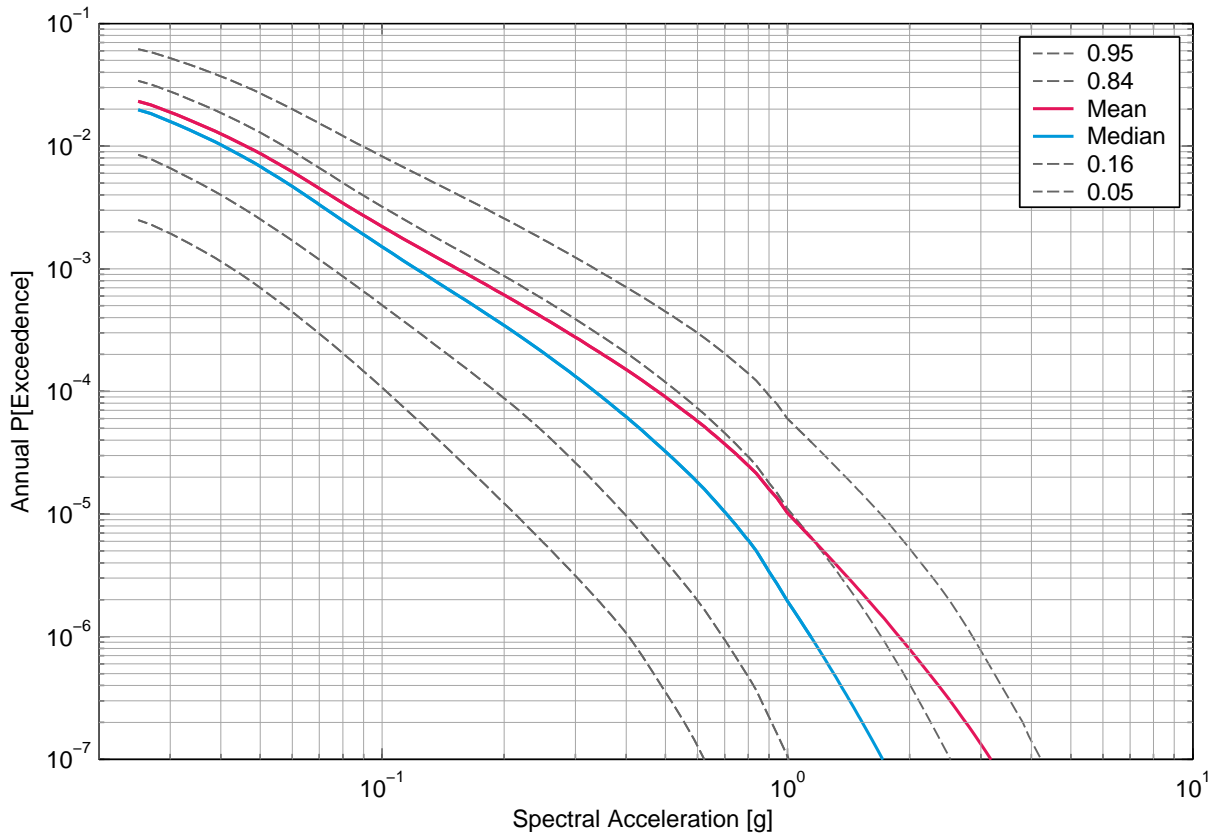


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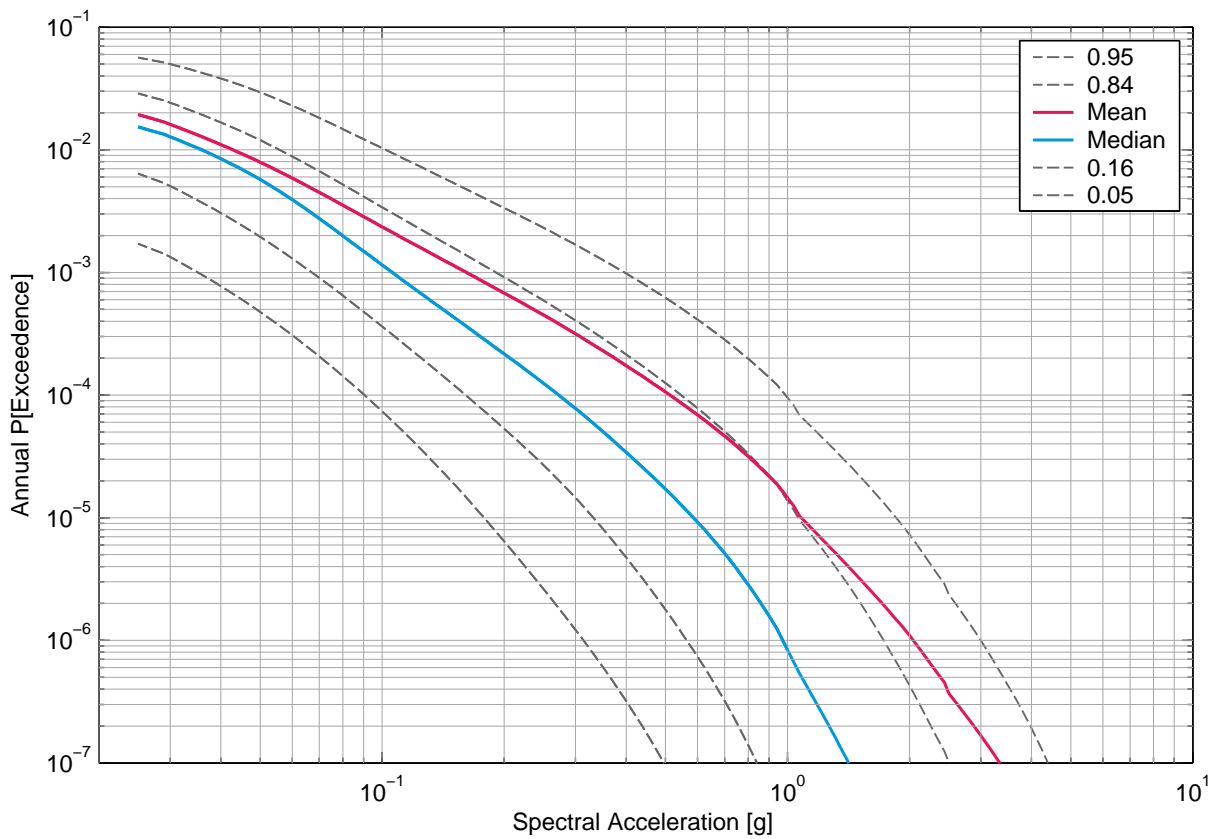


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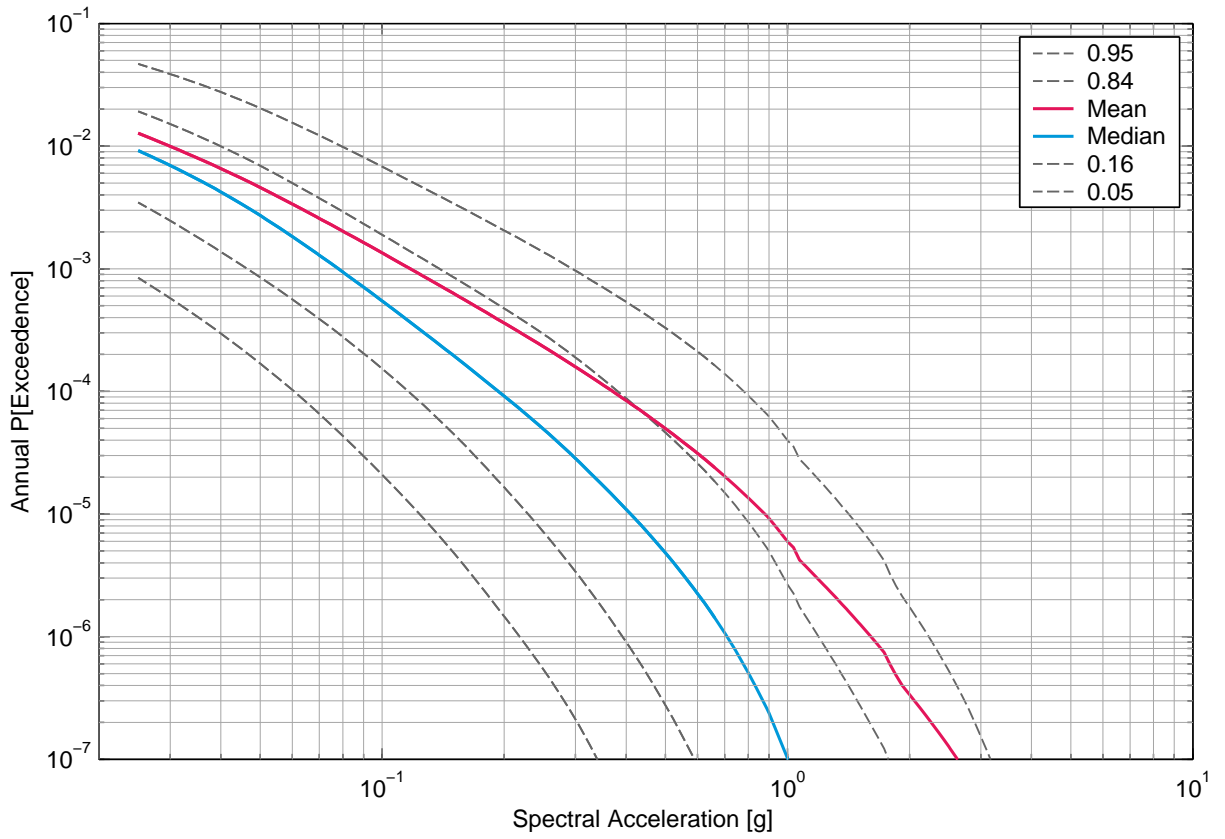


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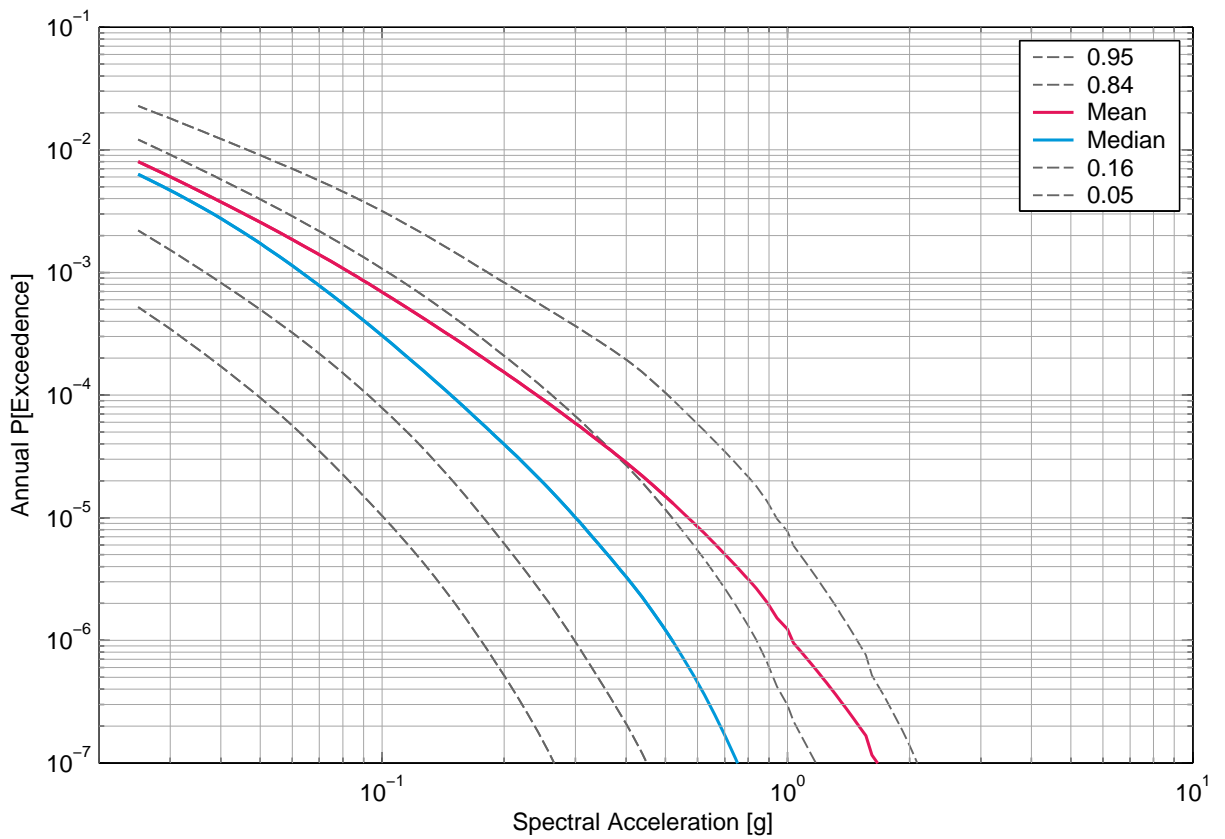


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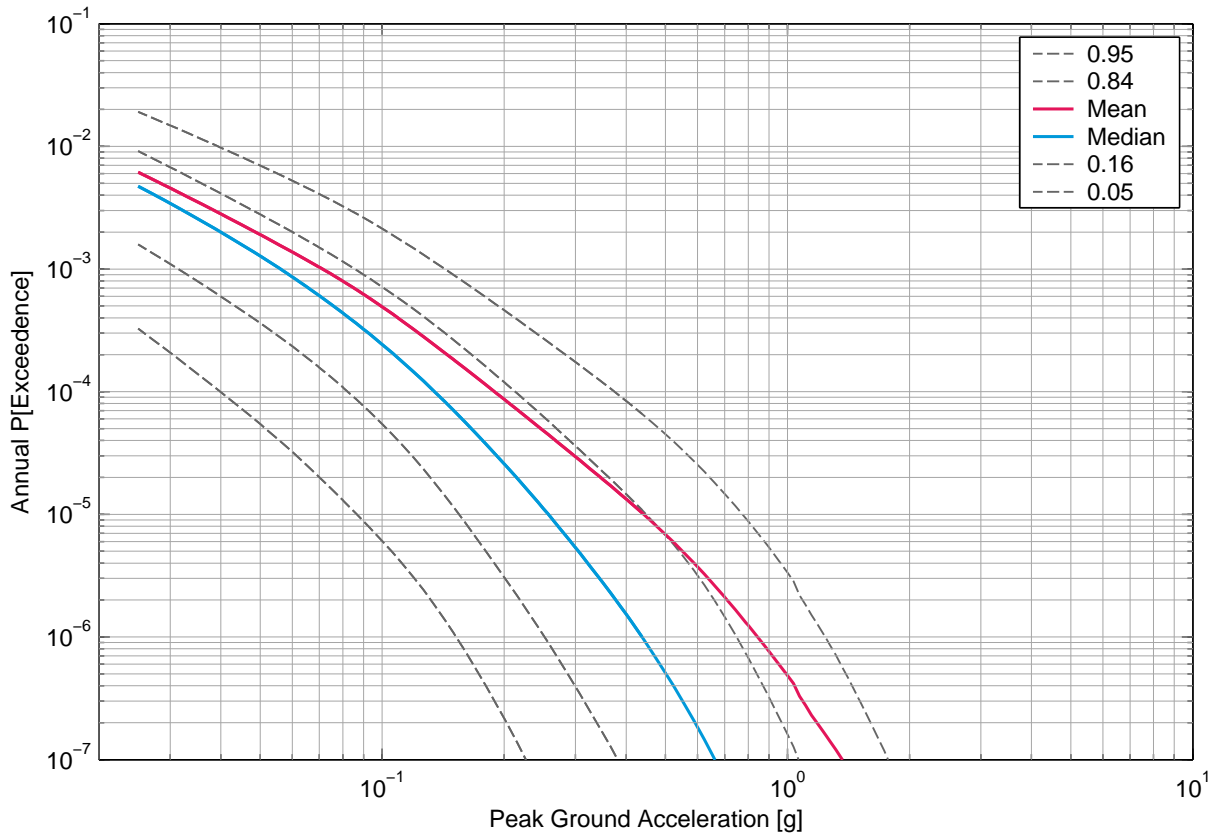


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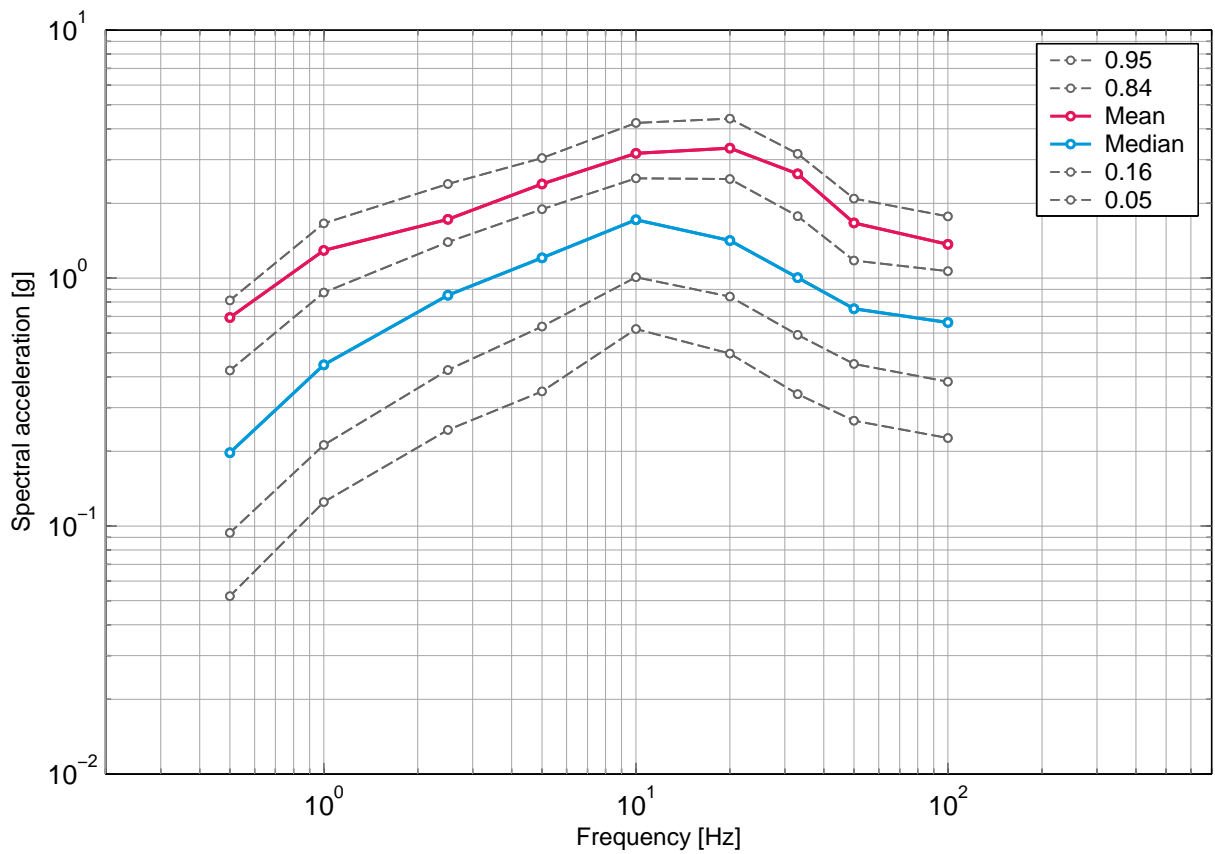


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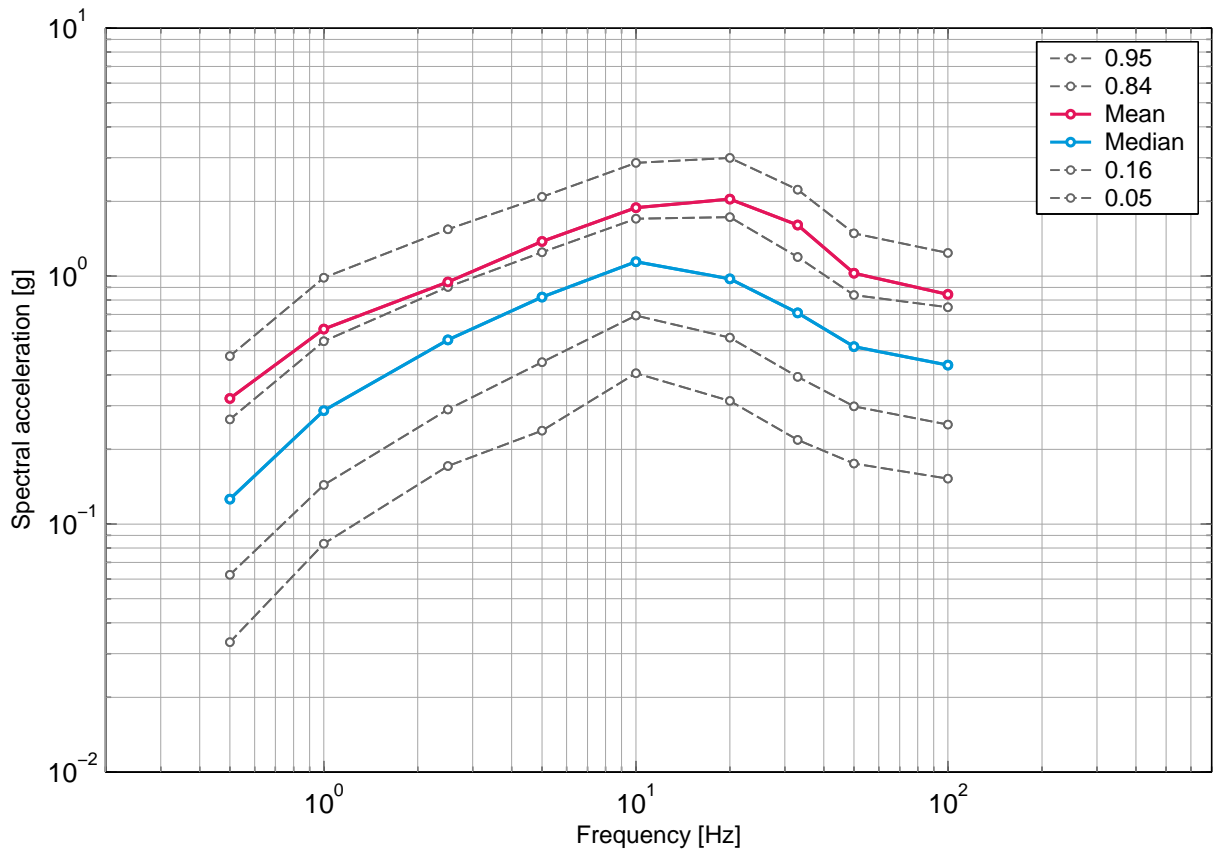


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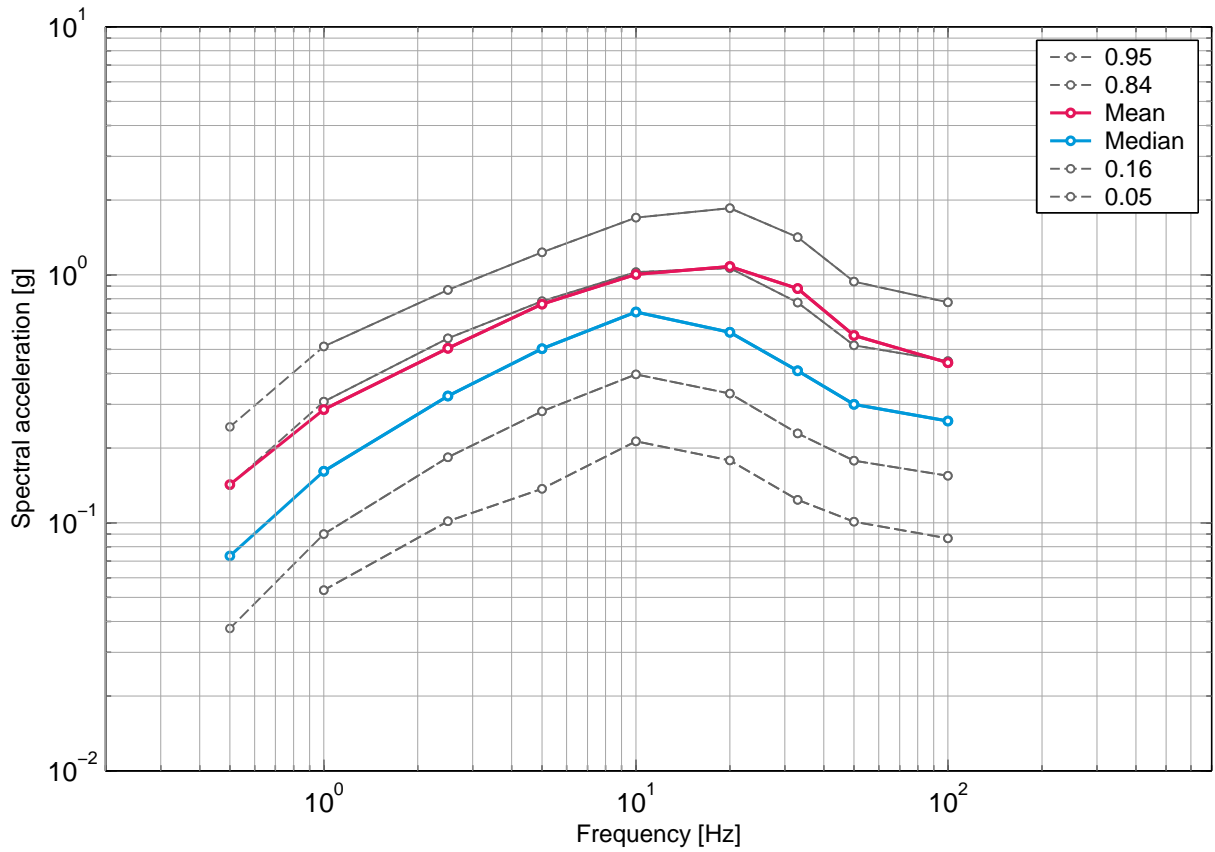


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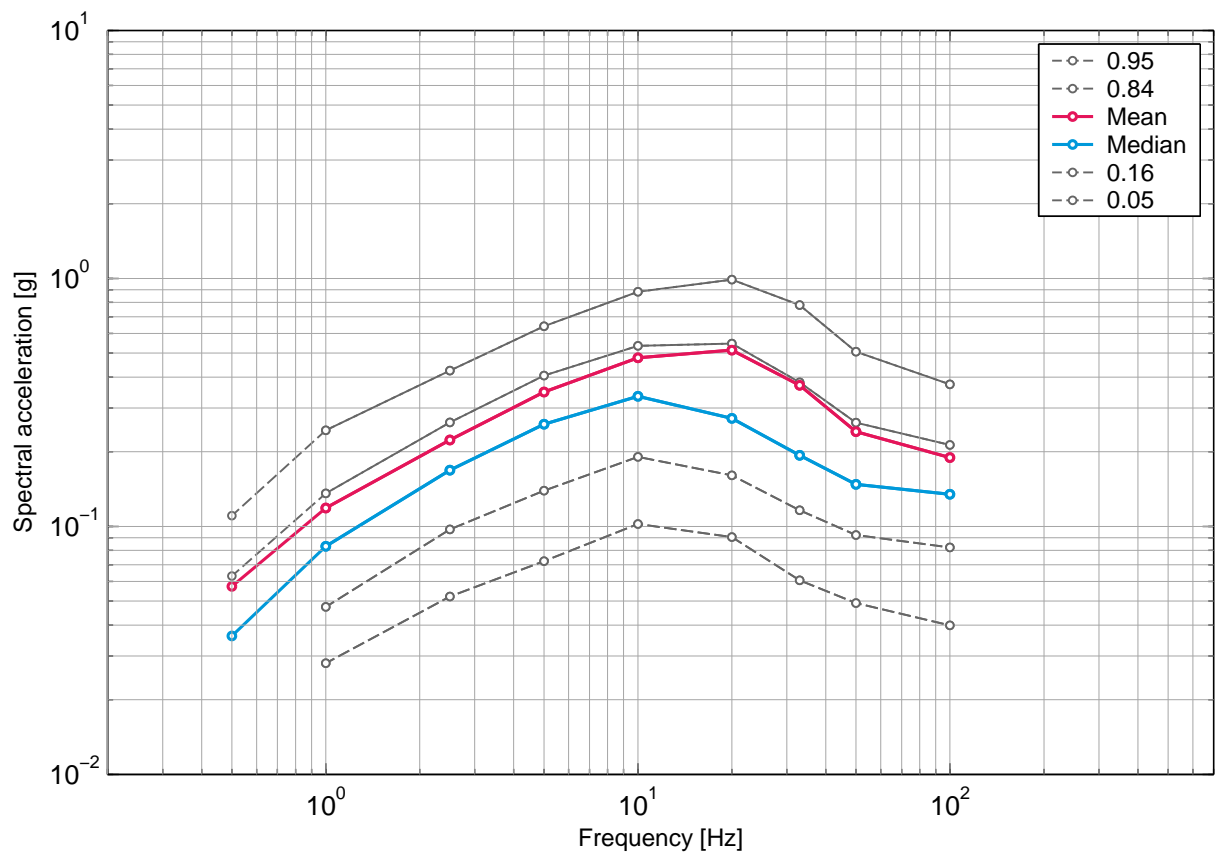


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## 5.11 Mühleberg, Soil Hazard, Vertical Component, Surface

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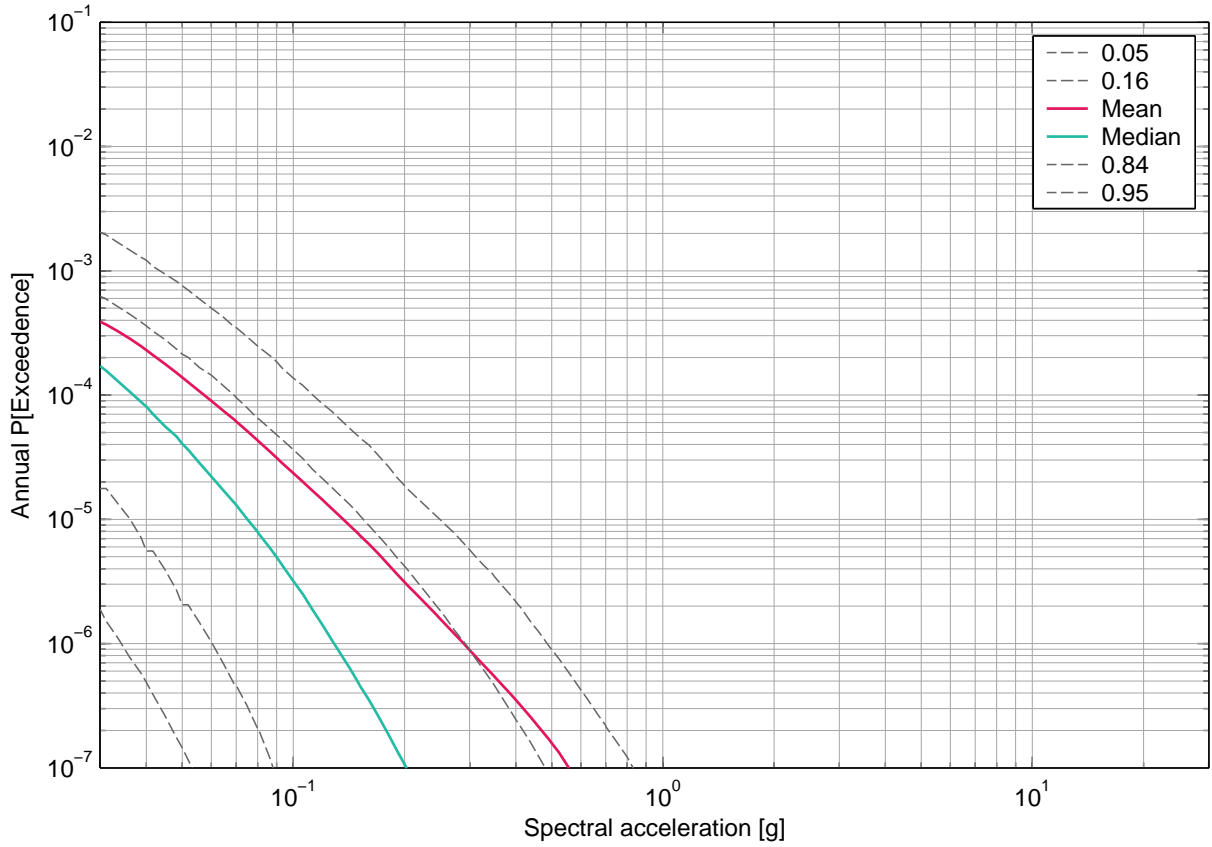


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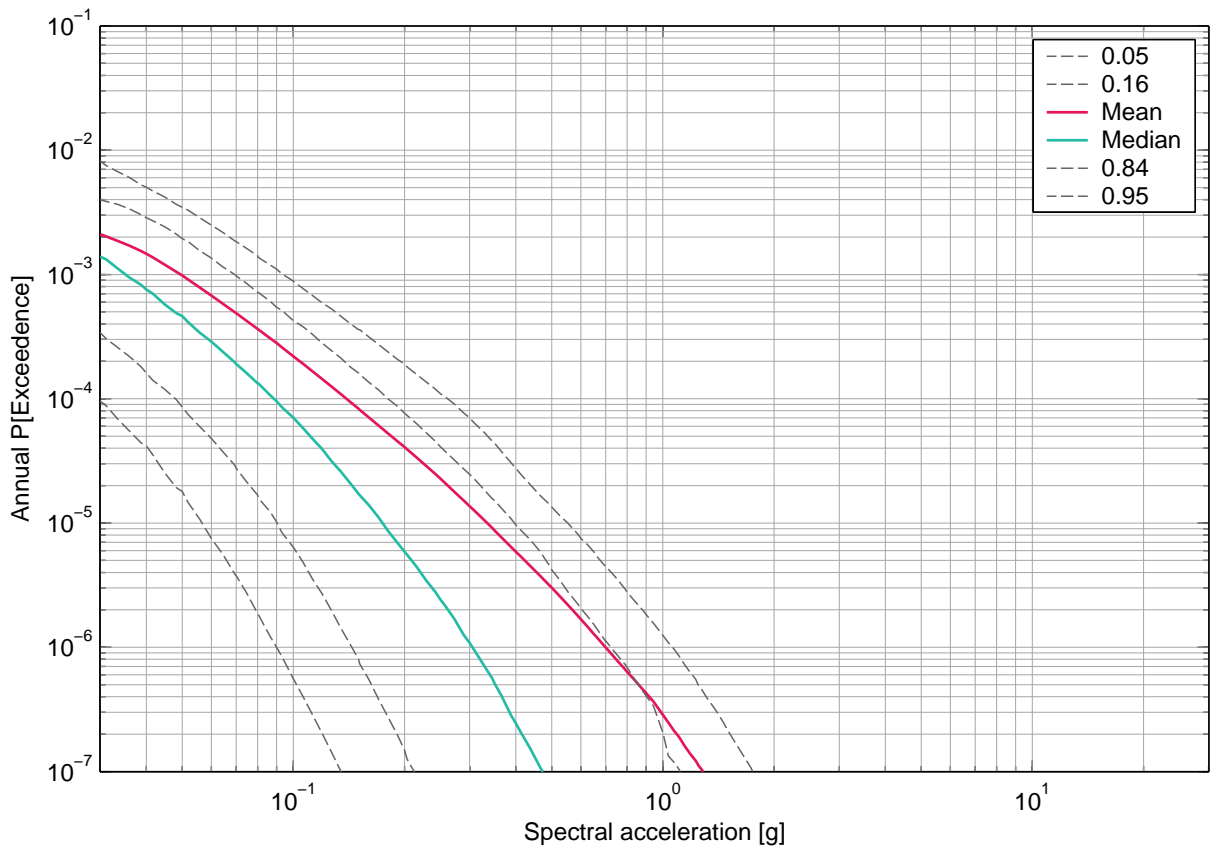


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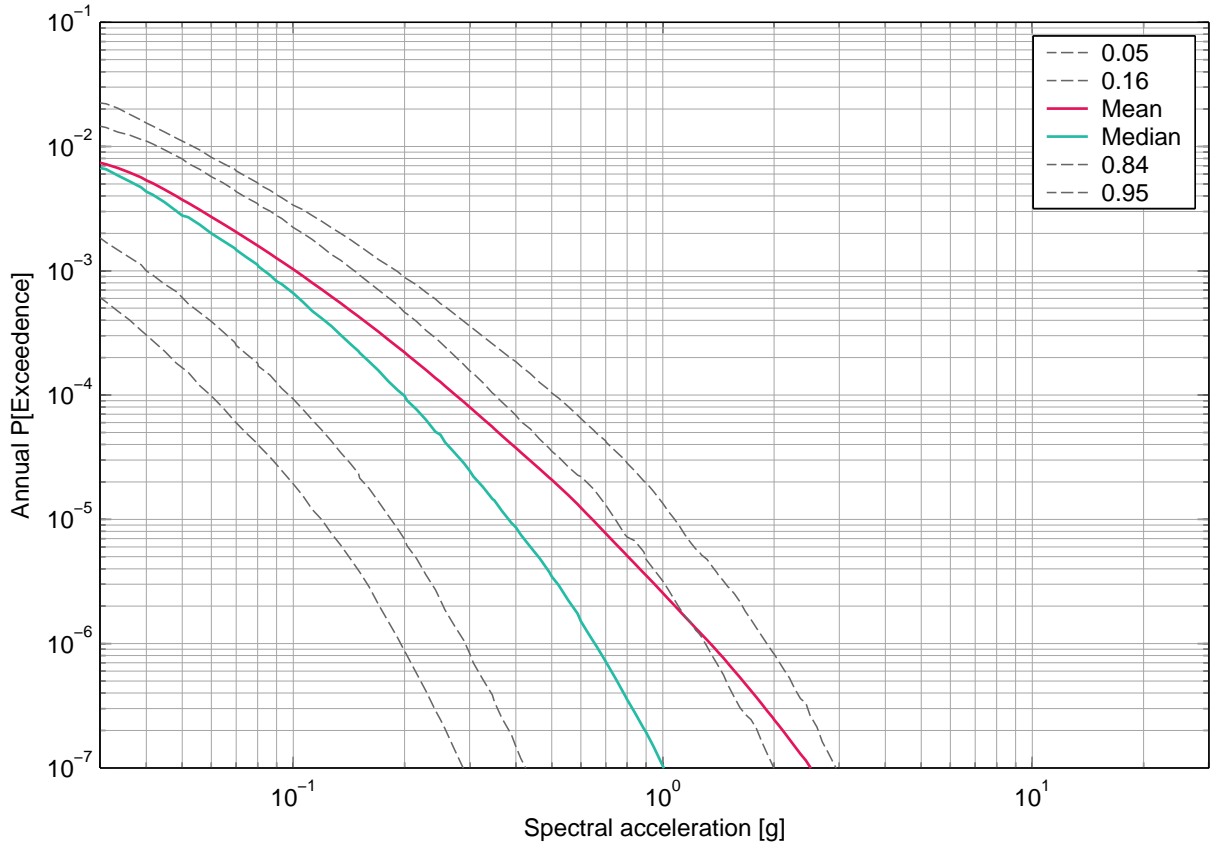


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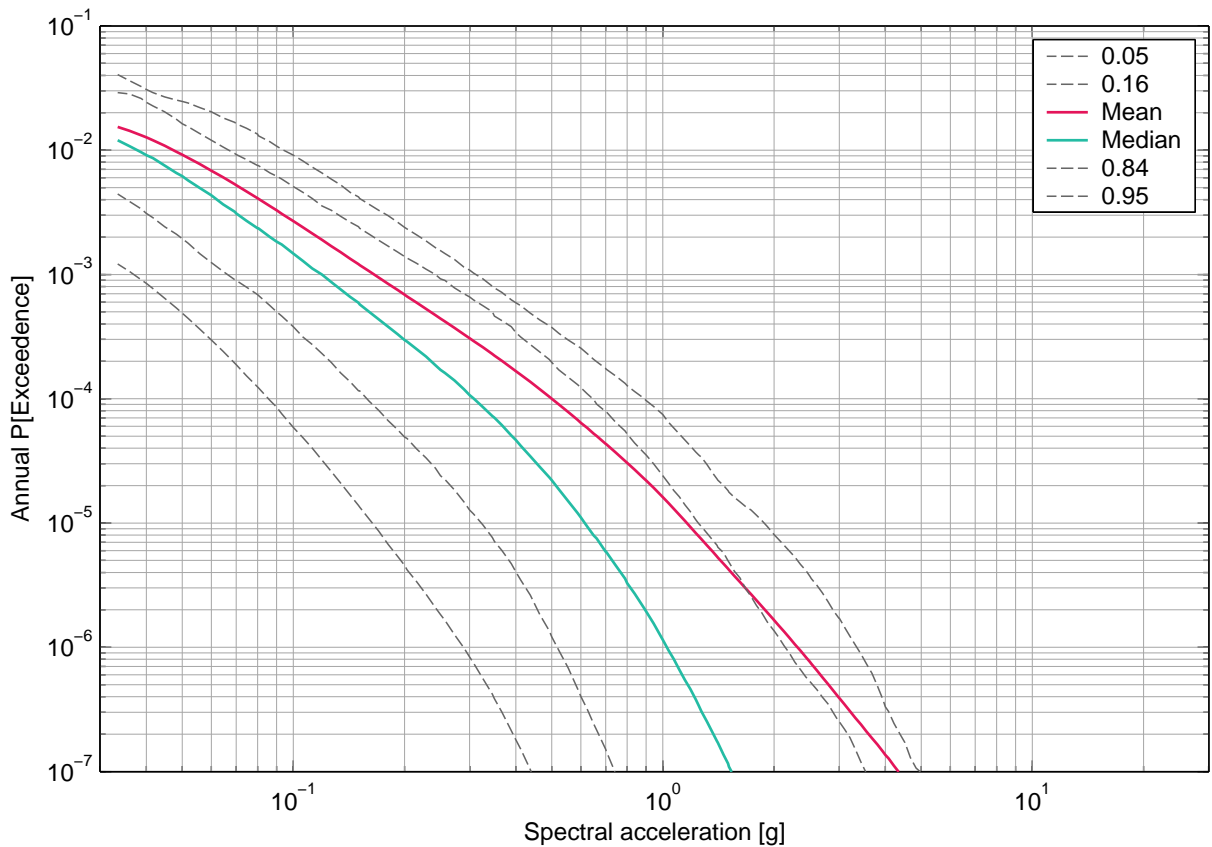


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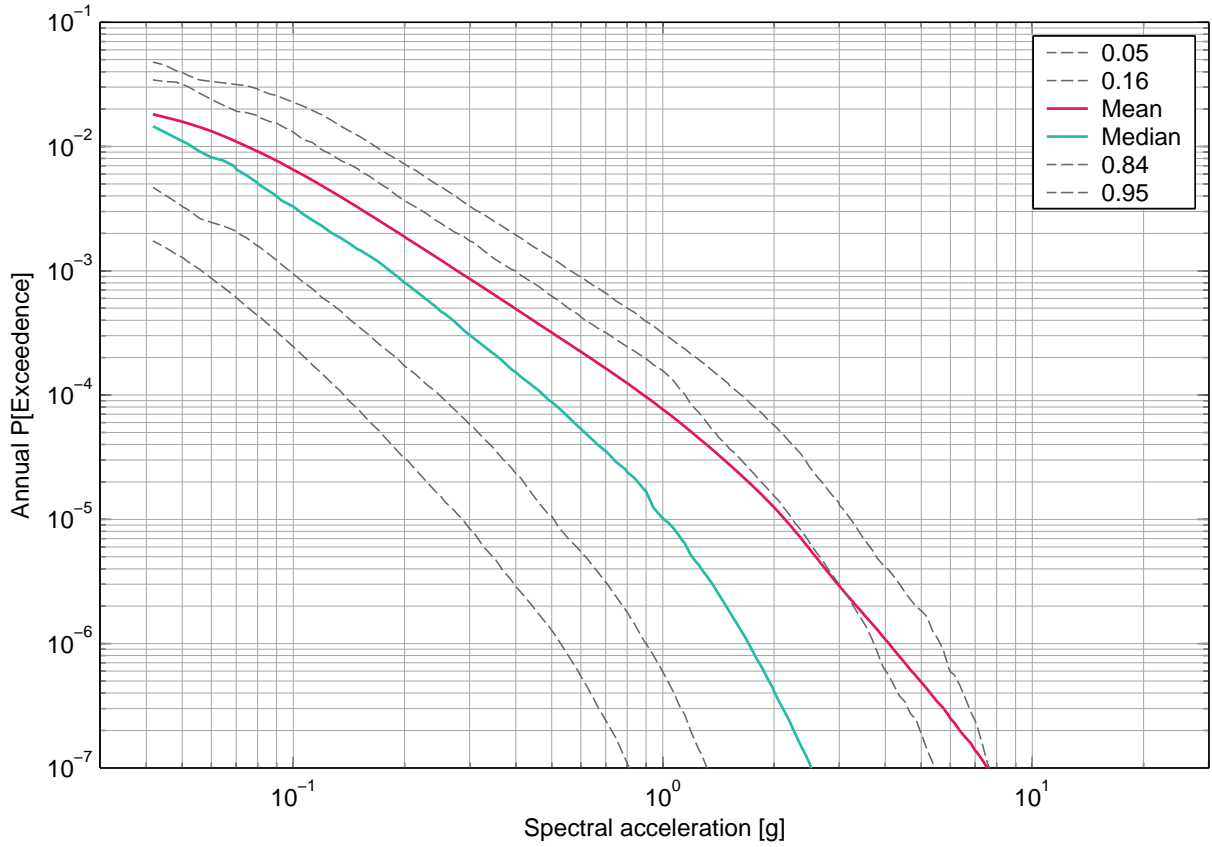


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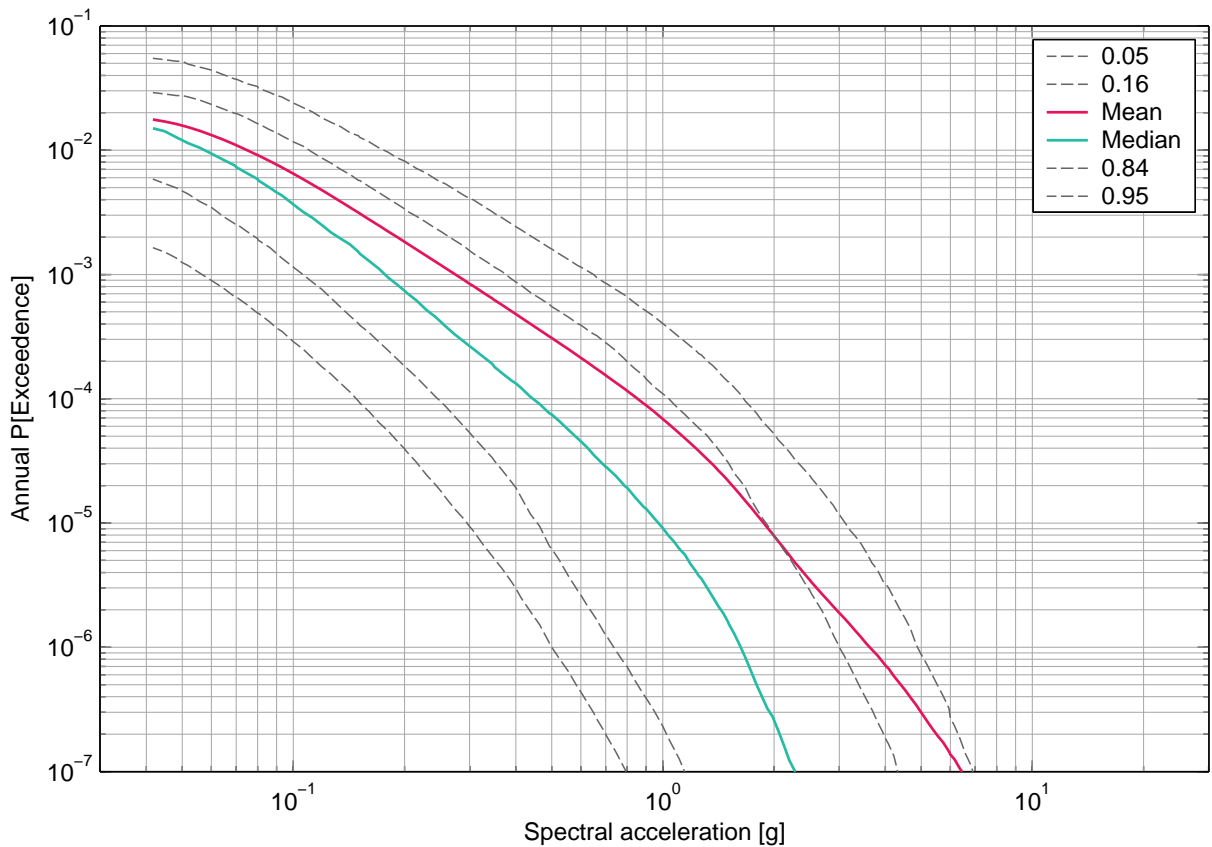


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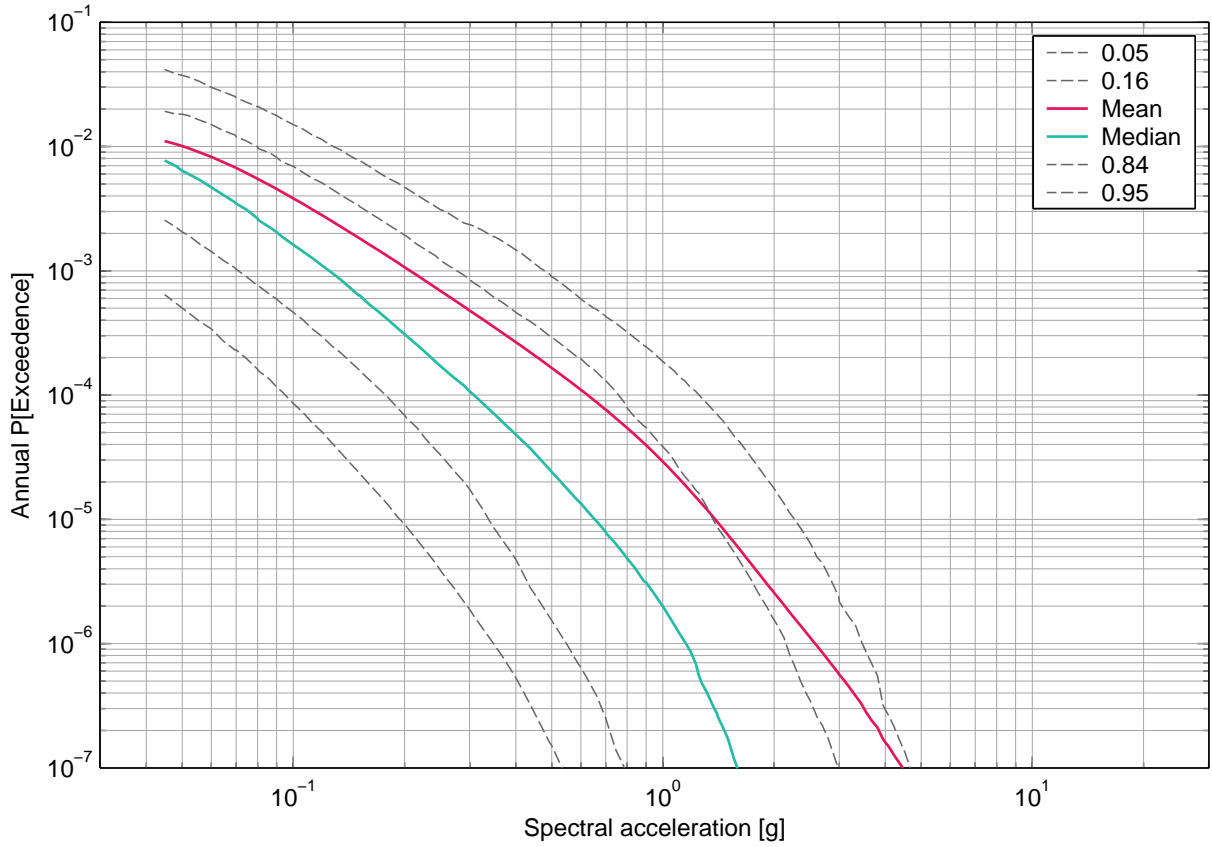


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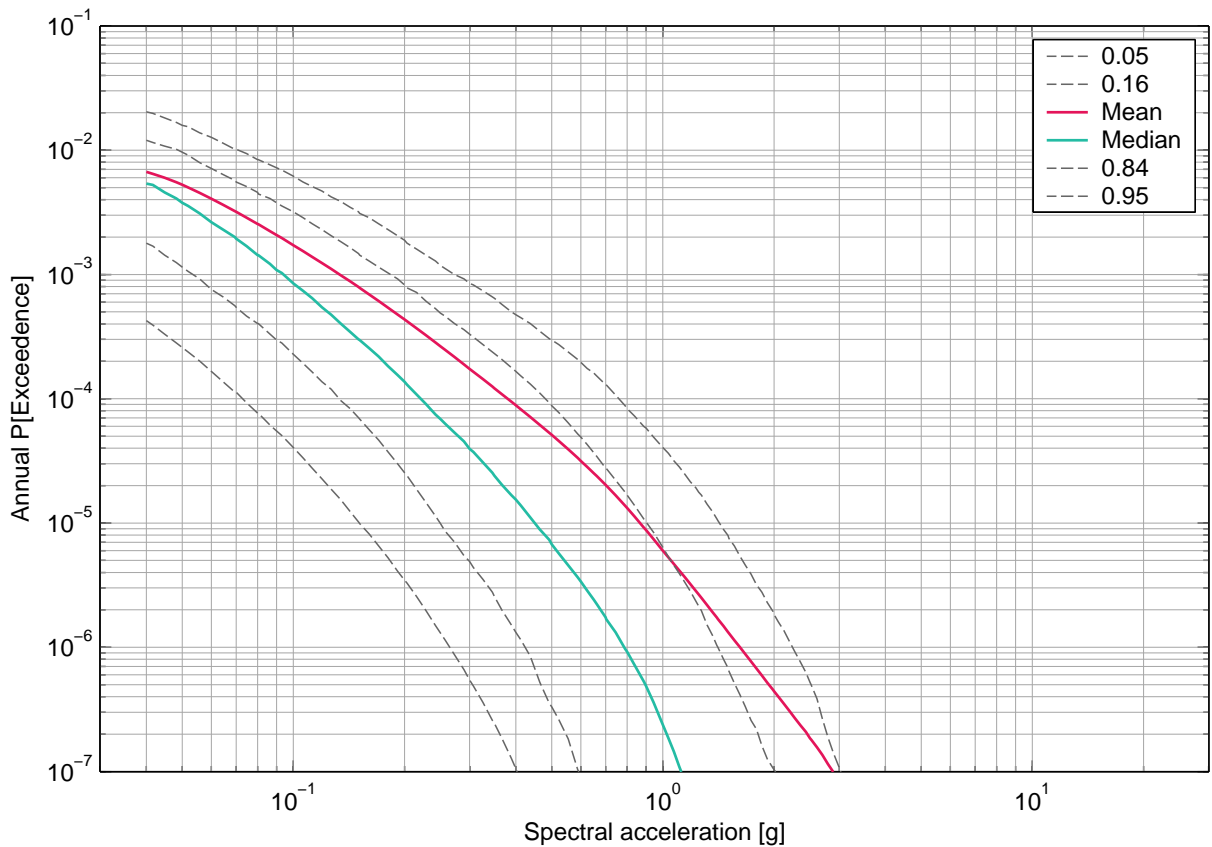


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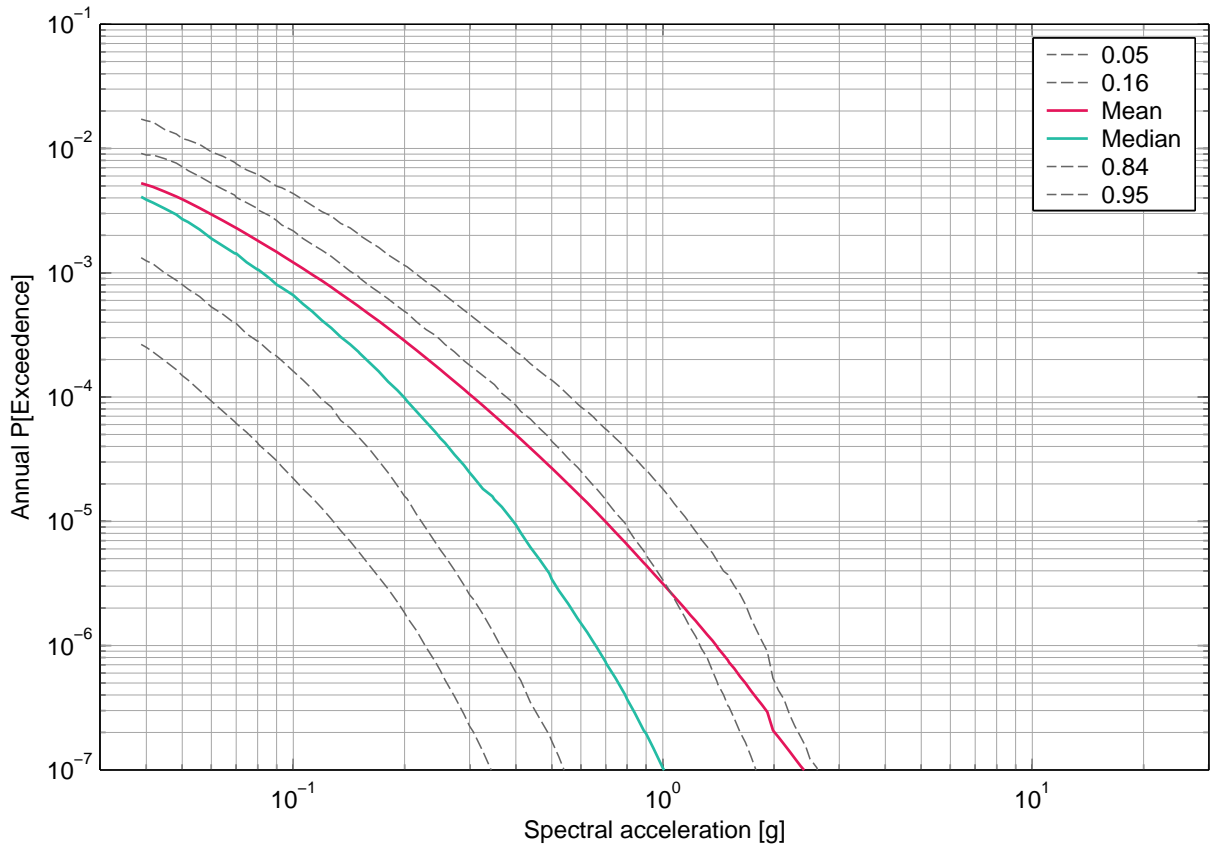


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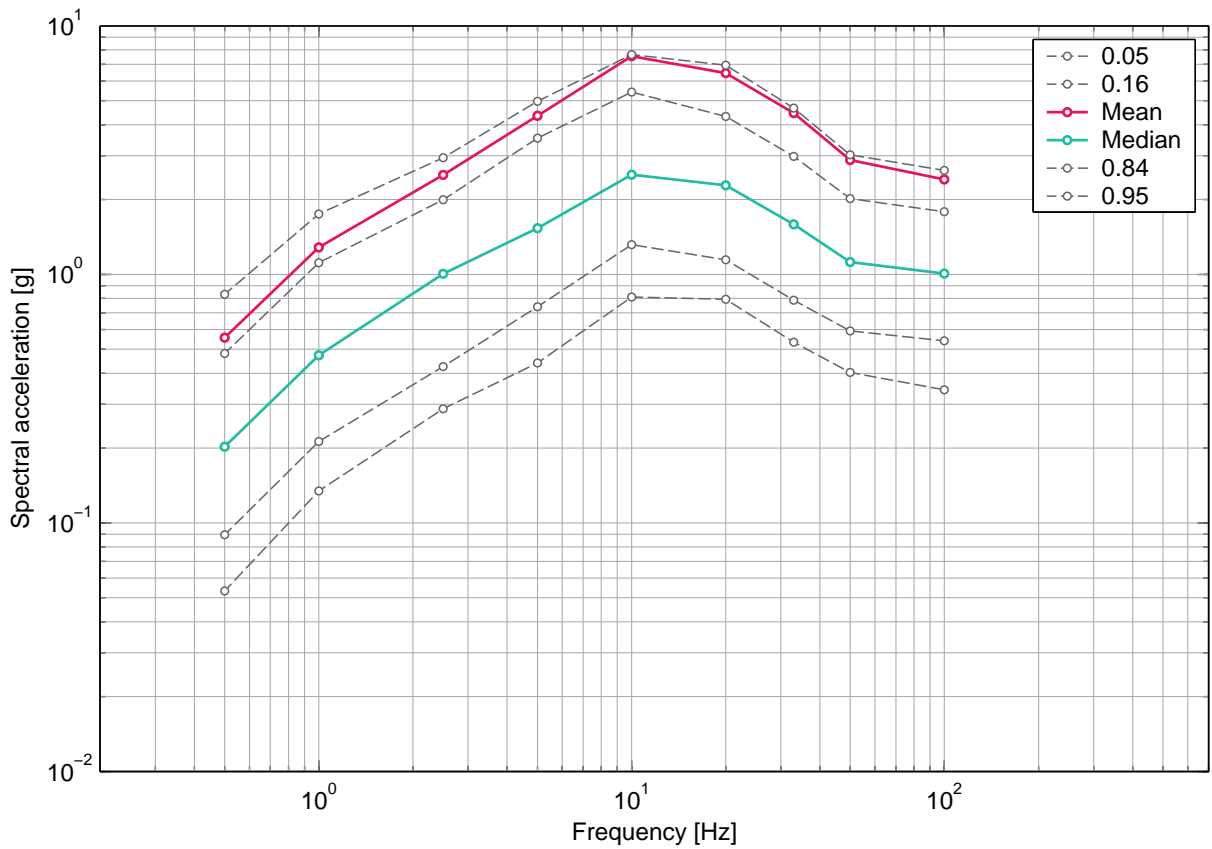


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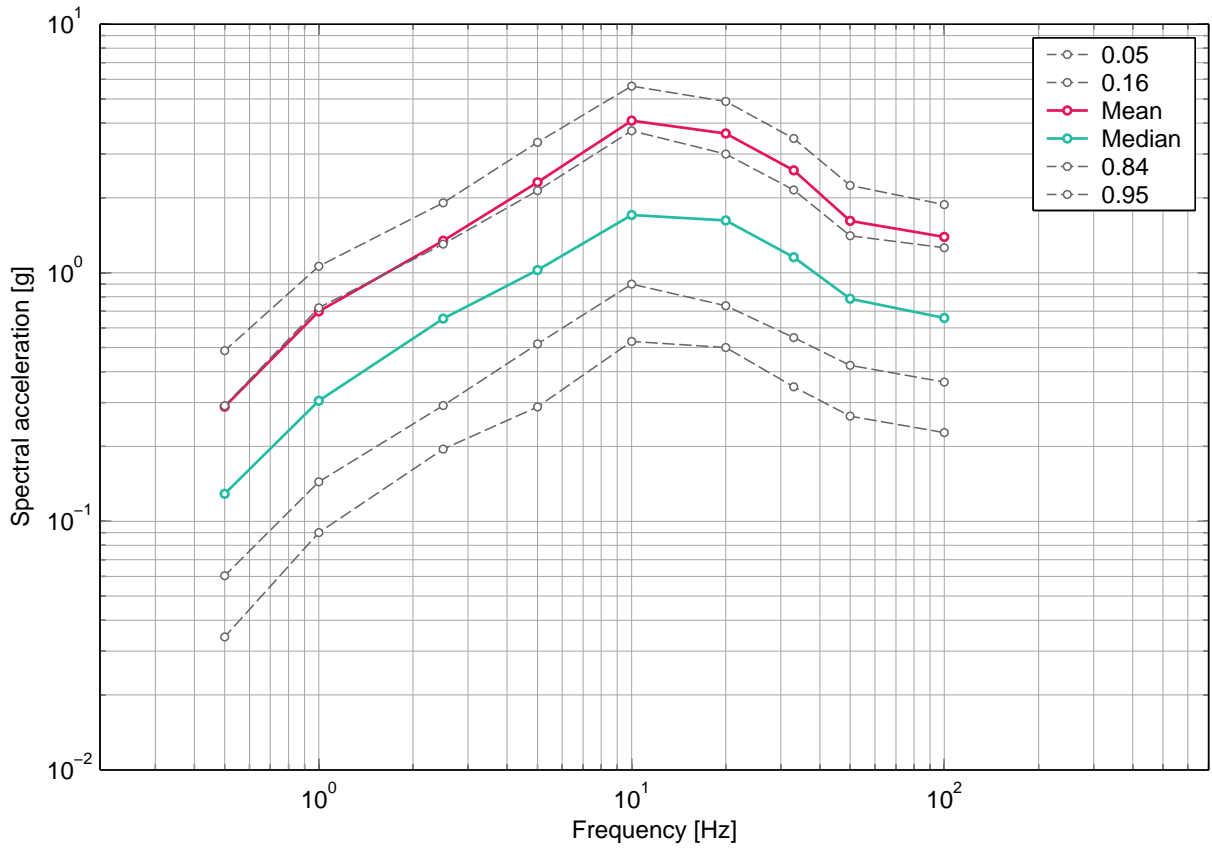


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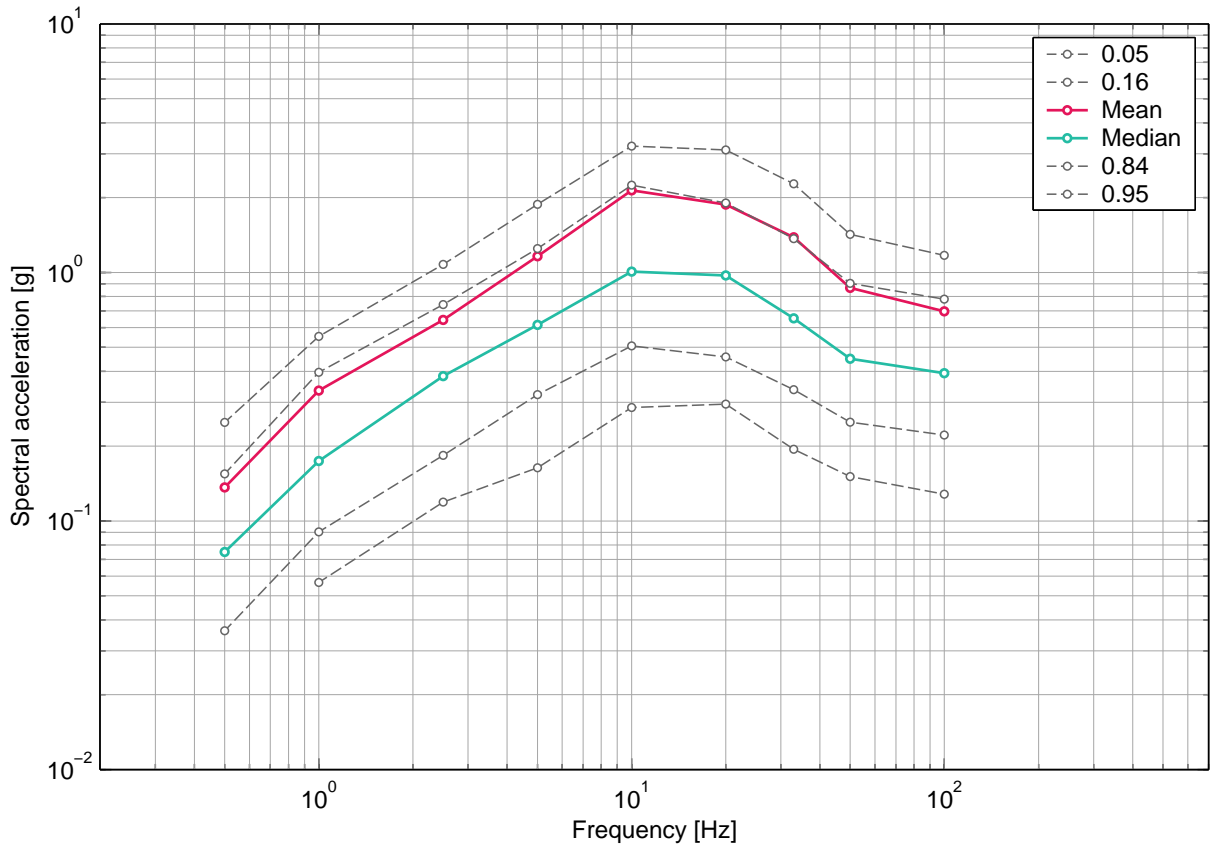


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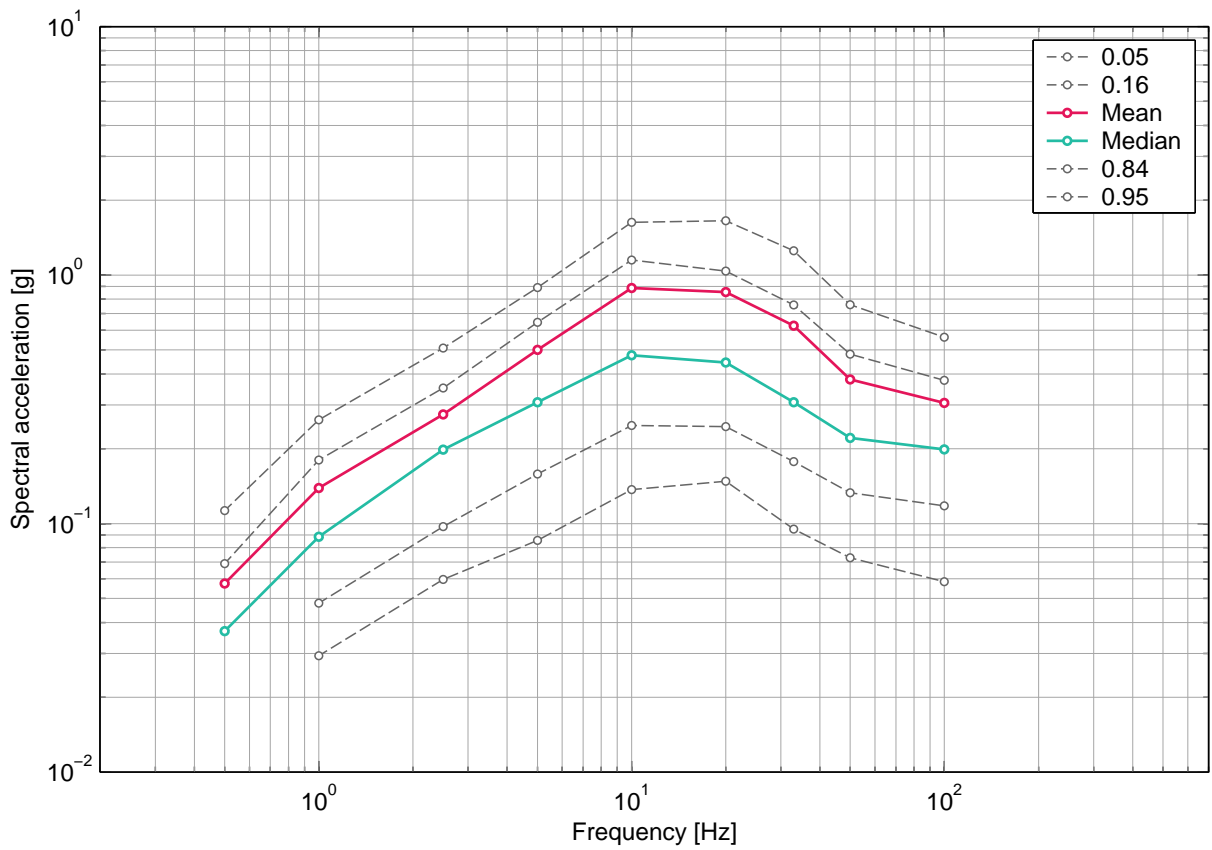


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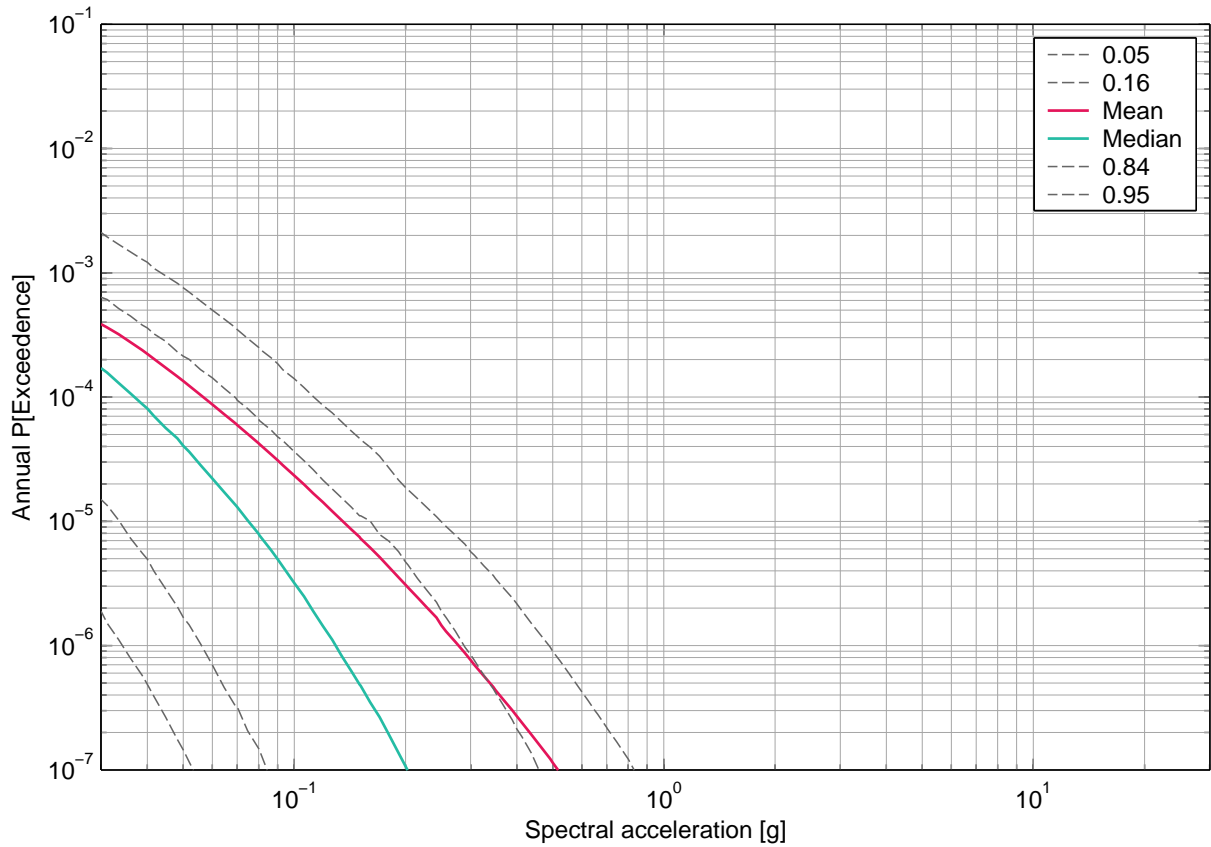


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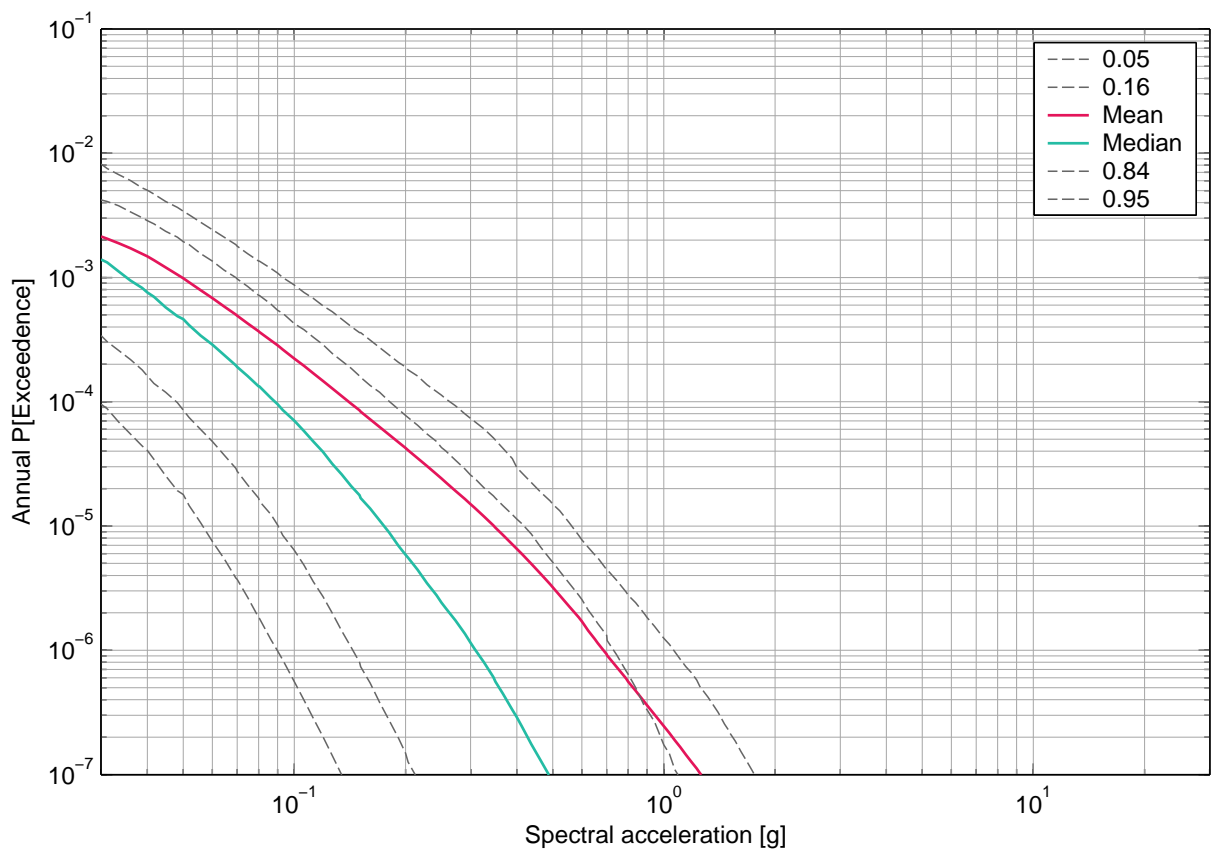


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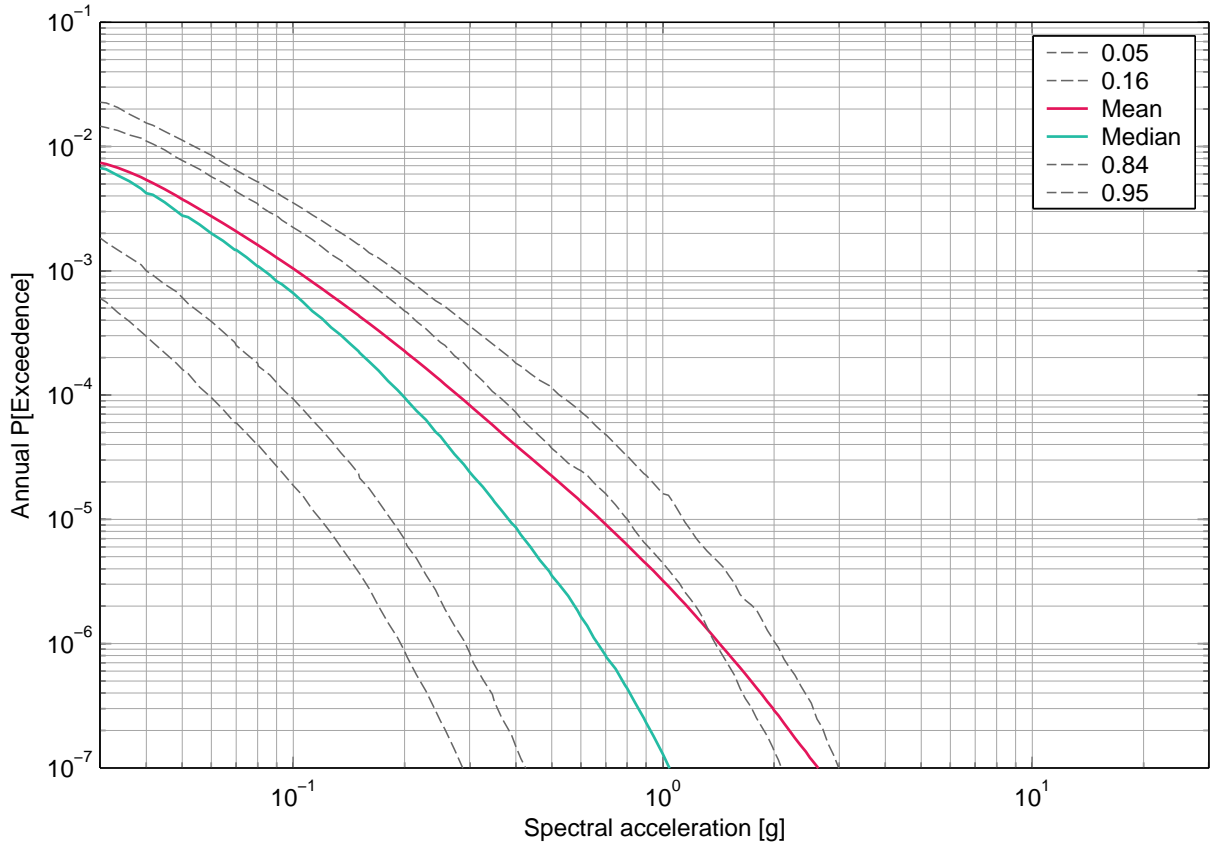


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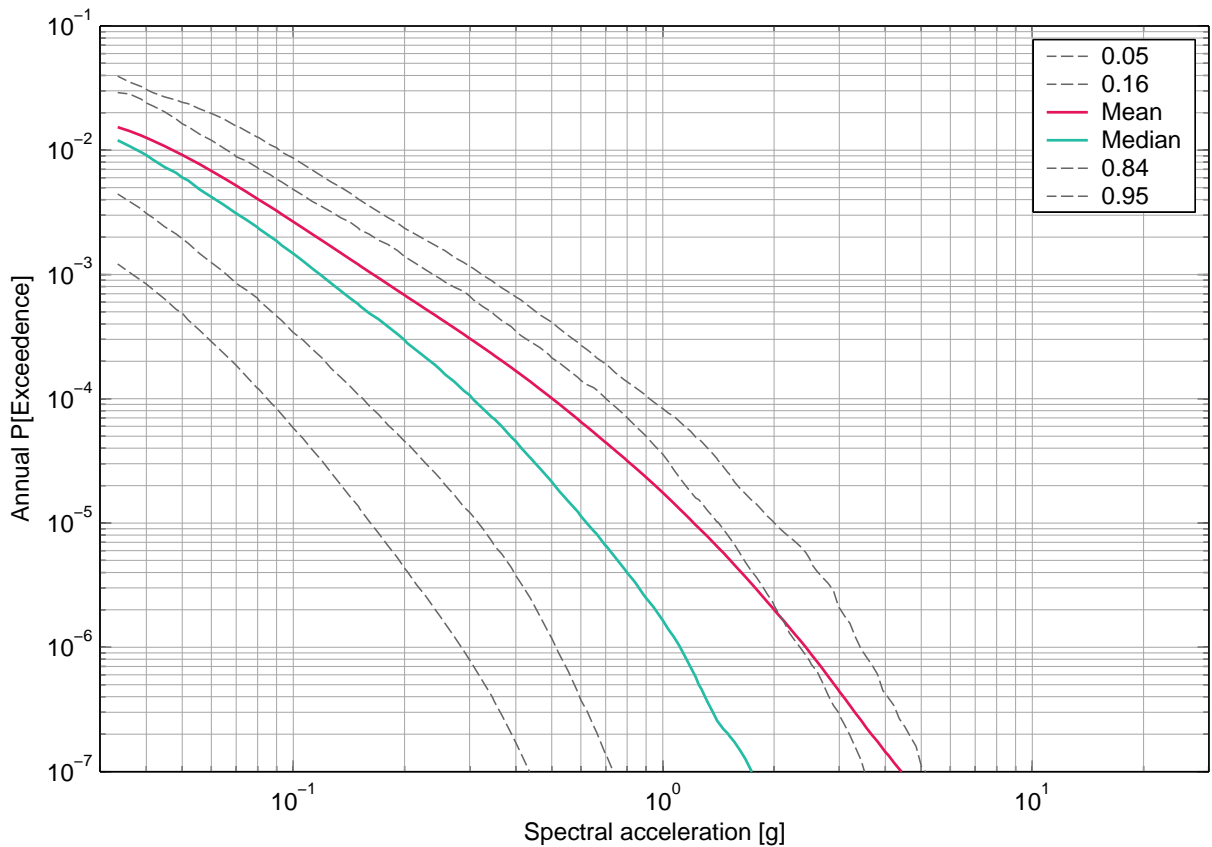


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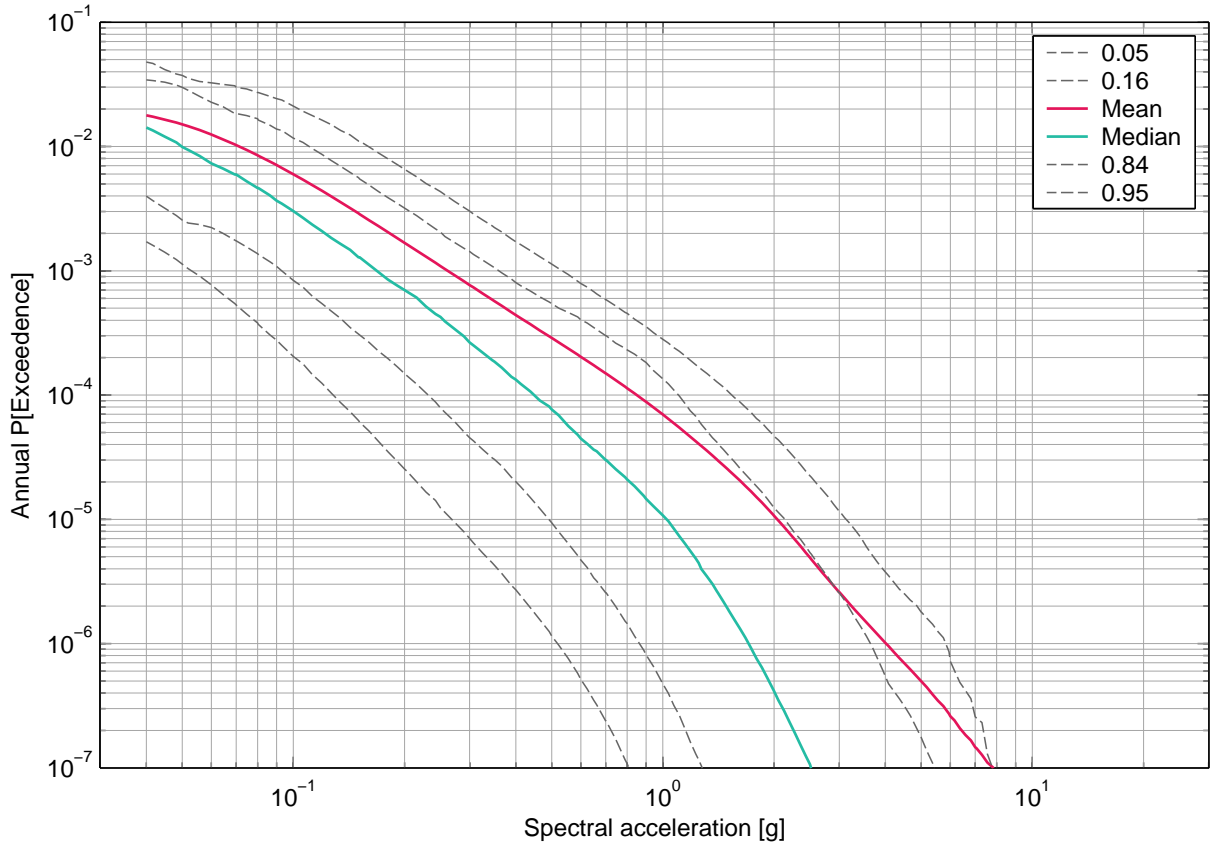


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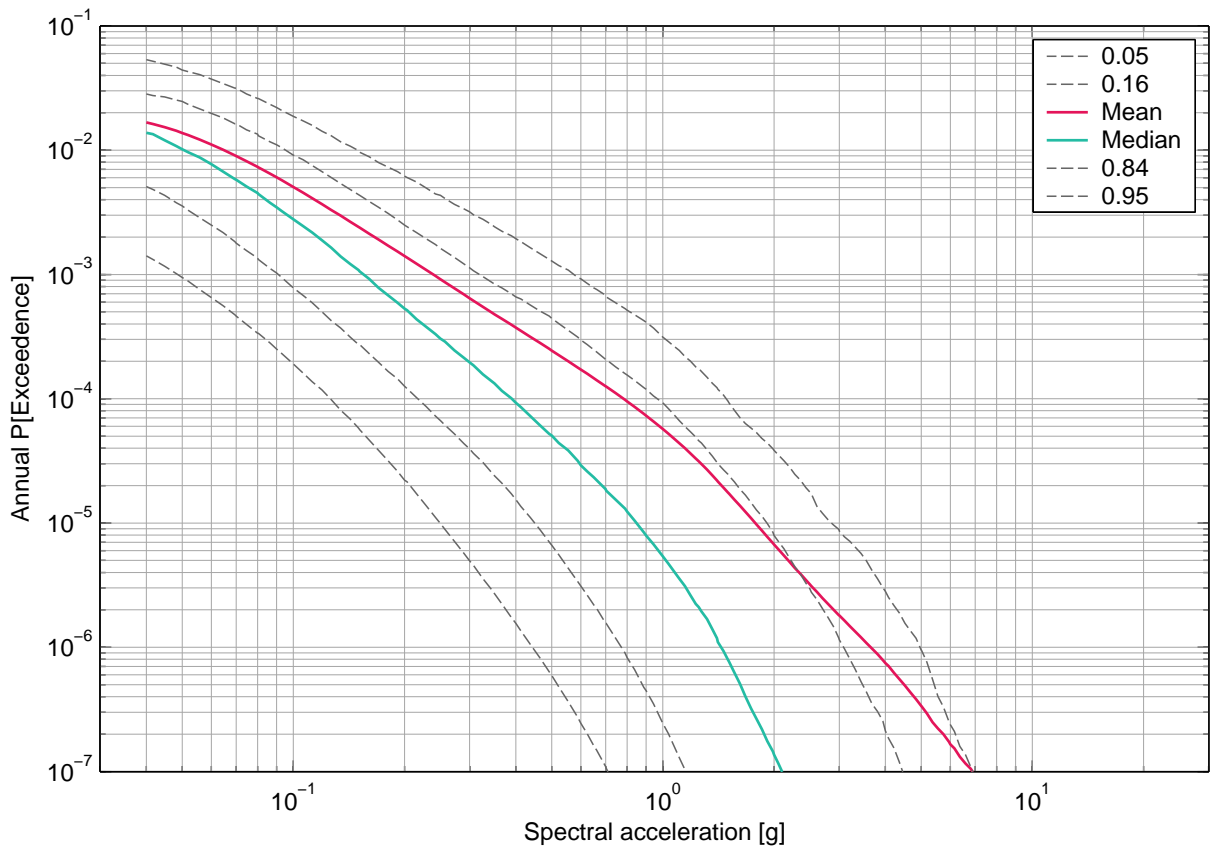


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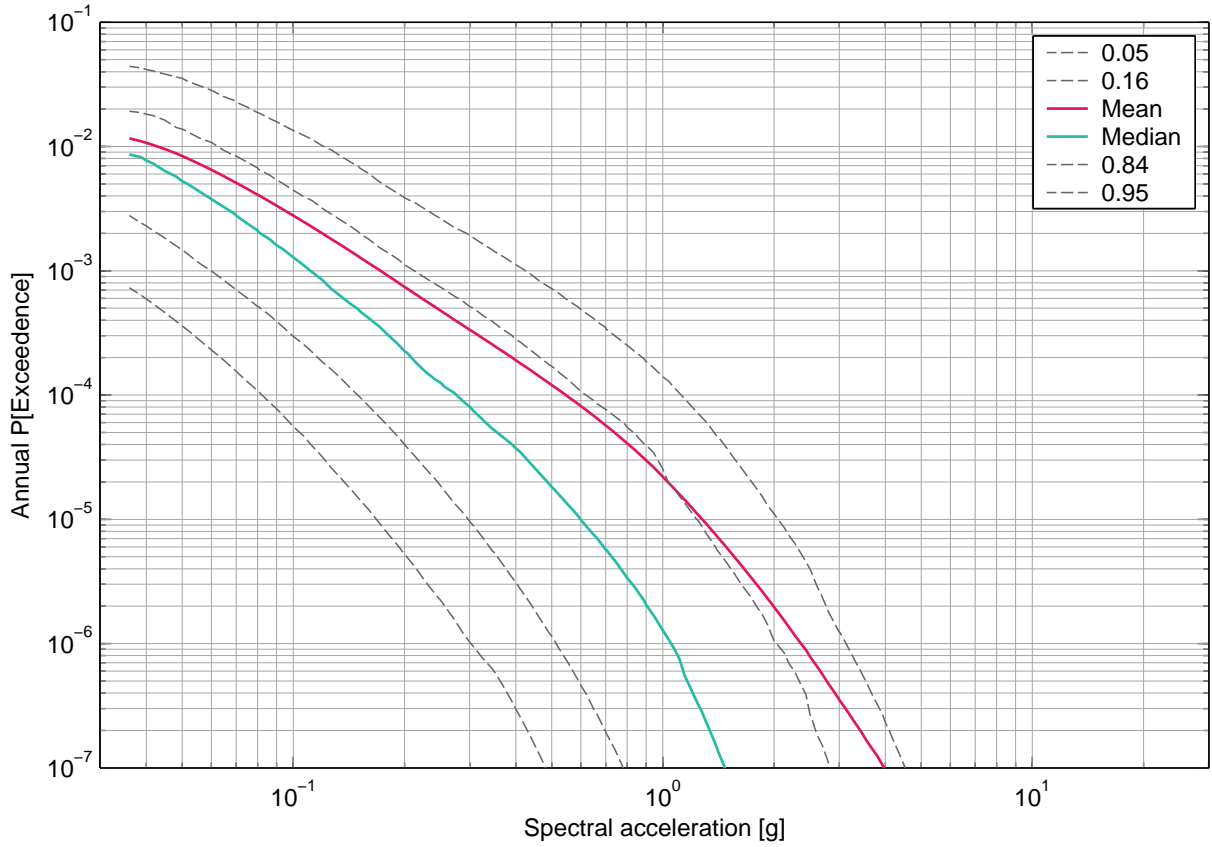


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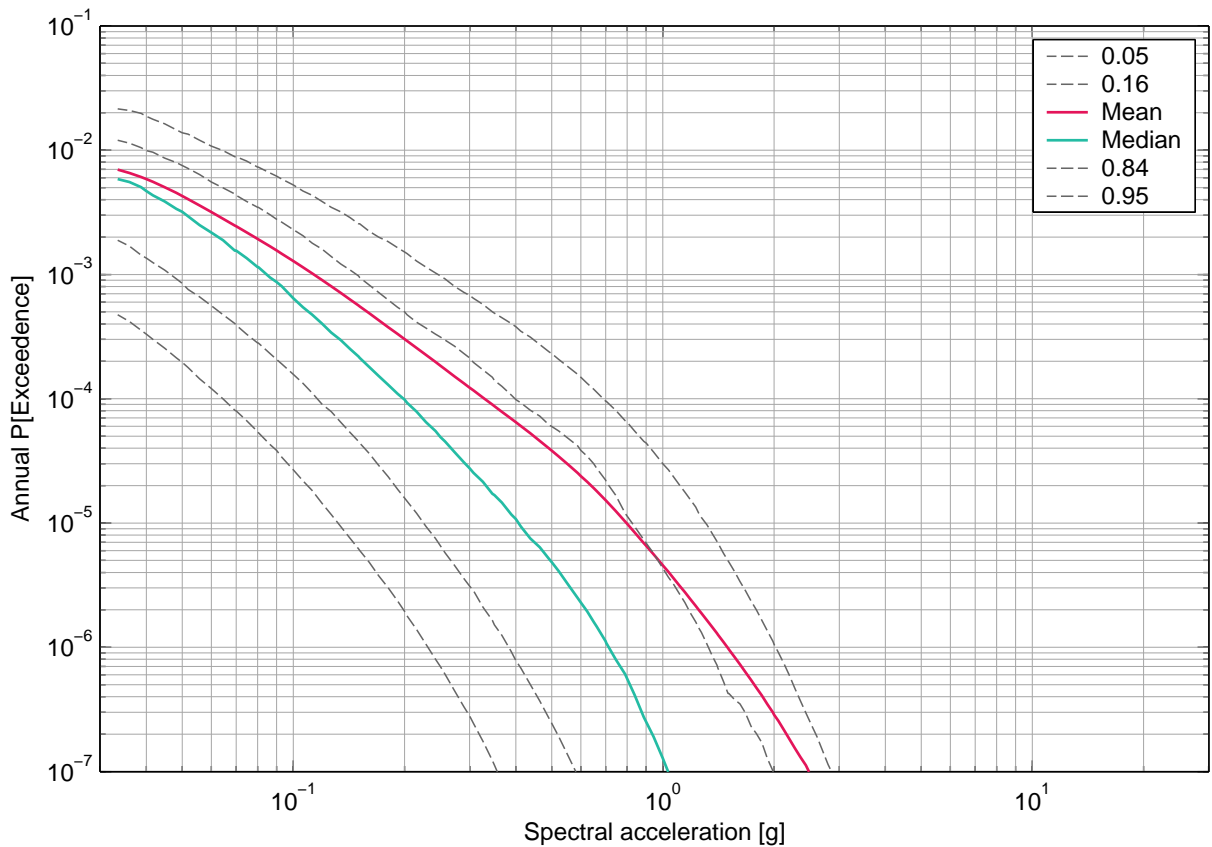


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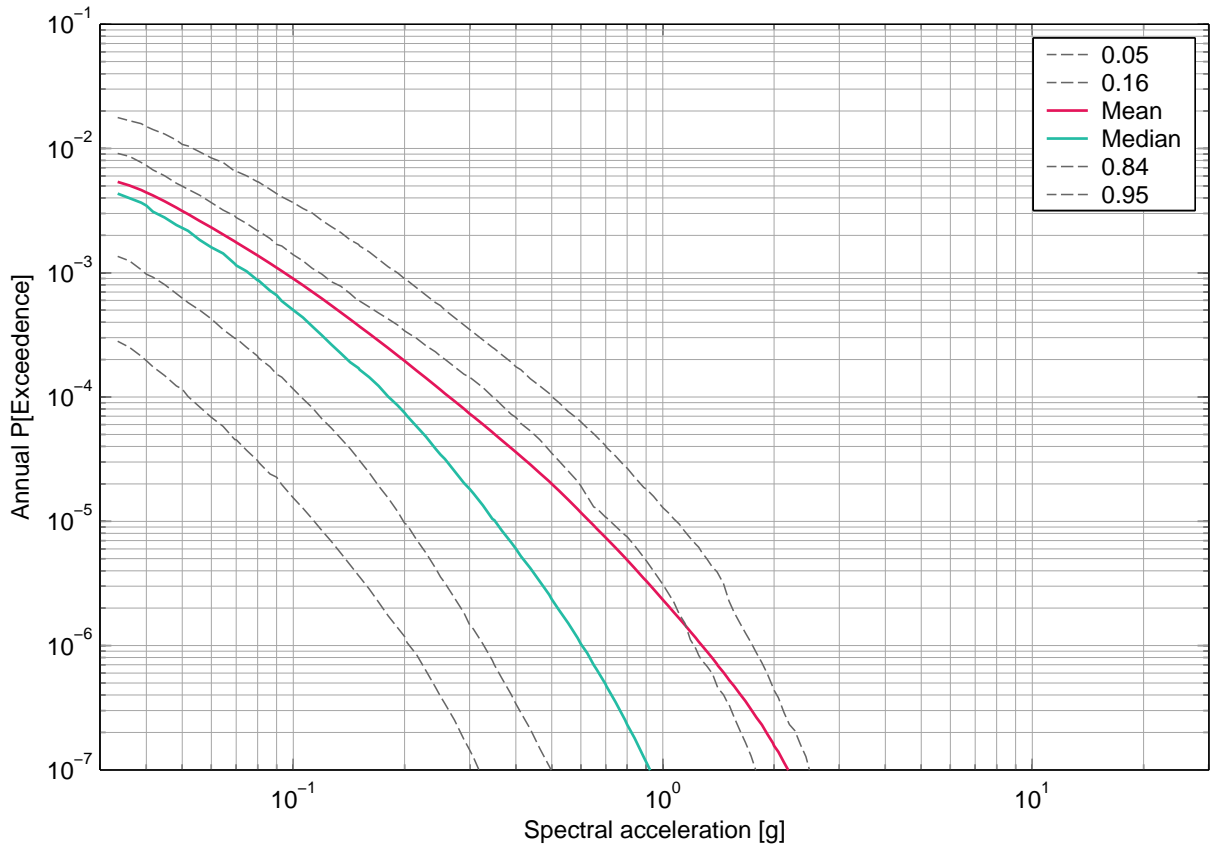


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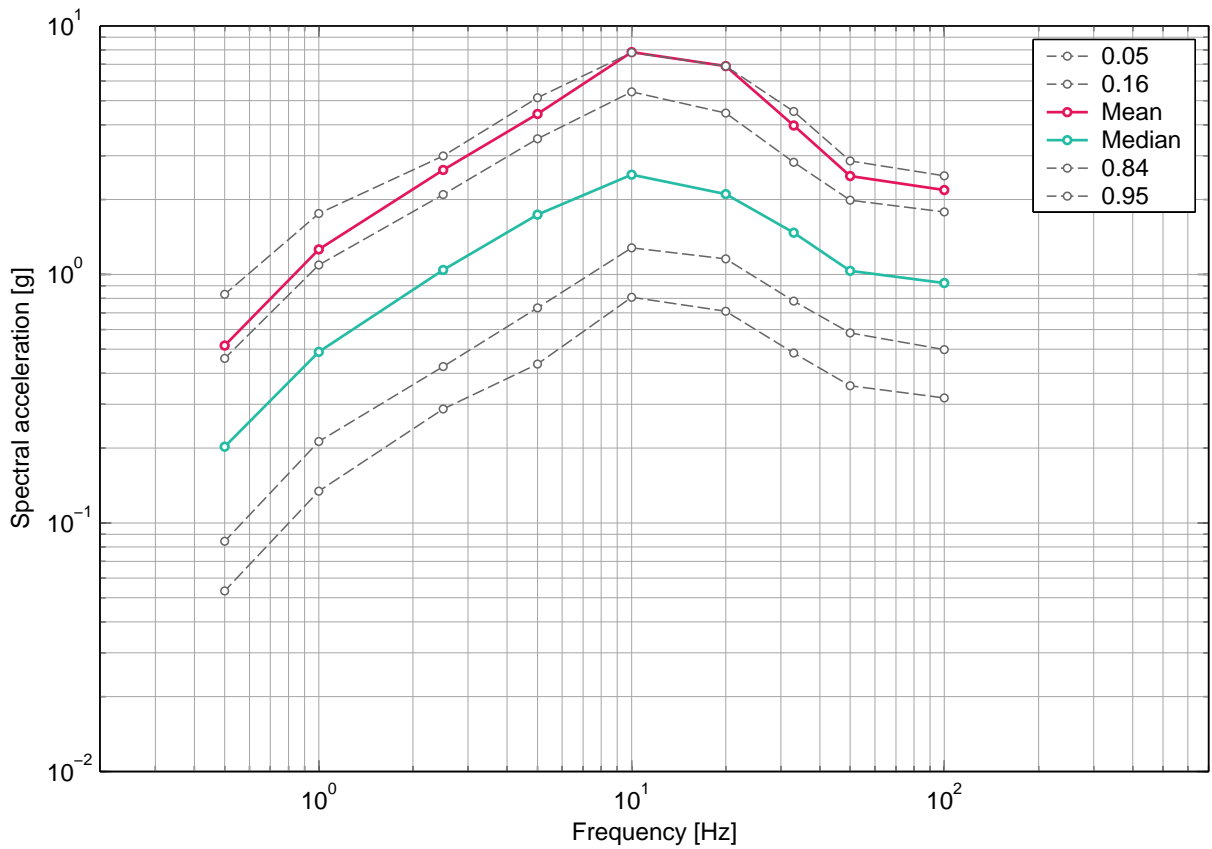


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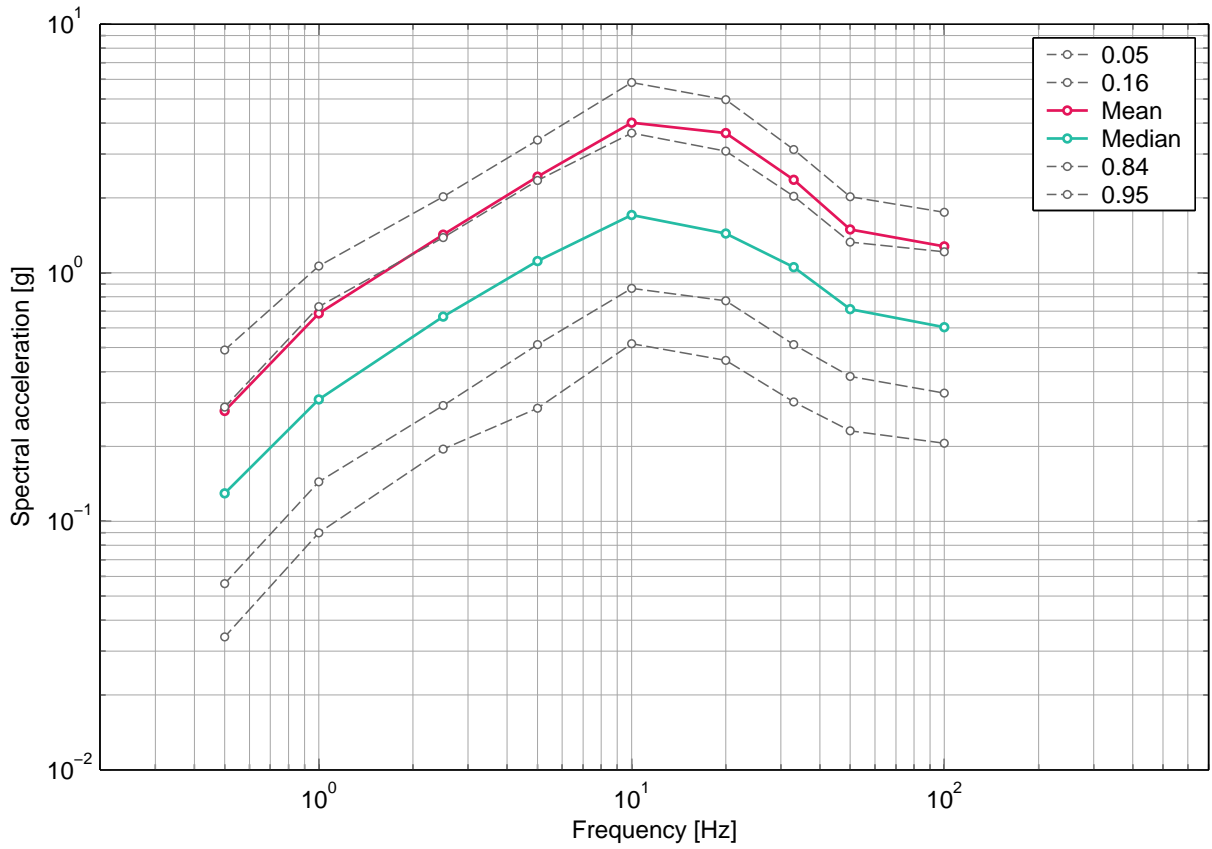


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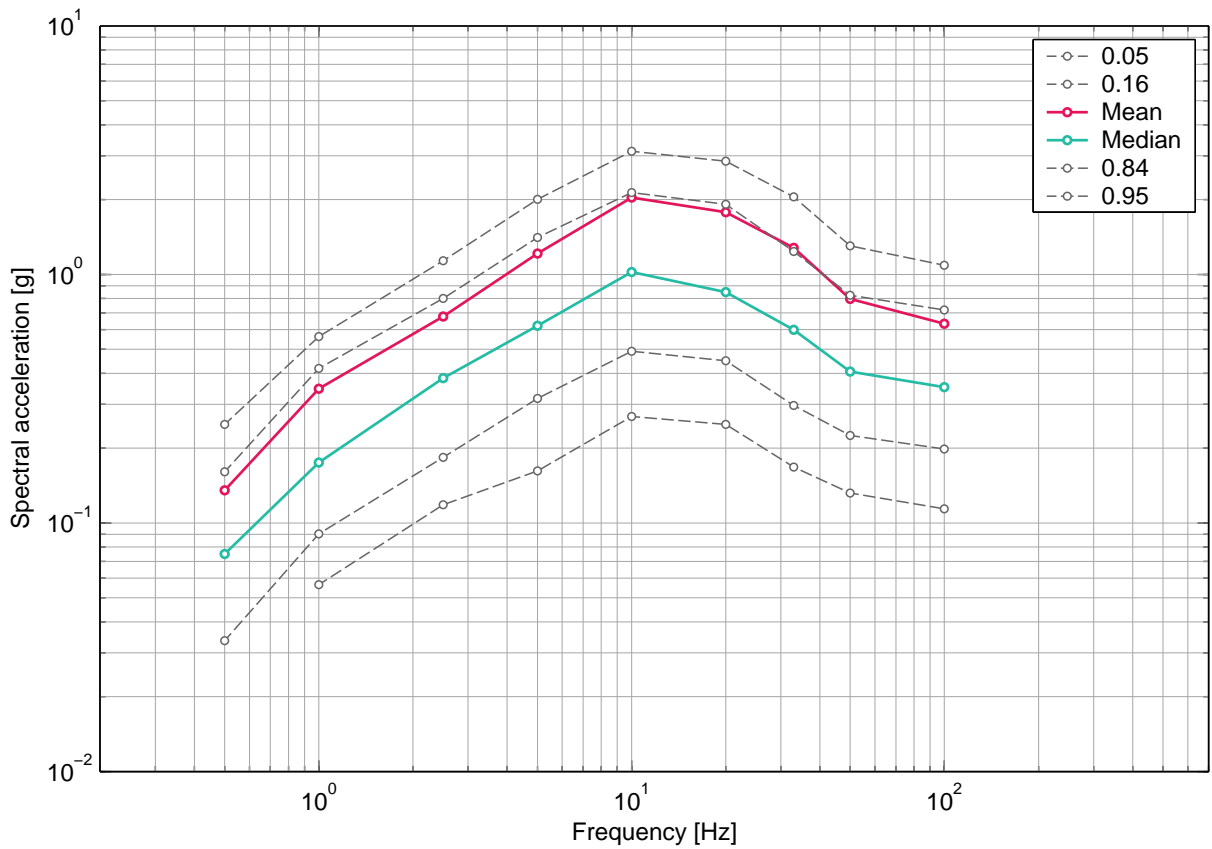


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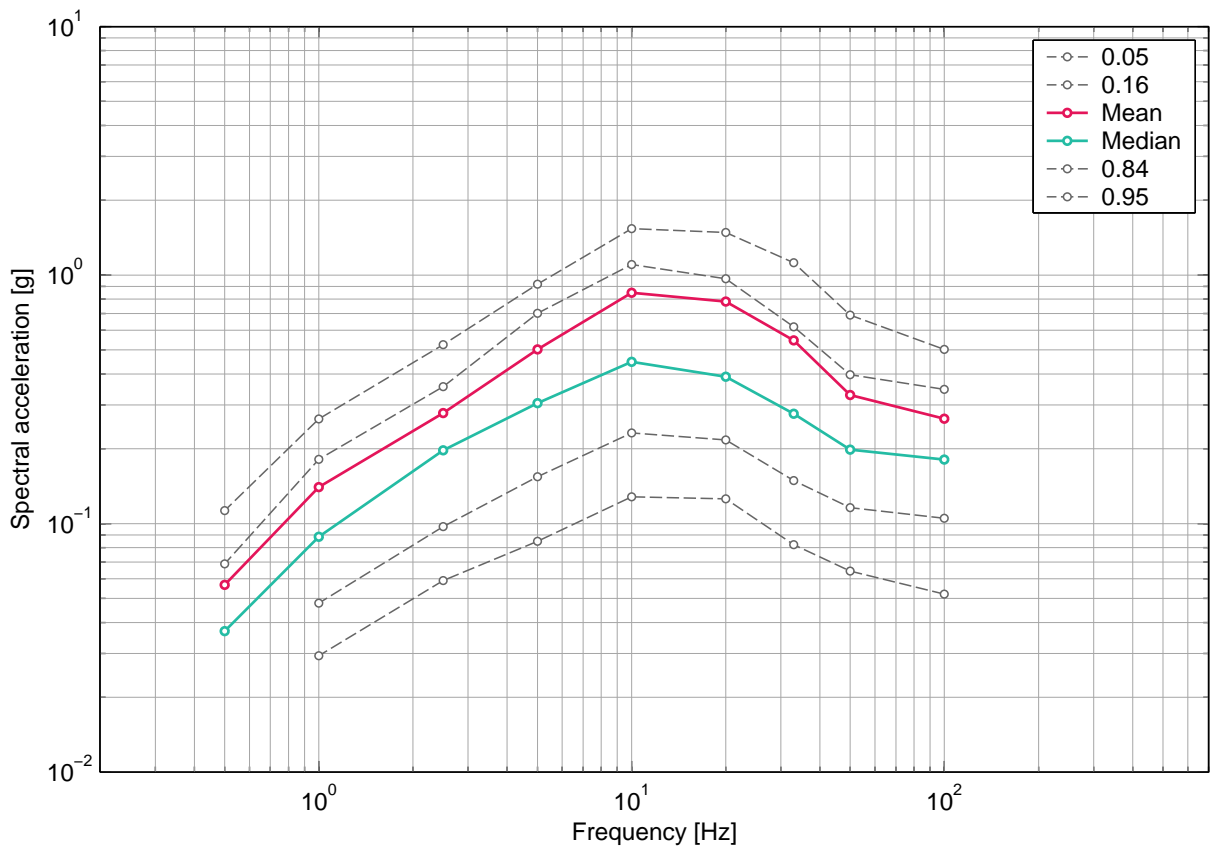


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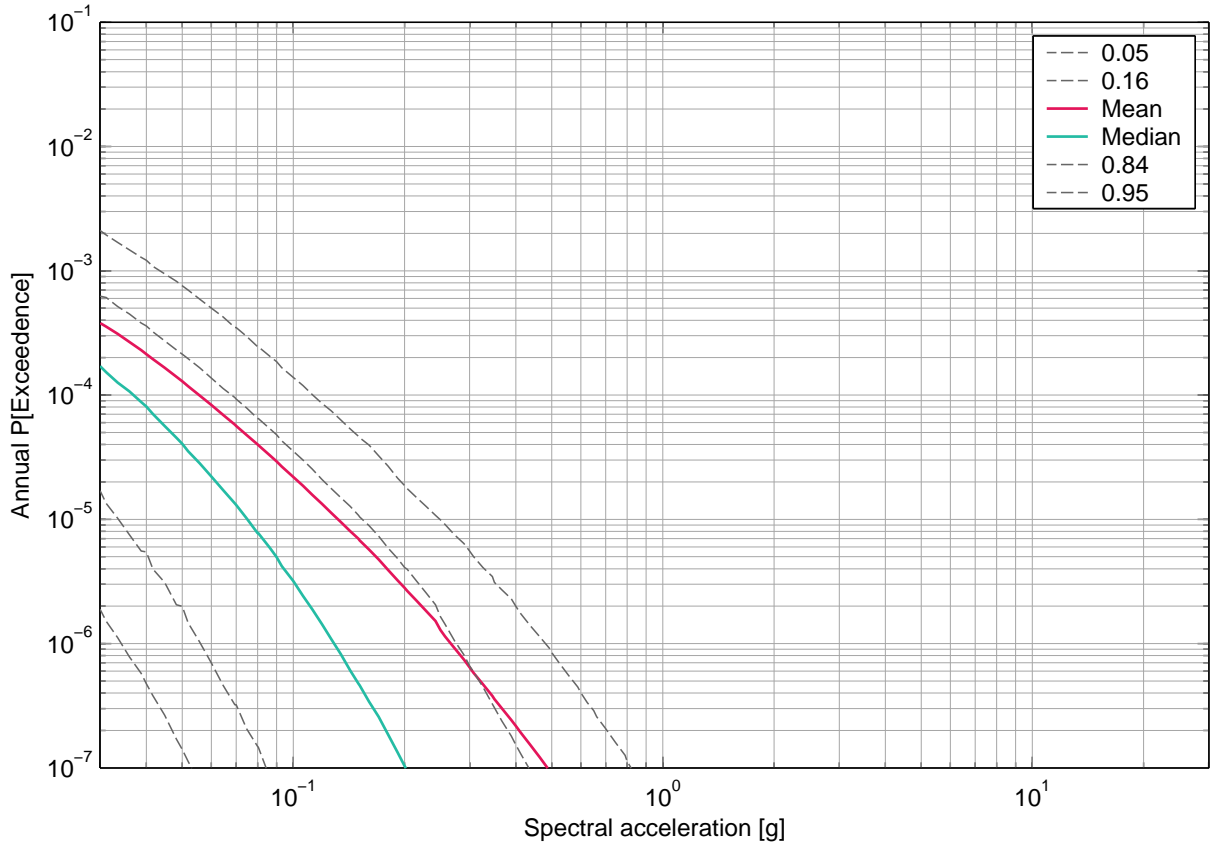


Fig. 5-13.1: Mühleberg, vertical component, soil, -14 m, mean hazard and fractiles, 0.5 Hz.

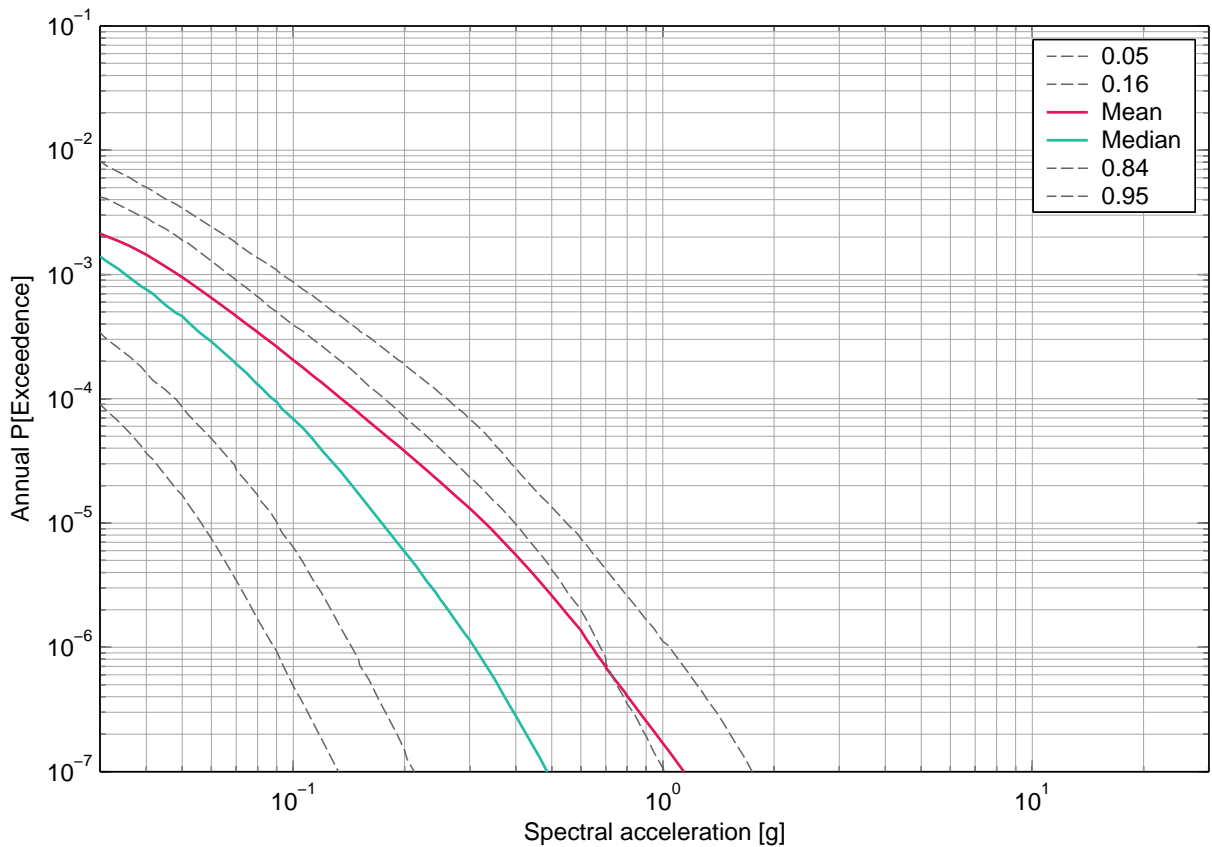


Fig. 5-13.2: Mühleberg, vertical component, soil, -14 m, mean hazard and fractiles, 1 Hz.

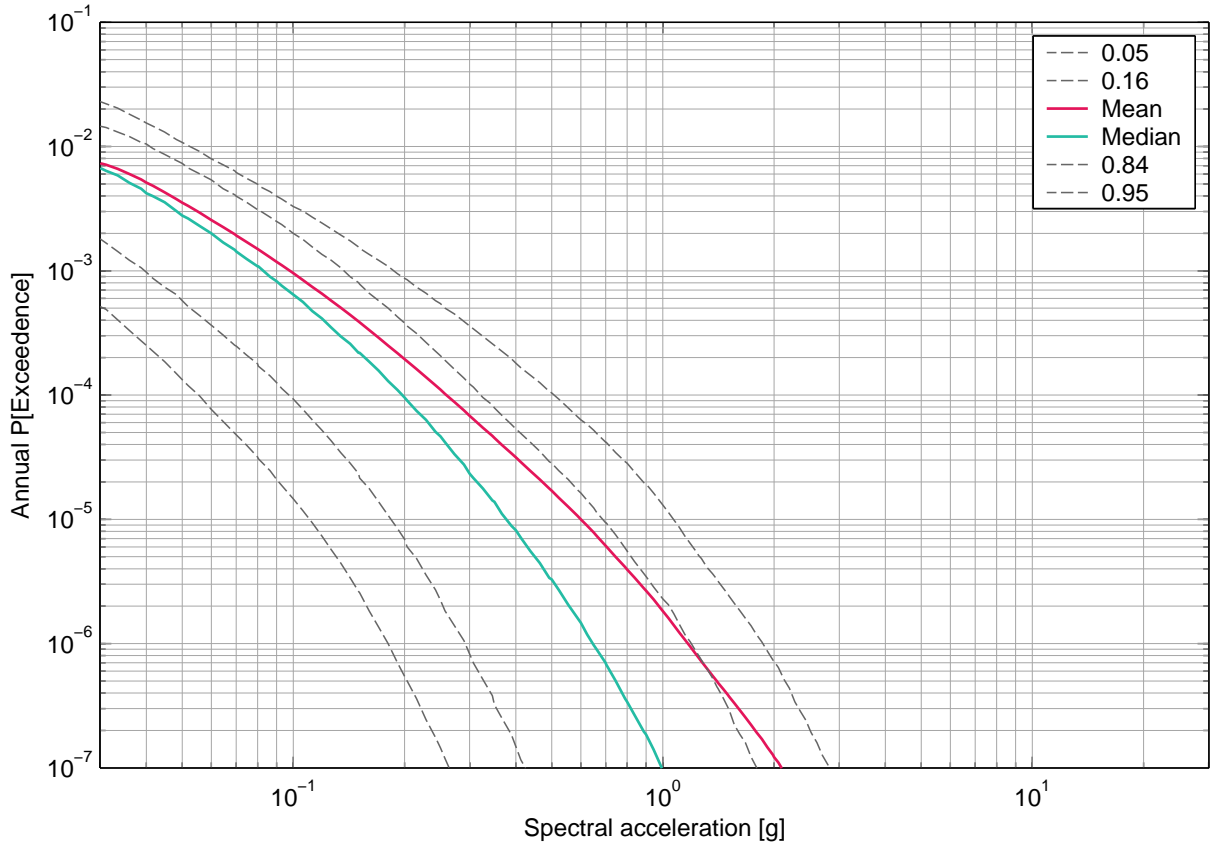


Fig. 5-13.3: Mühleberg, vertical component, soil, -14 m, mean hazard and fractiles, 2.5 Hz.

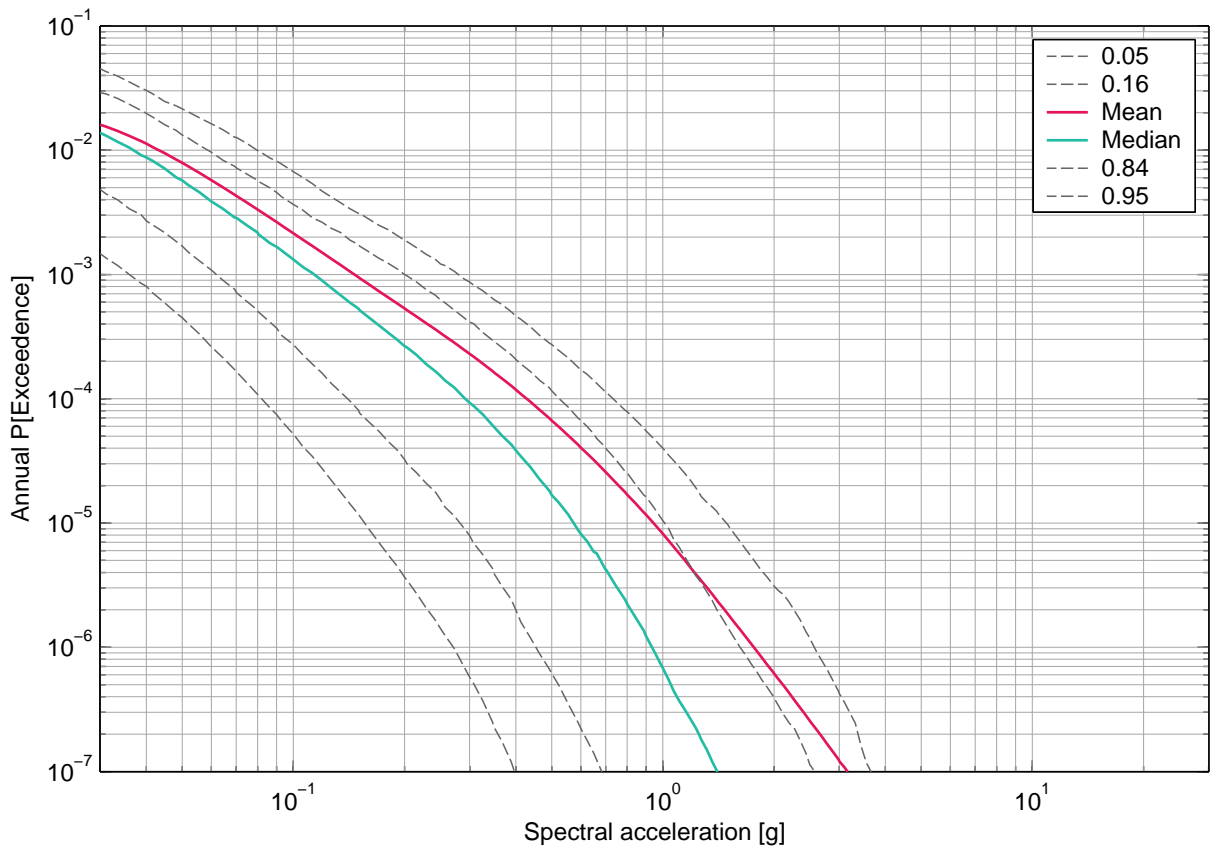


Fig. 5-13.4: Mühleberg, vertical component, soil, -14 m, mean hazard and fractiles, 5 Hz.

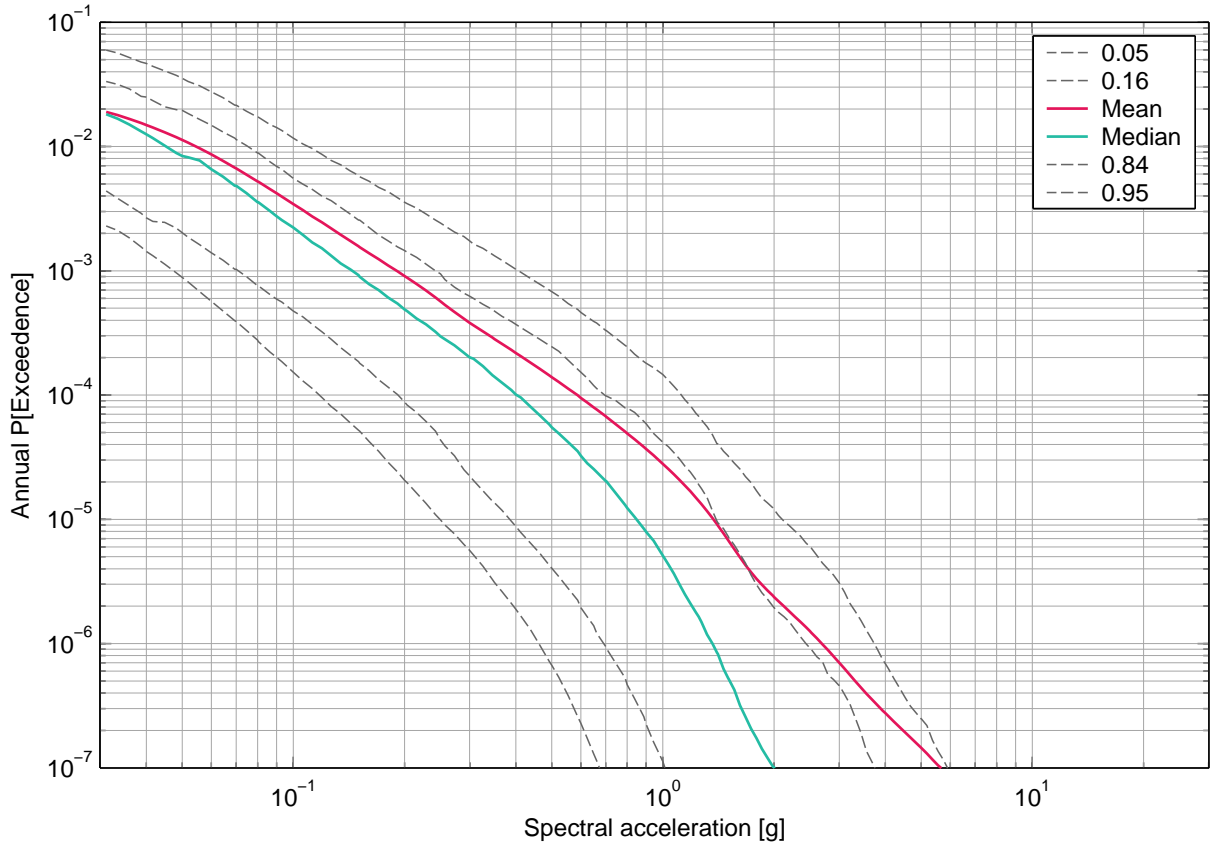


Fig. 5-13.5: Mühleberg, vertical component, soil, -14 m, mean hazard and fractiles, 10 Hz.

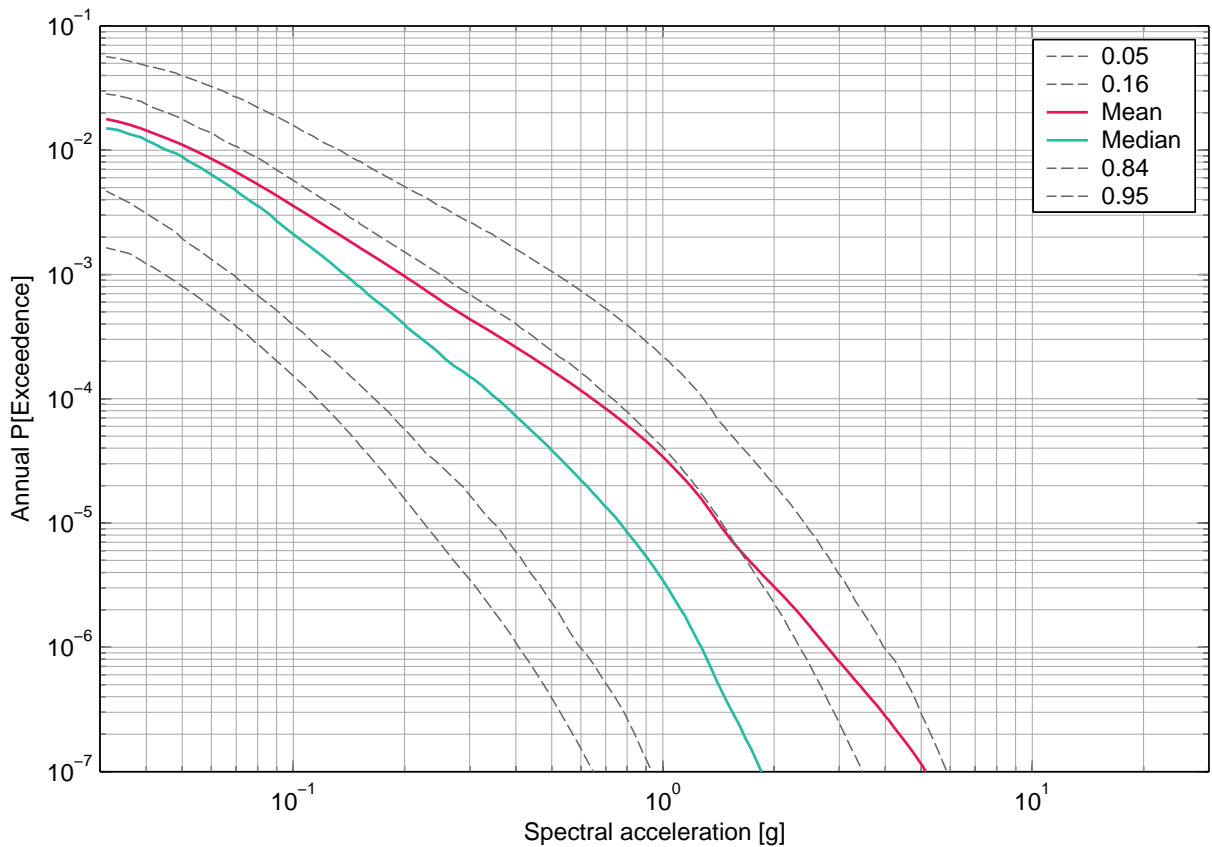


Fig. 5-13.6: Mühleberg, vertical component, soil, -14 m, mean hazard and fractiles, 20 Hz.

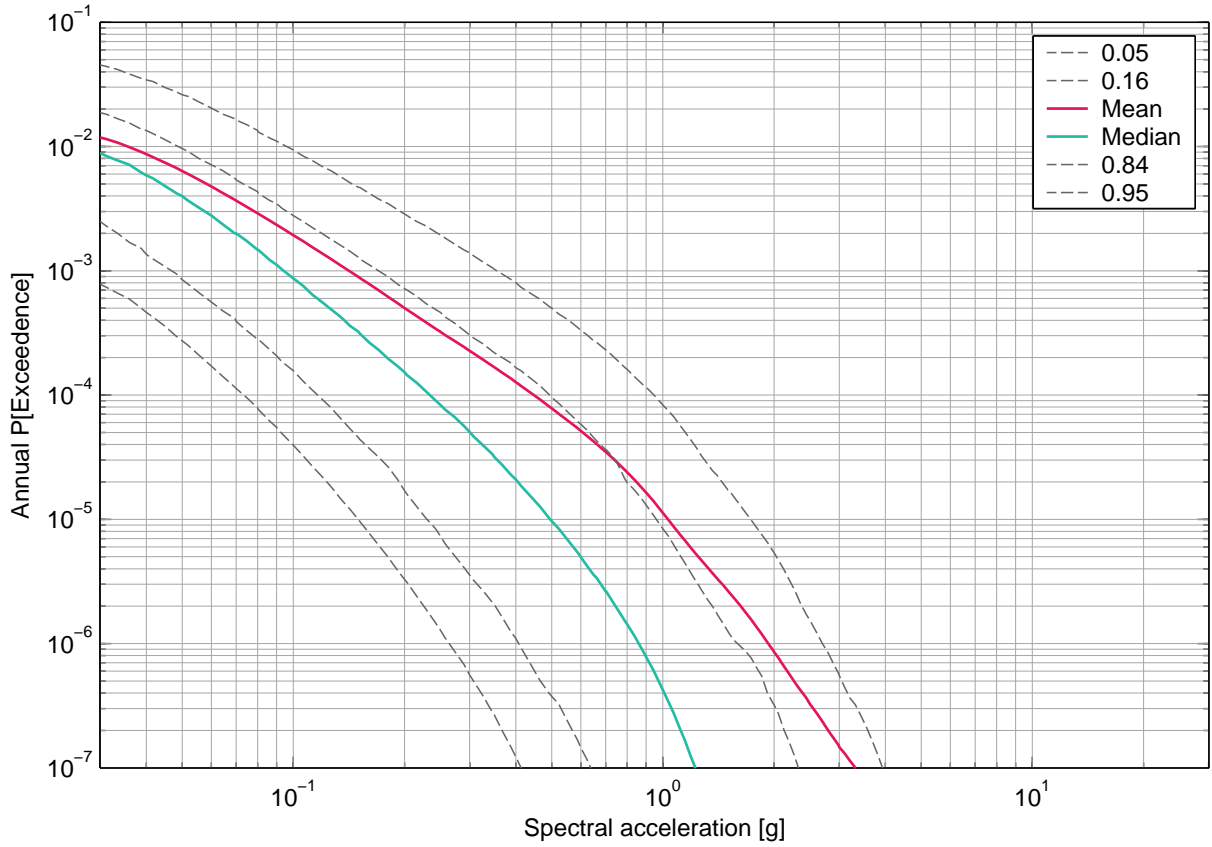


Fig. 5-13.7: Mühleberg, vertical component, soil, -14 m, mean hazard and fractiles, 33 Hz.

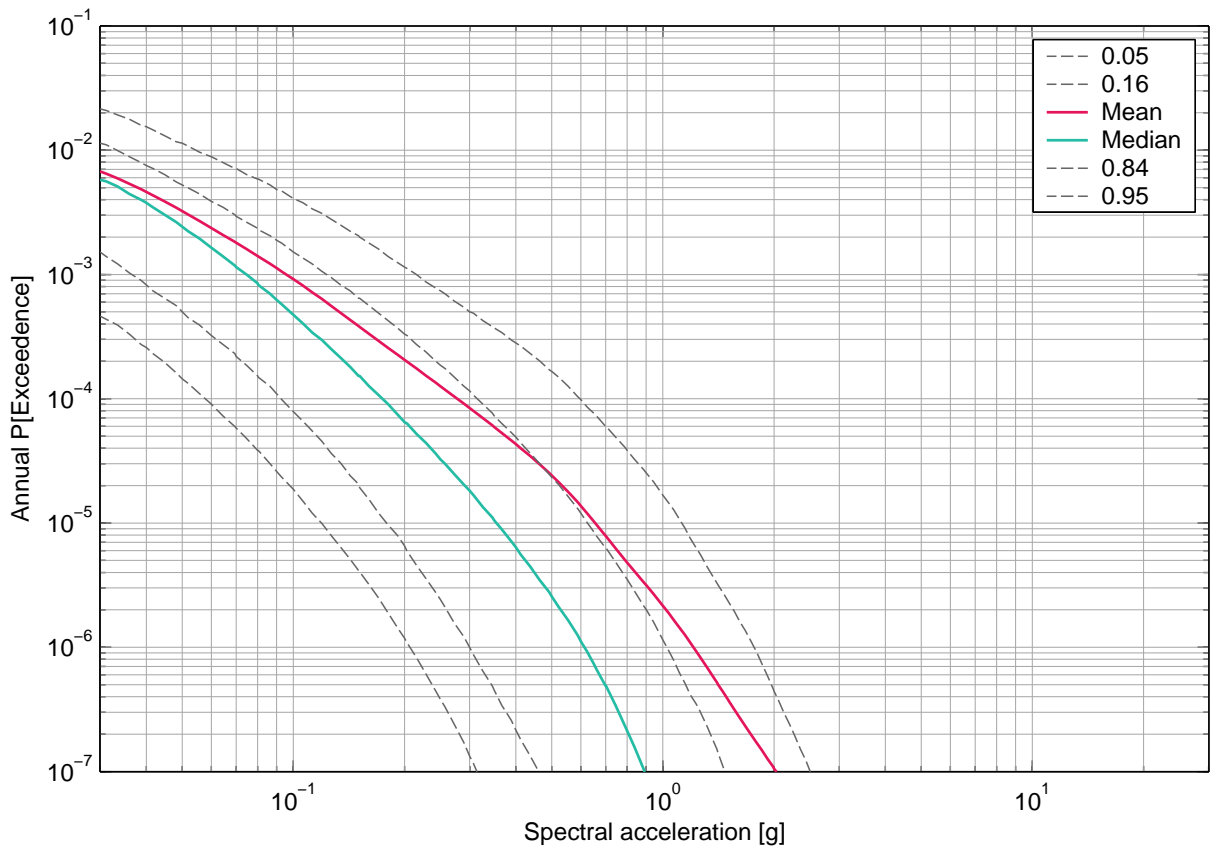


Fig. 5-13.8: Mühleberg, vertical component, soil, -14 m, mean hazard and fractiles, 50 Hz.

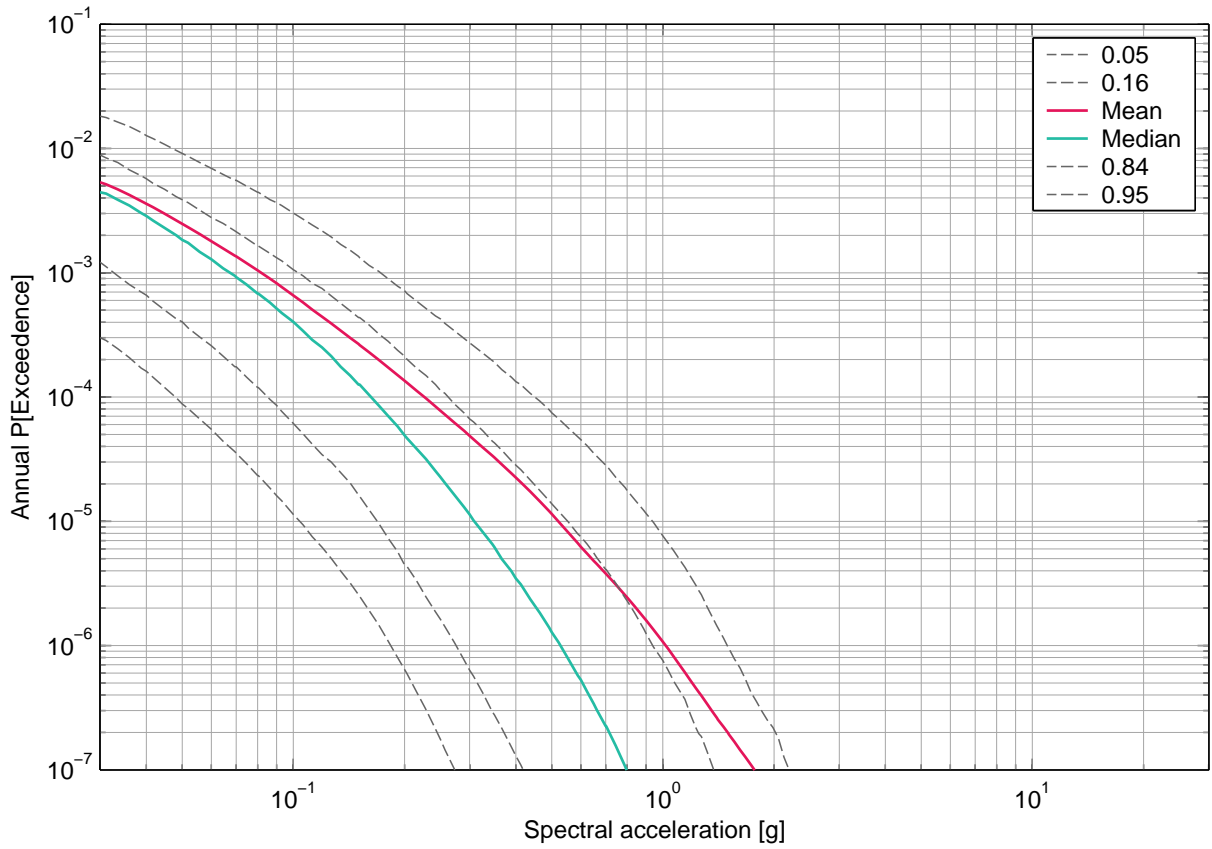


Fig. 5-13.9: Mühleberg, vertical component, soil, -14 m, mean hazard and fractiles, PGA.

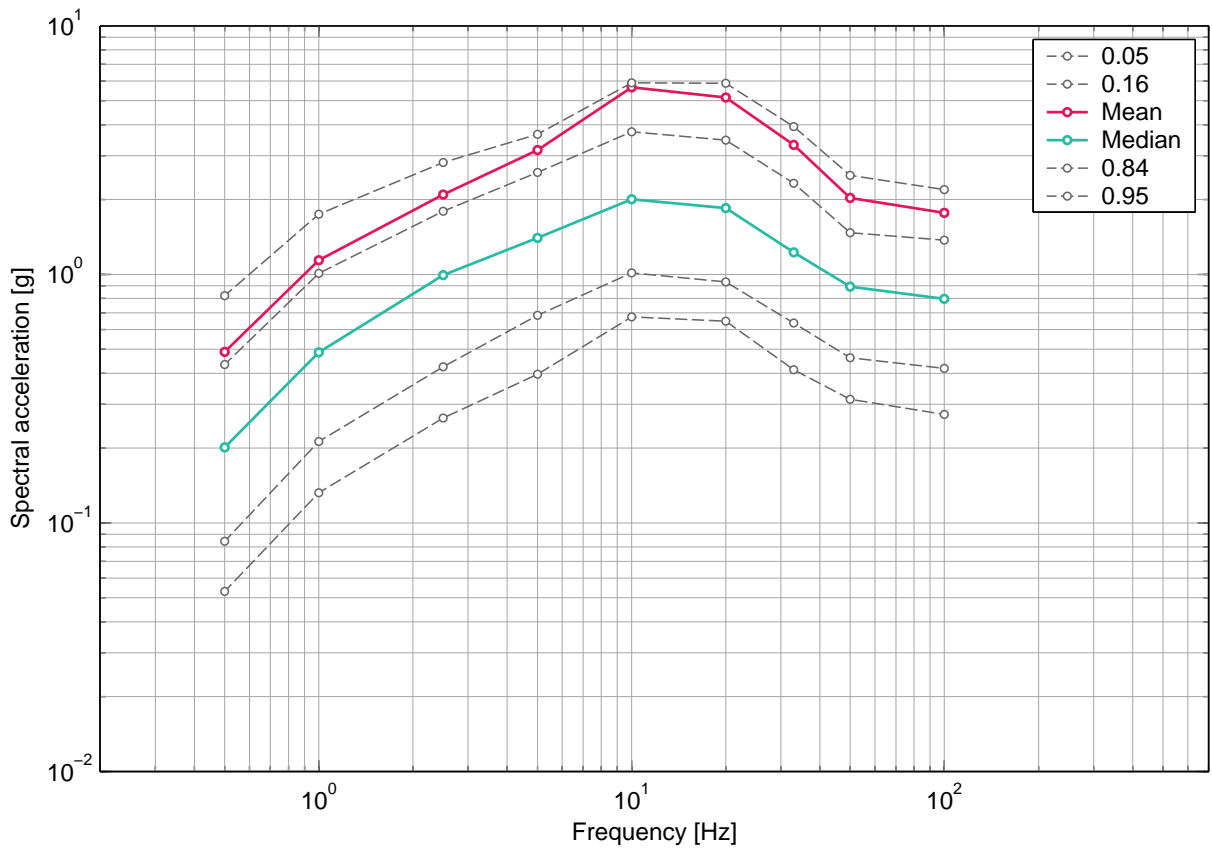


Fig. 5-13.10: Mühleberg, vertical component, soil, -14 m, uniform hazard spectra for an annual probability of exceedence of 1E-07 and 5% damping.



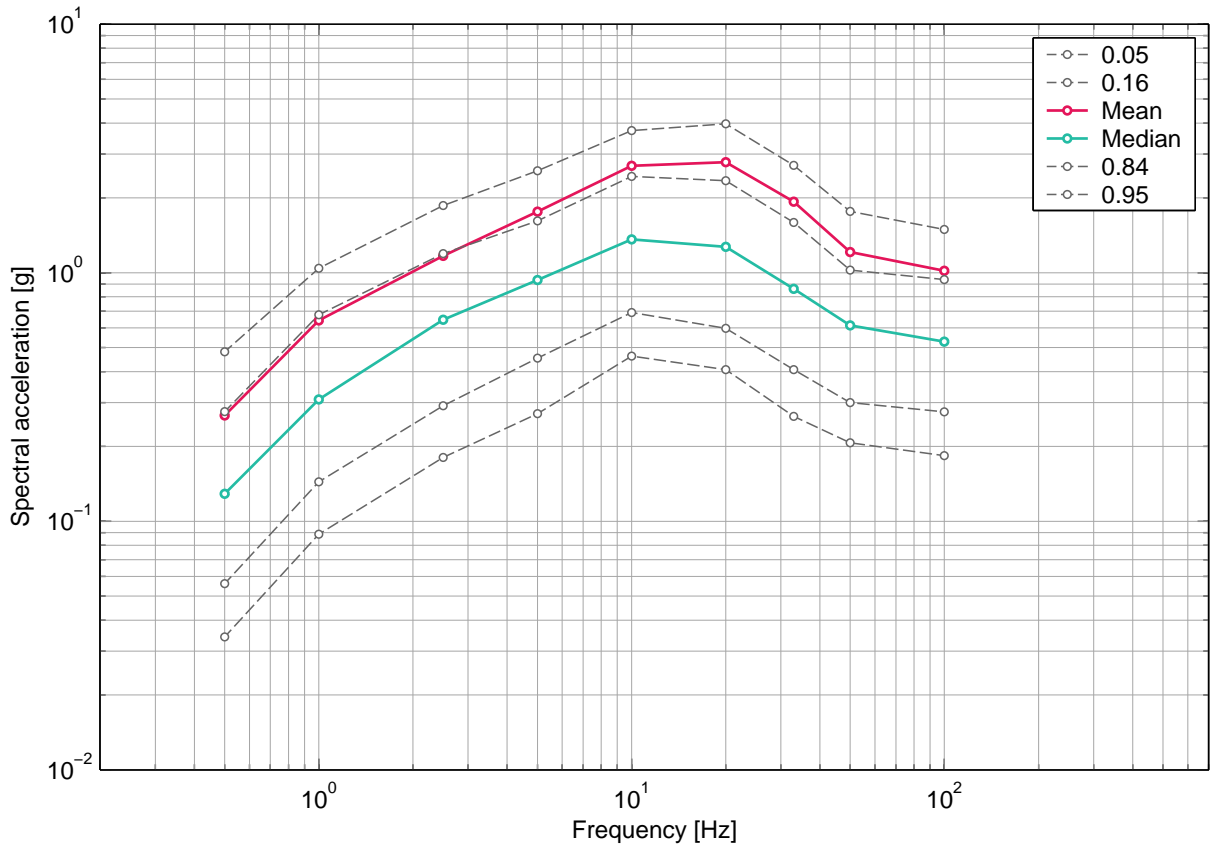


Fig. 5-13.11: Mühleberg, vertical component, soil, -14 m, uniform hazard spectra for an annual probability of exceedence of 1E-06 and 5% damping.

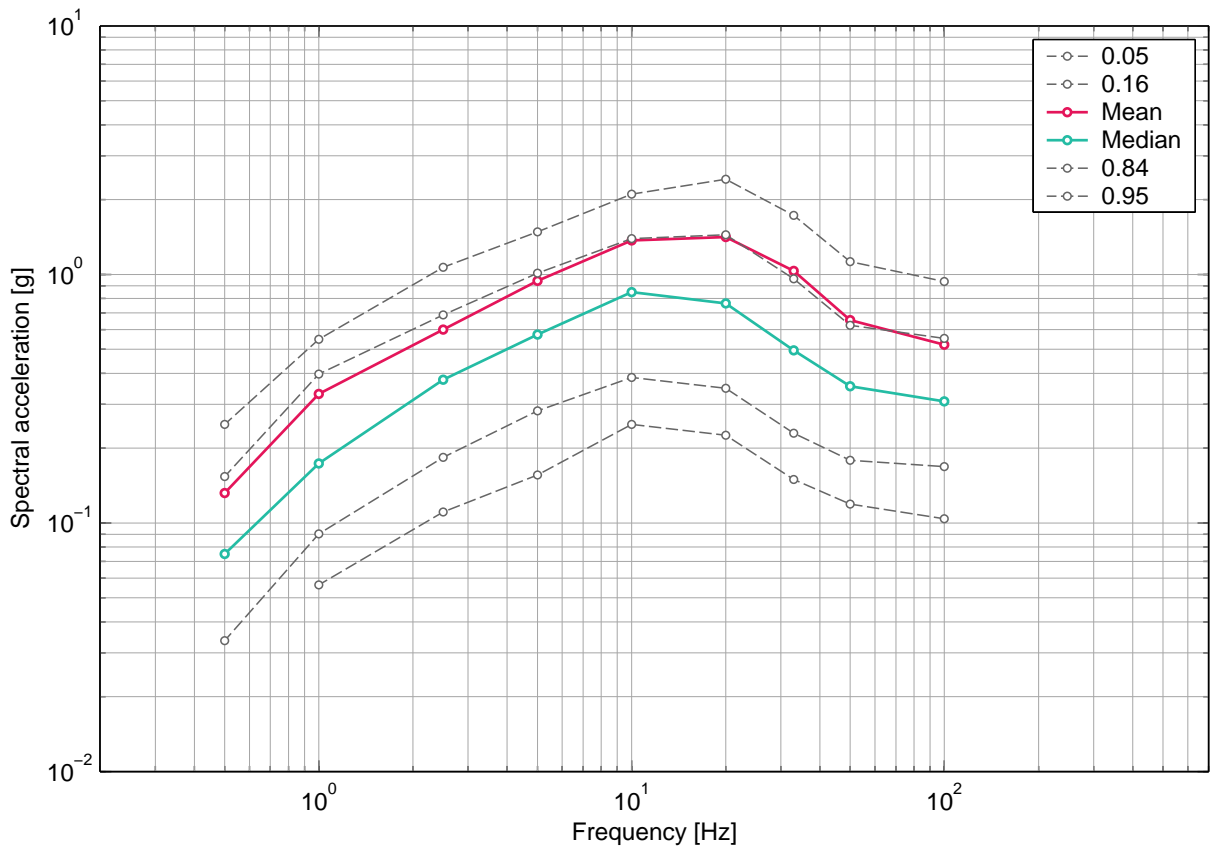


Fig. 5-13.12: Mühleberg, vertical component, soil, -14 m, uniform hazard spectra for an annual probability of exceedence of 1E-05 and 5% damping.

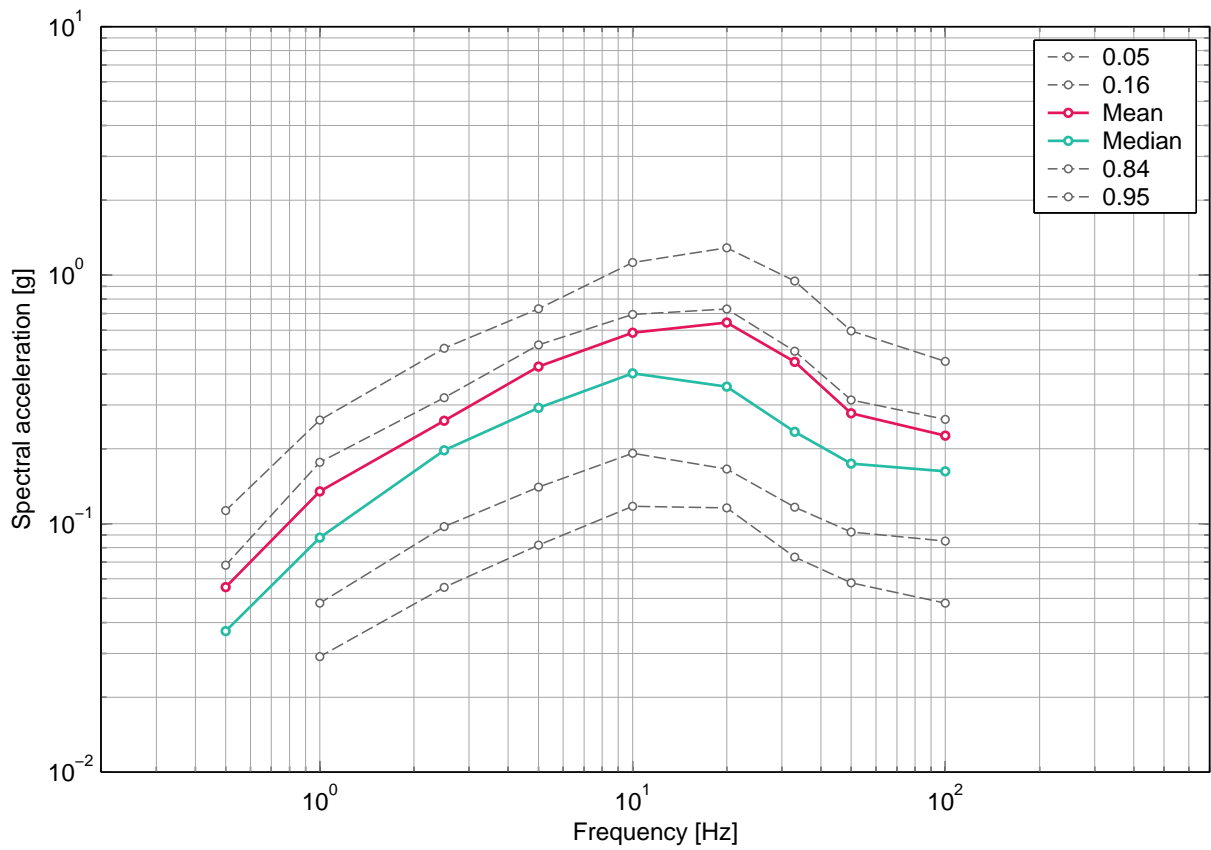


Fig. 5-13.13: Mühleberg, vertical component, soil, -14 m, uniform hazard spectra for an annual probability of exceedence of 1E-04 and 5% damping.

## APPENDIX 1

## CONTROLLING EARTHQUAKES

**A1 Beznau**

GM level	Frequency	Distance	Magnitude
0.05 g	0.5 Hz	2.5 km	5.95
0.05 g	PGA	12.5 km	5.05
0.15 g	5 Hz	7.5 km	5.05
0.15 g	PGA	2.5 km	5.35
0.3 g	0.5 Hz	2.5 km	6.95
0.3 g	PGA	2.5 km	5.95
0.5 g	5 Hz	2.5 km	5.95
0.7 g	PGA	2.5 km	6.45
1.0 g	5 Hz	2.5 km	5.95

**A2 Gösgen**

GM level	Frequency	Distance	Magnitude
0.05 g	0.5 Hz	2.5 km	5.95
0.05 g	PGA	12.5 km	5.05
0.15 g	5 Hz	7.5 km	5.15
0.15 g	PGA	7.5 km	5.45
0.3 g	0.5 Hz	2.5 km	6.95
0.3 g	PGA	2.5 km	5.95
0.5 g	5 Hz	2.5 km	5.95
0.7 g	PGA	2.5 km	6.95
1.0 g	5 Hz	2.5 km	6.45

**A3 Leibstadt**

GM level	Frequency	Distance	Magnitude
0.05 g	0.5 Hz	7.5 km	5.95
0.05 g	PGA	12.5 km	5.05
0.15 g	5 Hz	12.5 km	5.35
0.15 g	PGA	7.5 km	5.45
0.3 g	0.5 Hz	2.5 km	6.45
0.3 g	PGA	2.5 km	5.95
0.5 g	5 Hz	2.5 km	5.95
0.7 g	PGA	2.5 km	6.45
1.0 g	5 Hz	2.5 km	5.95

**A4 Mühleberg**

GM level	Frequency	Distance	Magnitude
0.05 g	0.5 Hz	7.5 km	5.95
0.05 g	PGA	12.5 km	5.05
0.15 g	5 Hz	7.5 km	5.05
0.15 g	PGA	7.5 km	5.45
0.3 g	0.5 Hz	2.5 km	6.95
0.3 g	PGA	2.5 km	5.45
0.5 g	5 Hz	7.5 km	5.95
0.7 g	PGA	2.5 km	6.95
1.0 g	5 Hz	2.5 km	6.45

Distance and magnitude values are the centers of smaller bins (5 km x 0.1 magnitude unit) than those used for the deaggregation figures.