



Contribution ID: 5

Type: **not specified**

LGWA Soundcheck E-Box. Requirements, Design and Legacy from the Insight E-Box

We present a preliminary assessment of the required and expected performances for the LGWA Soundcheck sensor acquisition electronics (LGWA Soundcheck E-Box). The most stringent requirements come from sensing noise performances and power consumption. We discuss the current assumptions and the projected performances based on the legacy from the Insight E-Box and the LISA Pathfinder GRS FEE. The current analysis shows we are able to deliver noise performances well below $1 \text{ uV/Hz}^{(1/2)}$, corresponding to $\sim 1 \text{ pm/Hz}^{(1/2)}$ in the frequency band of interest for LGWA Soundcheck. The projected power consumption is expected to be below 4-5 W during science operations.

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Session Classification: Payload