Battery Noise Assessment

Battery Box Ltd.

Prepared by:

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Table of Contents

Tables in Text

1.0 Introduction

This Report tests noise mitigation for a ‘Battery Box’ with the Original Equipment Manufacturer (OEM) being Huawei.

The Report is structured as follows:

- A description of the Battery Box Noise Sources.
- Noise Model Predictions.

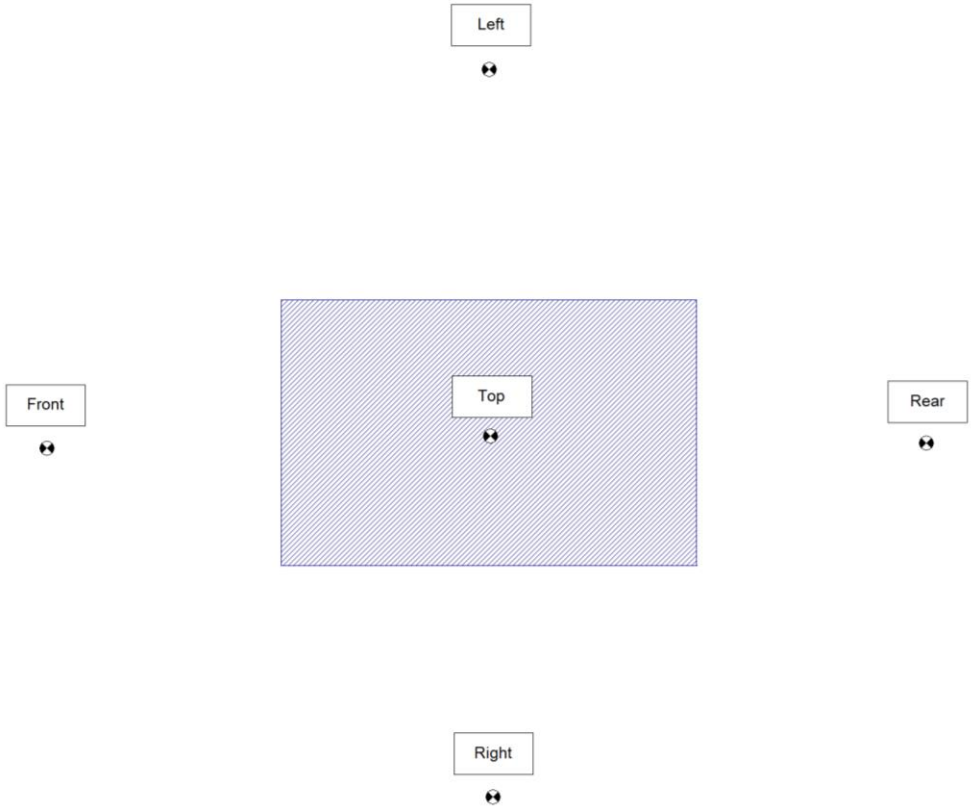
The information provided in this Report may be used to indicate the specific noise level that may be expected at the nearest Noise Sensitive Receptors to the Site.

2.0 Noise Sources

2.1 Unit Battery Configuration

Sound levels of the battery were measured by Huawei Digital Power Technologies Co Ltd., with testing conducted at a height of 1.5 meters above the ground, at approximately 1 meter from source across five designated locations around the unit, as shown in Figure 2-1.

Figure 2-1: Measurement Locations[1]



The sound data provided at each monitoring position can be seen in Table 2-1.

[1] Note no location 5

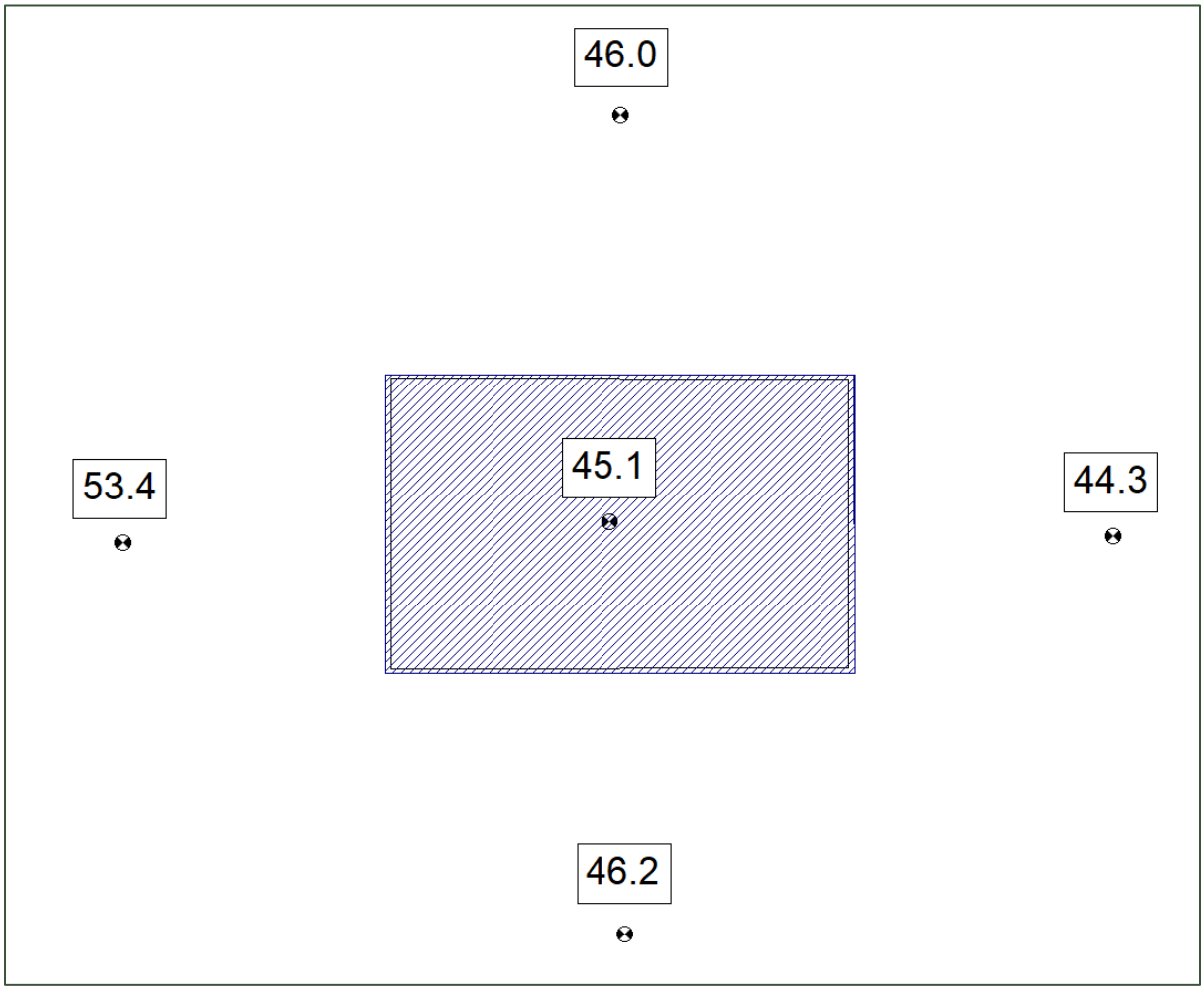
Table 2-1: Sound Power Data Full Charge

Ambient Temp. (°C)	Front (1m) dB	Rear (1m) dB	Left (1m) dB	Right (1m) dB	Top (1m) dB
25	53.4	45.2	46.6	45.6	45.1
Note: The instrument height level is 1.5m, and the distance from the cabinet is 1m.					

SLR has developed a noise model of the battery, using CadnaA software. The sound data in Table 2-1 has been included in the model.

Figures 2-2 details the battery in CadnaA.

Figure 2-2: CadnaA Output $L_{Aeq,T\ dB}$ (25 Degrees, 1m from Source)



The layout of one and four batteries can be seen in Figures 2-3 and 2-4.

Figure 2-3:Battery View in Noise Model

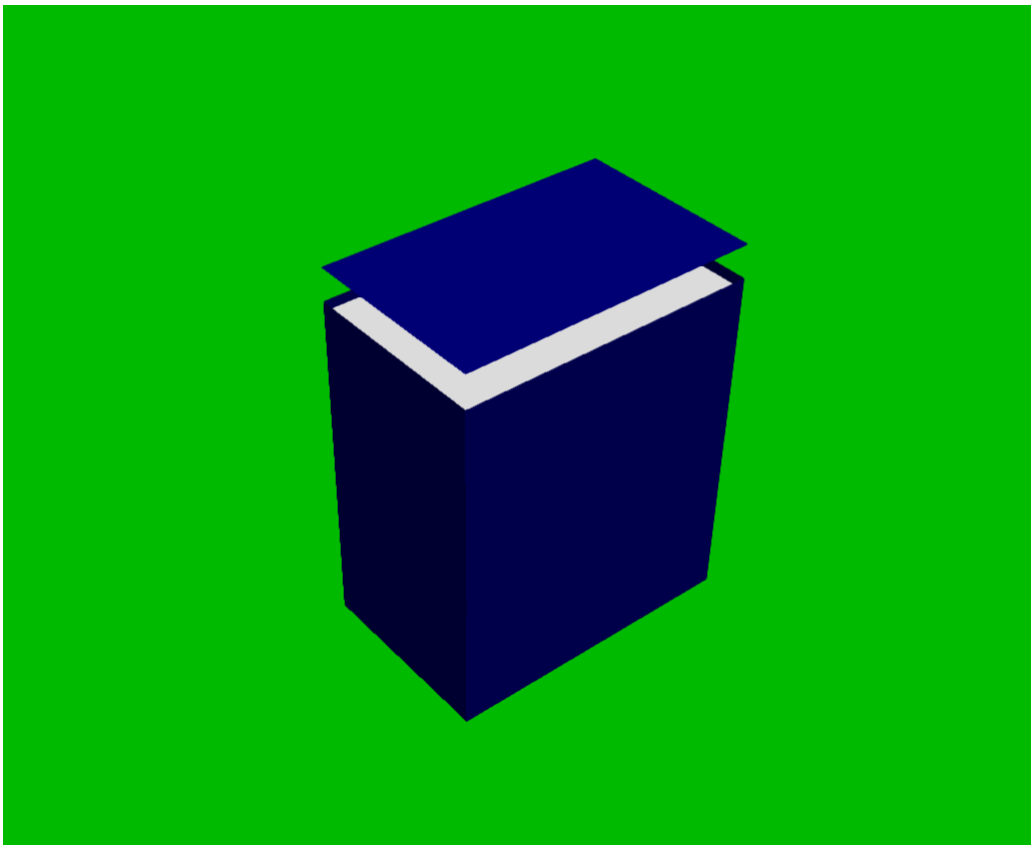
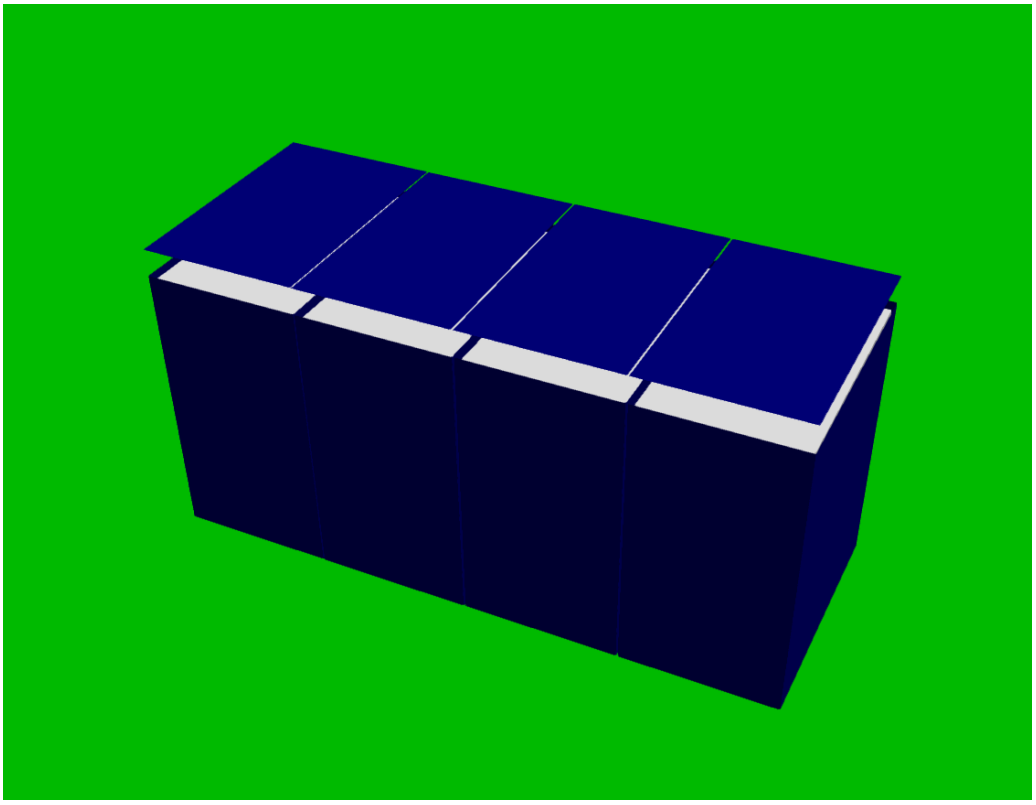


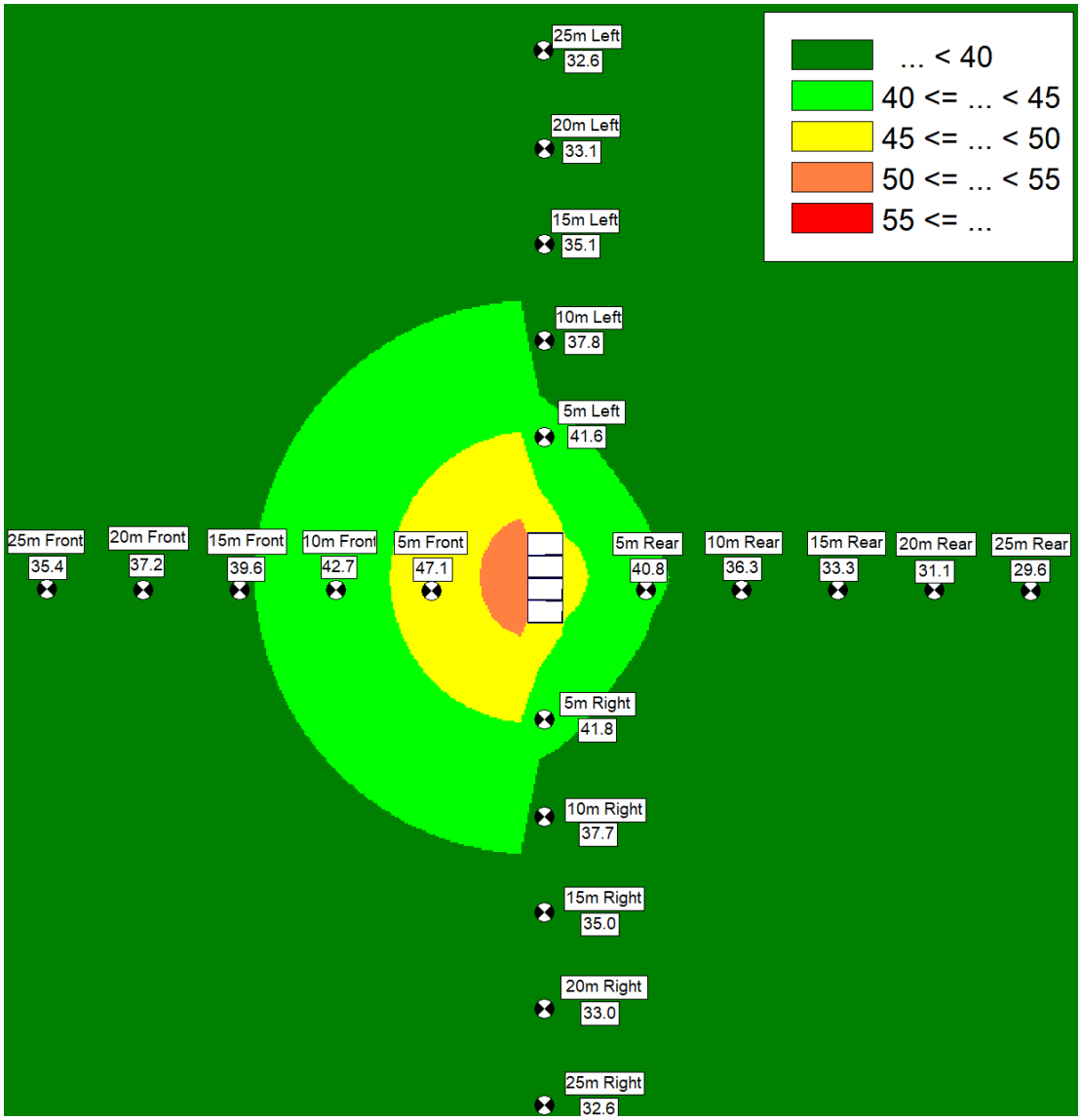
Figure 2-4: Battery (Four Units) View in Noise Model



3.0 Noise Model Predictions for Four Units

With four batteries in situ, the calculated sound level up to 25m way can be seen in Figure 3-1. In this section, all receivers have been set at a height of 4m to represent a first-floor window.

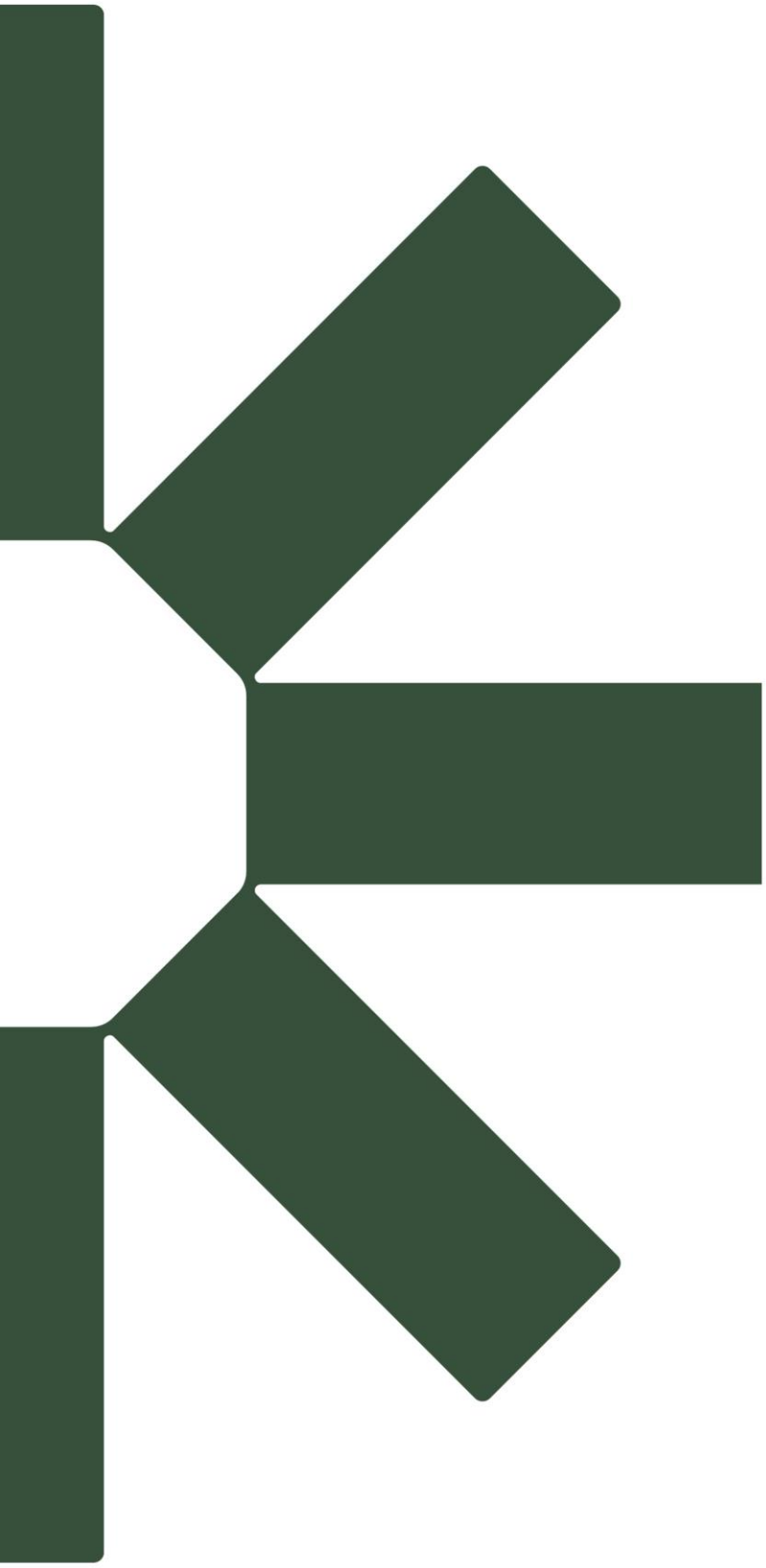
Figure 3-1: CadnaA Output $L_{Aeq,T\ dB}$ (25 Degrees, 5 - 25m from Source)



The results are tabulated in Table 3-1.

Table 3-1: CadnaA Output $L_{Aeq,T\ dB}$ (25 Degrees, 5 - 25m from Source) Data

Aspect	Distance From Source				
	5M	10M	15M	20M	25M
	L_{Aeq}, dBA				
Front	47.1	42.7	39.6	37.2	35.4
Left	41.6	37.8	35.1	33.1	32.6
Right	41.8	37.7	35.0	33.0	32.6
Rear	40.8	36.3	33.3	31.1	29.6



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