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# ABBI DEVICE DATASHEET

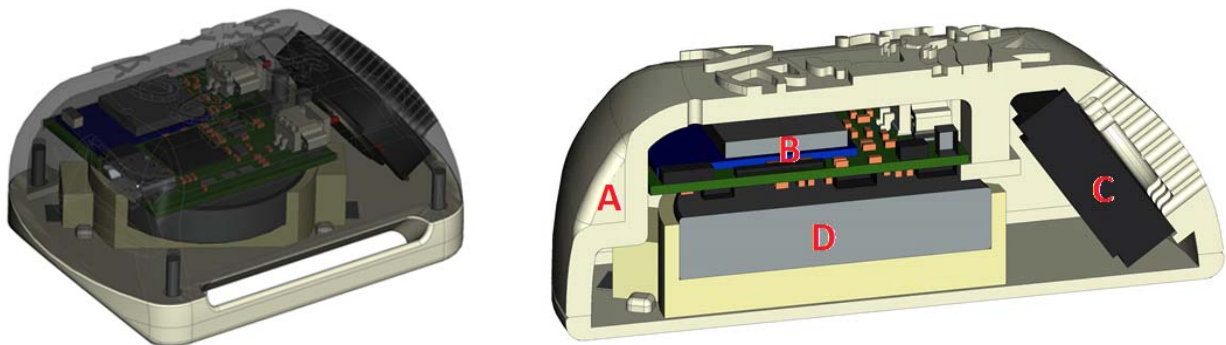
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## MAIN CHARACTERISTICS

Item	Specification
Enclosure Dimension	Dimension: 50 x 35 x 25 mm (length x width height)
Enclosure Material	Opaque photopolymer material (VeroWhite, Stratasys) or Clear bio-compatible Objet FullCure <sup>®</sup> 360
Weight	28 grams (including battery)
Microcontroller	Ultra Low-power ARM <sup>®</sup> -based Cortex <sup>®</sup> M3 (STM32L151QDH6, ST Microelectronics)
Memory	2 x 8-MB Flash memory (S25FL064P, Spansion).
Wireless connectivity	Bluetooth Low-Energy module (BLE113-A, Bluegiga Technologies)
Motion sensors	3 axis gyroscope (A3G4250D, ST Microelectronics) and 6 axis accelerometer/magnetometer combo (LSM303D, ST Microelectronics)
Audio amplifier	Class-D amplifier (SSM2305, Analog Devices). Output: 0.5 W, 8 ohm.
Speaker dimension	Dimension 15 x 24 mm, 8 ohm impedance, rated power 0.8 W (max 1.4 W)
Battery	Coin cell LIR 2450, rechargeable lithium-ion, 3.6 volt, 120 mAh.

## DRAWING

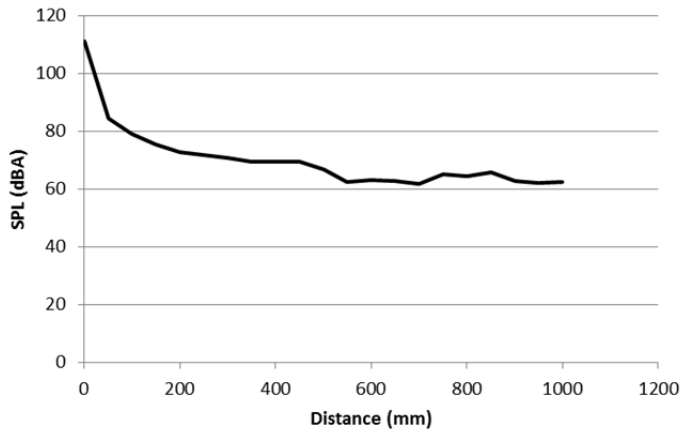


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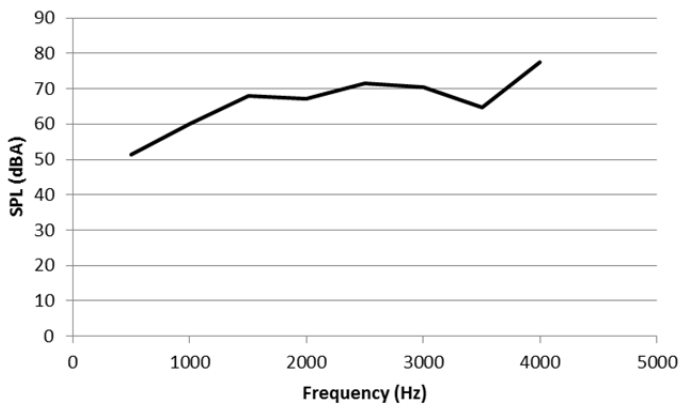
Schematic representation of the ABBI device. A: enclosure; B: electronic circuit; C: speaker; D: battery.

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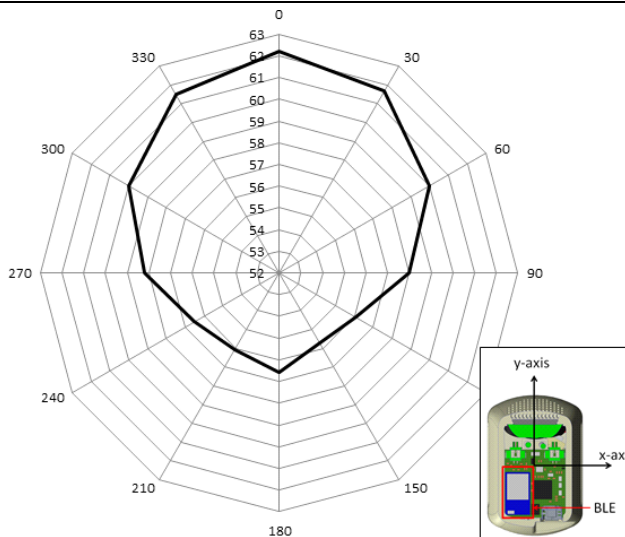
## SOUND LEVEL PRESSURE MEASUREMENTS



SPL produced by a 1kHz sinusoidal tone measured at different distances with volume set at maximum level. SPL was measured in an anechoic chamber.

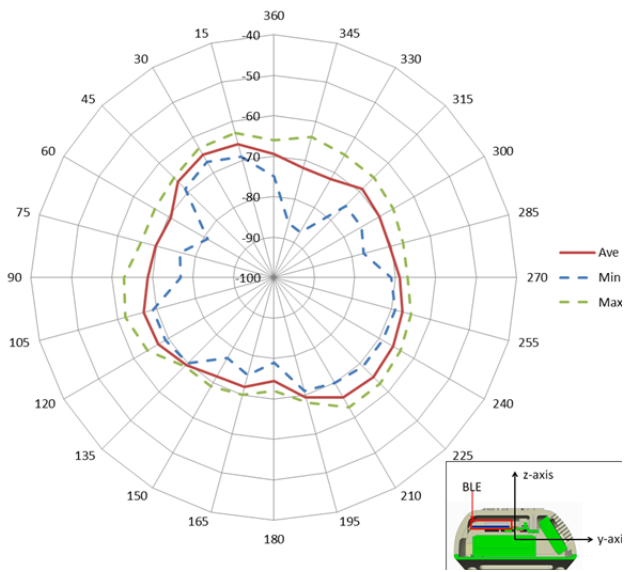


SPL produced by a sinusoidal tone measured at different frequencies with volume set at maximum level. SPL was measured at one meter of distance in an anechoic chamber.

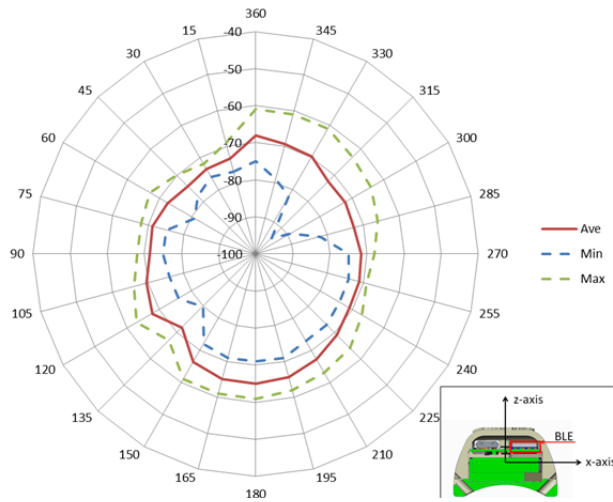


Spatial sound distribution. SPL produced in the XY plane by a 1kHz sinewave at different angles relative to the speaker direction with maximum volume. SPL was measured at one meter of distance in an anechoic chamber.

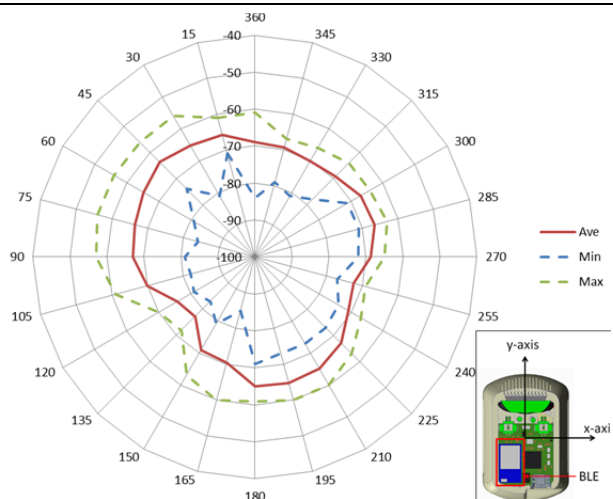
# SIGNAL STRENGTH



YZ plane



XZ plane



XY plane

The RSSI (Received Signal Strength Indicator) was measured in an open space with the nearest obstacle at about 5 m from the setup. The receiver was a BLE USB dongle (BLED112, Bluegiga) placed at 1 m distance.