



soberton inc.

# SP DYNAMIC SPEAKER UNIT

Acoustic Product Specification

Product Number: SP-1504-16



Release | Revision: D/2018

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## Dynamic Speaker Electroacoustic Characteristics

### Sound Pressure Level

93±3dB SPL @0.8, 1.0, 1.5 and 2.0KHz in average (0dB SPL=20µPa)  
Measuring Condition: 0.5W (Sine wave) 10cm measured with baffler shown in Fig.1.

### Frequency Response Curve

As shown in Figure 2

### Response Frequency

1000±20%Hz @ 1V. (Without Baffler)

### Input Power (Nominal and Maximum)

Rated Noise Power 0.5W

Short Term Max Power: 0.8W must be normal at a white noise (1W, F0 ~ 20KHz) for one minute

### Operation Test

Must be free audible noise (buzzes and rattles)

(3K ~ 5KHz frequency range, input level up to 2.0 Vrms)

### Distortion

Less than 10% @1KHz, 0.1M, 0.5W frequency range, input level up to 2.0Vrms

## General Specifications

### Operating Temperature Range

-20°C~+60°C

### Standard Test Conditions

Temperature 17°C~25°C

Relative Humidity 45%~80%(RH)

### AC Impedance

8±15%Ω (@2KHz 1V) without baffler

### Dimension

Ø15.0x5.7mm + WIRE (35mm) UL1571/AWG28# + Connector equ. to JST XHP-2 (2P=2.5mm)

### IP Level

IP50



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## Reliability Tests

The sound pressure as specified will neither deviate more than  $\pm 3\text{dB}$  from the initial value, nor have any significant damage after any of following testing.

### High Temperature Test

High Temperature  $+60\pm 2^\circ\text{C}$

Duration 96 hours

### Low Temperature Test

Low Temperature  $-20\pm 2^\circ\text{C}$

Duration 96 hours

### Heat Shock Test

High Temperature  $+60\pm 2^\circ\text{C}$

Low Temperature  $-20\pm 2^\circ\text{C}$

Changeover Time  $< 30$  seconds

Duration 1 hour

Cycle 100

### Humidity Test

Temperature  $+ 40\pm 2^\circ\text{C}$

Relative Humidity 90%~95%

Duration 96 hours

### Temperature Cycle Test

Temperature  $-20^\circ\text{C}$   $+60^\circ\text{C}$

Duration 45 minutes 45 minutes

Temperature gradient  $1\sim 3^\circ\text{C}/\text{min}$

Cycle 25

### Drop Test

Mounted with dummy set mass 100 g

Height 1.5 m

Cycle 6 (1 each plain) onto the concrete board

### Load Test

Speaker mode: White noise (EIA filter) for 96 hours @ 0.5W input power.



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## Measuring Method (Speaker Mode)

### Standard Test Condition

Temperature 15 ~ 35°C

Relative humidity 45% ~ 85%

Atmospheric pressure 860mbar to 1060mbar

### Standard Test Fixture

Input Power 0.5W

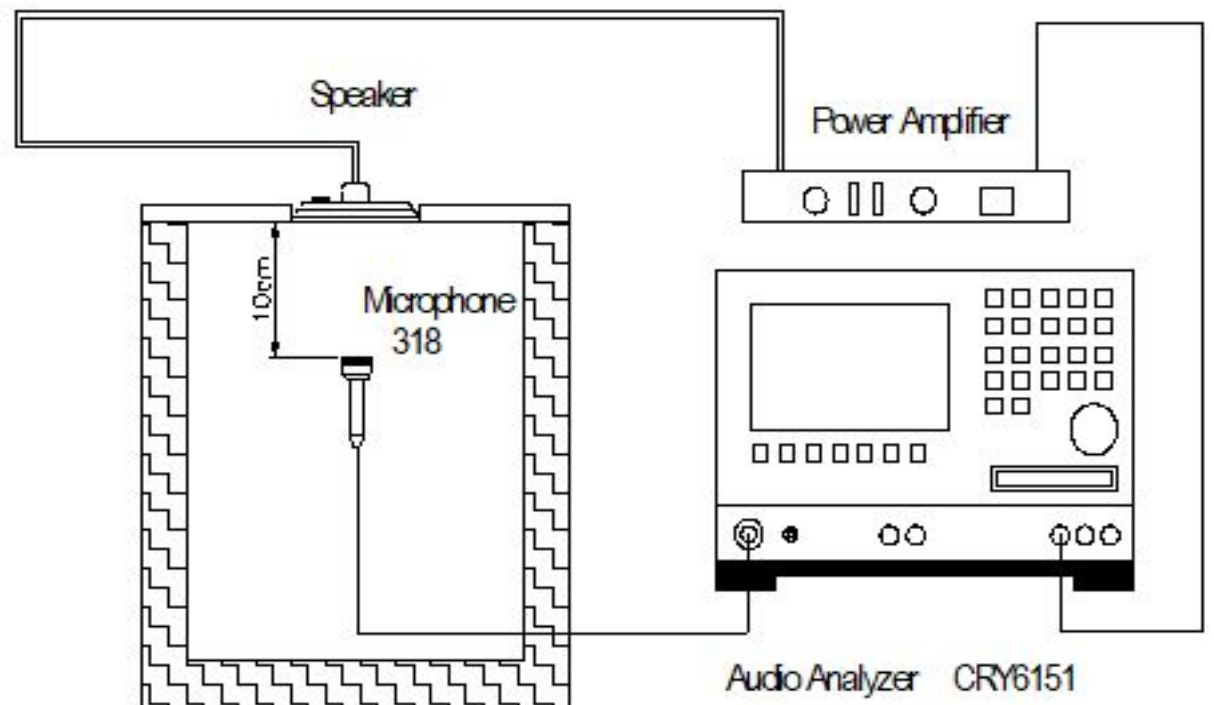
Zero Level -dB

Mode TSR

Potentiometer Range 50dB

Sweep Time 0.5sec

## Standard Test Condition of Speaker (Fig. 1)





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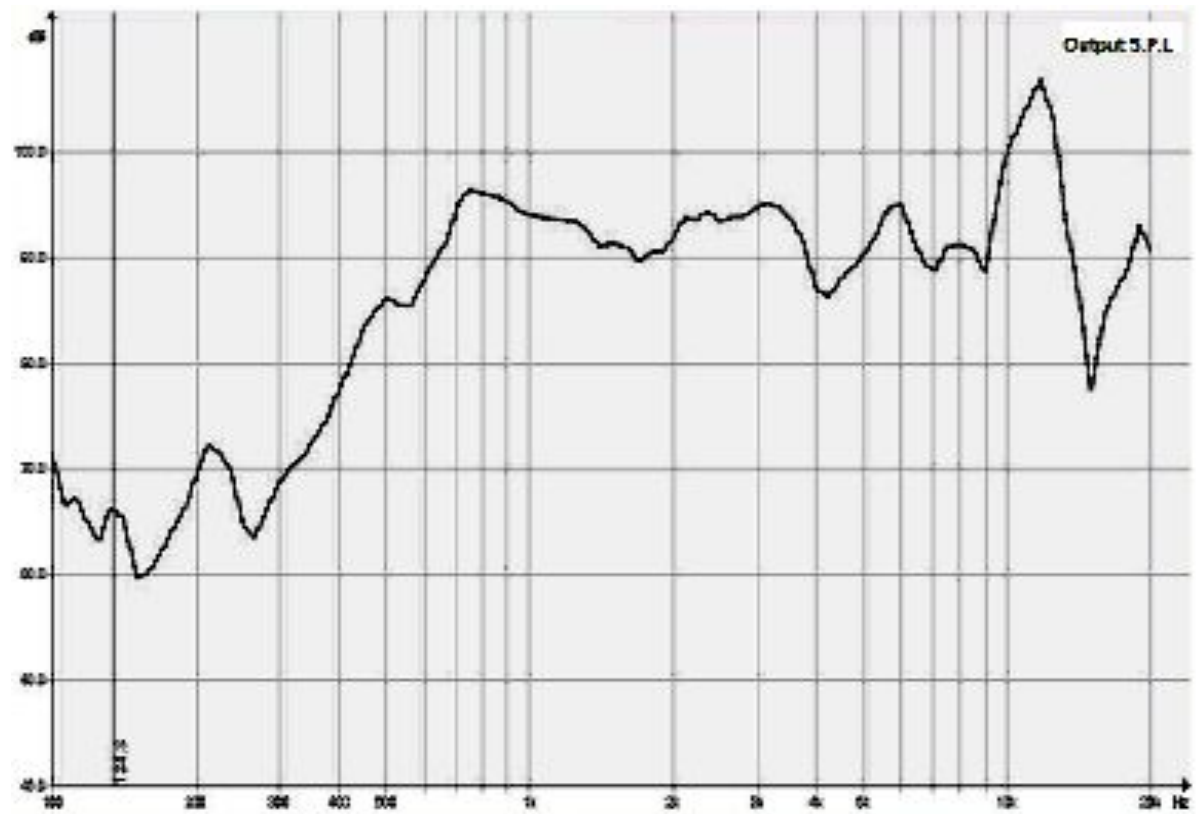
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### Frequency Response Curve (Fig. 2)





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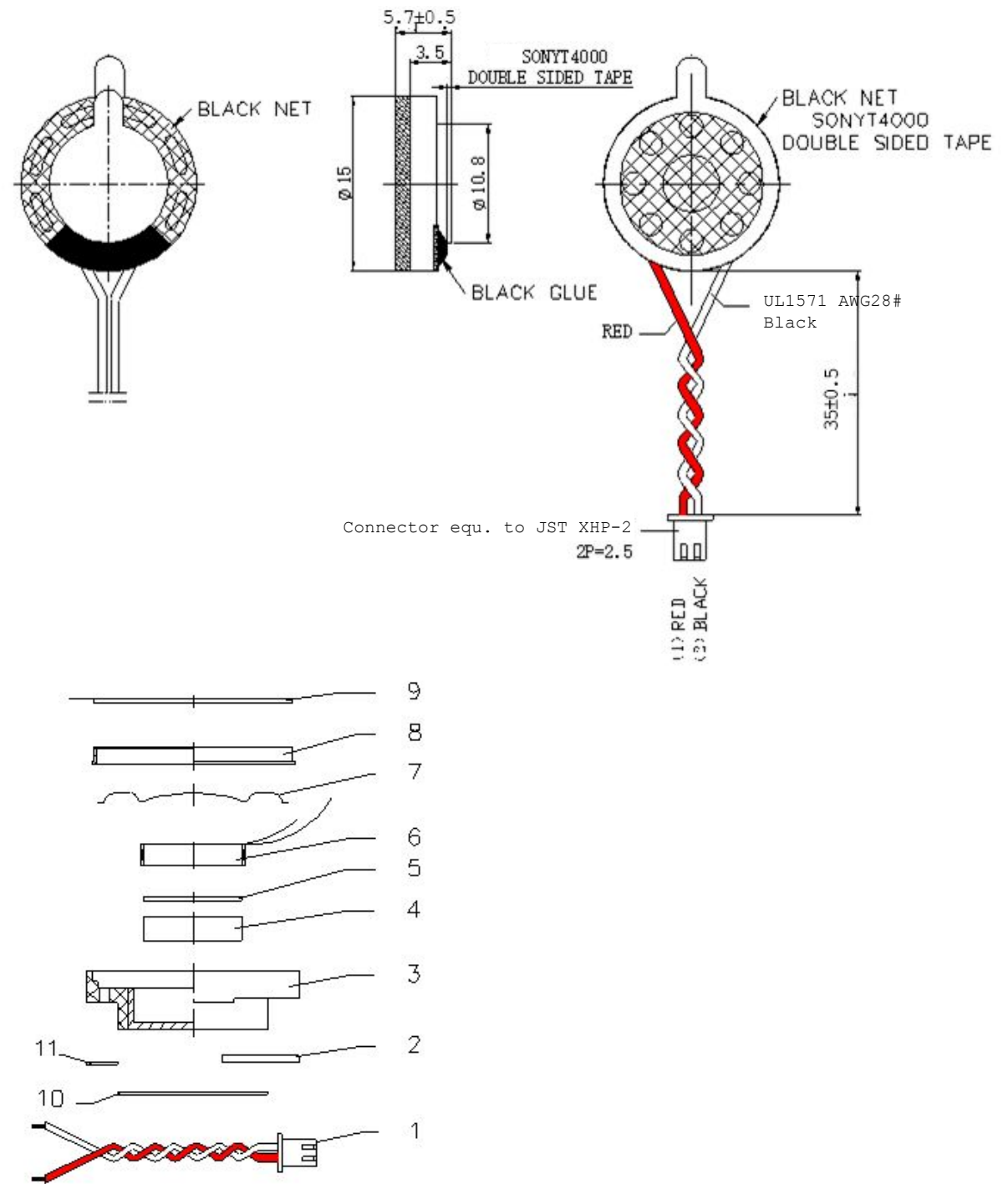
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## Dimensions

Tolerance:  $\pm 0.5$  (unit: mm)



| No. | Part Name     | Material                     | Quantity |
|-----|---------------|------------------------------|----------|
| 1   | Wire          | UL1571/AWG28#                | 2        |
|     | Connector     | equ. to JST XHP-2 (2P=2.5mm) | 1        |
| 2   | PCB           | FR-4                         | 1        |
| 3   | Frame         | PBT                          | 1        |
| 4   | Magnet        | Nd Fe B-N42                  | 1        |
| 5   | Plate         | SPCC                         | 1        |
| 6   | Voice Coil    | Copper                       | 1        |
| 7   | Membrane      | PEN                          | 1        |
| 8   | Cap           | SUS304                       | 1        |
| 9   | Screen Gasket | Black Net                    | 1        |
| 10  | Gasket        | SONY T4000 Double Sided Tape | 1        |
| 11  | Damping Net   | Black Net                    | 1        |



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