

# MESSRS.

## SPECIFICATION FOR APPROVAL

### 承 認 書

|                   |                 |
|-------------------|-----------------|
| Product           | DYNAMIC SPEAKER |
| Part No.          | AK-203205-MM-1  |
| Customer Approval |                 |
| Customer Part No. |                 |

|                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Approved By                                                                         | Checked By                                                                          | Made By                                                                               |
|  |  |  |



**Advanced Acoustic Technology Corporation**

**昊宸股份有限公司 // 常州笠翔电子有限公司**



ISO 9001 Certified

ISO 14001 Certified



**RoHS**

## 1. SPECIFICATION

AK-203205-MM-1

| ITEM |                            | SPECIFICATIONS                                                                                                |                              |
|------|----------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------|
| 01   | Type                       | Dynamic speaker                                                                                               |                              |
| 02   | Dimension                  | External diameter 20mm                                                                                        |                              |
| 03   | Rated Input Power          | 0.5 W                                                                                                         |                              |
| 04   | Max. Input Power           | 0.8 W for 1 minute                                                                                            |                              |
| 05   | Impedance                  | $32\Omega \pm 15\%$ at 2KHz 1V                                                                                |                              |
| 06   | Resonance Frequency (Fo)   | 700Hz $\pm 20\%$ at Fo, 1V                                                                                    |                              |
| 07   | Sound pressure level       | 91dB(0.5W/0.1M) $\pm 3$ dB                                                                                    | at AVE 0.8,1.0, 1.2, 1.5KHz. |
| 08   | Frequency Range            | Fo – 20 K Hz                                                                                                  |                              |
| 09   | Total Harmonics Distortion | Max 10 % at 1 KHz,0.1 W.                                                                                      |                              |
| 10   | Magnet                     | Rare earth permanent (Nd Fe B ) magnet                                                                        |                              |
| 11   | Weight                     | 2.2g $\pm 0.7$ g                                                                                              |                              |
| 12   | Appearance                 | Should not exist any obstacle to be harmful to normal operation; damages, cracks, rusts and distortions, etc. |                              |
| 13   | Operation Test             | Must be normal at program source 0.5W                                                                         |                              |
| 14   | Buzz, Rattle, etc.         | Should not be audible at 4.0V sine wave between Fo to 2KHz                                                    |                              |
| 15   | Polarity                   | When positive voltage is applied to the terminal marked (+), diaphragm should move to the front.              |                              |
| 16   | Terminal Strength          | Capable of withstand 1kg load for 15 seconds without resulting in any damage or rejection.                    |                              |
| 17   | Temperature                | Operating temperature: -20°C to +60°C<br>Storage temperature: -20°C to +60°C                                  |                              |

RoHS

## 2. MEASURING METHOD

### 2-1 .Test Condition

#### STANDARD

Temperature : 15 ~ 35°C

Relative humidity: 45% ~ 85%,

Atmospheric pressure: 860mbar to 1060mbar.

#### JUDGEMENT

Temperature : 20±3°C

Relative humidity: 60% ~ 70%,

Atmospheric pressure: 860mbar to 1060mbar

### 2-2. Standard Test Fixture

1. Input Power: 0.5W ( 4.0V)

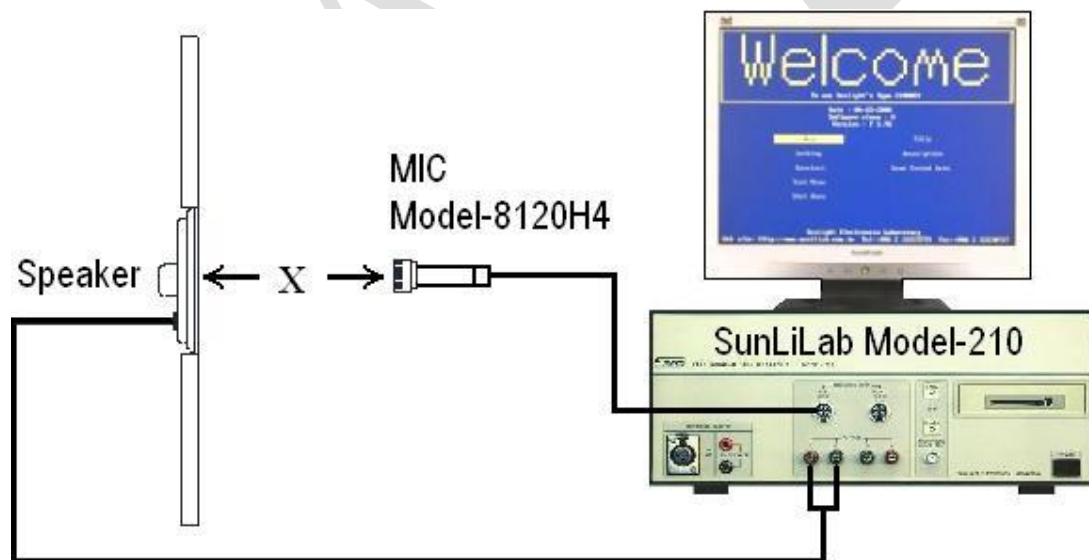
2. Zero Level : -dB

3. Mode: SPEAKER

4. Potentiometer Range: 50dB

5. Sweep Time: 0.5sec

6. Distance: X=10 cm

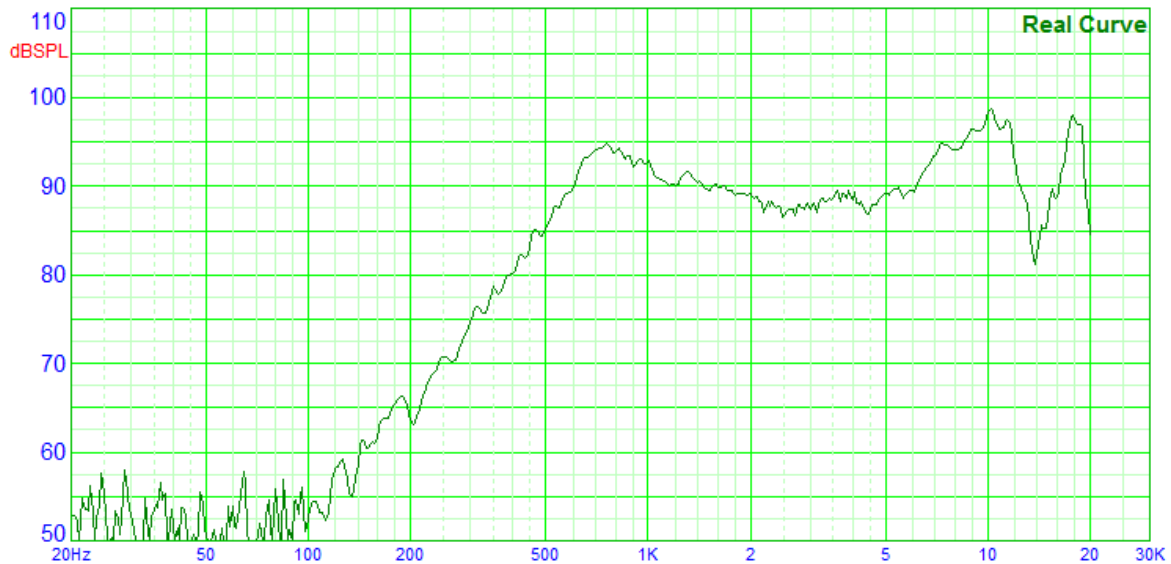


Standard Baffle Recommended  
In IEC 268-5 Where 1350mm x 1650mm

## 2-3. Frequency Response Curve

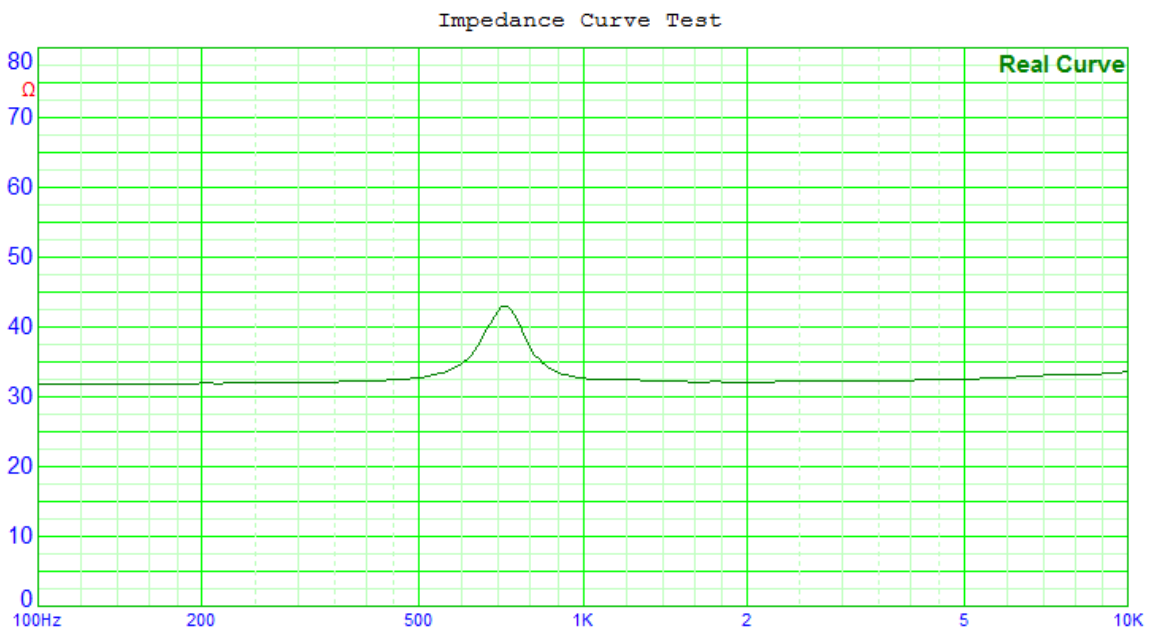
Type 2100S [Test Menu] Frequency Response Curve Test (Left)  
Firm:001 Object:TESTSPK 2100S F 2.40 09-09-2016 16:18:30  
1000Hz Sens.= 92.9dB SPL Pass F.R.: Pass DCR: 31.4Ω Pass  
Step Size:1/48 Oct.

Frequency Response Test Att. @ +0dB  
Test distance: .10M  
Voltage applied for F.R. =4000.0mV Start F. = 20Hz Stop F. =20000Hz  
F.R. check: None

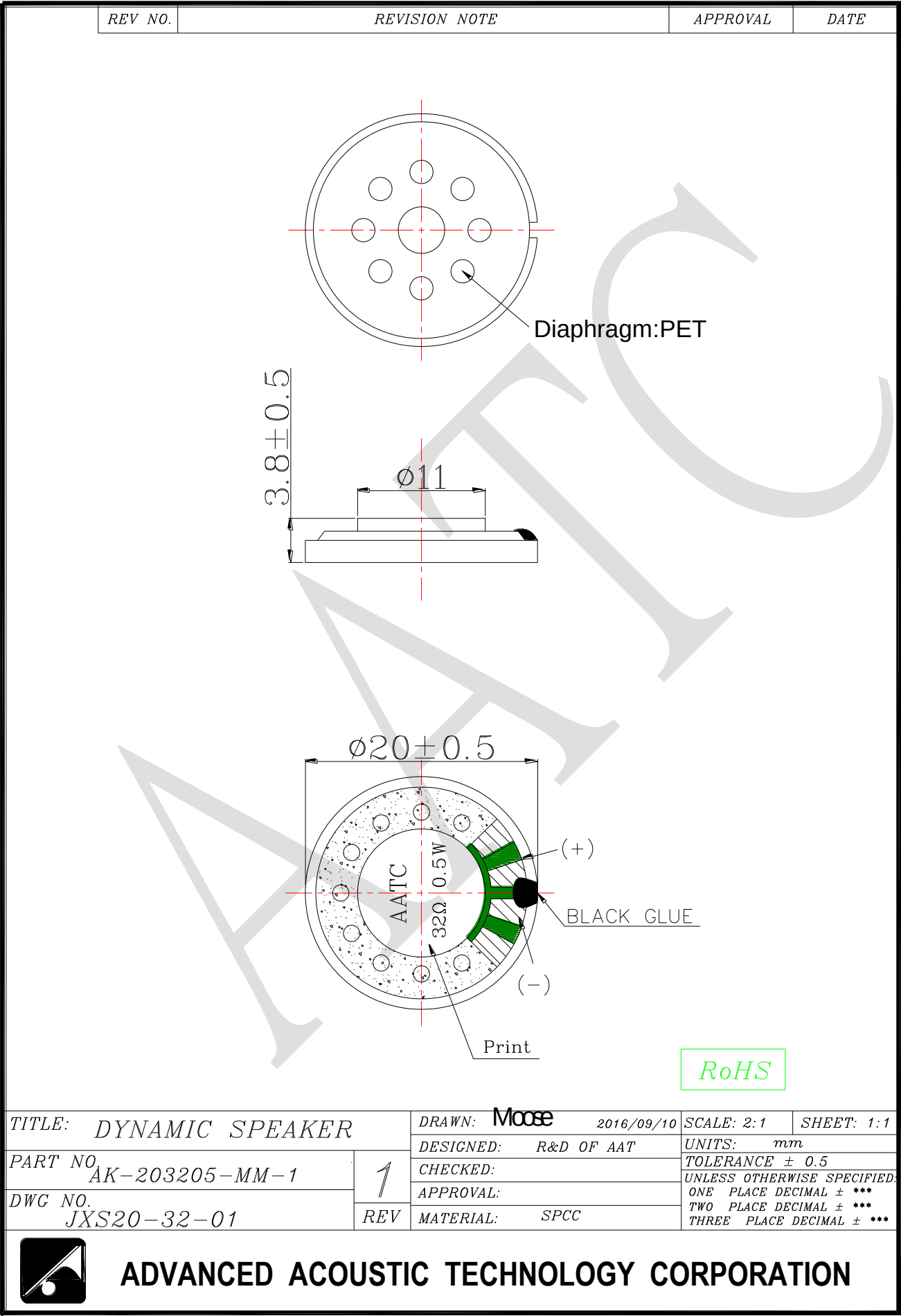


## 2-4. Impedance Curve

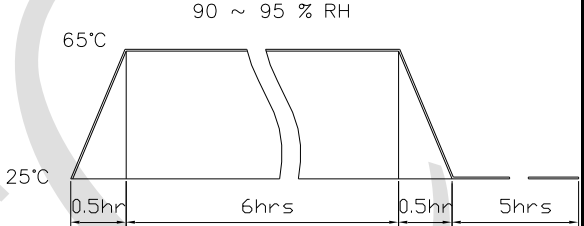
Type 2100S [Test Menu] Impedance Curve Test (Left)  
Firm:001 Object:TESTSPK 2100S F 2.40 09-09-2016 16:33:45  
Start Freq. = 100Hz Stop Freq. = 10000Hz Sweep Speed: 1/48 Oct.  
ACV = 1000.0mV ACZ = 32.6Ω @ 1000Hz. (Real)  
Fo = 714Hz; Qm = 4.66; Qe =12.94; Qt = 3.43; DCR = 31.6Ω.



3. DIMENSIONS



## 4. RELIABILITY TESTS

| Items. |                        | Specifications                                                                                                                                                                        |
|--------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 01     | High temp. Test        | Keep 96 hours at $+60^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and leave 3 hours in normal temperature and then check                                                                   |
| 02     | Low temp. Test         | Keep 96 hours at $-20^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and leave 3 hours in normal temperature and then check                                                                   |
| 03     | Humidity test          | Keep 96 hours at $+40^{\circ}\text{C} \pm 3^{\circ}\text{C}$ relative humidity 95% and leave 3 hours in normal temperature and then checked.                                          |
| 04     | Temp./Humidity cycle   | <p>The part shall be subjected 5 cycles. One cycle shall be 12 hours and consist of</p>             |
| 05     | Thermal cycle test.    | Low temperature: $-20^{\circ}\text{C} \pm 3^{\circ}\text{C}$ , temperature: $+60^{\circ}\text{C} \pm 3^{\circ}\text{C}$ , cycle: 1 hour/cycle each, and then keep 5 cycles in a room. |
| 06     | Vibration              | 10~55~10Hz sin-wave sweep 15min. 5G(constant) X, Y, Z 3 direction. 2 hours each, total 6 hours.                                                                                       |
| 07     | Free drop test         | Free drop from 100cm height to the concrete floor X, Y, Z 6 direction. 1 time each, total 6 times.                                                                                    |
| 08     | Load test              | Rated power white noise is applied for 96 hours                                                                                                                                       |
| 09     | Max Power test         | Max power 1 min. on - 2 min. off 10 cycles.                                                                                                                                           |
| 10     | Terminal strength test | Capable of withstand 1kg load for 15 seconds without resulting in any damage or rejection.                                                                                            |

### Criterion :

1. After testing any of the above reliability test items, the change of S.P.L shall be within  $\pm 3$  dB.
2. If you need more information, please contact our technology department, thank you.

## SOLDERING CONDITION

Recommend using constant searing-iron in temperature range  $360 \pm 5^{\circ}\text{C}$ .

Soldering time 2 seconds.