1 SCOPE
This specification covers a hearing-aid compatible dynamic type receiver for telephone handset, specially designed and constructed for payphone handsets.

2 DESIGN AND CONSTRUCTION
The receiver shall be of the design, construction and physical dimensions as shown Fig. 1.

3 ELECTRICAL AND ACOUSTICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>NO.</th>
<th>TEST</th>
<th>REQUIREMENTS</th>
<th>TEST CONDITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Sweep Frequency</td>
<td>100 +/- 2dB SPL</td>
<td>FIG. 3</td>
</tr>
<tr>
<td>3.2</td>
<td>Frequency Response</td>
<td>1) Curve : Fig.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) 1 KHz : 100 +/-3dB SPL</td>
<td></td>
</tr>
<tr>
<td>3.3</td>
<td>Impedance</td>
<td>1 KHz : 170 +/- 30 ohm</td>
<td>FIG. 4</td>
</tr>
<tr>
<td>3.4</td>
<td>Insulation Resistance</td>
<td>At Least 50M ohm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1) Voltage : 250V D.C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Position : Between Terminals and Metallic Case</td>
<td></td>
</tr>
<tr>
<td>3.5</td>
<td>Dielectric Strength</td>
<td>Withstand</td>
<td>Voltage : 115V R.M.S, 60 Hz.A.C.</td>
</tr>
<tr>
<td>3.6</td>
<td>Magnetic Field Intensity</td>
<td>1) 1 KHz: At Least -72 dBV</td>
<td>FIG. 5</td>
</tr>
<tr>
<td></td>
<td>1) Axial Field</td>
<td>2) Curve : Fig. 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2) Radial Field</td>
<td>1 KHz : At Least -77dBV</td>
<td></td>
</tr>
<tr>
<td>3.7</td>
<td>Anti-Static</td>
<td>Not Occur Electric Discharge</td>
<td>FIG. 6</td>
</tr>
</tbody>
</table>
4 ENVIRONMENTAL TEST

4.1. GENERAL
After any following test, the sweep frequency response level shall not vary more than +/- 2dB from the initial value.

4.2 TEST

<table>
<thead>
<tr>
<th>NO.</th>
<th>TEST</th>
<th>TEST CONDITIONS</th>
</tr>
</thead>
</table>
| 4.2.1.| Humidity And High Temperature| 1) Temperature : 60 +/- 3 C  
2) Relative Humidity : 90 - 95% RH  
3) Duration of Exposure : 72 Hours  
4) Duration of Recovery : 6 Hours |
| 4.2.2.| Low Temperature               | 1) Temperature : -20 +/- 3 C  
2) Duration of Exposure : 72 Hours  
3) Duration of Recovery : 6 Hours |
| 4.2.3.| Cycle, Temperature            | 1) Low Temperature : -20 +/- 3 C  
2) High Temperature : 60 +/- 3 C  
3) Number of Cycles : 5 Cycles  
4) Duration of Exposure : 3 Hrs at Each Temperature  
5) Duration of Transfer Time : Less Than 5 Min.  
6) Duration of Recover : 6 Hours |
| 4.2.4.| Shock, Drop Test              | 1) Mounting : 2500 or K-type Handset  
2) Direction : Random Drop  
3) Height : 1 Meter  
4) Floor : Concrete Floor Faced with 5mm Thick Hard Wood Board  
5) Number of Drop : 10 Times |
| 4.2.5.| Vibration                    | 1) Mounting : Rigidly Mounted on the Table  
2) Direction : 3 Mutually Perpendicular Directions  
3) Frequency : Varied Logarithmically From 10 To 50 Hz And Back To 10 Hz Every One Minute.  
4) Amplitude : 1.5 mmp-p  
5) Duration : 6 Hrs (2 Hrs in Each of 3 Directions) |
FIG. 1
DESIGN, CONSTRUCTION AND
PHYSICAL DIMENSIONS

1. Inner Pole : 4 Holes
   (Bottom Plate)
2. Damping Cloth : Silk
3. Leakage Coil : 0.14
4. Welding Method Improved

<table>
<thead>
<tr>
<th>UNIT</th>
<th>SCALE</th>
<th>TOLERANCES</th>
<th>DESCRIPTION</th>
<th>DRAWING NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td></td>
<td></td>
<td>RECEIVER</td>
<td>MHS-C-149A-00</td>
</tr>
<tr>
<td></td>
<td>LENGTH</td>
<td>ANGLES</td>
<td>BT-R8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>WEIGHT</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.1 BLOCK DIAGRAM

3.2 SWEEP FREQUENCY RESPONSE
1) Test signal voltage (0.3 - 3.3KHz) :-18.4 dBV (S1: OFF)
2) Sweep : Apply test signal varying logarithimically from 0.3 -3.3 KHz and back to 0.3 KHz every one second. (S1:ON)
3) Read out the average position of the S.P.L. Meter needle (meter damping);y=xy0.45

3.3 FREQUENCY RESPONSE AT 1KHz
1) Apply on test signal (1 KHz) according to F.3.2 (1).
2) Read out the S.P.L. Meter Needle.

3.4 FREQUENCY RESPONSE CURVE
1) Apply on test signal according to F.3.2 (1).
2) Record 1) Paper Speed : 3Cm/Sec. 2) Writing Speed: 100mm/sec
FIG. 4  IMPEDANCE MEASUREMENT

F 4.2 Measurement
1) Test signal voltage : -18.4 dBV at 1KHz. (S1:OFF)
2) Apply on test signal (S2:R), and read out Voltmeter needle (Er). (S1:ON)
3) Apply on test signal (S2:VR), and adjust VR to the same as Er. (S1:ON)
4) Read out the resistance of the VR.
   Impedance of the receiver = Resistance of the VR

FIG. 5  MAGNETIC FIELD INTENSITY MEASUREMENT

F 5.1  Axial Field Limit Curves  (Relative to 1 KHz. Response)
FIG 5.2 AXIAL FIELD MEASUREMENT

(1) BLOCK DIAGRAM

(2) MEASUREMENT
1) Test signal voltage (0.2 -3 KHz.) : -18.4 dBV (S1 :OFF)
2) Apply on test signal of 1 KHz. And read out Voltmeter needle.
3) Record
   0. Paper Speed : 3 mm/sec.
   0. Writing Speed : 100 mm/sec.

(3) PROBE COIL
0. D.C. Resistance : 900 ohm
0. Inductance : 140 mmH
0. Sensitivity : -60.5 dBV/A/m
0. Dimensions

FIG 6 ANTI-STATIC TEST
SILICON VARISTOR DIODE

VR-60, VR-61

■ RATING OF STANDARD (Ta: 25°C)

<table>
<thead>
<tr>
<th>DIVISIONS</th>
<th>SIGN</th>
<th>VR-60F</th>
<th>VR-61F</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>D.C. Forward Current</td>
<td>Ir (mA)</td>
<td>400</td>
<td>150</td>
<td>mA</td>
</tr>
<tr>
<td>Max. Surge Current for 10ms</td>
<td>Ism</td>
<td>32</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Junction Temperature</td>
<td>Tj</td>
<td>-60° + 100°C</td>
<td></td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>Tsto (°C)</td>
<td>-60° + 100°C</td>
<td></td>
<td>°C</td>
</tr>
<tr>
<td>Assembly of chips</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>orange</td>
<td></td>
<td>red</td>
<td></td>
</tr>
</tbody>
</table>

■ D.C. CHARACTERISTICS (either direction, Ta: 25°C)

<table>
<thead>
<tr>
<th>DIVISIONS</th>
<th>SIGN</th>
<th>Condition measurement</th>
<th>VR-60F</th>
<th>VR-61F</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward Voltage</td>
<td>Vr</td>
<td>1.5 max.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forward Current</td>
<td>Ir</td>
<td>Vr = 0.2</td>
<td>20 max.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Measurement within 3 sec.

■ GRAPH CHARACTERISTICS

- VR - Ir
- Vr - Vr
- P - Ta Rating

■ OUTLINE

[Unit mm]: VR-60F, VR-61F

■ EXAMPLE OF APPLICATION

- Key board circuit
- Dial type Telephone