MWS65

TEST DATA

IEC61000 SERIES
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Test results are typical data. Nevertheless the following results are considered to be actual capability data because all units have nearly the same characteristics.
1. Electrostatic discharge immunity test (IEC61000-4-2)

Model : MWS65

(1) Equipment used
Electro static discharge simulator : ESS-2002EX (Noiseken)
Discharge resistance : 330Ω Capacity : 150pF

(2) Test conditions
- Input voltage : 115, 230VAC
- Output voltage : Rated
- Output current : 100%
- Polarity : +, −
- Test times : 10 Times
- Discharge interval : > 1 Second
- Ambient temperature : 25°C

(3) Test method and device test point
Contact discharge : ⅅ, mounting screw
Air Discharge : Input and output terminal, ⅅ, mounting screw

(4) Acceptable conditions
1. The regulation of output voltage must not exceed ±5% of initial value (before the test) during test.
2. The output voltage must be within the regulation of specification after the test.
3. Along with 1 and 2, smoke and fire, as well as no output failure are not allowed.

(5) Test result

<table>
<thead>
<tr>
<th>Contact discharge (kV)</th>
<th>MWS65-5</th>
<th>MWS65-48</th>
<th>Air discharge (kV)</th>
<th>MWS65-5</th>
<th>MWS65-48</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>PASS</td>
<td>PASS</td>
<td>4</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>6</td>
<td>PASS</td>
<td>PASS</td>
<td>8</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>7.2</td>
<td>PASS</td>
<td>PASS</td>
<td>9.6</td>
<td>PASS</td>
<td>PASS</td>
</tr>
</tbody>
</table>
2. Radiated radio-frequency electromagnetic field immunity test (IEC61000-4-3)

**Model**: MWS65

(1) **Equipment used**
- Signal generator: SMT03 (ROHDE & SCHWARZ)
- Power meter: NRVD (ROHDE & SCHWARZ)
- Power amplifier: CBA9413B (SCHAFFNER)
- Biconillog Antenna: 3149 (EMCO)

(2) **Test conditions**
- **Input voltage**: 115, 230VAC
- **Output voltage**: Rated
- **Output current**: 100%
- **Amplitude modulator**: 80%, 1kHz
- **Electromagnetic frequency**: 80～2.5GHz
- **Ambient temperature**: 25°C
- **Wave angle**: Horizontal and vertical
- **Distance**: 3.0m
- **Sweep condition**: 1.0% step up, 2.8 seconds hold
- **Test angle**: Top/bottom, both sides, front/back

(3) **Test method**

![Test Method Diagram]

(4) **Acceptable conditions**
1. The regulation of output voltage must not exceed ±5% of initial value (before the test) during test.
2. The output voltage must be within the regulation of specification after the test.
3. Along with 1 and 2, smoke and fire, as well as no output failure are not allowed.

(5) **Test result**

<table>
<thead>
<tr>
<th>Radiation field strength (V/m)</th>
<th>MWS65-5</th>
<th>MWS65-48</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>3</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>10</td>
<td>PASS</td>
<td>PASS</td>
</tr>
</tbody>
</table>
3. Electrical fast transient / burst immunity test (IEC61000-4-4)

Model : MWS65

(1) Equipment used
EFT/B generator : TARNSIENT 2000 (TARNSIENT)

(2) Test conditions
• Input voltage : 115, 230VAC
• Output voltage : Rated
• Output current : 100%
• Test time : 1 Minute
• Polarity : +, –
• Ambient temperature : 25°C
• Number of tests : 3 Times
• Repetitive frequency : 5kHz

(3) Test method and device test point
Apply to (N, L, 📕), (N, L), (N), (L), (🪝).

(4) Acceptable conditions
1. The regulation of output voltage must not exceed ±5% of initial value (before the test) during test.
2. The output voltage must be within the regulation of specification after the test.
3. Along with 1 and 2, smoke and fire, as well as no output failure are not allowed.

(5) Test result

<table>
<thead>
<tr>
<th>Test voltage (kV)</th>
<th>Repetition rate (kHz)</th>
<th>MWS65-5</th>
<th>MWS65-48</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>5</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>2.2</td>
<td>5</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>2.4</td>
<td>5</td>
<td>PASS</td>
<td>PASS</td>
</tr>
</tbody>
</table>
4. Surge immunity test (IEC61000-4-5)

Model : MWS65

(1) Equipment used
Surge generator : TARSIENT 2000 (TARSIENT)
Coupling impedance : Common 12Ω   Coupling capacitance : Common 9μF
                      Normal  2Ω         Normal  18μF

(2) Test conditions
• Input voltage  : 115, 230VAC   • Output voltage  : Rated
• Output current : 0, 100%       • Test times     : 3 Times
• Polarity       : +, −          • Mode          : Common and normal
• Phase          : 0, 90 deg     • Ambient temperature : 25°C

(3) Test method and device test points
Apply to common mode (N- → , L- → ) and normal mode (N-L).

(4) Acceptable conditions
1. The regulation of output voltage must not exceed ±5% of initial value (before the test) during test.
2. The output voltage must be within the regulation of specification after the test.
3. Along with 1 and 2, smoke and fire, as well as no output failure are not allowed.

(5) Test result

<table>
<thead>
<tr>
<th>Test voltage (kV)</th>
<th>Common</th>
<th>Normal</th>
<th>Test voltage (kV)</th>
<th>Common</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MWS65-5</td>
<td>MWS65-48</td>
<td></td>
<td>MWS65-5</td>
<td>MWS65-48</td>
</tr>
<tr>
<td>1</td>
<td>PASS</td>
<td>PASS</td>
<td>1</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>2</td>
<td>PASS</td>
<td>PASS</td>
<td>1.2</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>2.4</td>
<td>PASS</td>
<td>PASS</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5. Conducted disturbances induced by radio-frequency field immunity test (IEC61000-4-6)

Model : MWS65

(1) Equipment used
RF-Generator : NSG 2070 (SCHAFFNER)

(2) Test conditions
- Input voltage : 115, 230VAC
- Output voltage : Rated
- Output current : 100%
- Electromagnetic frequency: 150kHz~800MHz
- Ambient temperature : 25°C
- Sweep condition : 1.0% step up
  , 2.8 seconds hold

(3) Test method

(4) Acceptable conditions
1. The regulation of output voltage must not exceed ±5% of initial value (before the test) during test.
2. The output voltage must be within the regulation of specification after the test.
3. Along with 1 and 2, smoke and fire, as well as no output failure are not allowed.

(5) Test result

<table>
<thead>
<tr>
<th>Voltage level (V)</th>
<th>MWS65-5</th>
<th>MWS65-48</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>3</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>10</td>
<td>PASS</td>
<td>PASS</td>
</tr>
</tbody>
</table>
6. Power frequency magnetic field immunity test (IEC61000-4-8)

Model : MWS65

(1) Equipment used
AC power source : NSG1007 (SCHAFFNER)
Helmholts coil : Induction coil interface (SCHAFFNER)

(2) Test conditions
- Input voltage : 115, 230VAC
- Output current : 100%
- Output voltage : Rated
- Magnetic frequency : 50Hz/60Hz
- Ambient temperature : 25°C
- Direction : X, Y, Z
- Test time : More than 10 seconds (each direction)

(3) Test method and device test point

(4) Acceptable conditions
1. The regulation of output voltage must not exceed ±5% of initial value (before the test) during test.
2. The output voltage must be within the regulation of specification after the test.
3. Along with 1 and 2, smoke and fire, as well as no output failure are not allowed.

(5) Test result

<table>
<thead>
<tr>
<th>Magnetic field strength (A/m)</th>
<th>MWS65-5</th>
<th>MWS65-48</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>3</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>10</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>36</td>
<td>PASS</td>
<td>PASS</td>
</tr>
</tbody>
</table>
7. Voltage dips, short interruptions immunity test (IEC61000-4-11)

Model : MWS65

(1) Equipment used
Test generator : TARNSIENT 2000 (TARNSIENT)

(2) Test conditions
• Input voltage : 115, 230VAC
• Output voltage : Rated
• Output current : 100%
• Ambient temperature : 25°C
• Number of tests : 3 Times
• Interval : More than 10 seconds

(3) Test method and device test point

(4) Acceptable conditions
1. The output voltage must be within the regulation of specification after the test.
2. Smoke and fire must not occur.

(5) Test result

<table>
<thead>
<tr>
<th>Test level</th>
<th>Dip rate</th>
<th>Continue time</th>
<th>MWS65-5</th>
<th>MWS65-48</th>
</tr>
</thead>
<tbody>
<tr>
<td>70%</td>
<td>30%</td>
<td>500ms</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>40%</td>
<td>60%</td>
<td>100ms (*1)</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>0%</td>
<td>100%</td>
<td>10ms</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>0%</td>
<td>100%</td>
<td>20ms (*2)</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>0%</td>
<td>100%</td>
<td>5000ms (*3)</td>
<td>PASS</td>
<td>PASS</td>
</tr>
</tbody>
</table>

*1: When the input power is less than 200Vac, output voltage shut down. Then it recover again itself.
*2: When the input power is less than 170Vac, output voltage shut down. Then it recover again itself.
*3: When continue time is 5000ms, output voltage shut down. Then it recover again itself.