



Moser Baer India Ltd.  
Engineering Department  
Product: 120mm DVD-RW, 4X

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**PRODUCT SPECIFICATION**  
**DVD-RW 4.7GB General Purpose**  
**(2X-4X)**

**Approved By:**

**G.M (Technical)**

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## 1.0 PURPOSE

- 1.1 To define and document the mechanical, physical, and optical characteristics of MBI's DVD-RW, 120mm Rewritable optical disc with capacity of 4.7 Gbytes in its final form as shipped to the customer.

## 2.0 SCOPE

- 2.1 This document is in conformance with 120mm DVD-RW. This specification of DVD-RW is in compliance with DVD-RW specification-version 1.2/4x. Discs manufactured with this process are designed to work from 2 to 4x recording speed.

## 3.0 REVISION RECORD

| Effect Date | Item(s)<br>No(s) | Page No | Changes made to<br>document | Name of Requester |
|-------------|------------------|---------|-----------------------------|-------------------|
|             |                  |         |                             |                   |

## 4.0 APPLICABLE PRODUCT

- 4.1 Product Description  
2X-4X, DVD-RW

## 5.0 ENVIRONMENT CONDITIONS

### 5.1 For Product Testing

- |   |                   |              |
|---|-------------------|--------------|
| 1 | Temperature       | 23 ± 2 deg C |
| 2 | Relative Humidity | 45 – 55 % RH |

There should be no condensation. Before testing, the disc should be conditioned to the testing environment more than 24hrs.

## 5.2 Operating Condition ( For Write/Read )

|   |                                 |                |
|---|---------------------------------|----------------|
| 1 | Temperature                     | -5 to 55 deg C |
| 2 | Absolute Humidity               | 1 ~ 30g/cu. M  |
| 3 | Relative Humidity               | 3 ~ 85% RH     |
| 4 | Relative Temperature variations | < 10 deg C/hr  |
| 5 | Relative Humidity variations    | < 10% RH/hr    |

No condensation occurs on the disc.

## 5.3 Storage Condition

|   |                                 |                  |
|---|---------------------------------|------------------|
| 1 | Temperature                     | - 10 to 55 deg C |
| 2 | Absolute Humidity               | 1 ~ 30g/cu. M    |
| 3 | Relative Humidity               | 3 ~ 90%          |
| 4 | Relative Temperature variations | < 15 deg C/hr    |
| 5 | Relative Humidity variations    | < 10% RH/hr      |

No condensation occurs on the disc

## 5.4 Transportation

|   |                                 |                 |
|---|---------------------------------|-----------------|
| 1 | Temperature                     | -10 to 55 deg C |
| 2 | Absolute Humidity               | 1 ~ 30g/cu. M   |
| 3 | Relative Humidity               | 3 ~ 90% RH      |
| 4 | Relative Temperature variations | < 15 deg C/hr   |
| 5 | Relative Humidity variations    | < 10% RH/hr     |

No condensation occurs on the disc. The disc should not be kept under the above condition more than two weeks.

## 5.5 For Reliability Test, Test Condition

|   |               |          |
|---|---------------|----------|
| 1 | Temperature   | 80 deg C |
| 2 | Humidity      | 85% RH   |
| 3 | Duration Time | 250 hrs  |

After Climate test the disc should maintain the book specifications.

## 6.0 RAW MATERIAL DETAIL

|   |                  |                    |
|---|------------------|--------------------|
| 1 | Substrate        | Polycarbonate      |
| 2 | Recording Layer  | Phase Change Alloy |
| 3 | Reflective Layer | Silver Alloy (Ag)  |
| 4 | Bonding layer    | UV bonding resin   |

## 7.0 MEDIA CHARACTERISTICS AND SPECIFICATIONS

### 7.1 Disc Geometry

|   |                        |                    |
|---|------------------------|--------------------|
| 1 | Outer diameter of disc | 120 + 0.3 mm       |
| 2 | Center hole diameter   | 15.05 + 0.05 mm    |
| 3 | Substrate thickness    | 1.20+0.03/-0.06 mm |
| 4 | Track pitch            | 0.74 ± 0.01 um     |
| 5 | Scanning velocity      | 3.49 ± 0.03 m/s    |
| 6 | M-Code                 | MBI01RWG 20        |

### 7.2 Mechanical Characteristics

|    |                      |                        |
|----|----------------------|------------------------|
| 1  | Radial Deviation     | ± 0.7 deg              |
| 2  | Tangential Deviation | ± 0.3 um               |
| 3  | Axial Deflection     | ± 150 um               |
| 4  | Radial P-P           | < 40 um                |
| 5  | Axial Acceleration   | ± 4 m/s <sup>2</sup>   |
| 6  | ECC                  | < 30 um                |
| 7  | Tangential Skew      | ± 0.13 um              |
| 8  | Radial Acceleration  | ± 0.8 m/s <sup>2</sup> |
| 9  | Radial Skew          | ± 0.315 deg            |
| 10 | Unbalance            | < 2.5gm*mm             |

### 7.3 Unrecorded Characteristics

|   |                 |             |
|---|-----------------|-------------|
| 1 | Birefringence   | < ± 60 nm   |
| 2 | LPPb            | 0.18 – 0.27 |
| 3 | NWO             | 0.08 - 0.14 |
| 4 | Radial Noise 1b | < 22 nm     |
| 5 | Radial noise 2b | < 16 nm     |
| 6 | CNR of Wobble   | > 35 db     |
| 7 | BLER b          | <3 %        |
| 8 | Push Pull b     | 0.22 – 0.44 |

#### 7.4 Recorded Characteristics

##### a) At DOW 0

|    |                 |               |
|----|-----------------|---------------|
| 1  | Reflectivity    | 18 – 30 %     |
| 2  | m14             | > 0.6         |
| 3  | Assym           | -0.05 to 0.15 |
| 4  | Radial Noise 1a | < 15 nm       |
| 5  | Radial Noise 2a | < 16 nm       |
| 6  | PISUM 8         | < 280         |
| 7  | PIE             | < 5           |
| 8  | TCS             | > 0.1         |
| 9  | AR              | > 15          |
| 10 | DPD Amp         | 0.5 to 1.1    |
| 11 | I14/I14H DV     | < 0.15        |
| 12 | DC Jitter       | < 8%          |
| 13 | CNR of Wobble   | > 31          |

##### b) Direct Overwriting ( DOW 1000 )

|   |         |        |
|---|---------|--------|
| 1 | Jitter  | < 10 % |
| 2 | PIE avg | < 280  |

**Note: These parameters entirely depend on the recording drives and test equipments**