PRODUCT SPECIFICATION

Digital Versatile Disc (DVD-R), 4.7 Gbytes (1X-16X)

Approved By: **Sr. 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 16X DVD-R, 120mm recordable optical disc with capacity of 4.7Gbytes in its final form as shipped to the customer.

2.0 SCOPE

2.1 This document is in conformance with DVD specifications for recordable disc for general(DVD_R for general). This is in compliance with DVD specification version 2.0. Disc manufactured with this process are designed to work at 1X-16X recording speed.

3.0 REVISION RECORD

Effect Date	Item(s) No(s)	Page No	Changes made to document	Name of Requester

4.0 APPLICABLE PRODUCT

4.1 Product Description
16X Speed, 4.7 Gbytes DVD-R

5.0 ENVIRONMENT CONDITIONS

5.1 For Product Testing

1	Temperature	15 to 35 deg C 25 ± 5 deg C *
2	Relative Humidity	45-55 % RH 50 ± 5% *

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

5.2 For Product Use

1	Temperature	-25 to 50 deg C
2	Absolute Humidity	0.5 ~ 30g/cu. M
3	Relative Humidity	10 ~ 90% RH
4	Relative Humidity variations	< 15 deg C/hr
5	Relative Temperature variations	< 10% RH/hr

No condensation occurs on the disc.

5.3 For Reliability Test, Test Condition

1	Temperature	80 deg C
2	Humidity	85% RH
3	Duration Time	100 hrs

After Climate test the disc should maintain the book specifications.

6.0 RAW MATERIAL DETAIL

1	Substrate	Polycarbonate
2	Recording Layer/ Dye	Azo Organic dye
3	Reflective Layer	Silver Alloy
4	Bonding Layer	UV Bonding resin

7.0 PRODUCT CHARACTERISTICS AND SPECIFICATIONS

7.1 DISC GEOMETRY

1	Outer diameter of disc	120 ± 0.3 mm
2	Center hole diameter	15.00 – 15.15 mm
3	Finished Disc thickness	1.17 to 1.26 mm
4	Track pitch	0.74 ± 0.01 um
5	Scanning velocity	3.49 ± 0.03 m/s
6	Substrate thickness	0.6 ± 0.02

7.2 MECHANICAL CHARACTERISTICS

1	Axial Runout	±300 mm
2	Axial Tracking Error	± 0.23 um
3	Axial Acceleration	± 8 m/s^2
4	Radial Runout	<70 um
5	Radial Tracking Error	± 0.022 um
6	RMS Noise	± 0.016 um
7	Radial Acceleration	± 1.1 m/s^2
8	Radial Alpha	± 0.8 deg
9	Radial PP	< 0.6 deg
10	Tangential alpha	± 0.30 deg

7.3 ELECTRICAL UNRECORDED SIGNALS

1	Push Pull signal Before(PPb) Recording	0.22 –0.44
2	Push Pull variations before recording (PPvar)	<0.15
3	Push Pull Ratio (PPr)	0.5 – 1.0
4	TCa	>0.1
5	Normalized Wobble Signal (NWS)	0.06 – 0.12
6	Land Pre Pit Before Recording (LPPb)	0.18 – 0.28
7	LPPb BLERb	<3
8	LPPb BLERa	<5
9	PWP	-100 to –80
10	Aperture Ratio	<15
11	WOb	>35
12	Birefringence’s	<±100 nm

7.4 ELECTRICAL RECORDED SIGNALS*

1	Rtop	45 – 85%
2	I14/I14H	>0.6
3	I3/I14	>0.15
4	Variation of I14/I14H within one disc	<0.33
5	Variation of I14/I14H within one revolution	<0.15
6	Asymmetry	-0.05 TO 0.15
7	PI Sum 8	<280
8	Jitter	<8%
9	DPD Amplitude	0.5-1.1
10	DPD Asymmetry	<0.2
11	TPP	<0.9
12	WOa	>31

- * Recorded Electrical signals depends upon selection of drives.

7.5 QUALITY OF SIGNALS

1	Air bubbles	<=100 um
2	Black spot causing birefringence	<= 200 um
3	Black spot not causing birefringence	< 300 um
4	Numer(/80mm) of defects larger than 30 um	< 6
5	The total length(/80mm) of defects larger than 30 um	<= 300 um