



# UNRECORDED DVD-R TESTING BY MEDIA SCIENCES



Unrecorded DVD-R discs are fully evaluated by electrical parameter and error testing. Accurate, objective electrical test results, together with additional visual and mechanical tests, verify conformance to standards and specifications, and provide a high level of confidence in functionality in recording drives. Additional recorded tests are required for dye layer quality evaluation.

## RECOMMENDED TESTS

TEST TYPE	NUMBER OF DISCS TESTED		
	VENDOR EVALUATION	TROUBLE-SHOOTING	QUALITY EVALUATION
<i>All discs serialized</i>			
All ECC Blocks	5 (1)	1	1
Quick Scan	0	0	4 (1) (2)
<b>REPORTS PROVIDED</b>			
Summary Report	✓	✓	
Variance Report	✓	✓	
Evaluation Report	✓	✓	✓
Test Values	✓	✓	✓
Test Data Graphs	✓	✓	<i>All Blocks Only</i>

- (1) Please submit 6 samples for Vendor Evaluation and Quality Evaluation.  
 (2) Quick Scan uses 0.1 mm data samples every 1 mm of radius.

**Vendor Evaluation** tests define product quality based on comprehensive test data, and provide information that can be used for vendor selection or process capability studies.

**Troubleshooting** pinpoints defects for corrective action. Key performance tests identify and help to correct *mysterious* problems that appear and disappear.

**Quality Evaluation** is recommended for lot acceptance or for regular quality monitoring of approved vendors.

## STANDARD UNRECORDED DVD-R QUALITY TESTS OF MEDIA SCIENCES

**Rgroove** tests the reflectivity of the metallic coating by measuring the highest value of the on-track reflected beam.

**Radial Push-Pull** evaluates the sensitivity of the tracking signal to radial position. **Radial Noise** evaluates high frequency fluctuations of this signal.

**Cross-Track** is the difference between off-track and on-track average HF signal amplitude divided by the off-track value.

**Groove Wobble CNR** evaluates wobble signal quality.

**Normalized Wobble Amplitude** measures the amplitude of the pre-groove wobble.

**Aperture Ratio** measures variations in land pre-pit signal amplitude exclusive of wobble amplitude.

**Land Pre-Pit Amplitude and Phase** and **Pre-Pit BLER** measure unrecorded addressing quality.

**Average Track Pitch** is the disc average radial separation between adjacent tracks.

**Start and End Information Diameters** define the start of lead-in and the end of lead-out.

**Start and End Data Diameters** define the end of lead-in and the start of lead-out.

**Mechanical Inspection** evaluates center hole and outside rim diameters, absence of center hole burrs, radial eccentricity, outer rim concentricity, axial deflection, thickness, radial and tangential tilt, weight, and static unbalance.

**Visual Inspection** identifies defects such as bubbles, black spots or pinholes, scratches, spots, stains, cloudiness, or debris that can adversely affect performance, causing interchange failure in some drives but not in others.

*Our extensive experience enables us to provide standard DVD tests or to tailor a test plan to fit your needs.*

### MEDIA SCIENCES, INC.

221 Boston Post Road East, Suite 470, Marlborough, MA 01752-3527 U.S.A.

<http://www.msscience.com/> [jhartke@mscience.com](mailto:jhartke@mscience.com) tel: +508-480-9338 fax: +508-480-9544

# UNRECORDED DVD-R TEST PLANS AND REPORTS

Media Sciences conducts tests in accordance with appropriate ISO Standards or generally accepted industry practices using carefully calibrated test equipment, and follows a **TEST PLAN** that defines tests to be performed, number of samples for each test, defect limits for each test, and accept/reject criteria for the lot under test. Clients may submit a **TEST PLAN**, or may request that Media Sciences prepare the plan. In the absence of a **TEST PLAN**, Media Sciences will reject the lot under test upon the occurrence of one or more test samples containing critical defects or two or more samples having major defects.

QUALITY EVALUATION REPORT		
Variable	No. Accepted	No. of Defects
IGroove b		
Delta IGroove b		
Radial Push-Pull, PPb		
Delta PPb (Disc)		
Cross-Track		<b>TEST</b>
Groove Wobble CNRb		
Normalized Wobble Amplitude		
Aperture Ratio		
Land Pre-Pit Amplitude		
Land Pre-Pit Phase		
Pre-Pit BLERb		
Average Track Pitch		<b>RESULTS</b>
Start Information Diameter		
End Information Diameter		
Start Data Diameter		
End Data Diameter		

QUALITY EVALUATION TEST RESULTS		
Variable	Unit	Serial Number
IGroove b	%	
Delta IGroove b	%	
Radial Push-Pull, PPb	—	
Delta PPb (Disc)	—	
Cross-Track	—	<b>TEST</b>
Groove Wobble CNRb	dB	
Norm. Wobble Ampl.	—	
Aperture Ratio	—	
Land Pre-Pit Ampl.	—	
Land Pre-Pit Phase	deg.	
Pre-Pit BLERb	%	
Average Track Pitch	μm	<b>RESULTS</b>
Start Info. Diam.	mm	
End Info. Diam.	mm	
Start Data Diam.	mm	
End Data Diam.	mm	

VARIANCE REPORT	
Major Positive Variances	Test results that clearly indicate above average performance.
Minor Positive Variances	Observations or test results that are above average and may result in above average performance.
Major Negative Variances	Test results that clearly indicate unacceptable performance.
Minor Negative Variances	Observations or test results that are below average and may result in below average performance.

MECHANICAL & VISUAL RESULTS		
Variable	Unit	Serial Number
Center Hole Diameter	mm	
Center Hole Burr	—	
Outside Rim Diameter	mm	
Radial Eccentricity	μm	
Rim Concentricity	mm	<b>TEST</b>
Axial Deflection	mm	
Thickness	mm	
Radial and Tangential Tilt	deg.	
Bubble	—	
Black Spot	—	
Scratch	—	
Spot or Stain	—	<b>RESULTS</b>
Label	—	
Identification Band	—	
Weight	gm	
Static Unbalance	gm•mm	

Test results exceeding limits may be ranked as **CRITICAL**, **MAJOR**, or **MINOR** defects. **CRITICAL DEFECTS** are expected to cause unpredictable interchange failures. Upon their occurrence, use of the product should be discontinued until effective corrective action has been confirmed. Product recall may also be necessary. **MAJOR DEFECTS** reflect significant interchange risks. Either enhanced quality monitoring should be used while prompt corrective action is taken, or product usage should be halted. **MINOR DEFECTS** indicate significant, but marginal flaws. Product usage may continue while corrective action is taken by the manufacturer.