



# EMC

## TEST REPORT

REPORT NO. : F87061102  
MODEL NO. : RDR-102H  
DATE OF TEST : June 15, 1998

PREPARED FOR: RAITE OPTOELECTRONICS CO.

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**1. CERTIFICATION**

Issue Date: June 29, 1998

Product : DVD ROM DRIVE  
Trade Name : RAITE  
Model No. : RDR-102H  
Applicant : RAITE OPTOELECTRONICS CO.  
Standard : FCC Part 15, Subpart B, Class B  
ANSI C63.4-1992  
CISPR 22:1993+A1+A2

We hereby certify that one sample of the designation has been tested in our facility on June 15, 1998. The test record, data evaluation and Equipment Under Test (EUT) configurations represent herein are true and accurate representation of the measurements of the sample's EMC characteristics under the conditions herein specified.

The test results show that the EUT as described in this report is in compliance with the Class B limits of conducted and radiated emission of applicable standards.

TESTED BY: Ken Liu, DATE: 6/29/98  
( Ken Liu )

CHECKED BY: Sharon Hsiung, DATE: 6/29/98  
( Sharon Hsiung )

APPROVED BY: Mike Su, DATE: 6/29/98  
( Mike Su )

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### 3.2 LIMITS OF CONDUCTED AND RADIATED EMISSION

#### LIMIT OF RADIATED EMISSION OF CISPR 22

| FREQUENCY<br>(MHz) | Class A (at 10m) | Class B (at 10m) |
|--------------------|------------------|------------------|
|                    | dBuV/m           | dBuV/m           |
| 30 - 230           | 40               | 30               |
| 230 - 1000         | 47               | 37               |

#### LIMIT OF RADIATED EMISSION OF FCC PART 15, SUBPART B FOR FREQUENCY ABOVE 1000 MHz

| FREQUENCY<br>(MHz) | Class A (at 10m) |        | Class B (at 3m) |        |
|--------------------|------------------|--------|-----------------|--------|
|                    | uV/m             | dBuV/m | uV/m            | dBuV/m |
| Above 1000         | 300              | 49.5   | 500             | 54.0   |

- Note: (1) The lower limit shall apply at the transition frequencies.  
 (2) Emission level (dBuV/m) = 20 log Emission level (uV/m).  
 (3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

#### LIMIT OF CONDUCTED EMISSION OF CISPR 22

| FREQUENCY<br>(MHz) | Class A (dBuV) |         | Class B (dBuV) |         |
|--------------------|----------------|---------|----------------|---------|
|                    | Quasi-peak     | Average | Quasi-peak     | Average |
| 0.15 - 0.5         | 79             | 66      | 66 - 56        | 56 - 46 |
| 0.50 - 5.0         | 73             | 60      | 56             | 46      |
| 5.0 - 30.0         | 73             | 60      | 60             | 50      |

- Note: (1) The lower limit shall apply at the transition frequencies.  
 (2) The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz  
 (3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.



#### 4. TEST RESULTS (EMISSION)

##### 4.1 RADIO DISTURBANCE

Frequency Range : 0.15 - 30 MHz (Conducted Emission)  
30 - 1000 MHz (Radiated Emission)  
Input Voltage : 120 Vac, 60 Hz  
Temperature : 28 °C  
Humidity : 53 %  
Atmospheric Pressure : 999 mbar

| TEST RESULT | Remarks                                                                                                                                  |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PASS</b> | Minimum passing margin of conducted emission: -13.2 dB at 0.963 MHz<br>Minimum passing margin of radiated emission: -2.0 dB at 93.97 MHz |

##### 4.1.1 EUT OPERATION CONDITION

1. Turn on the power of all equipments.
2. PC reads a test program and runs it to enable all functions.
3. PC sends messages to monitor and monitor displays messages on screen.
4. PC sends messages to modem.
5. PC sends messages to printer, and the printer prints them on paper.
6. PC sends audio messages to speaker.
7. PC plays a DVD ROM disk via the EUT and sends out video messages to monitor and monitor displays these messages on screen.
8. Repeat steps 3-8.

ADT CO. SITE 5  
CISPR 22 CLASS B

15. Jun 98 13:17

EUT: RDR-102H  
Test Spec: LISN : L

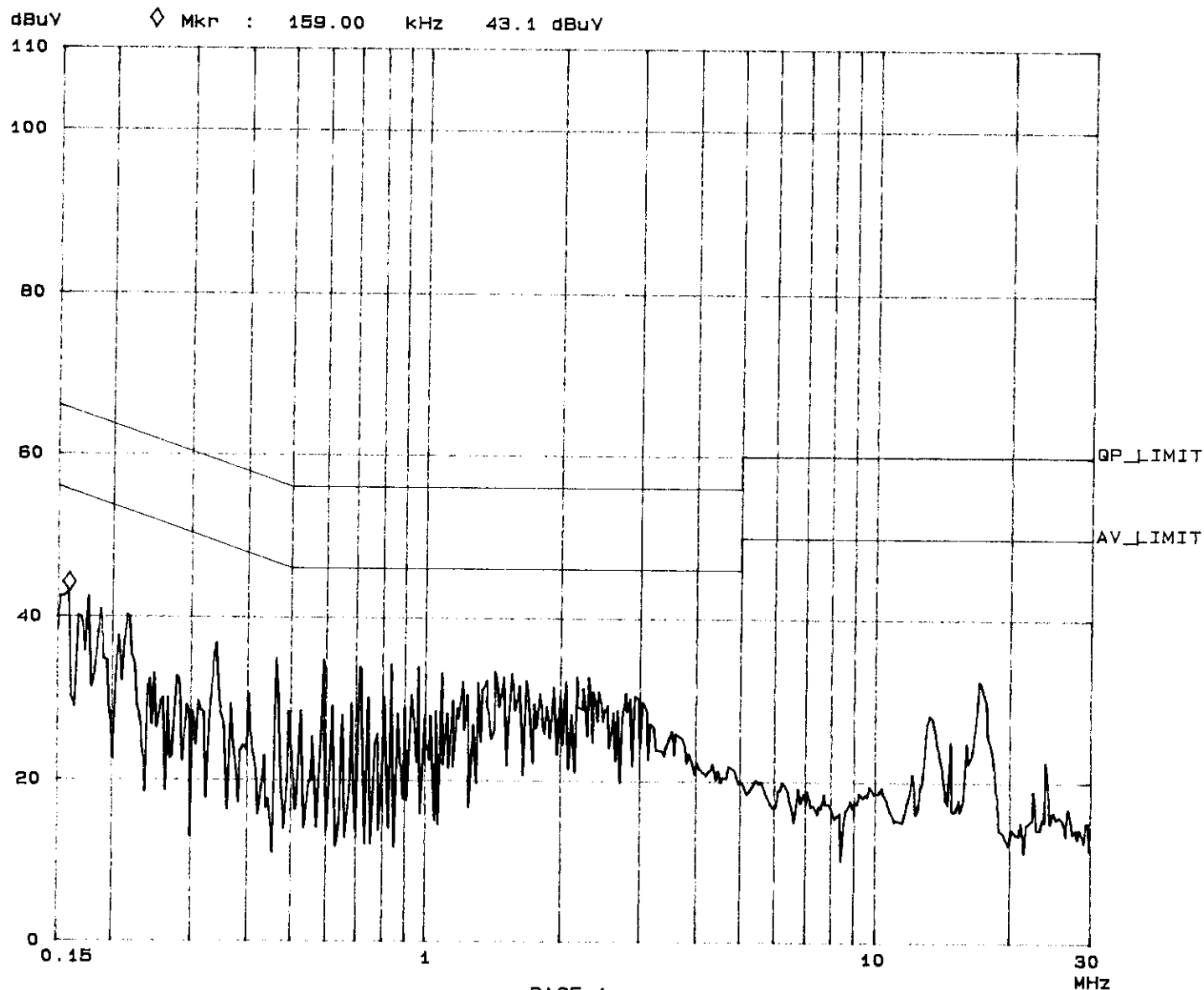
Report No. F87061102

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Tested by KEN

Fast Scan Settings (3 Ranges)

| Frequencies |      |      | Receiver Settings |          |        |        |        |       |
|-------------|------|------|-------------------|----------|--------|--------|--------|-------|
| Start       | Stop | Step | IF BW             | Detector | M-Time | Atten  | Preamp | OpRge |
| 150k        | 450k | 3k   | 10k               | PK       | 1ms    | 10dBLN | OFF    | 60dB  |
| 450k        | 5M   | 3k   | 10k               | PK       | 1ms    | 10dBLN | OFF    | 60dB  |
| 5M          | 30M  | 3k   | 10k               | PK       | 1ms    | 10dBLN | OFF    | 60dB  |



ADT CO. SITE 5  
CISPR 22 CLASS B

15. Jun 98 13:30

EUT: RDR-102H  
Test Spec: LISN : N

Report No. F87061102

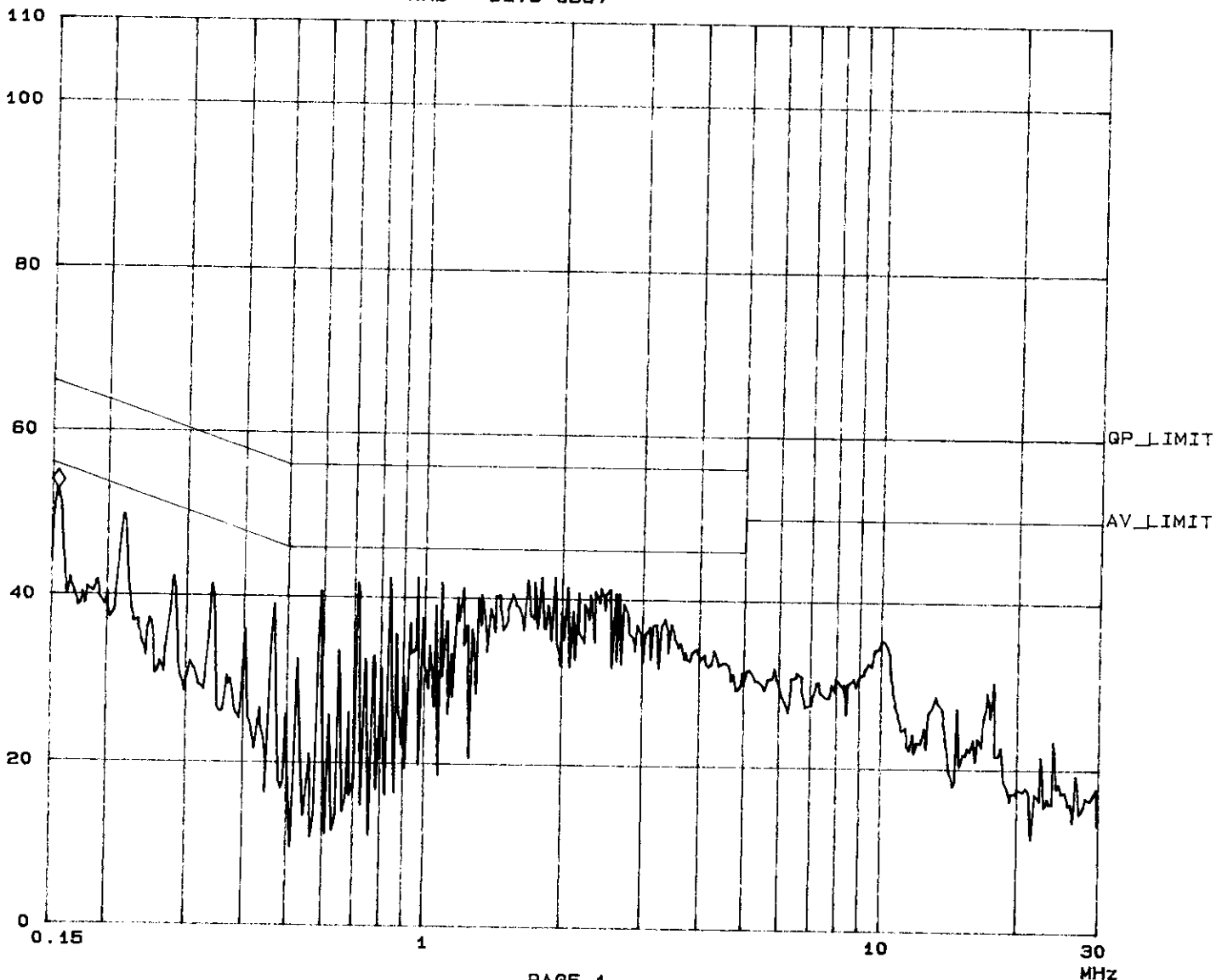
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Tested by KEN

Fast Scan Settings (3 Ranges)

| Frequencies |      |       | Receiver Settings |          |        |       |        |       |
|-------------|------|-------|-------------------|----------|--------|-------|--------|-------|
| Start       | Stop | Step  | IF BW             | Detector | M-Time | Atten | Preamp | OpRge |
| 150k        | 450k | 100Hz | 10k               | PK       | 1ms    | 10dB  | OFF    | 60dB  |
| 450k        | 5M   | 3k    | 10k               | PK       | 1ms    | 10dB  | OFF    | 60dB  |
| 5M          | 30M  | 3k    | 10k               | PK       | 1ms    | 10dB  | OFF    | 60dB  |

dBuV      ◇ Mkr : 154.50 kHz 52.9 dBuV





### 4.3 TEST DATA OF RADIATED EMISSION

EUT: DVD ROM DRIVEMODEL: RDR-102HANTENNA: CHASE BILOG CBL6111APOLARITY: HorizontalDETECTOR FUNCTION: Quasi-peak

6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz

MEASURED DISTANCE: 10 M

TEST PERSONNEL: KEN

| Frequency<br>(MHz) | Correction<br>Factor<br>(dB/m) | Reading<br>Data<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) |
|--------------------|--------------------------------|---------------------------|-------------------------------|-------------------|----------------|
| 94.00              | 10.8                           | 11.7                      | 22.5                          | 30.0              | -7.5           |
| 109.65             | 13.2                           | 11.4                      | 24.6                          | 30.0              | -5.4           |
| 115.91             | 14.2                           | 12.2                      | 26.4                          | 30.0              | -3.6           |
| 119.03             | 14.7                           | 9.2                       | 23.9                          | 30.0              | -6.1           |
| 199.85             | 12.6                           | 13.8                      | 26.4                          | 30.0              | -3.6           |
| 201.18             | 12.7                           | 13.3                      | 26.0                          | 30.0              | -4.0           |
| 206.78             | 13.3                           | 7.1                       | 20.4                          | 30.0              | -9.6           |
| 326.31             | 18.3                           | 14.0                      | 32.3                          | 37.0              | -4.7           |
| 400.95             | 22.1                           | 7.7                       | 29.8                          | 37.0              | -7.2           |

- REMARKS :
1. Emission level (dBuV/m) = Correction Factor(dB/m) + Meter Reading (dBuV).
  2. Correction Factor(dB/m) = Ant. Factor(dB/m)+Cable loss(dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level - Limit value



## 6. ATTACHMENT I – TECHNICAL DESCRIPTION OF EUT

### SPECIFICATIONS:

|                           |                                                   |
|---------------------------|---------------------------------------------------|
| * Drive Type              | Internal                                          |
| * Interface               | ATAPI ( EIDE )                                    |
| * Buffer Memory           | 512KB (DVD/CD)                                    |
| * Capacity                | 17GB/dual-sided double layer                      |
| * Data Transfer Rate      |                                                   |
| DVD                       | 2.76MB/sec typ.(CLV 2X)-DVD                       |
| CD                        | 3.6 MB/sec Max.(CAV 24x)-CD                       |
| * Access Time             |                                                   |
| Random: DVD               | Less than 150 msec                                |
| CD                        | Less than 100 msec                                |
| Full-stroke: DVD          | Less than 230 msec                                |
| CD                        | Less than 180 msec                                |
| * Error Rate              | Less than $10^{-12}$                              |
| * Power Requirement       | DC 12V $\pm 5\%$ (1.2A)<br>DC 5V $\pm 5\%$ (1.2A) |
| * Environment Temperature | Operating 5~45°C<br>Non-operation -30~65°C        |
| * Environment Humidity    | Operation: 20-80%<br>Non-operation: 5-90%         |
| * MTBF                    | 75,000 POH (10% Duty)                             |
| * Dimension               | 146 x 41.5 x 200mm                                |
| * Weight                  | 0.93 Kg                                           |