

<u>APPENDIX A – Test Data</u> <u>Summary of Test Results</u>

Test Date(s): June 11-15, 2004

Test Engineer:

Table A-1. Summary of Test Results

FCC Part 15 Section	Description	Result
15.107	Conducted Emissions	PASS
15.109	Radiated Spurious Emissions	PASS

PCTEST™ PT. 15. REPORT	PCTEST	MEASUREMENT REPORT FCC Part 15B		Reviewed by: Quality Manager
Filename:	Test Dates:	EUT:	FCC ID:	Page A1
B.240602360.A3D	June 11-15, 2004	Internal DVD R/ RW Drive	A3DND-3100A	



APPENDIX A – Test Data (Cont.) Radiated Test Data/Plots

FREQ (MHz)	Level (dBm)	AFCL (dB/m)	POL (H/V)	Height (m)	Azimuth (° angle)	F/S (uV/M)	Margin (dB)
85.10	12.44	8.06	V	2.8	30	20.51	-9.5
202.23	9.50	16.60	Н	1.4	225	26.11	-3.9
343.63	5.03	22.17	Η	1.4	90	27.21	-9.8
406.50	3.95	23.86	Η	1.6	300	27.81	-9.2
689.44	2.19	29.72	Н	1.3	180	31.91	-5.1
914.62	-4.30	32.80	Н	1.5	200	28.51	-8.5

Table A-2. Radiated Measurements at 10-meters Sample #1 S/N: 456M006SSSS

NOTES:

- 1. All modes of operation were investigated and the worst-case emissions are reported.
- 2. The radiated limits are shown on Figure A-1. Above 1 GHz the limit is $500\mu V/m$.

APPENDIX A – Test Data (Cont.) Radiated Test Data/Plots

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Measurements using CISPR quasi-peak mode. Above 1GHz, peak detector function mode is used with a resolution bandwidth of 1MHz and a video bandwidth of 1MHz. The peak level complies with the average limit. Peak mode is used with linearly polarized horn antenna and low-loss microwave cable.

PCTEST™ PT. 15. REPORT	PCTEST	MEASUREMENT REPORT FCC Part 15B	NEC	Reviewed by: Quality Manager
Filename:	Test Dates:	EUT:	FCC ID:	Page A2
B.240602360.A3D	June 11-15, 2004	Internal DVD R/ RW Drive	A3DND-3100A	

All readings are calibrated by HP8640B signal generator with accuracy traceable to the National Institute of Standards and Technology (NIST).

AFCL = Antenna Factor (Roberts dipole) and Cable Loss (30 ft. RG58C/U).



FREQ (MHz)	Level (dBm)	AFCL (dB/m)	POL (H/V)	Height (m)	Azimuth (° angle)	F/S (uV/M)	Margin (dB)
84.71	12.89	8.02	V	2.6	30	20.91	-9.1
135.55	10.36	12.64	V	2.7	90	23.01	-7.0
169.40	8.74	14.86	V	2.4	180	23.61	-6.4
406.63	4.55	23.86	Н	1.7	300	28.41	-8.6
546.81	0.05	27.06	Н	1.6	225	27.11	-9.9
683.96	1.09	29.62	Н	1.3	180	30.71	-6.3

Table A-2. Radiated Measurements at 10-meters Sample #2 S/N: 456M005SSSS

NOTES:

- 1. All modes of operation were investigated and the worst-case emissions are reported.
- 2. The radiated limits are shown on Figure A-1. Above 1 GHz the limit is $500\mu\text{V/m}.$

All readings are calibrated by HP8640B signal generator with accuracy traceable to the National Institute of Standards and Technology (NIST).

Measurements using CISPR quasi-peak mode. Above 1GHz, peak detector function mode is used with a resolution bandwidth of 1MHz and a video bandwidth of 1MHz. The peak level complies with the average limit. Peak mode is used with linearly polarized horn antenna and low-loss microwave cable.

PCTEST™ PT. 15. REPORT	PCTEST	MEASUREMENT REPORT FCC Part 15B		Reviewed by: Quality Manager
Filename:	Test Dates:	EUT:	FCC ID:	Page A3
B.240602360.A3D	June 11-15, 2004	Internal DVD R/ RW Drive	A3DND-3100A	

AFCL = Antenna Factor (Roberts dipole) and Cable Loss (30 ft. RG58C/U).



Radiated Test Data/Plots

FREQ (MHz)	Level (dBm)	AFCL (dB/m)	POL (H/V)	Height (m)	Azimuth (° angle)	F/S (uV/M)	Margin (dB)
73.07	12.74	6.67	V	2.6	45	19.40	-10.6
202.23	6.70	16.60	V	2.7	225	23.31	-6.7
305.13	5.42	20.78	V	2.5	330	26.21	-10.8
406.86	3.24	23.86	Н	1.7	300	27.11	-9.9
496.34	2.49	26.01	Н	1.6	90	28.51	-8.5
682.91	0.10	29.60	Н	1.3	180	29.71	-7.3

Table A-2. Radiated Measurements at 10-meters

Sample #3 S/N: 456M004SSSS

NOTES:

1. All modes of operation were investigated and the worst-case emissions are reported.

2. The radiated limits are shown on Figure A-1. Above 1 GHz the limit is $500\mu V/m$.

Measurements using CISPR quasi-peak mode. Above 1GHz, peak detector function mode is used with a resolution bandwidth of 1MHz and a video bandwidth of 1MHz. The peak level complies with the average limit. Peak mode is used with linearly polarized horn antenna and low-loss microwave cable.

PCTEST™ PT. 15. REPORT	PCTEST	MEASUREMENT REPORT FCC Part 15B		Reviewed by: Quality Manager
Filename:	Test Dates:	EUT:	FCC ID:	Page A4
B.240602360.A3D	June 11-15, 2004	Internal DVD R/ RW Drive	A3DND-3100A	

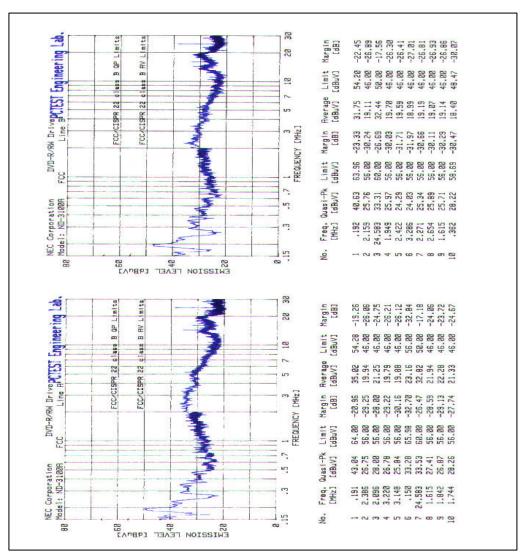
All readings are calibrated by HP8640B signal generator with accuracy traceable to the National Institute of Standards and Technology (NIST).

AFCL = Antenna Factor (Roberts dipole) and Cable Loss (30 ft. RG58C/U).



Line-Conducted Test Data

Plot A-1. Line-Conducted Test Plot



Sample #1 S/N: 456M004SSSS

Notes:

- 1. All Modes of operation were investigated and the worst-case emissions are reported.
- 2. The limit for Class B device(s) from 150kHz to 30MHz are specified in EN55022.
- 3. Line A = Phase: Line B = Neutral
- 4. Deviations to the Specifications: None.

PCTEST™ PT. 15. REPORT	PCTEST	MEASUREMENT REPORT FCC Part 15B		Reviewed by: Quality Manager
Filename:	Test Dates:	EUT:	FCC ID:	Page A5
B.240602360.A3D	June 11-15, 2004	Internal DVD R/ RW Drive	A3DND-3100A	



Line-Conducted Test Data

ź Margin [dB] Engineering | 20 5.5.4.5.6.6.5.4.5. a 9 54.03 46.00 46.00 47.00 47.00 2 FRIEST Average [dBuV] CISPR 22 23 55 28 84 48 48 48 13 5 FCC/CISPR [\F2] DVD-R/RW Drive 4 Margin [dB] -6.51 -17.68 -19.55 -22.07 -24.73 -22.33 -23.01 -22.81 FREQUENCY Limit [dBuV] 64.00 62.57 59.04 60.59 56.00 56.00 57.00 Quasi-Pk [dBuV] 57,49 44.89 41.84 41.84 34.58 35.87 32.99 33.19 34.58 Corporation el: ND-3188A 57 Freq. m .191 .227 .347 .384 .384 .528 .1516 .1616 NEC C No. 15 - N 9 4 10 to ~ 80 60 60 88 30 Engineering Lab. -2.58 -13.29 -14.81 -17.98 -17.98 -17.98 -19.74 -19.74 20 PY L 8 54,08 49.05 46.08 46.08 46.08 46.08 46.08 CC/CISPR 22 elass B dissa B 2 Line APCTEST E Average [dBuV] 22 un [MHZ] Margin [dB] DVD-R/RW Drive RS/NZS-3548 Lin 45.83.88.83.88 REQUENCY Limit [dBuV] 99 99 98 98 98 98

Plot A-2. Line-Conducted Test Plot

Sample #2 S/N: 456M005SSSS

Quasi-Pk [dBuV]

Freq.

ė

m

1 25

. 191 . 227 . 347 . 287 . 467 . 383 . 383 . 519 . 519 . 616

- N E 4 15 10 1 8 5 5 5

Notes:

Corporation el: ND-3188A

Model: N

28

- All Modes of operation were investigated and the worst-case emissions are reported.
- The limit for Class B device(s) from 150kHz to 30MHz are specified in EN55022.
- Line A = Phase: Line B = Neutral
- Deviations to the Specifications: None.

EWIZZION FENER [4BnA]

PCTEST™ PT. 15. REPORT	PCTEST	MEASUREMENT REPORT FCC Part 15B		Reviewed by: Quality Manager
Filename:	Test Dates:	EUT:	FCC ID:	Page A6
B.240602360.A3D	June 11-15, 2004	Internal DVD R/ RW Drive	A3DND-3100A	



Line-Conducted Test Data

30 Ź Margin [dB] -4.95 -16.81 -17.76 -18.57 -22.01 -22.52 -22.52 -22.52 -22.52 B OP Limits 20 B AV L Limit [dBuV] 54.01 46.38 46.00 46.00 46.00 46.00 46.00 46.00 8 200 "BRTEST Average [dBuV] 28.06 28.06 29.06 20.06 C) in in CISPR ive # [MHz] Margin [dB] 8 5 8,48,88,43,22,44 DCD-R/RW Driv FREQUENCY Limit [dBuV] RS Quasi-Pk [dBuV] ~ 254.89 37.57 34.83 35.19 38.24 29.33 29.40 29.40 29.40 Corporation el: ND-3100A 5 Freq. 3 .191 .346 .346 .382 .383 .383 .385 .855 .855 NEC (1 10 S. ------88 EWIZZION CENEC [9BOA] 30 Engineering Lab. -2.32 -13.51 -11.55 -14.24 -15.11 -15.73 -17.51 -20.95 -17.82 28 0 2 54.02 53.04 53.04 59.06 59.62 69.53 49.53 46.00 46.00 m 0 ~ "PRIEST Average [dBuV] 51.70 39.88 34.82 35.51 33.80 33.70 25.65 25.65 27.69 20 LC) DCD-R/RW Drive # [MHz] Margin [dB] 1 FREQUENCY [Limit [dBuV] 55.53 Quas i -Pk [dBuV] 1 57.65 44.75 46.00 40.00 38.99 35.76 31.98 34.35 Corporation el: ND-3188A n, Freq. .191 .226 .314 .327 .327 .383 .772 .466 Mode S. 12 - N m + 10 10 7 10 10 10 EWISSION LEVEL [dBuv] 8

Plot A-3. Line-Conducted Test Plot

Sample #3 S/N: 456M004SSSS

Notes:

- 1. All Modes of operation were investigated and the worst-case emissions are reported.
- 2. The limit for Class B device(s) from 150kHz to 30MHz are specified in EN55022.
- 3. Line A = Phase; Line B = Neutral
- 4. Deviations to the Specifications: None.

PCTEST™ PT. 15. REPORT	PCTEST	MEASUREMENT REPORT FCC Part 15B		Reviewed by: Quality Manager
Filename:	Test Dates:	EUT:	FCC ID:	Page A7
B.240602360.A3D	June 11-15, 2004	Internal DVD R/ RW Drive	A3DND-3100A	



Test Support Equipment Used

1. NEC Internal DVD R/RW Drive FCC ID: A3DND-3100A (EUT) S/N: 456M005SSSS

0.6 m. unshielded analog audio cable 0.6 m. unshielded digital audio cable

2. GATEWAY Mid Tower PC Model:GP6-450 S/N: 0011745565

1.8 m. unshielded AC power cord

3. SONY Monitor Model: SDM-HS74 S/N: N/A

1.8 m. shielded D-SUB cable1.8 m. unshielded AC power cord

4. H/P THINKJET Printer FCC ID: DS16XU2225C S/N: 2651540366

1.8 m. unshielded AC power cord 2.0 m. shielded parallel cable

5. LOGITECH Mouse Model: JNZ211443 S/N: hca30223393

1.8 m. unshielded cable

6. GATEWAY Keyboard Model: SK-9921 S/N: C084851

1.8 m. unshielded cable

7. ZOOM Modem FCC ID: BDNV34MINI-EXT S/N: 1257ZM4X1012

1.8 m. unshielded DC power cord 1.6 m. shielded serial Cable

8. SONY Headphones Model: MDR-V2 S/N: PCT2006

2.0 m. shielded audio cable

Note: See Attachment H – Test Setup Photographs, for actual system test setup.

PCTEST TM PT. 15. REPORT	PCTEST	MEASUREMENT REPORT FCC Part 15B	NEC	Reviewed by: Quality Manager
Filename:	Test Dates:	EUT:	FCC ID:	Page A8
B.240602360.A3D	June 11-15, 2004	Internal DVD R/ RW Drive	A3DND-3100A	