FCC ID: DBL1995VL

EMC

TEST REPORT

REPORT NO. : F87070611
MODEL NO. : PL900
DATE OF TEST : July 11, 1998

PREPARED FOR : CHUNTEX ELECTRONIC CO., LTD.

ADDRESS : 6F, NO. 2, ALLEY 6, LANE 235 PAO CHIAO RD.,
HSIN TIEN, TAIPEI HSIEN, TAIWAN, R.O.C.

PREPARED BY: ADVANCE DATA TECHNOLOGY CORPORATION

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Accredited Laboratory

12F, NO.1, SEC.4, NAN-KING EAST RD.,
TAIPEI, TAIWAN, R.O.C.

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1. CERTIFICATION

Issue Date: July 15, 1998

Product	:	COLOR MONITOR
Trade Name	:	CTX
Model No.	:	PL900
Applicant	:	CHUNTEX ELECTRONIC CO., LTD.
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 July 11, 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: John Liao , DATE: 7/15/98
(John Liao)

CHECKED BY: Ariel Hsieh , DATE: 7/15/98
(Ariel Hsieh)

APPROVED BY: Mike Su , DATE: 7/15/98
(Mike Su)

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	COLOR MONITOR
Model No.	:	PL900
Power Supply Type	:	Switching
Power Cord	:	Nonshielded (1.8m)
Data Cable	:	Shielded (1.8m)

Note: The EUT is a 19" color monitor with resolution up to 1600x1200 (94 kHz).

There are two ferrite cores on the video cable outside the monitor.

For more detailed features description, please refer to ATTACHMENT 1 - TECHNICAL DESCRIPTION OF EUT and User's Manual.

2.2 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories are used to form representative test configuration during the tests.

No.	Product	Brand	Model No.	FCC ID	I/O Cable
1	PERSONAL COMPUTER	HP	D4579A	DoC Approved	Nonshielded Power (1.8m)
2	KEYBOARD	FORWARD	FDA-104GA	F4ZDA-104G	Shielded Signal (1.4m)
3	MOUSE	COMPAQ	M-S28	DZL210472	Shielded Signal (1.8m)
4	PRINTER	HP	2225C+	DSI6XU2225	Shielded Signal (1.2m) Nonshielded Power (1.9m)
5	MODEM	ACEEX	1414	IFAXDM1414	Shielded Signal (1.2m) Nonshielded Power (1.9m)
6	VGA CARD	DIAMOND	STEALTH 64 VIDEO	FTUPCI968524	N/A

2.3 TEST METHODOLOGY AND CONFIGURATION

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4:1992. Radiated testing was performed at an antenna to EUT distance of 10 m on an open area test site.

Please refer to the photos of test configuration in Item 5.

3. TEST INSTRUMENTS

3.1 TEST INSTRUMENTS (EMISSION)

RADIATED EMISSION MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated until
HP Spectrum Analyzer	8590L	3544A00941	Dec. 14, 1998
HP Pre-Amplifier	8447D	2944A08312	Sept. 10, 1998
HP Preamplifier	8347A	3307A01088	Sept. 4, 1998
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 28, 1998
CHASE BILOG Antenna	CBL6111A	1500	Sept. 12, 1998
EMCO Double Ridged Guide Antenna	3115	9312-4192	April 3, 1999
EMCO Tower	1051	1264	N/A
Open Field Test Site	Site 1	ADT-R01	Sept. 5, 1998

Note: 1. The measurement uncertainty is less than +/- 3dB, which is calculated as per NAMA's document NIS81.

2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.

CONDUCTED EMISSION MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE & SCHWARZ Test Receiver	ESHS30	828109/007	Aug. 4, 1998
ROHDE & SCHWARZ Artificial Mains Network	ESH2-Z5	892107/003	July 22, 1998
EMCO L.I.S.N.	3825/2	9504-2359	Aug. 1, 1998
Shielded Room	Site 3	ADT-C03	N/A

Note: 1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per NAMA's document NIS81.

2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.

3.2 LIMITS OF CONDUCTED AND RADIATED EMISSION

LIMIT OF RADIATED EMISSION OF CISPR 22

FREQUENCY (MHz)	Class A (at 10m) dBuV/m	Class B (at 10m) 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 (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 (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 - 2000 MHz (Radiated Emission)
Input Voltage	:	120 Vac, 60 Hz
Temperature	:	30 ℃
Humidity	:	53 %
Atmospheric Pressure	:	996 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -18.6 dB at 2.882 MHz Minimum passing margin of radiated emission: -3.3 dB at 118.24 MHz

Note: The EUT was pretested under the following resolution & horizontal synchronization speed mode:

* 1600x1200 mode (94 kHz),
* 1280x1024 mode (80 kHz),
* 640x480 mode (31.5 kHz)

The worst emission levels were found under 1600x1200 mode (94 kHz) and therefore the test data of only this mode is recorded.

4.1.1 EUT OPERATION CONDITION

1. Turn on the power of all equipments.
2. PC runs a test program to enable all functions.
3. PC reads and writes messages from FDD and HDD.
4. PC sends "H" messages to monitor (EUT) and monitor displays "H" patterns on screen.
5. PC sends "H" messages to modem.
6. PC sends "H" messages to printer, and printer prints them on paper.
7. Repeat steps 3-7.

4.2 TEST DATA OF CONDUCTED EMISSION

EUT: **COLOR MONITOR** MODEL: **PL900**

MODE: **1600x1200 (94 kHz)**

6 dB Bandwidth: 10 kHz

TEST PERSONNEL: John Liao

Freq.	L Level		N Level		Limit		Margin [dB (μV)]			
[MHz]	[dB (μV)]		[dB (μV)]		[dB (μV)]		L		N	
	QP	AV	QP	AV	QP	AV	QP	AV	QP	AV
0.186	37.30	-	32.40	-	64.21	54.21	-26.9	-	-31.8	-
0.282	39.40	-	37.80	-	60.76	50.76	-21.4	-	-23.0	-
0.655	31.70	-	26.80	-	56.00	46.00	-24.3	-	-29.2	-
2.882	37.40	-	37.30	-	56.00	46.00	-18.6	-	-18.7	-
6.561	40.80	-	41.20	-	60.00	50.00	-19.2	-	-18.8	-
20.999	37.50	-	37.10	-	60.00	50.00	-22.5	-	-22.9	-

Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
4. The emission levels of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value

ADT CO. Shielded Room 3
CISPR 22 CLASS B

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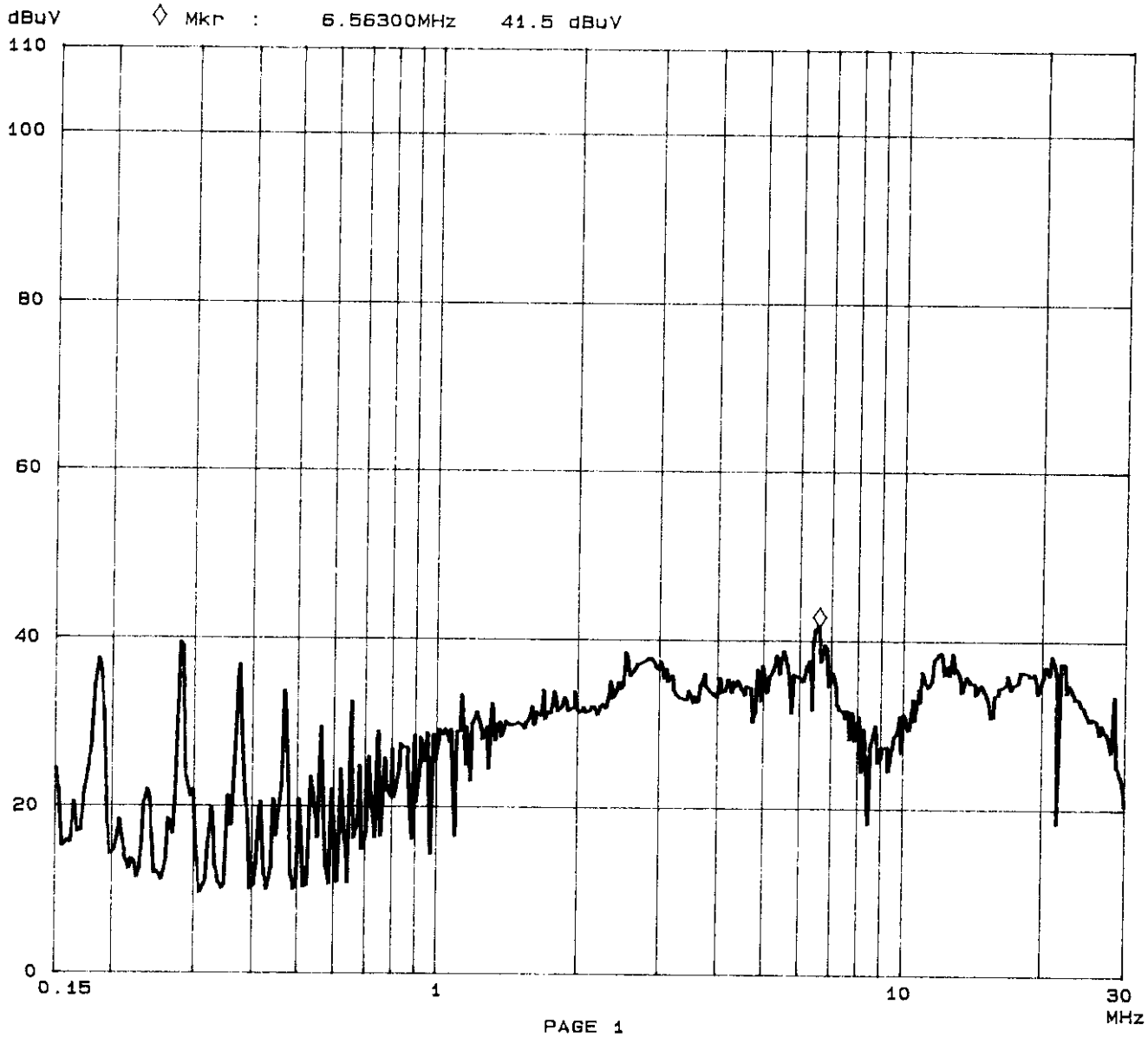
Tested by John Liao

EUT: MODEL: PL900
Op Cond: 1600X1200 94kHz
Test Spec: LISN : L
Comment: FULL SYSTEM

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. Shielded Room 3
CISPR 22 CLASS B

11. Jul 98 11:03

EUT: MODEL: PL900
Op Cond: 1600X1200 94kHz
Test Spec: LISN : N
Comment: FULL SYSTEM

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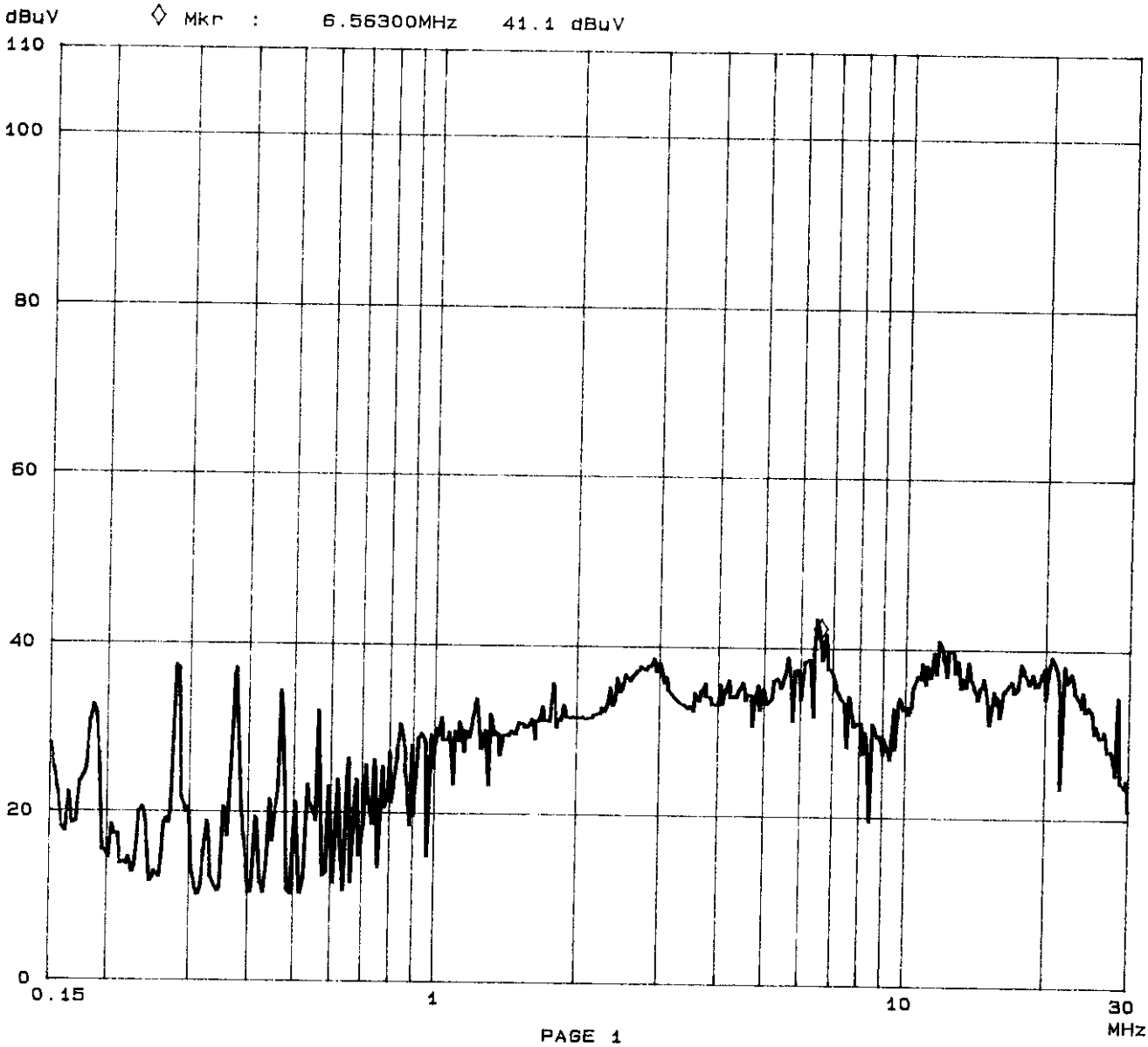
Tested by John Liao

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



4.3 TEST DATA OF RADIATED EMISSION

EUT: **COLOR MONITOR** MODEL: **PL900**

MODE: **1600x1200 (94 kHz)** POLARITY: Horizontal

ANTENNA: CHASE BILOG CBL6111A/EMCO Horn 3115

DETECTOR FUNCTION AND BANDWIDTH: Quasi peak, 120 kHz (30-1000 MHz)
Peak, 1 MHz (1000 MHz-2000 MHz)

FREQUENCY RANGE: 30-1000 MHz MEASURED DISTANCE: 10 M

FREQUENCY RANGE: 1000-2000 MHz MEASURED DISTANCE: 3 M

TEST PERSONNEL: John Liao

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
46.28	13.2	3.2	16.4	30.0	-13.6
67.58	8.0	15.4	23.4	30.0	-6.6
84.29	9.6	8.1	17.7	30.0	-12.3
118.23	14.6	9.1	23.7	30.0	-6.3
151.89	13.3	4.9	18.2	30.0	-11.8
168.86	12.2	13.2	25.4	30.0	-4.6
185.58	12.2	12.1	24.3	30.0	-5.7
202.53	12.9	9.4	22.3	30.0	-7.7

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

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TEST DATA OF RADIATED EMISSION

EUT: **COLOR MONITOR** MODEL: **PL900**

MODE: **1600x1200 (94 kHz)** POLARITY: Vertical

ANTENNA: CHASE BILOG CBL6111A/EMCO Horn 3115

DETECTOR FUNCTION AND BANDWIDTH: Quasi peak, 120 kHz (30-1000 MHz)
Peak, 1 MHz (1000 MHz-2000 MHz)

FREQUENCY RANGE: 30-1000 MHz MEASURED DISTANCE: 10 M

FREQUENCY RANGE: 1000-2000 MHz MEASURED DISTANCE: 3 M

TEST PERSONNEL: John Liao

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
44.25	13.7	12.6	26.3	30.0	-3.7
46.30	12.7	13.5	26.2	30.0	-3.8
67.59	7.6	18.3	25.9	30.0	-4.1
84.32	8.5	11.9	20.4	30.0	-9.6
118.24	15.0	11.7	26.7	30.0	-3.3
151.90	15.0	8.6	23.6	30.0	-6.4
168.84	13.1	12.7	25.8	30.0	-4.2
185.58	12.9	10.8	23.7	30.0	-6.3

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:

Picture Tube	48.2cm/19 inches (viewable 45.7cm/18") diagonal measurement (Low radiation / Anti-Static/ Anti-Magnetic)		
Dot Pitch	0.26mm		
Scan Frequency	Horizontal 30 to 95 kHz Vertical 50 to 160 Hz , TTL		
Max. Resolution	1600 x 1200 (75Hz)		
Plug & Play	DDC 1/DDC 2B		
Power Supply	AC 100-120V/200-240V, 50/60 Hz (Automatic)		
Power Consumption	120W, <8W in power-saving mode		
Dimensions	460 (W) x 453.5 (H) x 456 (D) mm 18.1 (W) x 17.9 (H) x 18 (D) inches		
Weight	19.5Kgs/42.95lbs		
Environmental	Operating	Temperature	5°C to 35°C
		Humidity	20% to 80% (Non condensing)
	Storage	Temperature	-20°C to 60°C
		Humidity	10% to 90% (Non condensing)