

COVER PAGE FOR TEST REPORT

Test Item Description:	LCD Projector
Model/Type Reference:	VT48, VT48+, VT480, VT480+, VT49, VT49+, VT490, VT490+, VT491, VT491+, VT57, VT58, VT58BE, VT58+, VT59, VT59BE, VT59+, VT580, VT580+, VT590, VT590+, VT595, VT595+, VT695, VT695+
Rating(s):	100-240 V~, 50/60 Hz, 2.4-1.0 A (for VT48, VT49, VT57, VT58, VT58BE, VT59, VT59BE) 100 V~, 50/60 Hz, 2.4 A (for VT48, VT49, VT58, VT59 shipped to Japan) 100-240 V~, 50/60 Hz, 3.1-1.3 A (for VT480, VT490, VT491, VT580, VT590, VT595, VT695) 100 V~, 50/60 Hz, 3.1 A (for VT480, VT490, VT491, VT580, VT590, VT595, VT695 shipped to Japan) 200-240 V~, 50/60 Hz, 1.2 A (for VT48+, VT49+, VT58+, VT59+) 200-240 V~, 50/60 Hz, 1.5 A (for VT480+, VT490+, VT491+, VT580+, VT590+, VT595+, VT695+)
Standards:	IEC 60950-1:2001, First Edition
Applicant Name and Address:	NEC VIEWTECHNOLOGY LTD 686-1 NISHI-OI OI-MACHI ASHIGARAKAMI-GUN KANAGAWA 258-0017 JAPAN
Factory Location(s):	1. NEC NAGANO LTD 8060 ROKUDOBARA MISUZU INA-SHI NAGANO-KEN 396-0198 JAPAN 2. TOSHIN TECHNOLOGY (SHENZHEN) CO LTD BLK 1 LONG HUA TOWNFUL INDUSTRIAL PARK BAO'AN DISTRICT, LONGHUA TOWN SHENZHEN, GUANGDONG CHINA 3. SUZHOU SHIN-EI SANGYO CO LTD 158-106, 108 HUASHAN RD NEW DISTRICT SUZHOU, JIANGSU 215011 CHINA

This Report includes the following parts, in addition to this cover page:

1. Specific Technical Criteria
2. Clause Verdicts
3. Critical Components
4. Enclosures
 - a. Marking Plate

The original report was modified on 2006-12-14 to include the following changes/additions:
Amendment 3:

This report is only valid in conjunction with CB Test Report No. NC5553-A6-CB-1 (CB Certificate No. JPULA-00779) and including revisions CB Test Report No. NC5553-A6-CB-1 (Correction 1) (CB Certificate No. JPULA-00779-C1), CB Test Report No. NC5553-A6-CB-1 (Amendment 1) (CB Certificate No. JPULA-00779-A1/C1), CB Test Report No. NC5553-A6-CB-1 (Correction 2) (CB Certificate No. JPULA-00779-A1/C2), CB Test Report No. NC5553-A6-CB-1 (Amendment 2) (CB Certificate No. JPULA-00779-A2/C2) and CB Test Report No. NC5553-A6-CB-1 (Correction 3) (CB Certificate No. JPULA-00779-A2/C3) for following modification.

- Addition of similar models VT491 and VT491+.
Referred to Model Difference for details.






All applicable tests according to the above standard(s) have been carried out.

Test results are valid only for the tested equipment.

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 	Test Report issued under the responsibility of:	 UL Apex Co., Ltd.
TEST REPORT IEC 60950-1, First Edition Information technology equipment-Safety Part 1: General Requirements		
Report Reference No : NC5553-A6-CB-1		
Tested By : Naoyuki Ito		
Approved By : Holger Laible		
Date of issue : 2005-09-22		
CB Testing Laboratory : UL Apex Co., Ltd.		
Address : 4383-326 Asama-cho, Ise-shi, Mie-ken, 516-0021, Japan		
Testing location/procedure : CBTL <input checked="" type="checkbox"/> RMT <input type="checkbox"/> SMT <input type="checkbox"/> TMP <input type="checkbox"/> WMT <input type="checkbox"/>		
Testing Location/address : UL Apex Co., Ltd. 4383-326 Asama-cho, Ise-shi, Mie-ken, 516-0021, Japan		
Applicant's name : NEC VIEWTECHNOLOGY LTD		
Address : 686-1 NISHI-OI OI-MACHI ASHIGARAKAMI-GUN KANAGAWA 258-0017 JAPAN		
Test specification:		
Standard : IEC 60950-1:2001, First Edition		
Test procedure : CB Scheme		
Non-standard test method : N/A		
Test Report Form No. : IEC60950_1B		
Test Report Form originator : SGS Fimko Ltd		
Master TRF : dated 2003-03		

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Test item description	LCD Projector
Trade Mark	NEC
Model/Type reference	VT48, VT48+, VT480, VT480+, VT49, VT49+, VT490, VT490+, VT491, VT491+, VT57, VT58, VT58BE, VT58+, VT59, VT59BE, VT59+, VT580, VT580+, VT590, VT590+, VT595, VT595+, VT695, VT695+
Manufacturer	NEC VIEWTECHNOLOGY LTD 686-1 NISHI-OI OI-MACHI ASHIGARAKAMI-GUN KANAGAWA 258-0017 JAPAN
Rating	100-240 V~, 50/60 Hz, 2.4-1.0 A (for VT48, VT49, VT57, VT58, VT58BE, VT59, VT59BE) 100 V~, 50/60 Hz, 2.4 A (for VT48, VT49, VT58, VT59 shipped to Japan) 100-240 V~, 50/60 Hz, 3.1-1.3 A (for VT480, VT490, VT491, VT580, VT590, VT595, VT695) 100 V~, 50/60 Hz, 3.1 A (for VT480, VT490, VT491, VT580, VT590, VT595, VT695 shipped to Japan) 200-240 V~, 50/60 Hz, 1.2 A (for VT48+, VT49+, VT58+, VT59+) 200-240 V~, 50/60 Hz, 1.5 A (for VT480+, VT490+, VT491+, VT580+, VT590+, VT595+, VT695+)

Summary of Testing:

No tests were conducted

Copy of Marking Plate - Refer to Enclosure titled Marking Plate for copy.

Test item particulars :

Equipment mobility: movable or fixed

Operating condition	continuous
Mains supply tolerance (%).....	+10%, -10%
Tested for IT power systems.....	No
IT testing, phase-phase voltage (V)	N/A
Class of equipment.....	Class II (double insulated)
Mass of equipment (kg)	Approx. 2.9 kg (unit only), Approx. 4.6 kg (Including Ceiling Mount Kit)
Protection against ingress of water	IP X0

Possible test case verdicts:

- test case does not apply to the test object	N / A
- test object does meet the requirement	P(Pass)
- test object does not meet the requirement	F(Fail)

Testing:

Date(s) of receipt of test item	N / A
Date(s) of Performance of tests	N / A

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

"(see Enclosure #)" refers to additional information appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a point is used as the decimal separator.

Refer to the Cover Page For Test Report for a list of all Factory Locations.

GENERAL PRODUCT INFORMATION:

Report Summary

The original report was modified on 2005-10-19 to include the following changes/additions:
This report is only valid in conjunction with CB Test Report No. NC5553-A6-CB-1 (CB Certificate No. JPULA-00779) for following modification.

(Correction 1)

1. Correction of mis-information in Table - 1.5.1

- Electrical rating of D101 is corrected from "600 V, 10 A" to "600 V, 6 A".

- Manufacturer's name of T101 is corrected from "Tabuchi Electric" to "Tabuchi Electric Industry"

2. Correction of mis-information in Table 4.5 - Temperature rise measurements

- Information of T101 was corrected as follow (according to Table 1.5.1 - Critical Component List)

<original> Primary Transformer (T101) coil (Class A), Temperature Limit: 90°C

<correction> Inductor (T101) coil (Class E), Temperature Limit: 105°C

There is no additional evaluation.

Only information of Table 1.5.1 and Table 4.5 were revised.

The original report was modified on 2006-03-30 to include the following changes/additions:
This report is only valid in conjunction with CB Test Report No. NC5513-A6 (CB Certificate No. JPULA-00779-C1) for following modification.

(Amendment 1)

1. Replacements of secondary DC Fans

Intake Fan 1 located under front lens (Provided in Models VT580, VT480 series only) and Intake Fan2 located under lamp fan were replaced Model D07F-12B1S1 09A by Model D07F-12B1S1 15A. Model D07F-12B1S1 15A is identical to Model D07F-12B1S1 09A except for the length of the lead wire.

2. Addition of alternate Reflector Lamp

Alternate Reflector Lamp for VT58, VT48, Ushio Inc, model NSH150NEJ/C is same as original model NSH150NEJ, except for production factory only.

3. Correction of misinformation in table 1.5.1.

Type/model data of Secondary Fuse (F1002) (protected VCCS+6.2V circuit)

<wrong> CCP2E50

<correct>CCP2E50H

No tests were considered necessary in Amendment 1, because there was no modification related directly to a safety.

The original report was modified on 2006-06-20 to include the following changes/additions:
This report is only valid in conjunction with CB Test Report No. NC5553-A6 (CB Certificate No. JPULA-00779-A1/C1) for following modifications.

(Correction 2)

- Addition of the Model: VT57

- Addition of the Model: VT58BE

Cl. 1.7.1 was evaluated in this report.

The original report was modified on 2006-08-11 to include the following changes/additions:
This report is only valid in conjunction with CB Test Report No. NC5553-A6-CB-1 (CB Certificate No. JPULA-00779) and including revisions CB Test Report No. NC5553-A6-CB-1 (Correction 1) (CB Certificate No. JPULA-00779-C1), CB Test Report No. NC5553-A6-CB-1 (Amendment 1) (CB Certificate No. JPULA-00779-A1/C1) and CB Test Report No. NC5553-A6-CB-1 (Correction 2) (CB Certificate No. JPULA-00779-A1/C2) for following modification.

(Amendment 2)

- Addition of similar models VT49, VT49+, VT490, VT490+, VT59, VT59BE, VT59+, VT590, VT590+, VT595, VT595+, VT695, VT695+

See "Model Differences" for details.

Subclause 1.5.1, 1.6.2, 1.7.1, 2.5, 5.3 were re-evaluated.

- Correction of information for Lamp Fan in critical components list

<Wrong> Type: BM6025-04

<Correct> Type: BM6025-04W-XXX (X: Changeable but not related for safety.)

The original report was modified on 2006-11-07 to include the following changes/additions:
Correction 3:

This report is only valid in conjunction with CB Test Report No. NC5553-A6-CB-1 (CB Certificate No. JPULA-00779) and including revisions CB Test Report No. NC5553-A6-CB-1 (Correction 1) (CB Certificate No. JPULA-00779-C1), CB Test Report No. NC5553-A6-CB-1 (Amendment 1) (CB Certificate No. JPULA-00779-A1/C1), CB Test Report No. NC5553-A6-CB-1 (Correction 2) (CB Certificate No. JPULA-00779-A1/C2) and CB Test Report No. NC5553-A6-CB-1 (Amendment 2) (CB Certificate No. JPULA-00779-A2/C2) for the following modification.

- Correction of a typographical error in Table 1.5.1

Type/model of Inductor (L101, L102) - Alternate, Toho Zinc
<wrong> FK-070EK-4420H
<correct> FK-070EK-4320H

The original report was modified on 2006-12-14 to include the following changes/additions:
Amendment 3:

This report is only valid in conjunction with CB Test Report No. NC5553-A6-CB-1 (CB Certificate No. JPULA-00779) and including revisions CB Test Report No. NC5553-A6-CB-1 (Correction 1) (CB Certificate No. JPULA-00779-C1), CB Test Report No. NC5553-A6-CB-1 (Amendment 1) (CB Certificate No. JPULA-00779-A1/C1), CB Test Report No. NC5553-A6-CB-1 (Correction 2) (CB Certificate No. JPULA-00779-A1/C2), CB Test Report No. NC5553-A6-CB-1 (Amendment 2) (CB Certificate No. JPULA-00779-A2/C2) and CB Test Report No. NC5553-A6-CB-1 (Correction 3) (CB Certificate No. JPULA-00779-A2/C3) for following modification.

- Addition of similar models VT491 and VT491+.
Referred to Model Difference for details.

Product Description

Operator can replace the lamp and needs to remove screws (with tool or coin) to contact to lamp.

This equipment is considered to be used under movable (table-top), and also, considered to be used under ceiling mount position (upside down holding) with the optional ceiling mount kit, and also, considered to be used under free tilt position (rear down holding and front down holding) with the optional ceiling mount kit. The unit is secured to ceiling by service personnel only.

15 V, 17.5 V outputs of power supply, VCCS+6.2 V circuit (protecting by Fuse F1002) and VCSS+4.2 V circuit (protecting by Fuse F1005) in this equipment are evaluated as Limited Power Source. (see subclause 2.5)

Power Supply (Filter Board Types 3N10081, 3N10111 and Main Board Types 3N10080, 3N10110) is evaluated as parts of the equipment in this report.

Main Board, Type 3N10110 is similar to Main Board, Type 3N10080, except for the ratings of the following components, components/pattern trace layout.

- Diode Bridge (D101) (Rating current is different: 3N10080; 6 A. 3N10110; 15 A)
- Inductor (L104) (Difference is type designation only. Not construction change.)
- Varistor (VZ102) (Located Line-to-Line after fuse F1. Only provided to 3N10080)

Filter Board, Model 310111 is identical to Filter Board, Model 3N10081, except for model designation only. Models VT49, VT49+, VT490, VT490+, VT491, VT491+, VT59, VT59BE, VT59+, VT590, VT590+, VT595, VT595+, VT695, VT695+ are used with Filter Board, Model 3N10111 and Main Board, Model 3N10110. (Modified in Amendment 3)

Ballast Power Supplies, Models PHG201G21AD (used in Models VT480, VT480+, VT580, VT580+),

PHG201G21DD (used in Models VT490, VT490+, VT491, VT491+, VT590, VT590+, VT595, VT595+, VT695, VT695+), PHG201G21BD (used in Models VT48, VT48+, VT57, VT58, VT58+, VT58BE) and PHG201G21ED (used in Models VT49, VT49+, VT59, VT59BE, VT59+) have been CB certified by NEMKO under IEC 60950-1 1st edition. (Modified in Amendment 3)

Model Differences

Model VT580 is the basic model described in this report.

Model VT480 is identical to Model VT580, except for minor change of secondary circuit for different resolution.

Model VT58 is identical to Model VT580, except for electrical rating, minor change of secondary circuits, ballast power supply and lamp for different brightness, interface connectors and Intake Fan 1 (Model VT58 is not provided with Intake Fan 1).

Model VT48 is identical to Model VT58, except for minor change of front lens for optical unit and minor change of secondary circuit for different resolution.

Referred to Enclosure #7-01 for model differences

Model VT48+ and VT58+ are identical to Models VT48 and VT58, except for model designation, information of electrical rating as follow.

- Models VT48, VT58: 100-240 V~, 2.4-1.0 A, 50/60 Hz
- Models VT48+, VT58+: 200-240 V~, 1.2 A, 50/60 Hz

Model VT480+ and VT580+ are identical to Models VT480 and VT580, except for model designation, information of electrical rating as follow.

- Models VT480, VT580: 100-240 V~, 3.1-1.3 A, 50/60 Hz
- Models VT480+, VT580+: 200-240 V~, 1.5 A, 50/60 Hz

Maybe, Models VT48+, VT58+, VT480+, VT580+ are shipped to China only.

Models VT57, VT58BE is identical to Model VT58 except for model designation only.

Model VT49 is identical to Model VT48, except for components of power supply, micro lens for brightness and secondary protection device for L.P.S.

Model VT59 is identical to Model VT49, except for minor change of front lens for optical unit and minor change of secondary circuit for different resolution (Model VT49: SVGA, Model VT59: XGA).

Models VT59BE is identical to Model VT59, except for model designation only.

Model VT490 is identical to Model VT580, except for components of power supply, secondary protection device for L.P.S.

Model VT590 is identical to Model VT490, except for minor change of secondary circuit for different resolution (Model VT490: SVGA, Model VT590: XGA).

Model VT595 is identical to Model VT590, except for speaker. (Model VT590: 1 W, Model VT595: 5 W).

Model VT695 is identical to Model VT595, except for model designation.

Models VT49+, VT59+ are identical to Models VT49, VT59, except for model designation, information of electrical rating (Refer to Cover Page.).

Models VT490+, VT590+, VT595+, VT695+ are identical to Models VT490, VT590, VT595, VT695, except for model designation, information of electrical rating (Refer to Cover Page.).

Referred to Enclosure #7-08 for model differences.

Model VT491 is similar to Model VT490, except for interface connectors (Addition of COMPUTER 2 IN, AUDIO IN and AUDIO OUT. These connectors are identical to the basic model VT580.) (Modified in Amendment 3)

Model VT491+ is similar to Model VT491, except for model designation, information of electrical rating. (Refer to Cover Page. Modified in Amendment 3)

Additional Information

(Optional) Accessories:

- Remote Controller
- Ceiling Mount Kit

Power Supply Cord Sets for Europe, Japan were evaluated in this report.
Also, Power Supply Cord Set for USA was evaluated. (see Enclosure #7-06)

Appliance inlet is certified at 2.5 A, 250 V under EN60320-1 only. And it is certified at 7 A, 125 V/2.5 A, 250 V or 5 A, 250 V under UL498. Input current of Models VT480, VT580 exceeds 2.5 A under input voltage 100 V. According to UL60950-1 1st edition (based on IEC60950-1 1st edition), since the appliance inlet is certified under UL498, it is complied with 3.2.4.

However, recognizing NCBs may require additional information, testing and evaluation.

Unless otherwise indicated, all tests were conducted on Model VT580 under the following maximum normal load condition installed at desk-top position.

- Continuous projection of color bar
- Following input signal was used for the evaluation of this projector.
R. G. B. Input signal; Resolution 640 x 480, Vertical Frequency 60 Hz
(Input Signal does not influence on the equipment's power consumption.)

Speeds of Fan Motors are changeable by ambient temperature. During the tests, the following operating fan-speed conditions were considered.

<Model VT480, VT580 series>

- Setting at Ambient 26 °C
Intake Fan 1 (located on front side): 2200 rpm, Intake Fan 2 (located on rear side): 2200 rpm
Lamp Fan: 2800 rpm, Exhaust Fan: 2100 rpm

- Setting at Ambient 38 °C
Intake Fan 1 (located on front side): 4000 rpm, Intake Fan 2 (located on rear side): 4000 rpm
Lamp Fan: 2800 rpm, Exhaust Fan: 2700 rpm

- Setting at Ambient 40 °C (During this setting condition, the unit was operated under eco-mode only.)

- Intake Fan 1 (located on front side): 4000 rpm, Intake Fan 2 (located on rear side): 4000 rpm
Lamp Fan: 1800 rpm, Exhaust Fan: 2700 rpm

<Model VT48, VT58 series>

- Setting at Ambient 26 °C

Intake Fan: 2200 rpm, Lamp Fan: 2800 rpm, Exhaust Fan: 1600 rpm

- Setting at Ambient 38 °C

Intake Fan: 3800 rpm, Lamp Fan: 2800 rpm, Exhaust Fan: 2250 rpm

- Setting at Ambient 40 °C (During this setting condition, the unit was operated under eco-mode only.)

Intake Fan: 3600 rpm, Lamp Fan: 1800 rpm, Exhaust Fan: 2000 rpm

Power Supply Output - Overload Tests (17.5 V output, 15.0 V output, 4.2 V dc output and 6.2 V output) were not performed, because this test results were same as results of Transformer Abnormal Operation Test.

For applicant request, the following national differences to IEC 60950, Third Edition were also evaluated and the results were attached with this report as an enclosure: China, Japan, Singapore (Japanese deviation was evaluated to Models VT48, VT49, VT58, VT59, VT59BE, VT480, VT490, VT491, VT580, VT590, VT595, VT695)

Technical Considerations

The product was submitted and tested for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 40°C

The means of connection to the mains supply is: Pluggable A, Detachable power cord

The product is intended for use on the following power systems: TN, TN-S

The equipment disconnect device is considered to be: Appliance coupler

The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS): VCCS+6.2V, VCSS+4.2 V and 15 V, 17.5 V outputs of power supply (main board), 3N10080

The following terminals are supplied signal level only: S-VIDEO, VIDEO, AUDIO IN (for S-VIDEO and VIDEO), PC CONTROL, MONITOR OUT, AUDIO OUT (for MONITOR OUT), COMPUTER 1 IN (for Models VT480, VT480+, VT490, VT490+, VT491, VT491+, VT580, VT580+, VT590, VT590+, VT595, VT595+, VT695, VT695+), COMPUTER 2 IN (for Models VT480, VT480+, VT490, VT490+, VT491, VT491+, VT580, VT580+, VT590, VT590+), COMPUTER 2 (DVI-I) IN (for Models VT595, VT595+, VT695, VT695+), COMPUTER IN (for Models VT48, VT48+, VT49, VT49+, VT57, VT58, VT58BE, VT58+, VT59, VT59BE, VT59+)

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.1	Rated voltage(s) or voltage range(s) (V).....:	100-240 V~ 200-240 V~ (for Models VT48+, VT49+, VT58+, VT59+, VT480+, VT490+, VT491+, VT580+, VT590+, VT595+, VT695+) (Modified in Amendment 3)	Pass
	Rated current (mA or A)	2.4-1.0 A (for VT48, VT49, VT57, VT58, VT58BE, VT59, VT59BE) 3.1-1.3 A (for VT480, VT490, VT491, VT580, VT590, VT595, VT695) (Modified on Amendment 3) 1.2 A (for VT48+, VT49+, VT58+, VT59+) 1.5 A (for VT480+, VT490+, VT491+, VT580+, VT590+, VT595+, VT695+) (Modified in Amendment 3)	Pass
	Type/model or type reference.....:	(Amendment 3) VT48, VT48+, VT480, VT480+, VT49, VT49+, VT490, VT490+, VT491, VT491+, VT57, VT58, VT58BE, VT58+, VT59, VT59BE, VT59+, VT580, VT580+, VT590, VT590+, VT595, VT595+, VT695, VT695+	Pass

IEC 60950-1			
Clause	Requirement + Test	Result - Remark	Verdict

1.5.1	TABLE: list of critical components					Pass
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity ¹⁾	
Power Supply Cord Set (for Europe) (optional)	--	--	--	--	--	
Plug	KDK Fujikura (Thailand)	KP-419C	250 V, 2.5 A	EN50075	VDE	
Cord	KDK Fujikura (Thailand)	H03VVH2-F	2 x 0.75 mm ²	HD21.5 S3	VDE	
Connector	KDK Fujikura (Thailand)	KS-15F	250 V, 2.5 A	EN60320	SEMKO, VDE	
Power Supply Cord Set (for Europe) - Alternate (optional)	--	--	--	--	--	
Plug	Kawasaki Electric Wire	KP-419C	250 V, 2.5 A	EN50075	VDE	
Cord	Kawasaki Electric Wire	H03VVH2-F	2 x 0.75 mm ²	VDE0281-5	VDE	
Connector	Kawasaki Electric Wire	KS-15F	250 V, 2.5 A	EN60320-1	SEMKO	
Power Supply Cord Set (for Japan) (optional)	--	--	--	--	--	
Plug	KDK Fujikura (Thailand)	KP-713C	125 V, 7 A	(Certif. No. 41- 19568)	METI	
Cord	KDK Fujikura (Thailand)	B-type	2 x 0.75 mm ²	(Certif. No. 12- 9473)	METI	
Connector	KDK Fujikura (Thailand)	KS-15M	125 V, 7 A	(Certif. No. 41- 22420)	METI	
Power Supply Cord Set (for Japan) - Alternate (optional)	--	--	--	--	--	
Plug	Hewtech LTK	VM10920-B0	125 V, 7 A	(Certif. No. JET1031-43001- 1004)	JET	
Cord	LTK Electric Wire (Huizhou)	HVCTFK	2 x 0.75 mm ²	(Certif. No. JET0751-12009- 1001)	JET	
Cord - Alternate	Hewtech (Lianyungang) Wire	HVCTFK	2 x 0.75 mm ²	(Certif. No. JET1349-12009- 1001)	JET	

IEC 60950-1					
Clause	Requirement + Test			Result - Remark	Verdict
Connector	Hirakawa Hewtech	VM10760-B0	125 V, 7 A	(Certif. No. JET1031-43006-1001)	JET
Filter Board	--	--	--	--	--
Appliance Inlet (CN1)	Nicoon Industry	NC-133	2.5 A, 250 V (Rating 5 A, 250 V under UL Recognition)	EN60320 (UL498)	UL DEMKO (UL)
Appliance Inlet (CN1) Alternate	Echo Electric	AC-M15	2.5 A/250 V (Rating 2.5 A, 250 V/7 A, 125 V under UL Recognition)	EN60320-1 (UL498)	UL DEMKO (UL)
Appliance Inlet (CN1) Alternate	SMK	II24-1	2.5 A/250 V (Rating 2.5 A, 250 V/7 A, 125 V under UL Recognition)	EN60320-1 (UL498)	UL DEMKO (UL)
Fuse (F101)	Suzhou Littelfuse OVS	215	250 V, T6.3 AH	EN60127	VDE
Fuse (F101) - Alternate	SKYGATE	SG5013	250 V, T6.3 AH	EN60127	SEMKO
Power Switch (SW1)	Matsushita Electric Works	AJ7241BF	250 V, 10(4) A	EN61058-1	TUV
Varistor (VZ101)	Various	Various	Minimum 250 V	IEC60950-1	None
Bleeder Resistor (R100)	Various	Various	680 kohm, 1/4 W	IEC60950-1	None
Line-to-line Capacitor (C100, C102)	Okaya Electric Industries	LE	275 V, 0.47 μ F, X2, 55/100/56/C	IEC60384-14, 2nd edition	SEMKO
Line-to-line Capacitor (C100, C102) - Alternate	Okaya Electric Industries	XE	275 V, 0.47 μ F, X2, 40/100/56/C	IEC60384-14, 2nd edition	VDE
Inductor (L101, L102)	Toho Zinc	FK-070EK-6820H	Class E (Inductance 6.8 mH)	IEC60950	None
Core Cover for Inductor (L101, L102)	WinTech Polymer	CRN7000	PBT, V-0, 120°C RTI, minimum 0.32 mm thick	UL94	UL
Inductor (L101, L102) - Alternate	Sekishin Industry	SFC-1910-04073	Class E (Inductance 6.8 mH)	IEC60950	None
Core Cover for Alternate Inductor (L101, L102)	WinTech Polymer	CRN7000	PBT, V-0, 120°C RTI, minimum 0.32 mm thick	UL94	UL
Inductor (L101, L102) - Alternate	Toho Zinc	FK-070EK-4320H	Class E (Inductance 4.3		--

IEC 60950-1					
Clause	Requirement + Test		Result - Remark	Verdict	
Core Cover for Alternate Inductor (L101, L102)	WinTech Polymer	CRN7000	mH) PBT, V-0, 120°C RTI, minimum 0.32 mm thick	UL94	UL
Inductor (L101, L102) - Alternate	Sekishin Industry	SFC-1910-03043	Class E (Inductance 4.3 mH)	IEC60950	None
Core Cover for Alternate Inductor (L101, L102)	WinTech Polymer	CRN7000	PBT, V-0, 120°C RTI, minimum 0.32 mm thick	UL94	UL
Line-to-secondary capacitor (C105, C106)	Murata Manufacturing	KX	250 V, 1000 pF, Y1, 25/125/21/C	IEC60384-14, 2nd edition	VDE
Primary Wire of Filter Board	Various	UL Style 10097	Two provided. 600 V, 105°C, 20 AWG. Covered with Insulation Tubing; minimum 0.4 mm thick	UL758	UL
Printed Wiring Board	Various	Various	Minimum V-1, 130°C	UL94	UL
DC Power Supply	--	--	--	--	--
Connector (CN2, CN101)	Various	Various	250 V, 7 A	EN69184	TUV
Varistor (VZ102) (for Model VT49, VT49+, VT490, VT490+, VT491, VT491+, VT59, VT59BE, VT59+, VT590, VT590+, VT595, VT595+, VT695, VT695+)	Various	Various	Minimum 250 V	IEC60950-1	None
Diode Bridge (D101)	Various	Various	600 V, 6 A	IEC60950-1	None
Alternate Diode Bridge (D101) (for Model VT49, VT49+, VT490, VT490+, VT491, VT491+, VT59, VT59BE, VT59+, VT590, VT590+, VT595, VT595+,	Various	Various	600 V, 15 A	IEC60950-1	None

IEC 60950-1					
Clause	Requirement + Test		Result - Remark	Verdict	
VT695, VT695+)					
Heatsink of D101, Q101, Q201	Various	Various	Aluminum. Overall size: 28 by 82.1 by 27 mm, minimum 1.95 mm thick	IEC60950-1	None
Inductor (L104)	Toho Zinc	SK-068KST-100YR (070)	(Class A)	IEC60950-1	None
Base of Inductor (L104)	Wintech Polymer	CN7030	PBT, V-0, 120°C RTI, minimum 0.32 mm thick	UL94	UL
Inductor (L104) - Alternate (for Model VT49, VT49+, VT490, VT490+, VT491, VT491+, VT59, VT59BE, VT59+, VT590, VT590+, VT595, VT595+, VT695, VT695+)	Toho Zinc	SK-068KST-100YRS (070)	(Class A, Same construction as Type SK-068KST-100YR (070).)	IEC60950-1	None
Base of Alternate Inductor (L104)	Wintech Polymer	CN7030	PBT, V-0, 120°C RTI, minimum 0.32 mm thick	UL94	UL
Inductor (L104) - Alternate	Sekishin Industry	IDM-T10B-03201	(Class A)	IEC60950-1	None
Base of Alternate Inductor (L104)	Various	Various	Bakelite, V-0	UL94	UL
Inductor (T101)	Tabuchi Electric Industry	CHT120	Class E	IEC60950	None
Bobbin of Inductor (T101)	Various	Various	Phenolic, V-0, minimum 0.64 mm thick	UL94	UL
Electrolytic Capacitor (C104)	Various	Various	220 µF, 400 V, 105°C	IEC60950-1	None
Transformer (T201)	Tabuchi Electric Industry	PTTX108	Class B	IEC60950	None
Bobbin of Transformer (T201)	Sumitomo Bakelite	PM-9820	Phenolic, V-0, minimum 0.64 mm thick	UL94	UL
Alternate Bobbin of Transformer (T201)	Hitachi Chemical	CP-J-8800 or CP-J-8600	Phenolic, V-0, minimum 0.64 mm thick	UL94	UL
Insulation tape	Jingjiang Yahua Pressure Sensitive Glue	CT	Yellow color only, CTI equal to or greater than 400, but less than 600 (on	IEC60112	UL

IEC 60950-1					
Clause	Requirement + Test		Result - Remark	Verdict	
			film/adhesive side)		
Insulation tape - Alternate	Teraoka Seisakusho	630F	CTI equal to or greater than 600 (on film/adhesive side)	IEC60112	JET
Insulation tape - Alternate	Teraoka Seisakusho	631S	CTI equal to or greater than 600 (on film/adhesive side)	IEC60112	JET
Insulation tape - Alternate	Teraoka Seisakusho	632S	CTI equal to or greater than 600 (on film/adhesive side)	IEC60112	JET
Insulation tape - Alternate	3M Company	1350F-1	Yellow color only, CTI equal to or greater than 400, but less than 600 (on film/adhesive side)	IEC60112	UL
Insulation tape - Alternate	3M Company	1318-1	Yellow color only, CTI equal to or greater than 600 (on film/adhesive side)	IEC60112	UL
Separate tape	Teraoka Seisakusho	673F	CTI equal to or greater than 600 (on film/adhesive side)	IEC60112	JET
Separate tape - Alternate	Teraoka Seisakusho	673A	CTI equal to or greater than 600 (on film/adhesive side)	UL510, UL746A	UL
Separate tape - Alternate	Nitto Denko	343B	CTI equal to or greater than 600 (on film/adhesive side)	IEC60112	JET
Separate tape - Alternate	Jingjiang Yahua Pressure Sensitive Glue	WF2901	CTI equal to or greater than 400, but less than 600, Yellow color only (on film/adhesive side)	IEC60112	UL
Primary-to-secondary	Murata Manufacturing	KX	250 V, 1000 pF, Y1, 25/125/21/C	IEC60384-14, 2nd edition	VDE

IEC 60950-1					
Clause	Requirement + Test			Result - Remark	Verdict
capacitor (C119)					
Optical Isolator (PC201, PC202, PC203)	Toshiba	TLP421F	Reinforced insulation	EN60950	FIMKO
Optical Isolator (PC201, PC202, PC203)	NEC Compound Semiconductor Devices	PS2561AL1	Reinforced insulation	EN60950-1	SEMKO
Printed Wiring Board	Various	Various	Minimum V-1, minimum 130°C	UL94	UL
Ballast PS for Model VT480, VT480+, VT580, VT580+	Ushio Inc.	PHG201G21AD	Input: 250-420 V dc, maximum 1.2 A, Output: 40-160 V dc, maximum 3.3 A, 200 W	IEC 60950-1	CB certified by NEMKO
Ballast PS for Models VT490, VT490+, VT491, VT491+, VT590, VT590+, VT595, VT595+, VT695, VT695+	Ushio Inc.	PHG201G21DD	Input: 250-420 V dc, maximum 1.2 A, Output: 40-160 V dc, maximum 3.3 A, 200 W	IEC 60950-1	CB certified by NEMKO
Ballast PS for Models VT48, VT48+, VT57, VT58, VT58BE, VT58+	Ushio Inc.	PHG201G21BD	Input: 250-420 V dc, maximum 1.2 A, Output: 40-160 V dc, maximum 3.3 A, 150 W	IEC 60950-1	CB certified by NEMKO
Ballast PS for Models VT49, VT49+, VT59, VT59BE, VT59+	Ushio Inc.	PHG201G21ED	Input: 250-420 V dc, maximum 1.2 A, Output: 40-160 V dc, maximum 3.3 A, 150 W	IEC 60950-1	CB certified by NEMKO
Other Parts	--	--	--	--	--, --
Secondary Fuse (F1005) (for Model VT580 series) (protected VCCS+4.2V circuit)	KOA	CCF1N5	60 V, 5.0 A	UL248-1	UL
Secondary Fuse (F1001) (for Model VT590 series) (protected VCCS+4.2V	KOA	CCP2E100	72 V, 4 A	UL248-1	UL

IEC 60950-1					
Clause	Requirement + Test		Result - Remark		Verdict
circuit)					
Secondary Fuse (F1002) (for Model VT580 series) (protected VCCS+6.2V circuit)	KOA	CCP2E50H	Maximum 72 V dc, 2.5 A (Interrupting Ability Rating: 5.0 A)	UL248-1, UL248-14	UL
Secondary Fuse (F1006) (for Model VT590 series) (protected VCCS+6.2V circuit)	Kamaya Electric	FCC16252ADTP	32 V dc, 2.5 A	UL248-1, UL248-14	UL
PWB of Secondary circuits	various	various	Minimum V-1, minimum 105 °C	UL94	UL
Lamp Fan	Minebea-Matsushita Motor	BM6025-04W-XXX (X: Changeable but not related for safety.)	12 V dc, 0.18 A (minimum 0.14 m3/min, Class A)	IEC60950-1	None
Body and blade material of Lamp Fan	various	various	minimum V-2	UL94	UL
Exhaust Fan	Minebea-Matsushita Motor	3110KL-04W-B39	12 V dc, 0.22 A (0.83 m3/min)		VDE
Intake Fan 1 (located under front lens. Provided in Models VT480, VT480+, VT490, VT490+, VT491, VT491+, VT580, VT580+, VT590, VT590+, VT595, VT595+, VT695, VT695+)	Nidec America	D07F-12B1S1 15A	12 V dc, 0.32 A (minimum 0.22 m3/min)	EN60950-1	TUV
Intake Fan 2 (located under Lamp Fan)	Nidec America	D07F-12B1S1 15A	12 V dc, 0.32 A (minimum 0.22 m3/min, Class A)	IEC60950-1	None
Body and blade material of Intake Fan 2	various	various	minimum V-2	UL94	UL
Thermal Switch (Located on	Uchiya Thermostat	UP62G	105 °C, 250 Vdc, 0.5 A (100,000	EN60730	VDE

IEC 60950-1					
Clause	Requirement + Test			Result - Remark	Verdict

lamp housing)			cycles test was complied)		
Thermal Sensor for Fan control	Murata Mfg.	NCP18XH103F03RB	Operating Temperature: -40 - 125 °C, Resistance under 25 °C: 10k ohm	UL1434	UL
Lamp Assembly for VT480, VT480+, VT490, VT490+, VT491, VT491+, VT580, VT580+, VT590, VT590+, VT595, VT595+, VT695, VT695+	NEC Viewtechnology	VT85LP	(This type name is described for user service to replace the lamp.)	IEC60950-1	None
Lamp Assembly for VT48, VT48+, VT49, VT49+, VT57, VT58, VT58BE, VT58+, VT59, VT59BE, VT59+	NEC Viewtechnology	VT80LP	(This type name is described for user service to replace the lamp.)	IEC60950-1	None
Reflector Lamp for VT480, VT480+, VT490, VT490+, VT491, VT491+, VT580, VT580+, VT590, VT590+, VT595, VT595+, VT695, VT695+	Ushio Inc	NSH200NEF	70 V dc, 200 W	IEC60950-1	None
Reflector Lamp for VT480, VT480+, VT490, VT490+, VT491, VT491+, VT580, VT580+, VT590, VT590+, VT595, VT595+, VT695, VT695+ - Alternate	Ushio Inc	NSH200NEF/C	70 V dc, 200 W (Same as NSH200NEF, except for production factory only)	UL60950	None
Reflector Lamp for VT48, VT48+, VT49, VT49+, VT57, VT58, VT58BE, VT58+,	Ushio Inc	NSH150NEJ	70 V dc, maximum 150 W	IEC60950-1	None

IEC 60950-1					
Clause	Requirement + Test			Result - Remark	Verdict
VT59, VT59BE, VT59+					
Reflector Lamp for VT48, VT48+, VT49, VT49+, VT57, VT58, VT58BE, VT58+, VT59, VT59BE, VT59+ - Alternate	Ushio Inc	NSH150NEJ/C	70 V dc, maximum 150 W (Same as NSH150NEJ, except for production factory only)	UL60950-1	None
Front lens of lamp assembly	various	various	Glass, minimum 2.9 mm thick	IEC60950-1	None
Lamp Lead	various	various	Style 3239, rated minimum 10 kV dc, minimum 200°C. Covered with insulation tubing; 300 V, 200 °C, minimum 0.4 mm thick	UL758	UL
Lamp cartridge (Holder Lamp)	Dainippon Ink & Chemical	FZ-1140-D5	V-0, 200°C RTI, minimum 0.75 mm thick (Evaluated UV protection.)	UL94	UL
Material of Lamp connector	Dainippon Ink & Chemical	FZ-1140-D5	V-0, 200°C RTI, 0.75 mm thick	UL94	UL
Insulation Sheet (covered power supply)	Mitsubishi Engineering-Plastics	N-7	V-0, minimum 0.5 mm thick	UL94	UL
Insulation Sheet (covered Ballast power supply)	Mitsubishi Engineering-Plastics	N-7	V-0, minimum 0.5 mm thick	UL94	UL
Insulation Sheet (under Filter board)	Mitsubishi Engineering-Plastics	N-7	V-0, minimum 0.5 mm thick	UL94	UL
Upper Enclosure (mechanical/electrical/fire enclosure)	Asahi Kasei	X705L	5VB, 2 mm thick (Tested Annex A.1 to the enclosure with color paint coated.)	UL94	UL
Lower Enclosure (mechanical/electrical/fire enclosure)	Asahi Kasei	X705L	5VB, 2 mm thick (Tested Annex A.1 to the enclosure with color paint	UL94	UL

IEC 60950-1					
Clause	Requirement + Test			Result - Remark	Verdict

Lamp Cover (mechanical/electrical/fire enclosure)	Asahi Kasei	X705L	coated.) 5VB, 2 mm thick (Tested Annex A.1 to the enclosure with color paint coated.)	UL94	UL
Control Button, Remote Controller's Sensor Cover, LED Cover (Decorative)	various	various	Minimum HB	UL94	UL
Lamp housing (Cover Lamp)	Dainippon Ink & Chemical	FZ-1140-D5	V-0, 200°C RTI, minimum 0.75 mm thick (Evaluated UV protection.)	UL94	UL
Lamp housing (Cover Lamp) - Alternate	Toray Industries Inc	AR04	V-0, 200°C RTI, minimum 0.75 mm thick (Evaluated UV protection.)	UL94	UL
Optical unit, fan duct	various	various	Minimum V-2	UL94	UL
Front lens body	various	various	V-0 (covered front opening for front lens)	UL94	UL
Air Filter	various	various	One or two provide. Minimum V-2 or HF-2	UL94	UL
Air Filter Holder	various	various	One or two provide. Minimum V-2 or HF-2	UL94	UL
Remote Controller (Optional)	Sanwa	RD427E	Material of Enclosure: Minimum HB. PWB; minimum V-1.	IEC60950-1	None
Ceiling Mounting Kit (Optional)	Yamagata Asahi	VT80CM	Metal	IEC60950-1	None

¹⁾ an asterisk indicates a mark which assures the agreed level of surveillance

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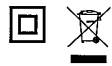
Report Reference #

NC5553-A6-CB-1

Enclosure
Marking Plate

Supplement Id	Description
13-01	Rating labels
13-02	Rating labels for Models VT491 and VT491+

NEC MODEL VT491 100-240V~ 50/60Hz 3.1-1.3A



CAUTION : TO PREVENT ELECTRIC SHOCK, DO NOT OPEN TOP COVER. NO USER-SERVICEABLE PARTS INSIDE.
ATTENTION : AFIN DE PREVENIR UN CHOC ELECTRIQUE NE PAS ENLEVER LE COUVERCLE S'ADRESSER A UN REPARATEUR COMPETENT.
WARNING : TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.
AVERTISSEMENT : POUR EVITER UN FEU OU UN RISQUE D'ELECTROCUTION NE PAS EXPOSER CET ENSEMBLE A LA PLUIE OU A L'HUMIDITE.
CAUTION : SEE INSTRUCTION MANUAL FOR LAMP REPLACEMENT.
HINWEIS : ZUM AUSWECHSELN DER LAMPE BEDIENUNGSANLEITUNG BEACHTEN.
ZUR TRENNUNG VOM NETZ IST DER NETZSTECKER AUS DER STECKDOSE ZU ZIEHEN!

イ.通風孔をふさがらないでください。内部温度の上昇を招き故障の原因になります。 ロ.温度の高い場所や湿気が多い場所での使用はさけてください。		PS E	警告	高圧注意
		定格電圧 100V 定格入力電流 3.1A 定格周波数 50/60Hz		サービスマン以外の方は トップカバーをあげない でください。内部には高 電圧部分が数多くあり、 万一さわると危険です。

ASSEMBLED IN CHINA
NEC Viewtechnology, Ltd. : 37-8, SHIBA 5-CHOME MINATO-KU, TOKYO 108-0014, JAPAN 24L62641

NEC MODEL VT491+ 200-240V~ 50/60Hz 1.5A



CAUTION : TO PREVENT ELECTRIC SHOCK, DO NOT OPEN TOP COVER. NO USER-SERVICEABLE PARTS INSIDE.
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ZUR TRENNUNG VOM NETZ IST DER NETZSTECKER AUS DER STECKDOSE ZU ZIEHEN!

: CE