

**Harvatek Surface Mount LED Data Sheet  
HT-159IRPJ-XXXX**

Official Product	Product: HT-159IRPJ-XXXX		Data Sheet No.
Tentative Product	*****		HT-159IRPJ-XXXX
Specifications are subject to change without notice. Data and drawings herein are copyrighted.	August 20, 2009	Version of 1.0	Page 1/13

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**DISCLAIMER**

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HARVATEK's products are not authorized for use as critical components in life support devices or systems without the express written approval of the President of HARVATEK or HARVATEK INTERNATIONAL. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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## Product Specifications

Product	Peak Wavelength	Test Current $I_{FP}$ (mA) $t_p = 20ms$	Radiant Intensity (mW/Sr)	Forward Voltage $V_F$ (V)	Orderable Part Number
HT-159IRPJ	850 nm	100	20.0 min	1.5 typ	HT-159IRPJ-XXXX
	Specification		Material		Quantity
Resin	Water clear		Epoxy resin		
Carrier tape	Per EIA 481-1A specs		Transparent		2000pcs per reel
Reel	Per EIA 481-1A specs		Plastic / White		
Label	HT standard		Paper		
Packing bag	220x240mm		Aluminum laminated bag/ no-zipper		One reel per bag
Carton	HT standard		Paper		

### Others:

Each immediate box consists of 5 reels. The 5 reels may not necessarily have the same lot number or the same bin combinations of  $I_V$ ,  $\lambda_D$  and  $V_f$ . Each reel has a label identifying its specification; the immediate box consists of a product label as well.

### Compliance and Certification

RoHS compliant and IS9002, QS9000 and ISO14001 certified.



### ATTENTION: Electrostatic Discharge (ESD) protection




The symbol to the left denotes that ESD precaution is needed. ESD protection for GaP and AlGaAs based chips is necessary even though they are relatively safe in the presence of low static-electric discharge. Parts built with AlInGaP, GaN, or/and InGaN based chips are **STATIC SENSITIVE devices**. ESD precaution must be taken during design and assembly.

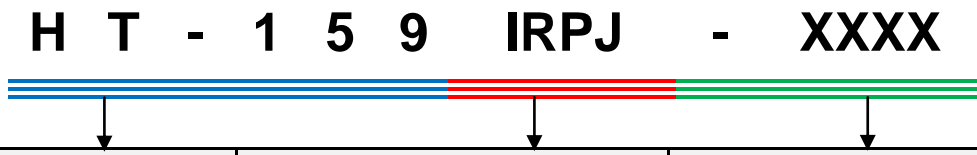
If manual work or processing is needed, please ensure the device is adequately protected from ESD during the process.

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## Label Specifications

<b>HARVATEK</b>		Date: yyyy/mm/dd 
CUSTOMER P/N: 		
HARVATEK P/N: 	QTY: PCS 	
LOT NO: 		QC
IV BIN: COLOR BIN: VF:		

### Harvatek P/N:



Series Name	Emitting Wavelength	Customer Code
<b>HT-159</b> HT: Harvatek 159: Top Mount 1206 series with 1.6mm Dome Lens 3.2 (L) x 1.6 (W) x 1.85 (H) mm	<b>IRPJ:</b> 850 nm Infrared Emitter $I_{FP}=100mA$ , $t_p=20ms$	<b>XXXX</b> Customer Product Code (TBD)

### Lot P/N:

1	2	3	4	5	6	7	8	9	10
<b>P</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>A</b>	<b>-</b>	<b>D</b>	<b>T</b>

Code 1	Code 2	Code 3	Code 4, 5	Code 6, 7	Code 9	Code 10
	Mfg. Year	Mfg. Month	Mfg. Date	Lots	Resin Color	Packaging
Internal Tracing Code	Z: 2000 1: 2001 2: 2002 3: 2003 .....	1: Jan. 2: Feb. .... 9: Sep. A: Oct. B: Nov. C: Dec.	1~31/ (30)	01~99, A,B,C...	C: Clear D: Diffused	T: Tape & Reel

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## Product Features

### Absolute Maximum Rating

Parameter	Symbol	Max.	Unit
Power Dissipation	$P_D$	190	mW
Continuous Forward Current	$I_F$	100	mA
Reverse Voltage	$V_R$	5	V
Operating Temperature	$T_{OP}$	-30 to 80	°C
Storage Temperature	$T_{ST}$	-45 to 85	°C

\* @  $t_P = 10 \mu s$ , duty cycle = 1%

### Package Outline Dimension

### Recommended Soldering Pattern for Reflow Soldering

Unit: mm Tolerance: +/-0.1

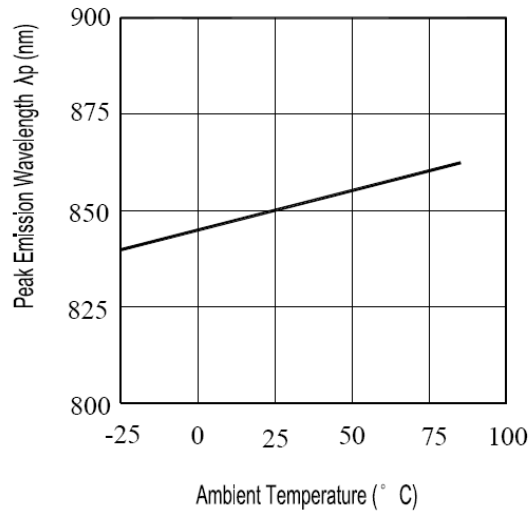
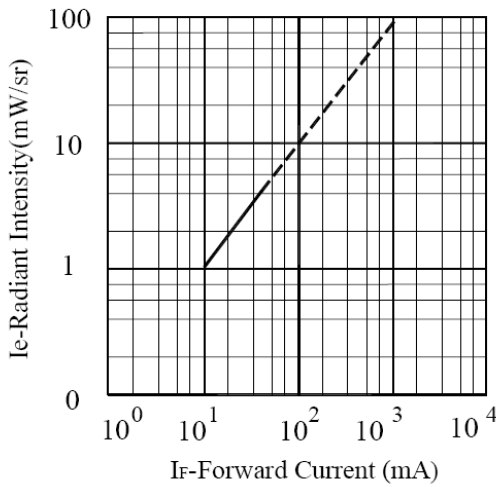
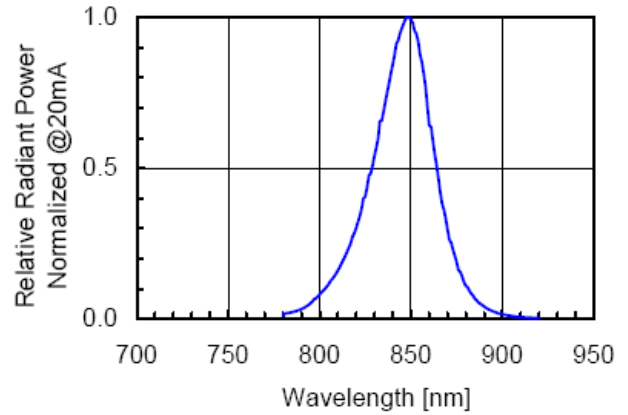
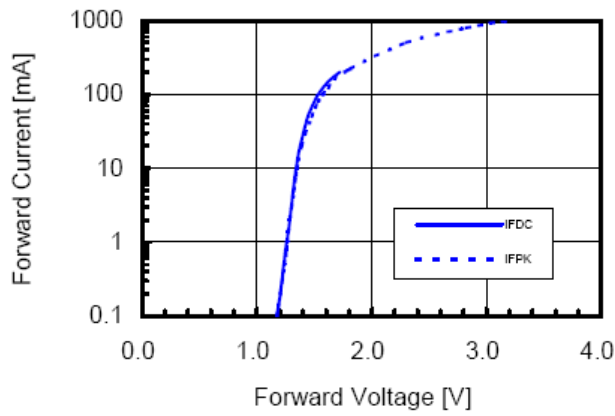
Outline Dimension	Solder Pattern
<p>                     Polarity Mark                      LED Die                      Resin                      PCB                      Cathode (-)                      Anode (+)                 </p>	
Soldering terminals may shift in the x, y direction.	Unit: mm

### Electro-Optical Characteristics

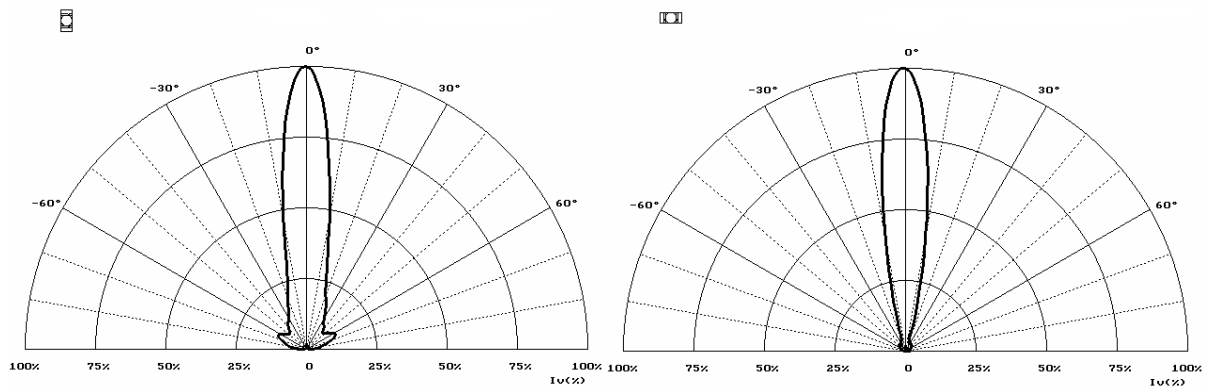
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward Voltage	$V_F$	-	1.5	1.9	V	$I_F=20mA$
Reverse Current	$I_R$	-	-	10	$\mu A$	$V_R=5V$
Peak Emission Wavelength	$\lambda_P$	-	850	-	nm	$I_F=20mA$
Radiant Intensity	$I_e$	20.0	50.0	-	mW/sr	$I_{FP}=100mA$ $t_P=20ms$
Spectral Bandwidth	$\Delta\lambda$	-	40	-	nm	$I_F=20mA$
Emission Angle	$2\frac{1}{2}\theta$	-	20	-	degrees	-

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### Characteristics Curves



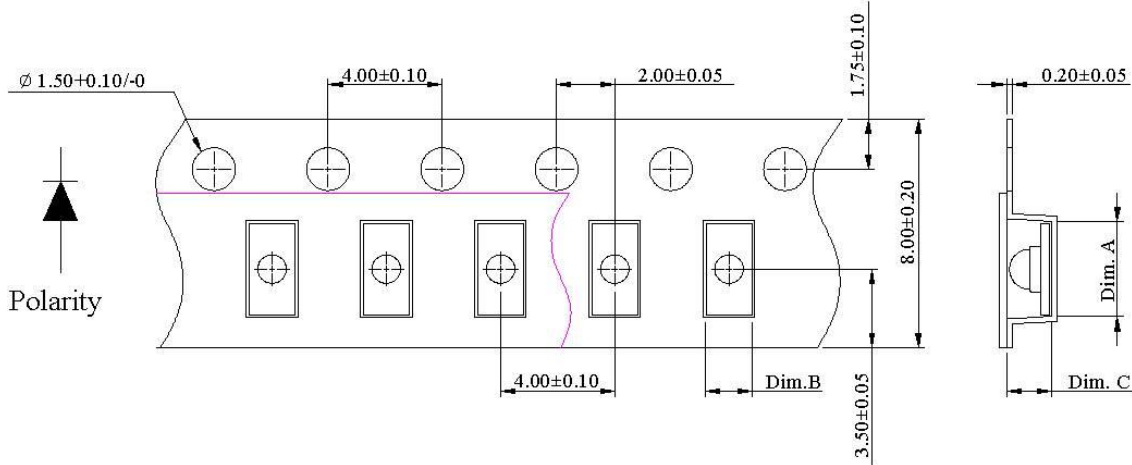
### Radiation Pattern



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### Packaging

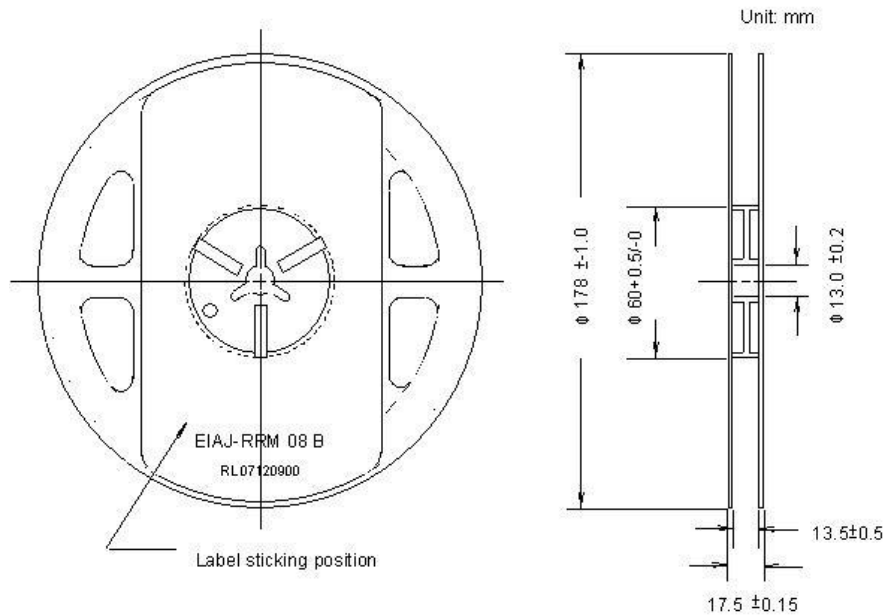
### Tape Dimension



Part No.	Dim. A	Dim. B	Dim. C	Q'ty/Reel
HT-159IRPJ-XXXX	3.30±0.10	1.70±0.10	2.2±0.10	2K

Unit: mm

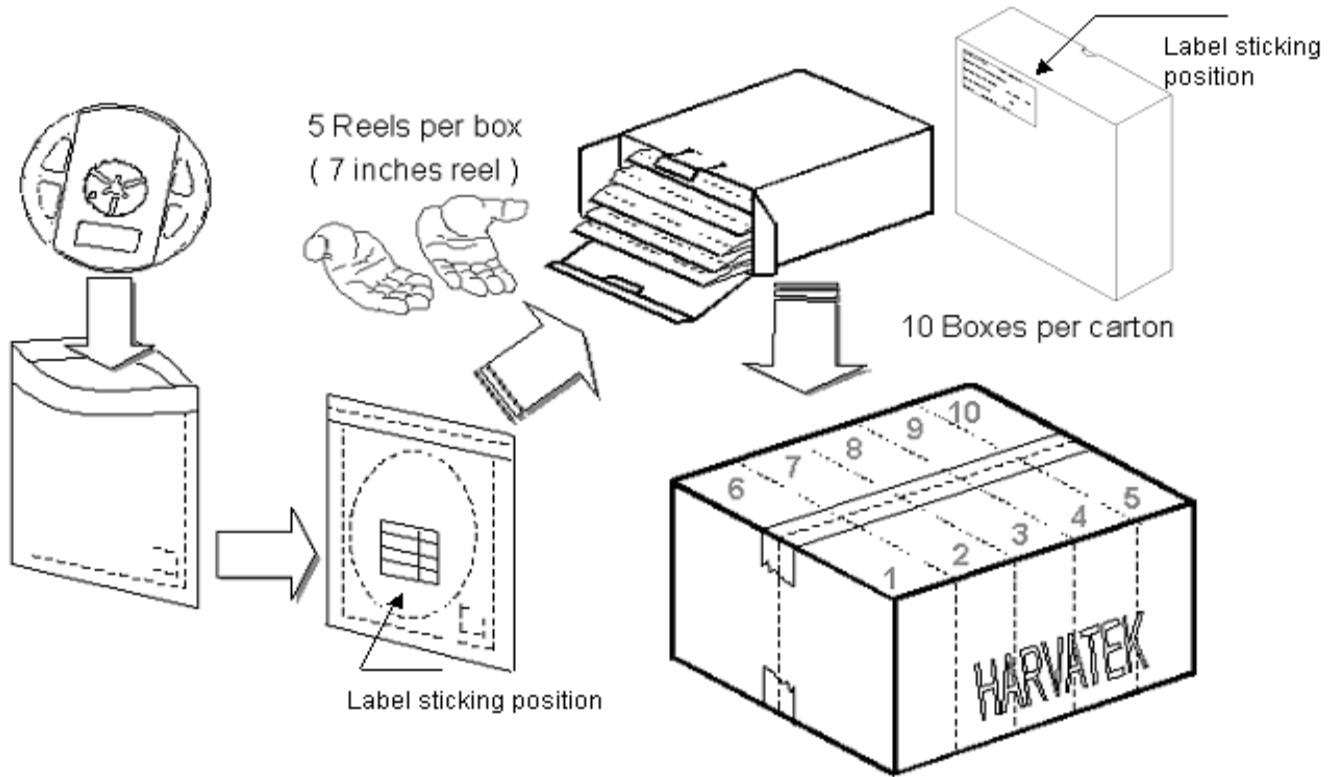
### Reel Dimension



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## Packing



5 boxes per carton is available depending on shipment quantity.

	Specification	Material	Quantity
Carrier tape	Per EIA 481-1A specs	Transparent	2000pcs per reel
Reel	Per EIA 481-1A specs	Plastic / White	
Label	HT standard	Paper	
Packing bag	220x240mm	Aluminum laminated bag/ no-zipper	One reel per bag
Carton	HT standard	Paper	Non-specified

Others:

Each immediate box consists of 5 reels. The 5 reels may not necessarily have the same lot number or the same bin combinations of Iv,  $\lambda_D$  and Vf. Each reel has a label identifying its specification; the immediate box consists of a product label as well.

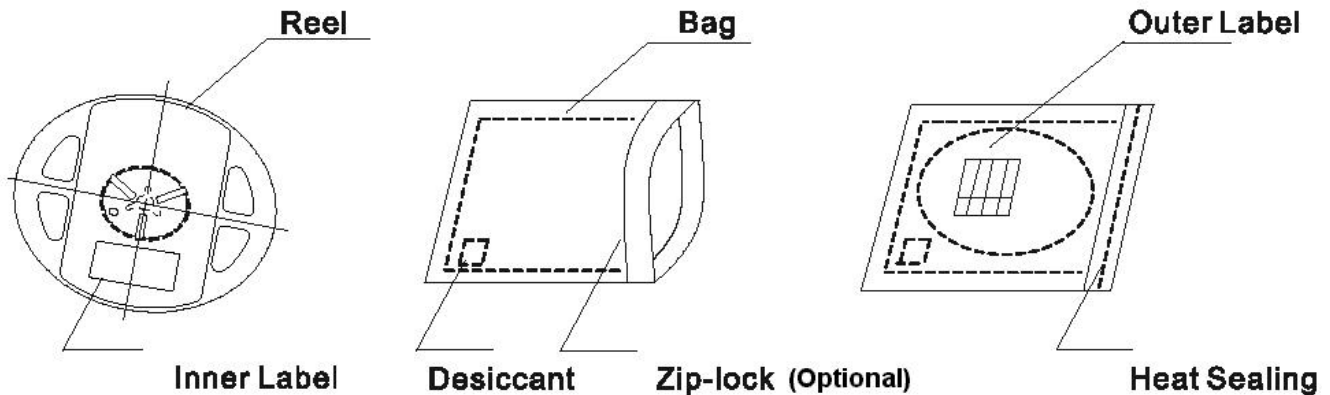
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## Dry Pack

All SMD optical devices are **MOISTURE SENSITIVE**. Avoid exposure to moisture at all times during transportation or storage. Every reel is packaged in a moisture protected anti-static bag. Each bag is properly sealed prior to shipment.

Upon request, a humidity indicator will be included in the moisture protected anti-static bag prior to shipment.

The packaging sequence is as follows:

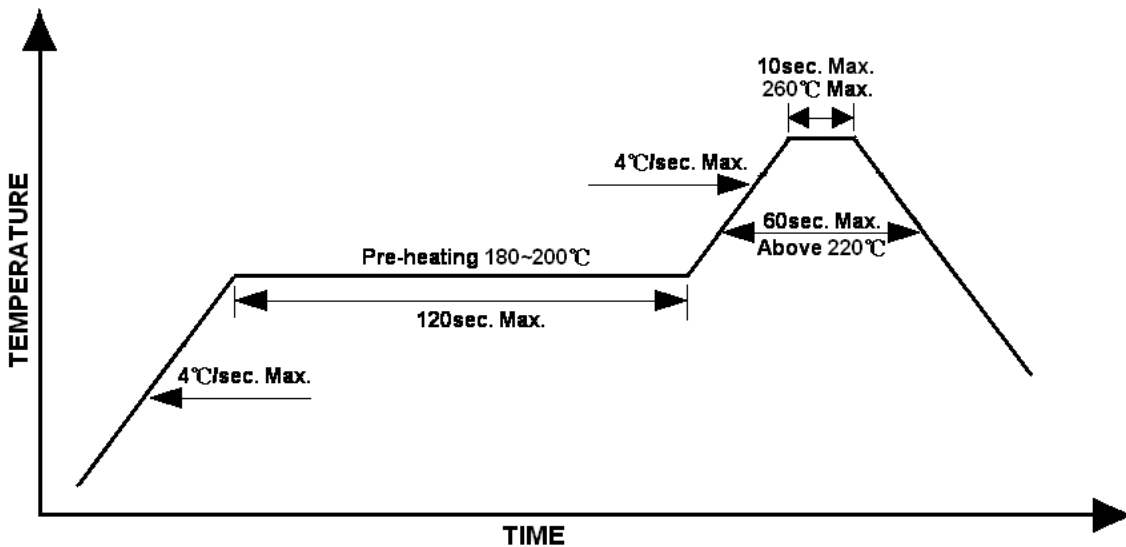


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## Reflow Soldering

- Recommended tin glue specifications: melting temperature in the range of 178~192 °C
- The recommended reflow soldering profile is as follows (temperatures indicated are as measured on the surface of the LED resin):

Lead-free Solder Profile



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**Precautions**

1. Avoid exposure to moisture at all times during transportation or storage.
2. Anti-Static precaution must be taken when handling GaN, InGaN, and AlInGaP products.
3. It is suggested to connect the unit with a current limiting resistor of the proper size. Avoid applying a reverse voltage beyond the specified limit.
4. Avoid operation beyond the limits as specified by the absolute maximum ratings.
5. Avoid direct contact with the surface through which the LED emits light.
6. If possible, assemble the unit in a clean room or dust-free environment.

**Reworking**

- Rework should be completed within 5 seconds under 260 °C.
- The iron tip must not come in contact with the copper foil.
- Twin-head type is preferred.

**Cleaning**

Following are cleaning procedures after soldering:

- An alcohol-based solvent such as isopropyl alcohol (IPA) is recommended.
- Temperature x Time should be 50°C x 30sec. or <30°C x 3min
- Ultra sonic cleaning: < 15W/ bath; bath volume ≤ 1liter
- Curing: 100 °C max, <3min

**Cautions of Pick and Place**

- Avoid stress on the resin at elevated temperature.
- Avoid rubbing or scraping the resin by any object.
- Electro-static may cause damage to the component. Please ensure that the equipment is properly grounded. Use of an ionizer fan is recommended.

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## Revision History

Changes since last revision	Page	Version No.	Revision Date
Initial Release – XXXX		1.0	08-20-2009

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