Harvatek Surface Mount CHIP LED Data Sheet
HT-159RNG-9128

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LIFE SUPPORT POLICY

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.

Product Specifications

	Specification	Material	Quantity
Iv	Z1:1125-1270 mcd Z2 1270-1440 mcd AA1: 1440-1610 mcd AA2:1610-1800 mcd AB1:1800-2010 mcd AB2:2010-2250 mcd AC1:2250-2530 mcd AC2:2530-2850 mcd AD1:2850-3200 mcd AD2:3200-3600 mcd @20mA/ Ta= 25^{O} ;Tolerance: ± 10%		
Lambda (λ_D)	515-531 nm @20mA/ Ta= 25^{O} C;Tolerance: ± 0.5nm		
Vf	2.7-3.9V @20mA/ Ta= 25^{O} C ;Tolerance: ± 0.05V		
Ir	< 100 μA @ V_R = 5 V		
Resin	Water Clear	Epoxy Resin	
Carrier tape	EIA 481-1A specs	Conductive black tape	2000pcs per reel
Reel	EIA 481-1A specs	Conductive black	
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, λ_D and Vf. Each reel has a label identifying its specification; the immediate box consists of a product label as well.

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.

Label Specifications

■**Customer P/N: 9128**

■ **Harvatek P/N:**

H T- 1 5 9 - RNG - 9 1 2 8

Series Name	Emitting Color	Customer Code
HT-159 **3.2(L)x1.6(W)x1.85(H) mm** **Reverse Mountable**	**NG: Green @20mA**	**Customer Product Code: 9128**

■ **Lot No.:**

1	2	3	4	5	6	7	8	9	10
E	1	A	1	A	2	2	L	1	2
Code 1 2		Code 3	Code 4	Code 5	Code 6	Code 7	Code 8	Code 9	Code 10
		Mfg. Year	Mfg. Month	Mfg. Date	Consecutive number		Special code		
Internal Tracing Code		2010-A 2011-B 2012-C 2013-D . .	1:Jan. 2:Feb. .... A:Oct. B:Nov. C:Dec.	1:A 2:B 3:C ... 26:Z 27:7 28:8 29:9 30:3 31:4	01~ZZ		000~ZZZ		

■ Luminous Intensity (Iv) Bin:

Color	Bin Code	Spec. Range
NG	Z1	1125-1270 mcd
	Z2	1270-1440 mcd
	AA1	1440-1610 mcd
	AA2	1610-1800 mcd
	AB1	1800-2010 mcd
	AB2	2010-2250 mcd
	AC1	2250-2530 mcd
	AC2	2530-2850 mcd
	AD1	2850-3200 mcd
	AD2	3200-3600 mcd

■ Dominant Wavelength (λ_D) Bin:

Color	Bin Code	Spec. Range
NG	A	515-519 nm
	B	519-522 nm
	C	522-525 nm
	D	525-528 nm
	E	528-531 nm

■ Forward Voltage (Vf) Bin:

Color	Bin Code	Spec. Range
NG	G8	2.7-2.9 V
	H7	2.9-3.1 V
	H8	3.1-3.3 V
	J7	3.3-3.5 V
	J8	3.5-3.7 V
	K7	3.7-3.9 V

Product Features

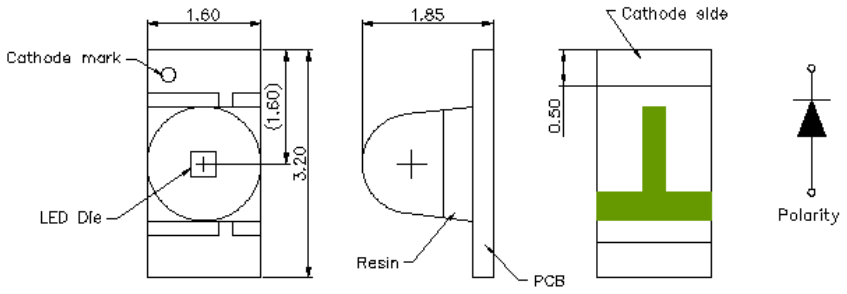
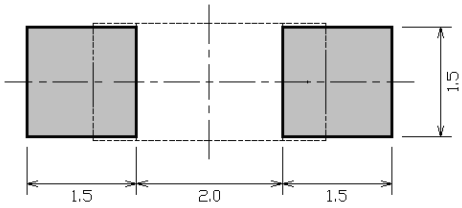
Electro-Optical Characteristics

(I_F @ 20mA, T_a 25°C)

Code for parts	Lighting Color		V_F(V)		λ (nm)			I^*_V(mcd)
			typ	max	$λ_D$	$λ_P$	△λ	Typical
HT-159RNG	Green	InGaN	3.3	3.9	527	520	40	2010

Package Outline Dimension and Recommended Soldering Pattern for Reflow Soldering

Unit: mm Tolerance: +/-0.1

Outline Dim.	Soldering Pattern
	

1 .Soldering terminals may shift in the x, y direction.

Absolute Maximum Ratings

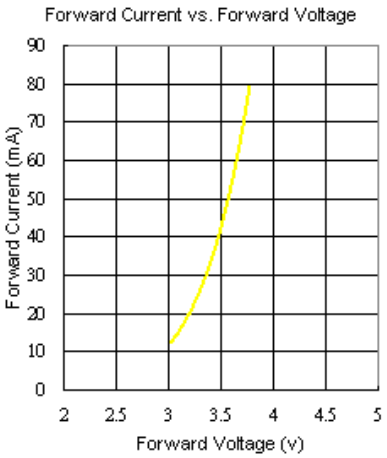
(T_a 25°C)

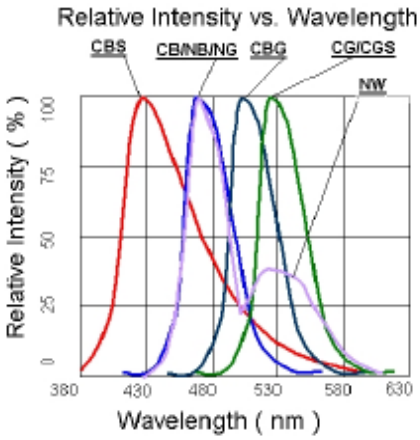
Series	P_d (mW)	I_F (mA)	I_{FP} (mA)	V_R (V)	I_R (uA)	T_{OP} (°C)	T_{ST} (°C)
HT-159RNG	78	20	80	5	<100@ V_R = 5	-30~+80	-40~+85

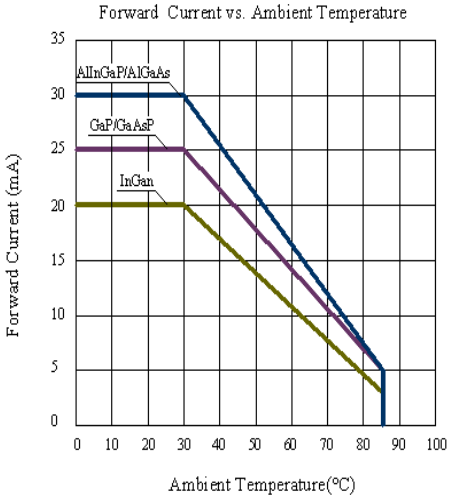
** Condition for IFP is pulse of 1/10 duty and 0.1msec width

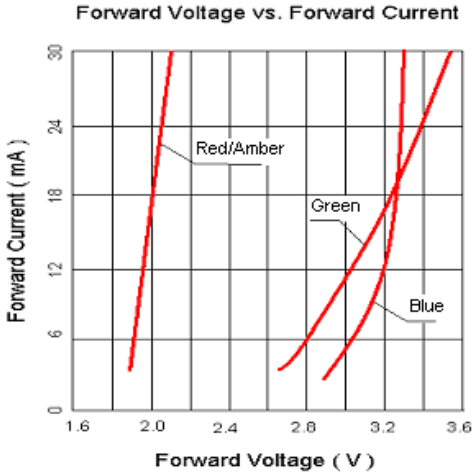
** Remarks: This product should be operated in forward bias. If a reverse voltage is continuously applied to the product, such operation can cause migration resulting in LED damage.

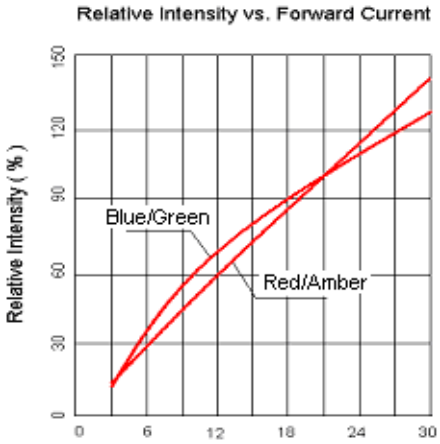
Characteristics of HT-159R Series

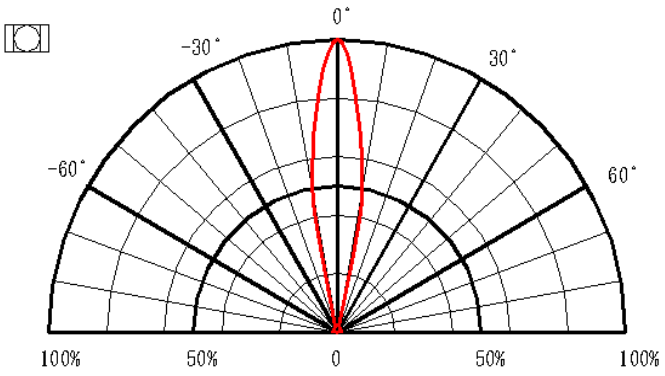


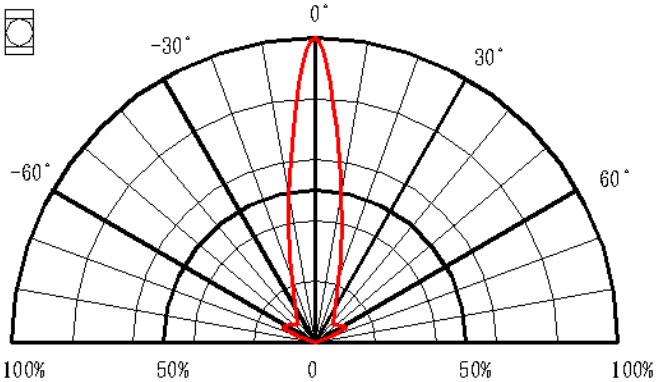






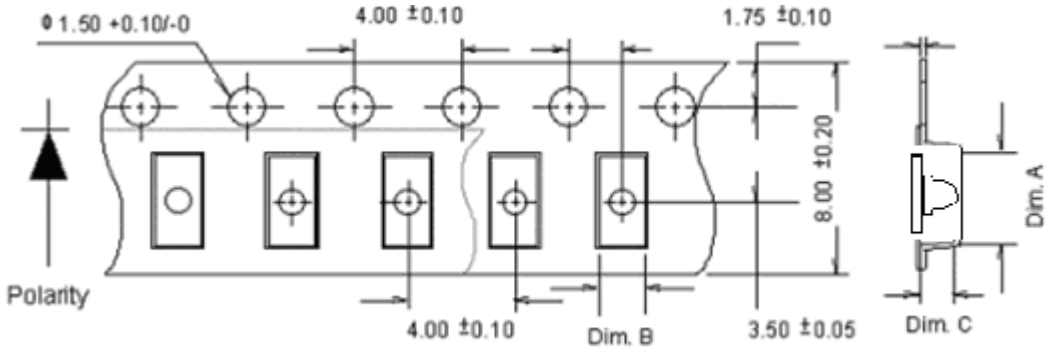






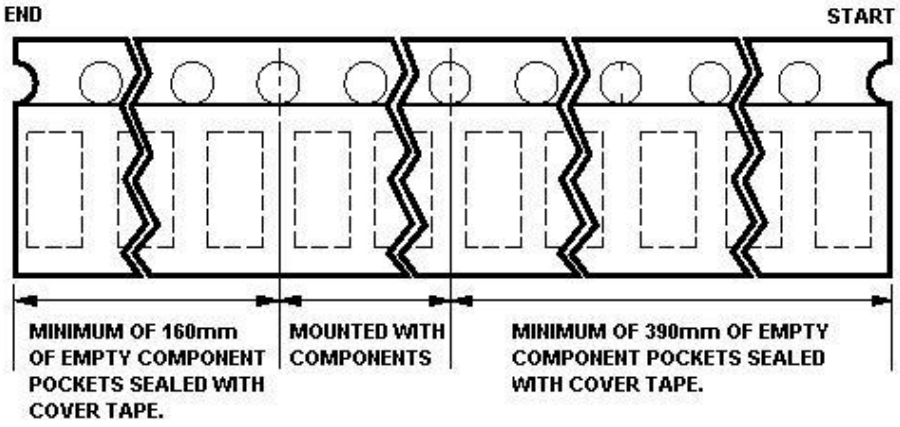
Packaging

Tape Dimension

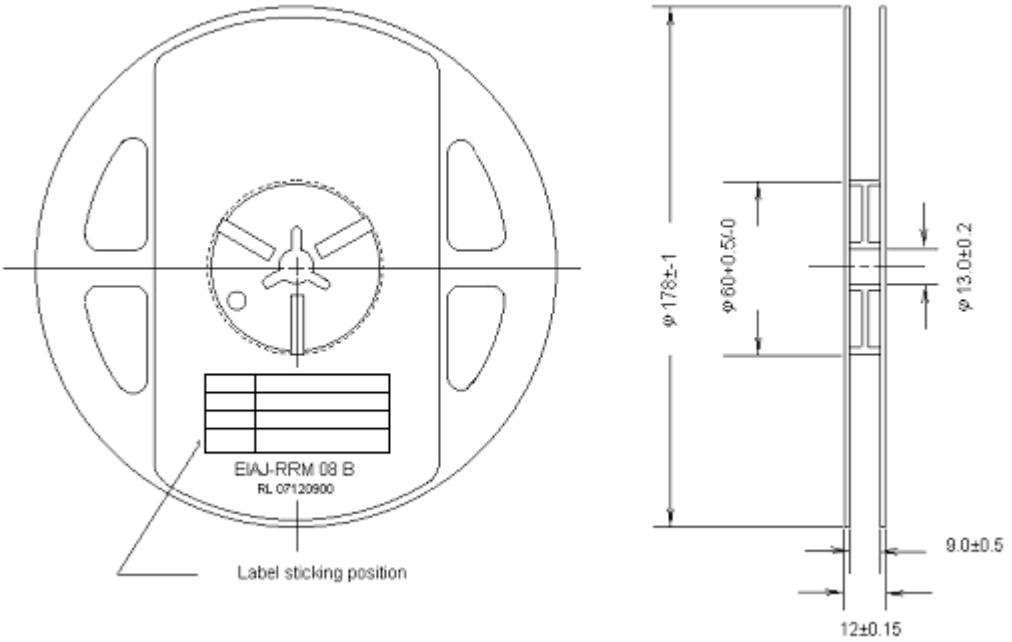


Part No.	Dim. A	Dim. B	Dim. C	Q'ty/Reel
HT-159	3.3±0.1	1.7±0.1	2.0±0.1	2K

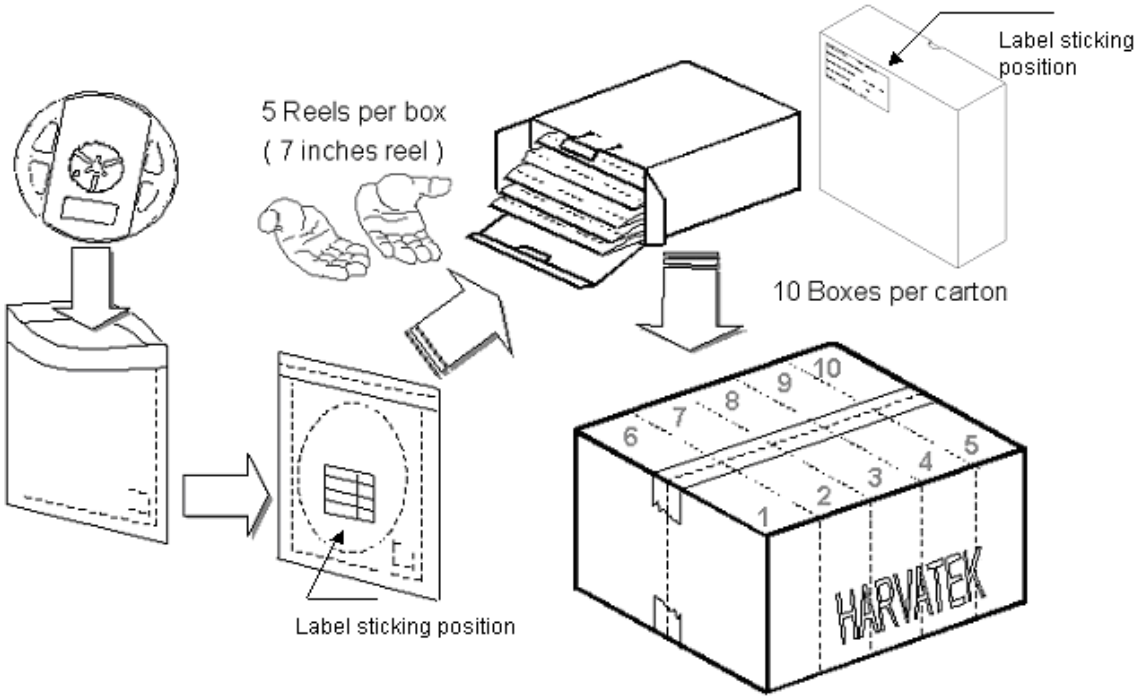
Unit: mm :



Reel Dimension



Packing



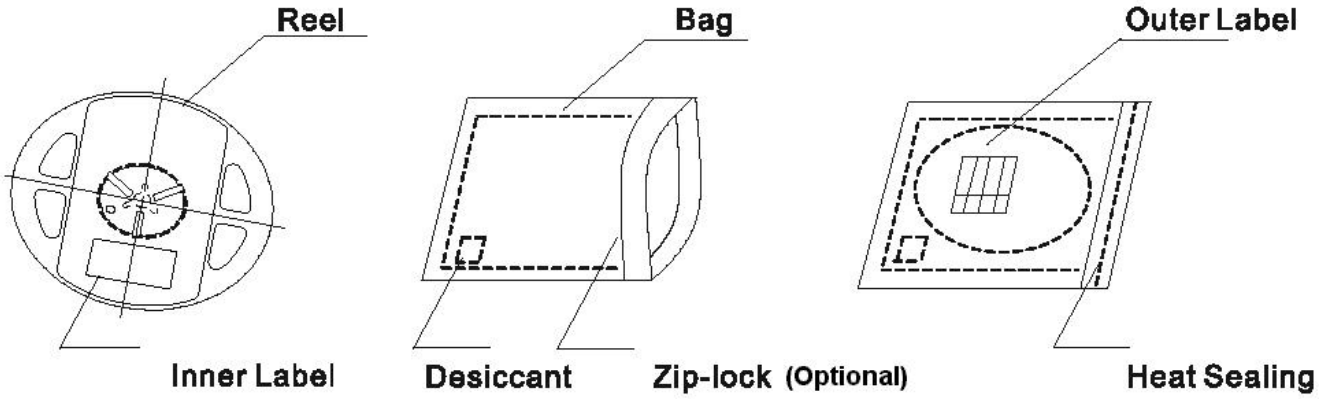
5 boxes per carton is available depending on shipment quantity.

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:



PRECAUTIONS

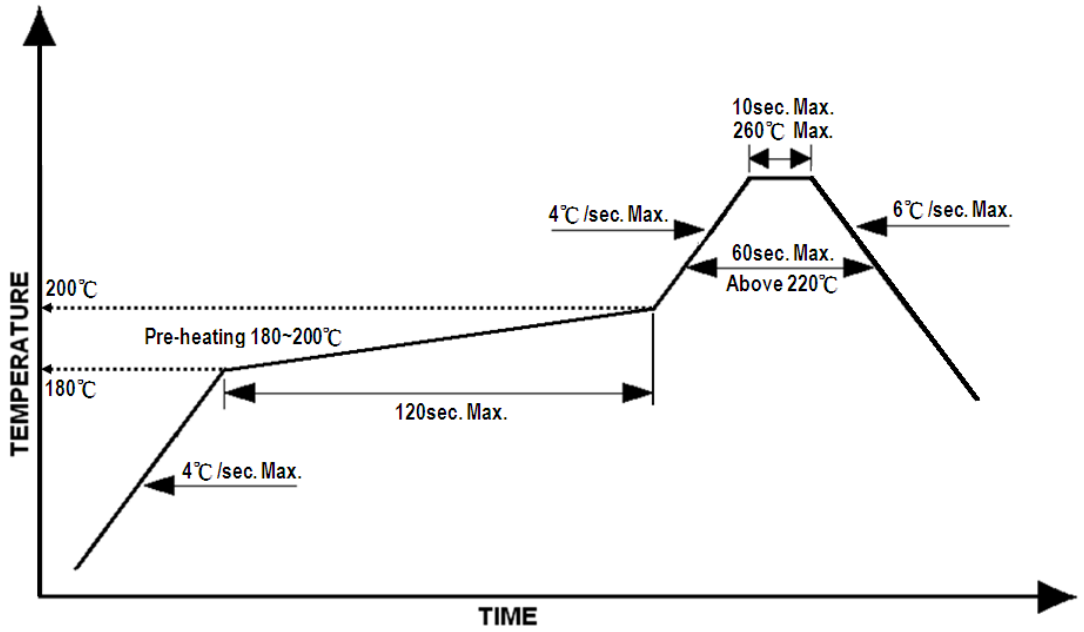
1. Avoid exposure to moisture at all times during transportation or storage.
2. Anti-Static precaution must be taken when handling GaN, InGaN, and AlInGaP products.
3. It is suggested to connect the unit with a current limiting resistor of the proper size. Avoid applying a reverse voltage beyond the 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.

Reflow Soldering

Recommend soldering paste specifications:

1. Operating temp.: Above 220 ^{O}C ,60sec
2. Peak temp.:260 ^{O}CMax.,10sec Max.
3. Never take next process until the component is cooled down to room temperature after reflow.
4. The recommended reflow soldering profile (measuring on the surface of the LED terminal) is following:

Lead-free Solder Profile



Reworking

- Rework should be completed within 5 seconds under 260 ^{O}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^{o}C x 30sec. or <30^{o}C x 3min
- Ultra sonic cleaning: < 15W/ bath; bath volume ≤ 1liter
- Curing: 100 ^{O}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.
- Electric-static may cause damage to the component. Please ensure that the equipment is properly grounded. Use of an ionizer fan is recommended.

Revise History

Rev.	Descriptions	Date	Page
1.0	-	10/18/2012	-