Read : Application dt.25.02.2013 from M/s. Photoquip India Ltd., holder of TIN 27910243354V.
Heard : Sh. P.V. Surte, Advocate.

PROCEEDINGS

(under section 56(1)(e) and 56(2) of the Maharashtra Value Added Tax Act, 2002)

No.DDQ-11-2013/Adm-6/15/B-3 **Mumbai, dt.** 22/03/2016

The applicant, M/s. Photoquip India Ltd., situated at A-33/34, Royal Industrial Estate, Naigaon Cross Road, Wadala, Mumbai-400 031 seeks to know the rate of tax on "LED Downlight" sold through invoice no.C/12-13/286 dt.02.02.2013.

02. FACTS AND SUBMISSION

The application seeks determination of the rate of tax on Light Emitting Diodes, briefly referred to as LED Downlight by the applicant. The invoice shows sale of 6 white and 6 warm white colour sold at the rate of Rs.1600.75 each for Rs.19,209 on which VAT at the rate of 5% is charged at Rs.960.45. The applicant contends thus -

- The aforesaid goods were purchased from M/s. Digital Circuits P. Ltd. of 60, Doddakalsandra, KPR Main Road, Bangalore under invoice no.1910 dated 1.2.2013 for Rs.18,300 on which Excise Duty and Central Sales Tax were separately charged for a total price of Rs.19,820. The said invoice shows that the aforesaid goods are classified for the purpose of levy of Excise Duty under Heading No.8541.4020. The goods so purchased are resold by the applicant. The goods are used as a substitute for compact fluorescent Lamps as it gives more light with lesser power consumption by 15 to 20%. It comprises of 1500 lumens, 15 Watt, voltage 85 to 285 weighing 360 gm.
- The product is covered by Entry 56 of Schedule C which refers to IT products as notified by the Notification No.VAT-1505/CR-237/Taxation-1 dated 17.10.2005. The said Notification refers to Headings under the Central Excise Tariff chapter 85. Entry at serial No.31 read as under:-

  "Diodes transistors and similar semi-conductor devices, photo sensitive semi-conductor devices including photovolt cells, whether or not assembled in modules, or made up into panels, light emitting diodes, mounted piezo electric crystals.

  Tariff entry 8541 10 00 refers to Diodes, other than photo sensitive or light emitting diodes

  8541 40 refers to light emitting diodes including solar cells whether or not assempled in modules or panels, electro-luminescent etc.

03. HEARING

Sh. P.V. Surte [Advocate] attended the hearing. The submission during hearing is thus -

- It is submitted that the product is an IT product as covered by the Heading 85414020 as notified. It is contended that the product is covered by the description 'light emitting diodes'.

  Hence, the attention of the applicant was invited to the fact that the light emitting diodes as mentioned in the notification is not the electrical fitting downlight as sold by the applicant. Their attention is invited to the description of light emitting diode as available in the HSN.

- The applicant had brought the samples of the products which are seen thus :
  a) LED downlight - It consists of 12 pieces of LED which are kept in a fixture which has a light output of 15 watts. The fixture has a connection for a AC input and clamps to hold the fixture. The 12 pieces of LED are soldered on to a PCB.
     It is seen that the shape of the fittings is as per the spread of light.
  b) LED spot - It consists of 5 pieces of LEDs soldered on to a PCB. The rest description is the same as LED downlight.
  c) LED Tube - It consists of 84 pieces of LEDs soldered on to a PCB. The rest description is the same as LED downlight.

- The applicant requested time to give a submission. The same, while reiterating the contention as made earlier, additionally states thus -
  - It was once again explained that what was sold was not LED CDiods but an IT product purchase from a manufacturer as certified by the Central Excise authorities. The product sold was in the form of an assembled module. The use of the product was already stated viz. that it was a substitute for compact florescent lamp as well as old fashioned bulb. It is an energy saving device universally recognised. It consumes less power (electricity) and emits more light.
  - It was pointed out that Entry C-111 refers to compact florescent lamps and attracts tax at the rate of 4% w.e.f. 01-07-2009 and 5% from 01-04-2010. The said entry is amended on 01-04-2015 so as to include LED bulbs. Nonetheless the Notification still continues. The product sold comprises of various parts LED, Printed circuit board, semi conductors, light reflector, plastic housing and a cable. Entry C-56 and Notification refer to products of Information Technology. The LED downlight sold by the applicant is an IT product as certified by the Central Excise authorities.
  - It is therefore requested that suitable order be passed as the application is pending since 25.02.2013 to date.
  - Without prejudice and in the alternative, if an adverse order is passed, the applicant prays for grant of prospective effect since for the past two years, he has collected and paid tax at the rate of 5%.

04. OBSERVATION

I have gone through the facts of the case. The product before me is a Downlight, more specifically a Light Emitting Diode (LED) Downlight. A downlight is a light placed or designed so as to throw illumination downwards. There are different methods of lighting such as Down-lighting (*with fixtures on or recessed in the ceiling casting light downward*), Uplighting (*bounce indirect light off the ceiling and back down*), Back Lighting (*either around or through an object is mainly for accent*) and Front lighting (*tends to make the subject look flat as its casts almost no visible shadows*). The Wikipedia describes a 'downlight' as *a recessed light or downlight (also pot light in Canadian English, sometimes can light (for canister light) in American English) is a light fixture that is installed into a hollow opening in a ceiling which when installed it appears to have light shining from a hole in the ceiling, concentrating the light in a downward direction as a broad floodlight or narrow spotlight.* It is further explained that there are three parts to a recessed light-ing fixture: housing, trim and bulb. The trim is the visible portion of the light. It is the insert that is seen when looking up into the fixture, and also includes the thin lining around the edge of the light. The housing is the fixture itself that is installed inside the ceiling and contains the lamp holder. There are many different types of bulbs that can be inserted into recessed lighting fix-tures, with the amount of heat generated by the bulb being a unique consideration. The types of electric lighting include:

- *incandescent light bulbs*
- *arc lamps*
- *gas-discharge lamps, e.g., fluorescent lights and compact fluorescent lamps, neon lamps, flood lamps, mod-ern photographic flashes*
- *lasers*
- *light-emitting diodes, including OLEDs*
- *sulfur lamps*

An LED lamp is a light-emitting diode (LED) product that is assembled into a *lamp* (or *light bulb*) for use in lighting fixtures. When the light is produced from an LED, as opposed to another light source, it is called an LED downlight. The prefix LED denotes the light

source of the light. It is similar to a fluorescent or incandescent light, but it is lit electronically.

We need to know more about LED but prior to that a brief but useful information about lamps.

'Commonly called 'light bulbs', lamps are the removable and replaceable part of a light fixture, which converts electrical energy into electromagnetic radiation. ***While lamps have traditionally been rated and marketed primarily in terms of their power consumption, expressed in watts, proliferation of lighting technology beyond the incandescent light bulb has eliminated the correspondence of wattage to the amount of light produced.*** *For example, a 60 W incandescent light bulb produces about the same amount of light as a 13 W compact fluorescent lamp.* ***Each of these technologies has a different efficacy in converting electrical energy to visible light.*** *Visible light output is typically measured in lumens. This unit only quantifies the visible radiation, and excludes invisible infrared and ultraviolet light. A wax candle produces on the close order of 13 lumens, a 60 watt incandescent lamp makes around 700 lumens, and a 15-watt compact fluorescent lamp produces about 800 lumens, but actual output varies by specific design.[12] Rating and marketing emphasis is shifting away from wattage and towards lumen output, to give the purchaser a directly applicable basis upon which to select a lamp.'.....[Source - Wikipedia]*

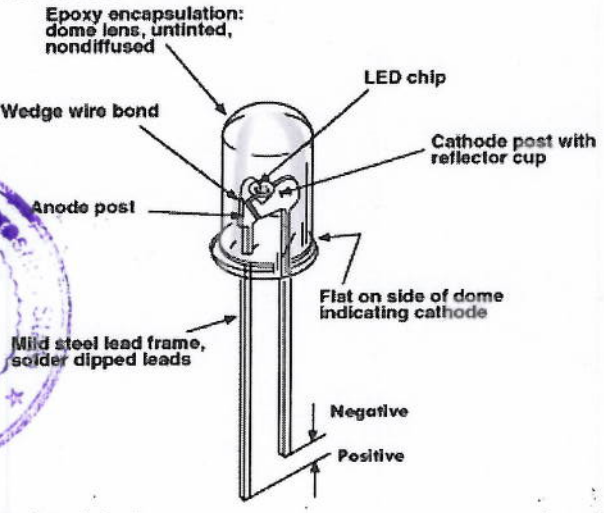
Thus, LED is the technology and the impugned downlights use the same to produce light. We will understand about this technology thus -

http://www.electroschematics.com/5167/more-about-led

Some LED Physics

The LED has a semiconductor chip placed in its center. The semiconductor consists of two regions namely a P region that has positive charge carriers and an N region with negative charge carriers. N-type has extra electrons P-type has missing electrons i.e. extra 'holes'. A diode is a section of N-type material bonded to a section of P-type material. There are three layers in the chip. An active photon generating material is sandwiched between the P and N type materials so that photons will be generated when the electrons and holes combines. That is when a potential difference is applied between the P and N materials through the LED terminals, holes from the P layer and electrons from the N layer move towards the active material where they combine to produce the light though the phenomenon of Electroluminescence.

Internal view of LED



How LED gives color?

The color of photon emission depends on the chemical doped in the active material. Chemicals like Gallium, Arsenic and Phosphor are used to give color to the light emission.

ELECTRONICS-TUTORIALS.WS

Light Emitting Diodes or LED's, are among the most widely used of all the different types of semiconductor diodes available today. They are the most visible type of diode, that emit a fairly narrow bandwidth of either visible light at different coloured wavelengths, invisible infra-red light for remote controls or laser type light when a forward current is passed through them.

A "Light Emitting Diode" or LED as it is more commonly called, is basically just a specialised type of PN junction diode, made from a very thin layer of fairly heavily doped semiconductor material.

When the diode is forward biased, electrons from the semiconductors conduction band recombine with holes from the valence band releasing sufficient energy to produce photons which emit a monochromatic (single colour) of light. Because of this thin layer a reasonable number of these photons can leave the junction and radiate away producing a coloured light output.

Then we can say that when operated in a forward biased direction Light Emitting Diodes are semiconductor devices that convert electrical energy into light energy.

The construction of a Light Emitting Diode is very different from that of a normal signal diode. The PN junction of an LED is surrounded by a transparent, hard plastic epoxy resin hemispherical shaped shell or body which protects the LED from both vibration and shock.

Surprisingly, an LED junction does not actually emit that much light so the epoxy resin body is constructed in such a way that the photons of light emitted by the junction are reflected away from the surrounding substrate base to which the diode is attached and are focused upwards through the domed top of the LED, which itself acts like a lens concentrating the amount of light. This is why the emitted light appears to be brightest at the top of the LED.

However, not all LEDs are made with a hemispherical shaped dome for their epoxy shell. Some indication LEDs have a rectangular or cylindrical shaped construction that has a flat surface on top or their body is shaped into a bar or arrow. Also, nearly all LEDs have their cathode, (K) terminal identified by either a notch or flat spot on the body, or by one of the leads being shorter than the other, (the Anode, A).

Unlike normal incandescent lamps and bulbs which generate large amounts of heat when illuminated, the light emitting diode produces a "cold" generation of light which leads to high efficiencies than the normal "light bulb" because most of the generated energy radiates away within the visible spectrum. Because LEDs are solid-state devices, they can be extremely small and durable and provide much longer lamp life than normal light sources.

ENERGYSTAR.GOV - ENERGY STAR is a U.S. Environmental Protection Agency

What are LEDs?

LEDs, or light–emitting diodes, are semiconductor devices that produce visible light when an electrical current passed through them. LEDs are a type of Solid State Lighting (SSL), as are organic light–emitting diodes (OLEDs) and light–emitting polymers (LEPs).

How is LED lighting different than other light sources, such as incandescent and CFL?

LED lighting differs from incandescent and compact fluorescent lighting in several ways. When designed well, LED lighting can be more efficient, durable, versatile and longer lasting.

LED lighting products use light emitting diodes to produce light very efficiently. An electrical current passes through semiconductor material, which illuminates the tiny light sources we call LEDs. The heat produced is absorbed into a heat sink.

Common LED colors include amber, red, green, and blue. There is actually no such thing as a "white" LED. To get white light, the kind we use for lighting our homes and offices, different color LEDs are mixed or covered with a phosphor material that converts the color of the light. The phosphor is the yellow material you can see on some LED products. Colored LEDs are widely used as signal lights and indicator lights, like the power button on a computer.

LEDs are now being incorporated into bulbs and fixtures for general lighting applications. LEDs are small and provide unique design opportunities. Some LED bulb solutions may look like familiar light bulbs and some may not, but can better match the performance of traditional light bulbs. Some LED light fixtures may have LEDs built–in as a permanent light source.

LEDs are "directional" light sources, which means they emit light in a specific direction, unlike incandescent and compact fluorescent bulbs, which emit light and heat in all directions. For this reason, LED lighting is able to use light and energy more efficiently in many applications. However, it also means that sophisticated engineering is needed to produce an LED light bulb that shines light all around like an incandescent A-shape bulb.

Incandescent bulbs produce light using electricity to heat a metal filament until it becomes "white" hot or is said to incandesce. As a result, incandescent bulbs release 90% of their energy as heat.

In a CFL, an electric current flows between electrodes at each end of a tube containing gases. This reaction produces ultraviolet (UV) light and heat. The UV light is transformed into visible light when it strikes a phosphor coating on the inside of the bulb.

The Basics of LED Lighting

The useful life of LED lighting products is defined differently than that of other light sources, such as incandescent or CFL. This is because LEDs typically do not "burn out" or fail. Instead, they experience lumen depreciation, where the amount of light produced decreases and light color appearance can shift over time. Instead of basing the useful life of an LED product on the time it takes for 50% of a large group of lamps to burn out (as is the case with traditional sources), LED product "lifetime" is set based on a prediction of when the light output decreases 30 percent.

LEDs and Heat

Because LED lighting systems don't radiate heat the way an incandescent or halogen light bulb does, the heat produced from the power going into the product must be drawn away from the LEDs. This is usually done with a heat sink, which is a passive device that absorbs the heat produced and dissipates it into the surrounding environment. This keeps LEDs from overheating and burning out. Thermal management is probably the single most important factor in the successful performance of an LED product over its lifetime because the higher the temperature at which the LEDs are operated, the more quickly the light will degrade, and the shorter the useful life will be.

WIKIPEDIA

A light-emitting diode (LED) is a two-lead semiconductor light source. It is a p–n junction diode, which emits light when activated.[4] When a suitable voltage is applied to the leads, electrons are able to recombine with holes within the device, releasing energy in the form of photons. This effect is called electroluminescence, and the color of the light (corresponding to the energy of the photon) is determined by the energy band gap of the semiconductor.

An LED is often small in area (less than 1 mm^2) and integrated optical components may be used to shape its radiation pattern.

Working principle

A P-N junction can convert absorbed light energy into a proportional electric current. The same process is reversed here (i.e. the P-N junction emits light when electrical energy is applied to it). This phenomenon is generally called electroluminescence, which can be defined as the emission of light from a semi-conductor under the influence of an electric field. The charge carriers recombine in a forward-biased P-N junction as the electrons cross from the N-region and recombine with the holes existing in the P-region. Free electrons are in the conduction band of energy levels, while holes are in the valence energy band. Thus the energy level of the holes will be lesser than the energy levels of the electrons. Some portion of the energy must be dissipated in order to recombine the electrons and the holes. This energy is emitted in the form of heat and light.

The electrons dissipate energy in the form of heat for silicon and germanium diodes but in gallium arsenide phosphide (GaAsP) and gallium phosphide (GaP) semiconductors, the electrons dissipate energy by emitting photons. If the semiconductor is translucent, the junction becomes the source of light as it is emitted, thus becoming a light-emitting diode, but when the junction is reverse biased no light will be produced by the LED and, on the contrary, the device may also be damaged.

Technology

The LED consists of a chip of semiconducting material doped with impurities to create a p-n junction. As in other diodes, current flows easily from the p-side, or anode, to the n-side, or cathode, but not in the reverse direction. Charge-carriers—electrons and holes—flow into the junction from electrodes with different voltages. When an electron meets a hole, it falls into a lower energy level and releases energy in the form of a photon.

The wavelength of the light emitted, and thus its color, depends on the band gap energy of the materials forming the p-n junction. In silicon or germanium diodes, the electrons and holes usually recombine by a non-radiative transition, which produces no optical emission, because these are indirect band gap materials. The materials used for the LED have a direct band gap with energies corresponding to near-infrared, visible, or near-ultraviolet light.

LED development began with infrared and red devices made with gallium arsenide. Advances in materials science have enabled making devices with ever-shorter wavelengths, emitting light in a variety of colors.

LEDs are usually built on an n-type substrate, with an electrode attached to the p-type layer deposited on its surface. P-type substrates, while less common, occur as well. Many commercial LEDs, especially GaN/InGaN, also use sapphire substrate.

Most materials used for LED production have very high refractive indices. This means that much light will be reflected back into the material at the material/air surface interface. Thus, light extraction in LEDs is an important aspect of LED production, subject to much research and development.

BRITANNICA.COM - ENCYCLOPÆDIA BRITANNICA

LED, in full light-emitting diode, in electronics, a device that emits infrared or visible light when charged with an electric current. Visible LEDs are used in many electronic devices as indicator lamps, in automobiles as rear-window and brake lights, and on billboards and signs as alphanumeric displays or even full-colour posters. Infrared LEDs are employed in autofocus cameras and television remote controls and also as light sources in fibre-optic telecommunication systems.

The familiar lightbulb gives off light through incandescence, a phenomenon in which the heating of a wire filament by an electric current causes the wire to emit photons, the basic energy packets of light. LEDs operate by electroluminescence, a phenomenon in which the emission of photons is caused by electronic excitation of a material. The material used most often in LEDs is gallium arsenide, though there are many variations on this basic compound, such as aluminum gallium arsenide or aluminum gallium indium phosphide. These compounds are members of the so-called III-V group of semiconductors—that is, compounds made of elements listed in columns III and V of the periodic table. By varying the precise composition of the semiconductor, the wavelength (and therefore the colour) of the emitted light can be changed. LED emission is generally in the visible part of the spectrum (i.e., with wavelengths from 0.4 to 0.7 micrometre) or in the near infrared (with wavelengths between 0.7 and 2.0 micrometres). The brightness of the light observed from an LED depends on the power emitted by the LED and on the relative sensitivity of the eye at the emitted wavelength. Maximum sensitivity occurs at 0.555 micrometre, which is in the yellow-orange and green region. The applied voltage in most LEDs is quite low, in the region of 2.0 volts; the current depends on the application and ranges from a few milliamperes to several hundred milliamperes.

The term diode refers to the twin-terminal structure of the light-emitting device. In a flashlight, for example, a wire filament is connected to a battery through two terminals, one (the anode) bearing the negative electric charge and the other (the cathode) bearing the positive charge. In LEDs, as in other semiconductor devices such as transistors, the "terminals" are actually two semiconductor materials of different composition and electronic properties brought together to form a junction. In one material (the negative, or n-*type, semiconductor) the charge carriers are electrons, and in the other (the positive, or* p-*type, semiconductor) the charge carriers are "holes" created by the absence of electrons. Under the influence of an electric field (supplied by a battery, for instance, when the LED is switched on), current can be made to flow across the* p-n *junction, providing the electronic excitation that causes the material to luminesce.*

In a typical LED structure, the clear epoxy dome serves as a structural element to hold the lead frame together, as a lens to focus the light, and as a refractive index match to permit more light to escape from the LED chip. The chip, typically 250 × 250 × 250 micrometres in dimension, is mounted in a reflecting cup formed in the lead frame. The p-n-*type GaP:N layers represent nitrogen added to gallium phosphide to give green emission; the* p-n-*type GaAsP:N*

layers represent nitrogen added to gallium arsenide phosphide to give orange and yellow emission; and the p-type *GaP:Zn,O layer represents zinc and oxygen added to gallium phosphide to give red emission. Two further enhancements, developed in the 1990s, are LEDs based on aluminum gallium indium phosphide, which emit light efficiently from green to red-orange, and also blue-emitting LEDs based on silicon carbide or gallium nitride. Blue LEDs can be combined on a cluster with other LEDs to give all colours, including white, for full-colour moving displays.*
Any LED can be used as a light source for a short-range fibre-optic transmission system—that is, over a distance of less than 100 metres (330 feet). For long-range fibre optics, however, the emission properties of the light source are selected to match the transmission properties of the optical fibre, and in this case the infrared LEDs are a better match than the visible-light LEDs. Glass optical fibres suffer their lowest transmission losses in the infrared region at wavelengths of 1.3 and 1.55 micrometres. To match these transmission properties, LEDs are employed that are made of gallium indium arsenide phosphide layered on a substrate of indium phosphide. The exact composition of the material may be adjusted to emit energy precisely at 1.3 or 1.55 micrometres.

From the above, it can be seen that LED is a technology used to generate light. This technology has use and application in various areas as follows :

LED uses fall into four major categories:
- *Visual signals where light goes more or less directly from the source to the human eye, to convey a message or meaning*
- *Illumination where light is reflected from objects to give visual response of these objects*
- *Measuring and interacting with processes involving no human vision[152]*
- *Narrow band light sensors where LEDs operate in a reverse-bias mode and respond to incident light, instead of emitting light[153][154][155][156]*

The applications are described thus :

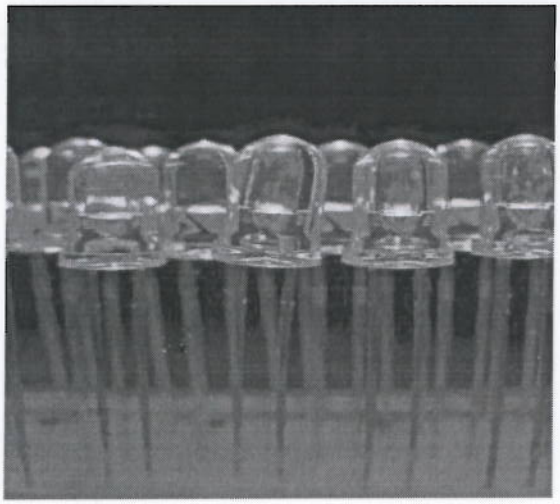
- *Indicator lights: These can be two-state (i.e., on/off), bar-graph, or alphabetic-numeric readouts.*
- *LCD panel backlighting: Specialized white LEDs are used in flat-panel computer displays.*
- *Fiber optic data transmission: Ease of modulation allows wide communications bandwidth with minimal noise, resulting in high speed and accuracy.*
- *Remote control: Most home-entertainment "remotes" use IREDs to transmit data to the main unit.*
- *Optoisolator: Stages in an electronic system can be connected together without unwanted interaction.*
- *Indicators and signs*
  The low energy consumption, low maintenance and small size of LEDs has led to uses as status indicators and displays on a variety of equipment and installations. Large-area LED displays are used as stadium displays and as dynamic decorative displays. Thin, lightweight message displays are used at airports and railway stations, and as destination displays for trains, buses, trams, and ferries.
- *Automotive applications for LEDs continue to grow*
  Because of their long life, fast switching times, and their ability to be seen in broad daylight due to their high output and focus, LEDs have been used in brake lights for cars' high-mounted brake lights, trucks, and buses, and in turn signals for some time, but many vehicles now use LEDs for their rear light clusters.

Thus, a study of LEDs reveals that these are currently used for a wide variety of different applications such as residential lighting, aerospace industry, architectural, automotive, broadcasting, electronic instrumentation, entertainment and gaming, the military, traffic and transportation. Since LEDs are focused lights they prove best at specific lighting tasks such as desk lamps, reading lights, night lights, security lights, spot lights, accent lights and lighting for signage.

What emerges from a perusal of the above exercise by me is that the impugned product is a downlight, a lighting fixture, which works on the LED principle of source of light. The downlight can use any of the methods to generate light. When LEDs are used for lighting purposes, it is seen that they are far sturdier than traditional incandescent light bulbs or fluorescent tubes. Since LEDs don't use fragile components such as glass and filaments, LEDs are able to withstand shock, vibration and extreme temperature. LEDs are preferred as they are cost-effective, use less energy, produce less heat, and emit more light than fluorescent and

incandescent light bulbs. These lights have a longer life span than traditional light bulbs.

The applicant informs that the impugned products were purchased from a dealer in Karnataka and are being resold in Maharashtra. The sale bill of the said dealer, M/s. Digital Circuits Pvt Ltd, which is the purchase bill of the applicant, mentions the product as 'LED Downlight Corvi'. The applicant has also given a brochure of the Corvi Brand LED Light products which states thus *"A research and development major in the realm of LEDlights, Corvi sees efficiency as a measure of creativity based on precision, determination and imagination...."*. The different LED products described are Spot, Downlight, Tube, 2 X 2 and accessories, namely ceiling bracket and swivel. A diagram of a LED and the present product (Corvi Downlight) using the LED technology could be seen thus -



[Light emitting diode]

[Downlight using light emitting diodes]

The applicant had explained during hearing that the LED downlight consists of 12 pieces of LED which are kept in a fixture which has a light output of 15 watts. The fixture has a connection for an AC input and clamps to hold the fixture. The 12 pieces of LED are soldered on to a PCB. It was further explained that the shape of the downlight or the tube would be as per the spread of light i.e the area sought to be illuminated. Thus, the applicant's product known as a downlight uses 12 pieces of the LEDs while a LED tube uses 84 pieces of LEDs.

From all above, one can say that reference to LED technology and LED products is not co-terminous. Having seen so, it is necessary to look at the claim in respect of the schedule entry under the Maharashtra Value Added Tax Act, 2002 (MVAT Act,2002) claimed applicable to the impugned product. The said entry reads thus -

C-56	IT products as may be notified by the State Government from time to time.

As can be seen the entry speaks of a notification. Accordingly, the applicant has claimed that the impugned product is covered by the description against the Central Excise Tariff Heading (CETH) 8541 at sr. no.31 of the notification dt.17.10.2005 under the entry. We shall see the said description thus :

MVAT ACT,2002

Sr. No. (1)	Heading No. (2)	Sub Heading No. (3)	Tariff Item No. (4)	Description (5)
31	8541	-	-	Diodes transistors and similar semiconductor devices; photosensitive semiconductor devices, including photovoltaic cells whether or not assembled in modules or made up into panels; light emitting diodes; mounted piezo-electric crystals.
	-	-	8541 10 00	Diodes, other than photosensitive or light emitting diodes,
	-	-	8541 21 00	Transistors, other than photosensitive transistors, with a dissipation rate of less than 1W
	-	-	8541 29 00	Other transistors
	-	8541 30	-	Thyristors, diacs and triacs, other than photosensitive devices
		8541 40	-	Photosensitive semi-conductor devices, including photovoltaic cells whether or not assembled in modules or made up into panels; light emitting diodes; including solar cells whether or not assembled in modules or panes, electro-luminescent
	-	-	8541 50 00	Other semi-conductor devices
	-	-	8541 60 00	Mounted piezo-electric srystals
	-	-	8541 90 00	Parts of goods covered by heading 8541

Light emitting diodes hve been covered through the notification under the CETH 8541, more specifically the CETH 8541 40. There is no amendment to this sr. no. since the date of the notification. Hence, we shall now see the description as appearing under the Central Excise during the said period thus :

CENTRAL EXCISE TARIFF ACT

8541	Diodes, transistors and similar semiconductor devices; photosensitive semiconductor devices, including photovoltaic cells whether or not assembled in modules or made up into panels; light emitting diodes; mounted piezo-electric crystals
8541 10 00	- Diodes, other than photosensitive or light emitting diodes
	- Transistors, other than photosensitive transistors:
8541 21 00	- - With a dissipation rate of less than 1W
8541 29 00	*- Thyristors, diacs and triacs, other than photosensitive devices*
8541 30 10	- - - Thyristors
8541 30 90	- - - Other
8541 40	*Photosensitive semi-conductor devices, including photovoltaic cells whether or not assembled in modules or made up into panels; light emitting diodes;*
8541 40 11	- - - *Photocells:*
8541 40 19	- - - - Solar cells whether or not assembled in modules or panels
8541 40 20	- - - Light emitting diodes (electro-luminescent)
8541 40 90	- - - Other
8541 50 00	- - - Other semiconductors devices
8541 60 00	- - - Mounted piezo-electric crystals
8541 90 00	- - - Parts

It can be seen that the description under Central Excise against the Heading 8541 has been taken in its entirety. And when the entire Heading has been notified, a mention of the sub-headings would do no further. Now, it is seen that the notification covers 'light emitting diodes'. It is under this description that the applicant claims the impugned goods to be covered. My immediate reaction to this would be that the claim is not justified by any quarters. The above description in the notification describes the technology and not the products made using the technology. And if what the applicant claims was true then not only bulbs or lamps but televisions

and every other product using LED technology or LEDs would be covered by the description and under that Heading. Is that so? And if it was so, then does Central Excise Tariff also consider LEDs and products using LED technology under the same Heading? I would deliberate all such questions thus -

The elaborate details about LED had by me hereinearlier reveal that LED is the technology used to generate light. So There are many sources of light - *thermal, incandescent light bulbs, neon lights (gas), fluorescent, infrared light, ultra violet.* The principles are - *Luminescence (emission of light by a substance not resulting from heat), Incandescence (the process of giving off light because of the high temperature), Phosphorescence (some materials, called phosphors, give off light for a short time after you shine a light on them), Light from Electric Discharge (process by which a gas releases light because of electricity passing through it), Fluorescence (release of light from a substance caused by exposure to radiation from an external source), Chemiluminescence (light resulting from a chemical reaction), Bioluminescence (light resulting from biochemical reaction by a living organism), etc.* The present products are downlights which function on the LED mechanism and are not LED *per se*. Even to suggest that the Heading covers products using LEDs would mean that Central Excise treats all LED using products under one Heading. Can this be true? There are not only LED lamps but LED Televisions and the Excise Tariff has different Headings for this products. There are separate Tariff Headings for lights or signaling lights and other products. We also see that there is Heading 8531 which is for "*Electric sound or visual signalling apparatus, e.g. bells, sirens, indicator panels, burglar or fire alarms (excl. those for cycles, motor vehicles and traffic signalling), parts thereof*" Sub-heading 831 20 00 covers "*Indicator panels incorporating liquid crystal devices (LCD) or light emitting diodes (LED)*". Does that mean that the impugned product is covered under the LED mentioned in this Sub-heading, too? And further this interpretation would mean that any and every goods using LEDs being covered by the impugned Heading would fall under the schedule entry for Information Technology products for the purposes of the MVAT Act,2002. No, it is certainly not so. My inference that the description '*light emitting diodes*' as found in CETH 8541 is the technology and not the products containing the LED technology finds concrete support from a notification issued under the very Central Excise Tariff. By Notification No.12 /2012-Central Excise dated 17th March, 2012, the Central Government brought out a notification exempting or reducing the duty of excise on certain goods as specified in the Table appended to the notification. Entry Nos. 271 and 321 of this notification should lay to rest any debate that has been made out in the present proceedings. The entries read thus :

No.	Chapter or heading or sub heading or tariff item of the First Schedule	Description of excisable goods	Rate	Condition No.
271	8541 40 20	Light emitting diodes (electroluminescent) for the manufacture of goods specified as Sl. No. 321	6%	3
321	9405	LED lights or fixtures including LED Lamps	6%	3

Thus, it can be seen that the notification echoes the spirit of the Excise Tariff classification by mentioning that the light emitting diodes used for the manufacture of LED lights or fixtures which fall in CETH 9405. Thus, the aforesaid entry does not provide exemption or lower rate of

excise duty to other products manufactured using the light emitting diodes but only to 'LED lights or fixtures including LED Lamps'. Though the situation is as clear as this, I would also refer to the Condition No. 3 as mentioned in the above Table to wipe away any doubt which may remain for want of the above Table not being explained in the right context. The Condition states that the exemption shall be allowed if it has been proved to the satisfaction of an officer not below the rank of the Deputy Commissioner of Central Excise or the Assistant Commissioner of Central Excise, as the case may be, having jurisdiction that such goods are cleared for the intended use specified in column (3) of the Table. Thus, it can be seen that the condition is for ensuring that the benefit of lower or exempted duty of excise goes to the right claimants only and therefore, the Condition No.3 doesn't change the interpretation or position by any margin.

Having seen thus, I would not deliberate any further but it would help to refer to what the Harmonized Commodity Description and Coding System Explanatory Notes (HSN) say in respect of the description 'light emitting diodes' as found in the Heading 8541 :

(C) LIGHT EMITTING DIODES

Light emitting diodes, or electroluminescent diodes (based, inter alia, on gallium arsenide or gallium phosphide) are devices which convert electric energy into visible, infra-red or ultra-violet rays. They are used e.g. for displaying or transmitting data in control systems.

Laser diodes emit a coherent light beam and are used, e.g., in detecting nuclear particles, in altimetering or in telemetering equipment, in communication systems using fibre optics.

The above HSN Note explains the LEDs being devices used to generate light and find use in many applications which call for displaying or transmitting data. The impugned product is a LED downlight (diagram reproduced on page 7) and could be any other LED product such as LED spotlight, LED flats or LED tube light. But these are not LED *per se* which is the technology (diagrams reproduced on page 7 and 3).

Having seen thus, I would deal with the reliance placed by the applicant on a certification under the Central Excise Act given to a dealer in LED lights stating therein that the same fall in the CETH 8541. I would reproduce the same herein thus :

OFFICE OF THE SUPERINTENDENT OF CENTRAL EXCISE, KOTHRUD II RANGE, PUNE VI DIVISION, 'A' WING, 4TH FLOOR, I.C.E HOUSE, PUNE 01.

TO WHOMSOEVER IT MAY CONCERN

It is to certify that M/s. Litech Electrosystems Pvt. Ltd. situated at Gat No.401, Urawade, Tal-Mulshi, Dist-Pune-412111 having Central Excise Registration No. AACCL6470CEM001, are manufacturing LED Lights falling under Chapter Sub Heading No. 85414020 of Central Excise Tariff Act, 1985 and wants to avail Notification No.12/2012-CE dated 17/3/2012 and pay 6% duty on their product as applicable to item manufactured by them. Further, they are availing Notification No.8/2003-CE dated 1/3/2003.

This certificate is issued as per the request of the assessee.

F. No. K-II/Litechsystem/2014-15

Pune, the May. 2014.

Superintedent C. Excise
Kothrud II Range, Pune VI Divn.

I find no reason to follow the above certification as we have seen that the provision i.e the Tariff classification itself covers only the LED technology under the Tariff Heading 8541. Product manufactured using LEDs are classified in their respective classification. Now, there are many

such applications of LEDs as in alarm clocks, digital watches, light bulbs and calculators, High Definition televisions, etc. The use of LEDs in the impugned downlights is one of the many such uses. As observed earlier, all of these could not be possibly covered under the Tariff Heading 8541. Further, we have seen that the notification under Central Excise, too, endorses the view by referring to products manufactured using LEDs of CETH 8541. Such a certification besides being inherently fallacious and in disharmony with the Tariff classification would not help the applicant in making a point that the impugned product is covered by the CETH 8541 and thereby, the schedule entry C-56. The said certification does not refer to any section and authority under the premises of which the same is being issued. It is certainly not a statutory order under the Central Excise Tariff Act and hence cannot be relied upon.

In view of all above discussion, it can be concluded that the 'LED downlight' in the present proceeding is nothing but a lighting fixture with cluster of a number LEDs fixed in a fixture. These fixtures are of different designs catering to lighting requirements of premises such as industrial lighting, residential lighting, etc. Therefore, it has to be observed that the impugned LED downlight is not covered by the CETH 8541 as notified for the purposes of the schedule entry C-56. Additionally, it is also seen that there is no other specific entry which covers the impugned product. The bill submitted for determination is of the period 2012-13. During this period, there was no other specific entry under which the impugned products could be said to fall. Therefore, the impugned product falls in the residuary schedule entry E-1, thereby amenable to tax @12.5%.

Though a determination would be in respect to the provision governing the invoice given for determination, I find that the applicant has referred to the schedule entry C-111 which is for "*Compact Fluorescent Lamps and LED bulbs*". It is the claim of the applicant that the impugned product is a 'LED bulb' as mentioned in the aforesaid entry. I would deal with this claim thus :

LED bulbs were added to this entry w.e.f 01.04.2015. As can be seen, the entry does not cover LED tubelights but only the bulbs. Though both are used as lighting fixtures, the difference in them lies in their shape. The former comes in the straight and slender tube forms while a bulb is of a spherical ball shape. The Legislature has consciously sought to cover the latter and not the tubelights or any other shapes. Legislative intention has to be respected. In the determination order No.DDQ-11-2012/Adm-6/16/B-2 dt.27.10.2015, it was seen as to how compact fluorescent lamps are different from the linear fluorescent tube lights. It was also discussed as to how in other States, too, the difference in shape was recognized and clarified accordingly. We may refer to the rulings thus :

- Tvl. Philips Electronics India Limited had preferred an application under section 48-A of the Tamil Nadu Value Added Tax Act seeking clarification on the rate of tax on "T5 - CFL /

CFT". By clarification dt.14.02.2013, T5 has been held as an unclassified item under the residuary entry of the said Act. While holding so, it was observed thus –

"Compact Fluorescent lamps and tubes are smaller both in length and diameter. The tube used in lighting applications are low pressure mercury vapour discharge lamps. These lamps generate light by the process of fluorescence by electrical discharge - passage of electricity to gaseous-vapour medium along the column of the tube. Therefore, T5 is not a Compact Fluorescent tube but, having the length of an ordinary tube light and hence irrespective of its specific characteristics, it is treated as a unclassified item."

- Under the Kerala Value Added Tax Act, M/s. Philips Electronics India Ltd, Alupuram, Ernakulam had preferred an application under section 94 of the Kerala Value Added Tax Act, 2003 seeking clarification on the rate of tax on the commodity Philips T5 Fluorescent Lamps. Similar contention about the said product being a CFL was made in the said proceedings, as well. In the decision dt.05.11.2012, it was observed thus –

"7. Entry No.28A in the Third Schedule to the Kerala Value Added Tax Act, 2003 does not carry an HSN Code, and hence common parlance or trade parlance test ought to be used in interpreting this entry. It is true that both Compact Fluorescent Lamps and T5 Fluorescent Lamps work under the fluorescent principle (i.e. low pressure gas discharge) and not on filament principle (tungsten filament lamps / incandescent lamps). But the differentiating factor is that in trade parlance T5 is a type of fluorescent lamp and is used in fixtures formerly used for incandescent lamps.

8. As such the commodity T5 fluorescent lamp, though energy saving, may not fit the description of a Compact Fluorescent Lamp and hence would not fall under Entry 28A of the Third Schedule to the Act. None of the entries in any of the Schedules to the Kerala Value Added Tax Act, 2003 is suitable for incorporating this commodity. Hence it is clarified that the commodity Philips T5 Fluorescent Lamps would be taxable at the rate of 13.5% by virtue of Entry 103 of S.R.O. No. 82/2006."

A picture of a LED bulb could be seen thus :

The present product is thus :

I have seen the sample of the present product. It has 12 pieces of LED soldered on to a PCB which are kept in a fixture which has a connection for a AC input and clamps to hold the fixture. It was also informed that the shape of the fittings is as per the spread of light. The design of LED down light is such that mostly it's hidden inside architectural without exposing the lighting source. We see that the impugned product is not in the shape of a bulb. The following information from the website of **energystar.gov (U.S. Environmental Protection Agency)** would throw

light on LED lighting :

The light-emitting diode (LED) is one of today's most energy-efficient and rapidly-developing lighting technologies. Quality LED light bulbs last longer, are more durable, and offer comparable or better light quality than other types of lighting.....

How LEDs are Different

LED lighting is very different from other lighting sources such as incandescent bulbs and CFLs. Key differences include the following:

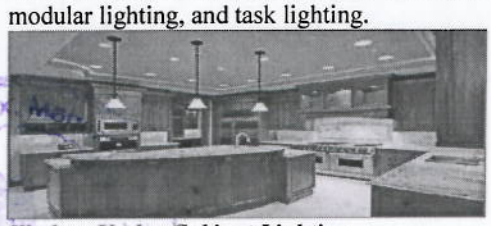
- Light Source: LEDs are the size of a fleck of pepper, and a mix of red, green, and blue LEDs is typically used to make white light.
- Direction: LEDs emit light in a specific direction, reducing the need for reflectors and diffusers that can trap light. This feature makes LEDs more efficient for many uses such as recessed downlights and task lighting. With other types of lighting, the light must be reflected to the desired direction and more than half of the light may never leave the fixture.
- Heat: LEDs emit very little heat. In comparison, incandescent bulbs release 90% of their energy as heat and CFLs release about 80% of their energy as heat.

LED Products

LED lighting is currently available in a wide variety of home and industrial products, and the list is growing every year. The rapid development of LED technology leads to more products and improved manufacturing efficiency, which also results in lower prices. Below are some of the most common types of LED products.

Industrial and Commercial Lighting

The high efficiency and directional nature of LEDs makes them ideal for many industrial uses. LEDs are increasingly common in street lights, parking garage lighting, walkway and other outdoor area lighting, refrigerated case lighting, modular lighting, and task lighting.



Kitchen Under-Cabinet Lighting

Because LEDs are small and directional, they are ideal for lighting countertops for cooking and reading recipes. The color can appear more cool or blue than is typically desirable in a kitchen, and there can be some excessive shadowing in some fixtures, so it is important to compare products to find the best fixture for your space.

Recessed Downlights

Recessed downlights are commonly used in residential kitchens, hallways, and bathrooms, and in a number of office and commercial settings. DOE estimates there are at least 500 million recessed downlights installed in U.S. homes, and more than 20 million are sold each year. Both CFL and LED technology can decrease downlight wattage by 75% or more.

LED Replacement Bulbs

With performance improvements and dropping prices, LED lamps can replace 40, 60, and even 75 Watt incandescent bulbs. It's important to read the Lighting Facts Label to make sure the product is the right brightness and color for the intended location. When chosen carefully, LED replacement products can be an excellent option.

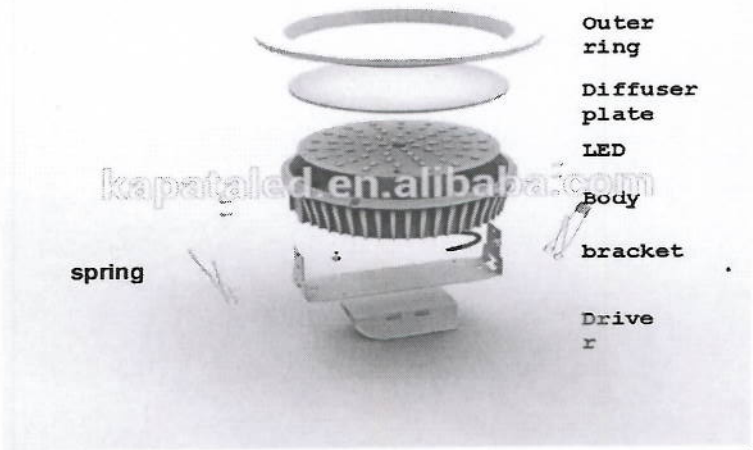
Holiday Lights

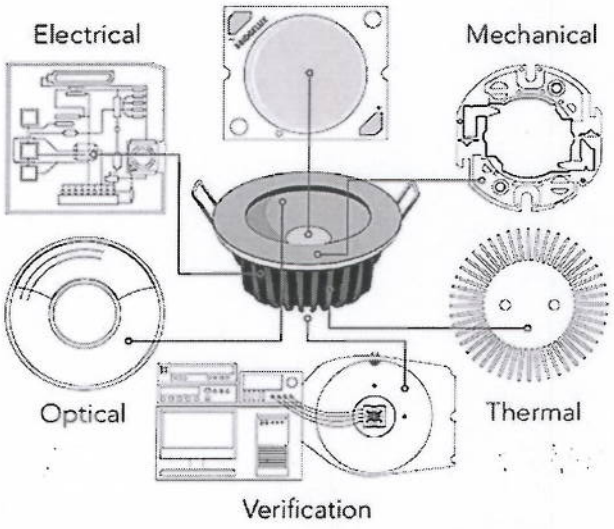
LEDs consume far less electricity than incandescent bulbs, and decorative LED light strings such as Christmas tree lights are no different. Not only do LED holiday lights consume less electricity, they also have the following advantages:

- Safer: LEDs are much cooler than incandescent lights, reducing the risk of combustion or burnt fingers.
- Sturdier: LEDs are made with epoxy lenses, not glass, and are much more resistant to breakage.
- Longer lasting: The same LED string could still be in use 40 holiday seasons from now.
- Easier to install: Up to 25 strings of LEDs can be connected end-to-end without overloading a wall socket.

The LED Replacement Bulbs are the ones whose photograph has been shown on page 11. The bulbs come in various shapes such as standard light bulb shape, bulged bulb shape, Conical bulb shape, Crystalline Pear bulb shape, Pear bulb shape, elongated standard incandescent bulb shape, etc. The point is the shape can be identified as that of a bulb. Whereas the present product is definitely not in a bulb shape. LEDs appearing in the form of tiny dots are soldered on to a PCB. This portion is kept in a housing which has openings for heat dissipation. The housing then has a cover. It can be shown from a screen shot thus :

The parts of a downlight are normally thus :





A view of the diagrams above would help us understand that the impugned product is not a LED bulb. So when asked for a LED bulb, the impugned product would not be asked for. The impugned downlight is for style and aesthetic appeal. The entry 111 falls in Schedule C which calls for a tax rate of 5%. Certainly then, such high-end luxurious products would not be placed with other products which have been consciously kept at a lower rate. Besides, the wording of the entry is 'LED Bulbs' and therefore, interpretation has to respect the legislative intention. And therefore, I am of the considered opinion that the impugned product would not be covered by the schedule entry C-111 of the MVAT Act,2002.

05. PROSPECTIVE EFFECT

The applicant has requested for prospective effect if his contention as regards the applicable schedule entry is not acceptable. I have elaborately dealt with the claim and the provisions of the Central Excise Tariff classification have been pointed to show that the applicant has been making a very fallacious argument. Further, the Tariff description was also very obvious. Therefore, there was no case of any misclassification issues. Reliance on the certification would not help as the same was not a statutory order and was not issued to the applicant. Further, it is of the year 2014-15 and the applicant has been charging 5% tax earlier thereto. In view thereof, I am not inclined to a favourable consideration of the request for prospective effect.

06. In the premises, I pass an order that -

ORDER

(under section 56(1)(e) and 56(2) of the Maharashtra Value Added Tax Act, 2002)

No.DDQ-11-2013/Adm-6/15/B- 3 **Mumbai, dt.** 22/03/2016

For reasons as stated in the body of the order, it is herewith determined thus :

1. The "LED Downlight" sold through invoice no.C/12-13/286 dt.02.02.2013 is not covered by the description "light emitting diodes" as notified against the Central Excise Tariff Heading 8541 40 in the notification for the purposes of the schedule entry C-56 of the Maharashtra Value Added Tax Act, 2002.

2. The said product falls in the residuary schedule entry E-1, thereby taxable @12.5%.

3. The request for prospective effect is rejected.

(RAJIV JALOTA)

COMMISSIONER OF SALES TAX
MAHARASHTRA STATE, MUMBAI