Quality Assurance at Wavelength Electronics

QUALITY BASICS

Wavelength Electronics prides itself on the quality of the laser drivers, temperature controllers, and accessories provided to customers in engineering, research, academia and other demanding applications all around the world. High reliability products help decrease scrap and waste, saving cost and keeping manufacturing lines running for the customer.

There are many ways to assess a manufacturer's ability to produce high-quality products; however, two ways stand out as integral indicators: *First Pass Yield* (FPY) and the number of *Return Materials Authorizations* (RMA). The engineering and manufacturing teams at Wavelength Electronics have worked hard to optimize these rates for customer ease of use and peace of mind.

Quality assurance is critical at Wavelength Electronics to ensure quality products that work right out of the box. The internal FPY rate has consistently reached up to 95%, and the RMA rate has not exceeded 0.1% for many years. These impressive rates give confidence to the customers when ordering and operating laser drivers and temperature controllers.

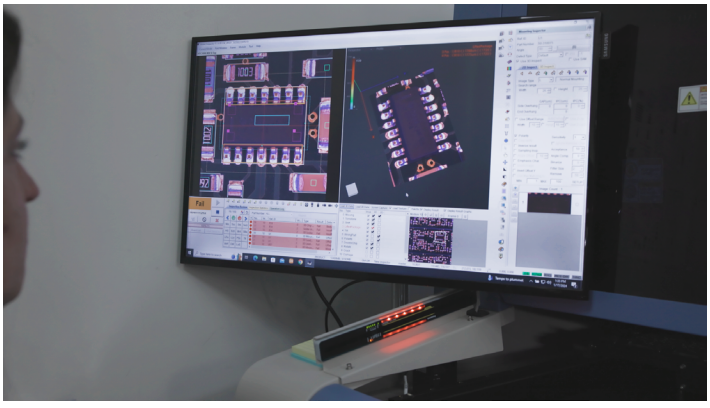

Figure 1. Inspection process at Wavelength Electronics for quality assurance.

WHAT IS FPY AND RMA RATE?

First Pass Yield (FPY) measures and tracks the number of manufactured products that do not require rework as a ratio or percentage of total units that started in the manufacturing process. For example, if 100 controllers enter a selective-soldering process, 90 controllers leave the process as good units, and 10 controllers are set aside for rework; then the FPY for this selective-soldering process would be 90%. Although all 100 controllers might ship out to customers after 10 are reworked, the FPY metric only counts products that make it through the process without rework. By tracking FPY, manufacturers can improve tools and machines that are causing defects or rework, and customers can be assured that the products sent out the door meet quality standards.

FPY measures the efficacy of manufacturing, but it does not measure the quality of units after shipment to the customer. That measurement is dealt with by totalling the number of Return Materials Authorizations.

A Return Materials Authorization starts the return process of a defective product for a refund, replacement, or repair. If the RMA is requested within the warranty period, repair or replacement service is normally free of charge. For many out of warranty products, RMAs can still be requested but may be subject to failure analysis fees. These are typical standards for many manufacturers, but some warranty guidelines may differ in policy.

Once a return is authorized, an RMA number is created. The RMA number is assigned by the manufacturer and is tied to the product being returned. It is important to obtain this RMA number before returning any product. This is how manufacturers track and assess the financial effects of the RMA process and customer satisfaction. A low RMA rate would indicate a higher quality in items produced at that particular facility. A higher RMA rate indicates common problems and defects in products received by the customer. For example, if 100 controllers are shipped to customers, and five are returned and assigned RMA numbers due to being defective; then the RMA rate would be 5%. Most manufactures are not willing to advertise this rate due to the high number of RMAs indicating the lower quality they can promise to customers, or due to the inconsistency in RMA rates over previous years.

WAVELENGTH ELECTRONICS' RATES

The manufacturing team at Wavelength Electronics continually monitors and improves processes affecting the quality of laser drivers and temperature controllers. After assembly, Wavelength Electronics is proud to share a first pass yield or success rate of 95% before the product is even shipped to the customer. For every 100 products manufactured, only five are reworked due to consistent process control.

As for a low RMA rate, Wavelength Electronics has consistently achieved <0.1% over many decades in the semiconductor electronics business dealing with countless customers and a variety of high performance applications that use laser drivers and temperature controllers. This rate implies that for every 1,000 units that are shipped out to customers, only one product is found to be defective and returned for repair. Quality products and ease-of-use for customers is of the highest concern when designing and manufacturing products for laser control at Wavelength Electronics.

FPY & RMA RATES BENEFITS

There are many benefits from the high FPY rate and extremely low RMA rate of Wavelength Electronics:

- 99.9% of products work as designed out of the box
- No wasted time or cost on shipping defective products back to the factory
- Research projects or manufacturing lines are not halted by defective products
- Drives Product and Quality Management System (QMS) improvements
- Eliminates Cost of Poor Quality (COPQ)

With a low RMA rate, the customer can have confidence that the products will work right away. There will not be any hassle with broken or defective products 99.9% of the time.

Wavelength Electronics is focused on consistently meeting customers' needs and requirements for their applications and photonics ambitions. Wavelength Electronics continues to improve the Quality Management System (QMS) with better documentation and manufacturing processes to deliver reliable quality products.

Another benefit of an extremely low RMA rate is saving money and time for the customer. When products perform as designed and promised, there is no wasted time and money spent on shipping the unit back to the factory for repair or replacement, halting important research or manufacturing. This also keeps product prices low as fewer workers are needed for inspection and repair, and the time for those processes are kept to a minimum. The cost of poor quality (COPQ) affects not only manufacturers but customers as well. Wavelength Electronics aims to eliminate the COPQ with an extremely high FPY.

For the very few products that are found to be defective upon reaching the customer, Wavelength Electronics makes repairing or replacing those units a priority in the facility. While most products can be repaired and shipped in less than a week, some issues may require special analysis and repairs. Getting quality products back to the customer quickly is as important to Wavelength Electronics as solving any laser control needs.

USEFUL LINKS

Wavelength Electronics' **Terms & Conditions**

Request RMA: **sales@teamwavelength.com**

KEYWORDS

Return materials authorization, RMA, first pass yield, FPY, quality, rework, warranty, repair, laser driver, temperature controller

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