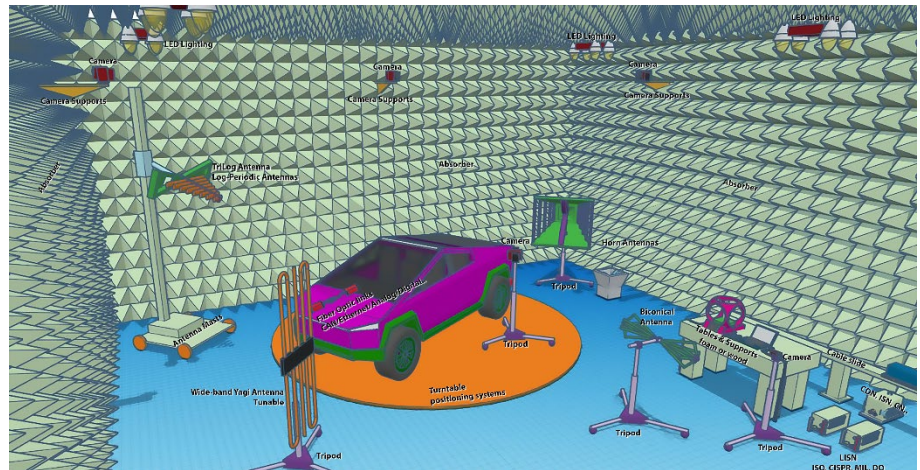


Essential Things To Know When Purchasing EMC Test Equipment

By Jason Smith 2020 in the Pandemic!

If you're anyone from an EMC test lab to a manufacturer taking your equipment to an EMC test lab once a year or more, you need some form of EMC test equipment. There is a huge range of possible capabilities, from spending a few thousand dollars on pre-compliant equipment to millions of dollars for a fully accredited lab. To what extent of equipment you need depends on many factors. Having the right tools to develop your products is vitally important. We will focus on the EMC Test Equipment Purchase after the needs are set.

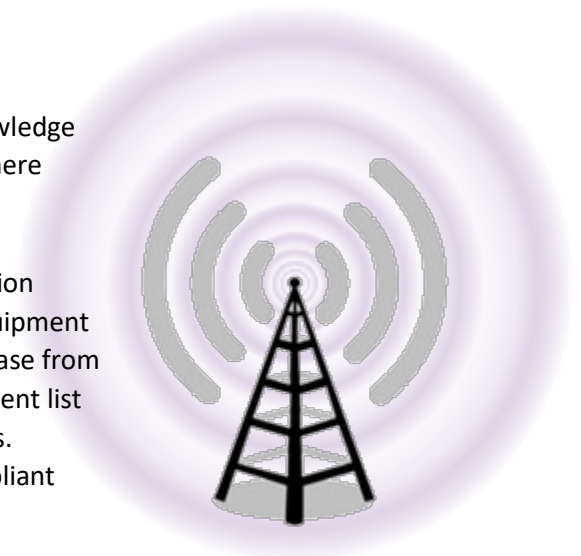
EMC test equipment overall is very specialized with low-volume sales. In such a low-volume market, updates to equipment do not happen often, and prices typically are relatively higher. In drastic comparison, a cell phone may sell millions of the same model within a year, which leads to extensive quality control, new designs every year, and



updates from the feedback of a vast amount of users. In EMC, the quantities sold of a particular model may only be 5 - 50 in a year. These items are, therefore, designed for a much longer life cycle. Equipment should last 5 – 10 years or even longer on average. Since sales volumes are low, the availability is less. Most items are built to order, which extends delivery to weeks or months. One must plan in advance for the need. As the EMC market continues to mature and grow, so does the test equipment used specifically for this unique market. The purchasing process is more involved than more common tools.

To-do list:

- Set a budget
 - Readjust the budget based on your increased knowledge and availability of products after the next steps (there could be many iterations)
- List out what equipment is required
 - Higher a consultant to help with equipment selection
 - Absolute EMC gives free consulting on equipment selection. It's free! No matter if you purchase from us or not. We can help refine your equipment list and give you ideas for alternative products.
 - Based on pricing and budgets, check out pre-compliant alternatives



- Find experienced vendors to help select and discuss equipment needs/benefits/options
- Get pricing and quotes from selected vendors that you trust
- Create a plan for the implementation of equipment in your product development or EMC testing
 - Once you have the equipment, make sure to utilize it fully
 - Create a quality plan for fully compliant testing

Consultants can help you with all the above if this is a little outside of your wheelhouse. But if you have the time to devote to the research and information gathering, it can all be done yourself. Use vendors for their knowledge but understand their motivation is to sell you their products. This does not mean you cannot trust them, just that you need to understand the source. They will always make their products sound the best. It is for you to discern fact from marketing.

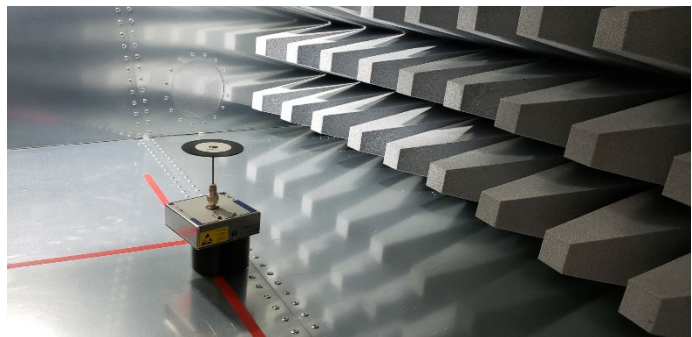
Factors when purchasing equipment

1. Need
2. Cost
3. Ease of use
4. Serviceability / Repair Capability
5. Software control
6. Size/color
7. Delivery

The above list is in the order of importance, but each situation is different, and the order is adjusted. For example, delivery might become a priority if production is held up from passing radiated emissions, and troubleshooting must be done immediately, usually increasing costs.

Types of EMC test Equipment:

- Emissions Receiver, Spectrum Analyzer*
- Power Meters*
- Signal Generators/Function Generators*
- Amplifiers
- Field Probes
- Oscilloscopes*
- Voltage Meters/Multimeters*
- RF Conducted Immunity System
- Magnetic Immunity Systems
- Transient Conducted Immunity Generators
- Antennas, Pre-Amplifiers
- Directional Couplers
- Anechoic Chambers, Shield/Screen rooms, GTEM, ...
- Software
- Coax Cables*, Adaptors*



- **EUT Monitoring Equipment: Cameras, Computers*, Fiberoptic Exstenders, ...**
- **Test Verification Accessories: Loads, Adaptors*, Fixtures, ...**
- **Accessories: Test Table, Tripods*, Antenna Mast, Turntable, Equipment Racks*, System Computer*, Equipment Carts*, Tools*, ...**

* These listed items are used in broader markets (RF, Telecom, Wireless,...). This means volume sales are increased, and therefore, the demand for this equipment is higher, choices are more, delivery is shorter (from stock), and the cost is lower in comparison to specialized EMC equipment.

GREEN items are all items offered directly from Absolute EMC. Other items can be packaged into a turnkey package through our expanded partnerships.

Is quality directly linked to price?

Yes and No. Of the factors to understand about the test equipment you purchase, pricing is always the most important. I have not run into a customer with no limit on spending, but I hope to one day. There is a relationship between quality and price, but it is not always easy to discern. Quality has a different meanings for different people. Larger companies are sometimes viewed as being a better choice for equipment, but this is misguided. Since sales volume are relatively low, no matter if it is a small or large company, sales margins need to be increased for larger companies to cover overhead. If it is a publicly-traded company, profits also must support the shareholders. They are leading to higher prices, not higher quality. Larger companies (not always) lose track of customer needs, and support issues go unsolved. A smaller reseller and manufacturer can be sure to keep all customers on track. Equipment for EMC should be purchased with trust and direct conversations with the seller. It should not be purchased off of the internet without first vetting the company and products. One must be confident that the money spent will be supported and that questions can be answered when they arise. The sale is not finished after the purchase. You need to utilize the equipment for many years to come. Don't underestimate after-sales support's importance.



EMC Test equipment retail outlets:

- Direct from Manufacturers. This can be done directly (by phone/web) or through manufacturing representatives. Sales agents should be knowledgeable to get you quick, effective responses or get you directly in touch with the correct people.
 - VAR (Value Added Reseller). Some companies extend their offering by partnering with other companies and relabeling and enhancing products for the EMC market (or other)
- Resellers/Distributors. If a manufacturer is outside of the country where you live, most likely, they sell through a third party. There are many reasons why this is legally beneficial to both the seller and the customer. A reseller needs to be knowledgeable about the equipment and give you quick correct answers. If they are selling from a website with no or little knowledge of the test and equipment, make sure to go elsewhere.
- System Integrators. Offer a complete solution/package of equipment to meet a requirement; this may include packaging together many manufacturers' products and software packages into a system with training and integration.

- Equipment Rental. Sometimes long-term ownership of the equipment is not ideal, or only a one-time test is required. Making use of rental companies benefits your bottom line.
- Used: Ebay, Auction sites, Used equipment dealers, Lab closures. Used equipment purchasing can save money, but can it save enough to overcome the risks. Risks: no warranty, short life cycle, DOA, after-sales support/repair available, is it obsolescent, does it meet compliance with new requirements, ...

Many sellers may fit into many of the above groups, not just one. It depends on the products. For example, a manufacturer may relabel some instruments to meet customer needs and offer turnkey systems. Absolute EMC, for example, is primarily a knowledgeable reseller of EMC Test Equipment but does work as a VAR for some products while offering full system integration services.

Extras:

There are additional items that are needed that should be considered during your EMC equipment purchase process.

- Calibration - All instruments need to be calibrated and follow a quality protocol. The calibration you decide on will be added cost over the life of the products. Is it yearly, bi-yearly, or user verified before use? Decisions your quality system must address. You may also need to add special calibration costs to the purchase of new equipment.
- Repair/service – though we all hope nothing even needs service. But it should be known in advance how service will be handled from a vendor downtime can be quite expensive if it is out of service for months.
- Usable items – Gasketing, Metalik tape, tinfoil, Test setup support, connections, and cables do wear out and need replacing.
- Shipping and delivery costs of the equipment
- Real Estate – depending on what equipment is purchased, you need an area to perform this testing. It has to be planned and layout. This may require anything from improved grounding to adding a new building for a chamber.

Conclusion:

Purchasing EMC test equipment is a massive undertaking, and time needs to be devoted to understanding all that is available to make an educated choice. Be sure to have trust in your vendor/s of choice. With the new purchase, a new relationship is started. You need the vendor to be available for questions and service for many years to come. Trust is paramount!

