**Standards:**

**Basics:**

Most States require that animal products distributed in that State be registered or licensed with the State’s feed control office. The FDA has guidelines for materials that are safe to use for direct contact with food. To be FDA compliant, a material must be able to withstand the environment it will be used in. HDPE injection mold.

**Terminology:**

IEEE standards

**Test and Measurement:**

ASTM Standards are a set of standards that have been created to aide with voluntary review of a product. These standards are not required to be followed, but they help with the creation of an effective and safe product.

10-CFR Part 430 sets a testing standard for energy conservation in non-automobile electronic products. Each product category has its own set of requirements that must be met and tested individually. For example, testing requirements for battery chargers require verified data for the accuracy and precision of the measuring equipment.

**Product:**

Product standards are one of the most rigorous and important standards to follow when creating a consumer product. Not following these standards can compromise the safety and consistency of your product. The Due care practice standard is followed to ensure the legitimacy of their product at every step of the supply chain. Product should not be created with unlawfully sourced material. Through the Code of Federal Regulations (CFR) there are several regulations surrounding consumer products with electronic components that must be adhered to. 47 CFR part 15 consists of several standards that all pertain to the regulation of radio frequency energy emissions in the 9khz to 3000 GHz range. 10-CFR Part 429 sets requirements for certification reports, such as including information about the basic model and a compliance statement. Depending on the retailer you select, you may be subject to Underwriter Laboratories (UL) standards. These include standards for isolating signals and feedback, safety requirements for electronics, and standard for insulation systems. Products that are authorized under 47 CFR Part 15 must contain the product’s name, model number, The name, address, contact information of a US-based responsible party, and a statement that the product complies with 46 CFR Part 15.

**Process:**

Importer and manufacturers of certain types of electronic products in the United States must issue aSupplier’s Declaration of Conformity (SDoC). SDoC requires the party responsible for compliance to ensure that the equipment complies with the appropriate technical standards. 21 CFR 175 requires that adhesives or other coatings within the product meet FDA food safety standards.

**Interface + Data:**

[IEEE SA - IEEE 1636-2009](https://standards.ieee.org/ieee/1636/4558/)

**International:**

For most consumer products imported or manufactured in the United States country of origin labeling is required. Both the product and packaging should have country of origin labeling.

**Ethics:**

**Patents: competitions patents**

[US6401657B1 - Automatic pet food feeder - Google Patents](https://patents.google.com/patent/US6401657)

[US06401657-20020611-D00001.png (2703×3855) (storage.googleapis.com)](https://patentimages.storage.googleapis.com/US6401657B1/US06401657-20020611-D00001.png)

[US5363805A - Automatic pet feeder - Google Patents](https://patents.google.com/patent/US5363805A/en)

[US5363805-drawings-page-2.png (2320×3408) (storage.googleapis.com)](https://patentimages.storage.googleapis.com/96/91/fe/583cc93ea63040/US5363805-drawings-page-2.png)

[US4181037A - Lazy Susan assembly having an adjustable alignment mechanism - Google Patents](https://patents.google.com/patent/US4181037)

[US5312003A - Lazy susan system - Google Patents](https://patents.google.com/patent/US5312003)

Publishable vs patentable:

**Level 0:**

|  |  |
| --- | --- |
| Module | Dog Feeder |
| Inputs | * Users Feeding Desires * Power: 120 volts AC rms, 60Hz |
| Outputs | * Dog is Fed |
| Functionality | Dog is fed according to users input settings. System should be able to feed a large dog for a week, contained within the design is space for 2 gallons of kibble. |

**Level 1:**

|  |  |
| --- | --- |
| Module | Power System |
| Inputs | * Power: 120 AC rms, 60HZ |
| Outputs | * +5 Volt DC. |
| Functionality | Rectify 120 AC into +13.8 Volts which is supplied into a 12-volt battery. This battery is stepped down to 5 volts for use throughout the system. |

|  |  |
| --- | --- |
| Module | Measure + Dispense Food |
| Inputs | * Dog food. * User setup input. |
| Outputs | * Measure food amount |
| Functionality | Measures food in bowl currently and based on user’s setup options dispenses set food amounts from storage containers to bowl. |

|  |  |
| --- | --- |
| Module | Detect + Supply Food |
| Inputs | * User settings. * Food measured. |
| Outputs | * Dog is supplied food. * Call upon dog. |
| Functionality | System will supply set amount of food, then will call the dog when it is time to eat. It will also detect when the correct dog arrives at the system and extend the correct bowl. |

|  |  |
| --- | --- |
| Module | User Programming |
| Inputs | * User desired settings |
| Outputs | * User selected settings |
| Functionality | User should be able to select the amount and frequency in which their pet is fed. The system should be easily usable by the owner. |