Coffee Bean mm Radar Test Plan

2025/04/04

# Overview

The major objective of this project is to use the XM125, measure coffee beans of varying moisture content, and sizes, then catalog those results in a spreadsheet. The key is to create consistent results, while determining the absolute minimum amount of measurements to get the best readings.

# System Radar Test Plan v1.0

| Date of Test: | 2025/04/04 |
| --- | --- |
| Tester: | Kamal Smith |

## Purpose

*Measure coffee beans with varying moisture content, using Pulsed Coherent Radar(PCR) device, and comparing those results to the Roastrite RM-800, which uses capacitive dielectric density/Volumetric Mass Density for its measurement capabilities.*

## Equipment Needed

* **System Equipment**
  + *Acconeer XM125 (A121 and XE125 sensors on the development board)*
  + *Acconeer Exploration Tool*
* **Test Equipment**
  + *Python Scripts (uses the Acconeer Exploration tool to interface with the Radar sensor*
* **Other Equipment**
  + *Within the ecosystem of python, using Pytorch, for machine learning utilization, in taking measurements, to detect the percent moisture content.*

## Pre-Test Setup

1. *Plug-in the XM125 into the laptop, via USB-C cable.*
2. *Open Python, and load the script to prepare for measurements.*
3. *Measuring the weight of coffee beans, to maintain consistency for the density of the coffee beans.*
4. Fill the Beanis, in preparation for the measurements, with the coffee bean sample.

## Top Down Test Steps

1. Turn on the power switch.
   1. LED should turn on: ☐ Tests: power on indicator requirement
2. Measure 5V output, should be 5 ± 10% V: \_\_\_\_\_\_\_\_\_ V

## Post-Test Teardown

1. Unplug….
2. …

## Top-down Test Plan Conclusions / Discussion

Any further notes go here.