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# Measurement Services

## CHARMS

### Introduction

ANTECH is a world leader in the design, supply and operation of equipment for measuring radioactive waste. Our UK Measurement Services team operate a mobile gamma assay platform known as CHARMS (Characterisation, Assay and Radiation Monitoring Station).

CHARMS is a trailer-mounted system combining a high efficiency, high resolution HPGe detector with an integrated turntable and load cell measurement platform. This enables CHARMS to generate laboratory-quality results and as such, ANTECH has achieved UKAS accreditation to ISO17025 for the measurement of drums and builders bulk 'dumpy' bags using the system; the only service provider to offer accredited results.

- Deploys to site for in-situ measurements using the Open Detector Geometry (Far Field) measurement technique
- High resolution spectroscopic characterisation of waste
- Assay of any container type possible, turntable maximum capacity 2 tonnes
- Assay of drums and 'dumpy' bags under accreditation to ISO17025
- Measurement Report provides total activity (Bq) or activity concentration (Bq/kg) of measured nuclides and Minimum Detectable Activities (MDA) for those not detected
- Results applicable to waste sentencing at Out-of-scope / VLLW / LALLW / LLW levels



CHARMS services provide a complete assay solution, with ANTECH operators deploying the system and conducting measurements on-site, through to the production of final measurement reports.

Measurement times are optimised for high throughput, using a high efficiency shielded and collimated detector to achieve excellent MDAs in as little as 5 minutes per item.

The integrated turntable rotates the package to ensure the entire object is viewed and reduce effects of in-homogeneity, while load-cells allow automated density correction, providing confidence in the result accuracy.

CHARMS is a versatile system, capable of being powered by 240V or 110V site power or being used in remote locations with an on-board generator. The electromechanically cooled detector requires no liquid nitrogen cooling and battery operation allows cooling to be maintained without power during non-operational hours.

Modular options also allow the detector to be dismantled and used for measurements without the trailer, including measuring containers such as HHISOs, or use with a Small Turntable option for close-up measurement of drums and smaller objects.

## Benefits

- In-situ laboratory quality gamma spectroscopy measurements of drums, waste bags, loaded pallets and large volume objects up to 2 tonnes.
- UKAS accreditation demonstrates confidence in the traceability and quality of results
- Staffed by trained and experienced ANTECH personnel
- High measurement throughput due to high efficiency large diameter HPGe detector
- Short measurement times down to 5 mins with low MDAs
- Integrated turntable and load-cells reduce need for external equipment
- Assay configurable in response to customer needs
- Provides results sufficient to sentence waste into out-of-scope / VLLW / LALLW / LLW.
- Trailer mounted system enables rapid deployment to site for in-field measurements
- Enclosed Operator Laboratory area allows outdoor all-weather operations
- Electromechanical cooling eliminates the need for liquid nitrogen
- Versatility to operate with or without external power for deployments at a range of sites

## Specification

<b>Service Level</b>	Fully integrated measurement services of waste/contaminated items, including provision of both equipment and personnel
<b>Detector</b>	High efficiency (>50% relative) HPGe with large diameter crystal. Shielded and collimated for optimum operation
<b>Data Processing</b>	Ortec Isotopic for spectral analysis and density correction
<b>Measurement Technique</b>	Open Detector Geometry (Far Field) measurement following ISO19017 Procedures compliant with ISO17025 and UKAS accredited for drum and dumpy bag measurements
<b>Minimum Detectable Activities (MDA)</b>	Nuclide, measurement time and item dependent. Typical 0.0035 Bq/g Cs-137 and 0.0021 Bq/g Co-60. Able to sentence Out-of-Scope / VLLW / LALLW / LLW
<b>Measurement Quality</b>	Full QA/QC programme supporting laboratory-quality results. Measurement procedure UKAS accredited to ISO17025
<b>Results and Reporting</b>	Full measurement report detailing activity / activity concentration and MDAs for a library of radionuclides. Customised reporting options including all spectral data available
<b>Maximum turntable load</b>	>2 tonnes, turntable diameter 1700mm
<b>Measurement throughput</b>	Up to 60 items per day
<b>Input Power requirement</b>	110 or 240V industrial supply; or on-board generator

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