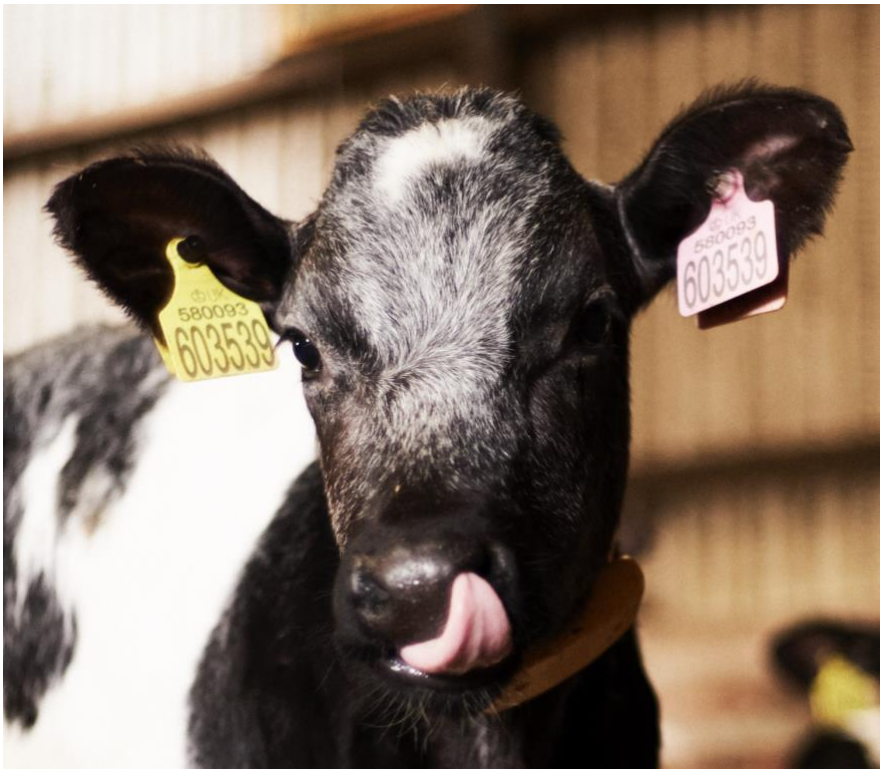


UHF EID IN SCOTLAND

Work in progress through 2020

ABSTRACT

UHF EID is an ideal future proofed technology for animal tag recognition. Its continued development within the ScotEID pilot during 2020 and early 2021 describes why it is the technology of choice for cattle identification.

ScotEID Field Team

UHF EID in Scotland

Introduction

Radio Frequency Identification (RFID) involves attaching an electronic transponder containing a unique number to an item so that the item can be identified by scanning it with appropriate reading equipment. RFID offers many advantages in terms of speed and accuracy of inventory-taking and is now commonplace across many sectors of the economy. For example, in retailing, logistics and transport.

In Scottish livestock agriculture, RFID is already mandatory for the electronic identification (EID) of sheep; it will soon become mandatory for cattle and is already used voluntarily by some cattle farmers.

RFID comes in different flavours, with different advantages and disadvantages. For example: for agricultural livestock, electronic identifiers generally take the form of an ear tag, but EID transponders can also be embedded in boluses, injectable phials and neck collars.

Transponders can be active or passive – the former having their own battery, the latter being energised only when scanned by reading equipment; and transponders can operate at different radio frequencies, with Low Frequency (LF) and Ultra-High Frequency (UHF) being most relevant for livestock.

LF is currently used for sheep EID and is anticipated to be mandated for cattle by the EU, with the UK following suit. However, the EU requires EID tags to be WYSIWYG (what you see is what you get) and to comply with the prevailing international standard (ISO11784) for how animal IDs are written ('encoded') onto electronic transponders.

Unfortunately, the existing system of cattle IDs in the UK cannot simultaneously satisfy both requirements, meaning that either a change in cattle numbering is needed, or the UK must deviate from either ISO11784 and/or the requirement for WYSIWYG. Yet changing cattle numbers has implications for existing IT systems (and farmers' acceptance), non-WYSIWYG has implications for ease of interpretation by users and deviating from ISO11784 has implications for ease of international trade in live animals. This conundrum means that progress with implementing LF-EID for cattle in the UK has progressed very slowly.

By contrast, UHF EID is not governed by EU regulations. This means that adherence to ISO11784 is not (yet) mandated and WYSIWYG can be achieved using the existing cattle numbering system. Given some other technical and cost advantages, this makes UHF relatively attractive.

This paper presents the current position of UHF cattle EID in Scotland, summarising ScotEID's activities and focus.

UHF Tags in Scotland

Passive UHF (Ultra High Frequency) is a type of tag technology that has been adopted and used widely across many different business industries to track and trace items electronically throughout supply chains.

UHF technology within cattle tags has been under research and development by ScotEID in Scotland since 2012. To this date ScotEID continues to develop and support the industry to adopt the technology to assist with cattle management, efficiency, and safety. It is anticipated that the technology will improve the speed and accuracy of traceability, and in time pave the way for removal of paper passports.

At present ScotEID UHF tags are used voluntarily and are available as part of the ongoing pilot, testing their use on farm and through markets and abattoirs. Currently there is one official UHF secondary tag available (PAS44 approved), and others will be made available during 2021. There is, at the time of writing, no planned date to make these tags compulsory, either for new-born calves, or as replacement tags. There are UHF tags available that can only be used as management tags and manufacturers are currently taking these through compulsory testing called PAS44.

UHF tags have been chosen as a preferred technology in Scotland because they retain and output the actual tag number, commonly referred to as WYSIWYG 'What You See Is What You Get', can long distance read, are anti-collision, not subject to magnetic interference from metal penning, and don't interfere with existing LF or UHF Electronic Identification (EID) systems (sheep and dairy systems).

UHF readers, both fixed and handheld, are available commercially and are used in many industries throughout the world. This makes UHF technology easily accessible to the farming industry. New, updated and innovative kit is regularly coming to market as it adapts and evolves at speed to keep up with market requirements. Innovation also includes 'active' tags able to transmit over large distances.

The benefits that UHF can provide the industry with cannot go unnoticed. Lower costs and faster reading speeds are just some of the attractions, as we look towards handling, managing, and recording data on farm, in markets and abattoirs in a safer, more accurate, less stressful environment for both humans and animals.

As well as the benefits already outlined, UHF tag technology has an abundance of additional features which will benefit the sector and supply chain.

- Unlike standard[1] Low Frequency (LF), UHF has what is called 'Anti-collision technology'. In simple terms this means the UHF technology has the capability to

[1] An advanced form of LF does have anti-collision capability but is not easily compatible with standard LF – which renders its practical application difficult when standard LF is already in use, as with sheep.

capture and read numerous tags at one time (if desired). This gives the user (farmer/mart/abattoir) the option to handle cattle either in batches or as individuals to suit the handling and management set up.

- Typical read range for a handheld UHF reader is comfortably 2-3 metres average, compared to around 30cm for LF. A mains powered/static reader can reach UHF cattle tags at around 6 metres and more. Active (powered) UHF can read more than 1km away.

- The power output of UHF readers can be easily altered using a slide button, to provide different read ranges e.g. either almost touching the tag or out to 3 meters for a hand held.

- Not being as constrained as LF by regulations means that UHF can record the full UK ID number as it is written and recorded for official purposes. This means that using UHF for cattle traceability does not require any change in the format of the cattle ID's as the tag has the capability to store it in its current form. Different UHF RFID tags have varying amounts of storage available. While the most commonly used configuration is a 96bit EPC 'license plate,' other configurations are also used. One common variation is the Alien Higgs 3 transponder, which has a standard user memory of 512 bits, in addition to the 96 bit 'license plate.' The EPC memory is expandable from 96 bits to as much as 480 bits.

- As well as being able to store the full UK ID number as it is written visually, UHF tag technology provides additional storage capacity which will, in the future, allow consideration to be given to what other beneficial functionality may be provided, for example holding the UK ID passport barcode information (breed, sex, date of birth, dam ID).

- UHF on farm for management purposes will remove the need to visually read tags, reducing handling, admin errors and improving safety. However, investing in new technology on farm is not compulsory and, as in the case of sheep, EID tagged animals can still be read visually and practices can continue without the need for the farm to be equipped with EID technology.

- In addition to the practical application of UHF on farms, markets and abattoirs, UHF provides the full supply chain with additional assurances on Scotch brand and provenance. Within the UHF technology the silicon chip has its own unique identifier (TID), which during the tag writing process can be linked to the official UK identification number allocated to an animal. This process allows for checks to be made on whether a tag is a genuine official tag, not a fraudulent copy.

At present, and until there is an agreed UK position on cattle renumbering for LF, Scottish cattle keepers have two choices:

- To voluntarily use Low Frequency non-WYSIWYG tags and readers as are currently available.

- To voluntarily use ScotEID UHF WYWIWYG tags, working with ScotEID as they continue to develop a wider range of UHF tags.

LF Tags in Scotland

Currently Low Frequency (LF) cattle tags are available for management purposes only (although, confusingly, an official non-EID tag can contain a transponder – just the transponder is not itself an official electronic identifier). These are non-WYSIWYG, using a tag manufacturer assigned code number that has to be translated by software, matching the code to the animal's actual ID via a 'tag bucket', to show the visible number on the tag.

The process of allocating a manufacturer's code number to each UK identification number is laborious, particularly when a tag is renewed using a different manufacturer's code. To date, LF technology has taken first place in EID of cattle in the UK for management purposes with the expectation that LF will be the mandated technology throughout the UK.

In addition to LF having limited storage capacity, tags have a short read range, typically no more than 80cms and is a technology which is over 40 years old with no potential to grow and adapt to meet industry needs.

Dual Tagging

Because they operate on entirely different parts of the radio frequency spectrum, LF and UHF can co-exist on the same animal without interfering with each other. This offers the possibility of allowing dual tagging, to permit an animal to be read using either technology. Using both EID technologies can give a wider scope for cattle keepers who may have already invested in LF reading technology for sheep or cattle management systems.

Dual tagging could be achieved by having an LF tag in one ear and a UHF tag in the other, or by having a combined tag in the same ear. Dual RFID tags are a combination of Low Frequency (LF) and Ultra High Frequency (UHF) either as one piece, or as two separate pieces that are then secured together through the ear to make one piece. The tag is visually laser marked with the official UK identification number associated to the animal. At present this tag combination is not available commercially.

As is expected, Low Frequency will be mandated at some point for the UK cattle herd. Scotland is most likely to also mandate UHF for use with Scotland, and therefore will require dual tagging of some form.

It is planned that official LF WYSIWYG (What You See is What You Get) will become available in time but will require a number change, which is a complicated process to undertake and will require current government systems to be updated. Unfortunately, legacy government data systems such as CTS cannot be updated to accommodate a new number sequence compatible with the low frequency EID international standard (ISO 11784).

At this time ScotEID don't believe that LF WYSIWYG tags will become available as official tags until CTS/BCMS closes (when new cattle systems in England and Wales become operational), now thought to be 2023.

Dual Tag Benefits include:

- Cattle that are exported from Scotland can still be read within the rest of the UK using their (eventual) official LF systems (other parts of the UK are unlikely to mandate UHF).
- Dual tags give dairy and beef farms the ability to both EID and BVD tissue sample without the need for 3 tags, as both technologies are encompassed within one piece.
- Allows farmers who have invested in LF technology the option to read with existing technology.

Dairy farmers have been using LF technology in greater numbers for as long as, if not longer than beef herds in Scotland. Automatic calf feeders, outer parlour feeders, AutoID in milking parlours and ID Drafters as the cows leave the parlour are all examples of systems where LF reading technology is installed.

Some beef farmers have been using LF technology for over twenty years to support farm management e.g., logging live weights and health and welfare practices, thereby reducing the requirement for pen, paper, and human error.

The option to create a dual tag for the small proportion of beef herds who already use LF would allow those who have made investment in the technology to continue recording and managing their herd as they currently do.

In dairy farms, the issue is more complex. The difficulty is that existing LF systems may not be compatible with the use of an additional LF ear transponder. This is because an official tag will, or may, 'collide' with existing LF management tags or collars. One policy option for dairy farms would be to have a derogation from the regulation to use only UHF official tags while the cows are on-farm, to make sure that existing equipment is not compromised. Some dairy farms use a UHF system already, which won't be a problem because of anti-collision technology.

At present 'Smartrac gen1' tag (Male) and a RH Low Frequency (Female) are with ETAS seeking approval to begin trials to make it a PAS44 2019 approved combination, as have APK who are starting the dual tag journey to approval.

Active Tags

Active RFID tags is a type of technology that actively broadcasts a signal to a reader to collect useful information based on the individual animal. The tags are powered by a battery and can send a signal of up to one kilometre (in some instances) depending on the receiver location and antenna. Using LoRaWAN technology (https://en.wikipedia.org/wiki/LoRa) read distances can be up to around 10 Kilometres or more depending on topography.

Dairies are already using Active UHF tags on collars or ankle straps to monitor motability, eating and sleeping behaviours of an animal as well as providing an early warning signal as to when an animal is close to calving based on her behaviour.

ScotEID are trialling active tags in the form of a GPS battery powered sensor on a cow collar. To date ScotEID can track the movement details of each individual animal, average speed, distance travelled and where on a google map the animals are located.

The sensors utilise Long Range Wide Area Network (LoRaWAN) and send their location data at adjustable timed intervals to a strategically placed LoRaWAN base station. This station in turn uploads the data to a phone network through a normal SIM card, which is then accessible through an app for your phone and PC.

Use cases are probably most valuable for cattle out on remote areas and common grazing areas where the cattle can be seen to be moving around, confirming their existence for department inspections etc and also to confirm that the animal is healthy and moving normally.

Approval Process for PAS44:2019

For UHF (or LF) tags to be compliant in Great Britain, they must pass a sequence of tests administered through BCMS.

The approval process, in short, covers the following:

1. Table-top assessments by the Competent Authority. These establish the ear tag meets basic specifications and welfare standards that allow it to progress to the next stage of testing.
2. The Welfare Assessment – detail can be seen on process – noted following:
3. Completion of approval through PAS 44: 2019
4. Bovine Official EID Technical Standards (Part I only for UHF)

Tags that are currently on the market without official electronic transponders have met the standards within the previous PAS44:2014 which is primarily testing the plastics. For tags to be approved and to include official electronic transponders, they must comply with the testing required through the updated PAS44:2019. This will allow the electronic tag to be used as the primary tag.

PAS44:2019 allows an electronic tag to be the primary. If the tag has existing PAS44:2014 approval as a non-EID tag, 'grandfathering rights' mean that the Welfare Assessment need not be repeated and most elements of the PAS44 tests can be waived. However, the tag will still be subjected desk assessments, some PAS44 tests and the Part I of the Technical Standards:

1. Send tag to ETAS – tabletop assessment.
2. Send to APHA- table top assessment.
3. PAS44 – UV test, tension/stress test on pin, laser marking, electronic reading.
4. Bovine Official EID Technical Standards (Part I only for UHF)

It should be noted that progress to seek approval through BCMS/ETAS is sometimes slower than desired and is currently holding back the manufacturers in providing UHF approved tags to the market. Moreover, uncertainty over the status of some changes to PAS44 (notably whether pink is the agreed colour for bovine EID tags) is causing some manufacturers to delay seeking PAS44:2019 approval.

Welfare Assessment procedure

Requirement	**Cattle**
Period of assessment	21 days
Number of animals per batch of tags on each farm	At least 25 calves
Location	Calves at one farm (not at grass) and at the other with access to pasture
Age of animals at start of assessment	Less than 20 days
Ear tag numbers	Use the herd mark of the test farm and the next available batch of numbers
Loss and replacement of tags	The assessment tags will take the place of the official tags for the duration of the assessment and are allowed to remain if the tag is approved; tags that fall out during the assessment should only be replaced with approved tags with the same unique number
Veterinary assessment by the same vet	At insertion of the tags, 7 days after insertion and 21 days after insertion

PAS44 UHF Cattle Tags available

At present there is only one make of UHF tag which has been approved through PAS44 (2019) and available to buy as an official tag in Scotland. As shown later within Tag Status, there are several tags which are working through PAS44 2019 approval to be on the market sometime in 2021.

Tag Make	**Supplier**
Smartrac Generation 1 Smartrac Generation 1	Anderson Farm Supplies Shearwell

All approved UHF tags are a light salmon pink colour making them easy to distinguish from a standard tag, which will be important during the period when there will be mixed batches of cattle traveling through markets and abattoirs. Tag colour differentiation will allow both buyers and yards-staff easy identification of animals which can be read electronically and those which cannot. Saving time and handling requirements.

Anderson Farm Supplies and ScotEID have jointly distributed 54,817 UHF tags onto farms as part of the trial and voluntary phase of bovine EID research and development

Tag Retention

Tag retention in cattle beasts in Scotland is a generic problem with eartags, and not a problem that can necessarily be fixed during the implementation of UHF technology per se, although ScotEID is working with tag manufacturers to improve tag robustness.

Tag loss percentage in Scottish cattle is higher than in other European countries, as extended winter period housing and feeding systems on a typical farm provide the ideal environment for tags to be manipulated through oblique feeding barriers and troughs.

The flex motion, which in most standard tags allows for up to 40,000 'flexes' means that increased pressure upon the neck of the tag weakens and can lead to the tag severing into two pieces. Some fence types, can also cause a tag to be ripped from the ear in one piece, leading to complete tag loss – this is not necessarily a tag issue, but cattle environment issue.

UHF tags which are currently working through PAS44 2019 accreditation are required to meet the standards set out within the BSI Standards Publication 'Official identification ear tags for cattle – Specification'. Within the document, Annex D explains the 'Method of test for tensile strength of ear tags', the process of testing the tag for strength and durability. The test involves the tag being set within a 'test jig' and an increasing load applied to numerous points on the plastic piece and pulled at various angles. A note is kept of the number of times which the tag is manipulated before the effects on the appearance of the tag are noticeable.

Common issues which result in tag loss include:

- Pin breakage, resulting in complete tag loss
- Tag ripped from ear typically by field fences

UHF Reading Equipment

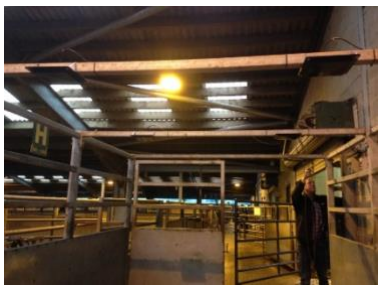
Research and Development into UHF at both markets and abattoirs in Scotland (and across the Scotland-England border) continues by ScotEID and progress can be seen in the following two tables. At present, 10 out of the 16 abattoirs and 17 out of the 26 marts are set up with reading equipment and antenna (smaller, seasonal markets/abattoirs are typically those who still require set up). Covid 19 has slowed down the progress made in 2020 with travel restrictions and contact restricted, however work will commence to complete the installation of reading equipment as soon as it is safe to do so.

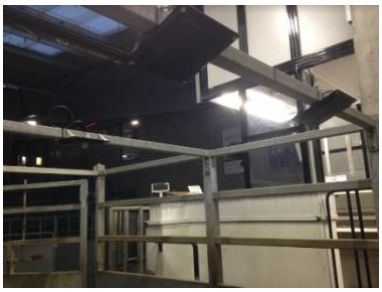
Markets

Market Location	Reading Location	Reader Type	Antennas
Dingwall Mart Ring	Ring	Motorola	2 Israelli 4 Sirit
Dingwall Mart Farm entrance	Out to farm exit/entrance	IP Vanch	2 Yagi's
Dingwall Mart Loading Banks	loading banks 5,6,7,8	VaunchVF-787	6 Yagi's 2 Mobile Mark
Thainstone Mart ring 2	ring 2	Impinj Speedway	4 MobileMark
Thainstone Mart Ring 1	ring 1	Vanch VF-747	4 MobileMark
Caledonian Mart	single file race into small ring	Impinj Speedway	1 MobileMark
Caley mart big ring	Weigh bridge big ring	Vaunch VF-747	4mobilemark
St Boswells Mart	Weigh bridge	Impinj Speedway	4 MobileMark
Ayr Mart 69/176/8004	Weigh bridge	Impinj Speedway	4 MobileMark
UA stirling	Weigh bridge	Caen Ion	4 MobileMark
Lanark	Weigh bridge	Impinj Speedway	2 MobileMark 1 Isreli
Castle Douglas	Weigh bridge	Caen Ion	4 MobileMark (Dome)
Dumfries	Weigh bridge	Impinj Speedway	4 MobileMark (plastic)
Carlisle Ring 2	entrance to race	Impinj Speedway	4 MobileMark
UA Huntly	Weigh bridge	CAEN ION + RPi	4 MobileMark
Shetland Mart	Weigh bridge and entrance to abattoir	CAEN ION + RPi	4 MobileMark
Shetland Port	loading banks	Vanch 747 + RPi	4 Yagi's
Orkney Mart	Weigh bridge	Vanch + RPi	4 MobileMark
Orkney Port	In Shed between loading banks	Vanch IP + RPi	2 MobileMark 2 Yagi's
Newton Stewart	Weigh bridge	CAEN ION + RPi	4 MobileMark
Forfar	Weigh bridge	Vanch +Rpi	4 MobileMark
Quoybrae	Weigh bridge	Vanch IP + RPi	4 MobileMark
Longtown	Weigh bridge and race to the side	Vanch IP + RPi	2 MobileMark 2 Yagi's
Ben Nevis	To Be Completed		
Kingussie	To Be Completed		
Lochmaddy	To Be Completed		
Portree	To Be Completed		
Stornoway	To Be Completed		
Dalmally	To Be Completed		
Islay	To Be Completed		
Tiree	To Be Completed		
Uist	To Be Completed		

Abattoirs

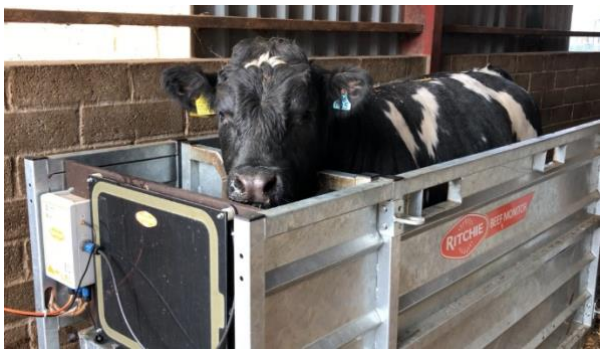
Abattoir Location	Reading Location	Reader Type	Antennas
Highland meats	Loading banks	Vaunch VF-747	2 Mobile Marks
AK Stodarts	Loading banks	IP Vanch	1 Mobile mark +2 Yagi
Scotbeef - Bridge of Allan	Loading banks	Vaunch VF-747	2 Mobile mark +2 Yagi
Scotbeef - Inverurie	Loading banks	Vaunch VF-747	2 Mobile Marks
Wishaw	Loading banks	Vaunch VF-747	3 Mobile Marks
Munro's - Dingwall	Loading banks	Vaunch VF-747	3 Mobile Marks
Locherbie	Loading banks	Vaunch VF-747	3 Mobile Marks
Grantown on Spey	Loading banks	Vaunch VF-747	
MacIntosh Donald - Portlethan	Loading banks x2 seperate		
Woodhead Bro's - Turriff	Loading banks		
ABP Perth	To Be Completed		
Sandyford Abattoir	To Be Completed		
Shotts Abattoir	To Be Completed		
Islay Abattoir	To Be Completed		
Lochmaddy Abattoir	To Be Completed		
Mull Abattoir	To Be Completed		





UHF is being trialled in several different ways to ensure the technology is fit for purpose across the industry supply chain. This includes reading equipment being installed in the form of both fixed and portable reading locations.

The Ritchie Beef Monitor is a unit at a fixed reading point that has been designed to gather multiple weight readings per day as an animal drinks from a water trough. This gives greater control and accuracy within the herd, particularly with finishing animals. SAC have been trialling the beef monitor unit with UHF tags and have collectively read 10,122 tag interactions over a 2-3 month period in 2020. This has allowed for more accurate weights over the course of a day to be collected, reducing the need to handle, weigh and stress both humans and animals.

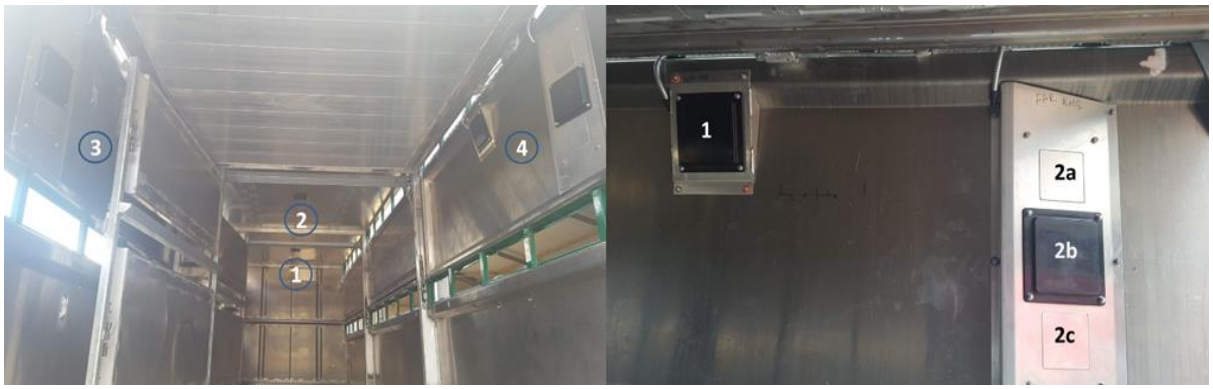


ScotEID trial farms have been hugely beneficial to the development of UHF in Scotland, bringing user friendly practicalities and technology together to build a fit for purpose on farm system. The photos below show that the reading equipment is non-intrusive and is out of harm's way, but delivers a function which reduces close contact handling, amongst other benefits such as recording error reduction.

SAC Float Trial

In 2020 SAC commenced work to trial UHF technology and GPS tracking to trial improving cattle traceability. As seen below a combination of UHF antennae were fitted to a livestock box which assessed the accuracy of UHF tags in cattle as they entered the float. Animals were all fitted with UHF tags and were read during transportation between SRUC Easter Howgate Farm to two abattoirs. Over the course of the trial the tag read remained at 100% and were unaffected by the location of the antennae within the livestock box.

Please note the above work is credited to SAC. A fuller report will be published in due course.



As a base line figure, 50,766 reads have been captured through handheld readers, readers in markets and abattoirs, the SAC float trial and fixed farm readers. This number is cautiously conservative, as reads on farm are not necessarily recorded to ScotEID, and so the likelihood is that thousands more reads have been recorded as keepers use the technology to handle and record livestock at home.

Tag Supplier

Established in 2010, family run business Anderson Farm Supplies, based in South West Scotland, specialise in printing new and replacement cattle ear tags. Anderson Farm Supplies have been part of the UHF research and development project since 2018 and have been actively involved in the roll out of voluntary UHF tags to cattle keepers in Scotland. As of 1st January 2021, Andersons had supplied UHF tags out onto 250 farms which totals approximately 38,714 tags over a one-year period (an additional 12,528 were distributed at the end of 2019). These tags have been programmed and laser marked with the official UK ID number. On average Anderson Farm Supplies will be programming and laser marking between 800-1000 UHF tags per week during spring and autumn calving blocks.
Anderson Farm Supplies are able to provide capacity to provide tag distribution throughout Scotland, both laser marking and programming the tags for official identification. The supplier also has the technology required to programme the tags to include the 'barcode' information which includes the breed, sex, date of birth and dam ID, however this is not mandatory for UHF tags as yet.

Shearwell Data Ltd are able to provide UHF secondary tags in Scotland.

Industry Support

Pilot farms using UHF have enjoyed positive experiences. For example:

Andrew Clark, Blackhill Farm, Lanarkshire

"I Started using UHF tags on the calves last year and after speaking to David Kerr at ScotEID, I got a loan of an EID reader to use in conjunction with the tags. I have found the reader very easy to use - it connects via Bluetooth to my weigh scales and phone, making it quick and easy to record data and monitor the performance of the calves. I'm now planning on purchasing a reader, as I've found it a great piece of equipment that will allow me to continue to improve efficiency within my beef herd."

Douglas Gill, Brucefield Farm, Tain

"Weighing cattle regularly using UHF provides on the spot information at the touch of a button to monitor animals weights and history. Using EID as a management tool is a no brainer, I can't imagine being without it now, it's quicker, better, easier and safer."

James Young, Girvan Mains

"I started using a LF (Low Frequency) system during March 2020. I then heard about the trial work ScotEID were undertaking with UHF (Ultra High Frequency) tags and had David Kerr visit me to explain the advantages of the technology and to demo how it all worked. Knowing the benefits, it would bring to my business I decided to set LF to the side and with support from David, I moved to UHF tags.

The WYSIWYG (What You See Is What You Get) tags worked easily with my weigh head and the fact that I can read cattle from 2-3 meters away made working and sorting animals safer for me and my staff. Having the passport info on the tag made checking the animal details so much slicker and a pleasure to do because the reader did the hard work for me and the passports could stay in the office out the muck and rain."

John Howie, Girtridge Farm

"I would encourage anyone to get involved with cattle EID, you can make it as hands off as you wish or intensive as you wish. It improved our management and takes paper away from the crush and makes the whole process a lot quicker and easier, less stress on me and the animal".

Key Learnings in 2020

Tags

- UHF Pink tags are easily recognisable within a pen of cattle – making identification of UHF tagged animals easy.
- UHF provides a silicon chip serial number, making animal identification more secure than ever before.
- Cattle can be tracked by GPS with UHF LoRaWAN active tags.
- UHF is the same frequency as active tags and therefore compatible with international LoRaWAN standards.

Recording

- UHF tags hold more information and can therefore help save on admin time and errors.
- Both fixed and handheld readers have a place on the market – suiting a variety of different farms market and abattoir set ups.

Reading

- Ability to read and identify cattle through a vent opening on a float.
- UHF is very easy to adjust reading range by sliding the power button on the reader settings. This makes it easy to read big groups or individual animals on the go.
- Read range can reach up to 6-7metres with fixed readers, or down to near tag touch.
- Reading and identifying individual animals whilst amongst other stock.
- Ability to read and identify cattle whilst walking down a pass when cattle are feeding.
- 100 percent read rates achieved in the SRUC UHF livestock lorry trial.
- Reader compatibility to Bluetooth the UK ID numbers to a variety of Bluetooth enabled weigh scales.

Management

- UHF allows animals to be handled less frequently and when handling is required, tag reading can be done from a safer distance, providing benefits for both animals and humans.
- UHF has made it easy to read the UK ID numbers accurately in markets, copying the information from the reader, and writing it on the pen cards and attaching it to the pen gates for yard staff to identify batches of cattle. This is now a regular procedure at sales.
- Supported mart staff to read UHF ear tags in the holding pens to speed up the process at batching
- UHF provides an opportunity to easily record data – providing support to improve on farm efficiency.

Please see various videos produced by ScotEID and SRUC on YouTube. Simply type ScotEID into YouTube's search function or use the URL below:

https://www.youtube.com/results?search_query=scoteid

ScotEID Field Team

April 2021