

# A SUMMARY OF RFID TAGS FOR LIVESTOCK

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## BRIEF HISTORY

About the mid 1980's electronic ear tags started to be used in livestock. Low frequency was used as it had the advantage of being able to pass through the animal's body thus avoiding problems in reading the tag in variable circumstances. Both half duplex (HDX) and full duplex (FDX-A&B) were developed, however HDX became dominant due to patents gained and developed by Texas Instruments, a multi national electronics manufacturer. The Allflex tag company and Texas Instruments partnered to develop the technology for livestock. The first tags were very expensive and consequently sales were only to a small percentage of the market. FDX-B was developed but was not so advanced during this time to be any competition to HDX. Both high frequency (HF) and ultra high frequency (UHF) technology advanced considerably but due to the size of the product and its inability to read through animal flesh they were generally discounted as a solution even though they were potentially a lower cost tag component. LEADER was at the fore front in evaluating many solutions that were advanced to the industry during this time. Having developed and marketed Trovan FDX-B tags for some years two new FDX-B chip manufacturer companies came to the fore in the mid 1990's, namely AEG and Sokymat. With the advance of DUAL readers to read both HDX and FDX-B technologies the price for electronic tags started to reduce during which time LEADER was at the fore front of supply.

After the outbreak of mad cow's disease the need for traceability of cattle became a government priority and the solution in Australia was decided to be electronic RFID tags. As the benchmark reading distance for the tags was set at up to 1.2 metres HDX technology was mandated for the new National Livestock Identification Scheme. To provide a solution for this requirement, towards the end of 2003 LEADER patented a NEW HDX tag using a Texas Instrument 32 mm glass transponder. Due to high retention, a single button style RFID tag is only required. This product has gone onto to sell many millions into national mandatory schemes. An ISO Standard for Livestock applies. To lower cost in the future, recycling of the transponder component of the tag is being evaluated.

With the adoption of the New Zealand government of RFID technology the benchmark reading distance for tags has been set at 80cm. Both HDX and FDX-B technology have been approved with DUAL readers being accepted. LEADER recommends HDX tags for cattle and deer, with HDX ONLY panel race readers on farm for maximum read distances of up to 1.2 metre, although DUAL hand held readers can be used. Both HDX and FDX-B tags are restricted on DUAL race readers to around 80cm although HDX tags may read a little further.

Many countries now have introduced mandatory traceability systems and will require other food supplying countries to have such systems in place for access to their markets. RFID tag traceability is now becoming the STANDARD.

**LOW FREQUENCY v UHF** – Though trials look promising, reading many tags at once, UHF has difficulty in reading through flesh affecting 100% reads in some operational circumstances. ISO for livestock is yet to exist. Frequency problems with mobile networks can occur. Read distance 1.5 to 4 metres. If all problems were solved tomorrow it could take 3 + years to come to market in Government programs. Tags cost less but are too large at present for high retention in a single tag required by government schemes. LEADER however is committed to follow through with UHF tag development.