How to Make Unique Identifiers for Tobacco Track and Trace Secure and Independent from the Tobacco Industry: A Standards-Based Approach

1. INTRODUCTION

This document has been written by the International Tax Stamp Association (ITSA) as a contribution to the work being carried out on the implementation of a tobacco track and trace system compliant with the WHO Framework Convention on Tobacco Control (FCTC) and its Protocol to Eliminate Illicit Trade in Tobacco Products. The Protocol is an international treaty that entered into force in September 2018 and that requires ratifying governments (called parties) to implement a track and trace system for tobacco products by 2023.

In particular, this document addresses aspects of the following provisions for track and trace in the Protocol:

- That unique, **secure** and non-removable identification markings, such as codes or stamps, shall be affixed to or form part of all unit packs and outside packaging of tobacco products sold in each party's territory;
- That obligations assigned to a party shall not be performed by or delegated to the tobacco industry.

This document proposes ways in which parties can ensure that the unique identification markings (which we will hereinafter refer to as UIDs) are secure and free from intervention by the tobacco industry, using international standards commonly employed by the security sector.

The document builds on a recently released expert technical report on tracking and tracing which was commissioned by the FCTC Secretariat for the purpose of providing actionable guidelines for implementing the high-level provisions of the Protocol. Although the technical report (which is titled *Report of the Panel of Experts on the Protocol to Eliminate Illicit Trade in Tobacco Products Technical Documents*[1]) does a good job of developing some key aspects of tracking and tracing, ITSA believes that the 'secure' aspect of the UIDs needs further elaboration.

[1] http://www.who.int/entity/fctc/protocol/mop/FCTC_MOP1_Panel_Experts_Technical_Documents_supplementary_EN.pdf?ua=1

International Tax Stamp Association 10 Windmill Business Village, Brooklands Close, Sunbury-on-Thames, TW16, 7DY, UK
Tel: +44 (0)1932 785 680 Fax: +44 (0)1932 780 790 Email: itsaboard@tax-stamps.org www.tax-stamps.org

International Tax Stamp Association Registered in England No. 9924987

The proposals described in this document are based on the following proven principles, which are reflected in a number of international ISO standards:

- That the most secure solution to mitigate the fraudulent use of UIDs is one which combines multiple overt and covert physical security elements with digital security and functionality;
- That track and trace technology, when used alone, is not an authentication solution;
- That it is not enough to consider only the physical properties of an authentication element when assessing its security value – a 'system' perspective is also needed;
- That authentication elements and tools should be procured from a supplier that is fully independent from the tobacco industry, so as to counter the risk of non-compliant tobacco manufacturers manipulating the elements for their own benefit.

2. SECURE IDENTIFICATION MARKINGS

Article 8.3 of the Protocol states: '*With a view to enabling effective tracking and tracing, each party shall require that unique, **secure** and non-removable identification markings […], such as codes or stamps, are affixed to or form part of all unit packets […] of cigarettes […].*' Even though the 'uniqueness' aspect of the UID is relatively well developed in the FCTC expert report, the 'secure' aspect should be clarified with more specific guidelines. This can be done with the help of three international standards: ISO 16678:2014, ISO 22381:2018 and ISO 12931:2012.

International standard **ISO 16678:2014** (*Guidelines for interoperable object identification and related authentication systems to deter counterfeiting and illicit trade*) provides a general framework for using UIDs, highlighting their strengths and weaknesses. Specifically, it identifies acts of fraud that may occur when UID codes are copied, re-originated, guessed, or reused (duplicated). It recommends that in order to mitigate the risk of duplicated codes, an authentication element should be used. This can be achieved by incorporating an intrinsic physical security layer into the code, or by having a physical security layer sitting next to it.

The related **ISO 22381:2018** (*Guidelines for establishing interoperability among object identification systems to deter counterfeiting and illicit trade*) follows up ISO 16678 with guidance on how to specify an open environment for identification and authentication of objects.

International standard **ISO 12931:2012** (*Performance criteria for authentication solutions used to combat counterfeiting of material goods*) provides useful definitions of security features and authentication tools that can be used to establish whether a material good is genuine or not. In particular, it classifies authentication elements as either overt or covert:

International Tax Stamp Association 10 Windmill Business Village, Brooklands Close, Sunbury-on-Thames, TW16, 7DY, UK
Tel: +44 (0)1932 785 680 Fax: +44 (0)1932 780 790 Email: itsaboard@tax-stamps.org www.tax-stamps.org

International Tax Stamp Association Registered in England No. 9924987

- Overt elements are those that are detectable and verifiable by one or more of the human senses, without recourse to a tool, and that are therefore useable by the general public;
- Covert elements are hidden from the human senses until the use of a tool by an informed person reveals them. They are therefore intended for authentication by an authorised inspector. Two further sub-categories of covert elements are often used in the industry: semi-covert (aimed at economic operators and detectable through readily available and low-cost devices) and forensic (aimed at authentication by specialised laboratories for legal proceedings).[2]

A best practice in the security industry is to consider a mix that combines multiple overt and covert authentication elements, possibly based on a risk analysis. Such a combination not only addresses different stakeholders with targeted features and tools, but also exponentially increases the overall level of security of an authentication solution, thereby providing effective barriers against counterfeiting and imitation attempts.

ISO 12931:2012 also provides useful insights on the difference between authentication and track and trace, notably including the statement that '*Track and trace technology when used alone is not considered to be an authentication solution*.'

In summary, a **UID applied on a product cannot be considered a *secure* marking**, unless intrinsic or adjacent authentication elements and authentication tools are used to protect it against counterfeiting or duplication. Whether the UID is non-predictable, non-sequential, encrypted, or intended to be scanned by supply chain actors does not matter: **to make it secure against acts of fraud, it must be protected by one or more authentication elements.**

3. SECURING THE SUPPLY CHAIN OF SECURITY FEATURES

Consideration of the physical or chemical properties alone of an authentication element is not sufficient to deem a UID secure. The authentication element needs also to be analysed from a 'systems' perspective, starting from the sourcing of its raw materials right up to its inspection. The drawing below describes a typical supply chain of security features and authentication tools.

[2] A good overview of security feature classification methods can be found in 'How to Classify Security Features', by Martin Fürbach, Authentication News, Volume 24 – No 4 / April 2018.

International Tax Stamp Association 10 Windmill Business Village, Brooklands Close, Sunbury-on-Thames, TW16, 7DY, UK
Tel: +44 (0)1932 785 680 Fax: +44 (0)1932 780 790 Email: itsaboard@tax-stamps.org www.tax-stamps.org

Another standard that can usefully be referred to in this context is **ISO 14298:2013** (*Graphic technology – Management of security printing processes*), which sets out how a producer of security documents or security foils should ensure the security of their supply chain for both their components and the products they supply to customers.

In order to make the whole system secure, the following steps need to be undertaken:

a) Raw materials must be sourced from trustworthy suppliers, selected after a thorough due diligence process, often through exclusive supply agreements. This protects against supplying these same materials to rogue operators, who may use them to counterfeit the authentication elements;

b) As a best practice, the methods required to produce authentication elements from raw materials, and their corresponding authentication tools, should be protected through patents (and trade secrets), in order for parties to have the legal means to prosecute attempts to replicate such elements. Any detailed information relating to production methods should also be protected by enforcing strict, 'need-to-know' confidentiality rules for employees exposed to sensitive information;

c) The production of a security feature often requires equipment that is not available in the open market. Equipment suppliers must undertake due diligence on potential buyers to avoid supply to unscrupulous companies that may use the equipment to imitate the features. It is worth noting that the high cost of such production equipment is often also a hindrance to fraudsters, requiring extremely high volumes in order to guarantee a decent return on investment;

d) Production of authentication elements and tools should be carried out in facilities that are subject to strict access controls and ongoing surveillance of authorised employees, visitors, suppliers and transportation companies. Audits and certifications of compliance with required security standards are often carried out by government agencies or third party independent companies;

e) Companies involved in the transportation of raw materials and authentication elements should be carefully selected and should demonstrate the use of adequate security measures (including in some cases armoured vehicles, and vehicle tracking), as well as

International Tax Stamp Association 10 Windmill Business Village, Brooklands Close, Sunbury-on-Thames, TW16, 7DY, UK
Tel: +44 (0)1932 785 680 Fax: +44 (0)1932 780 790 Email: itsaboard@tax-stamps.org www.tax-stamps.org

traceability measures to monitor consignments throughout the supply chain, including at temporary warehouses;

f) Appropriate examination tools must be available to stakeholders (producers, traders and inspectors) so they are able to verify the authentication elements that have been designed for them. In the case of covert security features, authentication tools must be reserved for use by authorised inspectors only in order to protect the features from reverse-engineering.

Companies printing security documents, or printed or foil security features, are generally required to comply with, or to be certified according to the ISO 14298 standard.

In order to ensure the integrity of security features and to protect them from attacks, all of the above measures must be taken. If any one of these measures is sacrificed, the security of the whole system can be compromised.

Do the security features required by the EU Tobacco Products Directive (TPD) meet these requirements? As a reminder, the TPD requires the tobacco industry to use a UID for track and trace purposes and at least five authentication elements (including overt, semi-covert and covert features), of which at least one of those elements must be procured from an independent supplier.

Even though it may at first appear that the number of required authentication elements under the TPD is reasonably high, the regulation has no provisions for addressing the six points raised above. This lack of provision applies both to the four elements that can be internally produced by the tobacco industry itself, as well as to the element that must be procured from an independent supplier, for which there are no requirements other than that of 'independence' from the tobacco industry.

The result is that the TPD requirements for the security feature fail to guarantee any security at all, and in particular do not ensure that the UID will be secure.

In order that the Protocol implementation does not fall victim to the same gaps in regulation as the TPD, specific guidance that considers security features from a 'systems' perspective should be issued to the parties.

4. TAX STAMPS

Today, more than 150 jurisdictions around the world use tax stamps as a means to counter smuggling, counterfeiting and tax evasion on tobacco products. Their effectiveness has been reported by numerous tax authorities and law enforcement agencies, especially when employed

International Tax Stamp Association 10 Windmill Business Village, Brooklands Close, Sunbury-on-Thames, TW16, 7DY, UK
Tel: +44 (0)1932 785 680 Fax: +44 (0)1932 780 790 Email: itsaboard@tax-stamps.org www.tax-stamps.org

in conjunction with a track and trace system to monitor their usage and distribution. In this case, **tax stamps combine various authentication elements with a UID, thereby rendering the UID secure**.

It should be noted that most tax stamp suppliers (including members of ITSA) are certified to comply with ISO 14298:2013, which provides assurance on the integrity of the whole supply chain of authentication elements carried by a tax stamp, as described in Section 3 of this document.

Tax stamps (or, at least, 'stamps') are explicitly mentioned in Article 8.3 of the Protocol as a means to implement unique, secure and non-removable UIDs. Other references to tax stamps appear in Article 14, which deals with unlawful conduct including criminal offences, and which requires parties to sanction economic operators involved in the manufacturing, trading or handling of tobacco products carrying false stamps, incorrect stamps – or no stamps at all.

It is therefore surprising that the expert technical report includes no guidelines for tax stamps. What it should have included, in ITSA's view, are references to the newly published international standard **ISO 22382:2018** (*Security and resilience – Authenticity, integrity and trust for products and documents – Guidelines for the content, security, issuance and examination of excise tax stamps*), in particular focusing on Section 8.3 (*Authentication features*), 8.4 (*Tamper evidence*) and Section 10 (*Tax stamp supply and distribution security*).

5. CONCLUSIONS

In summary, ITSA makes three recommendations, based on international standards, for ensuring that the UIDs required under Article 8 of the Protocol, are secure and free of intervention by the tobacco industry, thereby expanding on the expert technical report published by the FCTC:

a) Authentication elements and tools based on ISO 16678, ISO 22381 and ISO 12931 should be required in order to make the UID secure;

b) Authentication elements and tools should only be procured from a supplier that is fully independent from the tobacco industry, and that offers adequate security from a systems perspective – from the sourcing of raw materials, to the production and distribution of security features, to final inspection – thereby complying with ISO 14298;

c) Tax stamps, which are mentioned in Article 8 as a means to provide UIDs, should be based on the newly published ISO 22382 standard.

International Tax Stamp Association 10 Windmill Business Village, Brooklands Close, Sunbury-on-Thames, TW16, 7DY, UK
Tel: +44 (0)1932 785 680 Fax: +44 (0)1932 780 790 Email: itsaboard@tax-stamps.org www.tax-stamps.org

International Tax Stamp Association Registered in England No. 9924987

6. CONTACT ITSA

Don't hesitate to contact us for further information or for answers to questions not covered above. We stand ready to contribute to and advise any stakeholders of the WHO FCTC Protocol on the implementation of a track and trace system, leveraging the expertise of our members in the security industry and drawing on their experience in assisting governments worldwide to fight illicit tobacco trade.

I looking forward to hearing from you.

Nicola Sudan
General Secretary
International Tax Stamp Association

+44 1932 508 806

nicola.itsa@tax-stamps-org

www.tax-stamps.org

December 2018

International Tax Stamp Association 10 Windmill Business Village, Brooklands Close, Sunbury-on-Thames, TW16, 7DY, UK
Tel: +44 (0)1932 785 680 Fax: +44 (0)1932 780 790 Email: itsaboard@tax-stamps.org www.tax-stamps.org