# Cheque Production and Cheque Image Quality Assessment Standards Version 2.1

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# Contents

# Revision History

| Version # | Publish Date | Revision Description | Author |
|---|---|---|---|
| 1.0 | May 23rd, 2019 | Template updated following Requirements Workshop. | Prism |
| 2.0 | August 7th, 2019 | Section 6.2 IQA Settings table -notation placed to allow a tolerance of +/- 0.15 inches on the standard maximum and minimum length and height during IQA tool configuration based on guidance from IQA tool providers to eliminate "failed IQA" result due to minute deviations in cheque sizing. | Prism |
| 2.1 | September 01st, 2021 | Section 2 CPA Standard 006 Key Extracts – Section 5 Part A clarified in regard to the inclusion of date guidance boxes for cheque paper to be used for handwritten cheques only. | Prism |
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# 1.0 Image-based Clearing System- Standards for Cheque Production

The shared minimum standards for use in cheque production for cheques exchanged and settled electronically between the Participant Banks of the Trinidad & Tobago Automated Clearing House (TTACH) are outlined in this document.  Agreement has been made to adopt **the Canadian Payments Association (CPA) Standard 006 Specifications for MICR- Encoded Payment Items,** as the foundation for decision-making as it relates to cheque produced for exchange across an Electronic Cheque Clearing System (ECCS).

This international Standard is being adopted to achieve consistency in the production and subsequent evaluation of MICR-encoded image-friendly documents; supporting the capture and archive of compliant cheque images by Participant Banks, timely settlement and ensuring that essential information is readily legible when viewing the image of the cheque rather than the physical item itself, regardless of the party conducting the evaluation.

Agreed Standards allow cheque producers, both internal and third party, to produce documents that meet the common minimum quality level required of all Participant Banks. Clients of Participant Banks who privately source their own cheque paper are to be encouraged to engage recognised print houses with prior expertise in translating the CPA Standard 006 requirements and are required to provide their bank with cheque samples for pre-verification prior to issuance.

## 1.1 Cheque Printing Paper

**The below outlines the minimum standards to be followed when sourcing cheque paper stock and the minimum enhanced security features for adoption on all (Personal, Business, Managers Official Cheque) cheque paper stock across Participant Banks to enable the completion of due diligence efforts at the bank of first deposit (BOFD) prior to the scanning of the cheque.**

### (a) Security Paper -Level II
- 24lb. base sheet
- SecureLaser toner adhesion-This feature is created by coatings applied to the finished paper that securely anchor toner to the paper. This makes removal very difficult without causing visible damage to the paper.
- MICR & OCR compatible
- 83 brightness
- Optically Dead Sheet (paper without fluorescence in it; remains dark under a detection light)
- Invisible security fibers
- Full chemical reactions (brown stain & black dye)- Paper reacts to chemical alteration leaving a visible stain on the paper.
- True watermark- This feature is created by the paper machine by altering fibers during sheet formation. It produces a distinctive mark that is visible in reflected and transmitted light, but will not scan or copy. It also offers protection against cut-and-paste attempts.

### (b) Enhanced Cheque Security Features

Additional security options for cheque paper provide layered security on top of the security features that are already manufactured into the Level II paper. These are your first line of defense against cheque fraud and can also limit your risk of being held accountable for acts of cheque fraud as the use of high security cheques help your organization to legally demonstrate that care has been exercised to protect your cheques. **The agreed minimum enhanced security features are listed below;**

- **Explicit Warning Band** – Alerts bank tellers that fraud deterrent features are present. The warning band on the cheque face calls out specific features. This helps the recipient quickly verify the cheque is authentic.
- **Padlock icon** – introduced in response to a growing concern with cheque fraud perpetrated with use of copiers and computers. The presence of the Padlock Icon on a cheque indicates that there is a minimum of three features incorporated in the cheque that add complexity and make the cheque document harder to reproduce or change.
- **MicroPrinting Icon** - Border and Backer contain micro printing, magnify to verify, when copied appears as a dotted line. These are words printed so small that they look like a line to the naked eye. Only when magnified do the micro-printed words become visible. If the document is copied or altered, this line becomes unreadable.
- **Fourdrinier true watermark**- A true watermark paper is considered one of the highest levels of document security available. A True Fourdrinier Watermark is part of the paper, created during the milling process. Visually, it appears and may be viewed in the paper by holding it up to a light source. Additional security is derived due to the uniqueness of the actual mark, which limits and controls its availability.
- **Fluorescent Invisible Fibers**- Only visible under ultraviolet light.
- **Colored Background**- Colored pattern protects against alteration. Recommended to have the cheque with a colored background with a pattern that is compliant with CPA Standard 006

**The above security features <u>can be exceeded if your institution so wishes,</u> once the placement of any additional security features, does not negatively impact cheque image quality or obscure data on the cheque Areas of Interest. Availability of additional security features should be discussed directly with your institution's supplier.**

## 2.0 Canadian Payments Association Standard 006 – Key Extracts

**The entire Canadian Payments Association (CPA) Standard 006 (Part A and Part B) is to be reviewed and understood by Participant Banks**. **Please Refer to Appendix A.** The following extracts highlight key sections that are fundamental to the engagement of parties responsible for cheque production and also identify the sections of the Standard where multiple choices are allowed, but one choice for adoption by all Participant Banks, has been agreed.

### (a) Area of Interest
**Review Section 2.2 of the CPA Standard 006**

## (b) Paper Specifications

**Review Section 3 of the CPA Standard 006**. Section 3.3 extracted below in regard to **Document Sizes**

All documents, excluding any detachable portions, are to be rectangular in shape. The following

minimum and maximum dimensions shall be adhered to:

|  | Length | Depth |
|---|---|---|
| Minimum | 15.88 cm (6¼") | 6.99 cm (2¾") |
| Maximum | 21.59 cm (8½") | 9.53 cm (3¾") |

*Note: some of the Metric figures have been rounded off, in most cases to the nearest hundredth of a centimetre.*

## (c) Magnetic Ink Character Recognition Encoding

**Review Section 4 of the CPA Standard 006- Machine Language E13B**
Details surrounding the Magnetic Ink Character MICR-Encoding area and the allowed characters are laid out in this section. The MICR line is the only print allowed in this area. In addition, borders are not permitted within the MICR area.

> "*The area containing the MICR band measures 1.59 cm (5/8") from the bottom edge of the document. In the MICR band, the use of magnetic ink is restricted to the printing of the prescribed E-13B characters. No printing shall appear anywhere in this area on the face of the document except the prescribed E-13B characters in the encoding line (see section 4.4). It is strongly recommended that the MICR band remain clear of background screening. Borders are not permitted within the 1.59cm (5/8") clear MICR band.*"

## (d) Images

**Review Section 5 of the CPA Standard 006- Specifications for Imageable MICR-Encoded Payment Items**

### Section 5.1 – Background Screening
Background colours and safety tint should adhere to the below excerpt to ensure that legibility of information is not compromised during the imaging process.

> "*It is strongly recommended that light pastel colours or standard safety tints be used for background screening and that clay "inorganic" and highly reflective inks, heavy inking and dark colours be avoided.*"

### Section 5.2 – Security
Hidden pantographs such as "Void" or "Copy" are not allowed as specified in the extract below.

> "*"Void" pantographs and other hidden pantographs that are intended to appear on copies as a security measure to prevent fraudulent duplication must not be visible on either **grayscale (120 dpi) or binary (i.e. black & white) (200 dpi) images** captured from original cheques or other payment items.*"

**Section 5.3 Populating the Data Elements**

For Hand-Printed and Hand-Written Payor filled fields **black or blue ball point or roller pens shall be used for populating the Data Elements of a MICR-encoded document.**

The CPA Standard 006 outlines additional specifications that are to be followed for cheques where the fields completed by the Payor are Computer-Generated. E.g. Managers Official Cheques **please refer to Section 5.3**

**Section 5 – Part A.**

**Areas where a shared approach to adoption of one of the options available in the Standard, has been agreed**

- o (6) Date Format DDMMYYYY to be used and date field guidance boxes to be included for handwritten cheques.
- o (6) Date Format DDMMYYYY to be used for computer generated cheques.
- o (11) Convenience Amount rectangle to be preceded by a "$"
- o (12) Payor Name must also be accompanied by an Address

**The below are optional and can be adopted if your institution wishes**
- o (9) Amount in Words (Legal Amount) "/100 DOLLARS" to be included on cheque
- o (11) Currency Designation of TTD printed below the amount in figures (Convenience Amount)

# 3.0 Compliant Cheque Samples

**Review Page numbered 24 (smaller cheque image) of the CPA Standard 006 (pdf Page 31) for cheque front view guidance.**

**Review Page numbered 38 of the CPA Standard 006 (pdf Page 45) for cheque rear view guidance.**

# 4.0 Other Imageable MICR- encoded Documents

For Participant Banks who intend to continue to issue inter-member debits or settlement vouchers please refer to Section 6.2 and Section 6.3 of the CPA Standard 006

# 5.0 Trace Lines

The Trace Line, also referred to as Audit Trail or Endorsement Line, contains information printed on the rear of the cheque by the capture device. Trace Line formats can vary across financial institutions as they are highly configurable. The information can be used to locate an original physical cheque in conjunction with a cheque retrieval process.

Some of the most common information elements included in the Trace Line are listed below.

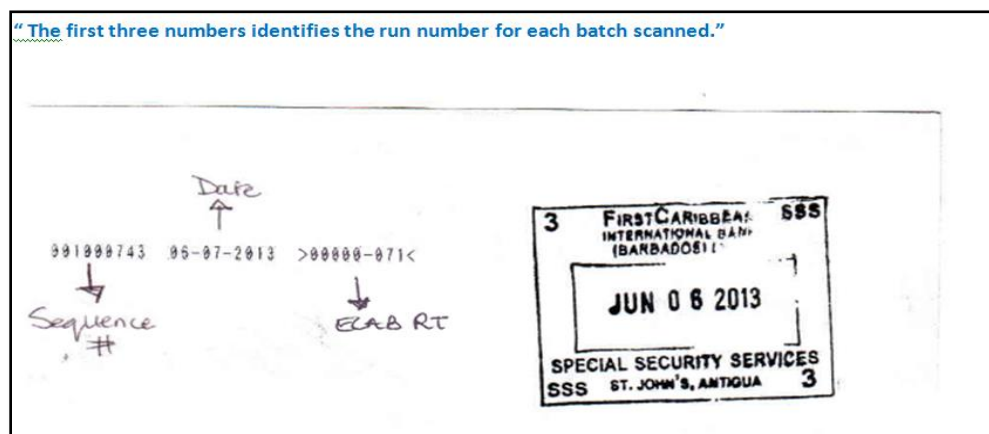|      |                                                                     |
|------|---------------------------------------------------------------------|
| I.   | Business Date.                                                      |
| II.  | Originating Bank ID                                                  |
| III. | Originating Branch ID                                               |
| IV.  | Originating Bank Name                                                |
| V.   | Batch Number.                                                        |
| VI.  | Run Number.                                                          |
| VII. | Item sequence Number.                                               |
| VIII.| Machine Number – Identifies the machine the cheque was processed on. |



*Figure 1: Example of trace line printed on rear of cheque*

## 5.1 Physical Cheque Retrieval Process

A receiving financial institution may issue a request to the Bank of First Deposit (BOFD) that results in the need to retrieve a physical cheque. The receiving financial institution uses data from the Image Cash Letter (ICL) file to identify the BOFD. The ICL file also contains data that is conveyed to the BOFD, so they can locate the specific cheque image.

On receipt of a request, the Trace Line information on the cheque image is used by the BOFD to complement their physical storage practice in order to locate the physical cheque. The interpretation of

the Trace Line takes place at the BOFD, who would have printed the Trace Line on the cheque at inception.

The image below displays the fields used by receiving financial institutions in physical cheque retrieval. Some of the fields contain the same information found in Trace Lines.

| Field | Field Name |
|---|---|
| | REC 26 - Check Detail Addendum A |
| -- | Record Offset (not in file) |
| -- | Record Length |
| 1 | Record ID |
| 2 | Check Detail Addendum A Record Number |
| 3 | Bank of First Deposit (BOFD) Routing Number |
| 4 | BOFD Business (Endorsement) Date |
| 5 | BOFD Item Sequence Number |
| 6 | Deposit Account Number at BOFD |
| 7 | BOFD Deposit Branch |
| 8 | Payee Name |
| 9 | Truncation Indicator |
| 10 | BOFD Conversion Indicator |
| 11 | BOFD Correction Indicator |
| 12 | User Field |
| 13 | Reserved |

*Figure 2: X9 check detail record containing the fields used to facilitate the physical cheque retrieval process.*

Situations requiring the retrieval of physical cheques are listed below.

I. Poor quality cheque images resulting in the need to re-imaging original physical cheques.

II. Piggy-back cheques which occur when two cheques are scanned simultaneous resulting in an image that appears to be a single cheque.

# 6.0 Image Quality Assessment

An Electronic Cheque Clearing System (ECCS) allows for fast and convenient exchange of cheque images between Participant Banks. Cheque images are incorporated into Image Cash Letter (ICL) files after physical cheques have been scanned at the Bank of First Deposit (BOFD). ICL files are based on the X9 format and contain cheque transaction data and front and rear images of the cheques. These files are transported to the receiving financial institutions after clearing the ACH.

Image Quality Assessment (IQA) standards must be implemented to ensure there is no degradation in the quality of the cheque images being exchanged between Participant Banks during the daily ACH processing. Image Quality Assessment (IQA) tools are used to evaluate the usability and compliance of images and identify cheque images that fall below the acceptable standard, see **Section 6.2 Trinidad & Tobago ACH IQA Settings.**

IQA is completed after scanning and before the resulting image is transmitted to the central ACH or before the image is accepted for settlement and archiving. This functionality examines the quality of images scanned against agreed IQA settings and ensures that only cheques meeting those requirements are allowed to traverse the Electronic Cheque Clearing System. The possibility exists that images with imperfect information to the human eye, could pass IQA validation due to the mathematical nature of this functionality. For example, an image with an illegible signature would still pass IQA validation.

IQA tools can be employed at separate stages or at a combination of stages during the process of exchanging cheque images, either at the Bank of First Deposit (BOFD) and or at the receiving financial institution and or at the central Automated Clearing House (ACH).

There are many factors that affect the quality of an image. Some examples are listed below.

I. The technique used to create the image file
II. Aesthetics around cheque design
III. Possibility of data loss during transmission
IV. The peculiarities around the scanning process since scanners are imperfect devices
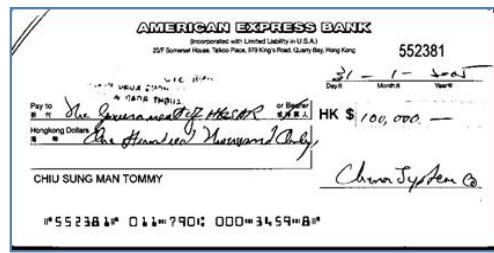
Manual assessment of usability can also be performed but is subjective in nature and as a result it is more efficient and consistent to have Image Quality Assessment performed through technological means. IQA tools apply a set of standards for the gauging of image usability, which is important for the operation of a reputable electronic cheque clearing system.

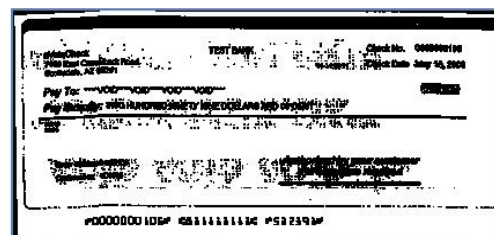The following are examples of cheque issues that would be caught by IQA.

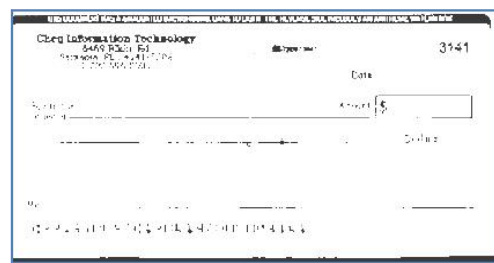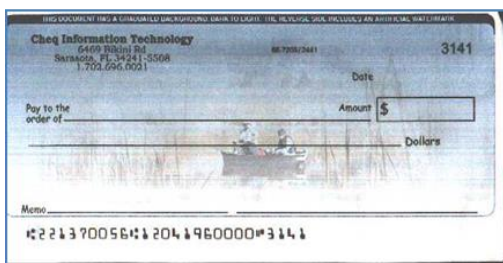| | **What the Teller Sees and Keys** | **What the Scanner Sees** |
|---|---|---|
| **Example One:** Usable Image - Some teller stamp bleed through |  |  |
| **Example Two:** Image Too Dark due to background |  |  |
| **Example Three:** Image Too Light due to Scanner cover being removed |  |  |

## 6.1 Impact of IQA Noncompliance

Cheque images of substandard quality could be accepted by Participant Banks in the absence of Image Quality Assessment. This could lead to Participant Banks and or customers receiving cheque images of a low quality which could adversely affect the corporate image of their bank. Additional costs, time and energy also have to be expended in correcting such situations, especially when the item is required for legal proceedings. The following are benefits from the adopting of IQA standards for the Trinidad and Tobago ECCS.

I.    IQA validation at the sending financial institutions aids in preventing the entry of non-compliant items into the cheque image exchange process.

II.   Receiving financial institutions would also be able to validate their own incoming cheques as opposed to taking the assurance from another financial institution.

## 6.2 Trinidad & Tobago ECCS Image Quality Assessment Settings

**Image Quality Assessment tools are to be utilised by all Participant Banks and is a mandatory requirement for the BOFD prior to the exchange of their ICL file to the central ECCS and a mandatory requirement for the RDFI on receipt of ICL files from the central ECCS.** Implementation of Image Quality Assessment into each Participant Bank's internal cheque processes is the responsibility of each Participant Bank and the availability of an IQA tool to support the testing of IQA compliance, will be a mandatory requirement for Testing.

The table below outlines the IQA settings for use by Participant Banks in Trinidad & Tobago. These exact settings are to be applied by IQA tools or through IQA validation to assess the usability and quality of cheque images to be stored and to be exchanged.

| Length | Minimum = 6.25 Inches | Maximum= 8.50 Inches |
|---|---|---|
| **Height** | Minimum = 2.75 Inches | Maximum = 3.75 Inches |
| ***Note *a tolerance of +/- 0.15 inches on the maximum and minimum length and height is allowed during IQA tool configuration.*** | | |
| **Corners** | Front Lower Right and Back Lower Left Corners > 0.8 Inches<br>Front Upper (both) and Front Lower Left Corners > 1.0 Inches<br>Rear Upper (both) and Rear Lower Right Corners > 3.0 Inches | |
| **Document Skew** | Front Skew > 287.2 Degrees | |
| **Darkness** | Front Minimum Darkness < 0.009 (Ratio of black pixels to total pixels)<br>Front Maximum Darkness > 0.9 (Ratio of black pixels to total pixels)<br><br>Back Minimum Darkness < 0.0038 (Ratio of black pixels to total pixels)<br>Back Maximum Darkness > 0.98 (Ratio of black pixels to total pixels) | |
| **Noise** | Front Noise Relative Density (Black and White)<br>> 5.852 Spots considered as noise per square inch, on average<br><br>Back Noise Relative Density (Black and White)<br>> 5.852 Spots considered as noise per square inch, on average | |
| **IQA Record Size** | Front = Minimum 250 Bytes, Maximum 200,000 Bytes<br>Back = Minimum 250 Bytes, Maximum 200,000 Bytes | |

*Table 1: IQA Settings*

## 6.3 Appendix A – Canadian Payments Association Standard 006

CPA Standard 006_as at April 2017.