

**(Unofficial Translation)\***

**Standard for Cheques and Imaged Cheque Standard in  
Cheque Clearing System**

**Payment Systems Department**

**Bank of Thailand**

**April 2008**

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\* This translation is for the convenience of those unfamiliar with the Thai language.

For official purpose, only Thai texts are relevant.

## Preface

Standard for cheques and documents stipulated under the Interbank Electronic Cheque Clearing System are mainly used as the guideline and provisions with regard to main composition of cheque and other related documents, considered necessary for printing in compliance with the scope and details as designated. These will ensure the uniform cheque standard for the entire system in order to achieve smooth operations, higher effectiveness, and prepare for Imaged Cheque Clearing System (ICS), which directly benefits the cheque clearing process among member banks, the general public, and the economy at large. Primary objectives for setting the standard for cheques and related documents are, i.e.,

1. To provide related parties with knowledge and understanding towards the design of cheque, use of Code Line, use of cheque and other documents to be used with cheque, all of which will be under the single uniform standard to facilitate the interbank cheque clearing procedures.

2. To allow cheque with Magnetic Ink Character Recognition E13B to proceed through reader machines quickly and accurately

3. To prepare for business expansions of commercial banks, in which there is a tendency of continually increase in the rate of expansion in response to economic growths.

4. To prepare for Imaged Cheque Clearing System (ICS), which will promote the exchange of cheque image in lieu of paper cheque, as a firm foundation for the development and extension of cheque clearing all over the country.

The Bank of Thailand, therefore, deems it appropriate to improve the new cheque standard for member banks and other parties related to cheque preparation and printing in order to move in the same direction, in compliance with the stated objectives.

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## **Standard for Cheques and Imaged Cheque Standard Implementation Plans**

The Bank of Thailand (BOT) has developed cheque clearing system between banks into the Imaged Cheque Clearing System (ICS), by which the images are exchanged instead of physical cheques. The ICS system is scheduled to be in operation approximately in August 2009.

In the ICS system implementation, amendments of standard for cheques and documents related to cheque clearing system are needed for conformity with the new system. For example, cheque design must have image friendly attributes, which can ensure that the data in the captured images are clearly visible. Moreover, the cheque-printing paper must be CBS1 paper with Laser Grade and have common watermarks to provide the benefits for sending banks in inspection process in the place of paying banks.

The standard for cheques and Imaged Cheque Standard implementation plans will be divided into 3 phases, which will correspond to the initiation of the new system, Imaged Cheque Clearing System (ICS), and the retirement of the old system, the Electronic Cheque Clearing System (ECS).

### **1. Phase 1: Image Friendly Standards comes into effect in February 2009**

The standards that come into effect in phase 1 include Cheque Design (except 3. Back Side), MICR E13B Font Type Standard, Security for Cheques, Cheque Design Standards for Imaged Cheque Clearing, and Recommendations for Use of Cheques.

For Code Line Format, Standards of Replacement Slip, Document Carrier Envelope, and Batch Control, and Bills of Exchange, Promissory Note, and Other Instruments, existing standards announced in January 2003 will be used.

### **2. Phase 2: Imaged Cheque Standard comes into effect in August 2009**

Imaged Cheque Standard will become effective along with the initiation of ICS system.

### **3. Phase 3: New Code Line Standard comes into effect in July 2010**

The standards that become effective in phase 3 include Cheque Design (only 3. Back Side), Code Line Format, Standard of Replacement Slip (which also cover the retirements of Standards for Document Carrier Envelope and Batch Control), and Bill of Exchange, Promissory Note, and Other Instruments.

## Summary of Standard for Cheques and Imaged Cheque Standard Implementation Plans

Contents	Remarks
<b>Standards that will come into effect in February 2009</b>	
<b>(Image Friendly Standards)</b>	
1. Cheque Design	Except 3. Back Side, use the existing standard <sup>1</sup> until the date specified
2. Code Line Format	Use existing standard <sup>1</sup>
3. MICR E13B Font Type Standard	
4. Standards of Replacement Slip, Document Carrier Envelope and Batch Control	Use existing standard <sup>1</sup>
5. Standard of Cheque-printing Paper	
6. Bill of Exchange, Promissory Note and Other Instruments	Use existing standard <sup>1</sup>
7. Security for Cheques	
8. Cheque Design Standards for Imaged Cheque Clearing	
10. Recommendations for Use of Cheques	
<b>Supplementary standards that will come into effect in August 2009</b>	
<b>(Imaged Cheque Standard)</b>	
9. Imaged Cheque Standard	Come into effect along with the Imaged Cheque Clearing System (ICS)
<b>Supplementary standards that will come into effect in July 2010</b>	
<b>(New Code Line Standard)</b>	
1. Cheque Design	Only 3. Back Side
2. Code Line Format	
4. Standards of Replacement Slip	Retirement of Standards of Document Carrier Envelope and Batch Control
6. Standard for Bill of Exchange, Promissory Note and Other Instruments	

<sup>1</sup> Standard for Cheques and Supplementary Documents for Cheque Clearing System (January 2003)

## 1. Cheque Design

### 1. Size

Length:  $7 \pm \frac{3}{32}$  inches ( $178 \pm 2$  mm)

Height:  $3 \frac{1}{2} \pm \frac{3}{32}$  inches ( $89 \pm 2$  mm)

To print cheque with running paper, the height is allowed to be not exceeding  $3 \frac{2}{3}$  inches (approximately 93 mm).

### 2. Front Side

There are two main parts on the front side of the cheque:

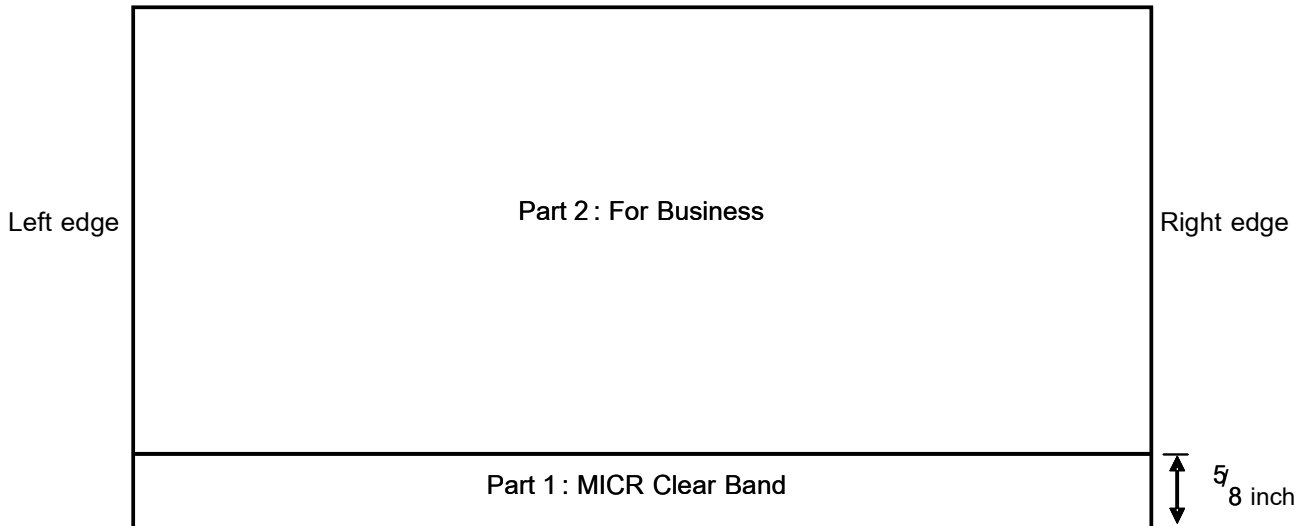


Figure 1: Front side

#### 2.1 Part 1: MICR Clear Band

The MICR Clear Band is the area in the bottom of cheque,  $\frac{5}{8}$  inch from the bottom edge all through the cheque length. There must be neither magnetic ink or chemical substance both vertically and horizontally, printing, writing, cutting or rips, staples, nor any marks that can be inspected by MICR E13B reader machines, in both the front and back of the cheque, aside from MICR E13B characters for designated information on Code Line.

## 2.2 Part 2: For Business

The data to be shown on the area for business can be divided in two groups, i.e.,

### 2.2.2 Group 1: Specific location data

The information in this group must be in a designated area, on the right of cheque above the MICR Clear Band, applicable for the automatic reading machine for further processing, i.e.,

#### (1) Date Field

The Date field is in the top right area, consisting of 8 rectangular boxes with the length approximately 2 inches and the Date Field Indicator must be printed below each rectangular box e.g. DDMMYYYY or ๑๑๑๑๑๑๑๑, away from the right edge of the cheque by  $\frac{1}{4}$  inch, and approximately  $3\frac{1}{8}$  inches from the bottom edge. The word "Date" must be on the left of the Date Field.

#### (2) Amount Field

The Amount (number) field must be on the right of the cheque, down from the Date field. It must be a rectangular shape in white or light color with  $\frac{3}{8}$  inch wide and  $2\frac{5}{8}$  inches long. The right side of the rectangular box must be  $\frac{1}{4}$  inch away from the right edge of the cheque and the bottom edge of the box must be  $1\frac{3}{4}$  inches up from the bottom edge of the cheque. There must be a symbol "฿" in the box, not exceeding  $\frac{1}{25}$  inch away from the left edge of the box.

#### (3) Signature Field

Signature field will be on the bottom right of the cheque, being in white or light color for the clearly visible information. It is  $\frac{1}{4}$  inch away from the right edge of the cheque, and  $\frac{3}{8}$  inch up from the MICR Clear Band. This is to make the payer's signature be in the appropriate position for the automated signature verification system, and also facilitate the MICR E13B Reader.

**2.2.2 Group 2: Non-specific location data**

This is a group of information to be on any location on the cheque as deemed appropriate, not to interfere with the information in Group 1. This is other information than those in Group 1, e.g., name and address of the bank, name and address of the payer, name of payee, the payable amount in characters, cheque number, etc.

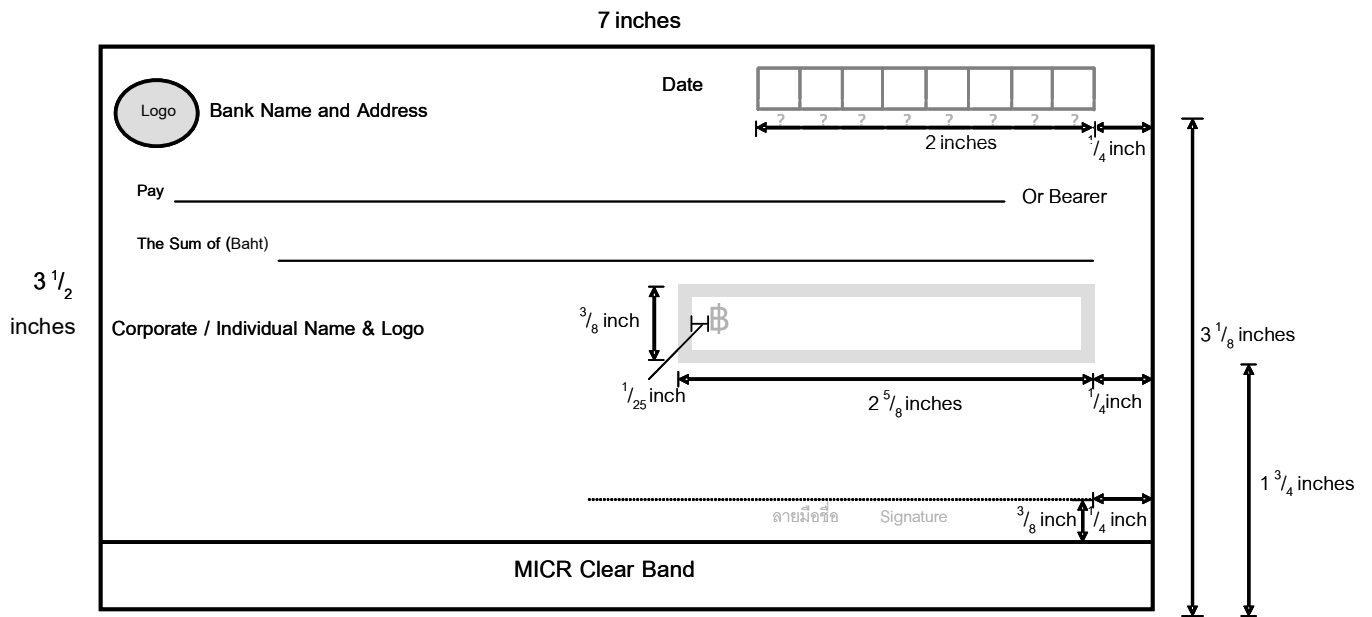


Figure 2: Data and positions on cheque

## 2.3 Background

The background color and pattern of the cheque should be in light color for clear visibility of data on the cheque in order to facilitate preparation of cheque image. The background color and pattern should be under the following criteria:

2.3.1 For Offset Printing with Offset Printing Pigments, the percentage of Offset Printing Pigment must not exceed the following

Color	% Offset Printing Pigment
Yellow – Y	100%
Magenta – M	20%
Cyan – C	20%
Black – B	0%

2.3.2 If printing with methods other than this, the background color should be printed on paper to compare with the “Pantone”, so that the values comply with the criteria as illustrated in the table above.

## 2.4 Sizes of Printed Letters on Cheque

### 2.4.1 Pre-printed Letters from printing house

(1) Bank name and address, corporate name and address, the word “Date”, “Pay” and “Amount (Baht)”, in which font size should be printed with no less than 8 point type or 2.81 mm.

(2) Date Field Indicator should be printed with no less than 6 point type or 2.11 mm but not exceeding 8 point type or 2.81 mm.

### 2.4.2 Printed Letters for Making Payments

Printed letters for making payments include payer’s name, date of payment, amount in characters and numbers, in which font size should be printed with no less than 10 point type or 3.51 mm.

### 3. Back Side

There are three main parts on the back of the cheque, i.e.,

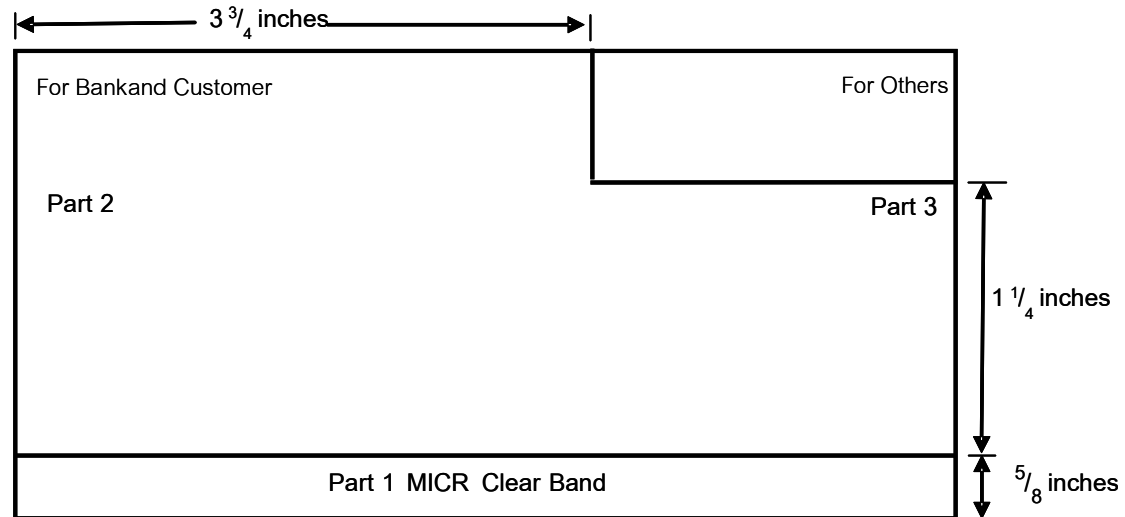


Figure 3: Back side

#### 3.1 Part 1: MICR Clear Band

The MICR Clear Band is the area in the lower part of cheque, or  $\frac{5}{8}$  inch from the bottom edge of the cheque throughout the length of cheque.

#### 3.2 Part 2: For Bank and Customer

The area of the middle part, up from MICR Clear Band by  $1 \frac{1}{4}$  inches throughout the length of the cheque, and the top left area,  $3 \frac{3}{4}$  inches from the left edge through the right of the cheque.

#### 3.3 Part 3: For Others

The upper right area,  $3 \frac{3}{4}$  inches away from the left edge, and  $1 \frac{1}{4}$  inches up from the MICR Clear Band

## **2. Code Line Format**

At present, the member banks are establishing large number of new branches in response to the growths in economy and the rate of new branches establishments tends to rise continually. Furthermore, the economic growth may cause the existing branch code and cheque number to become insufficient in the near future, so there is a need to increase the number of digits of related data.

The amendment of Code Line format includes the increase in number of digits for bank code from 2 digits to 3 digits, branch code from 3 digits to 4 digits, and cheque number from 7 digits to 8 digits. Moreover, Check Digit is added into the Code Line for the purpose of validating the Code Line encoding and reading processes.

### **1. Specifications for Printing Code Line on the Front of the Cheque**

1.1 Only MICR E13B font can be used for printing Code Line on the front of the cheque.

1.2 On the front side, there must be MICR Clear Band, with 0.625 inch or 10/16 inch (15.875 mm) width from to the bottom edge, throughout the length of the cheque. There must not be any printing ink or pattern that may affect efficiency of the MICR E13B Reader or OCR E13B Reader, such as magnetic ink, carbon ink, embossed printing, or any mark readable for MICR E13B or OCR E13B Reader, in both the front or the back of the cheque, other than MICR E13B characters encoded with magnetic ink on the Code Line.

1.3 In the MICR Clear band, there must be Read Band that is 0.250 inch or 4/16 inches (6.35 mm) wide and 0.187 inch or 3/16 inch away from the bottom edge of the cheque, throughout the length of cheque.

1.4 Within the Read Band, there must be Code Line that is 0.125 inch or 2/16 inch (3.175 mm) wide and 0.250 or 4/16 inch (6.35mm) up from the bottom edge of the cheque, throughout the length of cheque. The MICR E13B characters must be printed on this band only.

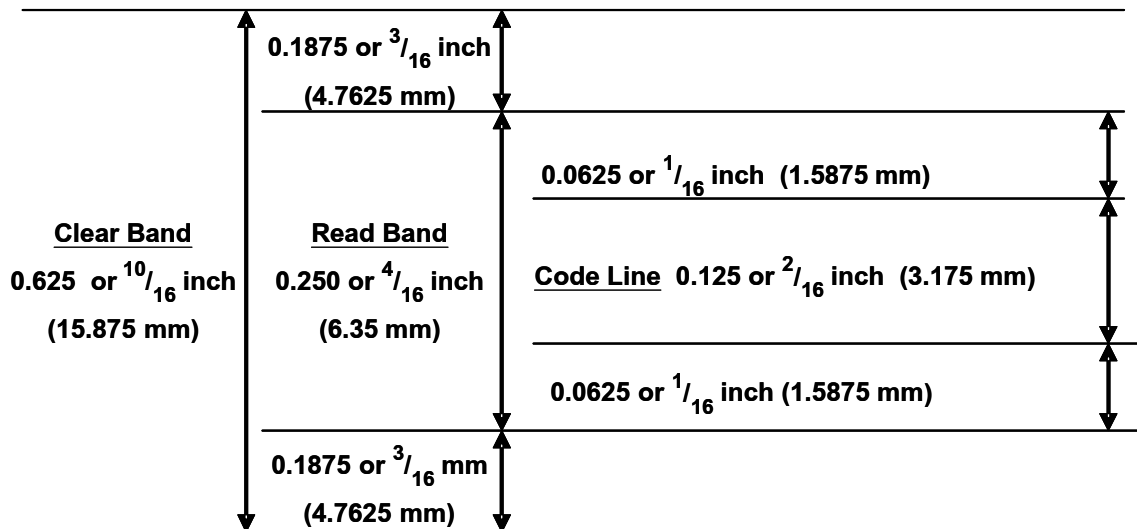


Figure 1: Enlargement and space of Clear Band, Read Band, and Code Line

1.5 The MICR E13B character must be printed with only magnetic ink with sufficient magnetic induction power for MICR E13B Reader to read data as designated.

1.6 Neither signs nor numbers can be printed in the MICR Clear Band, which is  $0.315$  or  $\frac{5}{16}$  inch (7.94 mm) away from the left or the right edge of the cheque.

1.7 The length of data in each field in Code Line must not exceed 15 digits.

1.8 The Check Digit, cheque number, bank and branch code, account number, and document type must be encoded by a cheque-printing company or the cheque-issuing bank before the presentment of chequebooks to customers. The account number and document type must be encoded at the same time.







1.9 Special signs of data in each category must be printed at the same as the data in that category. For instance, the special sign for amount of money ( $\text{₹}$ ) must be printed at the same time as the amount of money only.

1.10 The data fields that are adjacent and has no blank space between them should be encoded at the same time in order to reduce any error from deviation of character and line spacing, which makes it unable for the MICR E13B Reader to read accurately.

## 2. Positions and Details of Different Data Fields on Code Line

The data on Code Line can be divided in six fields, counting the far right first and the far left last, which includes:

	Field	Digits	Descriptions
1	Amount Field	13	<p>There are 11 digits, plus two special signs</p> <ul style="list-style-type: none"> <li>● Digit 1            special sign “#” (Amount sign) The right edge of the special sign is 5/16 inch away from the right edge of the cheque.</li> <li>● Digits 2-3        Satang unit of payable amount</li> <li>● Digits 4-12      Baht unit of the payable amount</li> <li>● Digit 13          special sign “#”(Amount sign)</li> <li>● The left edge of this amount field must be 1 15/16 inches away from the right edge of the cheque.</li> </ul> <p><u>Remark:</u></p> <ol style="list-style-type: none"> <li>1. It is optional for banks to encode the amount field.</li> <li>2. The amendment of number should be conducted by Adhesive foil back Cheque Correction Label with the thickness not exceeding 0.009 inch, and the number must be encoded correctly on this label with the payable amount.</li> </ol>
2	Document Type Field	3	<p>Comprise two digits for document type, and one blank digit.</p> <ul style="list-style-type: none"> <li>● Digit 14          blank</li> <li>● Digits 15-16    document type code (in number)</li> <li>● The left edge of this field must be 2 5/16 inches away from the right edge of the cheque.</li> <li>● Standard document type codes are, as below: <ul style="list-style-type: none"> <li>01 or Blank            Cheque</li> <li>02                      Cashier Cheque</li> <li>03                      Gift Cheque</li> <li>04                      Domestic Draft</li> <li>05                      Dividend Cheque</li> <li>06                      Promissory Note</li> <li>07                      Bill of Exchange</li> <li>08                      Foreign Draft</li> <li>09                      Others</li> </ul> </li> </ul>

	Field	Digits	Descriptions
3	Account Number Field	12	<p>Comprise the 10-digit account number, one special sign, and one blank digit.</p> <ul style="list-style-type: none"> <li>● Digit 17 special sign “” (Domestic Sign)</li> <li>● Digits 18-27 account number (in number)</li> <li>● Digit 28 blank</li> <li>● The left edge of this field is 3 <math>\frac{13}{16}</math> inches away from the right edge of the cheque.</li> </ul>
4	Bank Branch Field	9	<p>Comprise of 4-digit branch code, 3-digit bank code and two special signs.</p> <ul style="list-style-type: none"> <li>● Digit 29 special sign  (Bank/Branch Code)</li> <li>● Digit 30-33 branch code of the bank (in number)</li> <li>● Digit 34 special sign  (Dash)</li> <li>● Digit 35-37 bank code (in number)</li> <li>● The left edge of this field is 4 <math>\frac{15}{16}</math> inches away from the right edge of the cheque</li> </ul>
5	Cheque Number Field	10	<p>Comprise of 8-digit cheque number and two special signs.</p> <ul style="list-style-type: none"> <li>● Digit 38 special sign  (Domestic Sign)</li> <li>● Digit 39-46 cheque number (in number)</li> <li>● Digit 47 special sign  (Domestic Sign)</li> <li>● The left edge of this field is 6 <math>\frac{3}{16}</math> inches away from the right edge of the cheque.</li> </ul>
6	Check Digit (Check Digit Field)	4	<p>Comprises of 2-digit Check Digit and one blank digit.</p> <ul style="list-style-type: none"> <li>● Digit 48 blank</li> <li>● Digit 49-50 Check Digit (in number)</li> <li>● Digit 51 special sign  (Bank/Branch Sign)</li> <li>● The left edge of this field is 6 <math>\frac{11}{16}</math> inches away from the right edge of the cheque.</li> </ul>

### 3. Check Digit Calculation

#### 3.1 Check Digit Calculation Formula

Check Digit calculation for data on the MICR Code Line is based on the ISBN (International Standard Book Number) formula with the following principles:

1. The data for calculation includes cheque number, bank code, branch code and account number, which add up to a total of 25 digits.
2. Each data is weighed according to its digit by counting from the right-most digit as "1" (not including the check digit).
3. Find product by multiplying each data with its assigned weight.
4. Divide the total sum of products in 3. by 97 (Mod 97).
5. Subtract 97 by the remainder from the division in 4 to obtain the Cheque Digit.

Remarks: Check Digit will hold the value from 00 to 96 and its value will always be represented by a two-digit number e.g. 08 and 12.

#### Example of Check Digit Calculation

1. Cheque number has the value of 12345678
2. Bank code has the value of 123
3. Branch code has the value of 1234
4. Account number has the value of 1234567890

	Cheque number								Bank code			Branch code				Account number									
Data	1	2	3	4	5	6	7	8	1	2	3	1	2	3	4	1	2	3	4	5	6	7	8	9	0
Weight	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Product	25	48	69	88	105	120	133	144	17	32	45	14	26	36	44	10	18	24	28	30	30	28	24	18	0

Sum of data multiplied by weight equals to 1156

Mod 97 equals to 89 (divided by 97 will obtain 11 with remainder of 89)

Check Digit equals to  $97 - 89 = 08$

### 3.2 Validation of Check Digit

Validation of Check Digit obtained from calculation is based on the following principles:

1. Calculation of the total weighted product is done in the same way as the calculation of Check Digit.
2. Add the total weighted product to the calculated Check Digit.
3. If the sum is divided by 97 (Mod 97) and produce the remainder of 0, it ensures the correctness of calculated Check Digit.

	Cheque number								Bank code			Branch code				Account number											
Data	1	2	3	4	5	6	7	8	1	2	3	1	2	3	4	1	2	3	4	5	6	7	8	9	0		
Weight	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		
Product	25	48	69	88	105	120	133	144	17	32	45	14	26	36	44	10	18	24	28	30	30	28	24	18	0		

Total weighted Product                      equals to    1156  
 Check Digit                                        equals to    08  
 1156 + 08                                        equals to    1164  
 Mod 97    equals to    0        (97\*12 = 1164)

This demonstrates that calculated Check Digit is correct.





### 3. MICR E13B Font Type Standard

The standard of MICR E13B font type emphasizes shape, size and properties including signal levels of the MICR E13B font printed by magnetic ink for smooth character recognition. Besides, it will show other necessary details on the production and printing MICR E13B font, including limitation of possible error in cheque printing at acceptable level of the MICR E13B system in general.

#### 1. Objective

To ensure uniform printing of MICR E13B font, which is developed to facilitate automatic processing of cheque or document, under the single uniform standard of the entire banking industry


#### 2. Character Configuration


The MICR E13B characters for printing Code Line on the front side of every cheque consist of the following:


##### 2.1 10-Digit Numbers


0 1 2 3 4 5 6 7 8 9

##### 2.2 4-Digit Special Signs

 Bank/Branch (Transit Symbol)

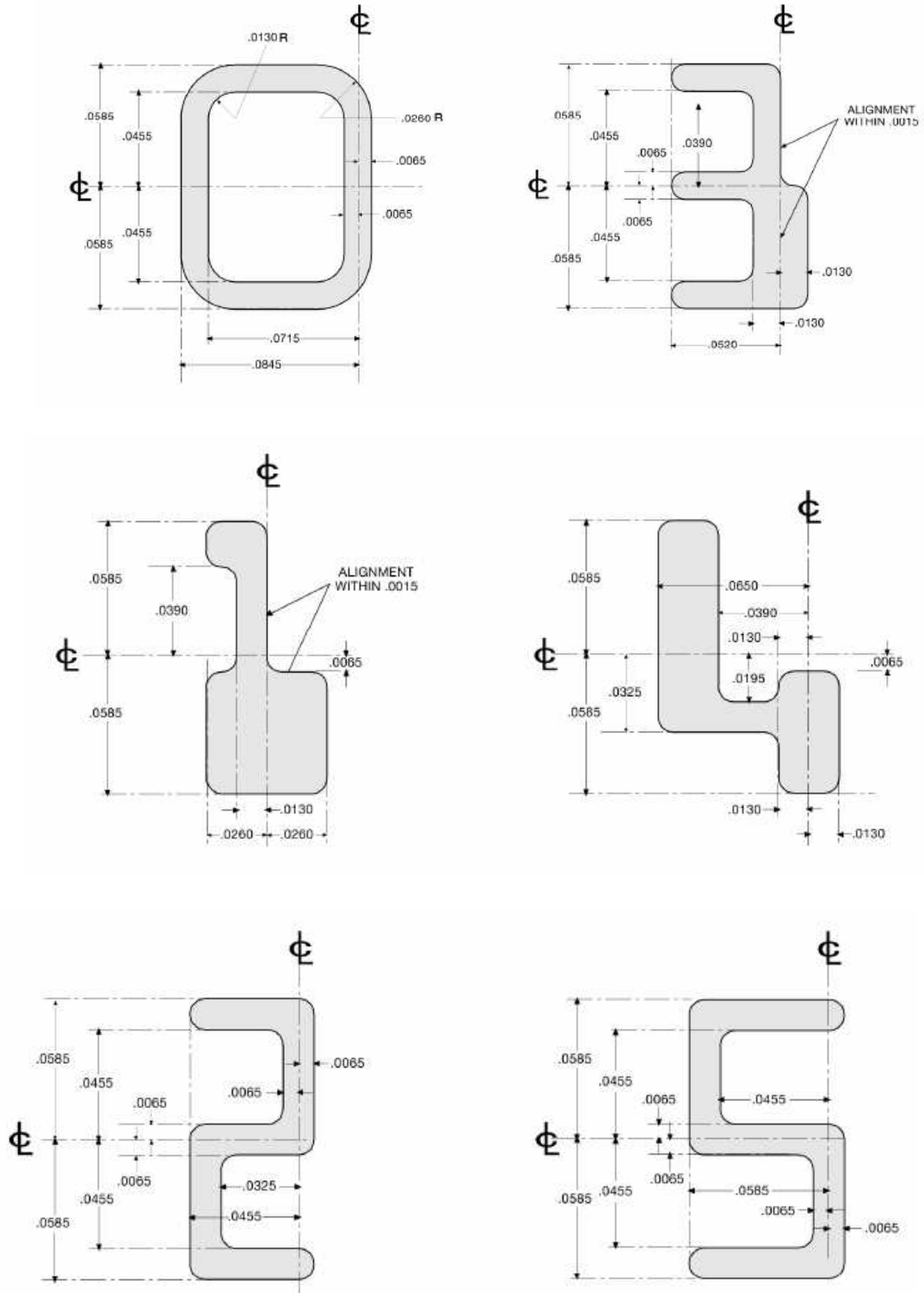
 Amount (Amount Symbol)

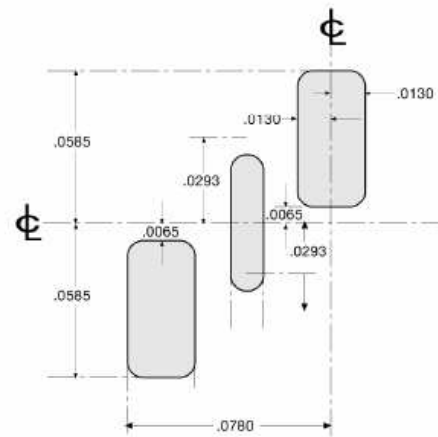
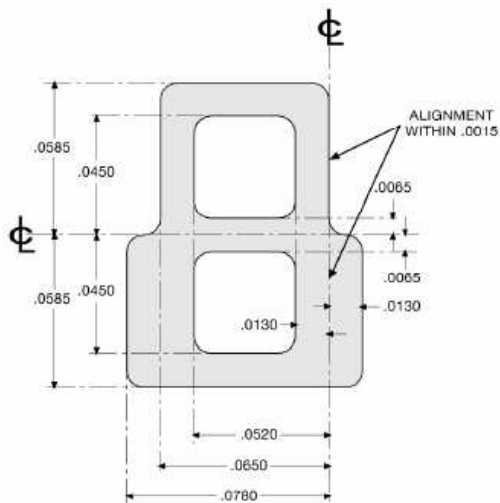
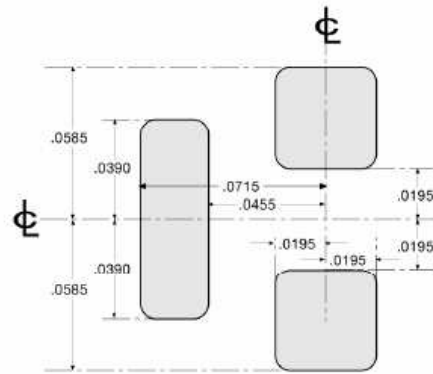
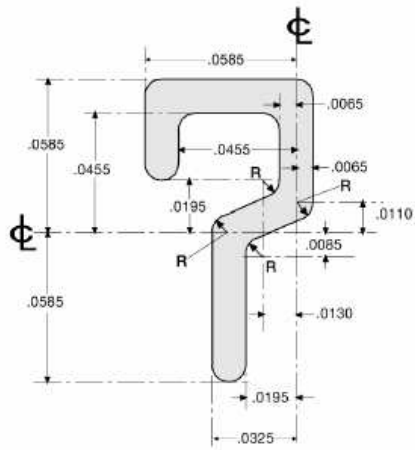
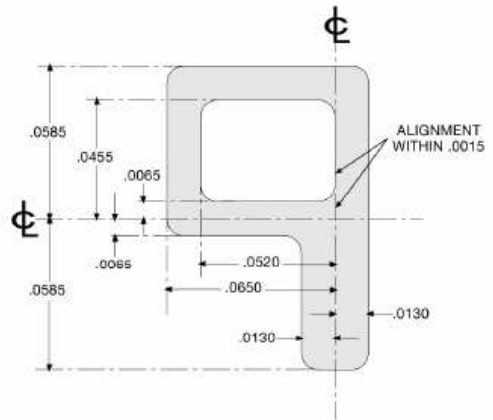
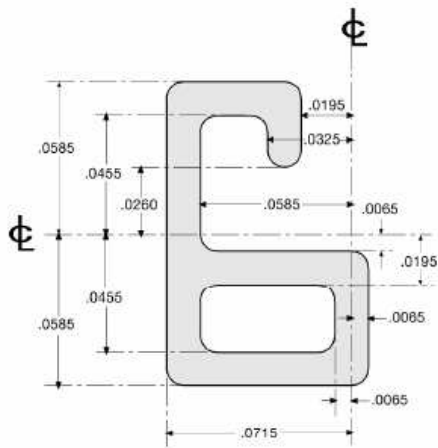
 Domestic (On-Ups Symbol)

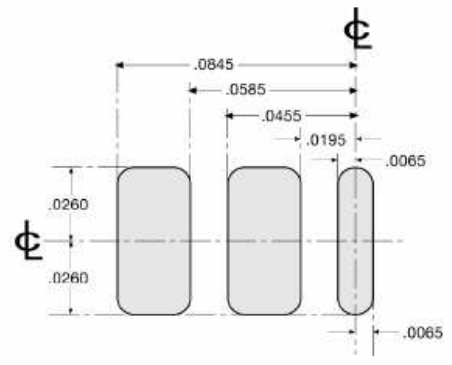
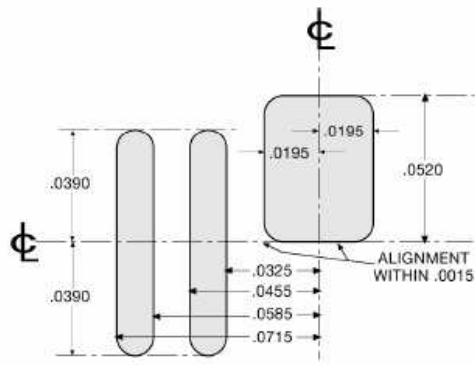
 Dash (Hyphen Symbol)

### 2.3 Enlargements and Details of E13B Characters

With reference to ISO 1004-1995







### 3. Properties and Signal Levels of MICR E13B Font

#### 3.1 Stroke Width

0.013 ± 0.002 inch (0.33 ± 0.05 mm)

#### 3.2 Normal Pitch

0.125 ± 0.010 inch (3.18 ± 0.25 mm)

#### 3.3 Character Height

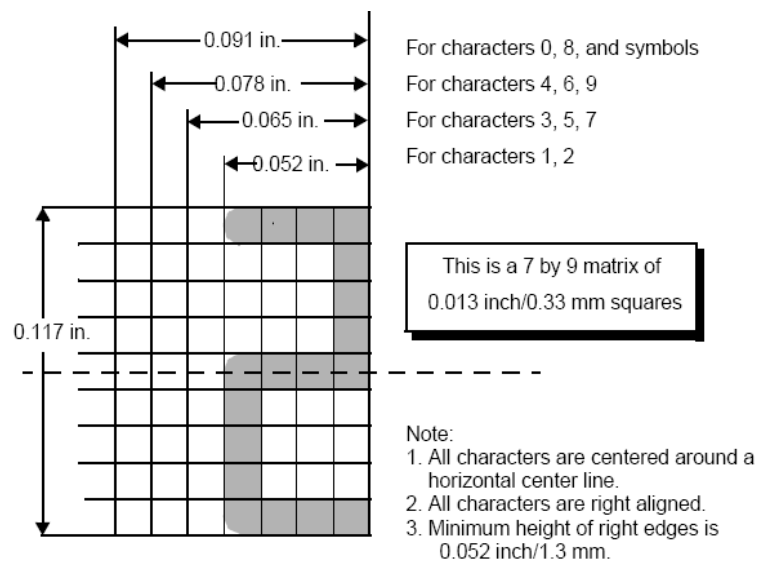
Every character is 0.117 inch high (2.97 mm)

Except: Domestic (On-US Sign) is 0.091 inch high (2.31 mm)

Dash (Hyphen Sign) is 0.052 inch high (1.32 mm)

#### 3.4 Character Width

It differs by shape of each character.

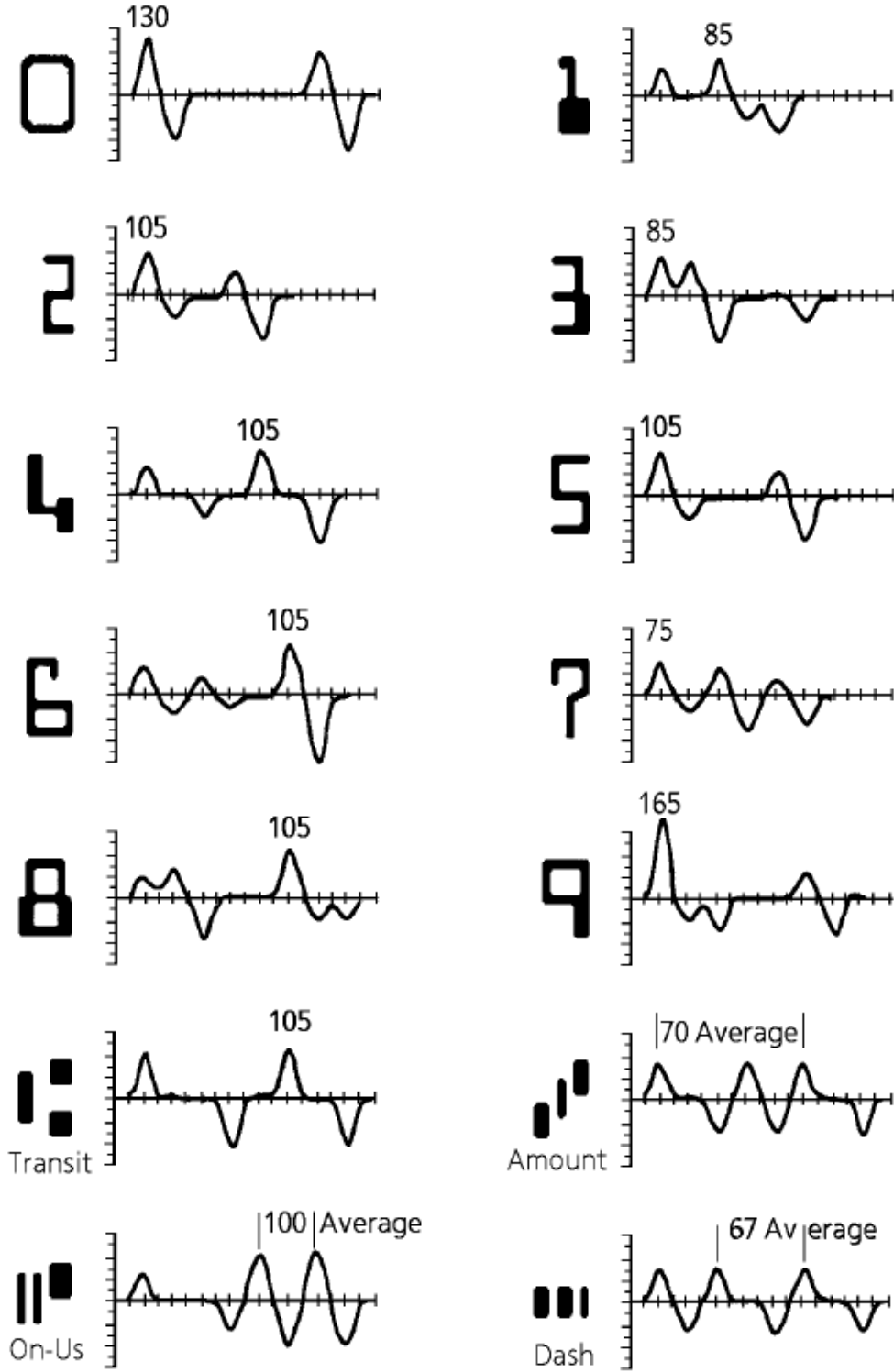


#### 3.5 Character Right Hand Edge and Character horizontal Center Line

When put a character above one another, the right hand edge of each character and the horizontal center will completely cover one another.

### 3.6 Nominal Signal Level

The nominal signal levels from different MICR E13B characters are different, as shown below:



## **4. Print Fault**

### **4.1 Position Tolerances**

$\pm \frac{1}{16}$  inch from designated position

### **4.2 Alignment of the Bottom Edge of Two Adjacent Characters**

The difference between the horizontal center line of any two adjacent characters must not exceed 0.007 inch.

### **4.3 Line Skew**

All data fields on the Code Line must be in the Read Band, which is 3/16 inch away from bottom and upper edge, all through the length of the cheque. As a result, the skew of the line of data each fields depends on the length of data in that particular field.

### **4.4 Character Skew**

Skew of each character must not exceed 1 ½ degree out of the perpendicular to the bottom edge of cheque.

### **4.5 Character Edge Irregularity**

Any irregularity of the character edge must not exceed 0.0015 inch on either side of the nominal edge dimension.

### **4.6 Void**

The size of voids, or areas where the absence of ink creates a hole through which the paper show up, must not exceed the area that can be all visible with a circle of 0.008 inch-radiator, no matter the circle moves straight toward any direction for not exceeding 0.004 inch (0.10 mm). The entire space of void, either in vertical or horizontal direction of any character, must not exceed 20 percent of the bar area. Needle voids, long and slim areas where no ink appears, must not be wider than 0.002 inch (0.05 mm).

### **4.7 Uniformity of Ink Film**

The ink is to be distributed uniformly within the outlines of each character. In case where there is squeeze-out or halo (fade ink) within a character, it must not exceed 0.0015 from the edge of the character.

#### **4.8 Extraneous Magnetic Ink within the $\frac{5}{8}$ inch MICR Clear Band**

Each extraneous magnetic ink area on the front of the cheque in the MICR Clear Band must not exceed 0.003

\* 0.003 inch. Each extraneous magnetic ink area on the back of the cheque in the MICR Clear Band must not exceed 0.006\*0.006 inch.

#### **4.9 Embossment or Debossment**

The printing must not lead to embossment or debossment in excess of 0.001 inch.

#### **4.10 Signal Level Range**

The space of Voltage wave form or the Signal Level Range from MICR E13B characters must be in the range of 80-160 percent, using the normal signal level as 100 percent.

#### **4.11 Other Faults**

In case of any questions, Gardon Gauge or Optical Comparator Grid, or Signal Level Tester should be used for measurement.

## 4. Standard of Replacement Slip

### 1. Replacement Slip

Replacement slip refers to a document created to replace a physical cheque for the purpose of internal use within the banks and other intentions. Replacement slip can be used in the following cases:

- (1) Cheque, bill of exchange, promissory note and other instruments with defect, or with something attached e.g. stamp duty, seal, or with rip, or with high embossment due to Writing Machines, or with creases which would jam in Reader and Sorter machine.
- (2) Cheque or other instruments with defect on the amount data on the Code Line, which cannot be repaired with Adhesive foil back Cheque Correction Label for re-encoding.

#### 1.1 Specifications of Replacement Slip

It must be high-quality white bond paper, as thick as cheque-printing paper.

#### 1.2 Size of Replacement Slip

Width:	$7 \pm \frac{3}{32}$ inches	( $17 \pm 2$ mm)
Height:	$3 \frac{1}{2} \pm \frac{3}{32}$ inches	( $89 \pm 2$ mm)

**1.3 Details and Data Format of Replacement Slip**

**1.3.1 Name of Sending Bank and the Statement “Replacement Slip”**

There must be a band, with background color as dark blue, of 1 inch wide adjacent to the top edge all through the length of the replacement slip, and having the name of the sending bank and the statement “Replacement Slip” printed in Thai of ½ inch long being in the normal paper color.

**1.3.2 Date and Certifying Statement of Replacement Slip**

Under the name of the sending bank, there must be a statement printed, “Date.....” for inserting company seal or the clearing date, together with the statement “Certified True, Enclosed with Original Instrument”, follow by a dotted-line with the statement “Authorized Signatory of Sending Branch”. It is 1/8 inch in size and positioned on the right of the replace slip.

**1.3.3 Sending bank code**

In the middle of the replacement slip, print a 1 x 1 inch box, and the bank code of 4/8 inch, together with a statement “Bank Code” above the box.

<b>Bank..... Limited</b>		<b>Replacement Slip</b>
		Date .....
<b>Bank code</b> <div style="border: 1px solid black; width: 60px; height: 60px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"> <span style="font-size: 24px; font-weight: bold;">50</span> </div>		Certified True, Enclosed with Original Instrument (Signed and Sealed) ----- Authorized Signatory of Sending Branch
๐: ๖ ๒ ๐ ๖ ๒๓๔๕๖ ๗๘๐ ๖ ๒๓๐๐ ๖ ๒๓๔๐: ๖ ๒๓๔๕๖ ๗๘๙๐๐ ๖ ๒ ๐ ๖ ๒๓๔๕๖ ๗๘๙๐ ๖		

Figure 1: Details and Data Format on Replacement Slip

#### **1.4 Position and Details of Data in Each Field on Code Line**

On the replacement slip, there must be the same data in each field as on cheque, using MICR E13B characters, and magnetic ink, printed in compliance with the same standard as that being used on cheque. The data is classified into six fields:

- (1) Amount
- (2) Document type
- (3) Account number
- (4) Bank and branch code
- (5) Cheque number
- (6) Check Digit

For the replacement slips of bill of exchange, promissory note, returned cheque slip and other instruments, they will consist of data on the Code Line in at least two fields, i.e., Amount and Bank and branch code with the following details:

1.4.1 The replacement slips of bill of exchange, promissory note, and other instruments will show the bank and branch codes of the paying banks as shown on the original instruments. If there is no branch code, it shall be a code of the head office.

1.4.2 As for the replacement slips of returned cheques, the bank and branch codes will be the codes of bank and branch that receives the returned cheque slip.

## 5. Standard of Cheque-printing Paper

The cheque-printing paper must be CBS 1 (London Clearing Banks Paper Specifications No. 1), which has the following properties:

### 1. General Attributes

- 1.1 Paper to be supplied white
- 1.2 To be flat without bend
- 1.3 To be free from magnetic or metallic inclusions
- 1.4 To be smooth and free from embossment or heavy engraving
- 1.5 To be printed on smoother side only
- 1.6 Moisture content to be suitable for printing conditions in Thailand

### 2. Physical Attributes

The paper is produced from "Chemical Pulp". After being conditioned to comply with ISO 187:1990 at the temperature of 23 + 1°C and relative humidity of 50 + 2%, it will possess the following properties:

Properties	Specifications	Standard
2.1 Grammage	90-100 g / m <sup>2</sup>	ISO 536:1995
2.2 Thickness	105-130 µm	ISO 534:1998
2.3 Smoothness	No more than 150 ml / min	ISO 8791-2:1990
2.4 Stiffness - Cross-Machine Direction - Machine Direction	At least 3.1 mN At least 7.9 mN	ISO 2493:1992
2.5 Porosity - Air resistance (Gurley Method) or - Air permeance (Bendsten Method)	At least 2.7 sec / 100ml No more than 450 ml / min	ISO 5636-5:2003 ISO 5636-3:1992
2.6 Opacity	At least 85%	ISO 2471:1998
2.7 Reflectance	At least 70%	ISO 2469:1994
2.8 Tear Strength - Cross-Machine Direction - Machine Direction	At least 705 ml At least 705 ml	ISO 1974:1990
2.9 Dirt	Number of squares (0.1x0.1 m <sup>2</sup> ) containing dirt must not exceed 200 squares within a 6 m <sup>2</sup> area	BS 5477:1997

### 3. Anti-Fraudulent Attributes

3.1 Does not glow under the Ultraviolet (UV) light or UV-Dull at the wavelength of 250-380 nanometers.

3.2 Cheque-printing paper must obviously change its color when reacting with chemicals, at least 12 substances, used in forgery and modification.

- |                        |                              |
|------------------------|------------------------------|
| 1. Sodium Hypochlorite | 2. Chlorine Water            |
| 3. Ink Aradicator      | 4. Hydrochloric Acid         |
| 5. Acetic Acid         | 6. Sodium Hydroxide Solution |
| 7. Ethyl Alcohol       | 8. Acetone                   |
| 9. Methyl Ethyl Ketone | 10. Pyridine                 |
| 11. Formamide          | 12. Cellosolve               |
| 13. Nitropropane       | 14. Chloroform               |
| 15. Isopropyl Alcohol  | 16. Ammonia                  |
| 17. Ethyl Ether        | 18. Ethyl Acetate            |
| 19. Trichloroethylene  | 20. Benzene                  |
| 21. Turpentine         | 22. Gasoline                 |
| 23. Phenol             |                              |

## 6. Bill of Exchange, Promissory Note and Other Instruments

### 1. General Composition

1.1 Draft and cheque issued by banks, such as cashier cheque, gift cheque to be under the same standard as the physical cheque.

1.2 Bill of Exchange, promissory note or other instruments must be of:

Width:	7 - 8 $\frac{21}{32}$	inches	(178 - 220 mm)
Height:	3 $\frac{1}{2}$ - 4	inches	(89 - 102 mm)

### 1.3 Utility Space

The front of bill of exchange, promissory note and other instruments shall be in two parts, MICR Clear Band and For Business.

The back of bill of exchange, promissory note and other instruments shall be in three parts; first part for MICR Clear Band, second part for bank and customers, and third part for Others.

1.4 Important concerns for issuing bill of exchange, promissory note and other instruments:

- (1) Title of bill of exchange, promissory note must be clearly visible in the middle.
- (2) Reference number, if any, should be in the top-left of the instrument.
- (3) The numeric amount of money should be immediately visible on the right-hand side of the instrument.
- (4) Payer's signature should be in the bottom right, above the blank area.
- (5) Paying bank's name should be in the bottom left, above the blank area.
- (6) Background color and pattern should be in light color as mentioned in Cheque Design as specified in Standard for Cheque.

**2. Code Line Format**

Code Line Format of draft, bill of exchange, promissory note or other instruments can be divided in 6 fields, counting the far right position as the first, and the far left position as the last. The MICR E13B characters must be printed according to the positions and details of the data in each field under the Code Line Format of cheque.

**3. Paper Standard**

The paper used for printing draft, bill of exchange, promissory note or other instruments must be under the same standard for cheque-printing paper.

## **7. Security for Cheques**

Security for cheques must consist of cheque forgery prevention technique and data modification prevention techniques as stated below:

### **1. Cheque Forgery Prevention Techniques**

#### **Common Watermark**

The paper used in printing cheques must possess the properties stated in chapter 5 i.e. CBS1 (London Clearing Banks Paper Specification No.1) paper and apply common watermark in which complies with the specifications as determined by the Bank of Thailand. The common watermark with the width and height of no less than 2 cm is engraved into the paper and positioned all over the cheque. Each cheque must hold at least one full watermark and it should be clearly visible when applied to light. This is to facilitate the sending banks to inspect other banks' cheques which deposited by the customers.

The paying bank is allowed to add the bank' own watermark along with the common watermark for the benefits of internal control within the bank itself. However, the bank' own watermark must not be adjacent to or overlap with the common watermark.

### **2. Data Modification Prevention Techniques**

#### **CBS1 Paper with Laser Grade**

The paper used in printing cheques must be CBS1 paper with Laser Grade, i.e. CBS1 paper coated by a special method to support good adhesion of toner. This provides prevention of scraping, erasing, or modifying of data printed from laser printer by leaving clearly-visible traces.

### **3. Other Security Techniques**

Other than the techniques specified above, the banks can introduce other cheque forgery or data modification prevention techniques. Nonetheless, banks should take the impacts on imaged cheque clearing into considerations as follows:

3.1 Security techniques for cheques must not impede the working process of Imaged Cheque Clearing e.g. "VOID" or other words, which identify forgery using color photocopy machine, created by Void Pantograph technique should be invisible in both grayscale and black and white images at the resolution specified in Imaged Cheque Standard, as these words may block important data on the image and hinder the approval process for debiting with image.

3.2 Security techniques for cheque must not affect the Reflectance and/or Print Contrast Signal values to fall below the values specified in the "Cheque Design Standard for Imaged Cheque Clearing" defined in chapter 8.

**Common Watermark**



## 8. Cheque Design Standard for Imaged Cheque Clearing

Imaged Cheque Clearing is cheque clearing at sending bank and exchanges data and image with the paying bank instead of physical cheques in order to reduce costs and risks from the transportation of physical cheques. Paying bank will validate and approve the payments by making considerations based on cheque images.

Therefore, the design of cheque to support Imaged Cheque Clearing should provide paying banks the clarity of important data, which are essential for cheque inspection, on cheque image. Area containing important data, both pre-printed (e.g. MICR Code Line) or fields that required customer's filling out (e.g. date, amount, and payer's signature), should not have clearly-visible patterns or too dark background color. The measures to specify the background color include Reflectance and Print Contrast Signal values, in which the details are stated as follows:

### 1. Reflectance

Reflectance is the brightness of cheque background color that is visible to human eyes with the value of 0-100%. Magnesium oxide or barium sulphate powders, white-colored minerals (with high capability of reflecting light), is defined as 100% Reflectance, while 0% Reflectance is pure black.

The objective of specifying Reflectance value for various areas on cheque is to ensure that the areas required important data filling out, e.g. payment date and amount, are lightly colored to facilitate visibility of important data on cheque images.

### 2. Print Contrast Signal

Print Contrast Signal is the value of contrast between the printed area (e.g. characters) and the background color, which is calculated by comparing Reflectance values of printed area and background area as illustrated in the follow formula:

$$PCSp = \frac{Rb - Rp}{Rp}$$

where    PCSp =    Print Contrast Signal of the specific area measured  
              Rb    =    Reflectance of background  
              Rp    =    Reflectance of the specific area measured

The area with high PCS value means the printed area has higher brightness compared with background, leading to clear visibility. The objective of PCS specifications is to ensure that the pre-printed data (e.g. ₪-sign, Date Field Indicator, and MICR Code Line) are clearly visible from cheque image or in some cases, borders of date and amount (number) fields may be required to be invisible on cheque images.

### 3. Standard Values for Important Areas on Cheques

For visibility of important data on cheque images, pattern, background, and security technique designs must comply with the specified values as stated below:

Fields	Reflectance (R)	PCS	PCS Calculation
Amount (number) (background)	$\geq 60\%$	$\leq 0.30$	Rb = The highest R value in amount field Rp = The lowest R value in amount field
Amount (number) (border)	-	$\leq 0.30$	Rb = The highest R value in amount field Rp = The lowest R value in border
Date (background)	$\geq 60\%$	$\leq 0.30$	Rb = The highest R value in date field Rp = The lowest R value in date field
Date (border)	-	$\leq 0.30$	Rb = The highest R value in date field Rp = The lowest R value in border
Signature (background)	$\geq 45\%$	-	-
Amount (characters) (background)	$\geq 45\%$	-	-
Receiver (background)	$\geq 45\%$	-	-
MICR Clear Band	$\geq 60\%$	$\leq 0.30$	Rb = The highest R value in MICR Clear Band Rp = The lowest R value in MICR Clear Band
MICR Character	-	$\geq 0.60$	Rb = The highest R value in MICR Clear Band Rp = The lowest R value in MICR characters
Baht Sign (₪)	-	$0.35 \leq PCS \leq 0.60$	Rb = The highest R value in background Rp = The lowest R value of Baht Sign
Date Field Indicator (DDMMYYYY)	-	$\geq 0.60$	Rb = The highest R value in background Rp = The lowest R value in Date Field Indicator

#### **4. Reflectance and Print Contrast Signal Measurement**

Since Reflectance measurement is a measurement of reflecting light that is visible to human eyes, therefore the Reflectance and Print Contrast Signal measuring devices need to be calibrated to respond to light in similar ways. The calibrations will be made depending on the types, brands, and models of the devices e.g. some models of a device may require installation of light filter.

Reflectance in this standard refers to “Diffuse Reflectance” or Reflectance occurred due to light striking on object with smooth surface, which is the Reflectance in every part of surface in different directions unlike different from Reflectance of light. The Reflectance measurement should be made by “black-backing” method, in which the sample is measured while being backed with black at no more than 0.5% Reflectance.

Reflectance measurement is made by Reflectance meter or Print Contrast Signal meter or both, which are devices having spectral responses using an aperture of 0.008 inch (0.20 mm) diameter. In any cases, the aforementioned approach is suitable for measuring the areas with the same background. However, in the case that the background consists of many colors, Reflectance measurement must be made by taking multiple samples within a specific area and the obtained values are averaged for the actual value of that specific area.

Print Contrast Signal is measured by putting Reflectance value of background and Reflectance value of the area desired to measure into its formula. The Print Contrast Signal of background should not exceed 0.30.

## 9. Imaged Cheque Standard

In Imaged Cheque Clearing System (ICS), sending banks and paying banks will exchange data and images instead of physical cheques. Therefore, exchanged images must have the qualified properties to facilitate paying banks in cheque image inspections as well as signature inspection before approval of debiting customers' accounts.

### 1. Types of Exchanged Images

#### 1.1 Grayscale

Grayscale is an image that each pixel has gray tonal values, usually more than 2 levels besides black and white up to 256 levels. Grayscale image must have the following properties:

- (1) 256 color levels (8 bits)
- (2) Quantization Matrices (Q-factor) of 80

#### 1.2 Black and White

Black and white is an image that each pixel is stored in memory at 1 bit being either black or white.

### 2. Imaged Cheque Standard

Cheque images exchanged in the system must possess the following properties:

Types of Images	Front/Back	Resolution	File Format	Number of Images
1. Grayscale	Front only	100 dpi	JPEG	1
2. Black & White	Front and back	200 dpi	TIFF	2
			Total	3

## 10. Recommendations for Use of Cheques

Recommendations for use of cheques should be printed in the inner cover of chequebook as a guideline, as below:

1. Do not type or write below the MICR Clear Band, 5/8 inch, in both the back and front of the cheque.
2. Crossing, payer's signature, or stamping of any seal or statement must not be in the MICR Clear Band that is used for encoding MICR E13B characters.
3. Do not scrape or erase the characters on the Code Line in the MICR Clear Band.
4. To modify any statement, the user must cross out the whole statement, and sign the name above the corrected parts, avoid using correcting fluid.
5. The use of the back of the cheque is allowed only in the area above the MICR Clear Band throughout the height of the cheque and with the width of 3 <sup>3</sup>/<sub>4</sub> inches from the left edge of the cheque.
6. Avoid folding, which may be damaging to the characters on the Code Line.
7. In case of cheque with perforated line, the user should carefully tear the cheque on the perforated line.
8. Use black or dark blue ink for writing cheques, avoid fluorescence ink, and do not use pencil.
9. The payable amount must be close to the “฿” sign.
10. Payment date field should be filled out in each of the given boxes and in the format indicated by the Date Field Indicator below the field i.e. DDMMYYYY or วรรณปปปป.