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Implementation Guideline

Bakong as a payment switch

A single QR Code for receiving payment from any mobile banking apps

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Mode

Merchant - Presented

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What is KHQR?

The standardization of KHQR code specification will help prOMOTE wider use of MOBILE retail PAYMENTS in CAMBODIA and provide consistent user experience for MERchants and CONSUMERs. It can enable interoperability in the PAYMENT industry. A COMMON QR code would facilitate PAYMENTS AMONG different SCHEMES, e-wallets and banks and would encourage SMALL MERchants to adopt KHQR code as PAYMENT MEthod.

KHQR is created for Retail PAYMENT in CAMBODIA and cross-border PAYMENT within ASEAN countries. It only requires a single QR for receiving PAYMENT frOM any MOBILE apps including Bakong App, MAKING QR PAYMENT SIMPLE for both cusTOMERs and MERchants in CAMBODIA. For MORE detail spec please refer to Prakas KHQR Code Specification in CAMBODIA. This DOCUMENT will guide you through on how to IMPL-EMENT KHQR by using Bakong PAYMENT Network as PAYMENT Switch.

of KHQR

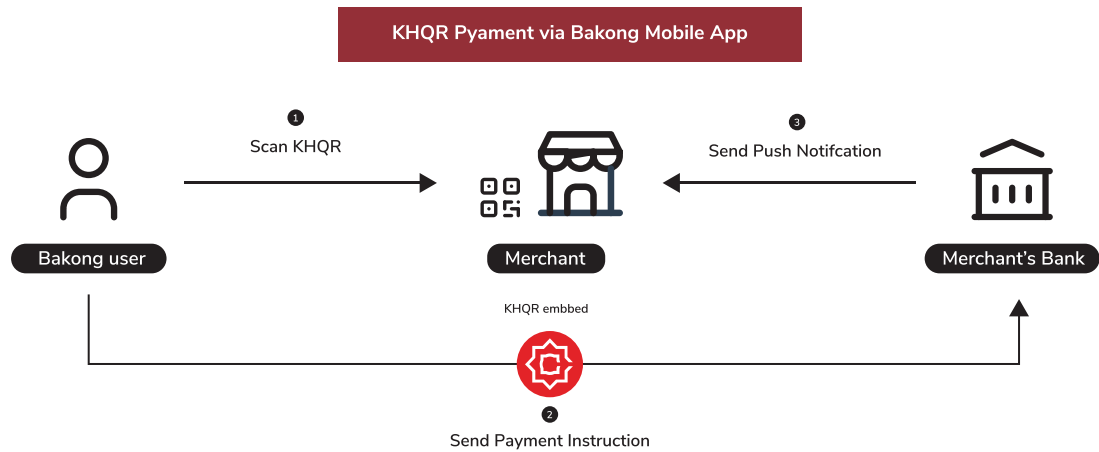
For customers

- No more confusion with multiple QR codes stand when making payment. Simply look out for the KHQR label.
- Using your own favourite app including Bakong App to make payment anywhere that has a KHQR label.

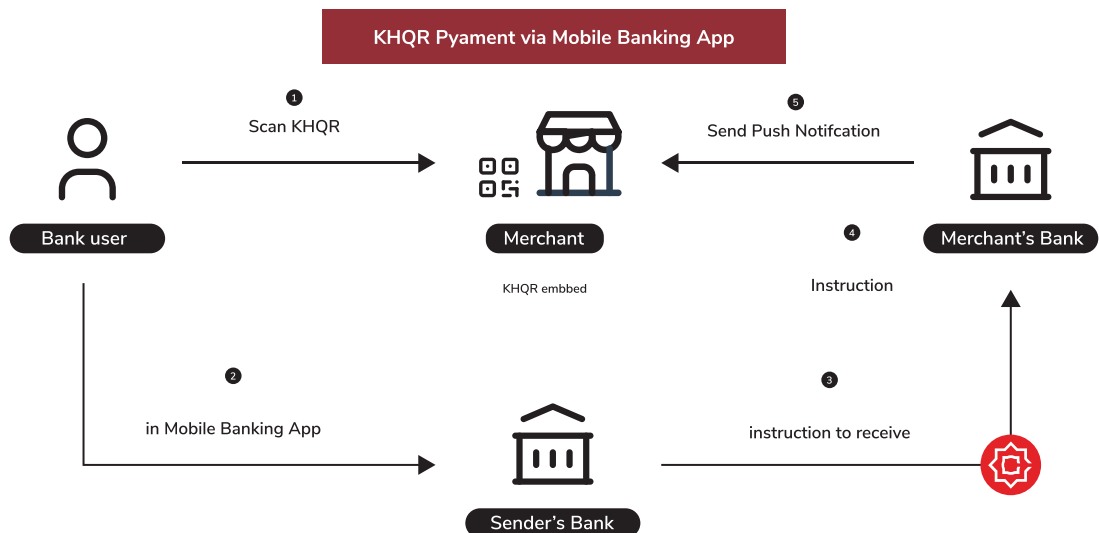
For merchants

- Saving Space for your counter. Only need to display a single KHQR stand instead of multiple QR labels.
- Simple, fast, and secure payment solution.
- Can accept payment from anyone and any bank app. No need to sign bilateral contracts with many acquirers anymore.

it works



- 1 User scan KHQR via Bankong App**
Bakong app reads the information of KHQR
- 2 User Confirms Payment**
Credit amount transfer to merchant's bank KHQR settlement account based QR information in step 1 and attach it as a payment instruction to merchant bank
- 3 Process Payment**
 1. Recieve payment instruction
 2. Notify merchant of recieved payment then the bank may credit to their merchant account immediately or the next day by:
 - Debit bank suspend account - Credit merchant account



- 1 Bank Customer Scans KHQR**
Mobile banking app reads QR Code information
- 2 Bank Customer Confirms Payment in Mobile Banking App**
Attach payment instruction based on QR Code information read
- 3 Sender Bank Forwards Payment Instruction**
 - Debit sender bank KHQR settlement account
 - Credit receiving bank KHQR settlement account
- 4 Receive Payment Instruction**
 - Receive payment instruction from sender bank
 - Send payment instruction to the receiving bank
- 5 Process Payment Instruction, Notify**
 - Debit bank suspend account
 - Credit merchant account

to implement

Abbreviation	Full Form
CRC	Cyclic Redundancy Check
MCC	Merchant Category Codes

Prerequisite

Must become a KHQR endorser

- KHQR endorser must have KHQR settlement account which is a Bakong Wallet Account where you can either register with NBC or become a member of Bakong.
- Update QR label by follow Prakas specification of KHQR as prepared and accepted by ABC as in Prakas in this document: KHQR for Payment in Cambodia
- Accept T&C to use Bakong as a payment switch for KHQR especially fee sharing which is stated in Bakong Rule & Procedure (BRP).
- Developers shall check and test if the acquirer system can generate QR Code compliant with KHQR Specification, or parse KHQR Code from Bakong App.

How to generate KHQR Label

KHQR Tag 29

Solo merchant or Individual

This QR code can be generated via Bakong Mobile/Desktop app with Receive Function or by using Bakong page: www.bakong.nbc.org.kh . FIs can also use the API as presented detail in this link: KHQR API specification

Static KHQR Example



QR Code with tag 29 as a solo merchant with static KHQR

“00020101021129200016test_bakong@devb520459995
3031165802KH5917Lucky Supermarket6010Phnom
Penh9917001316339210247786304102F”

■ QR Code Convention

Data Object	Input Characters	Meaning
Payload format indicator	"000201"	Version 1
Point of Initiation Method	"010211"	Unique QR Code is shown for each consumer or Static QR Code
CRC	"6304102F"	Checksum

■ Merchant Account Information

Data Object	Input Characters	Meaning
Gobally Unique Identifier	"2920"	
Gobally Unique Identifier	"0016test_bakong@devb"	Global Unique Identifier = test_bakong@devb is Bakong account (this must be a solo merchant/Individual Bakong account Id)

■ Additional Merchant Account Information

Data Object	Input Characters	Meaning
MCC	"52045999"	Miscellaneous and speciality retail outlets
Country Code	"5802KH"	Cambodia
Merchant Name	"5917Lucky Supermarket"	Lucky Supermarket
Merchant City	"6010Phnom Penh"	Phnom Penh
Timestamp	"991700131633921024778"	131633921024778 is timestamp in milisecond

■ Transaction Value

Data Object	Input Characters	Meaning
Transaction Amount		0 or Prompt for input
Transaction Currency	"5303116"	KHR

** Understanding the code

"5303116" divided into 3 parts "53", "03", "116" whereas

- First part (53) is the tag ID
- Second part (03) is the length of data of the third part (116 has 3 digits)
- Third part (116) is the data

Dynamic KHQR Example



QR Code with tag 29 as a solo merchant with dynamic KHQR

“0020101021229200016test_bakong@devb520459995303
116540410005802KH5917Lucky Supermarket6010Phnom
Penh9917001316339234555826304D1EB”

■ QR Code Convention

Data Object	Input Characters	Meaning
Payload format indicator	“000201”	Version 1
Point of Initiation Method	“010212”	Dynamic QR Code
CRC	“6304D1EB”	Checksum

■ Merchant Account Information

Data Object	Input Characters	Meaning
Gobally Unique Identifier	“2920”	
Gobally Unique Identifier	“0016test_bakong@devb”	Global Unique Identifier = test_bakong@devb is Bakong account (this must be a solo merchant/Individual Bakong account Id)

■ Additional Merchant Account Information

Data Object	Input Characters	Meaning
MCC	“52045999”	Miscellaneous and speciality retail outlets
Country Code	“5802KH”	Cambodia
Merchant Name	“5917Lucky Supermarket”	Lucky Supermarket
Merchant City	“6010Phnom Penh”	Phnom Penh
Timestamp	“991700131633923455582”	131633923455582 is timestamp in milisecond

** Note for checksum

In order to get the checksum value or CRC, get the value of the code except last 4 digits computed with CRC algorithm to get the 4 digits value.

Transaction Value

Data Object	Input Characters	Meaning
Transaction Amount	"54041000"	Amount 1000
Transaction Currency	"5303116"	KHR

Remittance KHQR

This KHQR generates for remittance transaction, there is a **must** follow the KHQR specification. After owning the Bakong Wallet for exAMPLE: "merchant@bank" (KHQR settlement account), the content of QR Code shall be generate similar to this

Static KHQR Example



QR Code with tag 29 as a remittance KHQR with static KHQR
 "00020101021129460016devbkhppxxx@devb01100000001
 1120208Dev Bank5204599953031165802KH5910Jonh
 Smith6010Phnom
 Penh99170013163392463782863042ACD"

QR Code Convention

Data Object	Input Characters	Meaning
Payload format indicator	"000201"	Version 1
Point of Initiation Method	"010211"	Static QR Code
CRC	"63042ACD"	Checksum

Account Information

Data Object	Input Characters	Meaning
Gobally Unique Identifier	"2946"	
Gobally Unique Identifier	"0016devbkhppxxx@devb"	Global Unique Identifier = devbkhppxxx@devb is Bakong account. (this must be a FI's KHQR settlement account)

Additional Account Information

Data Object	Input Characters	Meaning
MCC	"52045999"	Miscellaneous and speciality retail outlets

Country Code	"5802KH"	Cambodia
Merchant Name	"5910Jonh Smith"	Jonh Smith
Account Information	"01100000001112"	Account Info = 000000112 is account number
Acquiring Bank	"0208Dev Bank"	Dev Bank
Merchant City	"6010Phnom Penh"	Phnom Penh
Timestamp	"991700131633924637828"	131633924637828 is timestamp in milisecond

Transaction Value

Data Object	Input Characters	Meaning
Transaction Amount		0 or Prompt for input
Transaction Currency	"5303116"	KHR

KHQR Tag 30

This KHQR generates for corporate merchant, there is a **must** follow the KHQR specification. After owning the Bakong Wallet for example: "merchant@bank" (KHQR settlement account), the content of the QR Code shall be generate similiar to this:

Dynamic KHQR Example



QR Code with tag 30 as a corporate merchant with dynamic KHQR
 "00020101021230400013merchant@devb01070000001020
 8Dev Bank52045999530384054031.55802KH5911Coffee
 Shop6010Phnom
 Penh6220030412340708A6008667991700131633935834
 57563045515"

QR Code Convention

Data Object	Input Characters	Meaning
Payload format indicator	"000201"	Version 1
Point of Initiation Method	"010212"	Dynamic QR Code

CRC	"63045515"	Checksum
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■ Merchant Account Information

Data Object	Input Characters	Meaning
Gobally Unique Indentifer	"3040"	
Gobally Unique Indentifer	"0013merchant@devb"	Global Unique Identifier = devbkhppxxx@devb is Bakong account. (this must be a Fls KHQR settlement account)

■ Additional Merchant Account Information

Data Object	Input Characters	Meaning
MCC	"52045999"	Miscellaneous and speciality retail outlets
Country Code	"5802KH"	Cambodia
Merchant Name	"5911Coffee Shop"	Coffee Shop
Merchant ID	"01070000001"	00000001 is merchant ID
Acquiring Bank	"0208Dev Bank"	Dev Bank
Merchant City	"6010Phnom Penh"	Phnom Penh
Timestamp	"991700131633935834575"	131633935834575 is timestamp in milisecond

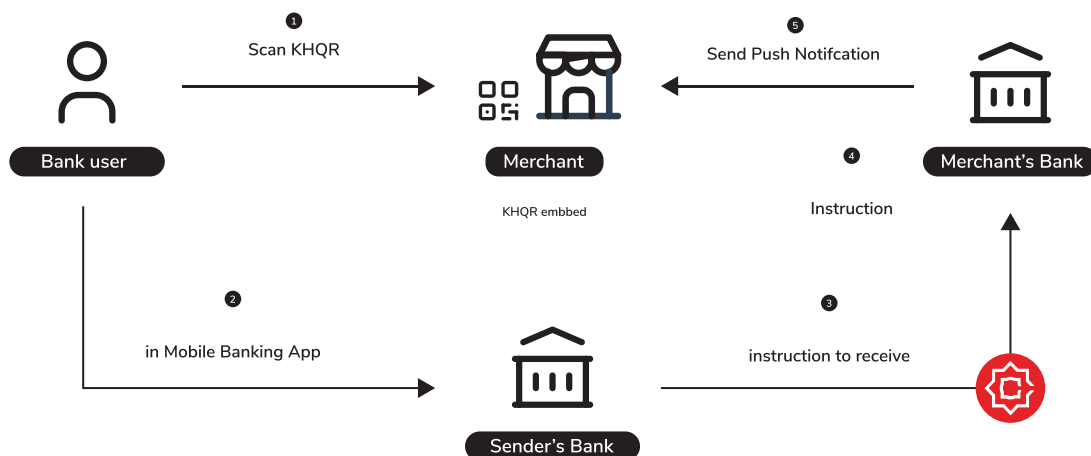
■ Transaction Value

Data Object	Input Characters	Meaning
Transaction Amount	"54031.5"	Amount 1.5
Transaction Currency	"5303840"	USD

■ Additional Data Field Template

Data Object	Input Characters	Meaning
Additional Field Template	"6233"	0 or Prompt for input
Store Label	"03041234"	1234
Terminal Label	"0708A6008667"	A6008667 is terminal label

What to do with FI's Mobile App?



- 1 Bank Customer Scans KHQR**
Mobile banking app reads QR Code information
- 2 Bank Customer Confirms Payment in Mobile Banking App**
Attach payment instruction based on QR Code information read
- 3 Sender Bank Forwards Payment Instruction**
 - Debit sender bank KHQR settlement account
 - Credit receiving bank KHQR settlement account
- 4 Receive Payment Instruction**
 - Receive payment instruction from sender bank
 - Send payment instruction to the receiving bank
- 5 Process Payment Instruction, Notify**
 - Debit bank suspend account
 - Credit merchant account

KHQR Embbed Data (Tag)

Tag ID	Sub tag ID	Name	Example
30	00	Unique ID of payment	merchant@BankA
	01	Merchant ID	000340241
	02	Acquiring Bank	BankA
52		Merchant Category Code	840
53		Transaction CCY code	999
58		CCY code	KH
59		Merchant Name	Sosoro
60		Merchant City	Phnom Penh
62		Additional Data Field	
	01	Bill Number	0978773121
	02	Mobile Number	093524545
	03	Store Label	T000001
	07	Terminal Number	T000001

asked questions (FAQs)

1. If my bank wants to know more or inquire about KHQR, who should I talk to?

KHQR team of Association of Bank in Cambodia

2. If my bank wants to know more or inquire about How To Implement KHQR By Using Bakong As a Payment Switch, who should I talk to?

Bakong team of National Bank of Cambodia

3. How to identify remittance KHQR?

Remittance KHQR is the QR that contain information as below:

- Use tag 29.
- Globally Unique Identifier in tag 00 is bank main wallet or desktop wallet.
- Has customer account information in sub tag 01 (account number or phone number).

4. How to identify solo merchant/individual KHQR?

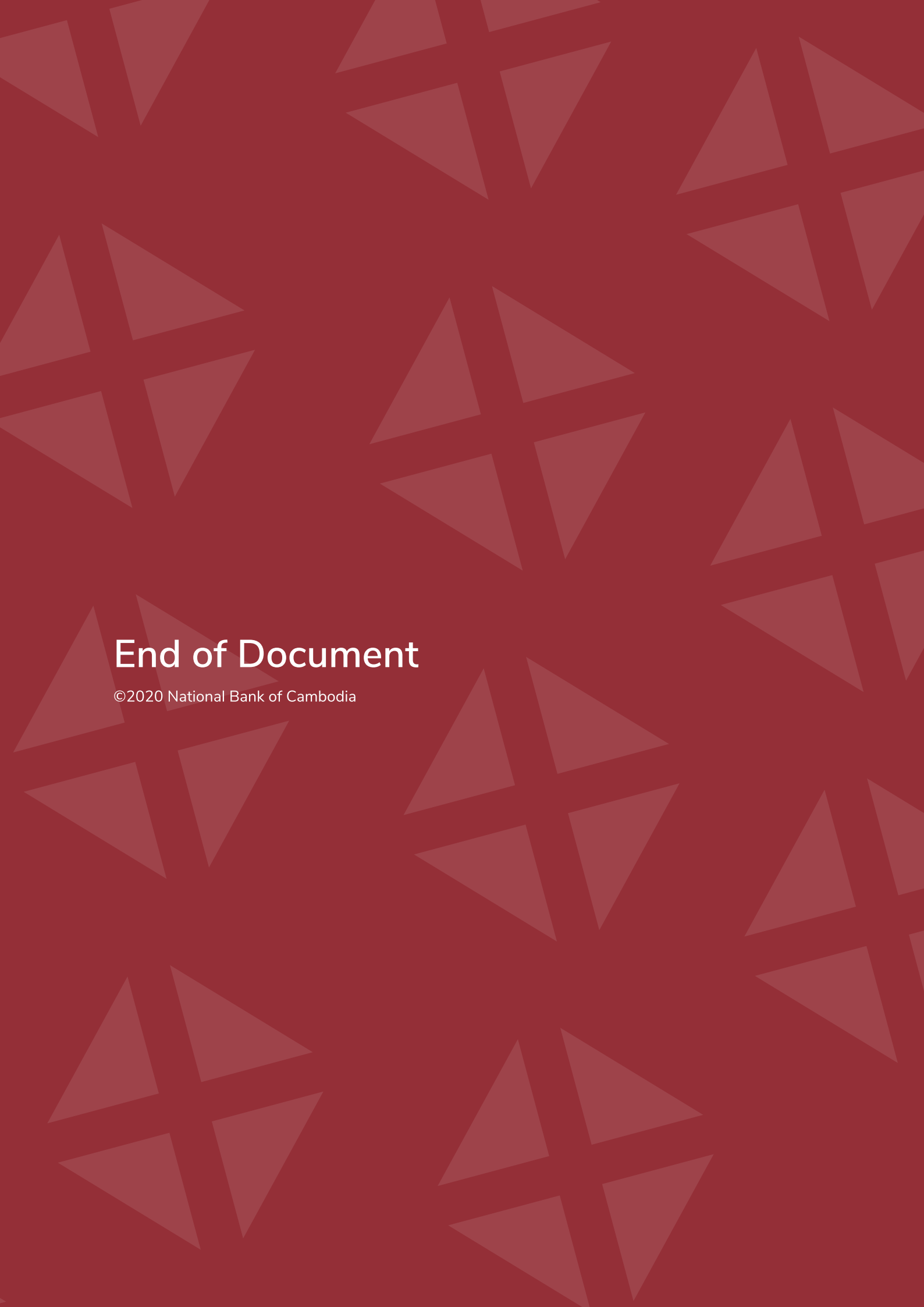
Solo merchant/Individual KHQR is the QR that contain information as below:

- Use tag 29.
- Globally Unique Identifier in tag 00 is customer Bakong account Id.
- No customer information in sub tag 01.

5. How to identify corporate merchant KHQR?

Corporate merchant KHQR is the QR that contain information as below:

- Use tag 30.
- Globally Unique Identifier in tag 00 is bank main wallet or desktop wallet.
- Has merchant information in sub tag 01 (merchant id or merchant account number).



End of Document

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