OnePay QR code Manual

MANUAL FOR READ AND CREATE ONEPAY QR CODE

BANQUE POUR LE COMMERCE EXTÉRIEUR LAO | NO 01, PANGKHAM STREET, BAN XIENGNHEUN, CHANTHABOULY DISTRICT, VIENTIANE LAO PDR, VIENTIANE 2925

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1. Introduction

OnePay is function in BCEL One Application, OnePay enable consumers to make purchase using merchant generated and display QR code base on the merchant details, it can be used for a transfer of funds to a Merchant account designated by the Merchant Account Information over a payment network in exchange for goods and services provided by the Merchant.

1.1 QR Code

QR code (abbreviated from Quick Response Code) is the trademark for a type of matrix barcode (or two-dimensional barcode) first designed for the automotive industry in Japan. A barcode is a machine readable optical label that contains information about the item to which it is attached. A QR code uses four standardized encoding modes (numeric, alphanumeric, byte/binary, and kanji to efficiently store data.

1.2 QR Code in EMVCo format

Onepay using EMVCo format for payment between Consumer and Merchant. EMVCo's work is overseen by EMVCo's six member organisations American Express, Discover, JCB, Mastercard, UnionPay, and Visa and supported by dozens of banks, merchants, processors, vendors and other industry stakeholders who participate as EMVCo Associates

1.3 Notational Conventions

The abbreviations listed

Abbreviations	**Description**
QR Code	Quick Response Code
ISO	International Standards Organization

1.4 Merchant Category Code

Can see Merchant category on [IOS 18245] as this Link

1.5 Transaction Currency

Currency code have 3 character as [IOS 4217]

Currency code	Currency
418	LAK
480	USD
764	THB
156	CNY

1.6 Presence of Data Objects

- M: Mandatory
- C: Conditional
- O: Optional
- N: Numeric
- A: Alphanumeric Special
- H: HEX

2. Data in QR Code

Table below are EMVco for BCEL Onepay explanation field

2.1. Main QR Code Format

Field ID	Field Name	Format	Length	Presence	Example	Comment
00	Payload Format Indicator	N	02	M	01	
01	Point of Initiation Method	N	02	O	11	11 Static QR, 12: dynamic QR
33	Allocation of Merchant Account Information	A	Var. up to 99	M		Field 33
52	Merchant Category Code	N	04	M	5812	5812 = Eating Places, Restaurants
53	Transaction Currency	N	03	M	418	Depend on IOS 4217 LAK code is 418
54	Transaction Amount	N	Var. up to 13	C	250000	Amount to pay
58	Country Code	A	02	M	LA	Country with 2 char
60	Merchant City	A	Var. upto 15	M	VT	Display merchant district
62	Data Objects for Additional Data Field Template	A	Var. up to 99	O		Field 62
63	Cyclic Redundancy Check	H	04	M		checksum data generate using CRC16 ပေးထဝဂ CRC-CCITT (0xFFFF)

2.1 Sub Field 33

Field ID	Field Name	Format	Length	presence	Example
00	IIN	A	04	M	BCEL
01	APPLICATION ID	A	Var. up to 8	M	ONEPAY
02	MERCHANT ID	A	Var. up to 16	M	mch5949fa044ed9d

2.2 Sub Field 62

Field ID	Field Name	Format	Length	presence	Example
01	Bill Number	A	Var. up to 25	O	1234567890
02	Mobile number	A	Var. up to 25	O	7XXXXXXX
03	Store Label	A	Var. up to 25	O	SYHOME
04	Loyalty number	A	Var. up to 25	O	
05	Reference Label	A	Var. up to 25	O	REF123456789
06	Customer Label	A	Var. up to 25	O	
07	Terminal Label	A	Var. up to 25	O	TM123456
08	Purpose of Transaction	A	Var. up to 25	O	Goods payment

3. Create QR Code

To create QR code in own system are collect data each field and build to EMVco message and then user message to generate QR code

3.1 Message format

EMVco message have many block, in one block have Field ID + Data length + Data / maximum data are 99 charactor

eg. Field id 58 are Country code field, Data Lao PRD code is “LA”, “LA” length are 2 character and Filed ID = “58”, then Filed message will be “5802LA”

3.2 Create message

#	Field ID	Field name	Len	Data to put
1	00	Payload Format Indicator	02	01
2	01	Point of Initiation Method	02	11
3	33	Comcast (3.0 + 3.1 + 3.2)	38	0004BCEL0106ONEPAY0216mch5949fa044ed9d
3.0	00	INN	04	BCEL
3.1	01	APPID	06	ONEPAY
3.2	02	Merchant ID	16	mch5949fa044ed9d
4	52	Merchant Category Code	04	5732
5	53	Transaction Currency	03	418
6	58	Country Code	02	LA
7	60	Merchant City	03	VTE
8	63	Checksum	04	8C5F

Use data in table to Comcast

#	Field ID	Data
1	00	000101
2	01	010211
3	33	33380004BCEL0106ONEPAY0216mch5949fa044ed9d
4	52	52045732
5	53	5303418
6	58	5802LA
7	60	6003VTE
8	63	63048C5F

After Comcast all message we will get EMVco message for generate QR code in next step as below:

00020101021133380004BCEL0106ONEPAY0216mch5949fa044ed9d5204573253034185802LA6003VTE63048C5F

Then you can use message to generator QR code using library to generate.

3.3 Source PHP for generate massage QR code

```php
<?php

// Bank provide these data
$mcid = "mch5949fa044ed9d";
$mcc = "5732";
$ccy = 418;
$country = "LA";
$province = "VTE";

// You set these data
$amount = 540000;
$invoiceid = "123";
$transactionid = "1234567890";
$terminalid = null;
$description = "Orange Juice";
```

```php
$rawqr = buildqr([
    00 => "01",
    01 => "11",
    33 => buildqr([
        00 => "BCEL",
        01 => "ONEPAY",
        02 => $mcid
    ]),
    52 => $mcc,
    53 => $ccy,
    54 => $amount,
    58 => $country,
    60 => $province,
    62 => buildqr([
        01 => $invoiceid,
        05 => $transactionid,
        07 => $terminalid,
        08 => $description
    ])
]);

$fullqr = $rawqr . buildqr([63 => crc16($rawqr . "6304")]); // Adding itself into checksum

echo $fullqr;



function buildqr($arr){
    $res = "";
    foreach ($arr as $key => $val){
        if (!$val) continue;
        $res .= str_pad($key, 2, "0", STR_PAD_LEFT) .
            str_pad(strlen($val), 2, "0", STR_PAD_LEFT) .
            $val;
    }
    return $res;
}

function crc16($sStr, $aParams = array()){
    $aDefaults = array(
        "polynome" => 0x1021,
        "init" => 0xFFFF,
        "xor_out" => 0,
    );
    foreach ($aDefaults as $key => $val){
        if (!isset($aParams[$key])){
            $aParams[$key] = $val;
        }
    }
    $sStr .= "";
    $crc = $aParams['init'];
    $len = strlen($sStr);
    $i = 0;
    while ($len--){
        $crc ^= ord($sStr[$i++]) << 8;
        $crc &= 0xffff;
        for ($j = 0; $j < 8; $j++){
            $crc = ($crc & 0x8000) ? ($crc << 1) ^ $aParams['polynome'] :
                $crc << 1;
            $crc &= 0xffff;
        }
    }
```

```
    $crc ^= $aParams['xor_out'];
    return str_pad(strtoupper(dechex($crc)),4, "0", STR_PAD_LEFT);
}
```