Central Bank of Azerbaijan Republic

QR Code

Merchant - Presented Mode

2019

Document history

VERSION	DATE	AUTHOR	LOCATION	CHANGES
1.0	25-10-2018	CBAR		The initial version
1.1-1.5	28-01-2019	CBAR		Internal review

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1. Introduction

1.1 About

This document contains the requirements for creating QR Code by the Merchant, format and data objects included in the information.

QR Code should be created on the basis of ISO18004 standard.

QR Code created by the Merchant on the basis of this standard should be demonstrated via mobile devices, cash registers, notifications on e-commerce or receipts and must be used for the creation of payment transaction by been reading through the Consumer mobile app.

1.2 References

During the preparation of the standard for QR Code, the following sources have been used.

- ISO 18004 – Information technology—Automatic identification and data capture techniques - QR Code, bar code specification
- EMV® QR Code Specification for Payment Systems – (EMV QRCPS) Merchant-Presented Mode
- ISO/IEC 13239 Information technologies – Telecommunications and information exchange between systems – High –level data link control (HDLC) procedures)
- ISO 3166 –1 alpha-2 –Codes for the representation of names of countries and their subdivisions— Part 2: Country subdivision code
- ISO 4217 – Codes for the representation of currencies and funds
- ISO 18245 – Retail financial services - Merchant category codes
- RFC 4122 – A Universally Unique Identifier (UUID) URN Namespace https://tools.ietf.org/html/rfc4122

1.3 Abbreviations

The following abbreviations are used in the specification:

Table 1.: Abbreviations

CRC	Cyclic Redundancy Check
CPC	Card Processing Center
ID	Identifier of the data object

ISO	International Standards Organization
PSP	Payment Service Provider
RFU	Reserve for future use
QR Code	Quick Response Code
UUID	Universally unique identifier
TIN	Taxpayer Identification Number

1.4 Presence Status of Data objects included in the information by standard

Presence status of Data objects included in the information by standard may get the following values:

- M: Mandatory - shall always be present
- C: Conditional - shall be present under certain conditions
- O: Optional - may be present

1.5 Formats for Data objects included in the information

Every symbol used in the formed QR Code's requisites must be compatible with UTF-8 [Unicode] standard.
The prices to be obtained by Data objects in QR Code created in accordance with standard should belong to one of the following sets of characters:

Character set	Code for character set
a b c d e f g h i j k l m n o p q r s t u v w x y z A B C D E F G H I J K L M N O P Q R S T U V W X Y Z ç ə ğ ı ö ş ü Ç Ə Ğ I Ö Ş Ü 0 1 2 3 4 5 6 7 8 9 / - ? : ( ) . , ' + Cr Lf Space	X
a b c d e f g h i j k l m n o p q r s t u v w x y z A B C D E F G H I J K L M N O P Q R S T U V W X Y Z 0 1 2 3 4 5 6 7 8 9 / - ? : ( ) . , ' + = ; ! " % & * < > Space	Y

In order to indicate the characters to be used at the formats of Data objects in the QR Code, the following conventional signs will be used:

Conventional sign	Description
a	Arbitrary capital letter included in Y character set
b	Arbitrary capital letter and "-" sign included in Y character set
c	Arbitrary capital letter and figure included in Y character set
d	Arbitrary figure and decimal sign "," included in Y character set. It expresses complete and fractional numbers by being full part before decimal sign, then fractional part.
e	Arbitrary small letter included in Y character set
f	Arbitrary capital, small letter and figure included in Y character set
n	Arbitrary figure included in Y character set
x	Arbitrary characterincluded in X character set
[ ]	It is not mandatory to fill the unit compatible with the format inside the bracket.
!	It is mandatory to fill the symbols at the specified number in the part which it belongs.

2. Data objects included in the information for QR Code

2.1 Structure of Data objects in the QR Code

Data objects contained within QR Code are organized in a tree-shaped structure, under the root (See: **Figure 1**). A Data object may be a primitive data object or a template. A template may include other primitive data objects or templates.

Figure 1.: Tree-shaped structure of Data objects in the QR Code

```
┌─────────────────┐
│ Root            │
└─────────────────┘
         │
         │        ┌──────────────────────────┐
         ├───────►│ Primitive data object    │
         │        └──────────────────────────┘
         │        ┌──────────────────────────┐
         └───────►│ Template                 │
                  └──────────────────────────┘
                          │
                          │      ┌──────────────────────────┐
                          ├─────►│ Primitive data object    │
                          │      └──────────────────────────┘
                          │      ┌──────────────────────────┐
                          └─────►│ Template                 │
                                 └──────────────────────────┘
```
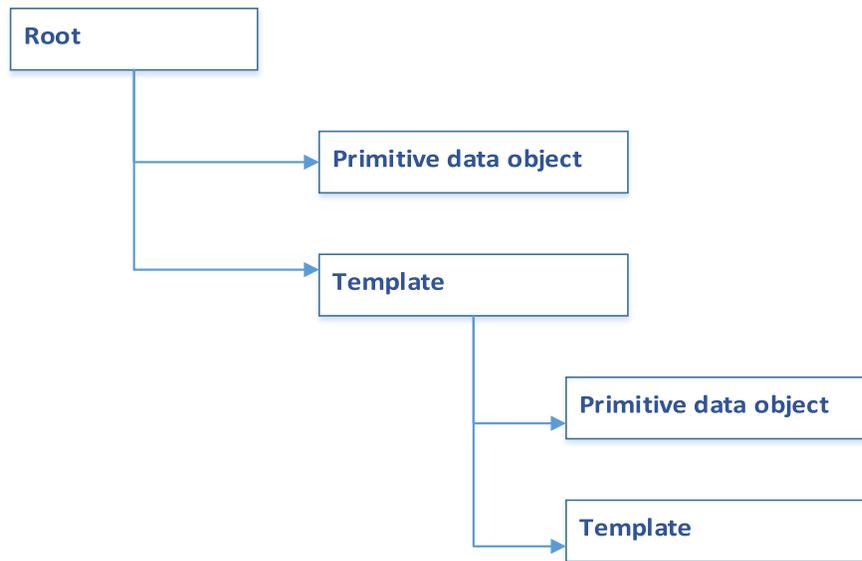
When describing the requisites of Data objects, **Structural indicator** is used. **Structural indicator** can get the following prices:

- RP: Primitive data object under the Root
- RT: Template under the Root
- TP: Primitive data object under the Template
- TT: Template under the Template

The information contained within QR Code is organized as a sequence of fields. Each Data object is made up of three individual fields. The first field is an identifier (ID) by which the data object can be referenced. The next field is a length field that explicitly indicates the number of characters included in the third field: the value field. A data object is then represented as an ID / Length / Value combination, where:

- **The ID** is encoded as two-digit numeric value, with a value ranging from "00" to "99";
- **The Length** is encoded as a two-digit numeric value, with a value ranging from "01" to "99";
- **The Value Field** may vary from 1 to 99 characters.

A data object that is not encapsulated within a template is said to be under the root of the QR Code.
The value of an ID is not unique and the data object to which it refers is context specific. If the ID is not under the root, the context of an ID is defined by the encapsulating template.
The value of some Data objects on QR Code may be submitted in the form "***" (consisting of symbol for 3 asterisks) by the Merchant. The presence of "***" indicates that the mobile application of the Consumer that scans QR code, is responsible for

obtaining the necessary information, in the case of this information doesn't presented by Merchant. When consumer is required to include the information, included value should be adjusted according to the format defined on the same Data object.

Individual account information of the Merchant doesn't participate within QR Code. These requisites should be requested from the Central database via identification number (Merchant ID, Object code, etc.) which determined the Merchant in the system.

2.2 Data objects included in the Merchant - presented QR Code

2.2.1 Data objects under the Root of Merchant - presented QR Code

Name, identifier (ID), format, status, structural indicator and general description of the Data objects under the Root of QR Code information structure are given in the following table (See: **Table 2.)**.

Table 2. Data objects under the Root of Merchant – presented QR Code

Name	ID	Format	Status	Structural indicator	Description
Standard version	"00"	3!a2!n	M	RP	It defines the standart version for QR Code. **Note: "MPV01"** has been identified as the initial version of the standard for QR Code Merchant - presented mode **MPV** – Merchant - Presented Version, **01**- It characterizes the initial version.
UUID	"01"	32x	M	RP	Identification code of payment system created on the basis of RFC 4122 standard in the environment where QR Code is applied. **Note:** [UUID] value must be accepted without (-) hyphen separators.

QR Code type	"02"	2!n	M	RP	It determines that QR Code is dynamic or static:
					    11 – Static QR Code
					    12 – Dynamic QR Code

Device ID	"03"	35x	O	RP	User device identifier **Note**: Ths object could be used for identification merchant's mobile application
Merchant general information	"04"	99x	M	RT	Template for the general information of Merchant See: **Table 3**.
Merchant information on card infrastructure	"05"	99x	C	RT	Template for the Merchant information on card infrastructure See: **Table 4**. **Note**: This template will take part, if operation is conducted through card infrastructure.
Merchant information on cash register infrastructure or on electronic commerce	"06"	99x	C	RT	Template for the Merchant information on cash register infrastructure or on electronic commerce See: **Table 5**. **Note**: This template will take part, if operation is conducted through cash register infrastructure or electronic commerce gateway.
The source that returns the payment status to the Merchant	"07"	11c	M	RP	Unique internal identification number given in the payment system infrastructure: 1. Card processing center 2. Relevant component of payment system infrastructure 3. Operator of online cash register system
Transaction amount information	"08"	99x	M	RT	Template for information on transaction amount See: **Table 6.**
Country code	"09"	6f	M	RP	Country code according to the standard of ISO 3166 -1 alpha 2. Part 2

Reference number	"10"	16!n	C	RP	Unique reference number of QR Code. **Note**: It must be included in dynamically generated QR Code by the Merchant.
Payment destination	"11"	99x	C	RT	Template for the destination of the payment See: **Table 7.** **Note:** It must be included in case of treasury payments.
Additional Information	"12"	99x	O	RT	Template for the additional information It is template for information that can be provided in addition to the above mentioned Data objects. See: **Table 8.**
Reserve for future use (RFU)	"13" - "98"	-	O	-	The areas that can be used in the next versions of the standard
Cyclic Redundancy Check (CRC)	"99"	4!c	M	RP	The checksum shall be calculated according to [ISO/IEC 13239] using the polynomial '1021' (hex) and initial value 'FFFF' (hex). The data over which the checksum is calculated shall cover all data objects, including their ID, Length and Value, to be included in the QR Code, in their respective order, as well as the ID and Length of the CRC itself (but excluding its Value).

2.2.2 Templates for the Merchant information

2.2.2.1 Merchant general information template (ID "04")

Name, identifier (ID), format, status, structural indicator and general description of the Data objects under this template of QR Code information structure are given in the following tables (See: **Table 3.)**.

Table 3.: Merchant general information template (ID "04")

Name	ID	Format	Status	Structural indicator	Description
Name	"00"	35x	M	TP	Name of the Merchant
TIN	"01"	10!n	O	TP	TIN of the Merchant
E-mail address	"02"	25x	O	TP	E-mail address of the Merchant
Mobil number	"03"	13!x	O	TP	Mobil number of the Merchant
Reserve for future use (RFU)	"04"-"99"	-	O	-	The areas that can be used in the next versions of the standard.

2.2.2.2 Merchant information on card infrastructure template (ID "05")

Name, identifier (ID), format, status, structural indicator and general description of the Data objects under this template of QR Code information structure are given in the following tables (See: **Table 4.)**.

Table 4.: Merchant information on card infrastructure template (ID "05")

Name	ID	Format	Status	Structural indicator	Description
Merchant category code (MCC)	"00"	4!n	M	TP	According to the standard ISO 18245
Merchant ID	"01"	35x	M	TP	Unique identification code given to the Merchant by

Name	ID	Format	Status	Structural indicator	Description
					Acquirer Bank on card infrastructure. **Note**: It is appealed to the Central database with the value of this field for retrieving individual account information of the Merchant.
Terminal ID	"02"	16x	M	TP	Unique identification code given to POS terminal and cash machines (ATMs) within card infrastructure.
Reserve for future use (RFU)	"03" - "99"	-	O	-	The areas that can be used in the next versions of the standard.

2.2.2.3 Merchant information on cash register infrastructure or on electronic commerce gateway template (ID "06")

Name, identifier (ID), format, status, structural indicator and general description of the Data objects under this template of QR Code information structure are given in the following tables (See: **Table 5.)**

Table 5.: Merchant information on cash register infrastructure or on electronic commerce gateway template (ID "06")

Name	ID	Format	Status	Structural indicator	Description

Object code	"00"	16x	M	TP	Object code for the branch of Merchant issued by tax authorities/ Identification code for the internet resource of Merchant for electronic commerce given by the relevant payment system infrastructure **Note**: It is appealed to the Central database with the value of this field for receiving individual account information of the Merchant.
Cash register ID	"01"	16x	C	TP	Identification number of cash registers installed in the Merchant side **Note**: This field must take part, if operation is conducted through cash register infrastructure.
Cashier ID / Internet resource ID for electronic commerce	"02"	15!n	C	TP	Identification number of cash registers installed in the Merchant side/ Identifier for internet resource of Merchant for electronic commerce **Note**: This field must take part, if operation is conducted through mobile application of merchant or through internet resource of merchant for electronic commerce.
Reserve for future use(RFU)	"03" - "99"	-	O	-	The areas that can be used in the next versions of the standard.

2.2.3 Transaction amount information template (ID "08")

Name, identifier (ID), format, status, structural indicator and general description of the Data objects under this template of QR Code information are given in the following table (See: **Table 6.**).

Table 6.: Transaction amount information template (ID "08")

Name	ID	Format	Status	Structural indicator	Description
Currency code	"00"	3!a	M	TP	The code of transaction currency defined in ISO 4217. AZN is used for the national currency of Azerbaijan.
Amount editing indicator	"01"	2!n	M	TP	Indicator for editing the amount: **11-** The Consumer is allowed to change the amount **12-** Consumer is not allowed to change the amount
Amount	"02"	15d	M	TP	Amount must be different from "0". It should consist of only figures (by being from "0" to "9") and the sign of **","** for separating the integer part and fractional part. **","** can also be used for full amounts. **Note**: If the value of data object **ID "01"** is **"11", "***"** content is supported on this area.
Order number	"03"	2!n	O	TP	The inclusion of the order number through client application is designed for the Static QR code formed by including the standard amount of transaction. **Note**: **"***"** content is supported on this object.

Name	ID	Format	Status	Structural indicator	Description
Tip or Convenience Indicator	"04"	2!n	O	TP	It determines the type of additional service fee applied by the merchant: **"01":** The Consumer should be prompted to enter the Tip . **"02":** The merchant would mandatorily charge a flat convenience fee **"03":** The merchant would charge a percentage convenience fee
Value of Convenience Fee Fixed	"05"	13d	C	TP	Value of Convenience Fee Fixed must be present if the data object **ID "04"** is present with a value of **"02"**.
Value of Convenience Fee Percentage	"06"	5d	C	TP	Value of Convenience Fee Percentage must be present if the data object **ID "04"** is present with a value of **"03"**.
Reserve for future use (RFU)	"07" - "99"	-	O	-	The areas that can be used in the next versions of the standard.

2.2.4 Payment destination template (ID "11")

Name, identifier (ID), format, presence status, structural indicator and general description of the Data objects under this templates of QR Code information are given in the following table (See: **Table 7.**).

Table 7.: Payment destination template (ID "11")

Name	ID	Format	Status	Structural indicator	Description
Invoice number	"00"	35x	O	TP	Invoice number of document for the payer's obligation to the governmental organization

Name	ID	Format	Status	Structural indicator	Description
					Note: "***" content is supported for this object.
Payment description	"01"	35x	O	TP	Purpose of payment **Note**: "***" content is supported for this object.
Budget level code	"02"	2c	C	TP	Code of budget level **Note**: This data object will take part only in case of treasury payments.
Budget classification code	"03"	6!n	C	TP	Code of budget classification **Note**: This data object will take part only in case of treasury payments
Reserve for future use (RFU)	"04" - "99"	-	O	-	The areas that can be used in the next versions of the standard.

2.2.5 Additional Information template (ID "12")

Name, identifier (ID), format, presence status, structural indicator and general description of the Data objects under this templates of QR Code information are given in the following table (See: **Table 8.**).

Table 8.: Additional Information template (ID "12")

Name	ID	Format	Status	Structural indicator	Description
Loyalty category	"00"	13n	O	TP	Unique loyalty number that differentiates the group of consumers for applying different bonus programs on loyalty. **Note**: "***" content is supported for this object.
Customer number	"01"	13x	O	TP	Specific identification number that identifies the customer (Student registration number,

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					social insurance number, etc.) **Note**: "***" content is supported for this object.
Subscriber number	"02"	24x	O	RP	Identification code given to the payer in a mass service organization (subscriber code, phone number etc.). **Note**: "***" content is supported for this area.
TIN of state body	"03"	10!n	C	TP	TIN of the body that holds the state duty **Note**: This data object will take part in case of treasury payments .
Reserve for future use (RFU)	"04" - "99"	-	O	-	The areas that can be used in the next versions of the standard.

3. Example

3.1 QR Code on Merchant - presented mode

Name of the data object		Value	Description
Standard version		0005MPV01	Version "MPV01"
UUID		01328779c7cfceb149b89546c4f3faea3721	"8779c7cfceb149b89546c4f3faea3721" – QR code generated on Instant Payments system
QR Code type		020212	"12"- Dynamic QR Code
Merchant general information		0361	
	Merchant Name	0007ZƏFƏRAN	Name of the Merchant- "ZƏFƏRAN"
	Merchant TIN	01101234567891	TIN of the merchant "1234567891"
	Merchant e-mail adress	0215info@zeferan.az	E-mail address of the Merchant "info@zeferan.az"
	Merchant mobile number	0313+994555667070	Mobile number of the Merchant "+994555667070"
Merchant information on card infrastructure		0531	
	Merchant category code (MCC)	00045122	Merchant category code "5122" – Drugs, Drug Proprietaries, and Druggist Sundries
	Merchant ID	01071129938	Merchant ID "1129938"
	Terminal ID	0208POS12993	Terminal ID "POS12993"
The source that returns the payment status to Merchant		0709ACPCAZ23XXX	Identifier of card processing center that returns the payment status to the Merchant ACPCAZ23XXX

Transaction amount information	0837	
Currency code	0003AZN	Transaction currency "AZN" – Azerbaijani Manat
Amount editing indicator	010212	"12" - Consumer is not allowed to change the amount.
Amount	020513,05	Amount of transaction – "13,05"
Tip or Convenience Indicator	040202	"02" – Merchant charges a flat convenience fee
Value of Convenience Fee Fixed	050501,03	Value of Convenience Fee "01,03"
Country code	0905AZ-BA	"AZ-BA" – Azerbaijan, Baku
Reference number	10120009871113458787	0009871113458787
Payment destination	1107	
Payment description	0103***	"***" – It must be filled by consumer on mobile application
Additional Information	1207	
Loyalty category	0003***	"***" – It must be filled by consumer on mobile application.
Cyclic Redundancy Check (CRC)	9904C707	CRC "C707"

0005MPV0101328779c7cfceb149b89546c4f3faea37
2102021203610007ZƏFƏRAN011012345678910215i
nfo@zeferan.az0313+9945556670700531000451220
10711299380208POS129930709ACPCAZ23XXX083
70003AZN010212020513,05040202050501,030905
AZ-
BA1012000987111345878711070103***12070003*
**9904C707