IHMCL/QR-Code/2023/E-231734                                    Date: 19.12.2023

### CIRCULAR: DESIGN AND DRAWING OF FASTAG WITH QR-Code

Sub:   Design and Drawing of FASTag with QR-Code for easy recharge -Reg.

To enhance the convenience of recharging the FASTag wallet for users on highways, a QR-code feature to be introduced on the non-adhesive side of the FASTag RFID TAG.

2.      Please refer to the enclosed document for the revised design and drawing, which illustrates the placement of the QR-Code on the front non-adhesive side of the FASTag.

3.      It is requested to implement the above-mentioned points accordingly.

Yours Sincerely,

(Vivek Jaiswal)
**Chief Operating Officer**

Encl: As above

To,
**All The Issuer Member Banks and NPCI**

Copy to:

1. **PPS to Chairman, NHAI**
2. **PPS to CMD, IHMCL**
3. **Website Administrator – For posting on the IHMCL website.**

# NETC FASTag:

# Tag and Marks Specifications

# Version -1.2

# Table of Contents

## A    Objective of the document

The objective of this document is to provide the guidelines and specifications for issuing FASTag. It provides details related to the tag placement, tag dimension and tag variants. The details provided in this document can be used by the tag issuers and the tag vendors / tag manufacturers for the manufacturing of FASTag.

## B    References and Publications

MoRTH Guidelines

Security Guidelines for NETC from NPCI

## C    Document History

| Version | Release Date | Author | Reviewed By | Approved By | Revision History |
|---------|-------------|--------|-------------|-------------|------------------|
| 1.0 | 05-07-2016 | Product Team | Product Team | Product Team | First Version |
| 1.1 | 28-07-2016 | Product Team | Product Team | Product Team | Change in tag dimension |
| 1.2 | TBD | Product Team | Product Team | Product Team | Change in design with QR Code inclusion |

# 1 Brand Mark

FASTag offers the convenience of cashless payment of toll fare while the vehicle is in motion through the National Electronic Toll Collection (NETC) System.

The FASTag brand mark must be placed on the tag as mentioned below:

1) The "FASTag: Easy to Cruise" brand mark must appear on FASTag label with Issuing Bank, NHAI, IHMCL and NPCI logo and a barcoded tag ID as specified in the below image.
2) FASTag brand mark must be placed at the center top position of the label on a standardized white background.
3) Do not alter/add/modify or scale the artwork of FASTag label.
4) FASTag label dimensions are 100 mm x 50 mm [width x height].
5) **No additional slip/artwork/branding is allowed on or nearby the FASTag. FASTag shall be standalone while being affixed on vehicle.**
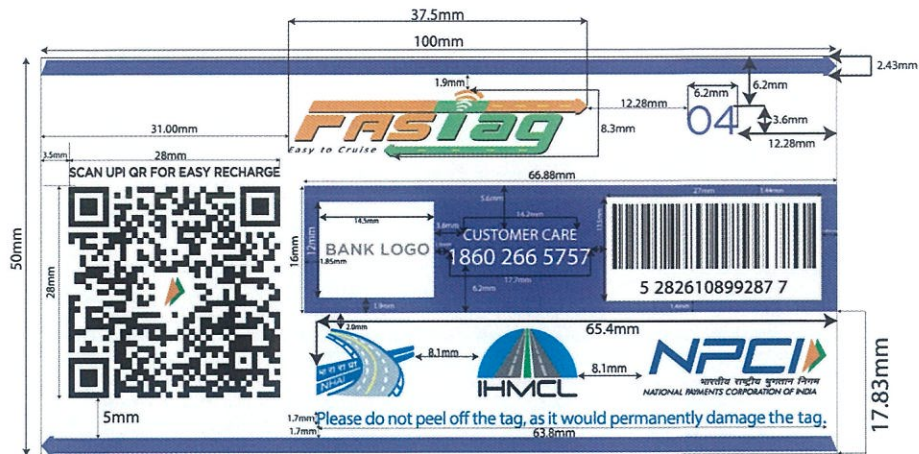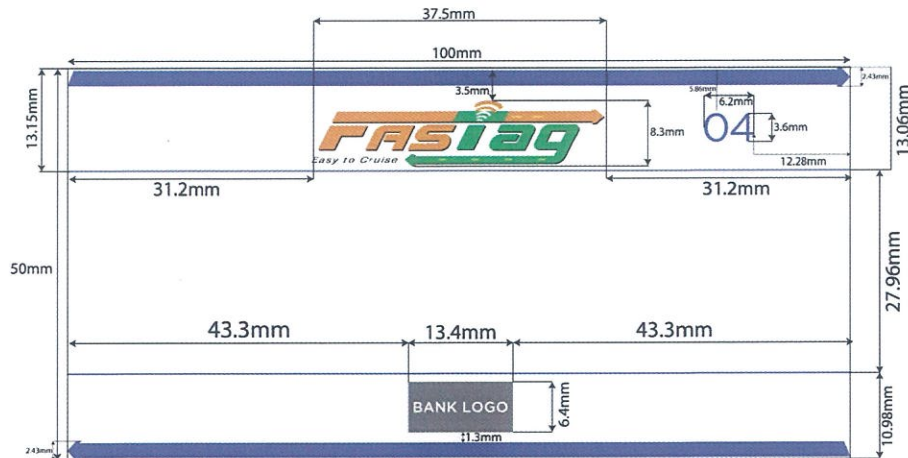
Front – Non Adhesive Side
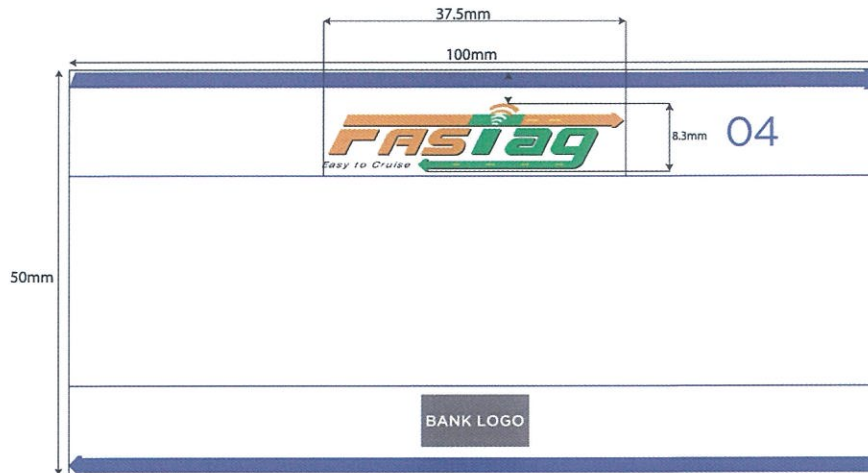
Back – Adhesive Side



## 2 Tag Artwork

### 2.1 Front and Back Artwork

Front – Non Adhesive Side
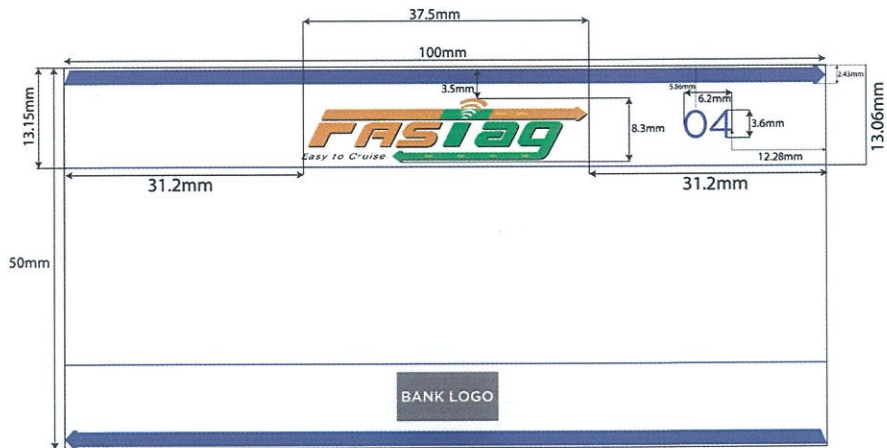
Back – Adhesive Side



- ❖ The label design broadly consists of three parts:
  - The upper partition consists of white background with FASTag logo and vehicle class number.
  - Center partition consists of QR code, banner consisting of tag issuer's logo and barcode on front side of the Tag while back side is kept empty.
  - The lower partition consists of the logos of NHAI, IHMCL, and NPCI at front side while back side has logo of Issuer Bank.
- ❖ Two arrows in opposite direction must be placed at the top and bottom of the label. The arrow at the top must direct from left to right while the arrow at the bottom must direct from right to left.
- ❖ The center background banner and arrow at the upper and lower portion of the tag are of the same color. The color denotes the tag variant.

## 2.2 Upper Artwork

Front – Non Adhesive Side



Back – Adhesive Side



❖ Following are the details of upper partition of label:

- On the front non-adhesive side, FASTag logo is of size 37.5 mm x 8.3 mm [Width x Height] and is placed at 1.9 mm from lower edge of the arrow on top and 31 mm from left edge of label. The "FASTag: Easy to Cruise" logo image will be provided separately.

- Tag vehicle class identifier number is 6.2 mm X 3.6 mm [Width x Height], placed at the distance of 6.2 mm from top edge of the label and 12.28 mm from right edge of the label.

- On the back adhesive side FASTag logo is of size 37.5 mm x 8.3 mm [Width x Height] and is placed at 3.5 mm from top edge of label and 31.2 mm from right edge of label.

## 2.3 Center Artwork

### Front – Non Adhesive Side



100mm

16.17mm

17.83mm

50mm

FASTag
Easy to Cruise

04

SCAN UPI QR FOR EASY RECHARGE

BANK LOGO

CUSTOMER CARE
1860 266 5757

5 282610899287 7

NPCI
NATIONAL PAYMENTS CORPORATION OF INDIA
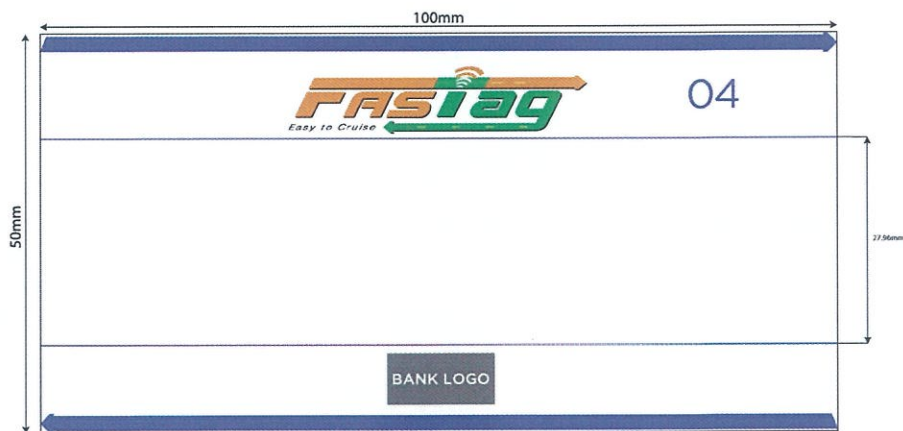
Please do not peel off the tag, as it would permanently damage the tag.
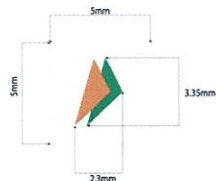
Font Type:-
CUSTOMER CARE → Gotham Medium (Regular)-2mm

18602665757 → Gotham Medium (Regular)-3mm

'SCAN UPI QR FOR EASY RECHARGE' → Gotham Medium (Regular) – 1.7 mm

### Back – Adhesive Side



100mm

50mm

FASTag
Easy to Cruise

04

27.96mm

BANK LOGO

❖ Following are the details of Center Partition:

- On the front non adhesive side, the vehicle class color coded banner on the center partition is placed at 17.83 mm from the bottom edge of the label, 16.17 mm from the top edge of the label and has dimensions of 66.88 mm x 16 mm [width x height]. Objects like tag issuer's logo, barcode and customer care number are placed inside this banner.

- On the front non adhesive side, the QR Code has dimensions of 28 mm x 28 mm [width x height] and is placed at 3.5 mm from the left edge of the label, and 5 mm from top edge of the bottom arrow. The NPCI Fast Forward logo has dimensions of 2.3 mm x 3.5 mm [width x height] is placed inside a white box of dimensions 5 mm x 5 mm [width x height], placed at the center of the QR Code (Centrally Aligned).

- On the front non adhesive side, tag issuer's logo is placed within the white block at the distance of 1.85 mm from left edge of the banner and 1.9 mm from bottom of the banner. The issuer bank logo must reside within the perimeter of white block of 14.5 mm x 12 mm [width x height].

- On the front non adhesive side, Tag ID encoded barcode must reside within the white block of perimeter 27 mm x 13.5 mm [width x height], placed at 1.85 mm from right edge of the label, 1.4 mm from bottom edge of the banner and 1.44 mm from the top edge of the banner. Please **refer to section 3 for barcode specification**.

- The customer care number of tag issuer should be written in the center in white color ink, between the tag issuer logo and barcode.

- On the back adhesive side, the antenna should be placed in the white center block highlighted above with dimension of 100 mm x 27.96 mm [width x height].
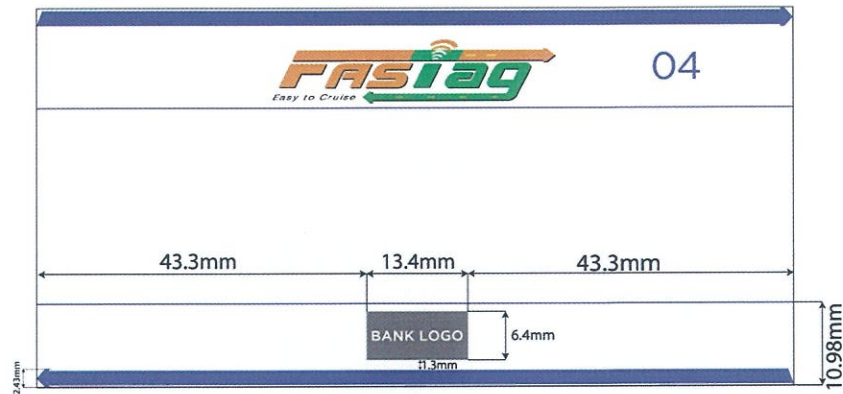
## 2.4    Lower Artwork

Front – Non Adhesive Side





Back – Adhesive Side



❖ Following are the details of lower partition of the tag:

  ▪ Front non adhesive side of label contain NHAI logo, with dimensions of 12.3mm x 8.5mm [width x height] and is placed at 65.4 mm from right edge of the label & 5 mm from top edge of the bottom arrow (in line with the bottom edge of QR Code); IHMCL logo is at the center with dimensions of 12.5 x 8.5 mm [width x height], placed at a distance of 8.1 mm from the right edge of NHAI logo, and NPCI logo with dimensions of 22.9 mm x 7 mm [width x height] is placed at 8.1 mm from the right edge of IHMCL logo.

All three logos are placed at 5 mm from the top edge of the bottom arrow (in line with the bottom edge of QR Code).

- The back adhesive side of the tag contains the logo of Tag issuer. The dimensions of logo are to be placed in the perimeter of 13.4 mm x 6.4 mm [width x height], and at 1.3 mm from the top edge of bottom arrow and 43.3 mm from the right edge of the label.

## 3  Barcode Specification

Barcode printed on the FASTag label should be encoded using Code-128 specification. Code 128 is a very effective, high-density symbology which permits the encoding of alphanumeric data. The symbology includes a checksum digit for verification, and the bar code may also be verified character-by-character verifying the parity of each data byte. The barcode's length and height should also follow the Code 128 sizing specifications and the entire barcode along with the defined text should be enclosed within the perimeter of 27 mm x 13.5 mm, placed at 1.85 mm from right edge of the label, 1.4 mm from bottom of the banner and 1.44 mm from the top edge of the banner.

Major sections of code 128.

1. Quiet zone

2. Start/stop character.

3. Encoded data

4. Check character.
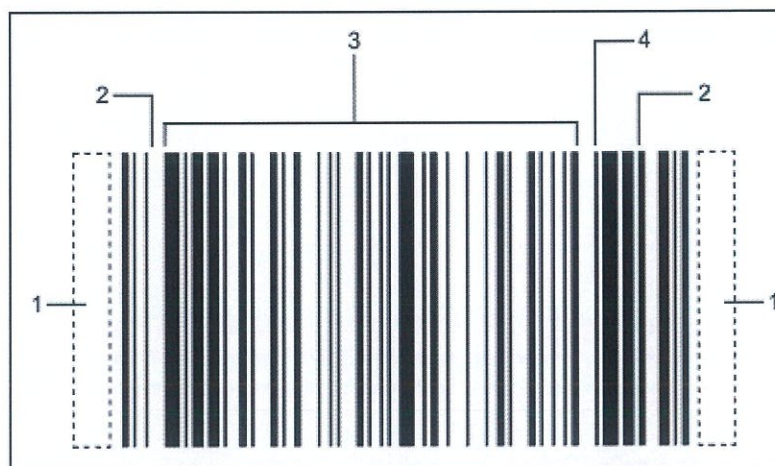
The check character is calculated from a weighted sum (modulo 103) of all the characters. Each tag shall have a unique barcode and the encoded data shall contain the following elements of EPC ID

1. Issuer Identification Number [IIN] in decimal
2. Key Index [KI] in decimal
3. EPC ID's serial number in decimal
4. '-' as field seperator as alphanumeric charater

Each field defined above in point 1,2 & 3 above needs to be seprated by a seperator '-' [ASCII code 0x2D]. The encoded data also needs to written below the printed barcode. An sample barcode is illustrated below:



123456-001-0000001

**IIN ⇔1234356, Key Index ⇔ 1, Serial Number ⇔ 1**

# 4   General Specification for FASTag

## 4.1   FASTag Placement

FASTag shall be installed at a fixed location inside the windshield of the vehicle. The location of the tag shall be to center of the windshield just behind the rear-view mirror. As per the Gazette Notification no. H-25011/04/2010-P&P (Toll) Vo.VI, dated 07.11.2017 and IHMCL policy

## 4.2   Tag physical characteristics

Ministry of Road Transport and Highway (MoRTH) guidelines to be followed to ensure the physical aspects of the tag.

- Quality of the label
- Print quality & Color fastness
- Adhesive quality

## 4.3  Tag variant

The Tag variance is as per the vehicle classes defined for NETC gudeilines. Different color codes repesent their respective vehicle class.

The color codes are defined as below:

| Tag Vehicle Class | Description | Color (Pantone) |
|---|---|---|
| 4 | Car / Jeep / Van/ Tata Ace and similar mini light commercial vehicle | 7671C |
| 5 | Light Commercial Vehicle | 7577C |
| 6 | Three Axle Commercial Vehicles | 102C |
| 7 | Bus/Truck | 7740C |
| 12 | 4 to 6 axles | 219C |
| 15 | 7 or More Axle | 7688C |
| 16 | Heavy Construction Machinery (HCM)/Earth Moving Equipment (EME) | 19-4220 TPX |

Vehicle class with colour codes



| C:0 M:0 Y:100 K:0 | C:0 M:60 Y:80 K:0 | C:70 M:18 Y:0 K:0 | C:77 M:22 Y:96 K:0 | C:75 M:77 Y:0 K:0 | C:10 M:95 Y:0 K:0 | C:25 M:9 Y:0 K:64 |
|---|---|---|---|---|---|---|
| Pantone: 102C | Pantone: 7577C | Pantone: 7688C | Pantone: 7740C | Pantone: 7671C | Pantone: 219C | Pantone: 19-4220 TPX |

## 5 Quick Reference Tag Diagram

**Front – Non Adhesive Side**
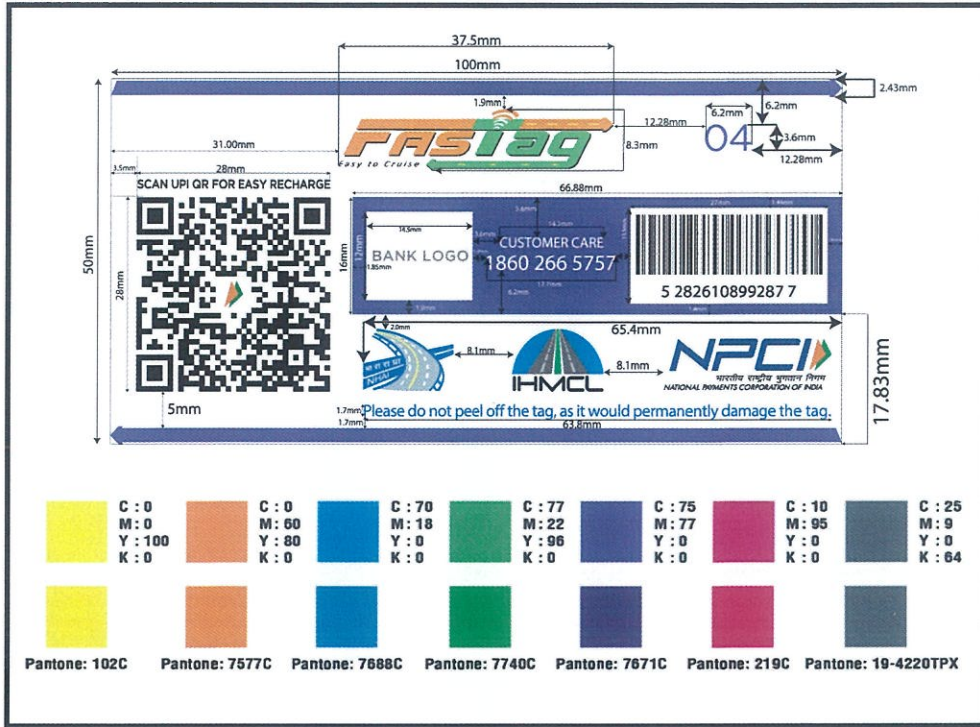


**Back – Adhesive Side**
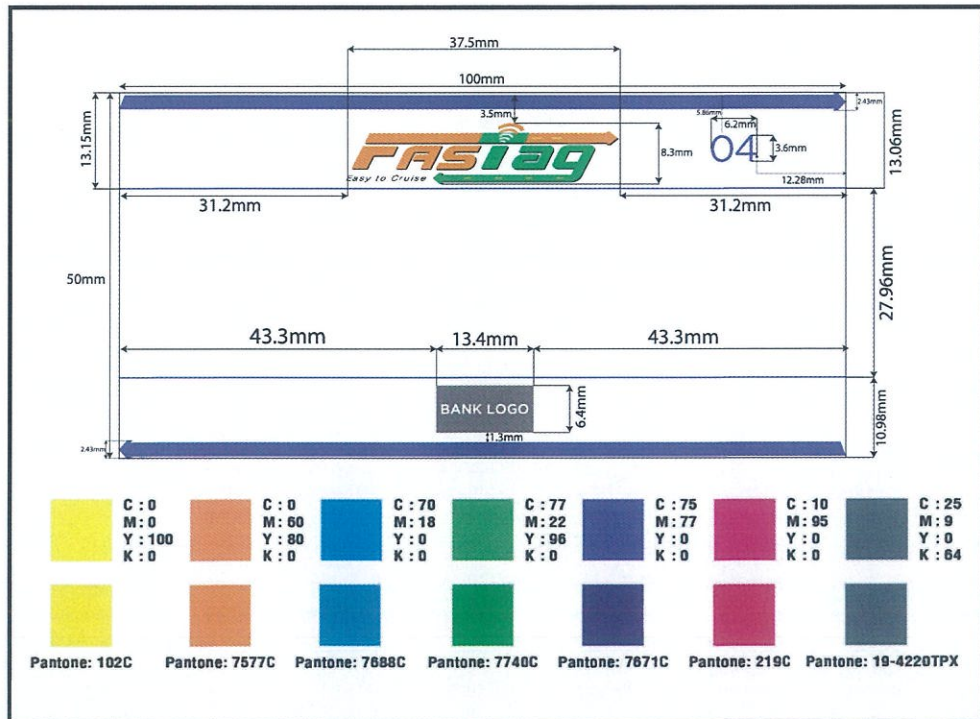
# Draft Approach Document NETC FASTag linked Wallet Top-up Using UPI

**Objective:** The objective of this document is to suggest different approaches by means of which the NETC Tag / Wallet can be topped up / recharged using UPI.

## Approaches to Top-up the NETC Tag Linked wallet using UPI:

## Sending /pushing the credit to top up the wallet:

In this scenario, the user shall credit the NETC wallet / Tag using his UPI PSP App or BHIM App. In case of a push transaction using his UPI PSP App or BHIM App the user will follow the below steps:

a. Log into UPI application and enter the pre-defined UPI id structured in the following manner of "netc.vehicle registration no/TagID @tag issuer handle" or scans the QR code on NETC FASTag comprising of the above UPI ID with UPI QR guidelines.
   For e.g. netc.MH01AL5469@axisbank or netc.34161FA820328AA2051915A0@axisbank

   The QR should comprise of the following data:
   **upi://pay?ver=01&mode=01&pa=<netc.vehicle registration no/TagID@Tag Issuer Handle>&purpose=00&mc=4784&pn=NETC%20FASTag%20Recharge&orgid=<Bank UPI OrgID>&qrMedium=04**

   For E.g.:
   1.  For old Customer, personalized VPA based QR to be couriered to the customer:
   **upi://pay?ver=01&mode=01&pa=netc.up53ds6368@axisbank&purpose=00&mc=4784&pn=NETC %20FASTag%20Recharge&orgid=189999&qrMedium=04**

   2.  For New Customer, personalized VPA based QR to be printed on tag:
   **upi://pay?ver=01&mode=01&pa=netc.34161FA820328AA2051915A0@axisbank&purpose=00&mc =4784&pn=NETC%20FASTag%20Recharge&orgid=189999&qrMedium=04**

b. Since the above UPI Id is pre-defined, the end-user can save the above UPI Id in the saved beneficiary list for recurring and future use.

c. The user needs to enter his UPI PIN to authorize the transaction.
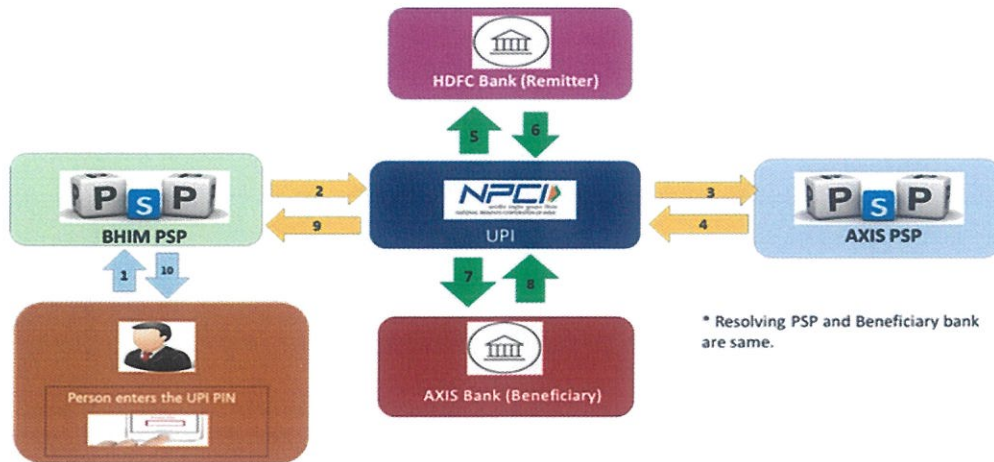
1. The user shown in the above diagram is using a BHIM UPI application and his remitter account is with HDFC Bank. The user logs into his BHIM application and scans the QR code on NETC FASTag or enters the pre-defined UPI Id in the style and structure "netc.vehicle registration no/TagId @tag issuer handle" (in this case Axis Bank who has issued the FASTag)

2. The customers PSP, in this case BHIM will send the transaction details to NPCI.

3. NPCI will forward the transaction to AXIS Bank for address resolution.

4. The customer NETC wallet is identified while resolving address basis the prefix of the UPI Id i.e., netc followed by VRN or TagID. Post which banks need to populate account details which would be visible in customers PSP app (in this case BHIM). To handle this scenario -

- The tag issuing bank needs to create a distinct VPA (as defined in point no 1) for each of the Vehicle registered for FASTag. This will ensure that there is no separate reconciliation process as the money would be loaded directly to a distinct FASTag account linked to the VPA.

Once the credit is received, the customer's NETC wallet should be topped up and an SMS confirmation should be sent by the bank.

# Roles and responsibility of the Tag issuer

1. Ensure UPI ID generation is in the predefined format i.e. "netc.vehicle registration no/TagID @tag issuer handle". For e.g. **netc.MH01AL5469@axisbank** or **netc.34161FA820328AA2051915A0@axisbank**

2. Ensure that the QR should comprise of the following data:

   upi://pay?ver=01&mode=01&pa=<netc.vehicle registration no/TagID@Tag Issuer Handle>&purpose=00&mc=4784&pn=NETC%20FASTag%20Recharge&orgid=<Bank UPI OrgID>&qrMedium=04

   For E.g.: For old Customer, personalized VPA based QR to be couriered to the customer:
   upi://pay?ver=01&mode=01&pa=netc.up53ds6368@axisbank&purpose=00&mc=4784&pn=NETC %20FASTag%20Recharge&orgid=189999&qrMedium=04

   For New Customer, personalized VPA based QR to be printed on tag:
   upi://pay?ver=01&mode=01&pa=netc.34161FA820328AA2051915A0@axisbank&purpose=00&mc=4784&pn=NETC%20FASTag%20Recharge&orgid=189999&qrMedium=04

3. Ensure that the NETC FASTag QR:

   a. Generation facility is provided on the bank website for the customer.

   b. Is displayed on all the consumer facing portals for NETC after login.

   c. Is displayed on all the consumer NETC Bank apps after login.

4. Ensure that real time validation of the Vehicle Registration Number (VRN) or TagID is performed before initiating the financial transaction.

5. Ensure real time credit is processed to FASTag linked wallet.

6. Ensure a real time refund is processed to the customer for any failed recharge transactions.

7. Ensure populating of merchant category code (4784 - Tolls and bridge fees) for each UPI transactions.

# Parameters need to be considered:

1) **VPA Verification:** For every UPI top-up request Member Bank should have an actual VPA resolution with the respective NETC FASTag account details of the customer. Member Banks should populate the Name & Vehicle No (as maintained in the NETC system) as a response to VPA resolution.

**2) QR Structure:** The Member bank shall ensure mandatory compliance to the latest UPI Deep linking URL spec. The parameters relevant to UPI QR recharge for NETC FASTag are mentioned as below:

UPI QR url for NETC FASTag recharge shall start with "upi://pay?" and shall contain the following parameters.

| Sr. No. | Parameter Name | UPI API field | Data Type | Size | Description | Nature of Fields |
|---|---|---|---|---|---|---|
| 1 | ver | Txn -> QR-> qVer | String | Fixed values | It is used to specify the QR version ver=01 | Static/Fixed |
| 2 | mode | Txn-> InitiationMode | String | Fixed values | As NETC FASTag QR is an offline Static Secure QR Code hence it will be 01 | Static/Fixed |
| 3 | purpose | Txn-> Purpose | String | Fixed values | For NETC FASTag QR recharge it should be default i.e., 00 | Static/Fixed |
| 4 | orgid | Head->OrgId | String | 06 - 12 | UPI OrgId of NETC FASTag Issuing Bank | Dynamic/Variable |
| 5 | pa | Payee-> addr | String | Max: 255 | Payee UPI ID(VPA) For NETC FASTag the VPA will be: <netc.VRN/TagID@tag issuer handle> | Dynamic/Variable |
| 6 | pn | Payee-> name | String | Max: 99 | Payee Name. For NETC FASTag it should be: "NETC FASTag Recharge" | Static/Fixed |
| 7 | mc | Payee-> mcc | Numeric | 4 | Payee merchant Code. NETC FASTag should follow the MCC 4784 (Tolls and bridge fees) | Static/Fixed |
| 8 | qrMedium | Txn-> QR-> qrMedium | Fixed Value | Fixed values | This field indicates the Source channel i.e., creation point of the string. 01 - PICK FROM GALLERY 02 - APP 03 – POS 04 – PHYSICAL/ Share Intent mode 05– ATM 06 – WEB To generate the string, code 02 to 06 to be used. | Static/Fixed |

3) **Real time Business Rule validation of UPI system & NETC system:** Any business rules between the two systems of bank (NETC & UPI), should be on real time basis. All transactions where the FASTag account could not be topped up/ recharged (on account of failure of any rules), the respective UPI transactions should also be declined with suitable reason codes.

4) **Daily Reconciliation Process:** Member Banks should ensure proper reconciliation for all transactions in a time bound manner on a real-time/near-real time basis. The reconciliation system should be robust to trigger alerts on any anomaly/mismatches and should operate 24X7. The SOP for reconciliation mechanism should not be relaxed on account of weekend/holidays and should adhere to the time bound reconciliation mechanism as specified above.

5) **Unique Transaction Identifier:** Ensure that all UPI transactions in the ecosystem are identified and reconciled by a unique reference number/identifier.

6) **Robust Monitoring System:** Member Banks should ensure that any unusual surge in volume/value/velocity of top up transactions is monitored & is triggered to take appropriate action. It should be noted that monitoring of only approved transactions may not help, and Member Banks should monitor both approved and declined transactions.

# 7  Annexure 2

# Draft Approach Document for availing existing FASTag users with recharge through QR facility.

**Objective:** The objective of this document is to suggest different approaches by which existing FASTag users can generate their FASTag linked QR code to avail seamless recharge through QR facility.

**Approaches for availing existing FASTag users with recharge through QR facility:**

In GFF'23, NPCI has launched new design of FASTag, with a breakthrough feature, which will empower the FASTag users to recharge their FASTag linked payment instrument easily, by availing the hassle-free benefits of UPI. The new design comes with easy scan QR code affixed on the FASTag, enabling user to simply scan the QR via. any UPI app and make the transaction.

Currently there are more than 7.8 Crore issued FASTags in the market. This feature will be available to the new FASTag users by default. And for existing users, a migration journey has been penned down and enclosed below.

We propose the following approach, to enable the existing FASTag user, avail the recharge via. QR feature on their payment instrument linked FASTag:

## 1.  Generate QR on webpage powered by NPCI/Issuer Bank:

NPCI/Issuer Bank will specially curate a webpage, wherein, just by entering issuer Bank name and Vehicle Registration Number, user can generate the QR code for their FASTag linked to the provided details.

**Customer Journey:**

    I.    Users will visit the NPCI/Issuer Bank FASTag QR generator webpage.

    II.    Required user input:

        a. Issuer Bank's name.

        b. VRN (Vehicle Registration Number).

    III.    Provided data is verified from NETC Mapper:

        a. If data is found in NETC Mapper; FASTag linked QR will be generated.

        b. If data is not found in NETC Mapper, FASTag linked QR will not be generated.

    IV.    Generated QR code can be used to scan via. UPI app and recharge the FASTag linked Payment Instrument. The QR can be printed and kept along or pasted inside the vehicle.