

Central Clearing House (CCH)

Interface Control Document

Version 2.4

Table of Contents

Table of Contents	2
1 Introduction	1
1.1 Goal.....	1
2 Business Rules	1
3 Technical Specifications	5
3.1 File Exchange Methodology	5
3.2 Process Flow Diagram.....	6
4 Processing Guidelines	7
4.1 File Naming Conventions.....	7
4.2 File Transfer	9
5 General File Format Rules	9
6 Toll Transaction File	10
6.1 Toll Transaction Header Record Format.....	10
6.2 Toll Transaction Detail Record Format	11
6.3 Toll Transaction Footer Record Format.....	15
6.4 Toll Transaction Sample File Format	16
7 Toll Reconciliation File	17
7.1 Toll Reconciliation Header Record Format.....	17
7.2 Toll Reconciliation Detail Record Format	18
7.3 Toll Reconciliation Footer Record Format.....	19
7.4 Toll Reconciliation Sample File Format	19
8 Violation Reconciliation File	19
8.1 Violation Reconciliation Header Record Format	19
8.2 Violation Reconciliation Detail Record Format	20
8.3 Violation Reconciliation Footer Record Format	21
8.4 Violation Reconciliation Sample File Format.....	22
9 Black List Tag File	22
9.1 Black List Tag Header Record Format.....	22
9.2 Black List Tag Detail Record Format	23
9.3 Black List Tag Footer Record Format.....	23
9.4 Black List Tag Sample File Format.....	24
10 Discounts File	24
10.1 Discount File Header Record Format	24
10.2 Discount File Detail Record Format.....	25
10.3 Discount File Footer Record Format.....	26
10.4 Discount Sample File Format.....	26
11 Appendix	27
11.1 Reason Codes	27
11.2 Blacklist Tag Reason Codes.....	29
11.3 Tag EPC Memory	29
11.4 Tag User Memory	31
11.5 Glossary of Terms	34
11.6 Encryption and Decryption.....	34
11.7 Responsibilities.....	35

1 Introduction

1.1 Goal

This program aims to establish a non-stop toll regime in which a vehicle with a single passive RFID tag can pass through toll plazas on Indian highways and pay toll without actually stopping. The system envisaged by the program is complex, encompassing the function of a nation-wide clearing house in which all the related Concessionaires (operating the toll plazas) participate.

2 Business Rules

1. Plaza Setup:

Plaza is a point where Customer is charged with Toll amount when traveled through that Plaza. At each plaza type of tolling will be defined which is known as Price Mode.

Price mode can be,

- **Point Based:** Plazas are operated individually. Toll Amounts are collected, while crossing the particular plaza only.
- **Distance Based:** If two or more plazas are participating in ETC, toll amounts are collected based on the distance between two plazas. Concessionaire will send ETC transactions by pairing entry and exit points. The transactional data shall include plaza, entry point with corresponding laneID, exit point with corresponding Lane Id, transaction date/time captured by the respective lane system at both Entry and Exit points. CCH will use entry and exit points to price the trips based on the toll tariffs maintained in the system.
- **Custom Based:**
 - CCH is not going to calculate pricing and CCH will post the transactions with the amount available in the file for the particular transaction.
 - Concessionaires will send toll amount in Header and transactions level.
 - If the amount field in the header is null or if the amount in the header and sum of amount fields in the detail records doesn't match, we will reject the file.
 - If the amount field is null in transaction record, we will reject the transaction.
 - If the concessionaire sends the transaction with 0 amounts, we will post the transaction with 0 amounts.
 - CCH verifies the TOL amount sent by the concessionaire with the master data available at the CCH end.

2. Pass Issuance Setup:

Based on plaza requirement following type of passes will be applied.

- **Monthly Pass:**

- Monthly Pass time period can be either Calendar day or Roll over based on requirement. If Calendar day time period applicable then monthly pass expires at the end of the month and if Roll over time period applicable, then pass will be expired in calendar days of the specific month, from the pass issuance date. For example, if pass is issued on 2nd of February, then it will be expired on 1st of March. If pass is issued on 2nd of March, then it will be expired on 1st of April.
- IsPassReversalApplicable: This attribute is applicable for monthly passes issued in Distance based tolling plazas.
 - If this attribute says “Yes”, then if monthly pass is issued from plaza A to plaza B, automatically monthly pass will be applied to Plaza B to Plaza A.
 - If this attribute says “No”, then if monthly pass is issued from plaza A to plaza B, monthly pass will not be applied to Plaza B to Plaza A. Customer need to purchase another monthly pass for Plaza B to Plaza A.

- **Daily pass:**

- Daily Pass time period can be either Calendar day or Roll over based on requirement. If Calendar day time period applicable then daily pass expires at the end of the day and if Roll over time period applicable then pass will be expired in 24 hours.
- Based on Plaza requirement daily pass can be issued automatically or can be issued manually.
- For automatic daily pass 1st trip will be charged with regular tariff, second trip will be charged with (Regular tariff – Daily pass tariff) and from 3rd trip ‘0’ amount will be charged.
- For Manual daily pass no trip will be charged until pass expires. Manual pass can be issued from road user portal, Point-of-Sale, Internal and concessionaire portals.
- Note: In the current system, Manual Daily passes are not implemented.

- **Return pass:**

- Return Pass time period can be either Calendar day or Roll over based on requirement. If Calendar day time period applicable then Return pass expires at the end of the day and if Roll over time period applicable then pass will be expired in 24 hours.
- Based on Plaza requirement Return pass can be issued automatically or can be issued manually.
- For automatic Return pass, 1st trip will be charged with regular tariff, second trip will be charged with (Regular tariff – Return pass tariff).
- For Manual Return pass, for two trips, no toll will be charged until pass expires. Manual pass can be issued from road user portal, Point-of-Sale, Internal and concessionaire portals.
- Note: In the current system, Manual Return passes are not implemented.

- **Local Pass:** Local Pass can be issued at plaza based on the requirement. Customer need to submit the document to prove as local. Concessionaire, from Concessionaire portal, need to add customers as local, by verifying the documents. Once added, whenever customer travels in this plaza, CCH is going to charge local pricing tariff. There will be a

provision to inactivate the customer from Local from concessionaire portal. Local pricing is not applicable for distance based tolling plazas. At any given time, customer can be local to only one plaza.

- **Discount files for Passes:** Tags which are availed discounts like Monthly pass, Local pass, Daily pass, Local exemption, Global exemption will be included in Discount file which will be uploaded once a day by CCH. Concessionaires should update their systems accordingly. The initial file will be a FULL file and contains tags with active discounts (local pricing, monthly pass etc.). Subsequent exchanges will be Diff/Partial files containing changes since last update. Note: Based on the plaza requirements, for some plazas daily passes will be applied automatically and for some plazas daily passes will be issued manually. Daily passes which are issued manually, will be uploaded to corresponding TMS in discount file.
- CCH will generate Init/Full files on a weekly basis on every Monday at 1:00 AM for the Discount files. Whenever CCH Sends Init/Full file, TMS has to flush all the existing data corresponding to Discounts from their system and update with the data available in the Init/Full file.

3. Toll Transactions:

- Whenever vehicle crosses the plaza, concessionaires need to record the transactions. At specified intervals, need to send these transactions in a toll transaction file to CCH.
- The frequency for concessionaires to transfer toll transaction files is 15 minutes as per the SLA. CCH may change this frequency as per the demand.
- Toll Transactions are of two types. Clean Transactions and Violation Transactions.
 - **Clean transactions** are processed as they are received every 15minutes and reconciliation files will be generated and sent to corresponding concessionaires on a daily basis. These reconciliation files will not acknowledge violation transactions.
 - **Violation Transactions:**
If Concessionaire sends the transactions with IsViolation=1, CCH expects supporting Images with imagename in the file and corresponding images in a designated location assigned to each concessionaire on CCH SFTP server (\InBound\Images folder). Concessionaire can send two type of images. Wide Range image or Rear View Image. At least one image should be provided i.e., If Rear View Image is provided then Wide Range image is optional and vice-versa.

If Images are provided, CCH will move transactions to image review. If either Images are not placed in designated location or Image Name is not provided in the transaction, then CCH will reject these transactions.

- **Image Evidence Required:** If AVC vehicle class does not match with vehicle class tied to the tag for the clean transactions sent to CCH then these will be considered as violations by CCH. These transactions will be marked as rejected in the recon file with reason

code, 'IMGEVDREQ'. The transactions with reason code as 'IMGEVDREQ' will be held in CCH for further processing until image evidence is received from Concessionaire.

Concessionaire will need to provide the supporting image evidence and place the images in a designated location assigned to each concessionaire on CCH SFTP server (\InBound\ImageEvidence folder). Once the image is received for the transaction, CCH will move transactions to image review and Image auditor will review and take decision either to accept or reject the transaction. If Image auditor, rejects the transaction in image review because of image is not clear, CCH will reject the transaction with reason as "ImgRevRej".

CCH will resume processing based on the image auditor decision and will include the transaction and status in the violation reconciliation file sent to concessionaire once a day.

When concessionaire uploads the image for the image evidence required, the image name should be prefixed by unique transaction id assigned to the toll record that is sent to CCH in the toll transaction file. Please see below for naming convention.

Image name: <TransactionId>_<ImageName>.jpg

Example: 1234567890_Image1.jpg where 1234567890 is the unique transaction id assigned to the toll record in the transaction file, Image1 is the name assigned to the image per concessionaire requirements/naming convention currently in place.

- **Image Review Process:** Image auditor will review and take decision either to accept or reject the transaction. If Image auditor, rejects the transaction in image review because of image is not clear, CCH will reject the transaction with reason as "ImgRevRej".

CCH will resume processing based on the image auditor decision and will include the transaction and status in the violation reconciliation file sent to concessionaire once a day.

- **Reconciliation for Violation Transactions:**

All the violation transactions that are received from a concessionaire will be consolidated for the entire day and a single reconciliation file will be generated, once processed (manual review by CCH) based on the SLA defined for the violation processing by CCH.

4. If concessionaires are not able to send the transactions to CCH on the same day, they can still send it as per SLA defined by CCH. Currently, in the system, it is configured for 7 days.
5. Blacklisted tag file will be uploaded every 15 minutes by CCH. Concessionaires shall update their systems as per the SLA defined by CCH. CCH will not be responsible to accept the transactions on the Blacklisted tags that have occurred after the time

period that was defined as part of the SLA. These transactions will be rejected by CCH.

CCH will generate Init/Full files on a weekly basis on every Monday at 1:00 AM for the Black list files. Whenever CCH Sends Init/Full file, TMS has to flush all the existing data corresponding to Black list from their system and update with the data available in the Init/Full file.

6. **Overweight pricing** – For transactions of vehicles that need to be charged higher toll for vehicle weight exceeding the allowed limit, concessionaire shall indicate the same to CCH on the transaction by setting 'IsOverweight' to true. Additional weight related data like WIM weight etc will need to be included in the transactional data sent to CCH. If overweight pricing is allowed for the plaza, CCH will charge the fare applicable for next higher vehicle class.

Note: CCH will not consider Over weight Pricing for Custom based tolling, even though concessionaire sends the transaction with IsOverweight = 1 and process the transaction with the amount available in the transaction record.

Note: As per existing CCH, Overweight pricing will not be applied in the current system.

7. CCH Service Providers: Providers like ICICI, Axis etc., who issues tags to customers, maintains customer accounts, vehicle information, recharges, and managing POS outlets.
8. Guarantee of payment for valid tags - CCH will honor all transactions on tags that were deemed "valid" Tag issued by authorized issuers. The Concessionaires have to validate such transactions. Tag EPC memory will contain the Header, GS-1 code, CCH Id, Tag Supplier id , Tag serial no, future use(for IHMCL) and check sum(for IHMCL). From the Tag EPC memory TMS will identify the CCH service provider. Refer section 11.2 and 11.3 for further information.

3 Technical Specifications

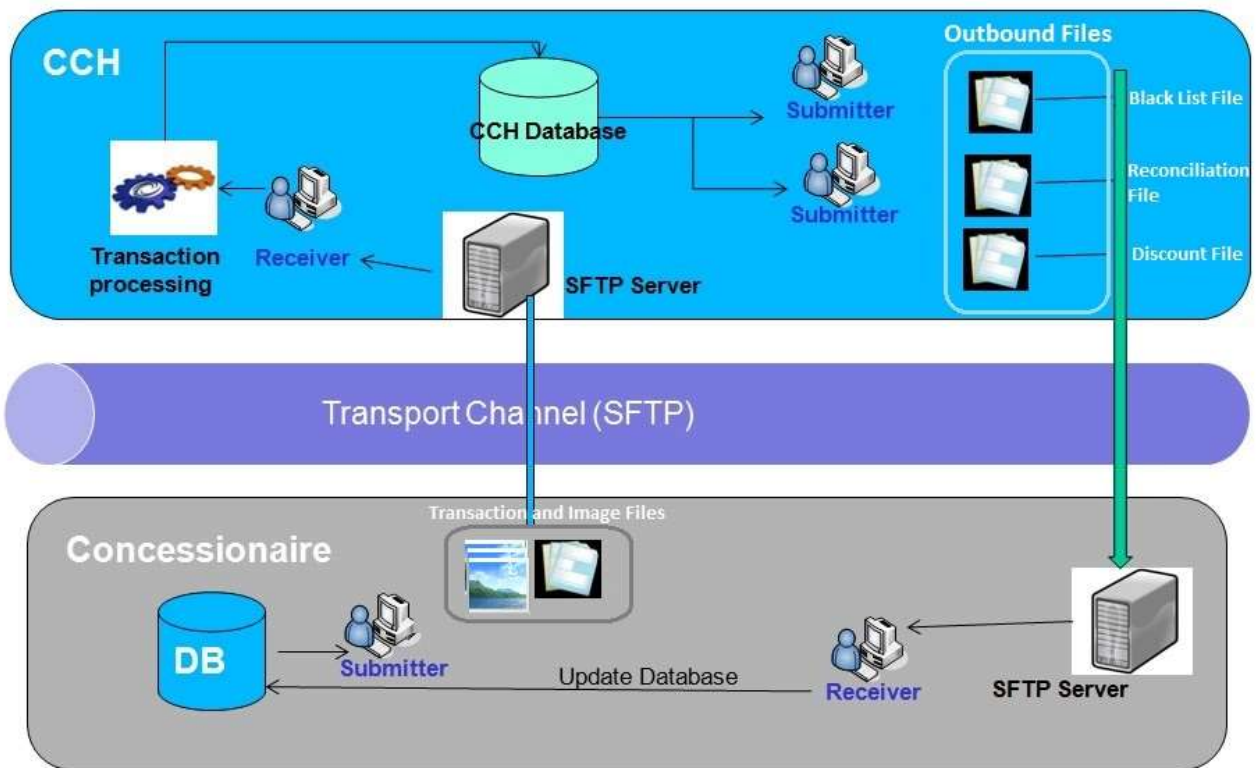
3.1 File Exchange Methodology

The file transfer mechanism utilizes the SFTP (secure file transfer protocol) over the Internet to exchange the data files to/from each concessionaire's SFTP server. The transfer files are created using concessionaire's proprietary software, but the files conform to the formats described in this document. The files are generated in an ASCII format. The sending concessionaire/CCH encrypts the file using GPG encryption tools, and the receiving CCH's/concessionaire's public key. This will also have the effect of compression of the data. The sending concessionaire/CCH then utilizes the SFTP protocol to send the encrypted files to the receiving CCH's/concessionaire's SFTP server. The CCH/concessionaire agency using its private key can therefore decrypt the received files. After decryption, the CCH/concessionaire processes the data with their own proprietary software.

Requirements

- CCH or each concessionaire must have a publicly accessible SFTP server, with or without a DNS entry on the Internet. SFTP exchange can be accomplished with only the IP address.
- CCH will provide a user-id and password to each concessionaire which will transmit files to SFTP Server. This is to prevent anonymous users from accessing the SFTP site.
- CCH/concessionaire shall install a GPG encryption package suitable for the platform they run on.
- Files will be encrypted before transmission to ensure the confidential data does not fall into unauthorized hands.
- Refer Appendix 11.6 for further information regarding File encryption and decryption

3.2 Process Flow Diagram



4 Processing Guidelines

4.1 File Naming Conventions

The file names (and extensions) are designed to be able to tell, at a glance, the information contained in the file, its source and its destination. All file names and extensions shall use lowercase characters.

The file extensions shall define the type of information contained in the file and shall be as shown in Table 1.

Table 1 - File Extensions

S. No	File Description	File Extension	Origination
1	Toll Transaction file	Tol	Originate
2	Toll Reconciliation file	Trc	Response
3	Blacklist tag file	Blt	Originate
4	Violation Reconciliation file	Vrc	Response
5	Discount File	Dis	Originate

File names shall use two distinct formats depending on whether the file is an Originate file or a Response file.

Originate file names shall have the format: **aa_bb_yyyymmdd_hhmmss.xxx**
Where the fields are defined as follows:

Table 2 - File naming convention

S. No	Description	Type	Delimiter	Comments
1	Aa	Alpha	Underscore “_”	Originating Agency
2	Bb	Alpha	Underscore “_”	Destination Agency
3	Yyyymmdd	Alpha	Underscore “_”	Created date of the file
4	Hhmmss	Alpha	Dot “.”	Created time of the file
5	Xxx	Alpha		File Extension

Response file name (**Toll Reconciliation**) shall have the format:
aa_bb_yyyymmdd_hhmmss.xxx

Toll File Name

Ex: LTPTP_TPCCH_20120625_185342.tol

Toll Reconciliation

Ex: TPCCH_LTPTP_20120625_205041.trc

Violation Reconciliation (For the day)

Ex: TPCCH_LTPTP_ 20120625_205041.vrc

Blacklist Tags

Ex: TPCCH_LTPTP_ 20120625_091041.bl

Discount Files

Ex: TPCCH_LTPTP_ 20121101_144741.dis

Table 3 –Reference codes used during File Exchange process

S. No	Codes	Description
1	TPCCH/CCH	This code refers to Central Clearing House. This code shall be used in the inbound toll files and outbound files.
2	Agency code	This is a unique code assigned by CCH/CCHto a plaza participating in ETC. This is used as source agency code and destination agency code in the inbound and outbound files respectively.
3	Plaza Id(Toll zone id)	This is a unique id assigned by CCH/CCHto a plaza. This is used in the inbound toll files.
4	Lane Id	Lane id is a unique id assigned to the lane of a plaza. This id shall be defined and shared by Concessionaires at the time of master data exchange.

Note: The above details shall be shared with Concessionaire when they share the master data initially.

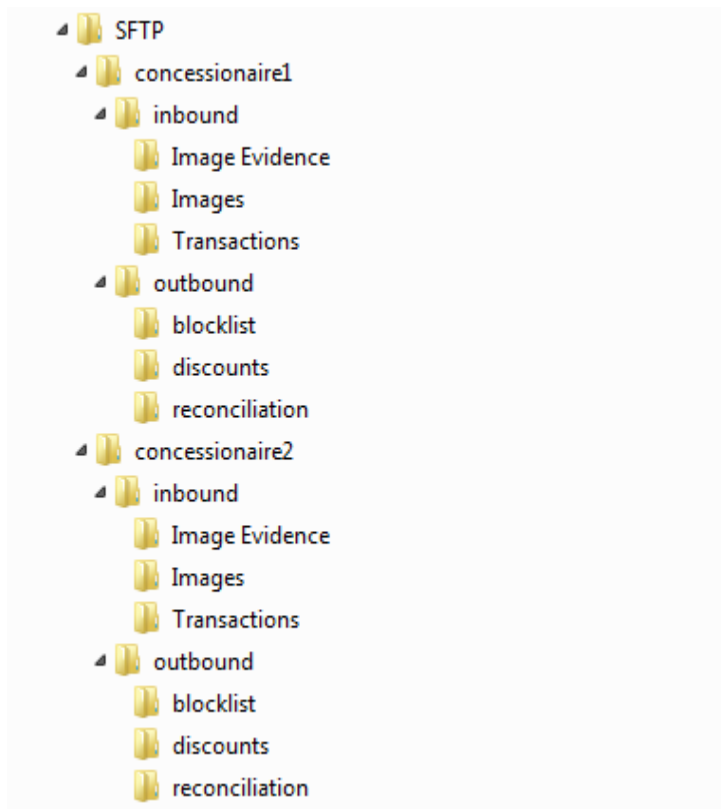
Table 4 – SLA’s for File transfers:

S. No	File Description	Frequency
1	Toll Transaction file(.tol)	Every 15 minutes
2	Toll Reconciliation file(.trc)	Once a day
3	Blacklist tag file (.blt)	Every 15 minutes
4	Violation Reconciliation file (.vrc)	Once a day
5	Discount File (.dis)	Once a day
6	Sending of Toll transactions	Within 7 days
7	Violation Clearance	Within 7 days
8	Rejection of Blacklist transactions	15mins (after black list file uploaded to concessionaires)

4.2 File Transfer

Files will be exchanged between CCH and concessionaires on a regular basis as specified in the business requirements. The file exchange happens through SFTP Server. CCH will maintain the SFTP server for now. CCH create a unique folder for each concessionaire. The folder is password protected and concessionaire can access only their folder and not others. Concessionaire can place the file or read the file from that location. Sender has to use temporary extension during the file transfer for local system to SFTP server. Once the file transferred successfully they can change the extension into proper extension. This will avoid two systems (Concessionaire and CCH) are accessing the same file during transits state.

Following is the SFTP folder structure.



5 General File Format Rules

The following rules apply to all files used in interoperability:

- All files will be in ASCII format.
- All files will use the comma “,” as the field delimiter.
- All files will use the line feed “LF” (hex 0A) as the record delimiter.
- Each file will contain:
 - A header record
 - Detail records

- A trailer record
- All numeric fields will be fixed size and with leading zeros.
- All date fields will be delimited with a forward slash “/”.
- All time fields will be delimited with a colon “:”.
- The Plaza/Lane combination will be pre-defined for validation and printing on patron statements
- Date fields will have the following format: YYYY/MM/DD
- Time fields will have the following format: HH:MM:SS
- Processing and file transfer take place 365/366 days per year.
- Transaction Number and Date must be a unique combination.
- Tag#, Plaza, Lane, Date, and Time must be a unique combination for tolls.
- Also, the transaction number cannot be 0.

6 Toll Transaction File

6.1 Toll Transaction Header Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Record Code	Alphanumeric	7	,	Y	#HEADER
2	Originating Agency	Alphanumeric	5	,	Y	Corresponding Concessionaire
3	Destination Agency	Alphanumeric	5	,	Y	CCH
4	File Type	Alphanumeric	5	,	Y	TOLL/TOL-for Toll transaction File
5	File Date Time	DateTime	19	,	Y	Local Date/Time file was created in YYYY/MM/DD HH:MM:SS format
6	Record Count	Numeric	10	,	Y	Number of data records, excluding the Header and Footer Record, contained in this file.
7	Total Amount	Money	10	,	N	Optional. This is for future use. Total Amount for all transactions available in the current file.

8	FileID	Alphanumeric	12	CR & LF	Y	CCH's/concessionaire's end Unique file ID.
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6.2 Toll Transaction Detail Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Transaction Id	Alphanumeric	20	,	Y	Complete Transaction ID at concessionaire end
2	Toll Zone Id	Alphanumeric	6	,	Y	Concessionaire plaza id(assigned by CCH)
3	Lane Id	Alphanumeric	6	,	Y	Concessionaire Lane Id. Lane Id should not contain special characters and space.
4	Transaction Date Time	DateTime	19	,	Y	Local Date/Time for Transaction date time, in the form YYYY/MM/DDTHH:MM:SS
5	Is Violation	Bit	1	,	Y	1 - violation transaction 0 - non violation Concessionaires have to identify the given transaction as violation or not. If it's a violation then the value set to "1". Note: CCH will not consider any violation if the flag is not set. Default value is "0"
6	Is Exempted	Bit	1	,	Y	1 means exempted transaction 0 means non exempted Concessionaires have to identify the given transaction is exempted or not. If it is

						<p>exempted then they need to set this value as “1”.</p> <p>Note: CCH will not honor the toll amount to the concessionaire’s for any exempted transaction. This is used to track how many exempted transaction happened on the road.</p> <p>Default value: “0”</p>
7	Tag Id	Hexadecimal	24	,	Y	<p>First 80/96 bits of EPC Memory converted to Hexadecimal ,</p> <p>For Details see the Appendix: 11.3</p>
8	Tag Read Date Time	DateTime	19	,	Y	<p>Local Date/Time for transceiver Reading date time, in the form</p> <p>YYYY/MM/DDTHH:MM:SS</p>
9	Tag Vehicle Classification	Numeric	2	,	Y	<p>Vehicle Class read from Tag User Memory.</p>
10	AVC Vehicle Classification	Alphanumeric	5	,	Y	<p>Vehicle classification identified by AVC</p>
11	Wide Range ImageName	Alphanumeric	250	,	N	<p>Optional. In case of IsViolation=1, then it is mandatory. At least one image should be provided i.e., If Rear View ImageName is provided then it is optional.</p>
12	WRImageDate time	DateTime	19	,	N	<p>Optional.</p> <p>Date Format:</p> <p>YYYY/MM/DDTHH:MM:SS</p>
13	Rear View ImageName	Alphanumeric	250	,	N	<p>Optional. In case of IsViolation=1, then it is mandatory. Atleast one image should be provided i.e., If Wide Range ImageName is provided then it is optional.</p>

14	RVImageDate Time	DateTime	19	,	N	Optional. Date Format: YYYY/MM/DDTHH:MM:SS
15	Lane Status Id	Char	1	,	N	Status of the Lane. Possible values are : (Open) C (Close) Default Value: empty(" ") If Lane Status is "C" the record will not be accepted by CCH
16	Lane Mode Id	Char	1	,	N	Mode of the Lane. Possible values are : M (Maintenance) N (Normal) Default Value: empty(" ") If Lane Status is "M" the record will not be accepted by CCH
17	Toll Amount	Money	8	,	N	Optional filed. Toll amount is calculated by CCH. For Custom Based Tolling (PriceMode-"C"), this field is mandatory.
18	Vehicle Detection Method	Alpha	15	,	N	Optional field. Possible values are : Serial ASII Timeout Default value: empty(" ")
19	Is Straddle	bit	1	,	N	Optional, it's used for future use.
20	Is Buffered	bit	1	,	N	Optional, it's used for future use.
21	User Memory	Alphanumeric	50	,	N	Optional, it is used for future

	Text					use
22	LPNumber	Alphanumeric	12	,	N	Optional, concessionaire can send plate number if they are able to identify it. It will not be used in transaction processing. In case of dispute, this information will be handy to come to conclusion, Default value is empty " "
23	Confidence Level	numeric	1	LF	N	Optional, it is used for future use, Highest OCR confidence level of the image captured for the vehicles
24	Entry Toll Zone Id	Alphanumeric	6	,	N	Entry plaza id. Required for distance based tolling (price mode "D")
25	Entry Lane Id	Alphanumeric	5	,	N	Lane Id at Entry Plaza. Required for distance based tolling (price mode "D")
26	Entry Transaction Date Time	DateTime	19	,	N	Entry Local Date/Time for Transaction date time, in the form YYYY/MM/DDTHH:MM:SS Mandatory for distance based tolling (price mode "D")
27	PriceMode	Char	1	,	Y	'D' for Distance Based pricing 'P' for Point Based pricing. 'C' for Custom Pricing. Default value is 'P'
28	IsOverWeight Charged	Bit	1	,	Y	1 – If the vehicle is over loaded 0 – if the vehicle is not over loaded. Default value is 0
29	WIM Weight	Alphanumeric	10	,	N	This is mandatory if the 'IsOverWeightCharged' is true and pricing mode is other than 'C'.

30	Static Weight	Alphanumeric	10	,	N	Vehicle weight measured at static scale located at the plaza.
31	Attribute_1	Alphanumeric	20	,	N	This field will have additional agency specific data, if necessary
32	Attribute_2	Alphanumeric	20	,	N	This field will have additional agency specific data, if necessary
33	Attribute_3	Alphanumeric	20	,	N	This field will have additional agency specific data, if necessary
34	Attribute_4	Alphanumeric	30	,	N	This field will have additional agency specific data, if necessary
35	Attribute_5	Alphanumeric	30	,	N	This field will have additional agency specific data, if necessary
36	Attribute_6	Alphanumeric	30	,	N	This field will have additional agency specific data, if necessary
37	Attribute_7	Alphanumeric	50	,	N	This field will have additional agency specific data, if necessary
38	Attribute_8	Alphanumeric	50	,	N	This field will have additional agency specific data, if necessary
39	Attribute_9	Alphanumeric	200	,	N	This field will have additional agency specific data, if necessary
40	Attribute_10	Alphanumeric	1000	LF	N	This field will have additional agency specific data, if necessary

6.3 Toll Transaction Footer Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Record Code	Alphanumeric	8	,	Y	#TRAILER
2	Number of Records	Numeric	10	LF	Y	Number of records. Leading zeros are required.

6.4 Toll Transaction Sample File Format

```
#HEADER,LTPTP,CCH,TOLL,2013/01/30 11:09:09,0000000005,0000000000,1000¶
8009123,021000,L1,2013/01/30 10:15,0,0,990000000010000003D4,2013/01/30
10:15:00,04,24,,,,,,,,,AP09CE0982,,,,,P,,,,,,,,, ¶
8009124,022000,L2,2013/01/30 11:15,1,0,990000000010000003D5,2013/01/30
11:15:00,03,23,l2imagewide,2013/01/30 11:15:00,l2rearimg1,2013/01/30
11:15:02,O,N,,Serial,0,0,,AP09CE0982,1,,,,P,,,,,,,,, ¶
8009124,022000,L2,2013/01/30 11:15,1,0,990000000010000003D6,2013/01/30
11:15:00,03,23,l2imagewide3,2013/01/30 11:17:00,l2rearimg4,2013/01/30
11:17:12,,,,,,,,,AP09CE0934,1,,,,P,,,,,,,,, ¶
8009124,024000,L2,2013/01/30 11:15,0,0,990000000010000003D7,2013/01/30
11:15:00,03,23,,,,,,,,,AP09CE0935,,024010,L1,2013/01/30 10:15,D,,,,,,,,, ¶
8009127,021000,L1,2013/01/30 10:15,0,0,2013/01/30
10:15:00,04,24,,,,,,,,,AP09CE0982,,,,,P,1,200.45,200.45,,,,,,,,, ¶
#TRAILER,0000000005¶
```

7 Toll Reconciliation File

7.1 Toll Reconciliation Header Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Record Code	Alphanumeric	7	,	Y	#HEADER
2	Originating Agency	Alphanumeric	5	,	Y	CCH
3	Destination Agency	Alphanumeric	5	,	Y	Corresponding concessionaire
4	File Type	Alphanumeric	5	,	Y	TRC – Toll reconciliation file
5	File Mode	Alphanumeric	1	,	Y	Possible values are “F”-For full file “P”- Partial file
6	File Date Time	Date time	19	,	Y	Local Date/Time file was created, in the form YYYY/MM/DD HH:MM:SS
7	Transaction Count	Numeric	10	,	Y	Number of data records, excluding the Header and Footer Record, contained in this file.
8	Accepted Count	Numeric	10	,	Y	Number of accepted transactions in a business day.
9	Accepted Amount	Money	8	,	Y	Total accepted Amount through trips in a business day.
10	Discounted Amount	Money	8	,	Y	Total discounted Amount applied for the trips in a business day.
11	File ID	Alphanumeric	12	,	Y	Unique file id.
12	Source File ID	Alphanumeric	12	LF	Y	Optional, it's used for future use.

7.2 Toll Reconciliation Detail Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Transaction Id	Alphanumeric	20	,	Y	Original Transaction ID generated by agency
2	CustomerTripID	Numeric	10	,	Y	CCH transaction process ID for an accepted trip
3	Toll Zone Id	Alphanumeric	6	,	Y	Concessionaire plaza id
4	Lane Id	Alphanumeric	6	,	Y	Lane Id
5	Transaction Date Time	DateTime	19	,	Y	Local Date/Time for Transaction date time, in the form YYYY/MM/DDTHH:MM:SS
6	Tag Id	Hexadecimal	24	,	Y	First 80/96 bits of EPC memory
7	Vehicle Classification	Alphanumeric	5	,	Y	Vehicle Classification on which toll amount will be calculated (AVC)
8	Accepted Amount	Money	10	,	Y	Accepted amount by the CCH.
9	Discounted Amount	Money	10	,	N	Optional, In case transaction has any discounts then this field is mandatory.
10	Response Code	Alphanumeric	1	,	Y	Response code. "A" for Accepted "R" for Rejected
11	Reason Code	Alphanumeric	10	,	Y	Description of the reason codes. It will be useful when there is a rejection. See Appendix 11.1
12	Plate Number	Alphanumeric	12	,	N	Plate Number of the vehicle. If transaction has plate number, then the same will be sent

13	Source File ID	Alphanumeric	12	LF	N	Optional.
----	----------------	--------------	----	----	---	-----------

7.3 Toll Reconciliation Footer Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Record Code	Alphanumeric	8	,	Y	#TRAILER
2	Number of Records	Numeric	10	LF	Y	Number of records. Leading zeros are required.

7.4 Toll Reconciliation Sample File Format

```
#Header, TPCCH,LTPTP,TRC,F,2012/06/06 23:59:59,2012,0000000002,
0000000003,00.00,00.00 ,PTP0101011, PTP0101010¶
011001001,0110212122,W,W1,2012/06/06 23:59:59,01100110,2L, 10.00, ,A,
,AP09BK4890,¶
011001002, 0110212123,W,W1,2012/06/06 23:59:59,01100110,2L, 10.00,10.00,AD,
,AP09BK4890,¶
011001003,0110212123,E,E1,2012/06/06 23:59:59,01100110,2L,
10.00,10.00,R,012,AP09BK4891,¶
#TRAILER ,0000000003¶
```

8 Violation Reconciliation File

8.1 Violation Reconciliation Header Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Record Code	Alphanumeric	7	,	Y	#HEADER
2	Originating Agency	Alphanumeric	5	,	Y	CCH
3	Destination Agency	Alphanumeric	5	,	Y	Corresponding Concessionaire
4	File Type	Alphanumeric	5	,	Y	VRC – Toll reconciliation file
5	File Mode	Alphanumeric	1	,	Y	Possible values are

						“F”-For full file “P”- Partial file
6	File Date Time	Date time	19	,	Y	Local Date/Time file was created, in the form YYYY/MM/DD HH:MM:SS
7	Transaction Count	Numeric	10	,	Y	Number of data records, excluding the Header and Footer Record, contained in this file.
8	Accepted Count	Numeric	10	,	Y	Number of accepted transactions in a business day.
9	Accepted Amount	Money	8	,	Y	Total accepted Amount through trips in a business day.
10	Discounted Amount	Money	8	,	Y	Total discounted Amount applied for trips in a business day.
11	File ID	Alphanumeric	12	,	Y	Unique file id.
12	Source File ID	Alphanumeric	12	,	N	Optional default value is empty (“ ”), it may be used in future.

8.2 Violation Reconciliation Detail Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Transaction Id	Alphanumeric	20	,	Y	Original Transaction ID generated by agency
2	CustomerTripID	Numeric	10	,	Y	CCH transaction process ID for an accepted trip
3	Toll Zone Id	Alphanumeric	6	,	Y	Concessionaire plaza id

4	Lane Id	Alphanumeric	6	,	Y	Lane Id
5	Transaction Date Time	DateTime	19	,	Y	Local Date/Time for Transaction date time, in the form YYYY/MM/DDTHH:MM:SS
6	Tag Id	Hexadecimal	24	,	Y	First 80/96 bits of EPC memory in Hexadecimal format
7	Vehicle Classification	Alphanumeric	5	,	Y	Vehicle Classification on which toll amount will be calculated
8	Accepted Amount	Money	10	,	Y	Accepted amount by the CCH.
9	Discounted Amount	Money	10	,	N	Optional, In case the transaction has any discounts then this field is mandatory.
10	Response Code	Alphanumeric	1	,	Y	Response code. "A" for Accepted "R" for Rejected
11	Reason Code	Alphanumeric	10	,	Y	Description of the reason codes. It will be useful when there is a rejection. See Appendix 11.1
12	Plate Number	Alphanumeric	12	,	N	Plate Number of the vehicle. If transaction has plate number, then the same will be sent
13	Source File ID	Alphanumeric	12	LF	Y	Original Concessionaire File Id.

8.3 Violation Reconciliation Footer Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Record Code	Alphanumeric	8	,	Y	#TRAILER
2	Number of Records	Numeric	10	LF	Y	Number of records. Leading zeros are

						required.
--	--	--	--	--	--	-----------

8.4 Violation Reconciliation Sample File Format

```
#Header, TPCCH,LTPTP,VRC,F,2012/06/06 23:59:59,0000000002,
0000000003,00.00,00.00,PTP0101011, ¶
0001100100,1020023123,W,W1,2012/06/06 23:59:59,01100110,2L, 10.00, ,A,
,AP09BK4890 ,PTP0101010¶
0001100101,1020023124, W,W1,2012/06/06 23:59:59,01100110,2L, 10.00,10.00,AD,
,AP09BK4890,PTP0101010¶
0001100102,1020023125,E,E1,2012/06/06 23:59:59,01100110,2L,
10.00,10.00,R,012,AP09BK4891,PTP0101010¶
#TRAILER ,0000000003¶
```

¶---Line Feed Symbol (end of the current line cursor will be available at new line)

9 Black List Tag File

9.1 Black List Tag Header Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Record Code	Alphanumeric	7	,	Y	#HEADER
2	Originating Agency	Alphanumeric	5	,	Y	CCH
3	Destination Agency	Alphanumeric	5	,	Y	Corresponding Concessionaire
4	File Type	Alpha	5	,	Y	BLT-for Black List tag File
5	Update Code	Alpha	5			- INIT for Initial load/full load. It will be weekly once - DIFF – Differential load
6	File Date Time	DateTime	19	,	Y	Local Date/Time file was created, in the form YYYY/MM/DD HH:MM:SS
7	Record Count	Numeric	10	,	Y	Number of data records,

						excluding the Header and Footer Record, contained in this file.
8	FileID	Alphanumeric	12	CR & LF	Y	Unique Agency Batch ID.

9.2 Black List Tag Detail Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Tag ID	Hexadecimal	24	,	Y	First 80/96 bits of EPC memory in Hexadecimal format
2	Status	Alphanumeric	1	,	Y	Current Status of the Tag. Possible values are "A" - Add to Black list "R" - Remove from Black list
3	Effective Date	Datetime	15	,	Y	Local Date/Time for Tag start effective date, in the form YYYY/MM/DD HR:MI:SS
4	Reason Code	Alphanumeric	10	,		Reason code. See Appendix 11.2

9.3 Black List Tag Footer Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Record Code	Alphanumeric	8	,	Y	#TRAILER
2	Number of Records	Numeric	10	LF	Y	Number of records. Leading zeros are required.

9.4 Black List Tag Sample File Format

```
#HEADER,TPCCH,LTPTP,BLT,2012/06/06 23:59:59,0000000002,PTP0101010¶
01100110,A, 2012/06/06 23:59:59,¶
01100111,R, 2012/06/06 23:59:59,321¶
#TRAILER,0000000002¶
```

10 Discounts File

10.1 Discount File Header Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Record Code	Alphanumeric	7	,	Y	#HEADER
2	Originating Agency	Alphanumeric	5	,	Y	CCH
3	Destination Agency	Alphanumeric	5	,	Y	Corresponding Concessionaire
4	File Type	Alpha	5	,	Y	DIS-for Discount File
5	Update Code	Alpha	5			INIT for Initial/full load sent at least weekly on Monday at 1:00 AM. DIFF – Differential load
6	File Date Time	DateTime	19	,	Y	Local Date/Time file was created, in the form YYYY/MM/DD HH:MM:SS
7	Record Count	Numeric	10	,	Y	Number of data records, excluding the Header and Footer Record, contained in this file.
8	FileID	Alphanumeric	12	CR & LF	Y	Unique Agency Batch ID.

10.2 Discount File Detail Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Customer Id	Long	20	,	Y	CCH Customer Account#
2	Tag ID	Hexadecimal	24	,	Y	First 80(CCHGS1 tags)/96 (IHMCL Tags)bits of EPC memory in Hexadecimal format
3	Serial Number	Alphanumeric	50	,	Y	Serial Number of the tag (Decimal Format)
4	Vehicle Number	Alphanumeric	12	,	Y	License Plate Number of the vehicle
5	Start Effective Date	Date	10	,	Y	Local Date/Time for start effective date in YYYY/MM/DD format
6	End Effective Date	Date	10	,	Y	Local Date/Time for End effective date in YYYY/MM/DD format
7	Discount Type	Alphanumeric	2	,	Y	Available Values - MP- Monthly Pass LP – Local Pricing LN – Local Non Revenue GN – Global Non Revenue
8	Tariff Desc	Alphanumeric	50	,	Y	Discount Tariff name assigned by Concessionaire. E.g. 'Local Personal Traffic' 'Local Commercial Traffic' 'Local Non Revenue' 'Global Non Revenue'
9	Action	Char	1	LF	Y	It tells the discount is activated or deactivate. Possible values are 'A' for Activate

						'D' for De-Activate
10	Entry Toll Zone Id	Alphanumeric	6	,	N	Available Values : Default Value: empty(" ") Entry Toll Zone Id if price mode is 'D' and Discount type is MP.
11	Exit Toll Zone Id	Alphanumeric	6	,	N	Available Values : Default Value: empty(" ") Exit Toll Zone Id is mandatory if Discount Type is other than GN

10.3 Discount File Footer Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Record Code	Alphanumeric	8	,	Y	#TRAILER
2	Number of Records	Numeric	10	LF	Y	Number of records. Leading zeros are required.

10.4 Discount Sample File Format

```
#HEADER,TPCCH,LTPTP,DIS,2012/11/01 23:59:59,0000000005,PTP0101010¶
10001713,91000002201000000009,684743140614301600972809,AP09AC2727,
2012/10/01,2012/11/01,LP,Local Commercial Traffic,A,,021001¶
10001714,91000002201000000008,684743140614301600972808,AP09AC2726,
2012/10/01,2012/11/01,MP,,D,021000,021001¶
10001715,91000002201000000007,684743140614301600972807,AP09AC2756,
2012/10/01,2012/11/01,MP,,D,,021001¶
10001716,91000002201000000006,684743140614301600972806,AP09AC2746,
2012/10/01,2012/11/01,LN,Local Non Revenue,A,,021001¶
10001717,91000002201000000005,684743140614301600972805,AP09AC2736,
2012/10/01,2012/11/01,GN,Global Non Revenue,D,,¶
#TRAILER,0000000005¶
```

Note: Local Non Revenue and Global Non Revenue accounts are not included in current discount file process, but will be available in near future. Corresponding discount types are mentioned in this document under 10.2 section for the field Discount Type. System Integrators need to consider these discount types in their system.

11 Appendix

11.1 Reason Codes

S. No	Reason Codes	Description
1	INVALIDFRMT	Any transaction received with data that is not in compliance with standards/conventions mentioned in the ICD will be rejected with reason 'INVALIDFRMT'
2	INVALIDDATE	Date/Time format recorded in the transaction is invalid or transaction received with future date will be rejected with reason 'INVALIDDATE'. Valid format: YYYY/MM/DD HH:MM:SS
3	OLDTRIP	If the transaction date/time of a transaction falls behind threshold period. Ex: Threshold period is 7 days. In case CCH receives a 9 days older transaction, system will reject the transaction with reason 'OLDTRIP'.
4	DATADIFF	If data received in the transaction does not comply with the master data of Plaza, Lanes and Vehicle class configured in the system, such transactions will be rejected with reason 'DATADIFF'
5	DUPLICATE	Same tag-id, same plaza, same lane, same transaction ID, date time, and not accepted earlier. If a transaction received with a tagid, transaction Id, transaction date time, from a lane of a plaza is accepted by CCH then, another transaction received from same lane of that plaza with same tagid, same transaction Id and same transaction date time will be rejected with reason 'DUPLICATE'
6	INVALIDTAG	If a transaction is received with a <ol style="list-style-type: none"> 1. Tag which does not belongs to CCHor 2. Tag-id is empty/having all zeros or 3. Invalid Header or 4. Invalid GM constant. then, that transaction will be rejected with reason 'INVALIDTAG'
7	CLONEDTAG	Same tag-id, same transaction date time, different Plaza. If a transaction received with a tagid and transaction date time from one plaza is accepted by CCH then, another transaction received from different plaza with the same tag id and transaction date time within the defined threshold period will be rejected with reason 'CLONEDTAG'

8	MALTAG	Same tag-id, same plaza,same lane/different lane in same direction and within defined threshold time range. If a transaction received with a tagid, transaction date time, from lane direction of a plaza is accepted by CCH then, another transaction received from same plaza, with the same tag id, same lane direction and transaction date time within the defined threshold period will be rejected with reason 'MALTAG' Threshold time in the current system: 10 minutes
9	BLKLISTTAG	Negative balance (tag is in blacklist)/lost tag / stolen tag. Transaction with a 'Black listed' tag i.e., a tag having negative balance or tag with status 'Lost/Stolen', 'TagInactive' or 'Damaged'
10	ACCEPTED	Transaction accepted without any difference in toll amount
11	DISCOUNTMP	Transaction Accepted with discount amount for a Vehicle/Account holding an active monthly pass for the plaza, where transaction occurred.
12	DISCOUNTDP	Transaction Accepted with discount amount for a Vehicle/Account holding an active Daily pass for the plaza, where transaction occurred.
13	DISCOUNTRP	Transaction Accepted with discount amount for a Vehicle/Account holding an active Return pass for the plaza, where transaction occurred.
14	DISCOUNTLP	Transaction Accepted with discount amount for a Vehicle/Account which is local for the plaza, where transaction occurred.
15	DISCOUNT	Transaction Accepted with discount amount
16	EXEMPTEDGNR	Transaction Accepted with zero toll amount for a Global Non-Revenue Vehicle/Account
17	EXEMPTEDLNR	Transaction Accepted with zero toll amount for a Local Non-Revenue Vehicle/Account
18	EXEMPTED	Transaction is accepted with zero toll amount
19	VEHCLSDIFF	Transaction accepted at Image review with corrected vehicle class rather than the Tag Vehicle class received in the transaction.
20	IMGREVREJ	Transaction rejected in image review due to non-availability of information such as no images, image not clear etc.
21	IMGEVDREQ	Transaction not marked as violation but AVC and Tag vehicle class mismatch

Note: ReasonCodes - DISCOUNTMP, DISCOUNTDP, DISCOUNTLP, DISCOUNTRP, EXEMPTEDGNR, and EXEMPTEDLNR are not available in the current CCH System. These reason codes will be available in future releases.

11.2 Blacklist Tag Reason Codes

S. No	Reason Code	Description
1	ACCNEGBAL	Account turned to negative balance
2	ACCPOSBAL	Account turned to positive balance
3	TAGDAMAGED	Tag damaged
4	CONBLKREQA	Concessioner requested for blacklist add
5	CONBLKREQR	Concessioner requested for blacklist remove
6	TAGINACTV	Tag in Inactive Status

11.3 Tag EPC Memory

Total EPC memory size is 96 bits (12 bytes)

ICICI:

S. No	Bits in order	Description
1	8	Header (constant)
2	28	General Manager (GS-1 issued Unique ID for ICICI. Similarly for other issuers)
3	8	Tag supplier ID
4	36	Unique Tag Serial No
5	16	EPC Validation (These 16 bits are for future purpose) Therefore, while sending the toll files, in the Tag Id field, TMS has to record the first 80 bits of EPC memory in Hexadecimal format for CCHGS1 tags.

Header: Header field shall contain the code 91

GS-1: GS-1 field shall contain the code 8907048

Tag Supplier Id: Tag supplier Id shall contain the 1 to 31

Unique Tag Serial No: Unique Tag Serial Number shall contain the hex decimal format 00 to FF

EPC Validation: Future use

IHMCL:

S. No	Bits in order	Description
1	8	Header (constant)
2	3	Filter
3	3	Partition
4	24	IHMCL Prefix
5	5	CCH ID
6	5	Tag Vendor Id
7	26	Vehicle Id
8	6	Future Use
9	16	Check Sum

Header: GIAI -96 coding scheme should be used for encoding in EPC memory of the RFID tags on the vehicles (8004).

Filter: Filter out the tag that needs to be read (0 fixed)

Partition: Determines the length of the entity identifier, which will be IHMCL who controls the EPC memory encoding specification (5 decimal fixed).

IHMCL Prefix: IHMCL Prefix field shall contain the code 8907272

CCH Service Providers: Up to 31 service providers

Tag Vendor Id: Up to 31 Tag Suppliers

Vehicle Id: Up to 6.7 crore unique id's per service provider, per tag vendor

Future Use: Any future application/bifurcation, if needed.

Check Sum: For checking the validity of the EPC encoding (Modulo 10 algorithm).

EPC Memory Encoding Illustration:

Hexa Decimal to Decimal Format conversion

Hexa Decimal Format: **34161FA8202200114DC00003**

We need to convert the each Hexa decimal no to binary format as mentioned below

3	4	1	6	1	F	A	8	2	0	2	2	0	0	1	1	4	D	C	0	0	0	0	3
0011	0100	0001	0110	0001	1111	1010	1000	0010	0000	0010	0010	0000	0000	0001	0001	0100	1101	1100	0000	0000	0000	0000	0011

Binary Format for 34161FA8202200114DC00003
00110100000101100001111110101000001000000010001000000000000100010100110111000000000000000000011

We need to convert binary value to decimal as per the IHMCL memory allocation

Header	Filter	Partition	IHMCL Prefix	CCH ID	TAG Vendor ID	Vehicle ID	Future Use	Check Sum
8 bits	3bits	3bits	24bits	5bits	5bits	26bits	6bits	16bits
00110100	000	101	100001111110101000001000	00001	00010	00000000000100010100110111	000000	0000000000000011
52 (8004)	0	5	8907272	1	2	00017719	00	3

Decimal Serial No: 520589072721200017719003

Calculating the Check Sum value using Modulo 10 Algorithm

Number Positions	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	N14	N15	N16	N17	N18	N19	N20	
Number without Check Digit	8	9	0	7	2	7	2	1	2	0	0	0	1	7	7	1	9	0	0		
Step 1: Multiply	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
BY	1	3	1	3	1	3	1	3	1	3	1	3	1	3	1	3	1	3	1		
Add Results	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	
To Create Sum	8	27	0	21	2	21	2	3	2	0	0	0	1	21	7	3	9	0	0	=	127
Subtract the sum from the nearest equal or higher multiple of ten = (130-127) = 3																					
Number with Check Digit	8	9	0	7	2	7	2	1	1	0	0	0	1	7	7	1	9	0	0	3	

11.4 Tag User Memory

S. No	Total User memory size is 512 bits (64 bytes) Bits in order	Description
1	96	Vehicle registration number
2	8	Vehicle class
3	408	Not confirmed yet

Vehicle Registration No: Vehicle registration number field shall contain the hex decimal format (Char to Hex decimal format)

Vehicle Class: Vehicle class field shall contain the hex decimal format (Decimal to Hex decimal)

Future use: Not using

Algorithm:

Step 1:

HexaVehicle # = Vehicle # convert from Decimal to Hexa

Step 2:

HexaVehicleClassId = Vehicle Class Id convert from Decimal to Hexa + "00"

UserMemoryData = HexaVehicle # + HexaVehicleClassId

Converting Registration number to HexDeciaml value

Example for Vehicle #: AP20AE5242 and vehicle class 20

Vehicle #: AP20AE5242 (Vehicle class id = 20)

Char[] arrayVehicleNum= new Vehicle Number.ToCharArray();

for each arrayVehicleNum convert DecimalToHexadecimal

E.g.: AP20AE5242

A-Decimal value - 65 - hexavalue - 41

P-Decimal value - 80 - hexavalue - 50

2-Decimal value - 50 - hexavalue - 32

0-Decimal value - 48 - hexavalue - 30

A-Decimal value - 65 - hexavalue - 41

E-Decimal value - 69 - hexavalue - 45

5-Decimal value - 53 - hexavalue - 35

2-Decimal value - 50 - hexavalue - 32

4-Decimal value - 52 - hexavalue - 34

2-Decimal value - 50 - hexavalue - 32

HexValue = 41503230414535323432 (no of digits/length = 20)

Formatting Registration Number according to specified length

Maxvehiclelength=24 (allotted)

If (Hex **Value** lenght < 24)
then append leading zeros

If we add leading zeros we will get the following number
HexaVehicle #:000041503230414535323432

Converting Vehicle Class to HexDecimal

Vehicle class id = 20

VehicleclassId covert DecimalToHexaDecimal

VehicleclassId/16

E.g.: 20/16

Divider +Remainder=1+4 (Concatination)
append "00" right side of HexaVehicleClassId

HexaVehicleClassId: 1400

User Memory

UserMemoryData = 000041503230414535323432 + 1400

User Data: 0000**41503230414535323432** 1400

Vehicle Registration	Vehicle Class
Number (AP20AE5242)	Id (20)

Usage of User Memory

Total User memory - 64 bytes

-We are using 13 bytes for writing user data into tag

-Out of 13 bytes we are using 12 bytes for vehicle registration number and another 1 byte for VehicleclassId

There will be another 51 bytes of user memory available for future use(64 -13 = 51 bytes).

11.5 Glossary of Terms

S. No	Terms	Definition
1	Concessionaires	The owner/operator of the facilities at which a transaction occurred.
2	AVI	Automatic Vehicle Identification
3	CCH	Central Clearing House
4	Lane Controller	Device which records data read from a transponder by overhead antennas, reads light curtains to provide for vehicle separation, treadles to determine axle count, and can control gates or barriers if the proper toll is paid via AVI or deposit of coins.
5	Plate	License plate of a vehicle; captured by violation enforcement System (VES) if present.
6	Transponder (tag)	Device to allow for automatic transaction identification, works by means of radio signal activation and returns the information programmed into by the Issuing Agency.

11.6 Encryption and Decryption

CCH and Concessionaire(s) should generate a public-private key pair and share their public keys.

Concessionaire needs to generate an OpenPGP key pair certificate and share the public key to CCH so that CCH shall encrypt the outbound files and transfer to the concessionaire SFTP server.

To create OpenPGP and X.509 certificates Gpg4win uses a key length of 2048 bit by default. The default algorithm for signing and encrypting is RSA.

Encryption/Decryption process doesn't include the digital signatures. The same key shall be used in future.

Encryption:

Concessionaire TMS has to use GnuPG tool and encrypt the TOL files using CCH public key (following binary format) and upload into SFTP server. CCH will decrypt those encrypted files with its private key.

Similarly, CCH will encrypt the outbound files i.e., Blacklist/Reconciliation/Discounts etc., using the Concessionaire TMS public key. TMS should decrypt the outbound files using their private key.

Decryption:

CCH uses GnuPG tool to decrypt the toll files uploaded into SFTP server, which are encrypted and by Concessionaire TMS using CCH public key.

Similarly, Concessionaire TMS has to decrypt the outbound files i.e., Blacklist/Reconciliation/Discount files, using the Concessionaire TMS private key. Concessionaire TMS should decrypt the outbound files using their private key.

Tools:

CCH is currently making use of gpg4win for encryption/decryption process. Download the gpg.exe from the link provided here (<http://gpg4win.org/download.html>).

This can be automated by accessing the Gnupg executable files and passing passphrase as arguments to the process.

11.7 Responsibilities

Items	Responsibility
Business Rules Update or Finalization	CCH Ltd.
Finalization of Agency Codes	CCH Ltd.
Finalization of Reason Codes	CCH Ltd.
Plaza and Lane names	Concessionaires
Violation clearance SLAs	CCH Ltd. and Concessionaires
Appendix section	CCH Ltd.