



Transaction Risk API 2.1

Source Development Guide

Document History

Date	Changes
11 November 2025	Update: Updated wording around ERM
3 March 2025	Update: API source documentation for email.domain_creation_date to replace "integer or null" with "string or null" and updated description
11 December 2024	Update: Included disclaimer for usage of Identity Risk Model
10 October 2024	Update: Branding update to remove Ekata and reflect Mastercard. Inclusion of Email Risk Score.

Table of Contents

Document History	1
Source Development Guide Overview	3
Transaction Risk API 2.1	3
Query Parameters	4
Responses: 200	6
Primary Email Checks	6
IP Checks	8
Primary Phone Checks	9
Primary Address Checks	11
Secondary Email Checks	12
Secondary Phone Checks	12
Secondary Address Checks	13
Machine Learning Scores	14
Alerts & Warnings	15
Request: GET	16
Request Samples: URL	16
Request Samples: cURL	16
Request Samples: POST	17
Request Samples: cURL	17
Response Sample: 200	17
Error Handling	19
How To Respond to Error Codes	19
Disclaimers	21



Source Development Guide Overview

This document should be used with the associated Integration Guide. The Integration Guide provides additional accepted formats for the following:

- Name
- Phone
- Address
- IP
- Timestamp

Transaction Risk API 2.1

The Transaction Risk Score API provides a predictive score to help merchants assess the holistic risk of a single transaction. In under 100ms, it scores overall risk using email, IP address, phone number, name, and physical address and delivers a concise response for easy integration.



Query Parameters

All parameters are string unless noted.

Query Parameters	Description
transaction_id required	Desc: The identifier associated with the event.
transaction_time required	Desc: Timestamp must be in UTC time zone and date format. See the Integration Guide for additional information
primary.name	Desc: The full legal name of the person.
primary.business_name	Desc: The full primary legal name of the business.
secondary.name	Desc: The full secondary full legal name of the person.
secondary.business_name	Desc: The full secondary legal name of the business.
primary.address.street_line_1	Example: primary.address.street_line_1=100 Syrws St Desc: The first line of the street part in the primary structured address. Limit: Cannot exceed 1000 characters.
primary.address.street_line_2	Example: primary.address.street_line_2=Ste 1 Desc: The second line of the street part in the primary structured address. Limit: Cannot exceed 1000 characters.
primary.address.city	Example: primary.address.city=London Desc: The name of the city in the primary structured address. Limit: Cannot exceed 500 characters.
primary.address.postal_code	Example: primary.address.postal_code=N7 8XG Desc: The postal code of the primary structured address. Limit: Cannot exceed 100 characters.
primary.address.state_code	Example: primary.address.state_code=JS Desc: The state code of the primary structured address. Limit: Cannot exceed 100 characters.
primary.address.country_code	Example: primary.address.country_code=GB Desc: The ISO-3166 alpha-2 country code associated with the primary address. See the Integration Guide for additional information.
secondary.address.street_line_1	Example: secondary.address.street_line_1=100 Syrws St Desc: The first line of the street part in the secondary structured address. Limit: Cannot exceed 1000 characters.



Query Parameters	Description
secondary.address.street_line_2	Example: secondary.address.street_line_2=Ste 1 Desc: The second line of the street part in the secondary structured address. Limit: Cannot exceed 1000 characters.
secondary.address.city	Example: secondary.address.city=London Desc: The name of the city in the secondary structured address. Limit: Cannot exceed 500 characters.
secondary.address.postal_code	Example: secondary.address.postal_code=N7 8XG The postal code of the secondary structured address. Limit: Cannot exceed 100 characters.
secondary.address.state_code	Example: secondary.address.state_code=JS Desc: The state code of the secondary structured address. Limit: Cannot exceed 100 characters.
secondary.address.country_code	Example: secondary.address.country_code=GB The preferred value is ISO-3166-2, 2 alpha country code of the secondary address. See the Integration Guide for additional information
primary.phone	Desc: The phone number in E.164 or local format. See the Integration Guide for additional information
primary.phone.country_hint	Example: primary.phone.country_hint=GB Desc: The ISO-3166 alpha-2 country code associated with the primary phone number.
secondary.phone	Desc: The phone number in E.164 or local format. See the Integration Guide for additional information
secondary.phone.country_hint	Example: secondary.phone.country_hint=GB The ISO-3166 alpha-2 country code associated with the secondary phone number. See the Integration Guide for additional information
primary.email_address	Example: primary.email_address=waidong@gmail.com Desc: The primary email address of the person.
secondary.email_address	Example: secondary.email_address=waidong@gmail.com Desc: The secondary email address of the person.
ip_address	Desc: IPv4 and IPv6 are the only valid IP versions accepted. The IP address associated with the event.



Responses: 200

Response Schema: application/json

Primary Email Checks

Signals	Description
primary.email.valid	<i>boolean or null</i> True if the email address is valid.
primary.email.first_seen_days	<i>integer or null <int64></i> Count of days since the email address was first observed in Ekata's Identity Network. If the email address has not been observed before, <code>first_seen_days</code> will be 0.
primary.email.to_name	<i>string or null</i> Enum: "not found" "match" "no-match" The match status between the input name and the queried entity.
primary.email.domain_creation_date	<i>string or null</i> The date that the email domain was registered. Example: Gmail domain is dated to 2005-08-26 (YYYY-MM-DD)
primary.email.last_seen_days	<i>integer or null <int164></i> Count of days since the email was last observed in Ekata's Identity Network. If the email has not been observed before, <code>last_seen_days</code> will be 0.
primary.email.risk_score	<i>number <double> [0 .. 1]</i> Highly performant risk score that assesses the risk level of an email address. The score is derived from a model that leverages features from the Identity Network and new features on email tumbling detection, email linkages to other PII elements, and a new disposable domain list service. A number between 0 and 1 rounded to three decimal places. To return a score, the only required input is an email address. To have the best performance, IP address, phone, or address is recommended.
primary.email.is_disposable	<i>boolean or null</i> True if the email domain is disposable. Disposable emails are generally associated with fraudulent activities. If true, this is one of the strongest risk indicators and the transaction should be flagged for further review.



Signals	Description
primary.email.mailbox_velocity	<p><i>integer <int64> [0..∞]</i></p> <p>Returns an integer value for the velocity (frequency) a mailbox has been seen in the past 180 days.</p> <p>A mailbox is the un-tumbled name part of an email address. E.g., johndoe@gmail.com, john.doe@gmail.com, and johndoe+123abc@gmail.com all have the same mailbox.</p>



IP Checks

Signals	Description
ip.risk	<i>boolean or null</i> True if the IP address is considered risky, based on multiple IP data points and velocity calculations.
ip.risk_score	<i>string or null <double> [0 .. 1] ^0\.[0-9]{1,3}/1\.[0]</i> Comprehensive risk score associated with an IP address, with a higher score indicating a riskier IP address. A number between 0 and 1 rounded to three decimal places.
ip.primary_address_distance	<i>string or null <int164></i> The distance (in miles) between the IP address and the physical address.
ip.secondary_address_distance	<i>string or null <int164></i> The distance (in miles) between the IP address and the physical address.
ip.last_seen_days	<i>integer or null <int164></i> Count of days since the IP address was last observed in Ekata's Identity Network. If the IP address has not been observed before, last_seen_days will be 0.
ip.geolocation_country_code	<i>string or null</i> The ISO-3166 alpha-2 country code associated with the geolocation of the individual's IP address. See the Integration Guide for additional information
ip.connection.type	<i>string or null</i> Enum: "cable/DSL" "corporate" "cellular" "dialup" IP Connection type description.



Primary Phone Checks

Signals	Description
primary.phone.valid	<p><i>boolean or null</i></p> <p>True if the phone number is valid.</p>
primary.phone.line_type	<p><i>string or null</i></p> <p>Enum: "non-fixed-VoIP" "premium" "voicemail" "landline" "fixed-VoIP" "toll-free" "other" "mobile"</p> <p>The line type of the phone number</p> <ul style="list-style-type: none"> • landline - Traditional wired phone line • fixed-VoIP - VOIP-based fixed line phones • mobile - Wireless phone line • voicemail - Voicemail-only service • toll-free - Callee pays for call • premium - Caller pays a premium for the call—e.g., 976 area code • non-fixed-VoIP - Skype, for example • other - Anything that does not match the previous categories
primary.phone.ip.last_seen_days	<p><i>integer or null <int164></i></p> <p>Count of days since the phone-IP combination was last observed in Ekata's Identity Network. If the phone-IP combination has not been observed before, last_seen_days will be 0.</p>
primary.phone.to_name	<p><i>string or null</i></p> <p>Enum: "not-found" "match" "no-match"</p> <p>The match status between either of the input names (person or business) and the queried entity.</p>
primary.phone.carrier	<p><i>string or null</i></p> <p>The company that provides voice and/or data services for the phone number. Carriers are returned at the MVNO level.</p>



Signals	Description
<p>primary.address.validity_level</p>	<p><i>string or null</i></p> <p>Enum: "valid_to_house_number" "missing_address" "invalid" "valid" "valid_to_street" "valid_to_country" "valid_to_city" "valid_to_house_number_missing_apt"</p> <p>The most granular level to which the address could be validated. Ex. If the address was only valid to the city level (but not to the house level), it would return "valid_to_city".</p> <ul style="list-style-type: none"> • missing_address – An input address was not provided. • invalid – The input address is not valid. • valid – The input address is valid. • valid_to_country – The input address could only be validated to the country level. This means the country of the input address is valid, but the other elements of the input address were unable to be confirmed as valid or invalid. • valid_to_city – The input address was validated to the city level. This means the country, state, city, and postal code of the input address are valid, but the street, house number, and subpremise of the input address were unable to be confirmed as valid or invalid. • valid_to_street – The input address was validated to the street level. This means the country, state, city, postal code, and street of the input address are valid, but the house number and subpremise of the input address were unable to be confirmed as valid or invalid. • valid_to_house_number – The input address was validated to the street and house number level. This means the country, state, city, postal code, street, and house number of the input address are valid, but the subpremise of the input address was unable to be confirmed as valid or invalid. • valid_to_house_number_missing_apt – The input address was validated to the street and house number level. This means the country, state, city, postal code, street, and house number of the input address are valid, but the subpremise of the input address was missing and thus unable to be confirmed as valid or invalid.



Primary Address Checks

Signals	Description
<p>primary.address.validity_level</p>	<p><i>string or null</i></p> <p>Enum: "valid_to_house_number" "missing_address" "invalid" "valid" "valid_to_street" "valid_to_country" "valid_to_city" "valid_to_house_number_missing_apt"</p> <p>The most granular level to which the address could be validated. Ex. If the address was only valid to the city level (but not to the house level), it would return "valid_to_city".</p> <ul style="list-style-type: none"> • missing_address – An input address was not provided. • invalid – The input address is not valid. • valid – The input address is valid. • valid_to_country – The input address could only be validated to the country level. This means the country of the input address is valid, but the other elements of the input address were unable to be confirmed as valid or invalid. • valid_to_city – The input address was validated to the city level. This means the country, state, city, and postal code of the input address are valid, but the street, house number, and subpremise of the input address were unable to be confirmed as valid or invalid. • valid_to_street – The input address was validated to the street level. This means the country, state, city, postal code, and street of the input address are valid, but the house number and subpremise of the input address were unable to be confirmed as valid or invalid. • valid_to_house_number – The input address was validated to the street and house number level. This means the country, state, city, postal code, street, and house number of the input address are valid, but the subpremise of the input address was unable to be confirmed as valid or invalid. • valid_to_house_number_missing_apt – The input address was validated to the street and house number level. This means the country, state, city, postal code, street, and house number of the input address are valid, but the subpremise of the input address was missing and thus unable to be confirmed as valid or invalid.
<p>primary.address.first_seen_days</p>	<p><i>string or null</i></p> <p>Count of days since the address was first observed in Ekata's Identity Network. If the address has not been observed before, first_seen_days will be 0.</p>



Signals	Description
primary.address.to_name	<p><i>string or null</i></p> <p>Enum: "not-found" "match" "no-match"</p> <p>The match status between either of the input names (person or business) and the queried entity.</p>

Secondary Email Checks

Signals	Description
secondary.email.valid	<p><i>boolean or null</i></p> <p>True if the email address is valid.</p>
secondary.email.first_seen_days	<p><i>integer or null <int164></i></p> <p>Count of days since the email was first observed in Ekata's Identity Network. If the email has not been observed before, <code>first_seen_days</code> will be 0.</p>

Secondary Phone Checks

Signals	Description
secondary.phone.valid	<p><i>boolean or null</i></p> <p>True if the phone number is valid.</p>
secondary.phone.ip.last_seen_days	<p><i>integer or null <int164></i></p> <p>Count of days since the phone-IP combination was last observed in Ekata's Identity Network. If the phone-IP combination has not been observed before, <code>last_seen_days</code> will be 0.</p>



Secondary Address Checks

Signals	Description
<p>secondary.address.validity_level</p>	<p><i>string or null</i></p> <p>Enum: "valid_to_house_number" "missing_address" "invalid" "valid" "valid_to_street" "valid_to_country" "valid_to_city" "valid_to_house_number_missing_apt"</p> <p>The most granular level to which the address could be validated. Ex. If the address was only valid to the city level (but not to the house level), it would return "valid_to_city".</p> <ul style="list-style-type: none"> • missing_address – An input address was not provided. • invalid – The input address is not valid. • valid – The input address is valid. • valid_to_country – The input address could only be validated to the country level. This means the country of the input address is valid, but the other elements of the input address were unable to be confirmed as valid or invalid. • valid_to_city – The input address was validated to the city level. This means the country, state, city, and postal code of the input address are valid, but the street, house number, and subpremise of the input address were unable to be confirmed as valid or invalid. • valid_to_street – The input address was validated to the street level. This means the country, state, city, postal code, and street of the input address are valid, but the house number and subpremise of the input address were unable to be confirmed as valid or invalid. • valid_to_house_number – The input address was validated to the street and house number level. This means the country, state, city, postal code, street, and house number of the input address are valid, but the subpremise of the input address was unable to be confirmed as valid or invalid. • valid_to_house_number_missing_apt – The input address was validated to the street and house number level. This means the country, state, city, postal code, street, and house number of the input address are valid, but the subpremise of the input address was missing and thus unable to be confirmed as valid or invalid.
<p>secondary.address.first_seen_days</p>	<p><i>integer or null <int164></i></p> <p>Count of days since the address was first observed in Ekata's Identity Network. If the address has not been observed before, first_seen_days will be 0.</p>



Signals	Description
secondary.address.to_name	<p><i>string or null</i></p> <p>Enum: "not-found" "match" "no-match"</p> <p>The match status between either of the input names (person or business) and the queried entity.</p>

Machine Learning Scores

Signals	Description
identity_network_score	<p><i>number or null [0.. 1] <double> ^0\.[0-9]{1,3}/1\.</i></p> <p>Comprehensive network score built on behavioral insights such as velocity, popularity, volatility, and age of an attribute, with a higher score indicating a riskier transaction. A number between 0 and 1 rounded to three decimal places.</p>
identity_risk_score	<p><i>integer or null <int164> [0.. 500]</i></p> <p>Comprehensive identity risk score with a higher score indicating a riskier transaction.</p>



Alerts & Warnings

Signals	Description
alerts	<p><i>Array of strings</i></p> <p>Items Enum: "primary.phone.valid" "primary.email.to_name" "primary.address.first_seen_days" "secondary.phone.ip.last_seen_days" "primary.address.to_name" "secondary.address.to_name" "primary.address.validity_level" "ip.last_seen_days" "primary.phone.line_type" "primary.email.valid" "secondary.address.first_seen_days" "ip.risk" "secondary.email.valid" "primary.email.first_seen_days" "ip.secondary_address_distance" "identity_risk_score" "primary.phone.to_name" "secondary.phone.valid" "identity_network_score" "secondary.address.validity_level" "secondary.email.first_seen_days" "ip.primary_address_distance" "primary.phone.ip.last_seen_day" "primary.email.domain_creation_date" "primary.email.last_seen_days" "ip.risk_score" "ip.geolocation_country_code" "ip.connection.type" "primary.phone.carrier"</p> <p>Returns a list of fields affected in the rare case of a partial data outage; otherwise, it will be empty. In the case of a partial data outage, it is recommended to use the partial response in the real-time transaction model and use the alerts field data for diagnostics in post transaction.</p>
warnings	<p><i>Array of strings or null</i></p> <p>Primary/Secondary Email: "Invalid username syntax"</p> <p>Primary/Secondary Email: "Invalid domain syntax"</p> <p>Primary/Secondary Email: "Address is too long"</p> <p>Primary/Secondary Email: "Invalid top-level-domain (TLD) in address"</p> <p>Primary/Secondary Email: "General syntax error"</p> <p>Primary/Secondary Address: "Input postal code was corrected"</p> <p>Primary/Secondary Address: "Input state corrected"</p> <p>Primary/Secondary Address: "Missing country_code"</p> <p>Primary/Secondary Phone: "Invalid country_hint value. Only Alpha-2 supported"</p> <p>IP: "IP address is in private range"</p> <p>An array containing warning messages.</p>



Request: GET

GET

/2.1/transaction_risk

Request Samples: URL

```
https://api.ekata.com/2.1/transaction_risk?transaction_id=95285489a80b059a7f0be7147ba211f1&transaction_time=2020-12-31+13%3A45&primary.name=Martin+Chang&primary.business_name=Serangoon+Sweets&primary.phone=64431948&primary.email_address=martinchang%40gmail.com&primary.address.street_line_1=153+Joo+Chiat+Rd&primary.address.city=Singapore&primary.address.postal_code=427431&primary.address.country_code=SG&ip_address=54.190.251.42&secondary.name=Lisa+Chang&secondary.phone=64432643&secondary.email_address=lisachang%40gmail.com&secondary.address.street_line_1=326+Serangoon+Ave&secondary.address.city=Singapore&secondary.address.postal_code=550326&secondary.address.country_code=SG
```

Request Samples: cURL

```
curl --get -H "Authorization: Bearer <API_KEY>"  
'https://api.ekata.com/2.1/transaction_risk' \  
--data-urlencode 'transaction_id=95285489a80b059a7f0be7147ba211f1' \  
--data-urlencode 'transaction_time=2020-12-31 13:45' \  
--data-urlencode 'primary.name=Martin Chang' \  
--data-urlencode 'primary.business_name=Ipsium Lorem LLC' \  
--data-urlencode 'primary.phone=67340062' \  
--data-urlencode 'primary.email_address=martinchang@gmail.com' \  
--data-urlencode 'primary.address.street_line_1=153 Joo Chiat Rd' \  
--data-urlencode 'primary.address.street_line_2=' \  
--data-urlencode 'primary.address.city=Singapore' \  
--data-urlencode 'primary.address.state_code=' \  
--data-urlencode 'primary.address.postal_code=427431' \  
--data-urlencode 'primary.address.country_code=SG' \  
--data-urlencode 'ip_address=54.190.251.42' \  
--data-urlencode 'secondary.firstname=Lisa' \  
--data-urlencode 'secondary.lastname=Chang' \  
--data-urlencode 'secondary.phone=64432643' \  
--data-urlencode 'secondary.email_address=lisachang@gmail.com' \  
--data-urlencode 'secondary.address.street_line_1=326 Serangoon Ave' \  
--data-urlencode 'secondary.address.street_line_2=' \  
--data-urlencode 'secondary.address.city=Singapore' \  
--data-urlencode 'secondary.address.postal_code=550326' \  
--data-urlencode 'secondary.address.country_code=SG'
```



Request Samples: POST

POST

/2.1/transaction_risk

Request Samples: cURL

```
curl --POST -H "Authorization: Bearer <API_KEY>" 'https://api.ekata.com/2.1/transaction_risk' \  
--data-urlencode 'transaction_id=95285489a80b059a7f0be7147ba211f1' \  
--data-urlencode 'transaction_time=2020-12-31 13:45' \  
--data-urlencode 'primary.name=Martin Chang' \  
--data-urlencode 'primary.business_name=Ipsum Lorem LLC' \  
--data-urlencode 'primary.phone=67340062' \  
--data-urlencode 'primary.email_address=martinchang@gmail.com' \  
--data-urlencode 'primary.address.street_line_1=153 Joo Chiat Rd' \  
--data-urlencode 'primary.address.street_line_2=' \  
--data-urlencode 'primary.address.city=Singapore' \  
--data-urlencode 'primary.address.state_code=' \  
--data-urlencode 'primary.address.postal_code=427431' \  
--data-urlencode 'primary.address.country_code=SG' \  
--data-urlencode 'ip_address=54.190.251.42' \  
--data-urlencode 'secondary.firstname=Lisa' \  
--data-urlencode 'secondary.lastname=Chang' \  
--data-urlencode 'secondary.phone=64432643' \  
--data-urlencode 'secondary.email_address=lisachang@gmail.com' \  
--data-urlencode 'secondary.address.street_line_1=326 Serangoon Ave' \  
--data-urlencode 'secondary.address.street_line_2=' \  
--data-urlencode 'secondary.address.city=Singapore' \  
--data-urlencode 'secondary.address.postal_code=550326' \  
--data-urlencode 'secondary.address.country_code=SG'
```

Response Sample: 200

```
{  
  "primary.email.valid": true,  
  "primary.email.first_seen_days": 234,  
  "primary.email.to_name": "not-found",  
  "primary.email.domain_creation_date": "2000-11-29",  
  "primary.email.last_seen_days": 5,  
  "primary.email.risk_score": 0.661,  
  "primary.email.is_disposable": false,  
  "primary.email.mailbox_velocity": 18;  
  "ip.risk": false,  
  "ip.risk_score": 0.248,  
  "ip.primary_address_distance": 240,
```



```
"ip.secondary_address_distance": 240,  
"ip.last_seen_days": 10,  
"ip.geolocation_country_code": "US",  
"ip.connection.type": "cable-dsl",  
"primary.phone.valid": true,  
"primary.phone.line_type": "landline",  
"primary.phone.ip.last_seen_days": 10,  
"primary.phone.to_name": "no-match",  
"primary.phone.carrier": "Ekatatelco",  
"primary.address.validity_level": "valid_to_street",  
"primary.address.first_seen_days": 10,  
"primary.address.to_name": "match",  
"secondary.email.valid": true,  
"secondary.email.first_seen_days": 120,  
"secondary.phone.valid": true,  
"secondary.phone.ip.last_seen_days": 12,  
"secondary.address.validity_level": "invalid",  
"secondary.address.first_seen_days": 10,  
"secondary.address.to_name": "match",  
"identity_network_score": 0.364,  
"identity_risk_score": 375,  
"alerts": []  
"warnings": []  
}
```



Error Handling

Ekata uses conventional HTTP response codes to indicate success or failure of a request.

- 2xx range codes indicate a successful response.
- 4xx range codes indicate an error that resulted from the API request.
- 5xx range codes indicate an error within Ekata's system.

Contact support@ekata.com for help on errors that can't be resolved.

HTTP Code	Error Name	Error Message(s)	Likely Cause
400 Bad Request	MissingInput	transaction_id_required transaction_time_required	API request is missing one or both required inputs.
401 Unauthorized	AuthError	invalid-auth-token	API key is not provided in the API request.
402 Payment Required	QuotaExceededError	quota-exceeded	API key has exceeded its lifetime quota of requests.
403 Forbidden	AuthError	action-unauthorized	Configuration issue on Ekata's end or invalid input sent.
403 Forbidden	AuthError	invalid-auth-token	API key provided is invalid.
403 Forbidden	AuthError	ip-blocked	API request is from an IP address that isn't on the permitted IPs list.
403 Forbidden	AuthError	token-archived	API key has been archived.
403 Forbidden	AuthError	token-disabled	API key is not valid yet.
403 Forbidden	AuthError	token-expired	API key has expired.
404 Not Found	InvalidResourceURI	Invalid resource URI	API request has been made to an invalid URI/endpoint
429 Too Many Requests	-	-	API key has exceeded its rate limit.
500 Internal Server Error	InternalError	internal-error	Internal error on Ekata's end.

How To Respond to Error Codes

- 4xx error code is returned, review and correct the input.
1. 429 error code is returned, the call will not automatically retry the query. Retry requests once the rate of 429 responses has returned to normal.

For Transaction Risk API, it is recommended to configure timeouts at 600ms.





Disclaimers

This model is designed to be an informational tool only. This model is provided as a rough estimate of authentication-based risk decisioning performance. The analysis performed by this model is a series of general estimates which are based upon the underlying information and assumptions now available. That information may change over time, and the analysis would need to be updated to reflect those changes for the analysis to be useful. The assumptions regarding authorization rates are hypothetical and there can be no guarantee that they will be achieved. Actual results may vary substantially from the figures shown. Mastercard accepts no responsibility for any losses arising from any use of or reliance upon any calculations or conclusions reached using this Model.

MASTERCARD MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING (A) THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE, AND NON-INFRINGEMENT; (B) RELATING TO THE PERFORMANCE OF SMART AUTHENTICATION OR USE OF RISK INFORMATION; (C) THAT USE OF SMART AUTHENTICATION OR RISK INFORMATION SHALL BE UNINTERRUPTED OR ERROR-FREE; OR (D) CONCERNING THE ACCURACY, QUALITY, RELIABILITY, SUITABILITY, OR EFFECTIVENESS OF THE RISK INFORMATION OR ANY OTHER DATA, RESULTS, CONTENT, OR OTHER INFORMATION OBTAINED OR GENERATED BY COMPANY THROUGH ITS USE OF SMART AUTHENTICATION OR ANY RISK INFORMATION. SMART AUTHENTICATION, RISK INFORMATION, AND OTHER MASTERCARD IP IS PROVIDED "AS IS," WITH ALL FAULTS, KNOWN AND UNKNOWN. THE COMPANY ASSUMES THE ENTIRE RISK ARISING OUT OF ITS USE OF SMART AUTHENTICATION AND ITS USE OF THE RISK INFORMATION UNDER ALL APPLICABLE LAWS, INCLUDING THOSE RELATING TO PRIVACY AND DATA PROTECTION, BANKING, CREDIT, AND ANTI-DISCRIMINATION.

