



Fast Interface for New Issuance (FINI)

API SIMULATION TEST GUIDE

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1 Introduction

The FINI API Gateway offers a range of RESTful JSON endpoints for market participants to automate different types of IPO workflows, including obtaining IPO reference data, managing EIPO subscriptions and validating EIPO funding.

FINI will provide test environment for market participants to perform development and testing of their own systems to interface with FINI API Gateway. **Market participants must setup Virtual Private Network (VPN) connection for connecting to HKEX's testing environment through Internet**, with either Client VPN or Site-to-Site VPN option. On the other hand, VPN is not required for production environment.

In the Simulation Testing Stage of FINI API Test environment (from 28 Nov 2022 to 27 Jan 2023), market participants may verify the connectivity of their development/testing environment with the FINI testing environment, including setup of testing agent and machine profiles, retrieval of JWT access token and calling FINI APIs with simulation responses.

This guide is being released to market participants in participation in FINI's API early simulation testing, which is not a complete implementation of FINI API functionality. Sample request messages and simulation response messages are described.

Please refer to FINI API Guide for the full message format of FINI APIs.

2 Important Notes

Please note the following for FINI API Test environment in Simulation Testing stage.

- JWT access token expiration value is set as 1 hour to facilitate testing purpose, instead of 30 seconds in production.
- FINI Simulation environment always returns a static JSON response if the input requests pass all syntax validation and fulfil the End-to-End encryption requirement (for EIPO subscription endpoints only). The "Static JSON Response" sub-sections show a sample of each API endpoint's successful response body, and the Validations for Simulation Test stage can be found in Appendix.
- FINI Simulation environment always returns a static JSON response regardless the nextCursor value/API request timestamp/size/number of records in the request JSON or parameters.
- FINI Simulation environment will not perform business validations (e.g. existence of stock code) and may not return the same validation or error message as production.
- FINI Simulation environment validation list is not the full set as production.
- The hardware capacity of FINI Simulation environment is not identical to production, thus it is not allowed for performance or load testing.
- Please ignore the SSL Certificate warning on domain **fini.u4cp.hkex.com.hk** for all testing tools (Browser or any testing tools), because self-signed testing SSL certificates will be used in FINI API Test environment.

3 Connectivity Setup

The FINI API Test environment is accessed via Internet with Client VPN or Site-to-Site VPN established. For details, please refer to *FINI Testing Environment Setup and Access Guide*.

Testing Agent Profile and Machine Profiles must be setup before conducting FINI API tests. For details, please refer to *HKEX Access Management User Guide*.

The following FINI API endpoints can be tested after the connectivity is setup and test profiles are created. Static simulation responses will be returned by the FINI API Test environment if the basic API request format checking is passed.

4 FINI API JWT Access Token Retrieval API

URI	https://connect-am.u4cp.hkex.com.hk:443/openam/oauth2/eu/access_token
Method	POST

For preparing the Agent Profile JWT(G1) and Machine Profile JWT(G2), the JWT Audience parameter (i.e. “aud”) must be set to value https://connect-am.u4cp.hkex.com.hk:443/openam/oauth2/eu/access_token.

4.1 Request Body Sample

```
grant_type: "urn:ietf:params:oauth:grant-type:jwt-bearer"
assertion:
"eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJhdWQiOiJodHRwczovL2NvbW5lY3QtYW0udTRjcC5oa2V4LmNvbS5oazo0NDMvb3BlbmFtL29hdXRoMi9ldS9hY2Nlc3NfdG9rZW4iLCJpc3MiOiJodHRwczovL3Rlc3Rjb21wYW55YS5jb20vQWdlbnRlbnR1Rjc3N1ZlIiLCJzdWliOiJlU29hZDQ1MjY2NTQ1NzU5Mn0.KJFi-SbUvxqS9rtxQd1BGBFvkz9LcCvi-OY0mzWd85ejMI59qNoB3oIKLqvz66OHne2ULL43Joo95DFMHeQalvsg-6oEPG_EST3V-U8RxAyHNX78xDIR1PY4dYFUcUkdjfrd6G2a4Dcl7piUE7xCFZKdQH9Rm9OoCanvT64VVuVwYti9a0nMIQWJclc2oOeP6FbDPEhu_WYb8t3GICldW1pD_-gcAK-4CMjffjJMYSauNtj0vpx9-2gGLgP6ol86QzJEFp8EtSWdfCuoeREW6z4ErETBS41KV1hpmv7fZVnUqrM5x_mzAIPBBT4qvcxySDefJLA1074ohEvgTaiSg"
client_assertion_type: "urn:ietf:params:oauth:client-assertion-type:jwt-bearer"
client_assertion:
"eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJhdWQiOiJodHRwczovL2NvbW5lY3QtYW0udTRjcC5oa2V4LmNvbS5oazo0NDMvb3BlbmFtL29hdXRoMi9ldS9hY2Nlc3NfdG9rZW4iLCJpc3MiOiJodHRwczovL3Rlc3Rjb21wYW55YS5jb20vQWdlbnRlbnR1Rjc3N1ZlIiLCJzdWliOiJlU29hZDQ1MjY2NTQ1NzU5Mn0.KJFi-SbUvxqS9rtxQd1BGBFvkz9LcCvi-OY0mzWd85ejMI59qNoB3oIKLqvz66OHne2ULL43Joo95DFMHeQalvsg-6oEPG_EST3V-U8RxAyHNX78xDIR1PY4dYFUcUkdjfrd6G2a4Dcl7piUE7xCFZKdQH9Rm9OoCanvT64VVuVwYti9a0nMIQWJclc2oOeP6FbDPEhu_WYb8t3GICldW1pD_-gcAK-4CMjffjJMYSauNtj0vpx9-2gGLgP6ol86QzJEFp8EtSWdfCuoeREW6z4ErETBS41KV1hpmv7fZVnUqrM5x_mzAIPBBT4qvcxySDefJLA1074ohEvgTaiSg"
H8lgx_TmHTaA74FwKstWWlhde9lpQJ0JtxvxQJnhw-g2lr5sqMrmIAu7KyrKT6hwputEljh8U4hpKISEN9VPSsXwVjGvItQ-_OOOEMloVxg-v8hWw0pQK6w4zygPInIWmG6Gg0cJlh8JX69CMN1z8eXdT-enmRr4vrAeOCLk_Bgg"
```

4.2 Response Body Sample

```
{
```


URI	https://fini.u4cp.hkex.com.hk/api/ipos/list/v1?size={{size}}&nextCursor={{cursor}}
Method	GET

6.1 Request Header

authorization: Bearer `{{jwt_token}}`

6.2 Static JSON Response

```
{
  "code": "0",
  "message": "",
  "data": [
    {
      "ipoID": "6",
      "stkCode": "9988",
      "isin": "KYG017191142",
      "status": "25"
    },
    {
      "ipoID": "7",
      "stkCode": "9633",
      "isin": "CNE10004272",
      "status": "30"
    },
    {
      "ipoID": "8",
      "stkCode": "9618",
      "isin": "KYG8208B1014",
      "status": "45"
    },
    {
      "ipoID": "9",
      "stkCode": "6618",
      "isin": "KYG5074A1004",
      "status": "60"
    },
    {
      "ipoID": "10",
      "stkCode": "1024",
      "isin": "KYG532631028",
      "status": "70"
    }
  ],
  "totalSize": 5,
  "timestamp": "2021-05-17 18:00:00",
  "nextCursor": "0",
  "exception": []
}
```

7 Enquire IPO reference data

URI	https://fini.u4cp.hkex.com.hk/api/ipos/refdata/v1?ipoID={{ipoID}}
Method	GET

7.1 Request Header

authorization: Bearer `{{jwt_token}}`

7.2 Static JSON Response

```
{
  "code": "0",
  "message": "",
  "data": [{
    "ipoID": "123",
    "stkCode": "9988",
    "status": "40",
    "companyEngFull": "Alibaba Group Holding Limited",
    "companyEngShort": "BABA",
    "companyChiFull": "阿里巴巴集團控股有限公司",
    "companyChiShort": "阿里巴巴",
    "placeOfCorp": "1",
    "isin": "KYG017191142",
    "nomValue": 0.0000000000000025,
    "nomCur": 1,
    "hkAddress": [{"id": "1", "line": "26/F Tower One, Times Square"},
      {"id": "2", "line": "1 Matheson Street"},
      {"id": "3", "line": "Causeway Bay"},
      {"id": "4", "line": "Hong Kong"}],
    "warrants": [{"warrantNameEngShort": "BABA-WRT 1",
      "warrantNameEngFull": "Alibaba Warrant 1",
      "warrantCode": "4988",
      "isin": "",
      "boardLot": 100000,
      "subscriptionPrice": 2.000,
      "totalWarrants": 10000000}, {"warrantNameEngShort": "BABA-WRT 2",
      "warrantNameEngFull": "Alibaba Warrant 2",
      "warrantCode": "4999",
      "isin": "",
      "boardLot": 100000,
      "subscriptionPrice": 4.000,
      "totalWarrants": 40000000}],
    "offerType": 1,
    "listSecurities": 1,
    "listPlatform": 1,
    "primaryExchange": ["1"],
    "dualPrimaryExchange": null,
    "biotechIndicator": "1",
    "regsIndicator": "0",
    "wvrRatio": "1,10",
    "tradeCurrency": "HKD",
    "boardLot": 100,
    "downwardPriceFlex": 10,
    "upwardPriceFlex": 0,
    "priceMin": 0.000,
    "priceMax": 188.000,
    "priceFinal": 0.000,
    "clawback": [{"id": "1", "ratio": "1", "allocation": "10"},
      {"id": "2", "ratio": "15", "allocation": "30"},
      {"id": "3", "ratio": "50", "allocation": "40"},
      {"id": "4", "ratio": "100", "allocation": "100"}],
    "preIpoShares": "80000000",
    "ipoShares": "500000000",
  ]
}
```



```
"poSharesInitial": "12500000",
"poApplicationQuantity": "530465900",
"poOversubscriptionRatio": 42.44,
"poSharesFinal": "50000000",
"ioSharesInitial": "487500000",
"ioApplicationQuantity": "487500000",
"ioOversubscriptionRatio": 1.00,
"ioOfferSharesFinal": "450000000",
"poReallocationCap": 20.00,
"upsizedOption": 20.00,
"upsizedPoShares": null,
"upsizedIoShares": null,
"overallotOption": 15.00,
"overallotPoShares": null,
"overallotIoShares": null,
"overallPoShares": null,
"overallIoShares": null,
"overallIpoShares": null,
"totalIssuedCapitalListing": null,
"totalIssuedHsharesListing": null,
"totalIssuedNonwvrsharesListing": null,
"denomTable": [
  {"id": "1", "shares": "100", "value": "101.01"},
  {"id": "2", "shares": "200", "value": "202.02"},
  {"id": "3", "shares": "300", "value": "303.03"},
  {"id": "4", "shares": "400", "value": "404.03"},
  {"id": "5", "shares": "500", "value": "505.04"},
  {"id": "6", "shares": "600", "value": "606.05"},
  {"id": "7", "shares": "700", "value": "707.06"},
  {"id": "8", "shares": "800", "value": "808.06"},
  {"id": "9", "shares": "900", "value": "909.07"},
  {"id": "10", "shares": "1000", "value": "1010.08"},
  {"id": "11", "shares": "2000", "value": "2020.15"}],
"designatedSponsor": "Credit Suisse (Hong Kong) Limited",
"sponsors": [{"id": "1", "member": "Goldman Sachs (Asia)"},
  {"id": "2", "member": "Morgan Stanley (Asia)"},
  {"id": "3", "member": "JP Morgan (Asia)"},
  {"id": "4", "member": "BOCI Securities"}],
"legalSponsor": [{"id": "1", "member": "Freshfields Bruckhaus Deringer"},
  {"id": "2", "member": "Clifford Chance"},
  {"id": "3", "member": "Deacons"}],
"legalIssuer": "Freshfields Bruckhaus Deringer",
"underwriters": [{"id": "1", "member": "GoldmanSachs(Asia)"},
  {"id": "2", "member": "MorganStanley(Asia)"},
  {"id": "3", "member": "JPMorgan(Asia)"},
  {"id": "4", "member": "BOCISecurities"}],
"advisers": [{"id": "1", "member": "GoldmanSachs(Asia)"},
  {"id": "2", "member": "MorganStanley(Asia)"},
  {"id": "3", "member": "JPMorgan(Asia)"},
  {"id": "4", "member": "BOCISecurities"}],
"overallCoordinators": [{"id": "1", "member": "GoldmanSachs(Asia)"},
  {"id": "2", "member": "MorganStanley(Asia)"},
  {"id": "3", "member": "JPMorgan(Asia)"},
  {"id": "4", "member": "BOCISecurities"}],
"distributors": [{"id": "1", "member": "Citigroup Global Markets Asia"},
  {"id": "2", "member": "JP Morgan"},
  {"id": "3", "member": "The Hongkong and Shanghai Banking"}],
"hkShareReg": "Computershare Investor Services HK",
"bookOpenDate": "2021-04-26 09:00:00",
"bookCloseDate": "2021-04-29 12:00:00",
"pricingDate": "2021-04-30",
```

```

"allotmentDate": "2021-04-30",
"listingDate": "2021-05-04 09:00:00",
"silnputDate": "2021-05-03",
"placingSharesDeliveryDate": "2021-05-04 09:00:00",
"prefOfferIndicator": "0",
"brokerage": 1.00000,
"sfcLevy": 0.00270,
"sehkTradingFee": 0.00500,
"frcoLevy": 0.00015
}},
"totalSize": 1,
"timestamp": "2021-04-29 15:00:00",
"exception": []
}

```

8 Add EIPO Subscription Entries

URI	https://fini.u4cp.hkex.com.hk/api/eipo/subscriptions/add/v1
Method	POST

This API request requires end-to-end encryption HTTP headers and the Personal Identifiable Information (PII) data fields have to be encrypted according to the FINI API Guide.

8.1 Request Header

```

authorization: Bearer {{jwt_token}}
x-fini-encrypted-key: {{x_fini_encrypted_key}}
x-fini-request-id: {{x_fini_request_id}}
x-fini-timestamp: {{x_fini_timestamp}}
x-fini-signature: {{x_fini_signature}}
x-fini-encryption-client: "YES"

```

8.2 Request Body

```

{
  "data": [
    {
      "requestID": 1234569,
      "ipoID": "1519",
      "idList": [
        {
          "idType": "%enc_%HNQ/R6XyFQs9p42JFOHdgzs=",
          "idCountryJurisdiction": "%enc_%ZVg4WDR6t17gA19h/1lgNslUjw==",
          "idNum": "%enc_%bCJN95M4rJpF0nvuBM0Yef9JfOtIT13Fw8s=",
          "fullNameEng": "%enc_%bnseqvNs8/9+IfSolHQy8CU9wfCJYvTeolEYayU=",
          "fullNameChi": "%enc_%xlrMIQOqfCSYHS9OloEMEU7dxXJx3APHRGHm4w=="
        },
        {
          "idType": "%enc_%HNQ/R6XyFQs9p42JFOHdgzs=",

```

```

        "idCountryJurisdiction": "%enc_%ZVg4WDR6tI7gAI9h/1IgNsIUjw==",
        "idNum": "%enc_%byFM8JI7rZpF0I1HHETICnWh/T2I1nrDmtQ=",
        "fullNameEng": "%enc_%bnseqvRk7/9+IfSoJolihMpzDTvhOtWESZmFLk=",
        "fullNameChi": "%enc_%xlrMIReCfCSYHS9O79mqwJriMXOI8aac5xKLBg=="
    }
},
"appQuantity": "1000",
"firmID": "1100",
"ownRef": "001"
}
]]

```

8.3 Static JSON Response

```

{
  "code": "0",
  "message": "",
  "data": [{
    "requestID": 1234567,
    "recordID": "8523734271652226A",
    "exception": []
  }, {
    "requestID": 3456789,
    "recordID": "8523734271652227A",
    "exception": []
  }, {
    "requestID": 9846416,
    "recordID": "8523734271652228A",
    "exception": []
  }
],
  "totalSize": 3,
  "timestamp": "2021-09-26 16:27:20",
  "exception": []
}

```

9 Amend EIPO Subscription Entries

URI	https://fini.u4cp.hkex.com.hk/api/eipo/subscriptions/change/v1
Method	POST

This API request requires end-to-end encryption HTTP headers and the Personal Identifiable Information (PII) data fields have to encrypted according to the FINI API Guide.

9.1 Request Header

```

authorization: Bearer {{jwt_token}}
x-fini-encrypted-key: {{x_fini_encrypted_key}}
x-fini-request-id: {{x_fini_request_id}}
x-fini-timestamp: {{x_fini_timestamp}}
x-fini-signature: {{x_fini_signature}}
x-fini-encryption-client: "YES"

```

9.2 Request Body

```
{
  "data": [
    {
      "recordID": "0000000442200000A",
      "idList": [
        {
          "idType": "%enc_%HNQ/R6XyFQs9p42JFOHdgzs=",
          "idCountryJurisdiction": "%enc_%ZVg4WDR6t17gAl9h/1lgNslUjw==",
          "idNum": "%enc_%dCJN95M4rJoo0pY0IK1esPyYfvHLortPgE0=",
          "fullNameEng": "%enc_%WXwS5M9s9NlsqGUYDjbl0fxPXXlo6EpUIQ==",
          "fullNameChi": "%enc_%yK/f1B+Ef9ElywpA+o4Lyg3nkZk2Jw=="
        },
        {
          "appQuantity": "10000",
          "firmID": "1024",
          "ownRef": ""
        }
      ]
    }
  ]
}
```

9.3 Static JSON Response

```
{
  "code": "0",
  "message": "",
  "data": [
    {
      "recordID": "8523734271652226A",
      "exception": []
    }
  ],
  "totalSize": 1,
  "timestamp": "2021-09-26 16:27:20",
  "exception": []
}
```

10 Invalidate EIPO Subscription Entries

URI	https://fini.u4cp.hkex.com.hk/api/eipo/subscriptions/invalidate/v1
Method	POST

This API request requires end-to-end encryption HTTP headers according to the FINI API Guide.

10.1 Request Header

```
authorization: Bearer {{jwt_token}}
x-fini-encrypted-key: {{x_fini_encrypted_key}}
x-fini-request-id: {{x_fini_request_id}}
x-fini-timestamp: {{x_fini_timestamp}}
```

x-fini-signature: {{x_fini_signature}}
x-fini-encryption-client: "NO"

10.2 Request Body

```
{
  "data": [
    {
      "recordID": "0000000124100000A"
    }
  ]
}
```

10.3 Static JSON Response

```
{
  "code": 0,
  "message": "",
  "data": [
    {
      "recordID": "8523734271652226A",
      "exception": []
    },
    {
      "recordID": "8523734271652227A",
      "exception": []
    }
  ],
  "totalSize": 2,
  "timestamp": "2021-09-26 16:27:20",
  "exception": []
}
```

11 Enquire EIPO Subscription Entries

URI	https://fini.u4cp.hkex.com.hk/api/eipo/subscriptions/query/v1
Method	POST

This API request requires end-to-end encryption HTTP headers and the response will be encrypted according to the FINI API Guide.

11.1 Request Header

authorization: Bearer {{jwt_token}}
x-fini-encrypted-key: {{x_fini_encrypted_key}}
x-fini-request-id: {{x_fini_request_id}}
x-fini-timestamp: {{x_fini_timestamp}}
x-fini-signature: {{x_fini_signature}}
x-fini-encryption-client: "NO"

11.2 Request Body

```
{
  "data":
  {
    "ipoID": "1519",
    "recordID": ["0000000442200000A"],
    "subFlowStatus": "3"
  },
  "size": 100,
  "nextCursor": "0"
}
```

11.3 Static JSON Response

```
{
  "code": 0,
  "message": "",
  "data": [
    {
      "requestID": 1234569,
      "ipoID": "1519",
      "idList": [
        {
          "idType": "%enc_%EQB9JO9LgkLIQL4jsQ==",
          "idCountryJurisdiction": "%enc_%aAkiBWaBORyF1inLTpuJ",
          "idNum": "%enc_%YXNXcn8yXvRRjilxng2vfQ0Kcax4iA==",
          "fullNameEng": "%enc_%YyoELx9mAZFqyQelZlClw3aQbf9Py62G7w==",
          "fullNameChi": "%enc_%ydvWpO+gjkqMQdxD2eNIHsBfMuPZK85X"},
        {
          "idType": "%enc_%EQB9JO9LgkLIQL4jsQ==",
          "idCountryJurisdiction": "%enc_%aAkiBWaBORyF1inLTpuJ",
          "idNum": "%enc_%YnBWdX4xX/RRjuG6zio1MzWpWfsAHg==",
          "fullNameEng": "%enc_%YyoELxhuHZFqyQelZlnpkqbMoKuuGrDNA==",
          "fullNameChi": "%enc_%ydvWpPuljkqMQdxDme7PwoOiF+8dlfD0"}
      ],
      "appQuantity": "1000",
      "firmID": "1100", "ownRef": "001"
    }
  ],
  "exception": "",
  "totalSize": 1,
  "timestamp": "2021-09-26 16:27:20",
  "nextCursor": "0"
}
```

12 Enquire EIPO Funding Validation List

URI	https://fini.u4cp.hkex.com.hk/api/eipo/funding/query/v1
Method	POST

12.1 Request Header

authorization: Bearer `{{jwt_token}}`

12.2 Request Body

```
{
  "data":
  {
    "ipoID": "123",
    "transactionRef": null,
    "preFundingStatus": null
  },
  "size": 100,
  "nextCursor": "0"
}
```

12.3 Static JSON Response

```
{
  "code": "0",
  "message": "",
  "data": [
    {
      "stkCode": "1234",
      "isin": "123456789012",
      "status": "25",
      "transactionRef": "123456789",
      "preFundingStatus": "10",
      "settlementStatus": null,
      "ipoInfo": {
        "tradeCurrency": "HKD",
        "priceMin": 0.000,
        "downwardPriceFlex": 0,
        "priceFloor": 0.000,
        "priceMax": 188.000,
        "priceFinal": 176,
        "poMaxValue": 10449004280.00,
        "prefundingDate": "2020-09-30"
      },
      "fundingInfo":
      {
        "partID": "B01130",
        "partName": "BOCI SECURITIES",
        "poMaxOptIn": "Y",
        "totalAppQuantity": 1000000,
        "appValue": 208980085.60,
        "prefundingReq": 208980085.60,
        "totalAllotQuantity": null,
        "allotValue": null
      },
      "bankAcctInfo":
      {
        "cpBankCode": "012",
        "cpBranchCode": "001",
        "cpBnkAcctNum": "612356251",
        "nomBankCode": "012",
        "nomBranchCode": "004",
        "nomBankAcctNum": "612356256",
        "debtorRef": ""
      },
      "exception": []
    }
  ]
}
```

```

    },
    {
      "stkCode": "1234",
      "isin": "123456789012",
      "status": "25",
      "transactionRef": "ZksmhwOuiKG0G ",
      "preFundingStatus": "10",
      "settlementStatus": "",
      "ipoInfo":
      {
        "tradeCurrency": "HKD",
        "priceMin": 0.000,
        "downwardPriceFlex": 0,
        "priceFloor": 0.000,
        "priceMax": 188.000,
        "priceFinal": 176,
        "poMaxValue": 10449004280.00,
        "prefundingDate": "2020-09-30"
      },
      "fundingInfo": {
        "partID": "B01345",
        "partName": "PHILLIP SECURITIES",
        "poMaxOptIn": "Y",
        "totalAppQuantity": 3400200,
        "appValue": 710574087.06,
        "prefundingReq": 710574087.06,
        "totalAllotQuantity": null,
        "allotValue": null
      },
      "bankAcctInfo": {
        "cpBankCode": "012",
        "cpBranchCode": "001",
        "cpBnkAcctNum": "612356251",
        "nomBankCode": "012",
        "nomBranchCode": "004",
        "nomBankAcctNum": "612356256",
        "debtorRef": ""
      },
      "exception": []
    }
  ],
  "totalSize": 2,
  "timestamp": "2021-09-30 08:12:33",
  "nextCursor": "0",
  "exception": []
}

```

13 Confirm EIPO Funding Validation

URI	https://fini.u4cp.hkex.com.hk/api/eipo/funding/confirm/v1
Method	POST

13.1 Request Header

authorization: Bearer `{{jwt_token}}`

13.2 Request Body

```
{
  "data": [
    {
      "transactionRef": "0000000001041"
    },
    {
      "preFundingStatus": "30"
    }
  ]
}
```

13.3 Static JSON Response

```
{
  "code": "0",
  "message": "",
  "data": [
    {
      "transactionRef": "6398340114921",
      "preFundingStatus": "20",
      "exception": []
    },
    {
      "transactionRef": "6398340114936",
      "preFundingStatus": "20",
      "exception": []
    },
    {
      "transactionRef": "6398340114947",
      "preFundingStatus": "20",
      "exception": []
    },
    {
      "transactionRef": "6398340114959",
      "preFundingStatus": "20",
      "exception": []
    },
    {
      "transactionRef": "6398340114972",
      "preFundingStatus": "30",
      "exception": []
    }
  ],
  "totalSize": 5,
  "timestamp": "2021-09-30 10:05:25",
  "exception": []
}
```

14 Appendix - FINI Simulation Test Validations

The following validations will be performed in the Simulation Stage to validate the incoming API request

14.1 FINI API JWT Access Token Validation

When JWT access token value is missing, invalid and expired

14.1.1 Response Body Sample

```
{
  "code": "1J002",
  "message": "The JWT access token is invalid",
  "data": "The token was expected to have 3 parts, but got 1.",
  "totalSize": 0,
  "timestamp": "2022-10-07 03:24:53",
  "exception": "[]"
}
```

14.2 JSON Syntax Validation

If the input JSON does not follow the API Specification definition

14.2.1 Response Body Sample

```
{
  "code": "1G002",
  "message": "Bad Body Input",
  "data": [],
  "totalSize": 0,
  "timestamp": "2022-10-07 03:30:59",
  "exception": []
}
```

14.3 End-to-End Encryption (applicable to EIPO Subscription endpoints)

All Subscription endpoints require additional End-To-End Encryption request parameters in HTTP Header

14.3.1 X-FINI-REQUEST-ID

Missing X-FINI-REQUEST-ID in the HTTP Header

14.3.1.1 Response Body Sample

```
{
  "code": "400000",
  "message": "Invalid Parameters",
  "data": [],
  "exception": [{
    "recordErrorCode": "411001",
    "recordErrorMsg": "Missing X-FINI-REQUEST-ID in the header"
  }]
}
```

```
}
```

14.3.2 X-FINI-TIMESTAMP

Missing X-FINI-TIMESTAMP in the HTTP Header

14.3.2.1 Response Body Sample

```
{
  "code": "400000",
  "message": "Invalid Parameters",
  "data": [],
  "exception": [{
    "recordErrorCode": "411003",
    "recordErrorMsg": "Missing X-FINI-TIMESTAMP in the header"
  }]
}
```

14.3.3 X-FINI-SIGNATURE

Missing X-FINI-SIGNATURE in the HTTP Header

14.3.3.1 Response Body Sample

```
{
  "code": "400000",
  "message": "Invalid Parameters",
  "data": [],
  "exception": [{
    "recordErrorCode": "411005",
    "recordErrorMsg": "Missing X-FINI-SIGNATURE in the header"
  }]
}
```

14.4 X-FINI-ENCRYPTED-KEY

Missing X-FINI-ENCRYPTED-KEY in the HTTP Header

14.4.1.1 Response Body Sample

```
{
  "code": "400000",
  "message": "Invalid Parameters",
  "data": [],
  "exception": [{
    "recordErrorCode": "411006",
    "recordErrorMsg": "Missing X-FINI-ENCRYPTED-KEY in the header"
  }]
}
```

14.4.2 Signature error

The value of X-FINI-SIGNATURE in the HTTP Header is invalid

14.4.2.1 Response Body Sample

```
{
  "code": "400000",
  "message": "Invalid Parameters",
```

```
"data": [],  
"exception": [{  
  "recordErrorCode": "411008",  
  "recordErrorMsg": "Signature error"  
}]  
}
```

14.5 Crypto process exception

Incorrect encryption value in the input JSON

14.5.1 Response Body Sample

```
{  
  "code": "400000",  
  "message": "Invalid Parameters",  
  "data": [],  
  "exception": [{  
    "recordErrorCode": "411999",  
    "recordErrorMsg": "Crypto process exception"  
  }]  
}
```