# Visa Secure Test Suite (VSTS) User's Guide

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# Introduction to the Visa Secure Test Suite

Visa Secure Test Suite (VSTS) helps ensure that Product Providers' 3DS Server (3DSS) and Access Control Server (ACS) software meets Visa's EMV 3DS technical and business requirements before connecting to Visa's EMV 3DS 2.x Directory Server.

- 3DS Server and ACS software must first successfully complete EMV® 3DS testing before beginning VSTS testing.
- VSTS provides a standard set of required and optional test cases that help 3DS Server and ACS software Product Providers confirm that their software meets Visa EMV 3DS product and business rules.
- All EMV 3DS 2.x ACS and 3DS Server software must successfully complete all required VSTS test cases before connecting to Visa's EMV 3DS 2.x Directory Server.

## Testing Process

VSTS messages are stored by test case instance, under the Product Provider's ID.

VSTS will validate that all required fields are present and valid per EMV 3DS specification and Visa requirements. Visa requirements can be referenced by accessing the acquirer and issuer implementation guides from Visa Online.

Visa Test Analysts review the results to ensure that no errors are found and that the Product Provider's software performed each test case successfully from both a technical and business perspective. If errors are found, the Product Provider must correct the error and rerun the failing test case until all aspects of the test case as specified are successfully performed.

## Guide Organization

This Guide contains the following sections:

**Table 1: Guide Organization**

| Section | Description |
|---|---|
| Introduction | Provides an overview of VSTS and VSTS's testing process. |
| Test Process Overview | Describes general setup steps, and specific setup instructions for 3DS Servers and ACSs. |
| 3DS Server Test Cases | Provides test case details for 3DS Server testing. |

| Section | Description |
|---|---|
| ACS Test Cases | Provides test case details for ACS testing. |
| Test Results Review | Provides an overview on how the Test Analyst will review the test results to reach a Pass/Fail conclusion. |
| Appendix | Appendix covering the process of CAVV validation and a high-level overview of the applicable error codes |

## Technical Support

For administrative, general test procedure related questions or any other technical issues with the VSTS, please contact Global Client Testing (GCT) at gctv3dsts@visa.com.

# 1 Test Process

A Product Provider must perform the following steps, regardless of whether an a 3DS Server or ACS is being tested.

## 1.1 Enrollment

As a first step, the Product Provider must:

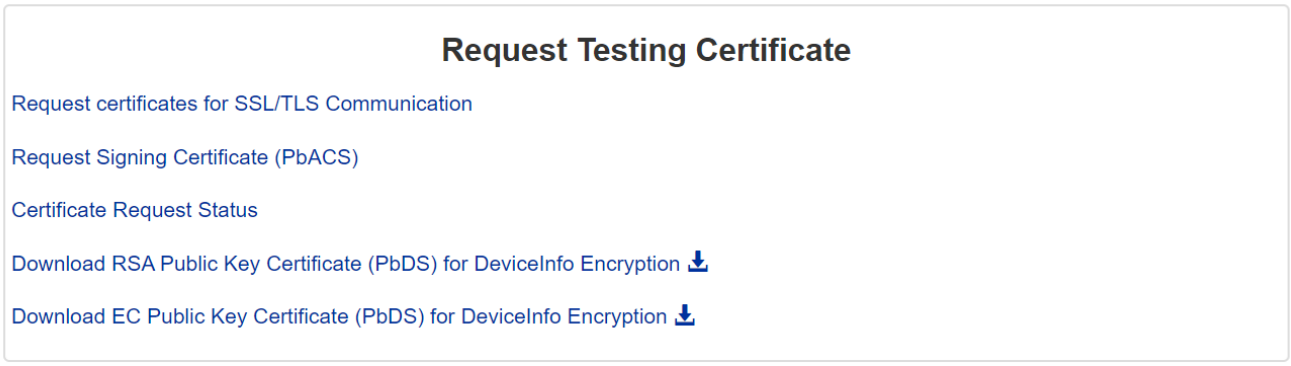
- Prepare a Visa EMV 3DS Product Testing **application package** to initiate Visa EMV 3DS 2.x Product Testing. Refer to the Application Package Section of the EMV 3DS Product Provider Pre-Implementation Guide and Checklist for details.
- Email the completed application package to gctv3dsts@visa.com.
- Register in VSTS by providing contact information about the Product Provider and information about the 3DS software component(s) that they are testing.

A Visa test analyst is notified of the Product Provider's desire to enroll and validates the Product Provider's application package and registration. If the application and registration is complete the Product Provider is granted VSTS access.

## 1.2 Request Test Certificates

The Product Provider can request the SSL/TLS connectivity certificates and/or signing certificates required for the component for which they are performing testing using VSTS's online certificate issuance facility. Once the user clicks the **'Request Testing Certificate'** link in the homepage, the following screen will be presented,

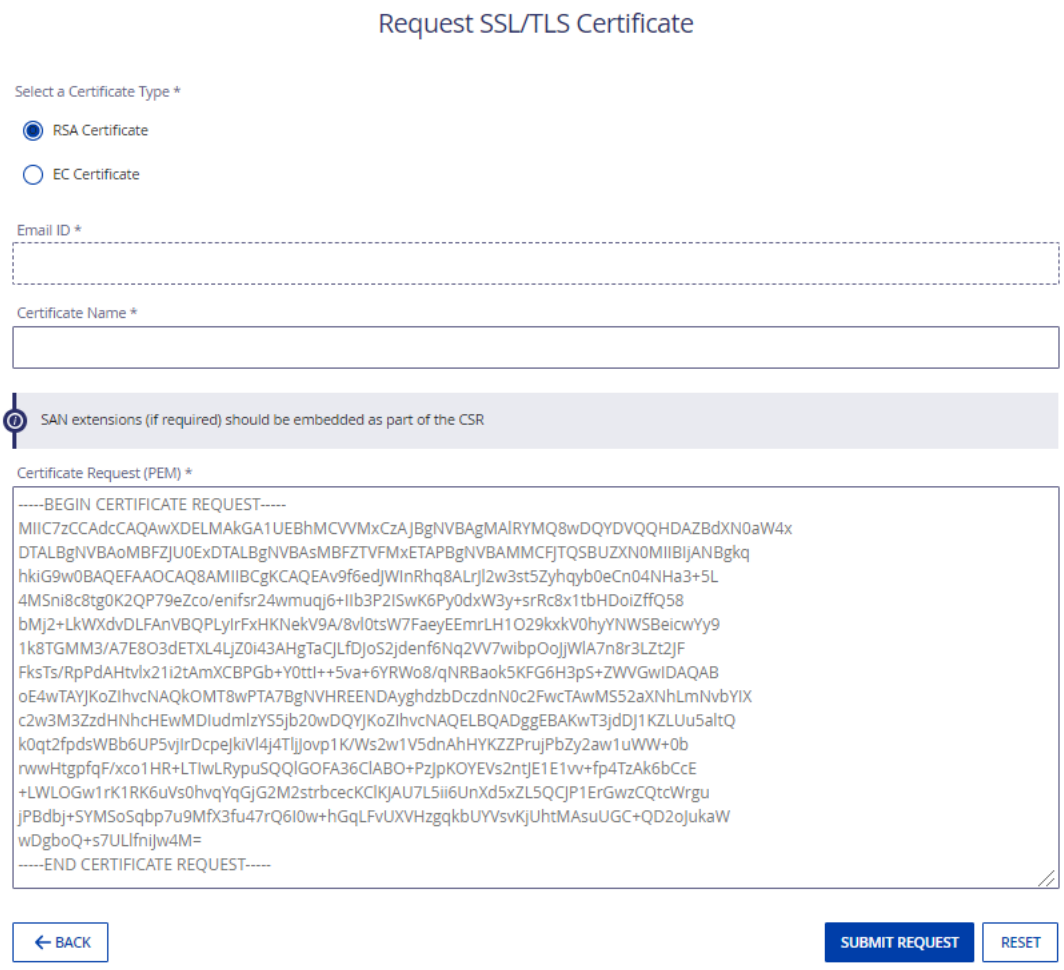
**Figure 1: Request Testing Certificate**




**'Request certificates for SSL/TLS Communication'** is used by the 3DS Server and ACS product provider to request the connectivity certificates for all flows and **'Request Signing Certificate (PbACS)'** is used by the ACS product provider to request the signing certs to support app-based flows. The device info encryption keys applicable for the test suite can be downloaded from the links **'Download RSA Public Key Certificate (PbDS) for DeviceInfo Encryption'** or **'Download EC Public Key Certificate (PbDS) for DeviceInfo Encryption'.**

A sample request page (for connectivity and signing certs) is as follows (email ID field will be defaulted to the tester's registered user name/email contact),

**Figure 2: Request SSL/TLS Certificate**




The user can track the status of their certificate requests by accessing the **'Certificate Request Status'** page within **'Request Testing Certificate'** link.

**Table 1–1: 3DS Server Setup Details**

| Activity | Description |
|---|---|
| 3DS Server Certificate Request | • **Request certificates for SSL/TLS Communication**: The 3DS Server Product Provider needs to provide the Certificate Signing Request (CSR) by accessing **'Request certificates for SSL/TLS Communication'** under the **'Request Testing Certificate'** link within the home page of application. The generated CSR needs to be copied and pasted within the 'Cert Request (PEM)' field in **'Request certificates for SSL/TLS Communication'.** Following are high-level guidelines - |

| Activity | Description |
|---|---|
| | - The user has to select the appropriate certificate type (RSA or EC) as applicable.<br>- The email ID field will be defaulted to the registered contact appropriate for that user ID.<br>- The user has to enter the certificate name as applicable. This is used only for tracking purposes. (Maximum length for this field is 255 characters and accepted characters are alphanumeric and special characters (space is not accepted).<br>- SAN extensions (if required) should be embedded as part of the CSR.<br>- CSR provided must be represented in Base64 encoded PKCS#10 format, a sample is provided within the application for reference purposes.[1] Multiple CSRs with the same common name cannot be submitted at this time.<br>- Once the request is validated successfully, the status of the certificate request can be viewed under **'Certificate Request Status'** within **'Request Testing Certificate'** link.<br>- Once the certificate is ready, an email will be sent to the registered contact with the certificate, additionally the certificate(s) can also be downloaded from the **'Certificate Request Status'** page.<br>- Please contact gctv3dsts@visa.com for any additional support. The product provider can request multiple certificate requests as applicable to their configuration (issued connectivity certs are Client & Server certificate from the application) - one request needs to be submitted per CSR.<br>• Download the following keys by clicking on the **'Request Testing Certificate'** link on the left-hand menu accessible from the VSTS home page to support app-based payment flows.<br>– Download RSA Public Key Certificate (PbDS) for DeviceInfo Encryption<br>– Download EC Public Key Certificate (PbDS) for DeviceInfo Encryption<br>The last 2 links provide the 3DS Server Product Provider with the VSTS public keys for DeviceInfo encryption to be used for the App flow (3DS SDK) messages. The user has the option to use either an RSA or EC public key. |
| **3DS Server Certificate Installation** | Please use certificate installation procedures consistent with your server software. |

[1] Multiple CSRs with the same common name cannot be submitted at this time. Additionally, a new line character or line break is required after "-----BEGIN CERTIFICATE REQUEST-----" and before "-----END CERTIFICATE REQUEST----- as noted in the sample in the application.

| Activity | Description |
|---|---|
| **Test Connectivity** | After obtaining and installing VSTS testing certificates, 3DS Server product providers must send AReq's to the following URL in order to initiate test cases: https://VisaSecureTestSuite-vsts.3dsecure.net/ds2<br>The Cardholder Account Number to be used to initiate each test case is detailed in chapter 2 of this guide. |
| **Support Questions?** | Please contact Global Client Testing (GCT) at gctv3dsts@visa.com. |

**Table 1–2: ACS Setup Details**

| Activity | Description |
|---|---|
| **ACS Certificate Request** | • **Request certificates for SSL/TLS Communication**: The ACS Product Provider needs to provide the Certificate Signing Request (CSR) by accessing **'Request certificates for SSL/TLS Communication'** under the **'Request Testing Certificate'** link within the home page of application. The generated CSR needs to be copied and pasted within the 'Cert Request (PEM)' field in **'Request certificates for SSL/TLS Communication'.** Following are high-level guidelines -<br>- The user has to select the appropriate certificate type (RSA or EC) as applicable.<br>- The email ID field will be defaulted to the registered contact appropriate for that user ID.<br>- The user has to enter the certificate name as applicable. This is used only for tracking purposes. (Maximum length for this field is 255 characters and accepted characters are alphanumeric and special characters (space is not accepted).<br>- SAN extensions (if required) should be embedded as part of the CSR.<br>- CSR provided must be represented in Base64 encoded PKCS#10 format, a sample is provided within the application for reference purposes.[2] Multiple CSRs with the same common name cannot be submitted at this time<br>- Once the request is validated successfully, the status of the certificate request can be viewed under **'Certificate Request Status'** within **'Request Testing Certificate'** link.<br>- Once the certificate is ready, an email will be sent to the registered contact with the certificate, additionally the certificate(s) can also be downloaded from the **'Certificate Request Status'** page. |

[2] Multiple CSRs with the same common name cannot be submitted at this time. Additionally, a new line character or line break is required after "-----BEGIN CERTIFICATE REQUEST-----" and before "-----END CERTIFICATE REQUEST----- as noted in the sample in the application.

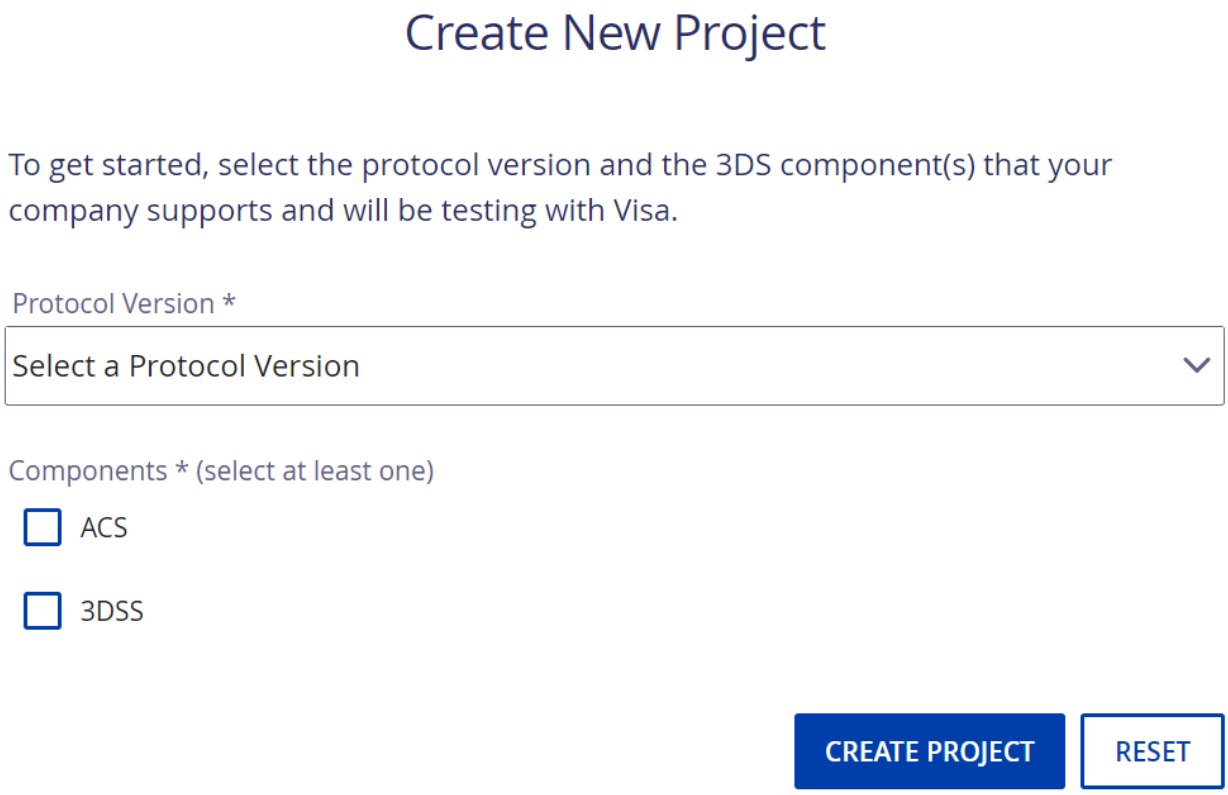
| Activity | Description |
|---|---|
| | • Please contact gctv3dsts@visa.com for any additional support. The product provider can request multiple certificate requests as applicable to their configuration (issued connectivity certs are Client & Server certificate from the application) - one request needs to be submitted per CSR.<br>• **Request Signing Certificate (PbACS):** This link (accessible by clicking the 'Request Testing Certificate' menu from the home page) is used by an ACS Product Provider to obtain the PbACS certificate, which is used to sign the "acsSignedContent" in the ARes message populated for app-based challenge flows. The guidelines to request this certificate is the same as noted for the connectivity certs.<br>The ACS must provide the Certificate Signing Request (CSR) to be signed by the appropriate Test Suite Signing CA.<br>• **Commercial CAs for app-based flow:** The public key certificate for the ACS is signed by a Commercial CA for app-based challenge flow for the CReq/CRes link as noted in the specification. ACS product providers should use the services from DigiCert or Entrust for usage with VSTS – contact GCT team for any additional questions. |
| **ACS Certificate Installation** | Please use certificate installation procedures consistent with your server software. |
| **Test Connectivity** | After obtaining and installing VSTS testing certificates, an ACS initiates VSTS test cases through the VSTS user interface (UI). AReq messages will be sent from the VSTS DS to the product provider's ACS URL provided at creation of the project. The DS URL to be used by an ACS when sending an RReq will be included in the AReq sent to ACS during the challenge flow test cases.<br>For those ACS Product Providers that elect to use VSTS's default PANs, please review the test cases in Chapter 3 - ACS Test Cases to see the PANs that must be enrolled on the ACS to conduct testing.<br>ACS Product Providers may either:<br>• Use VSTS's default test card numbers (PANs), as provided by VSTS in the AReq for each specific test case, or<br>• Use PANs that have already been enrolled on their ACS.<br>If the ACS Product Provider wants to use their own PANs, the Product Provider must edit the **<PAN>** field in the AReq for each test case before clicking the **Send AReq button**. To use VSTS's default PANs, the ACS Product Provider must enroll VSTS's PANs on the Product Provider's ACS. |
| **Support Questions** | Please contact Global Client Testing (GCT) at gctv3dsts@visa.com. |

## 1.3 Manage Projects

Once the access is granted to the test suite and the necessary connectivity certificates are obtained to connect to the VSTS's simulators, the Product Provider can proceed to the next step – creation of the applicable projects to access the necessary test cases. VSTS bundles the applicable test cases based on the protocol version and component type into categories referred to as 'Projects'. The Product Provider can access this option by clicking on 'Create Project' link on the left-hand side of the home page of VSTS.

The following screen will be presented to the user,

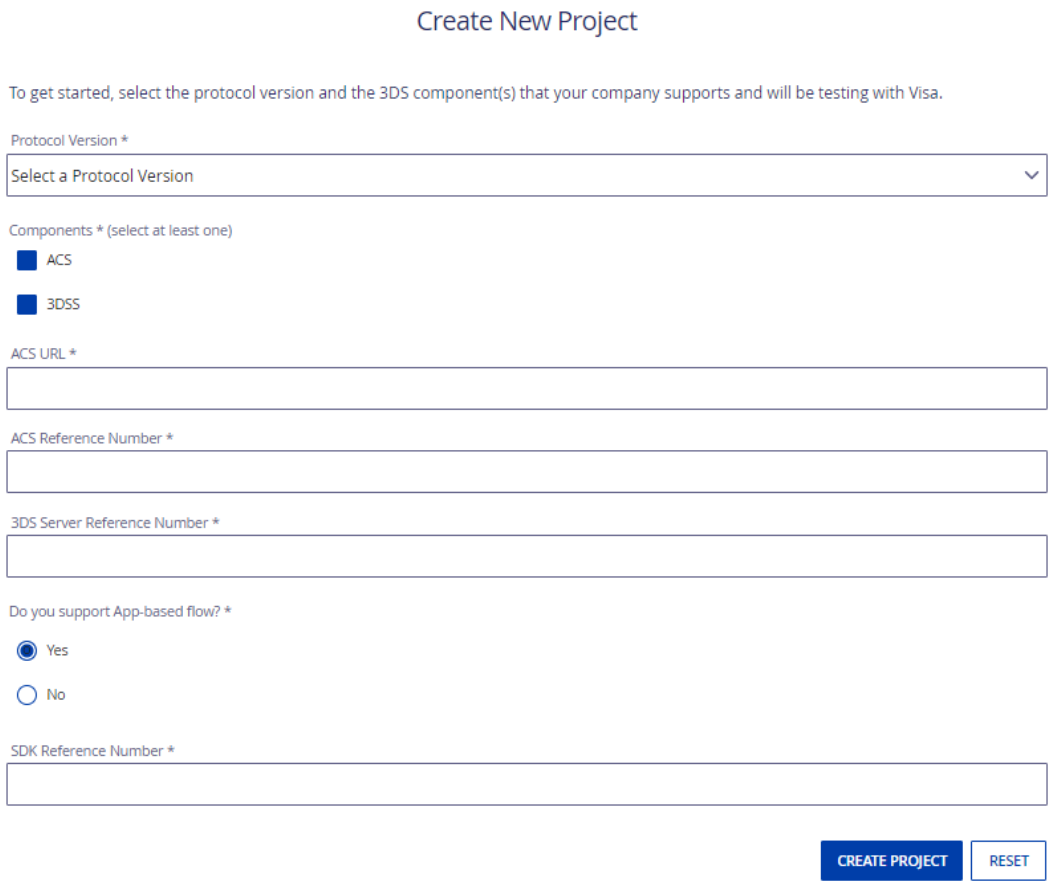
**Figure 3: Create New Project**




VSTS currently supports 2.1.0 and 2.2.0 protocols. The users should create the projects as applicable to their testing needs (GCT team will cross-verify the same during the issuance of Compliance Letter based on the EMVCo LoA submitted as a part of the application package shared in the enrollment step).

On selecting the applicable protocol version and component type, additional details will be requested as follows,

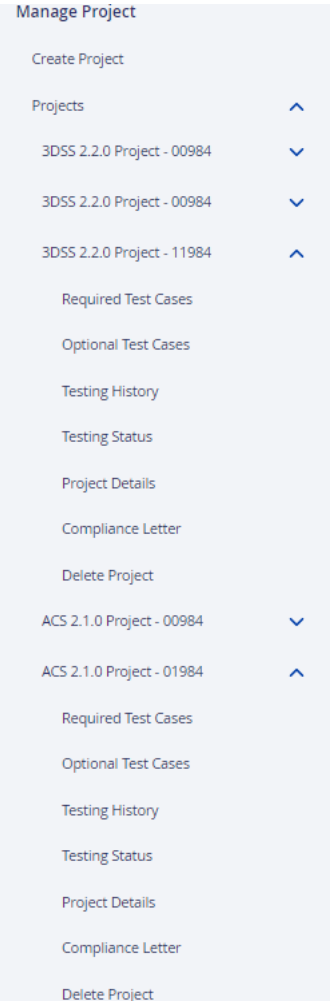
**Figure 4: Create New Project (additional details)**




3DS Server Product Providers supporting the app-based flow will be prompted to enter the corresponding EMVCo SDK Reference Number. The ACS URL entered during the creation of project will be used as the default URL by the VSTS DS simulator (for sending the AReqs). The users will still have the option to edit this URL at the individual test case level accessible within the corresponding project. The combination of the Operator ID (BID entered as a part of VSTS user registration) and EMVCo Reference Number is treated as an unique element across the VSTS projects. The users shall use the BID entered during enrollment and the EMVCo Reference Numbers entered during creation of the projects in the applicable 3DS messages (AReq and ARes) in order to successfully execute the test cases. The logs are displayed as per this combination within the VSTS UI.

On successful creation of a project, the user will be presented with the following sub-menus as per the components selected on the home page.

**Figure 5: Project View**




The Product Provider can access the required and optional set of test cases as applicable from the links. The ACS Product Providers should trigger the AReq (and the CReq) from the UI where as the 3DS Server Product Providers should send the corresponding 3DS messages to the VSTS's DS URL as noted in section 1.2 of this guide. Product Providers can refer to the chapters 2 and 3 in this guide for additional details on the test cases supported by VSTS.

A Product Provider supporting 2.2 protocol should run the required test cases corresponding to all active protocols (2.1 and 2.2) in order to request the Compliance Letter. A Product Provider supporting 2.1 protocol should run the required test cases corresponding to 2.1 protocol in order to request the Compliance Letter. The app-based flow test cases will be marked as required (frictionless flow use cases) when the 3DSS product provider acknowledges the support during the creation of the corresponding project. The ACS Product Providers should run the test case corresponding to validation of CAVV in addition to completing all their required test cases to request Compliance Letter.

In addition to this, the Product Providers can access the logs of their execution by accessing 'Testing History' and 'Testing Status' links within the applicable project. The 'Testing History'[3] link contains the execution of all the logs for each test case for that project where as the 'Testing Status' link contains the most recent execution of each test case for that project.

Note - The user will not be able to delete a project once the 'Compliance Letter' is requested.

## 1.4 Run Test Cases

The Product Provider must run all of the required test cases. Please contact GCT team for additional details on the conditional and optional test case applicability. For added benefit, the Product Provider may also choose to run any number of the optional test cases. Refer to the FAQ document available within the VSTS homepage for any additional connection parameters.

- Review Test Results
- Rerun Test Cases as Necessary

The Product Provider must review the Testing Status link within their applicable project in VSTS to confirm that they correctly passed all required test cases. If any test cases are failed, the Product Provider must rerun them until they are successfully completed.

## 1.5 Successful Completion

Upon completion of the required test cases:

- **Compliance Letter Request**: The Product Provider shall click the Compliance Letter link within their corresponding project menu and request the compliance letter. The Product Provider will be prompted to add their product details. The Product Provider will be eligible to request the Compliance Letter only when the required test cases are passed successfully. The following screen captures the requested fields from the user when a compliance letter is requested from VSTS -

[3] The search within 'Testing History' is defaulted to a period of 6 months from the current date. The tester can override the search dates as applicable in the UI.

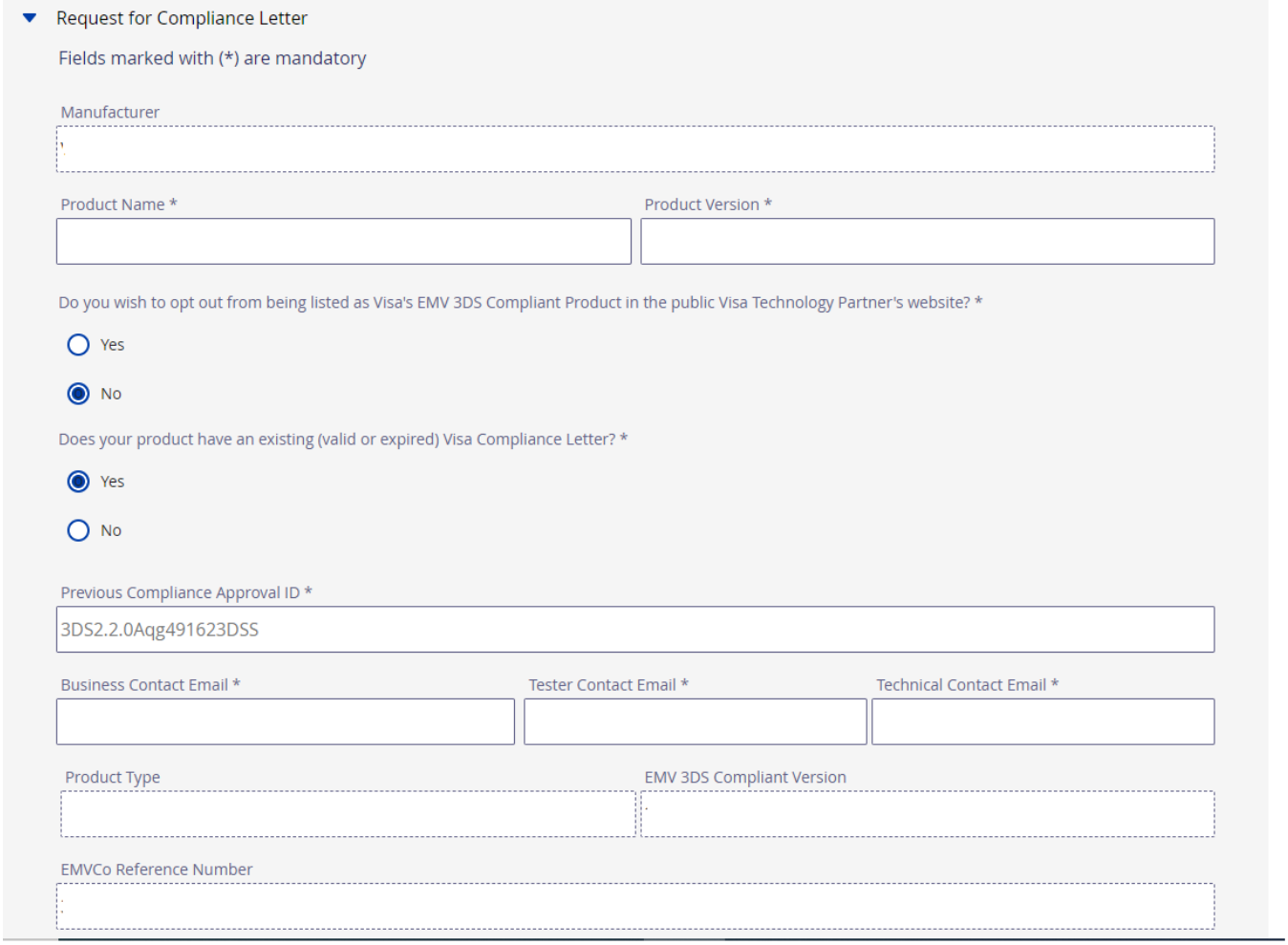



**Figure 6: Request Compliance Letter**

The following fields – 'Manufacturer', 'Product Type', 'EMV 3DS Compliant Version' and 'EMVCo Reference Number' will be pre-populated from the details provided during the creation of the project and/or VSTS account (these details will be captured in the compliance letter issued by VSTS as well).

The user will be prompted to enter the 'Product Name', 'Product Version', 'Business Contact Email', 'Tester Contact Email' and 'Technical Contact Email' – information captured for Product Name, Product Version and Business Contact Email will be displayed in Visa's EMV 3DS Compliant Product list as noted in this section[4].

The user will also be prompted to enter their previous compliance approval ID, if applicable (approval ID can be referenced from the existing Visa compliance letter) and based on the validity of the entered approval ID, the corresponding existing entry in the EMV 3DS Compliant Product list will be updated.

[4] The contact emails will still be captured by VSTS even if opted out from being listed in the Visa Technology Partner website (the contact emails and other relevant details will not be published in the list when opted out).

- **Test Analyst Review**: A Visa test analyst shall review the test results and approve the compliance request. VSTS compliance is valid till the corresponding software's EMVCo approval expiry date.
- **Compliance Letter Delivery**:
  - **Via Download**: The compliance letter shall be available for the Product Provider to download by clicking the PDF link in the compliance letter column.
  - **Via Email**: An electronic copy of the compliance letter shall also be sent to the registered email ID. The email will also inform that Product Provider that should they want production certificates, they should contact their Visa representative to request the certificates.
- **Visa Approved EMV 3DS Product Listing**: Products that have successfully completed VSTS testing are listed on Visa's EMV 3DS Compliant Product List.

## 1.6 Next Steps/Request Production Certificate(s)

Once the Product Provider has received Visa's Compliance Letter for its EMV 3DS product, the Product Provider can request digital certificates by completing Digital Certificate Request Forms.

Digital certificates are used to connect a Product Provider's 3DS ACS or 3DS Server software to Visa's EMV 3DS 2.x Directory Server. Not all Products Providers will connect with Visa's 3DS EMV 3DS 2.x Directory Server.

## 1.7 Contact Information for additional help

Please contact Global Client Testing (GCT) at gctv3dsts@visa.com for any test suite related questions.

- Support is located and operates in the U.S. in the Eastern Time Zone during standard business hours.
- Support is not available on weekends or during U.S. holidays.
- Target response is 2 to 3 business days. Please be aware that some questions will take longer to address particularly if a support ticket is required.

Please include as many details as possible to resolve any connectivity issues, usually the following information will be requested by the support team to resolve connectivity issues -

-Client IP

-Client Ports being used

-TLS Version and Cipher Info

-Certificate being used (provide as an attachment)

-Any error messages or details captured

-Client Tester Email

-Test Case Name

# 2 3DS Server Test Cases for EMV® 3DS 2.1

The 3DS Server Test Cases in this chapter are required for 3DS Server implementations in all Visa Regions for 2.1 protocol.

## 2.1 EMV® 3DS 2.1.0 Frictionless Flow (Browser-based)

### Test Case 3DSS-210-101–Frictionless Flow, Browser, PA (Result=Y)

**Description**

The 3DS Server (System Under Test, SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status Y in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000003010" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided[5] |
| Acquirer BIN | "400551" |
| Message Version Number | "2.1.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification. In addition, the Visa acquirer/merchant implementation guide (accessible from Visa Online) should be referenced for Visa specific data requirements.

2 3DS Server (SUT) POSTs AReq to VSTS.

[5] Value provided by EMVCo after EMVCo 3DS testing.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "Y", ECI = "05" and CAVV.
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## Test Case 3DSS-210-102– Frictionless Flow, Browser, PA (Result=N)

**Description**

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status N in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000003028" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.1.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "N", (ECI and CAVV fields will be absent in the message).
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## Test Case 3DSS-210-103–Frictionless Flow, Browser, PA (Result=A)

### Description

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status A in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

### Action

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000003036" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.1.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

### Expected Results

- VSTS responds with ARes to 3DS Server, transaction status = "A", ECI = '06' and CAVV.
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## Test Case 3DSS-210-104–Frictionless Flow, Browser, PA (Result=U)

### Description

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status U in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000003044" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.1.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "U" (ECI and CAVV fields will be absent in the message).
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## Test Case 3DSS-210-105– Frictionless Flow, Browser, PA (Result=R)

### Description

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status R in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

### Action

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000003051" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.1.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

### Expected Results

- VSTS responds with ARes to 3DS Server, transaction status = "R" (ECI and CAVV fields will be absent in the message).
- Test case complete.

## Test Case 3DSS-210-301–Frictionless Flow, Browser, NPA (Result=Y)

### Description

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status Y in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000003077" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.1.0" |
| Message Category | "02" |
| 3DS Requestor Authentication Indicator | "04" or "05" |
| 3DS Server Operator ID | Product Provider's BID |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "Y" (ECI and CAVV fields will be absent in the message).
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## Test Case 3DSS-210-302–Frictionless Flow, 3RI, NPA (Result=Y)

**Description**

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status Y in response**. 3DS Server (SUT) accepts ARes, this completes the test case. This is an optional test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000003135" |
| Device Channel | "03" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.1.0" |
| Message Category | "02" |
| 3RI Indicator | "80"[6] |
| 3DS Server Operator ID | Product Provider's BID |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification. The AReq will be considered as a payment message category type when the 3RI Indicator field is set to a value of '80' (inspite of the message explicitly called out as 'Non-Payment' for the Message Category field).

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "Y", ECI = "05" and CAVV.
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

[6] The AReq is to be considered as a payment message category type by the ACS when the 3RI Indicator field is set to a value of '80' for message version 2.1 (inspite of the message explicitly called out as 'Non-Payment' for the Message Category field).

## 2.2 EMV® 3DS 2.1.0 Frictionless Flow (App-based)

### Test Case 3DSS-210-201–Frictionless Flow, App, PA (Result=Y)

**Description**

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status Y in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000003085" |
| Device Channel | "01" |
| 3DS Server and SDK Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.1.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields (including the sdk* fields) must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "Y" and ECI="05" (CAVV will be present in the message)
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## Test Case 3DSS-210-202– Frictionless Flow, App, PA (Result=N)

### Description

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status N in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

### Action

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000003093" |
| Device Channel | "01" |
| 3DS Server and SDK Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.1.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields (including the sdk* fields) must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS

### Expected Results

- VSTS responds with ARes to 3DS Server, transaction status = "N", (ECI and CAVV fields will be absent in the message).
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## 2.3 EMV® 3DS 2.1.0 Challenge Flow (Browser-based)

### Test Case 3DSS-210-106-Challenge Flow, Browser, PA (Result=Y)

**Description**

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status C in response**. 3DS Server (SUT) accepts ARes and challenge flow is initiated.

3DS Server (SUT) sends a CReq to VSTS. VSTS sends **RReq with transaction status Y** to 3DS Server. 3DS Server (SUT) sends RRes to VSTS. VSTS sends **final CRes with transaction status Y** to 3DS Server, this completes test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000003101" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.1.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "C".
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- 3DS Server (SUT) builds a CReq as follows:
  - 3DS Server Transaction ID: (Same 3DS Server Transaction ID as AReq)
- 3DS Server (SUT) sends CReq to VSTS

- VSTS POSTs RReq to 3DS Server with transaction status = "Y" and ECI="05" (CAVV will be present in the message)
- 3DS Server (SUT) builds an RRes (resultsStatus = '01'), sends to VSTS
- VSTS sends final CRes to 3DS Server with transaction status = "Y"
- 3DS Server (SUT) confirms the CRes is received without any errors/issues
- Test case complete

## 2.4 EMV® 3DS 2.1.0 Challenge Flow (App-based)

### Test Case 3DSS-210-203-Challenge Flow, App-Native, PA (Result=Y)

**Description**

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status C in response**. 3DS Server (SUT) accepts ARes and challenge flow is initiated.

3DS Server (SUT) sends a CReq to VSTS. VSTS sends the challenge data elements though the CRes message. VSTS sends **RReq with transaction status Y** to 3DS Server. 3DS Server (SUT) sends RRes to VSTS. VSTS sends **final CRes with transaction status Y** to 3DS Server, this completes test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000003119" |
| Device Channel | "01" |
| 3DS Server and SDK Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.1.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields (including the sdk* fields) must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "C".
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- 3DS Server (SUT) builds a CReq as follows:
  - 3DS Server Transaction ID: (Same 3DS Server Transaction ID as AReq)
- 3DS Server (SUT) sends CReq to VSTS

- VSTS sends CRes with the challenge data elements
- 3DS Server (SUT) sends the subsequent CReq to VSTS
- VSTS POSTs RReq to 3DS Server with transaction status = "Y" and ECI="05" (CAVV will be present in the message)
- 3DS Server (SUT) builds an RRes (resultsStatus = '01'), sends to VSTS
- VSTS sends final CRes to 3DS Server with transaction status = "Y"
- 3DS Server (SUT) confirms the CRes is received without any errors/issues
- Test case complete

## Test Case 3DSS-210-204-Challenge Flow, App-HTML, PA (Result=Y)

### Description

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status C in response**. 3DS Server (SUT) accepts ARes and challenge flow is initiated.

3DS Server (SUT) sends a CReq to VSTS. VSTS sends the challenge data elements though the CRes message. VSTS sends **RReq with transaction status Y** to 3DS Server. 3DS Server (SUT) sends RRes to VSTS. VSTS sends **final CRes with transaction status Y** to 3DS Server, this completes test case

### Action

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000003127" |
| Device Channel | "01" |
| 3DS Server and SDK Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.1.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields (including the sdk* fields) must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "C".
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- 3DS Server (SUT) builds a CReq as follows:
  - 3DS Server Transaction ID: (Same 3DS Server Transaction ID as AReq)
- 3DS Server (SUT) sends CReq to VSTS
- VSTS sends CRes with the challenge data elements
- 3DS Server (SUT) sends the subsequent CReq to VSTS
- VSTS POSTs RReq to 3DS Server with transaction status = "Y" and ECI="05" (CAVV will be present in the message)
- 3DS Server (SUT) builds an RRes (resultsStatus = '01'), sends to VSTS
- 3DS Server (SUT) confirms the CRes is received without any errors/issues
- Test case complete

## 2.5 EMV® 3DS 2.1.0 Operation Flow

### Test Case 3DSS-210-001–Preq (w/out Serial Number)

**Description**

The 3DS Server (SUT) will send a PReq to VSTS. If the PReq is sent without any errors/issues, VSTS will return the 3DS Server a PRes with 5 ranges (all ranges currently in DS, due to the blank serial number passed). 3DS Server accepts PRes, this completes the test case.

**Action**

1 3DS Server (SUT) builds PReq as follows:

| | |
|---|---|
| 3DS Server Reference Number | EMVCo provided |
| 3DS Server Operator ID | Product Provider's BID |
| Serial Number | Not present |
| Message Version | "2.1.0" |

**Note:** All other required fields must be included in the PReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs PReq to VSTS.

**Expected Results**

- VSTS responds with PRes to 3DS Server, includes card ranges 1-5
- 3DS Server (SUT) confirms the PRes is received without any errors/issues
- Test case complete

## Test Case 3DSS-210-002–Preq (with Serial Number)

### Description

The 3DS Server (SUT) will send a PReq to VSTS. If the PReq is sent without any errors/issues, VSTS will return the 3DS Server a PRes with 2 ranges (the ranges that have changed or been added since the given Serial Number was returned). 3DS Server accepts PRes, this completes the test case. This is an **optional** test case.

### Action

1 3DS Server (SUT) builds PReq as follows:

| | |
|---|---|
| 3DS Server Reference Number | EMVCo provided |
| 3DS Server Operator ID | Product Provider's BID |
| Serial Number | value returned in test case 3DSS 210-001 |
| Message Version | "2.1.0" |

**Note:** All other required fields must be included in the PReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs PReq to VSTS.

### Expected Results

- VSTS responds with PRes to 3DS Server, includes 2 more card ranges. Note – this is a canned response from the VSTS's DS simulator.
- 3DS Server (SUT) confirms the PRes is received without any errors/issues.
- Test case complete.

## 2.6 EMV® 3DS 2.1.0 PSD2 Exemption Specific Supplementary Test Cases

3DS Server Product Providers can run the test case specified in this section to ensure that they are meeting the guidelines specified in 'PSD2 Exemptions Supplementary Guide' document. This is an **conditional** test case (required for clients operating or planning to operate in EEA, this includes product providers planning to or operating and offering services to clients in EEA).

### Test Case 3DSS-210-401 – Frictionless Flow, Browser, PA (Result=N)

**Description**

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status N in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001204" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.1.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |
| 3DS Requestor Challenge Indicator | "82" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "N", transaction status reason = "89" and ECI = "07". (CAVV will be **present** in the message).
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## 2.7 EMV® 3DS 2.1.0 Supplementary Test Cases

### Test Case 3DSS-210-501-Challenge Flow, Browser, PA (Result=Y, Challenge Mandated)

**Description**

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status C in response**. 3DS Server (SUT) accepts ARes and challenge flow is initiated. This is an **conditional** test case (required for clients operating or planning to operate in EEA, this includes product providers planning to or operating and offering services to clients in EEA).

3DS Server (SUT) sends a CReq to VSTS. VSTS sends **RReq with transaction status Y** to 3DS Server. 3DS Server (SUT) sends RRes to VSTS. VSTS sends **final CRes with transaction status Y** to 3DS Server, this completes test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001287" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.1.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Challenge Indicator | "04" |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "C".
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- 3DS Server (SUT) builds a CReq as follows:
  - 3DS Server Transaction ID: (Same 3DS Server Transaction ID as AReq)
- 3DS Server (SUT) sends CReq to VSTS
- VSTS POSTs RReq to 3DS Server with transaction status = "Y" and ECI="05" (CAVV will be present in the message)
- 3DS Server (SUT) builds an RRes (resultsStatus = '01'), sends to VSTS
- VSTS sends final CRes to 3DS Server with transaction status = "Y"
- 3DS Server (SUT) confirms the CRes is received without any errors/issues
- Test case complete

# 3 3DS Server Test Cases for EMV® 3DS 2.2

## 3.1 EMV® 3DS 2.2.0 Frictionless Flow (Browser-based)

### Test Case 3DSS-220-101–Frictionless Flow, Browser, PA (Result=Y)

**Description**

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status Y in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001006" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "Y", ECI = "05" and CAVV.
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## Test Case 3DSS-220-102– Frictionless Flow, Browser, PA (Result=N)

### Description

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status N in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

### Action

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001014" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS

### Expected Results

- VSTS responds with ARes to 3DS Server, transaction status = "N", (ECI and CAVV fields will be absent in the message).
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## Test Case 3DSS-220-103–Frictionless Flow, Browser, PA (Result=U)

### Description

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status U in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001022" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "U" (ECI and CAVV fields will be absent in the message).
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## Test Case 3DSS-220-104– Frictionless Flow, Browser, PA (Result=R)

### Description

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status R in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

### Action

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001030" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

### Expected Results

- VSTS responds with ARes to 3DS Server, transaction status = "R" (ECI and CAVV fields will be absent in the message).
- Test case complete.

## Test Case 3DSS-220-105– Frictionless Flow, Browser, PA (Result=I)

### Description

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status I in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

### Action

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001048" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |
| 3DS Requestor Challenge Indicator | "06" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

### Expected Results

- VSTS responds with ARes to 3DS Server, transaction status = "I", ECI = "07" and CAVV.
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## Test Case 3DSS-220-106–Frictionless Flow, Browser, PA (Result=A)

### Description

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status A in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001055" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "A", ECI = '06' and CAVV.
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## Test Case 3DSS-220-301–Frictionless Flow, 3RI, PA (Result=Y)

**Description**

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status Y in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001063" |
| Device Channel | "03" |

| | |
|---|---|
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3RI Indicator | "06" or "11" |
| 3DS Server Operator ID | Product Provider's BID |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "Y", ECI = "05" and CAVV.
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## 3.2 EMV® 3DS 2.2.0 Frictionless Flow (App-based)

### Test Case 3DSS-220-201–Frictionless Flow, App, PA (Result=Y)

**Description**

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status Y in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001071" |
| Device Channel | "01" |
| 3DS Server and SDK Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields (including the sdk* fields) must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "Y" and ECI="05" (CAVV will be present in the message)
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## Test Case 3DSS-220-202– Frictionless Flow, App, PA (Result=N)

### Description

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status N in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

### Action

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001089" |
| Device Channel | "01" |
| 3DS Server and SDK Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields (including the sdk* fields) must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS

### Expected Results

- VSTS responds with ARes to 3DS Server, transaction status = "N", (ECI and CAVV fields will be absent in the message).
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## 3.3 EMV® 3DS 2.2.0 Challenge Flow (Browser-based)

### Test Case 3DSS-220-107-Challenge Flow, Browser, PA (Result=Y)

**Description**

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status C in response**. 3DS Server (SUT) accepts ARes and challenge flow is initiated.

3DS Server (SUT) sends a CReq to VSTS. VSTS sends **RReq with transaction status Y** to 3DS Server. 3DS Server (SUT) sends RRes to VSTS. VSTS sends **final CRes with transaction status Y** to 3DS Server, this completes test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001097" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "C".
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- 3DS Server (SUT) builds a CReq as follows:
  - 3DS Server Transaction ID: (Same 3DS Server Transaction ID as AReq)
- 3DS Server (SUT) sends CReq to VSTS

- VSTS POSTs RReq to 3DS Server with transaction status = "Y" and ECI="05" (CAVV will be present in the message)
- 3DS Server (SUT) builds an RRes (resultsStatus = '01'), sends to VSTS
- VSTS sends final CRes to 3DS Server with transaction status = "Y"
- 3DS Server (SUT) confirms the CRes is received without any errors/issues
- Test case complete

## Test Case 3DSS-220-108-Decoupled Flow, Browser, PA (Result=Y)

### Description

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status D in response**. 3DS Server (SUT) accepts ARes and decoupled flow is initiated. VSTS sends **RReq with transaction status Y** to 3DS Server in a 10 minute delay from the exchange of AReq/ARes. 3DS Server (SUT) sends RRes to VSTS to complete the test case. This is an **optional** test case.

### Action

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001246" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |
| 3DS Requestor Decoupled Request Indicator | "Y" |
| 3DS Requestor Decoupled Max Time | (at least a value of 15 minutes) |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "D".
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- VSTS POSTs RReq to 3DS Server with transaction status = "Y" and ECI="05" (CAVV will be present in the message)
- 3DS Server (SUT) builds an RRes (resultsStatus = '01'), sends to VSTS
- Test case complete

## 3.4 EMV® 3DS 2.2.0 Challenge Flow (App-based)

### Test Case 3DSS-220-203-Challenge Flow, App-Native, PA (Result=Y)

**Description**

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status C in response**. 3DS Server (SUT) accepts ARes and challenge flow is initiated.

3DS Server (SUT) sends a CReq to VSTS. VSTS sends the challenge data elements though the CRes message. VSTS sends **RReq with transaction status Y** to 3DS Server. 3DS Server (SUT) sends RRes to VSTS. VSTS sends **final CRes with transaction status Y** to 3DS Server, this completes test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001105" |
| Device Channel | "01" |
| 3DS Server and SDK Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields (including the sdk* fields) must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "C".
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- 3DS Server (SUT) builds a CReq as follows:
  - 3DS Server Transaction ID: (Same 3DS Server Transaction ID as AReq)
- 3DS Server (SUT) sends CReq to VSTS

- VSTS sends CRes with the challenge data elements
- 3DS Server (SUT) sends the subsequent CReq to VSTS
- VSTS POSTs RReq to 3DS Server with transaction status = "Y" and ECI="05" (CAVV will be present in the message)
- 3DS Server (SUT) builds an RRes (resultsStatus = '01'), sends to VSTS
- VSTS sends final CRes to 3DS Server with transaction status = "Y"
- 3DS Server (SUT) confirms the CRes is received without any errors/issues
- Test case complete

## Test Case 3DSS-220-204-Challenge Flow, App-HTML, PA (Result=Y)

### Description

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status C in response**. 3DS Server (SUT) accepts ARes and challenge flow is initiated.

3DS Server (SUT) sends a CReq to VSTS. VSTS sends the challenge data elements though the CRes message. VSTS sends **RReq with transaction status Y** to 3DS Server. 3DS Server (SUT) sends RRes to VSTS. VSTS sends **final CRes with transaction status Y** to 3DS Server, this completes test case

### Action

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001113" |
| Device Channel | "01" |
| 3DS Server and SDK Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields (including the sdk* fields) must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "C".
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- 3DS Server (SUT) builds a CReq as follows:
  - 3DS Server Transaction ID: (Same 3DS Server Transaction ID as AReq)
- 3DS Server (SUT) sends CReq to VSTS
- VSTS sends CRes with the challenge data elements
- 3DS Server (SUT) sends the subsequent CReq to VSTS
- VSTS POSTs RReq to 3DS Server with transaction status = "Y" and ECI="05" (CAVV will be present in the message)
- 3DS Server (SUT) builds an RRes (resultsStatus = '01'), sends to VSTS
- 3DS Server (SUT) confirms the CRes is received without any errors/issues
- Test case complete

## 3.5 EMV® 3DS 2.2.0 Operation Flow

### Test Case 3DSS-220-001–Preq (w/out Serial Number)

**Description**

The 3DS Server (SUT) will send a PReq to VSTS. If the PReq is sent without any errors/issues, VSTS will return the 3DS Server a PRes with 5 ranges (all ranges currently in DS, due to the blank serial number passed). 3DS Server accepts PRes, this completes the test case.

**Action**

1 3DS Server (SUT) builds PReq as follows:

| | |
|---|---|
| 3DS Server Reference Number | EMVCo provided |
| 3DS Server Operator ID | Product Provider's BID |
| Serial Number | Not present |
| Message Version | "2.2.0" |

**Note:** All other required fields must be included in the PReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs PReq to VSTS.

**Expected Results**

- VSTS responds with PRes to 3DS Server, includes card ranges 1-5
- 3DS Server (SUT) confirms the PRes is received without any errors/issues
- Test case complete

## Test Case 3DSS-220-002–Preq (with Serial Number)

### Description

The 3DS Server (SUT) will send a PReq to VSTS. If the PReq is sent without any errors/issues, VSTS will return the 3DS Server a PRes with 2 ranges (the ranges that have changed or been added since the given Serial Number was returned). 3DS Server accepts PRes, this completes the test case. This is an **optional** test case.

### Action

1 3DS Server (SUT) builds PReq as follows:

| | |
|---|---|
| 3DS Server Reference Number | EMVCo provided |
| 3DS Server Operator ID | Product Provider's BID |
| Serial Number | value returned in test case 3DSS 220-001 |
| Message Version | "2.2.0" |

**Note:** All other required fields must be included in the PReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs PReq to VSTS.

### Expected Results

- VSTS responds with PRes to 3DS Server, includes 2 more card ranges. Note – this is a canned response from the VSTS's DS simulator.
- 3DS Server (SUT) confirms the PRes is received without any errors/issues.
- Test case complete.

## 3.6 Visa Delegated Authentication Program Test Cases

3DS Server Product Providers can run the test cases specified in this section to ensure that they are meeting Visa Delegated Authentication (VDA) program requirements. The Visa Delegated Authentication Program Implementation guide can be referenced for additional details. Successful completion of these test cases (if executed) will be noted in the Compliance Letter. These are **conditional** test cases (required for clients operating or planning to operate in EEA, this includes product providers planning to or operating and offering services to clients in EEA).

### Test Case 3DSS-220-401– Frictionless Flow, Browser, PA (Result=I)

**Description**

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status I in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001121" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor ID | "11764405" |
| 3DS Requestor Authentication Indicator | "01" |
| 3DS Requestor Challenge Indicator | "07" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "I", ECI = "07" and CAVV.
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## Test Case 3DSS-220-402– Frictionless Flow, Browser, PA (Result=N)

**Description**

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status N in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001139" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor ID | "11764406" |
| 3DS Requestor Authentication Indicator | "01" |
| 3DS Requestor Challenge Indicator | "07" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "N", (ECI and CAVV fields will be absent in the message). The transStatusReason code returned for this test case will be '85' indicating that the VMID (3DS Requestor ID or the merchant) is not participating in the VDA program.
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## Test Case 3DSS-220-403– Frictionless Flow, Browser, PA (Result=N)

**Description**

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status N in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000002004" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3DS Requestor ID | "11764405" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |
| 3DS Requestor Challenge Indicator | "07" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "N", (ECI and CAVV fields will be absent in the message). The transStatusReason code returned for this test case will be '88' indicating that the ACS (or the issuer) is not participating in the VDA program.
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## Test Case 3DSS-220-404– Frictionless Flow, Browser, PA (Result=I)

**Description**

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status I in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000003002" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor ID | "11764405" |
| 3DS Requestor Authentication Indicator | "01" |
| 3DS Requestor Challenge Indicator | "07" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "I", ECI = "07" and CAVV. The ARes is returned by VSTS's DS simulator for this scenario (the ACS supporting this card range is considered to be not participating in the VDA program).
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## 3.7 Transaction Risk Analysis (TRA) Program Test Cases

3DS Server Product Providers can run the test cases specified in this section to ensure that they are meeting Transaction Risk Analysis (TRA) program requirements. The TRA program guidelines can be referenced from the PSD2 Implementation guide. Successful completion of these test cases (if executed) will be noted in the Compliance Letter. These are **conditional** test cases (required for clients operating or planning to operate in EEA, this includes product providers planning to or operating and offering services to clients in EEA).

### Test Case 3DSS-220-601– Frictionless Flow, Browser, PA (Result=I)

**Description**

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status I in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001170" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |
| 3DS Requestor Challenge Indicator | "05" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "I", ECI = "07" and CAVV.
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.

- Test case complete.

## Test Case 3DSS-220-602– Frictionless Flow, Browser, PA (Result=N)

### Description

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status N in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

### Action

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001220" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |
| 3DS Requestor Challenge Indicator | "05" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS

### Expected Results

- VSTS responds with ARes to 3DS Server, transaction status = "N", (ECI and CAVV fields will be absent in the message). The transStatusReason code returned for this test case will be '01'.
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## Test Case 3DSS-220-603– Challenge Flow, Browser, PA (Result=C)

### Description

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status C in response**. 3DS Server (SUT) accepts ARes and challenge flow is initiated.

3DS Server (SUT) sends a CReq to VSTS. VSTS sends **RReq with transaction status Y** to 3DS Server. 3DS Server (SUT) sends RRes to VSTS. VSTS sends **final CRes with transaction status Y** to 3DS Server, this completes test case..

### Action

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001238" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Authentication Indicator | "01" |
| 3DS Requestor Challenge Indicator | "05" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS

### Expected Results

- VSTS responds with ARes to 3DS Server, transaction status = "C".
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- 3DS Server (SUT) builds a CReq as follows:
  - 3DS Server Transaction ID: (Same 3DS Server Transaction ID as AReq)
- 3DS Server (SUT) sends CReq to VSTS

- VSTS POSTs RReq to 3DS Server with transaction status = "Y" and ECI="05" (CAVV will be present in the message)
- 3DS Server (SUT) builds an RRes (resultsStatus = '01'), sends to VSTS
- VSTS sends final CRes to 3DS Server with transaction status = "Y"
- 3DS Server (SUT) confirms the CRes is received without any errors/issues
- Test case complete

## 3.8 EMV® 3DS 2.2.0 PSD2 Exemption Specific Supplementary Test Cases

3DS Server Product Providers can run the test case specified in this section to ensure that they are meeting the guidelines specified in 'PSD2 Exemptions Supplementary Guide' document. This is an **conditional** test case (required for clients operating or planning to operate in EEA, this includes product providers planning to or operating and offering services to clients in EEA).

### Test Case 3DSS-220-701– Frictionless Flow, Browser, PA (Result=I)

**Description**

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status I in response**. 3DS Server (SUT) accepts ARes, this completes the test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001212" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor ID | "11764405" |
| 3DS Requestor Authentication Indicator | "01" |
| 3DS Requestor Challenge Indicator | "82" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "I", ECI = "07" and CAVV.
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- Test case complete.

## 3.9 EMV® 3DS 2.2.0 Supplementary Test Cases

### Test Case 3DSS-220-801-Challenge Flow, Browser, PA (Result=Y, Challenge Mandated)

**Description**

The 3DS Server (SUT) will send an AReq with the 16-digit test PAN to VSTS. If the AReq is received with all the mandatory fields without any errors/issues, VSTS will return the 3DS Server an **ARes with status C in response**. 3DS Server (SUT) accepts ARes and challenge flow is initiated. This is an **conditional** test case (required for clients operating or planning to operate in EEA, this includes product providers planning to or operating and offering services to clients in EEA).

3DS Server (SUT) sends a CReq to VSTS. VSTS sends **RReq with transaction status Y** to 3DS Server. 3DS Server (SUT) sends RRes to VSTS. VSTS sends **final CRes with transaction status Y** to 3DS Server, this completes test case.

**Action**

1 3DS Server (SUT) builds AReq as follows:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001295" |
| Device Channel | "02" |
| 3DS Server Reference Number | EMVCo provided |
| Acquirer BIN | "400551" |
| Message Version Number | "2.2.0" |
| Message Category | "01" |
| 3DS Server Operator ID | Product Provider's BID |
| 3DS Requestor Challenge Indicator | "04" |
| 3DS Requestor Authentication Indicator | "01" |

**Note:** All other required fields must be included in the AReq and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

2 3DS Server (SUT) POSTs AReq to VSTS.

**Expected Results**

- VSTS responds with ARes to 3DS Server, transaction status = "C".
- 3DS Server (SUT) confirms the ARes is received without any errors/issues.
- 3DS Server (SUT) builds a CReq as follows:
  - 3DS Server Transaction ID: (Same 3DS Server Transaction ID as AReq)
- 3DS Server (SUT) sends CReq to VSTS
- VSTS POSTs RReq to 3DS Server with transaction status = "Y" and ECI="05" (CAVV will be present in the message)
- 3DS Server (SUT) builds an RRes (resultsStatus = '01'), sends to VSTS
- VSTS sends final CRes to 3DS Server with transaction status = "Y"
- 3DS Server (SUT) confirms the CRes is received without any errors/issues
- Test case complete

# 4 ACS Test Cases for EMV® 3DS 2.1

The ACS Test Cases below are required for Issuer ACS implementations in all Visa Regions. Each Visa Region may also require additional test cases.

## 4.1 EMV® 3DS 2.1.0 Frictionless Flow (Browser-based)

### Test Case ACS-210-101–Frictionless Flow, Browser PA (Result=Y)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status Y in response**. VSTS validates the ARes, this completes the test case.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN | "4012000000003010" [7] |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.1.0" |

**Expected Results**

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV to be included in the message):

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version | "2.1.0" |

[7] Default value, editable.

**Note:** All other required fields must be included in the ARes and have a valid value per the EMV 3DS Protocol Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.
- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

## Test Case ACS-210-102– Frictionless Flow, Browser PA (Result=N)

### Description

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status N in response**. VSTS validates the ARes, this completes the test case.

### Action

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN | "4012000000003028" |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.1.0" |

### Expected Results

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV not to be included in the message):

| | |
|---|---|
| Transaction Status | "N" |
| Transaction Status Reason Code | (applicable code) |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version | "2.1.0" |

**Note:** All other required fields must be included in the ARes and have a valid value per the EMV 3DS Protocol Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.
- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

## Test Case ACS-210-103–Frictionless Flow, Browser PA (Result=U)

### Description

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status U in response**. VSTS validates the ARes, this completes the test case.

### Action

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000003044" |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.1.0" |

### Expected Results

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV not to be included in the message):

| | |
|---|---|
| Transaction Status | "U" |
| Transaction Status Reason Code | (applicable code) |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version | "2.1.0" |

**Note:** All other required fields must be included in the ARes and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.
- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

## Test Case ACS-210-104–Frictionless Flow, Browser PA (Result=R)

### Description

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status R in response**. VSTS validates the ARes, this completes the test case.

### Action

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000003051" |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.1.0" |

### Expected Results

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV not to be included in the message):

| | |
|---|---|
| Transaction Status | "R" |
| Transaction Status Reason Code | (applicable code) |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version | "2.1.0" |

**Note:** All other required fields must be included in the ARes and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.
- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

## Test Case ACS-210-301– Frictionless Flow, Browser NPA (Result=Y)

### Description

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status Y in response**. VSTS validates the ARes, this completes the test case.

### Action

1 ACS user logs in to VSTS and runs the test case.

2 VSTS 3DS Server builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000003077" |
| Device Channel | "02" |
| Message Category | "02" |
| 3DS Server Operator ID | "00000011" |
| 3DS Requestor Authentication Indicator | "04" |
| Message Version | "2.1.0" |

### Expected Results

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV may be included in the message):

| | |
|---|---|
| Transaction Status | "Y"[8] |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version | "2.1.0" |

**Note:** All other required fields must be included in the ARes and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.
- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

[8] ECI and CAVV values may be present.

## Test Case ACS-210-302– Frictionless Flow, 3RI, NPA (Result=Y)

### Description

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status Y in response**. VSTS validates the ARes, this completes the test case. This is an optional test case.

### Action

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN | "4012000000003135" |
| Device Channel | "03" |
| Message Category | "02" |
| 3RI Indicator | "80"[9] |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.1.0" |

### Expected Results

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV to be **included** in the message):

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version | "2.1.0" |

**Note:** All other required fields must be included in the ARes and have a valid value per the EMV 3DS Protocol Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.

[9] The AReq is to be considered as a payment message category type by the ACS when the 3RI Indicator field is set to a value of '80' for message version 2.1 (inspite of the message explicitly called out as 'Non-Payment' for the Message Category field).

- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

## 4.2 EMV® 3DS 2.1.0 Frictionless Flow (App-based)

### Test Case ACS-210-201–Frictionless Flow, App PA (Result=Y)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status Y in response**. VSTS validates the ARes, this completes the test case.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS 3DS Server builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN | "4012000000003085" |
| Device Channel | "01" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.1.0" |

**Note:** SDK related data elements will be present as per the requirements listed in EMV 3DS Protocol Specification.

**Expected Results**

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV to be included in the message):

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version Number | "2.1.0" |

**Note:** All other required fields (including the sdk* fields) must be included in the ARes and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.
- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

## Test Case ACS-210-202–Frictionless Flow, App PA (Result=N)

### Description

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status N in response**. VSTS validates the ARes, this completes the test case.

### Action

1 ACS user logs in to VSTS and runs the test case.

2 VSTS 3DS Server builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN | "4012000000003093" |
| Device Channel | "01" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.1.0" |

**Note:** SDK related data elements will be present as per the requirements listed in EMV 3DS Protocol Specification.

### Expected Results

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV not to be included in the message):

| | |
|---|---|
| Transaction Status | "N" |
| Transaction Status Reason Code | (applicable code) |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version Number | "2.1.0" |

**Note:** All other required fields (including the sdk* fields) must be included in the ARes and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.

- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

## 4.3 EMV® 3DS 2.1.0 Challenge Flow (Browser-based)

### Test Case ACS-210-105-Challenge Flow, Browser, PA (Result=Y)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. ACS (SUT) will validate that the AReq is received with all the mandatory fields without any errors/issues and returns an **ARes with status C in response**. VSTS accepts ARes and sends a CReq to the ACS (Challenge flow is initiated).

ACS (SUT) sends **RReq with transaction status Y** to VSTS. VSTS sends RRes to ACS. ACS (SUT) sends **final CRes with transaction status Y** to VSTS, complete test case.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000003101" |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.1.0" |

3 ACS (SUT) confirms the AReq is received without any errors/issues.

4 ACS (SUT) creates ARes with the following and sends to VSTS (CAVV and ECI not to be included in the message)

| | |
|---|---|
| Transaction Status | "C" |
| ACS Reference Number | EMVCo-assigned ACS Reference Number |
| ACS Operator ID | Product Provider's BID |

5 VSTS confirms the ARes is received without any errors/issues.

6 VSTS simulator builds and sends CReq to the ACS.

7 ACS (SUT) builds and sends RReq to VSTS with the following (CAVV to be included in the message)

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |

**Expected Results**

- VSTS confirms that the RReq is received without any errors/issues.
- VSTS builds and sends the RRes as follows:

| | |
|---|---|
| Results Status | "01" |

- ACS (SUT) confirms that the RRes is received without any errors/issues.
- ACS (SUT) sends final CRes with transaction status = "Y" to VSTS.
- Test case complete.

## Test Case ACS-210-106-Challenge Flow, Browser, NPA (Result=Y)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. ACS (SUT) will validate that the AReq is received with all the mandatory fields without any errors/issues and returns an **ARes with status C in response**. VSTS accepts ARes and sends a CReq to the ACS (Challenge flow is initiated).

ACS (SUT) sends **RReq with transaction status Y** to VSTS. VSTS sends RRes to ACS. ACS (SUT) sends **final CRes with transaction status Y** to VSTS, complete test case. This is a **mandatory** test case and the objective is verify the ACS response for cardholder verification as part of EMV token ID&V.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001253" |
| Device Channel | "02" |
| Message Category | "02" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.1.0" |
| 3DS Requestor Authentication Indicator | "06" |
| EMV Payment Token Indicator | true |

3 ACS (SUT) confirms the AReq is received without any errors/issues.

4 ACS (SUT) creates ARes with the following and sends to VSTS (CAVV and ECI not to be included in the message)

| | |
|---|---|
| Transaction Status | "C" |
| ACS Reference Number | EMVCo-assigned ACS Reference Number |
| ACS Operator ID | Product Provider's BID |

5 VSTS confirms the ARes is received without any errors/issues.

6 VSTS simulator builds and sends CReq to the ACS.

7 ACS (SUT) builds and sends RReq to VSTS with the following (CAVV to be included in the message)

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |

**Expected Results**

- VSTS confirms that the RReq is received without any errors/issues.
- VSTS builds and sends the RRes as follows:

| | |
|---|---|
| Results Status | "01" |

- ACS (SUT) confirms that the RRes is received without any errors/issues.
- ACS (SUT) sends final CRes with transaction status = "Y" to VSTS.
- Test case complete.

## 4.4 EMV® 3DS 2.1.0 Challenge Flow (App-based)

### Test Case ACS-210-203-Challenge Flow, App-Native, PA (Result=Y)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. ACS (SUT) will validate that the AReq is received with all the mandatory fields without any errors/issues and returns an **ARes with status C in response**. VSTS accepts ARes and sends a CReq to the ACS (Challenge flow is initiated).

ACS (SUT) sends the CRes message with the challenge screen(s) data elements. ACS (SUT) sends **RReq with transaction status Y** to VSTS. VSTS sends RRes to ACS. ACS (SUT) sends **final CRes with transaction status Y** to VSTS, complete test case.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000003119" |
| Device Channel | "01" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.1.0" |

3 ACS (SUT) confirms the AReq is received without any errors/issues.

4 ACS (SUT) creates ARes with the following and sends to VSTS (CAVV and ECI not to be included in the message)

| | |
|---|---|
| Transaction Status | "C" |
| ACS Reference Number | EMVCo-assigned ACS Reference Number |
| ACS Operator ID | Product Provider's BID |

5 VSTS confirms the ARes is received without any errors/issues.

6 VSTS simulator builds and sends CReq to the ACS.

7 ACS (SUT) sends the CRes message to VSTS as applicable. ACS SUTs can edit the value of challengeDataEntry field from VSTS UI as needed for the subsequent CReq messages. VSTS inspects the value of 'challengeCompletionInd' in the CRes message to conclude the exchange of CReq/CRes messages.

8 ACS (SUT) builds and sends RReq to VSTS with the following (CAVV to be included in the message)

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |

**Expected Results**

- VSTS confirms that the RReq is received without any errors/issues.
- VSTS builds and sends the RRes as follows:

| | |
|---|---|
| Results Status | "01" |

- ACS (SUT) confirms that the RRes is received without any errors/issues.
- ACS (SUT) sends final CRes with transaction status = "Y" to VSTS.
- Test case complete.

## Test Case ACS-210-204-Challenge Flow, App-HTML, PA (Result=Y)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. ACS (SUT) will validate that the AReq is received with all the mandatory fields without any errors/issues and returns an **ARes with status C in response**. VSTS accepts ARes and sends a CReq to the ACS (Challenge flow is initiated).

ACS (SUT) sends the CRes message with the challenge screen(s) data elements. ACS (SUT) sends **RReq with transaction status Y** to VSTS. VSTS sends RRes to ACS. ACS (SUT) sends **final CRes with transaction status Y** to VSTS, complete test case.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000003127" |
| Device Channel | "01" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.1.0" |

3 ACS (SUT) confirms the AReq is received without any errors/issues.

4 ACS (SUT) creates ARes with the following and sends to VSTS (CAVV and ECI not to be included in the message)

| | |
|---|---|
| Transaction Status | "C" |
| ACS Reference Number | EMVCo-assigned ACS Reference Number |
| ACS Operator ID | Product Provider's BID |

5 VSTS confirms the ARes is received without any errors/issues.

6 VSTS simulator builds and sends CReq to the ACS.

7 ACS (SUT) sends the CRes message to VSTS as applicable. ACS SUTs can edit the value of challengeHTMLDataEntry field from VSTS UI as needed for the subsequent CReq messages. VSTS inspects the value of 'challengeCompletionInd' in the CRes message to conclude the exchange of CReq/CRes messages.

8 ACS (SUT) builds and sends RReq to VSTS with the following (CAVV to be included in the message)

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |

**Expected Results**

- VSTS confirms that the RReq is received without any errors/issues.
- VSTS builds and sends the RRes as follows:

| | |
|---|---|
| Results Status | "01" |

- ACS (SUT) confirms that the RRes is received without any errors/issues.
- ACS (SUT) sends final CRes with transaction status = "Y" to VSTS.
- Test case complete.

## Test Case ACS-210-205-Challenge Flow, App-Native, PA (Result=Y)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. ACS (SUT) will validate that the AReq is received with all the mandatory fields without any errors/issues and returns an **ARes with status C in response and the message extension 'Device Acknowledgment'**. VSTS accepts ARes and sends a CReq to the ACS (Challenge flow is initiated).

ACS (SUT) sends the CRes message with the challenge screen(s) data elements. ACS (SUT) sends **RReq with transaction status Y** to VSTS. VSTS sends RRes to ACS. ACS (SUT) sends **final CRes with transaction status Y** to VSTS, complete test case. This is an **optional** test case and the objective is verify the 'Device Acknowledgment' message extension.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000003119" |
| Device Channel | "01" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.1.0" |

3 ACS (SUT) confirms the AReq is received without any errors/issues.

4 ACS (SUT) creates ARes with the following and sends to VSTS (CAVV and ECI not to be included in the message)

| | |
|---|---|
| Transaction Status | "C" |
| ACS Reference Number | EMVCo-assigned ACS Reference Number |
| ACS Operator ID | Product Provider's BID |
| Message Extension | "[{<br>"name":"Device Acknowledgment",<br>"id":"A000000802-001",<br>"criticalityIndicator":false,<br>"data[10]":<br>{<br>}] |

5 VSTS confirms the ARes is received without any errors/issues.

6 VSTS simulator builds and sends CReq to the ACS.

7 ACS (SUT) sends the CRes message to VSTS as applicable. ACS SUTs can edit the value of challengeDataEntry field from VSTS UI as needed for the subsequent CReq messages. VSTS inspects the value of 'challengeCompletionInd' in the CRes message to conclude the exchange of CReq/CRes messages.

8 ACS (SUT) builds and sends RReq to VSTS with the following (CAVV to be included in the message)

[10] The data element of this extension is as supported by the ACS and according to the format specified in the EMVCo publication 'Device Acknowledgement Message Extension' accessible from the EMVCo website.

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |

**Expected Results**

- VSTS confirms that the RReq is received without any errors/issues.
- VSTS builds and sends the RRes as follows:

| | |
|---|---|
| Results Status | "01" |

- ACS (SUT) confirms that the RRes is received without any errors/issues.
- ACS (SUT) sends final CRes with transaction status = "Y" to VSTS.
- Test case complete.

## Test Case ACS-210-206-Challenge Flow, App-Native, NPA (Result=Y)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. ACS (SUT) will validate that the AReq is received with all the mandatory fields without any errors/issues and returns an **ARes with status C in response**. VSTS accepts ARes and sends a CReq to the ACS (Challenge flow is initiated).

ACS (SUT) sends the CRes message with the challenge screen(s) data elements. ACS (SUT) sends **RReq with transaction status Y** to VSTS. VSTS sends RRes to ACS. ACS (SUT) sends **final CRes with transaction status Y** to VSTS, complete test case. This is a **mandatory** test case and the objective is verify the ACS response for cardholder verification as part of EMV token ID&V.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001261" |
| Device Channel | "01" |
| Message Category | "02" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.1.0" |
| 3DS Requestor Authentication Indicator | "06" |
| EMV Payment Token Indicator | true |

3 ACS (SUT) confirms the AReq is received without any errors/issues.

4 ACS (SUT) creates ARes with the following and sends to VSTS (CAVV and ECI not to be included in the message)

| | |
|---|---|
| Transaction Status | "C" |
| ACS Reference Number | EMVCo-assigned ACS Reference Number |
| ACS Operator ID | Product Provider's BID |

5 VSTS confirms the ARes is received without any errors/issues.

6 VSTS simulator builds and sends CReq to the ACS.

7 ACS (SUT) sends the CRes message to VSTS as applicable. ACS SUTs can edit the value of challengeDataEntry field from VSTS UI as needed for the subsequent CReq messages. VSTS inspects the value of 'challengeCompletionInd' in the CRes message to conclude the exchange of CReq/CRes messages.

8 ACS (SUT) builds and sends RReq to VSTS with the following (CAVV to be included in the message)

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |

**Expected Results**

- VSTS confirms that the RReq is received without any errors/issues.
- VSTS builds and sends the RRes as follows:

| | |
|---|---|
| Results Status | "01" |

- ACS (SUT) confirms that the RRes is received without any errors/issues.
- ACS (SUT) sends final CRes with transaction status = "Y" to VSTS.
- Test case complete.

## Test Case ACS-210-207-Challenge Flow, App-HTML, NPA (Result=Y)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. ACS (SUT) will validate that the AReq is received with all the mandatory fields without any errors/issues and returns an **ARes with status C in response**. VSTS accepts ARes and sends a CReq to the ACS (Challenge flow is initiated).

ACS (SUT) sends the CRes message with the challenge screen(s) data elements. ACS (SUT) sends **RReq with transaction status Y** to VSTS. VSTS sends RRes to ACS. ACS (SUT) sends **final CRes with transaction status Y** to VSTS, complete test case. This is a **mandatory** test case and the objective is verify the ACS response for cardholder verification as part of EMV token ID&V.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001279" |
| Device Channel | "01" |
| Message Category | "02" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.1.0" |
| 3DS Requestor Authentication Indicator | "06" |
| EMV Payment Token Indicator | true |

3 ACS (SUT) confirms the AReq is received without any errors/issues.

4 ACS (SUT) creates ARes with the following and sends to VSTS (CAVV and ECI not to be included in the message)

| | |
|---|---|
| Transaction Status | "C" |
| ACS Reference Number | EMVCo-assigned ACS Reference Number |
| ACS Operator ID | Product Provider's BID |

5 VSTS confirms the ARes is received without any errors/issues.

6 VSTS simulator builds and sends CReq to the ACS.

7 ACS (SUT) sends the CRes message to VSTS as applicable. ACS SUTs can edit the value of challengeHTMLDataEntry field from VSTS UI as needed for the subsequent CReq messages. VSTS inspects the value of 'challengeCompletionInd' in the CRes message to conclude the exchange of CReq/CRes messages.

8 ACS (SUT) builds and sends RReq to VSTS with the following (CAVV to be included in the message)

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |

**Expected Results**

- VSTS confirms that the RReq is received without any errors/issues.
- VSTS builds and sends the RRes as follows:

| | |
|---|---|
| Results Status | "01" |

- ACS (SUT) confirms that the RRes is received without any errors/issues.

- ACS (SUT) sends final CRes with transaction status = "Y" to VSTS.
- Test case complete.

## 4.5 EMV® 3DS 2.1.0 PSD2 Exemption Specific Supplementary Test Cases

ACS Product Providers can run the test cases specified in this section to ensure that they are meeting the guidelines specified in 'PSD2 Exemptions Supplementary Guide' document. These are **conditional** test cases (required for clients operating or planning to operate in EEA, this includes product providers planning to or operating and offering services to clients in EEA).

### Test Case ACS-210-401–Frictionless Flow, Browser PA (Result=Y)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status Y in response**. VSTS validates the ARes, this completes the test case.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN | "4012000000003010" |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.1.0" |
| Message Extension | "[{<br>"name":"Acquirer Country Code Extension",<br>"id":"A000000003-001",<br>"criticalityIndicator":false,<br>"data":<br>{<br>"acquirerCountryCode":"826",<br>"acquirerCountryCodeSource":"02",<br>"version":"1.0"<br>} |

| | |
|---|---|
| | }]" |

**Expected Results**

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV to be included in the message):

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version | "2.1.0" |

**Note:** All other required fields must be included in the ARes and have a valid value per the EMV 3DS Protocol Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.
- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

## Test Case ACS-210-402–Frictionless Flow, Browser PA (Result=N)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status N in response**. VSTS validates the ARes, this completes the test case.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN | "4012000000001204" |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.1.0" |
| 3DS Requestor Challenge Indicator | "82" |

**Expected Results**

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV to be **included** in the message):

| | |
|---|---|
| Transaction Status | "N" |
| Transaction Status Reason | "89" |
| ECI | "07" |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version | "2.1.0" |

**Note:** All other required fields must be included in the ARes and have a valid value per the EMV 3DS Protocol Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.
- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

## 4.6 EMV® 3DS 2.1.0 Supplementary Test Cases

### Test Case ACS-210-501-Challenge Flow, Browser, PA (Result=Y, Challenge Mandated)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. ACS (SUT) will validate that the AReq is received with all the mandatory fields without any errors/issues and returns an **ARes with status C in response**. VSTS accepts ARes and sends a CReq to the ACS (Challenge flow is initiated). This is an **conditional** test case (required for clients operating or planning to operate in EEA, this includes product providers planning to or operating and offering services to clients in EEA).

ACS (SUT) sends **RReq with transaction status Y** to VSTS. VSTS sends RRes to ACS. ACS (SUT) sends **final CRes with transaction status Y** to VSTS, complete test case.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001287" |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| 3DS Requestor Challenge Indicator | "04" |
| Message Version | "2.1.0" |

3 ACS (SUT) confirms the AReq is received without any errors/issues.

4 ACS (SUT) creates ARes with the following and sends to VSTS (CAVV and ECI not to be included in the message)

| | |
|---|---|
| Transaction Status | "C" |
| ACS Reference Number | EMVCo-assigned ACS Reference Number |
| ACS Operator ID | Product Provider's BID |

5 VSTS confirms the ARes is received without any errors/issues.

6 VSTS simulator builds and sends CReq to the ACS.

7 ACS (SUT) builds and sends RReq to VSTS with the following (CAVV to be included in the message)

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |

**Expected Results**

- VSTS confirms that the RReq is received without any errors/issues.
- VSTS builds and sends the RRes as follows:

| | |
|---|---|
| Results Status | "01" |

- ACS (SUT) confirms that the RRes is received without any errors/issues.
- ACS (SUT) sends final CRes with transaction status = "Y" to VSTS.
- Test case complete.

# 5 ACS Test Cases for EMV® 3DS 2.2

## 5.1 EMV® 3DS 2.2.0 Frictionless Flow (Browser-based)

### Test Case ACS-220-101–Frictionless Flow, Browser PA (Result=Y)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status Y in response**. VSTS validates the ARes, this completes the test case.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN | "4012000000001006" |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.2.0" |

**Expected Results**

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV to be included in the message):

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version | "2.2.0" |

**Note:** All other required fields must be included in the ARes and have a valid value per the EMV 3DS Protocol Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.
- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

## Test Case ACS-220-102– Frictionless Flow, Browser PA (Result=N)

### Description

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status N in response**. VSTS validates the ARes, this completes the test case.

### Action

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN | "4012000000001014" |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.2.0" |

### Expected Results

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV not to be included in the message):

| | |
|---|---|
| Transaction Status | "N" |
| Transaction Status Reason Code | (applicable code) |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version | "2.2.0" |

**Note:** All other required fields must be included in the ARes and have a valid value per the EMV 3DS Protocol Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.
- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

## Test Case ACS-220-103–Frictionless Flow, Browser PA (Result=U)

### Description

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status U in response**. VSTS validates the ARes, this completes the test case.

### Action

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001022" |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.2.0" |

### Expected Results

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV not to be included in the message):

| | |
|---|---|
| Transaction Status | "U" |
| Transaction Status Reason Code | (applicable code) |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version | "2.2.0" |

**Note:** All other required fields must be included in the ARes and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.
- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

## Test Case ACS-220-104–Frictionless Flow, Browser PA (Result=R)

### Description

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status R in response**. VSTS validates the ARes, this completes the test case.

### Action

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001030" |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.2.0" |

### Expected Results

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV not to be included in the message):

| | |
|---|---|
| Transaction Status | "R" |
| Transaction Status Reason Code | (applicable code) |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version | "2.2.0" |

**Note:** All other required fields must be included in the ARes and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.
- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

## Test Case ACS-220-105–Frictionless Flow, Browser PA (Result=I)

### Description

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status I in response**. VSTS validates the ARes, this completes the test case.

### Action

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN | "4012000000001048" |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.2.0" |
| 3DS Requestor Challenge Indicator | "06" |

### Expected Results

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV to be included in the message):

| | |
|---|---|
| Transaction Status | "I" |
| ECI | "07" |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version | "2.2.0" |

**Note:** All other required fields must be included in the ARes and have a valid value per the EMV 3DS Protocol Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.
- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

## Test Case ACS-220-301– Frictionless Flow, 3RI PA (Result=Y)

### Description

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status Y in response**. VSTS validates the ARes, this completes the test case.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS 3DS Server builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001063" |
| Device Channel | "03" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.2.0" |

**Expected Results**

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV to be included in the message):

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version | "2.2.0" |

**Note:** All other required fields must be included in the ARes and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.
- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

## 5.2 EMV® 3DS 2.2.0 Frictionless Flow (App-based)

### Test Case ACS-220-201–Frictionless Flow, App PA (Result=Y)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status Y in response**. VSTS validates the ARes, this completes the test case.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS 3DS Server builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN | "4012000000001071" |
| Device Channel | "01" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.2.0" |

**Note:** SDK related data elements will be present as per the requirements listed in EMV 3DS Protocol Specification.

**Expected Results**

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV to be included in the message):

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version Number | "2.2.0" |

**Note:** All other required fields (including the sdk* fields) must be included in the ARes and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.
- VSTS confirms that the ARes is received without any errors/issues.

- Test case complete.

## Test Case ACS-220-202–Frictionless Flow, App PA (Result=N)

### Description

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status N in response**. VSTS validates the ARes, this completes the test case.

### Action

1 ACS user logs in to VSTS and runs the test case.

2 VSTS 3DS Server builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN | "4012000000001089" |
| Device Channel | "01" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.2.0" |

**Note:** SDK related data elements will be present as per the requirements listed in EMV 3DS Protocol Specification.

### Expected Results

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV not to be included in the message):

| | |
|---|---|
| Transaction Status | "N" |
| Transaction Status Reason Code | (applicable code) |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version Number | "2.2.0" |

**Note:** All other required fields (including the sdk* fields) must be included in the ARes and have a valid value per the EMV 3DS Core Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.
- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

## 5.3 EMV® 3DS 2.2.0 Challenge Flow (Browser-based)

### Test Case ACS-220-106-Challenge Flow, Browser, PA (Result=Y)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. ACS (SUT) will validate that the AReq is received with all the mandatory fields without any errors/issues and returns an **ARes with status C in response**. VSTS accepts ARes and sends a CReq to the ACS (Challenge flow is initiated).

ACS (SUT) sends **RReq with transaction status Y** to VSTS. VSTS sends RRes to ACS. ACS (SUT) sends **final CRes with transaction status Y** to VSTS, complete test case.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001097" |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.2.0" |

3 ACS (SUT) confirms the AReq is received without any errors/issues.

4 ACS (SUT) creates ARes with the following and sends to VSTS (CAVV and ECI not to be included in the message)

| | |
|---|---|
| Transaction Status | "C" |
| ACS Reference Number | EMVCo-assigned ACS Reference Number |
| ACS Operator ID | Product Provider's BID |

5 VSTS confirms the ARes is received without any errors/issues.

6 VSTS simulator builds and sends CReq to the ACS.

7 ACS (SUT) builds and sends RReq to VSTS with the following (CAVV to be included in the message)

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |

**Expected Results**

- VSTS confirms that the RReq is received without any errors/issues.
- VSTS builds and sends the RRes as follows:

| | |
|---|---|
| Results Status | "01" |

- ACS (SUT) confirms that the RRes is received without any errors/issues.
- ACS (SUT) sends final CRes with transaction status = "Y" to VSTS.
- Test case complete.

## Test Case ACS-220-107-Decoupled Flow, Browser, PA (Result=Y)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. ACS (SUT) will validate that the AReq is received with all the mandatory fields without any errors/issues and returns an **ARes with status D in response**. VSTS accepts ARes and a decoupled flow is initiated.

ACS (SUT) sends **RReq with transaction status Y** to VSTS. The RReq should be sent by the ACS (SUT) within 6 hours and 30 seconds after sending the ARes to VSTS. VSTS sends RRes to ACS to complete test case. This is an **optional** test case.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001246" |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.2.0" |
| 3DS Requestor Decoupled Max Time | "300" |
| 3DS Requestor Decoupled Request Indicator | "Y" |

3 ACS (SUT) confirms the AReq is received without any errors/issues.

4 ACS (SUT) creates ARes with the following and sends to VSTS (CAVV and ECI not to be included in the message)

| | |
|---|---|
| Transaction Status | "D" |
| ACS Reference Number | EMVCo-assigned ACS Reference Number |
| ACS Operator ID | Product Provider's BID |

5 VSTS confirms the ARes is received without any errors/issues.

6 ACS (SUT) builds and sends RReq to VSTS with the following (CAVV to be included in the message).

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |

**Expected Results**

- VSTS confirms that the RReq is received without any errors/issues.
- VSTS builds and sends the RRes as follows:

| | |
|---|---|
| Results Status | "01" |

- ACS (SUT) confirms that the RRes is received without any errors/issues.
- Test case complete.

## Test Case ACS-220-108-Challenge Flow, Browser, NPA (Result=Y)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. ACS (SUT) will validate that the AReq is received with all the mandatory fields without any errors/issues and returns an **ARes with status C in response**. VSTS accepts ARes and sends a CReq to the ACS (Challenge flow is initiated).

ACS (SUT) sends **RReq with transaction status Y** to VSTS. VSTS sends RRes to ACS. ACS (SUT) sends **final CRes with transaction status Y** to VSTS, complete test case. This is a **mandatory** test case and the objective is verify the ACS response for cardholder verification as part of EMV token ID&V.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001253" |
| Device Channel | "02" |
| Message Category | "02" |
| 3DS Server Operator ID | "00000011" |

| | |
|---|---|
| Message Version | "2.2.0" |
| 3DS Requestor Authentication Indicator | "06" |
| EMV Payment Token Indicator | true |
| EMV Payment Token Source | "02" |

3 ACS (SUT) confirms the AReq is received without any errors/issues.

4 ACS (SUT) creates ARes with the following and sends to VSTS (CAVV and ECI not to be included in the message)

| | |
|---|---|
| Transaction Status | "C" |
| ACS Reference Number | EMVCo-assigned ACS Reference Number |
| ACS Operator ID | Product Provider's BID |

5 VSTS confirms the ARes is received without any errors/issues.

6 VSTS simulator builds and sends CReq to the ACS.

7 ACS (SUT) builds and sends RReq to VSTS with the following (CAVV to be included in the message)

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |

**Expected Results**

- VSTS confirms that the RReq is received without any errors/issues.
- VSTS builds and sends the RRes as follows:

| | |
|---|---|
| Results Status | "01" |

- ACS (SUT) confirms that the RRes is received without any errors/issues.
- ACS (SUT) sends final CRes with transaction status = "Y" to VSTS.
- Test case complete.

## 5.4 EMV® 3DS 2.2.0 Challenge Flow (App-based)

### Test Case ACS-220-203-Challenge Flow, App-Native, PA (Result=Y)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. ACS (SUT) will validate that the AReq is received with all the mandatory fields without any errors/issues and returns an **ARes with status C in response**. VSTS accepts ARes and sends a CReq to the ACS (Challenge flow is initiated).

ACS (SUT) sends the CRes message with the challenge screen(s) data elements. ACS (SUT) sends **RReq with transaction status Y** to VSTS. VSTS sends RRes to ACS. ACS (SUT) sends **final CRes with transaction status Y** to VSTS, complete test case.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001105" |
| Device Channel | "01" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.2.0" |

3 ACS (SUT) confirms the AReq is received without any errors/issues.

4 ACS (SUT) creates ARes with the following and sends to VSTS (CAVV and ECI not to be included in the message)

| | |
|---|---|
| Transaction Status | "C" |
| ACS Reference Number | EMVCo-assigned ACS Reference Number |
| ACS Operator ID | Product Provider's BID |

5 VSTS confirms the ARes is received without any errors/issues.

6 VSTS simulator builds and sends CReq to the ACS.

7 ACS (SUT) sends the CRes message to VSTS as applicable. ACS SUTs can edit the value of challengeDataEntry field from VSTS UI as needed for the subsequent CReq messages. VSTS inspects the value of 'challengeCompletionInd' in the CRes message to conclude the exchange of CReq/CRes messages.

8 ACS (SUT) builds and sends RReq to VSTS with the following (CAVV to be included in the message)

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |

**Expected Results**

- VSTS confirms that the RReq is received without any errors/issues.
- VSTS builds and sends the RRes as follows:

| | |
|---|---|
| Results Status | "01" |

- ACS (SUT) confirms that the RRes is received without any errors/issues.
- ACS (SUT) sends final CRes with transaction status = "Y" to VSTS.
- Test case complete.

## Test Case ACS-220-204-Challenge Flow, App-HTML, PA (Result=Y)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. ACS (SUT) will validate that the AReq is received with all the mandatory fields without any errors/issues and returns an **ARes with status C in response**. VSTS accepts ARes and sends a CReq to the ACS (Challenge flow is initiated).

ACS (SUT) sends the CRes message with the challenge screen(s) data elements. ACS (SUT) sends **RReq with transaction status Y** to VSTS. VSTS sends RRes to ACS. ACS (SUT) sends **final CRes with transaction status Y** to VSTS, complete test case.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001113" |
| Device Channel | "01" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.2.0" |

3 ACS (SUT) confirms the AReq is received without any errors/issues.

4 ACS (SUT) creates ARes with the following and sends to VSTS (CAVV and ECI not to be included in the message)

| | |
|---|---|
| Transaction Status | "C" |
| ACS Reference Number | EMVCo-assigned ACS Reference Number |
| ACS Operator ID | Product Provider's BID |

5 VSTS confirms the ARes is received without any errors/issues.

6 VSTS simulator builds and sends CReq to the ACS.

7 ACS (SUT) sends the CRes message to VSTS as applicable. ACS SUTs can edit the value of challengeHTMLDataEntry field from VSTS UI as needed for the subsequent CReq messages. VSTS inspects the value of 'challengeCompletionInd' in the CRes message to conclude the exchange of CReq/CRes messages.

8 ACS (SUT) builds and sends RReq to VSTS with the following (CAVV to be included in the message)

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |

**Expected Results**

- VSTS confirms that the RReq is received without any errors/issues.
- VSTS builds and sends the RRes as follows:

| | |
|---|---|
| Results Status | "01" |

- ACS (SUT) confirms that the RRes is received without any errors/issues.
- ACS (SUT) sends final CRes with transaction status = "Y" to VSTS.
- Test case complete.

## Test Case ACS-220-205-Challenge Flow, App-Native, PA (Result=Y)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. ACS (SUT) will validate that the AReq is received with all the mandatory fields without any errors/issues and returns an **ARes with status C in response and the message extension 'Device Acknowledgment'**. VSTS accepts ARes and sends a CReq to the ACS (Challenge flow is initiated).

ACS (SUT) sends the CRes message with the challenge screen(s) data elements. ACS (SUT) sends **RReq with transaction status Y** to VSTS. VSTS sends RRes to ACS. ACS (SUT) sends **final CRes with transaction status Y** to VSTS, complete test case. This is an **optional** test case and the objective is verify the 'Device Acknowledgment' message extension.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001105" |
| Device Channel | "01" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.2.0" |

3 ACS (SUT) confirms the AReq is received without any errors/issues.

4 ACS (SUT) creates ARes with the following and sends to VSTS (CAVV and ECI not to be included in the message)

| | |
|---|---|
| Transaction Status | "C" |
| ACS Reference Number | EMVCo-assigned ACS Reference Number |
| ACS Operator ID | Product Provider's BID |
| Message Extension | "[{<br>"name":"Device Acknowledgment",<br>"id":"A000000802-001",<br>"criticalityIndicator":false,<br>"data[11]":<br>{<br>}] |

5 VSTS confirms the ARes is received without any errors/issues.

6 VSTS simulator builds and sends CReq to the ACS.

7 ACS (SUT) sends the CRes message to VSTS as applicable. ACS SUTs can edit the value of challengeDataEntry field from VSTS UI as needed for the subsequent CReq messages. VSTS inspects the value of 'challengeCompletionInd' in the CRes message to conclude the exchange of CReq/CRes messages.

8 ACS (SUT) builds and sends RReq to VSTS with the following (CAVV to be included in the message)

[11] The data element of this extension is as supported by the ACS and according to the format specified in the EMVCo publication 'Device Acknowledgement Message Extension' accessible from the EMVCo website.

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |

**Expected Results**

- VSTS confirms that the RReq is received without any errors/issues.
- VSTS builds and sends the RRes as follows:

| | |
|---|---|
| Results Status | "01" |

- ACS (SUT) confirms that the RRes is received without any errors/issues.
- ACS (SUT) sends final CRes with transaction status = "Y" to VSTS.
- Test case complete.

## Test Case ACS-220-206-Challenge Flow, App-Native, NPA (Result=Y)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. ACS (SUT) will validate that the AReq is received with all the mandatory fields without any errors/issues and returns an **ARes with status C in response**. VSTS accepts ARes and sends a CReq to the ACS (Challenge flow is initiated).

ACS (SUT) sends the CRes message with the challenge screen(s) data elements. ACS (SUT) sends **RReq with transaction status Y** to VSTS. VSTS sends RRes to ACS. ACS (SUT) sends **final CRes with transaction status Y** to VSTS, complete test case. This is a **mandatory** test case and the objective is verify the ACS response for cardholder verification as part of EMV token ID&V.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001261" |
| Device Channel | "01" |
| Message Category | "02" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.2.0" |
| 3DS Requestor Authentication Indicator | "06" |
| EMV Payment Token Indicator | true |
| EMV Payment Token Source | "02" |

3 ACS (SUT) confirms the AReq is received without any errors/issues.

4 ACS (SUT) creates ARes with the following and sends to VSTS (CAVV and ECI not to be included in the message)

| | |
|---|---|
| Transaction Status | "C" |
| ACS Reference Number | EMVCo-assigned ACS Reference Number |
| ACS Operator ID | Product Provider's BID |

5 VSTS confirms the ARes is received without any errors/issues.

6 VSTS simulator builds and sends CReq to the ACS.

7 ACS (SUT) sends the CRes message to VSTS as applicable. ACS SUTs can edit the value of challengeDataEntry field from VSTS UI as needed for the subsequent CReq messages. VSTS inspects the value of 'challengeCompletionInd' in the CRes message to conclude the exchange of CReq/CRes messages.

8 ACS (SUT) builds and sends RReq to VSTS with the following (CAVV to be included in the message)

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |

**Expected Results**

- VSTS confirms that the RReq is received without any errors/issues.
- VSTS builds and sends the RRes as follows:

| | |
|---|---|
| Results Status | "01" |

- ACS (SUT) confirms that the RRes is received without any errors/issues.
- ACS (SUT) sends final CRes with transaction status = "Y" to VSTS.
- Test case complete.

## Test Case ACS-220-207-Challenge Flow, App-HTML, NPA (Result=Y)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. ACS (SUT) will validate that the AReq is received with all the mandatory fields without any errors/issues and returns an **ARes with status C in response**. VSTS accepts ARes and sends a CReq to the ACS (Challenge flow is initiated).

ACS (SUT) sends the CRes message with the challenge screen(s) data elements. ACS (SUT) sends **RReq with transaction status Y** to VSTS. VSTS sends RRes to ACS. ACS (SUT) sends **final CRes with transaction status Y** to VSTS, complete test case. This is a **mandatory** test case and the objective is verify the ACS response for cardholder verification as part of EMV token ID&V.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001279" |
| Device Channel | "01" |
| Message Category | "02" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.2.0" |
| 3DS Requestor Authentication Indicator | "06" |
| EMV Payment Token Indicator | true |
| EMV Payment Token Source | "02" |

3 ACS (SUT) confirms the AReq is received without any errors/issues.

4 ACS (SUT) creates ARes with the following and sends to VSTS (CAVV and ECI not to be included in the message)

| | |
|---|---|
| Transaction Status | "C" |
| ACS Reference Number | EMVCo-assigned ACS Reference Number |
| ACS Operator ID | Product Provider's BID |

5 VSTS confirms the ARes is received without any errors/issues.

6 VSTS simulator builds and sends CReq to the ACS.

7 ACS (SUT) sends the CRes message to VSTS as applicable. ACS SUTs can edit the value of challengeHTMLDataEntry field from VSTS UI as needed for the subsequent CReq messages. VSTS inspects the value of 'challengeCompletionInd' in the CRes message to conclude the exchange of CReq/CRes messages.

8 ACS (SUT) builds and sends RReq to VSTS with the following (CAVV to be included in the message)

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |

**Expected Results**

- VSTS confirms that the RReq is received without any errors/issues.
- VSTS builds and sends the RRes as follows:

| | |
|---|---|
| Results Status | "01" |

- ACS (SUT) confirms that the RRes is received without any errors/issues.
- ACS (SUT) sends final CRes with transaction status = "Y" to VSTS.
- Test case complete.

## 5.5 Visa Delegated Authentication Program Test Case

ACS Product Providers can run the test case specified in this section to ensure that they are meeting Visa Delegated Authentication (VDA) program requirements. The Visa Delegated Authentication Program Implementation guide can be referenced for additional details. Successful completion of these test cases (if executed) will be noted in the Compliance Letter. This is an **conditional** test case (required for clients operating or planning to operate in EEA, this includes product providers planning to or operating and offering services to clients in EEA).

### Test Case ACS-220-401–Frictionless Flow, Browser PA (Result=I)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status I in response**. VSTS validates the ARes, this completes the test case.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN | "4012000000001121" |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| 3DS Requestor ID | "11764405" |
| Message Version | "2.2.0" |
| 3DS Requestor Challenge Indicator | "07" |

**Expected Results**

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV to be included in the message):

| | |
|---|---|
| Transaction Status | "I" |
| ECI | "07" |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version | "2.2.0" |

**Note:** All other required fields must be included in the ARes and have a valid value per the EMV 3DS Protocol Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.
- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

## 5.6 Transaction Risk Analysis (TRA) Program Test Cases

ACS Product Providers can run the test cases specified in this section to ensure that they are meeting TRA program requirements. The TRA program guidelines can be referenced from the PSD2 Implementation guide. Successful completion of these test cases (if executed) will be noted in the Compliance Letter. These are **conditional** test cases (required for clients operating or planning to operate in EEA, this includes product providers planning to or operating and offering services to clients in EEA).

### Test Case ACS-220-601–Frictionless Flow, Browser PA (Result=I)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status I in response**. VSTS validates the ARes, this completes the test case.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN | "4012000000001170" |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.2.0" |
| 3DS Requestor Challenge Indicator | "05" |

**Expected Results**

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV to be included in the message):

| | |
|---|---|
| Transaction Status | "I" |
| ECI | "07" |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version | "2.2.0" |

**Note:** All other required fields must be included in the ARes and have a valid value per the EMV 3DS Protocol Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.
- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

## Test Case ACS-220-602–Frictionless Flow, Browser PA (Result=N)

### Description

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status N in response**. VSTS validates the ARes, this completes the test case.

### Action

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN | "4012000000001220" |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.2.0" |
| 3DS Requestor Challenge Indicator | "05" |

### Expected Results

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV not to be included in the message):

| | |
|---|---|
| Transaction Status | "N" |
| Transaction Status Reason Code | (applicable code) |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version | "2.2.0" |

**Note:** All other required fields must be included in the ARes and have a valid value per the EMV 3DS Protocol Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.
- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

## Test Case ACS-220-603–Challenge Flow, Browser PA (Result=C)

### Description

The VSTS will send an AReq with the 16-digit test PAN to ACS. ACS (SUT) will validate that the AReq is received with all the mandatory fields without any errors/issues and returns an **ARes with status C in response**. VSTS accepts ARes and sends a CReq to the ACS (Challenge flow is initiated).

ACS (SUT) sends **RReq with transaction status Y** to VSTS. VSTS sends RRes to ACS. ACS (SUT) sends **final CRes with transaction status Y** to VSTS, complete test case.

### Action

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN | "4012000000001238" |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.2.0" |
| 3DS Requestor Challenge Indicator | "05" |

3 ACS (SUT) confirms the AReq is received without any errors/issues.

4 ACS (SUT) creates ARes with the following and sends to VSTS (CAVV and ECI not to be included in the message)

| | |
|---|---|
| Transaction Status | "C" |
| ACS Reference Number | EMVCo-assigned ACS Reference Number |
| ACS Operator ID | Product Provider's BID |

5 VSTS confirms the ARes is received without any errors/issues.

6 VSTS simulator builds and sends CReq to the ACS.

7 ACS (SUT) builds and sends RReq to VSTS with the following (CAVV to be included in the message)

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |

**Expected Results**

- VSTS confirms that the RReq is received without any errors/issues.
- VSTS builds and sends the RRes as follows:

| | |
|---|---|
| Results Status | "01" |

- ACS (SUT) confirms that the RRes is received without any errors/issues.
- ACS (SUT) sends final CRes with transaction status = "Y" to VSTS.
- Test case complete.

## 5.7 EMV® 3DS 2.2.0 PSD2 Exemption Specific Supplementary Test Cases

ACS Product Providers can run the test cases specified in this section to ensure that they are meeting the guidelines specified in 'PSD2 Exemptions Supplementary Guide' document. These are **conditional** test cases (required for clients operating or planning to operate in EEA, this includes product providers planning to or operating and offering services to clients in EEA).

### Test Case ACS-220-701–Frictionless Flow, Browser PA (Result=Y)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status Y in response**. VSTS validates the ARes, this completes the test case.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN | "4012000000001006" |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| Message Version | "2.2.0" |
| Message Extension | "[{<br>"name":"Acquirer Country Code Extension",<br>"id":"A000000003-001",<br>"criticalityIndicator":false,<br>"data":<br>{<br>"acquirerCountryCode":"826",<br>"acquirerCountryCodeSource":"02",<br>"version":"1.0"<br>}<br>}]" |

**Expected Results**

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV to be included in the message):

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version | "2.2.0" |

**Note:** All other required fields must be included in the ARes and have a valid value per the EMV 3DS Protocol Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.
- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

## Test Case ACS-220-702–Frictionless Flow, Browser PA (Result=I)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. The ACS (SUT) will validate the AReq and return an **ARes with status I in response**. VSTS validates the ARes, this completes the test case.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN | "4012000000001212" |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| 3DS Requestor ID | "11764405" |
| Message Version | "2.2.0" |
| 3DS Requestor Challenge Indicator | "82" |

**Expected Results**

- ACS (SUT) confirms that the AReq is received without any errors/issues.
- ACS (SUT) creates the ARes with the following (CAVV to be included in the message):

| | |
|---|---|
| Transaction Status | "I" |
| ECI | "07" |
| ACS Reference Number | EMVCo provided |
| ACS Operator ID | Product Provider's BID |
| Message Version | "2.2.0" |

**Note:** All other required fields must be included in the ARes and have a valid value per the EMV 3DS Protocol Specification. Any optional fields which are included must also present a valid value per the EMV 3DS Core Specification.

- ACS (SUT) sends ARes to VSTS.
- VSTS confirms that the ARes is received without any errors/issues.
- Test case complete.

## 5.8 EMV® 3DS 2.2.0 Supplementary Test Cases

### Test Case ACS-220-801-Challenge Flow, Browser, PA (Result=Y, Challenge Mandated)

**Description**

The VSTS will send an AReq with the 16-digit test PAN to ACS. ACS (SUT) will validate that the AReq is received with all the mandatory fields without any errors/issues and returns an **ARes with status C in response**. VSTS accepts ARes and sends a CReq to the ACS (Challenge flow is initiated). This is an **conditional** test case (required for clients operating or planning to operate in EEA, this includes product providers planning to or operating and offering services to clients in EEA).

ACS (SUT) sends **RReq with transaction status Y** to VSTS. VSTS sends RRes to ACS. ACS (SUT) sends **final CRes with transaction status Y** to VSTS, complete test case.

**Action**

1 ACS user logs in to VSTS and runs the test case.

2 VSTS builds an AReq as follows and sends to ACS:

| | |
|---|---|
| PAN (Cardholder Account Number) | "4012000000001295" |
| Device Channel | "02" |
| Message Category | "01" |
| 3DS Server Operator ID | "00000011" |
| 3DS Requestor Challenge Indicator | "04" |
| Message Version | "2.2.0" |

3 ACS (SUT) confirms the AReq is received without any errors/issues.

4 ACS (SUT) creates ARes with the following and sends to VSTS (CAVV and ECI not to be included in the message)

| | |
|---|---|
| Transaction Status | "C" |
| ACS Reference Number | EMVCo-assigned ACS Reference Number |
| ACS Operator ID | Product Provider's BID |

5 VSTS confirms the ARes is received without any errors/issues.

6 VSTS simulator builds and sends CReq to the ACS.

7 ACS (SUT) builds and sends RReq to VSTS with the following (CAVV to be included in the message)

| | |
|---|---|
| Transaction Status | "Y" |
| ECI | "05" |

**Expected Results**

- VSTS confirms that the RReq is received without any errors/issues.
- VSTS builds and sends the RRes as follows:

| | |
|---|---|
| Results Status | "01" |

- ACS (SUT) confirms that the RRes is received without any errors/issues.
- ACS (SUT) sends final CRes with transaction status = "Y" to VSTS.
- Test case complete.

# 6 Review Test Results

## 6.1 3DS Server SUTs

3DS Server Product Providers drive their test cases by sending AReq messages with the required Cardholder Account Number to VSTS Directory Server. After running their test cases, they must review the Testing Status page. If there are any required test cases that they have not passed, they must review their results to see why they failed - VSTS will specify when and why the Product Provider failed a test case. In order to successfully complete testing and request their VSTS Compliance Letter, they must rerun their test cases until they have passed them all. The Product Provider shall click the 'Compliance Letter' link within the corresponding project link and request the compliance letter on successful completion of all the required test cases.

**Note:** The Testing Status page lists test cases and their most recent status (e.g. Passed, Pending, Failed, etc.). The Testing History page shows all attempts of a test case.

## 6.2 ACS SUTs

ACS Product Providers drive their test cases through VSTS UI. After running their test cases, they must review the Testing Status page. If there are any required test cases that they have not passed, they must review their results to see why they failed - VSTS will specify when and why the Product Provider failed a test case. In order to successfully complete testing and request their VSTS Compliance Letter, they must rerun their required test cases until they have passed them all. The Product Provider shall click the 'Compliance Letter' link within the corresponding project link and request the compliance letter on successful completion of all the required test cases.

**Note:** The Testing Status page lists test cases and their most recent status (e.g. Passed, Pending, Failed, etc.). The Testing History page shows all attempts of a test case.

# A CAVV Validation

ACS SUTs are required to execute the CAVV validation test case in VSTS.

ACS SUTs shall use the CAVV validation feature available in VSTS to accomplish the below two objectives:

- To confirm that the ACS is able to generate a properly formatted CAVV.
- To confirm that the ACS is capable of selecting the correct CAVV position 2 value to match the authentication method used to authenticate the consumer.

VSTS currently supports the validation of version 7 of CAVV format (**CAVV U3 V7 (PA)**)[12] and it is **mandatory for all ACS projects to support CAVV U3 V7 during VSTS testing** to comply with the mandate for the usage of CAVV U3 V7 for 3DS 2.x transactions. Refer to CAVV Guide for additional details.

**Steps involved in performing CAVV validation and the expected results:**

**Step 1:** ACS user selects the applicable CAVV test case within the required test cases option of the project menu and a form is presented to the user.

**Step 2:** The ACS user provides all the required data fields mentioned below and clicks submit:

a. CAVV
b. ECI
c. Account #
d. Authentication Method (user chooses the method from the drop down that they support and used in this particular validation of the CAVV – position 2 of the supplied CAVV)

**Note:** The easiest way for an ACS SUT to obtain a CAVV, ECI, and Account # is to run required test case **ACS-210-101 or ACS-220-101**. These data fields will be a part of the ARes message available to the user when the required test case is successfully completed in VSTS. ACS SUTs should use the VisaNet Certification Management Service (VCMS) test keys (provided in this section) to generate the CAVVs for validation in VSTS and it is highly recommended to use the test PANs provided in the applicable ACS test case from this user guide for the purposes of CAVV validation. The ACS SUTs may also use a CAVV, ECI, and Account # from any other test transaction they conduct that provides these values. **Additional setup/configuration is required when ACS SUTs chooses to use their own PANs for the purpose of CAVV validation**, contact gctv3dsts@visa.com for additional details.

[12] VSTS currently does not support the validation of CAVV complying to the NPA format CAVV U3 V7 (NPA).

**Step 3:** VSTS sends the above fields to VCMS. VSTS will provide the validation results. If any of the above fields are not provided in the basic format expected, there will be an error displayed on the screen.

**Step 4:** Based on the validations above, VCMS sends the results to VSTS and VSTS displays the CAVV validation results to the user.

**Step 5:** User is **provided** with the below results and the fields displayed below are based on the CAVV and other fields that are provided in the previous step.

a. Action Code
b. CAVV results Code

Please refer to CAVV guide and VIP tech manual (accessible from Visa Online) for more details on the result codes and the related fields.

**Step 6:** Based on the CAVV results code obtained from VCMS, the testing status/history pages are updated.

**VCMS Keys**

**Figure 7:VCMS Keys**

| Key Type | Clear Key Components | Encrypted Value | Key Check Value |
|---|---|---|---|
| CAVV-A<br>CAVV-B | 0131 5170 1020 4061<br>91B0 D0F1 80A1 C1E0 | 6AFDC50C75277837<br>019D0CAF0F61A7FC | 4E C4 DC<br>08 0D E7 |