ID TECH TLV Tag
Reference Guide

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Revision History

Date	Revision	Changes	Author
A	07/28/2016	First edition of document.	KT
B	07/28/2016	Removed most vendor names. Edits for consistency. Eliminated duplicate tags and empty rows.	KT
B	07/29/2016	SmartSoft changed to Smart Tap. "Added for" removed. Removed "Tentative" tags. Fixed formatting issues.	KT
C	09/20/2016	Added new tags DFEF4B and subsequent.	KT
D	11/18/2016	Added Appendix for DFEE1E. Added new tags DFEF53 to DFEF65. Added new tags FFEE12 to FFEE17 and FFEE69.	KT
E	03/06/2017	Added tag DFEE25 (Response Codes), with its own Appendix.	KT
F	06/12/2017	Added Appendix D on tag DFEE1B usage. Added tags DFEF69 to DFEF7E.	KT
G	05/15/2018	Added new tags in the DFEDxx range. Added new EMV status codes in Appendix.	KT
H	04/15/2019 07/03/2019	Corrected appendix reference in DFEE1B comments. Added 0x50, 0x36 to Appendix C.	CB
K	12/31/2019	Reinsertion of revision history. Changed Tag FFEE1F to DFEE02 to indicate TLV Contactless Error Code. Miscellaneous other style updates.	CB
L	01/21/2020	Updated DFEF1A name and description; the tag is a SmartTap delimiter.	CB
M	03/13/2020	Updated DFEE51 description: KSN of online PIN DUKPT. The previous version of DFEE51 is still active as a two-byte tag, DF51.	
N	11/03/2020	Removed the following tags: DFEF63, DFEF65, DFEF66, DFEF67, DFEF68, DFEF69, DFEF6A, DFEF6B, DFEF6C, DFEF6D	CB

Table of Contents

1. Introduction

This document describes ID TECH proprietary TLV tags as used in a variety of products. It does not include industry standard EMV tags defined by EMVCo.

1.1. Format

b = binary
n = numeric
an = alpha-numeric
cn = compressed numeric

Note: All tag payloads should be assumed to be in raw binary format unless otherwise specified.

1.2. Abbreviations

ACT	Activate Transaction
AR	ID TECH Advanced Reader Series Firmware
Cfg	Config
CL	Contactless
CONAIDS	Configurable AIDs
GR	ID TECH Global Reader Series Firmware
NEO	ID TECH NEO-Series

2. Constructed Versus Primitive Tags

We distinguish between tags that can wrap other tags and ordinary tags that cannot. When TLVs are nested the outer (wrapper) tag is said to be constructed. The Value of the associated "wrapper" TLV is one or more TLVs.

Tags are specified in accordance with **Basic Encoding Rules** (BER-TLV), per Annex B, Book 3 of EMV 4.3, and obey the following conventions:
- All ID TECH proprietary tags will be 3 bytes long.
- Byte 1 will be FF if constructed or DF if primitive.
- Byte 2 has bit 8 set.
- Byte 3 does not have bit 8 set but does have at least one other bit set.

Example: Vags.

3. Primitive Tag

Tag	Name	Focus	Description	Format	Comments
DF891C	Interac Retry Limit	Vendi	Configured value for the total number of tap attempts during an Interac Mobile Debit (NFC) application transaction.	N1	Interac Card Used
DFED01	Merchant Category	SmartTap 2.1			
DFED02	POS Capabilities Bitmaps	SmartTap 2.1			
DFED03	Retry Times	SmartTap 2.1			
DFED04	Select OSE Support	SmartTap 2.1			
DFED05	Skip Second Select Support	SmartTap 2.1			
DFED06	Stop Payment if Smart Tap 2.1 Failed Support	SmartTap 2.1			
DFED07	Pre-Signed Support	SmartTap 2.1			
DFED08	Security Option	SmartTap 2.1			Reserve for auto poll.
DFED09	Service Type	SmartTap 2.1			Reserve for auto poll.
DFED0A	Determines if Fallback Reason should be output.	QuickChip	Controls the output Fallback Reason. The default switch is OFF.	b-1	00 - Switch is OFF, not output fallback. Reason 01 - Switch is ON, output fallback reason.
DFED0B	Debug Flag for Interac	Vendi	Upon card termination, perform all the steps of the card deactivation and send all card data to the host.	b-1	**Bit 0**- Enabled debug function. **Bit 1-** Disable "Enter PIN" Message.
DFED0C	Default Transaction Type for Mastercard	VP3300	This tag is setting in Group0. When the Active command does not have tag 9C, the reader will use the tag to replace 9c.	b-1	
DFED0D	Default Transaction Type for Visa Card	VP3300	This tag is setting in Group0. When the Active command does not have tag 9C, the reader will use the tag to replace 9c.	b-1	

Tag	Name	Focus	Description	Format	Comments
DFED0E	Default Transaction Type for Amex card	VP3300	The tag is set in Group0. The tag is set in Group0. When the Active command does not have tag 9C, the reader will use the tag to replace 9c.	b-1	
DFED0F	Default Transaction Type for Discover card	VP3300	This tag is setting in Group0. When the Active command does not have tag 9C, the reader will use the tag to replace 9c.	b-1	
DFED10	Default Transaction Type for Interac card	VP3300	This tag is setting in Group0. When the Active command does not have tag 9C, the reader will use the tag to replace 9c.	b-1	
DFED11	Enable Non- EMV tag	KIII	This tag is set in Group0. The default is 1.	b-1	0: Disable 1: Enable
DFED12	Log tag for MCL	MCL Lab Test			
DFED13	Log tag for MCL	MCL Lab Test			
DFED14	Log tag for MCL	MCL Lab Test			
DFED15	Log tag for MCL	MCL Lab Test			
DFED16	Log tag for MCL	MCL Lab Test			
DFED17	Log tag for MCL	MCL Lab Test			
DFED18	Poll Mode	Vendi	Has a one-byte payload and sets Vendi Poll Mode (see Comments).	b	Value = 00: Auto-Poll Value = 01: Poll on Demand
DFED19	Enable LOG	MCL Log Enable	This tag is used to enable and disable log. Send with ACT.		Value = 00: Disable LOG Value = 01: Enable LOG
DFED20	Company Name	Augusta	Is used for meta data for the company's name.	b - 16	Able to store name of the company who configured the device.
DFED21	Configure Date	Augusta	Able to track the date the device was configured.	b - 3	**Format**: yymmdd
DFED22	Current Configuration Version	Augusta	Stores unique serial number and versioning information used by the company	b - 32	Freeform tag. Used based on the customer preference.

Tag	Name	Focus	Description	Format	Comments
DFED23	Quick Chip: ApplePay Terminal Application Version Number				
DFED24	Quick Chip: ApplePay Terminal Capabilities Information				
DFED25	Quick Chip: ApplePay VAS Filter				
DFED26	Quick Chip: ApplePay VAS Protocol				
DFED27	SmartTap Delimiter for Service Objects				
DFED28	SmartTap Service Type Requests				
DFED74	MC DE Log CAPDU Entry	VP8800	Contains C-APDU bytes for logging in.	b	
DFED75	MC DE Log RAPDU Entry	VP8800	Contains R-APDU bytes for logging in.	b	
DFED76	MC DE Logging Enable	VP8800	Indicates Data Exchange APDU Logging is enabled for Mastercard.	b-1	
DFED77	ZIP PPSE Event Handling	VP8800	Defines ZIP's response to PPSE events.	b – 4	See Combined Selection Supplement – PPSE Failure Mode spec.
DFED78	IDTECH PPSE Event Handling	VP8800	Defines IDTECH's response to PPSE events.	b – 4	See Combined Selection Supplement – PPSE Failure Mode spec.
DFED79	Custom PPSE Event Handling	VP8800	Defines the Customer response to PPSE events.	b – 4	See Combined Selection Supplement – PPSE Failure Mode spec.
DFED7A	Mastercard PPSE Event Handling	VP8800	Defines the Mastercard response to PPSE events.	b – 4	See Combined Selection Supplement – PPSE Failure Mode spec.
DFED7B	Visa PPSE Event Handling	VP8800	Defines the Visa response to PPSE events.	b – 4	See Combined Selection Supplement – PPSE Failure Mode spec.
DFED7C	Amex PPSE Event Handling	VP8800	Defines the Amex response to PPSE events.	b – 4	See Combined Selection Supplement – PPSE Failure Mode spec.
DFED7D	Discover PPSE Event Handling	VP8800	Defines the Discover response to PPSE events.	b – 4	See Combined Selection Supplement – PPSE Failure Mode spec.
DFED7E	Interac PPSE Event Handling	VP8800	Defines Interac's response to PPSE events.	b – 4	See Combined Selection Supplement – PPSE Failure Mode spec.

Tag	Name	Focus	Description	Format	Comments
DFED7F	Default DRL	VP8800	Default Dynamic Reader Limits for XP 3.1	18 bytes	Contains 6 bytes each of **Contactless Terminal Floor Limit**, **Transaction Limit**, and **CVM Required Limit**. Data from **DF8123**, **DFEE34**, and **DF8126**.
DFEE01	ApplePay VAS Protocol	Apple	ApplePay VAS is used to select between Full VAS protocol and URL VAS protocol.	b-1	This is a proprietary TLV always enclosed in the ApplePay VAS collective TLV FFEE06
DFEE02	ApplePay VAS Failure Report	Apple	ApplePay VAS is used to return the Error Code, SW1-SW2, RFState for a Failed VAS transaction embedded in the FFEE06.	b-4	This is a proprietary TLV always enclosed in the ApplePay VAS collective TLV FFEE06
DFEE02	TLV Contactless Error Code Table	Unipay III/ Kiosk III	Error Code for Contactless.	4 bytes	**Byte 1:** Error Code (Error Code giving the reason for the failure). **Byte 2:** SW1 (Value of SW1 returned by the Card (SW1SW2 is 0000 if SW1 SW2 not available)). **Byte 3:** SW2 (Value of SW2 returned by the Card (SW1SW2 is 0000 if SW1 SW2 not available)). **Byte 4:** RF State Code (RF State Code indicating exactly where the error occurred in the Reader-Card transaction flow).
DFEE03	ViVOtech Proprietary Suite	MVS	MVS		
DFEE04	TAC Online	SmartTap	Used by SmartTap Kernel for Terminal Configuration (set in and picked up from the Contact Group).		
DFEE05	Threshold Value for Biased Random Selection.	SmartTap	Being used by Smart Tap Kernel for Terminal Configuration (set in and picked up from the Contact Group).		
DFED06	Stop Payment if Smart Tap 2.1 Failed Support	SmartTap 2.1			
DFED07	Pre-Signed Support	SmartTap 2.1			
DFED08	Security Option	SmartTap 2.1			Reserve for Auto Poll.
DFED09	Service Type	SmartTap 2.1			

Tag	Name	Focus	Description	Format	Comments
DFED0A	Fallback Reason to Output is determined by a Switch.	QuickChip	The switch controls the Output Fallback reason. The default switch is OFF.		
DFED0B	Debug Flag for Interac	Vendi	When the card is terminated, it is necessary to perform all the steps of the card and send all card data to the host.		
DFED0C	Default Transaction Type for Mastercard	VP3300	This tag is setting in Group0. When the Active command does not have tag 9C, the reader will use the tag to replace 9c.	b-1	
DFED0D	Default Transaction Type for Visa Card	VP3300	This tag is setting in Group0. When the Active command does not have tag 9C, the reader will use the tag to replace 9c.	b-1	
DFED0E	Default Transaction Type for AmEx Card	VP3300	This tag is setting in Group0. When the Active command does not have tag 9C, the reader will use the tag to replace 9c.	b-1	
DFED0F	Default Transaction Type for Discover card	VP3300	This tag is setting in Group0. When the Active command does not have tag 9C, the reader will use the tag to replace 9c.	b-1	

Tag	Name	Focus	Description	Format	Comments
DFED10	Default Transaction Type for Interac card	VP3300	This tag is setting in Group0. When the Active command does not have tag 9C, the reader will use the tag to replace 9c.	b-1	
DFED11	Enable Non- EMV tag	KIII	This tag is set in Group0. Default is 1.	b-1	0: Disable 1: Enable
DFED12	Log tag for MCL	MCL Lab Test			
DFED13	Log tag for MCL	MCL Lab Test			
DFED14	Log tag for MCL	MCL Lab Test			
DFED15	Log tag for MCL	MCL Lab Test			
DFED16	Log tag for MCL	MCL Lab Test			
DFED17	Log tag for MCL	MCL Lab Test			
DFED18	Poll Mode	Vendi	One-byte payload. Sets Vendi Poll Mode (See comments).	b	Value = 00: Auto-Poll Value = 01: Poll on Demand
DFED19	Enable LOG	MCL Log Enable	This tag is used to enable and disable log. Send with ACT.		Value = 00: Disable LOG Value = 01: Enable LOG
DFED20	Company Name	Augusta	Use for meta data for company name.	b - 16	Able to store name of company who configured the device.
DFED21	Configure Date	Augusta	Able to track the date the device was configured.	b - 3	Format: yymmdd
DFED22	Current Configuration Version	Augusta	The company uses the store's unique serial number + versioning information.	b - 32	Freeform Tag: Used based on the customer preference.
DFED23	Quick Chip: ApplePay Terminal Application Version Number				
DFED24	Quick Chip: ApplePay Terminal Capabilities Information				
DFED25	Quick Chip: ApplePay VAS Filter				
DFED26	Quick Chip: ApplePay VAS Protocol				

Tag	Name	Focus	Description	Format	Comments
DFED27	SmartTap Delimiter for Service Objects				
DFED28	SmartTap Service Type Requests				
DFED74	MC DE Log CAPDU Entry	VP8800	Contains C-APDU bytes for logging	b	
DFED75	MC DE Log RAPDU Entry	VP8800	Contains R-APDU bytes for logging	b	
DFED76	MC DE Logging Enable	VP8800	Indicates Data Exchange APDU Logging is enabled for Mastercard	b - 1	
DFED77	ZIP PPSE Event Handling	VP8800	Defines the ZIP appropriate response to PPSE events	b - 4	See Combined Selection Supplement – PPSE Failure Mode spec.
DFED78	IDTech PPSE Event Handling	VP8800	Defines the IDtech appropriate response to PPSE events	b - 4	See Combined Selection Supplement – PPSE Failure Mode spec.
DFED79	Custom PPSE Event Handling	VP8800	Defines the Customer appropriate response to PPSE events	b - 4	See Combined Selection Supplement – PPSE Failure Mode spec.
DFED7A	Mastercard PPSE Event Handling	VP8800	Defines the Mastercard appropriate response to PPSE events	b - 4	See Combined Selection Supplement – PPSE Failure Mode spec.
DFED7B	Visa PPSE Event Handling	VP8800	Defines the Visa appropriate response to PPSE events	b - 4	See Combined Selection Supplement – PPSE Failure Mode spec.
DFED7C	Amex PPSE Event Handling	VP8800	Defines the Amex appropriate response to PPSE events	b - 4	See Combined Selection Supplement – PPSE Failure Mode spec.
DFED7D	Discover PPSE Event Handling	VP8800	Defines the Discover appropriate response to PPSE events	b - 4	See Combined Selection Supplement – PPSE Failure Mode spec.
DFED7E	Interac PPSE Event Handling	VP8800	Defines the Interac appropriate response to PPSE events	b - 4	See Combined Selection Supplement – PPSE Failure Mode spec.

Tag	Name	Focus	Description	Format	Comments
DFED7F	Default DRL	VP8800	Default Dynamic Reader Limits for XP 3.1	18 bytes	Contains 6 bytes each of Contactless Terminal Floor Limit, Transaction Limit, and CVM Required Limit. Data from DF8123, DFEE34 and DF8126.
DFEE01	ApplePay VAS Protocol	Apple	ApplePay VAS, used to select between Full VAS protocol and URL VAS protocol.	b-1	This is a proprietary TLV always enclosed in the ApplePay VAS collective TLV FFEE06
DFEE02	ApplePay VAS Failure Report	Apple	Before ApplePay VAS, returned the Error Code, SW1–SW2, RFState for a failed VAS transaction embedded in the FFEE06.	b-4	The proprietary TLV is enclosed in the ApplePay VAS collective TLV FFEE06
DFEE03	ViVOtech Proprietary Suite	MVS	MVS		
DFEE04	TAC Online	SmartTap	Used by Smart Tap Kernel for Terminal Configuration (set in and picked up from Contact Group).		
DFEE05	Threshold Value for Biased Random Selection.	SmartTap	Used by Smart Tap Kernel for Terminal Configuration (set in and picked up from Contact Group).		
DFEE06	Target Percentage for Random Transaction Selection	SmartTap	Used by Smart Tap Kernel for Terminal Configuration (set in and picked up from Contact Group).		
DFEE07	Maximum Target Percentage for Random Transaction Selection	Smart Tap	Used by Smart Tap Kernel for Terminal Configuration (set in and picked up from Contact Group).		

Tag	Name	Focus	Description	Format	Comments
DFEE08	RID (in AR)	ACT	The RID to be used for the transaction. Passed from PPSE to the AID module in the ACT parameters.		
DFEE09	Last 4 digits of Primary Account Number (PAN)	Discover	Discover Zip (DGI '7006')		
DFEE0A	Group 0 Initialize Flag	Kiosk III	Value = 00: not initialized. (If the tag is not found or Value is not 1, the reader will initialize group 0 with default setting automatically when the power cycle is on) Value = 01: Initialized		
DFEE0B	Issuer Script Results	ACT, Smart Tap	Used in ViVOtech 2 Serial Interface (Activate Trans and Continue Trans Response). Also being used by Smart Tap Kernel for Terminal Configuration (set in and picked up from Contact Group).		
DFEE0C	Issuer Script Results	Contact	May be used in the future by Contactless.		
DFEE0D	Force Transaction Online	ACT, Smart Tap	Used in ViVOtech 2 Serial Interface (Activate Transaction Command. Also being used by Smart Tap Kernel for Terminal Configuration (set in and picked up from Contact Group).		

Tag	Name	Focus	Description	Format	Comments
DFEE0E	Default DDOL	Smart Tap	Used by Smart Tap Kernel for Terminal Configuration (set in and picked up from Contact Group).		
DFEE0F	Enable Revocation List Processing	Smart Tap	Used by Smart Tap Kernel for Terminal Configuration (set in and picked up from Contact Group).		
DFEE10	Terminal Languages Supported	Smart Tap	Used by Smart Tap Kernel for Terminal Configuration (set in and picked up from Contact Group).		
DFEE11	Enable Transaction Logging	ACT, Smart Tap	Used in ViVOtech 2 Serial Interface (Activate Transaction Command). Also used by Smart Tap Kernel for Terminal Configuration.		
DFEE12	KSN	Cfg	Transaction Result (response): TDES/AES mode Data encryption Key (DUKPT Key) - KSN, 10 bytes Value.		Encryption Format data. (Reserved for existing products) FFEE12 is used by Kiosk3, Vendi and Unipay3/Unipay1.5.
DFEE13	TAC Default	Smart Tap	Used by Smart Tap Kernel for Terminal Configuration (picked up from Contact Group).		
DFEE14	TAC Denial	Smart Tap	Used by Smart Tap Kernel for Terminal Configuration (set in and picked up from Contact Group).		
DFEE15	Application Selection Indicator	Contact	Contact L2 command		Contact EMV L2
DFEE16	DUKPT Key or MKSK Select for Online PIN Encrypted	Contact	Contact L2 command		Contact EMV L2

Tag	Name	Focus	Description	Format	Comments
DFEE17	ICC Terminal Entry Mode	Contact	Contact L2 command		Contact EMV L2. This configures the output value for 9F39, which is the POS entry mode. If 9F39 is included in the DFEF5A tag, expect to see the contents of DFEE17 returned.
DFEE18	MSR Terminal Entry Mode	Contact	Contact L2 command		Contact EMV L2
DFEE19	Online DOL	Contact	Contact L2 command		Contact EMV L2
DFEE1A	Output Data Element	Contact	Contact L2 command		Contact EMV L2
DFEE1B	Authorization Request Data Elements	Contact	Contact L2 command		Contact EMV L2 See Appendix E.
DFEE1C	LCD Font Size	Cfg			
DFEE1D	Sensitive Data Mask	Cfg	NEO (K3, Vendi, Unipay III, Unipay1.5) and AR (VendIII) Secure Mode Configuration of encrypting and masking data		**byte1**: Pre-PAN clear data length, range 0-6, default 4 **byte2**: Post-PAN clear data length, range 0-6, default 4 **byte3**: Mask Character for **ASCII Code Value**, range 0x20-0x7E, default 0x2A(*) **byte4:** Mask Character for Hex Code Value**,** range 0x0A-0x0F, default 0x0C **byte5:** Expire date output option, 0x30=Mask, 0x31=NotMask, default 0x31.
DFEE1E	Terminal Configuration	Contact	Contact L2		Contact EMV L2 config. See **Appendix A.**
DFEE1F	Issuer Script Limit	Contact	Contact L2		Contact EMV L2 Control issuer script MAX limit.
DFEE20	ICC Power on Waiting Time	Contact	Contact L2		Contact EMV L2 Detect card in waiting time.
DFEE21	ICC L1 Data Transaction Waiting Time	Contact	Contact L2		Contact EMV L2 Do ICC L1 data exchange waiting time.
DFEE22	Driver (Menu, Get Pin, Get Msr) Timeout	Contact	Contact L2		Contact EMV L2 3 Values: Timeout for Menu (Seconds), Timeout for Get PIN (Seconds), and Timeout for Get MSR (Seconds)
DFEE23	MSR all track data	Contact	Contact L2		Contact EMV L2 When fallback to MSR, MSR data will store the tag.
DFEE24	Force Acceptance	Contact	Contact L2		Contact EMV L2
DFEE25	ICC Response Code	NEO			See **Appendix.**

Tag	Name	Focus	Description	Format	Comments
DFEE26	Encryption Status Information	NEO	Vendi (Encryption on Only), Unipay III, Unipay 1.5		**Byte 1**: **Bit 4/3/0**: Captured Data Type 0 0 0 = Contact Card 0 1 = Contactless Card / EMV 0 1 = Contactless Card / MSD 0 1 x = MSR Card **Bit 2/1**: Encryption Mode 0 0 = TDES 1 = AES x = Refer to "Extended Encryption Mode" **Bit 5**: Reserved for Attribution Byte Extension. **Bit 6/7**: Encryption Status (For ViVOpay IDG) 0 = MSR/MSD off, EMV off 0 1 = MSR/MSD off, EMV on 0 = MSR/MSD on, EMV off 1 1 = MSR/MSD on, EMV on **Byte 2**: (Optional) **Bit 3/2/1/0**: Extended **Encryption Mode** 0 0 0 0 = TDES 0 0 0 1 = AES 0 0 1 0 = TransArmor **Algorithm** 0 0 1 1 = Voltage Algorithm 0 1 0 0 = Visa FPE 0 1 0 1 = Verifone FPE **Bit 4~6**: Reserved **Bit 7**: 0 = Without MAC Verification Data 1 = With **MAC Verification Data**
DFEE27	MSR Control	Contact	Contact L2 CMD (60-10) in Unipay 1.5		MSR Only Flag In contact EMV reader. Host need MSR transaction. 1: MSR only enabled. 0: MSR only disabled.
DFEE28	Terminal Capabilities - No CVM Required	MasterCard	MasterCard. Group 0 (Contactless)	b-3	
DFEE29	Terminal Capabilities - CVM Required	MasterCard	MasterCard. Group 0 (Contactless)	b-3	
DFEE2A	Threshold Value for Biased Random Selection (Intera c)	Interac	IDG Get/Set Configuration (Not Group Specific) (Interac Parameter)		Value used in **Terminal Risk Management** for random transaction selection.
DFEE2B	Maximum Target Percentage for Biased Random Selection (Interac)	Interac	IDG Get/Set Configuration (Not Group Specific) (Interac Parameter)		Value used in **Terminal Risk Management** for random transaction selection.

Tag	Name	Focus	Description	Format	Comments
DFEE2C	Target Percentage for Random Selection (Intera c)	Interac	IDG Get/Set Configuration (Not Group Specific) (Interac Parameter)		Value used in terminal risk management for random transaction selection.
DFEE2D	Group Number And Fallback Group	CONAIDS	CONAIDS	n2-1	When the group cannot be derived from the **Kernel ID Transaction Type Group** this is the group that will be used.
DFEE2E	Max AID Length	CONAIDS	CONAIDS	n2-1	
DFEE2F	AID Disabled	CONAIDS	CONAIDS	b-1	
DFEE30	Track Data Source	Clearing	Clearing Record	b-1	
DFEE31	DD Card Track 1	Clearing	Transaction and Clearing Record	b < 60	
DFEE32	DD Card Track 2	Clearing	Transaction and Clearing Record	b < 9	
DFEE33	Interac Receipt Required	Interac	Interac		
DFEE34	Terminal Contactless Transaction Limit	CONAIDS	CONAIDS	n12-6	
DFEE35	Visa Reader Risk Flags	CONAIDS	CONAIDS	b-3	
DFEE36	CVM Required Limit	CONAIDS	CONAIDS	n12-6	
DFEE37	UI Scheme	CONAIDS	CONAIDS	b-1	UI Scheme
DFEE38	Language Option for LCD	CONAIDS	CONAIDS	n2-1	
DFEE39	Force MagStripe	CONAIDS	CONAIDS	n2-1	
DFEE3A	TAC - Online	CONAIDS	CONAIDS	b-5	
DFEE3B	TAC - Default	CONAIDS	CONAIDS	b-5	
DFEE3C	TAC - Denial	CONAIDS	CONAIDS	b-5	
DFEE3D	Reader Contactless Floor Limit Data	CONAIDS	CONAIDS Group Tag	n12-6	Related to the AID indicating the limit for which the Terminal will ask the card to perform an online transaction if the amount of the transaction is greater than this limit. Terminal - Group Tag n12 - 6
DFEE3E	Enable Exception List Processing	SmartTap	Used by Smart Tap Kernel for Terminal Configuration (set in and picked up from Contact Group).		
DFEE3F	Default TDOL	SmartTap	Used by Smart Tap Kernel for Terminal Configuration (set in / picked up from Contact Group)		

Tag	Name	Focus	Description	Format	Comments
DFEE40	Message to be Displayed by EMV Kernel on "PIN Try Limit Exceeded" condition	SmartTap	Used by Smart Tap Kernel for Terminal Configuration (set in / picked up from Contact Group).		
DFEE41	Message to be Displayed by EMV Kernel on "Last PIN Try" Condition	SmartTap	Used by Smart Tap Kernel for Terminal Configuration (set in and picked up from Contact Group).		
DFEE42	Message to be Displayed by EMV Kernel on "Please Try Again" condition	SmartTap	Used by Smart Tap Kernel for Terminal Configuration (set in / picked up from **Contact Group)**		
DFEE43	Message to be Displayed by EMV Kernel on "Call Your Bank" Condition	Smart Tap	Used by Smart Tap Kernel for Terminal Configuration (set in and picked up from **Contact Group)**		
DFEE44	Application Capability	Cfg		b-2	
DFEE47	SoftCard Read Cmd Data	SoftCard	IDG Activate Transaction (Cmd)		
DFEE48	SoftCard Write Data	SoftCard	IDG Activate Transaction (Cmd)		
DFEE49	SoftCard Transaction Data	SoftCard	IDG Activate Transaction (Response)		
DFEE12	KSN of Data encryption Key				
DFEE23	MSR all track data		IDTech - DFEE23		
5A	Masked PAN		IDTech - 5A with Special Length		
DFEE4A	Registered Application Provider Identifier (RID)	CONAIDS	CONAIDS	b-5	
DFEE4B	Partial Selection Allowed	CONAIDS	CONAIDS	b-1	
DFEE4C	Application Flow	CONAIDS	CONAIDS	n2-1	
DFEE4D	Selection Features - GR 1.2.10	CONAIDS	CONAIDS AID section - Flags for application selection features for this AID.	b-1	
DFEE4E	Polling Options	ACT		b-1	If Bit 1 is '1', switch to MSR after CL failure in PPSE.

Tag	Name	Focus	Description	Format	Comments
DFEE4F	Interface Support	CONAIDS	CONAIDS	b-1	Used to declare AID as a Contact or Contactless AID. 01h = Contactless AID, 02h = Contact AID. If this Tag is missing, then the AID defaults to a Contactless AID.
DFEE50	Special Flow	ACT	IDG Activate Transaction (Cmd)		For defining special pre- and post- PPSE flows for SoftCard and other non- payment Apps.
~~DFEE51~~	Amex Terminal Capability (used for Amex only). Still available as two-byte tag DF51.	Amex	A stand in for 9F6D in GR based products, since that tag is used in Visa for something different.	b-1	
DFEE51	KSN of online PIN DUKPT	Contact		b10-12	
DFEE52	Transaction CVM	Clearing	Transaction and Clearing Record	b-1	
DFEE53	Exclude from Processing	CONAIDS	CONAIDS	b-1	Indicates that this AID should not be considered as a Terminal Supported AID for the specified operations. **Bit 0** (LSB): Exclude from PPSE Processing Flag. **Bit 1**: Exclude from Trial & Error Processing Flag
DFEE54	Kernel ID Transaction Type Group List	CONAIDS	CONAIDS - Kernel ID Transaction Type Group List is a variable length list of 3-byte elements with a maximum size in the GR of 24 bytes, which is 8 triplets. Each triplet containing a supported Kernel ID, a transaction type and a group. This list defines the supported Kernel ID's and each triplet defines which group to use if that specific kernel and transaction type is requested.	b-24	CONAIDS tag to support Combined Selection. (CONAIDS only.)
DFEE55	RID			b-5	

Tag	Name	Focus	Description	Format	Comments
DFEE56	Activate Trans for DESFireViVOComm Flows	DesFire	IDG Get and Set Configuration (Not Group Specific)		
DFEE57	Reader Primary Language	Cfg	IDG Get and Set Configuration (Not Group Specific)		
DFEE58	Reader Secondary Language	Cfg	CONAIDS - AID section - Kernel ID used if the card does not provide a Kernel ID or provides one that is length 0.		
DFEE59	Default Kernel ID	CONAIDS	ViVOtech Proprietary. IDG Act Trans with Encryption (02-05, 02-15)	n2-1	CONAIDS tag to support Combined Selection. (CONAIDS only.)
DFEE5A	TLV Exclusion List	ACT	ViVOtech Proprietary		
DFEE5B	Terminal Entry Capability	Cfg	ViVOtech Proprietary	n2-1	Used to communicate the **Terminal Entry Capability** to the POS Value 5 - Support VSDC Contact Chip Value 8 doesn't support VSDC Contact Chip; (If the TTQ is set to support contact chip, the value will set to 5, otherwise it is 8). The RF field will be deactivated up to four-byte BCD period representing microseconds of delay that during a **Mobile CVM Processing Try Again**.
DFEE5C	RF Deactivate Period	Cfg		b-4	The RF field will be deactivated up to four-byte BCD period representing microseconds of delay that during a **Mobile CVM Processing Try Again**.
DFEE5D	D-PAS Issuer Script Response status	Discover			
DFEE5E	Transaction Timing Information	ACT	ViVOtech Proprietary	b-1	For updated modules, this tag is used to enable the collection of transaction timing data per activity when it is provided in the **Activate Transaction Command**. The actual timing data will be provided in the Activate Transaction Response.

Tag	Name	Focus	Description	Format	Comments
DFEE5F	Encrypted PAN for remote PIN Pad	ACT	ViVOtech Proprietary is used in the Activate Transaction Command.		Used for PIN Pad Pairing. See "Serial Interface Supplement - PIN Pad Pairing" and "Serial Interface Supplement - Enhance Activate Transaction SRED".
DFEE60	Product ID	MVS	ViVOpay Proprietary (SRED)		
DFEE61	Processor ID	MVS	MVS		
DFEE62	Main Firmware Build ID	MVS	MVS		
DFEE63	CB Enhanced DDA Indicator (same block as DF03)	Visa	MVS		aka DF03
DFEE64	CB Wave 2 CVM Requirements (same block as DF04)	Visa	Visa Proprietary		
DFEE65	Build ID Num (Cxx)	MVS	Visa Proprietary		
DFEE66	SVN Number	MVS	MVS		
DFEE67	Specific Features Switch	Cfg	MVS	b-3	
Dfee68	Enable or Disable Stop Command Processing	MasterCard	Enables for misc features: CVN17, Track1 and Track2 in response.		The **STOP Command Processing** requires the receiving of a serial comm and inside the transaction loop, which could affect timing. This is especially true for SELECT PPSE. To implement a flag that will turn it on and off.
DFEE69	Configure Proprietary Tags	MasterCard	MChip 3.0 STOP Command Support		This tag will encapsulate a list of proprietary TLVs. These proprietary TLVs may be configured and used to supply information for DOLs.
DFEE6A	Enable and Disable Comm Error Recovery		GR		Enables (1) or Disables (0) the communications error handling in which the reader institutes a UI message delay and begins a new transaction automatically. This feature may have to be disabled to pass certain MChip3 **Torn Transaction** tests, with multiple transactions. (Perhaps for Eval Tool Timing?)
DFEE6B	Terminal IFD	Cfg			
DFEE6C	FTP Phase 2 Mode Options		TR3-FTP Phase 2		Bit flags to enable or disable specific Phase 2 functionality.

Tag	Name	Focus	Description	Format	Comments
DFEE6D	Mode 3 Match AID		TR3-FTP Phase 2		Provides the kernel with an AID to match in Mode 3 which is a **Bridge Mode** to allow distance-based travel using some special cards before this mode is available with bank cards.
DFEE6E	Torn Transaction Log Clean Interval (minutes)	Cfg	IDG Get/Set Configuration (Not Group Specific)		M/Chip 3.0
DFEE6F	Timestamp Data		TR3-FTP Phase 2		Allows numbered list of transaction point timestamps to be returned to the terminal. Transaction point numbers are defined in the Design Spec.
DFEE70	Loyalty Program ID	Discover	IDG Get/Set Configurable Group (DPAS Parameter)		
DFEE71	Value Added Tax 1	Discover	IDG Get/Set Configurable Group (DPAS Parameter)		
DFEE72	Value Added Tax 2	Discover	IDG Get/Set Configurable Group (DPAS Parameter)		
DFEE73	Merchant Category Code	Discover	IDG Get/Set Configurable Group (DPAS Parameter)		
DFEE74	Discover Optional Features	Discover	IDG Get/Set Configurable Group (DPAS Parameter)		
DFEE75	Communications Error Message Delay	Cfg	System Level TLV used for Communication Error Message Delay configuration parameter. Unit of measure: milliseconds.	n6-3	Minimum value 500ms, BCD characters

Tag	Name	Focus	Description	Format	Comments
DFEE76	TVR from GenAC	Clearing	Contains the value of the TVR at the instant of sending it to ICC during GenAC. Tag 95 contains the Final TVR that is sent to the terminal. These tag values may or may not match. It is possible that the reader sets bits in the TVR between	b-5	
DFEE77	ViVOpay MSR Custom Data Output Tag	Clearing	This TLV denotes the custom data output from MSR transactions.		
DFEE78	MC Timing Performance Enable	GR	This TLV is a 1-byte value which toggles the MasterCard timing performance behavior, and avoids using EEPROM read Access. The transaction runs faster and this will save ~30msec because Group 1 is pre-loaded into RAM and not loaded, from EEPROM.		
DFEE79	Card Disable Mask	CoinCo	TENTATIVE: Used in CoinCo experimental firmware to provide a mask of card types from PCC.h to be disabled (ignored) during polling.		

Tag	Name	Focus	Description	Format	Comments
DFEE7A	Card Disable Interval		TENTATIVE: Used in CoinCo experimental firmware to define the number of 100ms 'ticks' the CL interface remains disabled during polling after disabled card is presented.		
DFEE7B	Serial Port (UART) Inter- character Timeout Period	CoinCo	AR (2.1.5)		The maximum time, in milliseconds, between characters of a **Receive** sequence. When no characters are received for this length of time SRED will consider **Message Complete**. Default is 2000 (2 seconds). Two-byte value allows 0 to 65535 ms, a value of 0 disables the timeout function. **Example**: Things will work as they did prior to AR 2.1.5.
DFEE7C	Auto Switch Feature	Cfg			
DFEE7D	Track Formatting Feature	Cfg			
DFEE7E	Burst Mode	Cfg	b-1		Used only in AR 2.1.4 and previous.

Tag	Name	Focus	Description	Format	Comments
DFEE7F	Improved	Cfg	This is a byte value, range of 0–255. If 0, the **Improved Collision Feature** is disabled & **EMEA Anti-Collision Feature** is enabled and the reader polls normally. If 1, **Improved EMEA Feature** is disabled and the reader polls normally. If 2 to 255, **Improved Collision Feature** is enabled & EMEA Feature is disabled. Reader does additional polling to verify each polling event. **Example**: Multiple successful reads are required before the reader acknowledges a successful read.		
DFEF01	2nd Usage: Remaining Candidates	Cfg	Identifies how many candidates are left on the candidate list.		
DFEF02	2nd Usage: Single Application Flow in All Candidate's Flag	Cfg	Identifies if all candidates on the candidate list has the same application flow.		
DFEF03	GMEDs Data	GMAD	Transaction and Clearing Record **(GMAD)**		

Tag	Name	Focus	Description	Format	Comments
DFEF04	MSR Encryption Option	Cfg	Forced encryption setting for each track	**b-1**	**Bit 0**: T1 force encrypt. Bit 1: T2 force encrypt. Bit 2: T3 force encrypt. **Bit 3**: T3 force encrypt when card type is 0x80. Default value should be 0x08. Refer to **80000403-001 Enhanced Encrypted MSR Data Output Format** specification. Reserved for **MSR Options**.
DFEF05	CVMRequiredLimit_JCB Scheme	Visa	Visa Proprietary (VisaWave), JCB		Visa aka DF01
DFEF06	CB Display Offline Funds Indicator (same block as DF05)	Visa	Visa Proprietary		aka DF05
DFEF07	CB Terminal Type (same block as 9F35)	Visa	Visa Proprietary		aka 9F35
DFEF08	Generic Name String	MVS	MVS		
DFEF09	Serial Finite State Machine Version	MVS	MVS		
DFEF0A	Generic Numeric	MVS	MVS		
DFEF0B	Generic Specification String	MVS	MVS		
DFEF0C	System Information Suite	MVS	MVS		
DFEF0D	Generic Implementation String	MVS	MVS		
DFEF0E	Serial Protocol Version	MVS	MVS		
DFEF0F	Serial Protocol Suite	MVS	MVS		
DFEF10	L1 Paypass Version	MVS	MVS		
DFEF11	L1 LCR Version	MVS	MVS		
DFEF12	VIUDS Scheme IDs Supported	Visa	VTPS/VIUDS		Allows up to 4 - 4-byte scheme ID's. 16 bytes, 4 bytes per Scheme ID, hexadecimal
DFEF13	VIUDS Scheme ID Selection Criteria	Visa	VTPS/VIUDS		0 = Select all matching, 1 = Select first matching. 1 byte, numeric
DFEF14	Transaction Finite State Machine Version	MVS	MVS		
DFEF15	L2 Card App Version	MVS	MVS		
DFEF16	TLV available				
DFEF17	Track 1 Data	Clearing	Contactless Card Transaction Result (response)		Track 1 Data. DiscoverZip, Visa MSD, Amex, PBOC
DFEF18	Track 2 Data	Clearing	Contactless Card Transaction Result (response)		Track 2 Data. DiscoverZip, Visa MSD, Amex, PBOC

Tag	Name	Focus	Description	Format	Comments
DFEF19	Unpredictable Number Range	Amex	KIII - Customer specific		This tag decides the range of unpredictable number; if UN is greater than this value, UN can MOD the range.
DFEF1B	L2 Card App Suite	MVS	MVS		
DFEF1A	SmartTap Delimiter	SmartTap	Delimiter for service numbers used in simplified output for SmartTap 2.1.		
DFEF1C	User Experience Version	MVS	MVS		
DFEF1D	User Experience Suite	MVS	MVS		
DFEF1E	Encrypted Sensitive Tags	Clearing			Single encrypted blob that when decrypted will contain multiple tag sensitive data. KSN DFEE12 needed for decryption
DFEF1F	Auto authenticate	Contact	Authenticates the card after Start Transaction without the need for command.		**Byte 1**: Auto authenticates option **Byte 2:** Force online option
DFEF20	MAC option in response data	Contact	Add MAC message to the response for EMV L2 command	ASCII	
DFEF21	BIN	White List	Used to define the BIN to be used for the White List	ASCII	May contain wildcards
DFEF22	AID	White List	Used to define the AID to be used for the White List	binary	May contain wildcards
DFEF23	HMAC	White List	The HMAC provided to authenticate the origin of the White List	binary	SHA-256, RCF-2104
DFEF24	HMAC KSN	Contact	The DUKPT KSN for the MAC key used in HMAC calculation	binary	
DFEF25	Output Data Format Select	UniPayIII	Select Vivopay or ICC encrypt Output Format in Auto Mode.	binary	For code DFEF25 = 5038 view Section 3.1 for more information.
DFEF26	MSR fallback	Spectrum Pro	Allow MSR fallback in EMV L2 transaction	binary	
DFEF27	Online capability	Spectrum Pro	Select whether support Online or not	b-2	

Tag	Name	Focus	Description	Format	Comments
DFEF29	LCD Delay Time	Cfg			
DFEF2A	Serial heartbeat Required	Cfg			
DFEF2B	Display Unsupported Card	Cfg	To display a Fail message or an Insert or Swipe Message based on terminal configuration.		
DFEF2C	Terminal AID List	Vendi		binary	0: Disable **1: Enable**
DFEF2D	Online Authentication Data	Kiosk III	When select PPSE Fail, reader will follow this tag one by one resend select AID to card.	TLVs	
DFEF2E	Terminal Transaction Log	Kiosk III	**CUP application,** Including Online Authentication Data **(TLVs) from issuer.**	binary	**Byte 1**: PAN length **Byte 2~21**: PAN Hash(sha1) **Byte 22~34**: Amount (ASCII code) **Byte 35**: PAN sequence number **Byte 36~42:** Transaction Date (ASCII code, value of tag 9A)
DFEF2F	CUP Configuration	Kiosk III	Including transaction log which might be used in Terminal Risk Management**.**	binary	
DFEF30	White List	Kiosk III		bianry	
DFEF31	Blacklist	Kiosk III	Support UPI	binary	
DFEF32	Auto-Switch	UniPay III	Support UPI	binary	Data Format reference neo spec. (Auto switch section) **Byte 1**: Card Type **Byte 2**: Serial Number **Other:** UID or AID
DFEF33	Online PIN Block	Kiosk III	Used in command 02-40 response. (TLV output format)		
DFEF34	Antenna Detection Switch	Kiosk III			
DFEF35	Communications Watchdog Period	AR		binary	Two bytes. 0 = feature disabled. 1 - 65535 seconds timeout. generates a system reboot if V2 serial communications are not periodically received to reset it. Initially inserted in AR. 2.1.5 for customer as a method to automatically reset Vend III readers that hangs.

Tag	Name	Focus	Description	Format	Comments
DFEF36	Media Control & Status Tracking	Kiosk II	Used to control media presentation/ removal, and reports the status of same	binary	Data format = 4 bytes See note following this table.
DFEF37	Interface Select		**Interface Select Tag**: This tag can select transaction interface of reader.	binary	Interface Select. Bit 0: MSR **Bit 1**: Contactless **Bit 2:** Contact
DFEF38	Timeout for Next Command		A contact transaction needs 2 or 3 commands to be completed. This tag is the defined timeout of the next command.	binary	Two bytes. (Unit: Sec)
DFEF39	Network Indicate		When transactions go online and need this tag to indicate if the network is ok or has failed.	binary	0: Network is failed. 1: Network is Okay.
DFEF3A	Reader Behavior Mode	Kiosk2	The reader can operate in either modes. **NORMAL**: Kiosk2 BL and Image both operate normally. **COMPATIBLE**: BL will not execute flash ISP commands. It will only simulate and acknowledge them. Main Image will exhibit command behaviors compliant with **GR 1.1.0,** even though it is new firmware**.**		Has 2 permissible values: 00 – NORMAL 01 - COMPATIBLE

Tag	Name	Focus	Description	Format	Comments
DFEF3B	Autopoll Transaction Separation Interval	Kiosk 2	This is configurable, defaults to 0. After a transaction (successful or unsuccessful), the reader will not begin the next transaction until this interval has expired. In milliseconds" 0001 = 1 msec, 000A = 10 msec, 1388 = 5000 msec. This is a system tag and is configurable via the 04-00 command.	binary	Default value = 0000
DFEF3C	Fallback Support And Timeout For Waiting Next Command	NEO2.0	Used in Activate Transaction Command (02-40) and decides **CT Transaction Fallback Support** and **Timeout** for the next command.	3 bytes	Byte 1: Fallback support Byte 2~3: Timeout for next command (Unit: Sec)
DFEF3D	Legacy Tag Support	NEO 2.0	Enables support for legacy tags on older products	1 Byte	Byte1bit0: Support Old TLVs

Tag	Name	Focus	Description	Format	Comments
DFEF40	Ascii-code encryption Tag57 TLV	UniPay CPR 41665-1			Original - The Value of `57 A1 18` is encrypted data for `57 11 43 35 12 89 62 82 19 87 D1 21 22 01 00 00 00 00 00` (Pad 0x00) **New**: Change 57 11 xx … xx to Ascii-code `35 37 31 31 34 33 33 35 31 32 38 39 62 82 31 39 38 37 3D 31 32 31 32 32 30 31 30 30 30 30 30 30 30 30 30 30` (Hex D --> '=' (0x3D)) Encrypt the Ascii-code (Pad 0x00) to be 48 bytes data `yy yy yy yy yy yy` Use this New Tag to create TLV data - **DFEF40** 30 `yy yy yy yy yy yy`
DFEF41	MAC Verification Data for SRED	SRED	NGA Protocol Products - Augusta S, Augusta S	16 Bytes	Encrypted EMV L2 output data must with MAC Verification Data while "Verify Encryption Output Data Option" is On.
DEFF42	MAC Verification KSN for SRED	SRED	NGA Protocol Products - Augusta S, Augusta S	10 Bytes	Encrypted EMV L2 output data must with **MAC Verification Data** while **Verify Encryption Output Data Option** is **On**.
DFEF43	Local TZ/DST information.		The local time zone & daylight saving information of the transaction time.	4 Bytes	**Byte1**: +/-, indicates current timezone is ahead or behind UTC. **Byte2**: HH, hours of the time difference with UTC. **Byte3**: MM, minutes of the time difference with UTC. **Byte4**: Flag for daylight saving, set 1 to indicate daylight saving enabled.
DFEF44	Combination Options	JCB	See JCB specification for more details.	2 bytes	See JCB_Contactless_Terminal_Spec_v1.3 for details
DFEF45	Removal Timeout	JCB	When the cardholder is asked to remove their card.	2 bytes	See JCB_Contactless_Terminal_Spec_v1.3 for details

Tag	Name	Focus	Description	Format	Comments
DFEF46	ACT Pass Response DOL	Cfg	Used to define the additional TLV's desired for the ACT Pass Response.	T&L's	See ACT Response DOL specification
DFEF47	CDA Hash Input	DPAS CL2.5:C6 **PayPass CL2.5:C2**	Stores the CDA Hash Input data.	<= 1024 bytes	Tag used to store the **CDA Hash Input** data in the **TLV Database**. Used by ModTLV: HandleDOL() in the TlvDb static library to pick up data when indicated and append to the other DOL data.
DFEF48	Indicate - Retrieve Transaction Result Again (Due to Output Ram Not Being Enough).	Contact Reader	RAM not Enough - Augusta or Augusta S with TransArmor.	n bytes	If RAM is not enough, the **Tag Value** will be tailed in **Transaction Result** or response of **Retrieve Transaction Result** Command. If RAM is enough, the Tag Value will not exist**.**
DFEF49	Outcome Parameter Set	JCB	Combination of Transaction Outcome Parameters	9 bytes	See JCB_Contactless_Terminal_Spec _v1.3 , EMV Book A 6.2 for details
DFEF4A	User Interface Request Data	JCB	Combination of Transaction User Interface Request Data	14 bytes	See JCB_Contactless_Terminal_Spec _v1.3 , EMV Book A 7.1 for details
DFEF4B	MSR Equivalent Data Option		Terminal Setting for MSR Equivalent Data Tag DFEF4D	3 bytes	See Appendix B.
DFEF4C	MSR Equivalent Data Track Lengths		Track(s) data length for MSR Equivalent Data Tag DFEF4D	6 bytes	`<Track 1 Length><Track 2 Length><Track 3 length><PAN length><RFU><RFU>` Length of 0 indicates track disabled in DFEF4B or data not available. This tag also serves as an indicator of which data element are found first when "Only First Element Found" is enabled in DFEF4B.
DFEF4D	MSR Equivalent Data		**MSR Equivalent Data** reconstructed from existing **EMV** tags. **Alpha-numeric** format.	an	Data populated with element(s) according to configuration tag DFEF4B
DFEF4E	ACT MSD Response DOL	Cfg	Used to define the additional TLV's desired for the ACT MSD response.	T&L's	See ACT Response DOL specification

Tag	Name	Focus	Description	Format	Comments
DFEF4F	ACT Decline Response DOL	Cfg	Used to define the additional TLV's desired for the ACT Decline and Failed responses.	T&L's	See ACT Response DOL specification
DFEF50	Terminal Interchange Profile (JCB)	JCB	It's a terminal configuration replacement for 9F53 in JCB, since that tag is used in MasterCard and Interac for something different.	3 bytes	See JCB_Contactless_Terminal_Spec_v1.3 for details
DFEF51	Bypass EMV Completion Output	Contact		1 byte	01 = Suppress Output (`DFEF510101`)
DFEF52	Re-Fallback Times	Contact	Used for Re-Fallback implementation times setting.	1 byte	If this TLV data is not in **Transaction Command**, the default is 5 times. The value size will be 3 (`DFEF520103`) ~10(`DFEF52010A`). If the Value is not 3~10, use 5 times.
DFEF53	Dynamic Reader Limits	XP 3.1 to start with	Used to provide a kernel with a variety of reader limits that may vary depending on the card brand.	var	For XP 3.1 this list is 16 sets of **Transactions**, **Floor**, and **CVM Required** limits (3 each).
DFEF54	SmartTap AID Index	Kiosk III	Used to select SmartTap AID	1 byte	**00**: use AID A0 00 00 04 76 D0 00 01 01 **01**: use AID A0 00 00 04 85 10 01 01 01

Tag	Name	Focus	Description	Format	Comments
DFEF55	Kernel Specific Features	Cfg	This TLV will contain whatever appropriate feature switches for the kernel dataset it has been configured in. Meaning in Expresspay it may have different meanings than in Visa or MC.	var	Defined per card brand kernel. Used ONLY in the datasets.
DFEF56	Retry Limit	**Interac**	The total number of taps allowed before transaction is terminated.	**1 byte**	Maximum (and default value) is 3.
DFEF57	Firmware Version No.		Encodes Firmware Version info (ASCII).	**var**	In QuickChip products, specify this tag in **DFEF5A** (see below) to appear in **Transaction Output**.
DFEF58	Current KSN of PIN Encryption DUKPT	**VP8800**			
DFEF59	Terminal Data Setting - Default Amount	**QuickChip**			
DFEF5A	Terminal Data Setting - Tags to Return	**QuickChip**			
DFEF5B	Mask for Tag5A	**QuickChip**			
DFEF5C	Mask for Tag56	**QuickChip**			
DFEF5D	Mask for Tag57	**QuickChip**			
DFEF5E	Mask for Tag 9F6B	**QuickChip**			
DFEF5F	Mask for Tag FFEE13	**QuickChip**			
DFEF60	Mask for Tag FFEE14	**QuickChip**			
DFEF61	Error Code	QuickChip			**Note**: The list below is not exhaustive. For the complete list, see **Appendix D** of this guide.

F2 20	Insert ICC again / Swipe (used for all other fallback)
F2 21	Prompt Fallback (used for case of no matching AID)
F2 22	Counter reached/almost exhausted

Tag	Name	Focus	Description	Format	Comments
DFEF62	Allow MSR Swipe data from ICC Card	QuickChip	Determines if an ICC must be attempted to be read first or allowed to return the MSR Swipe data instead (non-fallback) before attempting to read ICC.	1 byte	If value = 0x00, then any MSR swipe with an ICC card requires the card to be inserted instead of returning MSR swipe data. MSR swipe data from an ICC card can only be captured in a fallback situation. If value = 0x01, any card swiped (MSR or ICC) will return MSR swipe data.
DFEF64	Referral timeout		Shows the referral message while waiting time for key entry.	2 bytes	
DFEF6E	USB-KB Output Data Postfix			0~8 bytes	
DFEF6F	Inter-character Delay for USB- KB Interface			1 byte	
DFEF70	VP8800 Dual Interface Interference Prevention Mechanism Fine-Tune Parameters	VP8800/cfg	ID TECH Proprietary.	4 bytes	**b31~b28(4 bits)**: AS3911 "Wake-up Timer Control Register" wur/wut2~0. **b27~b24(4 bits)**: AS3911 "Amplitude Measurement Config Register" am_d3~0. **b23~b16(8 bits)**: Calibration IDG Command: Target Amplitude Value. **b15~b12(4 bits)**: AS3911 "Antenna Calibration Control Register" tre_3~0. **b11~b08(4 bits)**: CTLS/MSR Identification Algorithm: Delta Threshold Value. **b07~b00(8 bits): CTLS/MSR Identification Algorithm**: No. of Amplitude Samples.
DFEF71	Waiting ICC Insert Time	contact EMV L2		2 bytes	Wait the ICC card's insert time when MSR card's service code is 2/6, and the unit is second.
DFEF72	Pre-Poll Card Mechanism Control in ACT Cmd & Config Setting	VP8800/cfg	**ID TECH Proprietary:** If this tag is not present in the ACT Cmd, the tag stored in configuration will be referred. If this tag present in the ACT Cmd, it will get rid of the tag stored in configuration.	1 byte	0: disable pre-poll card mechanism, 1: enable pre-poll card mechanism **Others**: auto mode. **Enable pre-poll card mechanism under the combination below**: • Contactless + MSR • Contactless + Contact • Contactless + Contact + MSR

Tag	Name	Focus	Description	Format	Comments
DFEF73	Transaction Message Type	Kiosk III		1 byte	b8~b4: RFU **b3**: **Reversal Message** **b2**: **Confirmation Message** **b1**: **Authorization Message**
DFEF74	Reference Amplitude Value	VP8800/cfg	While pre-poll contactless card mechanism enabled, we will get the current amplitude value. If the difference between current amplitude and reference amplitude is larger or equal to reference delta value, it means card detected, will go to poll card stage immediately. The value of this tag cannot be set via IDG command, it only set through reference amplitude calibration process	2 bytes	Reference amplitude value.
DFEF75	Reference Delta Value	VP8800/cfg	For pre-poll contactless card mechanism. Smaller value means the event of card detected will be triggered easily.	1 byte	Delta value.
DFEF76	Transaction Interface Type To Activate	NEO2.0	Is used in **Activate Transaction Command** (02-40), to decide which interface (**Contact**/**MSR**/**Contactless**) will be activated.	1 byte	

Tag	Name	Focus	Description	Format	Comments
DFEF77	Timeout For Waiting Next Command	NEO2.0	Used in **Activate Transaction** Command (02-40), and decides **Timeout** for waiting next command.	1 byte	Unit of measure is seconds.
DFEF78	EMV Contact L2 Display Messages Option	Contact L2	This is an option to send display messages to the host even if the reader already has a display. Request from Cale for Spectrum Pro/L100.	1 byte	0: Disable 1: Enable
DFEF79	PIN Block Format (When TDES)	VP8800/Cfg	Used for choosing PIN block format when TDES is used for encryption.	1 byte	Possible values: 0 or 3
DFEF7A	Enable Apple Paycheck	VENDi/cfg	Enable a flag for send **Select OSE** to check Apple Pay.	1 byte	0: Disable 1: Enable
DFEF7B	Apple Pay Status	VENDi	If **DFEF7A** tag is enabled, then the response is 1 for read Apple pay or else the response is 0.	1 byte	0: RF Card, or not enable Tag DFEF7A 1: Apple Pay
DFEF7C	Track Bit Encoding	VP8800/MSR	Returned by the MSR module and containing the track encoding information.	1 byte	
DFEF7D	Re-power on Times	Contact L2	For control the times of re-power on ICC card before fall back to MSR	1 byte	Range :1-5, Default is 3
DFEF7E	Fallback Response Code List	Contact L2	To control the fallback when the response code is in this list.	var	List of the **Response Codes** from the transaction result **Response Code** is in this list, then do fallback.

Tag	Name	Focus	Description	Format	Comments
DFEF7F	Visa Oda And Online Indicator	KIII	This tag is used to indicate the ODA and Online result of VISA.	1 byte	**Bit 7** – ODA and Online performed: 1 performed, 0 Not performed. **Bit 6** – RFU Bit 5 – RFU Bit 4 – RFU **Bit 3** – fDDA performed: 1 performed, 0 Not performed. **Bit 2** – fDDA failed: 1 Failed, 0 Succeed. **Bit 1** – SDA performed: 1 performed, 0 Not performed. **Bit 0** – SDA failed: 1 Failed, 0 Succeed.

3.1. Note for Tag DFEE25

For contact EMV transactions, a two-byte result code may be returned in DFEE25. Check the contents of tag DFEE25, when it occurs, and interpret the results as follows:

Note: The result code is always two bytes long. The bottom two bits of the first byte are flags. If the zero bit is set, it means there was "advice." If the 1 bit was set, it means there was a "reversal." E.g.: 0203 means there was a reversal (02) and the result was 03 (declined).

EMV Result Codes

Code	Message
0x0000	EMV_RESULT_CODE_APPROVED_OFFLINE
0x0001	EMV_RESULT_CODE_DECLINED_OFFLINE
0x0002	EMV_RESULT_CODE_APPROVED
0x0003	EMV_RESULT_CODE_DECLINED
0x0004	EMV_RESULT_CODE_GO_ONLINE
0x0005	EMV_RESULT_CODE_CALL_YOUR_BANK
0x0006	EMV_RESULT_CODE_NOT_ACCEPTED
0x0007	EMV_RESULT_CODE_FALLBACK_TO_MSR (EMV_RESULT_CODE_USE_MSR)
0x0008	EMV_RESULT_CODE_TIMEOUT
0x0010	EMV_RESULT_CODE_AUTHENTICATE_TRANSACTION
0x00FF	EMV_RESULT_CODE_UNABLE_TO_REACH_HOST
0x1001	EMV_RESULT_CODE_FILE_ARG_INVALID
0x2001	EMV_RESULT_CODE_MEMORY_NOT_ENOUGH
0x3004	EMV_RESULT_CODE_FALLBACK_SITUATION
0x3012	EMV_RESULT_CODE_MSR_CARD_ERROR_FALLBACK
0x3013	EMV_RESULT_CODE_TIMEOUT_FOR_WAITING_ICC_INSERT_OR_MSR_SWIPE_FALLBACK
0x5001	EMV_RESULT_CODE_PARSING_TAGS_FAILED
0x5002	EMV_RESULT_CODE_CARD_DATA_ELEMENT_DUPLICATE
0x5003	EMV_RESULT_CODE_DATA_FORMAT_INCORRECT
0x5004	EMV_RESULT_CODE_APP_NO_TERM
0x5005	EMV_RESULT_CODE_APP_NO_MATCHING
0x5006	EMV_RESULT_CODE_MANDATORY_OBJECT_MISSING
0x5007	EMV_RESULT_CODE_APP_SELECTION_RETRY
0x5008	EMV_RESULT_CODE_AMOUNT_ERROR_GET
0x5009	EMV_RESULT_CODE_CARD_REJECTED
0x5010	EMV_RESULT_CODE_AIP_NOT_RECEIVED
0x5011	EMV_RESULT_CODE_AFL_NOT_RECEIVED
0x5012	EMV_RESULT_CODE_AFL_LEN_OUT_OF_RANGE
0x5013	EMV_RESULT_CODE_SFI_OUT_OF_RANGE
0x5014	EMV_RESULT_CODE_AFL_INCORRECT
0x5015	EMV_RESULT_CODE_EXP_DATE_INCORRECT
0x5016	EMV_RESULT_CODE_EFF_DATE_INCORRECT
0x5018	EMV_RESULT_CODE_CRYPTOGRAM_TYPE_INCORRECT
0x5019	EMV_RESULT_CODE_PSE_BY_CARD_NOT_SUPPORTED
0x5020	EMV_RESULT_CODE_USER_LANGUAGE_SELECTED
0x5021	EMV_RESULT_CODE_SERVICE_NOT_ALLOWED
0x5022	EMV_RESULT_CODE_NO_TAG_FOUND
0x5023	EMV_RESULT_CODE_CARD_BLOCKED
0x5024	EMV_RESULT_CODE_LEN_INCORRECT

Code	Message
0x5025	EMV_RESULT_CODE_CARD_COM_ERROR
0x5028	EMV_RESULT_CODE_ARC_NOT_PRESENCED
0x5030	EMV_RESULT_CODE_COMM_NO_ONLINE
0x5031	EMV_RESULT_CODE_TRAN_TYPE_INCORRECT
0x5036	EMV_RESULT_CODE_APP_BLOCK_AID
0x5037	EMV_RESULT_CODE_PAN_INVALID
0x5038	EMV_RESULT_CODE_TRANS_TYPE_NO_SUPPORT
0x6003	EMV_RESULT_CODE_CVM_TAG_8E_MISSING
0x6004	EMV_RESULT_CODE_CVM_TAG_8E_FORMAT_ERROR

3.2. Note for Tag DFEF36

8	7	6	5	4	3	2	1	Notes:
–	–	–	–	–	–	–	X	–Disable Media Detection Reporting –Enable Media Detection Reporting
–	–	–	–	–	–	X	–	–Disable Media Removal Reporting –Enable Media Removal Reporting
0	0	0	0	0	0	–	–	RFU

8	7	6	5	4	3	2	1	Notes:
–	–	–	–	–	–	–	X	0 – RF Field Deactivated 1 – RF Field Activated
–	–	–	–	–	–	X	–	0 – No CL Media Detected 1 – CL Media Detected
–	–	–	–	–	X	–	–	– CL Media Removed – CL Media Still Present
–	–	–	–	X	–	–	–	0 – No CT Media Detected 1 – CT Media Detected
–	–	–	X	–	–	–	–	– CT Media Removed – CT Media Still Present
–	–	X	–	–	–	–	–	– No effect – PollForToken aborted
0	0	–	–	–	–	–	–	RFU

Byte 3: Status Byte 2 - RFU Byte 4: Status Byte 3 – RFU

4. Constructed Tags

Tag	Name	Focus	Description	Format	Comment
FFEE01	ViVOpay TLV Group Tag		ViVOpay Proprietary Tag. Transaction (Cmd+Rsp)		**Encapsulating Tag**: Contains TLVs returned by **Special Flow** apps invoked during Pre-PPSE Processing
FFEE02	ViVOpay Pre-PPSE Special Flow Group Tag	Special Flow	Transaction (response)	TLVs	**Encapsulating Tag**: Contains TLVs returned by **Special Flow** apps invoked during Post-PPSE Processing
FFEE03	ViVOpay Post-PPSE Special Flow Group Tag	Special Flow	Transaction (response)	TLVs	This tag will hold any intermediate MSG signals issued by **Process K** during the transaction and included in the ACT response. If enabled, for L2 verification of MSG signal data. It is also used to enable this functionality. If sent in the ACT command **Signal Data** capture will be enabled for that transaction and this tag will then be returned in the ACT response if any data was added to it during the transaction.
FFEE04	M/Chip3 Intermediate Message Data	MasterCard	M/Chip 3 specific	TLVs	This tag is used inside FFEE04 to delineate the individual signals (MSG or OUT) that are added.
FFEE05	M/Chip3 Intermediate Message Marker	MasterCard	M/Chip 3 specific		This TLV is used to pass through ApplePay VAS proprietary TLV's. May be provided in the ACT and in the transaction response.
FFEE06	ApplePay VAS Container	Apple	ApplePayVAS	TLVs	Constructed tag with individually encrypted sensitive tags. KSN DFEE12 needed for decryption
FFEE07	Encrypted Sensitive Tags	Clearing		TLVs	Constructed tag with individual masked tags.
FFEE08	Masked Tags	Clearing		TLVs	Constructed tag that contains associated pairs **of Amount, Authorization**. (9F02) and RIDs. Kernel uses **Amount**, **Authorization** from a table when the related RID is detected.
FFEE09	Fixed Fare Amounts		TR3-FTP Phase 2	TLVs	No wild cards allowed.
FFEE0A	BIN Range	White List	Contains two BIN's (DFEF21). Any BIN	TLVs	No wild cards allowed.

Tag	Name	Focus	Description	Format	Comment
			including and between the first BIN and second BIN is a nonfinancial regardless of content.		
FFEE0B	AID Range	White List	Contains two AID's (DFEF22). Any AID including and between the first AID and second AID is a nonfinancial regardless of content.	TLVs	
FFEE0C	White List	White List	List of the BIN's and the AID's and ranges of BIN's and AID's that will be used to determine if sensitive SRED data will be evaluated. **Example**: If in the white list they are assumed non-financial.	TLV's	
FFEE0D	Torn Temp Record	Mastercard	Temporary (List) construction tag used to hold intermediate **Torn Transaction Log** entries. Mirrors the objects as defined in the specification.	TLVs	
FFEE10	ViVOpay MChip Group Tag	MasterCard	Is this TLV exposed via the serial interface? If yes then which commands ... Act Trans (Cmd or Resp)? Get/Set Config? Get/Set Con-Groups?	TLVs	
FFEE11	ViVOpay Discover Group Tag	Discover	???	TLVs	Discover DPAS
FFEE12	Cash Reader Risk Record	Visa	Holds the tags for cash transaction reader risk parameters.	TLVs	Replaces functionality of now obsolete 04-0C command.
FFEE13	Cashback Reader Risk Record	Visa	Holds the tags for cashback transaction reader risk parameters.	TLVs	Replaces functionality of now obsolete 04-0D command.
FFEE14	DRL Record 1	Visa	Holds the tags for reader risk record.	TLVs	One of four tags to replace functionality of now obsolete 04-0E command.
FFEE15	DRL Record 2	Visa	Holds the tags for reader risk record.	TLVs	One of four tags to replace functionality of now obsolete 04-0E command.
FFEE16	DRL Record 3	Visa	Holds the tags for reader risk record.		One of four tags to replace functionality of now obsolete 04-0E command.

Tag	Name	Focus	Description	Format	Comment
FFEE17	DRL Record 4	Visa	Holds the tags for reader risk record.		One of four tags to replace functionality of now obsolete 04-0E command.
FFEE18	Tags to Write Yet Before GenAC	Mastercard	Used in **Data Exchange**. (see CL25:C2)		
FFEE19	Tags to Write Yet After GenAC	Mastercard	Used in **Data Exchange**. (see CL25:C2)		
FFEE1A	Terminal App DET Data	Mastercard	Used in **Data Exchange**. (see CL25:C2)		Each DET signal's data should be wrapped in this tag in a **Continue Transaction Command.**
FFEE20	Apple VAS Merchant ID Setting Container	KIII, AppleVAS	This construct contains several Merchant ID structures (FFEE21)		
FFEE21	Apple VAS Merchant ID Setting	KIII, AppleVAS	This constructed tag contains Merchant ID structure's content: `9F25, 9F29`.		
FFEE69	ViVOpay Proprietary Tag List	Amex Discover Interac Mastercard Visa	This construct contains a list of proprietary tags that happen during the transaction.	TLVs	Added for Mastercard PayPass 3.0.2. and this TLV is a **Group TLV** and included in Group 1. The user can set it with 'expected' TLV and the MC app can interact with and modify the TLV if encountered during the transaction. **Unrecognized** tags are expected and returned to the POS. For all other apps (Amex, Discover, Interac, Visa), this is NOT a **Group TLV**. Instead, it is created dynamically by the reader during the transaction. This TLV will only contain unrecognized TLVs that are found inside the **Template Tag BFOC** during **PPSE** or **Final Select**.

5. Appendix A: Contact EMV Configuration Values (Tag DELETE)

Contact Terminal Configuration (**Default**: F0 DC 3C F0 C2 9E 94 00).

Byte 1:

b8	b7	b6	b5	b4	b3	b2	b1	Meaning:
1	X	X	X	X	X	X	X	Key Pad support
X	1	X	X	X	X	X	X	LCD support
X	X	1	X	X	X	X	X	PIN Pad support
X	X	X	1	X	X	X	X	Print Support
X	X	X	X	0	X	X	X	RFU
X	X	X	X	X	0	X	X	RFU
X	X	X	X	X	X	0	X	RFU
X	X	X	X	X	X	X	0	RFU

Byte 2:

b8	b7	b6	b5	b4	b3	b2	b1	Meaning:
1	X	X	X	X	X	X	X	PSE support
X	1	X	X	X	X	X	X	Cardholder confirmation
X	X	1	X	X	X	X	X	PIN Pad support
X	X	X	1	X	X	X	X	Print Support
X	X	X	X	1	X	X	X	EMV language selection method
X	X	X	X	X	1	X	X	Default DDOL
X	X	X	X	X	X	0	X	RFU
X	X	X	X	X	X	X	0	RFU

Byte 3:

b8	b7	b6	b5	b4	b3	b2	b1	Meaning:
0	X	X	X	X	X	X	X	RFU (Revocation of Issuer Public Key Certificate (DF26))
X	1	X	X	X	X	X	X	Manual action when CA PK loading fails
X	X	1	X	X	X	X	X	CA PK verified with check sum
X	X	X	1	X	X	X	X	Bypass PIN Entry
X	X	X	X	1	X	X	X	Subsequent bypass PIN Entry
X	X	X	X	X	1	X	X	Get data for pin try counter
X	X	X	X	X	X	0	X	RFU
X	X	X	X	X	X	X	0	RFU

Byte 4:

b8	b7	b6	b5	b4	b3	b2	b1	Meaning:
1	X	X	X	X	X	X	X	Amount before CVM processing
X	1	X	X	X	X	X	X	Floor limit checking
X	X	1	X	X	X	X	X	Random transaction selection
X	X	X	1	X	X	X	X	Velocity checking
X	X	X	X	0	X	X	X	RFU (Transaction Log (DF11))
X	X	X	X	X	0	X	X	RFU (Exception File (DF27))
X	X	X	X	X	X	0	X	RFU
X	X	X	X	X	X	X	0	RFU

Byte 5:

B8	B7	B6	B5	B4	B3	B2	B1	Meaning:
1	X	X	X	X	X	X	X	Terminal Action Code Support
X	1	X	X	X	X	X	X	Terminal Action Code Can Be Change
X	X	1	X	X	X	X	X	Terminal Action Code Can Be Deleted or Disable
X	X	X	1	X	X	X	X	Default Action Code Processing Before 1st Gac
X	X	X	X	1	X	X	X	Default Action Code Processing After 1st Gac
X	X	X	X	X	1	X	X	Tac/Iac Default Process When Unable to Go Online (Skipped)
X	X	X	X	X	X	1	X	Tac/Iac Default Process When Unable to Go Online (Normal)
X	X	X	X	X	X	X	0	Rfu

Byte 6:

b8	b7	b6	b5	b4	b3	b2	b1	Meaning:
1	X	X	X	X	X	X	X	Forced Online Support
X	1	X	X	X	X	X	X	Forced Acceptance Support
X	X	1	X	X	X	X	X	Advices Support
X	X	X	1	X	X	X	X	Issuer Referrals Support
X	X	X	X	1	X	X	X	Batch Data Capture
X	X	X	X	X	1	X	X	Online Data Capture
X	X	X	X	X	X	1	X	Default TDOL
X	X	X	X	X	X	X	0	RFU

Byte 7:

b8	b7	b6	b5	b4	b3	b2	b1	Meaning:
1	X	X	X	X	X	X	X	Amount and Pin Entered on The Same Keypad
X	1	X	X	X	X	X	X	ICC/Magstripe Reader Combined
X	X	1	X	X	X	X	X	Magstripe Read First
X	X	X	1	X	X	X	X	Support Account Type Selection
X	X	X	X	1	X	X	X	On Fly Script Processing
X	X	X	X	X	1	X	X	Internal Date Management
X	X	X	X	X	X	1	X	Reversal Mode (1)Unable Go Online (2) Arc Error 0: (3) Online Approved but Reader Not Approved. 1: (3) Online Approved but Card Response Aac.
X	X	X	X	X	X	X	0	RFU

Byte 8:

b8	b7	b6	b5	b4	b3	b2	b1	Meaning:
X	X	X	X	X	X	X	X	Amount and Pin Entered on The Same Keypad

6. Appendix B: Encrypted Track Data Status (Tag DFEF4B)

Byte 1:

b8	b7	b6	b5	b4	b3	b2	b1	Meaning:
1	X	X	X	X	X	X	X	Amount and Pin Entered on The Same Keypad
X	1	X	X	X	X	X	X	ICC/Magstripe Reader Combined
X	X	1	X	X	X	X	X	Magstripe Read First
X	X	X	1	X	X	X	X	Support Account Type Selection
X	X	X	X	1	X	X	X	On Fly Script Processing
X	X	X	X	X	1	X	X	Internal Date Management
X	X	X	X	X	X	1	X	Reversal Mode (1) Unable Go Online (\\2) Arc Error 0:(3) Online Approved but Reader Not Approved. 1:(3) Online Approved but Card Response Aac.
X	X	X	X	X	X	X	0	RFU

Byte 1:

8	7	6	5	4	3	2	1	Notes:
–	–	–	–	–	–	–	X	0- Disable Track 3 Sentinels 1- Enable Track 3 Sentinels
–	–	–	–	–	–	X	–	0- Disable Track 2 Sentinels 1- Enable Track 2 Sentinels
–	–	–	–	–	X	–	–	0- Disable Track 1 Sentinels 1- Enable Track 1 Sentinels
–	–	–	–	X	–	–	–	0 – Disable Track 3 1- Enable Track 3
–	–	–	X	–	–	–	–	0- Disable Track 2 1- Enable Track 2
–	–	X	–	–	–	–	–	0- Disable Track 1 1- Enable Track 1
–	X	–	–	–	–	–	–	0- Disable PAN 1- Enable PAN
X	–	–	–	–	–	–	–	0- All Data Elements Found 1- Only First Element Found

Byte 2: RFU
Byte 3: RFU

If this tag does not exist in **Terminal Settings**, tags **DFEF4C** and **DFEF4D** will not be generated.

The default value of this tag is 0x12 = Track 2 enabled with **Sentinels**.

Data Search Order
The **Only First Element Found** (bit 8 = 1), Tag **DFEF4D** will be populated with a single data element:
- Track 2, Tag 57 (converted to alpha numeric format) Track 2, Tag 9F6B
- Track 2, Tag 5F22 Track 1, Tag 56 Track 1, Tag 5F21
- PAN, Tag 5A (converted to alpha numeric format) Track 3, Tag 58
- Track 3, Tag 5F23

The **All Data Elements Found** (BIT 8 = 0), Tag **DFEF4D** is populated with a single instance of each requested data element, according to the following order:
Track 1 requested (bit 6 = 1).

Include first instance:
Tag 56 = Track 1 Equivalent
Tag 5F21 = Track 1, identical to the data coded Track 2 requested (bit 5 = 1).

Include first instance:
Tag 57 = Track 2 Equivalent (converted to alpha numeric format)
Tag 9F6B = Track 2 Data
Tag 5F22 = Track 2, identical to the data coded
Track 3 requested (bit 4 = 1).

Include first instance:
Tag 58 = Track 3 Equivalent

Tag 5F23 = Track 3, identical to the data coded
PAN requested (bit 7 = 1).

Include:
Tag 5A = PAN (converted to alpha numeric format)

Sentinels
Any found data element of Track 1, Track 2, or Track 3, start and add sentinels are added according to bits 1, 2, and 3.

6.1. Compressed Numeric Elements
Any data element captured as compressed numeric have the following rules:
- Padding (0xf) is not included.
- Center separators 0xd is converted to 0x3d ("=").

Data is encoded as ASCII representation of binary data.
Example: `0x123 = 0x313233 = "123"`

7. Appendix C: Contact Response Code (Tag DFEE25)

Certain commands produce **Response Code** messages to display on a host device. These codes are wrapped in the **DFEE25** tag and are shown below.

See the Appendix on tag **DFEF61** to review additional contact EMV status codes.

Note: The first response byte has bit flags in the lower nibble. (See explanation at end of table.)

Number	Response Code (2 Bytes)	Display on LCD
1	0x00,0x00	APPROVED (offline)
2	0x00,0x01	DECLINED (offline)
3	0x00,0x02	APPROVED
4	0x00,0x03	DECLINED (See also the note following this table.)
5	0x00,0x04	GO ONLINE
6	0x00,0x05	CALL YOUR BANK
7	0x00,0x06	NOT ACCEPTED
8	0x00,0x07	USE MAGSTRIPE
9	0x00,0x08	TIME OUT
10	0x00,0x10	(start transaction success)
11	0x00,0x11	MSR Success
	0x00, 0x12	Card In
12	0x10, 0x01 (FILE_ARG_INVALID)	TERMINATE
13	0x10,0x02 (FILE_OPEN_FAILED)	TERMINATE
14	0x10,0x03 (FILE_OPERATION_FAILED)	TERMINATE
15	0x20, 0x01 (MEMORY_NOT_ENOUGH)	TERMINATE
16	0x30, 0x01 (SMARTCARD_OK)	TERMINATE
17	0x30, 0x02 (SMARTCARD_FAIL)	TERMINATE
18	0x30, 0x03 (SMARTCARD_INIT_FAILED)	TERMINATE
19	0x30,0x04 (FALLBACK_SITUATION)	TERMINATE
20	0x30, 0x05 (SMARTCARD_ABSENT)	TERMINATE
21	0x30,0x06 (SMARTCARD_TIMEOUT)	TERMINATE
22	0x30,0x07 (MSR_CARD_ERROR)	TERMINATE
	0x30, 0x10 (SSL2_ICCMSR_DATA_FALLBACK)	FALLBACK TO MSR
	0x30, 0x11 (SSL2_ICCMSR_DATA_SERVICE)	FALLBACK TO MSR

	0x30, 0x12 (SSL2_ICCMSR_CARD_ERROR)	CHIP ERROR
	0x30, 0x13 (SSL2_ICCMSR_TIMEOUT)	TIMEOUT AFTER FALLBACK
23	0x50, 0x01 (PARSING_TAGS_FAILED)	TERMINATE
24	0x50, 0x02 (CARD_DATA_ELEMENT_DUPLICATE)	TERMINATE
25	0x50, 0x03 (DATA_FORMAT_INCORRECT)	TERMINATE
26	0x50, 0x04 (APP_NO_TERM)	NOT_ACCEPTED
27	0x50, 0x05 (APP_NO_MATCHING)	NOT_ACCEPTED
28	0x50, 0x06 (MANDATORY_OBJECT_MISSING)	TERMINATE
29	0x50, 0x07 (APP_SELECTION_RETRY)	TERMINATE
30	0x50, 0x08 (AMOUNT_ERROR_GET)	TERMINATE
31	0x50, 0x09 (CARD_REJECTED)	TERMINATE
32	0x50, 0x10 (AIP_NOT_RECEIVED)	TERMINATE
33	0x50, 0x11 (AFL_NOT_RECEIVED)	TERMINATE
34	0x50, 0x12 (AFL_LEN_OUT_OF_RANGE)	TERMINATE
35	0x50, 0x13 (SFI_OUT_OF_RANGE)	TERMINATE
36	0x50, 0x14 (AFL_INCORRECT)	TERMINATE
37	0x50, 0x15 (EXP_DATE_INCORRECT)	TERMINATE
38	0x50, 0x16 (EFF_DATE_INCORRECT)	TERMINATE
39	0x50, 0x17 (ISS_COD_TBL_OUT_OF_RANGE)	TERMINATE
40	0x50, 0x18 (CRYPTOGRAM_TYPE_INCORRECT)	TERMINATE
41	0x50, 0x19 (PSE_BY_CARD_NOT_SUPPORTED)	TERMINATE
42	0x50, 0x20 (USER_LANGUAGE_SELECTED)	TERMINATE
43	0x50, 0x21 (SERVICE_NOT_ALLOWED)	NOT_ACCEPTED
44	0x50, 0x22 (NO_TAG_FOUND)	TERMINATE
45	0x50, 0x23 (CARD_BLOCKED)	TERMINATE
46	0x50, 0x24	TERMINATE

	(LEN_INCORRECT)	
47	0x50, 0x25 (CARD_COM_ERROR)	TERMINATE
48	0x50, 0x26 (TSC_NOT_INCREASED)	TERMINATE
49	0x50, 0x27 (HASH_INCORRECT)	TERMINATE
50	0x50, 0x28 (ARC_NOT_PRESENCED)	TERMINATE
51	0x50, 0x29 (ARC_INVALID)	TERMINATE
52	0x50, 0x30 (COMM_NO_ONLINE)	TERMINATE
53	0x50, 0x31 (TRAN_TYPE_INCORRECT)	TERMINATE
54	0x50, 0x32 (APP_NO_SUPPORT)	TERMINATE
55	0x50, 0x33 (APP_NOT_SELECT)	TERMINATE
56	0x50, 0x34 (LANG_NOT_SELECT)	TERMINATE
57	0x50, 0x35 (TERM_DATA_NOT_PRESENCED)	TERMINATE
	0x50, 0x36 (CARD_BLOCKED)	TERMINATE
58	0x60, 0x01 (CVM_TYPE_UNKNOWN)	TERMINATE
59	0x60, 0x02 (CVM_AIP_NOT_SUPPORTED)	TERMINATE
60	0x60, 0x03 (CVM_TAG_8E_MISSING)	TERMINATE
61	0x60, 0x04 (CVM_TAG_8E_FORMAT_ERROR)	TERMINATE
62	0x60, 0x05 (CVM_CODE_IS_NOT_SUPPORTED)	TERMINATE
63	0x60, 0x06 (CVM_COND_CODE_IS_NOT_SUPPORTED)	TERMINATE
64	0x60, 0x07 (CVM_NO_MORE)	TERMINATE
65	0x60, 0x08 (PIN_BYPASSED_BEFORE)	TERMINATE
66	Error Result Code	TERMINATE

Note: First response byte has bit flags as follows:
Bit 0 --- if transaction has advice, this bit is 1. Bit 1 --- if transaction has reversal, this bit is 1.

Example:
```
DFEE25 02 02 03 □ Reversal (02) + DECLINED (03)
```

8. Appendix D: DFEF61 (Contact EMV Status Codes)

Error Code	Definition
0x0400	Related Key Was Not Loaded
0x0410	Non-SRED Device Need Load Manufacture Key and Firmware Key
0x0500	Key Same / Duplicate Key Detected
0x0702	PAN Is Error
0x0F00	Encryption or Decryption Failed
0x1001	File Arg Invalid
0x1002	File Open Failed
0x1003	File Operation Failed
0x2001	Memory Not Enough
0x3001	Smartcard OK
0x3002	Smartcard Fail
0x3003	Smartcard Init Failed
0x3004	Fallback Situation
0x3005	Smartcard Absent
0x3006	Smartcard Timeout
0x3007	MSR Card Error
0x5001	Parsing Tags Failed
0x5002	Card Data Element Duplicate
0x5003	Data Format Incorrect
0x5004	App No Term
0x5005	No Matching AID
0x5006	Mandatory Object Missing
0x5007	App Selection Retry
0x5008	Amount Error Get
0x5009	Card Rejected
0x5010	AIP Not Received
0x5011	AFL Not Received
0x5012	AFL Len Out of Range
0x5013	SFI Out of Range
0x5014	AFL Incorrect
0x5015	Exp Date Incorrect
0x5016	Eff Date Incorrect
0x5017	ISS Code Table Out of Range
0x5018	Cryptogram Type Incorrect
0x5019	PSE By Card Not Supported
0x5020	User Language Selected
0x5021	Service Not Allowed
0x5022	No Tag Found
0x5023	Card Blocked
0x5024	Length Incorrect
0x5025	Card Communications Error
0x5026	TSC Not Increased
0x5027	Hash Incorrect
0x5028	Arc Not Present
0x5029	ARC Invalid
0x5030	Comm No Online

Error Code	Definition
0x5031	Tran Type Incorrect
0x5032	App Not Supported
0x5033	App Not Selected
0x5034	Language Not Selected
0x5035	Term Data Not Present
0x5036	Card Blocked
0x5500	No RKI-KEK
0x5501	Rki-Kek Stop
0x5504	Validate Authentication Code Error
0x5505	Encrypt or Decrypt Data Failed
0x5506	Not Support the New Key Type
0x5507	New Key Index Is Error
0x5508	Step Error
0x5509	Remote Key Injection Timeout (Latest Command Is Timeout)
0x550A	Mac Error
0x550B	Key Usage Error
0x550C	Mode of Use Error
0x550F	Other Error
0x6000	Save Or Configuration Failed / Or Read Configuration Error, Flash Error
0x6001	CVM Type Unknown
0x6002	CVM Aip Not Supported
0x6003	CVM Tag 8E Missing
0x6004	CVM Tag 8E Format Error
0x6005	CVM Code Is Not Supported
0x6006	CVM Cond Code Is Not Supported
0x6007	CVM No More
0x6008	PIN Bypassed Before
0x6200	No Serial Number
0x6201	No White List
0x6900	Invalid Command – Protocol Is Right, But Task Id Is Invalid
0x6A00	Unsupported Command – Protocol and Task Id Are Right, But Command Is Invalid
0x6A01	Unsupported Command – Protocol and Task ID Are Right, But Command Is Invalid – In this State
0x6B00	Unknown Parameter in Command – Protocol Task ID and Command Are Right, But Parameter Is Invalid
0x6B10	ASN.1 Data Error
0x6C00	Unknown Parameter in Command – Protocol Task ID and Command Are Right, but Length is Out of the Requirement.
0x7300	DUKPT is STOP (21 bit 1)
0x8100	Timeout
0x8200	Wrong Operate Step
0x8300	Decode MSR Error
0x8500	No Swipe MSR Card
0x2C02	No Microprocessor ICC seated
0x2C06	No Card Seated to Request ATR
0x8B10	ICC Error on Power-Up
0xE313	IO Line Low -- Card Error After Session Start
0x9042	Invalid LCL-KEK
0x9046	Invalid Data Encryption Key

Error Code	Definition
0x9047	Do Not Support This Key
0x9052	Invalid RKI-KEK
0x9054	TR31 Checks Failed
0x9055	DOMAC Verification Failed
0x9057	LCL-KEK Exists
0xF002	ICC Communication Timeout
0xF003	ICC Communication Error
0xF005	ICC Encrypted C-APDU Data Structure Length Error or Format Error.
0xF200	AID List / Application Data Does Not Exist
0xF201	Terminal Data Does Not Exist
0xF202	TLV Format Is Error
0xF203	AID List Is Full
0xF204	Any CA Key Does Not Exist
0xF205	CA Key RID Does Not Exist
0xF206	CA Key Index Does Not Exist
0xF207	CA Key is Full
0xF208	CA Key Hash Value is Error
0xF209	Transaction Format Error
0xF20A	The Command Will Not Be Processing
0xF20B	CRL Does Not Exist
0xF20C	CRL Number Exceed Max Number
0xF20D	Amount, Other Amount, and Transaction Type Are Missing
0xF20E	The Identification of Algorithm Is Mistake
0xF20F	No Financial Card
0xF210	In Encrypt Result State, TLV total Length Is Greater Than Max Length
0xF211	ICC L2 Is Not in Idle State

9. Appendix E: Tag DFEE1B

Tag **DFEE1B** can be supplied in **Complete Transaction** to enforce specifics surrounding approvals, declines, or referrals.

The approving processor or gateway Host will provide Tag 8A as part of its response. The two-byte value in 8A needs to be a value the kernel understands, or the kernel will change it to 'Z3' (0x5A33) in the **Completion** step.

Sending a **Result** code to a reader that is not recognized by the kernel will change it to 'Z3' (0x5A33).

Example: The kernel may not recognize result code 3035 and instead may change it to to 5A33 ('Z3').

Solution: Use tag **DFEE1B** to define the three response codes: **Approved**, **Referral**, or **Decline**.

DFEE1B is defined as 8 bytes long:
- Bytes 0/1 are for **Approved Code**
- Bytes 2/3 are for **Referral Code**
- Bytes 4/5 are for **Declined Code**
- Bytes 6/7 are **Reserved for Future Use** (RFU).

Example: If the online host uses 3030 as **APPROVED**, 3031 as **REFERRA**L, and 3035 as **DECLINED**, included the following TLV in the terminal settings:
```
DFEE1B 08 3030 3031 3035 0000
```

The kernel will recognize and properly process the transaction when **DFEE1B** is defined with the DECLINE = 3035.

Note: You can set DFEE1B on a per-transaction basis. To set the tag on a per-transaction basis send DFEE1B to the **emv_completeTransaction()** method of the Universal SDK, or provide DFEE1B in the "extra tags" of the **Complete Transaction** parameters in the Universal Demo app.