Hellenic Republic

ΑΑΔΕ
Independent Authority
for Public Revenue (IAPR)

Directorate-General for e-Government
Directorate for Infrastructure Management
Department E

Postal Address	: Pireos 72, Moschato
Zip Code	: 18346
Information	: P.Mavridis
Phone	: 213 1621133
E-Mail	: didypod.5@aade.gr
Url	: www.aade.gr

POSTED ON THE INTERNET

ADA: ΨΗ1Ν46ΜΠ3Ζ-00Υ
Greek Government Gazette: 3875 B /15.06.2023
Athens, 13-6-2023

A.1088

TO: List of Recipients

SUBJECT: Amendment of the Decision of the Governor of IAPR A.1098/13-7- 2022 "Determination of technical specifications (communication protocol) and other functions for the interconnection between Fiscal Electronic Mechanisms and EFT/POS terminals. Implementation on the principle of "collection by card - mandatory issuance of a receipt by a FEM"". (B'3940)

DECISION

THE GOVERNOR OF I.A.P.R.

Considering:

1. The provisions of:
a) Articles 12 and 40 of Law 4308/2014 (A' 251), as in force.
b) Articles 15 & 15A of Law 4174/2013 (A' 170), as added by the provisions of Law 4646/2019 (A'201) as in force.
c) Decision A.1098/13-7-2022 of the Governor of the Independent Authority for Public Revenue "Determination of technical specifications (communication protocol) and other functions for the interconnection between Fiscal Electronic Mechanisms and EFT/POS terminals. Implementation on the principle of "collection by card - mandatory issuance of a receipt by a FEM"". (B'3940), as amended by Decision A.1190/30-12-2022 of the Governor of the Independent Authority for Public Revenue (B'6993).
d) the joint decision A.1138/12.6.2020 of the Minister of Finance and of the Governor of the Independent Authority for Public Revenue "Determination of the scope, time and procedure for electronic transmission of data to the Independent Authority for Public Revenue, as well as any other matter necessary for the

implementation of the provisions of article 15A of Law 4174/2013 " (B'2470).
e) Decision A.1024/31.1.2020 of the Governor of the Independent Authority for Public Revenue "Supplementary technical specifications of communication and encryption protocol for the transmission of data to the FEM information system" (B' 317).
f) Decision A.1011/2020 of the Governor of the Independent Authority for Public Revenue "Withdrawal from the use of models of Fiscal Electronic Mechanisms (FEMs), which received an eligibility license based on A.Y.O.O. POL.1234/9.10.2002 (B΄1362) and POL.1135/26-10-2005 (B΄1592), except of Fiscal Sign Machines and Fiscal Printer Taximeters" (B' 85).
g) Decision POL.1166/2018 of the Governor of the Independent Authority for Public Revenue, "Technical specifications of communication and encryption protocol for the transmission of data to the FEM information system" (B΄3603).
h) Decision POL.1220/2012 (B' 3517) " Codification – Completion of technical specifications of Fiscal Electronic Mechanisms and systems. Procedures for their use and operation. Specifications of files sent to GSIS."
i) Decision POL.1221/2012 (B' 3513) "Upgrade of the drivers of the Fiscal Sign Machines. Determination of fiscal data files to be sent to the GSIS pursuant to the provisions of article 20 of Law 3842/2010 (A' 58)"
j) Decision A.1173/7-12-2022 of the Governor of the Independent Authority for Public Revenue "Amendment of the technical specifications of FEMs." (B'6953)
k) Chapter A of Part One of Law 4389/2016 "Urgent provisions for the implementation of the agreement on finance targets and structural reforms and other provisions" (A' 94)
2. The European Commission's document C(2012) 4961 providing us with comments on notification 2012/266/EN
3. The European Commission's document C(2012) 4967 providing us with comments on notification 2012/267/EN
4. The approval of the European Commission on notification 2022/183/GR, for the acceptance of the urgency procedure, No. GROW/E3/BH/as (2022)3027420/12.04.2022 letter addressed to the Minister Plenipotentiary of the Permanent Representation of Greece in Brussels and communicated to us through ELOT.
5. Decision D.ORG.A 1125859 EX 2020/23.10.2020 of the Governor of the Independent Authority for Public Revenue "Organization of the Independent Authority for Public Revenue (I.A.P.R.)" (B 4738)
6. Act of the Council of Ministers No. 1. of 20.1.2016 "Selection and appointment of the Secretary General of the General Secretariat for Public Revenue of the Ministry of Finance" (Y.O.D.D. 18) in conjunction with the provisions of the first subparagraph of para. 10 of article 41 of Law 4389/2016, the Decisions No. 39/3/30.11.2017 (Y.O.D.D. 689) of the Board of Directors of I.A.P.R. and Decision 5294EX2020/17.01.2020 of the Minister of Finance "Renewal of the service of the Governor of the Independent Authority for Public Revenue" (Y.O.D.D. 27)
7. The conclusion of the Project Management Team at IAPR on the elaboration of the specifications for the interconnection of cash registers with POS terminals, in the framework of reform 16614 for the reform and interconnection of cash

registers with the fiscal administration, implemented in the framework of the National Recovery and Resilience Plan "Greece 2.0"

8. The need to interconnect FEMs with EFT/POS Terminals, to ensure the issuance of fiscal receipts when card payments are performed, for effective fiscal monitoring and the reduction of tax evasion.

9. The fact that, from the procedures of this decision, no expenditure is caused at the expense of the IAPR Budget.

WE DECIDE

We amend in the Decision of the Governor of IAPR A.1098/13-7-2022, as in force, the Appendix, with regard to EFTPOS communications with the FEMs Central Information System “Esend”, as attached to this Decision.

This Decision shall take effect on the date of its publication in the Government Gazette.

This decision be published in the Government Gazette.

THE GOVERNOR OF I.A.P.R.
GEORGIOS PITSILIS

APPENDIX

INTERCONNECTION OF RETAIL RECEIPTS ISSUANCE SYSTEMS AND PAYMENT CARD ACCEPTANCE TERMINALS (EFTPOS)

Basic communication protocol

Version: 1.08

Date: 6 June 2023

INDEX

1. Introduction..... 3
2. The general scheme..... 3

3. The physical connection..... 4
3.1. Connect over tcp/ip 4
3.2.Connect via usb, bluetooth or RS232..... 5
4. Flow and messages at a glance..... 6
4.1.Ordinary sale flow (or other transactions)..... 7
4.2. Flow of temporary registration to the eftpos , of a retail receipt or invoice, already issued by the ECR..... 8
4.3.Flow in case of failure to process a payment transaction..... 8
4.4.Echo flow.....9
4.5.Flow of executing control command.....9
4.6.Repeat flow [result] of last transaction..... 9
4.7. Flow for repeated [result] of all pending transactions..... 10
5. Flow and messages in detail.....12
5.1.Message syntax.....12

5.2.[ECHO] message..... 14
5.3.[AMOUNT] message..... 15

5.4. [CONFIRMED] message..... 16

5.5.[RESULT] message..... 16

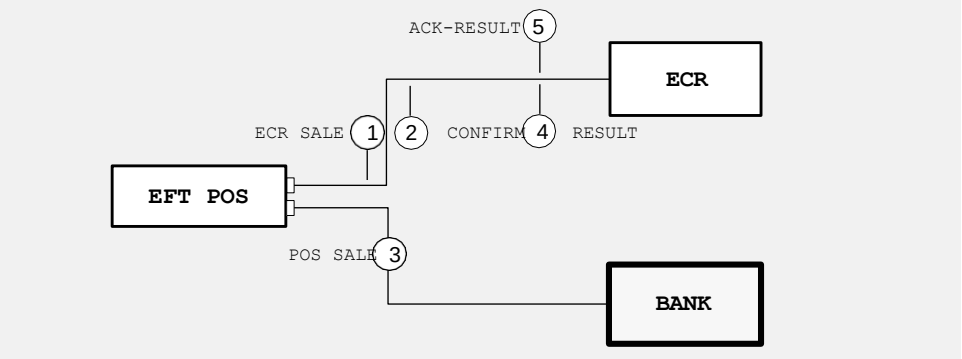
5.6.[ACK-RESULT] message..... .24
5.7.[REGRECEIPT] message..... 25
5.8.[RESEND-ONE]message 26
5.9.[RESEND-ALL]message 27
5.10.[ERROR] message..... 28
5.11.[SUCCESS] message 30
5.12.[CONTROL] message 31
5.13.Other transaction messages 32
5.14.Error handling..... 34
6.Description of the MAC mechanism..... 37
7.Summary of handling for matching daily sums 39
8.Possible fault scenarios and troubleshooting procedures..... 41
9.Issuance and distribution of master key (MK) 44
10.Download the AESKEY from FEMs central information system “Esend”..... 47

1. INTRODUCTION

The text describes the minimum communication requirements between retail receipt issuance systems (FEMs) and EFTPOS located in the field. An important issue is to ensure the presence of every transaction executed in EFTPOS, at the corresponding FEM. The term ECR ("Electronic Cash Register") or the term "cash register" or the term "FEM" used in this technical description, are considered in the context of the text to be identical to any legal fiscal system for issuing retail receipts according to the current legislation (fiscal electronic cash registers, fiscal printers, fiscal sign machines).

2. THE GENERAL SCHEME

The interconnection concerns three systems: ECR, EFTPOS and PAYMENT SERVICE PROVIDERS (BANK):



Picture 1

The usual communication flow follows 5 steps:

1. The transaction is initiated by the ECR. The operator chooses card payment and ECR sends a request to EFTPOS.
2. The EFTPOS immediately acknowledges the request to the ECR, which enters in waiting mode for the final result.
3. The EFTPOS connects to the payment service provider for online approval or offline approves or offline rejects or stops the transaction.
4. The EFTPOS responds to the ECR with the final result: rejection or approval. In the approval, it sends transaction details (such as transaction number, approval code, etc.). The final result is sent directly to ECR, before printing starts from EFTPOS. If the ECR supports this, the final result includes data so that the payment receipt is printed by the ECR.
5. The ECR acknowledges the final result. If this acknowledgement does not reach EFTPOS for any reason, EFTPOS marks this transaction as not fully

processed by the ECR.

Key assumptions and limitations:

1. Only ECR can initiate a new sale transaction (purchase, purchase by installments, registration of pre-approval, mailorder). EFTPOS has a locked keyboard and menu when performing sale transactions.
2. If in the case of ECR failure or ECR-EFTPOS communication failure, EFTPOS has performed sale transactions that are not recorded in the ECR, then there exists a mandatory procedure for EFTPOS to send these transactions to the ECR (see 4.6, 4.7) after rectification of the ECR failure. The EFTPOS has the ability to keep the most basic details of these transactions in a separate file for ex-post auditions and verification purposes.
3. No interruption of processing in EFTPOS is allowed by the ECR. If during step 3 ECR owner wants to stop processing, then this is done manually in EFTPOS.
4. EFTPOS serves only one ECR request at a time, it does not have a queue of requests and cannot even respond to a new request while the current one is being processed.
5. The communication does not contain sensitive transaction data, such as bounced card number, cvv2, track2 or cardholder name.
6. EFTPOS should keep log files with the following priority and depending on their storage and computing capabilities:
    a) Communication problems or system errors (mandatory)
    b) Operator actions related to the interface (mandatory)
    c) Transaction basic data (time/amount/sessionId/outcome)
    d) Full recording of messages exchanged

    The format of recording incidents is a matter of implementation by each manufacturer, as long as it fulfills the purpose of establishing facts and resolving any technical problems.
7. In case the employee is awarded a tip via card, there is the possibility to enter the amount of the tip in the keyboard of the EFTPOS for the specific retail receipt. There is a mandatory procedure for sending these transactions from EFTPOS to the ECR. Tip amounts are kept as pending transactions and sent to the ECR as packages (tip amount). The ECR returns an ACK-RESULT message to EFTPOS for each pending transaction so that EFTPOS can close the package.

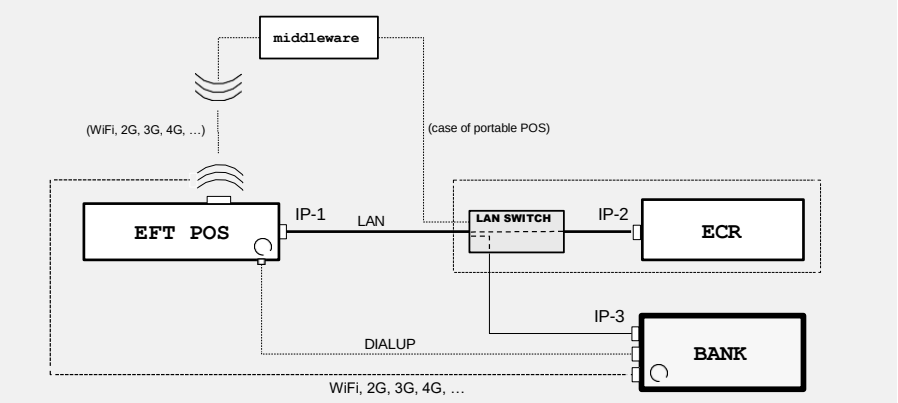
3. THE PHYSICAL CONNECTION

In the connection between EFTPOS-ECR, EFTPOS acts as a "server" in relation to the ECR, and as a "client" in relation to the payment service provider.

3.1. CONNECT OVER TCP/IP

The connection between EFTPOS and ECR over TCP/IP is:

- Either Direct connection ECR-EFTPOS. Examples: connection to a LAN network with Ethernet cables, WIFI connection, etc.
- Or via middleware system specially made for EFTPOS that cannot be connected otherwise.



Picture 2

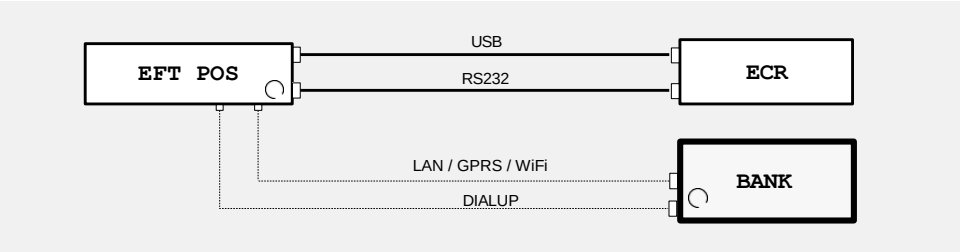
The LAN switch can be an external device or built-in.

In the case of a middleware connection, as the local IP of the EFTPOS is typically unknown or inaccessible to the ECR, some additional implementation is required, so that the connection to the middleware will be opened by EFTPOS with a "logon" ,and will keep it open as needed, entering itself into a waiting loop for ECR requests. The middleware system acts as a simple message forwarder.

3.2. CONNECT VIA USB, BLUETOOTH OR RS232

USB, or Bluetooth connection is supported without changing the communication protocol at all.

RS232 connection is also supported, with the only protocol change being the addition of a small string as a prefix to each exchanged message.



Picture 3

4. FLOW AND MESSAGES AT A GLANCE

Using symbolic names, messages exchanged between ECR and EFTPOS are:

[AMOUNT]:	Purchase Start Request (ECR->EFTPOS)
[CONFIRMED]:	Confirmation of receipt of request (EFTPOS->ECR)
[ERROR]:	Unable to service request (EFTPOS->ECR)
[RESULT]:	Transaction result (EFTPOS->ECR)
[ACK-RESULT]:	Acknowledge of [RESULT] (ECR->EFTPOS)
[RESEND-ONE]:	Request to resend [RESULT] of a transaction (ECR–>EFTPOS)
[RESEND-ALL]:	Request to send [RESULT] for the pending refund transactions executed autonomously by EFTPOS without using ECR, executed transactions involving preloaded receipts and invoices already issued by ECR, and sales transactions executed by EFTPOS not connected with ECR, due to ECR failure or EFTPOS-ECR interface failure. (ECR ->EFTPOS)
[ECHO]:	Communication Test (ECR->EFTPOS->ECR)
[CONTROL]:	Miscellaneous Configuration Command (ECR->EFTPOS)
[SUCCESS]:	General Success Message (EFTPOS->ECR)
[REGRECEIPT]:	Send a retail receipt or invoice for later sales transaction (ECR->EFTPOS)

Optional extensions for other transactions:

[AMOUNT-INSTALM]:	Request to start a sale transaction using installments (ECR->EFTPOS)
[AMOUND-REFUND]:	Refund request (ECR->EFTPOS)
[AMOUNT-VOID]:	Cancellation request (ECR->EFTPOS)

[AMOUNT-COMPLETION]: Request for pre-approval (ECR->EFTPOS)

[AMOUNT-MAIL]: MAIL ORDER transaction request (ECR->EFTPOS)

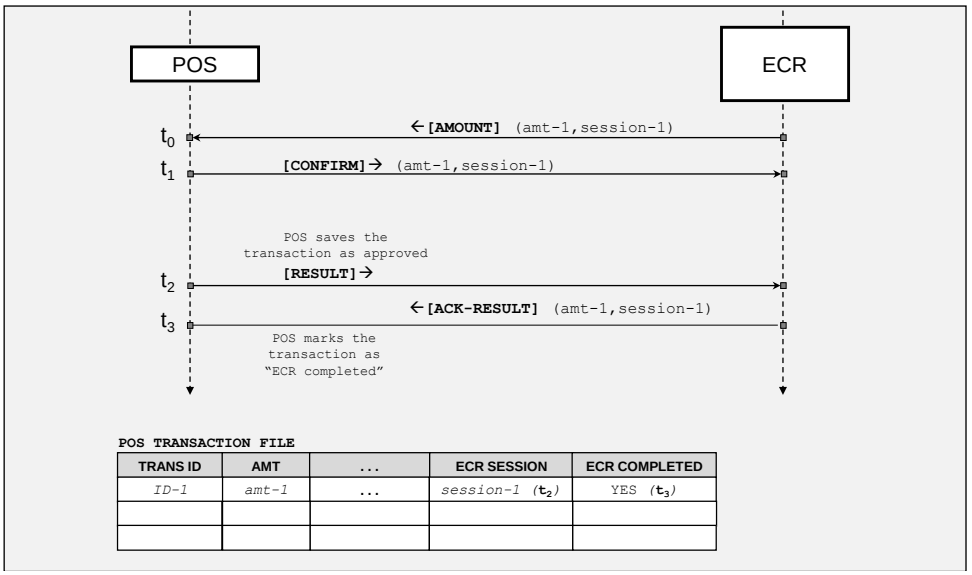
The following 6 message flows are allowed, which always run on the same connection (in the same session).

4.1. ORDINARY SALE FLOW (OR OTHER TRANSACTIONS)

[t0]	EFTPOS ← [**AMOUNT**] ← ECR In addition to the purchase amount, ECR sends other information, such as receipt number, cash register serial number, cashier code, etc	
[t1]	EFTPOS → [**CONFIRMED**] → ECR EFTPOS immediately acknowledges the command, and the ECR waits for a result.	t1-t0 < 2 sec
	EFTPOS processes the request, requests card insertion, logs in for online approval, etc.	
[t2]	EFTPOS → [**RESULT**] → ECR EFTPOS responds with the result, which can be a rejection or approval. If it is an approval, it sends additional transaction details (e.g. approval code, transaction number, etc.)	Usually t2-t1 < 60 sec
[t3]	EFTPOS ← [**ACK-RESULT**] ← ECR The ECR acknowledges the receipt of the final result command, and the EFTPOS registers (if it was an approval) that the transaction has been fully processed by the ECR.	t3-t2 < 2 sec

The above four messages ([AMOUNT], [CONFIRMED], [RESULT], [ACK- RESULT]) have a common 6-digit session number, different for each new transaction, which ECR creates and which serves as a control of message relevance and avoidance of critical errors.

A schematic illustration of the standard flow is shown in Picture 4.



Picture 4

4.2. FLOW OF TEMPORARY REGISTRATION TO THE EFTPOS , OF A RETAIL RECEIPT OR INVOICE, ALREADY ISSUED BY THE ECR

[t0]	EFTPOS ← [**REGRECEIPT**] ← ECR The ECR provides information on retail receipt or on an invoice it has just issued so that the EFTPOS can use it in a later transaction (e.g. home delivery)	
[t1]	EFTPOS → [**SUCCESS**] → ECR The action is always expected to be successful (except in cases of technical problem)	t1-t0 < 2 sec

4.3. FLOW IN CASE OF FAILURE TO PROCESS A PAYMENT TRANSACTION

[t0]	EFTPOS ← [**AMOUNT**] ← ECR	
[t1]	EFTPOS → [**ERROR**] → ECR EFTPOS acknowledges the download, but with an error code, declares to the ECR that processing is not possible.	t1-t0 < 2 sec

4.4. ECHO FLOW

[t0]	EFTPOS ← [**ECHO**] ← ECR	
[t1]	EFTPOS → [**ECHO**] → ECR	t1-t0 < 2 sec

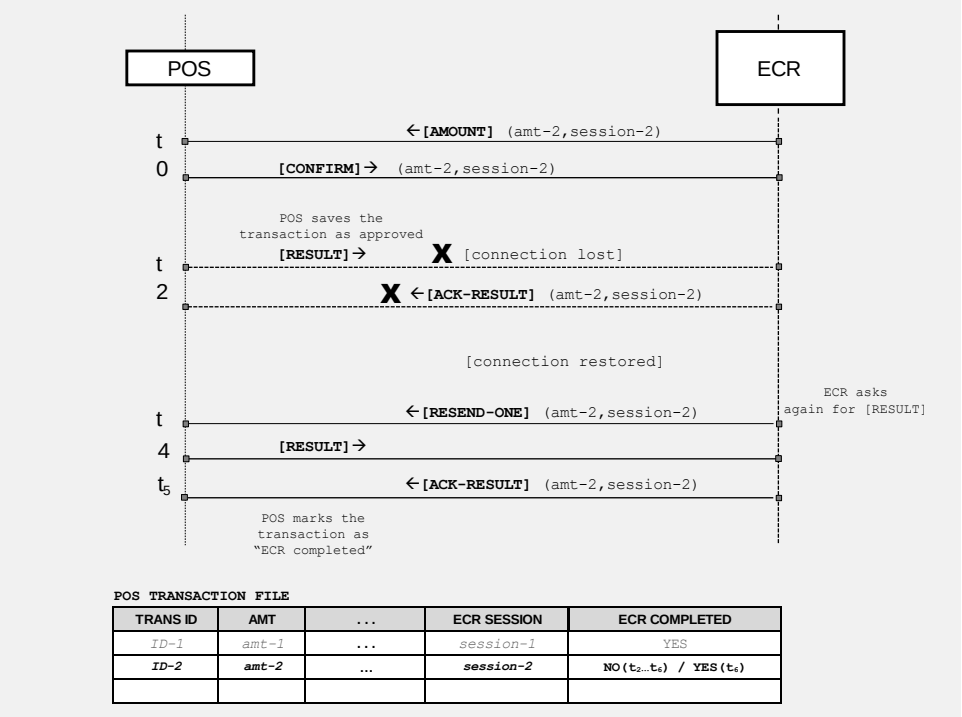
4.5. FLOW OF EXECUTING CONTROL COMMAND

[t0]	EFTPOS ← [**CONTROL**] ← ECR It is possible for the ECR to configure certain parameters of EFTPOS related to the interface with the ECR	
[t1]	EFTPOS →[SUCCESS ή ERROR]→ ECR	t1-t0 < 2 sec

4.6. REPEAT FLOW [RESULT] OF LAST TRANSACTION

[t0]	EFTPOS ← [**RESEND-ONE**] ← ECR If the transaction was approved by the EFTPOS but due to a connection problem the ECR does not receive the answer [RESULT] or if theEFTPOS does not receive the answer [ACK-RESULT], the ECR operator can select this action to complete the normal flow.	
[t1]	EFTPOS → [**RESULT**] → ECR EFTPOS searches in the transaction package for the last transaction and, if it matches the data of the request, sends its details immediately. Otherwise it returns rejection.	t1-t0 < 5 sec
[t2]	EFTPOS ← [**ACK-RESULT**] ← ECR The ECR acknowledges receipt of the final result and the EFTPOS registers (if it was an approval) that the transaction has been fully processed by the ECR.	t2-t1 < 2 sec

A schematic iteration flow of the [RESULT], is shown in Picture 5.



Picture 5

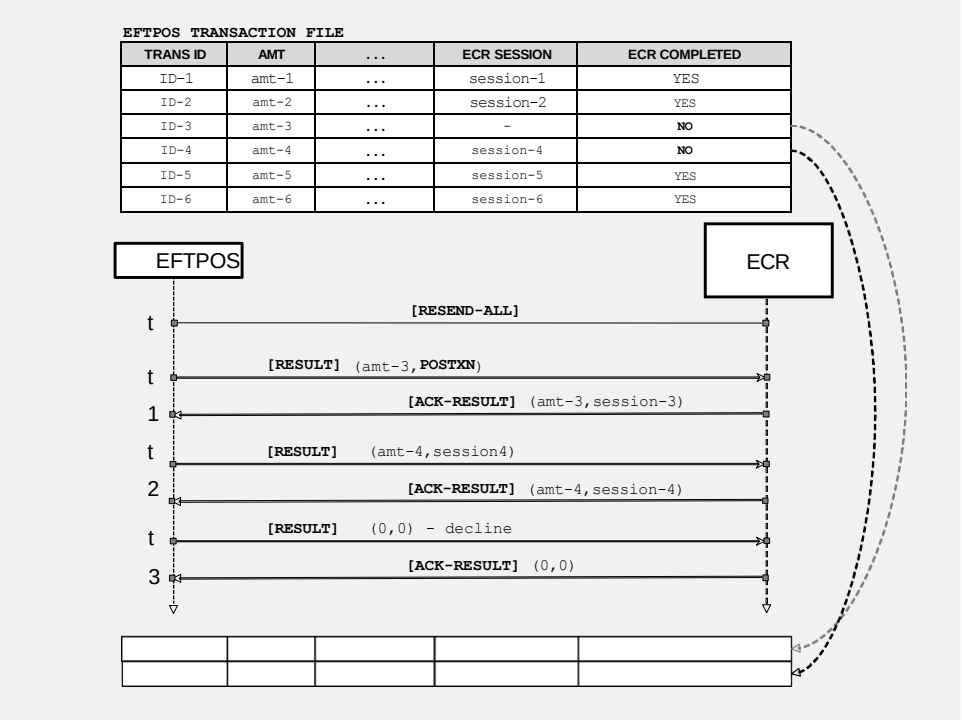
4.7. FLOW FOR REPEATED [RESULT] OF ALL PENDING TRANSACTIONS

[t0]	EFTPOS ← [**RESEND-ALL**] ← ECR If EFTPOS has stored refund transactions that were executed autonomously, or sale transactions performed by the EFTPOS as preloaded receipts or preloaded ECR invoices (via REGRECEIPT flows),then EFTPOS does not allow the option "SEND PACKAGE", i.e. the clearing of transactions by the payment service provider and the payment of the merchant. In this case, the ECR operator should request EFTPOS through a specific command to receive these pending transactions.	
[t1]	• EFTPOS starts sending all refund transactions that were executed autonomously. In this case, as they do not have	t1-t0 < 5 sec

	an ECR *session-number*, this is sent as **POSTXN**. • EFTPOS starts sending all sale transactions that were performed by the EFTPOS as preloaded receipts or preloaded invoices	
	EFTPOS → [**RESULT**] → ECR EFTPOS ← [**ACK-RESULT**] ← ECR EFTPOS → [**RESULT**] → ECR EFTPOS ← [**ACK-RESULT**] ← ECR . . . . EFTPOS → [**RESULT**] → ECR EFTPOS ← [**ACK-RESULT**] ← ECR [RESEND-ALL] does not send print data even if it is supported by ECR. The last [RESULT] has a zero amount, zero *session number* and it is a rejection, signaling the end of the dispatch.	

An example of a repeat flow for pending transactions is illustrated in Picture 6. The EFTPOS resends [RESULT] for only 2 transactions:

- For *ID-3*, which concerns a refund transaction
- For ID-4, which originated from EFTPOS as it corresponded to a receipt already issued by ECR and which was loaded into EFTPOS for later card payment.



Picture 6

5. FLOW AND MESSAGES IN DETAIL

5.1. MESSAGE SYNTAX

Each message consists of a header and a body as follows:

BYTES	ΠΕΡΙΓΡΑΦΗ	
0-1	MSG SIZE (2 bytes, binary)	The size of the message that follows in bytes: MSG SIZE: b0*256 + b1
2-4	DIRECTION INDICATOR (3 bytes, ascii)	Characterizes the source of the message: **ECR** (from ECR to EFTPOS) **EFTPOS** (from EFTPOS to ECR)
5-6	PROTOCOL VARIANT (2 bytes, ascii)	Specifies flow and function: **01**: default mode ("variant 1") **02**: ECR undertakes the printing of the EFTPOS receipt ("variant 2")

7-8	PROTOCOL VERSION (2 bytes, ascii)	Specifies the syntax in the body of the message. **For the proposed protocol its value is 10.**
9-...	Main part of message (MSG SIZE-7)	As specified below.

SPECIAL CASES

In RS232 connection, the string "ECR" or "POS" respectively will be used as a prefix of the entire message (i.e. before the length prefix) and as a suffix (i.e. as the last byte of the body), an LRC digit for additional message integrity checking (see 5.14).

The middleware connection will be prefixed with the string "ACQ<3-digits-acqId>TID<8-digits-POS-tid>", where ACQ will be a specified three-digit code of the acquirer.

The body of the message consists of a prefix of a capita latin letter that identifies its type, followed by fields which are also usually prefixed with a capital letter. Each field can be subdivided into subfields, whose meaning is determined by their location alone.

The field separator is '/' and the subfield separator is ':'. The escape character is '\', although there is no need to use an escape character. The main body has the following syntax:

MSG BODY: = <*msg type*>/<*field*>{/<*field*>{/<*field*>}...}

msg type := <*letter*>

field := {<*letter*>}<*subfield*>{:<*subfield*>{:<*subfield*>}...}

letter := A | B | C | ... | Z

subfield := as specified in each case (data type, byte count, meaning)

Data types have the following abbreviations:

num – numeric, right-aligned and filled with 0

an – alphanumeric, no spaces allowed nor special characters

anp – alphanumeric, spaces allowed

ans – alphanumeric, spaces and special characters allowed

5.2. [ECHO] MESSAGE

It is sent by ECR at the operator's choice (usually during installation) to check the connection to the EFTPOS. Terminal ID and EFTPOS application version are added to the echo. Please note that this command is sent by ECR to EFTPOS without encryption.

Syntax:

ECR REQUEST:

X/*<text>*

EFTPOS RESPONSE:

X/*<text>*/T*<tid>*:*<app-version>*

Element	Type	Size	Description
text	anp	1..200	Free text, which is expected in response
tid	an	1..8	Terminal ID
app-version	ans	1..10	EFTPOS application version

Example:

```
ECR->EFTPOS: BYTES 23
00 17                                           |..
45 43 52 30 32 31 30 58 2F 48 65 6C 6C 6F 20 66 |ECR0210X/Hello f
72 6F 6D 20 45 43 52                            |rom ECR
EFTPOS->ECR: BYTES 42
00 2A 50 4F 53 30 32 31 30 58 2F 48 65 6C 6C 6F |.*POS0210X/Hello
20 66 72 6F 6D 20 45 43 52 2F 54 36 34 39 39 39 | from ECR/T64999
39 39 39 3A 31 2E 35 2E 32 33 2E 30             |999:8.5.23.0
```

In particular, the following format of the ECHO command may be used in order for the ECR to inform the EFTPOS of the ECR serial number in order to enable the EFTPOS to apply to the FEMs Central Information System “Esend”, for the Master Key as described in paragraph 9:

X/INIT:ECRNumber

5.3. [AMOUNT] MESSAGE

It is sent by ECR at the start of a new purchase.

Syntax:

ECR REQUEST:

A/**S**<*session number*>/**F**<*amount*>:<cur-code>:<cur-exp>
/**D**<*datetime*>/***R***<*ecr-id*>/***H***<*operator-number*>/***T***<*receipt number*>
/**M**<*custom-data*>{/***Q***<*mac*>}

Element	Type	Size	Description
session number	an	6	Different for each new purchase 6-digit number. May be sequential, pseudo-random or under another logic. **EFTPOS must check that each new request comes with a different session number than the previous one.**
amount	num	1..12	The amount of the transaction
cur-code	num	3	The ISO 4217 currency code (978 for €)
cur-exp	num	1	The decimals of the currency (2 for €)
datetime	num	14	Current date and time in YYYYMMDDhhmmss format
ecr-id	an	11	ECR serial number
operator-number	an	1..8	Cashier's code
receipt-number	an	1..8	ECR progressive receipt number
custom-data	ans	1..100	Data to be specified per case and type of ECR. If it is not used, it is sufficient to send a zero character ("M0"). **In bill payment transactions the custom-data includes a special 12-digit payment code.**
mac	an	8	T-DES mac mechanism for authenticating ECR requests. The MAC is calculated on the whole message from the prefix letter to the '/Q' (without it). By convention the first 4 bytes of the MAC (expressed in ASCII) are used. **The MAC is mandatory.** It is optional only in software maintenance and troubleshooting mode.

Example:

```
ECR->EFTPOS: BYTES 81
00 51                                    |.Q
45 43 52 30 32 31 30 41 2F 53 30 30 31 30 30 38 |ECR0210A/S001008
2F 46 32 35 30 30 3A 39 37 38 3A 32 2F 44 32 30 |/F2500:978:2/D20
32 32 30 35 32 34 31 30 32 35 31 37 2F 52 41 42 |220524102517/RAB
43 30 30 31 31 31 32 32 32 2F 48 31 32 31 2F 54 |C00111222/H121/T
31 30 32 30 2F 4D 30 2F 51 35 39 44 31 39 45 37 |1020/M0/Q59D19E7
44                                       |D
```

5.4. [CONFIRMED] MESSAGE

It is sent directly by EFTPOS in response to ECR's initial purchase request, acknowledging that processing is in progress.

Syntax:

EFTPOS RESPONSE:

A/S<*session number*>/F<*amount*>/*R*<*ecr-id*>/*T*<*receipt-number*>

Element	Type	Size	Description
session number	an	6	It must be the same as that of [AMOUNT] and this must be checked by ECR.
amount	num	1..12	
ecr-id	an	11	
receipt-number	an	1..8	

Example:

```
EFTPOS->ECR: BYTES 41
00 29 50 4F 53 30 32 31 30 41 2F 53 30 30 31 30 |.)POS0210A/S0010
30 38 2F 46 32 35 30 30 2F 52 41 42 43 30 30 31 |08/F2500/RABC001
31 31 32 32 32 2F 54 31 30 32 30                |11222/T1020
```

5.5. [RESULT] MESSAGE

It is sent by EFTPOS as a final response to ECR's initial purchase (or other transaction) request regarding the outcome of the transaction.

The answer can come immediately (if it concerns offline rejection or approval), in a few seconds (typical case of online approval) or even more than a minute if online communication or PIN entry is delayed. A timeout setting of >150 sec in ECR is recommended.

Syntax:

R/S<*session number*>/*R*<*ecr-id*>/*T*<*receipt-number*>{:<*receipt-number*>}

/*M*<*custom-data*>/C<rsp-*code*>{/D<*trans-data*>{/P<*prn-data*>}}

- The field <*trans-data*> is returned only if the transaction was approved, i.e. the <rsp-code> is 00.

  The *field* <*trans-data*> consists of the following elements:

  <*trans-data*> =<*card-type*>:<*txn-type*>:<*cardpan-masked*>:
  <*amount*>:<*amount-final*>:<*amount-tip*>:
  <*amount-loy*>:<*amount-cb*>:<*bankId* (Acqid*)* >:<*terminalId*>:
  <*batch-num*>:<*rrn*>:<*stan*>:<*authcode*>:
  <*trans-datetime*>:<*txn-ecr-status*>

- The <prn-data> field is returned if a) the transaction was approved b) the protocol variant in the message header [AMOUNT] was 02 c) the protocol variant in the message header [RESULT] is also 02[1]. It is normally 1-4 Kb in size and is composed of the lines to be printed together with specified formatting characters as specified below.

Element	Type	Size	Description
session number	an	6	They must be the same as those of [CONFIRMED] **and this must be checked by the ECR unless it is the following exception where such a check cannot be made or is not certain to succeed.** Exception: in case the [RESULT] message comes in response to a [RESEND-ALL] message, the **session number** may have the special value "POSTXN", which means that the transaction was initiated by EFTPOS. In this case the elements: • ***ecr-id*** *and* ***receipt-number*** *will have a zero value if the transaction took place only in EFTPOS.* • ***ecr-id*** *and* ***receipt-number*** *will have a non zero value if the transaction corresponds*
ecr-id	an	11	
receipt-number *(progressive number on Fiscal ECR, Fiscal Printers, Fiscal Sign Machines/FEMAS)*	an	1..8	

1 The POS may have to print the card payment receipt, despite ECR's ability to print it. Such may be the case where the CVM of the card requires the signature of the cardholder. Especially in implementations where the ECR only prints the customer's copy of the card payment receipt, it is necessary for the EFTPOS to print the merchant's copy of the card payment receipt.

			to a pre-loaded receipt or invoice issued by the FEM.
rsp-code	num	2	EFTPOS transaction outcome code: **00**: success, transaction approved **33**: general rejection code In some implementations the outcome code better identifies the reason for rejection as follows: **03**: user cancellation or timeout **04**: declined by the terminal **05**: declined by the host **06**: communication problem **09**: bank's host unreachable **66**: system error in EFTPOS
card-type	an	1..20	The type of card (Visa, Mastercard, etc.)
txn-type	num	2	Type of transaction: **00**: purchase **01**: void **02**: refund **03**: pre-approval entry **04**: mail order **05**: purchase by instalments
card-pan-masked	ans	14..19	The card number with the intermediate digits masked.
amount	num	1..12	The amount of the transaction. It must be the same as that of [CONFIRMED] **and this must be checked by ECR. The field is positive if it is a card payment and negative (has the sign minus) if it is a card return.**

amount-final	num	1..12	It may differ from the amount in case of loyalty with redemption or added tip. The field is positive if it is a card payment and negative (minus sign) if it is a refund to the card.
amount-tip	num	1..12	Tip amount
amount-loy	num	1..12	Loyalty redemption amount
amount-cb	num	1..12	Amount of cashback
bankId (Acqid)	num	1..3	Code of the payment service provider or the final acquiring bank. Useful in configurations with multiple approval banks (multiacquiring)
terminalId	an	1..8	The terminal Id.
batch-num	num	1..6	The package number in EFTPOS
rrn	num	0..12	The rrn of the transaction In some implementations may be empty in the case of off-line checks.
stan	num	1..6	The transaction number in EFTPOS
authcode	an	6..8	The authorisation code
trans-datetime	num		Date and time of approval in YYYYMMDDhhmmss format
txn-ecr-status	num	1	Characterizes the transaction as a communication with ECR • 0 - initiated by ECR - success • 1 - initiation by ECR - failure to complete (initial RESULT) • 2 - initiation in EFTPOS using pre-loaded receipt of invoice • 3 - initiation in EFTPOS using receipt or invoice which have been found in a previous EFTPOS record. • 4 - initiation from EFTPOS without entering receipt or invoice data (corresponding to ECR failure). • 5 - Inability to communicate between ECR and EFTPOS due to failure of their interconnection (infrastructure failure).

prn-data	ans	0..4Kb	It is composed of lines to be printed and control characters for special formatting as follows: ▪ **0x0A** - line change ▪ **0x1B 0x01** - print basic logo ▪ **0x1B 0x02** - print 2nd logo (e.g. loyalty) ▪ **0x1B 0x03** - print c- less icon ▪ **0x1B 0x04** to **0x1B 0x06** reserved for icon use ▪ **0x1B 0x07** to **0x1B 0x09** reserved for use of BAR/QR codes ▪ **0x1B 0x0C** - pause for printing client copy ▪ **0x1B 0x43** - centre alignment ▪ **0x1B 0x52** - right alignment ▪ **0x1B 0x4C ('L')** - left alignment (default after new line) ▪ **0x1B 0x4E ('N')** - use regular size characters (default) ▪ **0x1B 0x42 ('B')** - use bold characters ▪ **0x1B 0x53 ('S')** - use small characters Greek characters are sent in ISO- 8859-7. Cyrillic characters are sent in ISO-8859-5.

Examples:

1. Example of rejection

[220524 184605] ECR connection from [10.1.101.129] ECR->EFTPOS: BYTES 81 00 51 |.Q 45 43 52 30 31 31 30 41 2F 53 30 30 31 30 34 39 |ECR0110A/S001049 2F 46 32 35 30 30 3A 39 37 38 3A 32 2F 44 32 30 |/F2500:978:2/D20 32 32 30 35 32 34 31 37 34 32 33 31 2F 52 41 42 |220524174231/RAB 43 30 30 31 31 31 32 32 32 2F 48 31 32 31 2F 54 |C00111222/H121/T 31 30 34 34 2F 4D 30 2F 51 36 42 32 38 37 45 39 |1044/M0/Q6B287E9 35 |5	[AMOUNT]
EFTPOS->ECR: BYTES 41 00 29 50 4F 53 30 31 31 30 41 2F 53 30 30 31 30 |.)POS0110A/S0010 34 39 2F 46 32 35 30 30 2F 52 41 42 43 30 30 31 |49/F2500/RABC001 31 31 32 32 32 2F 54 31 30 34 34 |11222/T1044 [220524 184606] ECR request	[CONFIRMED]

[220524 184610] TXN-C [1][552053xxxxxx9096][000000002500] [220524 184616] Connecting (0) to [.....] [220524 184618] T [280]===>	online authorization

[220524 184619] <===H [128] . . . . . . [220524 184622] TXN-C declined (75) rrn=214430253013 EFTPOS->ECR: BYTES 42 00 2A 50 4F 53 30 31 31 30 52 2F 53 30 30 31 30 |.*POS0110R/S0010 34 39 2F 52 41 42 43 30 30 31 31 31 32 32 32 2F |49/RABC00111222/ 54 31 30 34 34 2F 4D 30 2F 43 33 33 |T1044/M0/C33	[RESULT]

2. Approval example (without printing print data – “variant-1”):

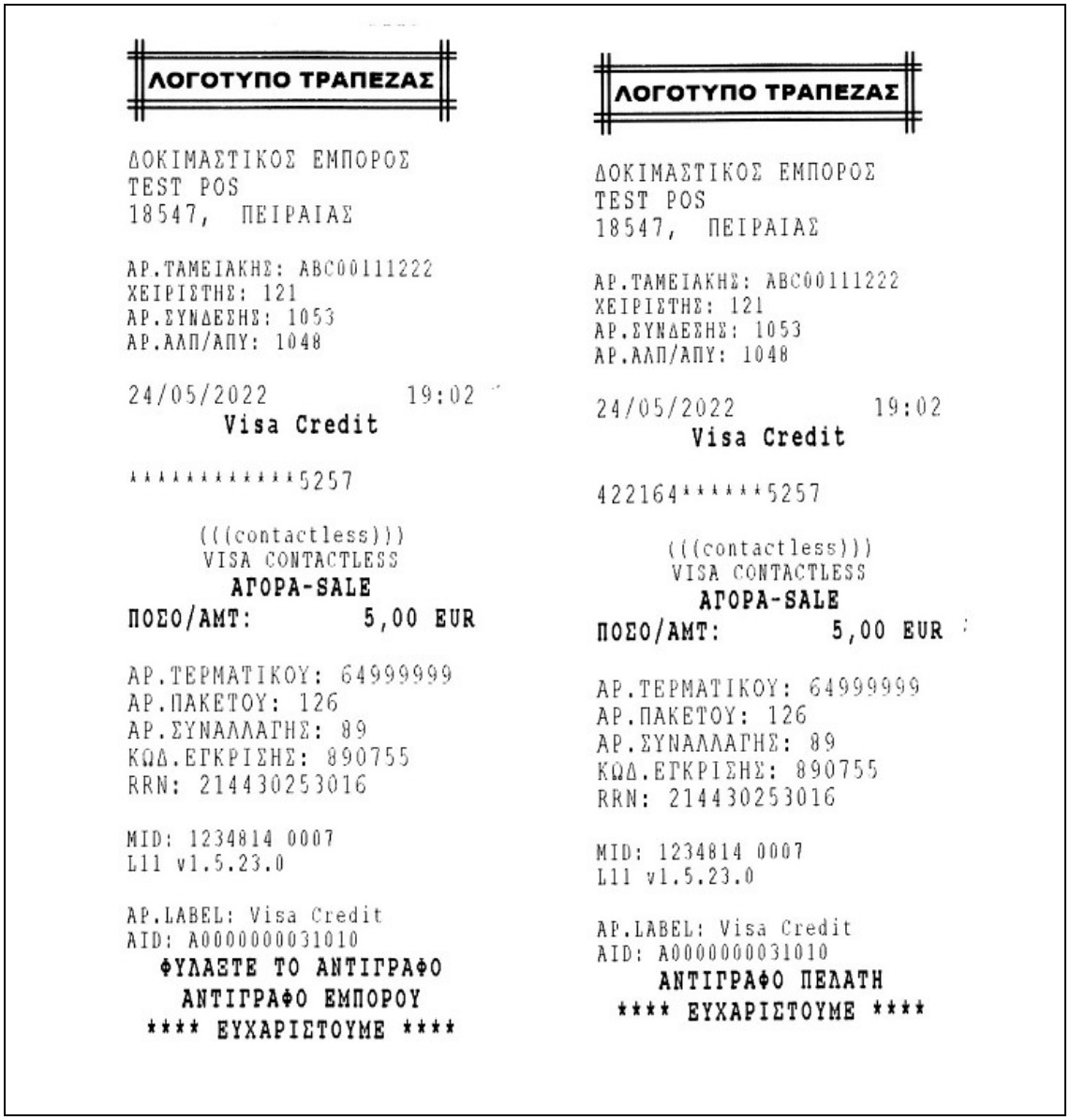
[220524 185118] ECR connection from [10.1.101.129] ECR->EFTPOS: BYTES 81 00 51 |.Q 45 43 52 30 31 31 30 41 2F 53 30 30 31 30 35 30 |ECR0110A/S001050 2F 46 32 30 30 30 3A 39 37 38 3A 32 2F 44 32 30 |/F2000:978:2/D20 32 32 30 35 32 34 31 37 34 37 34 34 2F 52 41 42 |220524174744/RAB 43 30 30 31 31 31 32 32 32 2F 48 31 32 31 2F 54 |C00111222/H121/T 31 30 34 35 2F 4D 30 2F 51 31 45 44 45 43 43 44 |1045/M0/Q1EDECCD 39 |9 EFTPOS->ECR: BYTES 41 00 29 50 4F 53 30 31 31 30 41 2F 53 30 30 31 30 |.)POS0110A/S0010 35 30 2F 46 32 30 30 30 2F 52 41 42 43 30 30 31 |50/F2000/RABC001 31 31 32 32 32 2F 54 31 30 34 35 |11222/T1045 [220524 185118] ECR request . . . . . . [220524 185124] TXN-L [1][422164xxxxxx5257][2000] [220524 185129] Connecting (0) to [.....] [220524 185131] T [117]===> . . . . [220524 185135] TXN-L authorized (890753) rrn=214430253014 EFTPOS->ECR: BYTES 147 00 93 50 4F 53 30 31 31 30 52 2F 53 30 30 31 30 |..POS0110R/S0010 35 30 2F 52 41 42 43 30 30 31 31 31 32 32 32 2F |50/RABC00111222/ 54 31 30 34 35 2F 4D 30 2F 43 30 30 2F 44 56 69 |T1045/M0/C00/DVi 73 61 20 43 72 65 64 69 74 3A 30 30 3A 34 32 32 |sa Credit:00:422 31 36 34 2A 2A 2A 2A 2A 2A 35 32 35 37 3A 32 30 |164******5257:20 30 30 3A 32 30 30 30 3A 30 3A 30 3A 30 3A 31 31 |00:2000:0:0:0:11 3A 36 34 39 39 39 39 39 39 3A 31 32 36 3A 32 31 |:64999999:126:21 34 34 33 30 32 35 33 30 31 34 3A 38 36 3A 38 39 |4430253014:86:89 30 37 35 33 3A 32 30 32 32 30 35 32 34 31 38 35 |0753:20220524185 31 33 35 3A 30 |135:0 ECR->EFTPOS: BYTES 41 00 29 |.) 45 43 52 30 31 31 30 52 2F 53 30 30 31 30 35 30 |ECR0110R/S001050 2F 52 41 42 43 30 30 31 31 31 32 32 32 2F 46 32 |/RABC00111222/F2	[AMOUNT] 20,00€ [CONFIRMED] online authorization EFTPOS [ACQ-RESULT]

3. Approval example (with print data sending – “variant-2”):

[220524 190150] ECR connection from [10.1.101.129] ECR->EFTPOS: BYTES 80 00 50 |.P	

45 43 52 30 32 31 30 41 2F 53 30 30 31 30 35 33 |ECR0210A/S001053 2F 46 35 30 30 3A 39 37 38 3A 32 2F 44 32 30 32 |/F500:978:2/D202 32 30 35 32 34 31 37 35 38 31 35 2F 52 41 42 43 |20524175815/RABC 30 30 31 31 31 32 32 32 2F 48 31 32 31 2F 54 31 |00111222/H121/T1 30 34 38 2F 4D 30 2F 51 36 43 30 42 38 38 35 42 |048/M0/Q6C0B885B EFTPOS->ECR: BYTES 40 00 28 50 4F 53 30 32 31 30 41 2F 53 30 30 31 30 |.(POS0210A/S0010 35 33 2F 46 35 30 30 2F 52 41 42 43 30 30 31 31 |53/F500/RABC0011 31 32 32 32 2F 54 31 30 34 38 |1222/T1048 [220524 190150] ECR request [220524 190154] TXN-L [1][422164xxxxxx5257][500] [220524 190209] Connecting (0) to [.....] [220524 190213] T [276]===> . . . . . . [220524 190214] <===H [152] . . . . . . [220524 190214] TXN-L authorized (890755) rrn=214430253016 EFTPOS->ECR: BYTES 1235 04 D3 50 4F 53 30 32 31 30 52 2F 53 30 30 31 30 |..POS0210R/S0010 35 33 2F 52 41 42 43 30 30 31 31 31 32 32 32 2F |53/RABC00111222/ 54 31 30 34 38 2F 4D 30 2F 43 30 30 2F 44 56 69 |T1048/M0/C00/DVi 73 61 20 43 72 65 64 69 74 3A 30 30 3A 34 32 32 |sa Credit:00:422 31 36 34 2A 2A 2A 2A 2A 2A 35 32 35 37 3A 35 30 |164******5257:50 30 3A 35 30 30 3A 30 3A 30 3A 30 3A 31 31 3A 36 |0:500:0:0:0:11:6 34 39 39 39 39 39 39 3A 31 32 36 3A 32 31 34 34 |4999999:126:2144 33 30 32 35 33 30 31 36 3A 38 39 3A 38 39 30 37 |30253016:89:8907 35 35 3A 32 30 32 32 30 35 32 34 31 39 30 32 31 |55:2022052419021 33 3A 30 2F 50 1B 01 0A 1B 4E C4 4F 4B 49 4D 41 |3:0/P....N.OKIMA D3 54 49 4B 4F D3 20 45 4D D0 4F 50 4F D3 0A 1B |.TIKO. EM.OPO... 4E 54 45 53 54 20 50 4F 53 0A 1B 4E 31 38 35 34 |NTEST POS..N1854 37 2C 20 20 D0 45 49 50 41 49 41 D3 0A 0A 1B 53 |7, .EIPAIA....S C1 D1 2E D4 C1 CC C5 C9 C1 CA C7 D3 3A 20 41 42 |.....: AB 43 30 30 31 31 31 32 32 32 0A 1B 53 D7 C5 C9 D1 |C00111222..S.... C9 D3 D4 C7 D3 3A 20 31 32 31 0A 1B 53 C1 D1 2E |.....: 121..S... D3 D5 CD C4 C5 D3 C7 D3 3A 20 31 30 35 33 0A 1B |.....: 1053.. 53 C1 D1 2E C1 CB D0 2F C1 D0 D5 3A 20 31 30 34 |S...../...: 104 38 0A 0A 1B 4E 32 34 2F 30 35 2F 32 30 32 32 1B |8...N24/05/2022. 52 1B 4E 31 39 3A 30 32 0A 1B 43 1B 42 56 69 73 |R.N19:02..C.BVis 61 20 43 72 65 64 69 74 0A 0A 1B 4E 2A 2A 2A 2A |a Credit...N**** 2A 2A 2A 2A 2A 2A 2A 2A 35 32 35 37 0A 0A 1B 43 |********5257...C 1B 53 28 28 28 63 6F 6E 74 61 63 74 6C 65 73 73 |.S(((contactless 29 29 29 0A 1B 43 1B 53 56 49 53 41 20 43 4F 4E |)))..C.SVISA CON 54 41 43 54 4C 45 53 53 0A 1B 43 1B 42 C1 C3 CF |TACTLESS..C.B... D1 C1 2D 53 41 4C 45 0A 1B 42 D0 CF D3 CF 2F C1 |..-SALE..B..../. CC D4 3A 1B 52 1B 42 35 2C 30 30 20 45 55 52 0A |..:.R.B5,00 EUR. 0A 1B 4E C1 D1 2E D4 C5 D1 CC C1 D4 C9 CA CF D5 |..N..... 3A 20 36 34 39 39 39 39 39 39 0A 1B 4E C1 D1 2E |: 64999999..N... D0 C1 CA C5 D4 CF D5 3A 20 31 32 36 0A 1B 4E C1 |.....: 126..N. D1 2E D3 D5 CD C1 CB CB C1 C3 C7 D3 3A 20 38 39 |.....: 89 0A 1B 4E CA D9 C4 2E C5 C3 CA D1 C9 D3 C7 D3 3A |..N.....: 20 38 39 30 37 35 35 0A 1B 4E 52 52 4E 3A 20 32 | 890755..NRRN: 2 31 34 34 33 30 32 35 33 30 31 36 0A 0A 1B 53 4D |14430253016...SM 49 44 3A 20 31 32 33 34 38 31 34 20 30 30 30 37 |ID: 1234814 0007 0A 1B 53 4C 31 31 20 76 31 2E 35 2E 32 33 2E 30 |..SL11 v1.5.23.0 0A 0A 1B 53 41 50 2E 4C 41 42 45 4C 3A 20 56 69 |...SAP.LABEL: Vi 73 61 20 43 72 65 64 69 74 0A 1B 53 41 49 44 3A |sa Credit..SAID: 20 41 30 30 30 30 30 30 30 30 33 31 30 31 30 0A | A0000000031010. 1B 43 1B 42 D6 D5 CB C1 CE D4 C5 20 D4 CF 20 C1 |.C.B..... .. . CD D4 C9 C3 D1 C1 D6 CF 0A 1B 43 1B 42 C1 CD D4 |.....C.B... C9 C3 D1 C1 D6 CF 20 C5 CC D0 CF D1 CF D5 0A 1B |..... ..... 43 1B 42 2A 2A 2A 2A 20 C5 D5 D7 C1 D1 C9 D3 D4 |C.B**** ..... CF D5 CC C5 20 2A 2A 2A 2A 0A 1B 4E 0A 0A 0A 0A |.... ****..N....	[AMOUNT] [CONFIRMED] online authorization [RESULT] With print data. The print result is shown in **Picture 7**

0A 1B 0C 1B 01 0A 1B 4E C4 4F 4B 49 4D 41 D3 54 |.....N.OKIMA.T 49 4B 4F D3 20 45 4D D0 4F 50 4F D3 0A 1B 4E 54 |IKO. EM.OPO...NT 45 53 54 20 50 4F 53 0A 1B 4E 31 38 35 34 37 2C |EST POS..N18547, 20 20 D0 45 49 50 41 49 41 D3 0A 0A 1B 53 C1 D1 | .EIPAIA....S.. 2E D4 C1 CC C5 C9 C1 CA C7 D3 3A 20 41 42 43 30 |.....: ABC0 30 31 31 31 32 32 32 0A 1B 53 D7 C5 C9 D1 C9 D3 |0111222..S..... D4 C7 D3 3A 20 31 32 31 0A 1B 53 C1 D1 2E D3 D5 |...: 121..S..... CD C4 C5 D3 C7 D3 3A 20 31 30 35 33 0A 1B 53 C1 |.....: 1053..S. D1 2E C1 CB D0 2F C1 D0 D5 3A 20 31 30 34 38 0A |...../...: 1048. 0A 1B 4E 32 34 2F 30 35 2F 32 30 32 32 1B 52 1B |..N24/05/2022.R. 4E 31 39 3A 30 32 0A 1B 43 1B 42 56 69 73 61 20 |N19:02..C.BVisa 43 72 65 64 69 74 0A 0A 1B 4E 34 32 32 31 36 34 |Credit...N422164 2A 2A 2A 2A 2A 2A 35 32 35 37 0A 0A 1B 43 1B 53 |******5257...C.S 28 28 28 63 6F 6E 74 61 63 74 6C 65 73 73 29 29 |(((contactless)) 29 0A 1B 43 1B 53 56 49 53 41 20 43 4F 4E 54 41 |)..C.SVISA CONTA 43 54 4C 45 53 53 0A 1B 43 1B 42 C1 C3 CF D1 C1 |CTLESS..C.B..... 2D 53 41 4C 45 0A 1B 42 D0 CF D3 CF 2F C1 CC D4 |-SALE..B..../... 3A 1B 52 1B 42 35 2C 30 30 20 45 55 52 0A 0A 1B |:.R.B5,00 EUR... 4E C1 D1 2E D4 C5 D1 CC C1 D4 C9 CA CF D5 3A 20 |N.....: 36 34 39 39 39 39 39 39 0A 1B 4E C1 D1 2E D0 C1 |64999999..N..... CA C5 D4 CF D5 3A 20 31 32 36 0A 1B 4E C1 D1 2E |.....: 126..N... D3 D5 CD C1 CB CB C1 C3 C7 D3 3A 20 38 39 0A 1B |.....: 89.. 4E CA D9 C4 2E C5 C3 CA D1 C9 D3 C7 D3 3A 20 38 |N.....: 8 39 30 37 35 35 0A 1B 4E 52 52 4E 3A 20 32 31 34 |90755..NRRN: 214 34 33 30 32 35 33 30 31 36 0A 0A 1B 53 4D 49 44 |430253016...SMID 3A 20 31 32 33 34 38 31 34 20 30 30 30 37 0A 1B |: 1234814 0007.. 53 4C 31 31 20 76 31 2E 35 2E 32 33 2E 30 0A 0A |SL11 v1.5.23.0.. 1B 53 41 50 2E 4C 41 42 45 4C 3A 20 56 69 73 61 |.SAP.LABEL: Visa 20 43 72 65 64 69 74 0A 1B 53 41 49 44 3A 20 41 | Credit..SAID: A 30 30 30 30 30 30 30 30 33 31 30 31 30 0A 1B 43 |0000000031010..C 1B 42 C1 CD D4 C9 C3 D1 C1 D6 CF 20 D0 C5 CB C1 |.B..... .... D4 C7 0A 1B 43 1B 42 2A 2A 2A 2A 20 C5 D5 D7 C1 |....C.B**** .... D1 C9 D3 D4 CF D5 CC C5 20 2A 2A 2A 2A 0A 1B 4E |..... ****..N 0A 0A 0A 0A 0A |..... ECR->EFTPOS: BYTES 40	[ACQ-RESULT]
00 28 |.(45 43 52 30 32 31 30 52 2F 53 30 30 31 30 35 33 |ECR0210R/S001053 2F 52 41 42 43 30 30 31 31 31 32 32 32 2F 46 35 |/RABC00111222/F5 30 30 2F 54 31 30 34 38 |00/T1048 [220524 190216] ECR connection closed	



Picture 7

5.6. [ACK-RESULT] MESSAGE

It is sent by ECR as acknowledgement of receipt of [RESULT].

Syntax:

ECR RESPONSE:

R/S<session *number*>/*R<ecr-id>*/F<amount>

/T<receipt-number>{*:<receipt-number>*}

Element	Type	Size	Description

session number	an	6	They must be the same as those of [RESULT] **and this must be checked by EFTPOS.** Exception: (see message [RESULT])
ecr-id	an	11	
amount	num	1..12	
amt-3	YES	ID-4	

Example: Section 5.5 for cases 2 and 3.

5.7. [REGRECEIPT] MESSAGE

It is sent by ECR with retail receipt data issued for later payment (e.g. for home delivery). This is the process of uploading receipts or invoices already issued by the FEM into EFTPOS, which must be paid by card later.

EFTPOS stores the receipt details (amount, session number, receipt number) and has them available for use for 24 hours.

It is the same as the [AMOUNT] message except for the original symbol which is W.

The *custom-data* field may have a brief note, as free text, related to the payment.

Syntax:

ECR REQUEST:

W/S<session *number*>/F<amount>:<cur-code>:<cur-exp>

/D<datetime>/R<ecr-id>/*H<operator-number>*/*T<receipt number>*

/M<custom-data>{/*Q<mac>*}

Example:

```
[220711 115333] ECR connection from [10.1.101.217]
ECR->EFTPOS: BYTES 81
00 51 |.Q
45 43 52 30 31 31 30 57 2F 53 30 30 31 35 37 33 |ECR0110W/S001573
2F 46 35 30 30 30 3A 39 37 38 3A 32 2F 44 32 30 |/F5000:978:2/D20
32 32 30 37 31 31 31 30 35 30 30 39 2F 52 41 42 |220711105009/RAB
43 30 30 31 31 31 32 32 32 2F 48 31 32 31 2F 54 |C00111222/H121/T
31 32 32 38 2F 4D 30 2F 51 33 30 41 44 44 38 41 |1228/M0/Q30ADD8A
33 |3
EFTPOS->ECR: BYTES 12
  00 0C 50 4F 53 30 31 31 30 45 2F 30 30 30 |..POS0110E/000
```

5.8. [RESEND-ONE] MESSAGE

It is sent by the ECR at the choice of the operator, in case the EFTPOS approved the transaction but failed to send [RESULT].

Syntax:

ECR REQUEST:

O/S<*session number*>/F<*amount*>:<*cur-code*>:<*cur-exp*>

/*R*<*ecr-id*>/*T*<*receipt-number*>{/*Q*<*mac*>}

Element	Type	Size	Description
session number	an	6	They must match those of the transaction approved in EFTPOS.
amount	num	1..12	
cur-code	num	3	
cur-expo	num	1	
ecr-id	an	11	
receipt-number	an	1..8	
mac	an	8	(See [AMOUNT])

Example:

```
[220524 193308] ECR connection from [10.1.101.135]
ECR->EFTPOS: BYTES 56
00 38                                    |.8
45 43 52 30 31 31 30 4F 2F 53 30 30 31 30 35 38 |ECR0110O/S001058
2F 46 31 35 30 3A 39 37 38 3A 32 2F 52 41 42 43 |/F150:978:2/RABC
30 30 31 31 31 32 32 32 2F 54 31 30 35 31 2F 51 |00111222/T1051/Q
46 37 31 36 37 41 39 46                  |F7167A9F
[220524 193309] ECR request
EFTPOS->ECR: BYTES 145
00 91 50 4F 53 30 31 31 30 52 2F 53 30 30 31 30 |..POS0110R/S0010
35 38 2F 52 41 42 43 30 30 31 31 31 32 32 32 2F |58/RABC00111222/
54 31 30 35 31 2F 4D 30 2F 43 30 30 2F 44 56 69 |T1051/M0/C00/DVi
73 61 20 43 72 65 64 69 74 3A 30 30 3A 34 32 32 |sa Credit:00:422
31 36 34 2A 2A 2A 2A 2A 2A 35 32 35 37 3A 31 35 |164******5257:15
30 3A 31 35 30 3A 30 3A 30 3A 30 3A 31 31 3A 36 |0:150:0:0:0:11:6
34 39 39 39 39 39 39 3A 31 32 36 3A 32 31 34 34 |4999999:126:2144
33 30 32 35 33 30 31 39 3A 39 32 3A 38 39 30 37 |30253019:92:8907
```

```
35 38 3A 32 30 32 32 30 35 32 34 31 39 33 32 30 |58:2022052419320
31 3A 31                                        |1:1
ECR->EFTPOS: BYTES 40
00 28                                           |.(
45 43 52 30 31 31 30 52 2F 53 30 30 31 30 35 38 |ECR0110R/S001058
2F 52 41 42 43 30 30 31 31 31 32 32 32 2F 46 31 |/RABC00111222/F1
35 30 2F 54 31 30 35 31                         |50/T1051
[220524 193310] ECR connection closed
```

5.9. [RESEND-ALL] MESSAGE

It is sent by the ECR at the choice of the operator, in case the EFTPOS cannot close a packet due to pending ECR transactions.

Syntax:

ECR REQUEST:

L/*R*<*ecr-id*>/D<datetime>{/*Q*<*mac*>}

Element name	Type	Size	Description
ecr-id	an	11	EFTPOS should override transactions received from a different ECR.
datetime	num	14	(See [AMOUNT])
mac	an	8	(See [AMOUNT])

Example:

```
[220711 121010] ECR connection from [10.1.101.217]
ECR->EFTPOS: BYTES 47
00 2F                                           |./
45 43 52 30 31 31 30 4C 2F 52 41 42 43 30 30 31 |ECR0110L/RABC001
31 31 32 32 32 2F 44 32 30 32 32 30 37 31 31 31 |11222/D202207111
31 30 36 34 35 2F 51 36 43 34 38 33 46 43 45    |10645/Q6C483FCE
EFTPOS->ECR: BYTES 132
00 84 50 4F 53 30 31 31 30 52 2F 53 50 4F 53 54 |..POS0110R/SPOST
58 4E 2F 52 2F 54 2F 4D 30 2F 43 30 30 2F 44 56 |XN/R/T/M0/C00/DV
69 73 61 20 43 72 65 64 69 74 3A 30 30 3A 34 33 |isa Credit:00:43
32 34 38 33 2A 2A 2A 2A 2A 2A 34 31 38 35 3A 32 |2483******4185:2
35 30 30 3A 32 35 30 30 3A 30 3A 30 3A 30 3A 31 |500:2500:0:0:0:1
31 3A 36 34 39 39 39 39 39 33 3A 32 33 3A 32 32 |1:64999993:23:22
32 32 32 32 31 30 30 30 30 31 3A 31 35 33 3A 31 |2222100001:153:1
32 33 34 35 37 3A 32 30 32 32 30 37 31 31 31 32 |23457:2022071112
30 30 35 37 3A 35                               |0057:5
ECR->EFTPOS: BYTES 41
00 29                                           |.)
45 43 52 30 31 31 30 52 2F 53 30 30 31 35 37 34 |ECR0110R/S001574
```

Purchase 25€ with invoice

2F 52 41 42 43 30 30 31 31 31 32 32 32 2F 46 35 |/RABC00111222/F5 30 30 30 2F 54 31 32 32 38 |000/T1228 ECR ACK RES: RESULT OF PARSING S=[001574] amt=[5000] ecr=[ABC00111222] rcp=[1228] EFTPOS->ECR: BYTES 145 00 91 50 4F 53 30 31 31 30 52 2F 53 31 35 37 33 |..POS0110R/S1573 2F 52 41 42 43 30 30 31 31 31 32 32 32 2F 54 31 |/RABC00111222/T1 32 32 38 2F 4D 30 2F 43 30 30 2F 44 56 69 73 61 |228/M0/C00/DVisa 20 43 72 65 64 69 74 3A 30 30 3A 34 33 32 34 38 | Credit:00:43248 33 2A 2A 2A 2A 2A 2A 34 31 38 35 3A 35 30 30 30 |3******4185:5000 3A 35 30 30 30 3A 30 3A 30 3A 30 3A 31 31 3A 36 |:5000:0:0:0:11:6 34 39 39 39 39 39 33 3A 32 33 3A 32 32 32 32 32 |4999993:23:22222 32 31 30 30 30 30 32 3A 31 35 34 3A 31 32 33 34 |2100002:154:1234 35 38 3A 32 30 32 32 30 37 31 31 31 32 30 31 32 |58:2022071112012 34 3A 32 |4:2 ECR->EFTPOS: BYTES 41 00 29 |.) 45 43 52 30 31 31 30 52 2F 53 30 30 31 35 37 34 |ECR0110R/S001574 2F 52 41 42 43 30 30 31 31 31 32 32 32 2F 46 35 |/RABC00111222/F5 30 30 30 2F 54 31 32 32 38 |000/T1228 ECR ACK RES: RESULT OF PARSING S=[001574] amt=[5000] ecr=[ABC00111222] rcp=[1228]	Purchase 50€ through the REGRECEIPT flow
EFTPOS->ECR: BYTES 147 00 93 50 4F 53 30 31 31 30 52 2F 53 50 4F 53 54 |..POS0110R/SPOST 58 4E 2F 52 41 42 43 30 30 31 31 31 32 32 32 2F |XN/RABC00111222/ 54 31 32 33 30 2F 4D 30 2F 43 30 30 2F 44 56 69 |T1230/M0/C00/DVi 73 61 20 43 72 65 64 69 74 3A 30 30 3A 34 33 32 |sa Credit:00:432 34 38 33 2A 2A 2A 2A 2A 34 31 38 35 3A 32 30 |483******4185:20 30 30 3A 32 30 30 30 3A 30 3A 30 3A 30 3A 31 31 |00:2000:0:0:0:11 3A 36 34 39 39 39 39 33 3A 32 33 3A 32 32 32 |:64999993:23:222 32 32 32 31 30 30 30 30 34 3A 31 35 35 3A 31 32 |222100004:155:12 33 34 36 30 3A 32 30 32 32 30 37 31 31 31 32 30 |3460:20220711120 32 30 31 3A 32 |201:2 ECR->EFTPOS: BYTES 41 00 29 |.) 45 43 52 30 31 31 30 52 2F 53 30 30 31 35 37 34 |ECR0110R/S001574 2F 52 41 42 43 30 30 31 31 31 32 32 32 2F 46 35 |/RABC00111222/F5 30 30 30 2F 54 31 32 32 38 |000/T1228 ECR ACK RES: RESULT OF PARSING S=[001574] amt=[5000] ecr=[ABC00111222] rcp=[1228] EFTPOS->ECR: BYTES 39 00 27 50 4F 53 30 31 31 30 52 2F 53 30 30 30 30 |.'POS0110R/S0000 30 30 2F 52 41 42 43 30 30 31 31 31 32 32 32 2F |00/RABC00111222/ 54 30 2F 4D 30 2F 43 33 33 |T0/M0/C33 [220711 121012] ECR connection closed	Purchase 25€ by typing the retail receipt number by the operator.

5.10. [ERROR] MESSAGE

It is sent by EFTPOS as an immediate response to ECR's initial request in cases where it cannot be processed.

Syntax:

EFTPOS RESPONSE:

E/<*error code*>

Element	Type	Size	Description
error code	num	3	001:“protocol not supported” 002:“duplicate request received” 003:“Syntax error in request” 004:“Invalid currency” 100:“Internal EFTPOS error” 500:“Invalid command” 501:“Wrong parameter” 502:“Missing MAC” 503:“MAC error” 504:“MAC not supported” 777:“EFTPOS not connected” 999:“BUSY”

Explanations by code:

1. Code 001: unsupported protocol. However the EFTPOS response uses the same version and variant of the ECR request in the header.
2. Code 002: the session number is the same as the previous transaction.
3. Code 003: Syntax error in message body.
4. Code 004: the ECR sends an amount in a different currency than that of the EFTPOS.
5. Code 100: Internal problem of EFTPOS.
6. Code 500/501: sent in case of invalid [CONTROL] message.
7. Code 502: ECR request is missing MAC field while required
8. Code 503: ECR request has MAC error
9. Code 504: EFTPOS cannot support MAC (e.g. missing keys)
10. Code 777: not connected EFTPOS (reserved code for middleware)
11. Code 999: EFTPOS is busy (e.g. operations are performed from the menu, communicates for parameters, etc.).

Note: during the period of servicing a transaction originating from ECR, EFTPOS cannot respond to any other request even when printing the receipt of the current transaction.

Examples:

1. **Request from ECR to occupied EFTPOS**

```
ECR->EFTPOS: BYTES 80
00 50                                           |.
45 43 52 30 32 31 30 41 2F 53 30 30 31 30 31 35 |ECR0210A/S001015
2F 46 32 35 30 3A 39 37 38 3A 32 2F 44 32 30 32 |/F250:978:2/D202
32 30 35 32 34 31 32 33 32 32 39 2F 52 41 42 43 |20524123229/RABC
30 30 31 31 31 32 32 32 2F 48 31 32 31 2F 54 31 |00111222/H121/T1
30 32 37 2F 4D 30 2F 51 33 42 35 34 30 37 33 46 |027/M0/Q3B54073F
EFTPOS->ECR: BYTES 12
00 0C 50 4F 53 30 32 31 30 45 2F 39 39 39       |.. POS0210E/999
```

2. **Request from an ECR that has another currency**

```
ECR->EFTPOS: BYTES 81
00 51                                           |.
45 43 52 30 32 31 30 41 2F 53 30 30 31 30 31 36 |ECR0210A/S001016
2F 46 32 30 30 30 3A 36 34 31 3A 32 2F 44 32 30 |/F2000:641:2/D20
32 32 30 35 32 34 31 32 33 35 32 30 2F 52 41 42 |220524123520/RAB
43 30 30 31 31 31 32 32 32 2F 48 31 32 31 2F 54 |C00111222/H121/T
31 30 32 38 2F 4D 30 2F 51 46 38 32 38 36 42 39 |1028/M0/QF8286B9
32                                              |2
EFTPOS->ECR: BYTES 12
00 0C 50 4F 53 30 32 31 30 45 2F 30 30 34       |.. POS0210E/004
```

3. **Request from ECR with unsupported protocol version or variant**

```
ECR->EFTPOS: BYTES 80
00 50                                           |.
45 43 52 30 33 30 33 41 2F 53 30 30 30 36 37 35 |ECR0303A/S000675
2F 46 32 35 30 30 3A 39 37 38 3A 32 2F 44 32 30 |/F2500:978:2/D20
32 31 31 31 32 32 31 31 35 39 32 37 2F 52 38 2F |211122115927/R8/
48 31 32 31 2F 54 30 30 30 36 37 34 2F 47 3A 30 |H121/T000674/G:0
3A 30 3A 30 3A 30 2F 4D 31 32 33 34 35 36 37 38 |:0:0:0/M12345678
EFTPOS->ECR: BYTES 12
00 0C 4D 45 4C 30 33 30 33 45 2F 30 30 31       |.. POS0303E/001
```

5.11. [SUCCESS] MESSAGE

This is a special case of an [ERROR] message with code 000.

Syntax:

EFTPOS RESPONSE:

```
E/000
```

5.12. [CONTROL] MESSAGE

General message for ECR to check EFTPOS behavior.

Syntax:

ECR REQUEST:

U/***R***<*ecr-id*>/C<*command-name*>:<*parameter-value*>*{:paramater-value}*

Element	Type	Size	Description
ecr-id	an	11	
command-name	an	1..20	Symbolic name of the parameter to be adjusted
parameter-value	an	1..50	Value of the parameter

The set of parameters and their possible values is expandable, depending on the needs that will arise.

PARAMETER	VALUES
UNBIND_POS	• 0 - EFTPOS has a locked keyboard and cannot initiate transactions autonomously. • 1 - EFTPOS can execute **refund** transactions autonomously, without an ECR mandate
MAC_K	1st value: MAC session key (32 hex digits), encrypted under a certain master key implanted in both ECR and EFTPOS. 2nd value: the CV of the key (6 hex digits). if the KCV test fails EFTPOS returns E/503 For the example of the chapter Error: Reference source not found would be: MAC_K:1ED9F7AE0B2509281BBC2DE38EF2A12B:CC5FFF

Examples:

1. **Open – close EFTPOS keyboard (refund transactions only):**

```
ECR->EFTPOS: BYTES 35
00 23                                  |.#
45 43 52 30 32 31 30 55 2F 52 41 42 43 30 30 31 |ECR0210U/RABC001
31 31 32 32 32 2F 43 55 4E 42 49 4E 44 5F 50 4F |11222/CUNBIND_PO
53 3A 31                               |S:1
EFTPOS->ECR: BYTES 12
00 0C 50 4F 53 30 32 31 30 45 2F 30 30 30      |..POS0210E/000
```

```
ECR->POS: BYTES 35
00 23                                  |.#
45 43 52 30 32 31 30 55 2F 52 41 42 43 30 30 31 |ECR0210U/RABC001
31 31 32 32 32 2F 43 55 4E 42 49 4E 44 5F 50 4F |11222/CUNBIND_PO
53 3A 31                               |S:0
EFTPOS->ECR: BYTES 12
      00  C 50 4F 53 30 32 31 30 45 2F 30 30 30      |..POS0210E/000
```

2. Successful sending of MAC session key:

```
ECR->EFTPOS: BYTES 68
00 44                                  |.D
45 43 52 30 32 31 30 55 2F 52 41 42 43 30 30 31 |ECR0210U/RABC001
31 31 32 32 32 2F 43 4D 41 43 5F 4B 3A 31 45 44 |11222/CMAC_K:1ED
39 46 37 41 45 30 42 32 35 30 39 32 38 31 42 42 |9F7AE0B2509281BB
43 32 44 45 33 38 45 46 32 41 31 32 42 3A 43 43 |C2DE38EF2A12B:CC
35 46 46 46                            |5FFF
EFTPOS->ECR: BYTES 12
00 0C 50 4F 53 30 32 31 30 45 2F 30 30 30      |..POS0210E/000
```

5.13. OTHER TRANSACTION MESSAGES

They have syntax, content and flow just like [AMOUNT] with the only difference being the original symbol, which will also be prefixed to the corresponding message [CONFIRM].

Any additional information necessary for void, refund, etc. (e.g. initial transaction number) is now entered into EFTPOS by the operator and is not received by the ECR.

ECR REQUEST (AMOUNT-INSTALM):

I/S<*session number*>/F<*amount*>:<cur-code>:<cur-exp>

/D<*datetime*>/*R*<*ecr-id*>/*H*<*operator-number*>

/*T*<*receipt number*>/M<*custom-data*>{/*Q*<*mac*>}

EFTPOS CONFIRMATION:

I/S<*session number*>/F<*amount*>/*R*<*ecr-id*>/*T*<*receipt number*>

ECR REQUEST (AMOUNT-REFUND):

Z/S<*session number*>/F<*amount*>:<cur-code>:<cur-exp>
/D<*datetime*>/*R*<*ecr-id*>/*H*<*operator-number*>
/*T*<*receipt number*>/M<*custom-data*>{/*Q*<*mac*>}

EFTPOS CONFIRMATION:

Z/S<*session number*>/F<*amount*>/*R*<*ecr-id*>/*T*<*receipt number*>

ECR REQUEST (AMOUNT-VOID):

V/S<*session number*>/F<*amount*>:<cur-code>:<cur-exp>
/D<*datetime*>/*R*<*ecr-id*>/*H*<*operator-number*>
/*T*<*receipt number*>/M<*custom-data*>{/*Q*<*mac*>}

EFTPOS CONFIRMATION:

V/S<*session number*>/F<*amount*>/*R*<*ecr-id*>/*T*<*receipt number*>

ECR REQUEST (AMOUNT-COMPLETION):

P/S<*session number*>/F<*amount*>:<cur-code>:<cur-exp>
/D<*datetime*>/*R*<*ecr-id*>/*H*<*operator-number*>
/*T*<*receipt number*>/M<*custom-data*>{/*Q*<*mac*>}

EFTPOS CONFIRMATION:

P/S<*session number*>/F<*amount*>/*R*<*ecr-id*>/*T*<*receipt number*>

ECR REQUEST (AMOUNT-MAIL):

M/S<*session number*>/F<*amount*>:<cur-code>:<cur-exp>
/D<*datetime*>/*R*<*ecr-id*>/*H*<*operator-number*>
/*T*<*receipt number*>/M<*custom-data*>{/*Q*<*mac*>}

EFTPOS CONFIRMATION:

M/S<*session number*>/F<*amount*>/*R*<*ecr-id*>/*T*<*receipt number*>

In the case of preloaded receipts via REGRECEIPT message, the type of sale transaction can be selected later, via a selection menu in EFTPOS. After selecting the receipt, follows the selection of the type of transaction e.g.: PURCHASE, INSTALLMENTS, PRE-APPROVAL ENTRY, MAIL ORDER, OFFLINE APPROVAL.
The LOCAL APPROVAL transaction (which is being removed by banking institutions) does not have a separate message type. It will only be handled as a preloaded receipt.

5.14. ERROR HANDLING

Failures in flows and messages as described in the previous sections are treated as system errors that are expected to occur extremely rarely and if they do occur, then they mean:

- Either a problem of physical connection and network that requires human intervention
- Either internal programming error and incomplete handling of some

conjuncture

In both cases, a clear indication of the problem must be given to the operator so that he can take the necessary steps to manually complete the transaction (or cancel it), eliminate the problem or even call technical support. **The responsibility for both parties (EFTPOS and ECR) as independent and autonomous systems in this interconnection, is to carefully check the validity of their input.**

The protocol for such rare errors does not provide mechanisms for retransmission or automatic correction of data. This would unnecessarily complicate implementation, especially since transmission integrity is considered to be guaranteed over TCP/IP and USB connections and for such a small amount of data.

Exceptionally, for RS232 connection, an acknowledgement mechanism familiar from the era of asynchronous modems can be additionally implemented, where each side at the end of the outgoing message adds a control byte (LRC) as a result of successive XOR on the characters sent.

If the recipient calculates a different LRC from the one stated in the message, he responds with a unique NAK character (0x15) requesting the repetition of the transmission or, after 3 repetitions, interrupts the communication as ineffective.

Below is a summary of the cases in a typical purchase cycle, where errors can occur and the appropriate handling by EFTPOS and ECR.

[t0]	EFTPOS ← [**AMOUNT**] ← ECR	
[t1]	EFTPOS → [**CONFIRMED**] → ECR	t1-t0 < 2 sec
[t2]	EFTPOS → [**RESULT**] → ECR	Usually t2-t1 < 60 sec
[t3]	EFTPOS ← [**ACK-RESULT**] ← ECR	t3-t2 < 2 sec

CASE 1 (EFTPOS): At [t0] EFTPOS is out of power or not connected to ECR
The ECR must abandon the connection attempt and report a connection failure to the operator.
CASE 2 (EFTPOS): At [t0] EFTPOS receives: a) garbage (completely unstructured data) b) invalid message (unsupported version, duplicate session, etc.)
For **(a)** EFTPOS should ignore and reject the data and preferably inform the operator by printing or displaying a message. For **b)** EFTPOS must respond with the corresponding error message (001, 002, 003, 004 and so on) as described in section **Σφάλμα! Το αρχείο προέλευσης της αναφοράς δεν βρέθηκε.**.
CASE 3 (EFTPOS): In [t1] EFTPOS becomes aware of a failure to send CONFIRM AMOUNT due to a communication problem.
EFTPOS should not proceed with the execution of the transaction but display or print a relevant message.
CASE 4 (ECR): CONFIRMED message: a) is not received within the expected time, or b) an error message is received instead of confirmed c) the CONFIRMED message has invalid data (session number, amount, ecr ID etc.) d) instead of CONFIRMED, receives an out-of-order RESULT message, with details of a previous transaction.
For **4.a)** the ECR after 5 seconds may request acknowledgement from the operator to

stop the effort or continue waiting

For **4.b)** the ECR reports the relevant error and stops the communication. Especially in the case of error 503 and 504, ECR can send once a CONTROL message with a MAC session key and repeat the mission.

For **4.c)** the ECR must stop communicating with EFTPOS and display a message that the system is in an invalid state.

If EFTPOS received the original request correctly and approved the transaction, then it will attempt to unsuccessfully send a RESULT and the transaction will be saved with ecr txn status 1. In this case, if ECR sends a RESEND-ONE message, this may successfully complete the communication.

For **4.d)** the ECR must ignore the message that for some reason came late from a previous incomplete transaction and wait for the arrival of CONFIRMED (or ERROR).

CASE 5 (ECR): The waiting time t2 and t1 take a long time. There are two possible causes:

(a) communication between EFTPOS and payment institution is very slow or the holder takes too long to enter the PIN;

b) EFTPOS crashes or restarted

The ECR must provide for the possibility of interruption of communication. Then:

In case **5.a)** EFTPOS eventually receives approval and sends a RESULT message, but this does not reach the ECR due to a connection failure. It is up to the operator to take the required actions, such as performing RESEND-ONE.

In case **5(b):** appropriate action by the operator and technical support is required.

CASE 6: In [t2] the ECR does not receive a valid response to the RESULT message (garbage, wrong message or wrong information)

ECR should cease communication and display a message. It is up to the operator to take the required actions, such as checking whether the transaction was approved by EFTPOS and performing RESEND-ONE.

If EFTPOS detects the failure to send a RESULT, it displays or prints a message and registers the transaction (if approved) with ecr txn status 1.

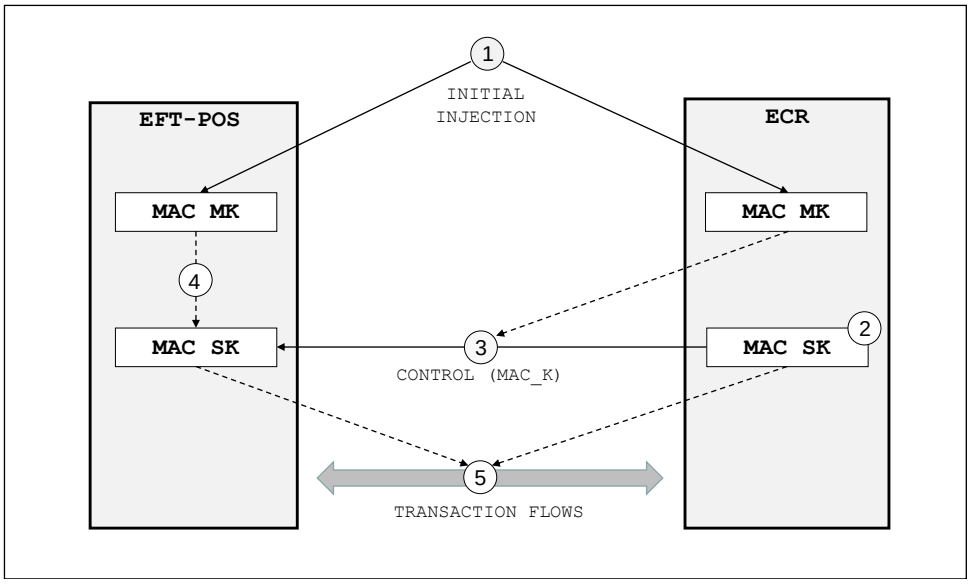
CASE 7 (EFTPOS): In [t3] EFTPOS does not receive ACK-RESULT

This may be due to either a failure to send the RESULT, an internal ECR problem, or a communication problem sending the ACK-RESULT.

EFTPOS registers the transaction with ecr txn status 1.

6. DESCRIPTION OF THE MAC MECHANISM

The relevant mechanism of MAC (message authentication checksum) in terms of implementation for the communication of the two parties is summarized in Picture 1.



Picture 1

1. At the initial stage of preparation, it is agreed between EFTPOS and ECR providers to implant a common master key (MK) in both devices, with procedures and practices that will protect it from leaking.

   The procedure is described in the chapter "Issuance and distribution of master key (MK)"

2. The ECR generates a pseudorandom session key (SK) for use.

3. Via control flow ([CONTROL] message), ECR sends to EFTPOS, SK encrypted with MK, using T-DES.

4. EFTPOS decrypts SK under MK and stores it for use.

5. During transaction flows, the SK is used to check the validity of the sender of requests.

The SK can be updated regularly using a [CONTROL] message from the ECR.

The MK may be renewed at less frequent intervals, with procedures and mechanisms mutually agreed between EFTPOS and ECR providers.

It is recommended to use a T-DES MAC algorithm (the usual CBC 1 mode) with a double length key (16 bytes).

Example of session key encryption and MAC computation

Test MK (plain):ABCDEF0123456789987654321OABCDEF (KCV: 48934A)
Test SK (plain):12340000ABCD111122223333FFFFDDDD (KCV: CC5FFF)
Test SK (encr):1ED9F7AE0B2509281BBC2DE38EF2A12B

Message:

A/S000922/F2000:978:2/D20220513150958/RABC00111222/H121/T000922/M00000000

MAC:4540A2547CFBA23A

Στοιχείο *mac*:/Q4540A254

The calculation of the MAC of the example above is done as follows:

INPUT AFTER PADDING (length=80):
41 2F 53 30 30 30 39 32 32 2F 46 32 30 30 30 3A |A/S000922/F2000:
39 37 38 3A 32 2F 44 32 30 32 32 30 35 31 33 31 |978:2/D202205131
35 30 39 35 38 2F 52 41 42 43 30 30 31 31 31 32 |50958/RABC001112
32 32 2F 48 31 32 31 2F 54 30 30 30 39 32 32 2F |22/H121/T000922/
4D 30 30 30 30 30 30 30 30 00 00 00 00 00 00 00 |M00000000.......
Number of blocks: 10

Block 0:
P:
41 2F 53 30 30 30 39 32 |A/S00092
H:
00 00 00 00 00 00 00 00 |........
P(xor)H:
41 2F 53 30 30 30 39 32 |A/S00092
TDES of P(xor)H:
00 41 06 32 34 81 FB 65 |.A.24..e

Block 1:
P:
32 2F 46 32 30 30 30 3A |2/F2000:
H:
00 41 06 32 34 81 FB 65 |.A.24..e
P(xor)H:
32 6E 40 00 04 B1 CB 5F |2n@...._
TDES of P(xor)H:
EB 92 A8 CD 45 24 2A 10 |....E$*.

Block 2:
P:
39 37 38 3A 32 2F 44 32 |978:2/D2
H:
EB 92 A8 CD 45 24 2A 10 |....E$*.
P(xor)H:
D2 A5 90 F7 77 0B 6E 22 |....w.n"
TDES of P(xor)H:
CE 85 08 94 25 AE 32 5E |....%.2^

Block 3:
P:
30 32 32 30 35 31 33 31 |02205131
H:
CE 85 08 94 25 AE 32 5E |....%.2^
P(xor)H:
FE B7 3A A4 10 9F 01 6F |..:....o
TDES of P(xor)H:

Block 5:
P:
42 43 30 30 31 31 31 32 |BC001112
H:
E2 D8 E8 13 0F 40 1A F0 |.....@..
P(xor)H:
A0 9B D8 23 3E 71 2B C2 |...#>q+.
TDES of P(xor)H:
1C 84 7B 3C E8 0D 33 41 |..{<..3A

Block 6:
P:
32 32 2F 48 31 32 31 2F |22/H121/
H:
1C 84 7B 3C E8 0D 33 41 |..{<..3A
P(xor)H:
2E B6 54 74 D9 3F 02 6E |..Tt.?.n
TDES of P(xor)H:
15 9E 89 04 3F B1 CA 40 |....?..@

Block 7:
P:
54 30 30 30 39 32 32 2F |T000922/
H:
15 9E 89 04 3F B1 CA 40 |....?..@
P(xor)H:
41 AE B9 34 06 83 F8 6F |A..4...o
TDES of P(xor)H:
19 48 5D 23 E9 36 DD 38 |.H]#.6.8

Block 8:
P:
4D 30 30 30 30 30 30 30 |M0000000
H:
19 48 5D 23 E9 36 DD 38 |.H]#.6.8
P(xor)H:
54 78 6D 13 D9 06 ED 08 |Txm.....
TDES of P(xor)H:

D5 E9 95 DF DA 5F DF 69	|....._.i	93 56 0E CE A7 E2 CA 8A	|.V.....
Block 4:			**Block 9:**	
P:			P:	
35 30 39 35 38 2F 52 41	|50958/RA	30 00 00 00 00 00 00 00	|0.....
H:			H:	
D5 E9 95 DF DA 5F DF 69	|....._.i	93 56 0E CE A7 E2 CA 8A	|.V.....
P(xor)H:			P(xor)H:	
E0 D9 AC EA E2 70 8D 28	|.....p.(	A3 56 0E CE A7 E2 CA 8A	|.V.....
TDES of P(xor)H:			TDES of P(xor)H:	
E2 D8 E8 13 0F 40 1A F0	|.....@..	**45 40 A2 54 7C FB A2 3A**	|**E@.T|..:**
			Result: [4540A2547CFBA23A]	

7. SUMMARY OF HANDLING FOR MATCHING DAILY SUMS

A prerequisite for transition to the new interconnection is the closure in both parties of previous pending transactions that had started with any existing interconnection.

IN THE NEW INTERFACE:

Each EFTPOS transaction must be matched to an ECR receipt.

EFTPOS will not be allowed to close a daily package if there are transactions that do not have such a match and will refer to ECR processing.

In any case, EFTPOS transactions made without ECR communication are clearly marked on both receipts and daily EFTPOS reports, such as:

- Transaction **POS-1**: if initiated by ECR but communication was interrupted at the end.
- Transaction **POS-2:** if initiated by EFTPOS based on a preloaded receipt or invoice already issued by ECR.
- Transaction **POS-3:** if initiated by EFTPOS based on a preloaded receipt or invoice already issued by ECR where more cards were used for the same purchase.
- Transaction **POS-4:** refund transaction made in EFTPOS autonomously without using FEM, or sale transaction made in EFTPOS autonomously, due to ECR failure or infrastructure failure, after approval by the FEMs Central Information System.

COMMON SCENARIOS:

1) **Purchase at ECR in cash**
2) **Purchase in ECR with card, but the customer did not have a card with him**

It is stopped by EFTPOS and the ECR receives a rejection [RESULT].

3) **Purchase in ECR using card and normal EFTPOS-ECR communication**

EFTPOS automatically receives, registers and prints on its receipt: session number, ecr Id, receipt-number.

4) **Purchase in ECR using card and problematic completion of EFTPOS-ECR**

communication

- EFTPOS automatically receives, registers and prints: session number, ecrId, receipt-number.

- The ECR does not receive the final EFTPOS response and does not print a receipt. The EFTPOS shall mark the relevant registration as pending for the ECR. The EFTPOS receipt is additionally printed "**Σ/ΓΗ POS-1**".

- The ECR operator can ask EFTPOS to repeat the final response (e.g. "RESEND ONE" with a "POS RESEND" option) and print a receipt. The EFTPOS then marks the relevant record as completed for the ECR.

5)Buy at EFTPOS on home delivery

EFTPOS has received a "preloaded" receipt or invoice from ECR through the REGRECEIPT flow with its data (amount, ecrid, session number, receipt number, custom data) and executes one or more sale or refund transactions, deferred and autonomously through a special handling option for the specific preloaded receipt, without however the algebraic set of these transactions exceeding the total amount of the preloaded receipt.

The EFTPOS receipt prints the marking "**ΣΥΝ/ΓΗ POS-2**"

6)Pay multiple preloaded receipts with one sale transaction

EFTPOS has received several preloaded receipts or invoices from ECR through the REGRECEIPT flow with their details (amount, ecrid, session number, receipt number, custom data) and executes a sale payment transaction deferred and autonomously through a special handling option by selecting more than one preloaded receipts or invoices, always with the limitation of not entering an amount.

On the POS receipt the marking "**ΣΥΝ/ΓΗ POS-3**" is printed.

CLOSING A PACKAGE IN EFTPOS:

If EFTPOS detects refund transactions executed autonomously or sale transactions executed with preloaded ECR receipts or invoices, it will not allow the action to be performed and will refer to ECR to settle pending issues through an option named e.g. "*CHECK POS PACKAGE*".

The "*CHECK POS PACKAGE*" option executes the RESEND-ALL flow where the ECR receives one by one the pending records from EFTPOS and returns a sessionId.

In any case, the ECR should return an ACK-RESULT message to EFTPOS for each pending record so that EFTPOS can close the package.

A separate file of the basic elements of transactions sent with RESEND-ALL, is kept by the EFTPOS for a long time. Specifically, for each transaction, the following data

are kept:

- Date-time
- Type (purchase, void, ...)
- Amount
- ECR communication category (0,1,2,3,4,5)
- ecrId
- Session Id

The availability period of these records is limited by the EFTPOS storage and the daily occurrence of pending records. The standard limit is set at 1000 records.

In case of operation of EFTPOS with ECR failure, but not in case of infrastructure failure, EFTPOS is allowed to perform packet closure, provided that pending transactions to the ECR are not deleted. The distinction in EFTPOS whether it is an ECR failure or an infrastructure failure results from the value of the UNLTime field that EFTPOS received from the FEMs Central Information System "Esend" when reporting the failure. In particular, if the UNLTime field has a value greater than 12, it is an ECR failure, while if it has a value less than or equal to 12, it is an infrastructure failure.

8. POSSIBLE FAULT SCENARIOS AND TROUBLESHOOTING PROCEDURES

For the proper functionality of businesses, in case of ECR failure or in case of failure to the business infrastructure, the following procedure for releasing the EFTPOS keyboard lock is defined. In all cases of communication, a prerequisite is the successful sending of the Master Key MK from the FEMs Central Information System "Esend" to EFTPOS, as described in paragraph 9.

EFTPOS keyboard activation process:

The user of EFTPOS, after a communication failure is detected and confirmed, through appropriate handling selects the type of failure, **ECR Failure** or **Infrastructure Failure.** According to this selection, EFTPOS makes a call to the FEMs Central Information System "Esend" where the type of fault is stated (sample communication below). If there is a SUCCESS answer from the FEMs Central Information System "Esend", the EFTPOS keyboard is unlocked and manual issuance of transactions is allowed. The time interval that EFTPOS is allowed to operate with manual transaction amount entry enabled, as well as how often this activation is allowed, is stated in this Decision. The time interval that EFTPOS is allowed to operate with manual transaction amount entry enabled, is set in a special field (UNLTime) within the response received from the server. The scenarios for which the keyboard activation process is allowed are the following:

1.**Scenario 1:** The ECR has a failure that cannot be dealt with immediately (critical hardware fault). The transaction, when executed autonomously by EFTPOS, sets num 4 in the "txn-ecr-status" field.

2.**Scenario 2:** The ECR is working, but there is a failure in the business infrastructure that prevents the devices from communicating. The transaction, when executed autonomously by EFTPOS, sets num 5 in the "txn-ecr-status" field. The operator is obliged in each transaction to enter the receipt number (Progressive receipt number). After entering the receipt number, the approval process proceeds.

Please note that in all the above scenarios, these transactions must be kept in EFTPOS until proper communication with the ECR is restored.

Reset Communication - EFTPOS Keyboard Deactivation Procedure:

After the repair of the failure, either through special handling of the ECR the **CONTROL command (UNBIND_POS - 0)** must be sent to the EFTPOS, or any other correct communication between ECR->EFTPOS is accomplished. In this way, ECR certifies the repair of the failure. By receiving this command, EFTPOS automatically locks its keyboard and then makes a new call to the FEMs Central Information System "Esend", where it states that the fault has been resolved. Then, through special handling, ECR by sending the **RESEND-ALL** command, requests from the EFTPOS all transactions issued autonomously (whether they are for some other reason pending), so that the records of e.txt fiscal files with document code **356 containing amount, amount final (positive if it is a sale or negative if is a refund)** can be created. Until these transactions are successfully sent to the ECR, EFTPOS will not be able to perform packet closure.
In EFTPOS there is a special report in which the counters, data and amounts for the above transactions are recorded separately, based on calendar criteria.

Technical specifications for requests to the FEMs Central Information System "Esend".

Data Interchange Format: JSON
HTTP method: POST

Standard API Description (EFTPOS <–> Esend)
Production endpoint:
https://www1.aade.gr/tameiakes/mysec/keyblock.php

Dispatch package fields

Field	Size	Description
TID	≤10 chars	Terminal Identification Number (EFTPOS)
UNBOUND_POS	1 char	0 (Failure restored) 1 (Keyboard activation)
TAX ID	9 chars	Business VAT number
ECR ID	11 chars	ECR serial number for which temporary failure has already been declared in

		accordance with par.39 of A.1173/2022.
MACKEY	32 chars	The Master key that EFTPOS initially received from the FEMs Central Information System "Esend".

Fields Format (keyboard activation request):

{

"TID": "99009999",

"UNBOUND_POS": "1",

"TAXID": "01345678",

"ECRID": "XXX12345678",

"MACKEY": "30001234C330001234C330001234C322" }

Fileds Format (restore failure):

{ "TID": "99009999",

"UNBOUND_POS": "0",

"TAXID": "01345678",

"ECRID": "XXX12345678",

"MACKEY": "30001234C330001234C330001234C322" }

Response Fields

Field	Size	Description
Status	3 chars	Replied status code
TID	≤10 chars	Terminal Identification Number (EFTPOS)
UNLTime	≤4 chars	The Maximum allowed time (in hours) that EFT can accept manual payments

Response fields format:

{

"Status": "000",

"TID": "99009999"

"UNLTime": "12"

}

Response Status codes

Status	Description
000	SUCCESS
101	Check the contents of the fields
102	Format error
103	Unregistered Device
104	Busy-Retry
105	Unspecified error
106	DENIED (The UNLTime field will be zero)

In the case where no ECR Temporary Failure Declaration or Infrastructure Temporary Failure Declaration has been previously submitted to the FEMs Central Information System "Esend", or if the validity of the temporary failure declaration has expired, then the reply of the FEMs Central Information System "Esend" to EFTPOS for the release of the keyboard is negative. The answer is also negative if the master key does not correspond to the specific EFTPOS.

9. ISSUANCE AND DISTRIBUTION OF MASTER KEY (MK)

In order to avoid the publication of keys during the pairing of ECR and EFTPOS and in order to prevent any action to bypass the initial connection, the issuance and installation of the master key (MK) is done through independent calls of ECR and EFTPOS to the FEMs Central Information System "Esend", which operates and is maintained in the infrastructure of IAPR.

Calls are executed with initialization fields for ECR: the ECR serial number and VAT number of the business, while for EFTPOS: the TID of the EFTPOS, the VAT number of the business, the distinguishing name of the EFTPOS manufacturer, and the corresponding APIKEY.

The process of creating the master key (MK) starts from the ECR so that after the creation and return to the ECR of the original key from the FEMs Central Information System "Esend", it is available for download to the EFTPOS.

Security

- The contact url of EFTPOS with the FEMs Central Information System "Esend for receiving the MK is: https://www1.aade.gr/tameiakes/mysec/eftposmk.php
- The encryption procedure for the communication of the FEMs with the FEMs Central Information System "Esend", using AES-256, is specified in the Decision of the Governor of IAPR POL 1166/2018. The contact url of the FEMs with the FEMs Central Information System "Esend", for receiving the MK is the following: http://tam.gsis.gr/eafdss/myweb/fhmmk.php

Standard API Description (EFTPOS <–> Esend)

Production endpoint: https://www1.aade.gr/tameiakes/mysec/eftposmk.php

Data Interchange Format: JSON

HTTP method: POST

Dispatch package fields

Field	Size	Description
TID	≤10 chars	Terminal Identification Number (EFTPOS)
ECRID	11 chars	Fiscal device serial number from ECR ECHO call
TAX ID	9 chars	Business VAT number
MAN	<=20 chars	EFTPOS manufacturer distinctive name
APIKEY	<= 64 chars	APIKEY

Fields format:
{ "TID": "99009999", "ECRID": "XXX99000000", "TAXID": "01345678", "MAN": "eftpos-hellas", "APIKEY": "0123456789012345678901234567890QWERTYUIOPASDFGHJKLZ12345678901234" }

The MAN field is determined by the interested EFTPOS manufacturer who notifies it to the competent authority of the FEMs Central Information System "Esend" by email request, while the APIKEY field is determined by the competent service of the FEMs Central Information System "Esend" that sends it to the interested EFTPOS manufacturer via email.

Response fields

Field	Size	Description
Status	3 chars	Replied status code
Description	<= 25 chars	Status description
TID	≤10 chars	Terminal Identification Number (EFTPOS)
MACKEY	32 chars	master key-MK

Fields format :

```
{
   "Status": "000",
   "Description": "SUCCESS",
   "TID": "990099",
   "MACKEY": "30001234C330001234C330001234C322"
}
```

Standard API Description (FEM <–> Esend)
Production endpoint: http://tam.gsis.gr/eafdss/myweb/fhmmk.php

Data interchange format: ENCRYPTED RAW (AES KEY encryption method).
HTTP method: POST

Dispatch package fields

Field	Size	Description
ECRID	11 chars	FEM Serial Number
TID	≤10 chars	Terminal Identification Number (EFTPOS)
TAX ID	9 chars	Business VAT number

Format fields (if they were not encrypted):
"XXX99000000;990099;01345678"

Response fields

Field	Size	Description
Status	3 chars	Replied status code
Description	<= 25 chars	Status description
TID	≤10 chars	Terminal Identification Number (EFTPOS)
MACKEY	32 chars	master key-MK

Format fields (if they weren't encrypted):
"000;SUCCESS;990099;30001234C330001234C330001234C322"

Response Status codes

Status	Description
000	SUCCESS
101	Check the contents of the fields
102	Format error
103	Unregistered Fiscal Device
104	Busy-Retry
105	Unspecified error

In particular, the following encryption rules apply to download the Master Key (MK, MACKEY):

Request from FEM:
1) ECRID

2) TID-encrypted-HEX_representation

3) TAXID VAT number-encrypted-HEX_representation(with the same IV)

4) IV (Initialization vector of FEM)-HEX_representation

The encryption is done with the manufacturer's AESKEY.
All fields are contiguous, with delimiter separator (;), plain/text POST.

Response from Esend:
1) Status

2) Description

3) TID-encrypted-HEX_representation

4) MACKEY-encrypted-HEX_representation(με το ίδιο IV)

5) IV (Initialization vector of the server)-HEX_representation

Decryption is done with the manufacturer's AESKEY.

All fields are contiguous, with delimiter separator (;).

10.DOWNLOAD THE AESKEY FROM FEMs CENTRAL INFORMATION SYSTEM "ESEND"

At the same time as the decision to approve a FEM eligibility license shall be notified to the FEM manufacturer, the 'base AESKEY' of the manufacturer, for the specific eligibility license is also notified. After submitting the D13 declaration of start, the FEM can contact through a specific url to the FEMs Central Information System "Esend", using the manufacturer's basic AESKEY. The FEMs Central Information System "Esend" returns to the FEM, encrypted, the AESKEY of the FEM that will be used to encrypt transaction data transmissions.

Standard API Description (FEM <–> Esend)

Production endpoint: http://tam.gsis.gr/eafdss/myweb/aeskey.php

Data interchange format: ENCRYPTED RAW (AES KEY encryption method).
HTTP method: POST

Dispatch package fields

Field	Size	Description
ECRID	11 chars	FEM Serial Number
TAX ID	9 chars	VAT number of business - holder

Fields format (if they weren't encrypted):
"XXX99000000;01345678"

Response fields

Field	Size	Description
Status	3 chars	Replied status code
Description	25 chars	Status description
ECRID	11 chars	FEM Serial Number
AESKEY	40 chars	AESKEY

Format fields (if they weren't encrypted):
"000;SUCCESS;XXX99000000;30001234C330001234C330001234C3223456789F"

Response Status codes

Status	Description
000	SUCCESS
101	Check the contents of the fields
102	Format error
103	Unregistered Fiscal Device
104	Busy-Retry
105	Unspecified error

In particular, when receiving the AESKEY for FEM from Esend, the following encryption rules apply:

Request from FEM:

1) ECRID

2) TAXID VAT number-encrypted-HEX_representation

3) IV (Initialization vector of FEM)-HEX_representation

The encryption is done with the manufacturer's AESKEY.

All fields are contiguous, with delimiter separator (;), plain/text POST.

Response from ESEND:

1) Status

2) Description

3) ECRID-encrypted-HEX_representation

4) AESKEY-encrypted-HEX_representation(with the same IV)

5) IV (Initialization vector of the server)-HEX_representation

Decryption is done with the manufacturer's AESKEY.

All fields are contiguous, with delimiter separator (;).