

Bank Bar Code Guide version 5.2

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FK|Finanssialan Keskusliitto
FC|Finansbranschens Centralförbund
Federation of Finnish Financial Services





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Version:

Version 5.1 accepted 20.10.2009

Version 5.2 26.1.2010 corrected test invoices version 5

16.4.2012 delete the bank bar code testing



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0 General

The version 5.1 of this guide describes the current versions 2, 4, and 5 of the bar code symbol.

The currently used Bank Bar Code guidelines are from 2002. In the guidelines, the version of the bar code symbol is 2. The version came into force when the euro was introduced into use. Version 2 is used when the payee's bank account number is in the national (BBAN) form in the invoice and also the reference is in the national form. **The use of version 2 will end in 31.10.2011.**

Version 3 will not be introduced into use (BBAN and international reference).

Version 4 is used when the payee's account number is in the international IBAN form and the reference is in the national form. Version 4 may be introduced into use on 1 December 2010 at the earliest.

Version 5 is used when the payee's account number is in the international IBAN form and the reference is in the international (RF) reference standard form. Version 5 may be introduced into use on 1 December 2010 at the earliest.

1 Bank Bar Code

A bar code printed out on the banks' giro form in accordance with this instruction is called the Bank Bar Code.

The Bank Bar Code is a form of presenting payment transaction data and it is approved by the Federation of Finnish Financial Services. Finnish banks have jointly developed the Bank Bar Code in order to accelerate payments and to prevent erroneous data from being keyed in. Giro forms to be used for invoicing are specified in the Guidelines for the giro forms published by the Federation of Finnish Financial Services. The Bank Bar Code can only be used when employing reference numbers in invoicing.

Before the Bank Bar Code is introduced into use, it must be tested by the Federation of Finnish Financial Services. (For more details, see paragraph 13.) In case the equipment by means of which the bar code was produced changes or if the bar code version changes, the bar code must be retested.

In the invoicing between companies, there are invoice forms with a bar code printed out on the bottom. The Federation of Finnish Financial Services does not, however, test this bar code.

Invoices without a giro part cannot be mailed to private customers or to banks' payment services or be paid in banks, but the data on the invoice should be transferred onto a giro form.



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The Bank Bar Code can only be printed on BBAN account numbers or the IBAN account numbers than begin with FI.

2 Representation of data

When the same data is presented both encoded in the Bank Bar Code and in plain text on the giro form, the subject matter of both sets data should be consistent.

3 Liabilities

An invoicing company is always responsible for the validity of the data printed out on a giro form.

4 Conditions for the use of the Bank Bar Code

The conditions for using the Bank Bar Code are always as follows:

- The giro form to be used is defined by the Federation of Finnish Financial Services.
- The placing of non-computerised data and other data on the giro form should comply with the giro guidelines.
- The structure and data contents of the Bank Bar Code to be used should comply with this standard.
- No other bar codes may be printed on the giro form.
- No other characters or symbols may be printed out in the field reserved for the Bank Bar Code on the giro form.

5 Elements of the Bank Bar Code

The Finnish Bar Code type is AIM (Automatic Identification Manufacturers) Code 128 published by Europe, Uniform Symbology Specification, which has also been specified in the international ISO/IEC 15417:2007 standard Information technology -- Automatic identification and data capture techniques -- Code 128 bar code symbology specification (later referred to as Code 128).

- The code type is Code 128, Character Set C. None of the other code types or character sets are valid, even partly, for the Bank Bar Code symbol. No change may be made to the character set inside the symbol, i.e., the symbol has always a fixed Start Code C which starts the encoding of the data in accordance with Code 128 Character Set C.
- The Bank Bar Code contains numeric data only.
- The Bank Bar Code is represented by one bar code symbol with a fixed number of the code characters.
- The length of the Bank Bar Code must not exceed 105 mm measured from the front edge to the back edge of the bar code.
- Measured in the same manner, the length of the Bank Bar Code should not be less than 70 mm. The banks' optical reading prefers the maximum length (105 mm) to the minimum length (70 mm). The height of the Bank Bar Code is 10.0–12.7 mm.
- There is a quiet zone of maximum 5.0 mm below the Bank Bar Code.
- For better usability, the Bank Bar Code should be horizontally centred in order to maximise the size of the quiet zones in the code.



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- o The quality class of the Bank Bar Code must be at least **1.5/10/670** or better when measured in accordance with the ISO/IEC 15416:2000 *Bar Code Print Quality Test Specifications for Linear Symbols*.

6 Printing out the Bank Bar Code

Invoicing companies print the Bank Bar Code out on the giro form along with other payment data in accordance with the Bank Bar Code Standard.

NOTE! There is space for only one bank account number in the Bank Bar Code. Should there be several bank account numbers on the giro form, the invoicing company chooses the proper bank account number to be encoded in the Bank Bar Code.

No other bar codes may be printed out on the giro form.

7 Reading the Bank Bar Code

The Bank Bar Code can be read, for example, by bar code readers in ATMs or banks' payment centres or by a reader connected to a PC

Invoices with a Bank Bar Code can still be paid by keying in the data at an ATM as before, if there is no code reader available or if one wants to alter the Bank Bar Code data.

The payment data read by bar code readers will be forwarded to payees in the same way as data keyed in.

8 Symbol version 2 of the Bank Bar Code

Version 2 of the Bank Bar Code is used when the payee's bank account number is in the national (BBAN) form in the invoice and also the reference is in the national form.

The Bank Bar Code is constructed from left to right as follows:

Data	Length	Value
Quiet Zone 1		
Start Character	*)	
Version No.	1	2
Payee's Bank Account No. (national)	14	N
Euros	6	N
Cents	2	N
Reference No. (national)	20	N
Due Date	6	YYMMDD
Reserve	4	0000
Check Digit 1	1	N
Check Digit 2	*)	
Stop Character	*)	
Quiet Zone 2		
	54	



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*) part of the Code 128 structure
N= numeric value

Content of the above fields:

Quiet Zone 1

The length of the quiet zone 1 on the left is 20 mm. This area must be kept totally free of any prints or reprints.

Start Character

START CODE C is a code in the structure of the Code 128.

Version No.

The version number is 2.

Payee's Bank Account No.

In the Bank Bar Code, the payee's bank account number is always in the computerised form. The value of the bank account number field may never be zero. On the giro form, the account number must also always be in the non-computerised form. There can be several payee's bank account numbers on the giro form in non-computerised form. The account number to be encoded in the bank bar code is chosen by the invoicing company.

Euros

The total of euros, the leading zero insert, reading range 00000...999999 euros. When the total of cents exceeds 99999999, the invoicing company prints out either the value 00000000 in the field for euros and cents or does not print out the bank bar code on the giro form at all. If the amount to be paid is chosen by the payer, the value 00000000 is printed out in the field for euros and cents.

Cents

The total of cents, reading range 00...99.

Reference number

The reference number of the invoice (national), leading zero insert. The bank bar code must always include a reference number. The leading zeros are not printed out on the giro form.

Due Date

The due date of an invoice is printed out in the form **yymmdd** in the bar code. If preferred, the invoicing company may fill in the due date field with zeros.

Reserve

The value of the data is 0000 (zero).

Check Digit 1

A check digit is calculated for the data fields used for the bank bar code. The check digit is calculated using the formula for calculating the reference number. The start character is



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omitted from the calculation.

Check Digit 2 (Modulus 103)

The Bank Bar Code always contains a check digit that is included in the structure of Code 128 and that immediately precedes the stop character. The check digit is calculated with the Modulus 103 algorithm.

The check digit of the symbol is calculated with the Modulus 103 algorithm on the basis of all characters, i.e., including start character and check digit 1 but without the stop character.

Stop Character (fixed STOP)

The stop character of Code 128 (STOP).

Quiet Zone 2

The length of the quiet zone 2 on the right is minimum 20 mm.

9 Symbol version 4 of the Bank Bar Code

The version 4 of the Bank Bar Code is used when the payee's bank account number is in the international IBAN form and the reference is in the national form.

The Bank Bar Code is constructed from left to right as follows:

Data	Length	Value
Quiet Zone 1		
Start Character	*)	
Version No.	1	4
The numeric part of the payee's bank account number (IBAN)	16	N
Euros	6	N
Cents	2	N
Reserve	3	000
Reference No. (national)	20	N
Due Date	6	YYMMDD
Check Digit 2	*)	
Stop Character	*)	
Quiet Zone 2		
	54	

*) part of the Code 128 structure
N= numeric value

The data contents that differ from symbol version 2:

Version No.

The version number is 4.

Reserve

The value of the data is 000 (zero).



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Payee's Bank Account No.

In the Bank Bar Code, the payee's bank account is in the IBAN form without the country code FI. The value of the bank account number field may never be zero. On the giro form, the account number must also always be in the non-computerised form with the country code FI. There can be several payee's bank account numbers in the IBAN form on the giro form in non-computerised form. The account number to be encoded in the bank bar code is chosen by the invoicing company.

Check Digit 1 Not in use.

10 Symbol version 5 of the Bank Bar Code

The version 5 of the Bank Bar Code is used when the payee's bank account number is in the international IBAN form and the reference is the international RF reference.

The Bank Bar Code is constructed from left to right as follows:

Data	Length	Value
Quiet Zone 1		
Start Character	*)	
Version No.	1	5
The numeric part of the payee's bank account number (IBAN)	16	N
Euros	6	N
Cents	2	N
The numeric part of the RF reference	23	N
Due Date	6	YYMMDD
Check Digit 2	*)	
Stop Character	*)	
Quiet Zone 2		
	54	

*) part of the Code 128 structure
N= numeric value

The data contents that differ from symbol version 2:

Version No.

The version number is 5.

Payee's Bank Account No.

In the Bank Bar Code, the payee's bank account is in the IBAN form without the country code FI. The value of the bank account number field may never be zero. On the giro form, the account number must also always be in the non-computerised form with the country code FI. There can be several payee's bank account numbers in the IBAN form on the giro



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form in non-computerised form. The account number to be encoded in the bank bar code is chosen by the invoicing company.

RF Reference

The international reference number of the invoice without the RF code. 23 characters long. The bank bar code must always include a reference number. The additional zeros are not printed out on the giro form.

The reference field of the Bank Bar Code is formed by removing the characters 'RF' from the beginning of the RF reference and by adding zeros after the position 2 in the character line in order to have 23 characters in total. Example:

- a national reference in the non-computerised form: 9991
- in the RF, non-computerised form: RF04 9991 (in which 04 is a check digit)
- in the Bank Bar Code: 04000000000000000009991

If the RF reference contains any alphabetical symbols after the letters 'RF' (ISO 11649), the Bank Bar Code will not be formed at all or the reference field will be printed with zeros. The Bank Bar Code contains numeric data only.

Check Digit 1 **Not in use.**

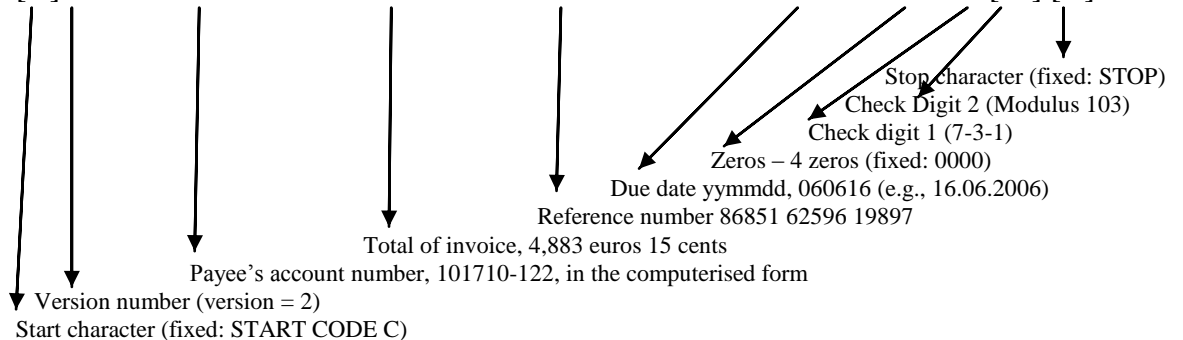
11 Non-computerised text that describes the content

Non-computerised content of the information will not be printed above or below the symbol.

12 Example of the check digit calculation for a Bank Bar Code

DATA CONTENTS OF A BANK BAR CODE

[X] 2 10171000000122 00488315 00000868516259619897 060616 0000 1 [39] [Y]



data contents of a bar code		Check digit 1 (7-3-1)		Check digit 2 (Modulus 103)		
Data	Value	Coefficient	Product	Value pair	Coefficient	Product
Start Character	[X]			(105)	1	105
1 Version 2	2	3	6			
2	1	7	7	21	1	21
3	0	1	0			



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4		1	3	3	1	2	2
5		7	7	49			
6		1	1	1	71	3	213
7		0	3	0			
8	Bank	0	7	0	00	4	0
9	account						
10	No.	0	1	0			
11		0	3	0	00	5	0
12		0	7	0			
13		0	1	0	00	6	0
14		1	3	3			
15		2	7	14	12	7	84
16		2	1	2			
17		0	3	0	20	8	160
18		0	7	0			
19		4	1	4	4	9	36
20	Total	8	3	24			
21	EUR	8	7	56	88	10	880
22		3	1	3			
23		1	3	3	31	11	341
24		5	7	35			
25		0	1	0	50	12	600
26		0	3	0			
27		0	7	0	00	13	0
28		0	1	0			
29		0	3	0	00	14	0
30		8	7	56			
31		6	1	6	86	15	1290
32	Reference	8	3	24			
33	No.	5	7	35	85	16	1360
34		1	1	1			
35		6	3	18	16	17	272
36		2	7	14			
37		5	1	5	25	18	450
38		9	3	27			
39		6	7	42	96	19	1824
40		1	1	1			
41		9	3	27	19	20	380
42		8	7	56			
43		9	1	9	89	21	1869
44		7	3	21			
45		0	7	0	70	22	1540
46	Due	6	1	6			
47	date	0	3	0	60	23	1380
		6	7	42			



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48		1	1	1	61	24	1464	
49		6	3	18				
50	}	0	7	0	60	25	1500	
51		Zeros	0	1	0			
52			0	3	0	00	26	0
53			0	7	0			
54	Check Digit	1	Sum	619	1	27	27	
	1							
	Check Digit	[39]	of which Stop	1	Sum of		15798	
	2		check digit		which		39	
					Mod			
					(103)			

The Check digit 1 of Version 2 is calculated in accordance with the calculation formula 7–3–1 for the reference number starting from the end. The start character is omitted from the calculation.

The Check digit 2 is calculated using the Modulus 103 algorithm on the basis of all characters, i.e., including start character and check digit 1, but without the stop character, as follows:

1. The Start Character is given a value 105.
2. Each symbol character (value pair) is given a coefficient.
 The Start Character is given the coefficient 1. The first value pair after that is given the coefficient 1, the second the coefficient 2, the third the coefficient 3, etc., up to the coefficient 27.
 NOTE! Both the Start Character and the first value pair are thus given coefficient 1.
3. Every value pair is multiplied by its coefficient and the sums arrived at are added up (in the example: 15798).
4. The final sum is divided by 103.
5. The remainder in point 3 is the value for the check digit 2 (in the example: 39).

13 Other guides and instructions

- Calculating the check digit of the reference number
- Introducing the RF reference in Finland
- The structure guide for account numbers
- IBAN and BIC
- Guidelines for giro forms

You will find the guides and instructions on the website of the Federation of Finnish Financial Services at www.fkl.fi.

14 Data contents of the test invoices

14.1 Data contents of the test invoices in version 2

INVOICE No. 1:



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Account No. Nordea 101710-122 Total: 4,883.15 Reference No. 86851 62596 19897 Due date: 16.06.2006
[105] 21 01 71 00 00 00 12 20 04 88 31 50 00 00 86 85 16 25 96 19 89 70 60 61 60 00 01 [39] [stop] **euro**

INVOICE No. 2:

Account No. Sp. 457611-2124 Total: 482.99 Reference No. 55958 22432 94671 Due date: 31.01.2000
[105] 24 57 61 12 00 00 12 40 00 48 29 90 00 00 55 95 82 24 32 94 67 10 00 13 10 00 06 [25] [stop] **euro**

INVOICE No. 3:

Account No. Op. 500046-41302 Total: 693.80 Reference No. 69 87567 20834 35364 Due date: 22.06.2007
[105] 25 00 04 64 00 01 30 20 00 69 38 00 00 69 87 56 72 08 34 35 36 40 70 62 20 00 04 [24] [stop] **euro**

INVOICE No. 4:

Account No. ÅAB 660100-1530641 Total: 7,444.54 Reference No. 7 75847 47906 47489 Due date: 27.10.1998
[105] 26 60 10 00 15 30 64 10 07 44 45 40 00 07 75 84 74 79 06 47 48 99 81 02 70 00 00 [34] [stop] **euro**

INVOICE No. 5:

Account No. Sampo 800014-50267 Total: 935.85 Reference No. 78 77767 96566 28687 Due date: None
[105] 28 00 01 40 00 50 26 70 00 93 58 50 00 78 77 76 79 65 66 28 68 70 00 00 00 05 [82] [stop] **euro**

INVOICE No. 6:

Account No. SHB 313130-1000058 Total: 3,928.37 Reference No. 8 68624 Due date: 18.03.2004
[105] 23 13 13 00 10 00 05 80 03 92 83 70 00 00 00 00 00 08 68 62 40 40 31 80 00 07 [41] [stop] **euro**

INVOICE No. 7:

Account No. SEB 330100-01100775 Total: 1,500.20 Reference No. 92125 37425 25398 97737 Due date: 31.12.2002
[105] 23 30 10 00 11 00 77 50 01 50 02 09 21 25 37 42 52 53 98 97 73 70 21 23 10 00 09 [37] [stop] **euro**

INVOICE No. 8:

Account No. Danske Bank 344994-827436 Total: 0.00 Reference No. 5907 38390 Due date: 27.12.1999
[105] 23 44 99 40 08 27 43 60 00 00 00 00 00 00 00 59 07 38 39 09 91 22 70 00 07 [21] [stop] **euro**

14.2 Data contents of the test invoices in version 4

INVOICE No. 1:

Account No. Sp. FI79 4405 2020 0360 82 Total: 4,883.15 Reference number: 86851 62596 19897 Due Date: 12.06.2010
[105] 47 94 40 52 02 00 36 08 20 04 88 31 50 00 00 00 08 68 51 62 59 61 98 97 10 06 12 [40] [stop]



INVOICE No. 2:

Account No. Nordea FI58 1017 1000 0001 22 Total: 482.99 Reference number: 55958 22432 94671 Due Date: 31.01.2012
[105] 45 81 01 71 00 00 00 12 20 00 48 29 90 00 00 00 05 59 58 22 43 29 46 71 12 01 31 [55] [stop]



INVOICE No. 3:

Account No. Op. FI02 5000 4640 0013 02 Total: 693.80 Reference number: 69 87567 20834 35364 Due Date: 24.07.2011
[105] 40 25 00 04 64 00 01 30 20 00 69 38 00 00 00 06 98 75 67 20 83 43 53 64 11 07 24 [14] [stop]



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INVOICE No. 4:

Account No. ÅAB FI15 6601 0001 5306 41 Total: 7,444.54 Reference number: 7 75847 47906 47489 Due Date: 19.12.2019
[105] 41 56 60 10 00 15 30 64 10 07 44 45 40 00 00 00 77 58 47 47 90 64 74 89 19 12 19 [63] [stop]



INVOICE No. 5:

Account No. Sampo FI16 8000 1400 0502 67 Total: 935.85 Reference number: 78 77767 96566 28687 Due Date: None
[105] 41 68 00 01 40 00 50 26 70 00 93 58 50 00 00 07 87 77 67 96 56 62 86 87 00 00 00 [30] [stop]



INVOICE No. 6:

Account No. Handelsbanken FI73 3131 3001 0000 58 Total: 0.00 Reference number: 8 68624 Due Date: 09.08.2013
[105] 47 33 13 13 00 10 00 05 80 00 00 00 00 00 00 00 00 00 00 00 00 00 86 86 24 13 08 09 [68] [stop]



INVOICE No. 7:

Account No. SEB FI83 3301 0001 1007 75 Total: 150,000.20 Reference number: 92125 37425 25398 97737 Due Date: 25.05.2016
[105] 48 33 30 10 00 11 00 77 51 50 00 02 00 00 92 12 53 74 25 25 39 89 77 37 16 05 25 [45] [stop]



INVOICE No. 8:

Account No. Tapiola FI39 3636 3002 0924 92 Total: 1.03 Reference number: 5907 38390 Due Date: 11.03.2023
[105] 43 93 63 63 00 20 92 49 20 00 00 10 30 00 00 00 00 00 00 05 90 73 83 90 23 03 11 [9] [stop]



INVOICE No. 9:

Account No. S-Pankki FI92 3939 0001 0033 91 Total: 0.02 Reference number: 13 57914 Due Date: 24.12.2099
[105] 49 23 93 90 00 10 03 39 10 00 00 00 20 00 00 00 00 00 00 00 01 35 79 14 99 12 24 [30] [stop]



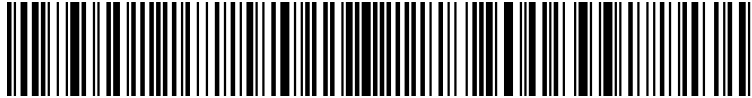


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14.3 Data contents of the test invoices in version 5

INVOICE No. 1:

Account No. Sp. FI79 4405 2020 0360 82 Total: 4883,15 Reference number: RF09 8685 1625 9619 897 Due Date: 12.6.2010
[105] 57 94 40 52 02 00 36 08 20 04 88 31 50 90 00 00 08 68 51 62 59 61 98 97 10 06 12 [74] [stop]



INVOICE No. 2:

Account No. Nordea FI58 1017 1000 0001 22 Total: 482,99 Reference number: RF06 5595 8224 3294 671 Due Date: 31.1.2010
[105] 55 81 01 71 00 00 00 12 20 00 48 29 90 60 00 00 05 59 58 22 43 29 46 71 10 01 31 [31] [stop]



INVOICE No. 3:

Account No. Op. FI02 5000 4640 0013 02 Total: 693,80 Reference number: RF02 6987 5672 0834 Due Date: 24.7.2011
[105] 50 25 00 04 64 00 01 30 20 00 69 38 00 20 00 00 00 00 69 87 56 72 08 34 11 07 24 [79] [stop]



INVOICE No. 4:

Account No. ÅAB FI15 6601 0001 5306 41 Total: 7 444,54 Reference number: RF84 7758 4747 9064 7489 Due Date: 19.12.2019
[105] 51 56 60 10 00 15 30 64 10 07 44 45 48 40 00 00 77 58 47 47 90 64 74 89 19 12 19 [16] [stop]



INVOICE No. 5:

Account No. Sampo FI16 8000 1400 0502 67 Total: 935,85 Reference number: RF60 7877 7679 6566 2868 7 Due Date: None
[105] 51 68 00 01 40 00 50 26 70 00 93 58 56 00 00 07 87 77 67 96 56 62 86 87 00 00 00 [15] [stop]



INVOICE No. 6:

Account No. Handelsbanken FI73 3131 3001 0000 58 Total: 0,00 Reference number: RF10 8686 24 Due Date: 9.8.2013
[105] 57 33 13 13 00 10 00 05 80 00 00 00 01 00 00 00 00 00 00 00 00 00 86 86 24 13 08 09 [91] [stop]



INVOICE No. 7:

Account No. SEB FI83 3301 0001 1007 75 Total: 150000,20 Reference number: RF71 9212 5374 2525 3989 7737 Due Date: 25.5.2016
[105] 58 33 30 10 00 11 00 77 51 50 00 02 07 10 92 12 53 74 25 25 39 89 77 37 16 05 25 [80] [stop]



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INVOICE No. 8:

Account No. Tapiola FI39 3636 3002 0924 92 Total: 1,03 Reference number: RF66 5907 3839 0 Due Date: 11.3.2023
[105] 53 93 63 63 00 20 92 49 20 00 00 10 36 60 00 00 00 00 00 05 90 73 83 90 23 03 11 [10] [stop]



INVOICE No. 9:

Account No. S-Pankki FI92 3939 0001 0033 91 Total: 0,02 Reference number: RF95 1357 914 Due Date: 24.12.2099
[105] 59 23 93 90 00 10 03 39 10 00 00 00 29 50 00 00 00 00 00 00 01 35 79 14 99 12 24 [33] [stop]

