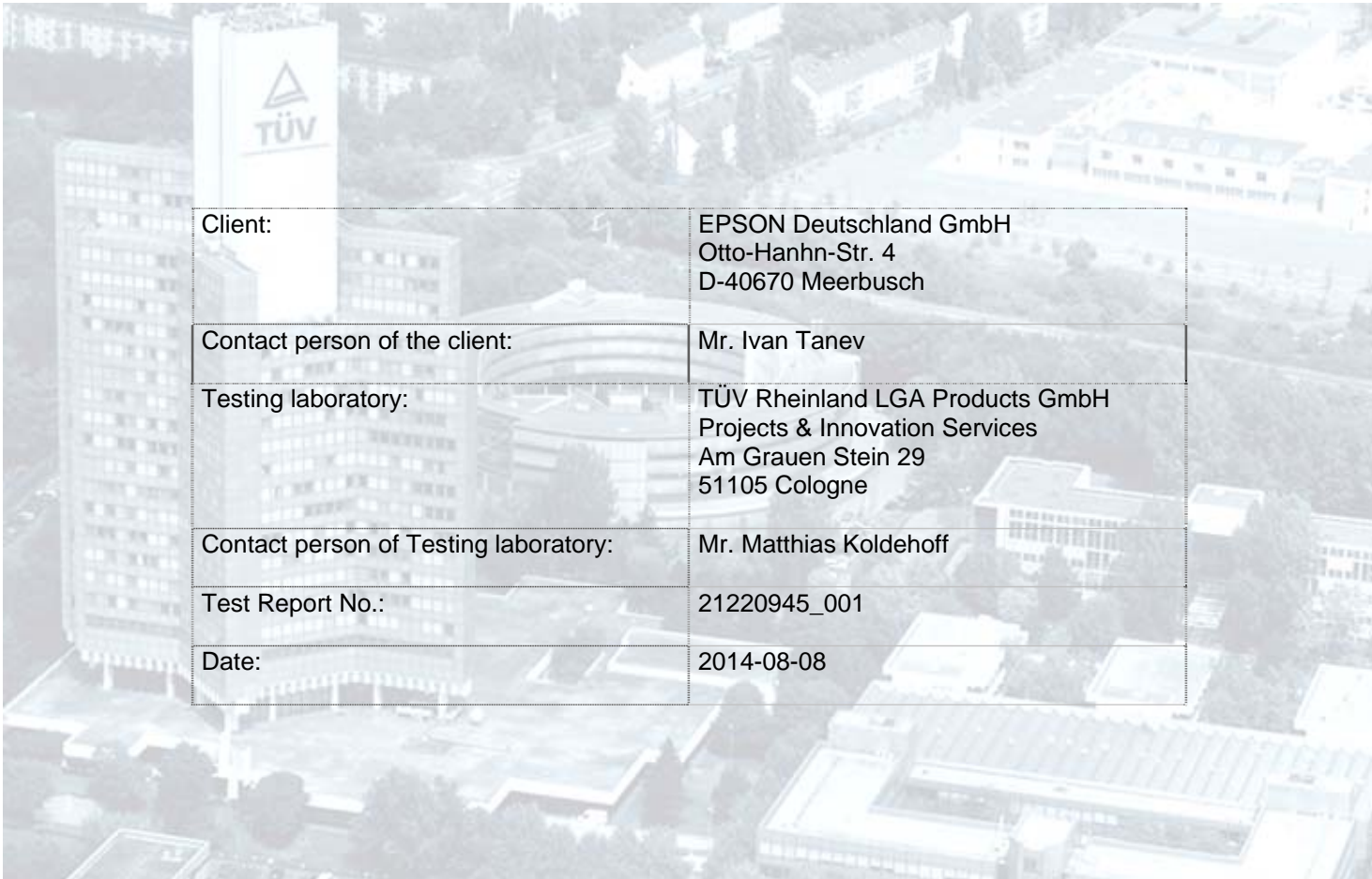


Benchmarktest “Cost per Print”

EPSON TM-C3500

PRIMERA LX900e

VIP COLOR VP495



Client:	EPSON Deutschland GmbH Otto-Hahn-Str. 4 D-40670 Meerbusch
Contact person of the client:	Mr. Ivan Tanev
Testing laboratory:	TÜV Rheinland LGA Products GmbH Projects & Innovation Services Am Grauen Stein 29 51105 Cologne
Contact person of Testing laboratory:	Mr. Matthias Koldehoff
Test Report No.:	21220945_001
Date:	2014-08-08

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1 Introduction

The aim of this test is the comparison of ink costs of each printout of three competitor inkjet color label printers. The test was carried out from 10.07.2014 to 08.08.2014.

2 Devices under test

EPSON TM-C3500

Model: M311A
S/N: U24F002981
Test sample No.: A000067862-003
Date of receipt: 13.05.2014



PRIMERA LX900e

Color Label 900 Series
S/N.: 2120400518
Test sample No.: A000067862-001
Date of receipt: 13.05.2014



VIP COLOR VP495

Model: VP495
S/N.: MY3248100G
Test sample No.: A000067862-002
Date of receipt: 13.05.2014



3 Consumables

3.1 Cartridges

Brand	Colour	Cartridge	Cartridge & Packaging
EPSON	Black	SJIC22P(K)	
	Cyan	SJIC22P(C)	
	Magenta	SJIC22P(M)	
	Yellow	SJIC22P(Y)	
PRIMERA	Black	53425	
	Cyan	53422	
	Magenta	53423	
	Yellow	53424	
VIP COLOR	Black	VP2-495-AS07A	
	Cyan	VP2-495-AS04A	
	Magenta	VP2-495-AS10A	
	Yellow	VP2-495-AS13A	

3.2 Paper

For printing 75 m endless label rolls with a width of 7,62 cm were used:

Demandjet Matt S2000 –Kern 76 mm /AD: 152.

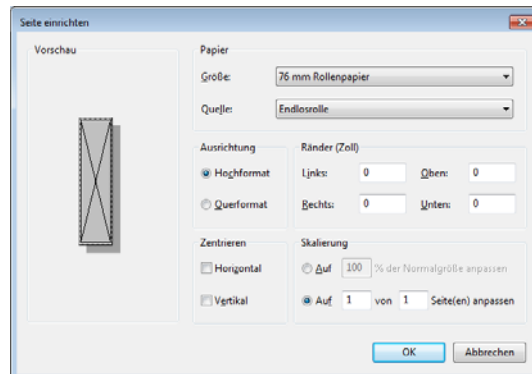


4 Testing equipment

4.1 Hardware / Software

The printers were used with the following PC configuration:

CPU:	Intel® Core™ i7 CPU 860 Pentium M 1.6 GHz
System memory:	4 GB
Graphic board:	ATI Mobility RADEON 7500
Interface:	USB 2.0
Operating System:	Windows 7 Professional, SP1
Applications:	Paint In the “Page Setup” dialogue the margins were set to “0”



Printer Driver:	EPSON TM-C3500: Version 1.0.0.5
	PRIMERA LX900e : Color Label 900, Version 1.06
	VIP COLOR VP495: VIPColor PCL-XL Driver, Version 7.3.5

Printer Setting: The printer settings are documented in Appendix A, B and C.

For comparable printing results following printer settings were adjusted:

PRIMERA LX900e : “Quality 2” in the settings for “Print Quality”

VIP COLOR VP495: “Normal” in the settings for “Qualität”

4.2 Test file

For the printouts the following test file provided by the client was used:

- AllShoes_300dpi_BlackTitle_ExtBarcode_lzw.tif



After 100 printouts of the test file the page 5 of the ISO/IEC 24712 test page suite was printed.



4.3 Used measurement equipment

Measurement	Device number	Next calibration
Weight measuring system	00305	04.2015
Temperature	08358	01.2016

5 Test Procedures

5.1 Set up

The set-up of the printer was performed according to the installation guide provided in the printer user's manual. The driver supplied with the printer was used. Cartridge installation is completed following the instructions in the cartridge installation guide.

5.2 Sample Size

A minimum of three physical cartridges were tested in each printer.

5.3 Print environment

The test was carried out in a laboratory room with a temperature between 23.1°C and 25.3 °C.

5.4 Maintenance

Printer maintenance was performed according to the printer and cartridge user's manual.

5.5 Printing

The test was performed in continuous printing.

5.6 Measurement

For each cartridge the following parameters were measured: weight of full cartridge, weight of used cartridge and number of pages.

6 Results

6.1 Number of Prints

6.1.1 EPSON TM-C3500

		Cartridge No.	Weight Start [g]	Weight End [g]	Number of prints
1 st set	C	SJIC22P(C)	65.249	38.611	2610
	M	SJIC22P(M)	65.041	38.122	2101
	Y	SJIC22P(Y)	65.481	38.900	2132
	K	SJIC22P(K)	65.419	37.783	3722
2 nd set	C	SJIC22P(C)	65.533	38.961	2463
	M	SJIC22P(M)	65.582	38.725	1890
	Y	SJIC22P(Y)	65.482	39.032	1919
	K	SJIC22P(K)	65.395	37.826	3804
3 rd set	C	SJIC22P(C)	65.923	39.153	2453
	M	SJIC22P(M)	65.521	38.763	2161
	Y	SJIC22P(Y)	65.241	38.810	2190
	K	SJIC22P(K)	65.901	37.875	3677
4 th set	C	SJIC22P(C)	65.142	38.082	2388
	M	SJIC22P(M)	65.550	38.594	1932
	Y	SJIC22P(Y)	65.506	39.005	1964
	K	SJIC22P(K)	-	-	-
5 th set	C	SJIC22P(C)	-	-	--
	M	SJIC22P(M)	65.376	38.048	1880
	Y	SJIC22P(Y)	65.671	38.892	1910
	K	SJIC22P(K)	-	-	-

		Cartridge No.	Number of cartridges to be considered	Ø Number of prints	Standard deviation
	C	SJIC22P(C)	4	2479	94
	M	SJIC22P(M)	5	1993	129
	Y	SJIC22P(Y)	5	2023	129
	K	SJIC22P(K)	3	3734	64

6.1.2 PRIMERA LX900e

		Cartridge No.	Weight Start [g]	Weight End [g]	Number of prints
1 st set	C	53422	21.609	13.646	1631
	M	53423	21.766	13.917	1448
	Y	53424	22.084	13.890	998
	K	53425	41.015	22.564	929
2 nd set	C	53422	21.819	14.042	1515
	M	53423	21.752	14.059	1349
	Y	53424	21.571	13.474	933
	K	53425	41.101	22.436	845
3 rd set	C	53422	21.538	13.732	1537
	M	53423	21.453	13.875	1369
	Y	53424	21.653	13.640	981
	K	53425	41.152	22.909	917
4 th set	C	53422	-	-	-
	M	53423	-	-	-
	Y	53424	21.664	13.707	966
	K	53425	41.031	22.974	861
5 th set	C	53422	-	-	-
	M	53423	-	-	-
	Y	53424	-	-	-
	K	53425	40.843	22.538	850

		Cartridge No.	Number of cartridges to be considered	Ø Number of prints	Standard deviation
	C	53422	3	1561	62
	M	53423	3	1389	52
	Y	53424	4	970	28
	K	53425	5	1591	40

6.1.3 VIP COLOR VP495

		Cartridge No.	Weight Start [g]	Weight End [g]	Number of prints
1 st set	C	VP2-495-AS04A	63.970	35.466	1786
	M	VP2-495-AS10A	64.303	33.135	1736
	Y	VP2-495-AS13A	63.956	33.377	1022
	K	VP2-495-AS07A	113.930	43.760	34737*
2 nd set	C	VP2-495-AS04A	64.055	32.882	1909
	M	VP2-495-AS10A	64.205	33.227	1787
	Y	VP2-495-AS13A	63.866	33.720	1107
	K	VP2-495-AS07A	-	-	-
3 rd set	C	VP2-495-AS04A	63.822	33.084	1857**
	M	VP2-495-AS10A	64.389	33.436	1716**
	Y	VP2-495-AS13A	63.234	33.489	1128
	K	VP2-495-AS07A	-	-	-
4 th set	C	VP2-495-AS04A	-	-	-
	M	VP2-495-AS10A	-	-	-
	Y	VP2-495-AS13A	64.064	33.437	1145
	K	VP2-495-AS07A	-	-	-
5 th set	C	VP2-495-AS04A	-	-	-
	M	VP2-495-AS10A	-	-	-
	Y	VP2-495-AS13A	63.741	33.297	1192**
	K	VP2-495-AS07A	-	-	-

		Cartridge No.	Number of cartridges to be considered	Ø Number of prints	Standard deviation
	C	VP2-495-AS04A	3	1851	62
	M	VP2-495-AS10A	3	1746	37
	Y	VP2-495-AS13A	5	1119	63
	K	VP2-495-AS07A	1	34737*	-

Remarks:

*) The number of prints for the black cartridge was estimated, because of the high yield in comparison to the other colours.

***) The print heads were replaced after 4600 prints because of problems with the print quality. Replacement of the print heads did not solve the problem. The test was continued in spite of the problems.

6.2 Costs of Prints

The cartridge prices were determined on 08/08/2014 as part of an internet search. The sources are documented in appendix D. Cartridge price (incl. Tax):

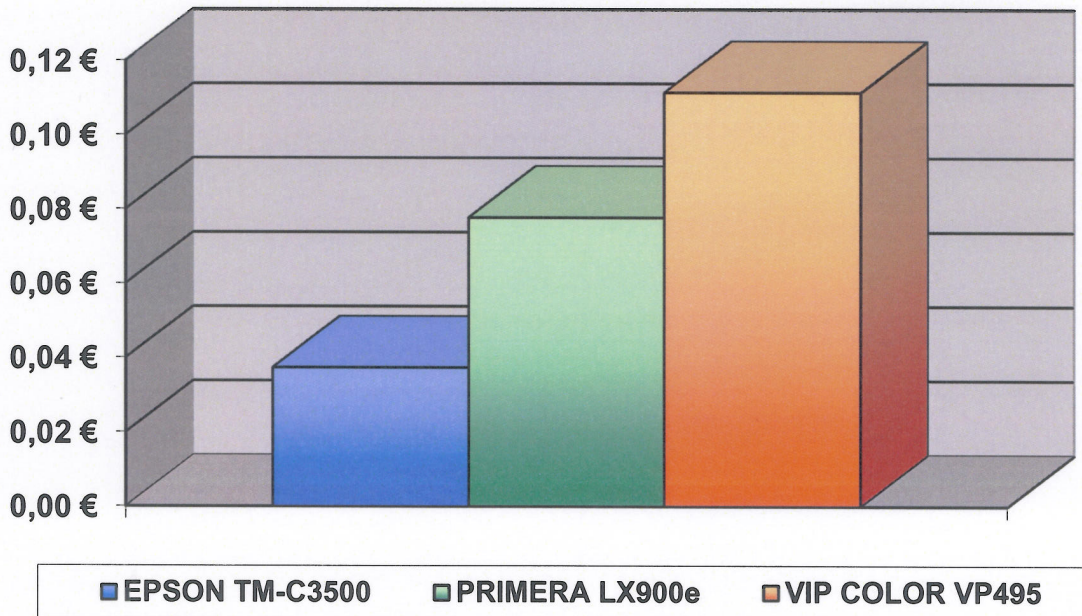
		EPSON TM-C3500	PRIMERA LX900e	VIP COLOR VP495
	C	22.36 €	23,89 €	54,74 €
	M	22.36 €	23,89 €	54,74 €
	Y	22.36 €	23,89 €	54,74 €
	K	22.36 €	32,64 €	53,55 €

The average ink costs were calculated using the following formula:

$$\varnothing \text{ Cost of Prints} = \sum \frac{\text{Price}_{cyan}}{\text{Prints}_{cyan}} + \frac{\text{Price}_{magenta}}{\text{Prints}_{magenta}} + \frac{\text{Price}_{yellow}}{\text{Prints}_{yellow}} + \frac{\text{Price}_{black}}{\text{Prints}_{black}}$$

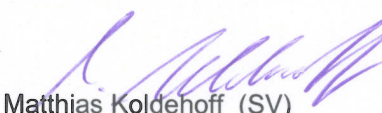
Printer	∅ Cost of prints
EPSON TM-C3500	0.0373 €
PRIMERA LX900e	0.0777 €
VIP COLOR VP495	0.1114 €

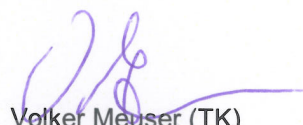
Ink Cost per Print



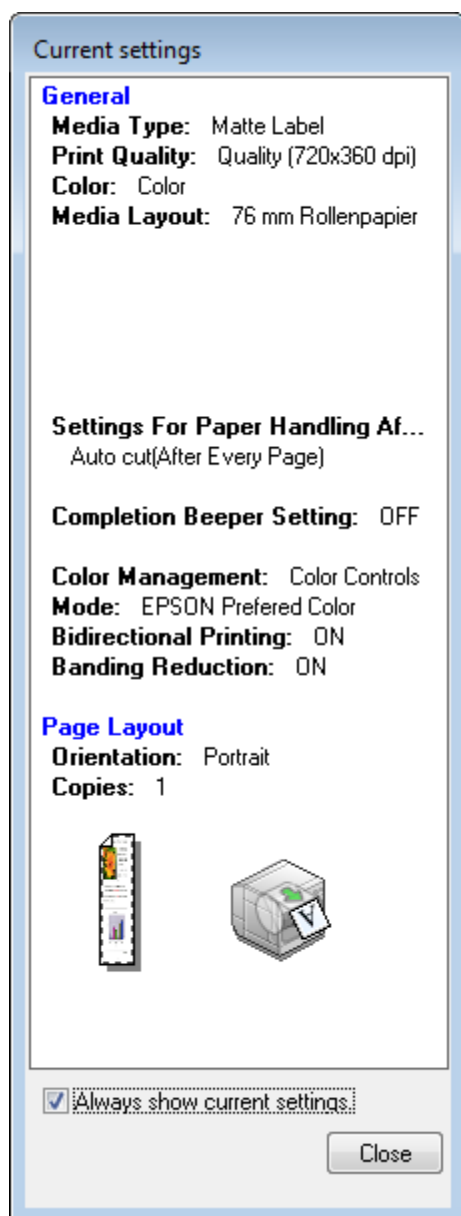
Cologne, 2014-08-08

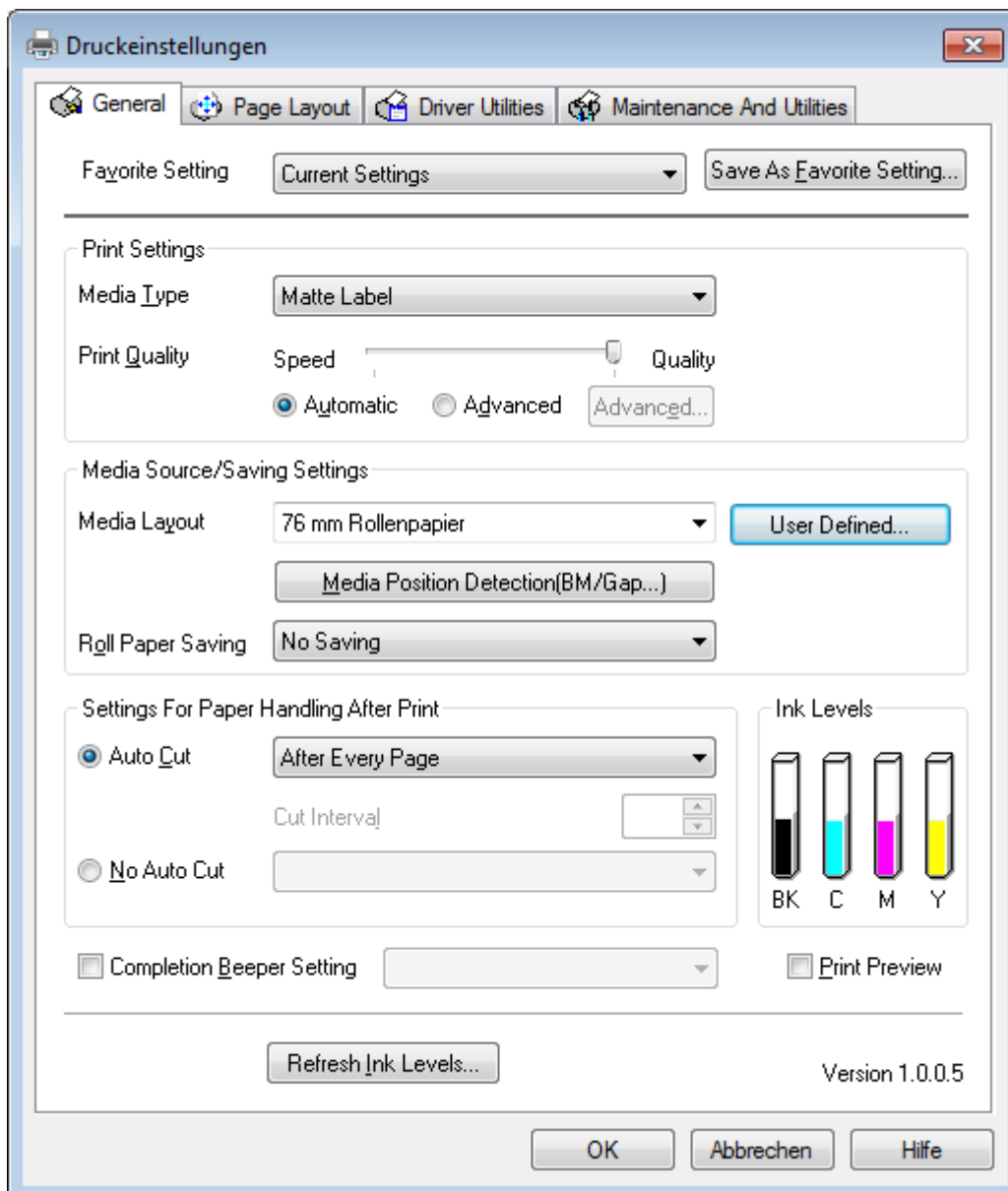
TÜV Rheinland LGA Products GmbH


 Matthias Koldehoff (SV)


 Volker Meuser (TK)

Appendix A – Printer Settings EPSON TM-C3500



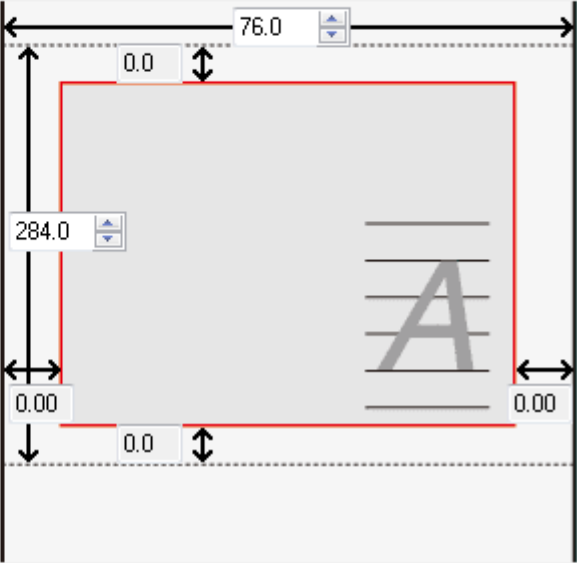


User Defined Media Layout

Media Layout Name :

Defined Media Layout :
NiceLabel SE custom layout

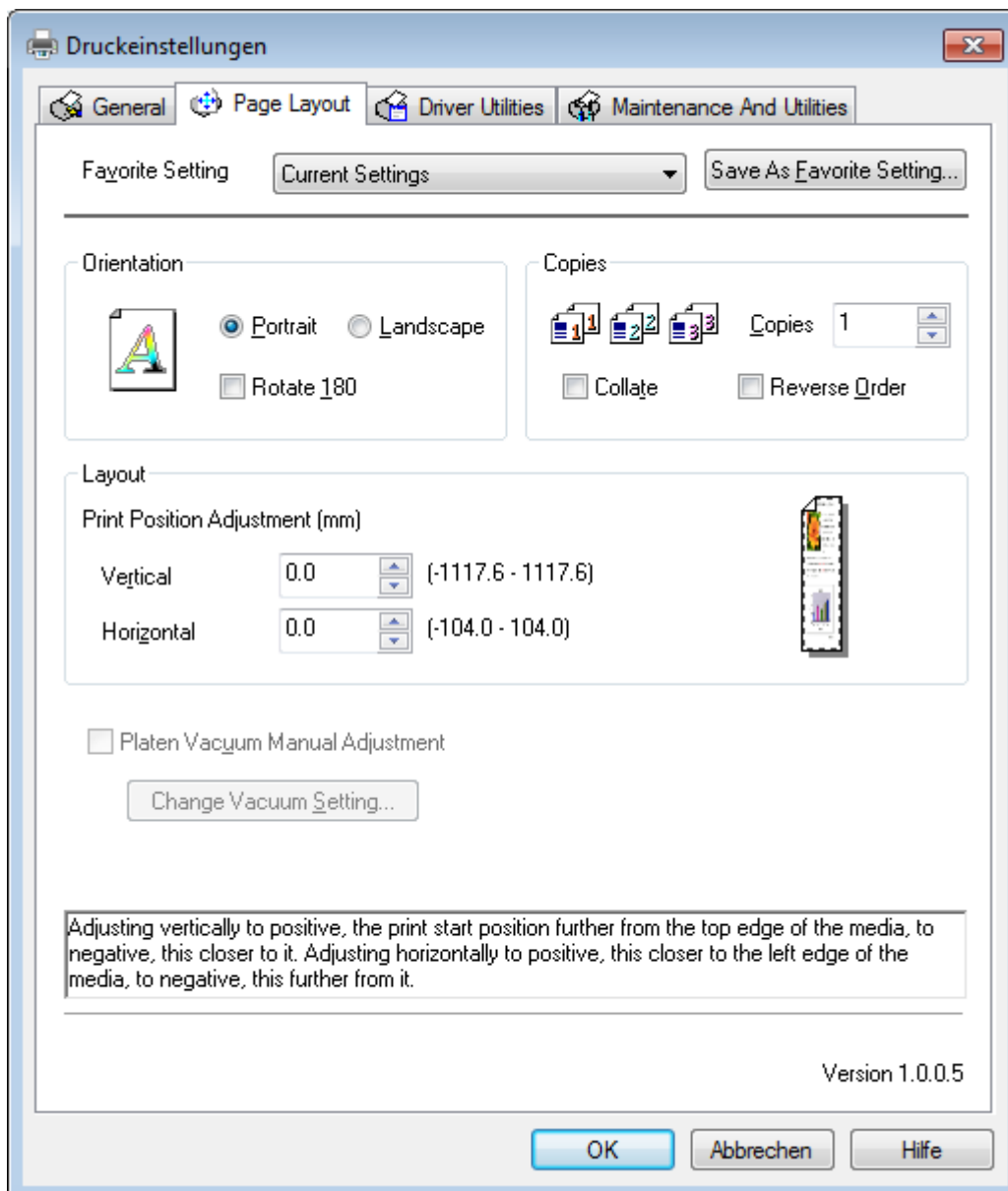
Media Form :

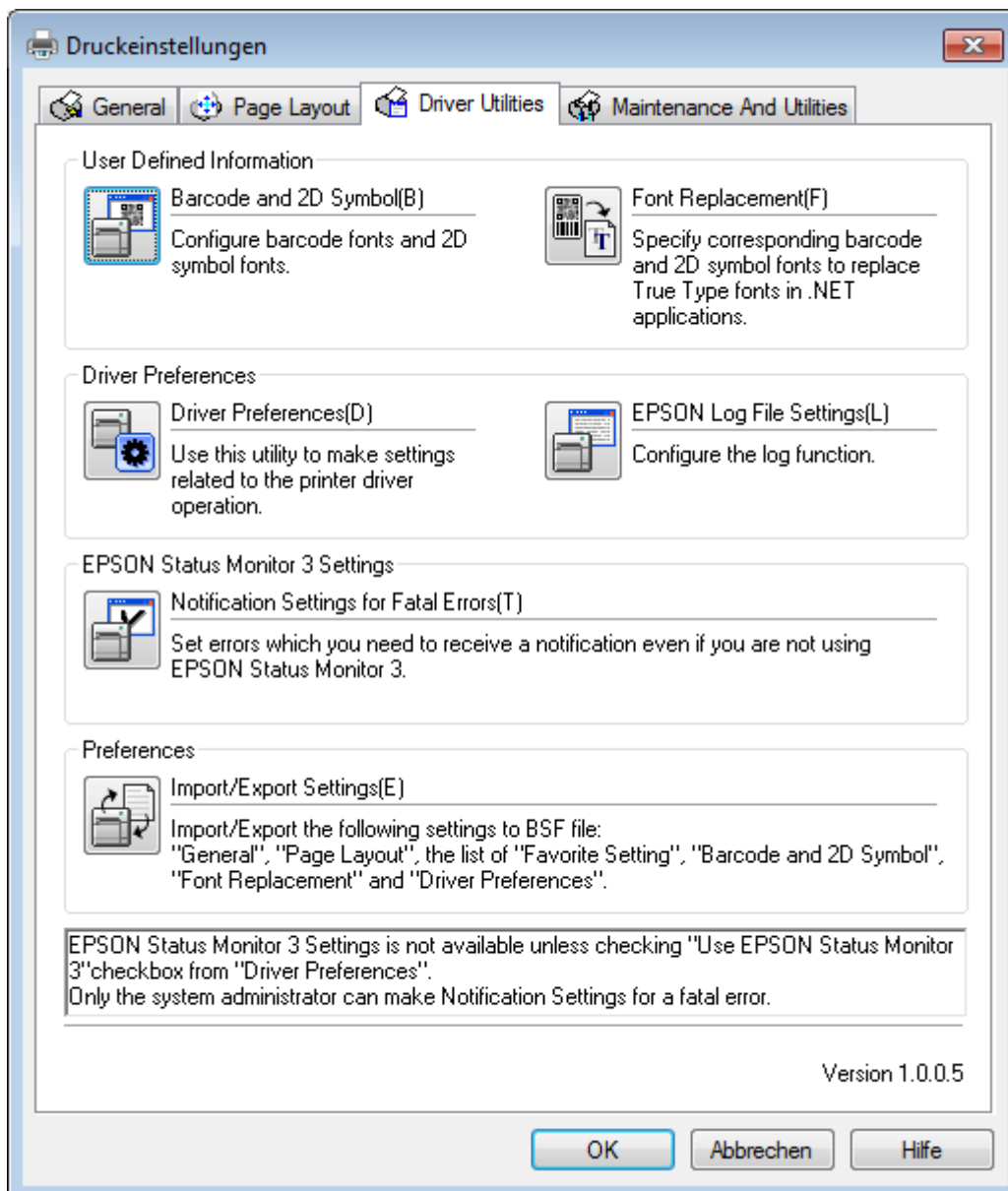


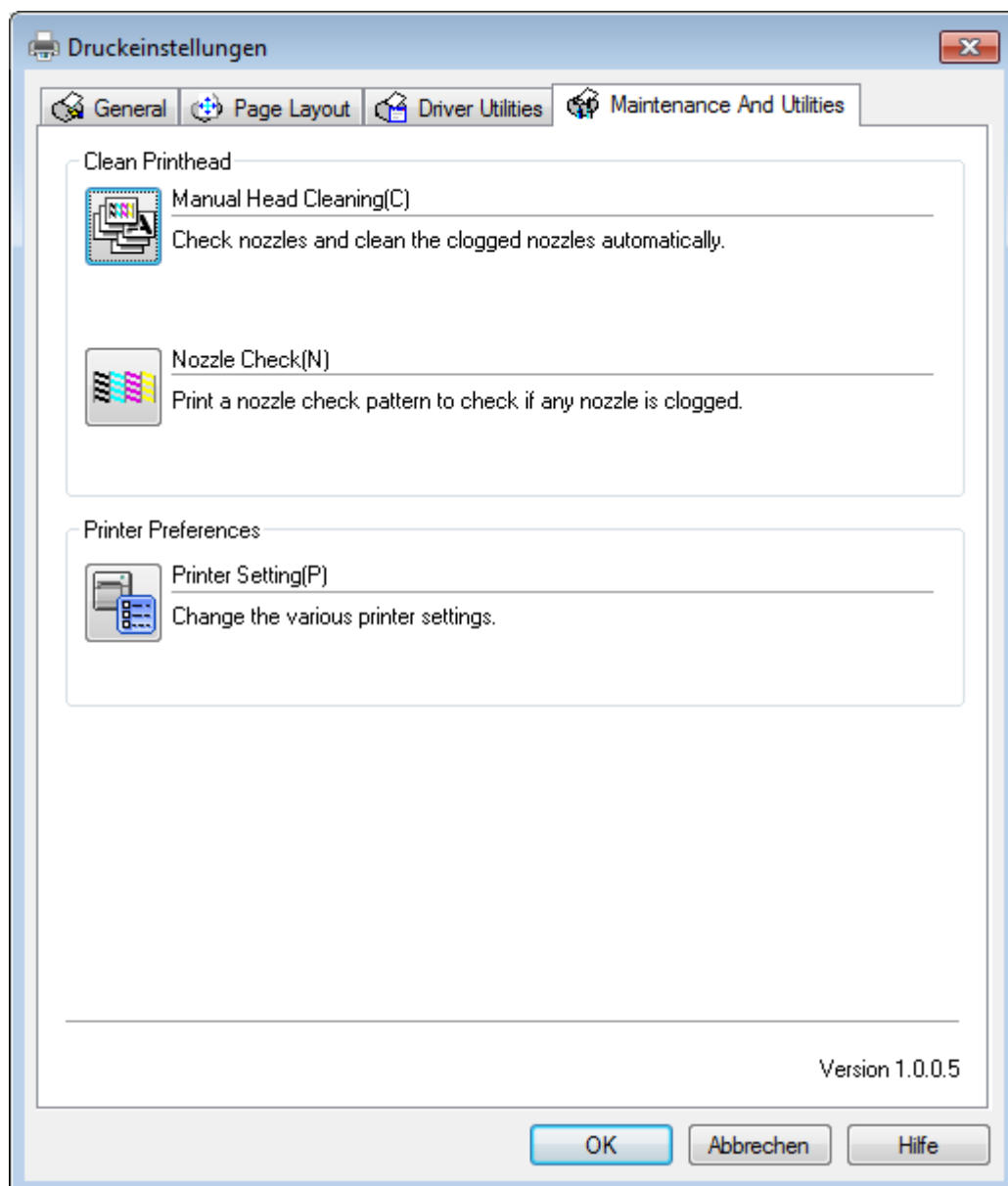
Extend Printable Area

Layout Information (mm)

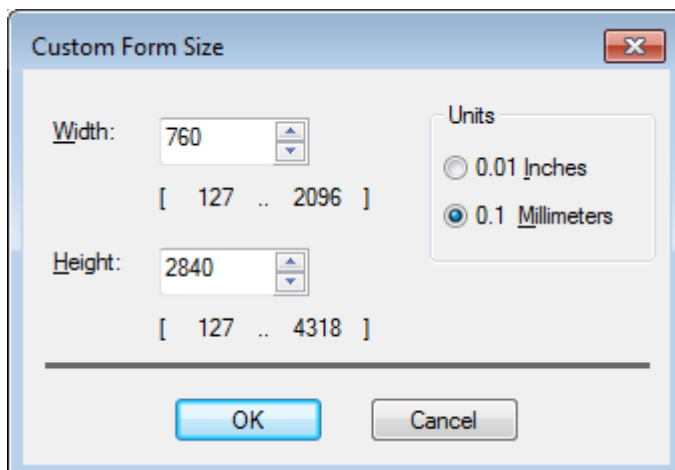
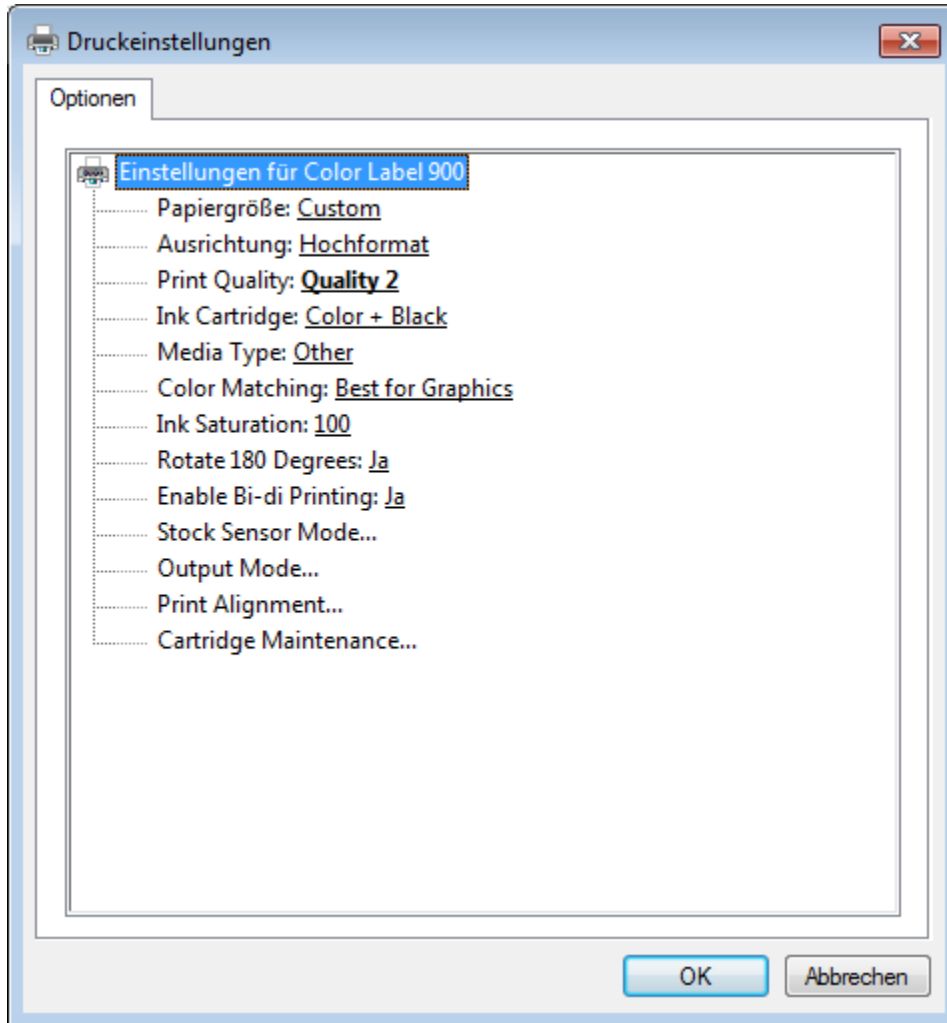
Media Width	<input type="text" value="76.0"/>	(30.0 - 108.0)	Media Length	<input type="text" value="284.0"/>	(15.0 - 1117.6)
Label Width	<input type="text"/>	(25.4 - 108.0)	Label Length	<input type="text"/>	(15.0 - 1117.6)
Labels Gap	<input type="text"/>	(3.0 - 6.0)	BM Interval	<input type="text"/>	(15.0 - 1117.6)



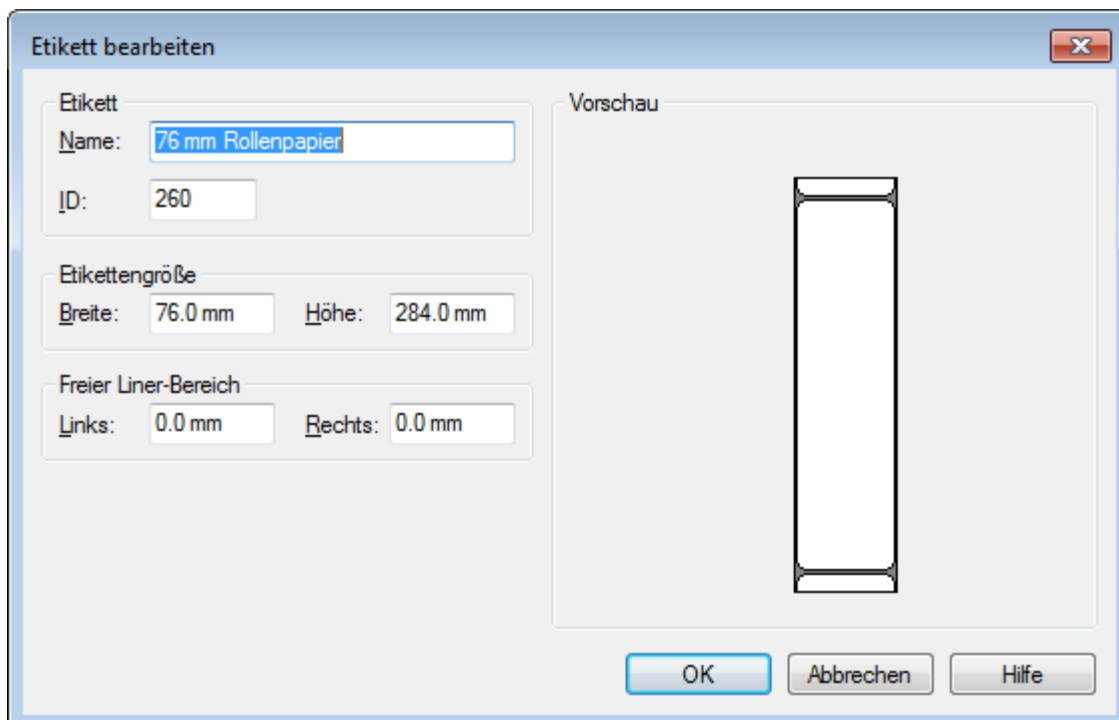
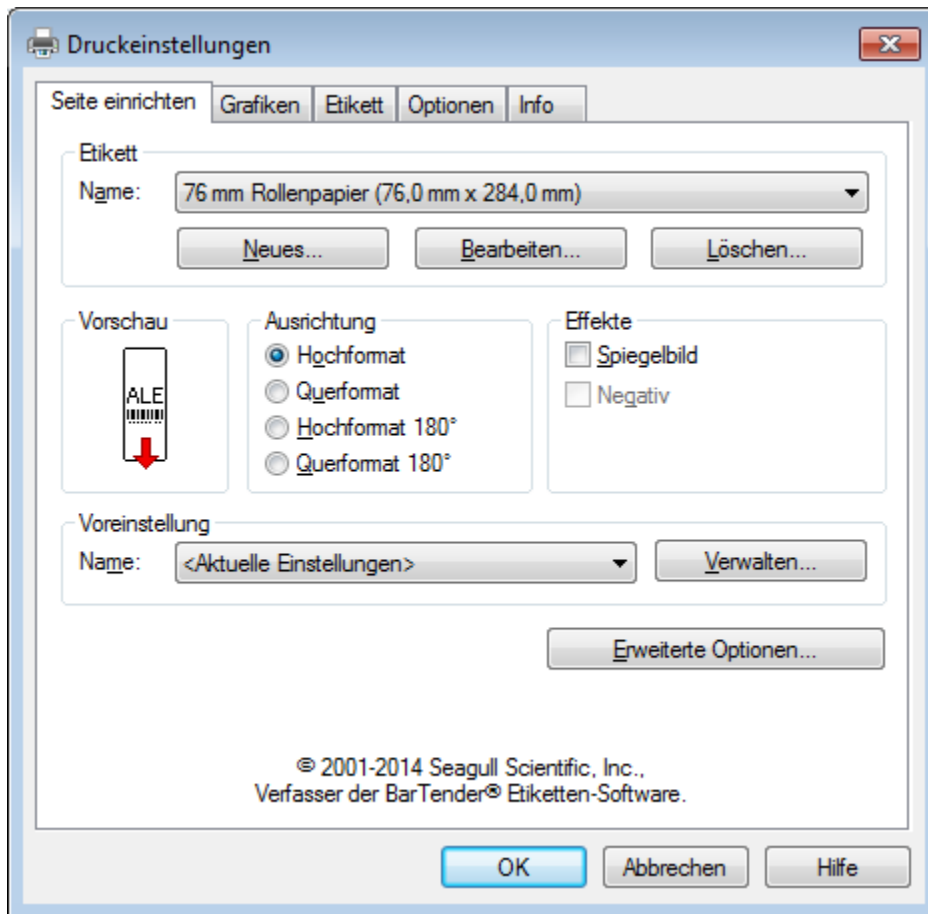


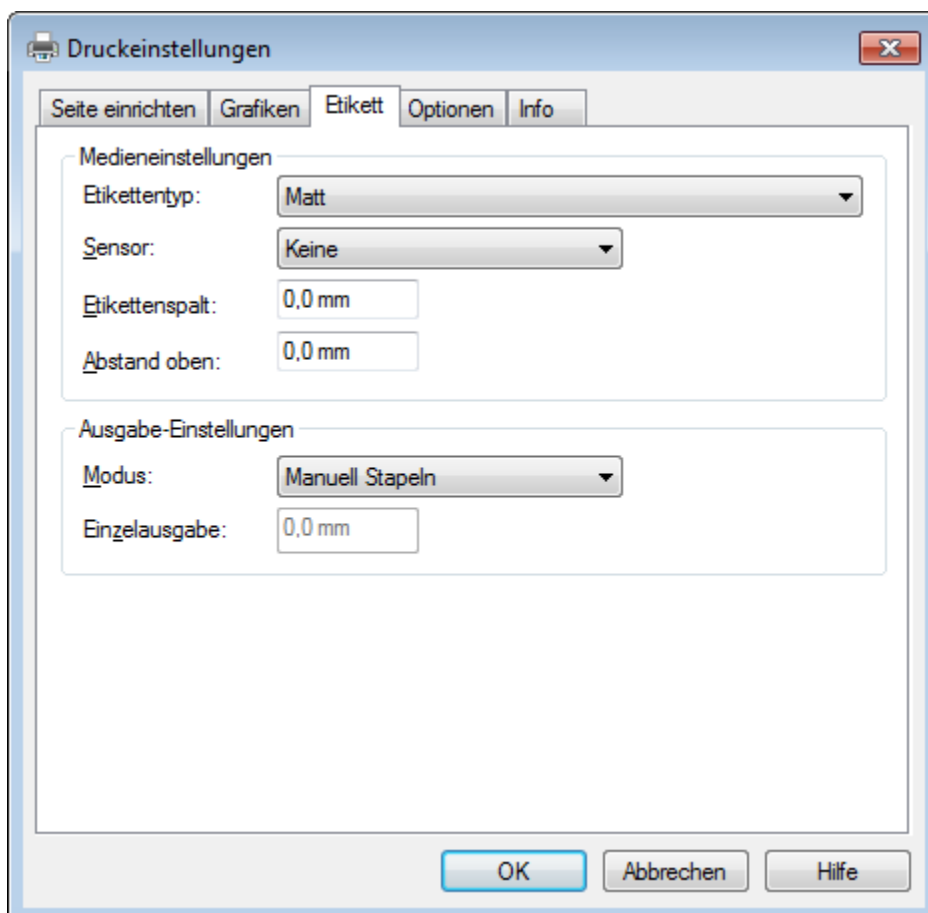
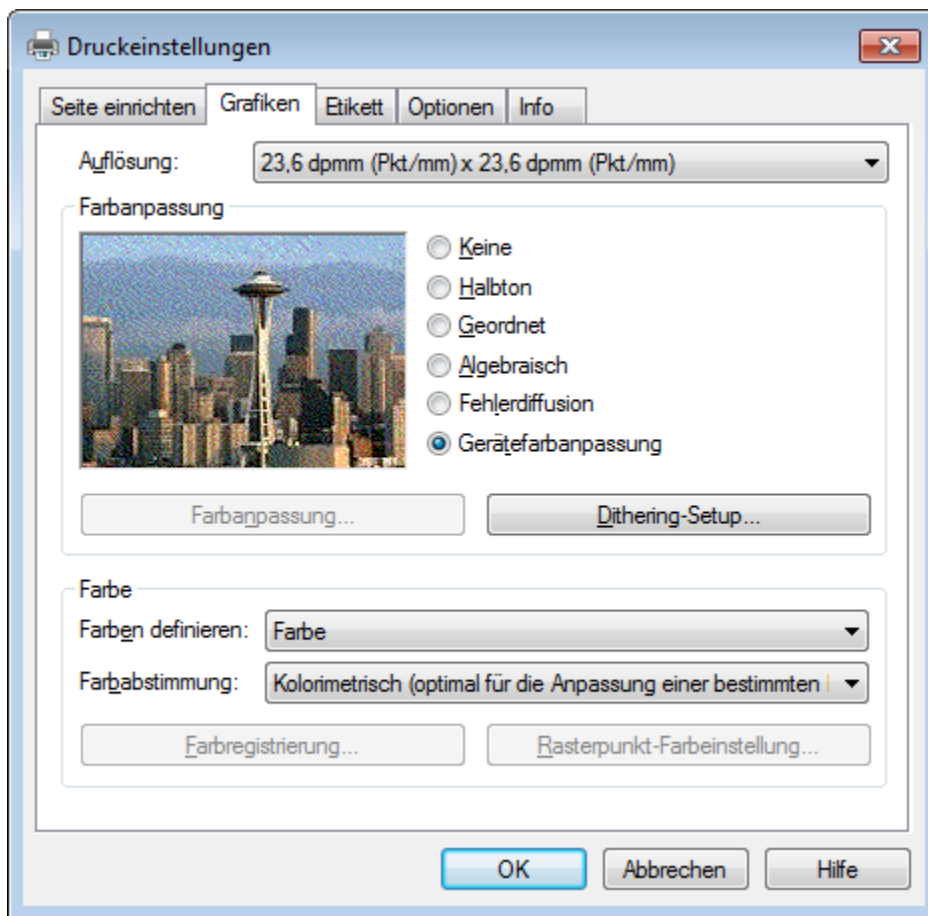


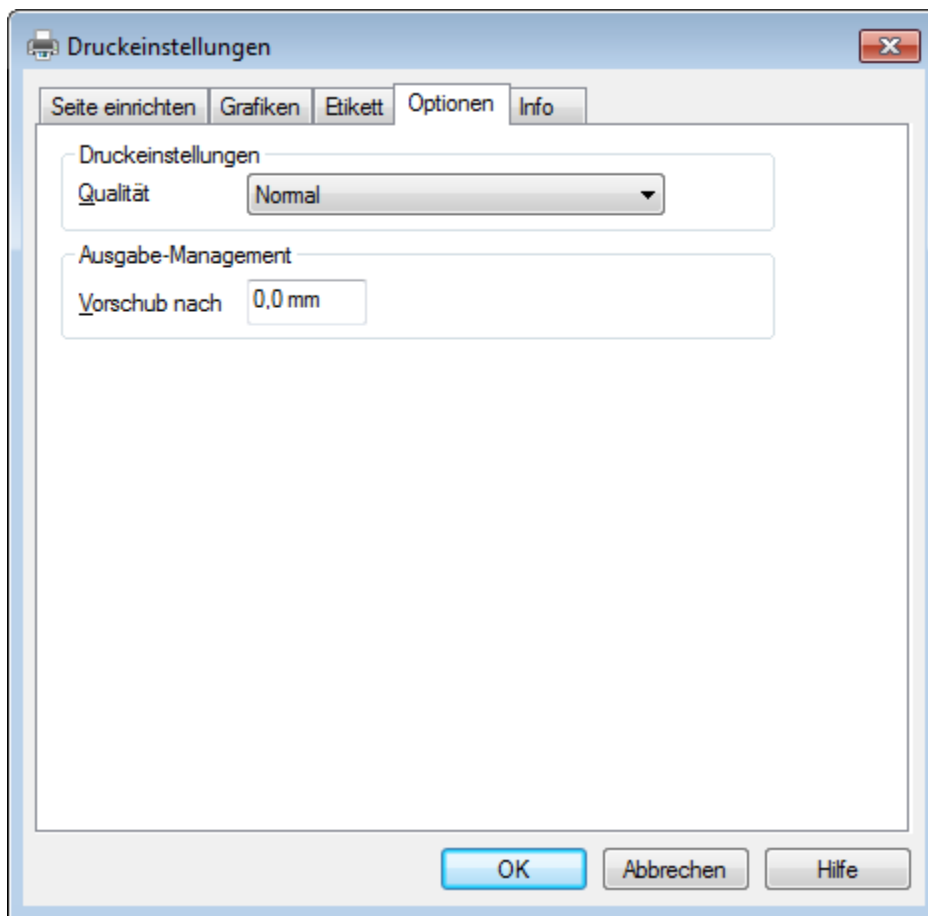
Appendix B – Printer Settings PRIMERA LX900e



Appendix C – Printer Settings VIP COLOR VP495







Appendix D – Price of cartridges

The cartridge prices were determined on 08/08/2014 as part of an internet search.

For Epson TM-C3500 the prices from the “EPSON”-Webshop were taken:

	Cartridge No.	Source	Price (incl. Tax)
C	SJIC22P(C)	http://www.epson.de/de/de/viewcon/corporatesite/products/consumables/overview/12965	22.36 €
M	SJIC22P(M)	http://www.epson.de/de/de/viewcon/corporatesite/products/consumables/overview/12967	22.36 €
Y	SJIC22P(Y)	http://www.epson.de/de/de/viewcon/corporatesite/products/consumables/overview/12968	22.36 €
K	SJIC22P(K)	http://www.epson.de/de/de/viewcon/corporatesite/products/consumables/overview/12966	22.36 €

For PRIMERA LX900e the prices were taken from the “grubster”-Webshop, as this was the cheapest shop on the price comparison site “idealo.de”:

	Cartridge No.	Source	Price (incl. Tax)
C	53422	http://www.grubster.de/_toner/tinte/Primera---Hohe-Ergiebigkeit---Cyan---Original---Tintenpatrone---fuer-Primera-LX900-Color-Label-Printer-RX900-Colour-RFID-Label-Printer.html	23,89 €
M	53423	http://www.grubster.de/_toner/tinte/Primera---Hohe-Ergiebigkeit---Magenta---Original---Tintenpatrone---fuer-Primera-LX900-Color-Label-Printer-RX900-Colour-RFID-Label-Printer.html	23,89 €
Y	53424	http://www.grubster.de/_toner/tinte/Primera---Hohe-Ergiebigkeit---Gelb---Original---Tintenpatrone---fuer-Primera-LX900-Color-Label-Printer-RX900-Colour-RFID-Label-Printer.html	23,89 €
K	53425	http://www.grubster.de/_toner/tinte/Primera---Hohe-Ergiebigkeit---Schwarz---Original---Tintenpatrone---fuer-Primera-LX900-Color-Label-Printer-RX900-Colour-RFID-Label-Printer.html	32,64 €

For VIP COLOR VP495 the prices were taken from the “KARLEY”- Webshop:

	Cartridge No.	Source	Price (incl. Tax)
C	VP2-495-AS04A	http://www.karley.de/etiketten_und_amp_drucker/farb_etikettendrucker/vp_zubehoer/cyan_pigmentierte_tintenpatrone_fuer_vip_color_vp495_farbetikettendrucker_vp2485as02b	54,74 €
M	VP2-495-AS10A	http://www.karley.de/etiketten_und_amp_drucker/farb_etikettendrucker/vp_zubehoer/magenta_pigmentierte_tintenpatrone_fuer_vip_color_vp495_farbetikettendrucker_vp2485as08b	54,74 €
Y	VP2-495-AS13A	http://www.karley.de/etiketten_und_amp_drucker/farb_etikettendrucker/vp_zubehoer/yellow_pigmentierte_tintenpatrone_fuer_vip_color_vp495_farbetikettendrucker_vp2485as11b	54,74 €
K	VP2-495-AS07A	http://www.karley.de/etiketten_und_amp_drucker/farb_etikettendrucker/vp_zubehoer/schwarze_tintenpatrone_fuer_vip_color_vp485_farbetikettendrucker_vp2485as07a	53,55 €