

MATRIXVIEW LIMITED

INDEPENDENT REPORT ON THE RESULTS OF DOCUMAT COMPRESSION SOFTWARE TESTING

19 April 2004

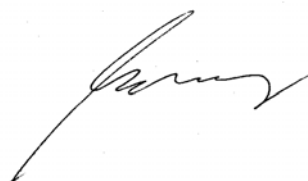
19 April 2004

To The Board of Directors
MatrixView Limited

Report on Compression Testing Results of DocuMat Compression Software

Please find attached our report resulting from our independent testing of the DocuMat compression software.

Yours faithfully



Lee Fu Kiang
Partner



John Pavlakis
Principal

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About this Report

This report represents the findings of testing in March 2004 the image compression ratio achieved by MatrixView Limited's DocuMat compression software version 1.

Scope

MatrixView Limited has engaged Ernst & Young to carry out independent testing of the image compression ratios achieved by DocuMat. The scope of testing was as follows:

- For each of the tested images, we identified the image compression ratio achieved by the DocuMat compression software and compared the result to the compression ratio obtained using software that compressed images using the CCITT G4 and the JBIG1 methods; and
- Compared the decompressed DocuMat, CCITT G4 and JBIG1 images to the original image to determine whether there was any 'loss' in the image bitmap.

Our work was undertaken in accordance with Australian Auditing Standard AUS 904 "Engagements to Perform Agreed Upon Procedures". The responsibility for determining the adequacy or otherwise of the procedures agreed to be performed is that of MatrixView Limited management. The procedures performed do not constitute either an audit or a review and, as such, no assurance is expressed. Had additional procedures been performed, other matters may have come to our attention that would have been reported.

Purpose

The purpose of this report is to independently report to the Board of MatrixView Limited and potential investors wishing to subscribe to MatrixView shares in the public offer document dated [], the image compression ratios achieved by the DocuMat compression software in comparison to CCITT G4 and JBIG1, and to determine whether the DocuMat decompressed images result in bitmap image loss.

About DocuMat

MatrixView Limited has represented that the DocuMat compression software is designed to be used only for the compression and decompression of bitmap bi-level images; e.g. black and white binary images.

MatrixView Limited represent that the DocuMat compression software is based on their proprietary algorithm called 'ABO' (Adaptive Binary Optimisation), which they claim provides 'lossless' and more efficient compression than the CCITT G4 standard, and similar compression ratio performance to JBIG1. For our testing, MatrixView Limited has provided us with a pre-commercial evaluation version of the DocuMat compression software version 1.

Procedures Performed

Pre-Test Procedures

On 8 March 2004 we received from MatrixView Limited a CD-ROM demonstration test kit labelled with serial number MV000136 containing the following:

- DocuMat Version 1 software and sample images on CD- ROM; and
- A USB dongle labelled with serial number 000136.

We installed the DocuMat compression software onto our PC ('the Test PC') and attached the USB dongle. The PC used was a Dell PowerEdge with an x86 Intel 927 MHz processor, 1GB RAM. The Test PC was run using the Windows 2000 operating system.

Sample of Images

- Sample 1 (10 Images): We selected 10 bi-level TIFF format images from a sample provided by MatrixView Limited. The selected images were based on reference images developed by the CCITT Group;
- Sample 2 (10 images): We obtained 10 images by scanning 10 pages of the Australian Tax Office Publication 'Pay as You Go Statement of Formulas for Calculating Amounts to be Withheld' ('NAT 1004-7 2003') saving scanned images as a bi-level TIFF format.
- Sample 3 (12 images): We obtained 12 GIF images from www.imagepower.com/compress/ccitt_images.htm on 18 March 2004. We converted these images into bi-level TIFF format on our Test PC using Softpro 'Ezi Image' release 1.01. The 12 images represent reference images developed by the CCITT Group.

All images were copied to our Test PC, and we recorded the size in bytes of each TIFF format file before commencing the test procedures.

Test Procedures

Compression and Decompression using DocuMat Compression Software

- On the Test PC all sample images were compressed using DocuMat compression software and saved in DocuMat's compressed 'DVU' format files with new file names. We recorded the size in bytes of each compressed file.
- On the Test PC all compressed images were then decompressed into TIFF format files using the DocuMat compression software, and saved under new file names. We recorded the size in bytes of each decompressed file.

Compression, Decompression using JBIG1 and CCITT G4

- On the Test PC compression and decompression of images into JBIG1 and CCITT G4 formats was performed using 'XnView' version 1.61 software (XnView is freeware software that allows the viewing and conversion of graphic file images). The size in bytes of each compressed and decompressed file was recorded.

Error Checking

- On the Test PC the decompressed, DocuMat, CCITT G4 and JBIG1 images were compared for differences against the original images using the following software:
 - DocuMat's 'Error Viewer' and the results were recorded; and
 - 'Dup Detector' version 3.101 (shareware software obtained from www.prismaticsoftware.com).

Findings

Compression

We found that the DocuMat compression ratio was higher than CCITT G4 compression ratio, with the Ratio Gain ranging from 1.26 to 2.28. DocuMat achieved compression ratios similar to JBIG1, with the Ratio Gain ranging from 1.00 to 1.02 (with one instance where JBIG1 had a compression ratio slightly better than DocuMat). The following tables summarise the results by sample set:

	Sample Size	Sample Average Compression Ratio				
		DocuMat	CCITT G4	JBIG1	Ratio Gain DocuMat to CCITT G4 ¹	Ratio Gain DocuMat to JBIG1 ²
Sample 1	10	13.45	9.00	13.40	1.49	1.00
Sample 2	10	16.50	12.02	16.45	1.37	1.00
Sample 3	12	20.59	13.56	20.49	1.52	1.01
Overall		16.45	11.35	16.39	1.45	1.00

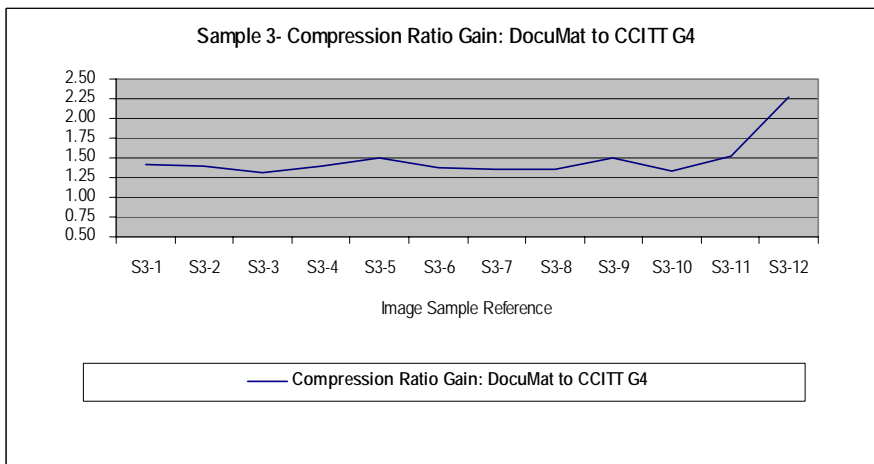
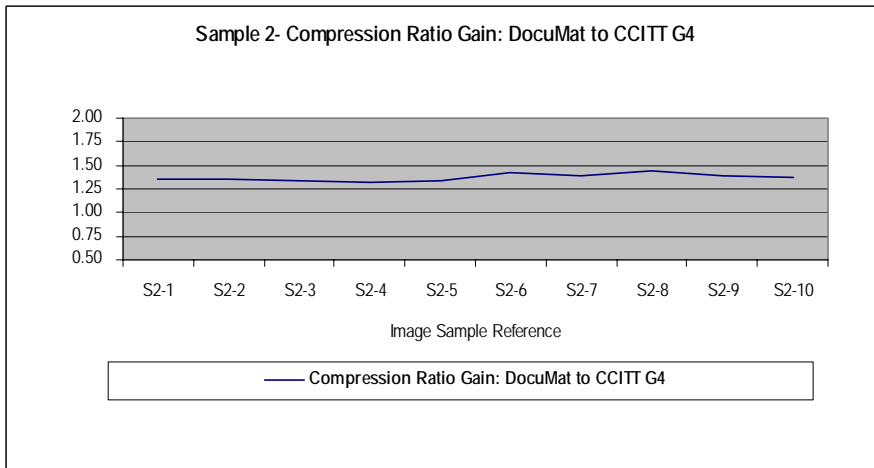
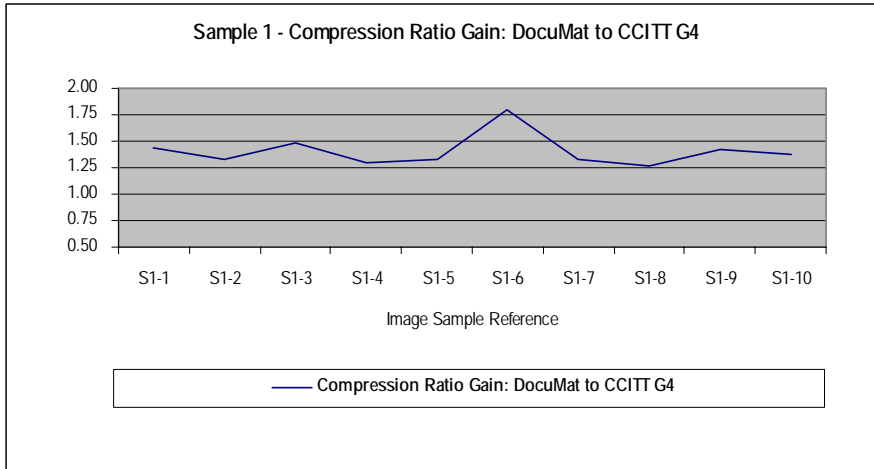
	Sample Size	Sample Compression Range (Min, Max)				
		DocuMat	CCITT G4	JBIG1	Ratio Gain DocuMat to CCITT G4 ¹	Ratio Gain DocuMat to JBIG1 ²
Sample 1	10	5.85 / 59.85	3.25 / 41.6	5.82 / 59.82	1.26 / 1.80	1.00 / 1.01
Sample 2	10	12.85 / 26.66	8.98 / 19.99	12.8 / 26.59	1.31 / 1.44	1.00 / 1.01
Sample 3	12	7.96 / 63.89	3.49 / 42.7	7.93 / 63.97	1.31 / 2.28	1.00 / 1.02
Overall		5.85 / 63.89	3.25 / 42.7	5.82 / 63.97	1.26 / 2.28	1.00 / 1.02

Table Notes

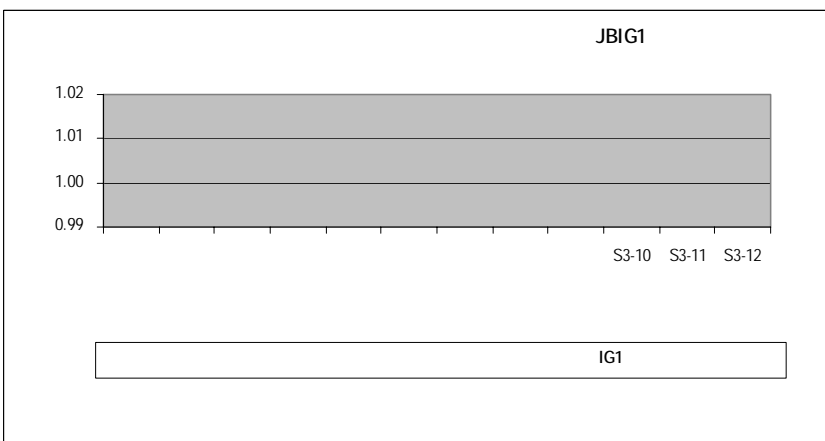
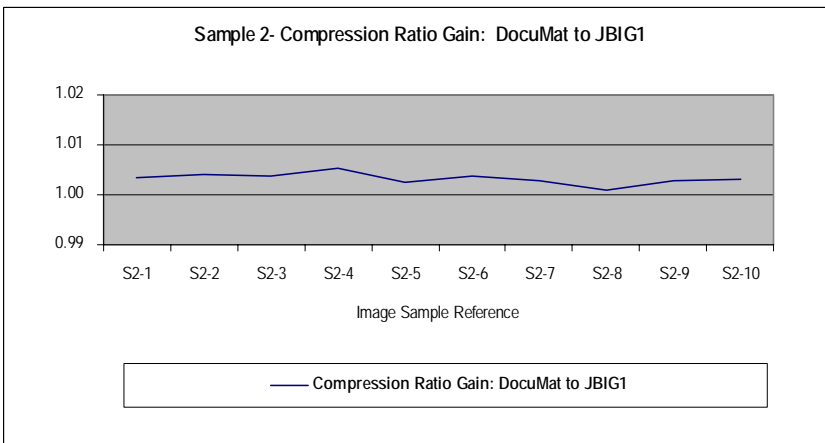
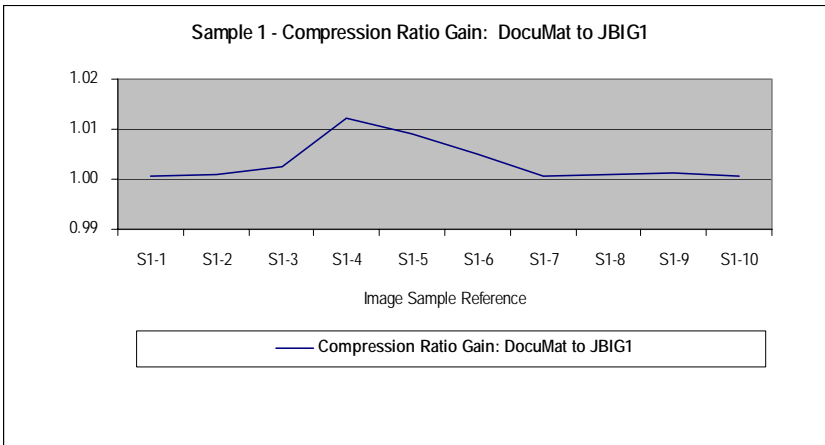
¹ "Ratio Gain DocuMat to CCITT G4" has been derived by dividing DocuMat's compressed image ratio by CCITT G4's compressed image ratio, with the result rounded to 2 decimal places. A ratio greater than 1 indicates that DocuMat achieved a compression ratio greater than CCITT G4.

² "Ratio Gain DocuMat to JBIG1" has been derived by dividing DocuMat's compressed image ratio by JBIG1's compressed image ratio, with the result rounded to 2 decimal places. A ratio greater than 1 indicates that DocuMat achieved a compression ratio greater than JBIG1.

The following graphs show the Compression Ratio Gain of DocuMat over CCITT G4 for each image in Sample 1, 2 and 3:



The following graphs show the Compression Ratio Gain of DocuMat over JBIG1 for each image in Sample 1, 2 and 3:



Compression Loss

No compression loss was detected on the decompressed images for DocuMat, JBIG1 and CCITT G4 using the 'Error Viewer' and 'Dup Detector' software.

Detailed Table of Results by Image

Image Ref.	Image Filename	TIFF Original Size (Bytes)	DocuMat			CCITT G4 Size (Bytes)		JBIG1		Ratio Compression Gain of DocuMat over:	
			Compressed Size (Bytes)	Decompressed Size (Bytes)	Compression Ratio	Compressed Size (Bytes)	Compression Ratio	Compressed Size (Bytes)	Compression Ratio	CCITT G4	JBG
Sample Set 1											
S1-1	ccitt2	513,954	8,588	513,350	59.85	12,355	41.60	8,591	59.82	1.44	1.00
S1-2	Ccitt4	513,954	54,337	513,350	9.46	72,206	7.12	54,369	9.45	1.33	1.00
S1-3	Ccitt6	513,954	12,580	513,350	40.85	18,598	27.63	12,611	40.75	1.48	1.00
S1-4	Ccitt7	513,954	55,676	513,350	9.23	71,914	7.15	56,327	9.12	1.29	1.01
S1-5	Image03_300_DPI	999,699	25,851	999,636	38.67	34,508	28.97	26,089	38.32	1.33	1.01
S1-6	Image10_300_DPI	1,119,888	191,450	1,119,824	5.85	344,539	3.25	192,555	5.82	1.80	1.01
S1-7	Image18_200_DPI	504,310	26,970	498,554	18.70	35,658	14.14	26,981	18.69	1.32	1.00
S1-8	Image23_300_DPI	852,527	81,530	852,464	10.46	102,792	8.29	81,572	10.45	1.26	1.00
S1-9	Image24_300_DPI	880,060	35,489	872,982	24.80	50,533	17.42	35,532	24.77	1.42	1.00
S1-10	Image28_300_DPI	939,754	54,109	932,774	17.37	74,002	12.70	54,143	17.36	1.37	1.00
Sample Set 2											
S2-1	Page01	1,101,116	54,525	1,100,046	20.19	74,150	14.85	54,725	20.12	1.36	1.00
S2-2	Page02	1,101,116	73,659	1,100,046	14.95	100,150	10.99	73,941	14.89	1.36	1.00
S2-3	Page03	1,101,116	58,736	1,100,046	18.75	78,030	14.11	58,956	18.68	1.33	1.00
S2-4	Page04	1,101,116	57,255	1,100,046	19.23	75,188	14.64	57,546	19.13	1.31	1.01
S2-5	Page05	1,101,116	41,299	1,100,046	26.66	55,084	19.99	41,416	26.59	1.33	1.00
S2-6	Page06	1,101,116	85,716	1,100,046	12.85	122,556	8.98	85,995	12.80	1.43	1.00
S2-7	Page07	1,101,116	81,188	1,100,046	13.56	112,210	9.81	81,430	13.52	1.38	1.00
S2-8	Page08	1,101,116	50,308	1,100,046	21.89	72,538	15.18	50,357	21.87	1.44	1.00
S2-9	Page09	1,101,116	79,471	1,100,046	13.86	109,912	10.02	79,677	13.82	1.38	1.00
S2-10	Page10	1,101,116	85,010	1,100,046	12.95	115,998	9.49	85,302	12.91	1.36	1.00

Image Ref.	Image Filename	TIFF Original Size (Bytes)	DocuMat			CCITT G4 Size (Bytes)		JBIG1		Ratio Compression Gain of DocuMat over:	
			Compressed Size (Bytes)	Decompressed Size (Bytes)	Compression Ratio	Compressed Size (Bytes)	Compression Ratio	Compressed Size (Bytes)	Compression Ratio	CCITT G4	JBG
Sample Set 3											
S3-1	Ccitt1-300	1,123,254	19,542	1,120,134	57.48	27,779	40.44	19,669	57.11	1.42	1.01
S3-2	Ccitt5-300	1,123,254	34,662	1,120,134	32.41	48,455	23.18	34,751	32.32	1.40	1.00
S3-3	Ccitt7-300	1,123,254	79,929	1,120,134	14.05	104,821	10.72	80,374	13.98	1.31	1.01
S3-4	f01_200	512,302	12,844	505,358	39.89	18,060	28.37	12,884	39.76	1.41	1.00
S3-5	f02_200	512,302	8,019	505,358	63.89	11,998	42.70	8,008	63.97	1.50	1.00
S3-6	f03_200	512,302	20,033	505,358	25.57	27,606	18.56	20,052	25.55	1.38	1.00
S3-7	f04_200	512,302	48,942	505,358	10.47	66,508	7.70	49,039	10.45	1.36	1.00
S3-8	f05_200	512,302	23,181	505,358	22.10	31,256	16.39	23,272	22.01	1.35	1.00
S3-9	f06_200	512,302	11,744	505,358	43.62	17,732	28.89	11,764	43.55	1.51	1.00
S3-10	f07_200	512,302	51,484	505,358	9.95	68,980	7.43	52,306	9.79	1.34	1.02
S3-11	f08_200	512,302	13,269	505,358	38.61	20,234	25.32	13,288	38.55	1.52	1.00
S3-12	f10_200	505,382	63,529	504,710	7.96	144,808	3.49	63,725	7.93	2.28	1.00

Non Endorsement of Products and Services

Our findings do not constitute an endorsement of MatrixView Limited's DocuMat compression software or any other products or services.

We have not been involved in the software development testing of the DocuMat compression software, and have not performed any testing of the stability, security, performance or functionality of the DocuMat compression software. We provide no assurance on the readiness of the DocuMat compression software for market launch.

Inherent Risk in Tools Used

We have used certain software tools in performing the test procedures as indicated in this report, including 'XnView', 'Error Viewer' and 'Dup Detector'. We have relied on these software tools, and have not sought to verify whether the software tools have programming errors that may otherwise alter the validity of this Report's findings.

Limitations of Use

This report makes no assertions about the mathematical validity of the ABO compression algorithm or the implementation of the algorithm.

The results of this report are only valid under the conditions of the performance of the tests. We are not responsible for any extension of the findings to other related or unrelated situations or conditions.

This report was prepared solely for the purpose set out in this report and is not to be used for any other purpose or distributed to any other party without our prior written consent. We disclaim all liability to any other party for all costs, loss, damage and liability that the other party may suffer or incur arising from or relating to or in any way connected with the contents of our report, the provision of our report to the other party or the reliance upon our report by the other party.

Definition of Terms

Term	Definition
Bi-level Image	A bi-level image is a computer image in which each pixel (picture element) is represented by only one bit, which can be either on or off. A bi-level image contains only two colours: a background colour and a foreground colour. Bi-level images are typically created as the result of scanning a printed image with a scanner that can only register light or dark or for the purpose of facsimile transmission.
CCITT	Comité Consultatif International Téléphonique et Télégraphique (CCITT). A group within the International Telecommunication Union (ITU) that developed the 'CCITT G4' compression standard.
Dongle	A mechanism for ensuring that only authorised users can copy or use specific software applications. Common mechanisms include a hardware key that plugs into a USB, parallel or serial port on a computer and that a software application accesses for verification before continuing to run.
GIF	Graphics Interchange Format. This is a graphics file format used to display indexed colour graphics. It supports up to 256 colours and uses lossless compression; i.e. the image data is not lost when the file is compressed.
International Telecommunication Union	An inter-governmental organisation through which public and private organisations develop telecommunication standards.
JBIG1	An image compression standard (International Standard 11544) developed by the Joint Bi-Level Image Experts Group (JBIG) of the ISO (International Standards Organisation).
Lossless	A term describing a data compression algorithm which retains all the information in the data, allowing it to be recovered perfectly by decompression.
TIFF (Tag Image File Format)	Is a common format for exchanging bitmap between application programs, including those used for scanner images. A TIFF file is normally identified as a file with a ".tiff" or ".tif" file name suffix. The TIFF format was developed in 1986 by an industry committee chaired by the Aldus Corporation (now part of Adobe Software). TIFF is currently one of the most common graphic image formats, commonly used in desktop publishing, faxing, 3-D applications, and medical imaging applications.
USB	USB (Universal Serial Bus). Provides an interface between a computer and add-on physical devices.