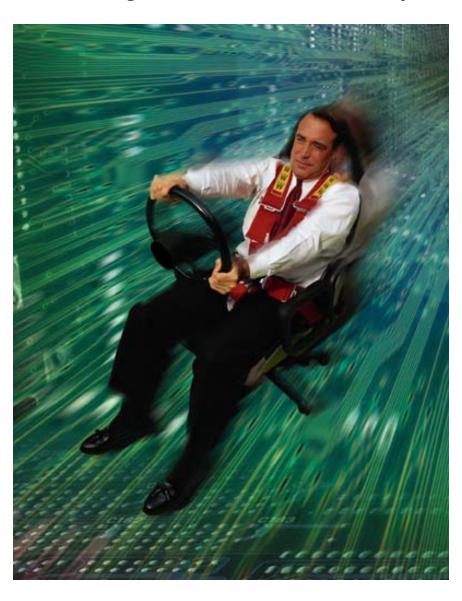
How to Slash Corporate Fax Telephone Charges 20 - 80%

Overview of V.34 Faxing and JBIG Document Compression

Significantly
improve the
delivery of fax
documents to
your audience
while drastically
reducing long
distance phone
charges





Copyright © 2005 FaxBack, Inc. All rights reserved. Published in 2004

FaxBack, Inc. considers information included in this documentation and in NET SatisFAXtion online help to be Confidential Information. Your access to and use of this Confidential Information are subject to the terms and conditions of the FaxBack and NET SatisFAXtion software license agreement, which has been executed and with which you agree to comply.

Contents

Reducing Fax Telephone Charges 20 - 80%

Overview of V34 Faxing and JBIG Compression

Executive Summary	3
The Challenge in Today's Business Environment	3
The Solution	4
Going Beyond Traditional Fax Server Capabilities	4
V.34 Faxing	5
V.34 Fax Machine Penetration and Growth	5
JBIG Document Compression Technology	5
How a Fax Call Works	6
Evaluating the ROI of a V.34 Fax Server	7
Cost Savings (two examples)	8
Compared to Outsourcing	10
Fax Hardware Support	11
Capacity and Scalability	11
Summary	12
More Info	12

Executive Summary

In today's economic climate, the pressure for companies to streamline communications processes, boost productivity while reducing costs has never been greater. These pressures include eliminating manual processes such as hand-feeding documents through a fax machine, faxing from single modem supported applications such as WinFax PRO as well as traditional LAN-based fax servers that are unable to support high-speed fax delivery.

Many companies are quickly realizing that these methods not only waste valuable employee time, but they can be costly in terms of doing business effectively. In today's demanding information age, getting data into the hands of your customers, suppliers and partners quickly and efficiently is critical to doing business.

When you consider that nearly 90% of the documents that are faxed originate on a computer, it is easy to see how a fax solution like NET SatisFAXtion has become an everyday staple of standard business communications for departments like purchasing, sales, customer service, human resources, as well as legal and accounting.

FaxBack's High-Speed Production suite goes one step further in automating the delivery of mission-critical information by giving users <u>unprecedented performance increases in fax</u> transmission times as well as significant cost savings on phone charges.

Any business that is interested in drastically reducing their fax phone bill charges will immediately realize the significant cost savings not only an monthly, yearly but long-term basis compounded over years of faxing. FaxBack utilizes V.34 fax and JBIG support to significantly reduce fax connection times (anywhere between 20-80%) boosting delivery times while dramatically decreasing long distance costs.

This guide is designed to give an overview of how companies can reduce their corporate Fax telephone bill, provide explanations for fax industry terms like V.34 and JBIG Document Compression while showing you the benefits these technologies can bring to any size organization.

The Challenge in Today's Competitive Business Environment

Few businesses can survive without being able to fax documents such as sales quotes, invoices, purchase orders, business contracts and more. Even in SOHO (small office/ home office) environments where the owner or manager does all those functions (and more), the advantages and ease of being able to fax directly from the desktop PC is quickly realized.

The reliance on faxing for business to business correspondence has driven explosive growth in the daily number of faxes companies are handling. Consolidation. Globalization. Mobile Commerce. Changing Consumer Expectations. The effects of these trends are enormous.

Being competitive in the market means getting time-sensitive, mission-critical information into the hands of your customers, supplier, partners and employees quickly and easily.

To accomplish business objectives on all sides many companies seem to be driving in three directions:

- Improving customer service
- Enabling the workforce
- Increasing core operating efficiencies

The Solution

Many businesses are turning to proven messaging models to deliver what their clients want as quickly as possible. Computer-based or LAN-based faxing is an application that's proven fast, effective and reliable information vehicle across a range of industries including banking/financial services, manufacturing, distribution and healthcare. Fax continues to be the best delivery method for reaching audiences.

Going Beyond Traditional Fax Server Capabilities

FaxBack has incorporated V.34 fax support and JBIG Document Compression technology into its High-Speed Production suite.

The increase in speed performance that V.34 fax support and JBIG Document Compression provides is staggering, especially considering users now have the ability to send what was once a 60-second fax document in less than 15 seconds.

Faxes Delivered Much Faster

With V.34 and JBIG companies are able to enjoy significant performance increases in fax transmission times. Users have the ability to send what was once a 60-second, high-resolution fax document *in less than 15 seconds* using V.34 and JBIG compression technology. For example, a fax document sent at 33.6kbps is more than twice as fast as one sent at 14.4kbps. So a document that would take 60 seconds to fax using 14.4 can be sent at 30 seconds with V.34. FaxBack goes one step further and utilizing JBIG compression technology is able to deliver this same 60-second fax in less than 15 seconds (results will vary depending on content and graphic intensity of the document).

Getting urgent faxes into the hands of your audience much faster increases your ability to respond to inquiries, process requests and do business more effectively. Delays in delivering your message can negatively impact a company's bottomline.

Translates to Huge Cost Savings on Fax Phone Bills

Fax senders are quickly realizing the significant cost savings on their long distance phone bills. Companies today are under increasing pressure to streamline business processes, improve communications all while keeping costs down. Businesses of all sizes and fax volumes are demanding a single solution that can efficiently deliver business-critical rapidly. FaxBack utilizes V.34 fax and JBIG support to significantly reduce connection times - boosting delivery times while dramatically decreasing long distance costs.

- Expanded Fax Hardware Options Provide an Extremely Affordable Alternative Eicon Network's Diva Server adapters offer same performance, same carrier-class reliability but are nearly 65% less the cost that traditional intelligent fax board manufacturers charge, making them highly attractive to organizations of all sizes and outbound faxing volumes.
- Faster Delivery for Incoming Fax Documents

 NET SatisFAXtion users enjoy much faster response times on inbound fax deliveries.

 Get urgent and time-sensitive faxes processed more efficiently than ever.

V.34 Faxing

This is an ITU-T recommendation describing a method that can be used to transmit data at rates of up to 33.6kbps over analog telephone lines. <u>V.34 sends and receives faxes at more than double the speed of the V.17/14.4Kbps fax standard.</u>

The speed of your outbound fax is dependent upon the receiving fax devices capabilities. For the past two years millions of fax machine units have been sold supporting 33.6Kbps or V.34 faxing. Manufacturers such as Brother, Panasonic, Cannon and Sharp refer to these machines as Super G3 capable.

Recent research by Peter Davidson, an IDC researcher and fax industry analyst indicates that Brother was the big winner in the end with over 4 million unit shipments in 2003. The company had the leading market share worldwide, ahead of Matsushita (Panasonic is its brand name, used in the US and Europe), which had 2.2 million. Brother exploited a line of low-cost lasers, ink-jets, thermal-transfer and even some thermals to take the prize. The company also tapped a boom in MFPs in 2003, which grew about 40% worldwide with Brother taking its share. Sharp was third with 1.5 million sold, followed by Hewlett-Packard with 1.3 million and Canon with 1.2 million shipments.

Nearly every fax machine or MFP that is sold via mass retail stores like Office Depot, Fry's Electronics is Super G3 capable (supports V.34 fax). Studies suggest that it is only a matter of time before Super G3 fax devices completely penetrate the mass market.

"Three things stand out about V.34 and phone bill savings. First, V.8 fast handshaking knocks about 6 seconds off all handshaking and retraining times. Second, JBIG slashes page file size by up to 70%. further lessening transmission time. Third, V.34 halves the transmission time of 14.4 modems and cuts it by one-third versus 9.6 modems. So you actually get a much bigger reduction than just two times faster. And then the carrier-class reliability you get with inexpensive Eicon cards compounds the fax phone bill savings."

Peter DavidsonDavidson Consulting Fax Industry Analyst

V.34 Fax Machine Penetration and Growth

Growth of V.34 fax machine shipments has been significant over the past several years according to Peter Davidson, a notable IDC research and fax industry analyst. By next year, 2005, Davidson predicts sales of V.34 machines will grow to over 4 million units in North America alone. This represents a 40% compounded annual growth rate (CAGR). Driving factors for this growth boom are sales of low-end laser and inkjet fax machines that are V.34 enabled. By 2005, Davidson estimates 75% of all laser fax machines and 50% of all inkjet fax machines will be V.34 enabled. This means that by 2005 the general installed base of V.34 fax machines will grow nearly 20%. In the corporate world, V.34 fax machine penetration will grow to 50%.

Bottomline is that the net result of this installed base of V.34 fax machines is increasing and adoption is becoming widespread. As a result of growth, users of V.34 fax will experience greater cost savings when both the sending and receiving fax machine is based on the V.34 standard.

V.34 Units Shipments Worldwide

	2001	2002	2003	2004	2005	CAGR %
V.34 Units Shipped	1,080,600	3,001,200	4,075,000	4,100,000	4,200,200	40%
V.34 Installed Base	1,800,000	4,800,000	8,800,000	12,000,000	16,000,000	73%
Worldwide Installed Base	112,000,000	118,000,000	125,000,000	131,000,000	138,000,000	5%

Source: Davidson Consulting, 2003

JBIG Document Compression Technology

FaxBack is the first fax messaging company to incorporate this compression technology into its popular fax server line, drastically shortening fax connection times while considerably reducing phone charges. JBIG is short for "Joint Bi-Level Image Group." It is a compression standard that was developed by a standards body (group of industry experts from major companies to work and produce standards for bi-level image coding).

The JBIG group has developed the IS 11544 (ITU-T T.82) standard for the lossless compression of a bilevel image. It can be thought to be similar to Group 3 or Group 4 fax but offers between 20% and 80% IMPROVEMENT in compression over these traditional methods. JBIG compression averages about a 20:1 over the original uncompressed image.

How a Fax Call Works: The Key to Understanding the Benefits of V.34

In order to understand the benefits of the V.34 standard, it is necessary to understand how a fax call takes place. The first step is the "handshake" that determines key factors in how the fax call will be set-up. The handshaking stage enables the sending and receiving fax device (such as a fax machine or fax server) to find a common speed at which the fax can be transmitted. With a 9.6 Kbps or a V.17 modem, the handshaking is done at 300 bps. With V.34 fax, the handshaking is done at a much faster rate of 1,200 bps. The result is that the handshaking time is reduced from approximately 16 seconds with 9.6Kbps and V.17 to seven seconds with V.34.

The next stage of the fax call is the data transmission. V.34 provides the widest range of supported data transmission rates, allowing it to optimize speed and reliability over a wider range of line conditions. With V.34, fax pages are transmitted at 33.6Kbps, which is twice the speed of V.17, which transmits at 14.4Kbps and three times the speed of 9.6Kbps. After each page is transmitted a retraining or re-synchronizing process is done between each additional page until the fax call completes.

V.34 improves the entire handshake and connection process through a feature called "line probing." Line probing allows a V.34 device to intelligently choose optimum parameters for any given connection. Immediately following the handshaking stage, complex signals are transmitted that allow the distant receiver to analyze the characteristics of the connection before beginning the data transmission stage. The connected devices use this line analysis to choose several key operating parameters. Line probing is performed on every new connection, and can also be performed at any time during the connection as part of the retraining process. As a result, V.34 allows devices not only

to adapt to a broad range of different line types and distortions from call to call, but also to accommodate varying line conditions over long periods of time on any given connection.

Evaluating the ROI of a V.34 Fax Server

The total savings accrued by using V.34 fax versus V.17 and 9.6Kbps is relative to the total amount of time it takes to send a fax using each fax transmission. For example, for a fax being sent using V.34, once the handshaking is completed, the first page is transmitted at 33.6Kbps. This means that the first page of a typical 3-4 page document will transmit in 7 seconds versus 16 seconds with the older technology. For the example of a 4-page fax transmission, the connection time can vary from 166 seconds with a 9.6Kbps modem, to only 41 seconds using V.34 fax technology, saving more than two minutes per call on average.

V.34 fax can save users thousands of dollars when compared to VC.17 and 9.6Kbps fax. The table below shows the time savings accrued per fax using V.34 fax, compared with the slower 9.6Kbps and V.17 fax transmissions.

	9.6 Kbps 4-page Fax (in seconds)	V.17 4-page Fax (in seconds)	V.34 4-Page Fax (in seconds)
Handshake	16	16	7
Page 1 (3%)	18	12	5
Retraining	6	6	.25
Page 2 (6%)	27	18	7
Retraining	6	6	.25
Page 3 (6%)	27	18	7
Retraining	6	6	.25
Page 4 (12%)	54	36	14
Retraining	6	6	.25
TOTAL	166 seconds	124 seconds	41 seconds

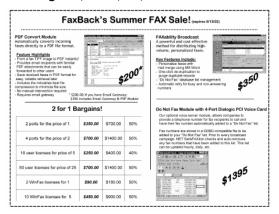
Cost Savings: Designed to Save Significant Time and Money

We've done our own internal testing to demonstrate just how users can realize significant performance increases in fax transmission times and experience large cost savings on their fax phone bills. Whether you're sending 100, 1000, 10,000

or 100,000 faxes at a time - a NET SatisFAXtion system with V.34 hardwarew will reduce time and costs while quickly paying for itself.

Example One: Fax Document with Graphics The single page fax document displayed to the right was once a 168-second fax document sent via 14.4Kbps. Transmission time for this same fax was reduced to 33 seconds using V.34 with JBIG compression technology.

This nearly quadruples document compression of today's fax standards, delivering this fax nearly 80% faster than ever before.



	Traditional	Traditional with V.34 Fax Support	Traditional with JBIG	V.34 & JBIG
Method	MR, ECM	MH, ECM, V.34	ECM & JBIG	ECM, V.34 & JBIG
Baud Rate	14.4Kbps	28.8Kbps	14.4Kbps	28.8Kbps
Duration	168 seconds	66 seconds	61 seconds	33 seconds
Speed Improvement	0 seconds 0% improvement	102 seconds faster 61% improvement	107 seconds faster 64% improvement	135 seconds faster 80% improvement

MR - Modified Read MH - Modified Huffmann ECM - Error Correction Mode

Savings Calculator

Companies are quickly realizing the significant cost savings on their long distance phone bills. The Savings chart to the right, gives you can idea of the potential savings on your long distance fax phone charges.

This example is calculated at .04 in long distance charges per minute.

Volume	Traditional Method	At 50% Faster	At 80% Faster
100 faxes	280 minutes	140 minutes	56 minutes
	x .04 = \$11.20	x .04 = \$5.60	x .04 = \$2.24
	\$0 cost savings	\$5.60 cost savings	\$8.96 cost savings
1000 faxes	2800 minutes	1400 minutes	560 minutes
	x .04 = \$112.00	x .04 = \$56.00	x .04 = \$22.40
	\$0 cost savings	\$56.00 cost savings	\$89.60 cost savings
10,000 faxes	28,000 minutes	14,000 minutes	5600 minutes
	x .04 = \$1120.00	x .04 = \$560.00	x .04 = \$224.00
	\$0 cost savings	\$560.00 cost savings	\$896.00 cost savings
100,000 faxes	280,000 minutes	140,000 minutes	56,000 minutes
	x .04 = \$11,200.00	x .04 = \$5600.00	x .04 = \$2240.00
	\$0 cost savings	\$5600 cost savings	\$8960 cost savings

^{*}Traditional is calculated at 168 seconds per fax page

^{*} Duration or the actual "connection time" is dependent on the receiving fax device's capabilities

^{*} Dependent on the receiving fax device's capabilities (baud rate, etc.)

^{*} Phone rates vary by company, volumes, long distance plans etc.

Example Two: Single Page Fax Document with Mostly Text

The single page fax document displayed to the right was once a 60-second fax document sent via 14.4Kbps.

Transmission time for this same fax was reduced to 17 seconds using V.34 with JBIG compression technology.



	Traditional	Traditional with V.34 Fax Support	Traditional with JBIG	V.34 & JBIG
Method	MH, ECM	MH, ECM, V.34	ECM & JBIG	ECM, V.34 & JBIG
Baud Rate	14.4Kbps	28.8Kbps	14.4Kbps	28.8Kbps
Duration	60 seconds	29 seconds	28 seconds	17 seconds
Speed Improvement	0 seconds 0% improvement	31 seconds faster 52% improvement	32 seconds faster 54% improvement	43 seconds faster 72% improvement

MR - Modified Read MH - Modified Huffmann ECM - Error Correction Mode

Savings Calculator

The Savings chart gives you can idea of the potential savings on your long distance fax phone charges.

This example is calculated at .04 per minute. Does not calculate fax retries for busy or invalid numbers.

Volume	Traditional Method	At 50% Faster	At 70% Faster
100 faxes	100 minutes x .04 = \$4.00	50 minutes x .04 = \$2.00	30 minutes x .04 = \$1.20
	\$0 cost savings	\$2.00 cost savings	\$2.80 cost savings
1000 faxes	1000 minutes x .04 = \$40.00	500 minutes x .04 = \$20.00	300 minutes x .04 = \$12.00
	\$0 cost savings	\$20.00 cost savings	\$28.00 cost savings
10,000 faxes	10,000 minutes x .04 = \$400.00	5,000 minutes x .04 = \$200.00	3,000 minutes x .04 = \$120.00
	\$0 cost savings	\$200.00 cost savings	\$280.00 cost savings
100,000 faxes	100,000 minutes x .04 = \$4,000.00	50,000 minutes x .04 = \$2000.00	30,000 minutes x .04 = \$1200.00
+T (0)	\$0 cost savings	\$2000 cost savings	\$2800 cost savings

^{*}Traditional is calculated at 168 seconds per fax page

^{*} Duration or the actual "connection time" is dependent on the receiving fax device's capabilities

^{*} Dependent on the receiving fax device's capabilities (baud rate, etc.)

^{*} Phone rates vary by company, volumes, long distance plans etc.

Compared with Outsource Services

Some reasons companies tend to use a fax service include not having in-house personnel to setup a fax server, not having an in-house e-mail system, or having low-volume computer faxing needs.

Owning your own fax broadcast software offers businesses, both small and large, offers many compelling benefits.

- Significantly cut costs in long distance charges
- Gets time-sensitive data into the hands of your audience faster
- Eliminates need to send valuable client/contact lists to a third-party
- Enjoy higher response rates (research shows LAN-based fax server get better response rates)
- Ability to integrate with your own internal applications
- More features so you're get more bang for your buck

Potential Significant Cost Savings

What most businesses do not realize before signing on with a service, is that you will tend to pay 50% to 300% more for each fax sent than with a fax server (Peter Davidson, fax industry analyst). What's more, many companies today are taking advantage of lower telephone long distance rates (e.g., .03.07 cents per minute versus .06.15 cents per minute that outsourcing companies typically charge).

Moreover, most outsource service bureaus DO NOT yet support V.34 fax or JBIG document compression technology and will only be able to send broadcasts at the traditional method. This can result in much higher fax connection times that you are paying for. In an earlier example, we showed how a single page fax document was cut from 168-seconds down to 33 seconds using V.34 with JBIG compression technology. With a service bureau you would be charged for the 168 seconds.

Eliminates the Need to Share Sensitive Client Data/Lists

Another consideration to keep in mind is that most businesses prefer to integrate fax with mission-critical applications on an in-house basis rather than risking security breaches from third-party service personnel.

In September 2002, Direct Marketer's Newsletter reported that 21 separate companies that sent their valued client and prospect lists to a third-party service-bureau for broadcasting had their contact lists copied and sent spam.

Enjoy Typically Higher Response Rates

Another consideration is the labor time it takes for a user to send a fax. It will typically be shorter with a fax server than with a fax service because independent industry research has shown that LAN-based response rates are better (Davidson Consulting, 2003).

Also, when things go wrong with a fax server, your own staff can address the problems; when things go wrong with a fax service, you will have to rely on a third-party to take control (and that third-party likely will be a startup that may not survive long-term or a Telco that may lack suitable support and may jettison its fax operations as it tries to cope with a changing market).

Ability to Integrate with Internal Applications

Also, many companies prefer to integrate their fax servers with their in-house e-mail systems or CRM (customer relationship management) applications to better streamline communications.

More Features, More Bang for Your Buck

And one final point, most fax servers, like NET SatisFAXtion, are much more fully-featured than the features that outsource fax services provide, giving you a much higher bang for your buck.

Fax Hardware Support

Several leading intelligent fax board manufacturers have already announced support or planned support of the V.34 fax or 33.6Kbps faxing. These include:

Brooktrout

Brooktrout's latest generation of intelligent fax boards delivers fast 33.6Kbps fax transmission speeds, up to 30 fax channels per board, and features an onboard T1/E1 interface-all with the performance and reliability.

Eicon Networks

Eicon boards offer high-performance and carrier-grade reliability at a reduced cost, making them making them highly attractive to organizations of all sizes and outbound faxing volumes.

Mainpine Ltd.

Mainpine's RockForceDUO and QUATRO boards also enable ITU V.34 or "Super G3" high-speed fax solutions. Offers comprehensive error correction and real-time, two-dimensional compression T.31 Class 1.0 and T.32 Class 2.1 fax commands.

Capacity and Scalability

For many companies the frequency of broadcasts and the number of recipients vary widely and over time. Targeted at those involved in sending hundreds - or hundreds of thousands - of documents quickly, efficiently and reliably, the NET SatisFAXtion Broadcast product line includes such features as mail merge to personalize documents, automatic retry for busy or non-answering numbers, detailed reports to track activity, and "Do Not Fax" database list management. Entry-level software starts at 2 fax ports and scales to support a maximum 96 ports of fax per server (4 T1's per system).

A FaxBack account representative can help you sort out several factors to keep in mind when determining how many ports your organization requires:

- How much existing fax traffic will the fax server have to support?
- How much new fax traffic will the existence of a fax server create?
- How much fax traffic must be handled during peak hours and/or the execution of major fax applications, like broadcasts?
- What kind of fax boards will be used and what are the relative throughput speeds they support and, to complete this equation.
- How much queuing delay is tolerable for outbound faxes (in other words, how much time is tolerable to have a fax wait in a queue before it is sent)?

Summary

The V.34 fax standard when coupled with JBIG document compression technology are important developments in fax technology, no only because they can send fax data nearly three times the speed of the older fax standards, but also because they support faster handshaking which can significantly impact call setup and session-management times by one-third.

Research has also shown the fax devices supporting the V.34 protocol also deliver more reliable fax transmissions, with less requirements for resends, and under a wider range of line conditions. The V.34 protocol is highly adaptive, automatically and intelligently applying the optimum combination of modulation methods and impairment-compensation techniques for each fax call. The result if much faster fax transmission and significant cost savings over time.

A typical company can save thousands of dollars in the first year alone from V.34 fax. As 33.6Kbps fax traffic increases the cost savings is compounded year after year. More importantly, as savings accumulates, the money saved from V.34 fax usage adds up to tens of thousands of dollars over the course of just a few years.

About FaxBack

For over twenty years FaxBack has been a leading fax messaging company with solutions that radically simplify the way organizations communicate. We provide award-winning network fax servers, fax-on-demand, broadcasting and web-to-fax solutions that streamline information processes, get time-sensitive information into the hands of your audience faster than ever before while reducing the cost of doing business.

First introduced in 1990, NET SatisFAXtion is an award-winning fax server with tens of thousands of fax servers installed in North America alone. Designed for organizations that need to control and simplify their fax communications, it is enjoyed by thousands of global organizations including AT&T, Arco, Bank of America, Compaq, Kaiser Permanente, Kodak, NEC, Sherwin-Williams and Wells Fargo. Countless other organizations in nearly every industry from real estate to manufacturing and travel to education and healthcare trust FaxBack and NET SatisFAXtion for their fax communications needs.

FaxBack's High-Speed Production suite goes one step further in automating the delivery of mission-critical information by giving users unprecedented performance increases in fax transmission times as well significant cost savings on phone charges. Backed by our software and years of industry expertise, companies can drastically reduce their costs, increase efficiency and position themselves to meet the business communication demands of today.

More Info

FaxBack, Inc. 7409 SW Tech Center Drive, Ste. 100 Tigard, OR 97223

 Voice:
 (503) 597-5350

 Fax:
 (503) 597-5399

 Web:
 www.faxback.com

 V.34:
 www.faxback.com/v34

 E-mail:
 info@faxback.com