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is company broker to
xG Technology**

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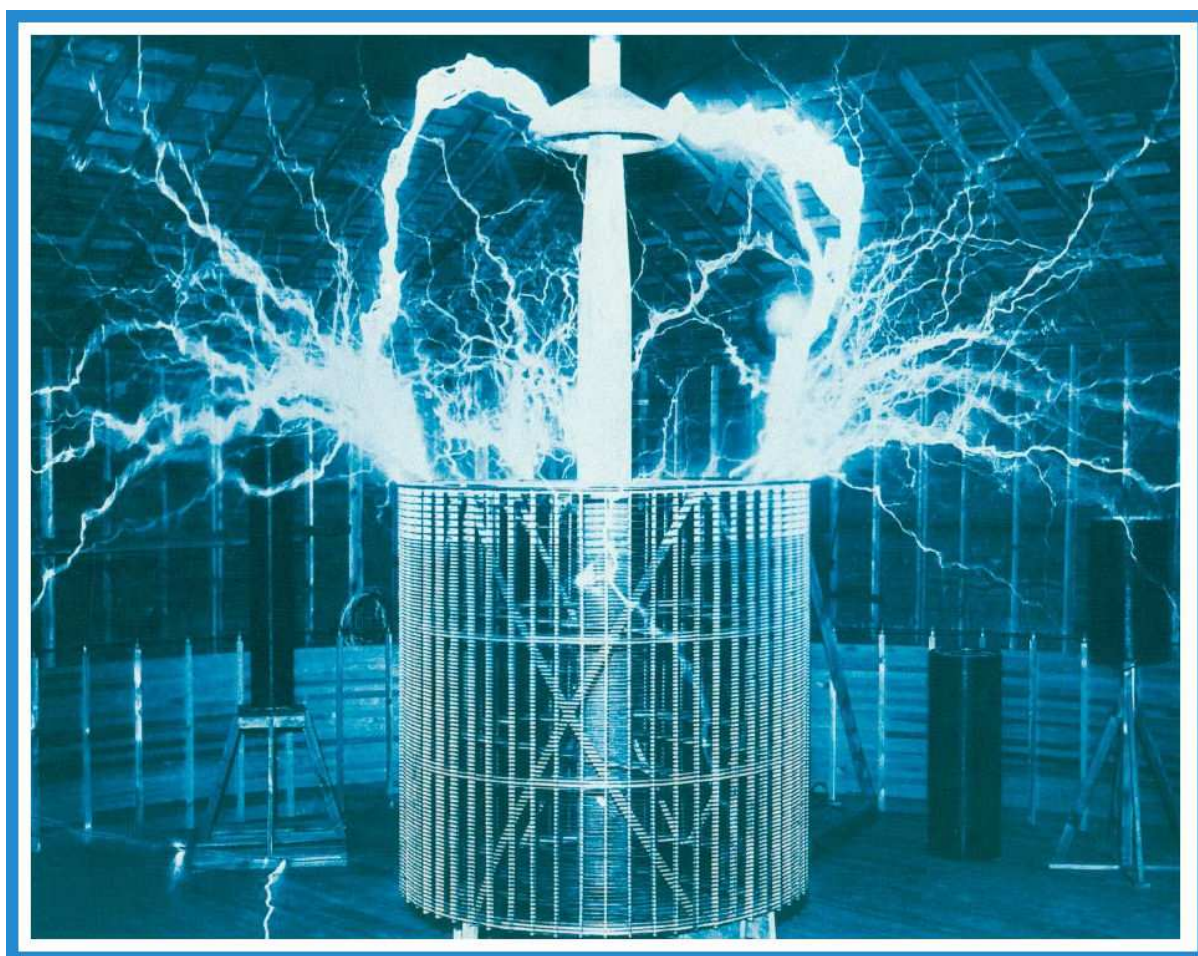
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Telecommunications

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xG Technology

Flash Of Genius



Source: Picture courtesy of the Tesla Society <www.teslasociety.com>

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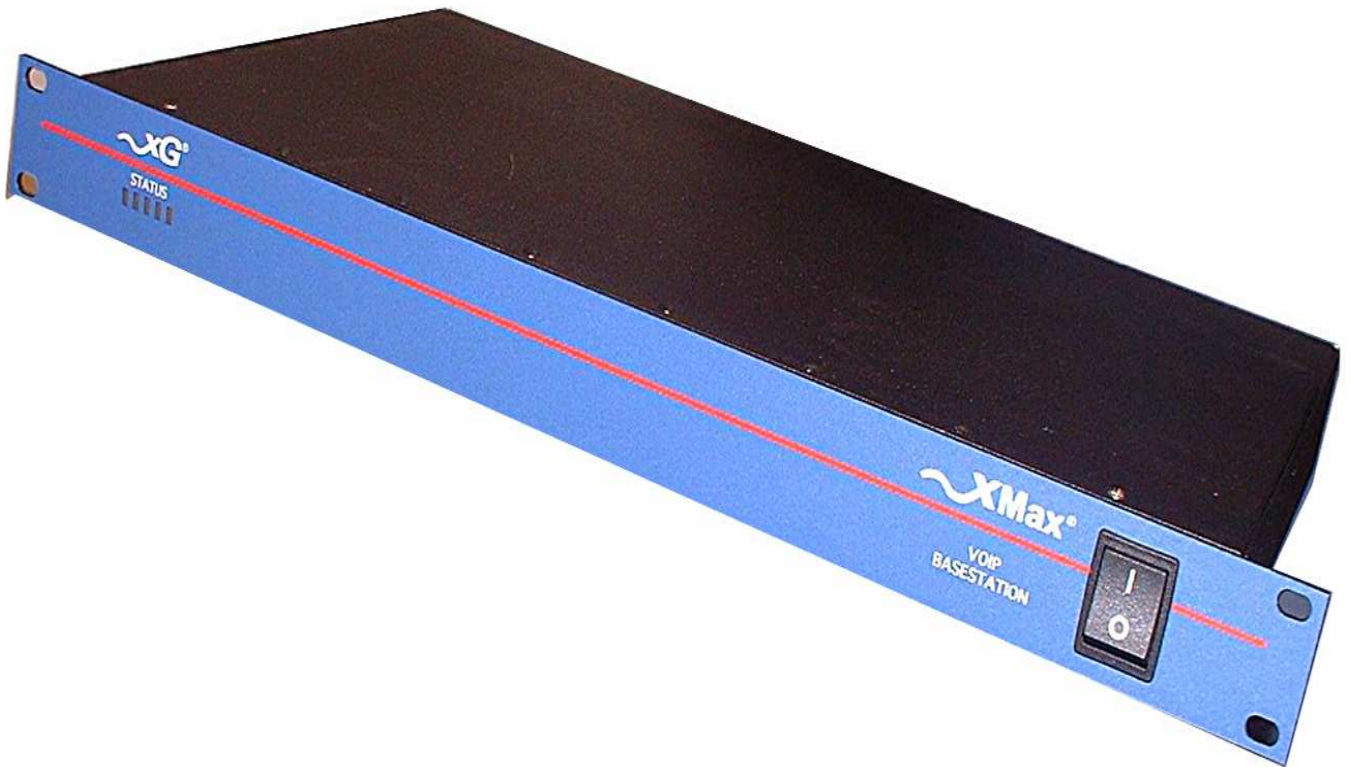
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xMax™ Base Station



Source: xG Technology

Introduction

The primary purpose of this note is to update forecasts in the light of xG's recent successful beta tests. We believe these tests prove that xMax, xG's application of their "Flash Signalling"™ technology to the VoIP space, is fully commercially viable.

We still see xG Technology as possessing the best upside of any technology play available in London, by some margin.

We intend to walk readers through the reasoning behind our forecast construction in considerable detail. The purpose is to make perspicuous the fact that xG possess not only a disruptive technology, but also a disruptive business model. The power of the technology is such that xG can dramatically undercut competitors on cost whilst offering superior performance AND **maintaining industry leading margins.**

Our forecast sales for 2007 are \$52.7m with net income of -\$2m, while for 2008 we expect \$295m and \$83m respectively. These forecasts are a strong upgrade - we had been anticipating only \$27.5m in sales in 2007 and \$164m in sales and net income of \$36m in '08. The forecasts are underwritten by good visibility provided by a contracted backlog for base stations of \$57m. The company is selling on 33x 2008 forecast earnings.

These numbers, taken in conjunction with our model, imply that the company will reach profitability in Q4 this year.

Skepticism surrounding these large claims is evaporating in the industry. The company has announced two international agreements expected to lead to joint ventures with blue chip players in the wireless space. Also, although not yet set in stone, the company is mooting a co-operative strategy with other players outside the USA, to leverage their brands and customer bases and enable them to offer an xMax™ **4G** service by 2008! This is at least 3 years ahead of any rival, none of whom have demonstrated that they have an economically viable 4G solution.

We shall also briefly review results for FY06.

The 28 day period for funding of the preferred equity instrument subscribed in November 2006 has begun. This instrument allows institutions a chance to inspect a working xMax™ network before committing funds. The commencement of this period implies that such a network is ready. xMax™ is in fact being used over the air.

Finally, we shall discuss valuation from a **reverse** DCF perspective and on a probability weighted basis. **We believe that we can strongly support the claim, given credible starting assumptions, that the shares are selling at a fraction of their value.** This is despite a superb performance since IPO, rendering xG the largest technology company on AIM.

We iterate our thesis that xG must be considered a core holding on the grounds that it is the best play on mobile communications and 4G, that it is an exceedingly rare opportunity to invest in a mass market disruptive technology in London and that it must be considered a necessary hedge for investors exposed to communications technology companies. We accept that many investors will have been sceptical about xG's claims and that this scepticism was rational, with the onus of proof upon the company. Now, however, maintaining scepticism in the light of conclusive proof that xMax™ works is arbitrary and irrational.

Structure

1. Reconstitution of forecasts
2. Beta Tests
3. Major developments
4. Review of FY06 results
5. Valuation

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Reconstitution of Forecasts

REVENUE & GROSS MARGIN								
Year to end December								
	ESTIMATED							
	2H 2006	FY 2006	1H 2007	2H 2007	FY 2007	1H 2008	2H 2008	FY 2008
REVENUE MODEL								
Number of territories								
Core			0	2		42	102	
Incremental	0		2	40		60	90	
Total	0	0	2	42	42	102	192	192
Base stations								
Number per territory	5		6	10		10	10	
Number of new base stations	0	0	12	400	412	600	900	1,500
Revenue per base station (\$'000)	50		50	50		40	30	
Handsets								
New base stations	0		12	400		600	900	
Old base stations	0		0	20		420	1,020	
Total base stations	0		12	420		1,020	1,920	
Handsets per new base station	0		400	400		400	400	
Handsets per old base station	0		0	1,000		1,000	1,000	
Total handsets	0		4,800	180,000		660,000	1,380,000	
New handsets	0		4,800	175,200		480,000	720,000	
Old handsets	0		0	4,800		180,000	660,000	
Total handsets			4,800	180,000	180,000	660,000	1,380,000	1,380,000
Charge per handset (\$)	140		285	150		125	100	
Revenue per handset/subscriber (\$/month)	15		15	15		15	15	
REVENUES (\$'000)								
VoIP Handset	0	0	1,368	26,280	27,648	60,000	72,000	132,000
VoIP Base Station	0	0	600	20,000	20,600	24,000	27,000	51,000
VoIP Recurring (subscription share)	0	0	108	4,374	4,482	27,000	75,600	102,600
International Territory	0	0	0	0	0	5,000	5,000	10,000
Total	0	0	2,076	50,654	52,730	116,000	179,600	295,600
GROSS MARGIN								
VoIP Handset	10%		-50%	-50%		0%	0%	
VoIP Base Station	93%		95%	95%		95%	95%	
VoIP Recurring (subscription share)	100%		100%	100%		100%	100%	
International Territory	100%		100%	100%		100%	100%	
GROSS PROFIT								
VoIP Handset	0	0	-684	-13,140	-13,824	0	0	0
VoIP Base Station	0	0	570	19,000	19,570	22,800	25,650	48,450
VoIP Recurring (subscription share)	0	0	108	4,374	4,482	27,000	75,600	102,600
International Territory	0	0	0	0	0	5,000	5,000	10,000
TOTAL								
Gross margin	n/a	n/a	0%	20%	19%	47%	59%	54%
Gross profit	0	0	(6)	10,234	10,228	54,800	106,250	161,050

Notes:

REVENUE

Sales of microchips into other vertical channels are assumed not to have started by year end 2008. This is substantially more conservative than managements internal projections.

Domestic

The model is driven by the number of new territories in which network deployment occurs. Management assumption is that the average sized network will cover a population of 400,000 and that an *initial* 5 base stations will be required to provide geographic coverage. We assume a maximum of 10 with each base station supporting only 1,000 subscribers. They can in fact support between 10,000 to 38,000. Thus the model assumes a penetration of only $10,000/400,000 = 2.5\%$. This is much lower than is likely to be stipulated as a *minimum* level in xG's contracts with domestic customers.

International

xG intend to follow a different strategy for international VoIP markets. Substantial up front licence fees will be charged on an annual basis over multi-year contracts. In return, xG will accept a lower share of recurring revenues. The model assumes that one international licence is signed in both 1H 2008 and 2H 2008 but that only the initial licence fees will be recognised by year end 2008. We make no allowance at all for revenues from joint ventures.

GROSS MARGIN

VoIP handset gross margin will be initially subsidised and subsequently held deliberately low in order to drive subsequent recurring revenues. We ignore the possibility of a handset OEM agreement.

Base station gross margin is fully costed based upon current cost of base station supply.

Improving gross margin trend is driven by the increasing proportion of very high margin recurring VoIP (i.e. share of monthly subscriptions) sales.

Source: Hichens, Harrison on company data

xG derives revenues from 3 primary sources - sale of base stations, sale of phones and an annuity stream paid by dealers operating an xG network, as a proportion of the monthly fee they are paid by their customers, the end user. They will accrue additional revenues from licensing of international markets and by sale of further devices in future generations of mobile technology, such as an email enabled Blackberry type device. We ignore sales from such devices and assume that phones are sold at cost with a 50% subsidy modelled as a negative gross margin of 50%. In fact, the company may well only subsidise around \$100 of the \$285 Generation 1 handset cost, with a further subsidy coming from the xG dealer in target markets, so consumers would only pay \$99. Hence, a sale of \$185 would be recognised by xG with a negative gross profit of \$100. As our model is more conservative and as this policy is not yet finalised, we will stick with the model described.

In addition, by 2008, xG is likely to be offering a broadband to home service wirelessly. This service would be provided via the existing VoIP base stations which would not need physical reconfiguration but which could be reset for such via a software download. The xG network is the world's first genuinely all digital infrastructure. The company is in negotiation with OEMs to manufacture the home modem for this. It would carry no subsidy and would be a profitable revenue stream in its own right as well as carrying a fresh annuity stream. None of this is included in our forecasts. However, it is worth dwelling on for a moment. The broadband service is likely to be offered in conjunction to mobile VoIP at a \$20 permium ie. \$59.99 per month. The average consumer pays \$50 (\$25 landline and \$25 broadband) on top of mobile costs. xG offers them an opportunity to dispense with these, because a wired xMax service is bundled, creating an incremental saving of \$30 per month while providing superior service. Again, this is illustrative of the technology making possible a disruptive business model.

Other assumptions are made perspicuous on the face of the model. We would add that capacity constraints are not a factor in manufacturing of base stations, but are so in terms of phone handsets. The company will take delivery of 10,000 Generation 1 phones in Q2 this year and have access to capacity for up to 300,000 Generation 2 handsets by September. This run rate capacity supports our 2008 forecasts for handsets.

The Generation 1 phone is pictured below and is not aesthetically pleasing. Its thickness is a consequence of the use of a larger FPGA (field programmable gate array) board which facilitates software reconfiguration, important for rapid production following the testing of prototypes in the beta tests. It is targeted at a small number of early adopters and price-conscious individuals.



Source: company data

Generation 2 phones will be much slimmer and cheaper as a consequence of using a hard copy FPGA, or Structured ASIC, that reduces the chip costs by 80%. The final iteration of the chip will be to an full ASIC (application specific integrated circuit) that includes all RF analogue parts hard wired into the chip (as opposed to residing in mutable software). This final migration is expected at the end of 08 and will occasion another large drop in unit costs. The Generation 2 phones are quite competitive with other models in terms of appearance (Cambridge Consultants Ltd. have been identified as the developers of the Generation 2 handset.) The mass market phase of the xG rollout is therefore set to begin in September with this handset, but the company's business model will be established by then. We are not sure if subsidies on Generation 2 phones will be as heavy, or exist at all, but we assume so. Costs will decline dramatically as indicated, an uncontroversial common experience in high volume manufacturing. We are aware that xG are in negotiation with large mobile phone OEMs and may have an agreement with them in place by the time that the Generation 2 phone is ready. If so, this will have a dramatic positive effect on margins and Generation 2 phones will carry no subsidy. We completely ignore this possibility.

We feel the main risk to our forecasts is the availability of handsets and are comforted by the very considerable due diligence done by management on lead times for components etc, right down to each transistor.

XG's first application of flash signal™ in the VoIP market is largely a network play- the market acceptance of the technology will partly depend upon extent of network coverage and critical mass of users. However, the extremely low cost of infrastructure, the market leading lowest cost monthly fee and subsidies for handsets are very likely to see very rapid adoption of the service. Please see our 06 note for full details of these. We assume only 1000 subscribers per base station - the recommended capacity is 10,000 while the theoretical capacity is 38,000. This treatment is consistent with the approach of acquiring a large number of territories early and building in density later.

At the time of the IPO the company had received binding commitments to purchase base stations to cover an estimated 57m members of the US population. Companies interested in reserving a market as an xG dealer commit to paying a dollar a head of population within the territory. This pre-payment is then credited against purchase of base stations. At \$57m, sales of 1140 base stations are implied. We assume considerably lower numbers. However, demand was so strong that xG elected to freeze this arrangement and are likely to charge a flat fee per territory, probably at a similar level, but with no credit against base stations. We have made no such assumption and these revenues would be accretive to our model at 100% gross margin.

Profit and Loss

PROFIT & LOSS							
Year to end December							
(\$'000)							
	ESTIMATED						
	FY 2006	1H 2007	2H 2007	FY 2007	1H 2008	2H 2008	FY 2008
Revenue	0	2,076	50,654	52,730	116,000	179,600	295,600
Cost of sales	0	(2,082)	(40,420)	<u>(42,502)</u>	<u>(61,200)</u>	<u>(73,350)</u>	<u>(134,550)</u>
Gross Profit	0	(6)	10,234	10,228	54,800	106,250	161,050
Gross Profit %		0%	20%	19%	47%	59%	54%
Indirect Costs							
R&D		(2,000)	(2,500)	(4,500)	(4,000)	(5,000)	(9,000)
Sales & marketing		(1,000)	(4,500)	(5,500)	(12,000)	(18,000)	(30,000)
General & administrative		<u>(1,000)</u>	<u>(2,000)</u>	<u>(3,000)</u>	<u>(5,000)</u>	<u>(6,000)</u>	<u>(11,000)</u>
Total	(4,476)	(4,000)	(9,000)	(13,000)	(21,000)	(29,000)	(50,000)
Stock-based compensation	(5,742)	-	-	-	-	-	-
Other (expenses) / income	<u>(1,155)</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total indirect costs	(11,373)	(4,000)	(9,000)	(13,000)	(21,000)	(29,000)	(50,000)
Operating profit / (loss)	(11,373)	(4,006)	1,234	(2,772)	33,800	77,250	111,050
Net interest	112	500	500	1,000	1,140	1,400	2,540
Taxation	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>(30,438)</u>	<u>(30,438)</u>
Net profit / (loss)	(11,261)	(3,506)	1,734	(1,772)	34,940	48,212	83,152
Fully diluted no. of shares ('000)	146,030			164,193			164,193
FD EPS (US cents)	(7.7)			(1.1)			50.6
FD EPS (GBP pence)	(3.9)			(0.6)			25.8
FD PER (x)	n/a			(3,089)			34
price (US cents/share)	1700						
\$/£ exchange	0.51						
price (GBP pence/share)	867						
Notes:							
Charge for stock-based compensation not included in estimates.							
Assumed full tax charge (38.7%) does not begin until 2H 2008.							

Source: Hichens, Harrison on company data

Cost lines are in accordance with management guidance and we have inflated this aggressively for 2008. The main variable is marketing spend which is estimated at \$25 per customer acquired. We do not fade this rate on higher levels of customers, which would be normal experience, i.e. higher volumes of customer require a lower spend per head to "acquire." Nevertheless, the company should be strongly profitable in 2008 and in fact could also achieve this in FY2007. As it stands, our forecasts imply profitability by Q4 07.

These forecasts are a strong upgrade - we had been anticipating only \$27.5m in sales in 2007 and \$164m in sales and net income of \$36m in '08. The margin strength of the model is apparent. This is made possible by the dramatic lowering of costs occasioned by the xMax™ infrastructure. Competitors, burdened by the amortisation and upkeep of far more expensive infrastructure, cannot compete on price (without bleeding themselves to death). xG could drop prices dramatically and retain significant profitability in this scenario. As a rule of thumb, Wall Street tends to criticise incumbents who drop close to an assumption of \$50-60 per subscriber per month.

xG owns a disruptive technology which represents a quantum leap in communications efficiency. We ask readers to note that the economic potential of this technology is captured by an equally disruptive business model, which vastly undercuts anything possible for competitors. The technology is fundamental in that it makes the business model possible, via the greatly reduced infrastructure costs and wide range of possible applications. **But it is the business model which makes xG so promising an investment.**

Cashflow

CASHFLOW							
Year to end December (\$'000)							
	ESTIMATED						
	FY 2006	1H 2007	2H 2007	FY 2007	1H 2008	2H 2008	FY 2008
Net Income	(11,531)	(3,506)	1,734	(1,772)	34,940	48,212	83,152
Depreciation and amortisation	102	425	475	900	525	575	1,100
Other	7,395	0	0	0	0	0	0
Working capital	696	(4,685)	2,980	(1,705)	(6,113)	(6,113)	(12,225)
Operating cash flow	(3,068)	(7,766)	5,189	(2,577)	29,352	42,675	72,027
<i>Conversion</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	84%	89%	87%
Capital expenditure (inc. intangibles)	(1,873)	(600)	(700)	(1,300)	(800)	(900)	(1,700)
Net cash used in investing activities	(1,873)	(600)	(700)	(1,300)	(800)	(900)	(1,700)
Free cash flow	(4,941)	(8,366)	4,489	(3,877)	28,552	41,775	70,327
Financing							
Debt	0	0	0	0	0	0	0
Equity	9,590	114,000	0	114,000	0	0	0
Net cash from financing activities	6,591	114,000	0	114,000	0	0	0
Net increase/(decrease) in cash	4,537	105,634	4,489	110,123	28,552	41,775	70,327
Cash at beginning of period	3,479	8,016	113,650	8,016	118,139	146,692	118,139
Cash at end of period	8,016	113,650	118,139	118,139	146,692	188,466	188,466

Source: Hichens. Harrison on company data

Our only remark is that we assume the net proceeds of a full uptake of the preference equity. The purpose of this funding is to provide tactical flexibility to the company in marketing via advertising and handset subsidies in various markets. The company is nevertheless fully funded already to reach its business goals and would use these additional funds to accelerate this process. Because subsidies on handsets are recovered well within a year via the annuity income stream, the utilisation of the preferred equity funds is not obvious in the model.

It is actually unlikely that subsidies will continue into late 2008 as we assume, as handsets will drop in price considerably as the network is developed and volumes climb.

Balance Sheet

BALANCE SHEET					
Year to end December (\$'000)					
	ESTIMATED				
	FY 2006	1H 2007	FY 2007	1H 2008	FY 2008
Intangible assets					
Tangible assets					
Total fixed assets	15,315	15,490	15,715	15,990	16,315
Net cash	8,016	113,650	118,139	146,692	188,466
Working capital	(693)	3,992	1,012	7,124	13,237
Other	0	0	0	0	0
Equity	22,638	133,132	134,866	169,806	218,018
WORKING CAPITAL BREAKDOWN					
Year to end December (\$'000)					
Debtors (receivables)		4,163	4,334	14,315	24,296
Debtor days		30	30		30
Creditors (payables)		(171)	(3,322)	(7,191)	(11,059)
Creditor days		30	30		30

Source: Hichens, Harrison on company data

Cap Structure

CAPITAL STRUCTURE	Pre-IPO		Post-IPO	
	Number of ordinary shares	% of issued share capital	Number of ordinary shares	% of issued share capital
ORDINARY SHARES				
New shares at IPO			0	0.0%
MB Merchant Group, LLC	56,721,902	46.9%	56,721,902	46.3%
Styr ehf.**	22,344,191	18.5%	22,344,191	18.3%
ACH Securities, S.A.	18,696,357	15.5%	20,196,357	16.5%
Joseph A. Bobier	5,025,000	4.2%	5,025,000	4.1%
Guardian Holding ehf	3,095,486	2.6%	3,095,486	2.5%
Kreditbank Suisse	2,190,000	1.8%	2,190,000	1.8%
Mats Wennberg	1,000,000	0.8%	1,000,000	0.8%
Others (<1% shareholders)	11,792,000	9.8%	11,824,750	9.7%
Issued share capital	120,864,936	100.0%	122,397,686	100.0%
DILUTIVE INSTRUMENTS				
Options (\$0.27 strike price)	5,000,000	4.1%	5,000,000	
Options (\$0.55 strike price)	5,000,000	4.1%	5,000,000	
Options (\$2.00 strike price)	10,000,000	8.3%	10,000,000	
preferred equity	0	0.0%	20,571,428	
Hichens warrants			1,223,977	
Total	20,000,000	16.5%	41,795,405	34.1%
Fully diluted issued share capital	140,864,936		164,193,091	

Source: Hichens, Harrison on company data:

The Recent Beta Tests

xG announced a successful conclusion to its “lab beta” in January - that is, testing of equipment in the laboratory as opposed to field testing. The first field test was carried out by xG engineers between late February and March on receipt of prototype handsets. At the end of March the final beta, or commercial beta, was begun by xG’s largest customer, Far Reach Technologies, in Daytona, Florida. This is expected to conclude imminently and is a test under commercial conditions, overseen, but not run by xG engineers. **The company is on timeline to begin commercial rollout in April.**

All these tests went, or are ongoing, very much as the company envisaged. **xMax™ is working and the system is operating over the air.**

We must make clear that the beta tests are not tests of whether or not the xMax™ technology works. The technology’s viability has been a public fact for at least 18 months, from their first public demonstration in Florida in November 2005. In fact, we ourselves have seen a demonstration of a video transmission, entailing data loads in excess of 3G standards, on ultra low power (3 nano watts). (It should be noted that voice is less technically demanding). The purpose of the beta tests is to debug and deliver a commercially stable VoIP service and is mainly a matter of iterative configuration of software while scaling up the number of users, number of base stations etc, (hence the initial use of FPGAs).

It might be useful to highlight the kind of tasks being undertaken during the betas. These include though are certainly not limited to-

Fine Tuning of the DSP (Digital Signal Processor) for best performance in varying atmospheric conditions.

A separate team is working on SIP (Session Initiation Protocol) Mobility testing. This is to create seamless handoff. Handoff is primarily concerned with preservation of signal between network areas. xG has perfected xMax™ to Wi-Fi and Wired Ethernet handoff and at time of writing was in the final stages of xMax™ to xMax™ handoff.

Lundinova, the designer of the Generation1 handset, was involved in final fine tuning of the user interface on the phone.

Another in house engineering team, working with outside consultants is designing and testing the model dealer network. Dealers/carriers are expected to install networks compliant to xG's design to ensure full mobility and least cost routing.

Hichen's technology analyst made the first call on an xMax™ handset (an international call) using the wi-fi function and this was quickly followed by wired VoIP calls using the xMax™ protocol and then wireless using xMax™. The company has delivered a stable working prototype to Far Reach, who are proceeding to scale up the number of users. Again, the process is one of iterative reconfiguration of software and is merely developmental.

Scale-up risks are not pertinent to xMax™, though they have been the ruin of many networks. This risk primarily redounds to interference and an xMax™ signal is uniquely distinct and transparent to other signals on the same spectrum. The signal is described as “close to immune to interference”. The TDMA (time division multiple access) core of the base station software allocates time slots for xMax™ signals so that they cannot interfere with each other. Scale-up risks also redound to the complexity of infrastructure and an xMax™ network has around 96% less “kit”.

From the recent results statement -

“Testing of xMax™ equipment by an authorized Federal Communications Commission (“FCC”) laboratory found it to be compliant with FCC regulations Part 15.249 conducted test requirements. These results showed the xMax™ signal to meet both conducted power and conducted bandwidth requirements for operation within the unlicensed 900 MHz band under Part 15 of the FCC’s rules.”

2008 brings 4G phones

A recent announcement also states an unusual function of the xMax™ handset - they can make and receive calls outside of a network area from another xMax™ handset - that is, in the absence of a base station. The full functionality of the xMax™ Generation 1 phone will be VoIP, SMS, push to talk (a popular feature in the USA) and this “walkie-talkie” feature. This feature has a range of approximately 5-7km. Such off-network calling is a unique feature as far as we know. It has obvious applications in remote locations, during disasters such as in New Orleans, for mountaineers and campers, not to mention emergency services.

Generation 3 will add video streaming and data services, effectively at a 3.5g standard. In fact, **2008 will see 4G standards, defined as 100mb/ps in a mobile environment, with the 3rd generation release.**

9 Patents granted and 17 pending with more in the pipeline

The “x” in “xG” can stand for 3, 4 and up, as the continual evolution of the Flash Signal™ technology allows for greater range and transmission rates much earlier than thought possible. **xG’s CTO, Joe Bobier, has incidentally now worked out how to send more than one bit of information per single wave of RF energy which promises an even greater acceleration of information transmission capacity and ultra efficient utilisation of bandwidth.** This is illustrative of the continuing production of IP by the company. The current position is that xG has 9 patents granted with a further 17 pending for a total of 26 and climbing.

We learned first hand that voice standards are at least as good as cellular despite the VoIP medium being notorious for poor “R-Values”, an industry term for voice quality. We experienced a crystal clear international VoIP call. This is due to a proprietary over-the-air protocol, or MAC layer, also called the “air interface”, designed by xG CTO, Joe Bobier, specifically for VoIP. It is a non-contention based system i.e. one that virtually eliminates data collisions, which VoIP can’t tolerate. The proprietary interface is called “xMac™”.

Major Developments and Strategy

Apart from the news on the beta progress, there have been two other very arresting developments in recent weeks.

To put in context, the brilliant inventor of Nautilus and MedX exercise machinery, Arthur Jones, has stated that the usual pattern for reception of a genuine innovation is “1. Ignore 2. Ridicule, 3. Attack, 4. Accept”. These are distinct phases. Scrutiny of past press reports shows that xG has passed through stages 1 and 2 while the directors have been excellent in risk management, pertinent to stage 3. We discussed this feature at length in our last note. We now have strong evidence that we are at the beginning of stage 4.

The Company has recently signed agreements and is in discussions with two large international partners for the exclusive rights to deploy xMax™ in the United Kingdom and Mexico.

The UK company is National Grid Wireless, which lays claim to 14,500 infrastructure installations (base station towers) in the UK while the Mexico company is Telefonica. This is blue chip authentication of xG's offering. In both cases, the intention is to create a joint venture serving the respective territories.

Strategically, the company is considering a different model for international rollout whereby they would not compete with incumbents but effectively lease what would by then be the world's first 4G network. This would allow the company to take advantage of the incumbent's brand and customer base, built up over many years, as well as insulating the company from Jones' stage 3 above.

The main development is that xG has announced it has begun the 28 day period for funding or cancellation of the \$120m preferred equity agreements signed in December by various institutions. This period allows such institutions 28 days to inspect the technology and first network before fully committing to funding.

Maiden Preliminary Results

The results for the year to December '06 are of very little interest in themselves and reflect the relatively modest losses to be expected in the late pre-revenue stage of the company's development.

The widening of losses was primarily a consequence of non cash items such as option costs of \$5.7m. There were also non-recurrent AIM admission costs of \$1.155m.

It should be noted that xG retained over \$8m in cash and could support an '06 burn rate for a further two years without funding - testament to management's excellent risk control. Capital investment into the 10,000 generation 1 handsets would have had the effect of reducing this period to 17 months. However, with first base station sales literally two weeks away and a contracted backlog position of \$57m, these points are academic.

Income statement for the year ended 31 December 2006

	Notes	2006 \$'000	2005 \$'000
Administration expenses		(11,373)	(3,451)
Operating loss	2	(11,373)	(3,451)
Interest receivable and similar income		112	15
Loss on ordinary activities before taxation		(11,261)	(3,436)
Taxation		-	-
Loss for the financial year		(11,261)	(3,436)
Loss per share			
Basic		\$ (0.09)	\$ (0.03)
Diluted		\$ (0.09)	\$ (0.03)

Source: xG Technology

Valuation

„You can win in a horse race, but you cannot beat horse racing.“

Attributed to Jesse Livermore

“.....somebody who really thinks about horse performance and is shrewd and mathematical could have a very considerable edge....

...there are actually a few people who can beat the game“

Lesson on Elementary, Worldly Wisdom As It Relates To Investment Management & Business - Charles Munger, USC Business School, 1994

“What we are looking for are underpriced bets, that’s all and it’s that simple.“

Charles Munger, from Poor Charlies Almanack, Donning Publishing, 2005

We remarked in our original note that xG set a formidable valuation challenge in that the application of traditional valuation techniques to a pre-revenue company is inappropriate. We suggested that clients think in reverse, starting with the price and then, via an uncontroversial discount rate, deriving the embedded expectations for performance implicit in the price. Then, the probability of reaching at least that level of performance could be judged.

For example, xG stands at \$2.0bn valuation. At a 15% discount rate, investors would have to forsee an exit valuation of \$6.3bn in 8 years time. This in turn would imply profitability of \$393m on a market historic median exit multiple. Again, in turn, this implies 30% earnings growth between 2008, our explicit forecast, and 2013. This would require less than \$1.5bn in sales on the current model. Could the business model support this? We think, obviously, yes.

What it comes down to is whether, after consideration of xG’s model, markets and products, investors find this highly probable or unlikely and anything in between. Good probability of such a performance or better implies a cheap share price.

Our estimates indicate that the company is selling on a forward PER less than 35x. Someone who believes the company to be overvalued must question those forecasts.

We aver that the chances of higher growth rates than those modelled are good to excellent.

- The company has implied visibility of between 1140 to several thousand base stations depending upon the interpretation of the \$57m of market reservations. \$57m divided by \$50k gives 1140 base stations.

Dense penetration of the implied 57m people would require a multiple of this. Our model assumes 420 base stations this year and an additional 1500 next year. Manufacturing capacity is for 3000 base stations per year but with spare capacity available to double this and with additional suppliers available.

Base station capacity is at a recommended 10,000 users with a theoretical 38,000 maximum. We assume 1000 user per bts in the second year and only 400 in the first.

Mobile phone manufacturing capacity will be 300,000 units in Q4: We assume an uptake of 60% and no increase in manufacturing capacity from the run rate thereafter. This would imply penetration of 2.4% of the 57m population already reserved and a much lower penetration of the greater number of actual markets probably being addressed by 2008.

The \$57m considerably understates demand-xG literally had to cut this off, as uptake was so strong as they realised they were underpricing the value of markets: We will see a non-credited market charge later in the year, not included in forecasts.

The model and infrastructure costs allow for the fastest possible rollout of xMax™ networks. In fact, common experience for incumbents offering flat rate services is to quickly achieve 10% market penetration. We assume 2.5%, which must be extremely conservative. The incumbents referred to typically have limited coverage areas, and high spectrum and infrastructure costs. xG's lower cost, a consequence of not having to recover these, and wider service strongly suggests superior penetration.

We have omitted several new applications of Flash Signal™ from forecasts, such as a Blackberry type device, broadband modem and also OEM arrangements.

Unlike other VoIP plays that rely upon the use of broadband connections and computers, xMax™ will expand the low cost calling benefits of VoIP to dial-up and no computer households. Beyond the fact that these demographics are often the ones that can use an affordable calling plan the most, overall they represent a significant increase in the potential market for VoIP.

These points indicate some not insignificant chance of xG greatly outperforming forecasts.

The following tables show such considerations in various scenarios - we are not particularly wedded to them, but use them illustratively to demonstrate a method rather than any particular assumptions.

Valuation Scenarios

Share price (US cent)	1,700c				
Share price (GBP pence)					
Dividend yield	0.0%				
Issued share capital (diluted)	164.2m				
Estimated sales for 2008 financial year	\$296m				
Expected tax rate	38.7%				
Years of growth from 2008	7	Equates to 6 year holding period			
CALCULATING THE MAXIMUM (LIMIT) PURCHASE PRICE					
	Poor		Acceptable		Good
Investor's required return	15.0%	Investor's required return	15.0%	Investor's required return	15.0%
Dividend yield (net)	0.0%	Dividend yield (net)	0.0%	Dividend yield (net)	0.0%
Required return from share price	15.0%	Required return from share price	15.0%	Required return from share price	15.0%
Expected annual sales growth rate	30.0%	Expected annual sales growth rate	40.0%	Expected annual sales growth rate	50.0%
At start				At start	
Share price	1,700c	Share price	1,700c	Share price	1,700c
FY 2008 sales	\$296m	FY 2008 sales	\$296m	FY 2008 sales	\$296m
Sales per share (c)	180	Sales per share (c)	180	Sales per share (c)	180
Price/sales ratio (x)	9.4	Price/sales ratio (x)	9.4	Price/sales ratio (x)	9.4
At year		5		At year	5
Expected sales per share (c)	1130	Expected sales per share (c)	1898	Expected sales per share (c)	3076
Expected Op margin	25%	Expected Op margin	30%	Expected Op margin	35%
Expected earnings margin	15%	Expected earnings margin	18%	Expected earnings margin	21%
Expected earnings per share (c)	173.1	Expected earnings per share (c)	349.0	Expected earnings per share (c)	660.0
Terminal price/earnings ratio (x)	20	Terminal price/earnings ratio (x)	20	Terminal price/earnings ratio (x)	20
Expected share price (c)	3462	Expected share price (c)	6980	Expected share price (c)	13199
Terminal price/sales ratio (x)	3.1	Terminal price/sales ratio (x)	3.7	Terminal price/sales ratio (x)	4.3
Maximum purchase price (c)	1721	Maximum purchase price (c)	3470	Maximum purchase price (c)	6562

Source: Hichens, Harrison on company data

CALCULATING THE REQUIRED GROWTH RATE IN SALES

Poor		Acceptable		Good	
Investor's required return	15.0%	Investor's required return	15.0%	Investor's required return	15.0%
Dividend yield (net)	0.0%	Dividend yield (net)	0.0%	Dividend yield (net)	0.0%
Required return from share price	15.0%	Required return from share price	15.0%	Required return from share price	15.0%
At start				At start	
Share price	1,700c	Share price	1,700c	Share price	1,700c
FY 2008 sales	\$296m	FY 2008 sales	\$296m	FY 2008 sales	\$296m
Sales per share (c)	180	Sales per share (c)	180	Sales per share (c)	180
Price/sales ratio (x)	9.4	Price/sales ratio (x)	9.4	Price/sales ratio (x)	9.4
At year 5		At year 5		At year 5	
Required share price (c)	3419	Required share price (c)	3419	Required share price (c)	3419
Terminal price/earnings ratio (x)	20	Terminal price/earnings ratio (x)	20	Terminal price/earnings ratio (x)	20
Required earnings per share (c)	171.0	Required earnings per share (c)	171.0	Required earnings per share (c)	171.0
Expected Op margin	20%	Expected Op margin	30%	Expected Op margin	35%
Expected earnings margin	12%	Expected earnings margin	18%	Expected earnings margin	21%
Required sales per share (c)	1394	Required sales per share (c)	930	Required sales per share (c)	797
Terminal price/sales ratio (x)	2.5	Terminal price/sales ratio (x)	3.7	Terminal price/sales ratio (x)	4.3
Required growth rate in sales	34.0%	Required growth rate in sales	26.4%	Required growth rate in sales	23.7%

Source: Hichens, Harrison on company data

CALCULATING THE EXPECTED RETURN

Poor		Acceptable		Good	
Expected annual sales growth rate	30.0%	Expected annual sales growth rate	40.0%	Expected annual sales growth rate	50.0%
At start				At start	
Share price	1,700c	Share price	1,700c	Share price	1,700c
FY 2008 sales	\$296m	FY 2008 sales	\$296m	FY 2008 sales	\$296m
Sales per share (c)	180	Sales per share (c)	180	Sales per share (c)	180
Price/sales ratio (x)	9.4	Price/sales ratio (x)	9.4	Price/sales ratio (x)	9.4
At year 5		At year 5		At year 5	
Expected sales per share (c)	1130	Expected sales per share (c)	1898	Expected sales per share (c)	3076
Expected Op margin	20%	Expected Op margin	30%	Expected Op margin	35%
Expected earnings margin	12%	Expected earnings margin	18%	Expected earnings margin	21%
Expected earnings per share (c)	138.5	Expected earnings per share (c)	349.0	Expected earnings per share (c)	660.0
Terminal price/earnings ratio (x)	20	Terminal price/earnings ratio (x)	20	Terminal price/earnings ratio (x)	20
Expected share price (c)	2770	Expected share price (c)	6980	Expected share price (c)	13199
Terminal price/sales ratio (x)	2.5	Terminal price/sales ratio (x)	3.7	Terminal price/sales ratio (x)	4.3
CA Expected return from share price	10.3%	Expected return from share price	32.6%	Expected return from share price	50.7%
Dividend yield	0.0%	Dividend yield	0.0%	Dividend yield	0.0%
Expected total return (CAGR)	10.3%	Expected total return (CAGR)	32.6%	Expected total return (CAGR)	50.7%

Source: Hichens, Harrison on company data

For those who cannot break their addiction to DCF, here is one we prepared earlier! Again, this shows the value of the company is around \$28 a share just in case the actual cashflows are produced and the discount rate is correct. It does not weight the cashflows for probability. We do not like DCF, except as a didactic tool for learning about a business. "I've never seen Warren do one!" says Munger of Warren Buffett, and we try to emulate this.

DCF

DISCOUNTED CASH FLOW MODEL											
Discount rate	14%										
Perpetuity growth rate	3%										
	Years to end December										
Years to end period	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
FCF growth				100%	70%	60%	50%	40%	30%	20%	3%
FCF (\$'000)	(4,941)	(3,877)	70,327	140,654	239,113	382,580	573,870	803,418	1,044,444	1,253,333	1,290,933
Present value of FCF (\$'000)	(4,528)	(3,116)	49,588	86,997	129,732	182,080	239,579	294,219	335,513	353,172	
Perpetuity (residual) value (\$'000)										11,735,752	
Present value of residual (\$'000)										2,900,854	
Net Present Value (\$'000)										4,564,090	
Fully diluted post-IPO market capitalisation (\$'000)										726,933	
Fully diluted post-IPO enterprise value (\$'000)										718,917	
Net Present Value (US cents/share)										2825	
Net Present Value (GBP pence/share)										1441	

Source: Hichens, Harrison on company data

There are qualitative considerations to weigh also. We point to the value of a now highly credible 4G solution as well as to the fact that the xMax™ technology is demonstrably viable. There is also the proven seriousness with which blue chip international companies have taken the company. And there is the fact that licensed spectrum is not needed to operate an xMax™ network, saving operators potentially billions in license fees: Add to this the approximately 7bn communications devices that are manufactured in the world each year, all of which can use Flash Signalling™.

It is the opinion of Hichens, Harrison that both bid and strategic partnership interest will be highly likely in the near term (meaning Q2 or Q3). The trigger for this is that incumbents in the industry are now faced with a highly credible threat to their businesses- their entire infrastructure is obsolete. That means they cannot ignore or ridicule xG (stages 1 and 2 in the Jones model) and the high profile IPO and international agreements, plus the protection of the technology via patents, established clear ownership and a UK listing indicate that management have insulated against stage 3. This leaves their only options as acquisition or partnership. Cable companies in addition could be attracted also to augment their existing infrastructure (Flash Signal™ has also wired applications) and create a wireless offering.

In addition, we may well see strong interest from non industry players, especially content companies who could view xMax™ as a direct link to the customer, avoiding the cable/PSTN duopoly in the US. Equipment and chip companies would also be highly interested seeing multiple generations of high demand products driven by Flash Signal™.

These qualitative points all point to justification of a high valuation.

Is there a way to quantify all these considerations from a valuation perspective?

ODDS Based Model

“Arbitrage” on Skype

Either investors take seriously the vast implications of Flash Signalling™, or they do not:

If they do not, there is no price they should pay for the shares (at least insofar as they are thinking in terms of fundamental analysis).

If they do, that implies that xG has a certain potential which it could partially or wholly fulfill. Anything close to the fulfillment of that potential would see a dramatically higher share price. But in terms of probabilities, how do we judge the potential?

Put differently, the one point we would ask investors to be cognisant of is that there is some serious, even if small (to be clear, we do not think it is small), possibility of xG becoming a world class technology company with the valuation to match. Our problem is how to quantify this possibility with regard to judging whether or not to buy the shares.

Again, to think seriously *and with intellectual honesty* about xG and its valuation, some way must be used to allow for “the expected value” of what may be a small to excellent chance of a *gigantic* return. Scepticism for its own sake is arbitrary, and arbitrariness is a species of the “Untrue”, together with falsity.

Time to put Munger’s advice to work. We ask that two, we think, uncontroversial premises be granted.

1. PREMISE - there is some not insignificant chance that xG will greatly outperform expectations implied in the current price.
2. PREMISE - if so, the company is worth considerably more than Skype at a minimum.

Comparing xG to Skype

- a. Skype sold on a maximum earnout of \$4.1bn and had trailing revenues of \$20m with a forecast \$60m. xG can be compared via our model.
- b. It owned a single application technology for wired VoIP while its recent wireless application is effectively wi-fi, and not truly mobile. xG owns a multi-application disruptive technology which first application alone is fully mobile VoIP and with further applications viable in every area of communications. xG will transition to a fabless semiconductor model in the medium term whereby it will make sales to OEMs in both wired and wireless markets.
- c. Skype did not have a particularly strong revenue model - it could not drive high margin recurrent earnings. xG does and can.
- d. Skype had a strong brand, though, and xG as yet does not.

With the exception of brand, if xG satisfies premise 1, it must be the case that xG is worth very much more than Skype was, *even if eBay overpaid for Skype*. (Brand strength must surely follow quickly if this is so. Great speed is possible here - few had heard of the “Blackberry” brand in January last year, now it is pervasive.) This point would also be supported by the implied earnings in the hypothetical scenario, which would likely be well in excess of \$100m in the medium term. Hence, let us quantify “very much more” by assuming a valuation of 4x. That is \$16.4bn. This “limits” the upside, because if xG reached its potential it would in fact be one of the top technology companies in the world, while this valuation would render it only a medium sized player.

We suggest that there is a way to work out the market's perception of the chance mentioned in premise 1, that xG will greatly outperform implied expectations. Investors can then consider if this accurately reflects the odds - if not, xG is an "under priced bet".

In addition, let us make the conservative assumption that any other possibility leads to xG being rendered worth only 50% of its current valuation, to represent a range of possibilities stretching from badly missing forecasts to moderately outperforming them. This would include the possibilities of reaching forecasts, just missing, widely missing etc. and is a simplifying assumption only.

Hence we are looking for the number Y in the expression

$$Y \times 16.4bn - ((1-Y) \times (1bn))^* = 2.0bn^*$$

*1bn is the amount lost if xG does not outperform forecasts. 2bn is the current market capitalisation

The value of Y, which are the percentage odds attributed to xG greatly outperforming expectations are therefore 17% or 5-1. We suggest that the actual likelihood of greatly outperforming forecasts must be somewhat higher because it is also the case that we have overestimated the effect of not "greatly outperforming forecasts" because the 60% loss is taken as a result of anything on the range of possibilities, such as merely reaching or just outperforming forecasts, and we have artificially limited the upside - xG's potential is such that it could become one of the worlds most valuable technology companies. Such a potential would indicate that the probable valuation should be far more favourably skewed, i.e. a lot higher.

Hence, xG would be an "under priced bet" in precisely Munger's sense.

We can also solve the equation for the valuation if we are prepared to take a guess at the probabilities. If, for example, we think that xG has a 30% chance of out-performing forecasts and we lose 60% immediately if not, we solve for Z in

$$0.3 \times Z - (0.7 \times (1.2bn)) = 2.0bn.$$

This gives a valuation of \$9.5bn at such odds, i.e. there is a 30% chance that xG is worth at least \$9.5bn on such assumptions. Again, this goes to method rather than precise probabilities.

But there is also another consideration to model. This is the risk of not owning xG if exposed to the communications space already. What this would mean is that, if on our assumptions, xG does outperform or even just meet expectations, this will make explicit the obsolescence of rival technologies.

Such an exposed investor must take into account the large losses likely if xG realises its ">17%" possibility. A reciprocal formula would be used to calculate the "insurance value" of purchasing xG. Depending on exposure this is likely to be greater than that expressed above.

Conclusion

Our valuation considerations should be interpreted as methodological recommendations rather than any attempt to determine future cashflows or probabilities etc...

But xG Technology is something that every investor exposed to communications must think about, so we have spent a lot of time suggesting how. We still think it possesses the greatest upside of any London Technology Stock.

We believe that the shares must be considered core - both since successful execution of the business plan still allows for truly dramatic upside and also to hedge probable severe consequences for incumbents, while the downside is thus greatly outweighed on a probability weighted basis.

Appendix

The Technology

Company History

History & Development

xG Technology evolved from the reorganisation of intellectual property originally owned by two companies preceding it – iDigi Communications, LLC and Island Labs, LLC. The common link between these two predecessors and xG Technology include the inventor, Joseph Bobier and the majority shareholder, MB Merchant Group LLC, whose principals, Rick Mooers and Roger Branton, run xG.

The Company is headquartered in Sarasota, Florida, with central engineering facilities located in Fort Lauderdale, Florida. The Group currently has 29 employees, of which 19 are involved in R&D. To date, the Company has completed research and development on the core technology including theoretical and mathematical expression, empirical validation and has been independently assessed and evaluated by IEEE Fellow Professor Stuart Schwartz of Princeton University. A public demonstration of pre-commercial prototypes was successfully carried out in November 2005.

The Company is now immediately pre-commercial, with initial sales indicated for Q2 2007. xG will focus on sales of base stations and xMax™-chipped handsets for the mobile VOIP market, with the aim of building a “franchised” (we use the term analogously) network of operators using the technology to provide such services.

Key points in the development of the Group are summarised as follows:

- 2000
 - Funded work on xMax™ formally begins
 - Six month feasibility study concludes technology viability; three test signal transmitters are built to analyse xMax™
 - Relocated to Florida Keys, set up formal laboratory
 - First patent application made
- 2001
 - Demonstrated data transmission to a mobile receiver at 1 mile distance
- 2002
 - Tested cable TV version of xG transmitter
 - Independent third party verification
- 2004
 - Central engineering facility opened in Ft. Lauderdale, FL.; staff expanded
- 2005
 - Wired and wireless two-way transmission demonstrated
 - Positive technology evaluation by Professor Stuart Schwartz, Princeton University
 - Briefing given to the FCC Office of Engineering Technology on xG
- 2006
 - Mobile VoIP announced as first vertical market
 - OEM Lundinova contracted to design and deliver 10,000 handsets
 - Release of xG evaluation kit for sale to OEMs and product designers
 - Company begins accepting applications for exclusive territories from regional carriers seeking to deploy xMax™—the first truly mobile VoIP service
 - Flotation on AIM in November. \$57m of territory reservation fees contracted. \$120m of preferred equity instrument subscribed for.

2007-January to April-Beta tests carried out and commercial rollout begins

Essentials of the technology

Basic Description

xG, more specifically its resident inventor, Joe Bobier, has discovered and patented a process called "single cycle modulation". Single cycle modulation is where individual sinusoidal (a type of wave) cycles of RF energy are modified to carry one "bit" of information. Rival technologies use tens to hundreds of thousands of waves to convey one "bit" of information, so the efficiency of xG's discovery is of a stunning order of magnitude. With each additional cycle requiring commensurate power output, it can be easily seen that vast efficiency gains are achieved and this is particularly important for mobile wireless communications, because of the implications for infrastructure requirement. However, the savings in battery power are not an insignificant factor. In addition, low power output "clutters" the spectrum much less, allowing for a greater number of simultaneous users of a network, i.e., enhanced operational efficiency and voice quality gains.

The technology is a physical layer technology to use the terminology of the OSI (Open Systems Interconnectivity) model of computer networking, which means it is agnostic to what sits above it in terms of technology (it will work with any standard in the upper six layers of the model). It resides in an FPGA (field programmable gate array) device and is suitable for migration to an ASIC (application specific integrated circuit). That is, you can stick it on a chip and plug it into a mobile handset or laptop, etc.

Perhaps the most important fact concerning xMax™ in the short term is that the technology does not require licensed spectrum - which is typically at higher frequencies - so that operators using xMax™ can avoid the enormous licence fees typically paid for such spectrum.

Hence, xMax™ -

- Can transmit substantially more information at long ranges than other technologies operating at similar power, in a "real world" context.
- Yields significantly greater range at similar levels of power.
- Yields the same range for significantly reduced power.
- Leads to much greater battery life for devices using the technology, such as laptops and - of course - mobile phones. (Initially, the technology will be deployed at similar power levels as rival technologies. At these levels, xMax™'s range is far superior, leading to reduced infrastructure costs. As denser coverage is built into specific areas, power can then be turned down very substantially.)
- Low power output "clutters" the spectrum much less, allowing for a greater number of simultaneous users of a network.

Power Spectral Efficiency – xMax™ can transmit substantially more information than other technologies operating at similar power levels.

Spectral efficiency, which is the transmitted bit rate divided by bandwidth capacity, is a common method for comparing RF signalling methods. Power spectral efficiency takes into account the amount of power required to convey data across the spectrum. Professor Stuart Schwartz has analysed this relationship and has demonstrated that xMax™ is 79-871x more efficient than CDMA (code division multiple access) and GSM (Global Standard for Mobile communications) technology standards.

	xMax™ Gen 1	GSM	CDMA
Bit Rate	3.7 Mbps	272 Kbps	1.125 Mbps
Bandwidth	10 MHz	200 kHz	1.2 MHz
Wattage	50 mW	160 W	10 W
bps/Hz/W	7.4	0.0085	0.09375

Source: Princeton University (Report by Professor Stuart Schwartz)

Technology	Claimed/Theoretical peak speeds	Avg. throughput/user	Cell Range
CDMA 1XEV-DO	2.4 Mbps	300 - 500 Kbps	3 - 5 Km
WCDMA	2 Mbps	150 - 200 Kbps	3 - 5 Km
HSDPA	14 Mbps	900 Kbps	3 - 5 Km
TD-CDMA	2.4 Mbps	600 - 700 Kbps	3 - 5 Km
TD-SCDMA	1.3 Mbps	300 - 500 Kbps	3 - 5 Km
Flash OFDM	2 - 3 Mbps	300 - 500 Kbps	3 - 5 Km
WiMAX (802.16e)	70 Mbps	1 - 2 Mbps	est. 1 - 3 Km
MobileFi (802.2)	70 Mbps	1 - 2 Mbps	est. 1 - 3 Km
xMax™ 900 ISM	50 Mbps	1 - 6 Mbps	Adjustable 5 - 48 Km

Source: CSFB research

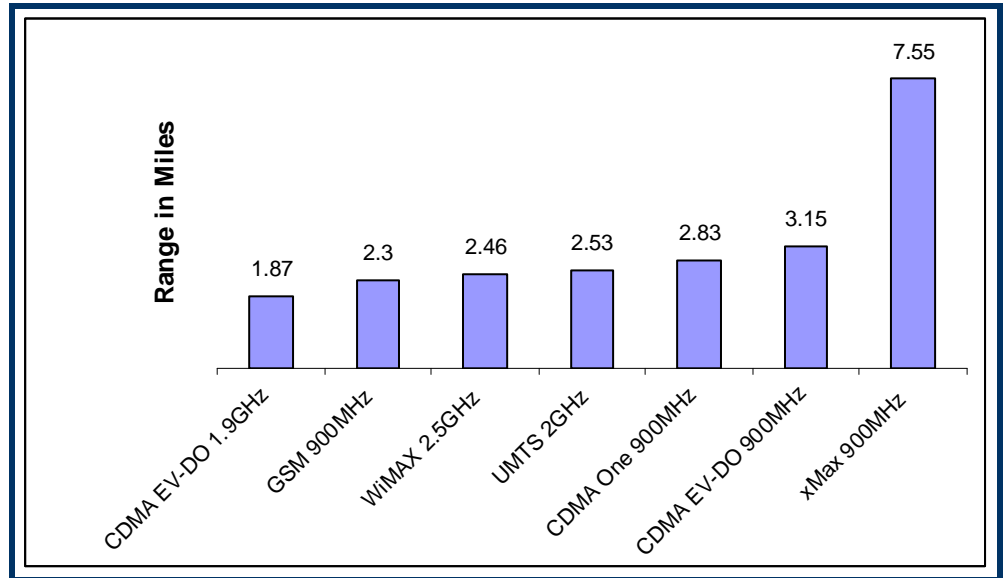
Note that 3G data transmission standards are 120KPS to 384 KPS while 3.5G is 425KPS to 14MPS.

The xMax™ generation 1 results are actual, not theoretical, as tested in the public demonstration of November 2005. Power output was subsequently turned down to 35 mW. The second chart shows comparative theoretical capacities.

The implications of this will be made clear in what follows.

**Extended Range of
xMax**

The first major implication is that, for similar power output required by other technologies, xMax™ can dramatically increase the range of communication devices. By contraposition, the same range is achievable for dramatically lower levels of power output.



Source: CSFB

It is this factor which will allow for dramatically lowered infrastructure costs in the build out of an xMax™ based network. Far fewer base stations (BTS) will be required to cover a given area. This is why we again use the word “compelling” (and again we are not speaking loosely), this time in relation to the commercial offering surrounding xMax™. Operators have extremely low capital expenditure requirements and no spectrum fees, while easily perceiving the potential to deliver seven figure revenues. These can get into the opportunity for an outlay of thousands, not millions, and still effectively compete with the majors. **This is absolutely not to suggest that xG may not want to partner with a large industry incumbent, which itself has access to licensed spectrum.** In fact, as we have argued, we expect to see a scramble by such players to partner with xG. Those that don't may well be at a serious competitive disadvantage. We have already seen keen interest by two very large players in the wireless space, wishing to develop a joint venture.

Power reduction – Two important implications

Wireless field performance results have shown xMax™ base stations transmitting full motion video over wireless local area networks (WLAN) ranges use just 300 nanowatts of RF output power. This is 3 million times less power than a typical 802.11 access point (a standard for RF). xMax™ radio signals can reach 18 miles on 35mW, as shown in the table in section a. The implications for battery life, improved risk profile for mobile phone usage, and for military/police/health services' mobile networks are substantial.

Power reduction features should become more important as denser coverage is built into networks, as xG intends initially to maximise range at similar power. However, in time, power usage should diminish substantially.

At this time, we see two further very important implications:

First, lower power usage sends less “clutter” into the spectrum. This in turn means that xMax™ networks, all things being equal, should be highly robust and support a higher number of simultaneous users. Theoretical capacity of an xMax™ BTS is 38,000 individuals though xG recommends one BTS per 10,000 population to build in sensible levels of redundancy. This should support 867 simultaneous users per BTS while maintaining acceptable call quality, calculated using the extended Erlang B statistical model used by the industry to make such predictions. This, in turn, is a function of average talk minutes per month and is tabulated below.

xMax™ BTS Capacity as a Function of Monthly Traffic (Minutes) per Sub					
Talk Minutes per Month	300	900	1800	2700	3600
Subscribers per BTS	31,700	10,566	5,283	3,522	2,641

Source: Company business plan

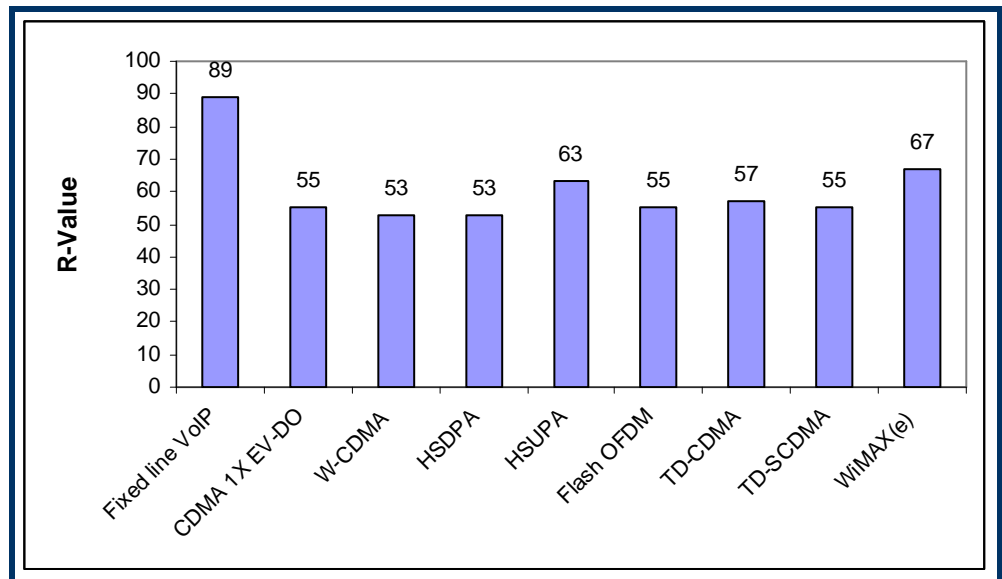
On average, cell sites can only handle 250 simultaneous calls. Estimates for CDMA and GSM BTS are as low as 68 to 128 simultaneous calls while the Vodafone website says a typical BTS can only handle 40-60.

Secondly, voice quality should be at the highest contextual standard, as it can vary with number of simultaneous calls. In addition, xMax™ is not a legacy technology and, because it is physical layer, is agnostic as to transmission protocols used higher in the “stack”. Hence it can be optimised for each, in distinction to all competing technologies.

Voice quality is measured via an R-value. An overview of the standard and the performance of rival technologies is given below. Although an estimate is not given for xMax™, one should be confident that its performance will be at the top level against competitive technologies in an equivalent context. We learned first hand that voice standards are at least as good as cellular despite the VoIP medium being notorious for poor “R-Values”, an industry term for voice quality. We experienced a crystal clear international VoIP call. This is due to a proprietary over-the-air protocol, or MAC layer, also called the “air interface”, designed by xG CTO, Joe Bobier, specifically for VoIP. It is a non-contention based system i.e. one that virtually eliminates data collisions, which VoIP can't tolerate. The proprietary interface is called “xMac™”.

R-Value Range	Quality Categories	User Satisfaction
90 ≤ R ≤ 100	Best	Very satisfied
80 ≤ R ≤ 90	High	Satisfied
70 ≤ R ≤ 80	Medium	Some users dissatisfied
60 ≤ R ≤ 70	Low	Many users dissatisfied
50 ≤ R ≤ 60	Poor	Nearly all users dissatisfied

Source: International Telecommunications Union



Source: CSFB

Unlicensed Spectrum

It is the case that mobile network operators use frequencies above 2 GHz. Lower radio frequencies have been allocated to myriad narrow channel users and cannot be reallocated or bundled into the wide channels necessary for broadband services. Consequently, current efforts for high speed services (such as 3G is supposed to be) focus on these high frequency bands.

High frequency transmission suffers, however, from propagation problems - it does not propagate as well as sub-gigahertz frequencies and can be stopped by most objects. This necessitates the construction of highly elaborate infrastructure architectures at great expense. The Commission of the European Communities estimates that the full Europe-wide 3G build out will cost €260bn, of which half is for licences and half for infrastructure! Currently, licensing auctions are ongoing in the USA, while Sprint has announced a \$3bn network investment to cover approximately 100mm people.

We have already noted that xMax™ works on lower frequencies and hence in unlicensed spectrum but nevertheless can be received with little disturbance or interference from other signals in the same band. ***xmax™ is the only technology which has this capacity.***

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****IMPORTANT DISCLOSURE CONCERNING INTEREST IN COMPANY****

Robyn Harte-Bunting, a technology analyst at Hichens, Harrison & Co. plc and the author of this report, holds shares in xG Technology. He acquired his shares in March 2006.