Thin Film Electronics

Q218 results

NFC ramp-up slower than expected

Tech hardware & equipment

Revenues from sales of NFC tags more than doubled during H118 as the number of clients and size of campaigns increased. However, Thinfilm's management notes that the rate of increase in demand for NFC solutions during Q218 was more modest than previously anticipated and has delayed break-even to 2020. We revise our estimates and reduce our indicative valuation from NOK3.01/share to NOK1.92/share.

Year end	Revenue ($m)	EBITDA* ($m)	PBT* ($m)	EPS* (c)	DPS (c)	EV/sales (x)
12/16	3.8	(36.9)	(42.8)	(6.5)	0.0	22.8
12/17	5.9	(50.9)	(57.5)	(6.6)	0.0	10.7
12/18e	5.4	(49.5)	(54.2)	(4.6)	0.0	23.8
12/19e	34.5	(43.3)	(51.3)	(4.4)	0.0	5.4

Note: *EBITDA, PBT and EPS are normalised, excluding amortisation of acquired intangibles, exceptional items and share-based payments.

Delays in EAS ramp-up and R2R production

Total revenue and other income declined by $1.4m to $2.0m during H118, reflecting the absence of JDA income which benefited H117. Revenue from sales of EAS and NFC tags rose by 4% year-on-year to $0.8m, as although fewer EAS tags were shipped because of a delay in volume shipments for denim category use-cases, shipments of NFC tags more than doubled. Operating costs reduced by 5% year-on-year to US$27.2m. Operating losses widened by 9% to US$27.2m. Losses before tax narrowed by 2% to US$25.2m because of the beneficial impact of unrealised foreign currency gains. Net cash (excluding long-term financial leases) reduced by US$31.9m to US$66.2m. Thinfilm invested US$9.0m in fixed and intangible assets (including pre-payments) primarily related to equipment for the new roll-based production line at the San Jose site. Delays in installing all of the roll-to-roll (R2R) equipment for NFC manufacture will result in R2R production being postponed by up to several months.

Set-backs being addressed

The year-on-year decrease in EAS revenues is likely to be reversed as the retail customer resolves how to attach the tags to denim items this quarter. The slower-than-expected adoption of NFC tapping by iOS users appears to be linked to the need to download an app and is likely to be resolved over the next year. Any delays in commencing R2R production will not interfere with NFC tag roll-out, as any short-fall in printed tag availability can be addressed through supply of silicon ones.

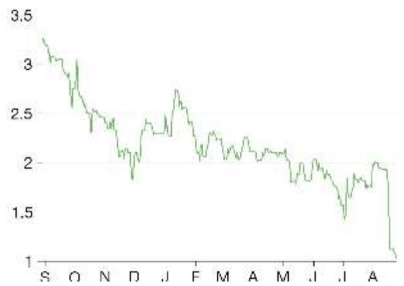
Valuation: Substantial upside potential, execution key

Our base case scenario returns a DCF valuation of NOK1.92/share (previously NOK3.01/share). Key triggers to close the gap are: Thinfilm announcing more campaigns requiring a million-plus NFC tags and being able to disclose meaningful volumes of NFC tag shipments per quarter; the proportion of iOS users engaging in NFC tapping reaching a level at which brand owners feel NFC campaigns will reach both Android and iOS users; and management providing greater clarity on when full R2R NFC tag production is likely to commence.

28 August 2018

Price	**NOK1.03**
Market cap	**NOK1,205m**
	NOK8.47/US$
Net cash ($m) at 30 June 2018 excluding financial lease	66.2
Shares in issue	1.17bn
Free float	96.2%
Code	THIN
Primary exchange	Oslo
Secondary exchange	OTCQX

Share price performance



%	1m	3m	12m
Abs	(41.8)	(43.9)	(68.8)
Rel (local)	(43.2)	(47.2)	(74.5)
52-week high/low		NOK3.3	NOK1.0

Business description

Thin Film Electronics is a global leader in NFC mobile marketing and smart-packaging solutions using printed electronics technology. This technology should enable it to offer printed NFC tags at a substantially lower price point than conventional silicon tags.

Next event

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Financials

Thinfilm is pioneering a new market and, as is invariably the case, the company has encountered several obstacles that are delaying roll-out. While new, yet unforeseen issues may well be encountered, we believe that the building blocks to facilitate an acceleration in growth are being put in place. Our base case estimates are based on a scenario where the business successfully executes on plan and customer adoption is relatively robust. The range of potential outcomes is, however, large, so we provide a sensitivity analysis in Exhibit 3.

Tag revenues up in H118, but operating losses widened

A comparison with the prior year is obscured by the receipt in H117 of significant revenues from a joint development programme with a global pharmaceutical company, as well as a change in allocation of grant income. Total revenue and other income declined by $1.4m to $2.0m, reflecting the absence of the JDA income and lower profits on disposal of assets. The key metric, revenue from sales of EAS and NFC tags, rose by 4% year-on-year to $0.8m. 11.3m EAS tags were shipped compared to 13.6m in H117, as there was a delay in volume shipments for denim category use-cases while the retailer tested alternative ways of attaching the tags. Shipments of NFC tags more than doubled as the company engaged in its first campaign requiring more than one million tags. Income related to government grants and other funded projects rose by 10% to US$0.7m. Operating costs (excluding depreciation and amortisation charges) reduced by 5% year-on-year to US$27.2m. Higher payroll costs associated with full-time operation at the R2R production facility in San Jose were balanced by lower premises costs, as activity at the Linköping site has reduced, while H117 bore the cost of renting both the original and the new premises in San Jose. Operating losses widened by 9% to US$27.2m. Losses before tax narrowed by 2% to US$25.2m because of the beneficial impact of unrealised foreign currency gains.

Net cash (excluding long-term financial leases) reduced by US$31.9m to US$66.2m. Thinfilm invested US$9.0m in fixed and intangible assets (including pre-payments) primarily related to equipment for the new roll-based production line at the San Jose site. This was partly offset by a US$1.2m inflow from the disposal of Linköping site assets. The only financial liability is $11.8m, arising from a long-term financial lease for the R2R production facility.

Revising estimates to reflect slower than expected NFC ramp-up

Revenues: we are encouraged by several points from the Q218 results call. Customers are placing follow-on orders for campaigns that are larger-scale than the earlier ones. The campaign with Yuni is the first one in the beauty vertical, taking Thinfilm into new markets. The campaign for the Brown-Forman brand, El Jimador Tequila, means that Thinfilm now has commercial agreements with four of the top seven spirits companies globally. The number of iOS users participating in campaigns is increasing, albeit from a low base. However, management notes that the rate of increase in demand for NFC solutions during Q218 was more modest than previously anticipated. An analysis of campaigns shows that NFC tapping is still concentrated among Android users. While Android users tapping tags with their mobile phones are taken directly to the relevant web page, iOS users need to open an app, which they must have previously downloaded, to access the tag content. This is similar to the process for reading QR codes, but takes time and discourages consumers from tapping. According to management, industry experts expect that usability will improve in the next two iOS releases, leading to higher tapping rates. Additionally, over time more and more iOS users will have downloaded an enabling app. Meanwhile, some brands are reluctant to invest in NFC marketing until iOS users have the same level of access as Android users. Management also notes that brands are reluctant to deploy NFC tags directly on packaging as this requires modification to packaging lines. This means that, with notable exceptions such as the million-tag campaign for Iovate, tags are used for smaller scale campaigns where they are incorporated into neck collars, hang tags or beer mats. Noting these trends, we revise our revenue estimates downwards.

Cost-base: we adjust our cost-estimates to reflect the increased focus on cost control and project management during Q2, which resulted in a 5% quarter-on-quarter reduction in costs. Management has recently initiated a more focused programme to conserve cash in response to the slower-than-expected uptake of NFC tags during H118. We will adjust our estimates again when the details of this are available.

Cash flow: our estimates continue to show Thinfilm reaching cash break-even in FY20, which is in line with management guidance. This leaves an estimated $41.0m funding gap. In accordance with Edison's policy, we model this as satisfied through debt, although management notes that it is likely to be satisfied through equity from a strategic partner.

Exhibit 1: Changes to estimates

	2017	2018e			2019e			2020e		
	Actual	Old	New	Chg (%)	Old	New	Chg (%)	Old	New	Chg (%)
NFC tags (m units)	0.0	21.3	14.0	(34.1)	687.6	203.0	(70.5)	1,509.9	960.0	(36.4)
EAS labels (m units)	25.9	65.1	33.0	(49.3)	163.4	125.0	(23.5)	232.7	197.0	(15.3)
Total revenue ($m)	5.9	8.0	5.4	(32.3)	100.4	34.5	(65.6)	217.0	141.1	(35.0)
Total operating costs ($m)	(59.0)	(62.8)	(56.3)	(10.3)	(130.4)	(79.3)	(39.2)	(172.6)	(126.8)	(26.6)
EBITDA ($m)	(50.9)	(52.4)	(49.5)	(5.6)	(27.6)	(43.3)	56.9	46.7	15.7	(66.3)
Normalised PBT ($m)	(57.5)	(57.2)	(54.2)	(5.2)	(35.2)	(51.3)	45.8	38.3	6.6	(82.8)
Normalised EPS (c)	(6.6)	(4.9)	(4.6)	(5.2)	(3.0)	(4.4)	45.8	3.3	0.6	(82.8)
Net (cash)/debt	(86.0)	(16.9)	(20.3)	19.9	36.1	38.5	6.4	14.7	47.1	221.0

Source: Edison Investment Research

Progress against strategic objectives

Management remains focused on three activities: (1) enhancing CNECT functionality to support an expanding number of marketing applications; (2) commissioning the R2R production facility in San Jose so it can manufacture tags in the volumes and at the price point required for deployment of billions of units; and (3) ensuring that it can provide marketing solutions that are relevant for consumers with Apple devices as well as those using Android or Windows operating systems.

Enhancing CNECT capability

As discussed in our July note, in April Thinfilm released version 2.0 of the CNECT Software Platform, which features improved marketing campaign and product enhancement tools. More recently, it started to collaborate with Clause to facilitate the pairing of physical goods with digital contracts. Thinfilm will integrate Clause's connected contracting solution into its CNECT software platform. CNECT's blockchain services already support the use of NFC tags as a security mechanism for authenticating products, confirming deliveries, reviewing supply chain routes and verifying the provenance of goods, which is highly complementary to the NFC mobile marketing offer. (Alibaba's investment in Smartrac this July demonstrates the utility of NFC in brand protection.) The partnership with Clause creates many more usage cases, linking the processes listed above to digital contracts or alternatively linking online verification processes with physical contracts.

Switching to R2R production

Management had intended that production of EAS tags on the R2R process would have started by the end of 2017. However, there were delays shipping the equipment to San Jose so Thinfilm started fully processing EAS tags in the facility at the end of May. Results from the initial batch processed established the commercial viability of the R2R line. However, the amount of time spent optimising equipment in San Jose has pushed completion of a fully roll-processed lot out to early September. Two of the six additional process tools required for NFC production have completed factory acceptance testing and are ready to ship, so some of the additional process steps required for NFC production start can commence at end-Q318, in line with the schedule management set out in December 2016. However, full production will be delayed for several weeks or months after that because modifications to one of the other processing tools are required. The exact length of the likely day cannot be determined until the exact modification required is decided. Management notes that the incremental cost of this modification is not material, only the potential delay to NFC volume production.

Ensuring compatibility with Apple devices

During Q218, Thinfilm and other proponents of the unidirectional protocol used in its proprietary PDPS (printed dopant polysilicon) NFC tags submitted the protocol for standardisation to the NFC Forum. In August, Thinfilm's senior technical project manager, Cosmin Pascu, was elected vice-chair of the NFC Compliance Committee, while Thinfilm's CEO presented strategic and technical insights from recent in-market deployments at the NFC Forum Innovation Day conference in June. In parallel, Thinfilm has started a development programme to create a roadmap leading to sub-micron feature sizes and broader NFC functionality. During Q218, Thinfilm demonstrated reader-initiated communication with printed NFC, which represents an alternative route for achieving iOS compatibility (see our July note for details). It also started a product development initiative to enable write-back. The combination would support a further widening of use cases; for example, a patient could tap every time he/she administered a prescribed drug, activating an update of their medical records.

Valuation

DCF valuation

Exhibit 2: DCF summary

$m	2018e	2019e	2020e	2021e	2022e	2023e	2024e	2025e	2026e	2027e
Revenue by product line										
EAS	1.7	5.6	8.5	10.9	13.6	17.3	20.7	22.8	25.1	27.6
NFC OpenSense	0.2	2.1	13.7	25.5	33.1	32.6	37.4	39.2	50.2	53.7
NFC SpeedTap	0.3	13.8	103.2	180.2	220.7	236.7	260.7	273.8	273.8	287.5
NFC Silicon	1.3	9.9	9.0	-	-	-	-	-	-	-
Pass-through costs	0.1	1.3	4.8	11.0	13.1	15.7	16.5	16.4	15.5	15.5
Sales revenue	3.6	32.7	139.2	227.6	280.5	302.4	335.4	352.2	364.6	384.2
Total unit sales own production (m)	37	251	1,090	1,956	2,589	3,432	4,015	4,435	4,683	5,186
ASP own production (c/unit)	6.1	9.1	11.9	11.6	10.8	8.8	8.4	7.9	7.8	7.4
Share units produced in-house (%)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Production revenue	2.3	22.8	130.2	227.6	280.5	302.4	335.4	352.2	364.6	384.2
Other revenue	3.1	11.7	10.9	1.9	2.0	2.1	2.2	2.3	2.3	2.4
Total revenue	5.4	34.5	141.1	229.5	282.5	304.5	337.5	354.5	366.8	386.6
Gross margin own production (%)	(33.1)	(0.4)	49.1	51.9	49.3	48.7	48.6	48.6	48.5	48.4
EBITDA	(49.5)	(43.3)	15.7	55.8	70.8	74.2	84.3	86.9	90.1	96.0
EBITDA margin (%)	(912.8)	(125.5)	11.1	24.3	25.0	24.4	25.0	24.5	24.6	24.8
Depreciation	(4.8)	(6.9)	(7.1)	(6.9)	(6.9)	(7.0)	(7.2)	(7.5)	(7.5)	(7.8)
Share-based payments	(1.4)	(1.4)	(1.4)	(1.4)	(1.4)	(1.4)	(1.4)	(1.4)	(1.4)	(1.4)
EBIT	(55.7)	(51.6)	7.2	47.5	62.5	65.9	75.7	78.0	81.2	86.7
Notional tax	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(25.0)	(26.0)	(27.8)
Tax rate (%)	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00
EBITDA after tax	(49.5)	(43.3)	15.7	55.8	70.8	74.2	84.3	61.9	64.1	68.2
Change in working capital	8.7	(4.8)	(17.5)	(14.5)	(8.7)	(3.6)	(5.4)	(2.8)	(4.8)	(5.3)
Capex	(25.0)	(9.6)	(4.8)	(6.5)	(7.8)	(8.5)	(9.4)	(10.0)	(10.5)	(11.2)
Free cash flow	(65.7)	(57.8)	(6.6)	34.7	54.3	62.2	69.5	49.2	48.8	51.7
Terminal value										450
NPV of future cash flows	(65.7)	(50.5)	(5.0)	23.1	31.6	31.6	30.9	19.1	16.5	148.3
Value of future cash flows	180				WACC	14.5%				
FY17 net debt/(cash)	(86.0)				Terminal growth rate	3%				
Equity value	265.7				TV as % of total EV	50.0%				
Per share value (NOK)	1.92				NOK/US$	8.47				

Source: Edison Investment Research

Thinfilm is the only listed company focused on the development and manufacture of printed electronics, so a multiples-based analysis is not appropriate in our view. We therefore use a DCF approach to value the business across a range of scenarios.

Given Thinfilm's relatively early stage of corporate development and the uncertainty regarding Apple's adoption of the unidirectional protocol used in the PDPS NFC tags, there is a wide margin of error in our unit sales forecasts. With the product mix and growth profile shown in Exhibit 2, which assumes that Apple adopts the protocol by the end of 2019, our DCF calculation generates an indicative valuation of NOK1.92/share (formerly NOK3.01/share). For the share price to reach this level, investors will need to regain confidence in the stock. Key triggers are: (1) Thinfilm announcing more campaigns requiring a million-plus NFC tags and being able to disclose meaningful volumes of NFC tag shipments per quarter; (2) the proportion of iOS users engaging in NFC tapping reaching a level at which brand owners feel NFC campaigns will reach both Android and iOS users; and (3) management providing greater clarity on when full R2R NFC tag production is likely to commence.

Sensitivity analysis – bull and bear cases

The qualitative impact of delays in Apple adopting the TTF protocol is explored in detail in our July note, but this is not the only factor that may adversely affect deployment of Thinfilm's tags. It is also dependent on competitive activity, such as discounting.

Based on our DCF assumptions for WACC (14.5%) and terminal growth rate (3%), our analysis (Exhibit 3) indicates that the current share price (bear case) factors in a revenue ramp-up that is c 23% slower than that adopted in our forecast. In principle, the roll-out rate could be slower than this, but each new client win, especially those like Iovate or Kilchoman whisky, which require over a million tags each, reduces the downside risk to our base case. Conversely, tag deployment from 2021 onwards may be substantially more rapid than the rate shown in our base case if the tags are deployed as widely as management envisage and become as ubiquitous as semiconductors containing ARM processors, Bluetooth chips or graphics processors. If Thinfilm licences the technology to a third party, deployment is not limited by the capacity of the R2R facility. Our bull case models the R2R facility reaching full capacity in 2023, but with third-party capacity enabling tag deployment to be five times this level in 2027. This gives a valuation of NOK10.53/share.

Exhibit 3: Sensitivity analysis

$m	2018e	2019e	2020e	2021e	2022e	2023e	2024e	2025e	2026e	2027e
Rate of roll-out implied by current share price (bear case)										
Total revenue ($m)	5.0	28.4	111.5	180.6	222.2	240.0	266.4	280.1	290.1	306.0
EBITDA ($m)	(49.6)	(45.4)	(0.6)	29.3	39.8	41.3	47.9	48.7	50.6	54.4
Indicative valuation (NOK/share)	1.11									
Third-party production capacity supporting higher volume ramp-up (bull case)										
Total revenue ($m)	5.4	34.5	141.1	292.7	545.4	732.0	834.2	950.0	1,036.3	1,059.3
EBITDA ($m)	(49.5)	(43.3)	15.7	90.7	209.0	305.0	382.2	472.1	537.8	557.3
Indicative valuation (NOK/share)	10.53									

Source: Edison Investment Research

Exhibit 4: Financial summary

US$000s	2016	2017	2018e	2019e	2020e
Year-end December	IFRS	IFRS	IFRS	IFRS	IFRS
PROFIT & LOSS					
Revenue	3,845	5,907	5,422	34,528	141,092
EBITDA	(36,873)	(50,867)	(49,492)	(43,343)	15,723
Operating Profit (norm, before amort. and except.)	(40,049)	(57,858)	(54,280)	(50,255)	8,618
Intangible Amortisation	0	0	0	0	0
Exceptionals	0	0	0	0	0
Share-based payments	(1,433)	(2,220)	(1,390)	(1,390)	(1,390)
Operating Profit	(41,482)	(60,078)	(55,670)	(51,645)	7,228
Net Interest	(2,731)	374	65	(1,002)	(2,041)
Profit Before Tax (norm)	(42,780)	(57,484)	(54,215)	(51,257)	6,577
Profit Before Tax (FRS 3)	(44,213)	(59,704)	(55,605)	(52,647)	5,187
Tax	(282)	122	0	0	0
Profit After Tax (norm)	(43,062)	(57,362)	(54,215)	(51,257)	6,577
Profit After Tax (FRS 3)	(44,495)	(59,582)	(55,605)	(52,647)	5,187
Average Number of Shares Outstanding (m)	659.1	862.7	1,172.0	1,172.0	1,172.0
EPS - normalised (c)	(6.5)	(6.6)	(4.6)	(4.4)	0.6
EPS - (IFRS) (c)	(6.8)	(6.9)	(4.7)	(4.5)	0.4
Dividend per share (c)	0.0	0.0	0.0	0.0	0.0
EBITDA Margin (%)	N/A	N/A	N/A	N/A	0.1
Operating Margin (before GW and except.) (%)	N/A	N/A	N/A	N/A	6.1
BALANCE SHEET					
Fixed Assets	24,903	34,246	53,382	55,044	51,677
Intangible Assets	3,142	2,190	3,686	5,332	7,142
Tangible Assets	9,155	20,522	39,234	40,322	36,218
Investments	12,607	11,534	10,462	9,390	8,318
Current Assets	79,231	115,074	33,678	24,928	50,773
Stocks	1,086	709	891	5,676	23,193
Debtors	3,940	16,245	891	5,676	23,193
Cash	74,205	98,120	31,896	13,576	4,386
Other	0	0	0	0	0
Current Liabilities	(7,789)	(7,320)	(891)	(46,676)	(64,193)
Creditors	(7,789)	(7,320)	(891)	(5,676)	(23,193)
Short term borrowings	0	0	0	(41,000)	(41,000)
Long Term Liabilities	(12,850)	(12,125)	(11,581)	(11,037)	(10,493)
Long term borrowings	(12,581)	(12,125)	(11,581)	(11,037)	(10,493)
Other long term liabilities	(269)	0	0	0	0
Net Assets	83,495	129,875	74,587	22,259	27,764
CASH FLOW					
Operating Cash Flow	(37,412)	(52,281)	(40,749)	(48,128)	(1,795)
Net Interest	88	343	65	(1,002)	(2,041)
Tax	(118)	(38)	0	0	0
Capex	(5,350)	(27,107)	(24,996)	(9,646)	(4,810)
Acquisitions/disposals	0	0	0	0	0
Financing	101,124	103,285	0	0	0
Dividend payments and Other items	(67)	170	0	0	0
Net Cash Flow	58,265	24,372	(65,680)	(58,776)	(8,646)
Opening net debt/(cash)	(15,940)	(61,624)	(85,995)	(20,315)	38,461
Finance leases initiated	(12,581)	0	0	0	0
Other	0	0	0	0	0
Closing net debt/(cash)	(61,624)	(85,995)	(20,315)	38,461	47,107

Source: Company accounts, Edison Investment Research

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