

Sensortek Technology Corp.

昇佳電子股份有限公司

論壇簡報



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昇佳電子股份有限公司

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議程

I. 公司簡介

II. 市場概況

III. 公司產品

IV. 經營實績

V. 未來發展

I. 公司簡介

關於我們

Company Name	Sensortek Technology Corp.	
Founded	December 1, 2009	
Capitalization	NT 489,126,180	
Chairman and CEO	Sheng-Su Lee	
Number of Employees	170	
Location	Tai Yuen Hi-Tech Industrial Park, Jhubei City, Hsinchu County	
Products	• 光學感測晶片 Optical Sensor - 近接感測晶片 Proximity Sensor (PS) - 環境光感測晶片 Ambient Light Sensor (ALS) - 色彩感測晶片 Color Temperature Sensor (RGB) - 閃頻偵測晶片 Flicker detection sensors • 微機電感測晶片 MEMS Sensor - 加速度感測晶片 Accelerometer Sensor (GS)	
Listing	Taipei Exchange Market (TPEX) 06/08/2020 (上櫃) Emerging Stock Market (TESM) 06/18/2019 (興櫃)	

里程碑

Entry Level Market

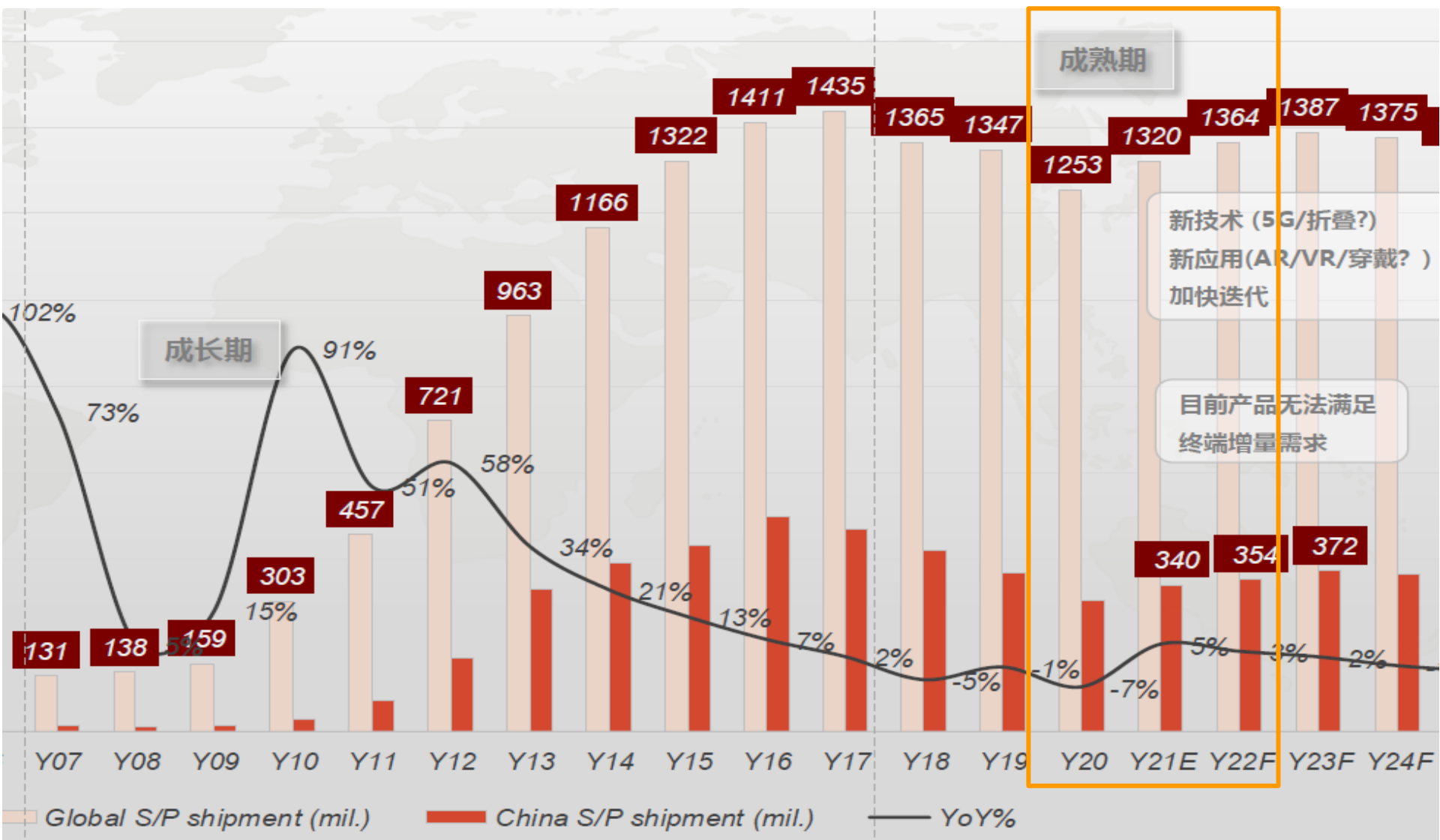
- 2009: Established the team and aim at entry-level smart phone models
- 2010: **Launched Optical Product Lines: Proximity (PS) & Ambient Light (ALS) sensors**
- 2012: **Launched MEMS Product Line: Accelerometers (g-sensors)**
- 2013: Spinoff
- 2017: **Launched 2nd Gen. of Optical product: Invisible solution (PS+ALS, All-in-1)**
- 2018: **Launched 2nd Gen. of Optical product: Under display & slit type PS+ALS solution**
Launched the 2nd Gen. of MEMS: Low-power G-sensors for smart phone

High-end Level Market

- 2019: **Launched the 3rd Gen. of Optical product: RGB sensors for high-end front screen**
- 2020: Listed at the Taipei Exchange Market (TPEX)
- **Launched the 3rd Gen. of Optical product: RGB + flicker sensors for rear cameras**
- 2021: Move to high-end models
 - Launched Optical **high sensitivity PS+ALS (x10) for AMOLED screens**
 - Launched Optical **Under display & slit type PS+RGB for screens**

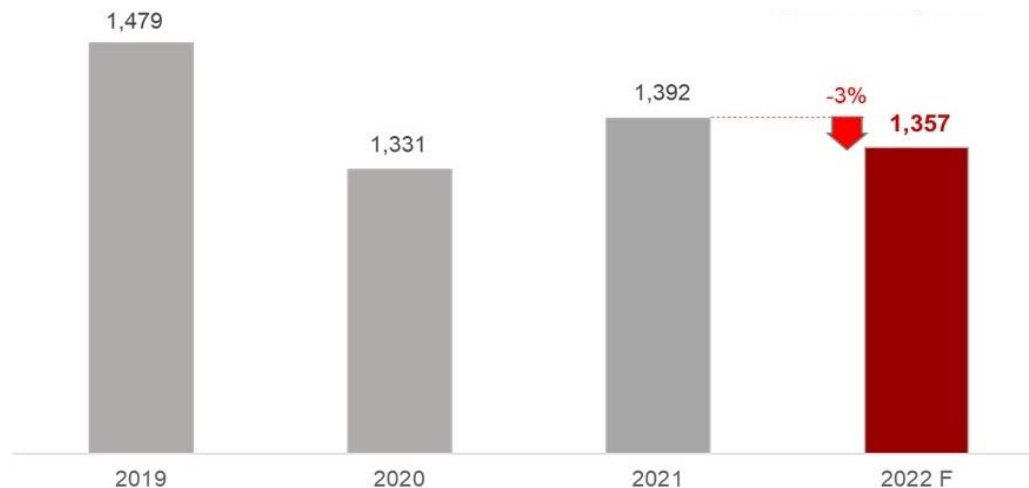
II. 市場概況

全球智慧型手機銷量預估



5G Smartphone Forecast

WW Smartphone shipment forecast update

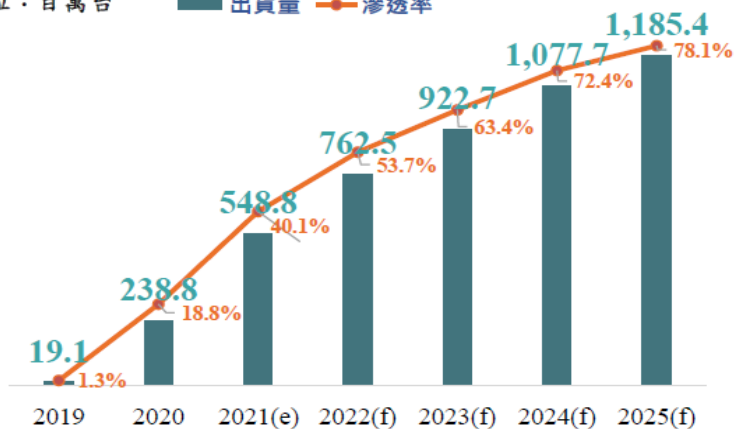


Source: Counterpoint Market Outlook 2022-2026, May 2022

5G smartphone forecast

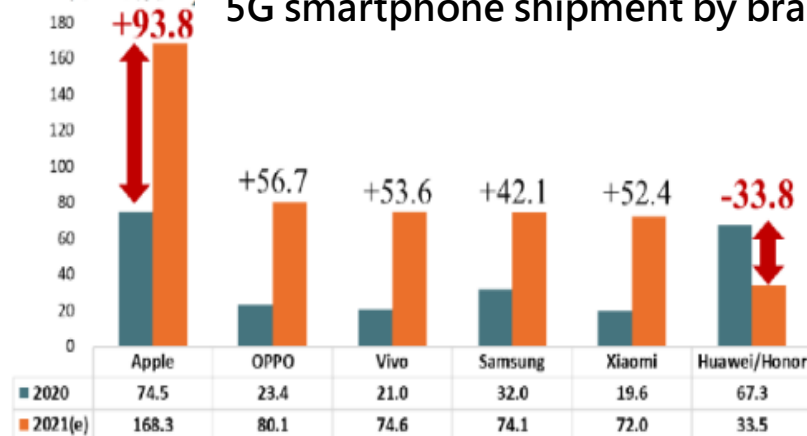
單位：百萬台

出貨量 滲透率



單位：百萬台

5G smartphone shipment by brand



資料來源：MIC

III. 公司產品

光學感測晶片 → 手機顯示屏應用

Optical sensor for displays :

Proximity Sensors (PS)

近接感測晶片 → 關屏防誤觸
turns off the display (anti-touch)

Ambient Light Sensors (ALS)

環境光感測晶片 → 調節螢幕亮度
... screen brightness control

- G1: PS + ALS 2-in-1 visible solution (2010)
- G2: PS + ALS 2-in-1 invisible solution (2018)
 - Under-display 屏下方方案 for AMOLED displays
 - Slit type 狹縫方案 for TFT displays

Color temperature Sensors (RGB)

色溫感測晶片 → 調節螢幕色溫
... screen color temperature control

- G3: PS + RGB sensors (2019)
- G4: PS + RGB sensors (2021)
 - Slit type & under display
 - for better reading experience



PS + ALS shipment

2019: >650M pcs
2020: >720M pcs
2021: >660M pcs



Waterdrop Screen

狹縫(Slit) ALS/PS
狹縫(Slit) PS / 屏下 ALS
前攝旁 ALS/PS
(Aside of Front Facing Camera)



Bezel-less Screen

屏下(Under-display) ALS/PS
狹縫(Slit) PS / 屏下 Under-display ALS



G1: PS + ALS visible solution 1x
G2: PS + ALS invisible solution → 3x
- Under-display solution for AMOLED

6x → 10x (MP) (H sensitivity)

G3: PS + RGB visible solution (2019) 1x
G4: PS + RGB invisible solution (2021) 3x (MP)

Sensitivity & feature Upgrades → ASP Boosts
感度及功能提升 → 平均價格提升

光學感測晶片 → 手機後相機應用

Optical sensor for Cameras :

3ch RGB sensor

色溫感測晶片 → 協助後相機白平衡校正
white balance correction (2021)

Flicker detection sensors

閃頻偵測晶片 → 協助消除光源物理閃爍
Flicker detection (2021)



3ch RGB sensor :

Camera RGB sensors are used for **white balance correction**. Different light sources come with different color temperatures, which can create unrealistic color casts in photos. White balance is the process of removing such color casts so that objects that appear white in person are rendered white in the photo..

環境中充斥著各種不同的光線，這些光線有著不同的色溫，因此手機數位相機在進行拍照時，需要對這些光線進行校正，才能呈現出正常的白色。依據 RGB 色溫感測器、影像感測器所測量的色溫來自動校正調整白平衡。



Flicker detection sensors :

Detects the 50 Hz or 60 Hz flickers produced by incandescent or fluorescent lights. Helps eliminate the streaks and distortion effects caused by the flickering.

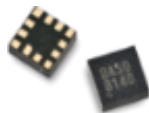
用於檢測環境中由白熾燈或螢光燈所產生的50Hz或60Hz光源物理閃爍。協助手機攝像頭之圖像系統能夠消除人造光源的閃爍而出現的條紋和失真效果。

微機電MEMS感測晶片

Accelerometers (G-sensors)

Rotation detection

加速度感測器 → 屏幕旋轉偵測



G-sensor shipment

2019 : >55M pcs

2020 : >80M pcs

2021: >120M pcs

- ✓ G-sensors for smartphones
- ✓ Low power g-sensors for wearable & IoT devices



屏幕旋轉
Screen rotation



遊戲
Game control



自動靜音
Automatic mute

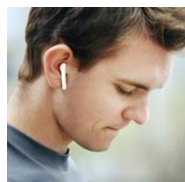


光學感測晶片 + 微機電感測晶片 穿戴裝置與非手機領域應用

True wireless stereo (TWS) earbuds

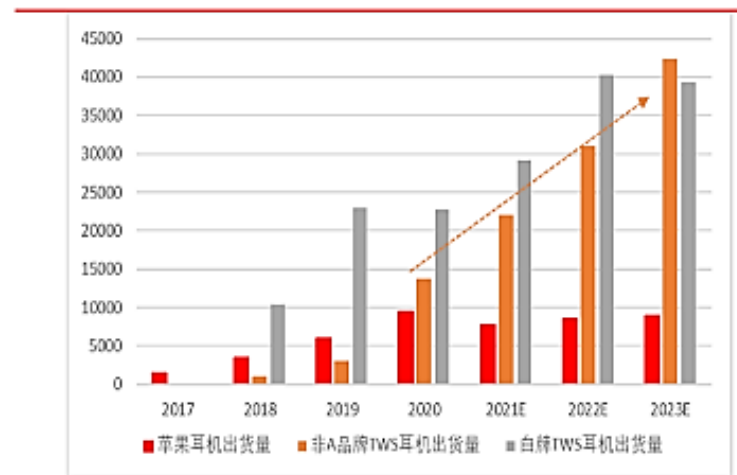
Accelerometers → click detection 敲擊偵測

Proximity sensors → on/off switch 功能啟用開關



敲擊偵測 Click detection

- 有來電時 Incoming call
單擊接聽 Click to answer
雙擊拒接 Double click to reject
- 音樂播放 Music mode
單擊暫停 Click to pause
雙擊換曲 Double click to switch



Smart watches & fitness trackers

Accelerometers → motion detection 移動偵測

Optical sensors → heartbeat detection 心律偵測 & UV sensors



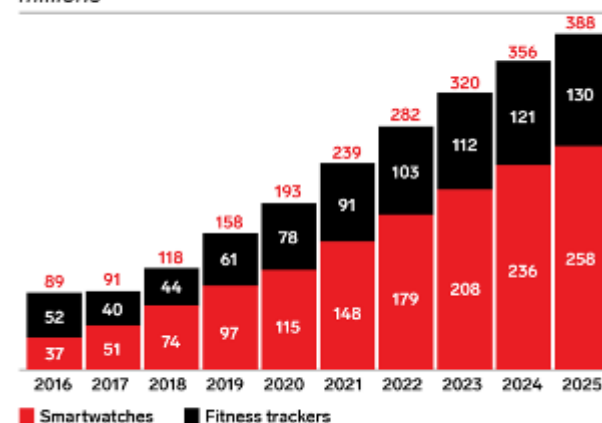
抬手亮屏 / 動態心率輔助
Heartbeat detection



睡眠偵測 / 久坐提醒
Sleep quality monitoring



Smart Wearable Device Shipments Worldwide, Smartwatch vs. Fitness Tracker, 2016-2025
millions

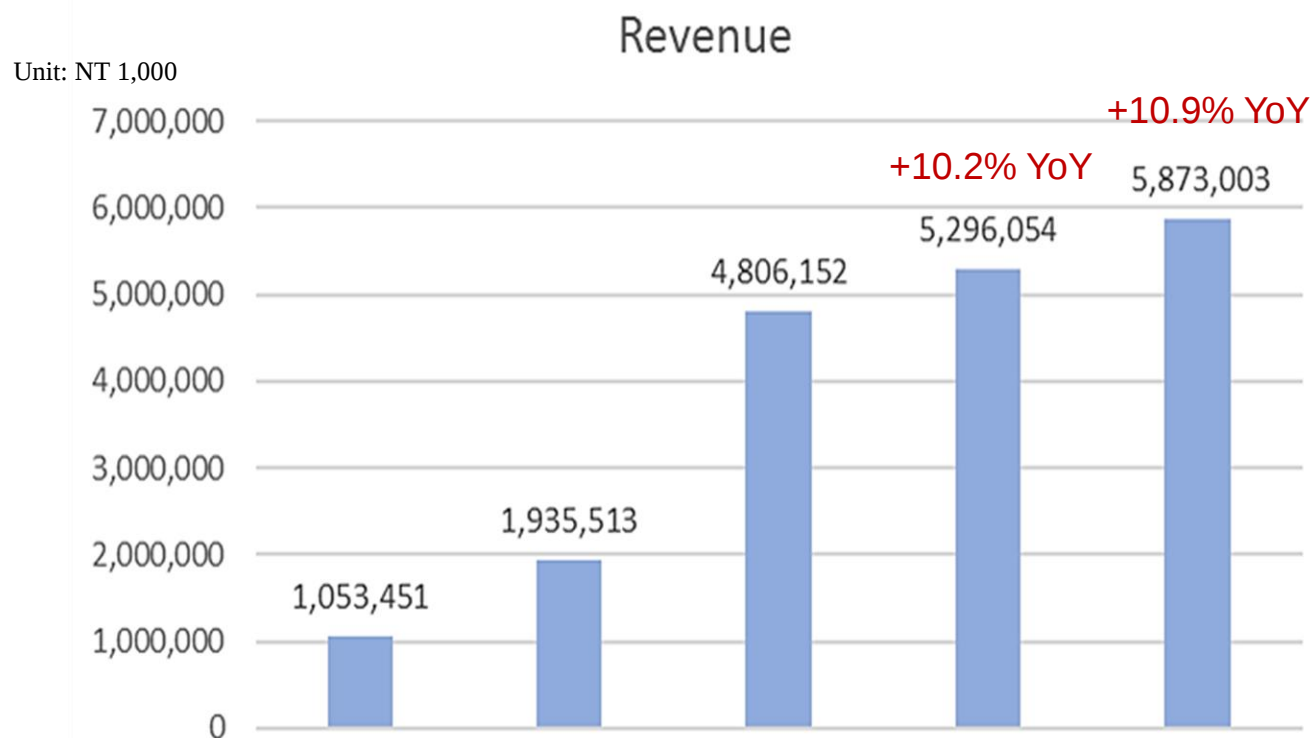


參考附件僅供示意參考
For illustration purposes only.

Note: numbers may not add up to total due to rounding
Source: CCS Insight as cited in press release, Feb 24, 2021

IV. 經營實績

經營實績



	2017	2018	2019	2020	2021
Revenue	1,053,451	1,935,513	4,806,152	5,296,054	5,873,003
Gross Margin	158,184	649,442	2,018,872	2,127,828	2,691,031
Margin Rate (%)	15%	34%	42%	40%	46%
Operating Income	8,751	366,646	1,497,236	1,537,189	1,900,070
Net Income	5,309	326,275	1,322,900	1,365,454	1,661,349
EPS (NT\$)	0.14	8.64	35.01	28.81	33.97

+18% YoY

Note: The EPS values listed here are based on the capital of 37,781 thousand shares.

Cash dividend : 30 ntd

損益表

Item	Q1 22		Q4 21		Q1~Q4 21		Q1 21	
	Results	% of sales	Results	% of sales	Results	% of sales	Results	% of sales
Net Sales	1,348,773	-	1,180,382	-	5,873,003	-	1,268,541	-
Gross Profit	573,143	42%	532,627	45%	2,691,031	46%	512,956	40%
Operating Expense	192,467	14%	183,181	16%	791,559	14%	167,906	13%
Operating Income	380,681	28%	349,451	30%	1,900,070	32%	345,055	27%
Income before Tax	411,907	30%	381,447	32%	1,970,683	33%	350,677	27%
Net Income*	339,146	25%	325,126	28%	1,661,349	28%	295,568	23%
EPS	6.93	-	6.65	-	33.97	-	6.04	-

(unitK ntd)	111.Q1	110.Q1	YoY
Net sale	1,348,773	1,268,541	6.32%
Net income	339,146	295,568	14.74%
EPS	6.93	6.04	14.74%

Unit: NT\$ thousands (except EPS)
Accounting standard: IFRS

* Listed on the English translation of our financial statements as
"Profit (loss), attributable to owners of parent"

資產負債表

Item	2022/3/31	2021/12/31	2021/9/30	2021/6/30	2021/3/31
Total Assets	7,790,405	7,220,887	6,973,430	7,034,889	6,546,874
Current Assets	6,341,047	5,817,181	5,628,478	5,738,903	5,288,197
Cash & Equivalents	2,227,118	1,975,445	2,338,478	3,402,027	2,215,010
AR	1,005,550	774,850	814,803	489,591	450,143
Inventory	771,698	678,295	413,657	425,377	305,180
Total Liability	3,769,979	2,063,124	2,168,520	2,793,386	2,780,120
AP	827,740	849,328	914,921	802,201	688,059
Shareholder Eqt.	4,020,426	5,157,763	4,804,910	4,241,503	3,766,754

Unit: NT\$ thousands
Accounting standard: IFRS

V. 未來發展

2021: 三種感測晶片投入手機應用

We are developing high-performance products and moving to high-end



展望2022

2010 - 2018

2018 – 2022/23

Entry-Level

Mid range

High end

Flagship

Addressable Market
400-500M/year

Addressable Market
400-500M/year

Addressable Market
300-400M/year

Addressable Market
300-400M/year

Opticals for Displays
Slit type
ALS only

Opticals for Displays
Slit type
PS+ALS (IR LED)

Opticals for Displays
Slit type
PS+ALS (IR LED / VCSEL)
Under display
PS+ALS (VCSEL)

Opticals for Displays
Under display
PS+ALS (VCSEL)
Visible
PS+RGB (VCSEL)

Opticals for Cameras
Flicker sensors

Opticals for Cameras
RGB + flicker sensors

Opticals for Cameras
RGB + flicker sensors

MEMS
Accelerometers

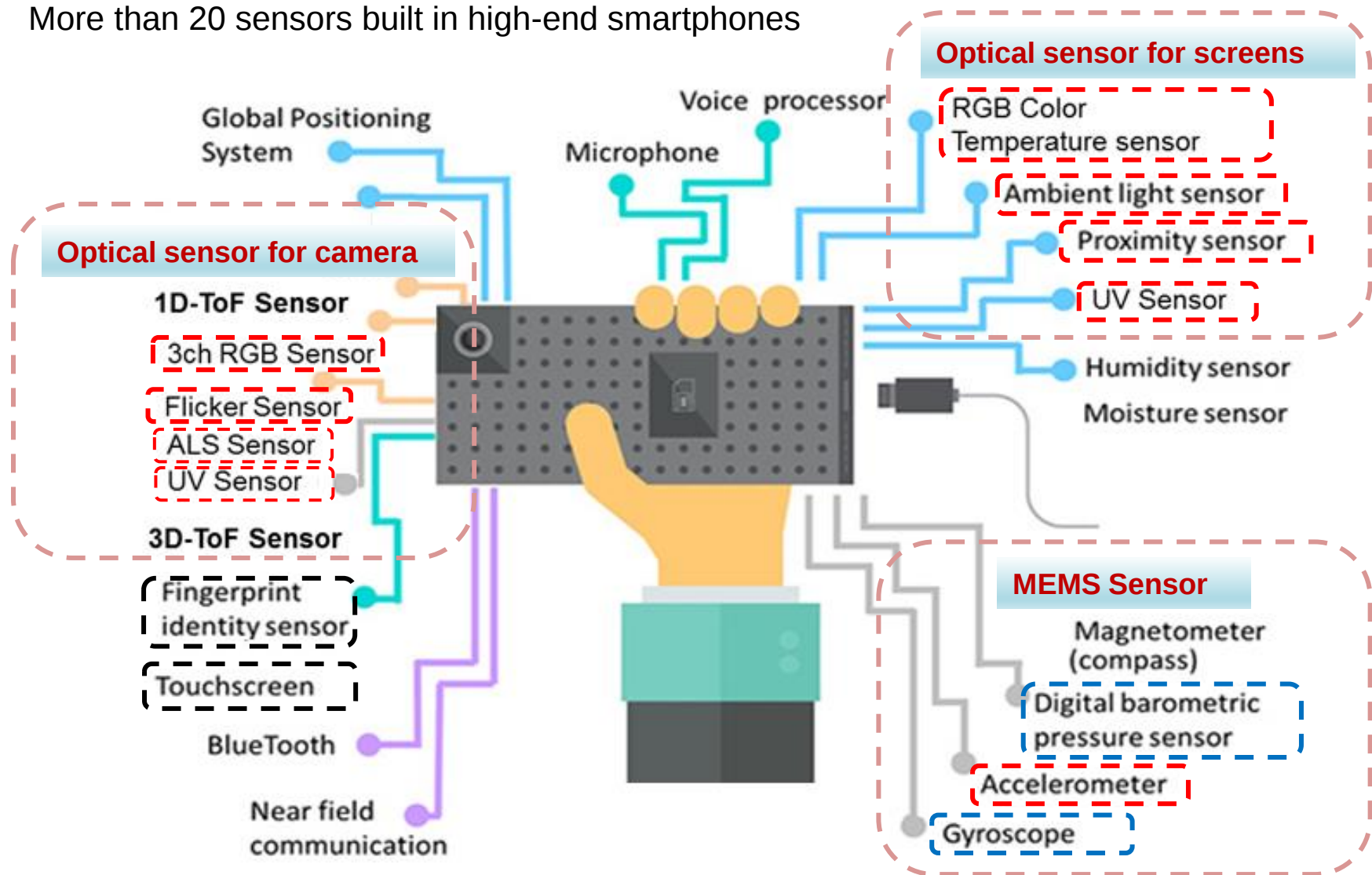
MEMS
Accelerometers
+ Gyroscopes

MEMS
Accelerometers
+ Gyroscopes
+ Pressure sensor

MEMS
Accelerometers
+ Gyroscopes
+ Pressure sensor

敬請期待

More than 20 sensors built in high-end smartphones



成長動能

1. Optical sensor for smartphone screens (前螢幕應用) :
 - High sensitivity PS+ALS (x6, x10) → AMOLED penetration trend boost ASP
 - PS+RGB (with ALS) → color temperature sensor in more high-end smartphone
2. Optical sensor for smartphone rear Cameras (後相機應用) :
 - RGB sensors → white balance correction in more high-end smartphone
 - flicker sensors → flicker detection sensor in more high-end smartphone
3. MEMS sensors in smartphone (加速 MEMS sensor 在智慧手機應用) :
 - G sensors → enlarge entry-level smartphone market (擴大產能)
 - Gyroscope sensors (under development)
 - speed up to entry of mid-to-high-end smartphones
4. Extend to other applications (拓展其他非手機應用) :
 - TWS: proximity sensors & accelerometers
 - Smart watches: ambient light + UV, heartbeat sensor, accelerometers sensor
 - Smart speakers: ambient light sensors
 - AR & VR glasses : proximity sensors & Gyroscopes
 - ...and more (e.g. auto & industrial)



謝謝

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