



TXC Corporation Investor Conference

December 13th, 2022

Disclaimer

- Except for statements in respect of historical matters, the statements in this release are forward-looking statements. Such forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause the actual performance, financial condition or results of operations of TXC to be materially different from what may be implied by such forward-looking statements.
- The financial forecasts and forward-looking statements in the release reflect the current belief of TXC as of the date of this release and TXC undertakes no obligation to update these forecasts and forward-looking statements for events or circumstances that occur subsequent to such date.
- The statements in respect of historical matters may contain unaudited information, which may have certain deficiency or weakness so as not to fairly present financial condition or the results of operations of TXC.

Timing Devices is Essential Key to All Electronics

 Making **Pulse** to the Connections

Quartz offers the most Clear & Low Noise Clock to make every Connections Better

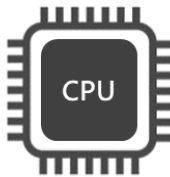
Clock Reference/Generation

Radio Frequency



5G NR
GPS
Wi-Fi 6/BT
NFC
UWB

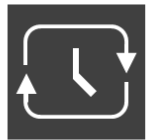
Electronic Devices



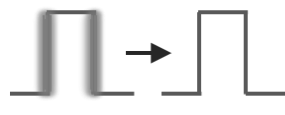
Interface
GPU/MCU
PMIC
DRAM
USB

Clock Synchronization/Attenuation

Network Infrastructure & Enterprise Devices



SyncE & IEEE 1588



Access Network
Front/Mid/Backhaul
Core Network
IDC
Optical Module



Crystal

Seam Seal



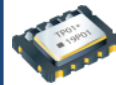
Glass Seal



Tuning Fork



Temperature Sensor Crystal (TSX)



Oscillator

Crystal Oscillators (XO)



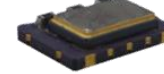
Temperature Compensated Oscillators (TCXO)



SAW Oscillators (SO)



Temperature Compensated Oscillators (S3TCXO)



Voltage Controlled Oscillators (VCXO)



Oven Controlled Oscillators (OCXO)



Worldwide Timing Market Overview

Strong Market Penetration



Rank		Vendors	Revenue (Million_USD)			Market Share (%)	
2020	2021	Company Name	2020	2021	YoY%	2020	2021
1	1	TXC	\$376	\$519	38.0%	10.8%	11.7%
2	2	Epson	\$370	\$425	15.0%	10.6%	9.6%
3	3	NDK	\$323	\$366	13.5%	9.3%	8.3%
4	4	KCD(Kyocera)	\$320	\$359	12.0%	9.2%	8.1%
5	5	KDS	\$209	\$260	24.5%	6.0%	5.9%
6	6	Microchip	\$179	\$222	23.9%	5.2%	5.0%
7	7	SiTime	\$116	\$218	88.4%	3.3%	4.9%
15	8	TKD	\$74	\$176	136.3%	2.1%	4.0%
7	9	Rakon	\$128	\$171	34%	3.7%	3.9%
9	10	Hosonic	\$100	\$113	12.9%	2.9%	2.6%
Other Companies			\$1,282	\$1,589	24.0%	36.9%	36.0%
Total Revenue			\$3,480	\$4,423	27.1%	100.00%	100.00%

Source: QYR Research Aug. 2022

Market Leader with Sustainability



-  **Over 39 Years in Timing Industry**, Founded in 1983 & Headquarters in Taiwan
-  **Listed in Taiwan Stock Exchange**, Since 2000
-  **Ranked No. 1 in Worldwide Timing Market**, QYR Research, 2022
-  **Ranked No. 1 in Worldwide MHz Crystal Market**, QYR Research, 2022
-  **Preferred Supplier for Tier 1 in Network Infrastructure Market**, 2008 ~ Present
-  **Global Ranking No. 3 in Automotive Market**, 104% YoY, 2022/1H
-  **Timing Industry Leader in Product Miniaturization**, 2012 ~ Present
-  **Smallest and Innovative Sensors Integration by Ceramic Packaging**, Since 2013

Manufacture Facilities

Founded in 1991

✓ Automotive IATF 16949



Taiwan, Ping Cheng (PCF)

- MHz Crystal
- TSX
- OSC
- TCXO
- VCXO
- OCXO
- Sensors

Founded in 1999

✓ Automotive IATF 16949



China, Ningbo (NGB)

- kHz/MHz Crystal
- TSX
- OSC
- TCXO

Founded in 2013



China, Chongqing (CKG)

- MHz Crystal
- TSX

- 3 manufacturing facilities
- 200+ automated production lines
- 430M+ monthly capacity(Timing Devices)
- 2 R&D s (PCF, NGB)
- 400+ engineers

Statements of Comprehensive Income

Unit: NT\$ Million	(Property Excluded)				(Consolidated)			
	Q3'22	Q2'22	QoQ	YOY	Q3'22	Q2'22	QoQ	YOY
Net Revenue	3,430	3,501	-2.0%	-13.7%	3,432	3,514	-2.3%	-16.4%
Gross Profit	1,296	1,376	-5.8%	-15.4%	1,304	1,382	-5.6%	-16.9%
Operating Expenses	578	574	0.7%	4.5%	584	581	0.6%	3.8%
Operating Profit	719	802	-10.4%	-26.6%	720	801	-10.1%	-28.5%
Non-Operating Items	330	233	41.5%	317.2%	327	230	42.1%	321.8%
Income before Tax	1,049	1,035	1.3%	1224.9%	1,047	1,031	1.6%	-3.4%
Net Income	852	844	0.9%	-0.8%	852	840	1.5%	-3.0%
Basic EPS (NT\$)	2.75	2.72	1.0%	-0.9%	2.75	2.72	1.1%	-3.2%
Gross Margin(%)	37.80%	39.30%			38.01%	39.33%		
OPEX(%)	16.85%	16.40%			17.03%	16.54%		
Operating Margin(%)	20.95%	22.90%			20.98%	22.79%		
Income before Tax Margin(%)	30.58%	29.56%			30.52%	29.34%		
Net Profit Margin(%)	24.84%	24.11%			24.84%	23.91%		

Statements of Comprehensive Income

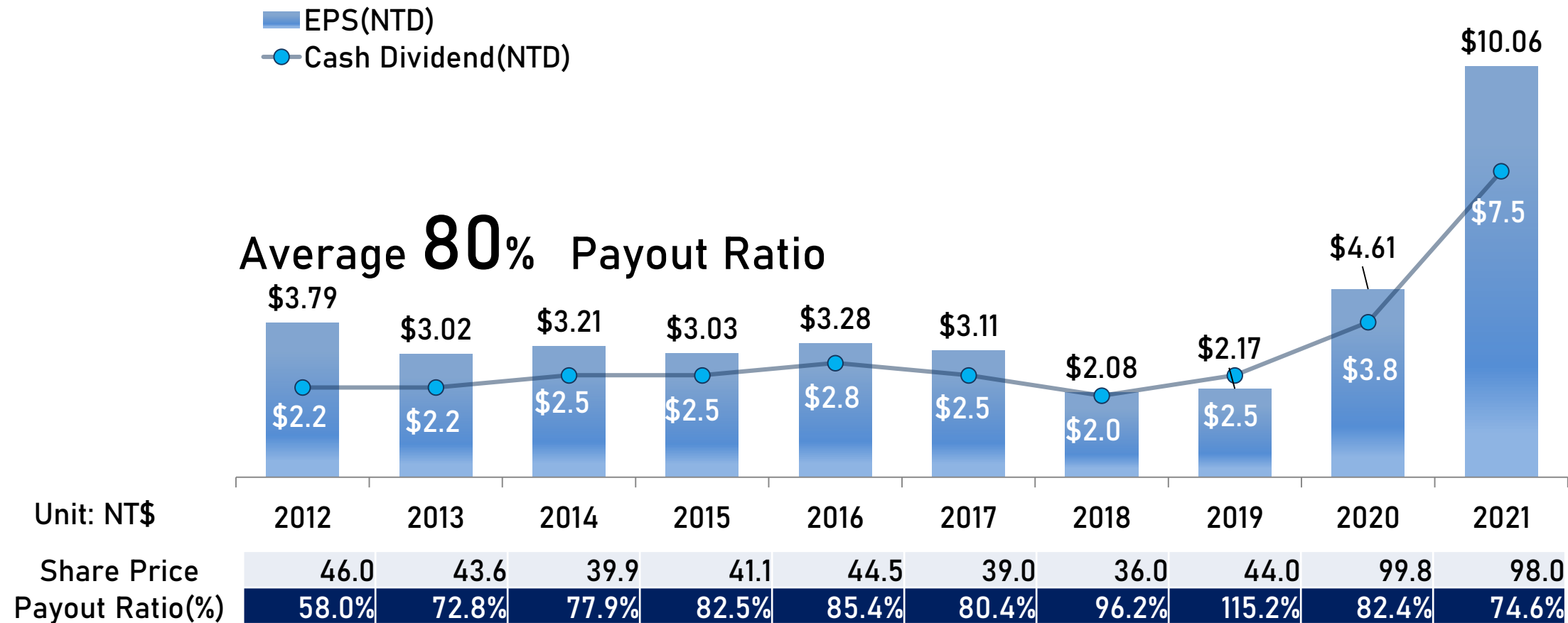
Unit: NT\$ Million	(Property Excluded)			(Consolidated)		
	Q1~Q3'22	Q1~Q3'21	YOY	Q1~Q3'22	Q1~Q3'21	YOY
Net Revenue	10,136	10,826	-6.4%	10,162	11,755	-13.5%
Gross Profit	3,868	4,052	-4.5%	3,885	4,353	-10.7%
Operating Expenses	1,676	1,545	8.5%	1,697	1,595	6.4%
Operating Profit	2,191	2,506	-12.6%	2,188	2,758	-20.7%
Non-Operating Items	711	147	383.7%	702	155	353.6%
Income before Tax	2,902	2,653	9.4%	2,890	2,912	-0.8%
Net Income	2,373	2,221	6.9%	2,363	2,431	-2.8%
Basic EPS (NT\$)	7.66	7.17	6.8%	7.63	7.85	-2.8%
Gross Margin(%)	38.16%	37.42%	-	38.23%	37.03%	-
OPEX(%)	16.54%	14.28%	-	16.70%	13.57%	-
Operating Margin(%)	21.62%	23.15%	-	21.53%	23.46%	-
Income before Tax Margin(%)	28.63%	24.51%	-	28.44%	24.77%	-
Net Profit Margin(%)	23.41%	20.51%	-	23.25%	20.68%	-

Balance Sheet

Unit: NT\$ Million	Sep. '22		Dec. '21		Sep. '21	
Item	Amount	%	Amount	%	Amount	%
Cash & Marketable Securities	3,608	18.0%	3,632	17.5%	2,755	14.1%
NR+AR	3,964	19.8%	4,040	19.4%	4,220	21.6%
Inventories	3,052	15.3%	2,639	12.7%	2,591	13.3%
Current Assets	11,565	57.8%	11,370	54.7%	10,852	55.6%
PP&E	6,313	31.6%	5,844	28.1%	5,260	27.0%
Total Assets	20,002	100.0%	20,803	100.0%	19,513	100.0%
Current Liabilities	4,703	23.5%	4,895	23.5%	4,817	24.7%
Non-current Liabilities	3,238	16.2%	3,149	15.1%	3,096	15.9%
Total Liabilities	7,942	39.7%	8,044	38.7%	7,914	40.6%
Total Shareholders' Equity	12,061	60.3%	12,760	61.3%	11,599	59.4%
A/R Turnover Days	108		91		91	
Inventory Turnover Days	124		103		100	
Inventory Turnover Days (exclu.)	105		78		74	
Current Ratio(%)	246%		232%		225%	
Debt Ratio(%)	39.7%		38.7%		40.6%	
Book Value Per Share(NT\$)	38.94		41.19		37.45	
ROA(%)	15.6%		16.8%		18.1%	
ROE(%)	25.4%		27.8%		30.5%	

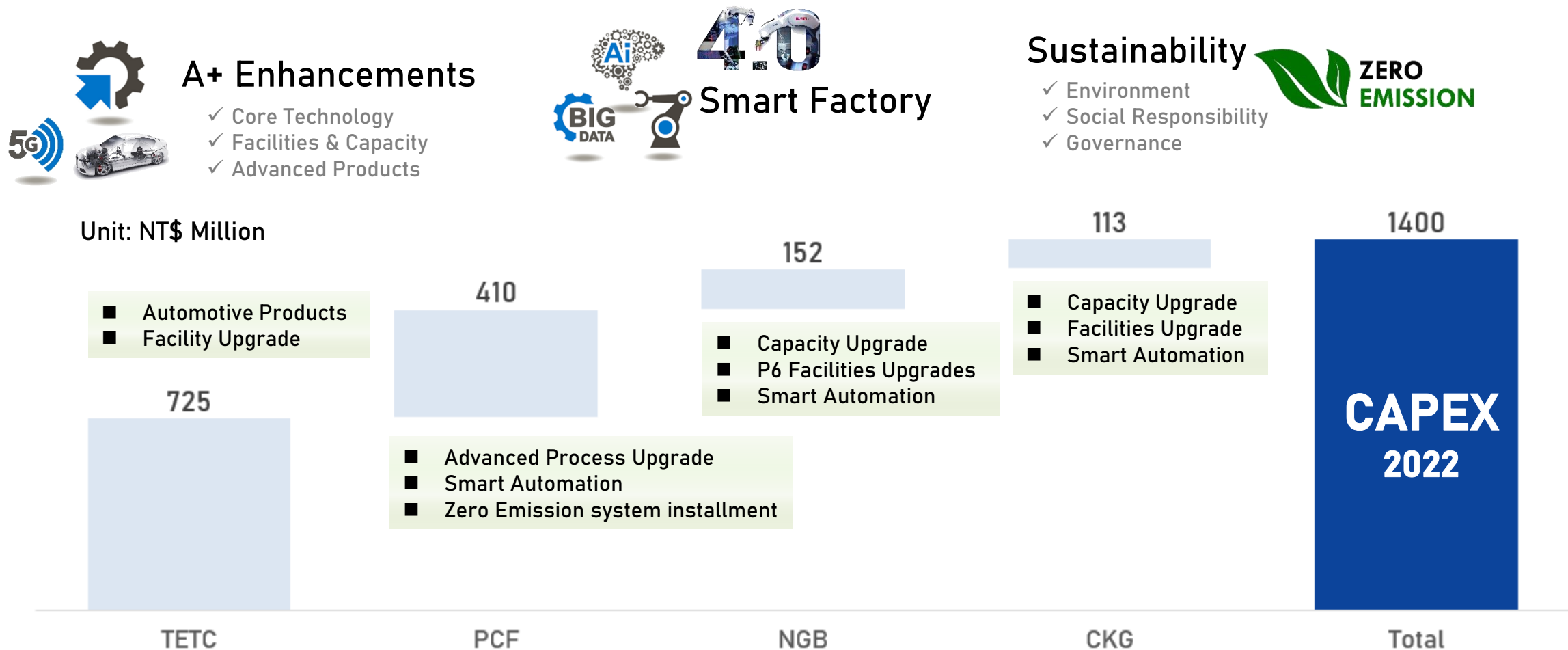
EPS & DPS

High Dividends Payout, with Sustainable Business Growth



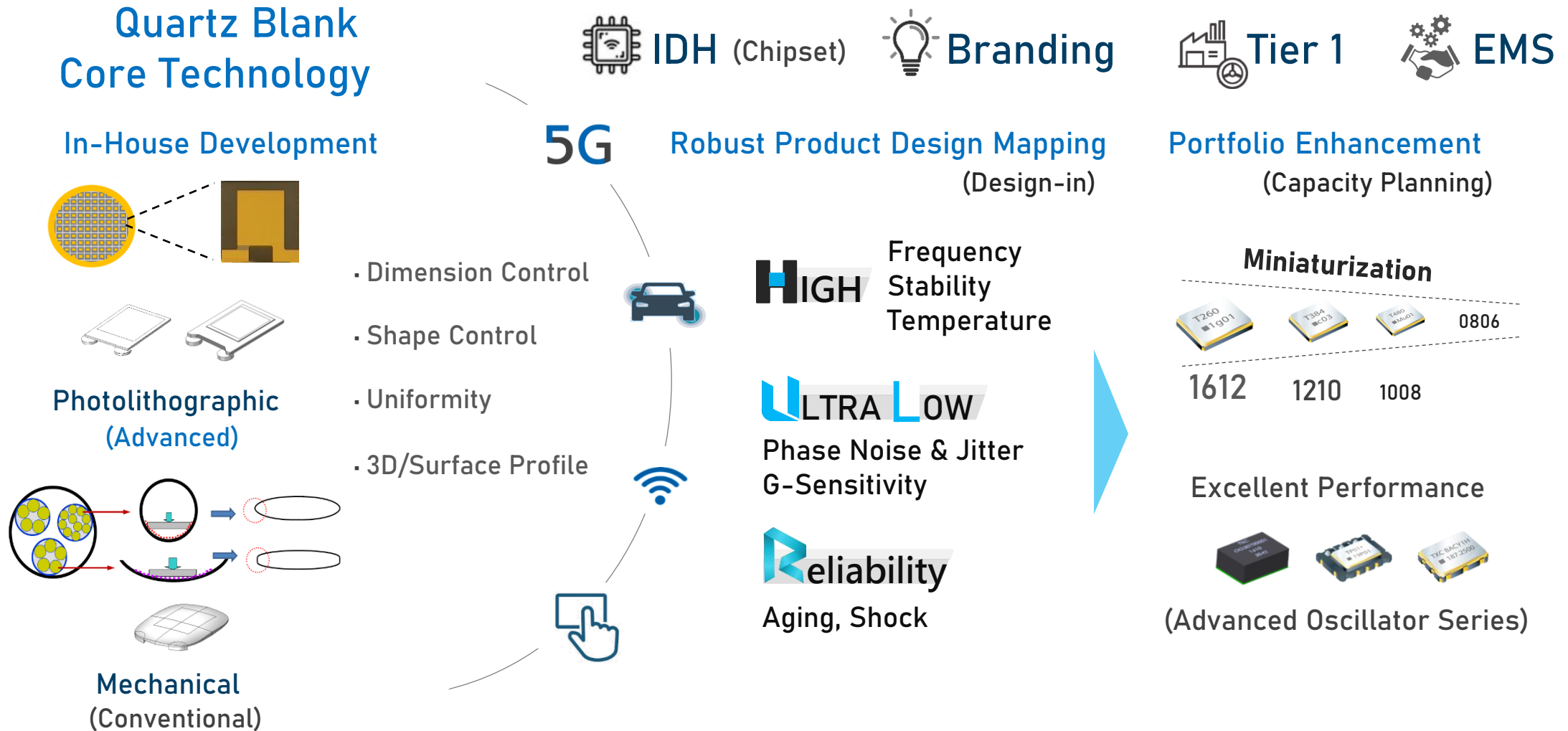
To Thrive with Enhancements & Improvements

Continuous Investment for Sustainability



Our Core Competiveness

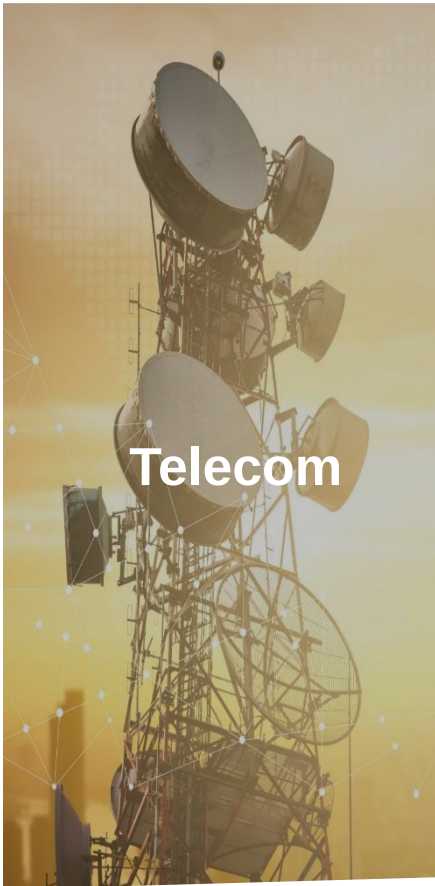
Improvement and Enhancement of Technology



Our Focuses

Provide the Cleanest & Most Stable Clock source to every hearts of Electronics

Precise Stability & Ultra Low Phase Noise & Jitter



Telecom

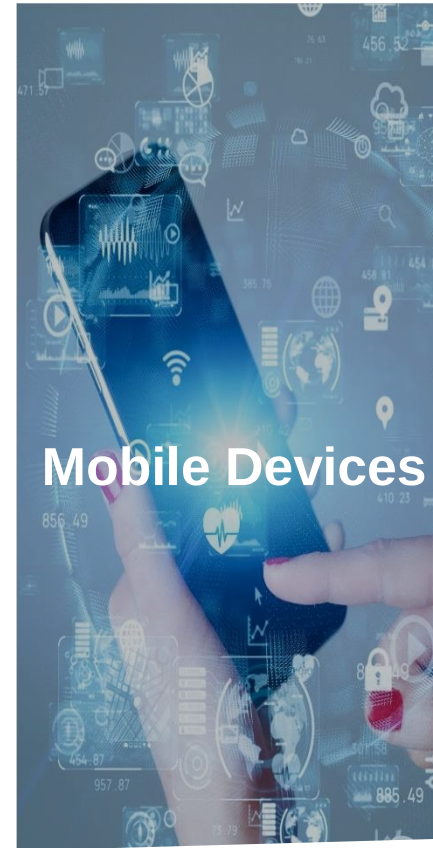


Datacom

High Frequency, Ultra Stability & Miniature

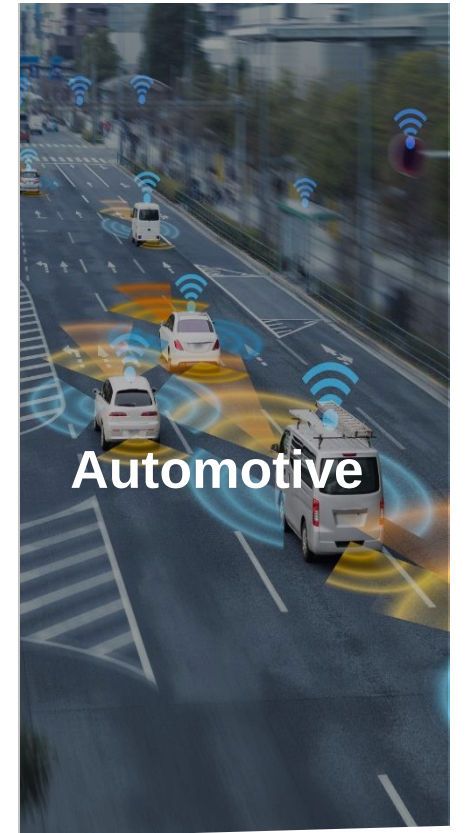


Connectivity



Mobile Devices

High Reliability & Quality

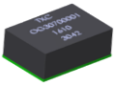


Automotive

Increase Data Traffic is folding Business growth

Data Transmission Upgrade for Advanced Oscillators Deployment

ThermSym **Hercules** **Chronos** **Eros**

 Industry-wide
Smallest(5x3 mm)
ppt Level
-40 to 105°C OT

OCXO

Infrastructure
 **+20%**
RU/DU/CU/Core/RAN

Data Computing
 **+25%**
Server/Switch/IDC/Edge

 -40 to 105°C OT
Standard PKG
7050/5032

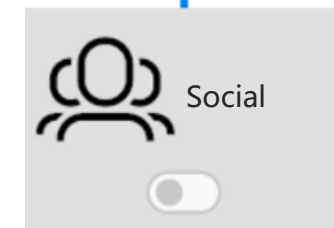
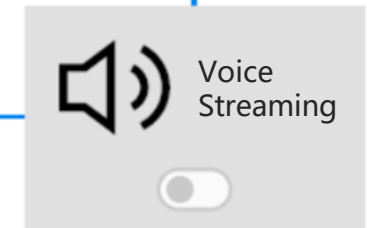
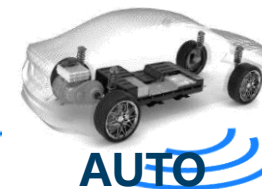
S3-TCXO

 Portfolio
Optimization
Ultra Low PN & PJ

CMOS/Diff XO

Optical/Smart NIC
 **+26%**
100/200/400G/Next Gen

Mobile Network Traffic Growing **3 – 5 times** in the Next 5 Years



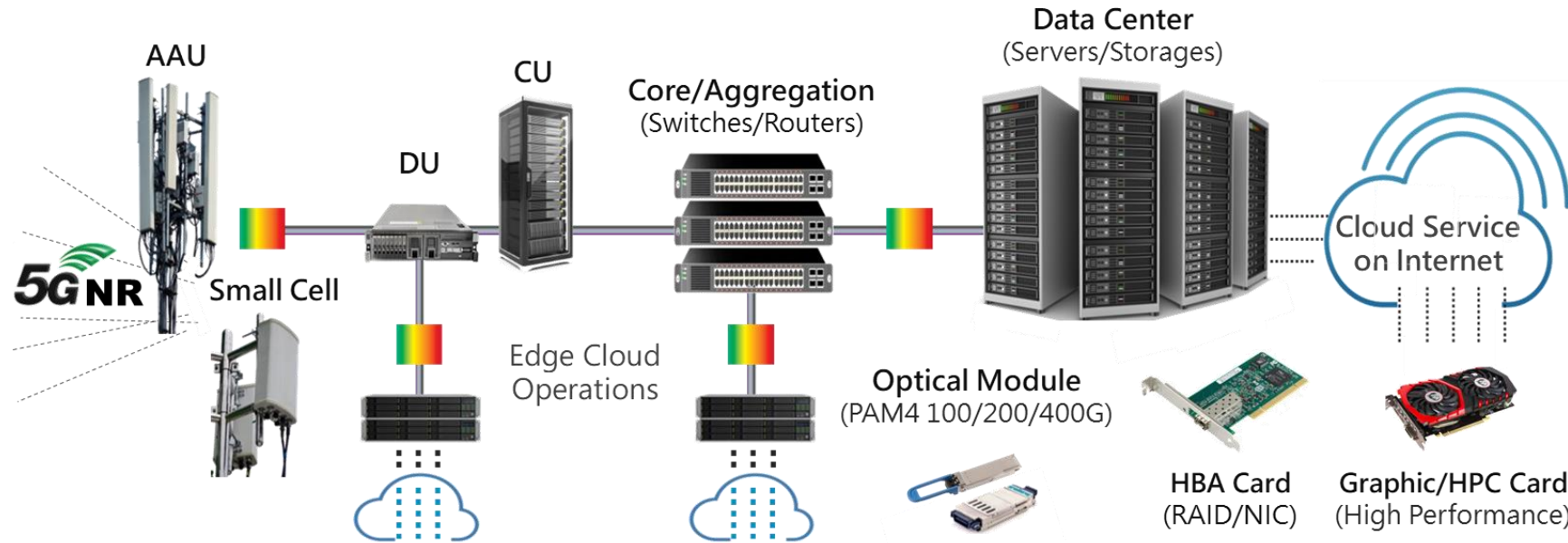
+% CAGR of equipment or device sales revenues
projection during 2022-2025

Data Traffic (EB per Month): 2021: **84**, 2024: **255**, 2027: **368**

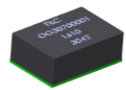
Source: Ericsson Mobility Report, June 2022

Telecommunication & Enterprise

Extra High-Frequency, Ultra-Low Phase Noise & Jitter & Stability Performance



High Stability
L T R A



OCXO

Stratum 3E
ThermSym™, $\pm 5 \sim 10$ ppb



S3TCXO

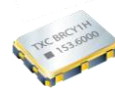
Stratum 3
Stability, ± 100 ppb



VCTCXO

Stratum 3
Stability, ± 280 ppb

L T R A



VCXO

Phase Jitter@12k - 20MHz, 0.05 ps
Phase Noise@10Hz, -80dBc/Hz



Diff XO

Phase Jitter@12k - 20MHz, 0.05~1.5 ps
Phase Noise@10Hz, < -60dBc/Hz



CMOS XO

Frequency up to 2.1GHz

Programmable XO (XO Series Selection for LT)

XO Series

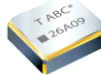
Mobile Connectivity & Devices Ecosystems

Miniature, Higher Frequency & Ultra Low Phase Noise



HIGH Frequency Accuracy & Stability

World's Smallest Series

			MHz Crystal		TSX (TH+Xtal)		XO (CMOS/Differential/PLL)		TCXO (CMOS/Clipped)
1612	1210	1008	Miniature, 1.0 x 0.8 (mm) 8 – 320 MHz	Miniature, 1.6 x 1.2 (mm) 19.2 – 76.8MHz		PJ@12k – 20MHz, 0.05 – 0.3 ps Low EMI CMOS XO		PN@100kHz, -166 dBc/Hz Stability, ±0.5 ppm	
Next 0806									

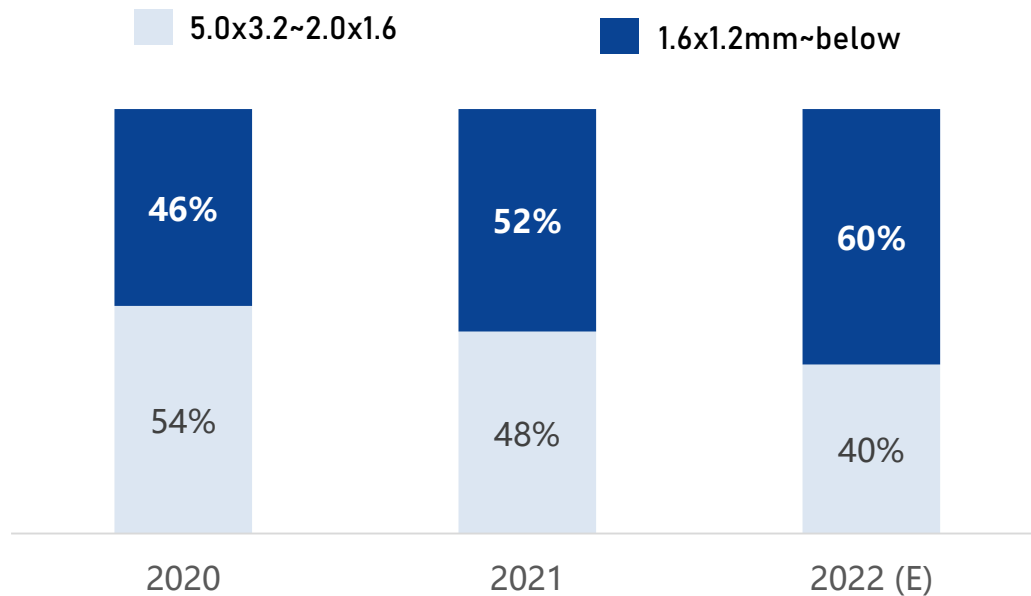
Optimized Product Mix for Organic Growth

Revenue scale up rapidly by key segments



Crystal(Xtal)

Revenue By Product Dimension Size

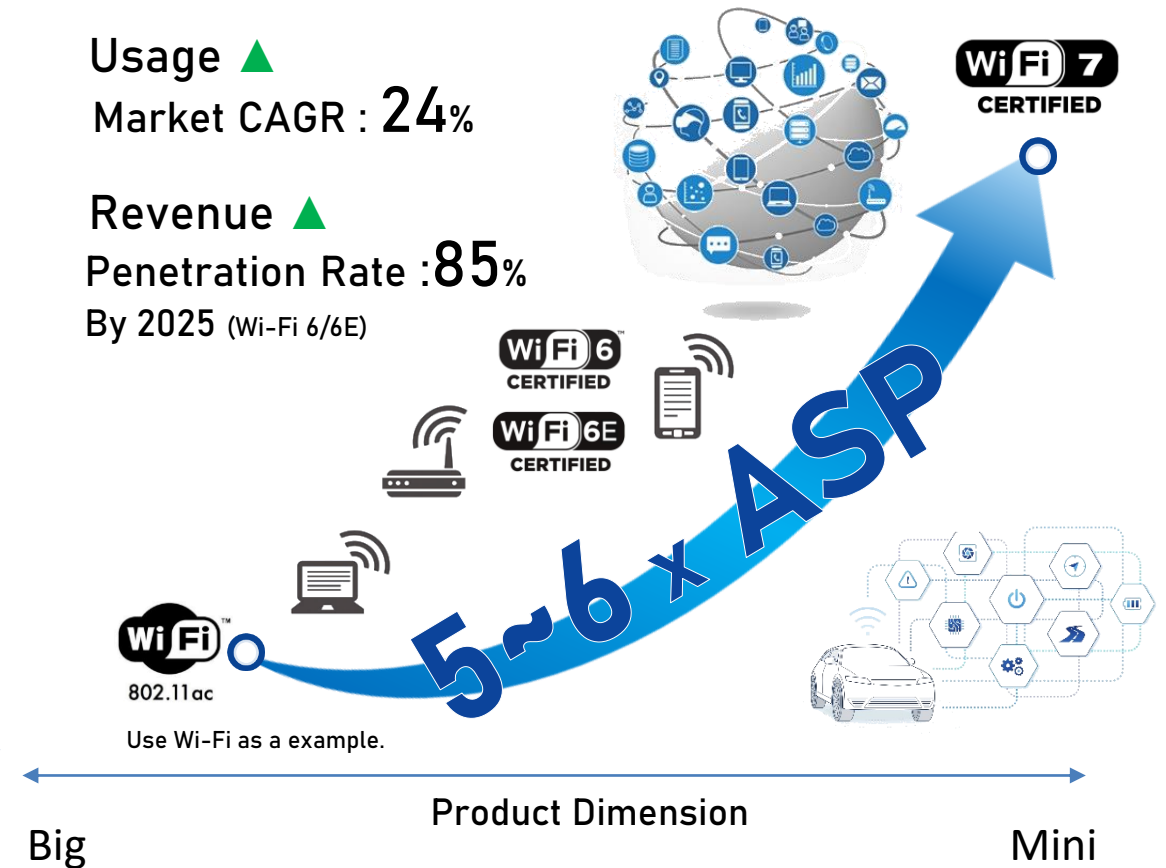


High
Frequency
Low

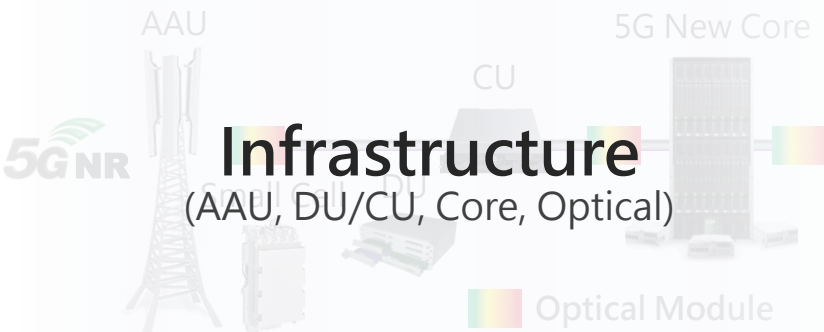
Illustration of Connectivity Technology Development By Product Trends

Usage ▲
Market CAGR : 24%

Revenue ▲
Penetration Rate : 85%
By 2025 (Wi-Fi 6/6E)



Total Solutions for 5G Application

Solution	Size	Key Parameters	5G Main Application
OCXO	9775/1409	Stability, ± 10 ppb	 Infrastructure (AAU, DU/CU, Core, Optical)
S3TCXO	5032/7050	Stability, ± 0.28 ppm	
TCXO	1612 – 2520	Phase Noise@100kHz, -166dBc/Hz	
VCXO	2520 – 7050	Phase Jitter@12k - 20MHz, 0.05 ps	 Intelligence Platform (Smart Device, Edge Computing, Automotive)
Diff XO	2520 – 7050	Phase Jitter@12k - 20MHz, 0.05 ps	
PLL XO	2520 – 7050	Frequency, 10MHz - 2.1GHz	
XO	1612 – 2520	Phase Jitter@12k - 20MHz, 0.3 ps	 Device Interconnection (Mobile Phone, Mobile, Computing, CPE)
TSX	1210 – 2520	Frequency, 19.2 – 76.8MHz	
Crystal	1008 – 5032	Frequency, 8 – 320MHz	

Trustworthy Quality for Mission Critical Scenarios



Zero Risk Approach

(Lowest DPPM Target per Management Standard & System)

IATF 16949 Certified & VDA 6.3 Mgt.

(Qualified Manufacture Facilities)

Reliability

(AEC-Q100, AEC-Q200 & Other Specified Compliances)

Product Robustness

(Design per Classification by Application, Refer to ASIL)

Automotive Main Applications Deployment

IVI System
Smart Cockpit
AI Applications



Device Connectivity
(Wi-Fi, BT, UWB, etc)
Connected Car
(5G/LTE, V2X, GNSS, etc)



Infotainment

Communication

Security

Power Steering
Breaking System
Engine/Fuel Control

EV Applications
Battery Management System
OBC(AC/DC), DC/DC, DC/AC

Camera
Radar/Lidar
System Integrated

Instrument Cluster
Interior Control Unit
Smart Key

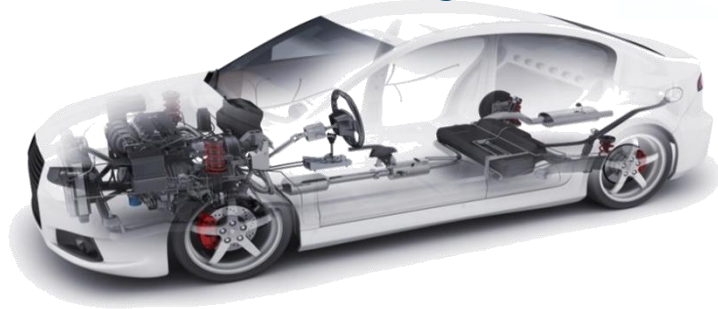


TPMS

Safety

Electric Vehicle

ADAS

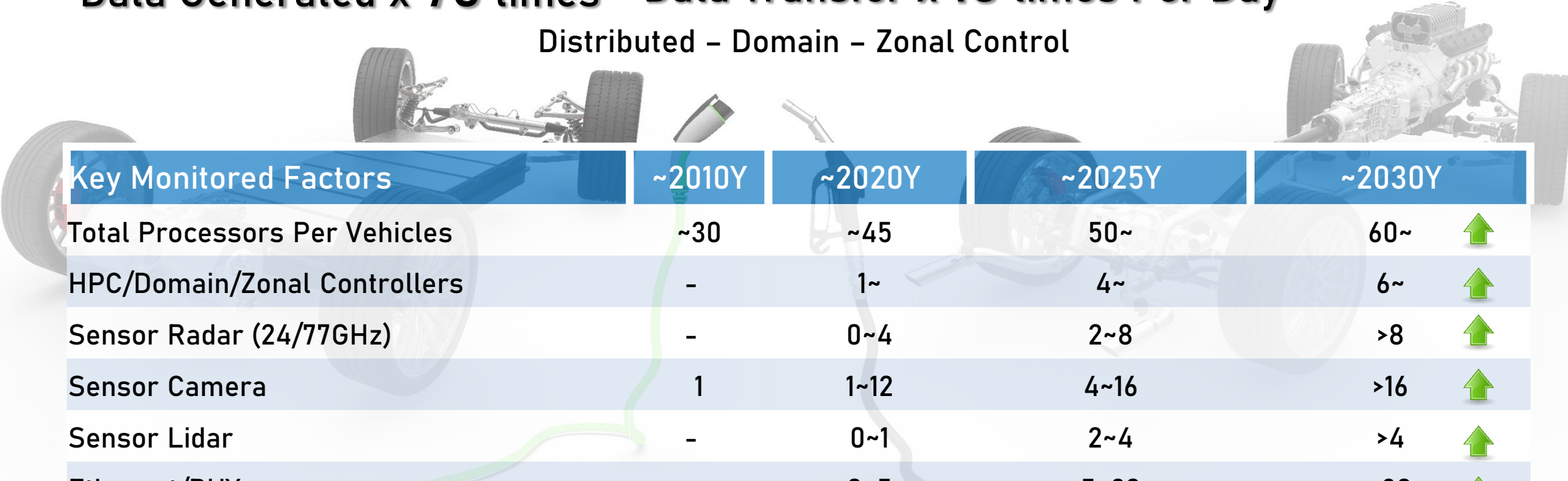


Irreversible Trends On Vehicle Electrification

High Performance Computing for Vehicle Network

Data Generated x **70** times Data Transfer x **10** times Per Day

Distributed – Domain – Zonal Control



Key Monitored Factors	~2010Y	~2020Y	~2025Y	~2030Y	
Total Processors Per Vehicles	~30	~45	50~	60~	↑
HPC/Domain/Zonal Controllers	-	1~	4~	6~	↑
Sensor Radar (24/77GHz)	-	0~4	2~8	>8	↑
Sensor Camera	1	1~12	4~16	>16	↑
Sensor Lidar	-	0~1	2~4	>4	↑
Ethernet/PHY	-	0~5	5~20	>30	↑
Wireless Connectivity	-	1~2	2~10	>10	↑

(*Source: Continental / Aptiv & Strategic Analytics, March, 22)

Electrification & Smarter Vehicles

Define Key Growth Applications with Strong Forecast & Projections

Automotive Grade, AEC-Q100, AEC-Q200 & Other Specified Compliances

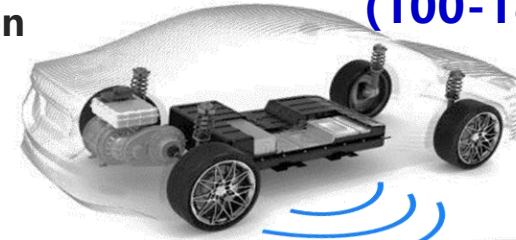


Autonomous
+43%

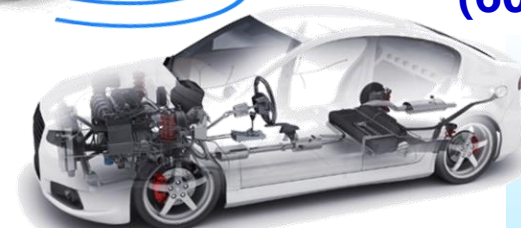


Safety & Motion
+16%

Electric Vehicle
(100-180 PCS)



Gasoline Vehicle
(60-100 PCS)



Smart Cockpit
+33%



Body Control
+36%



+% CAGR of TXC Sales Estimation during 2021-2025

<Note: Reference to **AVG 30 PCS of Usage in Traditional Vehicle**>

33%

2022

CAGR Electric Vehicle Market Sales Forecast, 2022 to 2025

2025

Total Automotive Solutions

Type	Solution	MHz	Size	Grade	Application Focus
SMD Crystal	Glass (2/4 Pads)	4 – 62.4	3225 – 8045	G3 – G0	Glass, Seam All Applications Related
	Seam (4 Pads)	8 – 80	1612 – 5032	G3 – G1	
AEC-Q200 Compliant	kHz (TF) (2 Pads)	32.768 kHz	3215	G3 – G1	kHz (TF) Infotainment, Security
	TSX (4 Pads)	19.2/38.4	2016/2520	G3 – G2	
SMD Oscillator	XO ※Low EMI XO (CMOS)	32k – 125	1612 – 5032	G3 – G1	TSX, TCXO Infotainment, Communication
		※ 10 – 40	※ 2016/2520	※ G3 – G1	
	Diff XO (LVPECL/LVDS)	50 – 156.25	3225	G3 – G1	
AEC-Q100 Compliant	TCXO (Clipped Sinewave)	6 – 52	2016 – 3225	G3 – G2	XO Series Infotainment, Security ADAS, EV Related

Grade : Operating Temperature, G3: -40 to 85°C, G2: -40 to 105°C, G1: -40 to 125°C, G0: -40 to 150°C

Total Solutions for the Comprehensive Ecosystem

Connected Diversified Applications with all necessity & requirement.



Mobile
Phone

XTAL
TSX
SENSOR

Higher Freq.
Miniature Size



Infrastructure

OCXO
S3-TCXO
VCTCXO/VCXO
XO

High Temp.
Ultra High Stab.
Ultra Low PN
G-Sensitivity



Automotive

XTAL
TSX
XO
TCXO

Reliability
Higher Freq.
Miniature Size

XTAL
XO
TCXO
SENSOR

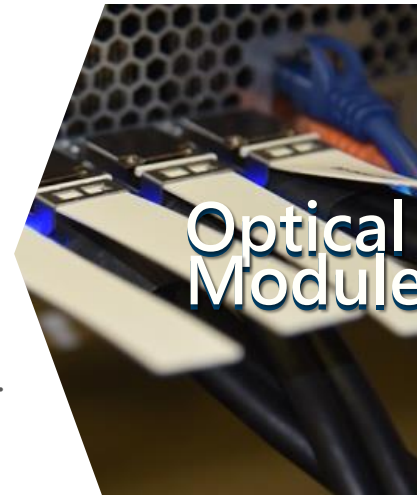
Higher Freq.
Miniature Size



Smart
Connectivity

XTAL
Diff XO

Higher Freq.
Ultra High Stab.
Ultra Low Jitter



Optical
Module

XTAL
XO
Diff XO

Higher Freq.
Ultra High Stab.
Ultra Low Jitter



Data
Computing

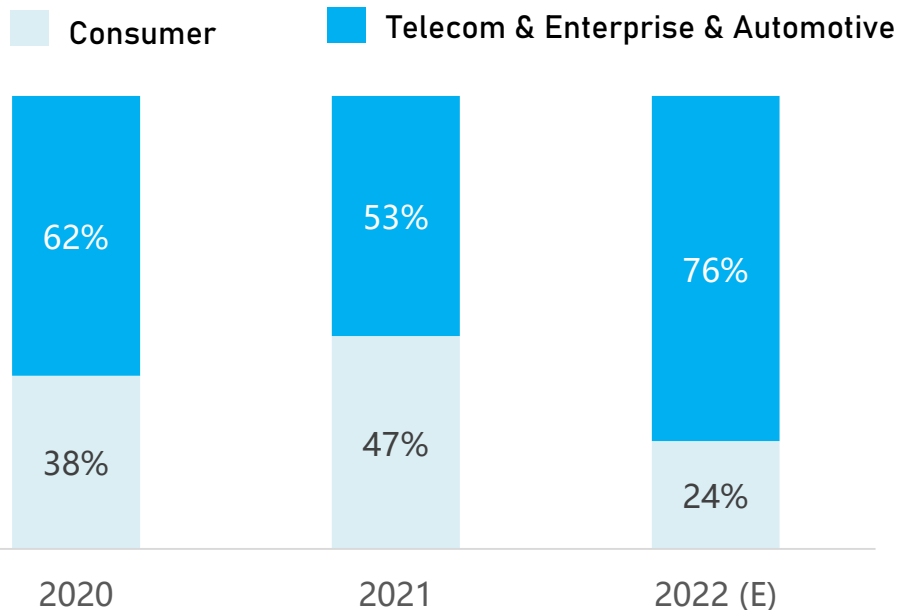
Optimized Product Mix for Organic Growth

Revenue scale up rapidly by key segments



Oscillator(XO)

Oscillator Revenue By Field Segments



Usage
↑

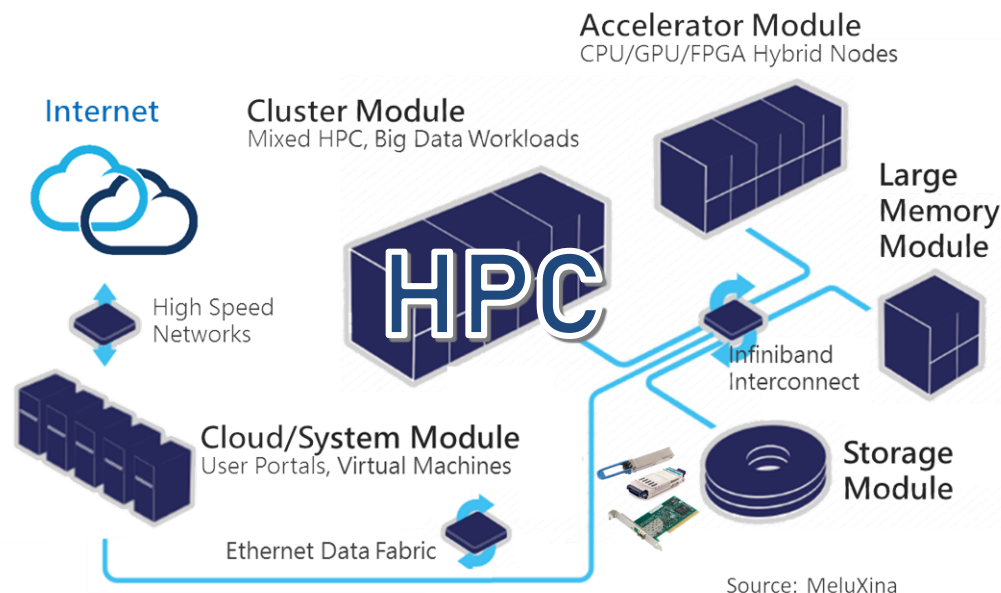
ASP
3~5x
↑



Radio Unit Market CAGR: 38% (~2026)

ThermSym Hercules Chronos Eros

World 1st Miniature / Ultra-Stability / Compact Design

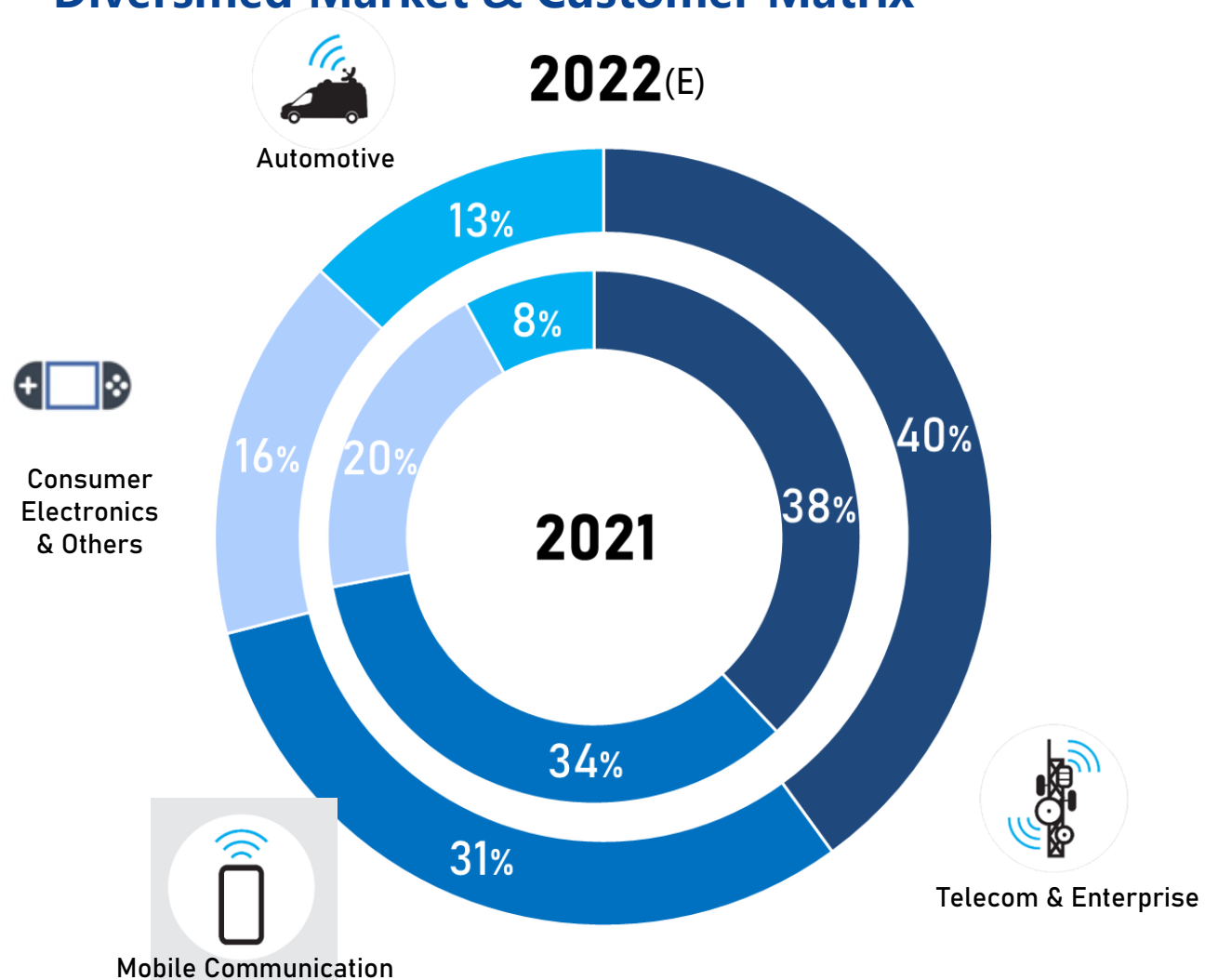


Camera
Radar
Lidar

HPC
Ethernet
Telematics

Revenue Growth By Segments

Diversified Market & Customer Matrix



Key Diversified Growth Drivers

5G Mobile Devices

Miniature Product , High Frequency Products

5G Telecom & Infrastructure

Precise & Ultra Low Phase Noise Oscillators

High Speed Datacom

High Frequency & Low Phase Jitter Oscillators

Vehicle Electrifications

Mass Adoption on Crystal & Oscillator for Autonomous Driving

Healthy Growth with Value based Sustainability

Dedicate on Continuous Enhancement of Environment, Society, and Governance

ESG Risk Rating

19.4 pts Low Risk



Achievement

- ISO 14064 Greenhouse Gas Emissions Verification (2009~)
- Top 6%~20% Listed Corporates for the 8th Corporate Governance Evaluation
- Top 249 Enterprises of CommonWealth Magazine.
- BSI Sustainability Leader Award
- IDB the 4th Gender Mainstreaming Benchmark Manufacturer

Roadmap

- ISO 50001 Energy Management System Verification
- 2030 RE25% , 2050 RE100% & Net Zero Carbon

Thank You

Think of Frequency, Think of **TXC**

