BERNSTEIN
SOCIETE GENERALE GROUP

Asia Semiconductors and Equipment & Global Memory

MediaTek Inc

Rating

Outperform

Price Target

2454.TT **4,380.00 TWD**

Mark Li
+852 2123 2645
mark.li@bernsteinsg.com

Yipin Cai, CFA
+852 2123 2669
yipin.cai@bernsteinsg.com

Edward Hou, CFA
+852 2123 2623
edward.hou@bernsteinsg.com

MediaTek event takeaway: Cloud now & Edge later

We attended MediaTek's "AI Without Limits" event on May 29 in Taipei & summarize our takeaways below.

Data Center business saw "a strong pipeline of new programs coming in". There was no change to the revenue guidance (i.e. US$2B for 2026, US$11-12B for 2027), but the company highlighted the strong demand & its key differentiation in SerDes, advanced packaging (>10x reticle size & hybrid bonding), DTCO/STCO (design-/system-technology co-optimization), & notably memory sourcing thanks to the volume of its consumer business.

Not a full-rack system vendor, but an ecosystem facilitator. MediaTek provides adjacent components beyond its core XPU offering. NVLink Fusion support for example helps customers connect a MediaTek ASIC tray to an NVIDIA switch tray & adds value especially to CSPs with limited engineering resources. Collaborations with partners such as Microsoft on active optical cable also elevate its role to a system-level enabler.

Strengthening Compute offerings. MediaTek is set to become the no.1 Chromebook CPU supplier with >50% share in 2026, and is a key silicon partner for Google's Gemini-enabled laptop Googlebook. And the collaboration in NVIDIA DGX Spark extends MediaTek's product spectrum to the enterprise side.

Further collaboration with Samsung? The company did not comment directly on Samsung Chairman's recent visit to MediaTek but acknowledged ongoing efforts to deepen and broaden collaboration with Samsung.

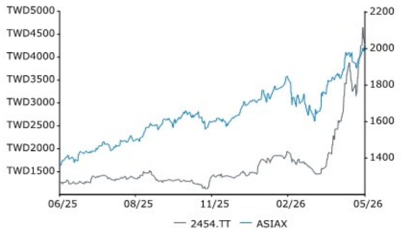
Launching AI glasses product next year. Despite technical challenges in power consumption, form factor, and always-on environmental sensing, MediaTek regards AI glasses as the personal device with the greatest potential & targets to launch an initial product next year.

Close Date	29 May 2026
2454.TT Close Price (TWD)	4,310.00
Price Target (TWD)	4,380.00
Upside/(Downside)	2%
52-Week Range	4,690.00/1,130.00
ASIAX	2,010.20
FYE	Dec
Div Yield	1.2%
Market Cap (TWD) (B)	6,912.79
EV (TWD) (B)	6,765.15

Performance	YTD	1M	6M	12M
Absolute (%)	201.4	65.1	209.0	242.1
ASIAX (%)	22.9	9.4	25.5	47.5
Relative (%)	178.5	55.7	183.4	194.6

Source: Bloomberg, Bernstein estimates and analysis.

Price Performance, 1YR



We reiterate our positive stance despite the recent stock moves. Outperform.

Reported EPS	F25A	F26E	F27E
2454.TT (TWD)	66.17	69.52	170.50

Financials	F25A	F26E	F27E	CAGR
Revenues (M)	595,966	652,535	1,117*	36.9%
Gross Margin (%)	47.5	46.0	44.5	--
Operating Margin (%)	17.4	16.3	25.3	--
Net Income Margin (%)	17.8	17.1	24.5	--
ROE (%)	26.4	27.8	57.6	--

Valuation Metrics	F25A	F26E	F27E
Reported P/E (x)	65.1	62.0	25.3
Div Yield (%)	1.2	1.2	1.8
Adjusted P/E (x)	65.1	62.0	25.3
EV/EBITDA (x)	53.5	52.1	22.0
EV/EBIT (x)	65.4	63.5	23.9

*Values shown in billions;Source: Bloomberg, Bernstein estimates and analysis.

First Published: 31 May 2026 20:30 UTC Completion Date: 31 May 2026 20:26 UTC

MediaTek sees Agentic AI application as the killer use case for 6G.

- Following video in 4G & high-throughput IoT in 5G, Agentic AI is viewed as the next major technology inflection. Looking ahead to 6G, MediaTek expects token-based Agentic AI applications the next “killer use case” to shape compute, connectivity, and system architecture requirements in both data centers & edge devices, to optimize token generation efficiency, latency, and cost. This structural shift positions MediaTek to participate across multiple layers and multiple product lines.

Data Center business: the cloud side of the “cloud-to-edge” story

- MediaTek reiterated its US$2B revenue target for 2026 and the TAM estimate of US$70-80B for 2027, mainly driven by accelerated capex from CSPs. The company has “won multiple large programs” and highlighted “a strong pipeline of new programs coming in”.

- **The company sees its key value-add in strong SerDes IP, DTCO/STCO, 3.5D packaging and ability to source tight component supplies such as memory:**

  - **SerDes:** MediaTek has had a team dedicated to SerDes development for over a decade. It now has 224G SerDes available for multiple process nodes and SerDes with higher data rates has been made available to data center customers too (Exhibit 1).

  - **DTCO/STCO:** MediaTek is capable of making over 10x-reticle size of heterogeneous package design. Its technology portfolio —e.g. die-to-die integration, electrical & optical interconnects, memory, and both scale-up & scale-out architectures — enables optimization at the design level. Through Design Technology Co-Optimization (DTCO), the company can achieve 10–15% improvements in area density or power efficiency for existing designs. MediaTek is collaborating with TSMC to further extend to System Technology Co-Optimization (STCO) and to optimize at the full system level to better address the performance and efficiency requirements of data center customers (Exhibit 2).

  - The roadmap (Exhibit 2) presented by MediaTek also will progress from 2.5D to 3.5D packaging technology, i.e. adding hybrid bonding capability to extend die-to-die connection from simply lateral to also vertical.

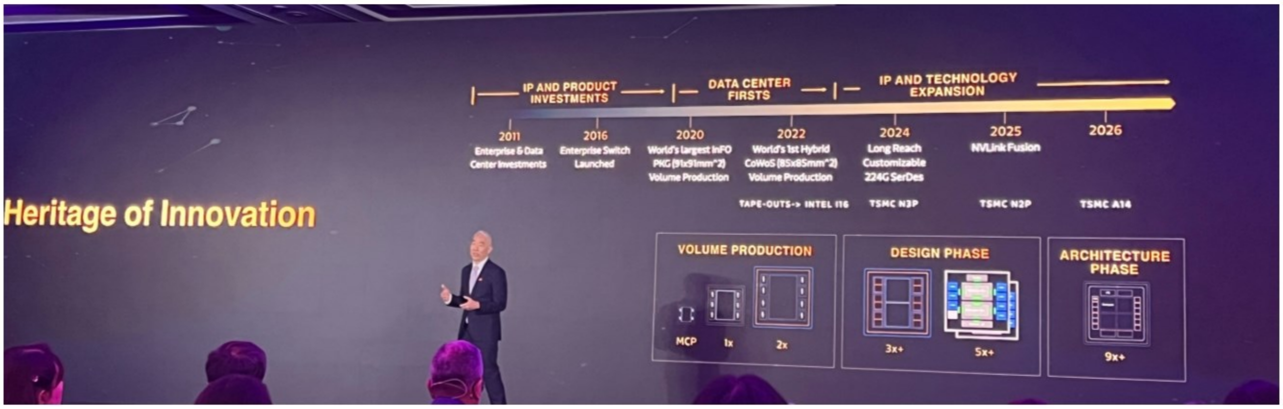
  - **Ability to source memory supply:** Thanks to its large procurement volume for consumer electronics applications, MediaTek has solid relationship with all major memory suppliers (incl. SK hynix, Samsung, and Micron), which gives the company a competitive advantage over other ASIC vendors in sourcing memory for customers.

- **MediaTek does not sell rack-level solutions, but it offers XPU-adjacent components to speed up the deployment of its partners’ ecosystem.**

  - MediaTek provides a customizable XPU template that is able to incorporate customer IPs. For example through NVLink Fusion customers can connect a MediaTek ASIC compute tray with an NVSwitch tray, and the solution can scale out to other racks through either InfiniBand or Ethernet and form a complete data center platform. This adds value to smaller CSP customers who have limited engineer resources for rack-related developments, and helps them accelerate product cadence & time-to-market (Exhibit 3).

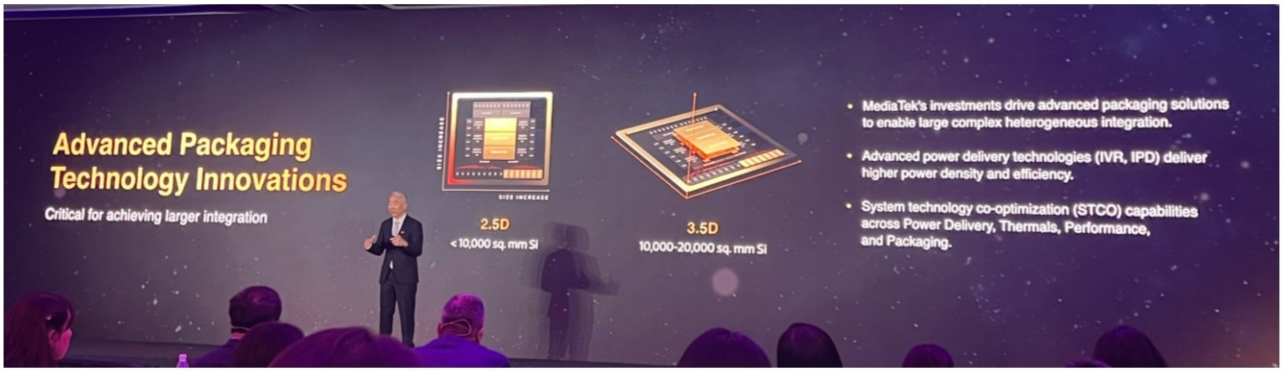
  - MediaTek is also collaborating with Microsoft (MSFT US, covered by Bernstein global software team) in the design of MicroLED-powered AOC (Active Optical Cable), which could extend rack-level connections with much farther reach (Exhibit 4).

EXHIBIT 1: **MediaTek has a team dedicated to SerDes development for over a decade. It now has 224G SerDes available for multiple process nodes, with higher data rate SerDes already been made available to data center customers.**



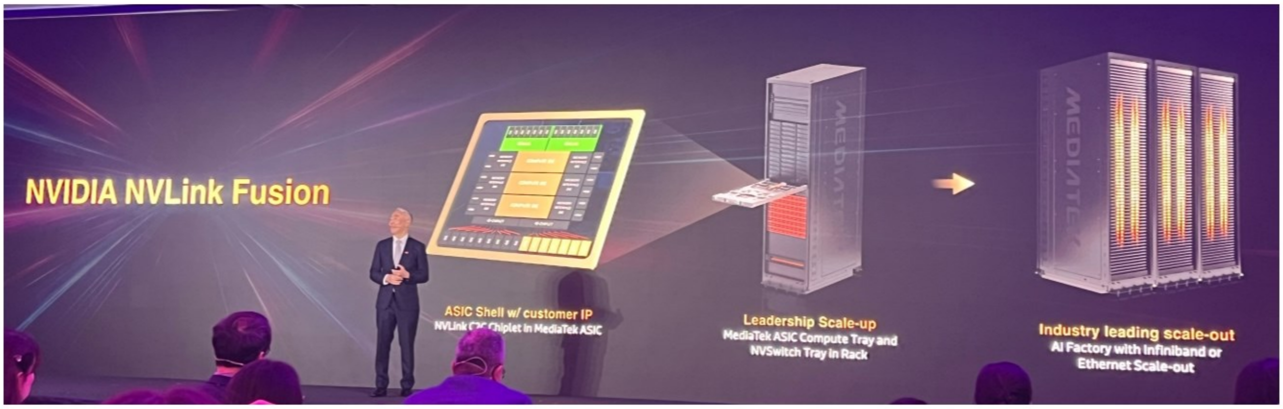
Source: Bernstein photo

EXHIBIT 2: **Through Design Technology Co-Optimization (DTCO), the company can achieve 10–15% improvements in area density or power efficiency for existing designs. MediaTek is working with TSMC to further extend to System Technology Co-Optimization (STCO) and to optimize at the full system level.**



Source: Bernstein photo

EXHIBIT 3: **The support of NVLink Fusion, possibly with the inclusion of customer IPs, enables to connect a MediaTek ASIC compute tray with an NVSwitch one. This adds value especially for second-tier CSPs with limited engineering resources.**



Source: Bernstein photo

EXHIBIT 4: **MediaTek is also collaborating with Microsoft in the design of MicroLED-powered AOC (Active Optical Cable) to extend rack-level connections with much farther reach.**

Source: Bernstein photo

MediaTek is expanding its Compute product portfolio from low-end to high-end, from consumer to enterprise.

- MediaTek has rapidly scaled its Chromebook presence from a small share three years ago to likely over 50% market share in 2026, making it the No.1 supplier in Chromebook CPUs. The company is also becoming a key silicon supplier for Googlebook (Google is covered by Bernstein US Internet team), the new laptop built with Gemini AI capabilities that is expected to launch later this year.

- In enterprise segment, MediaTek is collaborating with NVIDIA on solutions such as NemoClaw on NVIDIA's DGX Spark platform, which enables enterprises to generate tokens at lower or zero marginal cost. This aligns with the broader industry focus on reducing inference costs and improving AI workload efficiency (Exhibit 5).

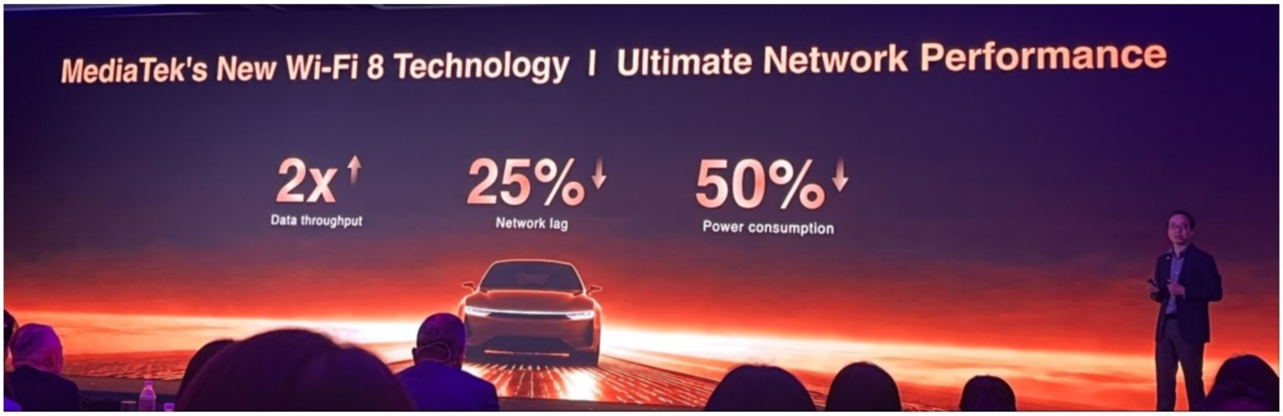
EXHIBIT 5: **MediaTek is expanding its Compute product portfolio from educational Chromebook to Gemini-empowered Googlebook and enterprise DGX Spark workstation.**

Source: Bernstein photo

Wi-Fi is deemed as "the last mile" of data transfer & MediaTek expects a boom in 2028

- MediaTek views Wi-Fi as a critical enabler in the AI ecosystem, particularly as the "last mile" connectivity layer linking end devices to data center infrastructure. The company is confident in its leading position in Wi-Fi 8, with silicon already demonstrated at CES earlier this year and Computex this month. As for the adoption timeline, the company expects early launches in 2027, with verification completing in 2028 and broader commercialization thereafter. This aligns with the expected proliferation of Agentic AI applications, which will place increasing demands on bandwidth and latency (Exhibit 6).

EXHIBIT 6: **The company is confident in its leading position in Wi-Fi 8 and expects to early launches in 2027 and mass commercialization in 2028.**



Source: Bernstein photo

MediaTek sees right to win in IoT verticals by bringing leading-node and AI capabilities to the market.

- MediaTek sees many IoT verticals a lucrative but under-served market, where incumbent solutions from competitors often rely on legacy process nodes but MediaTek differentiates with leading nodes and enhanced computing & AI capabilities. The business has been growing at c.35% CAGR over the past three years (including this year), albeit from a low base. Geographically, while maintaining a strong footprint in China, MediaTek is also expanding rapidly in the US and Europe (5x growth) and is planning an entry into Japan in the near term (Exhibit 7).

- **AI glasses can grow 10x by 2030 & MediaTek will launch a new product next year.** MediaTek acknowledges technical challenges in power consumption, size, and always-on environmental sensing, but is still very optimistic in AI glasses, viewing it the form factor with the greatest potential in personal AI era. The company expects the total shipment of AI glasses to grow from c.10M units in 2025 to c.100M units by 2030 & aims to launch its initial products as early as next year.

EXHIBIT 7: **In IoT segment, MediaTek maintains a strong footprint in China and is expanding rapidly in the US and Europe (5x growth). MediaTek is also planning an entry into Japan in the near term.**

Source: Bernstein photo

Cockpit SoC empowered by NVIDIA's CUDA is ready to capture 15-20% CAGR in automotive market.

- MediaTek's automotive business has been scaling rapidly, remarkably at 385% revenue CAGR over the past five years. The company now works with 20+ global OEMs across 190+ active projects, with an installed base exceeding 35M vehicles. Industry growth is expected at 15–20% CAGR, primarily driven by increasing semiconductor content per vehicle.

- The shift toward "AI-defined vehicles" from "Software-defined vehicles" requires higher computing and AI capability. MediaTek's Dimensity AX platform leverages NVIDIA's CUDA ecosystem & enables faster AI model deployment and continuous upgrades. The SoC chip integrates the compute die from MediaTek, GPU die from NVIDIA, interconnect technology from Data Center products, and the CoWoS packaging from TSMC. The company is set to launch a 2nm cockpit SoC "very soon" (Exhibit 8 - Exhibit 9).

EXHIBIT 8: **The shift toward "AI-defined vehicles" from "Software-defined vehicles" requires higher computing and AI capability.**

Source: Bernstein photo

EXHIBIT 9: **MediaTek's Dimensity AX platform leverages NVIDIA's CUDA ecosystem, enabling faster AI model deployment and continuous upgrades.**

Source: Bernstein photo

Further collaboration with Samsung?

- Samsung's Chairman Lee Jae-yong reportedly visited MediaTek headquarters in Taiwan on May 21 and met with MediaTek Vice Chairman and Chief Executive Officer Rick Tsai. MediaTek did not comment on directly but acknowledged ongoing efforts to deepen and expand collaboration between the two companies apart from exiting projects on TV, Wi-Fi, and Galaxy tablets etc.

INVESTMENT IMPLICATIONS

We rate MediaTek Outperform with TP of NT$4,380.00.

BERNSTEIN TICKER TABLE

			29 May 2026 Closing	Price	TTM Rel.		Reported EPS			Reported P/E (x)		
Ticker	Rating	Cur	Price	Target	Perf.	Cur	2025A	2026E	2027E	2025A	2026E	2027E
2454.TT (MediaTek)	O	TWD	4,310.00	4,380.00	194.6%	TWD	66.17	69.52	170.50	65.1	62.0	25.3
ASIAX			2,010.20									

O - Outperform, M - Market-Perform, U - Underperform, NR - Not Rated, CS - Coverage Suspended

Source: Bloomberg, Bernstein estimates and analysis.

I. REQUIRED DISCLOSURES

References to "Bernstein" or the “Firm” in these disclosures relate to the following entities: Bernstein Institutional Services LLC (April 1, 2024 onwards), Sanford C. Bernstein & Co., LLC (pre April 1, 2024), Bernstein Autonomous LLP, BSG France S.A. (April 1, 2024 onwards), Sanford C. Bernstein (Hong Kong) Limited 盛博香港有限公司, Sanford C. Bernstein (Canada) Limited, Sanford C. Bernstein (India) Private Limited (SEBI registration no. INH000006378), Sanford C. Bernstein (Singapore) Private Limited, Sanford C. Bernstein Japan KK（サンフォード・C・バーンスタイン株式会社）and analysts employed by Société Générale Africa Technologies & Services to produce Bernstein research under a Global Services Agreement in place between Bernstein and Société Générale.

Bernstein is part of a joint venture between Société Générale (SG) and AllianceBernstein, L.P. (AB). Unless specifically noted otherwise, for purposes of these disclosures, references to Bernstein’s “affiliates” relate to both SG and AB and their respective affiliates.

VALUATION METHODOLOGY

MediaTek Inc

We set a NT$4,380 1-year price target using a P/E multiple of 22x against our forward Q5-Q8 EPS estimate of NT$199.

RISKS

MediaTek Inc

There are a number of downside risks to our MediaTek price target: (1) Stronger competitive pressure from Qualcomm in 5G market (2) Slower 5G adoption increase, especially in China (3) Weaker smartphone demand globally (4) Slower diversification beyond smartphone (5) Downcycle in the broad semiconductor market

RATINGS DEFINITIONS, BENCHMARKS AND DISTRIBUTION

EQUITY RATINGS DEFINITIONS

Bernstein brand

The Bernstein brand rates stocks based on forecasts of relative performance for the next 12 months versus the S&P 500 for stocks listed on the U.S. and Canadian exchanges, versus the Bloomberg Europe Developed Markets Large and Mid Cap Price Return Index EUR (EDME) for stocks listed on the European exchanges and emerging markets exchanges outside of the Asia Pacific region, versus the Bloomberg Japan Large and Mid Cap Price Return Index USD (JPL) for stocks listed on the Japanese exchanges, and versus the Bloomberg Asia ex-Japan Large and Mid Cap Price Return Index (ASIAX) for stocks listed on the Asian (ex-Japan) exchanges -unless otherwise specified.

The Bernstein brand has three categories of ratings:

- Outperform: Stock will outpace the market index by more than 15 pp
- Market-Perform: Stock will perform in line with the market index to within +/-15 pp
- Underperform: Stock will trail the performance of the market index by more than 15 pp

Coverage Suspended: Coverage of a company under the Bernstein research brand has been suspended. Ratings and price targets are suspended temporarily, are no longer current, and should therefore not be relied upon.

Not Rated: A rating assigned when the stock cannot be accurately valued, or the performance of the company accurately predicted, at the present time. The covering analyst may continue to publish research reports on the company to update investors on events and developments.

Not Covered (NC) denotes companies that are not under coverage.

Bernstein brand stock ratings are based on a 12-month time horizon.

Autonomous brand – common stocks

The Autonomous brand rates common stocks as indicated below. As our benchmarks we use the Bloomberg Europe 500 Banks And Financial Services Index (BEBANKS) and Bloomberg Europe Dev Mkt Financials Large and Mid Cap Price Ret Index EUR (EDMFI) index for developed European banks and Payments, the Bloomberg Europe 500 Insurance Index (BEINSUR) for European insurers, the S&P 500 and S&P Financials for US banks and Payments coverage, S5LIFE for US Insurance, the S&P Insurance Select Industry (SPSIINS) for US Non-Life Insurers coverage, and the Bloomberg Emerging Markets Financials Large, Mid and Small Cap Price Return Index (EMLSF) for emerging market banks and insurers and Payments. Ratings are stated relative to the sector (not the market).

The Autonomous brand has three categories of common stock ratings:

- Outperform (OP): Stock will outpace the relevant index by more than 10 pp
- Neutral (N): Stock will perform in line with the market index to within +/-10 pp
- Underperform (UP): Stock will trail the performance of the relevant index by more than 10 pp

Coverage Suspended: Coverage of a company under the Autonomous research brand has been suspended. Ratings and price targets are suspended temporarily, are no longer current, and should therefore not be relied upon.

Not Rated: A rating assigned when the stock cannot be accurately valued, or the performance of the company accurately predicted, at the present time. The covering analyst may continue to publish research reports on the company to update investors on events and developments.

Those denoted as ‘Feature’ (e.g., Feature Outperform FOP, Feature Under Outperform FUP) are our core ideas.

Not Covered (NC) denotes companies that are not under coverage.

Autonomous brand common stock ratings are based on a 12-month time horizon.

Autonomous brand – preferred stocks

The Autonomous brand has three categories of preferred stock ratings:

- Outperform (OP): The total return of the preferred instrument is expected to outperform preferred securities of other issuers operating in similar sectors or rating categories over the next six months.
- Neutral (N): The total return of the preferred instrument is expected to perform in line with preferred securities of other issuers operating in similar sectors or rating categories over the next six months.
- Underperform (UP): The total return of the preferred instrument is expected to underperform preferred securities of other issuers operating in similar sectors or rating categories over the next six months.

Autonomous preferred stock ratings are based on a 6-month time horizon.

AUTONOMOUS CREDIT RESEARCH

Where this report contains investment recommendations for credit instruments, as defined in article 3(1)(35) of the Market Abuse Regulation, the information below is presented to comply with its disclosure requirements.

The report may also include reference(s) to published opinions by other Autonomous or Bernstein analysts covering the equity securities of the issuer(s) referenced herein. Please note an investment recommendation for credit instruments published by the author(s) of this report may differ from the published view of the analyst covering equity securities for the issuer(s) contained in this report and vice versa.

CREDIT RATINGS DEFINITIONS

The Autonomous brand has three categories of credit ratings:

- Credit Outperform (C-OP): The total return of the Reference Credit Instrument is expected to outperform the credit spread of bonds of other issuers operating in similar sectors or rating categories over the next six months.

- Credit Neutral (C-N): The total return of the Reference Credit Instrument is expected to perform in line with the credit spread of bonds of other issuers operating in similar sectors or rating categories over the next six months.

- Credit Underperform (C-UP): The total return of the Reference Credit Instrument is expected to underperform the credit spread of bonds of other issuers operating in similar sectors or rating categories over the next six months.

Autonomous credit ratings are based on a 6-month time horizon.

A list of all investment recommendations produced by the author(s) of this report alongside credit ratings history are available upon request.

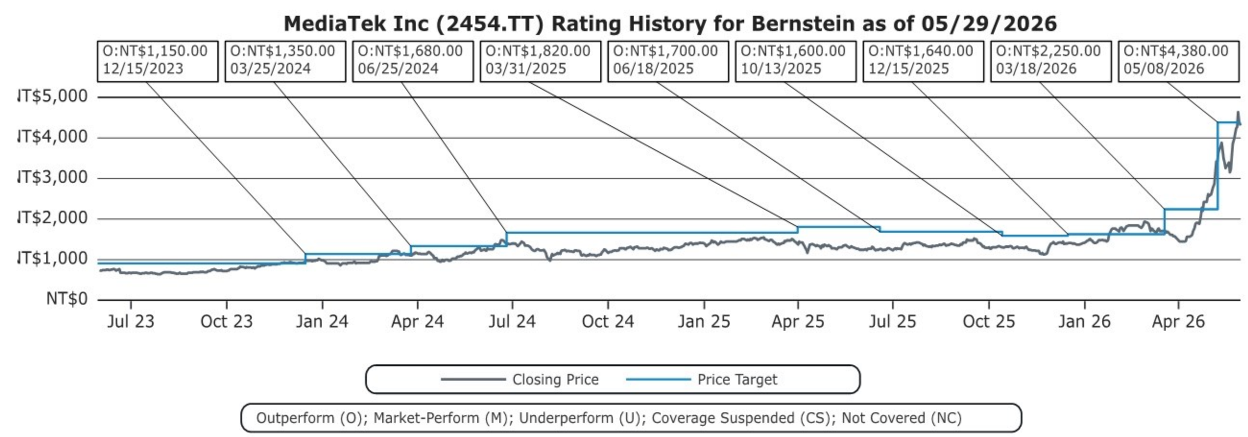
It is at the sole discretion of the Firm as to when to initiate, update and cease research coverage. The Firm has established, maintains and relies on information barriers to control the flow of information contained in one or more areas (i.e. the private side) within the Firm, and into other areas, units, groups or affiliates (i.e. public side) of the Firm

DISTRIBUTION OF EQUITY RATINGS/INVESTMENT BANKING SERVICES

Equity Rating	Market Abuse Regulation (MAR) and FINRA Rating Category	Global Rating Distribution	Investment Banking Relationships*
Outperform	BUY	51.1%	16.5%
Market-Perform (Bernstein Brand) Neutral (Autonomous Brand)	HOLD	36.3%	17.8%
Underperform	SELL	12.6%	14.9%

* These figures represent the percentage of companies within each equity rating category for which affiliates of Bernstein have provided investment banking services within the previous 12 months.
As of March 31, 2026. All figures are updated quarterly.

PRICE CHARTS / RATINGS AND PRICE TARGET HISTORY



All price target and closing price data in the chart(s) above are denominated in the currency noted in the Ticker Table of this report.

OTHER MATTERS

The legal entity(ies) employing the analyst(s) listed in this report, and their location, can be determined by the cou
phone number, as follows:

+1 Bernstein Institutional Services LLC; New York, New York, USA

+44 Bernstein Autonomous LLP; London UK

+212 Société Générale Africa Technologies & Services; Casablanca, Morocco

+33 BSG France S.A.; Paris, France

+34 BSG France S.A.; Madrid, Spain

+41 Bernstein Autonomous LLP; Geneva, Switzerland

+49 BSG France S.A.; Frankfurt, Germany

+91 Sanford C. Bernstein (India) Private Limited; Mumbai, India

+852 Sanford C. Bernstein (Hong Kong) Limited 盛博香港有限公司; Hong Kong, China

+65 Sanford C. Bernstein (Singapore) Private Limited; Singapore

+81 Sanford C. Bernstein Japan KK; Tokyo, Japan

Where this report has been prepared by research analyst(s) employed by a non-US affiliate, such analyst(s), is/are (unless otherwise expressly noted below) not registered as associated persons of Bernstein Institutional Services LLC or any other SEC-registered broker-dealer and are not licensed or qualified as research analysts with FINRA. Accordingly, such analyst(s) may not be subject to FINRA's restrictions regarding (among other things) communications by research analysts with a subject company, interactions between research analysts and investment banking personnel, participation by research analysts in solicitation and marketing activities relating to investment banking transactions, public appearances by research analysts, and trading securities held by a research analyst account.

Where this report has been prepared by research analyst(s) employed by Société Générale Africa Technologies & Services (part of the Société Générale group of companies), it has been prepared on behalf of a Bernstein company under a Global Services Agreement in place between Bernstein and Société Générale.

CERTIFICATION

Each research analyst listed in this report, who is primarily responsible for the preparation of the content of this report, certifies that all of the views expressed in this publication accurately reflect that analyst's personal views about any and all of the subject securities or issuers and that no part of that analyst's compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views in this publication.

II. ADDITIONAL GLOBAL CONFLICT DISCLOSURES

It is at the sole discretion of the Firm as to when to initiate, update and cease research coverage. The Firm has established, maintains and relies on information barriers to control the flow of information contained in one or more areas (i.e., the private side) within the Firm, and into other areas, units, groups or affiliates (i.e., public side) of the Firm.

III. OTHER IMPORTANT INFORMATION AND DISCLOSURES

Separate branding is maintained for "Bernstein" and "Autonomous" research products.

- Bernstein produces a number of different types of research products including, among others, fundamental analysis and quantitative analysis under both the "Autonomous" and "Bernstein" brands. Recommendations contained within one type of research product may differ from recommendations contained within other types of research products, whether as a result of differing time horizons, methodologies or otherwise. Furthermore, views or recommendations within a research product issued under one brand may differ from views or recommendations under the same type of research product issued under the other brand. The Research Ratings System for the two brands and other information related to those Rating Systems are included in the previous section.

- Autonomous operates as a separate business unit within the following entities: Bernstein Institutional Services LLC, Bernstein Autonomous LLP, Sanford C. Bernstein (Hong Kong) Limited 盛博香港有限公司 and Sanford C. Bernstein (India) Private Limited. For information relating to "Autonomous" branded products (including certain Sales materials) please visit: www.autonomous.com. For information relating to Bernstein branded products please visit: www.bernsteinresearch.com.

Analysts are compensated based on aggregate contributions to the research franchise as measured by account penetration, productivity and proactivity of investment ideas. No analysts are compensated based on performance in, or contributions to, generating investment banking revenues.

This report has been produced by an independent analyst as defined in Article 3 (1)(34)(i) of EU 596/2014 Market Abuse Regulation ("MAR") and the same article of MAR as it forms part of United Kingdom domestic law by virtue of the European Union (Withdrawal) Act 2018.

To our readers in the United States: Bernstein Institutional Services LLC, a broker-dealer registered with the U.S. Securities and Exchange Commission ("SEC") and a member of the U.S. Financial Industry Regulatory Authority, Inc. ("FINRA") is distributing this publication in the United States and accepts responsibility for its contents. Where this material contains an analysis of debt product(s), such material is intended only for institutional investors and is not subject to the US independence and disclosure standards applicable to debt research prepared for retail investors.

Bernstein Institutional Services LLC may act as principal for its own account or as agent for another person (including an affiliate) in sales or purchases of any security which is a subject of this report. This report does not purport to meet the objectives or needs of any specific individuals, entities or accounts.

To our readers in Canada: If this publication pertains to a Canadian domiciled company, it is being distributed in Canada by Sanford C. Bernstein (Canada) Limited, which is licensed and regulated by the Canadian Investment Regulatory Organization. If the publication pertains to a non-Canadian domiciled company, it is being distributed by Bernstein Institutional Services LLC, which is licensed and regulated by both the SEC and FINRA, into Canada under the International Dealers Exemption.

This document may not be passed onto any person in Canada unless that person qualifies as "permitted client" as defined in Section 1.1 of NI 31-103.

To our readers in Brazil: This report has been prepared by Bernstein Institutional Services LLC, and Banco BTG Pactual S.A. ("BTG") is responsible for the distribution of this report in Brazil.

To readers in the United Kingdom: This publication has been issued or approved for issue in the United Kingdom by Bernstein Autonomous LLP, authorised and regulated by the Financial Conduct Authority and located at 60 London Wall, London EC2M 5SH, +44 (0)20-7170-5000. Registered in England & Wales No OC343985.

This document is for distribution only to persons who (i) have professional experience in matters relating to investments falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (as amended, the "Financial Promotion Order"), (ii) are persons falling within Article 49(2)(a) to (d) ("high net worth companies, unincorporated associations, etc.") of the Financial Promotion Order, (iii) are outside the United Kingdom, or (iv) are persons to whom an invitation or inducement to engage in investment activity (within the meaning of section 21 of the FSMA) in connection with the issue or sale of any securities may otherwise lawfully be communicated or caused to be communicated (all such persons together being referred to as "relevant persons"). This document is directed only at relevant persons and must not be acted on or relied on by persons who are not relevant persons. Any investment or investment activity to which this document relates is available only to relevant persons and will be engaged in only with relevant persons.

To our readers in the member states of the EEA: This publication is being distributed by BSG France SA, which is authorised and regulated by the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and Autorité des Marchés Financiers (AMF).

To our readers in Hong Kong: This publication is being distributed in Hong Kong by Sanford C. Bernstein (Hong Kong) Limited 盛博香港有限公司, which is licensed and regulated by the Hong Kong Securities and Futures Commission (Central Entity No. AXC846) to carry out Type 4 (Advising on Securities) regulated activities and subject to the licensing conditions mentioned in the SFC Public Register (https://www.sfc.hk/publicregWeb/corp/AXC846/details)). This publication is solely for professional investors, as defined in the Securities and Futures Ordinance (Cap. 571). The purpose of this report is solely to provide an analysis of the issuers referred to in this report and is not intended for any purpose contrary to the laws of Hong Kong.

To our readers in Singapore: This publication is being distributed in Singapore by Sanford C. Bernstein (Singapore) Private Limited, only to accredited investors or institutional investors, as defined in the Securities and Futures Act 2001 of Singapore ("SFA"). Recipients in Singapore should contact Sanford C. Bernstein (Singapore) Private Limited in respect of matters arising from, or in connection with, this publication. Sanford C. Bernstein (Singapore) Private Limited is regulated by the Monetary Authority of Singapore and licensed under the SFA as a capital markets services licence holder for dealing in capital markets products that are securities and collective investment schemes and an exempt financial adviser for advising on, issuing and promulgating analyses and reports on securities. Sanford C. Bernstein (Singapore) Private Limited is registered in Singapore with Company Registration No. 20213710W and located at One Raffles Quay, #27-11 South Tower, Singapore 048583, +65-6230-4612.

To our readers in the People's Republic of China: The securities referred to in this document are not being offered or sold and may not be offered or sold, directly or indirectly, in the People's Republic of China (for such purposes, not including the Hong Kong and Macau Special Administrative Regions or Taiwan, the "PRC") in contravention of any applicable laws of the PRC.

This document does not constitute an offer to sell or the solicitation of an offer to buy any securities in the PRC to any person to whom it is unlawful to make the offer or solicitation in the PRC.

We do not represent that this document may be lawfully distributed, or that any securities may be lawfully offered, in compliance with any applicable registration or other requirements in the PRC, or pursuant to an exemption available thereunder, or assume any responsibility for facilitating any such distribution or offering. In particular, no action has been taken by us which would permit a public offering of any securities or distribution of this document in the PRC. Accordingly, the securities are not being offered or sold within the PRC by means of this document or any other document. Neither this document nor any advertisement or other offering material may be distributed or published in the PRC, except under circumstances that will result in compliance with any applicable laws and regulations.

To our readers in Japan: This publication is being distributed in Japan by Sanford C. Bernstein Japan KK (サンフォード・C・バーンスタイン株式会社), which is registered in Japan as a Financial Instruments Business Operator with the Kanto Local Finance Bureau (registration number: The Director-General of Kanto Local Finance Bureau (FIBO) No.3387) and regulated by the Financial Services Agency. It is also a member of Japan Investment Advisers Association. This publication is solely for qualified institutional investors in Japan only, as defined in Article 2, paragraph (3), items (i) of the Financial Instruments and Exchange Act.

For the institutional client readers in Japan who have been granted access to the Bernstein website by Daiwa Securities Group Inc. ("Daiwa"), your access to this document should not be construed as meaning that Bernstein is providing you with investment advice for any purposes. Whilst Bernstein has prepared this document, your relationship is, and will remain with, Daiwa, and Bernstein has neither any contractual relationship with you nor any obligations towards you.

To our readers in Australia: Sanford C. Bernstein (Hong Kong) Limited 盛博香港有限公司 is responsible for distributing research in Australia. It is regulated by the Securities and Exchange Commission under U.S. laws, by the Financial Conduct Authority under U.K. laws, which differs from Australian laws. Sanford C. Bernstein (Hong Kong) Limited 盛博香港有限公司 is exempt from the requirement to hold an Australian financial services license under the Corporations Act 2001 in respect of the provision of the following financial services to wholesale clients:

- providing financial product advice;
- dealing in a financial product;
- making a market for a financial product; and
- providing a custodial or depository service.

To our readers in India: This publication is being distributed in India by Sanford C. Bernstein (India) Private Limited (SCB India) which is licensed and regulated by Securities and Exchange Board of India ("SEBI") as a research analyst entity under the SEBI (Research Analyst) Regulations, 2014, having registration no. INH000006378 and as a stock broker having registration no. INZ000213537. SCB India is currently engaged in the business of providing research and stock broking services. Please refer to www.bernsteinresearch.in for more information.

- SCB India is a Private limited company incorporated under the Companies Act, 2013, on April 12, 2017 bearing corporate identification number U65999MH2017FTC293762, and registered office at Level 3A, 4th Floor, First International Financial Centre, Plot Nos C-54 and C-55, G Block, Near CBI Office, Bandra Kurla Complex, Bandra (East), Mumbai 400098, Maharashtra, India (Phone No: +91-22-68421401).
- For details of Associates (i.e., affiliates/group companies) of SCB India, kindly email MUM-BERNSTEIN-InCompliance@bernsteinsg.com.
- SCB India does not have any disciplinary history as on the date of this report.
- Except as noted above, SCB India and/or its Associates (i.e., affiliates/group companies), the Research Analysts authoring this report, and their relatives
  - do not have any financial interest in the subject company
  - do not have actual/beneficial ownership of one percent or more in securities of the subject company;

  - is not engaged in any investment banking activities for Indian companies, as such;
  - have not managed or co-managed a public offering in the past twelve months for any Indian companies;
  - have not received any compensation for investment banking services or merchant banking services from the subject company in the past 12 months;
  - have not received compensation for brokerage services from the subject company in the past twelve months;
  - have not received any compensation or other benefits from the subject company or third party related to the specific recommendations or views in this report; and
  - do not currently, but may in the future, act as a market maker in the financial instruments of the companies covered in the report.
  - do not have any conflict of interest in the subject company as of the date of this report.
- Except as noted above, the subject company has not been a client of SCB India during twelve months preceding the date of distribution of this research report. Neither SCB India nor its Associates (i.e., affiliates/group companies) have received compensation for products or services other than investment banking, merchant banking or brokerage services from the subject company in the past twelve months.
- The principal research analyst(s) who prepared this report, members of the analysts' team, and members of their households are not an officer, director, employee or advisory board member of the companies covered in the report.
- Our Compliance officer / Grievance officer is Ms. Rupal Talati, who can be reached at +91-22-68421451, or MUM-BERNSTEIN-InCompliance@bernsteinsg.com / Scbin-investorgrievance@bernsteinsg.com
- The Research investor charter and Terms & Conditions of SCB India are available on its website and may be accessed at Sanford C. Bernstein (India) Private Limited (https://bernsteinresearch.in/) for your reference.
- Disclaimer: Registration granted by SEBI, and certification from NISM, is in no way a guarantee of performance of the intermediary or provide any assurance of returns to investors. Investments in securities market are subject to market risks. Read all the related documents carefully before investing.

To our readers in Switzerland: This document is provided in Switzerland by or through Bernstein Autonomous LLP, and is provided only to qualified investors as defined in article 10 of the Swiss Collective Investment Scheme Act ("CISA") and related provisions of the Collective Investment Scheme Ordinance and in strict compliance with applicable Swiss law and regulations. The products mentioned in this document may not be suitable for all types of investors. This document is based on the Directives on the Independence of Financial Research issued by the Swiss Bankers Association (SBA) in January 2008.

To our readers in the Middle East: Bernstein Autonomous LLP, DIFC branch has its principal office at Gate Village 06, DIFC, Dubai, UAE. Bernstein Autonomous LLP, DIFC branch is regulated by the Dubai Financial Services Authority (DFSA) with the registration number CL10040 and is provisioned for Arranging Deals in Investments and Advising on Financial Products. All communications and services are directed at Professional Clients and Market Counterparties only (as defined in the DFSA rulebook). Persons other than Professional Clients and Market Counterparties, such as Retail Clients, are not the intended recipients of our communications or services.

LEGAL

All research publications are disseminated to our clients through posting on the firm's password protected websites, bernsteinresearch.com and autonomous.com. Certain, but not all, research publications are also made available to clients through third-party vendors or redistributed to clients through alternate electronic means as a convenience.

This publication has been published and distributed in accordance with the Firm's policy for management of conflicts of interest in investment research, a copy of which is available from Bernstein Institutional Services LLC, Director of Compliance, 245 Park Avenue, New York, NY 10167. Additional disclosures and information regarding Bernstein's business are available on our website www.bernsteinresearch.com.

The securities described herein may not be eligible for sale in all jurisdictions or to certain categories of investors where that permission profile is not consistent with the licenses held by the entities noted herein. This document is for distribution only as may be permitted by law. This publication is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of, or located in any locality, state, country or other jurisdiction where such distribution, publication, availability or use would be contrary to law or regulation or which would subject any of the entities referenced herein or any of their subsidiaries or affiliates to any registration or licensing requirement within such jurisdiction. This publication is based upon public sources we believe to be reliable, but no representation is made by us that the publication is accurate or complete. We do not undertake to advise you of any change in the reported information or in the opinions herein. This publication was prepared and issued by entity referred to herein for distribution to eligible counterparties or professional clients. This publication is not an offer to buy or sell any security, and it does not constitute investment, legal or tax advice. The investments referred to herein may not be suitable for you. Investors must make their own investment decisions in consultation with their professional advisors in light of their specific circumstances. The value of investments may fluctuate, and investments that are denominated in foreign currencies may fluctuate in value as a result of exposure to exchange rate movements. Information about past performance of an investment is not necessarily a guide to, indicator of, or assurance of, future performance.

This report is directed to and intended only for our clients who are “eligible counterparties”, “professional clients”, “institutional investors” and/or “professional investors” as defined by the aforementioned regulators, and must not be redistributed to retail clients as defined by the aforementioned regulators. Retail clients who receive this report should note that the services of the entities noted herein are not available to them and should not rely on the material herein to make an investment decision. The result of such act will not hold the entities noted herein liable for any loss thus incurred as the entities noted herein are not registered/ authorised/ licensed to deal with retail clients and will not enter into any contractual agreement/arrangement with retail clients. This report is provided subject to the terms and conditions of any agreement that the clients may have entered into with the entities noted herein. All research reports are disseminated on a simultaneous basis to eligible clients through electronic publication to our client portal.

The information in this report was prepared by Bernstein solely for the internal business use of our clients. Clients may store, display, analyze, reformat and print the information in this report for this limited use only. Clients may not copy, alter, create derivative works, resell, reverse engineer, commercially exploit, share or distribute any part of the information contained herein for any purpose without Bernstein’s express written consent. These restrictions include extracting data or using the content to develop indices or other products. Further, you may not use this report, or any portion of this report, to train or finetune any third-party machine learning or artificial intelligence system, or as a prompt or input into any such system. You also may not, without Bernstein’s express written consent, do any of the foregoing in connection with your own internal machine learning or artificial intelligence system.

Bernstein may use artificial intelligence tools in the preparation of its materials. Any such materials are reviewed by Bernstein’s research analysts prior to publication.

This report has been prepared for information purposes only and is based on current public information that we consider reliable, but the entities noted herein do not warrant or represent (express or implied) as to the sources of information or data contained herein are accurate, complete, not misleading or as to its fitness for the purpose intended even though the entities noted herein rely on reputable or trustworthy data providers, it should not be relied upon as such. Opinions expressed are the author(s)’ current opinions as of the date appearing on the material only and we do not undertake to advise you of any change in the reported information or in the opinions herein.

This publication was prepared and issued by the entity referred to herein for distribution to eligible counterparties or professional clients. The information in this report is intended for general circulation and does not constitute an offer to buy or sell any security, investment, legal or tax advice nor a personal recommendation, as defined by any of the aforementioned regulators. It does not take into account the particular investment objectives, financial situations, or needs of individual investors. The report has not been reviewed by any of the aforementioned regulators and does not represent any official recommendation from the aforementioned regulators. The investments referred to herein may not be suitable for you. Investors must make their own investment decisions in consultation with advice sought from a financial adviser regarding the suitability of the investment product, taking into account the specific investment objectives, financial situation or particular needs of any recipient of the recommendation, before the recipient makes a commitment to purchase the investment product.

The analysis contained herein is based on numerous assumptions. Different assumptions could result in materially different results. The information in this report does not constitute, or form part of, any offer to sell or issue, or any offer to purchase or subscribe for shares, or to induce engage in any other investment activity. The value of any securities or financial instruments mentioned in this report may fluctuate subject to market conditions. Information about past performance of an investment is not necessarily a guide to, indicative of, or assurance of future performance. Estimates of future performance mentioned by the research analyst in this report are based on assumptions that may not be realized due to unforeseen factors like market volatility/fluctuation. In relation to securities or financial instruments denominated in a foreign currency other than the clients’ home currency, movements in exchange rates will have an effect on the value, either favorable or unfavorable. Before acting on any recommendations in this report, recipients should consider the appropriateness of investing in the subject securities or financial instruments mentioned in this report and, if necessary, seek for independent professional advice.

The securities described herein may not be eligible for sale in all jurisdictions or to certain categories of investors where that permission profile is not consistent with the licenses held by the entities noted herein. This document is for distribution only as may be permitted by law. It is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of or located in any locality, state, country or other jurisdiction where such distribution, publication, availability or use would be contrary to law or regulation or would subject the entities noted herein to any regulation or licensing requirement within such jurisdiction.

Source: Bloomberg Index Services Limited. BLOOMBERG® is a trademark and service mark of Bloomberg Finance L.P. and its affiliates (collectively "Bloomberg"). Bloomberg or Bloomberg's licensors own all proprietary rights in the Bloomberg Indices. Neither Bloomberg nor Bloomberg's licensors approves or endorses this material, or guarantees the accuracy or completeness of any information herein, or makes any warranty, express or implied, as to the results to be obtained therefrom and, to the maximum extent allowed by law, neither shall have any liability or responsibility for injury or damages arising in connection therewith.