


**Buy Range** ₹590-610

**Target** ₹730-740

**Recommendation** BUY

**Highlights**

- **ASTRA MICROWAVE PRODUCTS LTD (AMPL)** has +30 years of experience in Radar, EW & Strategic Electronics domain has enabled it to move up the value chain from modules & sub-systems to Systems & System of Systems. Product range includes radars, missile electronics, electronic warfare, satellites, MMIC (Monolithic Microwave Integrated Circuit) and communication systems. Has a proven track record of making high value-added systems, RF and microwave super components and sub-systems which are becoming more relevant due to various government initiatives like IDDM, MAKE-II with backing from various DRDO Labs, Defense PSUs, various ISRO Centers and foreign OEMs.
- With an increasing demand for induction of strong & modern warfare technologies and combat defence platforms into the armed forces, pushing the demand for defence electronics products. As per the industry estimates, the Indian defence electronics is expected to clock 13-14% CAGR over FY22-27 to reach ₹650-700bn by FY27. Improving technology is demanding increased usage of electronics, expanding the share of defence electronics in total defence production. The share of defence electronics is projected at 40-42% of total defence production by FY27 as against current share of 36-37% thus benefiting AMPL products, Sub-systems and systems.
- The company's strong relationship with large corporations builds its brand equity and helps it in **establishing itself as a prime contractor for large and longer-term programs in the marketplace**. AMPL works on high-value complex projects awarded by companies under the **Build to Specifications** model. **Works with many foreign OEMs like Elta Systems Ltd, ELBIT, Rafael, Thales for producing their products in India under Build to Print mode** for meeting their offset requirements. **58.2% of revenue is from defence, 36.2% from exports (including deemed exports) and balance ~6% from space & others. Order backlog at ₹18.13bn (70%-Defence; 11%-Space; 15%-Exports; 4%- Meteorological)** as of 31Dec23.
- **Aims to achieve in Domestic: Export 70%:30% Revenue distribution over next 2-3 years.** Domestic business on an average carries 40- 45% of gross margin as against 8 -10% gross margin in exports.
- Opportunities across all sectors worth ₹240-250bn till FY28 including Defence opportunities worth ₹70bn.
- Government backing in Defence manufacturing under **"AtmaNirbhar Bharat"** initiative enabling AMPL for bidding for the whole system for both DRDO and for future MoD requirements.
- New product developments on the back of R&D focus to be one of the growth drivers for AMPL.
- Advanced manufacturing as well as R&D facilities along with strong in-house capabilities enabling execution of orders through **Build to Specifications (BTS)** and **Build to Print (BTP)** routes.
- **Build to Specifications (BTS)** – Projects with various **DRDO Labs, Defense PSUs** and various **ISRO Centers which are** High value addition leads to better margins.
- **Incorporated on 17Feb24, new wholly owned subsidiary Astra Space Technologies Pvt Ltd** for design, development, manufacture and integration of satellites, satellite pay loads, launching of satellites and establishment of ground stations for satellite tracking. Has been among the key players for the development of sub-systems for **India's Radar Satellite & Geosynchronous Satellite program, Resourcesat, Megatropics and Cartosat for Indian space programs by ISRO.**
- **Through JV or strategic alliances (Example – Astra Rafael Comsys Private Ltd -ARC), offer improved technology and products. Target the offset requirement in large defence procurement programmes of Gol.** Exploring the areas in the anti-drone, EW, satellites, Software Defined Radio (SDRs) and electro-optics through JVs. In discussion with our JV partners to expand the SDR product portfolio to develop EO (electro-optics) product line.

**ASTRA MICROWAVE PRODUCTS LTD.**
**Company Background**

**Astra Microwave Products Limited (AMPL)** was incorporated in 1991 by a team of scientists with experience in RF/Microwave/Digital electronics and management of projects with high technology content who sensed the need for a sound and technically powerful private company that can design, develop and produce highly end RF and Microwave subsystems and systems for strategic applications. The company had started its business with a diverse range of microwave products like filters, transmitters, receivers, antennas etc., and now producing actual space-borne hardware that has flown on Indian satellites which is a big achievement for AMPL. These achievements have pushed AMPL to move up the value chain using partnerships made possible by the Make in India policy of the Government of India. It has **five facilities in Hyderabad & one in Bengaluru**, is one of the few private sector companies in India that: **Design & Develop Radar, Electronic Warfare (EW), Strategic & Space Electronics Systems & sub-systems**. It has in-house capabilities of design, engineering, simulation, manufacturing, functional testing, environmental qualification of Defence, critical microwave and radio frequency-based equipments. **+30 years of experience in Radar, EW & Strategic Electronics domain has enabled it to move up the value chain from modules & sub-systems to Systems & System of Systems**. Product range includes radars, missile electronics, electronic warfare, satellites, **MMIC (Monolithic Microwave Integrated Circuit) and communication systems**. Has a proven track record of making **high value-added systems, RF and microwave super components and sub-systems which are becoming more relevant due to various government initiatives like IDDM, MAKE-II with backing from various DRDO Labs, Defense PSUs, various ISRO Centers and foreign OEMs**. The company's strong relationship with large corporations builds its brand equity and helps it in **establishing itself as a prime contractor for large and longer-term programs in the marketplace**. AMPL works on high-value complex projects awarded by companies under **Build to Specifications model**. Works with many foreign OEMs like **Elta Systems Ltd, ELBIT, Rafael, Thales** for producing their products in India under **Build to Print mode** for meeting their offset requirements. **58.2% of revenue is from defence, 36.2% from exports (including deemed exports) and balance ~6% from space & others**. **Order backlog at ₹18.13bn (70%-Defence; 11%-Space; 15%-Exports; 4%- Meteorological) as of 31Dec23**.

**Investment Rationale**
**1. Astra has advanced in-house facilities for lower turnaround time**

The company started its operations from a small manufacturing facility called Unit I, and from there in +30 years the company has grown substantially into a +₹8bn turnover entity with continuous investment in infrastructure, captive test facilities and other resources. The company has three production units and two R&D units which also include an exclusive space qualified facility. AMPL today has an array of assembly and test facilities that include 3 Automatic assembly lines for PCBA assembly, 5 class 10,000 clean rooms, functional test infrastructure that extends from 30MHz up to 40GHz, in house Environment test facilities including Electromagnetic compatibility (EMC) and electromagnetic interference (EMI) facility and a first for any Indian Private Industry - Near Field Antenna test and measurement range. AMPL started a new R&D facility close to Bangalore airport with an aim to expand its achievements further and be closer to its biggest customers. Being a company with a strong R&D background, AMPL has undertaken production of equipment from R&D labs to reduce the production lead times. AMPL has also demonstrated its capability to provide complete solutions from concept to product realisation using in house engineering capabilities of design, engineering, simulation, manufacturing, functional testing, environmental qualification of Defence, critical microwave and radio frequency-based equipments.

**Important Data**

Nifty	22,486
Sensex	74,131

**Key Stock Data**

CMP	₹620.2
Market Cap(bn)	₹58.88
52-W High/Low	₹694/213
Shares o/s(mn)	94.96
Daily Vol.(3MNSEAvg.)	96,147
BSE Code	532493
NSE Code	ASTRAMICRO
Bloomberg Code	ASTM:IN

**Shareholding Pattern (%) – Dec'23**

Promoter	6.5
DII's	14.8
FII's	2.9
Public	75.7

**Financials**

Particulars	FY21	FY22	FY23
Revenue	6,409	7,505	8,155
EBITDA	772	892	1,476
<b>EBITDA Margin (%)</b>	<b>12.0</b>	<b>11.9</b>	<b>18.1</b>
Net Profit	289	379	698
EPS (₹)	3.0	4.0	7.4
DPS (₹)	1.2	1.4	1.6
RoE (%)	5.2	6.5	10.9
RoCE (%)	9.5	10.6	17.2
P/E (x)	204.0	155.5	84.3
EV/EBITDA (x)	75.8	66.9	40.1
P/BV (x)	10.5	10.1	9.2

Particulars	FY24E	FY25E	FY26E
Revenue	8,445	11,304	15,744
EBITDA	1,731	2,427	3,188
<b>EBITDA Margin (%)</b>	<b>20.5</b>	<b>21.5</b>	<b>20.2</b>
Net Profit	935	1,448	1,922
EPS (₹)	9.8	15.3	20.2
DPS (₹)	1.8	2.0	2.2
RoE (%)	11.8	13.2	14.9
RoCE (%)	18.2	20.1	21.8
P/E (x)	63.0	40.7	30.6
EV/EBITDA (x)	30.9	25.0	20.0
P/BV (x)	6.4	5.1	3.9

Source: Company, Way2Wealth

**Relative Performance**







Return(%)	1Yr	3Yr	5Yr
<b>AMPL</b>	<b>136.3</b>	<b>314.0</b>	<b>668.3</b>
<b>Nifty50</b>	26.7	50.3	103.3
<b>Sensex</b>	22.8	45.7	100.5

Source: Company, Way2Wealth

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91-22-4019 2914

**Hyderabad, Telangana**
**Karnataka**

Unit I	Unit II	Unit III	Unit IV	Unit V	Bengaluru Unit
 Land : 1.13 Acres Building : 18,000 Sq. Ft Status : Own Year : 1999 <b>Facility Offering</b> Automatic weather Station AWS and other Hyderology & Meteorology	 Land : 20 Acres Building : 20,000 Sq. Ft Status : Own Year : 1995 <b>Facility Offering</b> Near Field Test Range Out-Door Test Range Multi-Layer Antenna Fabrication	 Land : 9.9 Acres Building : 77,000 Sq. Ft Status : Own Year : 2003 <b>Facility Offering</b> Clean Room Laser Welding Vibration Table	 Land : 19.0 Acres Building : 1,80,000 Sq. Ft Status : Own Year : 2009 <b>Facility Offering</b> EMI/EMC Halt/Hass Chamber ESS Chamber	 Land : 0.59 Acres Building : 23,000 Sq. Ft Status : Own Year : 2019 <b>Facility Offering</b> MIC Facility CNC Drilling Copper Plating Gold Plating Etching developing	 Land : 5.0 Acres Building : 1,00,000 Sq. Ft Status : Own Year : 2012 <b>Facility Offering</b> Near Field Test Range (NFTR) Satellite Integration Facility
<b>Equipped with</b>	Clean room compatible oven for curing epoxy	Temperature controlled hot plate with nitrogen purging facility for eutectic attachment	High-precision bonding machines	ESD measurement equipment	DC probing station for on-chip measurement of DC parameters

Source: Company, Way2Wealth

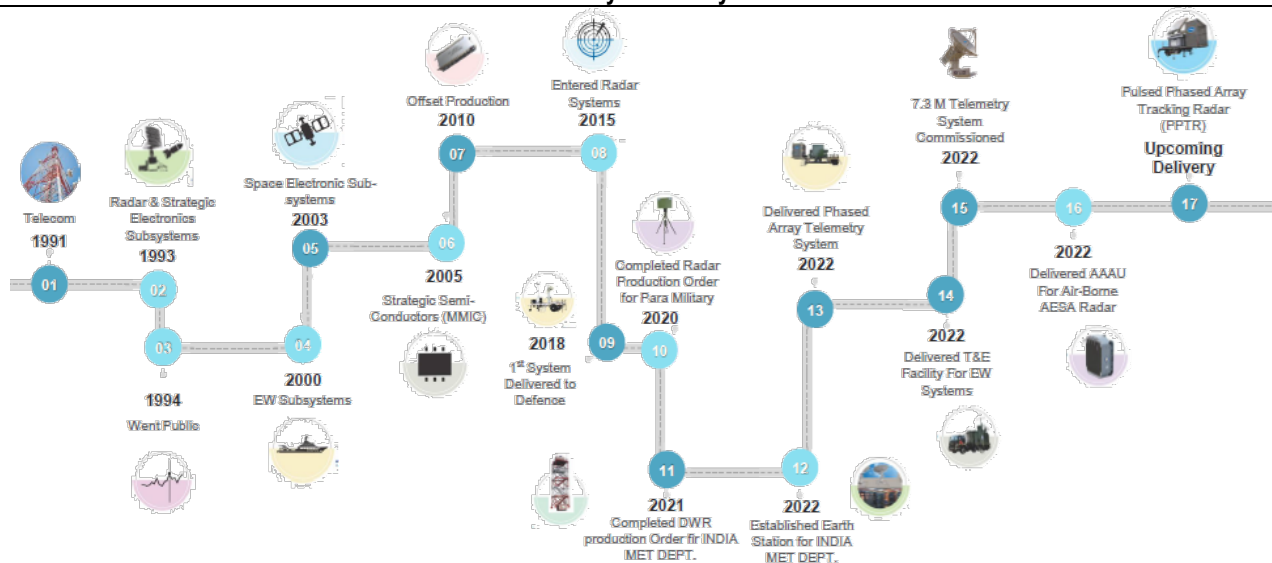
**2. Experienced management with reputation**

- **Mr. S. Gurunatha Reddy – M.D** – Worked in private sector industry and gained over 33 years of experience in accounting, finance, taxation, secretarial etc.
- **Dr. Maram Venkateshwar Reddy – Jt. M.D.** – 28 years of experience in handling Marketing and Business operations in the domain of Defense, Space and Telecom segment in India and Overseas Market.
- **Mr. Atim Kabra – Executive Director Strategy & Business Development** – Founder and Managing Director of Frontline Strategy Funds Pte. Ltd., a Singapore registered & licenced VCFM. Over 25 years of well rounded "equities exposure" including Portfolio Management, Equity Sales and Equity Research with global institutions like ABN AMRO Bank, ANZ Grindlays Bank.
- **Dr. Avinash Chander – Chairman** – Doctorate from JNTU Hyderabad. Retired Secretary, Defence R&D and Director General, DRDO.
- **Mr. P. A. Chitrakar – Head of R&D** – Associated with the Defence Electronics Laboratory, Hyderabad, as a scientist for over 20 years before co-founding Astra Microwave.
- **Mr. S. Varadarajan – Independent Director** – Retired Director of the Electronics & Radar Development Establishment (LRDE), Bengaluru.

**3. Highly regarded management, In-house engineering facilities and Clientele enabling in design, development and production of critical sub-systems and systems for its customers for various platforms**

+30 years of experience in Radar, EW & Strategic Electronics domain has enabled it to move up the value chain from modules & sub-systems to Systems & System of Systems. Product range includes radars, missile electronics, electronic warfare, satellites, MMIC (Monolithic Microwave Integrated Circuit) and communication systems. Has a proven track record of making high value-added systems, RF and microwave super components and sub-systems which are becoming more relevant due to various government initiatives like IDDM, MAKE-II with projects backed by various DRDO Labs, Defense PSUs, Various ISRO Centers and foreign OEMs.

**+30 yrs Journey**



**Defence**

- Radars
- Electronic Warfare
- Missile Electronics
- Telemetry
- Counter-Drones

**Space**

- Flight Model Application
- Ground based Application
- INSAT MSS Terminals

**Hydro/Meteorology**

- Water Level Measurement (Bubbler/ Radar Sensor)
- Automatic Weather Stations (AWS)
- Agromet Met Stations (AMS)
- Automatic Rain Gauge (ARG) X Band Doppler Weather Radar

**Other areas of work**

- Antennas
- MMIC
- Contract Manufacturing
- Homeland Security

Source: Company, Way2Wealth

The company's strong relationship with large corporations builds its brand equity and helps it in establishing itself as a prime contractor for large and longer-term programs in the marketplace



**Major stake in upcoming Defence Programs**



Light Combat Aircraft

AATRU FOR ASPJ

AAAU for Uttam AESA Radar

AAAU for LRMFR

AAAU for AEW&CS

Long Range Radar TRMs, BSNs, PS

Medium Power Radar DTRMs

Source: Company, Way2Wealth

### Products Developed over the years –

- **Homeland Security** – Counter UAV Radar – **Drishti**, Perimeter Intrusion Detection Radar.
- Design & Development of complete **Active Array Antenna Unit (AAAU) hardware, Signal Processing & Radar Data Processing for AESA Multi- Function Radar.**
- Supplying various kinds of EW sub systems and components to DPSUs and to the programs of Indian Airforce, Indian Navy and Indian Army. Also **associated with Jammer's program of LCA Mk1A, Su-30 MKI and other fighter platforms in India.**
- **Supplying various subsystems for Telemetry applications** such as S-Band FM Transmitter Airborne RF Trans receiver, Ground Up Down Converters, C & S band switch antenna systems, Telemetry Tracking Systems etc.
- **Supplying telemetry subsystems to LCA and Intermediate Jet Trainer (IJT) aircraft.**
- Design developed and manufactured components and sub-systems used in ground-based modules and S level(on-board) modules for various space programmes.
- **Astra has been among the key players for the development of sub-systems for India's Radar Satellite & Geosynchronous Satellite program, Resourcesat, Megatropics and Cartosat for Indian space programs by ISRO.**

### Key projects participated over the years –

- Line Replacement Units (LRUs) supplied to 3D-CAR Ashlesha & Arudhra Radars.
- Developed & supplied Radar & EW Systems Test & Evaluation Facility (50 MHz – 40 GHz) to DLRL to carry out T&E of EW systems in Radiation mode.
- Supplied Transmit/Receive (T/R) Modules & Control Units for Electronics & Radar Development Establishment (LRDE's) Long Range Radar (LRR).
- Developed & supplied a Land-based 7.3m Ground Telemetry Station which is designed to acquire and track airborne targets using five different carriers simultaneously.
- Proto Development & Production of Digital Transmit Receive Units (DTRUs) and Digital Receive Units (DRUs) for Digital Active Phased Array (DAPA Technology Demonstrator Project Shakti Project Sub-modules & Nayan Project Sub-modules.
- Developed, Supplied & Commissioned 11 X-DWRs.
- Developed & Supplied Active Array Antenna Unit (AAAU) for UTTAM AESA Radar for LCA Mk1A fighter aircraft.
- Developed & Supplied X-band AESA Seeker Head.

### Products/ Projects lined up for Future –

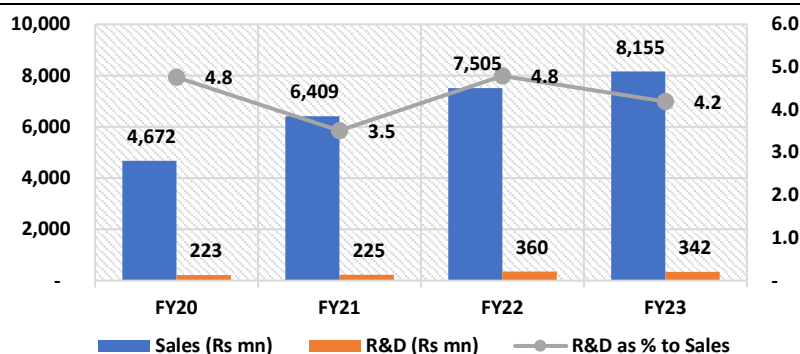
- Micro-components for Akash-NG.
- Telemetry and Altimeter for Brahmos.
- Demonstration of first anti-drone system in Q1FY25.
- Earth Observation and Nano satellites (with custom usage to micro and large satellites), Communication payloads, signal controls, reconnaissance capabilities, high-end optics, hyper spectral cameras, with uses in agriculture, Internet penetration on a wider scale, effective communications, remote sensing as well as warfare.
- LCA Mark-2, AEW&C Mark-1A & Mark-2, UTTAM Radar (AMPL is expecting production order of UTTAM radars soon for the first series of limited production. ~440 UTTAM radars are likely for LCA Mk1, considering additional 97 nos. that are being discussed. Awaiting RFP from DRDO for Su-30 radars from DRDO).

#### 4. New product development on the back of R&D focus to be one of the growth drivers for AMPL

With over 30 years of domain expertise in microwave and radio frequency applications, AMPL has moved up the value chain from manufacturing sub-systems to development and manufacturing a wide range of high-end, critical microwave and radio frequency application-based equipment such as Monolithic Microwave Integrated Circuit (MMIC) products, multi object tracking radar and airborne radars. The company is one of the few private sector manufacturers in India with in-house capabilities of designing, developing and manufacturing critical microwave and radio frequency based equipment that find applications across defence, space, meteorology and telecom and civil communications. With strong manufacturing capabilities and focus on research and development, company has been able to create a strong track record of new product development and R&D of sub-systems for various defence,

space and meteorological programs. Moreover, company has the capability of designing and developing Gallium Nitride (“GaN”) TRMs (Transmit & Receive Modules) and are currently working with defence agencies for incorporating such TRMs in modernising existing radars of upcoming fighter aircrafts like Su-30 Mk-1, LCA Mk-2 and AMCA.

- **New product development to accelerate growth** – Develop products in close association with government research organizations for defence and space. Enter commercial end user markets for radars.
- **Focus on Research & Development** – Invest in modern technology and equipment's to address changing industry trends and customer requirements. Leverage strong R&D base to broad base domestic offerings. Developing digital expertise by spending more on R&D.

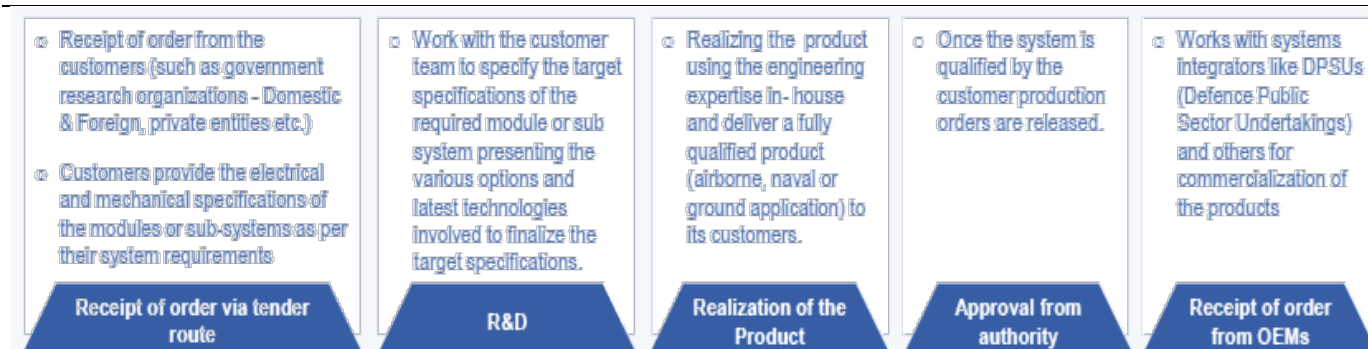


Source- Company, Way2Wealth

- 567 R&D professionals, out of which over 103 have a master’s degree, 4 hold doctorate degrees and over 100 have decade-plus experience. **Dedicated research and development facility in Bengaluru with modern equipment and in Hyderabad at Unit-III & Unit-IV enabling participation in multiple MAKE-II programs of IAF & IA for various Radar Systems.**
- **Joint Ventures and Strategic alliances** –Through JV or strategic alliances (Example – Astra Rafael Comsys Private Ltd – ARC), offer improved technology and products. **Target the offset requirement in large defence procurement programmes of GoI.** Exploring the areas in the anti-drone, EW, satellites, Software Defined Radio (SDRs) and electro-optics through JVs. In discussion with our JV partners to expand the SDR product portfolio to develop EO (electro-optics) product line.

**5. Advanced manufacturing as well as R&D facilities along with strong in-house capabilities enabling execution of orders through Build to Specifications (BTS) and Build to Print (BTP) routes.**

**Build to Specifications (BTS)** – Projects with various **DRDO Labs, Defense PSUs** and various **ISRO Centers** which are **High value addition leading to better margins.**



Source- Company, Way2Wealth

AMPL has produced more than US\$ 150mn worth of high-end modules under **Build to Print (BTP)** route with Foreign OEMs which are **marginal value addition acting as capacity filler**. The defence offset policy mandates a foreign vendor to source at least 30% of the value of an order (when the order is worth +₹20bn) from Indian manufacturers. Astra has been active in tapping this opportunity and its export business is driven by these offset provisions.

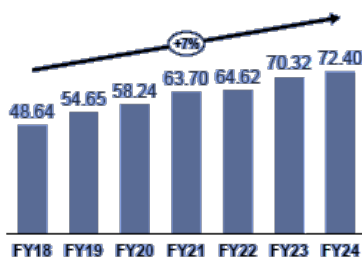


Source- Company, Way2Wealth

### 6. Government backing in Defence manufacturing under “AtmaNirbhar Bharat” initiative enabling AMPL for bidding for the whole system - for both DRDO and for future MoD requirements

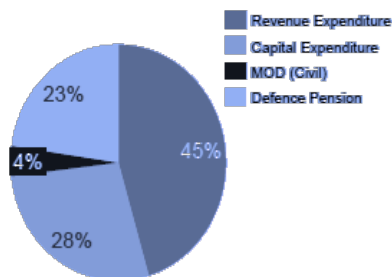
India's extensive modernisation plans, an increased focus on homeland security to increase government allocation for defence expenditure along with Make in India focus are expected to drive healthy growth in the sector. The Defence Research and Development Organisation (DRDO) is ushering into a new phase of reforms aimed at developing futuristic military weapons and supporting the government's initiative to boost domestic defence manufacturing. DRDO that has a network of over 50 labs across the country will engage in developing defence technologies from nuclear armaments to fighter jets and UAVs, data analytics, laser technology, combat vehicles, engineering systems, missiles, advanced computing and naval systems. The Ministry of Defence (MoD) has already outlined in its broad roadmap to make India a hub of defence manufacturing and has been taking policy initiatives to promote the domestic industry.

#### Growing Defence Budget (in Bn \$)



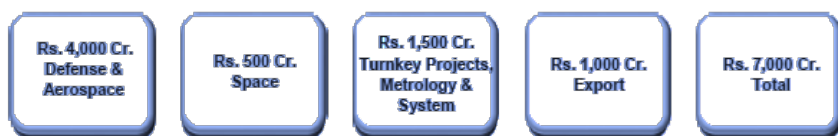
India is the 3rd largest military spender

#### Defence Budget Components - FY24



Source: Ministry of Defence - Budget

#### Business Potential till 2028



Source: Company, Way2Wealth

#### The Indian government has taken various initiatives to promote on indigenization in this space:

Atma Nirbhar Bharat | Imports Embargo

The Indian government has set the defence production target at USD 25 bn by 2025 (including US\$5 bn from exports by 2025)

ISRO has planned multiple deep space and experimental missions to strengthen India's position in global space industry through new technology development

Indigenous shipbuilding with a remarkable increase in capability and programme fulfillment

Defence Acquisition Procedure, 2020

Category	Indigenous Content (IC)
Buy (Indian-IDDM)	Indigenous design and ≥ 50%
Buy (Indian)	In case of Indigenous design ≥ 50% otherwise ≥ 60%
Buy and Make (Indian)	≥ 50% of the 'Make' portion Category not present
Buy (Global - Manufacture In India)	50% or more
Foreign Vendor	Foreign Vendor - Nil/ Indian Vendor ≥ 30%

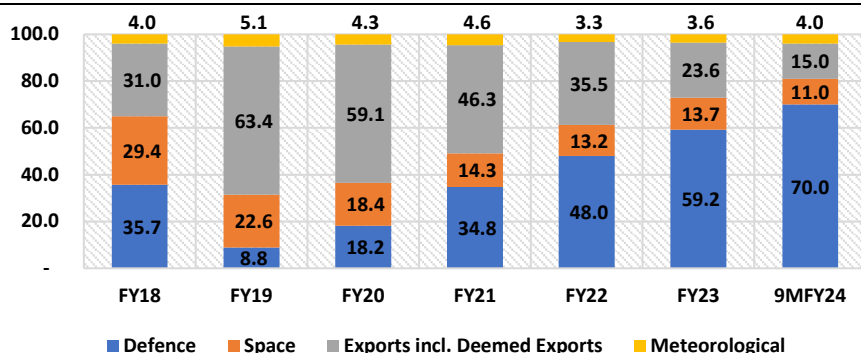
DRDO has substantially enhanced the technological capabilities of Indian industry through various policy initiatives, sustained engagements and sustained technology transfers. DRDO is taking these efforts to the next level to transform India into a hub of advanced defence technologies, developing state of the art defence equipment and systems. Government policies, especially concerning 'Make in India', 'Start-up India', 'Stand up India', 'Skill India' and 'Atmanirbhar Bharat' have provided many new opportunities. These are being leveraged to develop defence R&D and manufacturing eco-system in the country.

In the Interim Budget 2024, the Defence Budget has touched ₹6.21tn in the FY25 which comes out to be 13.04% of total Union Budget. Budgetary allocation for capital expenditure in Defence for FY 25 was at ₹1.72tn which is 20.33% higher than the actual expenditure of FY23 and 9.40 % more than the Revised Allocation of FY24. The enhanced budgetary allocation will facilitate in equipping the Armed Forces with state-of-the-art, niche technology lethal weapons, Fighter Aircraft, Ships, Platforms, Unmanned Aerial Vehicles, Drones, Specialist Vehicles etc.

The budgetary allocation to DRDO has been increased to ₹238.6bn in FY25 from ₹232.6bn in FY24. Of this allocation, a major share of ₹132.08bn is allocated for capital expenditure. This will financially strengthen the DRDO in developing new technology with special focus on fundamental research and hand-holding the private parties through Development-cum-production partner. Allocation to Technology Development Fund (TDF) scheme was at ₹600mn which is especially designed for new start-ups, MSMEs and academia attracting the young bright minds interested in innovation and developing niche technology in the field of defence in collaboration with the DRDO along with ₹1tn corpus for “Deep Tech” for long term loan to tech-savvy youth/companies and the tax advantage to the start-ups will give further impetus to innovation in the defence sector.

### 7. Healthy order-book position with buoyant prospects & pipeline presents strong growth visibility

AMPL has been able to create a diversified and healthy order book on the back of its strong capabilities and proven track record of making high value-added systems, RF and microwave super components and sub-systems **Order backlog at ₹18.13bn (70%-Defence; 11%-Space; 15%-Exports; 4%- Meteorological)** as of 31Dec23.



Source: Company, Way2Wealth

The defence segment, which contributes 70% to the company's order backlog as on 31Dec23 and is well positioned in terms of increasing domestic procurements by the government for our armed forces. A structural shift in defence sector is clearly visible with increasing allocation for modernised indigenous platforms. As per the estimates, contracts worth ~₹5tn for military equipments are likely to be placed from government with the domestic industries in the next five years, in line with its policy of promoting indigenous defence manufacturing.

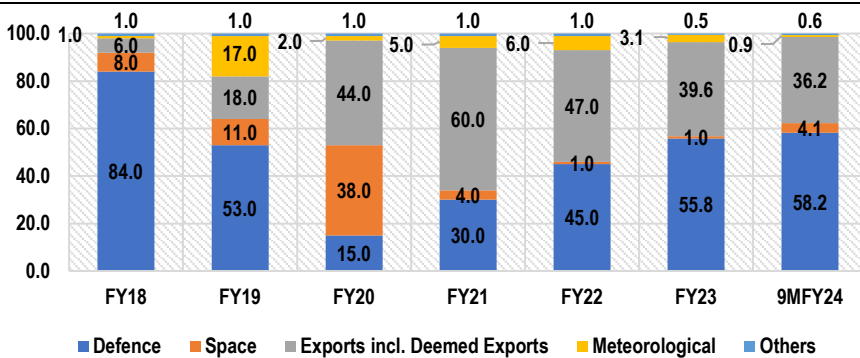
With an increasing demand for induction of strong & modern warfare technologies and combat defence platforms into the armed forces, pushing the demand for defence electronics products. This creates a strong demand outlook for products/systems like electronic warfare, radars, communication systems, navigation systems etc in defence platforms across aerospace, missiles, naval warships, underwater weapons like torpedoes and ground-based defence platforms. As per the industry estimates, the Indian defence electronics is expected to clock 13-14% CAGR over FY22-27 to reach ₹650-700bn by FY27. Improving technology is demanding increased usage of electronics, expanding the share of defence electronics in total defence production. The share of defence electronics is projected at 40-42% of total defence production by FY27 as against current share of 36-37% thus benefitting AMPL products, Sub-systems and systems.

**COMPETITIVE LANDSCAPE**

	Systems	Supplied >25 Radars	Sub-Systems	Components	MMIC	Planar Antenna Testing (NFTR)
BDL	☑					
BEL	☑	☑	☑	☑	☑	☑
L&T	☑					
Mahindra Defence	☑					
Bharat Forge	☑		☑			
Adani Defence	☑		☑			
<b>Astra Microwave</b>	☑	☑	☑	☑	☑	☑
Paras Defence	☑		☑			
Data Patterns	☑		☑	☑		
Centum Electronics			☑	☑		
CoreEL			☑	☑		
Mistral			☑	☑		
Alpha Design	☑		☑	☑		
TASL	☑		☑			

Source- Company, Way2Wealth

**Aims to achieve in Domestic: Export – 70:30% Revenue distribution over next 2-3 years.**  
 Domestic business on an average carries 40- 45% of gross margin as against 8 -10% gross margin in exports.



Source- Company, Way2Wealth

Major opportunities for AMPL of around Rs 24,000-25,000 Crs across all sectors till FY28.



Source- Company, Way2Wealth

**8. Incorporated on 17Feb24, new wholly owned subsidiary Astra Space Technologies Pvt Ltd for design, development, manufacture and integration of satellites, satellite payloads, launching of satellites and establishment of ground stations for satellite tracking**

Space segment (4.1% of order backlog at present) too presents a sizable opportunity for the coming in coming period as the company holds significant position in development of sub-systems for various space programs by ISRO. As per the estimates, Indian space economy - consisting of ground systems and satellite manufacturing - is projected to grow by 1.5x during CY23-27 from CY18-22, reaching a cumulative order book of ₹600-650bn. Astra Space Technologies in partnership with New Space India Limited (NSIL) is working on small satellites with synthetic aperture radar (SAR) payload. It has got technology transfer from ISRO along with plans for satellite integration, testing and launch of its own next satellite in the next couple of years. Facilities for the same will be built at its existing Bangalore unit and the company has budgeted to spend about ₹400mn in the next 3 years.

**AMPL's SUBSIDIARIES – Bhavyabhanu Electronics Pvt Ltd (BEPL)** is a fully owned subsidiary of Astra Microwave. Established with State-of-the-Art manufacturing & test facilities to meet Global Standards. A dependable player with excellent technological capabilities and a long-term commitment to the defense, aerospace, medical and industrial electronics industry. **FY23:- Revenue – ₹699.6mn; PAT – Loss of ₹42.8mn. FY22:- Revenue – ₹466.2mn; PAT – Loss of ₹27.3mn.**

**Aelius Semiconductor Pte Ltd (100% stake) – A fabless Monolithic Microwave Integrated Circuit (MMIC) Design House**, based in Singapore. **Aelius Semiconductors develops Gallium Arsenide (GaAs) and Gallium Nitride (GaN) MMIC products** based on a robust and reliable design philosophy. These designs are fabricated at leading foundries across the world. The products are tested and packaged as per customer's requirement utilising state-of-the-art facilities. **Aelius's unique and wide range of MMIC products are focused primarily on the Defense and Space industries, with competitive timelines and prices. FY23:- Revenue – ₹45.25mn; PAT – ₹2.9mn. FY22:- Revenue – ₹69mn; PAT – ₹23.2mn.** In future, AMPL might fabricate in India as the Indian government is seeking foreign investments ( \$10bn PLI scheme worth \$10bn launched in Jun'23) for its indigenous semiconductor industry for the development and design of fabs; Assembly, testing, marking, and packaging (ATMP) and specialty fabs among others.

**Astra Microwave Products Ltd and M/s RAFAEL ADVANCED DEFENSE SYSTEMS LTD., Israel (RAFAEL)** came together to form a JV company called **Astra Rafael Comsys Private Ltd. (ARC)** in Aug'19. Focuses on indigenous technology and AtmaNirbhar Bharat programmes. **Engages in carrying out production, integration, customisation, marketing, sale, life cycle support and additional activities as required in the fields of Tactical Radio Communication systems, Electronic Warfare Systems and Signal Intelligence Systems.**

### KEY RISKS

- **Key downside risks – i) Technology Obsolescence & RM cost. ii) Working capital management** – continuous investment in working capital impedes FCF generation. This has been a key problem faced by AMPL in the past cycle. **iii) Missing domestic defence and space orders**, thereby top-line growth does not lead to commensurate profit growth and upgrade cycle fails to pick up.
- **Key upside risks – i) Possible divestment of AMPL's promoter stake** (now at 6.5%), and **ii) Pick-up in domestic order inflow** in line with the **domestic defence capital budget in FY25.**

**VIEW**

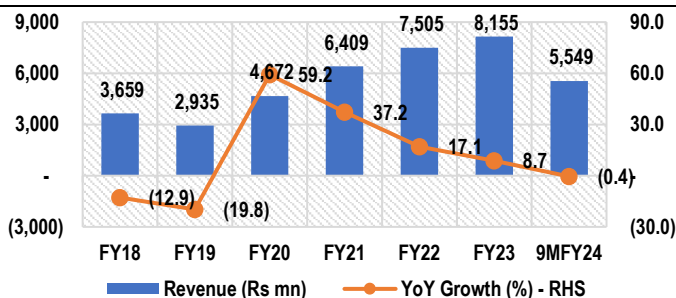
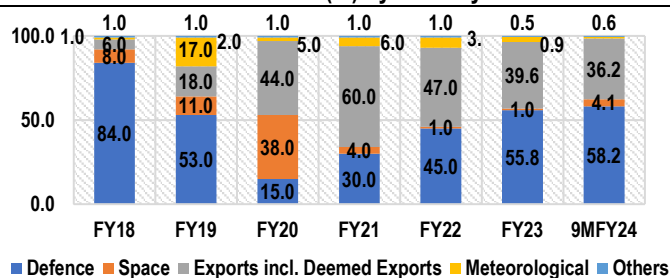
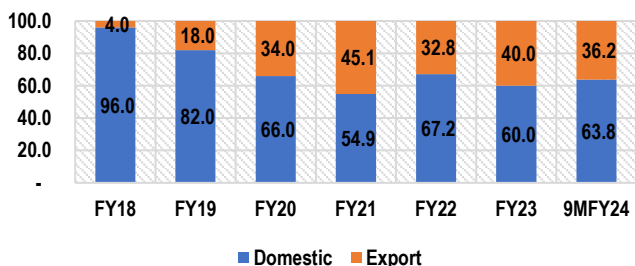
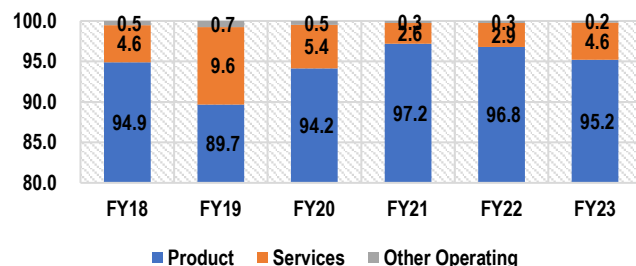
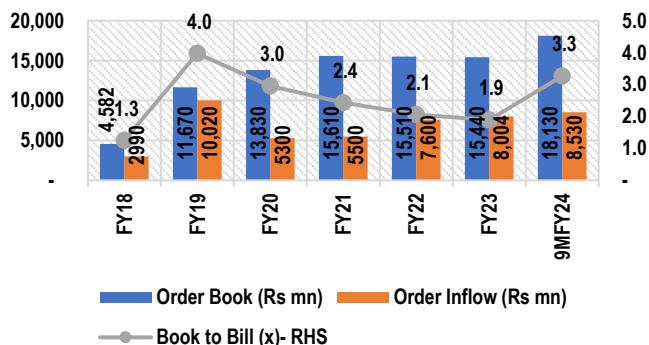
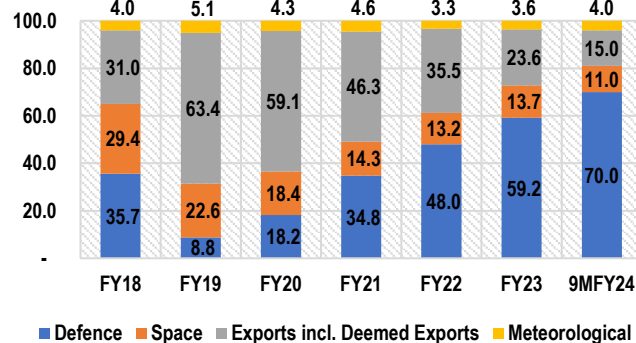
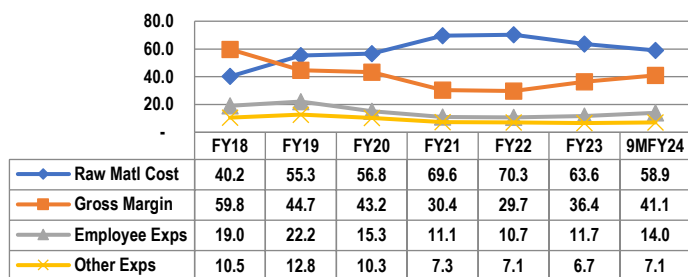
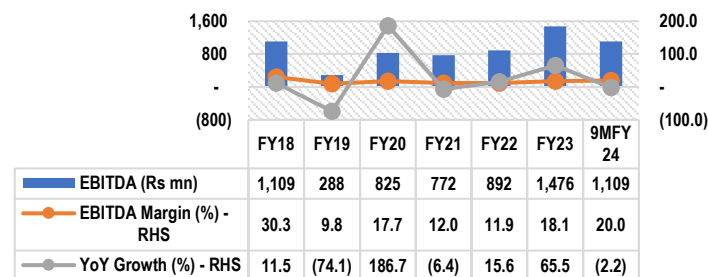
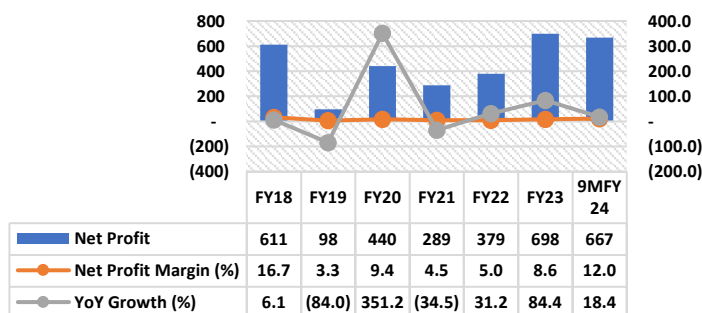
**Astra Microwave Products Ltd (AMPL)** is strongly placed to capture a bigger pie of the growing Indian defence sector with deep domain expertise and high focus on R&D enabled by strong backing from DRDO Labs, Defense PSUs and various ISRO Centers. It has designed, developed and produced critical sub-systems/systems for various airborne, naval and ground based platforms Radar, Missile Electronics, Electronic Warfare (EW), Satellites, MMIC and Communication. With strong domain expertise in microwave and radio frequency applications, it has moved up the value chain from manufacturing sub-systems/components to development & production of a wide range of high-end, high-value critical microwave and radio frequency application-based equipments like Gallium Nitride (GaN) Transmit/Receive Modules (TRMs), NavIC (Navigation with Indian Constellation) chips and other key radars & EW systems etc. With strong tailwinds in defence & space sectors in terms of indigenising key systems/sub-systems, the orders inflows opportunity for AMPL is huge in both domestic and export markets. It is well placed to witness healthy growth led by strong sector tailwinds. Govt's focus on indigenisation, increasing usage of electronics in defence & space, strong order backlog, healthy orders pipeline and execution of high-margin domestic orders would drive earnings in coming period. **Hence, we recommend it as a BUY stock with Target range ₹730-740 trading at P/E 30.6x FY26E EPS of ₹20.2**

**Q3FY24 Revenue/EBITDA/PAT grew ~5%/~30%/~57% YoY to ₹2.3bn/₹662mn/₹434mn**

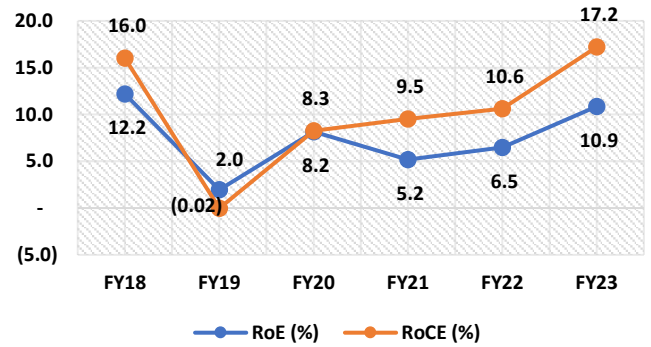
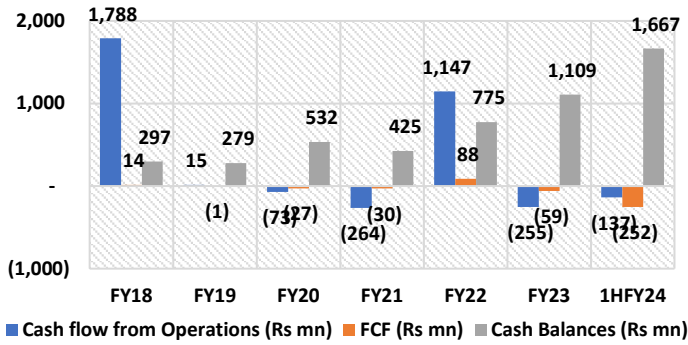
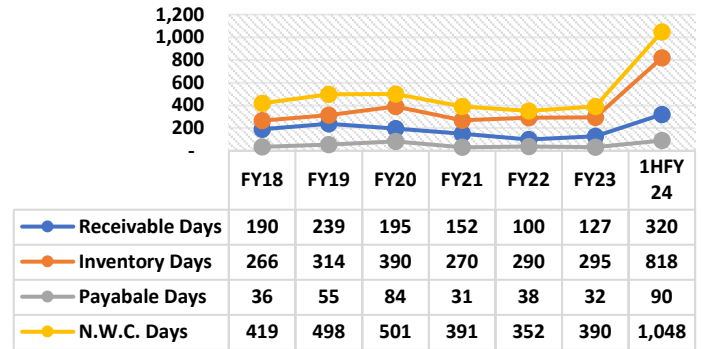
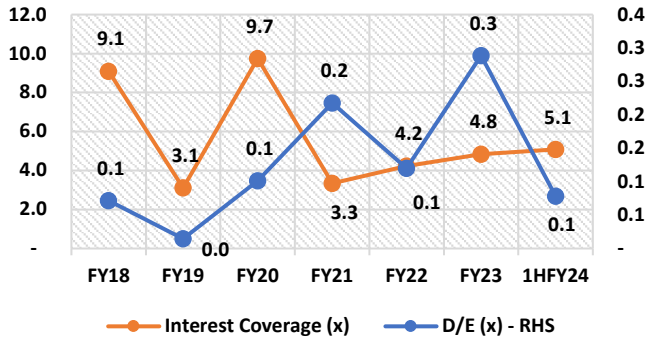
Particulars (₹ mn)	Q3FY24	Q3FY23	YoY (%)	Q2FY24	QoQ (%)	9MFY24	9MFY23	YoY (%)
<b>Revenue</b>	<b>2,310.2</b>	<b>2,203.0</b>	<b>4.9</b>	<b>1,901.2</b>	<b>21.5</b>	<b>5,548.7</b>	<b>5,570.7</b>	<b>(0.4)</b>
Cost of Matl	1,171.2	1,306.4	(10.3)	1,204.2	(2.7)	3,515.3	3,596.3	(2.3)
Inventory Changes	46.8	(9.5)	591.4	(113.3)	141.3	(246.5)	(206.2)	19.6
Raw Matl Cost	1,218.0	1,296.9	(6.1)	1,090.8	11.7	3,268.8	3,390.1	(3.6)
Employee Exps	307.2	264.6	16.1	254.6	20.7	776.3	677.9	14.5
Other Exps	123.5	132.3	(6.6)	139.3	(11.3)	394.8	369.3	6.9
<b>EBITDA</b>	<b>661.5</b>	<b>509.3</b>	<b>29.9</b>	<b>416.5</b>	<b>58.8</b>	<b>1,108.8</b>	<b>1,133.5</b>	<b>(2.2)</b>
<b>EBITDA Margin (%)</b>	<b>28.6</b>	<b>23.1</b>	<b>552</b>	<b>21.9</b>	<b>673</b>	<b>20.0</b>	<b>20.3</b>	<b>(36)</b>
Other Income	35.9	16.4	119.5	34.1	5.3	89.9	45.1	99.3
Finance Cost	81.4	82.4	(1.1)	62.3	30.8	218.2	209.0	4.4
Depreciation	66.4	60.3	10.1	62.7	5.8	185.6	173.8	6.8
JV & Associates – Profit/(Loss)	25.4	(1.2)	2,195.8	58.5	(56.6)	82.5	(15.9)	619.1
PBT	575.0	381.8	50.6	384.2	49.7	877.4	779.9	12.5
Tax Exps	141.2	104.9	34.6	83.9	68.2	210.7	216.9	(2.8)
<b>Net Profit</b>	<b>433.8</b>	<b>276.8</b>	<b>56.7</b>	<b>300.2</b>	<b>44.5</b>	<b>666.6</b>	<b>563.1</b>	<b>18.4</b>
EPS (₹)	4.6	3.2	42.9	3.2	44.5	7.0	6.5	8.0

As % to Sales	Q3FY24	Q3FY23	YoY (BPS)	Q2FY24	QoQ (BPS)	9MFY24	9MFY23	YoY (BPS)
Raw Matl Cost	52.7	58.9	(615)	57.4	(465)	58.9	60.9	(194)
Gross Margin	47.3	41.1	615	42.6	465	41.1	39.1	194
Employee Exps	13.3	12.0	129	13.4	(9)	14.0	12.2	182
Other Exps	5.3	6.0	(66)	7.3	(198)	7.1	6.6	49

Source- Company, Way2Wealth

**PAST PERFORMANCE**
**Revenue at 17.4% CAGR FY18-23**

**Revenue Mix (%) by Industry**

**Revenue Mix (%) by Geography**

**Revenue Mix (%) by Segment**

**Order Book/ Order Inflow CAGR ~22%/~28% FY18-23**

**Order Book Mix (%)**

**Cost as % to Sales**

**EBITDA CAGR ~6% FY18-23**

**PAT CAGR ~3% FY18-23**


Source: Company, Way2Wealth

**Negligible Debt & Stable W.C mgmt enabled Strong cash flows & Return ratios**


Source: Company, Way2Wealth

**FINANCIALS & VALUATIONS**

(₹ mn)

Particulars	FY18	FY19	FY20	FY21	FY22	FY23	FY24E	FY25E	FY26E
Order Book	4,582	11,670	13,830	15,610	15,510	15,440	18,580	22,608	29,915
Order Inflow	2,990	10,020	5,300	5,500	7,600	8,004	11,530	14,130	18,130
Defence	3,073.3	1,555.5	700.8	1,922.7	3,377.1	4,550.6	4,898.4	6,612.8	8,974.4
Space	292.7	322.8	1,775.5	256.4	75.0	81.6	337.8	395.6	472.3
Exports incl. Deemed Exports	219.5	528.3	2,055.8	3,845.5	3,527.2	3,229.4	3,040.4	4,012.9	5,746.7
Meteorological	36.6	498.9	93.4	320.5	450.3	252.8	84.5	113.0	126.0
Others	36.6	29.3	46.7	64.1	75.0	40.8	84.5	169.6	425.1
Revenue	3,658.7	2,934.9	4,672.2	6,409.1	7,504.6	8,155.2	8,445.5	11,304.0	15,744.5
EBITDA	1,108.9	287.8	824.9	771.9	892.2	1,476.2	1,731.0	2,427.0	3,188.0
EBITDA Margin (%)	30.3	9.8	17.7	12.0	11.9	18.1	20.5	21.5	20.2
PAT	610.9	97.6	440.4	288.6	378.7	698.3	935.0	1,448.0	1,922.0
EPS (₹)	6.4	1.0	4.6	3.0	4.0	7.4	9.8	15.3	20.2
DPS (₹)	1.2	0.3	1.2	1.2	1.4	1.6	1.8	2.0	2.2
RoE (%)	12.2	2.0	8.2	5.2	6.5	10.9	11.8	13.2	14.9
RoCE (%)	16.0	(0.02)	8.3	9.5	10.6	17.2	18.2	20.1	21.8
Cash Balances	296.8	279.1	532.3	425.3	774.8	1,108.6	1,976.0	2,189.0	2,467.0
FCF	14.5	(1.5)	(26.7)	(30.0)	87.6	(58.8)	(132.2)	248.7	568.2
Receivable Days	190	239	195	152	100	127	121	118	115
Inventory Days	266	314	390	270	290	295	287	276	260
Payable Days	36	55	84	31	38	32	35	34	33
Net Debt/ Equity (x)	0.01	(0.04)	0.00	0.14	(0.01)	0.12	0.10	0.10	0.08
P/E (x)	96.4	603.2	133.7	204.0	155.5	84.3	63.0	40.7	30.6
EV/EBITDA (x)	53.3	206.3	72.0	75.8	66.9	40.1	30.9	25.0	20.0
P/BV (x)	11.8	11.8	10.9	10.5	10.1	9.2	6.4	5.1	3.9
PEG	15.8	(7.2)	0.4	(5.9)	5.0	1.0	1.9	0.7	0.9

Source: Company, Way2Wealth

**PEER COMPARISON**

COMPANY	CMP (₹)	MCAP (₹ mn)	Revenue (₹ mn)				EBITDA (₹ mn)				EBITDA Margin (%)				PAT (₹ mn)				EPS (₹)			DPS (₹)			
			FY21	FY22	FY23	9MFY24	FY21	FY22	FY23	9MFY24	FY21	FY22	FY23	9MFY24	FY21	FY22	FY23	9MFY24	FY21	FY22	FY23	FY21	FY22	FY23	
Astra Microwave	620.2	58,880.10	6,409	7,505	8,155	5,549	772	892	1,476	1,109	12.0	11.9	18.1	20.0	289	379	698	667	3.0	4.0	7.4	7.0	1.2	1.4	1.6
Bharat Electronics	215.2	15,73,064.40	1,40,638	1,53,680	1,77,340	1,16,410	31,811	33,440	40,900	27,180	22.6	21.8	23.1	23.3	20,654	23,489	30,067	22,360	2.9	3.3	4.1	3.0	4.0	4.5	1.8
Data Patterns	2,691.1	150,655.7	2,240	3,109	4,535	3,375	920	1,410	1,718	1,287	41.1	45.4	37.9	38.1	556	940	1,240	1,106	9.9	16.8	22.1	19.7	-	-	-
Paras Defence & Space	716.7	27,949.40	1,430	1,830	2,224	1,738	430	520	560	387	30.1	28.4	25.2	22.3	160	270	360	204	5.1	6.9	9.2	5.7	-	-	-

COMPANY	CMP (₹)	MCAP (₹ mn)	RoE (%)			RoCE (%)			P/E (x)			EV/EBITDA (x)			P/BV (x)			MCAP/Sales (x)		
			FY21	FY22	FY23	FY21	FY22	FY23	FY21	FY22	FY23	FY21	FY22	FY23	FY21	FY22	FY23	FY21	FY22	FY23
Astra Microwave	620.2	58,880.10	5.2	6.5	10.9	9.5	10.6	17.2	20.4	155.5	84.3	75.8	66.9	40.1	10.5	10.1	9.2	9.2	7.8	7.2
Bharat Electronics	215.2	15,73,064.40	19	20.6	23.5	19.9	28.1	30.1	75	65.6	52.7	47.9	46.7	36.6	14.5	13.1	11.6	11.2	10.2	8.9
Data Patterns	2,691.10	150,655.70	26.7	16.4	10.6	26.3	19	11.4	271.1	160.4	121.5	164	105.6	84.6	67.2	24.3	12.9	67.3	48.5	33.2
Paras Defence & Space	716.7	27,949.40	9.5	8	9.7	13.6	11.1	12.3	141.9	103.9	77.8	65.7	53.6	49.9	13	8.3	7.5	19.5	15.3	12.6

COMPANY	CMP (₹)	MCAP (₹ mn)	Cash flow from Operations (₹ mn)		FCF (₹ mn)			Cash Balances (₹ mn)			Net D/E (x)			Interest Coverage (x)			NWC Days			
			FY21	FY22	FY23	FY21	FY22	FY23	FY21	FY22	FY23	FY21	FY22	FY23	FY21	FY22	FY23	FY21	FY22	FY23
Astra Microwave	620.2	58,880.1	(264)	1,147	(255)	-30	88	-59	425	775	1,109	0.1	0	0.1	3.3	4.2	4.8	391	352	390
Bharat Electronics	215.2	15,73,064.40	51,035	1,545	69,623	46,371	-6,631	79,173	50,085	12,390	77,250	-0.5	-0.1	-0.6	461.4	64.6	27	248	236	261
Data Patterns	2,691.10	150,655.70	434	522	(172)	377	140	-567	88	1,771	5,445	0.1	-0.3	-0.5	6	12.2	21.1	341	292	371
Paras Defence & Space	716.7	27,949.4	40	120	460	880	1,010	204	760	400	160	0.1	0	0	2.8	7	9.7	574	475	480

Source: Company, Way2Wealth

**TECHNICAL VIEW**
**Weekly Chart**

 ASTRAMICRO [N11618] 614.85, -1.09%  
 Price Avg(E,3) Avg(E,9) Avg(E,100) Avg(E,200)


Source : www.SpiderSoftwareIndia.Com

Vol

 LOG IRIS  
 614.85  
 540  
 480  
 420  
 360  
 300  
 240  
 180  
 120  
 60.00  
 Lk  
 200  
 150  
 100  
 50.00  
 9.36

The monthly chart structure for ASTRAMICRO looks very positive in long term as the stock is well placed above all its long term 100 -days & 200 – days exponential moving averages. The stock has been moving within the rising upward sloping channel since April 2020 suggests that the stock would remain uptrend. Tracking momentum indicators, the 14 days of momentum oscillator RSI is trading below the 9 days EMA suggesting consolidation mode. Technically the stock is entered into a consolidation phase after it hit a peak of 694 on 09th Feb 2024. According to the daily and weekly price trend line, ASTRAMICRO is likely to remain positive bias in long term scenario and it has found the key resistance level of 665/685. Break out of 685 levels would invite further buying and then the stock can move towards 720/745 levels in medium to long term scenario. On the lower side, the support lies at 580/548 levels. Investors are advised to buy and accumulate on dips for long-term gains.

**Technical Indicators/Overlays**

Bollinger Bands (Upper - Lower)	745.95 - 497.35
Short Term - 20 & 50 Days EMA	428 & 301
Long Term - 100 & 200 Days EMA	218 / 154
Annualised Volatility	48.14
ADX	44.98
MACD	102.09
RSI	78.02
Average True Range(ATR)	83
AD Line	5.36 Cr
Standard Deviation	127.34
Pivot Levels - R1, R2	636 & 656
Pivot Point	622
Pivot Levels - S1, S2	588 & 602
ROC (%)	79.41

**S. Devarajan**

Head – Technical &amp; Derivatives Research

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To enhance transparency, Way2Wealth has incorporated a Disclosure of Interest Statement in this document. This should, however, not be treated as endorsement of the views expressed in the report.

**Disclosure of Interest Statement: ASTRA MICROWAVE PRODUCTS LTD. as on 07<sup>th</sup> March 2024**

Name of the Security	ASTRA MICROWAVE PRODUCTS LTD.
Name of the analyst	Jayakanth Kasthuri
Analysts' ownership of any stock related to the information contained.	NIL
Financial Interest	
Analyst :	No
Analyst's Relative : Yes / No	Yes (10 Nos,01Nov23)
Analyst's Associate/Firm : Yes/No	No
Conflict of Interest	No
Receipt of Compensation	No
Way2Wealth ownership of any stock related to the information contained	NIL
Broking relationship with company covered	NIL
Investment Banking relationship with company covered	NIL

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Investment in securities market are subject to market risks. Read all the related documents carefully before investing.

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