Deutsche Bank Research

Rating
Buy

North America
United States

TMT
Telecom Services

Company
AST SpaceMobile

Reuters	Bloomberg	Exchange	Ticker
ASTS.OQ	ASTS US	NSM	ASTS

Date
30 June 2021

Initiation of Coverage

Price at 28 Jun 2021 (USD)	10.30
Price target	35.00
52-week range	22.50 - 7.08

Where No LEO Has Gone Before; Initiating At Buy

Valuation & Risks

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Investment Thesis: Very Attractive Risk/Reward With A Wide Range Of Outcomes, But An Early Stage Business That Still Has To Prove The Efficacy Of Its Technology And Satellite Design

- **Synopsis:** We are initiating coverage of AST SpaceMobile with a Buy rating and a $35 price target, which represents more than 3x the current stock price. Our PT is based on an average of four model scenarios, and implies EV/EBITDA multiples of 20x 2024E and 6x 2025E. If management executes on plan over the next 4-5 years, we see intrinsic value ultimately being significantly higher than our $35 PT reflects. Given management's projections for $1B in 2024 EBITDA, $2.6B in 2025, and $16B in 2031, a 6x multiple in 2025 would be extremely low for such a high forward growth outlook. However, the stock could also end up being worth $0 if AST's technological solution to enable satellites to communicate directly with smartphones doesn't work or scale as intended, or if the company's very large (24m x 24m) arrays do not unfold in space as they are designed to.
- **Asymmetrically Favorable Risk/Reward:** Despite the risks and early stage of the business, we are initiating with a Buy rating due to what we believe is a highly favorable risk/reward ratio (-$10 and -$2 downside in our negative scenarios, and +$35 and +$76 in our upside scenarios, and much greater potential upside longer term with success). Our PT, which is based on expected value, is more than 3x the current stock price.
- **Competitive Advantage:** AST has developed a technological solution to deliver broadband connectivity directly from low earth orbit (LEO) satellites to smartphones, opening up a potentially massive global opportunity to: (a) provide fill-in coverage to existing mobile subscribers when they are roaming outside of coverage areas; and (b) to provide basic broadband connectivity to the "unconnected" world, ie people living in areas that are unserved or poorly served by terrestrial networks. While there are other satcom players targeting these two broad market segments, none of them offer broadband directly to standard smartphones; instead they are essentially divided into two groups - those that offer narrowband data and voice directly to a dedicated (and expensive) satcom handset, and those that offer connectivity to an expensive ground terminal that can then connect to standard smartphones via WiFi or cabling. The ability for AST SpaceMobile to connect directly to standard smartphones without special equipment should give the company a distinct advantage over other Satcom operators targeting these same end markets. At the risk of oversimplifying, the key to AST's technological solution is based on: (1) its

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ability to trick the smartphone into detecting a cell site within range (when said cell site is actually a satellite 700 km away); and (2) the large size of the company's phased array antennas, which obviate the need for a large powerful antenna on the handset, and also provide the abundance of capacity (40 Gbps per satellite and 1.2M GB per satellite/month) that management is relying on to support its 620M subscriber forecast in 2030.

- **Business Model:** AST's wholesale business model also makes it an attractive investment. By partnering with Mobile Network Operators (MNOs) globally, AST is able to leverage those wireless carriers' spectrum and distribution, enabling AST to enter countries and scale its global subscriber base much more quickly than if AST were trying to go it alone, and to do so without incurring any subscriber acquisition costs. This is a critical point because: (a) AST's satellite constellation is designed to deliver massive capacity with global coverage and, therefore, being able to fill that capacity with equally massive distribution is needed in order to maximize ROI; and (b) competitively, AST will be in a much stronger position with large, incumbent MNOs like Vodafone, Telefonica, and AT&T (among many others) as partners.
- **Margin Structure:** The wholesale business model, which features a 50/50 revenue share with MNOs, should also result in very high (95%+) EBITDA margins for AST's business even early on (ie 2024). MNOs will be responsible for marketing, sales, provisioning, billing, device support, spectrum, and local regulatory approvals (working in conjunction with AST); thus greatly limiting AST's operating expenses.
- **MNO Relationships:** AST has already established relationships with MNOs covering about 1.3B people in aggregate, including binding commercial agreements covering ~800M people and MOUs addressing another ~500M.
- **Funding Outlook:** Phase 1 of the business plan is fully funded. AST SpaceMobile became a publicly traded equity on April 6, upon the completion of its merger with New Providence Acquisition Corp., a special purpose acquisition company (SPAC), which brought $230M in funding. AST also completed a PIPE raise with strategic investors Vodafone, American Tower and Rakuten, bringing in another $230M, for a total of $460M in new capital. Management expects this financing activity to be sufficient to fully fund phase 1 of the company's business plan. However, satellite construction and launches to support Phases 2-4 (in 2023-2024) will require additional funding to be raised; which we think could be in the form of government sponsored vendor financing, mezzanine debt, high yield debt, private equity, or public equity.
- **Valuation:** We are valuing AST SpaceMobile by equal probability weighting four scenarios ranging in value from $0 to $86 per share (see Figure 1 for details). We apply a 15-25x 2024E EBITDA multiple to each scenario, and then discount the resulting enterprise value back to a 12-month PT using a 15% WACC (in order to capture the high level of risk associated with an early stage business such as this one).
- **Risks:** Key risks include AST's technology not working as planned, failure to deploy the company's large arrays in space, satellite anomalies, launch failures, delays meeting key business plan milestones, cost overruns, failure to sign new carrier partners or loss of existing partners, lower than expected consumer demand, failure to gain regulatory approvals, greater than expected competition from new or existing players (including wireless MNOs), failure to receive additional funding on attractive terms, and changes to the business model that result in lower returns.



Figure 1: Our $35 PT is based on equally weighting four different scenarios; however, if the technology works as planned we see potential for further upside

ASTS Valuation				
	"Management Scenario" (A)	"DB Model" (B)	"Conservative" (C)	"Zero" (D)
Adj. EBITDA ('24E)	1,014.0	564.3	268.5	
EV/EBITDA Multple (CY)	***25.0x***	***25.0x***	***15.0x***	
Enterprise Value ('24E)	25,350	14,106	4,027	
Net Debt ('24E)	1,394	1,394	1,743	
Market Cap ('24E)	23,956	12,712	2,285	
Discount Rate	*15.0%*	*15.0%*	*15.0%*	
Market Cap ('22E)	18,130	9,621	1,729	
Stock Price ('22E)	**$85.99**	**$45.63**	**$8.20**	**$0.00**
Shares Outstanding ('22E)	210.8	210.8	210.8	
Scenario Weight	*25.0%*	*25.0%*	*25.0%*	*25.0%*
			Price Target	***$34.96***

Source :Deutsche Bank estimates, company information.

Key Business Plan Milestones / Stock Catalysts

At this point in time, AST's business plan is two years away from generating revenue and EBITDA, and the company hasn't launched any of its commercial satellites yet or tested the interoperability of its core technology with MNO partners in a space-based environment. AST plans to invest $1.7B to launch almost 170 satellites in the next 3.5 years, eventually reaching worldwide coverage with support for both 4G and 5G services. The company is expected to begin generating revenue and EBITDA starting in 2023, and FCF in 2024.

This leaves interim milestones for the market to digest, which will inevitably impact the probability distribution of outcomes and, therefore, the expected value of AST's business over time, and the stock price.

- Looking back historically, BlueWalker 1, which successfully launched on 4/1/19, was used by the company to validate AST's satellite to cellular architecture, as well as additional troubleshooting and testing objectives.
- The company is currently building its BlueWalker 3 (BW3) test satellite, with assembly and ground testing targeted to occur in 1H21, and orbital launch planned for late in the fourth quarter of 2021. BW3 will be used to test more of the SpaceMobile technology and its interoperability with MNO partners' networks. We think execution around BlueWalker 3's launch and subsequent test results, if successful, will serve as interim catalysts for the stock as each milestone represents a reduction in the overall risk of the business plan, driving a more positive distribution of outcomes and a higher expected value.
- Phase 1 of AST's plan involves launching its first 20 commercial satellites in late 2022 or early 2023. Phase 1 is intended to provide coverage to 1.6B POPs across 49 "equatorial" region countries, and to enable the company



to commercialize SpaceMobile service in these areas, and to begin generating revenue. The cost of Phase 1 is planned to be $510M, which is fully funded by the SPAC/PIPE financings, in addition to existing cash on the company's balance sheet.

- Phases 2 and 3 will bring AST to full global coverage with an additional 90 satellites by 2023YE (110 total), and Phase 4 will deliver MIMO and 5G support with an additional 58 satellites by 2024YE (168 in total across all four phases). AST will need to raise additional funding for Phases 2-4, which management estimates will amount to another ~$1.2B in investment during 2022 and 2023, bringing the total estimated constellation cost to $1.7B (note that we are assuming higher total project costs of ~$2.2B in our model in order to take a more conservative approach relative to management, and to reflect the possibility of cost overruns).
- We expect future investments (beyond Phases 2-4) to be success based and capacity driven. AST can add capacity incrementally over time by launching additional satellites, if the business is so successful that demand exceeds the capacity of the initial global network of 168 satellites.
- We also expect additional commercial updates (ie new MNO agreements) and regulatory approvals on a rolling basis from now through commercial launch to serve as interim catalysts for the stock.

SpaceMobile Is Aiming For A Small Slice Of A Very Large Total Addressable Market

Consumer mobility is a very large $1T market globally today. While SpaceMobile isn't going head to head with Mobile operators in competing for subscribers, a number of the ~5B mobile subscribers globally still roam out of terrestrial cellular coverage on a regular basis, and an estimated 4B people (roughly half of the world's population) are still fully without mobile broadband internet access today (per GSMA), 0.8B of which do not have any cellular service at all (and presumably none of these individuals have fixed line broadband either). This creates an opportunity for AST to use its satellite-based global coverage model to target both use cases and, if successful, to expand the market while at the same time capturing a very small slice of it. We see SpaceMobile having a higher probability of success than other satcom alternatives given its greater accessibility, lower cost of adoption, and affordable monthly service price (as low as ~$1 per month in equatorial markets).

We estimate that AST only needs to capture a small proportion of this opportunity in order to achieve meaningful financial success. **For context, AST only needs to win 2% of the total global unconnected population, or just 15% share of the ~510M people that we think are the *most likely to adopt* SpaceMobile service** (ie people that live in Phase 1 coverage areas - equatorial markets, that are also covered by AST's existing MNO partners, and who currently do not have mobile broadband service), **and zero market share from all other groups** (ie phase 2-3 markets, plus additional carrier partnerships), **in order to hit our 2025 subscriber forecast.**

The Competitive Landscape

Companies such as Starlink, OneWeb, and Project Kuiper are also deploying LEO satellite constellations in order to offer broadband to unconnected consumers. However, they are focused on what is essentially a fixed broadband alternative and they require a costly ground terminal for smartphones to connect with using WiFi. They do not, however, currently have a plan to connect their satellites directly to smartphones, a capability that represents AST's primary point of differentiation.

Lynk is another early stage satellite mobility service provider that also claims to be



able to connect directly from a satellite to a standard cell phone. However, we believe that AST's service, if deployed successfully, will appeal to a greater number of consumers than the text-messaging service that Lynk is planning to initially deploy (Lynk also plans to offer broadband longer term, but not as soon as AST). AST also has a significant head start in terms of raising capital, its satellite launch plans, and signing up MNO partners. We understand that Lynk has raised tens of millions of dollars, as compared to AST's >$500M, and Lynk has yet to publicly announce a commercial MNO partnership (to our knowledge). The real question here is not 'which is better/who will win - AST or Lynk?'; it is 'will AST's plan work?'. If it does work, then we believe AST will be successful irrespective of Lynk. If it does not work, then AST doesn't really have a business.

Is AST's Plan Just 'Pie In The Sky'? What The Skeptics Are Saying

There are risks to AST succeeding with its business plan, including the risk that the technology does not work with MNO partners' networks from space or that it doesn't scale as planned. There is also risk that the satellites' very large arrays will not successfully unfold in orbit; if they can't, then AST might need to modify the design, which will increase expenses and prolong time to market. There is risk that the end demand just isn't there, or that competition is greater than expected (either terrestrially or from another satcom solution). There are other risks too, although we see most of those as potentially causing delays or cost overruns, rather than undermining the entire business plan. In addition, performing due diligence on the technology and patents is inherently prohibitive; we try to ask the right questions, but ultimately we have to rely on what management has disclosed and said.

In an effort to successfully overcome these design challenges, AST has assembled a team of 161 scientists and engineers who have collectively participated in 40 previous satellite builds and launches. It is also worth mentioning that, similar to most satellites, there is a degree of redundancy being built into the arrays, which means the satellites should still function effectively even if a portion of the array is damaged during launch or deployment.

AST has brought together a strong lineup of strategic support as well, including a private investor base that counts some of the leading players in the global telecom industry (Vodafone, Rakuten, American Tower, Samsung Next); and has signed commercial partnerships or MOUs with both strategic investors and non-investors (including Vodafone, AT&T, Telefonica, Rakuten, American Tower, Telstra, Liberty Latin America, Millicom International, Indosat Ooredo, and others). We believe that the company will be able to leverage the collective expertise, resources, and relationships of these investors and partners, which should help mitigate *non-space* risks to the business plan.

In conducting our due diligence, we encountered skepticism from some professionals in the satellite industry, while we talked with others who were more constructive toward AST's ability to pull this off. Below we outline the key points of contention that we uncovered, and discuss both counterpoints to the skepticism and mitigating actions that AST management is undertaking.

1. AST's 24m x 24m phased arrays are large by industry standard, and require a complex unfolding mechanism to deploy.

One of the keys to AST's technology solution is its very large (24m x 24m) phased array antennas. Without these large arrays, AST would not be able to deliver a 30+ Mbps connection to a smartphone. However, the array, at full size, does not fit into



the nose cone of a launch vehicle. Therefore, the array must be folded up at launch, and then unfolded in space when the fairing splits from the nose cone. This adds complexity to the process of successfully deploying the satellite in orbit and without damage in what is a very harsh environment. AST skeptics tend to point to this issue as one of the greatest risks to the plan.

While AST's particular array design/size is unprecedented, there have been a couple other larger than average arrays deployed that we could identify. For example, Thuraya has a 15m array in space, and the International Space Station recently replaced its much larger solar sail-shaped array by unrolling it. Other large, complicated, delicate satellite systems have also been successfully sent into space before. Innovation is, after all, at the core of the satellite industry.

The key to minimizing this risk is careful design and extensive testing, which AST plans to conduct both on the ground and in space (including with the BlueWalker 3 test satellite later this year, which will be 10m x 10m). While AST will include multiple satellites with its first commercial launch, it will not be launching the entire constellation of 168 satellite all at once. Therefore, should the arrays not unfold correctly, AST could modify the design before trying again.

2. The constellation will cost much more than planned.

AST management expects its satellites to cost $14M apiece in Phase 1, scaling down to $10M in future phases as they scale production, for a total constellation cost of $1.7B. Some in the industry believe that this is unrealistic when considered in the context of historical satellite material, component, construction, and launch costs.

However, AST is planning to both leverage economies of scale and benefit from significant deflationary trends across the satellite manufacturing and launch industry, including the effects of increased standardization and miniaturization of components.

Satellite launch costs have reportedly fallen 90% since 2008 (per space.com), and we think this downward trend will continue in the future. Furthermore, AST's use of Silicon in its solar cells, instead of Gallium Arsenide, should equate to a 95% reduction in power costs for AST relative to most satellites; which we believe is made feasible by AST's large arrays (Silicon requires more surface area per unit of power generation).

Looking at it from a top down perspective, Telesat's Lightspeed constellation is estimated to cost $5-6B for its 298 satellites ($18.5M per satellite). The Lightspeed satellites are more advanced than AST's, thus they should cost more than AST's, even though they are smaller.

3. The technology might face interoperability challenges with MNO networks; it hasn't yet been proven.

While AST has tested its technology that enables a direct link between satellites and smartphones, including through its Bluewalker 1 satellite; it has not yet tested the capability in concert with MNO partners in a space based environment. However, Bluewalker 3, slated for launch in late 2021, will test the capabilities with MNO partners' networks



While the ability to send data from the satellite to a standard smartphone itself is innovative, and made possible by high powered satellites with very large phased array antennas; the ability to transmit from the smartphone to the satellite is even more challenging given the low power at which a smartphone operates and the lack of a specialized antenna on the phone. While management expresses confidence in its technology, AST will need to demonstrate this capability to the industry and to the market with Bluewalker 3 after it is launched and in orbit (scheduled for later this year).

4. NASA initially expressed concern over SpaceMobile's plans due to elevated collision risk, but has since been more constructive.

While NASA had initially expressed concern over SpaceMobile's plans in a letter to the FCC, NASA subsequently sent a second letter explaining that the agency is collaborating with AST and believes there is a path to mutual success for both entities as it relates to this matter. Specifically, (1) AST has indicated that it can be flexible with respect to the precise altitude of its satellites, and (2) its satellites will be equipped with collision avoidance technology that will further help to prevent collisions.

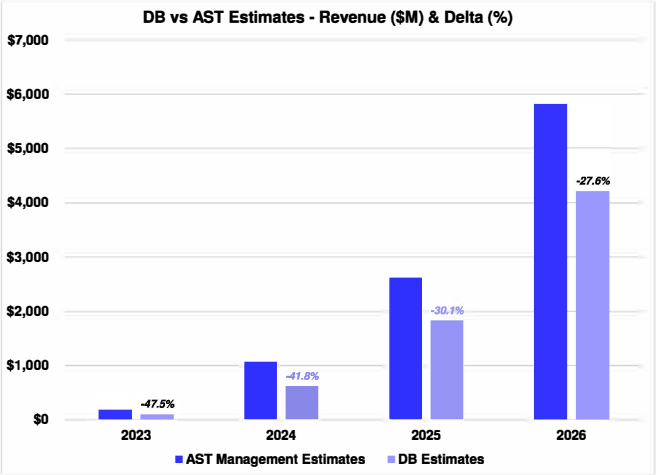
In its second letter, NASA clarified that **the agency does not believe these issues should preclude the issuance of a license to AST.** Specifically, the letter stated, *"AST & Science reached out to NASA and provided additional data on their system. NASA has since begun collaborating with AST & Science to enable the sharing of data and conjunction mitigation best practices, which, over time, should facilitate safe operations in space and result in mutual success. NASA appreciates this communication and willingness to share data." [...] "while technical concerns still exist, this need not preclude the issuance of the requested license, especially since NASA and AST & Science continue to work towards a positive outcome for all parties." - NASA's correspondence to the FCC (11/17/21)*

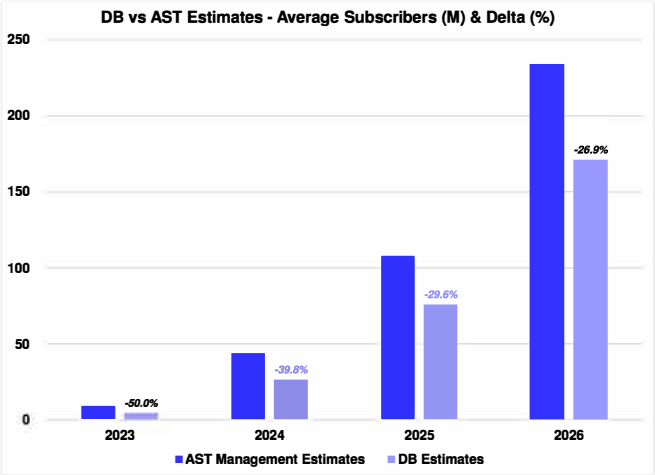
5. Regulatory approvals in each country will take time to obtain and may prove elusive.

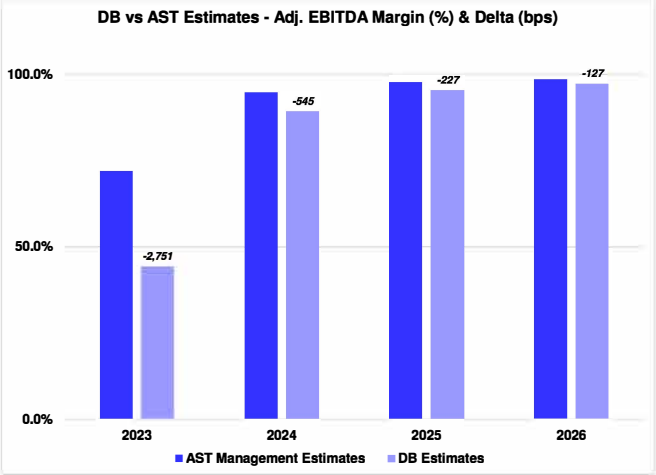
While some skeptics point to this as a risk to the plan overall, others (with whom we tend to agree) see it as more of a timing risk that could cause delays and slippage in certain markets. AST is leveraging MNO partners in obtaining regulatory approvals on a market by market basis, which should help to move the process along faster than if AST were doing it all on its own since the MNOs have in-country people, as well as preexisting relationships with regulators and local market knowledge..

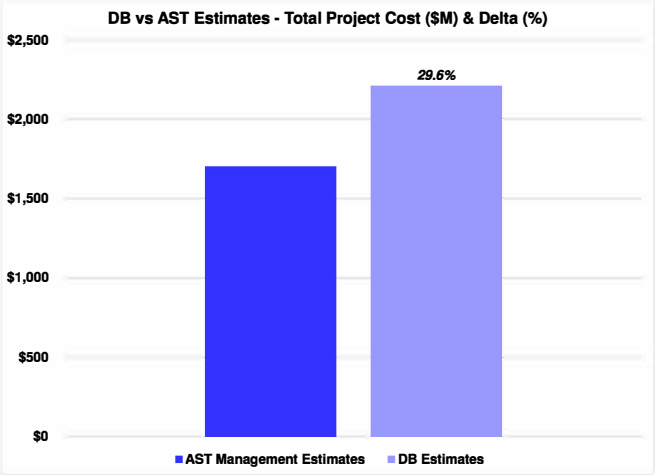
In order to account for some of these risks, we are taking a more conservative approach to forecasting this business, relative to management's plan; this includes building assumptions into our model for lower subscriber adoption and revenue, and higher total project costs as compared to the company's forecasts (see figure 2).

Figure 2: We are assuming lower subscriber adoption and revenue, and higher expenses and total project costs (compared to the company's forecasts) to reflect AST's elevated risk profile; even in this scenario we still see plenty of upside for ASTS' stock









Source : Deutsche Bank estimates, company information.

Valuation: Asymmetrically Favorable Risk/Reward With A Wide Range Of Outcomes

We are valuing AST SpaceMobile by equal weighing four scenarios: (1) AST management's forecasts from its public filings and slides, (2) Our forecast, which is more conservative than the company's projections, (3) An even more conservative scenario, where demand is lower and costs are higher, and (4) A total loss scenario where the technology and/or execution are unsuccessful and the stock is worth zero.

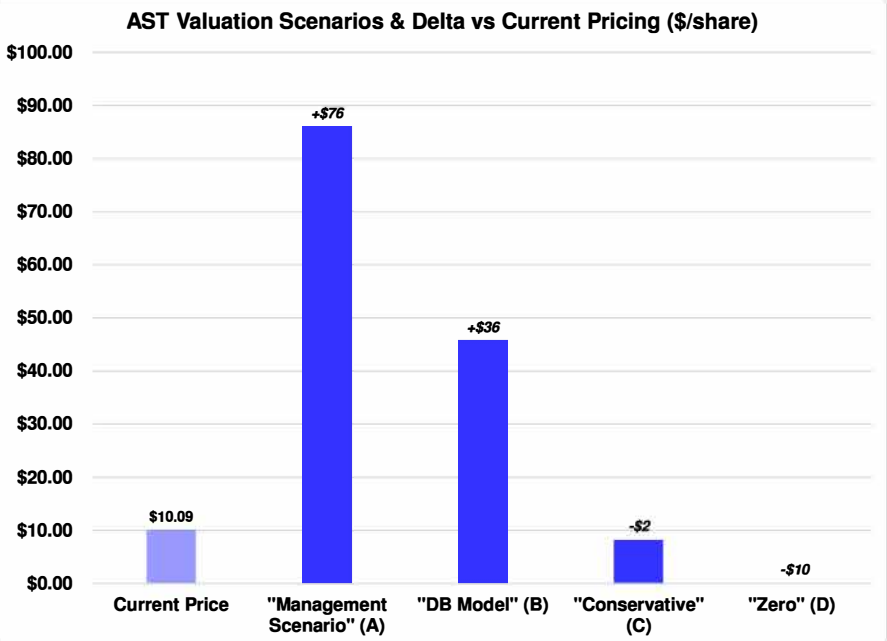
We apply a 15-25x 2024E EBITDA multiple to each scenario (reflective of the respective level of growth for each, and benchmarked against other communications services and satellite peers), and discount the resulting enterprise value back to a 12-month price target at a 15% WACC (reflecting the high level of risk associated with this investment). Weighting each of these four scenarios



equally yields a $35 price target, more than 3x the current stock price, and implies that the stock will trade at 20x EV/2024E EBITDA and 6x 2025E .

With the greatest downside scenario at -$10 per share and the most optimistic upside scenario at +$76 per share (vs the current price), we see the risk/reward as asymmetrically positive (see figure 3). Furthermore, 2024 is a measurement year that is still early in this project's lifecycle. If we take AST management's 2030 EBITDA forecast of more than $16B and apply a 10x multiple (which we think is still conservative given the business' expected growth profile), this implies a 2030 enterprise value of $163B (vs <$2B today). Discounting that EV back to the present time at a 15% discount rate yields a share price of roughly $190 today. We are not including this scenario in our valuation, nor are we endorsing it, but we do think that it is important to illustrate the potential upside for ASTS longer term if the technology works and management executes the business plan it has laid out.

Figure 3: Our $35 PT represents the equal probability weighting of four scenarios; these scenarios imply an asymmetrically positive risk/reward for investors ranging from +$76 to -$10 (compared to ASTS' current price)



Source : Deutsche Bank estimates, company information, Bloomberg Finance. Note: dollar values represent the change in ASTS' share price for each scenario.



Company Background & Transaction Details

SpaceMobile's Technological Solution, Satellite Design, and Business Model Are Very Different Than Any Satcom Company That's Come Before It

AST SpaceMobile is building a global network of satellites to provide cost-effective, high-speed mobile broadband services to consumers around the world. The company is planning to use very large satellites (24m x 24m arrays) in low earth orbit in order to connect to standard cell phones on the ground without the need for ground terminals, special handsets, or modifications to cell phones such as additional antennas or chipsets.

The ability to connect directly to cell phones means that, assuming it works according to plan, SpaceMobile would have two very distinct advantages over every other satellite communications company in serving a range of end markets with data, text, and voice services. It not only makes the service more accessible to mobile users roaming outside of terrestrial cellular coverage, but it also makes it more affordable and accessible to users that do not otherwise have fixed line or cellular connectivity available to them. No satellite communications company in the history of the industry has ever been able to offer a service that doesn't require either a special, dedicated, expensive handset; or an expensive fixed ground terminal.

What makes SpaceMobile unique is: (1) Its technological approach to tricking the handset into detecting a cell tower within range, while that cell tower is actually a satellite in orbit 700 kilometers away; (2) Its plan to use 24m x 24m phased arrays, uncommonly large in the LEO world, and the key to delivering the high bandwidth and broad geographic coverage while utilizing a relatively low number of satellites; (3) SpaceMobile's business model, which is a partnership model with Mobile Network Operators (MNOs) worldwide, such as Vodafone and AT&T, and features a 50/50 revenue split. Through this MNO partnership model, SpaceMobile can speed time to market and time to scale by leveraging the MNOs' businesses in everything from marketing, service, handset procurement, and billing, to spectrum authorization (all of which are critical).

SpaceMobile's business plan focuses on serving two primary end markets. The first is providing primary connectivity to unconnected people in areas where there is poor or nonexistent terrestrial cellular coverage, which will initially focus on equatorial regions. The second is providing fill-in mobile coverage to MNO partners' subscribers when those subscribers roam outside of the MNOs' terrestrial cellular coverage areas (which could include rural, backcountry, international roaming. air travel, maritime, and even urban/suburban dead spots).

Product, Pricing, Customer Acquisition

- **Data Speeds:** SpaceMobile expects to be able to offer broadband internet speeds in excess 30 Mbps to end users. This is more than sufficient to support virtually all applications and use cases on a single mobile device. Latency, always a concern with satellite delivered connectivity, is expected to be in the 20-40 ms range, below the FCC's 100 ms maximum needed to qualify as *broadband*.
- **Packaging & Pricing:** SpaceMobile intends to offer, through its MNO partners, different product constructs, plans, and price points on a country by country basis. Across poorly served/unserved areas, primarily in developing equatorial nations, the company expects to generate an ARPU



of about $2 per month (which AST will split 50/50 with its carrier partners). In the US and Europe, where SpaceMobile will be used primarily to fill in terrestrial coverage gaps, management expects a retail ARPU of about $15 per month (before the revenue split). Globally, management expects a retail ARPU of $4 per month (before the revenue split). Given the fixed cost nature of this business, maximizing revenue is the goal. As such, subject to SpaceMobile's MNO partners' discretion, the company plans to make available a range of different packages, including: (1) daily/weekly passes, (2) monthly, and (3) annual plans. Level of service will also be another element in pricing tiers; specifically, full broadband will be priced higher than a text + voice plan. Billing, marketing, and handset procurement and support (where applicable) will be handled by the MNO.

- **Subscriber Acquisition:** SpaceMobile will rely on its MNO partners to market, provision, and bill for SpaceMobile service. This will allow the company to scale much faster (and with no subscriber acquisition costs) than it would otherwise be able to do on its own, which is critical for a start-up company targeting a global subscriber base utilizing a 10-year life fixed cost satellite constellation. The version of the service sold in developed markets will be offered as an add-on to existing mobile plans at a time and place when demand for the service should be the highest (when a consumer is leaving cellular coverage, he/she will receive an automated text message directly from the SpaceMobile MNO partner asking if he/she would like to activate SpaceMobile.

"Super Wholesale" Model Has Important Implications for Scale, Margins, and Competitive Positioning

AST plans to leverage a "super wholesale" business model by signing strategic partnerships with major MNOs around the globe. AST's MNO partners are expected to handle all of the customer facing responsibilities for SpaceMobile, including marketing, selling, provisioning, and billing for the service, in exchange for a 50/50 revenue share of SpaceMobile customer revenues. In addition, MNO partners will provide the spectrum over which SpaceMobile service will be delivered in each market, eliminating the need for AST to go out and acquire spectrum rights on a global scale (however, in many cases approval from national communications regulators will still be required to use that spectrum for space to ground use).

This model provides SpaceMobile with access to a significant number of potential subscribers as soon as the service is ready for commercial use, while avoiding all customer acquisition costs, which are expensive in telecom and would be prohibitive in the context of SpaceMobile's global business plan. As a result, AST's model should generate very high margins, which management believes will be 95% in 2024, scaling to 99% by 2030 (we've been a bit more conservative in our model, but directionally consistent).

These partnerships also yield several important benefits for the MNOs, which we think creates a strong incentive for them to work with SpaceMobile, and which increases the likelihood that AST can maintain, deepen, and grow its portfolio of MNO partnerships over time. By leveraging SpaceMobile's satellite network to provide coverage in hard-to-reach and low population density areas, MNOs can market a differentiated service relative to competitors that cannot provide coverage in these areas. We think this should lead to additional revenue for SpaceMobile's partners via the 50/50 subscriber revenue split, as well as lower churn and higher gross additions. Furthermore, MNO partners can avoid capex to deploy network infrastructure in remote and low population/data traffic density areas, where ROIC



tends be very challenging as it relates to network investment).

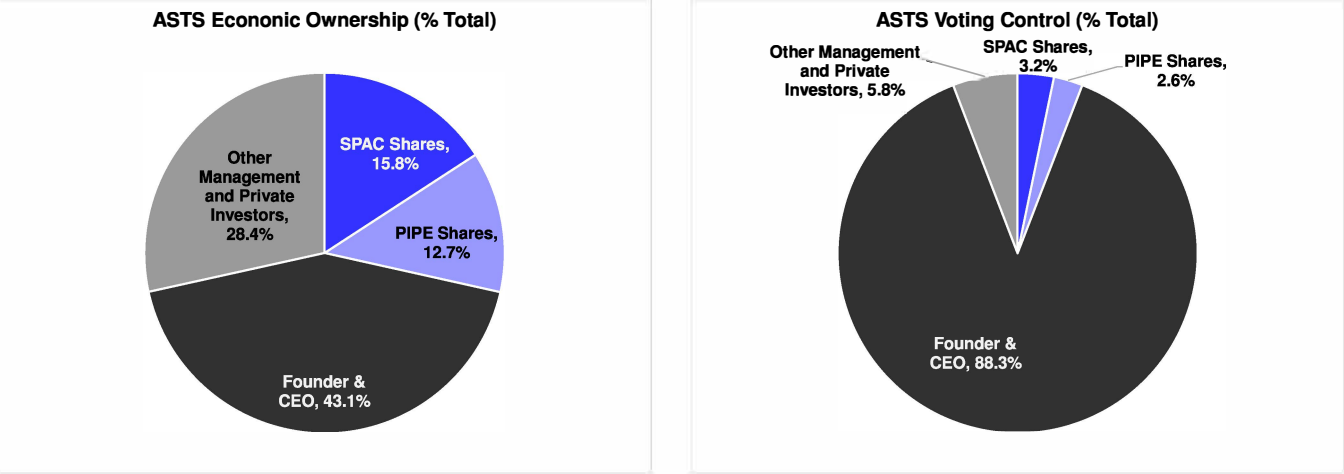
SpaceMobile has relationships with MNOs covering about 1.2B POPs in Phase 1 Markets (~510M of which also do not have service today). This includes a binding commercial agreement with Vodafone covering 540M Phase 1 POPs, half of which are unconnected; as well as memoranda of understanding (MOUs) with other MNOs, including Telefonica, covering an additional 650M POPs, 37% of which are unconnected. AST will continue to work on signing new partners in the coming months and years as it works toward a commercial launch in 2023. Vodafone is also a strategic investor in AST SpaceMobile, along with Rakuten, American Tower, and Samsung Next.

Details of the SPAC/PIPE Transactions

In early April 2021, AST SpaceMobile completed its business combination with New Providence Acquisition Corp., issuing 23M shares to the SPAC's shareholders, which brought $230M in cash funding, and raised an additional $230M in capital from PIPE investors (including Vodafone, Rakuten, and American Tower), for a total of $460M in funding, at an implied enterprise value of $1.4B.

Pro forma for these capital raises, the economic ownership is as follows: 43% held by Abel Avellan, Chairman & CEO, 28% held by the rest of AST's existing management team and other private investors, 13% by the PIPE investors, and 16% by former SPAC shareholders. Notably, the 78M Class C shares held by the company's founder and CEO represent 88% of the voting rights, leaving Mr. Avellan in control of the company.

Figure 4: Summary of Ownership and Voting Shares by Shareholder Group



Source : Deutsche Bank, company information.



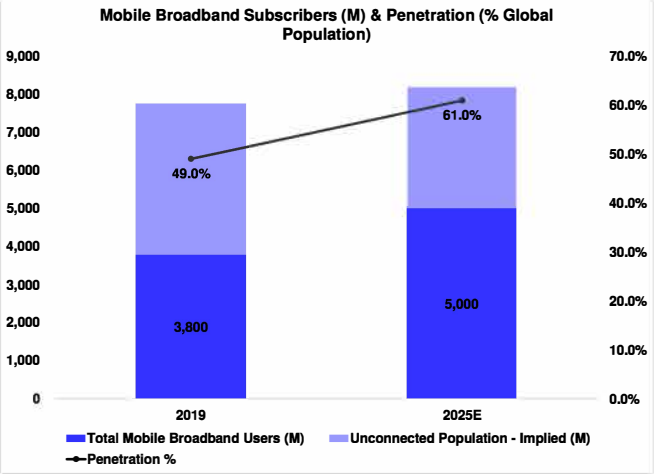
Connecting The Unconnected: SpaceMobile Is Targeting A Massive TAM

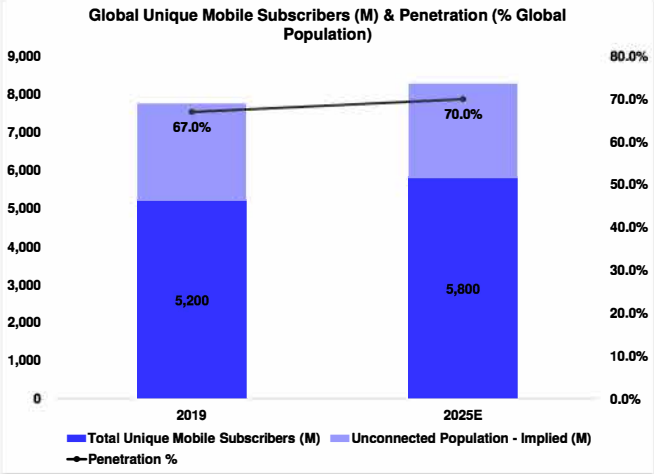
Consumer mobility is a massive $1T market globally, with an estimated >5B mobile phones currently in service (per GSMA). However, many of these mobile subscribers (especially those in less developed markets), still drop out of coverage on a regular basis. **There are also an estimated ~4B people, or roughly half of the world's population, who are still fully without mobile broadband internet service today** (also per GSMA, see figure 5).

We think that AST's satellite based global coverage model could greatly improve access to mobile broadband service for many of these people, through: (1) improved service availability in areas that cannot be economically covered by traditional wireless infrastructure; (2) the capability to connect to standard smartphones, which are becoming increasingly affordable through the emergence of lower cost options, and a robust secondary market (see figure 7; (3) service pricing that is relatively affordable in each given market (typically in the range of only a few dollars per month), and which should be an attractive option even in many lower income regions around the globe (see figure 8).

Especially given the growing importance of connectivity in today's world, we think it is reasonable to assume that demand for an accessible and affordable mobile connectivity service (like SpaceMobile) would be fairly robust as it becomes available. Additionally, we believe that AST needs only to capture a relatively small portion of this opportunity to achieve financial success, and to create meaningful value for shareholders. For context, AST's phase I launch plans are intended to provide coverage to 1.6B people in the "equatorial" region of the globe, **including ~510M who are: (1) covered by AST's MNO relationships, and (2) currently unconnected**. ***Importantly, we estimate that AST only needs to win 15% share in this "most likely to adopt" segment in order to hit our 2025 subscriber targets, assuming zero share from all other markets/groups*** (see figure 6). Additionally, from a top down perspective, our revenue projection of $1.8B by 2025, represents only 0.2% of the current $1T wireless TAM.

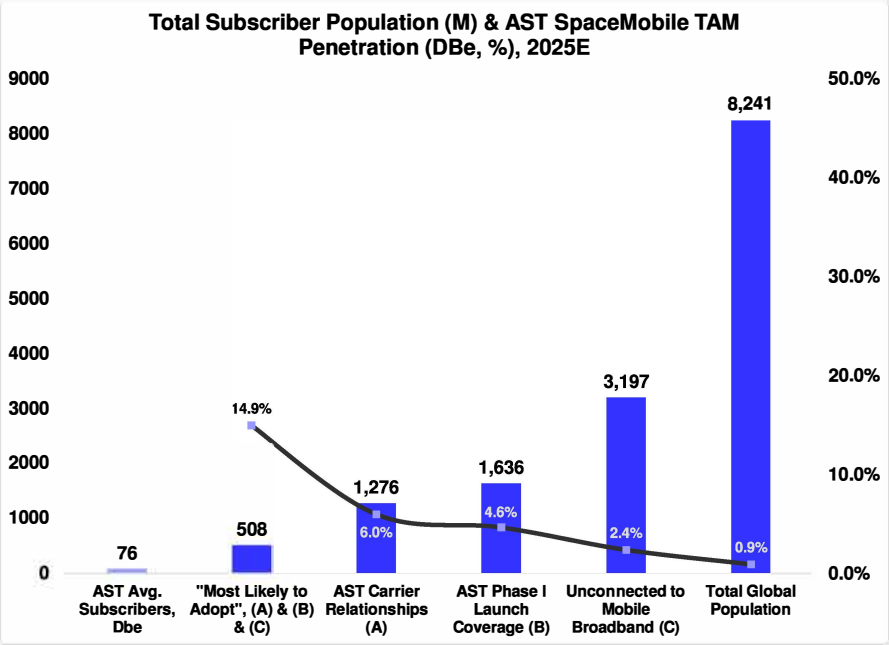
Figure 5: Per GSMA, 2.5B people globally are still without mobile devices, and 4B people remain unconnected via mobile internet; we see an opportunity for AST's technology to increasingly connect this group





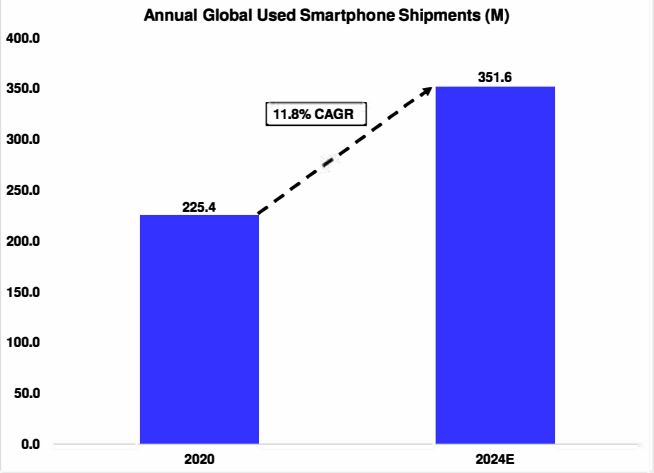
Source : Deutsche Bank, GSMA.

Figure 6: We believe AST's business only needs to capture a small % of its TAM, including just 15% of the customers that are "most likely to adopt", in order to achieve meaningful financial success



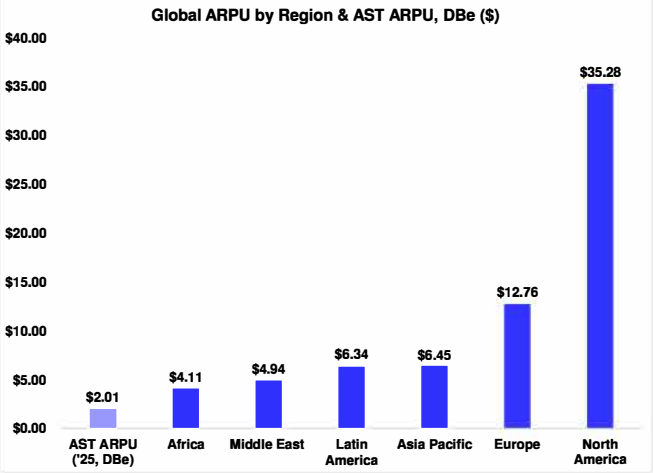
Source : Deutsche Bank estimates, company information, GSMA.

Figure 7: With used smartphone shipments continuing to increase in the coming years, availability of lower cost internet enabled devices should improve for many consumers globally



Source : Deutsche Bank, International Data Corporation (IDC).

Figure 8: AST's low cost plans should be competitive for many low income consumers even in developing markets



Source : Deutsche Bank estimates, company information, S&P Global Market Intelligence. Note: Industry ARPU for each region is being compared to ASTS' overall ARPU



Figure 9: Our $35 PT is based on equally weighting four different scenarios; however, if the technology works as planned we see potential for further upside

ASTS Valuation				
	"Management Scenario" (A)	*"DB Model" (B)*	*"Conservative" (C)*	*"Zero" (D)*
Adj. EBITDA ('24E)	1,014.0	564.3	268.5	
EV/EBITDA Multple (CY)	***25.0x***	***25.0x***	***15.0x***	
Enterprise Value ('24E)	25,350	14,106	4,027	
Net Debt ('24E)	1,394	1,394	1,743	
Market Cap ('24E)	23,956	12,712	2,285	
Discount Rate	*15.0%*	*15.0%*	*15.0%*	
Market Cap ('22E)	18,130	9,621	1,729	
Stock Price ('22E)	**$85.99**	**$45.63**	**$8.20**	**$0.00**
Shares Outstanding ('22E)	210.8	210.8	210.8	
Scenario Weight	*25.0%*	*25.0%*	*25.0%*	*25.0%*
			Price Target	***$34.96***

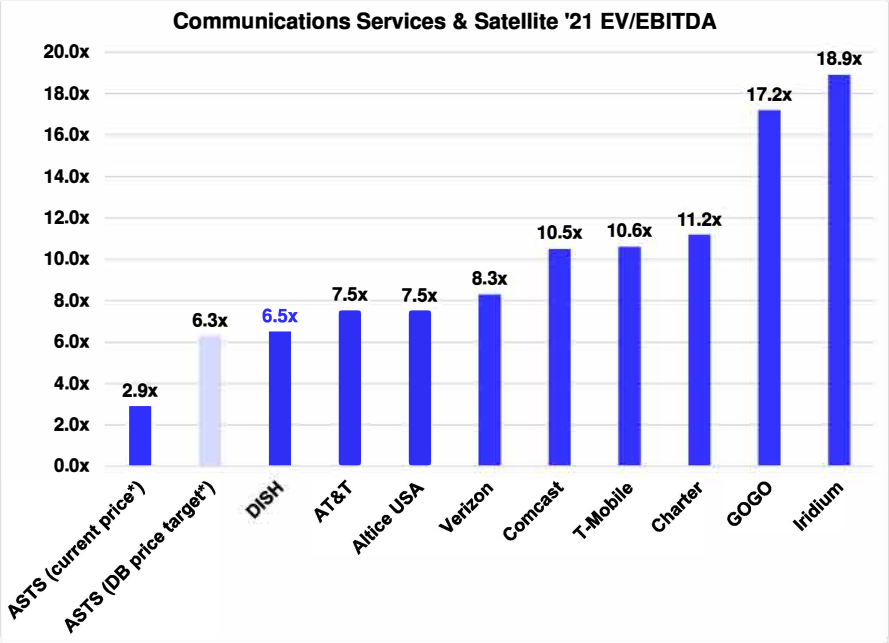
Source : Deutsche Bank estimates, company information.

Figure 10: Our $35 PT implies that ASTS would trade at 20x 2024E and 6x 2025E EV/EBITDA, which we think is very reasonable given the growth outlook (assuming success)

ASTS Valuation Multiples	2021	2022	2023	2024	2025	2026
Share Price	$10.09	$35.00	$40.23	$46.25	$53.16	$61.11
Growth		*246.9%*	*15.0%*	*15.0%*	*15.0%*	*15.0%*
EOP Shares	210.8	210.8	210.8	210.8	210.8	210.8
Market Capitalization	2,127.3	7,379.0	8,482.2	9,750.3	11,208.0	12,883.6
Net Debt	(317.5)	574.8	1,820.8	1,596.4	624.7	(1,774.3)
Minority Interests + Other	(202.4)	(202.4)	(202.4)	(202.4)	(202.4)	(202.4)
Adjusted Enterprise Value	1,607.3	7,751.5	10,100.6	11,144.3	11,630.2	10,906.9
Unlevered Free Cash Flow (Fully Taxed)	(144.2)	(871.6)	(1,168.2)	346.5	1,110.4	2,570.0
Yield (CY)				*3.1%*	*9.5%*	*23.6%*
Yield (CY+1)	*21.6%*	*4.5%*	*3.4%*	*10.0%*	*22.1%*	
EBITDA	(30.0)	(42.8)	45.8	564.3	1,756.3	4,105.3
EV/EBITDA (CY)				19.8x	6.6x	2.7x
EV/EBITDA (CY+1)	2.8x	13.7x	17.9x	**6.3x**	2.8x	
Levered FCF (Fully Taxed)	(143.6)	(892.4)	(1,245.9)	224.4	971.8	2,399.0
Levered FCF Yield (CY)				*2.3%*	*8.7%*	*18.6%*
Price/FCF (CY)				43.5x	11.5x	5.4x
Price/FCF (CY+1)	9.5x	32.9x	37.8x	10.0x	4.7x	

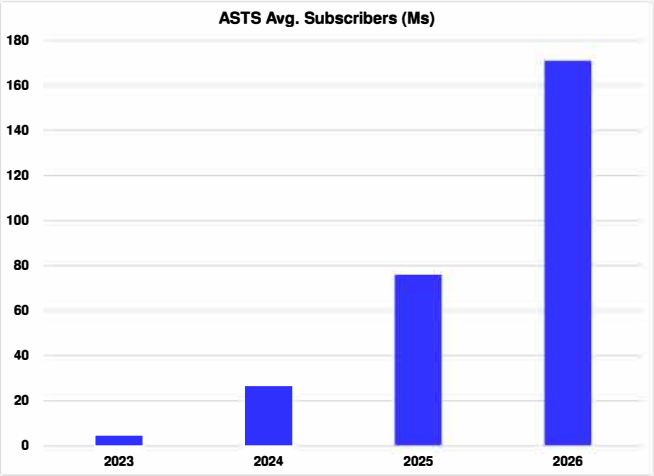
Source : Deutsche Bank estimates, company information, Bloomberg Finance. Note: Multiples in grey calculated using 2024 estimates.

Figure 11: Our AST price target still implies that the company will trade at the low end of the communications services & satellite peer group



Source : Deutsche Bank, company information, Bloomberg consensus.
*Note: We assume our ASTS price target is discounted back from 2024 at a 15% WACC. *2025 EBITDA*

Figure 12: AST SpaceMobile's business is set to ramp up significantly starting in 2023, once it begins launching its satellite network



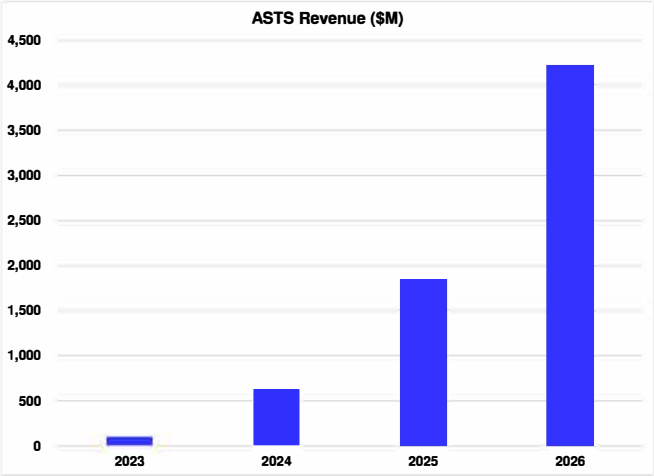
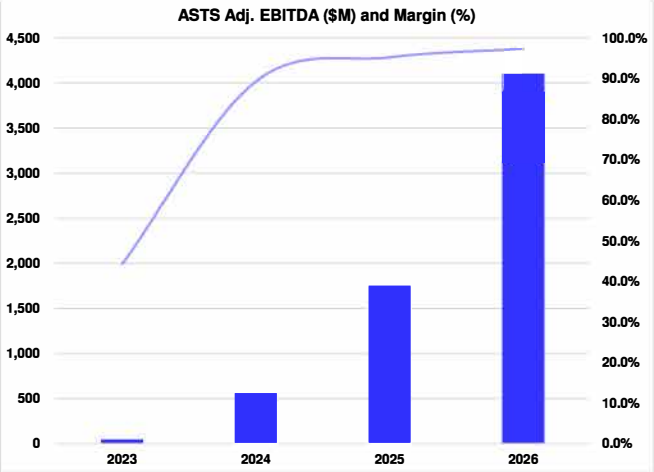
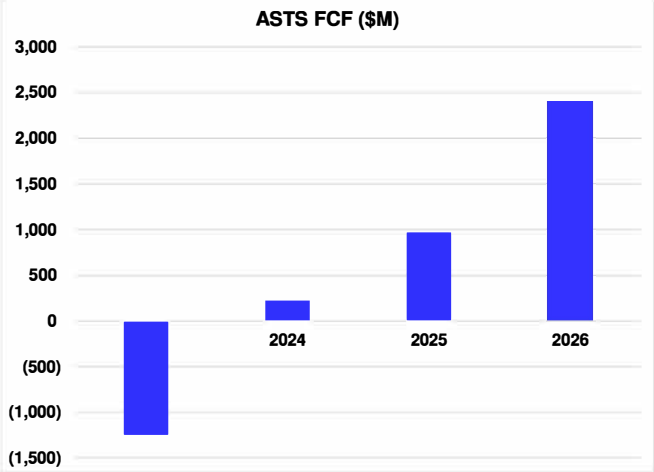


Figure 12: AST SpaceMobile's business is set to ramp up significantly starting in 2023, once it begins launching its satellite network





Source : Deutsche Bank estimates, company information.

Figure 13: ASTS Model Summary

	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Total Subscribers (000s)		0	9,000	44,000	108,000	234,000	373,000	468,000	531,000	620,000
Total SpaceMobile ARPU			$1.76	$1.96	$2.01	$2.05	$2.13	$2.20	$2.22	$2.21
Growth %				*11.3%*	*2.7%*	*2.0%*	*3.9%*	*3.1%*	*0.9%*	*-0.2%*
Total Revenue	**6.0**	**7.2**	**103.3**	**631.8**	**1,843.8**	**4,217.8**	**7,770.9**	**11,099.9**	**13,302.1**	**15,295.8**
Growth %				*511.8%*	*191.8%*	*128.8%*	*84.2%*	*42.8%*	*19.8%*	*15.0%*
Adj. EBITDA	**(30.0)**	**(42.8)**	**45.8**	**564.3**	**1,756.3**	**4,105.3**	**7,633.4**	**10,937.4**	**13,114.6**	**15,083.3**
Growth %				*1133.1%*	*211.3%*	*133.8%*	*85.9%*	*43.3%*	*19.9%*	*15.0%*
% Margin				*89.3%*	*95.3%*	*97.3%*	*98.2%*	*98.5%*	*98.6%*	*98.6%*
Capex	(130.0)	(860.0)	(1,215.0)	(20.0)	(25.0)	(110.0)	(667.0)	(948.0)	(45.0)	(400.0)
Free Cash Flow	**(143.6)**	**(892.4)**	**(1,245.9)**	**224.4**	**971.8**	**2,399.0**	**4,209.1**	**6,418.7**	**9,154.8**	**10,288.8**
Growth %					*333.1%*	*146.9%*	*75.5%*	*52.5%*	*42.6%*	*12.4%*

**All Dollars in Millions, Except ARPU*

Source : Deutsche Bank, company information.



Appendix 1

Important Disclosures

*Other information available upon request

Disclosure checklist

Company	Ticker	Recent price*	Disclosure
AST SpaceMobile	ASTS.OQ	10.3 (USD) 28 Jun 2021	1, 2, 7

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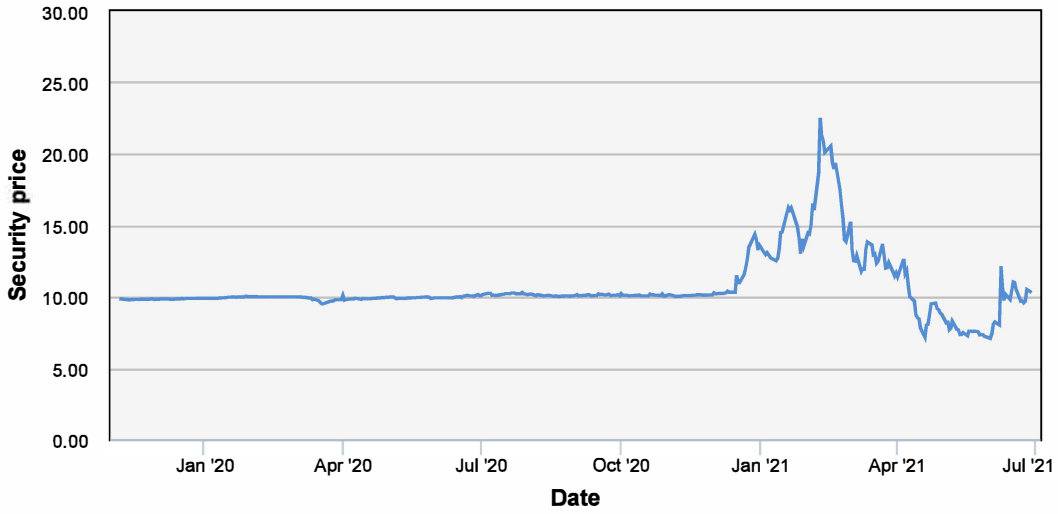
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Historical recommendations and target price: AST SpaceMobile (ASTS.OQ)

(as of 06/28/2021)



Current Recommendations

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Hold
Sell
Not Rated
Suspended Rating

** Analyst is no longer at Deutsche Bank

Equity Rating Key

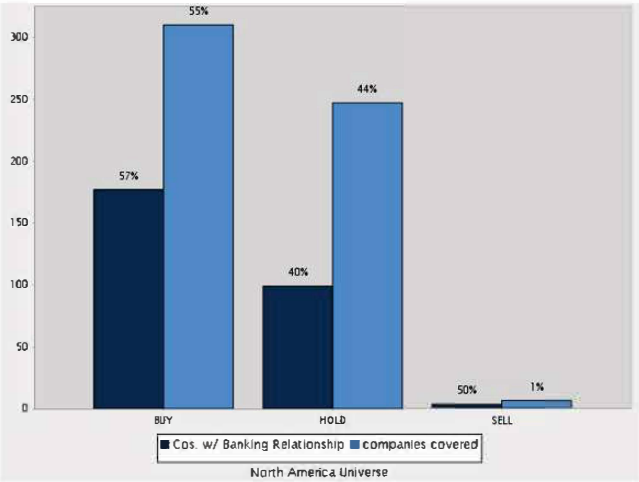
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Sell: Based on a current 12-month view of total share-holder return, we recommend that investors sell the stock.

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