



DIRECT-TO-DEVICE ANALYSIS SERIES

# Seven questions about direct-to-device

Two satellite operators may transmit on American mobile spectrum, and both rent it. One spends fifteen times its revenue on capital and holds leases that all expire on one day in May 2028. The other has agreed to pay \$19.6 billion to own its spectrum and, in October 2026, to buy the low band it lacked. Read the seven parts to find out:

1. who holds which spectrum and on what terms
2. why the operators rent and what the capital is costing them
3. what a phone and a satellite can physically do between them
4. what owning spectrum costs against renting it, including the reported price of low band
5. what the FCC and Congress have already decided
6. who has the money and who is supplying it
7. whether SpaceX becomes a carrier or stays a supplement, and the public signals that would show it first

# About this ebook

This ebook collects the seven parts of *Direct-to-Device Analysis Series*, published by Blue Prysm at [www.blueprysm.com/analysis/](http://www.blueprysm.com/analysis/).

The website carries the current edition. Where a figure here differs from the website, the website is the later version.

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Second edition, October 2026

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PART 2 SEC filings retrieved 17 Sep 2026

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PART 4 FCC licences 13 Sep 2026 · SEC filings as dated · auction results as published · Grain agreement 8 Oct 2026, read 12 Oct 2026

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two licences. The performance terms behind the waivers are satellite metrics tested from 30 November 2027 at two, four and nine years, and the FCC wrote the same terms into the 800 MHz band on **1 July 2026**, with a competitive process that ended in SpaceX's agreement to buy it on 8 October.

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Does anyone have the money?

The big three carriers generated **\$105.4B** of operating cash flow in FY2025 and had **\$33.8B** left after capex and dividends, against roughly \$337B of long-term debt less cash. Every new commitment must displace an old one. AST has about fourteen months of cash at its current rate of spend. Both operators that own their spectrum have agreed to be bought, by Amazon and Rocket Lab, and SpaceX held \$93.5B of cash on 30 June 2026.

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## PART 07

**What happens next**

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Carrier or supplement?

Two dates anchor the series: the EchoStar to SpaceX second closing, expected on or about **30 November 2027**, and the expiry of AST's 1,197 leases on **9 May 2028**. Every commercial negotiation in this market falls between them, and the filings that would reveal either scenario are public. On 8 October 2026 one of them appeared: SpaceX agreed to buy up to **14 MHz** of paired 800 MHz, the first low band it has contracted to own, and said it will deploy it on the ground as well as from orbit. The performance obligations now carry dates, and the first test falls on **30 November 2029**.

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**Work with Blue Prysm**

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# What is deployed today

## Who holds which spectrum, and on what terms?

Only two satellite operators have the right to transmit on American terrestrial spectrum, and almost everything they hold is rented from a carrier. AST's entire American footprint of 1,197 authorisations expires on a single day in May 2028. In orbit, four fleets fly at four different altitudes, and no public catalogue says which satellites carry a direct-to-cell payload. Since October SpaceX has held an authorisation for 15,000 more satellites, lower still, and an agreement to buy low band it does not yet hold.

### BLUE PRYSM · ANALYSIS

340–1,830 km

#### IN BRIEF

- Only two satellite operators appear in the FCC's market licence file of 13 September 2026 with American terrestrial rights. AST & Science holds **1,197** active records and Space Exploration Holdings 175, and all but two are leases of a carrier's spectrum. SpaceX's two licences were granted on 26 August 2026.
- Each position was granted in a single day and expires in a single day. AST's authorisations all expire on **9 May 2028**, twenty months after the file snapshot. SpaceX's 173 leases still show 3 March 2026 on every record, a date that has passed, while every other holder in the PCS G block shows 2036.
- In orbit, Starlink had **10,702** objects with current element sets at epoch 17 September 2026, and 824 of them, about one in thirteen, flew below 400 km where the direct-to-cell shells are. The other three fleets all fly higher. AST's sampled BlueBirds were at about 505 and 527 km, Lynk's Tower 4 at about 462 km and Globalstar's 28 satellites at 1,414 to 1,830 km.

- Three different Starlink numbers are in circulation, and they measure different things. The FCC has authorised 7,500 satellites for supplemental coverage, CelesTrak counts 11,123 payloads on orbit, and SpaceX's own prospectus says about 650 V1 Mobile satellites serve phones. Any claim should say which of the three it quotes. A fourth number arrived on 6 October 2026: an authorisation for **15,000** direct-to-device satellites in a separate constellation at 326 to 335 km, which is a ceiling rather than a fleet.
- The spectrum position is changing too. Two days after that order, on 8 October 2026, SpaceX agreed to buy Grain Management's nationwide 800 MHz portfolio, up to **14 MHz** paired of low band, subject to FCC consent. Nothing has moved in the licence file yet; [part 4](#) has the terms and the history.

## Only two satellite operators hold American terrestrial rights

The FCC's market licence file of 13 September 2026, filtered to active records held by licensee-type entities, shows two satellite operators with American terrestrial rights. AST & Science holds 1,197 records and Space Exploration Holdings holds 175 (Exhibit 1).

Almost none of it is owned. Every one of AST's 1,197 records is a lease: permission written against spectrum for which another company holds the licence. SpaceX's position is similar, with 173 leases in the PCS G block and two market licences granted on 26 August 2026. [Part 4](#) covers the difference between the two kinds of record. Every other direct-to-device operator is either an incumbent working on mobile-satellite spectrum of its own or a prospect with no American terrestrial rights.

AST's 654 markets against SpaceX's 174 say nothing about either company's ambition. A lease inherits the geography of the licence beneath it, and the two bands were divided differently when first licensed. The 700 MHz lower blocks were licensed in cellular market areas, which are small, so AST's footprint comes in 654 pieces. The PCS G block was licensed in economic areas, which are larger, so SpaceX's comes in 174. The market counts describe the band plans rather than the companies.

## EXHIBIT 1

## Two satellite operators hold American terrestrial rights, and all but two of their records are leases

|                      | AST & SCIENCE                                                                         | SPACE EXPLORATION HOLDINGS<br>(SPACEX)                                     |
|----------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| Active records       | <b>1,197</b>                                                                          | <b>175</b> (173 in the service band)                                       |
| Licence or lease     | <b>All leases</b>                                                                     | <b>173 leases</b> ; 2 licences granted 26 Aug 2026                         |
| Spectrum in service  | 704 to 716 and 734 to 746 MHz (700 MHz lower blocks), <b>24 MHz</b>                   | 1910 to 1915 MHz up and 1990 to 1995 MHz down (PCS G block), <b>10 MHz</b> |
| Markets              | <b>654</b> distinct, mostly cellular market areas                                     | <b>174</b> distinct economic areas                                         |
| Landlords            | AT&T, Verizon and FirstNet, whose lease notifications the order of 21 Apr 2026 covers | T-Mobile, under the order of 26 Nov 2024                                   |
| Granted              | <b>21 Apr 2026</b> , all on one day                                                   | <b>26 Nov 2024</b> , all on one day                                        |
| Expiry on the record | <b>9 May 2028</b> , all on one day                                                    | <b>3 Mar 2026</b> on every lease; every other G-block holder shows 2036    |
| Example markets      | Florida 2 (Glades), Texas 4 (Briscoe), Kansas 3 (Jewell), Sherman-Denison TX          | Eugene-Springfield OR, Bangor ME, Twin Falls ID, Gulf of Mexico            |

Counts are of active records held by licensee-type entities. The file also holds contact rows for the same records, which are excluded.

Source: FCC market licence file (I\_market), snapshot 13 September 2026, parsed 17 September 2026; FCC DA 26-391 (21 April 2026) and DA 24-1193 (26 November 2024) (Filed).

### HOW THE LICENCE FILE IS READ

The FCC publishes its market-based licences as a single bulk file, I\_market, of about 90 MB. Four steps turn it into the counts above.

**Active records.** Records with an active status are kept; the rest are dropped.

**Entity rows.** The file holds a contact row beside the licensee row for the same record. Only licensee-type rows are counted.

**Leases.** Leases are distinguished from licences by the form of the call sign.

**Bands.** Each record's frequencies come from the market-frequency table.

A lease is permission to transmit. The file does not say whether any satellite has used the spectrum it records.

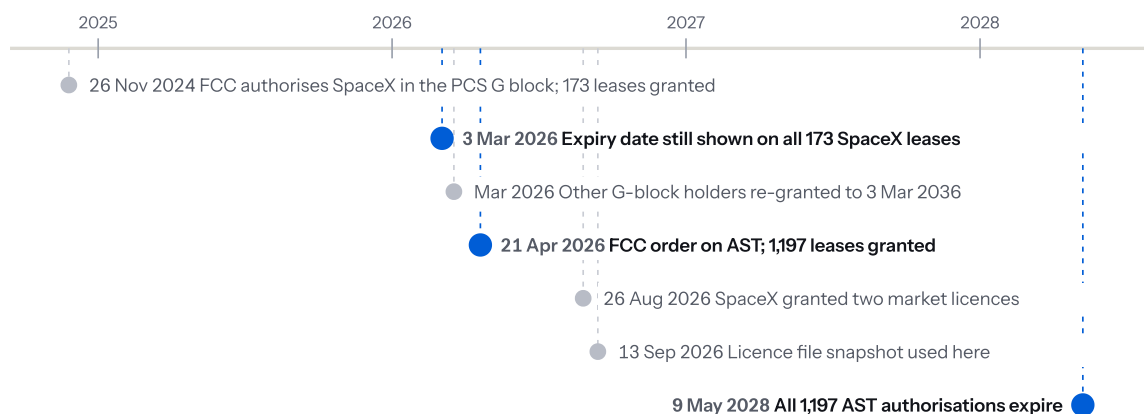
## Each position was granted on one day and expires on one day

Each date in the file matches an FCC order to the day. AST's records trace to the Bureau order adopted on [21 April 2026](#), which also covers the lease notifications filed with AT&T, Verizon and FirstNet. SpaceX's trace to the order of [26 November 2024](#) that authorised supplemental coverage from space in the PCS G block. For each position the file and the order agree.

The expiry dates set the two positions apart. All 1,197 of AST's authorisations expire on 9 May 2028, so its entire American footprint rests on a single date, twenty months after the September 2026 snapshot. Every one of SpaceX's 173 leases carries 3 March 2026, a date that had already passed at the snapshot, while every other holder in the PCS G block shows 2036. The file alone does not explain the discrepancy; part 4 looks at it more closely (Exhibit 2).

### EXHIBIT 2

#### AST's whole American footprint comes up for renewal on 9 May 2028, twenty months after the September 2026 snapshot



Source: FCC market licence file, snapshot 13 September 2026; DA 24-1193 (26 November 2024); DA 26-391 (21 April 2026) (Filed). Note: the 3 March 2026 date is reported as the file shows it, and its cause is not confirmed.

The dates matter because a position granted in a day can be withdrawn in a day. Neither company bought these rights at auction; both hold them at the pleasure of a landlord and a regulator, and in our view the expiry dates deserve more attention than the record counts. Everything AST has launched, and everything a partner or investor has committed to it, rests on the May 2028 date being extended. Nothing on the public record says it will be.

Neither company owns the spectrum its consumer service depends on.  
Both are tenants, and the tenancy has dates on it.

The file describes what was held on 13 September. What has been contracted since is larger. SpaceX's EchoStar purchase, 65 MHz between 1.7 and 2.2 GHz, sits in a trust until a closing expected in November 2027, and on 8 October 2026 SpaceX agreed to buy a second position, up to 14 MHz of paired 800 MHz spectrum, from Grain Management ([release](#)), subject to the FCC's consent. Neither is in the file, because neither has closed. The file shows who can transmit today, and today both operators are tenants.

The absences are as telling. Globalstar, Iridium and Skylo appear nowhere in these records because each operates in mobile-satellite spectrum it holds in its own right, which puts an incumbent in a far stronger negotiating position than a newcomer renting a carrier's. Two of the three have since agreed to be bought, Globalstar by Amazon on 13 April 2026 and Iridium by Rocket Lab on 28 June 2026; [part 6](#) sets out the terms.

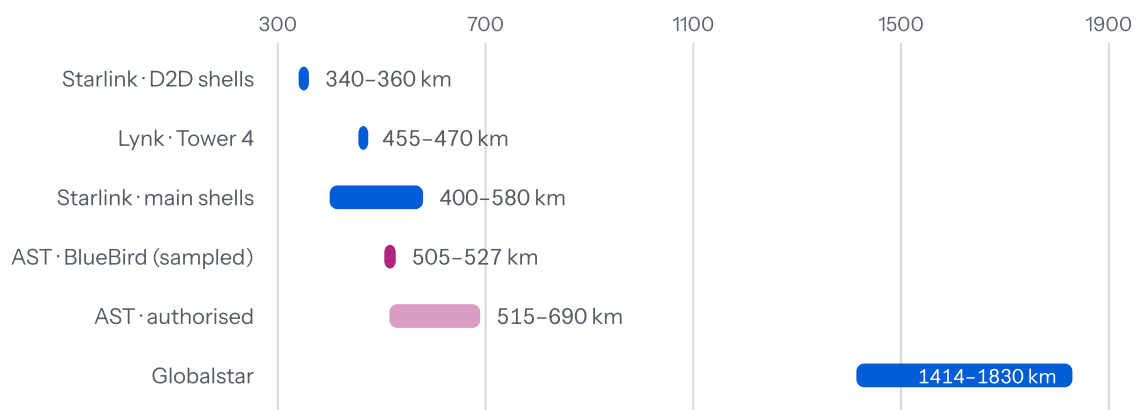
## Four fleets fly at four different altitudes

The four fleets that bear on this market are not variations on a single design. Each operator has settled on an altitude, an inclination and a fleet size, and together the three choices describe a commercial position rather than an engineering one (Exhibit 3).

### EXHIBIT 3

#### Four fleets fly between 340 and 1,830 km, and the two challengers chose different altitudes

■ Measured from orbital elements ■ AST, sampled and authorised



Altitude, km. Inclination is a commercial choice as much as an engineering one.

Source: altitudes computed from CelesTrak two-line elements, epoch 17 September 2026 (Calculated); FCC DA 24-1193 and DA 26-391 for the authorised shells (Filed). Note: AST and Lynk figures are samples, because the catalogue source throttled bulk retrieval.

Starlink keeps most of its fleet between 400 and 580 km, in four measurable shells. A further 824 of its 10,702 objects were below 400 km at the September epoch, consistent with the 340 to 360 km shells the 2024 order describes. AST flies at much the same height and has made the opposite choice about everything else. The two sampled BlueBirds flew at about 505 and 527 km at 53°, and its order describes

altitudes near 515 to 530 km and 680 to 690 km, but the whole constellation is to be 223 to 243 satellites, each far larger than a Starlink. Lynk’s Tower 4 was at about 462 km in a 97.3° sun-synchronous orbit. Globalstar, the incumbent, flies its 28 satellites far above all of them, at 1,414 to 1,830 km and 52° (Exhibit 4).

| EXHIBIT 4                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                    |                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Each fleet’s altitude, inclination and size amount to a different bet                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                    |                                                       |
| OPERATOR                                                                                                                                                                                                                                         | WHAT THE CATALOGUE SHOWS                                                                                                                                                                                                                                                                                                                                                                           | THE BET                                               |
| Starlink                                                                                                                                                                                                                                         | 10,702 objects in CelesTrak element sets at epoch 17 Sep 2026, against 11,123 Starlink payloads on orbit in its satellite catalogue. Four measured shells: 4,380 at 400 to 480 km and 53°; 3,235 at 480 to 530 km and 43°; 1,261 at 400 to 480 km and 97°; 493 at 530 to 580 km and 70°. <b>824 of the 10,702 (7.7%) below 400 km</b> , consistent with the 340 to 360 km shells in the 2024 order | Mass and proximity: many small satellites, flown low  |
| AST SpaceMobile                                                                                                                                                                                                                                  | Sampled: <b>BlueBird 01 at about 505 km</b> and <b>BlueBird 08 at about 527 km</b> , both 53°. The FCC order describes altitudes near 515 to 530 km and 680 to 690 km and a constellation of <b>223 to 243 satellites</b>                                                                                                                                                                          | Fewer, much larger satellites                         |
| Lynk                                                                                                                                                                                                                                             | <b>Tower 4 at about 462 km, 97.3°</b> , sun-synchronous and near-polar                                                                                                                                                                                                                                                                                                                             | Global revisit rather than continuous coverage        |
| Globalstar                                                                                                                                                                                                                                       | <b>28 satellites at 1,414 to 1,830 km, 52°</b>                                                                                                                                                                                                                                                                                                                                                     | An incumbent: high orbit, owned spectrum, small fleet |
| The Starlink count is the objects in the element-set pull at that epoch; the on-orbit count is CelesTrak’s satellite catalogue reconstructed for the same date.                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                    |                                                       |
| Source: CelesTrak two-line elements, epoch 17 September 2026, and satellite catalogue reconstructed for that date (Calculated); FCC DA 24-1193 (26 November 2024) and DA 26-391 (21 April 2026) (Filed). Note: AST and Lynk figures are samples. |                                                                                                                                                                                                                                                                                                                                                                                                    |                                                       |

Only two of the four compete for the same consumer service. Starlink’s many small satellites flown low and AST’s few large ones flown higher are rival ways of closing the same link to a phone, and each commits its operator to a different kind of fleet for years. The other two serve different purposes. A sun-synchronous fleet like Lynk’s passes over everywhere at intervals rather than lingering over one place. A small constellation in high orbit, on spectrum it owns, is the profile of an incumbent.

Inclination reads as an engineering parameter and is a commercial choice first. A 53° shell concentrates capacity over the populated mid-latitudes. A 97° sun-synchronous orbit passes over everywhere and lingers nowhere, which suits messaging and does not suit a service that has to feel like coverage.

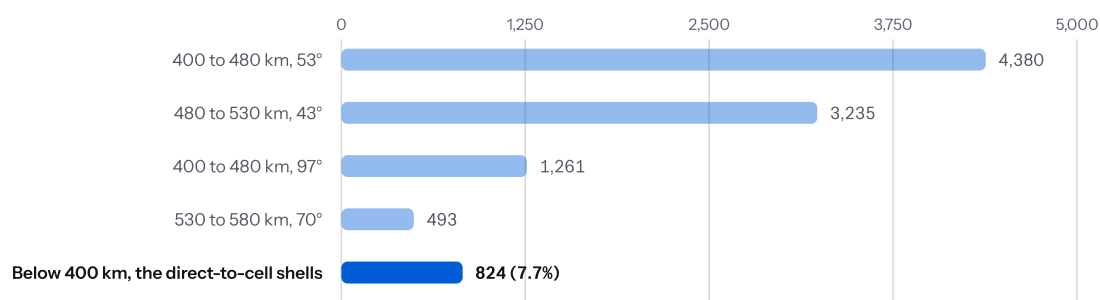
Altitude is a trade. A higher satellite sees more of the ground at once and stays over any given point for longer, but has to work much harder to close a link to a phone in someone’s hand; AST’s bet is to build large and launch few. A lower satellite closes the link more easily and has a shorter life, so the operator builds small and launches constantly, which is Starlink’s approach. Part 3 works through the link budget each design has to close, and the non-terrestrial series sets out [what each orbit is good for](#).

## None of the three Starlink counts in circulation is the number serving phones

Three different Starlink counts are in circulation, and they measure different things. The FCC's order of 26 November 2024 authorises supplemental coverage across up to 7,500 Gen2 satellites, which is a ceiling. CelesTrak's satellite catalogue held 11,123 Starlink payloads on orbit on 17 September 2026, which is a fleet. Its element sets at that epoch held 10,702 Starlink objects, of which 824, or 7.7%, flew below 400 km, where the order places the direct-to-cell shells (Exhibit 5). None of the three is the number serving phones, because the public catalogue cannot distinguish a satellite carrying direct-to-cell hardware from one without. The only source for that figure is SpaceX, whose prospectus of 12 June 2026 puts the fleet at approximately 650 V1 Mobile satellites, serving approximately 7.4 million monthly unique devices across approximately 30 countries.

### EXHIBIT 5

#### Four measured shells hold most of Starlink's 10,702 objects, and 824 fly below 400 km



Source: altitudes and inclinations computed from CelesTrak two-line elements, epoch 17 September 2026 (Calculated); FCC DA 24-1193 for the 340 to 360 km shells (Filed). Note: the five rows account for 10,193 of the 10,702 objects; we estimate the remaining 509 flew at or above 400 km outside the four shells.

## EXHIBIT 6

## Four different counts describe Starlink's fleet, and none of them is the number of satellites serving phones

| COUNT                         | FIGURE    | WHAT IT MEASURES                                                                                                                      | SOURCE                                                       |
|-------------------------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| Authorised                    | 7,500     | Gen2 satellites that may provide supplemental coverage in the PCS G block                                                             | FCC DA 24-1193, 26 Nov 2024                                  |
| Authorised, direct-to-device  | 15,000    | A separate constellation in nine shells at 326 to 335 km, for the EchoStar bands and the PCS G block; half due in orbit by 7 Oct 2032 | FCC DA 26-1078, 6 Oct 2026                                   |
| On orbit                      | 11,123    | Starlink payloads launched and not decayed                                                                                            | CelesTrak satellite catalogue, reconstructed for 17 Sep 2026 |
| With current orbital elements | 10,702    | Starlink objects in the element sets, of which 824 below 400 km                                                                       | CelesTrak element sets, epoch 17 Sep 2026                    |
| Carrying the phone payload    | about 650 | V1 Mobile satellites providing satellite-to-mobile data, over-the-top voice and messaging                                             | SpaceX prospectus, 12 Jun 2026                               |

The catalogue does not flag direct-to-cell payloads, so the last row rests on the company's own statement.

Source: FCC DA 24-1193 and DA 26-1078 (Filed); CelesTrak satellite catalogue and element sets (Calculated); SpaceX prospectus, Form 424B4, 12 June 2026 (Filed).

Two of the gaps between those figures are ordinary. An authorisation and a fleet measure different things, so the 7,500 and the 11,123 need not match, and the catalogue and the element sets differ because an object can be on orbit without a current element set in a given pull. The gap between all of those and the 650 is different in kind: nothing in a public catalogue separates a satellite with direct-to-cell hardware from one without, so no counting from outside can close it. An authorisation is a ceiling, a catalogue count is a fleet, and neither is a service. The 15,000 authorised on 6 October 2026 is the largest ceiling and the furthest from a fleet: none of those satellites has been launched, and the order gives SpaceX until 7 October 2032 to fly half of them.

Press coverage routinely blurs the three counts. Anyone weighing a direct-to-device claim should ask which one is being quoted. The only figure that describes the service comes from the company, and nothing in the catalogue can check it.

## Terms used

- **Lease.** Permission to use spectrum that another company is licensed to hold, for a term that cannot outlast the licence beneath it. In the FCC file a lease has a different form of call sign from a licence.

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- **Cellular market area (CMA).** One of the small geographic units in which the 700 MHz lower blocks were licensed. AST's 654 markets are mostly of this kind.

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- **Economic area (EA).** A larger licensing unit. The PCS G block SpaceX leases is licensed in economic areas, and 174 of them appear in its records.

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- **Supplemental coverage from space (SCS).** The FCC's framework, in GN Docket 23-65, under which a satellite operator may transmit on a terrestrial carrier's spectrum to supplement that carrier's coverage.

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- **Element set.** The two-line orbital elements CelesTrak publishes for a tracked object, from which mean motion converts to altitude. An object can be on orbit in the catalogue without a current element set in a given pull, which is why the two Starlink counts differ.

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## Implications

### CARRIER STRATEGIST

Check who controls the spectrum underneath any satellite service your subscribers will see, because it is almost never the satellite operator. The spectrum serving a market from orbit is rented from a national carrier; AST's 1,197 authorisations expire on 9 May 2028, and SpaceX's leases show a date that has passed. Treat the landlord's position and the renewal date as the terms of any partnership.

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### INVESTOR

Verify spectrum access, its term and the gap between authorised and deployed before you read a deck. All three are in public records, and none takes long: the FCC licence file for the leases and their dates, the Bureau orders for the authorisations and CelesTrak for what flies. When a Starlink count comes up, ask which of the three it is, because only the company's own figure describes the service.

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### VENDOR

Design to the bands on the record today. AST's service link is the 700 MHz lower blocks, at 704 to 716 and 734 to 746 MHz, and SpaceX's is the PCS G block at 1910 to 1915 and 1990 to 1995 MHz. Those are the links the FCC has authorised; part 3 sets out the gateway and telemetry bands that go with them.

## Method and limits

### HOW THIS WAS BUILT

The FCC's I\_market bulk file, about 90 MB, was downloaded from the public licensing directory and filtered to active records. The file carries a contact row beside each licensee row, so only licensee-type rows are counted; counting both is the most common way this count goes wrong. Leases are distinguished from licences by the form of the call sign, and bands are read from the market-frequency table. Altitudes are computed from CelesTrak's two-line elements at epoch 17 September 2026 by converting mean motion to altitude. The on-orbit count is CelesTrak's satellite catalogue, reconstructed for the same date.

### WHAT IT DOES NOT SHOW

A lease is permission to transmit, and it says nothing about whether anyone has. Public catalogues do not flag direct-to-cell payloads, so the only source for the number of satellites serving phones is SpaceX's own prospectus. The AST and Lynk altitudes are samples rather than fleet-wide measurements, because the catalogue source throttled bulk retrieval. The lessors' identities have not been checked against the licence file; the landlords named here are the ones the FCC orders name.

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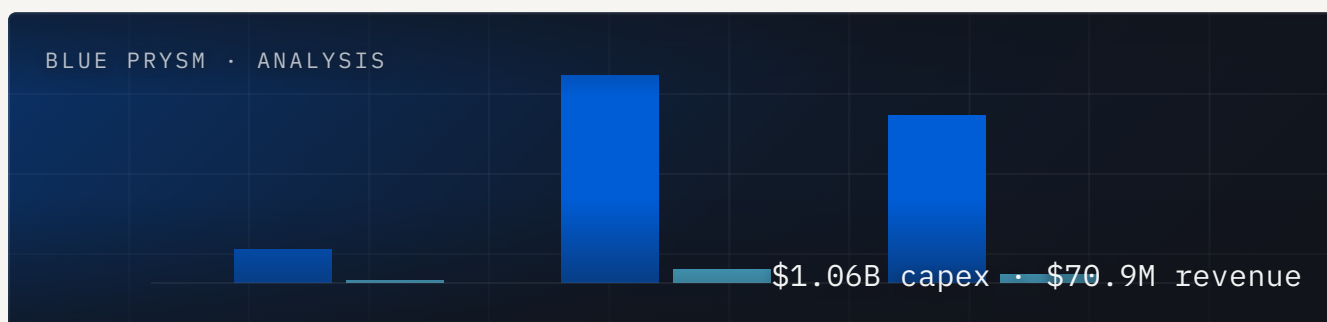
**Data as of:** FCC licences 13 Sep 2026 · orbital elements 17 Sep 2026 · FCC order of 6 Oct 2026 and the Grain agreement of 8 Oct 2026, read 12 Oct 2026 · Method version 1.0.

**Sources.** FCC licence database (snapshot 13 Sep 2026), FCC authorisation orders including DA 26-1078 of 6 Oct 2026, CelesTrak orbital elements (epoch 17 Sep 2026), Grain Management release of 8 Oct 2026. Parsed 17 Sep 2026; October items read 12 Oct 2026.

# Why the operators are doing this

## Why do it this way, and what does it cost?

The filings explain the deployments in part 1. AST SpaceMobile spent \$1,064.7 million on capital in FY2025, fifteen times its revenue, while Iridium, the incumbent, made \$114.4 million of net income on \$871.7 million. A company spending at AST's rate cannot afford to buy spectrum, so it rents, and the tenancy has an end date: every one of its 1,197 lease authorisations expires on 9 May 2028.



### IN BRIEF

- AST SpaceMobile is a construction project. It spent **\$1,064.7M** on capital in FY2025 against \$70.9M of revenue, up from \$4.4M the year before, and a further \$859.2M in the first half of 2026 (SEC XBRL filings). Iridium, the one profitable operator in the market, earned \$114.4M of net income on \$871.7M of revenue and spent \$100.3M keeping its constellation up.
- SpaceX has filed with the SEC since June 2026, and its phone business is still not separately reported. Starlink Mobile is reported inside an Enterprise & Government revenue line of **\$1,806M** for the quarter to 30 June 2026, alongside aviation, maritime and government work. No direct-to-cell revenue or capital figure is broken out.
- Renting follows from the spending. Buying AST's 24 MHz nationwide would cost roughly **\$5.4B to \$7.2B** at the auction and private prices in part 4, two to three times the \$2,335.7M of cash it held at the end of FY2025.
- All 1,197 of AST's lease authorisations were granted on 21 April 2026, and all of them expire on **9 May 2028**. Any evidence of usage, pricing and retention the business can produce is needed before that date, because the counterparties at renewal are the carriers whose customers the service serves.

## The three companies in the table are three different kinds of business

Every figure in Exhibit 1 is from an SEC filing, tagged and dated; none is from an investor presentation. The three companies compared are satellite operators whose filings cover their satellite business on its own. SpaceX has filed since June 2026 but reports its phone service inside a larger segment, which is covered below.

### EXHIBIT 1

#### Iridium is run for profit, Globalstar runs near break-even, and AST is a construction project

|                              | AST                             | SPACEMOBILE | GLOBALSTAR        | IRIDIUM                |
|------------------------------|---------------------------------|-------------|-------------------|------------------------|
| Revenue, FY2025              | \$70.9M (from \$4.4M in FY2024) |             | \$273.0M          | \$871.7M               |
| Revenue, H1 2026             |                                 | \$46.0M     | \$134.8M          | \$444.3M               |
| Net income, FY2025           |                                 | -\$341.9M   | -\$8.7M           | +\$114.4M              |
| Capex, FY2025                |                                 | \$1,064.7M  | \$5.5M (see note) | \$100.3M               |
| Capex, H1 2026               |                                 | \$859.2M    | n/a               | n/a                    |
| Operating cash flow, FY2025  |                                 | -\$72M      | \$622M            | \$400M                 |
| Operating cash flow, H1 2026 |                                 | -\$145M     | \$160M            | \$186M                 |
| Cash, FY2025                 |                                 | \$2,335.7M  | \$447.5M          | \$96.5M                |
| Cash, 30 Jun 2026            |                                 | \$2,288M    | \$410M            | \$184M                 |
| Long-term debt               |                                 | \$2,963M    | \$307M            | \$1,757M (31 Dec 2025) |
| R&D, FY2025                  |                                 | \$28.1M     | \$6.1M            | \$19.8M                |

Globalstar tags only PaymentsToAcquireOtherPropertyPlantAndEquipment, so its capex is not comparable with the other two columns. Its FY2025 net cash used in investing activities was **\$550.4M**, the better proxy for what it spends (see [part 6](#)). Iridium's long-term debt is as reported at 31 December 2025, because its Q2 2026 filing does not tag the same line. Rounded figures are as tabulated in part 6.

Source: SEC XBRL company facts ([data.sec.gov](https://data.sec.gov)), retrieved 17 September 2026; revenue, capital expenditure, operating cash flow, cash, debt, R&D and net income read from each company's FY2025 Form 10-K and Q2 2026 Form 10-Q tags (Filed). Note: fiscal years as filed. AST's FY2025 revenue is the amount in its FY2025 Form 10-K.

The three columns are not three stages of one company. Iridium is a profitable incumbent, with \$871.7M of revenue in FY2025, the only positive net income in the table and a mature constellation maintained on \$100.3M a year of capital expenditure. Globalstar is a wholesale business of a different kind, with \$273.0M of revenue, a net loss of \$8.7M, research spending of \$6.1M and spectrum it owns rather than rents. AST SpaceMobile is a construction project. It spent \$1,064.7M in FY2025 against \$70.9M of revenue, funded from cash of \$2,335.7M, which works out at a little over two years of spending at that rate.

Cash from operations makes the same point. Iridium generated \$400M from operations in FY2025 and Globalstar \$622M, so both pay their own way. AST ran an outflow of \$72M in the year and \$145M in the first half of 2026. Its cash fell from \$2,335.7M to \$2,288M over that half, and it carried \$2,963M of long-term debt at 30 June 2026. Two of these businesses fund themselves; the third draws on money it has raised.

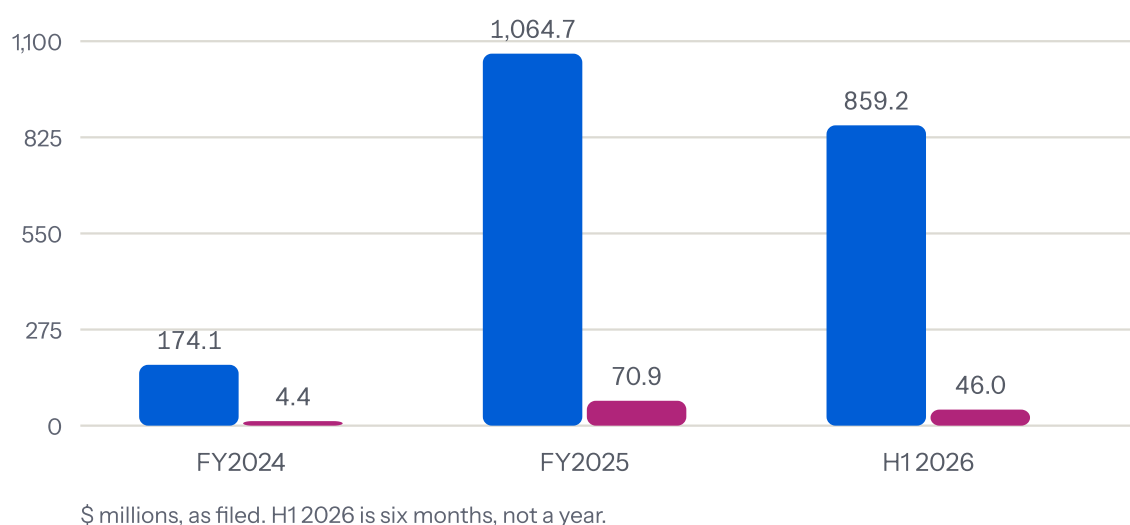
## AST's capital spending rose sixfold in a year

Capital expenditure is the fastest-moving line in AST's accounts: \$174.1M in FY2024, six times that at \$1,064.7M in FY2025, and \$859.2M in the first half of 2026 (Exhibit 2). Revenue for the same periods was \$4.4M, \$70.9M and \$46.0M. The company is in the middle of a build, and the build is the strategy rather than a preliminary to it.

EXHIBIT 2

**AST spent \$1,064.7M on capital in FY2025 and \$859.2M in the first half of 2026, against revenue of \$70.9M and \$46.0M**

■ Capital expenditure ■ Revenue



Source: SEC XBRL company facts, retrieved 17 September 2026; fiscal years as filed (Filed). Note: \$ millions. H1 2026 is six months.

The rest of AST's column follows from that. A net loss of \$341.9M is what construction on this scale produces. The \$28.1M of research spending looks small only beside the hardware spend. The \$2,335.7M of cash matters chiefly as a measure of how long the build can continue at the current rate; margin is a question for the day construction stops.

The three companies therefore deserve different questions. For Iridium and Globalstar, which are being run, the questions are margin, retention and renewal. For AST, which is being built, they are how much is left to build and who pays for it.

#### AST'S RUNWAY

At 30 June 2026 AST held \$2,288M of cash and \$2,963M of long-term debt. In the first half of 2026 it spent \$859M on capital and ran an operating cash outflow of \$145M.

**Half-year outflow.** Together, about \$1,004M went out in six months.

**Runway.** At that rate the cash covers about fourteen months before new financing is needed (our calculation).

**Context.** The company has raised capital repeatedly and may do so again. This clock runs alongside the lease expiry of 9 May 2028.

Figures are from AST's FY2025 Form 10-K and Q2 2026 Form 10-Q, as tagged. Part 6 compares them with the carriers' cash flows.

## SpaceX's filings do not separate its phone business

The largest constellation in the market is missing from Exhibit 1 even though SpaceX is now a public filer. It filed a Form S-1 on 20 May 2026, a prospectus on 12 June 2026 and its first Form 10-Q, for the quarter to 30 June 2026, on 4 August 2026. The 10-Q details the Connectivity segment, which had \$4,291M of revenue, \$1,656M of income from operations and \$1,367M of capital expenditure in the quarter, and shows \$93,522M of cash and cash equivalents at 30 June for the group as a whole. Starlink Mobile revenue, however, is reported inside the segment's Enterprise & Government line of \$1,806M, alongside aviation, maritime and government work, and nothing in the filing separates it out (Exhibit 3).

## EXHIBIT 3

## SpaceX discloses its Connectivity segment, and its satellite-to-phone service is one line inside it

| MEASURE                                       | FIGURE                                   | WHERE IT IS REPORTED                                                                             |
|-----------------------------------------------|------------------------------------------|--------------------------------------------------------------------------------------------------|
| Connectivity revenue, Q2 2026                 | <b>\$4,291M</b>                          | Segment note, Form 10-Q filed 4 Aug 2026                                                         |
| Of which Enterprise & Government              | <b>\$1,806M</b>                          | Revenue note; a footnote says the line “includes revenue from Starlink Mobile service offerings” |
| Connectivity income from operations, Q2 2026  | \$1,656M                                 | Segment note                                                                                     |
| Connectivity capital expenditure, Q2 2026     | \$1,367M                                 | Segment note; for the segment, not the phone service                                             |
| Cash and cash equivalents, 30 Jun 2026        | \$93,522M                                | Balance sheet, for the group                                                                     |
| V1 Mobile satellites                          | <b>about 650</b>                         | Prospectus, 12 Jun 2026                                                                          |
| Monthly unique devices served                 | about 7.4 million, in about 30 countries | Prospectus, 12 Jun 2026                                                                          |
| Direct-to-cell revenue or capital expenditure | <b>Not broken out</b>                    | No line in the 10-Q or the prospectus                                                            |

The prospectus says approximately 650 V1 Mobile satellites provide satellite-to-mobile data, over-the-top voice and messaging to approximately 7.4 million monthly unique devices across approximately 30 countries.

Source: SpaceX Form 10-Q for the quarter to 30 June 2026, filed 4 August 2026; prospectus (Form 424B4), 12 June 2026 (Filed).

We have not filled the blank with an estimate. It would be the only unfilled number in an argument built on filings, and it would be the number everyone quoted. In our view a market model that treats all four operators as equally knowable is wrong at the foundation; a sound one has three measured companies and one blank, and says so.

## Renting is the only route the capital expenditure line leaves open

[Part 1](#) showed that AST and SpaceX hold leases rather than licences, so neither owns the spectrum its consumer service depends on. On its own that looks like a weakness; against the capital expenditure line it looks like the only route open. We see three reasons the arrangement holds, all of them financial.

- **Crowding out.** A company spending a billion dollars a year on hardware cannot also buy the band it flies on. Buying AST’s 24 MHz nationwide would cost roughly \$5.4B to \$7.2B at the prices in [part 4](#), which is two to three times its cash. A lease keeps the capital in the constellation, where the business needs it.

- **Optionality.** A lease can be exited and a licence purchase cannot. For a service that has not yet proved consumer demand, reversibility has value: renting turns an irreversible bet on a market into a recurring cost that can be stopped.
- 
- **The carrier's side.** The carrier lends spectrum it already owns, gains coverage it could not build economically, and keeps billing its own subscriber. The satellite operator gains reach without winning customers one at a time. Each side supplies the part of the business it is better placed to supply, which makes the arrangements wholesale rather than retail (Exhibit 4).
- 

| EXHIBIT 4                                                                                                                                                                      |                                                                                                         |                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| In a wholesale arrangement the carrier keeps the spectrum and the customer, and the satellite operator supplies reach                                                          |                                                                                                         |                                                                                                       |
|                                                                                                                                                                                | CARRIER                                                                                                 | SATELLITE OPERATOR                                                                                    |
| Supplies                                                                                                                                                                       | Licensed spectrum, lent under a lease; the subscriber relationship and the bill                         | Satellites, launch and coverage where a tower is uneconomic                                           |
| Gets                                                                                                                                                                           | Coverage it cannot economically build                                                                   | Reach without acquiring customers one at a time                                                       |
| Keeps                                                                                                                                                                          | The licence, the customer and the pricing                                                               | The constellation and its operating cost                                                              |
| Depends on                                                                                                                                                                     | A satellite operator that can fund a fleet before revenue arrives                                       | A partner who owns both the spectrum and the customer relationship, and who sets the terms at renewal |
| On the record                                                                                                                                                                  | AT&T, Verizon and FirstNet with AST (order of 21 Apr 2026); T-Mobile with SpaceX (order of 26 Nov 2024) | AST: 1,197 leases to 9 May 2028. SpaceX: 173 leases in the PCS G block                                |
| The division of roles is our reading of the arrangements the FCC orders describe.                                                                                              |                                                                                                         |                                                                                                       |
| Source: FCC DA 26-391 (21 April 2026) and DA 24-1193 (26 November 2024); FCC market licence file, snapshot 13 September 2026 (Filed); roles as read by Blue Prysm (Judgement). |                                                                                                         |                                                                                                       |

The arrangement has a built-in constraint: the satellite operator’s revenue depends on a partner who owns both the spectrum and the customer. Globalstar shows the same logic from the other end. It owns its spectrum outright and still earns most of its revenue wholesaling capacity to one large consumer partner rather than selling retail, so its accounts show substantial revenue and almost no margin. Owning the spectrum removes the landlord; it does nothing about who owns the customer. Both incumbents have since agreed to be bought. Amazon’s agreement of 13 April 2026 pays Globalstar holders \$90.00 a share in cash or 0.3210 Amazon shares. Rocket Lab’s agreement of 28 June 2026 pays Iridium holders \$27.00 in cash plus Rocket Lab stock at a ratio of 0.2400 to 0.4000. [Part 6](#) sets out the terms and who is paying.

## The tenancy comes up for renewal on one day in May 2028

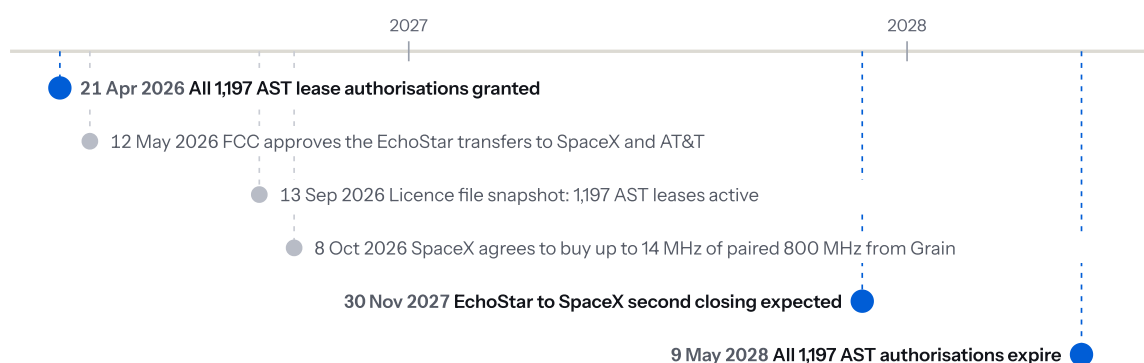
The dates are exact. All 1,197 of AST’s lease authorisations were granted on 21 April 2026, and every one expires on 9 May 2028 (Exhibit 5). A footprint assembled in a single administrative act comes up for renewal in a single administrative act, so the whole American business rests on one calendar entry.

# 9 May 2028

The day every one of AST's 1,197 lease authorisations expires, two years and eighteen days after the FCC granted them.

## EXHIBIT 5

### AST has two years from grant to renewal, and SpaceX expects to own its own spectrum five months before that date



Source: FCC market licence file, snapshot 13 September 2026; FCC DA 26-391 (21 April 2026); FCC news release of 12 May 2026; EchoStar SEC filings for the closing expectation (Filed); Grain Management release of 8 October 2026 (Reported).

Whatever is built on that footprint has about two years to prove itself before the commercial terms are renegotiated. The counterparties at that table are the carriers whose customers the service serves.

The other tenant is buying its way out. SpaceX expects to own 65 MHz from late 2027, and on 8 October 2026 it agreed to buy a second block, up to 14 MHz of paired 800 MHz spectrum from Grain Management, at a price neither party has stated. The capital constraint that keeps AST renting does not bind SpaceX, which held \$93.5 billion of cash on 30 June 2026. [Part 4](#) sets out both purchases and [part 6](#) the balance sheets behind them.

Anyone modelling this business should treat the date as an input rather than a footnote. It bounds the window in which evidence on usage, pricing and retention has to be produced, and anything meant to improve the renewal terms has to exist before it. The alternative is to stop being a tenant, which has a price of its own; [part 4](#) works out what owning the spectrum would cost.

## Terms used

- **Capital expenditure (capex).** Cash paid for property and equipment in the period, as each company tags it in its filings. It is not the same as constellation cost, and the tags differ between filers.
- **XBRL company facts.** The machine-readable tags behind every SEC filing, published at [data.sec.gov](https://data.sec.gov). Reading them gives the filed number rather than a summary of it.
- **Wholesale.** Selling capacity to another company, which sells the service to its own customers under its own brand and bill. Retail sells to the end customer directly.
- **Lease authorisation.** The FCC record permitting one company to use another's licensed spectrum for a stated term. AST's 1,197 are its entire American footprint.
- **Runway.** Months of cash at the current rate of spending before new financing is needed. We calculate it from the filed half-year figures rather than from guidance.

## Implications

### CARRIER STRATEGIST

Settle your position at renewal before the 2028 cycle, because during it will be too late. Under the wholesale model your subscribers' satellite experience is priced and controlled by an arrangement between two other companies, and AST's 1,197 authorisations expire on 9 May 2028. The terms you hold on that day will be whatever you have agreed before it.

### INVESTOR

Ask three questions before diligence starts, and expect a filed answer to each. Does the company own or rent its spectrum? Is capital spending running ahead of revenue, and for how many quarters does the cash cover it? Is the business retail or wholesale? For AST the filings answer rent, yes with about fourteen months of cash, and wholesale. A wholesale business grows only as fast as its partner's incentives allow, whatever its own execution.

### VENDOR

Sell into a build and into an operation on different terms, because they buy differently. AST's \$1,064.7M of FY2025 capital spending is where the equipment money is, concentrated in a build phase with a horizon everyone can see in May 2028. Iridium's \$100.3M is what steady state looks like, a mature constellation being kept up.

## Method and limits

### HOW THIS WAS BUILT

Every financial figure here comes from SEC XBRL company facts at [data.sec.gov](https://data.sec.gov), read from each company's filed tags rather than from a summary of them. Revenue, capital expenditure, cash, R&D and net income are taken from the 10-K and 10-Q filings, with fiscal years as filed. AST tags its revenue inconsistently across periods, so for FY2025 the amount in its FY2025 Form 10-K is used. SpaceX's figures are from its Form 10-Q for the quarter to 30 June 2026 and its prospectus of 12 June 2026. The runway estimate is our calculation: cash at 30 June 2026 divided by the half-year outflow on capital and operations.

### WHAT IT DOES NOT SHOW

SpaceX files with the SEC but reports its satellite-to-phone service inside the Enterprise & Government line of its Connectivity segment, so no figure comparable to the three companies in Exhibit 1 exists. Capital expenditure here is cash paid for property and equipment, which is not the same as constellation cost, and Globalstar does not tag constellation spending as capital expenditure at all. The runway figure is arithmetic on filed numbers and assumes the current rate of spending continues. This is not investment advice and does not forecast whether any of these companies will succeed.

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**Data as of:** SEC filings retrieved 17 Sep 2026 · Method version 1.0.

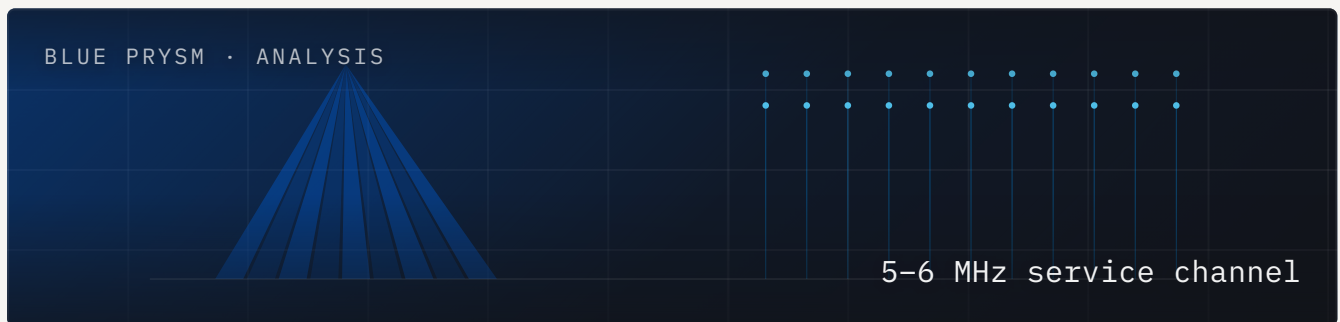
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**Sources.** SEC XBRL company facts (retrieved 17 Sep 2026), FCC authorisation orders, FCC licence database (13 Sep 2026), Grain Management release of 8 Oct 2026.

# How the radios work

## What can the radios physically do?

A phone is built to talk to a tower a few kilometres away. Direct-to-device asks it to talk to a satellite hundreds of kilometres up, on spectrum borrowed from a terrestrial network, and the engineering problem is closing that link. AST and SpaceX close it in opposite ways. In both designs the channel that reaches the handset is only 5 to 6 MHz wide, and that width, rather than the number of satellites, bounds the service. On 8 October 2026 SpaceX agreed to buy a low-band position at 800 MHz, which changes what its link can get through rather than how wide it is.



### IN BRIEF

- The two designs buy back the same link budget in opposite ways. AST's order of 21 April 2026 describes a large phased array on each satellite running thousands of steerable beams, which is aperture. SpaceX's order of 26 November 2024 authorises up to **7,500** Gen2 satellites at 340 to 360 km, which is proximity and numbers, and its order of 6 October 2026 adds a constellation of **15,000** direct-to-device satellites lower still, at 326 to 335 km.
- Whatever is overhead, the channel that reaches the handset is narrow: a single **6 MHz** block at 700 MHz for AST and a single **5 MHz** pair in the PCS G block for SpaceX. Everyone under a beam shares that width. More satellites mean a satellite is overhead more often; they do not make the channel any wider.
- The regulator, rather than the link budget, caps transmit power, because this spectrum is shared with everyone using the band on the ground. AST filed power flux-density and EIRP density values it can adjust across altitudes. SpaceX asked for a waiver of the aggregate out-of-band limit of **-120 dBW/m<sup>2</sup>/MHz**; the FCC deferred the question in 2024 and settled it on 6 October 2026, at **-110.6 dBW/m<sup>2</sup>/MHz** within 5 MHz of SpaceX's downlink band edges.

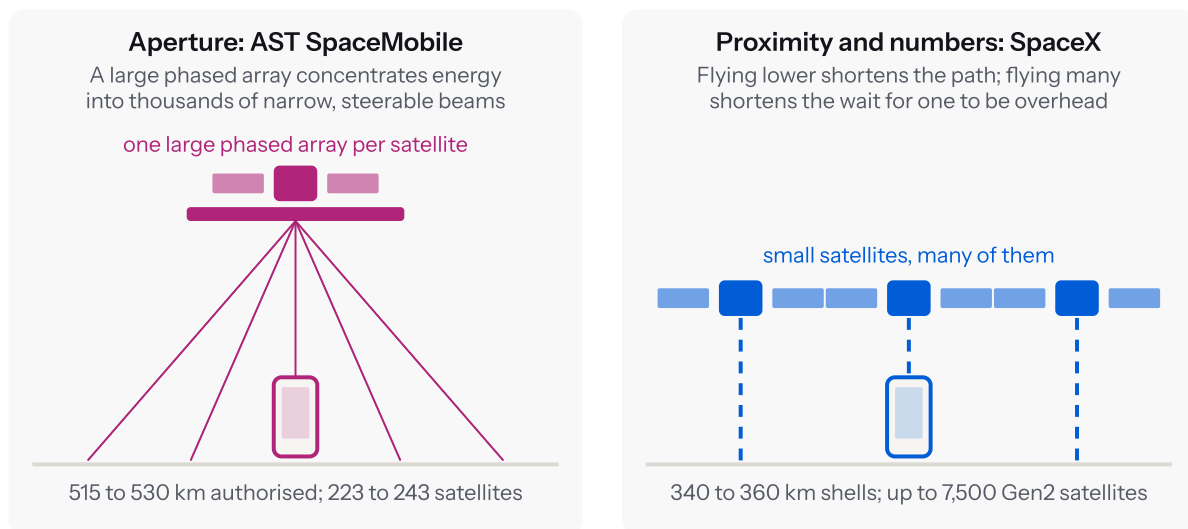
- Independent observation agrees with the paperwork. Volunteer ground stations in the SatNOGS database log AST BlueBird telemetry at 2225 and 2235 MHz, inside the 2200 to 2290 MHz band the FCC authorised.
- Lower frequency buys link budget, which is why SpaceX agreed on 8 October 2026 to buy up to **14 MHz** of paired 800 MHz spectrum. It also costs antenna: the same beam at 800 MHz needs an aperture about **six times** the area of one at 2 GHz. AST made that trade; the newly authorised SpaceX satellites, built for 2 GHz, have not.

## The two designs buy back the same link budget in opposite ways

Distance consumes link budget, and a satellite is a long way off. There are two ways to buy the budget back, and the two leading operators each chose a different one. Beam count, fleet size, interference management and replacement cadence all follow from that single choice (Exhibit 1).

### EXHIBIT 1

#### AST buys the link budget back with aperture, and SpaceX with proximity and numbers



#### The service channel is 5 to 6 MHz either way

AST: 6 MHz per 700 MHz block, 24 MHz leased. SpaceX: one 5 MHz pair in the PCS G block, 10 MHz leased. More satellites shorten the wait for one overhead and close gaps; they do not widen the channel.

Source: FCC DA 26-391 (21 April 2026) and DA 24-1193 (26 November 2024) (Filed). Note: AST's altitudes are those the order describes; the two sampled BlueBirds flew at about 505 and 527 km (part 1).

AST's answer is aperture: a very large antenna. Its [authorisation order](#), adopted on 21 April 2026, describes each satellite carrying a large phased array that runs thousands of electronically steerable beams at once, sized to produce narrow primary beams with low sidelobes. The beams are shaped to fit service-area boundaries, and the order records that they can be switched off wherever they would cause interference. A

bigger antenna concentrates energy into a smaller patch of ground, so more signal lands where it is wanted and less where it is not. The difficulty is flying an antenna that large and keeping it pointed.

SpaceX's answer is proximity and numbers. The FCC's [order of 26 November 2024](#) authorises supplemental coverage across up to 7,500 Gen2 satellites in shells at 340, 345, 350 and 360 km. Flying lower shortens the path, and flying many satellites shortens the wait for one to be overhead. Neither lever asks anything special of the antenna, so the two approaches are opposites rather than variations on a theme. On 6 October 2026 the Commission went further in the same direction. Its [order of that date](#) authorises a separate constellation of 15,000 direct-to-device satellites in nine shells between 326 and 335 km, lower than anything in the 2024 order, with half of them to be in orbit by 7 October 2032 and all of them by 7 October 2035. The new satellites are authorised for the 2 GHz bands SpaceX is buying from EchoStar as well as the PCS G block it rents, and SpaceX says they will carry more than a hundred times the bandwidth of the current generation. The bandwidth claim is the company's and concerns hardware that cannot be inspected; the order fixes the altitude, the bands and the dates.

The orbits show SpaceX doing what the order describes. Altitudes computed from CelesTrak two-line elements at epoch 17 September 2026 put 824 of the 10,702 Starlink objects in those element sets, or 7.7%, below 400 km, the band the order describes. The catalogue cannot say which of those objects carry direct-to-cell hardware; the only source for that is SpaceX's prospectus of 12 June 2026, which puts its V1 Mobile fleet at approximately 650 satellites. The 824 is evidence that the low shells are being filled, and the 650 is the company's own count of satellites serving phones. They are different measurements.

Neither design is obviously the right one; the useful observation is that each puts the cost in a different place (Exhibit 2). Aperture is expensive per satellite and awkward to launch, so AST's is a capital and manufacturing problem, most of it incurred before the first satellite reaches orbit. Proximity is cheap per satellite and expensive in fleet size, atmospheric drag and replacement, so SpaceX's is a continuing operating problem. We know of no public document that settles which trade works out better over a decade.

## EXHIBIT 2

### The two designs put the cost in different places: AST before launch, SpaceX in operations that never stop

|                      | AST SPACEMOBILE                                                                                   | SPACEX                                                                                                                                                                              |
|----------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lever                | Aperture: a large phased array on each satellite                                                  | Proximity and numbers: low shells, many satellites                                                                                                                                  |
| Altitude             | Near 515 to 530 km and 680 to 690 km in the order; sampled BlueBirds at about 505 and 527 km      | Shells at 340, 345, 350 and 360 km in the order; 824 objects below 400 km at epoch 17 Sep 2026                                                                                      |
| Fleet                | <b>223 to 243</b> satellites                                                                      | Up to <b>7,500</b> Gen2 satellites; about 650 V1 Mobile satellites on the prospectus; a further <b>15,000</b> direct-to-device satellites authorised on 6 Oct 2026 at 326 to 335 km |
| Beams                | Thousands of electronically steerable beams per satellite, shaped to service areas and switchable | Not the lever; the order describes shells and satellite count                                                                                                                       |
| Where the cost falls | Capital and manufacturing, before the first satellite reaches orbit                               | Operations: fleet size, atmospheric drag and replacement cadence                                                                                                                    |
| Service spectrum     | 704 to 716 and 734 to 746 MHz leased, in <b>6 MHz</b> blocks                                      | 1910 to 1915 and 1990 to 1995 MHz, one <b>5 MHz</b> pair                                                                                                                            |

The allocation of cost between capital and operations is our assessment of what each design implies.

Source: FCC DA 26-391 (21 April 2026) and DA 24-1193 (26 November 2024) (Filed); CelesTrak two-line elements, epoch 17 September 2026 (Calculated); SpaceX prospectus, 12 June 2026 (Filed); cost allocation by Blue Prism (Judgement).

## Only the service link is low and narrow

Each satellite uses three kinds of link, and the FCC authorises each in a different part of the spectrum (Exhibit 3). The service link reaches the handset on leased terrestrial spectrum. The gateway or feeder link connects the satellite to a ground station, and telemetry and command keep the satellite itself in contact.

## EXHIBIT 3

## Service links use low, narrow terrestrial bands, and gateways and telemetry use wide bands far higher

|                       | AST                                                                                                                                                | SPACEX                                                             |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| Service spectrum      | <b>704 to 716 and 734 to 746 MHz</b> leased; the authorisation spans 698 to 716, 728 to 746, 758 to 768, 788 to 798, 824 to 849 and 869 to 894 MHz | <b>1910 to 1915 MHz up and 1990 to 1995 MHz down</b> (PCS G block) |
| Gateway and feeder    | <b>37.5 to 42.0 GHz</b> (channel bandwidths of 2.5, 4.5, 0.5 and 2.0 GHz), plus 45.5 to 47, 47.2 to 50.2 and 50.4 to 51.4 GHz uplinks              | Ku-, Ka-, E- and V-band, previously authorised                     |
| Telemetry and command | <b>2025 to 2110 MHz up</b> (192 kHz channels); <b>2200 to 2290 MHz down</b>                                                                        | VHF beacons at the low shells                                      |

Service bands are those leased, as the licence file's market-frequency records show them; the AST authorisation spans more than it leases.

Source: FCC DA 26-391 (21 April 2026) and DA 24-1193 (26 November 2024); FCC market licence file, snapshot 13 September 2026, market-frequency records (Filed).

The position of the service links explains the designs. Lower frequency buys link budget, because a signal at 700 MHz gets through walls and bends around terrain far better than one at 1.9 GHz, which is why AST's partners lend it their low-band holdings rather than anything further up the band plan. The gateway and telemetry bands follow the same logic in reverse: they sit far higher, where bandwidth is plentiful and nothing has to reach a handset through a wall.

SpaceX has now acted on the same lesson. On 8 October 2026 it agreed to buy Grain Management's 800 MHz portfolio, up to 14 MHz of paired spectrum at 817 to 824 and 862 to 869 MHz, and described it as a coverage layer whose job is to get the signal "through obstacles, such as walls" while the 2 GHz spectrum carries the capacity ([SpaceX update](#); [part 4](#) has the price and the history). The physics that makes low band worth buying has a cost, and it falls on the satellite rather than the phone. Free-space loss falls with frequency, by about 7.7 dB between 2 GHz and 820 MHz (our calculation), so the lower band closes a link the higher one cannot. An antenna's gain for a given size falls by the same amount, however, so a satellite that wants the same beam on the ground at 800 MHz needs an aperture of about six times the area. AST made that trade when it built its arrays for the 700 MHz blocks. The 15,000 satellites the FCC authorised on 6 October are built, on SpaceX's own description, for 2 GHz, and the 800 MHz band is not among the frequencies in their grant. The low band therefore goes to work first on the ground, in what SpaceX calls an advanced terrestrial deployment, and from orbit only once a satellite with the aperture for it exists. The relation between frequency, loss and aperture is the textbook one, and the bands and the grant are on the record; neither link has been modelled here.

#### THE INCUMBENTS' INDOOR ARGUMENT

Each of the three national carriers has argued in public that satellite service does not reach indoors, and each argument turns on frequency and link budget. The remarks come from trade reporting rather than transcripts and are paraphrased here.

**AT&T.** Its chief executive spoke at the Goldman Sachs Communacopia + Technology Conference in September 2026, as reported by telecoms.com. The remark framed satellite as solving the last 2% of coverage rather than offering a new way to serve the other 98%.

**Verizon.** Its chief executive spoke on the Q2 2026 earnings call of 24 July 2026, as reported by Fierce Network. The remark described terrestrial networks as orders of magnitude more efficient than satellite and put the addressable market at single-digit millions of rural homes.

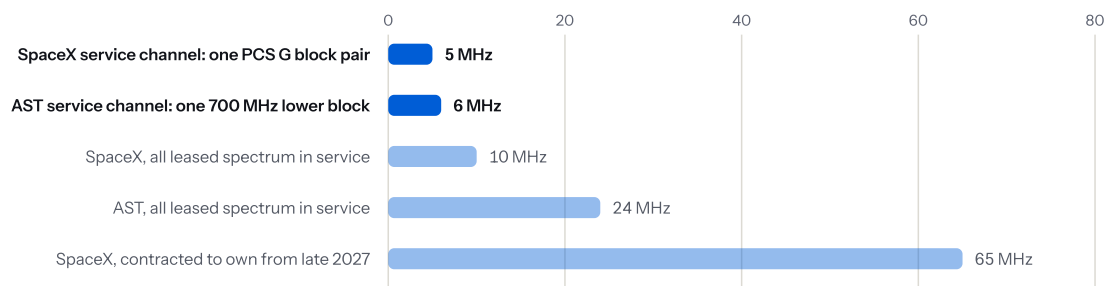
**T-Mobile.** The company has put satellite at 0.0002 to 0.0003% of its network usage, in trade reporting of September 2026.

The argument was consistent with the public frequencies: until 8 October 2026 every band SpaceX had contracted to own lay at 1.7 to 2.2 GHz, and AST's lease at 700 MHz. SpaceX's agreement that day to buy up to 14 MHz at 800 MHz is its answer, and it concerns the ground as much as orbit. Without a link-budget model we do not adjudicate; part 7 sets out what each side asserts.

Low band is narrow, and width is the capacity story. The 700 MHz blocks are 6 MHz wide and the PCS G block is a single 5 MHz pair. Whatever the constellation overhead is doing, the service is metered through a channel that narrow, shared by everyone under the beam, and neither aperture nor altitude changes it (Exhibit 4).

#### EXHIBIT 4

##### The service link is a 5 or 6 MHz channel, whatever each operator leases or has contracted to own in total



Source: FCC market licence file, snapshot 13 September 2026; FCC DA 26-391 and DA 24-1193; EchoStar Forms 8-K of 8 September and 6 November 2025 for the 65 MHz (Filed). Note: the 24 MHz and 10 MHz are leased totals across markets; each service channel is one 6 MHz block or one 5 MHz pair. Part 4 sets out the 65 MHz purchase.

More satellites buy availability and revisit. They do not widen the channel.

A tower comparison shows the scale. Five megahertz is among the narrowest carriers a cellular site is built around, and a tower uses one to serve the few hundred people within reach. A satellite beam shares the same width across everyone it can see at once, which can be a city. Capacity per user then comes down to bandwidth, spectral efficiency and how tightly beams can be reused, so the beam shaping in AST's order matters at least as much as the satellite count in SpaceX's. A headline satellite count is an availability claim rather than a throughput claim.

## The regulator sets the ceiling on transmit power

The ceiling on how hard a satellite may transmit comes from the regulator, because this spectrum is terrestrial and the binding limits concern interference into everyone else using the band on the ground, a constraint no coverage map shows. AST's order records that it filed power flux-density and maximum EIRP density values with the FCC, and that it can adjust EIRP across operating altitudes and elevation angles to stay inside them. The link budget says how hard AST would like to transmit; the regulator says how hard it may.

On SpaceX's side one limit stayed open for nearly two years. SpaceX asked the Commission in 2024 to waive the aggregate out-of-band power flux-density limit of  $-120 \text{ dBW/m}^2/\text{MHz}$  for these operations, and the Commission deferred the question, so an authorised service ran with a power question unanswered. The [order of 6 October 2026](#) answers it. The waiver is granted, and in its place SpaceX must hold the aggregate out-of-band flux density to  $-110.6 \text{ dBW/m}^2/\text{MHz}$  in the 5 MHz on either side of its downlinks in the H block and the PCS G block, 9.4 dB more than the rule allows, on condition that it causes no harmful interference to terrestrial licensees and stops transmitting on notice if it does (Exhibit 5).

## EXHIBIT 5

# Three power limits bear on the service: one is filed, one was deferred and is now set, and one is proposed

| LIMIT                                                                                                    | WHO                                           | STATUS                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power flux-density and maximum EIRP density values                                                       | AST                                           | <b>Filed</b> with the FCC; EIRP adjustable across operating altitudes and elevation angles (DA 26-391, 21 Apr 2026)                                                                                                                             |
| Aggregate out-of-band power flux-density limit of <b>-120 dBW/m²/MHz</b>                                 | SpaceX                                        | <b>Deferred</b> in 2024 (DA 24-1193, 26 Nov 2024); <b>waiver granted</b> on 6 Oct 2026 with a limit of <b>-110.6 dBW/m²/MHz</b> within 5 MHz of the H block and PCS G block downlink edges, on a no-harmful-interference condition (DA 26-1078) |
| Power flux-density, out-of-band and aggregate limits across several operators sharing an unlicensed band | Any operator under a future unlicensed regime | <b>Proposed:</b> question posed in ET Docket 26-169, circulated for the 6 Aug 2026 open meeting, with Part 15 power up to 36 dBm EIRP (part 5)                                                                                                  |

The third row is a circulated draft, and the limits in it are proposals rather than Commission action.

Source: FCC DA 26-391 (21 April 2026); DA 24-1193 (26 November 2024); DA 26-1078 (6 October 2026); FCC fact sheet for ET Docket 26-169, 16 July 2026 (Filed).

For engineering, the number to design to is now -110.6, and the attached condition, that operations stop on notice of harmful interference, is the one to plan around. For strategy, the two years the question stayed open show that regulatory headroom, rather than technology, may cap this service. It is one of two technical items that belong in any diligence on this market and seldom appear there; the other is the gap between authorised, catalogued and payload-carrying satellites that part 1 sets out.

## An independent cross-check

One independent check is available at no cost. The SatNOGS database holds telemetry logged by volunteer ground stations. It records AST BlueBird beacons at 430.5 to 439.5 MHz (GFSK and FSK, 2.4 to 19.2 kbaud) and S-band telemetry at 2225 and 2235 MHz (BPSK, 200 kbaud). Both S-band frequencies fall inside the 2200 to 2290 MHz command-and-telemetry band in the FCC authorisation, so the paperwork and the radio agree.

#### WHAT SATNOGS SHOWS

**Observed.** AST BlueBird beacons at 430.5 to 439.5 MHz, GFSK and FSK at 2.4 to 19.2 kbaud.

**Observed.** S-band telemetry at 2225 and 2235 MHz, BPSK at 200 kbaud.

**Authorised.** 2200 to 2290 MHz down for telemetry and command, in the order of 21 April 2026. Both S-band frequencies fall inside it.

**Not observable.** The service payload. Beacon observations are telemetry, and amateur stations do not measure the 700 MHz service link or what it carries.

Two unrelated sources describe the same radio, which supports the documents without measuring the service.

Amateur observation cannot see the service payload. It does confirm that the satellites are where the paperwork says and transmit what the paperwork says, and when an unrelated source agrees with the filing we read that as a reason to trust the documents describing the service.

#### Terms used

- **Link budget.** The account of power gained and lost between a transmitter and a receiver: transmit power, antenna gains, path loss over distance and losses through walls or terrain. A link closes when enough signal remains at the receiver.
- **Aperture.** The effective collecting area of an antenna. A larger aperture concentrates energy into narrower beams with more gain, which is the lever AST pulls.
- **Phased array.** An antenna of many elements whose signals are combined electronically, so beams can be steered and shaped without moving parts.
- **EIRP.** Effective isotropic radiated power: the power an antenna would need if it radiated equally in all directions to produce the signal it sends in its beam.
- **Power flux-density (PFD).** The power arriving per unit of area, in dBW/m<sup>2</sup>/MHz. Regulators limit it to protect other users of a band. The rule's aggregate out-of-band limit is -120 dBW/m<sup>2</sup>/MHz; SpaceX's waiver of 6 October 2026 sets -110.6 within 5 MHz of its downlink band edges.
- **800 MHz, band 26.** The 817 to 824 and 862 to 869 MHz pair SpaceX agreed to buy from Grain Management on 8 October 2026, which the standards call band 26. Low band in the same sense as AST's 700 MHz blocks, and a 7 MHz pair, so a single channel wide.
- **Service, gateway and telemetry links.** The service link carries the user's traffic between satellite and handset. The gateway or feeder link carries it between satellite and ground station. Telemetry and

command keep the satellite itself in contact.

- 
- **SatNOGS.** A database of transmitters and observations logged by volunteer ground stations.
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## Implications

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### CARRIER STRATEGIST

Treat “thousands of satellites” as an availability claim, because that is all it is. Capacity per user is bounded by a 5 to 6 MHz channel shared by everyone under a beam, so the beam shaping in AST’s order matters as much as the satellite count in SpaceX’s. The question to put to either operator is what one beam delivers to a handset indoors, at the frequency being used. SpaceX’s 800 MHz purchase changes the answer to that question only once a satellite built for the band exists, and on the ground before then.

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### INVESTOR

Put two technical items into diligence that seldom appear there. The first is the out-of-band condition in the 6 October 2026 order: a limit of  $-110.6$  dBW/m<sup>2</sup>/MHz and an obligation to stop on notice of harmful interference, which is the regulatory headroom the service runs inside. The second is the gap between authorised, catalogued and payload-carrying satellites, which part 1 sets out.

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### VENDOR

Model the link yourself rather than accepting someone’s chart, because every band you need is public. Service runs at 704 to 716 and 734 to 746 MHz for AST and at 1910 to 1915 and 1990 to 1995 MHz for SpaceX, with 1695 to 1710, 1915 to 1920, 1995 to 2020 and 2180 to 2200 MHz authorised for the new constellation and a 7 MHz pair at 800 MHz contracted for; an 800 MHz payload at the same beam size means about six times the aperture of a 2 GHz one. AST’s gateways use 37.5 to 42.0 GHz and above, and its telemetry 2025 to 2110 and 2200 to 2290 MHz. Decide early which side of the aperture-or-proximity question you are building for, because beam count, interference management and replacement cadence all follow from it.

## Method and limits

### HOW THIS WAS BUILT

RF characteristics are quoted from the FCC orders linked in the text, and the bands held are read from the market-frequency records of the FCC licence file of 13 September 2026. Altitudes are computed from CelesTrak two-line elements at epoch 17 September 2026 by converting mean motion to altitude. Beacon frequencies are from the SatNOGS transmitter database. Channel widths are the widths of the blocks leased, as the band plans define them. The free-space and aperture arithmetic for 800 MHz against 2 GHz is the textbook relation (loss and gain both go with the square of frequency), applied to 820 and 1,995 MHz; it bounds what a low band costs in antenna and is not a link budget.

### WHAT IT DOES NOT SHOW

No link budget has been modelled, so the figures here describe what the operators are authorised to do rather than what they achieve. Beacon observations are telemetry and say nothing about the service payload. Public catalogues do not identify which satellites carry direct-to-cell hardware. The channel-width arithmetic is a bound only, because real throughput depends on modulation, beam reuse and loading, none of which is visible from outside.

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**Data as of:** FCC orders as dated, read 12 Oct 2026 · licences 13 Sep 2026 · orbital elements 17 Sep 2026 · Method version 1.0.

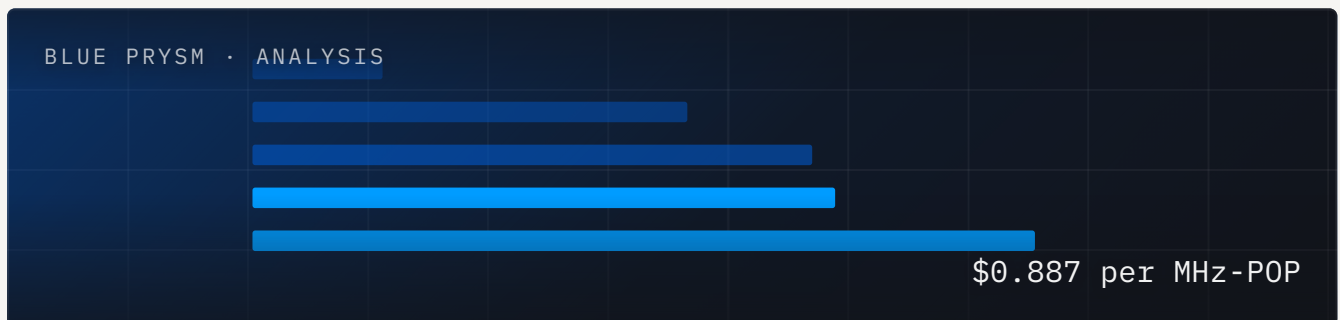
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**Sources.** FCC authorisation orders, including DA 26-1078 of 6 Oct 2026, FCC licence database (13 Sep 2026), CelesTrak orbital elements (17 Sep 2026), SatNOGS transmitter database, SpaceX update of 8 Oct 2026.

# What spectrum costs

## What does it cost to stop being a tenant?

Both satellite operators with American terrestrial rights are tenants, and in our view renting was the only way either business could exist while the money went into hardware. One has now contracted to buy its way out. SpaceX has agreed to pay \$19.6 billion for 65 MHz, within 4% of the C-band auction price per MHz-POP, with closing expected in November 2027, and on 8 October 2026 it agreed to buy a second position, up to 14 MHz of paired low band at 800 MHz, at a price neither party has stated. AST remains a tenant, with a date on the lease.



### IN BRIEF

- Neither operator holds a licence for the spectrum its consumer service runs on. In the FCC licence file of 13 September 2026, all 1,197 of AST's records and 173 of SpaceX's 175 are leases. AST rents **24 MHz** at 700 MHz and SpaceX **10 MHz** in the PCS G block.
- Spectrum has been changing hands at about a dollar per MHz-POP whoever is buying. The C-band auction cleared at \$0.852 and the 3.45 GHz auction at \$0.662, and SpaceX's private purchase from EchoStar came in at **\$0.887** for 65 MHz, within 4% of the C-band.
- At those prices, buying AST's 24 MHz nationwide would cost roughly **\$5.4B to \$7.2B**. The company ended FY2025 with \$2,335.7M of cash and had spent \$1,064.7M on its constellation in the year, so it was never going to buy; renting was the only way the business existed.

- On 8 October 2026 SpaceX agreed to buy Grain Management’s nationwide 800 MHz portfolio, up to **14 MHz** paired at 817 to 824 and 862 to 869 MHz: the block Sprint ran its network on, which T-Mobile was ordered to sell in 2020 and could not sell at \$3.6B in 2024. The price is undisclosed. The Wall Street Journal reports about \$8B, which works out at **\$1.68** per MHz-POP, nearly double the EchoStar price.

## A lease hangs from someone else’s licence

Both operators rent because a lease is fast, cheap and reversible. A lease is also derivative: it is written against someone else’s licence, in someone else’s markets, for a term that cannot outlast theirs. A licence is the opposite on every count, expensive and slow to obtain but national in scope if required, renewable, financeable and sellable. For a service that has to work everywhere, that difference is the business model.

The FCC’s market-based licence file, filtered to active records and licensee-type entities, shows the distinction. Neither operator holds a licence for the spectrum its consumer service runs on: every one of AST & Science’s records is a lease, and so are all but two of SpaceX’s. The bands, markets, landlords and dates are set out in Exhibit 1.

| EXHIBIT 1                                                                                                                                                                                                                      |                                                                                                   |                                                                                                                                                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Neither operator holds a licence for the spectrum its consumer service runs on                                                                                                                                                 |                                                                                                   |                                                                                                                                                   |
|                                                                                                                                                                                                                                | AST & SCIENCE                                                                                     | SPACE EXPLORATION HOLDINGS (SPACEX)                                                                                                               |
| Active market records                                                                                                                                                                                                          | <b>1,197, all leases</b>                                                                          | <b>175:</b> 173 G-block leases, plus <b>2 licences granted 26 Aug 2026</b>                                                                        |
| Spectrum in service                                                                                                                                                                                                            | 704 to 716 and 734 to 746 MHz, <b>24 MHz</b>                                                      | 1910 to 1915 and 1990 to 1995 MHz, <b>10 MHz</b>                                                                                                  |
| Markets                                                                                                                                                                                                                        | <b>654</b> , mostly cellular market areas                                                         | <b>174</b> economic areas                                                                                                                         |
| Landlords                                                                                                                                                                                                                      | AT&T, Verizon and FirstNet, the incumbent carriers named in the <a href="#">21 Apr 2026 order</a> | T-Mobile, via the <a href="#">26 Nov 2024 order</a>                                                                                               |
| Expiry on the record                                                                                                                                                                                                           | <b>9 May 2028</b> , all on one day                                                                | <b>3 March 2026</b> on every lease                                                                                                                |
| The licences                                                                                                                                                                                                                   | None                                                                                              | Two Auction 113 wins: the B1 block at 1700 to 1710 MHz in Cincinnati-Hamilton and the AWS-3 G block in the Gulf market ( <a href="#">part 5</a> ) |
| Counts are of active records held by licensee-type entities. A lease is permission to transmit rather than proof of operation.                                                                                                 |                                                                                                   |                                                                                                                                                   |
| Source: FCC market-based licence file, snapshot 13 September 2026, filtered to active records and to licensee-type entities; FCC DA 26-391 (21 April 2026) and DA 24-1193 (26 November 2024); FCC Auction 113 results (Filed). |                                                                                                   |                                                                                                                                                   |

# SpaceX’s G-block leases show a date that has passed

One date in the file is out of step with everything around it. Among active G-block records (Exhibit 2), T-Mobile License LLC, Nextel West, Trace-Tek, SDF and Tecore all show an expiry of 3 March 2036, most of them re-granted during March 2026. SpaceX’s 173 lease authorisations alone still carry 3 March 2026, the term before renewal.

EXHIBIT 2

Every other active G-block holder shows 3 March 2036, and SpaceX’s 173 leases show 3 March 2026

| ACTIVE G-BLOCK HOLDER      | RECORDS                  | EXPIRY ON THE RECORD |
|----------------------------|--------------------------|----------------------|
| T-Mobile License LLC       | Licences                 | 3 Mar 2036           |
| Nextel West                | Licences                 | 3 Mar 2036           |
| Trace-Tek                  | Licences                 | 3 Mar 2036           |
| SDF                        | Licences                 | 3 Mar 2036           |
| Tecore                     | Licences                 | 3 Mar 2036           |
| Space Exploration Holdings | 173 lease authorisations | 3 Mar 2026           |

Most of the 2036 records were re-granted during March 2026. The file jackets are not public, so the discrepancy is reported as the file shows it; its cause is not confirmed.

Source: FCC market-based licence file, snapshot 13 September 2026, all active PCS G-block records (Filed).

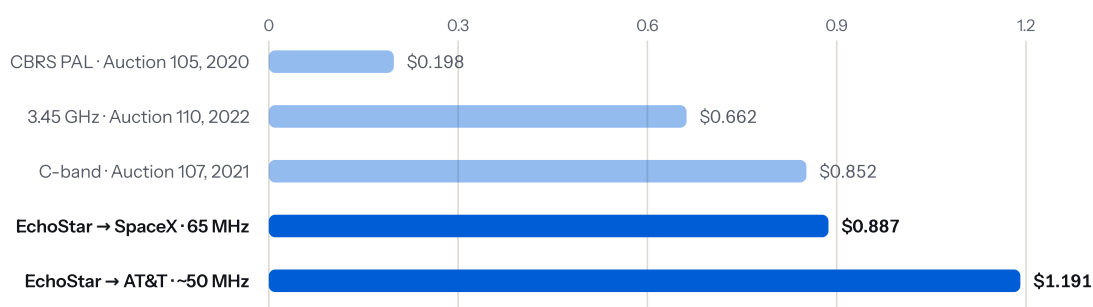
The file jackets are not public, so the cause is unknown; it may be no more than administrative lag behind a renewal. It does illustrate the structural point: a lease hangs from a licence, and when the licence moved, the leases did not move with it.

# Spectrum changed hands at about a dollar per MHz-POP

Comparing a 2020 auction with a 2025 private deal takes a common unit: dollars per MHz per person covered, or dollars per MHz-POP. The national-equivalent version divides the total paid by the bandwidth and then by the US population of 340,110,988, so every transaction lands on one axis whatever its licence footprint (Exhibit 3).

## EXHIBIT 3

## Paired spectrum changed hands at about a dollar per MHz-POP, and SpaceX's purchase cleared within 4% of the C-band auction



Source: FCC auction results for Auctions 105, 107 and 110; EchoStar Forms 8-K of 8 September 2025, 6 November 2025 and 3 August 2026; US Census population 340,110,988 (Filed and Calculated). Note: Auction 113 is excluded because it sold leftover licences concentrated in dense markets. Auction 105 is priced per licence against the county populations its licences carry; the other four rows are national-equivalent. The 800 MHz price is reported rather than filed and is kept out of this chart; Exhibit 4 carries it.

## EXHIBIT 4

## Eight transactions in one comparable unit, from \$0.198 per licence to a reported \$1.68 for low band

| TRANSACTION                                                | TOTAL                                    | BANDWIDTH                                                        | NATIONAL -<br>EQUIVALENT<br>\$/MHZ - POP                  |
|------------------------------------------------------------|------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------|
| Auction 107, C-band (2021)                                 | \$81.17B                                 | 280 MHz                                                          | \$0.852                                                   |
| Auction 110, 3.45 GHz (2022)                               | \$22.51B                                 | 100 MHz                                                          | \$0.662                                                   |
| Auction 105, CBRS PAL (2020)                               | \$4.59B                                  | 10 MHz per licence                                               | \$0.198, per licence                                      |
| Auction 113, AWS-3 (2026), <i>not comparable</i>           | \$3.57B                                  | leftover licences in selected markets                            | \$2.658, on a different basis; see <a href="#">part 5</a> |
| EchoStar to SpaceX, AWS-4 and H block                      | \$17.00B                                 | 50 MHz (paired)                                                  | \$1.000                                                   |
| EchoStar to SpaceX, AWS-3 unpaired                         | \$2.617B                                 | 15 MHz (uplink only)                                             | \$0.513                                                   |
| EchoStar to SpaceX, combined                               | \$19.617B                                | 65 MHz                                                           | \$0.887                                                   |
| EchoStar to AT&T, 600 MHz and 3.45 GHz, closed 28 Jul 2026 | \$20.25B (plus \$2.4B into an FCC trust) | about 50 MHz (about 30 MHz at 3.45 GHz, about 20 MHz at 600 MHz) | \$1.191                                                   |

|                                                |                                                                                |                       |                                           |
|------------------------------------------------|--------------------------------------------------------------------------------|-----------------------|-------------------------------------------|
| T-Mobile to Grain, 800 MHz, closed 11 Aug 2026 | \$2.9B cash plus 600 MHz licences; T-Mobile carried the whole at <b>\$3.6B</b> | up to 14 MHz (paired) | about <b>\$0.76</b> on the carrying value |
| Grain to SpaceX, 800 MHz, agreed 8 Oct 2026    | Undisclosed; <b>about \$8B</b> as reported by the Wall Street Journal          | up to 14 MHz (paired) | <b>\$1.68</b> on the reported figure      |

Auction totals are gross winning bids. Auction 113 is marked not comparable because it sold leftover licences in selected markets, and it is excluded from Exhibit 3. Auction 105 is priced per licence for the reason the sidebar gives. The two 800 MHz rows are on 14 MHz, the most the portfolio holds in any county; it holds as little as 4.85 MHz in some, so both are floors, and the last is on a reported price.

Source: FCC auction results; FCC Auction 113 results, retrieved 17 September 2026; EchoStar Forms 8-K of 8 September 2025, 6 November 2025 and 3 August 2026; T-Mobile Form 10-Q for the quarter to 30 June 2026 and release of 11 August 2026; FCC DA 26-653 for the bandwidth; US Census population 340,110,988 (Filed and Calculated); the Grain to SpaceX price from the Wall Street Journal via Fierce Network, 9 October 2026 (Reported).

#### WHY AUCTION 105 IS PRICED PER LICENCE

The CBRS auction's results publish the population of every county licence sold, so the band is priced here on its own MHz-POPs rather than on a national equivalent.

**Per licence.** The band sold for \$4,504,560,479 across 22,791,964,160 MHz-POPs, aggregated over 19,969 licences. That gives \$0.198 per MHz-POP.

**National-equivalent.** The same calculation on the whole population returns \$0.193. It assumes seven PALs sold in every county, and the county results show that they did not.

The spectrum cost tool, the workbook and the checklist all use the per-licence figure.

Three points follow from the table. Paired spectrum went at almost a dollar per MHz-POP, and the unpaired, uplink-only block at half that. The largest private spectrum purchase this market has seen cleared within 4% of the C-band auction, a useful reference whenever a spectrum position is called mispriced. The one low-band transaction since, SpaceX's October agreement for the 800 MHz band, sits well above everything else if the reported price holds; the premium that low band has long commanded in theory now has a number against it, discussed below.

Against those benchmarks, buying AST's 24 MHz nationwide would cost roughly \$5.4B to \$7.2B at \$0.662 to \$0.887 per MHz-POP (our calculation). Low band has historically traded at a premium to mid band, so that range is a floor rather than an estimate; at the \$1.68 the 800 MHz agreement implies, the same 24 MHz would be about \$13.7B. The company would have had to find that sum before a single satellite was built.

---

**\$5.4B to \$7.2B**

What AST's 24 MHz would cost nationwide at \$0.662 to \$0.887 per MHz-POP, against \$2,335.7M of cash at the end of FY2025 (our calculation). At the reported low-band price of \$1.68, about \$13.7B.

---

AST did not have the money. It closed FY2025 with \$2,335.7M of cash, less than half the lower figure, while spending \$1,064.7M a year on the constellation, as [part 2](#) sets out. Buying was never an option; renting was the only way the business could exist.

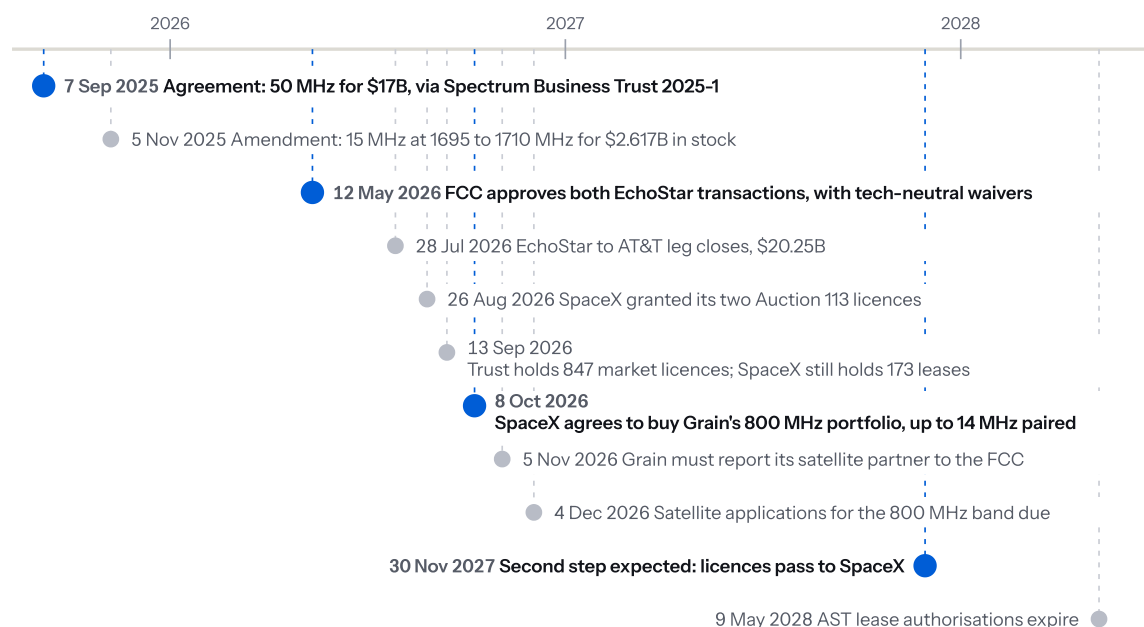
## **SpaceX has contracted to own 65 MHz beside the block it rents**

SpaceX's agreements with EchoStar are on the public record in EchoStar's filings, which contain more than the headline number. Four dated steps define the position SpaceX has contracted to hold, and in our reading the sequence matters as much as the total (Exhibit 5).

- 1. 7 September 2025.** An agreement to buy 50 MHz (2000 to 2020, 2180 to 2200, 1915 to 1920 and 1995 to 2000 MHz) for \$17B. The spectrum transfers in two steps, first into Spectrum Business Trust 2025-1 and then to SpaceX, and SpaceX lends the trust roughly \$2B to service EchoStar's notes in the meantime.
- 2. 5 November 2025.** An amendment adding up to 15 MHz at 1695 to 1710 MHz for \$2,616,737,853, all in SpaceX stock at \$212 a share, which takes the total to \$19,616,737,853.
- 3. 12 May 2026.** The FCC approved both EchoStar transactions. Its waivers let SpaceX use the spectrum "flexibly for terrestrial, space-based, and hybrid network architectures", subject to performance obligations ([FCC](#); see [part 5](#)).
- 4. On or about 30 November 2027.** The second step, the one that puts the licences in SpaceX's hands, is expected.

## EXHIBIT 5

**SpaceX's purchases run from a September 2025 agreement, through the October 2026 low-band deal, to a closing expected in November 2027, five months before AST's leases expire**



Source: EchoStar Forms 8-K of 8 September 2025, 6 November 2025 and 3 August 2026; FCC news release of 12 May 2026 (DOC-421651); FCC Auction 113 results; FCC market licence file, snapshot 13 September 2026; FCC DA 26-653 for the November and December dates (Filed); Grain Management release of 8 October 2026 (Reported).

One detail in the first step matters. The 1915 to 1920 and 1995 to 2000 MHz pair is the H block, immediately adjacent to the G block SpaceX rents from T-Mobile today. The reasoning is not stated, but the effect is that the spectrum being bought lies directly beside the spectrum the service runs on now.

The first step has happened. The FCC snapshot of 13 September 2026 shows Spectrum Business Trust 2025-1 holding 847 active market licences, while Space Exploration Holdings still shows the same 173 leases. The structure is executing in public and on schedule, a year ahead of the closing.

SpaceX leases 10 MHz from a carrier today and will own 65 MHz outright in late 2027 if the second step closes: six and a half times the bandwidth, with no landlord.

An operator does not need 65 MHz to supplement someone else's network; it needs it to be one. Trade reporting of SpaceX's Q2 2026 earnings call has executives naming AT&T, T-Mobile and Verizon and

expecting to take their customers. Those remarks are unverified, and the filings make the point more reliably than any quotation.

## In October SpaceX agreed to buy the low band it lacked

Everything SpaceX had contracted to own by the end of September lay between 1.7 and 2.2 GHz, and [part 3](#) sets out why that matters: it is the range that struggles with walls, and the incumbents' indoor argument rests on it. On 8 October 2026 SpaceX answered the argument with a purchase. Grain Management announced a definitive agreement to sell SpaceX its entire nationwide 800 MHz portfolio ([release](#)), and SpaceX described it the same day as "up to 14 megahertz of paired spectrum in the 800 MHz band", a coverage layer to get its signal through walls while the 2 GHz spectrum carries the capacity ([SpaceX update](#)). Neither party has stated the price. The Wall Street Journal, citing people familiar with the deal, put it at about \$8 billion in cash, and SpaceX, an SEC filer since its June prospectus, had filed nothing on the agreement by 12 October. The price is therefore reported rather than filed, and is treated as such here.

The block's history explains why the price matters. The spectrum is the 817 to 824 and 862 to 869 MHz pair that Sprint ran its network on, which T-Mobile inherited in 2020 and was ordered to sell as a condition of that merger. T-Mobile's filings carry the sequence. DISH agreed in July 2020 to buy it for approximately \$3.6 billion, paid \$100 million in 2023 to extend its option, and let the option lapse on 1 April 2024. T-Mobile then ran the auction the court's final judgment required and, on 1 October 2024, closed it without a qualifying bid. In May 2025 it agreed to sell the licences to two Grain affiliates for \$2.9 billion in cash plus the 600 MHz licences it was already leasing from Grain, carrying the whole at \$3.6 billion and expecting no material gain or loss. The FCC approved that sale on 1 July 2026 and it closed on 11 August. Fifty-eight days later Grain had a buyer at, if the report is right, more than twice what it paid (Exhibit 6).

## EXHIBIT 6

## The same 14 MHz has carried four prices in six years, and the last is more than twice the first

| DATE                            | TRANSACTION                                    | PRICE                                                               | NATIONAL -<br>EQUIVALENT<br>\$/MHZ-POP | ON THE RECORD                                                                                                 |
|---------------------------------|------------------------------------------------|---------------------------------------------------------------------|----------------------------------------|---------------------------------------------------------------------------------------------------------------|
| 1 Jul 2020                      | DISH's option under the Sprint merger judgment | approximately <b>\$3.6B</b>                                         | about \$0.76                           | T-Mobile Form 10-K for FY2024; the option lapsed on 1 Apr 2024                                                |
| 1 Oct 2024                      | T-Mobile's auction under the final judgment    | <b>No qualifying bid</b>                                            |                                        | T-Mobile Form 10-K for FY2024; T-Mobile relieved of the obligation to sell                                    |
| 30 May 2025, closed 11 Aug 2026 | T-Mobile to two Grain affiliates               | <b>\$2.9B</b> cash plus Grain's 600 MHz licences; carried at \$3.6B | about \$0.76 on the carrying value     | T-Mobile Form 10-Q to 30 Jun 2026; T-Mobile keeps a share of Grain's resale proceeds above a return threshold |
| 8 Oct 2026                      | Grain to SpaceX                                | Undisclosed; <b>about \$8B</b> reported                             | <b>\$1.68</b> on the reported figure   | Grain release and SpaceX update, no price; Wall Street Journal via Fierce Network (Reported)                  |

National equivalents are on 14 MHz, the most the portfolio holds in any county; it holds as little as 4.85 MHz in some, so the figures are floors. The 2020 figure is the option price and not a completed sale.

Source: T-Mobile Form 10-K for FY2024 and Form 10-Q for the quarter to 30 June 2026; T-Mobile release of 11 August 2026; FCC DA 26-653 (1 July 2026) for the bandwidth and counties; Grain Management release and SpaceX update of 8 October 2026 (Filed and Reported); arithmetic on US Census population 340,110,988 (Calculated).

Two points in that chain matter more than the headline. The first is a sentence in T-Mobile's 10-Q for the quarter to 30 June 2026: it "may receive a share of certain future proceeds from transactions entered into by Grain that monetize the 800 MHz spectrum licenses", once Grain has earned a stated return on its capital. T-Mobile is SpaceX's landlord in the PCS G block and its wholesale partner for satellite coverage, and it is now, through Grain, the seller of the low band that lets SpaceX compete with it, with a filed interest in the price SpaceX pays. We take no view on whether that was the plan; it is the position the filings describe. The second is the regulator's hand in the sale. The order approving the Grain purchase required Grain to run a competitive process for a satellite partner through a neutral adviser, to report the result by 5 November 2026 and to have satellite applications filed by 4 December, and it deferred every waiver the band needs for satellite use until that partner is named ([DA 26-653](#)). The SpaceX agreement landed inside that window. [Part 5](#) takes up what the order asks of whoever holds the band.

What SpaceX has agreed to buy is narrow. A 7 MHz pair is the width of a single channel, and it is the band Sprint built on, which is why the standards call it band 26 and why, as SpaceX says, most handsets already support it. The spectrum's value lies in where it sits, and so does its price. At the reported figure the national equivalent is \$1.68 per MHz-POP, nearly double the \$0.887 SpaceX paid EchoStar and above the \$1.191 AT&T paid for a mix of 600 MHz and 3.45 GHz. A block that found no bidder at \$3.6 billion in October 2024

reportedly fetched \$8 billion two years later; in our reading, the difference is what a satellite operator will pay for the one thing its mid band cannot do.

The first low-band position any satellite operator has contracted to own in this market is 14 MHz wide, cost a reported \$8 billion, and came from T-Mobile by way of Grain, with T-Mobile keeping a share of the resale.

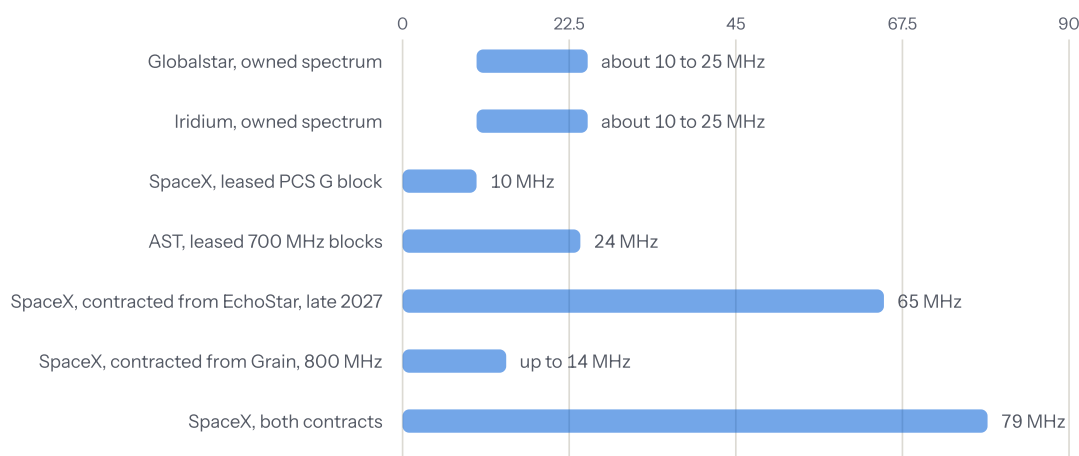
## Two things do not change when the spectrum is bought

Owning the spectrum changes the terms on which SpaceX holds it. It does nothing about the geography a lease can reach or the position of the two operators that never needed to rent, and until 8 October it did nothing about frequency either. Each of the three is a matter of record (Exhibit 7).

- **Frequency.** Until October, everything SpaceX had contracted to own lay at 1.7 to 2.2 GHz, and everything AST leases lies at 700 MHz. Owning 65 MHz buys width, and width is not propagation. As [part 3](#) set out, the low-band lease is the one that bends around terrain and gets through a wall, and the incumbents' public argument that satellite direct-to-device does not serve indoors is an argument about frequency and link budget that no satellite count answers. The Grain agreement answers it in kind: up to 14 MHz at 800 MHz is low band of the same character as AST's 700 MHz, and would be the first low-band position a satellite operator has owned in this market. It does not change width. Of the 79 MHz SpaceX has now contracted for, 14 MHz gets through walls, and a 7 MHz pair is a coverage layer rather than a capacity one, as SpaceX itself describes it.
- **Geography.** A lease is granted market by market, 654 areas for AST and 174 for SpaceX, and the footprint is whatever the landlord holds and chose to lend, which is why the lease lists read like a patchwork of rural counties. A nationwide licence has no holes in it, and the absence of holes is most of the difference between "supplemental coverage" and "coverage".
- **The incumbents.** Globalstar and Iridium appear nowhere in the lease records because they own their mobile-satellite spectrum outright, though narrowly, on the order of 10 to 25 MHz each, which is why their businesses are messaging and wholesale rather than broadband. Set beside the two tenants, the market offers three spectrum positions: owned and narrow, rented and wide, or bought and wide. Each produces a different kind of company.

## EXHIBIT 7

### Three spectrum positions are open in this market: owned and narrow, rented and wide, or bought and wide, and the bought position now includes low band



Source: FCC market licence file, snapshot 13 September 2026; EchoStar Forms 8-K of 8 September and 6 November 2025; FCC DA 26-653 for the 800 MHz bandwidth (Filed); Grain Management release of 8 October 2026 (Reported). Note: the Globalstar and Iridium figures are an order of magnitude for their owned mobile-satellite holdings, not a count from the licence file (Judgement). Leased and contracted totals start at zero, and the Grain row is the most the portfolio holds in any county.

## Terms used

- **MHz-POP.** One megahertz of spectrum covering one person. A licence's MHz-POPs are its bandwidth multiplied by the population of its area, and a price per MHz-POP is the total paid divided by them. It is the unit in which spectrum transactions are compared.
- **National-equivalent \$/MHz-POP.** A comparison device: the total divided by the bandwidth and then by the US Census population of 340,110,988, as if every transaction covered the whole country. Real auctions do not sell every licence and licence areas differ, so it is a comparison rather than a valuation.
- **Lease and licence.** A licence is the FCC's grant of the right to use a band in a market for a term; it can be renewed, financed and sold. A lease is permission from a licensee to use its spectrum, written against that licence and unable to outlast it.
- **PCS G block.** The 1910 to 1915 and 1990 to 1995 MHz pair that SpaceX leases from T-Mobile for its service link.
- **H block.** The 1915 to 1920 and 1995 to 2000 MHz pair immediately adjacent to the G block, part of SpaceX's purchase from EchoStar.

- **AWS-3 and AWS-4.** Two of the FCC's AWS bands. SpaceX's purchase includes AWS-4 at 2000 to 2020 and 2180 to 2200 MHz and unpaired AWS-3 uplink at 1695 to 1710 MHz. Auction 113 sold leftover AWS-3 licences in 2026.

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- **Spectrum Business Trust 2025-1.** The trust that holds the EchoStar licences between the first and second steps of the SpaceX purchase. It held 847 active market licences on 13 September 2026.

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- **800 MHz, band 26.** The 817 to 824 and 862 to 869 MHz pair, the enhanced specialised mobile radio block that Sprint ran its network on and T-Mobile inherited in 2020. Handsets know it as 3GPP band 26. It is distinct from the 800 MHz of bandwidth the 2025 statute orders auctioned, which [part 5](#) covers.

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- **Grain Management.** The investment firm whose affiliates NEWLEVEL IV, L.P. and NEWLEVEL, LLC bought T-Mobile's 800 MHz licences on 11 August 2026 and agreed on 8 October 2026 to sell them to SpaceX, subject to FCC approval.

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- **Gross winning bids.** Auction totals before bidding credits are applied. The auction figures here are gross.

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## Implications

### CARRIER STRATEGIST

Put two questions on the agenda now, because 2028 is too late to start. What does our lease say about assignment and competitive use? And what is our position at renewal once the counterparty no longer depends on the relationship? You may be renting spectrum to a company that has contracted to spend \$19.6B, and a reported \$8B more for low band, so that it never has to again. If you are T-Mobile, your filings say you also sold it the low band, through Grain, and kept a share of the price.

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### INVESTOR

Check three things before the meeting. Does the target own or rent? If it rents, when does the underlying licence expire, as distinct from the lease? Is the landlord a competitor, a partner, or both? The G-block file shows why the second question is worth asking, because the licences moved to 2036 and the leases still show 2026.

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### VENDOR

Plan for two equipment roadmaps rather than one. SpaceX owning 65 MHz at 1.7 to 2.2 GHz nationwide from late 2027, with a 7 MHz pair of band 26 beneath it, is a different customer from SpaceX renting a 5 MHz pair of PCS. Band support, handset certification and network architecture all move with the change, and the 800 MHz block is not among the bands of the 15,000-satellite constellation the FCC authorised on 6 October, which SpaceX describes as built for 2 GHz, so serving it from space needs a payload that does not yet exist on the record.

## Method and limits

### HOW THIS WAS BUILT

Licence and lease counts, service codes, grant dates and expiry dates come from the FCC's market-based licence file, snapshot 13 September 2026, filtered to active records and to licensee-type entities. Deal terms, prices and closing expectations come from EchoStar's SEC filings rather than from press coverage. Auction totals are gross winning bids as the FCC publishes them. National-equivalent dollars per MHz-POP is the total divided by the bandwidth and then by the US Census population of 340,110,988, applied on the same basis to the auction results and to the prices in EchoStar's filings. The cost of AST's 24 MHz is that bandwidth priced at \$0.662 to \$0.887 per MHz-POP on the same population. The 800 MHz portfolio is priced on the same basis over 14 MHz, the most it holds in any county according to the FCC's order of 1 July 2026; the only price for it is a press report, so that figure is marked as reported wherever it appears.

### WHAT IT DOES NOT SHOW

National-equivalent \$/MHz-POP is a comparison device rather than a valuation. Real auctions do not sell every licence, licence areas differ in population and value, and paired, unpaired, low-band and mid-band spectrum are not interchangeable. EchoStar's filing does not state the bandwidth in the AT&T transaction; the roughly 50 MHz used here is the FCC's own description of the approved transfer, so that row is approximate. The EchoStar to SpaceX closing is expected rather than completed: the FCC approved the transfer on 12 May 2026, but the second-step financial closing has not occurred. The expiry-date discrepancy on the G-block leases is reported as it appears in the file; its cause is not confirmed. Executive remarks come from unverified trade reporting. The price of the 800 MHz portfolio is a report by the Wall Street Journal, citing people familiar with the deal; neither Grain nor SpaceX has stated it, and SpaceX had filed nothing on the agreement with the SEC by 12 October 2026. The portfolio holds between 4.85 and 14 MHz by county, so a national equivalent on 14 MHz is a floor. Nothing here is investment advice.

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**Data as of:** FCC licences 13 Sep 2026 · SEC filings as dated · auction results as published · Grain agreement 8 Oct 2026, read 12 Oct 2026 · Method version 1.0.

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**Sources.** FCC market licence file (snapshot 13 Sep 2026, parsed 17 Sep 2026), FCC authorisation orders, EchoStar SEC filings (8-K, 8 Sep 2025 · 6 Nov 2025 · 3 Aug 2026), T-Mobile Form 10-K for FY2024 and Form 10-Q for the quarter to 30 Jun 2026, FCC DA 26-653 (1 Jul 2026), Grain Management release and SpaceX update of 8 Oct 2026, FCC auction results, US Census population; the Grain price as reported by the Wall Street Journal.

# Where the rules get written

Who writes the rules, and what have they already decided?

Most commentary on direct-to-device still treats as open whether the FCC will let a satellite operator build a terrestrial network. The FCC answered on 12 May 2026, when it approved the EchoStar transfers with waivers that let SpaceX run its spectrum from the ground, from orbit or both. Congress has fixed the auction calendar to 2034, and the first auction in four years cleared at \$2.658 per MHz-POP. Three orders in five months have since put dates on SpaceX's spectrum, and the one that approved the 800 MHz band's sale to Grain set the process that sold it on to SpaceX.



## IN BRIEF

- On **12 May 2026** the FCC approved both EchoStar transactions, which move about 115 MHz of mid-band spectrum to SpaceX and AT&T. The waivers let SpaceX use its share “flexibly for terrestrial, space-based, and hybrid network architectures”, with performance obligations attached. In our view that closes the permission question. The obligations, set out in the order itself, are satellite metrics tested at two, four and nine years from **30 November 2027**: a 5 dB downlink signal-to-noise ratio and 70% availability over 90% of each licence area to begin with, rising to 10 dB and 90%.
- Congress restored the FCC's auction authority on 4 July 2025 and ran it to **30 September 2034**, with a pipeline of at least 800 MHz behind it. At least 100 MHz of upper C-band must be sold by July 2027, and Auction 115 opens on 27 April 2027 with 160 MHz.
- Auction 113, the first in four years, sold 200 leftover AWS-3 licences for \$3,572.9 million, which works out at **\$2.658** per MHz-POP. Verizon paid 88.5% of the total. SpaceX bid for the first time and won two licences for \$8.5 million.

- A proposed rulemaking, ET Docket 26-169, would open more than 225 MHz of unlicensed spectrum to direct-to-device uplinks: a service that would need no spectrum position at all. The midterm election of 3 November 2026 can change the pace of policy but none of the permissions already granted.
- Two later orders set SpaceX's dates. On **1 July 2026** the FCC approved T-Mobile's sale of the 800 MHz band to Grain Management on condition that Grain pick a satellite partner by competitive process by 5 November and have satellite applications filed by 4 December 2026, with the EchoStar metrics and dates attached; SpaceX's agreement to buy the band on 8 October fell inside that window. On **6 October 2026** the FCC authorised SpaceX's 15,000-satellite direct-to-device constellation at 326 to 335 km, half of it due in orbit by 7 October 2032.

## The FCC has already permitted a satellite operator to build a terrestrial network

On 12 May 2026 the FCC's Wireless Telecommunications Bureau and Space Bureau approved both EchoStar transactions. The order moves about 115 MHz of mid-band spectrum to SpaceX and AT&T, and most of its length is conditions. One sentence in it settles the architecture question the market has been arguing about (Exhibit 1).

The Commission described the two deals as "collectively surpassing \$40 billion in deal value" ([news release](#); order in GN Docket No. 25-302, DA 26-471). The parties' own filings say \$19.617 billion for SpaceX and \$20.25 billion for AT&T, \$39.87 billion between them. The two figures reconcile once the \$2.4 billion escrow is added.

The consequential part of the decision is one sentence under the heading *Tech-Neutral Innovation*. It allows SpaceX to use its new spectrum "flexibly for terrestrial, space-based, and hybrid network architectures". The permission carries conditions. The Commission attaches what it calls "first-of-its-kind performance obligations", requiring "meaningful, reliable connectivity to the public — whether D2D, terrestrial, or both — within years". Neither the permission nor the obligation prefers one architecture over the other.

That symmetry matters. Whoever holds this spectrum decides how to use it, and the test it must pass says nothing about how the signal reaches the handset. In our view the regulatory question is closed: SpaceX may build a terrestrial mobile network on its own spectrum if it chooses. What remains is whether it can afford to and whether the physics allows it.

## EXHIBIT 1

## The 12 May 2026 order grants one permission and attaches four conditions

| TERM                          | WHAT THE ORDER SAYS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | WHO IT BINDS      |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| <b>Permission</b>             | Waivers let SpaceX use the spectrum “flexibly for terrestrial, space-based, and hybrid network architectures”                                                                                                                                                                                                                                                                                                                                                                                                          | SpaceX            |
| <b>Performance obligation</b> | The release requires “meaningful, reliable connectivity to the public” “within years”, whether direct-to-device, terrestrial or both. The order (paragraph 57) sets the numbers: from 30 Nov 2027, per licence and block, a 5 dB downlink SINR and 70% availability over 90% of the area within two years, 80% within four, and 10 dB and 90% within nine, with uplink throughput of 100, 200 and 300 kbps/MHz and spectral-efficiency floors alongside; a licence that misses the final test terminates automatically | SpaceX            |
| <b>Escrow</b>                 | EchoStar funds a \$2.4 billion escrow                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | EchoStar          |
| <b>Build-out</b>              | AT&T’s 600 MHz build-out is accelerated                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | AT&T              |
| <b>Boost Mobile</b>           | Preserved through a hybrid MVNO arrangement with AT&T                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | EchoStar and AT&T |

The purchase prices in the parties’ filings are \$19.617 billion (SpaceX) and \$20.25 billion (AT&T). The Commission’s “surpassing \$40 billion” includes the \$2.4 billion escrow. The performance metrics replace the terrestrial build-out rules (75% of population for AWS-3 and AWS-H, 70% for AWS-4), which the order waives; missing an interim test brings the final one forward by one year, then two.

Source: FCC news release and order of 12 May 2026, GN Docket No. 25-302, DA 26-471, paragraphs 48 and 57; purchase prices from EchoStar’s Forms 8-K, as read in part 4 (Filed).

The FCC has answered whether a satellite operator may build a terrestrial mobile network on its own spectrum, and the answer is yes. The questions left are financial and physical, and no regulator will settle them.

The rest of the order is conditions on other parties. EchoStar must fund the \$2.4 billion escrow, AT&T’s 600 MHz build-out is brought forward, and Boost Mobile survives through a hybrid MVNO arrangement with AT&T. The performance terms deserve a closer look than the release gives them, because the Commission has since used them twice.

The order does not ask SpaceX for a terrestrial build-out. The rules would have required 75% of the population of each licence area to be covered for the AWS-3 and H block licences and 70% for AWS-4; the order waives that in favour of a test a satellite can pass. From 30 November 2027, in each licence area and each block, SpaceX has two years to show a downlink signal-to-noise ratio of 5 dB and service available 70% of the time over 90% of the area, with uplink throughput for the worst-served users of at least 100 kbps per MHz; four years to lift availability to 80% and throughput to 200; and nine years to reach 10 dB, 90% and 300, with spectral-efficiency floors of 300 and then 600 kbps per MHz per beam on the downlink. Missing the first test brings the final one forward by a year, and missing the second by two years more; a licence that

fails the final test terminates automatically. The order also notes that the 3GPP standards do not yet support satellite operation in the 1915 to 1920 MHz block, and tells SpaceX to ask for a waiver near the milestone if it needs one.

## The 800 MHz order applied the same test to a second band

Seven weeks later the Wireless Telecommunications Bureau used the same template on a band SpaceX did not yet own. On 1 July 2026 it approved T-Mobile's sale of its 800 MHz licences, the 817 to 824 and 862 to 869 MHz pair, to affiliates of Grain Management, and Grain's sale of 600 MHz licences back to T-Mobile ([DA 26-653](#), WT Docket 25-178). This is the band the Sprint merger judgment had ordered T-Mobile to sell, which DISH declined to buy and which drew no qualifying bid at auction in 2024; [part 4](#) has that history and the prices. Grain had come to the Commission in 2025 describing utilities and regional operators as its customers, and in March 2026 it changed its plan to satellite direct-to-device. The Bureau allowed the change on conditions. Grain had to appoint a neutral adviser and open a competitive process for a satellite partner by 7 August 2026, finish it and report the outcome by 5 November, and have complete satellite applications filed by 4 December. If it did, the satellite metrics of the EchoStar order apply to the band on the same three dates: 30 November 2029, 2031 and 2036. If it did not, a terrestrial build-out applies instead: 33% of the population or 25% of the geography of each licence by 1 July 2029 and 66% or 50% by 1 July 2034, with automatic termination behind it. Because the 800 MHz band is not allocated for supplemental coverage from space, the Bureau also deferred every waiver the band needs for satellite use until the partner was named (Exhibit 2).

The partner was named on 8 October 2026, when Grain announced a definitive agreement to sell the whole portfolio to SpaceX, subject to the Commission's consent, and said in its release that the agreement aligns with the July order's process ([Grain release](#)). The bids and the other participants are not public; Bloomberg had reported AST SpaceMobile's interest in August, and that report is unverified. On the record, the regulator wrote a satellite performance test for one operator's spectrum in May, wrote the same test into a second band in July and required that band's holder to find a satellite operator to meet it, and the operator found was the one already holding the first band. Two days before the Grain announcement the Space Bureau and the Wireless Bureau had authorised that operator's next constellation: 15,000 direct-to-device satellites in nine shells between 326 and 335 km, half of them due in orbit by 7 October 2032 and all by 7 October 2035, with the 2000 to 2020 MHz band turned to downlink use by waiver so that both 2 GHz blocks point the same way, the 2020 to 2025 MHz uplink request deferred, and the out-of-band power question of 2024 settled ([DA 26-1078](#); [part 3](#)). The 800 MHz band is not among that constellation's frequencies. Serving it from orbit will take an application the Grain order expects by 4 December.

## Three orders in five months give SpaceX's spectrum one clock

| ORDER                  | WHAT IT COVERS                                                                                                                      | THE DATES IT FIXES                                                                                                                                                                                                                              |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DA 26-471, 12 May 2026 | EchoStar's AWS-4, H block and unpaired AWS-3 licences to SpaceX; tech-neutral waivers                                               | Second closing on or about 30 Nov 2027; performance tests at 2, 4 and 9 years from it: <b>30 Nov 2029</b> , 2031 and 2036; automatic termination for a licence that fails the final test                                                        |
| DA 26-653, 1 Jul 2026  | T-Mobile's 800 MHz licences to Grain; Grain's 600 MHz to T-Mobile; a conditional path to satellite use                              | Adviser and competitive process by 7 Aug 2026; outcome reported by <b>5 Nov 2026</b> ; satellite applications by <b>4 Dec 2026</b> ; then the same tests on 30 Nov 2029, 2031 and 2036, or a terrestrial build-out by 1 Jul 2029 and 1 Jul 2034 |
| DA 26-1078, 6 Oct 2026 | SpaceX's 15,000-satellite direct-to-device constellation at 326 to 335 km; 2 GHz, H block, AWS-3 and PCS G operations inside the US | Half the constellation in orbit by <b>7 Oct 2032</b> , all of it by 7 Oct 2035; a 15-year term; operations in the EchoStar bands only after the second closing                                                                                  |

The Grain agreement of 8 October 2026 is a company announcement subject to the Commission's consent; the consent, when it comes, will be a fourth order.

Source: FCC DA 26-471 (GN Docket 25-302), paragraphs 12 and 57; FCC DA 26-653 (WT Docket 25-178), paragraphs 6, 11 and 48; FCC DA 26-1078 (GN Docket 25-340), grant conditions 1, 3 and 9 (Filed); Grain Management release of 8 October 2026 (Reported).

The regulator now writes a satellite performance test rather than a build-out, and it has written the same one twice. Whoever holds the 800 MHz band and the EchoStar bands answers to one calendar, and its first date is 30 November 2029.

Congress had settled a year earlier where the next tranche of spectrum comes from.

## Congress has restored auction authority to 2034 and ordered an 800 MHz pipeline

Congress restored the FCC's auction authority in the reconciliation act signed on 4 July 2025, and this time it runs to 30 September 2034. The statute also attaches a pipeline of at least 800 MHz, including at least 100 MHz of upper C-band at 3.98 to 4.2 GHz that must be auctioned by July 2027. The FCC's own auction release credits the statute for both the authority and the pipeline. The enacted text, section 40002, and its six deadlines are set out clause by clause in [part 2 of the 6G series](#).

The first auction under the restored authority followed within a year, and it was the first of any kind in four years. Auction 113 opened on 2 June 2026 with AWS-3 spectrum at 1695 to 1710, 1755 to 1780 and 2155 to 2180 MHz. The 200 licences on offer were the ones left over after the 2014 defaults, and the proceeds go to

the “rip and replace” reimbursement programme ([FCC, 2 June 2026](#)). The next sale is Auction 115, which opens on 27 April 2027 with 160 MHz of upper C-band (Exhibit 3).

## EXHIBIT 3

### The regulatory calendar runs from the July 2025 statute to the first performance test in November 2029

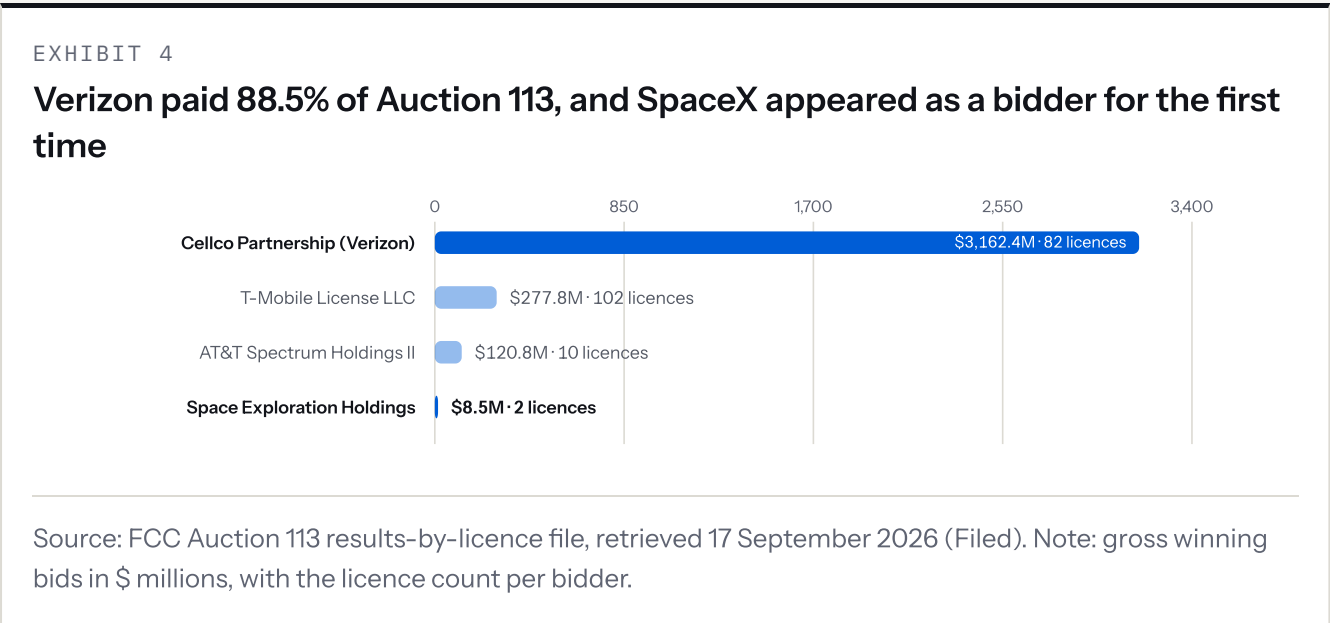


Source: FCC Auction 113 release of 2 June 2026 for the statute; FCC news release and order of 12 May 2026; FCC DA 26-653 of 1 July 2026; FCC fact sheet of 16 July 2026; FCC DA 26-1078 of 6 October 2026; FCC market licence file of 13 September 2026; EchoStar Forms 8-K (Filed); Grain Management release of 8 October 2026; election date and seat counts from published election trackers (Reported). Note: AT&T's leg of the EchoStar sale closed on 28 July 2026.

## Auction 113 cleared at \$2.658 per MHz-POP

The opening release framed Auction 113 as housekeeping: leftover licences, with proceeds to a reimbursement fund. The results read differently. The 200 licences sold for \$3,572,889,200 in gross

winning bids across 1,344,395,555 MHz-POPs, which works out at \$2.658 per MHz-POP (our calculation). Verizon, bidding as Cellco Partnership, paid \$3,162,445,000 for 82 licences, 88.5% of the total (Exhibit 4).



Two things stand out. The first is the concentration: no other bidder came near Verizon’s \$3.16 billion, and T-Mobile, which took more licences than Verizon at 102, paid \$277.8 million for them. The second is that SpaceX bid at all. Until June 2026 the company appeared in the American terrestrial record only as a tenant. Its two licences cost \$8,490,200, or \$0.367 per MHz-POP, the lowest price paid in the auction (Exhibit 5).

EXHIBIT 5

**The four largest winners paid between \$0.367 and \$3.075 per MHz-POP**

| BIDDER                       | LICENCES | GROSS WINNING BIDS | MHZ-POPS      | \$ PER MHZ-POP |
|------------------------------|----------|--------------------|---------------|----------------|
| All winners                  | 200      | \$3,572,889,200    | 1,344,395,555 | \$2.658        |
| Cellco Partnership (Verizon) | 82       | \$3,162,445,000    | 1,060,336,820 | \$2.982        |
| T-Mobile License LLC         | 102      | \$277,787,000      | 213,779,840   | \$1.299        |
| AT&T Spectrum Holdings II    | 10       | \$120,774,000      | 39,274,580    | \$3.075        |
| Space Exploration Holdings   | 2        | \$8,490,200        | 23,151,210    | \$0.367        |

Gross winning bids as published by the FCC. MHz-POPs and dollars per MHz-POP are our calculation from block bandwidths and market populations, and the total reconciles with the Commission’s “over 1.4 billion MHz-POPs”.

Source: FCC Auction 113 results-by-licence file, retrieved 17 September 2026 (Filed); dollars per MHz-POP calculated by Blue Prysm (Calculated).

#### THE TWO LICENCES SPACEX WON

**B1 block, 1700 to 1710 MHz.** Unpaired uplink in the Cincinnati-Hamilton market, for \$8,406,000.

**AWS-3 G block, 1755 to 1760 and 2155 to 2160 MHz.** In the Gulf market, for \$84,200. It is a different block from the PCS G block described in the earlier parts; the two share only the letter.

The B1 block lies inside the 1695 to 1710 MHz range that SpaceX is separately buying from EchoStar. A bid sheet does not reveal a company's intentions, but the alignment of bands is a matter of record. The FCC market licence file of 13 September 2026 shows Space Exploration Holdings with two market licences granted on 26 August 2026, its first that are not leases ([part 4](#)).

One caveat governs every use of that clearing price. Auction 113 sold a leftover inventory concentrated in dense markets, so its \$2.658 per MHz-POP cannot usefully be set beside a nationwide price such as the C-band's \$0.852 or the \$0.887 SpaceX agreed with EchoStar. A fair comparison would need a population-weighted match market by market, which this part does not attempt. What the figure does show is that in 2026 a national carrier paid about \$3 per MHz-POP for mid-band capacity in the markets it wanted, and that price belongs beside the C-band figure whenever the latter is quoted as the benchmark.

## The midterm election cannot reach the permissions already granted

The mechanics of the Commission are widely misdescribed. The Congressional Research Service's standing account of the agency ([CRS R45699](#)) sets them out, and they are simpler than the commentary suggests. There are five Commissioners on staggered five-year terms, and no more than three may come from one party. The President designates the Chair from among the sitting Commissioners on the first day of an administration, without a separate Senate vote. A Commissioner whose term has expired may stay on as a holdover, and three Commissioners make a quorum. None of those rules turns on an election.

The membership does change, though not on election night. A nomination to one of the Commission's vacant seats was announced in August 2026 and had not been confirmed when Axios reported it on 10 August ([Axios, 10 Aug 2026](#)). An August report does not give the seat count in September.

Election day is 3 November 2026. All 435 House seats are contested, as are 35 in the Senate (33 regular Class 2 seats and two specials), by the count of the published election trackers. None of that changes who sits on the FCC, because the terms and the appointment mechanism run on their own statutory calendar. The result can change five other things.

- **Committee chairs.** Who chairs Senate Commerce and House Energy & Commerce.
- **Confirmations.** How willing the Senate is to confirm nominees to the two vacant seats.
- **Appropriations.** The agency's budget.

— **Legislation.** Whether any spectrum legislation gets beyond the 2025 act.

— **Oversight.** How hard Congress looks at NTIA and BEAD.

Those levers act on the pace of policy; the permissions already granted are out of their reach. We know of no scheduled proceeding that would reopen the core direct-to-device permissions before 2028. The SCS framework in GN Docket 23-65 is adopted, the EchoStar transfers are approved and the auction pipeline is written into statute. The FCC's composition turns over with the presidency, and the next presidential election is in November 2028, the period in which SpaceX's performance obligations and AST's leases also come due. The dates coincide; this part does not forecast from them.

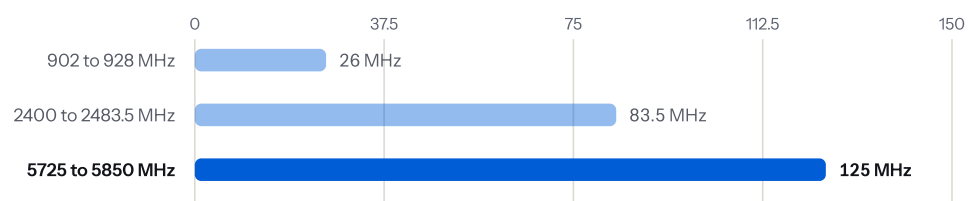
No scheduled proceeding reopens the core direct-to-device permissions before 2028. The election can change committee chairs, confirmations and the pace of legislation. It cannot touch the waivers, the SCS framework or the statutory pipeline.

## A proposed unlicensed regime would need no spectrum position at all

Separately, and with far less attention, the Commission circulated a Notice of Proposed Rulemaking for its open meeting of 6 August 2026. ET Docket No. 26-169, *Unleashing Unlicensed Spectrum for Direct-to-Device*, is described in the fact sheet the Commission published on [16 July 2026](#). The proposal would let a device transmit to a satellite from three unlicensed bands at ordinary Part 15 power of up to 36 dBm EIRP, more than 225 MHz in all (Exhibit 6). The notice also asks whether power flux-density, out-of-band and aggregate limits should apply when several satellite operators share a band.

### EXHIBIT 6

**The three proposed unlicensed uplink bands total about 234 MHz, and more than half of it lies at 5.7 GHz**



Source: FCC fact sheet for ET Docket No. 26-169, 16 July 2026 (Filed); widths calculated by Blue Prism from the band edges (Calculated). Note: the proposal covers more than 225 MHz; the band edges give 234.5 MHz. Proposed power limits are Part 15 levels of up to 36 dBm EIRP.

If the proposal becomes a rule, a class of direct-to-device service arrives that needs neither an auction nor a lease. Nothing in the proposal suggests it could carry voice. It may carry the sensor and asset traffic on which several business cases in this market depend, which is why a proceeding about unlicensed bands belongs in a strategic model that otherwise tracks only licensed ones.

The same notice records why the Commission is interested. By its own count, more than \$40 billion has moved through the US space economy for direct-to-device in eighteen months. It cites SpaceX’s \$19.6 billion EchoStar purchase, AST’s \$550 million L-band agreement, and Amazon’s acquisition of Globalstar and Rocket Lab’s of Iridium as “collectively totaling nearly \$20 billion”. Those are the transactions the earlier parts cover from the commercial side. The notice remains a circulated draft and its technical limits are proposals; it is a signal of direction and nothing firmer.

The six factors in a PESTLE frame

Exhibit 7 puts the findings of the series into a PESTLE frame, one factor per row, with the document, docket or dataset each rests on.

| EXHIBIT 7                                                                                                                                                                                                       |                                                           |                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Five of the six factors rest on an FCC document, and one on trade reporting                                                                                                                                     |                                                           |                                                                                                                                                                                         |
|                                                                                                                                                                                                                 | THE FACTOR                                                | THE CHECKABLE FACT BEHIND IT                                                                                                                                                            |
| P                                                                                                                                                                                                               | Regulatory permission has been granted                    | Tech-neutral waivers, 12 May 2026; SCS framework, GN Docket 23-65; the 800 MHz satellite pathway of 1 Jul 2026 and the D2D constellation grant of 6 Oct 2026                            |
| E                                                                                                                                                                                                               | Spectrum is repricing upward                              | Auction 113 at \$2.658 per MHz-POP; a mandated 800 MHz pipeline to 2034                                                                                                                 |
| S                                                                                                                                                                                                               | The market served is rural and marginal                   | Coverage-gap framing in every FCC release; T-Mobile has put satellite at <b>0.0002 to 0.0003%</b> of its network usage (trade reporting, September 2026)                                |
| T                                                                                                                                                                                                               | Channel width and power limits bind before policy does    | 5 to 6 MHz service channels; PFD limits ( <a href="#">part 3</a> )                                                                                                                      |
| L                                                                                                                                                                                                               | Satellite performance tests are the new enforcement lever | DA 26-471 paragraph 57 and DA 26-653 paragraph 48: 5 dB and 70% availability by 30 Nov 2029, 10 dB and 90% by 2036, automatic termination behind them; AT&T’s accelerated 600 MHz build |
| E                                                                                                                                                                                                               | Orbital rules are being modernised rather than tightened  | GSO/NGSO sharing Report and Order, SB Docket 25-157, adopted 30 April 2026                                                                                                              |
| The T-Mobile network-usage figure comes from trade reporting of September 2026; no transcript has been obtained. Every other entry points to an FCC document, a docket number or a figure in the earlier parts. |                                                           |                                                                                                                                                                                         |
| Source: FCC orders, releases and dockets as named; FCC Auction 113 results (Filed); trade reporting for the T-Mobile figure (Reported). Note: the second E is environmental, read here as the orbital regime.   |                                                           |                                                                                                                                                                                         |

## Terms used

- **MHz-POP.** One megahertz of spectrum covering one person. Dividing a price by the MHz-POPs it buys puts auctions and private sales of very different sizes on one scale.

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- **SCS, supplemental coverage from space.** The FCC's framework, adopted in GN Docket 23-65, under which a satellite operator may serve ordinary phones on spectrum that a terrestrial carrier is licensed to use.

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- **PFD, power flux-density.** The power a satellite's signal delivers per square metre at the ground. The FCC limits it to protect terrestrial users of the same and adjacent bands.

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- **NPRM.** A Notice of Proposed Rulemaking: the FCC's draft rules and questions, published for comment before any rule is adopted.

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- **Part 15.** The FCC's rules for unlicensed devices, which set power limits such as the 36 dBm EIRP proposed in ET Docket 26-169.

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- **SINR.** Signal to interference plus noise ratio, in decibels: how far a wanted signal stands above everything else at the receiver. The FCC's satellite tests ask for 5 dB on the downlink to begin with and 10 dB by the final test.

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- **The 800 MHz band.** Here, the 817 to 824 and 862 to 869 MHz pair that T-Mobile sold to Grain and Grain has agreed to sell to SpaceX. The 800 MHz of bandwidth the 2025 statute orders auctioned is a quantity rather than a band.

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## Implications

### CARRIER STRATEGIST

Stop treating “will the FCC let them?” as the risk; the waivers of 12 May 2026 answered it. Your regulatory exposure now runs through performance tests with dates on them, the auction cadence, and whether unlicensed direct-to-device takes the low end of your IoT business. Model those three and stop modelling the permission. Note also what the 800 MHz order did: when a licensee changed its plan from utilities to satellite, the Bureau wrote a process rather than refusing, and the process delivered the band to SpaceX in fourteen weeks.

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### INVESTOR

Put two dates in any model. The first is July 2027, by which at least 100 MHz of upper C-band must have been auctioned; Auction 115 opens on 27 April 2027 with 160 MHz. The second is 30 November 2029, the first performance test on SpaceX’s EchoStar bands and, if the satellite path is taken, on the 800 MHz band too; whichever Commission exists at the time will have to enforce it, and 4 December 2026 is the date by which the 800 MHz applications have to be on file.

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### VENDOR

Read ET Docket 26-169 before anything else. An unlicensed direct-to-device regime changes which radios matter and which certification path a device takes, and its proposed limit of 36 dBm EIRP is a design number you can start from today.

## Method and limits

### HOW THIS WAS BUILT

The FCC's orders, releases and auction results file are read directly rather than through summaries of them. The agency's constitution is taken from the Congressional Research Service.

The dollars per MHz-POP for Auction 113 are Blue Prism's calculation. Each licence's block bandwidth is multiplied by the population in the FCC's market table (A1 5 MHz, B1 10 MHz, G, H and I 10 MHz, J 20 MHz) and the gross winning bids are divided by the total. The result reconciles with the Commission's own figure of "over 1.4 billion MHz-POPs".

### WHAT IT DOES NOT SHOW

The FCC's membership changes without notice, so the seat count should be checked on the day it is relied on. ET Docket 26-169 is a circulated draft, and its technical limits are proposals rather than rules.

Nothing here predicts an election result or forecasts what a regulator will do. Auction 113's price per MHz-POP reflects a leftover inventory concentrated in dense markets; it is not a nationwide benchmark and is not used as one.

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**Data as of:** FCC auction results and licences 13 to 17 Sep 2026 · orders as dated, read 12 Oct 2026 · Method version 1.0.

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**Sources.** FCC releases and orders (DA 26-471 of 12 May 2026, DA 26-653 of 1 Jul 2026, DA 26-1078 of 6 Oct 2026), FCC auction results (retrieved 17 Sep 2026), FCC market licence file (13 Sep 2026), Congressional Research Service, Grain Management release of 8 Oct 2026.

# Who can afford to play

## Does anyone have the money?

The three national carriers generated \$105.4 billion of operating cash flow between them in FY2025. Once the network and the shareholders had been paid, \$33.8 billion was left, against about \$337 billion of long-term debt less cash. The satellite operators have the opposite problem: no dividend to protect and very little cash. The money for this market is arriving from Amazon, Rocket Lab and SpaceX, none of which is a telecom incumbent.



### IN BRIEF

- AT&T, Verizon and T-Mobile generated **\$105.4 billion** of operating cash flow in FY2025. Capital expenditure took \$47.8 billion of it and dividends another \$23.8 billion, which leaves \$33.8 billion of discretionary money against about \$337 billion of long-term debt less cash.
- SpaceX's 65 MHz position cost \$19.6 billion, which works out at about seven months of the three carriers' post-dividend free cash flow. The 800 MHz portfolio it agreed to buy on 8 October 2026 adds a reported \$8 billion, which would take its spectrum bill to about **\$27.6 billion**, or about ten months of that cash flow. Verizon's \$3.16 billion in Auction 113 took **37%** of its own post-dividend free cash flow.
- AST SpaceMobile spent \$859 million in the first half of 2026 against \$46 million of revenue, and held \$2,288 million of cash on 30 June: about **fourteen months** at that rate. EchoStar wrote down \$5.8 billion of spectrum intangibles in FY2025 and has since sold about 115 MHz for about \$39.9 billion.

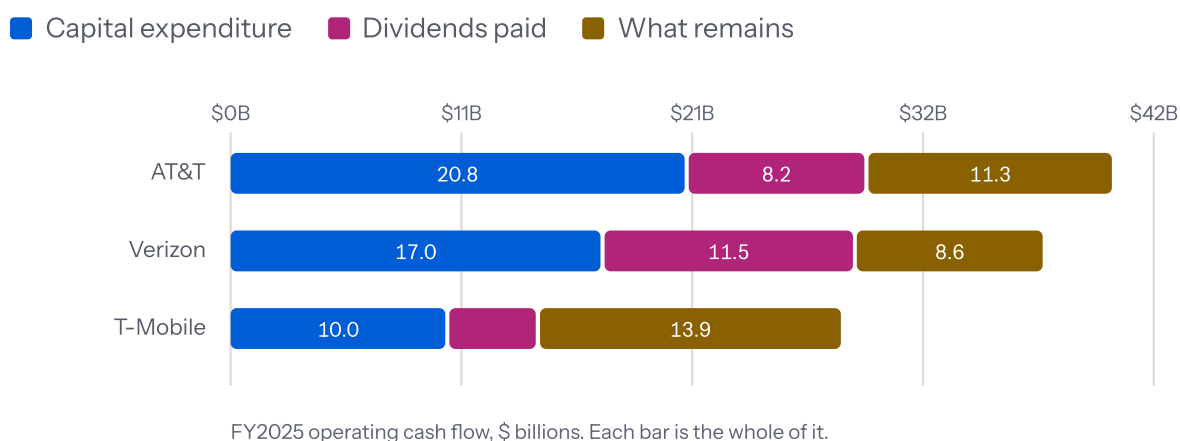
## Most of the carriers' cash is spoken for

All five incumbents in this section generate large operating cash flows. What decides each one's room for manoeuvre is how much remains once the network and the shareholders have been paid (Exhibit 1).

AT&T, Verizon and T-Mobile between them generated \$105.4 billion of operating cash flow in FY2025. Capital expenditure took \$47.8 billion of that, and dividends took another \$23.8 billion. The \$33.8 billion that remains is the discretionary money, and it stands against about \$337 billion of combined long-term debt less cash. Charter, which pays no dividend, is the exception that shows the pattern: its free cash flow and its free cash flow after dividends are the same \$4,418 million.

EXHIBIT 1

### The three national carriers committed two thirds of their FY2025 operating cash flow to capex and dividends before anything new



Source: AT&T, Verizon and T-Mobile FY2025 Forms 10-K, cash-flow statements as filed (Filed); the remainder calculated by Blue Prysm (Calculated). Note: \$ billions; each bar is the company's full operating cash flow.

The same shape repeats across all five companies: operating cash flow is large, capital expenditure takes a big share of it, and dividends take much of what is left. The line that describes strategic room is therefore free cash flow after dividends. The table uses each filer's own tagged lines rather than any adjusted measure (Exhibit 2).

## EXHIBIT 2

## Free cash flow after dividends ranged from \$4.4 billion at Charter to \$17.0 billion at Comcast in FY2025

| FY2025, \$ MILLIONS                   | AT&T          | VERIZON       | T-MOBILE            | COMCAST       | CHARTER      |
|---------------------------------------|---------------|---------------|---------------------|---------------|--------------|
| Revenue                               | 125,648       | 138,191       | 88,309              | 123,707       | 54,774       |
| Net income                            | 21,953        | 17,174        | 10,992              | 19,998        | 4,987        |
| Operating cash flow                   | 40,284        | 37,137        | 27,950              | 33,643        | 16,077       |
| Capital expenditure                   | 20,842        | 17,011        | 9,955               | 11,750        | 11,659       |
| <b>Free cash flow</b>                 | <b>19,442</b> | <b>20,126</b> | <b>17,995</b>       | <b>21,893</b> | <b>4,418</b> |
| Dividends paid                        | 8,180         | 11,481        | 4,121               | 4,894         | none         |
| <b>Free cash flow after dividends</b> | <b>11,262</b> | <b>8,645</b>  | <b>13,874</b>       | <b>16,999</b> | <b>4,418</b> |
| Cash, 30 Jun 2026                     | 17,570        | 1,752         | 2,825               | 7,661         | 509          |
| Long-term debt                        | 134,631       | 143,448       | 81,147 <sup>1</sup> | 84,264        | 92,960       |

<sup>1</sup> T-Mobile's long-term debt is as reported at 31 December 2025; its Q2 2026 filing does not tag the same line. Free cash flow is operating cash flow less capital expenditure as filed.

Source: FY2025 Forms 10-K for the year and Q2 2026 Forms 10-Q for cash and debt, XBRL as filed (Filed); free cash flow lines calculated by Blue Prism (Calculated).

**\$33.8B** What AT&T, Verizon and T-Mobile had left of their FY2025 operating cash flow after capital expenditure and dividends, against about \$337 billion of long-term debt less cash.

The debt measure is long-term debt less cash rather than a full net-debt figure, for a practical reason: T-Mobile's current-debt line is not tagged in a recent filing, and a stale figure would distort the total. The table shows that the carriers are short of uncommitted cash rather than of cash. Every new commitment must displace an existing one, and that condition changes slowly.

SpaceX's 65 MHz position cost \$19.6 billion, about seven months of the three carriers' combined post-dividend free cash flow. They could not have paid it and funded a network build as well, or paid it without the debt markets noticing.

The bill has since grown. On 8 October 2026 SpaceX agreed to buy Grain Management's 800 MHz portfolio, up to 14 MHz of paired low band, at a price neither party has stated; the Wall Street Journal reported about \$8 billion in cash, and SpaceX had filed nothing on it by 12 October ([part 4](#)). At the reported price, SpaceX's contracted spectrum comes to about \$27.6 billion, roughly ten months of the three carriers' post-dividend free cash flow and about 8.6% of the cash SpaceX itself held on 30 June. A purchase that would have taken a year of one carrier's discretionary money is, for the buyer, a rounding of its balance sheet. In our view that asymmetry, rather than any single transaction, is what the carriers' boards are now looking at.

## Auction 113 shows the dividend constraint at work

Verizon's gross winning bids for AWS-3 licences in Auction 113 came to \$3.16 billion, which is 37% of its FY2025 free cash flow after dividends of \$8,645 million (our calculation). T-Mobile, which pays a smaller dividend and carries less debt, bought more licences than Verizon, 102 against 82, and paid \$277.8 million for them, about 2% of its own post-dividend free cash flow. AT&T's \$120.8 million was about 1% of its own. The three bid in the same auction with very different degrees of freedom, and the prior claim on the cash is what separates them.

37%

The share of Verizon's FY2025 free cash flow after dividends (\$8,645 million) that its \$3,162 million of gross winning bids in Auction 113 took.

## The satellite operators have freedom to spend but little cash

The satellite side is the mirror image. With no dividend to protect and no legacy network to maintain, every dollar is available for the build, and there are not many dollars. The four operators are not a single category (Exhibit 3).

## EXHIBIT 3

## Iridium earned \$114 million in FY2025 while AST SpaceMobile spent \$1,065 million building

| \$ MILLIONS                  | ECHOSTAR       | AST SPACEMOBILE | GLOBALSTAR       | IRIDIUM            |
|------------------------------|----------------|-----------------|------------------|--------------------|
| Revenue, FY2025              | 15,005         | <b>70.9</b>     | 273              | 872                |
| Net income, FY2025           | <b>-14,497</b> | -342            | -9               | <b>+114</b>        |
| Operating cash flow, FY2025  | -99            | -72             | 622              | 400                |
| Capital expenditure, FY2025  | 966            | 1,065           | 5.5 <sup>2</sup> | 100                |
| Revenue, H1 2026             | 7,244          | 46              | 135              | 444                |
| Capital expenditure, H1 2026 | 226            | <b>859</b>      | 3                | 52                 |
| Operating cash flow, H1 2026 | 228            | <b>-145</b>     | 160              | 186                |
| Cash, 30 Jun 2026            | 440            | 2,288           | 410              | 184                |
| Long-term debt               | 15,985         | 2,963           | 307              | 1,757 <sup>1</sup> |

<sup>1</sup> Iridium's long-term debt is as reported at 31 December 2025; its Q2 2026 filing does not tag the same line. <sup>2</sup> Globalstar tags only PaymentsToAcquireOtherPropertyPlantAndEquipment, \$5.5 million in FY2025, and does not tag constellation spending as capital expenditure. Its FY2025 net cash used in investing activities was \$550.4 million, the better proxy for what it spends, and it is not comparable with the capex line.

Source: FY2025 Forms 10-K and Q2 2026 Forms 10-Q for EchoStar, AST SpaceMobile, Globalstar and Iridium, XBRL as filed (Filed).

AST's revenue is small but real: \$70.9 million in FY2025, against \$4.4 million the year before. The spending is the larger story. The company put \$859 million into capital expenditure in the first half of 2026 while running a \$145 million operating cash outflow. Against \$2,288 million of cash, that is about fourteen months at the current rate before new financing is needed (our calculation). AST has raised capital repeatedly and may do so again, but the clock is visible in the filings and runs alongside the 9 May 2028 lease expiry from [part 2](#).

### AST'S MONTHS OF CASH

AST spent \$859 million on capital expenditure in the first half of 2026 and ran an operating cash outflow of \$145 million in the same half. Together that is \$1,004 million over six months, or about \$167 million a month.

Cash at 30 June 2026 was \$2,288 million, which covers about 13.7 months at that rate.

The calculation uses the filed half-year figures and assumes the rate of spend does not change and no new money comes in. It measures the runway and does not forecast what AST will do.

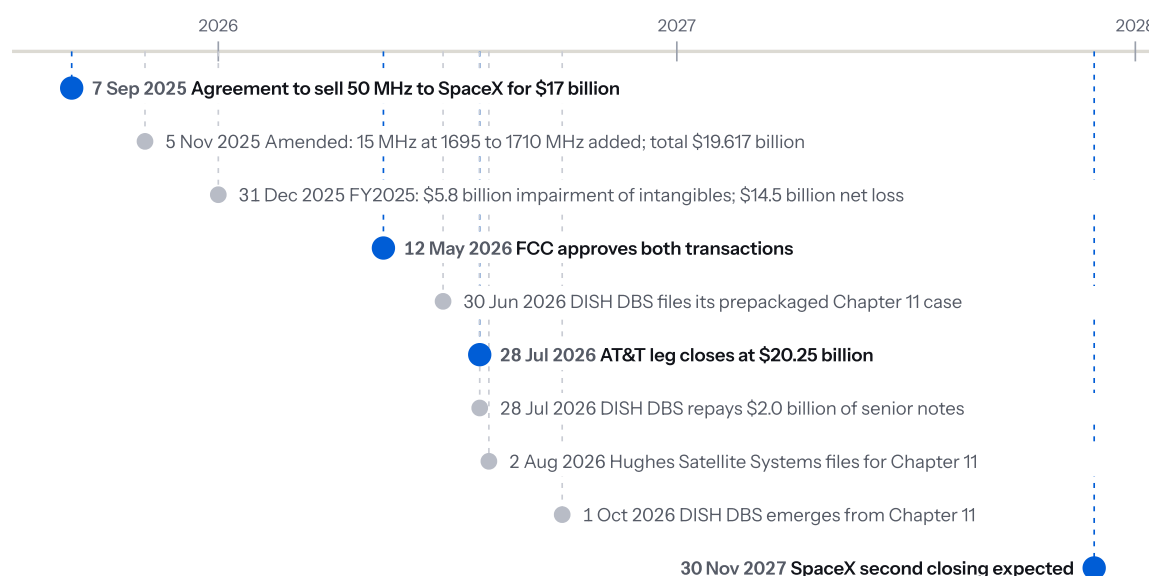
## EchoStar wrote down its spectrum and then sold it

EchoStar's FY2025 Form 10-K records the impairments. The company carries its FCC authorisations on the balance sheet at \$34,548,952,000 at 31 December 2025. Against that, in FY2025 it recorded pre-tax impairments of \$5,784,779,000 on indefinite-lived intangibles, \$6.5 billion on long-lived assets and \$4.3 billion on operating leases. It reported a net loss of \$14.5 billion for the year. The charges are pre-tax and do not sum to the loss; they show the scale of the write-down.

EchoStar has since agreed to sell about 115 MHz for about \$39.9 billion before the escrow described in [part 4](#). The AT&T leg closed on 28 July 2026, and the SpaceX leg is approved and expected to close on or about 30 November 2027. The subsidiaries had a harder year. DISH DBS repaid \$2.0 billion of senior notes on 28 July 2026 with the authorisation of the US Bankruptcy Court for the Southern District of Texas (Form 8-K, filed 28 July 2026). It emerged from its prepackaged Chapter 11 case in that court on 1 October 2026 (Form 8-K, filed 2 October 2026). Another subsidiary, Hughes Satellite Systems, filed for Chapter 11 on 2 August 2026 (Form 8-K, filed 3 August 2026) (Exhibit 4).

### EXHIBIT 4

#### EchoStar sold its spectrum in two legs while two of its subsidiaries passed through Chapter 11



Source: EchoStar Forms 8-K of 8 September 2025, 6 November 2025, 28 July 2026, 3 August 2026 and 2 October 2026; EchoStar FY2025 Form 10-K; FCC news release of 12 May 2026 (Filed). Note: the SpaceX closing is expected and has not occurred.

Owning spectrum and being able to use it are different conditions. A balance sheet full of licences is not a business, and EchoStar's FY2025 shows what the difference costs.

## Both owned-spectrum operators are being bought from outside telecoms

Part 1 picked out Globalstar and Iridium as the operators that never appear in the lease records, because they own their spectrum outright. Both have now agreed to be acquired, and neither buyer is a telecom company. The terms below are from each company's Form 8-K rather than from the accompanying announcements (Exhibit 5).

### EXHIBIT 5

#### Amazon and Rocket Lab agreed to buy the two owned-spectrum operators within eleven weeks of each other

|                         | GLOBALSTAR                                                                                                                | IRIDIUM                                                                                                                          |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Acquirer                | Amazon                                                                                                                    | Rocket Lab                                                                                                                       |
| Agreement               | Agreement and Plan of Merger dated 13 April 2026                                                                          | Agreement and Plan of Merger dated 28 June 2026                                                                                  |
| Consideration per share | \$90.00 in cash or, at the holder's election, 0.3210 Amazon shares, with an adjustment tied to an amount payable to Apple | \$27.00 in cash plus Rocket Lab stock at an exchange ratio between 0.2400 and 0.4000, depending on Rocket Lab's twenty-day price |
| Revenue, FY2025         | \$273 million                                                                                                             | \$872 million                                                                                                                    |
| Net income, FY2025      | Loss of \$9 million                                                                                                       | Profit of \$114 million                                                                                                          |
| Status at 17 Sep 2026   | Agreed; subject to conditions and approvals                                                                               | Agreed; lenders consented on 15 September 2026                                                                                   |

Both companies operate in mobile-satellite spectrum they hold outright and so appear nowhere in the FCC lease records read in part 1.

Source: Globalstar and Iridium Forms 8-K reporting the merger agreements; FY2025 Forms 10-K for revenue and net income (Filed).

Iridium, the one unambiguously profitable business among the four satellite operators, with \$872 million of revenue and \$114 million of net income in FY2025, is being bought. Globalstar, the other operator that never had to rent the spectrum it uses, is going the same way. Both owned-spectrum incumbents pass into other hands within eleven weeks of each other.

We read the two agreements as demand rather than distress. Owned mobile-satellite spectrum has become an input that Amazon, Rocket Lab and SpaceX want, and none of the three is a telecom incumbent.

## Cash flow and freedom of action have ended up in different hands

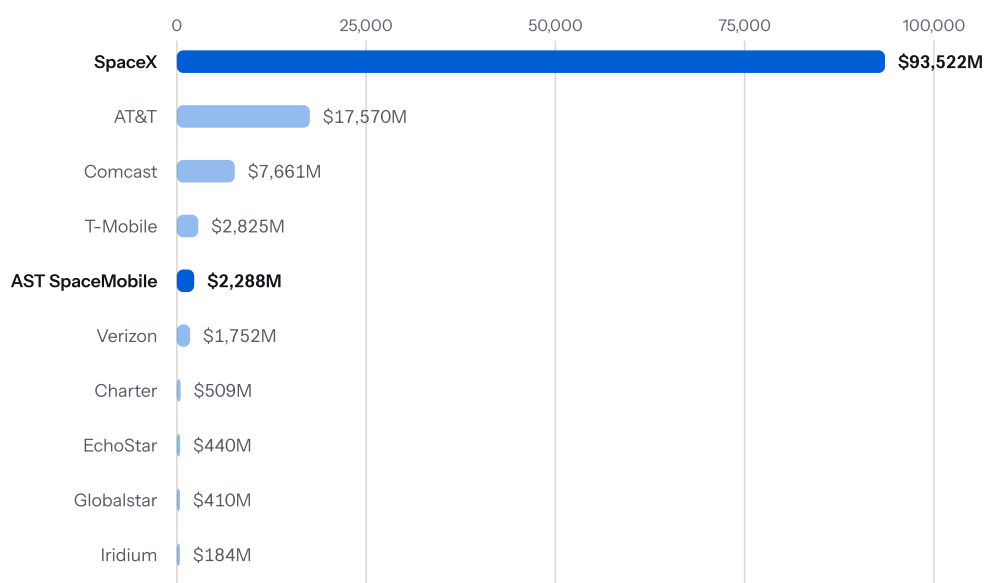
The filings show three positions, and no company holds both cash flow and freedom of action.

- **The carriers have the cash flow and lack the freedom.** Their operating cash flow dwarfs the satellite side's, but capex, dividends and debt service get to it first. They can win an auction but cannot fund a second, parallel network.
- **The satellite operators have the freedom and lack the cash.** AST has about fourteen months of visible runway, Globalstar and Iridium have agreed to be acquired, and EchoStar has sold the asset and closed half of the sale.
- **The capital is arriving from outside the industry.** Amazon, Rocket Lab and SpaceX, a public company since its June 2026 offering, are funding this from balance sheets that no US carrier can match and no satellite operator ever had. SpaceX's October agreement for the 800 MHz band, at a reported \$8 billion, is the latest instance; the seller is a private investment firm that had bought the band from T-Mobile.

SpaceX's balance sheet has been public since its June 2026 prospectus, and the first thing it shows is scale. Its first Form 10-Q reports \$93,522 million of cash and cash equivalents at 30 June 2026, nearly three times the cash of the nine other companies on this page combined (Exhibit 6). All three buyers now file with the SEC. A filing still cannot isolate SpaceX's phone business, because satellite-to-phone is reported inside the Enterprise & Government line of its Connectivity segment, so the direct-to-cell economics remain the one figure in this market that cannot be read from a filing.

## EXHIBIT 6

### SpaceX held \$93.5 billion of cash on 30 June 2026, nearly three times the nine other companies combined



Source: Q2 2026 Forms 10-Q, balance sheets as filed (Filed); the comparison calculated by Blue Prism as \$93,522 million against \$33,639 million for the other nine (Calculated).

## Terms used

- **Free cash flow.** Operating cash flow less capital expenditure, both as filed. Free cash flow after dividends also deducts the dividends paid; it is the money left for anything new.
- **Long-term debt less cash.** The debt measure used here in place of net debt, because one filer's current-debt line is not tagged in a recent filing.
- **XBRL.** The machine-readable tagging of SEC filings. Reading the tags gives each company's own definition of a line, which is why the tables note where definitions differ.
- **Prepackaged Chapter 11.** A bankruptcy case filed with a reorganisation plan the creditors accepted before filing, so the company can emerge quickly. DISH DBS filed one on 30 June 2026 and emerged on 1 October 2026.
- **Carrying value.** The amount at which an asset is held on the balance sheet after impairments, which differs from what a buyer would pay for it.

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## Implications

### CARRIER STRATEGIST

Model what you can spend after the dividend rather than what you generate. Your competitive risk is a counterparty whose cost of capital and disclosure obligations differ from yours: SpaceX held \$93.5 billion of cash on 30 June 2026, against the \$33.8 billion the three national carriers had left after dividends in FY2025, and it has since agreed to spend a reported \$8 billion of it on a low-band block one of you sold.

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### INVESTOR

Read three items from the filings that rarely make it into the deck. First, the impairment history of any spectrum-heavy balance sheet; EchoStar wrote down \$5.8 billion of intangibles in FY2025. Second, post-dividend free cash flow rather than EBITDA, as the measure of strategic room. Third, for any pre-revenue operator, months of runway at the current half-year burn rather than the guided one.

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### VENDOR

Plan for different buyers. Two of your satellite customers are becoming subsidiaries of Amazon and Rocket Lab, with different procurement, different timelines and a different tolerance for loss. The carriers' discretionary money is bounded by the dividend, so any proposal to them is competing with it.

## Method and limits

### HOW THIS WAS BUILT

Every figure is read from the XBRL data filed with the SEC in FY2025 Forms 10-K and Q2 2026 Forms 10-Q, and from Forms 8-K as dated. Press summaries and adjusted measures are not used.

Free cash flow is operating cash flow less capital expenditure as filed. The debt figure is long-term debt less cash and equivalents. Merger terms come from each company's Form 8-K. AST's months of cash are Blue Prysm's calculation: cash at 30 June 2026 divided by the monthly average of capital expenditure and operating cash outflow in the first half of 2026.

### WHAT IT DOES NOT SHOW

Definitions differ between filers. Capex tagging is inconsistent, and Globalstar does not report constellation spending as capital expenditure at all. Where a company did not tag a line in its latest quarter, the balance-sheet date differs and the table says so.

Carrying values are accounting measures and differ from market values. Announced mergers are agreements rather than completions, and they remain subject to conditions and approvals. The price of SpaceX's 800 MHz agreement is a press report, not a filing, and the sums that use it say so.

**None of this is investment advice, no securities are valued or recommended here, and none of it forecasts any company's results.**

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**Data as of:** SEC filings retrieved 17 Sep 2026 · the 800 MHz agreement of 8 Oct 2026 as reported, read 12 Oct 2026 · Method version 1.0.

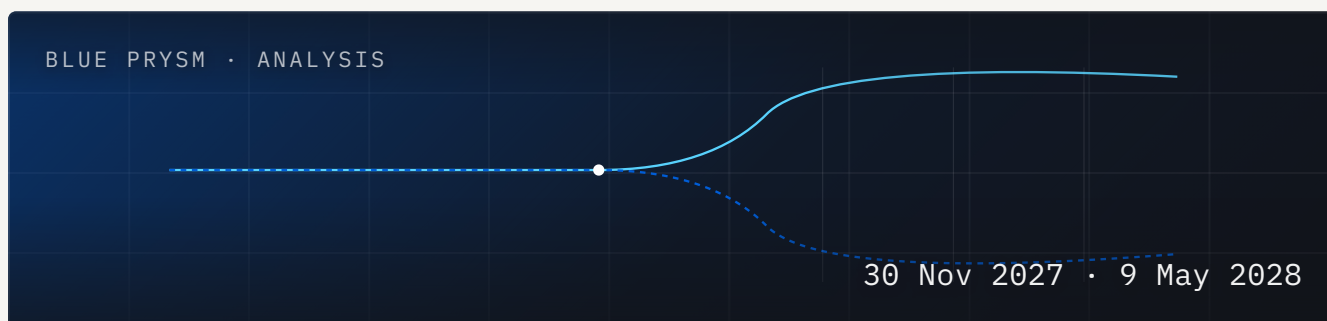
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**Sources.** SEC filings: FY2025 Forms 10-K, Q2 2026 Forms 10-Q, and Forms 8-K as dated. Retrieved 17 Sep 2026.

# What happens next

## Carrier or supplement?

Six parts of evidence come down to one question a board will ask: whether SpaceX becomes a mobile carrier or stays a supplement to one. Both readings can be defended from what SpaceX and the carriers have filed and said. What that material does settle is what each path requires, what the carriers have said about it, and which filings would appear first if either were under way. In the first week of October 2026 SpaceX agreed to buy the low band its position lacked and the three carriers signed their joint venture; both are the kind of move the indicators below were written to catch.



### IN BRIEF

- Of six ways to sell mobile service from orbit, only one is live and licensed: wholesale supplemental coverage over a carrier's spectrum. The FCC permitted a second, a facilities-based carrier on owned spectrum, on **12 May 2026**, and SpaceX has said it intends to build one.
- Each of the three national carriers said in 2026 that it will not offer an MVNO to a satellite operator. Two days after the FCC order, on 14 May 2026, the three announced a joint venture for satellite direct-to-device, and on 1 October 2026 they signed the agreement and named an interim chief executive. It still has no name, ownership split, satellite partner, timeline or regulatory filing behind it.
- The scenarios diverge on indoor coverage, spectrum depth and the clock. SpaceX's **65 MHz** lies at 1.7 to 2.2 GHz, and AST's leased 24 MHz at 700 MHz, where signals get through walls. On 8 October 2026 SpaceX answered in kind: it agreed to buy up to **14 MHz** of paired 800 MHz from Grain Management, at a price neither party has stated, for a terrestrial coverage layer and, in time, for its satellites.

- Two dates bound every negotiation: the EchoStar to SpaceX second closing, expected on or about **30 November 2027**, and the expiry of AST's 1,197 leases on **9 May 2028**. Two more now sit beside them: satellite applications for the 800 MHz band are due by **4 December 2026**, and SpaceX's first performance test on its EchoStar spectrum falls on **30 November 2029**. Either scenario would show first in public filings, certifications and registrations; nine are listed below, and one has now appeared.

## One of six models is live

The six models below are ordered by how real each one is, which differs from how much each is discussed. The ordering is our judgement. For the licensed rows the status comes from FCC orders and the FCC licence file; ET Docket 26-169 supplies the proposed rulemaking, and company statements as reported supply the rest (Exhibit 1).

### EXHIBIT 1

#### Only one of six models is live and licensed, and the second is permitted but unbuilt

| MODEL                                                    | WHO OWNS THE CUSTOMER    | STATUS                                                                                                                                                                                                                                                          |
|----------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wholesale SCS over a carrier's spectrum                  | The carrier              | <b>Live and licensed.</b> T-Mobile with Starlink; AT&T and Verizon with AST ( <a href="#">part 1</a> )                                                                                                                                                          |
| Facilities-based carrier on owned spectrum               | The satellite operator   | <b>Permitted, stated and now provisioned.</b> FCC tech-neutral waivers, 12 May 2026; SpaceX has said it intends to ( <a href="#">part 5</a> ); on 8 Oct 2026 it agreed to buy up to 14 MHz of 800 MHz for a terrestrial coverage layer, subject to FCC approval |
| Small cells at customer premises with satellite backhaul | The satellite operator   | <b>Described publicly by SpaceX; no filing.</b> Dismissed on the record by T-Mobile                                                                                                                                                                             |
| MVNO onto an incumbent network                           | Divided                  | <b>Publicly declined</b> by each of the three carriers in 2026                                                                                                                                                                                                  |
| Unlicensed direct-to-device                              | Whoever ships the device | <b>Proposed rulemaking.</b> ET Docket 26-169                                                                                                                                                                                                                    |
| Wi-Fi offload as a satellite play                        | None                     | <b>Commentary only.</b> No announcement or filing by anyone on the record                                                                                                                                                                                       |

Rows are ordered by how far each model has progressed on the public record.

Source: FCC orders of 26 November 2024, 21 April 2026 and 12 May 2026; FCC market licence file, 13 September 2026; FCC fact sheet for ET Docket 26-169, 16 July 2026 (Filed); Grain Management release and SpaceX update of 8 October 2026; company statements as reported by RCR Wireless, Light Reading, Fierce Network and telecoms.com (Reported).

The MVNO row is the one most often assumed and least supported. Each of the three incumbents has said in public, separately, that it is not offering one to a satellite operator. Those statements come from trade reporting rather than transcripts, and they are three separate refusals rather than one industry position; the effect is the same.

An MVNO is the cheap way into mobile, and none of the three carriers is offering one. The expensive way is the one now on the table.

The remarks attributed to named executives below were made at investor conferences and on earnings calls during 2026 and are taken from Light Reading, Fierce Network, RCR Wireless and telecoms.com. No transcripts have been obtained, so each remark is marked as reported rather than verified.

#### REPORTED

Executive remarks: SpaceX Q2 update, 5 Aug 2026, as reported by RCR Wireless; T-Mobile's CFO, Citi Global TMT Conference, September 2026, as reported by Light Reading; AT&T's CEO, Goldman Sachs Communacopia + Technology Conference, September 2026, as reported by telecoms.com; Verizon's CEO, Q2 2026 earnings call, 24 July 2026, as reported by Fierce Network. No transcripts obtained; paraphrased where marked.

## What each scenario requires

In Scenario A, SpaceX becomes a facilities-based carrier. It has the regulatory permission and, from late 2027, the spectrum. It still needs cell sites and backhaul, handset support for its bands, retail distribution, billing and care, and indoor coverage, the hardest of them. The small-cell idea exists because of that last item. At the SpaceX Q2 update on 5 August 2026 its executives talked about putting “a cellular base station on the gear that holds a Starlink broadband dish” and deploying “little femtocells around the country”, with service “end of next year”; the words are reported by [RCR Wireless](#) rather than taken from a transcript. Two months later SpaceX contracted for a second answer to the same item. On 8 October 2026 it agreed to acquire Grain Management's nationwide 800 MHz portfolio, up to 14 MHz of paired spectrum, and said it will deploy “an advanced terrestrial deployment” on it as a coverage layer that “penetrates through obstacles, such as walls”, with the 2 GHz spectrum carrying capacity and most existing phones already supporting the band ([SpaceX update](#)). The agreement covers the low-band position the incumbents said it lacked, with a network of ordinary cell sites to put it on: the expensive route rather than the clever one. The cost of that network is not on any citable record; TD Cowen's analyst put a national build at upwards of \$80 billion in a note of 8 October, as Fierce Network reported, and that figure is neither adopted nor adjusted here. [Part 4](#) has the price of the spectrum, which is a report rather than a filing, and the block's history.

The small-cell idea is an architectural argument: a subscriber's existing dish becomes a site, and distributed capex stands in for a low-band spectrum position. It is also the claim the incumbents attack hardest. T-Mobile's CFO, speaking at the Citi Global TMT Conference in September 2026, said the approach would need on the order of a billion femtocells to match existing outdoor coverage, and that a count like that brings interference and backhaul problems with it. Light Reading reported the remark as a paraphrase rather than a quotation.

In Scenario B, SpaceX stays supplemental. The scenario is coherent and cheaper. The economics from [part 2](#) still hold: the carrier lends spectrum, gains coverage it could not economically build, and bills its own subscriber. It is also the only one of the two that Exhibit 1 records as live and licensed. The scenario's weakness is its ceiling: the business is capped at a wholesale margin on someone else's customer, metered through the 5 to 6 MHz service channel that [part 3](#) sets out, and it would leave \$19.6 billion of nationwide spectrum running a supplement, an odd use of the asset (Exhibit 2).

| EXHIBIT 2                                                                                                                                                                                                                                                                                                                |                                                                                                                               |                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| Scenario A needs sites, devices, a retail business and indoor coverage that SpaceX lacks; Scenario B needs the partner it has                                                                                                                                                                                            |                                                                                                                               |                                                                            |
|                                                                                                                                                                                                                                                                                                                          | SCENARIO A: FACILITIES-BASED CARRIER                                                                                          | SCENARIO B: SUPPLEMENTAL                                                   |
| Spectrum                                                                                                                                                                                                                                                                                                                 | 65 MHz owned at 1.7 to 2.2 GHz from late 2027, plus up to 14 MHz at 800 MHz contracted on 8 Oct 2026, subject to FCC approval | 10 MHz leased in the PCS G block from T-Mobile                             |
| Permission                                                                                                                                                                                                                                                                                                               | Granted: tech-neutral waivers of 12 May 2026                                                                                  | Granted: SCS order of 26 November 2024                                     |
| Customer                                                                                                                                                                                                                                                                                                                 | SpaceX's own; a retail brand, number portability, billing and care to build                                                   | The carrier's                                                              |
| Sites                                                                                                                                                                                                                                                                                                                    | Cell sites, backhaul and small cells to build; executives describe femtocells on Starlink dishes                              | Satellites and gateways, in place                                          |
| Devices                                                                                                                                                                                                                                                                                                                  | Handset support for AWS-4, the H block and unpaired AWS-3 to certify; band 26, the 800 MHz block, is already in most phones   | Ordinary phones, in use                                                    |
| Indoor coverage                                                                                                                                                                                                                                                                                                          | The hardest requirement; answered on paper by the 800 MHz purchase and a terrestrial deployment, and unbuilt                  | Not offered; the incumbents' argument                                      |
| Ceiling                                                                                                                                                                                                                                                                                                                  | None from the model                                                                                                           | A wholesale margin on someone else's customer through a 5 to 6 MHz channel |
| Status                                                                                                                                                                                                                                                                                                                   | Permitted and stated; low band contracted; no terrestrial filing found to 12 Oct 2026                                         | Live and licensed                                                          |
| Executive remarks are as reported, without transcripts. The requirements are our reading of what each path needs.                                                                                                                                                                                                        |                                                                                                                               |                                                                            |
| Source: FCC orders of 26 November 2024 and 12 May 2026; EchoStar Forms 8-K; FCC market licence file, 13 September 2026 (Filed); Grain Management release and SpaceX update of 8 October 2026; SpaceX Q2 update of 5 August 2026 as reported by RCR Wireless (Reported); requirements assessed by Blue Prysm (Judgement). |                                                                                                                               |                                                                            |

### Three hinges decide between the scenarios

Three things decide the outcome, and none is settled by an opinion about anyone's intentions: whether the service works indoors, whether the spectrum position is deep enough to carry a national network, and what the capital and the regulatory clock require.

- **Indoor coverage.** Every incumbent argument comes back to this. AT&T’s CEO, speaking at the Goldman Sachs Communacopia + Technology Conference in September 2026, framed satellite as solving the last 2% of coverage rather than offering a new way to serve the other 98% (telecoms.com, as reported). Verizon’s CEO, on the Q2 2026 earnings call of 24 July 2026, called terrestrial networks orders of magnitude more efficient than satellite and put the addressable market at single-digit millions of rural homes (Fierce Network, as reported). Both are paraphrases of spoken remarks. SpaceX’s reply came on 8 October in the form of spectrum: low band, with a terrestrial deployment to put it on.

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- **Spectrum depth.** 65 MHz nationwide is a real position, on the order of what a single large carrier deploys in one mid-band layer, and the 800 MHz agreement adds a 7 MHz pair beneath it, a coverage layer rather than a capacity one. Whether 79 MHz is enough depends on the location: the same 65 MHz behaves very differently in a rural county and in Manhattan. Neither has been modelled here, and the question belongs in a capacity model.

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- **Capital and the clock.** [Part 6](#) showed the money arriving from outside the industry, which settles the capital half and leaves the clock. The FCC’s news release of 12 May 2026 describes performance obligations requiring “meaningful, reliable connectivity to the public — whether D2D, terrestrial, or both — within years” and publishes no number. The [order itself](#) sets the numbers at paragraph 57. From 30 November 2027 SpaceX has two years to show, in each licence area, a downlink signal-to-noise ratio of 5 dB and service 70% of the time over 90% of the area, four years for 80%, and nine years for 10 dB and 90%, with uplink throughput and spectral-efficiency floors alongside; a licence that misses the final test terminates automatically. The 800 MHz order of 1 July 2026 writes the same three dates and metrics into that band’s satellite pathway. The first test date is 30 November 2029.

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The propagation difference behind the indoor argument is real, and it ran the incumbents’ way for as long as everything SpaceX owned lay at 1.7 to 2.2 GHz, which penetrates walls less well than the 700 MHz AST leases ([part 3](#)). Link budgets are not modelled here, so the claim is not adjudicated; the frequencies are public and the physical argument is consistent with them. What changed on 8 October is the frequencies. SpaceX is still buying width where walls are a problem, and it has now also contracted for a narrow block where they are not, the kind of band AST rents, and has said that block goes to work on the ground first (Exhibit 3). If SpaceX solves indoor coverage, it will be with terrestrial radios on low band, as the incumbents did.

## EXHIBIT 3

## SpaceX will own 65 MHz between 1.7 and 2.2 GHz, and since October has contracted for the market's first owned low-band position

| HOLDER                      | BAND                        | FREQUENCIES                       | WIDTH        | BASIS                                                                                           |
|-----------------------------|-----------------------------|-----------------------------------|--------------|-------------------------------------------------------------------------------------------------|
| AST<br>SpaceMobile          | 700 MHz lower blocks        | 704 to 716 and 734 to 746 MHz     | 24 MHz       | Leased from the incumbent carriers; 1,197 records expiring 9 May 2028                           |
| SpaceX                      | PCS G block                 | 1910 to 1915 and 1990 to 1995 MHz | 10 MHz       | Leased from T-Mobile; 173 records                                                               |
| SpaceX                      | AWS-3 unpaired              | 1695 to 1710 MHz                  | 15 MHz       | Contracted from EchoStar; closing expected 30 November 2027                                     |
| SpaceX                      | H block                     | 1915 to 1920 and 1995 to 2000 MHz | 10 MHz       | Contracted from EchoStar                                                                        |
| SpaceX                      | AWS-4                       | 2000 to 2020 and 2180 to 2200 MHz | 40 MHz       | Contracted from EchoStar                                                                        |
| SpaceX                      | 800 MHz, band 26            | 817 to 824 and 862 to 869 MHz     | up to 14 MHz | Contracted from Grain Management on 8 Oct 2026; price undisclosed; FCC consent pending          |
| SpaceX,<br>contracted total | Six ranges, 817 to 2200 MHz |                                   | 79 MHz       | 65 MHz owned from late 2027 at \$19.6 billion, plus the 800 MHz block at a reported \$8 billion |

The service channel today is 5 to 6 MHz: AST's 700 MHz blocks are 6 MHz wide and the PCS G block is a single 5 MHz pair. The 800 MHz portfolio holds between 4.85 and 14 MHz by county.

Source: FCC market licence file, snapshot 13 September 2026; EchoStar Forms 8-K of 8 September 2025 and 6 November 2025; FCC orders of 26 November 2024, 21 April 2026 and 1 July 2026 (Filed); Grain Management release of 8 October 2026 (Reported); the Grain price from the Wall Street Journal via Fierce Network (Reported).

## The three national carriers answered with a joint venture

On 14 May 2026, two days after the FCC order, AT&T, T-Mobile and Verizon announced a joint venture for satellite direct-to-device ([joint release](#)). The release described pooled spectrum, joint investment and common technical specifications, with each company's existing satellite agreements left in place, and called the venture an agreement in principle. On 1 October 2026 the three said they had entered into a joint venture agreement, named Paul Roth as interim chief executive while a search runs for a permanent one, and put a board of founding-member representatives over it ([joint release](#)). The second release repeats the May commitments and adds a promise to work with rural operators. It is still a company announcement rather than a regulatory filing (Exhibit 4). A week later SpaceX agreed to buy the low band.

## EXHIBIT 4

## The 1 October 2026 release adds a signed agreement and a chief executive to the May commitments and leaves five things open

| ITEM                                     | STATUS IN THE RELEASE                                                                         |
|------------------------------------------|-----------------------------------------------------------------------------------------------|
| Pooled spectrum                          | <b>Stated</b>                                                                                 |
| Joint investment                         | <b>Stated</b>                                                                                 |
| Common technical specifications          | <b>Stated</b>                                                                                 |
| Existing individual satellite agreements | <b>Stated</b> to remain in place                                                              |
| Joint venture agreement                  | <b>Signed</b> , per the release of 1 Oct 2026                                                 |
| Leadership                               | <b>Named</b> : Paul Roth, interim chief executive; a board of founding-member representatives |
| Name of the venture                      | Not given                                                                                     |
| Ownership split                          | Not given                                                                                     |
| Satellite partner                        | Not named                                                                                     |
| Timeline                                 | Not given                                                                                     |
| Regulatory filing                        | None found to 12 October 2026                                                                 |

The May release described the venture as an agreement in principle; the October release says the agreement has been entered into.

Source: AT&T, T-Mobile and Verizon joint releases of 14 May and 1 October 2026 (Reported); search for a regulatory filing by Blue Prism to 12 October 2026 (Judgement).

Taken at face value, the release describes three carriers pooling the one asset class that [part 4](#) identified as what an entrant cannot assemble quickly. Whether it changes the market depends on terms that have not been published and on a regulatory review that, on the public record, has not begun. No reading of motive is offered beyond the releases. One thing the second release does not say: between the May announcement and the October signature, the low-band block T-Mobile sold to Grain went to the satellite operator the venture was formed in answer to.

## Each scenario would show in public filings before any announcement

None of what follows needs inside information. The indicators are ours, but each is a public filing, registration, certification or disclosure that would have to appear before a strategy could be announced (Exhibit 5).

## EXHIBIT 5

## Nine public indicators would reveal either scenario before a press release, and one has now appeared

| INDICATOR                    | SCENARIO | WHERE IT WOULD APPEAR                                                                                                                                                                                                                                                                                  |
|------------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Low band is bought           | A        | A purchase of spectrum below 1 GHz. <b>Seen:</b> Grain to SpaceX, up to 14 MHz at 800 MHz, agreed 8 Oct 2026; the FCC's consent to the assignment is the next filing                                                                                                                                   |
| Terrestrial build begins     | A        | FCC licensing and special temporary authority activity for SpaceX at 817 to 824 and 862 to 869 MHz, 1695 to 1710, 2000 to 2020 and 2180 to 2200 MHz; the 800 MHz order's terrestrial build-out, 33% of population or 25% of geography per licence by 1 Jul 2029, if the satellite pathway is not taken |
| Device support arrives       | A        | Handset band certifications for the AWS-4, H block and unpaired AWS-3 ranges; band 26 needs none, which is part of what the 800 MHz purchase buys                                                                                                                                                      |
| Sites are secured            | A        | Tower and rooftop lease announcements; antenna structure registrations; small-cell siting applications                                                                                                                                                                                                 |
| Retail intent                | A        | A consumer brand, number portability, and care and billing hiring                                                                                                                                                                                                                                      |
| The lease relationship cools | A        | The 173 PCS G-block lease records changing, or not being renewed                                                                                                                                                                                                                                       |
| The partnership renews       | B        | T-Mobile disclosure after the exclusivity period; continuation of the wholesale arrangement                                                                                                                                                                                                            |
| The spectrum stays in orbit  | B        | No terrestrial filings; the 79 MHz used only for supplemental coverage, and satellite applications for the 800 MHz band filed by 4 Dec 2026 as the Grain order requires                                                                                                                                |
| The joint venture converts   | B        | Definitive agreements, a named entity and a regulatory filing for the three-carrier venture. <b>Part seen:</b> the agreement was signed on 1 Oct 2026; the name and the filing are still to come                                                                                                       |

Scenario A is SpaceX as a facilities-based carrier; Scenario B is SpaceX as a supplement to the carriers. Two rows have moved since 17 September 2026, and both are marked.

Source: indicators selected by Blue Prism (Judgement); the lease count and the bands from the FCC market licence file of 13 September 2026; FCC DA 26-653 for the 800 MHz dates (Filed); Grain Management release of 8 October 2026 and the carriers' release of 1 October 2026 (Reported).

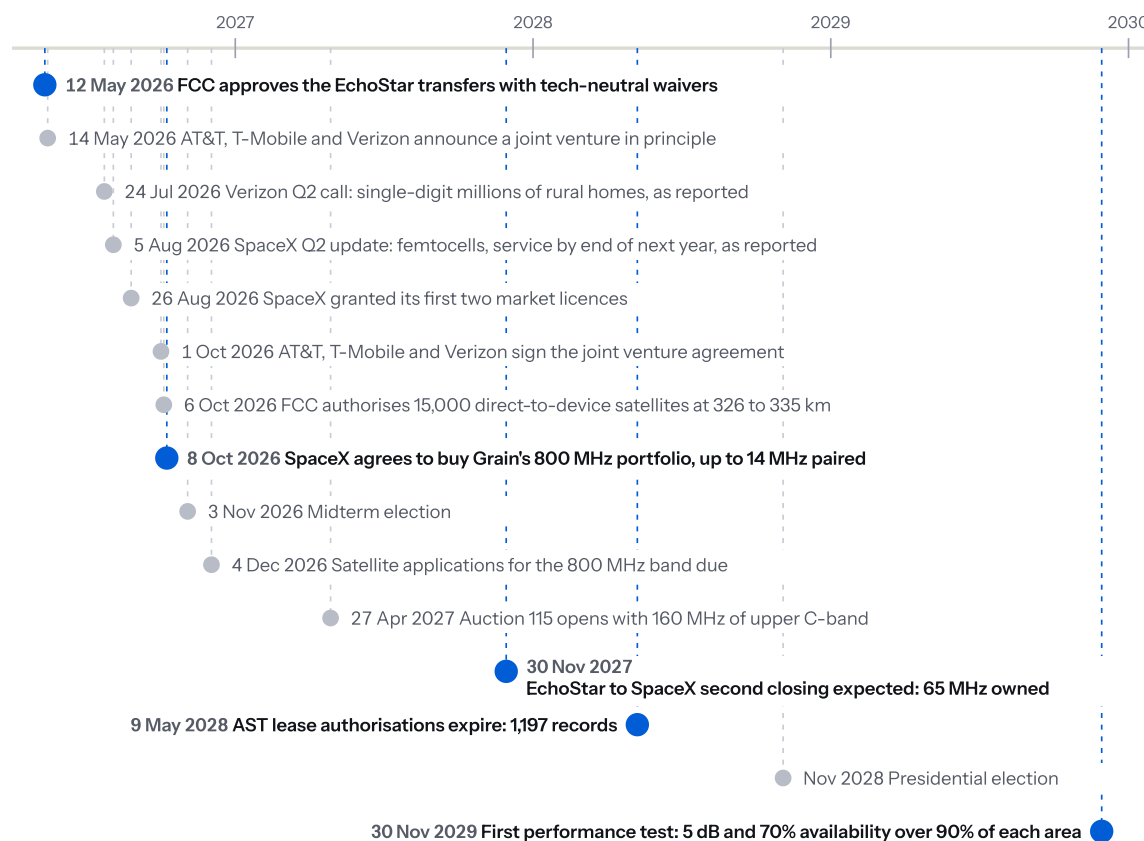
Neither list is a forecast or a scorecard. Each sets out only what would have to become visible in public before either path could be executed.

## Two dates bound every negotiation in this market

The EchoStar to SpaceX second closing is expected on or about 30 November 2027, and AST's 1,197 leases expire on 9 May 2028. Every commercial negotiation in this market falls between those two dates. October added two more. Satellite applications for the 800 MHz band are due by 4 December 2026 under the order that approved Grain's purchase, and SpaceX's first performance test on its EchoStar spectrum, the 5 dB and 70% test above, falls on 30 November 2029, with the 800 MHz band's first test written for the same day. The other dated events in the series lead up to them (Exhibit 6).

## EXHIBIT 6

### The two dates that bound the market fall eighteen months and two years after the FCC's approval, and the first performance test two years after the closing



Source: FCC news release and order of 12 May 2026 (DA 26-471, paragraph 57); FCC DA 26-653 of 1 July 2026; FCC DA 26-1078 of 6 October 2026; joint carrier releases of 14 May and 1 October 2026; EchoStar Forms 8-K; FCC market licence file, 13 September 2026; FCC auction notices (Filed); Grain Management release of 8 October 2026; executive remarks as reported by Fierce Network and RCR Wireless (Reported). Note: the second closing is expected and has not occurred, and the first performance test is dated from it.

The calendar is the one thing to keep from these seven parts. Everything commercial in this market must be negotiated between the second closing and the lease expiry, the first performance test comes two years after that, and the filings that would reveal either path are public, so an announcement is not needed to know which way it is going. The first of those filings arrived on 8 October 2026.

## Terms used

- **SCS, supplemental coverage from space.** The FCC framework under which a satellite operator serves ordinary phones on spectrum a terrestrial carrier is licensed to use. The live T-Mobile and Starlink service runs under it.

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- **Facilities-based carrier.** An operator that owns its spectrum and network and bills its own subscribers, as distinct from a wholesaler or an MVNO.

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- **MVNO.** A mobile virtual network operator: a brand that sells service on another operator's network under a wholesale agreement.

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- **Femtocell.** A small, low-power cellular base station for a home or office, connected to the operator through the premises' own broadband.

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- **Special temporary authority.** Short-term FCC permission to operate a radio before or outside a full licence, and one of the filings a terrestrial build would generate.

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- **Antenna structure registration.** An entry in the FCC's register of antenna structures. A new registration is a public sign that a site is being built.

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- **800 MHz, band 26.** The 817 to 824 and 862 to 869 MHz pair SpaceX agreed to buy from Grain Management on 8 October 2026: low band, 7 MHz each way, already supported by most phones. Part 4 has its history and its price.

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- **Performance test.** The metrics the FCC wrote into the EchoStar and Grain orders in place of a terrestrial build-out: downlink signal-to-noise ratio, availability over each licence area, uplink throughput per MHz and spectral efficiency per beam, tested at two, four and nine years.

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## Implications

### CARRIER STRATEGIST

Build the joint-venture question into your own planning now, whether or not you are in it; the agreement is signed and the terms are not published. If three national carriers pool satellite spectrum, the terms available to everyone else change, and regional operators are not at that table. Read the 800 MHz agreement as what it is: the satellite operator your industry supplies with spectrum has contracted to buy a carrier's coverage layer, from a carrier, with the regulator's process behind it.

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### INVESTOR

Use Exhibit 5 as a diligence checklist. A company that says it will build a terrestrial network and has filed nothing, certified nothing and leased no sites is at the intent stage, whatever the roadmap slide says. Buying the low band moves SpaceX one row down that list; the sites, the certifications and the 4 December filings are the rows that follow, and the price is still a press report.

---

### VENDOR

Prepare for both scenarios, because they buy different equipment. Scenario A is small cells, backhaul integration and multi-band devices; Scenario B is payloads and gateways. The bands are public and the same in both. The contracted spectrum is 1695 to 1710, 1915 to 1920, 1995 to 2000, 2000 to 2020 and 2180 to 2200 MHz, 65 MHz in all, with up to 14 MHz at 817 to 824 and 862 to 869 MHz added on 8 October 2026. The leased PCS G block is 1910 to 1915 and 1990 to 1995 MHz. Band 26 radios for the ground are a product that exists; an 800 MHz satellite payload at SpaceX's altitudes is not yet on any record.

## Method and limits

### HOW THIS WAS BUILT

Transaction terms, spectrum holdings and financials come from FCC orders, the FCC licence file and SEC filings, as cited through the series. The joint-venture description is limited to what the carriers' own releases of 14 May and 1 October 2026 say. The 800 MHz agreement comes from Grain Management's release and SpaceX's update of 8 October 2026; its price is a press report and is marked as such.

Executive remarks were made at investor conferences and on earnings calls and are taken from trade reporting; no transcripts have been obtained. Where an outlet and a date could not be tied to an exact form of words, the remark is paraphrased rather than quoted.

### WHAT IT DOES NOT SHOW

The two scenarios are analytical constructions and carry no probabilities. Today's filings and statements support both readings, which is why the observable indicators matter more than any opinion, including ours.

The absence of a regulatory filing does not prove that none exists. Nothing here is investment advice, and no company's securities are valued or recommended.

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**Data as of:** 17 Sep 2026; October 2026 items read 12 Oct 2026 · Method version 1.0.

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**Sources.** Company releases, FCC orders and filings (including DA 26-471 of 12 May 2026, DA 26-653 of 1 Jul 2026 and DA 26-1078 of 6 Oct 2026), SEC filings, the Grain Management release and SpaceX update of 8 Oct 2026, the carriers' joint release of 1 Oct 2026, and trade reporting where marked. Retrieved 17 Sep 2026; October items read 12 Oct 2026.



WORK WITH BLUE PRYSM

# Start with a diagnosis

Blue Prysm is a boutique consultancy working where telecommunications, AI and business strategy meet. We take the work from diagnosis and ideation, through business model design and market testing, to a first commercial offering.

Tell us what you are trying to decide. We reply in writing within two working days, with how we would approach it, what it would take and what it would cost.

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## PRACTICE

### Telecommunications strategy

Spectrum positions, satellite and direct-to-device plans, 6G roadmaps, private networks and the economics of each, priced from filings and auction records.

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## PRACTICE

### AI that pays its way

An AI programme designed around a portfolio of tests, each with its cost to prove, its guardrail and its kill gate written down before it starts.

---

## PRACTICE

### Business strategy

Diagnosing a revenue plateau, finding and testing the growth opportunities, and designing the plan to enter them.

## How an engagement runs

The first step is a one-day teardown. Each step stands on its own, has a fixed fee agreed before it starts, and you decide whether the next one is worth doing.

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## STEP 1

### One-day teardown

A 90-minute working session on the decision in front of you, a written answer in two working days, and the model behind it, yours to keep.

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## STEP 2

### Two-week assessment

Two working sessions, a 12 to 18 page memo with the working shown so your team can check every number, and a one-page board summary.

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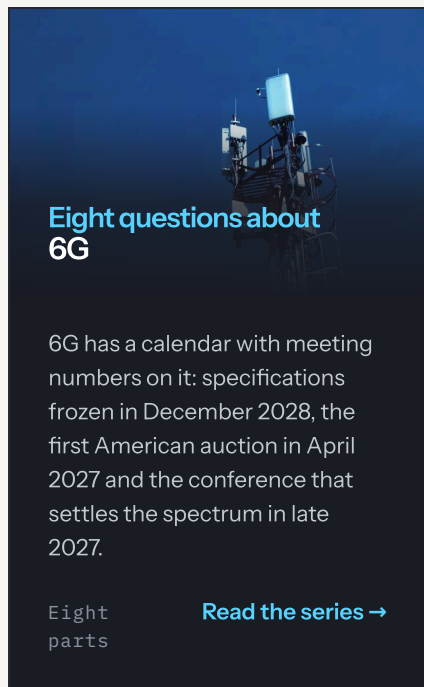
## STEP 3

### Project

Scoped to the engagement, with weekly checkpoints, until a first offering is in the market with your team running it. Every model and source is yours at the close.

# The other series

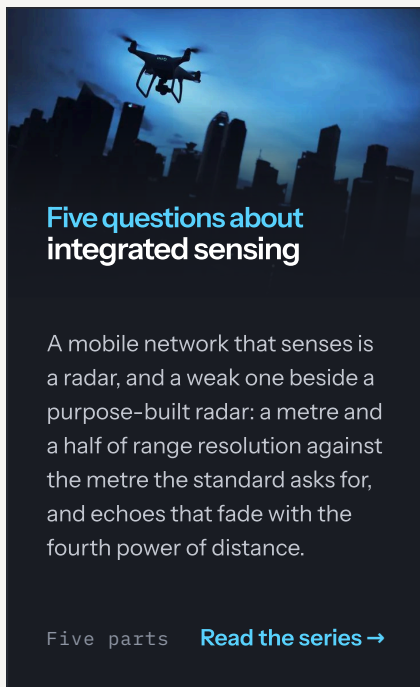
Each series takes one subject and answers five to eight questions about it from the primary record. All are free to read on the site or to download as ebooks.



### Eight questions about 6G

6G has a calendar with meeting numbers on it: specifications frozen in December 2028, the first American auction in April 2027 and the conference that settles the spectrum in late 2027.

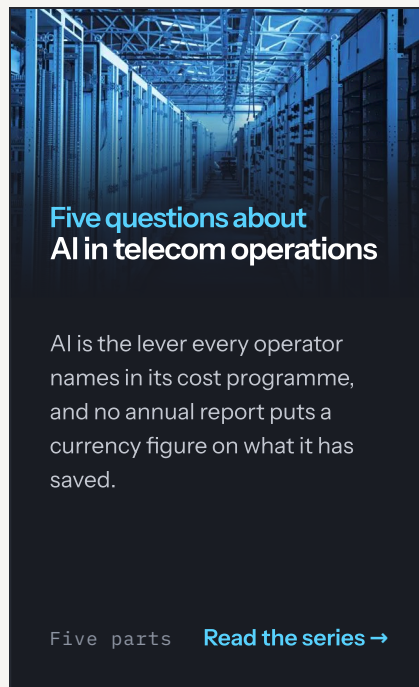
Eight parts [Read the series →](#)



### Five questions about integrated sensing

A mobile network that senses is a radar, and a weak one beside a purpose-built radar: a metre and a half of range resolution against the metre the standard asks for, and echoes that fade with the fourth power of distance.

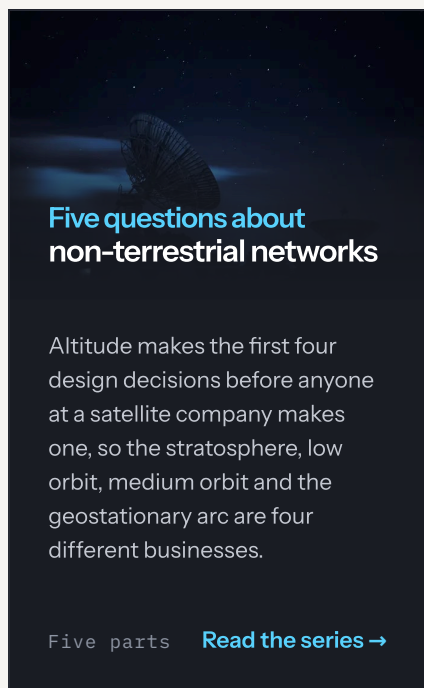
Five parts [Read the series →](#)



### Five questions about AI in telecom operations

AI is the lever every operator names in its cost programme, and no annual report puts a currency figure on what it has saved.

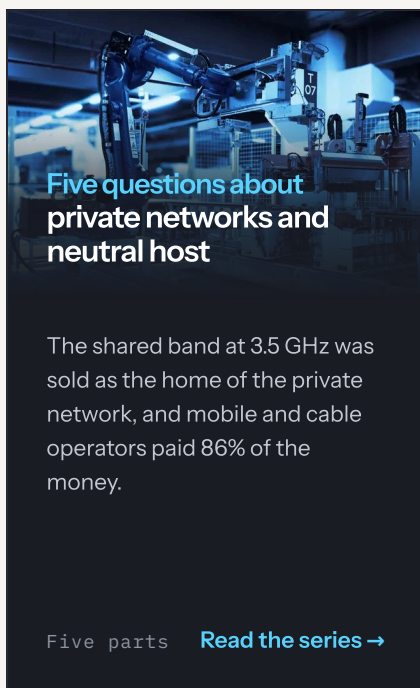
Five parts [Read the series →](#)



### Five questions about non-terrestrial networks

Altitude makes the first four design decisions before anyone at a satellite company makes one, so the stratosphere, low orbit, medium orbit and the geostationary arc are four different businesses.

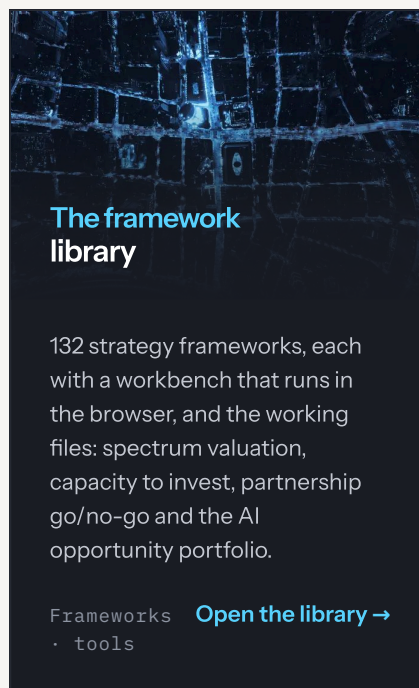
Five parts [Read the series →](#)



### Five questions about private networks and neutral host

The shared band at 3.5 GHz was sold as the home of the private network, and mobile and cable operators paid 86% of the money.

Five parts [Read the series →](#)



### The framework library

132 strategy frameworks, each with a workbench that runs in the browser, and the working files: spectrum valuation, capacity to invest, partnership go/no-go and the AI opportunity portfolio.

Frameworks [Open the library →](#)  
• tools

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