FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 26

[ET Docket No. 13-115; DA 25-270; FRS 289920]

Wireless Telecommunications Bureau Announces Licensing and Coordination Procedures for the Space Launch Service

AGENCY: Federal Communications Commission.

ACTION: Final Action.

SUMMARY: In this document, the Wireless Telecommunications Bureau (WTB or Bureau) announces licensing and frequency coordination procedures and data requirements for Space Launch Service licensees seeking Commission authorization to perform non-Federal space launch operations in the 2025-2110 MHz, 2200-2290 MHz, and 2360-2395 MHz bands.

ADDRESSES: Federal Communications Commission, 45 L St. NE, Washington, DC 20554.

FOR FURTHER INFORMATION CONTACT: Mark DeSantis, Wireless Telecommunications Bureau, Mobility Division, (202) 418-0678 or mark.desantis@fcc.gov. For information regarding the PRA information collection requirements, contact Cathy Williams, Office of Managing Director, at 202-418-2918 or Cathy.Williams@fcc.gov.

SUPPLEMENTARY INFORMATION: This is a summary of the WTB document, ET Docket No. 13-115; DA 25-270, released on March 25, 2025. The released, formatted version of this document is available at https://docs.fcc.gov/public/attachments/DA-25-270A1.pdf. Text and Microsoft Word formats are also available (replace ".pdf" in the link with ".txt" or ".docx", respectively. Alternative formats are available for people with disabilities (braille, large print, electronic files, audio format), by sending an email to fcc504@fcc.gov or call the Commission's Consumer and Governmental Affairs Bureau at (202) 418-0530 (voice), (202) 418-0432 (TTY).

Supplemental Final Regulatory Flexibility Analysis

The Regulatory Flexibility Act of 1980, as amended (RFA), requires that an agency prepare a regulatory flexibility analysis for notice and comment rulemakings, unless the agency certifies that the rule will not, if promulgated, have a significant economic impact on a substantial number of small

entities." If an agency files a certification with a rulemaking, the certification must contain a statement that provides a factual basis for its conclusion that there will not be significant economic impact on a substantial number of small entities. Accordingly, the Commission has prepared a Final Regulatory Flexibility Certification (FRFC) certifying that the rule and policy changes contained in this document will not have a significant economic impact on a substantial number of small entities.

Paperwork Reduction Act Analysis

This document may contain new or modified information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. All such requirements will be submitted to the Office of Management and Budget (OMB) for review under section 3507(d) of the PRA. OMB, the general public, and other federal agencies will be invited to comment on any new or modified information collection requirements contained in this proceeding. In addition, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. 3506(c)(4), the Bureau previously sought specific comment on how the Commission might further reduce the information collection burden for small business concerns with fewer than 25 employees.

Synopsis

By this document, as directed by the Commission in the *Third Report and Order* (90 FR 11480-01, March 7, 2025) in this proceeding, the Bureau announces licensing and coordination procedures for the commercial Space Launch Service. On December 6, 2024, the Bureau issued a Public Notice proposing and seeking comment on procedures for licensees in the Space Launch Service to electronically register—under a non-exclusive, nationwide license—launch sites; individual fixed, base, itinerant, and mobile stations; and technical parameters of launches that have been successfully coordinated with federal and non-federal users. The Bureau also proposed and sought comment on procedures for space launch licensees to complete federal and non-federal coordination via a third-party frequency coordinator to be selected at a later date.

After reviewing the record, we adopt the substantial majority of our proposals, with certain modifications described below. This approach is necessitated by the near-term timelines established by the Launch Communications Act. Moreover, we recognize that key data elements that we proposed be included in ULS registrations and provided to the space launch frequency coordinator were requested by,

and coordinated with, the National Telecommunications and Information Administration (NTIA) and associated federal government agency stakeholders, in a collaborative effort to ensure that secondary commercial space launch operations do not cause harmful interference to incumbent federal users. Where appropriate and consistent with the *Second Report and Order* (89 FR 63296-301, August 5, 2024) and *Third Report and Order* in this proceeding, we adopt certain modified proposals to further facilitate coordination of commercial space launch operations with non-federal incumbent uses. We note that certain procedures clarified through delegated authority in today's action may be revised by future Bureau public notice if necessitated by specific details associated with the future implementation of NTIA's automated mechanism and if consistent with the Commission's *Second Report and Order* and *Third Report and Order*, the authority delegated to the Bureau thereunder, and any subsequent Commission action in this proceeding.

I. BACKGROUND

In the *Second Report and Order* in this proceeding, the Commission adopted a secondary allocation in the 2025–2110 MHz band for non-federal Space Operation and, with respect to the 2200–2290 MHz band, lifted a prior restriction limiting such operations to four sub-bands, thus making the entire band available on a secondary basis for non-federal Space Operation. These allocations are subject to various conditions, including being limited to pre-launch testing and space launch operations. The Commission also adopted a licensing framework for these two bands under a new part 26 Space Launch Service. Through that framework, eligible space launch operators seeking authorization in the Space Launch Service will: (1) apply for and obtain a non-exclusive nationwide license via the Commission's Universal Licensing System (ULS); (2) register in ULS each launch site and each corresponding station (fixed, base, itinerant, or mobile) that will be used in their space launch operations; (3) complete a frequency coordination process using a third-party frequency coordinator; and (4) following successful coordination, register in ULS the technical and operating parameters associated with each specific coordinated launch prior to commencing launch operations. A space launch operator must register the final coordinated technical parameters in ULS to be authorized to commence launch operations.

The Launch Communications Act. Following the Commission's adoption of the *Second Report and Order*, Congress enacted the Launch Communications Act (LCA) on September 26, 2024. The LCA

requires Commission action with respect to three frequency bands: the 2025–2110 MHz and 2200–2290 MHz bands that were the subject of the *Second Report and Order* and the 2360–2395 MHz band, upon which the Commission sought comment in the Second Further Notice and that was addressed in the *Third Report and Order*. The LCA first requires the Commission, within 90 days of the LCA's enactment, to allocate each of these bands on a secondary basis for commercial space launches and reentries and to complete any proceeding in effect related to the adoption of service rules for these three bands. The Commission also must issue, within 180 days of the LCA's enactment, new regulations to streamline the process for granting authorizations for access to these three bands. These regulations must provide for, among other things: (1) authorizations that include multiple uses of the frequencies for multiple launches and reentries from one or more private and federal launch and reentry sites; (2) electronic filing and processing of applications for access to such frequencies for commercial space launches and reentries; and (3) improved coordination with NTIA to increase the speed of review of applications for authorizations to access frequencies for space launch and reentry through increased automation similar to an approach currently used for the 70/80/90 GHz bands.

Delegations of Authority. In the *Second Report and Order*, the Commission delegated authority to the Bureau to issue a public notice proposing and seeking comment on issues related to the licensing framework for the Space Launch Service to refine the application process and accommodate frequency coordination, including required information for license registrations and frequency coordination requests. The Commission also delegated authority to the Bureau to issue a public notice seeking further comment on the circumstances attending the designation of a single third-party space launch coordinator, including a mechanism for selecting the frequency coordinator.

The Bureau issued each of these public notices on December 6, 2024. In the *Licensing and Coordination Comment PN* (89 FR 104502-01, December 23, 2024), the Bureau proposed licensing and frequency coordination procedures and corresponding data requirements for the Space Launch Service and sought comment on those proposals. The Bureau acknowledged that its delegation of authority from the *Second Report and Order* applied only to two of the three frequency bands identified in the LCA, the 2025–2110 MHz and 2200–2290 MHz bands, as the Space Launch Service at that time consisted solely of those two bands. However, the Bureau anticipated that the Commission would benefit from the

development of a record with respect to the third band identified in the LCA, the 2360–2395 MHz band, which had not yet been incorporated into the Space Launch Service. Accordingly, the Bureau clarified that its proposals, and any subsequent final action taken, would apply not only to the 2025–2110 MHz and 2200–2290 MHz bands, but also to the 2360–2395 MHz band in the event the Commission took future action in that band pursuant to the LCA and delegated additional authority to the Bureau to clarify and establish procedures therein.

Third Report and Order. On December 23, 2024, the Commission adopted a *Third Report and Order* in this proceeding that reallocated the third band, 2360–2395 MHz, on a secondary basis for non-federal Space Operation and incorporated the band into its part 26 Space Launch Service. The Commission satisfied the 90-day LCA requirement to complete any proceeding in effect through a combination of: (1) previously adopting the *Second Report and Order*, thereby creating the part 26 licensing framework for authorizing commercial space launches and commercial space reentries and allocating the 2025–2110 MHz and 2200–2290 MHz bands for non-federal Space Operation on a secondary basis and (2) adopting the *Third Report and Order*, which allocated the 2360–2395 MHz band on a secondary basis for non-federal Space Operation, and extended the part 26 licensing framework to that band. The Commission in the *Third Report and Order* also affirmed the Bureau's proposals in the *Licensing and Coordination Comment PN* and delegated it additional authority to specify, among other things, application, licensing, registration, and frequency coordination procedures—including the data requirements that must be included in frequency coordination requests for space launch registrations—for all three bands identified in the LCA.

In this document, we adopt final licensing and coordination procedures for all three bands identified in the LCA: the 2025–2110 MHz, 2200–2290 MHz, and 2360–2395 MHz bands. As part of these final procedures, we adopt, as required in the Commission's *Second Report and Order* and *Third Report and Order*, data requirements for launch site, individual station, and post-coordination launch registrations in ULS, as well as information that licensees must submit to the space launch frequency coordinator to facilitate coordination requests. In Section II, we discuss the record and our decisions regarding required data points and related issues in implementing the part 26 licensing framework. In Section III, we set forth the specific data points required for initial registration of launch sites and stations

for a particular launch, frequency coordination, and the registration of coordinated technical parameters necessary to obtain authority to conduct space launch operations under part 26 of the Commission's rules.

II. DISCUSSION

We received eight comments and seven *ex parte* letters in response to the *Licensing and Coordination Comment PN*. We generally note in the context of discussing particular issues whether any commenter addressed those issues. We clarify from the outset, however, that commenters raise a substantial number of issues regarding the Bureau's December 2024 proposals and appear to seek, through the Bureau's issuance of a document on delegated authority, a fundamental paradigm shift of the allocations and the licensing and coordination framework the Commission established in the *Second Report and Order* and *Third Report and Order*. We find that these requested revisions fall outside of the Bureau's delegated authority established through two Commission actions in the Space Launch Service proceeding. We note that, as of the release of this document, the period for seeking reconsideration of the Commission's *Third Report and Order* has not yet lapsed, and that the Commission received no petitions for reconsideration of the Commission's *Second Report and Order*. We also find that Commission compliance with the near-term timeframes mandated by the LCA precludes wholesale revisions to our proposed approach with respect to data requirements. We therefore adopt, as discussed in detail below, the substantial majority of our proposed data requirements, with certain modifications based on record input.

A. Launch Site and Station Registrations

Launch Site Registrations. The *Second Report and Order* established that a Space Launch Service licensee must register the launch site to be used in a particular launch in ULS under its non-exclusive, nationwide license. In the *Licensing and Coordination Comment PN*, the Bureau proposed the following data requirements for launch site registrations in ULS:

1. Launch site name and launch designation (if applicable);
2. Geographic coordinates referenced to NAD83 (i.e., lat/long);
3. Address; and
4. Whether the site is an FAA-licensed commercial site or federal site.

We received no comments on the data requirements for registering launch sites in ULS and adopt these requirements, while adding potential categories for private, exclusive use sites and for those that are both commercial and federal sites.

Fixed, Base, Itinerant, and Mobile Station Registrations. As established in the *Second Report and Order*, a Space Launch Service licensee must register the fixed, base, itinerant, and mobile stations needed to support a launch in ULS under its nationwide, nonexclusive license. Through delegated authority, the Bureau sought to provide clarity for applicants and, after coordinating with NTIA, proposed one set of data requirements for itinerant and mobile station registrations, and a separate set for fixed and base station registrations.

Commenters are divided regarding our data proposals for station registration. Aerospace and Flight Test Radio Coordinating Council, Inc. (AFTRCC) generally supports our proposal and states that all of the information required could be useful in analyzing interference potential. It requests that we require maximum antenna height above ground level (AGL) for itinerant and mobile station registration. The Society of Broadcast Engineers (SBE) requests that we require the height AGL to the radiation center when the antenna is pointed along the horizon for fixed and base stations, and the tracking arc path for each transmit station. Conversely, United Launch Alliance (ULA) requests that we significantly reduce the required data for initial station registration in ULS, arguing that only the frequency band, center frequency, emission bandwidth, output power, and antenna gain are needed for analyzing interference potential. For receive-only stations, ULA argues that only the antenna's latitude and longitude are needed, and that the receivers' antenna gain-to-noise temperature ratio should be optional. ULA also requests that the Bureau eliminate any requirement for duplicative and extraneous submissions for station registration.

We agree with launch operators that eliminating certain data we proposed for initial station registration in ULS would reduce administrative burdens and serve the public interest. To promote streamlining, we find that the specific antenna details we proposed to require for initial station registration should not be required to be submitted at that point. This data is more appropriate for direct submission to the space launch frequency coordinator, as its essential purpose is to enable frequency coordinators to assess a proposed space launch operation and its potential to cause harmful interference to the federal and

non-federal users sharing the bands. AFTRCC, the incumbent coordinator in the 2360–2395 MHz band, states that all of the data we proposed to require in the *Licensing and Coordination Comment PN* could assist the space launch frequency coordinator and the incumbent coordinators in assessing the potential for harmful interference. SBE, the incumbent coordinator in the 2025–2110 MHz band, also supports the proposed level of detail. We therefore require licensees to provide antenna details in frequency coordination requests for submission to the space launch frequency coordinator, as discussed below, but we decline to adopt our proposal that would require that data also to be submitted for initial station registrations in ULS. We reflect this change in the final data requirements set forth in Section III below. Regarding more specific antenna details, SBE requests that we require the height AGL to the radiation center when the antenna is pointed along the horizon for initial ULS station registration, so that the data becomes available in frequency coordination requests. AFTRCC requests that we require maximum antenna height AGL for itinerant and mobile station registration because that data will be a factor in dictating the zone of potential interference to an incumbent station. We find the data requested by each party is not necessary at the initial station registration stage, but would assist in assessing the potential for harmful interference, and is thus more appropriate for frequency coordination purposes.

AFTRCC recommends that we add to our list of required parameters the expected range of launch trajectories from the launch site, indicating that such information could assist incumbent users in the band in identifying the areas in which potential interference will be received. SBE requests that we require the tracking arc path for the registration of each transmit station in ULS. Space launch operators, however, argue that launch trajectory information is confidential and proprietary and therefore inappropriate for the public ULS database. In order to further streamline, we find it unnecessary to require launch trajectory data for initial ULS registrations, as this information is most beneficial at the frequency coordination stage for assessing the potential for harmful interference. By requiring trajectory information in the frequency coordination process, rather than as a data field in initial ULS registration, we maintain consistency with the current part 5 licensing process, where such information is provided to federal agency stakeholders and not included as a data field in FCC Form 442 for an experimental license or in an application for experimental special temporary authority (STA). We therefore need not reach the issue of prospective confidentiality of this information in ULS. We note, however, that in today's

companion document regarding criteria and a selection mechanism for the space launch frequency coordinator, we take steps to ensure that information provided by space launch operators to the frequency coordinator will be secured and only shared with appropriate stakeholders, unless otherwise required by applicable law.

Launch Vehicle Registrations. In the *Licensing and Coordination Comment PN*, we proposed that launch vehicles be registered as mobile stations, but with additional technical details beyond those required for terrestrial mobile stations. We proposed data requirements for launch vehicle registrations consisting of the launch vehicle name, geographic coordinates of the launch site, location of transmitter on launch vehicle, and antenna details.

SpaceX opposes our proposal to treat launch vehicles as mobile stations, arguing that installing a mobile station on a launch vehicle does not convert the vehicle itself into a mobile station and seeking clarification that the launch vehicle itself is not a mobile station. SpaceX states that the Communications Act, the Commission's rules, and the ITU Radio Regulations treaty clearly distinguish between a "mobile station"—i.e., the radio equipment—and the platform on which that station is installed, whether a land vehicle, maritime vessel, aircraft, spacecraft, or building. SpaceX further argues that "maintaining this delineation between the radio equipment and the underlying launch vehicle will help ensure that the Commission's Part 26 licensing regime remains squarely within the Commission's statutory jurisdiction without duplicating or conflicting with the responsibilities of other agencies, including the Federal Aviation Administration."

We agree with SpaceX that clarification is warranted and confirm that, consistent with Commission authority, licensees will be required to register as a mobile station each radio attached to the launch vehicle used in the specific launch, and provide the details as specified in Section III below, but not independently register the actual launch vehicle. We find this approach consistent with the *Second Report and Order*, in which the Commission discussed registering mobile stations associated with the launch vehicle, as opposed to the actual vehicle, and we therefore condense the data required for mobile stations into a single section.

Requests for Bandwidth in Excess of 5 Megahertz. Licensees in the Space Launch Service are permitted to choose their own bandwidth, up to and including 5 megahertz. However, licensees may

request a bandwidth exceeding 5 megahertz for a particular station where they can demonstrate, on a case-by-case basis, why a larger bandwidth is necessary "to accomplish the specific telemetry, tracking, or command operation(s)," including an "explanation of why the operator's requirements cannot be satisfied using a bandwidth of 5 megahertz or less." As required in the *Second Report and Order*, a licensee seeking to operate in excess of 5 megahertz bandwidth must submit its justification as part of the registration process for a launch. Given the need to review the submission, the Bureau necessarily proposed that such a justification be included in the initial ULS registration.

In both the *Second Report and Order* and *Third Report and Order*, the Commission cautioned that the applicant's justification for exceeding 5 megahertz would be carefully assessed and would not be routinely granted. The Commission also noted in both Orders that a launch operator's ability to operate in excess of 5 megahertz would be dependent on its ability to coordinate such a bandwidth, which could be difficult given the congested nature of all three bands. In the *Licensing and Coordination Comment PN*, we proposed that the space launch frequency coordinator would not be required to coordinate requests for bandwidth in excess of 5 megahertz unless the Commission first indicated to the space launch frequency coordinator that a licensee's justification provided with a registration for a specific launch is complete and provides the fulsome explanation required pursuant to § 26.301 of the Commission's rules. We sought comment on this proposal.

AFTRCC agrees that the space launch frequency coordinator should not be required to process such requests until the Commission first indicates that the justification complies with § 26.301 of the Commission's rules. ULA states the licensee should not have to repeat the approval process for future launches if the justification and associated equipment remains the same. Virgin requests that the Bureau clarify that the space launch frequency coordinator is permitted to grant requests for greater than 5 megahertz, as the coordinator will have a "day-to-day understanding of spectrum use" and will know, during deconfliction on a mission-by-mission basis, whether more bandwidth can be granted.

As proposed, we will not require the space launch frequency coordinator to coordinate requests for bandwidth in excess of 5 megahertz unless and until it has been notified by the Commission that the licensee's justification, as provided in its initial station registration for a specific launch, is complete and complies with § 26.301 of the Commission's rules. Although Virgin seeks to afford the space launch

frequency coordinator increased authority, the *Second Report and Order* and *Third Report and Order* foreclose the Bureau from designating the coordinator the sole arbiter of whether a justification for increased bandwidth complies with Commission rules. Moreover, we caution that a Commission finding that the accompanying justification meets the Commission's rules does not guarantee that the space launch frequency coordinator can accommodate each request, which, as the Commission clearly highlighted, may be precluded in certain circumstances due to interference concerns raised in the frequency coordination process. We find our proposed approach to be consistent with the *Second Report and Order*, in which the Commission stated that requests for greater bandwidth would be carefully assessed on a case-by-case basis and not routinely granted. Although ULA disagrees with this approach, citing the need for greater flexibility, we find that adopting our proposal increases efficiency by avoiding a scenario where the space launch frequency coordinator expends significant resources coordinating a space launch request with an assumed parameter, only for the request to be later deemed noncompliant with the Commission's rules.

ULA's proposal for submitting one justification covering multiple launches is also foreclosed by the *Second Report and Order*'s case-by-case approach, which specified that the Commission was "allowing licensees to exceed the 5 megahertz bandwidth to the extent they can demonstrate such additional bandwidth is necessary for a given launch." We find merit, however, in streamlining submissions where possible, as ULA suggests. With respect to emission bandwidth, we therefore will require a space launch operator to only specify the emission bandwidth in the relevant required fields set forth in Section III below, rather than submit an excess bandwidth justification in each of the multiple fields requiring emission bandwidth. In the initial station registration in ULS, we will instead require that a justification for greater than five megahertz be submitted as a single attachment, which must identify each station for which increased bandwidth is sought. AFTRCC requests that the justification for greater than five megahertz bandwidth detail the specific throughputs and other communications requirements for the launch. Although space launch operators are free to provide this information in support of a request for excess bandwidth, we do not mandate that such information be included, as it does not directly relate to analysis of interference potential. Rather, we require a licensee's justification for larger bandwidths to include the details required in § 26.301 of the Commission's rules.

B. Frequency Coordination

Federal coordination is required in all three bands in the Space Launch Service. Specifically, the frequency coordinator is required to initiate coordination with NTIA by providing the licensee's launch site and station registrations with their corresponding technical and operational parameters to initiate the coordination process for each proposed launch. As noted in the *Licensing and Coordination Comment PN*, the LCA requires the Commission to improve coordination with NTIA within 180 days of enactment, including coordination to increase automation similar to the automation described in the Commission's service rules for the 70/80/90 GHz service.

In the 2025–2110 MHz and 2360–2395 MHz bands, non-federal coordination is also required. In the 2025–2110 MHZ band, the frequency coordinator is required to initiate site-specific frequency coordination with the local Broadcast Auxiliary Service (BAS) frequency coordinator, including the provision of all necessary technical and operational parameters for each space launch licensee, to protect BAS, Cable Television Relay Service (CARS), and Local Television Transmission Service (LTTS) operations, as well as federal entities that have completed coordination with the BAS frequency coordinator. In the 2360–2395 MHz band, the frequency coordinator must initiate a post-grant coordination request for site-specific coordination with the part 87 frequency coordinating committee as well as federal entities that have completed coordination with that committee.

Data Requirements for Coordination Requests. Following coordination with NTIA and federal agency partners, we proposed in the *Licensing and Coordination Comment PN* a list of data requirements for frequency coordination requests that would apply to the frequency coordination process in all three bands. We noted that the Commission anticipated that a licensee would identify the following for coordination requests: (1) the specific coordinates of fixed, base, and itinerant stations (e.g., latitude and longitude); (2) frequency channels; (3) launch trajectories; (4) launch window or planned launch date; and (5) any other technical and operational information (e.g., antenna characteristics, power levels, emission designators) needed by a third-party frequency coordinator to submit the frequency coordination request to the relevant non-federal and federal entities.

In proposing data requirements, we anticipated that the Commission would, consistent with the LCA, reallocate the 2360–2395 MHz band on a secondary basis for Space Operation, incorporate it into

the part 26 Space Launch Service, and require Space Launch Service licensees to coordinate their operations with part 87 non-federal flight test users. In the event the Commission did reallocate the 2360–2395 MHz band as anticipated and require coordination with non-federal flight test users, we proposed incorporating the data that the part 87 frequency advisory committee currently requires into the part 26 frequency coordination data requirements. Accordingly, we proposed data requirements for coordination requests in all three bands that include data currently required in the part 87 frequency advisory committee flight test coordination process, the data required in the STA process currently used to authorize space launch communications under part 5 of the Commission's rules, and the aforementioned data points the Commission anticipated would be required. We sought comment on whether any additional data should be required, and whether the proposal provided a third-party space launch frequency coordinator with sufficient information to coordinate launches with federal and non-federal users in all three LCA bands.

In response to our proposals, several commenters suggest modifications and clarifications. As noted above in the context of initial registration, SBE requests that we require for each transmit station the height AGL to the antenna radiation center when the antenna is pointed along the horizon, and for each fixed and base station the projected space launch tracking arc path. Blue Origin and Virgin request that we clarify that some data elements required for coordination requests will not be applicable to suborbital launch providers. ULA requests that we reduce the required data for coordination requests to eight elements, which it claims would be sufficient for the use of simplified propagation models for analyzing interference potential. ULA asserts that the information required under our proposal can be obtained from other federal agencies. ULA also submits that equipment suppliers should be responsible for providing emission details for each designator of each transmitter, not the launch providers.

After review of the record, we find it in the public interest to take the following approach. First, we require as a data point for each transmit station the height AGL to the antenna radiation center when the antenna is pointed along the horizon, and for each fixed and base station the projected space launch tracking arc path. We agree with SBE that this data would be useful in analyzing interference potential in three congested bands. Second, we agree with Blue Origin and Virgin that certain required data would be inapplicable to suborbital launch providers. Accordingly, we clarify that launch operators proposing

suborbital launches need not provide the following data tailored for orbital launch operations: (1) list of objects to achieve orbit during launch operation, (2) orbital location (orbit insertion), and (3) duration of transmission(s), to include on/off time (nominal and maximum durations) for each transmitter and receiving station(s) corresponding to the on/off times.

With respect to comments requesting revisions that would substantially eliminate data requirements, in particular ULA's conclusion that just eight specific datapoints are sufficient for simplified propagation models, we reiterate that the proposed data elements were requested by NTIA following federal agency stakeholder input, with a focus on preventing interference to incumbent federal operations from secondary space launch operations in these congested bands. Further, two additional incumbent frequency coordinators concur with our proposal to require this level of detail in coordination requests. We therefore do not find it appropriate to adopt commenter suggestions to significantly reduce the data required for coordination requests, as requiring this level of information can also facilitate expedited, successful coordination where feasible. ULA also submits that certain data needed for site and station registration and frequency coordination should be manually retrieved by the frequency coordinator from equipment suppliers and federal agencies, e.g. the FAA. We find such an approach administratively inefficient and inconsistent with the Commission's part 26 rules, which require the submission of data by the space launch operator licensee.

Next, Virgin Galactic requests that we enable licensees with high flight cadences of similar, if not nearly identical profiles, an option to submit "blanket mission requests" that cover several missions over a longer period of time. We find that the submission of a single "blanket mission request" seeking authorization of "several missions" with "nearly identical flight profiles" over a period of time is impermissible under the part 26 rules, which require frequency coordination on a per-launch basis. We clarify that licensees may submit, with their initial ULS registration, information regarding multiple launch sites and related station information associated with multiple launches for which actual authority to launch is sought. In conjunction, space launch licensees are free to submit multiple frequency coordination requests to the space launch frequency coordinator covering these multiple launches, provided each request seeks authorization and provides technical details for a single planned launch. Licensee are cautioned against registering and seeking frequency coordination for speculative launches.

Finally, similar to the argument raised in the context of initial registration of data in ULS, space launch providers emphasize the confidential and proprietary nature of the data required for frequency coordination requests, especially the required launch trajectory data. ULA asks that we address how the space launch frequency coordinator should handle, preserve, and safeguard launch service provider data. Currently, various technical parameters associated with a typical space launch are available for public review in the Commission's Experimental Licensing System (ELS), either through a filed application or through the grant instrument authorizing launch. We find it in the public interest, as noted in the *Frequency Coordinator Selection Public Notice*, to require applicants seeking to be the space launch frequency coordinator to demonstrate in their applications how they will secure the data provided by space launch operators.

Coordination Request Filing Destinations. In the *Licensing and Coordination Comment PN*, we proposed different filing destinations for coordination requests based on the band(s) for which the licensee seeks authorization. To complete non-federal coordination in the 2025–2110 MHz band, we proposed that the space launch frequency coordinator submit the coordination request to the local SBE frequency coordinator. We also proposed filing destinations for requesting federal coordination. For coordination requests that involve the 2025–2110 MHz and/or 2200–2290 MHz bands, we proposed requiring the frequency coordinator to submit frequency coordination requests to the NTIA Office of Spectrum Management's Frequency Assignment Branch. For coordination requests in the 2360–2395 MHz band, we proposed that the space launch frequency coordinator submit coordination requests to the applicable Area Frequency Coordinator (AFC) listed in Annex D, Table 2 of NTIA's Manual of Regulations and Procedures for Federal Radio Frequency Management. We also recognized that some coordination requests might combine 2360–2395 MHz with 2025–2110 MHz and/or 2200–2290 MHz, which could require routing to different destinations. For that reason, we sought comment on whether, in those instances, federal coordination requests should be directly submitted to NTIA's Office of Spectrum Management's Frequency Assignment Branch.

No commenters addressed the proposed filing destinations for initiating frequency coordination. Following further coordination with NTIA, and to reduce administrative burdens, we find it appropriate to adopt a single filing destination for all federal frequency coordination requests involving space launch

frequencies. Specifically, the space launch frequency coordinator shall submit requests for federal coordination involving any of the three Space Launch Service bands, or any combination thereof, to the NTIA Office of Spectrum Management's Frequency Assignment Branch. For non-federal coordination requests in the 2025–2110 MHz band, we adopt our proposal that the space launch frequency coordinator submit coordination requests to the local SBE frequency coordinator. As noted above, after the Bureau issued the *Licensing and Coordination Comment PN*, the Commission adopted the *Third Report and Order* and established non-federal frequency coordination requirements for the 2360–2395 MHz band. Specifically, the Commission required licensees to complete non-federal, site-specific coordination with the part 87 frequency coordinating committee, which is currently AFTRCC. We clarify that, to initiate non-federal coordination in the 2360–2395 MHz band, licensees must follow AFTRCC's current practice and procedure applicable to part 87 frequency coordination requests, which are submitted to AFTRCC via its online coordination portal.

Timing for Submission of Coordination Requests to Space Launch Frequency Coordinator and Format. With respect to the timing of the filing of coordination requests, we sought comment in the *Licensing and Coordination Comment PN* on a proposal in all three bands that would require the space launch frequency coordinator to submit coordination requests to incumbent coordinators 60 days in advance of a proposed launch date or window.

Commenters hold varying views regarding the timeframe for the submission of frequency coordination requests. AFTRCC requests that the space launch frequency coordinator receive the coordination request 80 days in advance of launch to review prior to submitting to incumbent coordinators, but otherwise supports our proposed timeframes for submission to the incumbent coordinators. Given the anticipated increased cadence of commercial space launches, space launch operators caution that a mandatory timeframe could result in an increased need for re-coordination requests as launch parameters and conditions change. SpaceX disagrees with the imposition of any minimum timeframe for filing coordination requests, arguing that most coordinations can be completed "within just a few days." SpaceX believes that the Bureau should forgo a specific timeframe and instead establish an expectation that parties will begin coordination as early as practicable before launch to avoid the need for re-coordination, coupled with a mutual requirement to coordinate in good faith and conclude

coordination expeditiously to meet anticipated launch dates. More recently, however, SpaceX argued that "setting an initial coordination timeframe of five-to-ten days before launch" would be "an appropriate means to ensure high-fidelity coordination information while reducing the extent to which parties must re-coordinate prior to launch." ULA argues that "the space launch industry does not typically manifest 60 days from launch." Blue Origin indicates that flexibility with launch dates and times is needed for a 60-day requirement to be practicable. Virgin Galactic claims the 60-day notice period is too long to support quick turnaround times and recommends a 15- or 30-day notice period instead.

We clarify that our focus is on the timeframe for space launch operators to submit coordination requests to the space launch frequency coordinator, not to the incumbent coordinators. Incumbent coordinators include NTIA and related federal AFCs, SBE, and AFTRCC. After review of the record, to provide increased flexibility, we do not herein mandate timeframes for the submission of coordination requests to the incumbent coordinators. We also do not mandate a specific timeframe for the submission of coordination requests from the space launch frequency coordinator to the incumbent coordinators. We note that part 26 licensees are required by Commission rule to initiate frequency coordination by submitting coordination requests to the space launch frequency coordinator, not the incumbent coordinators.

For these same reasons, we also decline to establish a fixed timeframe within which a space launch operator must submit coordination requests to the space launch frequency coordinator, such that the failure to submit by that date would result in an automatic rejection of the request as, in effect, late-filed. Rather, in seeking to facilitate successful launches, we clarify that a space launch frequency coordination request submitted to the space launch frequency coordinator 60 days or more from the launch date or start of a primary launch window would best facilitate effective coordination with relevant incumbent coordinators to prevent harmful interference in admittedly congested bands. We do anticipate, as space launch operators request, that the space launch frequency coordinator will exercise good faith and reasonable diligence to process a request expeditiously upon receipt by promptly reviewing the data and submitting the request to applicable incumbent coordinators for consideration. Although we recognize space launch operator interest in limiting the need for re-coordination requests based on, for example, changes to launch parameters as a launch date approaches, we must balance that concern with a

compelling need for the space launch frequency coordinator to coordinate with, in many circumstances, multiple stakeholders. We therefore caution that a failure to submit a frequency coordination request to the space launch frequency coordinator 60 days or more from the anticipated launch date or start of a primary launch window may leave insufficient time for the coordinator to fully engage all relevant incumbent coordinators, whether federal or non-federal, and receive critical input necessary to process the request prior to the requested launch date.

With respect to the format and method for space launch operators to submit the required data elements set forth in Section III below for frequency coordination, we seek to provide flexibility for the space launch frequency coordinator. We therefore will permit the coordinator, once selected, to establish and communicate to space launch operators the appropriate details for receipt of this information to commence the frequency coordination process.

Timing of Response from Incumbent Frequency Coordinators. In the *Licensing and Coordination Comment PN*, we sought comment on requiring a response from incumbent SBE frequency coordinators to the space launch frequency coordinator within 15 days following receipt of the coordination request. We received no comment directly addressing this proposed timeframe, though commenters generally seek flexibility where possible in the coordination process. We find it appropriate to afford incumbent coordinators such flexibility in evaluating space launch requests and accompanying data, and to manage their frequency coordination services. To further streamline our requirements, and as we anticipate that incumbent coordinators will respond to the space launch coordinator as expeditiously as possible, we do not find it necessary at this time to mandate a specific timeframe for incumbent coordinators to respond to the space launch frequency coordinator. If we find, after gaining experience with the part 26 framework, that there is a need to establish a mandatory timeframe for responding to frequency coordination requests, we may revisit this timing issue. Although we do not impose a timeframe for incumbent coordinators to respond to frequency coordination requests, we reiterate that licensees must obtain consent from relevant incumbent coordinators through the space launch frequency coordinator, as discussed below, to be able to register technical parameters and obtain authorization to commence space launch operations. The space launch frequency coordinator has no authority to independently authorize such operations.

Space Launch Frequency Coordinator Response to Licensee. In the *Licensing and Coordination Comment PN*, we proposed that the space launch frequency coordinator respond in writing to the licensee with the results of the coordination upon its completion, including any conditions, restrictions, or other limitations. AFTRCC agrees that, for denials of coordination requests, the space launch frequency coordinator must provide an explanation to the licensee. Although some commenters seek implementation of a revised paradigm that would alter the interactions between the space launch frequency coordinator and space launch licensees, no party opposes this proposal as specifically applied to the part 26 licensing framework adopted in the *Second Report and Order*. We therefore adopt our proposal, finding it an appropriate measure to facilitate prompt frequency coordination with clearly communicated approved parameters and related conditions, if any, of a space launch.

Non-Federal Coordination in the 2360–2395 MHz Band. In the 2360–2395 MHz band, the space launch frequency coordinator is required to initiate a post-grant coordination request for site-specific coordination with the part 87 frequency coordinating committee, as well as federal entities that have completed coordination with that committee. In the *Licensing and Coordination Comment PN*, we anticipated that the space launch frequency coordinator, in coordinating with the part 87 frequency advisory committee, would consider all stations within 320 kilometers (200 miles), which is the required procedure for part 87 flight test coordination. However, we proposed that the space launch frequency coordinator have the ability to expand that radius at its discretion if necessary for analyzing interference potential. After considering all such stations and coordinating with the part 87 frequency advisory committee, the space launch frequency coordinator would then propose necessary changes in technical parameters to minimize the risk of harmful interference to non-federal flight test stations. We sought comment on this proposal.

AFTRCC supports our proposal to allow the space launch frequency coordinator, in coordinating with the part 87 frequency advisory committee, to consider flight test stations outside the 320-kilometer (200-mile) radius. It states that the space launch and incumbent frequency coordinators having the ability to consider additional stations is essential to protecting primary flight test operations in the band because the geographic zone of potential interference from the space launch vehicle expands as the vehicle gains altitude. SpaceX disagrees, arguing that requiring deconfliction over an area larger than 200 miles could

needlessly create uncertainty, delay, and additional burdens on coordinating parties, particularly as the launch rate increases.

Based on the record, we find it unnecessary at this time to revise the part 87 requirement as applied to part 26 space launch operations, as we have not received complaints of harmful interference to incumbent stations resulting from space launch operator use, authorized through parts 5 or 87 of the Commission's rules, of center frequencies 2364.5 MHz, 2370.5 MHz, and/or 2382.5 MHz. These three frequencies are currently available within the 2360–2395 MHz band for telemetry and associated telecommand operations of expendable and re-usable launch vehicles. We therefore maintain the requirement that the space launch frequency coordinator consider relevant stations within a 320-kilometer (200-mile) radius in its interference analysis. This approach is subject to re-evaluation in the event complaints arise from impacted primary incumbent facilities, potentially resulting from the anticipated increased cadence of commercial space launch operations, and given the part 26 framework that provides access to frequencies on a secondary basis across the entire 2360–2395 MHz band.

Automated Federal Coordination Procedures. The LCA requires the Commission to improve NTIA coordination to increase the speed of review of space launch applications for authorization in all three bands, including automation similar to that required in the service rules for the 70/80/90 GHz service. In order to comply with the LCA, we proposed to require the space launch frequency coordinator to complete federal coordination in all three LCA bands using the automated coordination mechanism to be developed by NTIA.

Commenters support this requirement, with no commenter opposing this approach to complying with this particular LCA mandate. We adopt our proposal to require the space launch frequency coordinator to use the NTIA automated mechanism when available. We conclude that taking this action, in addition to ensuring from the outset that the space launch frequency coordinator has the ability to undertake automated frequency coordination, fulfills the 180-day LCA obligation to increase automation in NTIA coordination. The Bureau will subsequently announce the availability of the NTIA automated mechanism and any necessary adjusted data components and filing procedures resulting therefrom, which may include action through rulemaking, with notice and comment to the extent required or desired, and to the extent consistent with the Commission's delegation to the Bureau.

Coordination Disputes. We received comments seeking clarification on circumstances in which there is disagreement during frequency coordination among the launch operators, incumbent coordinators, and/or space launch frequency coordinator. Blue Origin states there should be a clearly defined escalation path made available to promote swift resolution in the event users are unable to reach a solution during the coordination process. AFTRCC asks that we clarify that the space launch frequency coordinator does not supplant the ultimate approval authority of the incumbent coordinators. It also states that, where the space launch frequency coordinator disagrees with the incumbent coordinator's denial or imposition of mitigation measures as a condition to a coordination request, the two should be required to meet expeditiously to resolve differences. According to AFTRCC, the Commission should be notified if a disagreement persists, but the incumbent coordinator's position should take precedence.

In the *Second Report and Order*, the Commission established the role of the space launch frequency coordinator in § 26.202 of the Commission's rules. Rather than indicate that the space launch frequency coordinator would approve or deny frequency coordinator requests following consultation with incumbent coordinators, the Commission specified that the space launch frequency coordinator was to serve as both a clearinghouse and an intermediary in negotiating operational parameters with incumbent coordinators. The Commission found that a single third-party coordinator, armed with knowledge of the operational guidelines imposed by prior coordination, could cross-reference that data with new requests for coordination in real time and act as an intermediary with SBE and NTIA to speed up the review process. We reiterate that part 26 licensees, working through the space launch frequency coordinator, must obtain consent from the incumbent coordinators, and that the space launch frequency coordinator has no authority to independently authorize operations. Consistent with the *Second Report and Order*, we clarify that the space launch frequency coordinator's role is limited to acting as a facilitator and an intermediary in negotiating with incumbent coordinators.

We recognize that certain circumstances may result in a lack of consensus in the frequency coordination process, particularly as launch cadences and congestion increase in the three bands available for space launch operations on a secondary basis. The Commission anticipated these circumstances and specified that, should a conflict arise, the affected coordinators are "jointly responsible for taking action to resolve the conflict, up to and including notifying the Commission and NTIA that a launch request

must be denied." The Commission's language makes clear that it anticipated that a launch coordination request may in fact be denied where an incumbent coordinator(s) and the space launch frequency coordinator are unable to resolve a dispute and agree on operational and technical parameters, conditions, or limitations. We find the *Second Report and Order* and *Third Report and Order* preclude our adoption of a dispute resolution system in which licensees are afforded a remedy for the denial of a coordination request.

Changes to Launch Parameters. Section 26.202 of the Commission's rules states that any changes to the technical and operational parameters for a launch that occur after completion of post-grant frequency coordination also require coordination, and that these changes must be provided to the space launch frequency coordinator to initiate an updated coordination. In the *Licensing and Coordination Comment PN*, we sought comment on procedures for licensees that seek to change launch parameters close in time to a scheduled launch date. Specifically, we sought comment on whether we should establish a cut-off date for licensees to modify launch parameters that have previously been coordinated, given that a cut-off date would need to afford sufficient time for re-coordination of a launch. We also sought comment on establishing a separate cut-off date for changes solely related to the coordinated launch date/time, potentially to accommodate weather or technical delays, that seek no changes to technical parameters.

Space launch operators unanimously advocate that the Commission not establish a cut-off date for coordinating changes to launch parameters, and no incumbent coordinator advocates for such a cut-off date. AFTRCC submits that the space launch frequency coordinator should be under no greater obligation than to exercise good faith and reasonable diligence to process a request for revised coordination, noting that such requests could be submitted only a few days prior to launch. SBE acknowledges that non-substantive changes to launch parameters do not require a new coordination request and asks that we require licensees to provide the coordinator any updates to launch particulars and timing information as soon as reasonably practicable once they are known. Finally, commenters agree that changes solely to launch date and time should not require re-coordination.

We agree with commenters that establishing a cut-off date for coordinating changes to launch parameters would not provide the flexibility needed to conduct commercial space launch operations,

particularly with an anticipated increase in cadence, and we decline to adopt such a deadline. As suggested by AFTRCC, we instead will require space launch operators to submit a revised coordination request to the space launch frequency coordinator as soon as practicable, and the space launch frequency coordinator must exercise good faith and reasonable diligence to expeditiously process such a request upon receipt.

We further clarify that, based on record support, a space launch operator is not required to submit a new coordination request with all associated data elements to the space launch frequency coordinator for changes to a specific scheduled launch registered in ULS that do not change the technical parameters of that launch. Rather, in circumstances solely requiring a change to the date/time of a launch if set for a particular date or a date change that falls outside a coordinated and registered launch window, a space launch operator will be permitted to notify the space launch frequency coordinator as soon as practicable of the requested new date, using a format to be determined by the space launch frequency coordinator following selection. Under the current part 5 experimental STA process, STAs are typically granted for a 6-month period, which provides flexibility in the event a launch date must be changed. We understand that, in the part 5 context, an update to a targeted launch date/time without technical parameter changes is typically completed following 48 hours' notice. As noted above, the space launch frequency coordinator has no authority to independently approve or deny launch parameters. We afford the space launch frequency coordinator the flexibility to coordinate changes solely related to the previously coordinated launch date/time with incumbent frequency coordinators on an expedited basis, without the licensee submitting a new coordination request. In the event the requested new date/time can be accommodated, the space launch frequency coordinator must communicate the result to the space launch operator which, to promote transparency and remain consistent with the *Second Report and Order*, is then required to update the previously approved registered coordination parameters in ULS, as discussed below, to reflect the new launch date/window. After the updated registration is accepted in ULS, the space launch operator is authorized to conduct the space launch operation.

Finally, we separately sought comment on a proposal that space launch licensees seeking to operate in the 2360–2395 MHz band, following coordination and registration of technical parameters in ULS and absent a change in technical parameters, be required to provide pre-launch notification to both

the space launch frequency coordinator and the part 87 frequency advisory committee 96 hours in advance of the commencement of the registered launch window. We asked whether the 96-hour notification would provide sufficient notice for flight test operators. AFTRCC and Virgin Galactic support such a requirement. SBE notes that a launch notification is also typically provided for space launch operations in the 2025–2110 MHz band. SBE explains that the launch notification is typically provided several days prior to a coordinated launch, outlining the particulars of the launch, such as launch windows, orbital parameters, and event sequencing. Thus, the launch notification is not currently relied upon as a substitute for frequency coordination requests, but as a supplement. SBE supports adoption of this format to the Space Launch Service.

Above, we clarified the applicable procedures for re-coordination of changed launch technical parameters, as well as afforded the flexibility to provide notice to the space launch frequency coordinator for launch date and time changes without changes to coordinated parameters. We find that these clarifications to the rules adopted in the *Second Report and Order* and *Third Report and Order* are sufficient to provide clarity to space launch stakeholders regarding the scope, limitations, and responsibilities surrounding a space launch. To facilitate a streamlined process, we find it unnecessary at this time to further mandate a separate, supplemental launch notification procedure specific to any of the three secondary space launch bands. The record makes clear that certain procedures, not currently required under Commission rules, have been developed to supplement interactions between incumbent coordinators and space launch operators (e.g., providing 96-hour advanced launch notification; separate notifications outlining launch parameters/windows). The record also confirms that much of the data for these supplemental notifications overlaps with the data we already require for frequency coordination. Stakeholders are of course free to continue current best practices developed through mutual agreement to foster an environment that can facilitate continuing increased use of these three bands for secondary space launch operations.

C. Post-Frequency Coordination Launch Registrations

Pursuant to the *Second Report and Order*, after a licensee has successfully coordinated, through the space launch frequency coordinator, its launch operations with NTIA and other relevant non-federal users, it must register those technical and operating parameters of the launch in ULS. In addition, a

licensee is only authorized for space launch operations after it has successfully registered the coordinated technical and operational parameters in ULS, subject to the condition that the licensee re-register, if necessary, and re-coordinate the launch if technical or operational details change.

Data Requirements for Post-Coordination Launch Registrations. In the *Licensing and Coordination Comment PN*, we proposed the following requirements for data for post-coordination launch registrations, to be incorporated from the licensee's approved coordination request:

1. Purpose of operation;
2. Operation start date and time;
3. Operation end date and time;
4. Stations to be used;
5. Launch site to be used;
6. Transmission characteristics, including frequency, emission designator, output power and effective isotropic radiated power (EIRP); and
7. Response from the third-party frequency coordinator regarding outcome of coordination, including conditions and limitations, and a list of entities with which it coordinated.

We also proposed that the parameters in the post-coordination launch registration would reflect the binding operational parameters for a given launch, and that a licensee would be authorized to commence launch operations thereunder, once that registration is accepted in ULS. SpaceX argues generally that the "binding operational parameters" of each launch are confidential and should not be publicly registered in ULS.

We did not receive specific comments regarding the data requirements we proposed for post-coordination launch registrations, with the exception of those seeking fundamental changes deemed outside the scope of the Bureau's delegated authority, as referenced. We adopt the proposed data parameters for such post-coordination registration purposes, as set forth in Section III below. We clarify in Section III that the "transmission characteristics" required at this stage are required for each station the licensee will use in its launch. We find it in the public interest to also adopt our proposal that a licensee be authorized to conduct launch operations under the parameters in the post-coordination launch registration once that registration is accepted in ULS. We find that such an approach fosters transparency

and data accuracy as it relates to reflecting coordinated parameters, and provides operational certainty in three congested bands for space launch stakeholders. With respect to SpaceX's general position that binding launch parameters are confidential and should not be included in public-facing ULS, we note that the *Second Report and Order* requires registration through that vehicle, and it is outside the scope of our delegated authority to change that decision. Further, as noted above, we do not anticipate that such information will meet the standards for obtaining confidentiality, particularly given the fact that many of the technical parameters required under part 26 are consistent with those currently made public through the part 5 experimental STA process. We reiterate that confidentiality must be requested on a case-by-case basis through existing Commission rules.

III. REQUIRED DATA ELEMENTS FOR SPACE LAUNCH INITIAL SITE/STATION REGISTRATION, FREQUENCY COORDINATION, AND REGISTRATION OF COORDINATED LAUNCH PARAMETERS

A. Initial Launch Site and Station Registration

To register a launch site that will be used in their space launch operations under a nationwide license, as required by § 26.108(b) of the Commission's rules, Space Launch Licensees shall provide the following data in ULS:

Launch site details:

1. Launch site name and launch designation (if applicable);
2. Geographic coordinates referenced to NAD83 (i.e., lat/long);
3. Address; and
4. Whether the site is an FAA-licensed commercial site, FAA-licensed federal site, FAA-licensed commercial and federal site, or private exclusive use site.

To register the individual terrestrial fixed, base, itinerant, and mobile stations that will be used in their space launch operations, as required by § 26.108(b) of the Commission's rules, Space Launch Licensees shall provide the following data in ULS. For licensees that specify a bandwidth in excess of 5 megahertz, a justification for greater than five megahertz must be submitted in the initial station

registration in ULS as a single attachment, which must identify each station for which increased bandwidth is sought.

Fixed and base station details:

1. Description of station, including its overall purpose within the proposed launch operation and specific function (e.g., transmit/receive, command/telemetry);
2. Antenna support structure type;
3. Height above ground level to the highest point of the supporting structure only;
4. Overall height above ground to tip of antenna in meters;
5. Elevation of ground at antenna site above mean sea level in meters;
6. Frequency band;
7. Emission bandwidth;
8. Address.

Itinerant and mobile station details:

1. Description of station, including its overall purpose within the proposed launch operation and specific function (e.g., transmit/receive, command/telemetry);
2. Radius of operation and geographic coordinates of the transmit location referenced to NAD83;
3. Frequency band;
4. Emission bandwidth;
5. For stations attached to the launch vehicle: name of launch vehicle; and
6. For stations attached to the launch vehicle: location of transmitter on launch vehicle or payload (e.g., first stage, second stage).

B. Frequency Coordination Requests

To initiate frequency coordination prior to each specific launch, as required by § 26.202 of the Commission's rules, Space Launch Service licensees shall provide the following data to the space launch frequency coordinator in a frequency coordination request:

1. Licensee details:
    a. Name of licensee;
    b. Call sign; and
    c. Primary and alternate point of contact for questions (name, title, email, and business phone number);
2. Previously registered launch site where launch will take place and corresponding site details;
3. Previously registered itinerant and mobile stations to be used in the launch and corresponding station details;
4. Previously registered fixed and base stations to be used in the launch and corresponding station details;
5. Transmitter characteristics for each transmit station (center frequency):
    a. Transmitter make/model;
    b. Output power;
    c. Antenna type (e.g., blade, parabolic);
    d. Number of antennas deployed;
    e. Antenna gain;
    f. Width of beam in degrees at half-power point;
    g. Frequency tolerance;
    h. Orientation in horizontal/vertical planes (if the antenna is tracking, state “tracking”);
    i. Antenna polarization;
    j. Antenna azimuth (if the antenna is tracking, state “tracking”);
    k. Antenna elevation angle (if the antenna is tracking, state “tracking”);
    l. For fixed and base stations, projected space launch tracking arc path;

m. For fixed and base stations, the height AGL to the radiation center when the antenna is pointed along the horizon;

n. For mobile and itinerant stations, maximum antenna height AGL;

o. EIRP (per individual antenna);

p. Total EIRP (from all radiating sources using a specific location); and

q. Emission designator.

6. Emission details for each designator of each transmitter:
    a. Emission bandwidth;

    b. Modulating signal:

    c. Modulation type (e.g., BPSK, QPSK, APK, FSK, Analog);

    d. If it is a digital signal, the final symbol rate in symbols/second after all overhead encoding or the final bit rate in bits/second after all overhead encoding;

    e. If FSK, include the type of FSK and the peak-to-peak frequency deviation as well as the final symbol rate or final bit rate; and

    f. Indicate whether the signal has subcarriers and, if so, which ones are used;

    g. RF fundamental emission data (two-sided) including a minimum of -3 dB, -20 dB, and -60 dB bandwidth data points; and

    h. Description of any signal filtering techniques employed.

7. Launch details:
    a. Name of launch vehicle;

    b. Launch mission name and/or designator number;

    c. Launch and reentry date/time window (primary and backup), including launch window open time, and the duration of each window;

    d. List of objects to achieve orbit during launch operation, if applicable;

    e. Total elapsed time from launch to end of transmission;

f. Requested frequencies used for launch and reentry, including required center frequency(ies);

g. Orbital location (orbit insertion), if applicable;

h. Mean launch azimuth (degrees, clockwise from the North);

i. Ground track from lift-off until end of transmission;

j. ECF Cartesian Vectors Format (position and velocity vs. time or position, velocity, and acceleration vs. time) in one minute time steps (at least) for each phase of launch through the end of transmission;

k. A plot image of the two-dimensional ground track of the launch vehicle including demarcations for important mission events (e.g., main engine cut-off (MECO), stage separation, payload jettison, passivation);

l. Duration of transmission(s), to include on/off time (nominal and maximum durations) for each transmitter and receiving station(s) corresponding to the on/off times, if applicable;

m. Trajectory (azimuth, heading) of the launch (i.e., expected launch vehicle flight profile);

n. Reentry landing zone, if applicable;

o. If applicable, expected reentry coordinates and the landing trajectory (from the reentry point) of reusable launch vehicles and boosters;

p. Maximum heights above ground level and above sea level for both launch and reentry activity; and

q. Operational contact information, including name, e-mail address, and telephone number.

8. Additional station details:

a. Name and location of each relay satellite station supporting launch operation;

b. Ground receiver sensitivity and selectivity; and

c. Antenna gain to noise temperature ratio (G/T) for each ground station used for reception of launch vehicle telemetry.

C. Registration of Coordinated Launch Parameters

To complete the post-coordination launch registration in ULS, as required by § 26.108(b) of the Commission's rules, Space Launch Service licensees shall provide the following data:

1. Purpose of operation;
2. Operation start date and time (Eastern Time Zone);
3. Operation end date and time (Eastern Time Zone);
4. Stations to be used;
5. Launch site to be used;
6. Transmission characteristics for each station—specifically, frequency, emission designator, output power, and EIRP; and
7. Response from the third-party frequency coordinator regarding outcome of coordination, including conditions and limitations, and a list of entities with which it coordinated.

This document shall be effective 30 days after publication in the Federal Register, except for new or modified information collections contained herein, for which the Bureau will seek such review by the Office of Management and Budget as provided below. Following completion of OMB review, the Bureau will announce the effective date of any such new or modified information collections.

Federal Communications Commission.

Amy Brett,

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