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SMALL ENTITY COMPLIANCE GUIDE

**Amendment of the Commission's Rules Regarding
Establishing the Digital Opportunity Data Collection
DA 22-241
WC Docket No. 19-195
Released: March 9, 2022**

This Guide is prepared in accordance with the requirements of Section 212 of the Small Business Regulatory Enforcement Fairness Act of 1996. It is intended to help small entities—small businesses, small organizations (non-profits), and small governmental jurisdictions—comply with the revised rules adopted in the above-referenced Federal Communications Commission (FCC or Commission) rulemaking dockets. This Guide is not intended to replace or supersede these rules, but to facilitate compliance with the rules. Although we have attempted to cover all parts of the rules that might be especially important to small entities, the coverage may not be exhaustive. This Guide cannot anticipate all situations in which the rules apply. Furthermore, the Commission retains the discretion to adopt case-by-case approaches, where appropriate, that may differ from this Guide. Any decision regarding a particular small entity will be based on the statute and any relevant rules.

In any civil or administrative action against a small entity for a violation of rules, the content of the Small Entity Compliance Guide may be considered as evidence of the reasonableness or appropriateness of proposed fines, penalties or damages. Interested parties are free to file comments regarding this Guide and the appropriateness of its application to a particular situation. The FCC will then consider whether the recommendations or interpretations in the Guide are appropriate in that situation. The FCC may decide to revise this Guide without public notice to reflect changes in the FCC's approach to implementing a rule, or it may clarify or update the text of the Guide. Direct your comments and recommendations, or calls for further assistance, to the FCC's Consumer Center:

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I. OBJECTIVES OF THE PROCEEDING

In the *Establishing the Digital Opportunity Data Collection Order*, WC Docket No. 19-195, Order, DA 22-241 (WTB/OEA/OET Mar. 9, 2022) (*Order*), the Wireless Telecommunications Bureau (WTB), Office of Economics and Analytics (OEA), and Office of Engineering and Technology (OET) (collectively, the Bureau and Offices) amended the Federal Communications Commission's (Commission or FCC) rules to adopt technical requirements to implement the mobile challenge, verification, and crowdsourcing processes required by the Broadband DATA Act (Pub. L. No. 116-130, 134 Stat. 228 (2020) (codified at 47 U.S.C. §§ 641-646)) as part of the FCC's ongoing effort to improve the Commission's mobile provider broadband availability data through the Broadband Data Collection (BDC).

Specifically, in the *Order* the Bureau and Offices: (1) adopted processes for collecting mobile on-the-ground challenge data, validating challenge speed tests, and established thresholds for determining when a cognizable challenge has been met, (2) established a process for mobile providers to respond to challenges by submitting either on-the-ground data using the same metrics as challengers, or infrastructure information, and (3) amended the Commission's rules to establish a process for the Commission to identify potential inaccuracies in mobile providers' reported coverage and initiate verification requests to mobile providers and for mobile providers to respond to verification requests using either on-the-ground or infrastructure information to confirm broadband coverage in areas they claim have service, pursuant to the Commission's *Third Order (Establishing the Digital Opportunity Data Collection; Modernizing the FCC Form 477 Data Program*, WC Docket Nos. 19-195, 11-10, Third Report and Order, 36 FCC Rcd 1126 (2021) (*Third Order*)).

The Bureau and Offices also changed the Commission's rules to implement a provision of the Broadband DATA Act that requires it to develop a process through which the Commission can collect verified data for use in the coverage maps from state, local, and tribal governmental entities, third parties, and other federal agencies. The rule changes require these entities to submit verified broadband data using the same data specifications required of mobile providers. Finally, in the *Order* the Commission established a process for collecting crowdsourced mobile coverage data from mobile subscribers and other entities, and a methodology staff will use to determine when a "critical mass" of crowdsourced filings suggests that a mobile provider has submitted inaccurate or incomplete data.

The decisions made in the *Order* will enable the Commission, Congress, other federal and state policy makers, Tribal entities, consumers, and other third parties to verify and supplement the data collected by the Commission on the status of mobile broadband availability throughout the United States.

II. COMPLIANCE REQUIREMENTS

The technical requirements to implement the mobile challenge, verification, and crowdsourcing processes required by the Broadband DATA Act, and the process established for governmental and third party entities to submit data to the Commission for use in the coverage maps adopted in the *Order* are outlined below.

A. H3 Geospatial Indexing for Challenge Speed Tests (47 CFR § 1.7001(a)(20))

- Valid challenge speed tests will be geographically distributed according to a particular underlying hexagonal cell geography based on the H3 geospatial indexing system described in 47 CFR § 1.7001(a)(20), which is an open source system developed by Uber Technologies, Inc.

B. Crowdsourcing Process (47 CFR § 1.7006(b))

- On-the-ground crowdsourced data is required to meet the same metrics and testing parameters required of broadband mobile providers that submit on-the-ground data in response to a Commission verification inquiry, except that the data may include any combination of download speed and upload speed rather than both.
- A mobile provider will be subject to the verification inquiry process described in 47 CFR § 1.7006(c) if crowdsourced and other available data cause the Commission to determine that a mobile provider's coverage information is likely not accurate.
- A mobile provider will be notified of a crowdsourced data filing against it via the online portal, but is not required to respond to a crowdsourced data filing filed against it.
- Crowdsourced data will also be made available to the public via the Commission's webpage, with the exception of personally identifiable information and any data required to be confidential under § 0.457 of the Commission's rules.

C. Mobile Service Verification Process for Mobile Providers (47 CFR § 1.7006(c))

- In response to a Commission staff verification request to verify the accuracy of the mobile provider's coverage, mobile providers must submit either infrastructure information or on-the-ground test data within 60 days of receiving the request.
- A mobile provider may also submit data collected from transmitter monitoring software, in addition to submitting on-the-ground data or infrastructure data or both.
- OEA and WTB may require a mobile provider to submit additional data when necessary to complete a verification inquiry.
- For on-the-ground data, a mobile provider must submit evidence of network performance based on a sample of on-the-ground tests that is statistically appropriate for the area.
 - The mobile provider must verify coverage of a sampled area using the H3 geospatial indexing system at resolution 8.
 - On-the-ground tests will be evaluated to confirm, using a one-sided 95% statistical confidence interval, that the cell coverage is 90% or higher.
 - A mobile provider must record at least two tests within each of the randomly selected hexagons. The time of the tests must be at least four hours apart, irrespective of date, unless, for any sampled hexagon, the mobile provider submits alongside its speed tests actual cell loading data for the cell(s) covering the hexagon sufficient to establish that median loading, measured in 15-minute intervals, did not exceed the modeled loading factor for the one-week period prior to the verification inquiry; in that case, the mobile provider is required to submit only a single test for the sampled hexagon.
 - For in-vehicle mobile tests, mobile providers must conduct tests with the antenna located inside the vehicle.

D. On-the-Ground Test Data (47 CFR § 1.7006(c)(1))

- When a mobile provider chooses to demonstrate mobile broadband coverage availability by submitting on-the-ground data, the mobile provider must provide valid on-the-ground tests that meet the following parameters:

- The test length must be between 5 and 30 seconds (not including ramp up time) individually applied to downlink, uplink, and roundtrip latency;
- The test measurement results have been averaged over the duration of the test (i.e., total bits received divided by total test time), and
- The test was conducted outdoors between 6:00 a.m. and 10:00 p.m. local time.
- On-the-ground test data must include the following metrics for each test:
 - Testing app name and version;
 - Timestamp and duration of each test metric;
 - Latitude and longitude at the beginning and end of each test using typical GPS;
 - Device type (brand/model) and operating system used;
 - Name of mobile provider being tested;
 - Location of test server;
 - Signal strength and quality, unique identifier, and radiofrequency metrics of each serving cell (where available);
 - Download speed;
 - Upload speed;
 - Roundtrip latency;
 - Whether the test was performed in an in-vehicle mobile or outdoor, pedestrian stationary environment (for an in-vehicle test, include the speed the vehicle was traveling, where available);
 - Whether the test failed to establish a connection with a mobile network at the time and place it was initiated;
 - The network technology (e.g., 4G LTE, 5G-NR) and spectrum bands used;
 - The timestamp that test measurement data were transmitted to the app developer's servers, the source IP address, and port of the device, as measured by the server, and
 - All other metrics for mobile test data required by the most recent specifications from OEA and WTB in accordance with 5 U.S.C. § 553.

E. *Submitting Infrastructure Information* (47 CFR § 1.7006(c)(2))

- When a mobile provider chooses to demonstrate mobile broadband coverage availability by submitting infrastructure data, the mobile provider must submit data for all cell sites and antennas that serve or interfere with the targeted area.
- Infrastructure data must include the following information for each cell site that the mobile provider uses to provide service for the area subject to the verification inquiry:
 - Latitude and longitude measured with typical GPS Standard Positioning Service accuracy or better;
 - The cell and site ID number for each cell site;
 - The ground elevation above mean sea level (AMSL) of the site (in meters);
 - Frequency band(s) used to provide service for each site being mapped including channel bandwidth (in megahertz);
 - Radio technologies used on each band;
 - Capacity (Mbps) and type of backhaul used;
 - Number of sectors at each cell site;

- Effective Isotropic Radiated Power (EIRP, in dBm) of the sector at the time the mobile provider creates its map of the coverage data;
- Geographic coordinates of each transmitter site measured with typical GPS Standard Positioning Service accuracy or better;
- Per site classification (e.g., urban, suburban, or rural);
- Elevation above ground level for each base station antenna and other transmit antenna specifications (i.e., the make and model, beamwidth (in degrees), radiation pattern, and orientation (azimuth and any electrical and/or mechanical down-tilt in degrees));
- Operate transmit power of the radio equipment;
- Throughput and associated required signal strength and signal to noise ratio;
- Cell loading distribution;
- Areas enabled with carrier aggregation and a list of band combinations, and
- Any additional parameters and fields that are listed in the most-recent specifications for wireless infrastructure data released by OEA and WTB in accordance with 5 U.S.C. § 553.

F. Mobile Service Broadband Coverage Challenges By Consumers (47 CFR § 1.7006(e))

Mobile providers' mobile broadband coverage maps can be challenged by consumers contesting mobile coverage data based on lack of service or poor service quality, such as slow user speed, subject to the below requirements. Mobile providers can dispute and rebut mobile coverage data challenges using on-the-ground and/or infrastructure data.

1. Creating a Challenge (47 CFR § 1.7006(e)(1)-(2))

- Consumer challengers must submit their name, email address, and mobile phone number of the device on which the speed test was conducted.
- Consumers must conduct challenge speed tests using the FCC Speed Test App or another app OET designated for use in the challenge process that will collect on-the-ground data consisting of the same metrics required when mobile providers respond to verification inquiries, as well as the timestamp that test measurement data were transmitted to the app developer's servers, as well as the source IP address and port of the device, as measured by the server, and a certification that the challenger is a subscriber or authorized user of the mobile provider being challenged.
- A consumer speed test will be used to create a cognizable challenge based on the following criteria, which will be administered by OEA:
 - Speed tests will be geographically associated within a hexagon from the H3 system, and the smallest challengeable hexagonal cell will be at resolution 8. A "point-hex," i.e., one of the smaller resolution 9 hexagons within a resolution 8 hexagon will be considered "accessible" when at least 50% of its area overlaps with the mobile provider's reported coverage data and a road runs through the point-hex.
 - A speed test will be broken into components (i.e., download and upload), each of which will be evaluated separately. A "positive" component is one where the speed meets or exceeds the minimum speeds that a mobile provider reports as "available" in its biannual BDC submission. A "negative" component is one where the speed fails to meet the minimum speeds that the mobile provider reports as "available" in its biannual BDC submission.

- A resolution 8 hexagon will be “challenged” when the following three thresholds are met:
 - Geographic: The geographic threshold will be met when at least 4 accessible point-hexes within a resolution 8 hexagon contain two of the same test components, one of which is negative. If there are fewer than 4 accessible point-hexes, the number of point-hexes in which tests must be recorded must be equal to the number of accessible point-hexes.
 - Temporal: The temporal threshold will be met when a resolution 8 hexagon contains two sets of negative test components (of the same type) separated by at least 4 hours.
 - Testing: The testing threshold will be met when a resolution 8 hexagon contains at least five negative test components of the same type when 20 or fewer total challenge test components have been submitted. When challengers have submitted more than 20 test components of the same type in a hexagon, the Bureau and Offices will require that a certain minimum percentage of the total number of test components of the same type in that hexagon be negative. The Bureau and Offices provide a caveat to this rule, which ensures that tests are geographically diverse by requiring that, in a resolution 8 hexagon where there are at least four accessible point-hexes, if more than 50% of the test components are taken in one point-hex, those test components will only count towards 50% of the threshold. Similarly, if there are only three accessible point-hexes, and test components from one point-hex represent 75% of the total test components, those test components will only count towards 75% of the threshold.
- A larger, “parent” hexagon (at resolutions 7 or 6) will be considered challenged if at least four of the child hexagons within such a “parent” hexagon are considered challenged.
- Mobile providers will be notified of all cognizable challenges to their mobile broadband coverage maps at the end of each month and challengers will be notified of a mobile providers response to the challenge. Mobile providers and challengers will be notified monthly of the status of a challenged areas.

2. Challenge Responses (*Order*; 47 CFR § 1.7006(e)(4))

- To dispute a challenge, mobile providers must submit a rebuttal (consisting of either on-the-ground test data or infrastructure data) to the challenge or concede the challenge within 60 days of being notified of the challenge.
- Challenge and crowdsource data other than the location that is the subject of the challenge, the name of the mobile provider, and details concerning the basis for the challenge must be kept private to protect challengers’ privacy interests.
 - Before a mobile provider receives access to crowdsourced or challenge data, it will be required, within the BDC system, to acknowledge that it will use personally identifiable information that it receives for the sole purpose of responding to the challenge and that it will protect and keep private all such personally identifiable information.
 - Personally identifiable information may include challenger contact information, device information, and network information.

a. Rebutting Challenges with On-the-Ground Data (47 CFR § 1.7006(e)(4)(iv))

- When a challenged mobile provider submits on-the-ground speed test data to rebut a challenge, the mobile provider will be required to submit data demonstrating that sufficient coverage exists at least 90% of the time in the challenged hexagon(s).
- To confirm an 8 hexagon, a provider must submit on-the-ground test data meeting the same three thresholds required for challenger tests for both the upload and download components: (1) a geographic threshold, (2) a temporal threshold, and (3) a testing threshold.
 - Geographic: At least four point-hexes of a resolution 8 hexagon must include two download test components taken within them, at least one of which must be positive, and at least four point-hexes of a resolution 8 hexagon must include two upload test components taken within them, at least one of which must be positive to demonstrate that adequate coverage occurs at multiple locations within the resolution 8 hexagon.
 - Temporal: Each resolution 8 hexagon will need to include a set of five positive test components of the same type with a time-of-day difference of at least four hours from another set of five positive download components, regardless of the date of the test; and
 - Testing: For a resolution 8 hexagon to be met, at least 17 positive test components of the same type have been taken in the hexagon when the mobile provider has submitted 20 or fewer test components of that type. When the mobile provider has submitted more than 20 test components of the same type, a certain minimum percentage of the total number of test components of that type in the hexagon must be positive, ranging from at least 82% positive, when mobile providers have submitted between 21 and 34 total test components of the same type, to at least 88% positive, when mobile providers have submitted 100 or more test components of the same type.
 - Additionally, if more than 50% of the test components of the same type are within a single point-hex where four or more point-hexes in the resolution 8 hexagon are accessible, the test components in that point-hex will only account for 50% of the total test components when evaluating the testing threshold.
 - A mobile provider may also demonstrate sufficient coverage in a resolution 8 hexagon that was not challenged to rebut a challenge to a lower-resolution hexagon containing the non-challenged resolution 8 hexagon (i.e., the “parent” resolution 7 hexagon or “grandparent” resolution 6 hexagon).
- Mobile providers must collect all of the required technical network information and RF metrics using a device that is able to interface with drive test software and/or runs the Android operating system.
- Mobile providers conducting in-vehicle mobile tests (i.e., drive tests) must conduct such tests with the antenna located inside the vehicle.
- Mobile providers may collect on-the-ground test data using mobile devices running either a Commission-developed app (i.e., the FCC Speed Test app), another speed test app that OET approved to submit challenges, or other software.
 - Mobile providers who choose to use software other than the FCC Speed Test app or another speed test app that OET approved for use in the challenge process, such

software will be considered approved for use in rebutting challenges provided that the software uses the test methodology and collects the metrics that approved apps must gather for consumer challenges and that government and third-party entity challenger speed test data must contain.

- Mobile providers who choose to use their own software must submit a complete description of the methodologies used to collect their data and a certification from a qualified engineer or official.

b. Rebutting Challenges with Infrastructure Data (47 CFR § 1.7006(e)(4)(v), (vi))

- Mobile providers may respond to challenges with infrastructure data rather than (or in addition to) on-the-ground speed test data. In cases where a challenged mobile provider chooses to submit infrastructure data to respond to a challenge, the mobile provider must submit the same data as required when a mobile provider submits infrastructure information in response to a Commission verification request, including information on the cell sites and antennas used to provide service in the challenged area.
- Infrastructure data, on their own, may be used to resolve challenges in a limited set of circumstances. In the circumstances listed below, infrastructure information will likely be as probative as on-the-ground test data and therefore a mobile provider may submit infrastructure data, on their own, in response to challenge that would invalidate speed tests submitted by challengers.
 - First, when extenuating circumstances at the time and location of a given test (e.g., maintenance or temporary outage at the cell site) caused service to be abnormal.
 - Mobile providers must submit coverage or footprint data for the site or sectors that were affected and information about the outage, such as bands affected, duration, and whether the outage was reported to the FCC's Network Outage Reporting System (NORS), along with a certification about the submission's accuracy.
 - Second, when the mobile device(s) with which the challenger(s) conducted their speed tests are not capable of using or connecting to the radio technology or spectrum band(s) that the mobile provider models as required for service in the challenged area.
 - Mobile providers must submit band-specific coverage footprints and information about which specific challengers' device(s) lack the band or technology.
 - Third, when speed tests were taken during an uncommon special event (e.g., a professional sporting event or concert) that increased traffic on the network.
 - Fourth, when speed tests were taken during a period where cell loading was abnormally higher than the modeled cell loading factor.
 - Mobile providers must submit cell loading data and these data must both (a) establish that the cell loading for the primary cell(s) at the time of the tests was abnormally higher than modeled, and (b) include cell loading data for a one-week period before and/or after the mobile provider was notified of the challenge showing as a baseline that the median cell loading for the primary cell(s) was not greater than the modeled value (e.g., 50%).

- If a high number of challenges show persistent over-loading, Commission staff may initiate a verification inquiry to investigate whether mobile providers have submitted coverage maps based on an accurate assumption of cell loading in a particular area.
- Fifth, when a mobile device used in testing used a data plan that could result in slower service.
 - Mobile providers must submit information about which specific device(s) used in the testing were using a data plan that would have resulted in slower service and information showing that the mobile provider's network did, in fact, slow the device at the time of the test.
- Sixth, when a mobile device used in the testing was either roaming or was used by the customer of a mobile virtual network operator (MVNO).
 - Mobile providers must identify which specific device(s) used in the testing were either roaming at the time or used by the customer of an MVNO, based upon their records.
- After a mobile provider identifies the speed tests it seeks to invalidate pursuant to one of the six circumstances and submits all required infrastructure data in support of its contention, Commission staff will remove any invalidated speed tests and recalculate the challenged hexagons.
- Any challenged hexagons that no longer meet the thresholds required for a challenge would be restored to their status before the cognizable challenge was created.
- Where a mobile provider successfully rebuts a challenge using this process, the challenged hexagons that have been restored to their status before the cognizable challenge was created would continue to be eligible for subsequent challenges.

c. After a Challenge Has Been Rebutted (47 CFR § 1.7006(e)(6))

- If a mobile provider successfully rebuts a challenge, the area confirmed to have coverage shall be ineligible for challenge until the next biannual broadband availability data filing six months after the later of either the end of the 60-day response period or the resolution of the challenge.
 - This ineligibility applies only with respect to the particular network technology and modeled environment for which the mobile provider has demonstrated sufficient coverage.
- In any area in which a mobile provider does not overturn the challenge but which is otherwise no longer considered challenged (e.g., where, as a result of data submitted by the mobile provider there is no longer sufficient evidence to sustain the challenge to that area but the mobile provider's data fall short of confirming coverage in the area), the coverage area will be restored to its pre-challenge status and will be eligible for future challenges against it.
- A mobile provider that concedes or loses a challenge must file within 30-days, geospatial data depicting the challenged area that has been shown to lack sufficient service.
 - This new data will constitute a correction layer to the provider's original propagation model-based coverage map, and Commission staff will use this layer to update the broadband coverage map.
 - To the extent that a provider does not later improve coverage for the relevant technology in an area where it conceded or lost a challenge, it must include this

correction layer in its subsequent filings to indicate the areas shown to lack service.

G. *Mobile Service Broadband Coverage Challenges by Governmental Entities and Other Third Parties (47 CFR § 1.7006(f))*

Mobile providers' mobile broadband coverage maps can be challenged by State, local and Tribal governmental entities and other third parties or individuals subject to the below requirements.

- Governmental and other third party challengers can submit challenge data by filing on-the-ground data according to the same metrics as required of mobile providers that submit data in response to a verification inquiry.
- The data metrics for these entities are largely the same as those previously listed in 47 CFR § 1.7006(f)(1)(i), except that governmental and other third party challengers are now required to also collect either: the timestamp that test measurement data were transmitted to the app developer's servers, as well as the source IP address and port of the device, as measured by the server; or the International Mobile Equipment Identity (IMEI) of the device used to conduct a speed test.
- Governmental and other third party challengers must also include all other metrics required per the most recent specification for mobile test data adopted by OEA and WTB in accordance with 5 U.S.C. § 553.
- Governmental and other third party challengers must use a device that is able to interface with drive test software and/or runs on the Android operating system.
- Valid speed tests conducted by consumers will be aggregated with those conducted by governmental and third party challengers and must collectively meet the threshold specified in 47 CFR § 1.7006(e) in order to create a challenge.
- Mobile providers are required to respond to challenges from governmental and other third party challengers in the same way that they are required to respond to consumer challenges.

H. *Collecting Verified Broadband Data from Government Entities and Other Third Parties (47 CFR § 1.7008(d))*

- Governmental and other third party challengers that choose to file verified data must follow the same filing process as mobile providers submitting their broadband internet access service data in the online data portal.
- Governmental and other third party challengers that file on-the-ground test data must submit such data using the same metrics and testing parameters required for mobile providers responding to a Commission verification inquiry.

III. RECORDKEEPING AND REPORTING REQUIREMENTS

The *Order* adopting technical requirements and a granular data collection to implement the mobile challenge, verification, and crowdsourcing processes required by the *Broadband DATA Act* contains new recordkeeping and reporting requirements. The details and specifics of the recordkeeping and reporting requirements adopted in the *Order* can generally be found in Section II of this guide under the Compliance Requirements.

IV. IMPLEMENTATION DATE

The rules shall become effective on May 11, 2022, which is thirty (30) days after publication of the text of the *Order* or summary thereof in the Federal Register.

V. INTERNET LINKS

A copy of the *Order* is available via this website at: <https://www.fcc.gov/document/fcc-releases-bdc-mobile-technical-requirements-order>.

A copy of the Federal Register Summary of the *Order* is available at: <https://www.federalregister.gov/documents/2022/04/11/2022-06826/establishing-the-digital-opportunity-data-collection>.

The FCC's webpage on the Broadband Data Collection is available at: <https://www.fcc.gov/BroadbandData>.