EXHIBIT A

T-Mobile USA, Inc.

Methodology for T-Mobile Drive Tests to Verify Compliance with T-Mobile/Sprint Merger Commitments

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I. INTRODUCTION

The Commission's order approving the license transfers associated with the merger of T-Mobile US, Inc. ("T-Mobile") and Sprint Corporation adopted as conditions commitments made by the Applicants in their *ex parte* filing dated May 20, 2019.[1] As described in the Order, one of those commitments requires T-Mobile to meet certain 5G network build-out commitments.[2] To verify the coverage area and speeds of its 5G service to determine compliance with the build-out commitments, T-Mobile committed to conducting a drive test utilizing a methodology mutually agreed to by T-Mobile and the Wireless Telecommunications Bureau ("Bureau").[3]

This document describes the methodology agreed to by T-Mobile and the Bureau, which T-Mobile will utilize to conduct drive tests following the third and sixth anniversaries of the merger's closing.

As described herein, T-Mobile will drive dense drive routes covering populated areas and major and minor roads. T-Mobile will drive approximately 1 million miles, more than five times the industry average (approximately 220,000), resulting in extensive testing in both urban and rural areas.

Stationary and mobile speed measurements will be taken in 500-meter grids that cover about 99.5% of the population, including 98% of the rural population. Approximately five million speed measurements, more than ten times the industry average (approximately 500,000), will be taken at different locations and in diverse network conditions to quantify delivered speeds. Measured data will be mapped to unique 500-meter grids in Census blocks containing population across the entire country, and the population of each Census block will be associated with the average speed across all speed-tested grids in the Census block. Note the population reference is derived from the 2016 Pitney Bowes study, which provides population at the Census block level based on the 2010 U.S. Census but updated based on more recent information.[4]

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[1] *Applications of T-Mobile US, Inc. and Sprint Corporation*, Memorandum Opinion and Order, Declaratory Ruling, and Order of Proposed Modification, WT Docket No. 18-197, FCC 19-103 (Nov. 5, 2019) ("Order").

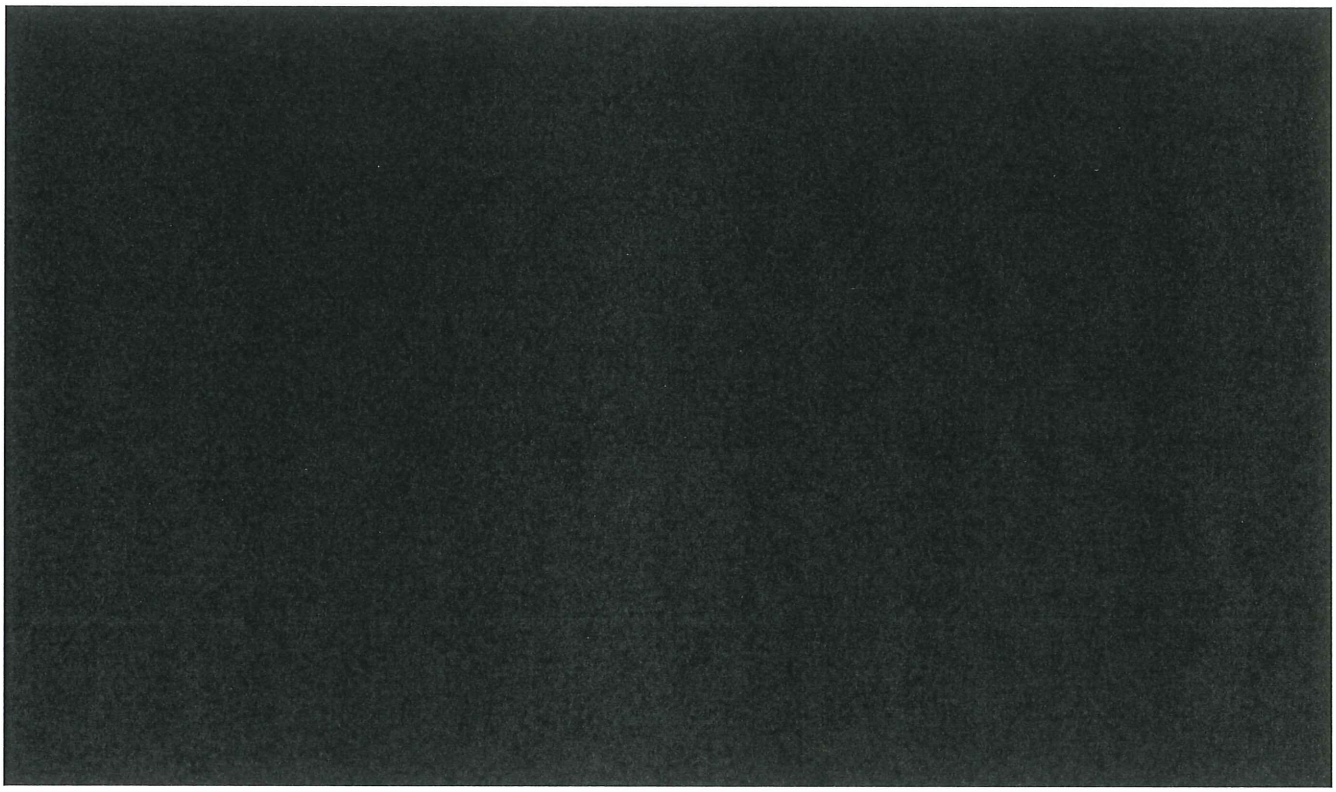
[2] *Id.* at App. G, Att. 1.

[3] *Id.*

[4] *See* Letter from Nancy Victory, Counsel to T-Mobile, and Regina Keeney, Counsel to Sprint, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 18-197, at 5-6 (filed May 20, 2019).

II. DRIVE TEST ROUTES

T-Mobile will set the routes to be driven throughout the country. The drive test routes will extensively cover the United States. These routes will go beyond just interstates and highways and T-Mobile will ensure that both rural and urban areas are covered. Dense drive routes will cover not only populated areas but extend to major and minor roads. Approximately 1 million miles will be driven (more than five times the industry known drive test norms), across the continental U.S., Hawaii and Puerto Rico. Along the drive routes, approximately five million speed measurements will be collected in both urban and rural areas. Note the below are not final drive routes.



III. DRIVE TEST EQUIPMENT & PLAN

Data will be collected using T-Mobile-Certified 5G devices as well as scanners to collect coverage measurements for both low- and mid-band independently. All drive tests will be performed during regular business hours to capture network performance and radio conditions under load. To calculate covered population, T-Mobile will make use of an RF propagation model to compute RSRP (Reference Signal Received Power) based on its ordinary course methodology at the time of the test. These types of predictions are used in ordinary business course to drive network investment. T-Mobile will provide these values with its test results. Coverage predictions are then overlaid into GIS mapping, with Census data, to calculate the population covered. Specifically, T-Mobile has chosen to work with address/population weighted block centroids licensed through Pitney Bowes as the most accurate method for tracking where people are. In Census Blocks where the coverage prediction covers the weighted centroid, the entire Census Block population will be counted toward the commitment metric; in Census Blocks where the coverage prediction does not cover the weighted centroid, none of the Census Block population will be counted toward the commitment metric.

Measurement Setup. Equipment setup will typically be comprised of one or more devices with a scanner configured to a standalone PC or with a logging software application on the device. Software installed on a PC or device is configured to run a specific test sequence. The test terminals (MS/UE) are usually positioned in the middle of the cabin, at the median of the side window's height, and equally spaced from each other. The scanner will have external antennas for receiver and GPS at the vehicle rooftop.

Measurement Instrumentation. General instrumentation is a third-party PC screen with route, levels, and message flow, with specific alerting on events. Internet-based servers are utilized for any specific throughput protocol testing (FTP/TCP/UDP). These servers are hosted in the public cloud, but third-party hosting or optional edge servers may also be utilized.

Changes in the next 3 to 6 years. The equipment models, hardware and software, are likely to change over the next 3 to 6 years due to technological improvements and T-Mobile will use the best available tools to support the latest network capabilities in use at that time.

Data Collection

Data Collection Methodology. All the scanner data will be collected with an external antenna, on-street/outdoor levels at vehicular speeds varying generally between 25-60 mph. The speed measurements performed will be in-car for both stationary and mobile measurements.

Data Collected. Devices (UE) can report all Layer2 and Layer3 information processed via the wireless chipset via streaming data flow or with certain information available within the device. A scanner is programmed to search only for selected frequencies and technologies, recording file logs typically for location (GPS), signal level, technology, serving cell/sector characteristics, signal quality, antenna paths, and other technology-specific signal embedded characteristics.

Synchronization Process of Data Collection. Both the phone and scanner will be connected to the same drive test software, so the measurements are automatically correlated and timestamped.

Data Collection Logistics and Mechanics

Logistics. The drive test team will continuously measure coverage through scanner equipment independently for both low- and mid-bands and manually trigger speed measurements when stopping at measurement locations and will initiate mobile speed tests when moving away from the stationary tests locations and the vehicle reaches the speed of surrounding traffic. There will not be a requirement to have separate teams for separate tasks, just separate teams covering different geographical areas, although T-Mobile may use separate teams if it is more efficient. There are no plans to drive roads in both directions or multiple times by design, but it may happen to some degree to cover intended grids.

Tracking Measured Sites. The drive testing software indicates the cell in which the speed measurement is being performed, which provides visibility to the drive test team.

Site outages. There will be a centralized support team to coordinate and communicate with drive test teams in case of planned or unplanned network outages that may affect areas being tested. All speed measurements are to be performed during regular business hours to capture network performance and radio conditions under load and avoid the network maintenance window.

Datasets and Samples

Deliverables. Apart from the shapefiles of low- and mid-band coverage areas, T-Mobile will provide: 1) scanner data export in no more than 4-second increments with measured RSRP per band along with its location coordinates; 2) speed measurements export with download speed values, test start and end location coordinates, RSRP of serving cell, network load for serving cell within hour of test, and bandwidth of serving cell and sector; 3) looked up speed measurements export with grid location, network load for dominant cell, and bandwidth of serving sector. Non-conforming results will also be provided to the Bureau with the exception of tests that fail due to equipment failure or human error.

Sample Requests. With continuous technology evolution, the output formats could change from today's examples. T-Mobile will provide a sample file to the Bureau before initiating the actual drive test.

Delivery Method. The datasets will be delivered to the Bureau in the same manner that large confidential data sets have been shared with FCC in previous engagements.

Speed Test Measurements. T-Mobile will make use of well-known industry speed measurement applications (*e.g.*, Ookla). The process will work as follows: 1) the application requests data from the server and measures the amount of bytes received; 2) depending on the type of application, it opens one or multiple connections to the server; 3) as data is transferred, the application aggregates the number of bytes transferred on all connections. Key parameters that will be collected to ensure the validity of the tests are technology type, site, frequency band, and signal information. There is no set file size for a test. By default, a continuous stream is used for the throughput test, which floods the connection with as much data as it can handle.

Test Parameters Collected

5G Network Features Visibility. The drive test software has visibility into the use of certain network features that are reported on layer 2 or layer 3 messages. The impact of such features is reflected in the results of the speed tests.

Collection of Data. Measurement location coordinates, frequency band(s), deployed channel bandwidth(s), and associated RSRP will be collected by the drive test software from the device on system information block (SIB) or layer 3 messages.

RSRP Scanner vs. Speed Measurement. The RSRP from the speed measurement may differ from a scanner because the latter will be using an external antenna and is not collected in network connected mode.

GPS Signal Challenges. External antennas for GPS provide great conditions for multiple satellite signal availability. In very dense urban areas, T-Mobile utilizes a GNSS dead-reckoning system that utilizes GPS in conjunction with direct auto-integration through automotive serial port to output a standard accurate GNSS signal output for the data collection software.

Site Loading and Correlation with Measurement

Sector Load Determination. Sector loading is measured from well-established network counters used for many purposes in the ordinary business course and are very reliable for determining usage of all subscribers connected to the sector. The sector load is not interpolated and is measured at every hour by the network. In cases of speed look up, the busy hour load of the dominant cell in the grid will be used, reflecting a worst-case scenario. The dominant cell is the cell sector that best covers the untested grid.

Correlation to Speed Measurement. Speeds are measured at the time of the measurement. The cell used and timestamp will be recorded for every speed measurement. During post processing, this information will be used to find the sector load value from the hourly network metrics.

Guidelines for Assessing and Processing Data. As part of the standard process of drive testing programs, the following is considered: 1) pre-drive verification of equipment, configuration, and sequence of testing; 2) set-up of alerts for issues with network performance during data

collection; 3) on-call support in case of issues; 4) system validation of log files collected; and 5) automated route acceptance, based on post-processing of drives against expected routes.

Handling Non-conforming Results. General validation revolves around route validation and performance versus expected. Failed tests will be validated for equipment issues. Discrepancies from expected performance will be checked against equipment and network issues. If the root cause of the non-conforming tests are immediately resolved, the retest(s) can be executed immediately and will use similar, if not the exact same, test conditions. At the post-processing phase, non-conforming results will be checked against network performance, key performance indicators (KPIs) at the time of fault, expected coverage, network outages/degradation, and capacity constraints.