



Measuring Broadband America:

**Fixed and Mobile Broadband Performance
Measurement**

**Open Platforms & Opportunities for
Collaboration**

Walter.Johnston@FCC.Gov

202-418-0807

Chief EMCD/OET/FCC

James.Miller@FCC.Gov

202-418-7351

Senior Attorney Advisor EMCD/OET/FCC



- **Measuring Broadband America**

- Recognition of importance of broadband and need to improve availability of broadband network performance information.
- Core principles
 - Provide **open and transparent** processes and information on broadband performance
 - **Full release** of collected data consistent with our **privacy policy**
 - **Collaboration** with industry, academia, and other stakeholders



- **Fixed Broadband Tests**

- Commission began gathering data in 2011 and has released three reports on *fixed* broadband performance.
- Strategic goals to ensure accountability, increase transparency, and enhance competition in the market.
- Reports have spurred investment, helped consumers make informed decisions about the marketplace, and helped the Commission make fact-based decisions.
- Developed infrastructure for nationwide testing and data collection



- **Expansion to Mobile**

- Recognition of importance of mobile broadband and need to expand the program to mobile broadband networks achieved with releasing of FCC Speed Test App for Android.
- Shares core principles and open methodologies of fixed effort
 - Provides information to consumers and interested stakeholders using Open and Transparent methodologies about mobile broadband.
 - Release of collected data consistent with privacy policies
 - Encourage improvements in mobile broadband networks and drive competition and fact-based decision making.
 - Utilize collaborative Open approach with support from academics, industry, government, public interest and other stakeholders



- **Collaborative process**
 - AT&T, Sprint, T-Mobile, Verizon
 - Federal Trade Commission
 - MIT, Georgia Tech, CU
 - Level3
 - CAIDA
 - Stanford
 - Redjack



- **Consumer privacy top priority.**

- Developed policies and procedures working with a diverse team of privacy experts from the federal government, academia, and industry.
- Fully anonymous data collection with no personal or identifiable information collected.
- Client software released as open source for inspection
- Analysis of data's statistical properties by privacy experts to ensure anonymity and prevent re-identification prior to release of data.
- Mobile App Terms and Conditions and Privacy Policy developed over multi-month “privacy by design” and reviewed by all stakeholders



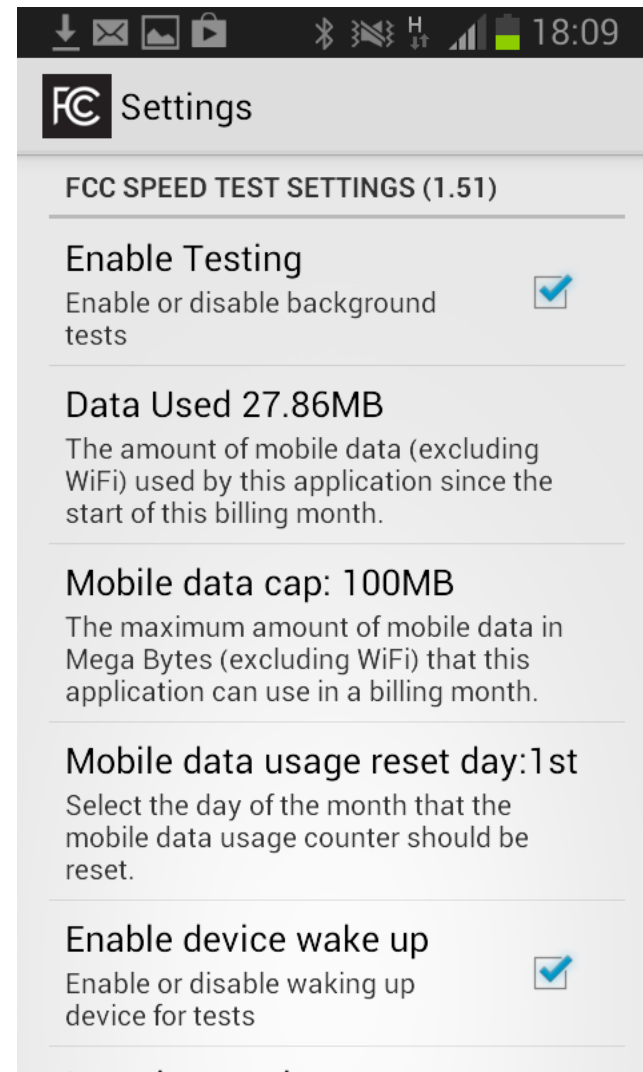
- **Consumer privacy Issues**

- Direct personally identifiable information
- Unique handset identifiers or data features
- Analysis and data processing policies to allay risks of reidentification



• App Functionality

- Available to download from Google Play.
- Tests run as requested by the user (manually), and on a random centrally-scheduled background basis.
 - Measures speed, latency, and packet loss.
 - Structural data including RSSI, Bearer, Carrier, CellTowerID, etc.
 - Data cap defaults and other consumer protections





- **Handset Retains Personalized Performance History**

- Average and individual test result history displays changes in mobile broadband network performance over time.

- Removes need for personalized data on backend





- **Software and Data Tools Supporting Big Data Applications**

- Native JSON file formats and noSQL approaches
- Conversion tools for CSV, SQL and other structured data
- Documented Data Dictionaries and Schemas





- **Shareable Collaborative Datasets**

- Openly documented data dictionary
- Structured export capability
- Anonymized data
- Public and unrestricted use of data consistent with privacy policy

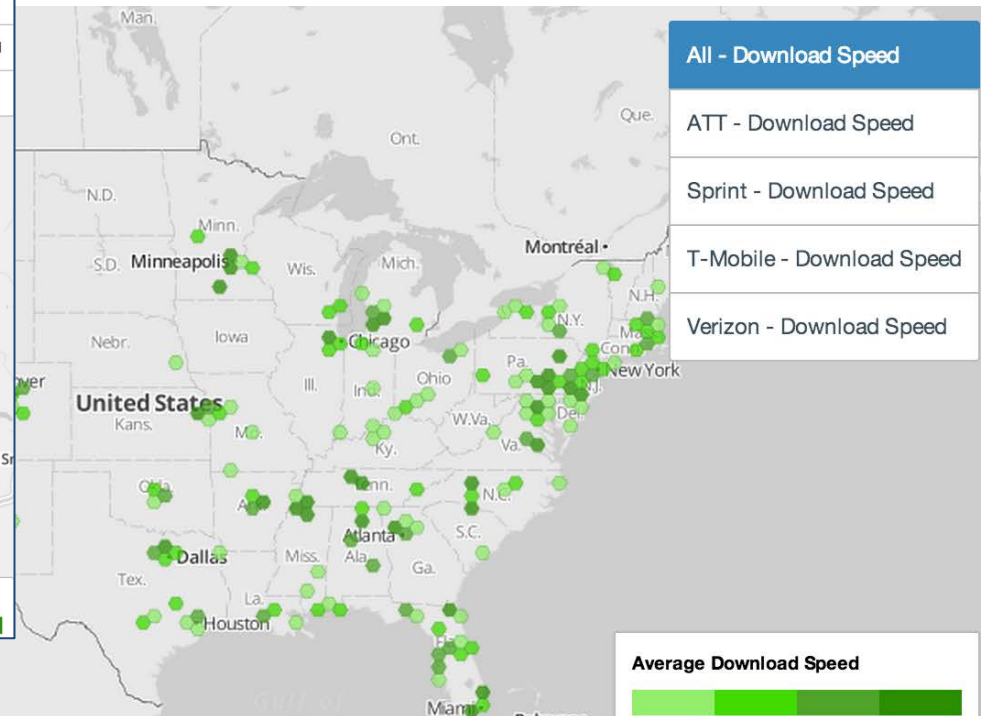
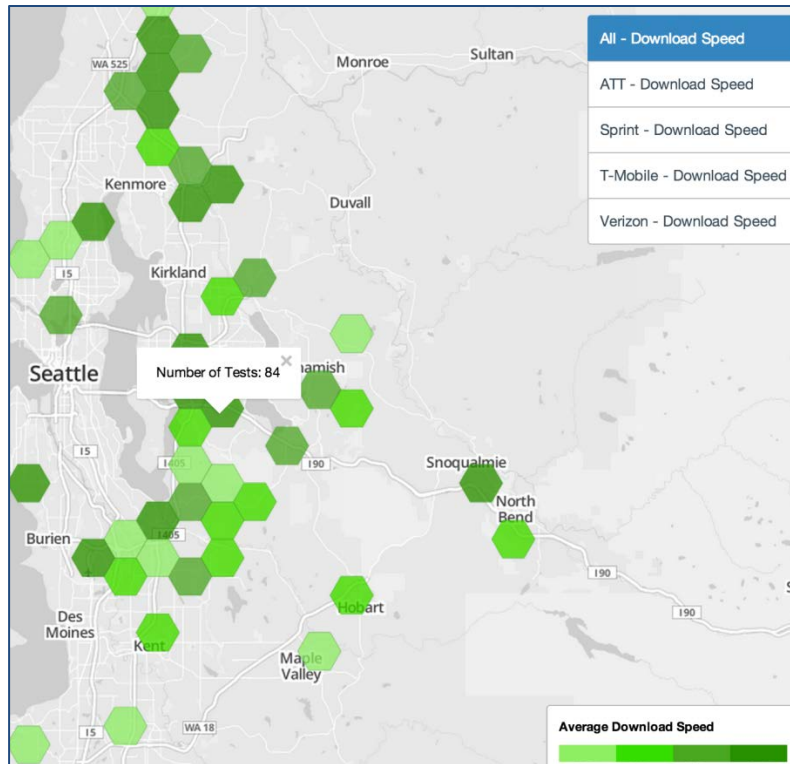


- **Visualizing the Mobile Landscape**

- Early 2014, FCC planned release of interactive tools and Open Datasets
 - Mobile broadband maps comparing local performance.
 - Comparisons by technology to inform decisions about handset upgrades.
 - Further tools and reports based on recommendations from consumers, public interest groups, and stakeholders.
 - Aggregated statistics and tables, and datasets vetted against FCC's privacy policies for mobile data



• Visualizing the Mobile Landscape





- **Program Goals**

- Create national database on mobile broadband performance and characteristics accessible without restriction by the public
- Protect privacy and maintain consumer confidence
- Advocate for standardized metrics and data formats
- Promote sharing of technologies and information with similar programs
- Open Methodologies, Open Data, Open Source and Collaboration



- **Opportunities for Collaboration**

- Use of shared datasets
- FCC App source code available
- Ability to support State data collections
- Leverage collaborative and privacy-centric best practices



Questions? Contact Us!

Walter.Johnston@FCC.Gov
202-418-0807
Chief EMCD/OET/FCC
James.Miller@FCC.Gov
202-418-7351
Senior Attorney Advisor
EMCD/OET/FCC