



FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 64

[CG Docket Nos. 13-24, 03-123, and 10-51; FCC 20-132; FRS 17392]

Captioned Telephone Services Quality Metrics

AGENCY: Federal Communications Commission.

ACTION: Proposed rule.

SUMMARY: In this document, the Federal Communications Commission (FCC or Commission) proposes to amend the mandatory minimum standards applicable to Internet Protocol Captioned Telephone Service (IP CTS) and Captioned Telephone Service (CTS) to include metrics for accuracy and caption delay and to define how testing and measurement of IP CTS and CTS provider performance should be conducted.

DATES: Comments are due [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]; reply comments are due [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may submit comments, identified by CG Docket Nos. 13-24, 03-123, and 10-51, by either of the following methods:

- **Electronic Filers:** Comments may be filed electronically using the internet by accessing the Commission's Electronic Filing System (ECFS): <https://www.fcc.gov/ecfs/filings>. Filers should follow the instructions provided on the website for submitting comments. For ECFS filers, in completing the transmittal screen, filers should include their full name, U.S. Postal service mailing address, and CG Docket Nos. 13-24, 03-123, and 10-51.
- **Paper Filers:** Parties who choose to file by paper must file an original and one copy of each filing. If more than one docket or rulemaking number appears in the caption of this proceeding, filers must submit two additional copies for each additional docket or rulemaking number. Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

For detailed instructions on submitting comments and additional information on the rulemaking process, see document FCC 20-132 at <https://docs.fcc.gov/public/attachments/FCC-20-132A1.pdf>.

FOR FURTHER INFORMATION CONTACT: William Wallace, Consumer and Governmental Affairs Bureau, FCC, at 202-418-2716, or William.Wallace@fcc.gov.

SUPPLEMENTARY INFORMATION: This is a summary of the Commission's Further Notice of Proposed Rulemaking (Further Notice), document FCC 20-132, adopted on September 30, 2020, released on October 2, 2020, in CG Docket Nos. 13-24, 03-123, and 10-51. The Report and Order and Order on Reconsideration in document FCC 20-132 was published at 85 FR 64971, October 14, 2020. The full text of this document is available for public inspection and copying via the Commission's Electronic Comment Filing System (ECFS). To request materials in accessible formats for people with disabilities (Braille, large print, electronic files, audio format), send an email to fcc504@fcc.gov or call the Consumer and Governmental Affairs Bureau at (202) 418-0530.

This proceeding shall be treated as a "permit-but-disclose" proceeding in accordance with the Commission's *ex parte* rules. 47 CFR 1.1200 *et seq.* Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter's written comments, memoranda or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with § 1.1206(b). In proceedings governed by § 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system

available for that proceeding, and must be filed in their native format (*e.g.*, .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules.

INITIAL PAPERWORK REDUCTION ACT OF 1995 ANALYSIS

The Further Notice in document FCC 20-132 seeks comment on proposed rule amendments that may result in modified information collection requirements. If the Commission adopts any modified information collection requirements, the Commission will publish another document in the **Federal Register** inviting the public to comment on the requirements, as required by the Paperwork Reduction Act. Pub. L. 104-13; 44 U.S.C. 3501-3520. In addition, pursuant to the Small Business Paperwork Relief Act of 2002, the Commission seeks comment on how it might further reduce the information collection burden for small business concerns with fewer than 25 employees. Pub. L. 107-198; 44 U.S.C. 3506(c)(4).

SYNOPSIS

1. The Commission seeks comment on proposed rules to enable the Commission to better evaluate the efficacy of the IP CTS and CTS programs and the performance of individual service providers. The Commission proposes to amend its rules to provide for robust, efficient, objective, and quantifiable measurement of the quality of service offered by each CTS and IP CTS provider and by the telephone caption service program as a whole. The Commission's objective is to adopt minimum performance standards that will allow it to evaluate progress toward achieving the Congressional objectives set forth in section 225 of the Communications Act of 1934, as amended (the Act). 47 U.S.C. 225.

2. IP CTS is a form of Telecommunications Relay Service (TRS) that permits an individual who can speak but who has difficulty hearing over the telephone to use a telephone and an Internet Protocol-enabled device via the internet to simultaneously listen to the other party and read captions of what the other party is saying. CTS is another form of telephone captioning, offered through state TRS programs, that functions similarly to IP CTS but without using the internet for the delivery of captions.

3. The Commission proposes to amend the minimum TRS standards applicable to CTS and IP CTS to provide quantifiable, measurable benchmarks for caption delay and accuracy. The Commission seeks comment on whether it should modify any other minimum TRS standards to provide more specific service-quality standards for CTS and IP CTS. The Commission also proposes to amend its

rules to define how testing and measurement should be conducted to gauge provider performance in relation to these standards and to measure progress by the telephone caption service program as a whole toward achieving the statutory goals in section 225 of the Act. In addition, the Commission seeks comment on whether such performance assessment is best carried out by the Commission, by individual providers, or by an entity selected and overseen by all providers. More generally, the Commission seeks comment on whether these proposals will advance the relevant statutory objectives in section 225 of the Act, or “performance goals”— technological currency and efficiency, and the overarching statutory goal of “functional equivalence.” What types of measurements are needed to ensure that service quality for telephone caption services is not only functionally equivalent but technologically current, and does not impede the development of improved technology?

4. The Commission invites commenters to propose performance-measurement alternatives that would advance the statutory goals and objectives, and the Commission seeks comment on the costs and benefits of its proposal and any alternatives. For example, would quantifiable, measurable benchmarks for caption delay and accuracy—or methods for measuring performance against such benchmarks—be more effectively and efficiently developed by a voluntary, consensus standards organization? If so, which standards-setting organization would be appropriate for developing such benchmarks and methods? What steps would be needed to ensure all stakeholders are able to participate effectively? How could a consensus process be managed so as not to unduly delay the establishment of service quality standards? Should the Commission adopt default standards in these areas, pending completion of consensus standards?

Adding CTS/IP CTS Metrics to TRS Minimum Standards

5. *Caption Delay.* The Commission proposes to adopt a minimum standard for caption delay and proposes the following definition:

Caption delay is the difference in time (in seconds) between when a word can be heard in the audio and when that word appears in the stream of captions on the caption user’s primary display.

The Commission seeks comment on how to specify more precisely what is meant by “when [a captioned word] appears” in the transcript or stream of captions. Should such “appearance” be defined as the *initial*

“appearance” of the word (*i.e.*, prior to any correction that may be provided subsequently) or its “final displayed appearance” (*i.e.*, so that the caption delay includes any time involved in providing a corrected version of the word)? Would measuring caption delay based on the initial appearance of a word provide an undesirable incentive for providers to prematurely deliver inaccurate captions? Conversely, would measuring caption delay based on the final displayed appearance provide an undesirable *disincentive* to correct mistakes in previously delivered captions?

6. Caption delay may vary over the course of a call. The Commission proposes that testing procedures should ensure that caption delay measurements for any service include measurements taken from various segments in the duration of captioned calls. The Commission seeks comment on the above proposals and their costs and benefits. Should caption delays during a single test call be averaged together, with each test call given a score, and the score for each test call given equal weight in the overall average? Or should caption delay be averaged on some other basis, *e.g.*, total delays divided by the total number of minutes tested? Should “seconds” be measured to the nearest tenth of a second or some other measure? Also, for IP CTS, what Internet speed(s) should be used to measure caption delay? Should delay be measured at more than one Internet speed?

7. The Commission seeks comment on setting the applicable metric, *i.e.*, the maximum average caption delay that should be allowed by the FCC’s minimum TRS standards. Testing of fully automatic telephone captioning indicates that such services are capable of delivering captions within one or two seconds, on average. How many seconds of delay should be considered the maximum acceptable delay for any form of captioning, in light of the capabilities of current technology, the expectations of caption consumers, and the impact of delay on a user’s ability to carry on a natural telephone conversation? Should the FCC’s minimum standards specify other limits on caption delay, in addition to the maximum average delay?

8. *Accuracy*. The Commission proposes to amend its rules to provide more specific standards and metrics for the accuracy of telephone captioning, including fully automatic IP CTS with captions created by an automatic speech recognition (ASR) program. The Commission proposes to combine accuracy with completeness in a single metric, “Word Error Rate,” which is likely to be easier to

administer. Word Error Rate is comprised of individual counts of words that are incorrectly inserted, deleted, or substituted in the captions delivered to the caller.

9. For purposes of measuring compliance with the standard, the Commission seeks comment on the following definition of Word Error Rate:

The Word Error Rate for a captioned telephone conversation is (i) the number of word substitutions, omissions, and insertions in the captions divided by (ii) the total number of words in the voice communications being captioned. Accuracy shall be assessed for a caption as delivered to the caption user's device within the minimum TRS standard for caption delay. A substitution error occurs when a spoken word is replaced with another word, an omission error involves the omission of a spoken word, and an insertion error consists of the addition of a word that has not been spoken.

10. The Commission seeks comment on this proposal and its costs and benefits. To implement this definition of Word Error Rate, should the Commission define what constitutes a "word"? For example, should interjected sounds such as "umm" and "ah" or garbled speech count as words? If a speaker uses a regional dialect or foreign phrase that has no standard English spelling, can there be an error in transcription? The Commission also seeks comment on whether to insert a qualifier in the above definition to limit the word errors that are counted to "major errors," which a group of IP CTS providers define as errors that significantly alter, obscure, or reverse the meaning of the original speech. Does this definition provide a consistent, repeatable determination of what constitutes a "major" error, and if not, can it be modified to do so? Would limiting counted errors to major errors produce materially different results in the overall assessment of CTS and IP CTS providers? More specifically, would any improvements from counting only major errors be sufficient to justify (1) the additional costs and burdens involved in classifying errors as major or minor and (2) the greater likelihood of disputes over which errors count as major errors?

11. Alternatively, if a distinction is needed between major and minor errors, should "minor errors" (*i.e.*, word substitutions (such as misspellings), deletions, or insertions that do not alter or obscure

the meaning of the original speech) still be counted but given less weight than major errors? For example, even though minor errors may not prevent a user from understanding the gist of a conversation, they still may be a distraction and force the CTS or IP CTS user to work harder to decipher the captions. Or should the standard the Commission adopts be based on a combination of two measurements, one that is limited to major errors and one that takes all errors—including substitutions, deletions, and insertions whether major or minor—into account?

12. Should readability (a concept that includes correct capitalization and punctuation) be included in the Word Error Rate standard, and if so, how should it be measured?

13. The Commission also seeks comment on the maximum Word Error Rate that should be specified for caption service in the FCC's minimum TRS standards, and how this standard should apply to variable call conditions. Should the Commission set the accuracy standard based on the expectations of users and the impact of inaccuracies on a user's ability to carry on a natural telephone conversation, and if so, how should these be determined? Alternatively, in order to set an initial standard as expeditiously as possible, should the Commission initially set the maximum permitted Word Error Rate based on the current performance of IP CTS providers, and subsequently reset the standard based on measures of user expectations and understanding? If a current-performance-based approach is initially used, should the maximum level be set based on the Word Error Rate achieved by the average provider, or at some other defined value on the spectrum of baseline accuracy measurements? Should a different standard be applied to calls with poor audio quality? How would such a determination be made?

14. *Speed of Answer.* Commission rules currently provide a metric for speed of answer, which is that 85 percent of all captioned telephone calls be answered within ten seconds of a user's initiation of contact with the captioning center and the start of captioning, measured daily. The rules currently require TRS providers themselves to measure speed of answer and to submit speed-of-answer data for every call in their monthly call detail reports.

15. The Commission seeks comment on whether to strengthen the applicable speed-of-answer standard for telephone captions. With fully automatic captioning, for example, an IP CTS provider can begin delivering captioning almost instantaneously upon receiving notice that a registered user is making a call for which captioning is desired. Would it be reasonable to require all providers to meet a standard

that approximates what is feasible with fully automatic captioning? For example, even though a provider may find it desirable, for other reasons, to continue using CAs for some or most calls, could fully automatic captioning be used as a stopgap measure for calls for which a CA is not immediately available?

16. *Other Standards.* The Commission tentatively concludes that no rule amendments are needed to quantify standards for transcription speed and usage data. The Commission seeks comment on this tentative conclusion. If the Commission adopts a caption delay standard, as proposed, should it also amend the rule on CA typing speed to make clear that it no longer applies to CTS and IP CTS?

17. The Commission seeks further comment on whether its minimum TRS standards should be modified to provide more specific and quantified performance standards for service outages and for dropped or disconnected calls. If the Commission adopts such standards, how should they be measured and what should be the minimum metric for compliance?

18. Should the Commission direct the Consumer and Governmental Affairs Bureau to conduct rulemakings or otherwise determine more granular metrics for caption delay, accuracy, or other TRS standards?

Testing and Measurement Methodologies

19. The Commission proposes that the methodologies used to assess provider performance shall produce objective, quantifiable, repeatable, and verifiable service quality measurements. The Commission also proposes that such methodologies be technologically neutral and not designed to favor any particular service provider. However, to the extent a provider's service is designed to work only with a particular device (such as a proprietary phone or a smartphone), the Commission proposes that the provider's service be tested when used with that device.

20. The Commission proposes the following additional guidelines for service quality testing:

- (1) Sample size (*i.e.*, the number of test calls) should be calculated to provide reliable and accurate information;
- (2) Test calls should mimic the proper use of the service (*e.g.*, both parties to a call should not be in the same room);
- (3) Test calls should follow the structure of a natural telephone conversation;

- (4) Test calls should not be detectable as “test calls” by CAs (*e.g.*, test calls should not start with a loud dual-tone multi-frequency tone followed by live conversation);
- (5) Testing should be designed to evaluate service performance over a range of telephone audio conditions (*e.g.*, static, distortion, inaudible or unintelligible conversation, and background noises), accents, and dialects that are likely to be encountered by CTS and IP CTS users.

The Commission seeks comment on these proposed guidelines. Do they appropriately balance the benefits of precision and fairness with the need for efficient methods of measurement? Should the Commission adopt these guidelines as recommended or mandatory? Should test calls include conversations in languages other than English? Are there additional guidelines the Commission should consider for testing the quality of service provided to IP CTS users with hearing loss and low vision or who are deafblind?

21. The Commission also seeks comment on the specifics of how tests and measurements for caption delay and accuracy should be conducted, and how the Commission can best ensure that such methods and procedures are transparent. Should the Commission specify the sample size and frequency of such testing, and if so, how? To what extent can document scoring, technical parameters, recording conditions, or other parameters affect test values, and what guidance should the FCC’s rules provide regarding these matters? Should the Commission direct the Consumer and Governmental Affairs Bureau to conduct rulemakings or otherwise make more granular determinations on how to conduct performance testing and measurement in relation to caption delay, accuracy, or other TRS standards? Alternatively, should test methods be subject to a peer review process?

22. The Commission also seeks comment on what specific consequences should result if testing shows that a provider is failing to meet the minimum standard for caption delay or accuracy. If test results conducted in accordance with applicable methodological guidelines indicate that a provider is not meeting the Commission’s minimum standard for caption delay or accuracy, should the service be retested on a weekly basis, with compensation withheld until such time as testing shows the problem with caption delay or accuracy has been fixed? Alternatively, should the provider be given some period of

time to rectify the problem, with withholding to begin if the problem cannot be rectified within that time period? Should the Commission formalize a compliance ladder approach, similar to the one used for closed captioning quality problems, which would be triggered whenever testing shows that a provider did not meet an applicable service quality standard?

Responsibilities for Measuring Service Quality

23. The Commission tentatively concludes that to obtain authoritative assessments of IP CTS providers' performance in relation to caption delay and caption accuracy, it would not be practicable to rely on provider self-measurement and reporting (*e.g.*, as in speed-of-answer compliance). Measurement of provider performance in these areas raises more complicated methodological issues than those involved in speed-of-answer reporting, such that effective oversight of the testing undertaken by individual providers would impose undue administrative burdens on both providers and the Commission. The Commission seeks comment on this tentative conclusion.

24. The Commission also seeks comment on whether authoritative testing and measurement of caption delay and accuracy would be most effectively and reliably performed by the Commission or by an entity selected and supervised by the providers themselves, through some type of joint undertaking. Could a provider-sponsored entity conduct such assessments in a manner that is objective and unbiased? How should the Commission ensure that such an entity remains unbiased and independent of improper influence by any TRS provider or group of providers?

25. The Commission seeks comment on whether an entity designated to conduct performance testing should be authorized to conduct testing and measurement in additional areas other than caption delay and accuracy. To ensure that any entity designated to conduct performance testing has the ability to conduct sufficient testing and collect sufficient data to develop reliable performance assessments, should the Commission require that IP CTS providers submit user devices, software, and other material or information needed for testing, as well as provider-generated testing protocols and results, to such an entity upon reasonable request?

26. The Commission proposes that the results of testing and measurement of CTS and IP CTS providers' performance, both in the aggregate and for individual providers, be made available to the public on a regular basis, in reports on the Commission's website. The Commission seeks comment on

this proposal and the frequency of such reports. In addition, the Commission seeks comment on the specificity of the results to be posted. Should the results only indicate whether each individual provider met the tested or measured minimum standard? Should the performance results for service quality standards other than caption delay and accuracy be reported? Should the performance results be reported in a way that allows consumers to compare providers' results? Should the reports include a rank or score for the provider's performance results? The Commission also seeks comment on whether to test and measure performance of publicly available captioning services for voice calls offered by entities that do not provide CTS or IP CTS and make such results available to the public in the CTS and IP CTS performance reports.

27. The Commission seeks comment on whether to mandate a system or procedure for CTS and IP CTS users to rate the quality and performance of captioning services, on a call-by-call or other appropriate basis, with publication of average ratings for each provider, and how such a system or procedure can be most effectively implemented and overseen. Would a five-star rating system provide sufficient granularity for meaningful user ratings of IP CTS providers? Should the rating system have more specific quality or usability ratings, such as on a scale of one to ten? For those users who choose to rate their TRS calls, should the Commission allow them the choice to identify themselves or should the ratings be strictly anonymous?

28. If testing of providers is conducted by a third party, how should the Commission ensure that providers (and their ASR technologies) respond to test calls as they would to any call, *i.e.*, how should the Commission ensure that tests are conducted so that the provider does not know its service is being tested? Should the Commission require that scripts used to conduct test calls not be given or identified to TRS providers or applicants prior to the execution of the tests? Should the Commission amend its rules to authorize the completion of test calls by registered CTS and IP CTS users via connections to providers' platforms, without disclosure to providers of the nature of the call, and with payment of TRS Fund compensation for such calls in the same manner as any TRS call? The Commission seeks comment on whether waivers of Commission rules are necessary and appropriate for this purpose, and more generally whether any rule provisions need to be waived to allow for effective testing and measurement of CTS and IP CTS.

29. The Commission seeks comment on the above proposals and their costs and benefits, and the beliefs and assumptions stated above.

Initial Regulatory Flexibility Act Analysis

30. As required by the Regulatory Flexibility Act of 1980, as amended, the Commission has prepared this Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on a substantial number of small entities by the policies and rules proposed in the Further Notice. Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadline for comments on the Further Notice specified in the **DATES** section. The Commission sent a copy of document FCC 20-132 to the Chief Counsel for Advocacy of the Small Business Administration (SBA).

Need for, and Objectives of the Proposed Rules

31. In the Further Notice, the Commission proposes to amend its rules to provide for robust, efficient, objective, and quantifiable measurement of the quality of service offered by CTS and IP CTS providers. This measurement program will enable the Commission to better evaluate the efficacy of the IP CTS and CTS programs and the performance of individual service providers in relation to the statutory goals of functional equivalence, technological currency, and efficiency.

Legal Basis

32. The authority for this proposed rulemaking is contained in sections 1, 2, and 225 of the Communications Act of 1934, as amended.

Small Entities Impacted

33. The rules proposed in document FCC 20-132 will affect the obligations of CTS and IP CTS providers. These services can be included within the broad economic category of All Other Telecommunications.

Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements

34. All CTS and IP CTS providers would be required to meet or exceed any quantitative performance standards adopted by the Commission for caption delay, accuracy, or other aspects of provider performance. Because the Commission tentatively concludes that provider self-measurement and reporting is not a practicable approach to assessing caption delay and accuracy, no specific reporting

or recordkeeping requirements are proposed. However, the Commission asks whether providers should be required to submit user devices, software, and other material or information needed for testing, as well as provider-generated testing protocols and results, upon request, if the Commission authorizes a third-party entity to conduct the testing and measurement. Such requirements, if adopted, may involve some additional recordkeeping and reporting.

Steps Taken to Minimize Significant Impact on Small Entities, and Significant Alternatives Considered

35. Only CTS and IP CTS providers certified to receive compensation from the TRS Fund would be subject to the testing and measurement requirements, if the rules are adopted. The Commission's proposals limit unnecessary regulation of small entities by focusing on assessment of caption delay and caption accuracy—the two metrics that interested parties generally designate as most important to captioning service quality. Opting some providers out of the program or limiting the extent of testing for some providers is not proposed because it would prevent the availability of comprehensive performance information to the Commission and consumers.

36. The Further Notice seeks comment from all interested parties. Small entities are encouraged to bring to the Commission's attention any specific concerns they may have with the proposals outlined in the Further Notice. The Commission expects to consider the economic impact on small entities, as identified in comments filed in response to the Further Notice, in reaching its final conclusions and taking action in this proceeding.

Federal Rules that Duplicate, Overlap, or Conflict with the Proposed Rules

37. None.

List of Subjects in 47 CFR Part 64

Individuals with disabilities, Telecommunications, Telephones.

Federal Communications Commission.

Marlene Dortch,
Secretary, Office of the Secretary.

Proposed Rules

For the reasons discussed in the preamble, the Federal Communications Commission proposes to amend Title 47 of the Code of Federal Regulations as follows:

Part 64 - MISCELLANEOUS RULES RELATING TO COMMON CARRIERS

1. The authority citation for part 64 continues to read as follows:

Authority: 47 U.S.C. 151, 152, 154, 201, 202, 217, 218, 220, 222, 225, 226, 227, 227b, 228, 251(a), 251(e), 254(k), 262, 276, 403(b)(2)(B), (c), 616, 620, 1401-1473, unless otherwise noted; Pub. L. 115-141, Div. P, sec. 503, 132 Stat. 348, 1091.

2. Amend § 64.604 by adding paragraph (a)(4) to read as follows:

§ 64.604 Mandatory minimum standards.

* * * * *

(a) * * *

(4) *Additional operational standards for captioned telephone service and IP CTS.* Providers of captioned telephone service and IP CTS shall meet or exceed service quality standards for caption delay and accuracy.

(i) *Caption delay.* Caption delay is the difference in time (in seconds) between when a word can be heard in the audio and when that word appears in the stream of captions on the caption user's primary display. Average caption delay shall be no greater than [X.X] seconds.

(ii) *Caption accuracy.* The accuracy of a captioned telephone conversation shall be measured as the Word Error Rate, with a lower Word Error Rate indicating a higher degree of accuracy. The Word Error Rate for a captioned telephone conversation is:

(A) The number of word substitutions, omissions, and insertions in the captions divided by;

(B) The total number of words in the voice communications being captioned. Accuracy shall be assessed for a caption as delivered to the caption user's device within the minimum TRS standard for caption delay. A substitution error occurs when a spoken word is replaced with another word, an omission error involves the omission of a spoken word, and an insertion error consists of the addition of a word that has not been spoken. The average Word Error Rate shall be no more than [XX.X%].

(iii) *Testing methodologies and procedures for caption delay and accuracy.* (A) Sample size should be calculated to provide reliable and statistically significant information.

(B) Test calls should mimic the proper use of the service.

(C) Test calls should follow the structure of a natural telephone conversation.

(D) Test calls should not be detectable as “test calls” by CAs.

(E) Testing should be designed to evaluate service performance over a range of telephone audio conditions, accents, and dialects that are likely to be encountered by CTS and IP CTS users.

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[FR Doc. 2021-01191 Filed: 1/29/2021 8:45 am; Publication Date: 2/1/2021]