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**6712-01**

**FEDERAL COMMUNICATIONS COMMISSION**

**47 CFR Parts 6, 7, 14, 20, 64, and 67**

**[CG Docket No. 16-145 and GN Docket No. 15-178; FCC 16-169]**

**Transition from TTY to Real-Time Text Technology**

**AGENCY:** Federal Communications Commission.

**ACTION:** Final rule.

**SUMMARY:** In this document, the Commission adopts amendments to its rules to facilitate a transition from outdated text telephone (TTY) technology to a reliable and interoperable means of providing real-time text (RTT) communication for people who are deaf, hard of hearing, deaf-blind, or have a speech disability over Internet Protocol (IP) enabled networks and services.

**DATES:** Document FCC 16-169 will become effective **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. The incorporation by reference of certain publications listed in the rules is approved by the Director of the Federal Register as of **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

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**SUPPLEMENTARY INFORMATION:** This is a summary of the Commission's [Transition from TTY to Real-Time Text Technology; Petition for Rulemaking to Update the Commission's Rules for Access to Support the Transition from TTY to Real-Time Text Technology, and Petition for Waiver of Rules Requiring Support of TTY Technology, Report and Order, document](#)

FCC 16-169, adopted on December 15, 2016 and released on December 16, 2016, in CG Docket No. 16-145, GN Docket No. 15-178. The Further Notice of Proposed Rulemaking, FCC 16-169, adopted on December 15, 2016 and released on December 16, 2016, is published elsewhere in this issue. The full text of document FCC 16-169 will be available for public inspection and copying via ECFS, and during regular business hours at the FCC Reference Information Center, Portals II, 445 12th Street, SW, Room CY-A257, Washington, DC 20554. To request materials in accessible formats for people with disabilities (Braille, large print, electronic files, audio format), send an email to [fcc504@fcc.gov](mailto:fcc504@fcc.gov) or call the Consumer and Governmental Affairs Bureau at (202) 418-0530 (voice), (844) 432-2272 (videophone), or (202) 418-0432 (TTY).

**INCORPORATION BY REFERENCE:** The Office of Federal Register (OFR) recently revised its regulations to require that agencies must discuss in the preamble of a final rule ways that the materials the agency is incorporating by reference are reasonably available to interested parties or how it worked to make those materials reasonably available to interested parties. In addition, the preamble of the final rule must summarize the material. The Internet Engineering Task Force (IETF) Request for Comments (RFC) 4103, Real-time Transport Protocol Payload for Text Conversation, June 2005, Gunnar Hellstrom & Paul E. Jones, provides technical specifications for carrying real-time text conversation session contents in RTP packets on Internet Protocol-based communications networks. This document is available for download at the Internet Engineering Task Force website at <http://ietf.org> or directly at <https://www.ietf.org/rfc/rfc4103.txt>, and is available for inspection at the Federal Communications Commission, 445 12th St., S.W., Reference Information Center, Room CY-A257, Washington, DC 20554, (202) 418-0270. It is also available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030 or go to [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

## **CONGRESSIONAL REVIEW ACT**

The Commission will send a copy of document FCC 16-169 to Congress and the Government Accountability Office pursuant to the Congressional Review Act, see 5 U.S.C. 801(a)(1)(A).

### **FINAL PAPERWORK REDUCTION ACT OF 1995 ANALYSIS**

Paragraphs 42 and 43 of document FCC 16-169 contain new information collection requirements, which are not applicable until approved by the Office of Management and Budget (OMB). The Commission, as part of its continuing effort to reduce paperwork burdens, will invite the general public to comment on these information collection requirements as required by the Paperwork Reduction Act (PRA) of 1995, Pub. L. 104–13. The Commission will publish a separate document in the Federal Register announcing approval of the information collection requirements contained in document FCC 16-169. In addition, the Commission notes that, pursuant to the Small Business Paperwork Relief Act of 2002, Pub. L. 107-198, 44 U.S.C. 3506(c)(4), the Commission previously sought comment on how the Commission might “further reduce the information burden for small business concerns with fewer than 25 employees.” Transition from TTY to Real-Time Text Technology; Petition for Rulemaking to Update the Commission’s Rules for Access to Support the Transition from TTY to Real-Time Text Technology, and Petition for Waiver of Rules Requiring Support of TTY Technology, Notice of Proposed Rulemaking, published at 81 FR 33170, May 25, 2016 (NPRM).

### **SYNOPSIS**

1. In document FCC 16-169, the Commission amends its rules to facilitate a transition from text telephone (TTY) technology to real-time text (RTT) as a reliable and interoperable universal text solution over wireless Internet protocol (IP) enabled networks for people who are deaf, hard of hearing, deaf-blind, or have a speech disability (collectively, “people with disabilities” or “text-reliant users”). The instant proceeding responds to a petition filed by AT&T in June 2015, requesting the Commission to update its accessibility rules to allow RTT to replace TTY technology over IP-based networks. On April 28, 2016, the Commission adopted an NPRM proposing to amend its rules to facilitate an effective and seamless transition from TTY

technology to RTT over wireless IP-based networks and services. In response, 25 parties filed comments and 13 filed reply comments.

### RTT is an Effective and Efficient Replacement for TTY Technology

2. There is consensus among the commenters that, in light of its technical and functional limitations, TTY technology needs to be replaced with an alternative text technology for IP-based networks. The Commission adopts its tentative conclusion that RTT is an effective alternative to TTY technology for the IP environment. RTT is a native IP technology designed for the packet-switched network environment that allows users to make RTT calls using the built-in functionality of numerous off-the-shelf devices. Commenters confirm that RTT features, including its full duplex operation, seamless integration of voice and text, international character set, and speed, will greatly improve the availability, efficiency and reliability of text-based communications sent over IP-based networks. In addition, RTT has the potential to enhance the ability of telecommunications relay services (TRS) to provide functionally equivalent telephone service, while at the same time reducing reliance on some forms of TRS. Finally, all of the major and several smaller wireless service providers already have committed to deploying this technology.

3. RTT is a superior accessibility technology to messaging-type text communication services because it provides a more natural and efficient way to meet the communication needs of consumers with disabilities, especially in the event of an emergency, when the need for effective and timely communication with a 911 center is at a premium. Because RTT allows instant transmissions and the improved delivery of messages, it is the text alternative that is the most functionally equivalent to voice communication. Specifically, RTT messages are immediately conveyed to and received by the recipient as the message is composed, as compared to all other text-based messaging services, which require parties to press a key to transmit the message. This enables the user to see what the other person is typing and begin developing a response before the entire message has been conveyed, similar to voice conversations. This capability also lets a user

know that the other party is indeed responding to the message, which allows for a more direct exchange of information and avoids confusion, crossed answers, and errors. The transition to RTT is also expected to help facilitate the transition to Next Generation 911 (NG911) – which will allow the transmission of voice, text and video to public safety answering points (PSAPs) – because broadly supported NG911 standards, such as i3, specify support standards for RTT communications. Further, RTT has built-in redundancy and the capacity to detect when information is lost, provides a more conversational flow, and avoids the out-of-sequence and delay pitfalls of short message service (SMS) text messaging.

#### Permitting RTT Support in Lieu of TTY Support over IP-Based Wireless Voice Services and Devices

4. The Commission adopts rules permitting IP-based wireless providers and manufacturers (covered entities) to support RTT in lieu of supporting TTY technology. These rule changes cover only those entities that are involved in the provision of IP-based wireless voice communication service, and only to the extent that their services are subject to existing TTY technology support requirements under parts 6, 7, 14, 20, or 64 of the Commission’s rules. Given the relative novelty of RTT, it is not appropriate for these rules to apply to entities who were not already subject to an equivalent obligation to support TTY technology.

5. The Commission concludes that it would be premature at this time to address application of RTT to the wireline environment. However, given RTT’s superiority to TTY technology, the Commission will keep this docket open to receive further input and conduct continued exploration on the appropriateness of using this technology as an alternative to TTY technology to achieve a universal, integrated text solution for voice service accessibility on wireline IP-based voice services and end user devices.

#### Wireless Service Support for RTT

6. To establish an effective and timely transition to RTT, the Commission amends parts 6, 7, 14, 20, and 64 of its rules to permit wireless service providers offering IP-based voice

communications, in lieu of supporting TTY technology:

- To support 911 access, pursuant to § 20.18 of the Commission’s rules, through RTT communications;
- To support RTT over telecommunications services and interconnected voice-over-IP (VoIP) services covered by parts 6 and 7 of the Commission’s rules, if readily achievable;
- To support RTT over interconnected VoIP services covered by part 14 of the Commission’s rules, unless not achievable;
- To support TRS access, pursuant to § 64.603 of the Commission’s rules, through RTT communications, including 711 abbreviated dialing access.

For purposes of this transition, “to support” is defined in a new part 67 of the Commission’s rules as “to enable users to initiate, send, transmit, receive, and display RTT communications in accordance with the applicable provisions of this part.”

7. The Commission finds that it has sufficient legal authority to amend the above rule parts to allow support for RTT in lieu of TTY technology. The Commission affirms that its RTT amendments to § 20.18(c) are within the Commission’s general Title III authority to regulate wireless service providers. Section 106 of the Twenty-First Century Communications and Video Accessibility Act of 2010, Pub. L. 111-260 (CVAA), 47 U.S.C. 615c(g), section 251 of the Communications Act (the Act), 47 U.S.C. 251(e)(3), the Wireless Communications and Public Safety Act of 1999, 47 U.S.C. 615-615(b), and the NET 911 Improvement Act of 2008, 47 U.S.C. 615a-1, further support the Commission’s adoption of RTT as a superior solution for enabling text-reliant users to access 911.

8. The Commission next affirms that it is within the Commission’s authority under sections 255 and 716 of the Communications Act (the Act) to amend parts 6, 7, and 14 of the Commission’s rules to permit wireless telecommunications and interconnected VoIP service

providers to support RTT in lieu of supporting TTY technology. Given the limitations of TTY technology in an IP environment, this action is necessary to fulfill the intent of the CVAA to “update the communications laws to help ensure that individuals with disabilities are able to fully utilize communications services and equipment” as these continue to undergo a “fundamental transformation.”

9. Finally, the Commission concludes that the Commission has sufficient authority under section 225 of the Act, 47 U.S.C. 225, to amend its TRS rules to permit common carriers and interconnected VoIP service providers to support the transmission of RTT calls to and from TRS providers, including 711 abbreviated dialing. Section 225 of the Act directs the Commission to ensure that TRS is available “in the most efficient manner” and to “ensure that regulations prescribed to implement this section encourage . . . the use of existing technology and do not discourage or impair the development of improved technology.”

#### End User Device Support for RTT

10. The Commission amends § 20.18 of its rules to allow new IP-enabled wireless devices used for voice communications that have the capability to send, receive, and display text activated for wireless voice services transmitted over IP facilities (hereinafter, text-capable) to support RTT in lieu of TTY communications. In addition, the Commission amends parts 6, 7, and 14 to provide manufacturers of end user equipment for use with wireless interconnected VoIP services with the option of supporting RTT communications in lieu of TTY technology “if readily achievable” or “unless not achievable,” as applicable. The Commission concludes that the same statutory provisions that provide the Commission with authority to allow RTT support in lieu of TTY support requirements for wireless services also provide authority to allow support for RTT on end user devices in lieu of support for TTYs.

11. The Commission does not require service providers and manufacturers to add RTT capability by recalling or retrofitting end user devices already in service or manufactured prior to the applicable compliance dates. At the same time, the Commission encourages covered entities

to “push out” downloadable RTT applications to existing text-capable user devices, to the extent practicable, to help consumers who use IP-based voice services make the transition to RTT technology without necessarily incurring the cost of a new device.

#### Regulatory Relief

12. Covered entities that support RTT in compliance with the Commission’s rules will be relieved of their TTY support requirements on all wireless networks and equipment, including services and devices used for legacy (non-IP) facilities, as of the applicable compliance dates. Given the declining use of TTYs, especially with wireless services, elimination of the TTY support obligation on wireless services is not expected to impose a hardship for text-reliant consumers. Additionally, given the progress being made to move ahead with the swift deployment of RTT, the Commission believes that allowing RTT to replace TTY technology on all IP-based wireless services will allow companies to devote greater time and resources to the effective deployment of RTT, instead of continuing to invest in outdated TTY technology.

#### Performance Objectives

13. The Act defines an electronic messaging service as “a service that provides real-time or near real-time non-voice messages in text form between individuals over communications networks.” Because RTT is similar to other examples of two-way interactive electronic messaging services cited in the legislative history of the CVAA – such as text messaging, instant messaging, and electronic mail – the Commission concludes that RTT is an electronic messaging service for purposes of section 716 of the Act. Thus, services and equipment used for RTT must comply more generally with the performance objectives contained in part 14 of the Commission’s rules unless these are not achievable.

#### Minimum Functionalities of RTT

14. The Commission believes that in order to meet the objectives of sections 225, 255, and 716 of the Act, communications services and equipment that support RTT should be as accessible, usable, and effective for people with disabilities as voice-based services over IP-

networks. To achieve this goal, the Commission concludes that RTT communications must be interoperable, backward compatible with TTY technology, and capable of supporting certain basic features and capabilities that are routinely available to users of wireless voice services.

#### Interoperability

15. The Commission concludes that effective RTT communications can only be achieved if the communications transmissions carried across, and the devices used with, various RTT-supporting platforms and networks are interoperable with one another. Absent interoperability, consumers, TRS call centers, and PSAPs would be burdened with having to support multiple versions of RTT. The record supports the use of a safe harbor technical standard to achieve interoperability while preserving technological neutrality and flexibility for the covered entities. This approach provides industry the flexibility to have individual internal RTT standards, so long as they can support the minimum functions and capabilities defined by the Commission's rules and can interoperate in a format specified in the common standard (or a mutually agreed alternative) where they connect with other providers' systems and transport technologies.

16. The Commission adopts RFC 4103, a non-proprietary, freely available standard that has been widely referenced by leading standards organizations and has been designated for RTT implementation by numerous domestic and foreign carriers as well as emergency communications groups, as the appropriate safe harbor standard for compliance with RTT interoperability requirements and certain performance objectives. Accordingly, any service or device that enables the initiation, transmission, reception, and display of RTT communications in conformity with RFC 4103 will meet the RTT interoperability requirement. Because RFC 4103 is subject to modification, service providers may use subsequent versions of RFC 4103 or a successor protocol, by mutual agreement.

#### Backward Compatibility with TTY Technology

17. To ensure that TTY-reliant consumers continue to have a method of communicating during the transition to RTT technology, the Commission requires wireless service providers to

ensure that their RTT technology is backward compatible with TTY technology. A migration to RTT without backward compatibility to TTY technology could leave certain people who are still reliant on TTYs without communication options, including persons who cannot afford high speed access, people in rural areas for whom IP service is not available, and senior citizens who might be reluctant to try new technology. Further, because many PSAPs are still reliant on TTY technology to receive calls from people with disabilities and it may be a while before they migrate to RTT, enabling RTT users to reach 911 emergency services during the transition period is particularly compelling.

18. No parties suggest that the costs of carrying out a backward compatibility requirement would be burdensome, and the record generally supports the feasibility of implementing this requirement through, for example, the use of gateways and RFC 4103. Some commenters recommend limiting backward compatibility to 911 and 711 (TRS) calls, to ensure that congestion does not prevent RTT calls from getting through to these essential services. However, these concerns can be avoided by letting transcoding of such calls be performed by 911 service providers or TRS providers, and ongoing testing should allow service providers to identify and find TTY-RTT and RTT-TTY solutions to the extent that technical issues arise.

19. Commenters point out that incompatibilities between RTT and TTY technologies, namely differences in transmission speed, character sets, and other features, may impact user experience, particularly if the RTT user is unfamiliar with TTY protocols and etiquette. With the exception of providing guidance on transliterations between characters, discussed below, the Commission does not address specific solutions to resolve RTT-TTY incompatibility issues, but instead allows service providers and other stakeholders the flexibility to develop their own technical solutions to resolve inconsistencies between the two technologies. The Commission stresses that public outreach and consumer education about the transition will play an important role in minimizing any adverse effects that RTT-TTY incompatibilities might have on users.

20. The Commission will allow use of ITU-T Recommendation V.18, which contains a table

showing transliterations from the most commonly used characters in the United States to TTY characters, to serve as a safe harbor for transliterating RTT to TTY characters. While the Commission concludes that this approach may provide one effective means of transliterating characters between the two technologies, the Commission also will permit covered entities to choose their own transliteration approach, so long as it can effectively convey the meaning of characters sent to the receiving party. The Commission further encourages use of a standard missing-symbol signal, as well as consumer outreach and education, to help minimize inconsistencies that users may experience as a result of differences between the two character sets.

21. Given the uncertainty as to how soon RTT will be universally available and familiar to users of wireline and wireless services, the Commission concludes that it is premature at this time to set a date by which the TTY backward compatibility obligation should expire.

#### Support for 911 Communications

22. Commercial mobile radio service (CMRS) providers transmitting over an IP network that choose to enable the transmission and receipt of communications via RTT – in lieu of TTY technology – to and from any PSAP served by their network, must do so in a manner that fully complies with all applicable 911 rules. Support for RTT in lieu of TTY technology is especially beneficial in emergency situations, and the record shows that the use of RTT for emergency communications is technically and economically feasible in the IP environment. There are a variety of existing options for configuring PSAP systems to receive RTT calls, and many PSAPs have installed or will soon install capabilities that will permit them to accept and effectively process RTT calls. Accordingly, to the extent RTT is the accessibility method chosen, RTT must be delivered without RTT-TTY conversion to PSAPs that are able to receive RTT after the dates specified for compliance by CMRS providers in document FCC 16-169.

23. The Commission amends its rules to require that once a PSAP is capable of receiving RTT communications, a service provider receiving a service request must begin delivering RTT

communications in an RTT format within six months after such request is made – to the extent the provider has selected RTT as its accessible text communication method. The Commission does not dictate the manner in which RTT-RTT communications must be transmitted to PSAPs, so long as they are otherwise in compliance with the rules adopted in document FCC 16-169. In the event that there are compelling reasons why it would not be feasible for a wireless service provider to transport RTT communications to the PSAP, the service provider may apply for a waiver from this requirement.

24. Many commenters agree that transcoding gateways offer an effective, feasible, and available means to allow TTY users to reach RTT-enabled PSAPs and RTT users to reach legacy PSAPs. T-Mobile, however, claims that this obligation would shift certain burdens now borne by PSAPs onto wireless carriers. Because the components of 911 call delivery referenced by T-Mobile are all basic 911 elements that carriers have been required to provide when transmitting calls from TTYs under § 20.18 of the Commission’s rules, the Commission does not believe that requiring the delivery of RTT 911 calls to PSAPs with the elements required by § 20.18 of the rules would involve any burden shifting. T-Mobile also claims that wireless carriers should not be held responsible for RTT-to-TTY conversion of 911 calls, but providers of 911 services commenting in this proceeding affirm the feasibility of accepting RTT calls. Given this record and the lack of a basis to conclude otherwise, the Commission rejects T-Mobile’s argument.

25. The Commission encourages carriers and state and local governments to conduct testing of RTT and training of 911 call-takers in consultation with consumers, prior to RTT deployment, and to share the results with other jurisdictions.

26. Under the Commission’s rules, wireless CMRS providers supporting TTY calling to 911 must ensure that location information is provided in accordance with the applicable requirements of § 20.18. Given the importance of this feature, RTT 911 calls should be subject to the same location information requirements as TTY 911 calls, and the Commission amends its rules accordingly. However, given concerns raised about the feasibility of achieving compliance with

this requirement via RTT provided through a downloadable application, the Commission will entertain requests for waivers from this requirement that allege that this is not technically feasible.

27. Regarding non-service initialized (NSI) devices, because the Commission has an open proceeding to sunset or revise rules for 911 calling from such devices, the Commission defers consideration of the use of NSI devices for RTT calling to 911 to that proceeding.

#### Core RTT Features

28. The following RTT features are needed to take the place of TTY technology and provide an effective communication alternative to voice communications. Two of these – initiating and receiving calls via the same ten-digit numbers used for voice calls and simultaneous voice and text – will be required for entities seeking to support RTT in lieu of TTY technology.

29. Initiating and Receiving Calls Using RTT. The Commission adopts its proposal that for wireless service providers and manufacturers to meet their accessibility obligations by supporting RTT, their networks and devices must be configured so that RTT communications can be initiated to and received from the same telephone number that can be used to initiate and receive voice communications on a given terminal device. The ability to initiate RTT communications through ten-digit telephone numbers will encourage and promote seamless integration of RTT and enabling access to ten-digit numbers is necessary to reach and be reached by any other person with a phone number and to ensure that RTT users can access 911 services. No commenters question the feasibility of providing this feature, or suggest that it would be overly burdensome.

30. Accessible Indicators. The Commission agrees with some commenters that without an accessible indicator that a call is being received, text-reliant users will not have communications equivalent to voice service, which produces an audio ring or other sounds to alert people who can hear. Given the importance of this feature for individuals who cannot hear and individuals who can neither hear nor see, the Commission recommends that device manufacturers and service providers incorporate accessible indicators in their RTT implementation to alert users to the

receipt of, and audio activity on, an RTT call.

31. Simultaneous voice and text. The Commission adopts its proposal that users of RTT must be able to send and receive both text and voice simultaneously in both directions over IP on the same call session and via a single device. Providing the ability to send and receive simultaneous voice and text is feasible, is supported by RFC 4103, and is an essential feature of RTT. Simultaneous voice and text also can allow for more robust exchanges between RTT users and PSAPs. Further, it can be particularly beneficial to people for whom speech is their primary mode of communication, but who find it necessary to augment speech with text, such as older adults who have progressive hearing loss, many of whom currently rely on relay services to make telephone calls. Finally, this feature can prove to be life-saving in emergencies, when a person in distress may want to type out an emergency's exact location to a 911 call taker to ensure accuracy, or when a person is no longer able to speak. Because TTY users currently have the ability to use both voice and text in the same call session, requiring this for RTT implementation will ensure that people with disabilities do not lose access to services they have had, should their providers opt to support RTT in lieu of TTY technology. Accordingly, an essential element of RTT support for entities choosing to support RTT over TTY technology will be the ability of users to have simultaneous voice and text capability on the same call session as of the compliance deadlines for CMRS providers opting to provide RTT support for all new authorized user devices activated on their networks.

32. Latency and Error Rate of Text Transmittal. The Commission believes that ensuring a latency and error rate that is functionally equivalent to the real-time nature of voice telephone communications is important to making real-time text effective for text-reliant users. It is the Commission's understanding that this component is addressed through the safe harbor standard RFC 4103, which sets a maximum typing-to-transmission latency. The Commission recommends that industry and consumer stakeholders work together to determine appropriate latency and error rate parameters. The Commission believes that this approach will provide much needed

flexibility for industry, while minimizing delays and errors that could impede effective communication for people with disabilities.

33. Device Functionality. A significant advantage to RTT is that it will allow text-reliant users to select off-the-shelf IP-based wireless devices offered to the public for their telephone communications.

34. The extent to which RTT is successful as a replacement for TTY and as an alternative to voice communications, however, will turn in large part on its ease of use by not only text-reliant users, but also members of the public with whom they are likely to converse. For this reason various commenters have urged inclusion of RTT as a pre-installed feature of end-user devices that is enabled by a default function. The Commission is concerned that some of the advantages of RTT as a universal text solution might not be realized if RTT is not enabled by default. The Commission strongly encourages covered entities seeking to meet their accessibility obligations by supporting RTT in lieu of TTY technology to take measures that facilitate, rather than discourage RTT use. While the Commission does not impose mandates for RTT to be pre-installed or accessed through a default function at this time, the Commission notes that the success of RTT's deployment and use may turn on its ease of use, and that its swift adoption is likely to expedite the date for phasing out requirements for TTY support, including the requirement for RTT to be backward compatible with TTYs. The Commission encourages collaboration among industry and consumer stakeholders to reach agreement on the appropriate features and technical aspects of RTT implementation.

35. Calling Features. In the NPRM, the Commission tentatively concluded that certain calling features that are commonly available to voice telephone users are necessary to ensure that RTT is as accessible, usable, and effective for people with disabilities as wireless voice communications service is for people without disabilities, including the ability to transfer calls, enable multi-party teleconferencing, and utilize automated attendant, interactive voice response systems, and caller identification features. Given that the deployment of RTT is still in its

infancy in the U.S., rather than mandate specific calling features or capabilities, the Commission notes more generally the overarching goal of enabling RTT to serve as a universally integrated accessibility solution that is functionally equivalent to voice communications. Consideration of the above calling features may be relevant as wireless voice communications service providers and equipment manufacturers work to identify and eliminate barriers to accessibility and usability during the design and development phases of their RTT products and services. The Commission also reminds companies that parts 6 and 7 of the rules require inclusion of people with disabilities in market research, product design, testing, pilot demonstrations, and product trials. These rules also require covered entities to work cooperatively with disability-related organizations, and to keep records of their efforts to implement parts 6, 7, and 14, including information about their efforts to consult with people with disabilities regarding RTT accessibility features.

#### Timeline for RTT Implementation by Service Providers

36. At present all Commission waivers from the TTY support obligations expire on December 31, 2017, or upon the effective date of rules providing for alternative IP-based wireless accessibility solutions, whichever is earlier. To the extent that a service provider prefers to support RTT access in lieu of TTY technology and does not wish to seek an extension of the current waiver, it can meet the following compliance timelines, which will supersede the December 31, 2017 deadline: By December 31, 2017, each Tier I service provider must either (1) offer a downloadable application or plug-in that supports RTT or (2) comply with the following: (i) implement in its core network the capability to support RTT; (ii) offer at least one new handset that supports native RTT functionality, and (iii) for all authorized end user devices specified on or after that date, include in future design specifications the requirement to support RTT. For all other (non-Tier I) carriers opting to provide RTT support, such compliance must be achieved by June 30, 2020. A carrier must meet these obligations except to the extent that it is not achievable for a particular manufacturer to support RTT on that carrier's network.

37. By December 31, 2019, each Tier I service provider opting to support RTT in lieu of

TTY technology must provide such support for all new authorized user devices activated on its networks. Non-Tier I service providers (including resellers) that opt to support RTT must do so for all new authorized user devices activated on their networks by June 30, 2021. A carrier must meet these obligations except to the extent that it is not achievable for a particular manufacturer to support RTT on that carrier's network. A carrier may rely in good faith on a manufacturer's representations that it has complied with its obligations under sections 716 and 717 of the Communications Act.

38. These deadlines are set in order to accommodate variances in manufacturer product lifecycles, while still ensuring that devices with native RTT functionality are available by a date certain. Among other things, they allow CMRS providers that do not fall into Tier I with additional time to comply with the RTT support requirements because they serve small subscriber populations, have fewer device options, often acquire the latest handset models much later than Tier I providers, and have limited influence on the technical ecosystem and standards setting. The Commission expects that handsets offered pursuant to these timelines will be compatible with at least the current versions of the operating systems available on text-capable handsets offered for sale by the service providers.

#### Timeline for RTT Implementation by Manufacturers

39. The Commission requires manufacturers opting to provide RTT support, in lieu of supporting TTY technology, to provide RTT functionality in handsets and other text-capable end user devices for wireless IP-based voice services, subject to the readily achievable or achievable limitation, as applicable, for all devices manufactured on or after December 31, 2018.

#### Other Compliance Deadlines and Related Matters

40. Although all compliance timelines contained in this section are prospective only, in that they do not require covered entities to retrofit "in-service" devices, pursuant to parts 6, 7, and 14 of the Commission's rules, entities covered under sections 255 and 716 of the Act are required to meet accessibility obligations as natural opportunities occur. As discussed earlier, the

Commission encourages covered entities, to the extent practicable, to “push out” downloadable apps or upgrades to operating systems to any in-service handsets that can support those apps or upgrades after each applicable compliance deadline.

41. The Commission clarifies that a wireless service provider or manufacturer in compliance with the RTT obligations adopted in this Report and Order will be relieved of its TTY support obligations on all wireless networks and equipment, including services and devices used for legacy (non-IP) facilities. To provide an incentive for early implementation of RTT, a provider or manufacturer that achieves early compliance with the RTT support requirements will be relieved of its TTY support obligations as of the date upon which such provider or manufacturer achieves such RTT support compliance. The Commission further provides that, for those carriers currently subject to a limited waiver of their TTY support requirements that would expire prior to their earliest applicable RTT compliance date, the Commission extends the waiver to that date.

#### Education, Outreach, and Notifications

42. To inform the public about the transition from TTY technology to RTT and the mechanics of how RTT technology will work, the Commission encourages consumer outreach and education efforts to include (1) the development and dissemination of educational materials that contain information pertinent to the nature, purpose and timelines of the RTT transition; (2) Internet postings, in an accessible format, of information about the TTY to RTT transition on the websites of covered entities; (3) the creation of a telephone hotline and online interactive and accessible service that can answer consumer questions about RTT; and (4) appropriate training of staff to effectively respond to consumer questions. All consumer outreach and education needs to be provided in a manner that is accessible to individuals with disabilities. The Commission encourages service providers and manufacturers to coordinate with consumer, public safety, and industry stakeholders to develop and distribute education and outreach materials. The Commission further directs the Commission’s Consumer and Governmental Affairs Bureau (CGB) to implement an outreach plan to complement industry’s efforts to fully inform the public

about RTT.

43. The Commission also adopts its proposal to have the notice conditions imposed in the Bureau's waiver orders remain in effect until the full implementation of the rules adopted in this proceeding. The continued provision of this information is necessary to ensure consumers with disabilities do not expect that TTY technology will be supported by IP-based wireless services when calling 911 services, to educate consumers about the availability of RTT, including its limitations when communicating with PSAPs that have only TTY capability, and to ensure these consumers know alternative accessible telecommunications options exist for this purpose. These notifications should also be provided in formats that are fully accessible to consumers with disabilities.

#### **FINAL REGULATORY FLEXIBILITY ANALYSIS**

44. As required by the Regulatory Flexibility Act of 1980, as amended (RFA), the Commission incorporated an Initial Regulatory Flexibility Analyses (IRFA) into the NPRM. The Commission sought written public comment on the proposals in the NPRM, including comment on the IRFA. No comments were received on the IRFA.

#### **Need for, and Objectives of, the Report and Order**

45. In document FCC 16-169, the Commission takes specific steps to amend its rules to facilitate a transition from outdated TTY technology to a reliable and interoperable means of providing RTT communication over IP enabled networks and services for people who are deaf, hard of hearing, speech disabled, and deaf-blind. Real-time text is a mode of communication that permits text to be sent immediately as it is being created. In response to various proposals made in the NPRM adopted earlier this year, the Commission adopts rules to:

- Permit CMRS providers to support RTT in lieu of TTY technology for communications using wireless IP-based voice services;
- Allow providers of telecommunications and interconnected VoIP services provided

over wireless IP facilities and manufacturers of equipment used with such services to support RTT in lieu of supporting TTY technology, “if readily achievable” or “unless not achievable”;

- Relieve wireless service providers and equipment manufacturers of all TTY support obligations to the extent they support RTT on IP facilities in accordance with Commission rules;
- Establish the following criteria defining what constitutes support for RTT:
  - RTT communications must be interoperable across networks and devices, and this may be achieved through adherence to RFC 4103, as a “safe harbor” standard for RTT;
  - RTT communications must be backward compatible with TTY technology;
  - RTT must support 911 communications and 711 relay communications; and
- Establish that support for RTT includes support for the ability to initiate and receive calls with the same telephone numbers as are used for voice communications and simultaneous voice and text in the same call session;
- Recognize that the provision of accessible indicators for call answering and activity, appropriate latency and error rates, and pre-installed and default functionality on devices can facilitate making RTT service functionally equivalent to voice communications;
- Permit manufacturers and service providers, to the extent the latter are responsible for the accessibility of end user devices activated on their IP-based wireless voice communications networks, to ensure that devices that have the ability to send, receive, and display text include RTT capability in lieu of supporting TTY technology, subject to the readily achievable and achievable limitations for parts 6, 7, and 14, as applicable;

- Find that RTT is an “electronic messaging service” that is subject to the performance objectives of parts 6, 7, and 14 of the Commission’s rules, if readily achievable or unless not achievable, as applicable.
- Establish the following timelines for implementation of RTT:
  - By December 31, 2017, each Tier I CMRS provider and, by June 30, 2020, each non-Tier I provider choosing to support RTT in lieu of TTY over IP facilities shall support RTT either (1) through a downloadable RTT application or plug-in that supports RTT; or (2) by implementing native RTT functionality into its core network, offering at least one handset model that supports RTT, and including the requirement to support RTT in future design specifications for all authorized user devices specified on or after these dates;
  - By December 31, 2018, manufacturers that provide devices for CMRS providers’ IP-based voice services and that choose to support RTT in lieu of TTY technology shall implement RTT in newly manufactured equipment, if readily achievable or unless not achievable, as applicable.
  - By December 31, 2019, each Tier I CMRS provider and, by June 30, 2021, each non-Tier I CMRS provider choosing to support RTT in lieu of TTY over IP facilities shall support RTT for all new authorized user devices;
  - A carrier is subject to the above timelines except to the extent that it is not achievable for a particular manufacturer to support RTT on that carrier’s network, in which case a carrier may rely in good faith on a manufacturer’s representations in this regard; and
- Establish consumer outreach, education, and notice guidelines to inform the public about the transition from TTY Technology to RTT, including how this technology will work.

## **Summary of Significant Issues Raised by Public Comments in Response to the IRFA**

46. No comments were filed in response to the IRFA.

### **Listing of the Number of Small Entities Impacted**

47. The majority of the rules adopted in document FCC 16-169 will affect obligations on telecommunications carriers and providers, VoIP service providers, wireline and wireless service providers, advanced communications services (ACS) providers, and telecommunications equipment and software manufacturers. Other entities, however, that choose to object to the substitution of RTT for TTY technology under the Commission's amended rules may be economically impacted by document FCC 16-169. Affected small entities as defined by industry are as follows.

- Wired Telecommunications Carriers;
- Local Exchange Carriers (LECs);
- Incumbent Local Exchange Carriers (Incumbent LECs);
- Competitive Local Exchange Carriers (Competitive LECs), Competitive Access Providers (CAPs), Shared-Tenant Service Providers, and Other Local Service Providers;
- Interexchange Carriers;
- Other Toll Carriers;
- Wireless Telecommunications Carriers (except Satellite);
- Cable Companies and Systems (Rate Regulation);
- All Other Telecommunications;
- TRS Providers;
- Electronic Computer Manufacturing;
- Telephone Apparatus Manufacturing (wireline);
- Computer Terminal and Other Computer Peripheral Equipment Manufacturing;
- Radio and Television Broadcasting and Wireless Communications Equipment

Manufacturing:

- Other Communications Equipment Manufacturing; and
- Software Publishers.

**Description of Projected Reporting, Record Keeping and other Compliance Requirements**

48. The rule changes adopted in document FCC 16-169 to permit support for RTT in lieu of TTY Technologies in all IP-based wireless services do not modify reporting, recordkeeping, and other compliance requirements. However, document FCC 16-169 requires that notice conditions imposed on waiver recipients remain in effect until the full implementation of the rules adopted in document FCC 16-169. The waiver recipients must continue to apprise their customers, through effective and accessible channels of communication, that (1) until TTY is sunset, TTY technology will not be supported for calls to 911 services over IP-based wireless services, and (2) there are alternative public switched telephone network (PSTN)-based and IP-based accessibility solutions for people with communication disabilities to reach 911 services. These notices must be developed in coordination with PSAPs and national consumer organizations, and include a listing of text-based alternatives to 911, including, but not limited to, TTY capability over the PSTN, various forms of PSTN-based and IP-based TRS, and text-to-911 (where available). The waiver recipients must also file a report every six months regarding their progress toward and the status of the availability of new IP-based accessibility solutions, such as RTT. The only entities that will be affected by this requirement are those entities that have previously petitioned for and received or will receive a waiver of the TTY obligations. The Commission believes the only burden associated with the reporting requirement will be the time required to continue to prepare and send out notifications to customers and to complete the progress and status report every six months.

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

49. In amending its rules, the Commission believes that it has minimized the effect on small entities while facilitating an effective and seamless transition from TTY technology to RTT. The Commission had considered other possible proposals and sought comment on the requirements and the analysis presented. The requirements adopted by the Commission to provide notices to customers and file reports with the Commission apply only to entities that have specifically sought waivers of the TTY obligations. Further, RTT technology may simplify the accessibility obligations of small businesses, because RTT allows calls to be made using the built-in functionality of a wide selection of off-the shelf devices such as cellphones, and thus may alleviate the high costs and challenges faced by small businesses and customers in locating dedicated external assistive devices, such as specialty phones. Additionally, in phasing out TTY technology, the burden is reduced for small entities and emergency call centers to maintain such technology in the long term.

50. The Commission also establishes a phased timeline for implementation of RTT technology. In response to comments in the proceeding and to reduce the burden and relieve possible adverse economic impact on small entities, by December 31, 2017, each Tier I CMRS provider and, by June 30, 2020, each non-Tier I provider may choose to support RTT in lieu of TTY over IP facilities. The Commission establishes a second period for each Tier I CMRS provider and non-Tier I CMRS provider choosing to support RTT in lieu of TTY over IP facilities to be required to support RTT for all new authorized user devices. Tier I CMRS providers must meet this requirement by December 31, 2019, and non-Tier I providers must meet this requirement by June 30, 2021. Manufacturers that provide devices for CMRS providers' IP-based voice services and that choose to support RTT in lieu of TTY technology shall implement RTT in newly manufactured equipment by December 31, 2018, if readily achievable or unless not achievable, as applicable.

51. In addition, the Commission is permitting rather than requiring service providers to support RTT. With regards to implementing RTT, while the Commission adopts a "safe harbor"

technical standard to ensure RTT interoperability, it also allows service providers to use alternative protocols for RTT, provided that they are interoperable. Further, throughout the item, flexibility is integrated into the criteria for RTT support in order to take into consideration the limitations of small businesses. For example, a service provider choosing to support RTT rather than TTY is not required to support RTT on new authorized end user devices to the extent that is not achievable for a particular manufacturer to support RTT on that provider's network. As such, the Commission anticipates that the requirements will have little to no impact on small entities that are eligible to rely on the claim that supporting RTT on a particular device is not achievable.

52. The Commission also determined to establish outreach and education guidelines to encourage rather than require service providers and manufacturers to implement efforts to notify consumers about the transition from TTY technology to RTT, and to allow small entities to determine the extent of resources they allocate to inform consumers of the changes in the services and associated equipment they will be receiving.

#### **ORDERING CLAUSES**

53. Pursuant to sections 4(i), 225, 255, 301, 303(r), 316, 403, 715, and 716 of the Communications Act of 1934, as amended, and section 106 of the CVAA, 47 U.S.C. 154(i), 225, 255, 301, 303(r), 316, 403, 615c, 616, 617, document FCC 16-169 IS ADOPTED and parts 6, 7, 14, 20, and 64 of the Commission's rules ARE AMENDED and part 67 IS ADOPTED.

54. The Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of document FCC 16-169, including the Final Regulatory Flexibility Analysis to the Chief Counsel for Advocacy of the Small Business Administration.

#### **List of subjects**

##### **47 CFR part 6**

Individuals with disabilities, access to telecommunication service and equipment, and customer premise equipment.

##### **47 CFR part 7**

Individuals with disabilities, access to voice mail and interactive menu services and equipment.

**47 CFR part 14**

Individuals with disabilities, access to advanced communication services and equipment.

**47 CFR part 20**

Commercial mobile services, individuals with disabilities, access to 911 services.

**47 CFR part 64**

Telecommunications relay services, individuals with disabilities.

**47 CFR part 67**

Real-time text, individuals with disabilities, incorporation by reference.

FEDERAL COMMUNICATIONS COMMISSION.

Katura Howard,  
Federal Register Liaison.  
Office of the Secretary.

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR parts 6, 7, 14, 20, 64, and adds 67 as follows:

**PART 6—ACCESS TO TELECOMMUNICATIONS SERVICE,  
TELECOMMUNICATIONS EQUIPMENT AND CUSTOMER PREMISES EQUIPMENT  
BY PERSONS WITH DISABILITIES**

1. The authority citation for part 6 is revised to read as follows:

**Authority:** 47 U.S.C. 151–154, 208, 255, and 303(r).

2. Amend § 6.3 by adding paragraphs (a)(3), (b)(5), (m), and (n) to read as follows:

**§ 6.3 Definitions.**

(a) \* \* \*

(3) Real-Time Text. Voice communication services subject to this part that are provided over wireless IP facilities and handsets and other text-capable end user devices used with such service that do not themselves provide TTY functionality, may provide TTY connectability and signal compatibility pursuant to paragraphs (b)(3) and (4) of this section, or support real-time text communications, in accordance with 47 CFR part 67.

(b) \* \* \*

(5) TTY Support Exemption. Voice communication services subject to this part that are provided over wireless IP facilities and equipment used with such services are not required to provide TTY connectability and TTY signal compatibility if such services and equipment support real-time text, in accordance with 47 CFR part 67.

\* \* \* \* \*

(m) The term real-time text shall have the meaning set forth in § 67.1 of this chapter.

(n) The term text-capable end user device means customer premises equipment that is able to send, receive, and display text.

**PART 7—ACCESS TO VOICEMAIL AND INTERACTIVE MENU SERVICES AND EQUIPMENT BY PEOPLE WITH DISABILITIES**

3. The authority citation for part 7 is revised to read as follows:

**Authority:** 47 U.S.C. 151-154, 208, 255, and 303(r).

4. Amend § 7.3 by adding paragraphs (a)(3), (b)(5), (n), and (o) to read as follows:

**§ 7.3 Definitions.**

(a) \* \* \*

(3) Real-Time Text. Voice communication services subject to this part that are provided over wireless IP facilities and handsets and other text-capable end user devices used with such service that do not themselves provide TTY functionality, may provide TTY connectability and signal compatibility pursuant to paragraphs (b)(3) and (4) of this section, or support real-time text communications, in accordance with 47 CFR part 67.

(b) \* \* \*

(5) TTY Support Exemption. Voice communication services subject to this part that are offered over wireless IP facilities and equipment used with such services are not required to provide TTY connectability and TTY signal compatibility if such services and equipment support real-time text, in accordance with 47 CFR part 67.

\* \* \* \* \*

(n) The term real-time text shall have the meaning set forth in § 67.1 of this chapter.

(o) The term text-capable end user device means customer premises equipment that is able to send, receive, and display text.

**PART 14—ACCESS TO ADVANCED COMMUNICATIONS SERVICES AND EQUIPMENT BY PEOPLE WITH DISABILITIES**

5. The authority citation for part 14 continues to read as follows:

**Authority:** 47 U.S.C. 151–154, 255, 303, 403, 503, 617, 618, 619 unless otherwise noted.

6. Amend § 14.10 by adding paragraphs (w) and (x) to read as follows:

**§ 14.10 Definitions.**

\* \* \* \* \*

(w) The term real-time text shall have the meaning set forth in § 67.1 of this chapter.

(x) The term text-capable end user device means end user equipment that is able to send, receive, and display text.

7. Amend § 14.21 by adding paragraphs (b)(3) and (d)(5) to read as follows:

**§ 14.21 Performance Objectives.**

\* \* \* \* \*

(b) \* \* \*

(3) Real-Time Text. Wireless interconnected VoIP services subject to this part and text-capable end user devices used with such services that do not themselves provide TTY functionality, may provide TTY connectability and signal compatibility pursuant to paragraphs (b)(3) and (4) of this section, or support real-time text communications, in accordance with 47 CFR part 67.

\* \* \* \* \*

(d) \* \* \*

(5) TTY Support Exemption. Interconnected and non-interconnected VoIP services subject to this part that are provided over wireless IP facilities and equipment are not required to provide TTY connectability and TTY signal compatibility if such services and equipment support real-time text, in accordance with 47 CFR part 67.

**PART 20—COMMERCIAL MOBILE SERVICES**

8. The authority citation for part 20 continues to read as follows:

**Authority:** 47 U.S.C. 151, 152(a), 154(i), 157, 160, 201, 214, 222, 251(e), 301, 302, 303, 303(b), 303(r), 307, 307(a), 309, 309(j)(3), 316, 316(a), 332, 615, 615a, 615b, 615c.

9. Amend § 20.18 by revising paragraph (c) to read as follows:

**§ 20.18 911 Service.**

\* \* \* \* \*

(c) Access to 911 services. CMRS providers subject to this section must be capable of transmitting 911 calls from individuals with speech or hearing disabilities through means other than mobile radio handsets, e.g., through the use of Text Telephone Devices (TTY). CMRS providers that provide voice communications over IP facilities are not required to support 911 access via TTYs if they provide 911 access via real-time text (RTT) communications, in accordance with 47 CFR Part 67, except that RTT support is not required to the extent that it is not achievable for a particular manufacturer to support RTT on the provider's network.

\* \* \* \* \*

#### **PART 64—MISCELLANEOUS RULES RELATING TO COMMON CARRIERS**

10. The authority citation for part 64 is revised to read as follows:

**Authority:** 47 U.S.C. 154, 225, 403(b)(2)(B), (c), 715, Pub. L. 104-104, 110 Stat. 56. Interpret or apply 47 U.S.C. 201, 218, 222, 225, 226, 227, 228, 254(k), 616, 620, and the Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. 112-96, unless otherwise noted.

11. Amend § 64.601 by revising paragraph (a)(15) and adding paragraph (a)(46) to read as follows:

#### **§ 64.601 Definitions and provisions of general applicability.**

(a) \* \* \*

(15) Internet-based TRS (iTRS). A telecommunications relay service (TRS) in which an individual with a hearing or a speech disability connects to a TRS communications assistant using an Internet Protocol-enabled device via the Internet, rather than the public switched telephone network. Except as authorized or required by the Commission, Internet-based TRS does not include the use of a text telephone (TTY) or RTT over an interconnected voice over Internet Protocol service.

\* \* \* \* \*

(46) Real-Time Text (RTT). The term real-time text shall have the meaning set forth in § 67.1 of this chapter.

\* \* \* \* \*

12. Revise § 64.603 to read as follows:

**§ 64.603 Provision of services.**

(a) Each common carrier providing telephone voice transmission services shall provide, in compliance with the regulations prescribed herein, throughout the area in which it offers services, telecommunications relay services, individually, through designees, through a competitively selected vendor, or in concert with other carriers. Interstate Spanish language relay service shall be provided. Speech-to-speech relay service also shall be provided, except that speech-to-speech relay service need not be provided by IP Relay providers, VRS providers, captioned telephone relay service providers, and IP CTS providers. In addition, each common carrier providing telephone voice transmission services shall provide access via the 711 dialing code to all relay services as a toll free call. CMRS providers subject to this 711 access requirement are not required to provide 711 dialing code access to TTY users if they provide 711 dialing code access via real-time text communications, in accordance with 47 CFR part 67.

(b) A common carrier shall be considered to be in compliance with this section:

(1) With respect to intrastate telecommunications relay services in any state that does not have a certified program under § 64.606 and with respect to interstate telecommunications relay services, if such common carrier (or other entity through which the carrier is providing such relay services) is in compliance with § 64.604; or

(2) With respect to intrastate telecommunications relay services in any state that has a certified program under § 64.606 for such state, if such common carrier (or other entity through which the carrier is providing such relay services) is in compliance with the program certified under § 64.606 for such state.

## **PART 67 – REAL-TIME TEXT**

13. Add new part 67 to read as follows:

Sec.

67.1 Definitions

67.2 Minimum Functionalities of RTT

67.3 Incorporation by Reference

**Authority:** 47 U.S.C. 151-154, 225, 251, 255, 301, 303, 307, 309, 316, 615c, 616, 617.

### **§ 67.1 Definitions.**

(a) Authorized end user device means a handset or other end user device that is authorized by the provider of a covered service for use with that service and is able to send, receive, and display text.

(b) CMRS provider means a CMRS provider as defined in § 20.18(c) of this chapter.

(c) Covered service means a service that meets accessibility requirements by supporting RTT pursuant to part 6, 7, 14, 20, or 64 of this chapter.

(d) RFC 4103 means IETF's Request for Comments (RFC) 4103 (incorporated by reference, see § 67.3 of this part).

(e) RFC 4103-conforming service or user device means a covered service or authorized end user device that enables initiation, sending, transmission, reception, and display of RTT communications in conformity with RFC 4103.

(f) RFC 4103-TTY gateway means a gateway that is able to reliably and accurately transcode communications between (1) RFC 4103-conforming services and devices and (2) circuit-switched networks that support communications between TTYs.

(g) Real-time text (RTT) or RTT communications means text communications that are transmitted over Internet Protocol (IP) networks immediately as they are created, e.g., on a character-by-character basis.

(h) Support RTT or support RTT communications means to enable users to initiate, send, transmit, receive, and display RTT communications in accordance with the applicable provisions of this part.

**§ 67.2 Minimum Functionalities of RTT.**

(a) RTT-RTT Interoperability. Covered services and authorized end user devices shall be interoperable with other services and devices that support RTT in accordance with this part. A service or authorized end user device shall be deemed to comply with this paragraph (a) if:

- (1) It is an RFC-4103-conforming end user device;
- (2) RTT communications between such service or end user device and an RFC 4103-conforming service or end user device are reliably and accurately transcoded –
  - (i) to and from RFC 4103, or
  - (ii) to and from an internetworking protocol mutually agreed-upon with the owner of the network serving the RFC 4103-conforming service or device.

(b) RTT-TTY Interoperability. Covered services and authorized end user devices shall be interoperable with TTYs connected to other networks. Covered services and authorized end user devices shall be deemed to comply with this paragraph (b) if communications to and from such TTYs:

- (1) pass through an RFC 4103-TTY gateway, or
- (2) are reliably and accurately transcoded to and from an internetworking protocol mutually agreed-upon with the owner of the network serving the TTY.

(c) Features and Capabilities. Covered services and authorized end user devices shall enable the user to:

- (1) initiate and receive RTT calls to and from the same telephone numbers for which voice calls can be initiated and received;
- (2) transmit and receive RTT communications to and from any 911 public safety answering point (PSAP) in the United States; and

(3) send and receive text and voice simultaneously in both directions on the same call using a single device.

**§ 67.3 Incorporation by Reference**

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. All approved material is available for inspection at the Federal Communications Commission, 445 12th St., S.W., Reference Information Center, Room CY-A257, Washington, DC 20554, (202) 418-0270, and is available from the sources listed below. It is also available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030 or go to

[http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

(b) Internet Engineering Task Force (IETF), c/o Association Management Solutions, LLC (AMS) 5177 Brandin Court, Fremont, California 94538, phone (510) 492-4080, website at <http://ietf.org> or directly at <https://www.ietf.org/rfc/rfc4103.txt>.

(1) Request for Comments (RFC) 4103, Real-time Transport Protocol Payload for Text Conversation (2005), IBR approved for § 67.1.

(2) [Reserved]

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