



**Federal Communications Commission  
Office of Engineering and Technology  
Laboratory Division**

April 19, 2019

**CITIZENS BROADBAND RADIO SERVICE DEVICES  
HANDSHAKE PROCEDURES**

**Question 1:** May Customer Premises Equipment (CPE) operating in the Citizens Broadband Radio Service (CBRS) obtain an equipment authorization that allows it to operate temporarily up to the power levels permitted for a CBRS device (CBSD; *e.g.*, base station (BTS-CBSD)) when it is unable to connect with a Spectrum Access System (SAS) except through the BTS-CBSD and no other means?

**Answer 1:** Yes, under specific conditions. We recognize that there are circumstances where an End-User Device operating as a CPE could be receiving a signal from a BTS-CBSD or another CBSD that is already authorized by the SAS, but the CPE needs to operate at signal levels higher than the 23 dBm permitted by rules for End-User Devices. In that case, the rules permit such devices to be authorized as a CBSD operating at higher power levels [Section 96.47(b)], and the CPE must register with a SAS as a CBSD. Other resources, if available, such as a wireline or wireless broadband service should be used to access the SAS. If there are no other means to close the loop with a SAS, the CPE may establish a connection with the SAS by using the frequencies authorized for the BTS-CBSD (“in band” communications), under the following conditions that will be implemented through the equipment authorization program:

- We will authorize a CPE to operate at the power levels permitted for CBSDs as a “CPE-CBSD” that may connect to the BTS-CBSD initially to register with and be authorized by the SAS. This transmission must be:
  - used only for communicating to the SAS for registration and authorization of the device; and,
  - at the lowest power level necessary for communications with the BTS-CBSD;
  - on a channel used by or indicated by the BTS-CBSD after receiving an authorization signal from the BTS-CBSD;
  - limited in duration and duty cycle to the minimum time necessary to get a grant from the SAS; this time should not exceed 1 second within any 10-second period, 10seconds within any 300-second period, or 20 seconds within any 3600-second period.
- After the CPE-CBSD is registered and authorized by the SAS, the CPE-CBSD can start data transmission in the CBRS band using the channels and power levels authorized by the SAS.

- In the event the CPE-CBSD needs to reconnect to a SAS or renew its connection for registration and (re)authorization purposes, the device can use the same or a shortened protocol to reestablish connection.
  - The maximum number of unsuccessful attempts to complete a registration by a CPE-CBSD should also be limited and specified by the applicant.

### **Equipment Authorization Procedures:**

For equipment authorization of devices which may need to use “in-band” communications, the specific protocol for communications must be pre-approved by the Commission under the Pre-Approval Guidance (PAG) procedures for manufacturers.<sup>1</sup> These devices will fall under a new equipment class CBC (Customer Premise Equipment CBSD). The submission for such approval must include a description of the conditions under which such communications will occur, the maximum permitted transmission times, duration, and repetition rates for the messages for connecting to the SAS, and any arrangements for avoiding interference. The submission should also explain how the protocol will be verified to show compliance with the specifications and other technical requirements.<sup>2</sup>

The test report must demonstrate compliance with the technical requirements and appropriate use cases. The CPE-CBSD must be tested with a compatible BTS-CBSD to demonstrate compliance.

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<sup>1</sup> KDB Publication 388624 D01, Pre-Approval Guidance Procedure.

<sup>2</sup> Devices that use the SAS emulator and approved test procedures developed by WinnForum, are not required to include the technical details of how the protocol is verified in the equipment authorization filing.