Signaling Protocols and Procedures for Citizens Broadband Radio Service (CBRS):
WInnForum Recognized
CBRS Air Interfaces and Measurements

Document WINNF-SSC-0002

Version 3.0.1

1 October 2018
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WInnForum Recognized CBRS Air Interfaces and Measurements

1 Introduction

This document lists information about the air interfaces (AI) and measurement types supported by the standards developed by the Wireless Innovation Forum for the Citizens Broadband Radio Service (CBRS) band.

2 Scope

This document consolidates information registered with the Wireless Innovation Forum following policy WINNF-17-SSC-0001 [n.4]. This document provides a list of the AIs, references for those AIs, and information about measurements that can be made by Citizens Broadband Radio Service Devices (CBSDs).

3 References

3.1 Normative references

The following referenced documents are necessary for the application of the present document.


3.2 Informative references

The following referenced documents are not necessary for the application of the present document but they assist the reader with regard to a particular subject area.


4 Definitions and abbreviations

AI: Air Interface
**CBRS**: Citizens Broadband Radio Service.

**CBRS band**: The 3550-3700 MHz Citizens Broadband Radio Service band.

**Citizens Broadband Radio Service Device (CBSD)**: Fixed Stations, or networks of such stations, that operate on a Priority Access or General Authorized Access basis in the Citizens Broadband Radio Service.

**E-UTRA**: Evolved Universal Terrestrial Radio Access

**Spectrum Access System (SAS)**: A system that authorizes and manages use of spectrum for the Citizens Broadband Radio Service in accordance with subpart F in [n.8].

## 5 Version Compatibility

Version 1 of this document is compatible with:

- V1.1.0 of [n.3].

## 6 Registered CBRS Air Interfaces

The following air interfaces (AIs) have been registered with the Wireless Innovation Forum for operation in the CBRS band:

### 6.1 E_UTRA

- Air Interface Reference: [3GPP TS 36.300](https://www.3gpp.org)

### 6.2 CAMBIUM_NETWORKS

### 6.3 4G_BBW_SAA_1

- Air Interface Reference: IEEE 802.16e

## 7 Measurement Report Types

The following measurement types have been registered with the Wireless Innovation Forum for operation in the CBRS band.

### 7.1 Received Power

**Definition**: Measurement of the radio frequency energy received over a set of frequency ranges during a measurement interval with results reported to a SAS for each of the frequency ranges in terms of effective received power for each frequency range.

The measurement capabilities associated with the Received Power measurement type are given in the following subsections.

#### 7.1.1 RECEIVED_POWER_WITHOUT_GRANT

**Semantics**: Received Power can be measured and reported when the CBSD does not have a spectrum grant from the SAS. If this measurement report capability is indicated by the SAS to the CBSD, the CBSD performs and reports Received Power measurements over the entire CBRS.
band in segments that do not exceed 10 MHz per measurement report. Those measurement reports are sent to the SAS in the first Spectrum Inquiry Request message and first Grant Request message.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME: $rcvdPowerMeasReports$ DATA TYPE: array of object: $RcvdPowerMeasReport$</td>
<td>An array of separate reports measured as Received Power.</td>
</tr>
</tbody>
</table>

### Table 2: $RcvdPowerMeasReport$ Object Definition

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME: $measFrequency$ DATA TYPE: number</td>
<td>Frequency of the lowest end of the measured frequency range in Hz.</td>
</tr>
<tr>
<td>NAME: $measBandwidth$ DATA TYPE: number</td>
<td>Measurement bandwidth in Hz used by CBSD to perform the Received Power measurement. The range bounded by $measFrequency$ as the lower bound and $(measFrequency + measBandwidth)$ as the upper bound expresses the frequency range used in making the measurement.</td>
</tr>
<tr>
<td>NAME: $measRcvdPower$ DATA TYPE: number</td>
<td>Received Power measurement in units of dBm. The range of this parameter is -100 dBm .. -25dBm. The Received Power is measured over the frequency range from $measFrequency$ as the lower bound to $(measFrequency + measBandwidth)$ as the upper bound.</td>
</tr>
</tbody>
</table>

### 7.1.2 RECEIVED_POWER_WITH_GRANT

**Semantics:** Received Power can be measured and reported when the CBSD has a spectrum grant from the SAS. If this measurement report capability is indicated by the SAS to the CBSD, the CBSD performs and reports Received Power measurements over one or more frequency ranges that do not exceed 10 MHz per measurement report. The measurement report(s) are sent to the SAS in the subsequent Heartbeat Request message.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
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<tbody>
<tr>
<td>NAME: $rcvdPowerMeasReports$ DATA TYPE: array of object: $RcvdPowerMeasReport$</td>
<td>An array of separate reports measured as Received Power.</td>
</tr>
</tbody>
</table>
### Table 4: RcvdPowerMeasReport Object Definition

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| `NAME: measFrequency
DATA TYPE: number` | Frequency of the lowest end of the measured frequency range in Hz.           |
| `NAME: measBandwidth
DATA TYPE: number` | Measurement bandwidth in Hz used by CBSD to perform the Received Power measurement. The range bounded by `measFrequency` as the lower bound and `(measFrequency + measBandwidth)` as the upper bound expresses the frequency range used in making the measurement. |
| `NAME: measRcvdPower
DATA TYPE: number` | Received Power measurement in units of dBm. The range of this parameter is -100 dBm .. -25dBm. The Received Power is measured over the frequency range from `measFrequency` as the lower bound to `(measFrequency + measBandwidth)` as the upper bound. |
## 8 Document History

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