1.1.1 Downstream Transmit Cyclic Prefix Insertion

This section describes how cyclic prefixes are inserted into the output of the IDFT. The addition of a cyclic prefix enables the receiver to overcome the effects of inter-symbol-interference and inter-carrier-interference caused by micro-reflections in the channel.

The IDFT yields a complex-valued sequence in the time domain. Cyclic prefix insertion is applied to this sequence and involves the following operations.

a) Prepending a cyclic prefix to the output of the IDFT

b) Appending a cyclic postfix to the output of the IDFT

The CLT transmitter shall support the cyclic prefix values defined in Table 1 for both 4K and 8K FFTs.

Table1: Cyclic Prefix (CP) Values

Cyclic Prefix (µs)	Cyclic Prefix Samples (N_{cp})
0.9375	192
1.25	256
2.5	512
3.75	768
5.0	1024

The cyclic prefix (in µs) is converted into samples using the sample rate of 204.8 Msamples/s.

1.4.1 Upstream Transmit Cyclic Prefix Insertion

A cyclic prefix is applied in the upstream transmission. The cyclic prefix is added in order to enable the receiver to overcome the effects of inter-symbol interference and inter-carrier interference caused by micro-reflections in the channel.

The CNU transmitter shall support the cyclic prefix values defined in Table 2.

Table 2 – Cyclic Prefix (CP) Values

Cyclic Prefix (µs)	Cyclic Prefix Samples (N_{cp})
0.9375	192
1.25	256
1.5625	320
1.875	384
2.5	512
2.8125	576
3.125	640
3.75	768
4.0625	832
4.375	896
4.6875	960
5.0	1024
5.3125	1088
5.625	1152
6.25	1280

The cyclic prefix (in µs) is converted into samples using the sample rate of 204.8 Msamples/s.