



# IIT Madras 5G TestBed

---

## Physical BroadCast Channel BBU And Channel Status Information Reference signal (CSI-RS) BBU

Project Report submitted by -  
Rohini K Rathod (EE18M061)

Project Guides -  
Prof. Nitin Chandrachoodan  
Prof. Radha Krishna Ganti

# Abstract

SS/PBCH block(SSB) consists of Synchronization signal(SS) and Physical Broadcast channel(PBCH). SSB is used to carry out cell search and identification to initialize a connection between UE and gNB. The report aims at a detailed description on PBCH design, transmission and mapping on the Resource element grid...PBCH transmitter is designed based on the technical specifications by 3GPP for 5G NR. PBCH data is generated and loaded with Demodulation reference signal(DMRS) for channel estimation at receiver. The combined data thus generated is mapped on (240) sub-carriers.

For acquiring the channel quality, NR specifies a special type of cell-specific reference signal which can be configured for transmission on up-to 32 antenna ports. The CSI-RS resources are code, frequency and time division multiplexed. After passing through the channel the CSI receiver estimates the channel. The report aims at a detailed description on CSI-RS generation, transmission and mapping on the Resource element grid.

## **Note :**

Further details of the modules constructed can not be posted here since my work belongs to the confidential property of 5g Testbed lab IIT Madras.