

ABSTRACT

1920's procedure has formulated that spectrum is allocated in bands (owned) by users due to technical differences. But in fact very few bands are really used at a given time and at a given place. In this final project has formulated algorithm and system design of DSM that will be added on fundamental TDCS system, this formulation was done to make TDCS system can fulfill the third criterion of cognitive radio, dynamic spectrum management. The target of this final project is constructed DSM block (on fundamental TDCS system) which can do adaptive function by adaptive channel allocation method.

On simulation, DSM was being a decision maker to choose transmit channel. First, DSM receiving sorted channel database, then DSM choosing channel which has highest SINR level (up to th 8 dB). To guarding SINR channel condition, this block using ATPC block. If $SINR < th$ 8 dB, ATPC will add power, ΔP (1dB). If ATPC can not guard SINR channel condition anymore on particular period, automatically (*adaptively*) DSM system will choose another channel (after updating SINR condition), for continuing transmit process. For each chosen channel will notching.

DSM was simulated for 11 users per channel. There was two times channel movement, on 20th second transmit process has attached in 22nd channel and then moved to 31st channel (SINR level decrease from 8.5003 dB to 7.519 dB) and on 100th second from 31st channel moved to 38th channel (SINR decrease from 10.967 dB to 7.8934 dB).

Based on simulation result conclude that probability of channel movement will be inline with the increasing of maximum user per channel. More user per channel, it will be more channel movement probabilities. And those channel movement is used to optimize transmit process which been done autonomy on TDCS with attaching on channel with SINR level always up to th 8 dB.

Keywords: DSM, TDCS, CR, frequency, interference