



**MEDIATEK**

# Auto-Channel Selection Application Note

2021/10/13

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# Version History

Version	Date	Author (Optional)	Description
0.1	2021-8-24	Alonso Hsu	Initial draft
1.0	2021-10-13	Micheal Su	Official release

# Outline

- ❑ Feature Description
- ❑ How to Configure – profile
- ❑ How to Configure – runtime command

# Feature Description

# Auto-Channel Selection (ACS)

- ACS is an mechanism that can support AP done for optimizing channel arrangement. That is, it will select the best working channel, which is clear and least loading, in current situation.
- The procedure is as follows:
  - **Step1: The AP scans each channel to gather information about the channel's condition**
    - 1) Switch to a channel and stay for 200ms(because the period of beacon frame is 100ms), and collect channel busy information.
    - 2) Switch to the next channel and repeat until every channel of channel list has been examined.
  - **Step2: Organize the channel group depend on current BW and supported channel. Sort out the channel busy information.**
  - **Step3: Select the best channel by the min. max. algorithm.**

# ACS Algorithm – min max PCCA Time

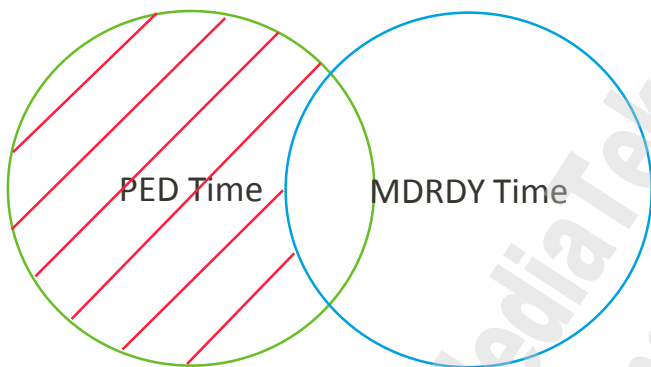
- Example of ACS algorithm for BW40 :



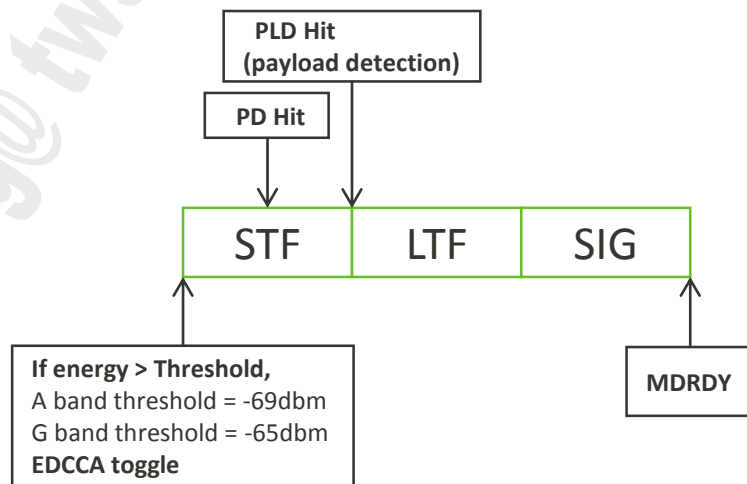
- 1) Select  $\max(\text{PCCA}(1)), \max(\text{PCCA}(2)), \max(\text{PCCA}(3)), \dots, \max(\text{PCCA}(13))$  as the candidate of BW40 channel group.
- 2) As 1), we can choose min. PCCA Time from the candidate of BW80 channel group as primary channel

# PCCA Time

- Also called channel busy time.
- The union of PED/PLD/MDRDY Time, which are dominated by BBP signal flags, is PCCA Time.
- PCCA time will be directly checked from BBP signal flags of both ED and MDRDY per  $\mu\text{s}$ .



**Dominated by non-wifi interference**



## How to Configure – profile



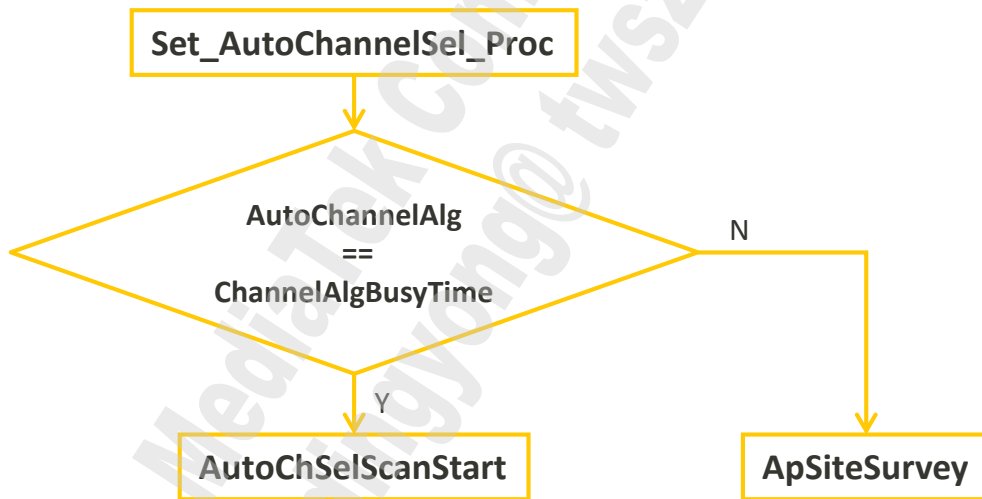
# Normal Start Up ACS Profile Setting

- **Profile location**
  - **/etc/wireless/mediatek/mt7915.dbdc.b0.dat (for BAND0)**
  - **/etc/wireless/mediatek/mt7915.dbdc.b1.dat (for BAND1)**
- **Set profile parameter of AutoChannelSelect as 3 to select ChBusyCnt algorithm.**
  - **Set AutoChannelSelect=3**
- **Set parameter “Channel” in profile to trigger auto-channel selection**
  - **Set Channel=0**
- **Modify parameter “AutoChannelSkipList” in profile to skip no-need channel**
  - **E.q. AutoChannelSkipList=1;3;11**

## How to Configure – runtime command

# Dynamic Auto-Channel Selection (DACS)

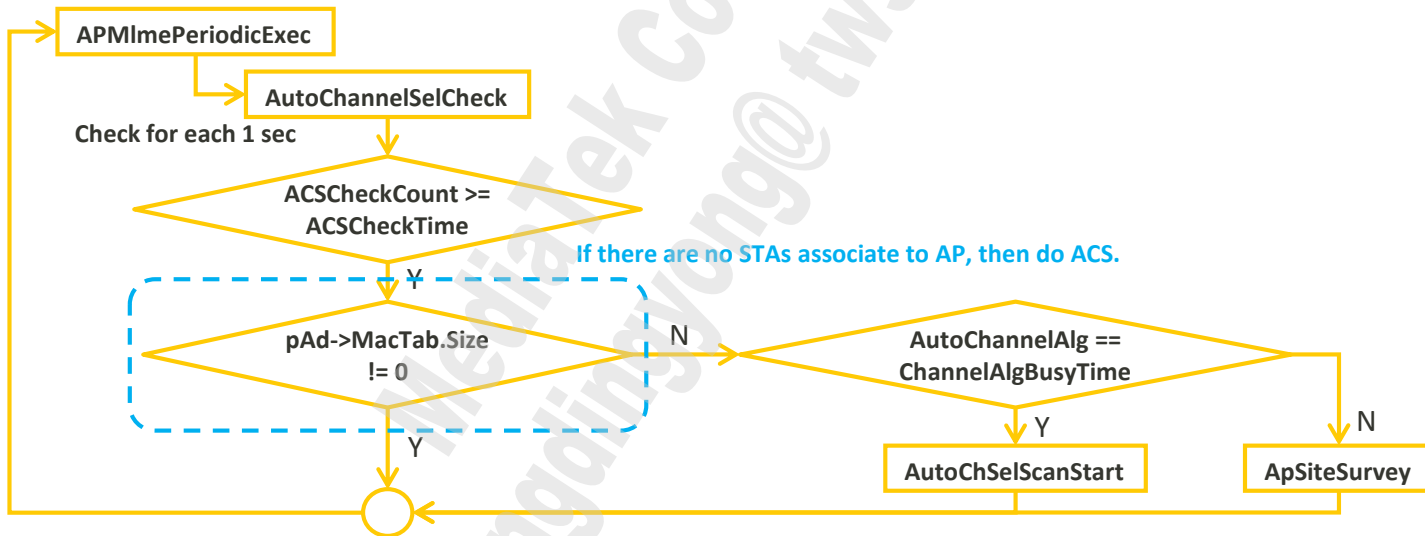
- **AutoChannelSel** command
  - `iwpriv ra0 set AutoChannelSel=3`



# Dynamic Auto-Channel Selection (DACS)

- **ACSCheckTime command**

- Set a periodic check time for auto channel selection (unit: hour)
- **iwpriv ra0 set ACSCheckTime=<Value> (unit: hour)**
  - For example : iwpriv ra0 set ACSCheckTime=3 , do ACS every 3 hours.



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