



## Installation de la cellule WIFI :

Pour commencer, il faut configurer le vlan autorisant l'accès à l'interface web de la borne. Pour cela, il suffit d'aller dans l'onglet "LAN", puis "VLAN Configuration" et de rentrer le VLAN de configuration. (Ne pas oublier de sauvegarder)

|   | Miroloss N Dual Padio Accoss Point with PoE   |
|---|---|
| CISCO WAFIST  | Wileless-IN Dual Radio Access Foint with FOE  |
| Getting Started   | VLAN Configuration  |
| Run Setup Wizard  Status and Statistics                                     | MAC Address: E0:AC:F1:AC:AC:78  |
| <ul> <li>Administration</li> </ul>  | Untagged VLAN:  C Enable  |
| VLAN<br>Port Settings<br>VLAN Configuration<br>IPv4 Setting<br>IPv6 Setting | 2<br>Untagged VLAN ID: 1 (Range: 1 - 4094, Default: 1)<br>Management VLAN ID: 100 (Range: 1 - 4094, Default: 1) |
| <ul> <li>Wireless</li> </ul>  | Save  |
| <ul> <li>System Security</li> </ul>   | 3   |
| <ul> <li>Quality of Service</li> </ul>                                      |   |
| ► ACL   |   |
| ► SNMP  |   |
|   | ⊳   |

Puis, il nous faut paramétrer l'adresse IP de la borne. Pour cela il faut aller dans "IPv4 Setting" et rentrer la configuration IP. (Ne pas oublier de sauvegarder)





## WAP131 Wireless-N Dual Radio Access Point with PoE

| Getting Started                                     | IDv4 Satting                         |
|---|--------------------------------------|
| Run Setup Wizard                                    | IPv4 Setting                         |
| <ul> <li>Status and Statistics</li> </ul>           | D DHCP                               |
| Administration                                      | Connection Type:                     |
| ▼ LAN   | Static IP Address: 172 . 16 . 0 . 10 |
| Port Settings<br>VLAN Configuration<br>IPv4 Setting | Subnet Mask: 255 . 255 . 255 . 0     |
| IPv6 Setting  | Default Gateway: 172 . 16 . 0 . 254  |
| <ul> <li>Wireless</li> </ul>                        | Denneis Marrie Occurre O. Durantia   |
| <ul> <li>System Security</li> </ul>                 | Manual                               |
| <ul> <li>Quality of Service</li> </ul>              |                                      |
| ► ACL   |                                      |
| ► SNMP  |                                      |
|   | Save                                 |

Il faut ensuite configurer le lien vers notre serveur RADIUS. Pour cela, il faut aller dans l'onglet "System Security" et "RADIUS Server". Dans la première ligne, renseigner l'IP de notre serveur, la clé d'authentification (Qui sera à réutiliser lors de l'installation du serveur RADIUS) et le port (1812 par défault). (Ne pas oublier de sauvegarder).

|            | PoE  | Access Point with                 | ss-N Dual Radio /   | /ireles            | cisco WAP131 W  |  |  |
|------------|--|-----------------------------------|---|--------------------|---|--|--|
|            |  |                                   |   |                    | Getting Started   |  |  |
| 2          | p Wizard RADIUS Server                                   |                                   |   |                    |   |  |  |
| - <b>Y</b> |  |                                   | r IP Address Type: 🔵 IPv4                                 | Server             | <ul> <li>Status and Statistics</li> </ul>   |  |  |
|            |  |                                   | O IPv6  |                    | <ul> <li>Administration</li> </ul>  |  |  |
| it: 1812)  | Authentication Port<br>(Range: 0 - 65535, Default: 1812) | Key<br>(Range: 1 - 64 Characters) | Server IP Address<br>(XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX | No.                | <ul> <li>LAN</li> <li>Wireless</li> </ul>   |  |  |
|            | 1812   |                                   | 172.16.0.1  | 1                  | System Security   |  |  |
|            | 1812   |                                   |   | 2                  | RADIUS Server<br>802.1X Supplicant  |  |  |
| ]          | 1812   |                                   |   | 3                  | Password Complexity<br>WPA-PSK Complexity   |  |  |
|            | 1812   |                                   |   | 4                  | <ul> <li>Quality of Service</li> </ul>  |  |  |
|            | <ul><li>ACL</li><li>SNMP</li></ul>                       |                                   |   |                    |   |  |  |
|            | Save   |                                   |   |                    |   |  |  |
|            |  |                                   |   |                    |   |  |  |
|            | 1812       1812  |                                   | inable RADIUS Accounting                                  | 2<br>3<br>4<br>✔ E | 802.1X Supplicant<br>Password Complexity<br>WPA-PSK Complexity<br>Quality of Service<br>ACL<br>SNMP |  |  |

Il faut ensuite créer les les réseaux en allant dans l'onglet "Wireless", puis "Network" et cliquer sur "Add"





| Seect he rolio interface first, and then enter the configuration parameters. Precision 2 (8 dHz)  | Networks                            |           |   |                     |   |
|---|-------------------------------------|-----------|---|---------------------|---|
| Paddo 18 Radio Hail, and unit refer the bomplation parameters.         Radio 2 (6 SH)         Virtual Access Points (SBD)         Virtual Access Points (SBD)         Virtual Access Points (SBD)         WPA Venions:       WPA.Venions:         VMPA Venions:       WPA.Venions:         WPA.Venions:       Renge: 140 Characters)         Key-1:       Renge: 140 Characters)         Key-2:       (Range: 140 Characters)         Key-3:       Renge: 140 Characters)         Key-4:       Renge: 140 Characters)         Key-3:       Renge: 140 Characters)         Key-4:       Renge: 140 Characters)         Key-3:       Renert PAddress.1 V  |                                     |           |   |                     |   |
| Nado 2 (6 GHz)         Victual Access Points (\$\$50)         No.       Enable VLAN D       S50 Name       Brandcast       Becurity       MAC Filter       Channel Isolation         Image: 140 Distribution       Image: 140 Distribution       Image: 140 Distribution       Image: 140 Distribution         Image: 140 Distribution       Image: 140 Distribution       Image: 140 Distribution       Image: 140 Distribution         Image: 140 Distribution       Image: 140 Distribution       Image: 140 Distribution       Image: 140 Distribution         Image: 140 Distribution       Image: 140 Distribution       Image: 140 Distribution       Image: 140 Distribution         Image: 140 Distribution       Image: 140 Distribution       Image: 140 Distribution       Image: 140 Distribution         Image: 140 Distribution       Image: 140 Distribution       Image: 140 Distribution       Image: 140 Distribution         Image: 140 Distribution       Image: 140 Distribution       Image: 140 Distribution       Image: 140 Distribution         Image: 140 Distribution       Image: 140 Distribution       Image: 140 Distribution       Image: 140 Distribution         Image: 140 Distribution       Image: 140 Distribution       Image: 140 Distribution       Image: 140 Distribution         Image: 140 Distribution       Image: 140 Distribution       Image: 140 Distribution       Image: 140   | Radio: Radio 1 (2.4 GHz)            |           |   |                     |   |
| Virbal Access Points (SSID)       SSID Name       SSID Broadcast       Security       MAC Filer       Channel Isolation         0       0       000       Assume_Admin_D2       VPAE Enterprise V       Deabled V       Image: Control of the second of the   | <ul> <li>Radio 2 (5 GHz)</li> </ul> |           |   |                     |   |
| No.       Enable       VLAN ID       SSID Name       SSID Boold Statumer, Admm_D2       WRA Enterprise V       Datable       Channel Isolation         0       0       00       Resummer, Admm_D2       WRA Enterprise V       Datable V       0         Hde Details         WRA Union:       WRA Union:       WRA Union:       WRA Vesion:   | Virtual Access Points (SSIDs)       |           |   |                     |   |
| No.       Loss of the second sec  | VAP Enable VI AN ID SSID Name       | SSID      | Security  | MAC Filter          | Channel Isolation                       |
| Image: Server IP Address 7:       Image: Server IP Address 7:       Image: Server IP Address 7:         Server IP Address 7:       Image: Server IP Address 7:       Image: Server IP Address 7:         Server IP Address 7:       Image: Server IP Address 7:       Image: Server IP Address 7:         Server IP Address 7:       Image: Server IP Address 7:       Image: Server IP Address 7:         Server IP Address 7:       Image: Server IP Address 7:       Image: Server IP Address 7:         Server IP Address 7:       Image: Server IP Address 7:       Image: Server IP Address 7:         Server IP Address 7:       Image: Server IP Address 7:       Image: Server IP Address 7:         Server IP Address 7:       Image: Server IP Address 7:       Image: Server IP Address 7:         Server IP Address 7:       Image: Server IP Address 7:       Image: Server IP Address 7:         Nav-2:       Image: Server IP Address 7:       Image: Server IP Address 7:         Nav-2:       Image: Server IP Address 7:       Image: Server IP Address 7:         Nav-2:       Image: Server IP Address 7:       Image: Server IP Address 7:         Nav-2:       Image: Server IP Address 7:       Image: Server IP Address 7:         Broadcast Key Refresh Rate:       Image: Server IP Address 7:       Image: Server IP Address 7:         Image: Server:       Server IP Address 7:       Server IP Address   |                                     | Broadcast | 18/DA Falancias Md  | Dischied be         |   |
| Hole Details         WPA Versions:       WPA/Versions:         Use global RADUS server settings         Server IP Address Type:       IP.vd         IP Address Type:       IP.vd         IP Address T:       ITZ 180.0         Generative readings       Goccocc.cocc.coc)         Server IP Address T:       ITZ 180.0         Server IP Address T:       (coccocc.cocc.coc)         Key-1:       (coccocc.cocc.coc)         Key-1:       (coccocc.cocc.coc)         Key-2:       (Range: 144 Characters)         Key-3:       (Range: 144 Characters)         Key-4:       (Range: 144 Characters)         IP cable RADIUS Accounting       Active Server:         Active Server:       Server IP Address I v         Broadcast Key Refresh Rate:       0       Sec (Range: 30-80400, 0 = Disable, Default: 300)         Session Key Refresh Rate:       0       Sec (Range: 30-80400, 0 = Disable, Default: 300         VPRA Versions:       WPA-TOP   | Assumer_Admin_02                    |           | WPA Enterprise 👻  | Disabled V          |   |
| WPA Versions: WPA-TrOP WPA2-AES<br>Brabe Part Paddress-1: WPA-TrOP WPA2-AES<br>Braver IP Address-2: Coc.coc.coc.coc.<br>Server IP Address-3: Coc.coc.coc.coc.<br>Server IP Address-3: Coc.coc.coc.coc.<br>Server IP Address-3: Coc.coc.coc.coc.<br>Server IP Address-3: Coc.coc.coc.coc.<br>Server IP Address-4: Coc.coc.coc.coc.<br>Key-1: (Range: 1-44 Characters)<br>Key-2: (Range: 1-44 Characters)<br>Key-4: Server IP Address-1<br>Bradoat Key Refresh Rate: 200 Sec (Range: 0-88400, 0 = Disable, Default: 300)<br>Session Key Refresh Rate: 20 Sec (Range: 30-88400, 0 = Disable, Default: 300)<br>Session Key Refresh Rate: 20 Sec (Range: 30-88400, 0 = Disable, Default: 300)<br>Session Key Refresh Rate: 20 Sec (Range: 30-88400, 0 = Disable, Default: 300)<br>Session Key Refresh Rate: 20 Sec (Range: 30-88400, 0 = Disable, Default: 300)<br>Session Key Refresh Rate: 20 Sec (Range: 30-88400, 0 = Disable, Default: 300)<br>Session Key Refresh Rate: 20 Sec (Range: 30-88400, 0 = Disable, Default: 300)<br>Session Key Refresh Rate: 20 Sec (Range: 30-88400, 0 = Disable, Default: 300)<br>Session Key Refresh Rate: 20 Sec (Range: 30-88400, 0 = Disable, Default: 300)<br>Session Key Refresh Rate: 20 Sec (Range: 30-88400, 0 = Disable, Default: 300)<br>Session Key Refresh Rate: 20 Sec (Range: 30-88400, 0 = Disable, Default: 300)<br>Session Key Refresh Rate: 20 Sec (Range: 30-88400, 0 = Disable, Default: 300)<br>Session Key Refresh Rate: 20 Sec (Range: 30-88400, 0 = Disable, Default: 300)<br>Session Key Refresh Rate: 30 Sec (Range: 30-88400, 0 = Disable, Default: 300)<br>Session Key Refresh Rate: 30 Sec (Range: 30-88400, 0 = Disable, Default: 300)<br>Sec (Range: 30-88400, 0 = |                                     |           | Hide Details  |                     |   |
| Carbo Pre-authentication      Brave IP Address Type:     Pyd     Pyd     Server IP Address Type:     Pyd     Pyd     Server IP Address Type:     (00000000000)     Server IP Address-2:     (0000000000)     Server IP Address-2:     (0000000000)     Server IP Address-3:     (0000000000)     Server IP Address-4:     (Range: 1-84 Characters)     Key-4:     (Range: 1-84 Characters)  |                                     |           | WPA Versions: WPA-TKIP  | WPA2-AES            |   |
| Server IP Address Type:       IPvd         Server IP Address 1:       172.16.0         Server IP Address 1:       (00.000.000.000)         Key-1:       (Range: 1-84 Characters)         Key-2:       (Range: 1-44 Characters)         Key-3:       (Range: 1-44 Characters)         Key-3:       (Range: 1-44 Characters)         Key-3:       (Range: 1-44 Characters)         Imable RADIUS Accounting       Active Server:         Active Server:       Server IP Address 1         Broadcast Key Refresh Rate:       0       Sec (Range: 0-80400, 0 = Disable, Default: 00)         Session Key Refresh Rate:       0       Sec (Range: 30-80400, 0 = Disable, Default: 0)         MPA Versions:       WPA-TDP       WPA2-AES         Key:       Sec (Range: 0-38400, 0 = Disable, Default: 300       Sec (Range: 0-38400, 0 = Disable, Default: 300         Seadcast Key Refresh Rate:       Belo   |                                     |           | Enable pre-authe  | ntication           |   |
| Server IP Address Type:       TPL@ (Pvd)         Server IP Address-1:       TO (0000000000)         Server IP Address-2:       (00000000000)         Server IP Address-4:       (00000000000)         Server IP Address-4:       (00000000000)         Server IP Address-4:       (000000000000)         Server IP Address-4:       (000000000000)         Server IP Address-4:       (000000000000)         Key-1:       (Range: 1-40 Characters)         Key-2:       (Range: 1-40 Characters)         Key-4:       (Range: 1-40 Characters)         Ney-4:       (Range: 1-40 Characters)         Broadcast Key Refresh Rate:       0         Sec (Range: 3-8400, 0 = Disable, Default: 300)         Secsion Key Refresh Rate:       0         Sec (Range: 3-8400, 0 = Disable, Default: 0)         Hold Details       WPA/TrOP         WPA/2-KES       Key Strength Meter:         WPA Versions:       WPA/TrOP         Key Strength Meter:       Beole Minimum         Broadcast Key Refresh Rata       Sec (Range: 0-8400, 0 = Dis  |                                     |           | Use global RADIUS server setting  | 5                   |   |
| Server IP Address-1: 1/21/80/9 (000.000.000)<br>Server IP Address-2: (000.000.000)<br>Server IP Address-3: (000.000.000)<br>Server IP Address-4: (000.000.000)<br>Server IP Address-4: (000.000.000)<br>Key-1: (Range: 1-40 Characters)<br>Key-2: (Range: 1-44 Characters)<br>Key-4: Server: Server IP Address-1 v<br>Broadcast Key Refresh Rate: 0 Sec (Range: 0-86400, 0 = Disable, Default: 300)<br>Session Key Refresh Rate: 0 Sec (Range: 30-80400, 0 = Disable, Default: 300)<br>Session Key Refresh Rate: WPA-TtOP<br>Hóa Details<br>WPA Versions: WPA Versions: WPA-TtOP<br>Key Steringth Meter: Bellow Minimum<br>Broadcast Key Refresh Rate 300 Sec (Range: 0-36400, 0 = Disable, Default: 300)<br>Sec (Range: 30-80400, 0 = Disable, Default: 300)<br>Sec (Range: 0-86400, 0 = Disable, Default: 300)   |                                     |           | Server IP Address Type:  IPv4  IPv4 | IPv6                |   |
| Server IP Address-2.       000000000000000000000000000000000000   |                                     |           | Server IP Address-1: 172.10.0.9   | (200020002          | 00()                                    |
| General Produest-0.       000000000000000000000000000000000000  |                                     |           | Server IP Address-2.  | (2000,2000,2000)    | 00()                                    |
| Wey-1:       (Range: 1-46 Characters)         Key-2:       (Range: 1-46 Characters)         Key-2:       (Range: 1-46 Characters)         Key-3:       (Range: 1-46 Characters)         Key-4:       (Range: 1-46 Characters)         Key-1:       (Range: 1-46 Characters)         Key-2:       (Range: 1-46 Characters)         Key-3:       (Range: 1-46 Characters)         Key-4:       (Range: 1-46 Characters)         Key-1:       (Range: 1-46 Characters)         Key-1:       Sec (Range: 0-86400, 0 = Disable, Default: 200)         Session Key Refresh Rate:       0         Sec (Range: 30-80400, 0 = Disable, Default: 200)         Session Key Refresh Rate:       0         Sec (Range: 30-80400, 0 = Disable, Default: 200)         Key Strength Meter:       Sec (Range: 30-80400, 0 = Disable, Default: 200)         Sec (Range: 0-38400, 0 = Disable, Default: 200)       Sec (Range: 0-38400, 0 = Disable, Default: 200)  |                                     |           | Server IP Address-4:  |                     | (m)                                     |
| Image: Instruction       (Using: Instructions)         Key-2:       Regree: I-84 Characters)         Key-3:       (Range: I-84 Characters)         Key-4:       (Range: I-84 Characters)         Imable RADIUS Accounting       Active Server:         Active Server:       See (Range: 0-86400, 0 = Disable, Default: 300)         Besion Key Refresh Rate:       0         See (Range: 30-88400, 0 = Disable, Default: 0)         Hole Default       0         See (Range: 30-88400, 0 = Disable, Default: 0)         Hole Default       0         See (Range: 30-88400, 0 = Disable, Default: 0)         Hole Default       0         See (Range: 30-88400, 0 = Disable, Default: 0)         Hole Default       0         See (Range: 30-88400, 0 = Disable, Default: 0)         Hole Default       0         See (Range: 30-88400, 0 = Disable, Default: 0)         Hole Default       0         See (Range: 30-88400, 0 = Disable, Default: 200)         Key Strength Meter:       Beole Minimum         Broadcast Key Refresh Rate       00       See (Range: 0-88400, 0 = Disable, Default: 200)   |                                     |           | Kev.1   | (Ronao: 1.64        | (haractor)                              |
| Image: Starting of the second seco   |                                     |           | Key-2   | (Range: 1-64        | Characters)                             |
| Key-4:       (Range: 1-84 Oharacters)         Brable RADIUS Accounting       Active Server:         Broadcast Key Refresh Rate:       000         Sec (Range: 0-86400, 0 = Disable, Default: 300)         Session Key Refresh Rate:       0         Sec (Range: 30-86400, 0 = Disable, Default: 0)         Hole Details         WPA Versions:       WPA-TrOP         Key:       (Range: 8-03 Characters)         Key:       Show Key as Clear Text         Key Strength Meter:       Below Minimum         Broadcast Key Refresh Rate:       000         Show Key as Clear Text       Key Strength Meter:         Broadcast Key Refresh Rate:       000   |                                     |           | Key-3:  | (Range: 1-64        | Characters)                             |
|   |                                     |           | Key-4:  | (Range: 1-64        | Characters)                             |
| Active Server: Server: PAddress-1   |                                     |           | Enable RADIUS Accounting  |                     |   |
| Broadcast Key Refresh Rate: 300 Sec (Range: 0-86400, 0 = Disable, Default: 300)<br>Session Key Refresh Rate: 0 Sec (Range: 30-86400, 0 = Disable, Default: 300)<br>Session Key Refresh Rate: 0 Sec (Range: 30-86400, 0 = Disable, Default: 0)<br>I 1 1 Assumer_Guest_02 VPA Personal V Disabled V<br>Hole Details<br>VPA Versions: WPA-TrOP WPA2-AES<br>Key: WPA-TrOP WPA2-AES<br>Key: Strength Meter: Below Minimum<br>Broadcast Key Refresh Rate 300 Sec (Range: 0-86400, 0 = Disable, Default: 300)  |                                     |           | Active Server: Server   | IP Address-1 🗸      |   |
| Session Key Refresh Rate: 0 Sec (Range: 30-80400, 0 = Disable, Default: 0)  |                                     |           | Broadcast Key Refresh Rate: 300   | Sec (Ran            | ge: 0-86400, 0 = Disable, Default: 300) |
| Image: 1   |                                     |           | Session Key Refresh Rate: 0   | Sec (Ran            | ge: 30-86400, 0 = Disable, Default: 0)  |
| Hide Details           WPA Versions:         WPA-TKIP         WPA2-AES           Key:         Immune         (Range: 8-83 Characters)           Show Key as Clear Text         Show Key as Clear Text           Hide Verlage And  | □ 1                                 |           | WPA Personal 🗸  | Disabled 🗸          |   |
| WPA Versions:         WPA_THUP         WPA_2-AES           Key:         Immediate         (Range: 8-63 Characters)           Show Key as Clear Text         Show Key as Clear Text           Key Strength Meter:         Immediate Key Refreah Rate         Below Minimum           Broadcast Key Refreah Rate         500         See (Range: 0-68400, 0 = Disable, Default: 300)  |                                     |           | Hide Details  |                     |   |
| Key:     (Range: 8-83 Characters)       Show Key as Clear Text     Show Key as Clear Text       Key Strength Meter:     Below Minimum       Broadcast Key Refresh Rate 300     See (Range: 0-86400, 0 = Disable, Default: 300)  |                                     |           | WPA Versions: 🛛 WPA   | -TKIP WPA2          | AES                                     |
| Show Key as Clear Text Key Strength Meter: Below Minimum Broadcast Key Refresh Rate 300 Sec (Range: 0-86400, 0 = Disable, Default: 300)   |                                     |           | Key:  | (Range: 8           | 63 Characters)                          |
| Key Strength Meter: Below Minimum Broadcast Key Refresh Rate 300 Sec (Range: 0-86400, 0 = Disable, Default: 200)  |                                     |           | Shov  | w Key as Clear Text |   |
| Sec (Range: 0-88400, 0 = Disable, Default: 300)   |                                     |           | Key Strength Meter:   | Below Minimum       |   |
|   | 2                                   |           | Broadcast Key Refresh Rate 300  | Sec (Rang           | e: 0-86400, 0 = Disable, Default: 300)  |

Il faut ensuite rentrer le Vlan d'action du réseau, son SSID et son protocole de sécurité.

| 🔽 0 🗹 100 U Assurmer_Admin_02 📿 🗸 | WPA Enterprise  |  |
|-----------------------------------|---|--|
|                                   | Hide Details  |  |
|                                   | WPA Versions: WPA-TKIP WPA2-AES   |  |
|                                   | ✓ Use global RADIUS server settings 4   |  |
| N                                 | Server IP Address Type:  IPv4 IPv6  |  |
| 4                                 | Server IP Address-1: 172.16.0.9 (xxx.xxx.xxx.xxx)                               |  |
|                                   | Server IP Address-2: (XXXLXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                     |  |
|                                   | Server IP Address-3: (XXX.XXX.XXX)  |  |
|                                   | Server IP Address-4: (XXXLXXXLXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                     |  |
|                                   | Key-1: (Range: 1-64 Characters)   |  |
|                                   | Key-2: (Range: 1-64 Characters)   |  |
|                                   | Key-3: (Range: 1-64 Characters)   |  |
|                                   | Key-4: (Range: 1-64 Characters)   |  |
|                                   | Enable RADIUS Accounting  |  |
|                                   | Active Server: Server IP Address-1  |  |
|                                   | Broadcast Key Refresh Rate: 300 Sec (Range: 0-86400, 0 = Disable, Default: 300) |  |
|                                   | Session Key Refresh Rate: 0 Sec (Range: 30-86400, 0 = Disable, Default: 0)      |  |
|                                   |   |  |

Pour un WPA enterprise, sélectionner "WPA Entreprise", puis cocher la case "Use global RADIUS server settings" et vérifier que le serveur actif est bien le numéro 1. (Ne pas oublier de sauvegarder)





## Répéter l'étape précédente pour les réseaux en 5 GHz

Select the radio interface first, and then enter the configuration parameters.

Radio: <u>Radio 1 (2 4 GHz)</u> Radio 2 (5 GHz)