

## Radio settings



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The "Radio settings" section allows to configure radio parameters to establish wireless connection.

Radio settings are divided into the following categories:

- [Radio frontend](#)
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### Radio frontend

| Parameter                          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Unit role</b>                   | One units must be set to Master and the other one to Slave.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Dynamic frequency selection</b> | <p>Following modes are possible to operation:</p> <ul style="list-style-type: none"> <li>• <b>Frequency selection off</b> - the center frequency must be selected manually.</li> <li>• <b>Mandatory DFS and radar detection</b> - the least noisy frequency will be selected in accordance with the set frequency grid. The device will block the frequency in case it detects a radar.</li> <li>• <b>Instant DFS</b> - the least noisy frequency will be selected in accordance with the set frequency grid. The device will change frequency in case the strong interference appears.</li> <li>• <b>Instant DFS and radar detection</b> - the least noisy frequency will be selected in accordance with the set frequency grid. The device will change frequency in case the strong interference appears and block the frequency in case it detects a radar.</li> </ul> <div style="border: 1px solid #f9c77d; padding: 10px; margin-top: 10px;"> <p> <b>NOTE</b></p> <p>The radar detection mode is only available with "ETSI" regulatory domain. Instant DFS and radar detection are only available for the Quanta 5 family devices.</p> </div> <p>For detailed description of the listed modes proceed to the <a href="#">Instant DFS article</a>.</p> |
| <b>Regulatory domain</b>           | <p>Regulatory domain automatically limits the wireless device operation which is may be needed to meet the local law requirements. Each regulatory domain may limits the following parameters:</p> <ul style="list-style-type: none"> <li>• Range of available center frequencies</li> <li>• Requirement of use LBT (Listen Before Talk) technique.</li> <li>• Maximum EIRP (Equivalent Isotropically Radiated Power) value.</li> <li>• Requirement of use radar detection technique.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Fixed center frequency</b>      | <p>Available only on the Slave unit.</p> <ul style="list-style-type: none"> <li>• Enabled - center frequency must be set manually on wich the Slave unit will operate.</li> <li>• Disabled - center frequenc will be selected automatically based on frequency channel grids.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Downlink /Uplink center frequencies</b> | <p>Allows to manually set the center frequency. The Quanta 5 family devices allow independent frequencies configuration for uplink and downlink streams. When same frequencies are used on both streams, transmission will be carried out in time division duplex (TDD) mode, when different frequencies are assigned for uplink and downlink traffic, the transmission mode will change to hybrid frequency division duplex (H-FDD). The uplink frequency can be configured only on the master.</p> <div><p> <b>NOTE</b></p><p>Downlink - the direction from Master to Slave, Uplink - the direction from Slave to Master. These directions are correct for the whole link and do not depend on the roles of the devices.</p></div> |
| <b>Power limit</b>                         | <p>This parameter limits the transmitter power, there are two modes:</p> <ul style="list-style-type: none"><li>• Transmitter output power - limits the power of transmitter to the set value.</li><li>• EIRP - limits the total system power calculated as: Tx Power + Antenna gain + Cable loss (an antenna gain and cable losses should be specified in the fields below).</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                |

#### Radio frontend settings description

### Radio frontend

Unit role: Master

Dynamic frequency selection: Instant DFS and radar detection

Regulatory domain: ETSI 5.4+5.8

Downlink center frequency, MHz: 5280

Uplink center frequency, MHz: 5280

Power limit, dBm: Transmit output power

-10 -2 27

Antenna gain, dBi: 23

RF cable loss, dBm: 0

Figure - Radio frontend settings

#### Air frame

| Parameter            | Description                                                                                                                            |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Channel width</b> | Channel width, should be the same on both Master and Slave units. Available values: 3.5, 5, 7, 10, 14, 15, 20, 28, 30, 40, 50, 56 MHz. |

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Frame length</b>           | <p>Frame period affects the following wireless link metrics:</p> <ul style="list-style-type: none"> <li>• The greater frame period the more payload will be transmitted in one frame. Greater values increase latency.</li> <li>• The lower frame period the less payload will be transmitted in one frame. Lower values decrease latency.</li> </ul> <p>Please note that frame period value is strongly depends on interference conditions. If larger frames will be dropped the larger payload is lost and system performance is decreased significantly. If smaller frames will be dropped the smaller payload is lost. Available values: 1, 2, 5, 10 ms.</p> |
| <b>Downlink /Uplink ratio</b> | <p>In automatic mode, the ratio changes dynamically in accordance with the transmitted traffic. Manual mode allows to set a fixed value. Available values depend from:</p> <ul style="list-style-type: none"> <li>• Channel width.</li> <li>• Frame length.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                           |

Air frame settings description

### Air frame

Channel width, MHz:

40

Frame length, ms:

5

Downlink/Uplink ratio:

Fixed

67 / 33

Figure - Air frame settings

## Automatic modulation and transmit power control

| Parameter                               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AMC strategy</b>                     | <p>There are following AMC strategies available:</p> <ul style="list-style-type: none"> <li>• Normal - represents a balance between the error rate and throughput values.</li> <li>• Conservative - assumes using higher CINR thresholds in order to minimize the error rate.</li> <li>• Aggressive - lowers the thresholds in order to use higher modulation levels and thus increase the throughput but also increase the error rate.</li> <li>• Extreme - lowers the CINR threshold below the Aggressive strategy values in order to maximize selected modulation and throughput.</li> </ul> |
| <b>Automatic transmit power control</b> | <p>ATPC allows to control transmitter output power automatically based on target RSSI value. If actual RSSI level is lower then unit increases transmitter output power of the remote unit and vice versa. ATPC could not set value that may exceed the "Power limit" value.</p> <ul style="list-style-type: none"> <li>• The Master unit manages the transmit power of Slave unit.</li> <li>• The Slave unit manages the transmit power of Master unit.</li> </ul>                                                                                                                             |
| <b>Target RSSI</b>                      | RSSI value which will be used by ATPC as target.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

AMC and ATPC settings description

### Automatic modulation and transmit power control

AMC strategy:

Normal

Automatic transmit power control:

☒

Target RSSI, dBm:

-55

Figure - AMC and ATPC settings

## Frequency channel grids

The frequency grid allows to limit the scan range in case the center frequency is automatically selected. Also Instant DFS will use these restrictions when monitoring the noise situation. Narrow grid of available frequencies speeds up scanning and link establishing process. Manual center frequency selection will also be limited to the values indicated in the grid.



### NOTE

Please note grids should be the same on both Master and Slave units.

### Frequency channel grid, MHz

|                                  |                                                                                                                                |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| 3.5 MHz:<br><a href="#">Edit</a> | <input type="text" value="4902.5-5997.5/5"/> <a href="#">×</a>                                                                 |
| 5 MHz:<br><a href="#">Edit</a>   | <input type="text" value="4902.5-5997.5/5"/> <a href="#">×</a>                                                                 |
| 7 MHz:<br><a href="#">Edit</a>   | <input type="text" value="4903.5-5996.5/7"/> <a href="#">×</a>                                                                 |
| 10 MHz:<br><a href="#">Edit</a>  | <input type="text" value="4905-5995/10"/> <a href="#">×</a>                                                                    |
| 14 MHz:<br><a href="#">Edit</a>  | <input type="text" value="4907-5993/14"/> <a href="#">×</a>                                                                    |
| 15 MHz:<br><a href="#">Edit</a>  | <input type="text" value="4907.5-5992.5/15"/> <a href="#">×</a>                                                                |
| 20 MHz:<br><a href="#">Edit</a>  | <input type="text" value="4910-5990/20"/> <a href="#">×</a>                                                                    |
| 28 MHz:<br><a href="#">Edit</a>  | <input type="text" value="4914-5986/28"/> <a href="#">×</a>                                                                    |
| 30 MHz:<br><a href="#">Edit</a>  | <input type="text" value="4915-5985/30"/> <a href="#">×</a>                                                                    |
| 40 MHz:                          | <input type="text" value="5000-5900/100"/> <a href="#">×</a>                                                                   |
|                                  | <div>Add frequency value...</div> <p>Examples: "5000", "5000-6000", "5000-6000/20" or a list "5000 5000-6000 6000-6006/3".</p> |
| 50 MHz:<br><a href="#">Edit</a>  | <input type="text" value="4925-5975/50"/> <a href="#">×</a>                                                                    |
| 56 MHz:<br><a href="#">Edit</a>  | <input type="text" value="4928-5972/56"/> <a href="#">×</a>                                                                    |

Figure - Frequency channel grids