

## Commands for modem configuration



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### ifc radio

Use this command to enable or disable the system radio interface.

**Syntax:**

*#1> ifc radio {up | down}*

### xg

Use this command to set the air link parameters.

**Syntax:**

*#1> xg [arguments]*

```

#l> xg
usage:

  xg config
  xg config -peer-exported
  xg config -defaults

  xg [-grids-carrier-ix=<carrier-ix>] [-grids-band=<channel-width>] -grids {<freq_start>[-<freq_end>[
/<step>]][,...]}
  xg [-grids-carrier-ix=<carrier-ix>] [-grids-band=<channel-width>] -grids=

General settings
  xg -type {master, slave}
  xg -tdd-sync-src {freerun, gnss}
  xg -autosync-link-settings {no, no-co-sa-no-reboot, no-reboot, reboot-remote-if-needed}

Link shared settings (Radio Front End)
  xg -cell-id {0..15/1}
  xg -channel-width {10, 20, 40}
  (channel-width 10): xg -freq-dl {6005..6415/50}
  (channel-width 20): xg -freq-dl {6010..6410/20}
  (channel-width 40): xg -freq-dl {6020..6400/50}
  (channel-width 10): xg -freq-ul {6005..6415/50}
  (channel-width 20): xg -freq-ul {6010..6410/20}
  (channel-width 40): xg -freq-ul {6020..6400/50}
  xg -short-cp {0, 1}
  xg -freq-auto {0, 1}

Link shared settings (Frame Config)
  xg -max-distance {1..100/1}
  xg -sframelen {2, 4, 5, 10}
  xg -tdd-profile {0..7/1}
  xg -tdd-profile-auto-switching {0, 1}

RF per-station settings
  xg -txpwr {0..27/1}
  xg -ctrl-block-boost {0, 1}
  xg -atpc-master-enable {0, 1}
  xg -atpc-target-rssi {-70..-40/1}
  xg -atpc-rssi-threshold {0..5/1}

Modulation related
  xg -amc-strategy {normal, conservative, aggressive}
  xg -max-mcs {1..11/1}

DFS/RSSI scan/Radar detection
  xg -ids-enable {0, 1}
  xg -ids-rssi-threshold {1..50/1}
  xg -ids-ffs-time {0..600/1}
  xg -ids-rdrdt-enable {0, 1}
  xg -ids-fix-dl-ul {0, 1}

Ethernet datapath related
  xg -traffic-prioritization {0..1/1}
  (ids-enable 0): xg -1588-sync-tai {1, 0}

Supplementary
  xg -config-restore-time {1..60/1}
  xg -config-restore-index {1..8/1}
  xg -passphrase=<pass>
aliases:
  xg -freq <val> => xg -freq-dl <val> -freq-ul <val>

```

Commands and options description is given in the table below:

Command	Description
<code>xg config</code>	<ul style="list-style-type: none"> <li>Local unit configuration</li> </ul>
<code>xg config -peer-exported</code>	<ul style="list-style-type: none"> <li>Unit configuration except the "Node Type" parameter</li> </ul> <p>The outputs have the following view:</p> <pre>xg -v3-start xg -v3 &lt;encoded web config&gt; xg -v3-end</pre>
<code>xg config -defaults</code>	<ul style="list-style-type: none"> <li>The default unit configuration</li> </ul>
<code>xg [-grids-carrier-ix=&lt;carrier-ix&gt; [-grids-band=&lt;channel-width&gt;] -grids {&lt;freq_start&gt;[&lt;freq_end&gt;[&lt;step&gt;]]}]...</code>	<ul style="list-style-type: none"> <li>If you need to set the limits on the available operation frequencies (for example, if there are some legal or other restrictions for usage of some part of hardware supported frequencies), you can configure a custom frequency grid. In order to set a custom frequency grid (within physical/license limits of a specific model), define the grid individually for each band of each carrier as a list of sub-bands</li> </ul>
<code>xg [-grids-carrier-ix=&lt;carrier-ix&gt; [-grids-band=&lt;channel-width&gt;] -grids=</code>	<ul style="list-style-type: none"> <li>Sequence of frequencies separated by commas</li> </ul>
<code>xg -type {master   slave}</code>	<ul style="list-style-type: none"> <li>Set the node type to "master" or "slave". Point-to-point link can be set between "master" and "slave" unit</li> </ul> <p>Example,</p> <pre>xg -type master</pre>
<code>xg -tdt-sync-src {freerun   gnss}</code>	<ul style="list-style-type: none"> <li>Configure TDD synchronization parameter: <ul style="list-style-type: none"> <li>"freerun" - the "slave" unit synchronization is performed with the built-in GPS/GLONASS receiver of the "master" unit</li> <li>"gnss" - synchronization from built-in GPS/GLONASS receiver</li> </ul> </li> </ul> <div style="border: 1px solid red; padding: 5px; margin-top: 10px;"> <p><b>⚠ CAUTION</b></p> <p>GNSS option is effective for "master" unit only.</p> </div> <div style="border: 1px solid red; padding: 5px; margin-top: 10px;"> <p><b>⚠ CAUTION</b></p> <p>Before enabling "gnss" option make sure that built-in GNSS-receiver is configured properly. Use "gps" command to configure or check the status (use values of "HDOP" up to 1.5).</p> </div>
<code>xg -autosync-link-settings {no, no-co-sa-no-reboot, no-reboot, reboot-remote-if-needed}</code>	<p>Automatic link synchronization:</p> <ul style="list-style-type: none"> <li>"no" - disabled</li> <li>"no-co-sa-no-reboot" - sync settings are not saved, the remote unit is not rebooted</li> <li>"no-reboot" - sync settings are saved, the remote unit is not rebooted</li> <li>"reboot-remote-if-needed" - save and reboot the remote unit if needed.</li> </ul> <p>The automatic link synchronization option will always be executed if it is enabled in CLI and not checked in the web interface</p>

<p><i>xg -cell-id {0..15/1}</i></p>	<ul style="list-style-type: none"> <li>• Set the link ID value</li> <li>• Use this parameter to avoid connecting a unit to a wrong peer if there are several co-located units using the same center frequency</li> <li>• Specify different ID values for different link. Both ends of the same link must have the same ID. The value range is 0...15 in increments of 1</li> </ul> <p>Example,</p> <pre>xg -cell-id 15</pre>
<p><i>xg -channel-width {10, 20, 40}</i></p>	<ul style="list-style-type: none"> <li>• Set the channel width (in MHz). The possible values are: 10, 20 or 40 MHz</li> </ul>
<p><i>{channel-width 10}: xg -freq-dl {6005..6415/50}</i></p> <p><i>{channel-width 20}: xg -freq-dl {6010..6410/20}</i></p> <p><i>{channel-width 10}: xg -freq-dl {6020..6400/50}</i></p>	<ul style="list-style-type: none"> <li>• Set the downlink center frequency (applicable to the models supporting split-frequency/H-FDD operation)</li> <li>• The range of available values for each of the channel widths is specified in braces.</li> </ul> <p>Example,</p> <pre>xg -freq-dl 6410</pre> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p><b>⚠ NOTE</b></p> <p>For the units with two radio modules the downlink center frequency must be set for both.</p> <p>Example,</p> <pre>xg -freq-dl [0]6000,[1]6100</pre> </div>
<p><i>{channel-width 10}: xg -freq-ul {6005..6415/50}</i></p> <p><i>{channel-width 20}: xg -freq-ul {6010..6410/20}</i></p> <p><i>{channel-width 10}: xg -freq-ul {6020..6400/50}</i></p>	<ul style="list-style-type: none"> <li>• Set the uplink center frequency (applicable to the models supporting split-frequency/H-FDD operation)</li> <li>• The range of available values for each of the channel widths is specified in braces.</li> </ul> <p>Example,</p> <pre>xg -freq-ul 6400</pre> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p><b>⚠ NOTE</b></p> <p>For the units with two radio modules the uplink center frequency must be set for both.</p> <p>Example,</p> <pre>xg -freq-ul [0]6200,[1]6300</pre> </div>
<p><i>xg -short-cp {0, 1}</i></p>	<ul style="list-style-type: none"> <li>• Enable/disable the "Short Cyclic Prefix" option</li> <li>• Cyclic prefix is used to mitigate inter-symbol interference due to multipath propagation environment</li> <li>• Cyclic prefix size is always 1/8 for 10 MHz channel width</li> </ul>

<p><i>xg -freq-auto {0, 1}</i></p>	<ul style="list-style-type: none"> <li>• Enable/disable the automatic frequency selection, in case of DFS option in license</li> </ul> <div style="border: 1px solid #f96; padding: 5px; margin-top: 10px;"> <p> <b>NOTE</b></p> <p>The automatic frequency selection option is NOT available for the InfiLINK XG 1000 family devices.</p> </div>
<p><i>xg -max-distance {1..100/1}</i></p>	<ul style="list-style-type: none"> <li>• Specify the maximum link distance (in kilometers). The possible values: from 1 to 100 in increments of 1 km</li> <li>• The specified value must not be lower than the actual link distance, but it is recommended keep it as close as possible to the actual distance to avoid unnecessary overheads</li> <li>• The recommended strategy is to set this parameter well above the actual distance after the units have been deployed based on the measured distance value taken from "<i>xginfo stat</i>" output</li> </ul> <p>Example,</p> <pre style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;">xg -max-distance 50</pre>
<p><i>xg -sframelen {2, 4, 5, 10}</i></p>	<ul style="list-style-type: none"> <li>• Set the air frame period duration (in ms). The value range is 2, 4, 5 or 10 ms</li> <li>• A shorter frame period gives lower latency, but also has higher overheads</li> <li>• Using longer frame periods cuts down overheads, but increases the latency</li> </ul> <p>Example,</p> <pre style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;">xg -sframelen 10</pre>
<p><i>xg -tdd-profile {0..7/1}</i></p>	<ul style="list-style-type: none"> <li>• Set the TDD profile</li> <li>• Current and available profile value, DL/UL ratio depending on the frame period can be checked in the output of "<i>xginfo capabilities -verbose</i>" command</li> </ul> <p>Example,</p> <pre style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;">xg -tdd-profile 5</pre> <p>DL/UL values for the profile 5:</p> <pre style="background-color: #2e3436; color: #eeeeec; padding: 10px; margin-top: 10px;">TDD Profile 5: F0: DL: 62, ttg: 0, UL: 0, rtg: 0 (air blks) F1: DL: 62, ttg: 0, UL: 0, rtg: 0 (air blks) F2: DL: 62, ttg: 0, UL: 0, rtg: 0 (air blks) F3: DL: 62, ttg: 0, UL: 0, rtg: 0 (air blks) F4: DL: 62, ttg: 0, UL: 0, rtg: 0 (air blks) F5: DL: 62, ttg: 0, UL: 0, rtg: 0 (air blks) F6: DL: 58, ttg: 4, UL: 0, rtg: 0 (air blks) F7: DL: 0, ttg: 0, UL: 62, rtg: 0 (air blks) F8: DL: 0, ttg: 0, UL: 62, rtg: 0 (air blks) F9: DL: 0, ttg: 0, UL: 59, rtg: 3 (air blks) DL/UL ratio: 70/30</pre>
<p><i>xg -tdd-profile-auto-switching {0, 1}</i></p>	<ul style="list-style-type: none"> <li>• Enable/disable the automatic downlink/uplink ratio selection</li> </ul>

<p><code>xg -txpwr {0..27/1}</code></p>	<ul style="list-style-type: none"> <li>Set a transmit power level (in dBm). The value range is 0...27 dBm in increments of 1 dBm</li> </ul> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <p><b>NOTE</b></p> <p>For the units with two radio modules the transmit power must be set for both. The value range is 0...22 dBm in increments of 1 dBm.</p> <p>Example,</p> <pre>xg -txpwr [0]10,[1]15</pre> </div>
<p><code>xg -ctrl-block-boost {0, 1}</code></p>	<ul style="list-style-type: none"> <li>Enable/disable control block boost option</li> <li>Control Block Boost improves link availability in the most difficult propagation and interference conditions due to the radio frame with control information transfer at duplicate transmit power</li> </ul>
<p><code>xg -atpc-master-enable {0, 1}</code></p>	<ul style="list-style-type: none"> <li>Enable/disable "ATPC Master"             <ul style="list-style-type: none"> <li>The master unit manages the transmit power of the remote unit in order to achieve the target RSSI value of its own receiver</li> </ul> </li> </ul>
<p><code>xg -atpc-target-rssi {-70..-40/1}</code></p>	<ul style="list-style-type: none"> <li>The RSSI target value:             <ul style="list-style-type: none"> <li>The RSSI value of the master tries to engage the target range, the center value of which is the "Target RSSI"</li> <li>Practical range: from -20 to -70 dBm (the actual: from -40 to -70 dBm)</li> </ul> </li> </ul>
<p><code>xg -atpc-rssi-threshold {0..5/1}</code></p>	<ul style="list-style-type: none"> <li>The RSSI value threshold on the master side</li> </ul>
<p><code>xg -amc-strategy {normal, conservative, aggressive}</code></p>	<ul style="list-style-type: none"> <li>Set the AMC algorithm strategy:             <ul style="list-style-type: none"> <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</li> <li>"normal" represents a balance between the error rate and throughput values</li> </ul> </li> </ul>
<p><code>xg -max-mcs {1..10/1}</code></p>	<ul style="list-style-type: none"> <li>Set the maximum MCS that can be used: from 1 to 10 (from QPSK to 1024)</li> </ul>
<p><code>xg -ids-enable {0, 1}</code></p>	<ul style="list-style-type: none"> <li>Enable/disable Instant DFS option</li> </ul> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <p><b>NOTE</b></p> <p>The "Instant DFS" option is only available for the InfiLINK XG family 5 GHz devices.</p> </div>
<p><code>xg -ids-rssi-threshold {1..50/1}</code></p>	<ul style="list-style-type: none"> <li>RSSI threshold for switching</li> </ul>
<p><code>xg -ids-ffs-time {0..600/1}</code></p>	<ul style="list-style-type: none"> <li>Frequency forced holding time</li> </ul>
<p><code>xg -ids-rdrdt-enable {0, 1}</code></p>	<ul style="list-style-type: none"> <li>Enable/disable frequency scanning</li> </ul>

<p><code>xg -ids-fix-dl-ul {0, 1}</code></p>	<ul style="list-style-type: none"> <li>Prevents Instant DFS to select different values of the DL/UL ratio</li> </ul>
<p><code>xg -traffic-prioritization {0..1/1}</code></p>	<ul style="list-style-type: none"> <li>Enable/disable traffic prioritization strategy. Unit will recognize the 802.1p tags in Ethernet frame headers. Based on these tags priorities will be automatically assigned to the frames when they are sent over the radio interface. Priorities may be adjusted manually (<a href="#">Commands for switch configuration</a>).</li> </ul>
<p><code>xg -1588-sync-tai {1, 0}</code></p>	<ul style="list-style-type: none"> <li>Enable/disable Master devices synchronization through the wired connection from an external synchronization source by IEEE 1588 protocol.</li> </ul> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <p><b>NOTE</b></p> <p>To ensure two Masters synchronization from the synchronization source, the PTP Daemon on must be configured in Master mode on one of them, on the other - in a Slave mode.</p> <p>For the first Master device:</p> <pre style="border: 1px solid #ccc; padding: 5px;">xg -tdd-sync-src freerun xg -1588-sync-tai 1 ptpd -b gel start</pre> <p>For the second Master device:</p> <pre style="border: 1px solid #ccc; padding: 5px;">xg -tdd-sync-src 1588 xg -1588-sync-tai 1 ptpd -g -b gel start</pre> </div>
<p><code>xg -config-restore-time {1..60/1}</code></p>	<ul style="list-style-type: none"> <li>Time of already established link checking, by default 5 minutes</li> <li>In order to stay the link after a new configuration applying, the unit checks the link establishment during this time and automatically restores the previous configuration in case the link was not established.</li> </ul> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <p><b>NOTE</b></p> <p>Detailed description is given in the document "<a href="#">Safety apply settings in InfiLINK XG / InfiLINK XG 1000</a>".</p> </div>
<p><code>xg -config-restore-index {1..8/1}</code></p>	<ul style="list-style-type: none"> <li>Unit configuration backup index</li> </ul>
<p><code>xg -passphrase=&lt;pass&gt;</code></p>	<ul style="list-style-type: none"> <li>Set the passphrase</li> </ul>
<p><code>xg -freq&lt;val&gt; =&gt; xg -freq-dl &lt;val&gt; -freq-ul &lt;val&gt;</code></p>	<ul style="list-style-type: none"> <li>Set the center frequency value</li> </ul> <p>Example,</p> <pre style="border: 1px solid #ccc; padding: 5px;">xg -freq 6415</pre>

Table - "xg" commands and options description



**NOTE**

Initial configuration procedure of the PtP link setup between the units is described in the section "[Laboratory pre-configuration](#)".

## xginfo

Use this command to output the information data.

**Syntax:**

#1> *xginfo* [arguments]

```
#1> xginfo
usage:
  xginfo stat [-verbose] [-clear] [-1]
  xginfo capabilities [-verbose]
  xginfo version
  xginfo availability
```

"xginfo" command arguments description is given in the table below

Command	Description
<i>xginfo stat [-verbose] [-clear] [-1]</i>	<ul style="list-style-type: none"> <li>Displays the link statistics:               <ul style="list-style-type: none"> <li>"-verbose" - detailed information about physical link parameters</li> <li>"-clear" - reset the statistics data</li> <li>"-1" - single snapshot of the statistics data</li> </ul> </li> </ul>
<i>xginfo capabilities [-verbose]</i>	<ul style="list-style-type: none"> <li>Displays the radio system capabilities</li> </ul>
<i>xginfo version</i>	<ul style="list-style-type: none"> <li>Displays the current firmware version</li> </ul>
<i>xginfo availability [-verbose] [-clear]</i>	<ul style="list-style-type: none"> <li>Displays the link availability statistics:               <ul style="list-style-type: none"> <li>"-verbose" - detailed information</li> <li>"-clear" - reset the statistics data</li> </ul> </li> </ul>

Table - "xginfo" commands and options description

## xgutils

**Syntax:**

#1> *xgutils* [arguments]

```
#1> xgutils
usage:
  xgutils ber-amc-show [-carrier <CARRIER_NUM>] [-1]
  xgutils ber-amc-reset [-mask <STREAM_MASK>]
```

"xgutils" commands and options description is given in the table below

Command	Description
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<code>xgutils ber-amc-show [-carrier &lt;CARRIER_NUM&gt;] [-1]</code>	<ul style="list-style-type: none"> <li>• Displays auto bitrate mechanism counters</li> </ul>
<code>xgutils ber-amc-reset [-mask &lt;STREAM_MASK&gt;]</code>	<ul style="list-style-type: none"> <li>• Bitrate adjustment mechanism reset counters based on a bit error counters</li> </ul>
<code>xgutils dfs-list [-clear]</code>	<ul style="list-style-type: none"> <li>• Displays a list of available frequencies and information on them (noise level, radar availability, selected frequency)             <ul style="list-style-type: none"> <li>• "clear" - reset the radars list and frequency scanning data</li> </ul> </li> </ul>
<code>xgutils dfs-stat [-clear]</code>	<ul style="list-style-type: none"> <li>• Instant DFS switching statistics             <ul style="list-style-type: none"> <li>• "clear" - reset the statistics</li> </ul> </li> </ul>

Table - "xgutils" commands and options description

## xgdfs

**Syntax:**

#1> xgdfs [arguments]

```
#1> xgdfs
usage:
  xgdfs -list [-clear]
  xgdfs -stat [-clear]
```

"xgdfs" commands and options description is given in the table below

Command	Description
<code>xgdfs-list [-clear]</code>	<ul style="list-style-type: none"> <li>• Displays a list of available frequencies and information on them (noise level, radar availability, selected frequency)             <ul style="list-style-type: none"> <li>• "clear" - reset the radars list and frequency scanning data</li> </ul> </li> </ul>
<code>xgdfs-stat [-clear]</code>	<ul style="list-style-type: none"> <li>• Instant DFS switching statistics             <ul style="list-style-type: none"> <li>• "clear" - reset the statistics</li> </ul> </li> </ul>

Table - "xgdfs" commands and options description