

Product Information: Rev 1G, Issue Dec 2016, Revised Sep 2017

Band selective digitally controlled RF repeater GR9P21 is an indoor bi-directional amplifier that offers an increase of signal strength in medium-sized rooms for BAND8 (EGSM) and BAND1 (UMTS) standards.

KEY FEATURES

- Dual band EGSM and UMTS
- Band selective operation
- Adjustable center frequency and gain
- Digital control
- Isolated RF outputs
- Compact design for easy installation
- Integrated antenna (or connector for indoor delivery network)
- Uplink & Downlink gain is separately adjustable
- Basic automatic gain control
- USB connectivity and user friendly GUI
- Low power consumption
- Status indicating LEDs



Figure 1: Repeater GR9P21 front view

APPLICATION AREAS

- Shopping centers
- Hotels, offices
- Factories
- Underground parking lots

PRODUCT DESCRIPTION

Generally repeaters are used in mobile communication systems to provide signal coverage for an area with poor or no signal (e.g. blind spot). Rantelon Ltd came across the insufficient coverage within buildings such as offices, parking lots, apartment buildings, shopping malls, subways and tunnels. Repeater GR9P21 series can solve these problems by amplifying the available signal from an outdoor antenna into weak coverage area via built-in antenna or indoor delivery network with multiple antennas.

One adjustable through software band provides for possibility to improve signals on any frequencies within EGSM or UMTS2100 frequency ranges. GR9P21 is equipped with new switching power module allowing extended range of supply voltages: +9V up to +17V. LEDs on the front panel indicate proper power supply, activity of automatic gain control circuits and activity of digital nodes.

TECHNICAL SPECIFICATIONS

Parameter	Specification
Frequency range*	BAND8 (EGSM): UL 880-915MHz & DL 925-960MHz BAND1 (UMTS): UL 1920-1980MHz & DL 2110-2170MHz
Number of independent band-segments	EGSM: UL 1 / DL 1 UMTS: UL 1 / DL 1
Band-segment bandwidth*	EGSM: 11.4MHz UMTS: 14.8MHz
Max. gain	75dB ±3dB @ EGSM, 70dB ±3dB @ UMTS
Manual gain adjust range	30dB with step 1dB (on order 0.5dB)
Automatic gain control	30dB
Downlink output power*	EGSM: +18dBm @ composite signal UMTS: +18dBm @ composite signal
Uplink output power*	EGSM: +18dBm @ composite signal UMTS: +18dBm @ composite signal
Return loss	10dB
Spurious emission	According to ETSI standards: < -36dBm up to 1GHz; < -30dBm above 1GHz
EVM	According to ETSI standards <12.5%
Supply voltage	DC: +9V..+17V
Current consumption	1.2A @ +12V
RF connector	N-Female (SMA optionally)
Operating temperature range	-20 ... +60 °C
Remote control option	On special order: Wi-Fi, LAN or 2G/3G-modem
Pure dimensions	120 x 190 x 60mm

* Ask Rantelon for other parameters. See www.rantelon.com for more information.

ORDERING INFORMATION

Model	Description
GR9P21-01/xN	With integrated coverage coverage indoor antenna
GR9P21-01/xNN	With RF output connector for coverage indoor antenna

Rantelon reserves the right to change the specification without notice.

Additionally available options:

- Wi-Fi, LAN or 2G/3G-modem connectivity
- Temperature stability
- Auto-Gain feature
- Isolation detection
- Band ON/OFF
- Coupled coverage port
- Auto turn ON/OFF
- Status and activity LOG's

NB! Some options need hardware upgrade.

Installation:

GR9P21 configuration can be implemented in two ways: using PC software and manually using two buttons available on enclosure of repeater unit.

Manual way and LED indications:

0. This is limited option what provide only for gain adjust possibility.

1. To enter manual mode push and hold button 1 or button 2 during three seconds. See step 2.

2. LED 1 will be flashed with green light if you enter manual configuration mode successfully. Using button 1 and button 2 do selection of desired band and link direction (in series: band8 downlink, band8 uplink, band1 downlink, band1 uplink). If you are holding the button pushed, state will be changed each second. Corresponding "Select BandX" and link direction LEDs will be active. Please see description below to select right band and link direction. If you are finished selection of band/link (or just do nothing), do not push button. Selection will be accepted after 5 seconds of free waiting. After that you go to adjust the gain value of selected band/link. Corresponding "Select BandX" LED will be blinking. See step 3.

LED1 (in left on Figure 1) describes **downlink** with next color scheme:

- > red – Band8 level (if it's active AGC is applied)
- > green – link direction (if it's active then it's downlink)
- > blue – Band1 level (if it's active AGC is applied)

LED 2 (in center on Figure 1) describes **repeater status** in normal and configuration modes:

- > red – Select Band8
- > green – repeater status indication (in normal work this LED is always active)
- > blue – Select Band1

LED3 (in right on Figure 1) describes **uplink** with next color scheme:

- > red – Band8 level (if it's active AGC is applied)
- > green – link direction (if it's active then it's uplink)
- > blue – Band1 level (if it's active AGC is applied)

3. Gain is adjustable using digital input attenuator. If you increase attenuator value gain will be smaller. If you decrease attenuator value, gain does change to higher level. Using button 1 (increase gain) and button 2 (decrease gain) select desired value of gain. If you are holding the button pushed, state will be changed each half of a second by 1dB. If you are finished selection of band/link (or just do nothing), do not push button. Selection will be accepted after 5 seconds of free waiting. "Select BandX" LED will be turned off. Gain value is changed successfully.

PC software way:

0. This option allows for 100% of available settings of repeater GR9P21.
1. Install “GR9P21 Control Application” software (available in original product package). Just copy folder “Gr9p21” to your PC and run “GR9P21.exe” fail. To use this application you need Microsoft Windows operation system.
2. Power repeater device on.
3. Connect device to PC using USB-mini type cable.
4. Run “GR9P21 Control Application”. See Figure 2.
5. To change gain use attenuator sliders. Gain is adjustable using digital input attenuator. If you increase attenuator value gain will be smaller. If you decrease attenuator value, gain does change to higher level.
6. To change center frequency of band filter activate the frequency slider using corresponding check box and then change the frequency.
7. To turn band (1 or 8) on and off use switch located in corresponding band side.
8. Output power and downlink RSSI indication is available for each band separately. The indication can be found in lower side of control application.
9. Indoor side isolation switch can be found in lower side of control application. Use this option to determine isolation between donor and coverage antennas.
10. Repeater status is available in lower side of application window. Available repeater bandwidth is shown in upper side of application window.
11. To finish configuration close application and disconnect USB.

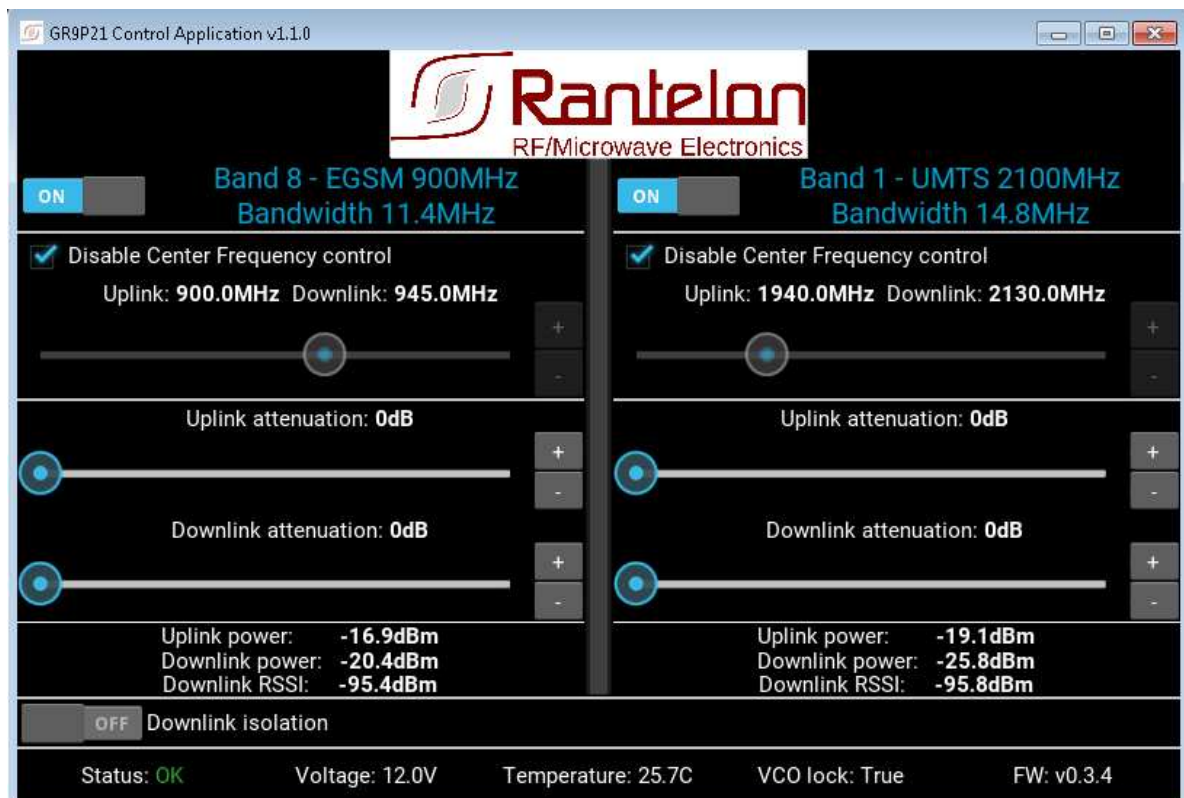


Figure 2: GR9P21 control application window.