

Dual-Band RF Repeater

RPT873 (GSM 900 & 1800) / RPT243 (GSM900 & WCDMA) / RPT203 (GSM1800 & WCDMA)

The Dual-Band RF Repeater (RFR) is the kind of RF repeater that can simultaneously work in two wireless systems. It transparently conveys and amplifies the wireless signal of two systems respectively between the BTS (Base Transceiver Station) and mobiles.

The Dual-Band RFR is working as a relay between the BTS and mobiles. It picks up the signal from the BTS via the dual-band Donor Antenna, linearly amplifies the signal and then retransmits it via the dual-band Coverage Antenna (or the dual-band Indoor Signal Distribution System) to the weak/blind coverage area. And the mobile signal is also amplified and retransmitted to the BTS via the opposite direction.

As per operator's requirement for working frequency, two types of Dual-Band RFR are available:

- **Band-Selective Dual-Band RF Repeater:** to amplify all signals in the whole band (bandwidth is customized);
- **Channel-Selective Dual-Band RF Repeater:** to amplify only the signals transmitted in the customized 1 to 2 channels.



FEATURES

- Aluminum-alloy casing has high resistance to dust, water and corroding;
- AGC (automatic gain control) function to prevent self-oscillation;
- Highly selective channel selector can process 2 channels simultaneously;
- No interference to BTS by adopting linear amplifier with high gain and low noise;
- Adopting filter with highly selectivity and low insertion loss eliminates interference between uplink and downlink;
- RS-232 ports provide links to a notebook for local supervision and to the built-in wireless modem to communicate with the NMS (Network Management System) that can remotely supervise repeater's working status and download operational parameters to the repeater.

APPLICATIONS

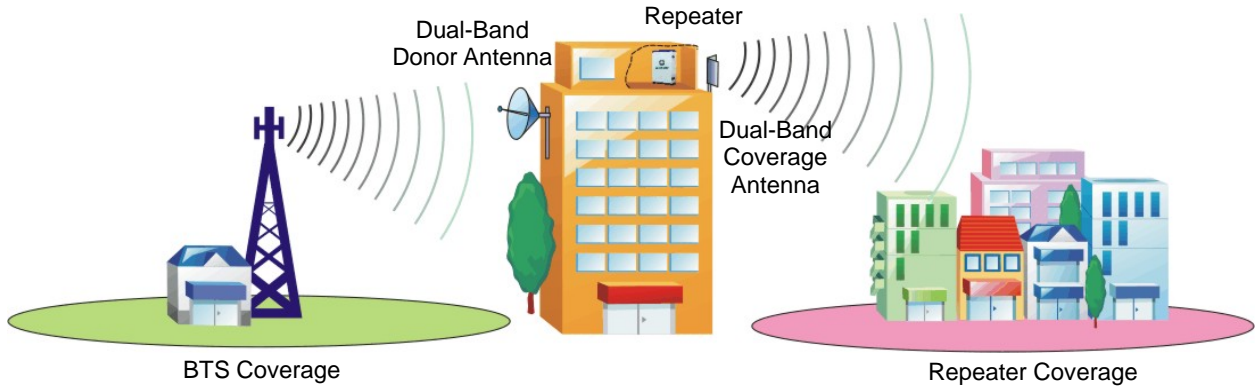
To expand signal coverage or fill signal blind area where signal is weak or unavailable.

- Outdoor: Airports, tourism regions, golf courses, tunnels, factories, mining districts, villages, highways...
- Indoor: Hotels, exhibition centers, basements, shopping malls, offices, parking lots, ...

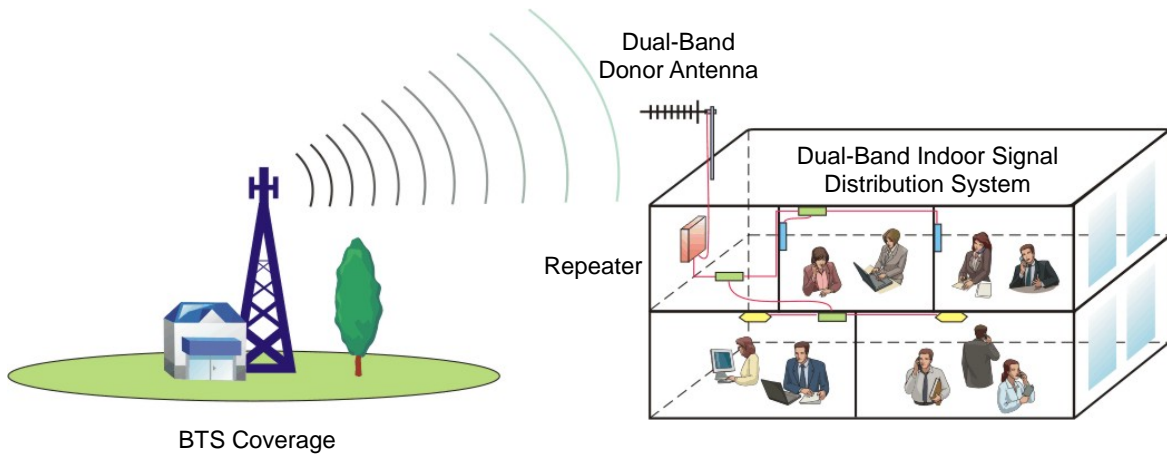
The Dual-Band RFR is mainly applicable to such case:

- The area to be covered requires to improve signal coverage of both wireless system;
- The repeater can find an installation place which can receive pure BTS signal at strong enough level and can meet the requirement of isolation to avoid self-oscillation;
- And the distance between the BTS and the area to be covered is 2km around.

APPLICATION DIAGRAM



Application Diagram of Outdoor Dual-Band RF Repeater



Application Diagram of Indoor Dual-Band RF Repeater

TECHNICAL SPECIFICATIONS

- Specifications of GSM 900 & 1800 Dual-Band RF Repeater

Items		GSM 900	GSM 1800
Working Frequency (customizable)	Uplink	890-915 MHz	1710-1785 MHz
	Downlink	935-960 MHz	1805-1880 MHz
Carrier Wave Mode		Channel Selective / Band Selective	
Working Bandwidth		Band-selective: 2-25 MHz (customizable) Channel-selective: 200kHz / Channel	
Output Power (customizable)		27-43 dBm (0.5-20 W)	
Gain		≥ 85dB	
Gain Adjustment Range		1-31 dB @ step of 1dB	
Voltage Standing Wave Ratio (VSWR)		< 1.5	
Spurious Emission	Within working band	≤ -15dBm/30kHz	
	Out of working band (Δf > 2.5MHz)	9kHz-1GHz: ≤ -36dBm/30kHz	
		1GHz-12.75GHz: ≤ -30dBm/30kHz	
Noise Figure		≤ 6dB	
In-Band Ripple		≤ 3dB p-p	
In-Band Intermodulation Attenuation		≤ -40dBc/30kHz (measured under rated output power)	
System Delay		≤ 5.0μSec	
I/O Impedance		50Ω	
RF Connector		N-Type (Female)	
Temperature Range		Operation: -25°C ~ +55°C / Storage: -30°C ~ +60°C	
Relative Humidity Range		≤ 95% (non condensing)	
Power Supply (customizable)		DC +24V / AC 220V±15%, 50Hz / AC 110V±15%, 50Hz	
Backup Power Supply (optional)		4 hours	
Casing Level		IP65	
Dimensions		Output power @ 27-30dBm: 570mm X 325mm X 215mm Output power @ 33-37dBm: 630mm X 400mm X 230mm Output power @ 37-43dBm: 690mm X 420mm X 260mm	
Weight		Output power @27-30dBm: 27kg Output power @33-37dBm: 35kg Output power @37-43dBm: 45kg	
Remote Monitoring/Control via NMS		Supported	
AGC (Automatic Gain Control) / ALC (Automatic Level Control)		Supported	

- Specifications of GSM 900 & WCDMA Dual-Band RF Repeater

Items		GSM 900	WCDMA
Working Frequency (customizable)	Uplink	890-915 MHz	1920-1980 MHz
	Downlink	935-960 MHz	2110-2170 MHz
Carrier Wave Mode	Channel Selective / Band Selective		
Working Bandwidth	Band-selective: 2-25 MHz (customizable) Channel-selective: 200kHz / Channel		Band-selective: 5-25 MHz (customizable) Channel-selective: 3.84MHz / Channel
	Gain	≥ 85dB	
Gain Adjustment Range	1~31 dB @ step of 1dB		
Output Power (customizable)	27-43 dBm (0.5-20 W)		27-40 dBm (0.5-10 W)
No. of Channels Supported	1 / 2 / 4		1 / 2
Adjacent Channel Power Ratio (ACPR)	--		P ≥ 31 dBm: (Offset 5MHz) ≤ 49dBc P ≥ 31 dBm: (Offset 10MHz) ≤ 54dBc P < 31 dBm: (Offset 5MHz) ≤ 50dBc P < 31 dBm: (Offset 10MHz) ≤ 55dBc
Voltage Standing Wave Ratio (VSWR)	< 1.5		
Error Vector Magnitude (EVM)	--		≤ 12.5%
Out-of-Band Gain	--		2.7 ≤ f_offset < 3.5 MHz: ≤ 60dB 3.5 ≤ f_offset < 7.5 MHz: ≤ 45dB 7.5 ≤ f_offset < 12.5 MHz: ≤ 45dB 12.5 ≤ f_offset: ≤ 30dB
Peak Code Domain Error (PCDE)	--		≤ -35dB
Noise Figure	≤ 6dB		
In-Band Ripple	≤ 3dB p-p		
System Delay	≤ 5.0μSec		
Spurious Emission	Within working band: ≤ -15dBm/30kHz 9kHz-1GHz: ≤ -36dBm/30kHz 1GHz-12.75GHz: ≤ -30dBm/30kHz		Comply with 3GPP TS 25.106 V6.0.0
In-Band Intermodulation Attenuation	≤ -40dBc/30kHz (measured under rated output power)		Comply with 3GPP TS 25.106 V6.0.0
I/O Impedance	50Ω		
RF Connector	N-Type (Female)		
Temperature Range	Operation: -25°C ~ +55°C / Storage: -30°C ~ +60°C		
Relative Humidity Range	≤ 95% (non condensing)		
Power Supply (customizable)	DC +24V / AC 220V±15%, 50Hz / AC 110V±15%, 50Hz		
Backup Power Supply (optional)	4 hours		
Casing Level	IP65		
Dimensions	Output power @ 27-30dBm: 570mm X 325mm X 215mm Output power @ 33-37dBm: 630mm X 400mm X 230mm Output power @ 37-43dBm: 690mm X 420mm X 260mm		
Weight	Output power @27-30dBm: 27kg Output power @33-37dBm: 35kg Output power @37-43dBm: 45kg		
Remote Monitoring/Control via NMS	Supported		
AGC (Automatic Gain Control) / ALC (Automatic Level Control)	Supported		

- Specifications of GSM 1800 & WCDMA Dual-Band RF Repeater

Items		GSM 1800	WCDMA
Working Frequency (customizable)	Uplink	1710-1785 MHz	1920-1980 MHz
	Downlink	1805-1880 MHz	2110-2170 MHz
Carrier Wave Mode	Channel Selective / Band Selective		
Working Bandwidth	Band-selective: 2-25 MHz (customizable)		Band-selective: 5-25 MHz (customizable)
	Channel-selective: 200kHz / Channel		Channel-selective: 3.84MHz / Channel
Gain	≥ 85dB		
Gain Adjustment Range	1-31 dB @ step of 1dB		
Output Power (customizable)	27-43 dBm (0.5-20 W)		27-40 dBm (0.5-10 W)
No. of Channels Supported	1 / 2 / 4		1 / 2
Adjacent Channel Power Ratio (ACPR)	--		P ≥ 31 dBm: (Offset 5MHz) ≤ 49dBc P ≥ 31 dBm: (Offset 10MHz) ≤ 54dBc P < 31 dBm: (Offset 5MHz) ≤ 50dBc P < 31 dBm: (Offset 10MHz) ≤ 55dBc
Voltage Standing Wave Ratio (VSWR)	< 1.5		
Error Vector Magnitude (EVM)	--		≤ 12.5%
Out-of-Band Gain	--		2.7 ≤ f_offset < 3.5 MHz: ≤ 60dB 3.5 ≤ f_offset < 7.5 MHz: ≤ 45dB 7.5 ≤ f_offset < 12.5 MHz: ≤ 45dB 12.5 ≤ f_offset: ≤ 30dB
Peak Code Domain Error (PCDE)	--		≤ -35dB
Noise Figure	≤ 6dB		
In-Band Ripple	≤ 3dB p-p		
System Delay	≤ 5.0μSec		
Spurious Emission	Within working band: ≤ -15dBm/30kHz 9kHz-1GHz: ≤ -36dBm/30kHz 1GHz-12.75GHz: ≤ -30dBm/30kHz	Comply with 3GPP TS 25.106 V6.0.0	
In-Band Intermodulation Attenuation	≤ -40dBc/30kHz (measured under rated output power)		Comply with 3GPP TS 25.106 V6.0.0
I/O Impedance	50Ω		
RF Connector	N-Type (Female)		
Temperature Range	Operation: -25°C ~ +55°C / Storage: -30°C ~ +60°C		
Relative Humidity Range	≤ 95% (non condensing)		
Power Supply (customizable)	DC +24V / AC 220V±15%, 50Hz / AC 110V±15%, 50Hz		
Backup Power Supply (optional)	4 hours		
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Weight	Output power @27-30dBm: 27kg Output power @33-37dBm: 35kg Output power @37-43dBm: 45kg		
Remote Monitoring/Control via NMS	Supported		
AGC (Automatic Gain Control) / ALC (Automatic Level Control)	Supported		

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