

Exhibit 1005



(12) Patent for Utility Model

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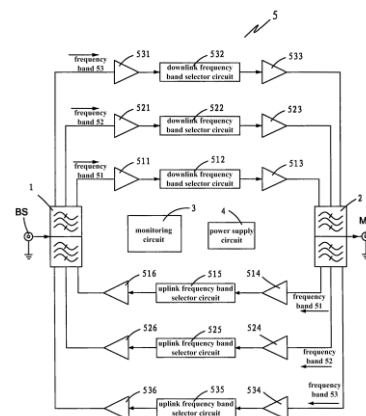
Claims in 1 page Description in 3 pages
Drawings in 2 pages

(54) Title of utility model

Tri-band Wireless Repeater

(57) Abstract

The present utility model provides a tri-band wireless repeater, comprising a donor-end multiplexer, a retransmission-end multiplexer, a monitoring circuit, a power supply circuit, and a signal path of three frequency bands connecting the donor-end multiplexer and the retransmission-end multiplexer. The present utility model has more frequency resources available for use, which can cost-effectively relieve the capacity stress in a single-band networking mode, so as to achieve the goals of reducing the network construction cost and simplifying the project installation.



1. A tri-band wireless repeater, comprising: a donor-end multiplexer, a retransmission-end multiplexer, a monitoring circuit, a power supply circuit, and a signal path of three frequency bands connecting the donor-end multiplexer, and the retransmission-end multiplexer, wherein the signal path of any one of the frequency bands comprises a downlink and an uplink; the any one downlink comprises a downlink low-noise amplifier circuit, a downlink frequency band selection circuit, and a downlink power amplifier circuit sequentially connected according to a signal transmission direction; the any one uplink comprises an uplink low-noise amplifier circuit, an uplink frequency band selection circuit, and an uplink power amplifier circuit sequentially connected according to a signal transmission direction; the monitoring circuit is respectively connected to the uplink low-noise amplifier circuit, the downlink low-noise amplifier circuit, the uplink frequency band selection circuit, the downlink frequency band selection circuit, the uplink power amplifier circuit, and the downlink power amplifier circuit; the monitoring circuit, the uplink low-noise amplifier circuit, the downlink low-noise amplifier circuit, the uplink frequency band selection circuit, the downlink frequency band selection circuit, the uplink power amplifier circuit, and the downlink power amplifier circuit are all powered by the power supply circuit.

2. The tri-band wireless repeater according to claim 1, wherein the monitoring circuit further comprises a first microcontroller, a first communication conversion IC, and a control handle sequentially connected; the first microcontroller is respectively connected to the uplink low-noise amplifier circuit, the downlink low-noise amplifier circuit, the uplink frequency band selection circuit, the downlink frequency band selection circuit, the uplink power amplifier circuit, and the downlink power amplifier circuit.

3. The tri-band wireless repeater according to claim 2, wherein the control handle further comprises a second microcontroller, and a second communication conversion IC, a button, and a display screen connected to the second microcontroller; the second communication conversion IC is connected to the first communication conversion IC.

4. The tri-band wireless repeater according to claim 1, wherein the power supply circuit comprises a DC-DC conversion IC and a power switch connected to each other, and the power switch is connected to the monitoring circuit.

TRI-BAND WIRELESS REPEATER

TECHNICAL FIELD

[0001] The present utility model relates to a mobile communication device, in particular, to a tri-band wireless repeater.

BACKGROUND

[0002] With the rapid development of modern mobile communications, mobile communication networks continue to expand their signal coverage. Other than increasing base stations to improve the effectiveness, another method that lowers the cost and increases the efficiency is to use repeaters. Setting up repeaters can improve the coverage effect; at the same time, it also greatly reduces the investment cost of base stations. Repeaters receive signals from mobile terminals and base stations so as to relay and transmit them after amplification, thereby achieving the purpose of covering dead zones and shadow areas. Due to the characteristics of radio signal propagation and the rapid development of urban buildings, the dead zones regarding communication network signals are also increasing. This is especially the case in large buildings where the signals therein are weak and meeting the use requirements becomes difficult. Therefore, repeaters have been widely used in areas with relatively low subscriber density, such as highways, conference centers, tunnels, tourist areas and other special areas.

[0003] Regarding the transmission methods, repeaters can be classified into wireless transmission repeaters, optical transmission repeaters, and microwave transmission repeaters. In a variety of specific environments, repeaters have been widely used. As for the wireless transmission repeaters, they have been widely used because of their low cost, lower corresponding technical complexity, and the rather simple condition for use. The principle of the wireless repeaters is that a donor antenna, opposite from the base station antenna to be forwarded, receives a downlink wireless signal transmitted from the base station, which is amplified by an LNA (low noise amplifier), a frequency band selection filter (only the required frequency band is selected to reduce interference), and the power amplifier. The forward antenna of the repeater then radiates the amplified downlink wireless signal to the wireless signal dead zones or areas with weak signals, so as to increase downlink coverage or improve the quality of coverage. At the same time, the forward antenna of the repeater also receives the signal from a mobile phone, which is filtered and amplified through a similar low-noise amplifier; the enhanced signal is then forwarded to the base station antenna through the donor antenna. In this process, the wireless signal path loss between the base station and the repeater is compensated for. This process is equivalent to setting a bidirectional transparent channel between the base station and the mobile phone so that the wireless signal becomes reachable.

[0004] The current basic structures of the wireless repeater in the market is shown in FIG. 1. A complete wireless repeater consists of the following: a donor antenna, a donor duplexer, a downlink low-noise amplifier circuit, a downlink frequency band selector circuit, a downlink power amplifier circuit, an uplink low-noise amplifier circuit, an uplink frequency band selector circuit, an uplink power amplifier circuit, a retransmission duplexer, a forward antenna, a power supply unit, and a monitoring system.

[0005] The working principle is described as follows:

[0006] the downlink: the donor antenna, opposite from the base station antenna to be forwarded, receives the downlink wireless signal transmitted from the base station; the signal is subjected to the following process: filtration with the donor-end duplexer; low-noise amplification with the downlink low-noise amplifier circuit; filtration and amplification with the downlink frequency band selector circuit; amplification with the downlink power amplifier circuit; and filtration with the retransmission duplexer. and finally the processed signal is transmitted with the forward antenna.

[0007] the uplink: the forward antenna receives the wireless signal from the mobile phone; the signal is subjected to the following processing: filtration with the retransmission duplexer; low-noise amplification with the uplink low-noise amplifier circuit; filtration and amplification with the uplink frequency band selector circuit; amplification with the uplink power amplifier circuit; and filtration with the donor duplexer filter; and finally the processed signal is transmitted with the donor antenna.

[0008] In addition, the monitoring system is used to realize various monitoring and alarming functions for the downlink low-noise amplifier circuit, the downlink frequency band selector circuit, the downlink power amplifier circuit, the uplink low-noise amplifier circuit, the uplink frequency band selector circuit, and the uplink power amplifier circuit.

[0009] The power supply unit provides power to each of the above active modules.

[0010] The above-mentioned repeaters are only suitable for the transmission of wireless signals in a single frequency band. In the era when the mobile communication network gradually evolves from 2G to 3G, network sets having the multiple frequency bands simultaneously present are required, which is not only costly but also requires large space, not practical in engineering applications; at the same time, the requirement of having multiple frequency bands has a low market competitiveness. In addition, the transmission capacity of microwave communication devices is also required to be upgraded with the development of the network to reduce operator investment.

SUMMARY

[0011] The technical problem to be solved by the present utility model is to provide a tri-band wireless repeater with more frequency resources available for use, which can cost-effectively relieve the capacity stress in a single-band networking mode, so as to achieve the goals of reducing the network construction cost and simplifying the project installation.

[0012] The utility model is implemented through the following: a tri-band wireless repeater, comprising: a donor-end multiplexer, a retransmission-end multiplexer, a monitoring circuit, a power supply circuit, and a signal path of three frequency bands connecting the donor-end multiplexer, and the retransmission-end multiplexer, wherein the signal path of any one of the frequency bands comprises a downlink and an uplink; the any one downlink comprises a downlink low-noise amplifier circuit, a downlink frequency band selection circuit, and a downlink power amplifier circuit sequentially connected according to a signal transmission direction; the any one uplink comprises an uplink low-noise amplifier circuit, an uplink frequency band selection circuit, and an uplink power amplifier circuit sequentially connected according to a signal transmission direction; the monitoring circuit is respectively connected to the uplink low-noise amplifier circuit,

the downlink low-noise amplifier circuit, the uplink frequency band selection circuit, the downlink frequency band selection circuit, the uplink power amplifier circuit, and the downlink power amplifier circuit; the monitoring circuit, the uplink low-noise amplifier circuit, the downlink low-noise amplifier circuit, the uplink frequency band selection circuit, the downlink frequency band selection circuit, the uplink power amplifier circuit, and the downlink power amplifier circuit are all powered by the power supply circuit.

[0013] Further, the monitoring circuit comprises a first microcontroller, a first communication conversion IC, and a control handle sequentially connected; the first microcontroller is respectively connected to the uplink low-noise amplifier circuit, the downlink low-noise amplifier circuit, the uplink frequency band selection circuit, the downlink frequency band selection circuit, the uplink power amplifier circuit, and the downlink power amplifier circuit.

[0014] Further, the control handle comprises a second microcontroller, and a second communication conversion IC, a button, and a display screen connected to the second microcontroller; the second communication conversion IC is connected to the first communication conversion IC.

[0015] Further, the power supply circuit comprises a DC-DC conversion IC and a power switch connected to each other, and the power switch is connected to the monitoring circuit.

[0016] The advantages of the present utility model lie in the following: the tri-band wireless repeater can work in three frequency bands simultaneously with more frequency resources available for use; and the tri-band wireless repeater can cost-effectively relieve the capacity stress in a single-band networking mode; therefore it is less likely to encounter the situation where a telephone call cannot be connected or the signal is interrupted when the frequency band is in use, thereby resolving the problem of lacking network capacity from the root cause. In addition, the call quality and indoor receiving status can be improved because of the increase in system capacity; the increased capacity can in turn be used to provide more data transmission so as to guarantee quality during calls. The volume of the tri-band wireless repeater is much smaller when compare with that of the three single-band repeaters.

BRIEF DESCRIPTION OF DRAWINGS

[0017] The present utility model will be further described with reference to the accompanying drawings and in combination with embodiments in the following.

[0018] Fig.1 is a block diagram of a repeater according to the prior art.

[0019] Fig.2 is a block diagram of a tri-band wireless repeater according to the present utility model.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0020] As shown in Fig.2, the present utility model provides a tri-band wireless repeater, comprising a donor-end multiplexer 1, a retransmission-end multiplexer 2, a monitoring circuit 3, a power supply circuit 4, and a signal path 5 of the three frequency bands connecting between the donor-end multiplexer 1 and the retransmission-end multiplexer 2, wherein the signal path 5 of the three frequency bands is respectively frequency band 51, frequency band 52, and frequency band 53.

[0021] The frequency band 51 includes a downlink and an uplink, wherein the downlink includes a downlink low-noise amplifier circuit 511, a downlink frequency band selection circuit 512, and a downlink power amplifier circuit 513 sequentially connected according to the signal transmission direction; the uplink includes an uplink low-noise amplifier circuit 514, an uplink frequency band selection circuit 515, and an uplink power amplifier circuit 516 sequentially connected according to the signal transmission direction.

[0022] The frequency band 52 includes a downlink and an uplink, wherein the downlink includes a downlink low-noise amplifier circuit 521, a downlink frequency band selection circuit 522, and a downlink power amplifier circuit 523 sequentially connected according to the signal transmission direction; the uplink includes an uplink low-noise amplifier circuit 524, an uplink frequency band selection circuit 525, and an uplink power amplifier circuit 526 sequentially connected according to the signal transmission direction.

[0023] The frequency band 53 includes a downlink and an uplink, wherein the downlink includes a downlink low-noise amplifier circuit 531, a downlink frequency band selection circuit 532, and a downlink power amplifier circuit 533 sequentially connected according to the signal transmission direction; the uplink includes an uplink low-noise amplifier circuit 534, an uplink frequency band selection circuit 535, and an uplink power amplifier circuit 536 sequentially connected according to the signal transmission direction.

[0024] The monitoring circuit 3 comprises a first microcontroller, a first communication conversion IC, and a control handle, wherein the control handle further comprises a second microcontroller, a second communication conversion IC, a button, and a display screen connected to the second microcontroller; the first communication conversion IC and the second communication conversion IC are connected to enable the interactive communication between the control handle and the first microcontroller. The first microcontroller is further connected to the uplink low-noise amplifier circuits 514 (524) (534), the downlink low-noise amplifier circuits 511 (521) (531), the uplink frequency band selection circuits 515 (525) (535), the downlink frequency band selection circuits 512 (522) (532), the uplink power amplifier circuits 516 (526) (536), and the downlink power amplifier circuits 513 (523) (533) respectively. Through the control handle and the first microcontroller, the monitoring circuit 3 can detect and control each circuit of the signal path 5 in the three frequency bands, including locking the local oscillator circuit required for frequency conversion and detecting the power of each link, etc. Display can be performed and the control can be done through the display screen and the button of the control handle respectively.

[0025] The power supply circuit 4 comprises a DC-DC conversion IC and a power switch connected to each other, and the power switch is connected to the monitoring circuit 3. The monitoring circuit 3, the uplink low-noise amplifier circuits 514 (524) (534), the downlink low-noise amplifier circuits 511 (521) (531), the uplink frequency band selection circuits 515 (525) (535), the downlink frequency band selection circuits 512 (522) (532), the uplink power amplifier circuits 516 (526) (536), and the downlink power amplifier circuits 513 (523) (533) are all powered by the power supply circuit 4.

[0026] The working principle of the repeater of the present utility model is described as follows:

[0027] Taking the frequency band 51 as an example. The working principle thereof is as follows: the downlink signal is inputted into the donor-end multiplexer 1 and is subjected to the following processing: filtration to remove interference signals from other frequency bands; low-noise amplification with the downlink low-noise amplifier circuit 511; frequency-conversion filtration and amplification with the downlink frequency band selection circuit 512; the required frequency band is then selected. The selected frequency band is amplified with the downlink power amplifier circuit 513 and inputted into the retransmission-end dielectric duplexer 2, then filtered and outputted. The working principle of the uplink is similar to that of the downlink. Details will not be repeated herein.

[0028] The working principle of bands 52 and 53 is the same as that of band 51 except that the work frequencies are different. Details are not repeated herein.

[0029] The tri-band wireless repeater of the present utility model can be applied to frequency band selection and amplification of uplink and downlink signals on mobile communication systems such as GSM, CDMA, DCS, PCS, WCDMA, and the like.

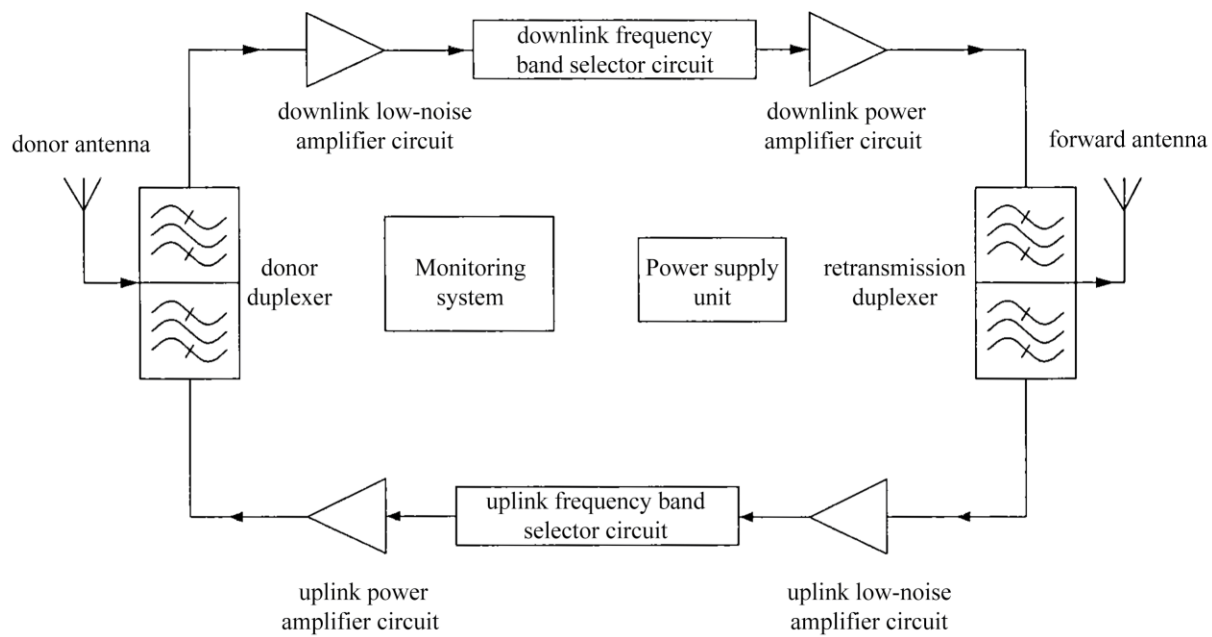


Fig. 1

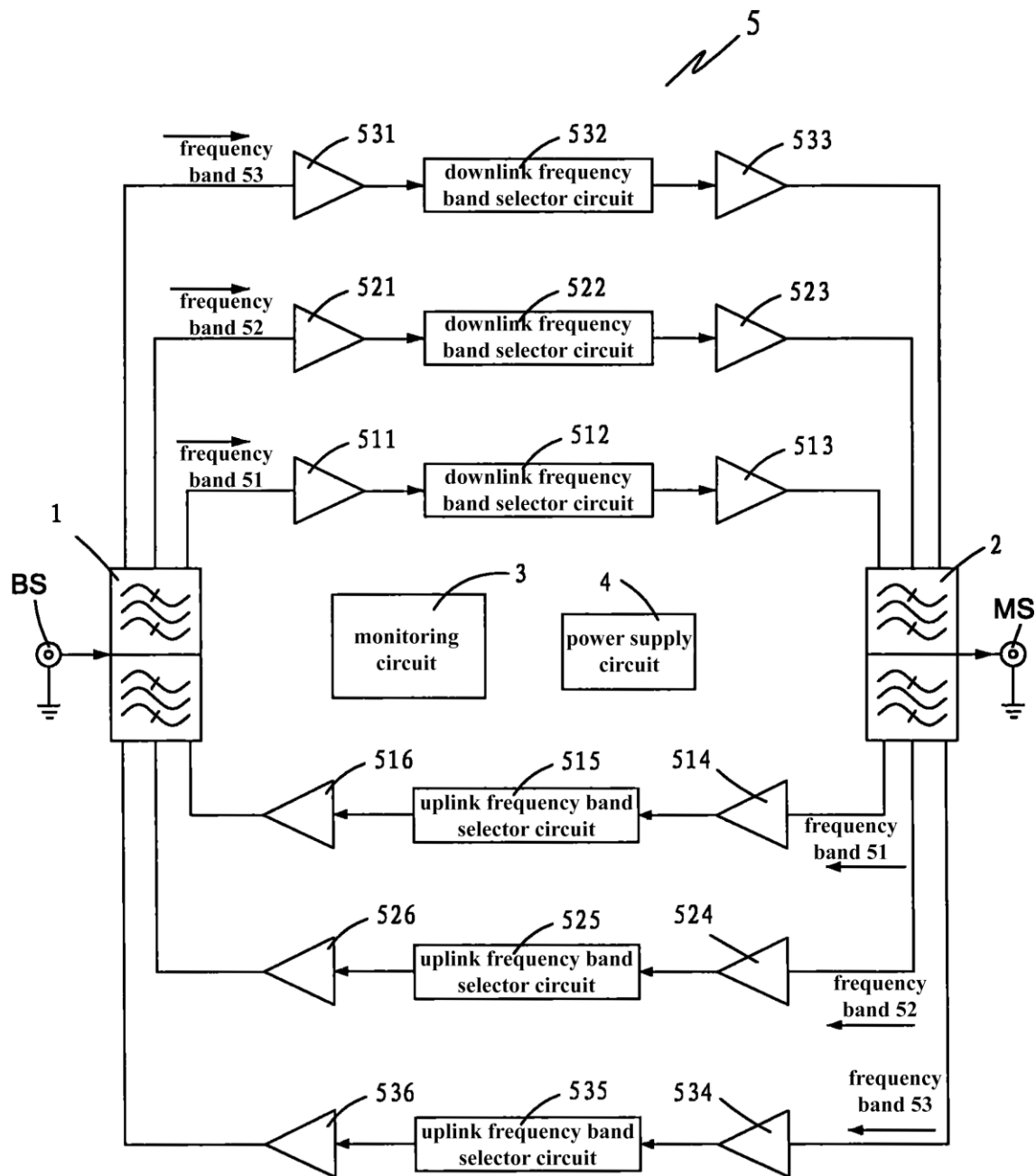


Fig. 2



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TRANSLATOR'S CERTIFICATE OF TRANSLATION

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Joseph Haymore, Program Manager

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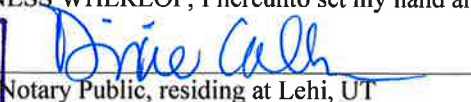
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IN WITNESS WHEREOF, I hereunto set my hand and official seal.



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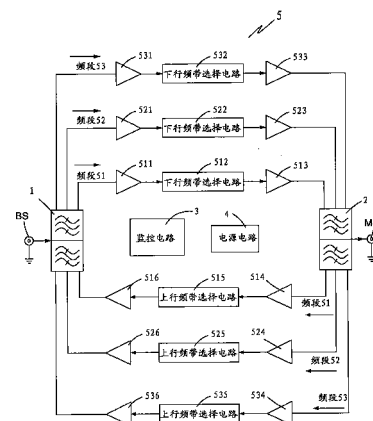
权利要求书 1 页 说明书 3 页 附图 2 页

(54) 实用新型名称

一种三频无线直放站

(57) 摘要

本实用新型提供了一种三频无线直放站,包括一施主端多工器、一重发端多工器、一监控电路、一电源电路,以及连接在该施主端多工器与该重发端多工器之间的三个频段的信号通道。本实用新型具有较多的频率资源可供运用,能经济有效地缓解单段组网方式的容量压力,从而达到降低网络建设成本,简化工程安装的目的。



1. 一种三频无线直放站,其特征在于:包括一施主端多工器、一重发端多工器、一监控电路、一电源电路,以及连接在该施主端多工器与该重发端多工器之间的三个频段的信号通道;所述任一频段的信号通道包括下行链路和上行链路;所述任一下行链路包括按信号传输方向依次连接的下行低噪放电路、下行频带选择电路、下行功放电路;所述任一上行链路包括按信号传输方向依次连接的上行低噪放电路、上行频带选择电路、上行功放电路;所述监控电路分别与所述上行低噪放电路、下行低噪放电路,上行频段选择电路、下行频段选择电路,以及上行功放电路、下行功放电路连接;所述监控电路、上行低噪放电路、下行低噪放电路、上行频带选择电路、下行频带选择电路、以及上行功放电路、下行功放电路均由所述电源电路供电。

2. 如权利要求 1 所述的一种三频无线直放站,其特征在于:所述监控电路进一步包括依次连接的第一单片机、第一通信转换 IC 和一控制手柄;所述第一单片机分别与所述上行低噪放电路、下行低噪放电路,上行频段选择电路、下行频段选择电路,以及上行功放电路、下行功放电路连接。

3. 如权利要求 2 所述的一种三频无线直放站,其特征在于:所述控制手柄进一步包括第二单片机,以及与该第二单片机连接的第二通信转换 IC、按键以及显示屏;所述第二通信转换 IC 与所述第一通信转换 IC 连接。

4. 如权利要求 1 所述的一种三频无线直放站,其特征在于:所述电源电路包括相互连接的 DC-DC 转换 IC 和电源开关,所述电源开关与所述监控电路相连。

一种三频无线直放站

【技术领域】

[0001] 本实用新型涉及一种移动通信设备,特别涉及一种三频无线直放站。

【背景技术】

[0002] 随着现代移动通信迅猛飞速的发展,移动通信网络要继续扩大信号覆盖范围,除了增加基站之外,利用直放站也是一种较为有效和经济的手段。通过架设直放站不但能改善覆盖效果,同时能大大减少投资基站之成本。直放站接收移动台、基站的信号进行中继放大后发射,从而达到覆盖盲区、阴影区的目的。由于无线电信号传播特性,以及城市建筑的高速发展等因素,通信网络信号盲区也不断增多,特别是大型建筑,其内部信号微弱,难于满足使用要求,因而,在用户密度较低的区域、高速公路、会议中心、隧道、旅游区等一些特殊区域得到广泛的应用。

[0003] 从传输方式来看,可分为无线传输直放站、光纤传输直放站及微波传输直放站。在各种特定的环境里,它们都得到广泛的应用。就无线传输直放站来说,由于其造价低、相应的技术复杂系数较小、使用条件简单而得到广泛的应用。无线直放站的原理是施主天线正对所要转发的基站天线,接收由基站发射过来的下行无线信号,经过 LNA(低噪声放大器)、频带选择滤波器(只选择所需的频带,减小干扰)、功率放大器放大后,再由直放站的转发天线向无线信号盲区或微弱区辐射,达到增大下行覆盖范围或者提高覆盖质量的目的。同时,直放站转发天线还将接收来自手机的信号,经过类似的低噪声放大器、滤波、放大后,将增强的信号通过施主天线发向基站天线。在这个过程中,直放站抵消掉基站到直放站之间的无线信号路径损耗,相当于在基站和手机之间设置一个双向透明的通道,使无线信号得到延伸。

[0004] 目前市场上销售的无线直放站的基本构造如图 1 所示,包括施主天线、施主双工器、下行低噪放电路、下行频带选择器电路、下行功放电路、上行低噪放电路、上行频带选择器电路、上行功放电路、重发双工器、转发天线以及供电单元和监控系统,组成一个完整的无线直放站。

[0005] 其工作原理如下所述:

[0006] 下行链路:施主天线正对所要转发的基站天线,接收由基站发射过来的下行无线信号,信号经过施主端双工器的滤波,下行低噪放电路的低噪放大,然后经过下行频带选择器电路的滤波放大,下行功放电路的放大,再经过重发双工器滤波,最后由转发天线发送出去。

[0007] 上行链路:转发天线接收来自手机的无线信号,信号经过重发双工器的滤波,上行低噪放电路的低噪放大,上行频带选择器电路的滤波放大,上行功放电路的放大,再经过施主双工器滤波,最后由施主天线发送出去。

[0008] 另外监控系统用于对下行低噪放电路、下行频带选择器电路、下行功放电路、上行低噪放电路、上行频带选择器电路、行功放电路实现各种监控和告警功能。

[0009] 供电单元则对上述各个有源模块进行供电。

[0010] 如前所述的直放站只适用于单个频段无线信号的传输,在移动通信网络逐步由 2G 向 3G 发展的时代,需要多个频段同时存在的组网方式,这样不仅成本较高,而且占用体积大,不符合实际工程应用,市场竞争力低,也需要微波通信设备的传输容量也能随网络的发展而平滑升级,以减少运营商的投资。

【实用新型内容】

[0011] 本实用新型要解决的技术问题,在于提供一种三频无线直放站,具有较多的频率资源可供运用,能经济有效地缓解单段组网方式的容量压力,从而达到降低网络建设成本,简化工程安装的目的。

[0012] 本实用新型是这样实现的:一种三频无线直放站,其特征在于:包括一施主端多工器、一重发端多工器、一监控电路、一电源电路,以及连接在该施主端多工器与该重发端多工器之间的三个频段的信号通道;所述任一频段的信号通道包括下行链路和上行链路;所述任一下行链路包括按信号传输方向依次连接的下行低噪放电路、下行频带选择电路、下行功放电路;所述任一上行链路包括按信号传输方向依次连接的上行低噪放电路、上行频带选择电路、上行功放电路;所述监控电路分别与所述上行低噪放电路、下行低噪放电路,上行频段选择电路、下行频段选择电路,以及上行功放电路、下行功放电路连接;所述监控电路、上行低噪放电路、下行低噪放电路、上行频带选择电路、下行频带选择电路、以及上行功放电路、下行功放电路均由所述电源电路供电。

[0013] 进一步地,所述监控电路包括依次连接的第一单片机、第一通信转换 IC 和一控制手柄;所述第一单片机分别与所述上行低噪放电路、下行低噪放电路,上行频段选择电路、下行频段选择电路,以及上行功放电路、下行功放电路连接。

[0014] 进一步地,所述控制手柄进一步包括第二单片机,以及与该第二单片机连接的第二通信转换 IC、按键以及显示屏;所述第二通信转换 IC 与所述第一通信转换 IC 连接进行通信。

[0015] 进一步地,所述电源电路包括相互连接的 DC-DC 转换 IC 和电源开关,所述电源开关与所述监控电路相连。

[0016] 本实用新型的优点在于:该三频无线直放站可实现同时有三个频段一并工作,具有较多的频率资源可供运用,能经济有效地缓解单段组网方式的容量压力,因此较不会遇上因线路忙碌而电话打不通或甚至断话的情况,从根本上解决网络容量不足的问题;除此之外,因系统容量的增加,通话品质及室内收讯状况也能得到改善,还可利用增加的容量提供更多数据传输保证通话,而且这种三频无线直放站的体积比三个单频直放站而言,体积大大减小。

【附图说明】

[0017] 下面参照附图结合实施例对本实用新型作进一步的说明。

[0018] 图 1 是现有直放站的结构框图。

[0019] 图 2 是本实用新型三频无线直放站的结构框图。

【具体实施方式】

[0020] 请参阅图 2 所示,本实用新型的三频无线直放站包括包括一施主端多工器 1、一重发端多工器 2、一监控电路 3、一电源电路 4,以及连接在该施主端多工器 1 与该重发端多工器 2 之间的三个频段的信号通道 5;该三个频段的信号通道 5 分别为频段 51、频段 52 以及频段 53,

[0021] 所述频段 51 包括下行链路和上行链路;所述下行链路包括按信号传输方向依次连接的下行低噪放电路 511、下行频带选择电路 512、下行功放电路 513;所述上行链路包括按信号传输方向依次连接的上行低噪放电路 514、上行频带选择电路 515、上行功放电路 516。

[0022] 所述频段 52 包括下行链路和上行链路;所述下行链路包括按信号传输方向依次连接的下行低噪放电路 521、下行频带选择电路 522、下行功放电路 523;所述上行链路包括按信号传输方向依次连接的上行低噪放电路 524、上行频带选择电路 525、上行功放电路 526。

[0023] 所述频段 53 包括下行链路和上行链路;所述下行链路包括按信号传输方向依次连接的下行低噪放电路 531、下行频带选择电路 532、下行功放电路 533;所述上行链路包括按信号传输方向依次连接的上行低噪放电路 534、上行频带选择电路 535、上行功放电路 536。

[0024] 所述监控电路 3 包括依次连接的第一单片机、第一通信转换 IC 和一控制手柄;所述控制手柄进一步包括第二单片机,以及与该第二单片机连接的第二通信转换 IC、按键以及显示屏,第一通信转换 IC 和第二通信转换 IC 连接以实现控制手柄与第一单片机进行交互通信。所述第一单片机再分别与所述上行低噪放电路 514(524)(534)、下行低噪放电路 511(521)(531),上行频带选择电路 515(525)(535)、下行频带选择电路 512(522)(532),以及上行功放电路 516(526)(536)、下行功放电路 513(523)(533) 连接。所述监控电路 3 即可通过所述控制手柄及第一单片机对三个频段的信号通道 5 中的各个电路进行检测和控制,包括对变频所需要的本振电路锁定,每个链路的功率检测等功能,并可通过所述控制手柄的显示屏进行显示和按键进行控制。

[0025] 所述电源电路 4 包括相互连接的 DC-DC 转换 IC 和电源开关,所述电源开关与所述监控电路 3 相连。所述监控电路 3、上行低噪放电路 514(524)(534)、下行低噪放电路 511(521)(531)、上频带选择电路 515(525)(535)、下行频带选择电路 512(522)(532)、以及上行功放电路 516(526)(536)、下行功放电路 513(523)(533) 均由所述电源电路 4 供电。

[0026] 本实用新型直放站的工作原理为:

[0027] 以频段 51 为例,其工作原理为:下行信号进入施主端多工器 1 滤波,去除其他频段的干扰信号,再经过下行低噪放电路 511 低噪放大,再经过下行频带选择电路 512 变频滤波放大,选择出需要的频带,再经过下行功放电路 513 放大,进入重发端介质双工器 2 滤波输出。上行链路工作原理与下行链路工作原理类似,不再赘述。

[0028] 频段 52、53 的工作原理同频段 51 的工作原理一样,只是工作的频率不一样,此处不再重复。

[0029] 本实用新型三频无线直放站可应用于对 GSM、CDMA、DCS、PCS、WCDMA 等移动通信系统上、下行信号进行选频放大。

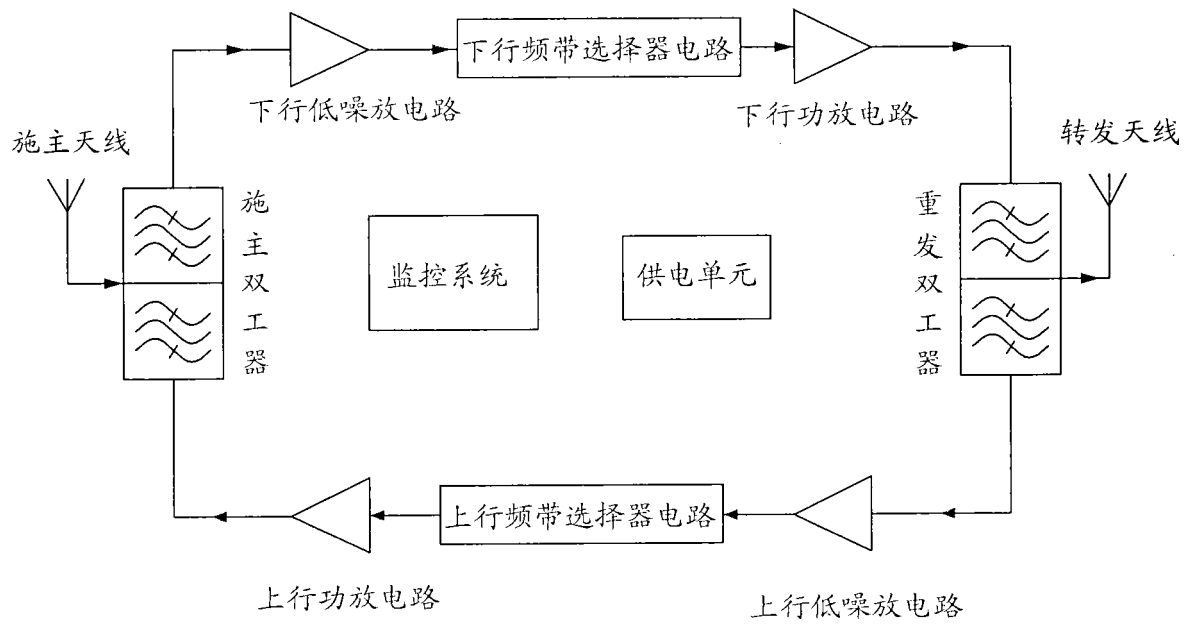


图 1

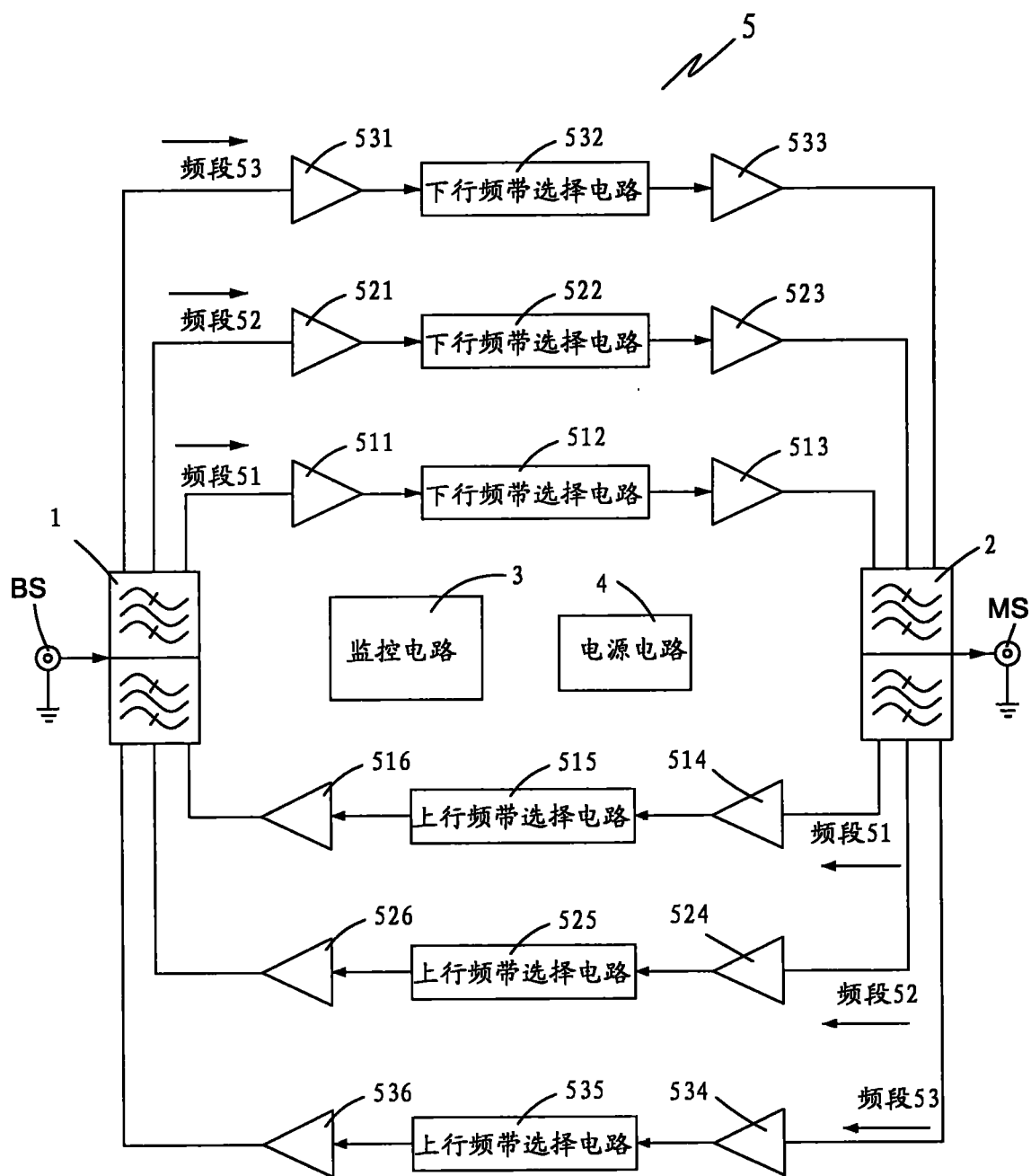


图 2