INTRODUCTION
（三分天下）

主題背景

（來龍去脈）/引章據典

標題與目的

（重述摘要）/有憑無據

論文架構

（簡介段落）/重裝上場

(研究目的與標題:重述摘要)

***Abstract*—The concept of *concurrent* multiband low-noise-amplifiers (LNAs) is introduced. A systematic way to design concurrent multiband integrated LNAs in general is developed. Applications of concurrent multiband LNAs in concurrent multiband receivers together with receiver architecture are discussed. Experimental results of a dual-band LNA implemented in a 0.35-μm CMOS technology as a demonstration of the concept and theory is presented.**

***Index Terms*—Amplifier noise, land mobile radio cellular systems, low-noise amplifier, radio communication, radio receivers.**

(研究主題背景:來龍去脈)

I. Introduction

STANDARD receiver architectures, such as superheterodyne and direct conversion, accomplish high selectivity and sensitivity by narrow-band operation at a single input frequency [1]. These modes of operation limit the system's available bandwidth and robustness to channel variations and thus its functionality. On the other hand, wide-band modes of operation are more sensitive to out-of-band unwanted signals (blockers) due to transistor nonlinearity. These out-of-band blockers can severely degrade receiver's sensitivity.

The diverse range of modern wireless applications necessitates communication systems with more bandwidth and flexibility. More recently, dual-band transceivers have been introduced to increase the functionality of such communication systems by switching between two different bands to receive *one band at* components used for the second band of operation (e.g., for adding GPS to a CDMA phone [6]), none of these efforts attempt simultaneous reception of more than one band.

In this work, a new *concurrent* dual-band receiver architecture is introduced that is capable of simultaneous operation at two-different frequencies without dissipating twice as much power or a significant increase in cost and footprint [7]. This concurrent operation can be used to extend the available bandwidth, provide new functionality, and/or add diversity to battle channel fading. The concurrent operation is realized through an elaborate frequency conversion scheme in conjunction with a novel concurrent dual-band low-noise amplifier (LNA). These new concurrent multiband LNAs provide simultaneous narrow-band input matching and gain at multiple frequency bands, while maintaining low noise.

Section II reviews the current advances of single-band LNAs from technological and architectural points of view. Section III briefly describes one such receiver architecture demonstrating the central role of the concurrent LNAs in the receiver. The general design methodology of concurrent multiband LNAs is discussed in Section IV. Experimental results of a concurrent dual-band CMOS LNA will be presented in Section V.

(研究論文架構:簡介段落)

II. A Review of Single-Band LNA Design Issues

Being the first active element in the receiver chain, the noise

(研究主題背景:來龍去脈)/引章據典

I. Introduction

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The diverse range of modern wireless applications necessitates communication systems with more bandwidth and flexibility. More recently, dual-band transceivers have been introduced to increase the functionality of such communication systems by switching between two different bands to receive *one band at a time* [2]–[5]. While switching between bands improves the

(研究主題背景:來龍去脈)/引章據典

第一段

兩述其美

- **(1) 功能優點先述**
- **More recently, ☼ ☼ ☼ have been introduced to increase the functionality of such ♪♪♪ by ♠♠♠ .**
- **(2) 發展趨勢必述**
- **☼ ☼ ☼ have gained increased attention in recent years because of ♪♪♪ and turn ♠♠♠ into an advantage for the system.**

簡介格式

第一&二段　主題背景　（六言絕句）

(來龍去脈)/引章據典

第一段

1. Function/Significance (功能性/重要性) [?]
2. Field/Area (應用領域)

第二段

3. Merits in Earlier Study(先前研究之優點) [?]
4. Flaw (缺點的提示)
5. Reforms (缺點改進之已有方案) [?]
6. Favored Reform (本論文提出較佳改善)

INTRODUCTION

Hw-5

(1) Find 3個主題背景

第一段

兩述其美

(2) Analyze分析中文陳述

(3) 擬定共用英文 基本句型

In the multitude of three counselors 三人行

there is wisdom 必有我師焉

With the multitude of three papers 三篇行

there is my paper 必有我篇焉

(研究主題背景:來龍去脈)/引章據典

LOW-PASS filters have been widely used to suppress harmonics and spurious signals. The conventional stepped-impedance filters, however, can only provide a gradual cutoff frequency response [1]. In order to achieve a sharp cutoff frequency response, more sections are needed, but increasing sections will also increase the loss in the passband and circuit size. Recently, semi-lumped low-pass filters [2] are reported with a sharp cutoff frequency response, unfortunately, soldering lumped components will increase fabrication difficulties and manufacturing repeatability is difficult to maintain. Low-pass filters using coupled lines [3] or stepped-impedance hairpin resonators [4] have finite attenuation poles in cutoff frequency band. However, because the capacitance of the coupled lines is too small, the finite attenuation pole cannot be located close to the passband. Consequently, the cutoff frequency response is gradual.

(研究主題背景:來龍去脈)/引章據典

「思源追遠/奉繼承先/啟蒙動後」

第一段

☼ ☼ ☼ have been widely used to ♪ ♪ ♪ by ♠ ♠ ♠ . The conventional ♣ ♣ ♣ , however, can only provide 🏛🏛🏛 [1].

In order to achieve a 🏵🏵🏵, more ☺ ☺ ☺ are needed, but increasing @@@ will also increase the ◘ ◘ ◘ .

Recently, ◊ ◊ ◊ [2] are reported with 🏵🏵🏵, unfortunately, ► ► ► will increase ╪╪╪ difficulties. ☼ ☼ ☼ using ▲▲▲ [3] or ╞╞╞ [4] have finite ⌂⌂⌂.

However, because ■ ■ ■ is too ╤╤╤, ЯЯЯ cannot ●●●. Consequently, 🏛🏛🏛 is ***.

(gained/drawn => increased/considerable => attention/interest)

INTRODUCTION

Hw-6

(1) Find 3個主題背景

第二段

3. Merits in Earlier Study(先前研究之優點) [?]
4. Flaw (缺點的提示)
5. Reforms (缺點改進之已有方案) [?]
6. Favored Reform (本論文提出較佳改善)

(2) Analyze分析中文陳述

(3) 擬定共用英文 基本句型

INTRODUCTION

Test-2

(A)

(1) Find 3個主題背景

第一段

第二段

(2) Analyze分析中文陳述

((3)) 擬定共用英文 基本句型

(B)

Find a good paper (3A grade and not in (A))

And use your (A)句型

to rewrite