

레이더 송수신기용 X 밴드 주파수 합성기 개발

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Development of X-band frequency synthesizer for radar transceiver

Hyun-Soo Lee+, Dong-kook Park++ Su-tea Lee+++ Jin-Young Kim++++

Abstract : A frequency synthesizer of 10 GHz ~ 11 GHz for FMCW radar is designed and implemented by the form of indirect frequency synthesizer of a single loop structure. The synthesizer uses a high speed digital PLL chip. It is difficult to divide directly by using a program counter of PLL chip because the output frequency of VCO is 10 GHz ~ 11 GHz, so we lower the frequency to 625 MHz ~ 687.5 MHz by using a prescaler, and then divide the frequency by the program counter. The output frequency sweep of VCO from 10 GHz to 11 GHz is measured.

Key words : FMCW radar, frequency synthesizer, single loop structure, prescaler

1. 서론

2. 주파수 합성기의 설계 및 제작

FMCW
Target Indicator),

MTI(Moving Target Indicator),

PLL

(VCO),

[5], [6].

[1],

[2]. 1 FMCW Radar (VCO)

2

가

(Frequency synthesizer)

R 가
R
가

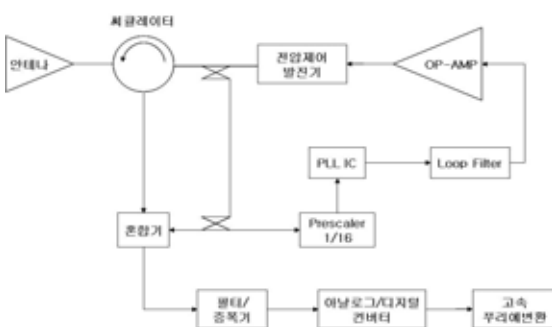
VCO

가

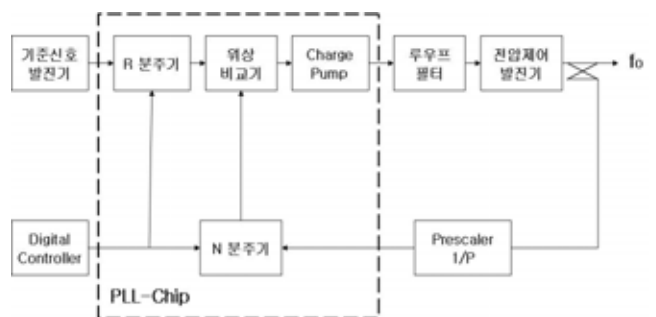
가

[3], [4].

, 10 GHz ~ 11 GHz



1. FMCW



2.

dc

+ (), E-mail: cafemonica@hotmail.com, Tel: 051)410-4905
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 +++ , ()
 ++++ , ()

VCO

PLL

3

3

PLL

charge pump

0.4V~4.7V

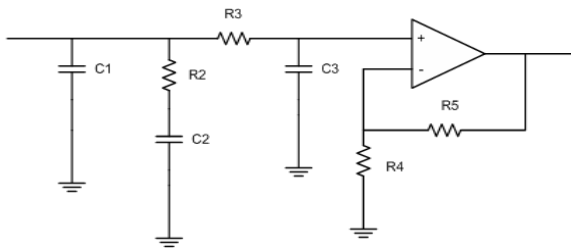
VCO

3.7 V ~ 8 V 가

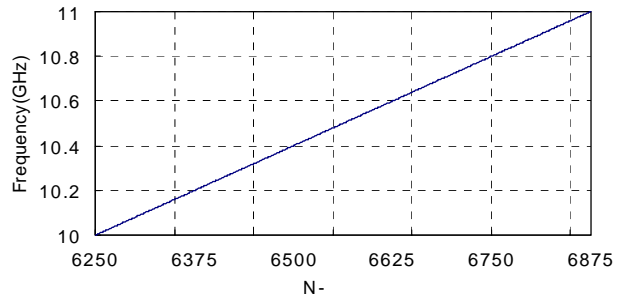
charge pump

VCO

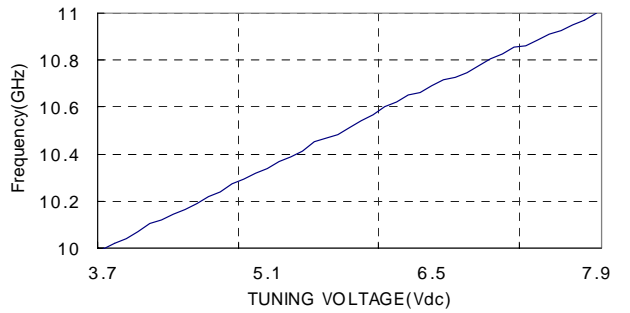
1.8



3.



(a)



(b) VCO(VTO-8951)

5.

3.

FMCW

10 GHz ~ 11 GHz

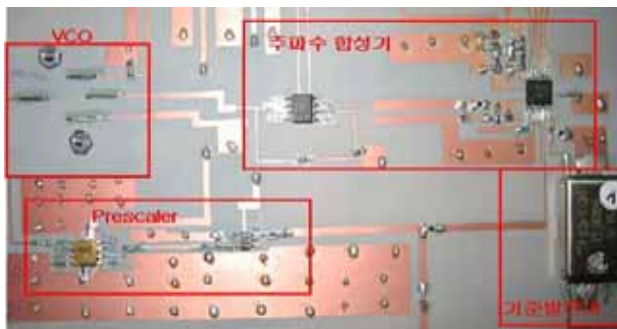
8.5 dBm

FMCW

가

12.8 MHz TCXO

4



4.

5-(a)

N

6250

6875

VCO

6-(b) PLL

VTO-8951

PLL

6-(a)가

참고 문헌

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