

ETACS CDMA Interference Canceller System

The Design and Implementation of Interference Canceller Systems in the Environments with Co-existing ETACS and CDMA Digital Cellular Systems

*, **, **

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ETACS CDMA Interference Canceller System(ICS)
ICS
ETACS CDMA 29 dB

ABSTRACT

In this paper, we provide the Interference Canceller Systems(ICS) in the wireless environments in the presence of co-existing ETACS and CDMA digital cellular systems to effectively cancel the interference than the established canceller systems. We proved the enhanced cancelling performances more than 29 dB cancellation characteristics between co-existing ETACS and CDMA digital cellular systems and the stabilized system characteristics in the rapidly changing wireless circumstances.

Key words : Interference canceller system, ETACS, CDMA

I. Introduction
The Interference Canceller System(ICS) is designed to cancel the interference between co-existing GSM, PCS, UMTS, cdma2000, ETACS and CDMA systems in the 800 MHz ~ 900 MHz band. [1], [2].

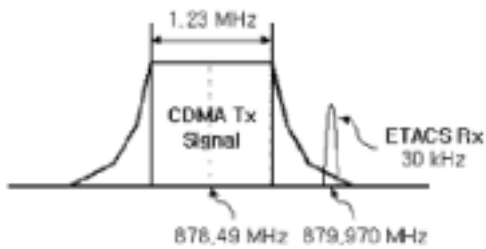
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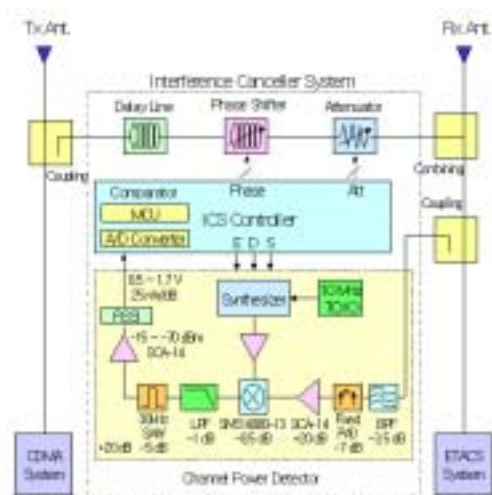
가
isolation
[3],
controller
Interference
Canceller System (ICS)
ICS
CDMA
ETACS
ETACS
CDMA

isolation
ETACS Rx
ICS
3-1
2 ICS
CDMA Tx
coupling port
CDMA Tx ETACS Rx
가
time delay
delay line
phase shifter
가
attenuator

ETACS Rx
CDMA Tx
CDMA Tx
ETACS Rx
(Signal-to-Interference power Ratio) SIR



1.



2. Interference Canceller System (ICS)

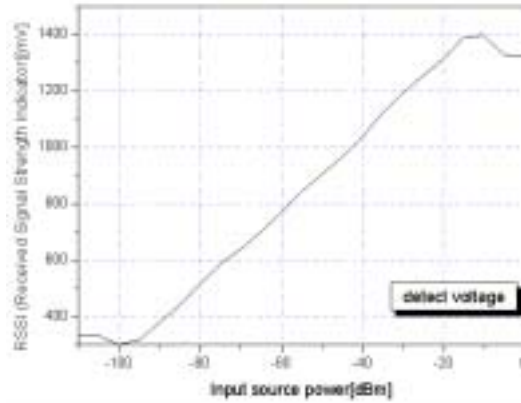
Rx , ETACS 가 가
 가
 phase shifter, attenuator
 update가
 ICS ETACS Rx com-
 bining coupling CDMA Tx
 channel power detector , IF
 down SAW filter
 RSSI(Received Signal
 Strength Indicator) controller
 controller phase attenuation
 RSSI , RSSI가 가
 phase attenuation .

update가 ,

3-2

ICS

phase shifter, stepped attenuator, chan-
 nel power detector, controller
 Phase shifter pin diode
 TTL level 8 , 가
 1.4° ,
 20 dBm .
 Stepped attenuator TTL level 7
 step 0.5 dB 0 ~ 63.5 dB attenuation level
 Channel power detector IF 1
 down SAW filter ICS



3. Channel power detector

1. ICS specifications

Frequency Range	800 ~ 900 MHz
Insertion Loss	15 dB (Max.)
Return Loss	18 dB (Min.)
Operating Power	+10 dBm
No damage Power	+20 dBm
Impedance	50
Operating Temperature	-30 ~ +60
Control type	TTL Level
DC Current	30mA@+12V DC
Connector	SMA Female
가 x x	325x170x440 mm

RSSI

3

3 - 100 ~ - 10 dBm

turning

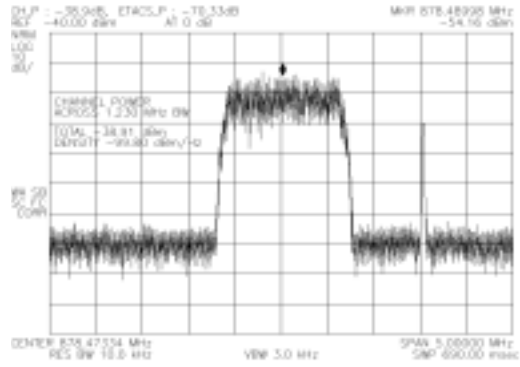
1 dB 25 mV RSSI 가

1 ICS , 4

ICS



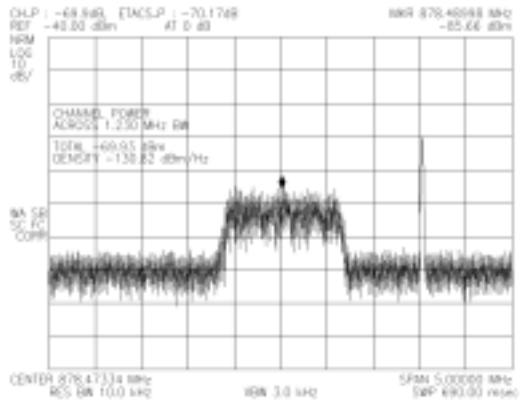
(a)



(a) ICS



(a)



(b) ICS

4. ICS

CDMA

ETACS

ICS

5 ~ 6

CDMA

가

- 35 ~ - 40

dBm

5 ETACS

- 70 dBm

ICS

ICS

CDMA channel power - 38.91 dBm

CDMA

1.5 MHz level

60 dB 가 [4].

, CDMA

1.495 MHz

ETACS

CDMA - 98.91 dBm

5. ETACS

- 70 dBm

ICS, CDMA channel power - 69.93 dBm, ETACS

CDMA

가 - 129.93 dBm 31 dB

SIR

6 ETACS

- 90 dBm ICS

ICS

, CDMA channel power - 38.90

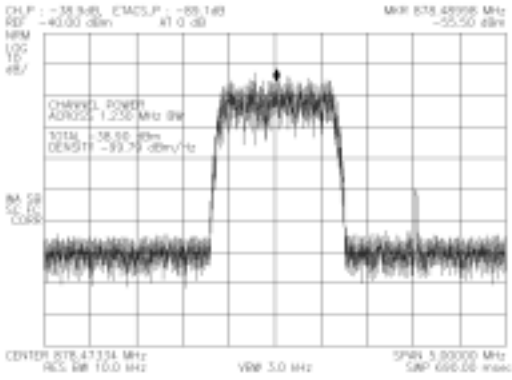
dBm, ETACS

CDMA - 98.9 dBm

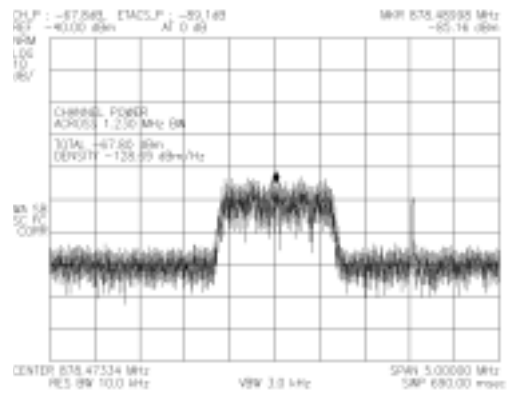
, SIR 8.9 dB 5

ICS

, CDMA channel power - 67.80 dBm



(a) ICS



(b) ICS

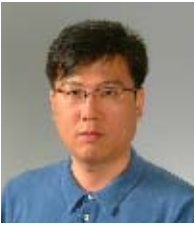
6. ETACS - 90 dBm

, ETACS CDMA
 - 127.80 dBm SIR
 37.8 dB가 SIR 28.9 dB
 . SIR

filter
 가
 ICS
 ICS
 ETACS CDMA
 29 dB
 ICS data
 가가

[1] , , 1998.
 [2] P. Vizmuller, *RF Design Guide*, Artech House, 1995.
 [3] W. Honcharenko, J. P. Kruys, D. Y. Lee, and N. J. Shah, "Broadband Wireless Access", *IEEE Commun. Mag.*, vol. 35, no. 1, pp. 20-26, Jan. 1997.
 [4] Qualcomm, *Radio System Characterization for the Proposed IS-95 based CDMA PCS Standard*, Nov. 1994.
 [5] W. C. Y. Lee, *Mobile Cellular Telecommunications : Analog and Digital Systems*, McGraw-Hill, 1989.

(張原豪)



1982 ~1986 :
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 1986 ~1988 ;
 ()
)
 1995 ~1998 :

1991 ~1992 : ()
 1992 ~2001 :
 2001 ~ : ()
 : , RF ,

(李潤鉉)



1965 2 ;
 ()
 1985 2 :
 ()
 1979 9 :
 1988 7 : New York State Uni-
 versity at Buffalo

1980 ~ :
 : , ,
 : , ,
 , EMI/EMC

(洪周爽)



1997 2 ;
 ()
 1999 2 ;
 ()
)
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