

JCS80 U.S. PTO  
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**PROVISIONAL APPLICATION COVER SHEET**

Atty. Docket No. 2919-PA-Z

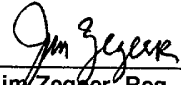
Box Provisional-Application  
Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

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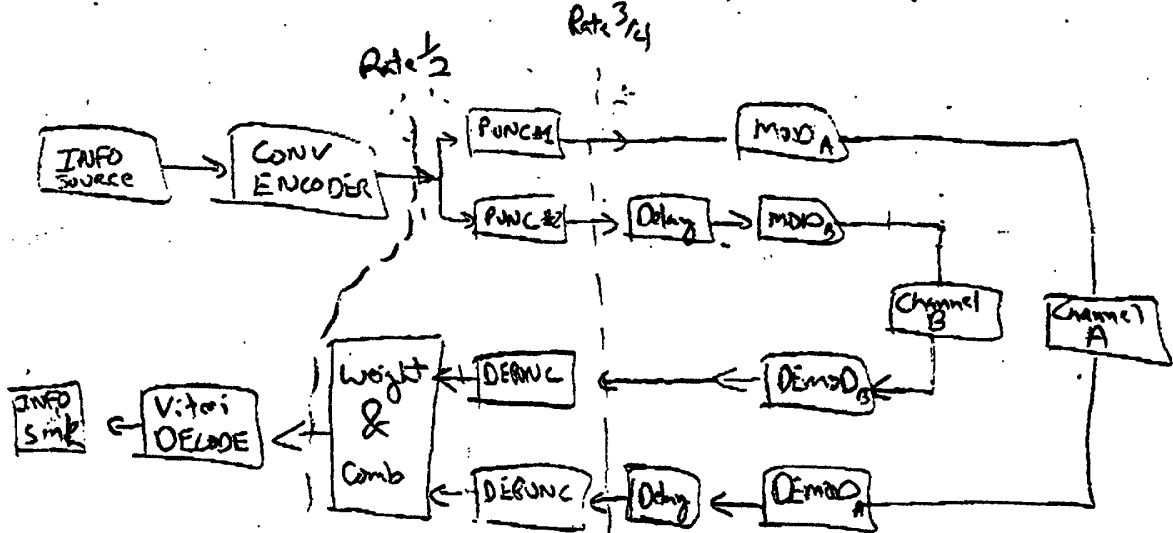
A.	The present application is a provisional application under 37 C.F.R. §1.53(c).				
B.	<table border="0"> <tr> <td>Inventor(s) Name(s):</td> <td>Address(es):</td> </tr> <tr> <td>1. Joseph Smallcomb</td> <td>Herndon, Virginia, U.S.A.</td> </tr> </table>	Inventor(s) Name(s):	Address(es):	1. Joseph Smallcomb	Herndon, Virginia, U.S.A.
Inventor(s) Name(s):	Address(es):				
1. Joseph Smallcomb	Herndon, Virginia, U.S.A.				
C.	Title of the Invention: DUAL CHANNEL DIVERSITY SYSTEM				
D.	<p>The correspondence address, name and registration number of the attorney for this provisional application is:</p> <table border="0"> <tr> <td>Jim Zegeer, Esq. Suite 108 801 North Pitt Street Alexandria, VA 22314</td> <td>Registration No. 18,957</td> </tr> </table>	Jim Zegeer, Esq. Suite 108 801 North Pitt Street Alexandria, VA 22314	Registration No. 18,957		
Jim Zegeer, Esq. Suite 108 801 North Pitt Street Alexandria, VA 22314	Registration No. 18,957				
E.	<p>This Provisional Application contains:</p> <p><input checked="" type="checkbox"/> <u>2</u> Pages of Specification containing a description, one block diagram and examples.</p> <p><input checked="" type="checkbox"/> The fee mandated under 37 C.F.R. §1.16 of \$150.00 (\$75.00 for a small entity)(check enclosed). Any additional fee required to effect the proper and timely filing of this Provisional Application may be charged to Deposit Account No. 26-0090.</p>				

Respectfully submitted,

  
\_\_\_\_\_  
Jim Zegeer, Reg. No. 18,957  
Attorney for Applicant

Date: November 30, 1998

# Dual Channel Diversity Via Staggered Puncturings of a Single Convolutional Code



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State of the art

- Channel A and B are different (i.e. Spatial diversity)
- TX Delay on B gives time diversity
- PUNCTURING  $1/2$  to  $3/4$  - send identical bits on A and B

Inventions

- Use different puncturing patterns on A and B (code diversity)
- Optimum weighting and combining of received signals

Example

Punc Pattern #1	b x b	for channel A
	b x b	
Punc Pattern #2	x b b	for channel B
	b x b	

## Staggered Puncturing Scheme

- Use same puncture pattern only staggered in "phase"

Sat. Signal	1/3 Puncture Pattern (2 of 6)
Early	g0:eeex g1:exee
Late	g0:llxl g1:xlil

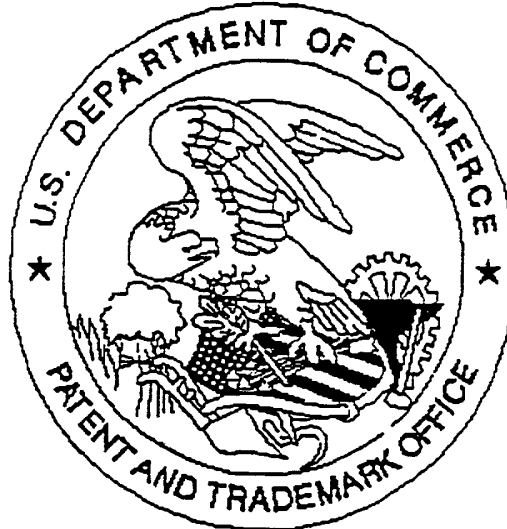
- MRC Example for signal of equal strength (maximum performance gain)

Punct. Pattern	1/3 Puncture Pattern (2 of 6)	Maximum Performance Gain
InPhase	g0:bbbx g1:bxbb	3 dB
Staggered	g0:bbel g1:elbb	4-5 dB

b: combine both; e: early only; l: late only

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