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PROVISIONAL APPLICATION COVER SHEET

Atty. Docket No. 2919-PA-Z

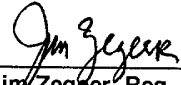
Box Provisional-Application
Assistant Commissioner for Patents
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Sir:

60440558-43098

| | |
|----|---|
| A. | The present application is a provisional application under 37 C.F.R. §1.53(c). |
| B. | Inventor(s) Name(s): 1. Joseph Smallcomb Address(es): Herndon, Virginia, U.S.A. |
| C. | Title of the Invention: DUAL CHANNEL DIVERSITY SYSTEM |
| D. | The correspondence address, name and registration number of the attorney for this provisional application is: Jim Zegeer, Esq. Registration No. 18,957 Suite 108 801 North Pitt Street Alexandria, VA 22314 |
| E. | This Provisional Application contains: <input checked="" type="checkbox"/> <u>2</u> Pages of Specification containing a description, one block diagram and examples. <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. |

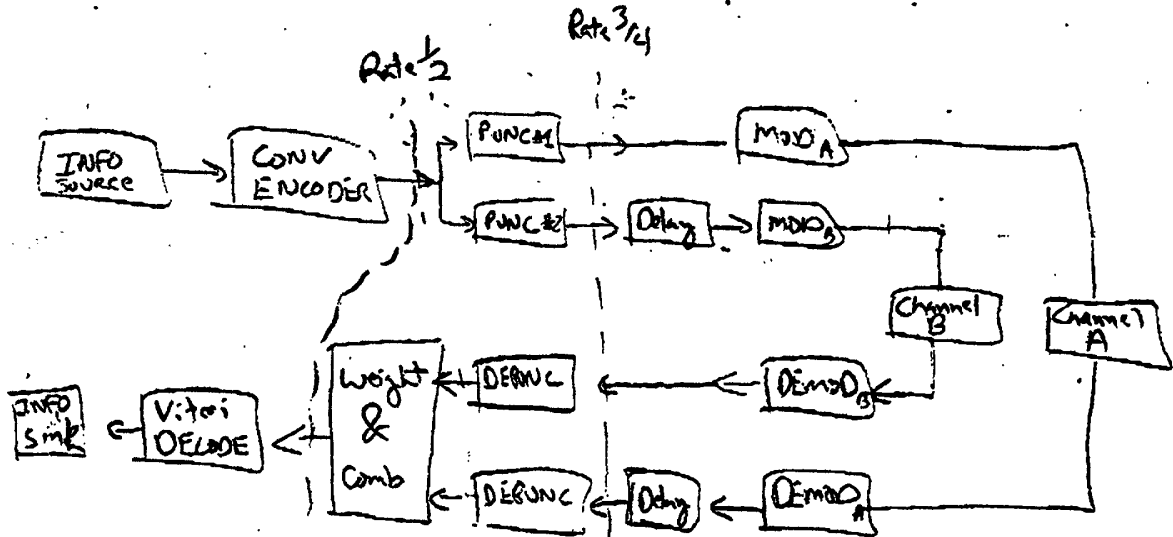
Respectfully submitted,



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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

Intentions

- 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 |

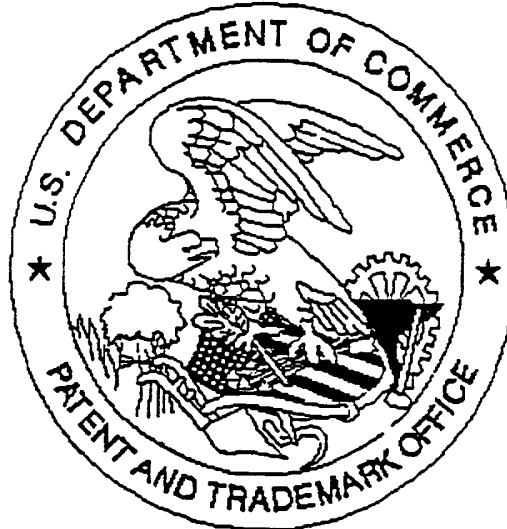
- MRC Example for signal of equal strength (maximum performance gain)

| 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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