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**Maltsev et al.**

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(54) **MULTIPLE INPUT MULTIPLE OUTPUT  
MULTICARRIER COMMUNICATION  
SYSTEM AND METHODS WITH QUANTIZED  
BEAMFORMING FEEDBACK**

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**H04L 27/28** (2006.01)

(52) **U.S. Cl.** ..... **375/260**

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**375/347, 267, 147, 150, 149; 455/403, 562.1,**  
**455/101, 102, 103, 69, 73; 342/372, 368,**  
**342/377, 383**

See application file for complete search history.

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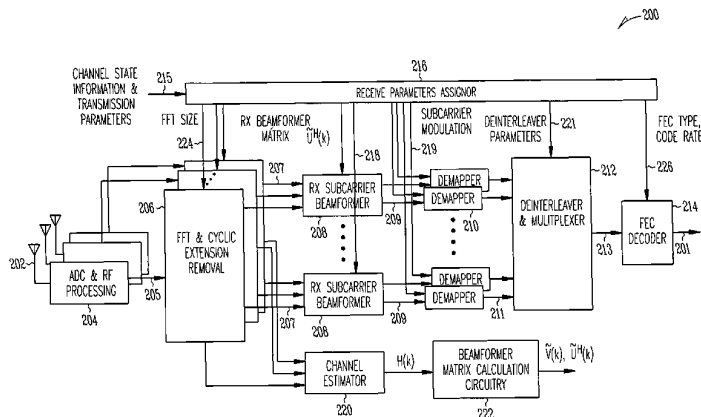
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Woessner, P.A.; Gregory J. Gorrie

(57) **ABSTRACT**

A multicarrier receiver generates a quantized transmit beam-  
former matrix ( $\hat{V}$ ) for each subcarrier of a multicarrier com-  
munication channel for use by a multicarrier transmitting  
station. The multicarrier receiver applies a corrected receiver  
beamformer matrix ( $\hat{U}^H$ ) to received subcarriers signals gen-  
erated by signals received from the transmitting station.

**34 Claims, 11 Drawing Sheets**



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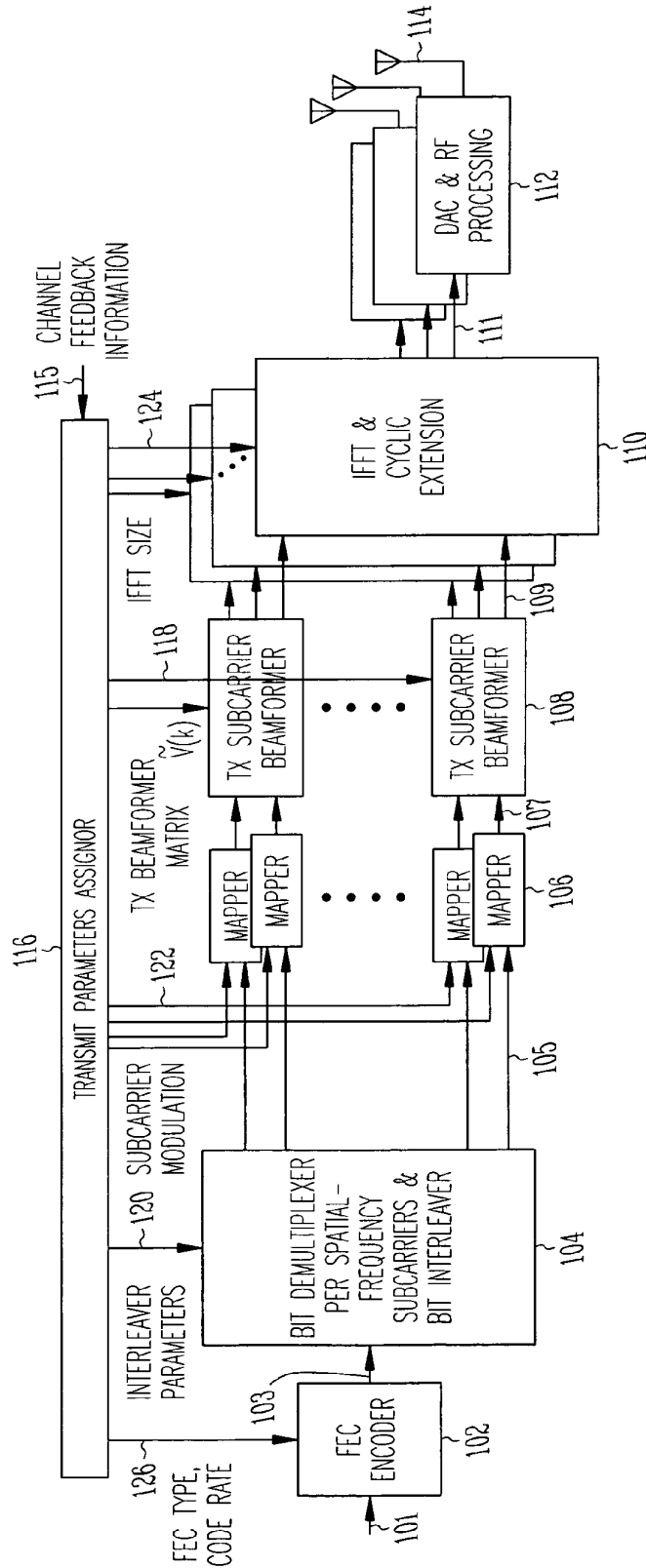


Fig. 1

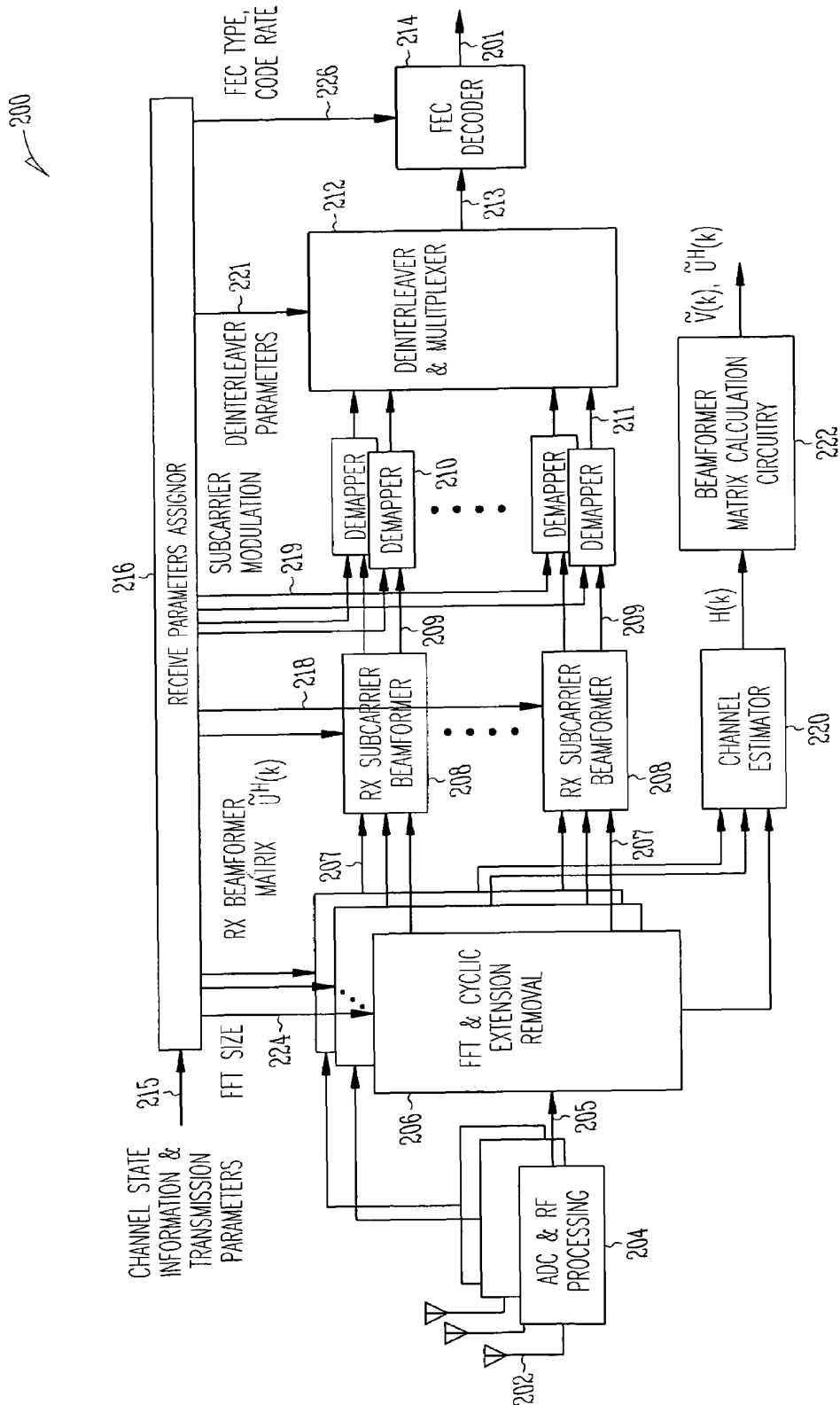


Fig. 2

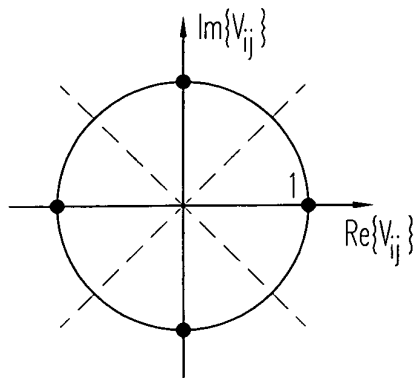


Fig. 3A

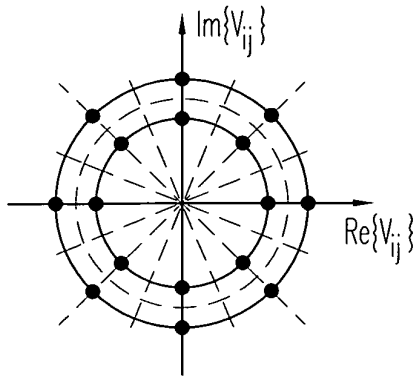


Fig. 3B

AMPLITUDE SUBFIELD

402 ↗

401 AMPLITUDE BITS	403 AMPLITUDE
000	$\sqrt{0.0625}$
001	$\sqrt{0.1875}$
011	$\sqrt{0.3125}$
010	$\sqrt{0.4375}$
110	$\sqrt{0.5625}$
111	$\sqrt{0.6875}$
101	$\sqrt{0.8125}$
100	$\sqrt{0.9375}$

Fig. 4A

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