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Frodigh et al.

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[54] **ADAPTIVE CHANNEL ALLOCATION IN A FREQUENCY DIVISION MULTIPLEXED SYSTEM**

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[52] U.S. Cl. **370/252**; 370/333; 455/63

[58] Field of Search 370/17, 13, 95.1, 370/95.2, 95.3, 71, 57, 19, 18, 30, 73, 69.1, 247, 252, 251, 254, 314, 332, 333, 337, 341, 344, 345, 346, 350, 281, 320, 335, 342, 478, 479, 480, 481; 375/200–205, 227, 254, 278, 284, 285, 293; 455/33.1–33.3, 34.1, 54.1, 50.1, 51.1, 52.2, 52.3, 57.1, 63, 65, 67, 67.1, 67.3, 67.4, 101; 379/58–60

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[57] **ABSTRACT**

A method and system of adaptive channel allocation in a frequency division multiplexed system is provided. In the method and system a subset of M subcarriers is chosen from a larger set of N subcarriers available for communications on a link. As communications take place on the link, signal quality (C/I) measurements on the subcarriers of the subset of M subcarriers and interference (I) measurements on the subcarriers of the group of N subcarriers are periodically performed. The C/I and I measurements are then used to reconfigure the subset of M subcarriers to reduce co-channel interference on the link.

22 Claims, 8 Drawing Sheets
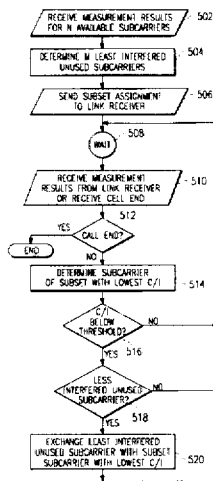
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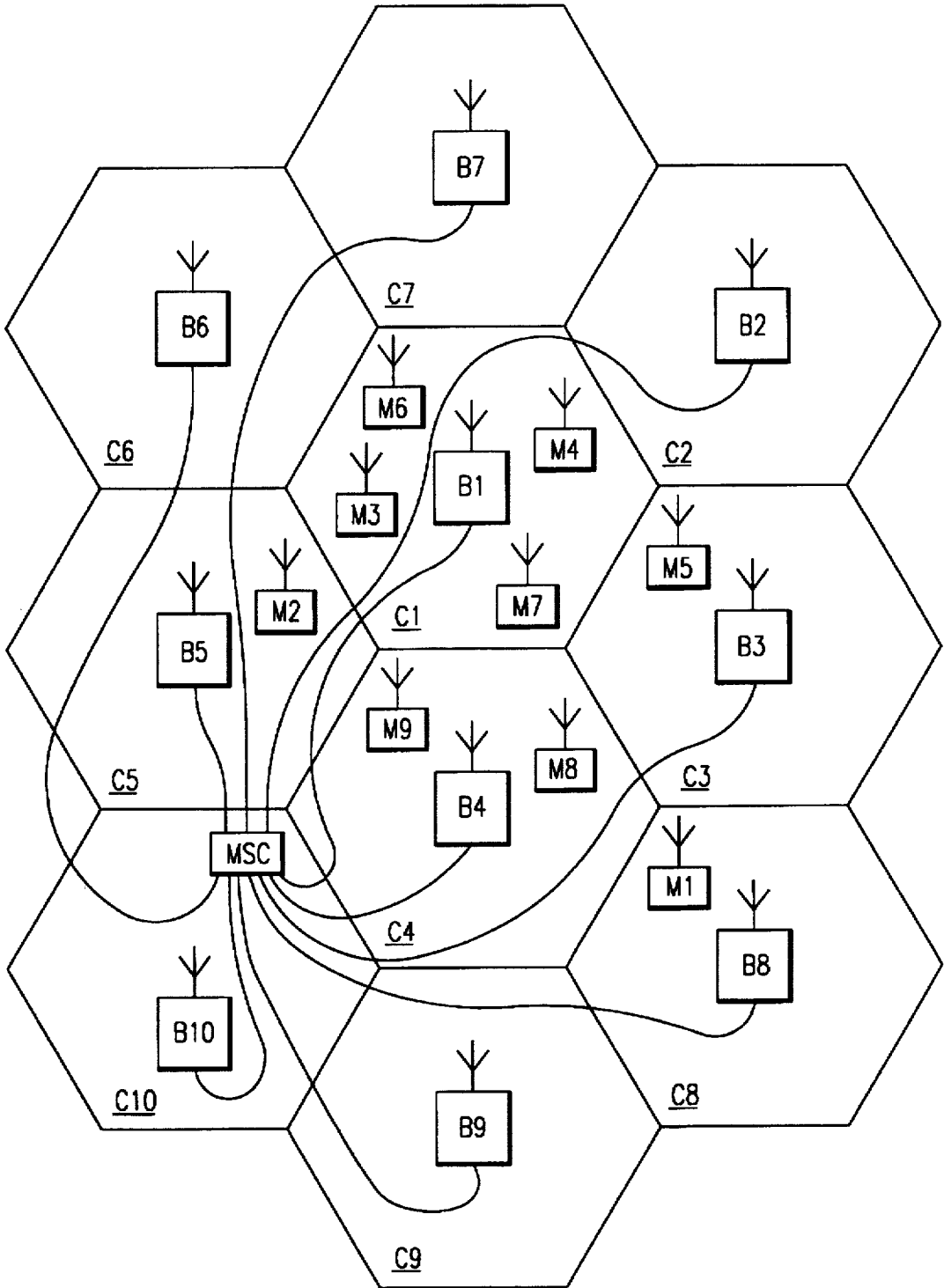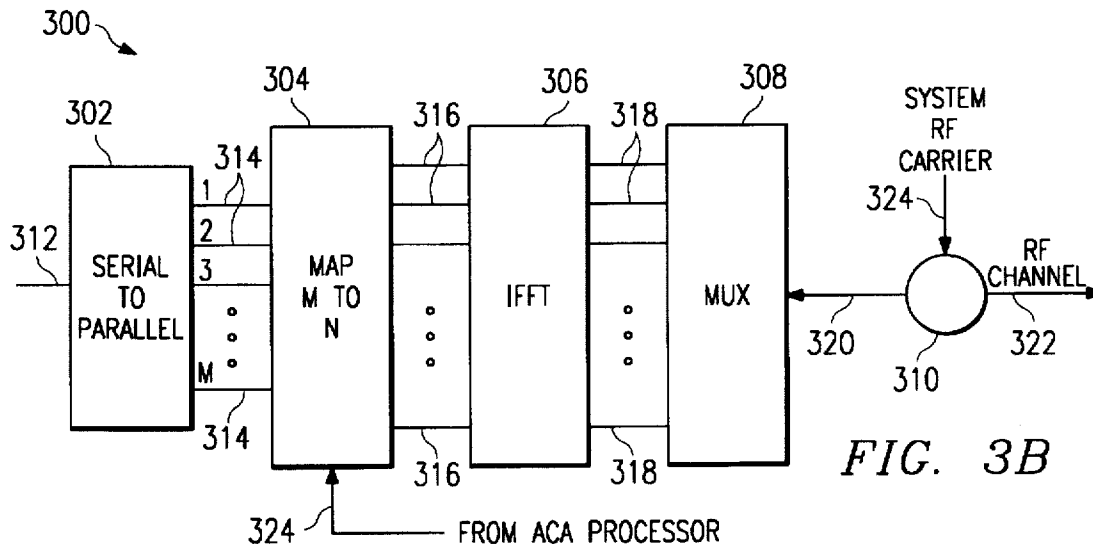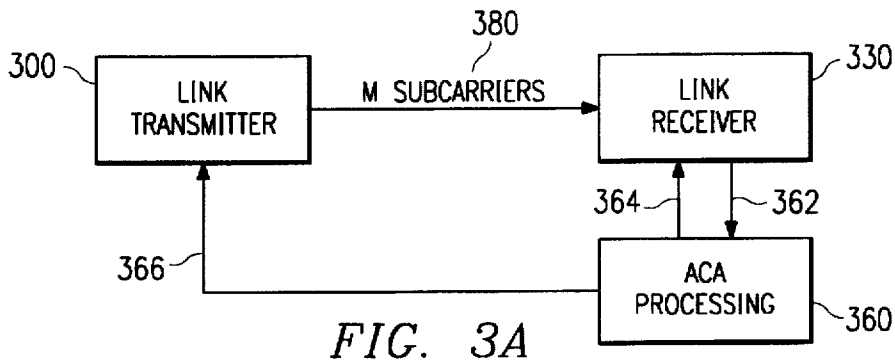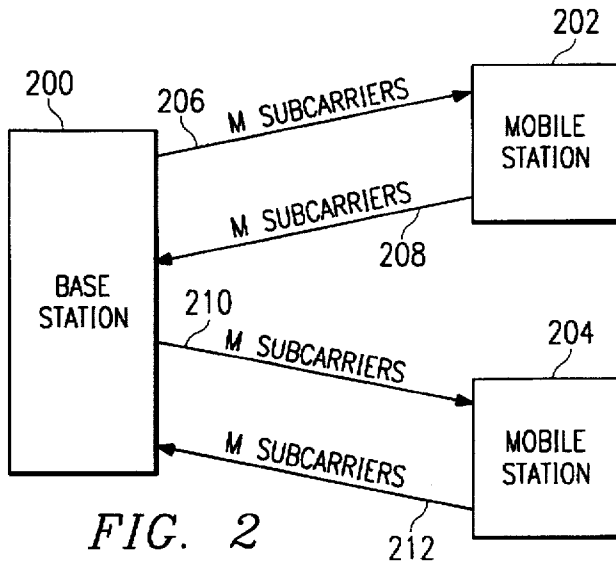
FIG. 1

FIG. 2

FIG. 3A

FIG. 3B

FIG. 3C

330

334 348 336 350 338 352 340

332

RF CHANNEL

322

DEMUX | FFT | DEMAP N TO M | PARALLEL TO SERIAL

RECEIVED DATA

354

INTER-FERENCE MEASURING MEANS

SIGNAL QUALITY MEASURING MEANS

344   342

FROM ACA PROCESSING

PROCESSING MEANS

346

TO ACA PROCESSING

FIG. 4B

FROM STEP 426 OF FIG. 4A

428a

SHORT TIME INTERVAL FOR REPORTING

NO

YES

428b

SEND Y LOWEST C/I MEASURMENTS AND Z LOWEST I MEASURMENTS TO SYSTEM

SEND C/I AND I MEASURMENTS TO SYSTEM

428c

TO STEP 414 OF FIG. 4A

DOCKET ALARM
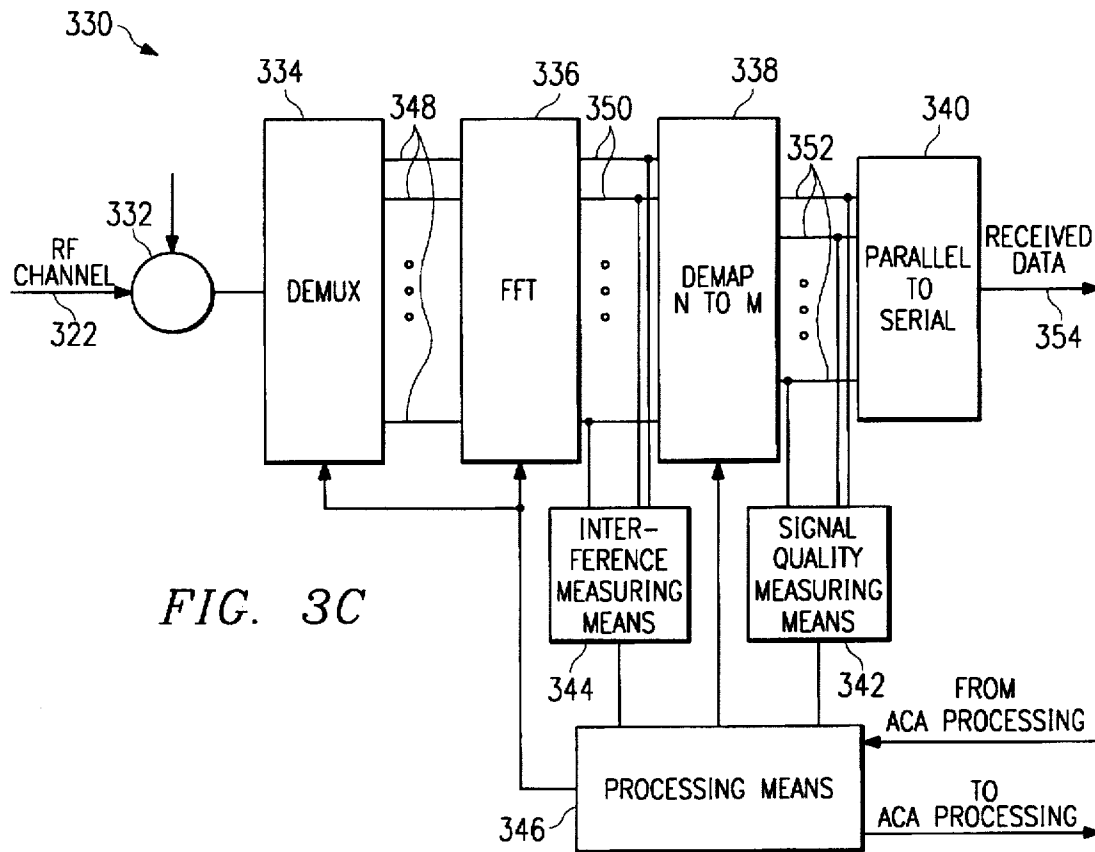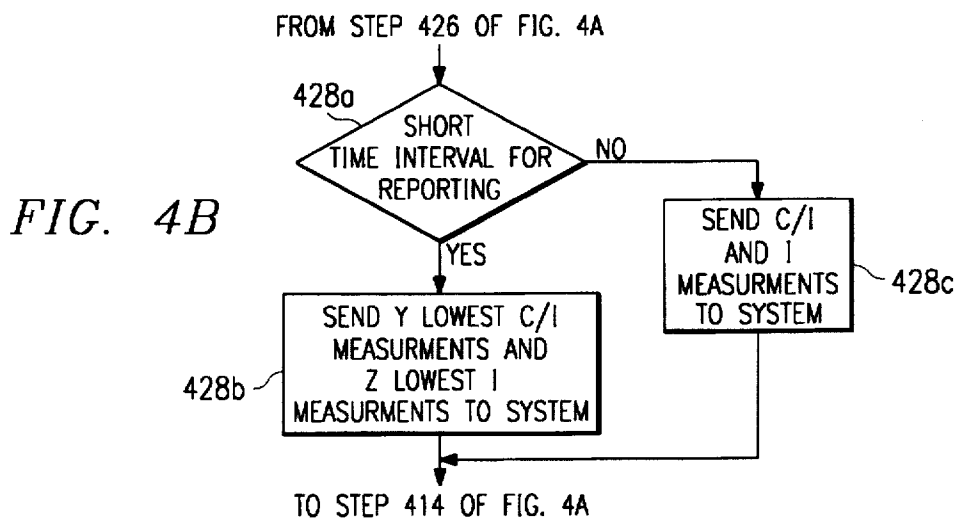
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