

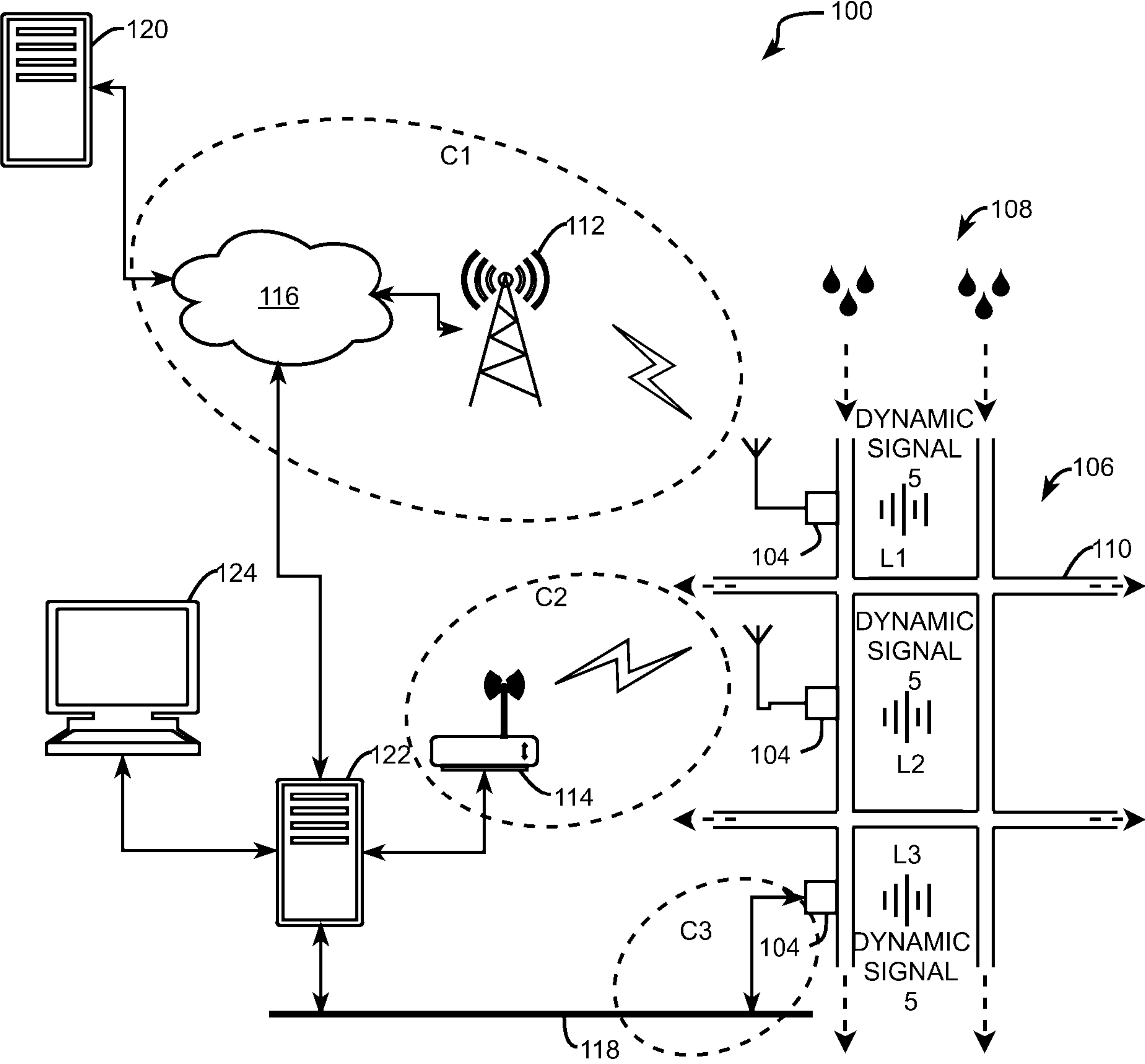


FIGURE 1

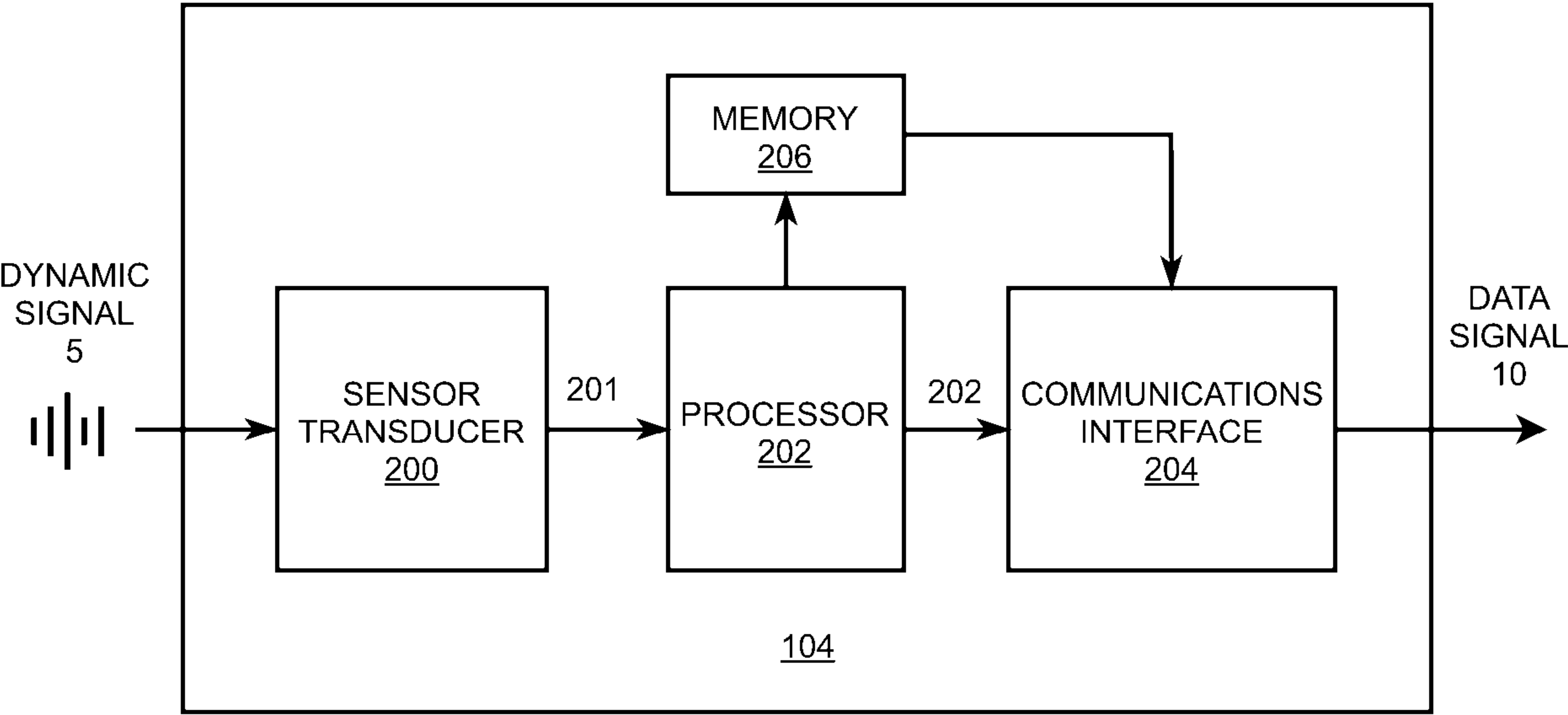


FIGURE 2

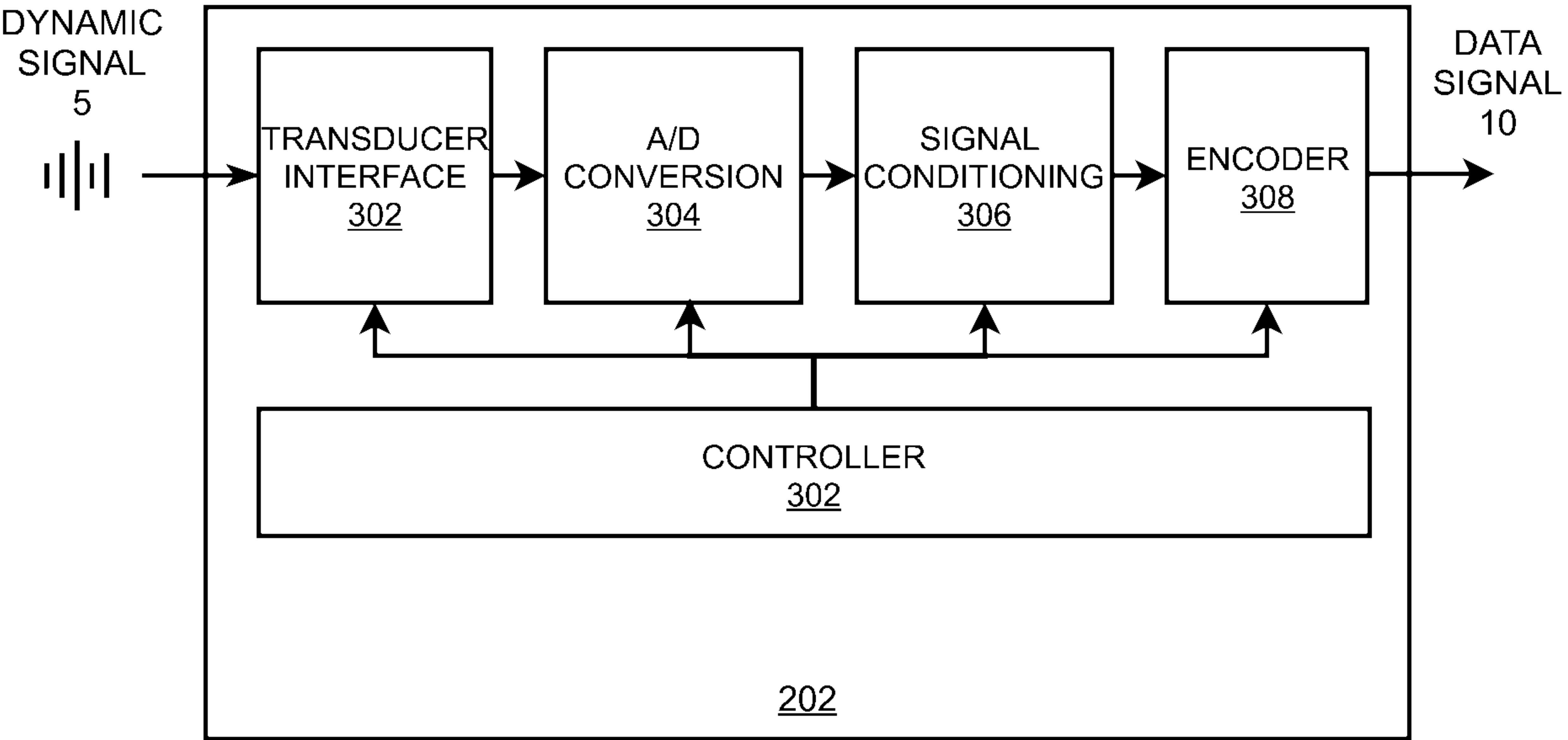


FIGURE 3

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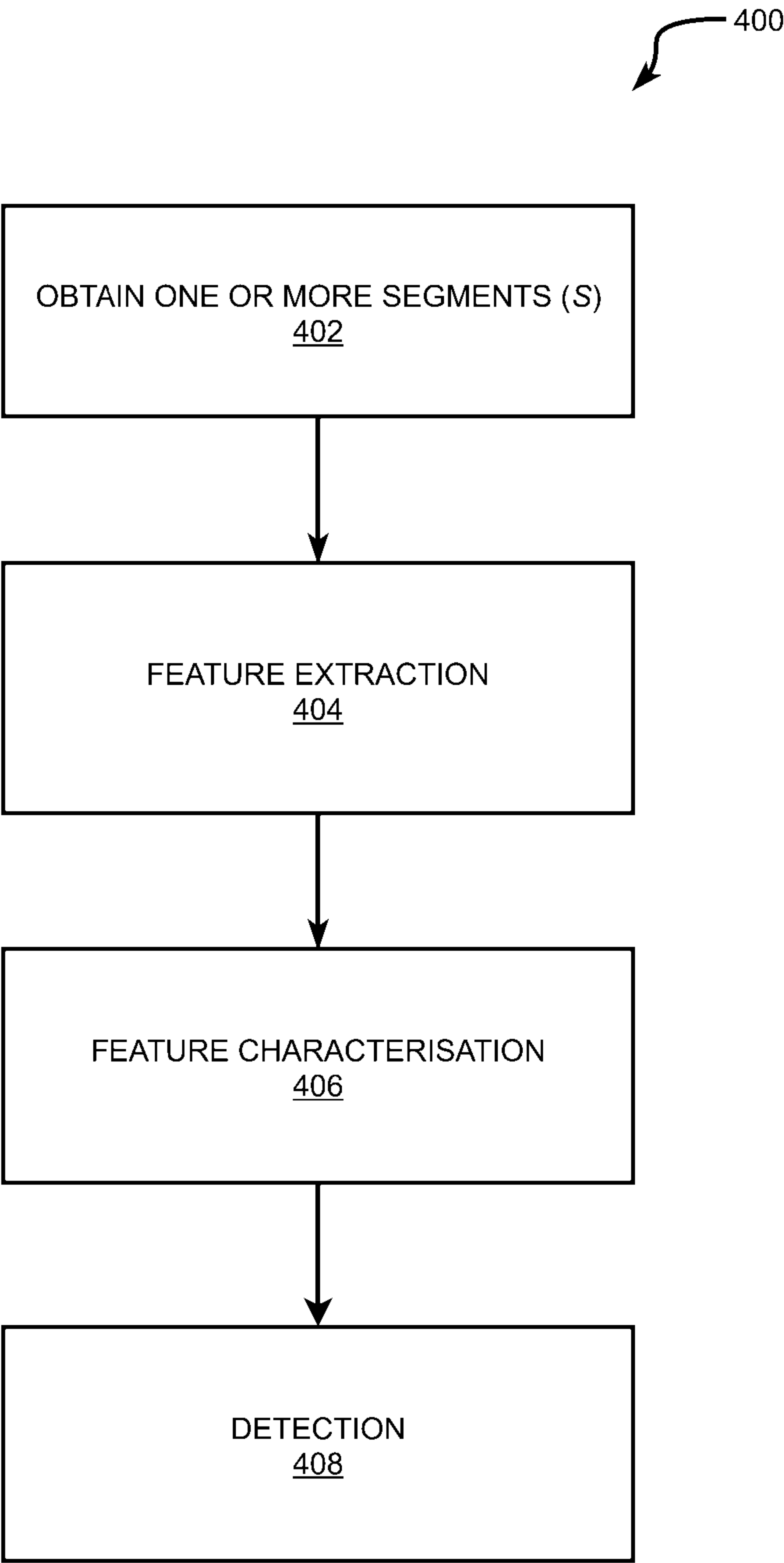


FIGURE 4

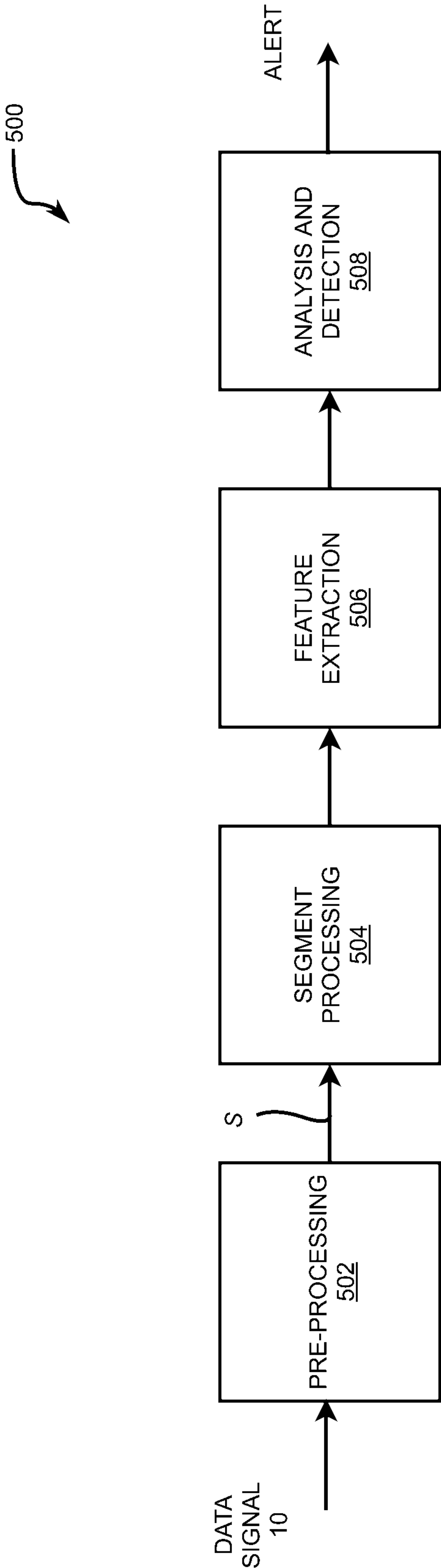


FIGURE 5

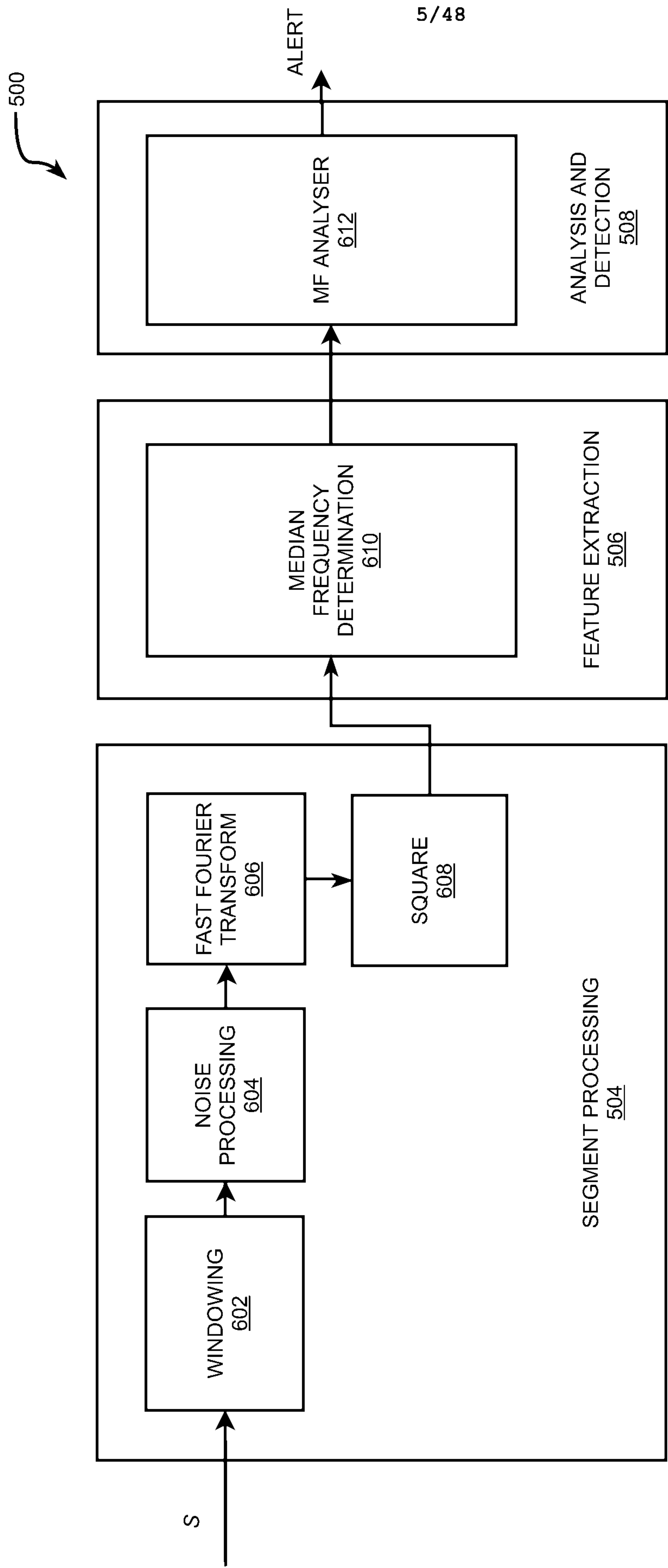


FIGURE 6

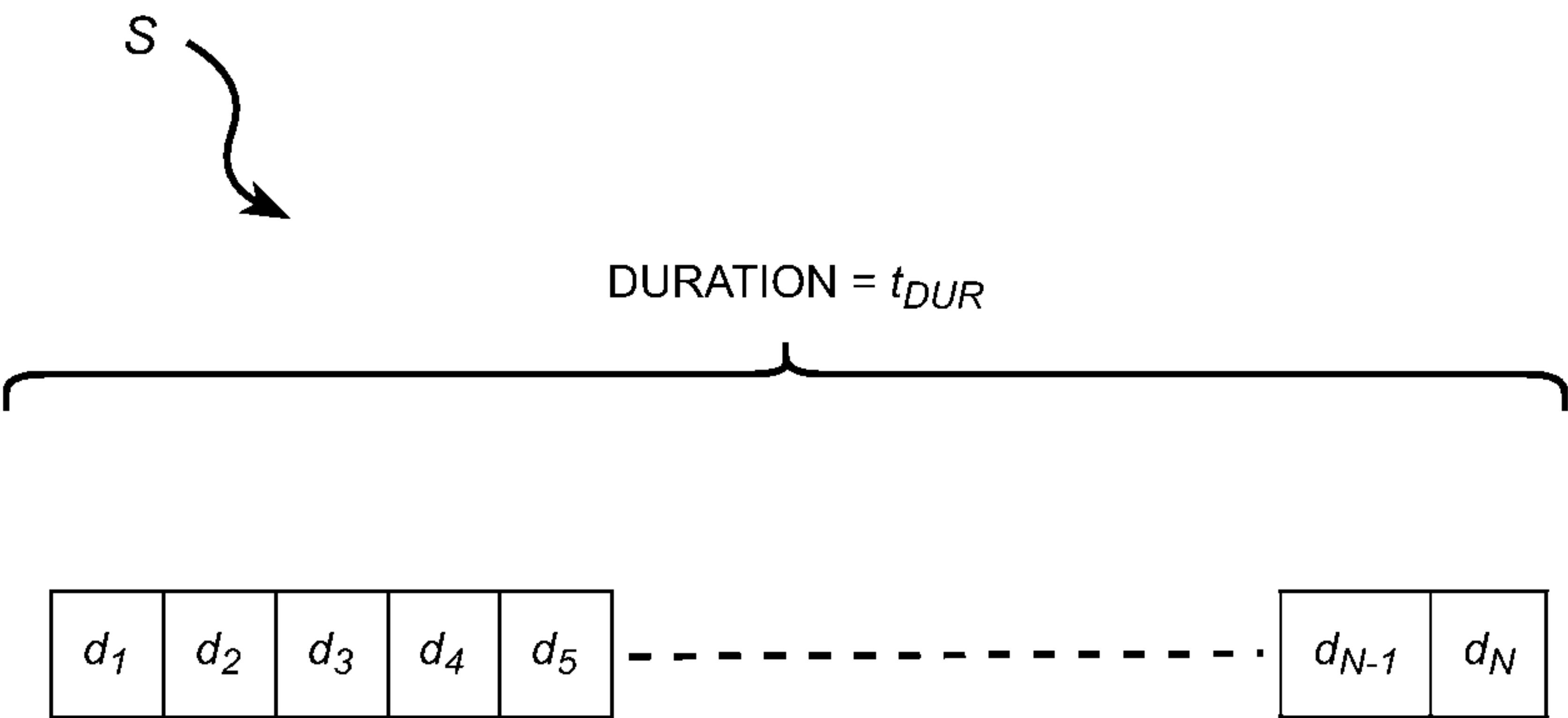


FIGURE 7A

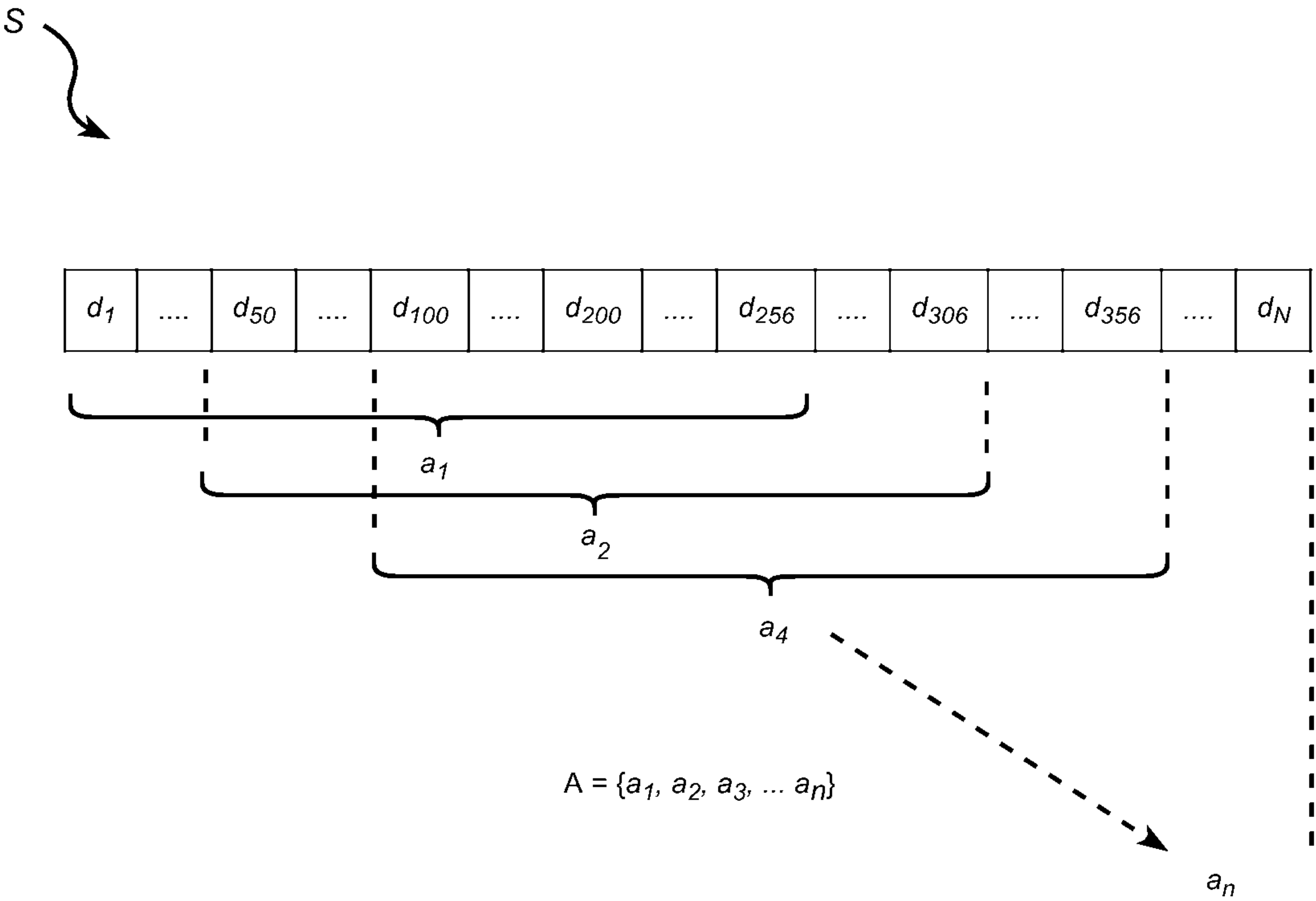


FIGURE 7B

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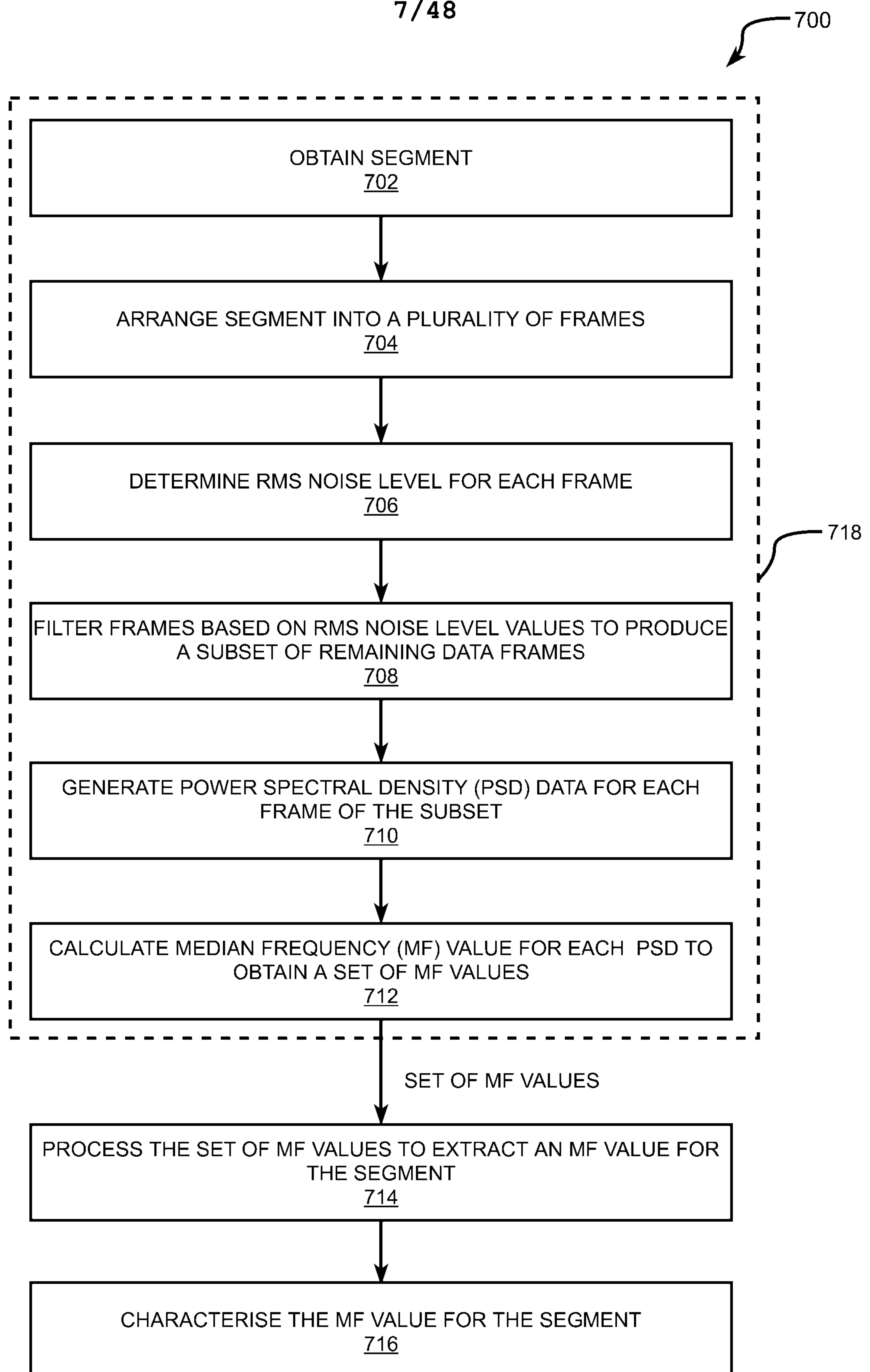


FIGURE 8

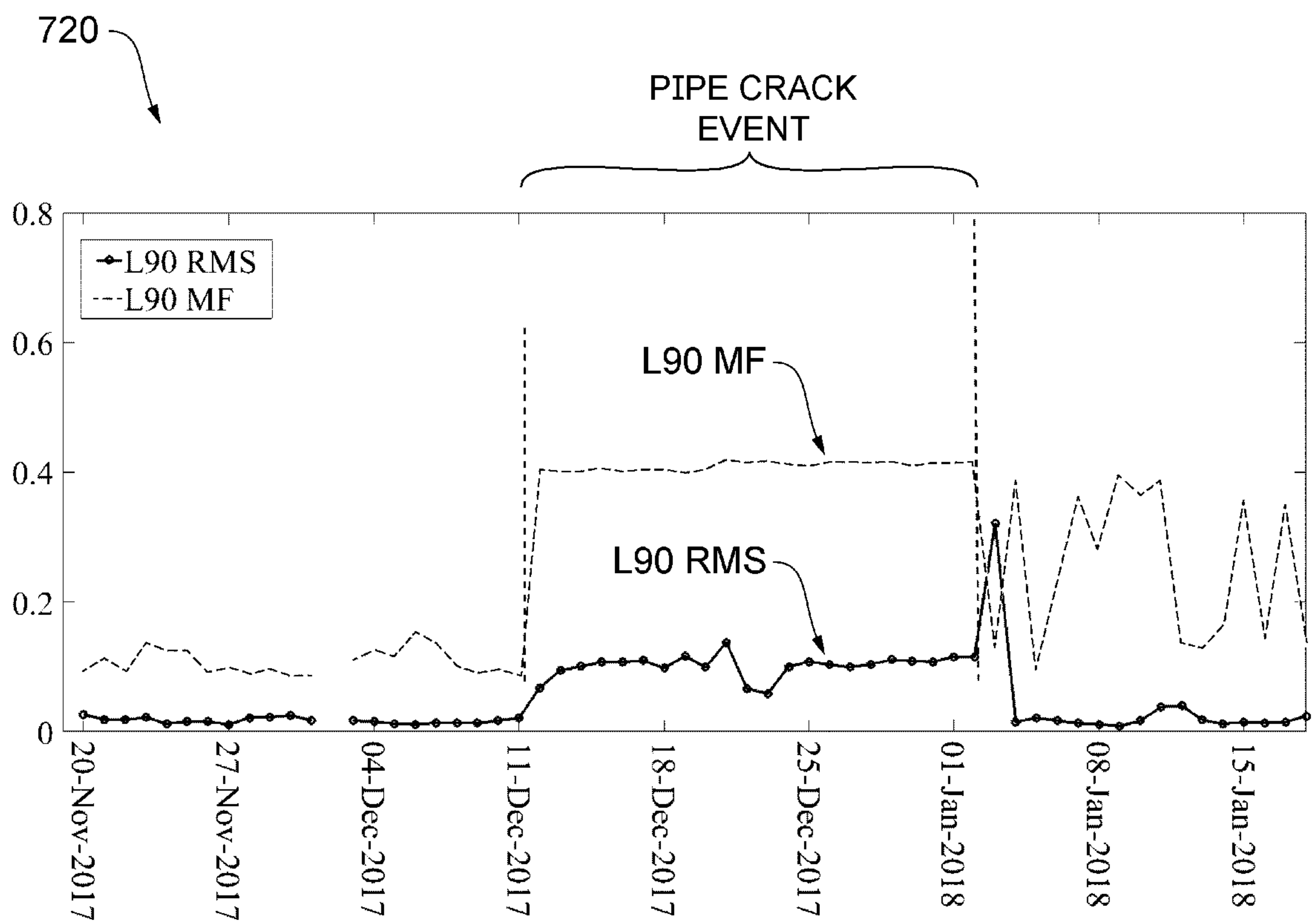


FIGURE 9A

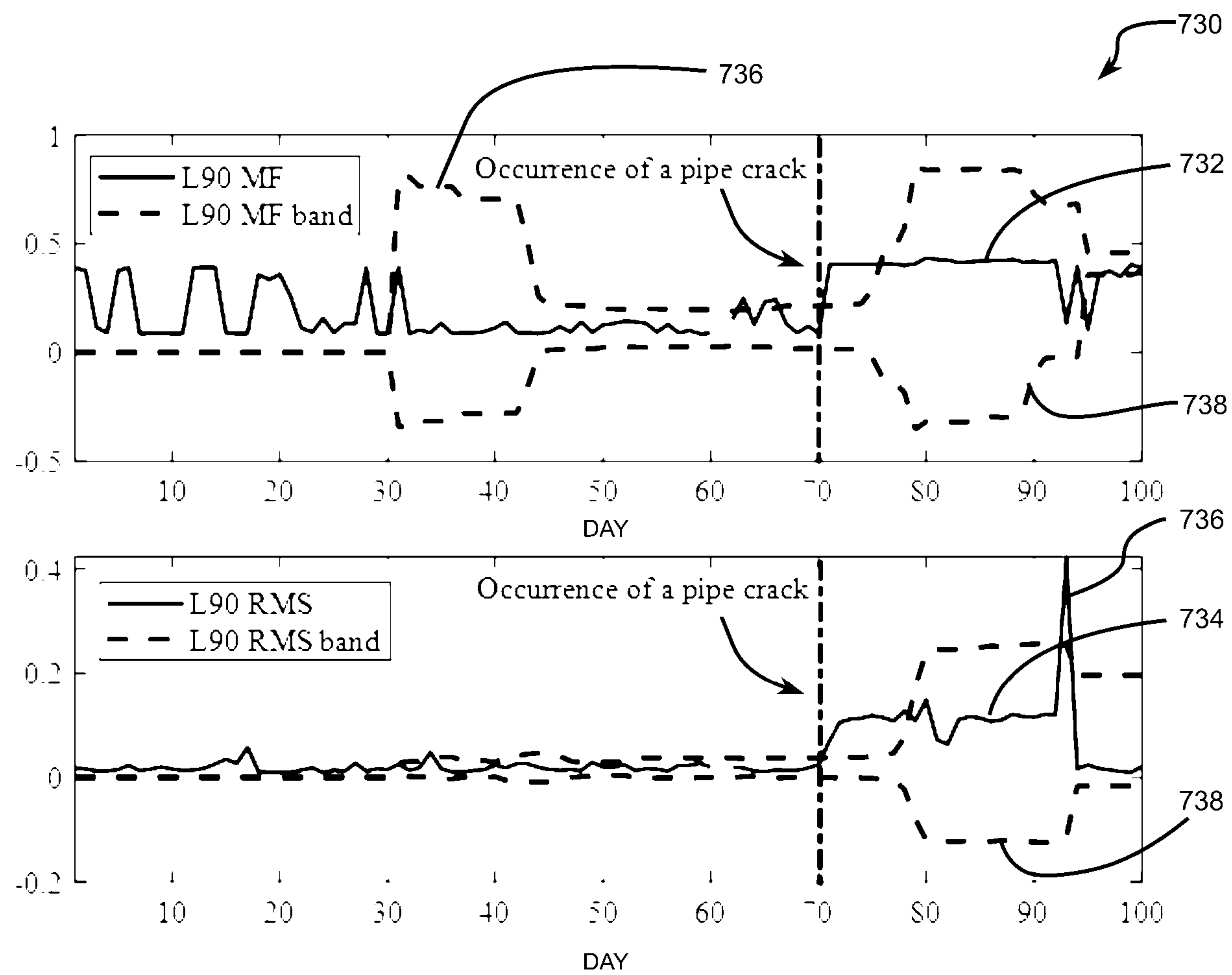


FIGURE 9B

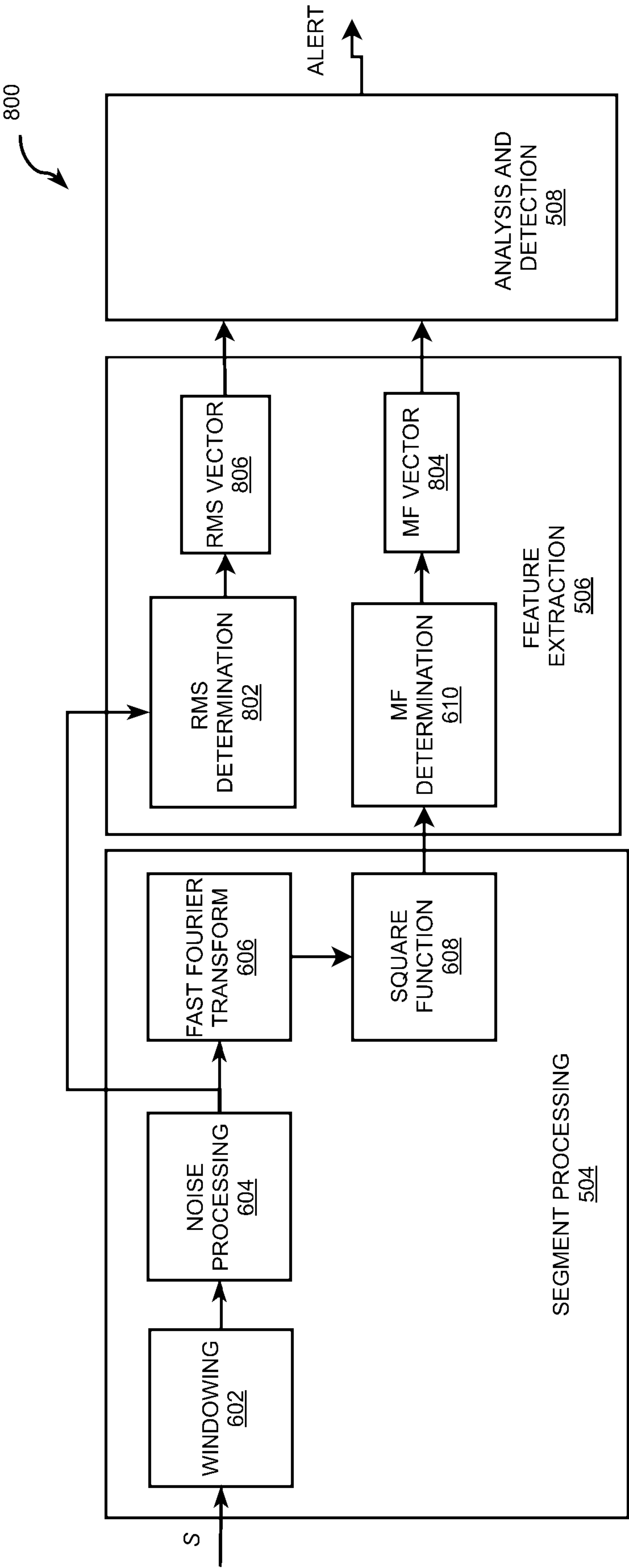


FIGURE 10

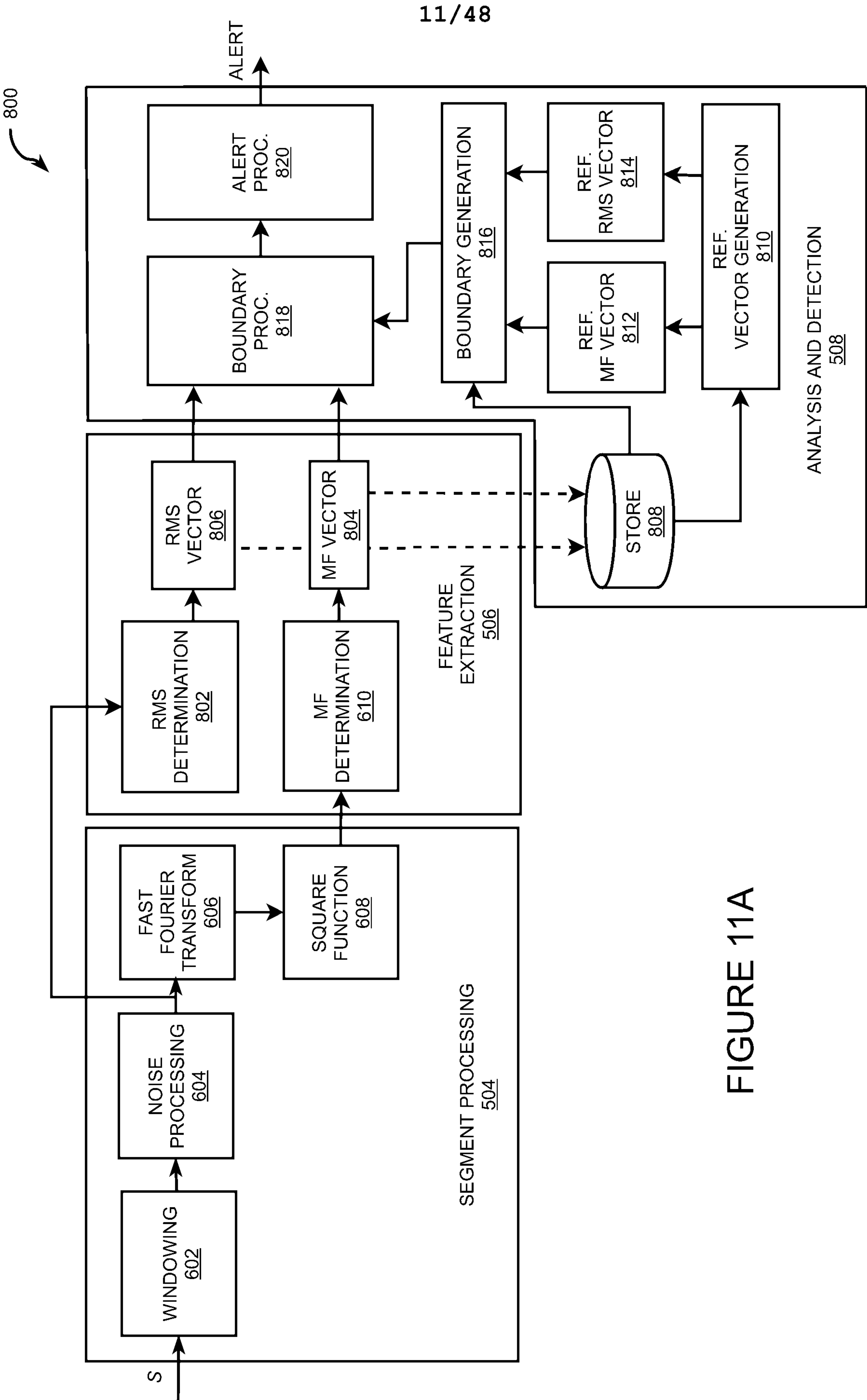


FIGURE 11A

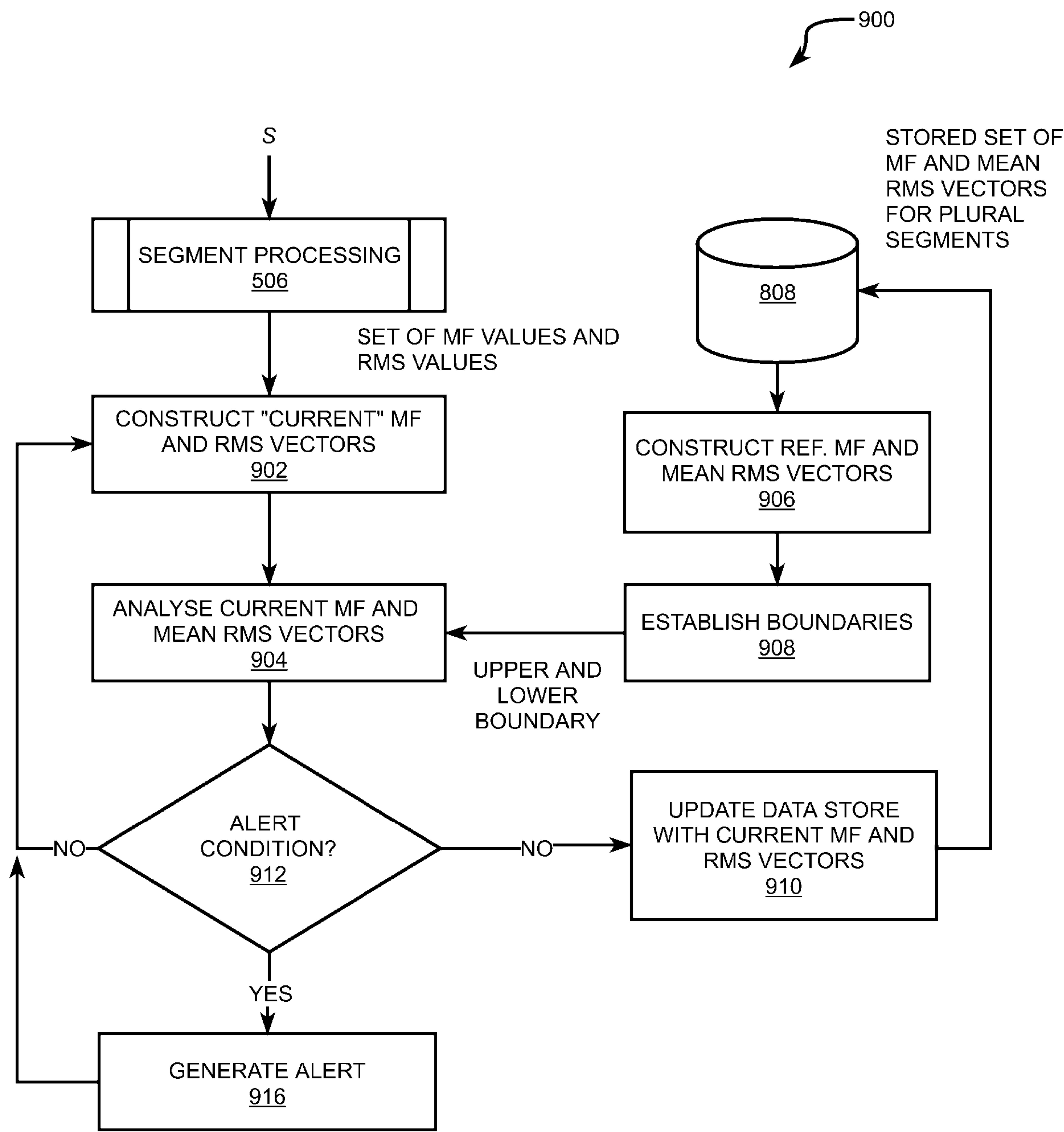


FIGURE 11B

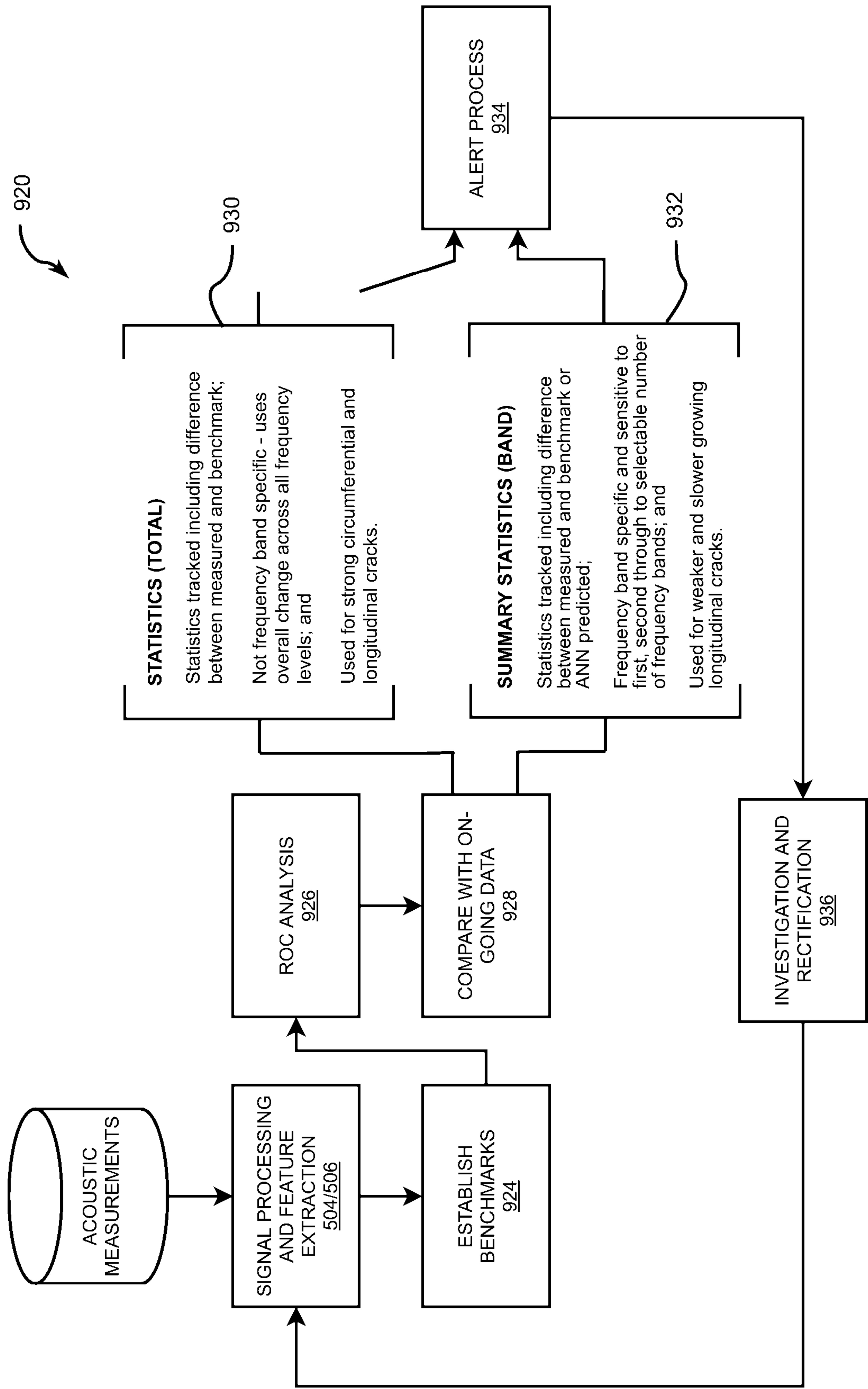


FIGURE 12A

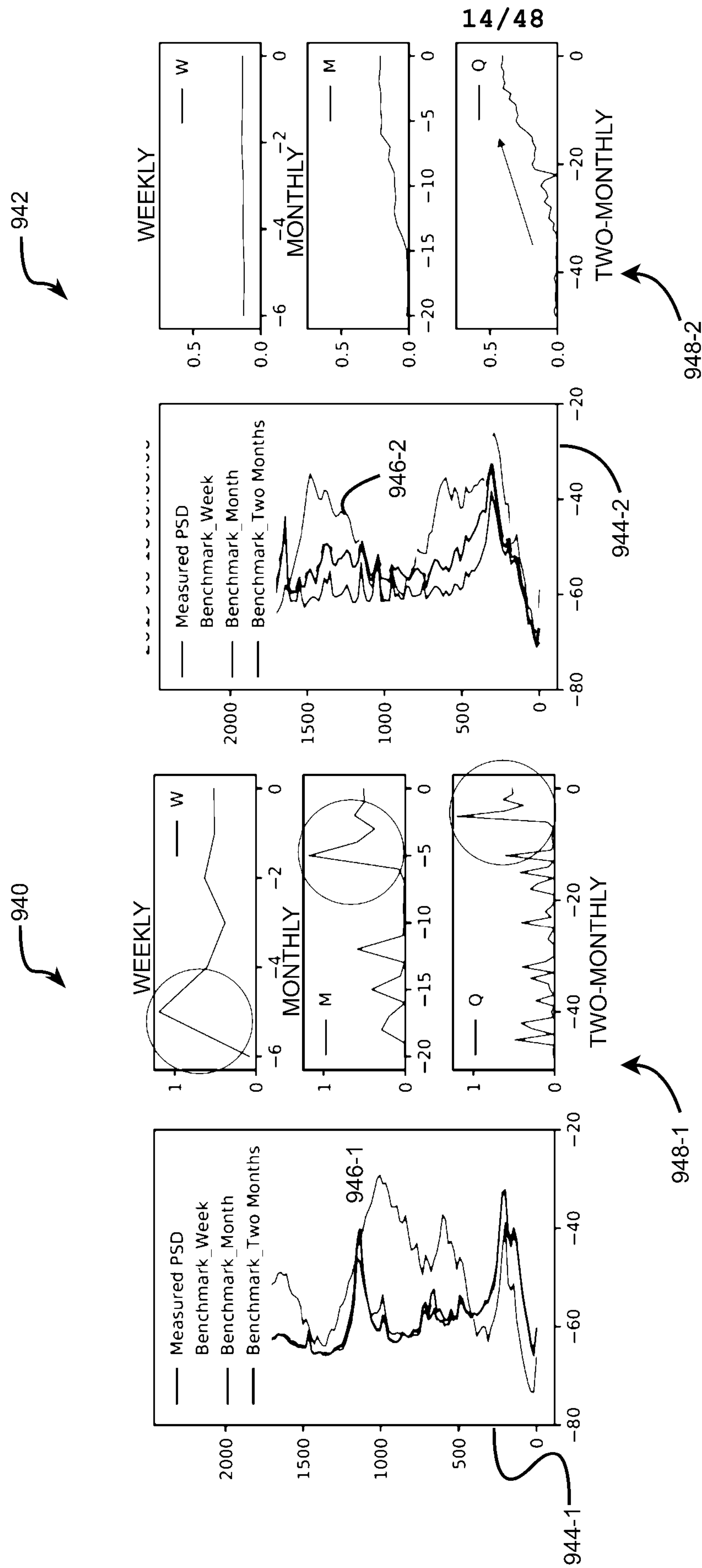


FIGURE 12B

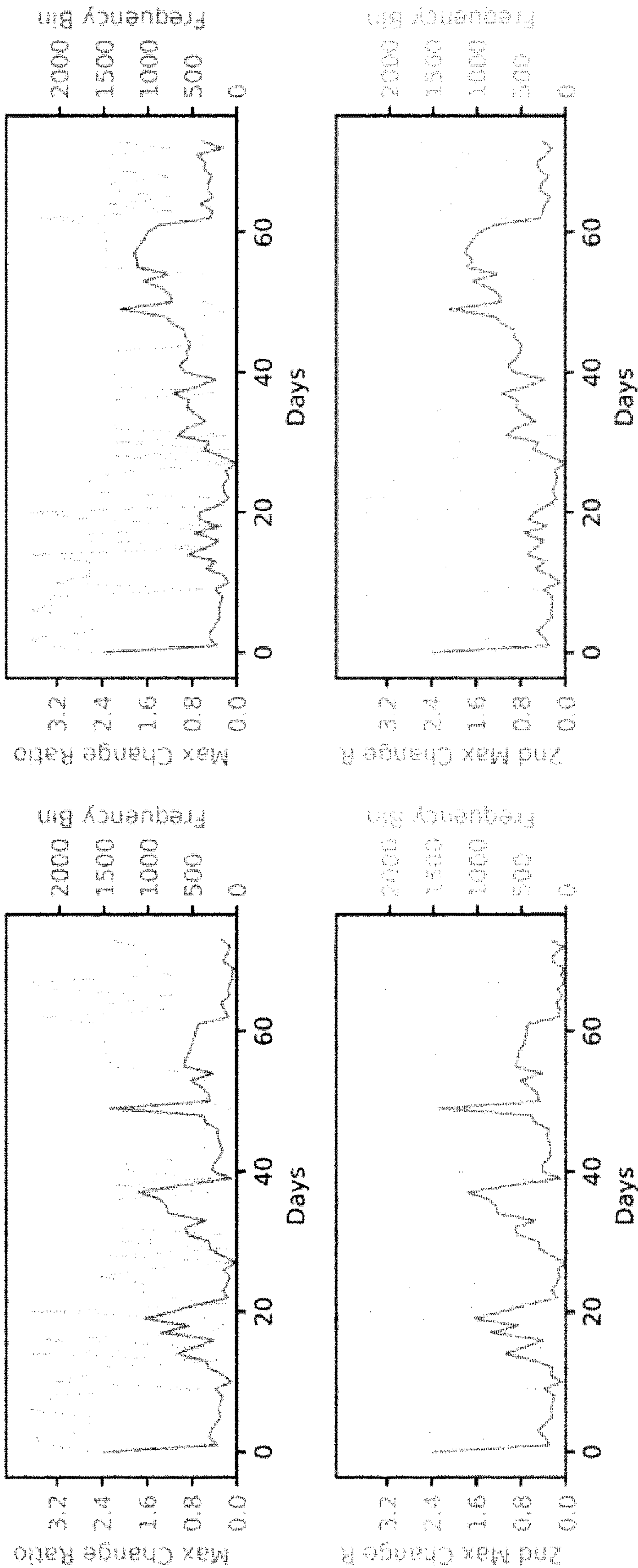


FIGURE 12C

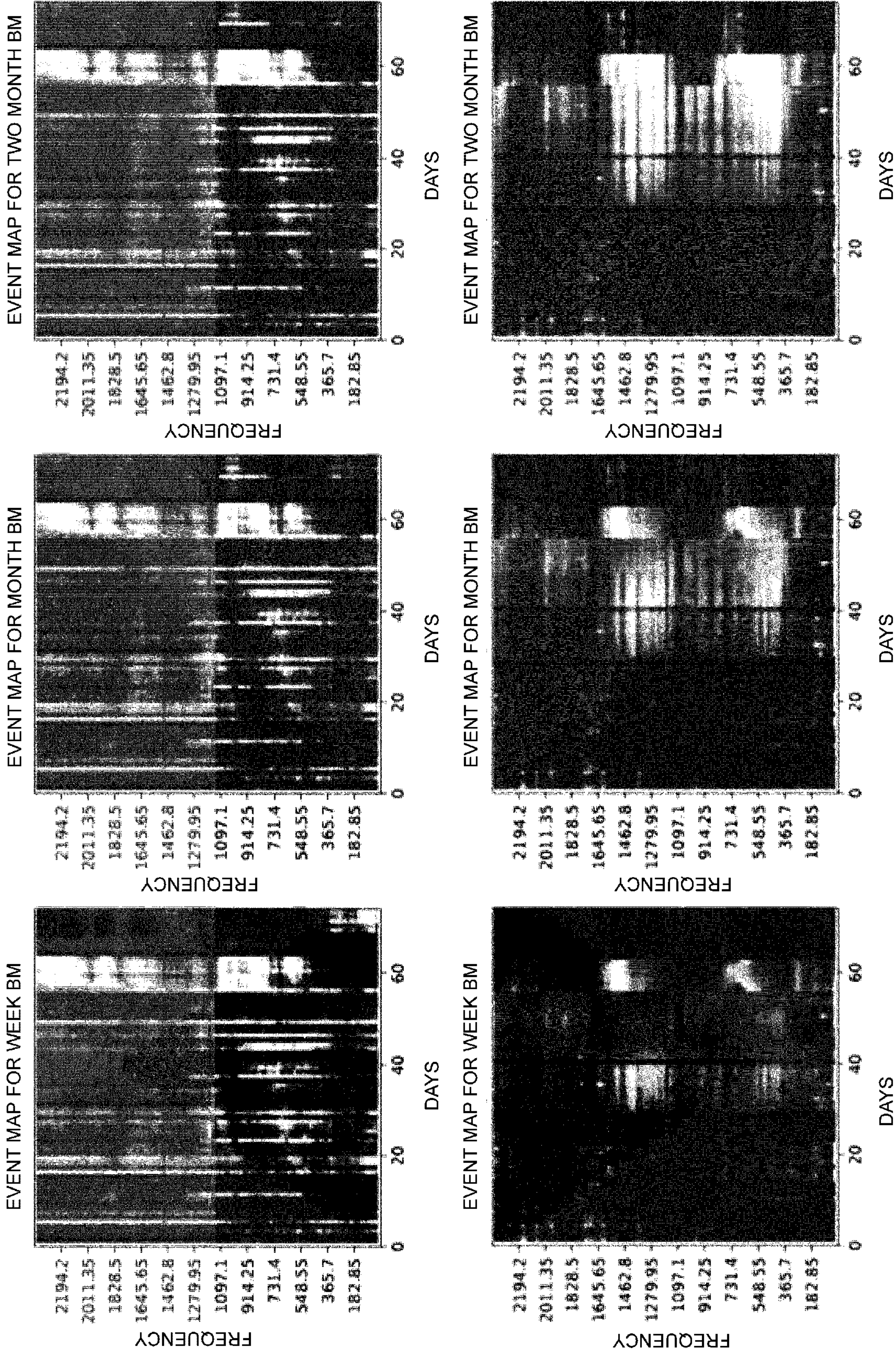


FIGURE 12D

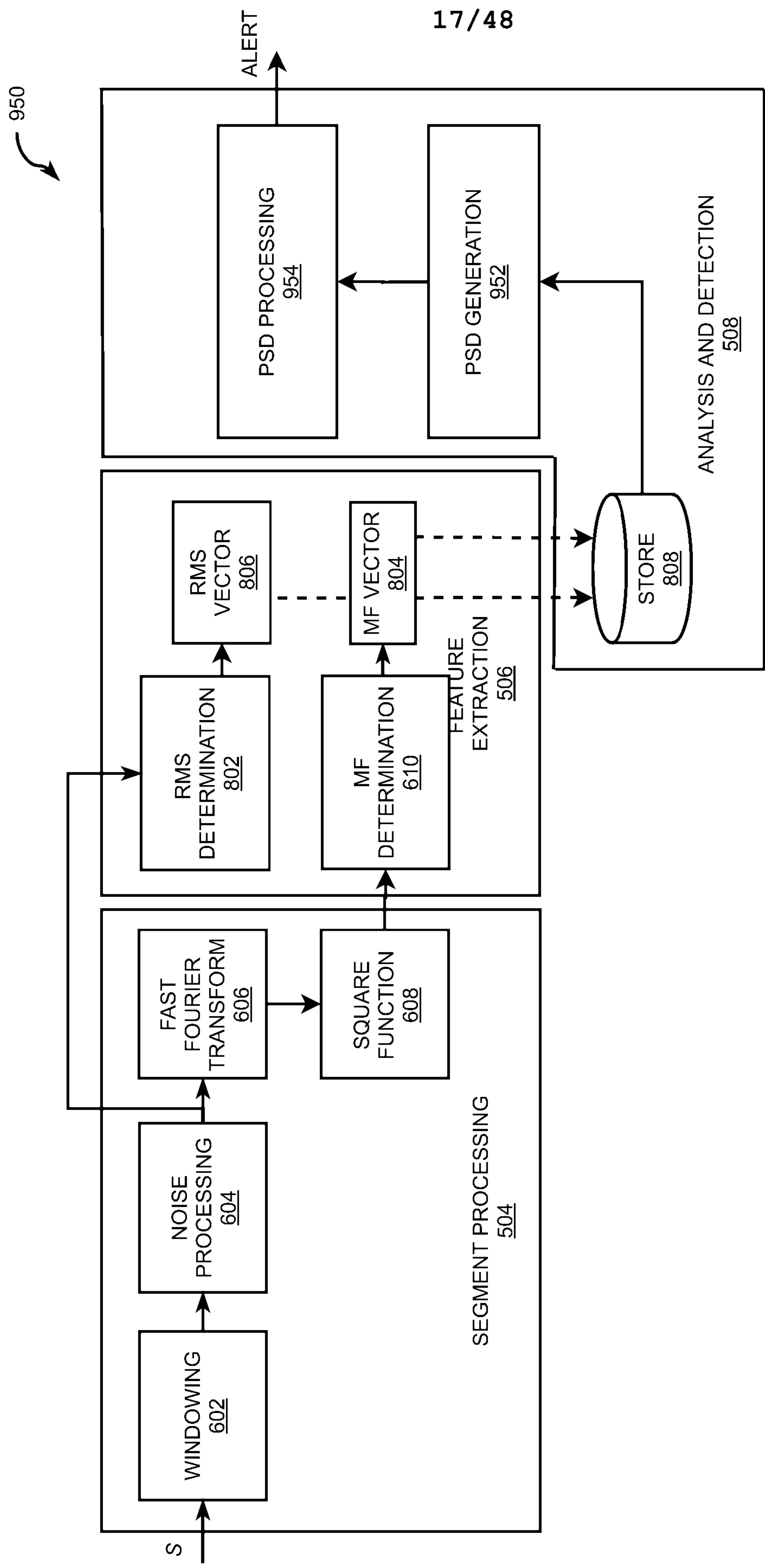


FIGURE 13A

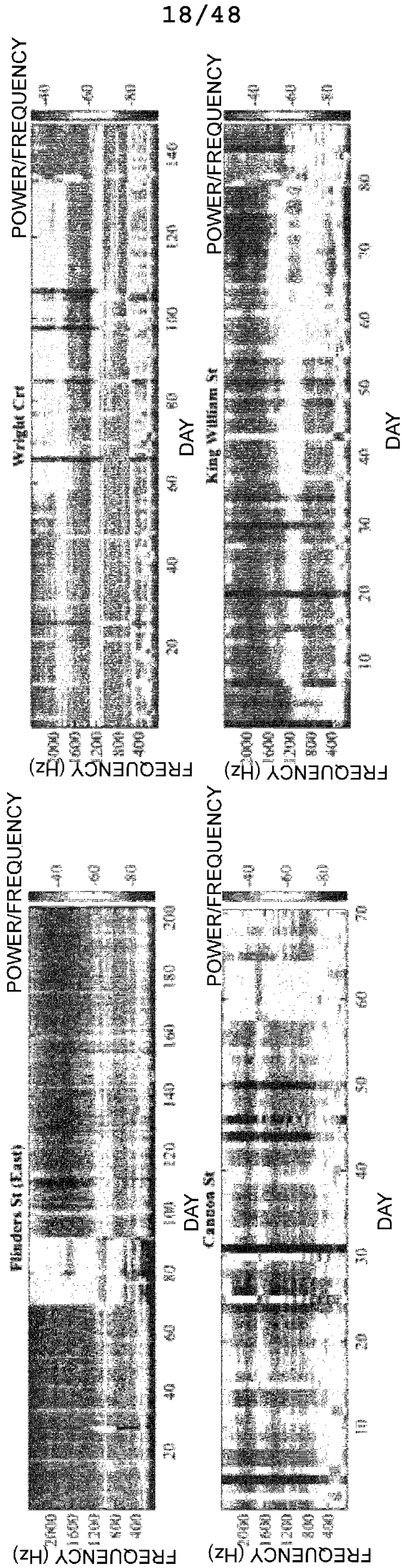


FIGURE 13B

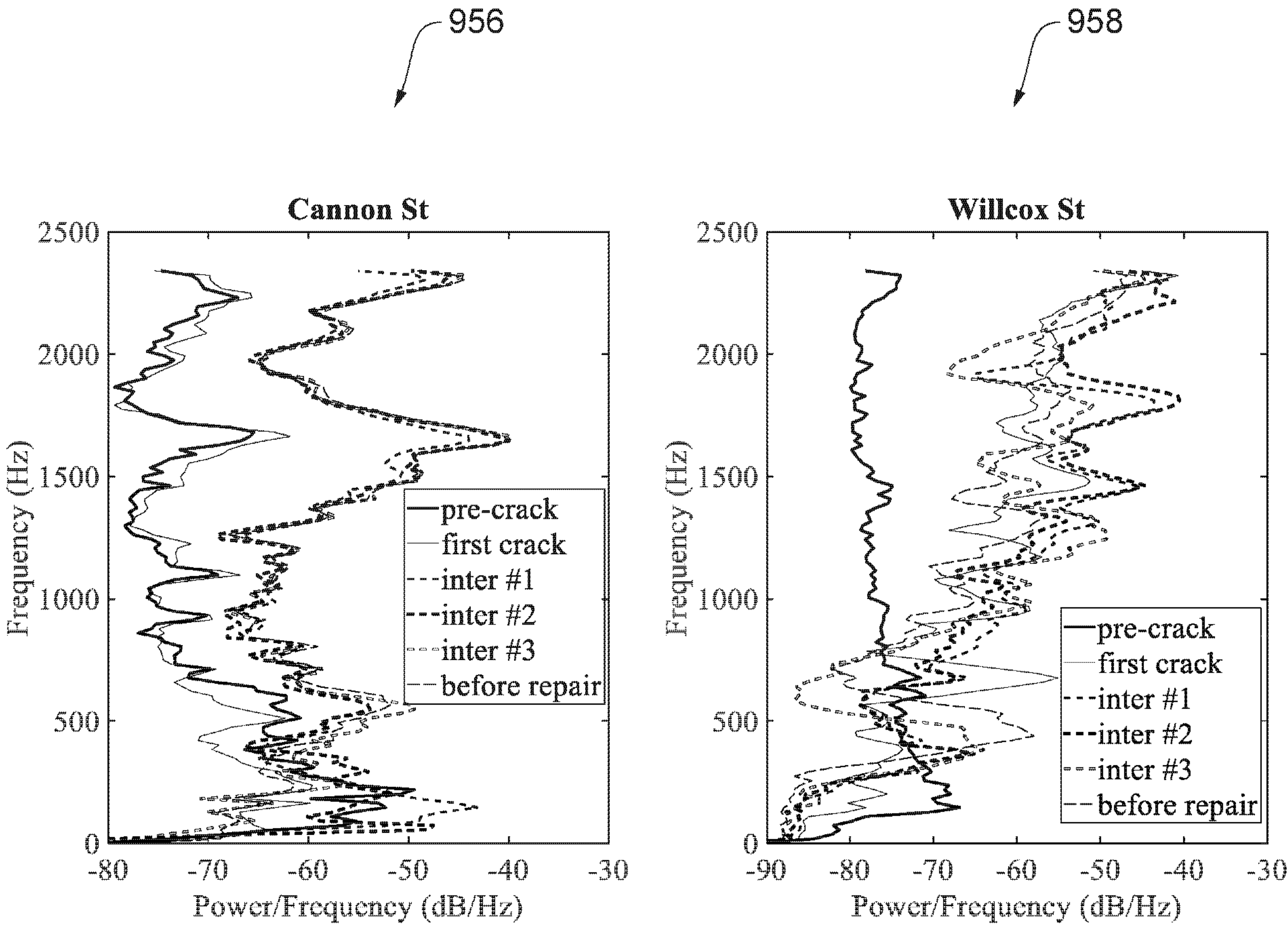


FIGURE 13C

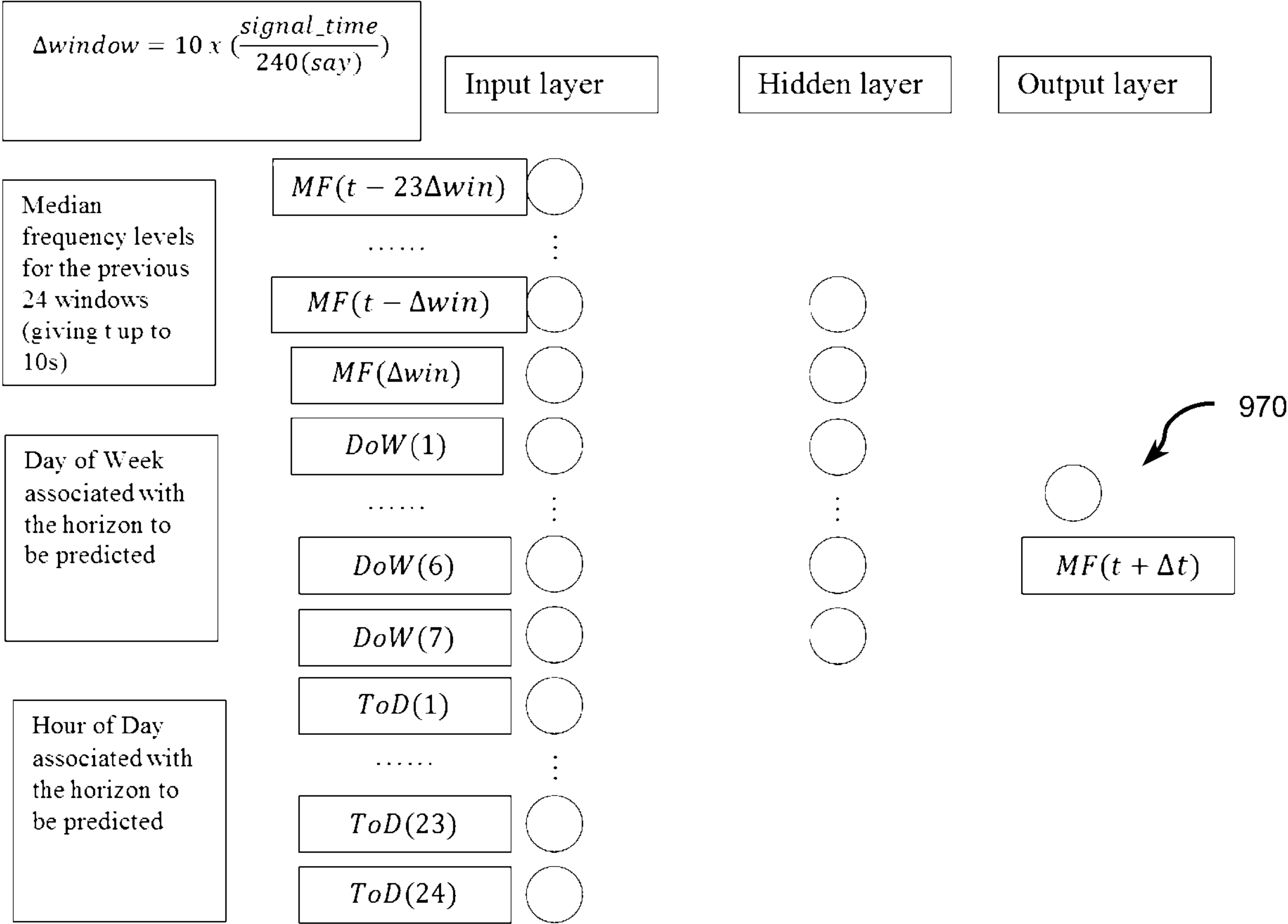


FIGURE 14A

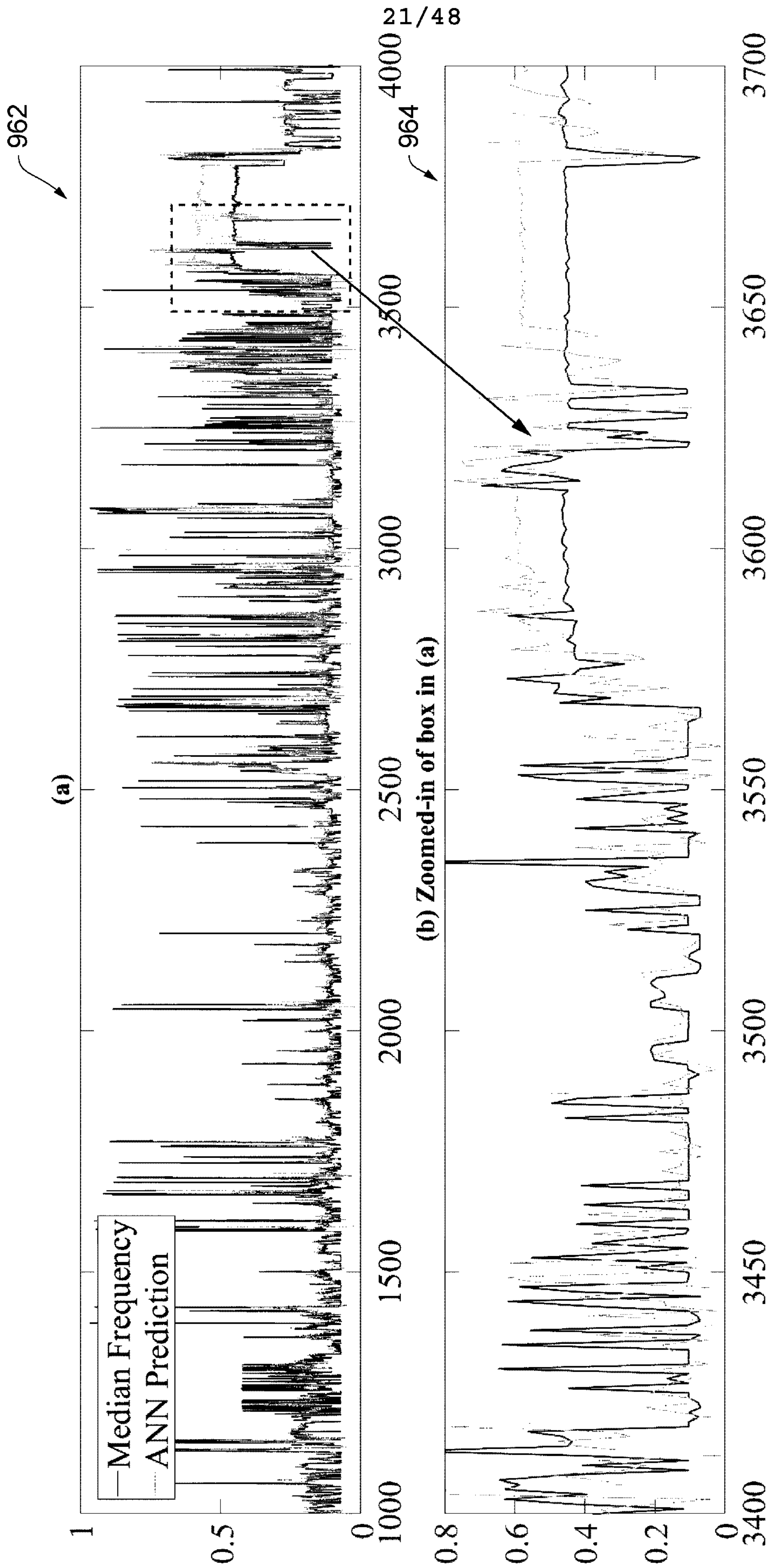


FIGURE 14B

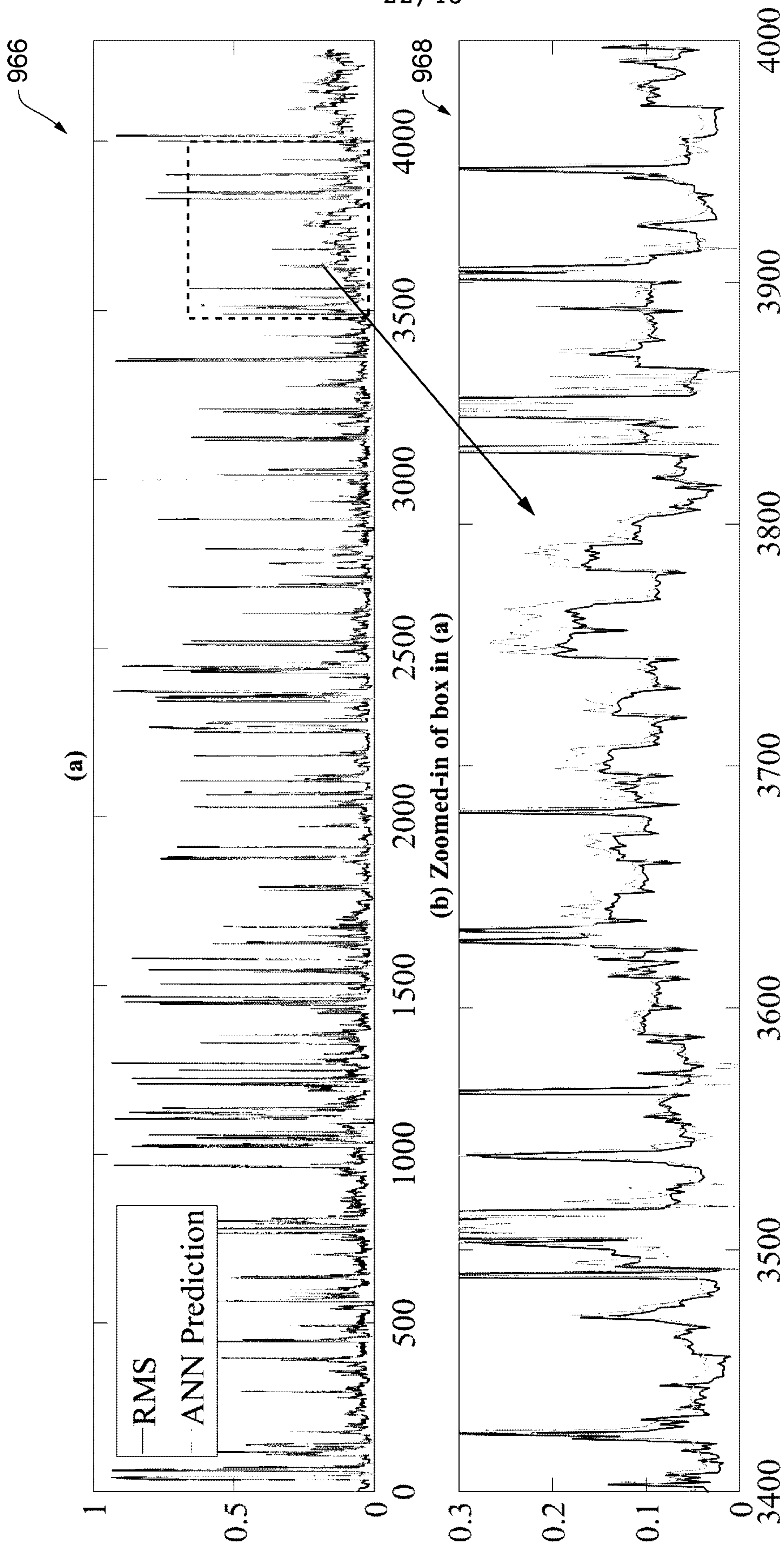


FIGURE 14C

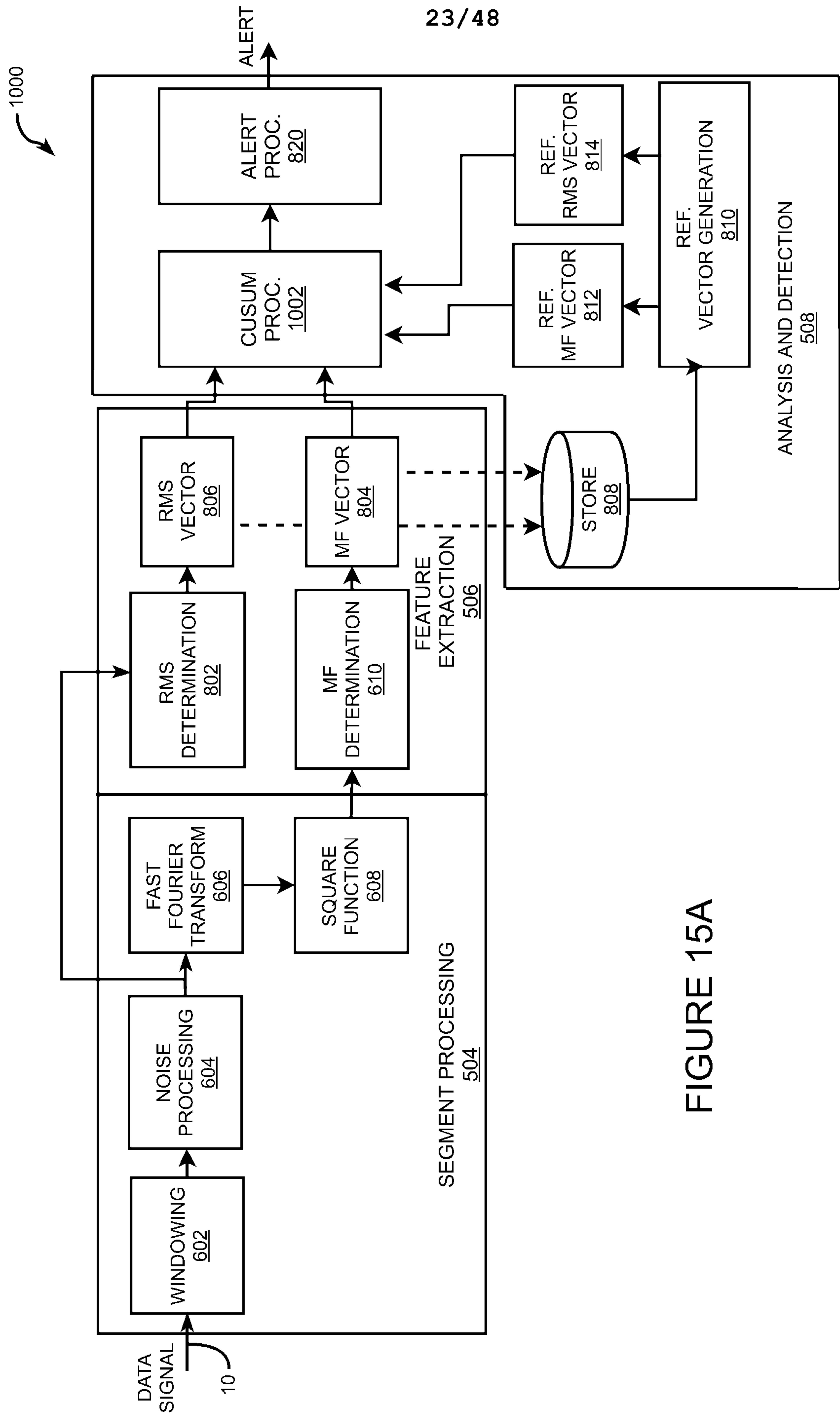


FIGURE 15A

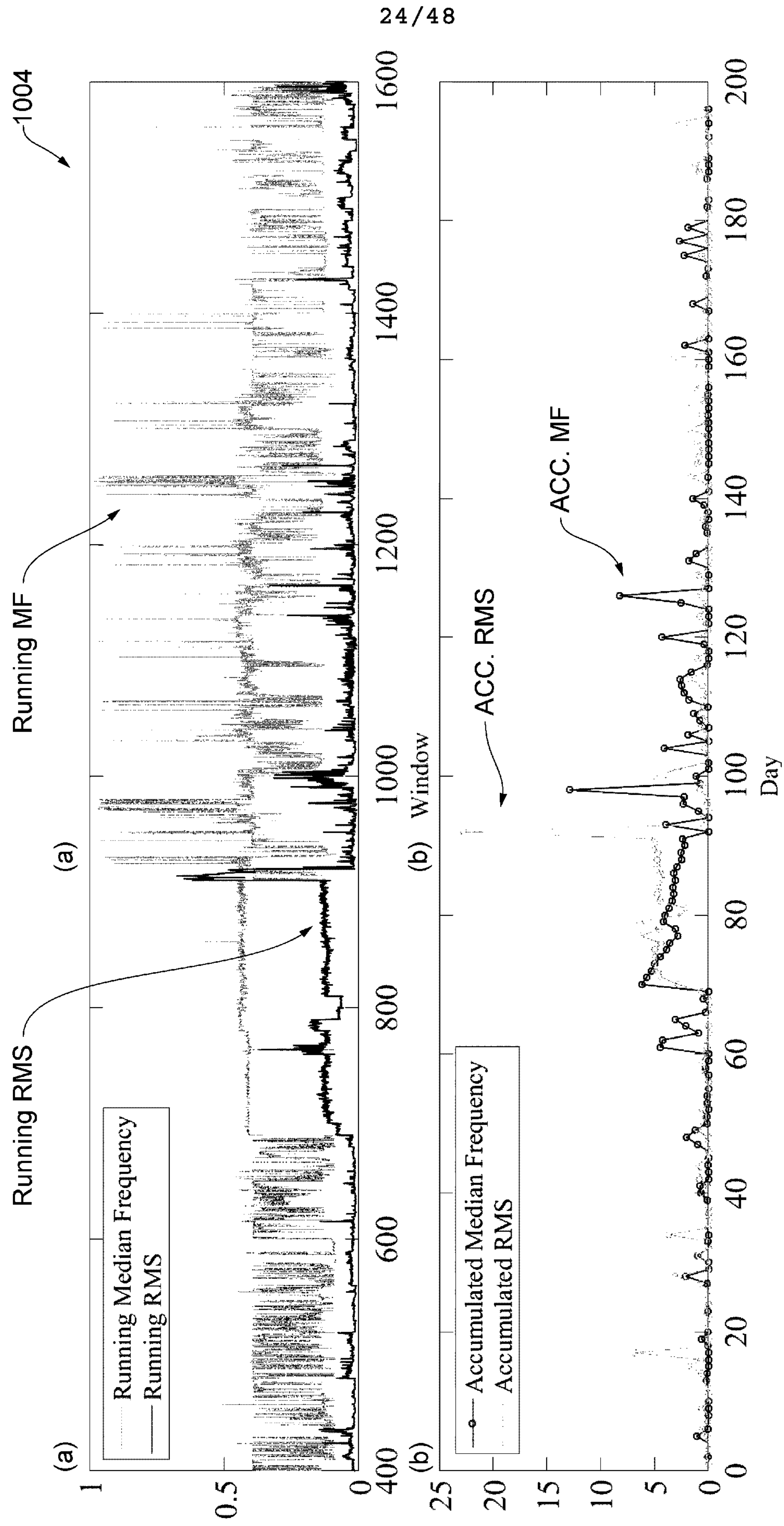


FIGURE 15B

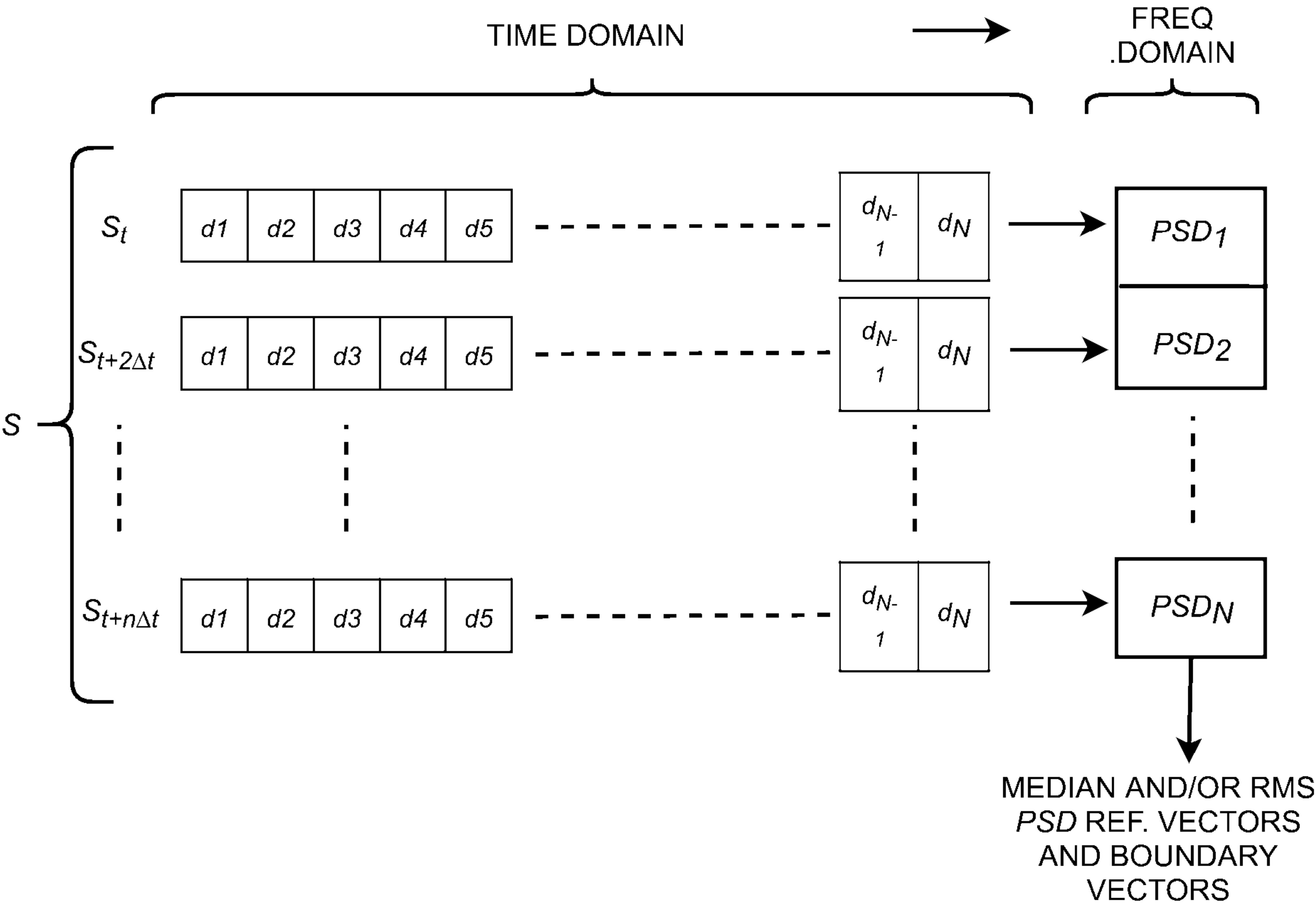


FIGURE 16

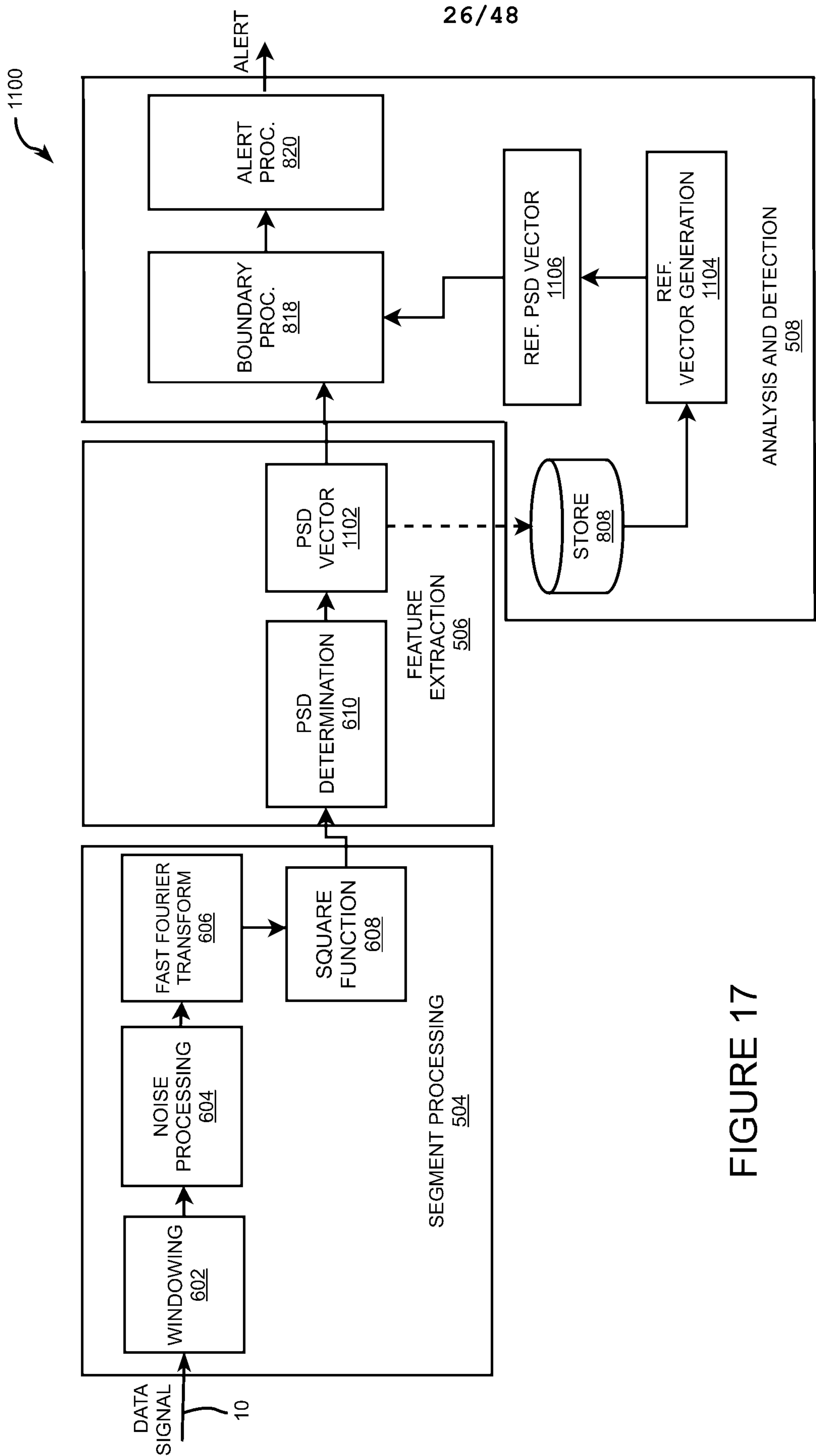


FIGURE 17

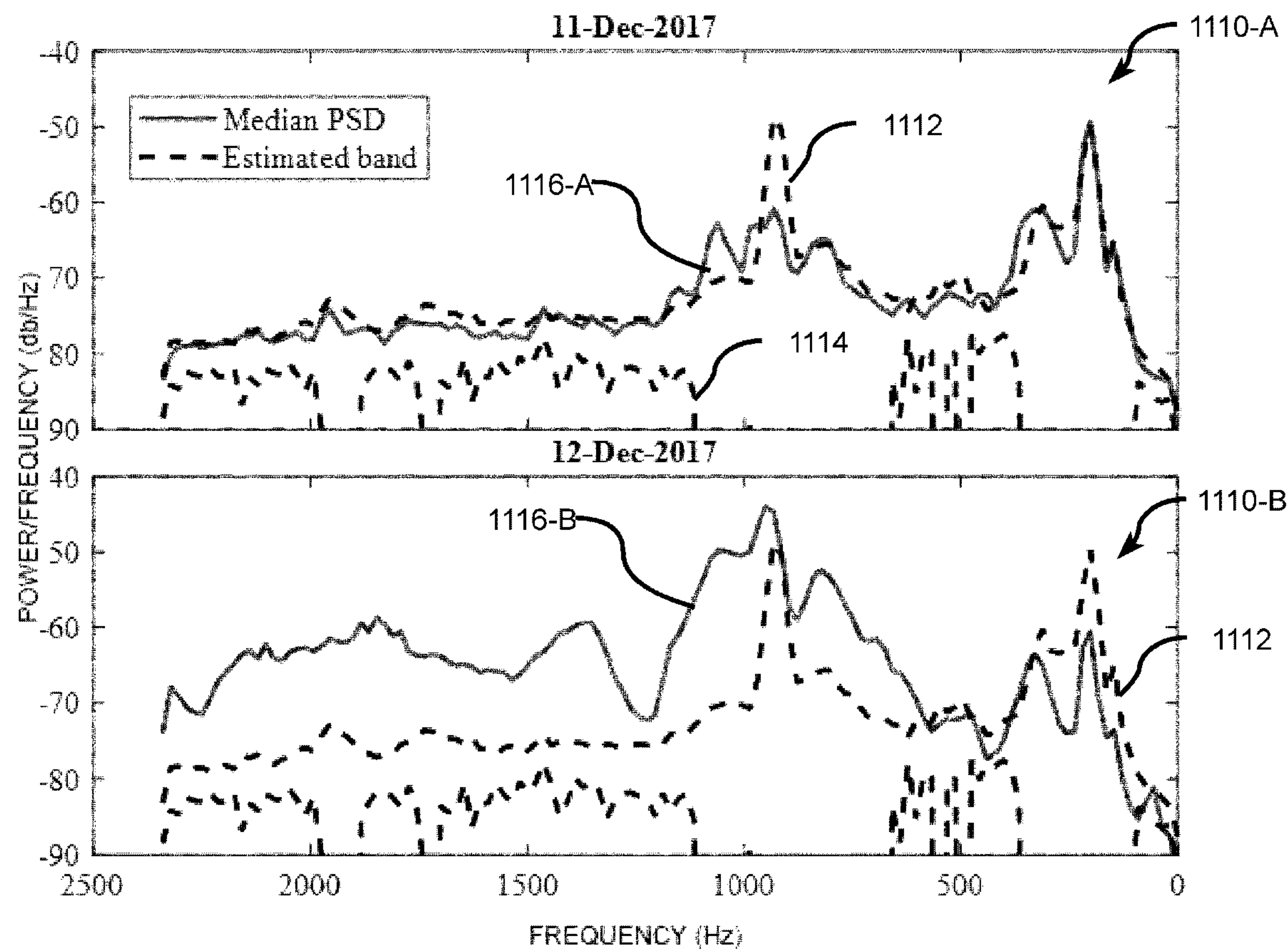


FIGURE 18

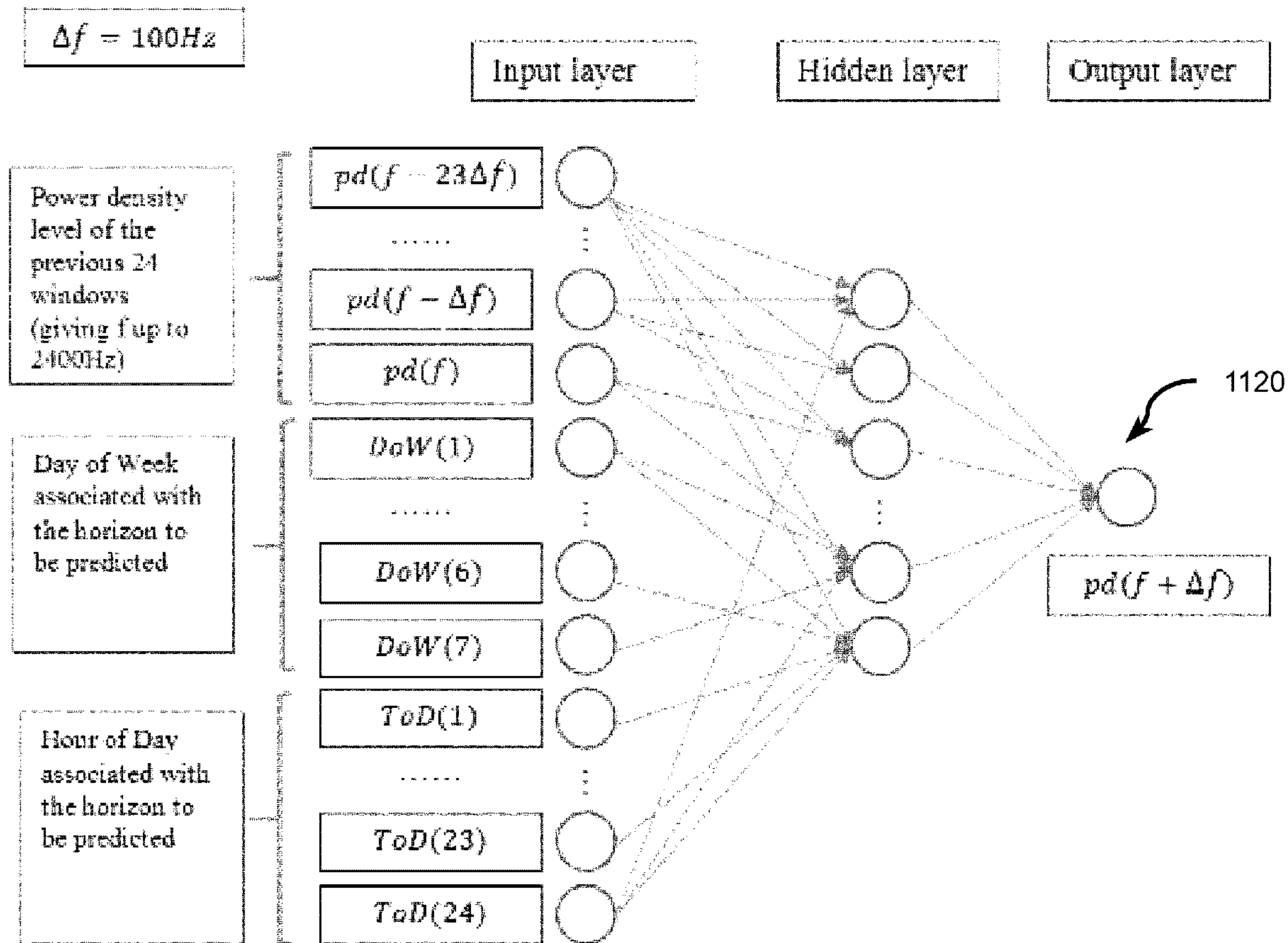


FIGURE 19

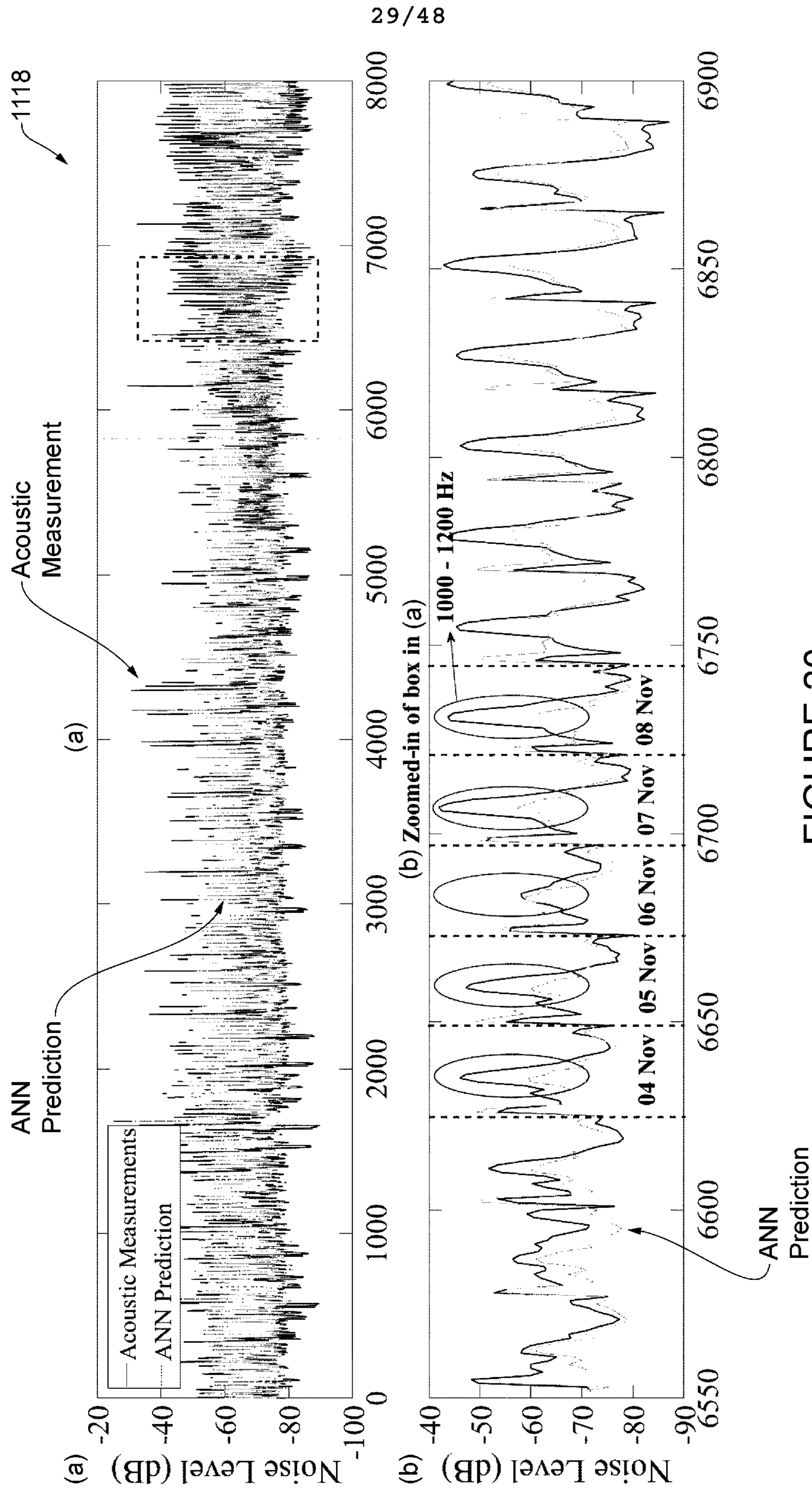
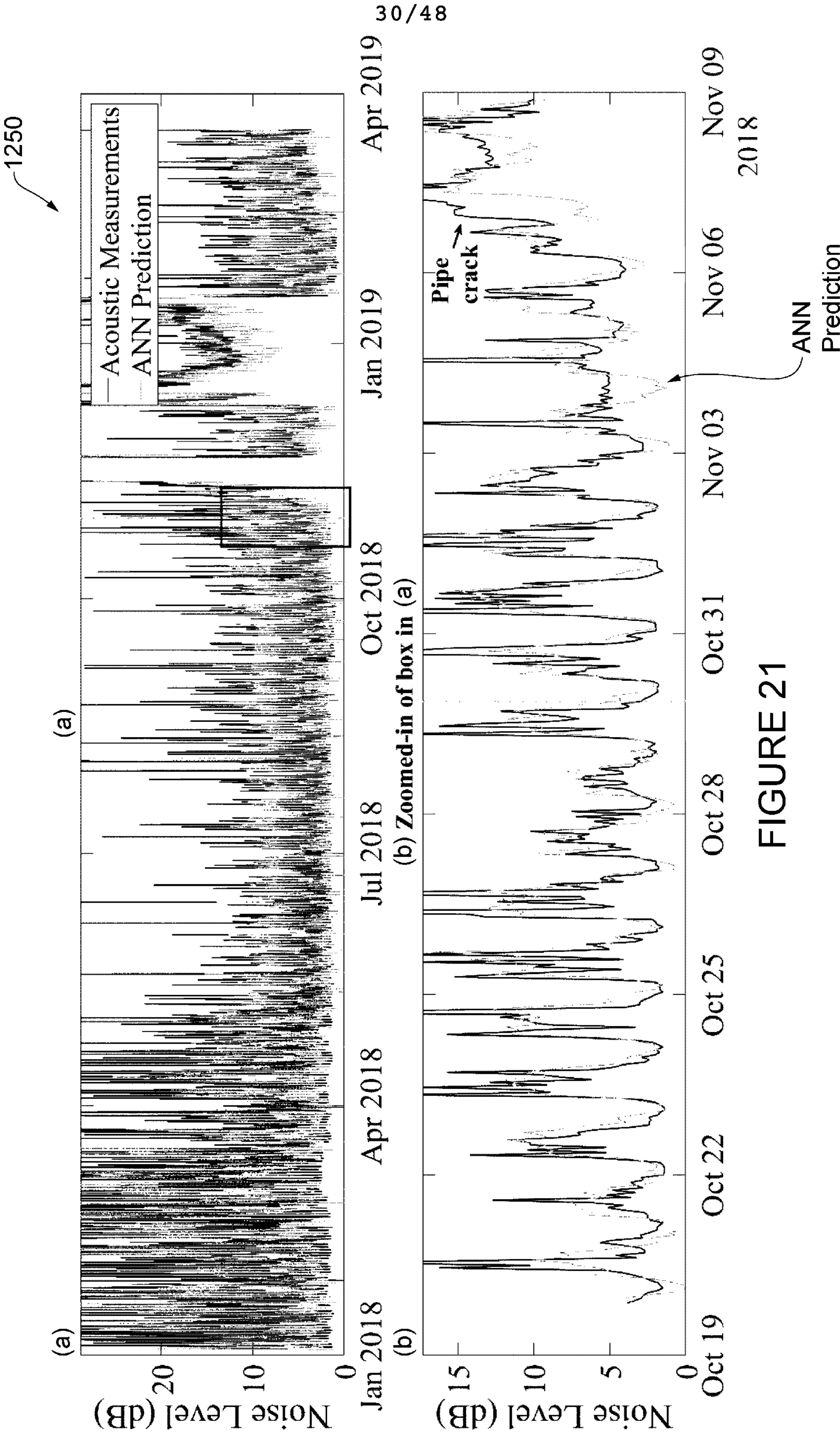


FIGURE 20



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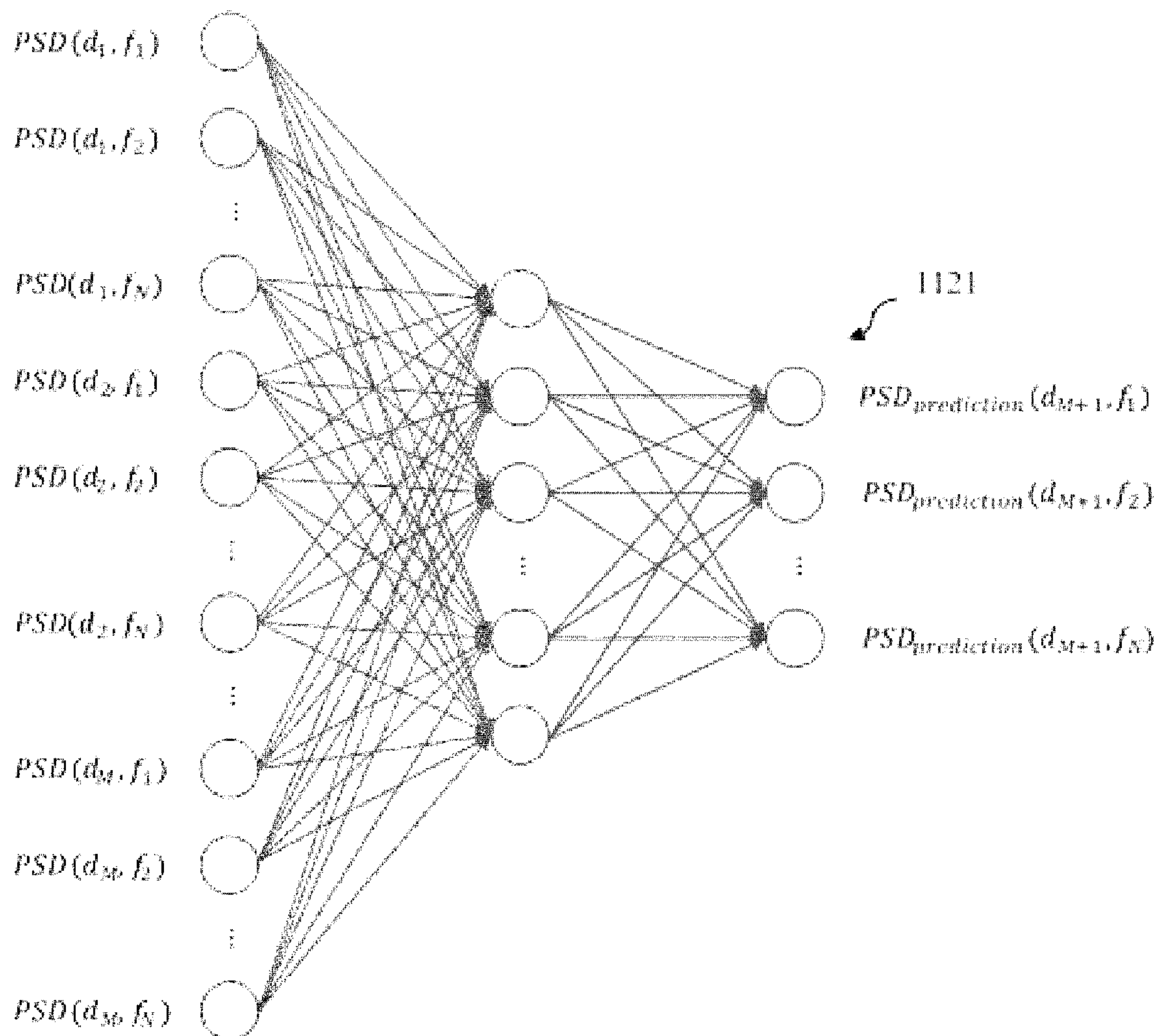


FIGURE 22

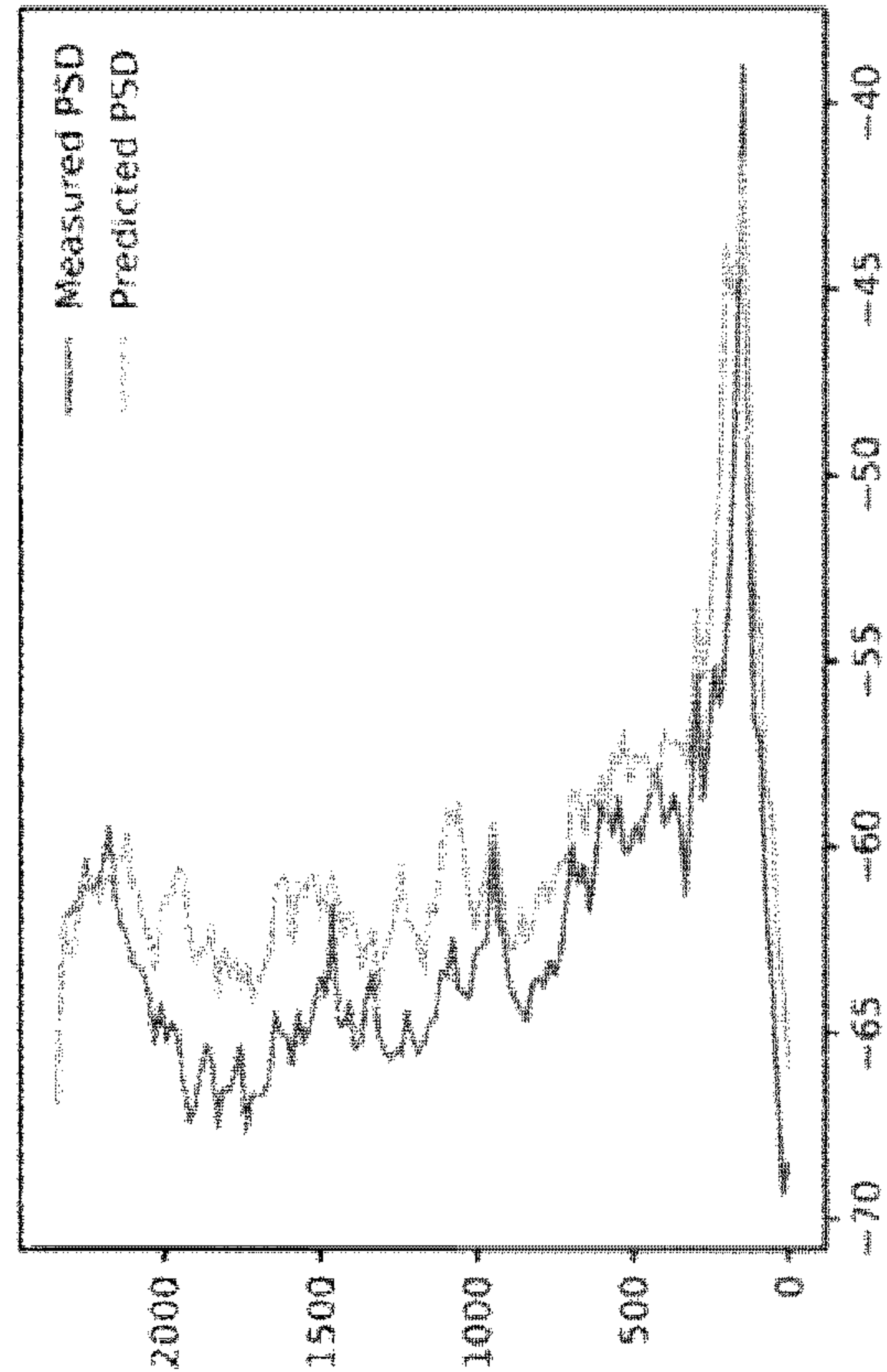


FIGURE 23A

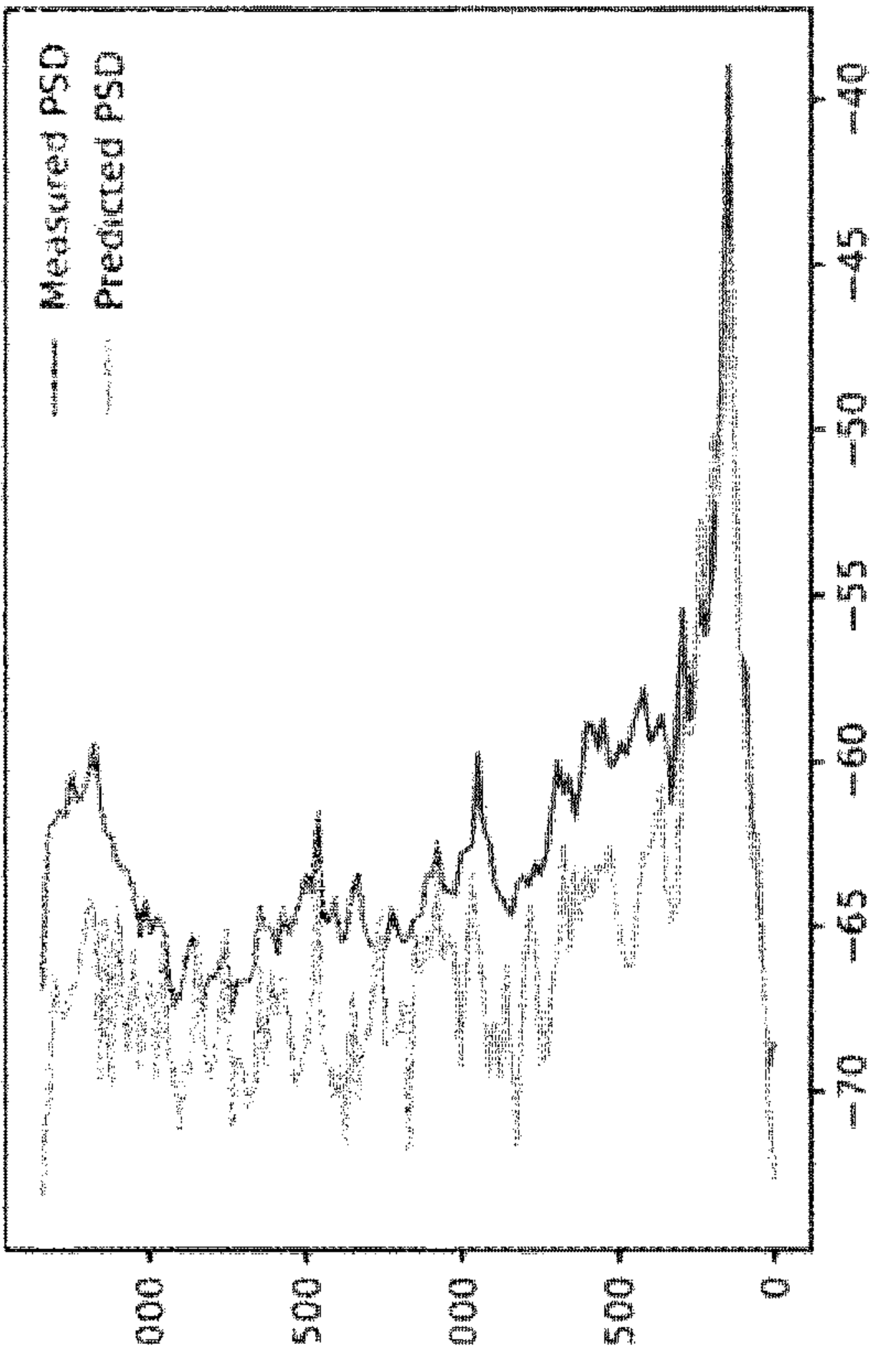


FIGURE 23B

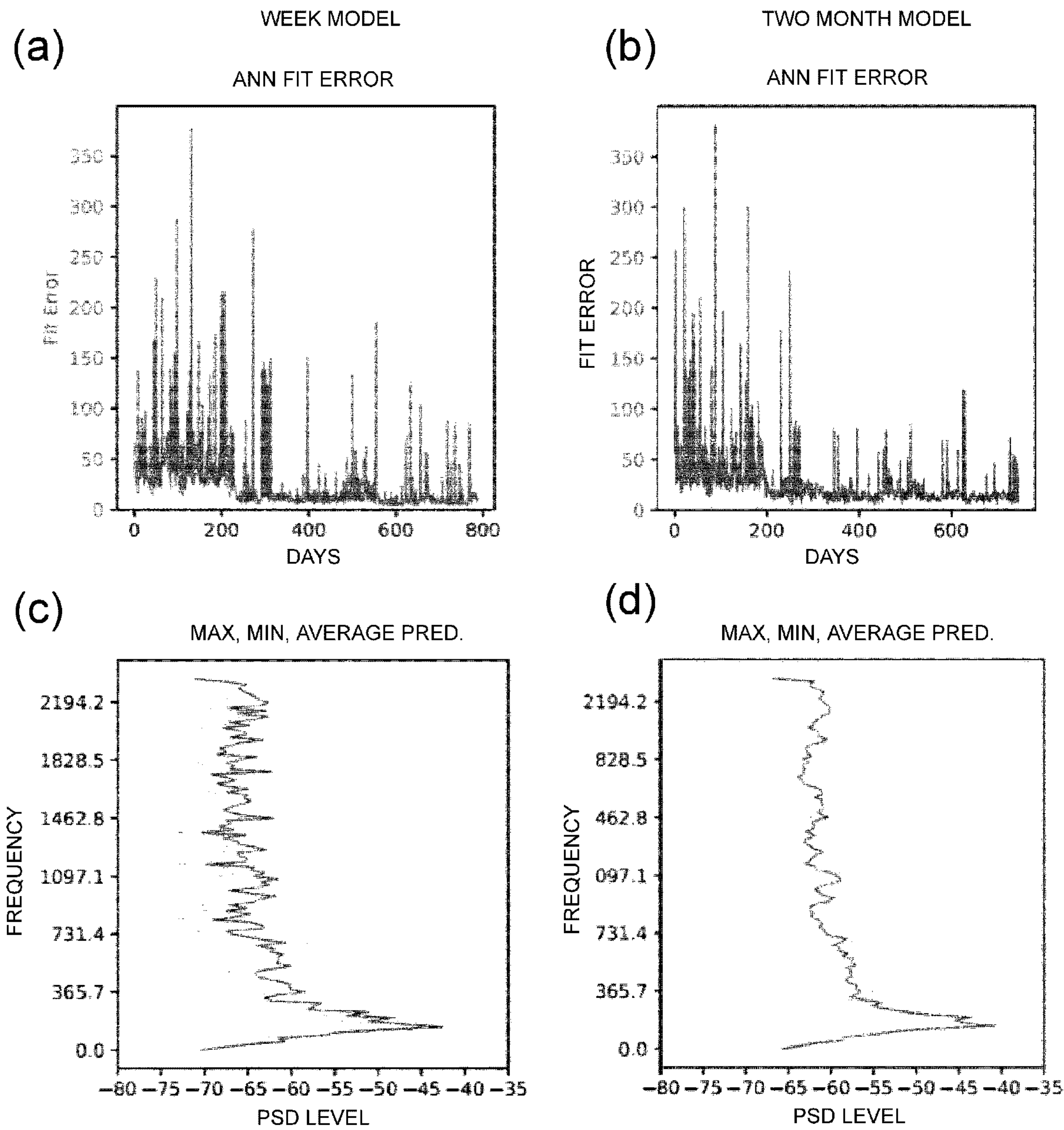


FIGURE 24

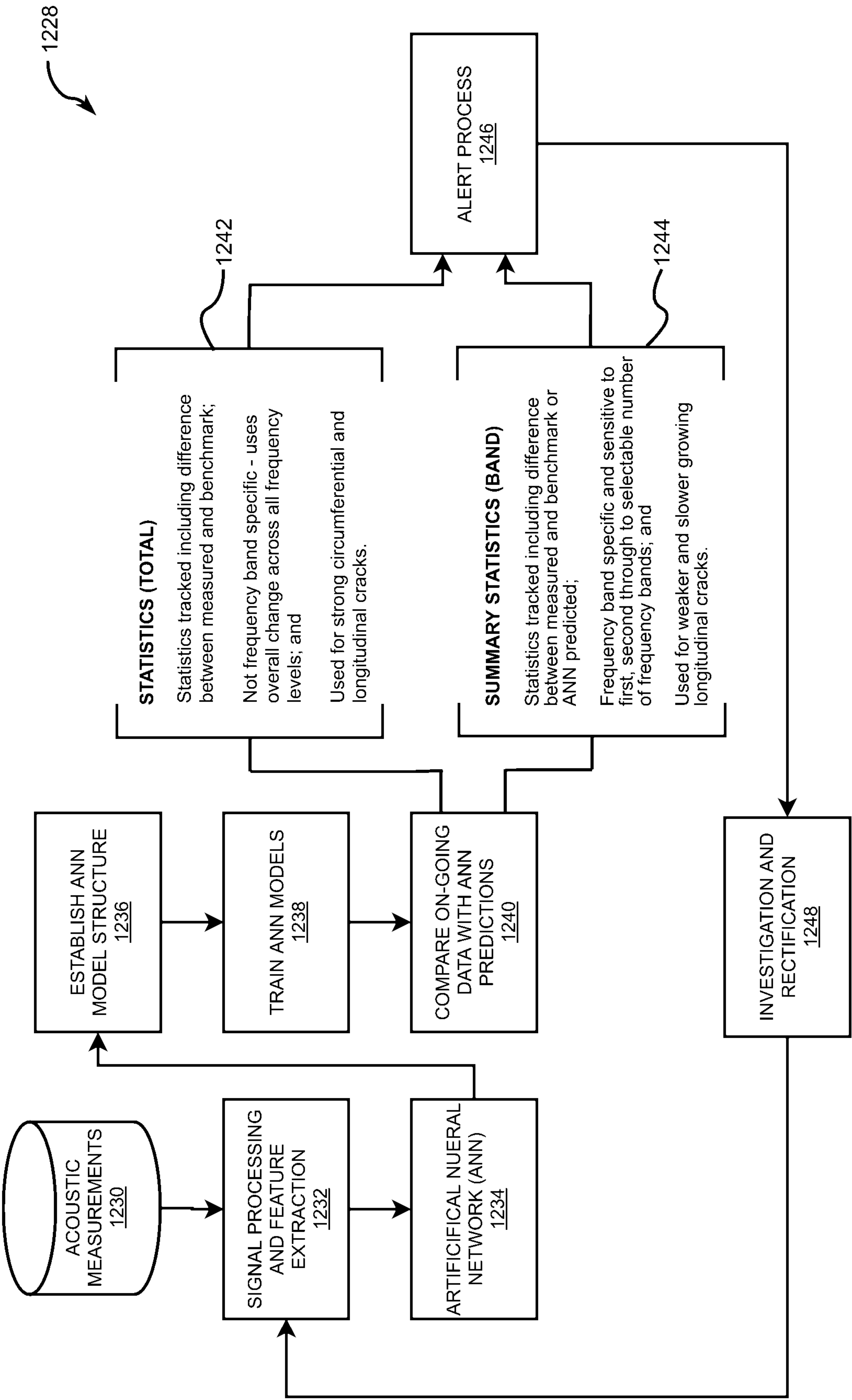


FIGURE 25

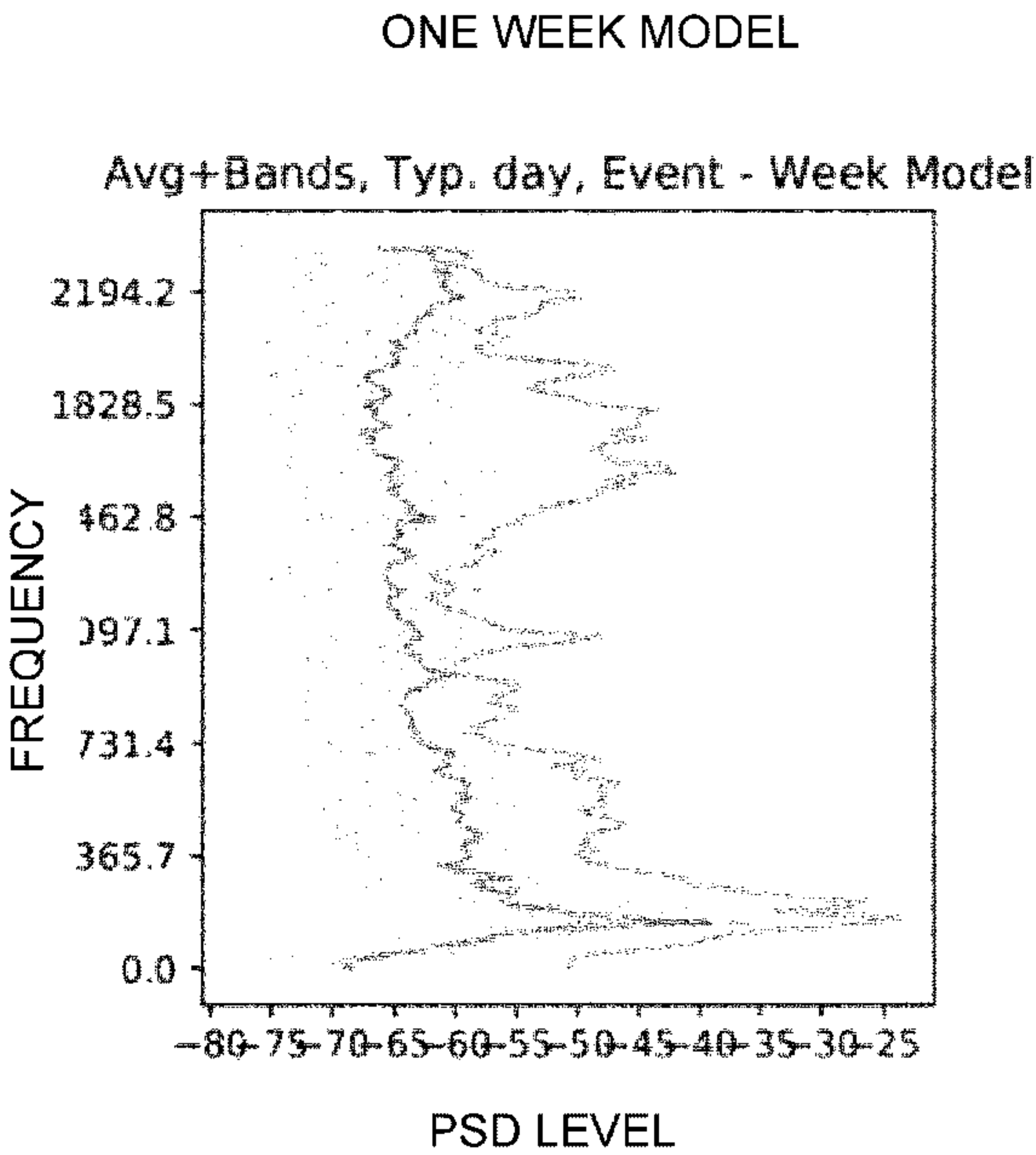


FIGURE 26

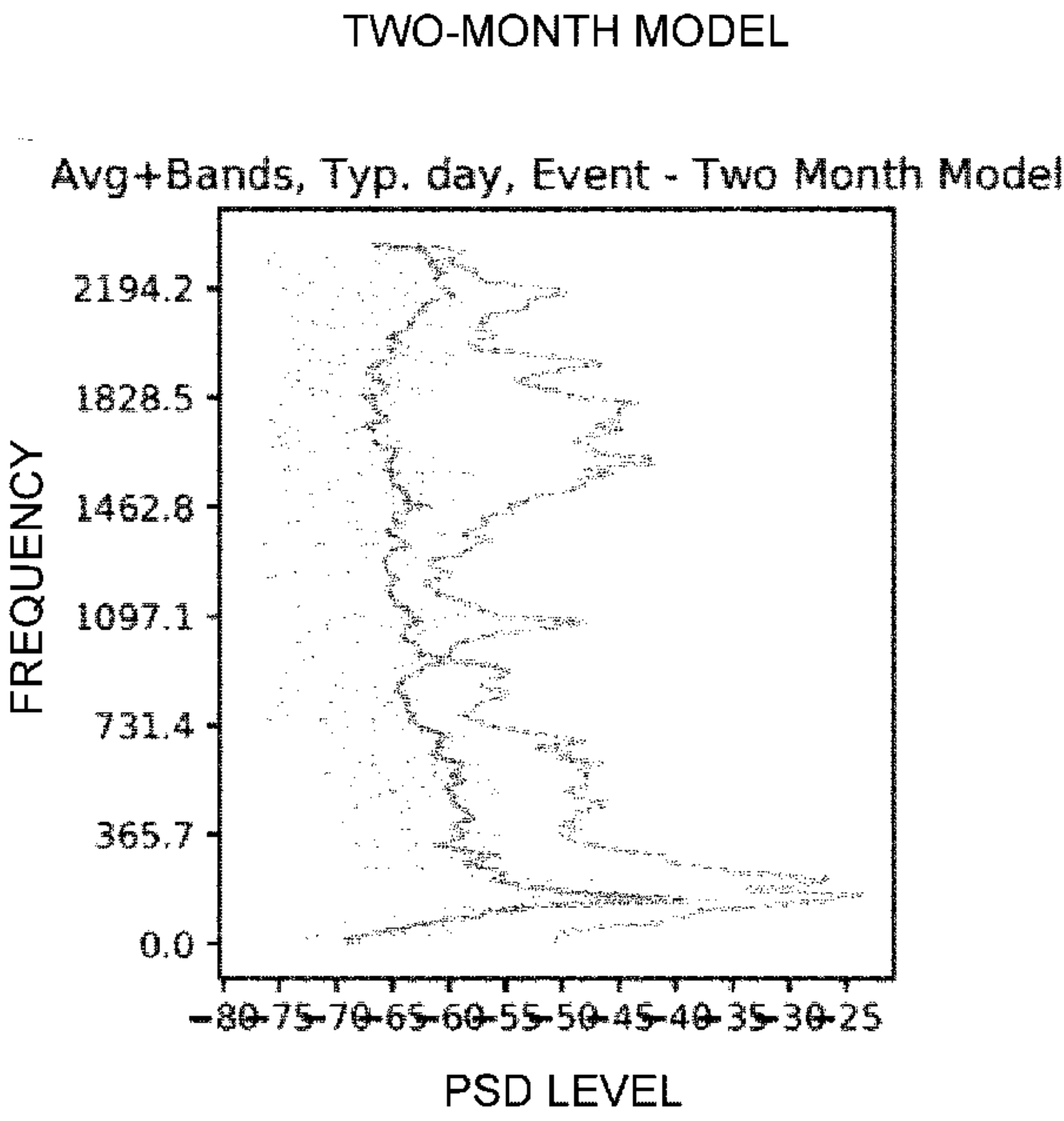


FIGURE 27

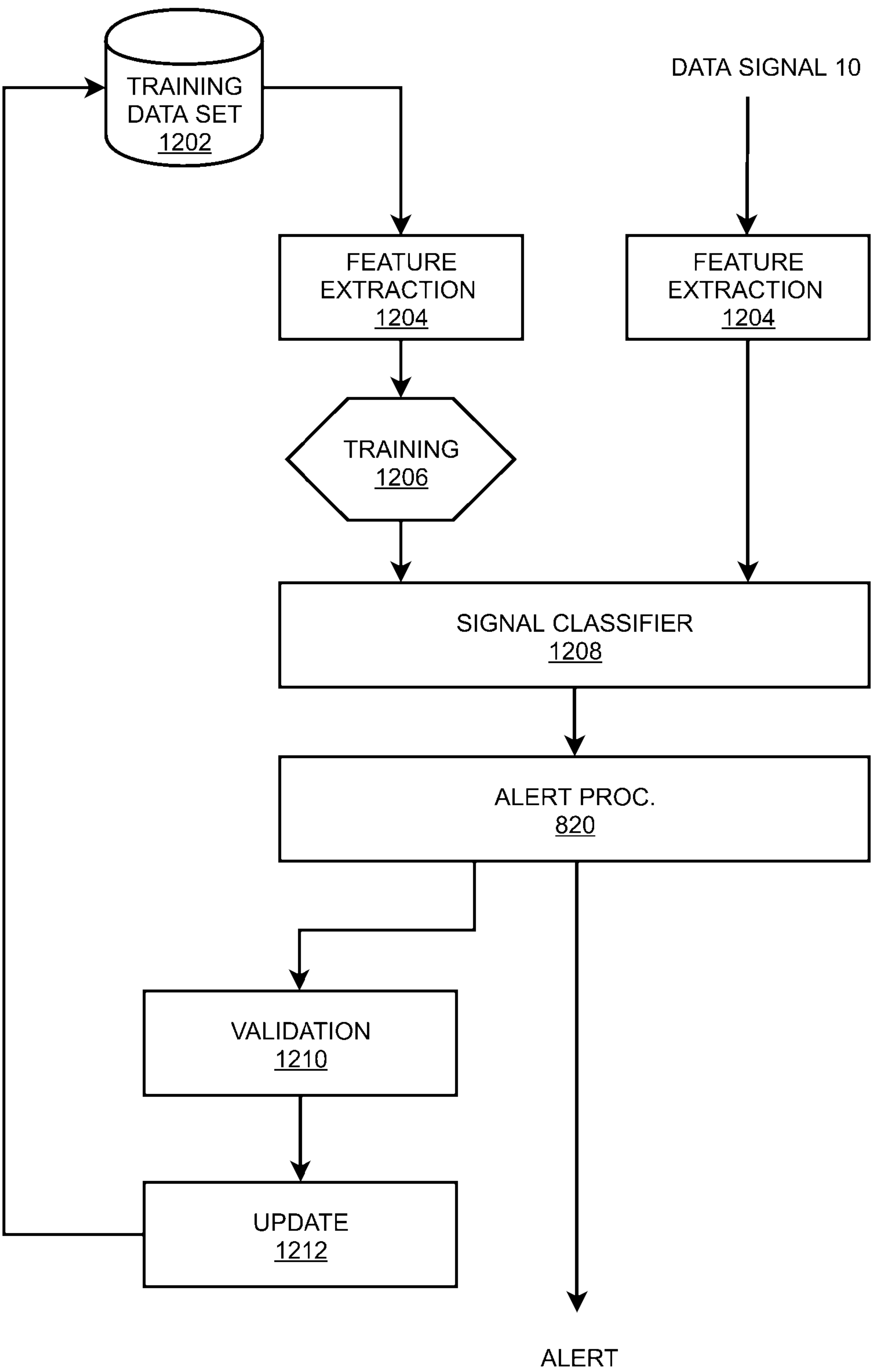


FIGURE 28

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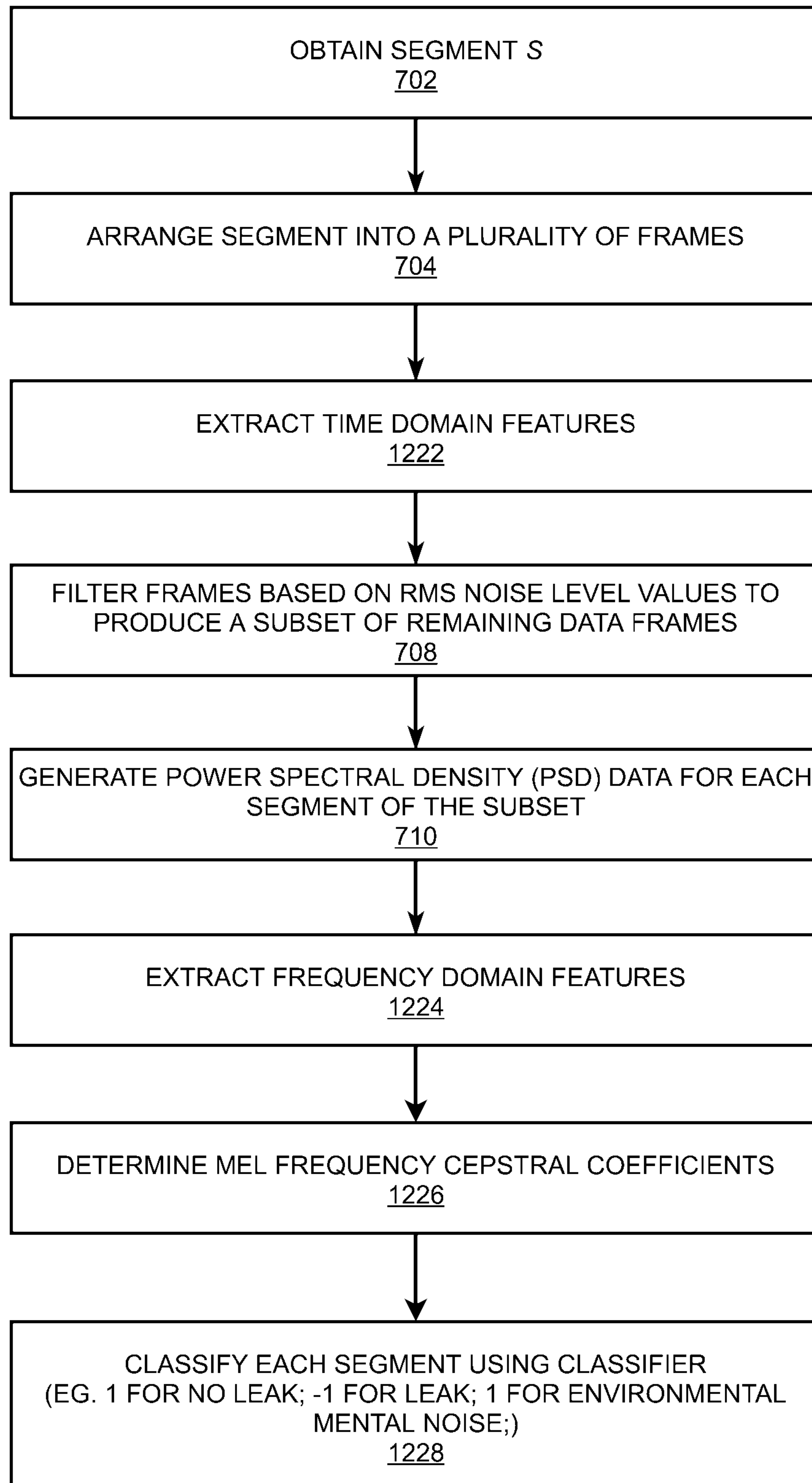


FIGURE 29

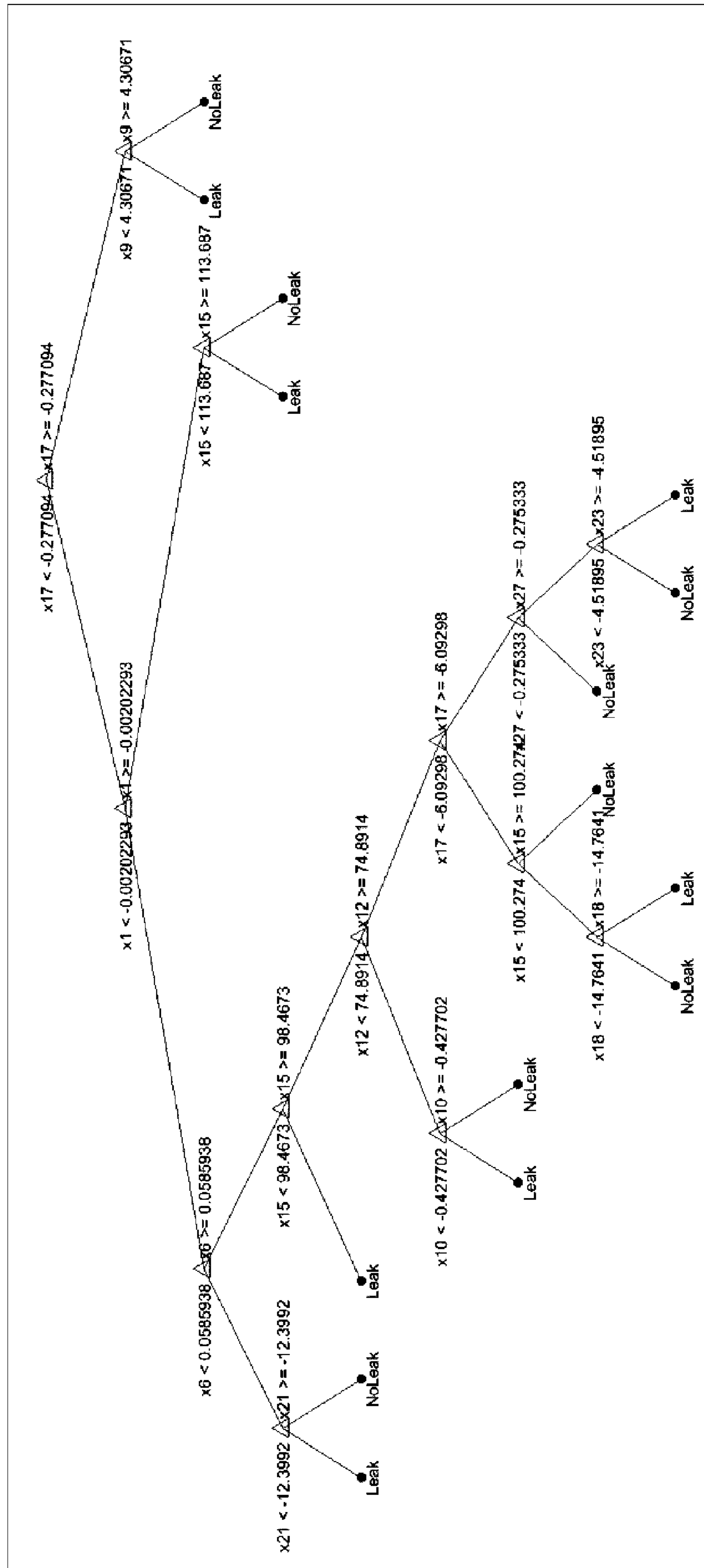


FIGURE 30A

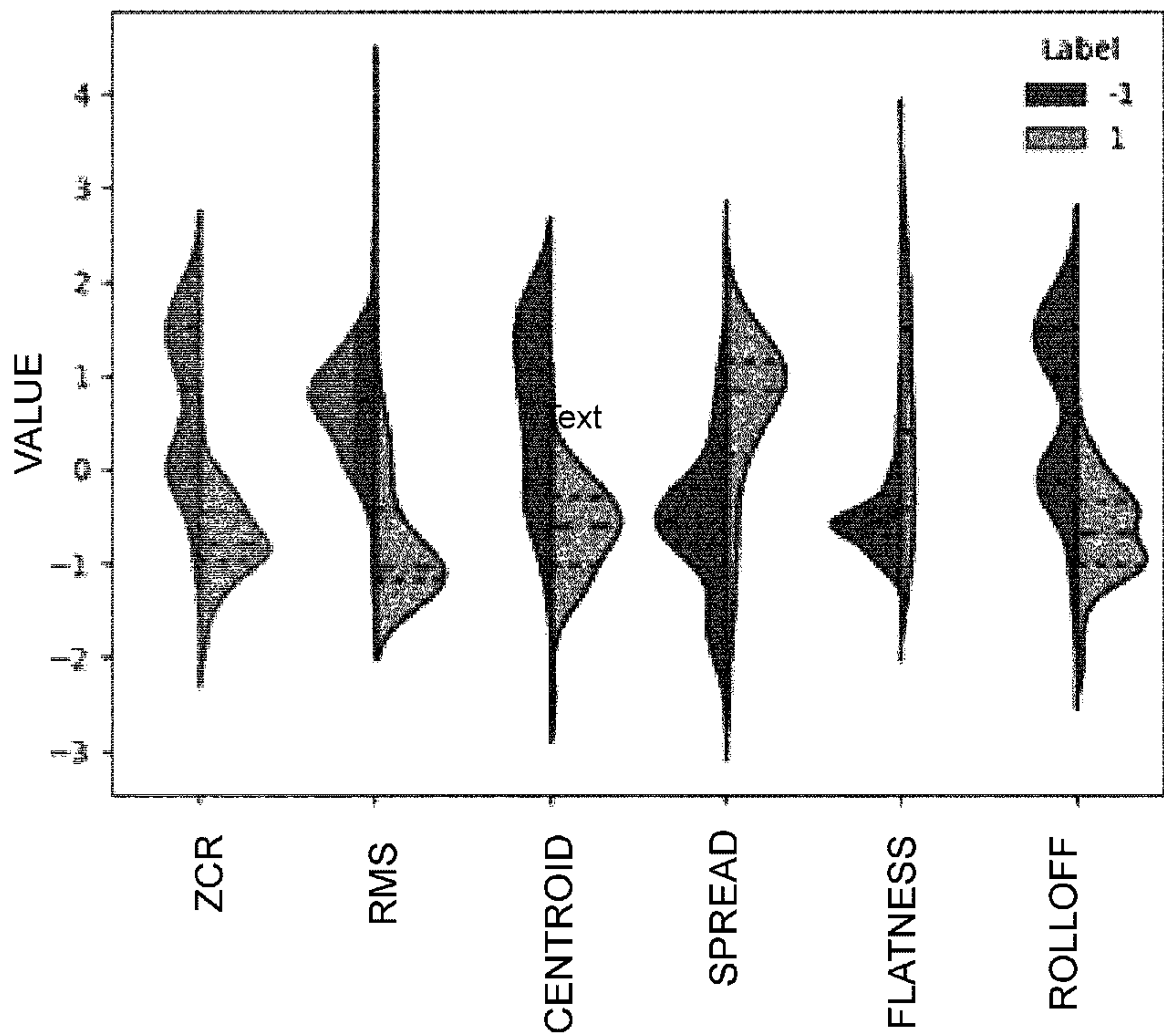


FIGURE 30B

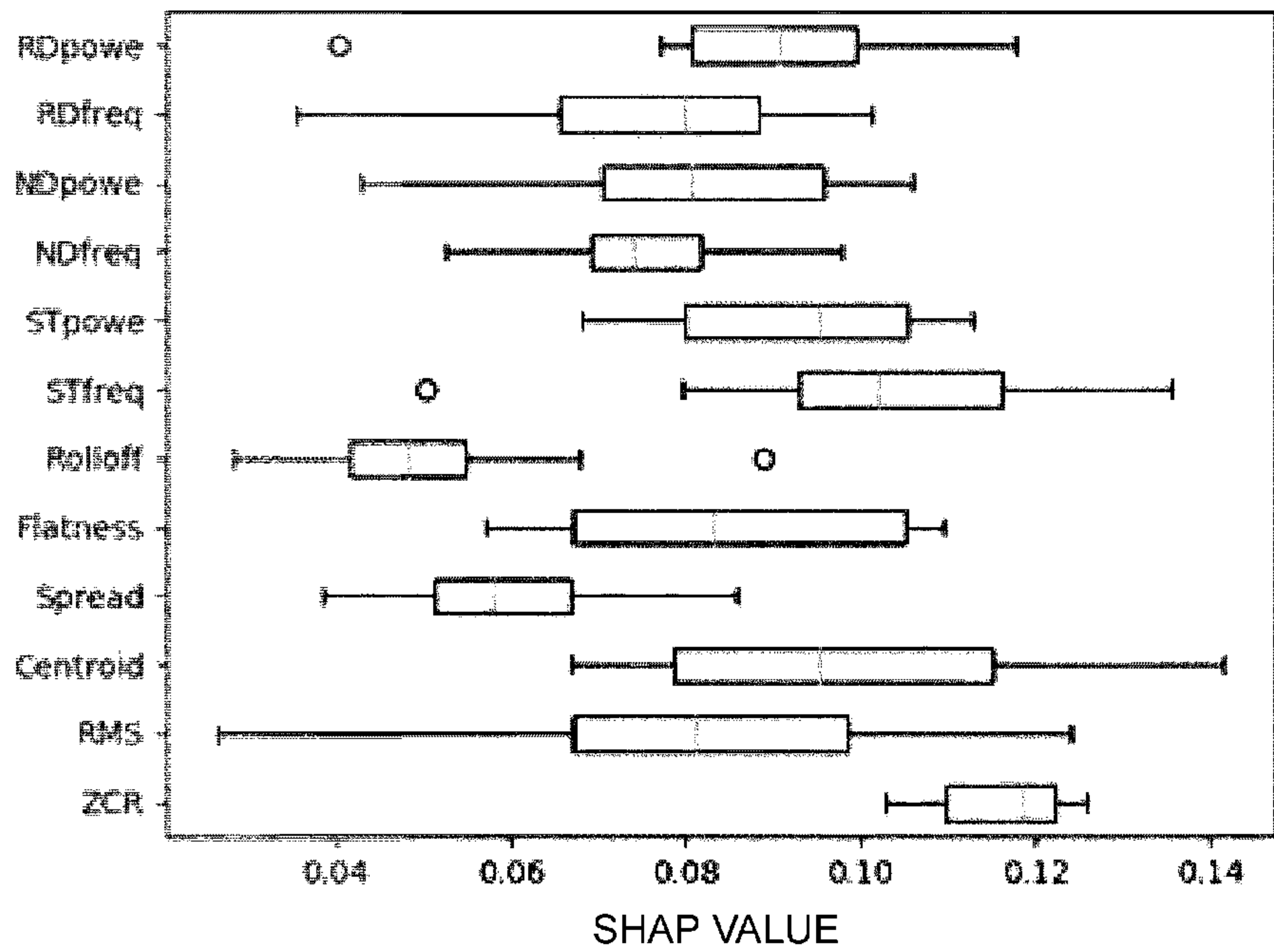


FIGURE 30C

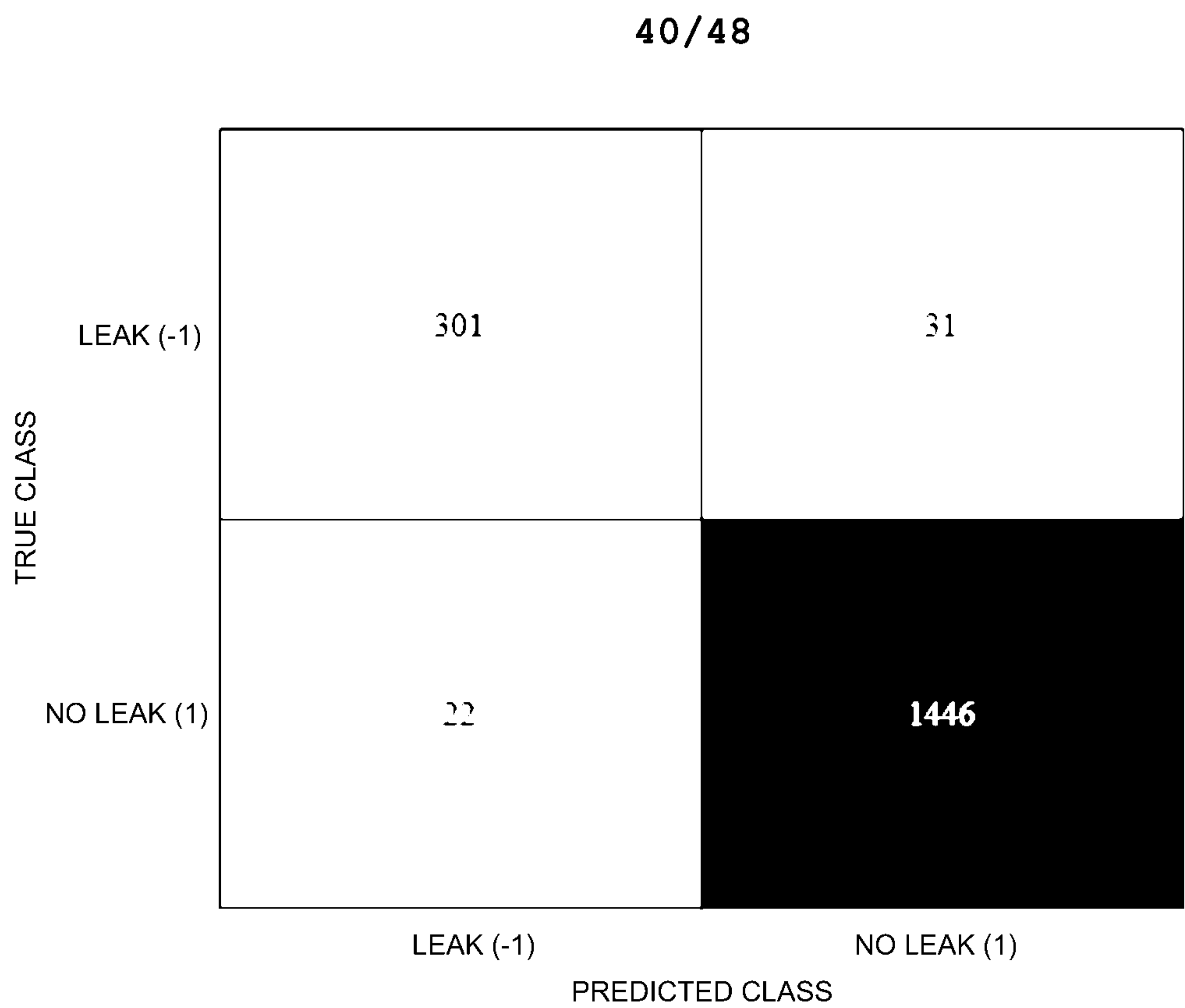


FIGURE 31

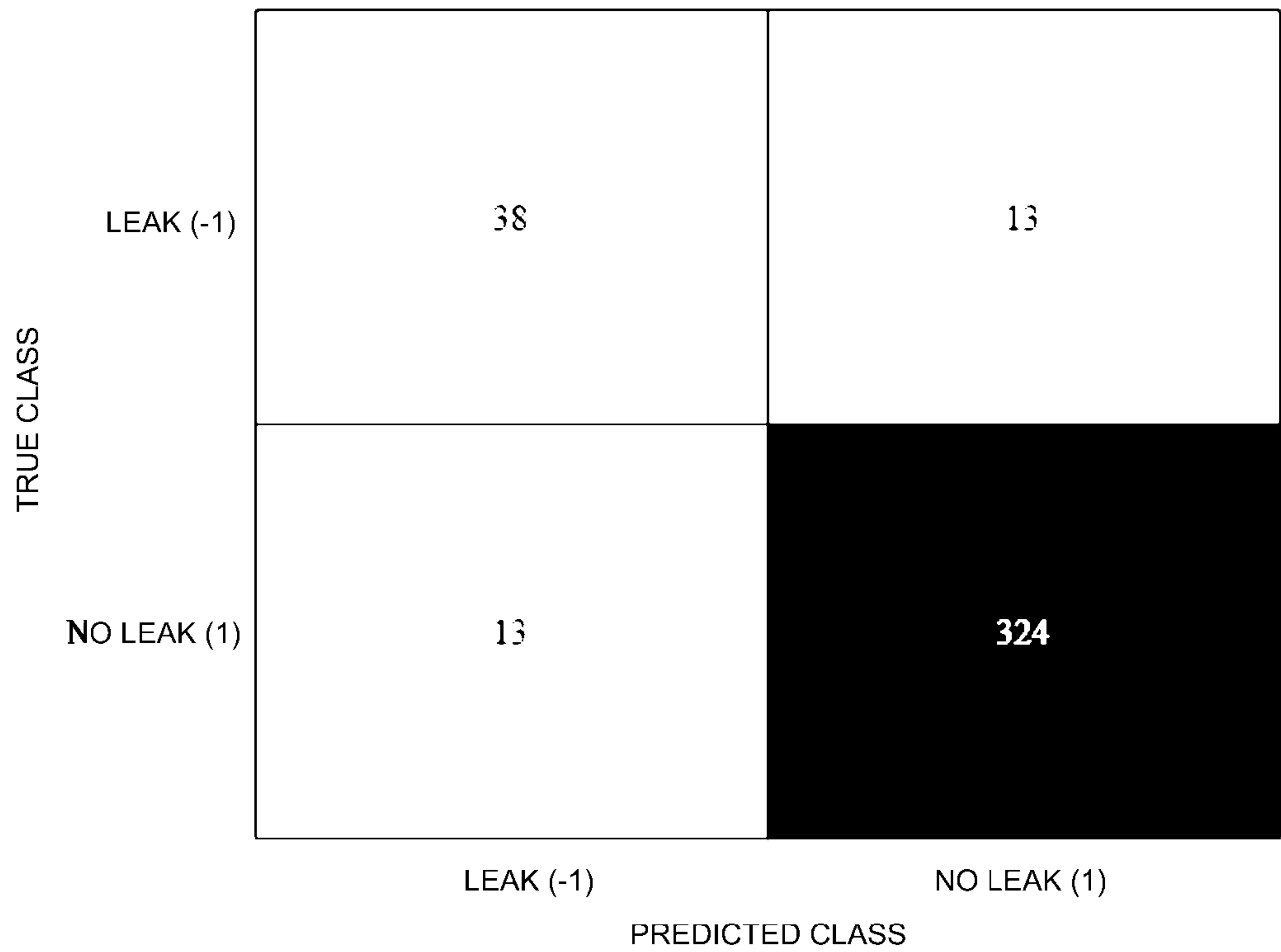


FIGURE 32

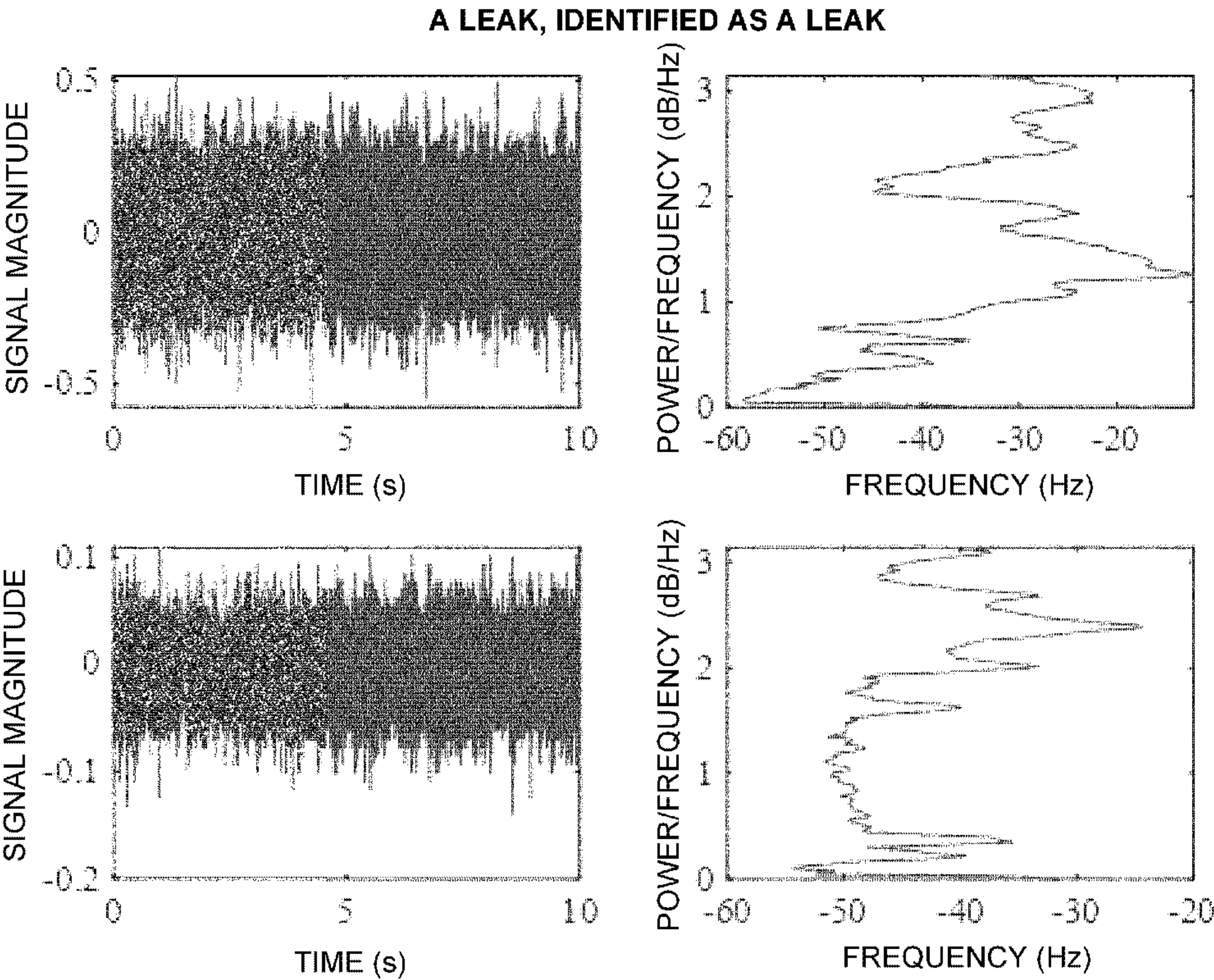


FIGURE 33

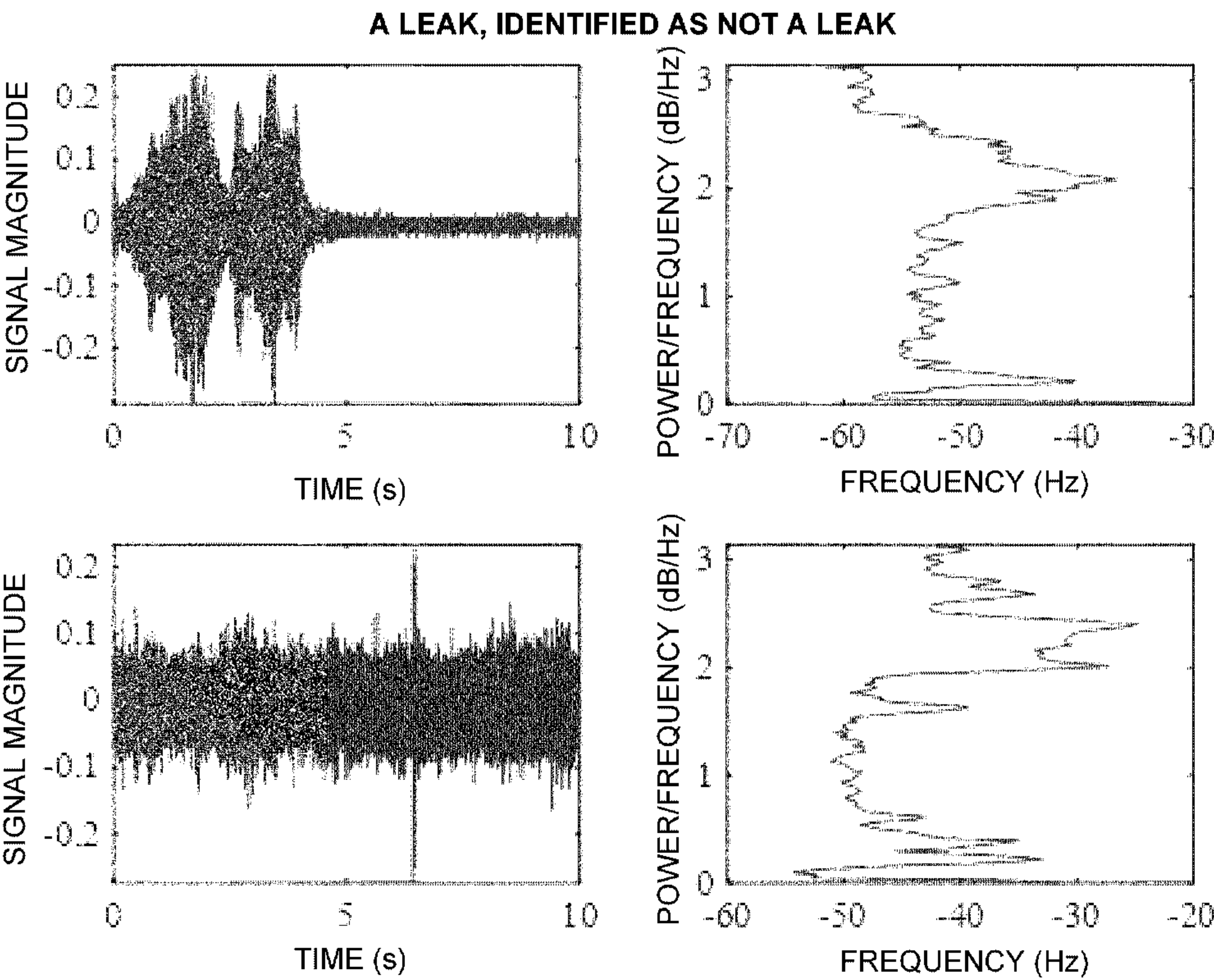


FIGURE 34

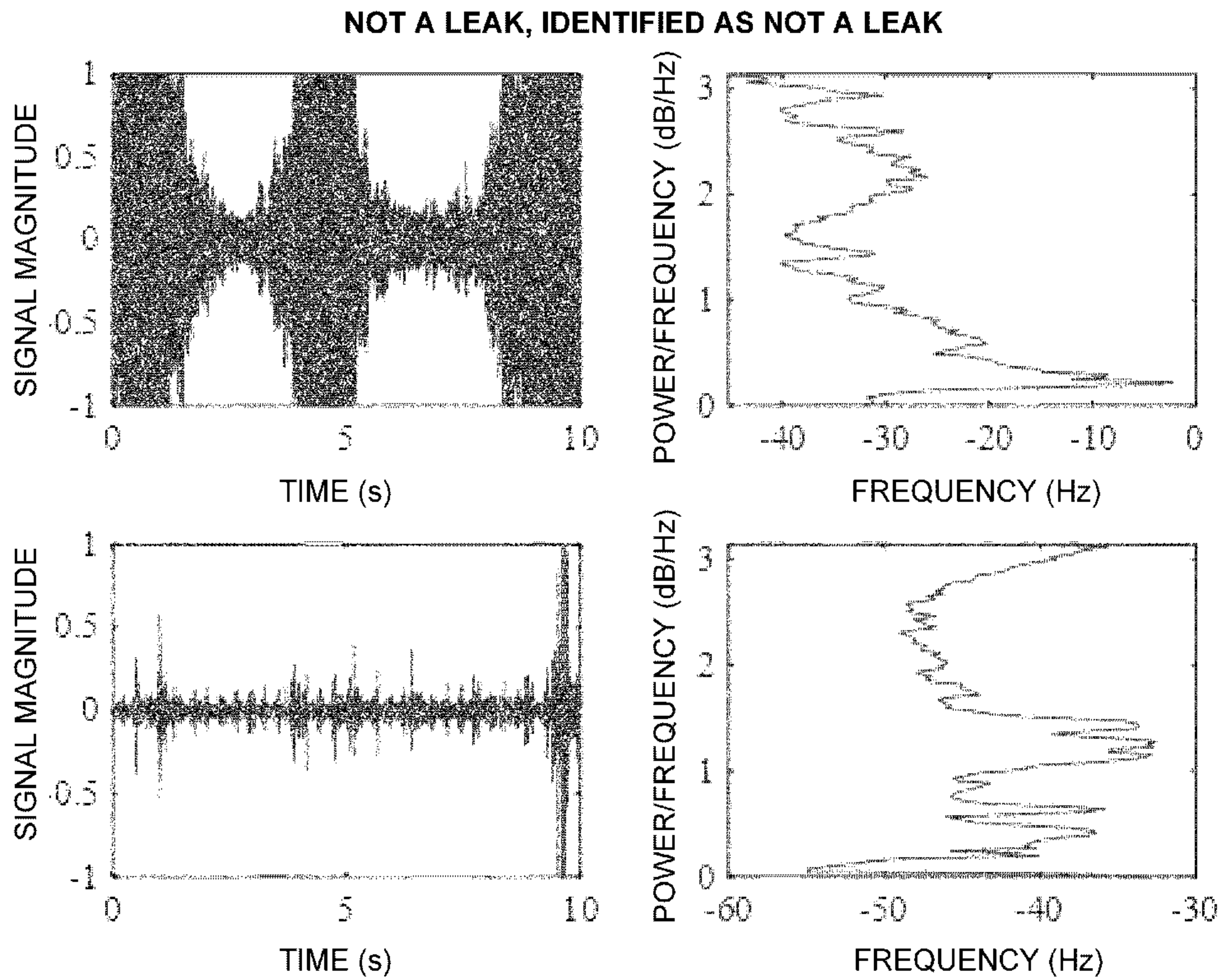


FIGURE 35

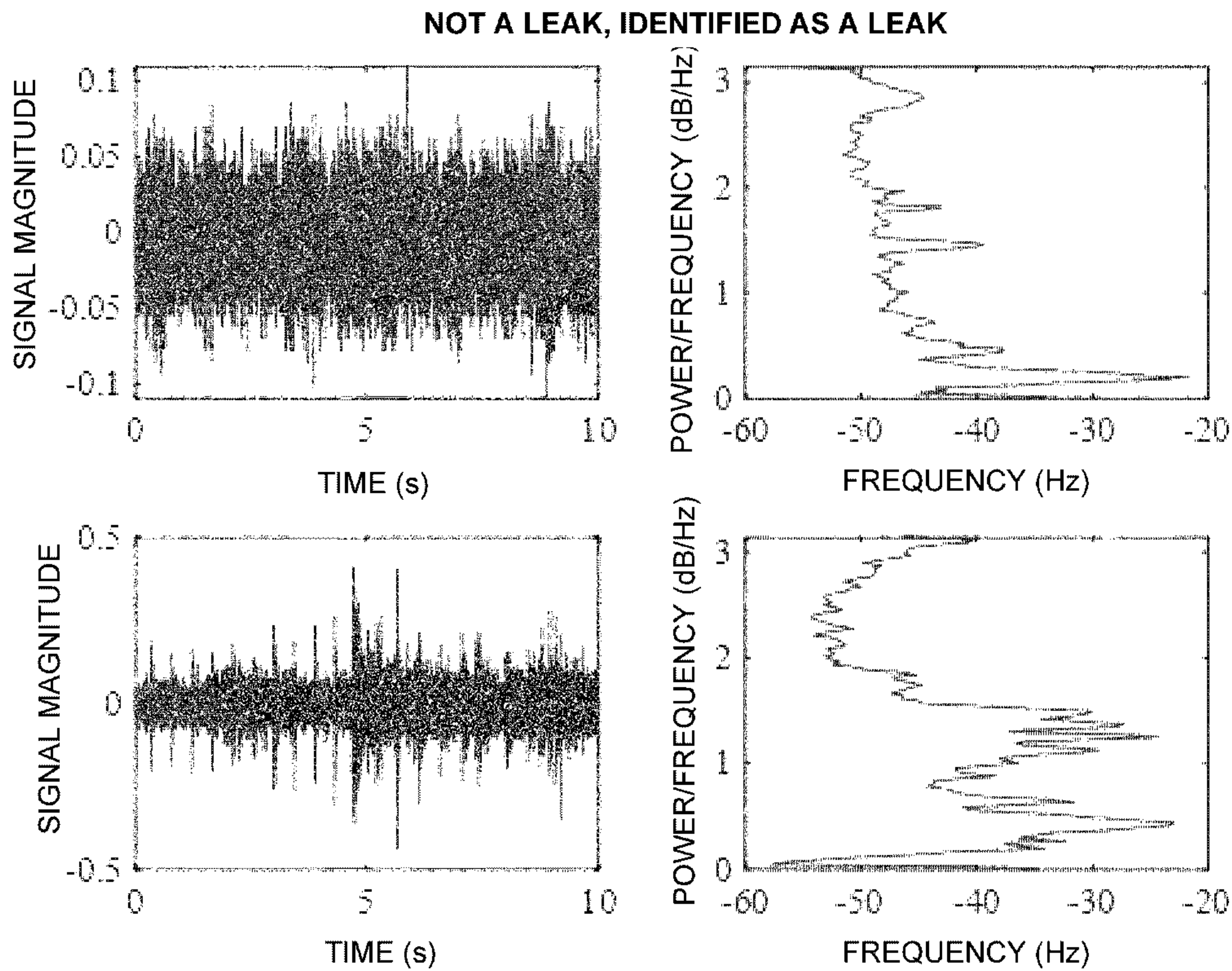


FIGURE 36

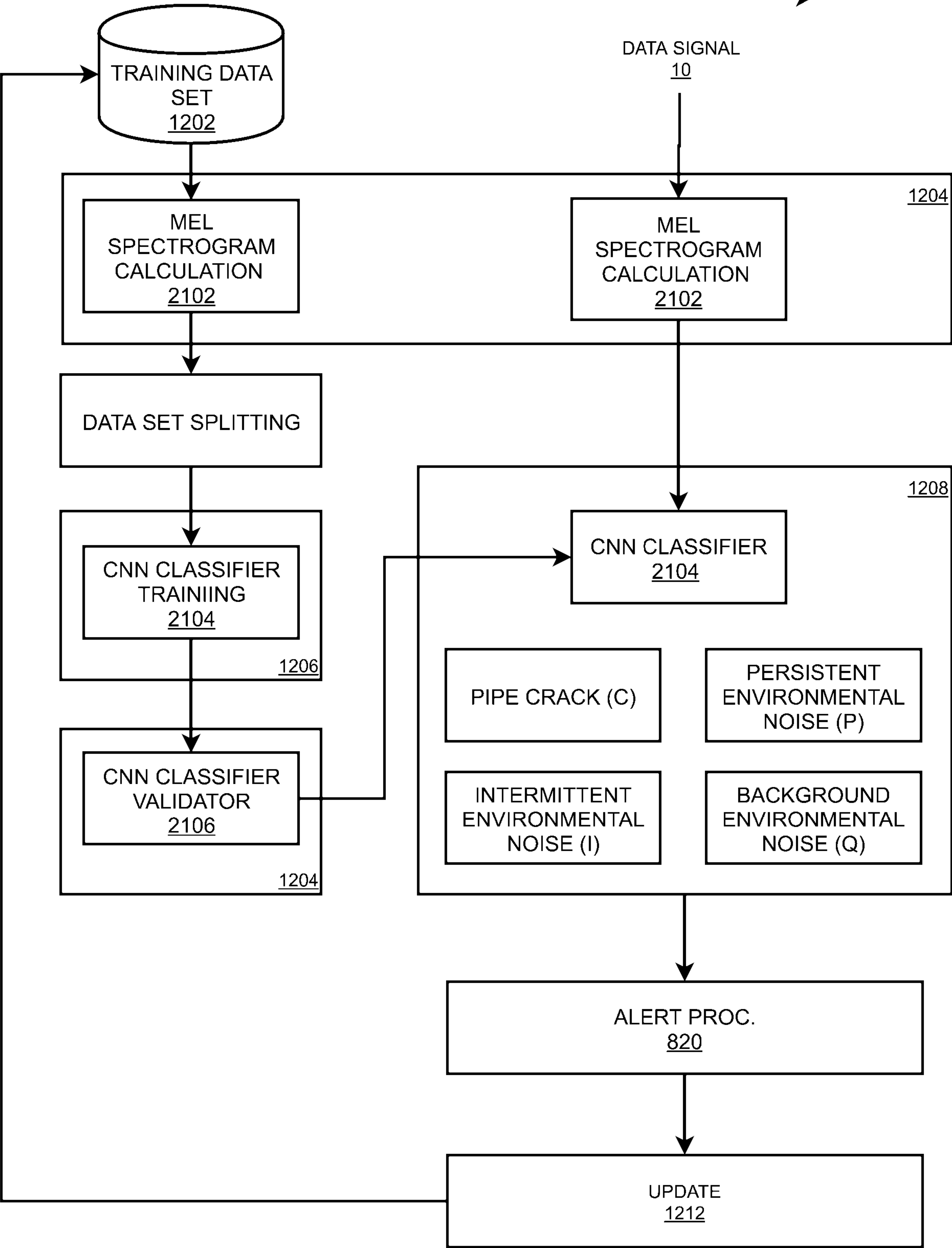


FIGURE 37A

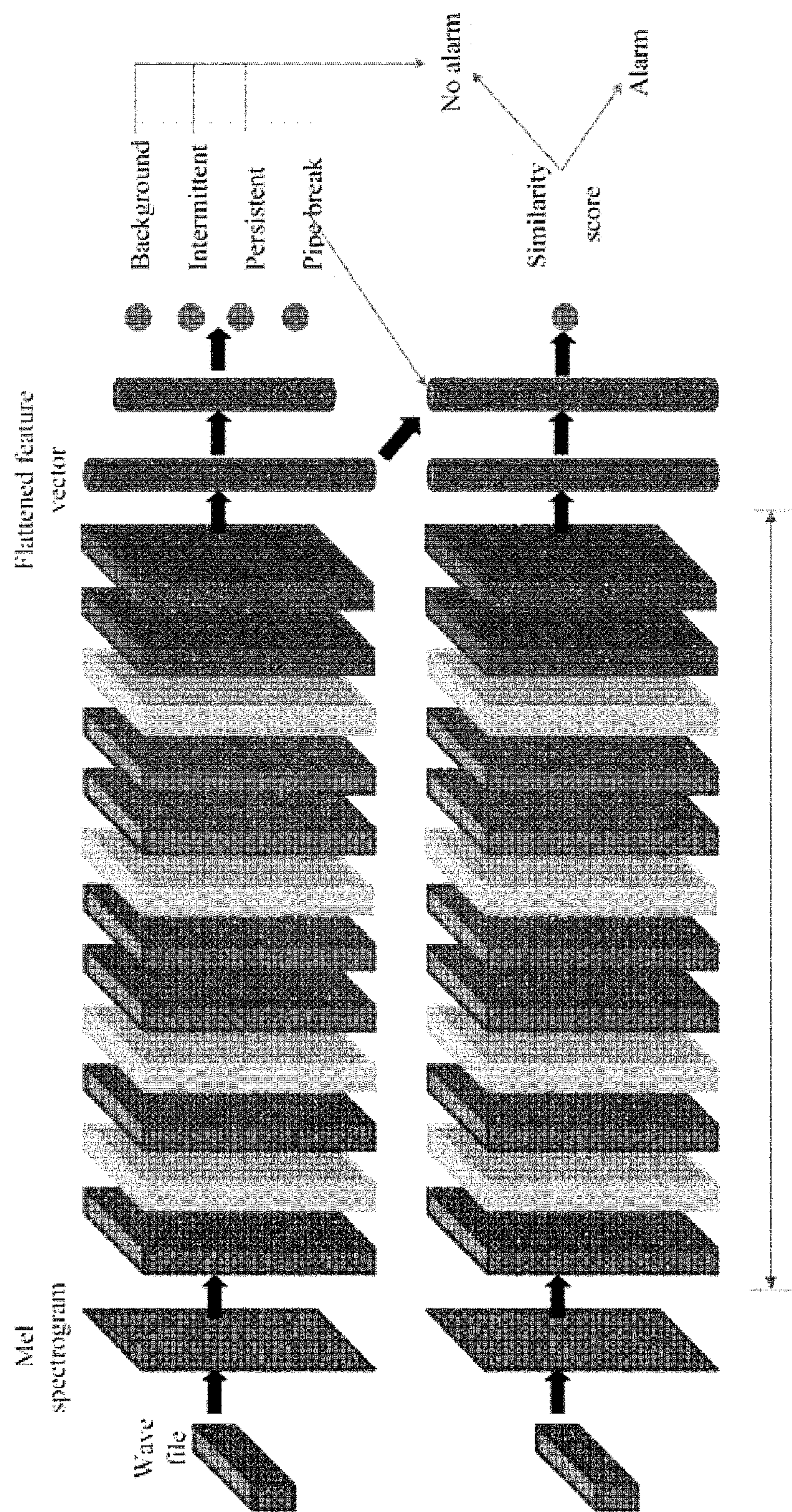


FIGURE 37B

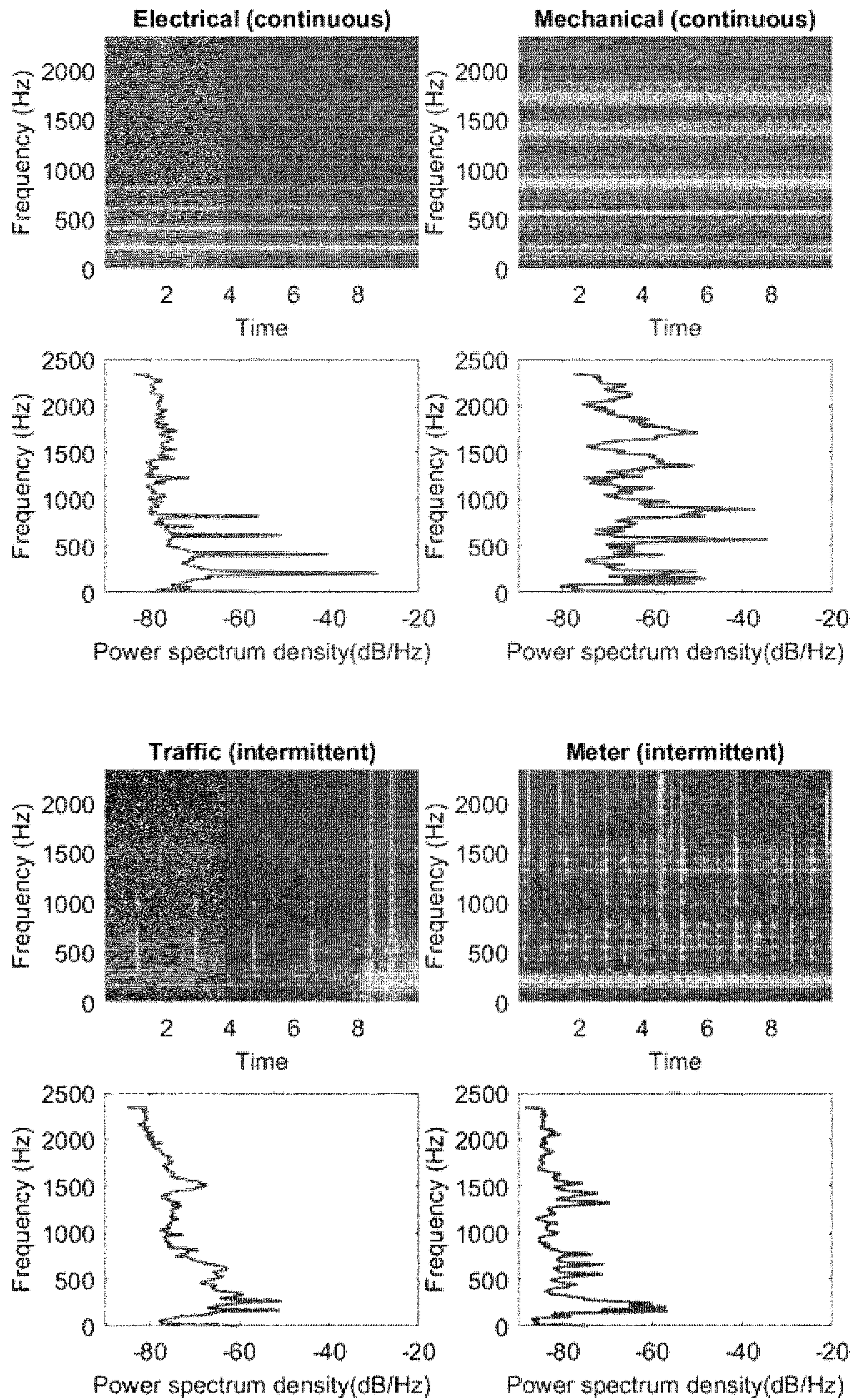


FIGURE 38A

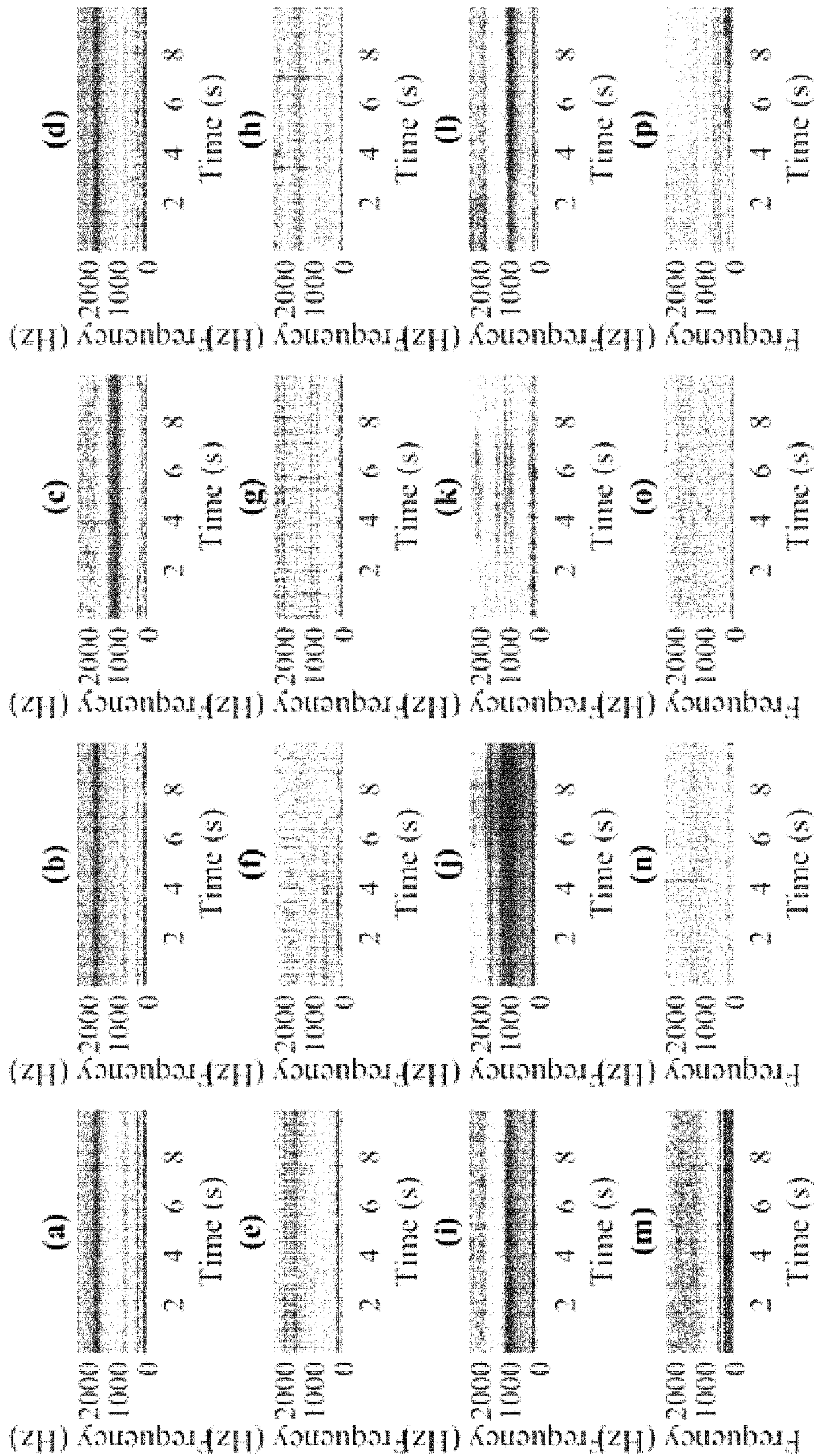


FIGURE 38B

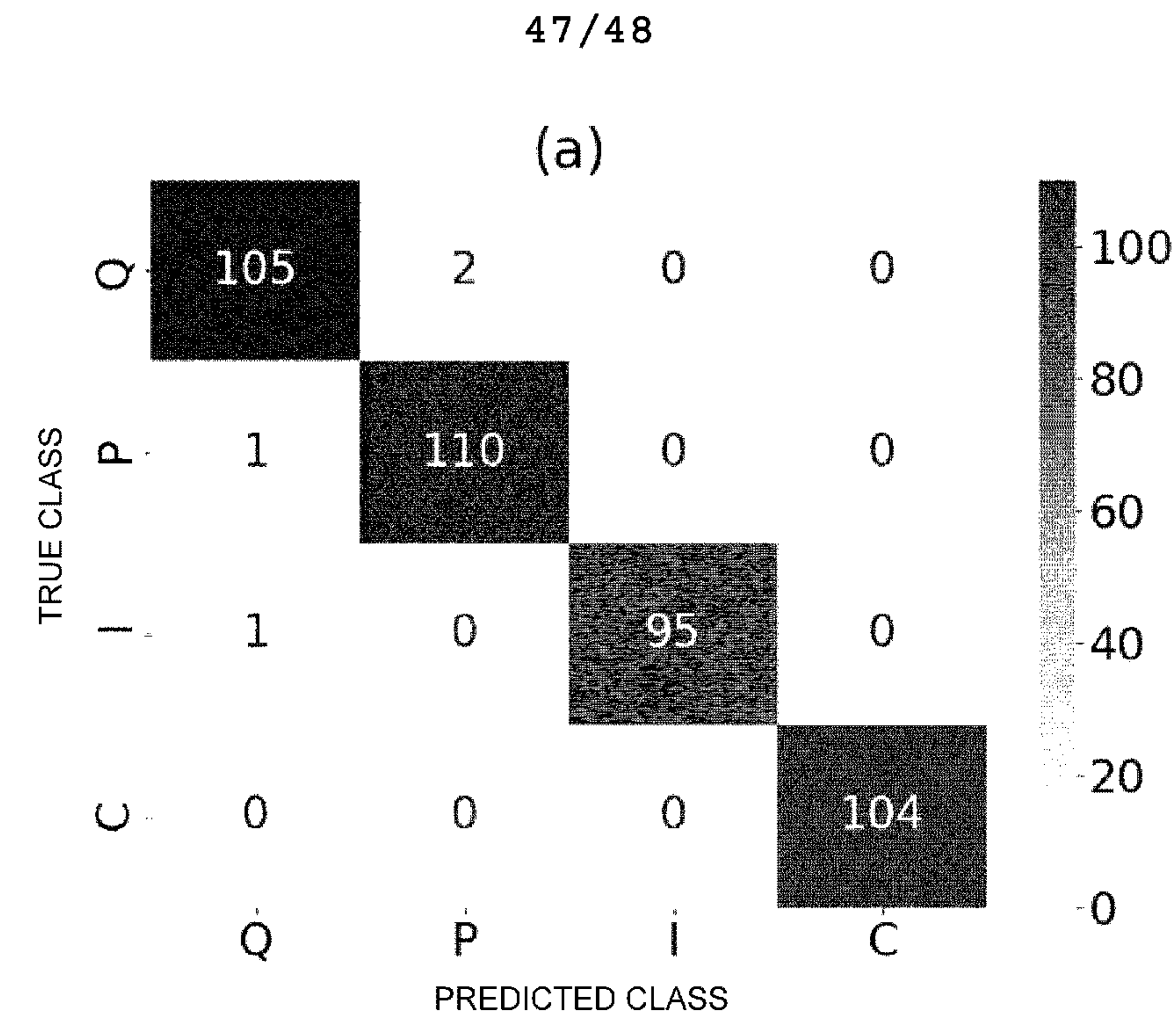


FIGURE 39

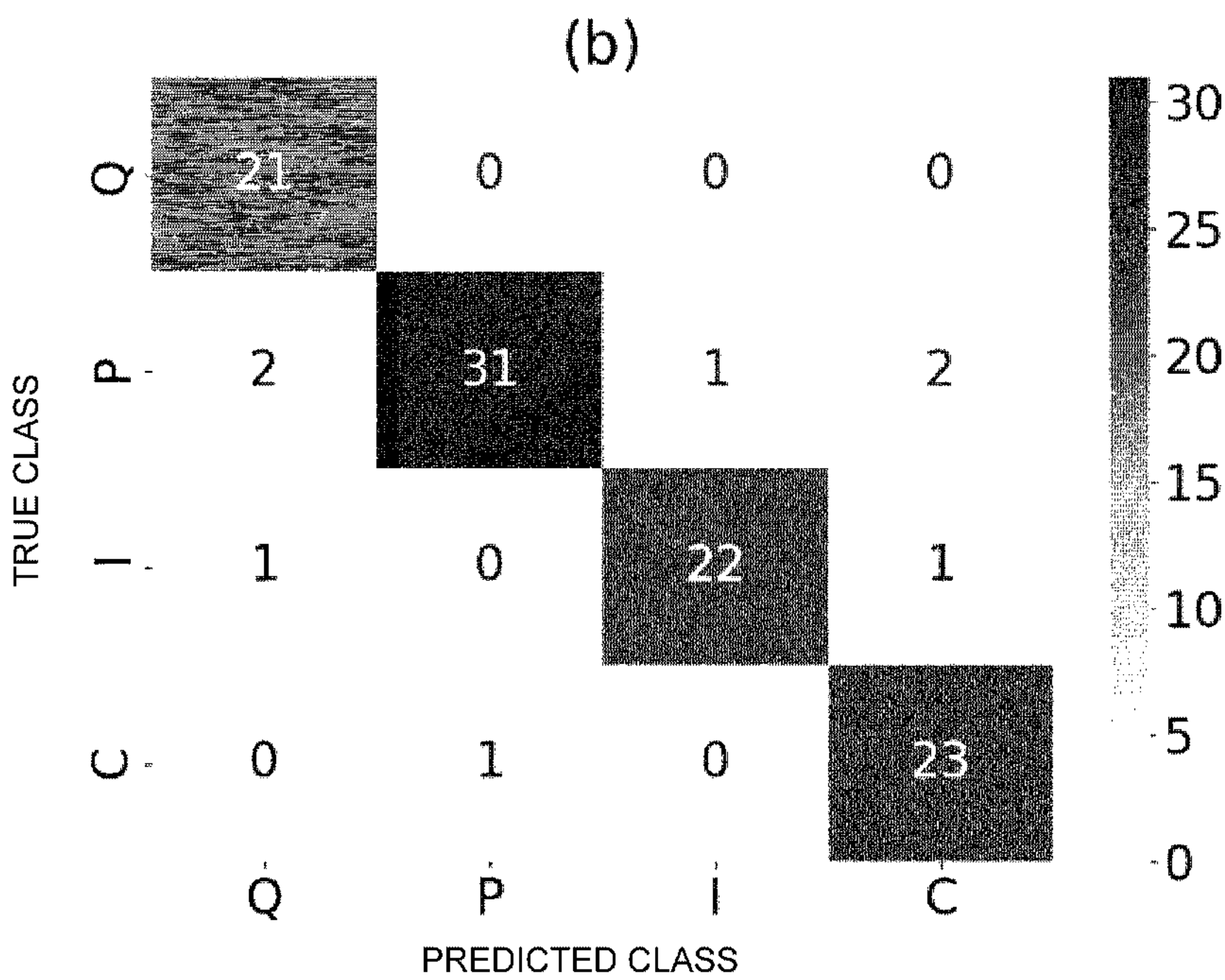


FIGURE 40

CHARACTERISTIC						
FAULT TYPE	PERSISTENCY AFTER FAULT	FREQUENCY PEAKS (NUMBER AND MAGNITUDE)	INITIAL SIGNAL MAGNITUDE	CHANGES IN FREQUENCY AND MAGNITUDE (SAME RELATIVE CHANGE THRESHOLD)	RATE OF CHANGE IN FREQUENCY AND MAGNITUDE	GAUSSIAN OR NON-GAUSSIAN
CIRCUMFERENTIAL CRACK (OR LEAK ON VALVE NOT ON LOGGER)	100%	SINGLE AND MEDIUM TO HIGH (BOTH FREQUENCY AND MAGNITUDE) DEPENDING ON DISTANCE TO FAULT	MEDIUM TO HIGH	FEW (OR NONE)	VERY FAST FOR INITIAL EVENT AND THEN NONE	GAUSSIAN
LONGITUDINAL CRACK	HIGH (BUT NOT ALWAYS 100%)	INITIALLY SINGLE AND THEN MULTIPLE WITH MEDIUM TO HIGH FREQUENCIES AND MAGNITUDES (SOMETIMES LOW) DEPENDING ON DISTANCE TO FAULT	LOW	SIGNIFICANT OVER TIME	SLOW WHEN STABLE CRACK GROWTH IN DETERIORATED (CORRODED) PIPE WALL AND THEN ACCELERATING WHEN UNSTABLE CRACK GROWTH	GAUSSIAN
CUSTOMER SIDE LEAK	HIGH (BUT NOT ALWAYS 100%)	VARIABLE DEPENDING ON RATE OF FLOW THROUGH WATER METER AND/OR TRANSMISSION OF CUSTOMER PLUMBING LEAK NOISE BACK THROUGH WATER METER	VARIABLE	FEW	VARIABLE	NON-GAUSSIAN

FIGURE 41