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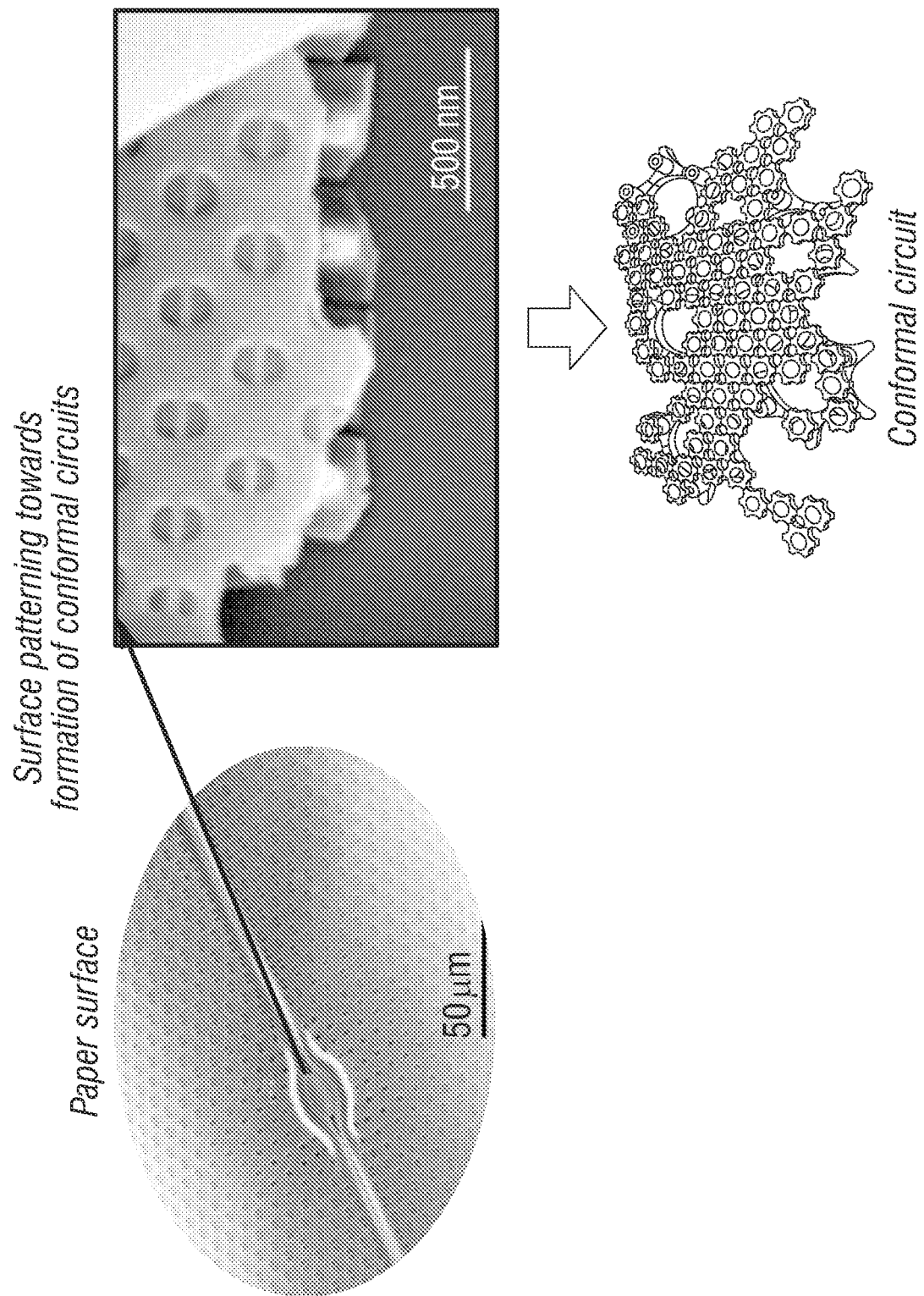


FIG. 1

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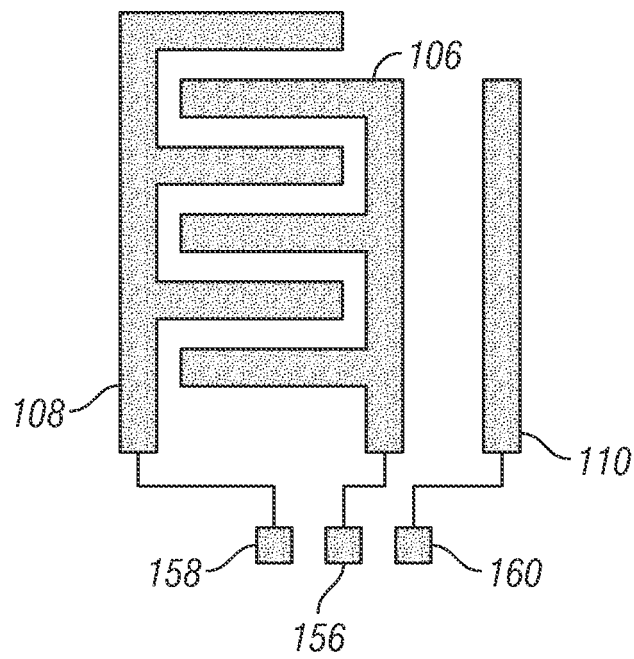


FIG. 2

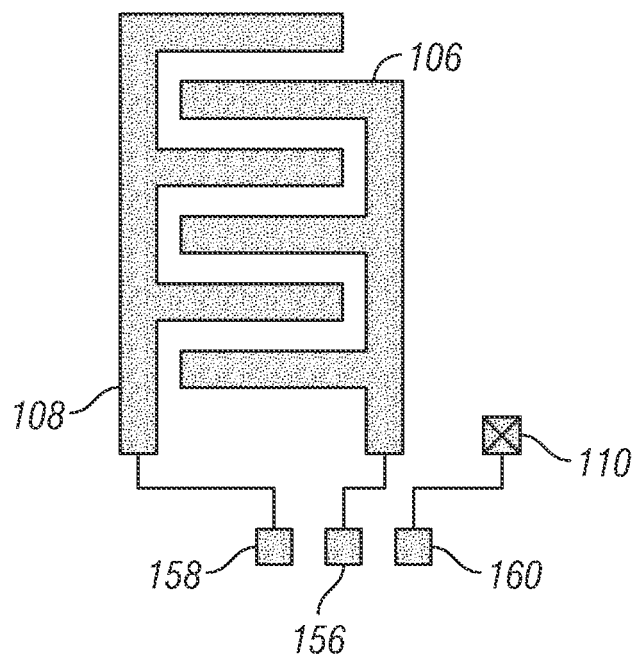
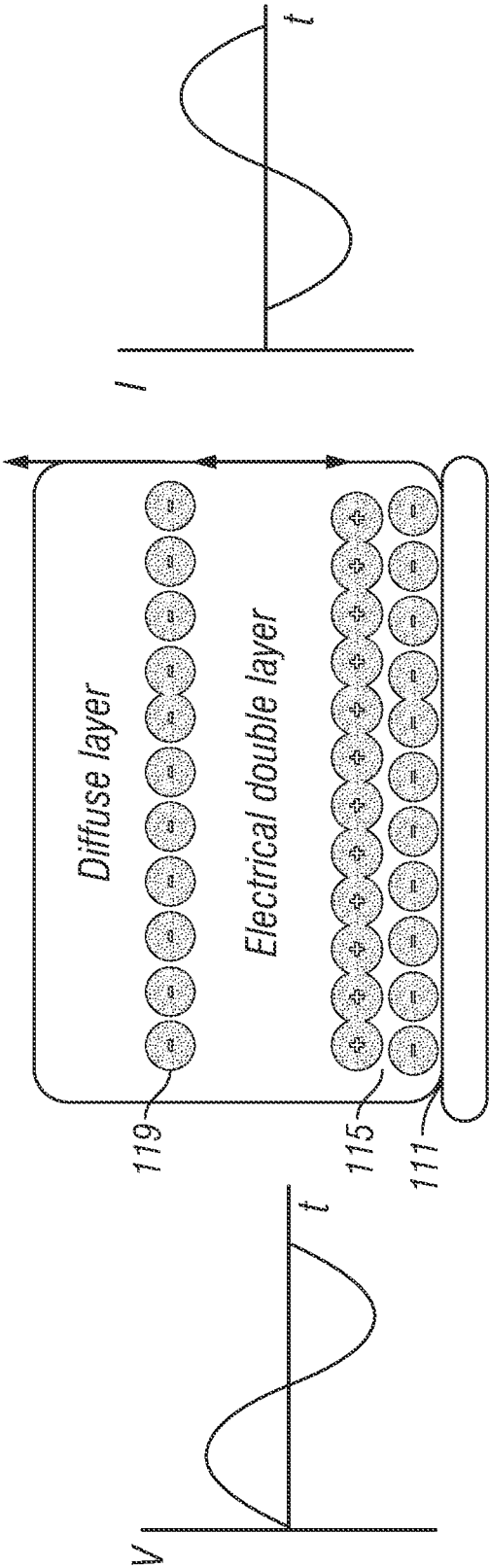


FIG. 3



$$V = V_m \sin \omega t$$
$$Z = \frac{V_m \sin \omega t}{I_m \sin(\omega t + \varphi)}$$
$$I = I_m \sin(\omega t + \varphi)$$

FIG. 4

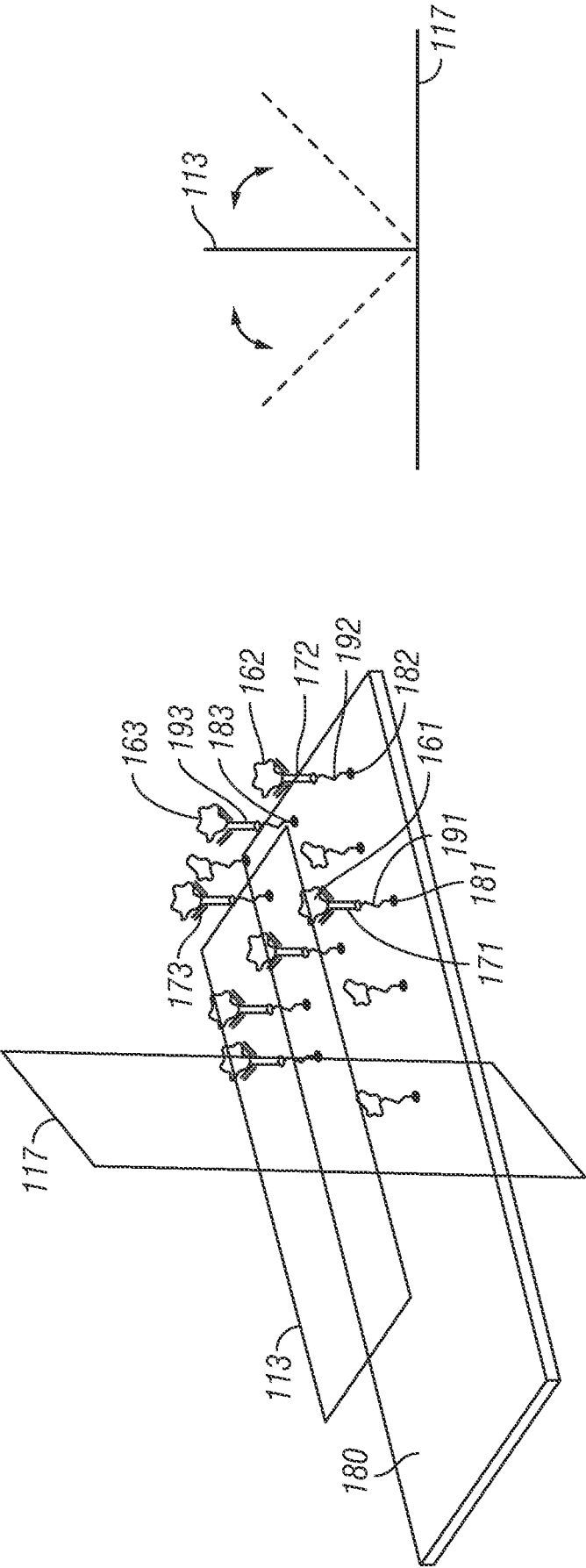


FIG. 5

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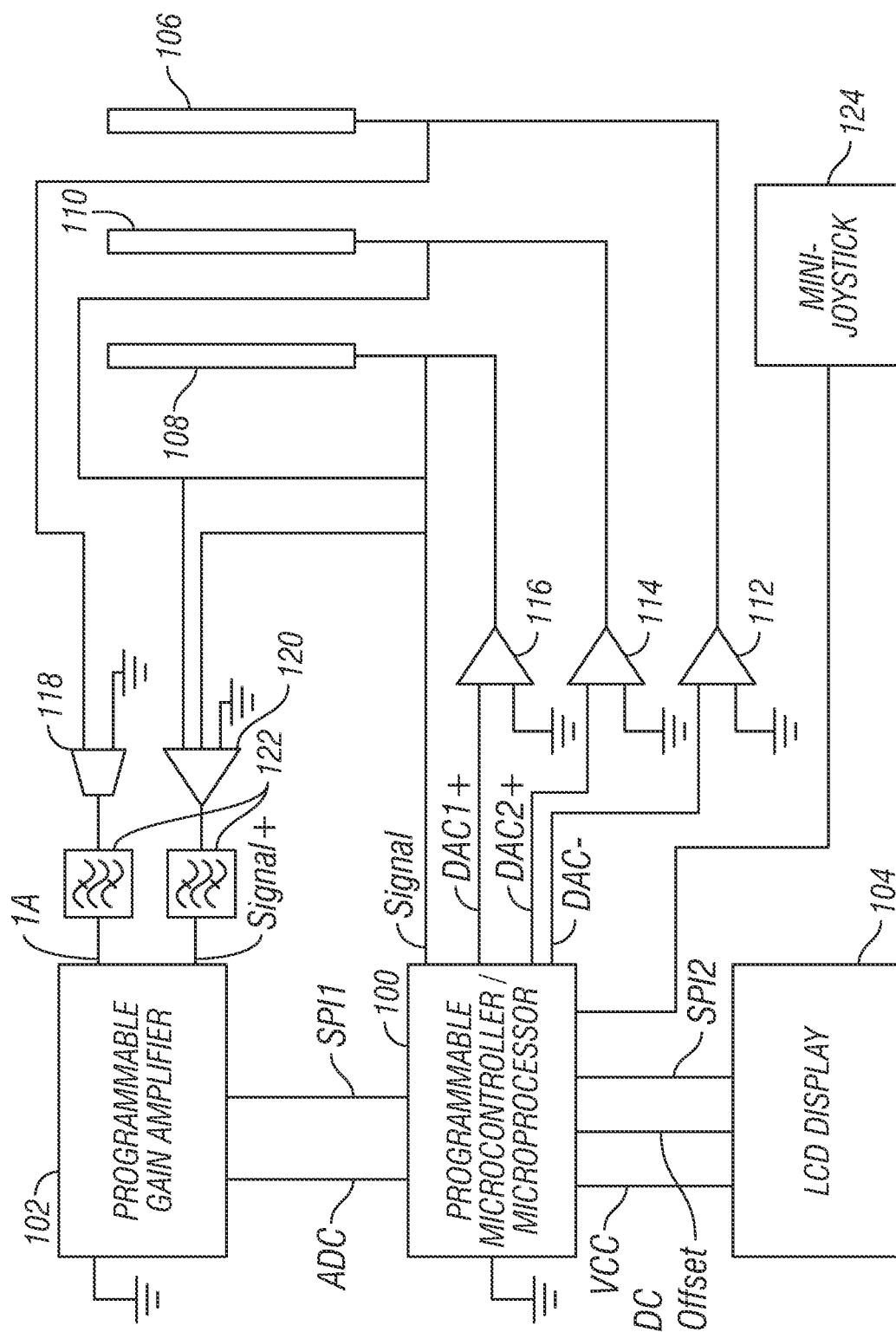


FIG. 6

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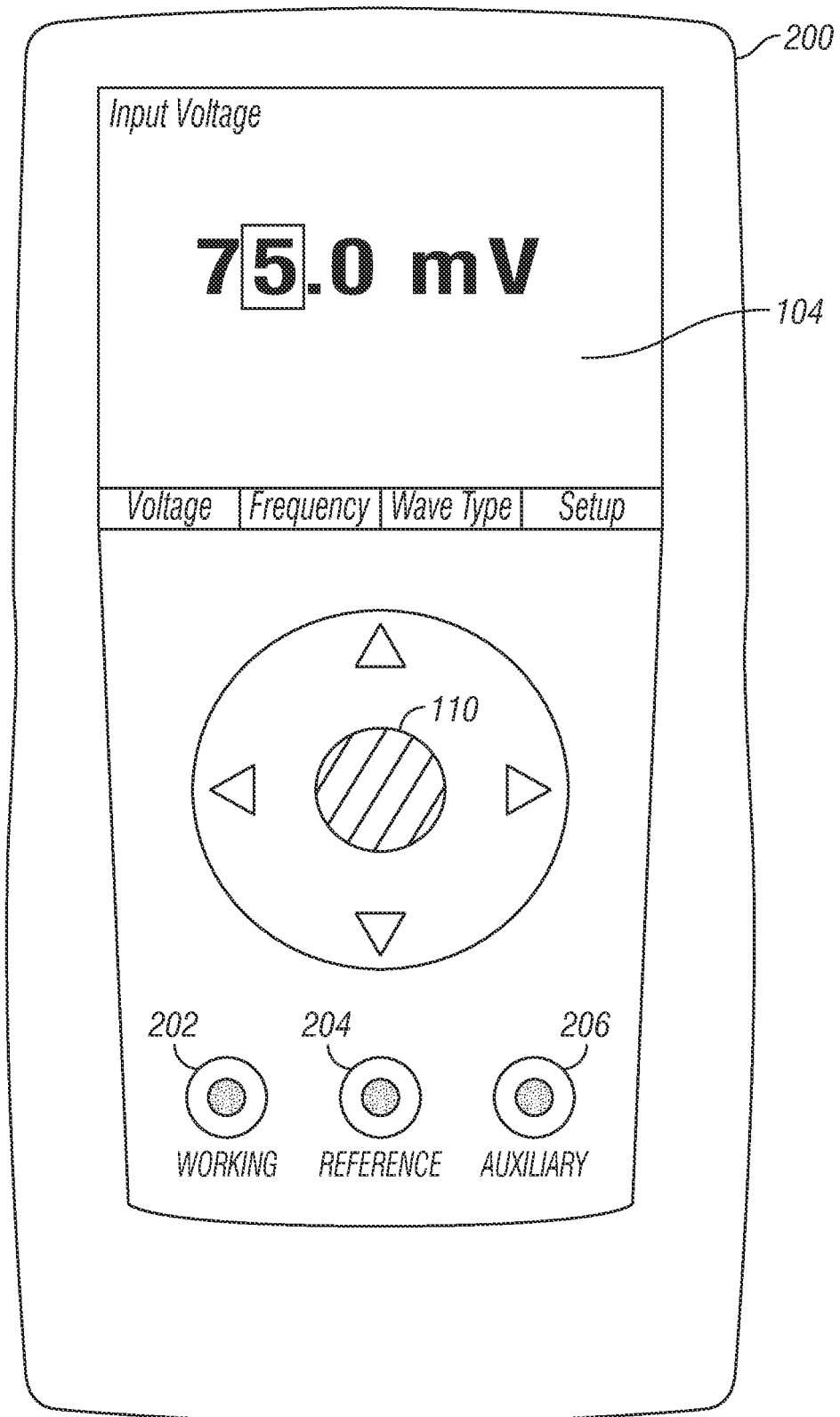


FIG. 7

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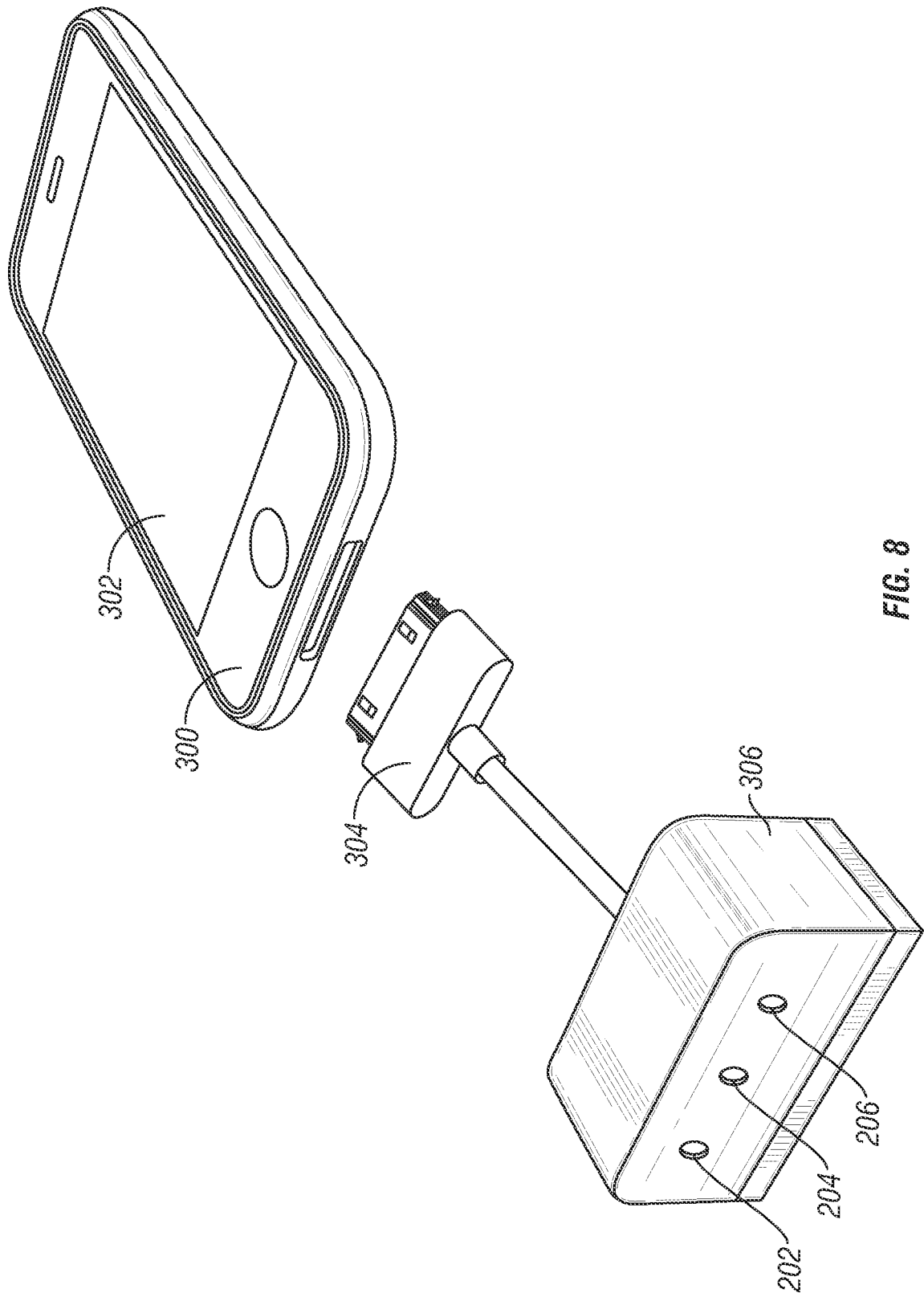


FIG. 8

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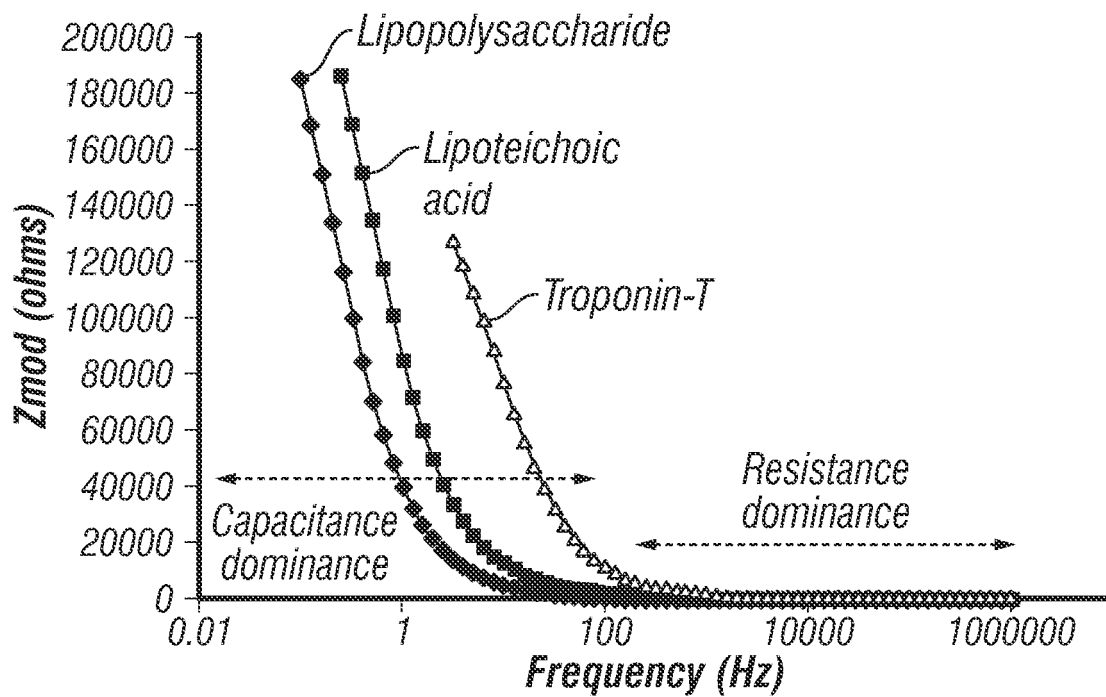


FIG. 9

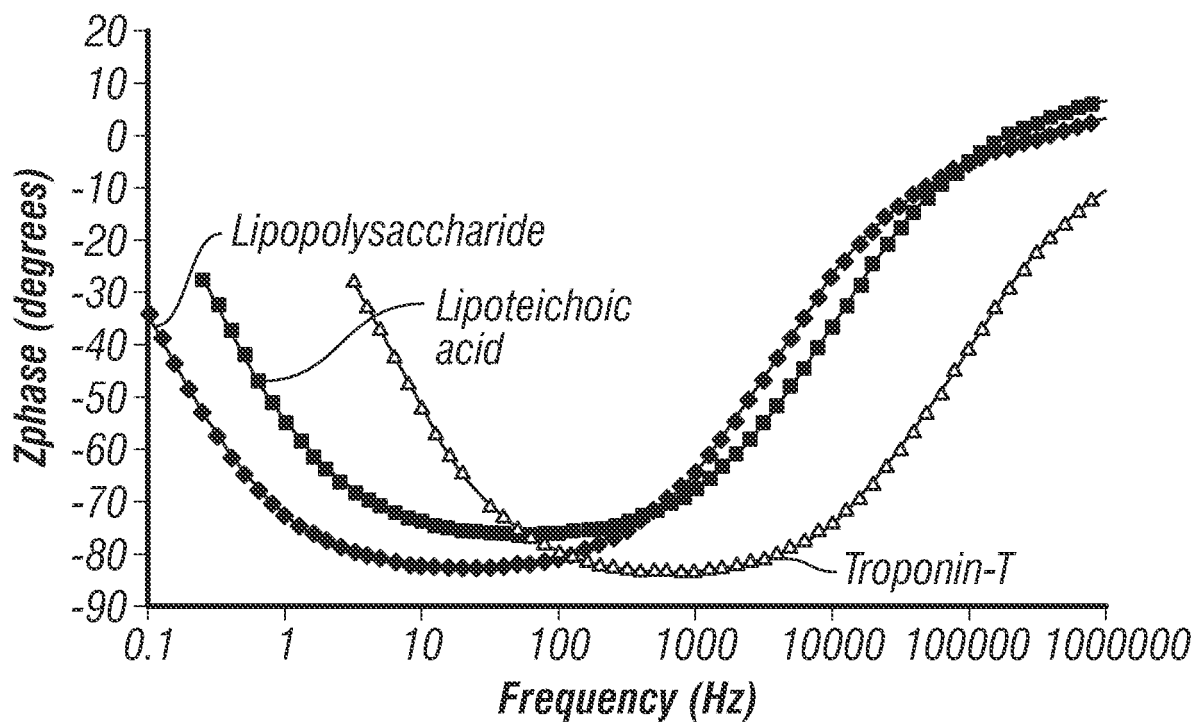


FIG. 10

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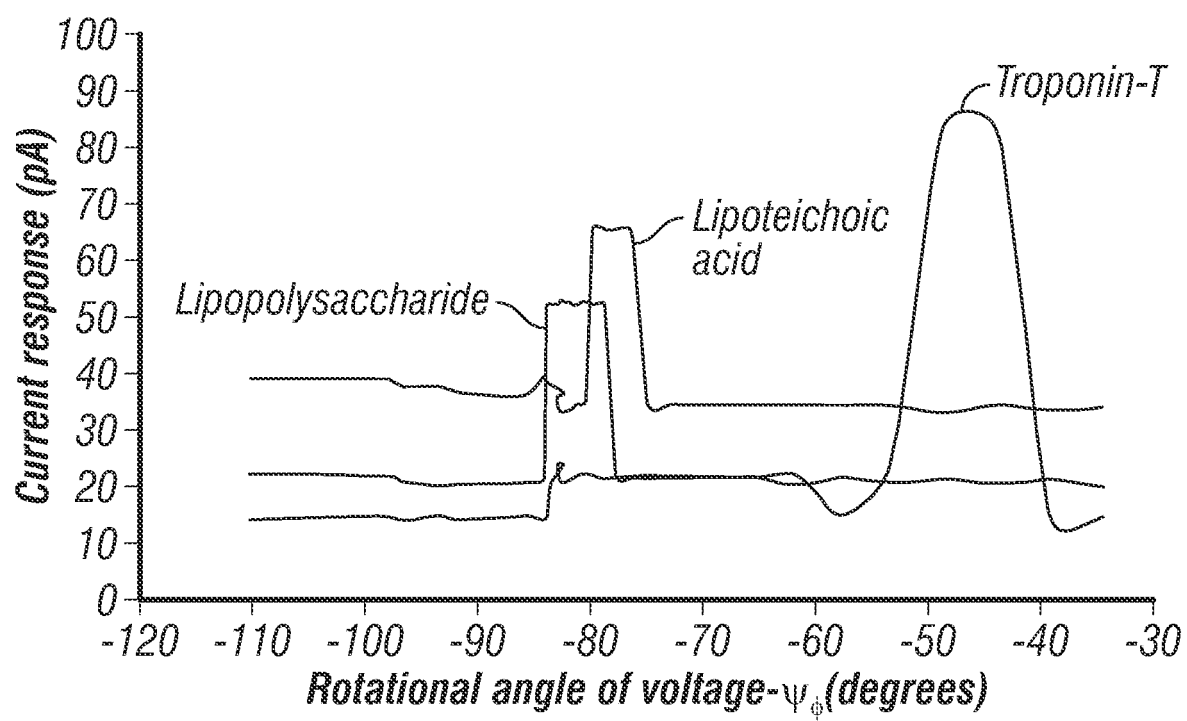


FIG. 11

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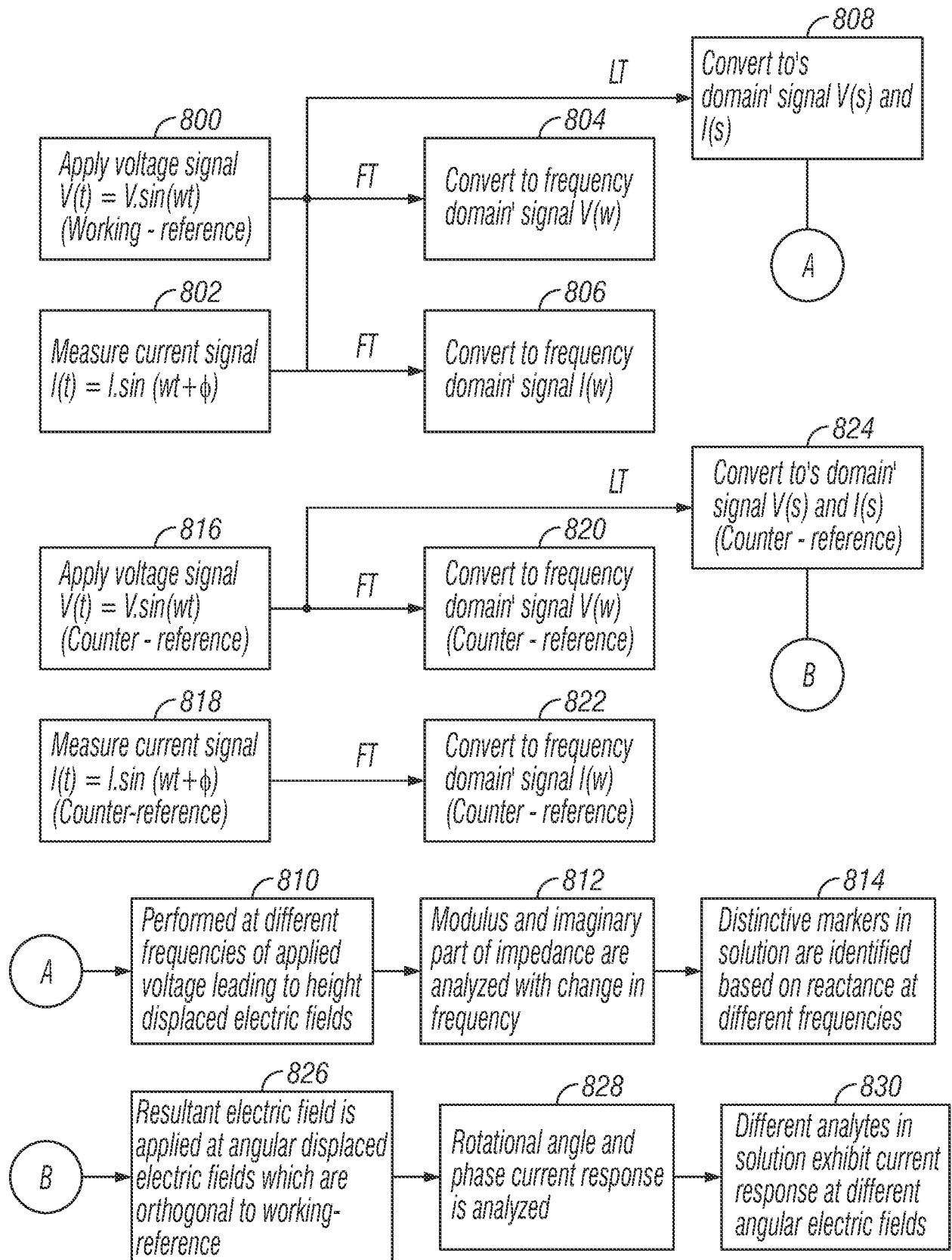


FIG. 12

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species	OPTIMAL SYSTEM	Receptor	frequency	Phase	Detection Limits
protein	2 or 3 electrode	Antibody	under 1000 Hz	sync	1fg/mL
long, ds DNA	3 electrode	ssDNA,dsDNA	under 1000 Hz	sync	1 mM
long RNA	3 electrode	ssDNA,dsDNA	under 1000 Hz	sync	1 mM
DNA oligo	3 electrode	ssDNA,dsDNA	under 1000 Hz	sync	1 mM
miRNA	2 or 3 electrode	miRNA	under 1000 Hz	sync	10 nM
steroids	2 or 3 electrode	enzyme,antibody	under 1000 Hz	sync	1 pg/mL
fatty acids	2 or 3 electrode	enzyme,antibody	under 1000 Hz	sync	1 pg/mL
lipids/phospholipids	2 or 3 electrode	enzyme,antibody	under 1000 Hz	sync	1 pg/mL
LPS	2 or 3 electrode	Antibody	under 1000 Hz	sync	

FIG. 13

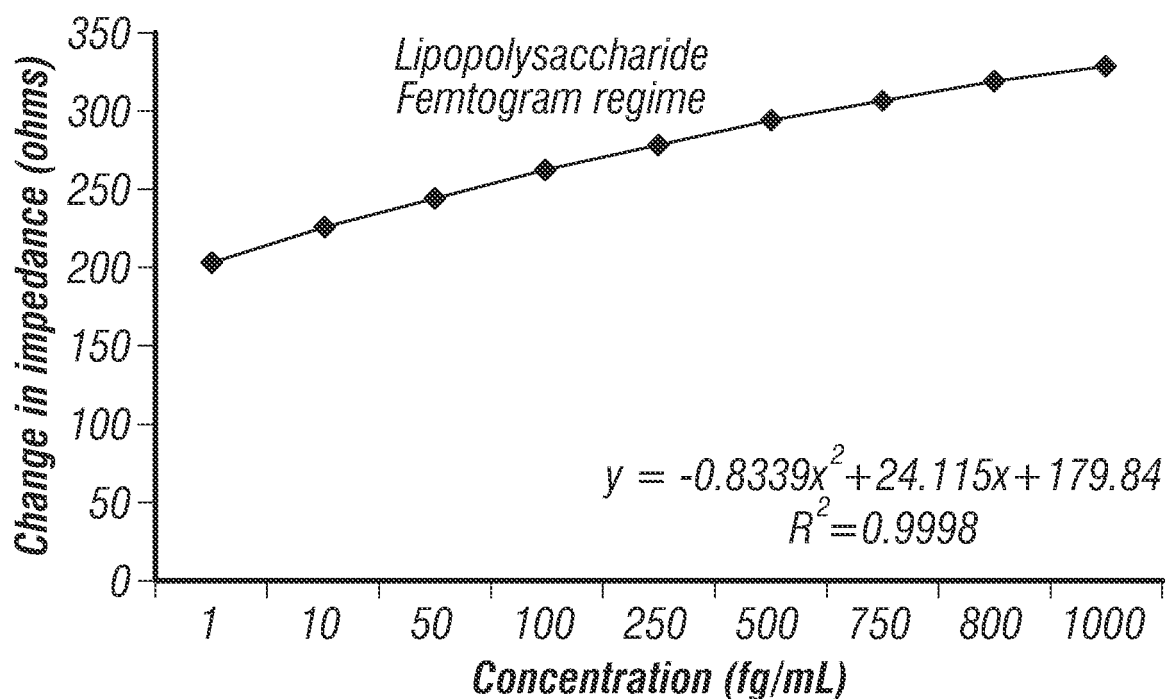


FIG. 14

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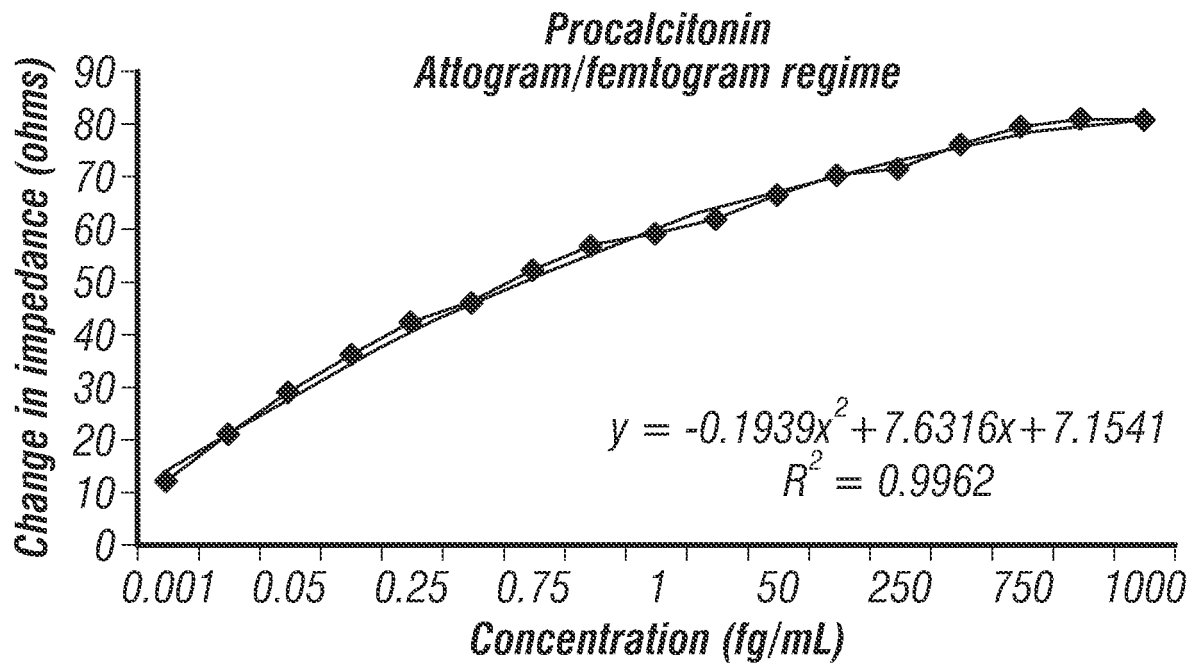


FIG. 15

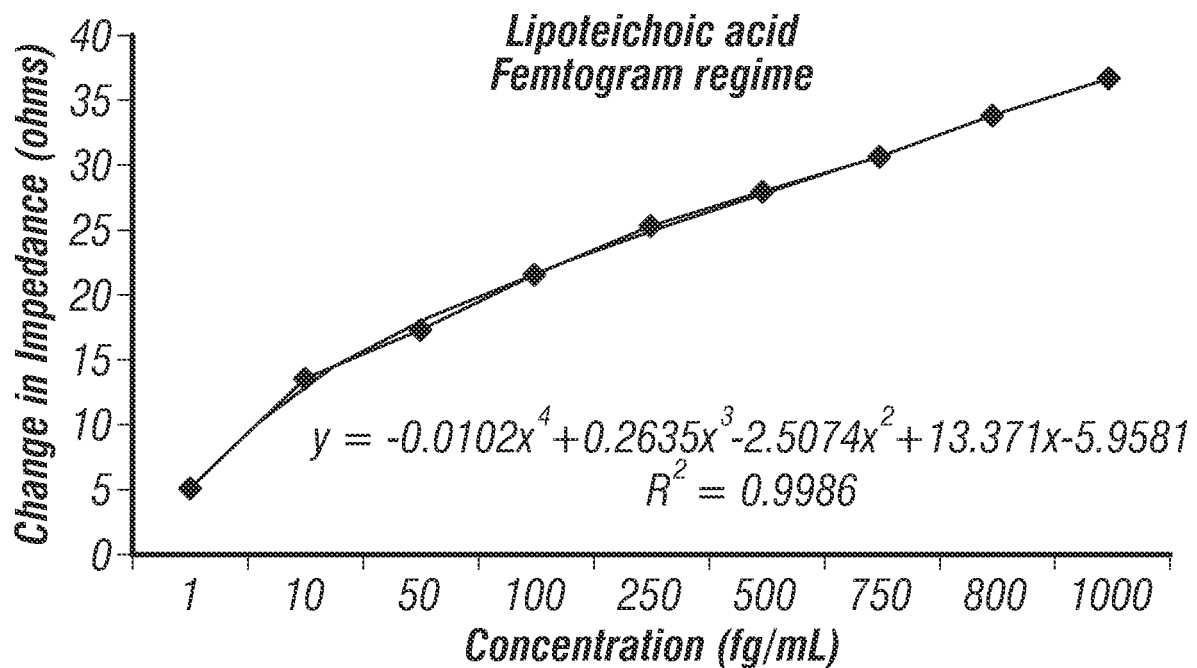


FIG. 16

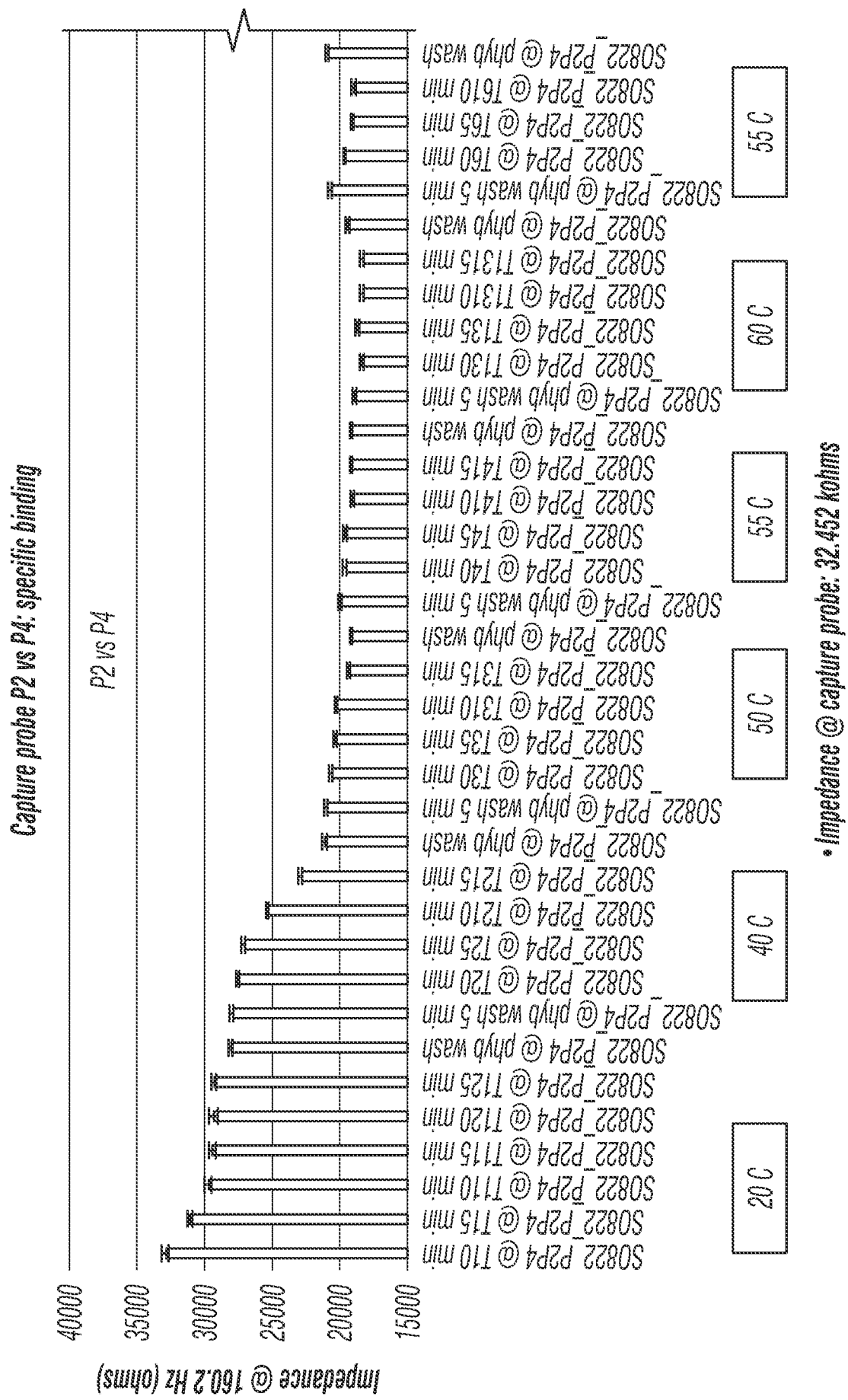
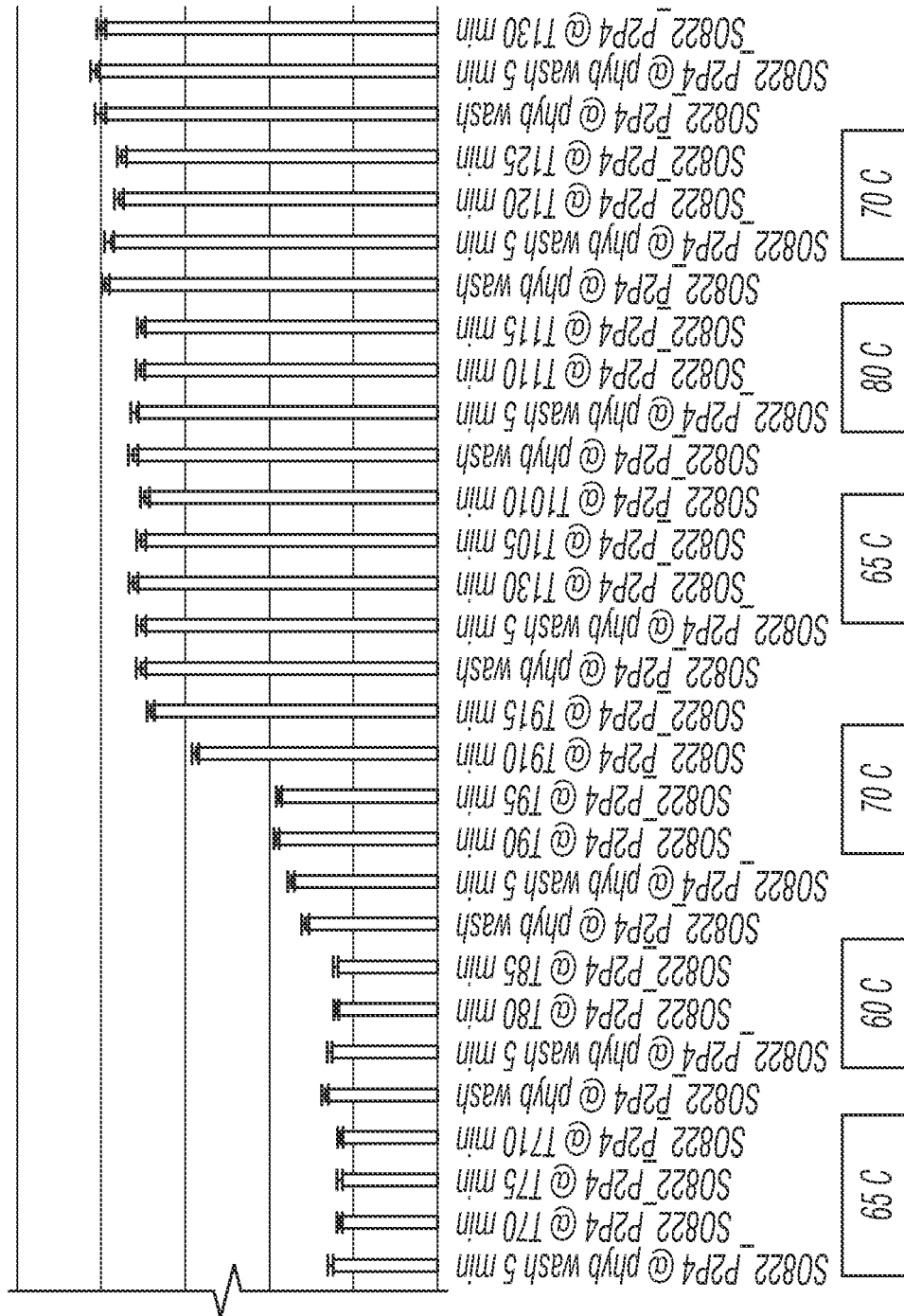


FIG. 17

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Capture probe P2 vs P4: specific binding



• Impedance @ capture probe: 32.452 kohms

FIG. 17 (Cont'd)

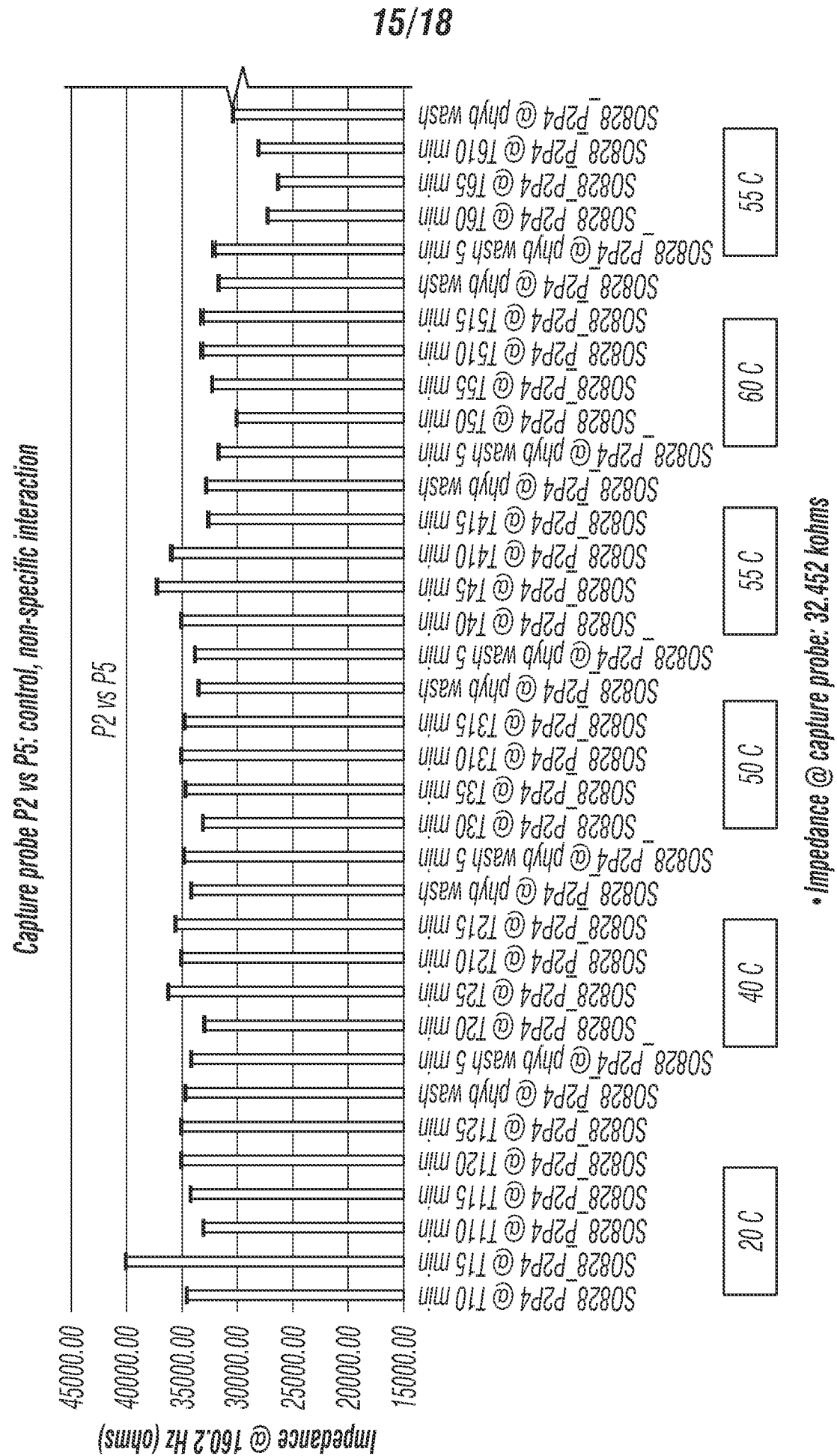
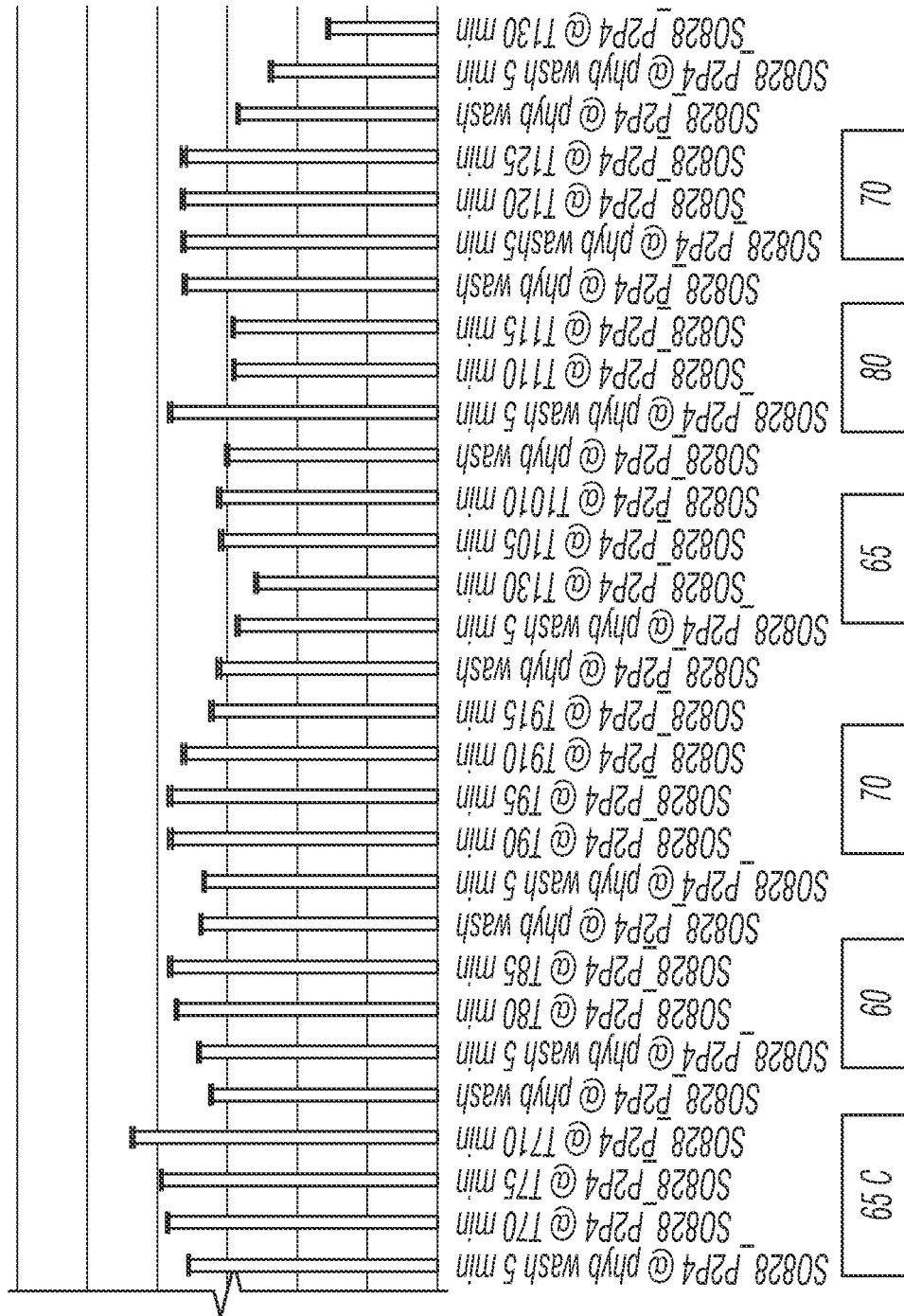


FIG. 18

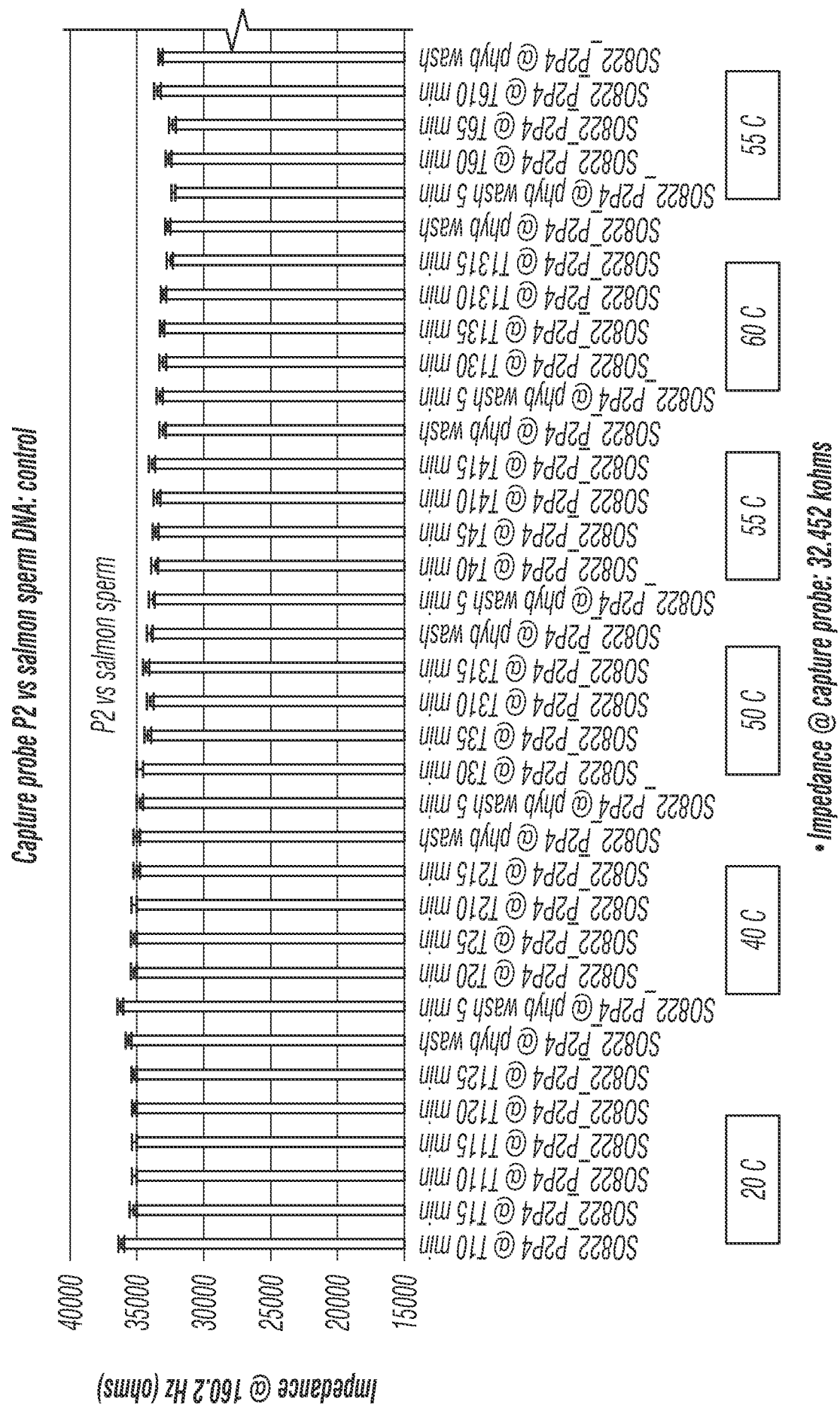
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Capture probe P2 vs P5: control, non-specific interaction



• Impedance @ capture probe: 32.452 kohms

FIG. 18 (Cont'd)



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Capture probe P2 vs salmon sperm DNA: control

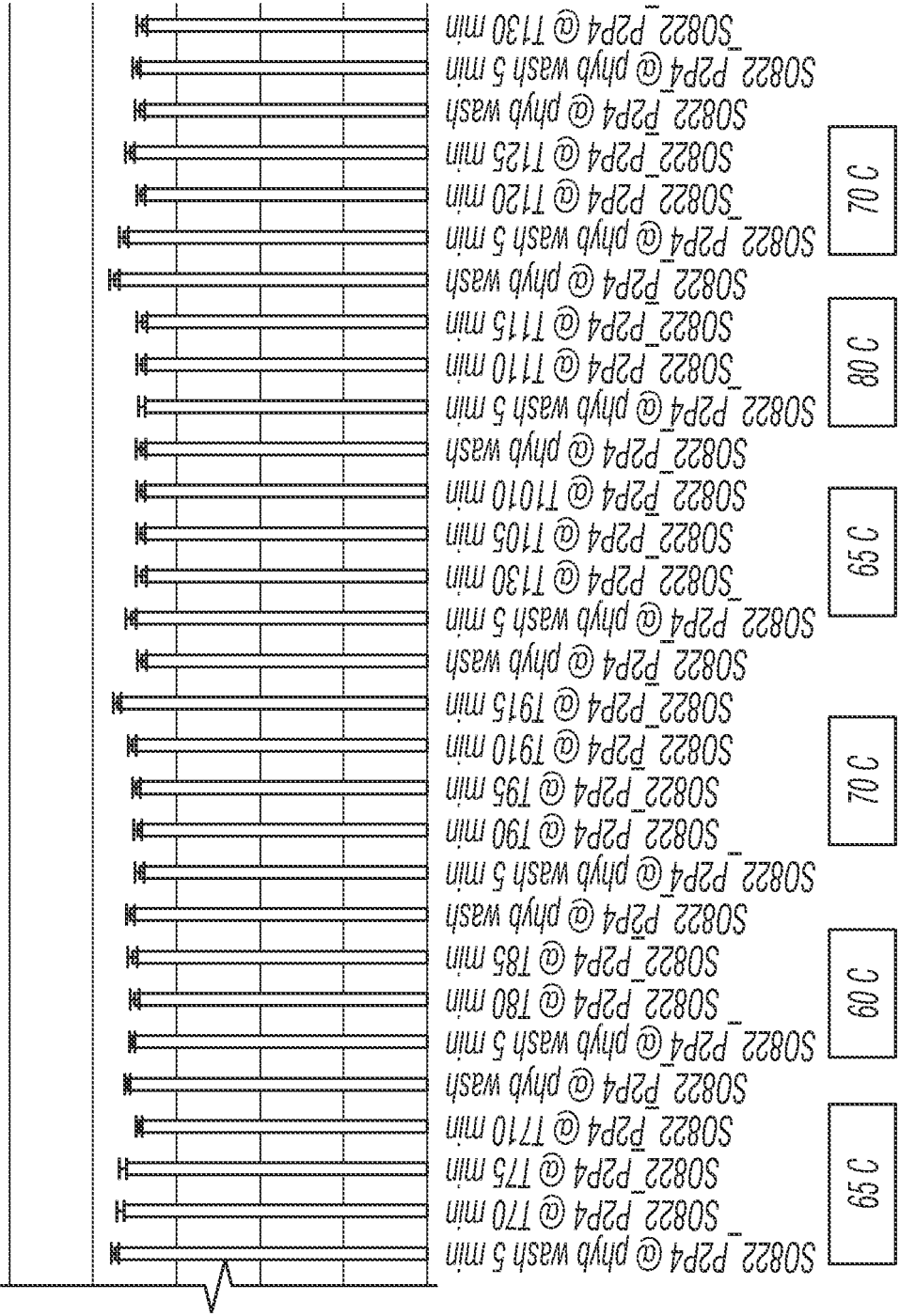


FIG. 19 (Cont'd)