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**UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF CALIFORNIA**

MORVIL TECHNOLOGY, LLC,

Plaintiff,

vs.

MEDTRONIC ABLATION FRONTIERS,  
LLC, and MEDTRONIC, INC.,

Defendants.

CASE NO. 10-CV-2088 BEN (BGS)

**CLAIM CONSTRUCTION ORDER**

In this patent infringement action, the parties seek construction of thirteen claim terms found in U.S. Patent Nos. 5,383,917; 5,620,481; 5,693,078; and 7,151,964. Having considered the papers filed by the parties and oral argument on the motion, the Court construes the terms as follows. This Order supersedes and replaces the Tentative Claim Construction Order (Docket No. 90).

**BACKGROUND**

The patented inventions are devices and techniques for treating cardiac arrhythmias, or irregular heart beats. A cardiac arrhythmia is caused when an extraneous strand of muscle fiber in the heart creates an abnormal short circuit, which alters the normal timing for electric impulses in the heart. Cardiac arrhythmias can be treated by ablations,<sup>1</sup> which interrupt or modify the electrical conduction that causes the short circuit. Previous types of ablation include causing energy to flow between a single electrode on the tip of a catheter<sup>2</sup> to a larger backplate acting as a ground electrode,

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<sup>1</sup> "Ablation" refers to damaging tissue.

<sup>2</sup> A "catheter" is a medical device that can be inserted into a body cavity, duct, or vessel.

1 and causing electrical energy to flow among multiple electrodes at the end of a catheter. The energy  
2 heats the cardiac tissue, which produces lesions. The goal is for the lesions to interrupt the abnormal  
3 electrical conduction. These procedures draw ablation patterns of distinct lines from electrode to  
4 electrode, which leave gaps in the ablation zone. As a result, these procedures may leave unablated  
5 tissue that allows short-circuiting to continue.

6 Plaintiff's patented inventions produce larger, uniform lesions by using a catheter that contains  
7 an arrangement of multiple electrodes and a generator that delivers radio frequency ("RF") energy to  
8 the electrodes in multiple voltage phases. The differences in voltage phases between electrodes allow  
9 current to flow between the electrodes<sup>3</sup> and heat the tissue, resulting in lesions. In the '917 and '078  
10 Patents, phased RF voltages are delivered to electrodes in a catheter to create substantial potential  
11 differences between the electrodes. In these inventions, the electrical current being delivered by the  
12 electrodes flows primarily in lateral directions on the surface of the ablated tissue. In the '481 and the  
13 '964 Patents, there is another auxiliary electrode that is placed on the back of the patient undergoing  
14 ablation, which is called a backplate. This auxiliary electrode allows for an additional flow of  
15 electrical current in a direction perpendicular to the tissue surface undergoing ablation.

16 The application for the '917 Patent was filed on July 5, 1991. The '078 Patent is a continuation  
17 of the '917 Patent. The application that issued as the '481 Patent was filed on June 7, 1995, as a  
18 continuation-in-part of the application for the '078 Patent. The '964 Patent issued from a line of  
19 continuation applications that began with a continuation based on the application for the '481 Patent.  
20 The specifications of the patents at issue, therefore, all derive from the specification of the '917 Patent.

21 Plaintiff brings this action for infringement of the '917, '481, '078, and '964 Patents.  
22 Specifically, Plaintiff asserts the following claims against Defendants Medtronic Ablation Frontiers  
23 LLC and Medtronic, Inc.: Claims 1, 5, 6, and 10 of the '917 Patent; Claim 1 of the '481 Patent; Claims  
24 1, 2, and 3 of the '078 Patent; and Claims 1 and 2 of the '964 Patent. The parties have submitted  
25 competing constructions for the disputed terms found in the four patents.

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27 <sup>3</sup> Electrical current will flow between two electrodes when (1) RF energy of different  
28 voltages is delivered to the two electrodes, and (2) the same voltage is delivered to the electrodes,  
if the voltages are "phased" relative to each other. A RF voltage's "phase" is its relationship in  
time relative to another RF voltage. Two voltages are phased if the voltages arrive at their  
destination at different times.

1 **DISCUSSION**

2 **I. LEGAL STANDARD**

3 “It is a bedrock principle of patent law that the claims of a patent define the invention to  
4 which the patentee is entitled the right to exclude.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed.  
5 Cir. 2005) (internal quotation marks omitted). Courts determine the meaning of disputed claim terms  
6 from the perspective of a person of ordinary skill in the art at the time the patent is filed. *Chamberlain*  
7 *Group, Inc. v. Lear Corp.*, 516 F.3d 1331, 1335 (Fed. Cir. 2008). Claim terms “are generally given  
8 their ordinary and customary meaning.” *Phillips*, 415 F.3d at 1312 (internal quotation marks omitted).

9 When construing claim terms, the court should first look to sources in the intrinsic record.  
10 *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). First, “the claims  
11 themselves provide substantial guidance as to the meaning of particular claim terms.” *Phillips*, 415  
12 F.3d at 1314. Second, the claims “must be read in view of the specification, of which they are a part.”  
13 *Id.* at 1315 (internal quotation marks omitted). The specification is usually “dispositive,” as “it is the  
14 single best guide to the meaning of a disputed term.” *Id.* (internal quotation marks omitted). Third,  
15 the court should consider the patent’s prosecution history, which is the record of proceedings before  
16 the Patent and Trademark Office (“PTO”) and includes the prior art cited during the patent  
17 examination. *Id.* at 1317. However, “because the prosecution history represents an ongoing  
18 negotiation between the PTO and the applicant, rather than the final product of that negotiation, it  
19 often lacks the clarity of the specification and thus is less useful for claim construction purposes.” *Id.*

20 If the intrinsic evidence resolves the ambiguity in the disputed claim terms, then “it is improper  
21 to rely on extrinsic evidence.” *Vitronics*, 90 F.3d at 1583. If ambiguities in the claim terms remain,  
22 however, courts may consider extrinsic evidence. *Id.* at 1584. Extrinsic evidence includes expert  
23 testimony, inventor testimony, dictionaries, and scientific treatises. *Phillips*, 415 F.3d at 1317.

24 **II. THE ’917, ’481, ’078, AND ’964 PATENTS**

25 The parties dispute thirteen claim terms found in the ’917, ’481, ’078, and ’964 Patents.  
26 Because the patents at issue are all from the same family and the specifications are nearly identical,  
27 Plaintiff contends that the terms should be construed consistently across the patents. Defendants do  
28 not object. Accordingly, the terms will be construed consistently across the patents. Each term will

1 be addressed in turn.

2 **A. “Ablation” [All Asserted Claims]**

3 The parties have agreed that “ablation” should be construed as “damaging of tissue.” (See  
4 Pl. Resp. Br. at 3 n.2; Defs. Resp. Br. at 1.) Accordingly, “ablation” shall be construed as “damaging  
5 of tissue.”

6 **B. “Supplying Individual[ly] Phased RF Voltages . . .” [Claim 1 of the ’917,  
7 ’481, and ’964 Patents]**

8 The parties dispute the term “supplying individual[ly] phased RF voltages” in Claim 1 of the  
9 ’917, ’481, and ’964 Patents. The proposed constructions are as follows:

Term	Plaintiff’s Construction	Defendants’ Construction
“supplying <i>individual phased</i> RF voltages to each of said plurality of electrodes” [Claim 1 of the ’917 Patent]	“supplying radio frequency voltages to each electrode in the array, where at least two voltages are at a different phase and the phase of each voltage is <i>independently established</i> ” <sup>4</sup>	“supplying <i>unique phased</i> RF voltages to each electrode in said array”
“supplying <i>individually phased</i> RF voltages to each electrode in said array of electrodes and said auxiliary electrode” [Claim 1 of the ’481 Patent]	“supplying radio frequency voltages to each electrode in the array and to the auxiliary electrode, where at least two voltages are at a different phase and the phase of each voltage is <i>independently established</i> ”	“supplying <i>unique phased</i> RF voltages to each electrode in said array and to said auxiliary electrode”
“a radio frequency energy source having a plurality of voltage outputs, each supplying <i>individually-phased</i> radio frequency voltages; and a plurality of electrical connections that couple said array of electrodes to said voltage outputs” [Claim 1 of the ’078 Patent]	“a radio frequency energy source that supplies radio frequency voltages, where at least two voltages are at a different phase and the phase of each voltage is <i>independently established</i> ”	“a radio frequency energy source supplying <i>uniquely phased</i> RF voltages to the electrodes in said array”

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<sup>4</sup> The Court’s adopted construction is highlighted.

<p>1 “a power supply 2 supplying 3 <i>individually phased</i> 4 RF voltages to <i>each</i> 5 electrode in said array 6 and to said auxiliary 7 electrode” 8 [Claim 1 of the '964 9 Patent]</p>	<p>“a power supply supplying radio frequency voltages to each electrode in the array and to the auxiliary electrode, where at least two voltages are at a different phase and the phase of each voltage is <i>independently</i> <i>established</i>”</p>	<p>“a power supply supplying <i>uniquely phased</i> RF voltages to each electrode in said array and to said auxiliary electrode”</p>
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7 The Court adopts the Plaintiff’s proposed construction of “supplying individual[ly] phased  
8 RF voltages.” The specification of the '917 Patent establishes that the voltages are “individually”  
9 phased if the phases of the voltages are independently established. That is, each individually phased  
10 voltage is independently established by its own phase shifting circuit:

11 FIG. 3a shows one embodiment of the multi-phase radio-frequency power supply in  
12 FIG. 2b. It comprises a main single-phase power supply 231, *the output 233 of which*  
13 *is sent in parallel to a plurality of phase shifting circuits 241. The output voltages*  
14  *$V_{10}$ - $V_{60}$  from these phase shifting circuits 241 have substantially the same amplitudes,*  
15 *but their phases are shifted relative to each other. Referring also to FIG. 2b, each*  
16 *individual phased voltage such as  $V_{10}$  is supplied via a line 221 to an electrode 201*  
17 *connected thereto.*

16 (JA 13 ['917 Patent at 6:11-20] (emphasis added).)

17 In addition, the '917 Patent shows that each phased voltage ( $V_{10}$ - $V_{60}$ ) is independent of each  
18 other and delivered by individual RF power sources:

19 FIG. 4 shows another embodiment of the multi-phase radio-frequency power supply  
20 220 in FIG. 2b. It comprises a plurality of individual RF power source 261. *Each*  
21 *individual RF power source 261 is capable of delivering a voltage such as one of  $V_{10}$ -*  
22  *$V_{60}$  with independent amplitude and phase, one for each electrode 201 connected*  
23 *thereto.*

23 (*Id.* ['917 Patent at 6:32-38] (emphasis added).)<sup>5</sup>

24 Furthermore, in the '917 Patent, two individually phased voltages are delivered to four

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26 <sup>5</sup> Defendants argue that labeling scheme,  $V_{10}$ - $V_{60}$ , indicates that each wire has a unique  
27 voltage. According to Defendants, the primary focus of the patents is an embodiment with seven  
28 electrodes, one assigned to the ground terminal,  $V_{00}$ , and the remaining six each assigned to a  
different, unique phase of RF voltage:  $V_{10}$ ,  $V_{20}$ ,  $V_{30}$ ,  $V_{40}$ ,  $V_{50}$ , and  $V_{60}$ . On the contrary,  $V_{00}$  is the  
“reference potential” and the labeling of the voltages  $V_{10}$ - $V_{60}$  is simply a number scheme, with no  
indication of the voltage. (*See* Defs. Resp. Br., Exh. 1 [Panescu Depo.], at 52-53.)

1 electrodes, with the first individually phased voltage ( $V_{10}$ ) going to one pair of electrodes, and the other  
2 individually phased voltage ( $V_{20}$ ) going to the other pair of electrodes:

3  
4 FIG. 8a illustrates the five-electrode OECA being used as a two-phase ablation  
5 apparatus according to a preferred embodiment. A 600-KHz RF, two-phase energy  
6 source produces voltages  $V_{00}$ ,  $V_{10}$ ,  $V_{20}$  with  $V_{00}$  being at ground potential and zero  
7 phase. *The voltages  $V_{10}$ ,  $V_{20}$  are approximately the same amplitude but have a phase  
8 difference  $\delta\theta_{12}$  in the range:  $70^\circ$ - $110^\circ$ .* The central electrode 409 is connected to  $V_{00}$ .  
9 *The peripheral electrodes 405 form two diagonal pairs. One pair is connected to  
10  $V_{10}$ , and the other pair to  $V_{20}$ .*

11 (JA 14-15 [’917 Patent at 8:66-9:7] (emphasis added).) This means that each individually phased  
12 voltage need not be delivered to its own electrode.

13 In addition, the ’917 Patent’s Summary of the Invention describes an embodiment where “a  
14 two-phase RF power source is used in conjunction with an orthogonal electrode catheter array.” (JA  
15 12 [’917 Patent at 3:55-56].) The array has “a central electrode and four peripheral electrodes,” with  
16 “[t]he central electrode [] connected to a ground voltage of the power supply” and the “four peripheral  
17 electrodes form[ing] two diagonal pairs which are respectively connected to two *individually phased*  
18 voltages of the power supply.” (*Id.* [’917 Patent at 3:60-65] (emphasis added).) Therefore, the  
19 voltages are described as “individually phased,” even though the electrodes in the first diagonal pair  
20 are at the same, first voltage phase, and the electrodes in the second diagonal pair are at the same,  
21 second voltage phase. They are described as “individually phased” because they are independently  
22 established by the generator. A construction—such as Defendants’—that excludes a preferred  
23 embodiment from the scope of the claims is “rarely, if ever, correct.” *See Vitronics*, 90 F.3d at 1583-  
24 84.

25 Next, the Court will consider the prosecution history of the ’917 Patent. Application Claim  
26 1 (later issued as Claim 1) was directed to “[a] radio-frequency ablation apparatus for biological tissues  
27 comprising . . . means for supplying individual phased RF voltages.” (JA 62 [’917 File History,  
28 Originally Filed Claims].) The Examiner rejected the claim as anticipated by an article authored by  
the inventors (among others), Jawahar M. Desai, et al., *Two Phase Radiofrequency Catheter Ablation  
of Isolated Ventricular Endomyocardium*, 14 PACING AND CLINICAL ELECTROPHYSIOLOGY 1179  
(1991). (JA 124-25 [Mar. 16, 1993 Office Action].) The *Desai* article described a radiofrequency

1 generator that supplied “individual[ly] phased” RF voltages. The generator supplied independently  
2 established RF voltages in two phases to four electrodes. Two of the electrodes had the first voltage  
3 phase and the remaining two had the second voltage phase. (Tucker Decl., Exh. F [*Desai* Article], at  
4 MED056158, Fig. 3B.) Because the *Desai* article described a system in which multiple electrodes  
5 shared the same phase, the electrodes were not “uniquely phased.” (See Pl. Op. Br., Exh. A [Panescu  
6 Decl. ¶ 37].)

7 In responding to the Examiner, the inventors did not dispute that the *Desai* article described  
8 a “means for supplying individual[ly] phased RF voltages.” They instead submitted declarations from  
9 Drs. Vera and Tesluk stating that they did not contribute to the claimed invention. (JA 140-44 [’917  
10 File History].) These declarations established that the *Desai* article was not prior art, and therefore did  
11 not anticipate Application Claim 1, even though it described “individual[ly] phased RF voltages.” (JA  
12 151 [Oct. 28, 1993 Office Action].) This suggests that “individual[ly] phased” does not require each  
13 electrode to have a “unique” phase.

14 First, Defendants argue that the embodiment in which *each* electrode is supplied with  
15 uniquely phased RF voltages is the only disclosed embodiment that can achieve substantial potential  
16 differences between *substantially any* two electrodes in the array. (See, e.g., JA 16 [’917 Patent at  
17 11:1-5] (“substantial potential difference exists between substantially any two electrodes of said array  
18 of electrodes” to “achieve uniform ablation”).) This argument, however, is undermined by  
19 Defendants’ proposed construction of this claim limitation, which requires a substantial potential  
20 difference to exist between the “vast majority” of electrodes, rather than between *each* electrode.  
21 (Defs. Op. Br. at 10-11.) Therefore, Defendants concede that “substantial potential difference[s]” can  
22 exist between electrodes even where the electrodes are not “uniquely phased.”

23 Second, Defendants argue that the claims that do not refer to “individually” phased RF  
24 voltages refer to particular spatial arrangements between the electrodes. According to Defendants,  
25 these specific spatial arrangements are essential when the RF voltages are commonly phased in order  
26 to produce the “fill” amongst the electrodes. However, Claim 4 of the ’078 Patent (which shares the  
27 same disclosure as the ’917 Patent), does not require “individually” phased RF voltages and also does  
28 not require “particular spatial arrangements between the electrodes,” undermining Defendants’

1 position. Specifically, Claim 4 requires “placing at least some of the electrodes of said array near a  
2 region of biological tissues to be ablated” and “supplying phased RF voltages to said array of  
3 electrodes; such that, over a predetermined period of time, substantial potential differences exist  
4 between a plurality of pairs of electrodes in the array . . .” (JA 227 [’078 Patent at 10:47-53].)

5 Third, Defendants argue that there is a distinction between the power supply and the  
6 electrodes, and the “individual[ly] phased” element is directed toward the electrodes and not toward  
7 the power supply. However, such a distinction is inconsistent with the plain language of the claims.  
8 The claims recite “*means for supplying individual[ly] phased RF voltages,*” “*radio frequency energy*  
9 *source* having a plurality of voltage outputs, *each supplying* individually-phased radio frequency  
10 voltages,” or “*a power supply supplying* individually phased RF voltages.” (JA 15 [’917 Patent at  
11 10:67] (emphasis added); JA 227 [’078 Patent at 10:24-26] (emphasis added); JA 419 [’481 Patent  
12 at 14:7] (emphasis added); JA 877 [’964 Patent at 13:18-19] (emphasis added).)

13 Fourth, Defendants argue that the specification describes two structures capable of supplying  
14 uniquely phased RF voltages. (Defs. Op. Br. at 9 (citing JA 13 [’917 Patent at 6:18-20, 6:35-37]).)  
15 Although the specification may describe some unique phasing embodiments, the claims are not limited  
16 to unique phasing. “To disavow claim scope, the specification must contain expressions of manifest  
17 exclusion or restriction, representing a clear disavowal of claim scope.” *Retractable Techs., Inc. v.*  
18 *Becton, Dickinson & Co.*, 653 F.3d 1296, 1306 (Fed. Cir. 2011) (internal quotation marks omitted).  
19 The specification does not contain such a disavowal of a system with electrodes at the same voltage  
20 phase.

21 **C. “Phased RF Voltages” [Claim 6 of the ’917 Patent]**

22 The parties dispute the term “phased RF voltages” in Claim 6 of the ’917 Patent. Their  
23 proposed constructions are as follows:

Term	Plaintiff’s Construction	Defendants’ Construction
“phased RF voltages”	“radio frequency voltages, where at least two voltages are at a different phase”	“two radiofrequency voltages at non-zero phases and a radiofrequency voltage at zero phase”

27 “Phased RF voltages” shall be construed as “radio frequency voltages, where at least two  
28 voltages are at a different phase.” This construction is very similar to the construction for



1 “individual[ly] phased RF voltages.” “Individually” modifies “phased RF voltages,” so “individual[ly]  
 2 phased RF voltages” are a particular type of phased RF voltages. Plaintiff’s construction contains the  
 3 requirement that “at least two voltages are at a different phase” because voltages cannot be “phased”  
 4 unless there is more than one voltage. (JA 13 [’917 Patent at 6:15-20, 6:35-37]; *see also* Pl. Op. Br.,  
 5 Panescu Decl. ¶ 33.)

6 Defendants argue that because the term “phased RF voltages” is found in the means-plus-  
 7 function clause in Claim 6, this term must correspond to structures that supply two RF voltages at non-  
 8 zero phases and a RF voltage at zero phase. However, the court must *first* identify and construe the  
 9 function, *then* determine the corresponding structure by consulting the specification. *Lockheed Martin*  
 10 *Corp. v. Space Sys./Loral, Inc.*, 324 F.3d 1308, 1318-20 (Fed. Cir. 2003). The term “phased RF  
 11 voltages” is located in the identified function of Claim 6, as discussed below. Accordingly, the  
 12 determination of the correct structure is dependent on a proper construction of the function.

13 **D. “Substantial Potential Difference[s] Exist[s] Between Substantially Any**  
 14 **Two Electrodes of Said Array [and Said Auxiliary Electrode]” [Claim 1**  
 15 **of the ’917, ’481, and ’964 Patents]**

16 The parties dispute the term “substantial potential difference[s] exist[s] between substantially  
 17 any two electrodes of said array [and said auxiliary electrode]” in Claim 1 of the ’917, ’481, and ’964  
 18 Patents. Their proposed constructions are as follows:

Term	Plaintiff’s Construction	Defendants’ Construction
“substantial potential difference[s] exist[s] between <i>substantially any two</i> electrodes of said array [and said auxiliary electrode]”	“potential difference[s] that <i>allow[s] or cause[s]</i> radio frequency currents to flow between a <i>significant number of electrodes</i> in the array [and the auxiliary electrode]”	“potential difference[s] that <i>cause[s]</i> radio frequency currents to flow between the <i>vast majority of the combinations of any two electrodes in the array [and between the vast majority of combinations of the electrodes in the array and the auxiliary electrode]</i> ”

27 The parties dispute three aspects of construction: (1) whether substantial potential difference  
 28 existing between electrodes *allows or causes* RF currents to flow (Plaintiff’s position) or *causes* RF

1 currents to flow (Defendants' position); (2) whether "substantially any two electrodes" refers to a  
2 significant number of the electrodes (Plaintiff's position) or the vast majority of the combinations of  
3 available electrodes (Defendants' position); and (3) whether claims reciting an auxiliary electrode  
4 require substantial potential differences between either the electrodes in the array *or* electrodes in the  
5 array and the auxiliary electrode (Plaintiff's position) or between both electrodes in the array, *and* the  
6 electrodes in the array as well as the auxiliary electrode (Defendants' position). Each of these disputes  
7 will be addressed in turn.

### 8 1. Allows vs. Causes

9 The parties dispute whether substantial potential difference existing between electrodes  
10 *allows or causes* RF currents to flow (Plaintiff's position) or *causes* RF currents to flow (Defendants'  
11 position). As explained in the specifications, where a phase difference exists between a pair of  
12 voltages, a potential difference is created. (JA 14 ['917 Patent at 7:27-29].) This potential difference  
13 either allows or causes radio frequency currents to flow. (*See, e.g., id.* ['917 Patent at 7:17-23]  
14 ("Therefore, the potential difference developed across electrodes (1) and (0) is  $V_{10}$ , and it *causes* a  
15 current to flow along a path **310** between the electrodes (1) and (0). Similarly, the potential difference  
16 developed across electrodes (2) and (0) is  $V_{20}$ , and it *causes* a current to flow along a path **320** between  
17 the electrodes (2) and (0)." (emphasis added)); *id.* ['917 Patent at 7:37-41] ("FIG. 6a illustrates the  
18 current distributions of a seven-electrode configuration as powered by a multi-phase supply. The  
19 phase difference between each adjacent pair of electrodes results in a potential difference and *allows*  
20 the currents to flow therebetween." (emphasis added)); JA 418 ['481 Patent at 12:17-32] ("This 3-  
21 phase configuration will *allow* RF currents to flow between electrodes whenever a sufficient potential  
22 difference exists. . . . With the addition of the backplate electrode **40**, a third set of current flow is  
23 possible. Current **335** now also flows from a electrode of the catheter to the backplate in a longitudinal  
24 direction." (emphasis added)). "Allow" and "cause" are used interchangeably to describe the effects  
25 of potential difference. *See Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d  
26 1111, 1119-20 (Fed. Cir. 2004) (although different words in a patent ordinarily have different  
27 meanings, "the patentee [may] use[] different words to express similar concepts even though it may  
28 be confusing drafting practice"). Therefore, Plaintiff's addition of "allow" is redundant. The Court

1 adopts a construction that recognizes that substantial potential difference existing between electrodes  
2 *causes* RF currents to flow.

## 3 **2. Significant Number vs. Vast Majority**

4 The parties dispute whether “substantially any two electrodes” refers to a significant number  
5 of the electrodes (Plaintiff’s position) or the vast majority of the combinations of available electrodes  
6 (Defendants’ position). Claims 1 of the ’917, ’481, and ’964 Patents state that substantial potential  
7 differences exist between “substantially any two electrodes” or “substantially any two electrodes of  
8 said array of electrodes and said auxiliary electrode” “to effect RF heating therebetween in order to  
9 achieve uniform ablation of biological tissues adjacent to said array of electrodes.” (JA 16 [’917  
10 Patent at 11:1-6]; JA 419 [’481 Patent at 14:10-15]; JA 877 [’964 Patent at 13:21-26].) This claim  
11 language (“substantially any”) is relative, providing that the vast majority of the electrodes must have  
12 a potential difference. Plaintiff attempts to remove the relativity, by arguing that the language is  
13 satisfied if there are many electrodes with substantial potential differences, even if it is a relatively  
14 small percentage of electrodes within the array. (Defs. Resp. Br., Exh. 1 [Panescu Depo.], at 101-02,  
15 114-15.)

16 Moreover, substantial potential differences among the electrodes in the array is designed to  
17 “achieve uniform ablation.” (*See, e.g.*, JA 15-16 [’917 Patent at 10:63-11:6].) In other words, the  
18 number of electrodes between which electrical currents flow must be such that uniform ablation  
19 adjacent to the electrodes is achieved. Only Defendants’ proposed construction—which requires radio  
20 frequency currents to flow between the vast majority of the combinations of any two  
21 electrodes—achieves the object of the invention, which is to “increase the size, depth and uniformity  
22 of lesions created by RF catheter ablations.” (JA 12 [’917 Patent at 3:14-16].) Under Plaintiff’s  
23 proposed construction, only a small fraction of the electrodes in an array of a large number of  
24 electrodes would need to have potential differences in order to achieve uniform ablation.

25 In addition, the only configurations identified as practicing the invention provide for  
26 substantial potential differences between the vast majority of the combinations of the electrodes. (*See*  
27 JA 8-9, 14-15 [’917 Patent at 7:37-44, 9:22-26, Figs. 6a and 8a].) In contrast, Figures 6b, 6c and 9a  
28 of the ’917 Patent demonstrate that substantial potential differences between a “substantial number”

1 of the electrodes result in an “uneven and ineffective” ablation. (See JA 14-15 [’917 Patent at 7:61-62,  
2 8:5-6, 9:47-49].) The Patentees’ disavowal of this claim scope is dispositive. See *Edwards*  
3 *Lifesciences LLC v. Cook Inc.*, 582 F.3d 1322, 1332-33 (Fed. Cir. 2009) (finding that the  
4 specification’s criticism of prior art “resilient wires” disclaimed scope encompassing resilient wires).

5 First, Plaintiff argues that the specifications show that uniform ablation can be achieved  
6 where a different number of RF currents flow between electrodes, and that every combination of  
7 electrodes do not need to have currents flowing between them in order to achieve uniform ablation.  
8 However, this is not inconsistent with Defendants’ proposed construction. Requiring radio frequency  
9 currents to flow between the *vast majority* of the combinations of any two electrodes is different from  
10 requiring that the currents flow between *every* combination of electrodes.

11 Second, Plaintiff argues that Defendants’ proposed construction is ambiguous, because it is  
12 unclear what percentage crosses the threshold from a “mere” majority to a “vast” majority. On the  
13 contrary, Defendants’ proposed construction (“vast majority”) is less ambiguous than Plaintiff’s  
14 proposed construction (“significant number”). Plaintiff’s proposed construction does not specify what  
15 percentage is necessary to constitute a “significant number,” or even whether a “significant number”  
16 is a majority or minority. The Court adopts a construction that recognizes that “substantially any two  
17 electrodes” refers to the vast majority of the combinations of available electrodes.

18 **3. Electrodes in the Array *or* Electrodes in the Array and the**  
19 **Auxiliary Electrode vs. Electrodes in the Array *and* the**  
20 **Electrodes in the Array as well as the Auxiliary Electrode**

21 Where the claims recite an auxiliary electrode, the parties dispute whether the claims require  
22 substantial potential differences either: (1) between the electrodes in the array *or* electrodes in the array  
23 and the auxiliary electrode (Plaintiff’s position); or (2) between both electrodes in the array *and* the  
24 electrodes in the array as well as the auxiliary electrode (Defendants’ position).

25 The claims require not only that substantial potential differences exist merely between the  
26 electrodes of the array and the auxiliary electrode, but also between the vast majority of the  
27 combinations of any two electrodes in the array. According to the Patentees, when ablation occurs  
28 between only the catheter electrodes and an auxiliary electrode, and not among the catheter electrodes

1 themselves, the potential differences are “unsatisfactory as there are substantial areas between the  
2 electrodes that remain unablated.” (JA 11-12 [’917 Patent at 2:66-3:2].)

3 Although Plaintiff opposes Defendants’ proposed construction, Plaintiff does not offer any  
4 argument in support of its proposed construction that substantial potential differences do not exist *both*  
5 between electrodes in the array *and* between the electrodes in the array and the auxiliary electrode.  
6 Accordingly, where the claims recite an auxiliary electrode, the Court adopts a construction that  
7 recognizes that substantial potential differences exist between *both* electrodes in the array *and* the  
8 electrodes in the array as well as the auxiliary electrode.

9 **E. “Substantial Potential Differences Exist Between Each Adjacent  
10 Electrode Pair” [Claim 6 of the ’917 Patent]**

11 The parties dispute the term “substantial potential differences exist between each adjacent  
12 electrode pair” in Claim 6 of the ’917 Patent. Their proposed constructions are as follows:

Term	Plaintiff’s Construction	Defendants’ Construction
“substantial potential differences exist between <i>each adjacent electrode pair</i> ”	“potential differences that <i>allow or cause</i> radiofrequency currents to flow between <i>each adjacent electrode pair</i> ”	“potential differences that <i>cause</i> radio frequency currents to flow between <i>the electrodes of one pair and the electrodes of any adjacent pair</i> ”

17 First, the parties dispute whether substantial potential differences existing between electrodes  
18 *allows or causes* RF currents to flow (Plaintiff’s position) or *causes* RF currents to flow (Defendants’  
19 position). For the reasons discussed above, the Court adopts a construction that recognizes that  
20 substantial potential differences existing between electrodes cause RF currents to flow.  
21

22 Second, the parties dispute whether the term “between each adjacent electrode pair” means  
23 between individual electrodes that make up a pair (Plaintiff’s position) or between electrodes of one  
24 pair and of another pair (Defendants’ position). For the following reasons, the Court adopts a  
25 construction that recognizes that “between each adjacent electrode pair” means between electrodes of  
26 one pair and of another pair.

27 The plain meaning of Claim 6 supports Defendants’ proposed construction. Claim 6 requires  
28 (1) an array of electrodes and (2) a plurality of adjacent electrode pairs among that array. (JA 16 [’917  
Patent at 11:34-36].) Each adjacent electrode pair is made of an electrode and one of its immediate

1 neighboring electrodes. (*Id.* [’917 Patent at 11:36-37].) “[S]ubstantial potential differences exist  
 2 between *each* adjacent electrode pair.” (*Id.* [’917 Patent at 11:41-43] (emphasis added).) Thus, Claim  
 3 6 requires substantial potential differences between electrodes of one pair (consisting of an electrode  
 4 and an immediate neighboring electrode) and the electrodes of an adjacent pair. In contrast, when the  
 5 claims require substantial potential differences to exist between one electrode and another electrode,  
 6 the claims refer to electrodes. (*See, e.g., id.* [’917 Patent at 11:1-3] (“substantial potential difference  
 7 exists between substantially *any two electrodes*” (emphasis added)).)

8 In addition, the goal of the ’917 Patent supports Defendants’ proposed construction. The  
 9 Patentees claimed differences between each adjacent electrode *pair* because the Patentees intended to  
 10 achieve “fill” in between and among all the electrode contacts, not just a line of ablation between two  
 11 electrodes. (*See, e.g., JA 14* [’917 Patent at 8:36-39] (“[B]y judicious pairing of the electrodes, a two-  
 12 phase RF supply is able to produce a fairly uniform lesion across the ablation zone spanned by the  
 13 electrode array.”); *JA 15* [’917 Patent at 9:22-24] (“It can be seen that current paths **333** run across all  
 14 adjacent pairs of electrode, substantially filling the ablation zone **411**.”).<sup>6</sup>

15 **F. “Substantial Potential Differences Exist Between a Plurality of Pairs of**  
 16 **Electrodes in the Array” [Claim 1 of the ’078 Patent]**

17 The parties dispute the term “substantial potential differences exist between a plurality of  
 18 pairs of electrodes in the array” in Claim 1 of the ’078 Patent. Their proposed constructions are as  
 19 follows:

Term	Plaintiff’s Construction	Defendants’ Construction
“substantial potential differences exist between a plurality of pairs of electrodes in the array”	“potential differences that allow or cause radio frequency currents to flow between at least two pairs of electrodes in the array”	“potential differences that cause radio frequency currents to flow between the electrodes of one pair and the electrodes of another pair for a plurality of the combinations of any pairs of electrodes in the array”

25 First, the parties dispute whether substantial potential differences existing between electrodes  
 26

27  
 28 <sup>6</sup> Defendants point to extrinsic evidence in support of their proposed construction. As the intrinsic evidence resolves the ambiguity in the claim terms, extrinsic evidence need not be considered.

1 *allows or causes* RF currents to flow (Plaintiff’s position) or *causes* RF currents to flow (Defendants’  
2 position). For the reasons discussed above, the Court adopts a construction that recognizes that  
3 substantial potential differences existing between electrodes cause RF currents to flow.

4 Second, the parties dispute whether the term “between a plurality of pairs of electrodes in the  
5 array” means between at least two pairs of electrodes in the array (Plaintiff’s position) or between the  
6 electrodes of one pair and the electrodes of another pair for a plurality of the combinations of any pairs  
7 of electrodes in the array (Defendants’ position). For the following reasons, the Court adopts a  
8 construction that recognizes that “between a plurality of pairs of electrodes in the array” means  
9 between the electrodes of one pair and the electrodes of another pair for a plurality of the combinations  
10 of any pairs of electrodes in the array.

11 The plain meaning of Claim 1 supports Defendants’ proposed construction that potential  
12 differences must exist between the electrodes of one pair and the electrodes of another pair for a  
13 plurality of the combinations of any pairs of electrodes in the array. The claim language specifically  
14 recites substantial potential differences existing “between a plurality of pairs of electrodes in the  
15 array . . . .” ( JA 247 [’078 Patent at 10:31-33].) Claim 1 states that the substantial potential  
16 differences exist *between pairs* of electrodes rather than between *individual* electrodes *within* a pair  
17 of electrodes. In contrast, the Patentees knew how to claim substantial potential differences between  
18 individual electrodes within a pair when that was intended. (*See, e.g.*, JA 15-16 [’917 Patent at 10:63-  
19 11:6.] (claiming “substantial potential differences between substantially *any two electrodes*” (emphasis  
20 added)).)

21 In addition, the goal of the ’078 Patent supports Defendants’ proposed construction. The  
22 invention must achieve “broad coverage of ablation,” a term the parties agreed means “ablation that  
23 substantially fills the ablation zone spanned by the array of electrodes.” Even if “between . . . pairs  
24 of electrodes” were construed to mean between individual electrodes, substantial potential differences  
25 must exist between more than two of these “pairs” if there are additional electrode pairs in the array.  
26 For example, substantial potential differences between only two out of four electrodes could not  
27 achieve broad coverage of ablation. (*See* JA 220-21, 226-27 [’078 Patent at 7:27-50, 8:65-9:14, Figs.  
28 6b, 6c, 9a, 9b] (describing ablation between fewer than a plurality of the combinations of any pairs as

1 “uneven and ineffective”).)

## 2 **G. Indefiniteness Arguments**

### 3 **1. Legal Standard**

4 A claim is invalid as indefinite under 35 U.S.C. § 112 if the Court determines that it is not  
5 amenable to construction. *Honeywell Int’l, Inc. v. Int’l Trade Comm’n*, 341 F.3d 1332, 1338 (Fed. Cir.  
6 2003). “A claim is indefinite if its legal scope is not clear enough that a person of ordinary skill in the  
7 art could determine whether a particular composition infringes or not.” *Geneva Pharm., Inc. v.*  
8 *GlaxoSmithKline PLC*, 349 F.3d 1373, 1384 (Fed. Cir. 2003); *see also Honeywell*, 341 F.3d at 1338  
9 (the definiteness requirement of § 112 “focuses on whether the claims, as interpreted in view of the  
10 written description, adequately perform their function of notifying the public of the scope of the  
11 patentee’s right to exclude” (internal quotation marks and alteration omitted)).

12 An argument that a claim is indefinite is more appropriately addressed at summary judgment.  
13 First, a party challenging a patent based on indefiniteness faces a high burden of proof, which is  
14 difficult to meet at the early stages of litigation. To prove indefiniteness, a party must “show[] by clear  
15 and convincing evidence that a skilled artisan could not discern the boundaries of the claim” based on  
16 the intrinsic evidence or knowledge of the relevant area of art. *Halliburton Energy Servs., Inc. v. M-I*  
17 *LLC*, 514 F.3d 1244, 1249-50 (Fed. Cir. 2008). Second, a finding of indefiniteness invalidates the  
18 patent claims entirely, rather than gives meaning to them. *Exxon Research & Eng’g Co. v. United*  
19 *States*, 265 F.3d 1371, 1376 (Fed. Cir. 2001); *see also Presidio Components, Inc. v. Am. Technical*  
20 *Ceramics Corp.*, No. 07-CV-893 IEG (NLS), 2008 WL 2397488, at \*3 (S.D. Cal. June 11, 2008);  
21 *Kowalski v. Ocean Duek Corp.*, No. 04-00055 BMK, 2007 WL 4104259, at \*3 (D. Haw. Nov. 19,  
22 2007); *Intergraph Hardware Techs. Co. v. Toshiba Corp.*, 508 F. Supp. 2d 752, 773 n. 3 (N.D. Cal.  
23 2007). Therefore, the Court will not address Defendants’ indefiniteness arguments and will construe  
24 all terms “amenable to construction, however difficult that task may be.” *Exxon*, 265 F.3d at 1375.<sup>7</sup>

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25  
26 <sup>7</sup> Defendants argue that it is appropriate to assess indefiniteness during claim construction,  
27 citing *PureChoice, Inc. v. Honeywell Int’l Inc.*, No. 06-CV-244, 2008 WL 190317, at \*7 (E.D.  
28 Tex. June 22, 2008), *aff’d*, 333 Fed. App’x 544 (Fed. Cir. 2009). It is true that in *PureChoice*, the  
court concluded that two claim terms were indefinite at the claim construction stage. *Id.* at \*7-8.  
In that case, however, the patent owner failed to reduce two telephone interviews with the patent  
examiner to a written statement. *Id.* at \*7. In addition, the written description of the patent was  
silent as to the terms at issue. *Id.* This lack of a written record rendered the claims indefinite. *Id.*



1                                   **2. Construction of Terms at Issue**

2                                   **a. “Uniform Ablation” [Claims 1 and 6 of the ’917 Patent,**  
3                                   **Claim 1 of the ’481 and ’964 Patents]**

4                                   The parties dispute the term “uniform ablation” in Claims 1 and 6 of the ’917 Patent as well  
5 as Claim 1 of the ’481 and ’964 Patents. The proposed constructions are as follows:

6

Term	Plaintiff’s Construction	Defendants’ Construction
“uniform ablation”	“ablation between electrodes”	Indefinite

7

8

9                                   The claims and specifications of the patents at issue establish that “uniform ablation” should  
10 be construed as “ablation between electrodes.” First, the claims themselves read: (1) a substantial  
11 potential difference exists *between electrodes* (either individual electrodes or pairs of electrodes); (2)  
12 the substantial potential difference effects RF heating *between the electrodes*; (3) in order to achieve  
13 *uniform ablation* of biological tissues adjacent to the array of the electrodes. (JA 16 [’917 Patent at  
14 11:1-5]; *id.* [’917 Patent at 11:41-45]; JA 227 [’078 Patent at 10:30-36]; JA 419 [’481 Patent at 14:10-  
15 15]; JA 877 [’964 Patent at 13:21-26].)

16                                   Second, the specifications discuss the formation of uniform lesions or the presence of  
17 uniform heating. (*See, e.g.*, JA 1 [’917 Patent, Abstract] (“Multi-phase RF ablation employing a two-  
18 dimensional or three-dimensional electrode array produces a multitude of currents paths on the surface  
19 of the ablation zone. This results in a *uniform lesion* with a size defined by the span of the electrode  
20 array.” (emphasis added)); JA 12 [’917 Patent at 3:29-39] (“[P]otential differences are created between  
21 each pair of electrodes in the array, thereby allowing current to flow between each pair of electrodes  
22 in the array to form a more *uniform heating pattern* therein . . . . [P]otential differences are created  
23 between at least adjacent pairs of electrodes in the array, thereby allowing current to flow between each  
24 adjacent pair in the array to form a more *uniform heating pattern* therein.” (emphasis added)); JA 14  
25 [’917 Patent at 8:36-39] (“Furthermore, by judicious pairing of the electrodes, a two-phase RF supply  
26 is able to produce a fairly *uniform lesion* across the ablation zone spanned by the electrode array.”  
27

28  
\_\_\_\_\_  
Such a lack of a written description is not applicable here.

1 (emphasis added).)

2 In addition, the specifications identify a problem with conventional ablation systems (only  
3 tissue under the electrode trip is ablated), while the specifications identify the Inventors' solution to  
4 this problem ("uniform ablation," *i.e.*, ablation in the areas between electrodes). Specifically, the  
5 Background of the Invention explains the problem of having substantial areas between electrodes  
6 unablated. (*See, e.g.*, JA 11 ['917 Patent at 2:19-26] ("Another technique is to apply a radio-frequency  
7 (RF) source to a standard electrode catheter . . . . When this is delivered between the distal tip of a  
8 standard electrode catheter and a backplate, it produces a localized RF heating effect. It causes a well  
9 defined, discrete lesion slightly larger than the tip electrode."); *id.* ['917 Patent at 2:40-45] ("A  
10 standard electrode catheter typically has a maximum electrode tip area of about 0.3 mm<sup>2</sup>. Therefore,  
11 the lesion created by the simple RF technique delivered through a standard electrode catheter may not  
12 be large enough to ablate the ventricular tachycardia."); *id.* ['917 Patent at 2:62-68] ("When used with  
13 a conventional RF power source in conjunction with a backplate, the five connecting electrodes will  
14 typically produce five lesion spots distributed over the area spanned by the electrode array. However,  
15 this arrangement has been found to be unsatisfactory as there are substantial areas between the  
16 electrodes that remain unablated. . . ."))

17 The Summary of Invention explains that the solution to this problem is to produce ablation  
18 between electrodes. (*See, e.g.*, JA 12 ['917 Patent at 3:28-31] ("[P]otential differences are created  
19 between each pair of electrodes in the array, thereby allowing current to flow between each pair of  
20 electrodes in the array to form a more uniform heating pattern therein."); *id.* ['917 Patent at 3:46-53]  
21 ("In this way, unlike conventional schemes, the various RF currents . . . flow parallel to the surface of  
22 the tissue between different pairs of electrodes. This arrangement allows various permutations of  
23 current paths to form on the tissue's surface, thereby adequately filling the ablation zone spanned by  
24 the array."))

25 First, Defendants argue that Plaintiff's construction improperly attempts to define the  
26 invention by what it does (achieve uniform ablation). Such a construction, however, is not improper.  
27 *See Funai Elec. Co., Ltd. v. Daewoo Elecs. Corp.*, 616 F.3d 1357, 1366 (Fed. Cir. 2010) ("The use of  
28 comparative and functional language to construe and explain a claim term is not improper. A

1 description of what a component does may add clarity and understanding to the meaning and scope  
2 of the claim. The criterion is whether the explanation aids the court and the jury in understanding the  
3 term as it is used in the claimed invention.”)

4 Second, Defendants argue that Plaintiff fails to distinguish “uniform ablation” from other  
5 types of ablation described in the patents. As explained above, however, the patents at issue  
6 distinguish between conventional ablation systems (in which only tissue under the electrode tip is  
7 ablated) and the inventions at issue here (in which ablation occurs in the areas between electrodes).<sup>8</sup>

8 **b. “A Predetermined Period of Time” [Claims 1 and 6 of the**  
9 **’917 Patent; Claim 1 of the ’481, ’078, and ’964 Patents]**

10 The parties dispute the term “a predetermined period of time” in Claims 1 and 6 of the ’917  
11 Patent, and Claim 1 of the ’481, ’078, and ’964 Patents. Their proposed constructions are as follows:

Term	Plaintiff’s Construction	Defendants’ Construction
“a predetermined period of time”	“a period of time of ablation that is set before ablation begins”	Indefinite <b>Alternative Construction:</b> To the extent that it can be construed, “ablation” in Plaintiff’s proposed construction should be replaced with the claim language “substantial potential difference”

18  
19 “A predetermined period of time” shall be construed as “a period of time of substantial  
20 potential difference that is set before ablation begins.” First, “predetermined” and “period of time”  
21 are commonly understood, so their constructions may be informed by their widely accepted meanings.  
22 (See Pl. Op. Br., Exh. B [Webster’s Ninth New Collegiate Dictionary], at 926 (defining “predetermine”  
23 as “to determine beforehand”); *Phillips*, 415 F.3d at 1314 (“In some cases, the ordinary meaning of  
24 claim language as understood by a person of skill in the art may be readily apparent even to lay judges,  
25 and claim construction in such cases involves little more than the application of the widely accepted  
26 meaning of commonly understood words.”).)

27  
28 <sup>8</sup> Both Plaintiff and Defendants point to extrinsic evidence in support of their proposed constructions. As the intrinsic evidence resolves the ambiguity in the claim terms, extrinsic evidence need not be considered.

1 Second, the event that occurs during the period of time is the existence of substantial  
2 potential differences between the electrodes of the array. This construction is supported by the plain  
3 meaning of the claim language. For instance, Claim 1 of the '917 Patent claims a “means for  
4 supplying individual phased RF voltages to each of said plurality of electrodes, such that, *over a*  
5 *predetermined period of time, substantial potential difference exists* between substantially any two  
6 electrodes of said array of electrodes.” (JA 15-16 ['917 Patent at 10:67-11:3] (emphasis added).)

7 Plaintiff argues that the event that occurs during the period of time is ablation. Specifically,  
8 Plaintiff argues that the claimed inventions are directed to ablation, so by reading the claims and  
9 specifications as a whole, one of ordinary skill in the art would understand the event to be the  
10 beginning of ablation. However, the phrase “time of ablation” does not appear in the claims. In  
11 addition, the portions of the '917 Patent that Plaintiff points to in support of its construction discuss  
12 applying power over a particular period of time. (*See* JA 10, 14-15 ['917 Patent at 8:7-19, 9:50-65,  
13 Fig. 10].) Power refers to the application of energy to create substantial potential differences.  
14 Accordingly, these parts of the '917 Patent support construing the event that occurs during the period  
15 of time as the existence of substantial potential differences between the electrodes of the array.

16 **H. “To Effect RF Heating Therebetween” [Claims 1 and 6 of the '917**  
17 **Patent; Claim 1 of the '481, '964, and '078 Patents]**

18 The parties dispute the term “to effect RF heating therebetween” in Claims 1 and 6 of the  
19 '917 Patent and Claim 1 of the '481, '964, and '078 Patents. The proposed constructions are as  
20 follows:

21 ///

22 ///

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Term	Plaintiff's Construction	Defendants' Construction	Court's Construction
<p>“to effect RF heating therebetween”</p>	<p>“to effect RF heating in the areas <i>between the electrodes</i>” [Claim 1 of the '917 Patent]</p> <p>“to effect RF heating in the areas <i>between each adjacent electrode pair</i>” [Claim 6 of the '917 Patent]</p> <p>“to effect RF heating in the areas <i>between a significant number of electrodes in the array</i> and the auxiliary electrode” [Claim 1 of the '481 and '964 Patents]</p> <p>“to effect RF heating in the areas <i>between at least two pairs of electrodes</i>” [Claim 1 of the '078 Patent]</p>	<p>“to effect RF heating <i>in the area spanned by the electrode array</i> [and in the area between the array of electrodes and the auxiliary electrode]”</p>	<p>“to effect RF heating in the areas <i>between the electrodes</i>” [Claim 1 of the '917 Patent]</p> <p>“to effect RF heating in the areas <i>between each adjacent electrode pair</i>” [Claim 6 of the '917 Patent]</p> <p>“to effect RF heating in the areas <i>between the vast majority of combinations of the electrodes in the array</i> and the auxiliary electrode” [Claim 1 of the '481 and '964 Patents]</p> <p>“to effect RF heating in the areas <i>between the electrodes of one pair and the electrodes of another pair for a plurality of the combinations of any pairs of electrodes in the array</i>” [Claim 1 of the '078 Patent]</p>

The parties dispute the location of heating.<sup>9</sup> The Court construes “to effect RF heating therebetween” as requiring heating between subsets of electrodes or pairs of electrodes. The word “therebetween” in each claim refers to the earlier usage of “between” earlier in that claim. When “therebetween” is read in the context of the claim in which it is used, the area that is heated differs based on the claim. *See Arlington Indus., Inc. v. Bridgeport Fittings, Inc.*, 345 F.3d 1318, 1325 (Fed. Cir. 2003) (“The context of the surrounding words in a claim also must be considered in determining

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<sup>9</sup> Although Plaintiff argues that the type of heating is also in dispute, the parties agree that the term requires RF heating. (*See* Pl. Op. Br. at 13 (“the effected heating is *radiofrequency (or ‘RF’)* heating” (emphasis added)); Defs. Op. Br. at 17 (“this term calls for *RF heating* in an area spanned by electrodes” (emphasis added)).)

1 the ordinary and customary meaning of a disputed claim limitation.”). Accordingly, the Court largely  
2 adopts Plaintiff’s proposed construction, with the exceptions discussed below.

3 Defendants argue that the term should be construed as “to effect heating *in the area spanned*  
4 *by the electrode array* [and in the area between the array of electrodes and the auxiliary electrode]”  
5 because the patents denigrate devices that produced heating only in separate discrete areas among the  
6 array, rather than in the area spanned by the electrode array. As Defendants acknowledge, however,  
7 “[t]he electrical connectivities referenced in each claim are just the various means to accomplish  
8 effecting RF heating in the area spanned by the electrode array.” (Defs. Op. Br. at 17-18.) It is  
9 necessary to achieve heating between subsets of electrodes or pairs of electrodes before it is possible  
10 to achieve RF heating in the area spanned by the electrode array. The plain language of the term “to  
11 effect RF heating therebetween” supports construing it as requiring heating between subsets of  
12 electrodes or pairs of electrodes.

13 Defendants also argue that Plaintiff’s proposed construction for this term includes  
14 constructions related to other terms that should be rejected. First, Defendants argue that Plaintiff’s  
15 construction of the term in Claim 6 of the ’917 Patent fails to construe the phrase “between each  
16 adjacent electrode pair,” which is subject to dispute. Although the parties do dispute the construction  
17 of “between each adjacent electrode pair,” Plaintiff’s proposed construction of the term at issue here  
18 does not contradict the construction of “between each adjacent electrode pair” that the Court adopted  
19 above. Second, Defendants argue that Plaintiff’s construction of the term in Claim 1 of the ’481 and  
20 ’964 Patents relies on Plaintiff’s inaccurate construction of “substantial potential difference[s] exist[s]  
21 between substantially any two electrodes of said array [and said auxiliary electrode].” Because the  
22 Court has adopted Defendants’ proposed construction of “substantial potential difference[s] exist[s]  
23 between substantially any two electrodes of said array [and said auxiliary electrode],” the Court will  
24 replace the phrase “a significant number of electrodes in the array and the auxiliary electrode” with  
25 “vast majority of combinations of the electrodes in the array and the auxiliary electrode” to make it  
26 consistent with Defendants’ proposed construction. Third, Defendants argue that Plaintiff’s  
27 construction of the term in Claim 1 of the ’078 Patent relies on Plaintiff’s inaccurate construction of  
28 “between a plurality of pairs of electrodes in the array.” Because the Court has adopted the

1 Defendants’ proposed construction of “between a plurality of pairs of electrodes in the array,” the  
2 Court will replace the phrase “between at least two pairs of electrodes” with “between the electrodes  
3 of one pair and the electrodes of another pair for a plurality of the combinations of any pairs of  
4 electrodes in the array.”

5 **I. “Array of Electrodes” [Claims 1, 5, 6, 10 of the ’917 Patent; Claim 1**  
6 **of the ’481 Patent; Claims 1 and 2 of the ’078 and ’964 Patents]**

7 The parties dispute the term “array of electrodes” in Claims 1, 5, 6, and 10 of the ’917  
8 Patent; Claim 1 of the ’481 Patent; and Claims 1 and 2 of the ’078 and ’964 Patents. The proposed  
9 constructions are as follows:

10

Term	Plaintiff’s Construction	Defendants’ Construction
“array of electrodes”	“arrangement of electrodes”	“electrodes arranged in two-dimensional or three-dimensional shape when deployed”  <b>Alternative Construction:</b> “electrodes arranged in a non-linear <sup>10</sup> shape when deployed”

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17 The term “array of electrodes” shall be construed as “electrodes arranged in two-dimensional  
18 or three-dimensional shape when deployed.” First, in regards to the shape of the array of electrodes,  
19 every array of electrodes described in the specification is a non-linear, two- or three-dimensional array.  
20 (See, e.g., JA 4, 12-14 [’917 Patent at 3:54-58, 5:57-62, 8:40-42, 8:46-50, Figs. 2a and 2b].) In  
21 addition, the Summary of Invention states that the “general object of the *present invention* [is] to  
22 improve catheter ablations,” which is “accomplished by application of a multi-phase RF power source  
23 to a *two- or three-dimensional* array of electrodes that is deployable from a catheter.” (JA 12 [’917  
24 Patent at 3:10-25] (emphasis added).) This characterization of the “present invention” within the  
25 “Summary of the Invention” is strong evidence that the claims should be read to encompass only non-  
26 linear, two- or three-dimensional arrangements of electrodes. *SciMed Life Sys., Inc. v. Advanced*

27

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28 <sup>10</sup> When used in reference to an electrode arrangement, a “linear” arrangement is one of electrodes laid end-to-end, and may be either curved or straight. (Def. Op. Br., Tucker Decl., at 25-26.)

1 *Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1343 (Fed. Cir. 2001); *Netcraft Corp. v. eBay, Inc.*, 549 F.3d  
2 1394, 1398 (Fed. Cir. 2008) (concluding that “the common specification’s repeated use of the phrase  
3 ‘the present invention’ describes the invention as a whole”).

4 In addition, potential differences must exist between the vast majority of the combinations  
5 of any two electrodes, as explained above regarding the construction of the term “substantial potential  
6 difference exists between substantially any two electrodes of said array.” For potential differences to  
7 exist between the vast majority of the combinations of any two electrodes, the electrodes must be  
8 arranged in a two- or three-dimensional shape. In a linear shape, substantial potential differences could  
9 not exist between substantially any two of the electrodes, as the communication between non-  
10 neighboring electrodes would be blocked by other electrodes and longer distances. (*See* JA 14 [’917  
11 Patent at 8:27-30]; Defs. Op. Br., Tucker Decl., at 24-25.)

12 Second, in regards to whether the electrodes are deployed, the ’917 Patent’s Summary of the  
13 Invention states that “general object of the *present invention* [is] to improve catheter ablations,” which  
14 is “accomplished by application of a multi-phase RF power source to a two- or three-dimensional array  
15 of electrodes that is *deployable* from a catheter.” (JA 12 [’917 Patent at 3:10-25] (emphasis added).)  
16 As explained above, this characterization of the “present invention” within the “Summary of the  
17 Invention” is strong evidence that the claims should be read to encompass only an array of electrodes  
18 that is deployable from a catheter.<sup>11</sup>

19 Plaintiff argues that Defendants’ proposed construction impermissibly reads limitations from  
20 the specification into the claims, and the specifications do not show a clear intent to limit the scope  
21 of the claimed array to a deployable two or three-dimensional arrangement. However, “[w]hen the  
22 specification makes clear that the invention does not include a particular feature, that feature is deemed  
23 to be outside the reach of the claims of the patent.” *Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d  
24 1340, 1347 (Fed. Cir. 2004) (internal quotation marks omitted). In *Microsoft*, the court found that

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25  
26 <sup>11</sup> In regards to Claim 1 of the ’078 Patent (JA 227 [’078 Patent at 10:21-36]), the  
27 electrodes must be deployed against biological tissue, otherwise the tissue could not be ablated by  
28 the RF voltages supplied to the electrodes. Dependant Claim 2 merely adds a catheter, not whether  
electrodes are deployed. (*See* JA 227 [’078 Patent at 10:37-39] (“A radio-frequency ablation  
apparatus for biological issues as in claim 1, further comprising an *electrode catheter* for deploying  
said array of electrodes.” (emphasis added)).)



1 when the specification repeated descriptions of the invention as communicating over a telephone line  
2 and many of the descriptions were found in the Summary of Invention, the descriptions were not  
3 limited to describing a preferred embodiment. *Id.* at 1347-49. Here, the repeated descriptions of the  
4 two- or three-dimensional shape when deployed in the specifications, including the Summary of the  
5 Invention, indicate that the descriptions are not limited to describing a preferred embodiment.<sup>12</sup>

## 6 **J. Means-Plus-Function Limitations**

### 7 **1. Legal Standard**

8 “A means-plus-function limitation recites a function to be performed rather than definite  
9 structure or materials for performing that function.” *Lockheed Martin*, 324 F.3d at 1318. “Such a  
10 limitation must be construed to cover the corresponding structure, material, or acts described in the  
11 specification and equivalents thereof.” *Id.* (citing 35 U.S.C. § 112, ¶ 6). To construe a means-plus-  
12 function limitation, a court first identifies and construes the claimed function, then identifies the  
13 corresponding structure that performs that function. *Id.* at 1318-20.

14 In general, the phrase “means for” invokes 35 U.S.C. § 112, ¶ 6, and is followed by the  
15 recited function and claim limitations. *Id.* at 1319. “The function of a means-plus-function claim must  
16 be construed to include the limitations contained in the claim language.” *Id.* “In identifying the  
17 function of a means-plus-function claim, a claimed function may not be improperly narrowed or  
18 limited beyond the scope of the claim language.” *Id.* At the same time, however, “neither may the  
19 function be improperly broadened by ignoring the clear limitations contained in the claim language.”  
20 *Id.* A court uses ordinary principles of claim construction to construe the meaning of the words used  
21 to describe the claimed function. *Id.*

22 In identifying the structure of a means-plus-function limitation, claim elements are construed  
23 to cover (1) the structure or material disclosed in the patent’s specification that perform the claimed  
24 function and (2) equivalents of that disclosed structure or material. *Versa Corp. v. Ag-Bag Int’l Ltd.*,  
25 392 F.3d 1325, 1329 (Fed. Cir. 2004). On the other hand, “[a] court may not import into the claim  
26 features that are unnecessary to perform the claimed function.” *Northrop Grumman Corp. v. Intel*

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27  
28 <sup>12</sup> Both Plaintiff and Defendants point to extrinsic evidence in support of their proposed constructions. As the intrinsic evidence resolves the ambiguity in the claim terms, extrinsic evidence need not be considered.

1 Corp., 325 F.3d 1346, 1352 (Fed. Cir. 2003). “When multiple embodiments in the specification  
2 correspond to the claimed function, proper application of § 112, ¶ 6 generally reads the claim element  
3 to embrace each of those embodiments.” *Micro Chem., Inc. v. Great Plains Chem. Co., Inc.*, 194 F.3d  
4 1250, 1258 (Fed. Cir. 1999). In addition, multiple claimed functions can share the same corresponding  
5 structure or structures. *Intellectual Prop. Dev., Inc. v. UA-Columbia Cablevision of Westchester, Inc.*,  
6 336 F.3d 1308, 1320 n.9 (Fed. Cir. 2003).

7 **2. Construction of Means-Plus-Function Limitations At Issue**

8 The parties agree that the following terms are means-plus-function limitations governed by  
9 36 U.S.C. § 112, ¶ 6.

10 **a. “Means for Supplying Individual Phased RF Voltages**  
11 **to Each of Said Plurality of Electrodes” [Claim 1 of the**  
12 **’917 Patent]**

13 The parties dispute the means-plus-function limitation “means for supplying individual  
14 phased RF voltages to each of said plurality of electrodes” in Claim 1 of the ’917 Patent. The parties’  
15 proposed constructions of the function and corresponding structure are as follows:

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Term	Plaintiff's Construction	Defendants' Construction	Court's Construction
<p>“means for supplying individual phased RF voltages to each of said plurality of electrodes, such that, over a predetermined period of time, substantial potential difference exists between substantially any two electrodes of said array of electrodes and to effect RF heating therebetween in order to achieve uniform ablation of biological tissues adjacent to said array of electrodes”</p>	<p><b>Function:</b> Supplying individual phased RF voltages to each of said plurality of electrodes.</p> <p><b>Corresponding Structure:</b></p> <p>(1) An RF energy source or power supply with an output to phase-shifting circuits that, in turn, deliver phased voltage outputs to the electrodes through interconnecting wires, as shown in 3:22-32, 5:63-65, 6:3-6, 6:11-20, 6:24-30 and Figs. 2b, 3a, and 3b of the '917 Patent; or</p> <p>(2) An RF energy source or power supply containing multiple RF power sources that deliver phased voltage outputs to the electrodes through interconnecting wires, as shown in 3:22-32, 5:63-65, 6:3-6, 6:32-38 and Figs. 2b and 4 of the '917 Patent; or</p> <p>(3) An RF energy source that delivers voltages of two phases to the electrodes through interconnecting wires, as shown in 3:54-68, 8:66-9:2, and Fig. 8a of the '917 Patent.</p> <p>This limitation also encompasses equivalent structures that perform the above function.</p>	<p><b>Function:</b> Supplying individual phased RF voltages to each of said plurality of electrodes, such that, over a predetermined period of time, substantial potential difference exists between substantially any two electrodes of said array of electrodes and to effect RF heating therebetween in order to achieve uniform ablation of biological tissues adjacent to said array of electrodes.</p> <p><b>Corresponding Structure:</b></p> <p>(1) An RF energy source or power supply with an output to multiple analog phase-shifting circuits, each delivering a different phase-shift or multiple RF energy sources, or power supplies, each delivering a different phase-shift, as shown at 3:22-32, 6:11-39, Figs. 3a, 3b, and 4;</p> <p>(2) Each individual phased RF signal delivered to one electrode, as shown at 3:26-32, 3:40-46, 5:63-6:10, 6:40-45, Fig. 2b;</p> <p>(3) Electrode in the array connected directly to ground, 3:40-46, 6:6-10, 6:20-23, 6:38-39, 6:40-45;</p> <p>AND</p> <p>(4) Electrodes of the configurations and dimensions disclosed in the Patent, as shown in Figs. 2b, 6a, and 8:19-30.</p>	<p><b>Function:</b> Supplying individual phased RF voltages to each of said plurality of electrodes, such that, over a predetermined period of time, substantial potential difference exists between substantially any two electrodes of said array of electrodes and to effect RF heating therebetween in order to achieve uniform ablation of biological tissues adjacent to said array of electrodes.</p> <p><b>Corresponding Structure:</b></p> <p>(1) An RF energy source or power supply with an output to multiple analog phase-shifting circuits, each delivering an individual phase-shift or multiple RF energy sources, or power supplies, each delivering an individual phase-shift, as shown at 3:22-32, 6:11-39, Figs. 3a, 3b, and 4;</p> <p>(2) Each individual phased RF signal delivered to one electrode, as shown at 3:26-32, 3:40-46, 5:63-6:10, 6:40-45, Fig. 2b;</p> <p>(3) Electrode in the array connected directly to ground, 3:40-46, 6:6-10, 6:20-23, 6:38-39, 6:40-45;</p> <p>AND</p> <p>(4) Electrodes of the configurations and dimensions disclosed in the Patent, as shown in Figs. 2b, 6a, and 8:19-30.</p>

**i. Function**

The Court construes the function as “supplying individual phased RF voltages to each of said plurality of electrodes such that, over a predetermined period of time, substantial potential difference

1 exists between substantially any two electrodes of said array of electrodes and to effect RF heating  
2 therebetween in order to achieve uniform ablation of biological tissues adjacent to said array of  
3 electrodes.”

4 Plaintiff argues that the additional language of the limitation starting with “such that” should  
5 be construed separately rather than identified as part of the function. According to Plaintiff, the  
6 language following “such that” does not describe the function itself, but describes the results of the  
7 function. *See Lockheed Martin Corp.*, 324 F.3d at 1319 (“The function is properly identified as the  
8 language after the ‘means for’ clause and before the ‘whereby’ clause, because a whereby clause that  
9 merely states the result of the limitations in the claim adds nothing to the substance of the claim.”);  
10 *Texas Instruments Inc. v. U.S. Int’l Trade Comm’n*, 988 F.2d 1165, 1172 (Fed. Cir. 1993) (“A  
11 ‘whereby’ clause that merely states the result of the limitations in the claim adds nothing to the  
12 patentability or substance of the claim.”); *Computer Acceleration Corp. v. Microsoft Corp.*, 516 F.  
13 Supp. 2d 752, 768-69 (E.D. Tex. 2007) (claimed function did not include language following “so that”  
14 phrase).

15 Plaintiff’s reliance on this “whereby clause” precedent, however, is misplaced. While a  
16 whereby clause that “merely states the result of the limitations in the claim adds nothing to the  
17 patentability or substance of the claim,” *Texas Instruments Inc.*, 988 F.2d at 1172, the language after  
18 “such that” does add something to the claim that was used to obtain the ’917 Patent in the first place.  
19 Figure 4 of the ’917 Patent illustrates a series of generators used to supply individually phased RF  
20 voltages. (JA 13 [’917 Patent at 6:32-39].) Panescu testified that the prior art could achieve the  
21 functionality shown in Figure 4 of the ’917 Patent. (Defs. Resp. Br., Exh. 1 [Panescu Depo.] at 118-  
22 19.) According to Panescu, the difference between the claimed invention and the prior art was “the  
23 concept of using that to now power an array of electrodes to *achieve uniform ablation.*” *Id.* (emphasis  
24 added). If the Plaintiff’s position is correct, and the function is merely to supply “individual[ly]  
25 phased RF voltages,” the ’917 Patent claims a function that Panescu agrees existed in the prior art  
26 when this is part of the purported novelty of the ’917 Patent. In addition, merely “supplying  
27 individually phased” or “phased” RF voltages doesn’t necessarily achieve the particular result that  
28 Plaintiff hopes for. (*See* Defs. Resp. Br., Exh. 2 [Tucker Depo.] at 66-67 (“[W]hat if I supply a voltage

1 that doesn't cause . . . substantial potential difference to exist between substantially any two electrodes  
2 to achieve uniform ablation? What if my voltage isn't substantial? I mean, that's not a result; that's  
3 actually a function.”.)

#### 4 **ii. Corresponding Structure**

5 The Court largely adopts Defendants' proposed structure as the corresponding structure  
6 necessary to perform the above function. However, the requirement of the delivery of *different* phase-  
7 shifts by each phase-shifting circuit or each RF energy source/power supply will not be adopted. This  
8 requirement is based on Defendants' proposed construction of “individual phased RF voltages,” which,  
9 as explained above, the Court has found to be incorrect. Rather, the Court will replace “different” with  
10 “individual,” in accordance with the claim language. Accordingly, the Court finds the following  
11 corresponding structure necessary to perform the identified function:

12 First, the specific structure for performing this supplying function includes either an RF  
13 energy source or power supply with an output to multiple analog phase-shifting circuits, each  
14 delivering an individual phase-shift, or multiple RF energy sources or power supplies, each delivering  
15 an individual phase-shift. (*See* JA 5-6, 12-13 [’917 Patent at 3:22-32, 6:11-39, Figs. 3a, 3b, and 4].)  
16 This is necessary to supply the individual phased RF voltages to the electrodes in the array. (Defs. Op.  
17 Br., Tucker Decl. at 35-36.) Where phase-shifters provide the phase shift, the structures in the ’917  
18 Patent use analog phase shifters. (JA 5, 13 [’917 Patent at 6:24-30, Fig. 3b]; Defs. Op. Br., Tucker  
19 Decl. at 36.) No other structure for shifting phases is disclosed.

20 Second, each individual phased RF signal is delivered to one electrode. (*See* JA 4, 12-13  
21 [’917 Patent at 3:26-32, 3:40-46, 5:63-6:10, 6:40-45, Fig. 2b].) If an RF signal is delivered to more  
22 than one electrode, the electrodes will be supplied with shared phased RF voltages rather than  
23 individual phased RF voltages. (Defs. Op. Br., Tucker Decl. at 25, 43-44.)

24 Third, where no backplate is recited, there must be at least one electrode in the array  
25 connected directly to the ground. (JA 12-13 [’917 Patent at 3:40-46, 6:6-10, 6:20-23, 6:38-39, 6:40-  
26 45].) According to the ’917 Patent, “[o]ne important aspect of the present multi-phase RF scheme is  
27 that a conventional external contact backplate is not employed to connect to the ground terminal of the  
28 power supply to complete the circuit. Instead, one or more electrodes among the array are connected

1 to the ground terminal of the multi-phase RF power supply.” (JA 12 [’917 Patent at 3:40-46].)  
2 Without a backplate, the ’917 Patent provides no other structure for completing the circuit, which a  
3 person of ordinary skill in the art would have found necessary for performing the claimed function.  
4 (Defs. Op. Br., Tucker Decl. at 36-39.)

5 Plaintiff objects to the inclusion of analog phase-shifting circuits in Defendants’ proposed  
6 construction. According to Plaintiff, while supplying RF voltages may require phase-shifters, the  
7 phase shifters may be either analog or digital because the performance of this function does not depend  
8 on the type of phase shifter used. The only phase-shifting circuits identified in the specification,  
9 however, are analog phase shifting circuits. (JA 5, 13 [’917 Patent at 6:24-30, Fig. 3b]; Defs. Op. Br.,  
10 Tucker Decl. at 36.) Accordingly, the Court finds that the structure includes analog phase-shifting  
11 circuits. *See Versa Corp.*, 392 F.3d at 1329 (claim elements are construed to cover (1) the structure  
12 or material disclosed in the patent’s specification that perform the claimed function and (2) equivalents  
13 of that disclosed structure or material).

14 In addition, Plaintiff argues that Defendants’ proposed structure does not identify a  
15 component that supplies voltages, but rather describes the destination of the RF signals, how an  
16 electrode is connected, the characteristics of the electrodes, the configurations of the electrodes, and  
17 the characteristics of the supplied RF voltages. This argument, however, is inconsistent with  
18 Plaintiff’s own proposed structure. Plaintiff’s proposed construction provides for the “interconnecting  
19 wires” that supply the voltages to the electrodes. The construction must be limited to the structure  
20 actually disclosed in the specification. The term is not a means for producing or generating individual  
21 phased RF voltages, but rather a means for supplying them “to each of said plurality of electrodes.”  
22 It necessarily follows that to supply the voltages, the corresponding structure must account for the  
23 manner in which the voltages are supplied, which only Defendants’ construction properly identifies.

24 **b. “Means for Supplying Phased RF Voltages to Each of Said**  
25 **Plurality of Adjacent Electrode Pairs” [Claim 6 of the ’917**  
26 **Patent]**

27 The parties dispute the means-plus-function limitation “means for supplying phased RF  
28 voltages to each of said plurality of adjacent electrode pairs” in Claim 6 of the ’917 Patent. Their

1 proposed constructions are as follows:

Term	Plaintiff's Construction	Defendants' Construction	Court's Construction
<p>2</p> <p>3</p> <p>4</p> <p>5 “means for</p> <p>6 supplying</p> <p>7 phased RF</p> <p>8 voltages</p> <p>9 to each of</p> <p>10 said plurality</p> <p>11 of adjacent</p> <p>12 electrode</p> <p>13 pairs, such</p> <p>14 that, over a</p> <p>15 predetermined</p> <p>16 period of</p> <p>17 time,</p> <p>18 substantial</p> <p>19 potential</p> <p>20 differences</p> <p>21 exist between</p> <p>22 each adjacent</p> <p>23 electrode</p> <p>24 pair to effect</p> <p>25 RF heating</p> <p>26 therebetween</p> <p>27 in order to</p> <p>28 achieve</p> <p>uniform</p> <p>ablation of</p> <p>biological</p> <p>tissues</p> <p>adjacent to</p> <p>said array of</p> <p>electrodes”</p>	<p><b>Function:</b> Supplying phased RF voltages to each of said plurality of adjacent pairs.</p> <p><b>Corresponding Structure:</b></p> <p>(1) An RF energy source or power supply with an output to phase-shifting circuits that, in turn, deliver phased voltage outputs to the electrodes through interconnecting wires, as shown in 3:22-39, 5:63-65, 6:3-6, 6:11-20, 6:24-30 and Figs. 2b, 3a, and 3b of the '917 Patent; or</p> <p>(2) An RF energy source or power supply containing multiple RF power sources that deliver phased voltage outputs to the electrodes through interconnecting wires, as shown in 3:22-39, 5:63-65, 6:3-6, 6:32-38, and Figs. 2b and 4 of the '917 Patent; or</p> <p>(3) An RF energy source that delivers voltages of two phases to the electrodes through interconnecting wires, as shown in 3:54-68, 8:66-9:2 and Fig. 8a of the '917 Patent</p> <p>This limitation also encompasses equivalent structures that perform the above function.</p>	<p><b>Function:</b> Supplying phased RF voltages to each of said plurality of adjacent electrode pairs, such that, over a predetermined period of time, substantial potential differences exist between each adjacent electrode pair to effect RF heating therebetween in order to achieve uniform ablation of biological tissues adjacent to said array of electrodes.</p> <p><b>Corresponding Structure:</b></p> <p>(1) An RF energy source or power supply with outputs directed to analog phase-shifting circuits, each delivering a different phase-shift, or multiple RF energy sources or power supplies, each delivering a different phase-shift, as shown in 3:33-39, 6:24-34, 8:66-9:7, Figs. 3b, 8a, 8b.</p> <p>(2) RF signals phase-shifted approximately 70°-110°, as shown in 9:2-4, Fig. 5c;</p> <p>(3) Each phased RF signal fed to two electrodes, as shown in 8:66-9:7, Fig. 8a;</p> <p>(4) Electrode in the array at ground potential and zero phase, 3:40-46, 9:4-5, Fig. 8a;</p> <p>(5) The adjacent electrode pairs are arranged such that the heating occurs between the electrodes of one pair and the electrodes of any adjacent electrode pair, 3:33-39, 6:63-68, 8:46-9:26, Figs. 7a, 7b, 8a, 8b;</p>	<p><b>Function:</b> Supplying phased RF voltages to each of said plurality of adjacent electrode pairs, such that, over a predetermined period of time, substantial potential differences exist between each adjacent electrode pair to effect RF heating therebetween in order to achieve uniform ablation of biological tissues adjacent to said array of electrodes.</p> <p><b>Corresponding Structure:</b></p> <p>(1) An RF energy source or power supply with outputs directed to analog phase-shifting circuits, each delivering an individual phase-shift, or multiple RF energy sources or power supplies, each delivering an individual phase-shift, as shown in 3:33-39, 6:24-34, 8:66-9:7, Figs. 3b, 8a, 8b.</p> <p>(2) RF signals phase-shifted approximately 70°-110°, as shown in 9:2-4, Fig. 5c;</p> <p>(3) Each phased RF signal fed to two electrodes, as shown in 8:66-9:7, Fig. 8a;</p> <p>(4) Electrode in the array at ground potential and zero phase, 3:40-46, 9:4-5, Fig. 8a;</p> <p>(5) The adjacent electrode pairs are arranged such that the heating occurs between the electrodes of one pair and the electrodes of any adjacent electrode pair, 3:33-39, 6:63-68, 8:46-9:26, Figs. 7a, 7b, 8a, 8b;</p>

		AND  (6) Electrodes of the configurations and dimensions disclosed in the Patent, as shown in 8:46-59, 9:59-63 and Figs. 7a, 7b, 8a, 8b.	AND  (6) Electrodes of the configurations and dimensions disclosed in the Patent, as shown in 8:46-59, 9:59-63 and Figs. 7a, 7b, 8a, 8b.
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**i. Function**

The Court construes the function as “supplying phased RF voltages to each of said plurality of adjacent electrode pairs, such that, over a predetermined period of time, substantial potential differences exist between each adjacent electrode pair to effect RF heating therebetween in order to achieve uniform ablation of biological tissues adjacent to said array of electrodes.” The Court includes the claim language following “such that” in its construction of the function for the same reasons discussed above in regards to the means-plus-function element of Claim 1 of the ’917 Patent.

**ii. Corresponding Structure**

The Court largely adopts Defendants’ proposed corresponding structure as the corresponding structure necessary to perform the above function. However, the requirement of the delivery of *different* phase-shifts by each phase-shifting circuit or each RF energy source/power supply will not be adopted. This requirement is based on Defendants’ construction of “individual phased RF voltages,” which, as explained above, the Court has found to be incorrect. Rather, the Court will replace “different” with “individual,” in accordance with the claim language. Accordingly, the Court finds the following corresponding structure necessary to perform the identified function:

First, it is necessary to have either an RF energy source or power supply with outputs directed to analog phase-shifting circuits, each delivering an individual phase-shift, or multiple RF energy sources or power supplies, each delivering an individual phase shift. (JA 5, 9, 12-15 [’917 Patent at 3:33-39, 6:24-34, 8:66-9:7, Figs. 3b, 8a, 8b].) These structures are necessary to deliver the phase shifts to the electrodes. (*See* Defs. Op. Br., Tucker Decl. at 40.) Additionally, to the extent that phase-shifters are used, it is necessary to use analog phase shifters. (JA 5, 13 [’917 Patent at 6:24-30, Fig. 3b]; *see also* Defs. Op. Br., Tucker Decl. at 40.) No other structure for shifting phases is disclosed.

Second, the RF signals must be phase-shifted approximately 70°-110°. (*See* JA 7, 15 [’917



1 Patent at 9:2-4, Fig. 5c].) In describing this embodiment, the Patentees state that the voltages used are  
2 within this range (*id.*), and the '917 Patent discloses no other phase-shift angle that could perform the  
3 stated function. (*See* Defs. Op. Br., Tucker Decl. at 41.)

4 Third, each phased RF signal is fed to two electrodes. (JA 9, 14-15 ['917 Patent at 8:66-9:7,  
5 Fig. 8a].) This is the only structure provided that performs the function identified in this claim. (Defs.  
6 Op. Br., Tucker Decl. at 41.) The purpose of supplying phased RF signals to adjacent pairs of  
7 electrodes was to simplify the power connection configuration. (JA 12 ['917 Patent at 3:33-39].) To  
8 achieve its purpose, each signal needs to be fed to more than one electrode. (*See* Defs. Op. Br., Tucker  
9 Decl. at 42.)

10 Fourth, at least one electrode in the array must be at ground potential and zero phase. (JA  
11 9, 12, 15 ['917 Patent at 3:40-46, 9:4-5, Fig. 8a].) As discussed above, the Patentees stated that “[o]ne  
12 important aspect of the present multi-phase RF scheme” is that an electrode in the array is connected  
13 to the ground terminal of the power supply. (JA 12 ['917 Patent at 3:40-46].) The '917 Patent  
14 provides no other structure for completing the circuit, which a person of ordinary skill in the art would  
15 have found necessary. (Defs. Op. Br., Tucker Decl. at 42.)

16 Plaintiff objects to the inclusion of analog phase-shifting circuits in Defendants’ proposed  
17 construction. As explained above, because analog phase-shifting circuits are the only structures  
18 disclosed in the specification for supplying “phased RF voltages,” this argument is rejected.

19 In addition, Plaintiff argues that like Defendants’ proposed structure for the means-plus-  
20 function element found in Claim 1 of the '917 Patent, Defendants’ proposed structure of the means-  
21 plus-function element here improperly identifies features that do not perform the recited function.  
22 Specifically, Plaintiff argues that Defendants’ proposed structure does not identify a component that  
23 supplies voltages, but rather describes a preferred phase-shift of the RF signals, the destination of the  
24 RF signals, how an electrode is connected, and the configurations and arrangements of the electrodes.  
25 For the reasons stated above, these arguments are rejected. In addition, to supply phase-shifted RF  
26 voltages, the voltages must have a difference in phase supplied either by analog phase-shifting circuits  
27 or separate RF energy sources or power supplies. The only structures identified in the written  
28 description supply the voltage at a 70°-110° phase shift.

**c. “Means for Supplying Individually Phased RF Voltages to Each Electrode in Said Array of Electrodes and to Said Auxiliary Electrode” [Claim 1 of the ’481 Patent]**

The parties dispute the means-plus-function limitation “means for supplying individually phased RF voltages to each electrode in said array of electrodes and to said auxiliary electrode” in Claim 1 of the ’481 Patent. Their proposed constructions are as follows:

Term	Plaintiff’s Construction	Defendants’ Construction	Court’s Construction
<p>“means for supplying individually phased RF voltages to each electrode in said array of electrodes and to said auxiliary electrode such that, over a predetermined period of time, substantial potential difference exists between substantially any two electrodes of said array of electrodes and said auxiliary electrode to effect RF heating therebetween in order to achieve uniform ablation of biological tissues adjacent to</p>	<p><b>Function:</b> Supplying individually phased RF voltages to each electrode in said array of electrodes and to said auxiliary electrode.</p> <p><b>Corresponding Structure:</b></p> <p>(1) An RF energy source or power supply with an output to phase-shifting circuits that, in turn, deliver phased voltage outputs to the electrodes and the auxiliary electrode through interconnecting wires, as shown in 3:21-30, 4:3-15, 4:36-43, 6:48-50, 6:56-58, 6:63-7:5, 7:7-15, 11:26-29, 11:33-38, 12:66-13:9 and Figs. 2b, 3a, 3b, 13 of the ’481 Patent; or</p> <p>(2) An RF energy source or power supply containing multiple RF power sources that deliver phased voltage outputs to the electrodes and the auxiliary electrode through interconnecting wires, as shown in 3:21-30, 4:3-15, 4:36-43, 6:48-50, 6:56-58, 7:16-21, 11:26-29, 11:33-38, 12:66-13:9 and Figs. 2b, 4, and 13 of the ’481 Patent; or</p>	<p><b>Function:</b> Supplying individually phased RF voltages to each electrode in said array of electrodes and to said auxiliary electrode such that, over a predetermined period of time, substantial potential difference exists between substantially any two electrodes of said array of electrodes and said auxiliary electrode to effect RF heating therebetween in order to achieve uniform ablation of biological tissues adjacent to said array of electrodes.</p> <p><b>Corresponding Structure:</b></p> <p>(1) An RF energy source or power supply with an output directed to multiple analog phase-shifters, each delivering a different phase-shift, or multiple RF energy sources or power supplies, each delivering a different phase-shift, as shown in 6:63-7:23, 11:30-40, Figs. 3a, 3b, 4, and 13;</p> <p>(2) Each individual phased RF signal delivered to one electrode of the catheter, as shown in 11:30-40, Fig. 13;</p>	<p><b>Function:</b> Supplying individually phased RF voltages to each electrode in said array of electrodes and to said auxiliary electrode such that, over a predetermined period of time, substantial potential difference exists between substantially any two electrodes of said array of electrodes and said auxiliary electrode to effect RF heating therebetween in order to achieve uniform ablation of biological tissues adjacent to said array of electrodes.</p> <p><b>Corresponding Structure:</b></p> <p>(1) An RF energy source or power supply with an output directed to multiple analog phase-shifters, each delivering an individual phase-shift, or multiple RF energy sources or power supplies, each delivering an individual phase-shift, as shown in 6:63-7:23, 11:30-40, Figs. 3a, 3b, 4, and 13;</p> <p>(2) Each individual phased RF signal delivered to one electrode of the catheter, as shown in 11:30-40, Fig. 13;</p>

<p>1 said array of 2 electrodes”</p>	<p>3 (3) An RF energy source that 4 delivers voltages of two or 5 three phases to the electrodes 6 and the auxiliary electrode 7 through interconnecting 8 wires, as shown in 3:52-65, 9 4:3-15, 4:36-43, 9:41-45, 10 12:4-10, 12:40-47, 12:66- 11 13:9 and Figs. 8a, 14a, and 12 14b of the '481 Patent.</p> <p>13 This limitation also 14 encompasses equivalent 15 structures that perform the 16 above function.</p>	<p>17 (3) An auxiliary electrode 18 connected directly to ground, 19 as shown in 6:63-7:7, 7:16-23, 20 11:30-40, Fig. 3a, 4, 13;</p> <p>21 AND</p> <p>22 (4) Electrodes of the 23 configurations and dimensions 24 disclosed in the Patent, as 25 shown in Fig. 2b, 13, and 26 8:66-9:9.</p>	<p>27 (3) An auxiliary electrode 28 connected directly to ground, as shown in 6:63-7:7, 7:16-23, 11:30-40, Fig. 3a, 4, 13;</p> <p>AND</p> <p>(4) Electrodes of the configurations and dimensions disclosed in the Patent, as shown in Fig. 2b, 13, and 8:66-9:9.</p>
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**i. Function**

The Court shall construe the function as “supplying individually phased RF voltages to each electrode in said array of electrodes and to said auxiliary electrode such that, over a predetermined period of time, substantial potential difference exists between substantially any two electrodes of said array of electrodes and said auxiliary electrode to effect RF heating therebetween in order to achieve uniform ablation of biological tissues adjacent to said array of electrodes.” The Court shall include the additional claim language following “such that” in its construction of the function for the same reasons discussed above in regards to the means-plus-function element of claim 1 of the '917 Patent.

**ii. Corresponding Structure**

The Court largely adopts Defendants’ proposed structure as the corresponding structure necessary to perform the above function. However, the requirement of the delivery of *different* phase-shifts by each phase-shifting circuit or each RF energy source/power supply will not be adopted. This requirement is based on Defendants’ construction of “individual phased RF voltages,” which, as explained above, the Court has found to be incorrect. Rather, the Court will replace “different” with “individual,” in accordance with the claim language.

The only difference between the structure corresponding to the means-plus-function element of Claim 1 of the '917 Patent and this element is that the structure corresponding to this function must also deliver voltage to an auxiliary electrode. The '481 Patent explains that the already identified structures are used to perform this additional function. (*See, e.g.*, JA 411-12, 418 [’481 Patent at 11:33-35 (“The configuration shown in FIG. 13 is similar to that of FIG. 2b except with the addition

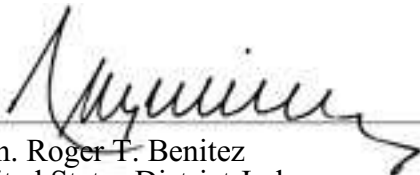
1 of an auxiliary electrode **40.**”); 12:7-9 (“The configuration shown in FIG. **14a** is similar to that of FIG.  
2 **8a** except with the addition of an auxiliary electrode **40.**”); 12:43-45 (“The configuration shown in  
3 FIG. **14b** is similar to that of FIG. **9a** except with the addition of an auxiliary electrode **40.**); Figs. 13,  
4 14a, 14b].) Therefore, the specific corresponding structure necessary to perform the identified function  
5 is identical to the structure identified for the means-plus-function element of claim 1 of the ’917  
6 Patent. This structure is adopted by the Court for the same reasons identified above.

7 **CONCLUSION**

8 For the reasons stated above, the terms at issue shall be construed as indicated above.

9 **IT IS SO ORDERED.**

10  
11 DATED: August 10, 2012

12   
13 Hon. Roger T. Benitez  
14 United States District Judge