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**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF UTAH**

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NCAP LICENSING, LLC., *et al.*,  
Plaintiffs,  
  
v.  
  
APPLE, INC.,  
Defendant.

**MEMORANDUM DECISION  
AND ORDER  
CONSTRUING DISPUTED  
CLAIM PHRASE**

Case No. 2:17-CV-905

Howard C. Nielson, Jr.  
United States District Judge

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The parties previously agreed that the phrase “radiating antenna element” means “an element of the antenna that transmits electromagnetic radiation.” Dkt. No. 269-1 at 2. But as the litigation proceeded, it became clear that the parties interpret this language very differently. In particular, the parties dispute whether a component of an antenna system that functions as part of a ground plane can be a radiating antenna element. After providing the parties the opportunity to present briefing and argument on the issue, the court determined that it was necessary to reopen claim construction to clarify the meaning of “radiating antenna element.” *See* Dkt. Nos. 473–75. The court then allowed the parties to present briefing and argument on the proper construction of this phrase. *See* Dkt. Nos. 487, 489, 493, 495, 501–03.

After carefully considering the parties’ briefing and arguments, the court refines the parties’ previously stipulated claim construction to the extent necessary to resolve their interpretive dispute. The court construes the term “radiating antenna element” as follows:

a part of an antenna, other than a ground plane, that emits electromagnetic radiation. The phrase “radiating antenna element” is commonly used to refer to the active or driven element—the part of the antenna that is connected to the transmitter directly or through the signal part of a feed line—though in certain antenna structures it may also be used to refer to other parts of the antenna system. The phrase is not used to refer to a part of an antenna system that functions as part of the ground plane, however.

## I.

Before turning to the proper construction of the phrase “radiating antenna element,” the court first addresses nCap’s renewed argument that the court should retain the previously stipulated construction and have the jury decide whether the portion of the accused devices that nCap characterizes as a radiating antenna element in fact “transmits electromagnetic radiation.”

To be sure, the court initially assumed that the parties’ disagreement regarding this question reflected their different factual positions. *See* Dkt. No. 305 at 9. But as the court has previously explained, it has become clear that the parties’ disagreement regarding the meaning and application of their previously agreed-upon construction is not solely—or even primarily—a factual dispute. *See* Dkt. No. 485 at 4:11–6:17. The parties agree, and the science leaves no room for dispute, that in many antenna systems the ground plane plays an essential role in transmitting radio waves. It is also undisputed that in many antenna systems the alternating current in the active or driven antenna element—the part of the antenna connected directly, or through the signal portion of a feed line, to the transmitter—induces electrical currents in portions of the ground plane and that these induced currents emit electromagnetic radiation.

Rather, the parties’ dispute is interpretive. Initially, nCap appeared to advance the broad argument that because a ground plane plays a role in transmitting radio waves, it transmits electromagnetic radiation and is a radiating antenna element. In response to Apple’s summary judgment arguments, however, nCap appeared to narrow its position to argue (perhaps in the alternative to its initial argument) that at least those parts of the ground plane in which currents are induced by an active antenna element “radiate” and thus are radiating antenna elements.

Apple, on the other hand, notes that in the patents-in-suit, the prior art, the relevant scientific literature, and even nCap’s own statements outside the context of this litigation, the

phrase “radiating antenna element” is never used to refer to a ground plane. To the contrary, it is consistently used *in contradistinction* to a ground plane. Noting also that the phrase is commonly used to refer to active or driven antenna elements, Apple asks the court to construe the phrase to refer only to such elements.

For these reasons, asking the jury to apply the previously stipulated construction of “radiating antenna element” to the accused device would almost certainly require the jury to do more than resolve a factual dispute. Rather, it would require the jury to choose between the parties’ competing interpretive arguments. This a jury cannot do. Supreme Court precedent is unequivocal: determining what the claims mean is “*exclusively*” for “the court.” *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 372 (1996) (emphasis added). Despite the parties’ previous stipulation, this court thus has an “independent obligation to determine the meaning of the claims.” *Exxon Chemical Patents, Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1555 (Fed. Cir. 1995). To avoid the reversible error of submitting an interpretive dispute to the jury, the court will follow the well-trodden path of reopening claim construction. *See, e.g., Pfizer, Inc. v. Teva Pharmaceuticals, USA, Inc.*, 429 F.3d 1364, 1377 (Fed. Cir. 2005); *Utah Medical Products, Inc. v. Graphic Controls Corp.*, 350 F.3d 1376, 1381–82 (Fed. Cir. 2003); *Jack Guttman, Inc. v. Kopykake Enterprises, Inc.*, 302 F.3d 1352, 1361 (Fed. Cir. 2002).

## II.

The court accordingly proceeds to construe the phrase “radiating antenna element” as used in the patents-in-suit. “It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (*en banc*) (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). In construing patent claims,

courts “look first to the language of the claims, followed by the language of the specification and prosecution history.” *Allergan Sales, LLC v. Sandoz, Inc.*, 935 F.3d 1370, 1374 (Fed. Cir. 2019). “The prosecution history . . . consists of the complete record of the proceedings before the PTO and includes the prior art cited during the examination of the patent.” *Phillips*, 415 F.3d at 1317. The language of the claims and specification, together with the prosecution history, are called the “intrinsic record.” *Id.*

Although “evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises” can also be helpful, such “extrinsic evidence” is “less significant than the intrinsic record in determining the legally operative meaning of claim language.” *Id.* (internal quotation marks omitted). Ultimately, “there is no magic formula or catechism for conducting claim construction.” *Id.* at 1324. The court reviews the available sources to determine “what the inventors actually invented and intended to envelop with the claim.” *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998). “The construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.” *Id.*; *accord Phillips*, 415 F.3d at 1316.

#### A.

The court begins with the intrinsic evidence. Both patents clearly use the term “radiating antenna element” in contradistinction to the ground plane.<sup>1</sup> Most notably, claim 7 of the ’071

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<sup>1</sup> Based on the language of some of the claims, nCap argues that the patent uses the phrase “radiating antenna element” in contradistinction to a “receiving antenna element.” For example, Claim 11 of the ’071 patent addresses “[t]he antenna system of claim 1, wherein the radiating antenna element is also a receiving antenna element.” Dkt. No. 490-2 at 21:28-29. The court agrees—though it does not follow, as nCap argues, that the patent does not *also* use the phrase “radiating antenna element” in contradistinction to a ground plane. Although the extrinsic

patent covers “[t]he antenna system of claim 1, wherein the substrate comprises a ground plane for the radiating antenna element.” It follows that the ground plane and the radiating antenna element “logically cannot be one and the same.” *Engel Indus., Inc. v. Lockformer Co.*, 96 F.3d 1398, 1405 (Fed. Cir. 1996). Nor is there anything “in the asserted claims to suggest that the [ground plane] and the [radiating antenna element] can be the same structure” in a single antenna system. *Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010).<sup>2</sup>

In addition, the specifications appear to use the phrase “active antenna element” as a synonym for the phrase “radiating antenna element.” Indeed, the ’276 patent specification uses the latter phrase only when providing the summary of the invention, and the ’071 patent specification never uses the phrase at all. But just as claim 7 of the ’071 patent distinguishes the “radiating antenna element” from the “ground plane,” the specifications distinguish the “active antenna element” from the “ground plane.” For example, describing a figure, the specifications state that “[h]ere, the first antenna segment 220A is functioning as an active antenna element and the second antenna segment 220B is functioning as a ground plane. When the substrate 210 is functioning as a ground plane or an earth ground is employed, the second antenna segment 220B may be omitted.” ’071 patent at 7:61–63; ’276 patent at 8:33–35 (same).

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evidence makes clear that this phrase is commonly used to refer to receiving elements as well as transmitting or emitting elements, *see* Dkt. No. 490-28 at 2.306, the court thus construes this phrase as used in the patents-in-suit to require that the antenna element emit, and not merely receive, electromagnetic radiation.

<sup>2</sup> To be sure, “the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.” *Phillips*, 415 F.3d at 1315. But here the court is not reading the limitation of dependent claim 7 into claim 1—it is not interpreting the independent claim to require that the substrate comprise the ground plane. Rather, the court is looking to the clear distinction drawn by claim 7 between the “ground plane” and the “radiating antenna element” for definitional insight into what these phrases mean.

Indeed, the specifications even distinguish the ground plane from the antenna itself. The specification for the '071 patent describes an embodiment of the invention in which the “conductive particle based material is applied to the substrate to form the conductive particle based conformable *antenna*.” ’071 patent at 15:60–63 (emphasis added). The specification then explains:

When the substrate is a conducting material, a non-conductive or semi-conductive coating may first be applied to the substrate. In this case, the conducting material may serve as *a ground plane*. When the substrate is a non-conducting material, *a ground plane* can be accomplished by using the earth’s natural ground. Alternatively, *the ground plane* can be accomplished by fabricating an independent ground plane.

*Id.* at 16:1–7 (emphases added). It is thus clear that the patent treats the “antenna” as something distinct from “the ground plane.” This distinction appears flatly contrary to nCap’s current litigation position that a ground plane can be a “radiating antenna element.”

Both patents cite prior art that likewise distinguishes radiating antenna elements—or obvious synonyms—from ground planes. For example, both patents cite U.S. Patent Number 7,015,861 (issued March 21, 2006), which describes an antenna comprising:

a conductive coating backplane or *ground plane* (depending upon whether the antenna is a GPS or other microstrip antenna) applied to a substrate structure such as a curved aircraft surface, a non-conductive dielectric coating applied over the outer surface of the conductive coating backplane or *ground plane*, and a conductive coating patch or microstrip array or *radiating element* (again depending upon whether the antenna is a GPS or other microstrip antenna) applied over the outer surface of the dielectric coating.

*Id.* at 2:35–44 (emphases added). The specification then instructs that

[t]he center conductor of a coaxial cable or the pin of a coaxial connector extends through and is insulated from the conductive coating backplane or *ground plane* and the dielectric coating, and is in contact with the conductive coating patch or microstrip array or *radiating element*, for transmission of a signal from the antenna.

*Id.* at 2:44–50 (emphases added).

And claim 27 of U.S. Patent Application Publication Number 2010/0097273, cited by both patents, claims “the antenna of claim 14, further comprising a ground member formed such that the substrate is positioned between the antenna member and the ground member,” *id.* at 6, drawing a distinction difficult if not impossible to reconcile with nCap’s argument that a ground plane can be not only an antenna element but a “radiating antenna element.”

The intrinsic evidence thus makes clear that the phrase “radiating antenna element” is commonly used to refer to the active antenna element but is not used to refer to the ground plane. Rather, it is used in contradistinction to the ground plane.

## **B.**

Outside the context of this litigation, nCap’s statements reflect the same understanding. The court recognizes that these statements are not quite intrinsic evidence and do not amount to clear disclaimers of claim scope. But to whatever extent these statements are probative, the court believes their rejection of the construction of “radiating antenna element” urged by nCap here and their recognition of the distinction between such an element and a ground plane tend to confirm the court’s reading of the intrinsic evidence.

In prosecuting a closely related patent in Europe, nCap explained to the EPO that “there are two distinct elements in any antenna system, namely the active antenna, which radiates or receives RF radiation; and the ground, or counterpoise if there is no available (actual) ground.” Dkt. No. 490-8 at 123. nCap further clarified that its invention “has [a] radiating part of the antenna, namely the ‘*transducer used to transmit or receive electromagnetic radiation.*’” *Id.* (emphasis in original). And nCap went on to say that the “the transducer (the active part of the antenna system)” “clearly cannot be the counterpoise” and that “[t]he counterpoise does not contribute to the TX/RX functionality of the antenna, but merely acts as a substitute for a ground

plane.” *Id.*<sup>3</sup> nCap also explained the need to “insulate the *radiating part* of the antenna from the ground plane or conducting substrate (which would act as a ground plane).” *Id.* at 122 (emphasis in original). For if the “radiating part” of the antenna “were placed in contact with a conductive substrate, this would earth/short the antenna to ground, rendering it useless.” *Id.* The clear distinctions between the “radiating part” of an antenna and the “ground plane,” “ground,” or “counterpoise” reflected in nCap’s representations to the EPO cannot be reconciled with its position in this litigation that a ground plane (or at least a portion of a ground plane) can be a radiating antenna element.

In addition, during the EPO proceedings, nCap offered as an exemplary embodiment of the invention claimed by its patent a “spray on” antenna that Chamtech (nCap’s predecessor) had previously developed. *See* Dkt. No. 492-13 at 15. In the documentation it submitted to the EPO, nCap described how this antenna worked. After first explaining that “typical antenna design, theory, and formulas may be employed” to “create and install an antenna” and then providing various “antenna patterns,” nCap went on to explain that a “ground plane can be accomplished by either using at least one of the earth’s natural ground, a side of a metal building, a vehicle. Alternatively, or in addition, a ground plane may be fabricated by creating another independent ground plane with the spray on material.” *Id.* at 18. nCap’s explanation of its spray-on antenna to the EPO thus clearly treated the ground plane as something distinct from the antenna—even when both are composed of the same material.

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<sup>3</sup> Rightly or wrongly, the EPO rejected nCap’s arguments and concluded that the subject matter claimed by nCap’s patent could not be distinguished from prior art. The EPO thus required nCap submit a new independent claim and amendments to the specification if it wished to continue its attempts to prosecute its patent. *See* Dkt. No. 502-2 at 2–4.



Further, the glossary provided with Chamtech’s instruction manual for the spray-on antenna describes a monopole antenna in which “one pole, such as a vertical *radiator* operated against the earth or a *ground plane*,” Dkt. No. 492-17 at 19 (emphases added), again clearly distinguishing the ground plane from the radiating antenna element. And Chamtech’s product documentation for a related Chamtech antenna drew the same distinction, instructing that the “center pin [of the feed line] must be applied to the *radiator element* and the shield must be applied to the *ground plane* element.” Dkt. No. 492-16 at 3 (emphases added).

To be sure, these product documentation materials were provided to the U.S. Government confidentially and are not public materials. *Cf. Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004). But there is no reason to think they reflected any sort of idiosyncratic usage or that their intended users would not have understood the distinction drawn between an “antenna,” “radiator,” or “radiator element,” on the one hand, and the “ground plane,” on the other hand—a distinction clearly inconsistent with nCap’s position in this litigation.

### C.

Extrinsic evidence of “the meaning of [the] term in the relevant art during the relevant time period” confirms the court’s conclusion. *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318, 331 (2015). The scientific literature regarding antennas consistently distinguishes the phrase “radiating antenna element”—or obvious synonyms of that phrase—from an antenna’s ground plane. Indeed, when asked at the most recent claim construction hearing, nCap’s counsel could not identify a single incidence in this literature in which a ground plane is referred to as a radiating antenna element.

Both parties agreed that CONSTANTINE A. BALANIS, ANTENNA THEORY (4th ed. 2016) is a leading publication in the field of antenna science. *See* Dkt. No. 489 at 16; Dkt. No. 493 at 9. nCap’s expert testified at his deposition that he uses the textbook to teach his students, calling it “the authoritative textbook.” Dkt. No. 492-4 at 14:3–15:11 And Apple’s expert used it in his opening report, calling it a “well-respected” reference in the art. Dkt. No. 492-36 at 29.

That textbook repeatedly draws the distinction recognized by the court. For example, it defines a “slot antenna” as “a *radiating element* which typically is formed by cutting an opening on a *ground plane*.” BALANIS 841 (emphases added). For a “patch antenna,” the textbook explains that the “*radiating element*[]” is placed a set distance “above a *ground plane*.” *Id.* at 784–85 (emphases added). It further teaches that “[c]oaxial-line feeds, where the inner conductor of the coax is attached to the *radiation patch* while the outer conductor is connected to the *ground plane*, are also widely used.” *Id.* at 786 (emphases added). And it explains that “[t]he *ground plane* between the substrates also isolates the feed from the *radiating element* and minimizes interference of spurious radiation for pattern formation and polarization purity.” *Id.* at 787 (emphases added).

And when the *Balanis* textbook first introduces the concept of ground planes, it begins by assuming “the ground is a perfect electric conductor, flat, and infinite in extent.” *Id.* at 180. It then provides various assumptions and introduces mathematical procedures used later in the textbook for determining the characteristics (such as the gain, directivity, and radiation pattern) of a specific radiating antenna element near such a ground, explaining that the same assumptions and procedures “can also be used to investigate the characteristics of any radiating element near any other infinite, flat, perfect electric conductor.” *Id.* The textbook also states that PEC, PMC,

and EBG surfaces—all of which are used as “ground plane[s],” *id.* at 210, “exhibit shortcomings when electromagnetic radiating elements are mounted on them,” *id.* at 207.

Finally, ground planes are conspicuously absent from any of the overviews of antenna elements in the textbook. For example, the textbook offers the history of “antenna elements”—which it appears to equate with radiating antenna elements—explaining that before “World War II most antenna elements were of the wire type (long wires, dipoles, helices, rhombuses, fans, etc.)” *Id.* at 19. It then explains that newer “radiators” were put in service after the war, and that “[m]any of these antennas were of the aperture type (such as open-ended waveguides, slots, horns, reflectors, lenses)” *Id.* Finally, the textbook discusses “a fundamental new radiating element” introduced in the 1970s—the “microstrip or patch.” *Id.* It is difficult to imagine that this comprehensive source would not once include a ground plane—a ubiquitous and long-understood mainstay of antenna theory—somewhere in its historical survey of antenna elements if a ground plane could properly be considered a “radiating antenna element.”

Both parties have also cited JOSEPH J. CARR, PRACTICAL ANTENNA HANDBOOK (4th ed. 2001) in this litigation. *See* Dkt. No. 276 at 4; Dkt. No. 489 at 17 n.5. This handbook likewise distinguishes between the “radiator element” and “the ground,” explaining, for example, that “the inner conductor of the coaxial cable is connected to the *radiator element*, and the coaxial cable shield is connected the *ground*.” Dkt. No. 490-15 at 187–89 (emphases added).

While the extrinsic evidence thus makes clear what a radiating antenna element *is not*, it provides less consistent guidance regarding what a radiating antenna element *is*. Like the patents-in-suit, the extrinsic evidence commonly uses the phrase to refer to active antenna elements. For example, the 2004 Institute of Electrical and Electronic Engineer’s definition of “driven element” is “[a] radiating element coupled directly to the feed line of an antenna.” Dkt. No. 490-28 at

2.114. And its definition of “primary radiator” is “[t]he radiating element of a reflector or lens antenna that is coupled to the transmitter or receiver directly, or through a feed line.” *Id.* at 2.297. Similarly, the Practical Antenna Handbook provides that a dipole antenna may be modeled as either a “single radiator fed at the center or a pair of radiators fed back to back.” Dkt. No. 490-15 at 410.

But contrary to Apple’s arguments, it does not appear that the phrase is used to refer only to such elements. For example, while the IEEE’s definitions of “driven element” and “primary radiator” just quoted make clear that active or driven elements are radiating antenna elements, they also imply that other types of radiating antenna elements may exist as well. And indeed, the IEEE identifies what it calls a “parasitic element,” which it defines as “[a] radiating element that is *not* connected to the feed lines of an antenna.” Dkt. No. 490-28 at 2.262 (emphasis added).

To be sure, the IEEE’s definitions are far from a model of clarity and coherence. Indeed, they sometimes seem contradictory. For example, IEEE’s definition of “radiating element” is “a basic subdivision of an antenna that *in itself* is capable of radiating or receiving radio waves.” *Id.* at 2.306 (emphasis added). But as is clear from IEEE’s separate definition, a parasitic element cannot *independently* radiate radio waves. (And indeed, although the driven element—which IEEE clearly defines as a “radiating element”—certainly *emits electromagnetic radiation*, in many antenna systems it cannot “in itself” *transmit “radio waves.”*<sup>4</sup>)

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<sup>4</sup> The extrinsic evidence distinguishes “electromagnetic radiation” from “radio waves.” The IEEE defines the former as “[t]he emission of electromagnetic energy from a finite region in the form of unguided waves.” Dkt. No. 490-28 at 2.309. And although it does not provide an express definition, the IEEE implicitly defines the latter as the waves ultimately transmitted by an antenna system. *See id.* at 2.12. Because the parties’ previously agreed-upon construction of “radiating antenna element” focuses on the source or sources of electromagnetic radiation in an antenna system rather than on the radio waves ultimately transmitted by the system, and because the extrinsic evidence generally uses the word “emit” (or its cognates) to refer to giving off

But although the IEEE’s definitions indicate that radiating antenna elements are not strictly limited to active or driven elements, these definitions provide no support for nCap’s argument that a ground plane may properly be referred to as a radiating antenna element. Indeed, the IEEE does not even include a ground plane in its list of antenna elements. *See id.* at 2.128 (defining “element” by reference to its definitions of “array element; director element; driven element; linear electric current element; linear magnetic current element; multi-wire element; parasitic element; radiating element; [and] reflector element”). And its definition of “ground plane”—“a conducting or reflecting plane functioning to image a radiating structure,” *id.* at 2.170—reflects the same fundamental distinction between a ground plane and a radiating element found consistently throughout the extrinsic evidence.

Even for monopole antennas, which undisputedly require both a ground plane and an active element to transmit radio waves, the IEEE maintains the distinction. It defines a monopole as an “antenna, constructed above an imaging plane, that produces a radiation pattern approximating that of an electric dipole in the half space above the imaging plane.” *Id.* at 2.237. As the IEEE’s definition of “ground plane” makes clear, this definition treats the ground plane as “the imaging plane” and the active element as the “antenna.”

In addition to these authoritative sources cited by both parties, Apple has provided several journal articles that reflect the same fundamental distinction. *See, e.g.*, Dkt. No. 490-19 at 2 (emphases added) (“However, the ever-increasing demand for size reduction of mobile handsets has led to embedded antennas, not only with reduced-size *radiating elements*, but also with

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unguided radiation and the word “transmit” (or its cognates) to refer to sending radio waves, the court modifies the previous construction to refer to a part of the antenna that “emits”—rather than “transmits”—“electromagnetic radiation.”

limited size *ground planes.*”); Dkt. No. 490-20 at 2 (emphases added) (“In recent years, Switchable Antenna is very synonym [sic] with UWB and most the component [sic] of switching is integrated with *radiating element* compared to the *ground plane.*”); Dkt. No. 492-24 (emphases added) (“For a mobile phone antenna, antenna characteristics are strongly affected by *ground plane*, as well as the *radiating element* itself.”).

Apple has also provided examples of other patents in this field that maintain the distinction. *See, e.g.* U.S. Patent No. 8,174,450 at 1:17-20 (issued May 8, 2012) (emphases added) (“The basic elements of a conventional [Micropatch Antenna] are a flat *radiating element* (patch) and a flat *ground plane* separated by a dielectric medium.”); U.S. Patent App. Pub. No. 2010/0013714 at Abstract (emphases added) (“An antenna for a wireless communication may include a *ground plane* provided on a carrying structure, a feed element, and a *radiating element* coupled to the feed element, the radiating element being substantially parallel to and vertically displaced from the ground plane by the feed element and a shortening element.”); *cf.* U.S. Patent No. 7,193,574 at 2:27-32 (issued March 20, 2007) (“An antenna comprises a ground plane, at least one active element, and a plurality of passive elements. The active element, which is installed on top of the ground plane while electrically isolated from the ground plane, radiates a radio beam.”).

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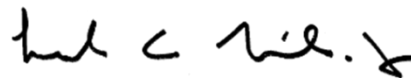
In short, both the intrinsic and extrinsic evidence make clear that the phrase “radiating antenna element” is commonly used to refer to the active or driven element of an antenna. To be sure, the extrinsic evidence, while not reflecting an entirely precise or consistent understanding of the phrase, also suggests that it may be used to refer to certain other parts of an antenna system as well. Whatever its outer limits, however, the phrase is not used to refer to a ground

plane. To the contrary, *all* of the evidence—the intrinsic evidence, the extrinsic evidence, and even nCap’s own statements outside this litigation—draw a consistent distinction between a radiating antenna element and a ground plane. For these reasons, the court construes the term “radiating antenna element” as follows:

a part of an antenna, other than a ground plane, that emits electromagnetic radiation. The phrase “radiating antenna element” is commonly used to refer to the active or driven element—the part of the antenna that is connected to the transmitter directly or through the signal part of a feed line—though in certain antenna structures it may also be used to refer to other parts of the antenna system. The phrase is not used to refer to a part of an antenna system that functions as part of the ground plane, however.

The court recognizes that this construction defines the disputed phrase as much by what it is not as by what it is. But the court concludes that this construction fairly captures both what is and what is not clear from the intrinsic and extrinsic evidence. In addition, this construction is firmly rooted in the parties’ initial stipulated construction—modified, to the extent necessary, to resolve the parties’ interpretive dispute regarding the meaning of the initial construction.

DATED this 14th day of July, 2023.



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Howard C. Nielson, Jr.  
United States District Judge