

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

GENERAL ACCESS SOLUTIONS, LTD.,

Plaintiff,

v.

CELLCO PARTNERSHIP D/B/A VERIZON
WIRELESS, VERIZON SERVICES CORP.,
VERIZON BUSINESS GLOBAL LLC,
VERIZON BUSINESS NETWORK
SERVICES LLC, VERIZON CORPORATE
SERVICES GROUP INC., VERIZON DATA
SERVICES LLC, and VERIZON ONLINE
LLC,

Defendants,

ERICSSON INC.

Intervenor-Defendant.

C.A. No. 2:22-394-JRG

DEFENDANTS' INVALIDITY CONTENTIONS

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Pursuant to the Local Patent Rule 3-3, Defendants¹ provide their Invalidity Contentions.

I. INTRODUCTION

On January 5, 2023, Plaintiff General Access Solutions, Ltd. (“GAS”) served its Infringement Contentions (“Infringement Contentions”) and asserted the following claims:

- U.S. Patent No. 7,230,931 (“’931 patent”): Claims 28, 29; and
- U.S. Patent No. 9,426,794 (“’794 patent”): Claims 1-2, 4-6

(collectively, the “Asserted Patents” or “Patents-in-Suit” and the “Asserted Claims”). Verizon contends that each of the Asserted Claims are ineligible subject matter under 35 U.S.C. § 101, and that each of the Asserted Claims is invalid under at least 35 U.S.C. §§ 102, 103, and/or 112. Ericsson contends that each Asserted Claim of the ’931 patent is invalid under at least 35 U.S.C. §§ 102, 103, and/or 112.

These Invalidity Contentions address the claims identified in GAS’s Infringement Contentions. Defendants reserve the right to modify, amend, or supplement these Invalidity Contentions to the extent the Court permits GAS to amend, supplement, or otherwise modify its Infringement Contentions, including by modifying the claims asserted, and to the full extent permitted by the Local Patent Rules.

Further, GAS’s Infringement Contentions are deficient and fail to provide allegations as to how the accused products infringe each and every claim limitation; rather, they simply parrot the claim language and then cite various documents—and in some circumstances, point to no evidence

¹ Defendants are Cellco Partnership d/b/a Verizon Wireless, Verizon Services Corp., Verizon Business Global LLC, Verizon Business Network Services LLC, Verizon Corporate Services Group Inc., Verizon Data Services LLC, and Verizon Online LLC (collectively, “Verizon”) and, with respect to the ’931 Patent, Intervenor Ericsson Inc. (“Ericsson”), collectively. Because GAS has not accused any Ericsson product or service of infringing the ’794 Patent, Ericsson provides these invalidity contentions only with respect to the ’931 Patent.

at all. GAS therefore has prejudiced Defendants' ability to understand, for purposes of preparing these Invalidity Contentions, what GAS alleges to be the scope of the Asserted Claims. Defendants reserve the right to amend these Invalidity Contentions if and when GAS provides proper infringement contentions as to each Asserted Claim.

Nothing in these Invalidity Contentions is intended, nor should be construed, as waiver of any claim construction argument or noninfringement position. Defendants' statements herein (including the accompanying charts) reflect Defendants' understanding of the purported potential scope of the claims that GAS appears to be advocating in its Infringement Contention. Defendants' statements herein are not to be construed as acquiescence to GAS's interpretation of any claims or claim terms. Defendants disagree that any such claim scope is proper.

Nothing herein shall be interpreted as an admission that: (1) the Asserted Claims are infringed by any of Defendants' products or services; (2) any particular feature or aspect of any of the accused instrumentalities practices any limitation of the Asserted Claims, (3) there is 35 U.S.C. § 112 support for any limitation of the Asserted Claims, or (4) any of GAS's proposed or implied constructions are supportable.

A. Priority Date

These Invalidity Contentions are based on the earliest priority dates as identified by GAS in its Infringement Contentions. Nothing in these Invalidity Contentions shall be understood as an agreement that any Asserted Patent is entitled to claim priority to the dates identified by GAS, or to any continuation-in-part, provisional, or foreign priority document. Defendants reserve the right to amend these Invalidity Contentions and identify additional prior art references if GAS is permitted by the Court to later assert an earlier priority date, or is permitted by the Court to later produce documents purporting to evidence earlier conception and reduction to practice.

Any reference to an “asserted priority date” in these Invalidity Contentions refers to the priority dates identified in GAS’s Infringement Contentions. Reference to a “priority date” or an “asserted priority date” should not be construed to mean that Defendants agree that any of the Asserted Patents are in fact entitled to such priority date, or that GAS has provided proper notice as to its contentions for a priority date.² To the extent GAS alleges that any prior art relied on in these Invalidity Contentions does not actually qualify as prior art to an Asserted Patent, Defendants reserve the right to rebut those allegations (*e.g.*, by demonstrating an earlier critical date for the challenged prior art and/or a later priority date for a particular Asserted Patent and/or Asserted Claim).³ Likewise, to the extent GAS successfully establishes an invention date before any of the prior art references relied on by Defendants, then those references serve as evidence of secondary considerations of obviousness, particularly, contemporaneous invention by others.

Asserted Patent	Asserted Priority Date
'931 patent	January 19, 2001
'794 patent	November 15, 2000

B. Claim Construction

Defendants’ Invalidity Contentions are based on (1) Defendants’ present understanding of the Asserted Claims, and (2) the claim constructions GAS appears to be using based on the Infringement Contentions, all without regard to whether Defendants agree with GAS’s apparent or expressed claim constructions. Defendants reserve the right to supplement or otherwise amend

² Defendants reserve the right to rely on additional documents, evidence, and expert testimony, including, without limitation, the documents cited in GAS’s Infringement Contentions, in the event that GAS fails to establish that any Asserted Claim of any Asserted Patent is entitled to its Asserted Priority Date.

³ Defendants reserve the right to rely on additional documents and evidence to rebut any efforts by GAS to allege any reference was not publicly available or otherwise available as prior art.

these Invalidity Contentions in response to any court-ordered clarifications on claim constructions, any report from any expert witness for GAS regarding the scope of the claims, any briefing filed by GAS relating to the scope of the claims, and any position taken by GAS concerning claim scope, infringement, or invalidity.

In the respective invalidity charts, Defendants identified terms that it contends are governed by 35 U.S.C. § 112 ¶ 6. Defendants otherwise take no position on any matter of claim construction in these Invalidity Contentions, including whether any particular claim element should be construed according to 35 U.S.C. § 112 ¶ 6. If Defendants' disclosures herein are consistent with any explicit, apparent, or implied claim constructions in GAS's Infringement Contentions, no inference is intended and no inference should be drawn that Defendants agree with any of GAS's claim constructions. Any statement herein describing or tending to describe any claim element is provided solely for the purpose of understanding and/or applying the cited prior art. In addition, to the extent that these Invalidity Contentions rely on or otherwise embody a particular order in which the steps of method claims are performed, Defendants do not necessarily propose that the method claims must be limited to such order, although Defendants may later propose such an order.

Nothing herein should be read to suggest that Defendants agree that any particular claim term is sufficiently definite, enabled or supported by the written description to meet the requirements of 35 U.S.C. § 112. Likewise, nothing herein should be read to suggest that Defendants agree that the preamble of any claim is or is not limiting.

Because any positions taken in these disclosures are based on the claim scope apparently asserted by GAS in its Infringement Contentions, with which Defendants may disagree, Defendants may take positions with respect to claim construction issues that are inconsistent with, or even contradictory to, positions expressed or implied in these Invalidity Contentions.

Prior art not included in these Invalidity Contentions, whether or not now known to Defendants, might become relevant depending on the claim constructions proposed by Defendants and/or the Court's claim construction rulings. Defendants reserve all rights to supplement or modify the positions and information in these Invalidity Contentions, including, without limitation, the prior art and grounds of invalidity set forth herein, after the Court has construed any term of the Asserted Claims.

C. Ongoing Discovery and Supplementation

Defendants base these Invalidity Contentions on its current knowledge and understanding of the Asserted Patents, GAS's Infringement Contentions, and other facts and information available as of the date of these contentions. Defendants' investigation into prior art—including prior art identified in these disclosures, third-party prior art (including system art and related evidence), documents, and knowledgeable witnesses—is ongoing.⁴ Furthermore, Defendants anticipate seeking and obtaining discovery, including third-party discovery, that further evidences and supports the invalidity of the Asserted Claims. Thus, Defendants expect to present additional information and evidence in support of its Invalidity Contentions, and to revise, amend, and/or supplement these Invalidity Contentions accordingly in a manner consistent with the Federal Rules of Civil Procedure and the Court's rules and applicable orders.

⁴ Defendants' future efforts include but are not limited to: serving subpoenas on prior artists and inventors regarding prior art, seeking additional information related to the references and systems disclosed in these Invalidity Contentions, and seeking additional information related to available prior art systems, as well as GAS's Infringement Contentions and the products accused of infringing therein. No depositions have been taken as of this time, including, without limitation, depositions of any inventors, authors, or entities listed on any references or systems identified in these Invalidity Contentions. Further, Defendants reserve the right to review and supplement these Invalidity Contentions with respect to any additional prior art that becomes apparent as discovery proceeds.

Furthermore, Defendants are investigating and pursuing information from additional sources of discovery that may bear on prior art and other invalidity bases, and may serve discovery requests on those sources if necessary. Defendants reserve the right to revise, amend, and/or supplement these Invalidity Contentions with any relevant information obtained from those additional sources.

Defendants further reserve the right to rely on statements or admissions from those owing a duty of candor, such as the named inventor, prosecution counsel, and others involved in the prosecution of the patent applications or related applications, concerning the scope of the prior art relevant to the Asserted Patents found in, *inter alia*, the following: the respective prosecution histories of the Asserted Patents and related patent applications; deposition testimony of the named inventor; and the papers filed and any evidence submitted by GAS in connection with this litigation.

Prior art not identified in this disclosure, whether known or not known to Defendants, may become relevant, including prior art concerning the state of the art at the time of invention, as well as simultaneous or near-simultaneous independent invention by others. For instance, Defendants currently are unaware of the extent, if any, to which GAS will contend that limitations of the Asserted Claims are not disclosed in the prior art identified by Defendants. To the extent that such an issue arises, Defendants reserve the right to identify other references that would disclose, practice, or render obvious the allegedly missing limitation(s) of the disclosed subject matter.

D. Prior Art Identification and Citations Thereto

In these Invalidity Contentions, Defendants identify specific portions of prior art references that disclose the elements of the Asserted Claims. While Defendants have identified exemplary prior art references for each element, they do not necessarily identify every disclosure of the same element in each prior art reference. A person of ordinary skill in the art would read a prior art

reference as a whole and in the context of other publications, literature, and general knowledge in the field and would rely upon other information including other publications and general scientific or engineering knowledge. Defendants therefore reserve the right to rely upon other unidentified portions of the prior art references and on other publications and prior art products and expert testimony to provide context and to aid in the understanding and interpretation of the identified portions of the prior art.

Defendants also reserve the right to rely upon (1) other portions of the cited prior art references, other publications, prior art products, and the testimony of experts to establish that the alleged inventions would have been obvious to a person of ordinary skill in the art, including on the basis of modifying or combining certain cited references; (2) admissions relating to prior art in the Asserted Patents or related patents, the prosecution history of the Asserted Patents or related patents, or other admissions obtained during discovery; (3) foreign counterparts of any U.S. patents identified in Defendants' Invalidity Contentions; and (4) any prior art references, other publications, prior art products, and the testimony of experts to establish that the alleged inventions would have been obvious to a person of ordinary skill in the art used during any reexamination, *inter partes* review, post-grant review, or any other proceeding at the Patent Office involving the Asserted Patents. Where a prior art reference includes citations to other references, those other references are considered incorporated by reference for context.

The references discussed in the claim charts may disclose the elements of the Asserted Claims explicitly and/or inherently, and/or they may be relied upon to show the state of the art in the relevant time frame. The suggested obviousness combinations are provided in the alternative to Defendants' anticipation contentions and are not to be construed to suggest that any reference included in the combinations is not by itself anticipatory.

Where Defendants identify in the claim charts a particular figure in a prior art reference, the identification should be understood to encompass the caption and description of the figure as well as any text relating to the figure in the specification and prosecution history in addition to the figure itself. Similarly, where an identified portion of text refers to a figure or other material, the identification should be understood to include the referenced figure or other material as well.

E. No Patentable Weight

Defendants reserve the right to argue that various portions of the Asserted Claims, such as an intended use or result, nonfunctional descriptive material, and certain preamble language, are entitled to no patentable weight. Mapping of a portion of an Asserted Claim to a prior art reference does not represent that such portion of the claim is entitled to patentable weight when comparing the claimed subject matter to the prior art.

Nothing herein should be read to suggest that Defendants agree that any particular claim term is sufficiently definite, enabled or supported by the written description to meet the requirements of 35 U.S.C. § 112. In addition, nothing herein admits in any way that any of Defendants' accused products infringe any of the Asserted Claims. Defendants reserve the right to amend and supplement these Invalidity Contentions, including in response to any amendments to, and revisions of, GAS's Infringement Contentions or application of the Asserted Claims. Defendants further reserve the right to supplement its corresponding document production should they later find additional, responsive documents.

II. INVALIDITY UNDER 35 U.S.C. §§ 102 AND 103

Defendants contend that the Asserted Claims are invalid as anticipated by the prior art under 35 U.S.C. § 102 and/or as obvious in view of the prior art, the knowledge of a person having ordinary skill in the art, and/or secondary factors of obviousness under 35 U.S.C. § 103.

The obviousness combinations of references provided in Defendants' invalidity claim charts under 35 U.S.C. § 103 are exemplary and are not intended to be exhaustive. In particular, Defendants are currently unaware of the extent, if any, to which GAS will contend that limitations of the Asserted Claims are not disclosed in the art identified by Defendants as anticipatory. To the extent an issue arises with any such limitation, Defendants will identify other obviousness combinations and/or other references that would have made obvious the addition of the allegedly missing limitation to the disclosed device, system, or method of operation.

Defendants reserve the right to present additional items of prior art under 35 U.S.C. § 102 and/or 35 U.S.C. § 103 located during the course of discovery or further investigation. For example, Defendants expect to issue subpoenas to third parties believed to have knowledge, documentation, and/or corroborating evidence concerning some of the prior art listed below and/or additional prior art. These third parties include without limitation the authors, inventors, or assignees of the references listed in these disclosures. In addition, Defendants reserve the right to assert invalidity under other subsections of 35 U.S.C. § 102 to the extent that discovery or further investigation yields information forming the basis for such invalidity.

A patentee bears the burden of production with respect to evidence of secondary considerations of nonobviousness. *ZUP, LLC v. Nash Mfg., Inc.*, 896 F.3d 1365, 1373 (Fed. Cir. 2018). As of the date of these Invalidity Contentions, GAS has not identified any evidence of secondary considerations, nor does GAS offer any evidence or explanation to support its allegations. As shown in these Invalidity Contentions, other companies and individuals described, built, and/or patented the exact same concepts in the Asserted Patents before GAS ever did—often many years before. Even where others' invention(s) occurred around the same time as the Asserted Patents, such simultaneous invention demonstrates the obviousness of the Asserted Patents.

Potentially relevant evidence includes any prior art reference cited herein that was publicly known or available before or around the alleged inventions claimed in the Asserted Patents. This also includes any prior art asserted in these Invalidity Contentions that GAS is able to pre-date based on its asserted priority dates by proving, *inter alia*, corroborated conception and diligent reduction to practice.

Defendants reserve all rights to further respond to any secondary considerations of nonobviousness raised by GAS, including by updating, modifying, and/or adding to these Invalidity Contentions. Defendants are not aware of any unexpected results, long-felt need, commercial success (or any nexus to any allegedly successful commercial embodiment), or awards for the alleged inventions of the Asserted Patents.

A. State of the Art

The subject matter of the Asserted Claims was well understood to those of skill in the art as of the respective priority dates of the Asserted Patents. To describe the state of the art at the time of the alleged inventions, in addition to the references listed on the face of the Asserted Patents and those references listed in Section B and charted in Exhibits A1–A14, B1–B9, and Appendices A–B, Defendants may rely on at least the references listed below and any admitted prior art discussed in the Asserted Patent and file histories.

1. U.S. Patent No. 7,230,931

The background state of the art includes that which is set forth in the patent, the file history, and the prior art references disclosed herein. A more detailed discussion is provided below.

Early Cellular Technologies

The first mobile telephone services were introduced in the U.S. in the late 1940s. These systems typically used base stations with large power amplifiers and tall towers to cover a relatively large area. From the 1970s to 1980s, the first-generation (1G) cellular systems were

developed. The 1G cellular systems were analog systems designed primarily for voice services. In the 1990s, various standard-setting organizations (SSOs) developed second-generation (2G) digital mobile communication standards such as Global System for Mobile Communications (GSM). The 2G systems introduced digital (as opposed to analog) signal modulation and error correction schemes, which improved noise and interference. The 2G systems also offered increased system capacity through the use of spectrally efficient digital speech codecs, new multiple access techniques including time division multiple access (TDMA) and code division multiple access (CDMA), and more aggressive frequency reuse. In the 1990s, the International Telecommunications Union (ITU) began publishing performance requirements and accepting proposals for 3G systems (then known as IMT-2000). Various cellular network improvements resulted from this endeavor, including CDMA2000 and Universal Mobile Telecommunications System (UMTS). Additional standards followed, accommodating high-speed packet data services, such as EV-DO and HSPA. Next was fourth generation 4G Cellular, which refers to post-3G standards which were no longer based on CDMA (i.e., breaking backwards compatibility with legacy systems). 4G mainly comprised three standards: WiMAX (IEEE 802.16), 3GPP Long Term Evolution (LTE), and Qualcomm's UMB.

5G Cellular

The 5G standard is built upon multiple technology innovations, including ultra-densification deployment scenarios, transmissions over millimeter wave (mmWave) bands, and massive multiple-input multiple-output (MIMO) technology used to scale up the existing number of base station antennas.

The 5G NR standard can be viewed as a major enhancement to LTE, although based on a similar frame structure and physical layer waveform, as well as the same basic channel structure

(e.g. PUCCH, PUSCH, PRACH) and many of the other features. The first 5G release (3GPP Release 15) is known as 5G New Radio (NR) and was formally approved on December 20, 2017.

2. U.S. Patent Nos. 9,426,794

The background state of the art includes that which is set forth in the patent, the file history, and the prior art references disclosed herein. A more detailed discussion is provided below.

The Internet Protocol (IP)

The Internet is a global “network of networks” that interconnects “hosts” across all such networks. The Internet is effectively defined by a collection of protocols known as the “Internet Protocol Suite” that operates across multiple layers of the Open Systems Interconnection (OSI) 7-layer model. The top-most layer is called the “Application Layer” (layer 7), which is the point at which the communicating entity (such as a person) interfaces with the communications channel in a manner specific to a given application. The two lowest layers of the OSI model are the “Physical Layer” (or “PHY,” layer 1) and the “Data Link Control Layer” (or “DLC,” layer 2), which are very specific to the physical media over which communications occurs.

In all communications networks, the PHY layer defines many critical attributes of the media transfer path including at least the channel encoding, modulation format, channel access multiplexing, carrier frequency, and transmitted signal level, as well as explicitly or implicitly defining the reverse procedures necessary for the receive path. The PHY layer transmits and receives “bits” converted into “signals.” Examples of different physical media include acoustic vibrations, electric fields, magnetic fields, radio transmissions, infrared emissions, electrical conductors, and optical fiber propagations.

The “middle” layers of the communication stack are, in theory, both application and media independent and include layer 3 (the “network layer”), layer 4 (the “transport layer”), layer 5 (the “session layer”), and layer 6 (the “presentation layer”). The term “network” is used often to

describe a series of points interconnected by communications channels. However, for purposes of analyzing the details of communications systems involving a “network layer,” it is important to understand that the purpose of the “network layer,” which is a defining characteristic of any communications “network,” is to perform routing and relaying services necessary to support data transmission over interconnected networks. Examples of the network layer 3 include the Internet Protocol (or “IP”), which is used to exchange data within the Internet and many private packet data networks (or “PDNs”).

Early WiFi Technology

In 1971, the first demonstration of wireless packet data network occurred at the University of Hawaii. This network was referred to as ALOHAnet, which operated on ultra-high frequency radio waves in lieu of phone lines. The History of WiFi, <https://getvoip.com/history-of-wifi/>. In 1988, WaveLAN was released, originally intended as a wireless alternative to existing wireline systems in cashier systems. *Id.*

The WaveLAN design was submitted to IEEE 802 LAN/MAN Standards Committee, which led to the creation of the IEEE 802.11 Working Group for Wireless LAN in 1990. *Id.* Over the next few years, researchers at Carnegie Mellon University conducted successful experiments on wireless connectivity on campus. In 1997, the IEEE Working Group released the first version of the 802.11 protocol, which provided up to 2 Mbps link speeds. *Id.* This protocol was updated to 802.11b in 1999, which allowed faster speeds (11 Mbps) on the 2.4 Ghz frequency.

In 1999, the WiFi Alliance was formed as a nonprofit trade association. (In the present day, this entity evaluates universal compatibility and certifies products for interoperability.) In 1999, the Working Group published protocol 802.11b, which allowed 11 Mbps link speeds on the 2.4Ghz frequency. Several iterations of the 802.11 standards were published thereafter, offering

higher speed and wider coverage, up to 802.11AC in 2014. WiFi 802.11AC offered a maximum speed of 1733 Mbps in the 5GHz band. *Id.*

IEEE 802.11

More specifically, IEEE 802.11 (first published in 1997 then revised in 1999) describes protocols that allow connections between stations (STA), which include mobile (and fixed) end-user devices. IEEE 802.11 defines “station” as “any device that contains an IEEE 802.11 conformant medium access control (MAC) and physical layer (PHY) interface to the wireless medium (WM).” IEEE 802.11 Standard § 3.42. A “mobile station” is “[a] type of station that uses network communications while in motion.” *Id.* § 3.34. An “access point” is “[a]ny entity that has station functionality and provides access to the distribution services, via the wireless medium (WM) for associated stations.” *Id.* § 3.2.

Mobile stations and access points connect by “association.” For example, Section 5.4.2.2 of the 802.11 standard explains that “[b]efore a STA is allowed to send a data message via an AP, it shall first become associated with the AP.” A mobile station “learns what APs are present and then requests to establish an association” with the AP. *Id.* The process of association can involve “broadcasting” the SSID of the network to be received by interested mobile stations. For example, in what is referred to as passive scanning, the access point broadcasts an SSID, which the mobile station receives, and the mobile station can start the association process if the SSID it matches the identity of an SSID of a network with which the mobile station wishes to connect.

“A Technical Tutorial on the IEEE 802.11 Protocol” by Pablo Brenner (“Brenner 1996”), published in 1996, provides the following schematic of wireless coverage areas serviced by Access Points.

IEEE 802.11 Architecture

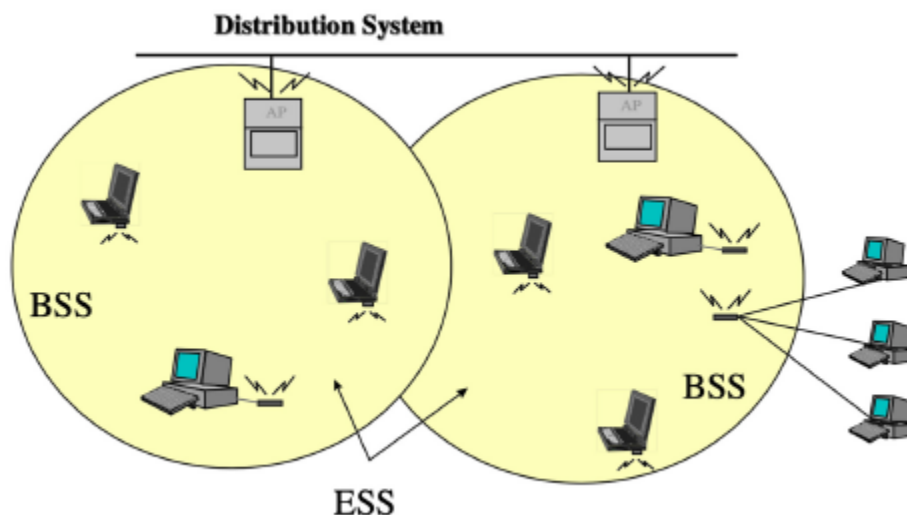
Architecture Components

An 802.11 LAN is based on a cellular architecture where the system is subdivided into cells, where each cell (called **Basic Service Set** or **BSS**, in the 802.11 nomenclature) is controlled by a Base Station (called **Access Point**, or in short **AP**).

Even though that a wireless LAN may be formed by a single cell, with a single Access Point, (and as will be described later, it can also work without an Access Point), most installations will be formed by several cells, where the Access Points are connected through some kind of backbone (called **Distribution System** or **DS**), typically Ethernet, and in some cases wireless itself.

The whole interconnected Wireless LAN including the different cells, their respective Access Points and the Distribution System, is seen to the upper layers of the OSI model, as a single 802 network, and is called in the Standard as **Extended Service Set (ESS)**.

The following picture shows a typical 802.11 LAN, with the components described previously:



Brenner 1996 at 3.

W-Fi Hotspots

In 1993, the first proposal for ideas resembling contemporary WiFi hotspots was introduced by Henrik Sjödín, then known as Public Access Local Wireless Networks. The History of WiFi. This concept was soon optimized for commercial use by several early innovators in the field, seeking to provide WiFi connectivity through a system compliant with IEEE 802.11.

One of the entities to commercialize WiFi hotspots in the late 1990s was a company named Metricom, which operated from 1996 to 2001. Its Ricochet wireless modems allowed subscribers to access the Internet, company intranets, and LANs from user devices including laptops. Metricom Web Archive. In 1998, MobileStar Network Corp., was founded in Richardson, Texas. MobileStar entered into contracts to provide network connectivity for consumers patronizing businesses such as Starbucks, American Airlines, and Hilton by year 2000. *See, e.g.,* MobileStar WSJ Article. MobileStar's product kit included network cards for user devices as well as a WiFi Access Point, a "single wireless transceiver that communicates with" the network cards. MobileStar provided Access Point bundles which were "networked together with a 10Base-T LAN," providing "adequate RF signals to the desired locations." *See* MobileStar Web Archive – Definitions. In 1999, Apple introduced the Apple AirPort ecosystem.⁵ One component of the AirPort system, known as the Base Station, served to provide home WiFi use for user devices equipped with AirPort cards. This system exemplified another early consumer computer devices to operate with integrated WiFi capability. The History of WiFi.

B. Identification of Prior Art

Defendants identify the following prior art now known to Defendants that anticipate or render obvious one or more of the Asserted Claims. Each of the following patents, publications, systems, and products is prior art under at least one or more of 35 U.S.C. § 102(a), (b), (e), (f), or (g) (pre-AIA) or § 102(a) (post-AIA), as applicable. Defendants' reliance on each prior art reference identified throughout these Invalidity Contentions includes the reference itself, anything incorporated by the reference, and any testimony by those with knowledge of the reference, such

⁵ https://www.youtube.com/watch?v=3iTNWZF2m3o&ab_channel=theunofficialAppleKeynoteschannel

as named authors and inventors. On information and belief, each listed document or item became prior art at least as early as the dates specified.

To the extent any limitation of any of the Asserted Claims is construed to have a similar meaning, or to encompass similar feature(s) and/or function(s), with any other claim limitation, and to the extent at least one claim chart in Exhibits A1–A14, B1–B9, and Appendices A–B hereto identifies any prior art reference as disclosing or teaching such similarly construed claim limitation, such identified prior art reference and Defendants’ contentions with respect to same are incorporated by reference. Priority dates identified for the prior art references are based on information currently available to Defendants, and Defendants will amend this disclosure to the extent additional information becomes available.

To the extent that they are prior art, Defendants reserve the right to rely upon (1) foreign counterparts of the U.S. Patents identified in Defendants’ Invalidity Contentions, (2) U.S. counterparts of foreign patents and foreign patent applications identified in Defendants’ Invalidity Contentions, and (3) U.S. and foreign patents and patent applications corresponding to articles and publications identified in Defendants’ Invalidity Contentions.

The prior art identified below is exemplary; the claimed features are similarly described or disclosed in additional prior art. Thus, Defendants reserve the right to rely on other evidence of the prior art beyond the example references identified herein.

The primary references identified below, and as further described in Exhibits A1–A14 and B1–B9, each discloses, either expressly or inherently, every element of the Asserted Claims, thereby anticipating those claims. To the extent GAS contends that any primary reference does not anticipate the Asserted Claims, it would have been obvious to combine or modify the primary references with concepts from other prior art, as explained herein and in Appendices A–E.

In particular, for each limitation of the Asserted Claims that GAS contends is not met by a particular primary reference, Defendants contend that the limitation (and claim as a whole) is obvious based on a combination of that particular primary reference with (1) any other primary reference disclosing that limitation, (2) any admitted prior art, as explained in the background of each patent or discussed in the file history, (3) any reference identified in Appendices A-E as disclosing that limitation, and/or (4) the knowledge of a person of ordinary skill in the art and/or any of the references and concepts discussed herein regarding the relevant background and state of the art. The specific combinations of prior art that Defendants contend render the Asserted Claims obvious are readily determinable as described herein, which is the most efficient manner of identifying the combinations. Defendants' obviousness grounds for each dependent claim incorporate the obviousness grounds for the claim(s) from which the dependent claim depends in addition to any obviousness grounds identified in the charts for the dependent claim.

Defendants do not yet have the benefit of GAS's positions on the prior art, including what (if any) elements it contends are missing in each prior art reference, whether GAS agrees that a reference is in fact prior art, and whether GAS agrees that a person of ordinary skill in the art would be motivated to combine specific references. Defendants reserve the right to supplement these obviousness positions (including identifying additional prior art combinations and the associated reasons to combine) as discovery in the case progresses, including expert discovery.

1. U.S. Patent No. 7,230,931

a. Prior Art Patents and Publications

- U.S. Patent No. 5,661,723, issued Aug. 26, 1997 ("Ueno '723")
- U.S. Patent No. 5,838,674, issued Nov. 17, 1998 ("Forssen '674")
- U.S. Patent No. 6,359,923, issued March 18, 2002 ("Agee '923")
- U.S. Patent No. 6,400,704, issued June 4, 2002 ("Mikuni '704")

- U.S. Patent No. 6,400,699, issued June 4, 2002 (“Airy ’699”)
- U.S. Patent No. 6,600,776, issued July 29, 2003 (“Alamouti ’776”)
- U.S. Patent No. 6,795,409, issued Sept. 21, 2004 (“Youssefmir ’409”)
- U.S. Patent No. 6,804,521, issued Oct. 12, 2004 (“Tong ’521”)
- U.S. Patent No. 6,977,919, issued Dec. 20, 2005 (“Stanwood ’919”)
- U.S. Patent No. 7,158,493, issued Jan. 2, 2007 (“Uhlik ’493”)
- U.S. Pat. Appl. Publ. No. 2002/0021684, published Feb. 21, 2002 (“Toshimitsu ’684”)
- Vornefeld et al., “SDMA Techniques for Wireless ATM,” IEEE Communications Magazine, November 1999, pp. 52-57 (“Vornefeld 1999”)
- TR 101 146 V3.0.0 (1997-12), “UTRA Concept Evaluation,” published December 1997 (“TR 101 146”)

b. Prior Art Systems

Defendants identify the following systems—including constituent software, hardware, methods, and processes—as prior art that anticipate or render obvious the Asserted Claims of these patents. Each system (1) was known or used in this country before the alleged invention of the claimed subject matter of the patent-in-suit; (2) was in public use and/or on sale in this country more than one year before the filing date of the application for the patent-in-suit; and/or (3) was invented and not abandoned, suppressed, or concealed prior to the alleged invention of the Asserted Patents.

Evidence of public use and/or sale of the listed system art includes webpages from the time of the alleged invention, for example as saved on the Internet Archive, and/or certain patents related to these systems. Exemplary examples of such webpages have been produced herewith. Discovery is ongoing and Defendants will supplement as discovery continues.

- Navini Networks System: On information and belief, the Navini Networks System was used and/or on sale as of at least October 2001. *See, e.g.*, exemplary webpages from the Internet Archives and press releases provided to Plaintiff; *see also, e.g.*, U.S. Patent Nos.

6,122,260; 6,157,340; 6,496,535; 6,834,076; 6,907,246; 7,062,276; 7,068,977; and 7,151,755.

- ArrayComm Inc. System: On information and belief, the ArrayComm Inc. System was used and/or on sale as of at least July 1997. *See, e.g.*, exemplary webpages from the Internet Archives and press releases provided to Plaintiff; *see also, e.g.*, U.S. Patent Nos. 5,828,658; 6,154,661; 7,158,493; 6,141,567; 6,795,409.
- BeamReach Networks, Inc. System: On information and belief, the BeamReach Networks System was used and/or on sale as of at least December 2000. *See, e.g.*, exemplary webpages from the Internet Archive provided to Plaintiffs; *see also, e.g.*, U.S. Patent Nos. 6,128,276; 6,512,737; 7,110,349.
- Iospan Wireless Inc. System: On information and belief, the BeamReach Networks System was used and/or on sale as of at least November 2000. *See, e.g.*:
 - https://web.archive.org/web/20001109012800/http://www.iospanwireless.com:80/solutions/so_home.html;
 - <https://web.archive.org/web/20010205010600/http://www.iospanwireless.com:80/technology/technology.html>;
 - https://web.archive.org/web/20010208181246mp_/http://www.iospanwireless.com/technology/tech_link3.html;
 - https://web.archive.org/web/20010417174106mp_/http://www.iospanwireless.com/technology/tech_link4.html;
 - https://web.archive.org/web/20010208181653mp_/http://www.iospanwireless.com/products/pro_access.html;
 - https://web.archive.org/web/20010208181720mp_/http://www.iospanwireless.com/products/pro_base.html;
 - https://web.archive.org/web/20010208182422mp_/http://www.iospanwireless.com/products/pro_system.html;
 - https://web.archive.org/web/20001109012800/http://www.iospanwireless.com:80/solutions/so_home.html
 - https://web.archive.org/web/20001109012800/http://www.iospanwireless.com:80/products/pro_home.html
 - U.S. Patent Nos. 6,067,290; 6,298,092; 6,351,499; 6,377,632; 6,377,636; 6,377,819; 6,400,699; 6,442,214; 6,567,387; 6,757,265; 6,760,882; 7,058,146; 7,773,564; and USRE44959.

c. Prior Invention Under § 102(g)

For any of the prior art that Defendants have identified, Defendants may argue that the authors or inventors of that prior art invented the subject matter claimed in the '931 Patent prior to

the filing date of the '931 Patent. Discovery has not started and Defendants will supplement as discovery begins.

d. Obviousness and Secondary References

Defendants identify each of the references listed above as primary references that render this patent anticipated, or at least obvious in view of the knowledge of a person of ordinary skill in the art. In addition, these primary references may be combined with each other or with the secondary references listed below to render this patent obvious under 35 U.S.C. § 103. One of ordinary skill in the art would be motivated to combine these references as explained in Section II.D:

- U.S. Patent No. 5,684,491, issued Nov. 4, 1997 (“Newman ’491”)
- U.S. Patent No. 5,828,658, issued Oct. 27, 1998 (“Ottersten ’658”)
- U.S. Patent No. 5,828,695, issued Oct. 27, 1998 (“Webb ’695”)
- U.S. Patent No. 6,067,290, issued May 23, 2000 (“Paulraj ’290”)
- U.S. Patent No. 6,128,276, issued Oct. 3, 2000 (“Agee ’276”)
- U.S. Patent No. 6,154,661, issued Nov. 28, 2000 (“Goldburg ’661”)
- U.S. Patent No. 6,160,800, issued Dec. 12, 2000 (“Atsuta ’800”)
- U.S. Patent No. 6,470,177, issued Oct. 22, 2002 (“Andersson ’177”)
- U.S. Patent No. 6,496,535, issued Dec. 17, 2002 (“Xu ’535”)
- U.S. Patent No. 6,512,737, issued Jan. 28, 2003 (“Agee ’737”)
- U.S. Patent No. 6,636,488, issued Oct. 21, 2003 (“Varma ’488”)
- U.S. Patent No. 6,650,623, issued Nov. 18, 2003 (“Varma ’623”)
- U.S. Patent No. 6,654,384, issued Nov. 25, 2003 (“Reza ’384”)
- U.S. Patent No. 6,693,887, issued Feb. 17, 2004 (“Stanwood ’887”)
- U.S. Patent No. 6,760,882, issued July 6, 2004 (“Gesbert ’882”)

- U.S. Patent No. 6,782,277, issued Aug. 24, 2004 (“Chen ’277”)
- U.S. Patent No. 6,785,252, issued Aug. 31, 2004 (“Zimmerman ’252”)
- U.S. Patent No. 6,804,211, issued Oct. 12, 2004 (“Klein ’211”)
- U.S. Patent No. 6,819,657, issued Nov. 16, 2004 (“Varma ’657”)
- U.S. Patent No. 7,039,441, issued May 2, 2006 (“Reudink ’441”)
- U.S. Patent No. 7,068,639, issued June 27, 2006 (“Varma ’639”)
- U.S. Patent No. 7,110,349, issued Sept. 19, 2006 (“Branlund ’349”)
- U.S. Patent No. 7,366,133, issued Apr. 29, 2008 (“Majidi-Ahy ’133”)
- U.S. Prov. Appl. No. 60/249,065 (“US Prov. ’065”)
- U.S. Prov. Appl. No. 60/248,867 (“US Prov. ’867”)
- U.S. Appl. No. 09/652,064 (“US. Appl. ’064”)
- U.S. Pat. Appl. Publ. No. 2001/0001609, published May 24, 2001 (“Mikuni ’609”)
- U.S. Pat. Appl. Publ. No. 2011/0077034, published March 31, 2011 (“Klein ’034”)
- U.K. Pat. Appl. Publ. No. GB2313237A, published Nov. 19, 1997 (“GB ’237”)
- U.K. Pat. Appl. Publ. No. GB2341757A, published March 22, 2000 (“GB ’757”)
- DE Pat. Appl. Publ. No. DE19851288C1, published March 2, 2000 (“DE ’288”)
- JP Pat. Appl. Publ. No. JPH11284567A, published Oct. 15, 1999 (“JP ’567”)
- JP Pat. Appl. Publ. No. JP2000232457A, published Aug. 22, 2000 (“JP ’457”)
- PCT Patent Application No. WO9428643A1, published Dec. 8, 1994 (“WO ’643”)
- PCT Patent Application No. WO2000028757A1, published May 18, 2000 (“WO ’757”)
- PCT Patent Application No. WO2001067620A2, published Sept. 13, 2001 (“WO ’620”)
- Fong et al., “Radio Resource Allocation in Fixed Broadband Wireless Networks,” IEEE Transactions On Communications, Vol. 46, No. 6, June 1998 (“Fong 1998”)
- Rainer Grunheid, et al., “Adaptive Modulation and Multiple Access for the OFDM Transmission Technique” (“Grunheid 2000”)

- Tangemann et al., “Influence of the User Mobility on the Spatial Multiplex Gain of an Adaptive SDMA System,” IEEE PIMRC ’94, pp. 745-749 (“Tangemann 1994”)
- Walke, et al., “IP over Wireless Mobile ATM-Guaranteed Wireless QoS by HiperLAN/2,” by Walke et al. (“Walke 2001”)
- J.H. Winters, “Smart Antennas for Wireless Systems,” IEEE Pers. Commun., Feb. 1998, pp. 23–27 (“Winters 1998”)

2. U.S. Patent Nos. 9,426,794

a. Prior Art Patents and Publications

- PCT Patent Application No. WO2000060885A1, published Oct. 12, 2000 (“Douglas ’885”)
- U.S. Patent No. 6,970,927, issued Nov. 29, 2005 (“Stewart ’927”)
- U.S. Patent No. 7,024,196, issued Apr. 4, 2006 (“Kotzin ’196”)
- U.S. Patent No. 7,099,295, issued Aug. 29, 2006 (“Doyle ’295”)
- PCT Patent Application No. WO2000059142A1, published Oct. 5, 2000 (“Komara ’142”)
- U.S. Patent No. 6,956,840, issued Oct. 18, 2005 (“Proctor ’840”)
- U.S. Patent No. 6,374,078, issued April 16, 2002 (“Williams ’078”)
- U.S. Patent No. 5,424,859, issued June 13, 1995 (“Uehara ’859”)

b. Prior Art Systems

Defendants identify the following systems—including constituent software, hardware, methods, and processes—as prior art that anticipate or render obvious the Asserted Claims of these patents. Each system (1) was known or used in this country before the alleged invention of the claimed subject matter of the patent-in-suit; (2) was in public use and/or on sale in this country more than one year before the filing date of the application for the patent-in-suit; and/or (3) was

invented and not abandoned, suppressed, or concealed prior to the alleged invention of the Asserted Patents.

Evidence of public use and/or sale of the listed system art includes webpages from the time of the alleged invention, for example as saved on the Internet Archive, and/or certain patents related to these systems. Exemplary examples of such webpages have been produced herewith. Discovery is ongoing and Defendants will supplement as discovery continues. Discovery is ongoing and Defendants will supplement as discovery continues.

- MobileStar System: On information and belief, the MobileStar System was used and/or on sale as of at least December 1998. *See, e.g.*, exemplary webpages from the Internet Archives and press releases provided to Plaintiff.
- Metricom System: On information and belief, the Metricom System was used and/or on sale as of at least July 1997. *See, e.g.*, exemplary webpages from the Internet Archives and press releases provided to Plaintiff.
- Apple AirPort System: On information and belief, the Apple AirPort System was used and/or on sale as of at least July 1999. *See, e.g.*, exemplary webpages from the Internet Archives and press releases provided to Plaintiff, and:
 - Macworld NY 1999 - iBook & AirPort Introduction, https://www.youtube.com/watch?v=3iTNWZF2m3o&ab_channel=theunofficialAppleKeynoteschannel;
 - iBook: An iMac to Go, <https://tidbits.com/1999/07/26/ibook-an-imac-to-go/> (July 26, 1999).

c. Prior Invention Under § 102(g)

For any of the prior art that Defendants have identified, Defendants may argue that the authors or inventors of that prior art invented the subject matter claimed in the '794 patent prior to the filing date of the '794 patent. Discovery is ongoing and Defendants will supplement as discovery continues.

d. Obviousness and Secondary References

Defendants identify each of the references listed above as primary references that render this patent anticipated, or at least obvious in view of the knowledge of a person of ordinary skill in the art. In addition, these primary references may be combined with each other or with the secondary references listed below to render this patent obvious under 35 U.S.C. § 103. One of ordinary skill in the art would be motivated to combine these references as explained in Section II.D:

- PCT Patent Application No. WO2000060885A1 (“Douglas ’885”)
- U.S. Patent No. 6,970,927 (“Stewart ’927”)
- U.S. Patent No. 7,024,196 (“Kotzin ’196”)
- U.S. Patent No. 7,099,295 (“Doyle ’295”)
- PCT Patent Application No. WO2000059142A1 (“Komara ’142”)
- U.S. Patent No. 6,956,840 (“Proctor ’840”)
- U.S. Patent No. 6,374,078 (“Williams ’078”)
- U.S. Patent No. 5,424,859 (“Uehara ’859”)
- U.S. Patent No. 5,838,674 (“Forssen ’674”)
- U.S. Patent No. 7,020,436 (“Schmutz ’436”)
- U.S. Patent No. 5,970,406 (“Komara ’406”)
- U.S. Patent No. 6,097,817 (“Bilgic ’817”)
- U.S. Patent No. 6,304,560 (“Archambaud ’560”)
- U.S. Patent No. 6,850,512 (“Bishop ’512”)
- U.S. Patent No. 6,438,363 (“Feder ’363”)
- U.S. Patent No. 5,969,678 (“Stewart ’678”)
- Brenner, Tech Tutorial on IEEE 802.11 (1996) (“Brenner 1996”)

- IEEE 802.11 Standard (1999) (“IEEE 802.11 Standard”)
- D. Buchholz, et al., Wireless In-Building Network Architecture and Protocols, IEEE Network Magazine, Nov. 1991 p. 31-38 (“Buchholz 1991”)
- A. Buss, Wireless networks to support rapid decision-making, NPS Research Project Notes, June 2000, p. 18-21, 49-50 (“Buss 2000”)
- J. Costello, American Airlines’ Airport Clubs to Install High-Speed Net Access, The Wall Street Journal, https://www.wsj.com/articles/SB957968313701209894?mod=trending_now_video_5 (May 23, 2000) (the “WSJ Article”)

C. Claim Charts

Charts specifically identifying where each element of each Asserted Claim is found in the prior art, either expressly or inherently, are found in Exhibits A1–A14, B1–B9, and Appendices A–B. However, this prior art is exemplary; the claimed features are similarly described or disclosed in other prior art.

In the claim charts included in this disclosure, Defendants identify specific portions of prior art references that disclose or render obvious the elements of the Asserted Claims. Although Defendants have identified at least one citation per element, each and every disclosure of the same element in a given reference is not necessarily identified. That Defendants did not identify each similar disclosure should not be construed as a concession by Defendants that such disclosure is not relevant. It should be recognized that a person of ordinary skill in the art would generally read a prior art reference as a whole and in the context of other publications, literature, and general knowledge in the field. To understand and interpret any specific statement or disclosure in a prior art reference, a person of ordinary skill in the art would rely upon other information including other publications and general scientific or engineering knowledge.

Where Defendants identify a particular figure in a prior art reference, the identification should be understood to encompass the caption and description of the figure as well as any text relating to the figure in the specification and prosecution history in addition to the figure itself. Similarly, where an identified portion of text refers to a figure or other material, the identification should be understood to include the referenced figure or other material as well.

Certain pieces of identified prior art disclose features of the Asserted Claims inherently. Defendants may rely on any evidence, including expert testimony, to establish the inherency of certain features of the prior art to invalidate the Asserted Claims.

D. Motivations to Combine Prior Art

Defendants believe that no showing of a specific motivation to combine prior art is required to combine the references disclosed in the attached charts; there was a reason to make each combination, each combination of art would have produced no unexpected results, and each combination at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 414–18 (2007) (rejecting the Federal Circuit’s “rigid” application of the teaching, suggestion, or motivation to combine test instead espousing an “expansive and flexible” approach). Indeed, the Supreme Court held that a person of ordinary skill in the art is “a person of ordinary creativity, not an automaton” and “in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like a pieces of a puzzle.” *Id.* at 420–21.

In view of *KSR*, the PTO issued a set of new Examination Guidelines. *See* Examination Guidelines for Determining Obviousness Under 35 U.S.C. § 103 in View of the Supreme Court Decision in *KSR International Co. v. Teleflex Inc.*, 72 Fed. Reg. 57,526 (Oct. 10, 2007). Those Guidelines identified various rationales for finding a claim obvious, including:

- a) Combining prior art elements according to known methods to yield predictable results;
- b) Simple substitution of one known element for another to obtain predictable results;
- c) Use of known technique to improve similar devices (methods, or products) in the same way;
- d) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
- e) “Obvious to try”—choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
- f) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been predictable to one of ordinary skill in the art;
- g) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

Id. at 57, 529.

In addition, the motivation to combine or modify prior art references is significantly stronger when, as here, the references seek to solve the same problem, come from the same field, and correspond well. *In re Inland Steel Co.*, 265 F.3d 1354, 1362 (Fed. Cir. 2001) (allowing two references to be combined as invalidating art under similar circumstances where the art “focus[ed] on the same problem . . . [,] c[a]me from the same field of art [and] . . . the identified problem found in the two references correspond[ed] well”).

Defendants have identified several exemplary motivations and reasons to combine the various references cited herein, and those motivations would have been supported, in part, by a reasonable expectation of success. The various teachings, suggestions, and/or reasons to modify any of the references and/or to combine any two or more of the references in Exhibits A1–A14, and B1–B9, and Appendices A–B come from various sources, including the prior art (specific and as a whole), common knowledge, common sense, predictability, expectations, industry trends,

design incentives or need, market demand or pressure, market forces, the nature of the problem faced, and/or the knowledge possessed by one of ordinary skill in the art. In addition, it would have been obvious to try combining the prior art references identified above.

These exemplary combinations demonstrate that there were only a finite number of predictable solutions to known problems addressed by the Asserted Patents. Furthermore, known work in one field or endeavor prompted variations based on predictable design incentives and/or market forces either in the same field or a different one. The combination of features found in the prior art references identified in these contentions would have been obvious because the claimed combinations represent the known potential options, with each such option having a reasonable expectation of success. Additionally, one of ordinary skill in the art would have been motivated to create combinations identified in these contentions using: known methods to yield predictable results; known techniques in the same way; a simple substitution of one known, equivalent element for another to obtain predictable results; and/or teaching, suggestion, or motivation in the prior art generally. Also, market forces in the industry, and the desire to improve features and performance, would motivate the addition of features to systems as they become available, become less expensive, become more commonly used, provide better performance and reliability, reduce costs, or predictably achieve other clearly desirable results.

To the extent GAS alleges that any other claimed limitation or limitations are not disclosed in any primary reference, it would have been obvious to combine the teachings of the reference with the background knowledge of a person of ordinary skill in the art and/or it would have been obvious to incorporate the missing limitation(s), including as disclosed in Exhibits A1–A14, B1–B9, and Appendices A–B, into the primary reference for the reasons disclosed herein. For example, one of ordinary skill in the art would have found substantial motivation to combine one

or more of the primary references with one more of each other or the secondary references in order to disclose the alleged inventions recited in the Asserted Claims. Each of the references disclosed herein as invalidating an Asserted Patent was directed at the same or similar field of technology and the same or similar problem as that Asserted Patent. To the extent GAS alleges that any particular claim limitation is not disclosed or inherent in the charted references, it would have been obvious to combine the charted reference with one or more of the references identified herein for the particular claim limitations. Also, as Defendants are currently unaware of the extent, if any, to which GAS will contend that limitations of the Asserted Claims are not disclosed in the art identified herein as anticipatory, Defendants reserve the right to identify other references and combinations that may render an allegedly missing limitation obvious. In addition, if and to the extent that GAS challenges the relevance of any of these references with respect to particular limitations of the Asserted Claims of the Asserted Patents, Defendants reserve its right to identify further motivation to combine particular references with additional particularity.

1. U.S. Patent No. 7,230,931 – Exemplary Motivations to Combine

Defendants have identified several exemplary motivations and reasons to combine the various references cited herein. For any reference for which there is a claim element that does not have a corresponding citation in that reference, it would be obvious to combine with the knowledge or a person of skill and/or any other reference in the primary or secondary charts for which there is a citation for that element. These combinations would have been obvious to try given that there were a finite number of identified, predictable solutions in the prior art, and there would have been a reasonable expectation of success to simply implement one prior art solution with concepts from prior art in the same field.

It would have been obvious to combine each of the references discussed below because they are analogous art generally directed to beamforming in a wireless communication system.

For example:

- A person of ordinary skill would have been motivated to combine Vornfeld 1999 with the exemplary citations and commentary provided in Exhibits A-2 to A-13 and Appendix A to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For example, a person of ordinary skill in the art would have been motivated to combine the teachings from Vornfeld 1999 with references that disclose the use of TDD frames, beamforming, and/or sectorization (*see, e.g.*, Alamouti '776, Youssefmir '409, Chen '277, Varma '488, Forssen '674, Goldberg '661, Toshimitsu '684, Walke 2001, Winters 1998, Fong 1998). A person of ordinary skill would have been motivated to combine these references because they are directed to wireless communication systems. Vornfeld 1999 discloses that “the discussion and evaluation of the application of SDMA techniques is embedded in the context of HIPERLAN/2, which serves here as an example of a modern broadband wireless access system.” Vornfeld 1999, at 52. As such, a person of ordinary skill would have recognized that the exemplary teachings could be combined with Vornfeld 1999. Indeed, Winters 1988 is cited in Vornfeld in support of the description of the various arrangements of antenna elements. *Id.*
- A person of ordinary skill would have been motivated to combine Alamouti '776 with the exemplary citations and commentary provided in Exhibits A-1 and A-3 to A-13 and Appendix A to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For example, a person of ordinary skill in the art would have been motivated to combine the teachings from Alamouti '776 with references that disclose the use of TDD frames, beamforming, and/or sectorization (*see, e.g.*, Vornfeld 1999, Youssefmir '409, Chen '277, Varma '488, Forssen '674, Goldberg '661, Toshimitsu '684, Walke 2001, Winters 1998, Fong 1998). A person of ordinary skill would have been motivated to combine these references because they are directed to wireless communication systems. Indeed, Alamouti '776 “involves improvements to a wireless a discrete multitone spread spectrum communications system” and describes “[w]ireless communications systems, such as cellular and personal communications systems” as background to the invention. Alamouti '776, at 1:10-18.
- A person of ordinary skill would have been motivated to combine Forssen '674 with the exemplary citations and commentary provided in Exhibits A-1 to A-2 and A-4 to A-13 and Appendix A to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For example, a person of ordinary skill in the art would have been motivated to combine the teachings from Forssen '674 with references that disclose the use of TDD frames, beamforming, and/or sectorization (*see, e.g.*, Vornfeld 1999, Alamouti '776, Youssefmir '409, Chen '277, Varma '488, Goldberg '661, Toshimitsu '684, Walke 2001, Winters 1998, Fong 1998). A person of ordinary skill would have been motivated to combine these references because they are directed to wireless communication systems. Indeed, Forssen '674 is directed to a “method and apparatus for increasing the

communication capacity of a communication system utilizing a time-division, multiple-access communication scheme.” Forssen ’674, at Abstract.

- A person of ordinary skill would have been motivated to combine Ueno ’723 with the exemplary citations and commentary provided in Exhibits A-1 to A-3 and A-5 to A-13 and Appendix A to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For example, a person of ordinary skill in the art would have been motivated to combine the teachings from Ueno ’723 with references that disclose the use of TDD frames, beamforming, and/or sectorization (*see, e.g.*, Vornfeld 1999, Alamouti ’776, Youssefmir ’409, Forssen ’674, Chen ’277, Varma ’488, Goldberg ’661, Toshimitsu ’684, Walke 2001, Winters 1998, Fong 1998). A person of ordinary skill would have been motivated to combine these references because they are directed to wireless communication systems. Indeed, Ueno ’723 relates to a “radiocommunication system and, more particularly, to a radiocommunication system which permits multimedia communications for transmission and reception of messages that can contain data, voice, sound and images using an ATM (Asynchronous Transfer Mode) technology.” Ueno ’723, at 7-13.
- A person of ordinary skill would have been motivated to combine Tong ’521 with the exemplary citations and commentary provided in Exhibits A-1 to A-4 and A-6 to A-13 and Appendix A to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For example, a person of ordinary skill in the art would have been motivated to combine the teachings from Tong ’521 with references that disclose the use of TDD frames, beamforming, and/or sectorization (*see, e.g.*, Vornfeld 1999, Alamouti ’776, Youssefmir ’409, Forssen ’674, Chen ’277, Varma ’488, Goldberg ’661, Toshimitsu ’684, Walke 2001, Winters 1998, Fong 1998). A person of ordinary skill would have been motivated to combine these references because they are directed to wireless communication systems. Indeed, Tong ’521 discloses that it relates “generally to wireless network.” Tong ’521, at 1:14-15.
- A person of ordinary skill would have been motivated to combine Stanwood ’919 with the exemplary citations and commentary provided in Exhibits A-1 to A-5 and A-7 to A-13 and Appendix A to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For example, a person of ordinary skill in the art would have been motivated to combine the teachings from Stanwood ’919 with references that disclose the use of TDD frames, beamforming, and/or sectorization (*see, e.g.*, Vornfeld 1999, Alamouti ’776, Youssefmir ’409, Forssen ’674, Chen ’277, Varma ’488, Goldberg ’661, Toshimitsu ’684, Walke 2001, Winters 1998, Fong 1998). A person of ordinary skill would have been motivated to combine these references because they are directed to wireless communication systems. Indeed, Stanwood ’919 relates “to communication systems, and more particularly to a method and apparatus for efficiently using bandwidth for subscriber unit initialization and synchronization in a time-synchronized communication system.” Stanwood ’919, at 1:25-28.
- A person of ordinary skill would have been motivated to combine Agee ’923 with the exemplary citations and commentary provided in Exhibits A-1 to A-6 and A-8 to A-13 and Appendix A to yield the claimed invention, and would have had a reasonable expectation

of success in doing so. For example, a person of ordinary skill in the art would have been motivated to combine the teachings from Agee '923 with references that disclose the use of TDD frames, beamforming, and/or sectorization (*see, e.g.*, Vornfeld 1999, Alamouti '776, Youssefmir '409, Forssen '674, Chen '277, Varma '488, Goldberg '661, Toshimitsu '684, Walke 2001, Winters 1998, Fong 1998). A person of ordinary skill would have been motivated to combine these references because they are directed to wireless communication systems. Indeed, Agee '923 involves "communications methods that make very efficient use of available spectral bandwidth by a combination of multiple access technique." Agee '923 , at 1:5-7.

- A person of ordinary skill would have been motivated to combine Uhlik '493 with the exemplary citations and commentary provided in Exhibits A-1 to A-7 and A-9 to A-13 and Appendix A to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For example, a person of ordinary skill in the art would have been motivated to combine the teachings from Uhlik '493 with references that disclose the use of TDD frames, beamforming, and/or sectorization (*see, e.g.*, Vornfeld 1999, Alamouti '776, Youssefmir '409, Forssen '674, Chen '277, Varma '488, Goldberg '661, Toshimitsu '684, Walke 2001, Winters 1998, Fong 1998). A person of ordinary skill would have been motivated to combine these references because they are directed to wireless communication systems. Indeed, Uhlik '493 discloses that "the present invention comprises transmitting a broadcast burst in a broadcast channel from a base station of a radio communications system." Uhlik '493, at Abstract.
- A person of ordinary skill would have been motivated to combine Toshimitsu '684 with the exemplary citations and commentary provided in Exhibits A-1 to A-8 and A-10 to A-13 and Appendix A to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For example, a person of ordinary skill in the art would have been motivated to combine the teachings from Toshimitsu '684 with references that disclose the use of TDD frames, beamforming, and/or sectorization (*see, e.g.*, Vornfeld 1999, Alamouti '776, Youssefmir '409, Forssen '674, Chen '277, Varma '488, Goldberg '661, Walke 2001, Winters 1998, Fong 1998). A person of ordinary skill would have been motivated to combine these references because they are directed to wireless communication systems. Indeed, Toshimitsu '684 relates to "a radio base station for carrying out radio communications with a plurality of radio terminals by adopting both a time division multiple access scheme and a space division multiple access scheme, and a frame configuration method for the radio base station.." Toshimitsu '684, at [0002].
- A person of ordinary skill would have been motivated to combine Airy '699 with the exemplary citations and commentary provided in Exhibits A-1 to A-9 and A-11 to A-13 and Appendix A to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For example, a person of ordinary skill in the art would have been motivated to combine the teachings from Airy '699 with references that disclose the use of TDD frames, beamforming, and/or sectorization (*see, e.g.*, Vornfeld 1999, Alamouti '776, Youssefmir '409, Forssen '674, Chen '277, Varma '488, Goldberg '661, Toshimitsu '684, Walke 2001, Winters 1998, Fong 1998). A person of ordinary skill would have been motivated to combine these references because they are directed to wireless communication systems. Indeed, Airy '699 is directed to an "apparatus and method for

scheduling wireless transmission of data blocks between at least one antenna of a base transceiver station and multiple subscriber units.” Airy ’699, at Abstract.

- A person of ordinary skill would have been motivated to combine Youssefmir ’409 with the exemplary citations and commentary provided in Exhibits A-1 to A-10 and A-12 to A-13 and Appendix A to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For example, a person of ordinary skill in the art would have been motivated to combine the teachings from Youssefmir ’409 with references that disclose the use of TDD frames, beamforming, and/or sectorization (*see, e.g.*, Vornefeld 1999, Alamouti ’776, Forssen ’674, Chen ’277, Varma ’488, Goldburg ’661, Toshimitsu ’684, Walke 2001, Winters 1998, Fong 1998). For instance, a person of ordinary skill would have been motivated to combine Youssefmir ’409 with Goldburg ’661 to yield the claimed invention, and would have had a reasonable expectation of success in doing so. A person of ordinary skill would have understood that Youssefmir ’409 and Goldburg ’661 are both directed to wireless communication systems. For example, Youssefmir ’409 relates to “radio communications, and more particularly to radio communications methods in a cellular or similar wireless communication system between a base station transmitter/receiver (transceiver) and a plurality of remote user terminals, in particular for radio communication in a changing environment.” Youssefmir ’409, Field of the Invention. Similarly, Goldburg ’661 relates to “the field of wireless communication systems, and more specifically, to the efficient broadcast of common downlink communication channel signals in a wireless communications system by a communication station that uses a multiple element transmitting antenna array in order to achieve a near omnidirectional pattern throughout its area of coverage.” Goldburg ’661, Field of the Invention. As such, a person of ordinary skill in the art would have recognized that teachings from Goldburg ’661 could be used in the wireless communication system disclosed in Youssefmir ’409. Indeed, Youssefmir ’409, in discussing alternate embodiments of the claimed invention, specifically references the application that resulted in Goldburg ’661 in its specification. Youssefmir ’409, at 27:36 42 (“In one alternative, the overhead signalling and polling signals are transmitted over a broad beam using the elements of array 104 (see for example, U.S. patent application Ser. No. 08/988,519 to Goldburg, filed Dec. 12, 1997 and assigned to the assignee of the present invention).”).
- Furthermore, it would have been obvious to a person of ordinary skill to combine interrelated engineers and inventors from the same companies. For example, it would have been obvious to combine or modify Youssefmir ’409 and Goldburg ’661, both of which were assigned to ArrayComm, Inc. (“ArrayComm”), with any additional prior art references assigned to and/or owned by ArrayComm. As another example, it would have been obvious to a person of ordinary skill in the art to combine or modify Alamouti ’776, which was assigned to AT&T, with any additional prior art references assigned to and/or owned by AT&T.
- A person of ordinary skill would have been motivated to combine Mikuni ’704 with the exemplary citations and commentary provided in Exhibits A-1 to A-11 and A-13 and Appendix A to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For example, a person of ordinary skill in the art would have been motivated to combine the teachings from Mikuni ’704 with references that disclose the use

of TDD frames, beamforming, and/or sectorization (*see, e.g.*, Vornfeld 1999, Alamouti '776, Youssefmir '409, Forssen '674, Chen '277, Varma '488, Goldberg '661, Toshimitsu '684, Walke 2001, Winters 1998, Fong 1998). A person of ordinary skill would have been motivated to combine these references because they are directed to wireless communication systems. Indeed, Mikuni '704 is relates to “a control channel placement method in which control channels for establishing wireless communication between a base station and a terminal station in a wireless communication system are placed in optimal time slots within a TDMA-TDD frame.” Mikuni '704, at 1:10-16.

- A person of ordinary skill would have been motivated to combine TR 101 146 with the exemplary citations and commentary provided in Exhibits A-1 to A-12 and Appendix A to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For example, a person of ordinary skill in the art would have been motivated to combine the teachings from TR 101 146 with references that disclose the use of TDD frames, beamforming, and/or sectorization (*see, e.g.*, Vornfeld 1999, Alamouti '776, Youssefmir '409, Forssen '674, Chen '277, Varma '488, Goldberg '661, Toshimitsu '684, Walke 2001, Winters 1998, Fong 1998). A person of ordinary skill would have been motivated to combine these references because they are directed to wireless communication systems.
- To the extent a prior art system does not expressly or inherently include any limitation, a person of ordinary skill would have been motivated to combine the prior art system with the exemplary citations and commentary provided in Exhibits A-1 to A-13 and Appendix A to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For instance, a person of ordinary skill would have understood that Navini System could be combined with references that are directed to wireless communication systems using TDD, sectors, and/or beamforming (*see, e.g.*, Vornfeld 1999, Alamouti '776, Youssefmir '409, Forssen '674, Chen '277, Varma '488, Goldberg '661, Toshimitsu '684, Walke 2001, Winters 1998, Fong 1998).

2. U.S. Patent Nos. 9,426,794 – Exemplary Motivations to Combine

Defendants have identified several exemplary motivations and reasons to combine the various references cited herein. For any reference for which there is a claim element that does not have a corresponding citation in that reference, it would be obvious to combine with the knowledge or a person of skill and/or any other reference in the primary or secondary charts for which there is a citation for that element. These combinations would have been obvious to try given that there were a finite number of identified, predictable solutions in the prior art, and there would have been

a reasonable expectation of success to simply implement one prior art solution with concepts from prior art in the same field.

It would have been obvious to combine each of the references discussed below because they are analogous art generally directed to wireless communication systems and/or devices consisting of a transceiver component communicating with user devices. For example:

- A person of ordinary skill would have been motivated to combine Douglas '885 with the exemplary citations and commentary provided in Exhibits B-1 to B-9 and Appendix B to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For example, a person of ordinary skill in the art would have been motivated to combine the teachings from Douglas '885 with references that disclose transceivers and/or access point devices capable of routing data to/from a network to user devices (*see, e.g.*, Stewart '927, Kotzin '196, Buchholz 1991, Doyle '295, Schmutz '436, Komara '142, Williams '794, Proctor '840, Uehara '859, Buss 2000, IEEE 802.11 Standard, Brenner 1996, Archambaud '560).
- A person of ordinary skill would have been motivated to combine Stewart '927 with the exemplary citations and commentary provided in Exhibits B-1 to B-9 and Appendix B to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For example, a person of ordinary skill in the art would have been motivated to combine the teachings from Douglas '885 with references that disclose transceivers and/or access point devices capable of routing data to/from a network to user devices (*see, e.g.*, Douglas '885, Kotzin '196, Buchholz 1991, Doyle '295, Schmutz '436, Komara '142, Williams '794, Proctor '840, Uehara '859, Buss 2000, IEEE 802.11 Standard, Brenner 1996, Archambaud '560).
- A person of ordinary skill would have been motivated to combine Kotzin '196 with the exemplary citations and commentary provided in Exhibits B-1 to B-9 and Appendix B to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For example, a person of ordinary skill in the art would have been motivated to combine the teachings from Douglas '885 with references that disclose transceivers and/or access point devices capable of routing data to/from a network to user devices (*see, e.g.*, Douglas '885, Stewart '927, Buchholz 1991, Doyle '295, Schmutz '436, Komara '142, Williams '794, Proctor '840, Uehara '859, Buss 2000, IEEE 802.11 Standard, Brenner 1996, Archambaud '560).
- A person of ordinary skill would have been motivated to combine Doyle '295 with the exemplary citations and commentary provided in Exhibits B-1 to B-9 and Appendix B to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For example, a person of ordinary skill in the art would have been motivated to

combine the teachings from Douglas '885 with references that disclose transceivers and/or access point devices capable of routing data to/from a network to user devices (*see, e.g.*, Douglas '885, Stewart '927, Buchholz 1991, Kotzin '196, Schmutz '436, Komara '142, Williams '794, Proctor '840, Uehara '859, Buss 2000, IEEE 802.11 Standard, Brenner 1996, Archambaud '560).

- A person of ordinary skill would have been motivated to combine Komara '142 with the exemplary citations and commentary provided in Exhibits B-1 to B-9 and Appendix B to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For example, a person of ordinary skill in the art would have been motivated to combine the teachings from Douglas '885 with references that disclose transceivers and/or access point devices capable of routing data to/from a network to user devices (*see, e.g.*, Douglas '885, Stewart '927, Buchholz 1991, Kotzin '196 , Schmutz '436, Doyle '295, Williams '794, Proctor '840, Uehara '859, Buss 2000, IEEE 802.11 Standard, Brenner 1996, Archambaud '560).
- A person of ordinary skill would have been motivated to combine Proctor '840 with the exemplary citations and commentary provided in Exhibits B-1 to B-9 and Appendix B to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For example, a person of ordinary skill in the art would have been motivated to combine the teachings from Douglas '885 with references that disclose transceivers and/or access point devices capable of routing data to/from a network to user devices (*see, e.g.*, Douglas '885, Stewart '927, Buchholz 1991, Kotzin '196 , Schmutz '436, Doyle '295 , Williams '794, Komara '142, Uehara '859, Buss 2000, IEEE 802.11 Standard, Brenner 1996, Archambaud '560).
- A person of ordinary skill would have been motivated to combine Williams '794 with the exemplary citations and commentary provided in Exhibits B-1 to B-9 and Appendix B to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For example, a person of ordinary skill in the art would have been motivated to combine the teachings from Douglas '885 with references that disclose transceivers and/or access point devices capable of routing data to/from a network to user devices (*see, e.g.*, Douglas '885, Stewart '927, Buchholz 1991, Kotzin '196 , Schmutz '436, Doyle '295 , Proctor '840 , Komara '142, Uehara '859, Buss 2000, IEEE 802.11 Standard, Brenner 1996, Archambaud '560).
- A person of ordinary skill would have been motivated to combine Uehara '859 with the exemplary citations and commentary provided in Exhibits B-1 to B-9 and Appendix B to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For example, a person of ordinary skill in the art would have been motivated to combine the teachings from Douglas '885 with references that disclose transceivers and/or access point devices capable of routing data to/from a network to user devices (*see, e.g.*, Douglas '885, Stewart '927, Buchholz 1991, Kotzin '196 , Schmutz '436, Doyle '295 ,

Proctor '840 , Komara '142, Williams '794, Buss 2000, IEEE 802.11 Standard, Brenner 1996, Archambaud '560).

- To the extent a prior art system does not expressly or inherently include any limitation, a person of ordinary skill would have been motivated to combine the prior art system with the exemplary citations and commentary provided for this claim in Exhibits B-1 to B-9 and Appendix B to yield the claimed invention, and would have had a reasonable expectation of success in doing so. For instance, a person of ordinary skill would have understood that MobileStar System could be combined with references that are directed to access points that contain transceivers receiving data from a wide area network and transmitting to user devices (*see, e.g.*, Douglas '885, Stewart '927, IEEE 802.11 Standard).

E. Invalidity under §§ 102(f), (g)

Defendants allege that the Asserted Claims are invalid under 35 U.S.C. §§ 102(f)-(g), based on information currently known to Defendants, including at least the following exemplary evidence:

GA0073771; GA0041218; GA0054277; GA0077650; GA0108503; GA0053007; GA0086430; GA0122651; GA0053735; GA0046096; GA0052975.

Pursuant to 35 U.S.C. §§ 102(f)-(g), Defendants identify the companies referenced in the foregoing documents, including, *e.g.*, Navini Networks, MobileStar Networks, and their respective employees, including but not limited to John Grabner and Mark Goode. These companies and their respective employees made the alleged inventions claimed in the Asserted Claims before the filing dates of the respective applications. The named inventor of the Asserted Claims and others associated with Plaintiff and/or Plaintiff's predecessor-in-interest also had interactions with these innovators and industry participants, *e.g.*, Navini and MobileStar, at trade shows and/or industry events and, as reflected in at least the foregoing exemplary documents, sought information regarding these innovators' systems, from which the Asserted Claims were derived.

Defendants reserve the right to modify and/or supplement their explanation of why the Asserted Claims are invalid under 35 U.S.C. §§ 102(f)-(g) in the event Defendants obtain additional evidence that the named inventor did not invent (either alone or in conjunction with

others) the subject matter claimed or that the claimed subject matter was invented by others. Should Defendants obtain such additional evidence, they will supplement the name(s) of the person(s) from whom and the circumstances under which the invention or any part of it was derived or the name of the person(s) that invented such subject matter and the circumstances of such invention.

III. INVALIDITY UNDER 35 U.S.C. § 112

Defendants allege that the Asserted Claims are invalid under 35 U.S.C. § 112 as indefinite (Section 112, ¶ 2) and for failing to satisfy the written description and enablement requirements (Section 112, ¶ 1). Defendants reserve all rights to amend their Invalidity Contentions under 35 U.S.C. § 112, including after the Asserted Claims are ultimately construed by the Court, in response to any interpretation of the Asserted Claims embodied in GAS's infringement positions, and/or to account for any changes in the law concerning invalidity under 35 U.S.C. § 112. Defendants also reserve the right to provide additional explanation and/or argument for their Invalidity Contentions under Section 112, including, for example, based on expert testimony. Defendants' contentions that the Asserted Claims are invalid under Section 112 are not admissions regarding the construction or scope of the claims of the Asserted Patents, or that any of the claims of the Asserted Patents are not anticipated or rendered obvious by any prior art. All of the below statements are by way of example only. Any item disclosed below with respect to any patent or claim may, as appropriate, be asserted as a defense against any other patent or claim that has a similar claim limitation and patent disclosure.

A. INVALIDITY UNDER 35 U.S.C. § 112, ¶ 1

35 U.S.C. § 112, ¶ 1 requires that the specification contain a written description of the invention. "[T]he hallmark of written description is disclosure." *Boston Sci. Corp. v. Johnson & Johnson*, 647 F.3d 1353, 1361–62 (Fed. Cir. 2011) (citation omitted). The test for whether a

specification adequately describes an invention is “whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date. . . . [T]he test requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art [It] is a question of fact.” *Ariad Pharms., Inc. v. Eli Lilly and Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (*en banc*); *Boston Scientific*, 647 F.3d at 1362.

The enablement requirement of Section 112 demands that the patent specification enable “those skilled in the art to make and use the full scope of the claimed invention without ‘undue experimentation.’” *Genentech, Inc. v. Novo Nordisk A/S*, 108 F.3d 1361, 1365 (Fed. Cir. 1997) (quoting *In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir. 1993)). “[T]he scope of the claims must be less than or equal to the scope of the enablement.” *Nat’l Recovery Tech., Inc. v. Magnetic Separation Sys., Inc.*, 166 F.3d 1190, 1196 (Fed. Cir. 1999). In other words, the claims must be enabled over their entire claimed range. *See id.* (finding lack of enablement because the “claim [] [was] broader than the enablement as taught in the specification”).

Defendants contend that the following Asserted Claims are invalid under 35 U.S.C. § 112, ¶ 1. Each Asserted Claim identified below (and each Asserted Claim that depends therefrom) is invalid under Section 112, ¶ 1 because the specification of the Asserted Patent fails to provide a sufficient written description, and/or enabling disclosure. For each listed term or phrase, Defendants believe the term or phrase is invalid under Section 112, ¶ 1, as is any limitation including such terms or phrases, for the same reason(s).

Defendants further contend that GAS’s apparent claim constructions render the asserted claims extremely broad in scope and well beyond the purported inventions described in the Patents-in-Suit. Based on a review of GAS’s Infringement Contentions, GAS is attempting to

construe the Patent-in-Suit in an idiosyncratic manner that is entirely inconsistent with the written specifications and prosecution histories of the Patents-in-Suit as well as with the understanding of one of ordinary skill in the art at the time the applications that issued as the Patents-in-Suit were filed. These allegations are inconsistent with the plain language of the claims, the supporting description, and the prosecution history.

The Asserted Claims are invalid because the specification of the Patents-in-Suit do not include sufficient written description of the purported inventions allegedly claimed in the Patents-in-Suit, and the manner and process of making and using it, in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use any of the allegedly claimed inventions, 35 U.S.C. § 112, ¶ 1.

Moreover, the patent applications that issued as the Patents-in-Suit did not contain a written description of the purported invention sufficiently clear and complete to enable one of ordinary skill in the art to which the purported invention pertains to make and use the invention as claimed without undue experimentation. *Id.* To the extent any of the Asserted Claims are found to cover one or more of the accused products identified in GAS's Infringement Contentions, such Asserted Claims are also invalid under 35 U.S.C. § 112, ¶ 1 because their full scope is not enabled by the specifications of the relevant Patents-in-Suit.

1. U.S. Patent No. 7,230,931

Defendants contend that the full scope of each Asserted Claim of the '931 patent was not described with particularity in the specification to which priority is sought, so as not to set forth enough detail to allow a person of ordinary skill in the art to understand what is claimed and to recognize that the inventor invented what is claimed. Accordingly, each Asserted Claim of the '931 patent is invalid for lack of adequate written description and/or enablement under 35 U.S.C. § 112, ¶ 1, based at least on the following claim terms/phrases:

- “wireless access device[s]” (all Asserted Claims)
- “wireless access devices disposed at a plurality of subscriber premises in an associated cell site of said wireless access network” (all Asserted Claims)
- “wireless access network” (all Asserted Claims)
- “directed scanning beam signal[s]” (all Asserted Claims)
- “at a start of a TDD frame” or “in a downlink portion of said TDD frame” or “said downlink portion of said TDD frame” (all Asserted Claims)
- “broadcast beam signal” that is transmitted to wireless access devices “within more than one of said sectors” / “within more than one of a plurality of sectors” (all Asserted Claims)
- “an other of said sectors” / “a second of said sectors” using “an other of said directed scanning beam signals” / “a second directed scanning beam signal” (all Asserted Claims)

Further, under at least the claim interpretations upon which Plaintiff apparently relies for its infringement assertions, the Asserted Claims would be invalid for failure to satisfy the written description and/or enablement requirements because they would be drawn to subject matter that exceeds or otherwise differs from that which one of ordinary skill in the art would understand the named inventors to have had in their possession. Plaintiff’s infringement allegations require numerous claim terms to be interpreted more broadly than the Asserted Patents disclose or enable. A person of skill in the art, upon reviewing the patents and the claims, would not consider the technology that Plaintiff seeks to cover in its infringement contentions to be in the possession of the inventors.

2. U.S. Patent Nos. 9,426,794

Defendants contend that the full scope of each Asserted Claim of the ’436 and ’612 patents was not described with particularity in the specification to which priority is sought, so as not to set forth enough detail to allow a person of ordinary skill in the art to understand what is claimed and to recognize that the inventor invented what is claimed. Accordingly, each Asserted Claim of the

'794 patent is invalid for lack of adequate written description and/or enablement under 35 U.S.C.

§ 112, ¶ 1, based at least on the following claim terms/phrases:

- “wherein the base station communicates with the first wireless transceiver and a plurality of other wireless communication devices according to a wide area wireless communication protocol” (Claims 1, 5)
- “wherein the second wireless transceiver communicates with the first mobile station and the second mobile station according to a local area wireless communication protocol” (Claims 1, 5)
- “re-transmits the first downlink signal to the first mobile station as a second downlink signal” (Claims 1)
- “re-transmitting the first downlink signal to the first mobile station as a second downlink signal” (Claim 5)
- “transceiver monitors first signal characteristics of the second downlink signal of the first mobile station” (Claim 1)
- “monitoring, using the second transceiver, first signal characteristics of the second downlink signal of the first mobile station” (Claim 5)
- “monitors first signal characteristics of the second downlink signal of the first mobile station” (Claim 1)
- “monitors second signal characteristics of the second mobile station” (Claims 5)
- “based on the first signal characteristics and the second characteristics, routes information to the first mobile station and the second mobile station, respectively” (Claim 1)
- “based on the first signal characteristics and the second characteristics, routing, using the second transceiver, information to the first mobile station and the second mobile station, respectively” (Claim 5)
- “wireline connection” (Claim 2)

Each of the Asserted Claims of the '794 patent is invalid for lack of written description and/or is not enabled. Further, under at least the claim interpretations upon which Plaintiff apparently relies for its infringement assertions, the Asserted Claims would be invalid for failure to satisfy the written description and/or enablement requirements because they would be drawn to

subject matter that exceeds or otherwise differs from that which one of ordinary skill in the art would understand the named inventors to have had in their possession. Plaintiff's infringement allegations require numerous claim terms to be interpreted more broadly than the Asserted Patents disclose or enable. A person of skill in the art, upon reviewing the patents and the claims, would not consider the technology that Plaintiff seeks to cover in its infringement contentions to be in the possession of the inventors.

B. INVALIDITY UNDER 35 U.S.C. § 112, ¶ 2

Claims are indefinite under 35 U.S.C. § 112, ¶ 2 when they “fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014). For example, to the extent an asserted apparatus claim includes both apparatus and method limitations, that claim is invalid for indefiniteness under Section 112, ¶ 2 because it fails to identify or notify the public of what constitutes direct infringement. *See IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377 (Fed. Cir. 2005). Similarly, a claim that uses means-plus function claiming is indefinite “[i]f the patentee fails to disclose adequate corresponding structure.” *Williamson v. Citrix Online, LLC*, 792 F. 3d 1339, 1352 (Fed. Cir. 2015). A claim can also be found indefinite if it uses terms of degree. *See Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014). As the Federal Circuit has “explained, a term of degree fails to provide sufficient notice of its scope if it depends ‘on the unpredictable vagaries of any one person’s opinion.’” *Id.* (citation omitted). In addition, “a claim term that lacks an antecedent basis may . . . render a claim indefinite.” *In re Downing*, 754 F. App’x 988, 996 (Fed. Cir. 2018).

Defendants contend that the following Asserted Claims are invalid under Section 112, ¶ 2. Each Asserted Claim identified below (and each Asserted Claim that depends therefrom) is invalid under Section 112, ¶ 2 because they fail to inform, with reasonable certainty, those skilled in the

art about the scope of the claimed invention. For each listed term or phrase, Defendants believe the term or phrase is invalid under Section 112, ¶ 2, and any limitation including such term or phrase is also indefinite.

1. U.S. Patent No. 7,230,931

- “sector”

Claim 28 of the '931 patent recites the term “sector” and requires “transmitting directed scanning beam signals each directed to substantially only wireless access devices within a different one of a plurality of sectors of a cell site associated with said first base station,” “transmit[ting], at a start of a TDD frame, a broadcast beam signal to wireless access devices within more than one of said sectors,” “transit[ting], in a downlink portion of said TDD frame, first downlink data traffic to substantially only wireless access devices within one of said sectors using one of said directed scanning beam signals” and “transmit[ting], in said downlink portion of said TDD frame, second downlink data traffic to substantially only wireless access devices within an other of said sectors using an other of said directed scanning beam signals.” Claim 29 of the '931 patent recites the term “sector” and requires “transmitting, at a start of a TDD frame, a broadcast beam signal to wireless access devices within more than one of a plurality of sectors within said associated cell site,” “transmitting, in a downlink portion of said TDD frame, first downlink data traffic to substantially only wireless access devices in a first of said sectors using a first directed scanning beam signal,” and “transmitting, in said downlink portion of said TDD frame, second downlink data traffic to substantially only wireless access devices in a second of said sectors using a second directed scanning beam signal.”

If this term is interpreted broadly enough to support Plaintiff's Infringement Contentions, then the claims will be indefinite, as the '933 patent does not provide or support any definition for

the term “sector” that would support Plaintiff’s Infringement Contentions and simultaneously inform a person of skill in the art of the bounds of the claims with reasonable certainty.

- “transmit path circuitry”

Claim 28 of the ’931 patent recites the term “transmit path circuitry” and requires “transmit path circuitry associated with a beam forming network capable of transmitting directed scanning beam signals each directed to substantially only wireless access devices within a different one of a plurality of sectors of a cell site associated with said first base station, wherein said transmit path circuitry,” and “wherein said transmit path circuitry transmits, in said downlink portion of said TDD frame, second downlink data traffic to substantially only wireless access devices within an other of said sectors using an other of said directed scanning beam signals.”

If these terms are interpreted broadly enough to support Plaintiff’s Infringement Contentions, then the claims will be indefinite, as the ’931 patent does not provide or support any definition for the term “transit path circuitry” that would support Plaintiff’s Infringement Contentions and simultaneously inform a person of skill in the art of the bounds of the claims with reasonable certainty.

- “TDD frame”

Claim 28 of the ’931 patent recites the term “TDD frame” and requires “transmit[ting], at a start of a TDD frame, a broadcast beam signal to wireless access devices within more than one of said sectors, the broadcast beam signal comprising a start of frame field,” “subsequently transmit[ting], in a downlink portion of said TDD frame, first downlink data traffic to substantially only wireless access devices within one of said sectors using one of said directed scanning beam signals,” and “transmit[ting], in said downlink portion of said TDD frame, second downlink data traffic to substantially only wireless access devices within an other of said sectors using an other of said directed scanning beam signals.” Claim 29 of the ’931 patent recites the

term “TDD frame” and requires “transmitting, at a start of a TDD frame, a broadcast beam signal to wireless access devices within more than one of a plurality of sectors within said associated cell site, the broadcast beam signal comprising a start of frame field capable of synchronizing receivers in said wireless access devices,” “transmitting, in a downlink portion of said TDD frame, first downlink data traffic to substantially only wireless access devices in a first of said sectors using a first directed scanning beam signal,” and “transmitting, in said downlink portion of said TDD frame, second downlink data traffic to substantially only wireless access devices in a second of said sectors using a second directed scanning beam signal.”

If these terms are interpreted broadly enough to support Plaintiff’s Infringement Contentions, then the claims will be indefinite, as the ’933 patent does not provide or support any definition for the term “TDD frame” that would support Plaintiff’s Infringement Contentions and simultaneously inform a person of skill in the art of the bounds of the claims with reasonable certainty.

2. U.S. Patent Nos. 9,426,794

- “re-transmit[ting]”

Claims 1 and 5 of the ’794 patent recite the term “re-transmit[ting]” and requires “re-transmit[ting] he first downlink signal to the first mobile station as a second downlink signal according to the local area wireless communication protocol” “the first downlink signal” originating from the base station according to a “wide area wireless communication protocol.”

If this term is interpreted broadly enough to support Plaintiff’s Infringement Contentions, then the claims will be indefinite, as the ’794 patent does not provide or support any definition for the term “monitor[ing]” that would support Plaintiff’s Infringement Contentions and simultaneously inform a person of skill in the art of the bounds of the claims with reasonable certainty.

- “monitor[ing]”

Claims 1 and 5 of the '794 patent recite the term “monitor[ing]” and requires “monitor[in]g” “signal characteristics of the second downlink signal of the first mobile station” and “second signal characteristics of the second mobile station.”

If this term is interpreted broadly enough to support Plaintiff’s Infringement Contentions, then the claims will be indefinite, as the '794 patent does not provide or support any definition for the term “monitor[ing]” that would support Plaintiff’s Infringement Contentions and simultaneously inform a person of skill in the art of the bounds of the claims with reasonable certainty.

- “signal characteristics of the second downlink signal of the first mobile station”

Claims 1 and 5 of the '794 patent recite the term “monitor[ing]” and requires “monitor[in]g” “signal characteristics of the second downlink signal of the first mobile station” and “second signal characteristics of the second mobile station.”

If this term is interpreted broadly enough to support Plaintiff’s Infringement Contentions, then the claims will be indefinite, as the '794 patent does not provide or support any definition for the term “monitor[ing]” that would support Plaintiff’s Infringement Contentions and simultaneously inform a person of skill in the art of the bounds of the claims with reasonable certainty.

- “second signal characteristics of the second mobile station”

Claims 1 and 5 of the '794 patent recite the term “monitor[ing]” and requires “monitor[in]g” “signal characteristics of the second downlink signal of the first mobile station” and “second signal characteristics of the second mobile station.”

If this term is interpreted broadly enough to support Plaintiff’s Infringement Contentions, then the claims will be indefinite, as the '794 patent does not provide or support any definition for

the term “monitor[ing]” that would support Plaintiff’s Infringement Contentions and simultaneously inform a person of skill in the art of the bounds of the claims with reasonable certainty.

IV. ACCOMPANYING DOCUMENT PRODUCTION

Pursuant to Local Patent Rules 3-3 and 3-4, Defendants have produced all prior art referenced in their Invalidity Contentions as well as source code, specifications, schematics, flow charts, artwork, formulas, or other documentation sufficient to show the operation of any aspects or elements of an Accused Instrumentality identified by the GAS in its Infringement Contentions. Defendants will promptly produce any documents uncovered during discovery, including through third-party subpoenas.

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CERTIFICATE OF SERVICE

I hereby certify that on March 2, 2023, the foregoing was served upon all counsel of record who have consented to electronic service.

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