

1 (Counsel listed on signature page)

2

3

4

5

6

7

8

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA

9

SAN FRANCISCO DIVISION

10

11

TECHNOLOGY PROPERTIES LIMITED
LLC, et al.,

12

Plaintiffs,

13

v.

14

HUAWEI TECHNOLOGIES CO., LTD., et al.,

15

Defendants.

16

17

TECHNOLOGY PROPERTIES LIMITED
LLC, et al.,

18

Plaintiffs,

19

v.

20

ZTE CORPORATION, et al.,

21

Defendants.

22

23

TECHNOLOGY PROPERTIES LIMITED
LLC, et al.,

24

Plaintiffs,

25

v.

26

SAMSUNG ELECTRONICS CO., LTD., et al.,

27

Defendants.

28

Case No. 3:12-cv-03865-VC

**DEFENDANTS' REPLY BRIEF IN
SUPPORT OF MOTION FOR
SUMMARY JUDGMENT**

DATE: November 30, 2017

TIME: 10:00 AM

PLACE: Courtroom 4, 17th floor

JUDGE: Hon. Vince Chhabria

Case No. 3:12-cv-03876-VC

Case No. 3:12-cv-03877-VC

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

TECHNOLOGY PROPERTIES LIMITED
LLC, et al.,

Plaintiffs,

v.

LG ELECTRONICS, INC., et al.,

Defendants.

Case No. 3:12-cv-03880-VC

TECHNOLOGY PROPERTIES LIMITED
LLC, et al.,

Plaintiffs,

v.

NINTENDO CO., LTD, et al.

Defendants.

Case No. 3:12-cv-03881-VC

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
II. SUMMARY JUDGMENT SHOULD BE GRANTED IN THIS CASE.....	2
A. Nothing In the HTC Case Precludes Summary Judgment	2
B. The Accused Products Have a Non-Infringing Oscillator Because it is Fixed by an External Crystal.....	4
1. Undisputed Facts Establish that the Frequencies of the Accused Oscillators Are Fixed	4
a. Plaintiffs concede that oscillators with minimal frequency variations are fixed-frequency oscillators	4
b. Plaintiffs concede that the actual frequency variation in the accused oscillators is only minimal.....	5
c. Plaintiffs offer only hypothetical PVT frequency variations that do not occur in the accused products	6
d. Plaintiffs’ hypothetical infringement theory is incorrect as a matter of law	8
e. Plaintiffs’ binning argument also is based on alleged frequency variation that cannot establish infringement	12
2. There is No Dispute that the Accused Oscillators’ Frequencies Are Fixed By an External Crystal	14
C. The Accused Products Do Not Infringe Because They Require a Command Input to Change Clock Frequency.....	16
III. CONCLUSION	19

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

TABLE OF AUTHORITIES

Page(s)

CASES

A.B. Dick Co. v. Burroughs Corp.,
713 F.2d 700 (Fed. Cir. 1983).....8, 9, 10

Accent Packaging, Inc. v. Legett & Platt, Inc.,
707 F.3d 1318 (Fed. Cir. 2013).....10, 11, 12

High Tech Med. Instr., Inc. v. New Image Indus., Inc.,
49 F.3d 1551 (Fed. Cir. 1995).....10, 12

Levi Strauss & Co. v. Abercrombie & Fitch Trading Co.,
719 F.3d 1367 (Fed. Cir. 2013).....2

Outside the Box Innovations, LLC v. Travel Caddy, Inc.,
695 F.3d 1285 (Fed. Cir. 2012).....9, 10, 11, 12

Phillips Petroleum Co. v. Huntsman Polymers Corp.,
157 F.3d 866 (Fed. Cir. 1998).....18

Stiftung v. Renishaw PLC,
945 F.2d 1173 (Fed. Cir. 1991).....11, 12

Suntiger, Inc. v. Sci. Research Funding Grp.,
189 F.3d 1327 (Fed. Cir. 1999).....11

Tech. Props. Ltd. LLC v. Huawei Techs. Co.,
849 F.3d 1349 (Fed. Cir. 2017)..... passim

TechSearch, L.L.C. v. Intel Corp.,
286 F.3d 1360 (Fed. Cir. 2002).....18

Temco Elec. Motor Co. v. Apco Mfg. Co.,
275 U.S. 319 (1928).....11

OTHER AUTHORITIES

Modern Dictionary of Electronics, 6th ed. 1984.....18

1 **I. INTRODUCTION**

2 Plaintiffs admitted that Defendants' products did not infringe under this Court's original
3 claim construction. Despite being given another chance, Plaintiffs fail to raise any genuine
4 dispute of material fact that the Federal Circuit's minor modification to the claim construction
5 would dictate a different result. Instead, Plaintiffs put forth a hypothetical infringement theory
6 directly contrary to the operation of the accused products, which has been rejected in related
7 litigation. This theory is incorrect as a matter of law and cannot be the basis for denying
8 summary judgment.

9 Defendants' motion cites extensive testimony and documentary evidence, including
10 testing data, demonstrating that the frequency variation of the voltage controlled oscillators
11 ("VCO") in the accused products is no greater than the infinitesimal frequency variation of a
12 crystal – a frequency variation that is so small that it constitutes a fixed frequency in the context
13 of the '336 patent, as Plaintiffs acknowledge. Plaintiffs do not dispute any of this evidence, nor
14 do they present any evidence that the frequency variation in the accused products is greater than
15 that exhibited by a crystal. Plaintiffs choose instead to create a hypothetical situation that never
16 exists in the accused products: VCO frequency variation resulting from the VCOs *not* being
17 controlled by the external crystals and phase-locked loops ("PLLs"). It is undisputed, though,
18 that the frequency of the VCOs in the accused products *are* controlled by the PLLs and external
19 crystals. Plaintiffs' theory fails because it ignores this fact. The law does not allow a patentee to
20 allege infringement based on hypotheticals rather than the actual operation of the accused
21 products.

22 Plaintiffs also argue the frequency of the VCOs in the accused products is "not fixed by
23 any external crystal," because the crystal is not directly connected to the VCO. Plaintiffs assert a
24 direct connection is required because the prior art which prompted the "not fixed by a crystal"
25 disclaimer involved a direct connection. This argument fails as a matter of law as it incorrectly
26 assumes the scope of a disclaimer is measured by the prior art, rather than by the words used by
27 the applicants. The Federal Circuit repeatedly has rejected that notion (including in this case),
28 and there is no requirement in the Federal Circuit's construction for such a direct connection.

1 Finally, Plaintiffs’ argument regarding the “command input” portion of the Federal
 2 Circuit’s claim construction is incorrect because undisputed evidence establishes that the only
 3 way to change the frequency of the accused VCOs is by using a command input. Plaintiffs’ sole
 4 argument on this issue – that a *hypothetical* ring oscillator divorced from a PLL can change
 5 frequencies without using a command input – is wrong because the *actual* VCOs in the accused
 6 products are part of a PLL and cannot change frequencies absent a command input. Defendants’
 7 Motion for Summary Judgement should therefore be granted.

8 **II. SUMMARY JUDGMENT SHOULD BE GRANTED IN THIS CASE**

9 Summary judgment should be granted because undisputed facts establish that the accused
 10 products do not practice the “entire oscillator” claim limitation as a matter of law.

11 **A. Nothing In the *HTC* Case Precludes Summary Judgment**

12 Plaintiffs argue throughout their opposition that the denial of summary judgment and the
 13 jury verdict of infringement in *HTC Corp. and HTC Am. v. Tech. Props. Ltd.* (the “*HTC* case”)
 14 preclude summary judgement here. D.I. 144¹ (“Opp.”) at 15-17, 23, 26-28. However, no order or
 15 verdict in the *HTC* case can provide a basis for denying Defendants’ motion here. As an initial
 16 matter, neither the denials of summary judgment nor the jury verdict in the *HTC* case (neither of
 17 which went through appeal) can bind non-parties to the *HTC* case like Defendants here.²

18 More importantly, the *HTC* case involved a very different construction of “entire
 19 oscillator” than the one in this case:

23 ¹ Unless otherwise indicated, all docket numbers cited in this brief refer to *Tech. Props. Ltd., et*
 24 *al. v. Samsung Elecs. Co., Ltd. et al.*, Case No. 12-cv-03877-VC.

25 ² See *Levi Strauss & Co. v. Abercrombie & Fitch Trading Co.*, 719 F.3d 1367, 1371-72 (Fed. Cir.
 26 2013) (issue preclusion applies when “*the party* defending against preclusion had a full and fair
 27 opportunity to litigate the issues” and “a judgment on the merits in a prior suit bars a second suit
 28 involving the *same parties* or their privies based on the same cause of action”) (emphasis added);
 Declaration of Erik Fuehrer in Support of Defendants’ Reply Brief in Support of Defendants’
 Motion for Summary Judgment (“Fuehrer Reply Decl.”), Ex. 54 (*HTC* case appeal dismissal).

<i>HTC</i> Case Construction	Federal Circuit Construction
The term “entire oscillator” (in claims 6 and 13) is properly understood to exclude any external clock used to generate the signal used to clock the CPU.	An oscillator located entirely on the same substrate as the central processing unit that does not requires a command input to change the frequency and whose frequency is not fixed by any external crystal.

Fuehrer Reply Decl., Ex. 55 (*HTC* Case Jury Instructions) at 26; *Tech. Props. Ltd. LLC v. Huawei Techs. Co.*, 849 F.3d 1349, 1360 (Fed. Cir. 2017). Plaintiffs agreed that these constructions were very different, telling the Federal Circuit that Judge Grewal’s construction in this case (to which the Federal Circuit ended up making only a minor modification) was a “stark reversal” of his prior construction in the *HTC* case:

Finally, in the case from which this appeal is taken, Judge Grewal was again presented with the same issues regarding the *entire oscillator* term – does an *entire oscillator* allow for the use of an externally-generated reference signal and can it be controlled. Like *HTC*, Appellees brought forward the *Sheets* and *Magar* references (discussed in detail below), and presented substantively these same arguments. In a **stark reversal** from his position on these same issue from [the *HTC* case in] 2013, Judge Grewal found that the *entire oscillator* term is properly construed as “an oscillator located entirely on the same semiconductor substrate as the central processing unit that does not require a control signal and whose frequency is not fixed by any external crystal.”

Fuehrer Reply Decl., Ex. 56 at 30-31 (bold/underline added; italics in original).

The Federal Circuit’s minor modification to Judge Grewal’s most recent construction retained the fundamental differences from the construction in the *HTC* case. First, the *HTC* case construction did not address, much less include, the *Sheets* disclaimer reflected in the Federal Circuit’s claim construction (*i.e.*, “that does not require a command input to change the clock frequency”), which forms one of the two bases of the present motion. Second, the “exclude any external clock used to generate a signal” language in the *HTC* case construction is much different than the Federal Circuit’s “and whose frequency is not fixed by any external crystal” construction, which forms the other basis of the present motion. The *HTC* case construction focused on *external clocks* and *signal generation*, whereas this part of the Federal Circuit’s

1 construction focuses on disclaiming the use of *external crystals* to *fix the frequency of the*
 2 *oscillator*, which is what the accused products do in this case. Indeed, Plaintiffs argued on appeal
 3 that this second aspect of the current construction (which the Federal Circuit did not modify)
 4 broadened the scope of the disclaimer as compared to all prior claim constructions. *Id.* at 24
 5 (“Note that only the present claim construction under appeal broadens the disclaimer beyond
 6 crystals that ‘generate’ a clock signal.”). As a result, the findings in the *HTC* case are not relevant
 7 to the issues currently presented to this Court.

8
 9 **B. The Accused Products Have a Non-Infringing Oscillator Because it is Fixed
 by an External Crystal**

10 The Federal Circuit’s construction requires an oscillator “whose frequency is not fixed by
 11 any external crystal” based on the patentee’s disclaimer regarding “Magar.” *Tech. Props. Ltd.*
 12 *LLC v. Huawei Techs. Co.*, 849 F.3d 1349, 1360 (Fed. Cir. 2017). Plaintiffs do not dispute that
 13 the frequencies of the oscillators in the accused products are fixed by an external crystal.
 14 Plaintiffs instead rely on flawed legal theories that are contrary to controlling Federal Circuit
 15 precedent.

16 **1. Undisputed Facts Establish that the Frequencies of the Accused
 Oscillators Are Fixed**

17
 18 **a. Plaintiffs concede that oscillators with minimal frequency
 variations are fixed-frequency oscillators**

19 As established in Defendants’ opening brief, the applicants’ statements during prosecution
 20 establish that crystal oscillators are fixed-frequency devices despite the fact that their frequencies
 21 vary minimally due to variations in manufacturing process, operating voltage and temperature
 22 (collectively referred to as “PVT”). D.I. 139-6 (“Def. Op. Br.”) at 18 (citing Ex. 3 (’336 patent
 23 prosecution history, April 15, 1996 Amendment) at 4³; *see also* Ex. 33 (Fish Depo.) at 145:21-
 24 24). Indeed, Plaintiffs agree that “a crystal oscillator does only minimally respond[] to PVT and
 25

26
 27 ³ Unless otherwise specified, the exhibits cited in this brief were attached to the Fuehrer Decl. in
 support of Defendants’ opening brief (D.I. 140-4).
 28

1 therefor is ‘fixed frequency.’” Opp. at 7. Thus, there is no dispute that an oscillator whose
 2 frequency varies only minimally in response to PVT variations is a fixed frequency device and
 3 within the Magar disclaimer portion of the claim construction.

4
 5 **b. Plaintiffs concede that the actual frequency variation in the
 accused oscillators is only minimal**

6 As established in Defendants’ opening brief, the VCOs identified by Plaintiffs in their
 7 Second Amended Infringement Contentions (“SAIC”) as the claimed “entire oscillator” are not
 8 the free-running oscillators described in the ’336 patent, but instead are one part of a PLL that
 9 controls the VCO such that the VCO outputs a fixed frequency.⁴ Def. Op. Br. at 15. Extensive
 10 testing performed by Defendants’ expert, Dr. Vivek Subramanian, confirms that the frequency of
 11 the VCOs in four of the accused processors varies only minimally over large changes in operating
 12 voltage and temperature. Specifically, the frequency variation exhibited by these accused VCOs
 13 is in all cases at or less than 6 parts per million and is within (or less than) the range of stability
 14 exhibited by a crystal oscillator – which the ’336 patent states generates a *fixed* frequency. Def.
 15 Op. Br. at 16-20.

16 Plaintiffs do not dispute any of this evidence. They also offer no testing data of their own
 17 to contradict Defendants’ testing evidence, nor any argument as to why the behavior of any other
 18 accused VCO would be different. Moreover, Plaintiffs acknowledge the testing shows that the
 19 frequency variation of the VCOs in the accused products is on par with fixed frequency crystals:

20 At most, Defendants’ testing shows that PLLs stabilize the output of on-
 21 chip oscillators that themselves vary widely based on PVT conditions, and
 22 that those stabilized outputs are roughly similar in stability to a frequency
 output by a hypothetical crystal.

23 Opp. at 24; *see also* D.I. 144-1 (“Oklobdzija Decl.”) ¶ 41 (“I do not dispute that PLL is
 24 _____

25 ⁴ Defendants’ opening brief explains that some accused products have VCOs (voltage controlled
 26 oscillators) while others employ ICOs (current controlled oscillators), and that the differences
 27 between them are not material. Def. Op. Br. at 8 n.5. Plaintiffs agree. D.I. 127 (SAIC) at 3 (“this
 28 difference is not believed to be important”).

1 functioning, as Dr. Subramanian demonstrates.”). Accordingly, there is no genuine dispute that
 2 the *actual* frequency variations exhibited by the accused “entire oscillators” – the VCOs
 3 controlled by the PLLs in the accused products – are no greater than those exhibited by a crystal
 4 oscillator, and, therefore, that the VCO frequencies are *fixed* frequencies.⁵

5
 6 **c. Plaintiffs offer only *hypothetical* PVT frequency variations that do not occur in the accused products**

7 Plaintiffs argue that the frequencies of VCOs in the accused products vary as required by
 8 the asserted claims of the ’336 patent, but, in so arguing, Plaintiffs rely on *hypothetical* situations
 9 that never exist in the accused products and that are plainly inconsistent with how the accused
 10 products actually operate as demonstrated by Defendants’ undisputed evidence. In particular,
 11 despite conceding that Dr. Subramanian’s testing shows that the *actual* frequencies output by the
 12 VCOs in the accused products vary by the same miniscule amounts as a crystal oscillator – and
 13 are therefore fixed frequencies – Plaintiffs assert that the accused VCOs (which Plaintiffs and Dr.
 14 Oklobdzija sometimes refer to as ring oscillators or as the on-chip oscillator) will respond to PVT
 15 variations. *See, e.g.*, Opp. at 19 (citing Oklobdzija Decl. ¶¶ 4, 33-34). However, Plaintiffs and
 16 Dr. Oklobdzija focus on *hypothetical* frequency variations that might occur if the VCOs were in
 17 *hypothetical* products in which they were not controlled by PLL circuitry, rather than address
 18 frequency variations in the actual accused products in which the VCOs are tightly controlled by
 19 PLLs and external crystals.

20 For example, in his declaration, Dr. Oklobdzija acknowledges that Dr. Subramanian’s
 21 “testing demonstrates that the PLL systems result in relatively stable clock frequencies”
 22 (Oklobdzija Decl. ¶ 40), but he then criticizes the testing because it was performed with the PLL

23 _____
 24 ⁵ Plaintiffs’ expert, Dr. Oklobdzija, disputes that a PLL can control the accused VCOs to provide
 25 greater frequency stability than that of a crystal oscillator. Oklobdzija Decl. ¶ 43. However, this
 26 assertion, which is not supported by citation to any evidence, misses the point of Dr.
 27 Subramanian’s undisputed testing results, namely that the frequency stability of the accused
 28 VCOs is well within the range of the frequency stability of a crystal, and is therefore a fixed
 frequency within the meaning of the ’336 patent. Def. Op. Br. at 16-20.

1 controlling the actual frequency of the VCO; that is, Dr. Subramanian’s test was performed on
2 how the products *actually* operate:

3 Such a protocol design is indeed measuring PLL performance as to Dr.
4 Subramanian’s assertion that “[t]he frequency of a PLL on each of these
5 chips was measured while environmental temperature was varied,” but the
6 testing does not measure VCO frequencies during the periods *when the*
7 *PLL is not intervening*. In order to do so, his experiment would need to
8 measure the VCO’s frequencies *with the PLL circuitry disabled* so that the
9 VCO frequency changes in response to temperature *were not masked by*
10 *PLL intervention*.

11 Oklobdzija Decl. ¶ 41 (bold/italics added; underline in original); Opp. at 30 (“[d]efendants never
12 contend that their ring oscillators would output a ‘fixed frequency’ *in the absence of the PLL.*”)
13 (emphasis added). Dr. Oklobdzija and Plaintiffs make clear that the frequency changes they rely
14 upon are *hypothetical* changes that might occur *if* the PLL and external crystal were not
15 controlling the accused VCOs, which never occurs in the accused products. D.I. 139-12
16 (“Pedrali-Noy Decl.”) ¶ 8; D.I. 139-8 (“Subramanian Decl.”) ¶ 76. Indeed, Dr. Oklobdzija’s
17 assertion that the tests should be run with the PLL *disabled* in order to demonstrate frequency
18 variation effectively concedes that the VCO frequency in the accused products is fixed during
19 actual operation.⁶

20 Dr. Oklobdzija also asserts that a generic “PLL comparison is only periodic, not
21 continuous, and *may* vary or drift between comparisons and adjustments.” Oklobdzija Decl. ¶ 35

22 ⁶ Dr. Oklobdzija’s reference in the above block quote to VCO frequency changes being “masked”
23 refers to frequency changes being prevented from occurring, not to frequency changes that occur
24 but are somehow hidden. In this regard, there is no disagreement between the parties or among
25 the experts as to the fundamental mechanics of how the PLL and external crystal actually work.
26 Cf. Def. Op. Br. at 9-10 *with* Oklobdzija Decl. ¶ 34. In particular, there is no dispute that the PLL
27 locks the frequency of the VCO to a fixed multiple of the frequency of the external crystal. Def.
28 Op. Br. at 10 (“[t]he PLL control circuit then adjusts a command signal that is output to the
control voltage input of the VCO to control the VCO’s output frequency to maintain that phase
lock [to the fixed frequency external crystal]”); Oklobdzija Decl. ¶ 34 (if “the divided VCO
frequencies (e.g., $F_{VCO/100}$) are higher or lower than the [crystal] reference frequency, $F_{reference}$, the
PLL system will then adjust the voltage delivered to the VCO, which adjusts the VCO
frequencies, to equalize them (e.g., achieve $F_{reference} = F_{VCO/100}$)”).

1 (emphasis added). However, Dr. Oklobdzija’s speculation as to what “may” happen in a
2 hypothetical PLL is unsupported by any evidence – much less evidence showing that any such
3 alleged frequency variance in the actual accused PLLs is greater than that exhibited by a crystal.
4 Moreover, Dr. Oklobdzija’s unsupported conjecture is contrary to the undisputed results of
5 Dr. Subramanian’s testing of the actual accused products, which established that any variance was
6 miniscule and well within the range of crystal frequency variation. Def. Op. Br. at 16-20, 23.

7 Relying on hypothetical frequency variation is nothing new for Plaintiffs or their expert.
8 In the prior ITC investigation, the Administrative Law Judge rejected this same argument:

9 What Dr. Oklobdzija and Complainants do is isolate the oscillators in space
10 and time by divorcing them from the effects of external crystals and PLLs
11 associated therewith and observing how they function without them.
12 However, this betrays the concept of the claimed “entire oscillator”
13 because the accused oscillators do not perform the clocking function of the
14 claims in isolation. ***The fact is the oscillators or ring oscillators in the
Accused Products are not designed to and do not perform the claimed
clocking function hermetically.*** Consequently, Dr. Oklobdzija testimony
about the “varying” limitations is either hypothetical or disregards material
facts.

15 Ex. 31 (Initial Determination in Inv. No. 337-TA-853) at 195 (emphasis added).

16 For all of the foregoing reasons, the Court should reject Plaintiffs’ arguments that the
17 VCOs in the accused products change frequencies due to changes in PVT because those
18 arguments are unsupported by any evidence, contrary to the undisputed evidence, and completely
19 divorced from the design and operation of the accused products.

20
21 **d. Plaintiffs’ hypothetical infringement theory is incorrect as a
matter of law**

22 Plaintiffs argue the hypothetical frequency variation in the accused VCOs establishes
23 infringement because, according to Plaintiffs, infringement cannot be avoided by including an
24 additional component in the form of an external crystal and PLL that prevents actual frequency
25 variations from occurring. Opp. at 29 (citing *A.B. Dick Co. v. Burroughs Corp.*, 713 F.2d 700,
26 703 (Fed. Cir. 1983)). Plaintiffs are incorrect as a matter of law.

27 The passage of *A.B. Dick* relied upon by Plaintiffs is a statement of a general principle that
28 does not apply to the facts of this case. *A.B. Dick*, 713 F.2d at 703. Specifically, subsequent

1 controlling Federal Circuit authority has clarified that where, as here, other components in a
2 product prevent an accused component from practicing a limitation of the claims by changing the
3 structure or operation of the accused component, there is no infringement.

4 In *Outside the Box Innovations, LLC v. Travel Caddy, Inc.*, 695 F.3d 1285 (Fed. Cir.
5 2012), the asserted claims were directed to a tool case and required “a first, flexible fabric front
6 panel” and “a second, flexible, fabric back panel.” *Id.* at 1301. The accused tool cases had
7 “reinforced [plywood] boards placed in between the fabric of the front and back panels.” *Id.* at
8 1305. In affirming the district court’s determination of non-infringement, the Federal Circuit
9 rejected an *A.B. Dick* argument very similar to Plaintiffs’ argument here:

10 Travel Caddy argues that the district court’s construction of “flexible fabric
11 front panel” is erroneous, for the front and back panels are made of fabric,
12 and the use of “comprising” in the claim does not exclude the addition of
13 plywood to the fabric panels. We do not discern such error, for we agree
14 with the district court that “flexible fabric front panel” is not reasonably
15 construed to include a plywood-stiffened fabric panel. Although “[i]t is
16 fundamental that one cannot avoid infringement merely by adding elements
17 if each element recited in the claims is found in the accused device.” *A.B.*
18 *Dick Co. v. Burroughs Corporation*, 713 F.2d 700, 703 (Fed.Cir.1983),
here the addition of plywood to the fabric panels removed the flexibility of
the fabric. The usage “comprising” means that additional components may
be present in the device, but **does not change the elements that are stated
in the claim . . .** The plywood is not simply an additional element, but a
material change in the fabric panel. We agree that the plywood board is
“an additional element [that] changed the structure of the purported
infringing object such that it could not infringe.”

19 *Id.* at 1305 (citation omitted). The analysis and result in *Outside the Box* is directly applicable
20 here. Under the Federal Circuit’s claim construction, the asserted claims of the ’336 patent all
21 require an entire oscillator whose frequency is not fixed by an external crystal. As demonstrated
22 by Dr. Subramanian’s undisputed test results, the frequency variation required by the claims is
23 **prevented** in the accused products by the addition of PLL circuitry that fixes the frequency of the
24 VCOs based on the frequency of an external crystal. This is just like the addition of the plywood
25 in *Outside the Box*, which **prevented** the required flexibility of the fabric. Subramanian Decl. ¶¶
26 55-69. Thus, the PLLs and external crystals are not simply additional elements as Plaintiffs
27 argue. Rather, those components change the functioning of the VCOs such that they cannot
28 satisfy the claim requirement of an entire oscillator “whose frequency is not fixed by an external

1 crystal.” Plaintiffs’ argument that the accused VCOs would oscillate in hypothetical products
2 with PLLs removed or disabled is no more correct than the argument that the fabric panels in
3 *Outside the Box* would be flexible if the plywood boards were removed.

4 Other Federal Circuit cases decided after *A.B. Dick* draw the same conclusion. In *High*
5 *Tech Med. Instr., Inc. v. New Image Indus., Inc.*, 49 F.3d 1551 (Fed. Cir. 1995), the asserted claim
6 recited a “camera being rotatably coupled to said body member.” *Id.* at 1553. The accused
7 camera, as designed and sold, did not rotate because two set screws prevented rotation of the
8 camera. *Id.* However, the district court found that loosening the set screws allowed the camera to
9 rotate, and therefore the camera was “rotatably coupled to the body member” as claimed. The
10 Federal Circuit reversed the district court, finding:

11 In the AcuCam, as designed, sold and intended for use, the camera is
12 rigidly coupled to its housing. The original and intended operating
13 configuration of the device must be altered – by loosening the set screws –
in order for the camera to rotate.

14 *Id.* at 1555. In reaching this conclusion, the Federal Circuit noted that the district court had found
15 the AcuCam camera was not designed to rotate during operation, there was no reference to
16 rotation of the camera in any promotional materials, and there was no evidence that any user had
17 loosened or removed the set screws prior to or during actual use. *Id.* at 1556. Accordingly, the
18 Federal Circuit held that a likelihood of infringement had not been established under the district
19 court’s screw-loosening infringement theory.

20 Similarly, in *Accent Packaging, Inc. v. Legett & Platt, Inc.*, 707 F.3d 1318 (Fed. Cir.
21 2013), the asserted claims required a mount that permitted pivoting through an arc of at least
22 ninety degrees. *Id.* at 1326-27. The plaintiff in *Accent Packaging* argued that the accused mount
23 infringed because it would permit rotation through ninety degrees **but for** a “SafeLatch™ stop.”
24 *Id.* at 1327. The Federal Circuit disagreed, finding that the “SafeLatch™ stop cannot be ignored
25 when determining whether the [accused product’s] mount **actually permits** its cover to be pivoted
26 through a ninety-degree arc.” *Id.* (emphasis in original). The Federal Circuit also rejected the
27 argument that the SafeLatch™ stop could be removed, finding that the mere possibility of
28 modification was not enough to establish infringement and noting that the stop served a critical

1 safety and service function. *Id.*

2 Plaintiffs cite three other cases in their opposition in purported support of this argument,
3 none of which are applicable. The first case, *Suntiger, Inc. v. Sci. Research Funding Grp.*, 189
4 F.3d 1327, 1336 (Fed. Cir. 1999) is cited for the proposition that “[i]f a claim reads merely on a
5 part of an accused device, that is enough for infringement.” Opp. at 29. But in *Suntiger*,
6 summary judgment was improper because there was an evidentiary dispute concerning the actual
7 products at issue: “there is evidence supporting that the addition of the graduated gray coating
8 does not fully eliminate an inherent feature of the claim (*i.e.*, 1% transmission at 515 nm and 90%
9 transmission at 636 nm)” and “[f]urthermore, there is a genuine dispute as to whether the ‘right
10 bottom’ of BluBlocker’s accused lens exhibits the inherent feature of the claim, which in this case
11 is the transmission characteristics specified in part (b) of the claim.” *Id.* at 1336. In contrast,
12 here, it is undisputed that the actual frequencies of the accused oscillators in the actual accused
13 products are fixed by an external crystal, and thus *Suntiger* in inapposite.

14 Plaintiffs also cite *Temco Elec. Motor Co. v. Apco Mfg. Co.*, 275 U.S. 319, 328 (1928), and
15 *Stiftung v. Renishaw PLC*, 945 F.2d 1173, 1179 (Fed. Cir. 1991) for the proposition that “[a]n
16 accused infringer’s alleged improvements do not necessarily avoid infringement.” Opp. at 29-30.
17 Significantly, this statement recognizes that the addition of an improvement *can* avoid
18 infringement in some cases (*e.g.*, the plywood boards in *Outside the Box* and the PLLs and
19 external crystals here), which contradicts Plaintiffs’ argument that additional elements cannot
20 defeat infringement. In any event, *Temco* and *Stiftung* are distinguishable here. *Temco* states that
21 “[i]t is well established that an improver cannot appropriate the basic patent of another, and that
22 the improver without a license is an infringer, and may be sued as such.” 275 U.S. at 328. Here,
23 the ’336 patent has not been appropriated because it requires “an oscillator . . . whose frequency
24 is not fixed by an external crystal” whereas the accused products take the opposite approach, with
25 oscillator frequencies that are fixed by an external crystal. In *Stiftung*, the Federal Circuit held
26 that the district court erred by reading in a limitation as to how a signal generated by the accused
27 device was used, but that limitation was not properly part of the claims. 945 F.2d at
28 1177. Infringement was established in that case because the properly construed claims did read

1 on the accused device. *Id.* at 1179. Here, the Federal Circuit has determined that “an entire
 2 oscillator . . . whose frequency is not fixed by an external crystal” is a requirement of the properly
 3 construed claims, and there is no genuine factual dispute the oscillator frequencies in the accused
 4 products *are* fixed by an external crystal. Accordingly, none of these cases help Plaintiffs’
 5 arguments in this case.

6 The Federal Circuit’s decisions in *Outside the Box*, *High Tech* and *Accent Packaging*
 7 refute Plaintiffs’ argument that an infringement finding may be based on a hypothetical frequency
 8 variation that never occurs in the accused VCOs because of the presence and operation of the
 9 PLLs and external crystals that prevent such variation, and the other cases cited in the Opposition
 10 are not applicable.

11
 12 **e. Plaintiffs’ binning argument also is based on alleged frequency
 variation that cannot establish infringement**

13 Plaintiffs argue the accused VCOs’ frequency varies as a result of manufacturing process
 14 variations, relying on the industry practice of “binning”, which is the sorting of integrated circuits
 15 based on performance characteristics. *Opp.* at 5, 31; Oklobdzija Decl. ¶¶ 31, 45-46. More
 16 specifically, Dr. Oklobdzija asserts that “*Qualcomm* bins its processors based on their speed
 17 *capabilities.*” Oklobdzija Decl. ¶ 46 (emphasis added). This argument fails for at least two
 18 reasons.

19 First, as explained by Dr. Oklobdzija, binning “is employed during the manufacture of the
 20 processors” by the processor companies, such as Qualcomm. *Id.* at ¶¶ 45, 31. This is long before
 21 any processor is incorporated into any of the accused mobile phones or other accused products.
 22 Any purported frequency variations *from one processor to another* during binning are irrelevant.

23 Second, Dr. Oklobdzija’s declaration demonstrates that binning is based on frequency
 24 *capabilities* rather than on the *actual* frequencies of the accused VCOs as they are controlled by
 25 PLLs and the external crystals in the accused products. *Id.* at ¶ 46. In this regard, variation in
 26 processing frequency *capability* is the subject of non-asserted claims of the ’336 patent, such as
 27 claim 1, which recites in part a “processing frequency *capability* of said central processing unit
 28 and a speed of said ring oscillator variable speed system clock varying together due to said

1 manufacturing variations.” Ex. 1 (’336 patent) at C1 2:1-3 (emphasis added). In contrast,
 2 asserted independent claims 6 and 13 are directed toward actual frequency variations, not
 3 variations in capability: an “entire oscillator” whose frequency is not fixed by any external crystal
 4 under the Federal Circuit’s construction, and the subsequently claimed “varying” of the clock rate
 5 of the entire oscillator as a function of one or more fabrication or operational parameters. *Id.* at
 6 C1 2:18-27 and 3:34-43. Accordingly, Plaintiffs’ assertion that processor manufacturers sort their
 7 processors by frequency capability provides no probative value in establishing whether
 8 independent claims 6 and 13, which require *actual* frequency variation by *a given oscillator*, are
 9 infringed, because the accused processors are incorporated into consumer products in which the
 10 frequencies of the VCOs are undisputedly fixed by PLLs and external crystals.

11 Plaintiffs raised this same flawed binning argument in the prior ITC investigation, and it
 12 was rejected for the same reasons discussed above. As the ALJ explained:

13 As for Dr. Oklobdzija’s assertion that binning is evidence of variations due
 14 to manufacturing process, the Administrative Law Judge concludes that
 15 while binning is a reflection that variations exist in the performance
 16 capabilities of microprocessors (Tr. (Subramanian) at 1264), *this does not*
 17 *constitute evidence that any of the Accused Products meet the “varying”*
 18 *limitations of the asserted claims.* . . . Once again, Dr. Oklobdzija and
 19 Complainants apply the “varying” limitation in a hermetic fashion as
 20 though an oscillator having a power source is the claimed “entire
 21 oscillator” and it does not matter that the frequency of the oscillators in the
 22 Accused Products are fixed, both internally and externally. For the reasons
 23 previously discussed, this argument is found to be erroneous.

24 Ex. 31 (Initial Determination) at 209 (emphasis added). The International Trade
 25 Commission’s Final Determination was in accord:

26 Furthermore, we disagree with Complainants regarding the significance of
 27 the binning process. The binning process merely sorts individual chips
 28 based on the maximum processing frequency at which a chip is capable of
 operating and *has nothing to do with the actual frequency and clock rate*
at which a chip operates. . . . Claims 6 and 13, on the other hand, require
 variation in the chip’s “processing frequency,” or the frequency at which
 the chip operates, not variation in the chip’s maximum processing
 frequency capability. . . . The ID properly recognizes this distinction,
 finding that “[b]y conflating these two distinctly-claimed elements, Dr.
 Oklobdzija disregards an important fact about the accused chips and
 products: by design, a PLL compensates for any PVT-related effects in
 order to maintain a stable and fixed frequency.”

1 Ex. 32 (Final Determination) at 37-38 (emphasis added).

2 Neither Dr. Oklobdzija nor Plaintiffs present any evidence that the actual frequency of any
3 accused VCO varies in any accused product, as a result of binning or otherwise. To the contrary,
4 Dr. Subramanian's testing confirms they do not.

5
6 **2. There is No Dispute that the Accused Oscillators'
Frequencies Are Fixed By an External Crystal**

7 Plaintiffs argue that the accused VCOs' frequencies are not fixed by an external crystal.
8 Undisputed facts establish that Plaintiffs are incorrect.

9 First, Plaintiffs argue that "Defendants' testing does not show that any accused on-chip
10 oscillators have their frequencies fixed by an external crystal . . . Defendants ignore the
11 requirement that an entire oscillator's frequency is 'not fixed by any external crystal.'" Opp. at
12 24 (citing Oklobdzija Decl. at ¶¶ 36-37). However, as established above, Dr. Subramanian's
13 testing demonstrates that the actual frequencies of the accused VCOs are fixed. Moreover, far
14 from ignoring the requirement that the entire oscillator's frequency must be fixed by an external
15 crystal, Defendants' opening brief established in detail how an external crystal fixes the VCO's
16 frequency in the accused products, as summarized below. Def. Op. Br. at 9-12, 30-31.

17 As an initial matter, TPL acknowledged in its appeal to the Federal Circuit that the PLL
18 uses the reference signal from the external crystal "to set the output of the oscillator to a specific
19 frequency." *Id.* at 10, 30 (citing Ex. 5 at 20-21). To do so, the PLL control circuit performs a
20 "phase checking" function by comparing the phase of the fixed-frequency reference signal that it
21 receives *from the external crystal* with the phase of the divided-down signal that it receives
22 through the PLL's feedback loop. *Id.* at 10. Based on this comparison, the PLL control circuit
23 determines whether the PLL's output frequency must be increased or decreased so that the phase
24 of the divided-down feedback signal received from the programmable divisor remains *locked to*
25 *the phase of the fixed-frequency external crystal*. *Id.* The PLL then adjusts a command signal
26 that is output to the control voltage input of the VCO to control the VCO's output frequency to
27 maintain that phase lock. In this way, the PLL feedback loop ensures that the VCO output
28 frequency is "locked" to a multiple of the fixed-frequency reference signal from the crystal

1 oscillator. *Id.* at 10, 30. The fixed output frequency of the VCO is literally a ***direct mathematical***
2 ***function*** of the frequency of the crystal oscillator and the values of programmable divisors in the
3 PLL. *Id.* at 10-12, 30. The parties' experts agree that a change in the crystal oscillator frequency
4 will ***necessarily result*** in a change to the VCO output frequency. *Id.* at 30-31. For example, as
5 Dr. Oklobdzija acknowledged, if the external crystal's frequency goes up, the VCO's frequency
6 also will go up by a fixed ratio, and if crystal's frequency goes down, so will the VCO's
7 frequency. *Id.* at 31. Dr. Oklobdzija's current declaration repeats many of these same facts and
8 does not dispute any of the remaining facts. *See* Oklobdzija Decl. ¶ 34. Thus, undisputed
9 evidence establishes that the VCO's frequency is fixed by the crystal oscillator, contrary to the
10 requirements of the Federal Circuit's claim construction.

11 Rather than dispute the factual accuracy of Defendants' evidence, Dr. Oklobdzija's
12 declaration makes a claim construction argument that is ***not*** advanced in Plaintiffs' brief:

13 I also note that the Federal Circuit indicated that it adopted the "frequency
14 is not fixed by any external crystal" based on statements made concerning
15 the Magar reference. Taking the Magar reference, and applicants'
16 discussion of it into account, to be "fixed by [an] external crystal" the
system clock would have to be directly connected or produced by (like in
Magar) by the external crystal (as the '336 Patent's I/O clock).

17 Oklobdzija Decl. ¶ 37; *see also id.* at ¶ 34 ("nor can this [reference] signal pass through the PLL
18 circuitry"). This claim construction argument fails because it assumes that the scope of the
19 Magar disclaimer must be measured by the prior art rather than by what the applicants said during
20 prosecution. The Federal Circuit already has rejected Plaintiffs' attempts to limit the scope of the
21 disclaimer to what is disclosed in the prior art. *Tech. Props. Ltd.*, 849 F.3d at 1359 ("the scope of
22 surrender is not limited to what is absolutely necessary to avoid a prior art reference; patentees
23 may surrender more than is necessary . . . [w]hen this happens, we hold patentees to the actual
24 arguments made, not the arguments that could have been made.") (citations omitted). Based on
25 the applicants' prosecution statements, the Federal Circuit decided through its claim construction
26 that the scope of the disclaimer broadly covered all oscillators whose frequency is fixed by an
27 external crystal, and there is nothing in the construction that limits the disclaimer to oscillators
28 that are directly connected to external crystals or whose frequency is directly produced by the

1 external crystal.

2 Like Dr. Oklobdzija's declaration, Plaintiffs do not dispute Defendants' explanation
3 regarding how the external crystal fixes the VCO's output frequency. Opp. at 27-28. Rather,
4 Plaintiffs assert that Defendants' showing is somehow "inapposite" because the claimed "entire
5 oscillator" is the oscillator rather than the PLL. *Id.* However, not only does this assertion ignore
6 that the oscillator is part of the PLL (*see, e.g.*, Plaintiffs' diagram at page 14 of their opposition
7 brief), it also ignores that Defendants' undisputed evidentiary showing, summarized above,
8 establishes that the output frequencies of both the PLL *and its oscillator* are fixed by the external
9 crystal. At most, Plaintiffs' argument on this point amounts to an indirect endorsement of
10 Dr. Oklobdzija's legally incorrect assertion that the Federal Circuit's claim construction requires
11 *direct* interaction between the crystal and the oscillator.

12 Plaintiffs also assert that a ring oscillator requires only a supply voltage to oscillate. Opp.
13 at 27; *see also* Oklobdzija Decl. ¶ 33. This assertion is inapposite for three related reasons. First,
14 the claim construction is directed to fixing the frequency of the oscillator, not to the mechanics of
15 how the oscillator begins to oscillate. Second, the claim construction excludes any oscillator
16 whose frequency is in fact controlled by any external crystal regardless of whether such control is
17 needed in the abstract. Third, as previously established, the accused products do in fact fix the
18 frequency of their VCOs during *actual* operation. It is irrelevant whether the frequency of the
19 VCOs might *hypothetically* vary according to PVT parameters if they were *not* controlled by the
20 PLL and the external crystal in the accused products.

21 Based upon the actual undisputed operation of the accused products as discussed above,
22 the frequencies of the accused VCOs are fixed by an external crystal. Accordingly, the accused
23 VCOs cannot be an "entire oscillator . . . whose frequency is not fixed by any external crystal," as
24 required by all of the asserted claims. Summary judgment of non-infringement should therefore
25 be granted in Defendants' favor.

26 **C. The Accused Products Do Not Infringe Because They Require a Command**
27 **Input to Change Clock Frequency**

28 The second portion of the Federal Circuit's construction requires an "entire oscillator . . .

1 that does not require a command input to change the clock frequency” based on the patentee’s
2 “Sheets” disclaimer. *Tech. Props. Ltd.*, 849 F.3d at 1359. This requirement provides a second
3 ground for summary judgment.

4 In their infringement contentions, Plaintiffs advanced four distinct infringement theories
5 on this point: (1) frequency variation while the PLL is locked; (2) frequency variation prior to
6 phase lock; (3) frequency variation between phase frequency detector cycles; and (4) frequency
7 variation resulting from thermal throttling. *See* Def. Op. Br. at 23-29. Defendants’ opening brief
8 set forth substantial evidence, including declarations from Dr. Subramanian and from Samsung
9 and Qualcomm engineers, demonstrating that each of these four infringement theories is
10 meritless. *Id.* In response, Plaintiffs’ opposition offers no evidence or argument regarding the
11 second, third and fourth of these theories. Because there is no genuine issue of fact as to these
12 three infringement theories, summary judgement of non-infringement is warranted as to these
13 theories.

14 The sole infringement theory now advanced by Plaintiffs under the Sheets disclaimer
15 portion of the claim construction is that the accused VCOs allegedly do not require a command
16 input to change frequency because the frequency of the accused VCOs – acting in isolation from
17 the rest of the PLL – will inherently vary in response to PVT changes. *Opp.* at 25-26. However,
18 Plaintiffs do not contest the following dispositive facts:

19 1) All accused products include a VCO that is fundamentally different from the ring
20 oscillator of the ’336 patent because the VCO includes a control voltage input that can be used to
21 control the frequency of the VCO. *Def. Op. Br.* at 8-9 (citing Subramanian Decl. ¶¶ 48-51).

22 2) All accused products include a PLL that uses the control voltage input of the VCO
23 to “lock” the actual frequency of the VCO to a fixed multiple of the frequency of an external
24 crystal. *Def. Op. Br.* at 9-10 ((citing Subramanian Decl. ¶¶ 40, 45) and Ex. 6 (Subramanian Tr.)
25 at 1152:11-1153:3).

26 3) When the PLL is locked, the frequency of the VCO changes only minimally and is
27 therefore considered fixed within the meaning of the ’336 patent. *See* Section II.B.1.b, *supra*.

28 4) The frequency of the VCO is changed in the accused products by altering the value

1 of one of the Programmable Divisors in the PLL, which unlocks the PLL. Def. Op. Br. at 12-13
 2 (citing Subramanian Decl. ¶ 46, Pedrali-Noy Decl. ¶¶ 5-6 and 10; Ex. 6 (Subramanian Tr.) at
 3 1322:20-1324:4; and Ex. 6 (Oklobdzija Tr.) at 967:22-969:17).

4 5) Altering the value of the Programmable Divisors in the PLL requires a command
 5 input.⁷ Def. Op. Br. at 20-22 (citing Subramanian Decl. ¶¶ 44-46, citing Ex. 47 (Sheets patent) at
 6 Abstract, Fig. 6 and 3:58-61)).

7 Plaintiffs' opposition also does not address (much less dispute) Defendants' additional
 8 showing that the control voltage that is generated by the PLL and that is directly input to the VCO
 9 to fix the VCO's frequency also is a "command input."⁸ Def. Op. Br. at 22 (citing Subramanian
 10 Decl. ¶ 51 and Ex. 9 (Modern Dictionary of Electronics, 6th ed. 1984) at 495). Defendants
 11 further established that this command input must be changed in order for the frequency of the
 12 VCO to change from one fixed frequency to another. Def. Op. Br. at 22.⁹

13 These undisputed facts establish that a command input is required to change the actual
 14 frequency of the VCO in all accused products. Rather than contesting these facts, Plaintiffs

16
 17 ⁷ Plaintiffs' opposition states that "Plaintiffs contest" that any PLL-driven changes are a
 18 "command input," but do not explain why, and cite only to Dr. Oklobdzija's Declaration at
 19 paragraph 38 as support. Opp. at 26. Dr. Oklobdzija's Declaration states at paragraph 38 that "I
 20 disagree with" the interpretation of "command input" according to Defendants' arguments, but
 21 offers no reasoning or further explanation as to why he disagrees with that interpretation.
 22 Plaintiffs' and Dr. Oklobdzija's bald assertion that they "contest" and "disagree with" Defendants
 23 is not sufficient to raise a material issue of disputed fact that would prevent summary judgment.
 24 See *Phillips Petroleum Co. v. Huntsman Polymers Corp.*, 157 F.3d 866, 876 (Fed. Cir. 1998)
 25 (holding that the patentee failed, through the conclusory statements of experts, to raise a genuine
 26 issue of material fact precluding summary judgment); *TechSearch, L.L.C. v. Intel Corp.*, 286 F.3d
 27 1360, 1372 (Fed. Cir. 2002) ("Mere denials or conclusory statements are insufficient.").

28 ⁸ Plaintiffs state that the command input in Sheets was a digital word. Opp. at 9-10. However,
 the Federal Circuit held that the scope of the "entire oscillator" disclaimers is not limited to what
 was absolutely necessary to avoid the prior art (*Tech. Props. Ltd.*, 849 F.3d at 1359), and nothing
 in the Federal Circuit's construction limits a "command input" to a digital word.

⁹ Plaintiffs also do not contest Defendants' showing that a command input is required, including
 at startup, to place the PLL into an unlocked state. Def. Op. Br. at 25-26 (citing Subramanian
 Decl. ¶ 75). Thus, any frequency variation that occurs during a period when the PLL is unlocked
 requires a command input and is therefore within the scope of the Sheets disclaimer.

1 advance two flawed arguments.

2 Plaintiffs first assert that “Defendants’ arguments are drawn to the PLL System, ignoring
3 the behavior of the accused ring oscillator.” Opp. at 24. However, as summarized above,
4 Defendants’ opening brief establishes in detail that a command input is required to change the
5 frequency *of the VCO*. That this process occurs within the PLL system (of which the VCO is one
6 part) cannot change the fact that the VCO’s frequency will not change absent a command input.

7 Plaintiffs next argue that the accused VCOs do not require a command input to change
8 frequency because their frequency “will vary according to PVT as a matter of physics.” Opp. at
9 25; *see also id.* at 26 (“the ring oscillator is naturally variable in response to PVT”). However,
10 these assertions view the VCO in *hypothetical* isolation, separated from the rest of PLL (of which
11 it is a part) that controls the VCO frequency during operation of the accused products. As
12 established above, such hypothetical frequency changes are irrelevant because the frequency of
13 the VCOs in the accused products cannot be changed without a command input.¹⁰

14 Because a command input is required to change the frequencies of the accused VCOs, the
15 accused VCOs cannot be the claimed “entire oscillator . . . that does not require a command input
16 to change the clock frequency” as required by all of the asserted claims. Summary judgment in
17 Defendants’ favor should therefore be granted for this additional reason.

18 **III. CONCLUSION**

19 For all of the foregoing reasons, Defendants request that the Court grant them summary
20 judgment of non-infringement as to all asserted claims.

21
22
23
24
25 ¹⁰ To the extent Plaintiffs contend that the construction of entire oscillator requires a command
26 input to be directly input to the VCO rather than to the PLL, this argument fails for the same
27 reasons that Plaintiffs’ assertion that the external crystal must be directly connected to the VCO.
28 *See* Section II.B.2, *supra*. Moreover, as established above, a command input (the control voltage)
is directly input to the VCO.

1 Dated: November 3, 2017

2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

DLA PIPER LLP (US)

/s/ Mark D. Fowler
Mark D. Fowler (SBN 124235)
Aaron Wainscoat (SBN 218337)
Erik R. Fuehrer (SBN 252578)
2000 University Avenue
East Palo Alto, CA 94303
Tel. (650) 833-2000
Fax (650) 833-2001

James M. Heintz (*pro hac vice*)
11911 Freedom Dr.
Reston, VA 20190
Tel. (703) 733-4000
Fax (703)733-5000

Robert C. Williams (SBN 246990)
401 B Street, Suite 1700
San Diego, California 92101
Tel. (619) 699-2700
Fax (619) 699-2701

Attorneys for Defendants
SAMSUNG ELECTRONICS CO., LTD.
and SAMSUNG ELECTRONICS
AMERICA, INC.

MCDERMOTT WILL & EMERY LLP

/s/ Charles M. McMahon
MCDERMOTT WILL & EMERY LLP
Charles M. McMahon (*pro hac vice*)
cmcMahon@mwe.com
Hersh H. Mehta (*pro hac vice*)
hmehta@mwe.com
444 West Lake Street
Chicago, IL 60606
[Tel.] (312) 372-2000
[Fax] (312) 984-7700

Fabio E. Marino (SBN 183825)
fmarino@mwe.com
L. Kieran Kieckhefer (SBN 251978)
kkieckhefer@mwe.com
275 Middlefield Road, Ste. 100
Menlo Park, CA 94025
[Tel.] (650) 815-7400
[Fax] (650) 815-7401

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

Attorneys for Defendants,
ZTE CORPORATION and ZTE (USA) INC.

STEPTOE & JOHNSON LLP

/s/ Timothy C. Bickham
Timothy C. Bickham
Step toe & Johnson LLP
1330 Connecticut Avenue, NW
Washington, DC 20036
Telephone: (202) 429-5517
Facsimile: (202) 429-3902

Attorneys for Defendants
HUAWEI TECHNOLOGIES CO., LTD.,
HUAWEI DEVICE CO., LTD.,
HUAWEI DEVICE USA INC.,
FUTUREWEI TECHNOLOGIES, INC., and
HUAWEI TECHNOLOGIES USA INC.

FISH & RICHARDSON P.C.

/s/ Scott A. Elengold
Michael J. McKeon, *pro hac vice*
mckeon@fr.com
Christian A. Chu (CA SBN 218336)
chu@fr.com
Richard A. Sterba, *pro hac vice*
sterba@fr.com
Scott A. Elengold, *pro hac vice*
elengold@fr.com
FISH & RICHARDSON P.C.
McPherson Building
901 15th Street, N.W., 7th Floor
Washington, D.C. 20005
Tel. (202) 783-5070
Fax: (202) 783-2331

Olga I. May (CA SBN 232012)
omay@fr.com
FISH & RICHARDSON P.C.
12390 El Camino Real
San Diego, CA 92130
Tel. (858) 678-4745
Fax: (858) 678-5099

Attorneys for Defendants
LG ELECTRONICS, INC. and
LG ELECTRONICS USA. INC.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

COOLEY LLP

/s/Matthey J. Brigham
Cooley LLP
Matthew J. Brigham (SBN 191428)
mbrigham@cooley.com
3175 Hanover Street
Palo Alto, CA 94304-1130
Tel.: (650) 843-5000
Fax: (650) 849-7400

Stephen R. Smith (pro hac vice)
stephen.smith@cooley.com
1299 Pennsylvania Ave., NW
Suite 700
Washington, DC 20004
COOLEY LLP
Tel.: (703) 456-8000
Fax: (703) 456-8100

Attorneys for Defendants
NINTENDO CO., LTD and
NINTENDO OF AMERICA INC.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

ATTESTATION

I, Timothy C. Bickham, am the ECF User whose ID and password are being used to file Defendants' Reply Brief in Support of Motion for Summary Judgment. In compliance with Civil Local Rule 5-1(i)(3), I hereby attest that the signatories listed above have read and approved the filing of this brief.

/s/ Timothy C. Bickham
Timothy C. Bickham
Steptoe & Johnson LLP
1330 Connecticut Avenue, NW
Washington, DC 20036
Telephone: (202) 429-5517
Facsimile: (202) 429-3902
tbickham@steptoe.com

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

TECHNOLOGY PROPERTIES LIMITED
LLC, et al.,

Plaintiffs,

v.

HUAWEI TECHNOLOGIES CO., LTD., et al.,

Defendants.

Case No. 3:12-cv-03865-VC

**DECLARATION OF ERIK R.
FUEHRER IN SUPPORT OF
DEFENDANTS' REPLY BRIEF IN
SUPPORT OF MOTION FOR
SUMMARY JUDGMENT**

DATE: November 30, 2017
TIME: 10:00 AM
PLACE: Courtroom 4, 17th floor
JUDGE: Hon. Vince Chhabria

TECHNOLOGY PROPERTIES LIMITED
LLC, et al.,

Plaintiffs,

v.

ZTE CORPORATION, et al.,

Defendants.

Case No. 3:12-cv-03876-VC

TECHNOLOGY PROPERTIES LIMITED
LLC, et al.,

Plaintiffs,

v.

SAMSUNG ELECTRONICS CO., LTD., et al.,

Defendants.

Case No. 3:12-cv-03877-VC

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

TECHNOLOGY PROPERTIES LIMITED
LLC, et al.,

Plaintiffs,

v.

LG ELECTRONICS, INC., et al.,

Defendants.

Case No. 3:12-cv-03880-VC

TECHNOLOGY PROPERTIES LIMITED
LLC, et al.,

Plaintiffs,

v.

NINTENDO CO., LTD, et al.

Defendants.

Case No. 3:12-cv-03881-VC

1 I, Erik R. Fuehrer, submit this declaration in support of Defendants’ Reply Brief in
2 Support of Motion for Summary Judgment, filed by Huawei Technologies Co., Ltd., Huawei
3 Device Co., Ltd., Huawei Device USA, Inc., Futurewei Technologies, Inc., Huawei Technologies
4 USA, Inc., ZTE Corporation, ZTE (USA) Inc., Samsung Electronics Co., Ltd., Samsung
5 Electronics America, Inc., LG Electronics, Inc., LG Electronics U.S.A., Inc., Nintendo Co., Ltd.,
6 and Nintendo of America Inc.’s (collectively, “Defendants”).

7 1. I am an attorney at the law firm of DLA Piper LLP (US), attorneys of record for
8 Defendants Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. in Case No.
9 3:12-cv-03877-VC (PSG). If called as a witness, I could and would testify competently to the
10 information set forth in this declaration.

11 2. Attached hereto as Exhibit 54 is a true and correct copy of the Order terminating
12 the appeal in *HTC Corp. v. Tech. Props. Ltd., LLC*, No. 14-1317 (Fed. Cir.), filed on January 27,
13 2015.

14 3. Attached hereto as Exhibit 55 is a true and correct copy of excerpts of the final
15 jury instructions in *HTC Corp. v. Tech. Props. Ltd., LLC*, Case No. 5:08-cv-00882-PSG, Dkt. No.
16 646 (N.D. Cal.), filed on September 30, 2013.

17 4. Attached hereto as Exhibit 56 is a true and correct copy of excerpts from the Brief
18 of Plaintiffs-Appellants Technology Properties Limited LLC, Phoenix Digital Solutions, LLC and
19 Patriot Scientific Corporation in *Tech. Props. Ltd. LLC v. Huawei Techs. Co.*, Nos. 2016-1306, -
20 1307, -1309, -1310, -1311 (Fed. Cir.), filed on March 10, 2016.

21
22 I declare under penalty of perjury under the laws of the United States of America that the
23 foregoing is true and correct.

24 Executed on November 3, 2017 in East Palo Alto, California.

25
26 /s/ Erik R. Fuehrer
27 Erik R. Fuehrer

EXHIBIT 54

Exhibit 54

NOTE: This order is nonprecedential.

**United States Court of Appeals
for the Federal Circuit**

HTC AMERICA, INC., HTC CORPORATION,
Plaintiffs - Cross-Appellants

v.

**TECHNOLOGY PROPERTIES LIMITED,
PATRIOT SCIENTIFIC CORPORATION,
ALLIACENSE LIMITED,**
Defendants - Appellants

14-1317

Appeal from the United States District Court for the
Northern District of California in case no. 5:08-cv-00882-
PSG United States Magistrate Judge Paul S. Grewal

ORDER

The parties having so agreed, it is

ORDERED that the proceeding is DISMISSED under
Fed. R. App. P. 42 (b).

FOR THE COURT

January 27, 2015

/s/ Daniel E. O'Toole

Daniel E. O'Toole

Clerk of Court

ISSUED AS A MANDATE: January 27, 2015

cc: Clerk's Office, United States District Court for the
Northern District of California

Thomas T. Carmack

Kyle Dakai Chen

Heidi Lyn Keefe

Philip William Marsh

James C. Otteson

Stephen R. Smith

Mark R. Weinstein

EXHIBIT 55

Exhibit 55

United States District Court
For the Northern District of California

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

HTC CORPORATION AND HTC AMERICA,)
INC.,)
)
Plaintiffs,)
)
v.)
)
TECHNOLOGY PROPERTIES LIMITED,)
et al.,)
)
Defendants.)
_____)

Case No.: 5:08-cv-00882-PSG
FINAL JURY INSTRUCTIONS
(Re: Docket Nos. 513, 645)

- 1 6. The term “oscillator . . . clocking” means “an oscillator that generates the signal(s) used for
- 2 timing the operation of the CPU.”
- 3 7. The term “processing frequency” means “[t]he speed at which the CPU operates.”
- 4 8. The term “varying . . . in the same way” mean “[i]ncreasing and decreasing proportionally.”
- 5 9. The term “external clock is operative at a frequency independent of a clock frequency of said
- 6 oscillator” means “an external clock wherein a change in the frequency of either the external clock
- 7 or oscillator does not affect the frequency of the other.”
- 8 10. The term “external memory bus” means “[a] group of conductors coupled between the I/O
- 9 interface and an external storage device.”
- 10 11. The term “Off-chip external clock” means “[a] clock not on the integrated circuit substrate.”
- 12 12. The term “external clock is operative at a frequency independent of a clock frequency of said
- 13 oscillator” means “[a]n external clock wherein a change in the frequency of either the external
- 14 clock or oscillator does not affect the frequency of the other.”
- 15 13. The term “Track” means “[i]ncreasing and decreasing proportionally.”
- 16 14. The term “clocking said central processing unit” means “providing a timing signal to said
- 17 central processing unit.”
- 18 15. The term “wherein said central processing unit operates asynchronously to said input/output
- 19 interface” means “the timing control of the central processing unit operates independently of and is
- 20 not derived from the timing control of the input/output interface such that there is no readily
- 21 predictable phase relationship between them.”
- 22 16. The term “ring oscillator” means “an oscillator having a multiple, odd number of inversions
- 23 arranged in a loop, wherein the oscillator is variable based on the temperature, voltage and process
- 24 parameters in the environment.”
- 25
- 26
- 27
- 28

1 17. The court has also found that a person of ordinary skill in the art reading the patent would
2 understand that the phrase “as a function of” is describing a variable that depends on and varies
3 with another, though not necessarily in an exact mathematical type functional relationship.


4 18. The term “entire oscillator” (in claims 6 and 13) is properly understood to exclude any external
5 clock used to generate the signal used to clock the CPU.
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

United States District Court
For the Northern District of California

IT IS SO ORDERED.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

Dated: September 30, 2013



PAUL S. GREWAL
United States Magistrate Judge

United States District Court
For the Northern District of California

EXHIBIT 56

Exhibit 56

Nos. 2016-1306, -1307, -1309, -1310, -1311

In the
United States Court of Appeals
for the **Federal Circuit**

TECHNOLOGY PROPERTIES LIMITED LLC, PHOENIX DIGITAL
SOLUTIONS LLC, PATRIOT SCIENTIFIC CORPORATION,

Plaintiffs-Appellants,

v.

HUAWEI TECHNOLOGIES CO., LTD., FUTUREWEI TECHNOLOGIES, INC.,
HUAWEI DEVICE CO., LTD., HUAWEI DEVICE USA INC., HUAWEI
TECHNOLOGIES USA INC., ZTE CORPORATION, ZTE USA, INC., SAMSUNG
ELECTRONIC CO., LTD, SAMSUNG ELECTRONICS AMERICA, INC.,
LG ELECTRONICS, INC., LG ELECTRONICS U.S.A., INC.,
NINTENDO CO., LTD., NINTENDO OF AMERICA INC.,

Defendants-Appellees.

Appeal from the United District Court
for the Northern District of California, Case Nos. 3:12-cv-03786-VC,
3:12-cv-03865-VC, 3:12-cv-03876-VC, 3:12-cv-03877-VC, 3:12-cv-03880-VC, and 3:12-cv-03881-VC.
The Honorable **Vince Chhabria**, Judge Presiding.

BRIEF OF PLAINTIFFS-APPELLANTS
TECHNOLOGY PROPERTIES LIMITED LLC, PHOENIX DIGITAL
SOLUTIONS, LLC and PATRIOT SCIENTIFIC CORPORATION

WILLIAM L. BRETSCHNEIDER
SILICON VALLEY LAW GROUP
50 W. San Fernando Street
Suite 750
San Jose, California 95113
(408) 573-5700

BARRY J. BUMGARDNER
NELSON BUMGARDNER, P.C.
3131 West 7th Street
Suite 300
Fort Worth, Texas 76107
(817) 377-9111

CHARLES T. HOGE
KIRBY NOONAN LANCE
& HOGE LLP
350 Tenth Avenue, Suite 1300
San Diego, California 92101
(619) 231-8666

*Counsel for Technology Properties
Limited LLC*

*Counsel for Phoenix Digital
Solutions LLC*

*Counsel for Patriot Scientific
Corporation*



August 2013	NDCA	ring oscillator	an oscillator having a multiple, odd number of inversions arranged in a loop, wherein the oscillator is variable based on the temperature, voltage and process parameters in the environment
September 2015 (the decision under appeal here)	NDCA	an entire oscillator disposed upon said integrated circuit substrate	an oscillator located entirely on the same semiconductor substrate as the central processing unit <u>that does not require a control signal and whose frequency is not fixed by any external crystal</u> ⁷

Note that only the present claim construction under appeal broadens the disclaimer beyond crystals that “generate” a clock signal.

In June 2007, a related phrase, “an entire ring oscillator variable speed system clock in said integrated circuit,” was construed by the United States District Court for the Eastern District of Texas. Appx2233-60 (Memorandum and Order, *Technology Properties Ltd. et al. v. Matsushita Elec. Indus. Co., Ltd., et al.*, Case No. 2:05-cv-494 (No. 259) (E.D. Tex., June 15, 2007) (the “Texas Markman Order”)). In the Texas proceeding, the court analyzed the intrinsic record presently cited by Appellees in this case and found that the term meant “a ring oscillator variable speed system clock that is located entirely on the same semiconductor

⁷ The terms “oscillator” and “central processing unit” terms, standing alone, were the subject of constructions that were not disputed by the parties.

585) (September 17, 2013)). While the court did agree that, as a result of prosecution history, the claims exclude “any external clock used to *generate* a signal” the court recognized that there was some factual dispute as to whether the clock is generated on the chip and relies on the PLL (and, thus, the external crystal) to merely “buffer or fix” the frequency. Appx1782 (*Id.* at 11). Judge Grewal called this a “classic factual question that requires a trial to answer.” *Id.*

After Judge Grewal entered the HTC Summary Judgment Order, HTC moved on an emergency basis to attempt to again capture additional claim limitations in the jury instructions. Appx1796-8 (HTC Emergency Motion, *HTC* (No. 590) (September 18, 2013)). Appellants opposed. Appx1800-06 (Defendants’ Opposition to Emergency Motion for Addendum to Jury Instructions, *HTC* (No. 596) (September 18, 2013)). Specifically, HTC asked the court to modify the jury instructions to indicate that (1) the *entire oscillator* term (and its kin) “are not satisfied by an accused system that uses any external clock to generate a signal” and (2) “an accused product can only infringe the ’336 Patent if that product contains an on-chip oscillator or clock that is (a) self-generating and (b) does not rely on an input control to determine its frequency.” Appx1797 (HTC Emergency Motion at 2). Judge Grewal held that the jury would be instructed that the term *entire oscillator* and its kin are properly understood to “exclude any external clock used to *generate* a signal,” but once again declined to add a

restriction with respect to control of the oscillator. Appx1808-09 (Emergency Motion Order, *HTC* (No. 607) (September 20, 2013)) (emphasis added).

After trial (where there was a finding of infringement of the '336 Patent), Judge Grewal considered a JMOL by HTC which once again touched on the issue of the *entire oscillator*. Appx1811-25 (Order Denying Plaintiffs' Renewed Motion for Entry of Judgment as a Matter of Law, *HTC* (No. 707) (January 21, 2014)). In its order denying HTC's JMOL, the court explained that in considering HTC's emergency motion regarding jury instructions, the court specifically considered HTC's request for additional claim construction and explained that the Emergency Motion Order modified the "external clock to generate a signal" language, while denying the self-generating/input control language. Appx1818-19 (*Id.* at 8-9). The court's JMOL Order demonstrated the court's acute understanding of how the PLLs involved in the accused HTC products are used to regulate, not generate the ring oscillator's frequency. Appx1821 (*Id.* at 11).

Finally, in the case from which this appeal is taken, Judge Grewal was again presented with the same issues regarding the *entire oscillator* term – does an *entire oscillator* allow for the use of an externally-generated reference signal and can it be controlled. Like HTC, Appellees brought forward the *Sheets* and *Magar* references (discussed in detail below), and presented substantively the same arguments. In a stark reversal from his position on the same issues from 2013,

Judge Grewal found that the *entire oscillator* term is properly construed as “an oscillator located entirely on the same semiconductor substrate as the central processing unit that does not require a control signal and whose frequency is not fixed by any external crystal.” Appx7 (Grewal R&R at 2). This construction was not advanced by any of the parties, but is much closer to what Appellees proposed than Appellants. Appx1469 (Patent Local Rule 4-3 Joint Claim Construction and Prehearing Statement, Exhibit B at 6 (Item No. 16) (listing the parties’ competing constructions for the *entire oscillator* term)). Judge Grewal’s construction incorporates two important, separate alleged disclaimers. First, the language “does not require a control signal” prohibits any type of control of the oscillator, while the “not fixed by any external crystal” language prohibits the use of an external reference signal. These two disclaimers arise from separate references (*Magar* and *Sheets*) and are discussed below.

SUMMARY OF THE ARGUMENT

The extensive claim construction history of the *entire oscillator* term exposes the central truth of this case – if there is some disavowal, such disavowal is not clear and unambiguous. To the extent that disclaimer must be included in the construction of the *entire oscillator* term, then, it must be narrowly crafted to exclude only what the Applicants actually argued to exclude at the patent office.