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12		
13	UNITED ST	TATES DISTRICT COURT
14	NORTHERN I	DISTRICT OF CALIFORNIA
15	SAI	N JOSE DIVISION
16		
17 18	HTC CORPORATION and HTC AMERICA, INC.,	Case No. 5:08-CV-00882 PSG
19	Plaintiffs,	(Related to Case No. 5:08-CV-00877 PSG)
20	V.	RENEWED MOTION FOR ENTRY OF JUDGMENT AS A MATTER OF LAW OF
21	TECHNOLOGY PROPERTIES	NON-INFRINGEMENT [PER FED. R. CIV. P. 50(b)]
22	LIMITED, PATRIOT SCIENTIFIC CORPORATION, and ALLIACENSE	Complaint Filed: February 8, 2008
23	LIMITED,	Trial Date: September 23, 2013
24	Defendants.	Date: December 10, 2013 Time: 10:00 a.m.
25		Place: Courtroom 5, 4th Floor Judge: Hon. Paul S. Grewal
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		HTC/C DENEWED MOTION FOR ENTRY

CASE NO. 5:08-cv-00882 PSG

HTC'S RENEWED MOTION FOR ENTRY OF JUDGMENT AS A MATTER OF LAW OF NON-INFRINGEMENT

#### NOTICE OF MOTION AND MOTION

PLEASE TAKE NOTICE that, pursuant to Federal Rule of Civil Procedure 50(b), Plaintiffs HTC Corporation and HTC America, Inc. (collectively "HTC") hereby renew their motion for judgment as a matter of law ("Motion"), for which the hearing is proposed to be held on December 10, 2013 at 10:00 a.m.

In this Motion, HTC seeks the entry of judgment as a matter of law on the ground that HTC does not infringe any of claims 6, 7, 9, 13, 14 or 15 of U.S. Patent No. 5,809,336 ("336 patent"). This Motion is based on the Memorandum of Points and Authorities set forth below, the evidence and proceedings at trial, and such other matters as may be presented and allowed by the Court.<sup>1</sup>

#### MEMORANDUM OF POINTS AND AUTHORITIES

HTC is entitled to judgment as a matter of law because, based on the evidentiary record at trial and the Court's claim construction, no reasonable jury could have found that HTC infringes any asserted claim of the '336 patent. Prior to trial, HTC sought summary judgment that none of the accused HTC products infringe the '336 patent. In ruling on the motion, the Court found that the "entire oscillator" term excluded the use of any external clock to generate the signal used to clock the CPU. (Dkt. No. 585 at 11:1-2; Dkt. No. 616, at 2:4-7) "Nevertheless," the Court held, "there remains a factual dispute whether HTC's products contain an on-chip ring oscillator that is self-generating and does not rely on an input control to determine its frequency." (*Id.* at 11:2-4.) The Court found that the summary judgment record presented "a classic factual question that requires a trial to answer." (*Id.* at 11:6-7.)

This "classic factual question," however, evaporated at trial. The trial record, including testimony elicited from TPL's technical expert, established without question that in all accused HTC products, an "external clock" is "used to generate the signal used to clock the CPU" –

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precisely what this Court found was excluded from the scope of the asserted claims. particular, TPL conceded repeatedly at trial that all of the accused HTC products included an onchip oscillator that relied on an input control to determine its frequency. Judgment as a matter of law, therefore, should be entered in HTC's favor.

#### I. LEGAL STANDARD

TPL's infringement claim against HTC at trial was based solely on literal infringement. (Declaration of Kyle D. Chen in Support of Renewed Motion for Entry of Judgment as a Matter of Law of Non-Infringement ("Chen Decl."), Ex. 1 (09/27/2013 Trial Tr. (Dkt. No. 643)) at 1012:25-1013:8.) Literal infringement could be found only if TPL established that "every limitation recited in the claim appears in the accused device, i.e., when the properly construed claim reads on the accused device exactly." DeMarini Sports, Inc. v. Worth, Inc., 239 F.3d 1314, 1331 (Fed. Cir. 2001) (internal quotations and citation omitted). "If any claim limitation is absent from the accused device, there is no literal infringement as a matter of law." Bayer AG v. Elan Pharm. Research Corp., 212 F.3d 1241, 1247 (Fed. Cir. 2000).

In deciding a motion for judgment as a matter of law under Federal Rule of Civil Procedure 50, a district court must draw all reasonable inferences in favor of the nonmoving party and refrain from making credibility determinations or weighing the evidence. See Reeves v. Sanderson Plumbing Prods., Inc., 530 U.S. 133, 150 (2000). Judgment as a matter of law should be entered because, based on the undisputed evidence presented at trial, no reasonable jury could have found that HTC literally infringes any claim of the '336 patent.

The question of literal infringement in this case did not turn on resolving conflicting evidence or weighing credibility of witnesses – the relevant facts surrounding the operation of the accused products were undisputed. Infringement instead turned on applying the undisputed operation of the accused products to the claim language as construed by the Court. The Federal Circuit has made it clear that in this situation – where there is no material dispute regarding the operation of the accused products – the question of literal infringement is properly decided as a matter of law. See, e.g., MyMail, Ltd. v. Am. Online, Inc., 476 F.3d 1372, 1378 (Fed. Cir. 2007) ("Because there is no dispute regarding the operation of the accused systems, that issue [of literal HTC'S RENEWED MOTION FOR ENTRY OF

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	infringement] reduces to a question of claim interpretation and is amenable to summary
	judgment."); K-2 Corp. v. Salomon S.A., 191 F.3d 1356, 1362 (Fed. Cir. 1999) ("Because the
	relevant aspects of the accused device's structure and operation are undisputed in this case, the
	question of whether [the accused product] literally infringes the asserted claims of the [patent-in-
	suit] turns on the interpretation of those claims."); see also Reeves, 530 U.S. at 150 ("And the
	standard for granting summary judgment 'mirrors' the standard for judgment as a matter of law,
	such that 'the inquiry under each is the same.'") (quoting Anderson v. Liberty Lobby, Inc., 477
	U.S. 242, 250-51 (1986)).
	II. JMOL OF NON-INFRINGEMENT SHOULD BE GRANTED TO HTC
	A. No Reasonable Jury Could Find that HTC's Products Satisfy the "Entire Oscillator" Limitation
	The Court found that the term "entire oscillator" is properly understood to exclude the
	use of any external clock to generate the signal used to clock the CPU. (See Dkt. Nos. 585 at 11
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and 616 at 2:4-7.) Based on this construction, the Court explained that the factual dispute for trial was "whether HTC's products contain an on-chip ring oscillator that is self-generating and does not rely on an input control to determine its frequency." (Dkt. No. 585 at 11:3-4 (emphasis added).) The Court's identification of the relevant issue was consistent with the intrinsic record:

- "[T]he Magar microprocessor clock is frequency controlled by a crystal which is also external to the microprocessor. ... The Magar microprocessor in no way contemplates a variable speed clock as claimed." (Dkt. No. 457-13, 7/7/1997 Amendment at 3-4 (TPL853\_00002427-28).)
- "The Magar teaching is well known in the art as a conventional crystal controlled oscillator. It is specifically distinguished from the instant case in that it is both fixedfrequency (being crystal based) and requires an external crystal or external frequency generator." (Dkt. No. 457-14, 2/10/1998 Amendment at 5 (TPL853\_00002403).)
- "Even if the examiner is correct that the variable clock in Sheets is in the same integrated circuit as the microprocessor of system 100, that still does not give the claimed subject matter. In Sheets, a command input is required to change the clock speed." (Dkt. No. 457-17, 1/13/1997 Amendment at 4) (TPL853 00002449).)

The testimony of TPL's technical expert, Dr. Vojin Oklobdzija, confirmed that in all accused HTC products, an "external clock" is "used to generate the signal used to clock the HTC'S RENEWED MOTION FOR ENTRY OF JUDGMENT AS A MATTER OF LAW

OF NON-INFRINGEMENT

CPU," precisely what the Court found (and the intrinsic record made clear) was excluded by the claim scope. In particular, the on-chip oscillator in the HTC products "rel[ies] on an input control to determine its frequency." (Dkt. Nos. 585 at 11:2-4 and 616 at 2:6-7.) Dr. Oklobdzija's testimony on this issue was consistent with the testimony of every other technical fact and expert witness that testified at trial.

As Dr. Oklobdzija acknowledged, although each accused HTC product includes either a Qualcomm, Texas Instruments (TI) or Samsung chip, for purposes of his infringement analysis, "they generally work the same way." (Chen Decl., Ex. 2 (09/26/2013 Trial Tr. (Dkt. No. 642)) at 734:16-18.) In particular, each chip includes a Phase Locked Loop (PLL) that receives input from an external (off-chip) reference signal which is based on a crystal. (Id. at 734:19-22, 735:6-19, 744:15-745:3.) This external reference signal is, according to Dr. Oklobdzija, "essential" to the PLLs in all of the accused HTC products. (Id. at 737:17-738:2.) The external reference produces a "stable" signal that "is **used** to adjust the frequency generated by the ring oscillator, so it has some relationship with it." (*Id.* at 738:9-17 (emphasis added).) The purpose of the PLL, in fact, is to adjust the frequency of the on-chip oscillator based on that external reference. (Id. at 746:11-18; see also Chen Decl., Ex. 3 (9/25/2013 Trial Tr. (Dkt. No. 641)) at 553:16-554:11.) The evidence at trial confirmed that all of the Qualcomm, TI and Samsung chips at issue in this case use such a PLL with an external reference signal. (See, e.g., Chen Decl., Ex. 4 (Trial Ex. 3084) at HTCTP0075742 (TCXO); Ex. 5 (Trial Ex. 3107) at QCHTCTPL0013601 (Fig. 12-1, TCXO), QCHTCTPL0013600; Ex. 6 (Trial Ex. 3109) at QCHTCTPL0017373; Ex. 7 (Trial Ex. 3112) at QCHTCTPL0024020; Ex. 8 (Trial Ex. 3091) at HTCTPI0002154 (CLKTCXO); Ex. 9 (Trial Ex. 3115) at TI-0001073 (CK\_REF); Ex. 10 (Trial Ex. 3100) at PIC00004245-46 (XTlpll or EXTCLK.)

Dr. Oklobdzjia also acknowledged that the signal used to clock the CPU is determined by a formula contained "in every textbook" that defines the relationship between the frequency of the reference signal and the output frequency of the on-chip oscillator. (Chen Decl., Ex. 2 (09/26/2013 Trial Tr.) at 739:12-24, 749:4-6, 735:2-5.) The Qualcomm, TI and Samsung chips all use such a formula to determine the frequency of the signal used to clock the CPU. The HTC'S RENEWED MOTION FOR ENTRY OF

notation used to express this formula may differ from chip to chip, but in each case, the formula expressly relies on the external clock frequency as the input control to determine the frequency of the accused oscillator. (*See*, *e.g.*, Chen Decl., Ex. 11 (Trial Ex. 3101) at QCHTCTPL0007812; Ex. 7 (Trial Ex. 3112) at QCHTCTPL0024021; Ex. 9 (Trial Ex. 3115) at TI-0001076; Ex. 12 (Trial Ex. 3117) at TI-0007192; Ex. 10 (Trial Ex. 3100) at PIC00004247.) One example of such a formula (for a Qualcomm chip) was discussed during Dr. Oklobdzija's cross-examination:

### 5.1 Output Frequencies

The PLL output clock frequency is given by:

 $f_{CLK} = f_{TCXO} * L * 2$ 

(Chen Decl., Ex. 13 (Trial Ex. 3027) at QTPL-0013892.)

The formula shown above states that the output frequency of the on-chip clock ( $f_{CLK}$ ) equals the frequency of the external crystal clock ( $f_{TCXO}$ ), multiplied by "L," multiplied by 2. (Chen Decl., Ex. 2 (09/26/2013 Trial Tr.) at 743:5-20.) The table below, from the same page of Exhibit 3027, shows that the output clock signal frequency of the PLL is based on the external reference frequency (19.2 MHz) multiplied by "L" and 2. For example, for an "L" value of 10, the output of the on-chip clock will equal 19.2 MHz \* 2 \* 10, which equals 384 MHz. (*Id.* at 743:21-744:17, 748:22-749:6.)

Table 5-1 PLL output clock frequencies with 19.2 MHz reference

Input frequency	L	PLL_L_VAL[5:0]	Output frequency ( MHz)
19.2 MHz	10	001010	384.0
19.2 MHz	11	001011	422.4
19.2 MHz	12	001100	460.8
19.2 MHz	13	001101	499.2
19.2 MHz	-14	001110	537.6

(Chen Decl., Ex. 13 (Trial Ex. 3027) at QTPL-0013892.) Dr. Oklobdzija admitted that a

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manufacturer can select the "L" value depending on what it wanted to achieve in its product. (Chen Decl., Ex. 2 (09/26/2013 Trial Tr.) at 746:8-18.)

As this example illustrates, the external clock in the accused HTC products is indisputably "used to generate the signal used to clock the CPU." This is because the frequency of the on-chip oscillator (represented by the output frequency fclk) is determined based on the external clock input (represented, for example, by the input frequency or TCXO above) in accordance with a precise mathematical formula. In this regard, the on-chip oscillator relies on an input control to determine its frequency. The "external clock," simply put, is "used" to generate the signal used to clock the CPU because the external clock determines the frequency of that clock signal.<sup>2</sup>

The trial record is undisputed that all of the PLLs in all of the HTC accused products use a formula, similar to the one above, in which the signal used to clock the CPU has a frequency determined as a function of the frequency of the external clock. This was confirmed through the undisputed trial testimony of Sina Dena, Baher Haroun and Thomas Gafford. (E.g., Chen Decl., Ex. 14 (9/24/2013 Trial Tr. (Dkt. No. 640)) at 350:7-17, 364:22-366:1, 360:21-361:6; Ex. 1 (9/27/2013 Trial Tr.) at 1046:9-14.)

TPL did not dispute that all accused HTC products include an external clock that controls the frequency of the on-chip oscillator. TPL conceded as much in closing argument, asserting that the external crystal is "used to limit or regulate the speed of the clock signal that is generated by the ring oscillator." (Chen Decl., Ex. 15 (10/1/2013 Trial Tr. (Dkt. No. 666)) at 1551:16-18.) TPL's concession eliminated the "factual dispute" that the Court identified as requiring a trial when it denied HTC's motion for summary judgment. (Dkt. No. 585 at 11:2-4.)

TPL's argument at trial focused on the suggestion that, for a system to be excluded from the "entire oscillator" definition, the signal from the external clock had to directly clock the

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<sup>&</sup>lt;sup>2</sup> Indeed, the Office of Unfair Import Investigations for the U.S. International Trade Commission reached the same conclusion in responding to TPL's Petition for Review of the ITC's Initial Determination of no infringement by HTC of the '336 Patent. See Request For Judicial Notice filed herewith, Exhibit A at pp.6-15.

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CPU. In closing argument, for example, TPL argued that that the on-chip oscillator could be analogized to a sports car following an RV on the road – both vehicles having their own separate engines. TPL's counsel asked the rhetorical question: "But is the RV and the engine in that motor home, is that used to generate the clock signal, or the engine power for the sports car?" (10/1/2013 Trial Tr. at 1552:18-20.) His response: "No way. No way. The sports car has its own engine, generates its own power." (*Id.* at 1552:20-21.)

But the language of the Court's construction, as well as the Court's reasoning, did not support counsel's inapposite analogy. The signal used to clock the CPU in each of the accused HTC products is undisputedly output by a PLL. That PLL output signal in every accused HTC product is defined by a precise formula that always includes the frequency of the signal generated by the external crystal clock. The Court's claim construction of the "entire oscillator" term makes it clear that no external clock can be **used** in any way "to generate the signal used to clock the CPU." The exclusion adopted by the Court does not require the external clock itself to directly generate the signal that actually clocks the CPU – all that is needed is for the external clock to be **used**. The "entire oscillator" limitation cannot be satisfied if an external clock is **used** in any way to generate the signal used to clock the CPU – which is indisputably the situation for all accused HTC products.

This case confirms the Federal Circuit's observation that in cases involving alleged literal infringement, such as this one, the literal infringement question ultimately reduces to a legal question of claim interpretation when the operation of the accused products is undisputed. *See MyMail*, *supra*, 476 F.3d at 1378. The only "disputes" resolved by the jury involved the meaning of the Court's exclusionary language and what it meant to "generate" a clock signal. The jury obviously struggled with these legal issues as evidenced by the two notes it sent out during its deliberations. (*See* Dkt. 656, at 15 (jury question asking for "court's definition of generate"); *id.* at 16 (jury question asking for definition of "other parts" in Court's instruction regarding legal affect of "comprising").) While it is unclear how the jury ultimately came to its finding of literal infringement, the lack of any material dispute in the trial record makes it clear that it did not do so by resolving evidentiary conflicts or making credibility determinations.

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Because the operation of the accused HTC products was undisputed, and that operation cannot as a matter of law meet the "entire oscillator" limitation required by all asserted claims, HTC is entitled to judgment as a matter of law of non-infringement.

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## B. No Reasonable Jury Could Have Found that the Processing Frequency of the CPU and the "Entire Oscillator" Vary as a Function of the Fabrication or Operational Parameter Variation as Required by the Claims

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Based on the undisputed evidence presented at trial, no reasonable jury could have found that the accused HTC products meet the element of "varying the processing frequency of said first plurality of electronic devices [for the CPU] and the clock rate of said second plurality of electronic devices [for the "entire oscillator"] in the same way as a function of parameter variation in one or more fabrication or operational parameters associated with said integrated circuit substrate." The evidence at trial established that the accused HTC products use fixed speed clocks that do not vary as a function of the variation in any of the fabrication or operational parameters. As Mr. Dena testified, for example, "[r]egarding PLL's, I can tell you that PLL's are designed to maintain the target frequency across PVT variations." (See Chen Decl., Ex. 1 (9/27/2013 Trial Tr.) at 1062:2-3; see also Ex. 14 (9/24/2013 Trial Tr.) at 359:2-8 (Haroun).) Using a fixed speed clock to clock the CPU was important to enable the HTC phones to operate consistently across all conditions. (Chen Decl., Ex. 1 (09/27/2013 Trial Tr.) at 1031:9-1032:9.)

As explained in the previous section, based on the formulae that establish the PLL's output signal frequency, the processing frequency of the CPU and the on-chip clock are a function of the fixed external reference signal and other factors relating to the PLL circuitry. None of the formulae for any Qualcomm, TI or Samsung chip recites any fabrication or operational parameter variation as playing any role in the determination of the PLL output frequency. The accused HTC products, therefore, do not meet the "varying" limitations as a

#### III. <u>CONCLUSION</u>

matter of law.

For the foregoing reasons, HTC respectfully requests that the Court enter judgment as a matter of law under Rule 50(b) in favor of HTC.

### Case5:08-cv-00882-PSG Document671 Filed10/31/13 Page10 of 10 Dated: October 31, 2013 Respectfully submitted, COOLEY LLP HEIDI L. KEEFE MARK R. WEINSTEIN RONALD S. LEMIEUX STEPHEN R. SMITH KYLE D. CHEN By: /s/ Kyle D. Chen Attorneys for HTC CORPORATION and HTC AMERICA, INC. 1184434/HN HTC'S RENEWED MOTION FOR ENTRY OF

1 2 3 4 5	COOLEY LLP HEIDI L. KEEFE (SBN 178960) (hkeefe MARK R. WEINSTEIN (SBN 193043) RONALD S. LEMIEUX (SBN 120822) KYLE D. CHEN (SBN 239501) (kyle.ch Five Palo Alto Square, 4th Floor 3000 El Camino Real Palo Alto, California 94306-2155 Telephone: (650) 843-5000	(mweinstein@cooley.com) (rlemieux@cooley.com)
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10 11 12	Facsimile: (703) 456-8100  Attorneys for Plaintiffs HTC CORPORATION and HTC AMERICA, INC.	
13 14 15 16	NORTHERN I	TATES DISTRICT COURT DISTRICT OF CALIFORNIA N JOSE DIVISION
17 18 19 20 21	HTC CORPORATION and HTC AMERICA, INC.,  Plaintiffs,  v.  TECHNOLOGY PROPERTIES	Case No. 5:08-CV-00882 PSG  (Related to Case No. 5:08-CV-00877 PSG)  CHEN DECLARATION IN SUPPORT OF RENEWED MOTION FOR ENTRY OF JUDGMENT AS A MATTER OF LAW OF NON-INFRINGEMENT [PER FED. R. CIV.
22 23 24 25	LIMITED, PATRIOT SCIENTIFIC CORPORATION, and ALLIACENSE LIMITED,  Defendants.	P. 50(b)]  Complaint Filed: February 8, 2008 Trial Date: September 23, 2013  Date: December 10, 2013 Time: 10:00 a.m. Place: Courtroom 5, 4th Floor
26 27 28		Judge: Hon. Paul S. Grewal

CASE NO. 5:08-cv-00882 PSG

CHEN DECLARTION IN SUPPORT OF RENEWED MOTION FOR ENTRY OF JUDGMENT AS A MATTER OF LAW

#### I, Kyle D. Chen, declare:

- 1. I am an attorney at the law firm of Cooley LLP, counsel in this action for Plaintiffs HTC Corporation and HTC America, Inc. (collectively "HTC"). I make this declaration in support of Plaintiffs' Renewed Motion for Entry of Judgment as a Matter of Law on Non-Infringement (Per Fed. R. Civ. P. 50(b)) ("Motion"). I have personal knowledge based on information provided to me of the facts contained within this declaration, and if called as a witness, could testify competently to the matters contained herein.
- 2. Attached hereto as **Exhibit 1** are true and correct copies of excerpts from the transcript of the trial proceedings in this case on September 27, 2013.
- 3. Attached hereto as **Exhibit 2** are true and correct copies of excerpts from the transcript of the trial proceedings in this case on September 26, 2013.
- 4. Attached hereto as **Exhibit 3** are true and correct copies of excerpts from the transcript of the trial proceedings in this case on September 25, 2013.
- 5. Attached hereto as **Exhibit 4** is a true and correct copy of an excerpt from Trial Exhibit 3084, admitted into evidence in this case on September 26, 2013.
- 6. Attached hereto as **Exhibit 5** is a true and correct copy of an excerpt from Trial Exhibit 3107, admitted into evidence in this case on September 26, 2013.
- 7. Attached hereto as **Exhibit 6** is a true and correct copy of an excerpt from Trial Exhibit 3109, admitted into evidence in this case on October 1, 2013.
- 8. Attached hereto as **Exhibit 7** is a true and correct copy of an excerpt from Trial Exhibit 3112, admitted into evidence in this case on October 1, 2013.
- 9. Attached hereto as **Exhibit 8** is a true and correct copy of an excerpt from Trial Exhibit 3091, admitted into evidence in this case on September 26, 2013.
- 10. Attached hereto as **Exhibit 9** is a true and correct copy of an excerpt from Trial Exhibit 3115, admitted into evidence in this case on September 30, 2013.
- 11. Attached hereto as **Exhibit 10** is a true and correct copy of an excerpt from Trial Exhibit 3100, admitted into evidence in this case on October 1, 2013.

### Case5:08-cv-00882-PSG Document671-1 Filed10/31/13 Page3 of 3 12. Attached hereto as Exhibit 11 is a true and correct copy of an excerpt from Trial Exhibit 3101, admitted into evidence in this case on October 1, 2013. 13. Attached hereto as Exhibit 12 is a true and correct copy of an excerpt from Trial Exhibit 3117, admitted into evidence in this case on October 1, 2013. 14. Attached hereto as Exhibit 13 is a true and correct copy of an excerpt from Trial Exhibit 3027, admitted into evidence in this case on September 26, 2013. 15. Attached hereto as Exhibit 14 are true and correct copies of excerpts from the transcript of the trial proceedings in this case on September 24, 2013. 16. Attached hereto as Exhibit 15 are true and correct copies of excerpts from the transcript of the trial proceedings in this case on October 1, 2013. I declare under penalty of perjury that to the best of my knowledge the foregoing is true and correct. Executed on October 31, 2013 in Palo Alto, California. /s/ Kyle D. Chen Kyle D. Chen 1188063

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## **EXHIBIT 1**

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3	SAN JOSE DIV	TISION		4	DIRECT EXAM BY MR. LANSKY (RES.) CROSS-EXAM BY MS. KEEFE P.	P. 916 . 927
4				5	REDIRECT EXAM BY MR. LANSKY	P. 978
5				6	GLORIA FELCYN DIRECT EXAM BY MR. HOGE P.	. 991
6	HTC CORPORATION AND HTC AMERICA, INC.,	) C-08-00882 PSG		7	CROSS-EXAM BY MR. LEMIEUX	P. 1001 P. 1006
7	PLAINTIFF,	) SAN JOSE, CALIFORNIA ) ) SEPTEMBER 27, 2013		8	PLAINTIFF'S	1. 1000
8	VS.	) VOLUME 5				
9	TECHNOLOGY PROPERTIES LIMITED, PATRIOT SCIENTIFIC CORPORATION	) PAGES 901-1153		9		. 1014
10	AND ALLIACENSE LIMITED,	) )		10		P. 1033 P. 1039
11	DEFENDANT.	) )		11		
12	TRANSCRIPT OF PRO			12	SINA DENA DIRECT EXAM BY MR. SMITH P.	. 1040
13	BEFORE THE HONORABLE I UNITED STATES MAGIS			13	CROSS-EXAM BY MR. MARSH	P. 1058 P. 1073
14				14		P. 1091
15	APPEARANCES:			15	FURTHER REDIRECT EXAM BY MR. SMITH	P. 1091
16	FOR THE PLAINTIFF: COOLEY LLP BY: HEIDI K			16	YU HSIN LIANG	
17 18	RON LEM 3175 HANOVER			17		. 1095 P. 1104
19	PAIO ALIO, C	ALLIFORNIA 54304		18	REDIRECT EXAM BY MS. KEEFE	P. 1114
20	APPEARANCES CONTINUED	ON NEXT PAGE		19	CHRI STOPHER BOKHART	
21				20		. 1114
22					MDEV OF EVANDITO	
23	OFFICIAL COURT REPORTER: LEE-AN	NNE SHORTRIDGE, CSR, CRR		21	INDEX OF EXHIBITS	
24	CERTIF	FICATE NUMBER 9595		22	<u>MARKED</u> <u>ADMITTED</u>	
25	PROCEEDINGS RECORDED BY MEC			23	DEFENDANTS'	
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1 2	APPEARANCES (CONTINUED)	902		1		904 BER 27, 2013
_	FOR THE PLAINTIFF: COOLEY LLP		08:59AM	2	P R O C E E D I N G S	
2	FOR THE PLAINTIFF: COOLEY LLP BY: STEPHEN R. SMIT 1299 PENNSYLVANIA A	н	08:59AM 08:59AM	2	PROCEEDINGS (JURY OUT AT 9:07 A.M.)	BER 27, 2013
3	FOR THE PLAINTIFF: COOLEY LLP BY: STEPHEN R. SMIT	H AVENUE, NW		2 3 4	P R O C E E D I N G S	BER 27, 2013
2 3 4	FOR THE PLAINTIFF: COOLEY LLP BY: STEPHEN R. SMIT 1299 PENNSYLVANIA A SUITE 700 WASHINGTON, D.C. 2: BY: MATTHEW J. LEAR	H AVENUE, NW 0004 RY	08:59AM	2	PROCEEDINGS (JURY OUT AT 9:07 A.M.)	BER 27, 2013
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12:37PM <b>1</b>	GENERATE THE SIGNAL USED TO CLOCK THE CPU.	12:40PM <b>1</b>	WE THANK THE COURT FOR ITS AND WE PLAN ON SUBMITTING FULL
12:37PM <b>1</b>	THE TESTIMONY HAS SHOWN THAT NONE OF THE HTC PRODUCTS HAS	12:40PM <b>1</b>	WRITTEN BRIEFING LATER, BUT THIS PRESERVES OUR RECORD AND WE
12:37PM <b>2</b>	AN ENTIRE OSCILLATOR AS CONSTRUED BY THE COURT, NOR DO HTC'S	12:40PM <b>2</b>	WOULD APPRECIATE THE COURT'S RULING.
12:37PM <b>4</b>	PRODUCTS PRACTICE THE ELEMENT OF, QUOTE, "VARYING THE	12:40PM <b>4</b>	THE COURT: THANK YOU, MS. KEEFE.
12:37PM <b>5</b>	PROCESSING FREQUENCY OF SAID FIRST PLURALITY OF ELECTRONIC	12:40PM <b>5</b>	MR. OTTESON, DO YOU WANT TO RESPOND? OR MR. HOGE?
12:37PM <b>6</b>	DEVICES, AND THE CLOCK RATE OF SAID SECOND PLURALITY OF	12:40PM <b>6</b>	MR. OTTESON: THANK YOU, YOUR HONOR.
12:37PM <b>7</b>	ELECTRONIC DEVICES, IN THE SAME WAY AS A FUNCTION OF PARAMETER	12:40PM <b>7</b>	DEFENDANTS OPPOSE HTC'S RULE 50(A) MOTION FOR JUDGMENT AS
12:37PM <b>8</b>	VARIATION IN ONE OR MORE FABRICATION OR OPERATIONAL PARAMETERS	12:40PM <b>8</b>	A MATTER OF LAW ON ALL OF THE ISSUES FOR WHICH THEY MOVE.
12:37PM <b>9</b>	ASSOCIATED WITH SAID INTEGRATED CIRCUIT SUBSTRATE, THEREBY	12:41PM <b>9</b>	WE BELIEVE THAT WE HAVE SHOWN AN EVIDENTIARY BASIS FOR
12:38PM 10	ENABLING SAID PROCESSING FREQUENCY TO TRACK SAID CLOCK RATE IN	12:41PM <b>10</b>	INFRINGEMENT OF THE '336 PATENT, THAT WE HAVE PROVIDED EVIDENCE
12:38PM 11	RESPONSE TO SAID PARAMETER VARIATION," END QUOTE, AS CONSTRUED	12:41PM 11	THAT THE ACCUSED HTC PRODUCTS INCLUDE THE ENTIRE OSCILLATOR, AS
12:38PM 12	BY THE COURT.	12:41PM <b>12</b>	WELL AS SATISFYING THE VARIED IN THE SAME WAY LIMITATIONS THAT
12:38PM 13	THE TRIAL EVIDENCE HAS NOT SHOWN THAT THE ACCUSED PRODUCTS	12:41PM 13	HAVE BEEN DISCUSSED BY MS. KEEFE.
12:38PM 14	VARY BASED ON ANY OF THESE PARAMETERS.	12:41PM 14	WE ALSO BELIEVE THAT THERE IS MORE THAN A SUFFICIENT BASIS
12:38PM 15	WE MAKE THIS MOTION ON THE BASIS THAT THE PATENTEES DID	12:41PM 15	FOR A FINDING OF INDIRECT INFRINGEMENT WITH RESPECT TO
12:38PM 16	NOT SHOW INFRINGEMENT, EITHER LITERALLY OR UNDER THE DOCTRINE	12:41PM <b>16</b>	INDUCEMENT. LITERATURE IS PROVIDED BY HTC TO ITS CUSTOMERS
12:38PM <b>17</b>	OF EQUIVALENTS, WITH RESPECT TO ANY ASSERTED CLAIM.	12:41PM <b>17</b>	INSTRUCTING THEM TO USE A USB CABLE IN AN INFRINGING MANNER, IN
12:38PM 18	DEFENDANTS HAVE ALSO FAILED TO PRESENT A LEGALLY	12:41PM <b>18</b>	OTHER WORDS, TO BASICALLY PROVIDE A SECOND CLOCK SIGNAL AS
12:38PM <b>19</b>	SUFFICIENT EVIDENTIARY BASIS THAT ANY ALLEGED INFRINGEMENT BY	12:41PM <b>19</b>	REQUIRED BY THE CLAIMS.
12:38PM <b>20</b>	HTC WAS WILLFUL.	12:41PM <b>20</b>	SO WE BELIEVE THAT THERE IS PLENTY OF EVIDENCE THERE, AS
12:38PM <b>21</b>	THE EVIDENCE AT TRIAL HAS ESTABLISHED AN ABSENCE OF ANY	12:41PM <b>21</b>	WELL AS HTC'S KNOWLEDGE OF NOT ONLY THE PATENT ITSELF, BUT THAT
12:38PM <b>22</b>	EVIDENCE FOR EITHER THE OBJECTIVE OR SUBJECTIVE PRONG OF THE	12:41PM <b>22</b>	SPECIFIC ARGUMENT, BECAUSE THAT ARGUMENT WAS ACTUALLY MADE TO
12:38PM <b>23</b>	WILLFUL INFRINGEMENT TEST.	12:41PM <b>23</b>	THEM IN BRIEFINGS BY ALLIACENSE.
12:38PM <b>24</b>	ON THE OBJECTIVE PRONG, AS WE EXPLAINED IN OUR SUMMARY	12:42PM <b>24</b>	SO WE BELIEVE WE DEFINITELY SATISFY THAT, WHICH ALSO LEADS
12:38PM <b>25</b>	JUDGMENT MOTION, THE OBJECTIVE PRONG IS A LEGAL DETERMINATION	12:42PM <b>25</b>	INTO THE ISSUE OF WILLFULNESS.
	UNITED STATES COURT REPORTERS		UNITED STATES COURT REPORTERS
	1010		
	1010		1012
12:39PM <b>1</b>	MADE BY THE COURT, SO NOW THAT THE COURT HAS ALLOWED TPL TO BE	12:42PM <b>1</b>	1012 WE ALSO BELIEVE THAT WE HAVE SUBMITTED AN EVIDENTIARY
12:39PM <b>1</b>		12:42PM <b>1</b> 12:42PM <b>2</b>	
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12:39PM <b>2</b>	MADE BY THE COURT, SO NOW THAT THE COURT HAS ALLOWED TPL TO BE HEARD ENTIRELY ON THIS ISSUE, IT SHOULD REMOVE THE ISSUE FROM	12:42PM <b>2</b>	WE ALSO BELIEVE THAT WE HAVE SUBMITTED AN EVIDENTIARY BASIS TO SUPPORT BOTH SUBJECTIVE AND OBJECTIVE WILLFULNESS
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	Case5:08-cv-00882-PSG <sub>1013</sub> ocume	1671-2	Filed10/31/13 Page4 of 7
(12:43PM) <b>1</b>	MS. KEEFE.	12:48PM <b>1</b>	Q. AND WHAT IS YOUR TITLE AT HTC?
12:43PM <b>2</b>	ON EQUIVALENTS, D.O.E., I DIDN'T HEAR ANYTHING COMING OUT	12:48PM <b>2</b>	A. I'M THE VICE-PRESIDENT OF PRODUCT AND OPERATIONS FOR HTC
(12:43PM) <b>3</b>	OF DR. OKLOBDZIJA OR ANY OF THE OTHER WITNESSES AS TO D.O.E.	12:48PM <b>3</b>	AMERICA.
12:43PM <b>4</b>	CAN WE AGREE THAT D.O.E. IS OUT?	12:48PM <b>4</b>	Q. BEFORE WE GET INTO EXACTLY WHAT DO YOU AT HTC, BECAUSE
12:43PM <b>5</b>	MR. OTTESON: YES, YOUR HONOR.	12:48PM <b>5</b>	WE'RE GOING TO GO PRETTY DEEP INTO THAT, I'D LIKE TO ASK A FEW
12:43PM <b>6</b>	THE COURT: ON THAT BASIS I'LL GRANT THE SECOND	12:48PM <b>6</b>	MORE QUESTIONS ABOUT YOUR BACKGROUND SO THE JURY CAN GET TO
12:43PM <b>7</b>	VICTORY, AS IT WERE, AND GRANT THE 50(A) MOTION ON THE D.O.E.	12:48PM <b>7</b>	KNOW YOU JUST A LITTLE BIT.
12:43PM <b>8</b>	CLAIM ALONE.	12:48PM <b>8</b>	A. SURE. NO PROBLEM.
12:43PM <b>9</b>	MS. KEEFE: THANK YOU, YOUR HONOR.	12:48PM <b>9</b>	Q. MR. FICHTER, WHERE DO YOU CURRENTLY LIVE?
12:43PM <b>10</b>	THE COURT: WITH RESPECT TO LITERAL INFRINGEMENT,	12:48PM <b>10</b>	A. I LIVE IN ISSAQUAH. THAT'S A SMALL CITY JUST EAST OF
12:43PM <b>11</b>	WILLFULNESS, INDUCEMENT, AND DAMAGES, THE MOTION IS DENIED.	12:48PM <b>11</b>	SETTLE, WASHINGTON STATE.
12:43PM <b>12</b>	ISSUES ARE PRESERVED AND OF COURSE, DEPENDING ON THE OUTCOME,	12:48PM <b>12</b>	Q. I HEAR A LITTLE BIT OF AN ACCENT. WHERE DID YOU GROW UP?
12:43PM <b>13</b>	YOU CAN RENEW THOSE MOTIONS POST-TRIAL.	12:49PM <b>13</b>	A. THANK YOU FOR CALLING IT A LITTLE. I'M GERMAN. I GREW UP
12:43PM <b>14</b>	MS. KEEFE: APPRECIATE IT. THANK YOU, YOUR HONOR.	12:49PM <b>14</b>	IN BERLIN, IN GERMANY.
12:43PM <b>15</b>	MR. OTTESON: THANK YOU, YOUR HONOR.	12:49PM <b>15</b>	Q. HOW LONG HAVE YOU LIVED IN THE UNITED STATES?
12:43PM <b>16</b>	THE COURT: ALL RIGHT. ANY OTHER ISSUES BEFORE WE	12:49PM <b>16</b>	A. WELL, MY WIFE AND MY DAUGHTERS, WE CAME OVER IN 2000S,
12:43PM <b>17</b>	GET BACK TO THE JURY? IF NOT, LET'S STAND.	12:49PM <b>17</b>	EARLY 2000S, SO ABOUT 13, 14 YEARS.
12:43PM <b>18</b>	MR. RIVERA.	12:49PM <b>18</b>	Q. HAVE YOU SPENT ALL OF YOUR TIME IN WASHINGTON SINCE YOU
12:45PM <b>19</b>	(PAUSE IN PROCEEDINGS.)	12:49PM <b>19</b>	CAME TO THE UNITED STATES?
12:46PM <b>20</b>	(JURY IN AT 12:46 P.M.)	12:49PM <b>20</b>	A. WE MOVED TO SAN DIEGO FIRST, SPENT TEN YEARS IN CALIFORNIA
12:47PM <b>21</b>	THE COURT: MEMBERS OF THE JURY, WELCOME BACK. I	12:49PM <b>21</b>	BEFORE WE MOVED TO SEATTLE.
12:47PM <b>22</b>	HOPE YOU HAD A GOOD LUNCH. YOU WILL RECALL THAT JUST BEFORE WE	12:49PM <b>22</b>	Q. YOU AND I WERE TEASING YESTERDAY. YOU PREFER CALIFORNIA;
12:47PM <b>23</b>	BROKE, TPL HAD RESTED IN ITS CASE.	12:49PM <b>23</b>	RIGHT?
12:47PM <b>24</b>	WE WILL NOW HEAR FROM HTC IN ITS CASE.	12:49PM <b>24</b>	A. LOOKING OUT THERE, THE SUN, I LIKE IT BETTER THAN THE
12:47PM <b>25</b>	MS. KEEFE, YOU MAY CALL YOUR FIRST WITNESS.	12:49PM <b>25</b>	RAIN.
	UNITED STATES COURT REPORTERS		UNITED STATES COURT REPORTERS
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12:47PM <b>1</b>	MS. KEEFE: THANK YOU, YOUR HONOR.	12:49PM <b>1</b>	Q. DO YOU HAVE ANY FAMILY, MR. FICHTER?
12:47PM <b>2</b>	MS. KEEFE: THANK YOU, YOUR HONOR. YOUR HONOR, HTC CALLS MARTIN FICHTER TO THE STAND,	12:49PM <b>2</b>	Q. DO YOU HAVE ANY FAMILY, MR. FICHTER?  A. YEAH. MY WIFE AND MY TWO DAUGHTERS. MY OLDER ONE, SHE'S
12:47PM <b>2</b> 12:47PM <b>3</b>	MS. KEEFE: THANK YOU, YOUR HONOR.  YOUR HONOR, HTC CALLS MARTIN FICHTER TO THE STAND,  PLEASE.	12:49PM <b>2</b> 12:49PM <b>3</b>	Q. DO YOU HAVE ANY FAMILY, MR. FICHTER?  A. YEAH. MY WIFE AND MY TWO DAUGHTERS. MY OLDER ONE, SHE'S  IN HER YEAR NUMBER THREE AT REED COLLEGE IN PORTLAND. SHE'S
12:47PM <b>2</b> 12:47PM <b>3</b> 12:47PM <b>4</b>	MS. KEEFE: THANK YOU, YOUR HONOR.  YOUR HONOR, HTC CALLS MARTIN FICHTER TO THE STAND,  PLEASE.  THE COURT: MR. FICHTER, GOOD AFTERNOON, SIR.	12:49PM <b>2</b> 12:49PM <b>3</b> 12:49PM <b>4</b>	Q. DO YOU HAVE ANY FAMILY, MR. FICHTER?  A. YEAH. MY WIFE AND MY TWO DAUGHTERS. MY OLDER ONE, SHE'S IN HER YEAR NUMBER THREE AT REED COLLEGE IN PORTLAND. SHE'S GOING TO MAJOR IN LINGUISTICS. I GUESS IT'S ALL THESE
12:47PM <b>2</b> 12:47PM <b>3</b> 12:47PM <b>4</b> 12:47PM <b>5</b>	MS. KEEFE: THANK YOU, YOUR HONOR.  YOUR HONOR, HTC CALLS MARTIN FICHTER TO THE STAND,  PLEASE.  THE COURT: MR. FICHTER, GOOD AFTERNOON, SIR.  WELCOME.	12:49PM <b>2</b> 12:49PM <b>3</b> 12:49PM <b>4</b> 12:49PM <b>5</b>	Q. DO YOU HAVE ANY FAMILY, MR. FICHTER?  A. YEAH. MY WIFE AND MY TWO DAUGHTERS. MY OLDER ONE, SHE'S IN HER YEAR NUMBER THREE AT REED COLLEGE IN PORTLAND. SHE'S GOING TO MAJOR IN LINGUISTICS. I GUESS IT'S ALL THESE DIFFERENT LANGUAGES THAT LED HER THERE.
12:47PM <b>2</b> 12:47PM <b>3</b> 12:47PM <b>4</b> 12:47PM <b>5</b> 12:47PM <b>6</b>	MS. KEEFE: THANK YOU, YOUR HONOR.  YOUR HONOR, HTC CALLS MARTIN FICHTER TO THE STAND,  PLEASE.  THE COURT: MR. FICHTER, GOOD AFTERNOON, SIR.  WELCOME.  THE WITNESS: GOOD AFTERNOON. WHERE DO I GO?	12:49PM 2 12:49PM 3 12:49PM 4 12:49PM 5 12:49PM 6	Q. DO YOU HAVE ANY FAMILY, MR. FICHTER?  A. YEAH. MY WIFE AND MY TWO DAUGHTERS. MY OLDER ONE, SHE'S IN HER YEAR NUMBER THREE AT REED COLLEGE IN PORTLAND. SHE'S GOING TO MAJOR IN LINGUISTICS. I GUESS IT'S ALL THESE DIFFERENT LANGUAGES THAT LED HER THERE. MY YOUNGER ONE, SHE'S A FRESHMAN AT VASSAR IN
12:47PM 2 12:47PM 3 12:47PM 4 12:47PM 5 12:47PM 6 12:48PM 7	MS. KEEFE: THANK YOU, YOUR HONOR.  YOUR HONOR, HTC CALLS MARTIN FICHTER TO THE STAND,  PLEASE.  THE COURT: MR. FICHTER, GOOD AFTERNOON, SIR.  WELCOME.  THE WITNESS: GOOD AFTERNOON. WHERE DO I GO?  THE COURT: IF YOU COULD APPROACH THE WITNESS STAND,	12:49PM 2 12:49PM 3 12:49PM 4 12:49PM 5 12:49PM 6 12:49PM 7	Q. DO YOU HAVE ANY FAMILY, MR. FICHTER?  A. YEAH. MY WIFE AND MY TWO DAUGHTERS. MY OLDER ONE, SHE'S IN HER YEAR NUMBER THREE AT REED COLLEGE IN PORTLAND. SHE'S GOING TO MAJOR IN LINGUISTICS. I GUESS IT'S ALL THESE DIFFERENT LANGUAGES THAT LED HER THERE. MY YOUNGER ONE, SHE'S A FRESHMAN AT VASSAR IN POUGHKEEPSIE, NEW YORK. SHE'S LOOKING MORE LIKE INTERNATIONAL
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	Case5:08-cv-00882-PSG Docume	nt671-2	Filed10/31/13 Page5 of 7
01:07PM <b>1</b>	WHICH MEANS I HAVE TO MAKE TRADEOFFS IN ORDER TO, TO GET TO A	01:10PM <b>1</b>	BEEN BROUGHT UP FIRST IN HTC PHONES. SO WE HAVE PEOPLE IN
01:07PM <b>2</b>	POINT WHERE EVERYTHING IS WORKING UNDER WORSE CASE CONDITIONS.	01:10PM <b>2</b>	SAN DIEGO WORKING AT QUALCOMM, AND QUALCOMM HAS ALWAYS PEOPLE
01:07PM <b>3</b>	Q. AND WHAT ARE SOME OF THE TRADEOFFS THAT YOU HAVE TO MAKE	01:10PM <b>3</b>	IN TAIWAN WORKING IN OUR OFFICES TO MAKE SURE THAT WE ARE
01:07PM <b>4</b>	IN ORDER TO ENSURE THAT THE PHONE WORKS IN THAT WORST CASE	01:10PM <b>4</b>	CLOSELY INTERRELATED.
01:07PM <b>5</b>	SCENARIO?	01:10PM <b>5</b>	Q. AND WHAT TYPES OF CHIPS DO YOU BUY FROM QUALCOMM? WHAT
01:07PM <b>6</b>	A. WELL, YOU COULD POTENTIALLY GET HIGHER PERFORMANCE OUT OF	01:10PM <b>6</b>	TYPES OF IN TERMS OF HELPING NARROW IT DOWN FOR WHAT MATTERS
01:08PM <b>7</b>	SOME OF THE COMPONENTS, BUT YOU WOULD LOSE RELIABILITY.	01:10PM <b>7</b>	FOR THIS CASE
01:08PM <b>8</b>	Q. WHAT DO YOU MEAN BY THAT?	01:10PM <b>8</b>	A. YES.
01:08PM <b>9</b>	A. IF YOU COULD IF YOU CAN RUN THE SYSTEM FASTER, YOU	01:10PM <b>9</b>	Q WHAT TYPES OF CLOCKS ARE ON THE CHIPS THAT YOU BUY FROM
01:08PM <b>10</b>	MIGHT RUN INTO A SITUATION WHERE SOME COMPONENTS FALL OUT OF	01:11PM 10	QUALCOMM?
01:08PM <b>11</b>	SYNCH OR YOU FALL OUT OF A SYNCH WITH A NETWORK, WHICH WOULD	01:11PM 11	A. WELL, THE SYSTEMS THAT WE ARE RUNNING ALL RUN A FIXED
01:08PM <b>12</b>	OBVIOUSLY BE BAD BECAUSE YOU MIGHT DROP A CALL, AND IT'S MORE	01:11PM 12	CLOCK.
01:08PM <b>13</b>	IMPORTANT TO KEEP THAT CALL THAN TO BE THAT LITTLE BIT FASTER.	01:11PM 13	Q. AND WHY IS THAT?
01:08PM <b>14</b>	Q. AND SO HOW DOES HTC GO ABOUT MAKING SURE THAT IT HAS THAT	01:11PM <b>14</b>	A. THAT'S THE ONLY WAY TO MAKE SURE THAT THE PHONE WORKS
01:08PM <b>15</b>	RELIABILITY THAT YOU TALKED ABOUT?	01:11PM 15	UNDER ALL, ALL CIRCUMSTANCES.
01:08PM <b>16</b>	A. HOW DO WE MAKE AGAIN, WE'RE DESIGNING FOR ABSOLUTE	01:11PM 16	Q. HAVE YOU EVER CONSIDERED USING A VARIABLE CLOCK IN YOUR
01:08PM <b>17</b>	WORST CASE, WHICH MEANS WE ARE LOOKING AT THE, THE RANGES OF	01:11PM 17	PHONES?
01:08PM <b>18</b>	HOW MUCH DUST CAN THERE BE IN THE AIR, HOW HOT, HOW COLD CAN IT	01:11PM 18	A. I HAVE NOT CONSIDERED AND I DON'T SEE WHAT THE BENEFIT
01:08PM <b>19</b>	BE, AND WE LOOK FOR THE WORST CASE AND MAKE SURE THAT THE PHONE	01:11PM 19	WOULD BE.
01:08PM <b>20</b>	WILL WORK IN THE WORST CASE, AND THEN WE TIGHTEN EVERYTHING	01:11PM 20	Q. WHY NOT?
01:08PM <b>21</b>	DOWN.	01:11PM <b>21</b>	A. WELL, THE KEY THING FOR THE PHONE IS TO RUN UNDER ALL
01:09PM <b>22</b>	Q. AND AS HEAD OF PRODUCT AND DEVELOPMENT, DO YOU HAVE A ROLE	01:11PM <b>22</b>	CIRCUMSTANCES AND BE FULLY RELIABLE.
01:09PM <b>23</b>	IN HELPING TO FIGURE OUT WHAT COMPONENTS GO INTO THE PHONE TO	01:11PM <b>23</b>	THE SECOND CONSIDERATION THAT I WOULD HAVE IS THE MOST
01:09PM <b>24</b>	ACHIEVE THOSE RESULTS?	01:11PM <b>24</b>	IMPORTANT THING THAT THE PHONE DOES IS CONNECT TO THE NETWORK,
01:09PM <b>25</b>	A. I DON'T PICK COMPONENTS MYSELF, BUT I WORK VERY CLOSELY	01:11PM <b>25</b>	AND THE NETWORK DETERMINES HOW FAST THAT EXPERIENCE IS.
	UNITED STATES COURT REPORTERS		UNITED STATES COURT REPORTERS
	1030	•	1032
01:09PM <b>1</b>	WITH THE PEOPLE WHO DO.	01:11PM <b>1</b>	SO EVEN IF I WOULD CHANGE THE PERFORMANCE OF THE PHONE
01:09PM <b>2</b>	_		
3	Q. AND WHAT DO YOU DO IN YOUR, IN YOUR ROLE WITH THEM? HOW	01:11PM <b>2</b>	ITSELF AND CLOCK IT FASTER OR SLOWER, IT WOULDN'T CHANGE THE
01:09PM <b>3</b>	DO YOU WORK WITH THEM?	01:11PM <b>3</b>	PERFORMANCE OF THE NETWORK AND SO I WOULDN'T GET ANY BENEFIT.
01:09PM <b>3</b>	DO YOU WORK WITH THEM?  A. WELL, I WILL TELL THEM, LOOK, I NEED A PHONE THAT HAS ALL	01:11PM <b>3</b> 01:11PM <b>4</b>	PERFORMANCE OF THE NETWORK AND SO I WOULDN'T GET ANY BENEFIT.  I WOULDN'T DOWNLOAD SOMETHING FASTER OR WOULDN'T BE ABLE TO
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	Case5:08-cv-00882-PSG <sub>1045</sub> ocume	nt671-2	Filed10/31/13 Page6 of 7
01:27PM <b>1</b>	BY MR. SMITH:	01:30PM <b>1</b>	Q. WHY IS IT CRITICAL?
01:27PM <b>2</b>	Q. AND IF YOU DON'T MIND SKETCHING OUT FOR US, AT A HIGH	01:30PM <b>2</b>	A. IT NEEDS IT HAS TO DO WITH THE STABILITY TO BEGIN WITH,
01:27PM <b>3</b>	LEVEL I UNDERSTAND IT'S A LITTLE BIT MORE COMPLICATED BUT	01:30PM <b>3</b>	SO, YOU KNOW, IF YOU'RE EXPERIENCING A CALL DROP, FOR INSTANCE,
01:27PM <b>4</b>	AT A HIGH LEVEL WHAT YOU'VE JUST TALKED ABOUT.	01:30PM <b>4</b>	IF THE FREQUENCY IS VARYING OUT CONTROL, YOU KNOW, YOU WOULD
01:27PM <b>5</b>	A. SO THERE'S THE, THE VERY FIRST ELEMENT IS A FIXED INPUT	01:30PM <b>5</b>	LOSE THE CALL. YOU WOULD LOSE YOUR WIRELESS. YOU WOULD LOSE
01:27PM <b>6</b>	CLOCK FREQUENCY (INDICATING).	01:30PM <b>6</b>	YOUR BLUETOOTH. BASICALLY THE CHIP STARTS TO MALFUNCTION IF
01:27PM <b>7</b>	Q. WHAT IS THAT?	01:30PM <b>7</b>	THE FREQUENCY IS NOT FIXED.
01:27PM <b>8</b>	A. IT'S COMING FROM AN EXTERNAL CHIP CRYSTAL, WE CALL IT	01:30PM <b>8</b>	YOU ARE NOT SUPPLYING ONLY TO ONE COMPONENT OF THE CHIP.
01:27PM <b>9</b>	TCXO. IT STANDS FOR TEMPERATURE COMPENSATED CRYSTAL	01:31PM <b>9</b>	AS I MENTIONED, THERE ARE MULTITUDES OF PLL'S AND THEY ARE
01:27PM <b>10</b>	OSCILLATOR.	01:31PM <b>10</b>	SUPPLYING TO A SYMPHONY ORCHESTRA, TO GROUPS OF COMPONENTS OF
01:27PM <b>11</b>	Q. OKAY.	01:31PM <b>11</b>	THE CHIP AND THEY ALL HAVE TO WORK IN UNISON.
01:27PM <b>12</b>	A. THE BOX I'M DRAWING IS BASICALLY THE PLL SYSTEM ITSELF	01:31PM <b>12</b>	IN OTHER WORDS, YOU CAN IMAGINE IF YOU RUSH TOO MUCH, TOO
01:27PM <b>13</b>	(INDICATING).	01:31PM <b>13</b>	MANY CARS INTO A HIGHWAY THAT DOESN'T HAVE THE BANDWIDTH TO
01:27PM <b>14</b>	Q. SO MR. DENA, IS THE TCXO PART OF THE CHIP?	01:31PM <b>14</b>	CARRY THAT TRAFFIC, YOU'RE GOING TO HAVE A BACKUP OF THE
01:27PM <b>15</b>	A. NO. THE CRYSTAL RESIDES OUTSIDE THE CHIP.	01:31PM <b>15</b>	TRAFFIC.
01:27РМ 16	Q. OKAY. PLEASE CONTINUE.	01:31PM <b>16</b>	Q. NOW, IS THIS HIGH LEVEL DESIGN IN ALL OF THE QUALCOMM
01:27PM <b>17</b>	A. THERE ARE WHAT WE CALL REGISTERS THAT ARE 32 BIT WIDE, AND	01:31PM <b>17</b>	CHIPS AT ISSUE IN THIS CASE?
01:28PM <b>18</b>	THEY'RE BASICALLY REPRESENTING THE BINARY VALUE OF THE NUMBER.	01:31PM <b>18</b>	A. THAT'S CORRECT.
01:28PM <b>19</b>	SO FOR COURT PURPOSES, WE CAN IMAGINE THESE ARE JUST L, M, AND	01:31PM <b>19</b>	NOW, WE HAVE CERTAIN PLL'S THAT MIGHT, INSTEAD OF L AND M
01:28PM <b>20</b>	N, OR A SERIES OF NUMBERS (INDICATING).	01:31PM <b>20</b>	AND N, USE ONLY L. BUT PRETTY MUCH THIS IS IT (INDICATING).
01:28PM <b>21</b>	<b>Q.</b> HOLD ON, MR. DENA. LET ME SEE IF WE CAN GET A BETTER VIEW	01:31PM <b>21</b>	Q. HOW DOES THAT LOOK IN A FORMULA WITH JUST L?
01:28PM <b>22</b>	HERE.	01:31PM <b>22</b>	A. WITH JUST L, WE HAVE ONE VERSION THAT IS BASICALLY L TIMES
01:28PM <b>23</b>	EXCUSE ME. THANK YOU.	01:31PM <b>23</b>	TCXO FREQUENCY TIMES TWO (INDICATING). THERE WAS A VERSION OF
01:28PM <b>24</b>	A. AND THEN BASICALLY OF THE PLL OUTPUT, WHICH ESSENTIALLY IS	01:31PM <b>24</b>	THE PLL LIKE THAT.
01:28PM <b>25</b>	THE CLOCK THAT WE USE FOR THE REST OF THE CHIP (INDICATING).	01:31PM <b>25</b>	Q. AND ALL THE PLL'S USED IN THE QUALCOMM CHIPS AT ISSUE IN
	UNITED STATES COURT REPORTERS		UNITED STATES COURT REPORTERS
4	1046	_	1048
01:28PM <b>1</b>	SO THIS SYSTEM THAT I'VE SHOWN IS THE SOURCE OF ALL CLOCKS	01:32PM <b>1</b>	THIS CASE, IS THERE A FORMULA THAT GOVERNS THE OUTPUT?
01:28PM <b>2</b>	SO THIS SYSTEM THAT I'VE SHOWN IS THE SOURCE OF ALL CLOCKS ON THE CHIPS, AND WE HAVE MULTIPLE OF THESE DEPENDING ON THE	01:32PM <b>2</b>	THIS CASE, IS THERE A FORMULA THAT GOVERNS THE OUTPUT?  A. ALWAYS.
01:28PM <b>2</b> 01:28PM <b>3</b>	SO THIS SYSTEM THAT I'VE SHOWN IS THE SOURCE OF ALL CLOCKS ON THE CHIPS, AND WE HAVE MULTIPLE OF THESE DEPENDING ON THE CHIP, AND IN SOME CHIPS YOU HAVE FOUR, SOME CHIPS YOU HAVE	01:32PM <b>2</b> 01:32PM <b>3</b>	THIS CASE, IS THERE A FORMULA THAT GOVERNS THE OUTPUT?  A. ALWAYS.  Q. HAVE YOU SEEN ANY INSTANCES WHERE THERE'S NOT A FORMULA?
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	Case5:08-cv-00882-PSG Docume	nt671-2	Filed10/31/13 Page7 of 7
01:50PM <b>1</b>	A. YES. AND I'D JUST LIKE TO EMPHASIZE. IT'S NOT DONE FOR	01:52PM <b>1</b>	A. QUALCOMM PERFORMS AGAIN, IF YOU'RE REFERRING BY TEST
01:50PM <b>2</b>	EVERY PART THAT IS SHIPPED. IT'S DONE FOR A BATCH OF DEVICES	01:53PM <b>2</b>	YOU KNOW, TESTING, AGAIN, IT'S A VERY BROAD STATEMENT. IF YOU
01:50PM <b>3</b>	THAT ARE IN EXTREME CORNERS OF THE PROCESS, FOR INSTANCE, AND	01:53PM <b>3</b>	ARE TALKING ABOUT CHARACTERIZATION, STRUCTURAL TESTING.
01:50PM <b>4</b>	THEN THERE'S AN EXTRAPOLATION THAT IS DONE BASED UPON THAT	01:53PM <b>4</b>	FUNCTIONAL TESTING, YOU KNOW, DURABILITY, THEY'RE ALL KINDS OF
01:50PM <b>5</b>	PERFORMANCE FOR THE FINAL PRODUCT TESTING.	01:53PM <b>5</b>	THINGS UNDER TESTING.
01:50PM <b>6</b>	SO CHARACTERIZATION IS NOT SOMETHING THAT'S DONE ON EVERY	01:53PM <b>6</b>	BUT IF YOU ARE REFERRING TO CHARACTERIZATION,
01:50PM <b>7</b>	CHIP THAT'S SHIPPED. IT'S ONLY DONE ON A SAMPLE OF DEVICES	01:53PM <b>7</b>	CHARACTERIZATION IS PERFORMED TO ENSURE FOR THE WIDE RANGE OF
01:50PM <b>8</b>	THAT RESIDE ON THE CORNERS, ON THE BOUNDARIES OF THE PVT.	01:53PM <b>8</b>	PROCESS VARIATIONS THAT WE RECEIVE FROM THE FACTORY AND, YOU
01:50PM <b>9</b>	Q. UNDERSTOOD. UNDERSTOOD.	01:53PM <b>9</b>	KNOW, WE SHIP THE PARTS THAT WE SHIP, THE PARTS THAT
01:50PM 10	BUT NO MATTER HOW CAREFUL QUALCOMM IS, NO MATTER HOW	01:53PM <b>10</b>	QUALCOMM SHIPS ARE WITHIN THAT WIDE RANGE.
01:50PM <b>11</b>	CAREFULLY THEY DESIGN THE CHIPS, THERE ARE SOME VARIATIONS FROM	01:53PM <b>11</b>	SO CHARACTERIZATION IS DONE TO ENSURE THE PARTS THAT
01:50PM <b>12</b>	CHIP TO CHIP; RIGHT?	01:53PM <b>12</b>	QUALCOMM SHIPS TO CUSTOMER HAVE THE GUARANTEE OF OPERATION
01:50PM <b>13</b>	A. VARIATIONS IN WHAT?	01:53PM <b>13</b>	WITHIN THOSE VARIATIONS.
01:50PM <b>14</b>	Q. IN PERFORMANCE.	01:53PM <b>14</b>	Q. AND IN FACT, ONE OF THE REASONS THAT QUALCOMM TESTS ITS
01:50PM <b>15</b>	A. PERFORMANCE OF WHAT? OF THE PLL?	01:53PM <b>15</b>	CHIPS IS SO THAT IT CAN PERFORM SPEED BINNING; RIGHT?
01:51PM <b>16</b>	Q. OF THE CHIPS. ARE THERE ANY VARIATIONS? I MEAN, EVEN IF	01:53PM <b>16</b>	A. SPEED BINNING IS A COMPLETELY DIFFERENT ISSUE FROM THIS.
01:51PM <b>17</b>	QUALCOMM IS CAREFUL TO DESIGN, THAT PROCESS IS NOT PERFECT;	01:53PM <b>17</b>	Q. OKAY. BUT SPEED BINNING DOES TAKE INTO ACCOUNT PROCESS OR
01:51PM <b>18</b>	RIGHT? THERE ARE SOME VARIATIONS FROM CHIP TO CHIP, ARE THERE	01:53PM <b>18</b>	FABRICATION VARIATIONS, DOES IT NOT?
01:51PM <b>19</b>	NOT?	01:54PM <b>19</b>	A. IT DOESN'T HAVE TO REALLY BASICALLY WHAT YOU ARE DOING
01:51PM <b>20</b>	A. ARE YOU REFERRING TO THE PLL PERFORMANCE OR SOMETHING	01:54PM <b>20</b>	IS IF YOU DO A SPEED BINNING, YOU DECIDE YOU LOOK AT THE
01:51PM <b>21</b>	ELSE?	01:54PM <b>21</b>	RANGE, THE SPECTRUM OF THE CHANGE IN THE PROCESS, LET'S SAY ON
01:51PM <b>22</b>	Q. I'M JUST REFERRING TO THE PERFORMANCE OF THE CHIP, OF	01:54PM <b>22</b>	THE LEFT-HAND SIDE YOU HAVE THE VERY SLOW PROCESS, ON
01:51PM <b>23</b>	QUALCOMM'S DESIGNS ON SILICON.	01:54PM <b>23</b>	RIGHT-HAND SIDE YOU HAVE THE VERY FAST PROCESS.
01:51PM <b>24</b>	A. I THINK THAT IS A VERY BROAD SCOPE BECAUSE CHIP	01:54PM <b>24</b>	WHAT DOES SLOW AND FAST MEAN? IT DOESN'T MEAN YOUR PLL
01:51PM <b>25</b>	PERFORMANCE CAN BE DEFINED BY HOW MUCH POWER IT CONSUMES OR	01:54PM <b>25</b>	COULD DO 2 GIGAHERTZ HERE AND IT NOW CAN DO 4 GIGAHERTZ. PLL
	UNITED STATES COURT REPORTERS		UNITED STATES COURT REPORTERS
	1062		1064
01:51PM <b>1</b>	1062 WHAT CLOCK RATE IT DOES, AND SO I'D LIKE TO BE AS SPECIFIC.	01:54PM <b>1</b>	1064 CAN DO 4 GIGAHERTZ ON EITHER SIDE OF THESE CORNERS.
01:51PM <b>2</b>		01:54PM <b>2</b>	
01:51PM <b>2</b> 01:51PM <b>3</b>	WHAT CLOCK RATE IT DOES, AND SO I'D LIKE TO BE AS SPECIFIC.	01:54PM <b>2</b> 01:54PM <b>3</b>	CAN DO 4 GIGAHERTZ ON EITHER SIDE OF THESE CORNERS.
01:51PM <b>2</b>	WHAT CLOCK RATE IT DOES, AND SO I'D LIKE TO BE AS SPECIFIC.  REGARDING PLL'S, I CAN TELL YOU THAT PLL'S ARE DESIGNED TO	01:54PM <b>2</b>	CAN DO 4 GIGAHERTZ ON EITHER SIDE OF THESE CORNERS.  WHAT FAST AND SLOW MEAN IS THE RECEIVING CIRCUIT. IN OUR
01:51PM	WHAT CLOCK RATE IT DOES, AND SO I'D LIKE TO BE AS SPECIFIC.  REGARDING PLL'S, I CAN TELL YOU THAT PLL'S ARE DESIGNED TO  MAINTAIN THE TARGET FREQUENCY ACROSS PVT VARIATIONS.  IN OTHER WORDS, THE 400 MEGAHERTZ ON A SLOW DEVICE, A SLOW  PROCESS DEVICE, IS GOING TO BE DONE WITH THE SAME L, M, N VALUE	01:54PM <b>2</b> 01:54PM <b>3</b> 01:54PM <b>4</b> 01:54PM <b>5</b>	CAN DO 4 GIGAHERTZ ON EITHER SIDE OF THESE CORNERS.  WHAT FAST AND SLOW MEAN IS THE RECEIVING CIRCUIT. IN OUR  ARGUMENTS, IT'S THE CPU. IT'S CAPABLE OF DOING BETTER THAN IT  WAS DESIGNED FOR IN TERMS OF RECEIVING HIGHER SPEED CLOCK IN  THE FAST CORNER.
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## **EXHIBIT 2**

	Case5:08-cv-	00882-PSG	Docume	1671-	3 Filed10/31/13 Page2 of 7 643	
	VATERIAL COLUMN	DIGE COID	. ==	:	2 <u>DEFENDANTS'</u>	
1 2	UNITED STATES DIST  NORTHERN DISTRICT OF				3 VOJIN OKLOBDZIJA	
3	SAN JOSE DIV				DIRECT EXAM BY MR. MARSH (RES.) P. 661  CROSS-EXAM BY MR. SMITH P. 720	
4	5.11 0052 511.	10101			REDIRECT EXAM BY MR. MARSH P. 761	
5				,	_	
6	HTC CORPORATION AND HTC ) AMERICA, INC., )	C-08-00882 PSG			DIRECT EXAM BY MR. CARMACK P. 793	
7	PLAINTIFF, )	) SAN JOSE, CALIFORNIA			7 CROSS-EXAM BY MR. LEMIEUX P. 818	
8	VS. )	SEPTEMBER 26 2013			8 STEPHEN PROWSE DIRECT EXAM BY MR. LANSKY P. 832	
9	TECHNOLOGY PROPERTIES LIMITED, )	) VOLUME 4		9	9	
10	PATRIOT SCIENTIFIC CORPORATION ) AND ALLIACENSE LIMITED, )	) PAGES 641-900		10	0 <u>INDEX OF EXHIBITS</u>	
11	DEFENDANT.	)		1	1 <u>MARKED</u> <u>ADMITTED</u>	
12	TRANSCRIPT OF PRO	Y P P D T N C C		1:	2 <u>DEFENDANTS'</u>	
13	BEFORE THE HONORABLE F UNITED STATES MAGIS	PAUL S. GREWAL		1:		
14		nanz copez		14	1279, 1282, 1627 <b>4</b>	
15	APPEARANCES:			03:07PM <b>1</b>	<b>5</b> 166, 177, 203, 210, 237, 245, 852	
16	FOR THE PLAINTIFF: COOLEY LLP BY: HEIDI K	EEFE		03:07PM 03:07PM <b>1</b> 0	357, 365, 367, 369, 373, 391,	
17	RON LEM 3175 HANOVER			03:08PM 03:08PM <b>1</b>	438, 442, 447, 1331, 1334, 1430,	
18	PALO ALTO, C	ALIFORNIA 94304		03:08PM	1541, 1542, 1543, 1544, 1545,	
19				03:08PM <b>18</b> 03:09PM	1552, 1553, 1554, 1555, 1556,	
20	APPEARANCES CONTINUED	ON NEXT PAGE		03:09PM <b>1</b> 9	1562, 1563, 1564, 1565, 1566,	
21				03:09PM <b>2</b> 0 03:10PM	<b>0</b> 1577, 1581, 1582, 1583, 1584, 1585, 1586, 1587, 1588, 1589,	
23	OFFICIAL COURT REPORTER: LEE-AN	INE SHORTRIDGE, CSR, CRR		03:10PM <b>2</b> *	<b>1</b> 1590, 1591, 1593, 1595, 1596, 1597, 1598, 1599, 1600, 1601,	
24		CICATE NUMBER 9595		03:10PM <b>2</b> :		
25	PROCEEDINGS RECORDED BY MECI	HANICAL STENOGRAPHY		03:11PM <b>2</b> 3	<b>3</b> 3033, 3081, 3082, 3083, 3084,	
	TRANSCRIPT PRODUCED V			03:11PM 03:11PM <b>2</b> 4		
	UNITED STATES COURT	REPORTERS		03:12PM 03:12PM <b>2</b> 5	3106, 3107, AND 3113 <b>5</b>	
				03:12PM	UNITED STATES COURT REPORTERS	
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1 2	APPEARANCES (CONTINUED)			03:12PM '	1 SAN JOSE, CALIFORNIA SEPTEMBER 26, 2013	
_	APPEARANCES (CONTINUED)  FOR THE PLAINTIFF: COOLEY LLP					
2				08:56AM	1 SAN JOSE, CALIFORNIA SEPTEMBER 26, 2013	
2 3 4	FOR THE PLAINTIFF: COOLEY LLP BY: STEPHEN R. SMIT 1299 PENNSYLVANIA A SUITE 700	AVENUE, NW		08:56AM	1 SAN JOSE, CALIFORNIA SEPTEMBER 26, 2013 2 PROCEEDINGS	
2 3 4 5	FOR THE PLAINTIFF: COOLEY LLP BY: STEPHEN R. SMIT 1299 PENNSYLVANIA A SUITE 700 WASHINGTON, D.C. 2	AVENUE, NW 0004		08:56AM 2 08:56AM 3	1 SAN JOSE, CALIFORNIA SEPTEMBER 26, 2013 2 PROCEEDINGS 3 (JURY OUT AT 9:01 A.M.)	
2 3 4 5 6	FOR THE PLAINTIFF: COOLEY LLP BY: STEPHEN R. SMIT 1299 PENNSYLVANIA A SUITE 700 WASHINGTON, D.C. 2 BY: MATTHEW J. LEAR 380 INTERLOCKEN CRI	AVENUE, NW 0004 RY ESCENT, SUITE 900		08:56AM 3 08:56AM 3 09:01AM 4	1 SAN JOSE, CALIFORNIA SEPTEMBER 26, 2013 2 PROCEEDINGS 3 (JURY OUT AT 9:01 A.M.) 4 THE COURT: MR. RIVERA, WOULD YOU CALL THE MATTER	
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2 3 4 5 6 7 8 9 10 11	FOR THE PLAINTIFF: COOLEY LLP BY: STEPHEN R. SMIT 1299 PENNSYLVANIA A SUITE 700 WASHINGTON, D.C. 2  BY: MATTHEW J. LEAR 380 INTERLOCKEN CRE BROOMFIELD, COLORA  ALSO PRESENT: VINCENT LAM  FOR DEFENDANTS TPL AND BY: JAMES C. OTT ALLIACENSE: IRVIN E. TYAI THOMAS T. CARMA VINCENT K. YEE DAVID LANSKY	AVENUE, NW  0004 RY ESCENT, SUITE 900 ADO 80021  W ESON N CK DRIVE		08:56AM	PROCEEDINGS  (JURY OUT AT 9:01 A.M.)  THE COURT: MR. RIVERA, WOULD YOU CALL THE MATTER  THAT'S BEEN SET FOR TRIAL, IF YOU WOULD.  THE CLERK: YES, YOUR HONOR. CALLING HTC  CORPORATION, ET AL VERSUS TECHNOLOGY PROPERTIES LIMITED, ET A  CASE NUMBER CV-08-882 PSG. MATTER ON FOR TRIAL.  COUNSEL, PLEASE STATE YOUR APPEARANCES.  THE COURT: COUNSEL, YOU WANT TO STATE YOUR  APPEARANCES, AT LEAST IN A REPRESENTATIVE CAPACITY.  MR. OTTESON: I'M SORRY. YES, JIM OTTESON,  AGILITY IP LAW. I REPRESENT DEFENDANTS TPL AND ALLIACENSE.	AL,
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11:20AM <b>1</b>	Q. OKAY. SO LET ME PUT IT UP ON THE ELMO. AND THAT'S THE	11:23AM <b>1</b>	A. YES.
11:20AM <b>2</b>	CONSTRUCTION, RIGHT, DOCTOR, THE ENTIRE OSCILLATOR THAT WE JUST	11:23AM <b>2</b>	Q. AND IN ALL OF THE HTC PHONES THAT HAVE THE AND ALL OF
11:20AM <b>3</b>	SAW IN THE CLAIM IS PROPERLY UNDERSTOOD TO EXCLUDE ANY EXTERNAL	11:23AM <b>3</b>	THEM HAVE PLL, AND THE PLL SENDS OUT A CLOCK THAT CLOCKS THE
11:20AM <b>4</b>	CLOCK USED TO GENERATE THE SIGNAL USED TO CLOCK THE CPU; RIGHT?	11:23AM <b>4</b>	CPU (INDICATING); CORRECT?
11:20AM <b>5</b>	A. EXCLUDE ANY EXTERNAL CLOCK YES, THAT'S CORRECT.	11:23AM <b>5</b>	A. THAT IS CORRECT.
11:21AM <b>6</b>	Q. AND YOU APPLIED THAT CLAIM CONSTRUCTION IN OFFERING YOUR	11:23AM 6	Q. AND ALL THE HTC PHONES HAVE AN EXTERNAL REFERENCE
11:21AM <b>7</b>	OPINION; CORRECT?	11:23AM <b>7</b>	(INDICATING); RIGHT?
11:21AM <b>8</b>	A. I DO, ABSOLUTELY.	11:23AM 8	A. THAT IS CORRECT.
11:21AM <b>9</b>	Q. RIGHT. NOW, WE'RE ALL BOUND BY THIS CONSTRUCTION? WE ALL	11:23AM 9	Q. AND THEY'RE ALL DIRECTLY OR INDIRECTLY BASED ON A CRYSTAL;
11:21AM 10	HAVE TO USE IT?	11:23AM 10	RIGHT?
11:21AM <b>11</b>	A. THAT THOSE ARE THE RULES OF THE GAME.	11:23AM 11	A. AS WE HAVE SEEN IT, RIGHT.
11:21AM <b>12</b>	Q. THE RULES OF THE GAME, OKAY. AND I WANT TO WALK THROUGH	11:23AM <b>12</b>	Q. RIGHT. COULD BE DIRECTLY FROM A CRYSTAL OR IT COULD BE
11:21AM 13	THE RULES OF THE GAME WITH YOU IN A LITTLE BIT OF DETAIL.	11:23AM 13	FROM A CLOCK GENERATOR THAT HAS A CRYSTAL; RIGHT?
11:21AM <b>14</b>	NOW, IT SAYS, "PROPERLY UNDERSTOOD TO EXCLUDE ANY EXTERNAL	11:24AM 14	A. SOMETHING STABLE.
11:21AM <b>15</b>	CLOCK," AND YOU WOULD AGREE WITH ME, DOCTOR, THAT AN EXTERNAL	11:24AM 15	Q. OKAY. BUT THEY ALL COME FROM A CRYSTAL ONE WAY OR THE
11:21AM <b>16</b>	CLOCK MEANS IT'S OFF THE CHIP; RIGHT?	11:24AM 16	OTHER; RIGHT?
11:21AM <b>17</b>	A. I ABSOLUTELY AGREE WITH YOU, MR. SMITH.	11:24AM 17	A. LET'S SAY YES. I MEAN, NOT NECESSARILY, BUT SOMETHING
11:21AM <b>18</b>	Q. YOU AGREE I'M SORRY?	11:24AM 18	STABLE, STABLE REFERENCE, AND CRYSTAL IS USUALLY STABLE
11:21AM 19	A. ABSOLUTELY I AGREE.	11:24AM 19	REFERENCE.
11:21AM <b>20</b>	Q. OKAY. THANK YOU.	11:24AM <b>20</b>	Q. SO THIS IS A STABLE REFERENCE (INDICATING). ALL THE
11:21AM <b>21</b>	SO AND YOU WOULD AGREE WITH ME THAT IF THERE'S AN	11:24AM <b>21</b>	PHONES USE A STABLE REFERENCE INTO THE PLL; CORRECT?
11:21AM <b>22</b>	OFF-CHIP CLOCK THAT'S USED TO GENERATE THE SIGNAL THAT CLOCKS	11:24AM <b>22</b>	A. THAT IS CORRECT.
11:21AM <b>23</b>	THE CPU, THEN THERE'S NO INFRINGEMENT; RIGHT?	11:24AM <b>23</b>	Q. AND COULD YOU CALL THAT A FIXED REFERENCE?
11:21AM <b>24</b>	A. THEN THE ELEMENT 13 WELL, THE ELEMENT A IS NOT	11:24AM <b>24</b>	A. I WOULD CALL IT STABLE.
11:22AM <b>25</b>	SATISFIED AND THAT WILL KNOCK BOTH OF THEM OUT.	11:24AM <b>25</b>	Q. STABLE. BECAUSE NOTHING IS PERFECT; CORRECT?
	UNITED STATES COURT REPORTERS		UNITED STATES COURT REPORTERS
	734		736
11:22AM <b>1</b>	734  Q. BECAUSE YOU HAVE TO HAVE ALL OF THE ELEMENTS TO INFRINGE;	11:24AM <b>1</b>	736 A. THAT IS CORRECT.
11:22AM <b>1</b> 11:22AM <b>2</b>		11:24AM <b>1</b> 11:24AM <b>2</b>	
١ .	Q. BECAUSE YOU HAVE TO HAVE ALL OF THE ELEMENTS TO INFRINGE;		A. THAT IS CORRECT.
11:22AM <b>2</b>	Q. BECAUSE YOU HAVE TO HAVE ALL OF THE ELEMENTS TO INFRINGE; RIGHT?	11:24AM <b>2</b>	<ul><li>A. THAT IS CORRECT.</li><li>Q. OKAY. NOW AND THIS IS THIS IS EXTERNAL, RIGHT,</li></ul>
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	Case5:08-cv-00882-PSG Docume	nt671-3	Filed10/31/13 Page4 of 7
11:25AM <b>1</b>	Q THIS IS NOT USED TO GENERATE THE CLOCK SIGNAL OVER HERE	11:28AM <b>1</b>	A. BECAUSE
11:25AM <b>2</b>	(INDICATING); RIGHT?	11:28AM <b>2</b>	Q. BUT THAT'S WHAT YOU SAID, SIR; RIGHT?
11:25AM <b>3</b>	A. THAT IS CORRECT.	11:28AM <b>3</b>	A. IT'S A COMMON SENSE.
11:25AM <b>4</b>	Q. THAT'S YOUR OPINION?	11:28AM <b>4</b>	Q. NO, NO. I DIDN'T
11:25AM <b>5</b>	A. IT IS NOT USED TO GENERATE.	11:28AM <b>5</b>	A. THIS IS EQUAL TO THAT, SO YOU CAN DERIVE THAT RELATIONSHIP
11:25AM <b>6</b>	Q. RIGHT. TO?	11:28AM <b>6</b>	AND IT'S A TEXTBOOK.
11:26AM <b>7</b>	A. TO GENERATE. IT IS USED TO BE A REFERENCE. IT IS USED TO	11:28AM <b>7</b>	Q. WELL, DOCTOR, I PROMISE YOU, WE WILL GET TO THE FORMULA.
11:26AM <b>8</b>	ADJUST, BUT IT IS NOT USED TO GENERATE.	11:28AM <b>8</b>	A. OKAY.
11:26AM <b>9</b>	Q. WE'LL GET THERE, DOCTOR. TRUST ME. BUT I JUST WANT TO	11:28AM <b>9</b>	Q. BUT I WANT TO JUST ASK SOME SIMPLE QUESTIONS SO WE'RE
11:26AM 10	MAKE SURE WE KNOW WHERE THE DISPUTE IS. OKAY?	11:28AM 10	ROLLING ON THE SAME PAGE.
11:26AM 11	SO YOUR POINT IS IT'S THE RING OSCILLATOR OR OSCILLATOR	11:28AM 11	A. ALL RIGHT.
11:26AM 12	ALONE THAT GENERATES THIS CLOCK SIGNAL; CORRECT?	11:28AM 12	Q. YOU CALLED THIS RELATIONSHIP BETWEEN THE EXTERNAL
11:26AM 12		11:28AM 12	
11:26AM 13	7.0 7.0 7.11.12 52.11.01.01.11.12 7.12.12 7.11.000.11.	11:28AM 13	REFERENCE AND THIS CLOCK SIGNAL (INDICATING), YOU REFERRED TO
11:26AM 14		11:28AM 14	IT AS THE SECRET FORMULA; RIGHT? YES?
	PAGE.	11:28AM 15	A. I USED THE TERM BECAUSE IT IS IN EVERY TEXTBOOK, SO I WAS
11:26AM 16	A. YES.		SURPRISED IT'S SECRET.
11:26AM 17	OKAY, GOOD. NOW, YOU'LL AT LEAST AGREE WITH ME, DOCTOR,	11:29AM 17	Q. RIGHT. BUT THE FORMULA FOR THE RELATIONSHIP BETWEEN THIS
11:26AM 18	THAT THIS EXTERNAL REFERENCE RIGHT HERE IS AN ESSENTIAL PART OF	11:29AM 18	EXTERNAL CRYSTAL, EXTERNAL REFERENCE AND THE CLOCK SIGNALS IS
11:26AM 19	THE, OF ALL THE PLL'S IN THE HTC PHONES (INDICATING); RIGHT?	11:29AM 19	IN EVERY TEXTBOOK? THAT'S YOUR POINT; RIGHT?
(11:26AM) <b>20</b>	A. I AGREE WITH YOU THAT IF WE ARE TALKING ABOUT PLL, PLL	11:29AM <b>20</b>	A. AND EVERY TEXTBOOK ON PLL WILL TELL YOU THAT THIS, YOU
(11:26AM) <b>21</b>	NEEDS TO HAVE A REFERENCE. SO IT IS LIKE IF WE ARE IF I	11:29AM 21	KNOW, IS RELATED TO THAT ONE AND IT'S RELATED BY WHATEVER
11:26AM <b>22</b>	AM TEACHING PLL, OKAY, I'LL HAVE TO INCLUDE THE REFERENCE.	11:29AM <b>22</b>	DIVIDE FACTOR IT IS, AND IF YOU PUT A DIVIDE FACTOR OVER THERE,
(11:26AM) <b>23</b>	RIGHT. SO YOUR POINT IS YOU CAN'T HAVE A YOU CAN'T	11:29AM <b>23</b>	YOU KNOW, ET CETERA, WHICH MEANS WHAT MR. HAROUN WAS TRYING TO
11:27AM <b>24</b>	HAVE A PLL WITHOUT A CRYSTAL?	11:29AM <b>24</b>	DIVIDE HERE
(11:27AM) <b>25</b>	A. WITHOUT A REFERENCE, YES, CORRECT.	11:29AM <b>25</b>	Q. RIGHT.
	UNITED STATES COURT REPORTERS		UNITED STATES COURT REPORTERS
	738		740
11:27AM 1	738  OKAY. AND TYPICALLY THE REFERENCE IS A CRYSTAL; CORRECT?	11:29AM <b>1</b>	740  A NOT VERY SUCCESSFULLY.
11:27AM		11:29AM <b>1</b> 11:29AM <b>2</b>	
	OKAY. AND TYPICALLY THE REFERENCE IS A CRYSTAL; CORRECT?		A NOT VERY SUCCESSFULLY.
11:27AM 2	Q. OKAY. AND TYPICALLY THE REFERENCE IS A CRYSTAL; CORRECT?  A. YES, LET'S SAY A CRYSTAL.	11:29AM <b>2</b>	A NOT VERY SUCCESSFULLY.  Q. IF WE CAN TAKE DOWN AND YOU DISAGREED WITH DR. HAROUN;
11:27AM <b>2</b> 11:27AM <b>3</b>	<ul> <li>Q. OKAY. AND TYPICALLY THE REFERENCE IS A CRYSTAL; CORRECT?</li> <li>A. YES, LET'S SAY A CRYSTAL.</li> <li>Q. A STABLE, EXTERNAL REFERENCE; CORRECT?</li> </ul>	11:29AM <b>2</b> 11:29AM <b>3</b>	A NOT VERY SUCCESSFULLY.  Q. IF WE CAN TAKE DOWN AND YOU DISAGREED WITH DR. HAROUN;  CORRECT?
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11:30AM <b>1</b>	OH, CAN WE GO DARK ON THE OUTSIDE, PLEASE? OKAY, GREAT.	11:33AM <b>1</b>	Q. AND IT STATES THAT "THE PLL OUTPUT FREQUENCY IS GIVEN
11:30AM <b>2</b>	IT'S QUALCOMM CONFIDENTIAL AND PROPRIETARY INFORMATION;	11:33AM <b>2</b>	BY" AND THE PLL OUTPUT CLOCK IS WHAT WE JUST SAW IN FIGURE
11:30AM <b>3</b>	CORRECT?	11:33AM <b>3</b>	2; RIGHT?
11:30AM <b>4</b>	A. THAT IS CORRECT.	11:33AM <b>4</b>	A. YES.
11:31AM <b>5</b>	Q. AND THEY SHARE IT WITH THEIR CUSTOMERS SUCH AS HTC;	11:33AM <b>5</b>	Q. OKAY. AND NOW AND HERE'S THE SECRET FORMULA, F CLOCK
11:31AM <b>6</b>	CORRECT?	11:33AM <b>6</b>	EQUALS FTCXO, AND THIS IS TIMES L TIMES 2; RIGHT? DID I READ
11:31AM <b>7</b>	A. THEY SHARE IT WITH HTC.	11:33AM <b>7</b>	THAT RIGHT?
11:31AM <b>8</b>	Q. AND THIS TYPE OF DATA SHEET IS SHARED WITH, TYPICALLY, HTC	11:33AM <b>8</b>	A. YES.
11:31AM <b>9</b>	ENGINEERS; RIGHT?	11:33AM <b>9</b>	Q. THOSE LITTLE ASTERISKS, THEY'RE THE MULTIPLICATIONS
11:31AM 10	A. THAT IS CORRECT.	11:33AM 10	A. YES.
11:31AM <b>11</b>	Q. OKAY. THIS IS NOT FOR MASS PUBLICATION?	11:33AM <b>11</b>	Q IN THIS FORMULA?
11:31AM <b>12</b>	A. THAT IS CORRECT.	11:33AM <b>12</b>	A. YES, BECAUSE YOU HAVE BECAUSE YOU HAVE DIVIDED THE
11:31AM 13	Q. YOU HAVE TO HAVE A YOU'VE GOT TO BE PRETTY TECHNICAL TO	11:33AM 13	CLOCK BY L AND YOU DIVIDED IT AGAIN BY 2, SO YOU HAVE TO
11:31AM 14	READ THESE, DOCTOR; RIGHT?	11:34AM 14	MULTIPLY TO GET THAT.
11:31AM 15	A. THAT IS CORRECT.	11:34AM 15	Q. AND THAT TCXO WE SAW WAS FROM FIGURE 2; RIGHT?
11:31AM 15	Q. OKAY. AND LET'S TAKE A LOOK AT FIGURE 2.1, IF WE COULD,	11:34AM 16	A. YES.
11:31AM 10	JIM, WHICH IS ON PAGE 9.	11:34AM 17	Q. AND THAT'S THE EXTERNAL REFERENCE?
11:31AM 17	DOCTOR, THAT SHOULD BE RIGHT IN FRONT OF YOU.	11:34AM 17 11:34AM 18	A. THAT'S THE EXTERNAL REFERENCE.
11:31AM 10	A. YES.	11:34AM 10	Q. AND THAT'S FIXED, OR A STABLE REFERENCE?
11:31AM 19	Q. AND IF WE COULD BLOW UP THIS PLL CORE (INDICATING).	11:34AM 19	A. THAT IS A STABLE REFERENCE.
11:31AM <b>20</b>	NOW, THIS IS A BLOCK DIAGRAM OF A PLL (INDICATING);	11:34AM <b>20</b>	Q. OKAY. AND NOW IF WE GO DOWN TO THE TEXT, IT STATES, THE
11:31AM <b>21</b>	CORRECT?	11:34AM <b>21</b>	
11:31AM <b>22</b>	A. YES. AND I THINK I SHOWED THE VERY SAME ONE HERE.	11:34AM <b>22</b>	VALID OUTPUT FREQUENCIES, RIGHT HERE (INDICATING), WITH A 19.2
11:31AM <b>23</b>	Q. OR VERY SIMILAR; RIGHT?	11:34AM <b>24</b>	MEGAHERTZ REFERENCE ARE LISTED IN TABLE 5.1. CORRECT? THAT'S  WHAT IT SAYS?
11:32AW <b>24</b>	·	11:34AM <b>25</b>	A. YES.
11:32AM <b>ZJ</b>	A. NO. THE SAME ONE WAS IN MY PRESENTATION.  UNITED STATES COURT REPORTERS	(11:34AM) <b>ZJ</b>	UNITED STATES COURT REPORTERS
1	742	4	744
11:32AM <b>1</b>	Q. OKAY. NOW, THIS TCXO, DOCTOR, DO YOU SEE THAT?	(11:34AM) 1	Q. AND TABLE 5.1 IS NOT HERE, AND WE'LL GET TO THAT IN A
11:32AM <b>2</b>	<ul><li>Q. OKAY. NOW, THIS TCXO, DOCTOR, DO YOU SEE THAT?</li><li>A. YES.</li></ul>	11:34AM <b>2</b>	Q. AND TABLE 5.1 IS NOT HERE, AND WE'LL GET TO THAT IN A MOMENT, BUT THIS 19.2 MEGAHERTZ IS REFERRING TO THE TCXO;
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	Case5:08-cv-00882-PSG Docume	nt671-3	Filed10/31/13 Page6 of 7
11:35AM	A. IT IS A REFERENCE, REFERENCE INPUT.	11:37AM <b>1</b>	A. OKAY. LET ME JUST EXPLAIN.
11:35AM <b>2</b>	Q. (FROM OFF CHIP?)	11:37AM <b>2</b>	Q. NO, NO. CAN YOU JUST ANSWER MY QUESTION, DOCTOR? DID I
11:35AM <b>3</b>	A. (FROM OFF CHIP.)	11:37AM <b>3</b>	DO THE MATH RIGHT?
11:35AM <b>4</b>	Q. OKAY. AND THEN THE WAY THIS WORKS IS L IS REFERRED TO IN	11:37AM <b>4</b>	A. YOU HAVE BECAUSE YOU DIVIDED. YOU DIVIDED IT BY 2.
11:35AM <b>5</b>	THE FORMULA UP HERE (INDICATING); CORRECT?	11:37AM <b>5</b>	YOU DIVIDED YOU DIVIDED THE 384 BY 10, YOU GET 38, YOU
11:35AM <b>6</b>	A. YEAH, THAT'S A DIVIDE FACTOR. THIS IS HOW MUCH THEY	11:37AM <b>6</b>	DIVIDE IT BY 2, YOU GET 19.2 SO YOU CAN COMPARE THOSE TWO
11:35AM <b>7</b>	DIVIDE THE VCO FREQUENCY.	11:37AM <b>7</b>	REFERENCES.
11:35AM <b>8</b>	Q. OKAY. AND THEN THE WAY YOU SET L IS THROUGH THESE BINARY	11:37AM <b>8</b>	THE PLL DOESN'T MULTIPLY. IT DIVIDES.
11:35AM <b>9</b>	VALUES; CORRECT?	11:37AM <b>9</b>	Q. SO, DOCTOR, YOU'RE DISAGREEING WITH THIS QUALCOMM
11:35AM 10	A. THAT IS THE BINARY 10.	11:38AM 10	DOCUMENT; CORRECT?
11:35AM <b>11</b>	Q. THAT'S 10, RIGHT THERE (INDICATING).	11:38AM <b>11</b>	A. WHAT THEY HAVE PRESENTED
11:35AM <b>12</b>	AND THIS IS A BINARY NUMBER 11 AND SO FORTH (INDICATING);	11:38AM <b>12</b>	Q. NO. DOCTOR, CAN YOU JUST ANSWER MY QUESTION?
11:36AM 13	CORRECT?	11:38AM 13	A. THERE IS A RELATIONSHIP BETWEEN
11:36AM <b>14</b>	A. THAT IS CORRECT.	11:38AM 14	MR. SMITH: YOUR HONOR
11:36AM <b>15</b>	Q. OKAY. AND THEN WHEN WE SEE THE OUTPUT FREQUENCY, THIS IS	11:38AM 15	THE WITNESS: BETWEEN THE CLOCK AND THE REFERENCE,
11:36AM <b>16</b>	WHAT COMES OUT OF THE PLL (INDICATING); CORRECT?	11:38AM <b>16</b>	BUT THAT DOES NOT DESCRIBE HOW PLL WORKS. IT JUST TELLS YOU,
11:36AM <b>17</b>	A. THAT IS YES, THAT IS THE FREQUENCY OF THE RING	11:38AM <b>17</b>	IF YOU SET THAT ON 10, THIS IS WHAT YOU'RE GOING TO GET OUT.
11:36AM 18	OSCILLATOR.	11:38AM <b>18</b>	THE COURT: MR. SMITH, DO YOU WISH TO RAISE AN
11:36AM <b>19</b>	Q. OKAY. THIS THIS FREQUENCY IS OUTPUTTED FROM THE PLL;	11:38AM <b>19</b>	OBJECTION OR MAKE A REQUEST?
11:36AM <b>20</b>	CORRECT?	11:38AM <b>20</b>	MR. SMITH: I DON'T WANT TO BE ARGUMENTATIVE, YOUR
11:36AM <b>21</b>	A. FROM THE YES, FROM THE RING OSCILLATOR.	11:38AM <b>21</b>	HONOR. I JUST ASKED A VERY SIMPLE QUESTION AND I WOULD
11:36AM <b>22</b>	Q. WELL, COMING OUT OF THE PLL IS THIS FREQUENCY	11:38AM <b>22</b>	INSTRUCT THE WITNESS NOT TO
11:36AM <b>23</b>	(INDICATING); RIGHT?	11:38AM <b>23</b>	THE COURT: YOU'RE ASKING ME TO GIVE THE WITNESS AN
11:36AM <b>24</b>	A. BECAUSE PLL IS SURROUNDING RING OSCILLATOR.	11:38AM <b>24</b>	INSTRUCTION TO THE WITNESS?
11:36AM <b>25</b>	Q. NO, I UNDERSTAND. I'M JUST ASKING YOU, IT COMES OUT OF	11:38AM <b>25</b>	MR. SMITH: YES.
	UNITED STATES COURT REPORTERS		UNITED STATES COURT REPORTERS
	746		748
11:36AM <b>1</b>	746 THE PLL, THOUGH; RIGHT?	11:38AM <b>1</b>	748 THE COURT: MR. MARSH?
11:36AM <b>1</b>		11:38AM <b>1</b>	
	THE PLL, THOUGH; RIGHT?	•	THE COURT: MR. MARSH?
11:36AM <b>2</b>	THE PLL, THOUGH; RIGHT?  A. IT COMES OUT OF IT CORRECTLY COMES OUT OF THE RING	11:38AM <b>2</b>	THE COURT: MR. MARSH?  MR. MARSH: YOUR HONOR, WE WOULD JUST ASK THAT THE
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	Cases:08-cv-00882-PSG Docume	11671-3	Filed10/31/13 Page 7 of 7
(11:39AM) <b>1</b>	A. THAT THEY PUT IN A DOCUMENT TO, TO TELL PEOPLE HOW CAN	11:42AM <b>1</b>	A. YOU CAN SET IT LOWER, YES.
11:39AM <b>2</b>	THEY GET THE REFERENCE FREQUENCY OR HOW CAN THEY HAVE THE	11:42AM <b>2</b>	Q. THIS IS THE MAXIMUM SPEED; CORRECT?
11:39AM <b>3</b>	OUTPUT FREQUENCY WITH RESPECT TO THE REFERENCE, WHICH IS 19.2.	11:42AM <b>3</b>	A. MAXIMUM SAFE SPEED.
11:39AM 4	Q. OKAY, AND IT'S ALL BASED UPON THIS FORMULA (INDICATING);	11:42AM <b>4</b>	Q. MAXIMUM SAFE SPEED, OKAY.
11:39AM <b>5</b>	CORRECT?	11:42AM <b>5</b>	SO THESE CHIPS ARE ALL SORTED INTO DIFFERENT BINS BASED
		•	
7	A. THIS FORMULA SHOWS THE RELATIONSHIP TO IT.		UPON WHAT YOU CALL MAXIMUM SAFE SPEED; CORRECT?
	Q. OKAY. WE CAN TAKE THAT ONE DOWN. THANK YOU, DOCTOR.	11:42AM 7	A. BASED ON THEIR CAPABILITIES.
11:39AM <b>8</b>	NOW, DR. OKLOBDZIJA, ONE OF THE LET'S SWITCH GEARS.	11:42AM 8	Q. RIGHT. AND THE WAY YOU DETERMINE WHERE THE CHIP WOULD GO
11:39AM 9	LET ME TELL YOU WE'RE GOING TO SWITCH GEARS. WE'RE OFF THE	11:42AM 9	INTO WHAT BIN IS YOU HAVE TO TEST THESE; RIGHT?
11:39AM 10	SECRET FORMULA. LET'S TALK ABOUT BINNING.	11:42AM 10	A. THAT IS CORRECT.
11:40AM 11	A. ALL RIGHT.	11:42AM 11	Q. AND I THINK YOU SHOWED US SOME VIDEO OR SOME OR SLIDES
11:40AM <b>12</b>	Q. ALL RIGHT. NOW, BINNING HAS BEEN AROUND FOR A LONG TIME;	11:42AM <b>12</b>	THAT THERE WERE SEVERAL TESTING STEPS YOU HAVE TO GO THROUGH.
11:40AM 13	RIGHT?	11:42AM 13	A. THAT IS CORRECT.
11:40AM <b>14</b>	A. NOT FOR SUCH A LONG TIME. I BELIEVE THAT, YOU KNOW, THE	11:42AM <b>14</b>	Q. AND YOU HAVE TO HOOK THE CHIPS UP AND SEE HOW FAST THEY
11:40AM 15	FIRST HALF OF THE TECHNOLOGY LIFE THERE WAS NO BINNING. IT	11:42AM <b>15</b>	RUN?
11:40AM <b>16</b>	CAME LATER WHEN VARIATIONS INCREASED.	11:42AM <b>16</b>	A. THAT IS CORRECT.
11:40AM <b>17</b>	Q. IT WAS THERE BY THE EARLY '80S; RIGHT?	11:42AM <b>17</b>	Q. AND IT'S PRETTY SOPHISTICATED EQUIPMENT; RIGHT?
11:40AM 18	A. FOR SOME HIGH SPECIALTY PARTS.	11:42AM <b>18</b>	A. THAT IS CORRECT.
11:40AM <b>19</b>	$\mathbf{Q.}$ Okay. And if we can go back to the elmo, and just so we	11:42AM 19	Q. OKAY. AND ONCE YOU DETERMINE HOW FAST THESE THINGS ARE,
11:40AM <b>20</b>	CAN ORIENT OURSELVES, WHEN YOU PUT UP I PUT UP CLAIM 16, OR	11:42AM <b>20</b>	THE MAXIMUM SAFE SPEED, YOU PUT THEM IN DIFFERENT BINS,
11:40AM <b>21</b>	13, I BELIEVE, AND WE HAD THE PINK OR PURPLE VARYING TOGETHER,	11:43AM <b>21</b>	LITERALLY PUT THEM IN SEPARATE FILES (INDICATING); CORRECT?
11:40AM <b>22</b>	THAT'S THE SECOND ELEMENT, RIGHT?	11:43AM <b>22</b>	A. YES, THAT'S CORRECT.
11:40AM <b>23</b>	A. ELEMENT B.	11:43AM <b>23</b>	Q. AND THEN THE MANUFACTURER, LIKE QUALCOMM, FOR EXAMPLE,
11:40AM <b>24</b>	Q. ELEMENT B. SO WE'VE MOVED ON FROM ELEMENT A. NOW WE'RE	11:43AM <b>24</b>	WOULD SELL THESE CHIPS FOR DIFFERENT PRICES; CORRECT?
11:40AM <b>25</b>	ON ELEMENT B; RIGHT?	11:43AM <b>25</b>	A. YES, THAT'S CORRECT.
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11:40AM <b>1</b>	A. THAT'S CORRECT.	11:43AM <b>1</b>	
	A. THAT'S CORRECT.		Q. AND THE SLOW ONES WOULD GO INTO A PHONE, A FLIP TOP PHONE,
11:40AM <b>2</b>	A. THAT'S CORRECT.  Q. NOW, BINNING, YOU SAID BINNING IS ONE OF THE REASONS WHY	11:43AM <b>2</b>	Q. AND THE SLOW ONES WOULD GO INTO A PHONE, A FLIP TOP PHONE, FOR EXAMPLE; AND THEN THE MEDIUM WOULD GO IN A DIFFERENT PHONE;
11:40AM <b>2</b> 11:41AM <b>3</b>	A. THAT'S CORRECT.  Q. NOW, BINNING, YOU SAID BINNING IS ONE OF THE REASONS WHY YOU BELIEVE THAT THE VARYING TOGETHER ELEMENT WAS INFRINGED;	11:43AM <b>2</b> 11:43AM <b>3</b>	Q. AND THE SLOW ONES WOULD GO INTO A PHONE, A FLIP TOP PHONE, FOR EXAMPLE; AND THEN THE MEDIUM WOULD GO IN A DIFFERENT PHONE; AND SO FORTH AND SO ON; RIGHT?
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11:40AM 2 11:41AM 3 11:41AM 4 11:41AM 5 11:41AM 6	A. THAT'S CORRECT.  Q. NOW, BINNING, YOU SAID BINNING IS ONE OF THE REASONS WHY YOU BELIEVE THAT THE VARYING TOGETHER ELEMENT WAS INFRINGED; CORRECT?  A. WELL, BECAUSE THEY VARY TOGETHER WHEN YOU PUT THEM IN THE FAST BIN, THEY'RE FAST TOGETHER. WHEN YOU PUT THEM IN THE SLOW	11:43AM 2 11:43AM 3 11:43AM 4 11:43AM 5 11:43AM 6	<ul> <li>Q. AND THE SLOW ONES WOULD GO INTO A PHONE, A FLIP TOP PHONE, FOR EXAMPLE; AND THEN THE MEDIUM WOULD GO IN A DIFFERENT PHONE; AND SO FORTH AND SO ON; RIGHT?</li> <li>A. RIGHT.</li> <li>Q. BUT YOU WOULD AGREE WITH ME, DOCTOR, THESE CHIPS THAT ARE IN ONE BIN FROM THE OTHER ARE DIFFERENT; CORRECT? THEY'RE</li> </ul>
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## **EXHIBIT 3**

	Case5:08-cv-		nt671	<u>-4</u>	Filed10/31/13 Page2 of 4 412
		410		2	
1 2	UNITED STATES DIST  NORTHERN DISTRICT OF			3	INDEX OF WITNESSES
3	NORTHERN DISTRICT OF			4	<u>DEFENDANTS'</u>
4	DAY GOOD DIV.	IOION		5	DANIEL LECKRONE DIRECT EXAM BY MR. OTTESON (RES.) P. 424
5					CROSS-EXAM BY MR. LEMIEUX P. 445
6	HTC CORPORATION AND HTC  AMERICA, INC.,	C-08-00882 PSG		6	REDIRECT EXAM BY MR. OTTESON P. 473
7	PLAINTIFF, )	SAN JOSE, CALIFORNIA		7	
8	VS. )	SEPTEMBER 25, 2013		8	VOJIN OKLOBDZIJA DIRECT EXAM BY MR. MARSH P. 487
9	TECHNOLOGY PROPERTIES LIMITED,	VOLUME 3		9	
10	PATRIOT SCIENTIFIC CORPORATION ) AND ALLIACENSE LIMITED,	PAGES 410-640		10	
11	DEFENDANT.			11	
12	TRANSCRIPT OF PRO	CEEDINGS		12	INDEX OF EXHIBITS
13	BEFORE THE HONORABLE F UNITED STATES MAGIS	PAUL S. GREWAL		13	MARKED ADMITTED
14				14	DEFENDANTS'
15	APPEARANCES:			15	245 519
16 17	FOR THE PLAINTIFF: COOLEY LLP BY: HEIDI K RON LEM			16	1618 519 1619 519
18	3175 HANOVER			17	594 519 1567 519
19	TADO ADIO, C			18	
20	APPEARANCES CONTINUED	ON NEXT PAGE		19	PLAINTIFF'S
21				20	3319 520
22				21	3446 520 3321 521
23		NE SHORTRIDGE, CSR, CRR ICATE NUMBER 9595		22	621
24	CERTIF	ICAIE NUMBER 9393		23	
25	PROCEEDINGS RECORDED BY MECI TRANSCRIPT PRODUCED V			24	
				25	
	UNITED STATES COURT	REPORTERS		23	UNITED STATES COURT REPORTERS
1		411			413
2	APPEARANCES (CONTINUED)			1	SAN JOSE, CALIFORNIA SEPTEMBER 25, 2013
3	FOR THE PLAINTIFF: COOLEY LLP			2	PROCEEDINGS
4	BY: STEPHEN R. SMIT 1299 PENNSYLVANIA A			3	(JURY OUT AT 9:04 A.M.)
5	SUITE 700 WASHINGTON, D.C. 2		09:04AM	4	THE COURT: MR. RIVERA, WOULD YOU CALL THE MATTER
6	BY: MATTHEW J. LEAR		09:04AM	5	THAT'S BEEN SET FOR TRIAL?
7	380 INTERLOCKEN CRI	ESCENT, SUITE 900	09:04AM	6	THE CLERK: YES, YOUR HONOR. CALLING HTC
	BROOMFIELD, COLORA	ADO 80021	09:04AM	7	CORPORATION, ET AL VERSUS TECHNOLOGY PROPERTIES LIMITED, ET AL
8	ALSO PRESENT: VINCENT LAM		09:04AM	8	CASE NUMBER CV-08-882 PSG. MATTER ON FOR TRIAL.
9			09:04AM	9	COUNSEL, PLEASE STATE YOUR APPEARANCES.
10	FOR DEFENDANTS AGILITY IP LA TPL AND BY: JAMES C. OTT	ESON	09:05AM	10	MR. OTTESON: GOOD MORNING, YOUR HONOR. JIM OTTESON
11	ALLIACENSE: IRVIN E. TYAI THOMAS T. CARMA		09:05AM	11	FOR THE DEFENDANTS.
12	VINCENT K. YEE		09:05AM	12	MR. HOGE: GOOD MORNING, YOUR HONOR. CHARLIE HOGE
	DAVID LANSKY		09:05AW	12	imit field: edgb inettime, fedt fieldet. etwitter field
13	DAVID LANSKY 149 COMMONWEALTH MENLO PARK, CALIFOR		09:05AM		FOR PATRIOT SCIENTIFIC CORPORATION.
14	149 COMMONWEALTH MENLO PARK, CALIFOR	RNIA 94025		13	
	149 COMMONWEALTH MENLO PARK, CALIFOR	RNIA 94025 NN, LANCE & HOGE	09:05AM	13 14	FOR PATRIOT SCIENTIFIC CORPORATION.
14	149 COMMONWEALTH MENLO PARK, CALIFOR  FOR DEFENDANT KIRBY, NOONA	RNIA 94025 NN, LANCE & HOGE	09:05AM 09:05AM	13 14 15	FOR PATRIOT SCIENTIFIC CORPORATION.  MS. KEEFE: GOOD MORNING, YOUR HONOR. HEIDI KEEFE
14 15	149 COMMONWEALTH MENLO PARK, CALIFOR  FOR DEFENDANT PATRIOT: CHARLES T. HOGE 35 TENTH AVENUE	RNIA 94025 NN, LANCE & HOGE	09:05AM 09:05AM 09:05AM	13 14 15 16	FOR PATRIOT SCIENTIFIC CORPORATION.  MS. KEEFE: GOOD MORNING, YOUR HONOR. HEIDI KEEFE  AND MY FRIENDS FOR HTC.
14 15 16	149 COMMONWEALTH MENLO PARK, CALIFOR  FOR DEFENDANT PATRIOT: CHARLES T. HOGE 35 TENTH AVENUE SAN DIEGO, CALIFORN  ALSO PRESENT: CHARLES MOOF	RNIA 94025 NN, LANCE & HOGE NIA 92101	09:05AM 09:05AM 09:05AM 09:05AM	13 14 15 16 17	FOR PATRIOT SCIENTIFIC CORPORATION.  MS. KEEFE: GOOD MORNING, YOUR HONOR. HEIDI KEEFE  AND MY FRIENDS FOR HTC.  THE COURT: ALL RIGHT. GOOD MORNING TO EACH OF YOU.
14 15 16 17	FOR DEFENDANT KIRBY, NOONA PATRIOT: CHARLES T. HOGE SAN DIEGO, CALIFORN  ALSO PRESENT: CHARLES MOOF CLIFFORD FLOWERS DAN LECKRONE	RNIA 94025 NN, LANCE & HOGE NIA 92101	09:05AM 09:05AM 09:05AM 09:05AM	13 14 15 16 17 18	FOR PATRIOT SCIENTIFIC CORPORATION.  MS. KEEFE: GOOD MORNING, YOUR HONOR. HEIDI KEEFE  AND MY FRIENDS FOR HTC.  THE COURT: ALL RIGHT. GOOD MORNING TO EACH OF YOU.  I UNDERSTAND THAT WE HAVE AT LEAST A COUPLE OF ISSUES TO
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	Case5:08-cv-00882-PSG pocume	nt671-4	Filed10/31/13 Page3 of 4 552
01:57PM <b>1</b>	CONNECTED HERE KEEPS 1 (INDICATING). AND IT'LL KEEP THAT 1	02:00PM <b>1</b>	Q. AND IS THAT THE CLOCK SIGNAL THAT IT USES TO THEN DECIDE
01:57PM <b>2</b>	ALWAYS.	02:00PM <b>2</b>	WHEN TO START AND STOP TO DO ITS OPERATIONS?
01:57PM <b>3</b>	SO THAT IS HOW THOSE REGISTERS ARE BUILT THAT HOLD THE	02:00PM <b>3</b>	A. EXACTLY, THAT'S THE START AND STOP OF ALL THE OPERATIONS
01:57PM <b>4</b>	VALUE.	02:00PM <b>4</b>	THAT THE CPU PERFORMS AS WE ILLUSTRATED BEFORE.
01:57PM <b>5</b>	NOW, WE HAVE A CLOCK IN ADDITION TO ALLOW IT FOR A	02:00PM <b>5</b>	Q. AND WHAT'S THIS BIG BLACK PORTION OF THE RECTANGLE THAT WE
01:57PM <b>6</b>	SIGNAL TO BE LATCHED.	02:00PM <b>6</b>	SEE ON THIS SLIDE?
01:57PM <b>7</b>	BUT IF I HAVE ODD NUMBER, LET'S SAY 3, THEY'RE ALWAYS	02:00PM <b>7</b>	A. THAT IS LET'S SAY ILLUSTRATING THE PACKAGE, OKAY? THIS IS
01:57PM <b>8</b>	CHASING EACH OTHER AS YOU SEE AND THAT PROVIDES AN OSCILLATION.	02:00PM <b>8</b>	THE PACKAGE AND THE CHIP IS, IS ENCAPSULATED INTO THIS PACKAGE.
01:57PM <b>9</b>	THAT'S AN OSCILLATOR.	02:00PM <b>9</b>	Q. SO THAT WHERE THE WHERE ARE THE RING OSCILLATOR AND THE
01:57PM <b>10</b>	Q. AND IN THE CONTEXT OF THE INVENTION OF THE '336 PATENT,	02:00PM <b>10</b>	CPU LOCATED EXACTLY WITH RESPECT TO THE PROCESSOR?
01:57PM <b>11</b>	WHERE IS THE RING OSCILLATOR LOCATED?	02:00PM <b>11</b>	A. ON THE SAME CHIP.
01:57PM <b>12</b>	A. ON THE SAME CHIP AS THE CPU.	02:00PM <b>12</b>	Q. NOW, I THINK ONE OF OUR JURORS ASKED A QUESTION ABOUT
01:58PM <b>13</b>	Q. OKAY. SO LET'S TURN TO THE NEXT SLIDE, DDX-19. AND THIS	02:00PM <b>13</b>	CLOCKING THE RING OSCILLATOR, OR THE SPEED OF THE RING
01:58PM <b>14</b>	IS THAT SAME FIGURE?	02:00PM <b>14</b>	OSCILLATOR IN THE CPU, SO I WANT TO JUST MAKE SURE THAT WE'VE
01:58PM <b>15</b>	A. OKAY. LET ME LET ME GO BACK ONE, ONE LET ME GO BACK	02:00PM <b>15</b>	GOT THIS PERFECTLY CLEAR.
01:58PM <b>16</b>	TO THE SAME SLIDE.	02:00PM <b>16</b>	IF THE RING OSCILLATOR HAS A SPEED OF 80 MEGAHERTZ, IF
01:58PM <b>17</b>	Q. OKAY.	02:00PM <b>17</b>	THAT'S ITS CLOCK RATE, WHAT WOULD BE THE PROCESSING FREQUENCY
01:58PM <b>18</b>	A. YEAH, I JUST WANT TO SAY SOMETHING.	02:01PM <b>18</b>	OF THE CPU?
01:58PM <b>19</b>	SO AS YOU HAVE SEEN, THIS IS THE PHYSICAL MECHANISM, OR	02:01PM <b>19</b>	A. IT WOULD BE AS YOU SEE, THEY ARE CONNECTED. IF YOU
01:58PM <b>20</b>	PHYSICAL PHENOMENA THAT GENERATES THAT CLOCK SIGNAL	02:01PM <b>20</b>	HAVE 80 MEGAHERTZ HERE, LIKE THAT GOES HERE AND YOU HAVE 80
01:58PM <b>21</b>	(INDICATING). THIS CLOCK SIGNAL IS GENERATED BY THE RING	02:01PM <b>21</b>	MEGAHERTZ IN THE CPU, SO CPU IS OPERATING AT 80 MEGAHERTZ
01:58PM <b>22</b>	OSCILLATOR CHASING ITSELF (INDICATING). THAT PRODUCES THIS	02:01PM <b>22</b>	(INDICATING).
01:58PM <b>23</b>	SIGNAL (INDICATING). THERE'S NOTHING ELSE THAT YOU SEE ON THAT	02:01PM <b>23</b>	SO IT'S EXACTLY THE SAME.
01:58PM <b>24</b>	SLIDE. THERE'S NOTHING EXTERNAL. YOU DON'T SEE A CRYSTAL	02:01PM <b>24</b>	Q. AND WHAT WOULD HAPPEN IF YOU CHANGED THE CLOCK RATE OF THE
01:58PM <b>25</b>	HERE. YOU DON'T SEE ANOTHER CLOCK HERE.	02:01PM <b>25</b>	RING OSCILLATOR TO 100 MEGAHERTZ?
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	UNITED STATES COURT REPORTERS 551		UNITED STATES COURT REPORTERS 553
01:58PM <b>1</b>		02:01PM <b>1</b>	
01:58PM <b>2</b>	Q. IS THE  A. YOU SEE THAT RING OSCILLATOR BY ITSELF GENERATING THE	02:01PM <b>2</b>	553
01:58PM <b>2</b> 01:58PM <b>3</b>	Q. IS THE  A. YOU SEE THAT RING OSCILLATOR BY ITSELF GENERATING THE CLOCK.	02:01PM <b>2</b> 02:01PM <b>3</b>	553  A. THEN THIS IS WIGGLING AT 100 (INDICATING), GOES IN AT 100,
01:58PM <b>2</b> 01:58PM <b>3</b> 01:58PM <b>4</b>	Q. IS THE  A. YOU SEE THAT RING OSCILLATOR BY ITSELF GENERATING THE CLOCK.  Q. THANK YOU. OKAY. SO LET'S LOOK AT THE RING OSCILLATOR ON	02:01PM <b>2</b> 02:01PM <b>3</b> 02:01PM <b>4</b>	553  A. THEN THIS IS WIGGLING AT 100 (INDICATING), GOES IN AT 100, AND THE CPU IS OPERATING AT 100 MEGAHERTZ.
01:58PM 2 01:58PM 3 01:58PM 4 01:58PM 5	Q. IS THE  A. YOU SEE THAT RING OSCILLATOR BY ITSELF GENERATING THE CLOCK.  Q. THANK YOU. OKAY. SO LET'S LOOK AT THE RING OSCILLATOR ON THE CHIP HERE IN DDX-119. WHERE IS THE CHIP OR THE PROCESSOR	02:01PM <b>2</b> 02:01PM <b>3</b> 02:01PM <b>4</b> 02:01PM <b>5</b>	A. THEN THIS IS WIGGLING AT 100 (INDICATING), GOES IN AT 100, AND THE CPU IS OPERATING AT 100 MEGAHERTZ.  Q. SO THAT WOULD BE THE CPU PROCESSING FREQUENCY WOULD BE 100 MEGAHERTZ.  SO THE SAME TRUE AT 2 GIGAHERTZ? IF WE GO REALLY FAST AT
01:58PM 2 01:58PM 3 01:58PM 4 01:58PM 5 01:59PM 6	Q. IS THE  A. YOU SEE THAT RING OSCILLATOR BY ITSELF GENERATING THE CLOCK.  Q. THANK YOU. OKAY. SO LET'S LOOK AT THE RING OSCILLATOR ON THE CHIP HERE IN DDX-119. WHERE IS THE CHIP OR THE PROCESSOR LOCATED HERE?	02:01PM 2 02:01PM 3 02:01PM 4 02:01PM 5 02:01PM 6	A. THEN THIS IS WIGGLING AT 100 (INDICATING), GOES IN AT 100, AND THE CPU IS OPERATING AT 100 MEGAHERTZ.  Q. SO THAT WOULD BE THE CPU PROCESSING FREQUENCY WOULD BE  100 MEGAHERTZ.  SO THE SAME TRUE AT 2 GIGAHERTZ? IF WE GO REALLY FAST AT  2 GIGAHERTZ FROM THE CLOCK OSCILLATOR
01:58PM 2 01:58PM 3 01:58PM 4 01:58PM 5 01:59PM 6 01:59PM 7	Q. IS THE  A. YOU SEE THAT RING OSCILLATOR BY ITSELF GENERATING THE CLOCK.  Q. THANK YOU. OKAY. SO LET'S LOOK AT THE RING OSCILLATOR ON THE CHIP HERE IN DDX-119. WHERE IS THE CHIP OR THE PROCESSOR LOCATED HERE?  A. SO HERE WE HAVE AN EXAMPLE OF THE RING OSCILLATOR SERVING	02:01PM 2 02:01PM 3 02:01PM 4 02:01PM 5 02:01PM 6 02:01PM 7	A. THEN THIS IS WIGGLING AT 100 (INDICATING), GOES IN AT 100, AND THE CPU IS OPERATING AT 100 MEGAHERTZ.  Q. SO THAT WOULD BE THE CPU PROCESSING FREQUENCY WOULD BE  100 MEGAHERTZ.  SO THE SAME TRUE AT 2 GIGAHERTZ? IF WE GO REALLY FAST AT  2 GIGAHERTZ FROM THE CLOCK OSCILLATOR  A. IT IS TRUE AT ANY FREQUENCY. WHY? BECAUSE THEY'RE
01:58PM 2 01:58PM 3 01:58PM 4 01:58PM 5 01:59PM 6 01:59PM 7 01:59PM 8	Q. IS THE  A. YOU SEE THAT RING OSCILLATOR BY ITSELF GENERATING THE CLOCK.  Q. THANK YOU. OKAY. SO LET'S LOOK AT THE RING OSCILLATOR ON THE CHIP HERE IN DDX-119. WHERE IS THE CHIP OR THE PROCESSOR LOCATED HERE?  A. SO HERE WE HAVE AN EXAMPLE OF THE RING OSCILLATOR SERVING AS A CLOCK (INDICATING). IT'S CONNECTED TO THE CPU	02:01PM 2 02:01PM 3 02:01PM 4 02:01PM 5 02:01PM 6 02:01PM 7 02:01PM 8	A. THEN THIS IS WIGGLING AT 100 (INDICATING), GOES IN AT 100, AND THE CPU IS OPERATING AT 100 MEGAHERTZ.  Q. SO THAT WOULD BE THE CPU PROCESSING FREQUENCY WOULD BE 100 MEGAHERTZ.  SO THE SAME TRUE AT 2 GIGAHERTZ? IF WE GO REALLY FAST AT 2 GIGAHERTZ FROM THE CLOCK OSCILLATOR A. IT IS TRUE AT ANY FREQUENCY. WHY? BECAUSE THEY'RE CONNECTED.
01:58PM 2 01:58PM 3 01:58PM 4 01:58PM 5 01:59PM 6 01:59PM 7 01:59PM 8 01:59PM 9	Q. IS THE  A. YOU SEE THAT RING OSCILLATOR BY ITSELF GENERATING THE CLOCK.  Q. THANK YOU. OKAY. SO LET'S LOOK AT THE RING OSCILLATOR ON THE CHIP HERE IN DDX-119. WHERE IS THE CHIP OR THE PROCESSOR LOCATED HERE?  A. SO HERE WE HAVE AN EXAMPLE OF THE RING OSCILLATOR SERVING AS A CLOCK (INDICATING). IT'S CONNECTED TO THE CPU (INDICATING). THE CLOCK SIGNAL IS DISTRIBUTED AROUND THE CPU,	02:01PM 2 02:01PM 3 02:01PM 4 02:01PM 5 02:01PM 6 02:01PM 7 02:01PM 8 02:01PM 9	A. THEN THIS IS WIGGLING AT 100 (INDICATING), GOES IN AT 100, AND THE CPU IS OPERATING AT 100 MEGAHERTZ.  Q. SO THAT WOULD BE THE CPU PROCESSING FREQUENCY WOULD BE 100 MEGAHERTZ.  SO THE SAME TRUE AT 2 GIGAHERTZ? IF WE GO REALLY FAST AT 2 GIGAHERTZ FROM THE CLOCK OSCILLATOR A. IT IS TRUE AT ANY FREQUENCY. WHY? BECAUSE THEY'RE CONNECTED.  THIS IS JUST LIKE IF I GRAB MR. MARSH'S HAND AND I START
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01:58PM 2 01:58PM 3 01:58PM 4 01:58PM 5 01:59PM 6 01:59PM 7 01:59PM 10 01:59PM 11 01:59PM 12 01:59PM 13 01:59PM 15 01:59PM 15 01:59PM 16 01:59PM 16 01:59PM 17 01:59PM 18 01:59PM 20 01:59PM 20 01:59PM 21	Q. IS THE  A. YOU SEE THAT RING OSCILLATOR BY ITSELF GENERATING THE CLOCK.  Q. THANK YOU. OKAY. SO LET'S LOOK AT THE RING OSCILLATOR ON THE CHIP HERE IN DDX-119. WHERE IS THE CHIP OR THE PROCESSOR LOCATED HERE?  A. SO HERE WE HAVE AN EXAMPLE OF THE RING OSCILLATOR SERVING AS A CLOCK (INDICATING). IT'S CONNECTED TO THE CPU (INDICATING). THE CLOCK SIGNAL IS DISTRIBUTED AROUND THE CPU, SO THIS RING OSCILLATOR CLOCKS THE CPU (INDICATING).  AND THE CPU RUNS AT THE SAME FREQUENCY AT WHICH THE RING OSCILLATOR RUNS.  Q. WHAT'S THE BIG GREEN ARROW HERE (INDICATING)?  A. IT'S THE CONNECTION. I MEAN, THIS IS THE CLOCK SIGNAL IF YOU GO ONE SLIDE BACK JUST FOR A SEC.  LET'S SAY I TAKE THIS ONE, THIS IS ONE WE OBSERVED, AND I CONNECT THIS CONNECTION TO THE CPU AND DISTRIBUTE IT ALL OVER AND AROUND THE CPU (INDICATING). I'M CLOCKING THE CPU FROM THIS POINT (INDICATING).  Q. THANK YOU. SO I WANT TO MAKE SURE I UNDERSTAND. SO THE RING OSCILLATOR HAS A CLOCK SIGNAL AND THAT'S THE GREEN ARROW; IS THAT RIGHT?  A. THAT IS THE GREEN ARROW (INDICATING).	02:01PM 2 02:01PM 3 02:01PM 4 02:01PM 5 02:01PM 6 02:01PM 7 02:01PM 8 02:01PM 10 02:02PM 11 02:02PM 12 02:02PM 13 02:02PM 15 02:02PM 16 02:02PM 17 02:02PM 17 02:02PM 18 02:02PM 19 02:02PM 20 02:02PM 21 02:02PM 21	A. THEN THIS IS WIGGLING AT 100 (INDICATING), GOES IN AT 100, AND THE CPU IS OPERATING AT 100 MEGAHERTZ.  Q. SO THAT WOULD BE THE CPU PROCESSING FREQUENCY WOULD BE  100 MEGAHERTZ.  SO THE SAME TRUE AT 2 GIGAHERTZ? IF WE GO REALLY FAST AT  2 GIGAHERTZ FROM THE CLOCK OSCILLATOR  A. IT IS TRUE AT ANY FREQUENCY. WHY? BECAUSE THEY'RE  CONNECTED.  THIS IS JUST LIKE IF I GRAB MR. MARSH'S HAND AND I START  SHAKING IT AT LIKE 2 HERTZ FREQUENCY, HE'S SHAKING AT TWO HERTZ  (INDICATING).  IF I GO AT TEN HERTZ, HE'S SHAKING AT TEN HERTZ  (INDICATING). THOSE TWO ARE CONNECTED.  SO IF THIS ONE IS PRODUCING THE OUTPUT OF THE OSCILLATOR  AT 2 GIGAHERTZ, IT IS DISTRIBUTED AT 2 GIGAHERTZ.  Q. NOW, IF, IN PRACTICE, I WANTED TO CHANGE THE FREQUENCY  THAT THE RING OSCILLATOR IS OPERATING AT, WHAT COULD I DO? HOW  WOULD THAT BE IMPLEMENTED IN A MODERN MICROPROCESSOR?  A. OKAY. WHAT I CAN DO IS I CAN LOOK AT I CAN CHANGE THE  RING OSCILLATOR. SO IF I RAISE THE VOLTAGE OF THE RING  OSCILLATOR OR LOWER THE VOLTAGE OR IF I FIND A SPOT, LET'S  SAY I LIMIT THE CURRENT THAT GOES THROUGH THIS RING OSCILLATOR,  OR WHAT IS KNOWN, THE TERM IS LIKE CURRENT STARVING, OKAY, IF I

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02:03PM) 1	WANT, THEY WILL SLOW DOWN. SO I CAN DO THAT CURRENT STARVING	02:05PM <b>1</b>	RANGE, BUT LET'S SAY WE DIVIDE IT BY 100 JUST FOR SIMPLICITY.
02:03PM <b>2</b>	BY VOLTAGE OR BY CURRENT, BASICALLY, SO I CAN ADJUST THE	02:06PM <b>2</b>	AND SO I GET 10 MEGAHERTZ HERE. THIS 10 MEGAHERTZ I WILL
02:03PM <b>3</b>	FREQUENCY.	02:06PM <b>3</b>	COMPARE WITH SOME REFERENCE SIGNAL. AND WHY ARE WE DOING THAT
02:03PM <b>4</b>	SO LET'S SAY IT'S DESIGNED TO BE 2 GIGAHERTZ. YOU SAY	02:06PM <b>4</b>	IS BECAUSE WHAT I'M BUILDING HERE IS LIKE A CRUISE CONTROL FOR
02:03PM <b>5</b>	THAT'S TOO FAST, I DON'T WANT IT 2. WELL, I WILL STARVE IT	02:06PM <b>5</b>	THAT FERRARI, SO I AM COMPARING THE SPEED AT WHICH FERRARI IS
02:03PM <b>6</b>	UNTIL IT IS 1 GIGAHERTZ.	02:06РМ 6	RUNNING TO SOME VALUE FOR WHICH I WANT TO SET IT TO RUN, OKAY?
02:03PM <b>7</b>	Q. AND IS THERE ANY ELECTRONIC CIRCUITRY THAT YOU COULD USE	02:06PM <b>7</b>	AND LET'S SAY THIS VALUE IS MUCH LOWER, SO I CAN TO DIVIDE
02:03PM <b>8</b>	TO CHANGE THE VOLTAGE OF THE RING OSCILLATOR, TO CHANGE ITS	02:06PM <b>8</b>	IT IN THIS CASE, BUT I DON'T HAVE TO.
02:03PM 9	SPEED?	02:06PM <b>9</b>	SO I HAVE TO PUT SOME REFERENCE. LET'S SAY IF I SAY,
02:03PM 10	A. THAT IS WHAT PLL DOES. AND I THINK WE'LL EXPLAIN IT	02:06PM <b>10</b>	OKAY, I WANT TO I WANT TO SET THAT CAR TO RUN AT 65, I HAVE
02:03PM 11	LATER.	02:06PM <b>11</b>	TO HAVE SOMETHING THAT POINTS TO 65 SO WHEN THE SPEEDOMETER
02:03PM <b>12</b>	Q. WELL, LET'S TAKE A LOOK AT THE NEXT SLIDE, DDX-120. WHAT	02:06PM <b>12</b>	COMES TO 65, I WILL LOCK INTO 65. SO I HAVE TO HAVE REFERENCE.
02:03PM <b>13</b>	ARE THESE COMPONENTS?	02:07PM <b>13</b>	I CANNOT JUST SAY, "OKAY, RUN AT 65." IT DOESN'T KNOW.
02:03PM <b>14</b>	A. THOSE ARE THE COMPONENTS OF THE PLL, AND I WILL EXPLAIN	02:07PM <b>14</b>	Q. SO I THINK WE HEARD WE'VE HEARD DISCUSSION OF A
02:03PM <b>15</b>	HOW PLL DOES IT.	02:07PM <b>15</b>	REFERENCE BEFORE. WE HEARD MENTION OF A METRONOME. WHAT DOES
02:03PM <b>16</b>	THE OUTPUT OF THIS FILTER IS ACTUALLY THAT VOLTAGE OF	02:07РМ 16	A PLL USE FOR ITS REFERENCE?
02:03PM <b>17</b>	CURRENT WHICH WILL START IT AND MAKE IT RUN AT THE FREQUENCY	02:07PM <b>17</b>	A. A PLL USES EXTERNAL QUARTZ OSCILLATOR, NOT NECESSARILY,
02:03PM <b>18</b>	THAT THIS CURRENT DETERMINES (INDICATING).	02:07PM <b>18</b>	OKAY?
02:04PM <b>19</b>	SO WHATEVER COMES OUT OF HERE, THE VOLTAGE OR CURRENT, THE	02:07PM <b>19</b>	WHAT PLL WHAT WE WANT TO USE HERE IS SOME STABLE
02:04PM <b>20</b>	CURRENT STARTS THE RING OSCILLATOR, WILL MAKE IT RUN FASTER OR	02:07PM <b>20</b>	REFERENCE.
02:04PM <b>21</b>	SLOWER (INDICATING).	02:07PM <b>21</b>	NOW, STABLE DEPENDS HOW STABLE YOU WANT IT TO BE.
02:04PM <b>22</b>	AND REMEMBER, THIS IS A VOLTAGE THAT COMES OUT HERE	02:07PM <b>22</b>	Q. SO WHY DON'T WE TAKE A LOOK AT DDX-122 WHERE I THINK
02:04PM <b>23</b>	(INDICATING). THIS IS NOT THE CLOCK. THIS IS THE VOLTAGE THAT	02:07PM <b>23</b>	YOU'VE ILLUSTRATED THE IDEA OF USING A REFERENCE HERE.
02:04PM <b>24</b>	CONTROLS THIS. OKAY?	02:07PM <b>24</b>	WHAT DOES THAT SLIDE SHOW US?
02:04PM <b>25</b>	Q. SO I SEE YOU'RE STILL USING, IN THIS SLIDE, DDX-121, YOU	02:07PM <b>25</b>	A. OKAY. SO THIS SLIDE SHOWS NOW WE HAVE CONNECTED THE
	UNITED STATES COURT REPORTERS		UNITED STATES COURT REPORTERS
	555		557
02:04PM <b>1</b>	555 STILL HAVE A RING OSCILLATOR.	02:07PM <b>1</b>	557 POINTS, AND LET'S START FROM HERE.
02:04PM <b>1</b> 02:04PM <b>2</b>		02:07PM <b>1</b> 02:07PM <b>2</b>	
	STILL HAVE A RING OSCILLATOR.		POINTS, AND LET'S START FROM HERE.
02:04PM <b>2</b> 02:04PM <b>3</b> 02:04PM <b>4</b>	STILL HAVE A RING OSCILLATOR.  A. YES.	02:07PM <b>2</b> 02:07PM <b>3</b> 02:08PM <b>4</b>	POINTS, AND LET'S START FROM HERE.  I HAVE THIS ONE RUNNING AT 10 AT 1 GIGAHERTZ, DIVIDED
02:04PM <b>2</b> 02:04PM <b>3</b>	STILL HAVE A RING OSCILLATOR.  A. YES.  Q. WHAT IS THE RING OSCILLATOR DOING IN THIS SLIDE?	02:07PM <b>2</b> 02:07PM <b>3</b> 02:08PM <b>4</b> 02:08PM <b>5</b>	POINTS, AND LET'S START FROM HERE.  I HAVE THIS ONE RUNNING AT 10 AT 1 GIGAHERTZ, DIVIDED  BY 100, FOR EXAMPLE, BECAUSE THIS REFERENCE IS 10 MEGAHERTZ
02:04PM 2 02:04PM 3 02:04PM 4 02:04PM 5 02:04PM 6	STILL HAVE A RING OSCILLATOR.  A. YES.  Q. WHAT IS THE RING OSCILLATOR DOING IN THIS SLIDE?  A. THE RING OSCILLATOR IS HAPPILY CLOCKING THE CPU.	02:07PM 2 02:07PM 3 02:08PM 4 02:08PM 5 02:08PM 6	POINTS, AND LET'S START FROM HERE.  I HAVE THIS ONE RUNNING AT 10 AT 1 GIGAHERTZ, DIVIDED  BY 100, FOR EXAMPLE, BECAUSE THIS REFERENCE IS 10 MEGAHERTZ  (INDICATING).  BASICALLY WHAT I WANT IS THIS FREQUENCY AND THIS TO BE THE SAME (INDICATING). WHY? BECAUSE I AM COMPARING THEM.
02:04PM 2 02:04PM 3 02:04PM 4 02:04PM 5 02:04PM 6 02:04PM 7	STILL HAVE A RING OSCILLATOR.  A. YES.  Q. WHAT IS THE RING OSCILLATOR DOING IN THIS SLIDE?  A. THE RING OSCILLATOR IS HAPPILY CLOCKING THE CPU.  Q. OKAY.	02:07PM 2 02:07PM 3 02:08PM 4 02:08PM 5 02:08PM 6 02:08PM 7	POINTS, AND LET'S START FROM HERE.  I HAVE THIS ONE RUNNING AT 10 AT 1 GIGAHERTZ, DIVIDED  BY 100, FOR EXAMPLE, BECAUSE THIS REFERENCE IS 10 MEGAHERTZ  (INDICATING).  BASICALLY WHAT I WANT IS THIS FREQUENCY AND THIS TO BE THE
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# EXHIBIT 4 (BEING FILED UNDER SEAL)

## EXHIBIT 5 (BEING FILED UNDER SEAL)

# EXHIBIT 6 (BEING FILED UNDER SEAL)

# EXHIBIT 7 (BEING FILED UNDER SEAL)

## EXHIBIT 8 (BEING FILED UNDER SEAL)

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### OMAP730 Technical Reference Manual

Literature Number: SWPU063B September 2003









Clock Generation

#### 5.2 Clock Generation

The clock domains in the OMAP730 hardware engine platform are synthesized by the digital phase-locked loops (DPLL). The DPLL input clock source (CK\_REF) is externally supplied from the CLKIN pin.

The DPLL1 output frequencies are programmable and can be further divided down to provide clocks to the MPU, the modem part connection, and the TC domains. The MPU domain, the modem part connection domain, and the TC domain are clocked from DPLL1.

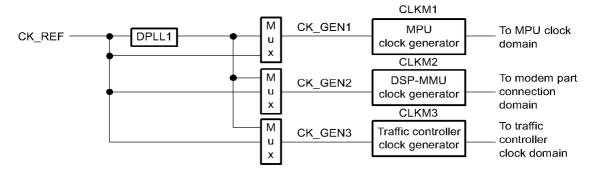
This implementation offers the clock rate selection flexibility to adjust the clock frequency of each clock domain and allows the OMAP730 hardware engine to adjust each clock domain to its optimal frequency. In addition, each domain is further subdivided into subdomains so that each subdomain can be independently activated/deactivated while the remaining part of the clock network is in an idle state. This clocking mode provides a scalable power-saving mechanism for general-purpose and power-hungry applications.

The OMAP clock system is organized around three main clock domains: MPU, modem part connection, and TC.

- ☐ The MPU clock domain contains:
  - MPU
  - MPU external peripheral clocks
  - MPU watchdog timer
  - MPU internal timers
  - MPU interrupt handler
- ☐ The modem part connection clock domain contains the DSP MMU.
- ☐ The TC clock domain contains:
  - TC
  - L3 OCP-I
  - MPUI port interface
  - System DMA controller
  - MPU TIPB bridges
  - LCD controller
  - OCP-T1 and OCP-T2

Figure 5–1 shows the clock generator module.

Figure 5-1. Clock Generator Module



Clock Generation and Reset Module

5-3

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#### Clock Generation

When mixed mode 4 is selected, you must program the divide-down bits of the ARM\_CKCTL register so that DSPDIV = DSPMMUDIV = TCDIV. Because ARM\_CK supplies the host processor and TC\_CK supplies different memory interfaces, the restriction on the speed of TC\_CK ensures that the rate of instruction/data fetch is never more than the rate at which data can be processed.

The TC clock frequency must be the same speed or slower than the MPU clock frequency.

#### 5.2.1.4 Bypass Mode

In bypass mode (CLOCK\_SELECT = 101), the DPLL is bypassed and the input reference clock is directly fed to the MPU, DSP, and TC clock domains.

#### 5.2.2 **DPLL**

The DPLL block synthesizes a frequency clock from the fixed reference input clock signal CK\_REF using the digital phase-locked loop mechanism. Only the MPU can access the DPLL control register.

#### 5.2.2.1 DPLL Modes

The DPLL can operate either in bypass mode or lock mode:

□ Bypass mode

In bypass mode (PLL\_ENABLE bit of the DPLL1\_CTL\_REG register set to 0), the DPLL output clock can be CK\_REF (input reference clock), CK\_REF/2, or CK\_REF/4, depending on the BYPASS\_DIV bit-field value of the DPLL1\_CTL\_REG register.

☐ Lock mode

In lock mode (PLL\_ENABLE bit of DPLL1\_CTL\_REG register set to 1), the output frequency is an integer multiple or fractional multiple (m/n, respectively, in the PLL\_MULT and PLL\_DIV bit fields of DPLL1\_CTL\_REG) of the input reference clock CK\_REF. With  $1 \le m \le 31$  and  $1 \le n \le 4$ , the frequency output ranges from CK\_REF/4 to  $31 \times CK$ \_REF.

#### 5.2.2.2 Synthesizing a Clock

At reset, the DPLL is in bypass mode and the BYPASS\_DIV bit field of DPLL1\_CTL\_REG is set to 0b00 (DPLL output clock = CK\_REF).

The procedure to synthesize a clock at a desired frequency is:

- 1) Set the PLL\_MULT and PLL\_DIV bit fields of DPLL1\_CTL\_REG to the correct value to get the desired multiplication factor.
- 2) Set the PLL ENABLE bit to 1 to enter the lock mode.
- 3) When the DPLL reaches the desired synthesized clock frequency, the bit LOCK bit of DPLL1\_CTL\_REG register goes to 1 and the output clock gets the synthesized clock.

5-6

5:08-cv-00882-PSG EX. 3100

# SC32442A43

### **USER'S MANUAL**

Revision 1.1



					MENT

SC32442A RISC MICROPROCESSOR

#### **FUNCTIONAL DESCRIPTION**

#### **CLOCK ARCHITECTURE**

Figure 7-1 shows a block diagram of the clock architecture. The main clock source comes from an external crystal (XTIpII) or an external clock (EXTCLK). The clock generator includes an oscillator (Oscillation Amplifier), which is connected to an external crystal, and also has two PLLs (Phase-Locked-Loop), which generate the high frequency clock required in the SC32442A.

#### **CLOCK SOURCE SELECTION**

Table 7-1 shows the relationship between the combination of mode control pins (OM3 and OM2) and the selection of source clock for the SC32442A. The OM[3:2] status is latched internally by referring the OM3 and OM2 pins at the rising edge of nRESET.

Table 7-1. Clock Source Selection at Boot-Up

Mode OM[3:2]	MPLL State	UPLL State	Main Clock source	USB Clock Source
00	On	On	Crystal	Crystal
01	On	On	Crystal	EXTCLK
10	On	On	EXTCLK	Crystal
11	On	On	EXTCLK	EXTCLK

NOTE

- Although the MPLL starts just after a reset, the MPLL output (Mpll) is not used as the system clock until the software
  writes valid settings to the MPLLCON register. Before this valid setting, the clock from external crystal or EXTCLK source
  will be used as the system clock directly. Even if the user does not want to change the default value of MPLLCON
  register, the user should write the same value into MPLLCON register.
- 2. OM[3:2] is used to determine a test mode when OM[1:0] is 11



#### SC32442A RISC MICROPROCESSOR

#### **CLOCK & POWER MANAGEMENT**

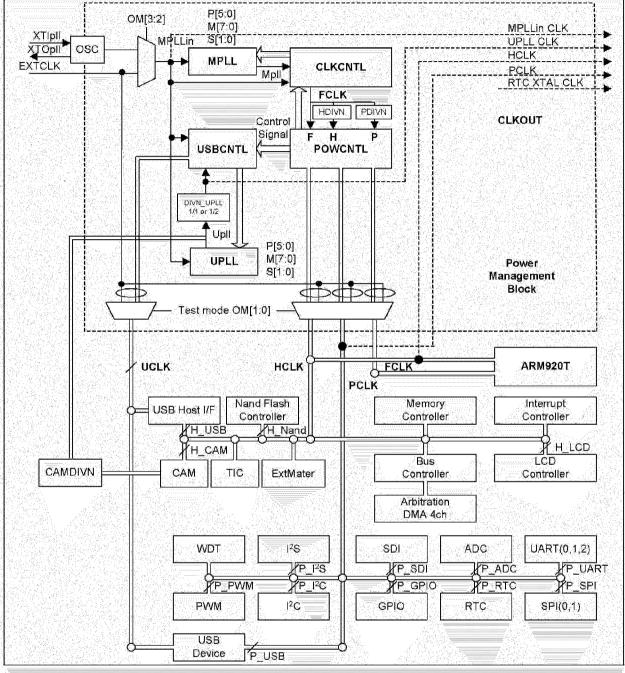


Figure 7-1. Clock Generator Block Diagram



7-3

#### **CLOCK & POWER MANAGEMENT**

SC32442A RISC MICROPROCESSOR

#### PHASE LOCKED LOOP (PLL)

The MPLL within the clock generator, as a circuit, synchronizes an output signal with a reference input signal in frequency and phase. In this application, it includes the following basic blocks as shown in Figure 7-2: the Voltage Controlled Oscillator (VCO) to generate the output frequency proportional to input DC voltage, the divider P to divide the input frequency (Fin) by p, the divider M to divide the VCO output frequency by m which is input to Phase Frequency Detector (PFD), the divider S to divide the VCO output frequency by "s" which is Mpll (the output frequency from MPLL block), the phase difference detector, the charge pump, and the loop filter. The output clock frequency Mpll is related to the reference input clock frequency Fin by the following equation:

Mpll = 
$$(2*m * Fin) / (p * 2^s)$$
  
m = M (the value for divider M)+ 8, p = P (the value for divider P) + 2

The UPLL within the clock generator is similar to the MPLL in every aspect.

The following sections describes the operation of the PLL, including the phase difference detector, the charge pump, the Voltage controlled oscillator (VCO), and the loop filter.

#### Phase Frequency Detector (PFD)

The PFD monitors the phase difference between Fref and Fvco, and generates a control signal (tracking signal) when the difference is detected. The Fref means the reference frequency as shown in the Figure 7-2.

#### Charge Pump (PUMP)

The charge pump converts PFD control signals into a proportional change in voltage across the external filter that drives the VCO.

#### Loop Filter

The control signal, which the PFD generates for the charge pump, may generate large excursions (ripples) each time the Fvco is compared to the Fref. To avoid overloading the VCO, a low pass filter samples and filters the high-frequency components out of the control signal. The filter is typically a single-pole RC filter with a resistor and a capacitor.

#### Voltage Controlled Oscillator (VCO)

The output voltage from the loop filter drives the VCO, causing its oscillation frequency to increase or decrease linearly as a function of variations in average voltage. When the Fvco matches Fref in terms of frequency as well as phase, the PFD stops sending control signals to the charge pump, which in turn stabilizes the input voltage to the loop filter. The VCO frequency then remains constant, and the PLL remains fixed onto the system clock.

#### Usual Conditions for PLL & Clock Generator

PLL & Clock Generator generally uses the following conditions.

Leas filles associates			MPLLCAP: 820 pF ± 5%
Loop filter capacitance		OLF □	UPLLCAP, 1500 pF ± 5%
External X-tal frequency		7	12 – 20 MHz <sup>(note)</sup>
External capacitance used fo	r X-tal	C <sub>EXT</sub>	15 – 22 pF

#### NOTES:

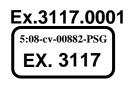
- 1. The value could be changed.
- 2. FCLK<sub>OUT</sub> must be bigger than 200MHz(It does not mean that the ARM core has to run more than 200Mhz).

SAMSUNG FLEGTRONICS

# EXHIBIT 11 (BEING FILED UNDER SEAL)

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### OMAP850

(A Member of Texas Instruments OMAP <sup>™</sup> Family of Products)

### Technical Reference Manual

Literature Number: SWPU080A November 2005









N.D. Cal Case No 5:08-cv-00882 N.D. Cal Case No 5:08-cv-05398

OMAP850/OMAP730 Comparison Overview

#### D.1 OMAP850/OMAP730 Comparison Overview

The Texas Instruments OMAP850 multimedia processor is a close derivative of OMAP730 processor. OMAP850 is an improved platform for key performance aspects. OMAP850 also receives some changes in MPU-S peripheral features list and pin multiplex. High compatibility level is preserved in both hardware and software, as follows:

#### □ Package

- Identical package: 289 ball grid array (BGA)
- Identical package pins location: pins name and pins assignment to balls
- Compatible pin multiplex (with few exceptions, see removed features below)
- Pin multiplex additions for new features and enhanced support
- ☐ GSM-S features
  - GPRS-EDGE feature
  - Binary software compatibility
- - Optimized internal SRAM interface for higher frame-buffer performances
  - Optimized OMAP3.2 core for DDR and DMA performances
  - 8-bit parallel camera interface data throughput improvement (same camera features; camera support moved from MPU-S peripheral bus to MPU-S TC OCP-T interface) for bigger sensor/higher frame-rate
- MPU-S removed features
  - CompactFlash interface not supported anymore
  - GPIO\_72/73/74 removed from pin multiplex on DQSH/DQSL/ SDCLKX DDR pins (DDR timings constraints)
- ☐ MPU-S new features
  - Addition of DDR memory support to SDRAM. See application note WMN\_030\_1 which describes how to use OMAP750/850/16xx Delay Locked Loop (DLL) and Digitally Controlled Delay Lines (DCDL) to access reliably Dual Data Rate (DDR) SDRAM.
  - Addition of external DMA request line support for EMIFS components
  - Addition of SHPLCD for glueless interfacing of LCD controller to Sharp TFT-LCD panels
  - Addition of traffic controller burst doubler feature in OMAP3.2 core for ARM926EJS cache-fill performance improvement

D-2

# EXHIBIT 13 (BEING FILED UNDER SEAL)

	Case5:08-cv-(		1671	-15	Filed10/31/13 Page2 of 7 229
		227		2	
1 2	UNITED STATES DIST			3	INDEX OF WITNESSES
3	NORTHERN DISTRICT OF			4	<u>DEFENDANTS'</u>
4	SAN OOSE DIV.	DION		5	CHARLES MOORE DIRECT EXAM BY MR. OTTESON (RES.) P. 249
5				6	CROSS-EXAM BY MS. KEEFE P. 295 REDIRECT EXAM BY MR. OTTESON P. 322
6	HTC CORPORATION AND HTC AMERICA, INC.,	C-08-00882 PSG		7	REDIRECT EXAM BY MR. OTTESON P. 322
7	PLAINTIFF,	SAN JOSE, CALIFORNIA			
8	vs.	SEPTEMBER 24, 2013  VOLUME 2		8	BAHER HAROUN DIRECT EXAM BY MR. CARMACK P. 333
9	TECHNOLOGY PROPERTIES LIMITED, PATRIOT SCIENTIFIC CORPORATION	PAGES 227-409		9	CROSS-EXAM BY MR. SMITH P. 354 REDIRECT EXAM BY MR. CARMACK P. 370
10	AND ALLIACENSE LIMITED,			10	
11	DEFENDANT.			11	DANIEL LECKRONE DIRECT EXAM BY MR. OTTESON P. 376
12	TRANSCRIPT OF PRO			12	
13	BEFORE THE HONORABLE F UNITED STATES MAGIS			13	INDEX OF EXHIBITS
15	APPEARANCES:			14	MARKED ADMITTED
16	FOR THE PLAINTIFF: COOLEY LLP			15	<u>DEFENDANTS'</u>
17	BY: HEIDI K RON LEM			16	440 374 441 374
18	3175 HANOVER PALO ALTO, C	STREET ALIFORNIA 94304		17	1431 374 556 376
19				18	370
20	APPEARANCES CONTINUED	ON NEXT PAGE		19	PLAINTIFF'S
21				20	PDX-3 368 369
22				21	PDX-4 369 369
23		NE SHORTRIDGE, CSR, CRR ICATE NUMBER 9595		22	
24				23	
25	PROCEEDINGS RECORDED BY MEC TRANSCRIPT PRODUCED			24	
		DUDODEDDO		25	
	UNITED STATES COURT	REPORTERS			UNITED STATES COURT REPORTERS
1		228			230
2	APPEARANCES (CONTINUED)			1	SAN JOSE, CALIFORNIA SEPTEMBER 24, 2013
3	FOR THE PLAINTIFF: COOLEY LLP		09:12AM	2	PROCEEDINGS
4	BY: STEPHEN R. SMITH 1299 PENNSYLVANIA AV		09:12AM	3	(JURY OUT AT 9:12 A.M.)
5	SUITE 700 WASHINGTON, D.C. 20	004	09:12AM	4	THE COURT: ALL RIGHT, COUNSEL. I UNDERSTAND THAT
6	BY: MATTHEW J. LEARY		09:12AM	5	THERE WERE AT LEAST THREE MOTIONS FILED ON THE DOCKET SINCE WE
7	380 INTERLOCKEN CRES BROOMFIELD, COLORAL		09:12AM	6	LAST SPOKE. LET'S BEGIN WITH NUMBER 619, WHICH DEALS WITH
8	ALSO PRESENT: VINCENT LAM		09:12AM	7	MR. MOORE'S TESTIMONY REGARDING THE GREENARRAYS.
9	7.ESS TRESERVE		09:12AM	8	IT'S YOUR MOTION, MS. KEEFE, GO AHEAD.
10	FOR DEFENDANTS AGILITY IP LAW	ı.	09:13AM	9	MS. KEEFE: VERY SIMPLY, YOUR HONOR, WHAT WE DID
11	TPL AND BY: JAMES C. OTTE ALLIACENSE: IRVIN E. TYAN	SON	09:13AM	10	AFTER AT THE SIDE-BAR, YOUR HONOR SAID THAT IF WE COULD FIND
12	THOMAS T. CARMAC VINCENT K. YEE		09:13AM	11	THAT THERE HAD BEEN DISCOVERY REQUESTS THAT WOULD HAVE CALLED
13	DAVID LANSKY	NDIVE	09:13AM	12	FOR THE GREENARRAY TO HAVE BEEN DISCLOSED AS AN INFRINGING
	149 COMMONWEALTH D MENLO PARK, CALIFOR		09:13AM	13	DEVICE, THAT I SHOULD
14	FOR REFERINANT	L LANGE & HOCS	09:13AM	14	THE COURT: YOU'RE TALKING SPECIFICALLY ABOUT THE 144
15	PATRIOT: CHARLES T. HOGE	I, LANCE & HOGE	09:13AM	15	PRODUCT?
16	35 TENTH AVENUE SAN DIEGO, CALIFORNI	A 92101	09:13AM	16	MS. KEEFE: THAT'S CORRECT, YOUR HONOR. THAT'S
17			09:13AM	17	CORRECT, THE ONE THAT WAS MENTIONED BY MR. MOORE IN TESTIMONY.
18	ALSO PRESENT: CHARLES MOORE CLIFFORD FLOWERS		09:13AM	18	AND POTENTIALLY MORE PROBLEMATIC WAS NOT THAT MR. MOORE
19	DAN LECKRONE MACK LECKRONE		09:13AM	19	WAS TALKING GENERICALLY ABOUT WHAT HE'S WORKING ON, BUT WHEN
20			09:13AM	20	ASKED WHY IT WAS RELEVANT, OPPOSING COUNSEL SAID THAT IT
			09:13AM	21	PRACTICING THE INVENTION, WHICH OF COURSE IS SOMETHING THAT
21			09:13AM	22	GAVE US A LITTLE BIT OF HEARTBURN.
21					
			09:13AM	23	SO WHAT WE WENT BACK AND DID WAS FOUND DISCOVERY REQUESTS
22			09:13AM 09:13AM		SO WHAT WE WENT BACK AND DID WAS FOUND DISCOVERY REQUESTS THAT WOULD HAVE CALLED FOR IT, WE LAID THEM OUT FOR YOUR HONOR
22 23				24	

	Case5:08-cv-00882-PSG Documer	t671-15	Filed10/31/13 Page3 of 7
01:22PM <b>1</b>	COULD BE PART OF THAT, SIR.	01:24PM <b>1</b>	CLOCK SIGNAL; CORRECT?
01:22PM <b>2</b>	Q. NOW, THE RING OSCILLATORS IN THE TEXAS INSTRUMENT CHIPS,	01:24PM <b>2</b>	A. IN IF YOU'RE TALKING ABOUT AN ANALOG PLL, IT IS NOT A
01:22PM <b>3</b>	THE OMAP CHIPS WE'RE TALKING ABOUT HERE, ARE THEY ARE THEY	01:24PM <b>3</b>	CLOCK SIGNAL, BUT IT LOOKS LIKE A CLOCK. IT'S A TIME PERIOD.
01:22PM <b>4</b>	ICO'S, CURRENT CONTROL OSCILLATORS, OR VCO'S, VOLTAGE CONTROL	01:24PM <b>4</b>	IT'S A DISTANCE OF TIME BETWEEN THE TWO EDGES. THAT'S WHAT THE
01:22PM <b>5</b>	OSCILLATORS?	01:24PM <b>5</b>	PHASE DETECTOR USES, SOMETHING PROPORTIONAL TO THE DELAY
01:22PM <b>6</b>	A. I DON'T KNOW THAT FOR A FACT, BUT MY UNDERSTANDING IS THEY	01:24PM <b>6</b>	BETWEEN ONE OF THE EDGES RELATIVE TO THE OTHER.
01:22PM <b>7</b>	WERE USING DIGITAL CONTROL DELAY LINES. THAT'S THE TERMINOLOGY	01:24PM <b>7</b>	Q. OKAY. LET'S TALK ABOUT THE OUTPUT OF THE FILTER INTO THE
01:22PM <b>8</b>	THAT WAS USED INTERNALLY AT THE TIME.	01:24PM <b>8</b>	OSCILLATOR. THIS DOES NOT HAVE A FREQUENCY; CORRECT?
01:22PM <b>9</b>	WHEN I START THE NEW GENERATION, WE WENT AWAY FROM THAT	01:25PM <b>9</b>	A. SO I WANT CLARIFICATION.
01:22PM 10	INTO WHAT IS REFERRED TO HERE IN THE PAPER OF CURRENT CONTROL	01:25PM 10	Q. YES.
01:22PM <b>11</b>	OR VOLTAGE CONTROL. WE CURRENTLY USE CURRENT CONTROL.	01:25PM <b>11</b>	A. ARE YOU TALKING THE ANALOG PLL OR DIGITAL PLL? BECAUSE
01:22PM <b>12</b>	Q. BUT ONE OF THE INPUTS TO THE RING OSCILLATOR IS EITHER A	01:25PM <b>12</b>	THE DIFFERENCE IS THE SIGNAL IS IN AN ANALOG IS A FINITE, IS
01:22PM <b>13</b>	CURRENT OR VOLTAGE OR MAYBE MULTIPLE CURRENTS AND VOLTAGES?	01:25PM <b>13</b>	A CONTINUOUS, VERY SMALL UP AND DOWN, ANY VALUE CAN CONTAIN,
01:22PM <b>14</b>	A. THAT'S CORRECT.	01:25PM <b>14</b>	WHEREAS DIGITAL IS QUANTIFIED NUMBER THAT IS VERY SPECIFIC CODE
01:22PM <b>15</b>	Q. THE AMOUNT OF CURRENT OR VOLTAGE THAT IS INPUT INTO AN	01:25PM <b>15</b>	THAT COMES IN.
01:22PM <b>16</b>	OSCILLATOR IS WHAT DETERMINES THE FREQUENCY THAT IS OUTPUT FROM	01:25PM <b>16</b>	AND BOTH ARCHITECTURES EXIST. DIGITAL USES DIGITAL VALUES
01:23PM <b>17</b>	THE OSCILLATOR; CORRECT?	01:25PM <b>17</b>	TO CONTROL OSCILLATORS, WHERE ANALOG USES AN ANALOG CONTINUOUS
01:23PM <b>18</b>	A. THAT IS CORRECT. IF IT IS DIGITALLY CONTROLLED, IT'S THE	01:25PM <b>18</b>	VALUES TO CONTROL THE OSCILLATOR.
01:23PM <b>19</b>	VALUE OF THE DIGITAL BITS THAT ARE CONTROLLED.	01:25PM <b>19</b>	SO IF YOU'RE TALKING ABOUT THE ANALOG PLL, WE CAN TALK
01:23PM <b>20</b>	SO IF THERE'S A DIGITAL INPUT, THERE ARE MULTIPLE LINES	01:25PM <b>20</b>	ABOUT THE ANALOG IN THAT CONTEXT.
01:23PM <b>21</b>	AND EACH ONE OF THEM WOULD HAVE A CERTAIN VALUE, A O OR A 1,	01:25PM <b>21</b>	Q. OKAY. IN AN ANALOG SITUATION LIKE THIS, THE OUTPUT OF THE
01:23PM <b>22</b>	AND DEPENDING ON THAT CONFIGURATION, THE SPEED OF THE DELAY	01:25PM <b>22</b>	FILTER IS VERY SMOOTH VOLTAGE OR CURRENT?
01:23PM <b>23</b>	LINE IN THE OSCILLATOR, WHICH IS THE SEQUENCE OF STAGES, WOULD	01:25PM <b>23</b>	A. YES, CORRECT.
01:23PM <b>24</b>	CHANGE. IT WOULD SLOW DOWN OR SPEED UP.	01:25PM <b>24</b>	Q. IN OTHER WORDS, THE RING OSCILLATOR DOES NOT RECEIVE ANY
01:23PM <b>25</b>	Q. OKAY. LET'S HAVE THE DIAGRAM OF THE PLL UP AGAIN. LET ME	01:25PM <b>25</b>	CLOCK SIGNAL AS SUCH?
	UNITED STATES COURT REPORTERS		UNITED STATES COURT REPORTERS
	348		350
01:23PM <b>1</b>	JUST ASK YOU	01:25PM <b>1</b>	350  A. NO, IT DOES NOT. IT RECEIVES A CONTROL PARAMETER.
01:23PM <b>1</b> 01:23PM <b>2</b>		01:25PM <b>1</b> 01:25PM <b>2</b>	
	JUST ASK YOU		A. NO, IT DOES NOT. IT RECEIVES A CONTROL PARAMETER.
01:23PM <b>2</b>	JUST ASK YOU  IF I MAY APPROACH?	01:25PM <b>2</b>	A. NO, IT DOES NOT. IT RECEIVES A CONTROL PARAMETER.  Q. OKAY. SO IT RECEIVES WHEN YOU SAY "CONTROL PARAMETER,"
01:23PM <b>2</b> 01:23PM <b>3</b>	JUST ASK YOU  IF I MAY APPROACH?  THE COURT: YOU MAY.	01:25PM <b>2</b> 01:25PM <b>3</b>	A. NO, IT DOES NOT. IT RECEIVES A CONTROL PARAMETER.  Q. OKAY. SO IT RECEIVES WHEN YOU SAY "CONTROL PARAMETER,"  YOU MEAN A CURRENT OR A VOLTAGE?
01:23PM <b>2</b> 01:23PM <b>3</b> 01:23PM <b>4</b>	JUST ASK YOU  IF I MAY APPROACH?  THE COURT: YOU MAY.  MR. CARMACK: THANK YOU.	01:25PM <b>2</b> 01:25PM <b>3</b> 01:25PM <b>4</b>	<ul> <li>A. NO, IT DOES NOT. IT RECEIVES A CONTROL PARAMETER.</li> <li>Q. OKAY. SO IT RECEIVES WHEN YOU SAY "CONTROL PARAMETER,"</li> <li>YOU MEAN A CURRENT OR A VOLTAGE?</li> <li>A. THAT IS CORRECT.</li> </ul>
01:23PM <b>2</b> 01:23PM <b>3</b> 01:23PM <b>4</b> 01:23PM <b>5</b>	JUST ASK YOU  IF I MAY APPROACH?  THE COURT: YOU MAY.  MR. CARMACK: THANK YOU.  Q. WE HAVE THIS ARROW OVER HERE THAT IS BASICALLY IN THIS	01:25PM <b>2</b> 01:25PM <b>3</b> 01:25PM <b>4</b> 01:25PM <b>5</b>	<ul> <li>A. NO, IT DOES NOT. IT RECEIVES A CONTROL PARAMETER.</li> <li>Q. OKAY. SO IT RECEIVES WHEN YOU SAY "CONTROL PARAMETER,"</li> <li>YOU MEAN A CURRENT OR A VOLTAGE?</li> <li>A. THAT IS CORRECT.</li> <li>Q. A SMOOTH CURRENT OR A VOLTAGE?</li> </ul>
01:23PM 2 01:23PM 3 01:23PM 4 01:23PM 5 01:23PM 6	JUST ASK YOU  IF I MAY APPROACH?  THE COURT: YOU MAY.  MR. CARMACK: THANK YOU.  Q. WE HAVE THIS ARROW OVER HERE THAT IS BASICALLY IN THIS  FIGURE NOT POINTING TO ANYTHING, BUT WE CAN ASSUME THAT THIS IS	01:25PM 2 01:25PM 3 01:25PM 4 01:25PM 5 01:25PM 6	<ul> <li>A. NO, IT DOES NOT. IT RECEIVES A CONTROL PARAMETER.</li> <li>Q. OKAY. SO IT RECEIVES WHEN YOU SAY "CONTROL PARAMETER,"</li> <li>YOU MEAN A CURRENT OR A VOLTAGE?</li> <li>A. THAT IS CORRECT.</li> <li>Q. A SMOOTH CURRENT OR A VOLTAGE?</li> <li>A. THAT IS CORRECT.</li> </ul>
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01:23PM 2 01:23PM 3 01:23PM 4 01:23PM 5 01:23PM 6 01:23PM 7 01:23PM 8 01:23PM 9 01:23PM 10 01:23PM 11	JUST ASK YOU  IF I MAY APPROACH?  THE COURT: YOU MAY.  MR. CARMACK: THANK YOU.  Q. WE HAVE THIS ARROW OVER HERE THAT IS BASICALLY IN THIS  FIGURE NOT POINTING TO ANYTHING, BUT WE CAN ASSUME THAT THIS IS  POINTING TO SOME SORT OF INTERNAL, EXTERNAL REFERENCE CLOCK;  CORRECT?  A. THAT'S CORRECT.  Q. SO LIKE A CRYSTAL OSCILLATOR?  A. YES.	01:25PM 2 01:25PM 3 01:25PM 4 01:25PM 5 01:25PM 6 01:25PM 7 01:26PM 7 01:26PM 9 01:26PM 10 01:26PM 11	A. NO, IT DOES NOT. IT RECEIVES A CONTROL PARAMETER.  Q. OKAY. SO IT RECEIVES WHEN YOU SAY "CONTROL PARAMETER," YOU MEAN A CURRENT OR A VOLTAGE?  A. THAT IS CORRECT.  Q. A SMOOTH CURRENT OR A VOLTAGE?  A. THAT IS CORRECT.  Q. SO THE RING OSCILLATOR TAKES IN A SMOOTH CURRENT OR VOLTAGE AND WHAT IT OUTPUTS IS ON OSCILLATION, WHICH MEANS A HIGH, LOW SQUARE WAVE; CORRECT?
01:23PM 2 01:23PM 3 01:23PM 4 01:23PM 5 01:23PM 6 01:23PM 7 01:23PM 8 01:23PM 9 01:23PM 10 01:23PM 11 01:23PM 12	JUST ASK YOU  IF I MAY APPROACH?  THE COURT: YOU MAY.  MR. CARMACK: THANK YOU.  Q. WE HAVE THIS ARROW OVER HERE THAT IS BASICALLY IN THIS FIGURE NOT POINTING TO ANYTHING, BUT WE CAN ASSUME THAT THIS IS POINTING TO SOME SORT OF INTERNAL, EXTERNAL REFERENCE CLOCK; CORRECT?  A. THAT'S CORRECT.  Q. SO LIKE A CRYSTAL OSCILLATOR?	01:25PM 2 01:25PM 3 01:25PM 4 01:25PM 5 01:25PM 6 01:26PM 7 01:26PM 8 01:26PM 10 01:26PM 10 01:26PM 11	A. NO, IT DOES NOT. IT RECEIVES A CONTROL PARAMETER.  Q. OKAY. SO IT RECEIVES WHEN YOU SAY "CONTROL PARAMETER," YOU MEAN A CURRENT OR A VOLTAGE?  A. THAT IS CORRECT.  Q. A SMOOTH CURRENT OR A VOLTAGE?  A. THAT IS CORRECT.  Q. SO THE RING OSCILLATOR TAKES IN A SMOOTH CURRENT OR VOLTAGE AND WHAT IT OUTPUTS IS ON OSCILLATION, WHICH MEANS A HIGH, LOW SQUARE WAVE; CORRECT?  A. THAT IS CORRECT.  Q. THAT'S THE REASON WE CALL IT AN OSCILLATOR IS BECAUSE IT OSCILLATES BETWEEN HIGH AND LOW?
01:23PM 2 01:23PM 3 01:23PM 4 01:23PM 5 01:23PM 6 01:23PM 7 01:23PM 8 01:23PM 9 01:23PM 10 01:23PM 11 01:23PM 12 01:23PM 12	JUST ASK YOU  IF I MAY APPROACH?  THE COURT: YOU MAY.  MR. CARMACK: THANK YOU.  Q. WE HAVE THIS ARROW OVER HERE THAT IS BASICALLY IN THIS  FIGURE NOT POINTING TO ANYTHING, BUT WE CAN ASSUME THAT THIS IS  POINTING TO SOME SORT OF INTERNAL, EXTERNAL REFERENCE CLOCK;  CORRECT?  A. THAT'S CORRECT.  Q. SO LIKE A CRYSTAL OSCILLATOR?  A. YES.	01:25PM 2 01:25PM 3 01:25PM 4 01:25PM 5 01:25PM 6 01:26PM 7 01:26PM 8 01:26PM 10 01:26PM 11 01:26PM 12 01:26PM 12	A. NO, IT DOES NOT. IT RECEIVES A CONTROL PARAMETER.  Q. OKAY. SO IT RECEIVES WHEN YOU SAY "CONTROL PARAMETER," YOU MEAN A CURRENT OR A VOLTAGE?  A. THAT IS CORRECT.  Q. A SMOOTH CURRENT OR A VOLTAGE?  A. THAT IS CORRECT.  Q. SO THE RING OSCILLATOR TAKES IN A SMOOTH CURRENT OR VOLTAGE AND WHAT IT OUTPUTS IS ON OSCILLATION, WHICH MEANS A HIGH, LOW SQUARE WAVE; CORRECT?  A. THAT IS CORRECT.  Q. THAT'S THE REASON WE CALL IT AN OSCILLATOR IS BECAUSE IT OSCILLATES BETWEEN HIGH AND LOW?  A. THAT IS CORRECT.
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01:23PM 2 01:23PM 3 01:23PM 4 01:23PM 5 01:23PM 6 01:23PM 7 01:23PM 8 01:23PM 9 01:23PM 10 01:23PM 11 01:23PM 12 01:23PM 13 01:23PM 14 01:23PM 14	JUST ASK YOU  IF I MAY APPROACH?  THE COURT: YOU MAY.  MR. CARMACK: THANK YOU.  Q. WE HAVE THIS ARROW OVER HERE THAT IS BASICALLY IN THIS  FIGURE NOT POINTING TO ANYTHING, BUT WE CAN ASSUME THAT THIS IS  POINTING TO SOME SORT OF INTERNAL, EXTERNAL REFERENCE CLOCK;  CORRECT?  A. THAT'S CORRECT.  Q. SO LIKE A CRYSTAL OSCILLATOR?  A. YES.  Q. SO THE TYPE OF SIGNAL THAT WOULD BE COMING IN HERE TO THE  PHASE DETECTOR IS AN UP AND DOWN CLOCK SIGNAL?  A. THAT'S CORRECT. IT'S A VARYING SIGNAL, YES.  Q. OKAY. THE PURPOSE OF THE PHASE DETECTOR IS TO COMPARE THE	01:25PM 2 01:25PM 3 01:25PM 4 01:25PM 5 01:25PM 6 01:26PM 7 01:26PM 8 01:26PM 10 01:26PM 11 01:26PM 12 01:26PM 13 01:26PM 14 01:26PM 14	A. NO, IT DOES NOT. IT RECEIVES A CONTROL PARAMETER.  Q. OKAY. SO IT RECEIVES WHEN YOU SAY "CONTROL PARAMETER," YOU MEAN A CURRENT OR A VOLTAGE?  A. THAT IS CORRECT.  Q. A SMOOTH CURRENT OR A VOLTAGE?  A. THAT IS CORRECT.  Q. SO THE RING OSCILLATOR TAKES IN A SMOOTH CURRENT OR VOLTAGE AND WHAT IT OUTPUTS IS ON OSCILLATION, WHICH MEANS A HIGH, LOW SQUARE WAVE: CORRECT?  A. THAT IS CORRECT.  Q. THAT'S THE REASON WE CALL IT AN OSCILLATOR IS BECAUSE IT OSCILLATES BETWEEN HIGH AND LOW?  A. THAT IS CORRECT.  Q. NOW, ALL OF THE NOW, ALL OF THE OMAP CHIPS USE PLL'S WITH THAT HAVE A REFERENCE SIGNAL FROM AN EXTERNAL CLOCK;
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01:23PM 2 01:23PM 3 01:23PM 4 01:23PM 5 01:23PM 6 01:23PM 7 01:23PM 8 01:23PM 10 01:23PM 11 01:23PM 12 01:23PM 15 01:23PM 15 01:23PM 15 01:24PM 16 01:24PM 16 01:24PM 17 01:24PM 18 01:24PM 20 01:24PM 21 01:24PM 21 01:24PM 22 01:24PM 23	IF I MAY APPROACH?  THE COURT: YOU MAY.  MR. CARMACK: THANK YOU.  Q. WE HAVE THIS ARROW OVER HERE THAT IS BASICALLY IN THIS FIGURE NOT POINTING TO ANYTHING, BUT WE CAN ASSUME THAT THIS IS POINTING TO SOME SORT OF INTERNAL, EXTERNAL REFERENCE CLOCK; CORRECT?  A. THAT'S CORRECT.  Q. SO LIKE A CRYSTAL OSCILLATOR?  A. YES.  Q. SO THE TYPE OF SIGNAL THAT WOULD BE COMING IN HERE TO THE PHASE DETECTOR IS AN UP AND DOWN CLOCK SIGNAL?  A. THAT'S CORRECT. IT'S A VARYING SIGNAL, YES.  Q. OKAY. THE PURPOSE OF THE PHASE DETECTOR IS TO COMPARE THE CLOCK SIGNAL FROM THE RING OSCILLATOR AND ITS EXTERNAL CLOCK SIGNAL TO SEE IF THEY'RE IN PHASE; RIGHT?  A. IT COMPARES SPECIFICALLY WHAT YOU CALL THE EDGES OF THE SIGNAL, YOU HAVE VERY FAST EDGES AND IT PICKS ONE STYLE TO SAY THE RISING ON BOTH CLOCKS AND IT COMPARES THE RELATIVE TIME BETWEEN THEM.  Q. OKAY. SO THE INPUTS TO THE PHASE DETECTOR ARE UP AND DOWN CLOCK SIGNALS?	01:25PM 2 01:25PM 3 01:25PM 4 01:25PM 5 01:25PM 6 01:25PM 6 01:26PM 7 01:26PM 10 01:26PM 11 01:26PM 12 01:26PM 15 01:26PM 15 01:26PM 15 01:26PM 15 01:26PM 17 01:26PM 17 01:26PM 20 01:26PM 20 01:26PM 21 01:26PM 22 01:26PM 23	A. NO, IT DOES NOT. IT RECEIVES A CONTROL PARAMETER.  Q. OKAY. SO IT RECEIVES WHEN YOU SAY "CONTROL PARAMETER," YOU MEAN A CURRENT OR A VOLTAGE?  A. THAT IS CORRECT. Q. A SMOOTH CURRENT OR A VOLTAGE?  A. THAT IS CORRECT. Q. SO THE RING OSCILLATOR TAKES IN A SMOOTH CURRENT OR VOLTAGE AND WHAT IT OUTPUTS IS ON OSCILLATION, WHICH MEANS A HIGH, LOW SQUARE WAVE: CORRECT?  A. THAT IS CORRECT. Q. THAT'S THE REASON WE CALL IT AN OSCILLATOR IS BECAUSE IT OSCILLATES BETWEEN HIGH AND LOW?  A. THAT IS CORRECT. Q. NOW, ALL OF THE NOW, ALL OF THE OMAP CHIPS USE PLL'S WITH THAT HAVE A REFERENCE SIGNAL FROM AN EXTERNAL CLOCK; CORRECT?  A. THAT IS CORRECT. Q. HAS TI EVER PRODUCED A, AN OMAP CHIP LIKE THESE THAT YOU KNOW OF THAT USES AN EXTERNAL REFERENCE, LIKE A CRYSTAL, WITHOUT USING A PLL BETWEEN THE CRYSTAL AND THE CPU?  A. IT IS POSSIBLE THAT WE'VE WE'VE DEVELOPED MANY SYSTEMS THAT ONLY USE A CONSTANT CLOCK FROM OUTSIDE. IT IS VERY POSSIBLE THAT THAT EXISTS, YES.

	Case5:08-cv-00882-PSG Documer	t671-15	Filed10/31/13 Page4 of 7
01:26PM <b>1</b>	A. AN EXTERNAL ONE, COMING FROM THE CONTROL IS OUTSIDE THE	01:29PM <b>1</b>	THAT OUTPUTS THE CLOCK SIGNAL OTHER THAN THE OSCILLATOR; RIGHT?
01:27PM <b>2</b>	CHIP.	01:29PM <b>2</b>	A. THERE IS THE INPUT EDGE COMING FROM THE CRYSTAL
01:27PM <b>3</b>	Q. SO WITH AN EXTERNAL REFERENCE CLOCK, IF IT'S CRYSTAL, THE	01:29PM <b>3</b>	TRIGGERS IN SOME FORMS OF PLL'S, I'M NOT SURE IF IT IS ON THE
01:27PM <b>4</b>	FREQUENCY WILL NEVER CHANGE; CORRECT?	01:29PM <b>4</b>	OMAP730, THE FIRST EDGE RUNS THROUGH AND IT BECOMES AN OUTPUT
01:27PM <b>5</b>	A. THE FREQUENCY OF THE EXTERNAL CRYSTAL WILL NEVER CHANGE.	01:30PM <b>5</b>	EDGE, AND THEN IT RECIRCULATES TO GENERATE N EDGES, TEN EDGES
01:27PM <b>6</b>	ON-CHIP, YOU CAN ALWAYS GO DOWN IN FREQUENCY BY PICKING	01:30PM <b>6</b>	EXTRA, VERY FAST, YOU GET A SEQUENCE OF EDGES.
01:27PM <b>7</b>	EVERY SECOND EDGE OR EVERY THIRD EDGE.	01:30PM <b>7</b>	AND THEN THE ELEVENTH ONE WOULD BE ACTUALLY A NEW ONE FROM
01:27PM <b>8</b>	Q. IN OTHER WORDS, YOU CAN DIVIDE?	01:30PM <b>8</b>	THE CRYSTAL COMING IN FOLLOWED BY ANOTHER N EDGE.
01:27PM <b>9</b>	A. YOU CAN DIVIDE, CORRECT.	01:30PM <b>9</b>	SO IN THIS CASE, THE SEQUENCE OF PULSES COMING OUT WOULD
01:27PM <b>10</b>	Q. BUT THE SIGNAL THAT COMES FROM A CRYSTAL OSCILLATOR	01:30PM <b>10</b>	BE TRIGGERED BY THE REFERENCE CLOCK.
01:27PM <b>11</b>	OFF-CHIP IS WITH A WE CALL A FIXED FREQUENCY SIGNAL?	01:30PM <b>11</b>	THE COUNT WOULD BE CONTROLLED BY THE LOOP THAT TRIGGERED
01:27PM <b>12</b>	A. YES.	01:30PM <b>12</b>	THAT N EDGES TO MAKE SURE IT'S EXACTLY TEN EDGES IN SPACE.
01:27PM <b>13</b>	Q. OKAY. AND SO IF YOU USE AN EXTERNAL CRYSTAL TO DIRECT THE	01:30PM <b>13</b>	SO THAT'S WHY I'M SAYING, COMPLETELY SAYING THE OSCILLATOR
01:27PM <b>14</b>	CLOCK TO THE CPU WITH NO PLL IN BETWEEN, YOU'RE GOING TO BE	01:30PM <b>14</b>	IS GENERATING, IT'S ACTUALLY IN SOME FORMS OF THESE
01:27PM <b>15</b>	STUCK WITH THE SPEED OF THAT CRYSTAL, OR SOME DIVISION OF IT?	01:30PM <b>15</b>	OSCILLATOR, IT TAKES A FIRST EDGE TO RUN THROUGH THE DELAY LINE
01:27PM <b>16</b>	A. THAT IS CORRECT.	01:30PM <b>16</b>	AND THEN IT COMES BACK AND IT'S STOPPED BY THE CONTROL LOCK
01:27PM <b>17</b>	Q. SO BUT IN THE CASE OF THE OMAP CHIPS THAT WE'RE TALKING	01:30PM <b>17</b>	BEFORE IT PROCEEDS AGAIN.
01:27PM <b>18</b>	ABOUT NOW, THE CPU DOESN'T RUN AT THE SPEED OF THE EXTERNAL	01:30РМ 18	SO YOU CAN CALL THAT A LOOP, BUT THE CONTROL SYSTEM IS IN
01:27PM <b>19</b>	CRYSTAL; CORRECT?	01:30РМ 19	FULL CONTROL OF HOW THE EDGES ARE FLOWING THROUGH.
01:27PM <b>20</b>	A. IT RUNS AT EITHER AN INTEGER MULTIPLE OR INTEGER DIVIDE.	01:30PM <b>20</b>	Q. OKAY.
01:28PM <b>21</b>	SOMETIMES COULD BE FRACTIONAL DEPENDING, YES.	01:30PM <b>21</b>	A. SO YOUR EXACT DESCRIPTION IS NOT YOU KNOW, THERE COULD
01:28PM <b>22</b>	Q. WHAT IS THE TYPICAL SPEED OF AN EXTERNAL REFERENCE CRYSTAL	01:30PM <b>22</b>	BE VARIATIONS OF WHAT YOU DESCRIBED.
01:28PM <b>23</b>	IN THESE CHIPS?	01:30PM <b>23</b>	Q. OKAY. LET ME CLARIFY IT THIS WAY: THERE'S NO OTHER
01:28PM <b>24</b>	A. IN THE OMAP730 OR 850 GENERATION, THE TYPICAL CRYSTAL	01:30PM <b>24</b>	PORTION IN THE PLL BESIDES THE RING OSCILLATOR THAT CAN CREATE
01:28PM <b>25</b>	THERE WAS TWO CRYSTALS TYPICALLY, ONE 113 MEGAHERTZ AND THE	01:30PM <b>25</b>	A FREQUENCY THAT'S SO MUCH HIGHER THAN THE EXTERNAL CRYSTAL;
	UNITED STATES COURT REPORTERS		UNITED STATES COURT REPORTERS
	352		354
01:28PM <b>1</b>	OTHER ONE IS 32 KILOHERTZ. THESE ARE TYPICAL VALUES IN CELL	01:31PM 1	CORRECT?
01:28PM <b>2</b>	OTHER ONE IS 32 KILOHERTZ. THESE ARE TYPICAL VALUES IN CELL PHONES.	01:31PM <b>2</b>	CORRECT?  A. THAT IS CORRECT. THAT IS WHERE IT'S WHERE THE EXTRA
01:28PM <b>2</b> 01:28PM <b>3</b>	OTHER ONE IS 32 KILOHERTZ. THESE ARE TYPICAL VALUES IN CELL PHONES.  Q. SO IF WE TOOK ONE OF THOSE OMAP PROCESSORS AND REDESIGNED	01:31PM <b>2</b> 01:31PM <b>3</b>	CORRECT?  A. THAT IS CORRECT. THAT IS WHERE IT'S WHERE THE EXTRA  EDGES ARE GENERATED, YES.
01:28PM <b>2</b> 01:28PM <b>3</b> 01:28PM <b>4</b>	OTHER ONE IS 32 KILOHERTZ. THESE ARE TYPICAL VALUES IN CELL PHONES.  Q. SO IF WE TOOK ONE OF THOSE OMAP PROCESSORS AND REDESIGNED IT SO IT DIDN'T HAVE THE PLL, ALL IT HAD WAS THE EXTERNAL	01:31PM <b>2</b> 01:31PM <b>3</b> 01:31PM <b>4</b>	CORRECT?  A. THAT IS CORRECT. THAT IS WHERE IT'S WHERE THE EXTRA  EDGES ARE GENERATED, YES.  MR. CARMACK: THANK YOU.
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01:28PM 2 01:28PM 3 01:28PM 4 01:28PM 5 01:28PM 6 01:28PM 7 01:28PM 8 01:28PM 10 01:28PM 11 01:28PM 12 01:29PM 13 01:29PM 14 01:29PM 15 01:29PM 17 01:29PM 18 01:29PM 18 01:29PM 19 01:29PM 20 01:29PM 21 01:29PM 21 01:29PM 21	OTHER ONE IS 32 KILOHERTZ. THESE ARE TYPICAL VALUES IN CELL PHONES.  Q. SO IF WE TOOK ONE OF THOSE OMAP PROCESSORS AND REDESIGNED IT SO IT DIDN'T HAVE THE PLL, ALL IT HAD WAS THE EXTERNAL CRYSTALS, THE FASTEST IT COULD RUN WOULD BE AT EITHER 32 KILOHERTZ OR 13 MEGAHERTZ; RIGHT?  A. THAT IS CORRECT. YOU NEED, YOU NEED A CLOCK MULTIPLIER TO BE ABLE TO GET TO HIGHER FREQUENCY.  Q. SO THE PLL ALLOWS THESE OMAP CHIPS TO RUN MANY TIMES FASTER THAN AN EXTERNAL CRYSTAL?  A. THAT IS CORRECT.  Q. AND THE PORTION OF THE PLL THAT OUTPUTS THAT HIGHER FREQUENCY IS THE RING OSCILLATOR; CORRECT?  A. AGREED. AS WE DISCUSSED, IN A DIGITAL PLL, THE OSCILLATOR COULD HAVE DOES NOT YOU COULD RECYCLE AN EDGE AND GENERATE MULTIPLES OF IT AND START/STOP.  SO THERE ARE DIFFERENT STRUCTURES WHERE IT IS COMPLETELY CONTROLLED BY THE DIGITAL CODE WORD.  SO AS I SAID, IF WE'RE TALKING ABOUT ANALOG PLL HERE, AND I'M TALKING ABOUT SO WHICH ONE ARE YOU TALKING ABOUT, DIGITAL PLL OR ANALOG PLL? BECAUSE THEY MAY SLIGHTLY DIFFERENT IN TERMS OF OSCILLATOR AND HOW THE CIRCUIT GENERATING EDGES WORKS.	01:31PM 2 01:31PM 3 01:31PM 4 01:31PM 5 01:31PM 6 01:31PM 7 01:31PM 8 01:31PM 10 01:31PM 11 01:31PM 12 01:31PM 13 01:31PM 14 01:31PM 15 01:31PM 15 01:31PM 16 01:31PM 17 01:31PM 18 01:31PM 19 01:31PM 20 01:31PM 21 01:31PM 21 01:31PM 22 01:31PM 22	A. THAT IS CORRECT. THAT IS WHERE IT'S WHERE THE EXTRA  EDGES ARE GENERATED, YES.  MR. CARMACK: THANK YOU.  THE COURT: THANK YOU, MR. CARMACK.  MR. SMITH:  MR. SMITH: THANK YOU, YOUR HONOR.  CROSS-EXAMINATION  BY MR. SMITH:  Q. GOOD AFTERNOON, DR. HAROUN.  A. GOOD AFTERNOON.  Q. YOU AND I HAVEN'T SPOKEN BEFORE, HAVE WE?  A. NO, WE HAVE NOT.  Q. I BELIEVE YOU SAID DURING COUNSEL'S EXAMINATION, I HAVE IT  WRITTEN DOWN THERE, THAT YOU'RE THE SENIOR FELLOW AND ALSO THE  DIRECTOR OF THE EMBEDDED SYSTEMS LABORATORIES AT TEXAS  INSTRUMENTS.  CAN YOU EXPLAIN A LITTLE BIT WHAT THAT MEANS, DR. HAROUN?  A. OKAY. SO SENIOR FELLOW IS AN ELECTED TITLE INSIDE  TEXAS INSTRUMENTS. WE HAVE A MANAGEMENT CHAIN AND WE HAVE WHAT  WE CALL A TECHNICAL LADDER CHAIN, TECHNICAL YOU GET PROMOTED  BY BEING ELECTED BY YOUR PEERS AND THE PEOPLE THAT ALREADY HAVE  BEEN ELECTED BEFORE YOU BECAUSE OF YOUR TECHNICAL CONTRIBUTIONS

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01:32PM <b>1</b>	LADDER, AND THEN SENIOR MEMBER, DISTINGUISHED, A FELLOW, AND A	01:34PM <b>1</b>	PHASE LOOKED LOOP, IT IS A BLOCK THAT GENERATES A NUMBER OF
01:32PM <b>2</b>	SENIOR FELLOW, AND THAT'S THE HIGHEST TITLE WE HAVE AT TI	01:34PM <b>2</b>	EDGES THAT ARE AN INTEGER, TYPICALLY AN INTEGER MULTIPLE OF
01:32PM <b>3</b>	TODAY, AND WE HAVE FIVE SENIOR FELLOWS IN THE WHOLE COMPANY.	01:34PM <b>3</b>	INPUT EDGES THAT ARE CALLED REFERENCE CLOCK.
4	Q. WHAT'S THE HIGHEST TITLE? I'M SORRY.	01:34PM <b>4</b>	
-		_	SO A REFERENCE CLOCK GENERATES EQUAL TIME, EQUAL TIME TO
	A. IT'S A SENIOR FELLOW, TEXAS INSTRUMENTS SENIOR FELLOW, AND		THE EDGES, WHAT'S CALLED GOING UP AND DOWN. ONE OF THOSE
01:32PM <b>6</b>	WE HAVE FIVE SENIOR FELLOWS AT TEXAS INSTRUMENTS TODAY.	-	EDGES SO THEY HAVE A CONSTANT TIME.
01:32PM <b>7</b>	Q. AND HOW MANY EMPLOYEES ARE THERE AT TEXAS INSTRUMENTS?	01:35PM <b>7</b>	THEN THE PHASE LOCK LOOP IS A BLOCK THAT FILLS IN BETWEEN
01:32PM <b>8</b>	A. THERE'S ABOUT 30,000 EMPLOYEES.	01:35PM <b>8</b>	THESE EDGES AN EXTRA NUMBER OF WHAT WE CALL AN INTEGER
01:32PM <b>9</b>	Q. AND DR. HAROUN, YOU ALSO SAID THAT YOU WERE THE DIRECTOR	01:35PM <b>9</b>	NUMBER, LIKE AN EXTRA TEN EDGES IN THE MIDDLE, EQUAL SPACE.
01:32PM 10	OF THE EMBEDDED SYSTEMS LABORATORY. WHAT DOES THAT MEAN, SIR?	01:35PM <b>10</b>	SO THE OUTPUT CLOCK WOULD BE A MULTIPLE OF THE INPUT
01:32PM <b>11</b>	A. WE HAVE A BUSINESS UNIT CALLED EMBEDDED PROCESSING.	01:35PM <b>11</b>	CLOCK.
01:32PM <b>12</b>	INSIDE THAT BUSINESS UNIT, WE BUILD DIGITAL SIGNAL PROCESSORS,	01:35PM <b>12</b>	AS PART OF THE PHASE LOCK LOOP, YOU CAN ALSO DIVIDE THE
01:32PM <b>13</b>	MICRO CONTROLLERS, WIRELESS CONNECTIVITY CHIPS.	01:35PM <b>13</b>	INPUT CLOCK OR DIVIDE THE OUTPUT CLOCK SO YOU CAN ACTUALLY
01:32PM <b>14</b>	AND IT HAS A RESEARCH LABORATORY CALLED EMBEDDED SYSTEM	01:35PM <b>14</b>	MULTIPLY BY TEN OR DIVIDE BY THREE. SO YOU GET THE INTEGER
01:32PM <b>15</b>	LABORATORY, AND I DIRECT ALMOST 48 PH.D.'S INTO THAT LAB TO	01:35PM <b>15</b>	RATIOS, SO 10 DIVIDED BY 3, A MULTIPLICATION OF THE INPUT
01:32PM <b>16</b>	DEVELOP FUTURE GENERATION SYSTEMS, NEW ARCHITECTURES, SOFTWARE	01:35PM <b>16</b>	THROUGHOUT.
01:33PM <b>17</b>	THAT RUNS ON THESE PROCESSORS TO DO FUNCTIONS, DIFFERENT	01:35PM <b>17</b>	Q. IS THERE AN OUTPUT OF A PLL?
01:33PM <b>18</b>	FUNCTIONS FROM IMAGING FUNCTIONS TO RADAR AND OTHER THINGS LIKE	01:35PM <b>18</b>	A. THERE IS TYPICALLY MULTIPLE OUTPUTS. THE MOST IMPORTANT
01:33PM <b>19</b>	тнат.	01:35PM <b>19</b>	ONE IS CALLED A CLOCK OUTPUT, WHICH IS A SIGNAL THAT GENERATES
01:33PM <b>20</b>	Q. WHAT TYPE OF PH.D.'S DO THESE EMPLOYEES HAVE?	01:35PM <b>20</b>	EVENTS OF EQUAL TIME SPACING AT A KNOWN FREQUENCY.
01:33PM <b>21</b>	A. THESE ARE TYPICALLY PH.D.'S OF ELECTRICAL ENGINEERING,	01:35PM <b>21</b>	Q. IS THAT A CLOCK OUTPUT TO CLOCK A CPU?
01:33PM <b>22</b>	DEPARTMENTS ACROSS THE COUNTRY AND WORLDWIDE.	01:35PM <b>22</b>	A. TYPICALLY IT IS USED TO CLOCK PROCESSORS. IT COULD CLOCK
01:33PM <b>23</b>	Q. AND CAN YOU PLEASE TELL US A LITTLE BIT ABOUT YOUR	01:35PM <b>23</b>	OTHER MODULES, TOO, BUT TYPICALLY IT'S USED TO CLOCK
01:33PM <b>24</b>	EDUCATIONAL BACKGROUND, DOCTOR.	01:35PM <b>24</b>	PROCESSORS.
01:33PM <b>25</b>	A. OKAY. I GOT BY BACHELOR'S AND MASTER'S FROM A UNIVERSITY	01:35PM <b>25</b>	Q. AND DO BOTH OF THE TI OMAP CHIPS THAT YOU'VE BEEN
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01:33PM <b>1</b>	IN CAIRO, EGYPT CALLED AIN SHAMS UNIVERSITY; AND THEN I WENT TO	01:36PM <b>1</b>	DISCUSSING TODAY INCLUDE A PLL?
01:33PM <b>2</b>	GET MY DEGREE AND MY PH.D. FROM THE UNIVERSITY OF WATERLOO IN	01:36PM <b>2</b>	A. YES, THEY DO.
01:33PM <b>3</b>	ONTARIO, CANADA. I GRADUATED IN 1990 FROM UNIVERSITY OF	01:36PM <b>3</b>	Q. IF WE COULD TURN TO EXHIBIT 3115, WHICH IS THE 730
01:33PM <b>4</b>	WATERLOO WITH A PH.D.	01:36PM <b>4</b>	REFERENCE MANUAL THAT YOU WERE ASKED ABOUT, IT JUST HAS A
01:33PM <b>5</b>	AND I GOT EMPLOYED IN UNIVERSITY OF CONCORDIA IN MONTREAL	01:36PM <b>5</b>	DIFFERENT EXHIBIT NUMBER ON IT.
01:33PM <b>6</b>	FOR ALMOST SIX YEARS FROM VERY LATE 1989 BEFORE I GOT GRANTED	01:36PM <b>6</b>	A. OKAY.
01:33PM <b>7</b>	THE PH.D. UNTIL I ACTUALLY GOT PROMOTED TO ASSOCIATE PROFESSOR	01:36PM <b>7</b>	Q. AND WE CAN LET'S TURN TO PAGE 5-6. AND SPECIFICALLY IF
01:33PM <b>8</b>	AND GOT TENURE, AND I WENT TO TEXAS INSTRUMENTS TO WORK THERE	01:36PM <b>8</b>	WE CAN BLOW UP 5.2.2.1.
01:33PM <b>9</b>	ON A SABBATICAL FROM UNIVERSITY AND I ACTUALLY DECIDED TO	01:36PM <b>9</b>	
			CAN YOU SEE THAT ON YOUR SCREEN, DOCTOR?
01:34PM 10	CONTINUE WORKING FOR TEXAS INSTRUMENTS FROM THAT TIME ON.	01:36PM 10	A. YES, I CAN, YES.
01:34PM 11	Q. AND I BELIEVE COUNSEL ASKED YOU ABOUT THE TI OMAP CHIPS	01:36PM 11	Q. AND THIS REFERS TO DPLL MODES?
01:34PM 12	THAT ARE AT ISSUE IN THIS CASE. DO YOU RECALL GENERALLY THAT		A. YES.
01:34PM 13	TESTIMONY?	01:36PM 13	Q. AND WHAT'S A DPLL MODE IN JUST VERY HIGH LEVEL, GENERAL
01:34PM 14	A. THAT'S CORRECT, YES.	01:36PM 14	TERMS?
01:34PM <b>15</b>	Q. AND THERE'S THE 730 AND THE 850. DO YOU RECALL THAT?	01:36PM 15	A. IT'S A DIGITAL PLL. IT DESCRIBES THE WAY THAT THE PLL
01:34PM <b>16</b>	A. YES.	01:36PM <b>16</b>	WORKS. ITS CONTROL IS DONE IN A DIGITAL MANNER VERSUS AN
01:34PM <b>17</b>	Q. AND YOU'VE READ THE, I BELIEVE, THE TECHNICAL	01:36PM <b>17</b>	ANALOG MANNER. THESE ARE THE TWO MAJOR TYPES.
01:34PM <b>18</b>	DOCUMENTATION RELATING TO BOTH OF THOSE CHIPS?	01:36PM <b>18</b>	Q. OKAY. AND DOES THE DPLL IN THESE TWO TI OMAP CHIPS HAVE
01:34PM <b>19</b>	A. YES, I LOOKED AT THE TECHNICAL REFERENCE MANUAL ONLY	01:36РМ 19	AN OUTPUT?
01:34PM <b>20</b>	RECENTLY ACTUALLY.	01:36PM <b>20</b>	A. YES, THEY DO.
01:34PM <b>21</b>	${f Q}_{f c}$ and counsel asked you a number of questions on this, on	01:37PM <b>21</b>	Q. AND WHAT'S THAT OUTPUT USED FOR?
01:34PM <b>22</b>	PLL'S. DO YOU RECALL THAT?	01:37PM <b>22</b>	A. THE OUTPUT IS USED TO CLOCK PROCESSORS. IN THE CASE OF
01:34PM <b>23</b>	A. THAT'S CORRECT, YES.	01:37PM <b>23</b>	DPLL1, IT CLOCKS MPU SUBSYSTEM.
01:34PM <b>24</b>	Q. WHAT'S A PLL IN VERY GENERAL TERMS?	01:37PM <b>24</b>	Q. AND THAT MPU SUBSYSTEM INCLUDES A CPU?
01:34PM <b>25</b>	A. THE PHASE LOCKED LOOP, IT'S AN ACRONYM THAT STANDS FOR	01:37PM <b>25</b>	A. YES, IT DOES.
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01:37PM <b>1</b>	Q. AND DOES THE OUTPUT EXCUSE ME. STRIKE THAT.	01:40PM 1 Q. WOULD YOU CONSIDER THAT RELATIONSHIP A MATHEMATICAL
01:37PM <b>2</b>	IS THE OUTPUT FREQUENCY FROM THE DPLL STABLE?	01:40PM 2 RELATIONSHIP?
		4
	OUTER CLOCK IS ALWAYS KNOWN TO HAVE A KNOWN VALUE WITHIN A	_
	TIGHT RANGE. THAT'S HOW THE SPECIFICATION ON THE PLL IS	o de visses iso establica in incluidad.
01:37PM <b>6</b>	DEVELOPED.	01:40PM 6 A. YES, IT IS.
01:37PM <b>7</b>	SO YES, THE ANSWER IS CORRECT, IT'S STABLE. IT'S A KNOWN	01:40PM 7 Q. AND SO MAY I
01:37PM 8	VALUE.	01:40PM 8 YOUR HONOR, MAY I APPROACH AND PUT UP THE
01:37PM <b>9</b>	Q. AND THEN, DOCTOR, IF YOU CAN SEE, THERE'S A REFERENCE TO	01:40PM 9 THE COURT: YOU MAY, MR. SMITH.
01:37PM 10	CK UNDERSCORE	01:40PM 10 MR. SMITH: THANK YOU, YOUR HONOR. PARDON ME.
01:37PM 11	A. REF.	01:40PM 11 (PAUSE IN PROCEEDINGS.)
01:37PM <b>12</b>	Q REF RIGHT THERE (INDICATING)?	01:40PM 12 MR. SMITH: BECAUSE THIS IS CONFIDENTIAL INFORMATION,
01:37PM 13	A. YES.	01:40PM 13 I THINK WE MAY HAVE TO PUT IT IN A WAY
01:37PM 14	Q. WHAT DOES THAT REFER TO, DOCTOR?	01:40PM 14 THE COURT: GO AHEAD. AND IF TPL OR PATRIOT NEEDS TO
01:37PM <b>15</b>	A. THAT IS TYPICALLY A CLOCK REFERENCE. THIS IS A KNOWN	01:40PM 15 STEP UP TO SEE WHAT'S ON THE BOARD, YOU HAVE MY PERMISSION AS
01:38PM <b>16</b>	REFERENCE THAT COMES FROM OFF CHIP, FROM A KNOWN TYPICALLY A	01:40PM 16 WELL.
01:38PM <b>17</b>	CRYSTAL OR ANOTHER CLOCK SOURCE OF A KNOWN HIGH ACCURACY.	01:40PM 17 MR. CARMACK: THANK YOU.
01:38PM 18	Q. AND WHAT DO YOU MEAN THAT IT COMES FROM OFF CHIP?	01:40PM 18 MR. SMITH: AND, YOUR HONOR, CAN I INVITE THE WITNESS
01:38PM <b>19</b>	A. YOU NEED A SPECIAL PROCESS TECHNOLOGY, LIKE A CRYSTAL, TO	01:40PM 19 TO COME DOWN AND USE THE EASEL?
01:38PM <b>20</b>	HAVE THE ACCURACY ASSOCIATED WITH IT. TYPICALLY IT'S DONE IN A	01:40PM <b>20</b> THE COURT: YOU MAY. YOU MAY STEP DOWN, DOCTOR.
01:38PM <b>21</b>	VERY TIGHT SUB.1 PERCENT, A THOUSAND PPL OR A HUNDRED PART PER	01:41PM 21 MR. SMITH: IF YOU COULD PUT THAT BACK UP, 5.1.
01:38PM <b>22</b>	MILLION ACCURACY.	01:41PM <b>22 Q.</b> AND DOCTOR
01:38PM <b>23</b>	SO THESE ARE BUILT AS CRYSTALS AND THEY GET CONNECTED TO	01:41PM 23 AND YOUR HONOR, MAY I HAVE A LITTLE FREEDOM TO GO LOOK AT
01:38PM <b>24</b>	THEIR OWN OSCILLATORS AND THEY GENERATE THESE EDGES THAT ARE	01:41PM <b>24</b> THAT?
01:38PM <b>25</b>	VERY ACCURATE TIME INTERVALS.	01:41PM <b>25</b> THE COURT: YOU HAVE SOME LATITUDE.
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01:38PM <b>1</b>	360 SO THEY'RE OFF CHIP, YES.	362 01:41PM <b>1</b> MR. SMITH: THANK YOU.
01:38PM <b>1</b> 01:38PM <b>2</b>		4
	SO THEY'RE OFF CHIP, YES.	01:41PM 1 MR. SMITH: THANK YOU.
01:38PM <b>2</b>	SO THEY'RE OFF CHIP, YES.  Q. AND DOCTOR, DO YOU CONSIDER A CRYSTAL TO BE ACCURATE?	01:41PM 1 MR. SMITH: THANK YOU. 01:41PM 2 Q. AND SO, DOCTOR, I BELIEVE WE WERE TALKING ABOUT THE BYPASS
01:38PM <b>2</b> 01:38PM <b>3</b>	SO THEY'RE OFF CHIP, YES.  Q. AND DOCTOR, DO YOU CONSIDER A CRYSTAL TO BE ACCURATE?  A. IT IS DESIGNED TO BE ACCURATE, YES.	01:41PM 1 MR. SMITH: THANK YOU. 01:41PM 2 Q. AND SO, DOCTOR, I BELIEVE WE WERE TALKING ABOUT THE BYPASS 01:41PM 3 MODE.
01:38PM <b>2</b> 01:38PM <b>3</b> 01:38PM <b>4</b>	SO THEY'RE OFF CHIP, YES.  Q. AND DOCTOR, DO YOU CONSIDER A CRYSTAL TO BE ACCURATE?  A. IT IS DESIGNED TO BE ACCURATE, YES.  Q. THAT'S THE POINT OF A CRYSTAL? IS THAT FAIR?	01:41PM 1 MR. SMITH: THANK YOU. 01:41PM 2 Q. AND SO, DOCTOR, I BELIEVE WE WERE TALKING ABOUT THE BYPASS 01:41PM 3 MODE. 01:41PM 4 A. THAT'S CORRECT.
01:38PM 2 01:38PM 3 01:38PM 4 01:38PM 5	SO THEY'RE OFF CHIP, YES.  Q. AND DOCTOR, DO YOU CONSIDER A CRYSTAL TO BE ACCURATE?  A. IT IS DESIGNED TO BE ACCURATE, YES.  Q. THAT'S THE POINT OF A CRYSTAL? IS THAT FAIR?  A. YES, CORRECT.	01:41PM 1 MR. SMITH: THANK YOU. 01:41PM 2 Q. AND SO, DOCTOR, I BELIEVE WE WERE TALKING ABOUT THE BYPASS 01:41PM 3 MODE. 01:41PM 4 A. THAT'S CORRECT. 01:41PM 5 Q. AND THAT THERE'S A RELATIONSHIP BETWEEN THE REFERENCE
01:38PM 2 01:38PM 3 01:38PM 4 01:38PM 5 01:38PM 6	SO THEY'RE OFF CHIP, YES.  Q. AND DOCTOR, DO YOU CONSIDER A CRYSTAL TO BE ACCURATE?  A. IT IS DESIGNED TO BE ACCURATE, YES.  Q. THAT'S THE POINT OF A CRYSTAL? IS THAT FAIR?  A. YES, CORRECT.  Q. AND CAN YOU TELL FROM THESE, FROM THIS PAGE, DOCTOR, THIS	01:41PM 1 MR. SMITH: THANK YOU. 01:41PM 2 Q. AND SO, DOCTOR, I BELIEVE WE WERE TALKING ABOUT THE BYPASS 01:41PM 3 MODE. 01:41PM 4 A. THAT'S CORRECT. 01:41PM 5 Q. AND THAT THERE'S A RELATIONSHIP BETWEEN THE REFERENCE 01:41PM 6 INPUT THAT COMES FROM THE CRYSTAL AND THE OUTPUT THAT COMES OUT
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	Case5:08-cv-00882-PSG gocumer	t671-15	Filed10/31/13 Page7 of 7
01:42PM <b>1</b>	COULD BE THIS EQUATION, THIS WOULD BE CASE A (INDICATING); CASE	01:45PM	WHICH IS THE M FACTOR HERE WITH THE DECLARE, WHICH COULD BE A
01:42PM <b>2</b>	B, IT COULD BE THE FREQUENCY OF CLOCK REFERENCE DIVIDED BY 4	01:45PM <b>2</b>	NUMBER SET BY REGISTER BETWEEN 1 AND 31, SO 1, 2, 3, 4, ALL THE
01:42PM <b>3</b>	(INDICATING).	01:45PM <b>3</b>	WAY UP TO 31 ARE OPTIONS.
01:42PM <b>4</b>	I THINK THE FIRST CASE IT SAYS IT COULD BE INPUT REFERENCE	01:45PM <b>4</b>	AND IT'S DIVIDED DOWN BY AN INTEGER THAT IS SO THE
01:42PM <b>5</b>	CLOCK OR THE CLOCK REV BY 2 OR THE CLOCK REV BY 4 (INDICATING).	01:45PM <b>5</b>	INPUT CLOCK REFERENCE IS M EQUALS 31 AND 1 LESS THAN N LESS
01:42PM <b>6</b>	I BELIEVE THAT'S CORRECT. YES.	01:45PM <b>6</b>	THAN 4, SIGNAL EQUALS 4 IS THE OTHER INTEGER (INDICATING).
01:42PM <b>7</b>	SO IT COULD BE ALSO THE LAST ONE, THE FIRST ONE ON THIS	01:45PM <b>7</b>	AND, YEAH, AND SO BASICALLY THE OUTPUT CLOCK RANGE IS THE
01:42PM <b>8</b>	STATEMENT, COULD BE NOT EXACTLY EQUAL TO THE FREQUENCY OF THE	01:45PM <b>8</b>	MINIMUM OF CLOCK REFERENCE BY 4 TO 31 TIMES CLOCK REFERENCE.
01:42PM <b>9</b>	CLOCK REV. SO THE OUTPUT IS EXACTLY EQUAL TO IT. IT'S THE	01:45PM <b>9</b>	THIS IS THE MAXIMUM AND MINIMUM OF WHAT THE PLL WOULD DO.
01:42PM <b>10</b>	BYPASS.	01:45PM 10	THIS TYPICALLY IS WHAT YOU CALL THE INPUT DIVIDER AND THIS
01:42PM <b>11</b>	Q. IS THAT	01:45PM <b>11</b>	TYPICALLY IS CALLED THE FEEDBACK (INDICATING). BUT M IS THE
01:43PM <b>12</b>	A. THESE ARE THE THREE OPTIONS. THIS COMES FIRST	01:45PM <b>12</b>	FEEDBACK DIVIDER VALUE, AND N IS THE INPUT DIVIDER NUMBER.
01:43PM <b>13</b>	(INDICATING). IT'S ONE OF THOSE THREE IS WHAT IS BEING SAID.	01:45PM 13	AND BOTH OF THESE SET THE MATHEMATIC EQUATION THAT USES
01:43PM <b>14</b>	Q. THANK YOU, DOCTOR.	01:45PM 14	THESE TWO EXTREME VALUES. THIS IS THE MINIMUM POSSIBLE VALUE
01:43PM <b>15</b>	SO C, IT WOULD BE AN ACCURATE STATEMENT TO SAY THAT IT'S	01:46PM 15	THAT CAN BE PRODUCE, AND THAT'S THE MAXIMUM POSSIBLE VALUE OUT
01:43PM <b>16</b>	DIRECTLY FROM CLOCK THE CK_REF IS DIRECTLY CLOCKING THE CPU?	01:46PM 16	OF THESE NUMBERS (INDICATING).
01:43PM <b>17</b>	A. YES. AND THE REASON WHY I MENTION FREQUENCY, BECAUSE WHAT	01:46PM <b>17</b>	Q. DOCTOR, DOES THIS FORMULA IN THE LOCK MODE REQUIRE THE
01:43PM <b>18</b>	IS WHAT MATTERS IS EXACT TIME BETWEEN THE EDGES ARE OR	01:46PM 18	CK_REF?)
01:43PM <b>19</b>	GREATER THAN THE EDGES. THAT'S REALLY WHAT IS BEING PASSED ON.	01:46PM 19	A. YES, OF COURSE. IT'S A MULTIPLE, SO THE EXACT OUTPUT IS A
01:43PM <b>20</b>	Q. AND AGAIN, JUST SO WE'RE CLEAR, CK_REF, WHAT DOES THAT	01:46PM <b>20</b>	MULTIPLE OF THE CLOCK FREQUENCY, IN THIS CASE IT'S 31 TIMES THE
01:43PM <b>21</b>	REFER TO?	01:46PM <b>21</b>	CLOCK REFERENCE, THAT'S THE HIGHEST POSSIBLE (INDICATING), AND
01:43PM <b>22</b>	A. CK_REF IS THE INPUT SIGNAL THAT IS COMING FROM THE	01:46PM <b>22</b>	HERE THE MINIMUM IS THE CLOCK REFERENCE DIVIDED, BEING SLOWED
01:43PM <b>23</b>	REFERENCE CRYSTAL OR THE REFERENCE INPUT CRYSTAL, THE INPUT	01:46PM <b>23</b>	DOWN BY A FACTOR OF 4, EVERY FOURTH PAGE (INDICATING), WHERE
01:43PM <b>24</b>	CRYSTAL THAT GENERATES THE REFERENCE CLOCK.	01:46PM <b>24</b>	HERE FOR EVERY EDGE YOU GET FROM THE CLOCK REFERENCE, YOU
01:43PM <b>25</b>	Q. DR. HAROUN, IF YOU WOULD BE SO KIND, COULD YOU JUST PUT ON	01:46PM <b>25</b>	ACTUALLY FILL IN 31, 30 EXTRA EDGES, SO A TOTAL OF 31 EDGES FOR
	UNITED STATES COURT REPORTERS		UNITED STATES COURT REPORTERS
	364		366
01:43PM <b>1</b>	364 THE TOP OF THAT BYPASS MODE SO WE KNOW WHICH IT IS?	(01:46PM) 1	THE CLOCK (INDICATING).
01:43PM <b>1</b> 01:43PM <b>2</b>		01:46PM	
	THE TOP OF THAT BYPASS MODE SO WE KNOW WHICH IT IS?		THE CLOCK (INDICATING).
01:43PM <b>2</b>	THE TOP OF THAT BYPASS MODE SO WE KNOW WHICH IT IS?  A. YES, THIS ONE IS BYPASS (INDICATING). THIS IS WHAT WE	01:46PM <b>2</b>	THE CLOCK (INDICATING).  Q. AND DOCTOR, DO YOU MIND PUTTING UP THAT FORMULA FOR THE
01:43PM <b>2</b> 01:43PM <b>3</b>	THE TOP OF THAT BYPASS MODE SO WE KNOW WHICH IT IS?  A. YES, THIS ONE IS BYPASS (INDICATING). THIS IS WHAT WE WERE DISCUSSING. THAT'S THE FIRST OF THEM.	01:46PM <b>2</b> 01:46PM <b>3</b>	THE CLOCK (INDICATING).  Q. AND DOCTOR, DO YOU MIND PUTTING UP THAT FORMULA FOR THE LOCK MODE OF THE DPLL IN THE TI OMAP CHIPS?
01:43PM <b>2</b> 01:43PM <b>3</b> 01:43PM <b>4</b>	THE TOP OF THAT BYPASS MODE SO WE KNOW WHICH IT IS?  A. YES, THIS ONE IS BYPASS (INDICATING). THIS IS WHAT WE WERE DISCUSSING. THAT'S THE FIRST OF THEM.  Q. NOW, LET'S TALK ABOUT LOCK MODE, AND IF YOU DON'T MIND TO	01:46PM <b>2</b> 01:46PM <b>3</b> 01:46PM <b>4</b>	THE CLOCK (INDICATING).  Q. AND DOCTOR, DO YOU MIND PUTTING UP THAT FORMULA FOR THE LOCK MODE OF THE DPLL IN THE TI OMAP CHIPS?  A. OKAY. SO THE FREQUENCY OF THE OUTPUT WOULD BE EQUAL TO,
01:43PM <b>2</b> 01:43PM <b>3</b> 01:43PM <b>4</b> 01:43PM <b>5</b>	THE TOP OF THAT BYPASS MODE SO WE KNOW WHICH IT IS?  A. YES, THIS ONE IS BYPASS (INDICATING). THIS IS WHAT WE  WERE DISCUSSING. THAT'S THE FIRST OF THEM.  Q. NOW, LET'S TALK ABOUT LOCK MODE, AND IF YOU DON'T MIND TO  FLIP OPEN THE FLIP OVER THE CHART.	01:46PM <b>2</b> 01:46PM <b>3</b> 01:46PM <b>4</b> 01:46PM <b>5</b>	THE CLOCK (INDICATING).  Q. AND DOCTOR, DO YOU MIND PUTTING UP THAT FORMULA FOR THE LOCK MODE OF THE DPLL IN THE TI OMAP CHIPS?  A. OKAY. SO THE FREQUENCY OF THE OUTPUT WOULD BE EQUAL TO, AND HERE IT'S ACTUALLY BECAUSE ALL OF THE MOST WE ARE
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01:43PM 2 01:43PM 3 01:43PM 4 01:43PM 5 01:43PM 6 01:44PM 7 01:44PM 8 01:44PM 9	THE TOP OF THAT BYPASS MODE SO WE KNOW WHICH IT IS?  A. YES, THIS ONE IS BYPASS (INDICATING). THIS IS WHAT WE WERE DISCUSSING. THAT'S THE FIRST OF THEM.  Q. NOW, LET'S TALK ABOUT LOCK MODE, AND IF YOU DON'T MIND TO FLIP OPEN THE FLIP OVER THE CHART.  A. OKAY.  Q. AND LET ME ASK YOU THE SAME QUESTIONS.	01:46PM 2 01:46PM 3 01:46PM 4 01:46PM 5 01:46PM 6 01:46PM 7 01:47PM 8 01:47PM 9	THE CLOCK (INDICATING).  Q. AND DOCTOR, DO YOU MIND PUTTING UP THAT FORMULA FOR THE LOCK MODE OF THE DPLL IN THE TI OMAP CHIPS?  A. OKAY. SO THE FREQUENCY OF THE OUTPUT WOULD BE EQUAL TO, AND HERE IT'S ACTUALLY BECAUSE ALL OF THE MOST WE ARE REPRESENTED BY A MATHEMATIC EQUATION, IT WOULD BE THE FREQUENCY OF THE CK_REF AND IT IS GOING TO BE MULTIPLIED THE INTEGER M IN
01:43PM 2 01:43PM 3 01:43PM 4 01:43PM 5 01:43PM 6 01:44PM 7 01:44PM 8 01:44PM 9 01:44PM 10	THE TOP OF THAT BYPASS MODE SO WE KNOW WHICH IT IS?  A. YES, THIS ONE IS BYPASS (INDICATING). THIS IS WHAT WE WERE DISCUSSING. THAT'S THE FIRST OF THEM.  Q. NOW, LET'S TALK ABOUT LOCK MODE, AND IF YOU DON'T MIND TO FLIP OPEN THE FLIP OVER THE CHART.  A. OKAY.  Q. AND LET ME ASK YOU THE SAME QUESTIONS.  THERE'S A CK_REF THAT'S REFERRED TO. WHAT IS THAT	01:46PM 2 01:46PM 3 01:46PM 4 01:46PM 5 01:46PM 6 01:46PM 7 01:47PM 8 01:47PM 9 01:47PM 10	THE CLOCK (INDICATING).  Q. AND DOCTOR, DO YOU MIND PUTTING UP THAT FORMULA FOR THE LOCK MODE OF THE DPLL IN THE TI OMAP CHIPS?  A. OKAY. SO THE FREQUENCY OF THE OUTPUT WOULD BE EQUAL TO, AND HERE IT'S ACTUALLY BECAUSE ALL OF THE MOST WE ARE REPRESENTED BY A MATHEMATIC EQUATION, IT WOULD BE THE FREQUENCY OF THE CK_REF AND IT IS GOING TO BE MULTIPLIED THE INTEGER M IN HERE DIVIDED BY THE INPUT N (INDICATING). AND THAT IS THE
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1 2	UNITED STATES DIS				3	MAC LECKRONE		
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4	DAY COOL DIV	VIDION		201 111	5	REDIRECT EXAM BY MR. CARMACK	P. 1506	
5					6	GLORIA FELCYN	D 1507	
6	HTC CORPORATION AND HTC AMERICA, INC.,	) C-08-00882 PSG				DIRECT EXAM BY MR. HOGE CROSS-EXAM BY MR. LEMIEUX	P. 1507 P. 1513	
7	PLAINTIFF,	) SAN JOSE, CALIFORNIA	01	1:36PM	7	VOJIN OKLOBDZIJA		
8	VS.	) OCTOBER 1, 2013 )			8	DIRECT EXAM BY MR. MARSH CROSS-EXAM BY MR. SMITH	P. 1515 P. 1530	
9	TECHNOLOGY PROPERTIES LIMITED,	) VOLUME 7			9	REDIRECT EXAM BY MR. MARSH	P. 1533	
10	PATRIOT SCIENTIFIC CORPORATION AND ALLIACENSE LIMITED,	) PAGES 1488-1637		•	10	CLOSING ARGUMENT BY MR. OTTESON	P. 1536	
11	DEFENDANT.	)			11	CLOSING ARGUMENT BY MS. KEEFE	P. 1571	
12	TRANSCRIPT OF PR	OCEFOINGS			12	CLOSING ARGOMENT BT MS. RELIE	F. 1371	
13	BEFORE THE HONORABLE UNITED STATES MAGIS	PAUL S. GREWAL			13			
14		00000			14	INDEX OF EXHIBIT	<u>TS</u>	
15	APPEARANCES:				15	MARKED ADMITTE	ED	
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19	ADDRAG COLOR	ON MEVE PAGE	01	1:09PM		3103, 3109, 3112, 3114, 3117, 3145, 3146, 3147, 3148, 3149,		
20 21	APPEARANCES CONTINUE	D ON NEXT PAGE	01	1:09PM 1:09PM		3150, 3151, 3152, 3153, 3154, 3155, 3156, 3157, 3158, 3159,		
22			01	1:10PM	20	3160, 3161, 3162, 3163, 3164, 3165, 3166, 3167, 3168, 3169,		
23	OFFICIAL COURT REPORTER: LEE-AI	NNE SHORTRIDGE, CSR, CRR		1:10PM 2 1:10PM	21	3170, 3171, 3172, 3173, 3174, 3175, 3176, 3177, 3178, 3179,		
24		FICATE NUMBER 9595	01	1:11PM	22	3180, 3181, 3182, 3439		
25	PROCEEDINGS RECORDED BY MEC	CHANICAL STENOGRAPHY		:	23	PDX-1002, PDX-1003 1499	5	
	TRANSCRIPT PRODUCED	WITH COMPUTER		:	24			
	UNITED STATES COURT	REPORTERS		:	25			
						UNITED STATES COUR	T REPORTERS	
1		14	89					1491
1 2	APPEARANCES (CONTINUED)	14	89		1	SAN JOSE, CALIFORNIA OC	TOBER 1, 2013	1491
	APPEARANCES (CONTINUED)  FOR THE PLAINTIFF: COOLEY LLP	14	89		1 2	SAN JOSE, CALIFORNIA OC PROCEEDING		1491
2	FOR THE PLAINTIFF: COOLEY LLP BY: STEPHEN R. SMIT	тн		)1:06PM				1491
2 3 4	FOR THE PLAINTIFF: COOLEY LLP BY: STEPHEN R. SMIT 1299 PENNSYLVANIA . SUITE 700	TH AVENUE, NW	01	01:06PM 01:06PM	2	PROCEEDING	S	
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2 3 4 5 6 7 8 9 10 11 12 13 14	FOR THE PLAINTIFF: COOLEY LLP BY: STEPHEN R. SMIT 1299 PENNSYLVANIA . SUITE 700 WASHINGTON, D.C2  BY: MATTHEW J. LEAI 380 INTERLOCKEN CR BROOMFIELD, COLOR,  ALSO PRESENT: VINCENT LAM  FOR DEFENDANTS AGILITY IP LA TPL AND BY: JAMES C. OTT ALLIACENSE: IRVIN E. TVA THOMAS T. CARMA PHILIP W. MARSH DAVID LANSKY 149 COMMONWEALTH MENLO PARK, CALIFOL  FOR DEFENDANT KIRBY, NOON, PATRIOT: CHARLES T. HOGE	TH AVENUE, NW 20004  RY RESCENT, SUITE 900 ADO 80021  AW TESON IN ACK I DRIVE RNIA 94025  AN, LANCE & HOGE E	01 01 01 01 01 01 01 01 01	11:06PM	2 3 4 5 6 7 8 9 10 11 11 12 13 14 15	PROCEEDING  (JURY OUT AT 1:06 P.M.)  THE COURT: GOOD AFTERNOON  PLEASE CALL THE MATTER THAT'S BEEN S  THE CLERK: YES, YOUR HONOR  CORPORATION, ET AL VERSUS TECHNOLO  CASE NUMBER CV-08-882 PSG, MATTER C  COUNSEL, PLEASE STATE YOUR APPE  MR. OTTESON: GOOD AFTERNOON  JIM OTTESON FROM AGILITY IP LAW REPE  ALLIACENSE, ACCOMPANIED BY MANY OF  MR. HOGE: GOOD AFTERNOON,  FOR PATRIOT SCIENTIFIC.  THE COURT: MR. HOGE, MR. OTMAS. KEEFE: GOOD AFTERNOON	N. MR. RIVERA, WEST FOR TRIAL. CALLING HTC DOY PROPERTIES LEDON, FOR TRIAL. CARANCES. DON, YOUR HONOR RESENTING DEFEN MY COLLEAGUES A, YOUR HONOR. CI	OULD YOU  IMITED, ET AL,  DANTS TPL AND AND CLIENTS.  HARLIE HOGE  TERNOON.  IEIDI KEEFE
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	FOR THE PLAINTIFF: COOLEY LLP BY: STEPHEN R. SMIT 1299 PENNSYLVANIA . SUITE 700 WASHINGTON, D.C2  BY: MATTHEW J. LEAI 380 INTERLOCKEN CR BROOMFIELD, COLOR.  ALSO PRESENT: VINCENT LAM  FOR DEFENDANTS TPL AND BY: JAMES C. OTT ALLIACENSE: IRVIN E. TYA THOMAS T. CARM PHILIP W. MARSH DAVID LANSKY 149 COMMONWEALTH MENLO PARK, CALIFOI  FOR DEFENDANT PATRIOT: CHARLES T. HOGE 35 TENTH AVENUE SAN DIEGO, CALIFORI  ALSO PRESENT: CHARLES MOO	TH AVENUE, NW 20004  RY RESCENT, SUITE 900 ADO 80021  AW TESON AN ACK  I DRIVE RNIA 94025  AN, LANCE & HOGE E NIA 92101	01 01 01 01 01 01 01 01 01 01	11:06PM	2 3 4 5 6 7 8 9 110 111 112 113 114 115 116	PROCEEDING  (JURY OUT AT 1:06 P.M.)  THE COURT: GOOD AFTERNOON  PLEASE CALL THE MATTER THAT'S BEEN S  THE CLERK: YES, YOUR HONOR  CORPORATION, ET AL VERSUS TECHNOLO  CASE NUMBER CV-08-882 PSG, MATTER C  COUNSEL, PLEASE STATE YOUR APPE  MR. OTTESON: GOOD AFTERNOON  JIM OTTESON FROM AGILITY IP LAW REPR  ALLIACENSE, ACCOMPANIED BY MANY OF  MR. HOGE: GOOD AFTERNOON,  FOR PATRIOT SCIENTIFIC.  THE COURT: MR. HOGE, MR. OTM  MS. KEEFE: GOOD AFTERNOON  FOR COOLEY FOR HTC, ALONG WITH MY TOTAL  THE COULTS HER ALONG WITH MY TOTAL  THE COULTS HE ALONG WITH MY TOTAL  THE COULTS HER ALONG WITH MY TOTAL  THE COULTS	N. MR. RIVERA, WO SET FOR TRIAL. R. CALLING HTC DOY PROPERTIES LO DON FOR TRIAL. CARANCES. DON, YOUR HONOR RESENTING DEFEN MY COLLEAGUES A TOUR HONOR. CI	OULD YOU  IMITED, ET AL,  DANTS TPL AND AND CLIENTS. HARLIE HOGE  TERNOON. IEIDI KEEFE ENT.
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2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	FOR THE PLAINTIFF: COOLEY LLP BY: STEPHEN R. SMIT 1299 PENNSYLVANIA. SUITE 700 WASHINGTON, D.C. 2  BY: MATTHEW J. LEAI 380 INTERLOCKEN CR BROOMFIELD, COLOR.  ALSO PRESENT: VINCENT LAM  FOR DEFENDANTS AGILITY IP LA TPL AND BY: JAMES C. OTT ALLIACENSE: IRVIN E. TVA THOMAS T. CARME PHILIP W. MARSH DAVID LANSKY 149 COMMONWEALTH MENLO PARK, CALIFOI  FOR DEFENDANT KIRBY, NOON. PATRIOT: CHARLES T. HOGE 35 TENTH AVENUE SAN DIEGO, CALIFORI  ALSO PRESENT: CHARLES MOO CLIFFORD FLOWERS	TH AVENUE, NW 20004  RY RESCENT, SUITE 900 ADO 80021  AW TESON AN ACK  I DRIVE RNIA 94025  AN, LANCE & HOGE E NIA 92101	01 01 01 01 01 01 01 01 01 01 01	11:06PM	2 3 4 5 6 7 8 9 10 11 11 12 13 14 15 16 17 18	PROCEEDING  (JURY OUT AT 1:06 P.M.)  THE COURT: GOOD AFTERNOON  PLEASE CALL THE MATTER THAT'S BEEN S  THE CLERK: YES, YOUR HONOR  CORPORATION, ET AL VERSUS TECHNOLO  CASE NUMBER CV-08-882 PSG, MATTER C  COUNSEL, PLEASE STATE YOUR APPE  MR. OTTESON: GOOD AFTERNOON  JIM OTTESON FROM AGILITY IP LAW REPE  ALLIACENSE, ACCOMPANIED BY MANY OF  MR. HOGE: GOOD AFTERNOON,  FOR PATRIOT SCIENTIFIC.  THE COURT: MR. HOGE, MR. OT  MS. KEEFE: GOOD AFTERNOON  FOR COOLEY FOR HTC, ALONG WITH MY TO  THE COURT: GOOD AFTERNOON  MS. KEEFE: GOOD AFTERNOON	N. MR. RIVERA, WO SET FOR TRIAL. R. CALLING HTC DOY PROPERTIES LO DON FOR TRIAL. EARANCES. DON, YOUR HONOR RESENTING DEFEN MY COLLEAGUES A , YOUR HONOR. CI	OULD YOU  IMITED, ET AL,  DANTS TPL AND AND CLIENTS. HARLIE HOGE ITERNOON. IEIDI KEEFE ENT.  , MS. KEEFE.
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	FOR THE PLAINTIFF: COOLEY LLP BY: STEPHEN R. SMIT 1299 PENNSYLVANIA SUITE 700 WASHINGTON, D.C. 2  BY: MATTHEW J. LEAI 380 INTERLOCKEN CR BROOMFIELD, COLOR,  ALSO PRESENT: VINCENT LAM  FOR DEFENDANTS AGILITY IP LA TPL AND BY: JAMES C. OTT ALLIACENSE: IRVIN E. TVA THOMAS T. CARMA PHILIP W. MARSH DAVID LANSKY 149 COMMONWEALTH MENLO PARK, CALIFOR  FOR DEFENDANT KIRBY, NOON, PATRIOT: CHARLES T. HOGE 35 TENTH AVENUE SAN DIEGO, CALIFORI  ALSO PRESENT: CHARLES MOO CLIFFORD FLOWERS DAN LECKRONE	TH AVENUE, NW 20004  RY RESCENT, SUITE 900 ADO 80021  AW TESON AN ACK  I DRIVE RNIA 94025  AN, LANCE & HOGE E NIA 92101	01 01 01 01 01 01 01 01 01 01 01 01	11:06PM 11:06P	2 3 4 5 6 7 8 9 110 111 112 113 114 115 116 117 118 119 120	PROCEEDING  (JURY OUT AT 1:06 P.M.)  THE COURT: GOOD AFTERNOON  PLEASE CALL THE MATTER THAT'S BEEN S  THE CLERK: YES, YOUR HONOR  CORPORATION, ET AL VERSUS TECHNOLO  CASE NUMBER CV-08-882 PSG, MATTER CO  COUNSEL, PLEASE STATE YOUR APPE  MR. OTTESON: GOOD AFTERNOON  JIM OTTESON FROM AGILITY IP LAW REPR  ALLIACENSE, ACCOMPANIED BY MANY OF  MR. HOGE: GOOD AFTERNOON,  FOR PATRIOT SCIENTIFIC.  THE COURT: MR. HOGE, MR. OT  MS. KEEFE: GOOD AFTERNOON  THE COURT: GOOD AFTERNOON  MS. KEEFE: GOOD AFTERNOON  MS. KEEFE: GOOD AFTERNOON  THE COURT: ALL RIGHT. COUN	N. MR. RIVERA, WOSET FOR TRIAL.  C. CALLING HTC DOY PROPERTIES L. DON FOR TRIAL.  CARANCES. DON, YOUR HONOR RESENTING DEFEN MY COLLEAGUES A TOYOUR HONOR. CI  TTESON, GOOD AFT TOYOUR HONOR. H TEAM AND THE CLI N TO YOU AS WELL L USEL, BEFORE WE F	OULD YOU  IMITED, ET AL,  DANTS TPL AND AND CLIENTS. HARLIE HOGE  TERNOON. IEIDI KEEFE ENT.  , MS. KEEFE.  RESUME
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2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	FOR THE PLAINTIFF: COOLEY LLP BY: STEPHEN R. SMIT 1299 PENNSYLVANIA SUITE 700 WASHINGTON, D.C. 2  BY: MATTHEW J. LEAI 380 INTERLOCKEN CR BROOMFIELD, COLOR,  ALSO PRESENT: VINCENT LAM  FOR DEFENDANTS AGILITY IP LA TPL AND BY: JAMES C. OTT ALLIACENSE: IRVIN E. TVA THOMAS T. CARMA PHILIP W. MARSH DAVID LANSKY 149 COMMONWEALTH MENLO PARK, CALIFOR  FOR DEFENDANT KIRBY, NOON, PATRIOT: CHARLES T. HOGE 35 TENTH AVENUE SAN DIEGO, CALIFORI  ALSO PRESENT: CHARLES MOO CLIFFORD FLOWERS DAN LECKRONE	TH AVENUE, NW 20004  RY RESCENT, SUITE 900 ADO 80021  AW TESON AN ACK  I DRIVE RNIA 94025  AN, LANCE & HOGE E NIA 92101	01 01 01 01 01 01 01 01 01 01 01 01 01 0	11:06PM 11:06P	2 3 4 5 6 7 8 9 10 11 11 12 13 14 15 16 17 118 19 20 21 22	PROCEEDING  (JURY OUT AT 1:06 P.M.)  THE COURT: GOOD AFTERNOON  PLEASE CALL THE MATTER THAT'S BEEN S  THE CLERK: YES, YOUR HONOR  CORPORATION, ET AL VERSUS TECHNOLO  CASE NUMBER CV-08-882 PSG, MATTER C  COUNSEL, PLEASE STATE YOUR APPE  MR. OTTESON: GOOD AFTERNOON  JIM OTTESON FROM AGILITY IP LAW REPE  ALLIACENSE, ACCOMPANIED BY MANY OF  MR. HOGE: GOOD AFTERNOON,  FOR PATRIOT SCIENTIFIC.  THE COURT: MR. HOGE, MR. OT  MS. KEEFE: GOOD AFTERNOON  FOR COOLEY FOR HTC, ALONG WITH MY TO  THE COURT: GOOD AFTERNOON  MS. KEEFE: GOOD AFTERNOON  THE COURT: ALL RIGHT. COUN  MATTERS IN THIS TRIAL, ARE THERE ANY  OTHER MATTERS WE CAN ADDRESS?	N. MR. RIVERA, WO SET FOR TRIAL.  C. CALLING HTC DOY PROPERTIES L. DON FOR TRIAL.  CARANCES. DON, YOUR HONOR RESENTING DEFEN MY COLLEAGUES  , YOUR HONOR. CI TESON, GOOD AFT  I, YOUR HONOR. H TEAM AND THE CLI N TO YOU AS WELL  L. SEL, BEFORE WE F  CEVIDENTIARY ISS	OULD YOU  IMITED, ET AL,  DANTS TPL AND AND CLIENTS. HARLIE HOGE  TERNOON. IEIDI KEEFE ENT.  , MS. KEEFE.  RESUME IUES OR
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	Case5:08-cv-00882-PSG <sub>1548</sub> cumer	t671-16	Filed10/31/13 Page3 of 4 1550
02:22PM <b>1</b>	WELL, WHAT IS IT EXACTLY? LET'S LOOK AT CLAIM 6 IF WE	02:25PM <b>1</b>	THAT IS SELECTED AT ANY GIVEN TIME, THAT IS USED TO THEN CLOCK
02:22PM <b>2</b>	LOOK AT COLUMN 2, LINES 18 TO 20. IT SAYS HERE THAT "AN ENTIRE	02:25PM <b>2</b>	THE CPU.
02:22PM <b>3</b>	OSCILLATOR DISPOSED UPON SAID INTEGRATED CIRCUIT SUBSTRATE,"	02:25PM <b>3</b>	IN ADDITION, IN THE PLL, AS YOU KNOW, IT GOES DOWN TO THIS
02:23PM <b>4</b>	THAT'S THE CHIP, "AND CONNECTED TO CENTRAL PROCESSING UNIT,	02:25PM <b>4</b>	DIVIDE THAT DIVIDED THAT VERY, VERY FAST, HIGH FREQUENCY CLOCK
02:23PM <b>5</b>	SAID OSCILLATOR CLOCKING SAID CENTRAL PROCESSING UNIT AT A	02:26PM <b>5</b>	SIGNAL DOWN TO, IN THE QUALCOMM CHIPS, 19.2 MEGAHERTZ
02:23PM <b>6</b>	CLOCK RATE."	02:26PM <b>6</b>	(INDICATING).
02:23PM <b>7</b>	SO WHAT DOES THE EVIDENCE SHOW?	02:26PM <b>7</b>	WHY? BECAUSE THAT'S THE FREQUENCY OF THE TCXO
02:23PM <b>8</b>	WELL, LET ME BACK UP. JUDGE GREWAL HAS ACTUALLY PUT AN	02:26PM <b>8</b>	(INDICATING), THE EXTERNAL REFERENCE CRYSTAL.
02:23PM <b>9</b>	EXTRA GLOSS ON THE MEANING OF "ENTIRE OSCILLATOR," AND YOU'RE	02:26PM <b>9</b>	AND THE REASON THEY WANT THEM TO BE THE SAME FREQUENCY IS
02:23PM <b>10</b>	GOING TO GET THIS IN YOUR JURY INSTRUCTIONS, TOO, SO LET'S TALK	02:26PM <b>10</b>	BECAUSE THEY THEN WANT TO MATCH UP THOSE SQUARE WAVES, THEY
02:23PM <b>11</b>	ABOUT WHAT THAT IS.	02:26PM <b>11</b>	WANT TO MATCH UP THE EDGES OF THE SQUARE WAVES HERE IN THE
02:23PM <b>12</b>	SO IN YOUR JURY INSTRUCTIONS, AFTER CLOSING ARGUMENTS,	02:26PM <b>12</b>	PHASE DETECTOR (INDICATING).
02:23PM <b>13</b>	JUDGE GREWAL IS ALSO GOING TO TELL YOU THIS ABOUT WHAT "ENTIRE	02:26PM <b>13</b>	AND THEN WHAT HAPPENS? THEN WHAT DOES THE PLL DO WITH
02:23PM <b>14</b>	OSCILLATOR" MEANS.	02:26PM <b>14</b>	THAT CLOCK SIGNAL? WELL, WHAT HAPPENS NEXT IS IT MAKES LITTLE
02:23PM <b>15</b>	"THE TERM 'ENTIRE OSCILLATOR' IN CLAIMS 6 AND 13 IS	02:26PM <b>15</b>	ADJUSTMENTS WITH THE CHARGE PUMP AND IT STORES CORRECTION
02:23PM <b>16</b>	PROPERLY UNDERSTOOD TO EXCLUDE ANY EXTERNAL CLOCK USED TO	02:26PM <b>16</b>	CHARGES HERE (INDICATING).
02:23PM <b>17</b>	GENERATE THE SIGNAL USED TO CLOCK THE CPU."	02:26PM <b>17</b>	NOW, DO WE HAVE THAT 19.2 MEGAHERTZ CLOCK SIGNAL SQUARE
02:23PM <b>18</b>	OKAY. THIS GOES TO WHAT THEIR NON-INFRINGEMENT ARGUMENT	02:26PM <b>18</b>	WAVE CONTINUING THROUGH TO THE RING OSCILLATORS (INDICATING)?
02:23PM <b>19</b>	IS, SO WE'RE GOING TO TALK ABOUT IT RIGHT NOW.	02:26PM <b>19</b>	NO. NO WAY. THAT CLOCK SIGNAL FROM THE EXTERNAL REFERENCE IS
02:23PM <b>20</b>	BUT LET'S REVIEW THE EVIDENCE. FIRST OF ALL, AS I THINK	02:27PM <b>20</b>	NOT USED TO GENERATE THE CLOCK SIGNAL OF THE RING OSCILLATORS.
02:23PM <b>21</b>	YOU HEARD A NUMBER OF TIMES FROM MR. DENA, FROM DR. HAROUN,	02:27PM <b>21</b>	IT STOPS.
02:24PM <b>22</b>	FROM TI, AND ALSO FROM MR. GAFFORD, THEY ADMIT THAT EVERY	02:27PM <b>22</b>	WHAT GENERATES THE CLOCK SIGNAL FOR THESE CLOCK FOR
02:24PM <b>23</b>	SINGLE ACCUSED PRODUCT HAS A MICROPROCESSOR CHIP WITH AN	02:27PM <b>23</b>	THESE RING OSCILLATORS IS POWER, AND THEY'VE GOT THAT, ALL FOUR
02:24PM <b>24</b>	ON-CHIP RING OSCILLATOR IN A PLL THAT'S ON THE SAME SILICON	02:27PM <b>24</b>	OF THEM HAVE THAT ALL THE TIME, EVEN THE ONES THAT AREN'T
02:24PM <b>25</b>	CHIP AS THE CPU.	02:27PM <b>25</b>	SELECTED TO BE IN THE PLL AT ANY GIVEN TIME. THEY'RE ALWAYS
	UNITED STATES COURT REPORTERS		UNITED STATES COURT REPORTERS
02:24PM <b>1</b>	1549 SO WE KNOW THAT.	02:27PM <b>1</b>	1551 GENERATING A CLOCK SIGNAL
02:24PM <b>1</b>	1549 SO WE KNOW THAT. AND ACCORDING TO MR. GAFFORD, THE RING OSCILLATORS IN	02:27PM <b>1</b>	1551 GENERATING A CLOCK SIGNAL.  NOW, LET'S TAKE A LOOK AT DDX-24 IF WE COULD, PLEASE, AND
022	SO WE KNOW THAT.		GENERATING A CLOCK SIGNAL.
02:24PM <b>2</b>	SO WE KNOW THAT.  AND ACCORDING TO MR. GAFFORD, THE RING OSCILLATORS IN	02:27PM <b>2</b>	GENERATING A CLOCK SIGNAL.  NOW, LET'S TAKE A LOOK AT DDX-24 IF WE COULD, PLEASE, AND
02:24PM <b>2</b> 02:24PM <b>3</b>	SO WE KNOW THAT.  AND ACCORDING TO MR. GAFFORD, THE RING OSCILLATORS IN  THESE PLL'S ARE USED TO CLOCK THE CPU.	02:27PM <b>2</b> 02:27PM <b>3</b>	GENERATING A CLOCK SIGNAL.  NOW, LET'S TAKE A LOOK AT DDX-24 IF WE COULD, PLEASE, AND  WE CAN TURN THE BACK SCREEN BACK ON.
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02:24PM <b>2</b> 02:24PM <b>3</b> 02:24PM <b>4</b> 02:24PM <b>5</b> 02:24PM <b>6</b>	SO WE KNOW THAT.  AND ACCORDING TO MR. GAFFORD, THE RING OSCILLATORS IN  THESE PLL'S ARE USED TO CLOCK THE CPU.  SO THEN THE QUESTION BECOMES WHETHER THE EXTERNAL  REFERENCE CRYSTAL EITHER GENERATES THE SIGNAL USED TO CLOCK THE  CPU, OR WHETHER IT IS USED TO GENERATE THE SIGNAL THAT IS USED	02:27PM 2 02:27PM 3 02:27PM 4 02:27PM 5 02:27PM 6	GENERATING A CLOCK SIGNAL.  NOW, LET'S TAKE A LOOK AT DDX-24 IF WE COULD, PLEASE, AND  WE CAN TURN THE BACK SCREEN BACK ON.  AGAIN, THIS ILLUSTRATES THE POINT I WAS MAKING EARLIER.  AS WE'VE DISCUSSED, EACH OF THESE INVERTERS HAS POWER, AND IT  GETS IT FROM THE CHIP'S MAIN POWER SUPPLY.
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02:24PM 2 02:24PM 3 02:24PM 4 02:24PM 5 02:24PM 6 02:24PM 7 02:24PM 8 02:24PM 9	SO WE KNOW THAT.  AND ACCORDING TO MR. GAFFORD, THE RING OSCILLATORS IN  THESE PLL'S ARE USED TO CLOCK THE CPU.  SO THEN THE QUESTION BECOMES WHETHER THE EXTERNAL  REFERENCE CRYSTAL EITHER GENERATES THE SIGNAL USED TO CLOCK THE  CPU, OR WHETHER IT IS USED TO GENERATE THE SIGNAL THAT IS USED  TO CLOCK THE CPU.  AND THE ANSWER TO BOTH OF THOSE QUESTIONS IS AN EMPHATIC  NO.	02:27PM 2 02:27PM 3 02:27PM 4 02:27PM 5 02:27PM 6 02:27PM 7 02:27PM 8 02:28PM 9	GENERATING A CLOCK SIGNAL.  NOW, LET'S TAKE A LOOK AT DDX-24 IF WE COULD, PLEASE, AND  WE CAN TURN THE BACK SCREEN BACK ON.  AGAIN, THIS ILLUSTRATES THE POINT I WAS MAKING EARLIER.  AS WE'VE DISCUSSED, EACH OF THESE INVERTERS HAS POWER, AND IT  GETS IT FROM THE CHIP'S MAIN POWER SUPPLY.  NOW, IS THERE EXTRA VOLTAGE OR CURRENT THAT IS SUPPLIED TO  TRY TO REGULATE OR ADJUST THE SPEED? YES.  BUT THAT IS NOT GENERATING THE CLOCK SIGNALS.
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	Case5:08-cv-00882-PSG Documer	1671-16	Filed10/31/13 Page4 of 4 1554
02:29PM <b>1</b>	REFERENCE. IT IS A COMPARATOR. A COMPARISON IS MADE BETWEEN	02:33PM <b>1</b>	LET'S IMAGINE WE HAVE A VERY CALM AND CONSISTENT MOTOR HOME
02:29PM <b>2</b>		02:33PM <b>2</b>	DRIVER WHO ALWAYS DRIVES AT 50 MILES AN HOUR AND YOU'RE STUCK
02:29PM <b>2</b>	THIS (INDICATING) AND THAT HERE (INDICATING).  AND THAT COMPARISON IS USED TO ADJUST THE SPEED, BUT NOT	02:33PM <b>2</b>	BEHIND HIM."
02:29PM <b>4</b>	GENERATE THE CLOCK SIGNAL FROM THE RING OSCILLATOR.	02:33PM <b>4</b>	INCIDENTALLY, MY GRANDFATHER, HE DIDN'T HAVE A MOTOR HOME
02:29PM <b>5</b>	NOW, YESTERDAY I DISCUSSED	02:33PM <b>5</b>	OR AN RV WELL, HE HAD A FIFTH WHEEL TRAILER AND HE TOWED IT
02:29PM <b>6</b>	LET'S TAKE THAT DOWN. THANK YOU.	02:33PM <b>6</b>	WITH HIS CHEVY PICKUP ALL AROUND THE WESTERN UNITED STATES FOR
02:29PM <b>7</b>	YESTERDAY I DISCUSSED AN ANALOGY WITH MR. GAFFORD TO	02:33PM <b>7</b>	ABOUT THE LAST 15 YEARS THAT HE AND MY GRANDMOTHER WERE ALIVE.
02:29PM <b>8</b>	ILLUSTRATE WHAT THE CRYSTAL IS USED FOR, AND WE'RE GOING TO PUT	02:33PM <b>8</b>	AND I'LL TELL YOU, HE WAS VERY CONSISTENT. HE WAS A VERY SLOW,
02:30PM <b>9</b>	UP A GRAPHIC HERE TO ILLUSTRATE THAT. THAT WAS IT. YEAH,	02:33PM <b>9</b>	CONSISTENT DRIVER, SAFE IN HIS MIND, BUT TOO SLOW TO BE SAFE
02:30PM 10	THAT'S IT.	02:33PM 10	FOR A LOT OF OTHER PEOPLE.
02:30PM <b>11</b>	THIS IS DDX-401. AS YOU CAN SEE, THERE IS A SPORTS CAR	02:33PM <b>11</b>	NOW I'M LOSING MY POWER HERE MYSELF.
02:30PM <b>12</b>	THAT IS TRAPPED GOING UP A HILL BEHIND AN RV, OR A MOTOR HOME,	02:33PM <b>12</b>	"SO THE MOTOR HOME IS NOT BEING USED TO GENERATE, BEING
02:30PM <b>13</b>	GOING UP A HILL, SOLID YELLOW LINE, CAN'T PASS. THE RV IS	02:33PM <b>13</b>	USED TO GENERATE THE POWER OF YOUR ALFA, IS IT? IT IS LIMITING
02:30PM <b>14</b>	GOING, SAY, 50 MILES AN HOUR AND THAT SPORTS CAR WANTS TO GO	02:33PM <b>14</b>	THE SPEED OF YOUR ALFA, BUT IT IS NOT BEING USED TO GENERATE
02:30PM <b>15</b>	FASTER THAN THAT.	02:33PM <b>15</b>	THE SPEED OF YOUR ALFA; RIGHT?"
02:30PM <b>16</b>	SO IS THE RV LIMITING THE SPEED OF THE SPORTS CAR? YES.	02:34PM <b>16</b>	WELL, NOW HE DOESN'T LIKE THE ANALOGY ANYMORE. SO YOU SEE
02:30PM <b>17</b>	IT'S LIMITING THE SPEED OF THE SPORTS CAR.	02:34PM <b>17</b>	WHAT HE SAYS HERE? HE SAYS, "IT IS BEING USED TO GENERATE THE
02:30PM 18	BUT IS THE RV AND THE ENGINE IN THAT MOTOR HOME, IS THAT	02:34PM <b>18</b>	POWER BECAUSE I'M CONTROLLING THE AMOUNT OF POWER I GET OUT OF
02:30PM 19	USED TO GENERATE THE CLOCK SIGNAL, OR THE ENGINE POWER FOR THE	02:34PM <b>19</b>	MY ENGINE IN RESPONSE TO THE MOTOR HOME."
02:30PM <b>20</b>	SPORTS CAR? NO WAY. NO WAY. THE SPORTS CAR HAS ITS OWN	02:34PM <b>20</b>	WELL, THAT IS JUST NOT TRUE. AND IT'S NOT TRUE WITH RING
02:31PM <b>21</b>	ENGINE, GENERATES ITS OWN POWER.	02:34PM <b>21</b>	OSCILLATORS AND EXTERNAL REFERENCE CRYSTALS EITHER.
02:31PM <b>22</b>	SO WHAT THE RV IS DOING IS LIMITING THE SPEED THAT THE	02:34PM <b>22</b>	LET'S TAKE THAT DOWN, PLEASE.
02:31PM <b>23</b>	SPORTS CAR CAN GO, BUT IT'S NOT USED TO GENERATE THE POWER FOR	02:34PM <b>23</b>	NOW, THERE'S ANOTHER WAY TO LOOK AT WHAT THE EXTERNAL
02:31PM <b>24</b>	THAT SPORTS CAR.	02:34PM <b>24</b>	REFERENCE CRYSTAL DOES, AND THAT IS IF WE COULD HAVE
02:31PM <b>25</b>	AND INITIALLY YESTERDAY, AT LEAST INITIALLY, MR. GAFFORD	02:34PM <b>25</b>	DDX-403, PLEASE. OH, NO, THAT'S NOT IT. DDX-403. THERE YOU
	UNITED STATES COURT REPORTERS		UNITED STATES COURT REPORTERS
4	1553		1555
02:31PM <b>1</b>	AGREED WITH ME THAT THE MOTOR HOME WAS NOT GENERATING THE POWER	02:34PM <b>1</b>	GO. PERFECT.
02:31PM <b>2</b>	AGREED WITH ME THAT THE MOTOR HOME WAS NOT GENERATING THE POWER FOR HIS SPORTS CAR WHEN HE WAS STUCK BEHIND IT, AND THAT AND	02:34PM <b>2</b>	GO. PERFECT.  OKAY. SO YOU'VE SEEN THESE, RIGHT? THE "YOUR SPEED"
02:31PM <b>2</b> 02:31PM <b>3</b>	AGREED WITH ME THAT THE MOTOR HOME WAS NOT GENERATING THE POWER FOR HIS SPORTS CAR WHEN HE WAS STUCK BEHIND IT, AND THAT AND HE ALSO AGREED INITIALLY THAT THE MOTOR HOME WAS NOT BEING USED	02:34PM <b>2</b> 02:34PM <b>3</b>	GO. PERFECT.  OKAY. SO YOU'VE SEEN THESE, RIGHT? THE "YOUR SPEED"  SIGNS. THERE'S ONE BETWEEN JUST DOWN THE STREET FROM WHERE
02:31PM <b>2</b> 02:31PM <b>3</b> 02:31PM <b>4</b>	AGREED WITH ME THAT THE MOTOR HOME WAS NOT GENERATING THE POWER FOR HIS SPORTS CAR WHEN HE WAS STUCK BEHIND IT, AND THAT AND HE ALSO AGREED INITIALLY THAT THE MOTOR HOME WAS NOT BEING USED TO GENERATE THE POWER FOR THE SPORTS CAR.	02:34PM <b>2</b> 02:34PM <b>3</b> 02:34PM <b>4</b>	GO. PERFECT.  OKAY. SO YOU'VE SEEN THESE, RIGHT? THE "YOUR SPEED"  SIGNS. THERE'S ONE BETWEEN JUST DOWN THE STREET FROM WHERE  I LIVE AND THAT'S, THAT'S PRETTY GOOD, 32 IN A 25. I MEAN, I
02:31PM 2 02:31PM 3 02:31PM 4 02:31PM 5	AGREED WITH ME THAT THE MOTOR HOME WAS NOT GENERATING THE POWER FOR HIS SPORTS CAR WHEN HE WAS STUCK BEHIND IT, AND THAT AND HE ALSO AGREED INITIALLY THAT THE MOTOR HOME WAS NOT BEING USED TO GENERATE THE POWER FOR THE SPORTS CAR.  LET'S LOOK AT WHAT HE SAID.	02:34PM <b>2</b> 02:34PM <b>3</b> 02:34PM <b>4</b> 02:34PM <b>5</b>	GO. PERFECT.  OKAY. SO YOU'VE SEEN THESE, RIGHT? THE "YOUR SPEED"  SIGNS. THERE'S ONE BETWEEN JUST DOWN THE STREET FROM WHERE  I LIVE AND THAT'S, THAT'S PRETTY GOOD, 32 IN A 25. I MEAN, I  TRY TO KEEP CLOSE TO THAT, I GUESS.
02:31PM 2 02:31PM 3 02:31PM 4 02:31PM 5 02:31PM 6	AGREED WITH ME THAT THE MOTOR HOME WAS NOT GENERATING THE POWER FOR HIS SPORTS CAR WHEN HE WAS STUCK BEHIND IT, AND THAT AND HE ALSO AGREED INITIALLY THAT THE MOTOR HOME WAS NOT BEING USED TO GENERATE THE POWER FOR THE SPORTS CAR.  LET'S LOOK AT WHAT HE SAID.  OH, NO. WE NEED TO GO TO THE TESTIMONY, BILL. DO YOU	02:34PM	GO. PERFECT.  OKAY. SO YOU'VE SEEN THESE, RIGHT? THE "YOUR SPEED"  SIGNS. THERE'S ONE BETWEEN JUST DOWN THE STREET FROM WHERE I LIVE AND THAT'S, THAT'S PRETTY GOOD, 32 IN A 25. I MEAN, I  TRY TO KEEP CLOSE TO THAT, I GUESS.  BUT THE POINT IS THAT WHAT THE "YOUR SPEED" COMBINED WITH
02:31PM 2 02:31PM 3 02:31PM 4 02:31PM 5 02:31PM 6 02:31PM 7	AGREED WITH ME THAT THE MOTOR HOME WAS NOT GENERATING THE POWER FOR HIS SPORTS CAR WHEN HE WAS STUCK BEHIND IT, AND THAT AND HE ALSO AGREED INITIALLY THAT THE MOTOR HOME WAS NOT BEING USED TO GENERATE THE POWER FOR THE SPORTS CAR.  LET'S LOOK AT WHAT HE SAID.  OH, NO. WE NEED TO GO TO THE TESTIMONY, BILL. DO YOU HAVE THAT? THIS IS AT 1382, 1 THROUGH 14.	02:34PM 2 02:34PM 3 02:34PM 4 02:34PM 5 02:34PM 6 02:35PM 7	GO. PERFECT.  OKAY. SO YOU'VE SEEN THESE, RIGHT? THE "YOUR SPEED"  SIGNS. THERE'S ONE BETWEEN JUST DOWN THE STREET FROM WHERE  I LIVE AND THAT'S, THAT'S PRETTY GOOD, 32 IN A 25. I MEAN, I  TRY TO KEEP CLOSE TO THAT, I GUESS.  BUT THE POINT IS THAT WHAT THE "YOUR SPEED" COMBINED WITH  THE SPEED LIMIT SIGN DOES IS IT'S A CUE, IT'S A SIGN TO YOU
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1 2 3 4 5 6 7 8 9	COOLEY LLP HEIDI L. KEEFE (SBN 178960) (hkeefe@cooley.com) MARK R. WEINSTEIN (SBN 193043) (mweinstein@cooley.com) RONALD S. LEMIEUX (SBN 120822) (rlemieux@cooley.com) KYLE D. CHEN (SBN 239501) (kyle.chen@cooley.com) Five Palo Alto Square, 4th Floor 3000 El Camino Real Palo Alto, California 94306-2155 Telephone: (650) 843-5000 Facsimile: (650) 857-0663  STEPHEN R. SMITH (pro hac vice) (stephen.smith@cooley.com) One Freedom Square Reston Town Center 11951 Freedom Drive Reston, VA 20190-5656 Telephone: (703) 456-8000 Facsimile: (703) 456-8100  Attorneys for Plaintiffs	
11	HTC CORPORATION and HTC AMERICA, INC.	
12 13	UNITED STATES DISTRICT COURT	
14	NORTHERN DISTRICT OF CALIFORNIA	
15	SAN JOSE DIVISION	
16		
117 118 119 220 221 222 223	HTC CORPORATION and HTC AMERICA, INC.,  Plaintiffs,  v.  TECHNOLOGY PROPERTIES LIMITED, PATRIOT SCIENTIFIC CORPORATION and ALLIACENSE LIMITED,  Defendants.	Case No. 5:08-cv-00882 PSG  [Related to Case No. 5:08-cv-00877 PSG]  [PROPOSED] ORDER GRANTING PLAINTIFFS' RENEWED MOTION FOR ENTRY OF JUDGMENT AS A MATTER OF LAW OF NON-INFRINGEMENT  Complaint Filed: February 8, 2008 Trial Date: September 23, 2013
24 25		_
26	Having considered HTC Corporation and HTC America Inc.'s ("Plaintiffs") Renewed	
27	Motion for Entry of Judgment as a Matter of Law on Non-Infringement (Per Fed. R. Civ. P.	
28	50(b)), the record in this case, and all related facts and circumstances, and good cause appearing	
	Case No. 5:08-cv-00882 PSG	[PROPOSED] ORDER GRANTING PLAINTIFFS' RENEWED JMOL OF NON-INFRINGEMENT

### Case5:08-cv-00882-PSG Document671-17 Filed10/31/13 Page2 of 2 therefore, **IT IS HEREBY ORDERED THAT**: Plaintiffs' Renewed Motion for Entry of Judgment as a Matter of Law on Non-Infringement (Per Fed. R. Civ. P. 50(b)) is **GRANTED.** A final judgment of non-infringement of U.S. Patent No. 5,809,336 in favor of Plaintiffs shall be entered. IT IS SO ORDERED. Dated: December \_\_\_\_\_, 2013 Hon. Paul S. Grewal United States Magistrate Judge [PROPOSED] ORDER GRANTING