

Overview of the EV 2 Formula and NetUS Case Study¹

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¹ The NetUS case study is discussed in *Global Patent Litigation: How and Where to Win* (Bloomberg BNA, 2014) (available at <http://www.bna.com/global-patent-litigation-p17179895470/>)

Table of Contents

- EV 2 Formula Overview
- The EV 2 Formula, Element by Element
- Considerations For Estimating EV 2 Formula Elements and Arriving at Conclusions
- NetUS Case Study (Discussed in Chapter 4 of the *Global Patent Litigation* book)
- Case Study Results
- Conclusions and Next Steps

EV 2 Formula Overview

What is the EV 2 Formula?

- The Expected Value (EV) 2 Formula is a flexible valuation tool that can yield an objective measure of overall case value
- The formula was originally developed by Mike Elmer, Senior Counsel at Finnegan, Henderson, Farabow, Garrett & Dunner, LLP
- A detailed discussion of the formula is included in the book *Global Patent Litigation: How and Where to Win* (Bloomberg BNA, 2016)
- Since the publication of the *Global Patent Litigation* book, the authors have continued to refine and expand upon the EV 2 Formula in collaboration with Kimberly Schenk, a CPA and patent damages expert with Charles River Associates
 - The first revision, presented here, incorporates issue-specific win rates for validity and infringement challenges
 - Other revisions will follow

EV 2 Formula Overview

The Original EV Formula

$$EV = \text{Win Rate} \times (A+B+C) - \text{Lose Rate} \times (D+E) - F$$

- Win Rate = Probability Patentee Will Win
- A = Expected Value of Past Damages Award
- B = Expected Value of Future Remedy
- C = Expected Value of Reimbursed Litigation Costs
- Lose Rate = Probability Patentee Will Lose
- D = Expected Value of Lost Licensing Revenues
- E = Expected Value of Reimbursing Opposing Party Costs
- F = Costs of Going to Trial

EV 2 Formula Overview

The Revised EV 2 Formula (“EV₂”)

$$EV_2 = [WR_C \times (A+B+C)] - [(1-WR_V) \times D] - [(1-WR_C) \times E] - F$$

- Issue-Specific Win Rates
 - Combined Win Rate (WR_C) = Probability Patentee Will Win Validity and Infringement
 - Validity Win Rate (WR_V) = Probability Patentee Will Win Validity
- A = Expected Value of Past Damages Award
- B = Expected Value of Future Remedy
- C = Expected Value of Reimbursed Litigation Costs
- D = Expected Value of Lost Licensing Revenues
- E = Expected Value of Reimbursing Opposing Party Costs
- F = Costs of Going to Trial

The use of issue-specific win rates allows for improved estimates of EV when in bifurcated countries like Germany. It is also useful for U.S. cases since the passage of the America Invents Act (AIA), as alleged infringers have become more proactive and there is an increasing number of cases where only one issue is being tried.

The EV 2 Formula, Element by Element

Win Rates

- Reflects the likelihood of the patentee prevailing in the litigation
- Separate win rates can be used for issues of validity and infringement, particularly in bifurcated countries and in the U.S. post-AIA, as separate validity challenges (e.g., PTAB) have become more prevalent

The EV 2 Formula, Element by Element

Element A

- Element A represents the expected amount the court will award for damages through the date of decision in the trial court of first instance

The EV 2 Formula, Element by Element

Element B

- Element B is the value of any future remedy adjusted to reflect the net present value of those future revenues
- Future remedies include an injunction and/or ongoing royalties (i.e., compulsory license or U.S. reasonable royalty damages awarded beyond the date of trial when an injunction is not entered)

The EV 2 Formula, Element by Element

Element C

- Element C is the expected value of all reimbursed costs of going to trial
- Costs for purposes of Element C include both court-awarded legal fees and out-of-pocket expenses

The EV 2 Formula, Element by Element

Element D

- Element D represents the expected costs of losing licensing revenues if the patent is declared invalid

The EV 2 Formula, Element by Element

Element E

- Element E represents the cost of paying the alleged infringer's costs
- Costs for purposes of Element E include both court-awarded legal fees and out-of-pocket expenses

The EV 2 Formula, Element by Element

Element F

- Element F is the total expected costs of litigation

The EV 2 Formula, Element by Element

Damage Multipliers

- Several damage multipliers are calculated to facilitate analysis
 - **A/F**: one rule of thumb is that A/F should be at least the reciprocal of the win rate
 - **(Win Rate x A)/F**: more conservative than A/F because it factors in the win rate
 - **EV/F**: becomes more useful when the value of an injunction is important and/or when it is likely that substantial litigation costs will be awarded to or assessed against the patentee
- Since the publication of the *Global Patent Litigation* book, the authors have added one additional damage multiplier: the injunction multiplier (B/F). This is most useful when the value of injunction is important or where there are no past damages.

Considerations

Valuing EV 2 Elements and Arriving at Conclusions

- When utilizing the EV 2 Formula as a decision making tool, particular consideration should be given to:
 - The client's desired outcome (damages, injunction, settlement, or some combination)
 - The affordability of litigation and any budget constraints
 - The level of risk that is considered acceptable to the client
 - How many patents or patent claims are at issue, and what options the infringer has for avoiding infringement of the asserted claims
 - Whether the patent holder is a non-practicing entity (NPE), and if so how that impacts the value of any of the formula Elements in each country
 - The typical time to trial for the relevant court systems, the normal life cycle of the products at issue, and the remaining life of the patent(s) at issue
 - Whether cases are typically bifurcated in the relevant court systems, and/or whether alternative venues are available for adjudicating validity issues (e.g., PTAB in the U.S.)
 - Whether court orders relating to injunctions and damages are generally enforceable in the relevant venues

Considerations

Win Rates

- The win rate will vary depending on the venue of choice, the stage of litigation, and whether infringement and validity are both litigated
- The validity win rate should consider both the probability that the issue of validity will be challenged and the probability of winning such a challenge
- Historical win rates can be adjusted up or down based on the unique case assessment made by counsel
- To determine the best case or worst case scenarios, the win rate can be set to 100% or 0%, respectively

Considerations

Element A

- Is it possible to make a single estimate of damages, or should probabilities be assigned to various outcomes?
- What form of damages can the patent holder likely recover? Or will the award involve a mix of different forms?
- Will there be any punitive damages or enhancements for willfulness?
- Will the patent holder receive pre- and/or post-judgment interest on the damage award? At what rate?
- How will the time value of money impact the present value of the award?

Considerations

Element B – Injunction Value

- How likely is a injunction?
- Would a preliminary injunction be entered, or only a permanent injunction?
- If an injunction is entered, how will the infringer respond?
 - Remove or disable the patented feature?
 - Redesign its product?
 - Shift its focus to a non-infringing product?
 - Move its location of manufacture or import?
 - Exit the market entirely?
 - Concede to settlement?
- If an injunction is entered, how will the patent holder benefit?
 - Greater market share?
 - Higher selling prices?
 - More leverage in settlement negotiations?
- How long will the benefits of the injunction be realized?
 - What is the remaining life of the patent(s)?
 - Where is the infringing product in terms of its overall life cycle?
 - How quickly will the market return to the status quo?

Considerations

Element B – Ongoing Royalties

- If ongoing royalties are awarded (i.e., through a compulsory license), how will the infringer respond?
 - Remove or disable the patented feature?
 - Redesign its product?
 - Market a non-infringing product?
 - Move its location of manufacture or import?
 - Exit the market entirely?
 - None of the above (i.e., pay royalties as ordered by the court)?

Considerations

Element C

- Is it possible to make a single estimate of reimbursed costs and fees, or should probabilities be assigned to various outcomes?
- Awarded costs and fees have historically not been reliably reported, so available published data to date has not been very reliable.

Considerations

Element D

- If issue-specific win rates are used, what is the validity win rate, and how likely is the patent holder to face a validity challenge?
- If the court finds some, but not all, of the patent claims invalid, does that impact future licensing revenue?
- Because other licensing revenues are not lost until validity has been finally decided, how likely is validity appeal, and what is the validity appeal win rate?

Considerations

Element E

- Is it possible to make a single estimate of reimbursed costs and fees, or should probabilities be assigned to various outcomes?

Considerations

Element F

- What are the average costs to litigate in this venue? Will this case be more or less expensive than the average?
- How do fees and costs vary depending on the outcome? e.g., If there is a high likelihood of the patent holder losing summary judgment, should the likely costs be discounted?

NetUS Case Study

Introduction

- The NetUS case study provides some basic facts involving a company with a patent on wireless communication chips
- Authors from 16 countries completed the case study and provided discussion of their results in the *Global Patent Litigation* book
- Case study results for Finland and Israel, the 17th and 18th countries, were published in the January 2015 *Global Patent Litigation* book supplement
- Case study results provided for Belgium, Denmark, Ireland, Mexico, Norway and Sweden in 2016 edition (24 countries total)

NetUS Case Study

Assumptions

- Several assumptions were made to simplify the case study:
 - Constant market size
 - 10% reasonable royalty rate (for ease of calculation)
 - Patent holder captures market share-weighted portion of enjoined sales

NetUS Case Study

Spreadsheet Model

- Contributing authors were provided an Excel spreadsheet to assist in evaluating each of the Elements of the EV 2 Formula given the facts in the case study
- Instructions provided to the contributors are summarized in the following slides

NetUS Case Study

Instructions for Element A

- Element A in the EV 2 calculation captures the expected value of either an award of lost patentee's profits, infringer's profits, or an award of royalties
- Element A also includes pre-judgment interest for the past damages (whether it is compound or simple interest)

NetUS Case Study

Instructions for Element B

- Element B in the EV 2 calculation captures the expected value of either an injunction (which would result in increased sales for Net US and its licensee) or an award of a reasonable royalty (on China Wireless' expected future sales)
- The Element B spreadsheet first calculates the expected value of the injunction and the expected value of the reasonable royalty, and then adjusts the total expected value to the net present value

NetUS Case Study

Instructions for Element C

- Because in many courts the award of fees is not guaranteed, the “Probability of Recovering” variables are included in the calculation.
- And, even if costs are awarded, it is unlikely in many courts to recapture all attorneys fees or court costs. Thus “% typically awarded” variables are included in the calculation

NetUS Case Study

Instructions for Element D

- Element D can be calculated without any additional information (based entirely on information entered on previous tabs and provided in the scenario)

NetUS Case Study

Instructions for Element E

- Element E can be calculated for most countries without any additional information (based entirely on information entered on previous tabs and provided in the scenario)
- For countries where infringement and validity are tried separately, minor changes may need to be made

NetUS Case Study

Instructions for Element F

- Please note that the possibility that Net US would have to pay for China Wireless's attorneys' fees are captured separately in Element E
- Furthermore, if Net US wins, any reimbursed fees are captured separately in Element C
- Therefore, Element F captures the total costs of going to trial, without any reimbursements to either of the parties

NetUS Case Study

EV 2 Cumulative Chart

- For all participating countries, the calculated values of each formula Element, plus the resulting EV 2 and damage multipliers, were published in the *Global Patent Litigation* book in the form of a “cumulative chart”
- The cumulative chart included several reasonableness checks on the calculated damages award:
 - Element A recalculated, assuming reasonable royalties are awarded at 10%
 - Element A recalculated, assuming reasonable royalties are awarded at 10%, plus simple interest
 - The largest patent damage award to date in each country

Case Study Results

EV 2 Cumulative Chart

EV CUMULATIVE CHART OF CHAPTER 4 CASE STUDY CALCULATIONS MADE FOR 18 COUNTRIES ¹														
	Element A	Element B	Element C	Element D	Element E	Element F	EV	Win Rate Used	Damage Multipliers			Element A Assuming Win at Trial and 10% RR ²	Element A with Simple Interest Assuming Win at Trial with RR ²	Largest Damages Award
									Damage Multiplier (A/F)	(Win Rate x A)/F	EV/F			
Australia	7,488,000	737,717	1,100,000	36,281	750,000	2,100,000	2,978,678	58.0%	3.6	2.1	1.4	1,440,000	1,872,000	Rarely Determined
Brazil	14,540,800	5,901,738	520,000	290,249	120,000	1,000,000	2,629,207	18.9%	14.5	2.7	2.6	10,240,000	14,540,800	300,000,000
Canada	9,089,280	1,106,576	360,000	54,422	360,000	900,000	4,444,974	52.5%	10.1	5.3	4.9	2,160,000	2,272,320	180,000,000
Canada (NPE)	2,272,320	435,374	360,000	54,422	360,000	900,000	513,689	52.5%	2.5	1.3	0.6	2,160,000	2,272,320	180,000,000
China	111,300,000	80,229,945	24,000	3,488,258	24,000	200,000	58,708,927	32.0%	556.5	178.1	293.5	31,800,000	31,800,000	44,000,000
Finland	394,875	340,050	950,000	32,908	950,000	1,100,000	-1,149,166	35.0%	0.4	0.1	(1.0)	240,000	253,500	11,900,000
France	8,553,087	2,898,175	180,000	142,533	150,000	530,000	4,066,223	41.0%	16.1	6.6	7.7	2,200,000	2,334,332	12,300,000
Germany	2,478,903	3,899,666	455,000	191,787	485,000	907,500	290,298	25.0%	2.7	0.7	0.3	2,340,000	2,478,903	2,700,000
India	126,603,750	30,566,031	80,000	2,157,602	85,000	255,000	77,248,589	50.0%	496.5	248.2	302.9	42,900,000	51,675,000	280,000
Israel	2,483,152	0	142,500	0	165,000	650,000	105,915	33.0%	3.8	1.3	0.2	440,000	926,418	727,000
Italy	5,569,200	1,844,293	75,000	90,703	74,000	215,000	2,681,576	40.0%	25.9	10.4	12.5	2,800,000	3,094,000	7,000,000
Japan (Access UK)	2,352,000	999,914	216,000	295,057	200,000	416,000	-17,203	22.0%	5.7	1.2	0.0	900,000	980,000	63,500,000
Japan (China Wireless)	9,408,000	5,999,486	253,000	295,057	200,000	453,000	2,608,163	22.0%	20.8	4.6	5.8	3,600,000	3,920,000	63,500,000
Netherlands	792,000	1,003,697	200,750	49,362	202,000	200,750	379,577	37.0%	3.9	1.5	1.9	720,000	792,000	3,900,000
Russia	3,680,000	7,695,010	54,500	378,443	47,500	257,000	4,059,238	40.0%	14.3	5.7	15.8	3,680,000	3,680,000	100,000
South Korea	4,133,416	2,531,044	5,700	126,006	4,200	421,500	1,250,391	26.5%	9.8	2.6	3.0	2,307,200	2,666,720	70,000,000
Switzerland	246,000	1,003,697	103,100	49,362	23,100	280,000	274,652	44.0%	0.9	0.4	1.0	240,000	366,000	N/A
Taiwan	1,629,440	1,365,043	50,000	67,133	0	150,000	249,609	15.0%	10.9	1.6	1.7	464,000	486,400	66,600,000
1UK (Access)	10,390,900	2,393,884	753,000	154,444	753,000	1,003,000	1,371,512	22.7%	10.4	2.4	1.4	3,650,000	4,550,900	6,150,000
2UK (CW/NetUS/NPE)	3,197,200	598,471	753,000	154,444	753,000	1,003,000	-670,815	22.7%	3.2	0.7	(0.7)	1,460,000	1,737,200	6,150,000
3UK (NetUS/NPE)	4,995,625	1,930,551	753,000	193,055	753,000	1,003,000	10,597	22.7%	5.0	1.1	0.0	3,650,000	4,550,900	6,150,000
4UK (CW with NetUS as a NPE)	1,998,250	772,220	753,000	193,055	753,000	1,003,000	-933,579	22.7%	2.0	0.5	(0.9)	1,460,000	1,737,200	6,150,000
U.S.	16,696,120	2,212,925	162,750	553,231	162,750	3,000,000	7,365,174	56.0%	5.6	3.1	2.5	8,500,000	9,540,640	1,800,000,000
U.S. (NetUS w/NPE)	9,616,976	2,212,925	162,750	553,231	162,750	3,000,000	3,400,853	56.0%	3.2	1.8	1.2	8,500,000	9,540,640	1,800,000,000

* This amount is a settlement amount after an appeal confirmed the liability decision, not a damage amount awarded by the court.

Footnote 1: In all instances the EV calculations are prepared assuming that NetUS has sued ChinaWireless as the only infringing party and that Net US is a practicing entity (PE), unless indicated otherwise. For those EV calculations where AccessUK only has been sued, it is so indicated in parentheses after the country name. Similarly, for those 3 countries [namely, Canada, England (UK) and the United States] where additional EV calculations have been prepared assuming that NetUS is a Non Practicing Entity (NPE), it is similarly indicated in the parentheses after the country name. England (UK) is the only country where NPE calculations have been prepared for infringement claims against both AccessUK, and ChinaWireless, respectively in separate suits.

Footnote 2: These columns have been included to provide additional Element A "comparisons" with the column entry of the largest damage award to date in each country. These comparisons are made for two reasons. First, as discussed elsewhere, the largest damage award only includes Element A and does not take into account any of the other "elements" in the EV formula. Second, while lost profits and infringer's profits are theoretically available in many countries, typically their respective burdens of proof are higher and courts are often inclined to award only a reasonable royalty (RR). For the calculations included in both columns (without, and with simple interest, respectively) it should also be noted that no additional award (such as lost profit) is included for any "lost sales" on the part of NetUS.

Footnote 3: In Israel, Elements B and D are both effectively "0" because the litigation will end around the time of patent expiration. Accordingly, there is no injunction to be valued (Element "B") and no third party revenue stream that will be negatively impacted (Element "D").

The cumulative chart has been updated since the publication of the Global Patent Litigation book to include results from Finland and Israel along with a \$2.7 million damage award in Germany.

Case Study Results

Discussion in *Global Patent Litigation Book*

- Where the EV 2 Formula is appropriate, the authors have found that the larger the calculated EV 2 value, the greater the economic incentive for initiating a litigation
- The EV 2 calculation can be used as part of an Early Case Assessment (ECA) to determine whether litigation is worth instigating at all
- The EV 2 calculation can be used by either party as an objective starting point for settlement negotiations
- Currently, the EV 2 Formula is based upon the legal measure of damages theoretically possible in each country, and may not provide a realistic measure of case value, particularly in developing countries

Case Study Results

Graphical Analysis Pages (EV 2 Dashboard)

- Since the publication of the *Global Patent Litigation* book, the authors have created graphical “dashboard” pages for each country to help decision makers analyze the data
- These graphical pages have helped the authors reach conclusions about the case study results beyond those presented in the *Global Patent Litigation* book (2014 edition)
- Those graphical dashboard pages for the NetUS case study are posted as a separate file on the Global IP Project website: www.globalpatentmetrics.com
- An illustrative example follows in the next slide

KIM: THESE NUMBERS ALSO NEEDS TO BE RECALCULATE USING EV 2 FORMULA

Case Study Results

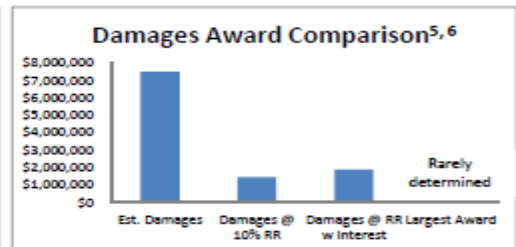
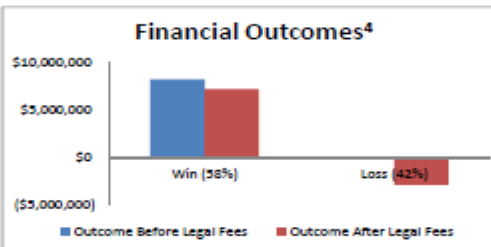
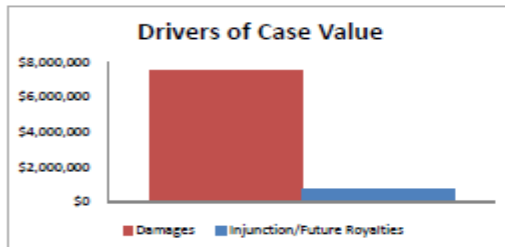
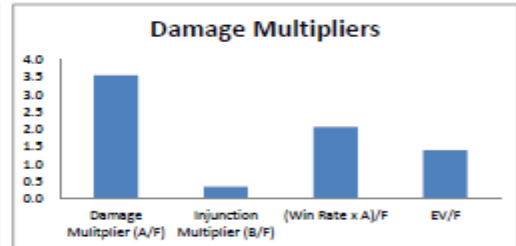
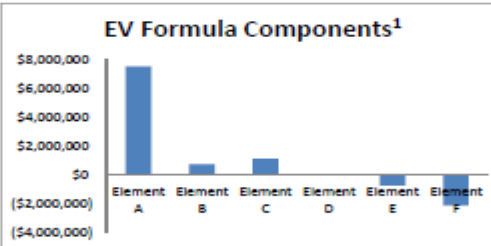
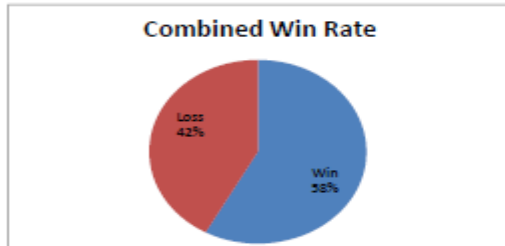
Graphical Analysis Pages (EV 2 Dashboard)

Detailed EV Analysis for Australia *NetUS v. China Wireless*

Authors' Analysis: Given the high win rate and significant potential damages, **NetUS should sue China Wireless in Australia.** If NetUS is successful on the issues of validity and infringement, it should expect to settle the case rather than proceeding to a damages trial due to the additional cost of litigating damages. It should also be noted that the injunction value is low due to the long time it takes to obtain judgment on validity and infringement; thus, if NetUS's litigation strategy is focused on obtaining an injunction, other venues may be more appropriate.

$$\text{EV Formula:}^1 \text{ EV} = [\text{Win Rate} \times (\text{A} + \text{B} + \text{C})] - [(1 - \text{Validity Win Rate}) \times \text{D}] - [(1 - \text{Combined Win Rate}) \times \text{E}] - \text{F}$$

Element A	Element B	Element C	Element D	Element E	Element F	EV	Infringement Win Rate ²	Validity Win Rate ²	Combined Win Rate	Damage Multipliers			
										Damage Multiplier (A/F)	Injunction Multiplier (B/F) ³	(Win Rate x A)/F	EV/F
\$7,488,000	\$737,717	\$1,100,000	\$36,281	\$750,000	\$2,100,000	\$2,978,678	N/A	N/A	58.0%	3.6	0.4	2.1	1.4



Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Category	Damages										Injunction/Future Royalty

* Suit filed 1/1/13

Footnote 1: A = Damages, B = Injunction/Future Royalties, C = Fees/Costs Awarded to Patent Holder, D = Lost Licensing Revenue, E = Fees/Costs Awarded to Infringer, F = Patent Holder's Total Fees/Costs
 Footnote 2: For purposes of the case study, the authors assumed a single win rate. In future versions of the EV calculation, separate win rates will be used for infringement and validity.
 Footnote 3: The injunction multiplier includes the value of an injunction and future royalties. Here, the value of the injunction is based only on the share of enjoined sales captured by the patentee.
 Footnote 4: The financial outcomes reflect the total monetary cost of the litigation if the patent holder wins versus if it loses. Amounts are shown before and after any unreimbursed fees/costs.
 Footnote 5: The damages award comparison includes the value of Element A calculated by the authors, as well as illustrative calculations of total damages at a 10% royalty, with and without simple interest.
 Footnote 6: Due to the structure of the Australian patent litigation system, where liability and quantum are determined in separate trials, it is rare for quantum (and thus, damages) to be determined by Australian courts.

Conclusions and Next Steps

Authors' Notes

- The EV 2 Formula can be useful in any situation if the facts and assumptions used to estimate the values for each element are tailored to the facts of the case
- The authors plan to continue working to improve the usefulness of the EV 2 Formula in several ways:
 - Improving the availability and granularity of data on win rates and time-to-trial metrics for venues around the world in collaboration with DARTS-IP
 - Expanding upon the work done for the NetUS case study, with the goal of providing users a tool that is more universally applicable in real world situations